此文件於 2025年 09 月 02 日收到。城市規劃委員會只會在收到所有必要的資料及文件後才正式確認收到申請的日期。

This document is received on 02 SEP 2025
The Town Planning Board will formally acknowledge the date of receipt of the application only upon receipt of all the required information and documents.

Form No. S16-I
表格第 S16-I 號

APPLICATION FOR PERMISSION UNDER SECTION 16 OF THE TOWN PLANNING ORDINANCE (CAP. 131)

根據《城市規劃條例》(第131章)第16條遞交的許可申請

Applicable to proposals not involving or not only involving:
適用於建議不涉及或不祇涉及:

(i) Construction of "New Territories Exempted House(s)";
興建「新界豁免管制屋宇」;

(ii) Temporary use/development of land and/or building not exceeding 3 years in rural areas or Regulated Areas; and
位於鄉郊地區或受規管地區土地上及/或建築物內進行為期不超過三年的臨時用途/發展;及

(iii) Renewal of permission for temporary use or development in rural areas or Regulated Areas
位於鄉郊地區或受規管地區的臨時用途或發展的許可續期

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

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

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

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

& Please attach documentary proof 請夾附證明文件

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

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

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

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

For Official Use Only 請勿填寫此欄	Application No. 申請編號	A/H7/188
	Date Received 收到日期	02 SEP 2025

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

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

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

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1. Name of Applicant 申請人姓名/名稱

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

Patchway Holdings (HK) Limited（博威控股（香港）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)

URBIS Limited

3. Application Site 申請地點

(a) 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）	Inland Lot No. 8945, Caroline Hill Road, Causeway Bay
(b) Site area and/or gross floor area involved 涉及的地盤面積及／或總樓面面積	☑Site area 地盤面積 14,802 sq.m 平方米 ☑About 約 ☑Gross floor area 總樓面面積 102,000 sq.m 平方米 ☐About 約
(c) Area of Government land included (if any) 所包括的政府土地面積（倘有）	N/A sq.m 平方米 ☐About 約

(d) Name and number of the related statutory plan(s) 有關法定圖則的名稱及編號	Approved Wong Nai Chung Outline Zoning Plan No. S/H7/21
(e) Land use zone(s) involved 涉及的土地用途地帶	"Commercial (2)"
(f) Current use(s) 現時用途	Vacant (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 ..... (DD/MM/YYYY), this application involves a total of ..... "current land owner(s)"#.
根據土地註冊處截至 ..... 年 ..... 月 ..... 日的記錄，這宗申請共牽涉 ..... 名「現行土地擁有人」#。

(b) The applicant 申請人 –

☐ has obtained consent(s) of ..... "current land owner(s)"#.
已取得 ..... 名「現行土地擁有人」#的同意。

Details of consent of "current land owner(s)"# obtained 取得「現行土地擁有人」#同意的詳情

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

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

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

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

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

☐ has taken reasonable steps to obtain consent of or give notification to 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. Type(s) of Application 申請類別

☐	Type (i) 第(i)類	Change of use within existing building or part thereof 更改現有建築物或其部分內的用途
☐	Type (ii) 第(ii)類	Diversion of stream / excavation of land / filling of land / filling of pond as required under Notes of Statutory Plan(s) 根據法定圖則《註釋》內所要求的河道改道／挖土／填土／填塘工程
☐	Type (iii) 第(iii)類	Public utility installation / Utility installation for private project 公用事業設施裝置/私人發展計劃的公用設施裝置
☑	Type (iv) 第(iv)類	Minor relaxation of stated development restriction(s) as provided under Notes of Statutory Plan(s) 略為放寬於法定圖則《註釋》內列明的發展限制
☑	Type (v) 第(v)類	Use / development other than (i) to (iii) above 上述的(i)至(iii)項以外的用途／發展

Note 1: May insert more than one「✓」.
註 1： 可在多於一個方格內加上「✓」號
Note 2: For Development involving columbarium use, please complete the table in the Appendix.
註 2： 如發展涉及靈灰安置所用途，請填妥於附件的表格。

(i) For Type (i) application 供第(i)類申請

(a) Total floor area involved 涉及的總樓面面積		sq.m 平方米	
(b) Proposed use(s)/development 擬議用途/發展	(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)		
(c) Number of storeys involved 涉及層數		Number of units involved 涉及單位數目	
(d) Proposed floor area 擬議樓面面積	Domestic part 住用部分	sq.m 平方米	☐About 約
	Non-domestic part 非住用部分.....	sq.m 平方米	☐About 約
	Total 總計	sq.m 平方米	☐About 約

(e) Proposed uses of different floors (if applicable) 不同樓層的擬議用途(如適用) (Please use separate sheets if the space provided is insufficient) (如所提供的空間不足，請另頁說明)	Floor(s) 樓層	Current use(s) 現時用途	Proposed use(s) 擬議用途

(ii) For Type (ii) application 供第(ii)類申請

(a) Operation involved 涉及工程	☐ Diversion of stream 河道改道 ☐ Filling of pond 填塘 Area of filling 填塘面積 ..... sq.m 平方米 ☐About 約 Depth of filling 填塘深度 ..... m 米 ☐About 約 ☐ Filling of land 填土 Area of filling 填土面積 ..... sq.m 平方米 ☐About 約 Depth of filling 填土厚度 ..... m 米 ☐About 約 ☐ Excavation of land 挖土 Area of excavation 挖土面積 ..... sq.m 平方米 ☐About 約 Depth of excavation 挖土深度 ..... m 米 ☐About 約 (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) (請用圖則顯示有關土地／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))
(b) Intended use/development 有意進行的用途／發展	

(iii) For Type (iii) application 供第(iii)類申請

(a) Nature and scale 性質及規模

☐ Public utility installation 公用事業設施裝置

☐ Utility installation for private project 私人發展計劃的公用設施裝置

Please specify the type and number of utility to be provided as well as the dimensions of each building/structure, where appropriate
請註明有關裝置的性質及數量，包括每座建築物/構築物(倘有)的長度、高度和闊度

Name/type of installation 裝置名稱／種類	Number of provision 數量	Dimension of each installation /building/structure (m) (LxWxH) 每個裝置／建築物／構築物的尺寸 (米) (長 x 闊 x 高)

(Please illustrate on plan the layout of the installation 請用圖則顯示裝置的布局)

(iv) For Type (iv) application 就第(iv)類申請

(a) Please specify the proposed minor relaxation of stated development restriction(s) and **also fill in the proposed use/development and development particulars in part (v) below** –
請列明擬議略為放寬的發展限制並填妥於第(v)部分的擬議用途/發展及發展細節 –

☐	Plot ratio restriction 地積比率限制	From 由 ..... to 至 .....
☑	Gross floor area restriction 總樓面面積限制	From 由 100,000 sq. m 平方米 to 至 102,000 sq. m 平方米
☐	Site coverage restriction 上蓋面積限制	From 由 .....% to 至 ..... %
☐	Building height restriction 建築物高度限制	From 由 .....m 米 to 至 ..... m 米 From 由 ..... mPD 米 (主水平基準上) to 至 .....mPD 米 (主水平基準上) From 由 ..... storeys 層 to 至 ..... storeys 層
☐	Non-building area restriction 非建築用地限制	From 由 .....m to 至 ..... m
☐	Others (please specify) 其他（請註明）	.....

(v) For Type (v) application 就第(v)類申請

(a) Proposed use(s)/development 擬議用途/發展	Submission of Layout Plan for Proposed Permitted Commercial Development (Office, Eating Place, Shop and Services) with Social Welfare Facility, Public Clinic, Place of Recreation, Sports or Culture, Public Transport Station and Public Vehicle Park (excluding Container Vehicle), and Minor Relaxation of Gross Floor Area Restriction (Please illustrate the details of the proposal on a layout plan 請用平面圖說明建議詳情)

(b) Development Schedule 發展細節表

Proposed gross floor area (GFA) 擬議總樓面面積	102,000 ..... sq.m 平方米	☐About 約
Proposed plot ratio 擬議地積比率	6.89	☑About 約
Proposed site coverage 擬議上蓋面積	65 ..... %	☐About 約
Proposed no. of blocks 擬議座數	3	
Proposed no. of storeys of each block 每座建築物的擬議層數	Towers 1&2: 25; Tower 3: 16. storeys 層 ☐ include 包括.....storeys of basements 層地庫 ☑ exclude 不包括 5 storeys of basements 層地庫	
Proposed building height of each block 每座建築物的擬議高度	Towers 1&2: +135.0 Tower 3: +90.0 mPD 米(主水平基準上) ..... m 米	☐About 約 ☐About 約

~~☐ Domestic part 住用部分~~

~~GFA 總樓面面積 ..... sq. m 平方米 ☐About 約~~

~~number of Units 單位數目 .....~~

~~average unit size 單位平均面積 .....sq. m 平方米 ☐About 約~~

~~estimated number of residents 估計住客數目 .....~~

☑ Non-domestic part 非住用部分

GFA 總樓面面積

☑ eating place 食肆 ..... sq. m 平方米 ☐About 約

☐ hotel 酒店 ..... sq. m 平方米 ☐About 約

(please specify the number of rooms 請註明房間數目) .....

Eating Place and Shop and Services Total: About 10,000 sq. m

☑ office 辦公室 85,300 sq. m 平方米 ☑About 約

☑ shop and services 商店及服務行業 ..... sq. m 平方米 ☐About 約

☑ Government, institution or community facilities 政府、機構或社區設施

(please specify the use(s) and concerned land area(s)/GFA(s) 請註明用途及有關的地面面積／總樓面面積)

Child Care Centre, Day Care Centre for the Elderly, and District Health Centre: About 3,100 sq. m

Performing Arts and Cultural Facilities: About 2,000 sq. m

☑ 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)

Light Bus Lay-bys: About 1,600 sq. m

☑ Open space 休憩用地

(please specify land area(s) 請註明地面面積)

☐ private open space 私人休憩用地 ..... sq. m 平方米 ☐ Not less than 不少於

☑ public open space 公眾休憩用地 6,000 sq. m 平方米 ☑ Not less than 不少於

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

Floor	Main Use
Edged Blue Site (Towers 1 and 2)	
B4-B5/F	Private Vehicle Park
B3/F	Public and Private Vehicle Park
B2/F	Public Vehicle Park; Ancillary L/UL Area; Parking for GIC Facilities Required under the Lease
B1/F	Commercial; Light Bus Lay-bys; E&M
G/F	Commercial; Public Open Space; E&M
1/F	Commercial; E&M
2/F	Commercial; Public Open Space; E&M
3/F	Commercial; E&M
4/F	E&M
5/F	GIC Facilities (Performing Arts and Cultural Facilities); Commercial; E&M
6/F-27/F (13, 14 and 24/F omitted)	Commercial; E&M

Floor	Main Use
Edged Red Site (Tower 3)	
B4-5/F	Private Vehicle Park
B3/F	Private Vehicle Park
B2/F	Public Vehicle Park
B2M/F	E&M
G/F	GIC Facility (District Health Centre); Public Open Space; E&M
UG/F	GIC Facility (Day Care Centre for the Elderly); Public Open Space; E&M
1/F	GIC Facility (Child Care Centre); E&M
2/F	Commercial; Public Open Space; E&M
3/F-17/F (4, 13 and 14/F omitted)	Commercial; E&M

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

G/F and 2/F: Public Open Space

7. Anticipated Completion Time of the Development Proposal 擬議發展計劃的預計完成時間

Anticipated completion time (in month and year) of the development proposal (by phase (if any)) (e.g. June 2023)
擬議發展計劃預期完成的年份及月份 (分期 (倘有)) (例：2023 年 6 月)
(Separate anticipated completion times (in month and year) should be provided for the proposed public open space and Government, institution or community facilities (if any))
(申請人須就擬議的公眾休憩用地及政府、機構或社區設施 (倘有) 提供個別擬議完成的年份及月份)

Q3 2029

8. Vehicular Access Arrangement of the Development Proposal 擬議發展計劃的行車通道安排

Any vehicular access to the site/subject building? 是否有車路通往地盤／有關建築物？	Yes 是	☐ There is an existing access. (please indicate the street name, where appropriate) 有一條現有車路。(請註明車路名稱(如適用)) ..... ☑ There is a proposed access. (please illustrate on plan and specify the width) 有一條擬議車路。（請在圖則顯示，並註明車路的闊度）
	No 否	☐
Any provision of parking space for the proposed use(s)? 是否有為擬議用途提供停車位？	Yes 是	☑ (Please specify type(s) and number(s) and illustrate on plan) 請註明種類及數目並於圖則上顯示) Private Car Parking Spaces 私家車車位 — Ancillary: Commercial and Performing Arts & Cultural Facilities: 512# / District Health Centre: 1 ✓; Public Vehicle Park: 100 ✓ Motorcycle Parking Spaces 電單車車位 — Ancillary: Commercial and Performing Arts & Cultural Facilities: 52# ✓; Public Vehicle Park: / Light Goods Vehicle Parking Spaces 輕型貨車泊車位 — Ancillary: /; Public Vehicle Park: 15 ✓ Medium Goods Vehicle Parking Spaces 中型貨車泊車位 — Ancillary: /; Public Vehicle Park: MGV + HGV Total: 5 ✓ Heavy Goods Vehicle Parking Spaces 重型貨車泊車位 — Ancillary: / Others (Please Specify) 其他 (請列明) Coaches — Ancillary: /; Public Vehicle Park: 5 ✓ Light Buses Parking Spaces (Day Care Centre for the Elderly) — Ancillary: 3 ✓; Public Vehicle Park: / Private Car Parking Spaces (District Health Centre) — Ancillary: 1 ✓; Public Vehicle Park: / Light Bus Parking Space (District Health Centre) — Ancillary: 1 ✓; Public Vehicle Park: / # Including 10 nos. private car parking spaces and 1 no. motorcycle parking space to be delineated for Performing Arts & Cultural Facilities.
	No 否	☐
Any provision of loading/unloading space for the proposed use(s)? 是否有為擬議用途提供上落客貨車位？	Yes 是	☑ (Please specify type(s) and number(s) and illustrate on plan) 請註明種類及數目並於圖則上顯示) Taxi Spaces 的士車位 — 5^ (Private Car/ Taxi) ✓ Coach Spaces 旅遊巴車位 — / Light Goods Vehicle Spaces 輕型貨車車位 — 37* ✓ Medium Goods Vehicle Spaces 中型貨車車位 — / Heavy Goods Vehicle Spaces 重型貨車車位 — 21@ ✓ Others (Please Specify) 其他 (請列明) Light Bus Lay-bys — 4 ✓
	No 否	☐ * Including 1 L/UL space (shared with Child Care Centre and Day Care Centre for the Elderly). ✓ ^ Including 1 motor vehicle lay-by (shared with GIC Facilities) ✓ @Including 1 L/UL space (shared with District Health Centre) ✓

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

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

Does the development proposal involve alteration of existing building? 擬議發展計劃是否包括現有建築物的改動?	Yes 是	☑ Please provide details 請提供詳情 Demolition of existing structures on site other than masonry wall and earthenware pipes
	No 否	☐
Does the development proposal involve the operation on the right? 擬議發展是否涉及右列的工程? (Note: where Type (ii) application is the subject of application, please skip this section. 註：如申請涉及第(ii)類申請，請跳至下一條問題。)	Yes 是	☑ (Please indicate on site plan the boundary of concerned land/pond(s), and particulars of stream diversion, the extent of filling of land/pond(s) and/or excavation of land) (請用地盤平面圖顯示有關土地／池塘界線，以及河道改道、填塘、填土及／或挖土的細節及/或範圍) ☐ Diversion of stream 河道改道 ☐ Filling of pond 填塘 Area of filling 填塘面積 ..... sq.m 平方米 ☐About 約 Depth of filling 填塘深度 ..... m 米 ☐About 約 ☐ Filling of land 填土 Area of filling 填土面積 ..... sq.m 平方米 ☐About 約 Depth of filling 填土厚度 ..... m 米 ☐About 約 ☑ Excavation of land 挖土 Area of excavation 挖土面積 13,378 sq.m 平方米 ☑About 約 Depth of excavation 挖土深度 23 - 33 m 米 ☑About 約
	No 否	☐

Would the development proposal cause any adverse impacts? 擬議發展計劃會否造成不良影響？			
	On environment 對環境	Yes 會 ☐	No 不會 ☑
	On traffic 對交通	Yes 會 ☐	No 不會 ☑
	On water supply 對供水	Yes 會 ☐	No 不會 ☑
	On drainage 對排水	Yes 會 ☐	No 不會 ☑
	On slopes 對斜坡	Yes 會 ☐	No 不會 ☑
	Affected by slopes 受斜坡影響	Yes 會 ☐	No 不會 ☑
	Landscape Impact 構成景觀影響	Yes 會 ☐	No 不會 ☑
	Tree Felling 砍伐樹木	Yes 會 ☐	No 不會 ☑
	Visual Impact 構成視覺影響	Yes 會 ☐	No 不會 ☑
	Others (Please Specify) 其他 (請列明) Air Ventilation Impact	Yes 會 ☐	No 不會 ☑

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

Please refer to technical assessments in Annexes C to K

Number of felled trees: 38; Number of compensatory trees: 38

10. 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。

This Application presents the Current Scheme for the Commercial Project on Caroline Hill Road, Causeway Bay. It provides significant enhancements to the previously Approved S16A Scheme (No.A/H7/181-2). Specifically it:

- protects and rehabilitates the OVT through different treatments within the three soil-rooting zones;
- allows the public to enjoy the POS at the TPZ; and
- includes an enhanced cultural placemaking proposal furthering community cultural and arts enjoyment in the Banyan Garden (when compared to both approved schemes).

Please refer to the Planning Statement as attached in this Application for full explanations.

11. Declaration 聲明

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

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

Signature 簽署 ..... ☐ Applicant 申請人 / ☑ Authorised Agent 獲授權代理人

ANDRE DAVID MORKEL ..... Director of URBIS Limited .....

Name in Block Letters 姓名（請以正楷填寫） Position (if applicable) 職位 （如適用）

Professional Qualification(s) 專業資格
☑ Member 會員 / ☐ Fellow of 資深會員
☑ HKIP 香港規劃師學會 / ☐ HKIA 香港建築師學會 /
☐ HKIS 香港測量師學會 / ☐ HKIE 香港工程師學會 /
☐ HKILA 香港園境師學會/ ☑ HKIUD 香港城市設計學會
☑ RPP 註冊專業規劃師 (No. 409)
Others 其他 .....

on behalf of 代表 URBIS Limited .....

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

URBIS LIMITED 雅邦規劃設計有限公司 Planning, Urban Design, Landscape, GIS & Environment

Date 日期 29/08/2025 ..... (DD/MM/YYYY 日/月/年)

Remark 備註

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

Warning 警告

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

Statement on Personal Data 個人資料的聲明

1. The personal data submitted to the Board in this application will be used by the Secretary of the Board and Government departments for the following purposes:
委員會就這宗申請所收到的個人資料會交給委員會秘書及政府部門，以根據《城市規劃條例》及相關的城市規劃委員會規劃指引的規定作以下用途：
   (a) the processing of this application which includes making available the name of the applicant for public inspection when making available this application for public inspection; and
   處理這宗申請，包括公布這宗申請供公眾查閱，同時公布申請人的姓名供公眾查閱；以及
   (b) facilitating communication between the applicant and the Secretary of the Board/Government departments.
   方便申請人與委員會秘書及政府部門之間進行聯絡。

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

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

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

~~Ash interment capacity 骨灰安放容量@~~

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

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

Total number of niches 龕位總數 _____

Total number of single niches
單人龕位總數 _____

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

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

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

Total number of double niches
雙人龕位總數 _____

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

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

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

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

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

_____

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

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

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

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

Proposed operating hours 擬議營運時間 _____

_____

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

Gist of Application 申請摘要

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

Application No. 申請編號	(For Official Use Only) (請勿填寫此欄)
Location/address 位置／地址	Inland Lot No. 8945, Caroline Hill Road, Causeway Bay
Site area 地盤面積	14,802 sq. m 平方米 ☑About 約 (includes Government land of 包括政府土地 sq. m 平方米 ☐ About 約)
Plan 圖則	Approved Wong Nai Chung Outline Zoning Plan No. S/H7/21
Zoning 地帶	"Commercial (2)"
Applied use/ development 申請用途/發展	Submission of Layout Plan for Proposed Permitted Commercial Development (Office, Eating Place, Shop and Services) with Social Welfare Facility, Public Clinic, Place of Recreation, Sports or Culture, Public Transport Station and Public Vehicle Park (excluding Container Vehicle), and Minor Relaxation of Gross Floor Area Restriction

		sq.m 平方米	Plot Ratio 地積比率
(i) Gross floor area and/or plot ratio 總樓面面積及／或地積比率	Domestic 住用	/ ☐ About 約 ☐ Not more than 不多於	/ ☐About 約 ☐Not more than 不多於
	Non-domestic 非住用	102,000 ☐ About 約 ☐ Not more than 不多於	6.89 ☑About 約 ☐Not more than 不多於
(ii) No. of blocks 幢數	Domestic 住用	/	
	Non-domestic 非住用	3	
	Composite 綜合用途	/	

(iii)	Building height/No. of storeys 建築物高度／層數	~~Domestic~~ 住用	m 米 ☐ (Not more than 不多於) mPD 米(主水平基準上) ☐ (Not more than 不多於) Storeys(s) 層 ☐ (Not more than 不多於) (☐*Include 包括*/☐ *Exclude 不包括* ☐ *Carport 停車間* ☐ *Basement 地庫* ☐ *Refuge Floor 防火層* ☐ *Podium 平台)*
		Non-domestic 非住用	m 米 ☐ (Not more than 不多於) Towers 1&2: +135.0 Tower 3: +90.0 mPD 米(主水平基準上) ☐ (Not more than 不多於) Towers 1&2: 25 Tower 3: 16 Storeys(s) 層 ☐ (Not more than 不多於) (☐*Include 包括*/☑ *Exclude 不包括* ☐ *Carport 停車間* ☑ *Basement 地庫* ☐ *Refuge Floor 防火層* ☐ *Podium 平台)* 5
		~~Composite~~ 綜合用途	m 米 ☐ (Not more than 不多於) mPD 米(主水平基準上) ☐ (Not more than 不多於) Storeys(s) 層 ☐ (Not more than 不多於) (☐*Include 包括*/☐ *Exclude 不包括* ☐ *Carport 停車間* ☐ *Basement 地庫* ☐ *Refuge Floor 防火層* ☐ *Podium 平台)*
(iv)	Site coverage 上蓋面積		65 % ☐ About 約
(v)	No. of units 單位數目		/
(vi)	Open space 休憩用地	Private 私人	/ sq.m 平方米 ☐ Not less than 不少於
		Public 公眾	6,000 sq.m 平方米 ☑ Not less than 不少於

#including 10 nos. private car parking spaces and 1 no. motorcycle parking space to be delineated for Performing Arts & Cultural Facilities.

(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	Ancillary	Public Vehicle Park
	Private Car Parking Spaces 私家車車位	Commercial and Performing Arts & Cultural Facilities: 512# District Health Centre: 1	100
	Motorcycle Parking Spaces 電單車車位	Commercial and Performaing Arts & Cultural Facilities: 52#	/
	Light Goods Vehicle Parking Spaces 輕型貨車泊車位	/	15
	Medium Goods Vehicle Parking Spaces 中型貨車泊車位	/	MGV + HGV Total: 5
	Heavy Goods Vehicle Parking Spaces 重型貨車泊車位	/	
	Others (Please Specify) 其他 (請列明)		
	Coaches	/	5
	Light Buses Parking Spaces (Day Care Centre for the Elderly)	3	/
	Private Car Parking Spaces (District Health Centre)	1	/
	Light Buses Parking Spaces (District Health Centre)	1	/
	Total no. of vehicle loading/unloading bays/lay-bys 上落客貨車位／停車處總數		
	Taxi Spaces 的士車位	5^ (Private Car/ Taxi)	
	Coach Spaces 旅遊巴車位	/	
	Light Goods Vehicle Spaces 輕型貨車車位	37*	
	Medium Goods Vehicle Spaces 中型貨車位	/	
	Heavy Goods Vehicle Spaces 重型貨車車位	21@	
	Others (Please Specify) 其他 (請列明)		
	Light Bus Lay-bys	4	

* Including 1 L/UL space (shared with Child Care Centre and Day Care Centre for the Elderly).
^ Including 1 motor vehicle lay-by (shared with GIC Facilities)
@ Including 1 L/UL space (shared with District Health Centre)

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

	Chinese 中文	English 英文
Plans and Drawings 圖則及繪圖		
Master layout plan(s)/Layout plan(s) 總綱發展藍圖／布局設計圖	☐	☑
Block plan(s) 樓宇位置圖	☐	☑
Floor plan(s) 樓宇平面圖	☐	☑
Sectional plan(s) 截視圖	☐	☑
Elevation(s) 立視圖	☐	☐
Photomontage(s) showing the proposed development 顯示擬議發展的合成照片	☐	☐
Master landscape plan(s)/Landscape plan(s) 園境設計總圖／園境設計圖	☐	☑
Others (please specify) 其他（請註明）	☐	☑
Site Location Plan, Application Site on OZP, Aerial Photo, Key Surrounding Developments Plans, Adopted Lease Plan, Plan showing boundaries of Application and Development Sites, Plan showing Area and Depth of Excavation, Plans showing Pedestrian/Vehicular Circulation, Urban Design Analysis Plan, Provision of Public Open Space Plan, Artist's Rendering		
Reports 報告書		
Planning Statement/Justifications 規劃綱領/理據	☐	☑
Environmental assessment (noise, air and/or water pollutions) 環境評估（噪音、空氣及／或水的污染）	☐	☐
Traffic impact assessment (on vehicles) 就車輛的交通影響評估	☐	☐
Traffic impact assessment (on pedestrians) 就行人的交通影響評估	☐	☐
Visual impact assessment 視覺影響評估	☐	☐
Landscape impact assessment 景觀影響評估	☐	☐
Tree Survey 樹木調查	☐	☑
Geotechnical impact assessment 土力影響評估	☐	☐
Drainage impact assessment 排水影響評估	☐	☑
Sewerage impact assessment 排污影響評估	☐	☑
Risk Assessment 風險評估	☐	☐
Others (please specify) 其他（請註明）	☐	☑
Air Ventilation Assessment, Approved Traffic Review Report, Approved Geotechnical Planning Review Report, Approved Conservation Management Plan, Water Supply Impact, Tree Protection Proposal for OVT		

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。

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BY HAND

Our Ref : HDL3-DM-2368-250431L
29 August 2025

Planning, Urban Design, Landscape, Golf & Environmental Consultants

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

Attention: Secretary of Town Planning Board

Dear Sir/Madam,

Section 16 Planning Application under the Town Planning Ordinance (Cap.131) for Submission of Layout Plan in "Commercial (2)" Zone for Patchway Holdings (HK) Limited at Inland Lot No. 8945, Causeway Bay

UIRBIS Limited is the authorized agent with respect to the captioned planning application under Section 16 of the Town Planning Ordinance.

Further to our previous Layout Plan approved by the Director of Planning, under the delegated authority of the Town Planning Board (ref. TPB/A/H7/181-2) on 29 May 2025 for the Lot above, we submit herewith a further Layout Plan for the same application site.

Please kindly find attached a signed original copy of the application form, an original copy of the authorization letter signed by the applicant and documentary proof of land ownership, and 4 hard copies of the supporting documents for the application.

Should you have any queries, please do not hesitate to contact [redacted], Town Planner at URBIS Limited by phone at [redacted] or via email [redacted].

Yours faithfully
For and on behalf of URBIS Limited

David Morkel MRTPI MHKIP MHKIUD RPP
DM/SY/cs
Encl.

Patchway Holdings (HK) Limited

銅鑼灣
Causeway Bay



Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Planning Statement

August 2025

Patchway Holdings (HK) Limited

Submission of Layout Plan and Application for Commercial Development on IL No8945 Causeway Bay, Hong Kong under s16 of the Town Planning Ordinance (Cap.131)

Planning Statement

Document No. 005

URBIS Limited

August 2025

In association with
Ronald Lu & Partners (Hong Kong) Ltd.
ARUP
WSP
Otherland Limited
MVA Hong Kong Ltd.
Arcadis Hong Kong Ltd.

Prepared by :	*Samantha Yung MRTPI*	27 August 2025 Date
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Executive Summary

This planning application relates to Inland Lot No. 8945, Caroline Hill Road, Causeway Bay, Hong Kong. It is prepared and submitted under Section 16 of the Town Planning Ordinance (Cap.131) on behalf of Patchway Holdings (HK) Limited (the Applicant), to seek approval from the Town Planning Board (TPB/the Board) for amendment of an approved Layout Plan for a proposed commercial and social welfare facility project.

The Application Site is zoned "Commercial (2)" ("C(2)") on the approved Wong Nai Chung Outline Zoning Plan (OZP) No. S/H7/21. It covers the majority of the "C(2)" zone in the OZP and has an area of about 14,802m^2. All the proposed uses in the approved Layout Plan, including 'Office', 'Shop and Services', 'Eating Place', 'Social Welfare Facility', 'Public Clinic', 'Place of Recreation, Sports or Culture', 'Public Transport Terminus or Station' and 'Public Vehicle Park (excluding container vehicle)', are Column 1 uses which are always permitted in the "C(2)" zone. According to the Remarks of the Notes of the "C(2)" zone in the OZP, for any new development within the zone, a Layout Plan shall be submitted for the approval of the Board.

A Layout Plan for the Application Site submitted as a Section 16 application (No. A/H7/181) was approved by the TPB on 6 May 2022. The approved Layout Plan (the 'Approved S16 Scheme') includes three commercial towers, comprising social welfare facilities, which include a Child Care Centre (CCC), a Day Care Centre for the Elderly (DE) and a District Health Centre (DHC), as well as commercial uses and performing arts and cultural facilities (PACF). The 2/F podium and Landscape Bridge, together with a public open space (POS) in the form of a semi-internal corridor, and an area around the Old and Valuable Tree (OVT) (Registration No. LANDSD(LEASED) WCH/1)(Previous Registration No. HKP WCH/1) on G/F, will provide a POS of at least 6,000m^2 in total, as required in the Notes of the OZP. The approved Project will yield a total of 102,000m^2 countable GFA, the maximum allowable under the OZP.

Subsequent to the approved Section 16 application, a Section 16A application (No. A/H7/181-2) for amendments to the approved Layout Plan (the 'Approved S16A Scheme') was approved by the Director of Planning, under the delegated authority of the TPB, on 29 May 2025. It included the following three Class B amendments as defined by the TPB Guidelines for Class A and Class B amendments to Approved Development Proposals (TPB PG-No.36C):

- Changes in the size of the setback at 2/F of Tower 3 from northeastern site boundary;
- Changes in the location of Government, Institution or Community (GIC) facilities, including the PACF (Towers 1 & 2) and the CCC, DE and DHC (Tower 3); and
- Changes in the location and layout of private and public car parks, car park for GIC facilities with its designated drop-off, loading/ unloading areas, internal roads and light buses lay-bys on B4-5/F, B3/F, B2/F and B1/F.

In addition to the above, the Section 16A application included a number of Class A amendments to the Approved Development Proposal - which do not require permission from either the TPB or their delegated authority.

This Application (for 'the Current Scheme') proposes *one material change* to the Approved S16A Scheme as follows:

The Application Site contains a large Fig tree (*Ficus elastica*) abutting Leighton Road, partly supported by an existing masonry wall. Although affected by Brown Root Rot Disease (BRRD), the tree is recognized by Government as an OVT (Registration No. LANDSD(LEASED) WCH/1). A tree protection zone (TPZ), which is currently covered by an extensive hard, impermeable concrete slab, is identified in the Lease. In the previous approved Section 16 and Section 16A applications for this project, a 'Banyan Garden' surrounding the OVT, along with an entrance plaza and internal street, were proposed as part of the POS at the G/F level.

According to a more detailed analysis of the OVT's condition undertaken by an Independent Tree Specialist, Professor Jim Chi Yung, BH, JP, the tree's crown vitality is declining and its root health is under stress. It has developed a sprawling horizontal canopy with extensive aerial roots due to its site constraints. Its growth is severely limited by:

- A shortage of open, good-quality soil;
- A high proportion of the TPZ being compacted and sealed over with impermeable paving; and
- Chronic soil compaction and reduced root aeration.

Without intervention, its long-term prognosis is poor, and it is unlikely to maintain good performance for more than a few decades.

Through collaboration with the independent tree specialist, landscape architects, architects, and structural engineers, an enhanced scheme for this area has been developed to achieve a win-win solution between tree preservation and public interest. In particular, the current approach will:

- Protect and Rehabilitate the OVT;
- Enhance Public Access and Enjoyment at the POS; and
- Enhance Cultural Placemaking.

The Current Scheme introduces three soil-rooting zones within the TPZ. Each zone will receive different treatments to maximise its capability to improve the OVT's growth in the long run. This approach responds to the OVT's declining growth, severely degraded site conditions, and an unfavourable long-term prognosis. Its greatest constraints, including an acute shortage of open soil, poor soil quality, and a TPZ largely covered by highly compacted and impermeable paving, have severely limited the tree's vitality. To address these entrenched challenges, the Current Scheme proposes to enhance the soil area, volume, and quality, giving the tree a new lease of life.

During the detailed design stage, it became evident that the previous Approved S16 Scheme would significantly limit the area of POS accessible by the public as it would require physical barriers including perimeter balustrades, which fully restrict public access to the Banyan Garden's lawn area, to prevent potential BRRD spread. The Current Scheme achieves a superior balance by a co-use arrangement within part of the TPZ: a surface will form part of the TPZ to serve as a civic plaza, whilst the space underneath will be filled with high-quality, uncompacted soil to encourage optimal root development. This innovative, science-based arboricultural intervention not only rehabilitates the OVT, but also demonstrates how valuable urban land resources can achieve public amenity and heritage tree conservation purposes. It represents a model for urban forestry and sustainable development in Hong Kong's dense core, striking a careful balance between preservation and public benefit.

The Current Scheme will offer an opportunity for users to experience the magnificent tree in close proximity and provide a flexible and multi-functional open space beneath it. This space has the potential for positive community and placemaking benefits as a space for temporary non-commercial cultural events and activities. This ensures the tree remains not only a natural heritage landmark but also a living element of the public's collective memory.

In addition to the amendment to the Banyan Garden, this application proposes the *following minor amendments* to the Approved S16A Scheme:

(1) As detailed architectural design has continued to develop, the location of POS, as well as the distribution of areas between covered and non-covered POS needs to be slightly amended. The total area of POS provided remains unchanged; and
(2) The design development of the POS during detailed design stage has resulted in the need for an amendment to the soft and hard landscape design of the POS at 2/F from that shown in the Approved S16A Scheme.

The technical assessments carried out for the two approved schemes are, to a large extent, applicable to the

Current Scheme, with minor updates where necessary to account for the Current Scheme.

In summary, as with the Approved S16 Scheme and the Approved S16A Scheme, the Current Scheme proposed by the Applicant:

- fulfills the requirements of layout plan submission under Remarks of the Notes of the "C(2)" zone on the approved Wong Nai Chung OZP No. S/H7/21;
- complies with material requirements and development parameters of the approved Wong Nai Chung OZP No. S/H7/21;
- preserves designated features of historical and natural value located on the site;
- results in an enhanced provision and distribution of POS;
- aligns with Government policy objectives in fostering arts, culture and tourism development;
- enhances air ventilation through building design and layout;
- enhances pedestrian connectivity to the surrounding area and walkability in the wider area;
- integrates the required GIC facilities with the commercial Project for the benefit of the public;
- alleviates traffic congestion in the area through incorporation of the gazetted 'Proposed Road Improvement Works at Caroline Hill Road, Link Road, Hoi Ping Road and Leighton Road'; and
- poses no insurmountable adverse impacts in terms of technical aspects.

However, importantly, this Application for the Current Scheme **provides significant enhancements** to the Approved S16A Scheme. Specifically it:

- protects and rehabilitates the OVT through different treatments within the three soil-rooting zones;
- allows the public to enjoy the POS at the TPZ; and
- includes an enhanced cultural placemaking proposal furthering community cultural and arts enjoyment of the Banyan Garden (when compared to both approved schemes).

In light of the abovementioned merits of the proposed changes proposed to the Approved S16A Scheme, favourable consideration of this application is respectfully requested from the Town Planning Board for the Current Scheme, as set out in this Layout Plan.

內容摘要

（內容如有差異，請以英文版本為準）

本規劃申請位於銅鑼灣加路連山道內地段 8945 號，博威控股 (香港)有限公司(下稱「申請人」）現按第 131 章城市規劃條例第 16 條，向城市規劃委員會(下稱「城規會」）提交對已核准發展藍圖的修訂以供核准，以發展商業、社會福利設施項目。

申請地點位於黃泥涌分區計劃大綱核准圖編號 S/H7/21(下稱「大綱圖」）的「商業（2）」地帶，並覆蓋「商業（2）」地帶大部分範圍，面積為 14,802 平方米。 已核准發展藍圖中的所有擬議用途，包括「辦公室」、「商店及服務行業」、「食肆」、「社會福利設施」、「政府診所」、「康樂文娛場所」、「公共車輛總站或車站」及「公眾停車場（貨櫃車除外）」，皆為「商業（2）」地帶內經常准許的第一欄用途。根據大綱圖內有關「商業（2）」地帶下註釋的備註，在地帶範圍內，任何新發展或現有建築物的重建，都必須提交一份發展藍圖，以供城規會核准。

根據第 16 條提出規劃許可申請（編號：A/H7/181）的發展藍圖已於 2022 年 5 月 6 日獲城規會批准。已核准發展藍圖 (即「已批准的 S16 方案」）包括三座商業大樓，設有社會福利設施，包括一間幼兒中心、一間長者日間護理中心及一間地區康健中心，以及商業用途和演藝及文化設施。已核准發展藍圖的二樓平台上的休憩用地將設有蓋景觀橋，橫跨地盤內的擬議道路，並延伸至通往利園六期的擬議行人天橋。已核准發展藍圖包括於二樓平台及有蓋景觀橋、地面的綠走廊及近古樹名木的範圍提供約 6,000 平方米作公眾休憩用地，以符合大綱圖內註釋的備註中的要求。本申請下的已核准發展藍圖達至大綱圖上訂明的最高准許總樓面面積，為 102,000 平方米。

繼第 16 條申請獲批准後，第 16A 條申請（編號：A/H7/181-2）亦於 2025 年 5 月 29 日獲規劃署署長根據城市規劃委員會授權批准。該申請旨在修訂已核准發展藍圖（即「已批准的 S16A 方案」），並包括根據城市規劃委員會對已獲核准的發展計劃作出 A 類及 B 類修訂的指引（TPB PG-No.36C）所界定的以下三項 B 類修訂：

- 第 3 座二樓由東北面地界向後移範圍的大小變更；
- 政府、機構或社區設施位置的變更，包括第 1 及第 2 座的演藝及文化設施，以及第 3 座的幼兒中心、長者日間護理中心和地區康健中心；以及
- 私人及公共停車場的位置和佈局變更，包括政府、機構或社區設施專用停車及其指定的落客處、上落客貨貨車處、內街，以及位於 B4-5 層、B3 層、B2 層及 B1 層的小巴避車處的調整。

除上述內容，根據《城市規劃條例》第 16A 條提交的申請亦包括若干屬於對核准發展計劃作出的 A 類修訂，此類修訂無需城市規劃委員會或其授權人員的批准。

本申請（即「現行方案」）就根據《城市規劃條例》第 16A 條已批准的 S16A 方案提出一項實質性變更，詳情如下：

申請地點包括一棵大型榕樹（印度榕），毗鄰禮頓道，部分由現有石牆支撐。儘管受到褐根病的影響，該樹木被列入為古樹名木（編號：LANDSD(LEASED) WCH/1）。契約內列明的樹木保護範圍，目前被大面積、堅硬、不可滲透的混凝土板覆蓋。在先前根據第 16 條及第 16A 條提出並已核准的規劃許可申請中，擬議項目在地下設置一個環繞該古樹名木的「榕樹花園」，以及一個入口廣場和內部街道，作為公衆休憩用地的一部分。

根據獨立樹木專家詹志勇教授，榮譽勳章，太平紳士對該古樹名木狀況的詳細分析，樹冠的活力正在下降，根部健康也面臨壓力。由於場地限制，它形成了橫向擴展的樹冠，並長出了大量氣根。其生長受到以下因素的嚴重限制：

- 缺乏開放且優質的土壤；
- 樹木保護區的大部分區域被壓實並覆蓋了不透水的鋪裝材料；以及
- 土壤長期壓實，導致根部通氣能力下降。

如果不進行干預，其長期前景堪憂，預計難以維持良好狀態超過幾十年。

透過與獨立樹木專家、園境師、建築師及結構工程師的合作，現就該範圍制定出一項優化方案，在保育樹木與保障公眾利益之間取得雙贏局面。具體而言，現行方案將：

- 保護並修復古樹名木；
- 提升公眾於公眾休憩用地的可達性與使用體驗；以及
- 加強文化地方營造。

為應對古樹名木生長衰退及場地條件惡化的問題，現行方案於樹木保護區內劃分三個土壤生根區域，並針對各區域施以不同的修復處理，以提升其對樹木長遠生長的支持能力。此策略正面回應古樹因土壤面積不足、土質劣化及樹木保護區範圍內鋪面高度壓實且不透水等因素所導致的生長困境。透過擴大土壤面積、增加土壤容量及改善土壤品質，方案旨在重塑生長環境，延續古樹生命力。

在詳細設計階段，先前已批准的 S16 方案為防止褐根病的潛在擴散，擬於榕樹園草坪區設置包括周邊欄杆的物理屏障，大幅限制公眾進入公眾休憩用地。此做法雖具保護作用，卻犧牲了空間的可達性與公眾享用權益。相比之下，現行方案採用更進取且整合性的設計，於樹木保護區內引入共用安排：地面部分設計為市民廣場，供公眾使用；而地下則填充高品質、未壓實的土壤，以促進樹木根系的最佳生長。此科學為本的樹藝干預措施不僅有助於修復古樹名木，亦保留了公眾的使用權益。此設計展示了如何在香港高密度核心地區，透過策略性規劃，讓城市土地資源同時實現文化遺產保育與社區福祉。它為城市林業與可持續發展樹立了典範，亦與政府推動的綠化、景觀提升及氣候韌性目標相契合。

現行方案讓市民近距離接觸這瑰麗的古樹，並在其下方設置一個靈活多功能的開放空間。該空間具備舉辦非商業性、臨時性文化活動的潛力，為社區帶來正面的地方營造效益。此設計不僅讓古樹繼續作為自然文化遺產地標存在，更可成為公眾集體記憶中的活元素。

除了對「榕樹花園」的修訂外，此申請亦就已批准的 S16A 方案提出以下若干輕微修訂：

(1) 隨着詳細建築設計持續發展，公眾休憩空間的位置，以及有蓋與無蓋公共休憩空間的面積分佈，需作出輕微修訂。惟所提供的公眾休憩用地總面積維持不變；以及

(2) 在詳細設計階段，公眾休憩用地的設計發展導致需對二樓公眾休憩用地的種植花卉樹木／園景建築設計上作出修訂，以配合實際情況，與已批准的 S16A 方案所示略有不同。

對兩個已獲批准方案所進行的技術評估在很大程度上適用於現行方案，並在必要時作出少量更新以反映現行方案。

總結而言，與已批准的 S16 方案及已批准的 S16A 方案相同，申請人所提出的現行方案：

- 符合大綱圖內《註釋》下的備註中有關提交發展藍圖的要求；
- 遵守大綱圖內的發展參數及所有重要要求；
- 完全保留申請地點內具自然及歷史價值的特徵；
- 提供更多具質素及更妥善分佈的公眾休憩用地；
- 符合政府在促進藝術、文化和旅遊發展方面的政策目標；
- 透過建築設計及佈局，改善地區的空氣流通；
- 提高地區內的行人連接性及易行度；
- 有效地融合所需要的政府、機構或社區設施；
- 透過已刊憲的加路連山道、連道、開平道及禮頓道擬建道路改善工程，舒緩地區交通擠塞問題；以及
- 於技術層面不會產生不可克服的負面影響。

然而, 此申請對現有方案針對已批准的 S16A 方案提供了**顯著的改進**。具體而言，它：

- 通過在三個土壤生根區域內採用不同的處理方式，保護並修復古樹名木；
- 讓公眾能夠在樹木保護範圍內享用公眾休憩用地；以及
- 提供一個優化文化與地方營造和人流通行的建議，進一步促進社區於「榕樹花園」的文化和藝術享受(與已批准方案相比）。

基於上述已批准的 S16A 方案擬議變更的裨益，懇請城規會對本規劃申請現行方案藍圖作出正面積極的考慮。

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LIST OF ABBREVIATIONS

AMO	Antiquities and Monuments Office
AVA	Air Ventilation Assessment
BD	Buildings Department
BH	Building Height
CCC	Child Care Centre

C(2)	Commercial (2)
DBH	Diameter at Breast Height
DE	Day Care Centre for the Elderly
DHC	District Health Centre
ELS	Excavation and Lateral Support
ES	Explanatory Statement
FSM	Fabricated Soil Mix
GFA	Gross Floor Area
"G/IC"	"Government, Institution or Community" (zone)
GIC	Government, Institution or Community
HGV	Heavy Goods Vehicle
HyD	Highways Department
LGV	Light Goods Vehicle
LMP	Landscape Master Plan
MGV	Medium Goods Vehicle
MLP	Master Layout Plan
NOFA	Net Operating Floor Area
OVT	Old and Valuable Trees
OZP	Outline Zoning Plan
POS	Public Open Space
PR	Plot Ratio
TPB	Town Planning Board
TPDM	Transport Planning and Design Manual
TPZ	Tree Protection Zone

1 Introduction

1.1 BACKGROUND AND PURPOSE OF THE APPLICATION

1.1.1. URBIS Limited is commissioned by Patchway Holdings (HK) Limited ("the Applicant") to seek approval under Section 16 of the Town Planning Ordinance (Cap.131) for amendments to a Layout Plan approved by the Town Planning Board ("TPB"/ the "Board") (Application No. A/H7/181) with subsequent amendments accepted by the Director of Planning, under the delegated authority of the TPB, under Section 16A (Application No. A/H7/181-2).

1.1.2. The application relates to a commercial development with social welfare facilities at Inland Lot (IL) 8945 Caroline Hill Road, Causeway Bay, Hong Kong (**Figure 1.1** refers).

1.1.3. The Application Site falls within the Approved Wong Nai Chung Outline Zoning Plan (OZP) No. S/H7/21. **Figure 1.2** depicts the current OZP zonings of the project site and its environs. The Site (or 'Application Site') falls within an area zoned as "Commercial (2)" ("C(2)"). According to the Notes of the OZP, 'Office', 'Shop and Services', 'Eating Place', 'Social Welfare Facility', 'Public Clinic', 'Place of Recreation, Sports or Culture', 'Public Transport Terminus or Station' and 'Public Vehicle Park (excluding container vehicle)' are Column 1 uses which are always permitted in the "C(2)" zone.

1.1.4. Notwithstanding that the above uses are permitted as of right, according to the OZP's Remarks of the Notes of the "C(2)" zone, for any new development within the zone, a Layout Plan shall be submitted for the approval of the Board.

1.1.5. A previous Layout Plan for this project, submitted under Section 16 of the Town Planning Ordinance (Cap.131), was approved on 6 May 2022 (Application No. A/H7/181). This is referred to in this Planning Statement as the 'Approved S16 Scheme'.

1.1.6. An application under Section 16A of the Town Planning Ordinance (Cap.131) for amendments to the Approved S16 Scheme was approved on 29 May 2025 (Application No. A/H7/181-2). This is referred to in this Planning Statement as the 'Approved S16A Scheme'. It included the following three Class B amendments according to the TPB Guidelines for Class A and Class B amendments to Approved Development Proposals (TPB PG-No.36C):

- Changes in the size of the setback at 2/F of Tower 3 from northeastern site boundary;
- Changes in the location of Government, Institution or Community (GIC) facilities, including the performing arts and cultural facilities (PACF) (Towers 1 & 2) and the Child Care Centre (CCC), a Day Care Centre for the Elderly (DE) and a District Health Centre (DHC) (Tower 3); and
- Changes in the location and layout of private and public car parks, car park for GIC facilities with its designated drop-off, loading/ unloading areas, internal roads and light buses lay-bys on B4-5/F, B3/F, B2/F and B1/F.

1.1.7. In addition to the above, the Approved S16A Scheme included a number of Class A amendments to the Approved S16 Scheme - which do not require permission from either the TPB or their delegated authority.

1.1.8. This 'Current Scheme' application proposes the following amendment to the Approved S16A Scheme:

- Enhancements to the design of a publicly accessible Banyan Garden forming part of the G/F Public Open Space (POS) to protect and rehabilitate a Government designated 'Old and Valuable Tree' (OVT) and to optimise the extent of the accessible public open space (POS) at the same time.

1.1.9. In addition to the amendment to the Banyan Garden, this application proposes the following minor

changes to the Approved S16A Scheme:

- As detailed architectural design has continued to develop, the location of POS, as well as the distribution of areas between covered and non-covered POS needs to be slightly amended. The total area of POS provided remains unchanged; and
- The design development of the POS during detailed design stage has resulted in the need for an amendment to the soft and hard landscape design of the POS at 2/F from that shown in the Approved S16A Scheme.

1.1.10. The technical assessments carried out for the two approved schemes are, to a large extent, applicable to the Current Scheme, with minor updates where necessary to account for the Current Scheme.

1.1.11. The purpose of this Planning Statement is to present the current Layout Plan design proposals (referred to in this Planning Statement as the 'Current Scheme'); relevant technical assessments; and to provide supporting planning justifications, for the consideration of the Board.

1.2 LAND STATUS

1.1.12. In March 2021, the Lands Department announced that the Application Site at Inland Lot No. 8945, designated for non-industrial (excluding residential, godown and petrol filling station) purposes, in the 2020-21 Land Sale Programme would be disposed of by public tender. The Conditions of Sale included specification of the minimum and maximum gross floor area (GFA) which also includes the GFA of the 'Government Accommodation' (a Child Care Centre, a Day Care Centre for the Elderly and a District health Centre) but excludes the GFA of the required public vehicle park, all to be constructed by the purchaser under the Conditions of Sale.

1.2.1 In May 2021, the land sale tender was awarded to the Applicant. As the sole landowner of the Application Site, the Applicant is prepared to realise the proposed commercial Project, together with its associated social welfare facilities and additional PACF presented in this Approved Layout Plan.

1.3 PLANNING HISTORY

1.3.1 On the previous Approved Wong Nai Chung OZP No. S/H7/19, the northern portion of the Application Site was zoned "Other Specified Uses" annotated "Sports and Recreation Club" ("OU(SRC)") and was occupied by the recreation clubs of the Post Office and PCCW; and the southern portion was zoned "G/IC" and occupied by the ex-headquarters building and vehicle depot of the Electrical and Mechanical Services Department (EMSD), as well as office buildings of Highways Department (HyD) and Civil Aid Services.

1.3.2 The Government commissioned consultancy studies in 2013 to review the development options and assess the development potential of the Application Site. The 2017-18 Budget indicated that to maintain Hong Kong's status as an international financial centre, it was necessary to ensure a continuous supply of office space, especially Grade A office space. Therefore, while the consultancy Study identified the southern portion of the Application Site for the provision of a district court, the rest of the site was proposed to be rezoned from "OU(SRC)"and "G/IC" to "C(2)". Moreover, in the Chief Executive's Policy Address 2017, it was proposed that a DHC would be set up in each district with a view to enhancing public awareness of disease prevention. The Food and Health Bureau has therefore proposed to have the Wan Chai DHC incorporated into the commercial development at the Application Site.

1.3.3 During the rezoning process, the TPB decided to impose a requirement in the OZP for the submission of a layout plan to the Board under the Section 16 planning application system of the Town Planning Ordinance (Cap.131), given that the commercial site is located at a prime location with a future district court development nearby.

1.3.4 A notional scheme showing the possible layout of the building blocks and open spaces, without PACF,

was presented by Planning Department (PlanD) for the reference of the TPB on the rezoning of the Application Site. It was prepared to facilitate the preparation of technical assessments to support the amendments of the OZP (**Annex A-1**).

1.3.5 At the same time, the TPB raised concerns towards the undesirable residual open space at the south-eastern corner of the Application Site (**Annex A-2**).

1.3.6 In the TPB meeting, it was mentioned that an integrated design of the Application Site and the future District Court site can be achieved as demonstrated in the indicative scheme with a deck provided over the internal road, linking the two sites together (**Annex A-1**).

1.3.7 During PlanD's consultation with District Council on the rezoning proposal and consideration of representations regarding the OZP amendment, the District Council and TPB noted that there was a strong demand of cultural, arts and performing facilities in Causeway Bay. Therefore, the Explanatory Statement of the OZP states at Clause 8.1.3 that "the project proponent of the site is encouraged to provide more GIC facilities taking into account the current deficit in Wan Chai District and for the benefit of the community. PACF are also compatible uses in the "C(2)".

1.3.8 The rezoning of the Application Site was approved by the TPB on 11 September 2020 and the OZP incorporating the rezoning of the Application Site was approved by the Chief Executive in Council on 24 November 2020.

1.3.9 In March 2022, a submission of a Layout Plan for the proposed permitted commercial development (Office, Eating Place, Shop and Services) with Social Welfare Facility, Public Clinic, Place of Recreation, Sports or Culture, Public Transport Station and Public Vehicle Park (excluding Container Vehicle), and minor relaxation of gross floor area restriction (from 100,000m^2 to 102,000m^2 (2%) to accommodate 2,000m^2 of additional PACF on 5/F of Towers 1 and 2) was made by the Applicant to the TPB under Section 16 of the Town Planning Ordinance (Application No. A/H7/181). It was approved on 6 May 2022 subject to conditions in the Board's letter of 20 May 2022 (ref. TPB/A/H7/181) (**Annex A-3**).

1.3.10 Subsequent to the approved Section 16 application, a Section 16A application (No. A/H7/181-2) for amendments to the approved Layout Plan was approved by the Director of Planning, under the delegated authority of the TPB, on 29 May 2025 (ref. TPB/A/H7/181-2) (**Annex A-4**).

1.3.11 The status of compliance with each condition under the approved Section 16 application (No. A/H7/181) and the approved Section 16A application (No. A/H7/181-2) is summarised in **Table 1.1** below.

Table 1.1 Status of Compliance with Each Condition Under the Approved Section 16 Application (No. A/H7/181) and the Approved Section 16A Application (No. A/H7/181-2)

Condition		Status
(a)	The design and provision of vehicular access, car parking and loading/unloading facilities for the proposed development to the satisfaction of the Commissioner for Transport or of the TPB;	The design and provision of vehicular access, car parking and loading/unloading facilities for the proposed development was submitted in the General Building Plans (GBPs) on which Transport Department has been consulted. The latest revision of the GBPs has been approved by Buildings Department on 5 March 2025 (**Annex A-5**).
(b)	The submission and implementation of a revised Landscape Master Plan to the satisfaction of the Director of Planning or of the TPB; and	The submission of a revised Landscape Master Plan (LMP) for partial compliance with this approval condition has been accepted by the Director of Planning on 12 August 2022 (**Annex A-6**). The full compliance with this approval condition rests upon the implementation of the approved LMP (which has not yet been achieved) to the satisfaction of the Director of Planning or of the TPB.
(c)	The submission of a Conservation Management Plan and implementation of the mitigation measures identified therein before commencement of works to the satisfaction of the Commissioner of Heritage or of the TPB.	The submission of Conservation Management Plan (CMP) for partial compliance with this approval condition has been accepted by the Antiques and Monuments Office (AMO) on 18 July 2022 (**Annex A-7**). The full compliance with this approval condition rests upon the implementation of the mitigation measures identified in the CMP before commencement of works (which is still ongoing and has not yet been achieved) to the satisfaction of the Commissioner of Heritage or of the TPB.
(d)*	The submission and implementation of a traffic management plan to demonstrate the proposed internal traffic and transport arrangements for vehicles and pedestrians to the satisfaction of C for T or of the TPB.	The traffic management plan will be submitted and implemented to the satisfaction of C for T or of the TPB in due course.

Note:
Condition (d) was introduced under the approval of the Section 16A application (No. A/H7/181-2).

2 Site Context and Features

2.1 SITE LOCATION, EXISTING CONDITION AND SURROUNDING DEVELOPMENT

2.1.1 The Application Site is located at the junction of Caroline Hill Road and Leighton Road, south of the commercial area of Causeway Bay on Hong Kong Island (**Figure 2.1** refers). The Application Site is bounded by Leighton Road to the northwest, by Caroline Hill Road to the northeast and southwest, and by land designated for the future District Court development and by the South China Athletic Association to its southeast.

2.1.2 Prior to commencement of construction works, the Application Site was mostly vacant. Structures and facilities associated with its former use as the recreation clubs of the Post Office and PCCW; the ex-headquarters building and vehicle depot of the Electrical and Mechanical Services Department (EMSD) and offices of the Highways Department (HyD) and Civil Aid Services were disused or demolished, except for the two remaining structures at the south-eastern part of the Site (one structure with one-storey height from level +10.0mPD to +15.0mPD approximately; and the other structure with two-storey height from level +5.0mPD to +15.0mPD approximately). The south-eastern part of the Application Site has an elevation of approximately +15.3mPD, while the remaining areas are at approximately +10.3mPD to +9.3mPD. Caroline Hill Road to the northeast of the Application Site has existing levels ranging from approximately +4.9mPD to +6.4mPD. Caroline Hill Road to the southwest of the Application Site has existing levels ranging from approximately +8.1mPD to +11.9mPD. Ground level elevations on Leighton Road to the north-west of the Application Site range from approximately +7.6mPD to +4.9mPD.

2.1.3 In terms of surrounding land use context, the areas to the north and northwest of the Application Site across Leighton Road consist mainly of office/commercial developments. Building height restrictions in this area range from 130-135mPD (**Figure 1.2** refers). The Causeway Bay Mass Transit Railway (MTR) Station is located within 500m of the Site (**Figure 2.2** refers). GIC uses of the Po Leung Kuk, residential developments and schools are located to the west and south across Caroline Hill Road (**Figure 2.2** refers). The South China Athletics Association, the Hong Kong Stadium and other sports clubs/recreational grounds are located to the southeast and east. St. Paul's Hospital and approximately 13-storey high residential uses in Haven Street zoned "Other Specified Uses" annotated "Mixed Use" are located to the southeast and east, with some sites undergoing redevelopment/renovation. Car repair workshops and eating places are currently found on the ground floors of developments along the eastern section of Caroline Hill Road near the Haven Street cluster.

2.1.4 Located at the junction of Leighton Road and Caroline Hill Road, the Application Site is within an area subject to occasional heavy traffic and traffic congestion. Leighton Road is a district distributor serving the southern part of Causeway Bay. Several bus stops are located along the road. Caroline Hill Road is a single two-way carriageway that abuts the northern and southern edges of the Application Site. Photos showing the surrounding context are depicted in **Figures 2.3a to 2.3c**.

2.2 HERITAGE FEATURES

2.2.1 The Application Site contains two sections of existing masonry retaining walls (Slope Feature Nos. 11SW-B/FR 193 and 11SW-B/FR 32) and two associated earthenware pipes which are on the northeast side of the Application Site and are Grade 3 historic structures (N339) designated on 12 December 2019 (**Figure 2.4** refers). The walls are important historic features of the streetscape (**Figures 2.5** refers).

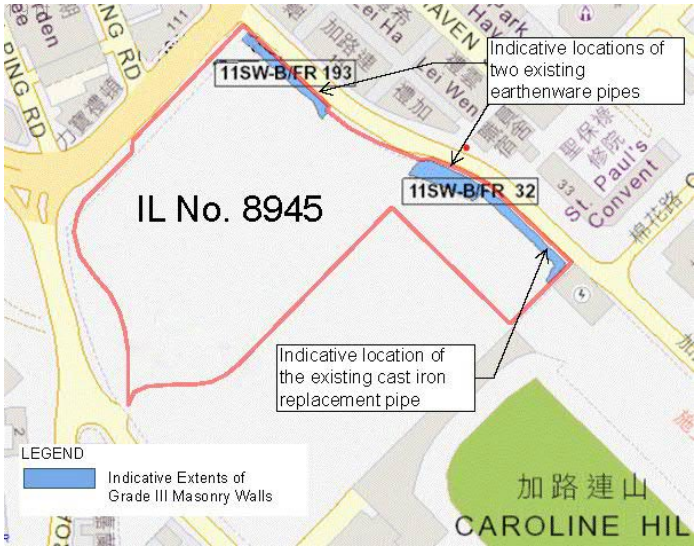


Figure 2.4 Location of Grade 3 Masonry Walls and Earthenware Pipes

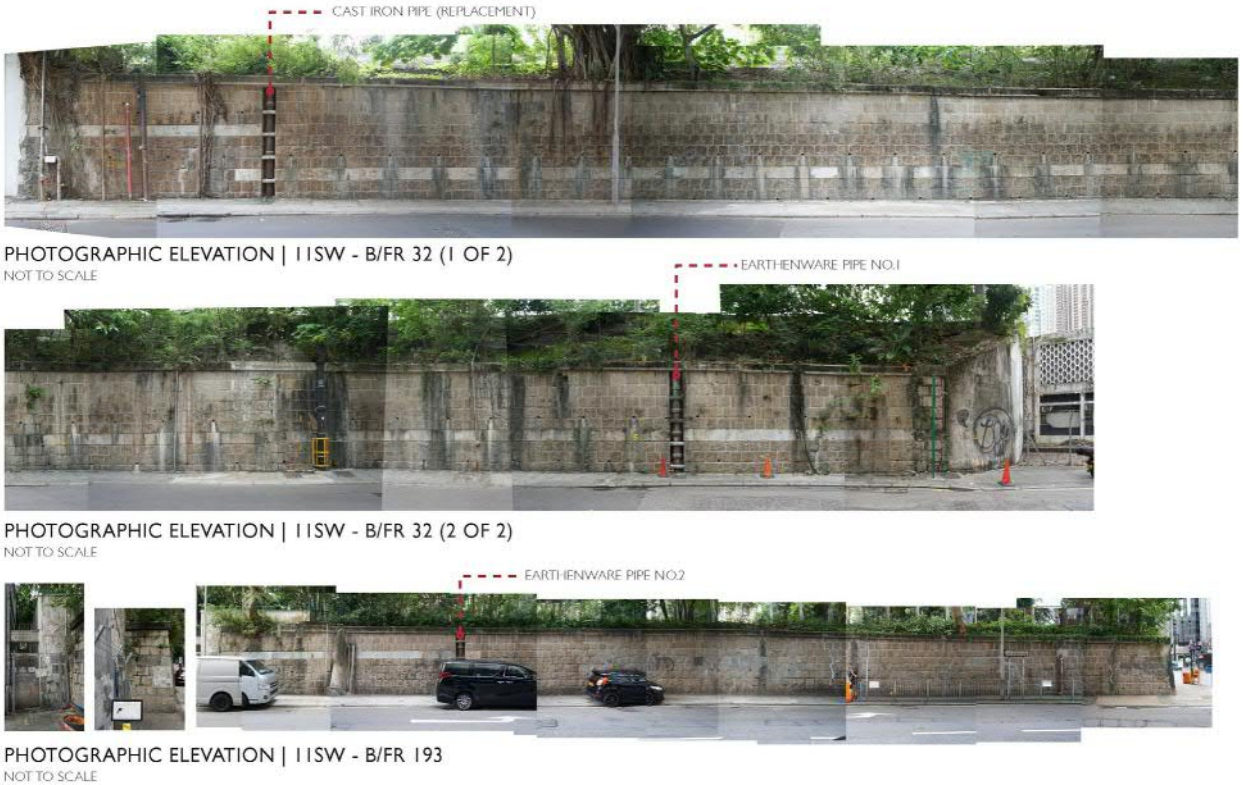


Figure 2.5 Photos of Grade 3 Masonry Walls and Earthenware Pipes

2.2.2 The graded masonry walls are built of roughly dressed granite blocks in stretcher bond with concrete bond courses and weep holes at different levels. The copings are finished in framed vermiculated rustication with drainage provision above. There are also two earthenware pipes (known as vitrified clay pipe) installed vertically in recessed setbacks within the masonry walls.

2.2.3 There are a number of other historic buildings/structures in the proximity of the Application Site, including St. Paul's Convent Church (Grade 1), Po Leung Kuk, Main Building (Grade 1), Confucius Hall (Grade 1), Shing Kwong Church (Grade 2), S.K.H. St. Mary's Church (Grade 1), Tung Wah Eastern

Hospital (Grade 2), St. Margaret's Church (Grade 1) and the Racecourse Fire Memorial (Declared Monument). **Table 2.1** and **Figure 2.6** show the detail and location of the historic buildings/structures in the surrounding.

Table 2.1 Historic Buildings/Structures in the Vicinity of the Application Site

	Historic Buildings/Structures	Date	Grading	Original Use	Current Use
1	Masonry Wall and Earthenware Pipes at Caroline Hill Road	1920s	3	Site formation of Queen's College	Boundary wall
2	St. Paul's Convent Church	1928	1	Church	Church
3	Po Leung Kuk, Main Building	1932	1	School, dormitory	Museum, Headquarters office, Memorial Hall
4	S.K.H. St. Mary's Church	1937	1	Church	Church
5	S.K.H. St. Mary's Church, General Office	1954	3	Office, vicarage, school	Activity centre, study room
6	Shing Kwong Church, The Church of Christ in China	1927	2	Church	Church
7	St. John Ambulance Brigade Hong Kong Island Area Headquarters	1935	2	Headquarters office	Headquarters office
8	Confucius Hall	1935	1	Public place and community hall	Cultural venue, assembly hall, staff quarters
9	St. Margaret's Church	1923	1	Church	Church
10	Tung Wah Eastern Hospital	1929	2	Hospital	Hospital

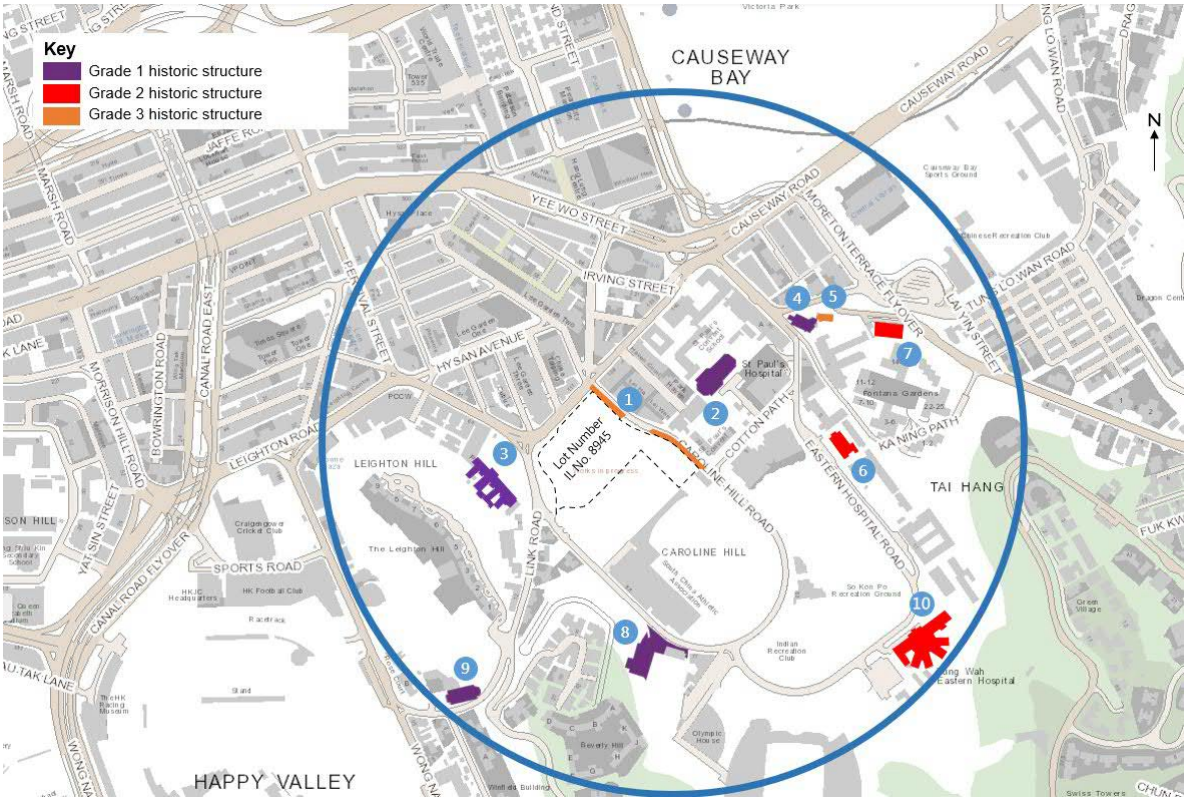


Figure 2.6 Plan Showing Historic Buildings/Structures in Vicinity of the Application Site

2.3 TREES AND VEGETATION

2.3.1 A total of 57 nos. of trees were surveyed on 21 August 2021 within the Application Site boundary, and are illustrated on the Approved Tree Survey Plan. Detailed tree findings are further elaborated in **Annex C**.

3 Outline Zoning Plan Provisions, Parameters and Requirements

3.1 OZP PLANNING INTENTION

3.1.1 Under the Remarks of the current OZP, the "C(2)" zone is stated to be "intended primarily for commercial development, which may include uses such as office, shop, services, place of entertainment, eating place and hotel, functioning as territorial business/financial centre(s) and regional or district commercial/shopping centre. These areas are usually major employment nodes".

3.2 DEVELOPMENT PARAMETERS AND FACILITIES PERMITTED UNDER THE OZP

3.2.1 According to the OZP Schedules of Uses, the following uses (inter alia) are always permitted within "Commercial" zones of the OZP:

- Office
- Eating Place
- Shop and Services
- Social Welfare Facility
- Public Clinic
- Place of Recreation, Sports and Culture
- Public Transport Terminus or Station
- Public Vehicle Park (excluding container vehicle)

3.2.2 The relevant development parameters of the Application Site stipulated on the OZP and in the Remarks of the Notes of the OZP under the "C(2)" zone are as listed as below:

- maximum gross floor area of 100,000m^2, or the gross floor area of the existing building, whichever is the greater, and it shall include the gross floor area of GIC facilities as required by the Government
- a public transport facility for minibuses shall be provided;
- a public vehicle park of not less than 125 parking spaces shall be provided; and
- a POS of not less than 6,000m^2 shall also be provided.

3.2.3 The Remarks of the "Commercial" zone in the OZP state:

"(6) Based on the individual merits of a development or redevelopment proposal, minor relaxation of the building height/gross floor area restrictions"…."may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.".

3.2.4 In addition to the above, the Explanatory Statement of the OZP (which is not formally a part of the statutory OZP itself) mentions in the "C(2)" zone the following key development requirements:

- a District Health Centre with a Net Operating Floor Area (NOFA) of about 1,000m^2;
- a Child Care Centre with a NOFA of about 531m^2;
- a Day Care Centre for the Elderly with a NOFA of about 358m^2;
- more cultural GIC facilities (optional);
- a public transport facility for minibuses (underground);

- a public car park (underground) of not less than 100 private cars parking spaces and 25 commercial vehicles;
- a clear building gap of not less than 25m in width across the central portion of the site in a northwest-southeast direction;
- retention of stone retaining walls[1];
- retention of OVT (No. LANDSD(LEASED) WCH/1); and
- an underground connection point within the site for the possible pedestrian subway to MTR Station.

3.2.5 In Para 8.1.3 of the Explanatory Statement of the Approved OZP, provision of PACF is stated to be "encouraged" but is not required.

3.3 REQUIREMENTS OF LAYOUT PLAN SUBMISSION

3.3.1 The Remarks of the "Commercial" zone in the OZP state 'a Layout Plan shall be submitted for the approval of the Town Planning Board'. **Table 3.1** specifies the requirements of the Layout Plan submission and the relevant sections of this Layout Plan in fulfilment of the requirements.

Table 3.1 Requirements of Layout Plan Submission under "C(2)" zone of the Approved Wong Nai Chung OZP No. S/H7/21 and the Relevant Sections of this Layout Plan Submission

Layout Plan Submission Requirements	Relevant Sections of the Statement
The area of the proposed land uses, the nature, position, dimensions, and heights of all buildings (including structures) to be erected on the site	▪ **Tables 4.1 to 4.3** ▪ Layout Plans at **Annex B**
The proposed total gross floor area for various uses and facilities	
The details and extent of GIC facilities, parking, loading/unloading and public transport facilities and open space to be provided within the site	
The alignment, widths and levels of any podium, footbridges, elevated walkways and roads to be constructed within the site	
The landscape and urban design proposals within the site	▪ Landscape Master Plan at **Annex C** ▪ Urban Design Proposal at **Section 4.6** and figure for urban design analysis at **Figures 4.23a and 4.23b** ▪ Landscape Proposal at **Section 4.7**
An air ventilation assessment report to identify the exact alignment of the building gap(s) and/or other enhancement measures for design improvements	▪ AVA at **Annex D**
Prior consultation with the Antiquities and Monuments Office (AMO) should be made if	▪ Approved CMP **at Annex I**

[1] As stated in the Explanatory Statement of the OZP, "the stone retaining walls along the northern and eastern peripheries of the site (except the portions being affected by the road improvement works) shall be preserved".

Layout Plan Submission Requirements	Relevant Sections of the Statement
any development, redevelopment and/or rezoning proposals might affect a declared monument and graded historic buildings/structures and their immediate environs	

3.4 FACILITIES WHICH ARE ENCOURAGED UNDER THE OZP

3.4.1 During PlanD's consultation with District Council on the rezoning proposal and consideration of representations of the OZP amendment, the District Council and TPB noted that there was a strong demand of cultural, arts and performing facilities in Causeway Bay. As noted above, the Explanatory Statement of the OZP states at Clause 8.1.3 that "the project proponent of the site is encouraged to provide more GIC facilities taking into account the current deficit in Wan Chai District and for the benefit of the community. PACF are also compatible uses in the "C(2)".

4 Development Proposal

4.1 INTRODUCTION

4.1.1 This section of the Planning Statement describes the Layout Plan for the Current Scheme development proposal (the 'Current Scheme') for which Section 16 approval is sought. This Current Scheme differs from the Approved S16A Scheme under Section 16A application (No. A/H7/181-2) in the ways described below.

4.2 AMENDMENTS TO THE 'APPROVED S16A SCHEME'

Enhanced Design and Layout of Banyan Garden

4.2.1 The Application Site contains a large Fig tree (*Ficus elastica*) abutting Leighton Road, partly supported by an existing masonry wall. Although affected by Brown Root Rot Disease (BRRD), the tree is recognized as an OVT (Registration No. LANDSD(LEASED) WCH/1). A tree protection zone (TPZ) has been identified under the Lease as a Pink Hatched Green Area. The existing OVT (Registration No. LANDSD(LEASED) WCH/1) within its TPZ should be preserved in situ in accordance with Development Bureau Technical Circular (Works) No. 5/2020 on "Registration and Preservation of Old and Valuable Trees" (DEVB TC(W) No. 5/2020) and integrated into the design of the at-grade POS.

4.2.2 In the previously approved development proposals, i.e. the Approved S16 Scheme and the Approved S16A Scheme, a Banyan Garden surrounding the OVT, along with an entrance plaza and internal street, was proposed as part of the POS at the G/F level (see **Figures 4.1 and 4.2**). Nevertheless, during the detailed design stage, it became evident that the design of these approved schemes would significantly limit public access and enjoyment at the POS as it requires physical barriers, including perimeter balustrades, to fully restrict public access to the Banyan Garden's lawn area, in order to prevent potential spread of BRRD (which can be spread by spores attached to the soles of shoes or on clothing).

4.2.3 An Independent Tree Specialist, Professor Jim Chi Yung, BH, JP ("Prof. Jim") has been appointed by the Applicant to undertake a more detailed analysis of the OVT's condition. His findings are as follows:

4.2.4 The tree's crown vitality is declining and its root health is under stress. It has developed a sprawling horizontal canopy with extensive aerial roots due to its site constraints. Its growth is severely limited by:

- A shortage of open, good-quality soil;
- A high proportion of the TPZ being compacted and sealed with impermeable paving; and
- Chronic soil compaction and reduced root aeration.

4.2.5 Without intervention, its long-term prognosis is poor, and it is unlikely to maintain good performance for more than a few decades.

4.2.6 In this regard, the Current Scheme presents a rare opportunity to rehabilitate a declining OVT through science-based arboricultural innovation, co-use of valuable urban land resources for both public enjoyment and heritage tree conservation, and demonstrate a model project for urban forestry and sustainable development in Hong Kong's dense urban core. The enhanced design of the Current Scheme has been developed to achieve a win-win solution between tree preservation and public interest. In particular, the approach of the Current Scheme will:

- Protect and rehabilitate the OVT;
- Enhance public access and enjoyment at the POS; and

- Enhance cultural placemaking.

4.2.7 The enhancements to the Banyan Garden are described below and the proposed Landscape Master Plan (LMP) is shown in **Figure 4.3**.

Protection and rehabilitation of OVT

4.2.8 In the Current Scheme, with the additional support of the Independent Tree Specialist, a more detailed analysis of the OVT's condition has been undertaken to formulate an enhanced design deemed most appropriate for the future Banyan Garden.

4.2.9 **Proposed OVT Protection-cum-rehabilitation Scheme –** The Current Scheme adopts a protection-cum-rehabilitation approach to address both the OVT's declining health and the need to protect it during nearby development. It introduces three soil-rooting zones within the TPZ, including (see **Figures 4.4a – 4.4b**):

(1) *Zone 1 Existing tree strip:* The 3.5 m wide and 170 m^2 soil area with massive subterranean roots and root stands will be left undisturbed.

(2) *Zone 2 New tree strip:* This is a new planting area that measures 5.7 m wide and 270 m^2 soil area will be transformed from the previous paved sports ground to open soil with soil enhancement treatments and root preservation.

(3) *Zone 3 New soil crescent:* This segment has a maximum width of 9.8 m and a 285 m^2 soil area. We propose to replace the compacted low-quality site soil with a high-quality uncompacted fabricated soil mix. Overlapping the proposed Plaza, it is designed for the co-use of precious land resources to create a win-win scenario. The modern soil cell technique will be adopted to build a suspended pavement and hold the rootable soil below it.

4.2.10 Each zone will receive different treatments to maximise its capability to improve the OVT's growth in the long run. Key measures include:

- Designing a rooting highway traversing these zones;
- Minimizing excavation impacts on roots;
- Soil enhancement treatments in the new tree strip;
- Innovative nurturing of sturdy root stands;
- Soil replacement in the new soil crescent;
- Synopsis of notable soil improvements;
- Implementation strategy for the scheme; and
- Preparation of a high-quality fabricated soil mix (FSM).

4.2.11 To ensure effective implementation of the above measures, the Independent Tree Specialist will perform the following duties:

- Leading the project's landscape team to prepare the manual for the post-construction maintenance of the OVT, which includes a maintenance schedule.
- Helping the Client to scrutinise the credentials and experience of a Qualified Professional who will shoulder the duties of monitoring and supervising the works associated with the OVT for effective implementation of the Scheme on site in accordance with the design and method statements.
- Advising the Qualified Professional in preparing the quarterly reports on the OVT, which should include photo records for the site works affecting the OVT, to be submitted to the Lands Department.

4.2.12 Detailed supporting information is provided in **Annex K**.

Enhancement in Public Access and Enjoyment at the POS

4.2.13 **Balancing Public Access and Tree Preservation** – Beyond preserving the OVT, the Current Scheme balances tree health, public accessibility, and placemaking. Under both previously approved schemes, perimeter balustrades would fully restrict public access to the Banyan Garden's lawn to prevent BRRD spread, limiting usable open space. In contrast, the Current Scheme enhances the tree's growing conditions while maintaining a usable, open plaza. The 9.8-metre-wide subterranean soil crescent integrates ecological restoration and urban design, expanding rootable soil volume and supporting the levelled surface of a new civic plaza above, capable of hosting exhibitions, performances, and seasonal events (see **Figure 4.5**).

4.2.14 **Integrated Soil System for Dual Functionality –** To achieve this balance, the soil crescent incorporates modular soil cell systems filled with uncompacted, high-quality fabricated soil mix. These systems are engineered to bear the load of pedestrian traffic and temporary installations while maintaining optimal conditions for root growth, water infiltration, and air exchange. The result is a multifunctional landscape that not only rehabilitates a heritage tree but also enriches the urban experience for residents and visitors. By seamlessly integrating ecological infrastructure with public amenities, the design ensures that the Banyan Garden becomes both a sanctuary for nature and a stage for cultural expression.

4.2.15 **Integrated Arboricultural and Public Space Strategy –** This integrated approach satisfies both arboricultural requirements for the future growth of OVT and public space objectives, representing a significant improvement over the 'either/or' solution in both of the approved schemes. Monitoring protocols will be implemented to assess the long-term effectiveness of these mitigation measures.

Enhancement in Cultural Placemaking

4.2.16 **Enhanced Cultural Placemaking, Circulation and Safety –** The design of the future Banyan Garden is envisioned as a vibrant, multifunctional space that harmonizes ecological preservation with cultural storytelling and public engagement. At the heart of this vision is the integration of a new soil crescent beneath the plaza, which not only supports the health and stability of the OVT but also enables the creation of a flat, open plaza surface suitable for hosting a wide range of cultural, artistic, and community events in a safe condition. This dual-purpose design ensures that the space remains both ecologically functional and socially dynamic (**Figure 4.6** refers).

4.2.17 **Supporting Community Arts and PACF Integration –** As well as enhancing the functionality of the POS, the Banyan Garden will also offer the potential for community arts activities such as temporary art installations, outdoor performances and light shows for the public. To synergize with the PACF on 5/F of Towers 1 and 2, some of the performances and cultural events will be organised by the operator of the PACF to create a rich cultural experience. Under the Current Scheme, the Banyan Garden will form an enhanced, vibrant public space. It will serve as a landmark, natural heritage resource and an element of the collective memory of the public, enhancing the sense of place and stimulating a sense of identity (**Figure 4.7** refers).

4.2.18 **Plaza Layout and Pedestrian Circulation –** The overall layout of the plaza prioritizes safe and intuitive circulation, with clear sightlines, barrier-free access, and shaded resting areas. The integration of storytelling elements into functional infrastructure, such as seating, paving, and balustrades, creates a layered public realm that invites reflection, learning, and interaction. For instances, an integrated seat wall balustrade, serving both as a physical safety barrier (to address the level difference between the proposed Banyan Garden and Leighton Road as stipulated in Building (Planning) Regulations (Cap. 123F)), will also serve as a boundary and as a storytelling medium. In doing so, the Banyan Garden becomes more than just a civic space; it becomes a living archive of Hong Kong's urban and ecological

heritage, rooted in the legacy of Lee Gardens and designed for the enjoyment of future generations. The new paved area adjacent to the building frontage in the Current Scheme will enhance pedestrian access and circulation space when compared to both of the approved schemes. The proposed Banyan Garden, entrance plaza, and internal street at the G/F level, covering approximately 2,835m^2, will serve as a vital link for pedestrians, connecting Leighton Road to an interim platform at +8.9mPD and onward to the Landscape Bridge at +18.75mPD (i.e. finished floor level refers).

Minor Amendments to the Location of POS and Distribution of Areas between Covered and Non-covered POS

4.2.19 Under the Approved S16A Scheme, POS provision of approximately 2,850m^2 was proposed at G/F and approximately 3,150m^2 at 2/F and UG/F (see **Figures 4.8a – 4.8b**). As detailed architectural design has progressed, it has resulted in a minor change to the location of POS from that in the approved Layout Plan, resulting in approximately 2,835m^2 of POS provision at G/F and 3,165m^2 at 2/F, 1/F and UG/F (see **Figures 4.9a – 4.9b**). The development of architectural design has also resulted in a slight adjustment to the distribution of areas between non-covered and covered POS under the Current Scheme (**Table 4.1** refers). The total area of POS provision remains unchanged.

Minor Amendment to the Soft/ Hard Landscape Design at 2/F

4.2.20 Under the Approved S16A Scheme, the POS at the 2/F level is designed to adjoin a small private open space known as the Event Plaza (refer to **Figure 4.2**). While the Event Plaza is privately managed, it will remain accessible to the public for the majority of the time. Temporary barriers will only be introduced during special events to manage crowd flows and ensure safety. To maintain a cohesive spatial experience, a unified landscape design will be implemented across both the POS and the Event Plaza, ensuring visual and functional continuity. Importantly, there will be no permanent physical barriers separating the two zones, reinforcing the sense of openness and shared public realm.

4.2.21 To further enhance the integration between the POS and the private open space, a subtle demarcation, such as a metal strip divider, will be installed between planting areas to indicate the boundary without disrupting visual harmony. The detailed design of this interface will be refined during the next stage of development.

1.1.1 Landscape Adjustment and Design Refinement – During detailed design, the demarcation strategy between the POS and the private open space has led to a minor amendment in the placement of soft and hard landscape elements compared to both of the approved schemes. These adjustments are necessary to reflect operational needs during events and to enhance the overall aesthetic quality of the landscape. The total area of POS under the Current Scheme remains unchanged (see **Figures 4.9a - b**), ensuring compliance with planning requirements while allowing for improved spatial organization.

4.2.22 As part of the Current Scheme, the landscape design at the 2/F level has been enriched with additional features that elevate both the aesthetic and functional quality of the public open space. Notably, new water features have been introduced to create dynamic visual corridors that enhance spatial connectivity and offer a calming sensory experience for visitors. These elements not only contribute to the visual identity of the plaza but also help define movement patterns and gathering zones. In addition, variations in planter edge treatments have been thoughtfully incorporated to serve dual purposes, providing soft boundaries for planting areas while also functioning as informal seating options. These sitting-out areas are designed to encourage public interaction, rest, and enjoyment, making the space more inclusive and user-friendly (**Figure 4.10** refers).

4.2.23 Despite these enhancements, the fundamental design framework and guiding principles of the approved schemes remain unchanged. The provision of POS and tree compensation measures will continue to align with the original planning intent and statutory requirements. The current refinements are focused on improving the spatial experience and visual richness of the landscape, without altering

the overall layout or reducing the designated POS area. These updates reflect a commitment to delivering a high-quality urban environment that balances ecological integrity with public amenity, ensuring that the space remains both functional and inspiring for everyday use and special events alike.

4.3 CURRENT SCHEME – DEVELOPMENT PROPOSAL AND ARCHITECTURAL LAYOUT

Layout and Architectural Design

4.3.1 The proposed Project consists of three commercial towers, namely Tower 1 & Tower 2 with 25 storeys (at the Edged Blue Site) and Tower 3 with 16 storeys (at the Edged Red Site) (**Figure 4.11** refers).

4.3.2 There are five levels of basements which include one level of Commercial & Lay-bys for Light Buses at B1/F and 4 levels of basement carpark for Public Vehicle Park and Private Parking at B2-B5/F. A retaining structure will be constructed in the Application Site up to the level of and surrounding a portion of the OVT (No. JUD WCH/1 (Previous Registration No. EMSD WCH/1)) in the adjacent District Court site. The architectural drawings and plan showing the area and depth of excavation are at **Figure 4.12**. The site formation plans with the additional protective barrier in the retaining structure and updated retaining wall extent were submitted to BD.

4.3.3 The 2/F podium is proposed (Level +18.70mPD) with a fully covered and enclosed Landscape Bridge over a new internal access road connecting the Edged Blue Site with the Edged Red Site. The 2/F podium will serve as part of the POS and as a pedestrian link that connects Towers 1 & 2 with Tower 3 and the GIC facilities.

4.3.4 The GIC facilities required under the OZP, which include a Child Care Centre (CCC), a Day Care Centre for the Elderly (DE) and a District Health Centre (DHC), are located at the podium level of Tower 3, occupying 3 storeys (at G/F – 1/F) and integrated with the covered POS at 2/F. The requirements for DHC, CCC and DE with NOFA of approximately 1,000m^2, 531m^2 and 358m^2 will be complied with, as stated in the ES of the OZP.

4.3.5 The additional PACF under the Approved S16 Scheme (No. A/H7/181) is subject to a permitted minor relaxation of GFA of approximately 2,000 m^2. The overall total GFA will remain unchanged as 102,000m^2 when compared with the Approved S16 Scheme.

4.3.6 In the Approved S16A Scheme, there is a minor redistribution of GFA, when compared to the Approved S16 Scheme, in terms of the provision of the required GIC facilities, light bus lay-bys and office. The previously approved GIC GFA of approximately 3,000m^2 was estimated based on a preliminary layout. The layout of GIC facilities has been further refined during liaison with relevant departments to facilitate future operations. The total GFA of GIC facilities is approximately 3,100m^2 under the Approved S16A Scheme with the provision of the minimum required NOFA inclusive as listed on the Lease. In addition, the B1/F layout, consisting of a commercial area, driveway and light bus lay-bys has been updated under the Approved S16A Scheme. The length of the driveway is reduced and the total GFA of the light bus lay-bys is approximately 1,600m^2, which complies with the minimum length, width and headroom of light bus lay-bys under Lease requirements. With the abovementioned changes in the non-domestic GFA, the office GFA is updated to approximately 85,300m^2 in order to utilise the entire development potential of 102,000m^2 of GFA.

4.3.7 While the building height of Towers 1 and 2 remains unchanged when compared to the Approved S16 Scheme, the 5/F level has been raised from +28.75mPD to +34.60mPD due to the requirement for an additional E&M floor on level 4/F at +28.70mPD under the Approved S16A Scheme. A full E&M floor at 4/F level is required between the retail podium and the office tower portion due to the high demand for power supply supporting the EV chargers for private car parking spaces, which has been identified during the design development stage. There will be express escalators bypassing 4/F to access 5/F directly from 3/F.

4.3.8 A comparison of the development schedules and provision of internal transport facilities between the Approved S16 Scheme (No. A/H7/181), Approved S16A Scheme (No. A/H7/181-2) and the Current Scheme are listed in **Tables 4.1 to 4.2** with proposed land uses by floor listed in **Table 4.3**.

Table 4.1: Comparison between Development Schedules of the Approved S16 Scheme, the Approved S16A Scheme and the Current Scheme

Development Parameters	Approved S16 Scheme (No. A/H7/181)	Approved S16A Scheme (No. A/H7/181-2)	Current Scheme	Difference between Current Scheme and Approved S16A Scheme
Application Site Area	Approx. 14,802 m^2	Approx. 14,802 m^2	Approx. 14,802 m^2	No change
Total GFA^	102,000 m^2	102,000 m^2	102,000 m^2	No change
▪ Office	Approx. 85,000 m^2	Approx. 85,300 m^2	Approx. 85,300 m^2	No change
▪ Retail	Approx. 10,000 m^2	Approx. 10,000 m^2	Approx. 10,000 m^2	No change
▪ Light Bus Lay-bys	Approx. 2,000 m^2	Approx. 1,600 m^2	Approx. 1,600 m^2	No change
▪ GIC Facilities required under OZP (Including DHC, CCC, DE)	Approx. 3,000 m^2	Approx. 3,100 m^2	Approx. 3,100 m^2	No change
▪ Additional GIC facilities (Performing Arts and Cultural Facilities)	Approx. 2,000 m^2	Approx. 2,000 m^2	Approx. 2,000 m^2	No change
Plot Ratio	Approx. 6.89	Approx. 6.89	Approx. 6.89	No change
No. of Blocks	3	3	3	No change
Site Coverage	65%	65%	65%	No change
Building Height	T1 and T2: 135mPD T3: 90mPD	T1 and T2: 135mPD T3: 90mPD	T1 and T2: 135mPD T3: 90mPD	No change
No. of Storeys				
▪ Basement	5 Storeys	5 Storeys	5 Storeys	No change
▪ Towers 1 and 2	24 Storeys	25 Storeys	25 Storeys	No change
▪ Tower 3	16 Storeys	16 Storeys	16 Storeys	No change
Public Open Space Provision^	6,000m^2	6,000m^2	6,000m^2	No change
▪ G/F:	Approx. 3,000m^2	Approx. 2,850m^2	Approx. 2,835m^2	-15m^2
- (incl non-covered POS)	Approx. 2,300m^2	Approx. 2,230m^2	Approx. 2,190m^2	-40m^2
- (incl. covered POS)	Approx. 700m^2	Approx. 620m^2	Approx. 645m^2	+25m^2
▪ 2/F, 1/F and UG/F:	Approx. 3,000m^2	Approx. 3,150m^2	Approx. 3,165m^2	+15m^2
- (Incl non-covered POS)	Approx. 1,250m^2	Approx. 1,490m^2	Approx. 1,488m^2	-2m^2
- (Incl. covered POS)	Approx. 1,750m^2	Approx. 1,660m^2	Approx. 1,677m^2	+17m^2
Greenery Coverage*				
▪ Total	Approx. 2,970 m^2	Approx. 2,970 m^2	Approx. 2,970 m^2	No change
Completion year	Q3 2029	Q3 2029	Q3 2029	No change

^Public Open Space of 6,000 m^2 to be exempted from GFA calculations.

* For PlanD's reference only.

Table 4.2: Comparison between Provision of Internal Transport Facilities of the Approved S16 Scheme, the Approved S16A Scheme and the Current Scheme

Internal Transport Facilities	Approved S16 Scheme (No. A/H7/181)		Approved S16A Scheme (No. A/H7/181-2)		Current Scheme (Remains Unchanged compared to the Approved S16A Scheme (No. A/H7/181-2))	
Private Parking & Loading/Unloading (L/UL)						
	Office	Retail and Performing Arts & Cultural Facilities	Office	Retail and Performing Arts & Cultural Facilities	Office	Retail and Performing Arts & Cultural Facilities
Private Car Parking Spaces	450	60	452	60#	452	60#
Motorcycle Parking Spaces	45	6	46	6#	46	6#
Loading/Unloading Spaces and lay-bys ▪ Motor Vehicle ▪ Light Goods Vehicle ▪ Heavy Goods Vehicle	 5 27* 15	 - 10 6	 5 27* 15	 - 10 6	 5^ 27* 15@	 - 10 6
Public Vehicle Park and Lay-by						
Private Car Parking Spaces	100		100		100	
Light Goods Vehicle Parking Spaces	15		15		15	
Medium/Heavy Goods Vehicle Parking Spaces	5		5		5	
Coaches Parking Spaces	5		5		5	
Light Bus Lay-bys	4		4		4	
Parking for GIC Facilities Required under the Lease						
Light Buses Parking Spaces (Day Care Centre for the Elderly)	3		3		3	
Motor Vehicle Parking Space (District Health Centre)	1		1		1	
Light Bus Parking Space (District Health Centre)	1		1		1	
Accessible Car Park (District Health Centre)	-		1		1	

*****including 1 L/UL space (shared with Child Care Centre and Day Care Centre for the Elderly) located at B2/F.
#Including 10 nos. private car parking spaces and 1 no. motorcycle parking space to be delineated for Performing Arts & Cultural Facilities.
^including 1 motor vehicle lay-by (shared with GIC Facilities) located at B2/F.
@ including 1 L/UL space (shared with District Health Centre) located at B2/F.

Table 4.3: Land Uses by Floor under the Current Scheme (Remains Unchanged compared to the Approved S16A Scheme (No. A/H7/181-2))

Floor	Main Use	Floor	Main Use
Edged Blue Site (Towers 1 and 2)		**Edged Red Site (Tower 3)**	
B4-B5/F	Private Vehicle Park	B4-5/F	Private Vehicle Park
B3/F	Public and Private Vehicle Park	B3/F	Private Vehicle Park
B2/F	Public Vehicle Park; Ancillary L/UL Area; Parking for GIC Facilities Required under the Lease	B2/F	Public Vehicle Park
B1/F	Commercial; Light Bus Lay-bys; E&M	B2M/F	E&M
G/F	Commercial; Public Open Space; E&M	G/F	GIC Facility (District Health Centre); Public Open Space; E&M
1/F	Commercial; E&M	UG/F	GIC Facility (Day Care Centre for the Elderly); Public Open Space; E&M
2/F	Commercial; Public Open Space; E&M	1/F	GIC Facility (Child Care Centre); E&M
3/F	Commercial; E&M	2/F	Commercial; Public Open Space; E&M
4/F	E&M	3/F-17/F (4, 13 and 14/F omitted)	Commercial; E&M
5/F	GIC Facilities (Performing Arts and Cultural Facilities); Commercial; E&M		
6/F-27/F (13, 14 and 24/F omitted)	Commercial; E&M		

4.4 CURRENT SCHEME - SITE PLANNING AND LAYOUT PRINCIPLES

Tower Dispositions and Open Space at Podium Level

4.4.1 Under the approved schemes, the towers are located in the north-west of the Application Site which integrates the fragmented open spaces proposed in the original layout under PlanD's rezoning conceptual scheme (**Figure 4.13**) and also creates large open space at the eastern part of the Application Site (**Figure 4.14**). Such tower disposition also responds to the Explanatory Statement of the OZP which states that the POS should be provided in the eastern portion of the Site facing Caroline Hill Road (East) and at-grade in the northern portion facing Leighton Road in order to enhance visual openness and pedestrian access. The approved disposition of towers does not affect the air ventilation performance at street levels and contributes to air ventilation with several wind enhancement features when compared with the statutory OZP rezoning indicative scheme in the previous application. The

Event Plaza will serve as an open space resource for Causeway Bay south and also as a recreational facility for the local community (**Figures 4.15a and 4.15b** refers).

Multi-Level Access and Pedestrian Connectivity

4.4.2 To enhance pedestrian accessibility and their walking experience, multi-level pedestrian access is proposed in this Project. This includes access to the Project from both street level and at an elevated level. Pedestrian access points at street level are located at +5.6mPD from Caroline Hill Road (East); at +7.00mPD from Leighton Road and at +8.90mPD from the new internal access road. The demolition works of the existing basement were completed to facilitate the construction of internal access road. A footbridge connecting the Application Site with Lee Garden Six at +17.64mPD is also proposed. This footbridge will form part of an elevated walkway system that connects the Lee Gardens Area all the way to the Causeway Bay MTR Station at Hysan Place. The proposed pedestrian connections and circulation routes are indicated in **Figures 4.16 and 4.17**.

Open Space and Landscape Bridge at 2/F

4.4.3 To further enhance pedestrian connectivity and integration between the Edged Blue and Edged Red Sites, a Landscape Bridge is provided at 2/F (Level +18.70mPD) spanning across the new internal access road and connecting the two parts of the Application Site. The Landscape Bridge will be fully covered and enclosed at the two sides facing Caroline Hill Road to the east and the new internal road to the west. This will serve as a major part of the covered POS and the design is to create a covered landscape area with ample greenery. The Landscape Bridge will extend all the way into the covered POS under Tower 3 in order to provide a well-integrated POS connecting two parts of the Application Site. This Landscape Bridge will also serve as a pedestrian link connecting the western and eastern parts of the Application Site, providing a seamless pedestrian connection with weather-proof protection and reducing pedestrian and vehicular conflict at the new access road below (**Figure 4.9b** refers).

Provision of Additional GIC Facilities – Performing Arts and Cultural Facilities (PACF)

4.4.4 As explained in Section 3.4, the Explanatory Statement in the OZP states that the project proponent for the Application Site is encouraged to provide additional GIC facilities such as PACF which are compatible uses under the zoning. PACF with a floor area of 2,000m^2 are therefore proposed at 5/F of Towers 1 and 2. Staircase, escalators and barrier free access will be provided to facilitate visitors to access the facilities on 5/F.

4.4.5 In a previous Section 16 application (No. A/H7/181) for this project, which was approved by the TPB on 6 May 2022, the development proposal included an additional 2,000m^2 of PACF on 5/F of Towers 1 and 2 to be operated by a non-profit organisation. In the Approved S16A Scheme (No. A/H7/181-2), the PACF was proposed to be relocated from the west to the east side on the same floor for better separation between the office lobby circulation and the cultural venue, in order to minimise mutual disturbance in daily operations. Construction works by the Applicant are ongoing on the basis of the design of the approved development proposal including the PACF. The Applicant has also been engaging in discussions with potential NGO operator of the PACF, namely EXCEL (Extension and Continuing Education for Life) Limited, a registered charitable institution which is fully self-sustained and which is a *non-profit making organisation.* EXCEL is a subsidiary of the Hong Kong Academy for Performing Arts (HKAPA), which is experienced in the operation of community cultural venues.

4.4.6 The Applicant will work with the organisation to operate exhibition venues and theatre on a non-profit basis for various types of cultural activities for the public to enjoy, including but not limited to visual arts, music, drama and dance. Floor space will also be provided for interactive workshops between artists and public participants. This can foster cultural development by supporting local artists and community groups, and respond to the deficit of GIC facilities in Wan Chai District.

Visual Corridor between the Two OVTs

4.4.7 In order to preserve views of the two OVTs at street level, a visual corridor of 6m wide is proposed at the podium between Towers 1 and 2, 3-storeys high. Such corridor shall allow visual connections between the two OVTs and integrate better with the existing site context. The visual corridor will also serve as a POS where street life and activities could take place. It will also act as an internal street to allow a more direct pedestrian access to the District Court to the south. (Appendix F3 of **Annex C** and **Figures 4.18a to 4.18c** refer).

Setback at Street and Podium Levels to Enhance Air Ventilation

4.4.8 Sufficient setback has been allowed at both the street and podium levels to enhance air ventilation and also allow a higher degree of visual openness. At the street level, setback is provided from the building edge for elevated design on G/F in the western portion of the Application Site abutting Caroline Hill Road (West), to enhance air ventilation and accommodate a drop-off area. In addition, setback is also proposed at grade from north-eastern boundary along the masonry wall at Caroline Hill Road (East). At the podium level, sufficient building setback is provided from north-eastern site boundary above 2/F and from the south-western boundary of Towers 1 & 2 and Tower 3. The Approved S16A Scheme proposed an increase in the size of setback of the podium at the north-eastern side of Towers 1 and 2 from 2/F and above to create a more efficient and spacious sense of arrival from the link bridge which will connect Lee Garden 6 to the future pedestrian walkway system in the Lee Garden area and Causeway Bay MTR station. The setback will be widened from approximately 23m to 36m. These setbacks will act as the major wind enhancement features (**Section 5.2** refers).

4.4.9 Furthermore, setback is proposed above 2/F from the south-western boundary abutting the District Court site. The extents of the setbacks are shown in **Figures 4.19a to 4.19b**.

Raised Tower and Covered Public Open Space at 2/F of Tower 3

4.4.10 In order to further enhance air ventilation flow, Tower 3 is proposed to be raised above the podium level at 2/F with the provision of covered POS underneath. The covered POS area will be landscaped with greenery. By raising the tower above the podium level, it will allow passage of air flow underneath, and, thereby, facilitate air ventilation at podium level (**Section 5.2** refers).

4.4.11 In the Approved S16 Scheme, a void of approximately 18m (W) x 13.4m (H) above the 2/F level at Tower 3 was proposed as one of the major wind enhancement features. As detailed architectural design has continued to progress, an amendment to the design of the 2/F level of Tower 3 is required, including an extension of the lift lobby towards the elevated void to allow more space for the circulation and unimpeded flow of office users. The amended elevated void, which varies from approximately 21m at its widest to 16m at its narrowest, with a void height maintained at approximately 13.4m, was approved in the Approved S16A Scheme (Application No. A/H7/181-2).

Integration of GIC Facilities with Public Open Space

4.4.12 The GIC facilities required under the OZP, namely the CCC, DE and the DHC, will be provided at the podium of Tower 3 at G/F to 1/F. It could be easily accessed from the street level at G/F or from the Landscape Bridge. Drop-off, L/UL and parking for these three GIC facilities are provided at B2/F of Tower 3 with direct disabled access to the GIC facilities.

4.4.13 There are minor level changes of the GIC facilities in the Approved S16A Scheme compared to the Approved S16 Scheme. The lowest floor will be slightly raised from +4.10mPD to +5.70mPD to flush with the adjoining street level. This will result in the levels of all three floors being raised by 1.6mPD. The lowest storey is thus renamed as "G/F" with the subsequent floor as "UG/F". The maximum height of Tower 3 at +90mPD will remain unchanged as per the Approved S16 Scheme. This change will improve pedestrian access to the GIC premises and will mean that the staircase between G/F and 1/F

in the Approved S16 Scheme can be omitted. This will also help to enhance the barrier-free access and facilitate a more welcoming access especially for children and the elderly.

4.4.14 The 3-storey GIC complex will be well-integrated with the POS and green landscape. POS areas incorporated into G/F, UG/F and 2/F of Tower 3 will feature landscaping and vertical greening, including green walls adorned with climbers, to create an inviting entrance to the upper ground floor lobby. With additional POS being integrated throughout the area, the visitor experience and social interaction can be enhanced.

4.4.15 The levels of POS were at +5.60mPD on G/F, +8.60mPD on UG/F, and +12.30mPD on 1/F under the Approved S16 Scheme. Compared with the Approved S16 Scheme, a portion of the POS is sunken to be located at +10.20mPD on UG/F of Tower 3, connecting the POS at +5.70mPD on G/F under the Approved S16A Scheme. Throughout the previous liaison with relevant departments, it was advised that the design should be updated to allow for more natural daylight into the GIC facilities. Therefore, a strip of POS will be carved out surrounding the GIC facilities to maximise the window frontage (**Figure 4.20d** refers). Sufficient windows and natural daylight will be allowed at both eastern and western sides of the GIC facilities (**Figures 4.20a to 4.20d** refer). Under the Approved S16A Scheme, the middle levels of the POS are now referred as UG/F. Therefore, the design intent remains unchanged compared to the Approved S16 Scheme in that pedestrians will be connected via POS from 2/F to street level (**Figure 4.17** refers).

4.5 CURRENT SCHEME – VEHICULAR / PEDESTRIAN CIRCULATION AND INTERNAL PARKING PROVISION

Vehicular Access Arrangement

4.5.1 Two vehicular accesses are proposed for the Project, located at the eastern and western portion of the new internal access road. To facilitate better traffic operation, the western vehicular access will mainly serve ingress and egress of private cars and taxis only. The eastern vehicular access will mainly serve light buses, goods vehicles as well as providing for the layby and parking spaces for the Tower 3 GIC facilities. The vehicular ingress and egress routes, as well as the vehicular access arrangements for the Project are shown on **Figures 4.21a and 4.21b**.

Internal Vehicular Circulation and Parking Provision

4.5.2 Off-street pick-up/drop-off laybys for private cars and taxis will be provided at G/F via the western vehicular access. Four light bus lay-bys will be located at B1 and the laybys can be accessed via the eastern vehicular access. Except for the one loading/unloading bay located at G/F to serve special operational needs, the ancillary loading/unloading area will be provided at B2. The public vehicle park for coaches and goods vehicles, the lay-by, car parking spaces and loading/unloading area for the Tower 3 GIC facilities will be provided at B2/F. The public vehicle park for private cars will be provided at B3/F whilst an ancillary car park will be located at B3 – B5/F.

4.5.3 The internal parking provision is summarised in **Table 4.2** above. The Remarks of the Notes of the OZP under the "C(2)" zone stipulate that a public vehicle park of not less than 125 parking spaces should be provided in the Application Site. The Explanatory Statement of the OZP (para 8.1.3) states that an underground public vehicle park with not less than 100 private car parking spaces and 25 commercial vehicle vehicles parking spaces shall be provided. **Table 4.2** demonstrates compliance with these requirements in the OZP.

4.5.4 The internal traffic arrangement for private cars including the access to the lay-by for GIC facilities located at B2/F as required under the OZP is shown on **Figure 4.22a**. The internal traffic arrangement for light buses, goods vehicles and coaches is shown on **Figure 4.22b**.

Pedestrian Circulation

4.5.5 Multi-level pedestrian links and walkway system accesses are proposed in this Project to enhance pedestrian accessibility. The proposed Landscape Bridge at 2/F acts as an important route providing a seamless weather-proof, barrier-free and grade-separated pedestrian connection between the Edged Blue and Edged Red Sites in the Application Site and to Lee Garden Six. This will create a continuous elevated deck connecting the various commercial and GIC facilities in the Application Site with the future pedestrian walkway system at the Lee Gardens area and then leading on to Causeway MTR Station. This is a great benefit to the public especially for visitors (e.g. children, the elderly and disabled) to the GIC facilities at the Edged Red Site of the Application since it is a safer and more direct pedestrian route than crossing the new internal access road. At-grade pedestrian accesses will be provided at the street levels of Leighton Road, Caroline Hill Road and pedestrian link will be provided at the new internal access road between the Application Site and the District Court site. Vertical pedestrian links by means of ramps, escalators, lifts and stairs will be provided to connect the elevated pedestrian link at podium level with the public and community facilities (i.e. POS, the light bus lay-bys, public vehicle park and GIC facilities in Tower 3), and the main accesses of buildings and pedestrian accesses at street level. The proposed pedestrian connections and circulation routes are indicated in **Figures 4.16 and 4.17**.

4.5.6 In addition, as required by Para 8.1.3 of the Explanatory Statement of the OZP, a potential subway connection will be reserved at B3 near the northern corner of the Application Site for a potential future pedestrian subway by the Government. Should the potential subway be realised, passenger's lifts and other vertical circulation will be provided at the entrance of the subway at B3/F - with a suitable internal layout - to bring pedestrians to the upper commercial floors such that there is no cross traffic between vehicles and pedestrians.

4.5.7 As aforementioned in **Table 1.1**, to comply with the approval Condition (a) under the approved Section 16 application (No. A/H7/181), the design and provision of vehicular access, car parking and loading/unloading facilities for the proposed development was submitted in the General Building Plans (GBPs) on which Transport Department has been consulted. The latest revision of the GBPs has been approved by Buildings Department on 5 March 2025 (**Annex A-4**).

4.6 CURRENT SCHEME - URBAN DESIGN PROPOSAL

Urban Design Context

4.6.1 Key urban design considerations of the Project include the following:

- Compatibility with the surroundings in terms of the scale, massing, and outlook;
- Physical and visual connectivity with the surroundings;
- Respect for and integration with the existing natural and cultural context, in particular the OVT abutting Leighton Road and the graded heritage walls; and
- Provision of a visual corridor between the OVTs on Leighton Road and at the future District Court Site.

4.6.2 In terms of the urban design context, areas to the north of the Application Site from Hysan Avenue to Hennessy Road are predominantly commercial developments and an internationally-reputed shopping district. The said areas are at all times busy at the street level. Areas to the south of the Application Site are mainly GIC facilities including many of the large-scale recreational grounds of the central urban districts of Hong Kong Island, such as the South China Athletic Association (SCAA), Indian Recreational Club, Hong Kong Cricket Association, and Hong Kong Stadium. They are, except for Hong Kong Stadium, mostly private clubs and offer a relatively tranquil environment. The areas immediately surrounding the Application Site are a mixture of the above two uses. There are several Grade A commercial offices to its immediate north of the Application Site such as Lee Garden Six and the Lippo

Leighton Tower. The Po Leung Kuk complex is at its immediate west and behind it, the high-end residential complex of Leighton Hill. To its immediate east along Leighton Road and Caroline Hill Road East are a continuous row of old tenement buildings (tong lau) whose street-level shops mainly serve the surrounding neighbourhood, and which include small restaurants and cafés. To its immediate south is the future District Court site. Leighton Road and the commercial Project therefore act as an edge that naturally delineates the hustle and bustle of northern Causeway Bay and the tranquil GIC zones around Caroline Hill Road.

4.6.3 The Application Site itself contains two features that contribute to the unique character and cultural context of the urban landscape. A large *Ficus elastica* OVT (Registration No. LANDSD(LEASED) WCH/1) abutting Leighton Road has a canopy that spreads some 40 metres over the road although the tree sits on only a 3.5m-wide existing slope. The tree stands on an existing masonry wall. The wall extends along the whole length of the Leighton Road boundary and Caroline Hill Road at the eastern boundary of the Application Site where part of it includes earthenware pipes on it which are a graded historic structure. There is another OVT (No. JUD WCH/1) at the south side of the Application Site within the proposed District Court site with part of the TPZ falling within the Application Site. This will be duly considered in the interfacing design. Relevant tree submissions such as Tree Preservation and Removal Proposal, detailed arboricultural assessment and method statements according to DEVB TC(W) No. 5/2020 as well as the Tree Protection Plan of the OVT JUD WCH/1 were made accordingly for any construction works or works area within the TPZ of the concerned OVT. Coordination with the District Court site such as design interface, sequence of works, protective measures and monitoring during construction etc. shall be conducted.

Urban Design Proposal

4.6.4 In terms of compatibility with its urban context, the scale of the commercial Project is compatible with the surrounding areas, with its maximum height set at 135mPD, the same as the commercial development to its north and the future District Court development to its south. A footbridge will be constructed to connect Lee Garden Six across Leighton Road to the podium level at approximately +18.70mPD in the Application Site. The footbridge offers a diversion for pedestrians from the existing busy Leighton Road, for a safer and more comfortable access to the various parts of the Project and completes an important part of the above-ground pedestrian network from Causeway Bay MTR Station to this area. **Figures 4.23a and 4.23b** depict the urban design analysis for the proposed Layout Plan.

4.6.5 Under the OZP and the Lease, it is stipulated that a POS of not less than 6,000m^2 shall be provided. The POS will comprise two portions. The first portion is a Banyan Garden and entrance plaza accessible from Leighton Road with its entry at the western side of the OVT, which is close to the existing pedestrian crossing on Leighton Road, outside the south-west corner of the Lippo Leighton Tower for the convenience and safety of pedestrians. A 24 hour-pedestrian walkway runs along the Banyan Garden, with an internal street creating a visual corridor between the two OVTs (LANDSD(LEASED) WCH/1 & JUD WCH/1), and enhancing both the physical and visual connection between them. The second portion is the POS at 2/F and UG/F and the associated POS surrounding the GIC facilities. It serves as the core of the POS, extending from the future footbridge connecting to Lee Garden Six across the Application Site to Tower 3. Details of the disposition and design of the POS are covered in **Section 4.7**. The disposition of the POS is shown in Appendix E under **Annex C**.

4.6.6 The OVT and the Grade 3 historic structure (the masonry wall and associated earthenware pipes) which contribute to the unique character to the surroundings are well respected in terms of visual connectivity through the creation of the Banyan Garden. A tree cluster situated on the masonry wall abutting the corner of Leighton Road and Caroline Hill Road East adds to the unique character to the surroundings. As such, the OVT and the tree cluster situated on masonry walls are to be preserved in-situ as far as practically possible. The detailed tree treatment proposal is further elaborated in **Annex**

C.

4.7 CURRENT SCHEME - LANDSCAPE PROPOSAL

Landscape Design and Open Space Provision

4.7.1 As aforementioned in **Table 1.1**, to comply with the approval Condition (b) under the approved Section 16 application (No. A/H7/181), the submission of a revised Landscape Master Plan (LMP) for partial compliance with this approval condition has been accepted by the Director of Planning on 12 August 2022 (**Annex A-5**). The 1st amendment submission of the LMP, tallying with the latest GBP submission was submitted to Planning Department on 10 January 2025. Full compliance with this approval condition rests upon the implementation of the approved LMP (which has not yet been achieved) to the satisfaction of the Director of Planning or of the TPB.

4.7.2 The LMP for the Current Scheme is shown in **Figures 4.3 and 4.24a to 4.24b**, as well as Appendix C under **Annex C**. Based on the unique character of the Site identified in the urban design analysis, landscape design should embrace on the one hand, this part of Causeway Bay to the north as having a higher-end commercial and retail character, but on the other hand, it should respect the tranquillity of the neighbourhood to its south. The key distinctive features: that is, the OVTs and the masonry wall, as well as the trees situated on the masonry wall will be integrated into the landscape design alongside the functional and aesthetic requirements of the Application Site. In addition, a variety of landscape elements will be strategically placed throughout the area to create a harmonious blend between the building and its surroundings. Landscaping and vertical greening within the POS areas at G/F, UG/F and 2/F of Tower 3 is designed to provide a green wall with climbers to create a welcoming entrance to the tower lobby. Greenery area is provided at R/F of Tower 3.

4.7.3 In the future post-pandemic era, functional open space will be one of the most valuable assets to public. The Landscape Bridge across the internal access road can increase the external site capacity and provide high-quality and safe open space to the public. In total a minimum POS provision of at least 6,000m^2 will be provided as required by the Remarks of the Notes of the OZP under the "C(2)" zone.

Banyan Garden at G/F

4.7.4 The OVT, perched atop a historic masonry wall 2 to 3 metres above Leighton Road, stands as a prominent natural landmark in the urban fabric. Its expansive canopy and aerial roots extend nearly 40 metres along the street, forming a green threshold between city and nature. The proposed Banyan Garden, entrance plaza, and internal street at G/F level, covering approximately 2,835m^2 will form a vital pedestrian linkage, connecting Leighton Road to an interim platform at +8.9mPD and ultimately to the Landscape Bridge at +18.75mPD (i.e. finished floor level).

4.7.5 The Banyan Garden is conceived as a restorative civic space that celebrates and safeguards the OVT while offering a dynamic public realm. Informed by expert input from the independent tree specialist, the Current Scheme significantly improves the tree's long-term growing conditions through the expansion of the rooting zone from the current 3.5-metre-wide strip to a total soil width of approximately 19 metres. This includes the addition of a subterranean soil crescent beneath the plaza, filled with uncompacted, fabricated soil mix within modular soil cell systems to facilitate healthy root development.

4.7.6 The Banyan Garden represents a refined integration of ecological infrastructure and urban design. By merging technical tree rehabilitation with multifunctional public use, the scheme creates a layered landscape that serves both environmental and social needs. The information related to tree protection measures for the OVT, as outlined in this section and throughout the submission, is for PlanD's reference and subject to detailed design.

Public Open Space at 2/F and UG/F

4.7.7 A total area of approximately 3,165m^2 comprises the remaining portion of the POS at 2/F and UG/F, with a minor portion at 1/F. The POS at 2/F podium is designed to let visitors escape from the hustle and bustle of Causeway Bay and enjoy a moment of tranquillity. At the same time, this is designed to respect the existing natural and cultural context. A number of existing trees on site will be transplanted and brought back to the POS at 2/F and UG/F. This area will provide open lawns for multi-use purposes by groups or individuals. Within the 2/F podium, a small area will be designated for non-POS use, namely the Event Plaza. The public can still access and use the space most of the time, except during special events when temporary barriers will be erected along the perimeter of this area. A unified landscape design will be adopted for the entire open space at 2/F regardless of whether it is a POS or non-POS area. This approach aims to achieve an integrated design and provide high-quality open space for public enjoyment, without any physical barriers. There will not be any physical barriers between the two spaces but clear demarcation will be implemented between the POS and private open space, such as a metal strip to be installed in between, and incorporating a different paving colour and material. Detailed paving design will be further developed at a later stage.

4.7.8 The Landscape Bridge featuring a transparent cover will allow its primary users - being elderly, young children and patients travelling to Tower 3 GIC facilities, access to carefully design natural elements and biophilic design, which is beneficial to ensure health and welling as recommended by the World Health Organization, accelerating recovery rates, reducing stress and enhancing the mental relaxation of the GIC users and public. Additionally, quality landscape and greenery will be strategically placed throughout the Covered Landscape Bridge. An internal headroom of approximately 6m and ample sunlight will be provided by the transparent cover.

4.7.9 According to WELL standards, creating space for physical activity is important for encouraging physical movement and fostering a healthy lifestyle and their standards suggest that a minimum space of 1,860m^2 is required for the Project. The Landscape Bridge connected to the covered POS under Tower 3 can contribute to this purpose. Apart from the area, the quality and usability of the POS is crucial. Innovative devices and ideas for smart microclimate control in the covered parts of the Landscape Bridge are to be incorporated to increase its usable period.

4.7.10 The POS at G/F Banyan Garden and 2/F podium will be accessible to the public 24-hours a day with barrier-free access. To cater for the heavy pedestrian flows and at the same time provide a natural urban environment, there will be an appropriate balance between hard (paved) and soft (planted) landscape.

Tree Preservation and Removal Proposal

4.7.11 In the Landscape Master Plan, 15 existing trees - including the OVT (LANDSD(LEASED) WCH/1) situated on and/or abutting the masonry retaining walls – are to be retained at their original locations. Four trees are suitable for transplanting and will be transplanted out of and back to the Project. Among the trees to be transplanted, five trees have unexpectedly failed since the approval of the planning application (No. A/H7/181), due to natural events and causes, including typhoons. Proposed permanent receptor sites for transplanted trees have been identified at the site entrance at Leighton Road and at the podium (2/F) within the Lot boundary.

4.7.12 There are 38 trees assessed as not being feasible for transplanting / relocation, and these are to be felled, with compensation tree planting being provided. These include two *Michelia* x *alba* trees which are a species protected under the Forests and Countryside Ordinance (T31 and T33). The detailed treatment of all trees and justifications of tree felling is further elaborated in **Annex C** and summarised in **Table 4.4**.

Table 4.4: Summary of Tree Recommendation

Recommendation	Nos. of Trees under Current Scheme (Remains Unchanged compared to the Approved S16A Scheme (No. A/H7/181-2))
Tree to be retained	15
Tree to be transplanted	4
Tree to be felled	38
Total (Existing Trees within Site Boundary)	57

Compensatory Tree Planting

4.7.13 The compensation ratio of felled trees will be not less than 1:1 in terms of quantity, in accordance with LAO PN No. 6/2023.

4.7.14 In order to compensate for the loss of trees within the Lot, 38 high quality Heavy Standard trees are to be planted alongside the western sections of Caroline Hill Road, and at the podium level (2/F). The compensatory ratio in terms of number will be at least 1:1 and in terms of diameter at breast height (DBH) will be at least 1:0.13. Besides, in accordance with the Lease, 22 nos. of additional trees shall be planted with the Lot apart from the retaining trees, transplanting trees, as well as compensatory trees. The additional trees are referred to as "new trees". A summary of the compensatory/ new tree planting ratio is presented in **Table 4.5**. A detailed proposal is further presented in **Annex C**.

Table 4.5: Compensatory Planting Ratio

Compensatory Metrics	Statistic / Ratio under Current Scheme (Remains Unchanged compared to the Approved S16A Scheme (No. A/H7/181-2))
Nos. of felled trees	38
Aggregated total DBH of felled trees	19,885mm
Nos. of compensatory trees	38 (Heavy standard DBH: 75mm)
Total aggregated DBH of compensatory trees	2,850mm
Compensatory Planting Ratio (by number)	1:1
Compensatory Planting Ratio (by DBH)	1:0.14
New Trees (stipulated under Lease)	22

4.7.15 In the Approved S16 Scheme, compensatory/ new trees were proposed to be planted alongside the eastern and western sections of Caroline Hill Road (G/F), and at the podium level (2/F). During the detailed design and site coordination stages, it has become clear that it is unavoidable to locate a series of underground utilities and structural works at G/F level. As such, there is insufficient space available for planting new trees. The infrastructure features and technical reasons for this are as follows:

- Terminal manhole which the setting out and invert levels are controlled by the city main;

- Basement smoke vents which are required to be distributed along basement wall below as prescribed under building code; and
- Over 60% (72m out of 120m) of the frontage facing Leighton Road is occupied by OVT LANDSD(LEASED) WCH/1 and the retained masonry wall, and it is therefore unavoidable to arrange most E&M openings and installation at G/F level.

4.7.16 To maintain the number of trees committed to in the Approved S16 Scheme, some of the new trees (originally at G/F) will therefore be relocated to the open space on the 2/F where major pedestrian flows from the Lee Gardens area through the elevated walkway system is anticipated, so as to ensure public enjoyment of the trees. Such amendment was reflected in the Approved S16A Scheme.

4.8 CURRENT SCHEME - TREATMENT OF HERITAGE FEATURES

4.8.1 The masonry walls around the Application Site are one of the features that define the character of the Application Site and contribute to its significance. The walls are also an important part of the streetscape. The Grade 3 historic structure, including the existing graded masonry walls and two earthenware pipes in their entirety will be kept, conserved and preserved as required under the lease in this Project proposal.

4.8.2 In accordance with the Explanatory Statement of the OZP, prior consultation was conducted with AMO and it is confirmed with AMO that there will be no alteration to the masonry walls and earthenware pipes, except for any necessary structural strengthening works required to fulfil relevant statutory requirements.

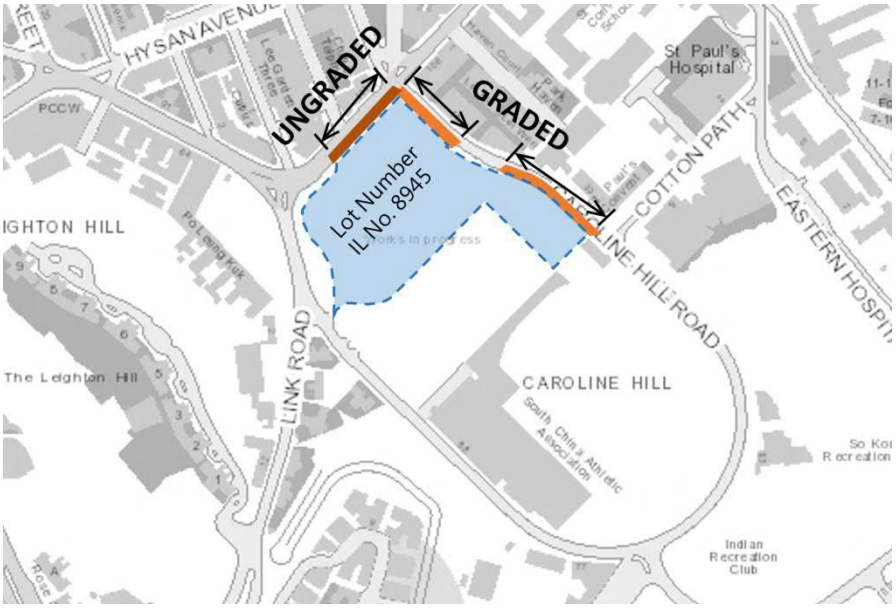


Figure 4.25: Plan Showing the Graded and Ungraded Parts of the Masonry Walls Required to be Preserved

5 Technical Assessments

5.1 INTRODUCTION

5.1.1 The following is a summary of technical assessments carried out for the Approved Layout Plan, where necessary with minor updates in the reports of Air Ventilation Assessment (**Annex D**), Drainage Impact Assessment (**Annex E**), and Sewage Impact Assessment (**Annex F**) to account for the Current Scheme.

5.2 SUMMARY OF AIR VENTILATION ASSESSMENT

5.2.1 An Air Ventilation Assessment – Initial Study (**Annex D**) was carried out for the Baseline Scheme (i.e. the Approved S16 Scheme) and the Approved S16A Scheme (No. A/H7/181-2) (i.e. remains the same as the Current Scheme).

5.2.2 Under this Current Scheme, several wind enhancement features are provided, including:

1) T1 -15m setback from the building edge for elevated design on G/F with 15m (W) x 8.5m (H);
2) T2 - building setback of min. 36m from north-eastern site boundary above 2/F;
3) T3 – Approximately 16~21m width and 13.4m height elevated design with additional void of approximately 5m width and 8.4m height above extended lift lobby of T3 on podium level;
4) T1 – building setback of approximately 5m on average from the south-western boundary;
5) T2 - building setback of 4m at grade from north-eastern boundary;
6) T3 - building setback of 7.5m above 2/F from south-western boundary abutting the district court site; and
7) T1 - min. 6m internal street of T1 on G/F.

5.2.3 The results of the assessment demonstrate that the ventilation performance will be similar under the Baseline and the Current Schemes under both annual and summer wind conditions.

5.2.4 Findings of the Air Ventilation Assessment – Initial Study are contained in **Annex D**.

5.3 GEOTECHNICAL PLANNING REVIEW

5.3.1 A Geotechnical Planning Review was conducted for the proposed Application Site at Inland Lot No.8945 in accordance with "GEO Advice Note for Planning Applications" (GEO, 2007) and was approved under previous planning submission (No. A/H7/181). There is no update further to the approved Geotechnical Planning Review Report, since there is no change in geotechnical view under this planning submission.

5.3.2 The approved Geotechnical Planning Review report (**Annex H**) (under previous planning submission) demonstrated that the proposed Project is geotechnically feasible.

5.4 DRAINAGE IMPACTS

5.4.1 A Drainage Impact Assessment (**Annex E**) was conducted for the proposed Application Site at Inland Lot No.8945.

5.4.2 Since the total surface runoff for the Current Scheme will be reduced with enlarged landscape area when compared with the existing case, the peak runoff to the existing branch of drainage pipe along Leighton Road should also be reduced and should be beneficial to the existing drainage system. Therefore, it is concluded that there would be no impact to the existing drainage system as a result of the Current Scheme. The Drainage Impact Assessment will be kept updated to be in line with the construction work on site for DSD review.

5.5 SEWERAGE IMPACTS

5.5.1 A Sewerage Impact Assessment (**Annex F**) was conducted for the proposed Application Site at Inland Lot No.8945.

5.5.2 The peak sewage flow from the Current Scheme is slightly increased from 67.58 L/s to 67.74 L/s. The assessment results demonstrated that the existing public sewerage system serving the Application Site has sufficient capacity to carry the estimated sewage from the Current Scheme, and hence, the development will cause no impact to the existing public sewerage system. The Sewerage Impact Assessment will be kept updated to in line with the construction work on site for DSD review.

5.6 TRAFFIC IMPACTS

5.6.1 A Traffic Review Report (TRR) (**Annex G**) to assess the potential traffic impact due to the proposed development at the Application Site with a total GFA of 102,000m^2 was submitted and approved by Transport Department in year 2022. The approved TRR concluded that the surrounding road network with implementation of the proposed road scheme at the Green Areas and a new internal access road between the Application Site and the District Court site will be adequate to serve the future traffic demand upon the completions of the Project.

5.6.2 Since the total GFA of the proposed development is the same (i.e. 102,000m^2) while the adjustment to the parameters of office and GIC facilities is very minor, there will be no apparent increase in the overall traffic induced by the proposed development when compared to the Approved S16 Scheme (No. A/H7/181) as assessed in the approved TRR. Therefore, the conclusion as drawn from the previous approved TRR is still valid.

5.7 AIR QUALITY IMPACTS

5.7.1 There are no polluting uses such as industrial buildings or trunk roads near the Application Site, and hence, it is expected that there will be no air quality impact to the site. In addition, the buildings within the site will comply with requirements of the HKPSG.

5.7.2 The project team will observe all relevant environmental protection ordinances and requirements and implement pollution control measures to minimise any potential environmental impact/nuisance during construction stage.

5.8 NOISE IMPACTS

5.8.1 Although openable windows will be provided at some commercial and government, institution and community areas within the Project in order to meet the requirements under the Buildings Ordinance, during normal operation, centralized heat, ventilation and air conditioning system or split type air conditioning units, and mechanical ventilation will be provided as the primary source of providing ventilation for the spaces. Hence, it is expected there will be no adverse noise impact on the proposed Project.

5.8.2 The project team will observe all relevant environmental protection ordinances and requirements and implement noise control measures to minimise any potential environmental impact/nuisance during construction stage.

5.9 CONSERVATION MANAGEMENT PLAN

5.9.1 The Conservation Management Plan (CMP) for Grade 3 Masonry Walls and Earthenware Pipes (**Annex I**) was prepared and submitted to AMO in accordance with Special Condition Clause 3(b) of the Conditions of Sale No. 20379. As aforementioned in **Table 1.1**, this submission of the CMP serves as partial compliance with the approval Condition (c) under the approved Section 16 application (No. A/H7/181) and has been accepted by the AMO on 18 July 2022 (**Annex A-6**). Full compliance with this approval condition rests upon the implementation of the mitigation measures identified in the CMP before commencement of works (which is still ongoing and has not yet been achieved) to the

satisfaction of the Commissioner of Heritage or of the TPB.

5.10 WATER SUPPLY IMPACTS

5.10.1 To be in line with Government's Fresh Water Cooling Towers Scheme (FWCT Scheme), fresh water cooling towers are proposed to be used in this project which is within the Scheme Designated Area of Causeway Bay (3) (**Annex J**).

5.10.2 Regarding the FWCT Scheme for the proposed development, the corresponding calculation of daily water demand (Potable and AC make up water) and residual head for proposed new DN200 freshwater main was conducted to demonstrate that the water supply impact on the fresh water demand is acceptable. It has been concluded that a Water Impact Assessment is not required. Supplementary information was prepared by the consultants and was received by WSD on March 2024 with no further comment from them (**Annex J**).

5.10.3 The WWO542 approval for potable water and flushing water supplies on October 2023 included the water demand of the FWCT Scheme with lead-in pipe sizes of dia. 150mm. The fresh water demand for the whole development including the capacity for FWCT was calculated and is considered sufficient.

5.10.4 The proposed new DN200 freshwater main will be in a loop system to be connected to the existing DN450 freshwater main at Leighton Road and the existing DN150 freshwater main at Caroline Hill Road East near Lei Kwa Court. The approximate pressure head as advised by WSD will be 80m at the DN450 freshwater main at Leighton Road and 70m at the DN150 freshwater main at Caroline Hill Road East near Lei Kwa Court. The residual head along the proposed DN200 freshwater main during peak flow condition will have sufficient residual head of more than 20m which fulfils the minimum requirement advised by WSD.

5.11 LANDSCAPE IMPACTS

5.11.1 A total of 57 trees, including OVT (LANDS(LEASED) WCH/1), were recorded within the site. Some trees will be unavoidably affected by the proposed works, including the construction of commercial towers, a Public Open Space, GIC facilities, vehicular access, and associated infrastructure. In addition, several trees were removed under the Emergency Tree Felling Procedure, with reports submitted to the Lands Department accordingly.

5.11.2 A total of 38 trees are proposed to be removed, while 15 trees, including the OVT (T69), are recommended to be retained in-situ, and 4 trees are proposed for transplanting. To mitigate natural loss, 60 trees are proposed for planting within the site, including 22 additional trees as stipulated in Clause 13(m) under the Lease of Inland Lot No. 8945.

5.11.3 As such, no significant landscape impact is anticipated for this Project. A detailed assessment of impacts on existing landscape resources and the proposed mitigation measures (compensatory planting) is provided in **Annex C** (Landscape Master Plan).

6 Planning Justifications

6.1 COMPLIANCE WITH DEVELOPMENT PARAMETERS AND OZP REQUIREMENTS

6.1.1 As shown in **Table 6.1** below, the Layout Plan for the Current Scheme complies in all material respects with the development parameters and planning intention for the "C(2)" zone as stated in the OZP, with due consideration to the unique circumstances of the Application Site.

Table 6.1: Development Restrictions under "C(2)" Zone of the Approved Wong Nai Chung OZP No. S/H7/21 and the Relevant Sections of this Layout Plan Submission

Development Restrictions	OZP / Notes Requirements	Explanatory Statement Requirements	Relevant Planning Statement Sections
GFA	100,000m^2 (including the GFA of GIC facilities as required by the Government)	▪ No more than 10,000m^2 shall be allocated to retail uses, with due consideration of the traffic capacity in the area	**Table 4.1; Sections 4.3**
GIC Facilities		▪ District Health Centre with Net Operating Floor Area of about 1,000m^2 ▪ Child Care Centre with a Net Operating Floor Area of about 531m^2 ▪ Day Care Centre for the Elderly with a Net Operating Floor Area of about 358m^2 ▪ Project proponent is encouraged to provide more GIC facilities taking into account the current deficit in Wan Chai District ▪ Performing arts and cultural facilities are also compatible uses in the "C(2)" site	**Table 4.1;** Floor Plans at **Annex B**
Building Height (BH)	Maximum 135mPD	/	**Table 4.1;** Section at **Annex B**
Public Transport Facility	A public transport facility for minibuses shall be provided	A public transport facility for minibuses (underground) shall be provided	**Table 4.1;** B1 Plan at **Annex B**
Internal Transport Facilities	A Public Vehicle Park (PVP) of not less than 125 parking spaces shall be provided	A public car park (underground) of not less than 100 private car parking spaces and 25 commercial vehicle parking spaces shall be provided	B1 to B5 Floor Plans at **Annex B**
Public Open Space	Not less than 6,000m^2	▪ Design of the open space should be well integrated with the facilities	

Development Restrictions	OZP / Notes Requirements	Explanatory Statement Requirements	Relevant Planning Statement Sections
		provided and be user friendly and easily accessible ▪ Should be designed as a quality place for the public to interact and enjoy the built environment and its special features, including the Old and Valuable Trees (OVTs) and stone retaining walls ▪ To enhance visual openness and to ensure easy accessibility by public, the open space shall be provided in the eastern portion facing Caroline Hill Road and at-grade in the northern portion fronting Leighton Road	▪ Landscape Master Plan at **Annex C** ▪ Urban Design Proposal at **Section 4.6** and figure for urban design analysis at **Figures 4.23a and 4.23b**
Urban Design/ Landscape/ Tree Preservation	Submission of Landscape and Urban Design Proposals	▪ Landscape submission required under Lease ▪ The OVT (No. LANDSD(LEASED) WCH/1) shall be preserved with sensitive protection method throughout the development process ▪ Existing trees found within the site and trees situating on and/or abutting the stone retaining walls shall also be preserved as far as possible ▪ Preservation of stone retaining walls along the northern and eastern peripheries of the site (except the portions being affected by the road improvement works) ▪ Podium-free design is encouraged with a view to maximising the opportunities for at-grade greening, tree preservation and enhancement of air ventilation at pedestrian level	▪ Landscape Proposal at **Section 4.7** ▪ Approved CMP at **Annex I**
Air Ventilation Assessment (AVA)	Submission of AVA	▪ According to the findings of AVA 2018, a clear building gap of not less than 25m in width across the central portion of the site (assuming podium-free design) in a northwest-southeast direction involving the OVT (No. LANDSD(LEASED) WCH/1) shall be provided to facilitate better air ventilation in the area.	AVA at **Annex D**

Development Restrictions	OZP / Notes Requirements	Explanatory Statement Requirements	Relevant Planning Statement Sections
Pedestrian Connections	/	The future developer shall reserve an underground connection point within the Application Site for the possible pedestrian subway to MTR Station which is subject to further feasibility study	B3 Plan at **Annex B**

6.1.2 The proposed Project set out in this application, contains a number of significant planning merits. These and other considerations are described below.

6.2 ENHANCED CULTURAL, PUBLIC OPEN SPACE AND APPEAL OF LANDSCAPE TO CREATE VIBRANT URBAN REALM

6.2.1 With more than 100 years of curating the physical and social dimensions of the Lee Gardens Area, the Applicant has been continuously committed to placemaking to connect the development with the surrounding neighbourhoods in Causeway Bay. The proposed development, forming a new large-scale strategic project located within the Lee Garden area, is envisioned to establish a new green landmark in Causeway Bay and create a new benchmark for future urban environment. Adopting a cultural placemaking approach at the provision of POS will play a vital role in attracting more footfall to the proposed development and creating a vibrant urban realm in the neighbourhood.

6.2.2 As required by the Explanatory Statement of the OZP, a minimum of 6,000m^2 of POS will be provided as part of the Project. Also as required by the Explanatory Statement of the OZP, much of this space will be provided on the eastern side of the Application Site. In contrast to the design of the POS in the rezoning application for the site, the POS which is open to public 24 hours a day, in the Layout Plan is an integrated open space network that is not fragmented by the intervening internal road.

6.2.3 As discussed in **Section 4.7**, the POS will comprise two portions. The Banyan Garden, entrance plaza, and internal street at G/F, covering a total area of approximately 2,835m^2, will be included in the POS (Appendix E of LMP under **Annex C** refers). This portion will serve as a connection for pedestrians traveling from Leighton Road to the interim platform.

Enhanced Cultural Placemaking at Banyan Garden at G/F

6.2.4 The Banyan Garden is designed not only to preserve the OVT but also to celebrate its significance as a natural and cultural landmark. By creating an immersive environment around the tree, the project invites the public to interact with and appreciate its beauty, fostering a deeper connection between the community and nature.

6.2.5 The Banyan Garden is conceived as a restorative civic space that celebrates and safeguards the OVT while offering a dynamic public realm. Informed by expert input from the independent tree specialist, the Current Scheme significantly improves the tree's long-term growing conditions through the expansion of the rooting zone from the current 3.5-metre-wide strip to a total soil width of approximately 19 metres. This includes the addition of a subterranean soil crescent beneath the plaza, filled with uncompacted, fabricated soil mix within modular soil cell systems to facilitate healthy root development.

6.2.6 The installation of balustrades, use of lightweight planting materials, and creation of a functional circulation area demonstrate a commitment to both tree preservation, public enjoyment and safety.

These measures ensure the OVT remains a centrepiece of the urban landscape while providing a high-quality, accessible public space for all to enjoy.

6.2.7 The current alternative design of the Banyan Garden will provide a flexible and multi-functional open space located around the OVT for non-commercial cultural and arts events, such as outdoor performances, installations and light shows for the public to enjoy. To synergize with the PACF on 5/F of Towers 1 and 2, some of the performances and cultural events will be organised by the operator of the PACF to create rich cultural experiences. It will also achieve a synergy effect with the al fresco dining and retail at G/F where the diners and the public can enjoy the unique setting of the Banyan Garden, forming a vibrant open space. It will serve as a landmark, natural heritage resource and an element of the collective memory of the public, enhancing the sense of place and stimulating a sense of identity (**Figures 4.6 – 4.7** refers).

Other Provisions of Public Open Space in the Approved S16A Scheme

6.2.8 A total area of approximately 3,165m^2 comprises a core portion of the POS at 2/F and UG/F. The open space on 2/F will integrate the Edged Blue and Edged Red sites of the Project and act as a community node to pull in pedestrian flow via the elevated pedestrian walkway. The POS at 2/F podium will be designed with various types of open spaces, including open lawn, multi-functional area and covered POS. Additional landscape elements with multiple smaller paths will be integrated into the open space at 2/F. There will be the provision of flexible and multifunctional open space at 2/F, enhancing the opportunities for chance encounters and will also diversify the use and appeal of the landscape as a whole (**Figure 4.10** refers).

6.2.9 The open space at the podium level is proposed outside the building entrances to provide maximum flexibility to users, and also to provide a sheltered area of relief from the urban density in the city. Meandering routes are designed to encourage people to walk through the greenery. Pocket spaces within these areas are proposed to encourage people to enjoy the environment. In particular, the extensive covered POS at 2/F, extending from the Landscape Bridge to Tower 3, will provide a seamless pedestrian connection with weather-proof protection. In addition, increased greenery coverage will help to mitigate the urban heat island effect. This open space area is envisioned to be busy year-round.

6.2.10 To enhance the visitor experience and encourage social interaction, the POS will be integrated throughout the area. For example, POS areas will be incorporated around T3 on the G/F, UG/F, and 2/F. These areas will feature landscape and vertical greening, including green walls with climbers, to create an inviting entrance to the Tower's upper ground floor lobby. These POS locations will provide opportunities for visitors and users to rest, gather, and enjoy the surroundings.

6.2.11 The Applicant will follow the requirements of the "Public Open Space in Private Developments Design and Management Guidelines" promulgated by the Development Bureau.

6.3 IN LINE WITH GOVERNMENT POLICY OBJECTIVES IN FOSTERING ARTS, CULTURE AND TOURISM DEVELOPMENT

6.3.1 The National 14th Five-Year Plan defined a direction and guiding policy as "shaping tourism with cultural activities and promoting culture through tourism" (page 91 – 92) to achieve the integrated development of culture and tourism. It is also stated in the Chief Executive's 2024 Policy Address to set out the Government's initiatives in promoting Hong Kong's cultural and creative industries as well as the tourism industry (para. 129 – 133).

6.3.2 In addition, the Culture, Sports and Tourism Bureau (CSTB) published the "Blueprint for Arts and Culture and Creative Industries Development" on 26 November 2024. This set out a clear vision, principles and strategic directions for the future development of the arts, culture and creative industries to further consolidate Hong Kong's position as an East-meets-West centre for international

cultural exchanges. In particular, one of the principles of the Blueprint (page 29) is to promote "market-driven development and integration of culture, sports and tourism" which encourages the private sector to participate and invest in the development of the arts, culture and creative industries. It is stated in the Blueprint (page 31) that:

"We should build a comprehensive and sustainable ecosystem for the arts, culture and creative industries, develop platforms which are conducive to industry development, and encourage the private sector's participation and support for the development of the sectors."

6.3.3 It is also stated in the Blueprint that limited venue supply has been one of the major constraints that hinder the development of arts and culture sectors on a larger scale.

6.3.4 The CSTB also published the "Development Blueprint for Hong Kong's Tourism Industry 2.0" on 30 December 2024 to enhance cultural confidence and revitalise Hong Kong tourism's industry. To instill the concept of "tourism is everywhere" in Hong Kong, in-depth integration of culture and tourism will be promoted by "bringing together traditional elements, pop culture, performing arts, cultural festivals, and innovative experiences" (page 36).

6.3.5 The Applicant shares many of the Government's policy objectives and has a strong track record in transforming Lee Gardens area into a vibrant, contemporary environment and destination, with a unique Hong Kong character, making it an attractive destination for leading multinational corporations, international visitors and local residents. The approved development demonstrates the Applicant's continuous commitment to fostering the private sector's support in developing platforms that nurture arts, culture and tourism development in Hong Kong. This approved proposal includes a 2,000m^2 PACF. The Applicant has been engaging in discussions with a potential NGO operator of the PACF, namely EXCEL, which is a subsidiary of the Honk Kong Academy of Performing Arts, to operate the facility and provide various types of cultural activities for the public to enjoy.

6.3.6 In addition to the PACF, the alternative design of the Banyan Garden at G/F does not only serve as a POS, but it also enables a flexibility that can accommodate multi-functional non-commercial uses, such as outdoor performances, arts and culture events and light shows. To synergize with the PACF on 5/F of Towers 1 and 2, some of the performances and cultural events will be organised by the operator of the PACF to create rich cultural experiences.

6.3.7 With the unique setting of the OVT and the graded masonry wall, such performances and events will present the city's rich natural and human heritage to the tourists through innovative and distinctive experiences. The creation of this flexible community space will help to cultivate visitors' and tourists' appreciation of Hong Kong's culture, thereby telling the good stories of Hong Kong. Importantly it will also respond positively to the Government's policies on culture and tourism, outlined above.

6.4 PRESERVATION OF DESIGNATED OVTS AND HERITAGE FEATURES

6.4.1 All parts of the graded masonry wall including the earthenware pipes, as well as the OVTs, will be preserved as part of the Project under the Layout Plan. For the masonry walls and earthenware pipes, as required by the Explanatory Statement of the OZP, prior consultation was conducted with AMO and they note that such features are to be preserved in-situ and that as the proposal does not pose any impact on the Grade 3 historic structure. They will be maintained as an important part of the streetscape as an expression of the history of the Causeway Bay area.

6.5 INTEGRATION OF COMMUNITY FACILITIES

6.5.1 The GIC facilities mentioned in the Explanatory Statement of the OZP are located in an integrated location together in G/F to 1/F in Tower 3. With floor space reserved for a DHC, CCC and DE, the proposed Project will alleviate the lack of social welfare facilities in Wan Chai District and fully satisfy the requirements of the OZP. The DHC at the Application Site will fulfill the Government's aspirations

of moving forward from treatment-oriented to prevention-focused healthcare, with the Wan Chai DHC at the Application Site acting as the core centre among other satellite centres in the district in the future. The provision of CCC and DE can meet the service demand of centre-based community care services for the elderly in Wan Chai District.

6.5.2 As explained in **Section 4.4**, the GIC facilities are well integrated with the POS, opening up to the green landscape and natural daylight, thereby providing a pleasant and comfortable environment for the users of the GIC facilities.

6.6 ENHANCED AIR VENTILATION THROUGH BUILDING DESIGN AND LAYOUT

6.6.1 To enhance the wind performance, the Tower 2 setback above 2/F is widened from 23m to min. 36m under the Approved S16A Scheme as well as the Current Scheme. This setback provides higher wind permeability for incoming wind especially from the podium of the proposed District Court and thereby facilitates leeward side ventilation performance.

6.6.2 The building design of the the Approved S16A Scheme as well as Current Scheme will bring enhancement to air ventilation. With the incorporation of building separation and set back, compliance with Sustainable Building Design Guidelines under PNAP-APP 152 will be ensured.

6.7 ENHANCED PEDESTRIAN CONNECTIVITY AND WALKABILITY

6.7.1 The Current Scheme will significantly enhance pedestrian connectivity within the district. The POS, which is open to public for 24 hours a day, together with the 24-hour pedestrian walkway, will connect the site from the podium level at 2/F with Lee Garden Six across Leighton Road. The fully covered and enclosed Landscape Bridge over the future internal road, which forms a part of the covered POS, provides a seamless pedestrian connection between the western and eastern parts of the Application Site, spanning the internal road and allowing easy access to the GIC facilities in Tower 3. The Landscape Bridge spanning the internal road is covered which provides a comfortable walking experience. The public using the GIC facilities and employees at the offices of Tower 3 at the eastern end of the site can reach the centre of Causeway Bay swiftly. The elevated walkway will also facilitate pedestrians to access the Application Site, extending the vibrancy of the well-established cluster of retail facilities in Causeway Bay. Pedestrians who walk to reach the re-provisioned light bus lay-bys at the Application Site will also enjoy the convenience of the walkway system.

6.7.2 With its multi-level walkway system, the proposed Project under the Layout Plan can significantly improve the walking experience in the area and promote a functional synergy between commercial heart of Causeway Bay and the Application Site.

6.8 TRAFFIC IMPROVEMENTS THROUGH ROAD IMPROVEMENT WORKS

6.8.1 With Leighton Road being a district distributor, the road junctions nearby experience high traffic volumes. During peak periods, traffic queues may tail back to the junction of Leighton Road and Yun Ping Road, resulting in traffic congestion on the wider local road network.

6.8.2 With the proposed two-way internal road connecting Caroline Hill Road (West) and Caroline Hill Road (East), access can be facilitated for the different users of the Application Site and concentration of traffic at particular neighbourhood junctions avoided.

6.8.3 The Layout Plan offers a set back at Caroline Hill Road (West) and a portion of Leighton Road near its junction with Caroline Hill Road (West) for the gazetted 'Proposed Road Improvement Works at Caroline Hill Road, Link Road, Hoi Ping Road and Leighton Road'. Detailed design of the concerned road improvement works has been submitted and approved by relevant Government departments. The road improvement works, which the Applicant has committed to under the lease, will alleviate the traffic congestion in the area and improve traffic flows.

6.9 NO INSURMOUNTABLE TECHNICAL IMPACTS

6.9.1 As demonstrated in **Section 5** and technical assessments at **Annexes D to J**, the current scheme will not create any adverse drainage, sewerage, noise, air quality, water supply, geotechnical, traffic or air ventilation impacts.

6.9.2 As such, the Project under the Layout Plan for the Current Scheme will not result in any insurmountable technical impacts.

7 Implementation

7.1 PROGRAMME AND PHASING

7.1.1 The construction completion of the Project under the Layout Plan for the Current Scheme, as well as under the Lease, remains the same as that in the Approved Layout Plan, i.e. Q3 of 2029.

7.1.2 The new internal access road and the associated road improvement works (the gazetted 'Proposed Road Improvement Works at Caroline Hill Road, Link Road, Hoi Ping Road and Leighton Road') will be completed by the Applicant by 30 June 2026.

7.1.3 The required GIC facilities including the CCC, DE and DHC, will also be available for occupation and operation by 30 September 2029 as required under Lease.

7.2 RESPONSIBILITY FOR CONSTRUCTION AND MANAGEMENT

7.2.1 As required under Lease, the POS (including the landscape bridge and its relevant structural supports) and public vehicle park will be constructed, operated and maintained at the Applicant's cost.

7.2.2 The proposed internal road will also be constructed and maintained at the Applicant's cost until it is surrendered to the Government as required under the Lease. Requirements under the Transport Planning and Design Manual (TPDM) will be observed and associated details will be submitted to HyD and relevant Government departments for approval.

7.2.3 The Applicant will construct the CCC, DE and DHC in accordance with the Technical Schedule under Lease and other relevant regulations and guidelines.

7.2.4 The light bus lay-bys constructed at the Applicants' cost will be accessible to the public 24 hours a day as required under Lease.

7.2.5 The detailed design of structural features, utilities, drainage, etc. as well as necessary regulatory and Lease submissions will be made in the future at the appropriate point in time.

8 Conclusion

8.1 SUMMARY

8.1.1 This Application presents the proposed Current Scheme Layout Plan for the Commercial Project on Caroline Hill Road, Causeway Bay. As with the Layout Plans previously approved by TPB (the Approved S16 Scheme' and the 'Approved S16A Scheme'), this Current Scheme proposed by the Applicant:

- fulfills the requirements of layout plan submission under Remarks of the Notes of the "C(2)" zone on the approved Wong Nai Chung OZP No. S/H7/21;
- complies with material requirements and development parameters of the approved Wong Nai Chung OZP No. S/H7/21;
- preserves designated features of historical and natural value located on the site;
- results in an enhanced provision and distribution of POS;
- aligns with Government policy objectives in fostering arts, culture and tourism development;
- enhances air ventilation through building design and layout;
- enhances pedestrian connectivity to the surrounding area and walkability in the wider area;
- integrates the required GIC facilities with the commercial Project for the benefit of the public;
- alleviates traffic congestion in the area through incorporation of the gazetted 'Proposed Road Improvement Works at Caroline Hill Road, Link Road, Hoi Ping Road and Leighton Road'; and
- poses no insurmountable adverse impacts in terms of technical aspects.

8.1.2 However, importantly, this Application **provides significant enhancements to the previously Approved S16A Scheme**. Specifically, these enhancements are that it:

- protects and rehabilitates the OVT through different treatments within the three soil-rooting zones;
- allows the public to enjoy the POS at the TPZ; and
- includes an enhanced cultural placemaking proposal furthering community cultural and arts enjoyment of the Banyan Garden (compared to the approved schemes).

8.1.3 The Applicant therefore respectfully requests the Town Planning Board, exercising its powers under Section 16 of the Town Planning Ordinance (Cap 131), to approve the proposed Layout Plan, with or without condition.

銅鑼灣 Causeway Bay



Figures

Hennessy Road
Yee Wo Street
Causeway Road
Percival Street
Canal Road East
Tung Lo Wan Road
Leighton Road
Caroline Hill Road
Eastern Hospital Road
Wong Nai Chung Road
Link Road
Caroline Hill Road

LEGEND

Application Site Boundary

NORTH

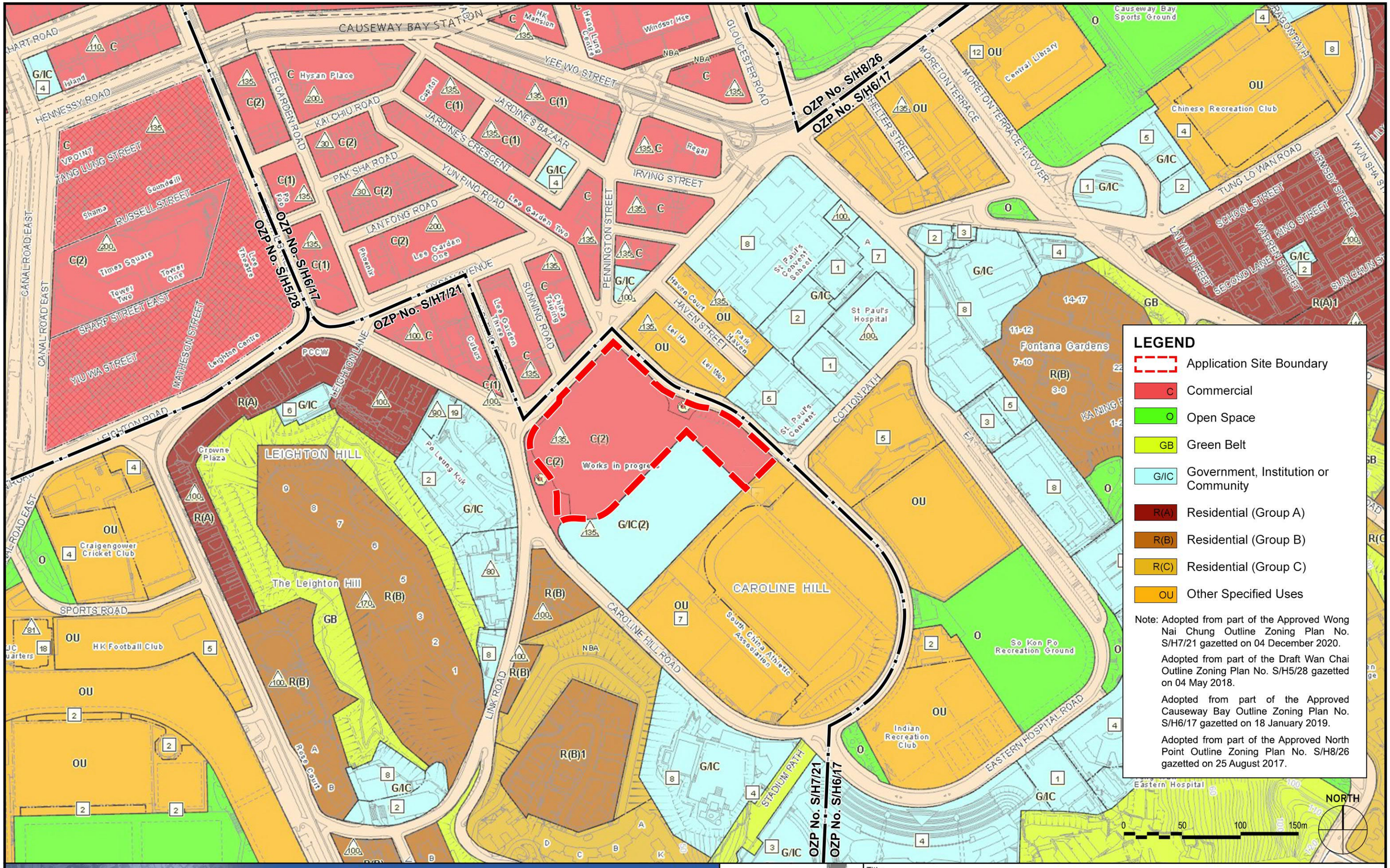
0 50 100 150m

Patchway Holdings (HK) Limited

Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Title: Site Location Plan

Scale	Date	Figure No.
1:3,000 @ A3	January 2024	**1.1**



Patchway Holdings (HK) Limited

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Title: Extract of the Approved Wong Nai Chung Outline Zoning Plan No. S/H7/21

Scale	Date	Figure No.
1:3,000 @ A3	January 2024	1.2



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Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Title: Aerial Photo of the Application Site

Scale	Date	Figure No.
1:3,000 @ A3	February 2025	**2.1**

LEGEND

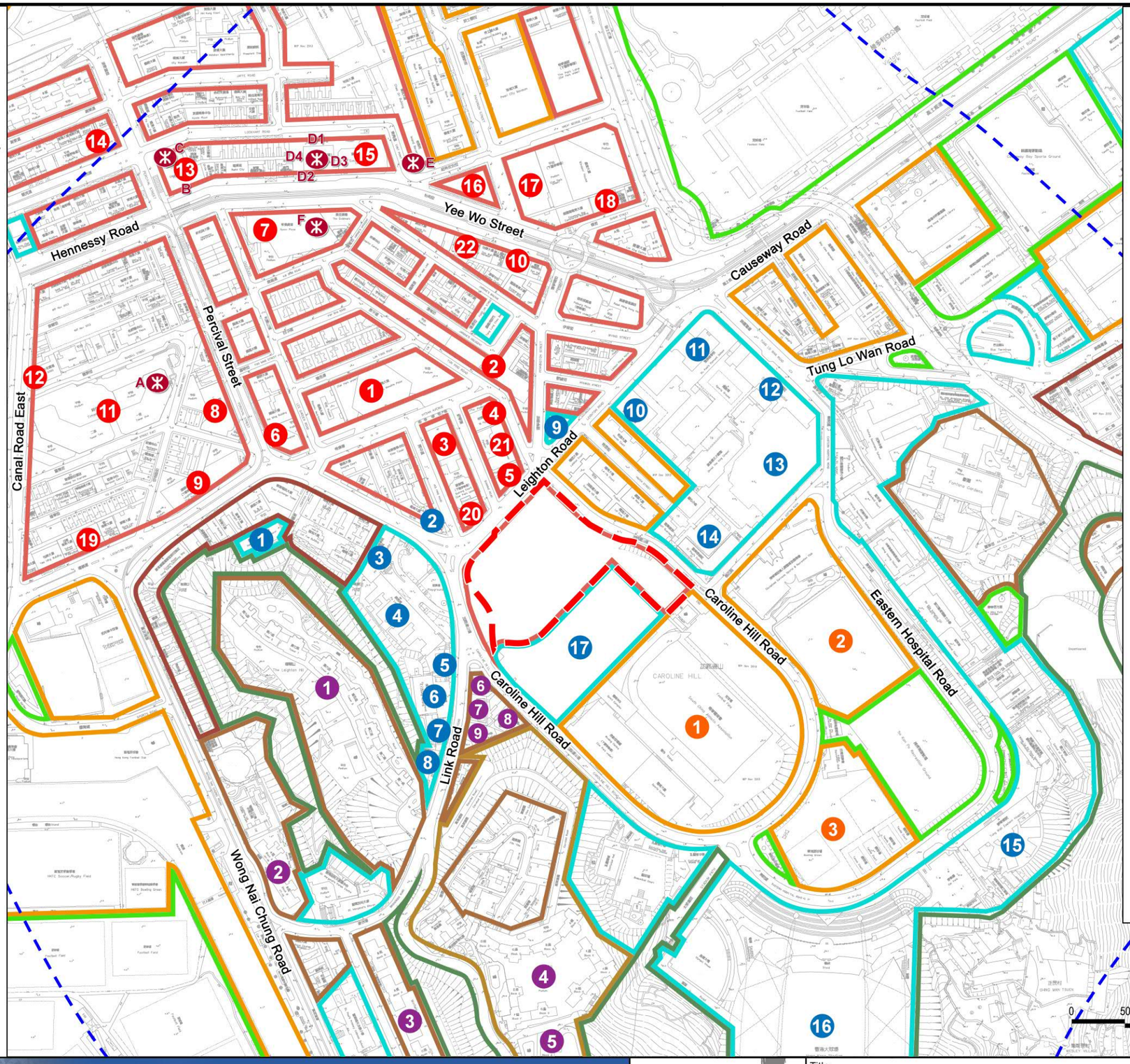
- Application Site Boundary
- 500m Catchment from Site

Land Use Zoning

- Commercial
- Government, Institution or Community
- Open Space
- Green Belt
- Residential (Group A)
- Residential (Group B)
- Residential (Group C)
- Other Specified Uses

Commercial

1. Lee Garden One
2. Lee Garden Two
3. Lee Garden Three
4. Lee Garden Five
5. Lee Garden Six
6. One Hysan Avenue
7. Hysan Place
8. Lee Theatre Plaza
9. Leighton Centre
10. McDonald's Building
11. Times Square
12. Plaza 2000
13. Causeway Bay Plaza 1
14. Causeway Bay Plaza 2
15. SOGO
16. Causeway Place
17. Hang Lung Centre
18. Causeway Bay Centre
19. Chinachem Leighton Plaza
20. Lippo Leighton Tower
21. China Taiping Tower
22. Hang Seng Causeway Bay Building



Residential (R)

1. The Leighton Hill
2. Rose Court
3. Winfield Building
4. Beverly Hill
5. Villa Rocha
6. Silverwood
7. Caroline Height
8. Caroline Garden
9. Jade Terrace

Government, Institution or Community Development (G/IC)

1. Hong Kong Ling Liang Church & Kindergarten
2. Zoroastrian Building
3. HKU Space PLK Community College
4. PLK Headquarters
5. PLK Kwok Law Kwai Chun Children Services Building
6. PLK Vicwood K.T. Chong Building
7. PLK Mok Hing Yiu Creche
8. PLK Gold & Silver Exchange Society Pershing Tsang School
9. The China Congregational Church
10. St. Paul's Kindergarten
11. St. Paul's Convent School
12. St. Paul's Hospital
13. St. Paul's Hospital
14. St. Paul Convent
15. Tung Wah Eastern Hospital
16. Hong Kong Stadium
17. Future District Court

Other Specified Uses

1. South China Athletic Association
2. Disciplined Services Sports and Recreation Club
3. Indian Recreation Club

NORTH

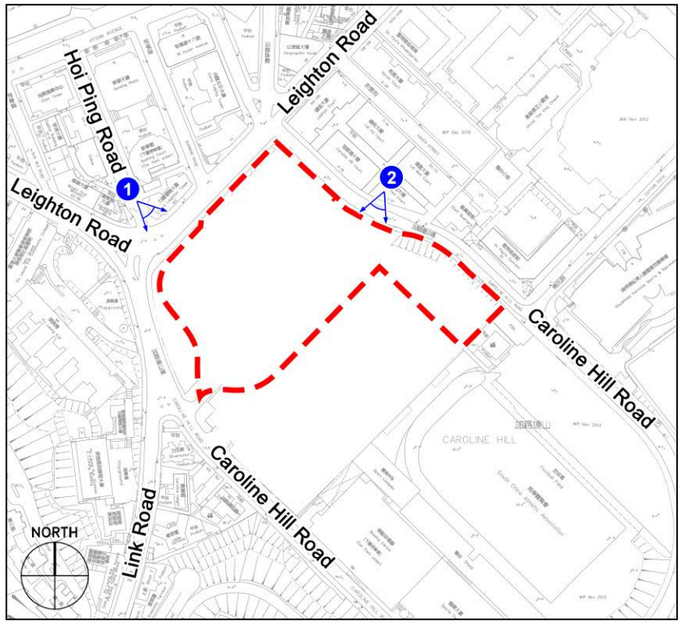
0 50 100 150 200 250m

Patchway Holdings (HK) Limited

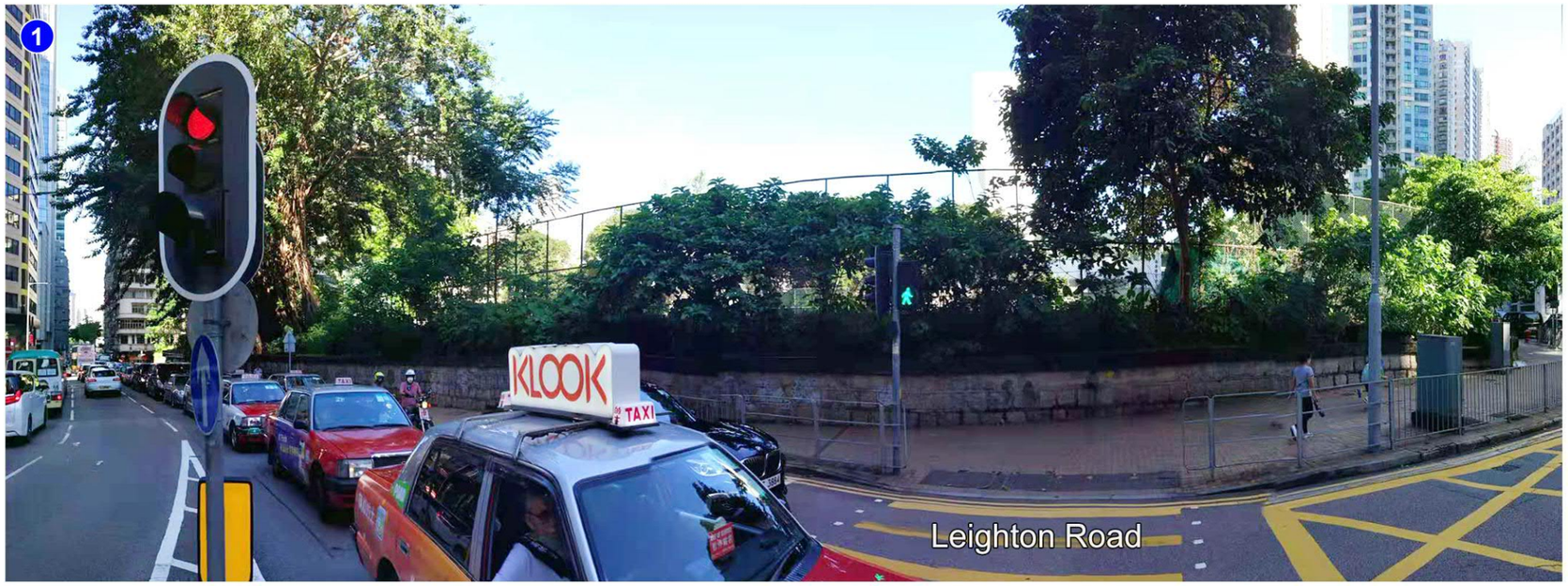
Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Title: Surrounding Development Context

Scale	Date	Figure No.
1:4,000 @ A3	January 2024	2.2



KEY PLAN



VP1 - Application Site (View from Leighton Road)



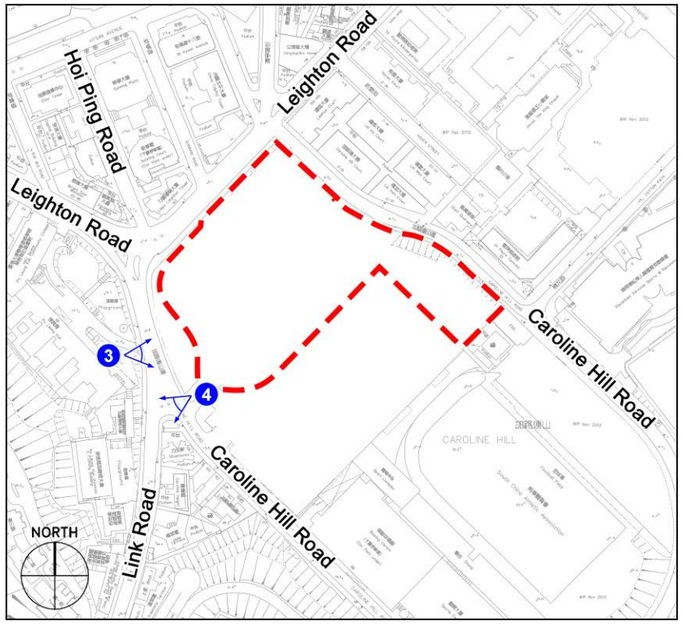
VP2 - Application Site (View from Caroline Hill Road (East) with Graded Portion of the Masonry Wall)

Patchway Holdings (HK) Limited

Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Title: Application Site and Surrounding Land Use Context

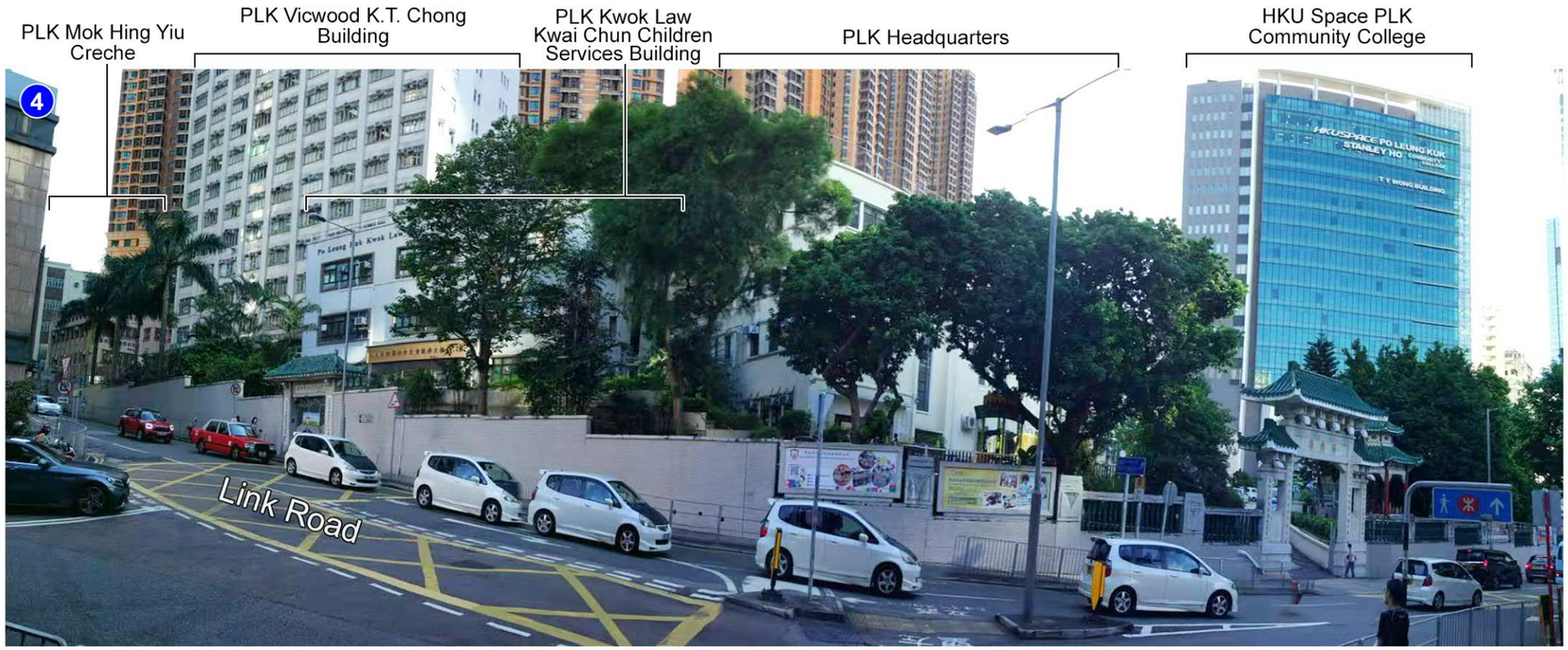
Scale	Date	Figure No.
N.T.S.	January 2024	**2.3a**



KEY PLAN



VP3 - Application Site (View from Caroline Hill Road (West))



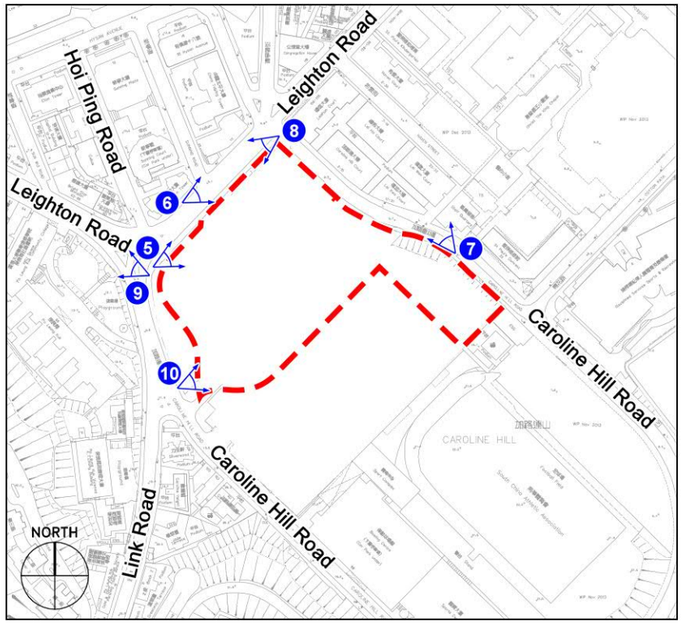
VP4 - Surrounding Development on Link Road and Caroline Hill Road (West)

Patchway Holdings (HK) Limited

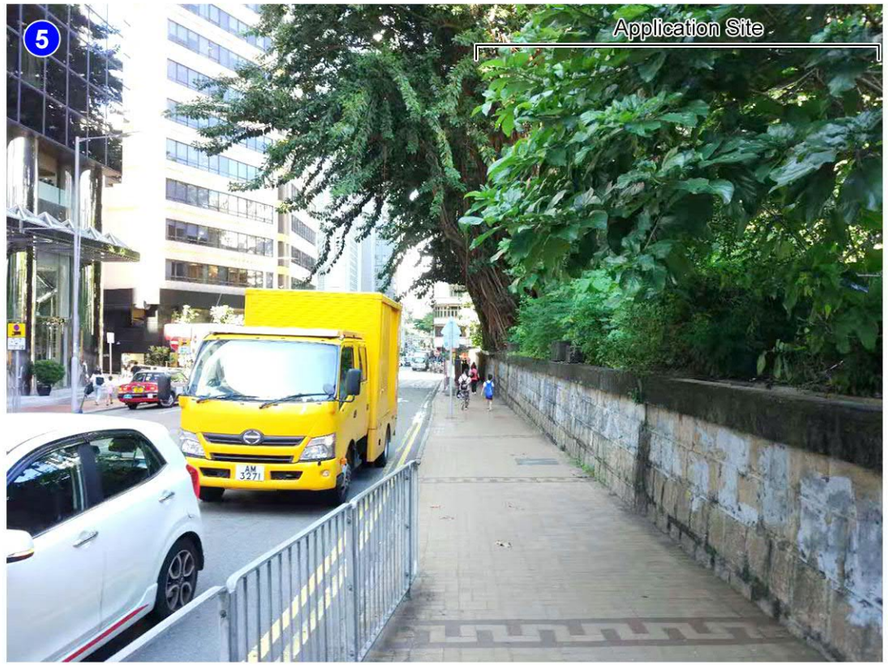
Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Ubis 雅邦 Limited

Title			
Application Site and Surrounding Land Use Context			
Scale	N.T.S.	Date	January 2024
Figure No.	**2.3b**		



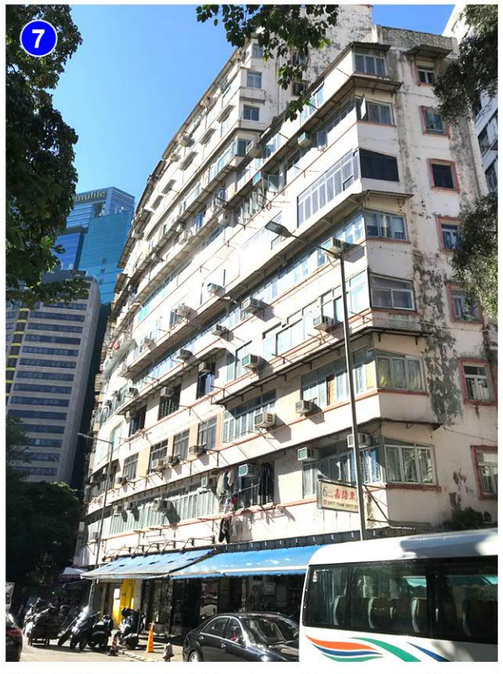
KEY PLAN



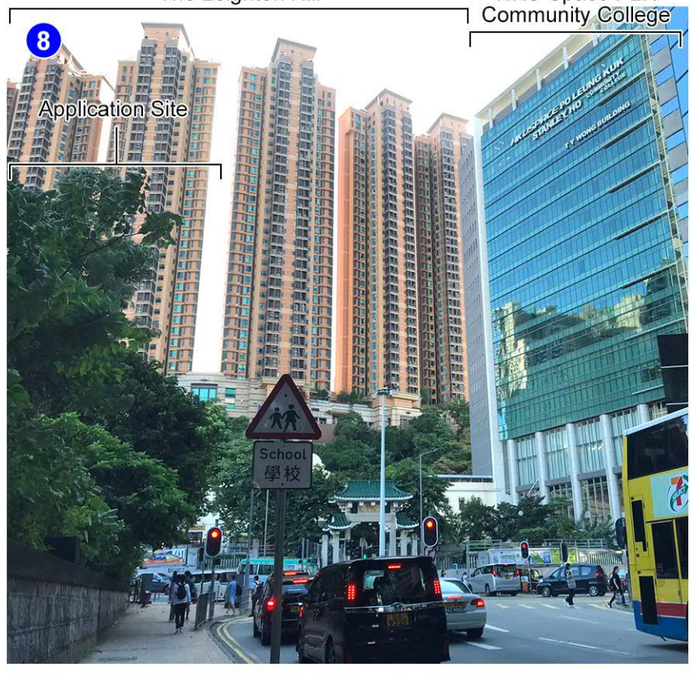
VP5 - Old and Valuable Tree (Registration No. LANDSD(LEASED) WCH/1)



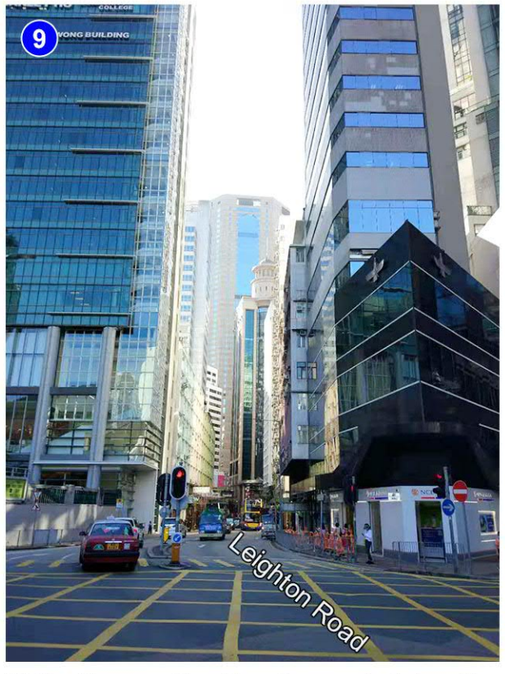
VP6 - Old and Valuable Tree (Registration No. LANDSD(LEASED) WCH/1)



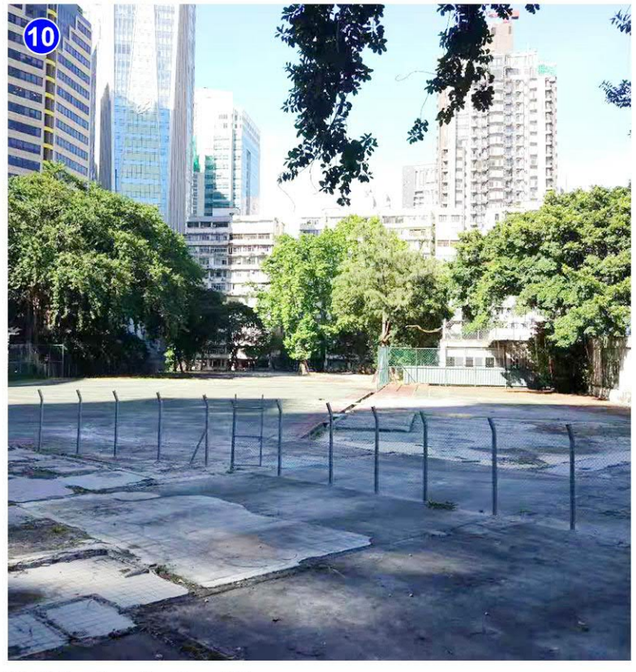
VP7 - Residential Block on Caroline Hill Road (East) with workshops on Ground Floor



VP8 - Surrounding Context (View from Leighton Road)



VP9 - Surrounding Development at Junction of Leighton Road and Hoi Ping Road



VP10 - Application Site

Patchway Holdings (HK) Limited

Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Title: Application Site and Surrounding Land Use Context

Scale	Date	Figure No.
N.T.S.	January 2024	**2.3c**



Remark: For PlanD's reference only

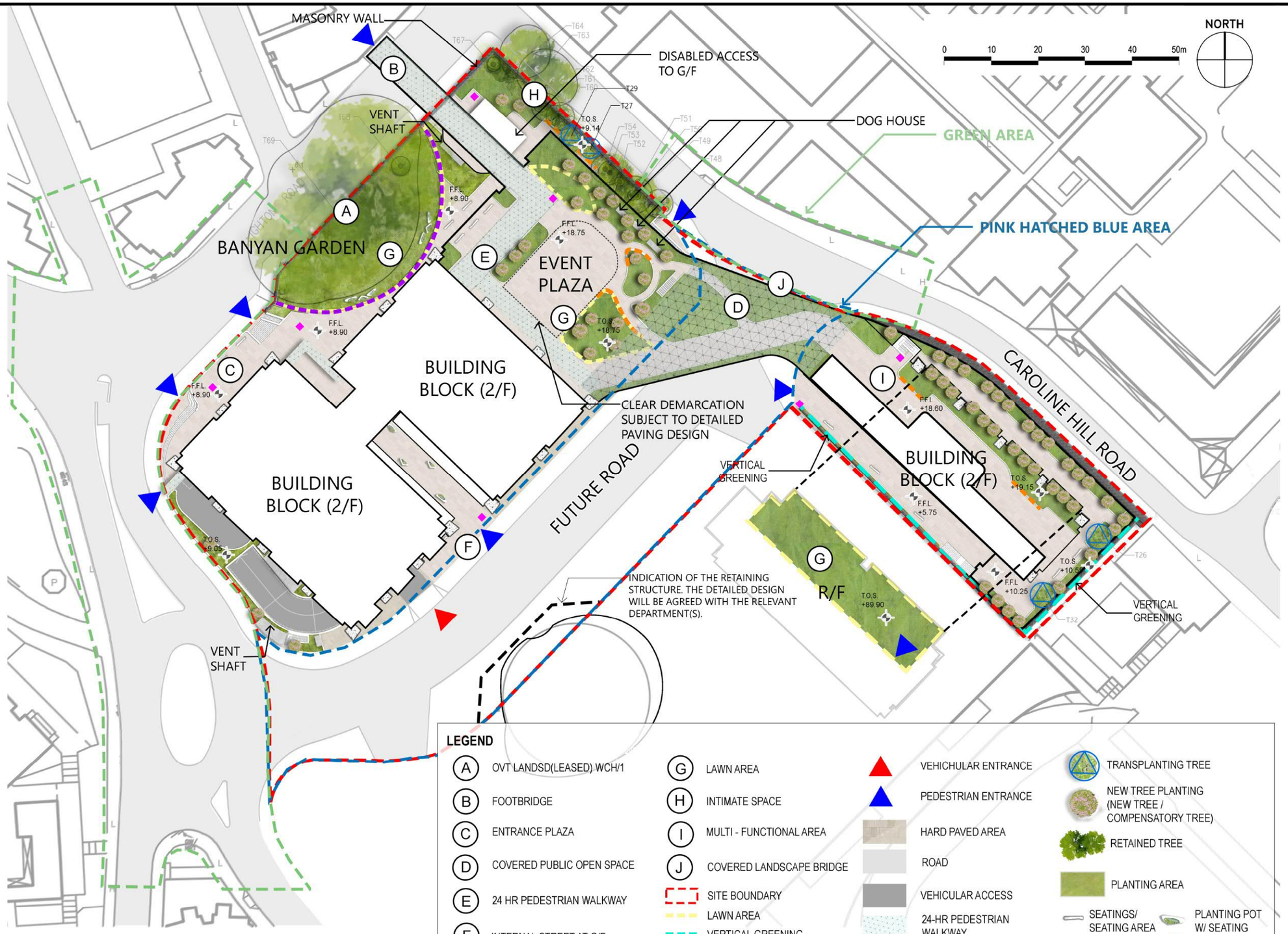
Patchway Holdings (HK) Limited

Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Title

Landscape Master Plan – Overall under Approved S16 Scheme (No. A/H7/181)

Scale	Date	Figure No.
1:850 @ A3	August 2022	**4.1**



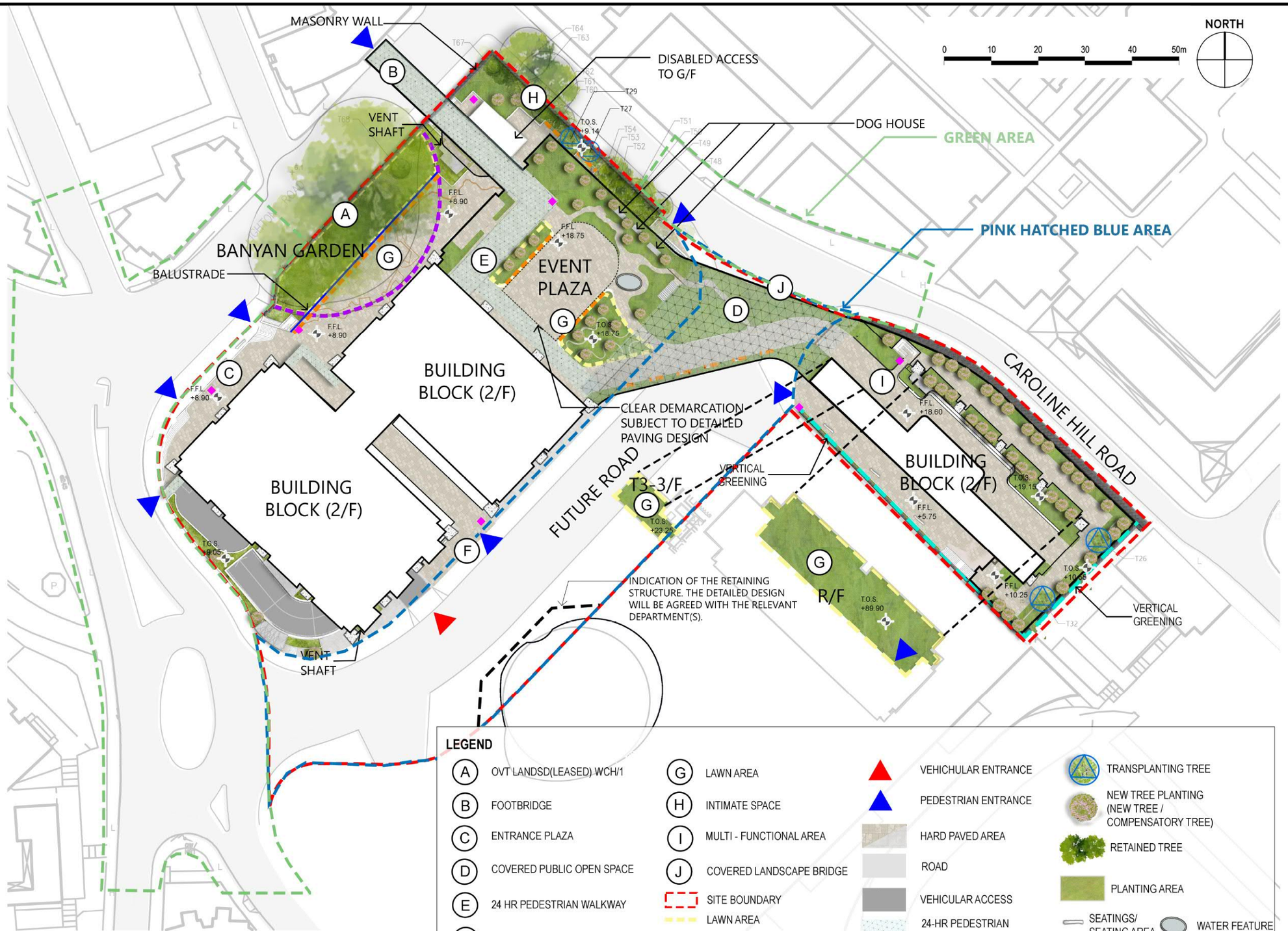
Remark: For PlanD's reference only

Patchway Holdings (HK) Limited

Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Title: Landscape Master Plan – Overall under Approved S16A Scheme (No. A/H7/181-2)

Scale	Date	Figure No.
1:850 @ A3	August 2025	**4.2**



LEGEND

- A OVT LANDSD(LEASED) WCH/1
- B FOOTBRIDGE
- C ENTRANCE PLAZA
- D COVERED PUBLIC OPEN SPACE
- E 24 HR PEDESTRIAN WALKWAY
- F INTERNAL STREET AT G/F
- SPOT LEVEL
- G LAWN AREA
- H INTIMATE SPACE
- I MULTI - FUNCTIONAL AREA
- J COVERED LANDSCAPE BRIDGE
- SITE BOUNDARY
- LAWN AREA
- VERTICAL GREENING
- SEATWALL
- TREE PROTECTION ZONE
- VEHICHULAR ENTRANCE
- PEDESTRIAN ENTRANCE
- HARD PAVED AREA
- ROAD
- VEHICULAR ACCESS
- 24-HR PEDESTRIAN WALKWAY
- TRANSPARENT COVER
- TRANSPLANTING TREE
- NEW TREE PLANTING (NEW TREE / COMPENSATORY TREE)
- RETAINED TREE
- PLANTING AREA
- SEATINGS/ SEATING AREA
- WATER FEATURE
- SIGNAGE
- MASONRY WALL
- VENT SHAFT

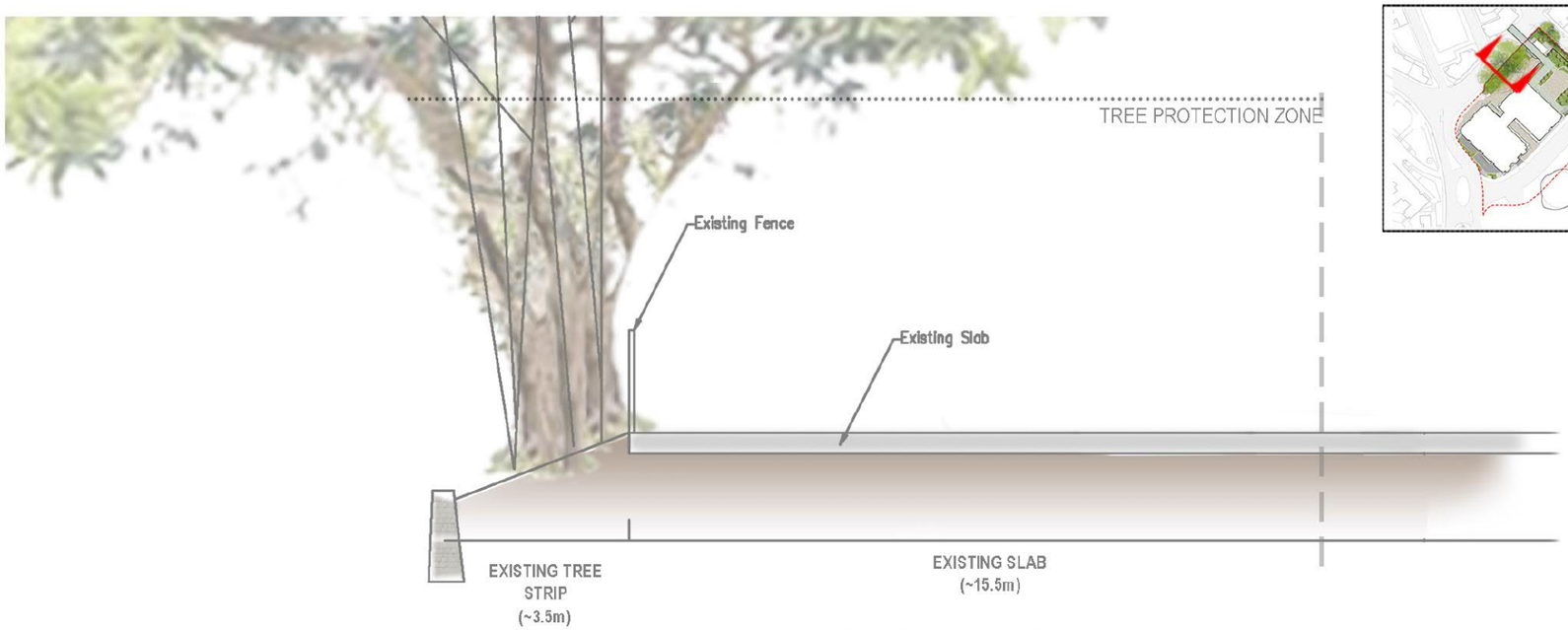
Remark: For PlanD's reference only

Patchway Holdings (HK) Limited

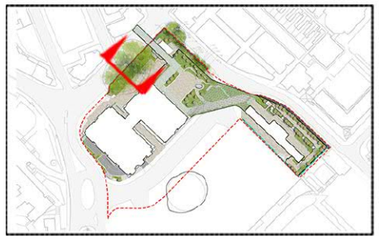
Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Title: Landscape Master Plan – Overall under Current Scheme

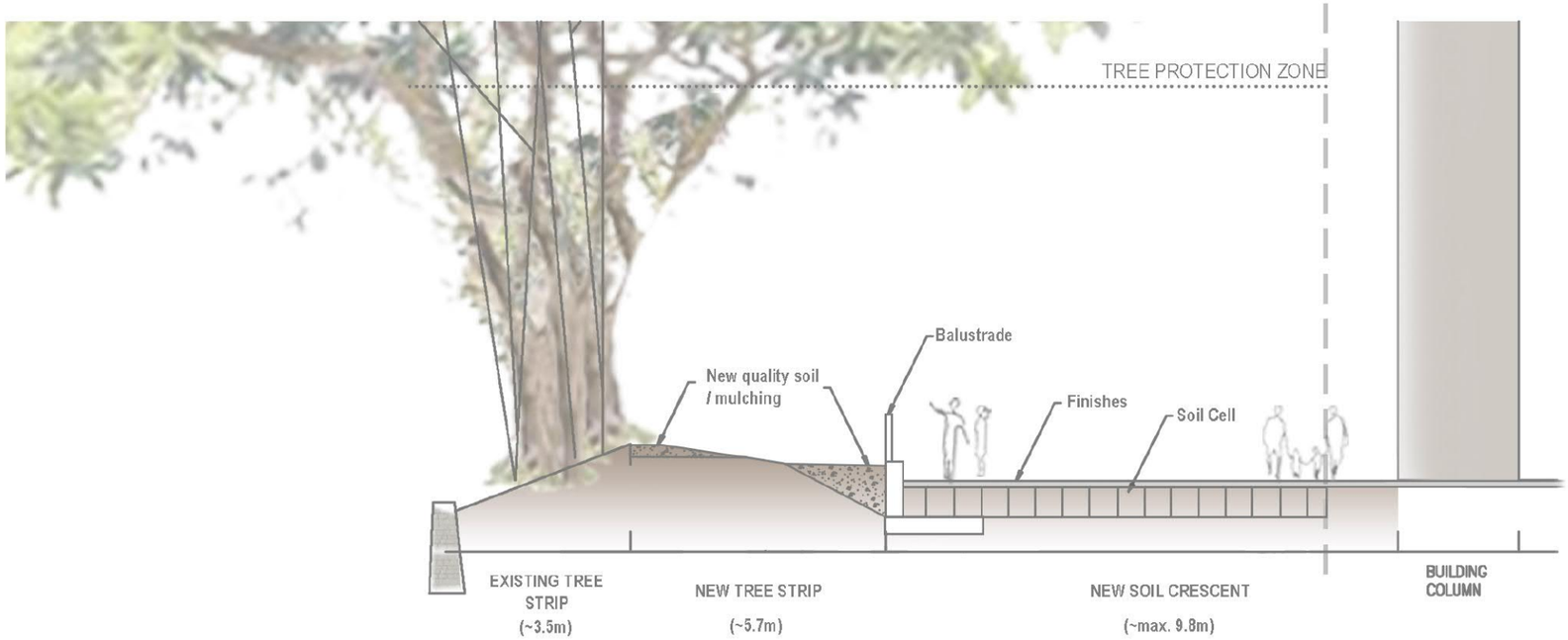
Scale	Date	Figure No.
1:850 @ A3	August 2025	**4.3**



EXISTING CONDTION



KEY PLAN



Noted: Details refer to Annex K Tree Protection Proposal for CVT; the detailed design will be further developed and submitted to the relevant government departments at the next stage.

PROPOSED SCHEME (at the balustrade footing position)

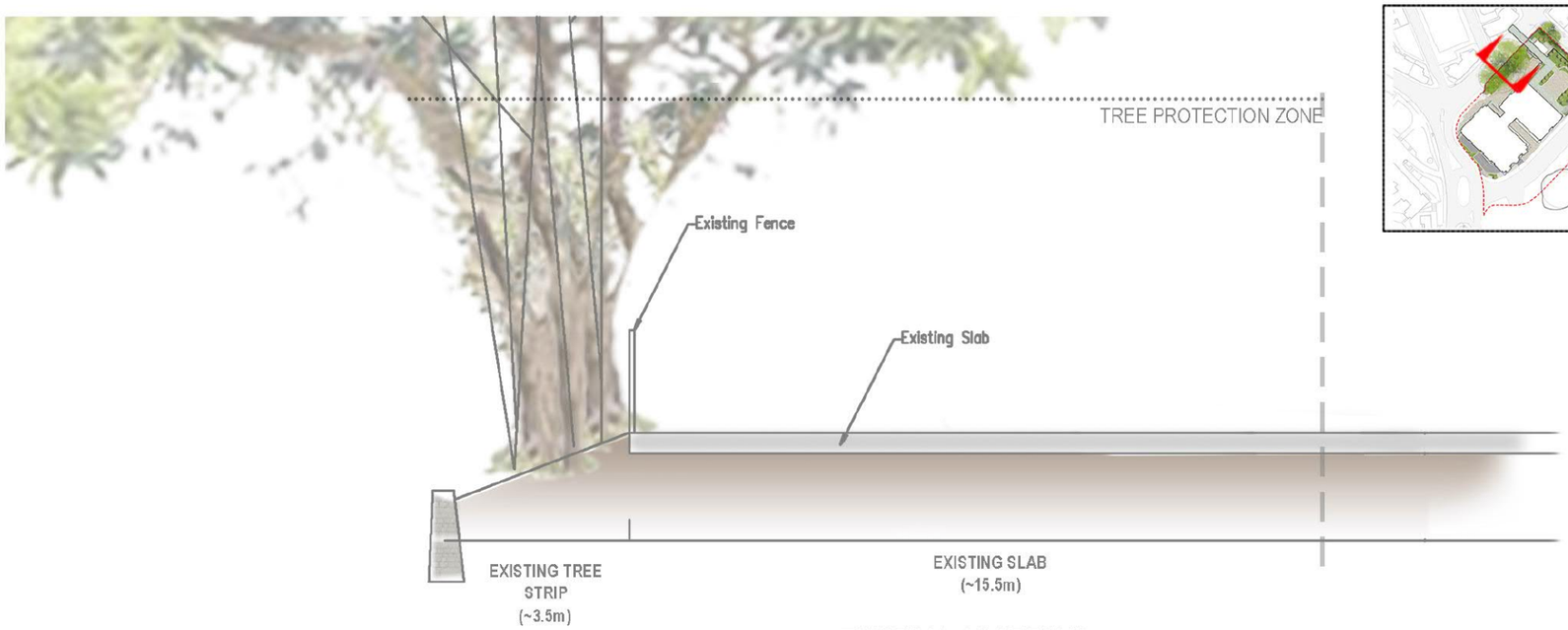
0 5 10 15m

Patchway Holdings (HK) Limited

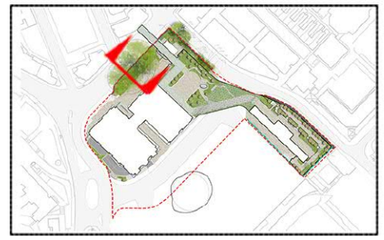
Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Title: Landscape Section of G/F Banyan Garden – 1/2

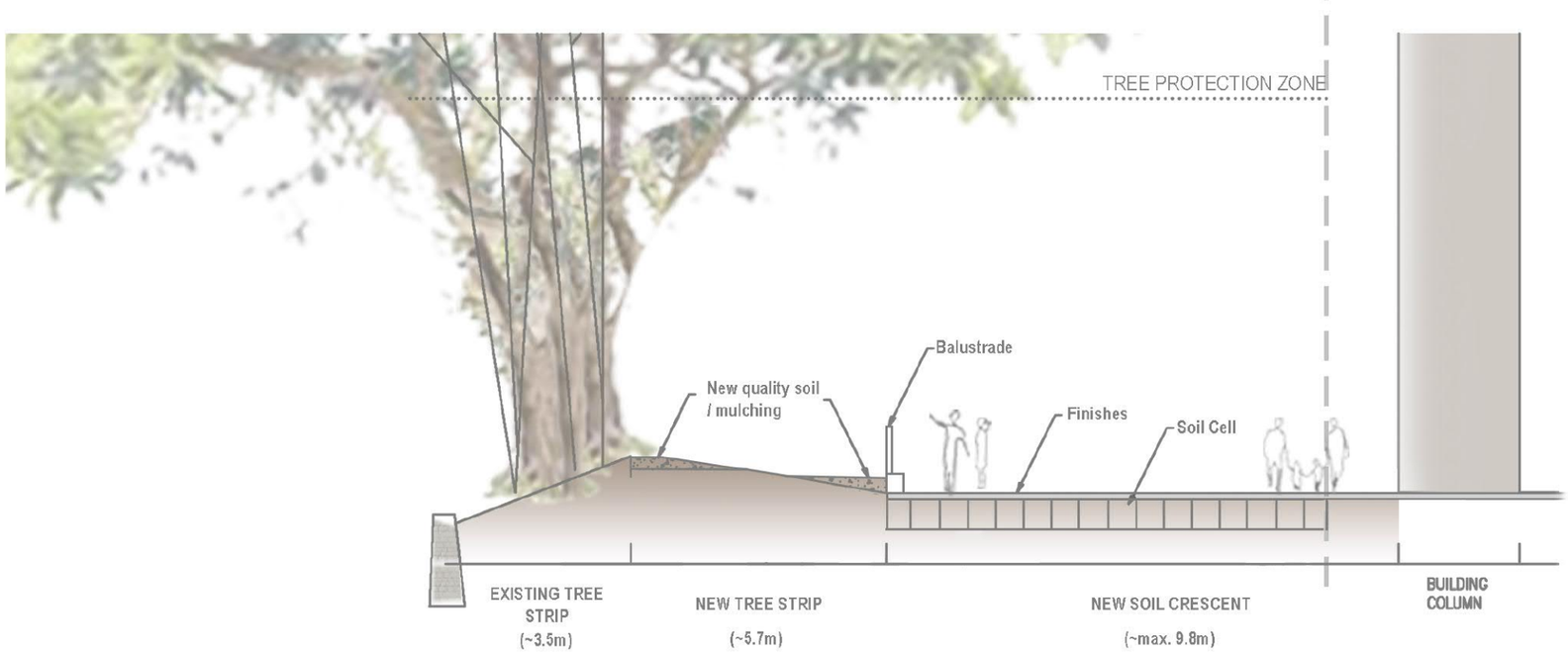
Scale	Date	Figure No.
1:300 @ A3	August 2025	**4.4a**



EXISTING CONDTION



KEY PLAN



Noted: Details refer to Annex K Tree Protection Proposal for OVT; the detailed design will be further developed and submitted to the relevant government departments at the next stage.

PROPOSED SCHEME (between the balustrade footing position)

0 5 10 15m

Patchway Holdings (HK) Limited

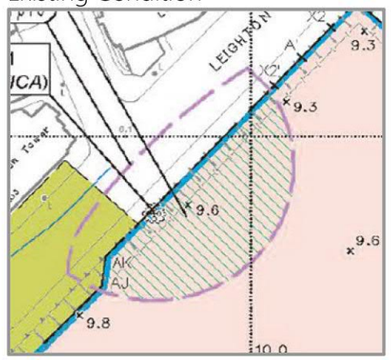
Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Title: Landscape Section of G/F Banyan Garden – 2/2

Scale	Date	Figure No.
1:300 @ A3	August 2025	**4.4b**

Banyan Garden Scheme Comparison

Existing Condition



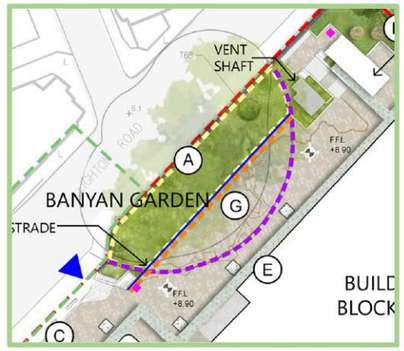
The whole area is an abandoned sport court and is covered by hard pavement with compacted soil.

Approved Scheme



A Banyan Garden with a lawn area was proposed to form part of the POS at G/F. During the detailed design stage, to prevent potential spread of BRRD, it became evident that this scheme requires erecting the balustrade outside the lawn area to fully restrict public access to the lawn area.

Current Scheme

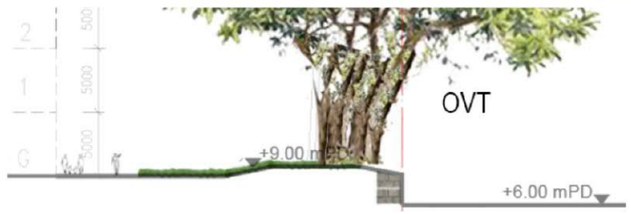


A balustrade will be erected along the planter expansion, whilst the subterranean soil cell systems will support a new civic plaza above which is publicly accessible.



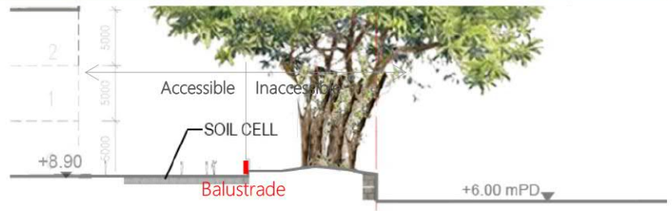
Full Compacted Soil Area

✓ Public Enjoyment



No Compacted Soil Area

X Public Enjoyment



No Compacted Soil Area

✓ Public Enjoyment

IL 8945, Caroline Hill Road, Causeway Bay



* IMAGE FOR REFERENCE ONLY, SUBJECT TO DETAIL DESIGN

Patchway Holdings (HK) Limited

Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Title: Artist's Impression of G/F Banyan Garden

Scale	Date	Figure No.
N.T.S.	August 2025	**4.6**



Live Performances



Street Art Exhibitions

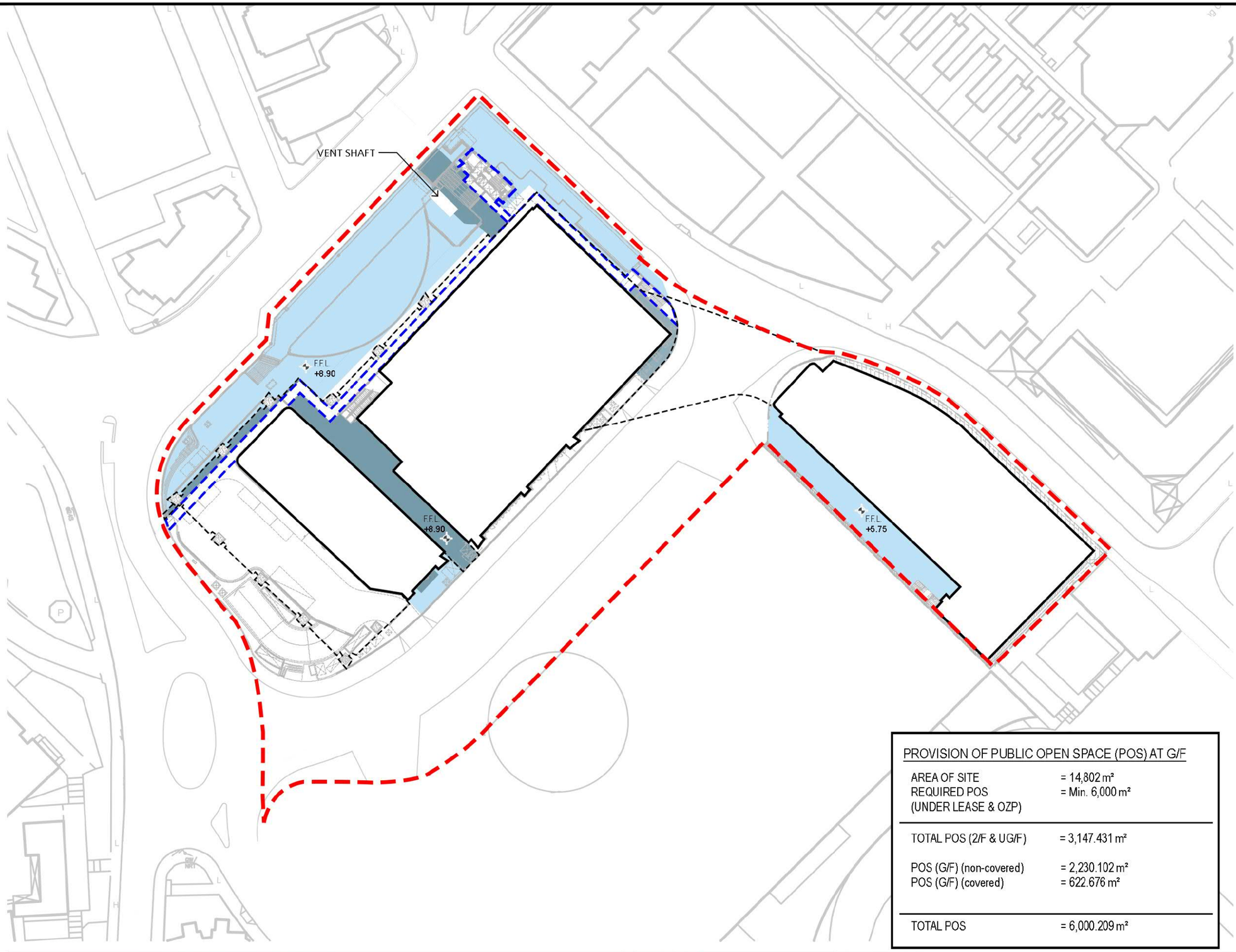


Cultural Festivals



Festive Light Shows

Patchway Holdings (HK) Limited	*Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong*	Ubis 雅邦 Limited	Title: Reference Images of Cultural Placemaking at G/F Banyan Garden	
			Scale: N.T.S.	Date: August 2025
			Figure No.: **4.7**	



PROVISION OF PUBLIC OPEN SPACE (POS) AT G/F

AREA OF SITE	= 14,802 m²
REQUIRED POS (UNDER LEASE & OZP)	= Min. 6,000 m²
TOTAL POS (2/F & UG/F)	= 3,147.431 m²
POS (G/F) (non-covered)	= 2,230.102 m²
POS (G/F) (covered)	= 622.676 m²
TOTAL POS	= 6,000.209 m²

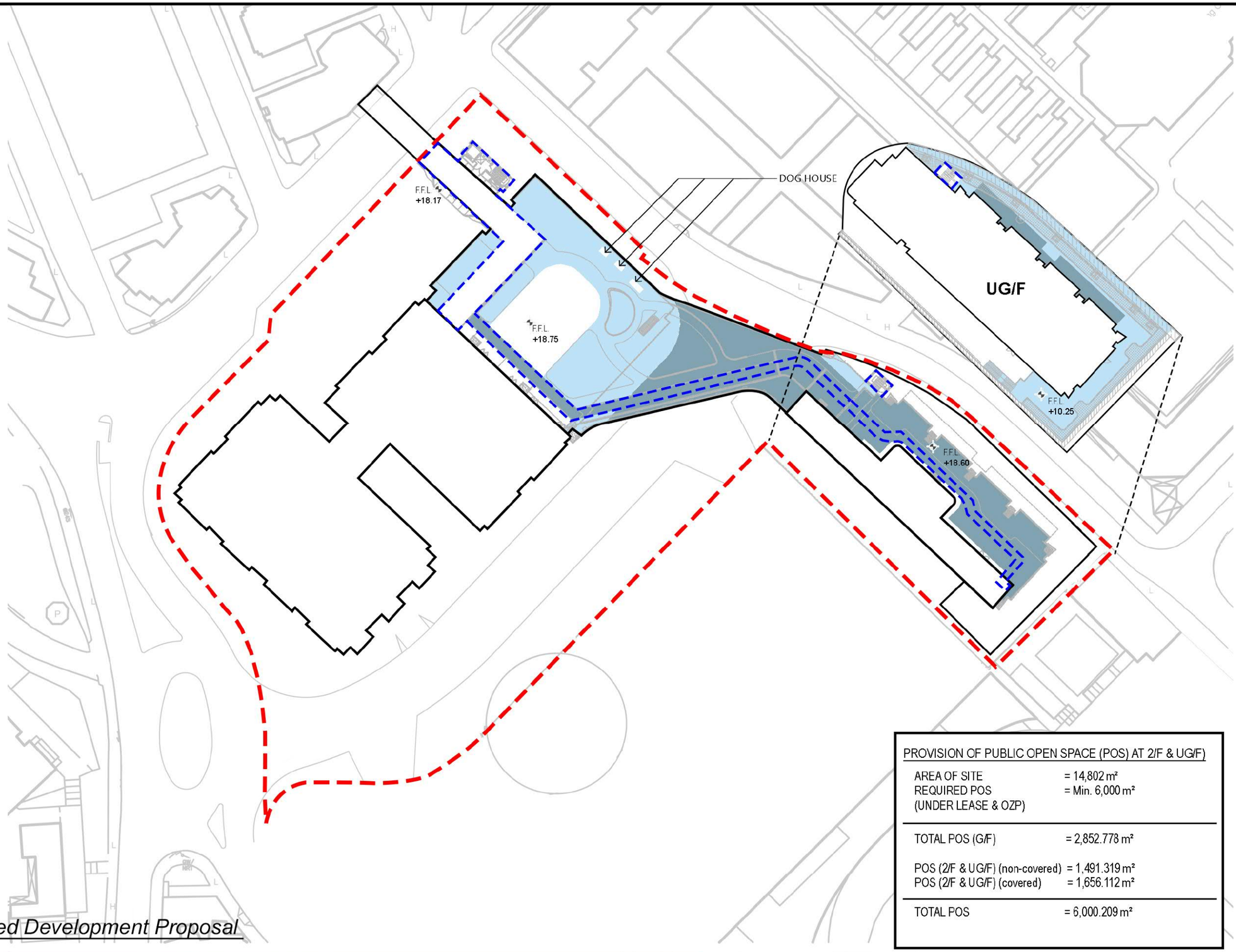
otherland

Patchway Holdings (HK) Limited

Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Title: Provision of Public Open Space – G/F under Approved S16A Scheme (No. A/H7/181-2)

Scale	Date	Figure No.
N.T.S.	March 2025	**4.8a**



PROVISION OF PUBLIC OPEN SPACE (POS) AT 2/F & UG/F)

AREA OF SITE	= 14,802 m²
REQUIRED POS (UNDER LEASE & OZP)	= Min. 6,000 m²
TOTAL POS (G/F)	= 2,852.778 m²
POS (2/F & UG/F) (non-covered)	= 1,491.319 m²
POS (2/F & UG/F) (covered)	= 1,656.112 m²
TOTAL POS	= 6,000.209 m²

Approved Development Proposal

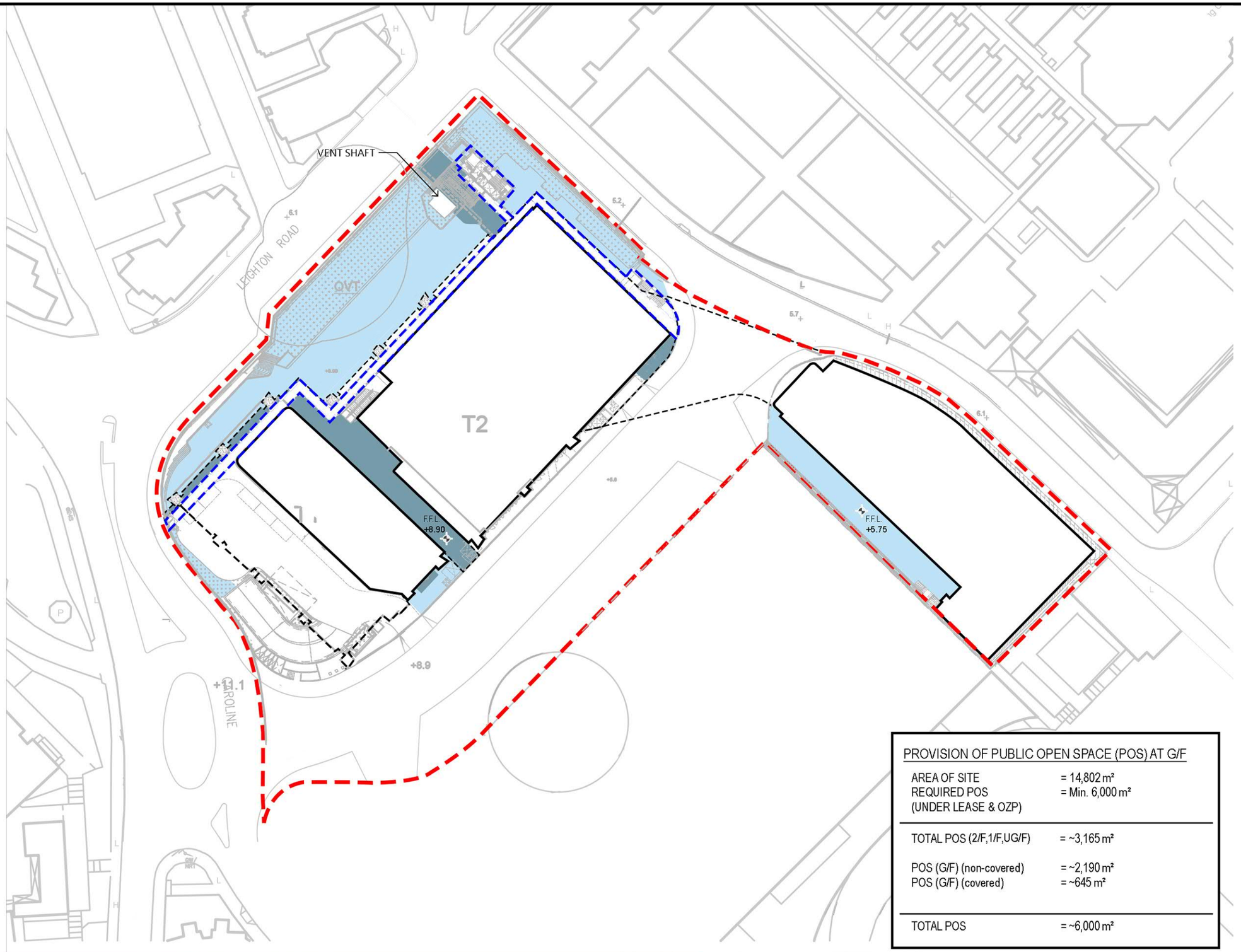
otherland

Patchway Holdings (HK) Limited

Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Title: Provision of Public Open Space – 2/F under Approved S16A Scheme (No. A/H7/181-2)

Scale	Date	Figure No.
N.T.S.	March 2025	**4.8b**



PROVISION OF PUBLIC OPEN SPACE (POS) AT G/F

AREA OF SITE	= 14,802 m²
REQUIRED POS (UNDER LEASE & OZP)	= Min. 6,000 m²
TOTAL POS (2/F,1/F,UG/F)	= ~3,165 m²
POS (G/F) (non-covered)	= ~2,190 m²
POS (G/F) (covered)	= ~645 m²
TOTAL POS	= ~6,000 m²

otherland

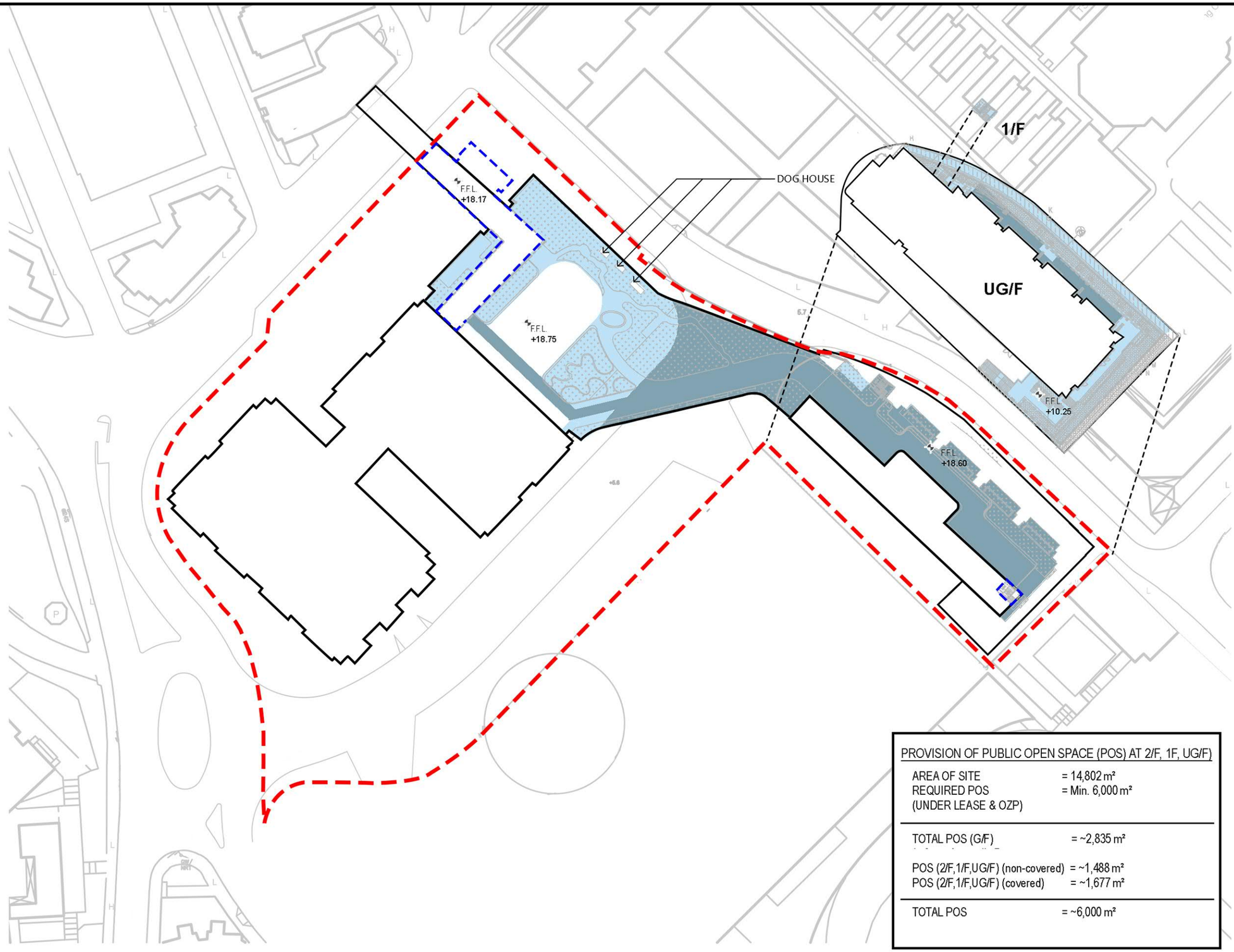
Patchway Holdings (HK) Limited

Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Ubis 雅邦 Limited

Title: Provision of Public Open Space – G/F under Current Scheme

Scale	Date	Figure No.
N.T.S.	August 2025	**4.9a**



PROVISION OF PUBLIC OPEN SPACE (POS) AT 2/F, 1F, UG/F)

AREA OF SITE	= 14,802 m²
REQUIRED POS (UNDER LEASE & OZP)	= Min. 6,000 m²
TOTAL POS (G/F)	= ~2,835 m²
POS (2/F,1/F,UG/F) (non-covered)	= ~1,488 m²
POS (2/F,1/F,UG/F) (covered)	= ~1,677 m²
TOTAL POS	= ~6,000 m²

otherland

Patchway Holdings (HK) Limited

Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Title: Provision of Public Open Space – 2/F under Current Scheme

Scale	Date	Figure No.
N.T.S.	August 2025	**4.9b**



* IMAGE FOR REFERENCE ONLY, SUBJECT TO DETAIL DESIGN

Patchway Holdings (HK) Limited

Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Title: Artist's Impression of 2/F Event Plaza

Scale	Date	Figure No.
N.T.S.	August 2025	**4.10**

Hennessy Road
Yee Wo Street
Causeway Road
Tung Lo Wan Road
Canal Road East
Percival Street
Leighton Road
Caroline Hill Road
Eastern Hospital Road
Wong Nai Chung Road
Link Road

LEGEND

- Application Site Boundary
- Green
- Edged Red
- Edged Blue

NORTH

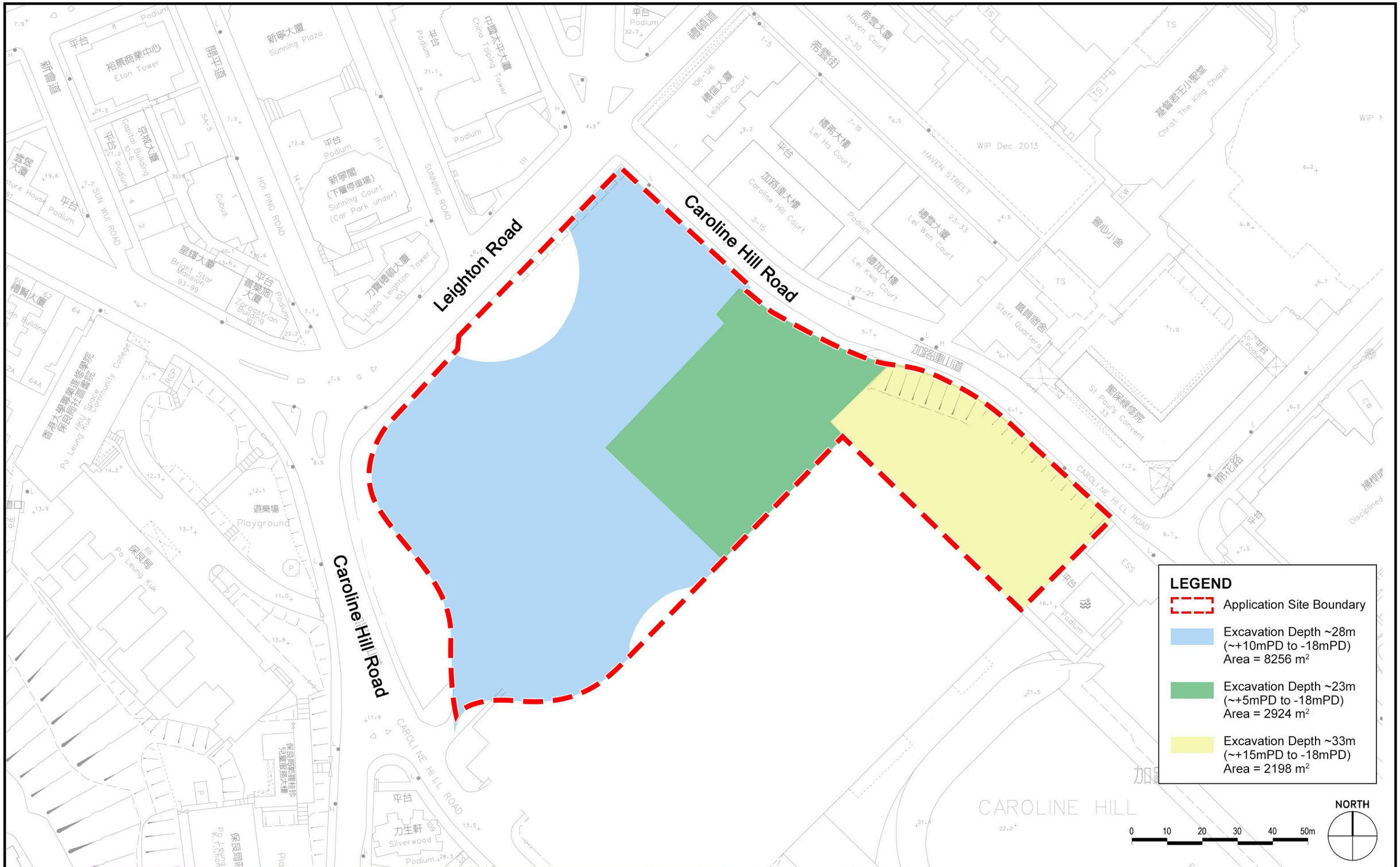
0 50 100 150m

Patchway Holdings (HK) Limited

Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Ubis 雅邦 Limited

Title: Adopted Lease Plan			
Scale: 1:3,000 @ A3	Date: January 2024	Figure No.: **4.11**	



Patchway Holdings (HK) Limited

Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Ubis 雅邦 Limited

Title: Depth and Area of Excavation

Scale	Date	Figure No.
1:3,000 @ A3	January 2024	**4.12**



Remark: For PlanD's reference only

Patchway Holdings (HK) Limited	***Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong***	Ubis 雅邦 Limited	Title: Artist's Impression of Planning Department Rezoning Conceptual Scheme	
			Scale: N.T.S.	Date: January 2024
				Figure No.: **4.13**

APPROVED DEVELOPMENT PROPOSAL

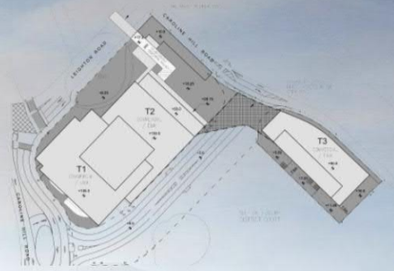
By combining the two towers and shifting to the NW corner in order to provide a large open space to the NE and a wider air corridor

By combining the 2 towers and shifting them to the NW corner, a **WIDER AIR CORRIDOR** could be provided which can help to facilitate air ventilation at street level

COVERED LANDSCAPE BRIDGE – A **BRIDGE CONNECTION** between Edged Blue and Edged Red Sites to **ENHANCE PEDESTRIAN CONNECTIVITY**, with **QUALITY LANDSCAPE & GREENERY**

Provision of a **LARGE & DESIGNATED OPEN SPACE** to the NE corner of the site with the provision of greenery and landscape for better enjoyment and **REDUCE VISUAL DOMINANCE OF BUILT FORMS** at street level

A VIEW ANGLE



Remark: For PlanD's reference only

Patchway Holdings (HK) Limited

Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Title: Artist's Impression of Approved Development Proposal

Scale	Date	Figure No.
N.T.S.	January 2024	**4.14**



* IMAGE FOR REFERENCE ONLY, SUBJECT TO DETAIL DESIGN

Patchway Holdings (HK) Limited

Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Ubis 雅邦 Limited

Title	Artist's Impression of Current Scheme		
Scale	N.T.S.	Date	March 2025
Figure No.	**4.15a**		



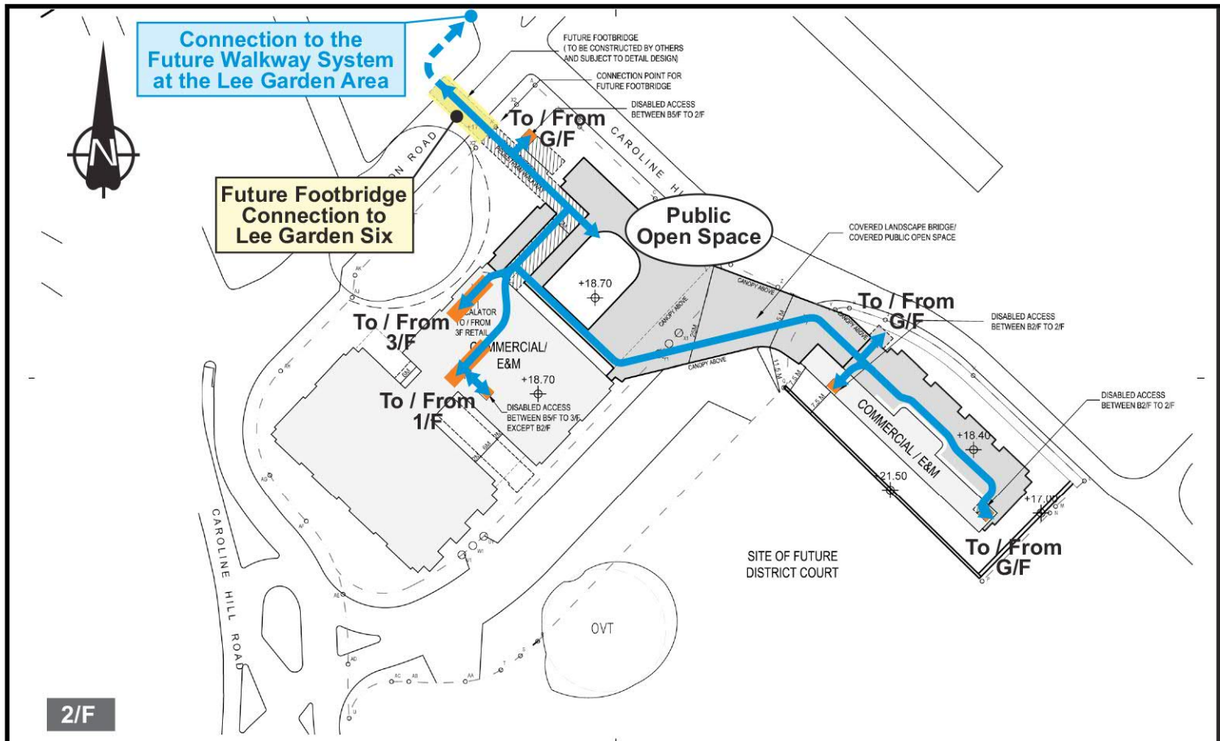
* IMAGE FOR REFERENCE ONLY, SUBJECT TO DETAIL DESIGN

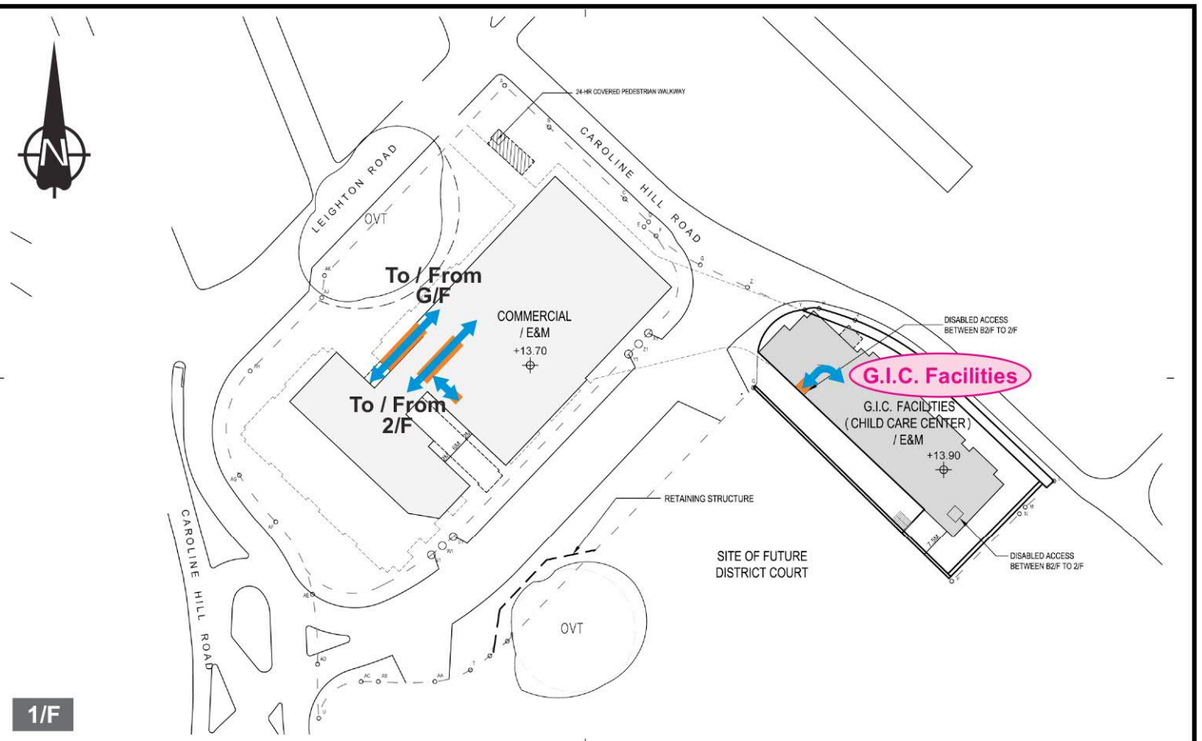
Patchway Holdings (HK) Limited

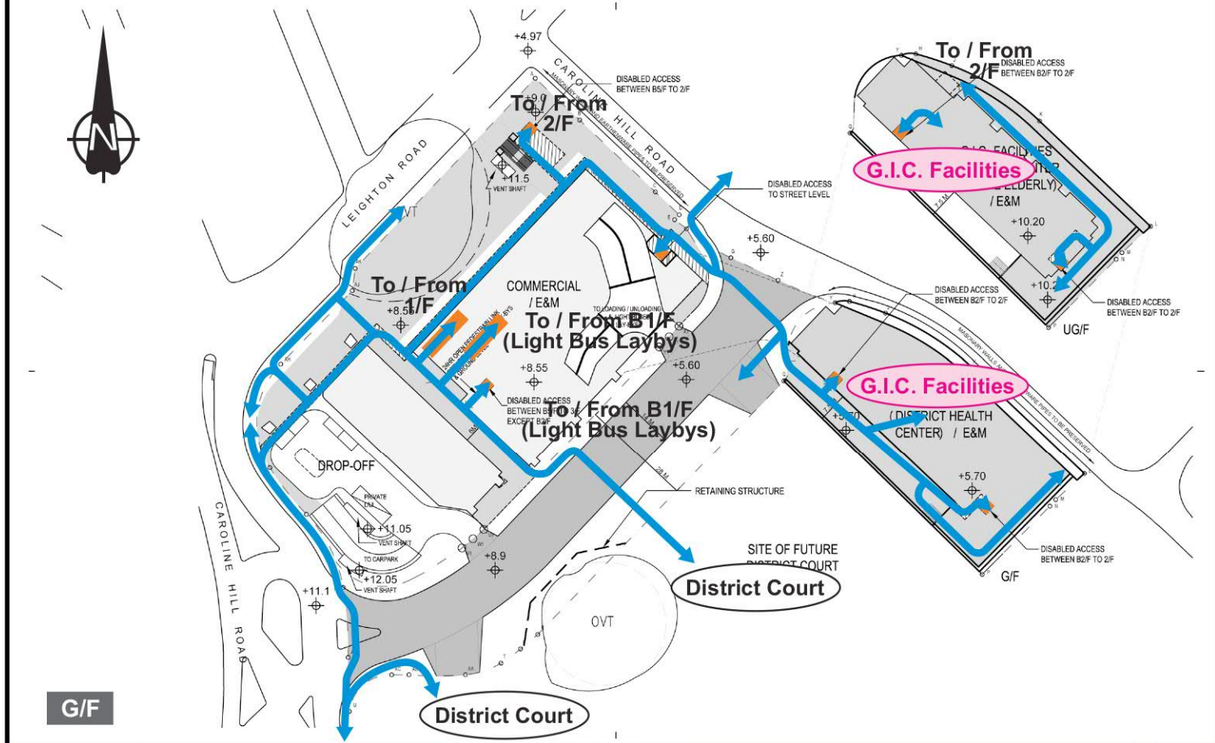
Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

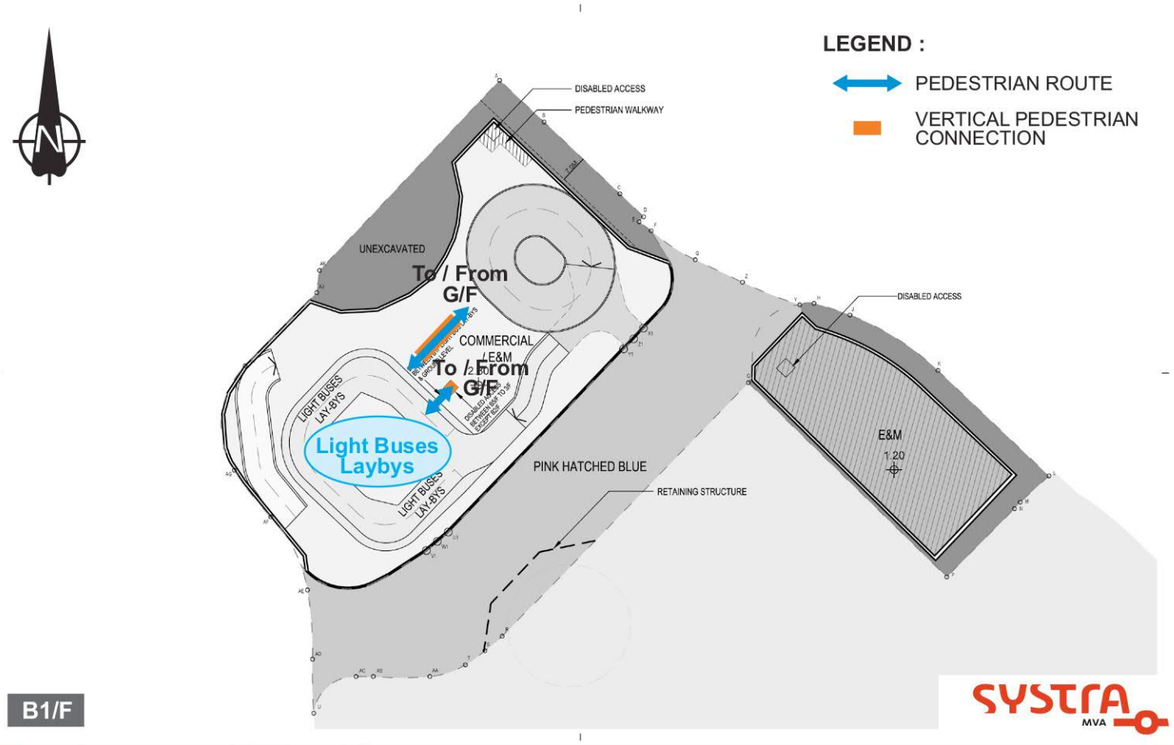
雅邦 Urbis Limited

Title	Artist's Impression of Current Scheme		
Scale	N.T.S.	Date	August 2025
Figure No.	**4.15b**		









SYSTRA MVA

Patchway Holdings (HK) Limited

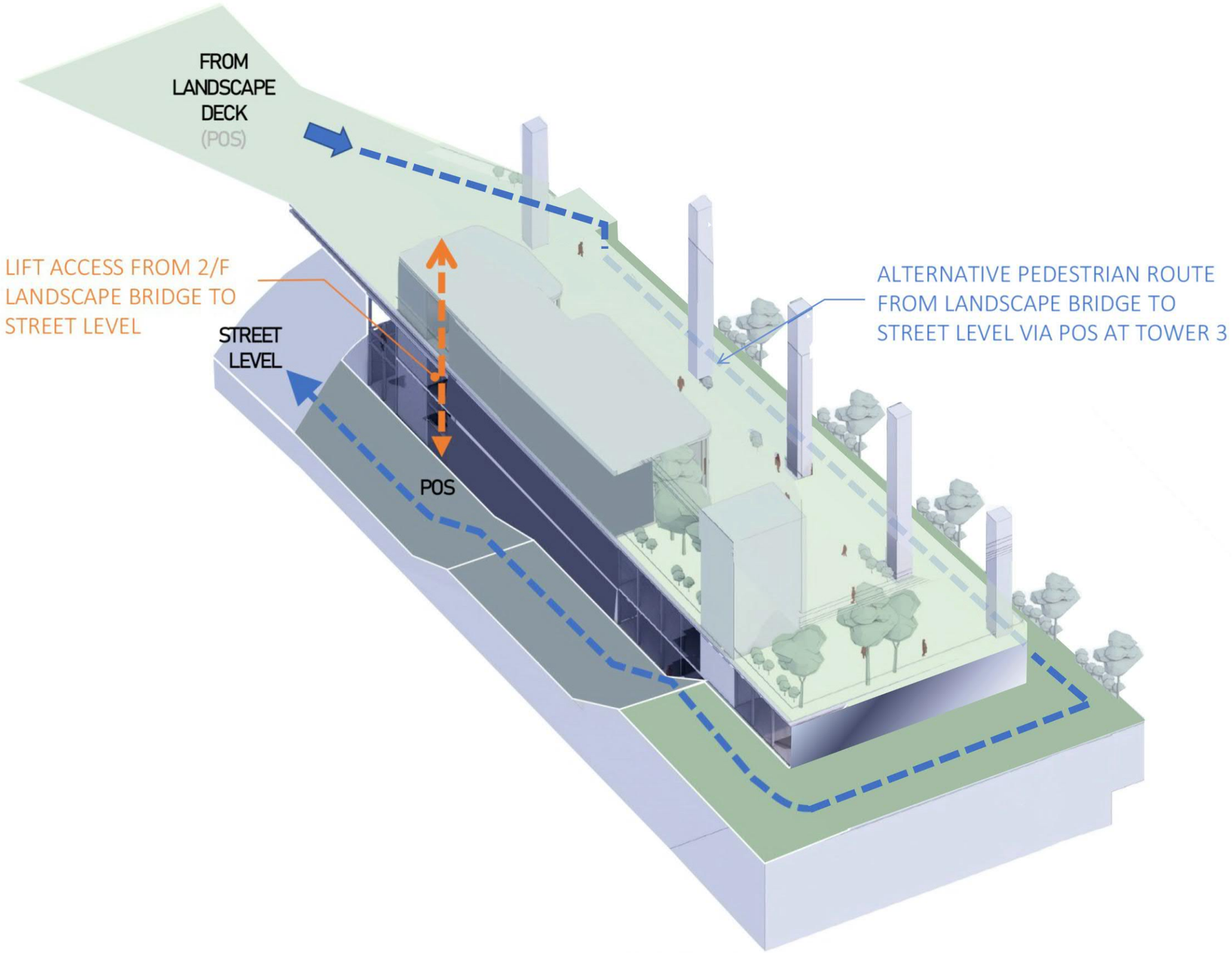
Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Ubis 雅邦 Limited

Title: Pedestrian Circulation

Scale	Date	Figure No.
N.T.S.	July 2025	4.16

PEDESTRIAN ACCESS FROM 2/F TO STREET LEVEL



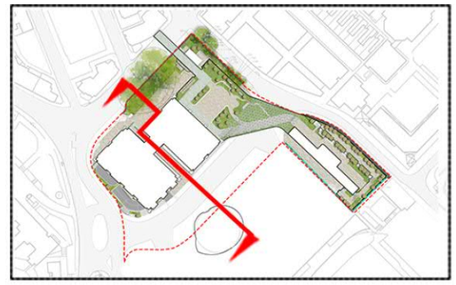
RONALD LU & PARTNERS

Patchway Holdings (HK) Limited

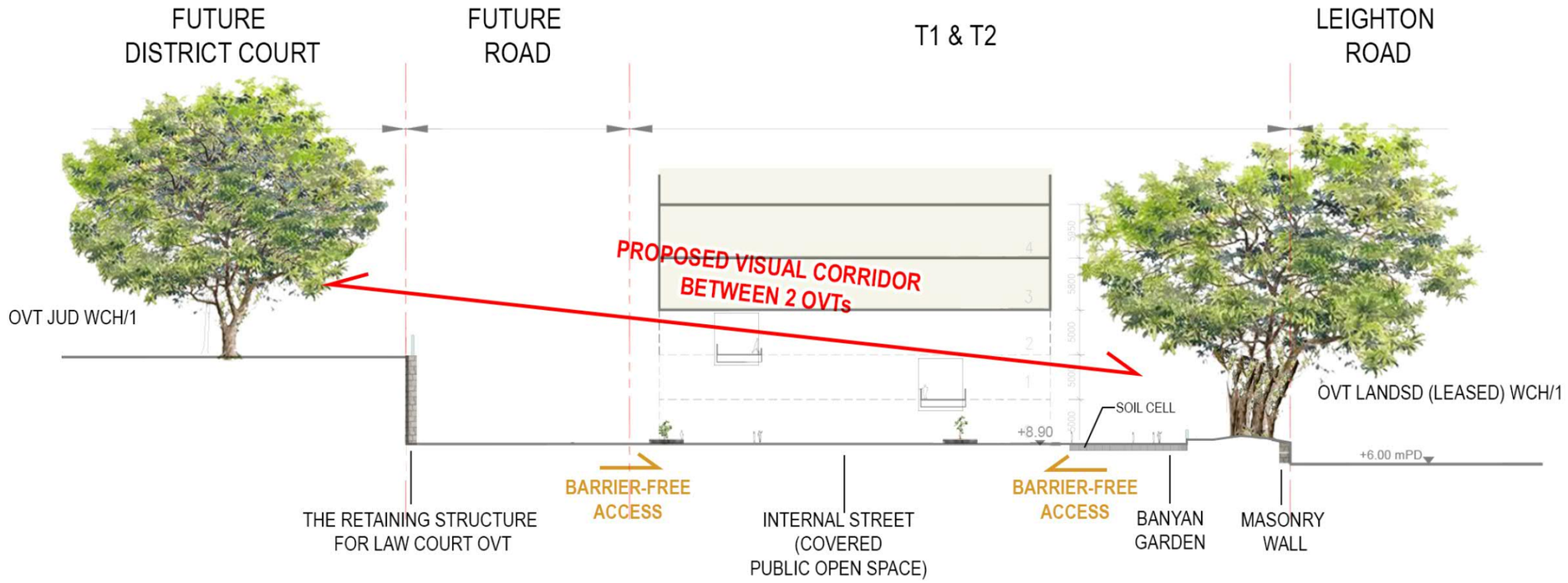
Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Urbis Limited 雅邦

Title			
Pedestrian Access from 2/F to Street Level			
Scale	N.T.S.	Date	January 2024
Figure No.	**4.17**		



KEY PLAN



otherland

Patchway Holdings (HK) Limited

Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Title: Visual Corridor between Two OVTs

Scale	Date	Figure No.
N.T.S.	August 2025	**4.18a**

VISUAL CORRIDOR BETWEEN 2 OVTS

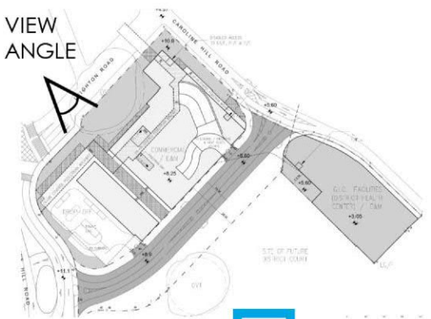


* IMAGE FOR REFERENCE ONLY, SUBJECT TO DETAIL DESIGN

VISUAL CORRIDOR BETWEEN 2 OVTS

A **VISUAL CORRIDOR** IS PROPOSED AT G/F TO ALLOW VISUALL CONNECTION BETWEEN 2 OVTs AT STREET LEVELS. IT ALSO SERVES AS A **COVERED PUBLIC OPEN SPACE (POS)** & **PEDESTRIAN WALKWAY**

VIEW ANGLE



RONALD LU & PARTNERS

Patchway Holdings (HK) Limited

Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Ubis 雅邦 Limited

Title			
Visual Corridor between Two OVTs			
Scale	N.T.S.	Date	January 2024	Figure No.	**4.18b**

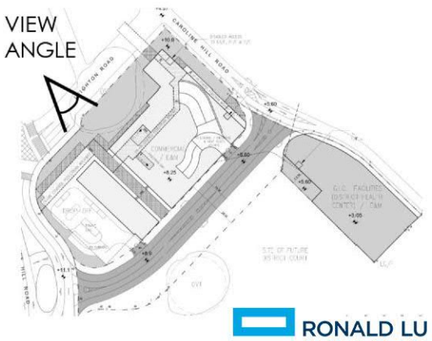
VISUAL CORRIDOR BETWEEN 2 OVTS



VISUAL CORRIDOR BETWEEN 2 OVTS

A **VISUAL CORRIDOR** IS PROPOSED AT G/F TO ALLOW VISUALL CONNECTION BETWEEN 2 OVTs AT STREET LEVELS. IT ALSO SERVES AS A **COVERED PUBLIC OPEN SPACE (POS)** & **PEDESTRIAN WALKWAY**

* IMAGE FOR REFERENCE ONLY, SUBJECT TO DETAIL DESIGN



RONALD LU & PARTNERS

Patchway Holdings (HK) Limited

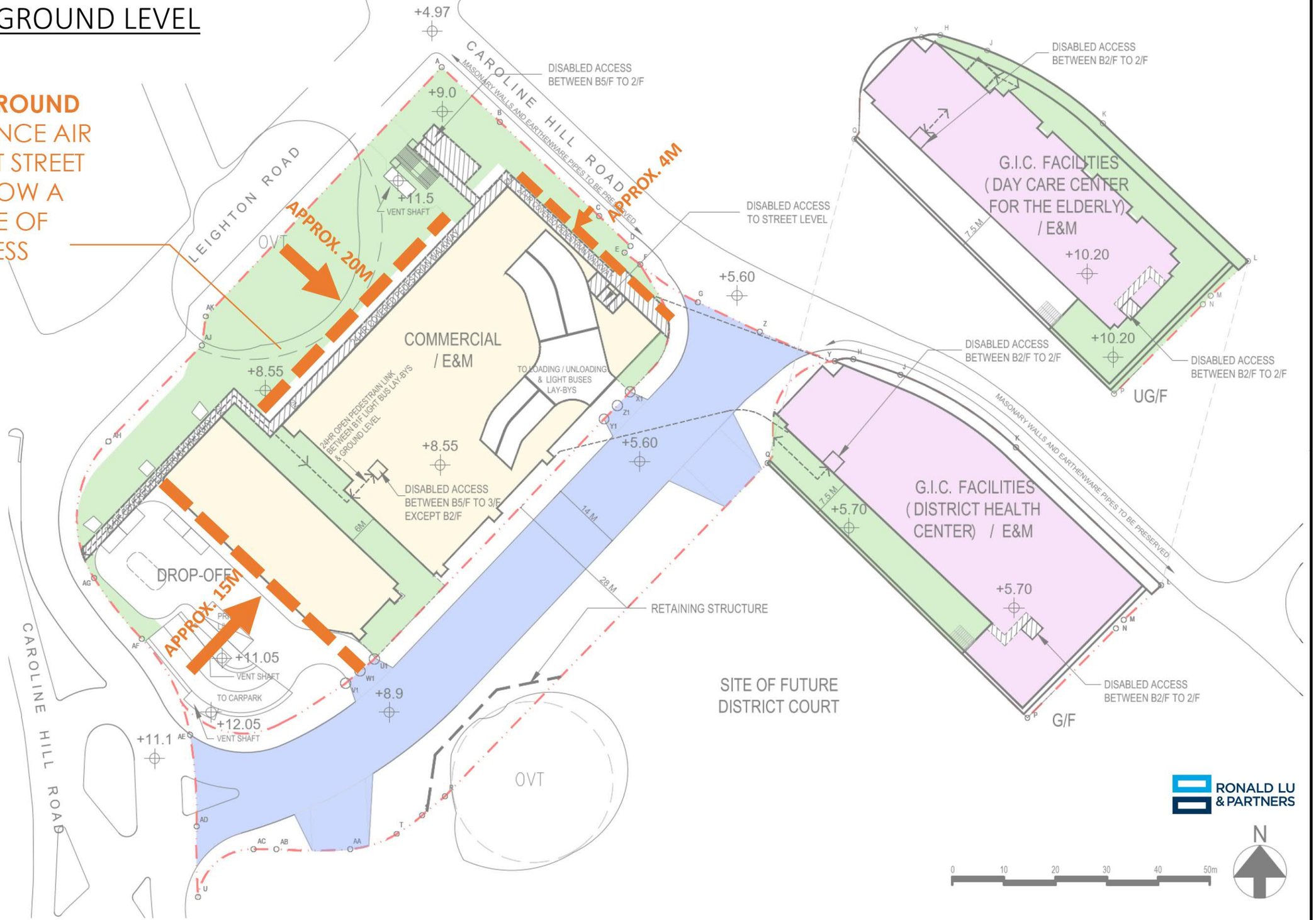
Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Urbis Limited 雅邦

Title			
Visual Corridor between Two OVTs			
Scale	N.T.S.	Date	January 2024	Figure No.	**4.18c**

SET-BACK AT GROUND LEVEL

SET-BACK AT GROUND LEVEL TO ENHANCE AIR VENTILATION AT STREET LEVEL AND ALLOW A HIGHER DEGREE OF VISUAL OPENNESS



Patchway Holdings (HK) Limited

Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Title: Setback at G/F and 2/F Levels

Scale	Date	Figure No.
1:750 @ A3	July 2025	**4.19a**

SET-BACK AT PODIUM LEVEL

SET-BACK AT PODIUM LEVEL TO ENHANCE AIR VENTILATION AT STREET LEVEL AND ALLOW A HIGHER DEGREE OF VISUAL OPENNESS

FUTURE FOOTBRIDGE
(TO BE CONSTRUCTED BY OTHERS
AND SUBJECT TO DETAIL DESIGN)

CONNECTION POINT FOR
FUTURE FOOTBRIDGE

DISABLED ACCESS
BETWEEN B5/F TO 2/F

LEIGHTON ROAD

CAROLINE HILL ROAD

+17.64

24M(W) COVERED PEDESTRIAN WALKWAY

APPROX. 36M

+18.70

COVERED LANDSCAPE BRIDGE/
COVERED PUBLIC OPEN SPACE

CANOPY ABOVE

ESCALATOR
TO / FROM
3F RETAIL

COMMERCIAL/
E&M

+18.70

DISABLED ACCESS
BETWEEN B5/F TO 3/F
EXCEPT B2F

DISABLED ACCESS
BETWEEN B2/F TO 2/F

DISABLED ACCESS
BETWEEN B2/F TO 2/F

COMMERCIAL / E&M

+18.40

+21.50

+17.00

APPROX.
16M - 21M

APPROX.
7.5M

APPROX. 5M
ON AVERAGE

SITE OF FUTURE
DISTRICT COURT

OVT

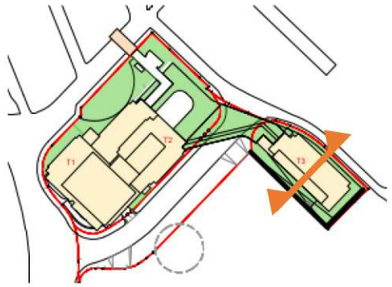
RONALD LU
& PARTNERS

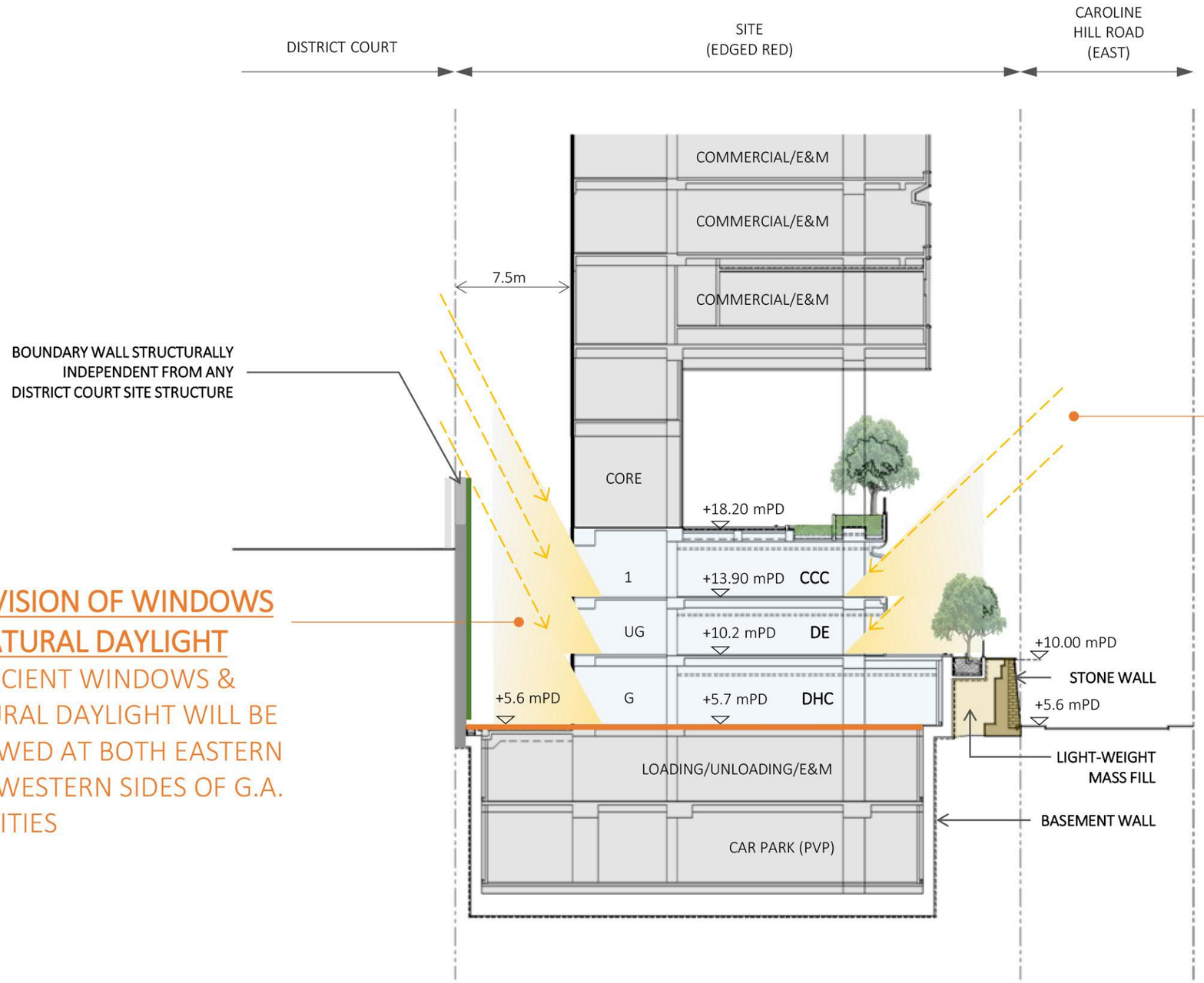
N

0 10 20 30 40 50m

Patchway Holdings (HK) Limited	*Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong*	Title: Setback at G/F and 2/F Levels	
		Scale: 1:750 @ A3	Date: July 2025
			Figure No.: **4.19b**

G.I.C. FACILITIES
WITH WINDOW FRONTAGE & NATURAL DAYLIGHT





PROVISION OF WINDOWS & NATURAL DAYLIGHT

SUFFICIENT WINDOWS & NATURAL DAYLIGHT WILL BE ALLOWED AT BOTH EASTERN AND WESTERN SIDES OF G.A. FACILITIES

PROVISION OF WINDOWS & NATURAL DAYLIGHT

SUFFICIENT WINDOWS & NATURAL DAYLIGHT WILL BE ALLOWED AT BOTH EASTERN AND WESTERN SIDES OF G.A. FACILITIES

RONALD LU & PARTNERS

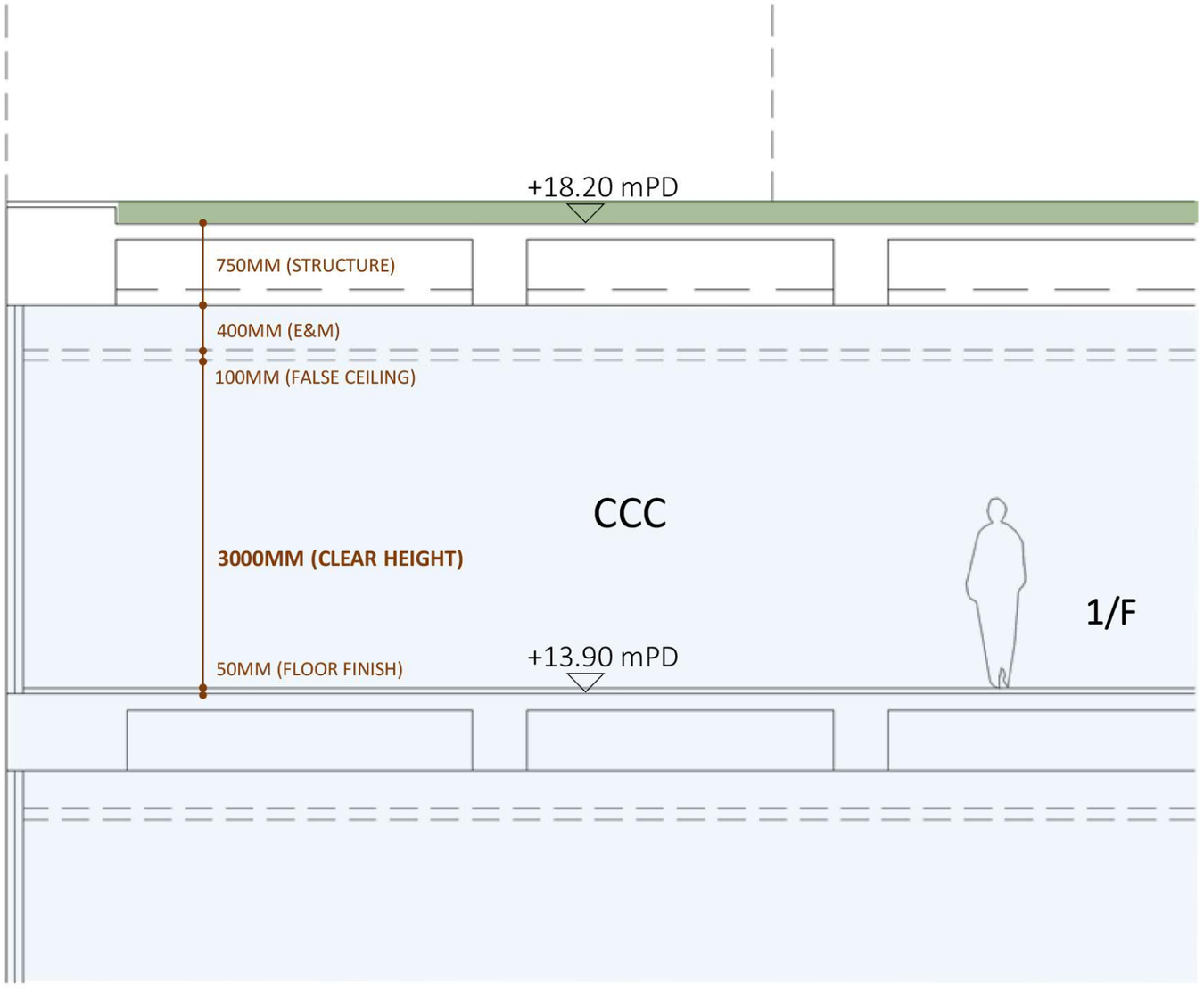
Patchway Holdings (HK) Limited

Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Ubis 雅邦 Limited

Title	GIC Facilities with Window Frontage and Natural Daylight		
Scale	N.T.S.	Date	March 2025
Figure No.	**4.20a**		

CLEAR HEIGHT OF CCC



RONALD LU & PARTNERS

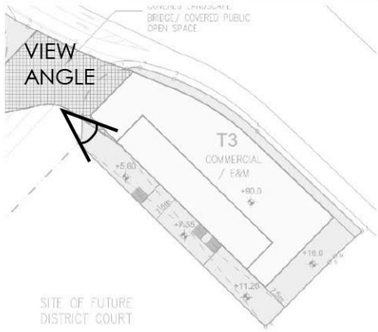
Patchway Holdings (HK) Limited

Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Urbis Limited 雅邦

Title	GIC Facilities with Window Frontage and Natural Daylight		
Scale	N.T.S.	Date	January 2024
Figure No.	**4.20b**		

GIC FACILITIES
WITH WINDOW FRONTAGE & NATURAL DAYLIGHT





RONALD LU & PARTNERS

Patchway Holdings (HK) Limited

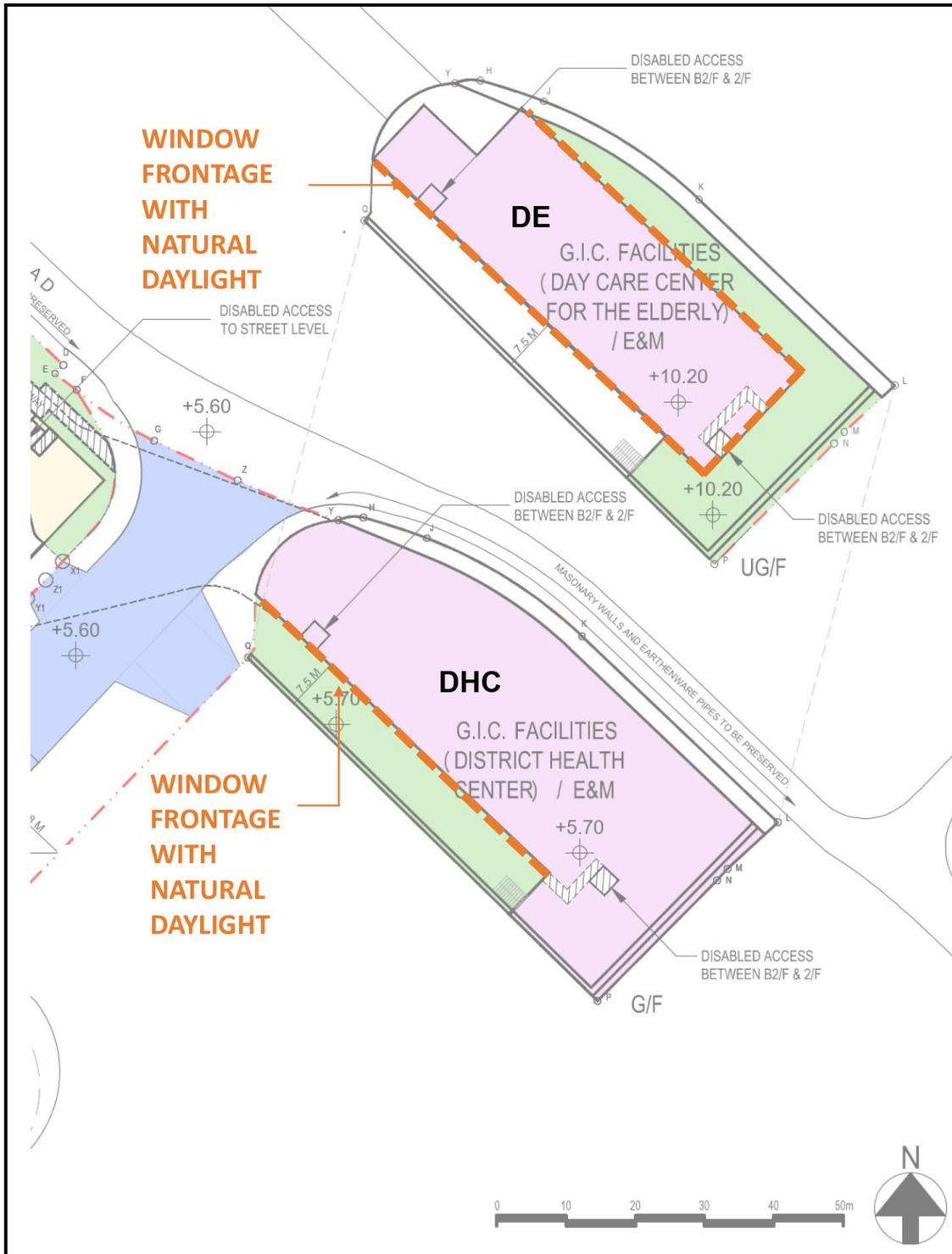
Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

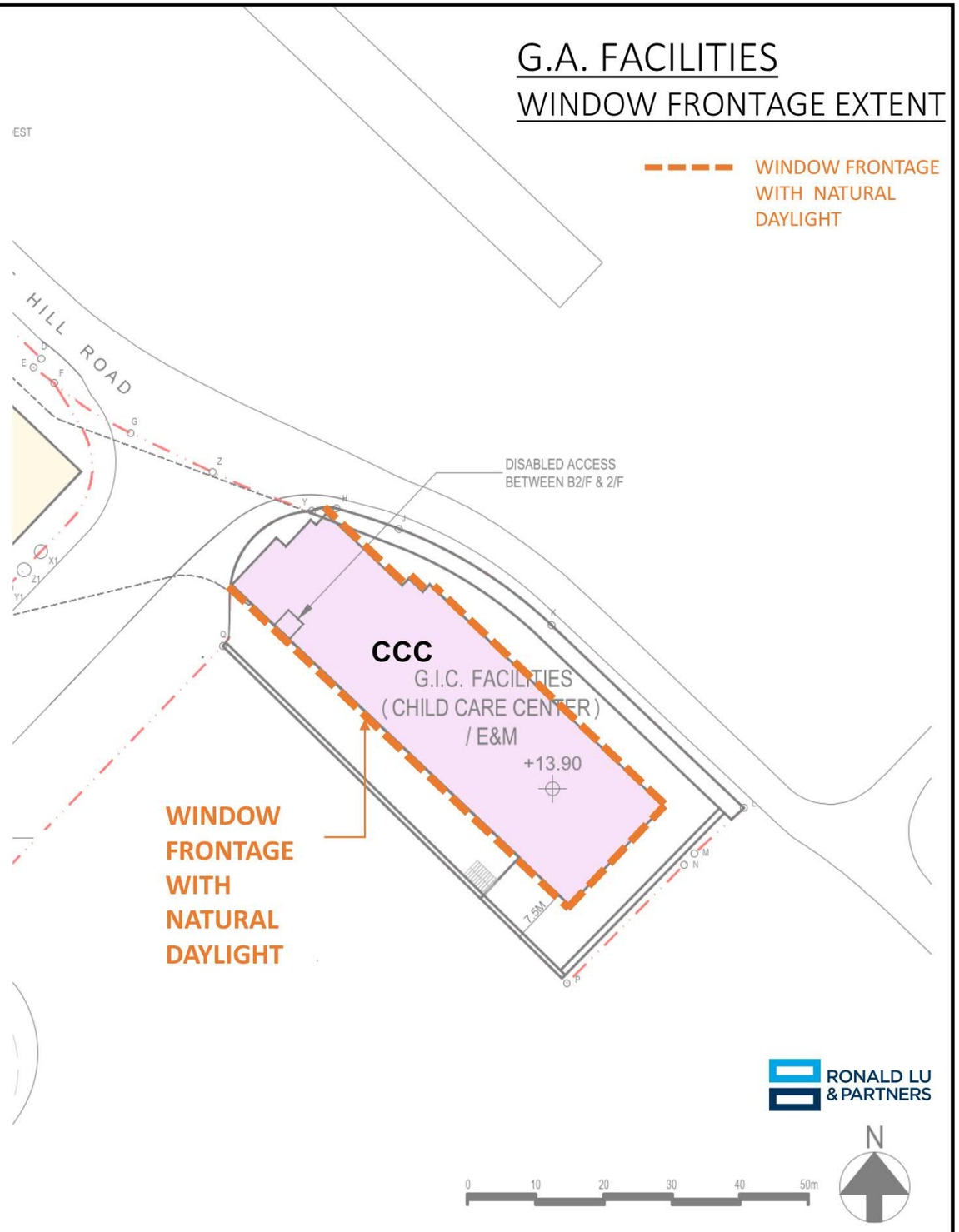
Title: GIC Facilities with Window Frontage and Natural Daylight

Scale	Date	Figure No.
N.T.S.	January 2024	**4.20c**

G.A. FACILITIES
WINDOW FRONTAGE EXTENT

WINDOW FRONTAGE WITH NATURAL DAYLIGHT





RONALD LU & PARTNERS

Patchway Holdings (HK) Limited

Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Urbis Limited 雅邦

Title	GIC Facilities with Window Frontage and Natural Daylight		
Scale	N.T.S.	Date	April 2024
Figure No.	**4.20d**		

Western Access

- Private car / taxi layby at GF
- An ancillary loading / unloading bay (heavy goods vehicle) at GF
- Public vehicle park (private cars) at B3
- Ancillary car park at B3-B5

Eastern Access

- Light buses laybys at B1
- Ancillary loading / unloading area at B2
- Drop-off, parking & loading / unloading for G.I.C. facilities at B2
- Public vehicle park (goods vehicles & coaches) at B2

LEGEND :

- INGRESS ROUTE TO WESTERN VEHICULAR ACCESS
- INGRESS ROUTE TO EASTERN VEHICULAR ACCESS

NORTH

Patchway Holdings (HK) Limited

Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Title: Vehicular Accessibility – Ingress Routes

Scale	Date	Figure No.
N.T.S.	July 2025	**4.21a**

Eastern Access

- Light buses laybys at B1
- Ancillary loading / unloading area at B2
- Drop-off, parking & loading / unloading for G.I.C. facilities at B2
- Public vehicle park (goods vehicles & coaches) at B2

Western Access

- Private car / taxi layby at GF
- An ancillary loading / unloading bay (heavy goods vehicle) at GF
- Public vehicle park (private cars) at B3
- Ancillary car park at B3-B5

LEGEND :

- EGRESS ROUTE FROM WESTERN VEHICULAR ACCESS
- EGRESS ROUTE FROM EASTERN VEHICULAR ACCESS

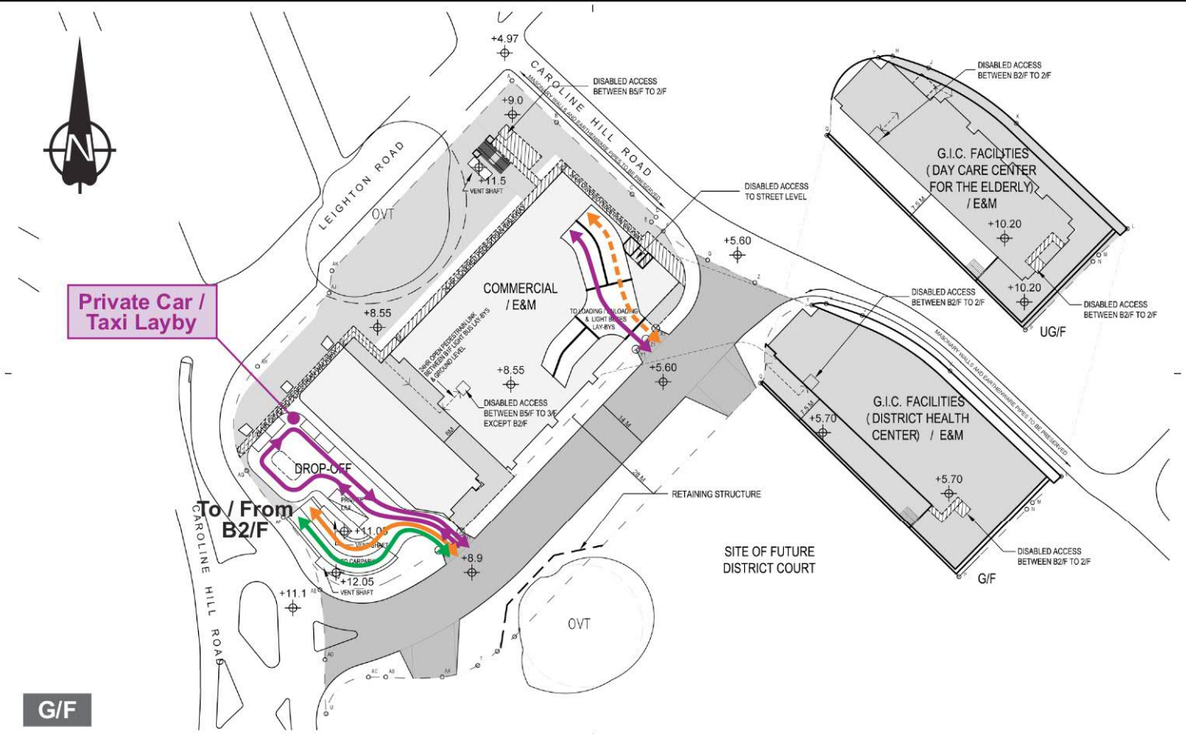
NORTH

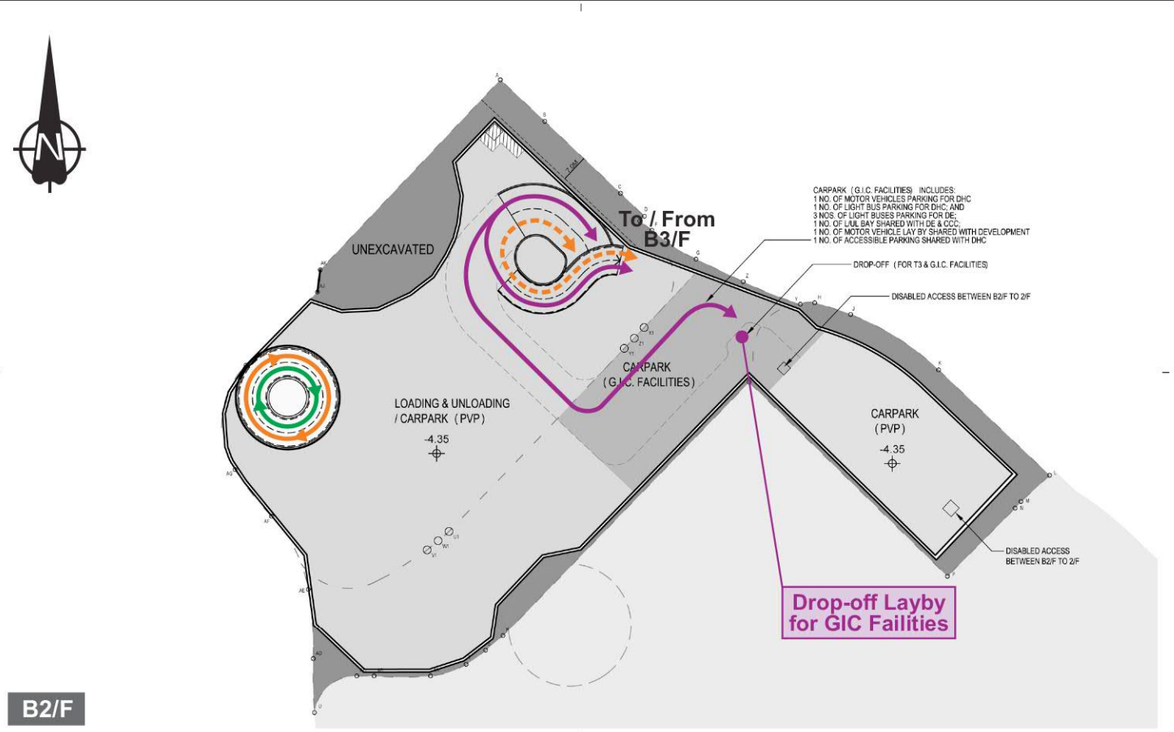
Patchway Holdings (HK) Limited

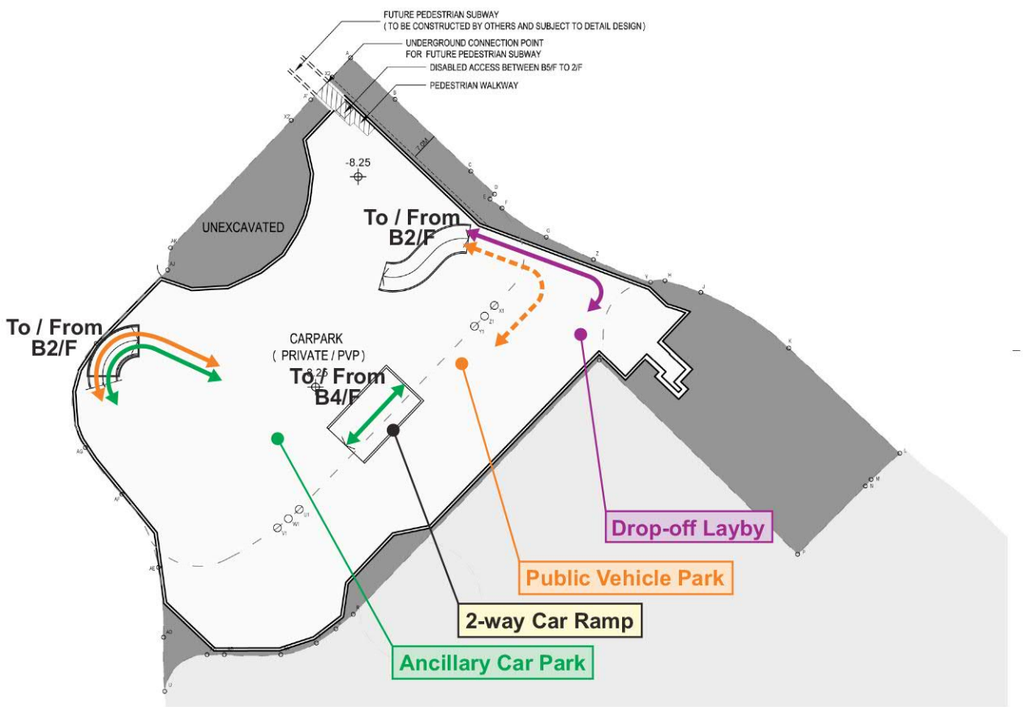
Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

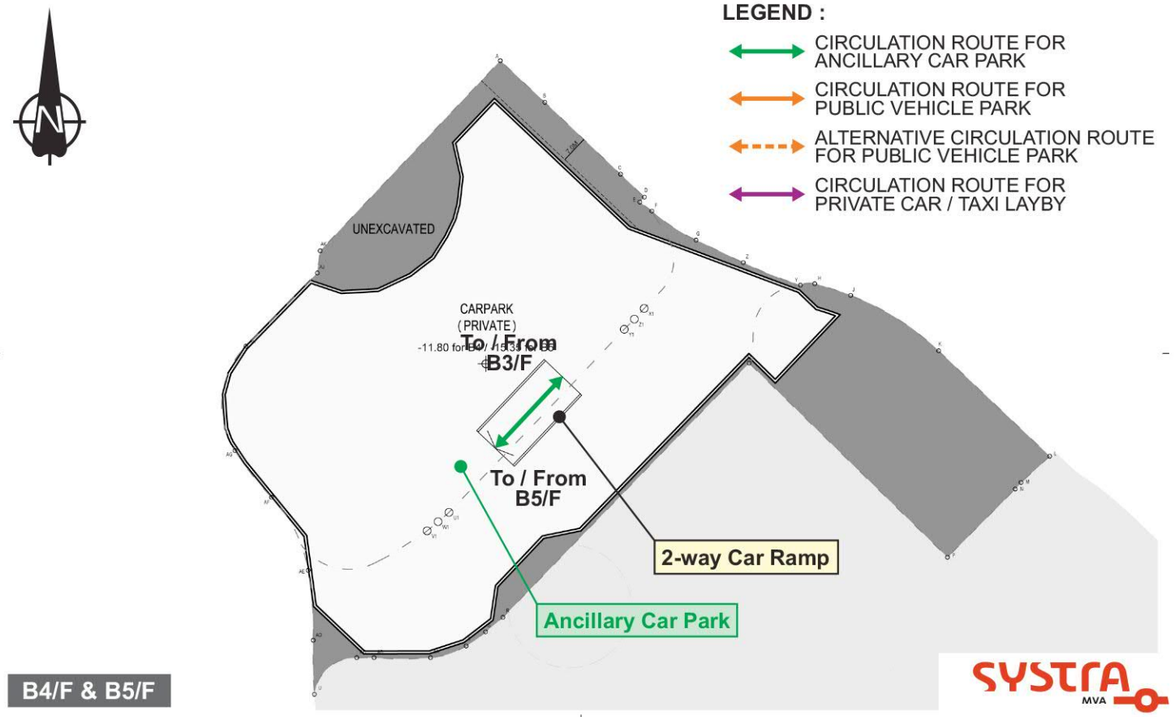
Title: Vehicular Accessibility – Egress Routes

Scale	Date	Figure No.
N.T.S.	July 2025	**4.21b**







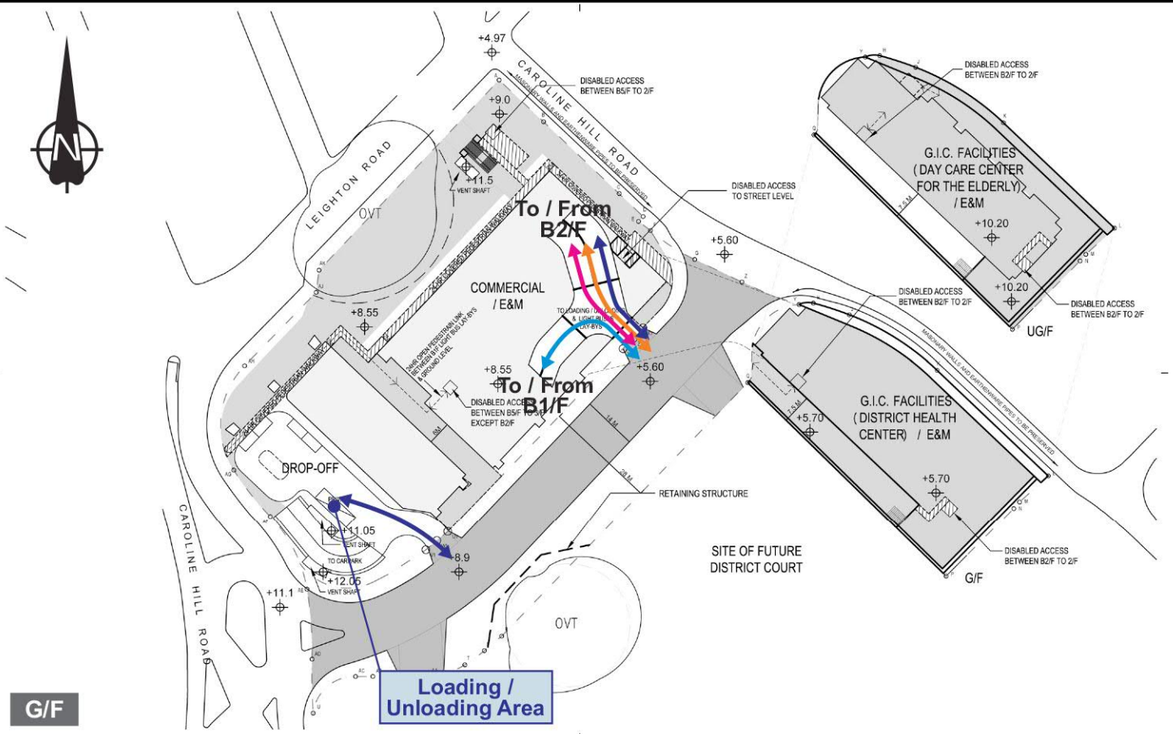


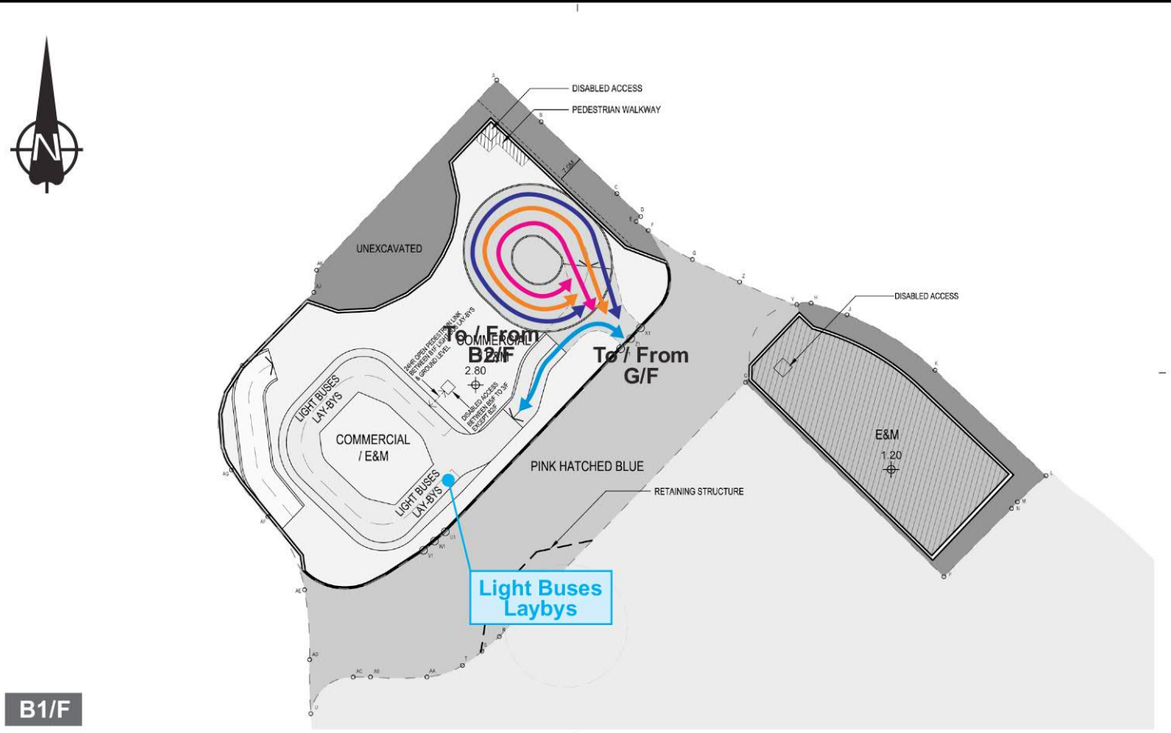
Patchway Holdings (HK) Limited

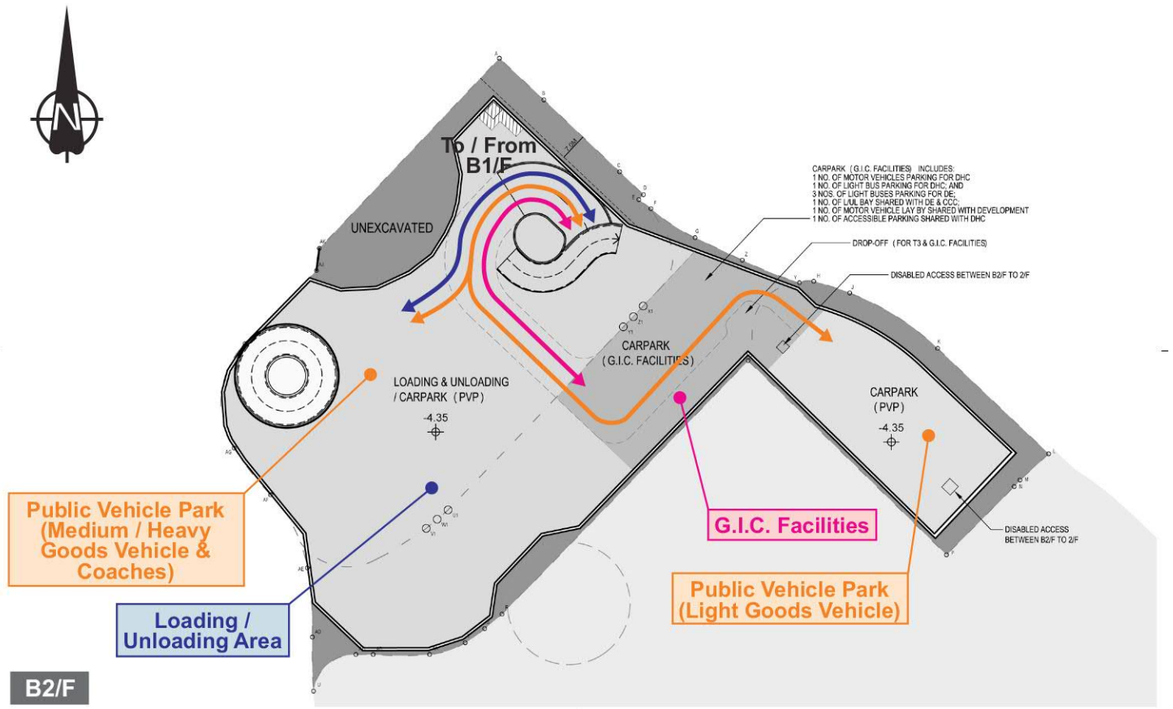
Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Title: Internal Traffic Arrangement and Circulation – Private Cars

Scale	Date	Figure No.
N.T.S.	July 2025	**4.22a**







LEGEND :

- CIRCULATION ROUTE FOR LIGHT BUSES LAYBYS
- CIRCULATION ROUTE FOR PUBLIC VEHICLE PARK
- CIRCULATION ROUTE FOR ANCILLARY LOADING / UNLOADING AREA
- CIRCULATION ROUTE FOR CAR PARK AND LOADING / UNLOADING OF G.I.C. FACILITIES

SYSTRA MVA

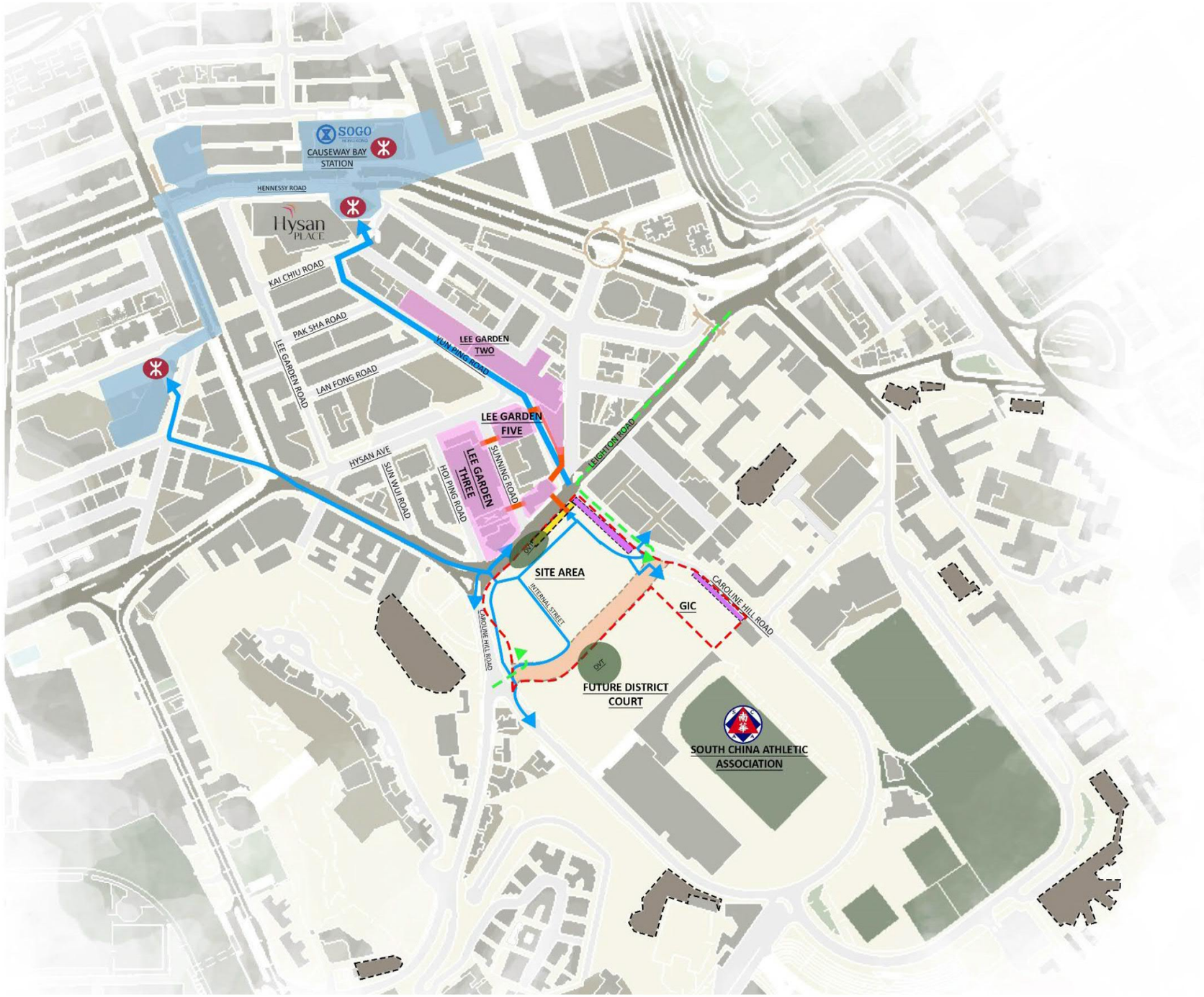
Patchway Holdings (HK) Limited

Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Ubis 雅邦 Limited

Title: Internal Traffic Arrangement and Circulation – Light Buses, Goods Vehicles and Coaches

Scale	Date	Figure No.
N.T.S.	July 2025	**4.22b**



LEGEND

- MTR STATION
- MTR STATION AREA
- PEDESTRIAN CIRCULATION
- VEHICLE ACCESS
- FUTURE FOOTBRIDGE NETWORK
- LEE GARDENS
- SITE BOUNDARY
- NEW ROAD
- HISTORIC BUILDING
- MASONRY WALLS & EARTHENWARE PIPES
- MASONRY WALLS (NON-GRADED)

otherland

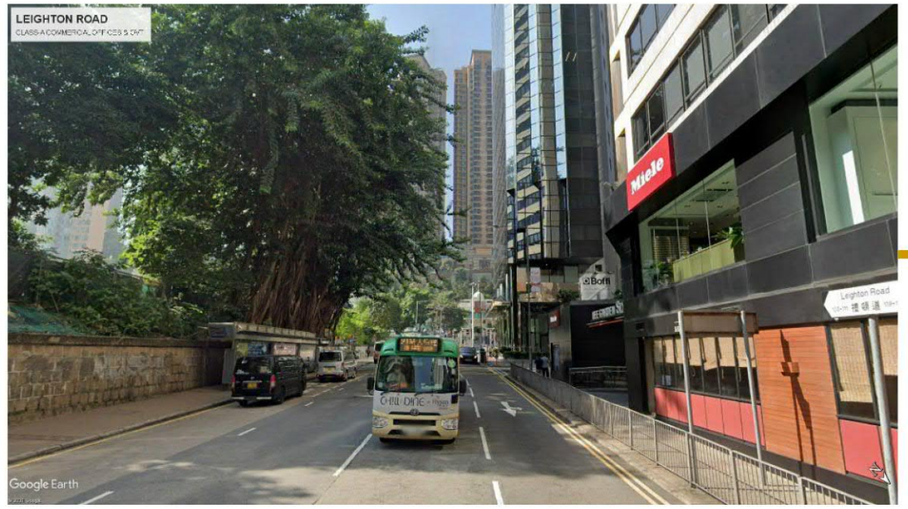
Patchway Holdings (HK) Limited

Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

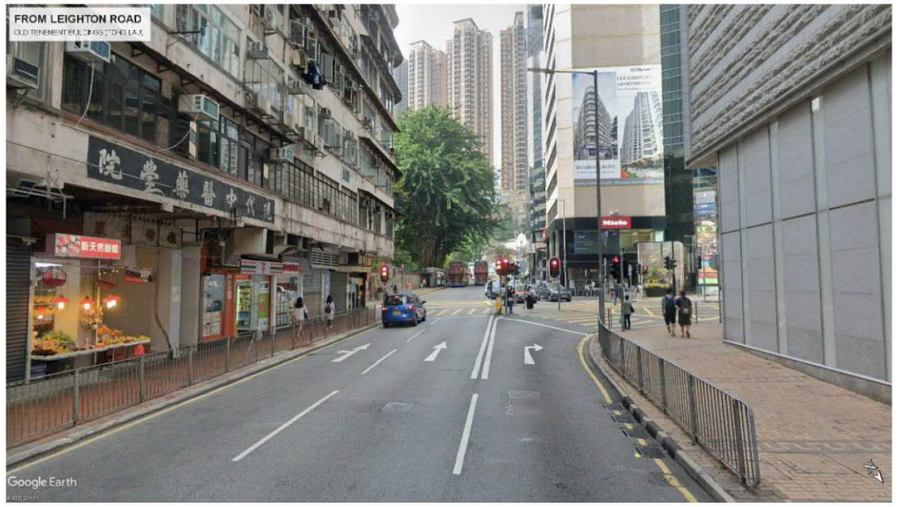
Urbis Limited 雅邦

Title: Urban Design Analysis – 1

Scale	Date	Figure No.
N.T.S.	August 2025	**4.23a**



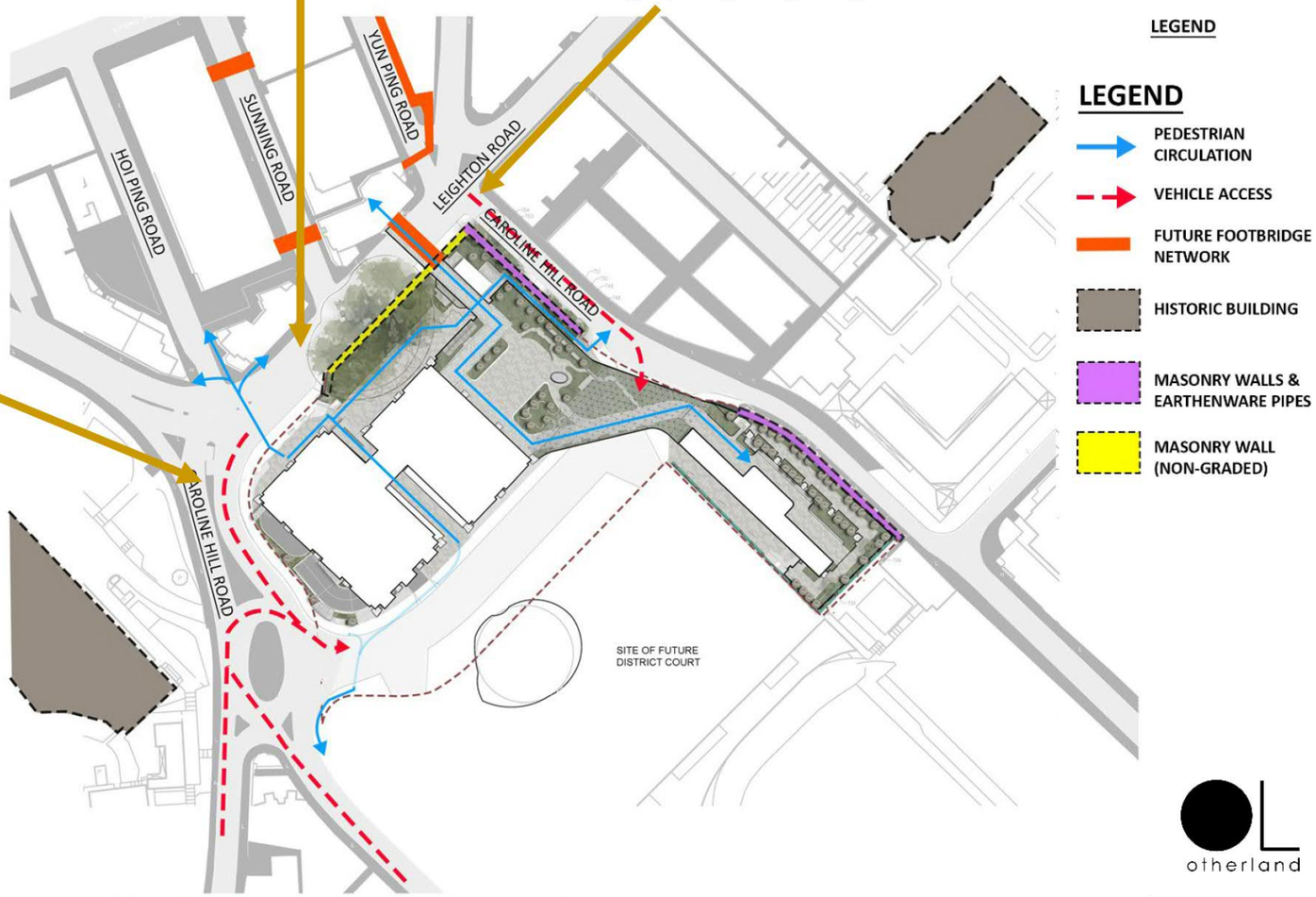
OVT & Grade A Commercial Offices, Leighton Road



Old Tenement Buildings (Tong Lau), Leighton Road



Heritage: Po Leung Kuk, Main Building, Leighton Road



Images reference from: Google Maps

otherland

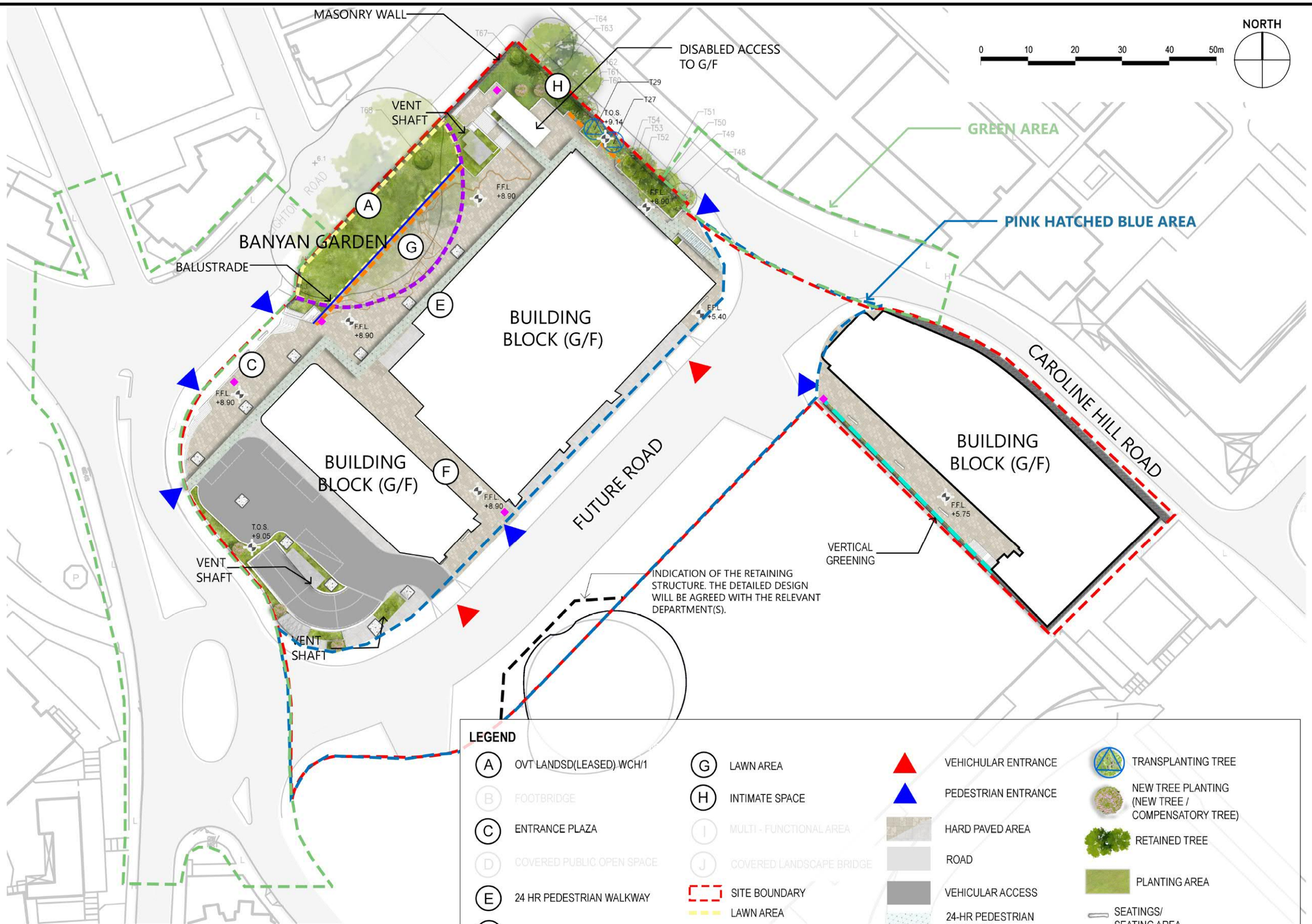
Patchway Holdings (HK) Limited

Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Urbis 雅邦 Limited

Title: Urban Design Analysis – 2

Scale	Date	Figure No.
N.T.S.	August 2025	**4.23b**



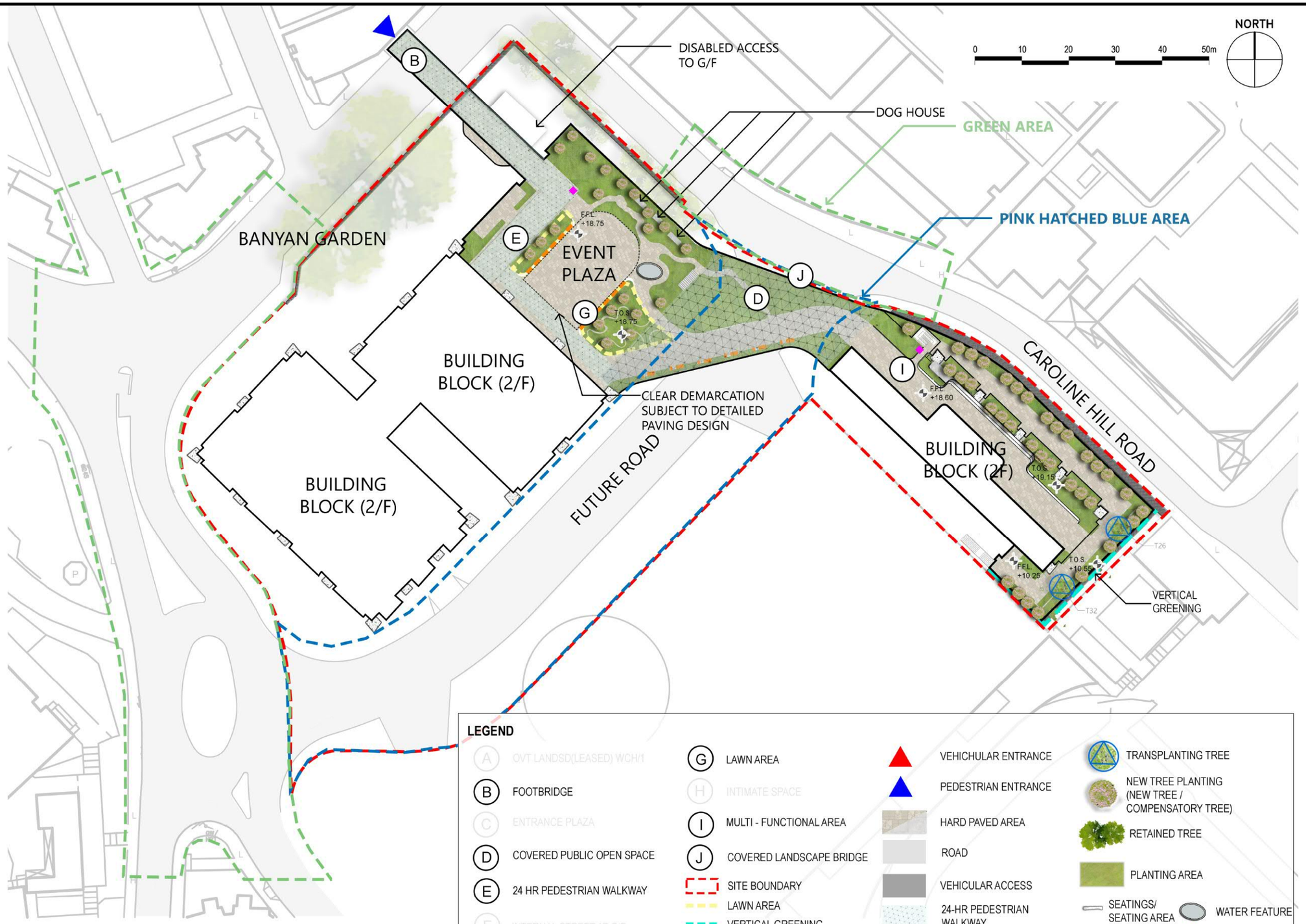
otherland

Patchway Holdings (HK) Limited

Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Title: Landscape Master Plan – G/F under Current Scheme

Scale	Date	Figure No.
1:850 @ A3	August 2025	**4.24a**



otherland

Patchway Holdings (HK) Limited

Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Title: Landscape Master Plan – 2/F under Current Scheme

Scale	Date	Figure No.
1:750 @ A3	August 2025	**4.24b**

銅鑼灣

Causeway Bay



Annex A-1

Plans and Minutes of Town Planning Board Meeting held on 8.5.2020 (Extracted)

N

通道
Access Road

地點東面的通道
Eastern Site Access

道路改善工程（東面）
Road Improvement Works (East)

道路改善工程（西面）
Road Improvement Works (West)

地點西面的通道
Western Site Access

+9mPD

商業大廈一座
Commercial Tower 1
BH: +135mPD

休憩用地
Open Space

25m
建築物間距
Building Gap

+6mPD

商業大廈二座
Commercial Tower 2
BH: +135mPD

5.7mPD
+

休憩用地
Open Space
+15mPD

15mPD
+

新區域法院一座
The District Court Block 1
BH: +135mPD

15mPD
+

11.9mPD
+

13mPD
+

新區域法院二座
The District Court Block 2
BH: +135mPD

行人天橋
Footbridge

10m

20m
建築物間距
Building Gap

新區域法院平台
The District Court Podium
BH: +22mPD

加路連山
CAROLINE HILL

體育中心
Sport Complex

南華體育會
South China Athletic Association

足球場
Football Field

保齡球場館
Bowling Centre
（下層停車場）
(Car Park under)

插圖 INSET

商業用地
Commercial Site

新區域法院
The District Court

用途地帶界線
ZONING BOUNDARY

圖例 LEGEND

- 地點界線 SITE BOUNDARY
- 古樹名木 OVT
- 現存主要樹木群的大約位置 APPROXIMATE LOCATION OF EXISTING MAJOR TREE CLUSTERS
- 需保留的石牆與石牆上的樹木的指示位置 INDICATIVE LOCATION OF MASONRY WALLS WITH TREE GROWTH TO BE PRESERVED
- 道路改善工程的指示路線 INDICATIVE ALIGNMENT FOR ROAD IMPROVEMENT WORKS
- 道路改善工程的指示範圍 INDICATIVE AREA FOR ROAD IMPROVEMENT WORKS
- 緊急車輛通道 EMERGENCY VEHICULAR ACCESS (EVA)
- 地點車輛出/入口 INGRESS / EGRESS OF SITE
- 緊急車輛通道出/入口 INGRESS / EGRESS FOR EVA
- 可能建設的地下行人通道 POSSIBLE UNDERGROUND PEDESTRIAN CONNECTION
- 行人通道 PEDESTRIAN CONNECTION
- BH 建築物高度 BUILDING HEIGHT
- mPD 在主水平基準上若干米 IN METRE ABOVE PRINCIPAL DATUM

界線只作識別用，通道（包括內部通道的走線）及建築物布局有待詳細設計
BOUNDARY FOR IDENTIFICATION PURPOSE ONLY. ACCESS (INCLUDING ALIGNMENT OF INTERNAL ROAD) AND BLOCK DISPOSITION SUBJECT TO DETAILED DESIGN

本摘要圖於2020年1月2日擬備，
所根據的資料為測量圖編號
11-SW-15B

EXTRACT PLAN PREPARED ON 2.1.2020
BASED ON SURVEY SHEET No.
11-SW-15B

加路連山道用地的概念方案
CONCEPTUAL SCHEME FOR CAROLINE HILL ROAD SITE

就黃泥涌分區計劃大綱草圖編號S/H7/20
提出的申述個案編號R1-R634及相關意見編號C1-C105作出考慮
CONSIDERATION OF REPRESENTATIONS No. R1-R634 AND
RELATED COMMENTS No. C1-C105 TO THE DRAFT
WONG NAI CHUNG OUTLINE ZONING PLAN No. S/H7/20

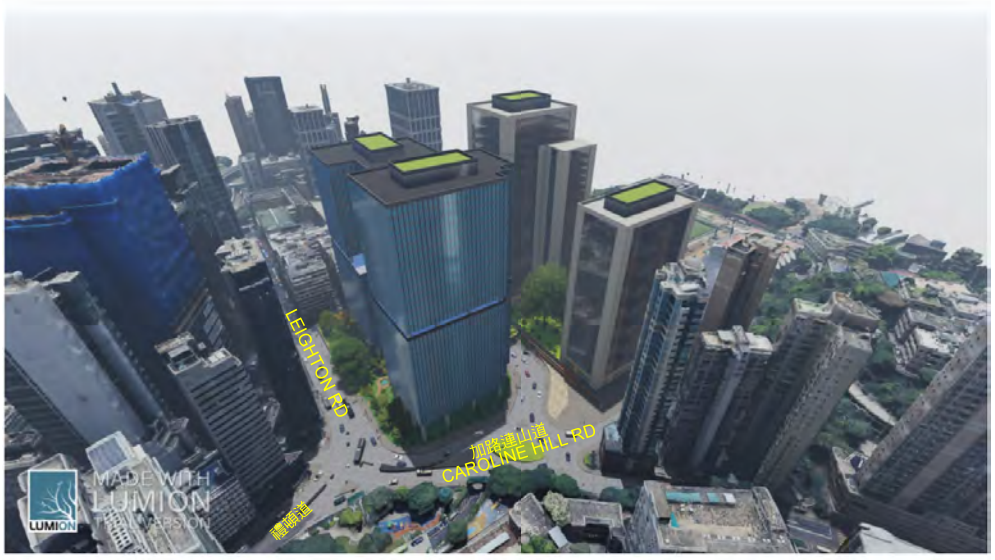
SCALE 1 : 1 200 比例尺

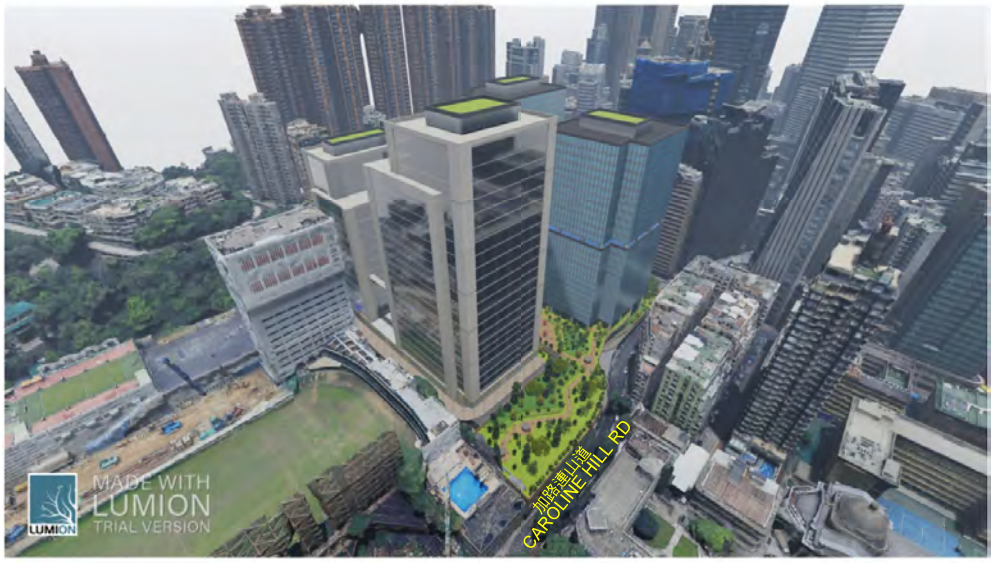
米 METRES 20 0 20 40 60 80 米 METRES

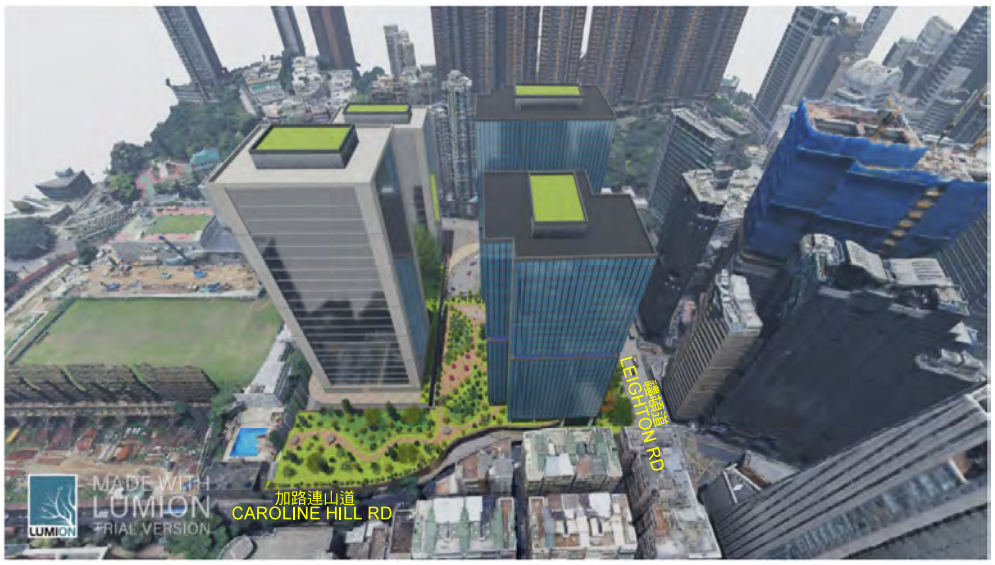
規劃署
PLANNING DEPARTMENT

參考編號
REFERENCE No.
R/S/H7/20

圖 PLAN
H - 5







只作圖示之用
FOR ILLUSTRATION PURPOSE ONLY

本圖於2020年1月15日擬備
PLAN PREPARED ON 15.1.2020

公共空間及商業發展間可互相融合的概念圖則
CONCEPTUAL ILLUSTRATION SHOWING POSSIBLE INTEGRATION OF OPEN SPACE WITH COMMERCIAL DEVELOPMENT

規劃署
PLANNING DEPARTMENT

參考編號
REFERENCE No.
R/S/H7/20

圖 PLAN
H - 7a





只作圖示之用
FOR ILLUSTRATION PURPOSE ONLY

本圖於2020年1月15日擬備
PLAN PREPARED ON 15.1.2020

公共空間及商業發展間可互相融合的概念圖則
CONCEPTUAL ILLUSTRATION SHOWING POSSIBLE INTEGRATION OF OPEN SPACE WITH COMMERCIAL DEVELOPMENT

規劃署
PLANNING DEPARTMENT

參考編號
REFERENCE No.
R/S/H7/20

圖 PLAN
H - 7b

(o) how the assumed retail GFA in the CHR Site would affect the TR result;

(p) whether the full TR report had been submitted to WCDC for consideration;

(q) the purpose or rationale for locating the minibus stop within the CHR Site;

Community facilities

(r) whether the proposed development in the "C(2)" zone could accommodate additional GIC facilities if those facilities were required in the future;

(s) whether the provision of residential care home for the elderly (RCHE) at the CHR Site had been explored and whether some of the commercial GFA could be allocated for the provision of elderly facilities; and

Open Space

(t) whether more open space could be provided notwithstanding that the OZP had stipulated a minimum 6,000m^2 of public open space and whether the management of the open space would be assigned to the future developer.

27. In response, Mr Louis K.H. Kau, Ms Fiona H.Y. Fong, Mr C.K. Wan and Ms Charis Wong made the following main points with the aid of PowerPoint slides and visualizer:

Site history

(a) the site was no longer reserved for open space years ago. Before demolition works took place at the site, it was occupied by the ex-Electrical and Mechanical Services Department (EMSD) Headquarters, a workshop for car repairing, the ex-Civil Aid Service Headquarters, the ex-Post Office Recreation Club and the PCCW Recreation Club. The site had long been occupied by GIC and recreational uses rather than preserved as a green lung;

Control mechanism

(b) the indicative layout was prepared to facilitate the preparation of technical assessments to support the amendments to the OZP. The essential elements had been incorporated into the Notes of the OZP. For the "C(2)" zone, a maximum BH of 135mPD, maximum GFA of 100,000m^2 which should include the GFA of GIC facilities as required by the government, and the provision of open space of not less than 6,000m^2; a public transport facility for minibuses; and a public vehicle park of not less than 125 parking spaces had been stipulated in the Notes while the Explanatory Statement of the OZP also specified that quantitative Air Ventilation Assessment (AVA) would be conducted at the detailed design stage to identify the exact alignment of the building gap and/or other enhancement measures, the retail GFA of the commercial development would be restricted to 10,000m^2, and a DHC with a net operational floor area (NOFA) of about 1,000m^2 and a CCC with a NOFA of about 531m^2 should be provided. The requirements for the submission of quantitative AVA, preservation of OVTs, protection of the stone retaining walls and trees thereon, submission of Landscape Plan and compliance with the SBDG would also be incorporated in the land sale conditions. The future developer was also advised to make reference to the 'Public Open Space in Private Developments Design and Management Guidelines' promulgated by the Development Bureau to design and manage the public open space to be provided within the CHR Site;

Public consultation

(c) the proposed development at the CHR Site and the proposed amendments to the OZP were presented three times to WCDC in 2018 and 2019. If the amendments to the draft OZP were confirmed, the relevant government departments would proceed to the detailed design of the district court development, and WCDC would be further consulted in that regard. As for the commercial development, if the future developer followed the development parameters as stipulated on the OZP, no further public consultation under the planning regime for the development on the "C(2)"

zone was required. If the future developer sought for minor relaxation of BH or GFA restrictions, submission of planning application to the Board would be required and the public could make comments on the proposal during the planning application process;

(d) regarding public consultation, PlanD would conduct public consultations for major planning studies. For district planning matters, normally the District Council would be consulted for the purpose of collecting public views. Besides, the Town Planning Ordinance had stipulated the statutory public consultation procedure in the plan making process. The public could make representations/comments to the Board in respect of OZP amendments and attend hearing meeting to make oral submission. The two residents' forums were organized by WCDC members and the representatives of concerned government departments had attended to explain the land use proposals and responded to residents' concerns;

Development intensity and building height

(e) as the district court was a government facility, it was appropriate to designate a "G/IC" zoning while the commercial development would be implemented by private developer and the "C(2)" zone had incorporated the relevant development parameters to guide and control the development. Despite the two different zonings, an integrated design could be achieved as demonstrated in the indicative scheme with suitable decking design. For the site at Sai Yee Street in Mong Kok, the site context was different from the CHR Site. The Sai Yee Street site was located close to the East Rail Station which had heavy pedestrian flow to and from other parts of Mong Kok through the site with more requirements for provision of the GIC facilities than that proposed in the CHR Site. Accessibility to these proposed GIC facilities and integrated open space design and connectivity with the surrounding areas in the Sai Yee Street site were also concerns to Members. Hence, the Board finally decided to require the submission of MLP for the Sai Yee Street site to ensure that the concerns would be properly addressed. As for the CHR Site, the design should be less complicated in terms of pedestrian connectivity and the 6,000m^2 public open space were all within the "C(2)" zone at the CHR Site. Furthermore, the

government scheme;

Indicative Scheme by PlanD

(h) whether the design/deposition of the future district court buildings would follow the indicative scheme provided by the government, and whether the public could scrutinise the final design of the district court buildings;

(i) referring to the government scheme that a 25m-wide building gap had been provided within the site between the two commercial towers, whether the building gap of 20m between the district court buildings near CHR(West) and the residential development opposite them were sufficient, and whether the building gap could be widened;

(j) whether there was a standard for minimum floor height for the district court buildings, and whether the Judiciary had finalised the court facilities to be provided at the site;

(k) besides DHC and CCC, whether additional GIC facilities could be provided at the site;

(l) in response to the concerns of Members, a revised conceptual layout with disposition of the district court buildings set back further from CHR(West) had been provided by PlanD during the further consideration of proposed amendments to the approved Wong Nai Chung OZP (as detailed in Plan FC-3 of MPC Paper No. 5/19). Noting R26's request for a NBA of 40m, what the distance was between the south-western edge of the district court building and the residential buildings at CRH(West) in the revised conceptual layout; and

(m) whether there was scope to swap the location of the open space at the north-eastern corner of the site and the district court buildings.

44. Mr Louis K.H. Kau, Mr C.K. Wan, Ms Fiona H.Y. Fong and Ms Charis Wong made the following responses:

Traffic

(a) the access road shown in the government scheme was indicative in nature. The future developer could consider different arrangements for the access road, including decking over it;

(b) upon completion, the access road within the site would be handed back to the government and become a public road to be managed by TD and maintained by HyD. The concern on the management arrangement of the access road affecting the operation of the district court building was unfounded;

(c) the traffic flow pattern on weekdays in the surrounding area was regular with little variation only. As such, despite only one day of traffic survey data was used, the likelihood for the TR result being not representative was low;

(d) the development would include 125 public car parking spaces. Besides, the ancillary car parking spaces for the retail floor space would normally be made available for hourly-parking by visiting customers, while the ancillary parking spaces for the office floor spaces would normally not be made available for public use. Regarding the concern on tailback, sufficient queuing space would need to be incorporated into the development following the design requirements. The actual arrangement would be formulated at the detailed design stage;

(e) the survey conducted for the TR had taken into account all road users, including learner drivers;

(f) the traffic capacity of the road junctions in the vicinity was a major consideration for the development project. Based on the TR, the remaining capacity of the nearby road network with improvement works at certain junctions could support the proposed GFA of 170,000m^2 for the proposed development at the CHR Site;

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Causeway Bay



Annex A-2

Minutes of Town Planning Board Meeting held on 19.6.2020 (Extracted)

(i) private developer could be a provider for GIC facilities. The trend for provision of GIC facilities in a commercial site was accepted and supported by the society. It was an efficient way to increase the supply of GIC facilities to cater to public needs; and

(j) there were major public open spaces, including the Victoria Park, in Causeway Bay and there was no need for further large open space at the site.

14. The Chairperson summarized that Members in general supported the district court development at the CHR site but there were diverse views on the proposed commercial development at the site. Some Members considered that the "G/IC(2)" and the "C(2)" zones should be maintained while some Members considered that the "C(2)" zone was not appropriate. As Members' views were divided, the meeting agreed to take a vote. A majority of Members considered that the "C(2)" and "G/IC(2)" zones under Amendment Items A and B should be maintained to facilitate commercial and district court development at the CHR site.

15. A Member said while the "G/IC(2)" and the "C(2)" zones were supported, the boundaries of the two zones could be suitably adjusted to allow for a more efficient site configuration for both the commercial and district court developments. Referring to the government's layout, the Member said the residual open space at the southeastern corner of the site due to the configuration of the "C(2)" zone was not desirable. Another Member suggested that consideration might be given to swapping the open space at the southeastern corner of the site to a better position by adjusting the zoning boundaries. The Chairperson said that the government's layout was indicative and it was only one of the design options. As indicated in the alternative schemes proposed by the representers, there was possibility for various design and layout arrangements. Members' concern on the design and layout of the "C(2)" site could be addressed alternatively, say by requiring the submission of layout plan for approval by the Board. After discussion, Members agreed to maintain the boundaries of the "C(2)" and "G/IC(2)" zones under Amendment Items A and B.

District Court Development

16. For the district court development, the Chairperson recapitulated that some

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Causeway Bay

Annex A-3

Town Planning Board Approval Letter (ref. TPB/A/H7/181)

城 市 規 劃 委 員 會
香港北角渣華道三百三十三號
北角政府合署十五樓

TOWN PLANNING BOARD
15/F., North Point Government Offices
333 Java Road, North Point,
Hong Kong.

傳　真 Fax: 2877 0245 / 2522 8426
電　話 Tel: 2231 4810
來函檔號 Your Reference:

覆函請註明本會檔號
In reply please quote this ref.: TPB/A/H7/181

By Email
rachel.yiu@urbis.com.hk

20 May 2022

Urbis Ltd.
11/F, Siu On Centre
188 Lockhart Road
Wanchai, Hong Kong
(Attn.: David Morkel)

Dear Sir/Madam,

Submission of Layout Plan and Proposed Minor Relaxation of Gross Floor Area For Permitted Eating Place, Office, Place of Recreation, Sports or Culture, Public Clinic,Public Transport Terminus or Station, Public Vehicle Park (excluding container vehicle), Shop and Services and Social Welfare Facility in "Commercial (2)" Zone, Inland Lot No. 8945, Caroline Hill Road, Causeway Bay

I refer to my letter to you dated 5.5.2022.

After giving consideration to the application, the Town Planning Board (TPB) approved the application for permission under section 16 of the Town Planning Ordinance on the terms of the application as submitted to the TPB. The permission shall be valid until 6.5.2026, and after the said date, the permission shall cease to have effect unless before the said date, the development permitted is commenced or the permission is renewed. The permission is subject to the following conditions :

(a) the design and provision of vehicular access, car parking and loading/unloading facilities for the proposed development to the satisfaction of the Commissioner for Transport or of the TPB;

(b) the submission and implementation of a revised Landscape Master Plan to the satisfaction of the Director of Planning or of the TPB; and

(c) the submission of a Conservation Management Plan and implementation of the mitigation measures identified therein before commencement of works to the satisfaction of the Commissioner of Heritage or of the TPB.

The TPB also agreed to advise you to note the advisory clauses as set out at the Appendix attached.

If you wish to seek an extension of the validity of this permission, you may submit an application under 16A of the Town Planning Ordinance to the TPB no less than six weeks before its expiry. This is to allow sufficient time for processing of the application in consultation with the concerned departments. The TPB will not consider the application if the time limit for commencement of development specified in the permission has already expired

at the time of consideration by the TPB. Please refer to the TPB Guidelines No. 35C and 36B for details. The Guidelines and application forms are available at the TPB's website (www.info.gov.hk/tpb/), the Planning Enquiry Counters of the Planning Department (Hotline : 2231 5000) at 17/F, North Point Government Offices, 333 Java Road, North Point; 14/F, Sha Tin Government Offices, 1 Sheung Wo Che Road, Sha Tin; and the Secretariat of the TPB at 15/F, North Point Government Offices.

For amendments to the approved development that may be permitted with or without application under section 16A, please refer to TPB Guidelines No. 36B for details.

The TPB Paper in respect of the application (except the supplementary planning statement/technical report(s), if any) is available at this link (https://www.info.gov.hk/tpb/en/meetings/MPC/Agenda/694_mpc_agenda.html) and the relevant extract of minutes of the TPB meeting held on 6.5.2022 is enclosed herewith for your reference.

Under section 17(1) of the Town Planning Ordinance, an applicant aggrieved by a decision of the TPB may apply to the TPB for a review of the decision. If you wish to seek a review, you should inform me within 21 days from the date of this letter (on or before 10.6.2022). I will then contact you to arrange a hearing before the TPB which you and/or your authorized representative will be invited to attend. The TPB is required to consider a review application within three months of receipt of the application for review. Please note that any review application will be published for three weeks for public comments.

This permission by the TPB under section 16 of the Town Planning Ordinance should not be taken to indicate that any other government approval which may be needed in connection with the development, will be given. You should approach the appropriate government departments on any such matter.

If you have any queries regarding this planning permission, please contact Ms Floria Tsang of Hong Kong District Planning Office at 2231 4917. In case you wish to consult the relevant Government departments on matters relating to the above approval conditions, a list of the concerned Government officers is attached herewith for your reference.

Yours faithfully,

(Leticia LEUNG)
for Secretary, Town Planning Board

LL/CC/jl

List of Government Department Contacts

(Application No. A/H7/181)

部門 **Department**	辦事處 **Office**	聯絡人姓名 **Name of Contact Person**	電話號碼 **Telephone No.**	傳真號碼 **Facsimile No.**
運輸署 Transport Department	交通工程(港島)部 Traffic Engineering (HK) Division	何采殷女士 Ms. HO Choi Yan, Candy	2829 5262	2824 0399
發展局 Development Bureau	古物古蹟辦事處 Antiquities and Monuments Office	葉蘋女士 Ms. YIP Ping, April	2655 0834	2721 6216

Advisory Clauses

(a) the approval of the application does not imply that any proposal on building design elements to fulfil the requirements under the Sustainable Building Design Guidelines, and any proposal on bonus plot ratio (PR) and site coverage and/or gross floor area (GFA) concession/exemption for the proposed development will be approved/granted by the Building Authority (BA). The Buildings Department (BD) should be approved direct to obtain the necessary approvals. In addition, if the building design elements and the bonus PR/GFA concession are not approved/granted by the BA and major changes to the current scheme are required, a fresh planning application to the Town Planning Board (the Board) may be required;

(b) to note the comments of the District Lands Officer/Hong Kong East, Lands Department (LandsD) that:-

(i) as stated in the Information Statement attached to the Tender Notice for sale of the Inland Lot No. 8945 (the Lot), the Government may at his sole discretion, upon application by the Purchaser of the Lot for a lease modification for the provision of additional Government, institution and community (GIC) facilities, consider such application and agree to adjust the maximum GFA as provided in the Conditions. A lease modification is required to be applied from LandsD to implement the proposal. LandsD would process such lease modification application in the capacity of a landlord and if the application is approved, it will be subject to such terms and conditions, including payment of premium and administrative fees as considered appropriate. There is no guarantee that the lease modification application will be approved by LandsD;

(ii) if the design and layout of the landscape bridge/covered public open space (POS) over the internal access road is acceptable by the Board and the concerned departments, prior written consent of the Director of Lands under Special Condition (SC) (10)(a) of the Conditions is required to be applied to permit the erection and subsequent maintenance of the proposed landscape bridge;

(iii) pursuant to SC(10)(b) of the Conditions, the Purchaser shall on or before 30.6.2026 lay and form portion of the internal access road within the Pink Hatched Blue Stratum and Pink Hatched Blue Stippled Green Stratum and when called upon to do so by the Director of Lands under SC(10)(h)(i) of the Conditions, the purchaser shall at his own expense and without any consideration, payment or compensation whatsoever surrender and deliver up vacant possession of the Pink Hatched Blue Stratum and Pink Hatched Blue Stippled Green Stratum (collectively referred as the "PHB Strata") together with the relevant structures, facilities, services and installations, provided always that the Government shall be under no obligation to accept surrender of the PHB Strata or any part(s) thereof at the request of the Purchaser, but may do so as and when it sees fit and by stages on such date(s) as it decides;

(iv) there are separate provisions of Pedestrian Links and Pedestrian Walkways as referred in SC(21)(a) & (d) of the Conditions respectively. For the former provision, it should be covered and segregated pedestrian ways or paths so as to link up the buildings or facilities as specified in SC(21)(b). The latter provision should be demonstrated to the satisfaction of relevant bureaux/departments including the Transport Department (TD), Highways Department (HyD), Planning Department (PlanD), Civil Engineering and Development Department (CEDD), Harbour Office of the Development Bureau (DEVB) on how the public could access the 24-hour Pedestrian Walkways with barrier free access to link up the POS, the subway connection, the footbridge connection, the ground level(s) of the Lot and the footpath(s) at street level(s) of Caroline Hill Road. His office reserves their comments on such upon compliance checking under the Conditions at general building plan submission stage;

(v) as revealed in **Drawing A-3** of this Paper, the proposed subway connection partly falls outside the Subway Connection as stipulated under SC(19)(a) of the Conditions (i.e. points A and A' through X2 of the Sale Plan). You are reminded to comply with the requirements stipulated under SC(19)(a) and SC(20)(a) regarding the construction of subway connection and footbridge connection, in particular their locations and their specified finished floor levels (i.e. -6.15mPD and +16.45mPD for the subway connection and the footbridge connection respectively);

(vi) the Purchaser shall at his own expense design, erect, construct and provide the Government Accommodation within the Lot in accordance with the Conditions, the Technical Schedules annexed thereto and the plans approved under the Conditions on or before 30.9.2029. The design and location of Government Accommodation comprising a child care centre (CCC), a day care centre for the elderly (DCCE) and a district health centre (DHC), Public Vehicle Park, POS in the proposed commercial development should be subject to the agreement of concerned departments including Social Welfare Department (SWD), Food and Health Bureau (FHB), Architectural Services Department (ArchSD), TD and PlanD. It is noted from **Appendix Ia** of this Paper that one loading/unloading (L/UL) space for light goods vehicle is proposed to be shared with CCC and DCCE. The shared-use arrangement of spaces as required under the Conditions, e.g. SC(43)(b)(ii), SC(44)(a)(ii)(II) and SC(44)(b)(i)(I) & (II) of the Conditions for various vehicles for Government Accommodation (including DCCE and CCC) and DHC should be observed and complied with and you should seek advice and comments from TD, FHB and SWD in this respect;

(vii) there is a submission requirement for a Landscape Master Plan (LMP) to the Director of Planning for approval under SC(14) of the Conditions. In accordance with the streamlined arrangement stated in paragraph 8 of Lands Administration Office (LAO) Practice Note (PN) No. 2/2020, LandsD would process the application for deemed approval for TPRP as allowed under paragraph 8 to 11 in LAO PN No. 2/2020 in complying with preservation of tree clause;

(viii) according to SC(13)(f) of the Conditions, prior written consent of the Director of Lands is required prior to the taking of the tree protection measures for the said Old and Valuable Tree (OVT) No. EMSD WCH/1; and

(ix) his office reserves comment on the architectural drawings, provision of Pedestrian Link and Pedestrian Walkways, provision of parking, L/UL facilities and GFA accountability, etc. upon compliance checking under the Conditions at general building plans submission stage;

(c) to note the comments of the Secretary for Food and Health that the details of the DHC should comply with the Technical Schedules for the government accommodation as required under the Conditions. More window frontage with natural daylight would be preferred and access from the adjacent street level on +5.6mPD to the DHC +4.1mPD via escalator, stair or ramps on top of lift access should be allowed;

(d) to note the comments of the Director of Social Welfare that lift service should be ensure to be provided at street level for the GIC facilities. It is noted that the premises boundary of CCC in the attachment I, Figure 4.3h in **Appendix Id** of this Paper aligns with the site boundary facing to the Caroline Hill Road (East) whereas in attachment II Indicative Boundaries of GIC Facilities in **Appendix Id** of this Paper, the premises boundary of CCC is set back from the site boundary facing to the Caroline Hill Road (East). The premises boundary of CCC should be reviewed by you at detailed design stage. Referring to the attachment I, Figure 4.3k in **Appendix Id** of this Paper, the window frontage with natural daylight will be further reduced by the lift lobbies as shown on the attachment II Indicative Boundaries of GIC Facilities in **Appendix Id** of this Paper. Further review regarding the window frontage should be conducted at detailed design stage. The extent of DCCE should not be separated into two parts by common facilities. Besides, pedestrian crossing facilities for the connection of 24-hour pedestrian walkway and GIC facilities at the new access road (+5.6mPD) should be explored at detailed design stage. In addition, the premises for the development, including the CCC and DCCE concerned, should be provided as an integral part of the development and will be assigned back to the Financial Secretary Incorporated as a government accommodation upon construction completion. Following the established practice, the maintenance and management in respect of the building structure of the government accommodation should be handled as "development common facility" by future building management office, whereas the internal fitting-out within the premises will be maintained by the service operators of the CCC and DCCE;

(e) to note the comments of the Commissioner for Transport that details of the traffic mitigation measures as recommended in the traffic review report should be submitted for approval prior to the commencement of works. Details of the pedestrian links and 24-hour walkways should be submitted for comment in detailed design stage. The proposed alternative pedestrian route from the landscape bridge to street level via POS at Tower 3 with a long detour route is not attractive to pedestrians. Alternative access to street level without a long detour route should be considered and submitted for consideration in detailed design stage. All the relevant SCs of the Conditions of the application site (the Site) should be complied with. The internal transport provision and details of the associated traffic arrangement should be subject to further adjustment in accordance with the development schedule in detailed design stage and be submitted for consideration in due course;

(f) to note the comments of the Chief Highway Engineer/Hong Kong, HyD that his office reserves comments from highways maintenance and landscape viewpoint upon receipt of the detailed proposals of the landscape bridge (including the support and the lighting and ventilation) and the internal access road submitted by you for review and approval;

(g) to note the comments of the Commissioner of Police that the proposal/site construction of vehicle access should not cause adverse traffic obstruction in or beyond the site of works and each Temporary Traffic Arrangement involving works on footpath and/or carriageway, if any, has to be submitted to Road Management Office of the Police for detailed comment prior to its implementation;

(h) to note the comments of the Chief Town Planner/Urban Design and Landscape, PlanD that:-

(i) detailed information on the proposed landscape treatment and recreational function in the various covered POS under the layout plan are not provided. To ensure the provision of POS as proposed under the layout plan, the accessibility and the recreation function of the POS with reference to the Hong Kong Planning Standards and Guidelines (HKPSG) in the revised LMP should be demonstrated;

(ii) you are advised to provide information on the proposed recreational function and landscaping within the "Recreational Garden", and ensure the HKPSG requirements could be met. More information on the proposed material covering the landscape bridge is required to be included in the revised LMP to demonstrate that sufficient sunlight could be provided for the proposed plantings in the covered landscape bridge;

(iii) you should provide detailed information on the proposed recreational function and landscaping in the subject "Covered POS", clarify and ensure Banyan Garden is at-grade and accessible from G/F of the development;

(iv) narrow area with the proposed new tree plantings to north of Tower 3 is counted as POS. Countable open space should be accessible, functional and usable for recreation in accordance with the HKPSG requirements;

(v) as tree plantings are observed along T1 and T2 despite the section-line does not run across area with tree plantings, you should review and revise accordingly. Besides, cross-section of T3 showing spatial relationship between stepped terrace on G/F and covered POS should be provided;

(vi) approval of the application by the Board does not imply approval of tree works such as pruning, transplanting and felling. Tree removal applications should be submitted direct to relevant authority/authorities for approval; and

(vii) in addition, you are advised to further enhance the permeability at low level by widening of the internal pedestrian walkway at G/F under Tower 1 and Tower 2 between Leighton Road and access road. Furthermore, to soften the perceivable building mass of the twin towers (Towers 1 and 2), you are advised to consider adopting permeable elements and other articulations of the building

façade at the detailed design stage;

(i) to note the comments of the Chief Architect, Central Management Division 2, Architectural Services Department (CA/CMD2, ArchSD) that the proposed footbridges (one running across Leighton Road and another one across the new internal access road) may block natural daylight and ventilation, overshadow the road/street underneath and create overlooking problem. The design should be as slender as possible, with a lightweight cover so that the proposed footbridges may blend in better with the surrounding environment and minimise the visual impact to the surrounding. For the proposed social welfare/community facilities/POS, you are recommended to create a pedestrian-friendly environment by providing barrier-free access/facilities, adequate shading devices, seating area and greening etc. to enhance enjoyment of the public spaces;

(j) to note the comments of the Head of Greening, Landscape and Tree Management Section, DEVB that DEVB Technical Circular (Works) No. 5/2020 – Registration and Preservation of Old and Valuable Trees stipulates that OVT should be given priority protection and preservation throughout different stages of development from planning, design, construction to post-construction. Two OVTs, namely HKP WCH/1 and EMSD WCH/1, are located within the Site or in its vicinity. They should be preserved with priority. In particular, any works within Tree Protection Zone (TPZ) should be avoided for tree preservation, and sufficient tree protective measures should be provided for the works in proximity with the TPZ to avoid any adverse impact to the tree health. TPZ is defined as a zone encompassing the tree along its dripline projecting vertically from the tree canopy and extending 2m below the ground level and 2m above the top of an OVT;

(k) to note the comments of the Commissioner for Heritage and Executive Secretary (Antiquities and Monuments) that:-

(i) you are required to clarify if the "further setback of basement footprint" mentioned in paras 5.2.7 and 5.2.8 of Annex B in **Appendix Ia** are accurate. The Antiquities and Monuments Office (AMO) was previously informed by the applicant that only 4.5m of setback from the face of the masonry wall to the proposed basement could be provided. However, it is noted from the Tree Preservation and Removal Proposal in **Appendix Ia** of this Paper that –

- paragraph 5.2.7: "...Zone 2 ... And further setback of the basement footprint (about 5m) is also required to prevent affecting the stability of the slope and the existing Masonry Wall.", and the Typical Section on Slope Modification at Zone 2 shows a setback of 4.5m + 5m of the basement; and

- paragraph 5.2.8: "... only further setback of the basement footprint is required to prevent affecting the stability of the slope and the existing masonry wall ...", and Typical Section at Zone 1 shows a setback of 4.5m + 3m;

(ii) supplementing a summary of the Ground Investigation works conducted at the masonry walls on Slope No. 11SW-B/FR 190 and the Grade 3 Historic Structure

(i.e. Slope No. 11SW-B/FR32, Slope No. 11SW-B/FR 193) to the Geotechnical Planning Review Report is recommended. Strengthening proposal and any proper mitigation/protective measures for the Grade 3 Historic Structure should also be included;

(iii) it is noted that a deep excavation is proposed in the close vicinity of the Grade 3 Historic Structure to accommodate a five-level underground parking space. AMO would defer to LandsD and relevant bueaux/departments to advise if the required parking spaces are justified in accordance with the relevant condition(s) of sale/ordinance(s)/guideline(s);

(iv) The following map legends in planning statement in **Appendix Ia** of this Paper, for instance, seem to be inaccurate:

- Figure 3.1: the accuracy of the arrow indicating the location of the "Existing Masonry Walls and Earthenware Pipes" on the non-graded masonry wall (11SW-B/FR190) facing Leighton Road should be checked;

- Figure 4.7b: only two masonry walls (with Slope Nos. 11SW-B/FR 193 and 11SW-B/FR 32) and the Earthenware Pipes thereon are graded structures marked in purple with legend "Masonry Walls and Earthenware Pipes". As the masonry wall (11SW-B/FR 190) facing Leighton Road is not a graded structure, for clarity, a different legend for 11SW-B/FR 190 should be used;

- Figures 4.7a and 4.7b: the meaning of the legend "Heritage" and its location(s) should be specified; and

- Figure 4.9: the area in black marked with legend "Masonry Wall" cannot be found, which should be supplemented;

(v) the AMO would provide comments on the survey/study of the Grade 3 Historic Structure and mitigation/protective measures for the protection of the Grade 3 Historic Structure upon receipt of the relevant submissions/building plans submitted by you and referred to AMO by relevant departments;

(l) to note the comments of the Director of Environmental Protection that a proper location for fresh-air intake during detailed design stage should be selected to avoid exposing future occupants under unacceptable environmental nuisances/impact;

(m) to note the comments of the Director of Food and Environmental Hygiene that her department should be consulted if they are invited to take up management and/or maintenance responsibility of any part(s) of the proposed development in future;

(n) to note the comments of the Chief Building Surveyor/Hong Kong East & Heritage, Buildings Department (BD) that:-

(i) for any bridge to be built over street, modification for exemption under section 31(1) of the Buildings Ordinance (BO) may be considered on a case-by-case basis when the relevant requirements under Practice Note for Authorised Persons, Registered Structural Engineers and Registered Geotechnical Engineers (PNAP) APP-38 (Bridges over Streets and Lanes) have been complied with. Favourable consideration will be given if the following requirements are fulfilled:

- the bridge is required under the lease or approval condition of a planning permission; or consistent with the Outline Zoning Plan(s), Outline Development Plan(s) or Layout Plan(s);

- the bridge is having an identified public benefit and the proposal is acceptable to the LandsD, TD, HyD and relevant department(s);

- the bridge is having other justified special circumstances; and

- the width of the bridge is commensurate with the anticipated pedestrian flow with full justifications.

(ii) he reserves his comments on the proposed landscape bridge under section 31(1) of the BO and PNAP APP-38;

(iii) clarification on whether the proposed internal access street is formed for any purpose under the BO should be provided. Your attention is drawn to regulation 23(2)(a) of the Building (Planning) Regulations (B(P)Rs);

(iv) justification on high headroom of covered POS, the office shuttle lobby/performing arts and cultural facilities, commercial floor, E&M floors, carpark and loading/unloading area should be provided for consideration;

(v) any private street/access road/public road should be excluded from site area 7calculation for the purpose of PR and site coverage calculations under regulations 20 and 21 of the B(P)Rs. The site area should not include any part of any street under regulation 23(2)(a) of the B(P)R;

(vi) GFA concessions (i.e. excluding/disregarding green/amenity features and non-mandatory/non-essential plant rooms and services from GFA and/or site coverage calculation) under PNAP APP-151 will only be considered when the pre-requisites in paragraph 6 of PNAP APP-151, including Sustainable Building Design Guidelines as stated in PNAP APP-152, have been complied with;

(vii) the portion of proposed footbridge within lot boundary should be accountable for GFA and site coverage calculations;

(viii) pedestrian links or walkways should be accountable for GFA calculation under regulation 23(3)(a) of the B(P)R unless exempted;

(ix) GFA concession for private carparking spaces and loading/unloading areas may be considered when the relevant requirements as laid down in PNAP

APP-2 have been complied with. Aboveground public carparks that are open and operated commercially for parking by general public should be accountable for GFA calculation;

(x) all areas under building footprint should be included in GFA calculation unless exempted;

(xi) GIC facilities including CCC, DHC, DCCE should be accountable for GFA calculation under regulation 23(3)(a) of the B(P)R; and

(xii) detailed comments under the BO will be made at building plan submission stage;

(o) to note the comments of the Director of Fire Services that detailed fire services requirements will be formulated upon receipt of formal submission of general building plans. As a CCC and other social welfare facilities are delineated in the proposed layout plan, relevant height restriction should be observed and reminded that licensing requirement will be formulated upon receipt of formal application via the Licensing Authority. The requirements of emergency vehicular access (EVA) as stipulated in Section 6, Part D of the Code of Practice for Fire Safety in Buildings 2011 under the B(P)R 41D which is administrated by BD should be observed;

(p) to note the comments of the Chief Architect 103, Projects Management Branch, Architectural Services Department that: -

(i) the internal access road in the the Site should be constructed to the standard for serving as the EVA for the Site and you should further coordinate with the District Court site regarding the EVA requirements, which are essential for the statutory compliance of the District Court development. As such, further comments should be given upon receiving your corresponding formal submission to relevant government departments;

(ii) details of drainage provision for the whole Caroline Hill Road site (i.e. including the Site and the District Court site) should be provided by you in the detail design stage. Further comments should be given upon receiving your corresponding formal submission to relevant government departments;

(iii) details of proposed retaining structures, construction sequence and associated provisions have not yet been made available by you at this stage. Further comments will be given upon receiving your corresponding formal submission to relevant government departments;

(iv) according to **Appendix Id** of this Paper, Section A as marked on "Schematic Excavation and Lateral Support (ELS) Layout Plan" was not found. You should ensure the above information, such as the top level of the proposed retaining structures along common site boundaries between the commercial site and the District Court site, should be included in the future submissions to relevant government departments. You should also ensure stability of the adjacent ground, i.e. the District Court site and the OVT, during ELS and removal of existing sub-structures/foundation which are currently retaining

the existing ground level difference along common boundaries between the commercial site and the District Court site;

(v) your responses in **Appendix Id** of this Paper that no constructions works would be conducted within the TPZ of OVT No. EMSD WCH/1. Though it is stated that struts would not intrude into the TPZ of such OVT according to the revised "Schematic ELS Layout Plan", the demolition of existing basement within the commercial site which partially falls within such TPZ is still uncertain. Relevant tree submissions due to construction works or works area within the TPZ of the concerned OVT should be followed as proposed by you in paragraph 4.5.3 of the Planning Statement in **Appendix Ia**;

(vi) design details and the tree protection measures for the OVT (No. EMSD WCH/1) have not yet been made available by you at this stage. Further comments will be given upon receiving your corresponding formal submission to relevant government departments;

(vii) though no tree root was recorded in the two trial pits adjacent to OVT (No. EMSD WCH/1) according to the Tree Root Assessment Report, relevant tree submissions for any construction works or works area within the TPZ of the concerned OVT should be followed as proposed by you in paragraph 4.5.3 of the Planning Statement in **Appendix Ia** of this Paper;

(viii) you are reminded that for the tree preservation proposal of OVT No. EMSD WCH/1, detailed demolition and structural proposal along the interface of internal road and OVT No. EMSD WCH/1 should be further coordinated and agreed with District Court site before commencement of works; and

(ix) according to "Section 6 Conclusion" of the revised Air Ventilation Assessment in **Appendix Ib** of this Paper, the ventilation performance in surrounding area of the applicant's proposed scheme would be similar to the baseline scheme prepared for the rezoning application before. However, it is considered a general statement about the overall condition. You should ensure that the ventilation performance of the District Court site and its immediate surrounding would not be adversely affected. Further comments will be given upon receiving your corresponding formal submission to relevant government departments;

(q) to note the comments of the Commissioner of Harbourfront, DEVB that by referring to SC(20)(a), unless otherwise approved by Director of Lands, the footbridge connection and finished floor level of the footbridge connection should be located between the points/levels as specified in the concerned SC. Compliance with the concerned SC should be demonstrated and LandsD should be consulted accordingly. You should demonstrate that 24-hour barrier-free pedestrian pathway has been allowed linking the footbridge connection to the street level of Leighton Road/Caroline Hill Road and the proposed route should be agreed by relevant technical departments, i.e. TD and HyD; and

(r) to note the comments of the Director of Leisure and Cultural Services that according to SC(15) of the Conditions, you should maintain and manage the POS at your expense.

For the roadside planter to be handed over to his department for future maintenance, it would be subject to their comment when detailed landscape plan is available.

(s) to note the comments of the Committee that the location of the performing arts and cultural facilities be reviewed, and its accessibility and integration with the public open space, and the connection to the Causeway Bay MTR Station should be enhanced.

Extracted from Confirmed Minutes of 694th Meeting of MPC held on 6.5.2022

Agenda Item 8

Section 16 Application

[Open Meeting (Presentation and Question Sessions Only)]

A/H7/181 Submission of Layout Plan and Proposed Minor Relaxation of Gross Floor Area for Permitted Eating Place, Office, Place of Recreation, Sports or Culture, Public Clinic, Public Transport Terminus or Station, Public Vehicle Park (excluding container vehicle), Shop and Services and Social Welfare Facility in "Commercial (2)" Zone, Inland Lot No. 8945, Caroline Hill Road, Causeway Bay
(MPC Paper No. A/H7/181)

49. The Secretary reported that the application was submitted by Patchway Holdings (HK) Limited, which was a joint venture of Hysan Development Company Limited (Hysan) and Chime Corporation Limited, and the application site (the Site) was located in Wong Nai Chung. Ove Arup & Partners Hong Kong Limited (ARUP) was one of the consultants of the applicant. The following Members had declared interests on the item:

Mr Ivan M.K. Chung *(Chairman)*	-	co-owning with spouse a property in Wong Nai Chung area;
Ms Lilian S.K. Law	-	being an ex-Executive Director and committee member of the Boys' & Girls' Clubs Association of Hong Kong which had received sponsorship from Lee Hysan Foundation, and co-owning with spouse a property in Wong Nai Chung area;
Professor Jonathan W.C. Wong	-	Lee Hysan Foundation had sponsored some of his projects;

Mr Ricky W.Y. Yu	-	Lee Hysan Foundation had sponsored some of his projects and being the Director and Chief Executive Officer of Light Be which had received donation from the Foundation; and
Mr Franklin Yu	-	his firm having current business dealings with ARUP.

50. The Committee noted that Mr Ricky W.Y. Yu had tendered an apology for being unable to attend the meeting. As the interests of Ms Lilian S.K. Law and Professor Jonathan W.C. Wong in relation to Hysan were indirect, the properties co-owned by Mr Ivan M.K. Chung (Chairman) and Ms Law had no direct view of the Site and Mr Franklin Yu had no involvement in the application, the Committee agreed that they could stay in the meeting.

Presentation and Question Sessions

51. With the aid of a powerpoint presentation, Ms. Floria Y.T. Tsang, STP/HK, briefed Members on the background of the application, the proposed layout plan and the minor relaxation of gross floor area (GFA), departmental and public comments, and the planning considerations and assessments as detailed in the Paper. The Planning Department (PlanD) had no objection to the application.

52. Some Members raised the following questions:

Connectivity of the Site

(a) noting from Drawing A-1 of the Paper that a future footbridge linking up the Site with Lee Garden Six was annotated as "to be constructed by others", how the provision of the said footbridge could be ensured, and whether the footbridge would be accessible by the public on a 7 days x 24 hours basis;

(b) the details of the potential subway connection to the Causeway Bay MTR Station;

(c) the pedestrian connection to the government/institution/community (GIC) facilities in Tower 3;

(d) whether the proposed visual corridor at G/F between Towers 1 and 2 would be connected to the public open space at the Site;

Proposed Performing Arts and Cultural Facilities

(e) noting that the proposed minor relaxation of GFA of 2,000m^2 was to facilitate the provision of additional GIC facilities for performing arts and cultural, whether there was a mechanism to ensure that the additional GFA would be used for the proposed purpose;

(f) noting that the performing arts and cultural facilities were proposed on 5/F of Towers 1 and 2, why it was different from the notional schemes previously presented to the Town Planning Board (the Board) and whether the provision of performing arts and cultural facilitate was a mandatory requirement under the "Commercial (2)" ("C(2)") zone covering the Site;

(g) the operator of and the accessibility to the proposed performing arts and cultural facilities;

(h) whether the building height of the proposed development would be reduced if the performing arts and cultural facilities were not provided;

Others

(i) whether the disposition of the proposed tower blocks had taken into account the district court buildings to the immediate southwest of the Site; and

(j) whether the applicant had provided any proposal on ways to enhance public enjoyment and vibrancy of the proposed public open space through organising various types of event, exhibition or activity.

53. In response, Mr Mann M.H. Chow, DPO/HK, made the following main points:

Connectivity of the Site

(a) the current application was submitted by a joint venture of Hysan and Chime Corporation Limited. Hysan had applied to the Government to waive the land premium for lease modification for construction of five footbridges and one covered walkway in the Causeway Bay area, including the future footbridge linking up the Site with Lee Garden Six (that did not form part of the subject application). The Chief Executive in Council had approved Hysan's application for waiving the premium payable for the aforementioned pedestrian links in 2021. The said footbridge that would be opened for public access 24 hours a day would be completed before 2029 (i.e. the estimated completion year of the proposed development under the current application);

(b) a connection point for a future pedestrian subway would be reserved on B3/F of Towers 1 and 2, however, the detailed alignment of the potential pedestrian subway connection to the Causeway Bay MTR Station was yet to be finalised by the Government;

(c) from the future footbridge on 2/F, the public could access the GIC facilities in Tower 3 via the public open space at that level with barrier-free access. The public open space would also be accessible by lifts from B3/F, the level of which was the connection to the possible pedestrian subway to the Causeway Bay MTR Station. Loading/unloading bay and parking of the GIC facilities were provided on B3/F of Tower 3 with direct disabled access to the GIC facilities in Tower 3;

(d) the visual corridor of 6m wide and 3-storey high was proposed on G/F

between Towers 1 and 2 to preserve the views of the two Old and Valuable Trees and it would be part of the public open space network on G/F;

Proposed Performing Arts and Cultural Facilities

(e) the additional GFA of 2,000m^2 for GIC facilities (performing arts and cultural facilities) would exceed the maximum permitted GFA of 100,000m^2 under the conditions of the lease governing the Site. The applicant had to apply for a lease modification for the provision of additional GFA for performing arts and cultural facilities that was subject to the Lands Department's approval. The use of the additional GFA for performing arts and cultural facilities would be stipulated in the lease concerned;

(f) some representers, including Hysan, had proposed that performing arts and cultural facilities should be provided at the Site and presented their indicative schemes to the Board during the hearing of the representations and comments on representations in respect of the amendment relating to the "C(2)" zone on the draft Wong Nai Chung Outline Zoning Plan No. S/H7/20 (the OZP). After considering the representations and comments, the Board agreed to highlight the intention of providing additional GIC facilities and that performing arts and cultural facilities (without specification on the scope or location) were compatible uses at the Site in the Explanatory Statement (ES) of the OZP, so as to encourage the developer of the Site to provide such facilities as far as possible. Flexibility was allowed on the design, floor area and location of performing arts and cultural facilities to be provided. While the provision of performing arts and cultural facilities was not mandatory, provision of other GIC facilities including a child care centre, a day care centre for the elderly and a district health centre were stated in the ES and were required under the lease to be provided at the Site. Subsequently, the Site was disposed through public sale and the applicant (i.e. a joint venture of two companies) had succeeded in bidding for the Site. As such, the detailed design of the

proposed development might be different from the notional scheme presented during the representation hearing;

(g) the proposed performing arts and cultural facilities would be operated on a non-profit making basis by non-governmental organisation(s) to be engaged by the applicant. The said facilities on the 5/F would be accessible via the lifts of Towers 1 and 2;

(h) even if performing arts and cultural facilities were not provided, the applicant might change the design and layout of the other floors and it might not necessarily result in lower building height. Any major changes in the layout required submission of the revised layout plan for the consideration of the Board;

Others

(i) the applicant had consulted the Architectural Services Department, which was responsible for the design and construction of the district court, in formulating the design for the proposed tower blocks. A 7.5m-wide tower setback from the district court site was proposed by the applicant to allow sufficient building gap; and

(j) the applicant had not provided any information in the submission regarding the means to enhance public enjoyment and vibrancy of the proposed open space. However, Members' view on the need to better engage the public in the public open space area could be conveyed to the applicant for their consideration.

54. Regarding a Member's enquiry on whether the performing arts and cultural facilities were already intended for the "C(2)" zone in the OZP amendment stage, the Chairman supplemented that the amendments to the OZP to rezone the Site to "C(2)" were initiated by the PlanD and a notional scheme showing the possible layout of the building blocks and open spaces, without performing arts and cultural facilities, was presented for the reference of the Board. During the hearing, the Board noted that the Wan Chai District

Council (WCDC) had requested for more performing arts and cultural facilities in the area and the Board agreed to revise the ES to encourage the developer of the Site to provide such facilities on a voluntary basis. In response to the suggestion in the ES, the applicant proposed an additional GFA of 2,000m^2 for provision of performing arts and cultural facilities.

Deliberation Session

55. The Chairman recapitulated that the proposed uses were always permitted under the "C(2)" zone and the subject application was for submission of a layout plan as required under the Notes of the "C(2)" zone. The major differences between the notional scheme presented by PlanD during the OZP amendment stage and the current application were (i) location of the open space (i.e. on G/F only in the notional scheme and on G/F and podium level in the current application) (ii) the design of the building blocks (i.e. instead of having two towers with a 25m-wide building gap in the notional scheme, the towers were combined into a twin tower (Towers 1 & 2) and a visual corridor was provided between Towers 1 and 2 at ground level); and (iii) additional performing arts and cultural facilities of 2,000m^2 GFA were provided in response to the requirement as stated in the ES of the OZP which was subject to lease modification and such provision could be controlled under the lease.

56. A Member recalled that the performing arts and cultural facilities at the Site were proposed by WCDC during the OZP hearing stage, and the Board had a thorough discussion on the public open space and the facilities to be provided at the Site, including the potential to integrate any performing arts and cultural facilities with the public open space so as to enhance the attractiveness and public enjoyment. Noting that the performing arts and cultural facilities were proposed on 5/F of Towers 1 and 2, a few Members considered that the design under the current application might not be able to attract public attention. Some Members, on the other hand, noted that there were popular performing arts and cultural facilities (such as the ArtisTree in Quarry Bay), located in the upper level premises and not integrated with the outdoor area, and had no objection to the minor relaxation of GFA to accommodate such facilities. Members in general appreciated the applicant's proposal to provide such facilities to address the views of the Board and the request of the WCDC.

57. Some Members said that the applicant should review the location of the

performing arts and cultural facilities e.g. relocating to G/F or lower floors and enhance public accessibility to the premises on 5/F. Some Members also considered that there should be a mechanism to control the use of the additional GFA applied for under the subject application so as to meet the public aspiration for the proposed performing arts and cultural facilities at the Site.

58. A Member considered that public accessibility to the proposed GIC facilities in Tower 3 should be further improved, such as locating the facilities on lower floors of the building as well as better integration and connection with the public open space and pedestrian accesses. Another Member said that the access to the MTR station should be enhanced and various art and cultural activities should also be held in the proposed public open space by the future operator of the performing arts and cultural facilities.

59. The Committee noted that should the application be approved by the Committee, the applicant would be required under the recommended approval condition to submit a revised Landscape Master Plan. The general building plans of the development at the Site would also need to be submitted to the Building Authority for approval. The applicant could be advised to refine the detailed design of the public open space and layout of the proposed development at those stages. If any Class B amendments were involved, an application under s.16(A)2 of the Town Planning Ordinance would need to be submitted.

60. The Chairman concluded that Members generally had no objection to the layout plan and the proposed minor relaxation of GFA of 2,000m^2 for provision of the proposed performing arts and cultural facilities. To address some Members' concerns, the Committee agreed that an advisory clause should be added to advise the applicant to (i) review the location of the performing arts and cultural facilities (e.g. relocating to a lower level) and enhance its accessibility and integration with the public open space, (ii) improve accessibility to the GIC facilities in Tower 3 and (iii) enhance connection of the Site to the MTR station.

61. After deliberation, the Committee decided to approve the application, on the terms of the application as submitted to the Town Planning Board (TPB). The permission should be valid until 6.5.2026, and after the said date, the permission should cease to have effect unless before the said date, the development permitted was commenced or the permission was renewed. The permission was subject to the following conditions :

"(a) the design and provision of vehicular access, car parking and loading/unloading facilities for the proposed development to the satisfaction of the Commissioner for Transport or of the TPB;

(b) the submission and implementation of a revised Landscape Master Plan to the satisfaction of the Director of Planning or of the TPB; and

(c) the submission of a Conservation Management Plan and implementation of the mitigation measures identified therein before commencement of works to the satisfaction of the Commissioner of Heritage or of the TPB."

62. The Committee also agreed to advise the applicant to note the advisory clauses as set out at Appendix V of the Paper and the additional advisory clause as below:

"to note the comments of the Committee that the location of the performing arts and cultural facilities be reviewed, and its accessibility and integration with the public open space, and the connection to the Causeway Bay MTR Station should be enhanced."

銅鑼灣



Causeway Bay

Annex A-4

Town Planning Board Approval Letter

(ref. TPB/A/H7/181-2)

規劃署
港島規劃處
香港北角渣華道 333 號
北角政府合署 14 樓

Planning Department
Hong Kong District Planning Office
14/F, North Point Government Offices,
333 Java Road, North Point,
Hong Kong

本函檔號 Your Reference HDL3-DM-2368-250169L
本署檔號 Our Reference TPB/A/H7/181-2
電話號碼 Tel. No.: 2231 4930
傳真機號碼 Fax No.: 2895 3957

By Registered Post & Fax (2802 8662)

29 May 2025

Urbis Limited
11/F, Siu On Centre,
188 Lockhart Road,
Wan Chai, Hong Kong
(Attn.: Mr. David Morkel)

Dear Sir/Madam,

Section 16A Application No. A/H7/181-2

I refer to your application of 28.3.2025 which was received by the Town Planning Board (TPB) on 31.3.2025 and your letters dated 2.4.2025, 25.4.2025, 2.5.2025, 7.5.2025, 9.5.2025, 14.5.2025, 20.5.2025, 22.5.2025 and 27.5.2025 providing further information on the application.

After giving consideration to your application, the Director of Planning, under the delegated authority of the TPB, approved your application for amendments to permission under section 16A of the Town Planning Ordinance on the terms of the application as submitted to the TPB. The amended permission is subject to the following conditions:

(a) the design and provision of vehicular access, car parking and loading/unloading facilities for the proposed development to the satisfaction of the Commissioner for Transport (C for T) or of the TPB;

(b) the submission and implementation of a revised Landscape Master Plan to the satisfaction of the Director of Planning or of the TPB;

(c) the submission of a Conservation Management Plan and implementation of the mitigation measures identified therein before commencement of works to the satisfaction of the Executive Secretary (Antiquities & Monuments) of the Antiquities and Monuments Office or of the TPB; and

(d) the submission and implementation of a traffic management plan to demonstrate the proposed internal traffic and transport arrangements for vehicles and pedestrians to the satisfaction of C for T or of the TPB.

You are also advised to note the advisory clauses as set out at **Annex I**.

Under section 17(1) of the Town Planning Ordinance, an applicant aggrieved by a decision of the TPB may apply to the TPB for a review of the decision. If you wish to seek a review, you should

inform the Secretariat of the TPB (15/F, North Point Government Offices, 333 Java Road, North Point, Hong Kong – Tel. No. 2231 4810 or 2231 4835 and Fax No. 2877 0245 or 2522 8426) within 21 days from the date of this letter (on or before 19.6.2025). The Secretariat of the TPB will then contact you to arrange a hearing before the TPB which you and/or your authorised representative will be invited to attend.

If you have any queries regarding this permission, please contact Ms. Floria Y. T. Tsang of this office at 2231 4917.

I should be grateful if you could advise me in due course whether this amended permission or other previous permission granted by the TPB in respect of the development would be implemented.

Yours faithfully,

(Ms. Janet CHEUNG)
for and on behalf of
Director of Planning

Annex I
Application No. A/H7/181-2

Advisory Clauses

(a) to note the comments of the District Lands Officer/Hong Kong East, Lands Department (LandsD) that:

(i) the proposed development should in all respects comply with the Conditions of Sale No. 20379 dated 10 June 2021 as varied and modified by a modification letter dated 7 November 2024 and a consent letter dated 26 November 2024 (collectively referred to as "the C/S") governing the Lot. Nothing in the Submission should in any event prejudice the Government's right and position to reject, disapprove, etc. any submissions under the C/S, including those which are consistent with the Submission but in conflict with any of the terms and conditions of the C/S;

(ii) regarding the loading/unloading space for shared use by child care centre (CCC) and day care centre for the elderly (DE), the shared-use arrangements required under the C/S, e.g. SC (43)(b)(ii), (44)(a)(ii)(II) and (44)(b)(i)(I) & (II) should be observed and complied with, as well as should closely liaise with relevant bureaux/ departments (B/Ds), including the Transport Department, the Health Bureau and the Social Welfare Department;

(iii) the terms and conditions of the modification letter dated 7 November 2024 for provision of the performing arts and cultural facilities (PACF) should be observed and complied with. In particular, attention is drawn to SC (73)(b)(i) of the C/S, which specifies that the respective numbers of spaces for the parking of motor vehicles and for the parking of motor cycles to be provided for the PACF shall be determined by the Secretary for Development;

(iv) the terms and conditions of the consent letter issued on 26 November 2024 for the erection of the footbridge within a specific area of the PHB Strata should be observed and complied with. These include the minimum vertical clearance (i.e. not less than 5.1m above ground level), the permitted users (i.e. for pedestrian passageway or open space or both) and the designated boundary for the footbridge' s erection (i.e. edged brown on the plan annexed to the consent letter) stipulated in the said consent letter. Furthermore, the consent letter mandates that the footbridge be constructed to such levels, alignment and dispositions, with such materials and to such standards and designs as shall be approved by the Director of Lands;

(v) regarding the subway connection and the footbridge connection (connecting the application site with Lee Garden Six), the requirements under SC (19) and (20) of the C/S, particularly the locations and level of connections, should be observed and complied with;

(vi) SC (10)(a) of the C/S, which specifies that no building or structure may be erected or constructed within the PHB Strata, except for the Tree Protection Measures for OVT (JUD WCH/1) and structures provided in relation to the formation of the PHB Strata,

should be observed. Any other structures would require the consent of the Director of Lands;

(vii) the Masonry Walls and Earthenware Pipes as shown by dotted brown lines on the plan (PLAN II) annexed to the C/S including the ungraded portion of masonry walls, should be kept, conserved and preserved as required under SC (3) of the C/S; and

(viii) SC (13)(f) of the C/S related to tree protection measures of the OVT, should be observed and complied with. Specially, the Lot Owner is required to obtain the written consent of the Director of Lands prior to the undertaking of the Tree Protection Measures for the OVT;

(b) to note the comments of the Director of Environmental Protection that a proper location for fresh-air intake during detailed design stage should be selected to avoid exposing future occupants under unacceptable environmental nuisances/impact;

(c) to note the comments of the Executive Secretary (Antiquities & Monuments) that the mitigation measures for the conservation of the Graded Structure as set out in the Conservation Management Plan (CMP), which was accepted by the Antiquities and Monuments Office on 18.7.2022, should be implemented. The following comments should also be noted:

(i) to carry out the tree felling and planting works along the top of the Graded Structure with due care and ensure that the structural integrity and historic fabrics of the Graded Structure would not be adversely affected by the proposed works;

(ii) the planting of new trees along the top of the Graded Structure would not cause disturbance to the Graded Structure and the roots of the proposed tree species should avoid penetrating into the Graded Structure;

(iii) to ensure that all works for the proposed vent shaft near the Banyan Garden shall not cause disturbance to the Graded Structure. You should also ensure that the proposed works at the Banyan Garden will not adversely affect the Graded Structure;

(iv) to devise and implement appropriate precautionary, protective and mitigation measures during all stages of works to ensure that the Graded Structure will not be adversely affected by the proposed works at Tower 3 and its associated construction; and

(v) to ensure that the preservation works of the OVT (Registration No. LANDSD (LEASED) WCH/1) abutting Leighton Road that partly supported by an existing masonry wall, would not adversely affected the connecting Graded Structure;

(d) to note the comments of the Chief Project Manager 103, Architectural Services Department, project team of the District Court Building, on behalf of the Judiciary Administrator that trees and plants near the peripheral of the District Court must have sufficient vertical and horizontal separation from top of the retaining wall. You should take an active role in plant management such as regular and ad hoc pruning to ensure no intrusion of plant structure into the site area of the District Court. As regard the transplanted tree T32 (Dimocarpus longan) which is proposed to be close to the site boundary, with due consideration of canopy spread,

a location with sufficient area (say 10m x 10m) for housing this medium to large tree species is highly recommended to maintain sufficient setback;

(e) to note the comments of the Director of Fire Services that water supplies for firefighting and fire service installations should be provided to his satisfaction. Detailed fire services requirements will be formulated upon receipt of formal submission of general building plans or referral from the relevant licensing authority. The emergency vehicular access provision should comply with the standard as stipulated in Section 6, Part D of the Code of Practice for Fire Safety in Buildings 2011, which is administrated by the Buildings Department;

(f) to note the comments of the Director of Food and Environmental Hygiene that for provision of cleansing service for new public roads, streets, cycle tracks, footpaths, paved areas etc, Food and Environmental Hygiene Department's (FEHD) should be separately consulted. Prior consent from FEHD must be obtained. No environmental nuisance should be generated to the surroundings. Also, for any waste generated from the operations and works, its disposal should be arranged properly at their own expenses. Proper licence / permit issued by FEHD is required if there is any food business / catering service / activities regulated by him under the Public Health and Municipal Services Ordinance (Cap. 132) and other relevant legislation for the public; and

(g) to note the comments of the Critical Infrastructure Security Coordination Centre, Hong Kong Police Force that the covered footbridge should be fully enclosed to prevent the throwing of projectiles or the dropping of objects from the bridge. The materials and finishes with adequate robustness and structural integrity of the covered footbridge, combined with glare mitigation measures, would assist in conducting a comprehensive assessment of the overall security of the area. The landscaping should be arranged to prevent plants from serving as stepping platforms to access the new District Court, ensuring security and controlled access. The design of the PACF must eliminate potential channels for object-throwing towards the new District Court, incorporating appropriate barriers or spatial planning to mitigate such risks.

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Causeway Bay

Annex A-5

Approval Letter of Building Amendment on General Building Plans (ref. BD 2/3014/21) (Extracted)

DWG

SU05HK

屋宇署
BUILDINGS DEPARTMENT

YOUR REF 來函檔號：
OUR REF 本署檔號： BD 2/3014/21
FAX 圖文傳真： 2845 1585
TEL 電話： 3162 8807
WEBSITE 網址： www.bd.gov.hk

5 March 2025

284

(23)

RONALD LU & PARTNERS

12 MAR 2025

RECEIVED (3)

CHEUNG Man-ching, Anthony
33/F, Wu Chung House,
213 Queen's Road East,
Wan Chai, Hong Kong

Dear Mr CHEUNG,

Caroline Hill Road, Causeway Bay, Hong Kong – I.L. 8945

I refer to your application received on 8 January 2025, supplementary information received on 5 February 2025 and your supplementary submission on 5 March 2025 for approval of proposals in respect of Building Amendment and the application for consent to the commencement and carrying out of the above building works.

2. Your submission of plans has been checked under the curtailed check system announced in Practice Note for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers (PNAP) ADM-19. On this basis, I am satisfied that your submission is fundamentally acceptable and may be approved.

3. You are reminded that the curtailed check system covers only the fundamental issues of a building proposal. Although non-fundamental issues will not be raised as reasons for disapproving a submission, I expect that all contraventions of the Buildings Ordinance (BO) and its subsidiary legislation are rectified as and when they are discovered and in any event, before completion of the works is certified. In this connection, I ask you to note that the Building Authority (BA) attaches great importance to the proper assumption of duties and responsibilities by authorized persons and registered structural engineers.

4. In accordance with the provisions of regulation 30(1) of the Building (Administration) Regulations (B(A)R), this is to notify that the above - mentioned plans submitted with your application received on 8 January 2025 and your supplementary submission on 5 March 2025 are hereby approved. One set of the said plans, on which I have signified my approval, is enclosed. Your client has been sent a copy of this letter but I would request that you ensure that the contents are understood by him.

5. This approval should **NOT** be deemed to confer any title to land or to act as a waiver of any term in any lease or licence; or to grant any exemption from or to permit any contravention of any of the provisions of the BO or any other enactment. Section 14(2) of the Buildings Ordinance refers.

6. Consent to the commencement and carrying out of the above Building Amendment is given in the Form BD103 enclosed. You are reminded to ensure that the plans now approved are compatible with all previously approved plans, any conditions imposed are fulfilled and no works are carried out before all required plans have been approved and consent given. Your attention is drawn to paragraph 10 of PNAP APP-97.

Original BD 103 retained for convenience of future consent applications

/7. .....

S.L. 9A (4/2023) (GBP Stage II & III Curtailed Check or A&A)

Our ref. BD 2/3014/21

7. This approval only covers the building works as coloured on the submitted plans on the basis that the uncoloured parts of the plans are exactly the same as the corresponding parts in the previous approved plans, and should not be construed as implying the approval of the uncoloured portion of the plans.

8. Your plans have referred to District Planning Officer/Planning Department for comments. Comments will be conveyed to you once available.

9. Your plans have been referred to District Lands Officer/Hong Kong East for comments which will be conveyed to you direct.

10. Comments from Chief Highway Engineer/Hong Kong, Highways Department (Contact Person: Iris S.S. CHEUNG at tel. no.: 2231 5618) are given at Appendix I enclosed.

11. Commissioner for Transport, Transport Department (contact officer: Mr Daniel P L WONG at tel. no.: 2829 5424) has replied that they are not in a position to provide comments.

12. Comments from Director of Environmental Protection (contact officer: Mr KWOK Wai-sing at tel. no.: 2516 1889) are given at Appendix II enclosed.

13. Chief Highway Engineer/Bridges & Structures, Highways Department (Contact Person: W K WONG at tel. no.: 3903 6515) has replied that they have no comment on the submission.

14. Chief Landscape Architect/ Landscape Division, Highways Department (Contact Person: LO Wai Ching at tel. no.: 3155 5727) has replied that they have no adverse comment from highways landscape point of view.

14. Your plans have also been referred to Chief Engineer/ Lighting, Highways Department and for comments which will be conveyed to you once available.

15. This serves to record that you have made minor amendments and submitted plans on 5 March 2025 to replace the previously submitted plans under PNAP ADM-14.

16. Your attention is drawn to Practice Note for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers APP-23 that a hoarding permit must be obtained and the hoarding be erected before building works commence.

Yours sincerely,

(YEUNG Pak-shing)
Senior Building Surveyor
for Building Authority

c.c. Patchway Holdings (HK) Limited
50/F, Lee Garden One,
33 Hysan Avenue,
Causeway Bay, Hong Kong

DFS	D of EP, EPD
DLO/HKE, LandsD	CHE/B&S
DPO/HK, Plan D	CLA/ LD, HyD
CHE/HK, HyD	CE/Lighting, HyD
C for T, TD	
CO/SM	

銅鑼灣
Causeway Bay



Annex A-6
Acceptance of Partial Compliance with Approval Condition (b) (ref. TPB/A/H7/181)

規劃署
港島規劃處
香港北角渣華道 333 號
北角政府合署 14 樓

Planning Department
Hong Kong District Planning Office
14/F, North Point Government Offices,
333 Java Road, North Point,
Hong Kong

By Post and Fax (2802 8662)

本函檔號	Your Reference	HDL3-DM-2368-220568L
本署檔號	Our Reference	( ) in TPB/A/H7/181
電話號碼	Tel. No. :	2231 4917
傳真機號碼	Fax No. :	2895 3957

12 August 2022

URBIS Limited
11/F Siu On Centre,
188 Lockhart Road,
Wan Chai, Hong Kong
(Attn.: Mr. David MORKEL)

Dear Mr. MORKEL,

Submission of Layout Plan and Proposed Minor Relaxation of Gross Floor Area for Permitted Eating Place, Office, Place of Recreation, Sports or Culture, Public Clinic, Public Transport Terminus or Station, Public Vehicle Park (excluding container vehicle), Shop and Services, and Social Welfare Facility in "Commercial (2)" zone, Inland Lot No. 8945, Caroline Hill Road, Causeway Bay (Planning Application No. A/H7/181)

Submission for Partial Compliance with Approval Condition (b)

I refer to your letter dated 10.8.2022 enclosing 15 copies of the full set of the accepted Landscape Master Plan (LMP) for the captioned application for partial compliance with approval condition (b) of the subject planning application on "the submission and implementation of a revised LMP to the satisfaction of the Director of Planning or of the Town Planning Board (TPB)" (the Submission). The accepted LMP has been stamped and duly signed, a copy of which is attached for your retention.

Yours sincerely,

(Ms. Floria TSANG)
for District Planning Officer/Hong Kong
Planning Department

c.c.

CTP/UD&L, PlanD	(Attn.: Ms. Tammy CHEUNG)	With a stamped copy for retention
DLO/HKE, LandsD	(Attn.: Ms. Olivia TSANG)	
Ex Secy (Antiquities & Monuments), AMO, DEVB	(Attn.: Ms. Kitty LIU)	
CA/CMD2, ArchSD	(Attn.: Mr. Calvin CHAN)	
CPM 103, ArchSD	(Attn.: Mr. Kevin SUEN)	
CBS/HKE&H, BD	(Attn.: Ms. Iris YIM)	
H(GEO), CEDD	(Attn.: Ms. Candy CHO)	
CHE/HK, HyD	(Attn.: Mr. Tim CHEUNG)	
S for Health	(Attn.: Ms. Natalie WAN)	
D of SW	(Attn.: Ms. Salina KWONG)	
C for T	(Attn.: Ms. Candy HO)	

Internal

HK-7/03
HK-7/03D
Site Record – H7/12

MC/FT/DL

銅鑼灣



Causeway Bay

Annex A-7

Acceptance of Partial Compliance with Approval Condition (c) (ref. TPB/A/H7/181)

規劃署
港島規劃處
香港北角渣華道 333 號
北角政府合署 14 樓

Planning Department
Hong Kong District Planning Office
14/F, North Point Government Offices,
333 Java Road, North Point,
Hong Kong

By Post and Fax (2802 8662)

本函檔號 Your Reference HDL3-DM-2368-220649L
本署檔號 Our Reference ( ) in TPB/A/H7/181
電話號碼 Tel. No.: 2231 4930
傳真機號碼 Fax No.: 2895 3957

Please quote our ref. in future correspondence

4 November 2022

URBIS Limited
11/F Siu On Centre,
188 Lockhart Road,
Wan Chai, Hong Kong
(Attn.: Mr. David MORKEL)

Dear Mr. MORKEL,

Submission of Layout Plan and Proposed Minor Relaxation of Gross Floor Area for Permitted Eating Place, Office, Place of Recreation, Sports or Culture, Public Clinic, Public Transport Terminus or Station, Public Vehicle Park (excluding container vehicle), Shop and Services, and Social Welfare Facility in "Commercial (2)" zone, Inland Lot No. 8945, Caroline Hill Road, Causeway Bay (Planning Application No. A/H7/181)

Submission for Compliance with Approval Condition (c)

I refer to your letter dated 13.9.2022 enclosing a Conservation Management Plan for partial compliance with approval condition (c) of the subject planning application on "the submission of a Conservation Management Plan (CMP) and implementation of the mitigation measures identified therein before commencement of works to the satisfaction of the Commissioner of Heritage or of the Town Planning Board (TPB)".

Commissioner for Heritage's Office (CHO) and Executive Secretary (Antiquities and Monuments), Antiquities and Monuments Office (AMO) were consulted and it is advised that the CMP has been accepted by AMO on 18.7.2022 with no further comment. As such, the submission part of the approval condition (c) is considered complied with. Please be reminded that full compliance with approval condition (c) rests upon the implementation of the mitigation measures identified in the CMP before commencement of works to the satisfaction of the Commissioner of Heritage or of the TPB.

Should you have any queries, please contact Mr. David LEUNG (Tel.: 2231 4603) of the Hong Kong District Planning Office.

Yours sincerely,

(Mann M. H. CHOW)
for and on behalf of Director of Planning

c.c.

CHO	(Attn.: Ms. Clarissa WAN)	Fax: 2906 1574
Ex Secy (Antiquities & Monuments), AMO, DEVB	(Attn.: Ms. Janice MAK)	Fax: 2721 6216

Internal

Secy, TPB
HK-7/03
Site Record – H7/12

MC/HT/DL

銅鑼灣
Causeway Bay



Annex B
Layout Plan

LEGEND

- APPLICATION SITE
- PINK HATCHED BLUE (NO STRUCTURE ERECTED ABOVE OR WITHIN 4M BELOW GROUND LEVEL)
- PUBLIC OPEN SPACE
- COMMERCIAL/E&M
- G.I.C. FACILITIES
- FUTURE FOOTBRIDGE
- LIGHT BUSES LAYBYS
- CARPARK (PVP)
- CARPARK (PRIVATE)
- CARPARK (G.I.C. FACILITIES)
- ACCESS ROAD
- LOADING & UNLOADING CARPARK (PVP)
- UNEXCAVATED
- 24-HR PEDESTRIAN WALKWAY
- PUBLIC OPEN SPACE WITH 24-HR PEDESTRIAN WALKWAY
- PEDESTRIAN LINK
- E&M
- CIRCULATION/ E&M

FUTURE FOOTBRIDGE
(TO BE CONSTRUCTED BY OTHERS
AND SUBJECT TO DETAIL DESIGN)

CAROLINE HILL ROAD

MASONARY WALLS AND EARTHENWARE PIPES TO BE PRESERVED

LEIGHTON ROAD

24-HR COVERED PEDESTRIAN WALKWAY

OVT

+9.0
+17.64
+11.5
+18.70
+8.55
+119.90
+115.25
+135.0
+5.6
+129.65
+8.9
+18.70
+18.40
+5.70
+90.0
+21.50
+17.00
+10.20

T1 COMMERCIAL / E&M

T2 COMMERCIAL / E&M

T3 COMMERCIAL / E&M

COVERED LANDSCAPE BRIDGE/
PUBLIC OPEN SPACE

CANOPY ABOVE

7.5m

SITE OF FUTURE
DISTRICT COURT

A B C D E F G H J K L M N O P Q R S T U V W X Y Z AA AB AC AD AE AF AG AH AJ AK U1 V1 W1 X1 Y1 Z1

0 10 20 30 40 50m

N

Rev.	Description	Drawn	Checked	Approved	Date
–	1st SUBMISSION				3-2022
A	1st AMENDMENT				9-2023
B	2nd AMENDMENT				1-2024

Rev.	Description	Drawn	Checked	Approved	Date

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

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B.D. Ref.
F.S.D. Ref.
D.L.O. Ref.
Drawn Date 1-2024
Checked Date 1-2024
Approved Date 1-2024
Cad File No.

RONALD LU & PARTNERS
呂元祥建築師事務所

Project Title
PROPOSED COMMERCIAL DEVELOPMENT ON IL NO.8945 AT CAROLINE HILL ROAD, CAUSEWAY BAY, HONG KONG

Drawing Title
LAYOUT PLAN (ALL LEVELS)

Project No. 21105HK
Scale 1:750 (A3) Issue Date Sept 2024
Drawing No. MLP -001

Drawing Purpose

LEGEND

- APPLICATION SITE
- PINK HATCHED BLUE (NO STRUCTURE ERECTED ABOVE OR WITHIN 4M BELOW GROUND LEVEL)
- PUBLIC OPEN SPACE
- COMMERCIAL/E&M
- G.I.C. FACILITIES
- FUTURE FOOTBRIDGE
- LIGHT BUSES LAYBYS
- CARPARK (PVP)
- CARPARK (PRIVATE)
- CARPARK (G.I.C. FACILITIES)
- ACCESS ROAD
- LOADING & UNLOADING CARPARK (PVP)
- UNEXCAVATED
- 24-HR PEDESTRIAN WALKWAY
- PUBLIC OPEN SPACE WITH 24-HR PEDESTRIAN WALKWAY
- PEDESTRIAN LINK
- E&M
- CIRCULATION/ E&M



Rev.	Description	Drawn	Checked	Approved	Date
–	1st SUBMISSION				3-2022
A	1st AMENDMENT				9-2023
B	2nd AMENDMENT				1-2024

Rev.	Description	Drawn	Checked	Approved	Date

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B.D. Ref.

F.S.D. Ref.

D.L.O. Ref.

Drawn Date 1-2024

Checked Date 1-2024

Approved Date 1-2024

Cad File No.

RONALD LU & PARTNERS

呂元祥建築師事務所

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON IL NO.8945 AT CAROLINE HILL ROAD, CAUSEWAY BAY, HONG KONG

Drawing Title

B4 & B5 FLOOR PLAN

Project No. 21105HK

Scale 1:750 (A3) Issue Date Jan 2024

Drawing No. MLP -002

Drawing Purpose

LEGEND

- APPLICATION SITE
- PINK HATCHED BLUE — NO STRUCTURE ERECTED ABOVE OR WITHIN 4M BELOW GROUND LEVEL
- PUBLIC OPEN SPACE
- COMMERCIAL/E&M
- G.I.C. FACILITIES
- FUTURE FOOTBRIDGE
- LIGHT BUSES LAYBYS
- CARPARK (PVP)
- CARPARK (PRIVATE)
- CARPARK (G.I.C. FACILITIES)
- ACCESS ROAD
- LOADING & UNLOADING CARPARK (PVP)
- UNEXCAVATED
- 24-HR PEDESTRIAN WALKWAY
- PUBLIC OPEN SPACE WITH 24-HR PEDESTRIAN WALKWAY
- PEDESTRIAN LINK
- E&M
- CIRCULATION / E&M

FUTURE PEDESTRIAN SUBWAY
(TO BE CONSTRUCTED BY OTHERS AND SUBJECT TO DETAIL DESIGN)

UNDERGROUND CONNECTION POINT
FOR FUTURE PEDESTRIAN SUBWAY

DISABLED ACCESS BETWEEN B5/F TO 2/F

PEDESTRIAN WALKWAY

UNEXCAVATED

CARPARK
(PRIVATE / PVP)
-8.25

-8.25

7.0M

A, A', B, C, D, E, F, G, H, J, K, L, M, N, P, R, S, T, U, V, W, X, Y, Z, AA, AB, AC, AD, AE, AF, AG, AH, AJ, AK, X1, X2, X2', Y1, Z1, U1, V1, W1

0 10 20 30 40 50m

N

Rev.	Description	Drawn	Checked	Approved	Date
–	1st SUBMISSION				3-2022
A	1st AMENDMENT				9-2023
B	2nd AMENDMENT				1-2024

Rev.	Description	Drawn	Checked	Approved	Date

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B.D. Ref.
F.S.D. Ref.
D.L.O. Ref.
Drawn Date 1-2024
Checked Date 1-2024
Approved Date 1-2024
Cad File No.

RONALD LU & PARTNERS
呂元祥建築師事務所

Project Title
PROPOSED COMMERCIAL DEVELOPMENT ON IL NO.8945 AT CAROLINE HILL ROAD, CAUSEWAY BAY, HONG KONG

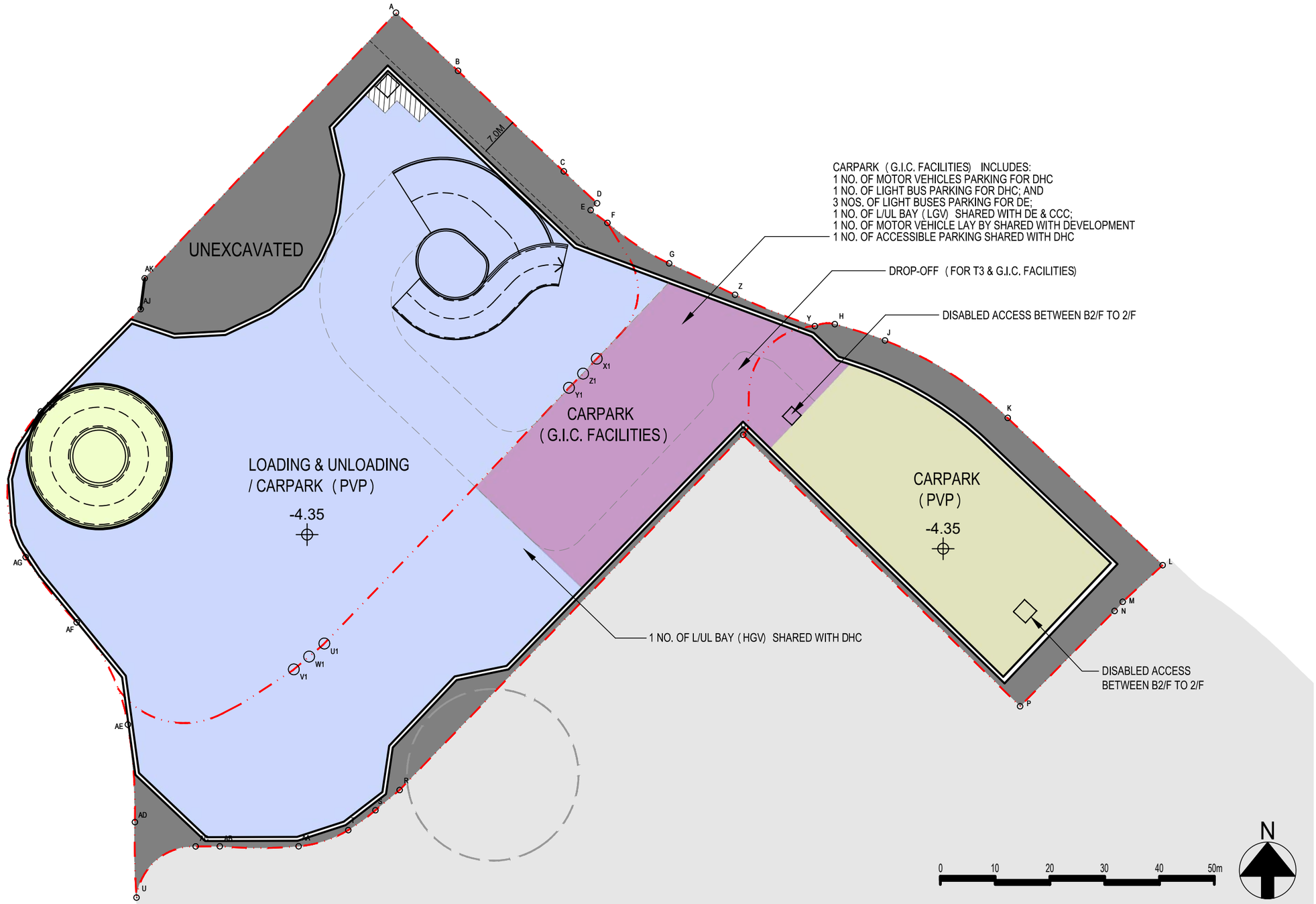
Drawing Title
B3 FLOOR PLAN

Project No. 21105HK
Scale 1:750 (A3)
Issue Date Jan 2024
Drawing No. MLP-003

Drawing Purpose

LEGEND

- APPLICATION SITE
- PINK HATCHED BLUE (NO STRUCTURE ERECTED ABOVE OR WITHIN 4M BELOW GROUND LEVEL)
- PUBLIC OPEN SPACE
- COMMERCIAL/E&M
- G.I.C. FACILITIES
- FUTURE FOOTBRIDGE
- LIGHT BUSES LAYBYS
- CARPARK (PVP)
- CARPARK (PRIVATE)
- CARPARK (G.I.C. FACILITIES)
- ACCESS ROAD
- LOADING & UNLOADING CARPARK (PVP)
- UNEXCAVATED
- 24-HR PEDESTRIAN WALKWAY
- PUBLIC OPEN SPACE WITH 24-HR PEDESTRIAN WALKWAY
- PEDESTRIAN LINK
- E&M
- CIRCULATION/ E&M



Rev.	Description	Drawn	Checked	Approved	Date
–	1st SUBMISSION				3-2022
A	1st AMENDMENT				9-2023
B	2nd AMENDMENT				1-2024

Rev.	Description	Drawn	Checked	Approved	Date

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B.D. Ref.
F.S.D. Ref.
D.L.O. Ref.
Drawn Date 1-2024
Checked Date 1-2024
Approved Date 1-2024
Cad File No.

RONALD LU & PARTNERS
呂元祥建築師事務所

Project Title
PROPOSED COMMERCIAL DEVELOPMENT ON IL NO.8945 AT CAROLINE HILL ROAD, CAUSEWAY BAY, HONG KONG

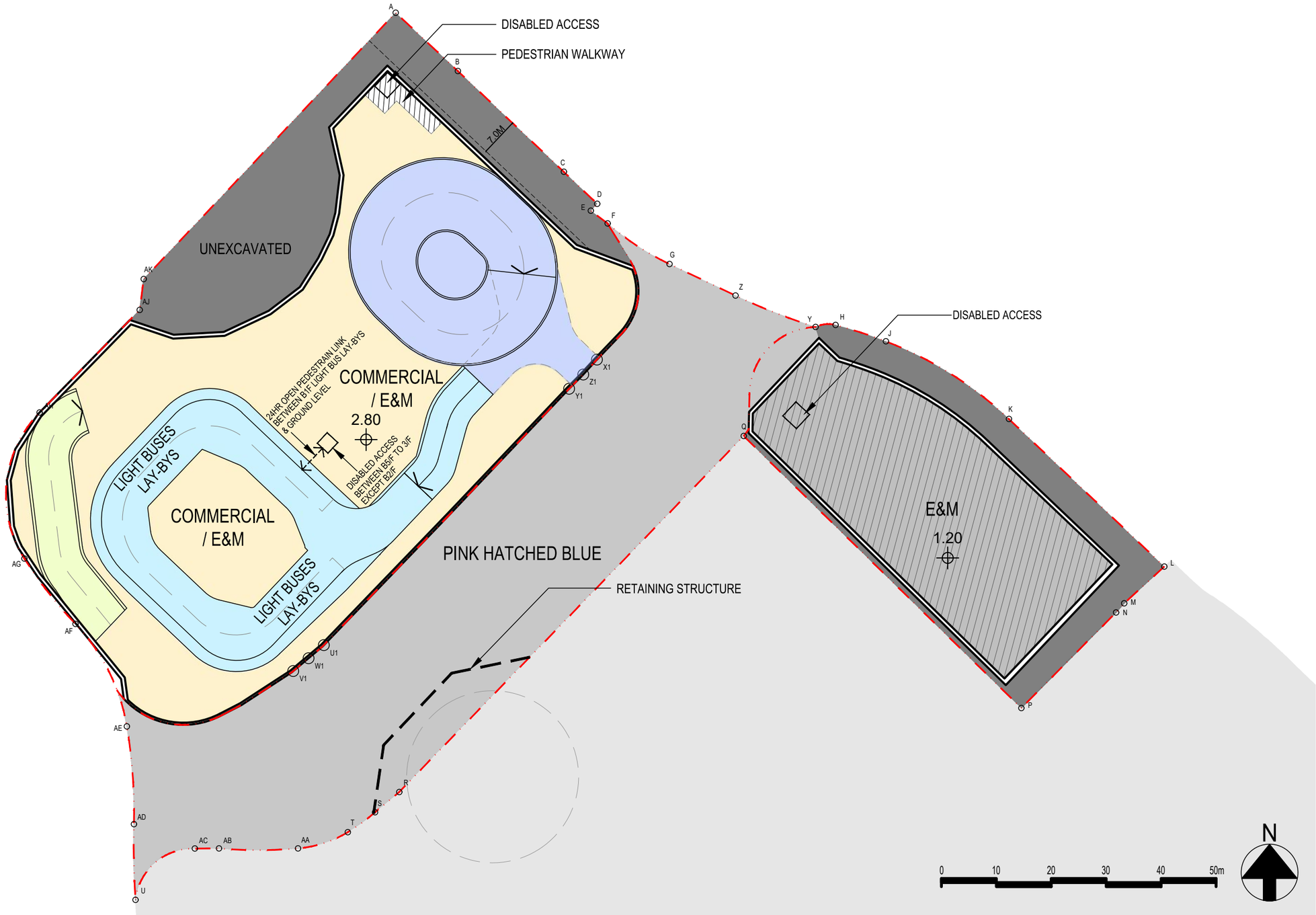
Drawing Title
B2 FLOOR PLAN

Project No. 21105HK
Scale 1:750 (A3) Issue Date Sept 2024
Drawing No. MLP -004

Drawing Purpose

LEGEND

- APPLICATION SITE
- PINK HATCHED BLUE — NO STRUCTURE ERECTED ABOVE OR WITHIN 4M BELOW GROUND LEVEL
- PUBLIC OPEN SPACE
- COMMERCIAL/E&M
- G.I.C. FACILITIES
- FUTURE FOOTBRIDGE
- LIGHT BUSES LAYBYS
- CARPARK (PVP)
- CARPARK (PRIVATE)
- CARPARK (G.I.C. FACILITIES)
- ACCESS ROAD
- LOADING & UNLOADING CARPARK (PVP)
- UNEXCAVATED
- 24-HR PEDESTRIAN WALKWAY
- PUBLIC OPEN SPACE WITH 24-HR PEDESTRIAN WALKWAY
- PEDESTRIAN LINK
- E&M
- CIRCULATION / E&M



Rev.	Description	Drawn	Checked	Approved	Date
–	1st SUBMISSION				3-2022
A	1st AMENDMENT				9-2023
B	2nd AMENDMENT				1-2024

Rev.	Description	Drawn	Checked	Approved	Date

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B.D. Ref.

F.S.D. Ref.

D.L.O. Ref.

Drawn Date 1-2024

Checked Date 1-2024

Approved Date 1-2024

Cad File No.

RONALD LU & PARTNERS
呂元祥建築師事務所

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON IL NO.8945 AT CAROLINE HILL ROAD, CAUSEWAY BAY, HONG KONG

Drawing Title

B1 FLOOR PLAN

Project No. 21105HK

Scale 1:750 (A3) Issue Date Sept 2024

Drawing No. MLP -005

Drawing Purpose

LEGEND

- APPLICATION SITE
- PINK HATCHED BLUE — NO STRUCTURE ERECTED ABOVE OR WITHIN 4M BELOW GROUND LEVEL
- PUBLIC OPEN SPACE
- COMMERCIAL/E&M
- G.I.C. FACILITIES
- FUTURE FOOTBRIDGE
- LIGHT BUSES LAYBYS
- CARPARK (PVP)
- CARPARK (PRIVATE)
- CARPARK (G.I.C. FACILITIES)
- ACCESS ROAD
- LOADING & UNLOADING CARPARK (PVP)
- UNEXCAVATED
- 24-HR PEDESTRIAN WALKWAY
- PUBLIC OPEN SPACE WITH 24-HR PEDESTRIAN WALKWAY
- PEDESTRIAN LINK
- E&M
- CIRCULATION / E&M

LEIGHTON ROAD

CAROLINE HILL ROAD

CAROLINE HILL ROAD

+4.97

+9.0

DISABLED ACCESS BETWEEN B5/F TO 2/F

MASONARY WALLS AND EARTHENWARE PIPES TO BE PRESERVED

+11.5 VENT SHAFT

24-HR COVERED PEDESTRIAN WALKWAY

DISABLED ACCESS TO STREET LEVEL

OVT

COMMERCIAL / E&M

+8.55

24HR OPEN PEDESTRAIN LINK BETWEEN B1/F LIGHT BUS LAY-BYS & GROUND LEVEL

TO LOADING / UNLOADING & LIGHT BUSES LAY-BYS

+5.60

+8.55

DISABLED ACCESS BETWEEN B5/F TO 3/F EXCEPT B2/F

6M

14M

28M

RETAINING STRUCTURE

DROP-OFF

PRIVATE LVL

+11.05 VENT SHAFT

TO CARPARK

+12.05 VENT SHAFT

+8.9

+11.1

SITE OF FUTURE DISTRICT COURT

OVT

G.I.C. FACILITIES (DAY CARE CENTER FOR THE ELDERLY) / E&M

+10.20

7.5M

DISABLED ACCESS BETWEEN B2/F TO 2/F

+10.20

DISABLED ACCESS BETWEEN B2/F TO 2/F

UG/F

DISABLED ACCESS BETWEEN B2/F TO 2/F

MASONARY WALLS AND EARTHENWARE PIPES TO BE PRESERVED

G.I.C. FACILITIES (DISTRICT HEALTH CENTER) / E&M

7.5M

+5.70

+5.70

DISABLED ACCESS BETWEEN B2/F TO 2/F

G/F

N

0 10 20 30 40 50m

Rev.	Description	Drawn	Checked	Approved	Date
–	1st SUBMISSION				3-2022
A	1st AMENDMENT				9-2023
B	2nd AMENDMENT				1-2024

Rev.	Description	Drawn	Checked	Approved	Date

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

This drawing is to be read in conjunction with the specification and any discrepancies are to be immediately reported to the Architect.

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B.D. Ref.

F.S.D. Ref.

D.L.O. Ref.

Drawn Date 1-2024

Checked Date 1-2024

Approved Date 1-2024

Cad File No.

RONALD LU & PARTNERS

呂元祥建築師事務所

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON IL NO.8945 AT CAROLINE HILL ROAD, CAUSEWAY BAY, HONG KONG

Drawing Title

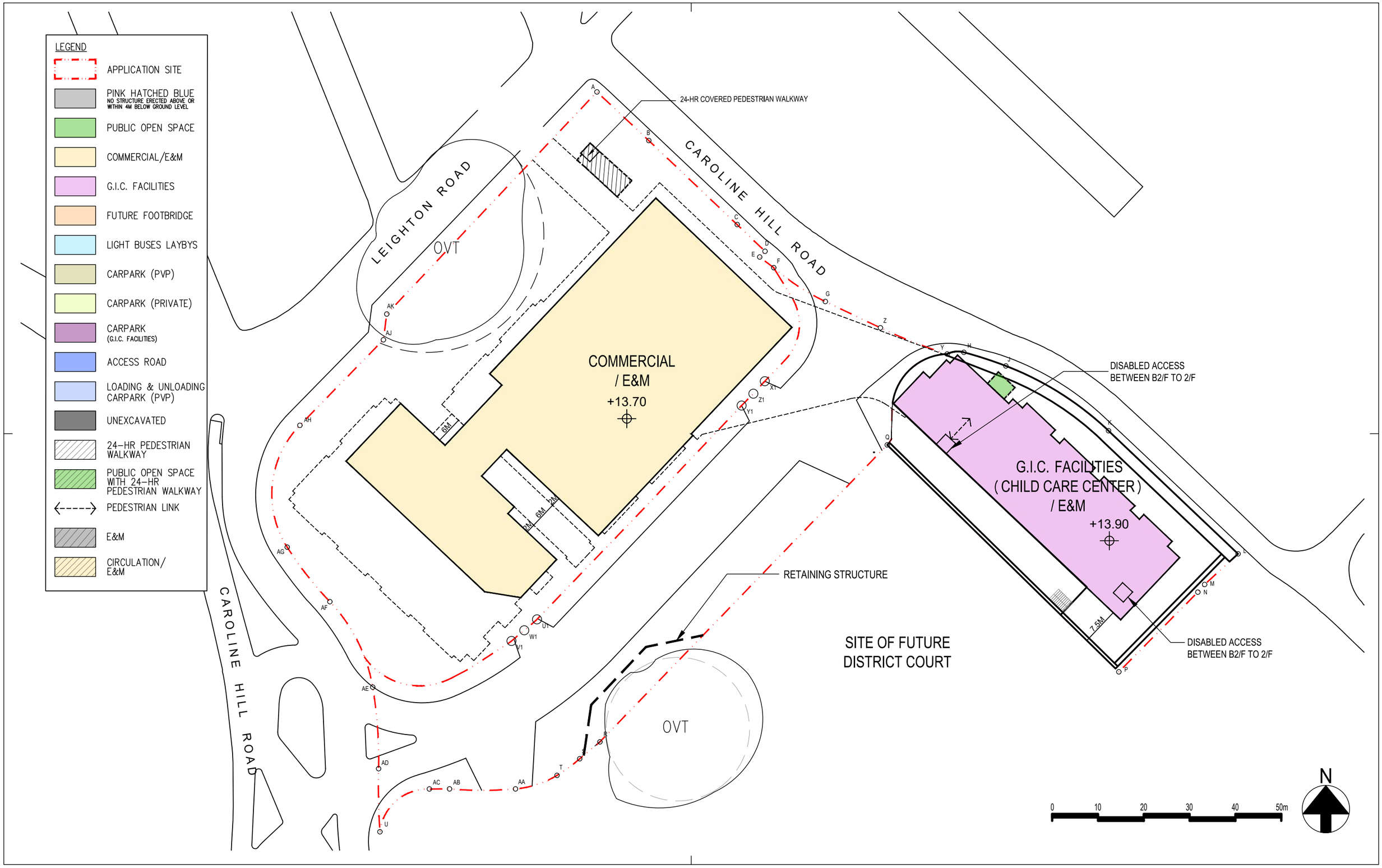
GROUND FLOOR PLAN

Project No. 21105HK

Scale 1:750 (A3) Issue Date Sept 2024

Drawing No. MLP -006

Drawing Purpose



Rev.	Description	Drawn	Checked	Approved	Date
–	1st SUBMISSION				3-2022
A	1st AMENDMENT				9-2023
B	2nd AMENDMENT				1-2024

Rev.	Description	Drawn	Checked	Approved	Date

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B.D. Ref.
F.S.D. Ref.
D.L.O. Ref.
Drawn Date 1-2024
Checked Date 1-2024
Approved Date 1-2024
Cad File No.

RONALD LU & PARTNERS
呂元祥建築師事務所

Project Title
PROPOSED COMMERCIAL DEVELOPMENT ON IL NO.8945 AT CAROLINE HILL ROAD, CAUSEWAY BAY, HONG KONG

Drawing Title
FIRST FLOOR PLAN

Project No. 21105HK
Scale 1:750 (A3) Issue Date Sept 2024
Drawing No. MLP-007

Drawing Purpose

LEGEND

- APPLICATION SITE
- PINK HATCHED BLUE (NO STRUCTURE ERECTED ABOVE OR WITHIN 4M BELOW GROUND LEVEL)
- PUBLIC OPEN SPACE
- COMMERCIAL/E&M
- G.I.C. FACILITIES
- FUTURE FOOTBRIDGE
- LIGHT BUSES LAYBYS
- CARPARK (PVP)
- CARPARK (PRIVATE)
- CARPARK (G.I.C. FACILITIES)
- ACCESS ROAD
- LOADING & UNLOADING CARPARK (PVP)
- UNEXCAVATED
- 24-HR PEDESTRIAN WALKWAY
- PUBLIC OPEN SPACE WITH 24-HR PEDESTRIAN WALKWAY
- PEDESTRIAN LINK
- E&M
- CIRCULATION/ E&M

FUTURE FOOTBRIDGE
(TO BE CONSTRUCTED BY OTHERS
AND SUBJECT TO DETAIL DESIGN)

CONNECTION POINT FOR
FUTURE FOOTBRIDGE

DISABLED ACCESS
BETWEEN B5/F TO 2/F

LEIGHTON ROAD

CAROLINE HILL ROAD

24-HR COVERED PEDESTRIAN WALKWAY

+17.64

+18.70

COVERED LANDSCAPE BRIDGE/
COVERED PUBLIC OPEN SPACE

CANOPY ABOVE

ESCALATOR
TO / FROM
3F RETAIL

COMMERCIAL/
E&M
+18.70

DISABLED ACCESS
BETWEEN B5/F TO 3/F
EXCEPT B2/F

DISABLED ACCESS
BETWEEN B2/F TO 2/F

DISABLED ACCESS
BETWEEN B2/F TO 2/F

COMMERCIAL / E&M

+18.40

21.50

+17.00

OVT

OVT

SITE OF FUTURE
DISTRICT COURT

N

0 10 20 30 40 50m

Rev.	Description	Drawn	Checked	Approved	Date
–	1st SUBMISSION				3-2022
A	1st AMENDMENT				9-2023
B	2nd AMENDMENT				1-2024

Rev.	Description	Drawn	Checked	Approved	Date

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B.D. Ref.

F.S.D. Ref.

D.L.O. Ref.

Drawn Date 1-2024

Checked Date 1-2024

Approved Date 1-2024

Cad File No.

RONALD LU & PARTNERS
呂元祥建築師事務所

Project Title
PROPOSED COMMERCIAL DEVELOPMENT ON IL NO.8945 AT CAROLINE HILL ROAD, CAUSEWAY BAY, HONG KONG

Drawing Title
SECOND FLOOR PLAN

Project No. 21105HK

Scale 1:750 (A3) Issue Date Sept 2024

Drawing No. MLP -008

Drawing Purpose

LEGEND

- APPLICATION SITE
- PINK HATCHED BLUE — NO STRUCTURE ERECTED ABOVE OR WITHIN 4M BELOW GROUND LEVEL
- PUBLIC OPEN SPACE
- COMMERCIAL/E&M
- G.I.C. FACILITIES
- FUTURE FOOTBRIDGE
- LIGHT BUSES LAYBYS
- CARPARK (PVP)
- CARPARK (PRIVATE)
- CARPARK (G.I.C. FACILITIES)
- ACCESS ROAD
- LOADING & UNLOADING CARPARK (PVP)
- UNEXCAVATED
- 24-HR PEDESTRIAN WALKWAY
- PUBLIC OPEN SPACE WITH 24-HR PEDESTRIAN WALKWAY
- PEDESTRIAN LINK
- E&M
- CIRCULATION/ E&M

LEIGHTON ROAD

CAROLINE HILL ROAD

OVT

ESCALATOR TO / FROM 2F RETAIL

ESCALATOR TO / FROM 5F PACF

COMMERCIAL / E&M +23.70

E&M +31.80

7.5M

7.5M

SITE OF FUTURE DISTRICT COURT

OVT

A B C D E F G Z Y H J K L M N P Q X1 Z1 Y1 U1 W1 V1 U T S R AA AB AC AD AE AF AG AH AJ AK

0 10 20 30 40 50m

N

Rev.	Description	Drawn	Checked	Approved	Date
–	1st SUBMISSION				3-2022
A	1st AMENDMENT				9-2023
B	2nd AMENDMENT				1-2024

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Approved Date 1-2024

Cad File No.

RONALD LU & PARTNERS

呂元祥建築師事務所

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON IL NO.8945 AT CAROLINE HILL ROAD, CAUSEWAY BAY, HONG KONG

Drawing Title

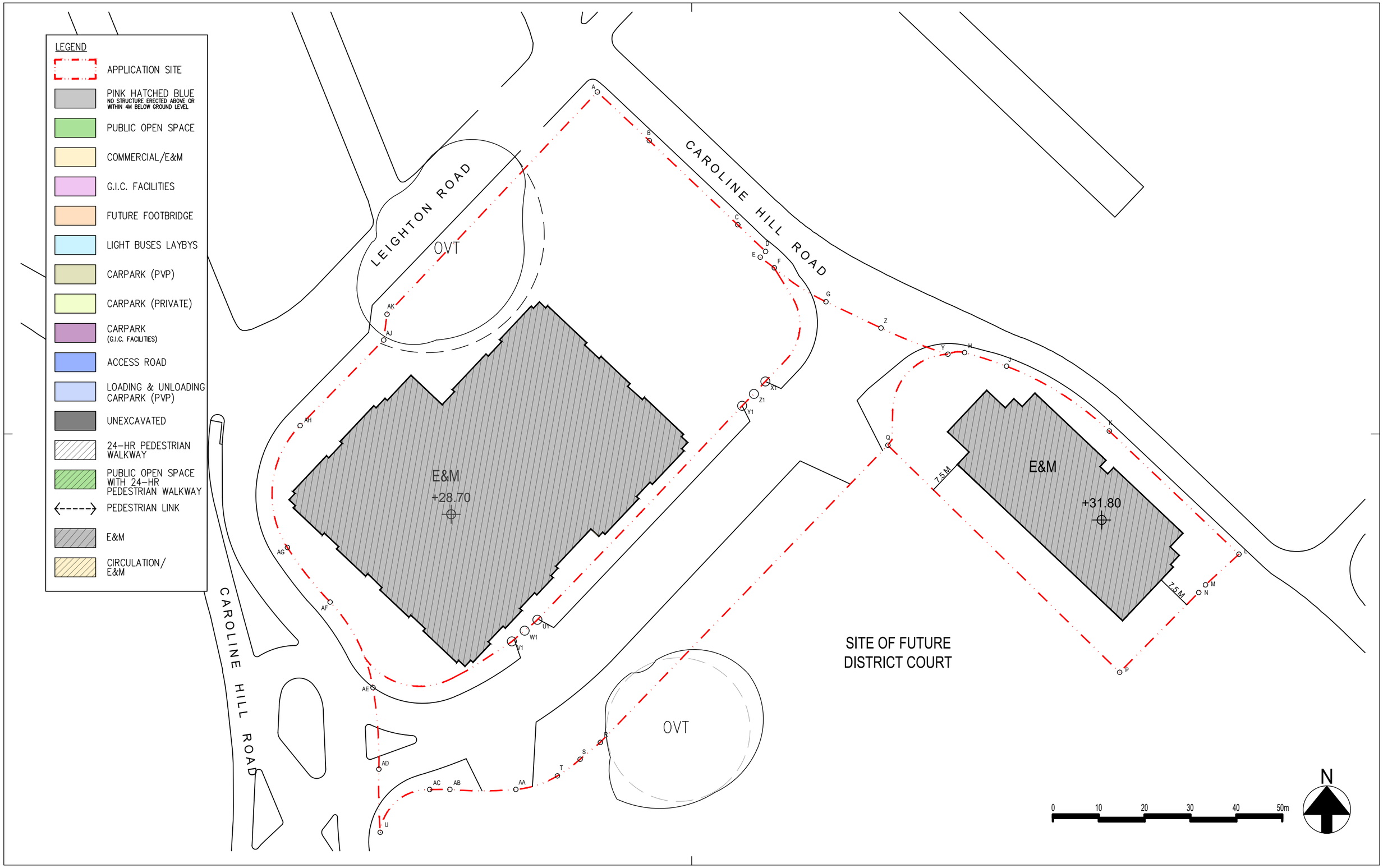
THIRD FLOOR PLAN

Project No. 21105HK

Scale 1:750 (A3) Issue Date Jan 2024

Drawing No. MLP -009

Drawing Purpose



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Project Title
PROPOSED COMMERCIAL DEVELOPMENT ON IL NO.8945 AT CAROLINE HILL ROAD, CAUSEWAY BAY, HONG KONG

Drawing Title
FORTH FLOOR PLAN

Project No. 21105HK
Scale 1:750 (A3) Issue Date Sept 2024
Drawing No. MLP -009.1

Drawing Purpose

LEGEND

- APPLICATION SITE
- PINK HATCHED BLUE — NO STRUCTURE ERECTED ABOVE OR WITHIN 4M BELOW GROUND LEVEL
- PUBLIC OPEN SPACE
- COMMERCIAL/E&M
- G.I.C. FACILITIES
- FUTURE FOOTBRIDGE
- LIGHT BUSES LAYBYS
- CARPARK (PVP)
- CARPARK (PRIVATE)
- CARPARK (G.I.C. FACILITIES)
- ACCESS ROAD
- LOADING & UNLOADING CARPARK (PVP)
- UNEXCAVATED
- 24-HR PEDESTRIAN WALKWAY
- PUBLIC OPEN SPACE WITH 24-HR PEDESTRIAN WALKWAY
- PEDESTRIAN LINK
- E&M
- CIRCULATION/ E&M

LEIGHTON ROAD

CAROLINE HILL ROAD

OVT

G.I.C.FACILITIES
(PERFORMING ARTS & CULTURAL FACILITIES)
+34.60

COMMERCIAL/ E&M
+34.60

ESCALATOR TO / FROM 3F RETAIL

COMMERCIAL /E&M
+35.70

7.5M

7.5M

SITE OF FUTURE DISTRICT COURT

OVT

A B C D E F G Z Y H J K L M N P Q R S T U V V1 W1 U1 X1 Z1 Y1 AA AB AC AD AE AF AG AH AJ AK

0 10 20 30 40 50m

N

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呂元祥建築師事務所

Project Title
PROPOSED COMMERCIAL DEVELOPMENT ON IL NO.8945 AT CAROLINE HILL ROAD, CAUSEWAY BAY, HONG KONG

Drawing Title
FIFTH FLOOR PLAN

Project No. 21105HK
Scale 1:750 (A3)
Issue Date Sept 2024
Drawing No. MLP -010

Drawing Purpose

LEGEND

- APPLICATION SITE
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- PUBLIC OPEN SPACE
- COMMERCIAL/E&M
- G.I.C. FACILITIES
- FUTURE FOOTBRIDGE
- LIGHT BUSES LAYBYS
- CARPARK (PVP)
- CARPARK (PRIVATE)
- CARPARK (G.I.C. FACILITIES)
- ACCESS ROAD
- LOADING & UNLOADING CARPARK (PVP)
- UNEXCAVATED
- 24-HR PEDESTRIAN WALKWAY
- PUBLIC OPEN SPACE WITH 24-HR PEDESTRIAN WALKWAY
- PEDESTRIAN LINK
- E&M
- CIRCULATION/ E&M

LEIGHTON ROAD

CAROLINE HILL ROAD

CAROLINE HILL ROAD

OVT

OVT

T1 & T2
COMMERCIAL / E&M
19 STOREYS
(6/F-27/F)

T3
COMMERCIAL / E&M
12 STOREYS
(3/F-17/F)

7.5M

7.5M

SITE OF FUTURE DISTRICT COURT

A B C D E F G Z Y H J K L M N P Q R S T U AA AB AC AD AE AF AG AH AJ AK X1 Z1 Y1 U1 W1 V1

0 10 20 30 40 50m

N

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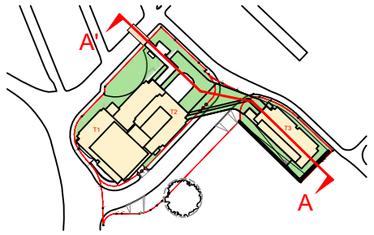
Project Title
PROPOSED COMMERCIAL DEVELOPMENT ON IL NO.8945 AT CAROLINE HILL ROAD, CAUSEWAY BAY, HONG KONG

Drawing Title
TYPICAL FLOOR PLAN

Project No. 21105HK
Scale 1:750 (A3)
Issue Date Sept 2024
Drawing No. MLP -011

Drawing Purpose



SITE
(EDGED RED)

SITE
(PINK HATCHED BLUE)

SITE
(EDGED BLUE)

LEIGHTON ROAD

LEE GARDEN SIX

T1 & T2

+135.00 mPD

27 27
26 26
25 25
23 23
22 22
21 21
20 20
19 19
18 18
17 COMMERCIAL / E&M 17
16 16
15 15
12 12
11 11
10 10
9 9
8 8
7 7
6 6
5 PERFORMING ARTS & CULTURAL FACILITIES +34.60 mPD 5
4 E&M +28.70 mPD 4
3 COMMERCIAL / E&M +23.70 mPD 3
2 COMMERCIAL / E&M +18.70 mPD 2
1 COMMERCIAL / E&M +13.70 mPD 1
G COMMERCIAL / E&M +8.55 mPD G
B1 COMMERCIAL / E&M +2.80 mPD B1
B2 LOADING & UNLOADING -4.35 mPD B2
B3 CARPARK (PRIVATE) -8.25 mPD B3
B4 CARPARK (PRIVATE) -11.80 mPD B4
B5 CARPARK (PRIVATE) -15.35 mPD B5
-18.00 mPD

19 STOREYS

T3

+90.0 mPD

17
16
15
12
11
10 COMMERCIAL / E&M
9
8
7
6
5
E&M
3 +31.80 mPD

12 STOREYS

COVERED PUBLIC OPEN SPACE

COVERED LANDSCAPE BRIDGE/ COVERED PUBLIC OPEN SPACE

2 +18.40 mPD
1 +13.90 mPD G.I.C. FACILITIES (CCC) / E&M
UG +10.20 mPD G.I.C. FACILITIES (DE) / E&M
G +5.70 mPD G.I.C. FACILITIES (DHC) / E&M
B2M +0.90 mPD E&M
B2 -4.35mPD CARPARK (PVP)

+18.70 mPD

+6.65 mPD

4000

CARPARK (G.I.C. FACILITIES)

LIGHT BUSES LAY-BYS

CARPARK (PVP)

FUTURE FOOTBRIDGE
(TO BE CONSTRUCTED BY OTHERS & SUBJECT TO DETAIL DESIGN)

+17.64 mPD

+16.80 mPD

+5.00 mPD

13400 4500 3700 4500 4800 5250

8500 5900 2500 2100 5000 5150 5750 7150 3900 3550 3550

0 10 20 30 40 50m

LEGEND

- APPLICATION SITE
- PINK HATCHED BLUE (NO STRUCTURE ERECTED ABOVE OR WITHIN 4M BELOW GROUND LEVEL)
- PUBLIC OPEN SPACE
- COMMERCIAL/E&M
- G.I.C. FACILITIES
- PERFORMING ARTS & CULTURAL FACILITIES
- FUTURE FOOTBRIDGE
- LIGHT BUSES LAYBYS
- CARPARK (PVP)
- CARPARK (PRIVATE)
- CARPARK (G.I.C. FACILITIES)
- ACCESS ROAD
- LOADING/UNLOADING
- UNEXCAVATED
- E&M

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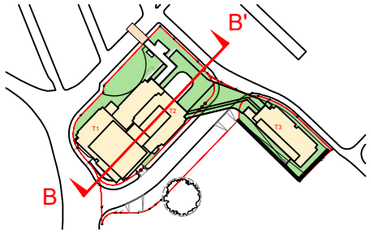
RONALD LU & PARTNERS
呂元祥建築師事務所

Project Title
PROPOSED COMMERCIAL DEVELOPMENT ON IL NO.8945 AT CAROLINE HILL ROAD, CAUSEWAY BAY, HONG KONG

Drawing Title
SECTION AA'

Project No. 21105HK
Scale 1:750 (A3)
Issue Date Sept 2024
Drawing No. MLP -012

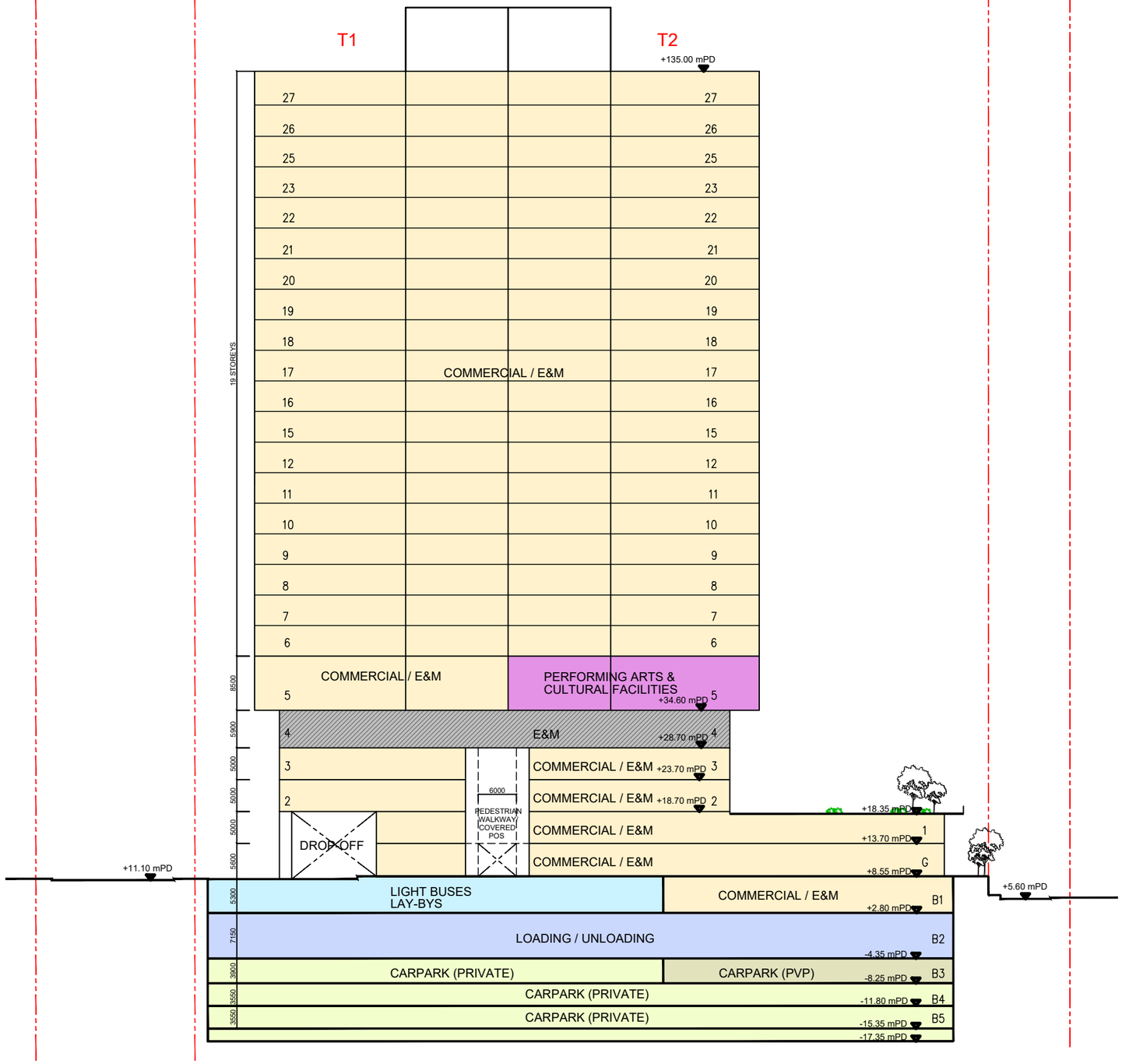
Drawing Purpose



CAROLINE HILL ROAD (WEST)

SITE
(EDGED BLUE)

CAROLINE HILL ROAD (EAST)



LEGEND

- APPLICATION SITE
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- PUBLIC OPEN SPACE
- COMMERCIAL/E&M
- G.I.C. FACILITIES
- PERFORMING ARTS & CULTURAL FACILITIES
- FUTURE FOOTBRIDGE
- LIGHT BUSES LAYBYS
- CARPARK (PVP)
- CARPARK (PRIVATE)
- CARPARK (G.I.C. FACILITIES)
- ACCESS ROAD
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- E&M

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Cad File No.

RONALD LU & PARTNERS
呂元祥建築師事務所

Project Title
PROPOSED COMMERCIAL DEVELOPMENT ON IL NO.8945 AT CAROLINE HILL ROAD, CAUSEWAY BAY, HONG KONG

Drawing Title
SECTION BB'

Project No. 21105HK
Scale 1:750 (A3) Issue Date Sept 2024
Drawing No. MLP -013

Drawing Purpose

銅鑼灣



Causeway Bay

Annex C
Landscape Master Plan

Landscape Master Plan Submission for
Commercial Development at Caroline Hill Road, Causeway Bay, Hong Kong

Landscape Master Plan Submission
(Rev.0)

AUG 2025

PREPARED BY:

OTHERLAND LIMITED

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1 Background

1.1 General

1.1.1 Section 16 (S16) Planning Application No. A/H7/181 of Layout Plan and Proposed Minor Relaxation of Gross Floor Area for Permitted Eating Place, Office, Place of Recreation, Sports or Culture, Public Clinic, Public Transport Terminus or Station, Public Vehicle Park (excluding container vehicle), Shop and Services and Social Welfare Facility in "Commercial (2)" Zone, Inland Lot No. 8945, Caroline Hill Road, Causeway Bay was approved by the Town Planning Board (TPB) on 6 May 2022. Approval condition (b), requires the submission and implementation of a revised Landscape Master Plan (LMP) to the satisfaction of the Director of Planning or of the TPB.

1.1.2 Otherland Limited is commissioned by Patchway Holdings (HK) Limited (Applicant), to conduct the Landscape Architectural design based on the Proposed Development scheme provided by Project Architect - Ronald Lu & Partners (Hong Kong) Ltd.

1.1.3 The Application Site is located at the junction of Caroline Hill Road and Leighton Road, south of the commercial area of Causeway Bay on Hong Kong Island (Figure 1.1). The Application Site is bounded by Leighton Road to the northwest, by Caroline Hill Road to the northeast and southwest, and by land designated for the future District Court development and by the South China Athletic Association to its southeast.

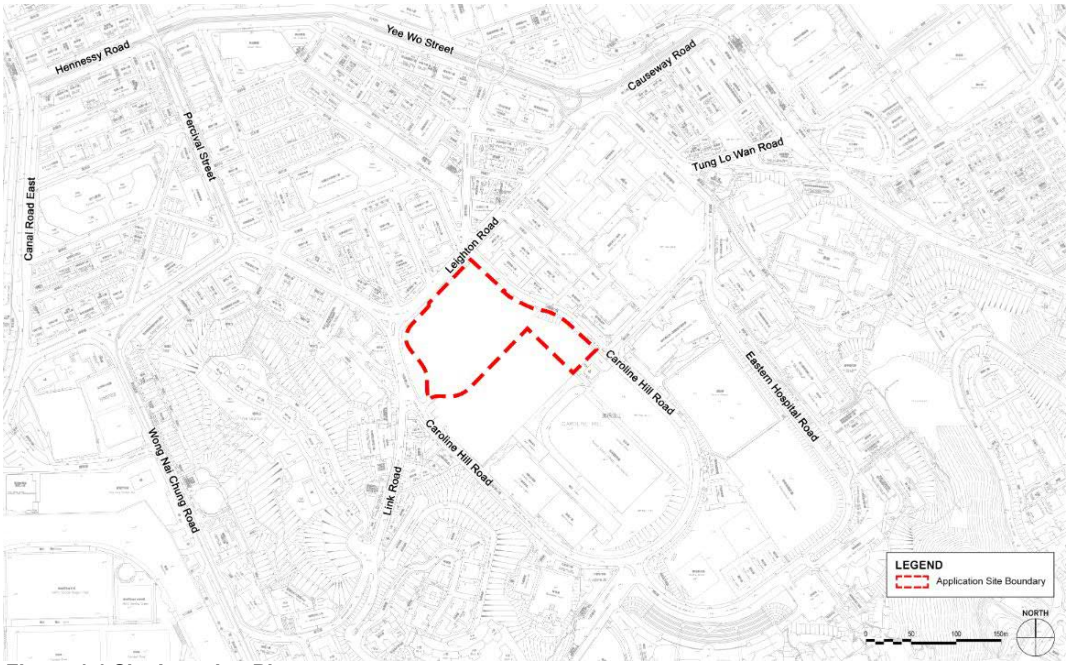


Figure 1.1 Site Location Plan

1.1.4 The visions of landscape design for the Application Site are included the followings:

- Respect for and integration with the existing natural and cultural context, in particular the Old and Valuable Tree, abutting Leighton Road and the graded heritage walls, as well as the tree cluster situated on the masonry wall abutting the corner of Leighton Road and Caroline Hill Road East;
- Provision of sufficient high quality public open space of minimum 6,000m^2 for the future visitors;

- Achieve a minimum site greenery coverage of 20% of the site area;
- Compatibility with the surroundings in terms of the scale, massing, and outlook;
- Physical and visual connectivity with the surroundings;
- Landscape design on the ground floor and second floor with sitting out area and/or planting area(s);
- Provision of a visual corridor between the OVTs on Leighton Road and at the future District Court Site; and
- Soften/ integration of built forms into surrounding environment.

1.1.5 This conceptual landscape proposal also sets out the site context potential impact to existing trees on site, landscape design parameters, open space and site coverage of greenery provisions as justification in support of the application.

1.1.6 Relevant government guidelines, practice notes, references and standards on preparation of this LMP:

- HKPSG Chapter 4, Street Tree Selection Guide promulgated by DEVB and GMP in Sheung Wan, Wan Chai and Causeway Bay;
- Plan Department (PlanD) PNPP No. 1/2019 – Processing and Compliance Checking of Landscape Submissions related to Planting Application;
- Plan D PNPP No. 1/2019 – Appendix A;
- Plan D PNPP No. 1/2019 – Appendix B;
- Lands Administration Office (LAO) PN No. 2/2020 – Tree Preservation and Removal Proposal for Building Development in Private Projects Compliance of Tree Preservation Clause under Lease; and
- Development Bureau (DEVB) Technical Circular (Works) No. 5/2020 – Registration and Preservation of Old and Valuable Trees.

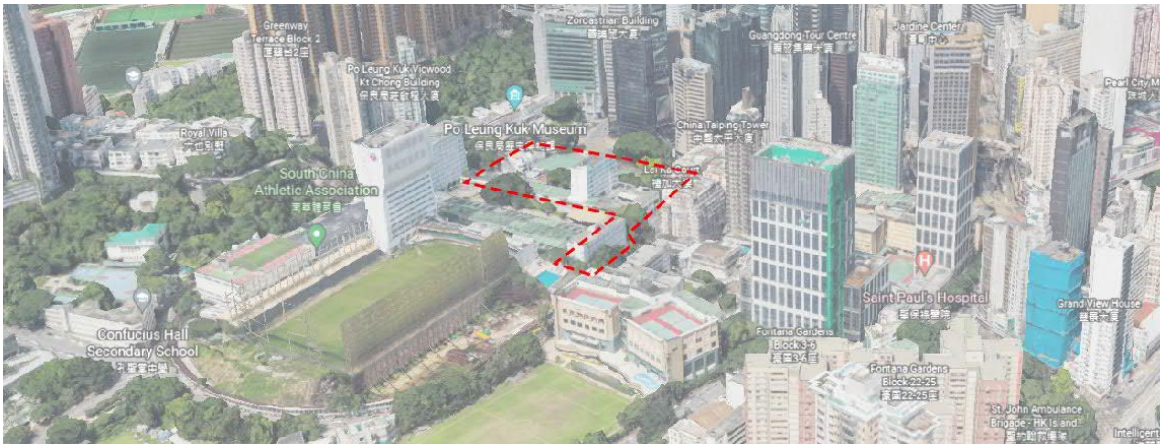
2 Site Appraisal

2.1 General

2.1.1 The Application Site covers the majority of the "C (2)" zone and has an area of about 14,802m^2. The Application Site is bounded by Leighton Road to the northwest, by Caroline Hill Road to the northeast and southwest, and by land designated for the future District Court development and by the South China Athletic Association to its southeast. The landscape character of the Site is categorised as Institutional Landscape.

2.1.2 The Application Site is mostly vacant. The site currently consists of two large flat areas on two different levels (approximately +15.3mPD & +10.3mPD to +9.3mPD respectively) bounded to the north by Leighton Hill Road where the site slopes down to the top of an antique retaining wall. To the east along Caroline Hill Road there is a narrow strip that slopes down to the top of an antique retaining wall. Further south along Caroline Hill Road (east) the upper section of the site has a slightly wider strip covered in chunam that slopes down to the top of the antique retaining wall that is to be preserved.

2.1.3 Structures and facilities associated with its former use as the recreation clubs of the Post Office and PCCW; the ex-headquarters building and vehicle depot of the Electrical and Mechanical Services Department (EMSD) and offices of the Highways Department (HyD) and Civil Aid Services are now disused or demolished, except for the two remaining structures at the south-eastern part of the Site.



3 Existing Landscape Resources

3.1 General

3.1.1 The Application Site is currently vacant, many of the species are typical woodland trees and have in all probability been self-seeded over the years. There are several fruit trees present which have reached maturity and also a number of ornamental species suggesting that these were once purposefully planted as part of an original landscaped area.

3.1.2 A tree survey was conducted from 21 Aug 2021. A total of 57 nos. of surveyed trees were recorded at the Pink Area within the Lot Boundary. All surveyed trees are illustrated on the Tree Location Plan in **Appendix A**. Two (2) trees within or adjacent to the Lot boundary were found including in the Register of Old and Valuable Trees (OVTs) promulgated under Development Bureau - Technical Circular (Works) No. 5/2020. Only one OVT (LANDSD(LEASED) WCH/1) is located within the site boundary, while another OVT (JUD WCH/1) is located out of boundary. The OVT (T69) has been infected with "Brown Root Rot Disease" (BRRD) before land grant. After the land grant, the assessments of the OVT's BRRD infection was conditions by independent mycology specialist. Based on the recommendation, spent mushroom substrate harbouring *Trichoderma* was added as mulching material in August 2024 in the existing tree strip. Since the implementation of this treatment, no further decline in tree vigour has been observed. At this stage, additional testing is not considered necessary. The status of BRRD will be continually monitored to determine whether additional testing and treatments are necessary.

3.1.3 24 nos. of tree species are identified, the dominant species are *Bauhinia purpurea, Dimocarpus longan, and Mangifera indica*. Two (2) nos. of trees - *Michelia* x *alba* (T31 and T33) are classified as rare or protected species in *Forest and Countryside Ordinance* (Cap. 96). Part of the existing trees are located on the flat lands within the vacancy land; while partial tree clusters are erected on the top of the heritage wall along eastern part of Caroline Hill Road. The general conditions of surveyed tree are found to be poor to fair. **Table 3.1** summarizes the tree species composition within the tree survey area. The detail tree conditions and tree treatments is further elaborated in **Annex A – Annex C.**

Table 3.1 Summary of Tree Species Composition within Survey Boundary

	Species Name	Chinese Name	No. of Trees
1	*Alangium chinense*	八角楓	2
2	*Aleurites moluccana*	石栗	2
3	*Bauhinia purpurea*	紅花羊蹄甲	4
4	*Broussonetia papyrifera*	構樹	3
5	*Casuarina equisetifolia*	木麻黃	1
6	*Celtis sinensis*	朴樹	1
7	*Cinnamomum burmannii*	陰香	2
8	*Clausena lansium*	黃皮	1
9	*Dimocarpus longan*	龍眼	6
10	*Ficus elastica*	印度橡樹	1
11	*Ficus hispida*	對葉榕	4
12	*Ficus microcarpa*	細葉榕	3
13	*Ficus variegata*	青果榕	3
14	*Ficus virens*	黃葛樹	1
15	*Ligustrum sinense*	山指甲	1
16	*Litsea glutinosa*	潺槁樹	1
17	*Litsea monopetala*	假柿木薑子	2
18	*Macaranga tanarius* var. *tomentosa*	血桐	3
19	*Mangifera indica*	杧果	7

	Species Name	Chinese Name	No. of Trees
20	*Michelia* x *alba*	白蘭	2
21	*Microcos nervosa*	布渣葉	1
22	*Morus alba*	桑	1
23	*Murraya paniculata*	九里香	1
24	*Plumeria rubra*	雞蛋花	2
	Dead tree	死樹	2
		Total	57

3.1.4 The existing surveyed trees comprise a mix of native and exotic species and their size, health, form, amenity value and suitability for transplanting vary. Detailed conditions of each surveyed tree are described in the Tree Assessment Schedule (TAS) in **Annex B**. Photographs showing the various views of the surveyed tree are shown in **Annex C**.

Criteria for Types of Trees with High Value for Priority Preservation

3.1.5 In general, any trees with high value should be preserved at their original location, and removal shall be prohibited except very special circumstances with full justifications. The criteria of the trees for priority preservation are listed as follows:

- Trees included in the Register of OVTs as mentioned in the DEVB TC(W) No. 5/2020 or any subsequent amendments thereof issued by DEVB; or
- Stonewall trees, trees of particular interest, trees of particular value, trees of rare species and other trees designed to be preserved under leases; or
- Mature trees (with an individual trunk (s) over 750mm DBH.

Identified Trees with High Value for Priority Preservation within the Lot

3.1.6 According to the findings in TAS, one Registered OVT was identified within Lot boundary. The following types of trees will high value for priority preservation are found within the Lot:

Registered OVT

3.1.7 One OVT (LANDSD(LEASED) WCH/1) (T69) - *Ficus elastica* is located within the site boundary, which is located at the slope along Leighton Road.

Tree of Rare or Protected Species

3.1.8 Two (2) nos. of trees - *Michelia x alba* (T31 and T33) are classified as rare or protected species in Forest and Countryside Ordinance (Cap. 96). Both rare species are located on the flat lands within the vacancy land.

Mature Trees

3.1.9 Two (2) mature trees - *Ficus microcarpa* (T25 and T77) are found with 3,000mm DBH at 1.3m above ground level. T25 is located at the SIMAR slope 11SW-B/FR32, while T77 is attached on the abandoned building structure.

Detailed Assessment for the Trees with High Value for Priority Preservation

3.1.10 To minimise the loss of affected trees with high value for priority preservation, a detailed assessment for the trees with high value for priority preservation has been carried out in this report and are shown in **Section 3.7**.

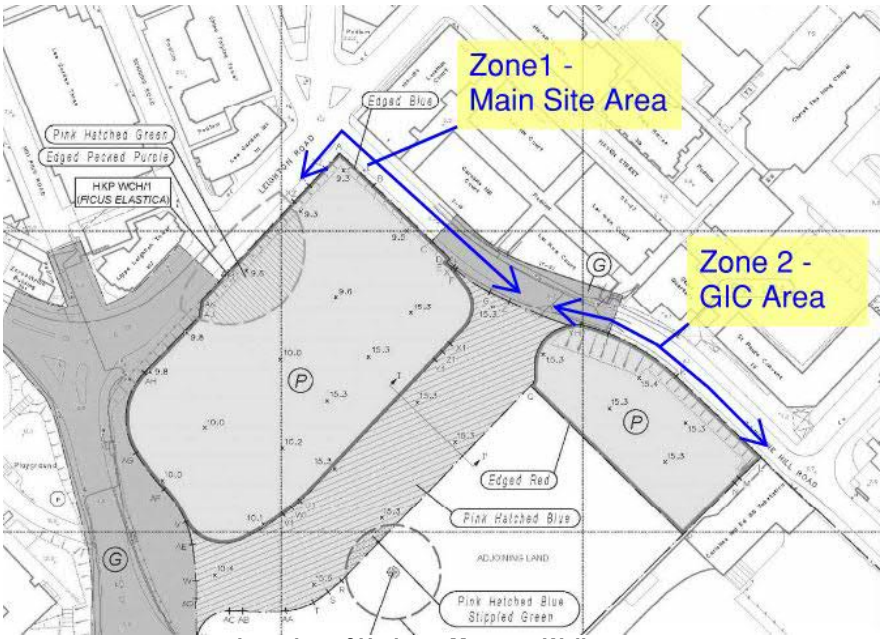
3.2 Tree Treatment (For PlanD's Reference Only)

3.2.1 Some trees will be unavoidably affected by the works by for proposed commercial towers, Public Open Space, GIC facilities, vehicular access and associated works. And some trees were felled under Emergency Tree Felling Procedure, which have been submitted to Lands Department after the removal works respectively, full set of Emergency Tree Removal Report is attached as **Annex E**.

3.2.2 The tree conditions, practicability of retaining and transplanting, and consideration for removal of trees in poor condition have been assessed on a case-by-case basis in the TAS. Detailed assessment for those trees with high value for priority preservation is presented in **Section 3.7**. The recommended tree treatment for all surveyed trees is presented in **Annex A – Tree Treatment Plan**.

3.3 Tree to be Retained (For PlanD's Reference Only)

3.3.1 According to Clause 13 – Preservation of Tree under the Lease of Inland Lot No. 8945, the OVT (T69) shall be preserved. Some of trees (including OVT (T69)) are scattered at the narrow strip that slopes down to the top of heritage masonry wall, the masonry walls are located along Caroline Hill Road to the north end of the site at Leighton Road. (refers to the figure below).



Location of Heritage Masonry Walls

3.3.2 In accordance with Clause 8.1.3 under explanatory statement of Approved Wong Nai Chung Outline Zoning Plan No. S/H7/21, *"Existing trees found within the site and trees situating on and/or abutting the stone retaining walls shall also be preserved as far as possible."* The project landscape architect has together with the project's structural and geotechnical engineer studied the feasibility on the preservation of the trees at the top of heritage walls as further elaborated in the following section.

3.4 Feasibility on the Tree Preservation along Masonry Walls (For PlanD's Reference Only)

3.4.1 Under lease, these heritage masonry walls are to be preserved and maintained. Substantial parts of the wall are approximately 3 meters to 5 meters tall with an additional sloped soil, where existing trees are located. The top of this slope is at approximately +10mPD (at Zone 1 – Main Site Area) to +15.0 mPD (at Zone 2 – GIC Area) (refers to figures below). The combined heritage retaining wall and the heritage retaining wall and the soil slope are considered as a geotechnical slope feature.



Masonry Wall at Zone 2 (GIC Area)

3.4.2 For Zone 2, as substantial parts of the heritage masonry walls required to be preserved under lease are approximately 5 meters above ground and are abutted directly on a narrow pedestrian pavement as adjacent to vehicular road. It is important that a proper inspection/survey and possible strengthening shall be carried out on these heritage walls to ensure their longevity.

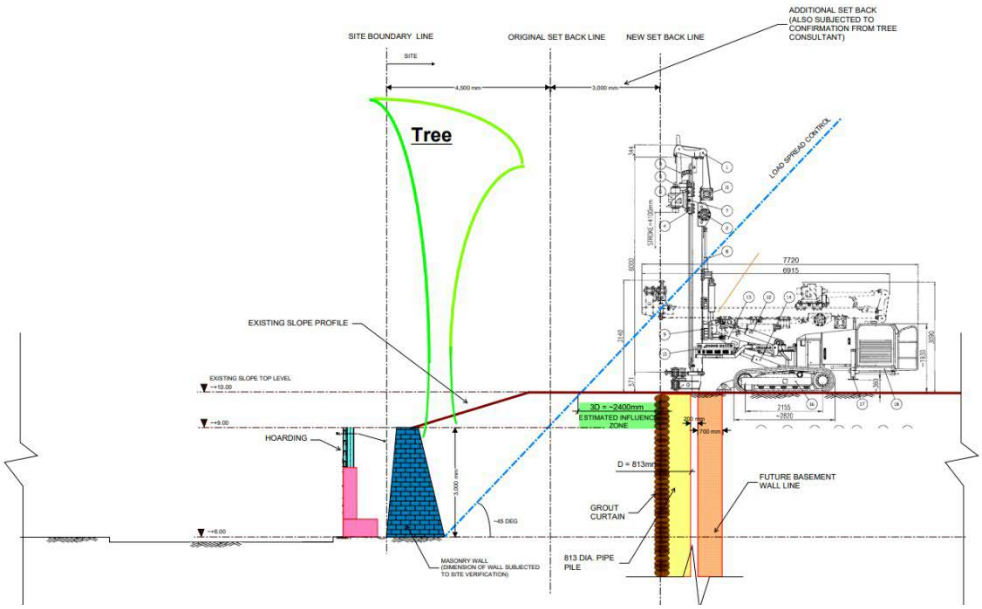
3.4.3 Secondly, in order to satisfy the requirements of the land lease, including construction of the GIC and commercial facilities, superstructure and basement will need to be constructed very close to the existing heritage wall. To facilitate the construction of the development under lease, it is necessary to have site formation that removes the existing overburden soil above and behind the heritage wall to approximately +6.0 to +8.0 mPD (ground formation level) depending on location. If the overburden soil and slope is not removed, piling and excavation lateral support works cannot proceed. Any piling machines that operate on top of the exiting slope will induce substantial loading and vibration that will lead to instability or slope slippage of the existing slope above and behind the heritage walls at Caroline Hill Road.

3.4.4 Besides, existing slopes gradient at Zone 2 is very steep (about 35 – 40 degree) with a height of about 5m above the top of masonry wall and is non-compliance to current Factor of Safety (FOS) requirement, slope modification is required for enhancing the slope stability. Hence, as the soil is needed to be removed, the existing trees (T16 – T25) cannot be retained in-situ.

3.4.5 For Zone 1, given the heritage wall is only about 2-3m above ground, while existing slope gradient is comparatively gentle with a slope height of about 1m above the top of heritage wall, no slope modification is needed for this part of heritage wall, only further set back of the basement footprint (total of 7.5m setback) is required to prevent affecting the stability of the slope and the existing heritage wall, with strengthening on existing Masonry Wall may be required. Therefore, the trees along Zone 1 are feasible to be retained at their original location.



Masonry Wall at Zone 1 (Main Site Area)



Typical Section at Zone 1

3.4.6 For this submission, existing trees at Zone 1 situating on and/or abutting the stone retaining walls are proposed to be retained in-situ.

3.5 Tree to be Transplanted (For PlanD's Reference Only)

3.5.1 Including the trees at the slope on the top of the heritage wall at Zone 2 area, 36 nos. of surveyed trees are inevitably affected by the proposed development, or its associated works, hence, all affected trees are recommended to be transplanted or felled.

3.5.2 Various factors have been taken into consideration when deciding whether it is feasible to transplant an individual tree from the site to a new receptor site. One important consideration is whether there is a suitable receptor site similar in nature to the existing growing environment of the tree. Many of the surveyed trees within the site are situated on slopes that render it impracticable to prepare their root balls and a receptor that match. Besides, tree with restricted or constrained root systems are also poor candidates for transplanting.

3.5.3 Having reviewed the suitability of individual species, their locations within the site, particularly those on slopes, their individual sizes, the ages of the specimens, current tree form, health condition, only four (4) nos. of affected trees are recommended to be transplanted, the proposed permanent receptor site will be replanted back to the Lot. The Tree Protection Zone (TPZ) of each tree to be transplanted will be erected before site clearance, the trees will be relocated to the onsite/ offsite receptor site by the landscape contractor, and will be reinstated to the permanent receptor site with the Lot.

3.6 Tree to be Felled (For PlanD's Reference Only)

3.6.1 Apart from the trees to be retained (15 nos.) and transplanted trees (4 nos.), the rest of surveyed trees (38 nos.) (including the two rare species T31 and T33; and two mature trees (T25 and T77) are proposed to be felled with compensation. Detailed justification of the removal of rare or protected species, and mature trees are further elaborated in **Section 3.7**.

3.7 Further Assessment for the Trees with High Value for Priority Preservation (For PlanD's Reference Only)

Register OVT (T69)

3.7.1 According to *Clause 13 – Preservation of Tree* under Inland Lot No. 8945, the OVT (T69) shall be preserved. Also, given the OVT has thrived for years under harsh condition, growing under a substantially large concrete slab with no significant health deterioration. While only a portion of its trunk remains within the open soil planter which is fully exposed beyond the slab's coverage, the tree has adapted to survive with severely limited access to air and water at its root zone. And this scheme is to enlarge the planting area from about 3.5m to about 9m width for significantly improving OVT's growing environment, no significant impacts will be caused to the OVT compared to the existing condition. Details assessment is further elaborated in **Annex D**.

Tree of Rare or Protected Species

3.7.2 Two (2) mature trees - *Michelia* x *alba* (T31 and T33) identified as protected species under Forestry Regulation (Cap. 96A) are located within site. Given both trees are in direct conflict with the proposed development they cannot be retained in-situ. According to the *GLTMS DEVB – Guidelines on Tree Transplanting*, trees with the following features should not be considered for transplanting under normal circumstances, e.g. tree with large size; or with poor health, structure or form. As T31 has a large size (DBH: 995mm; Height: 28m; Crown: 10m, 28m tall). In accordance with *GLTMS DEVB – Guidelines on Tree Transplanting,* a root ball with at least 8-10m diameter is needed. To transplant such a large tree, massive scale of receptor site and lifting machine are essential, however, given the site surrounding by the high-rise building clusters with narrow vehicular paths, and inappropriate area for temporary holding nursery. After considering the mobility and survival rate, T31 is therefore not recommended to be transplanted.

3.7.3 T33 has had temporary supports installed by others consisting of heavy-duty I-beams, and have obviously been considered to be a hazard in the recent past and have had their risk of collapse mitigated. The tree's health is not in decline at present but the angle of lean is of some concern and its long-term structural stability must be questioned. Hence, the rates of survival will be low. T33 is also not feasible to transplant. Both T31 and T33 are therefore proposed to be felled with compensation.

Mature Trees

3.7.4 Two (2) mature trees - *Ficus microcarpa* (T25 and T77) are found with 3,000mm DBH at 1.3m above ground level.

3.7.5 T25 is located at Zone 2 of the heritage wall, as mentioned in **Section 3.3**, T25 is not feasible to be retained in-situ. While T77 will be in direct conflict with the further formation works for the vehicular access (Pink Hatched Blue area under lease) serving both the subject site and the adjacent District Court as required under lease, and therefore cannot be retain in-situ as well.

3.7.6 As T25 is located at slope area, while T77 is attached to the abandoned building structure (see images below), where formation of a root ball of reasonable size is not practicable, both T25 and T77 are not transplantable. Besides, given *Ficus microcarpa* is easy to reach a large size, and it is a common species in Hong Kong, both T25 and T77 are recommended to be felled with compensation.



Whole View of T77



Merged with Structure (T77)



Merged with Structure (T77)



Merged with Structure (T77)

3.7.7 A summary of the proposed treatment to the existing trees is listed in **Table 3.2**, and **Annex B**.

Table 3.2 Summary of Proposed Treatment to Surveyed Trees

Proposed Treatment	Quantity (nos.)
To be Retained	15
To be Transplanted	4
To be Felled	38
Total	57

3.8 Compensatory Tree Planting

3.8.1 As stipulated in LAO PN No. 6/2023, the compensation ratio of felled trees shall be not less than 1:1 in terms of quantity. All compensatory trees will be planted within the Lot boundary. Most of the compensatory trees are proposed to be planted alongside the eastern and western side of Caroline Hill Road, and at the POS at UG/F and 2/F. Effort has been made to achieve the optimum use of common greenery area with consideration below. A compensatory ratio of 1:1 in terms of quantity will be achieved. To provide greening effects and forming a visual backdrop for the future uses, a matrix of native and ornamental species is proposed in this compensatory proposal.

3.8.2 Besides, in accordance with Clause 13 (m) under Lease of Inland Lot No. 8945, twenty-two (22) nos. of additional trees shall be planted with the Lot apart from the retaining, transplanting trees, as well as compensatory trees. Hence, the additional tree is marked as "new tree" and demonstrated in **Appendix B – New Tree Location Plan**.

3.8.3 To maintain the landscape features and ecological functions of the existing environment, the proposal will include eight (8) native and exotic species as compensatory tree planting. Some of the selected species are recommended in the *"Street Tree Selection Guide"* promulgated by DEVB, while some of them are recommended in *"Greening Master Plan in Sheung Wan, Wan Chai and Causeway Bay"* promulgated by DEVB. The proposed compensatory and new tree planting schedule is listed below in **Table 3.3** for reference.

Table 3.3 Compensatory/ New Tree Planting Schedule

Abbreviation	Botanical name	Chinese Name	Height (mm)	Spread (mm)	Size	Origin	Quantity (nos.)
ART.NIT.	*Artocarpus nitidus subsp. Lingnanensis*	紅桂木	5,000	3,000	Heavy Standard	Exotic	6
CAM.CRA.	*Camellia crapnelliana*	克氏茶	4,000	2,500	Heavy Standard	Native	1
CIN.BUR.	*Cinnamomum burmannii*	陰香	5,000	3,000	Heavy Standard	Native	3
DRA.DUP.	*Dracontomelon duper reanum*	人面子	5,000	3,000	Heavy Standard	Exotic	10
OSM.AUR	*Osmanthus fragrans var. aurantiacus*	金桂	4,000	3,000	Heavy Standard	Exotic	4
OSM.FRA.	*Osmanthus fragrans*	桂花	4,000	2,500	Heavy Standard	Exotic	15
TER.MAN.	*Terminalia mantaly*	小葉欖仁	6,000	2,500	Heavy Standard	Exotic	11
VIB.ODO.	*Viburnum odoratissimum*	珊瑚樹	4,000	2,500	Heavy Standard	Native	10

3.8.4 The overall compensatory proposal is summarized in **Table 3.4** below.

Table 3.4 Overall Compensatory Proposal

Total number of trees to be removed:	38
Number of compensatory trees on-site:	38
Overall compensatory ratio in terms of number:	1:1
New Trees (stipulated under Clause 13(m) of IL No. 8945)	22

4 Landscape Design

4.1 Landscape Design and Open Space Provision

4.1.1 The Landscape Master Plan for the proposed Project is shown at **Appendix C**. Based on the unique character of the Site identified in the urban design analysis, landscape design should embrace on the one hand, this part of Causeway Bay to the north as having a higher-end commercial and retail character, but on the other hand, it should respect the tranquillity of the neighbourhood to its south. The key distinctive features: that is, the OVTs and the masonry wall, as well as the trees situated on the masonry wall will be integrated into the landscape design alongside the functional and aesthetic requirements of the Application Site. In addition, various landscape elements will be strategically placed throughout the area to create a harmonious blend between the building and its surroundings, e.g. landscaping and vertical greening within the POS around T3 G/F, UG/F and 2/F to provide a green wall with climbers to create a welcoming entrance to the Tower upper ground floor lobby; a long section is indicated at **Appendix F1**.

4.1.2 In the future post-pandemic era, functional open space will be one of the most valuable assets to public. The Landscape Bridge across the internal access road can increase the external site capacity and provide high-quality and safe open space to the public. In total a minimum public open space provision of at least 6,000m2 will be provided as required by the Remarks of the Notes of the OZP under the “C (2)” zone.

4.2 Banyan Garden at G/F

4.2.1 The OVT, perched atop a historic masonry wall 2 to 3 metres above Leighton Road, stands as a prominent natural landmark in the urban fabric. Its expansive canopy and aerial roots extend nearly 40 metres along the street, forming a green threshold between city and nature. The proposed Banyan Garden, entrance plaza, and internal street at the G/F level, covering approximately 2,850m² will form a vital pedestrian linkage, connecting Leighton Road to an interim platform at +8.9mPD and ultimately to the Landscape Bridge at +18.75mPD (i.e. finished floor level).

4.2.2 The Banyan Garden is conceived as a restorative civic space that celebrates and safeguards the OVT while offering a dynamic public realm. Informed by expert input from ITS, the scheme significantly improves the tree’s long-term growing conditions through the expansion of the rooting zone from the current 3.5-metre-wide strip to a total soil width of approximately 19 metres. This includes the addition of a subterranean soil crescent beneath the plaza, filled with uncompacted, fabricated soil mix within modular soil cell systems to facilitate healthy root development. Detailed proposal with protection measures is prepared by Independent Tree Specialist Professor Jim Chi Yung, BH, JP, and can be referred to the **Annex K under Planning Statement**.

4.2.3 The Banyan Garden represents a refined integration of ecological infrastructure and urban design. By merging technical tree rehabilitation with multifunctional public use, the scheme creates a layered landscape that serves both environmental and social needs. The information related to tree protection measures for the OVT, as outlined in this section and throughout the submission, is for PlanD’s reference and subject to detailed design.

4.3 Open Space at 2/F and UG/F

4.3.1 A total area of approximately 3,165m2 comprises the remaining portion of the POS at 2/F and UG/F. The POS at 2/F podium is designed to let visitors escape from the hustle and bustle of Causeway Bay and enjoy a moment of tranquillity. At the same time, this is designed to respect the existing natural and cultural context. A number of existing trees on site will be transplanted and brought back to the POS at 2/F and UG/F. This area will include a number of recreational features of various types including open lawns for multi-use purposes by groups or individuals. Within the 2/F podium, a small area will be designated for non-POS use, namely Event Plaza. The public can still access and use the space most of the time, except during special events when temporary barriers will be erected

along the perimeter of this area. A unified landscape design will be adopted for the entire open space at 2/F regardless of whether it is a POS or non-POS area. This approach aims to achieve an integrated design and provide high-quality open space for public enjoyment, without any physical barriers. However, clear demarcation lines will be implemented between POS and non-POS area, such as incorporating a different colour of pavement/ material at detailed design stage.

4.3.2 The Landscape Bridge featuring a transparent cover, will provide access to carefully designed natural elements and biophilic design for its primary users, including elderly individuals, young children, and patients traveling to Tower 3 GIC facilities. This design approach aligns with the recommendations of the WHO and aims to promote health and well-being. It is expected to contribute to accelerated recovery rates, reduced stress levels, and enhanced mental relaxation for both GIC users and the general public (refer to **Appendix F2**). The specific trees proposed are illustrated in **Appendix B**.

4.3.3 According to WELL standards, creating space for physical activity is important for encouraging physical movement and fostering a healthy lifestyle and their standards suggest that a minimum space of 1,860m2 is required for the Project. The Landscape Bridge connected to the covered public open space under Tower 3 can contribute to this purpose. Apart from the area, the quality and usability of the public open space is crucial. Innovative devices and ideas for smart microclimate control in the covered parts of the Landscape Bridge are to be incorporated to increase its usable period.

4.3.4 The POS at G/F Banyan Garden and 2/F podium will be accessible to the public 24-hours a day with barrier-free access. To cater for the heavy pedestrian flows and at the same time provide a natural urban environment, there will be an appropriate balance between hard (paved) and soft (planted) landscape.

4.4 Raised Tower and Covered Public Open Space at 2/F of Tower 3

4.4.1 In order to further enhance air ventilation flow, Tower 3 is proposed to be raised above the podium level at 2/F with the provision of covered public open space underneath. The covered POS area will be landscaped with greenery and recreational facilities. By raising the tower above the podium level, it will allow passage of air flow underneath, and, thereby, facilitate air ventilation at podium level (**Appendix F4** refers).

4.5 Visual Corridor between the two OVTs

4.5.1 In order to preserve views of the two OVTs at street level, a visual corridor of 6m wide is proposed at the podium between Towers 1 and 2, 3-storeys high. Such corridor shall allow visual connections between the two OVTs and integrate better with the existing site context. The visual corridor will also serve as a Public Open Space (POS) where street life and activities could take place. It will also act as an internal street to allow a more direct pedestrian access to the District Court to the south. (**Appendix F3** refer).

4.6 Soft Landscape Design

- Tree and shrub plantings are proposed along the south-western boundaries to soften the building edge and will be visible from pedestrians;
- Tall shrubs are proposed to be scattered within the covered landscape bridge with transparent cover;
- Integrating greenery areas with open space at Banyan Garden, 2/F podium, and along retaining masonry walls for visitors, e.g. open lawn with shrubs provides multi-functional open space for visitors;
- The amenity planting strip along the open space of T3 to maximize opportunities for at-grade greening (refer to **Appendix F5**);

- Flowering, ornamental species and small size trees are proposed to be planted at the at the Covered Landscape Bridge at 2/F;

- Lawn area is recommended to be installed at T3 3F and R/F to provide sheltered views at the lower levels to provide buffer the landscape from the adjacent buildings; and

- The plant selection will consider the form, colour and foliage texture and seasonal effect. The intended choice of species, size and densities are listed in **Table 4.1**, the quantity of planter will be provided in the later design stage.

Table 4.1 General Planting Sizes and Densities

Planting Type/ Design Function	Size	Spacing (mm)
Shrub and Groundcover		
Intended choices of species: - *Acacia podalyriifolia* (銀葉金合歡) - *Buxus microphylla* (小葉黃楊) - *Carmona microphylla* (福建茶) - *Fatsia japonica* (八角金盤) - *Ficus microcarpa* var. *crassifolia* (火山榕) - *Hydrangea macrophylla* (繡球花) - *Ilex crenata* (龜甲冬青球) - *Monsteria Deliciosa* (龜背竹) - *Murraya paniculata* (九里香) To create a multi-level layered planting, to define different outdoor spatial arrangement.	Shrubs – 400 to 1000mm in height Groundcovers – Min. 100mm in height	Shrubs – 300 to 900mm Groundcovers – 100 to 250mm
Lawn		
Intended choices of species: - *Zoysia japonica* (朝鮮草) To soften the hardscape of the Application Site and provide lawn area for multiple purposes.	30mm height	-
Climber		
Intended choices of species: - *Epipremnum aureum* (綠蘿)	-	200

4.7 Hard Landscape Design

- All hard landscape areas and associated features will be in full compliance with universal access and relevant safety standards and guidelines. The choices of materials for different kinds of finishes will be compatible with the architectural style of the proposed architectural scheme, the brief schedule of hardscape elements is listed in **Table 4.2**;

- Adequate signage shall be provided to indicate the public space;

- Site furniture such as benches will be located at appropriate area, in order to serve its functions fully;

- The floor tiles to be used on pedestrian accesses/ floor finishes will be able to achieve certain slip-resistant effect;

- Lighting will be utilised strategically at the public pedestrian passageway at the entrance plaza and the Banyan Gardan and 2/F podium to encourage the use of the spaces at night time and

provide an increased sense of security. Lux calculations will be assessed by Building Services Engineer for the whole site; and

- Irrigation system and sub-soil drainage shall be provided for all plantings.

- **Table 4.2 Brief Schedule of Hardscape Elements**

Hardscape Elements	Intended Choice of Materials
Paved area	Granite/ Homogeneous tiles/ Artificial granite tiles
Planter wall/ curb	Granite/ Artificial granite tiles

4.8 Others

Soil Depth

4.8.1 The proposed landscaped area of the Application Site will be designed with adequate soil depth and width for healthy plant growth. Sufficient soil depth and volume will be provided for all landscape planting at ground, intermediate and roof levels. Excluding drainage layer, minimum soil depths of 1200mm, 600mm and 300mm will be provided for tree, shrubs, grass/ground covers respectively, the typical sections are demonstrated in **Appendix G1 to G3** respectively. The detail levelling plan at 2F is supplemented in **Appendix I**.

Drainage

4.8.2 Adequate drainage in forms of soak away system or subsoil drains by pipes with aggregated drainage layer will be provided for all planting areas to protect plants from waterlogging problems.

Irrigation

4.8.3 Adequate water points will be provided for general maintenance and watering of vegetation. To facilitate maintenance of soft landscape works, provision of water points located at a distance of maximum 40m centre to centre, which allows for 20m hose connection, for manual watering will be provided for irrigating all planting areas, the location of irrigation points is indicated in **Appendix H – Irrigation Plan**.

Maintenance and Accessibility

4.8.4 All landscaped areas will be provided with sufficient safe maintenance access.

5 Enhanced Provision of Public Open Space and Appeal of Landscape

5.1 General

5.1.1 As required by the Explanatory Statement of the OZP, a minimum of 6,000m2 of Public Open Space will be provided as part of the Project. Also as required by the Explanatory Statement of the OZP, much of this space will be provided on the eastern side of the Application Site. In contrast to the design of the public open space in the rezoning application for the site, the Public Open Space which is open to public 24 hours a day, in the Layout Plan is an integrated open space network that is not fragmented by the intervening internal road.

5.1.2 As discussed in Section 4, the POS will comprise two portions. The Banyan Garden, entrance plaza, and internal street at G/F, covering an approximate area of 2,835m2, will be included in the POS. This portion will serve as a connection for pedestrians traveling from Leighton Road to the interim platform.

5.2 Proposed Enhancement to Banyan Garden at G/F

5.2.1 The Banyan Garden is designed not only to preserve the OVT but also to celebrate its significance as a natural and cultural landmark. By creating an immersive environment around the tree, the project invites the public to interact with and appreciate its beauty, fostering a deeper connection between the community and nature.

5.2.2 6.2.5 The Banyan Garden is conceived as a restorative civic space that celebrates and safeguards the OVT while offering a dynamic public realm. Informed by expert input from ITS, the Current Scheme significantly improves the tree's long-term growing conditions through the expansion of the rooting zone from the current 3.5-metre-wide strip to a total soil width of approximately 19 metres. This includes the addition of a subterranean soil crescent beneath the plaza, filled with uncompacted, fabricated soil mix within modular soil cell systems to facilitate healthy root development. Detailed proposal with protection measures is prepared by Independent Tree Specialist Professor Jim Chi Yung, BH, JP, and can be referred to the **Annex K under Planning Statement**.

5.2.3 The installation of balustrades, use of lightweight planting materials, and creation of a functional circulation area demonstrate a commitment to both tree preservation, public enjoyment and safety. These measures ensure the OVT remains a centrepiece of the urban landscape while providing a high-quality, accessible public space for all to enjoy.

5.2.4 The current alternative design of the Banyan Garden will provide a flexible and multi-functional open space located around the OVT for non-commercial cultural and arts events, such as outdoor performances, installations and light shows for the public to enjoy. To synergize with the PACF on 5/F of Towers 1 and 2, some of the performances and cultural events will be organised by the operator of the PACF to create rich cultural experiences. It will also achieve a synergy effect with the al fresco dining and retail at G/F where the diners and the public can enjoy the unique setting of the Banyan Garden, forming a vibrant open space. It will serve as a landmark, natural heritage resource and an element of the collective memory of the public, enhancing the sense of place and stimulating a sense of identity.

5.3 Other Provisions of Public Open Space in the Approved Scheme

5.3.1 A total area of approximately 3,165m2 comprises a core portion of the POS at 2/F and UG/F. The open space on 2/F will integrate the Edged Blue and Edged Red sites of the Project and act as a community node to pull in pedestrian flow via the elevated pedestrian walkway. The POS at 2/F podium will be designed with various types of open spaces, including open lawn, multi-functional area and covered public open space. Additional landscape elements with multiple smaller paths will be integrated into the open space at 2/F. There will be the provision of flexible and multifunctional open

space at 2/F, enhancing the opportunities for chance encounters and will also diversify the use and appeal of the landscape as a whole (refer to **Appendix C3**).

5.3.2 The open space at the podium level is designed to be located outside the building entrances, providing users with maximum flexibility and a sheltered area that offers relief from the urban density of the city. Meandering routes are planned to encourage people to walk through the greenery, while pocket spaces within these areas are intended to create enjoyable environments. The extensive covered POS at 2/F, extending from the Landscape Bridge to Tower 3, will seamlessly connect pedestrians while providing weather-proof protection. Moreover, the increased greenery coverage will help mitigate the urban heat island effect. The open space area is envisioned to be a busy and vibrant space throughout the year.

5.3.3 To enhance the visitor experience and encourage social interaction, additional placed POS will be integrated throughout the area. For example, POS areas will be incorporated around T3 on the G/F, UG/F, and 2/F. These areas will feature landscaping and vertical greening, including green walls adorned with climbers, to create an inviting entrance to the Tower's upper ground floor lobby. These POS locations will provide opportunities for visitors and users to rest, gather, and enjoy the surroundings.

5.3.4 The Applicant will follow the requirements of the “Public Open Space in Private Developments Design and Management Guidelines” promulgated by the Development Bureau.

6 Landscape Management and Maintenance

6.1 General

6.2 Upon completion of the construction works after practical completion, a 12-months Defect Liability Period will be implemented which applies to both the hard and soft landscape works.

6.3 The Applicant will be responsible for the management and maintenance for both hard and soft landscape with the Lot boundary.

6.4 Hard landscape element works as described below:

- Routine Maintenance (Daily – Weekly)
  - Rubbish and litter removal;
  - Sweeping and cleaning; and
  - Damage inspection, repair of site furniture and light bulb replacement.
- Annual / Long-term Maintenance
  - Repainting;
  - Resurfacing of worn paving;
  - Replacing worn parts of site furniture, lighting fixtures and other facilities; and
  - Replacement of damaged landscape furniture.

6.5 The specialist soft landscape contractors will also be responsible for the maintenance of proposed planting in the site during the first year (Establishment Period). The contractors will carry out all measures necessary to ensure that all plants shall thrive and become established, and keep works neat and tidy and free from litter at all times. The maintenance routine for the soft landscape is shown in **Table 6.1**.

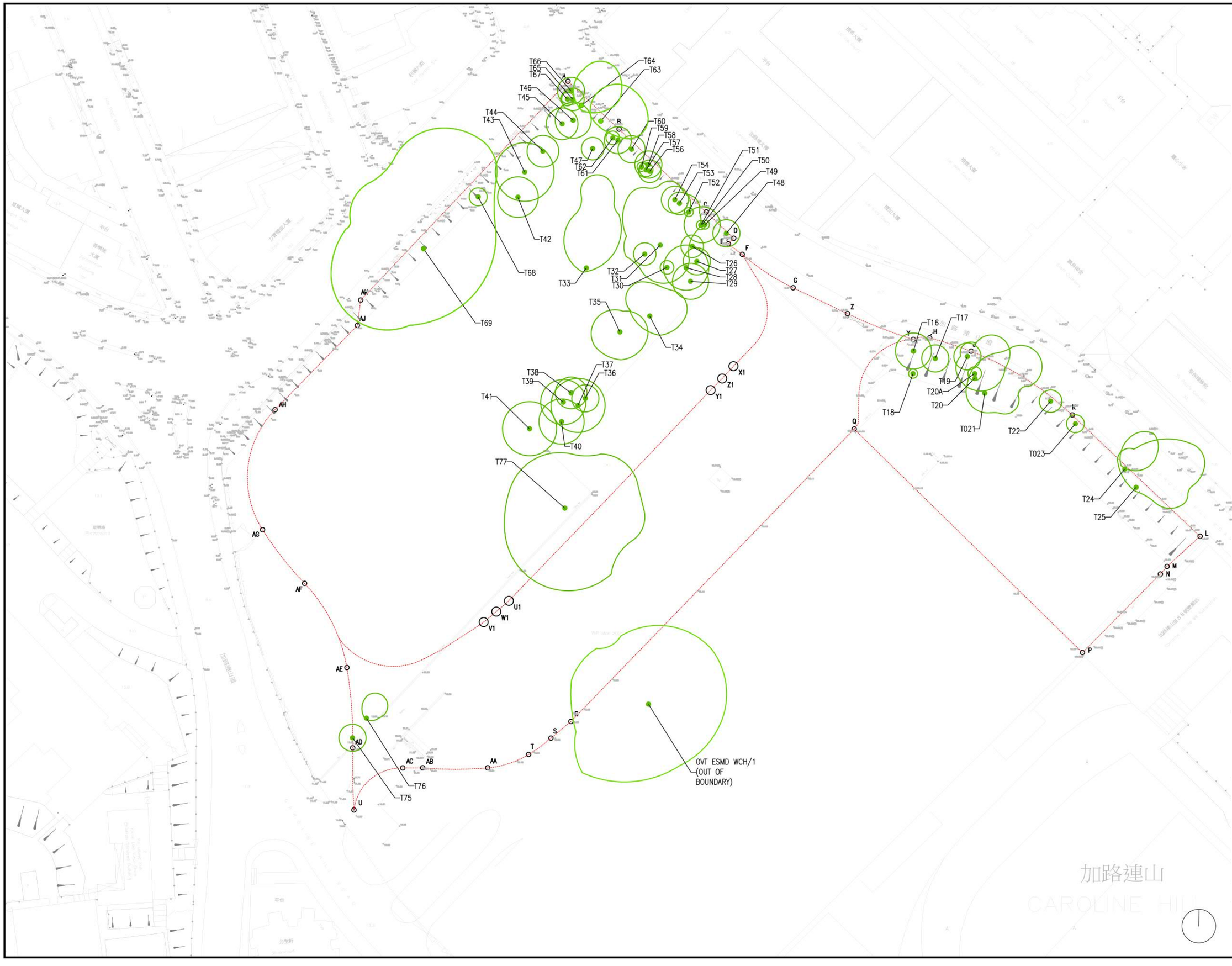
Table 6.1 Maintenance Routine for Soft Landscape Elements

	SPRING	SUMMER	AUTUMN	WINTER	REMARKS
Fertilization	As necessary		As necessary		
Watering	D	D	D	D	Depends on exact weather condition of the day
Mulch topping up	As necessary				
Pruning	As necessary				
Weeding	M	M	M	M	
Firming up staking	M	M	M	M	Action will also be taken after typhoon or rain storm occurred on site
Monthly Inspection	M	M	M	M	

Legend: D- Daily; M- Monthly

-End-

Appendix A
Tree Location Plan



LOT BOUNDARY

SURVEYED TREE

REV	DATE	DESCRIPTION
–		

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CLIENT:
PATCHWAY HOLDINGS (HK) LIMITED

PROJECT:
CAROLINE HILL ROAD

TITLE:
APPENDIX A-
TREE LOCATION PLAN

SCALE:	1:750@A3
DRAWN BY:	OY
CHECKED BY:	PC
APPROVED BY:	PC
DRAWING DATE:	JUN 2022
PROJECT No:	HYSAN02
SHEET No: HYSAN02-LMP-A-1	REV: –

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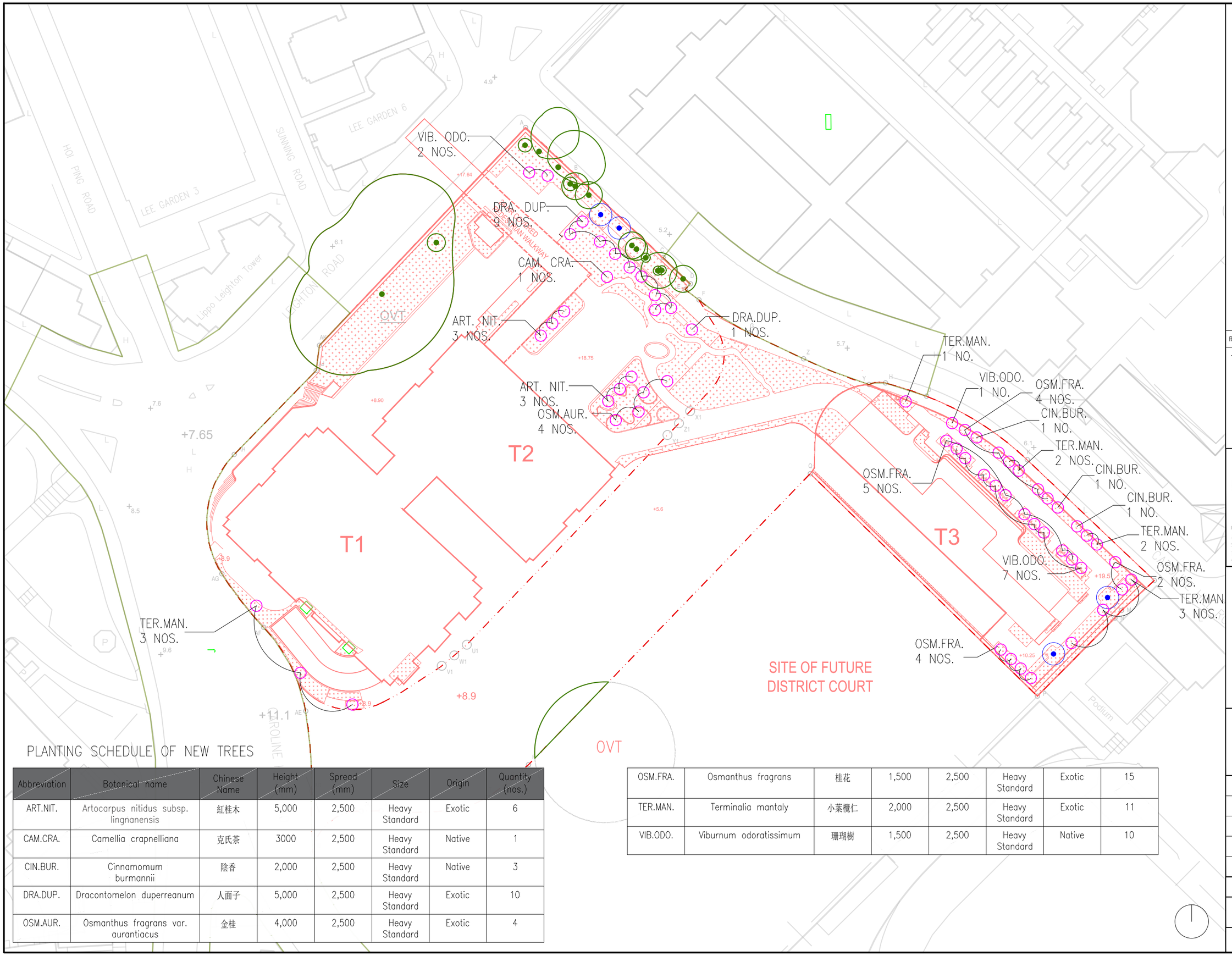
Appendix B
New Tree Planting Plan



PLANTING SCHEDULE OF NEW TREES

Abbreviation	Botanical name	Chinese Name	Height (mm)	Spread (mm)	Size	Origin	Quantity (nos.)
ART.NIT.	Artocarpus nitidus subsp. lingnanensis	紅桂木	5,000	2,500	Heavy Standard	Exotic	6
CAM.CRA.	Camellia crapnelliana	克氏茶	3000	2,500	Heavy Standard	Native	1
CIN.BUR.	Cinnamomum burmannii	陰香	2,000	2,500	Heavy Standard	Native	3
DRA.DUP.	Dracontomelon duperreanum	人面子	5,000	2,500	Heavy Standard	Exotic	10
OSM.AUR.	Osmanthus fragrans var. aurantiacus	金桂	4,000	2,500	Heavy Standard	Exotic	4
OSM.FRA.	Osmanthus fragrans	桂花	1,500	2,500	Heavy Standard	Exotic	15
TER.MAN.	Terminalia mantaly	小葉欖仁	2,000	2,500	Heavy Standard	Exotic	11
VIB.ODO.	Viburnum odoratissimum	珊瑚樹	1,500	2,500	Heavy Standard	Native	10

LOT BOUNDARY
GREEN AREA
MASTER LAYOUT PLAN
TREE TO BE RETAINED
TRANSPLANTING TREE
NEW TREE

REV	DATE	DESCRIPTION
–		

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PROJECT:
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TITLE:
APPENDIX B –
NEW TREE PLANTING PLAN

SCALE:	1:750@A3
DRAWN BY:	WL
CHECKED BY:	OY
APPROVED BY:	PC
DRAWING DATE:	AUG 2025
PROJECT No:	HYSAN02
SHEET No: HYSAN02–LMP–B–3	REV: –

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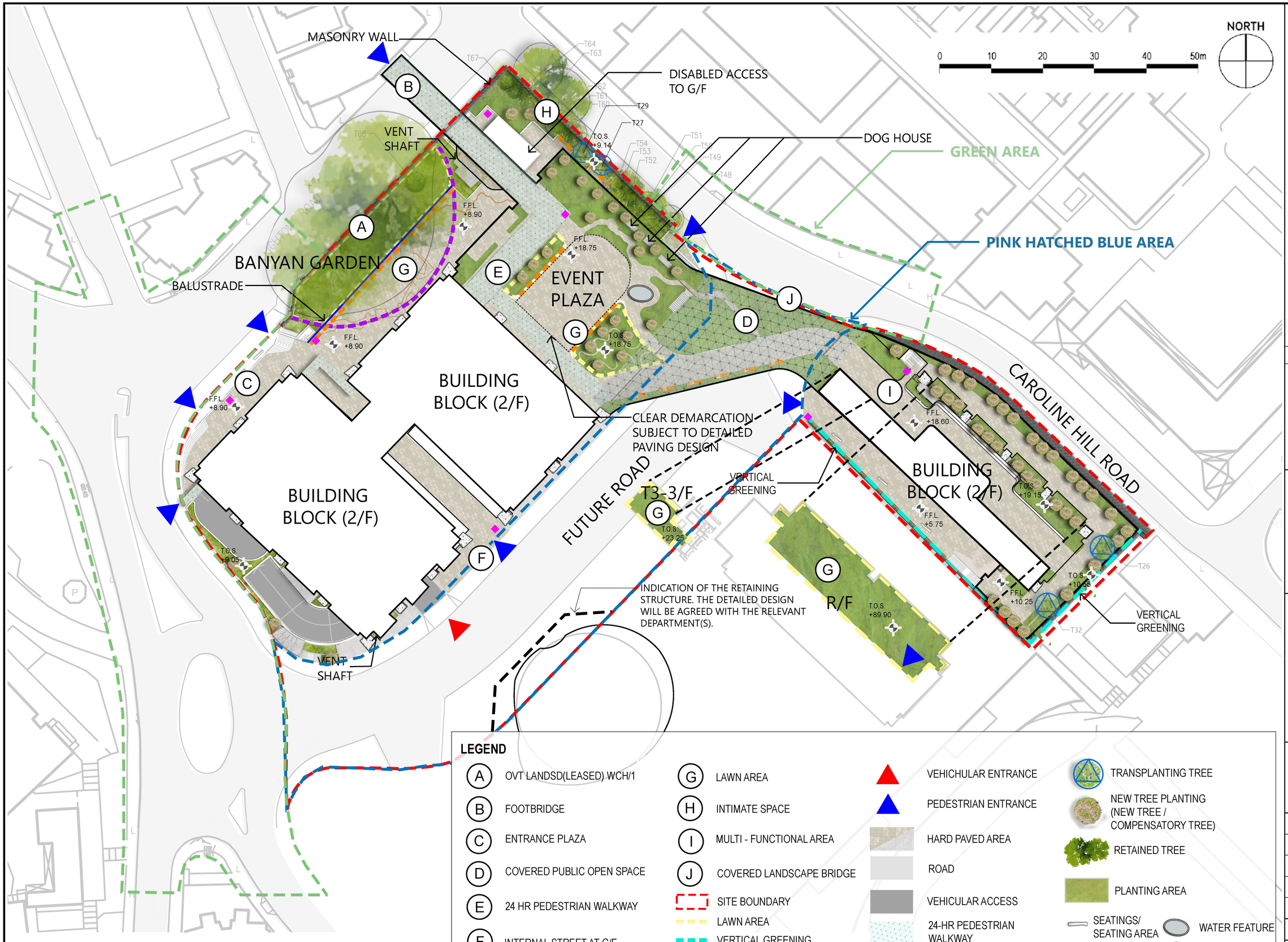
Appendix C
Landscape Master Plan



LEGEND

A	OVT LANDSD(LEASED) WCH/1	G	LAWN AREA		VEHICHULAR ENTRANCE
B	FOOTBRIDGE	H	INTIMATE SPACE		PEDESTRIAN ENTRANCE
C	ENTRANCE PLAZA	I	MULTI - FUNCTIONAL AREA		HARD PAVED AREA
D	COVERED PUBLIC OPEN SPACE	J	COVERED LANDSCAPE BRIDGE		ROAD
E	24 HR PEDESTRIAN WALKWAY		SITE BOUNDARY		VEHICULAR ACCESS
F	INTERNAL STREET AT G/F		LAWN AREA		24-HR PEDESTRIAN WALKWAY
	SPOT LEVEL		VERTICAL GREENING		TRANSPARENT COVER
			SEATWALL		
			TREE PROTECTION ZONE		

TRANSPLANTING TREE
NEW TREE PLANTING (NEW TREE / COMPENSATORY TREE)
RETAINED TREE
PLANTING AREA
SEATINGS/ SEATING AREA
WATER FEATURE
MASONRY WALL
SIGNAGE
VENT SHAFT

REV	DATE	DESCRIPTION
–		

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PROJECT:
CAROLINE HILL ROAD

TITLE:
APPENDIX C1 -
LANDSCAPE MASTER PLAN (OVERALL)

SCALE:	1:750@A3
DRAWN BY:	OY
CHECKED BY:	PC
APPROVED BY:	PC
DRAWING DATE:	AUG 2025
PROJECT No:	HYSAN02
SHEET No: HYSAN02-LMP-C1-2	REV: –

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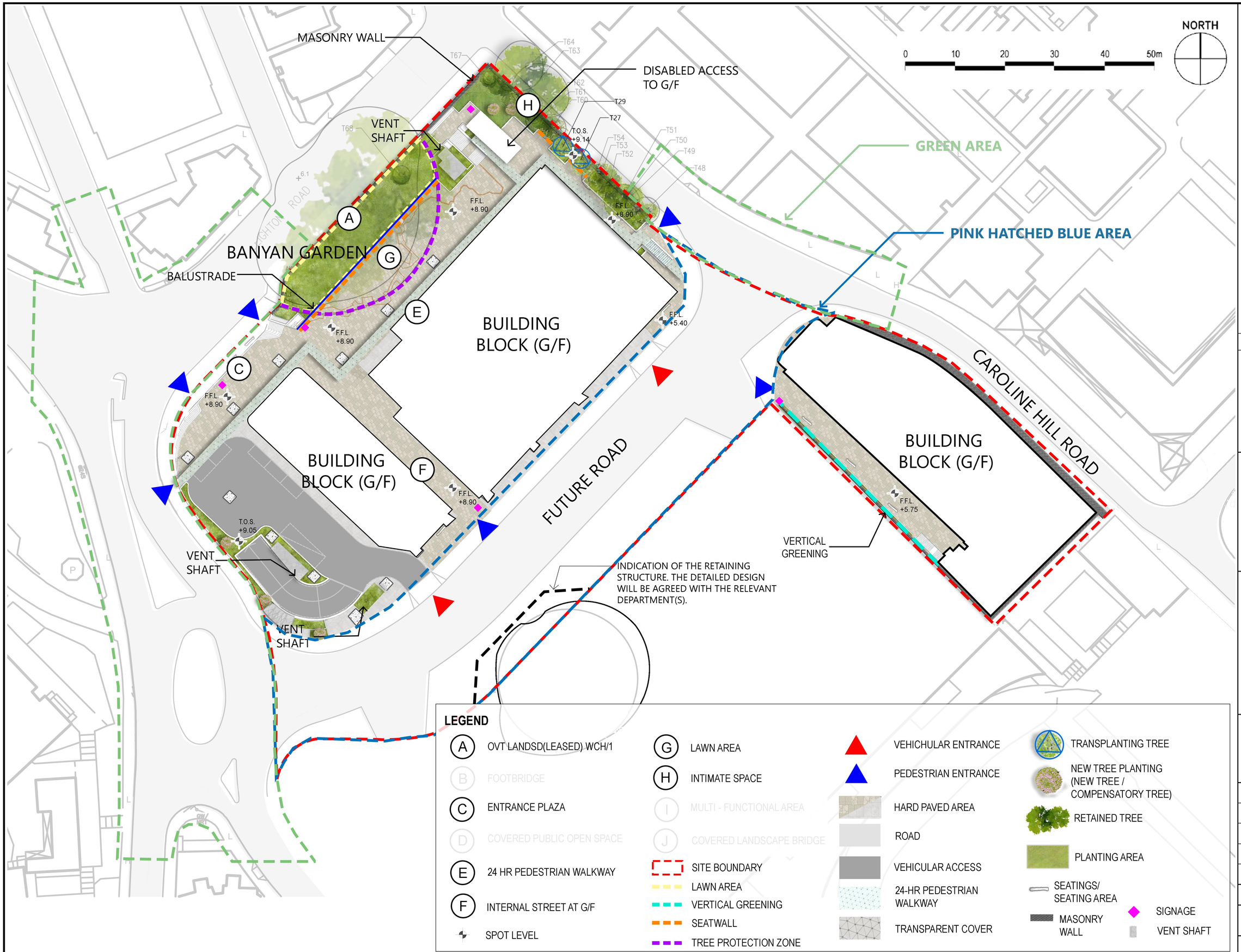

LEGEND

- A OVT LANDSD(LEASED) WCH/1
- B FOOTBRIDGE
- C ENTRANCE PLAZA
- D COVERED PUBLIC OPEN SPACE
- E 24 HR PEDESTRIAN WALKWAY
- F INTERNAL STREET AT G/F
- SPOT LEVEL
- G LAWN AREA
- H INTIMATE SPACE
- I MULTI - FUNCTIONAL AREA
- J COVERED LANDSCAPE BRIDGE
- SITE BOUNDARY
- LAWN AREA
- VERTICAL GREENING
- SEATWALL
- TREE PROTECTION ZONE
- VEHICHULAR ENTRANCE
- PEDESTRIAN ENTRANCE
- HARD PAVED AREA
- ROAD
- VEHICULAR ACCESS
- 24-HR PEDESTRIAN WALKWAY
- TRANSPARENT COVER
- TRANSPLANTING TREE
- NEW TREE PLANTING (NEW TREE / COMPENSATORY TREE)
- RETAINED TREE
- PLANTING AREA
- SEATINGS/ SEATING AREA
- MASONRY WALL
- SIGNAGE
- VENT SHAFT

REV	DATE	DESCRIPTION
–		

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PROJECT:
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TITLE:
APPENDIX C2 -
LANDSCAPE MASTER PLAN (G/F)

SCALE:	1:750@A3
DRAWN BY:	OY
CHECKED BY:	PC
APPROVED BY:	PC
DRAWING DATE:	AUG 2025
PROJECT No:	HYSAN02
SHEET No: HYSAN02-LMP-C2-2	REV: –

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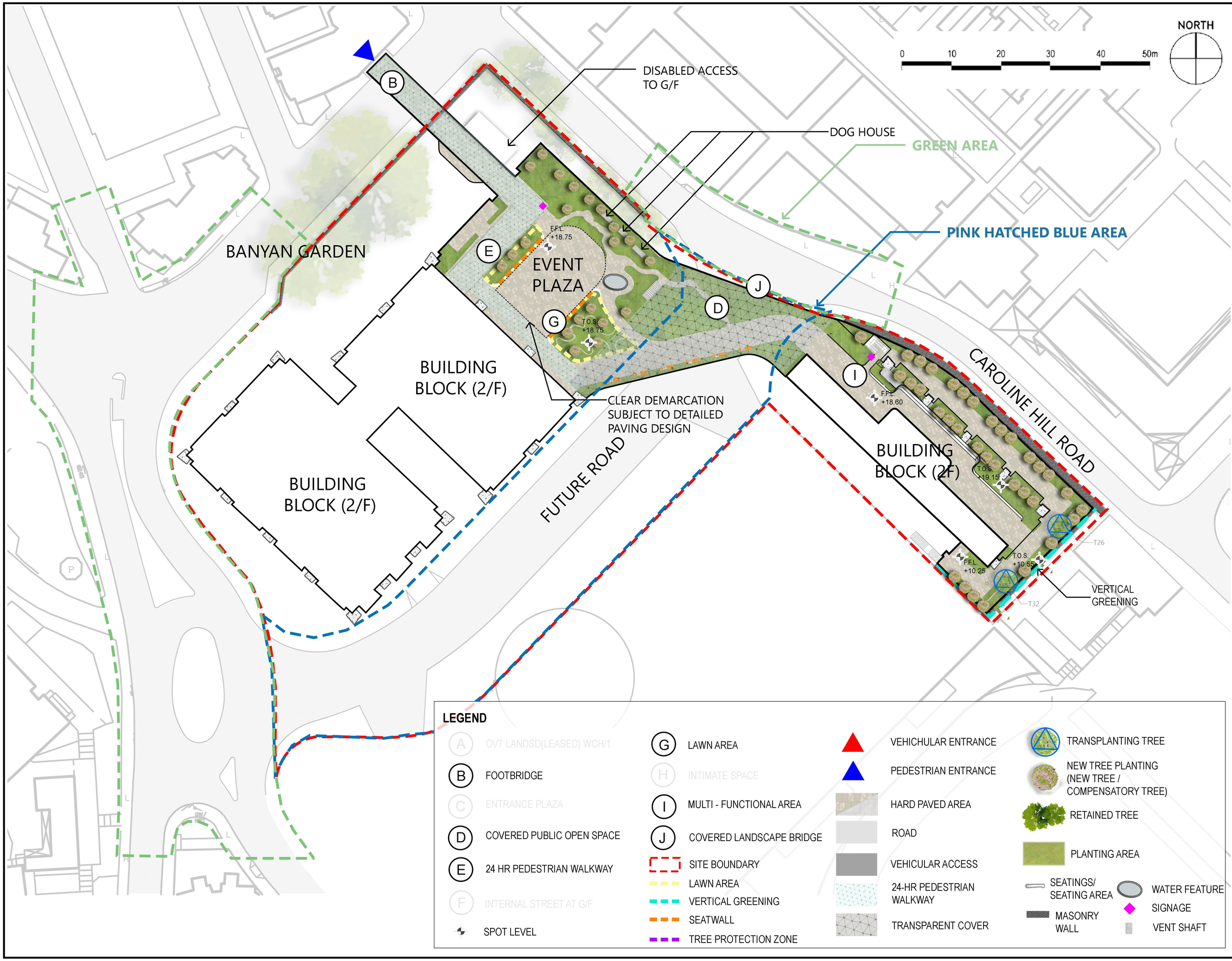

LEGEND

- A OVT LANDSD(LEASED) WCH/1
- B FOOTBRIDGE
- C ENTRANCE PLAZA
- D COVERED PUBLIC OPEN SPACE
- E 24 HR PEDESTRIAN WALKWAY
- F INTERNAL STREET AT G/F
- SPOT LEVEL
- G LAWN AREA
- H INTIMATE SPACE
- I MULTI - FUNCTIONAL AREA
- J COVERED LANDSCAPE BRIDGE
- SITE BOUNDARY
- LAWN AREA
- VERTICAL GREENING
- SEATWALL
- TREE PROTECTION ZONE
- VEHICHULAR ENTRANCE
- PEDESTRIAN ENTRANCE
- HARD PAVED AREA
- ROAD
- VEHICULAR ACCESS
- 24-HR PEDESTRIAN WALKWAY
- TRANSPARENT COVER
- TRANSPLANTING TREE
- NEW TREE PLANTING (NEW TREE / COMPENSATORY TREE)
- RETAINED TREE
- PLANTING AREA
- SEATINGS/ SEATING AREA
- MASONRY WALL
- WATER FEATURE
- SIGNAGE
- VENT SHAFT

REV	DATE	DESCRIPTION
–		

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PROJECT:
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TITLE:
APPENDIX C3 -
LANDSCAPE MASTER PLAN (2/F)

SCALE:	1:750@A3
DRAWN BY:	OY
CHECKED BY:	PC
APPROVED BY:	PC
DRAWING DATE:	AUG 2025
PROJECT No:	HYSAN02
SHEET No: HYSAN02-LMP-C3-2	REV: –

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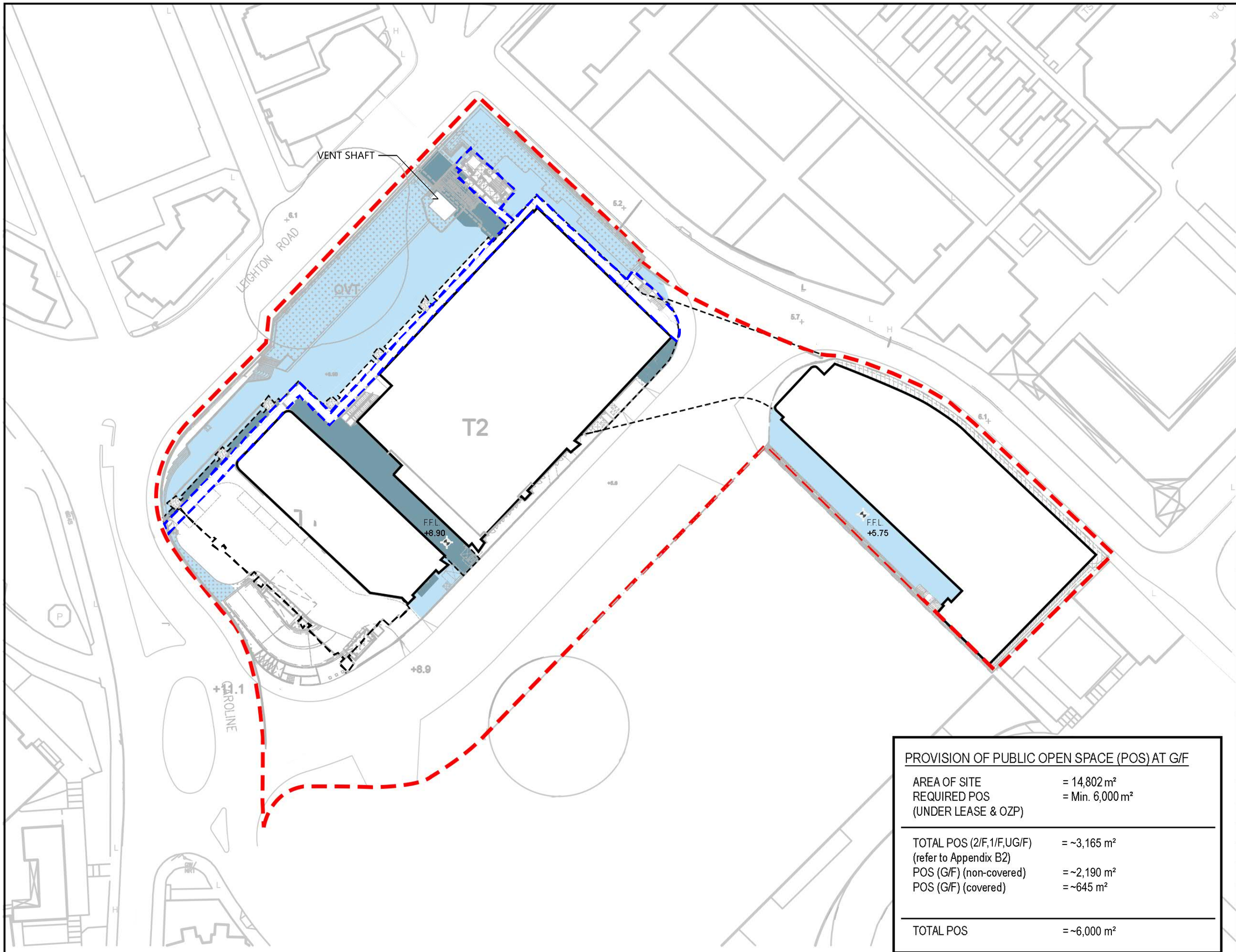
Appendix E
Provision of Public Open Spaces



SITE BOUNDARY
POS (NON-COVERED)
POS (COVERED)
BUILDING LINE
BUILDING /BRIDGE COVER LINE
24 HR PEDESTRIAN WALKWAY

REV	DATE	DESCRIPTION
–		

PROVISION OF PUBLIC OPEN SPACE (POS) AT G/F

AREA OF SITE	= 14,802 m²
REQUIRED POS (UNDER LEASE & OZP)	= Min. 6,000 m²
TOTAL POS (2/F,1/F,UG/F) (refer to Appendix B2)	= ~3,165 m²
POS (G/F) (non-covered)	= ~2,190 m²
POS (G/F) (covered)	= ~645 m²
TOTAL POS	= ~6,000 m²

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PROJECT:
CAROLINE HILL ROAD

TITLE:
APPENDIX E1 -
PROVISION OF PUBLIC OPEN SPACE (G/F)

SCALE:	1:750@A3
DRAWN BY:	OY
CHECKED BY:	PC
APPROVED BY:	PC
DRAWING DATE:	AUG 2025
PROJECT No:	HYSAN02
SHEET No: HYSAN02-LMP-E1-0	REV: –

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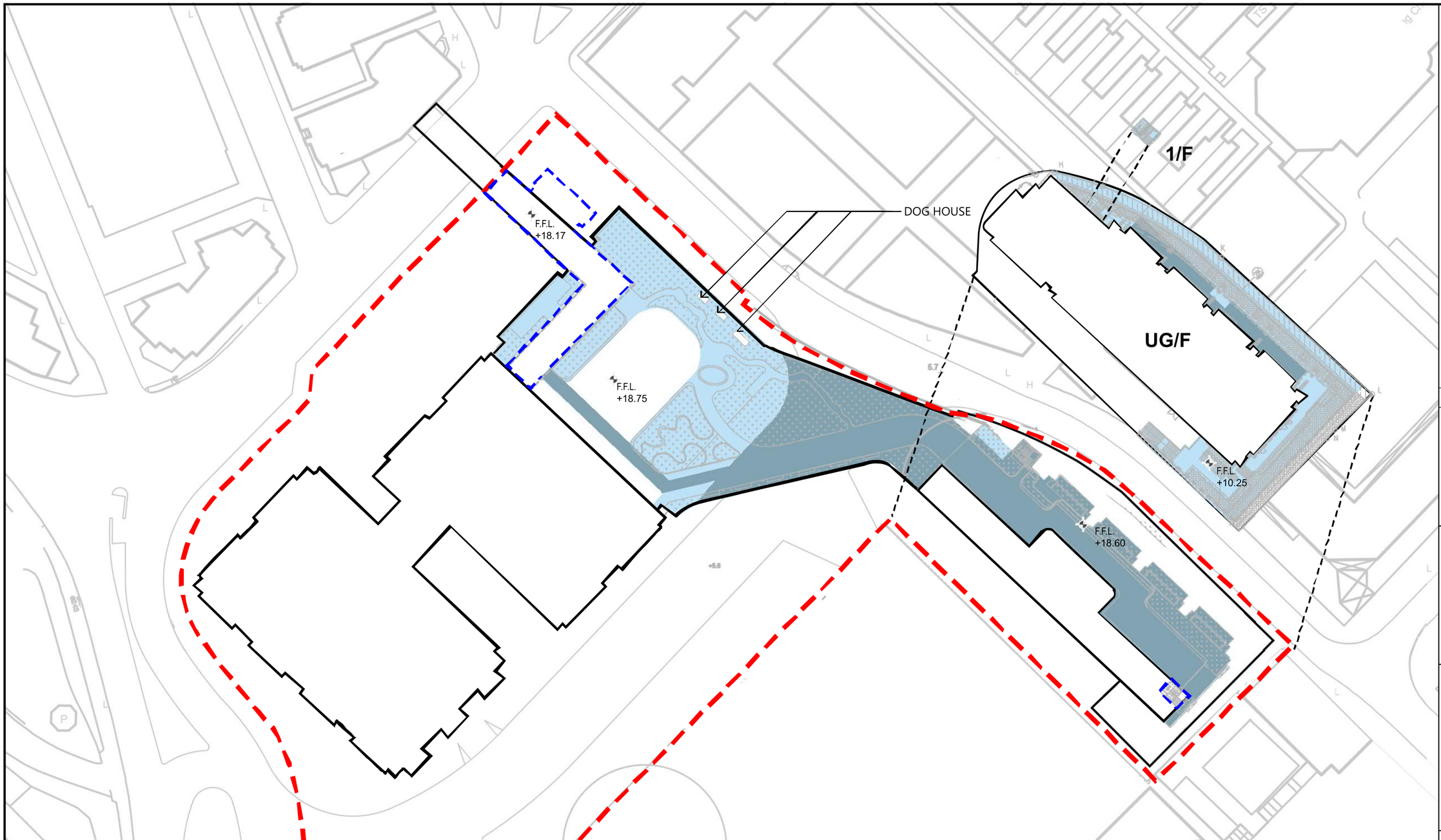

PROVISION OF PUBLIC OPEN SPACE (POS) AT 2/F, 1/F, UG/F)

AREA OF SITE	= 14,802 m²
REQUIRED POS (UNDER LEASE & OZP)	= Min. 6,000 m²
TOTAL POS (G/F) (refer to Appendix B1)	= ~2,835 m²
POS (2/F,1/F,UG/F) (non-covered)	= ~1,488 m²
POS (2/F,1/F,UG/F) (covered)	= ~1,677 m²
TOTAL POS	= ~6,000 m²

REV	DATE	DESCRIPTION
–		

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TITLE:
APPENDIX E2 -
PROVISION OF PUBLIC OPEN SPACE (2/F,1/F,UG/F)

SCALE:	1:750@A3
DRAWN BY:	OY
CHECKED BY:	PC
APPROVED BY:	PC
DRAWING DATE:	AUG 2025
PROJECT No:	HYSAN02
SHEET No: HYSAN02-LMP-E2-1	REV: –

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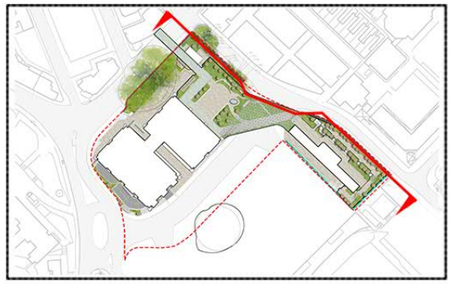
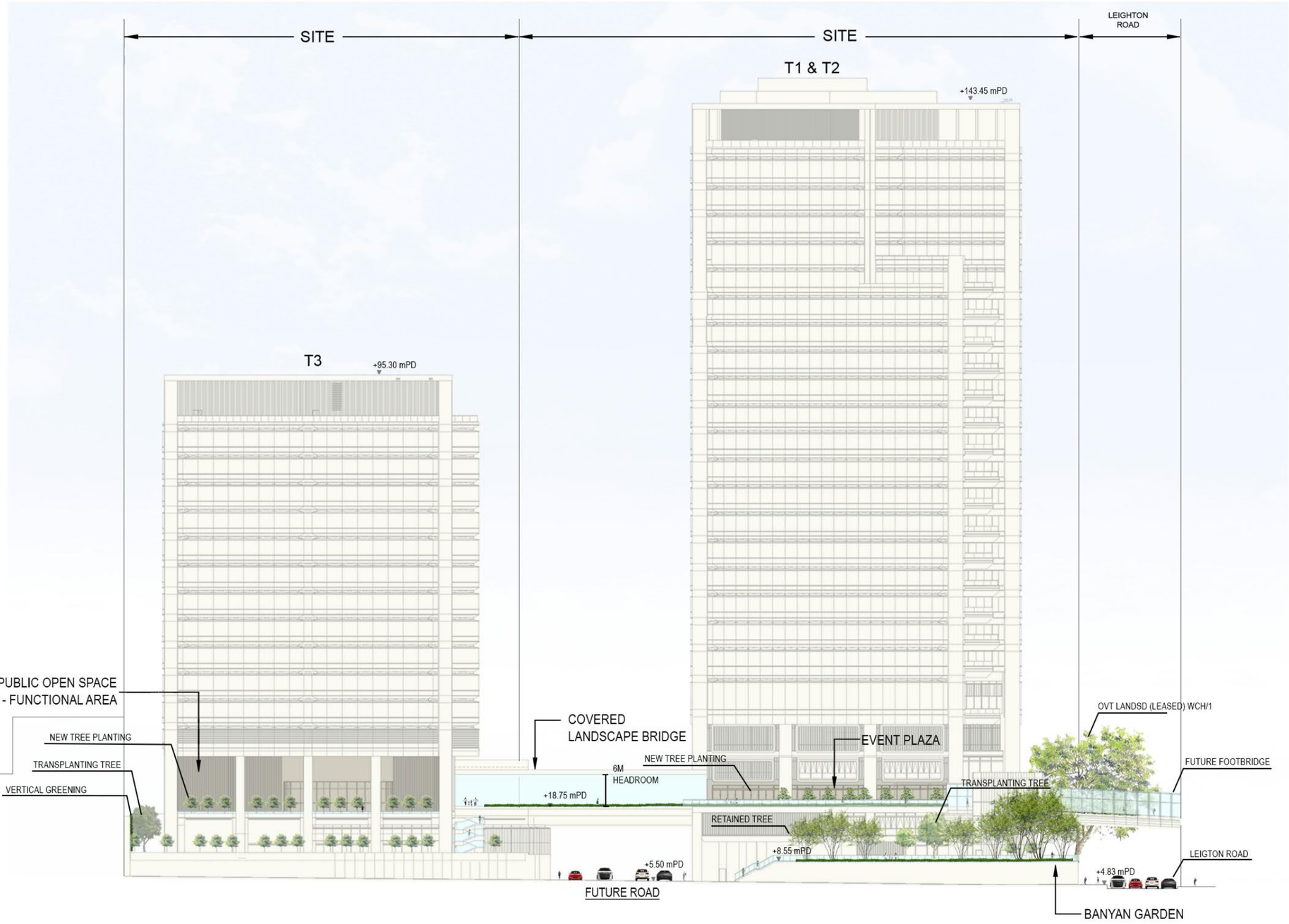
Appendix F
Landscape Sections



KEY PLAN



REV	DATE	DESCRIPTION
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PROJECT:
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TITLE:
APPENDIX F1 -
LANDSCAPE ELEVATION

SCALE:	AS SHOWN
DRAWN BY:	OY
CHECKED BY:	PC
APPROVED BY:	PC
DRAWING DATE:	AUG 2025
PROJECT No:	HYSAN02
SHEET No: HYSAN02-LMP-F1-1	REV: –

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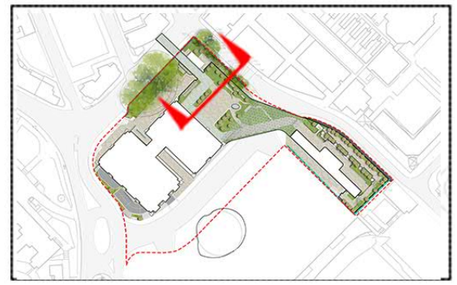
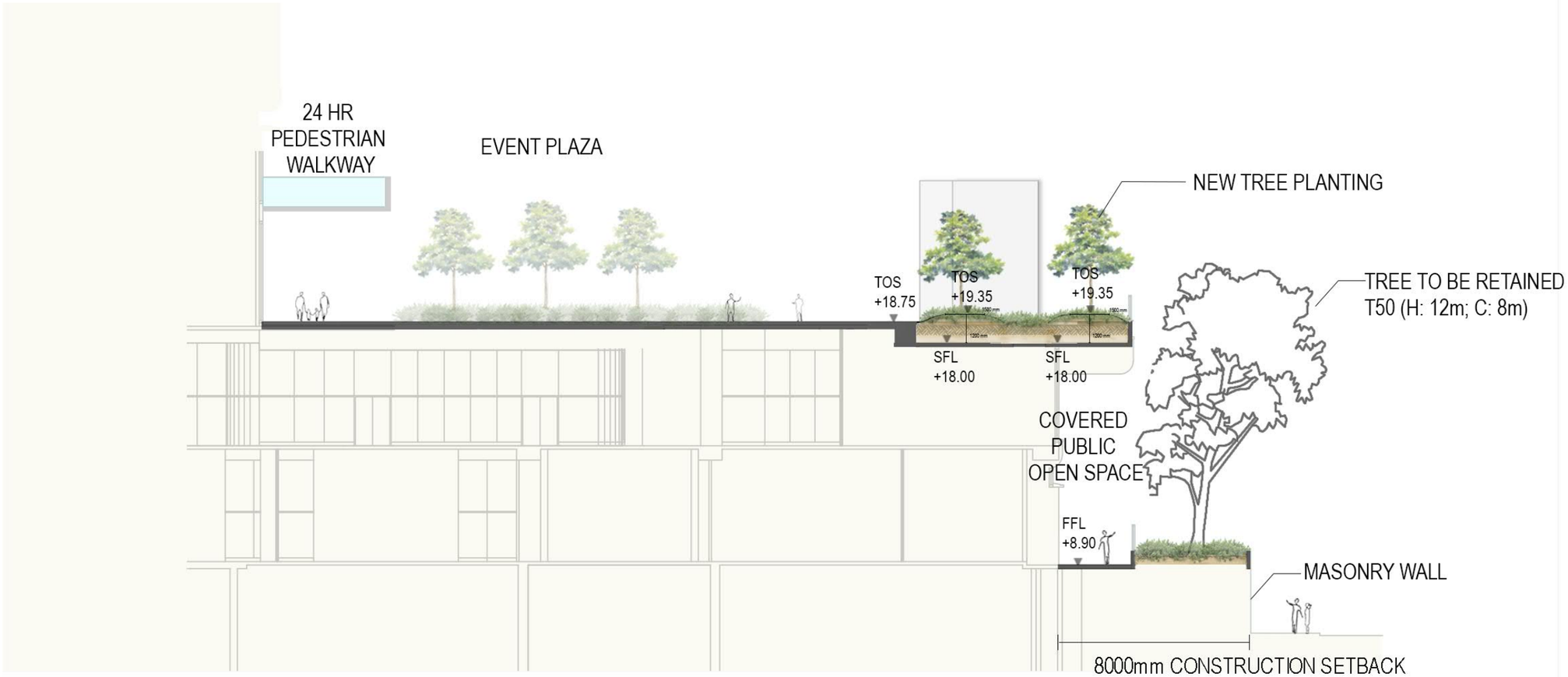


KEY PLAN

CAROLINE
HILL ROAD

T1 & T2



0 1 2 3 4 5m

REV	DATE	DESCRIPTION
–		

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CLIENT:
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PROJECT:
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TITLE:
APPENDIX F2 -
LANDSCAPE SECTION
(BETWEEN DEVELOPMENT & MASONRY WALL)

SCALE:	1:200 @ A3
DRAWN BY:	OY
CHECKED BY:	PC
APPROVED BY:	PC
DRAWING DATE:	AUG 2025
PROJECT No:	HYSAN02
SHEET No: HYSAN02-LMP-F2-1	REV: –

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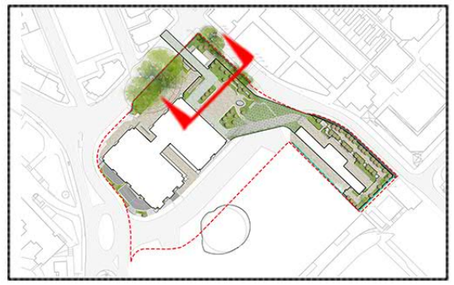
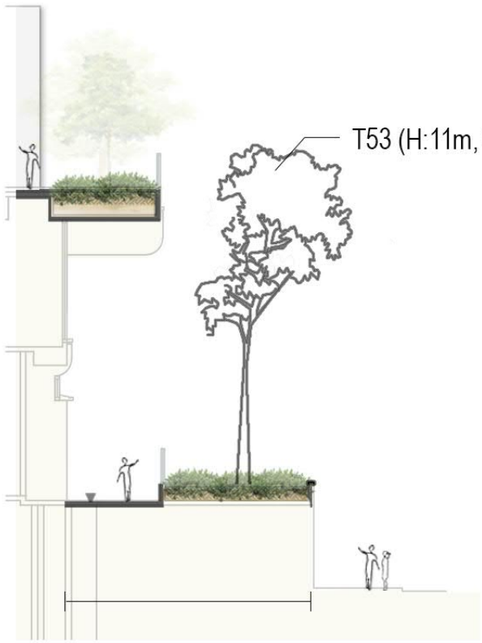


KEY PLAN



Cross Section of Retained Tree (T53)



Cross Section of Retained Tree (T54)

0 1 2 3 4 5m

REV	DATE	DESCRIPTION
–		

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TITLE:
APPENDIX F2A -
LANDSCAPE SECTION
(BETWEEN DEVELOPMENT & MASONRY WALL)

SCALE:	1:200 @ A3
DRAWN BY:	OY
CHECKED BY:	PC
APPROVED BY:	PC
DRAWING DATE:	APR 2024
PROJECT No:	HYSAN02
SHEET No: HYSAN02-LMP-F2-1	REV: –

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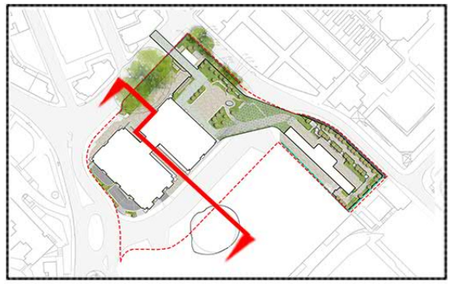
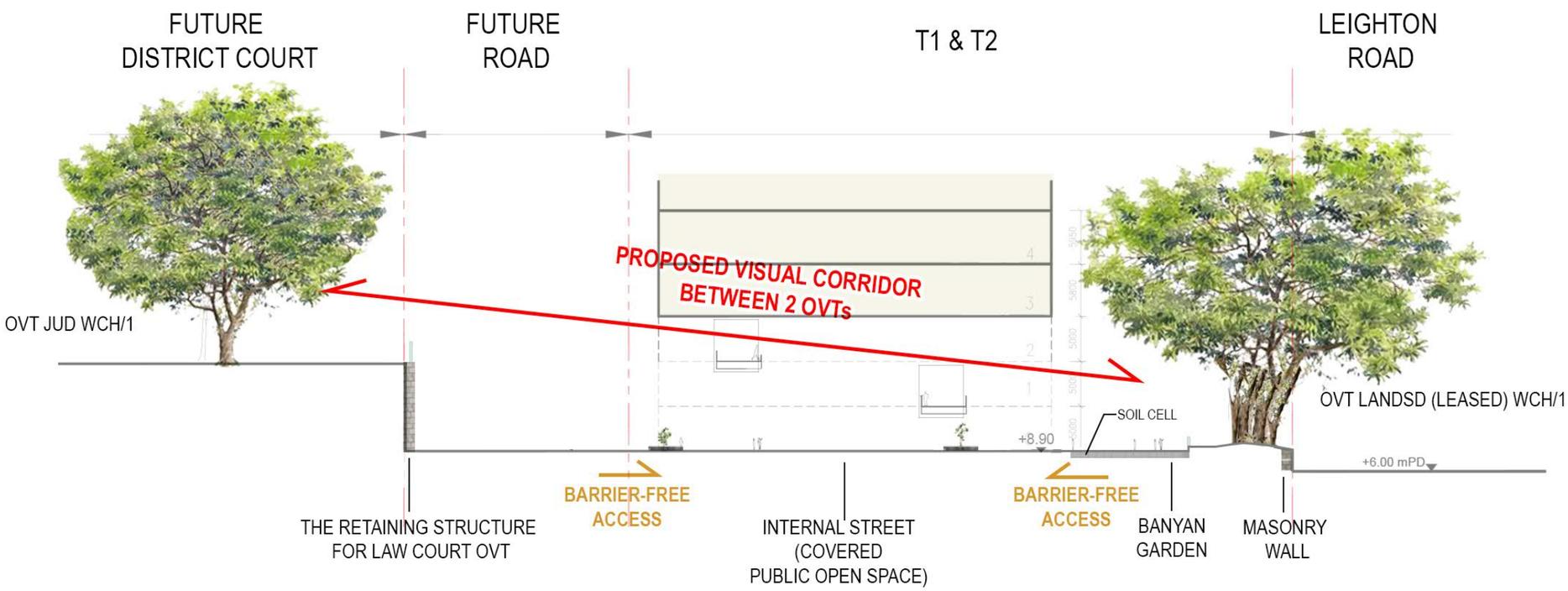


KEY PLAN



REV	DATE	DESCRIPTION
–		

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TITLE:
APPENDIX F3 -
LANDSCAPE SECTION
(VISUAL CORRIDOR BETWEEN TWO OVTS)

SCALE:	AS SHOWN
DRAWN BY:	OY
CHECKED BY:	PC
APPROVED BY:	PC
DRAWING DATE:	AUG 2025
PROJECT No:	HYSAN02
SHEET No: HYSAN02-LMP-F3-1	REV: –

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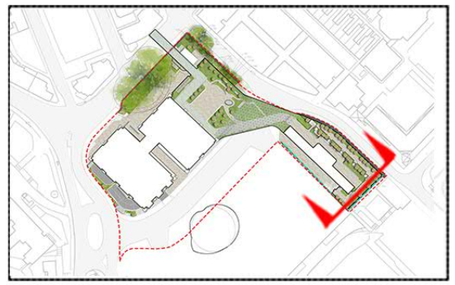
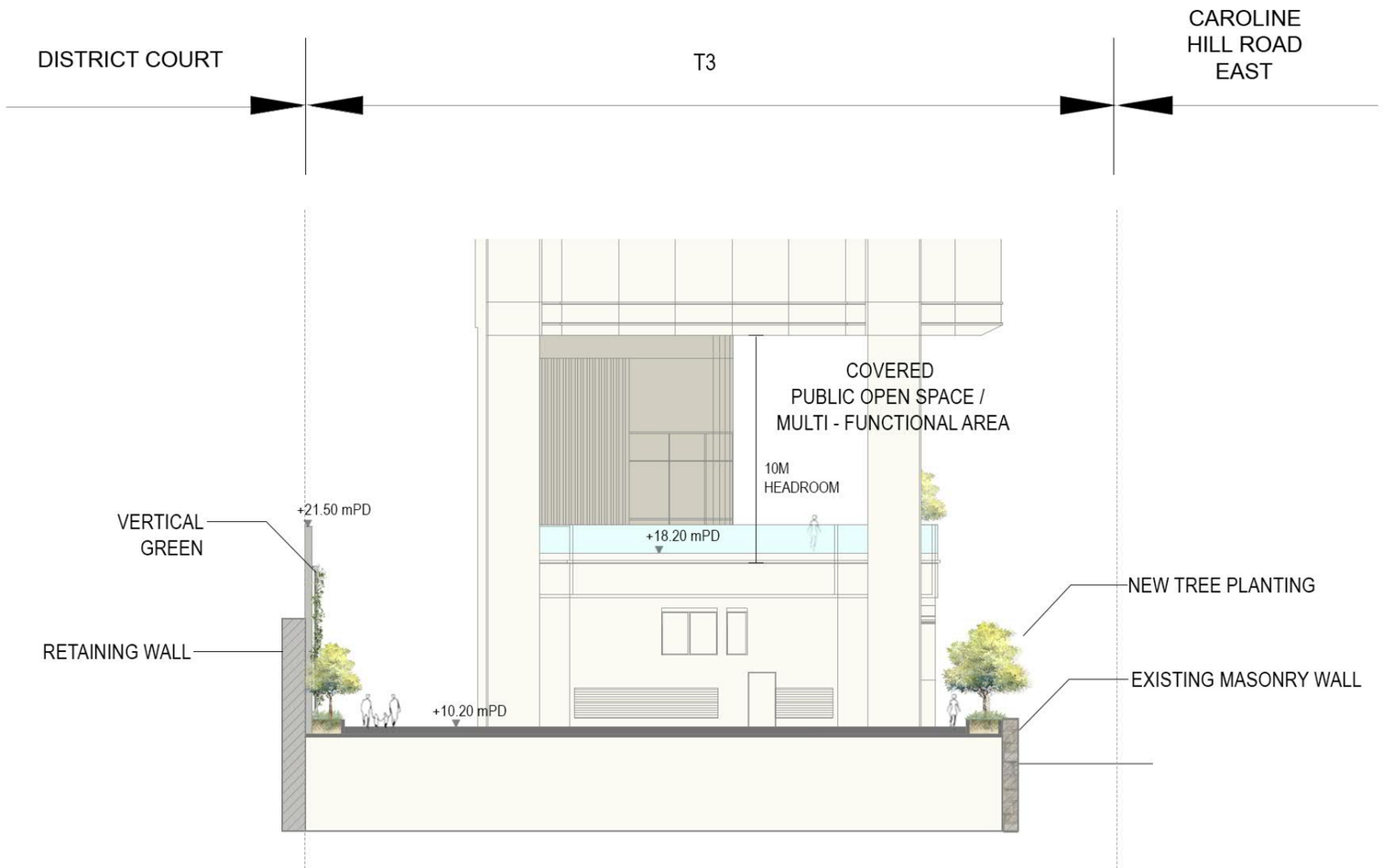


KEY PLAN



REV	DATE	DESCRIPTION
–		

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PROJECT:
CAROLINE HILL ROAD

TITLE:
APPENDIX F4 -
LANDSCAPE SECTION (TOWER 3)

SCALE:	AS SHOWN
DRAWN BY:	OY
CHECKED BY:	PC
APPROVED BY:	PC
DRAWING DATE:	AUG 2025
PROJECT No:	HYSAN02
SHEET No: HYSAN02-LMP-F4-1	REV: –

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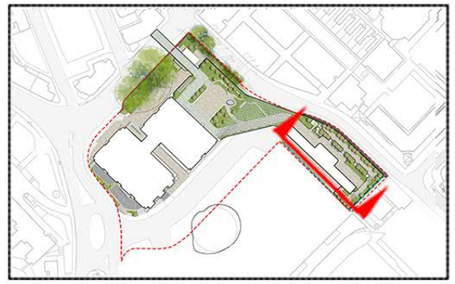

KEY PLAN



REV	DATE	DESCRIPTION
–		

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Tel: (852) 2893 0370 Fax: (852) 2893 3139
WWW.OTHERLAND.COM.HK

CLIENT:
PATCHWAY HOLDINGS (HK) LIMITED

PROJECT:
CAROLINE HILL ROAD

TITLE:
APPENDIX F5 -
LANDSCAPE SECTION
(STEPPED TERRACE OF TOWER 3)

SCALE:	AS SHOWN
DRAWN BY:	OY
CHECKED BY:	PC
APPROVED BY:	PC
DRAWING DATE:	AUG 2025
PROJECT No:	HYSAN02
SHEET No: HYSAN02-LMP-F5-1	REV: –

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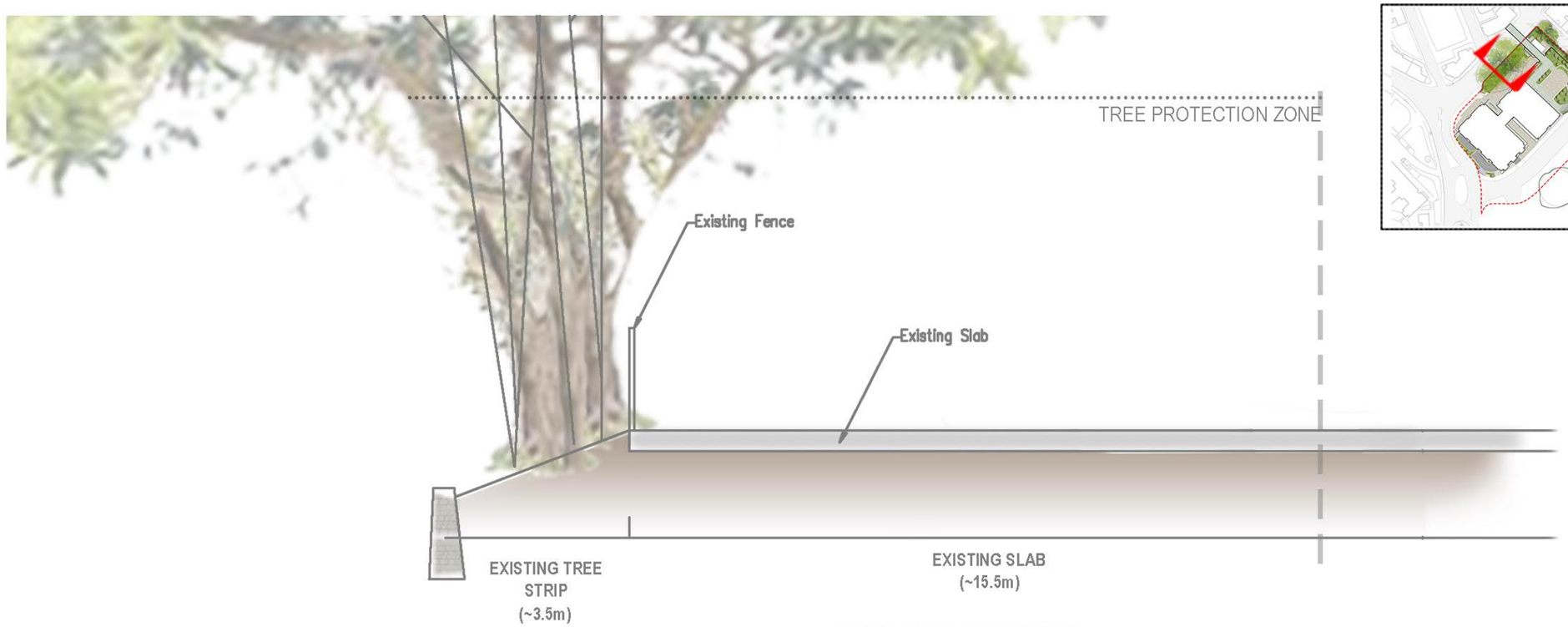
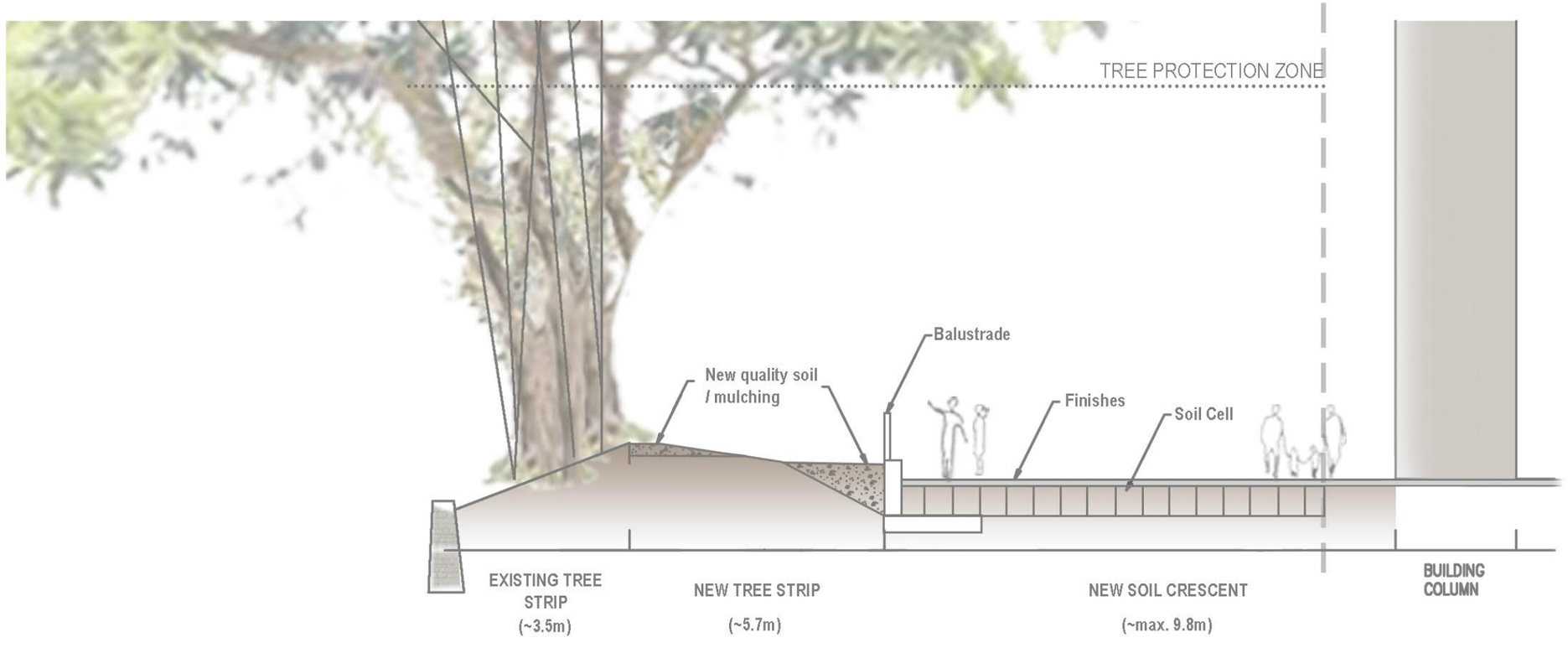
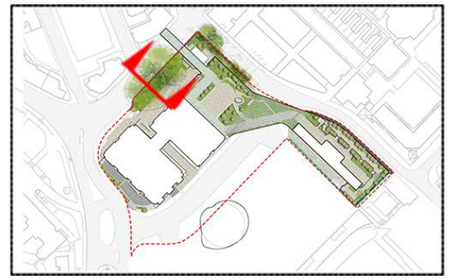


EXISTING CONDTION



Noted: Details refer to Annex K Tree Protection Proposal for OVT; the detailed design will be further developed and submitted to the relevant government departments at the next stage.

PROPOSED SCHEME (at the balustrade footing position)



KEY PLAN

REV	DATE	DESCRIPTION
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WWW.OTHERLAND.COM.HK

CLIENT:
PATCHWAY HOLDINGS (HK) LIMITED

PROJECT:
CAROLINE HILL ROAD

TITLE:
APPENDIX F6 -
LANDSCAPE SECTION
(BANYAN GARDEN)

SCALE:	1:100 @ A3
DRAWN BY:	OY
CHECKED BY:	PC
APPROVED BY:	PC
DRAWING DATE:	AUG 2025
PROJECT No:	HYSAN02
SHEET No: HYSAN02-LMP-F6-1	REV: –

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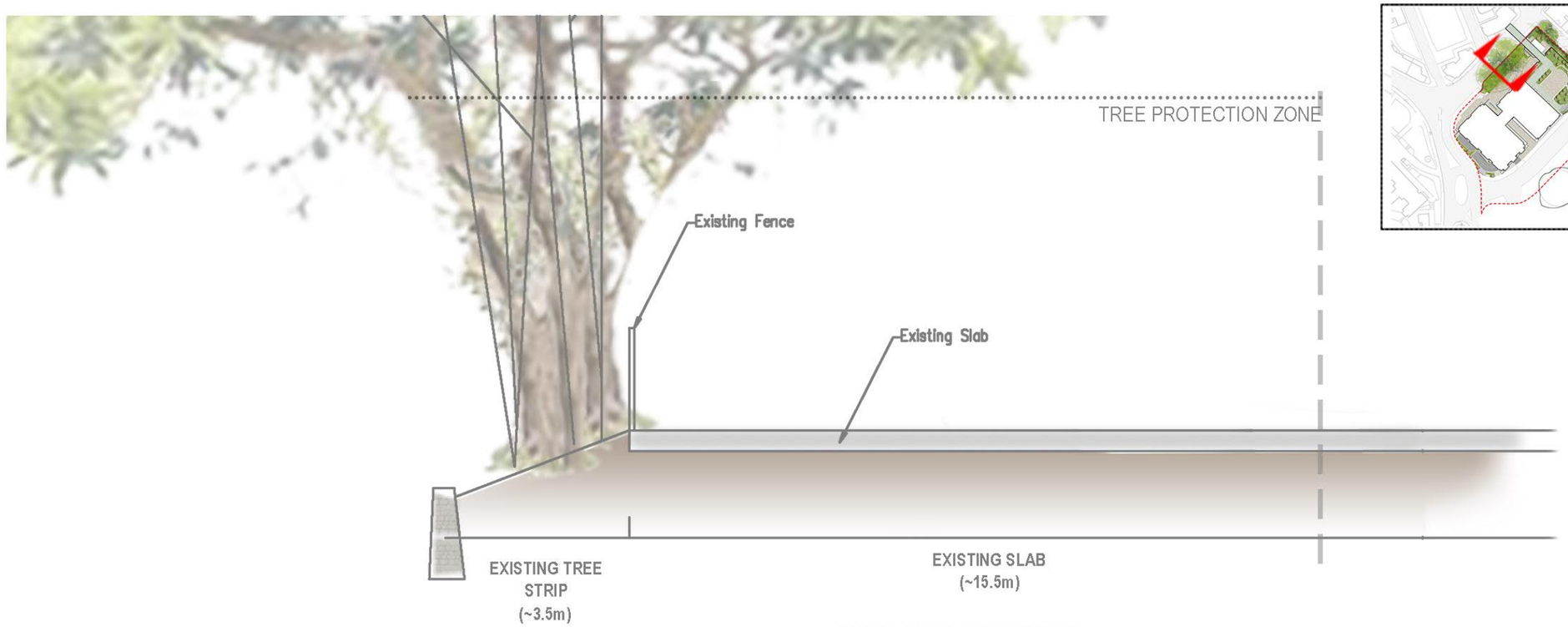
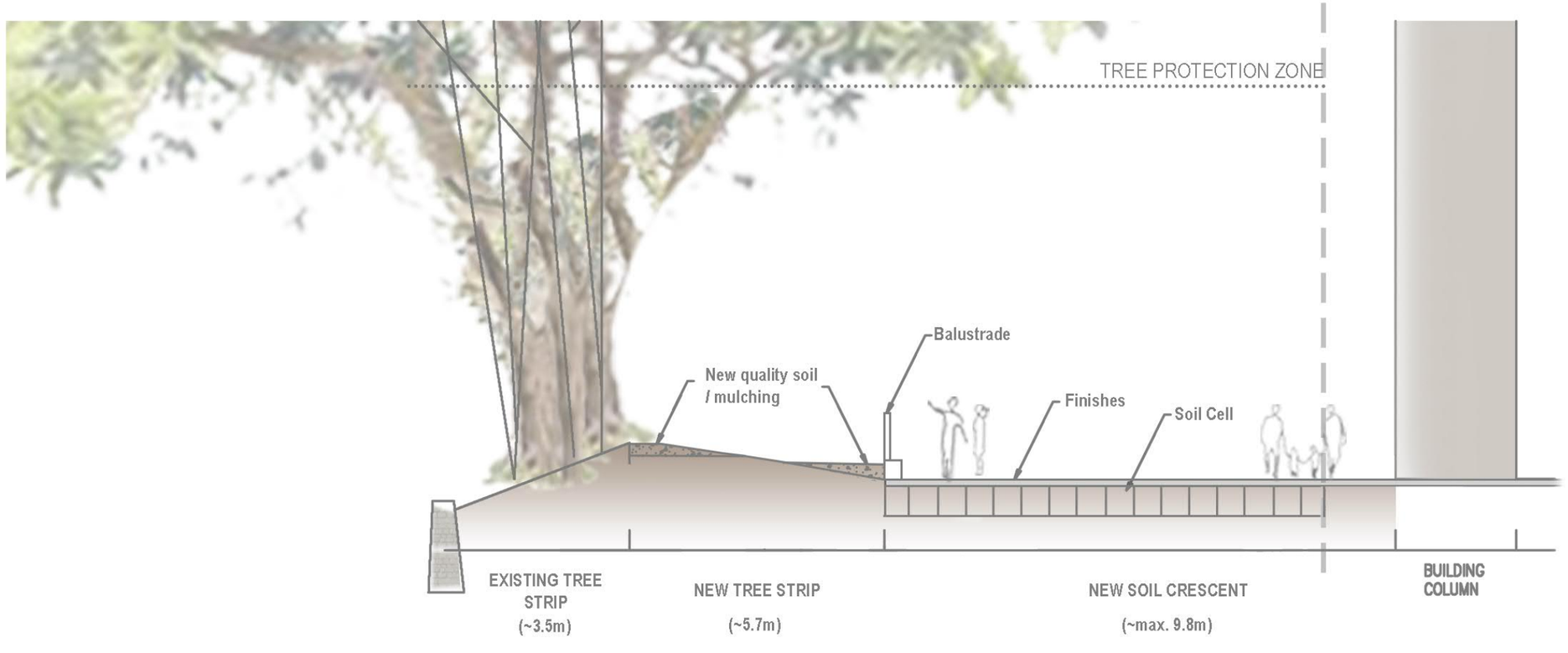
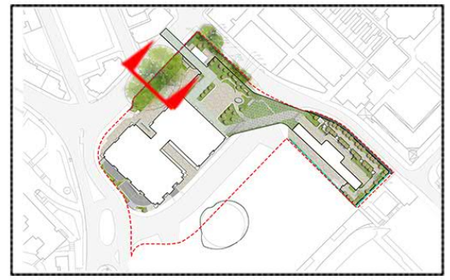


EXISTING CONDTION



Noted: Details refer to Annex K Tree Protection Proposal for OVT; the detailed design will be further developed and submitted to the relevant government departments at the next stage.

PROPOSED SCHEME (between the balustrade footing position)



KEY PLAN

REV	DATE	DESCRIPTION
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WWW.OTHERLAND.COM.HK

CLIENT:
PATCHWAY HOLDINGS (HK) LIMITED

PROJECT:
CAROLINE HILL ROAD

TITLE:
APPENDIX F6A -
LANDSCAPE SECTION
(BANYAN GARDEN)

SCALE:	1:100 @ A3
DRAWN BY:	OY
CHECKED BY:	PC
APPROVED BY:	PC
DRAWING DATE:	AUG 2025
PROJECT No:	HYSAN02
SHEET No: HYSAN02-LMP-F6-1	REV: –

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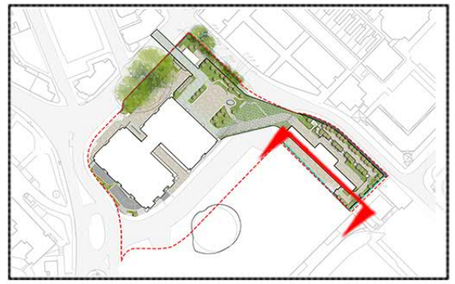

KEY PLAN



REV	DATE	DESCRIPTION
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CLIENT:
PATCHWAY HOLDINGS (HK) LIMITED

PROJECT:
CAROLINE HILL ROAD

TITLE:
APPENDIX F7 -
LANDSCAPE SECTION
(VERTICAL GREEN WALL)

SCALE:	AS SHOWN
DRAWN BY:	OY
CHECKED BY:	PC
APPROVED BY:	PC
DRAWING DATE:	AUG 2025
PROJECT No:	HYSAN02
SHEET No: HYSAN02-LMP-F7-1	REV: –

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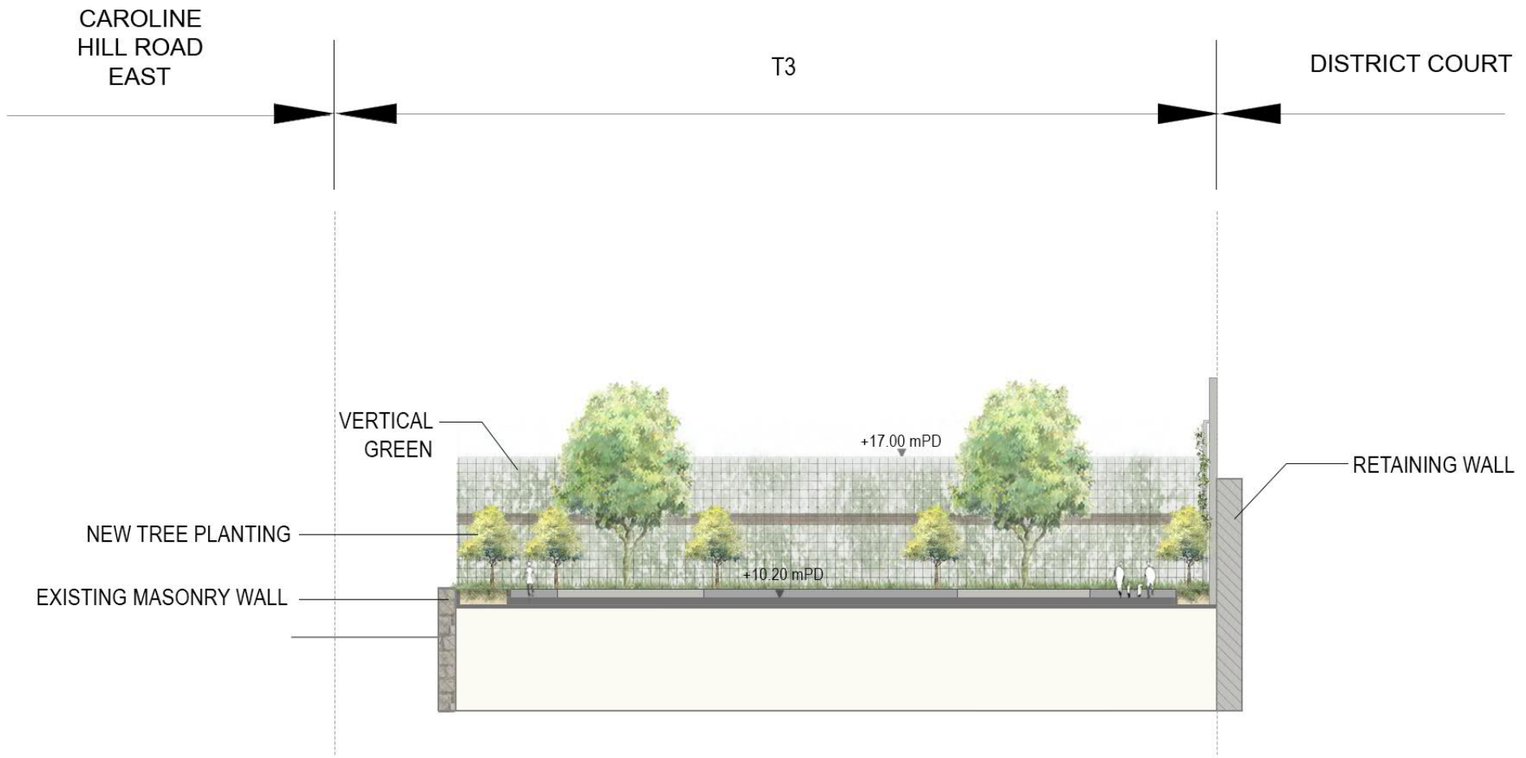
KEY PLAN



REV	DATE	DESCRIPTION
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CLIENT:
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PROJECT:
CAROLINE HILL ROAD

TITLE:
APPENDIX F7A -
LANDSCAPE SECTION
(VERTICAL GREEN WALL 2)

SCALE:	AS SHOWN
DRAWN BY:	OY
CHECKED BY:	PC
APPROVED BY:	PC
DRAWING DATE:	AUG 2025
PROJECT No:	HYSAN02
SHEET No: HYSAN02-LMP-F7A-1	REV: –

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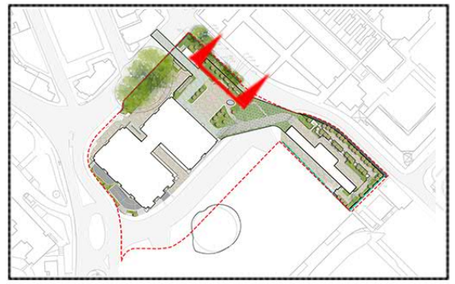
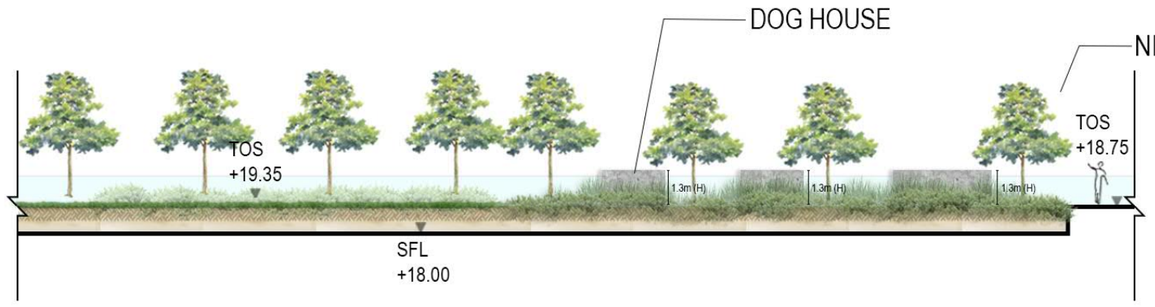


KEY PLAN



REV	DATE	DESCRIPTION
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CLIENT:
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PROJECT:
CAROLINE HILL ROAD

TITLE:
APPENDIX F8 -
LANDSCAPE SECTION
(2/F Planter Section - Dog House)

SCALE:	AS SHOWN
DRAWN BY:	OY
CHECKED BY:	PC
APPROVED BY:	PC
DRAWING DATE:	AUG 2025
PROJECT No:	HYSAN02
SHEET No: HYSAN02-LMP-F8-1	REV: –

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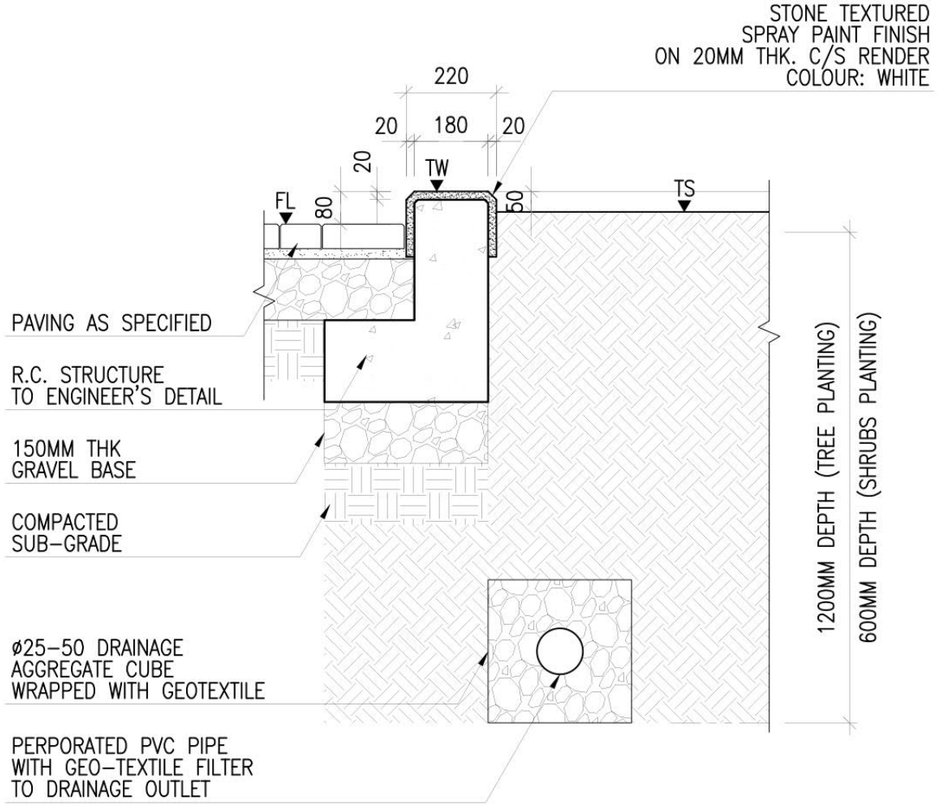
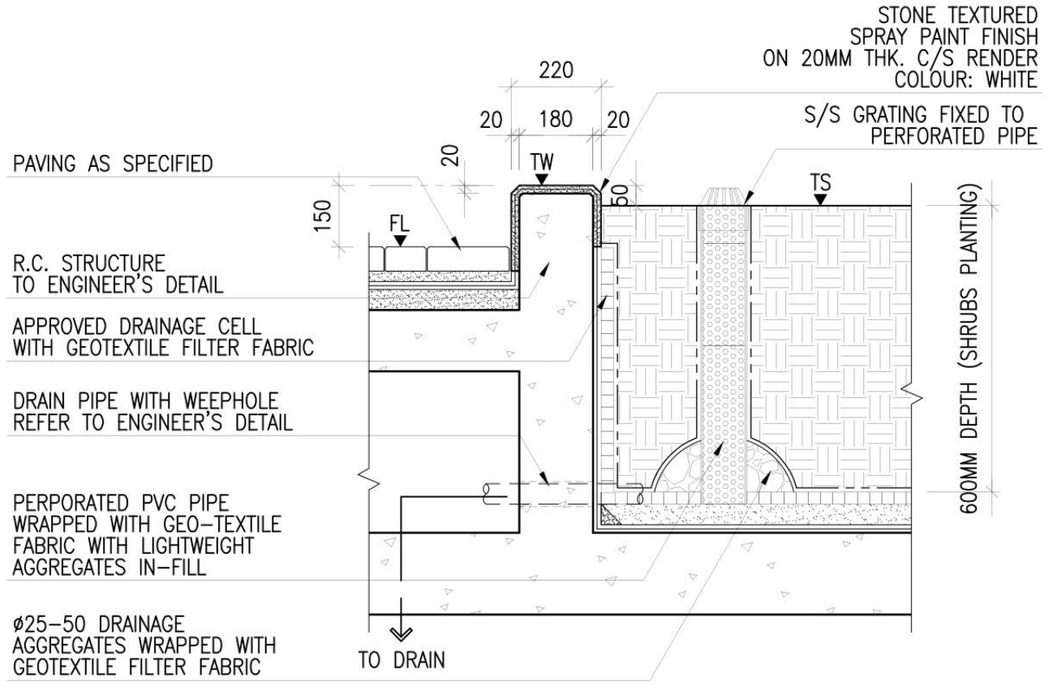
Appendix G
Typical Detail Drawings



A
–

CURB PLANTER DETAIL 1 (ON-GRADE)

SCALE 1:15



B
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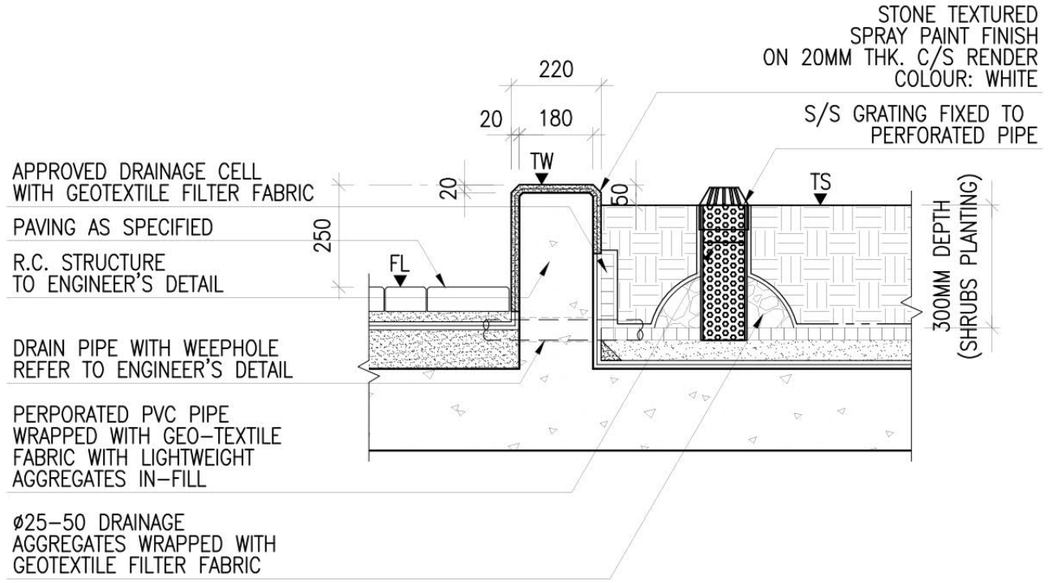
CURB PLANTER DETAIL 2 (ON-SLAB)

SCALE 1:15



C
–

CURB PLANTER DETAIL 3 (ON-SLAB)

SCALE 1:15

REV	DATE	DESCRIPTION
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PROJECT:
CAROLINE HILL ROAD

TITLE:
APPENDIX G1 -
PLANTER CURB DETAILS

SCALE:	1:15 @ A3
DRAWN BY:	OY
CHECKED BY:	PC
APPROVED BY:	PC
DRAWING DATE:	MAY 2022
PROJECT No:	HYSAN02
SHEET No: HYSAN02-LMP-G1-0	REV: –

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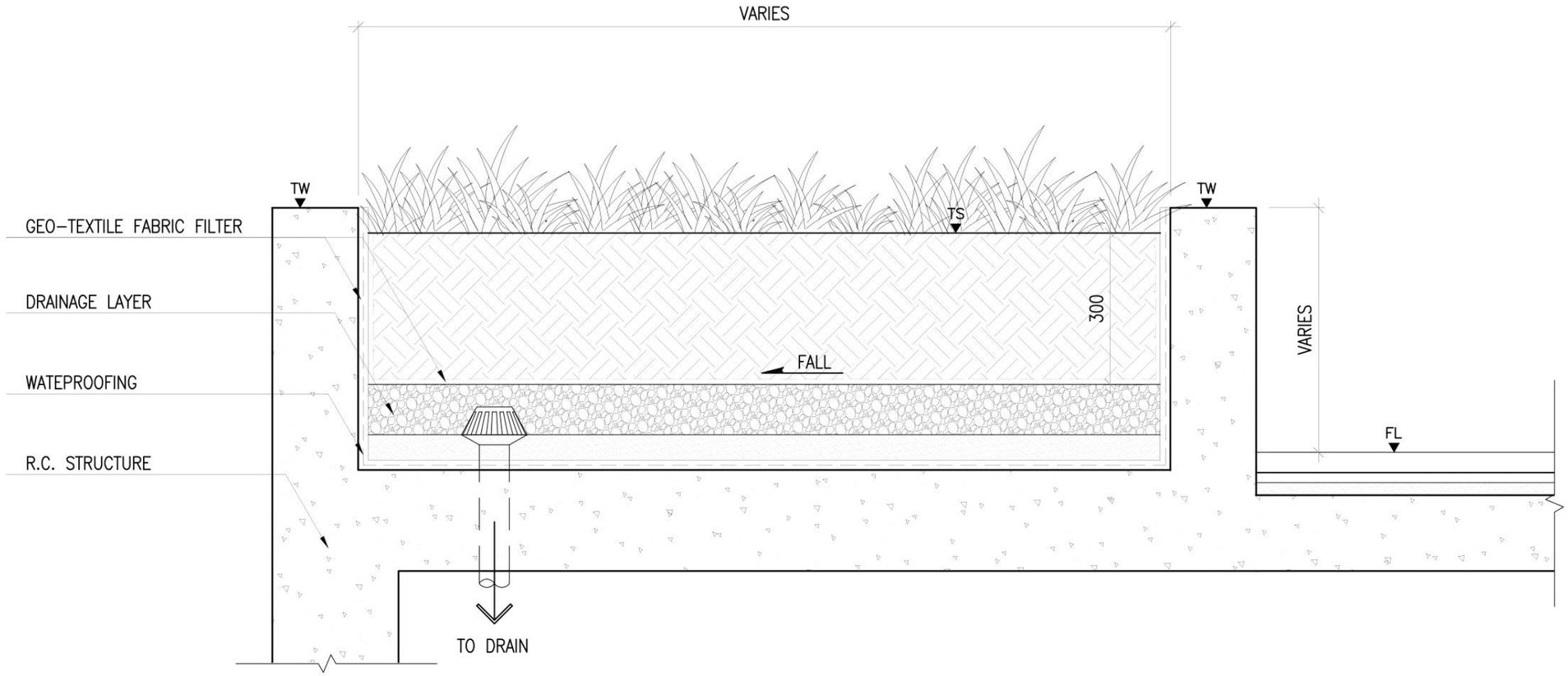

PLANTER SECTION
SCALE 1:10

FL ▼ FINISH LEVEL
TS ▼ TOP OF SOIL
TW ▼ TOP OF WALL

REV	DATE	DESCRIPTION
–		

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CLIENT:
PATCHWAY HOLDINGS (HK) LIMITED

PROJECT:
CAROLINE HILL ROAD

TITLE:
APPENDIX G2 -
TYPICAL PLANTER SECTION
W/300MM SOIL DEPTH

SCALE:	1:10 @ A3
DRAWN BY:	OY
CHECKED BY:	PC
APPROVED BY:	PC
DRAWING DATE:	MAY 2022
PROJECT No:	HYSAN02
SHEET No: HYSAN02-LMP-G2-0	REV: –

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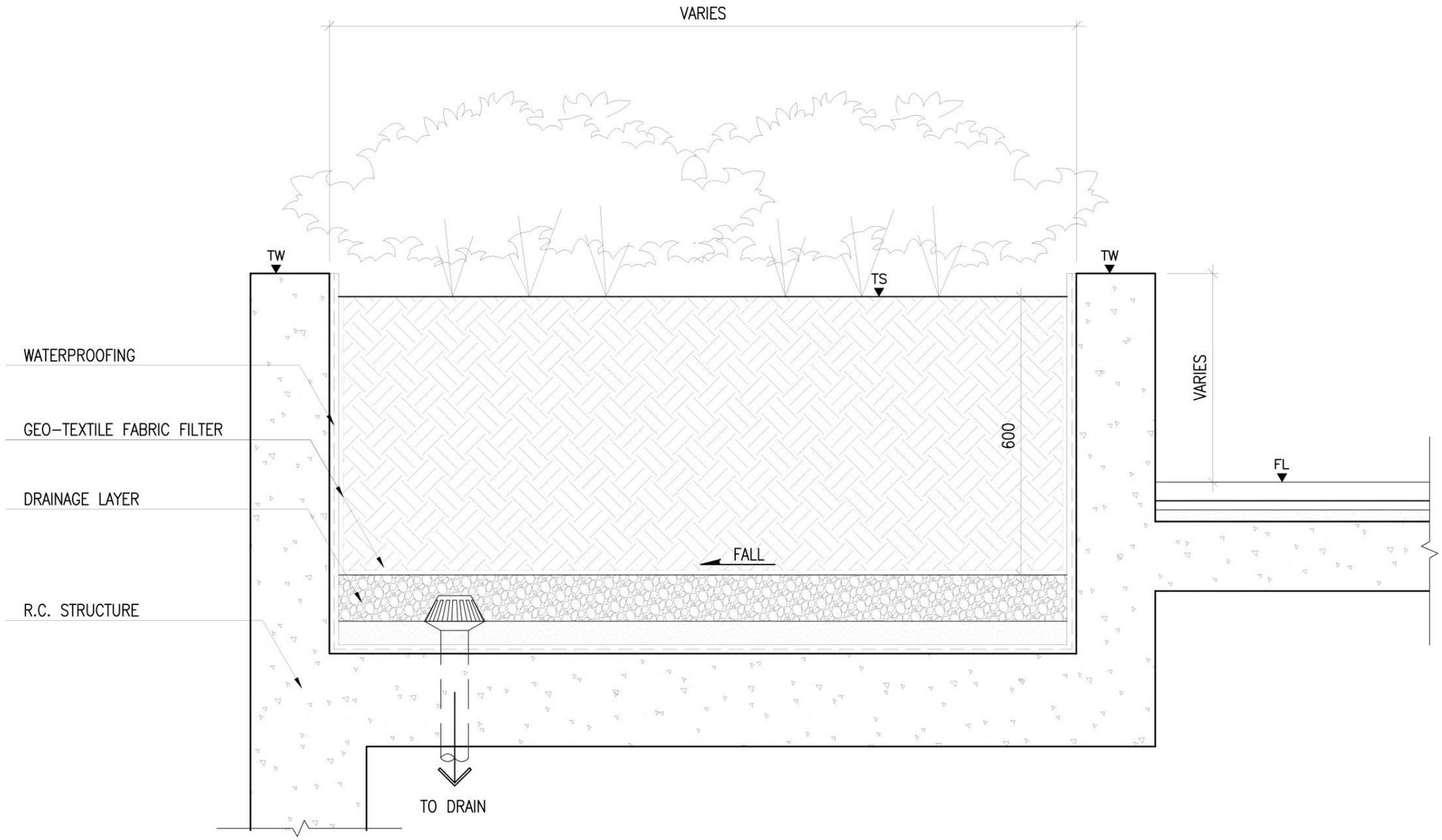

PLANTER SECTION
SCALE 1:10

FL ▼ FINISH LEVEL
TS ▼ TOP OF SOIL
TW ▼ TOP OF WALL

REV	DATE	DESCRIPTION
–		

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WWW.OTHERLAND.COM.HK

CLIENT:
PATCHWAY HOLDINGS (HK) LIMITED

PROJECT:
CAROLINE HILL ROAD

TITLE:
APPENDIX G3 -
TYPICAL PLANTER SECTION
W/600MM SOIL DEPTH

SCALE:	1:10 @ A3
DRAWN BY:	OY
CHECKED BY:	PC
APPROVED BY:	PC
DRAWING DATE:	MAY 2022
PROJECT No:	HYSAN02
SHEET No: HYSAN02-LMP-G3-0	REV: –

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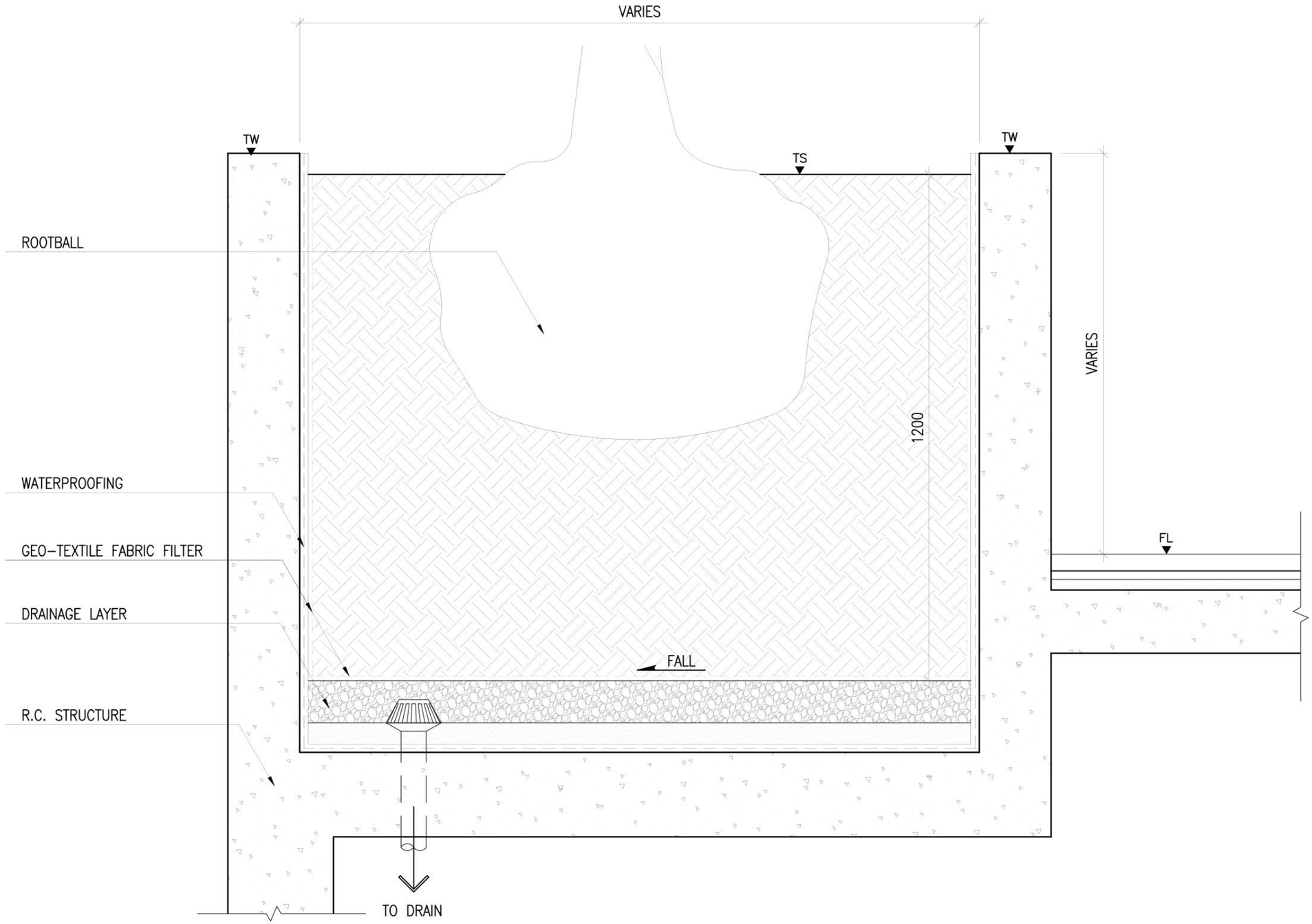

PLANTER SECTION
SCALE 1:10

FL FINISH LEVEL
TS TOP OF SOIL
TW TOP OF WALL

REV	DATE	DESCRIPTION
–		

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CLIENT:
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PROJECT:
CAROLINE HILL ROAD

TITLE:
APPENDIX G4 -
TYPICAL PLANTER SECTION
W/1200MM SOIL DEPTH

SCALE:	1:10 @ A3
DRAWN BY:	OY
CHECKED BY:	PC
APPROVED BY:	PC
DRAWING DATE:	MAY 2022
PROJECT No:	HYSAN02
SHEET No: HYSAN02-LMP-G4-0	REV: –

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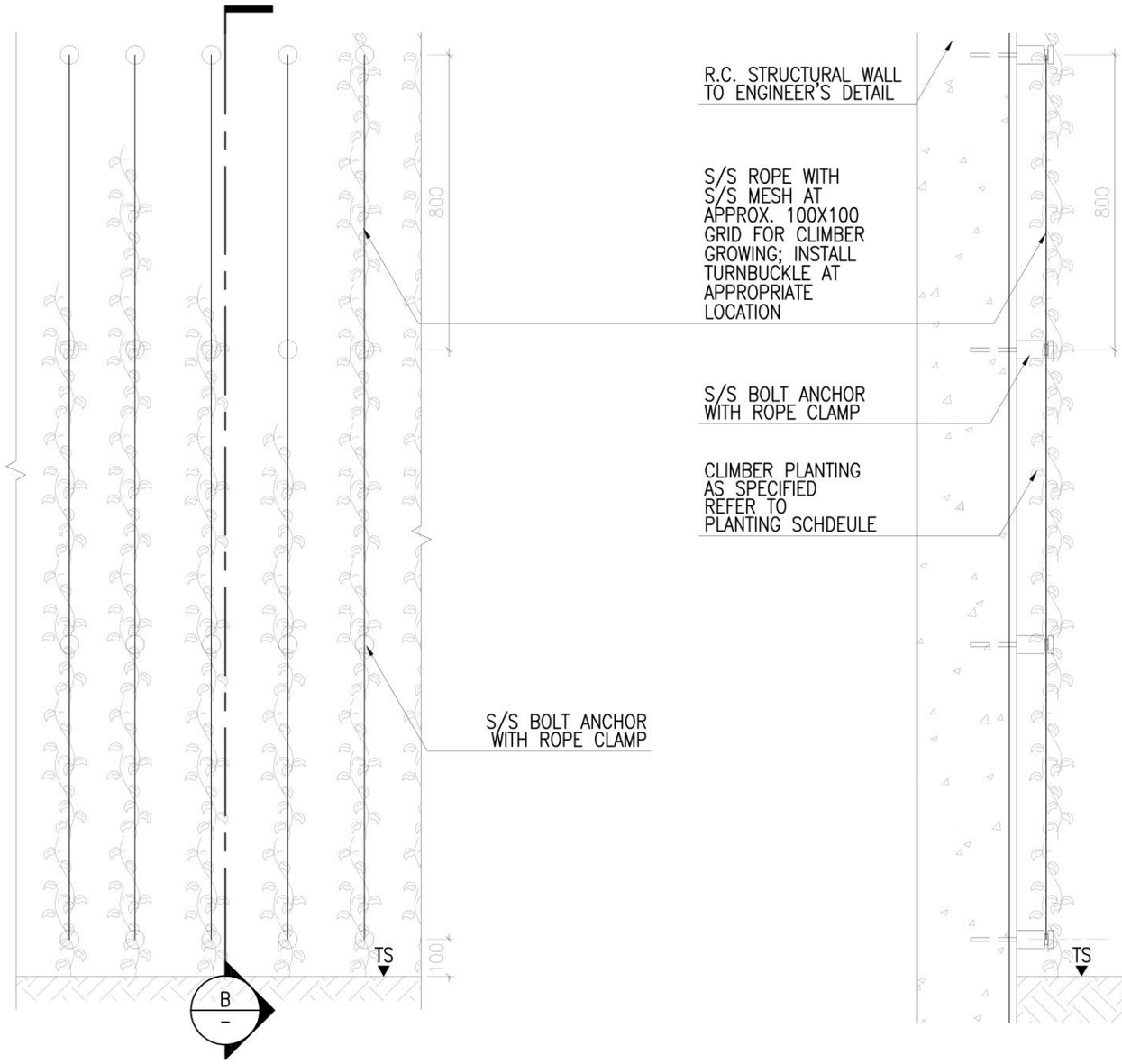

A ELEVATION
SCALE: 1:15

B SECTION
SCALE: 1:15

NOTE:
1. VERTICAL GREEN SYSTEM IS INDICATIVE.
   SUPPLIER/CONTRACTOR TO SUBMIT SYSTEM SUITABLE TO THE PROJECT.
2. VERTICAL GREEN PACKAGE TO BE DESIGN-BUILD. FINAL ASSESSMENTS
   SHOULD BE SUBJECTED TO THE SITE CONDITION.
3. VERTICAL GREEN SPECIALIST SUPPLIER TO PROVIDE DETAIL DRAWINGS
   FOR APPROVAL PRIOR TO MANUFACTURING AND INSTALLATION.

REV	DATE	DESCRIPTION
–		

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WWW.OTHERLAND.COM.HK

CLIENT:
PATCHWAY HOLDINGS (HK) LIMITED

PROJECT:
CAROLINE HILL ROAD

TITLE:
APPENDIX G5 -
TYPICAL DETAIL OF
VERTICAL GREENING

SCALE:	1:10 @ A3
DRAWN BY:	OY
CHECKED BY:	PC
APPROVED BY:	PC
DRAWING DATE:	APR 2023
PROJECT No:	HYSAN02
SHEET No: HYSAN02-LMP-G5-0	REV: –

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Appendix H
Irrigation Plan



SITE BOUNDARY
GREENERY AREA -G/F
GREENERY AREA -G/F (COVERED)
GREENERY AREA- 2/F & UG/F
GREENERY AREA-2/F (COVERED)
GREENERY AREA-R/F
VERTICAL GREENING
IRRIGATION POINT (G/F) (40m dia - COVERED AREA)
IRRIGATION POINT (UG/F) (40m dia - COVERED AREA)
IRRIGATION POINT (2/F) (40m dia - COVERED AREA)
IRRIGATION POINT (R/F) (40m dia - COVERED AREA)
IRRIGATION POINT (T3-3/F) (40m dia - COVERED AREA)

REV	DATE	DESCRIPTION
–		

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CLIENT:
PATCHWAY HOLDINGS (HK) LIMITED

PROJECT:
CAROLINE HILL ROAD

TITLE:
APPENDIX H -
IRRIGATION PLAN

SCALE:	1:750@A3
DRAWN BY:	OY
CHECKED BY:	PC
APPROVED BY:	PC
DRAWING DATE:	AUG 2025
PROJECT No:	HYSAN02
SHEET No: HYSAN02-LMP-H-1	REV: –

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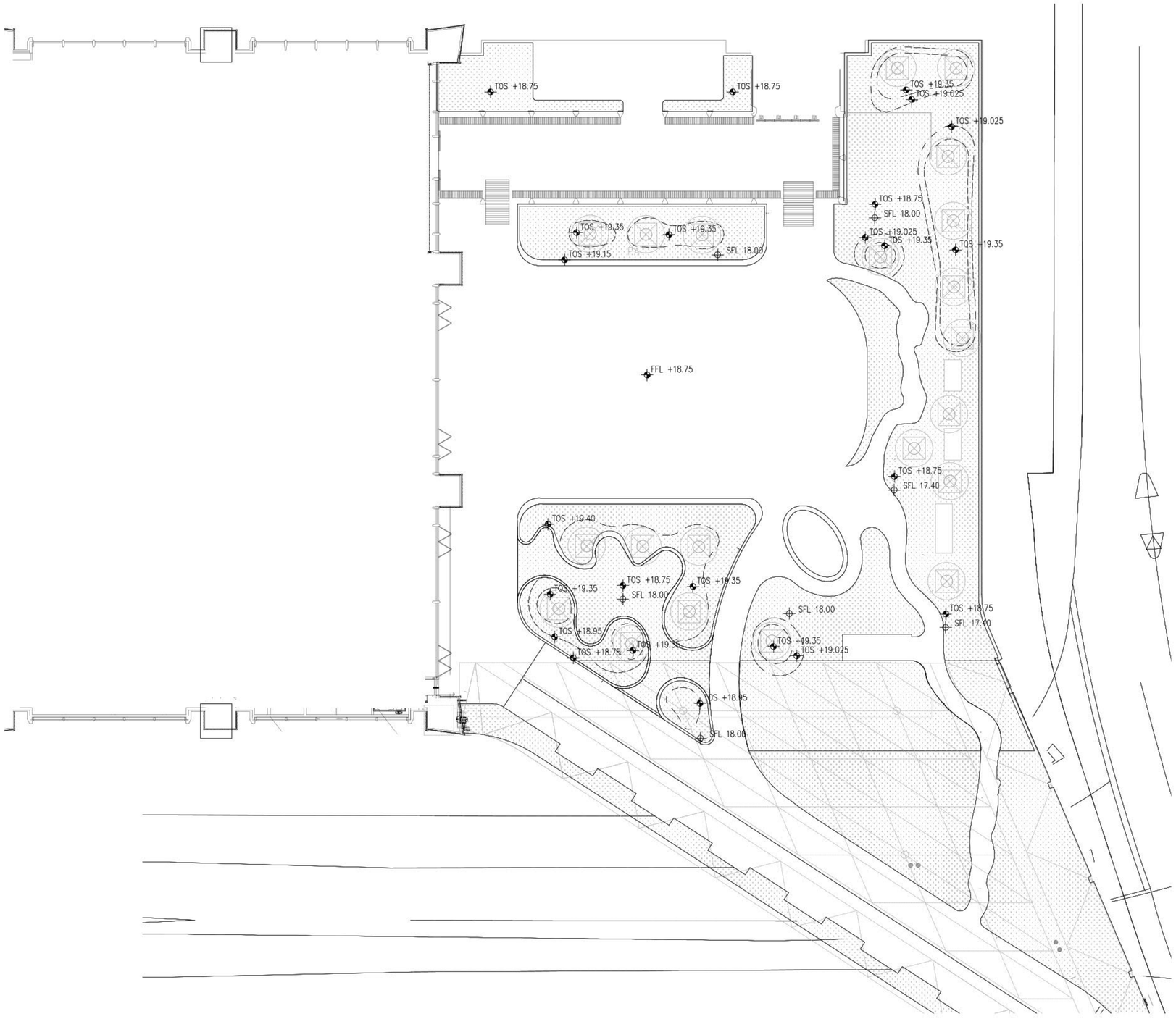
Appendix I
Levelling Plan (2/F)



REV	DATE	DESCRIPTION
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WWW.OTHERLAND.COM.HK

CLIENT:
PATCHWAY HOLDINGS (HK) LIMITED

PROJECT:
CAROLINE HILL ROAD

TITLE:
APPENDIX I -
SOILING PLAN (2/F)

SCALE:	1:300 @ A3
DRAWN BY:	OY
CHECKED BY:	PC
APPROVED BY:	PC
DRAWING DATE:	AUG 2024
PROJECT No:	HYSAN02
SHEET No: HYSAN02-LLP-0	REV: –

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SITE BOUNDARY
1200mm TOPSOIL DEPTH
600mm TOPSOIL DEPTH
300mm TOPSOIL DEPTH

REV	DATE	DESCRIPTION
–		

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Tel: (852) 2893 0370 Fax: (852) 2893 3139
WWW.OTHERLAND.COM.HK

CLIENT:
PATCHWAY HOLDINGS (HK) LIMITED

PROJECT:
CAROLINE HILL ROAD

TITLE:
APPENDIX I2 -
SOILING PLAN

SCALE:	1:750@A3
DRAWN BY:	OY
CHECKED BY:	PC
APPROVED BY:	PC
DRAWING DATE:	MAR 2025
PROJECT No:	HYSAN02
SHEET No: HYSAN02-LMP-APP_I2	REV: –

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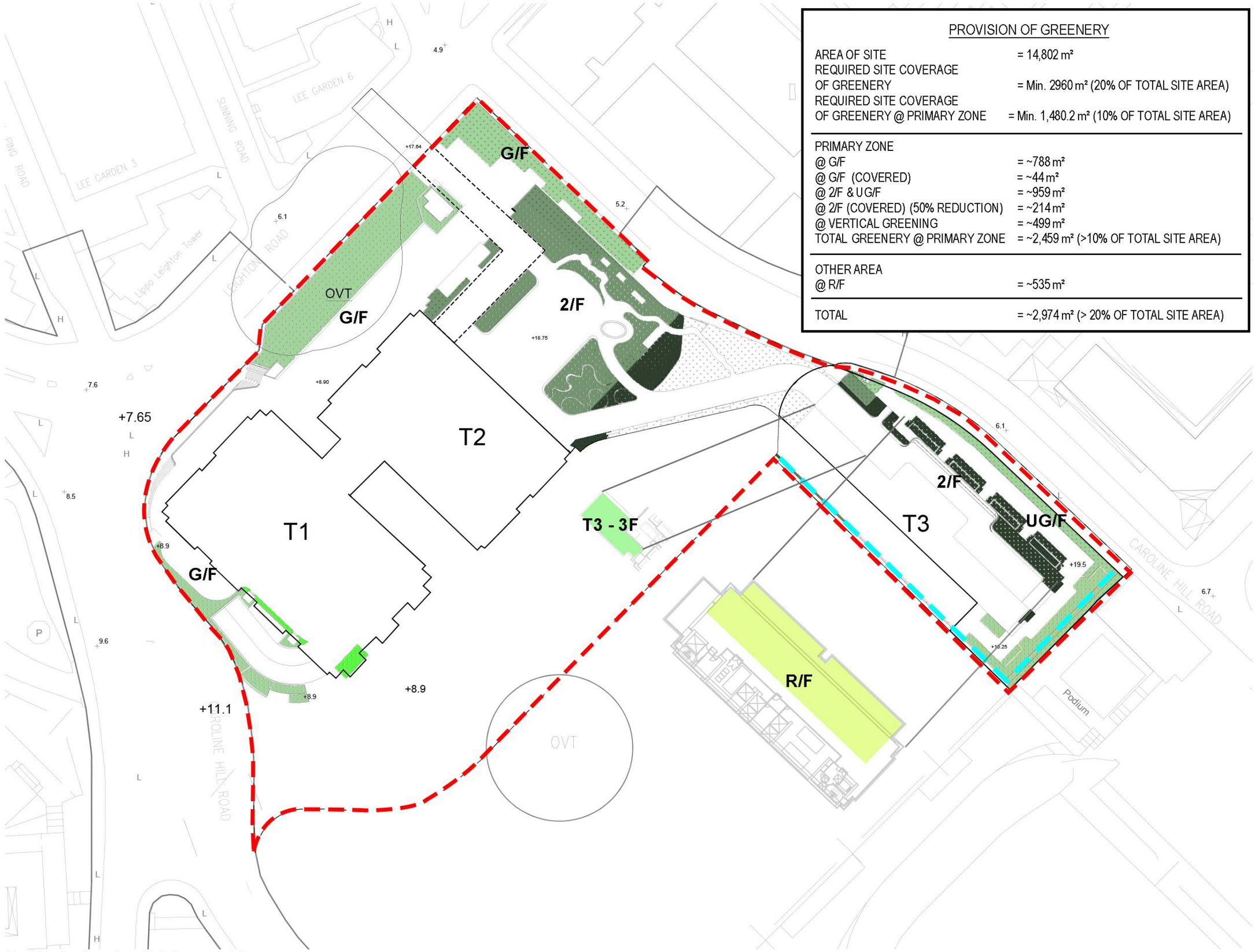
Appendix J
Provision of Greenery Coverage (For PlanD' s Reference Only)



PROVISION OF GREENERY

AREA OF SITE	= 14,802 m²
REQUIRED SITE COVERAGE OF GREENERY	= Min. 2960 m² (20% OF TOTAL SITE AREA)
REQUIRED SITE COVERAGE OF GREENERY @ PRIMARY ZONE	= Min. 1,480.2 m² (10% OF TOTAL SITE AREA)
PRIMARY ZONE	
@ G/F	= ~788 m²
@ G/F (COVERED)	= ~44 m²
@ 2/F & UG/F	= ~959 m²
@ 2/F (COVERED) (50% REDUCTION)	= ~214 m²
@ VERTICAL GREENING	= ~499 m²
TOTAL GREENERY @ PRIMARY ZONE	= ~2,459 m² (>10% OF TOTAL SITE AREA)
OTHER AREA @ R/F	= ~535 m²
TOTAL	= ~2,974 m² (> 20% OF TOTAL SITE AREA)

- SITE BOUNDARY
- GREENERY AREA -G/F
- GREENERY AREA -G/F (COVERED)
- GREENERY AREA- 2/F & UG/F
- GREENERY AREA-2/F (COVERED)
- GREENERY AREA-R/F
- VERTICAL GREENING

REV	DATE	DESCRIPTION
–		

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Tel: (852) 2893 0370 Fax: (852) 2893 3139
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CLIENT:
PATCHWAY HOLDINGS (HK) LIMITED

PROJECT:
CAROLINE HILL ROAD

TITLE:
ANNEX J -
PROVISION OF GREENERY COVERAGE

SCALE:	1:750@A3
DRAWN BY:	OY
CHECKED BY:	PC
APPROVED BY:	PC
DRAWING DATE:	APR 2025
PROJECT No:	HYSAN02
SHEET No: HYSAN02-LMP-J-1	REV: –

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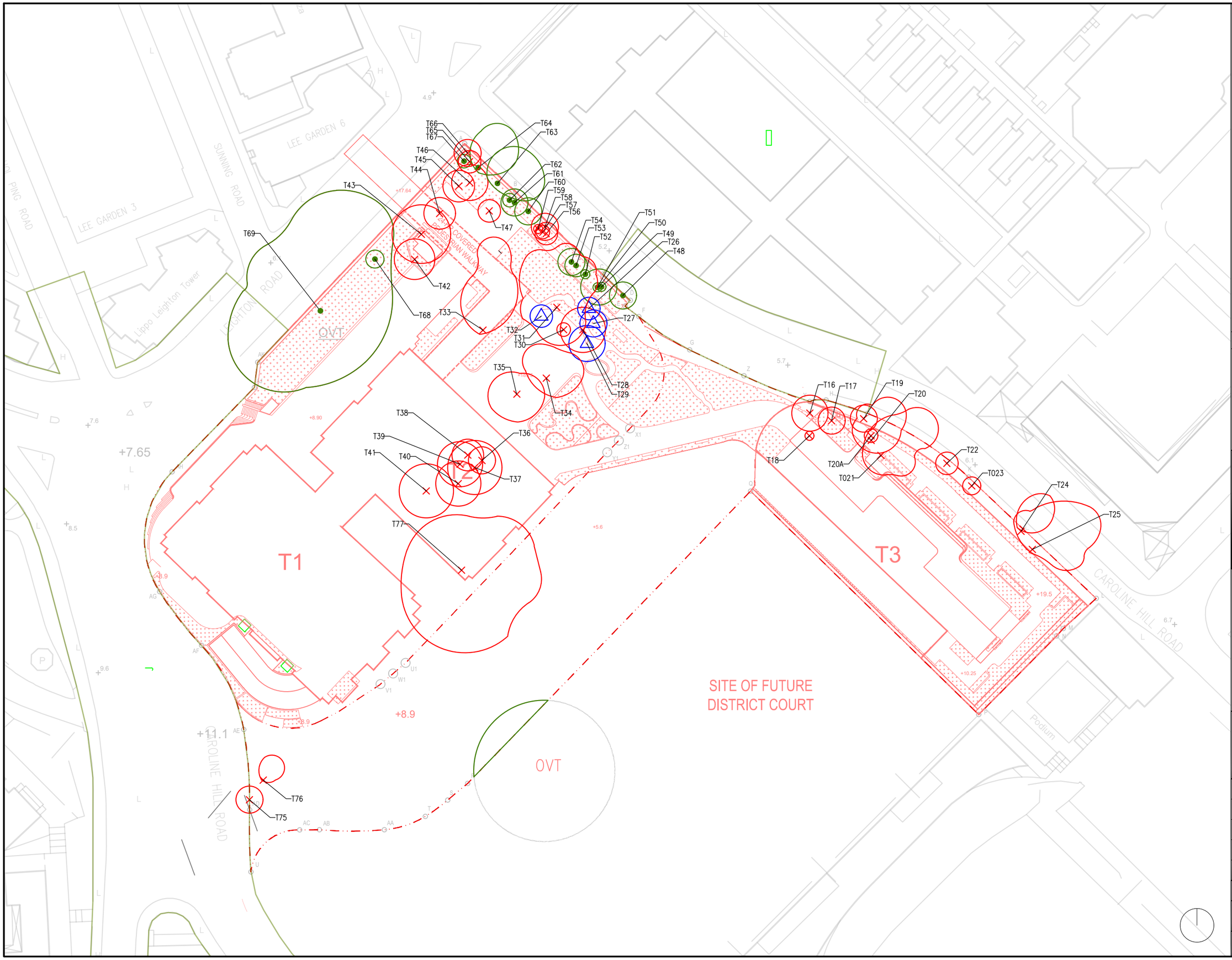
(For Planning Department's Reference only)

Annex A
Tree Treatment Plan



REV	DATE	DESCRIPTION
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CLIENT:
PATCHWAY HOLDINGS (HK) LIMITED

PROJECT:
CAROLINE HILL ROAD

TITLE:

ANNEX A –
TREE TREATMENT PLAN

SCALE:	1:750@A3
DRAWN BY:	WL
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APPROVED BY:	PC
DRAWING DATE:	MAR 2025
PROJECT No:	HYSAN02
SHEET No:	REV: –

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Xref \\LMP\Annex A Tree Treatment Plan\X_GBP.dwg

Annex B
Tree Treatment Schedule

Annex B - Tree Treatment Schedule
Commerical Development on IL8945, Causeway Bay, Hong Kong
Date of survey: 21 August 2021

Tree No.	Species		Diameter (mm)	Height (m)	Spread (m)	Treatment	Remarks
	Scientific Name	Chinese Name					
T16	*Aleurites moluccana*	石栗	500	16	8	Fell	
T17	*Ficus hispida*	對葉榕	150	5	6	Fell	
T18	*Ficus microcarpa*	細葉榕	150	3	2	Fell	
T19	*Broussonetia papyrifera*	構樹	250	13	6	Fell	
T20	*Broussonetia papyrifera*	構樹	300	13	10	Fell	
T20A	*Broussonetia papyrifera*	構樹	110	8	3	Fell	
T21	*Ficus variegata*	青果榕	500	17	8	Fell	
T22	*Ficus hispida*	對葉榕	210	4	5	Fell	
T23	*Macaranga tanarius* var. *tomentosa*	血桐	350	8	4	Fell	
T24	*Celtis sinensis*	朴樹	300	8	10	Fell	
T25	*Ficus microcarpa*	細葉榕	3000	23	20	Fell	
T26	*Litsea glutinosa*	潺槁樹	150	11	5	Transplant	
T27	*Plumeria rubra*	雞蛋花	500	10	6	Transplant	
T28	*Aleurites moluccana*	石栗	750	19	10	Fell	
T29	*Dimocarpus longan*	龍眼	200	10	8	Transplant	
T30	*Morus alba*	桑	180	9	3	Fell	emergent tree felling due to natural causes on 7 Nov 2022
T31	*Michelia x alba*	白蘭	995	28	10	Fell	
T32	*Dimocarpus longan*	龍眼	230	11	5	Transplant	
T33	*Michelia x alba*	白蘭	600	25	14	Fell	
T34	*Dimocarpus longan*	龍眼	600	13	11	Fell	
T35	*Mangifera indica*	杧果	650	15	12	Fell	
T36	*Mangifera indica*	杧果	220	11	6	Fell	
T37	*Ficus variegata*	青果榕	450	17	12	Fell	
T38	*Mangifera indica*	杧果	220	11	7	Fell	emergent tree felling due to natural causes on 27 Oct 2023
T39	*Dimocarpus longan*	龍眼	600	13	10	Fell	
T40	*Dimocarpus longan*	龍眼	400	11	10	Fell	
T41	*Casuarina equisetifolia*	木麻黃	650	25	12	Fell	
T42	*Mangifera indica*	杧果	550	12	9	Fell	
T43	*Mangifera indica*	杧果	800	15	13	Fell	
T44	*Mangifera indica*	杧果	450	11	7	Fell	emergent tree felling due to natural causes on 17 May 2023
T45	*Litsea monopetala*	假柿木薑子	300	17	7	Fell	emergent tree felling due to natural causes on 6 Sep 2022
T46	*Mangifera indica*	杧果	380	12	8	Fell	
T47	*Clausena lansium*	黃皮	450	9	5	Fell	emergent tree felling due to natural causes on 7 Nov 2022
T48	*Ficus virens*	黃葛樹	380	15	6	Retain	
T49	*Murraya paniculata*	九里香	160	4	2	Retain	
T50	*Bauhinia purpurea*	紅花羊蹄甲	420	12	8	Retain	
T51	*Bauhinia purpurea*	紅花羊蹄甲	150	6	2	Retain	
T52	*Bauhinia purpurea*	紅花羊蹄甲	120	9	4	Retain	
T53	*Bauhinia purpurea*	紅花羊蹄甲	150	11	5	Retain	
T54	*Macaranga tanarius* var. *tomentosa*	血桐	200	9	6	Retain	
T56	*Cinnamomum burmannii*	陰香	200	10	5	Fell	emergent tree felling due to natural causes on 8 Nov 2024
T57	*Cinnamomum burmannii*	陰香	100	4	3	Fell	emergent tree felling due to natural causes on 7 May 2024
T58	Dead Tree	死樹	250	9	6	Fell	emergent tree felling due to natural causes on 11 Jan 2024
T59	Dead Tree	死樹	150	8	2	Fell	emergent tree felling due to natural causes on 30 Oct 2023
T60	*Macaranga tanarius* var. *tomentosa*	血桐	290	8	6	Retain	
T61	*Ficus hispida*	對葉榕	250	7	6	Retain	
T62	*Ligustrum sinense*	山指甲	100	5	3	Retain	
T63	*Ficus variegata*	青果榕	500	18	10	Retain	
T64	*Litsea monopetala*	假柿木薑子	570	17	11	Retain	
T65	*Alangium chinense*	八角楓	200	12	5	Fell	emergent tree felling due to natural causes on 30 May 2024
T66	*Alangium chinense*	八角楓	270	10	6	Fell	emergent tree felling due to natural causes on 30 May 2024
T67	*Ficus hispida*	對葉榕	150	9	3	Retain	
T68	*Microcos nervosa*	布渣葉	120	7	4	Retain	
T69	*Ficus elastica*	印度橡樹	4000	29	50	Retain	OVT (confirmed positive of brown root rot disease (BRRD))
T75	*Dimocarpus longan*	龍眼	300	10	6	Fell	
T76	*Plumeria rubra*	雞蛋花	350	7	4	Fell	
T77	*Ficus microcarpa*	細葉榕	3000	20	17	Fell	

Summary Table

	Number of Tree(s)
Tree be to Retained	15
Tree to be Transplanted	4
Tree to be Felled	38
Total Number of Existing Tree(s)	57

Annex C
Tree Photo Records of Individual Tree

ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



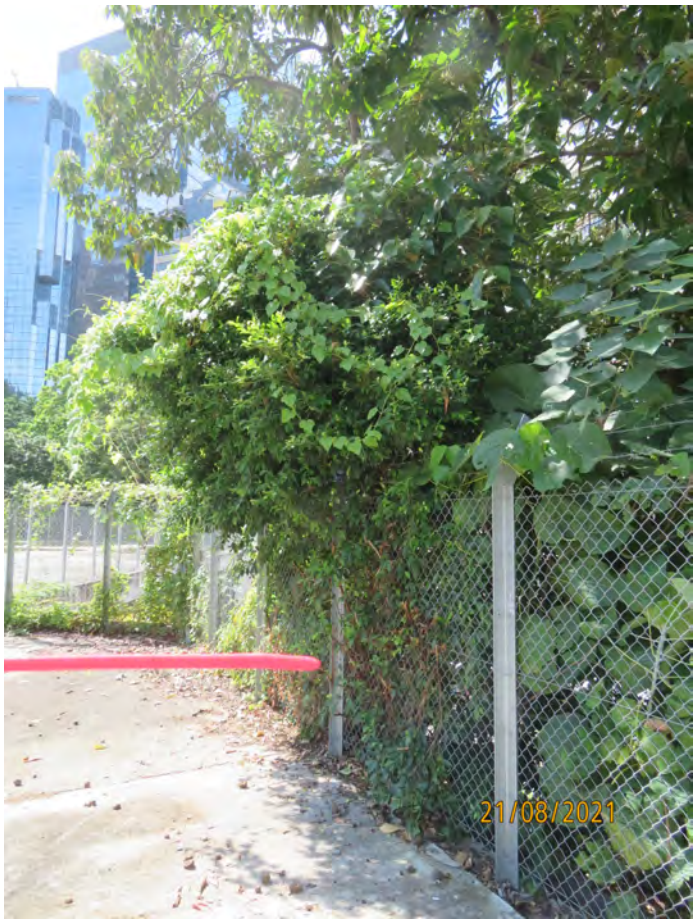
T16 - 1 Overview.JPG



T16 - Branch wound.JPG



T17 - 1 Overview.JPG

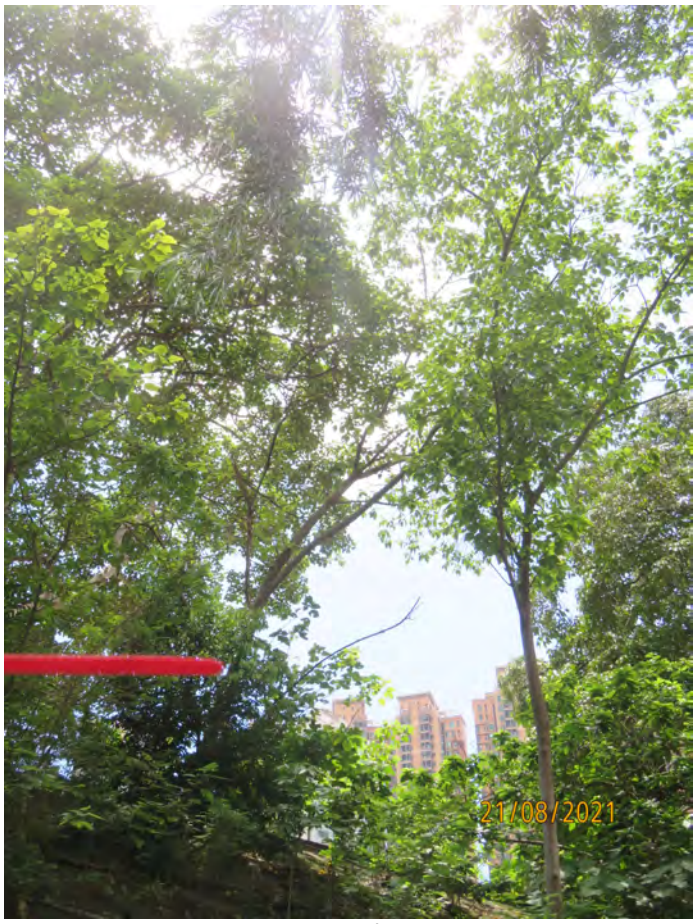


T18 - 1 Overview.JPG

ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



T19 - 1 Overview.JPG



T20 - 1 Overview.JPG



T20 - Dead branches.JPG



T20A - Overview.jpg

ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



T21 - 1 Overview.JPG



T22 - 1 Overview.JPG

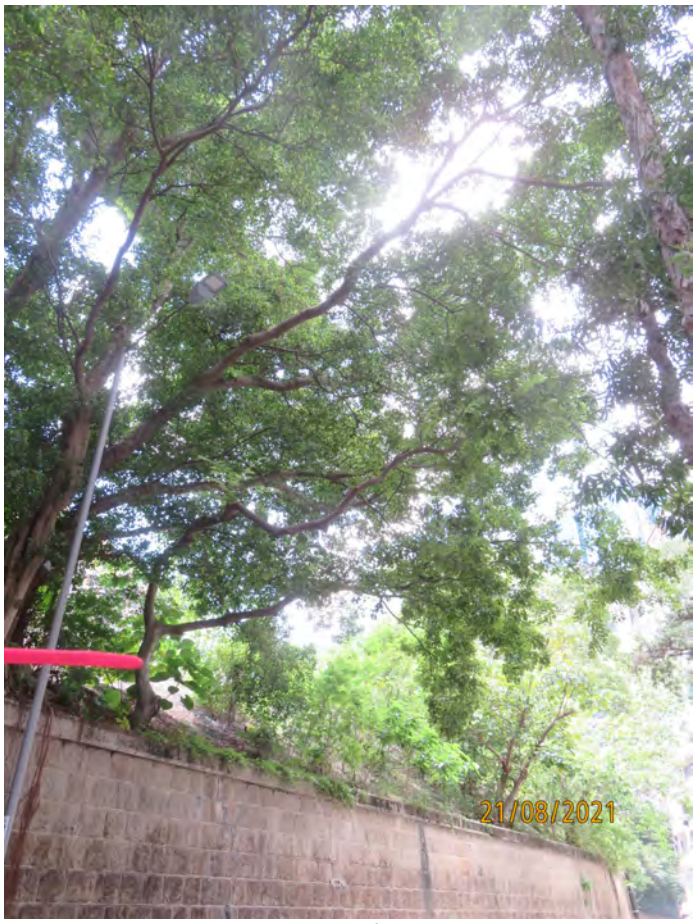


T23 - 1 Overview.JPG



T23 - Exposed root.JPG

ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



T24 - 1 Overview.JPG



T24 - Trunk wound with sap flow.JPG



T25 - 1 Overview.JPG



T26 - 0 Tag.JPG

ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



T26 - 1 Overview.JPG



T26 - 2 Overview.jpg



T27 - 0 Tag.JPG



T27 - 1 Overview.JPG

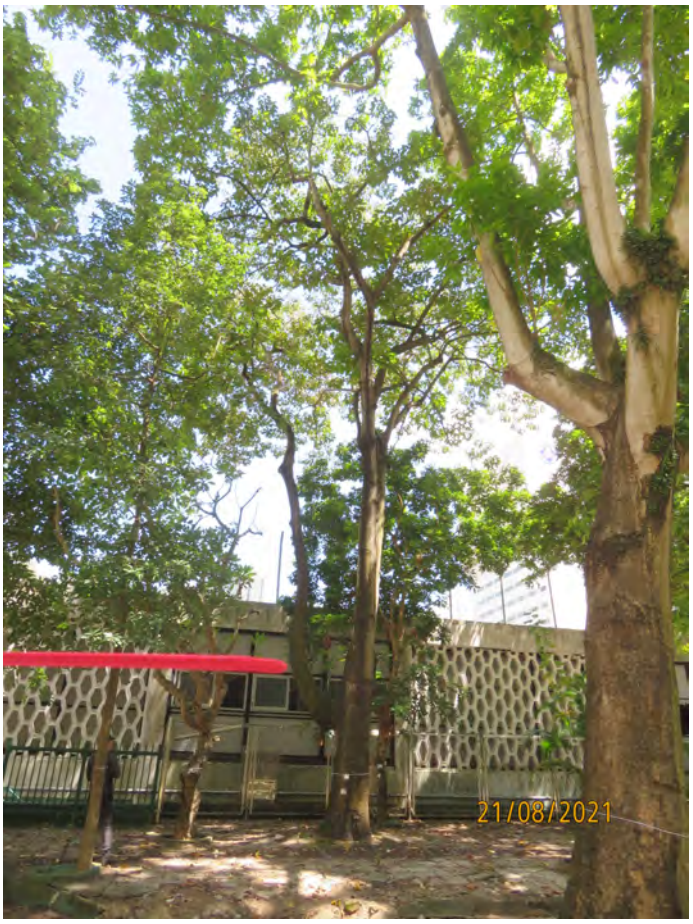
ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



T27 - 2 Overview.jpg



T28 - 0 Tag.JPG



T28 - 1 Overview.JPG



T29 - 0 Tag.JPG

ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



T29 - 1 Overview.JPG



T29 - 2 Overview.jpg



T30 - 0 Tag.JPG



T30 - 1 Overview.JPG

ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



T31 - 0 Tag.JPG



T31 - 1 Overview.JPG



T31 - Branch wound.JPG



T32 - 0 Tag.JPG

ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



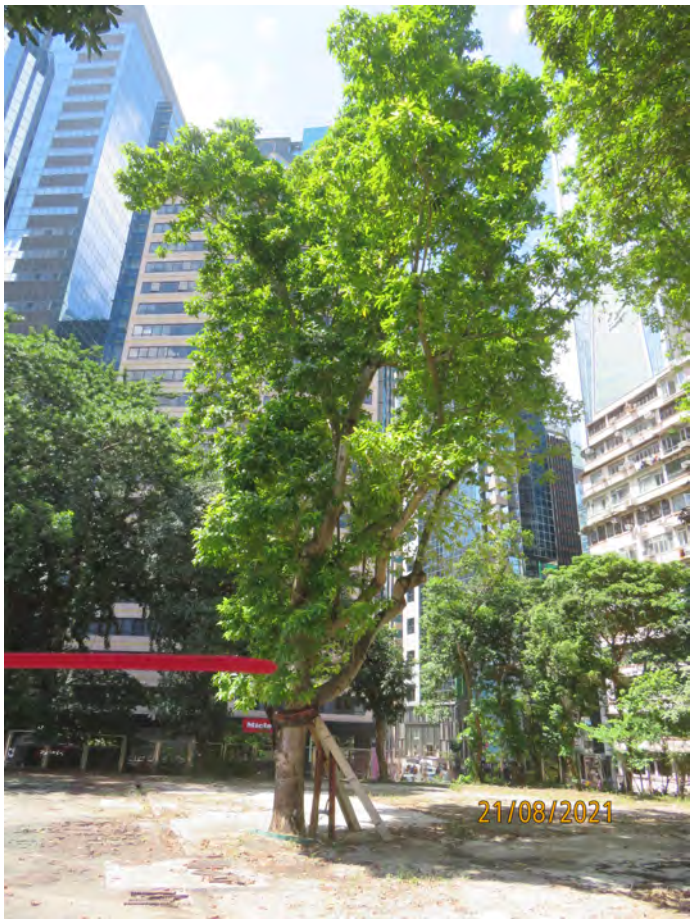
T32 - 1 Overview.JPG



T32 - 2 Overview.jpg



T33 - 0 Tag.JPG



T33 - 1 Overview.JPG

ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



T33 - Branch wound.JPG



T34 - 0 Tag.JPG



T34 - 1 Overview.JPG



T34 - Dead branches.JPG

ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



T35 - 0 Tag.JPG



T35 - 1 Overview.JPG



T35 - Dead branches.JPG



T36 - 0 Tag.JPG

ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



T36 - 1 Overview.JPG



T36 - Trunk wound.JPG



T37 - 0 Tag.JPG



T37 - 1 Overview.JPG

ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



T38 - 0 Tag.JPG



T38 - 1 Overview.JPG



T38 - Trunk wound.JPG



T39 - 0 Tag.JPG

ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



T39 - 1 Overview.JPG



T39 - Epicormcis and climbers.JPG



T40 - 0 Tag.JPG



T40 - 1 Overview.JPG

ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



T41 - 0 Tag.JPG



T41 - 1 Overview.JPG



T41 - Severe basal cavity.JPG



T41 - Sparse and dieback.JPG

ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



T42 - 0 Tag.JPG



T42 - 1 Overview.JPG



T43 - 0 Tag.JPG



T43 - 1 Overview.JPG

ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



T43 - Trunk cavity.JPG



T44 - 0 Tag.JPG



T44 - 1 Overview.JPG



T44 - Broken branch.JPG

ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



T44 - Broken top.JPG



T45 - 0 Tag.JPG



T45 - 1 Overview.JPG



T45 - Dead branches.JPG

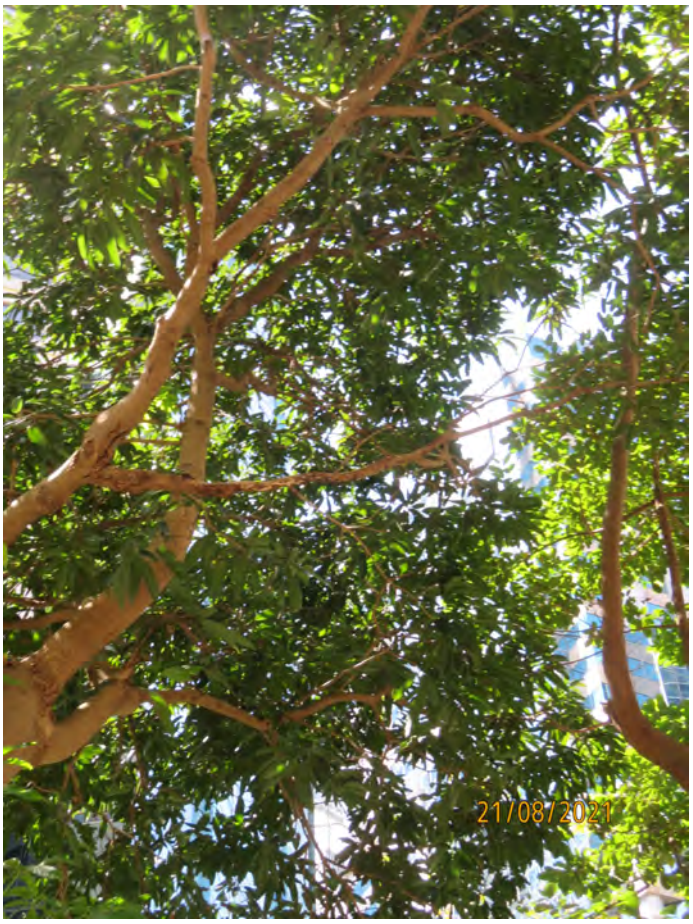
ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



T46 - 0 Tag.JPG



T46 - 1 Overview.JPG



T46 - Dead branches.JPG



T46 - Trunk cavity.JPG

ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



T47 - 0 Tag.JPG



T47 - 1 Overview.JPG



T48 - 0 Tag.JPG



T48 - 1 Overview.JPG

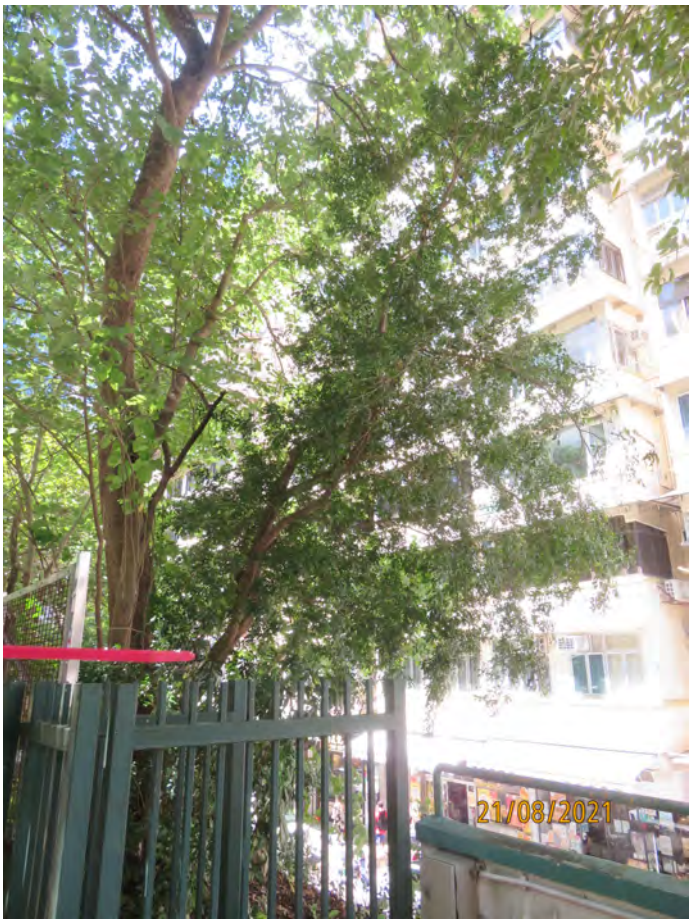
ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



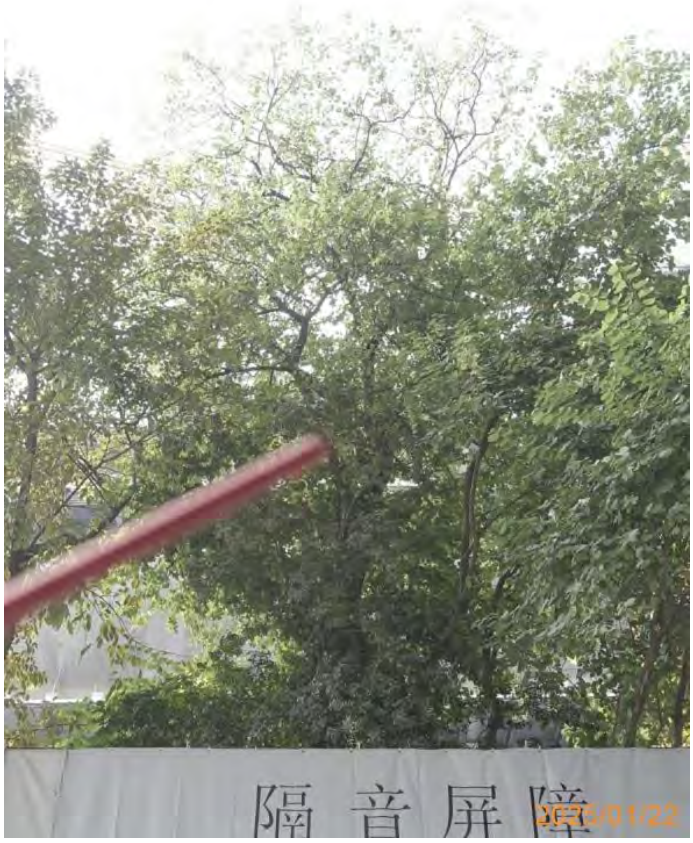
T48 - 2 Overview.jpg



T49 - 0 Tag.JPG



T49 - 1 Overview.JPG



T49 - 2 Overview.jpeg

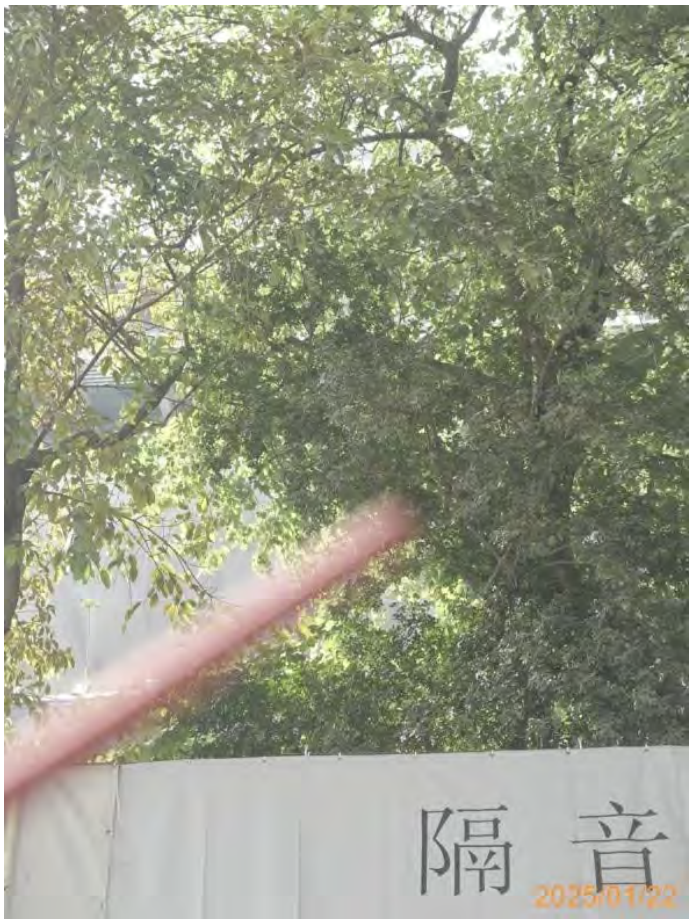
ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



T50 - 0 Tag.JPG



T50 - 1 Overview.JPG

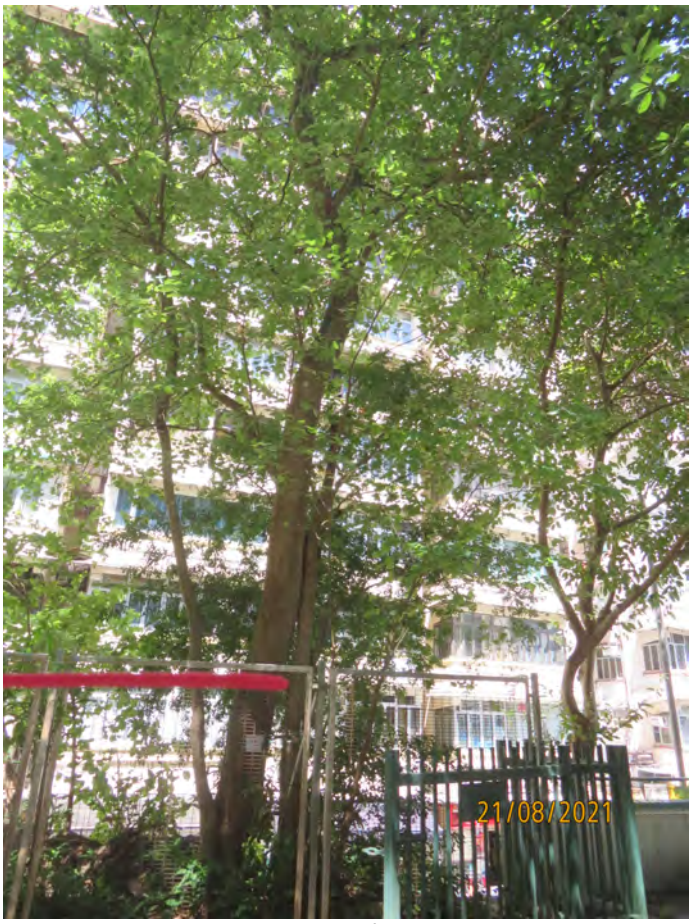


T50 - 2 Overview.jpg



T51 - 0 Tag.JPG

ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



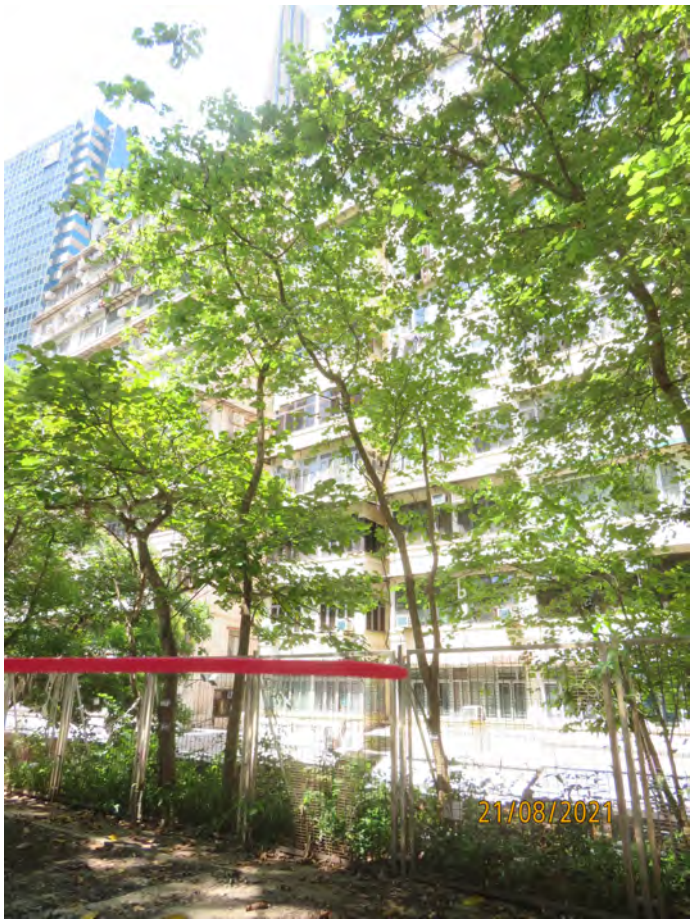
T51 - 1 Overview.JPG



T51 - 2 Overview.jpg



T52 - 0 Tag.JPG



T52 - 1 Overview.JPG

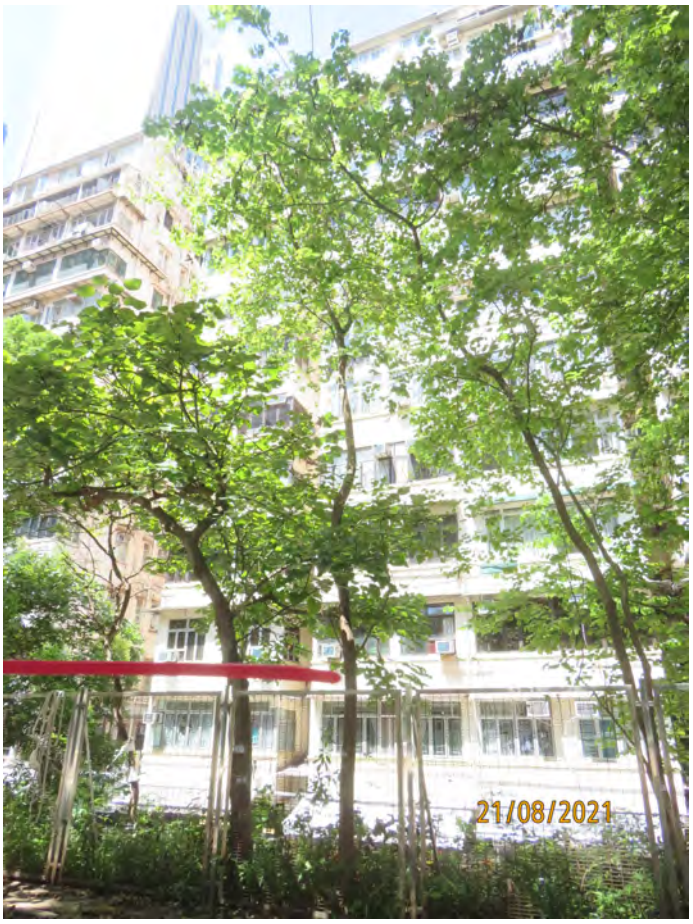
ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



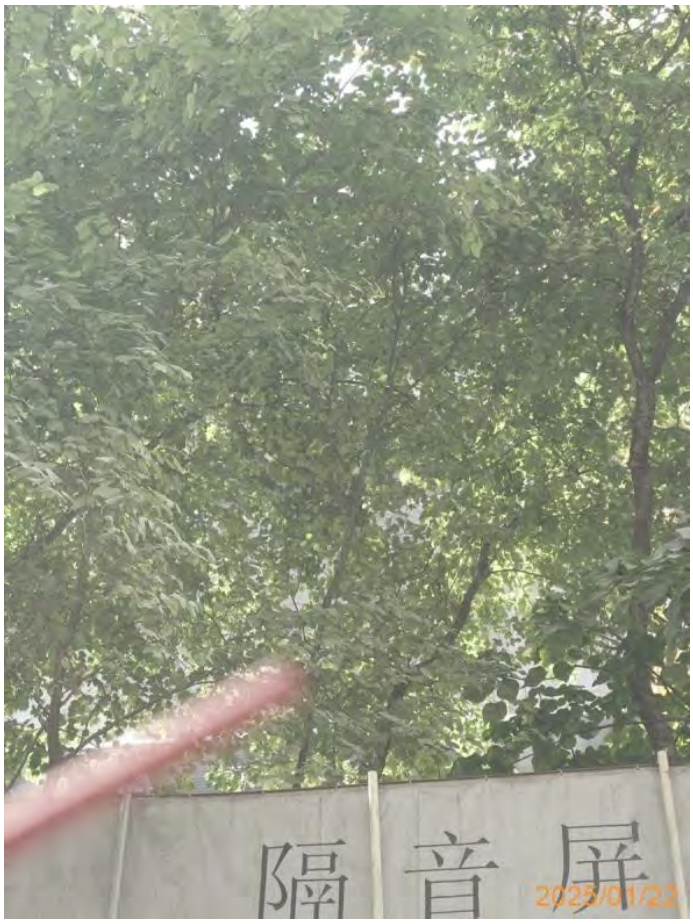
T52 - 2 Overview.jpg



T53 - 0 Tag.JPG



T53 - 1 Overview.JPG



T53 - 2 Overview.jpg

ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



T54 - 0 Tag.JPG



T54 - 1 Overview.JPG



T54 - 2 Overview.jpg



T54 - Trunk embedded.JPG

ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



T55 - 0 Tag.JPG



T55 - 1 Overview.JPG



T56 - 0 Tag.JPG



T56 - 1 Overview.JPG

ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



T57 - 0 Tag.JPG



T57 - 1 Overview.JPG



T58 - 0 Tag.JPG



T58 - 1 Overview.JPG

ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



T59 - 0 Tag.JPG



T59 - 1 Overview.JPG



T60 - 0 Tag.JPG



T60 - 1 Overview.JPG

ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



T60 - 2 Overview.jpg



T60 - Cut on trunk.JPG



T60 - Dead branches.JPG



T61 - 0 Tag.JPG

ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



T61 - 1 Overview.JPG



T61 - 2 Overview.jpg



T62 - 0 Tag.JPG



T62 - 1 Overview.JPG

ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



T62 - 2 Overview.jpg



T63 - 0 Tag.JPG



T63 - 1 Overview.JPG



T63 - 2 Overview.jpg

ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



T64 - 0 Tag.JPG



T64 - 1 Overview.JPG



T64 - 2 Overview.jpg



T65 - 0 Tag.JPG

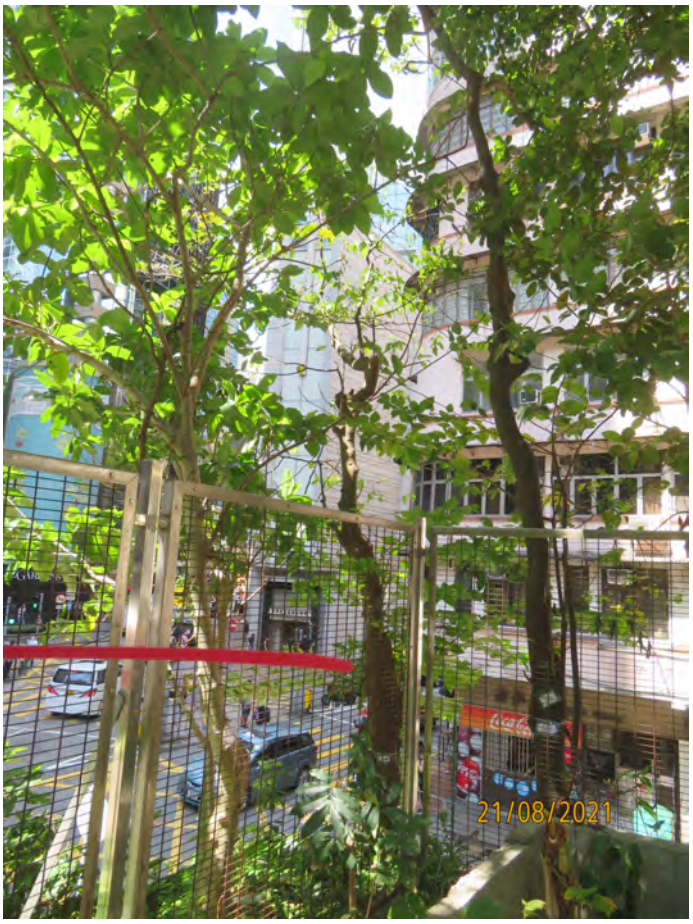
ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



T65 - 1 Overview.JPG



T66 - 0 Tag.JPG

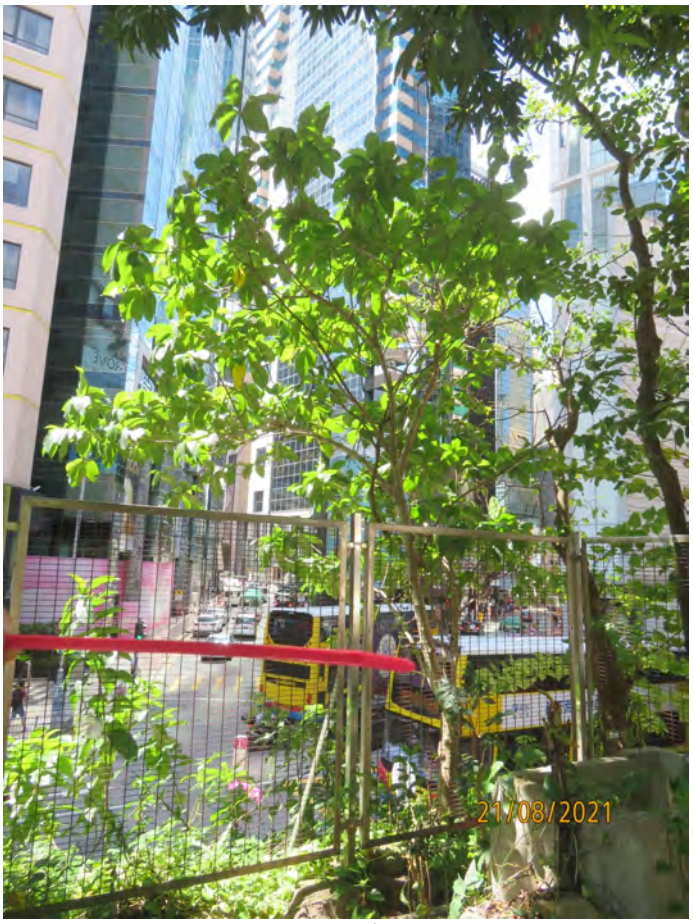


T66 - 1 Overview.JPG



T67 - 0 Tag.JPG

ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



T67 - 1 Overview.JPG



T67 - 2 Overview.jpg



T67 - Trunk cavity.JPG



T68 - 0 Overview.JPG

ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



T68 - 1 Tag.JPG



T68 - 2 Overview.jpg



T69 - 0 Tag.JPG



T69 - 1 Overview.JPG

ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



T69 - 2 Overview.jpg



T69 - Abnormal leaf size at treetop.JPG



T69 - Branch wound (1).JPG



T69 - Branch wound (2).JPG

ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



T69 - Branch wound (3).JPG



T69 - Dead branches (1).JPG



T69 - Dead branches (2).JPG



T69 - Exposed dead wood (1).JPG

ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



T69 - Exposed dead wood (2).JPG



T69 - Exposed dead wood (3).JPG



T75 - 0 Tag.JPG



T75 - 1 Overview.JPG

ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



T76 - 0 Tag.JPG



T76 - 1 Overview.JPG



T77 - 0 Tag.JPG



T77 - 1 Overview.JPG

ANNEX C - PHOTOGRAPHIC RECORD OF EXISTING TREE



T77 - Trunk embedded.JPG

銅鑼灣
Causeway Bay



Annex D
Air Ventilation Assessment

Patchway Holdings (HK) Limited

Proposed Commercial Development at Caroline Hill Road, Hong Kong

Air Ventilation Assessment – Initial Study

--

Issue 1 | Aug 2025

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number

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ARUP

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Appendices

Appendix A
Layout Plans of Baseline and Proposed

Appendix B
Layout Plans of Planned Development/WIP

Appendix C
Contour Plots of Velocity Ratio (VR)

Appendix D
Vector Plots of Velocity Ratio (VR)

Appendix E
Velocity Ratio (VR) at Test Points

1 Introduction

1.1 Background

Ove Arup & Partners Hong Kong limited (Arup) was instructed to conduct an Air Ventilation Assessment (AVA) – Initial Study for the Proposed Commercial Development at Caroline Hill Road, Hong Kong (the Application Site).

The Development site is currently zoned as "Commercial (2)" ("C(2)") on the Approved Wong Nai Chung Outline Zoning Plan (OZP) No. S/H7/21. This document is to support the Section 16 application.

The *Technical Guide for Air Ventilation Assessment for the Developments in Hong Kong (Annex A of Technical Circular No.1/06 for Air Ventilation Assessments)*[1] *(termed as AVA Technical Circular hereafter)* dated 19 July 2006 lay down the foundation of this method statement.

1.2 AVA Initial Study

Among all available wind data, an Initial Study will be conducted by using Computational Fluid Dynamics (CFD) techniques. It aims to achieve the following tasks:

- Initially assesses the characteristics of the wind availability of the site;
- Gives a general pattern and a rough quantitative estimate of the wind performance at the pedestrian level using Velocity VR;
- Identify the air paths within the site ascertain their effectiveness; and
- Identify good design features and problem areas if any and recommend mitigation measures.

2 Location and Site Characteristics

The Application Site is located at the junction of Leighton Road and Caroline Hill Road, to the northwest of the open space of South China Athletic Association.

The Study Site is generally surrounded by densely built-up area in Causeway Bay area to its northeast and northwest, with mostly high-rise buildings up to +209.7mPD with some mid-rise buildings with around +40-50mPD; a hilly range with residential towers, such as Leighton Hill with +170.7mPD, Beverly Hill with +188.3mPD, to its west and southwest; buildings from South China Athletic Association (+90.7mPD) to its immediate southeast, open space provided by several recreational spaces such as South China Athletic Association, Disciplined Services Sports and Recreational Club, So Kon Po Recreation Ground, and Indian Recreation Club, as well as a hill to further southeast. The locations of major building blocks are indicated in Figure 1, with the detailed surrounding building context shown in Figure 1.

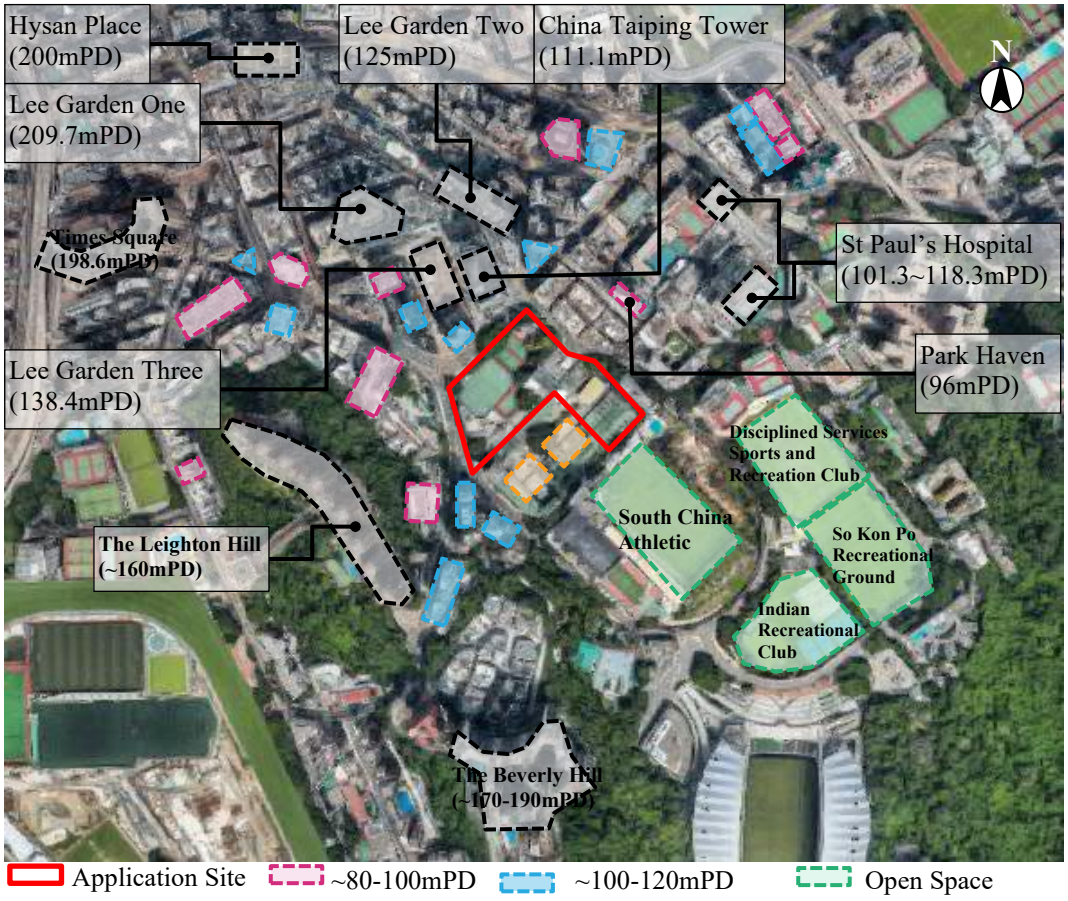

Figure 1 Site Location and Existing Surrounding Developments

2.1 Future Development

According to the GIS data and GeoInfo Map[1], there are several work-in-progress (WIP) sites and planned development within the Surrounding Area, which will also be considered in this AVA – Initial Study. The locations of these sites are shown in Figure 2. The building blocks of each site are shown in Appendix B.

Planned Development

The planned development is assumed based on the latest public information available:

- #1: 281 Gloucester Road Site - Planning Application A/H6/89
- #2: 17A and 17B Ventris Road Site – As there is no layout shown on the latest approved Planning Application A/H7/165. The building layout is assumed with Planning Application No. M/H9/11/9.
- #3: District Court at Caroline Hill Road – PWSC(2022-23)3 [1]
- #4: Planned Development on Construction of Dry Weather Flow Interceptor at Hung Hom and Causeway Bay, in Planning Application No. A/H8/437
- #5: Planned Development on 8 Leighton Road in Planning Application No. A/H7/183.

WIP Sites

The WIP sites is assumed based on the latest public information available:

- #6: 472 Hennessey Road; #7: 15 Matheson Street

  The building massing is assumed according to information from Building Department (BD) with full site coverage up the 24 storeys for #5[2] and latest information of 27 storeys for #6[3].

- #8: 22-24 Leighton Road; #9: 42-44 Yiu Wa Street

  As there is no publicly available information for these sites, the building massing are assumed to be full site coverage up to the maximum allowable height from Approved Causeway Bay Outline Zoning Plan (OZP) No. S/H5/17, the Approved Wong Nai Chung Outline Zoning Plan (OZP) No. S/H5/21, the Approved Wan Chai Outline Zoning Plan (OZP) No. S/H5/28, Building (Planning) Regulation.

[1] The key features of District Court at Caroline Hill Road, including building height, building gap separations, are similar between the reference and the latest information received from ArchSD as of April 11, 2024.

[1] http://www2.map.gov.hk/gih3/view/index.jsp
[2] https://m.mingpao.com/fin/dailyp2.php?node=1620759618714&issue=20210512
[3] https://www.landvision.com.hk/causeway-bay/11-15-matheson-street/b-5608/

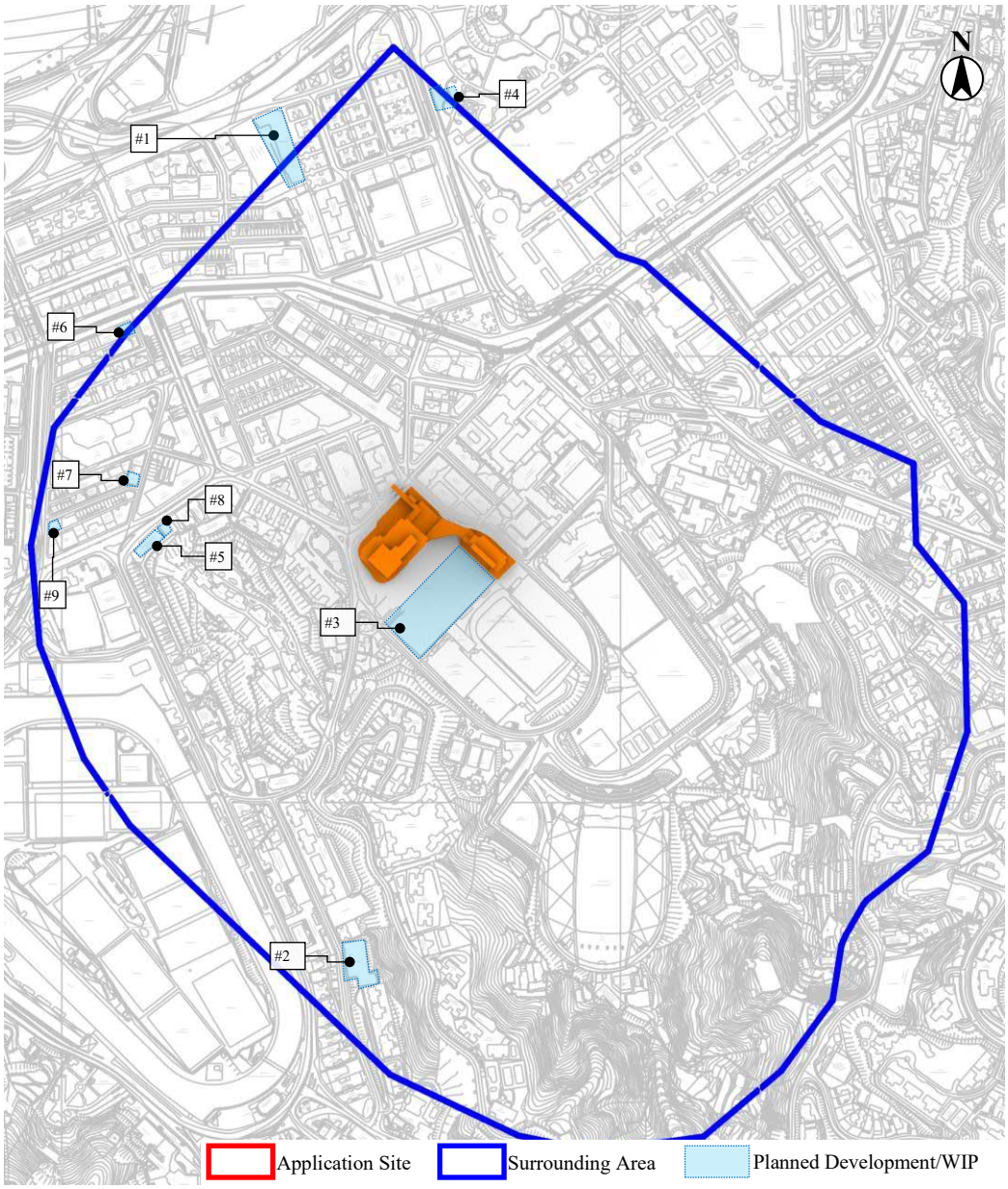

Figure 2 Location of the Planned/WIP Site around the Study Site

3 Proposed Methodology for Initial Study

3.1 Wind Data

As per the *AVA Technical Circular*[1], at least 75% of the time in a typical reference year (frequency of occurrence) would be studied under both annual and summer wind condition in the Initial Study when using a Computational Fluid Dynamics (CFD) modelling technique. Since the CFD approach is adopted for the present project's AVA, this criterion together with the following selected wind data are to be applied as the methodology.

The site wind availability of the Study Site and its surrounding is an essential parameter for AVA. As stipulated in the *AVA Technical Circular* [1] the site wind availability would be presented by using appropriate mathematical models. Planning Department (PlanD) has set up a set of simulated meso-scale data of Regional Atmospheric Modelling System (RAMS) of the territory for AVA study, which could be downloaded at Planning Department Website [2]. Simulated meso-scale data of Regional Atmospheric Modelling System (RAMS) from PlanD will therefore be adopted in this AVA Study. The location of the Development falls within the location grid (x: 083, y:033) in the RAMS database as indicated in Figure 3.

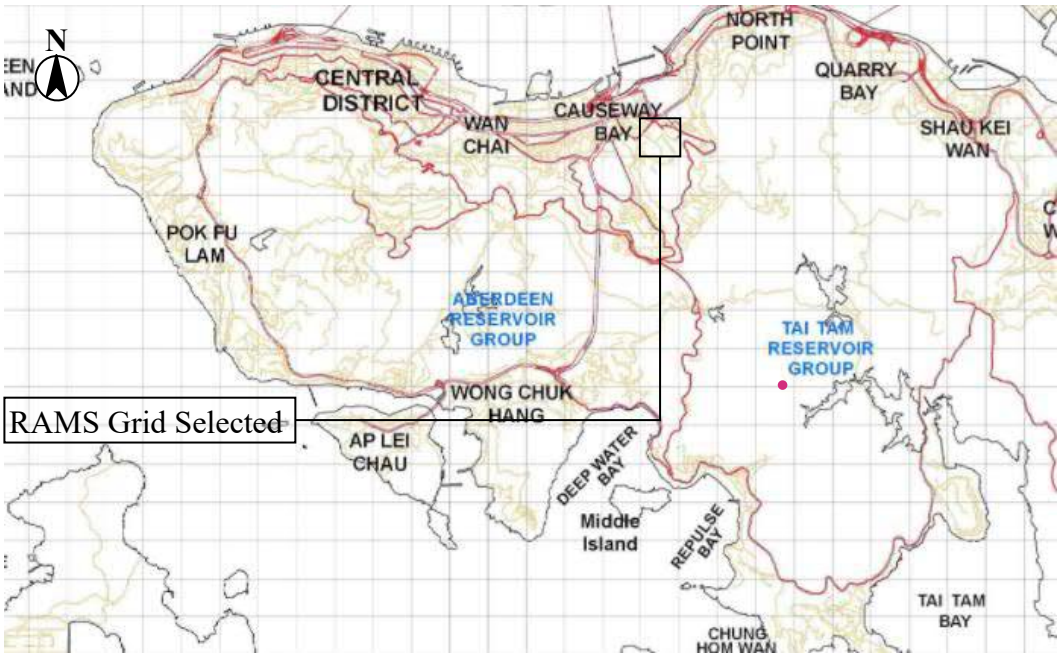

Figure 3 RAMS Grid and the Development Location

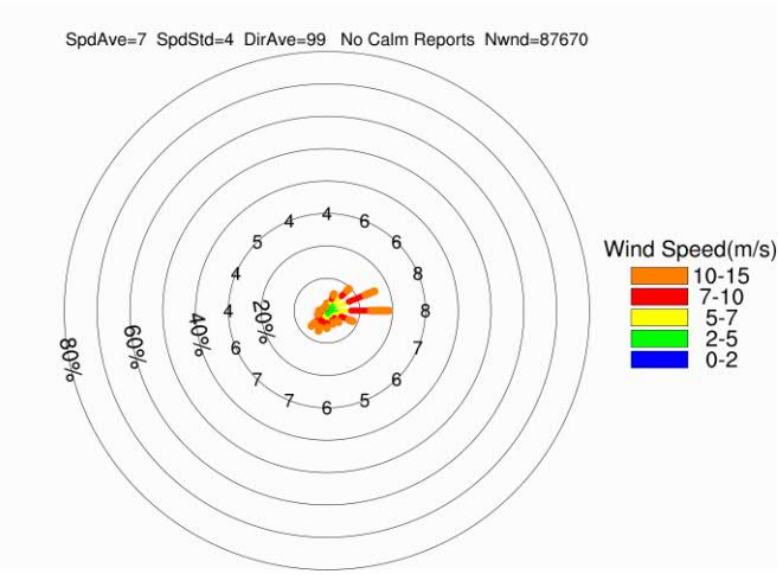

Figure 4 RAMS annual wind rose at 500mPD

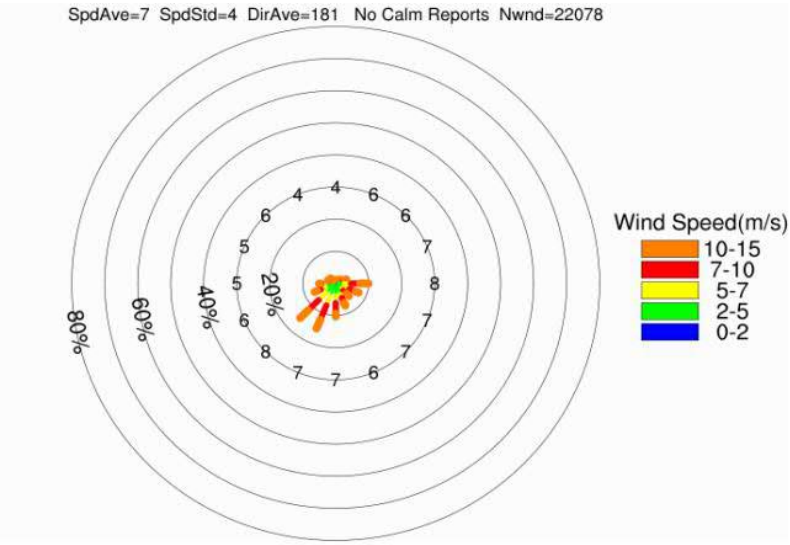

Figure 5 RAMS summer wind rose at 500mPD

3.1.1 Wind Directions

As mentioned in Section 3.1, the RAMS wind data of location grid (x:083, y:033) is adopted for the site wind availability in this study.

3.1.1.1 Annual Prevailing Wind

Eight prevailing wind directions (highlighted in red colour in Table 1) are considered in this AVA Study which covers 78.5% of the total annual wind frequency. They are north-north-easterly (5.6%), north-easterly (9.6%), east-north-easterly (16.0%), easterly (19.3%), east-south-easterly (8.6%), south (5.6%), south-south-westerly (6.9%) and south-westerly (6.9%) winds.

Table 1 Annual Wind Frequency

Wind Direction	N	NNE	NE	ENE	E	ESE	SE	SSE	
Frequency	2.3%	5.6%	9.6%	16.0%	19.3%	8.6%	5.1%	4.5%	
Wind Direction	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
Frequency	5.6%	6.9%	6.9%	3.1%	2.4%	1.3%	1.3%	1.3%	78.5%

** The wind frequency showing in red colour represents the selected winds for the CFD simulation.*

3.1.1.2 Summer Prevailing Wind

Eight prevailing wind directions (highlighted in red colour in Table 2) are considered in this AVA Study which covers 80.6% of the total summer wind frequency. They are easterly (10.4%), east-south-easterly (7.6%), south-easterly (5.9%), south-south-easterly (7.6%), southerly (10.7%), south-south-westerly (15.6%), south-westerly (15.8%) and west-south-westerly (7.0%) winds.

Table 2 Summer Wind Frequency

Wind Direction	N	NNE	NE	ENE	E	ESE	SE	SSE	
Frequency	1.0%	1.2%	1.9%	3.8%	10.4%	7.6%	5.9%	7.6%	
Wind Direction	S	SSW	SW	WSW	W	WNW	NW	NNW	Sum
Frequency	10.7%	15.6%	15.8%	7.0%	5.1%	2.6%	2.3%	1.3%	80.6%

** The wind frequency showing in red colour represents the recommended wind direction for the CFD simulation.*

3.1.2 Wind Profiles

The profiles of wind speed from the PlanD RAMS database (x:083, y:033) are shown in below.

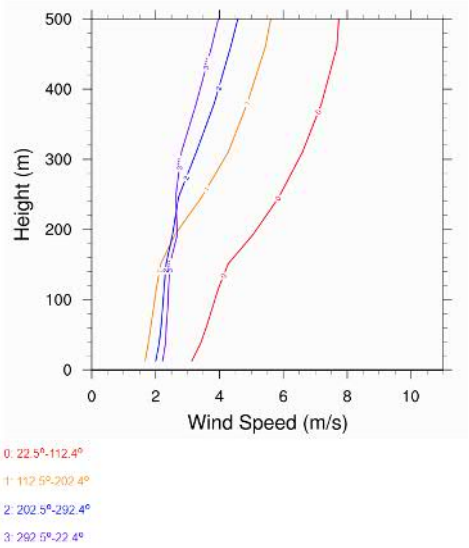

Figure 6 Normalised mean wind speed profile measured in 16 directions

The RAMS wind data is to be adopted in the AVA Initial study. It is recommended to extract the RAMS wind profile data directly as it can reflect the exact wind data. For wind data above 500m height, the velocity is assumed the same as the data at 500m. These wind data will be the input parameters in the CFD simulation.

3.2 Assessment and Surrounding Areas

With reference to the AVA Technical Circular [1] and the previous AVA Study from PLNQ B-1/AVA 2015[3], the Assessment Area and the Surrounding Area is extended beyond 1H and 2H from the site boundary with min. 200m and 400m respectively, as shown in Figure 7.

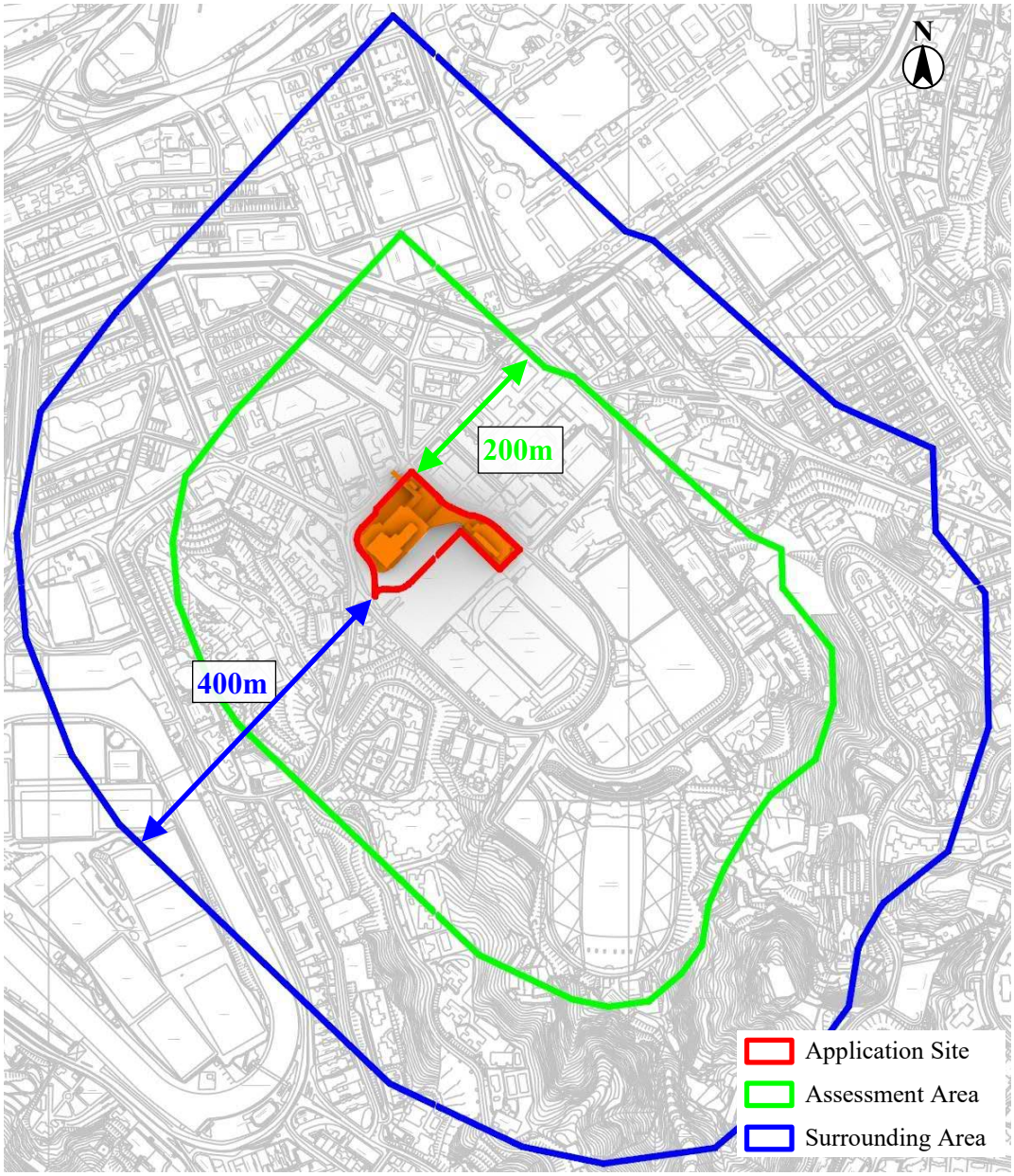

Figure 7 Application Site (red), Assessment Area (green) and Surrounding Area (blue)

Since there is no internationally recognized guideline or standard on using CFD for outdoor urban scale studies, reference was made to other CFD guidelines on different wind flow aspects to suggest a study approach for current study. The detail parameters are summarized in Table 3. The computational domain will be about 4600m (L) x 4300m (W) x 2100m (H), as shown in Figure 8. The surrounding model is shown in Figure 9 to Figure 12.

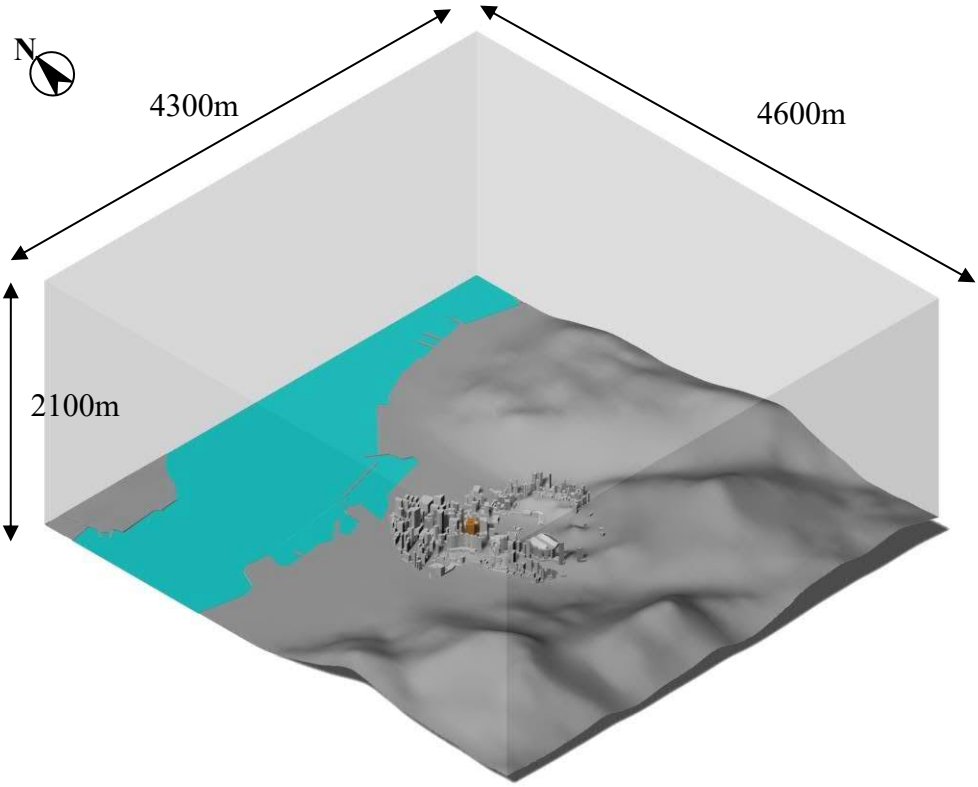

Figure 8 3D View of the Domain



Figure 9 Northerly view of Surrounding Buildings

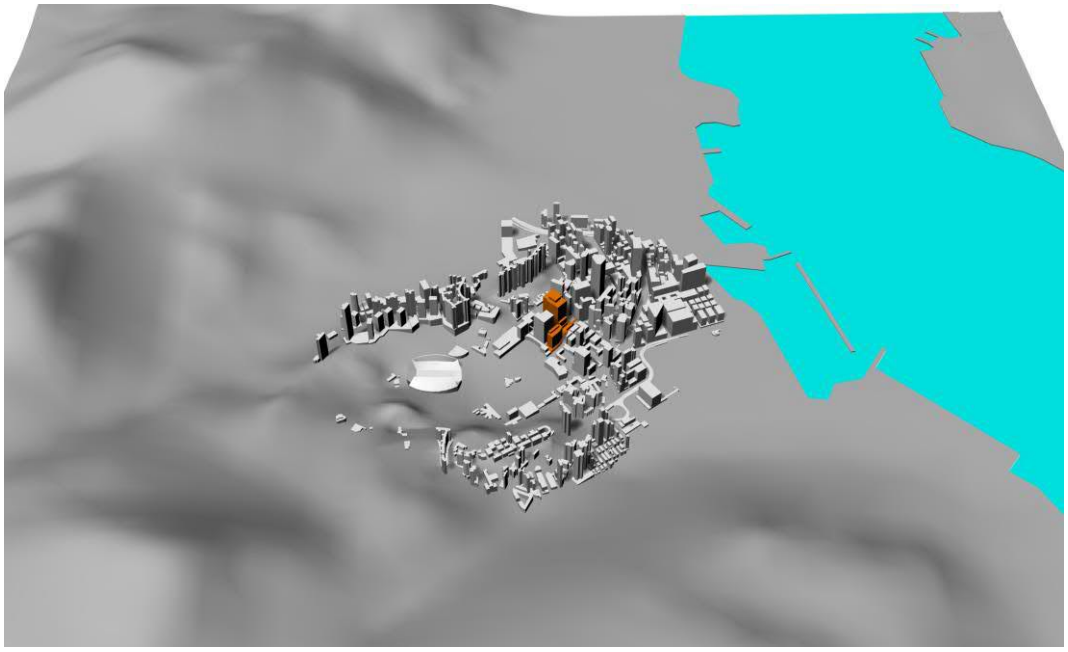

Figure 10 Easterly view of Surrounding Buildings

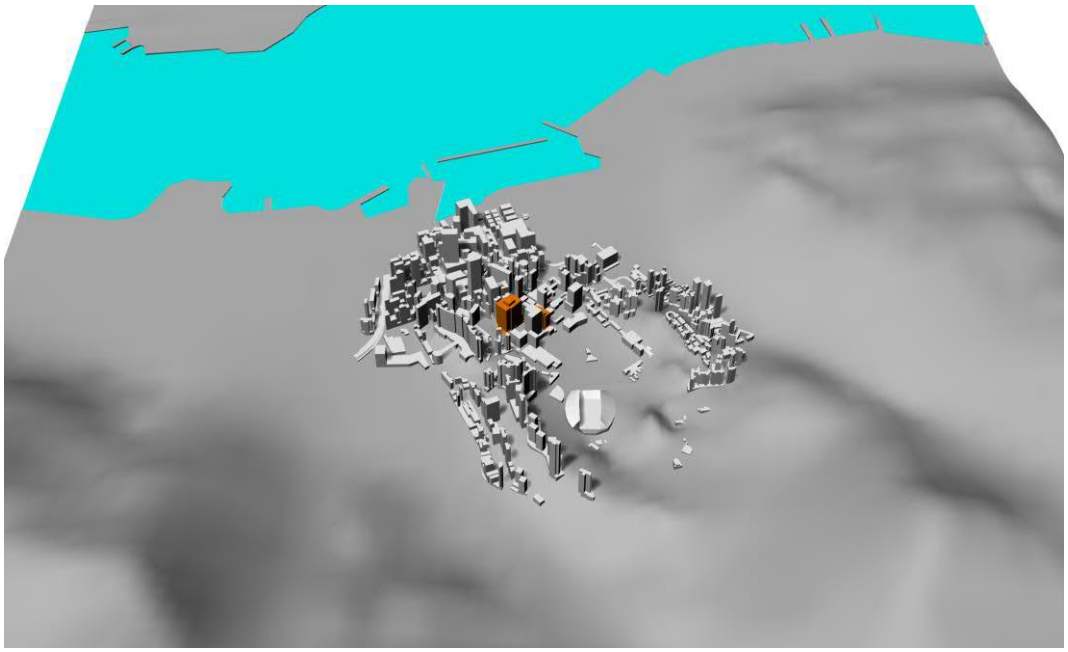

Figure 11 Southerly view of Surrounding Buildings

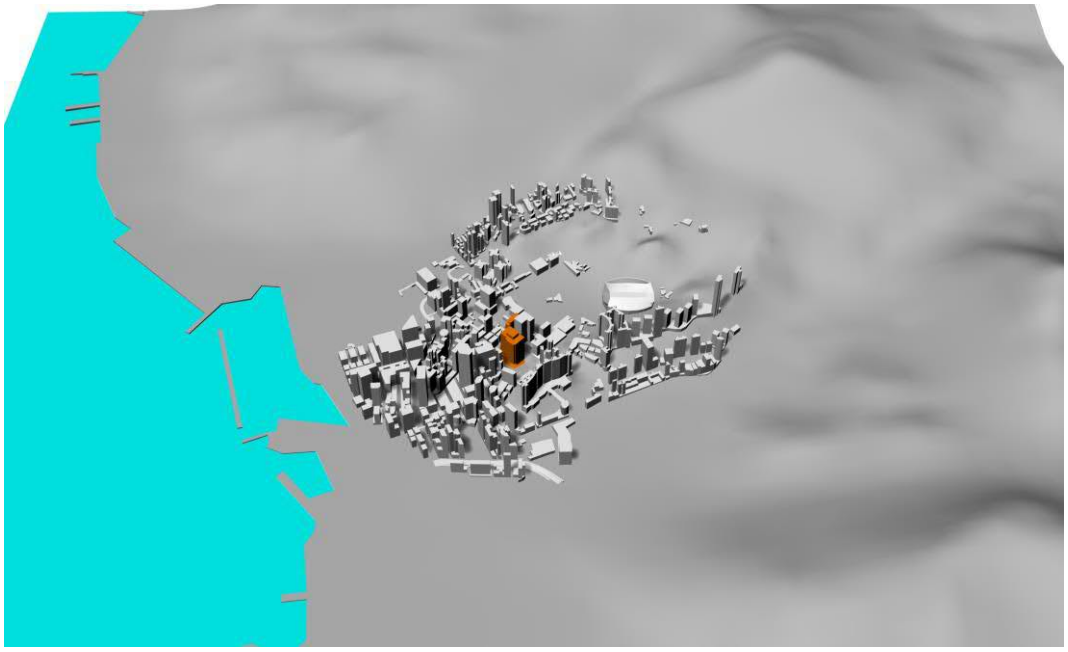

Figure 12 Westerly view of Surrounding Buildings

3.3 Technical Details for CFD simulation

3.3.1 Assessment Tool

Computational Fluid Dynamics (CFD) technique is adopted for the AVA Initial Study. A well-recognised commercial CFD package ANSYS ICEM-CFD and Ansys Fluent is used. Both software are widely used in the industry for AVA studies. With the use of three-dimensional CFD method, the local airflow distribution can be visualised in detail. The air velocity distribution within the flow domain, being affected by the site-specific design and the surrounding buildings, is simulated under the prevailing wind conditions in a year.

3.3.2 Mesh Setup

Body-fitted unstructured grid technique is used to fit the geometry to reflect the complexity of the development geometry. A prism layer of 3m above ground (totally 6 layers and each layer is 0.5m) is incorporated in the meshing to better capture the approaching wind as shown in Figure 13. The expansion ratio is 1.3 while the maximum blockage ratio is 3%.

Finer grid system is applied to the most concerned area based on preliminary judgement, while coarse grid system is applied to the area of surrounding buildings for better computational performance while maintaining satisfactory result. The mesh for the computational model is shown in Figure 14.

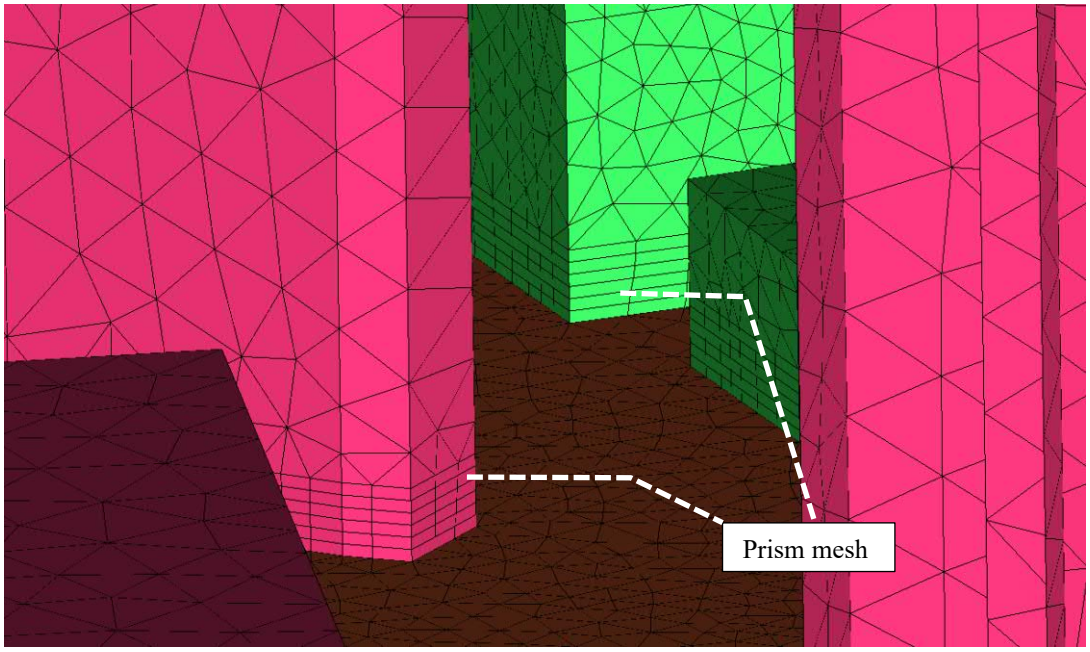

Figure 13 Prism mesh near the pedestrian level

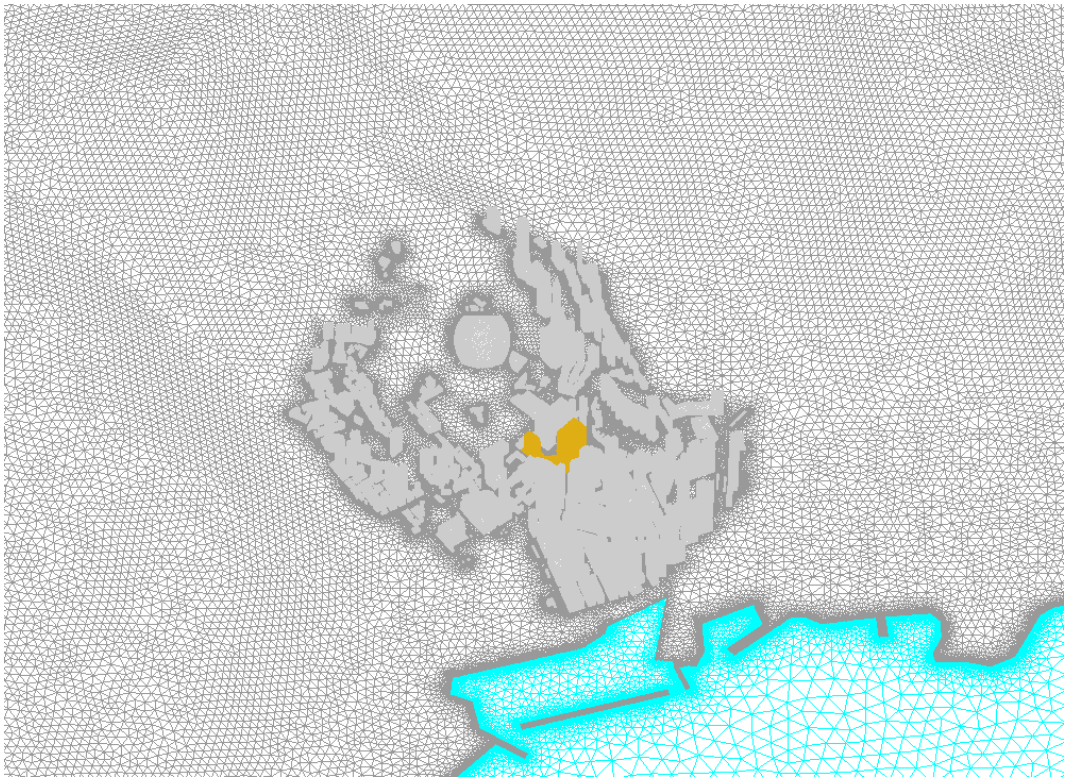

Figure 14 Mesh of the computational model

3.3.3 Turbulence Model

As highlighted in recent academic and industrial research literatures by CFD practitioners, the widely used standard k - ε turbulence model technique may not adequately model the effects of large scale turbulence around buildings and ignores the wind gusts leading to the relatively poor prediction in the recirculation regions around building. Therefore, in this CFD simulation, realizable $k - \varepsilon$ turbulence modelling method is applied. This technique provides more accurate representation of the levels of turbulence that can be expected in an urban environment.

3.3.4 Calculation Method

The Segregated Flow model solves the flow equations in a segregated manner. The linkage between the momentum and continuity equations is based on the predictor-corrector approach. A collocated variable arrangement and a Rhie-and-Chow-type pressure-velocity coupling combined with a SIMPLE-type algorithm is adopted. A higher order differencing scheme is applied to discretize the governing equations. The convergence criterion is set to 0.0001 on mass conservation. The calculation repeat until the solution satisfies this convergence criterion.

The prevailing wind directions are set to inlet boundary of the model with wind profile as detailed in Section 3.1.2. The downwind boundary is set to pressure with value of atmospheric pressure. The top and side boundaries are set to symmetry. In addition, to eliminate the boundary effects, the computational domain is built beyond the Surrounding Area as required in the Technical Circular.

3.3.5 Summary

Since there is no internationally recognized guideline or standard on using CFD for outdoor urban scale studies, reference was made to other CFD guidelines on different wind flow aspects to suggest a study approach for current study. The detail parameters are summarized in Table 3.

Table 3 Detail parameters to be adopted in the CFD

	CFD Model
Model Scale	Real Scale model
Model details	Only include Topography, Buildings blocks, Streets/Highways, no landscape is included
Domain	4600m(L) x 4300m(W) x 2100m(H)
Assessment Area	≥ 1H area
Surrounding building Area	≥ 2H area
Grid Expansion Ratio	The grid should satisfy the grid resolution requirement with maximum expansion ratio = 1.3
Prismatic layer	6 layer of prismatic layers and 0.5m each (i.e. total 3m above ground)
Inflow boundary Condition	Incoming wind profile as measured from RAMS
Outflow boundary	Pressure boundary condition with dynamic pressure equal to zero

Wall boundary condition	Logarithmic law boundary
Turbulence Model	Realisable k-ε turbulence model
Solving algorithms	Rhie and Chow SIMPLE for momentum equation Hybrid model for all other equations
Blockage ratio	< 3%
Convergence criteria	Below $1.0E^{-4}$

3.4 Data Presentation

The wind speed information at pedestrian level (2m above ground) will be acquired to determine the Wind Velocity Ratio (*VR*) as stipulated in the *AVA Technical Circular*[1] and as defined as follows:

$$VR = \frac{V_p}{V_\infty}$$

where V_p is the wind speed at the pedestrian height (2m above ground) and V_∞ is the wind velocity at the top of the boundary layer (defined as the height where wind is unaffected by urban roughness and determined by the topographical studies). Measurement will be taken in the following areas within the "Assessment Area":

- Along the Development boundary (defined as "Perimeter" test-points), such that the Site-Spatial Average Velocity Ratio (*SVR*) can be determined (as per the *AVA Technical Circular* [1]); and
- Throughout the Assessment Area other than the perimeter test-points (defined as "Overall" Test-points), such that the Local Spatial Average Velocity Ratio (LVR) can be determined by taking an average of all overall and perimeter test-points (as per the *AVA Technical Circular*[1]).

3.5 Locations of Test Points

As per the technical circular, three types of test point – perimeter test point and overall test point will be adopted to assess the wind performance. The allocation of these test points will be distributed evenly as stated in the *AVA Technical Circular* [1].

3.5.1 Perimeter Test Points

A total number of 42 perimeter test points (**Brown spots**), namely P points, are positioned at intervals of around 15m along the project site boundary in accordance with the *AVA Technical Circular*[1]. The locations of perimeter test points are shown in Figure 15 below.

3.5.2 Overall Test Points

A total number of 198 overall test points (**Blue spots**), namely O points, are evenly distributed in open areas within the assessment area, such as the streets and places where pedestrian frequently access, and their locations are shown in Figure 16.

3.5.3 Special Test Points

A total number of 28 special test points, namely S points (**Purple spots**), evenly distributed in open areas within the Study Site. Their locations are shown in Figure 17 to Figure 18.

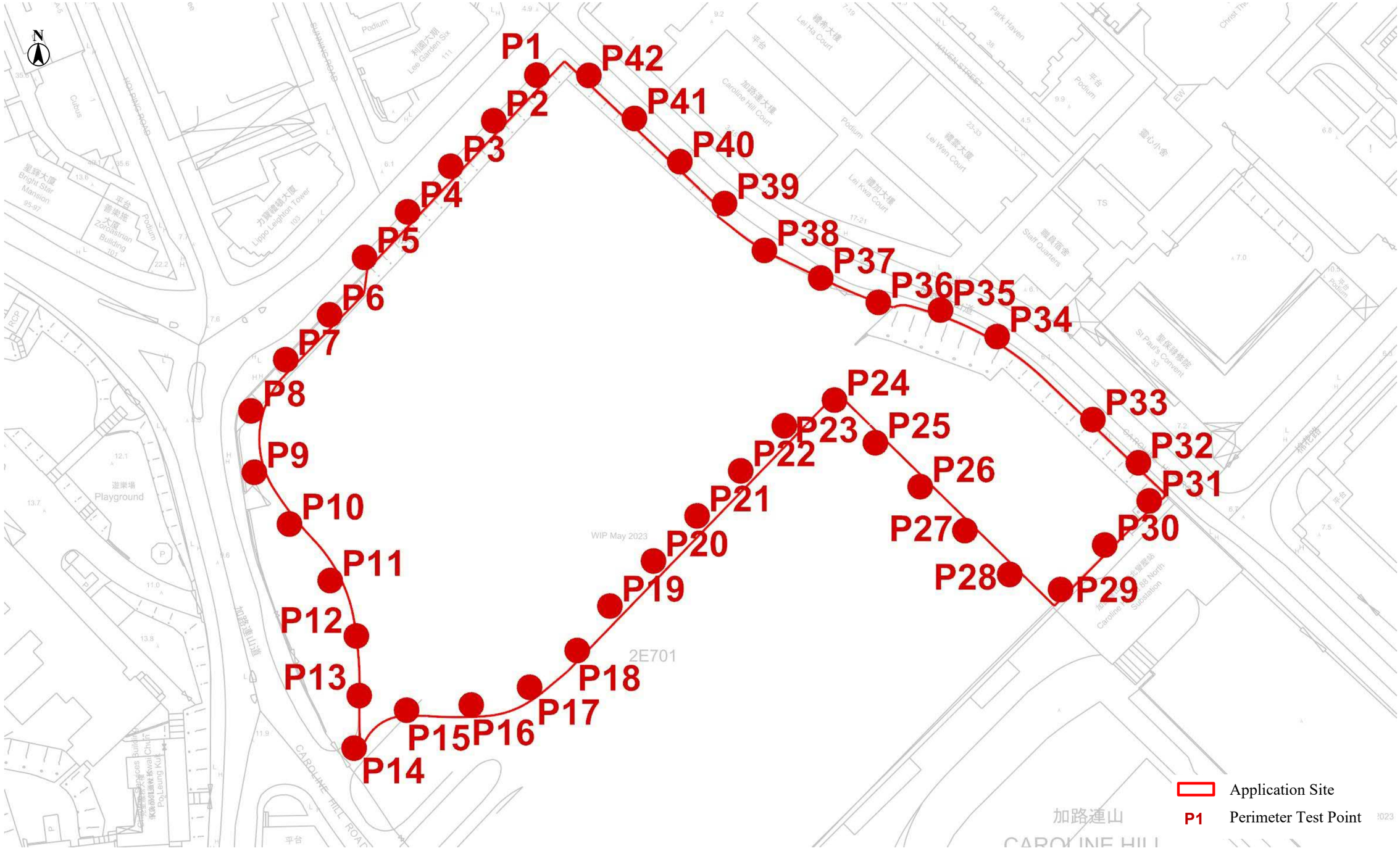

Figure 15 Location of Perimeter Test Points

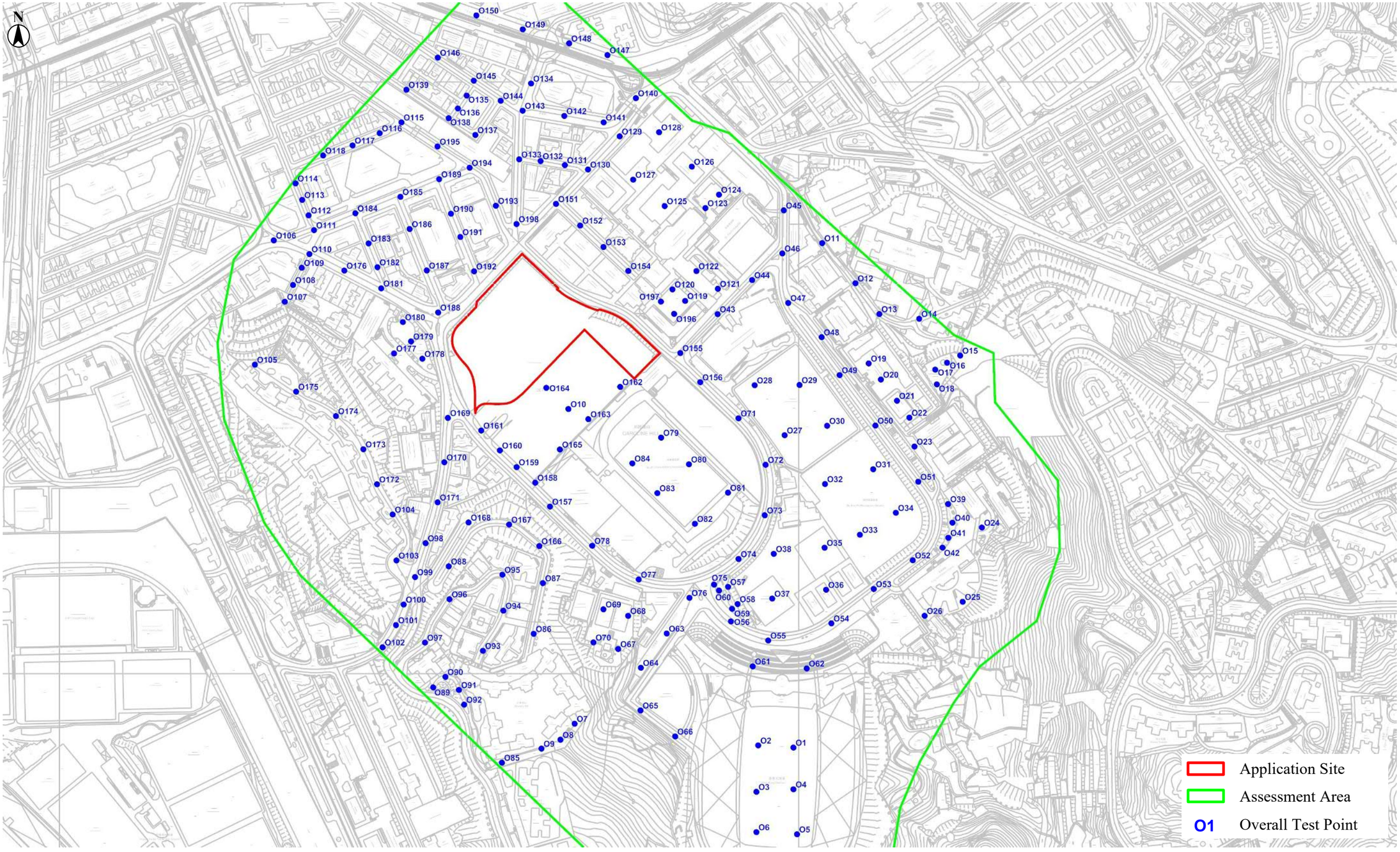

Figure 16 Location of Overall Test Points

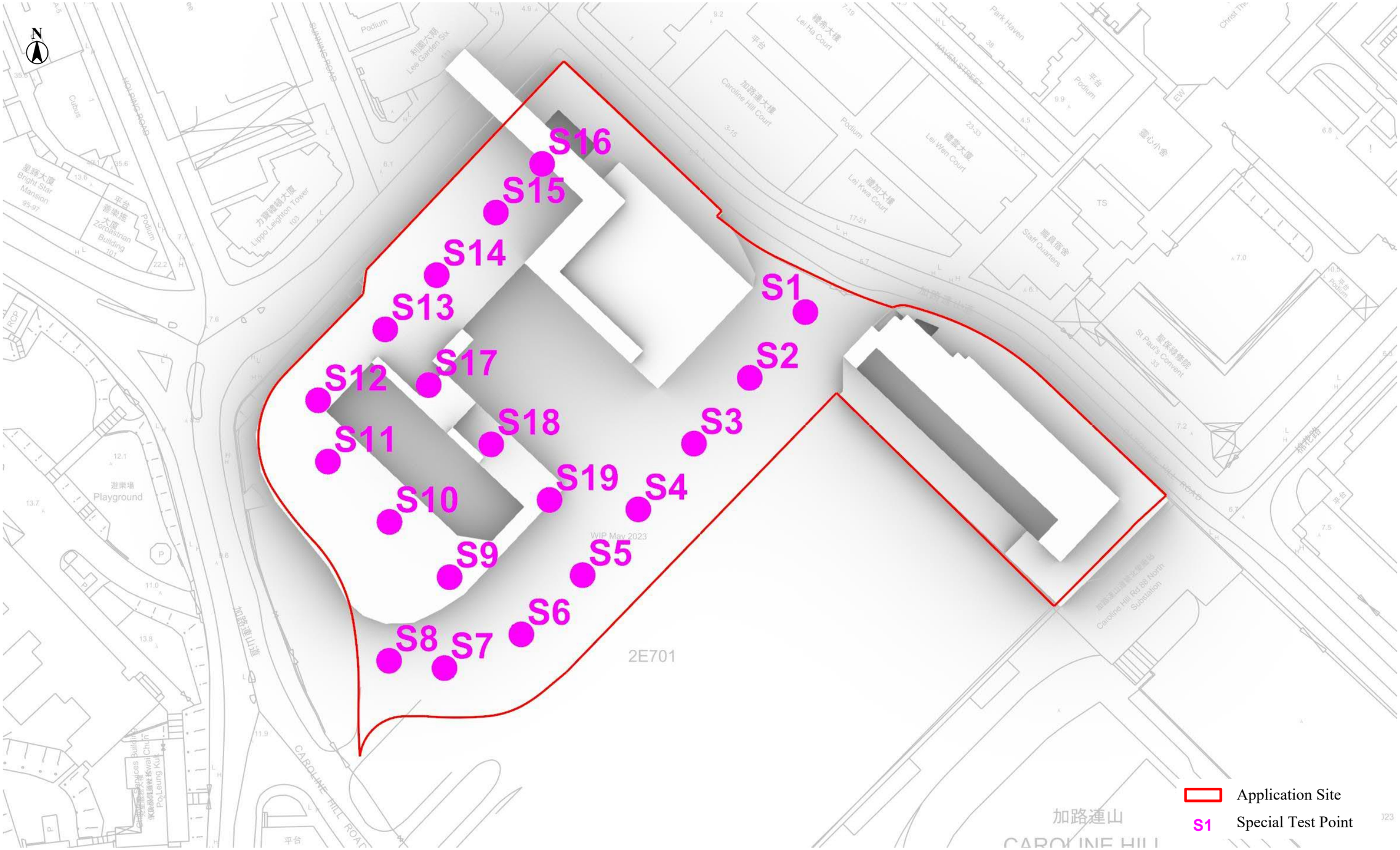

Figure 17 Location of Special Test Points on Street Level and G/F

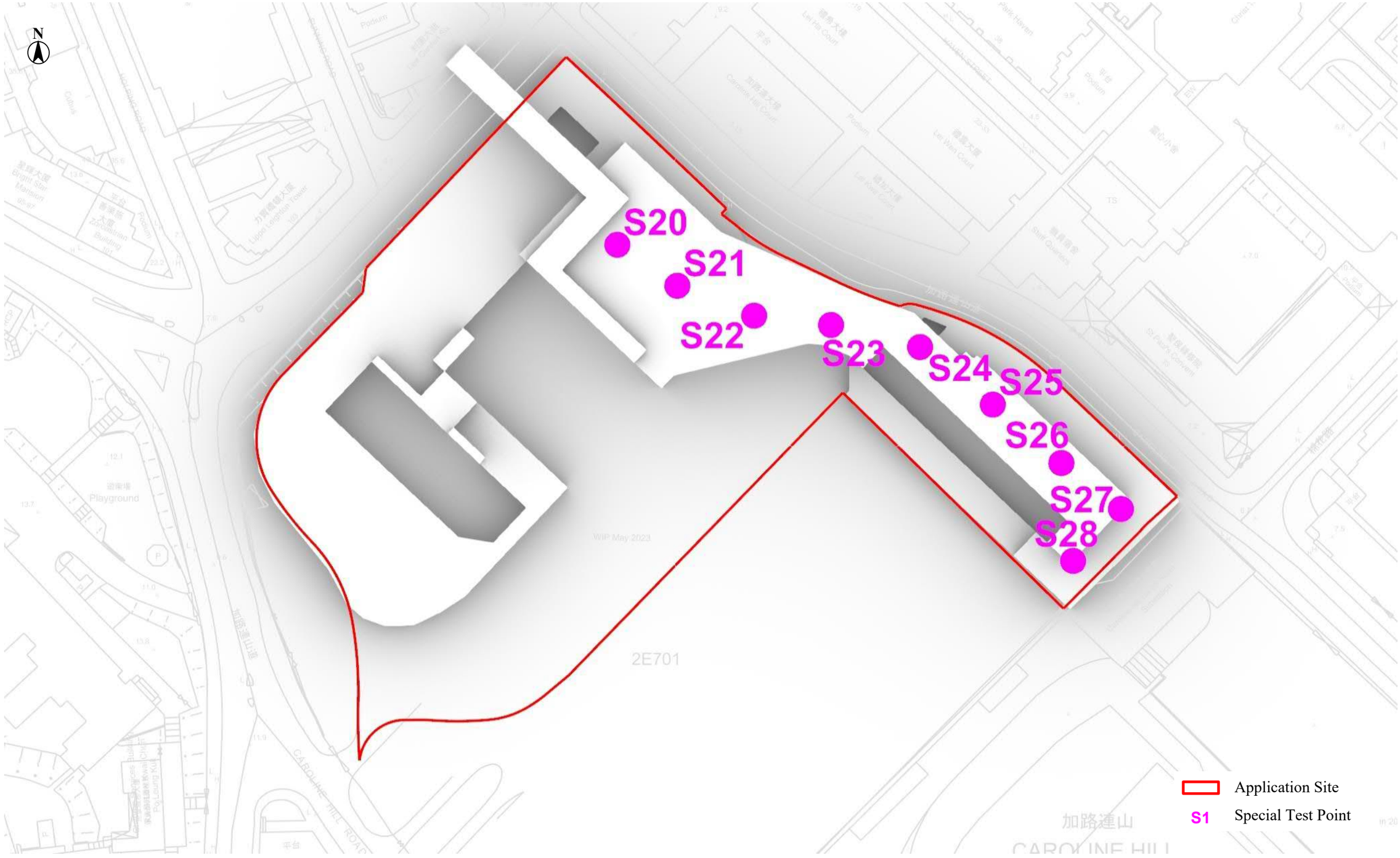

Figure 18 Location of Special Test Points on Podium Level

3.6 Focus Areas

Within the Proposed Assessment Area given in Figure 19, Figure 20 and Figure 21 a total of 51 focus areas are proposed. The associated test points for focus areas are tabulated in Table 4.

Table 4 Focus Areas and Corresponding Test Points

	Focus Area	**Test Points**
1	Yee Wo Street	O147-O150
2	Fung Un Street	O135, O136, O138, O145
3	Jardine's Bazaar	O143-O146
4	Jardine's Crescent	O137-O139, O144
5	Yun Ping Road	O115, O193-O195
6	Lan Fong Road	O115-O118
7	Lee Garden Road	O111-O114
8	Hysan Avenue	O106, O184, O185, O189, O194
9	Sun Wui Road	O181-O184
10	Hoi Ping Road	O185-O188
11	Leighton Lane	O107-O110
12	Sunning Road	O189-O192
13	Playground of Po Leung Kuk	O177-O180
14	Leighton Hill Road	O103-O105, O172-O175
15	Link Road	O98, O99, O169-O171
16	Elevated Road to Bevely Hill	O86-O88, O166-O168
17	Happy View Terrace	O93-O97
18	Broadwood Road	O99-O102
19	Rest Garden on Broadwood Road	O89-O92
20	Road south of Beverly Hill	O7-O9, O85
21	Confucius Hall Secondary School	O67-O70
22	Stadium Path	O63-O66, O76
23	Hong Kong Stadium	O1-O6, O61, O62
24	Eastern Hospital Road Sitting-out Area 1	O57-O60
25	Easter Hospital Road	O45-O56
26	Tung Wah Eastern Hospital	O24-O26
27	Indian Recreation Club	O35-O38
28	Caroline Hill Road	P32-P42, O71-O78, O155-O161
29	Eastern Hospital Road Sitting-out Area 2	O39-O42
30	South China Stadium	O79-O84
31	So Kon Po Recreation Ground	O31-O34
32	Proposed District Court	O10, O158-O165
33	Sir Ellis Kadoorie (S) Primary School	O19-O22
34	Disciplined Services Sports and Recreational Club	O27-O30
35	Ka Ning Path Rest Garden	O15-O18
36	Cotton Path Road	O43, O44, O46, O155
37	St. Paul's Convent	O119, O120, O196, O197
38	Ka Ning Road	O11-O14
39	Haven Street	O151-O154
40	St. Paul's Hospital	O121-O124

41	St. Paul's Convent School	O125-O128
42	Leighton Road	P1-P8, O106, O110, O129, O130, O151, O176, O188
43	Keswick Street	O130-O133
44	Pennington Street	O133, O134, O143, O198
45	Irvine Street	O140-O143
46	Internal Street of T1 on G/F	S13, S17-S19
47	Elevated Design of T1 on G/F	S9-S11
48	Access Road within Application Site	S1-S8
49	Open Space of T1&2 on G/F	S9-S19
50	Open Space of T2 on Podium Level	S20-S23
51	Elevated Design of T3 on Podium Level	S24-S28



Figure 19 Location of Focus Area

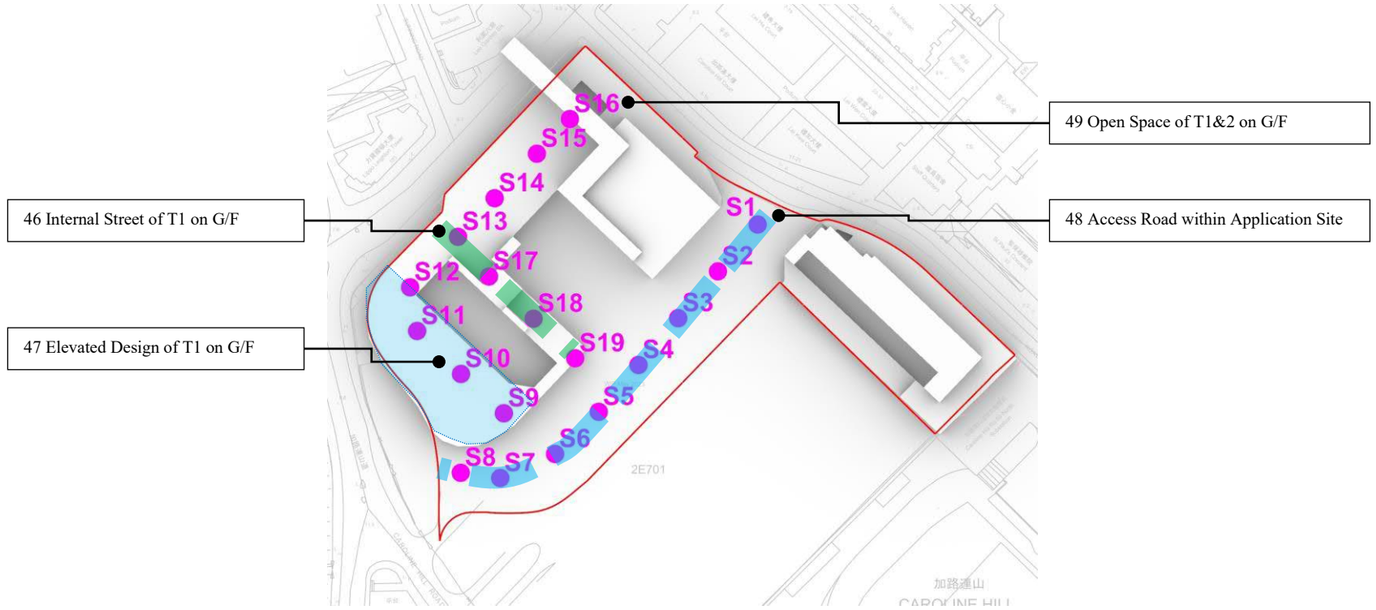

Figure 20 Location of Focus Area within Application Site - G/F

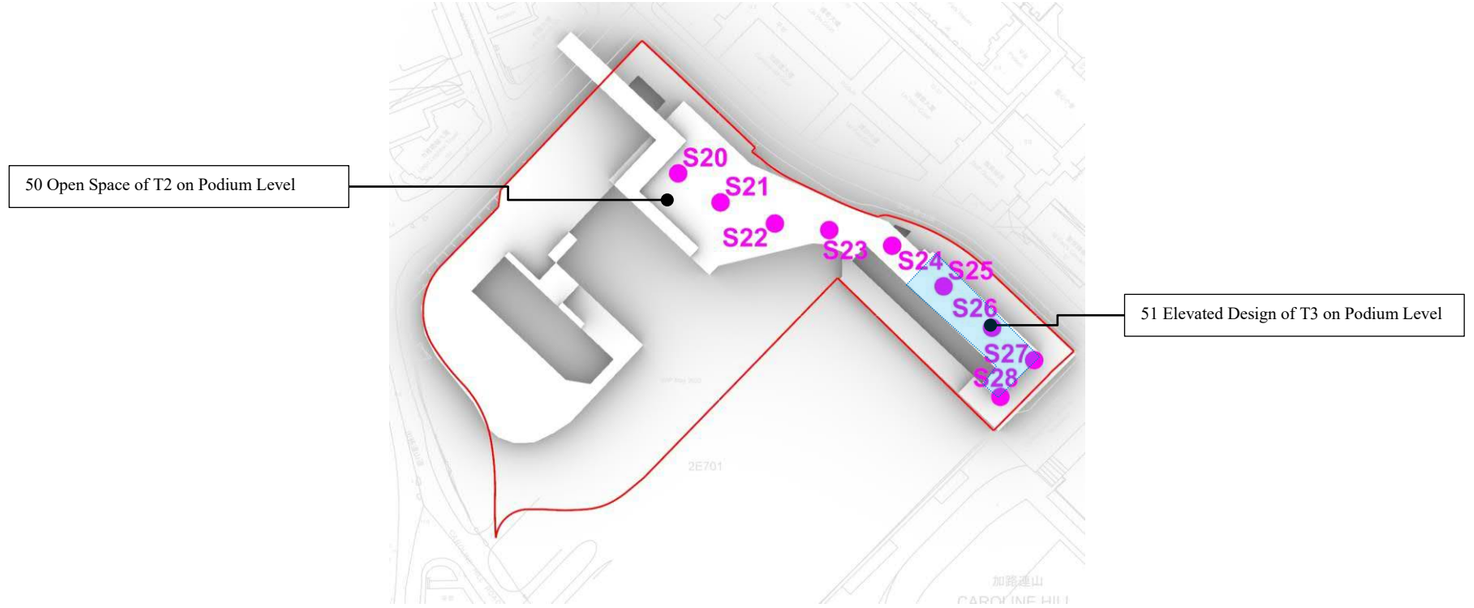

Figure 21 Location of Focus Area within Application Site - Podium Level

4 Design Schemes for Initial Study

Two schemes will be analysed and compared in this AVA Initial Study, namely the Baseline Scheme and the Proposed Scheme.

4.1 Baseline Scheme

Proposed Scheme is the previously approved scheme under Planning Application No. A/H7/181. The development parameters are summarized in Table 5 below. The layout plan of Baseline Scheme is shown in Figure 22 and Figure 23, with details in Appendix A. Major wind enhancement features are list below. The 3D model was constructed as shown in Figure 24 to Figure 27.

- #1: T1 – 15m setback is provided from the building edge for elevated design on G/F. The elevated design consists of 15m (W) x 8.5m (H).
- #2: T2 – Proposed building setback of min. 23m from north-eastern boundary above 2/F.
- #3: T3 – Elevated design on 2/F apart from the core area. The effective width of the elevated design is approximately 18m wide measured from north-eastern site boundary. The elevated design consists of approximately 18m (W) x 10m (H).
- #4: T1 – Building setback of approximate 5m on average from the south-western boundary.
- #5: T2 – Building setback of 4m at grade from north-eastern boundary.
- #6: T3 – Building setback of 7.5m above 2F from the south-western boundary abutting the district court site.

Table 5 Development Parameters of Baseline Scheme

Development Parameter	**Baseline Scheme**
Building Block(s)	2
Main Roof Height (mPD)	+135mPD for T1&2 +90mPD for T3

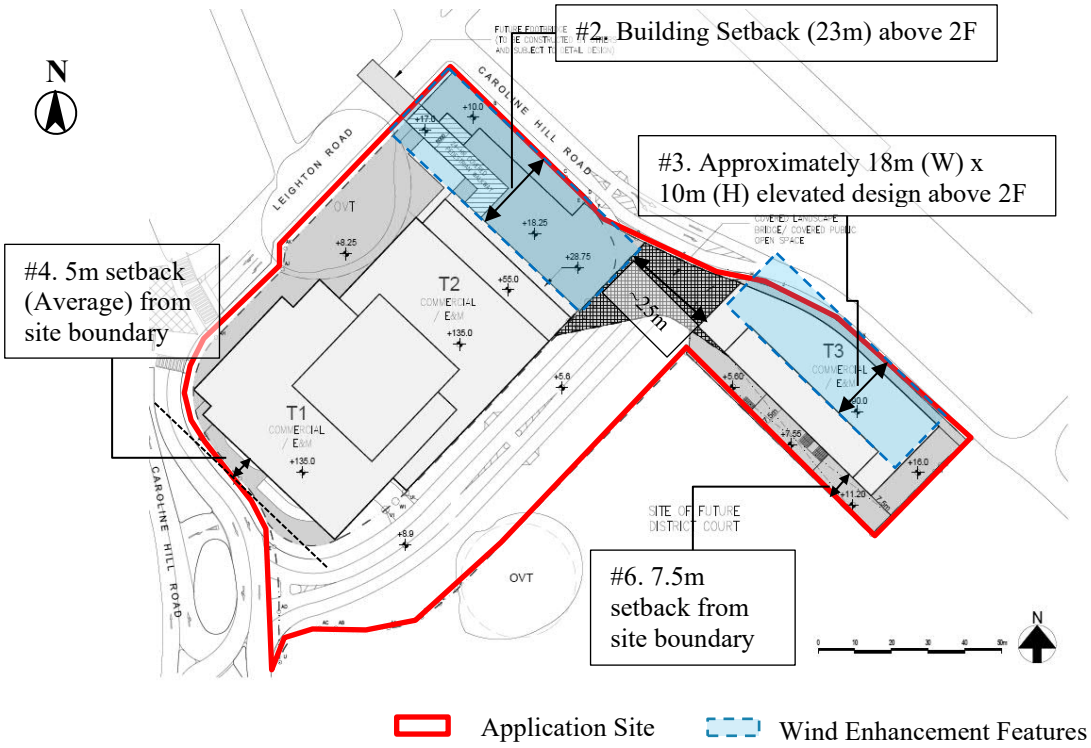

Figure 22 Baseline Scheme – Master Layout Plan

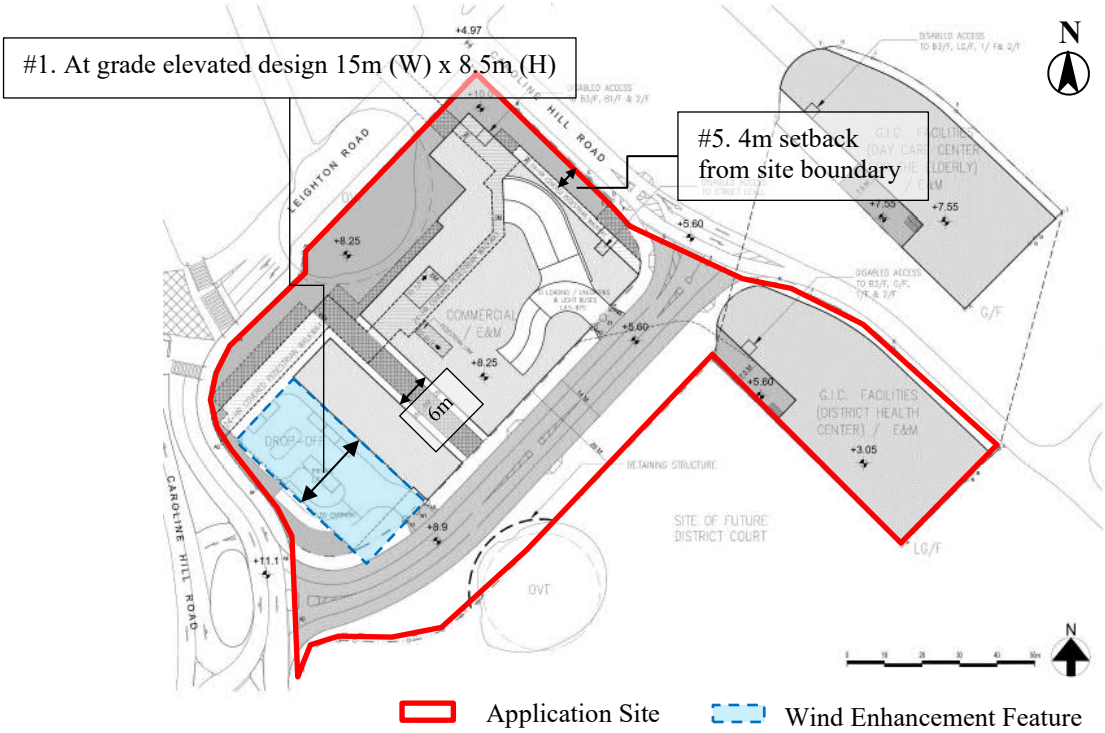

Figure 23 Baseline Scheme – GF Layout Plan



Figure 24 Northerly view of Baseline Scheme



Figure 25 Easterly view of Baseline Scheme

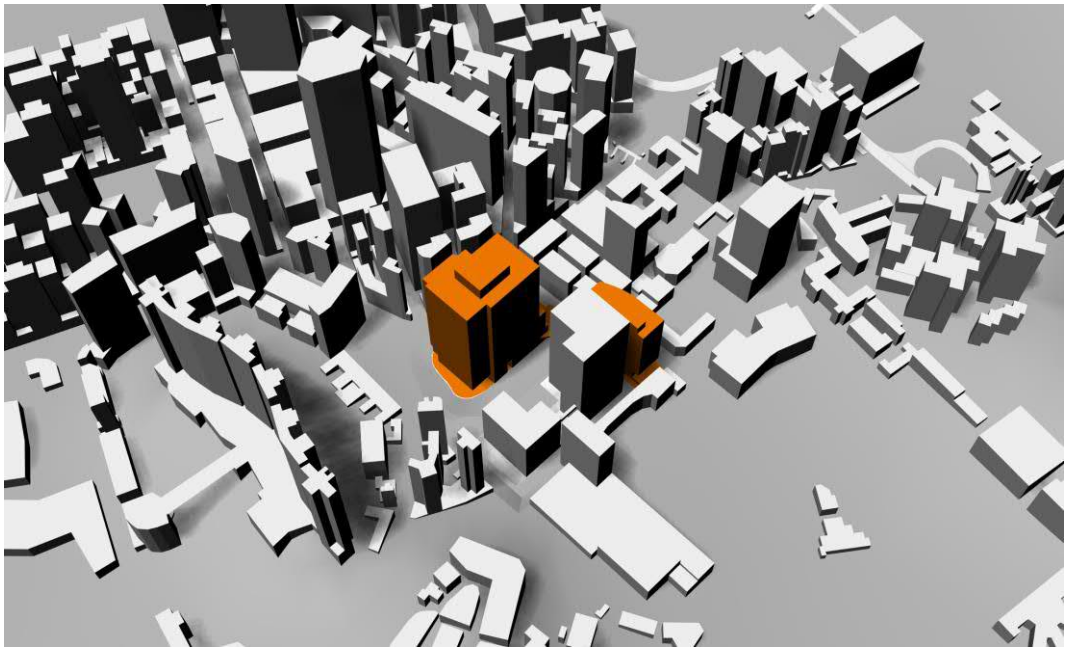

Figure 26 Southerly view of Baseline Scheme



Figure 27 Westerly view of Baseline Scheme

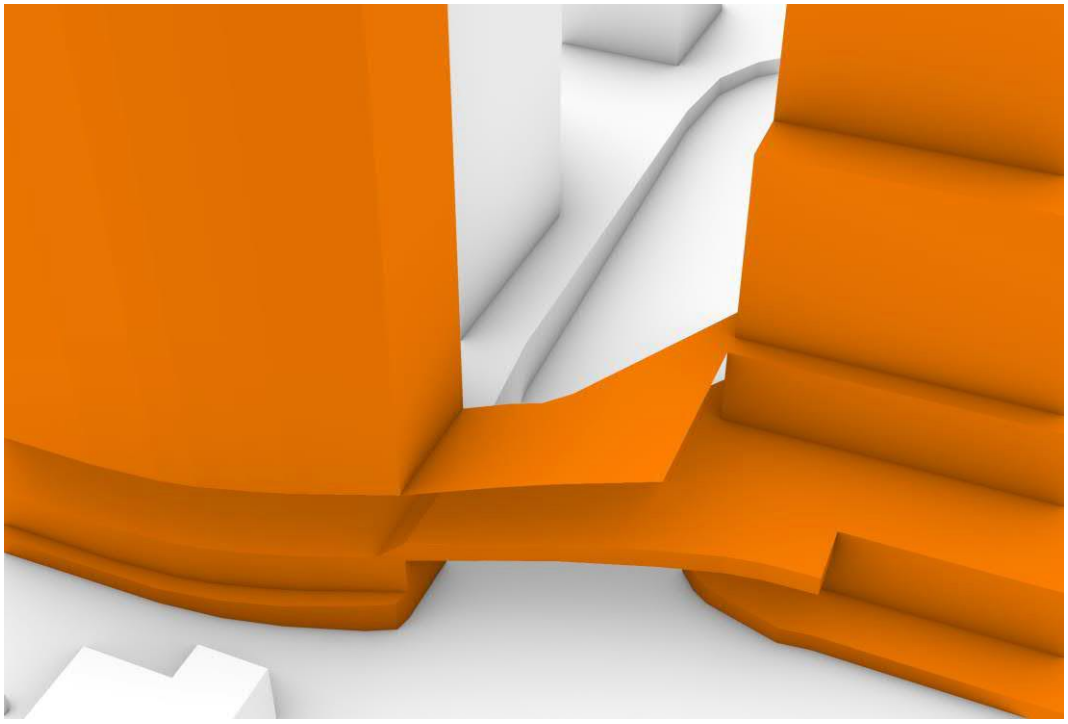

Figure 28 T2-T3 Footbridge of Baseline Scheme

4.2 Proposed Scheme

Proposed Scheme is the intended development scheme, with the same functional use as the Baseline Scheme. Amendments have been made to the building massing and T2-T3 footbridge.

The tower footprint of T2 is shifted from the north-eastern site boundary, the podium platform of T3 adjacent to south-western site boundary are lowered to connect to the street level and the footbridge between T2 and T3 are now enclosed. The development parameters are summarized in Table 6 below. The layout plan of Proposed Scheme adopted in the analysis is shown in Figure 29 and Figure 30.

As the design develops, there is a minor amendment to feature #3. It is expected to have an insignificant impact on wind performance, and the analysis would remain valid. Please refer to Section 6 for detailed discussion of the amendment. Please refer to Appendix A for the layout plan after the amendment.

Major wind enhancement features are list below. The 3D model was constructed as shown in Figure 31 and Figure 34.

- #1: T1 – 15m setback is provided from the building edge for elevated design on G/F. The elevated design consists of 15m (W) x 8.5m (H).
- #2: T2 – Building setback of min. 36m from north-eastern site boundary above 2/F.
- #3: T3 – Elevated design on 2/F apart from the core area. The effective width of the elevated design is approximately 18m wide on average measured from north-eastern site boundary. The elevated design consists of approximately 18m (W) x 13.4m (H).
- #4: T1 – Building setback of approximate 5m on average from the south-western boundary.
- #5: T2 – Building setback of 4m at grade from north-eastern boundary.
- #6: T3 – Building setback of 7.5m above 2F from the south-western boundary abutting the district court site.
- #7: T1 – Min. 6m Internal Street of T1 on G/F

Table 6 Development Parameters of Proposed Scheme

Development Parameter	**Proposed Scheme**
Building Block(s)	2
Maximum Building Height (mPD)	+135mPD for T1/T2 +90mPD for T3

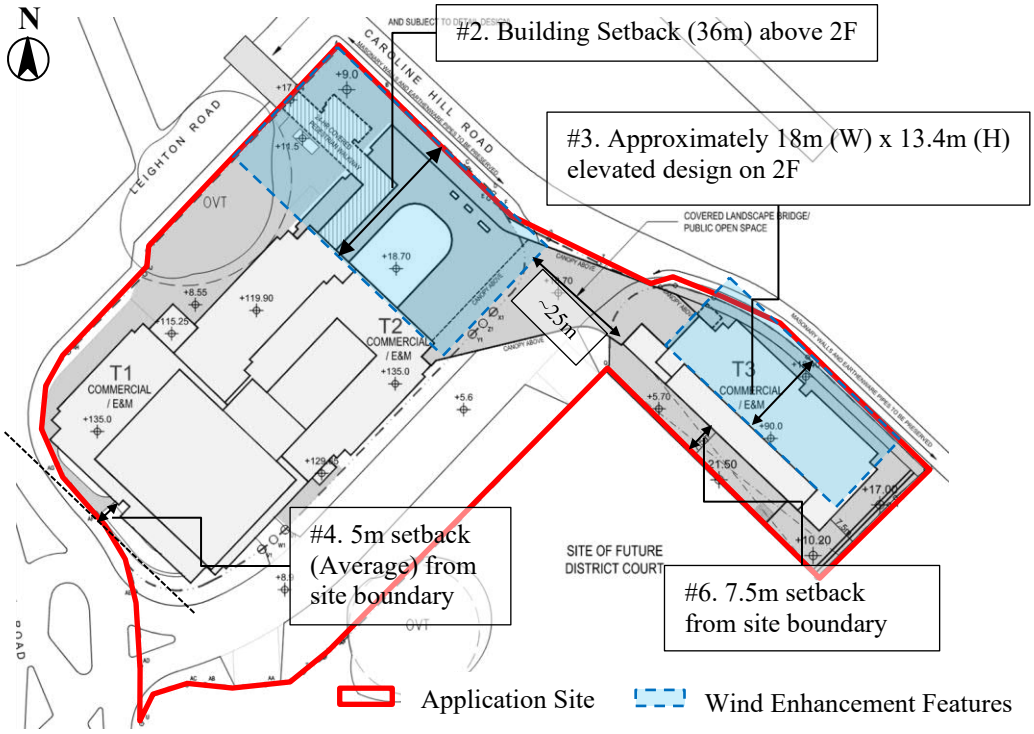

Figure 29 Proposed Scheme – Master Layout Plan

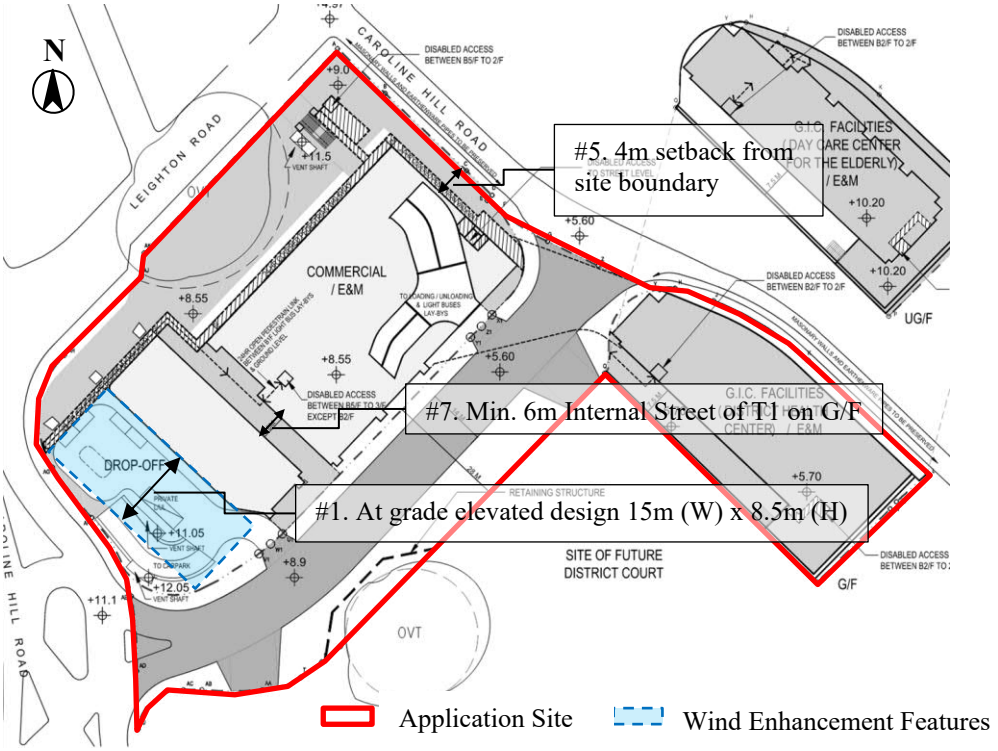

Figure 30 Proposed Scheme – GF Layout Plan

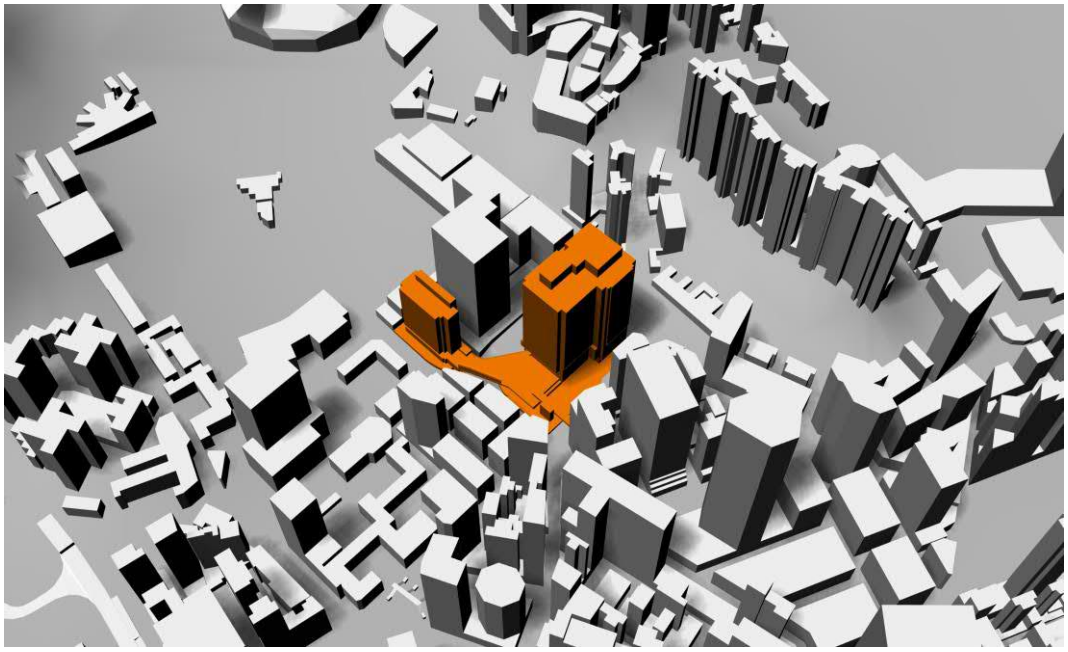

Figure 31 Northerly view of Proposed Scheme



Figure 32 Easterly view of Proposed Scheme



Figure 33 Southerly view of Proposed Scheme



Figure 34 Westerly view of Proposed Scheme

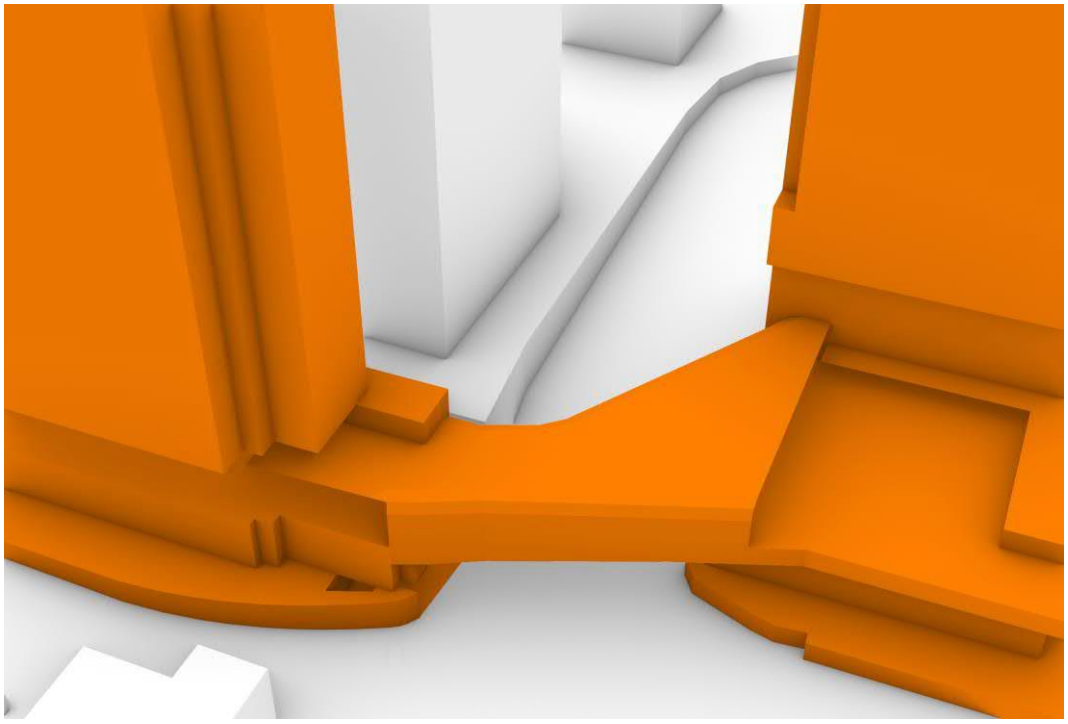

Figure 35 T2-T3 Footbridge of Proposed Scheme

5 Results and Discussion

The detailed contour and vector plots for each wind directions are shown in Appendix C and Appendix D.

5.1 Overall Pattern of Ventilation Performance under Annual Wind Condition

The overall wind performance of Baseline and Proposed Schemes under annual wind condition is presented in Figure 36 and Figure 37 respectively. Under annual wind conditions, prevailing winds are mostly from E quadrant, the Application Site is located at the leeward side of mid to high-rise developments and open space provided by recreational area with hilly terrain of Grandview Mansion to the further side. T1 and T2 are partially shielded by Proposed District Court. Surrounding wind environment is dominated by upwind developments and hilly terrain, except for some localized difference around the Application Site.

Incoming winds would be diverted to reach the Application Site from Caroline Hill Road, Leighton Road and Cotton Path. Some high-level incoming winds would skim over the mid-rise developments and open space to reach the Application Site from prevailing wind direction. The incoming wind directions are illustrated by **Black** arrows in Figure 36 and Figure 37 respectively.

Under both Schemes, downwash effect would be observed on T2, T3 and Proposed District Court. Under Baseline Scheme, larger frontal area of T3 would induce more prominent downwash effect. Downwash wind would ventilate the T3 podium and further travel to Caroline Hill Road, where slightly higher VR would be observed, illustrated by **Purple** arrow in Figure 36.

Under Baseline Scheme, the larger façade of T2 would also divert some incoming wind towards Access Road within Application Site. While under Proposed Scheme, the enclosed T2-T3 footbridge would also divert some incoming wind towards Access Road within Application Site. Different in ventilation pattern would be observed illustrated by **Red** arrow in Figure 36 and Figure 37 respectively.

Under Proposed Scheme, the enclosed T2-T3 footbridge under Proposed Scheme would shield the T2 podium, where slightly lower VR would be observed, illustrated by **Red** circle in Figure 37.

The larger T3 building setback from north-eastern site boundary enhanced wind permeability, more incoming wind from Caroline Hill Road would continue to travel along, where slightly higher VR would be observed, illustrated by **Purple** arrow in Figure 37.

In addition, larger building setback of T2 under Proposed Scheme allows incoming wind to skim over the T2 podium to ventilate Leighton Road and Playground of Po Leung Kuk on the leeward side, where slightly higher VR would be observed, illustrated by **Blue** arrow in Figure 37.

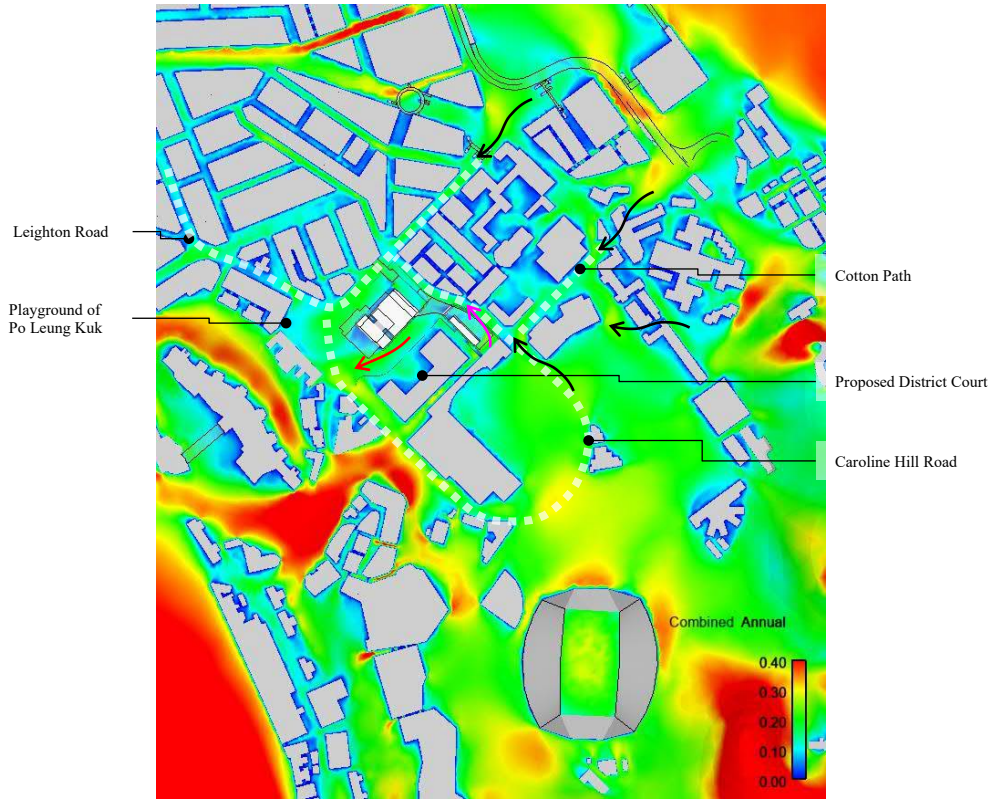

Figure 36 Contour plot of annual weighted VR under Baseline Scheme

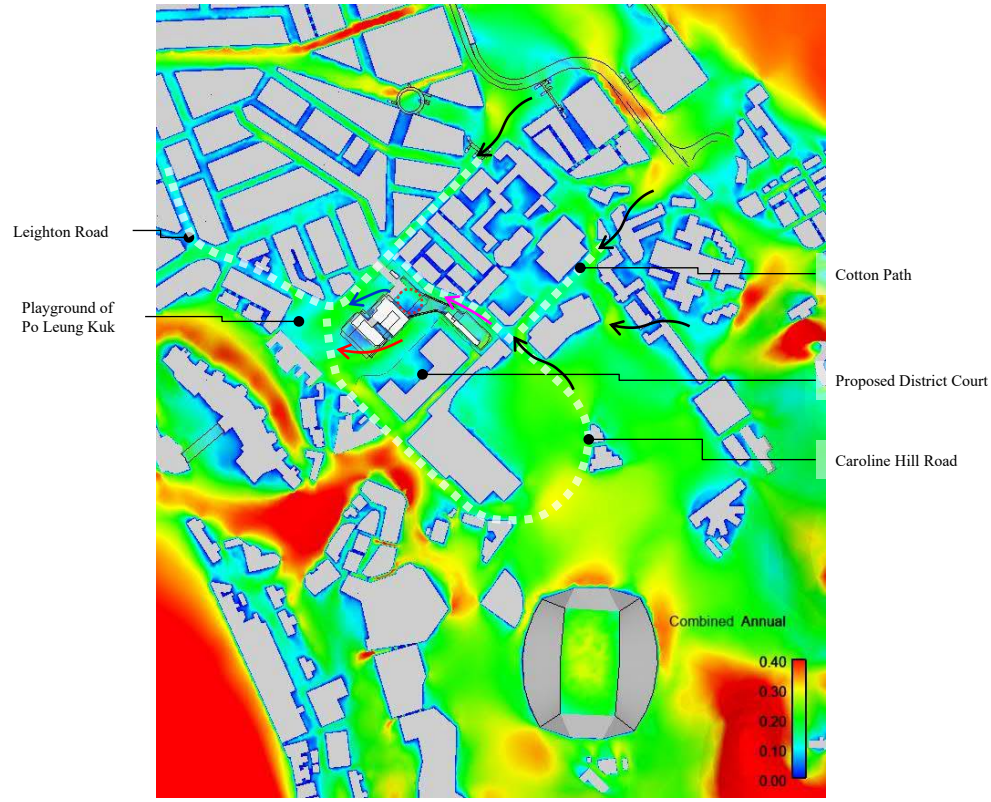

Figure 37 Contour plot of annual weighted VR under Proposed Scheme

5.2 Overall Pattern of Ventilation Performance under Summer Wind Condition

The overall wind performance of Baseline and Proposed Schemes under summer wind condition is presented in Figure 38 and Figure 39 respectively.

Under summer condition, the prevailing winds are mostly from SW quadrant. The Application Site is located at the leeward side of density built mid to high-rise developments and hilly terrain of Beverly Hill. T1 and T2 are shielded by The Leighton Hill, while T3 is shielded by Proposed District Court. Surrounding wind environment is relatively calm and dominated by upwind developments and hilly terrain, except for some localized difference around the Application Site.

Due to the upwind developments and hilly terrain, incoming winds would be diverted to reach the Application Site from Leighton Road, Sunning Road, Yun Ping Road and Caroline Hill Road. The incoming wind directions are illustrated by **Black** arrows in Figure 38 and Figure 39 respectively.

Under both Schemes, downwash effect would be observed on Proposed District Court.

Under Baseline Scheme, mid-level incoming wind from Yun Ping Road and Pennington Street would flow through T2-T3 footbridge and ventilate the Access Road within Application Site, where slightly higher VR would be observed, illustrated by **Purple** arrow in Figure 38.

Under Proposed Scheme, due to the larger building setback of T3 from north-eastern site boundary and larger T3 core, incoming wind from Caroline Hill Road would enter and be channelled to ventilate the T3 podium, where slightly higher VR would be observed, illustrate by **Black** circle in Figure 39.

Under Proposed Schene, the enclosed T2-T3 footbridge would divert some incoming wind to street level, together with the larger building setback of T3 from north-eastern site boundary, where slightly higher VR on part of the Access Road within Application Site and Caroline Hill Road would be observed, illustrate by **White** arrows in Figure 39.

Under Proposed Schene, due to the less prominent wind traveling from the north-west along Caroline Hill Road, the incoming wind from the opposite direction would be less limited to travel along the same road, where slightly higher VR would be observed, illustrated by **Red** circle in Figure 39.

Under both Scheme, incoming wind from Yun Ping Road and Pennington Street would travel along north-western site boundary. Under Baseline Scheme, the incoming wind would continue to travel to ventilate the Elevated Design of T1 on G/F. While under Proposed Scheme, the incoming wind would be diverted toward Caroline Hill Road. Where different in ventilation pattern would be observed, illustrated by **Red** arrow in Figure 38 and Figure 39 respectively.

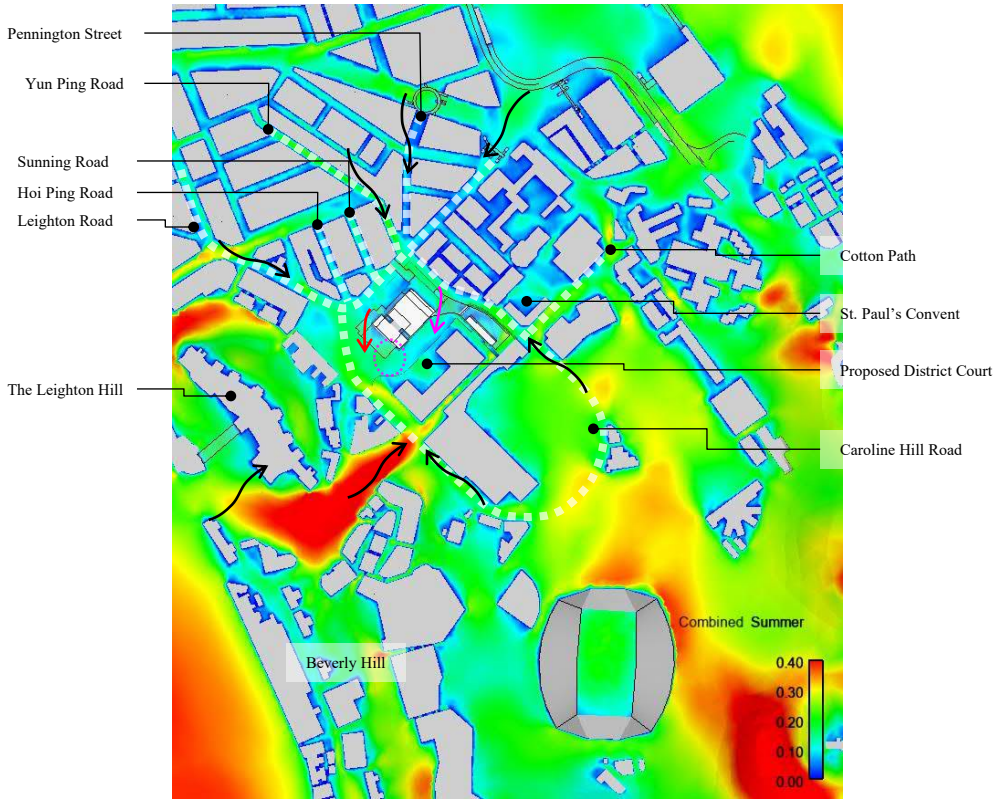

Figure 38 Contour plot of summer weighted VR under Baseline Scheme

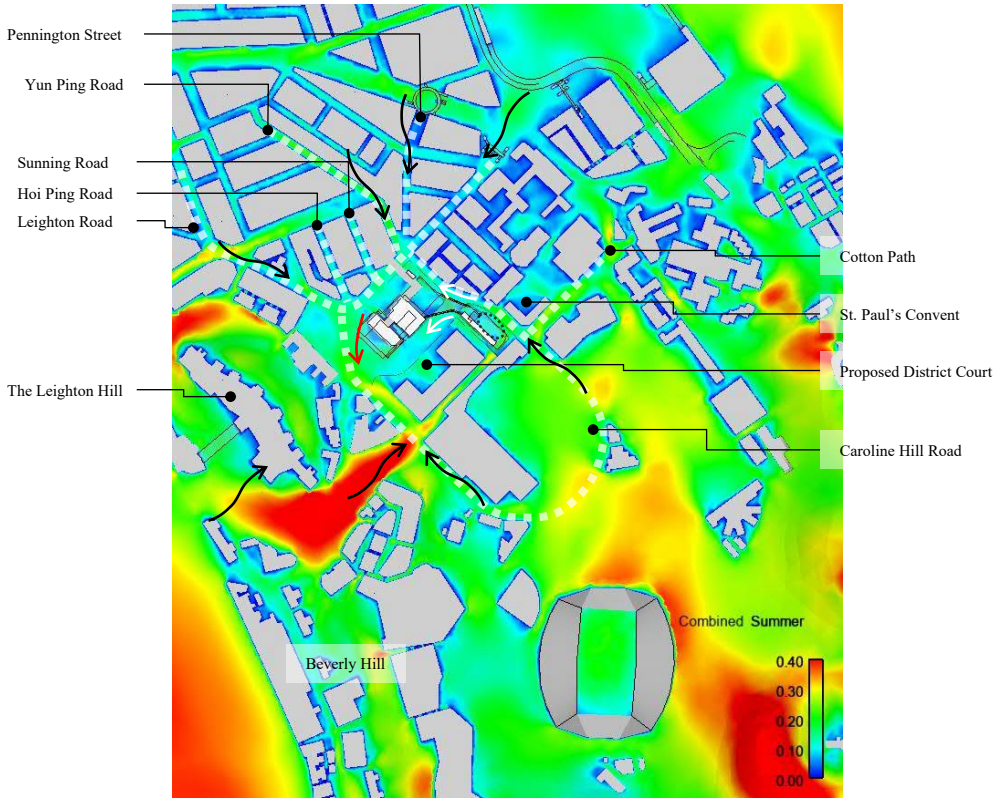

Figure 39 Contour plot of summer weighted VR under Proposed Scheme

5.3 Directional Analysis

5.3.1 NNE Wind

The overall wind performance of Baseline and Proposed Schemes under NNE wind is presented in Figure 40 and Figure 41, respectively.

The Application Site is located at the leeward side of densely built high-rise developments. Surrounding wind environment is relatively calm and dominated by upwind developments, except for some localized difference around the Application Site.

Due to the surrounding buildings, incoming wind would be diverted to reach the Application from Sun Wui Road, Hoi Ping Road, Sunning Road, Yun Ping Road, and Leighton Road. Some high-level wind would skim over the mid-rise buildings to reach the Application Site from north-east. The incoming wind directions are illustrated by **Black** arrows in Figure 40 and Figure 41, respectively.

Under both Scheme, stepping building height of T3 (lower) and Proposed District Court (taller) allows induced downwash effect on both buildings. Under Baseline Scheme, due larger frontal area of T3 more downwashed wind be induced to ventilate the Proposed District Court podium, where slightly higher VR would be observed, illustrated by **White** circle in Figure 40.

Under Baseline Scheme, mid-level incoming wind from Leighton Road would pass through the T2-T3 footbridge to ventilate the Access Road within Application Site, where slightly higher VR would be observed, illustrated by **Purple** circle in Figure 40.

Under Proposed Scheme, less podium setback of T1 from north-western site boundary divert the incoming wind from Leighton Road towards Playground of Po Leung Kuk, while shielded the Elevated Design of T1 on G/F, where slightly higher VR on Playground of Po Leung Kuk and slightly lower VR on Elevated Design of T1 on G/F would be observed, illustrated by **Red** arrow in Figure 41.

Due to less prominent wind from Leighton Road traveling towards The Leighton Hill, downwash effect from The Leighton Hill would be more prominent, where slightly higher VR would be observed, illustrated by **Red** circle in Figure 41.

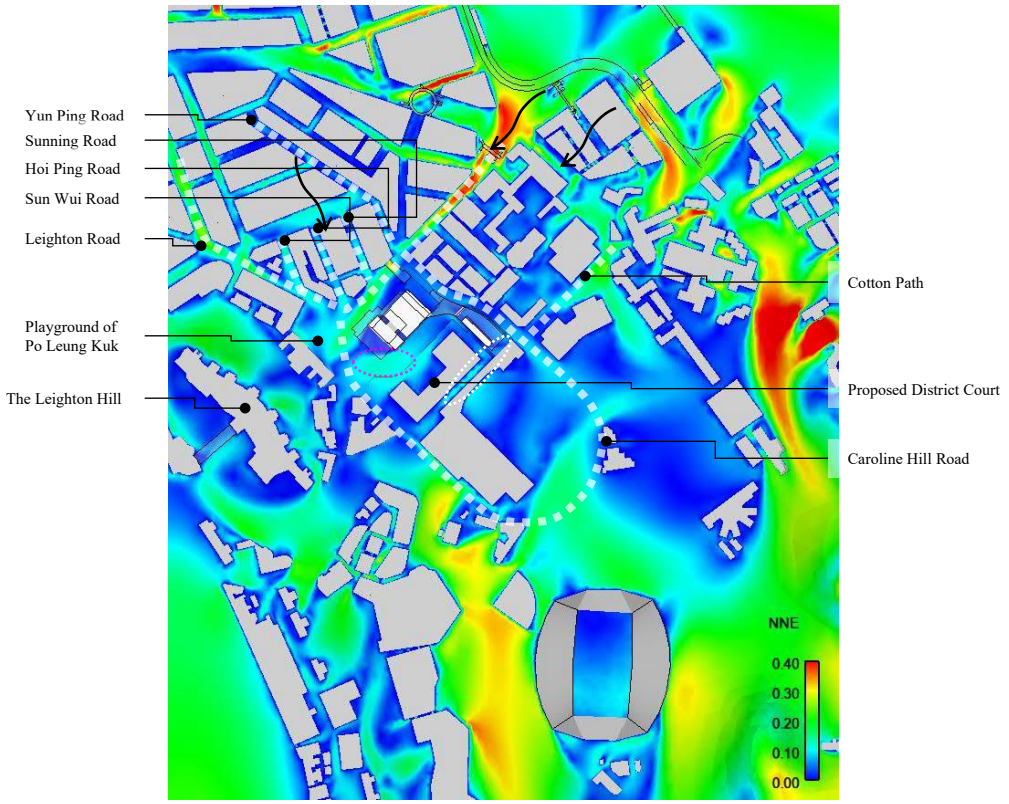

Figure 40 Contour plot of VR of Baseline Scheme under NNE wind

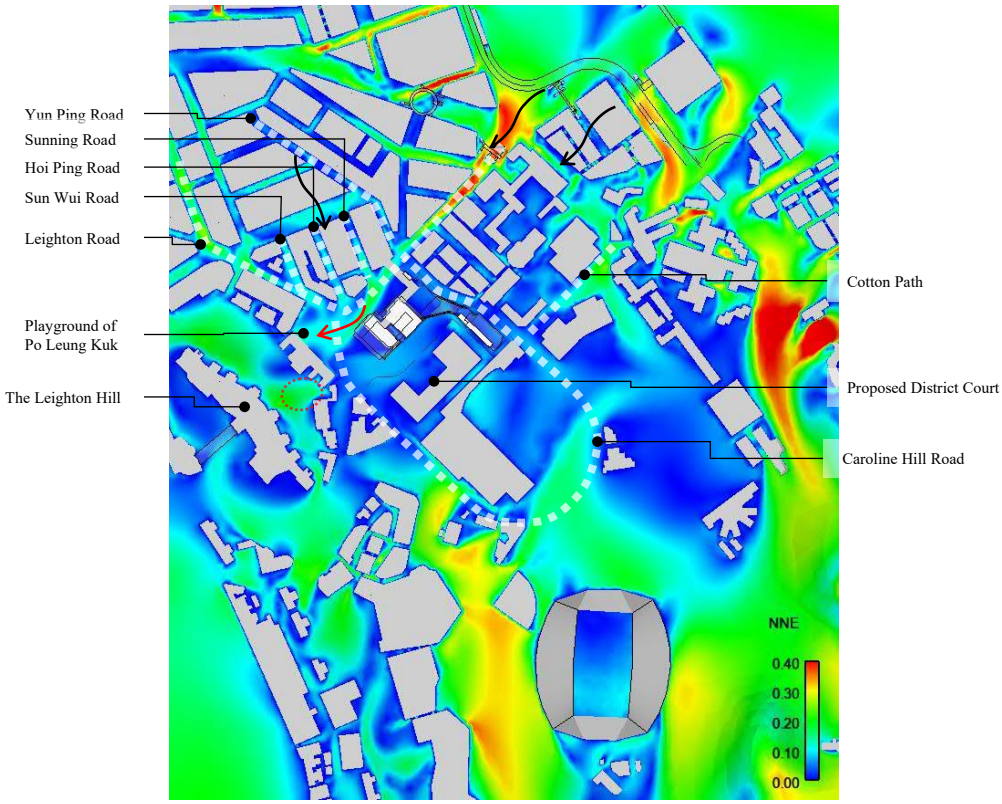

Figure 41 Contour plot of VR of Proposed Scheme under NNE wind

5.3.2 NE Wind

The overall wind performance of Baseline and Proposed Schemes under NE wind is presented in Figure 42 and Figure 43 respectively.

The Application Site is located at the leeward side of densely built high-rise developments. Surrounding wind environment is dominated by upwind developments, except for some localized difference around the Application Site.

Due to the surrounding buildings, incoming wind would be diverted to reach the Application from Leighton Road. Some high-level wind would skim over the mid-rise building to reach the Application Site from prevailing wind direction. The incoming wind direction is illustrated by **Black** arrows in Figure 42 and Figure 43 respectively.

Under both Schemes, downwash effect would be observed on T2, T3 and Proposed District Court.

Under Baseline Scheme, due to the larger setback of T1 podium from north-western boundary, incoming wind would continue to travel along north-western site boundary and Leighton Road to ventilate the leeward side, where slightly higher VR Playground of Po Leung Kuk would be observed, illustrated by **Black** circles in Figure 42. While, under Proposed Scheme, the incoming wind would be diverted away from the north-western site boundary to travel along Leighton Road and enter Sun Wui Road and Hoi Ping Road, where slightly higher VR would be observed, illustrated by **Black** circle in Figure 43.

In addition, under Proposed Scheme, the enclosed T2-T3 footbridge would divert some incoming wind to street level, together with the larger T3 building setback from north-eastern site boundary, slightly higher VR on Caroline Hill Road would be observed, illustrated by **White** arrow in Figure 43.

However, the footbridge would also shield some incoming wind from reaching the T2 podium, where slightly lower VR would be observed, illustrated by **White** circle in Figure 43.

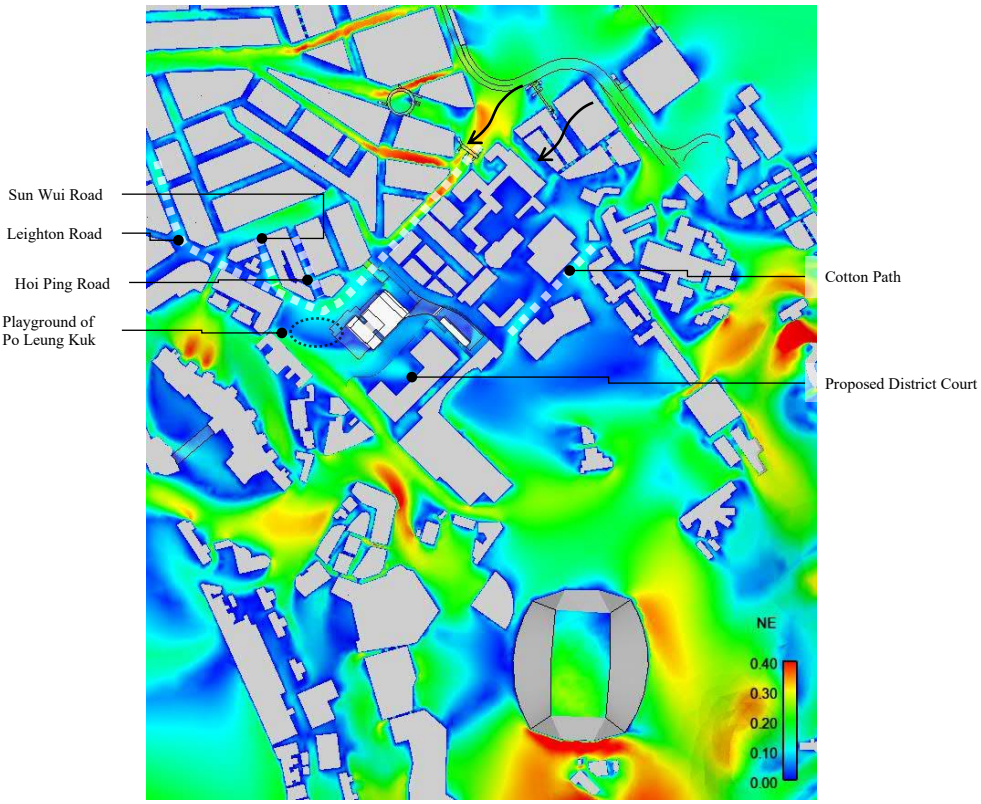

Figure 42 Contour plot of VR of Baseline Scheme under NE wind

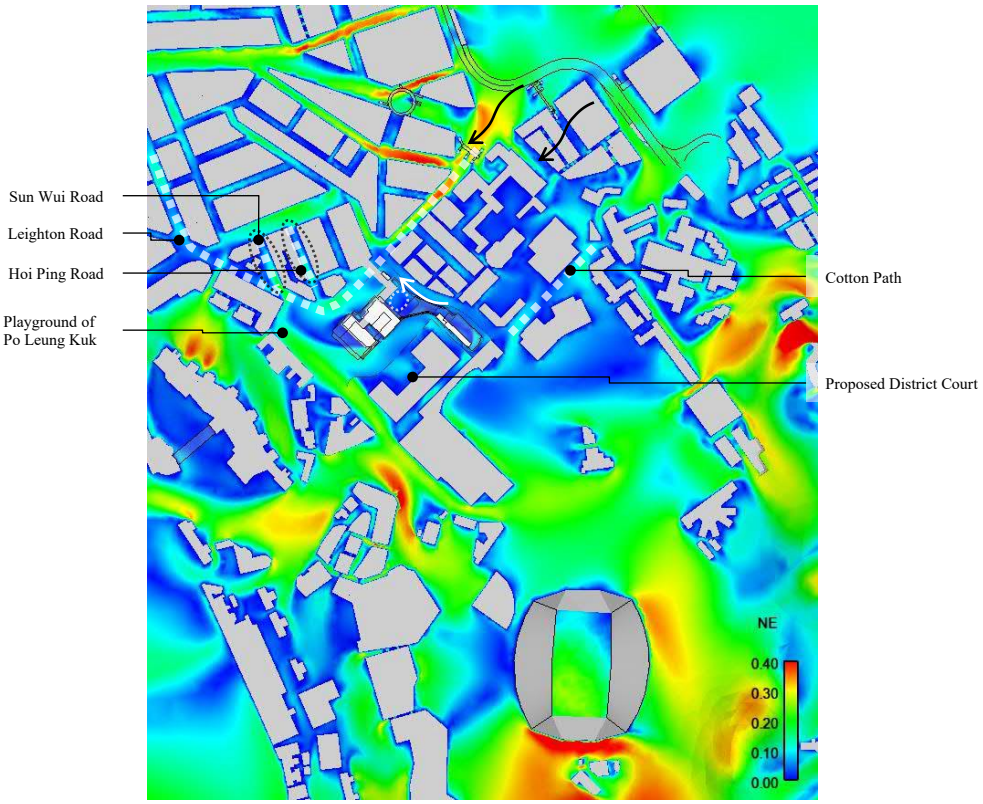

Figure 43 Contour plot of VR of Proposed Scheme under NE wind

5.3.3 ENE Wind

The overall wind performance of Baseline and Proposed Schemes under ENE wind is presented in Figure 44 and Figure 45respectively.

The Application Site is located at the leeward side of densely built mid to high-rise developments. Surrounding wind environment is dominated by upwind developments, except for some localized difference around the Application Site.

Due to the surrounding buildings, incoming wind would be diverted to reach the Application from Leighton Road and Cotton Path. Some high-level wind would skim over the mid-rise building to reach the Application Site from north-east. The incoming wind directions are illustrated by **Black** arrows in Figure 44 and Figure 45 respectively.

Under both Schemes, downwash effect would be observed on T2, T3 and Proposed District Court. Under Baseline Scheme, due to larger frontal area of T3 more downwashed wind would be induced to ventilate Proposed District Court, where slightly higher VR would be observed, illustrated by **Red** circle in Figure 44. Under Proposed Scheme, larger T3 core and higher T3 podium would divert downwashed wind from Proposed District Court to ventilate the area under enclosed T2-T3 footbridge, where slightly higher VR would be observed, illustrated by **Red** circle in Figure 45.

Under Baseline Scheme, due to larger south-eastern façade of T2, the downwash effect from T2 would be more prominent. The donwashed wind that reach the T2 podium would further travel to the street level to ventilate Caroline Hill Road, Leighton Road and other streets towards the leeward side. Slightly higher VR would be observed, illustrated by **Blue** arrows in Figure 44.

Under Proposed Scheme, the larger building setback of T2 on podium level allows incoming wind to skim over and ventilate the north-western site boundary, where slightly higher VR would be observed, illustrated by **Blue** arrow in Figure 45.

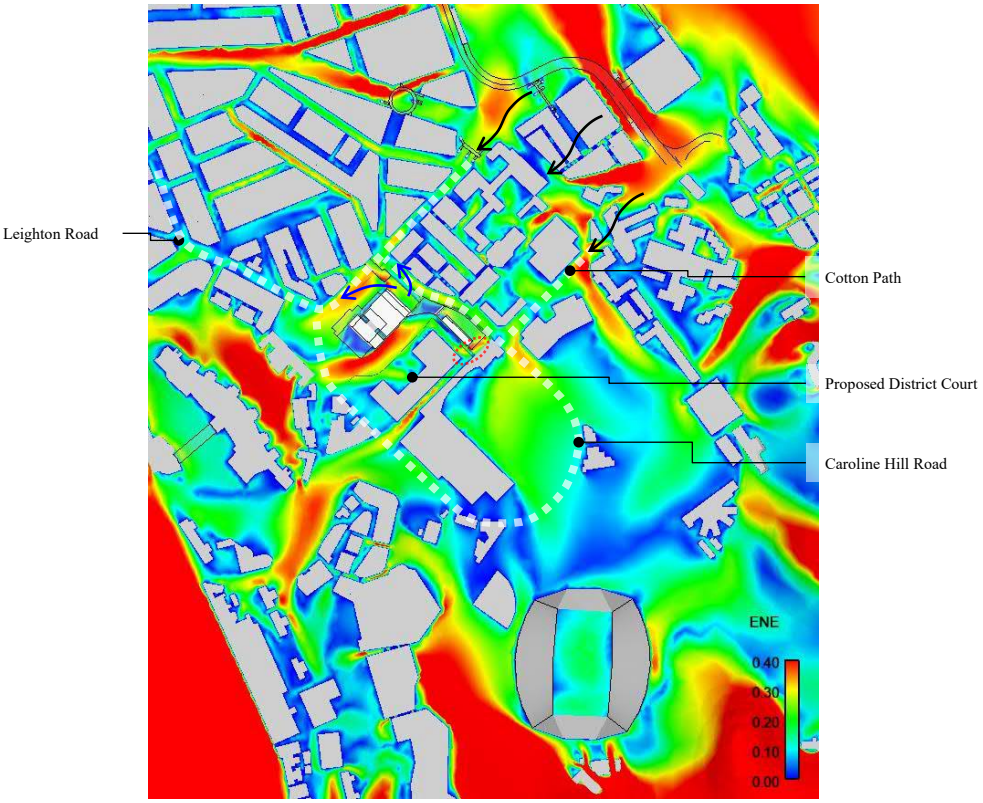

Figure 44 Contour plot of VR of Baseline Scheme under ENE wind

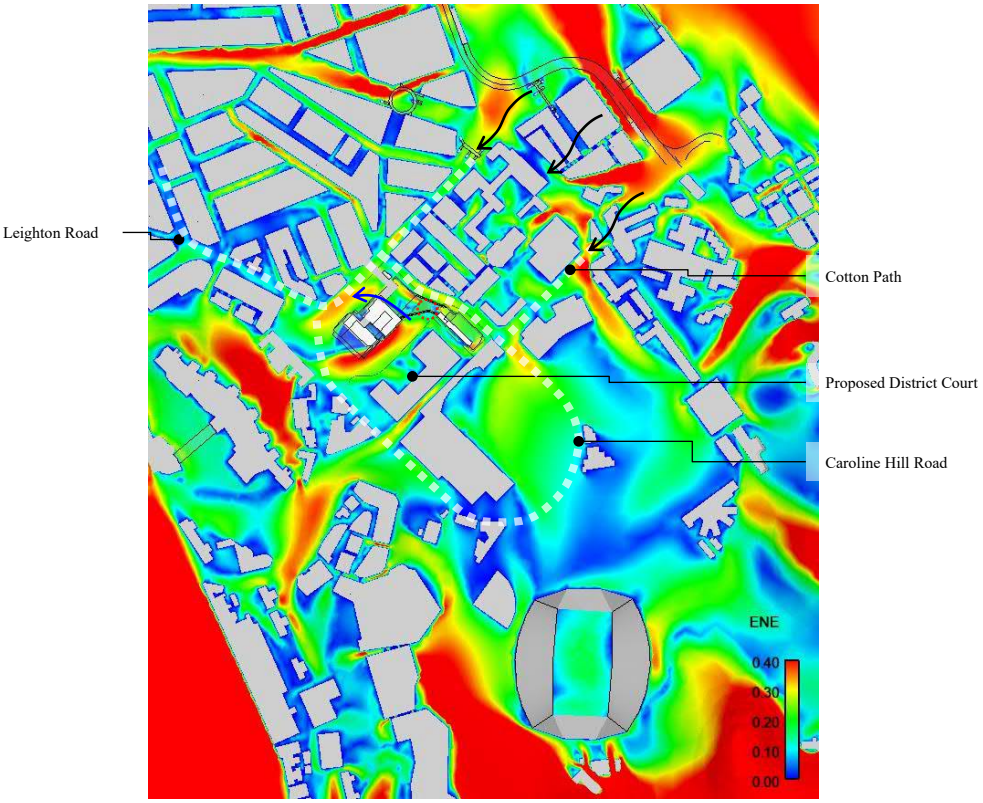

Figure 45 Contour plot of VR of Proposed Scheme under ENE wind

5.3.4 E Wind

The overall wind performance of Baseline and Proposed Schemes under E wind is presented in Figure 46 and Figure 47 respectively.

The Application Site is located at the leeward side of mid to high-rise development with hilly terrain of Grandview Mansion on further side. Surrounding wind environment is dominated by upwind developments and hilly terrain, except for some localized difference around the Application Site.

Due to surrounding buildings and hilly terrain, incoming wind would be diverted to reach the Application from Caroline Hill Road and Cotton Path. Some high-level wind would skim over the mid-rise building to reach the Application Site from the north-east direction. The incoming wind directions are illustrated by **Black** arrows Figure 46 and Figure 47 respectively.

Under both Schemes, downwash effect would be observed on T2, T3 and Proposed District Court. Under Baseline Scheme, due to the larger frontal area of T3, more downwashed wind from T3 would ventilate the T3 podium and Caroline Hill Road., slightly higher VR would be observed, illustrated by **Purple** arrow in Figure 46.

Under Proposed Scheme, the setback of T2 enhanced the wind permeability, incoming wind would skim over the T2 podium to ventilate the north-western site boundary and Leighton Road, where slightly higher VR would be observed, illustrated by **Black** circles in Figure 47.

Under Proposed Scheme, the enclosed T2-T3 footbridge would divert some incoming wind towards street level, together with the larger building setback of T3 from north-eastern site boundary, slightly higher VR on Caroline Hill Road would be observed, illustrated by **Red** arrows in Figure 47.

However, the footbridge would also shield incoming wind from reaching the T2 Podium, where slightly lower VR would be observed, illustrated by **Red** circle in Figure 47.

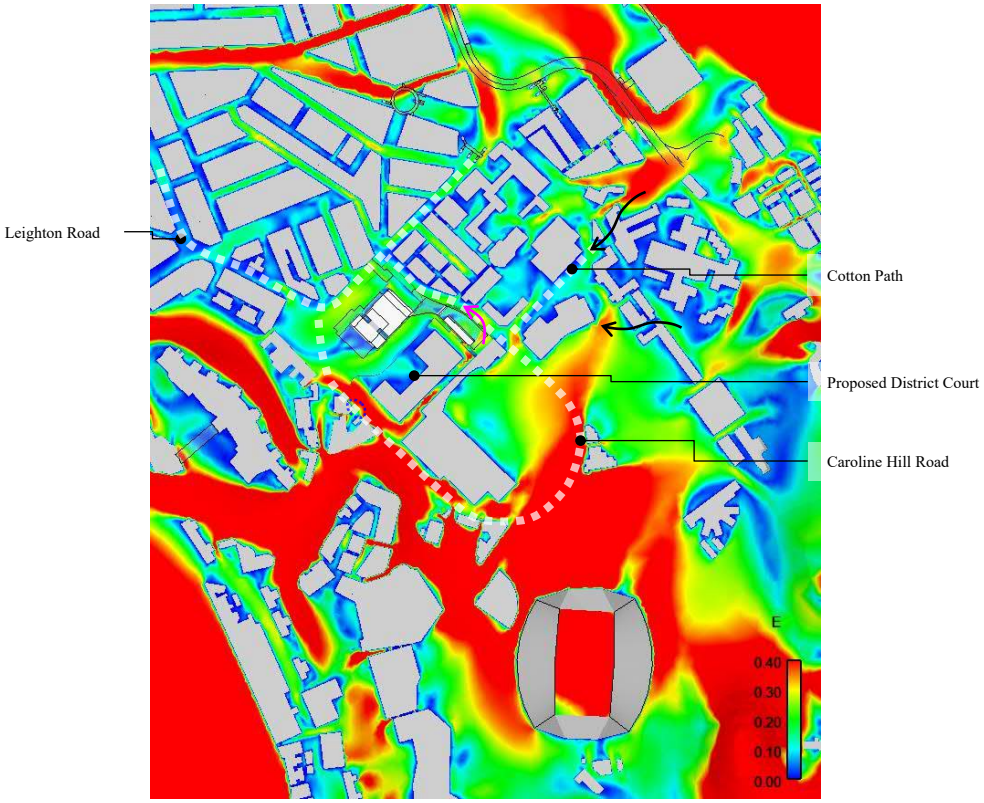

Figure 46 Contour plot of VR of Baseline Scheme under E wind

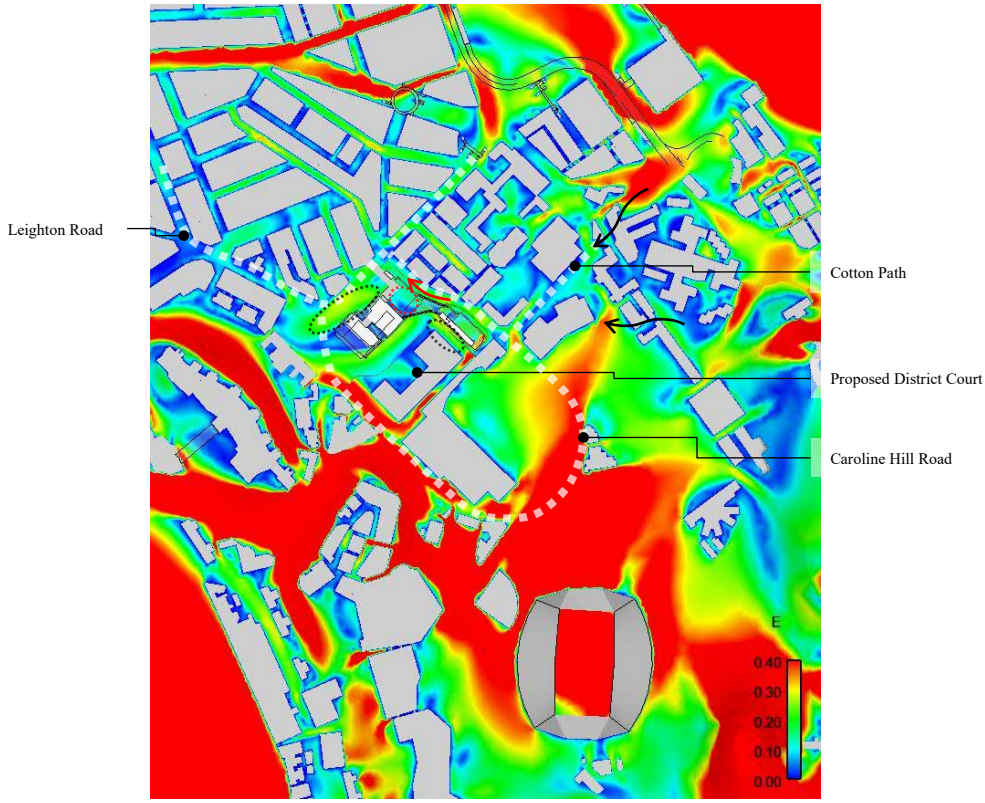

Figure 47 Contour plot of VR of Proposed Scheme under E wind

5.3.5 ESE Wind

The overall wind performance of Baseline and Proposed Schemes under ESE wind is presented in Figure 48 and Figure 49 respectively.

The Application Site is located at the leeward side of mid-rise building and open space provided by recreational area with hilly terrain of Grandview Mansion on further side, Also T1&T2 are partially shield by Proposed District Court. Surrounding wind environment is dominated by upwind developments and hilly terrain, except for some localized difference around the Application Site.

Due to the surrounding building and hilly terrain, incoming wind would be diverted to reach the Application from Caroline Hill Road. Some high-level wind would skim over the mid-rise building to reach the Application Site from prevailing wind direction. The incoming wind directions are illustrated by **Black** arrows Figure 48 and Figure 49 respectively.

Under both Schemes, downwash effect would be observed on T1, T2, T3 and Proposed District Court. Under Baseline Scheme, due to larger frontal area of T3 more downwashed wind would be induced to ventilate the T3 podium, where slightly higher VR would be observed, illustrated by **Blue** circle in Figure 48.

Also, the larger frontal area of T2 and T3 would induce more prominent downwash effect to ventilate the Access Riad within Application Site and Caroline hill road, where slightly higher VR would be observed, illustrated by **Blue** arrows in Figure 48.

Under Proposed Scheme, the Internal Street of T1 on G/F would divert incoming wind to further ventilate the Hoi Ping Road, where slightly higher VR would be observed, illustrated by **Blue** arrow in Figure 49.

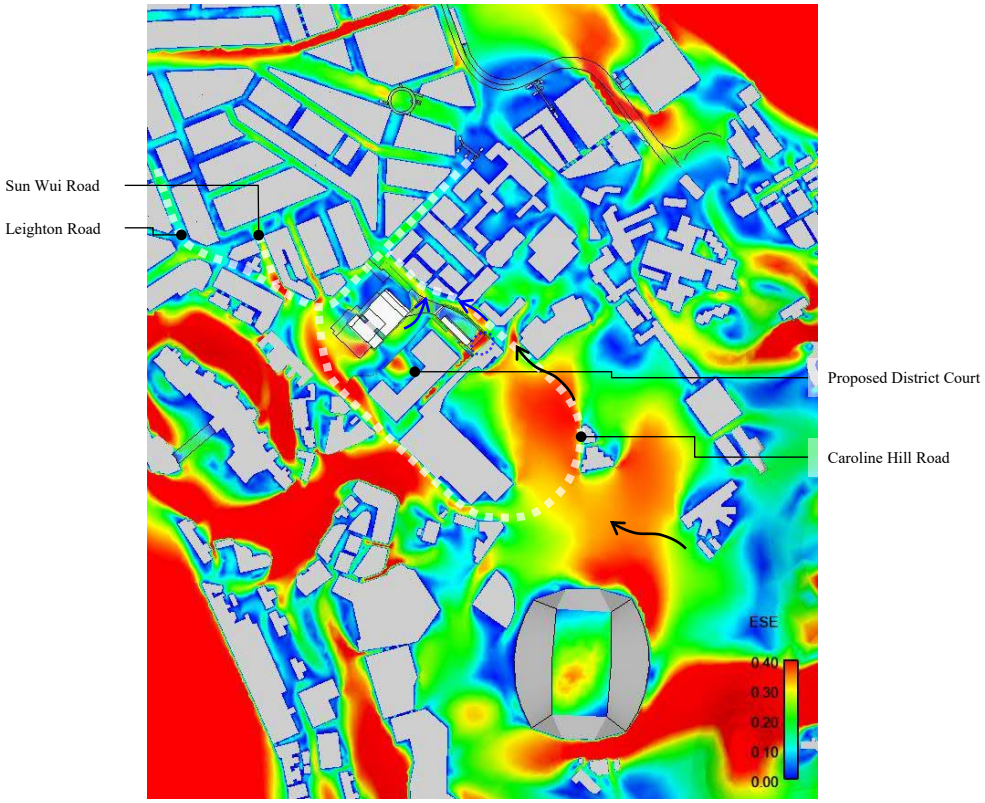

Figure 48 Contour plot of VR of Baseline Scheme under ESE wind

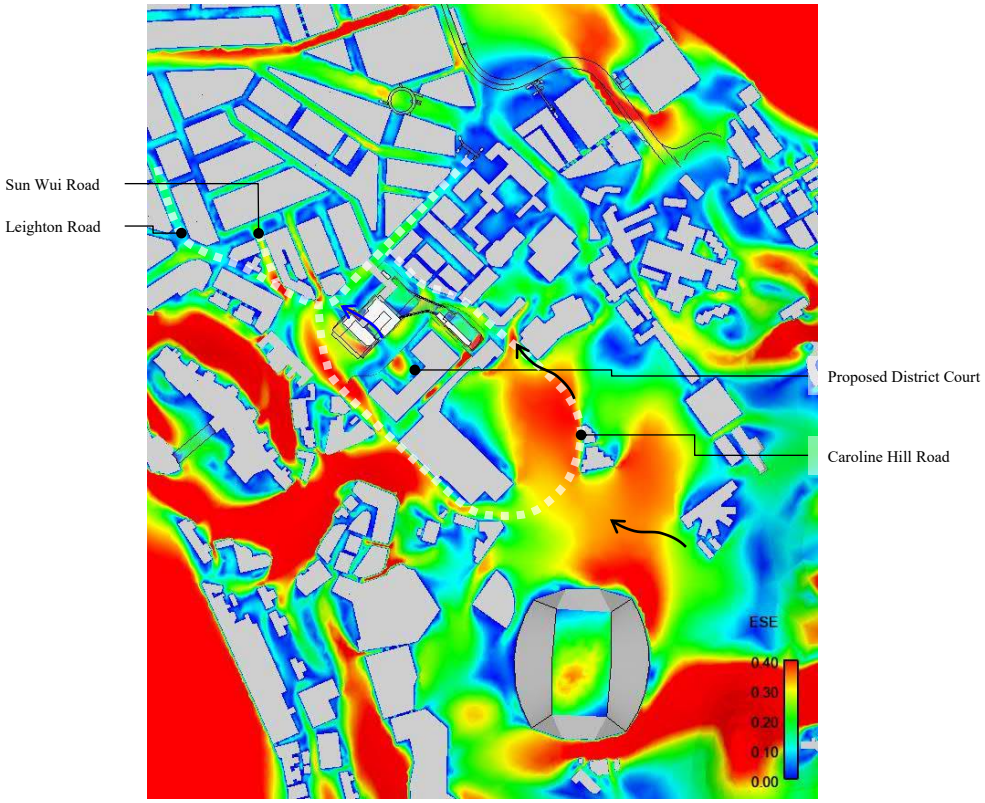

Figure 49 Contour plot of VR of Proposed Scheme under ESE wind

5.3.6 SE Wind

The overall wind performance of Baseline and Proposed Schemes under SE wind is presented in Figure 50 and Figure 51 respectively.

The Application Site is located at the leeward side of South China Stadium and open space provided by recreational area with hilly terrain on further side. Also, T1&T2 are shielded by Proposed District Court. Surrounding wind environment is dominated by upwind developments and hilly terrain, except for some localized difference around the Application Site.

Due to the hilly terrain and surrounding buildings, incoming wind would be diverted to reach the Application from Caroline Hill Road. Some high- level wind would reach the T3 from prevailing wind direction with relatively low obstruction. The incoming wind direction is illustrated by **Black** arrows Figure 50 and Figure 51 respectively.

Under both Schemes, downwash effect would be observed on T3 and Proposed District Court. Under Baseline Scheme, due to the larger frontal area of T3 more downwashed wind would be induced to ventilate the T3 podium and to further ventilate the streets at the leeward side such as St. Paul's Convent. Slightly higher VR would be observed, illustrated by **Blue** arrow in Figure 50.

Under Proposed Scheme, the enclosed T2-T3 footbridge would divert the incoming wind to the street level, together with the larger building setback of T3 from north-eastern site boundary, slightly higher VR on Access Road within Application Site would be observed, illustrated by **White** arrow in Figure 51.

However, the footbridge would also shield the T2 podium, where slightly lower VR would be observed, illustrated by **White** circle in Figure 51.

Under Proposed Scheme, the larger building setback of T2 allows incoming wind to skim over the T2 podium and ventilate Leighton Road and Sunning Road, where slightly higher VR can be observed, illustrated by **Red** arrow in Figure 51.

Due to the smaller frontal area of T3 under Proposed Scheme, more mid and high level winds would be diverted towards Lok Sing Centre at the far leeward side, and induce more prominent downwash effect to ventilate the Gloucester Road and Yee Wo Stret, where slightly higher VR would be observed, illustrated by **Blue** circles in Figure 51.

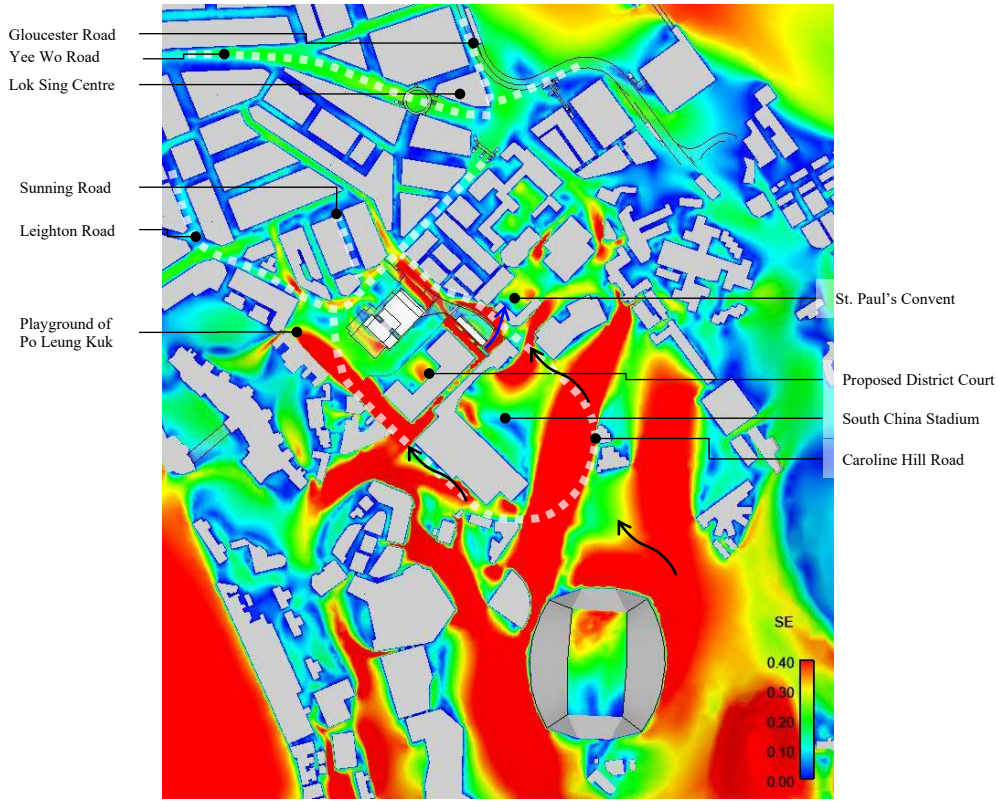

Figure 50 Contour plot of VR of Baseline Scheme under SE wind

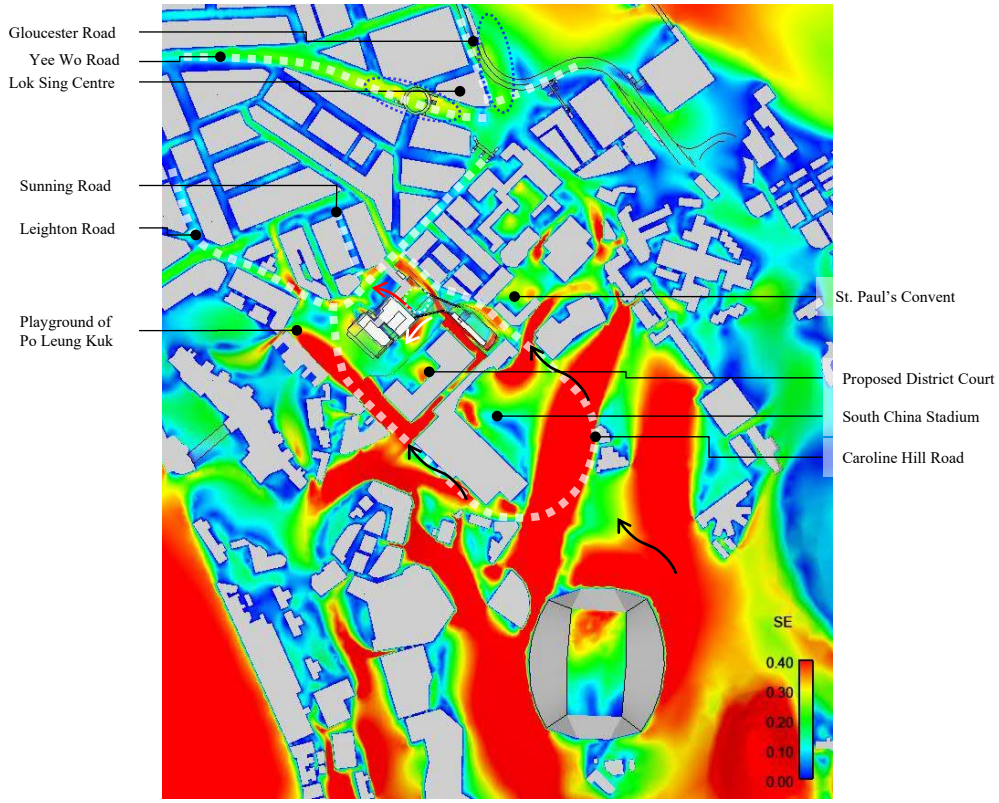

Figure 51 Contour plot of VR of Proposed Scheme under SE wind

5.3.7 SSE Wind

The overall wind performance of Baseline and Proposed Schemes under SSE wind is presented in Figure 52 and Figure 53 respectively.

The Application Site is located at the leeward side of Hong Kong Stadium and hilly terrain on further side. Also, T1&T2 are shielded and T3 are partially shielded by Proposed District Court respectively. Surrounding wind environment is dominated by upwind developments and hilly terrain, except for some localized difference around the Application Site.

Due to the hilly terrain, incoming wind would reach the Application from Caroline Hill Road. Some high-level wind would skim over the Hong Kong Stadium and open space to reach the T3 from prevailing wind direction. The incoming wind directions are illustrated by **Black** arrows in Figure 52 and Figure 53 respectively.

Under both Schemes, downwash effect would be observed on T3 and Proposed District Court. Under Baseline Scheme, due larger frontal area of T3 more downwashed wind would be induced to ventilate the T3 podium, where slightly higher VR would be observed, illustrated by **Black** circle in Figure 52.

Also, under Baseline Scheme, the larger façade of T2 would divert some high-level towards Access Road within Application Site and Elevated Design of T1 on G/F, where slightly higher VR would be observed, illustrated by **Red** circle in Figure 52.

Under Proposed Scheme, the larger building setback of T2 allows incoming wind to skim over the T2 podium and ventilate the Leighton Road and Yun Ping Road, where slightly higher VR can be observed, illustrated by **Red** arrow in Figure 53.

In addition, the enclosed T2-T3 footbridge would divert the incoming wind to the street level, together with the larger building setback of T3 from north-eastern site boundary, slightly higher VR on Access Road within Application Site and Caroline Hill Road would be observed, illustrated by **White** arrow in Figure 53.

However, the footbridge would also shield the podium of T2 where slightly lower VR would be observed, illustrated by **White** circle in Figure 53.

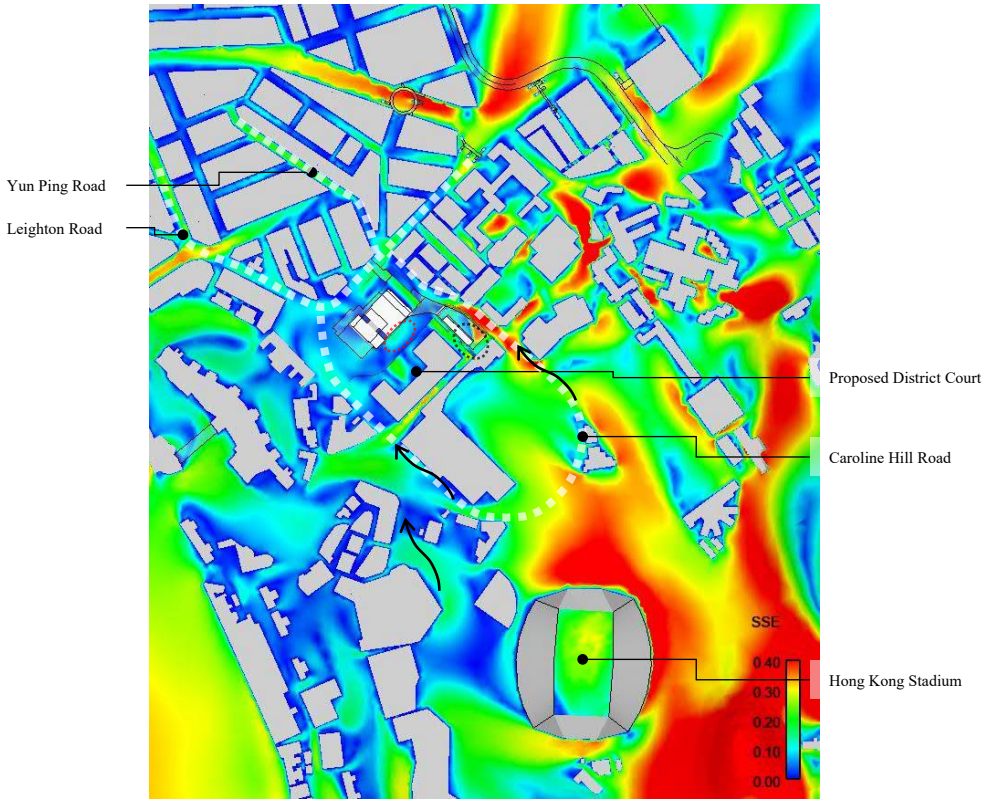

Figure 52 Contour plot of VR of Baseline Scheme under SSE wind

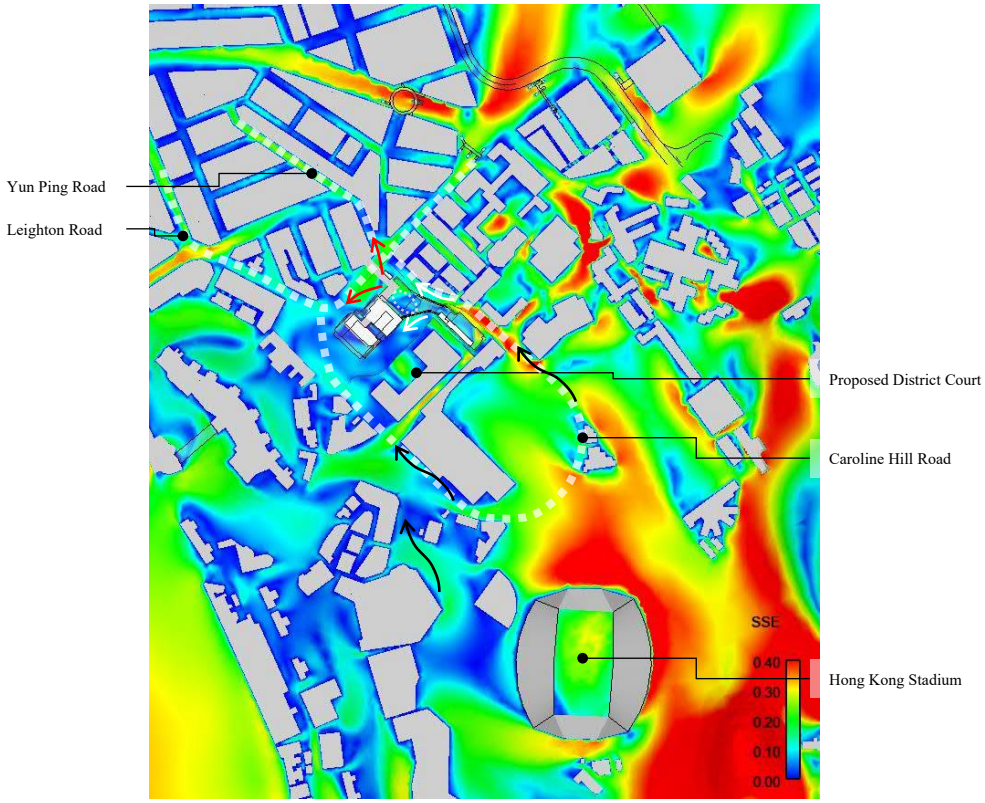

Figure 53 Contour plot of VR of Proposed Scheme under SSE wind

5.3.8 S Wind

The overall wind performance of Baseline and Proposed Schemes under S wind is presented in Figure 54 and Figure 55 respectively.

The Application Site is located at the leeward side Beverly Hill. Also, T1, T2 and T3 are partially shielded by Proposed District Court. Surrounding wind environment is relatively calm and dominated by upwind developments and hilly terrain, except for some localized difference around the Application Site.

Due to the upwind developments and hilly terrain, incoming wind would be diverted to reach the Application from Caroline Hill Road, Leighton Road and Yun Ping Road. Some high-level wind would flow around Beverly Hill to reach the T3 from prevailing wind direction. The incoming wind directions are illustrated by **Black** arrows Figure 54 and Figure 55 respectively.

Under both Schemes, downwash effect would be observed on T1 and Proposed District Court.

Under both Schemes, incoming wind from northern Caroline Hill Road would recirculate toward the Access Road within Application Site to recover the wind shadow. Under Baseline Scheme, the incoming wind would enter the Access Road within Application Site. While under Proposed Scheme, the enclosed T2-T3 footbridge and larger building setback of T3 from north-eastern site boundary would divert the incoming wind to travel along Caroline Hill Road, where different in ventilation pattern would be observed, illustrated by **Red** arrow in Figure 54 and Figure 55 respectively.

Under Proposed Scheme, due to smaller podium setback of T1 from north-western boundary, incoming wind from Leighton Road would be diverted towards Hoi Ping Road, where slightly higher VR would be observed, illustrated by **White** arrow in Figure 55.

However, it would shield the Caroline Hill Road on the leeward side, where slightly higher VR would be observed, illustrated by **Red** circle in Figure 55.

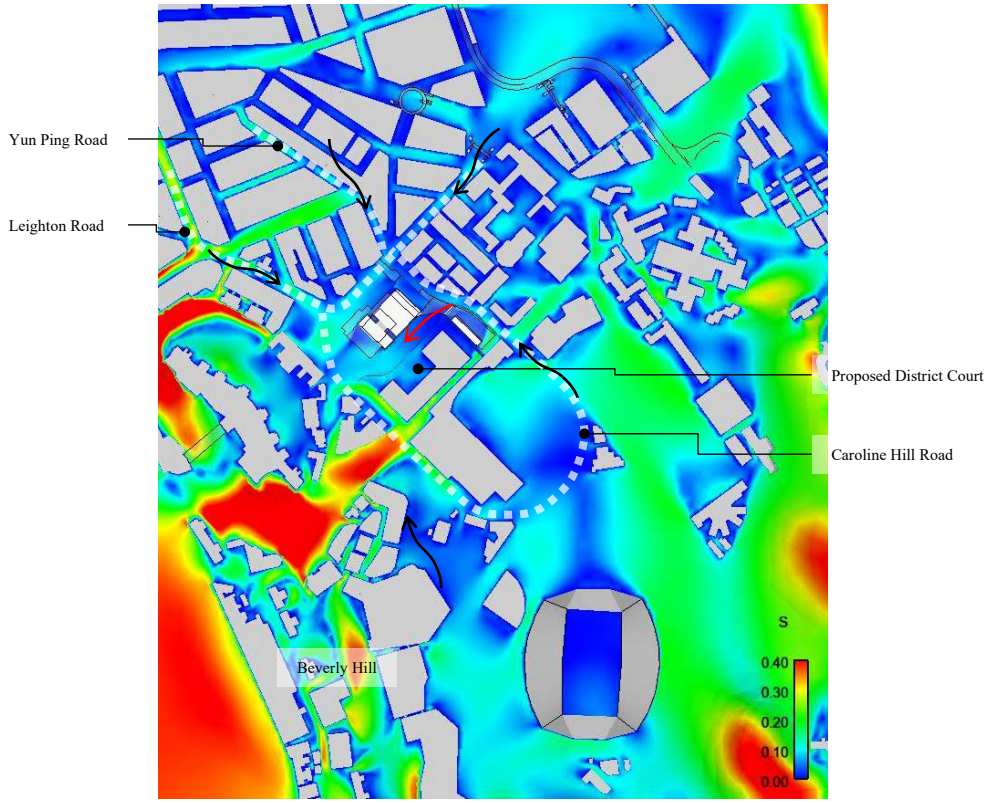

Figure 54 Contour plot of VR of Baseline Scheme under S wind

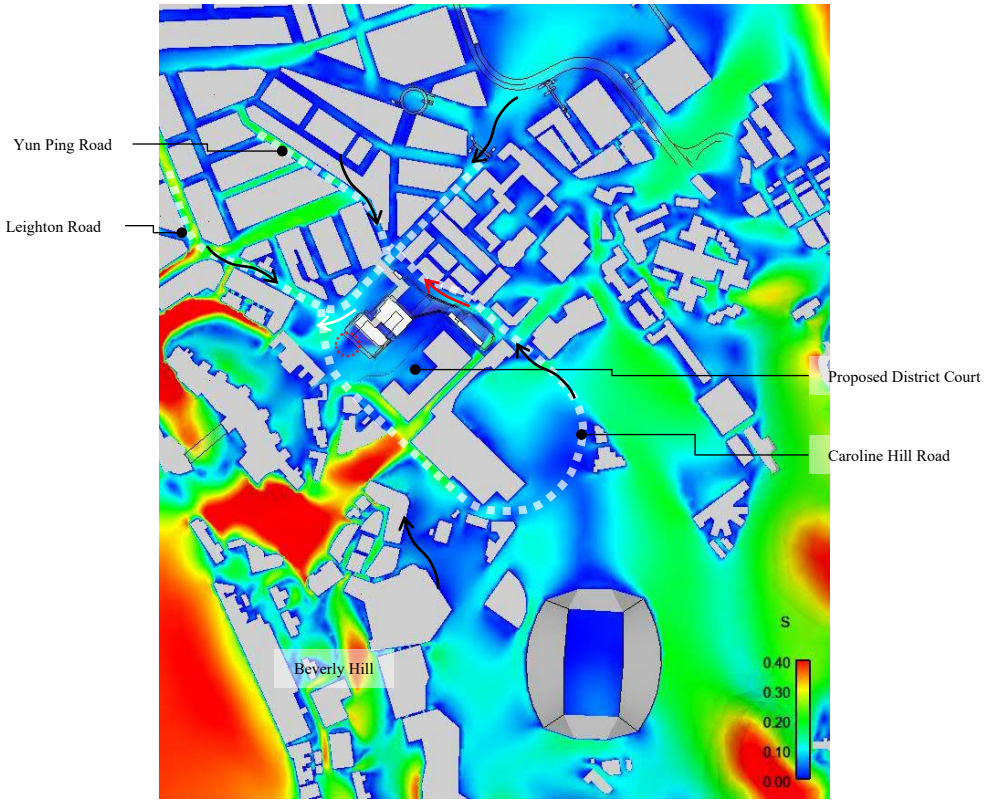

Figure 55 Contour plot of VR of Proposed Scheme under S wind

5.3.9 SSW Wind

The overall wind performance of Baseline and Proposed Schemes under SSW wind is presented in Figure 56 and Figure 57 respectively.

The Application Site is located at the leeward side Beverly Hill. Also, T1, T2 and T3 are partially shielded by Proposed District Court. Surrounding wind environment is relatively calm and dominated by upwind developments and hilly terrain, except for some localized difference around the Application Site.

Due to the upwind developments and hilly terrain, incoming wind would be diverted to reach the Application from Caroline Hill Road, Leighton Road and Yun Ping Road. Some high-level wind would reach the T3 from prevailing wind direction. The incoming wind directions are illustrated by **Black** arrows Figure 56 and Figure 57 respectively.

Under both Schemes, downwash effect would be observed on T1 and Proposed District Court. Under Baseline Scheme, due to the smaller T3 core, incoming wind from Caroline Hill Road would pass through the T3 podium to ventilate the Proposed District Court podium, where slightly higher VR would be observed, illustrated by **Black** circle in Figure 56.

Under Baseline Scheme, permeable T2-T3 footbrige allows incoming wind to pass through and ventilate the leeward side where slightly higher VR on Caroline Hill Road would be observed, illustrated by **Red** arrow in Figure 56.

Under Proposed Scheme, larger building setback of T3 from north-eastern site boundary and larger T3 core channel more incoming wind from Caroline Hill Road into enclosed T2-T3 footbridge to ventilate T2 podium, where slightly lower VR would be observed, illustrated by **Red** arrow in Figure 57.

In addition, Internal Street of T1 on G/F and protruded T2 podium would divert incoming wind to flow from Access Road within Application Site to north-western site boundary, where slightly higher VR would be observed, illustrated by **Purple** arrow in Figure 57.

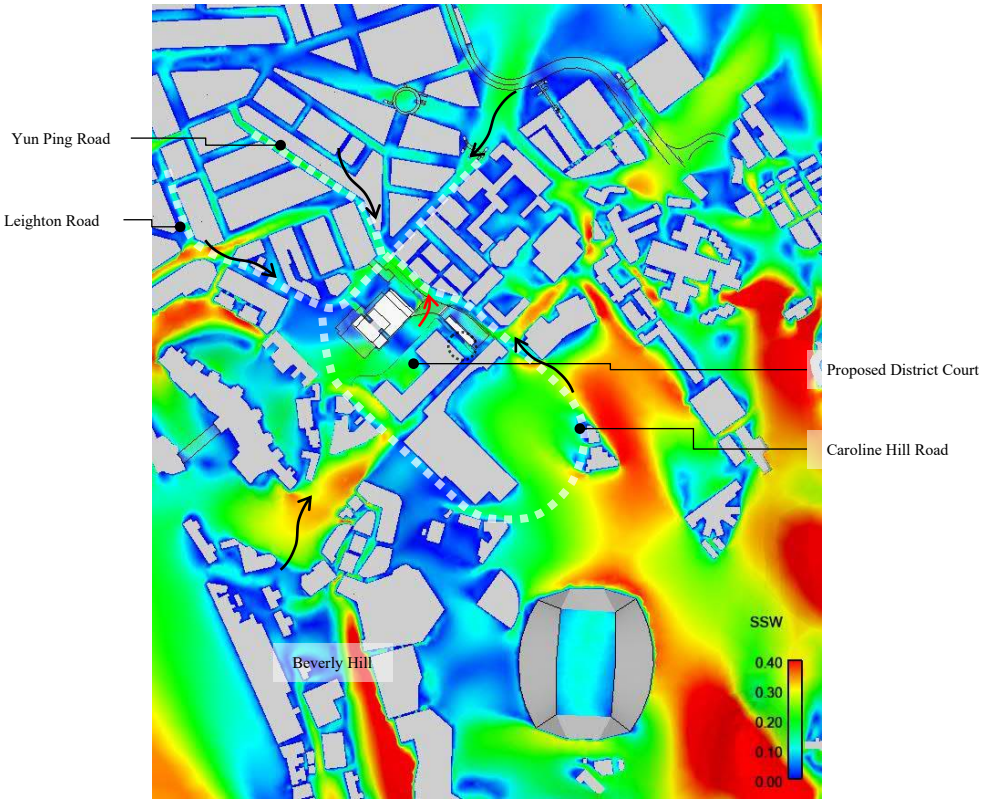

Figure 56 Contour plot of VR of Baseline Scheme under SSW wind

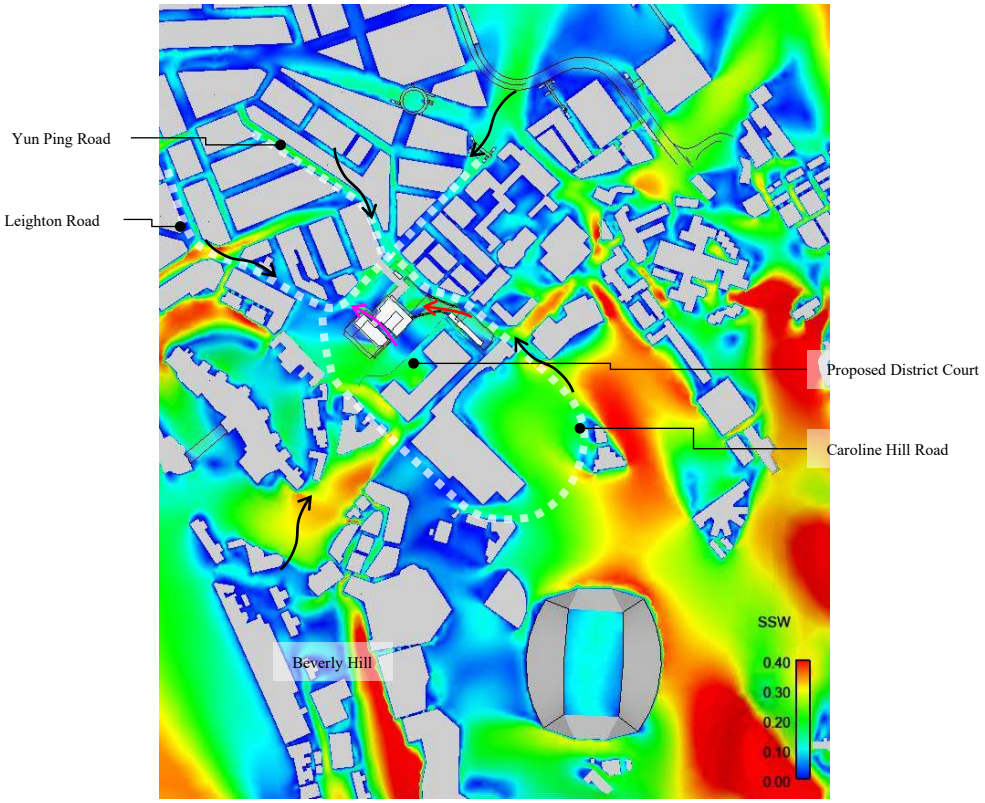

Figure 57 Contour plot of VR of Proposed Scheme under SSW wind

5.3.10 SW Wind

The overall wind performance of Baseline and Proposed Schemes under SW wind is presented in Figure 58 and Figure 59 respectively.

The Application Site is located at the leeward side of density built mid to high-rise developments at higher elevation. T1 and T2 are shielded by The Leighton Hill, while T3 is shielded by Proposed District Court. Surrounding wind environment is dominated by upwind developments and hilly terrain, except for some localized difference around the Application Site.

Due to the upwind developments and hilly terrain, incoming wind would be diverted to reach the application site from Leighton Road, Hoi Ping Road, Sunning Road, Yun Ping Road and Caroline Hill Road. Some high-level wind would skim over the mid-rise buildings to reach the T1 from prevailing wind direction. The incoming wind directions are illustrated by **Black** arrows in Figure 58 and Figure 59 respectively.

Under both Schemes, downwash effect would be observed on Proposed District Court. Under Baseline Scheme, due to the smaller T3 core the downwashed wind from Proposed District Cour would travel towards T3 podium, where slightly higher VR would be observed, illustrated by **Black** circle in Figure 58.

However, the air stream would continue to travel towards St. Paul's Convent and limit the incoming wind from Cotton Path, where slightly lower VR would be observed, illustrated by **Red** circle in Figure 58.

On other hand, under Proposed Scheme, due to less prominent air stream traveling from Proposed District Court to T3 podium, together with larger building setback of T3 from north-eastern site boundary, more incoming wind from Caroline Hill Road would reach the T3 podium, where slightly lower VR would be observed, illustrated by. **Purple** circle in Figure 59.

Under Baseline Scheme, mid-level incoming wind from Yun Ping Road and Pennington Street would flow through the T2-T3 footbridge and ventilate the Access Road within Application Site, where slightly higher VR would be observed, illustrated by **Purple** arrow in Figure 58.

Under both Scheme, incoming wind from Yun Ping Road and Pennington Street would travel along north-western site boundary. Under Baseline Scheme, due to larger setback of T1 podium from north-western site boundary, the incoming wind would continue to travel to ventilate the Elevated Design of T1 on G/F. While under Proposed Scheme, Internal Street of T1 on G/F and protruded T1 podium would divert incoming wind towards Access Road within Application Site. Where different in ventilation pattern would be observed, illustrated by **Red** arrow in Figure 58 and Figure 59 respectively.

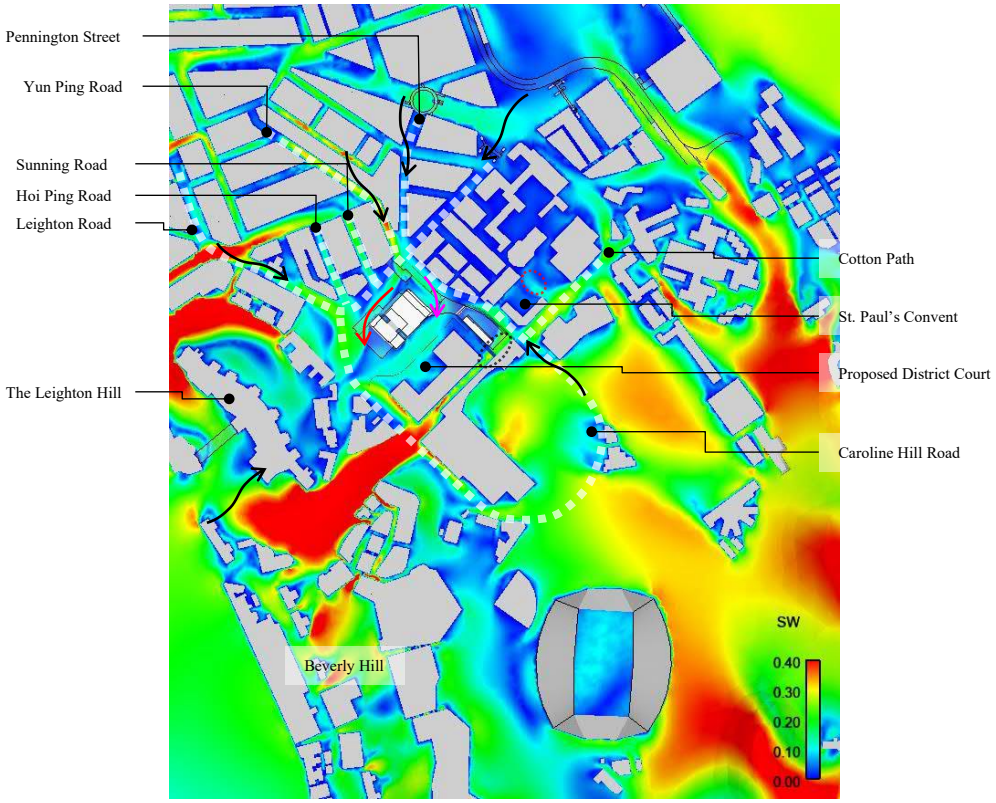

Figure 58 Contour plot of VR of Baseline Scheme under SW wind

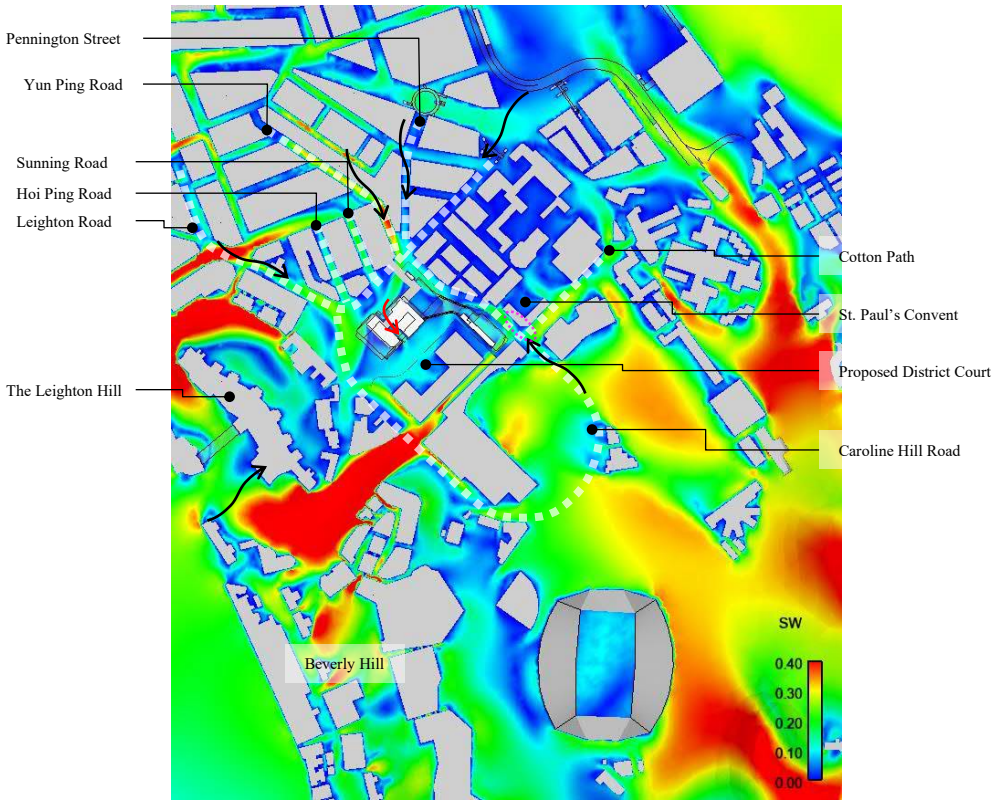

Figure 59 Contour plot of VR of Proposed Scheme under SW wind

5.3.11 WSW Wind

The overall wind performance of Baseline and Proposed Schemes under WSW wind is presented in Figure 60 and Figure 61 respectively.

The Application Site is located at the leeward side of density built mid to high-rise developments at higher elevation. T1 and T2 are shielded by The Leighton Hill, while T3 is shielded by Proposed District Court. Surrounding wind environment is dominated by upwind developments and hilly terrain, except for some localized difference around the Application Site.

Due to the upwind developments and hilly terrain, incoming wind would be diverted to reach the application site from Leighton Road, Hoi Ping Road, Sunning Road, Yun Ping Road, Pennington Street and Caroline Hill Road. The incoming wind directions are illustrated by **Black** arrows in Figure 60 and Figure 61 respectively.

Under Baseline Scheme, the incoming wind traveling along the building separation between Proposed District Court and South China Stadium would continue to ventilate the T3 podium due smaller T3 core, where slightly higher VR would be observed, illustrated by **Black** circle in Figure 60.

Under Baseline Scheme, mid-level incoming wind from Yun Ping Road and Pennington Street would flow through the T2-T3 footbridge and ventilate the Access Road within Application Site, where slightly higher VR would be observed, illustrated by **Purple** arrow in Figure 60.

Under Proposed Scheme, the incoming wind from Yun Ping Road and Pennington Street would be channelled by the enclosed T2-T3 footbridge to ventilate the podium of T3 where slightly higher VR would be observed, illustrated by **Purple** arrow in Figure 61.

Under Proposed Scheme, due to the wider separation of Internal Street of T1 on G/F, more incoming wind from Leighton Road, Hoi Ping Road and Sunning Road would enter to ventilate the Access Road within the Application Site, where slightly higher VR would be observed, illustrated by **Red** arrow in Figure 61.

Under Proposed Scheme, less setback of T1 podium from north-western site boundary, the incoming wind from Hoi Ping Road would be limited towards the Elevated Design of T1 on G/F and Caroline Hill Road, where slightly lower VR would be observed, illustrated by **Black** circle in Figure 61.

However, more wind would be diverted towards the Caroline Hill Road where slightly higher VR would be observed, illustrated by **Blue** arrow in Figure 61.

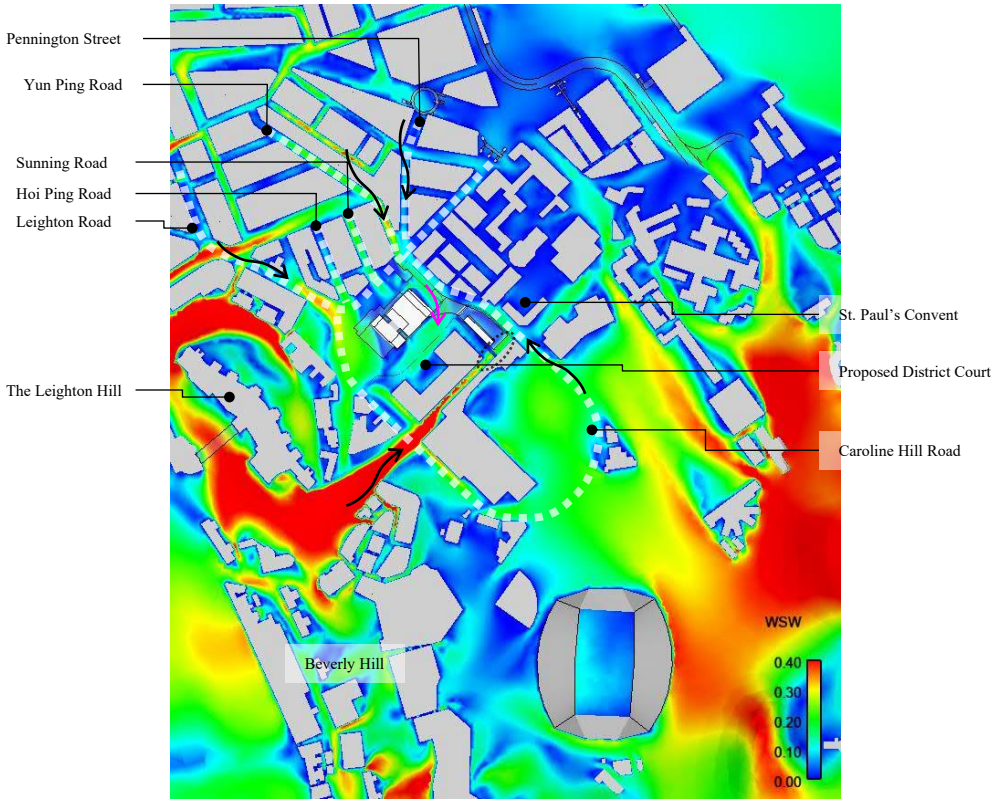

Figure 60 Contour plot of VR of Baseline Scheme under WSW wind

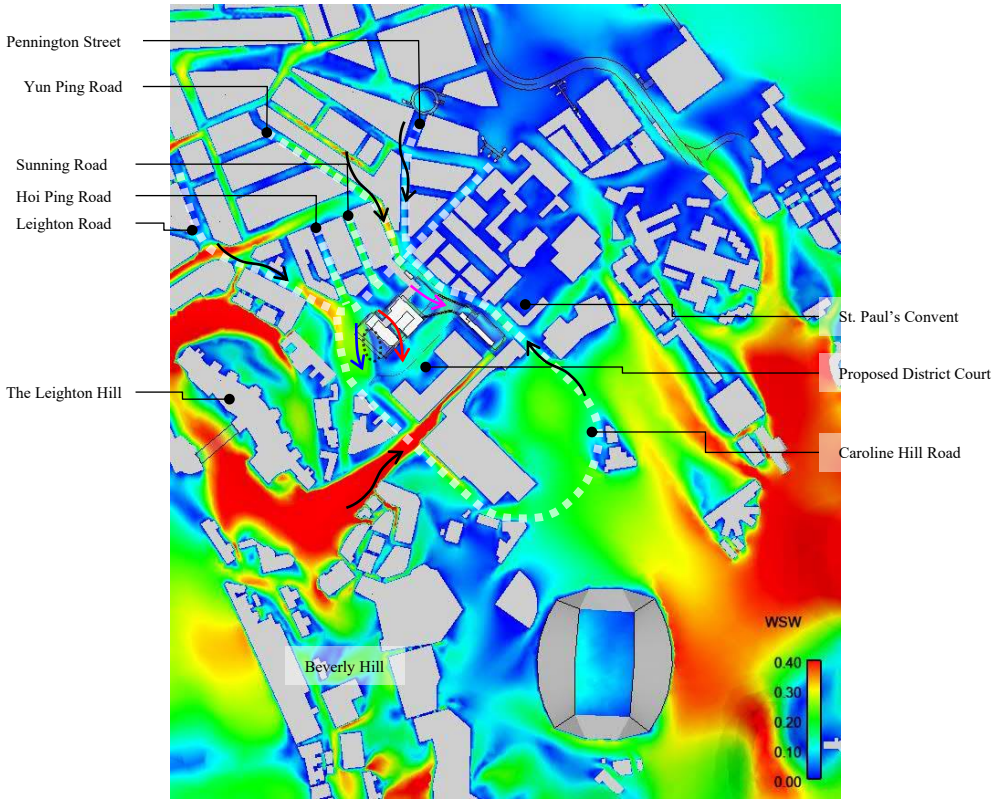

Figure 61 Contour plot of VR of Proposed Scheme under WSW wind

5.3.12 SVR and LVR

The average Velocity Ratios of all test points are determined and extracted. The results of all test points are presented in Appendix E. According to the *AVA Technical Circular*, the Velocity Ratio (VR) at each test point is assessed and the SVR and the LVR under the annual and summer conditions are determined and reported to assess the impact of Proposed Scheme to the wind environment, comparing Baseline Scheme. The SVR and LVR value of the test points are summarized as follows:

Table 7 Annual SVR and LVR for Baseline and Proposed Schemes

	Baseline Scheme	**Proposed Scheme**
SVR	0.16	0.15
LVR	0.19	0.19

Table 8 Summer SVR and LVR for Baseline and Proposed Schemes

	Baseline Scheme	**Proposed Scheme**
SVR	0.14	0.14
LVR	0.18	0.18

The result indicates that, due to the densely built-up area and hilly terrain in surrounding areas, both Scheme would achieve similar ventilation performance along the Application Site boundary and in the Surrounding Area, under annual and summer conditions.

5.4 Focus Areas

Within the Assessment Area and Application Site given in Figure 19 to Figure 21 respectively, a total of 51 focus areas are proposed. The associated test points and averaged VR for focus areas are tabulated in Table 9.

Table 9 Focus Areas and Corresponding Test Points

	Focus Area	**Annual Condition**		**Summer Condition**	
		Baseline	**Proposed**	**Baseline**	**Proposed**
1	Yee Wo Street	0.23	0.23	0.18	0.18
2	Fung Un Street	0.11	0.11	0.10	0.10
3	Jardine's Bazaar	0.21	0.21	0.13	0.13
4	Jardine's Crescent	0.12	0.12	0.14	0.14
5	Yun Ping Road	0.19	0.19	0.20	0.20
6	Lan Fong Road	0.17	0.17	0.13	0.13
7	Lee Garden Road	0.10	0.10	0.14	0.14
8	Hysan Avenue	0.15	0.15	0.20	0.20
9	Sun Wui Road	0.13	0.13	0.17	0.17
10	Hoi Ping Road	0.13	**0.14**	0.14	0.14
11	Leighton Lane	0.18	0.18	0.21	0.21
12	Sunning Road	0.12	**0.13**	0.12	**0.13**
13	Playground of Po Leung Kuk	0.13	0.13	0.12	0.12
14	Leighton Hill Road	0.30	0.30	0.22	0.22

15	Link Road	0.27	0.27	0.27	0.27
16	Elevated Road to Bevely Hill	0.35	0.35	0.30	0.30
17	Happy View Terrace	0.20	0.20	0.21	0.21
18	Broadwood Road	0.42	0.42	0.39	0.39
19	Rest Garden on Broadwood Road	0.11	0.11	0.17	0.17
20	Road south of Beverly Hill	0.30	0.30	0.29	0.29
21	Confucius Hall Secondary School	0.26	0.26	0.15	0.15
22	Stadium Path	0.21	0.21	0.17	0.17
23	Hong Kong Stadium	0.28	0.28	0.23	0.23
24	Eastern Hospital Road Sitting-out Area 1	0.28	0.28	0.28	0.28
25	Easter Hospital Road	0.21	0.21	0.26	0.26
26	Tung Wah Eastern Hospital	0.11	0.11	0.14	0.14
27	Indian Recreation Club	0.27	0.27	0.30	0.30
28	Caroline Hill Road	**0.20**	0.19	**0.20**	0.19
29	Eastern Hospital Road Sitting-out Area 2	0.13	0.13	0.18	0.18
30	South China Stadium	0.18	0.18	0.20	0.20
31	So Kon Po Recreation Ground	0.22	0.22	0.27	0.27
32	Proposed District Court	0.21	0.21	0.23	0.23
33	Sir Ellis Kadoorie (S) Primary School	0.12	0.12	0.15	0.15
34	Disciplined Services Sports and Recreational Club	0.19	0.19	0.26	0.26
35	Ka Ning Path Rest Garden	0.22	0.22	0.18	0.18
36	Cotton Path Road	0.16	0.16	0.21	0.21
37	St. Paul's Convent	**0.09**	0.08	0.09	0.09
38	Ka Ning Road	0.12	0.12	0.17	0.17
39	Haven Street	0.12	0.12	0.08	0.08
40	St. Paul's Hospital	0.13	0.13	0.09	0.09
41	St. Paul's Convent School	0.08	0.08	0.07	0.07
42	Leighton Road	0.16	0.16	0.13	**0.14**
43	Keswick Street	0.13	0.13	0.09	0.09
44	Pennington Street	0.13	0.13	0.09	0.09
45	Irvine Street	0.17	0.17	0.10	0.10
46	Internal Street of T1 on G/F	**0.14**	0.12	**0.13**	0.12
47	Elevated Design of T1 on G/F	0.09	**0.12**	**0.13**	0.11
48	Access Road within Application Site	**0.15**	0.14	0.12	0.12
49	Open Space of T1&2 on G/F	0.19	0.19	0.20	0.20
50	Open Space of T2 on Podium Level	0.15	0.15	0.17	0.17
51	Elevated Design of T3 on Podium Level	0.15	0.15	0.19	0.19

Annual Condition

Under annual condition, the prevailing wind are mostly from E quadrant.

Under Baseline Scheme, due to the larger frontal area of T2 and T3, more prominent downwash effect would be induced to ventilate the podium and street level such as ***Caroline Hill Road***, ***St. Paul's Convent***, ***Access Road within Application Site*** and ***Internal Road of T1 on G/F***.

While under Proposed Scheme, the enclosed T2-T3 footbridge would also divert some incoming wind to ventilate the street level such as ***Elevated Design of T1 on G/F***.

Under Proposed Scheme, the larger building setback of T2 allows more incoming wind to skim over the T2 podium, and ventilate the leeward side including ***Hoi Ping Road*** and ***Sunning Road***.

Summer Condition

Under summer condition, the prevailing winds are mostly from SW quadrant.

Under Proposed Scheme, the larger building setback of T2 enhanced the wind permeability, more incoming wind would pass through and further skim over T2 podium and ventilate the leeward side such as ***Sunning Road*** and ***Leighton Road***.

Under Baseline Scheme, incoming wind from Yun Ping Road and Pennington Street would flow along the north-eastern site boundary to ventilate the leeward side including ***Caroline Hill Road, Internal Road of T1 on G/F*** and ***Elevated Design of T1 on G/F***

6 Minor Amendment on Proposed Scheme

As the design continue to develop, the lift lobby on 2/F of T3 is enlarged to allow more room for pedestrian flow. This result in an amendment to the elevated design on 2/F of T3 including an extension of lift lobby towards the elevated void with approx. 5m (W) x 5m (H) x 15m (L). The amended elevated void varies from approx. 21m widest to 16m narrowest with a height maintained with approx. 13.4m. An additional void with approx. 5m (W) x 8.4m (H) is located above the amended lift lobby. An illustration diagram is shown in Figure 62.

The overall ventilation performance along the Site Boundary and Assessment Area due to the amendment would be minimal with confined difference near the amended lift lobby due to the following reasons:

Podium level incoming wind would reach T3 from the eastern side along Caroline Hill Road and from the south-western side under both annual and summer conditions.

For incoming wind from eastern side, the amended lift lobby is a minor extension from core structure and away from the north-eastern site boundary, which minimize the blockage. The elevated design with at least. 16m (W) x 13.4m (H) are free of obstruction for eastern wind. With additional 5m(W) x 8.4m (H) void atop the lift lobby, the effectiveness of the void would be insignificantly affected. Wind from eastern side would still be able to flow through underneath the tower. Some localized impact may be observed at the landscape deck under T3 within the Site, the influence on Caroline Hill Road would be minimal.

For incoming wind from south-western direction, the elongated shape of core structure would dominate the wind environment and cast a localized wind shadow at the elevated area under T3. The amended lift lobby would fall within shadow zone and the influence from the amendment on ventilation performance would be insignificant.

In summary, the amendment would impose insignificant ventilation impact to wind performance along the site boundary and assessment area, the simulation discussed in previous sections remained valid after the amendment.

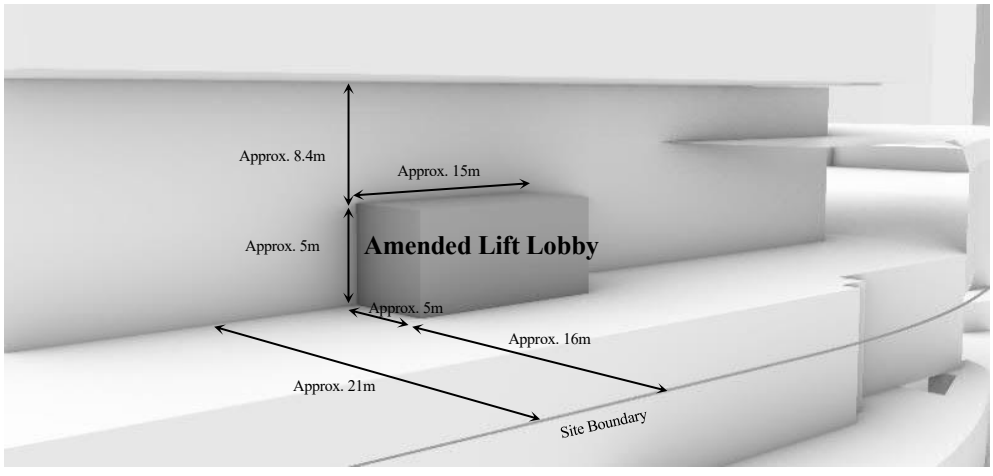

Figure 62 Amended Elevated Void on 2/F of T3

7 Conclusion

An Air Ventilation Assessment (AVA) – Initial Study was conducted to assess the ventilation performance of Baseline Scheme and Proposed Scheme in accordance to *the AVA Technical Circular*.

Two schemes were assessed using Computational Fluid Dynamics (CFD) techniques. A series CFD simulation using Realizable k-ε turbulence model were performed under annual and summer wind conditions with reference to *the AVA Technical Circular*. For annual wind condition, NNE, NE, ENE, E, ESE, S, SSW and SW were selected which gives total wind frequency of 78.5% over a year while E, ESE, SE, SSE, S, SSW, SW and WSW were selected for summer condition, which gives total wind frequency of 80.6%.

The Velocity Ratio (VR) as proposed by *the AVA Technical Circular* was employed to assess the ventilation performance under different schemes and its impact to the surroundings.

With reference to *the AVA Technical Circular*, 42 perimeter test points and 198 overall test points and 28 special test points were allocated to assess the ventilation performance in the Application Site and Assessment Area.

Although a minor amendment will be made to the Proposed Scheme, the simulation results of this report would remain valid as discussed in Section 6. The simulation results show the Proposed Scheme would achieve similar ventilation performance as Baseline along the Application Site boundary and in the Surrounding Area under both annual and summer conditions. Also, the surrounding wind environment are dominated by densely built-up area of Causeway Bay and hilly terrain at the southern side.

Major wind enhancement features are maintained with similar performance as Baseline Scheme including:

- #1. T1 – 15m (W) x 8.5m (H) elevated design of T1 on G/F, and
- #3. T3 – Approximately 16~21m (W) x 13.4m (H) elevated design with additional void of approximately 5m (W) x 8.4m (H) above extended lift lobby of T3 on podium level, and
- #4: T1 – Building setback of approximate 5m on average from the south-western boundary, and
- #5: T2 – Building setback of 4m at grade from north-eastern boundary, and
- #6: T3 – Building setback of 7.5m above 2F from the south-western boundary abutting the district court site, and
- #7: T1 – Min. 6m internal street of T1 on G/F.

Although the enclosed T2-T3 footbridge reduced the permeability across the Application Site, following major wind enhancement feature improved wind permeability across T2 podium to mitigate the ventilation impact:

- #2. 36m building setback from north-eastern site boundary above 2/F

8 Reference

[1] Annex A of Technical Circular No. 1/06 issued by the Housing, Planning and Lands Bureau pertaining specifically to Air Ventilation Assessments, 19th July, 2006

(https://www.devb.gov.hk/filemanager/en/content_679/hplb-etwb-tc-01-06.pdf)

[2] Planning Department RAMS Data (http://www.pland.gov.hk/pland_en/info_serv/site_wind/site_wind/)

[3] AVA Report for PLNQ B-1/AVA 2015 (https://www.pland.gov.hk/pland_en/info_serv/ava_register/ProjInfo/AVRG142_AVA_FinalReport.pdf)

Appendix A

Layout Plans of Baseline, Proposed Schemes

A1 Layout Plan of Baseline Scheme



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–	1st SUBMISSION				3–2022

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Cad File No.

RONALD LU & PARTNERS
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Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON IL NO.8945 AT CAROLINE HILL ROAD, CAUSEWAY BAY, HONG KONG

Drawing Title

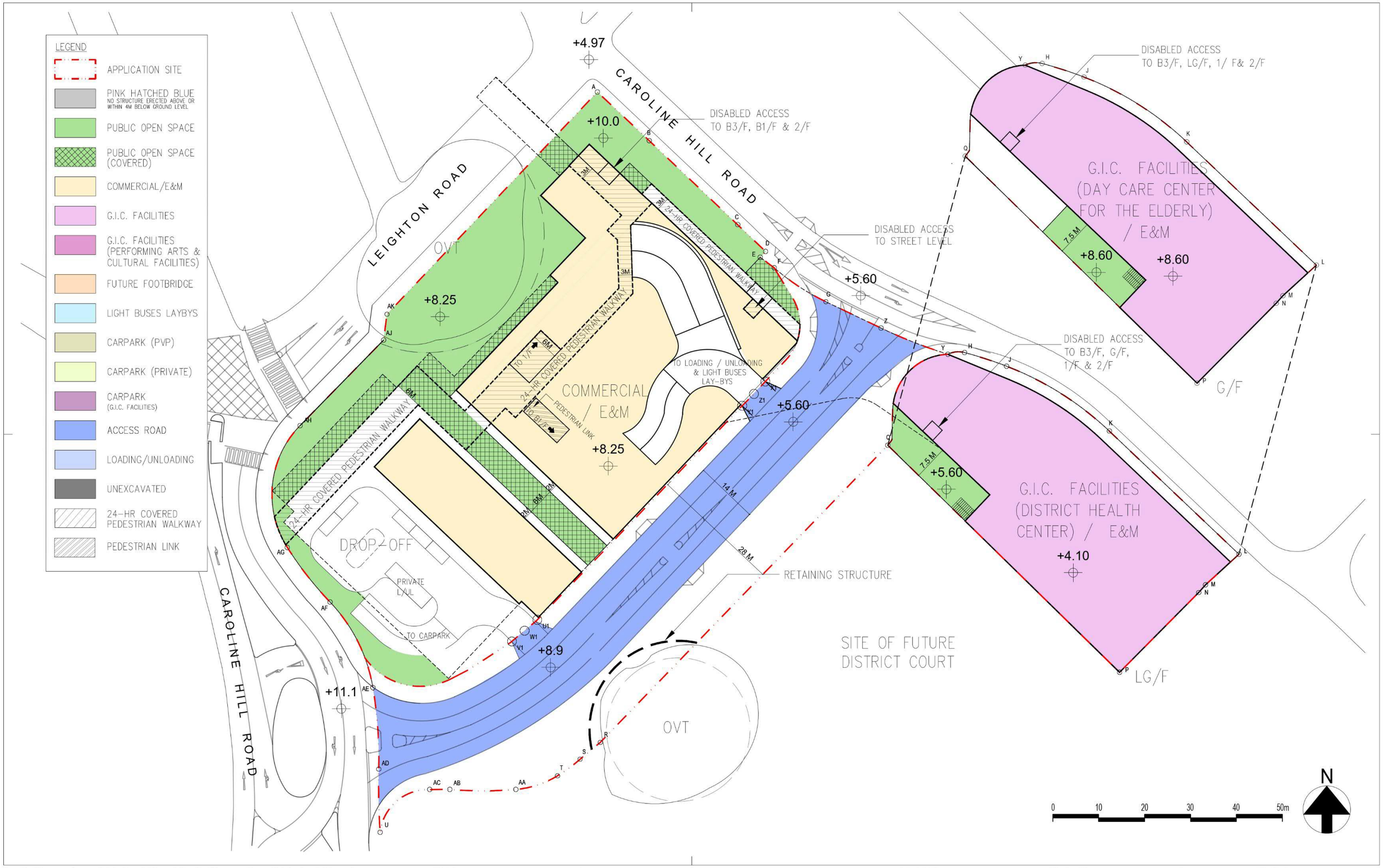
LAYOUT PLAN (ALL LEVELS)

Project No. 21105HK

Scale 1:750 (A3) Issue Date MAR 2022

Drawing No. MLP -001

Drawing Purpose



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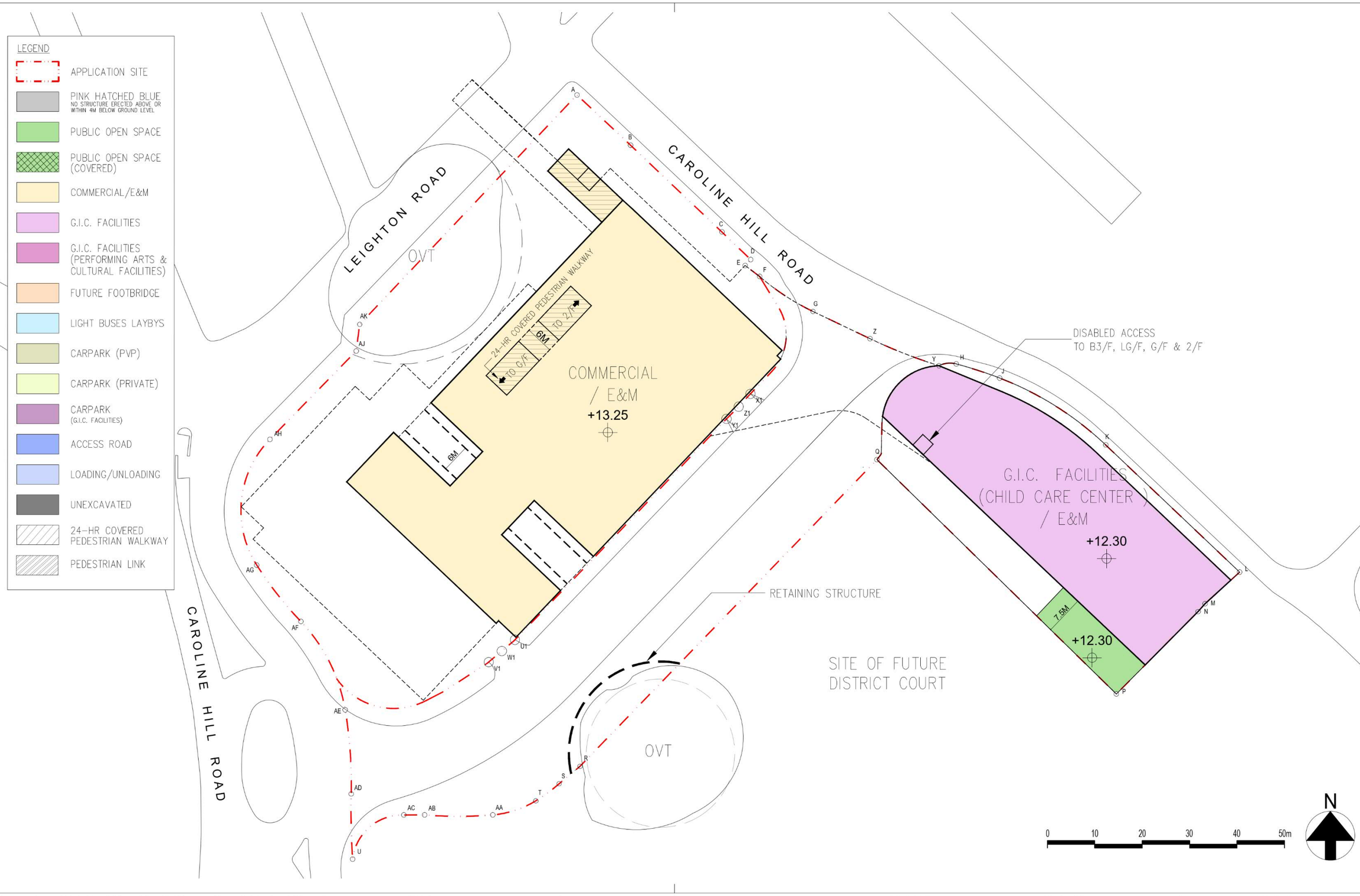
Project Title
PROPOSED COMMERCIAL DEVELOPMENT ON IL NO.8945 AT CAROLINE HILL ROAD, CAUSEWAY BAY, HONG KONG

Drawing Title
GROUND FLOOR PLAN

Project No. 21105HK
Scale 1:750 (A3) Issue Date MAR 2022
Drawing No. MLP -006

Drawing Purpose



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Project Title
PROPOSED COMMERCIAL DEVELOPMENT ON IL NO.8945 AT CAROLINE HILL ROAD, CAUSEWAY BAY, HONG KONG

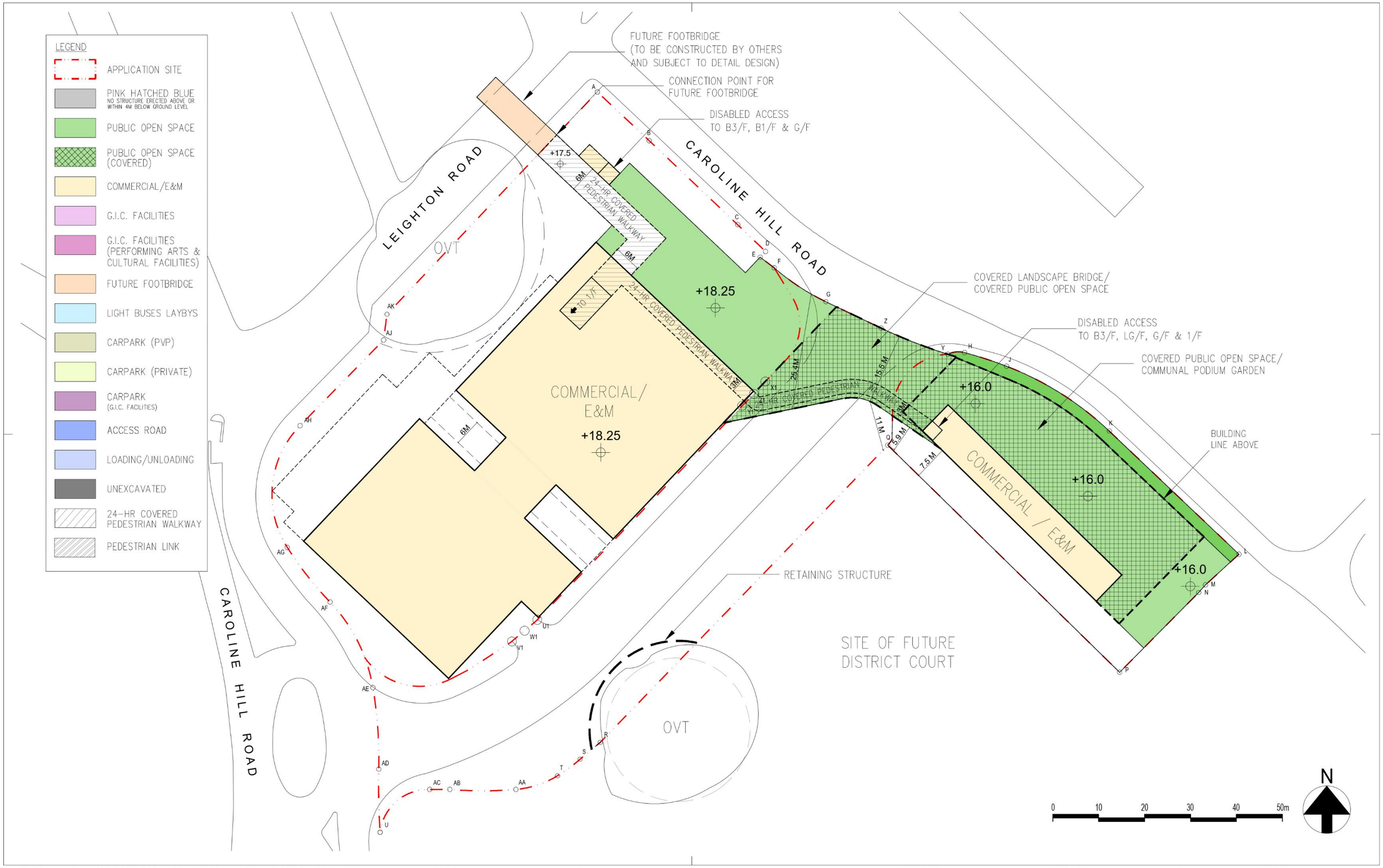
Drawing Title
FIRST FLOOR PLAN

Project No. 21105HK

Scale 1:750 (A3) Issue Date MAR 2022

Drawing No. MLP-007

Drawing Purpose



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Project Title
PROPOSED COMMERCIAL DEVELOPMENT ON IL NO.8945 AT CAROLINE HILL ROAD, CAUSEWAY BAY, HONG KONG

Drawing Title
SECOND FLOOR PLAN

Project No. 21105HK
Scale 1:750 (A3) Issue Date MAR 2022
Drawing No. MLP -008

Drawing Purpose

LEGEND

- APPLICATION SITE
- PINK HATCHED BLUE — NO STRUCTURE ERECTED ABOVE OR WITHIN 4M BELOW GROUND LEVEL
- PUBLIC OPEN SPACE
- PUBLIC OPEN SPACE (COVERED)
- COMMERCIAL/E&M
- G.I.C. FACILITIES
- G.I.C. FACILITIES (PERFORMING ARTS & CULTURAL FACILITIES)
- FUTURE FOOTBRIDGE
- LIGHT BUSES LAYBYS
- CARPARK (PVP)
- CARPARK (PRIVATE)
- CARPARK (G.I.C. FACILITIES)
- ACCESS ROAD
- LOADING/UNLOADING
- UNEXCAVATED
- 24-HR COVERED PEDESTRIAN WALKWAY
- PEDESTRIAN LINK

LEIGHTON ROAD

CAROLINE HILL ROAD

CAROLINE HILL ROAD

OVT

COMMERCIAL/
E&M
+23.25

COMMERCIAL
/E&M
+27.60

SITE OF FUTURE
DISTRICT COURT

OVT

7.5M

7.5M

A B C D E F G Z Y H J K L M N P O Q X1 Z1 Y1 U1 W1 V1 AK AJ AH AG AF AE AD AC AB AA T S R U

0 10 20 30 40 50m

N

Rev.	Description	Drawn	Checked	Approved	Date
–	1st SUBMISSION				3-2022

Rev.	Description	Drawn	Checked	Approved	Date

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B.D. Ref.
F.S.D. Ref.
D.L.O. Ref.
Drawn Date 3-2022
Checked Date 3-2022
Approved Date 3-2022
Cod File No.

RONALD LU & PARTNERS
呂元祥建築師事務所

Project Title
PROPOSED COMMERCIAL DEVELOPMENT ON IL NO.8945 AT CAROLINE HILL ROAD, CAUSEWAY BAY, HONG KONG

Drawing Title
THIRD FLOOR PLAN

Project No. 21105HK
Scale 1:750 (A3) Issue Date MAR 2022
Drawing No. MLP -009

Drawing Purpose

LEGEND

- APPLICATION SITE
- PINK HATCHED BLUE — NO STRUCTURE ERECTED ABOVE OR WITHIN 4M BELOW GROUND LEVEL
- PUBLIC OPEN SPACE
- PUBLIC OPEN SPACE (COVERED)
- COMMERCIAL/E&M
- G.I.C. FACILITIES
- G.I.C. FACILITIES (PERFORMING ARTS & CULTURAL FACILITIES)
- FUTURE FOOTBRIDGE
- LIGHT BUSES LAYBYS
- CARPARK (PVP)
- CARPARK (PRIVATE)
- CARPARK (G.I.C. FACILITIES)
- ACCESS ROAD
- LOADING/UNLOADING
- UNEXCAVATED
- 24-HR COVERED PEDESTRIAN WALKWAY
- PEDESTRIAN LINK

LEIGHTON ROAD

CAROLINE HILL ROAD

OVT

COMMERCIAL/
E&M
+28.75

G.I.C. FACILITIES
(PERFORMING ARTS &
CULTURAL FACILITIES)
+28.75

COMMERCIAL
/E&M
+35.0

SITE OF FUTURE
DISTRICT COURT

OVT

7.5M

7.5M

A B C D E F G Z Y H J K L M N P Q X1 Z1 Y1 U1 W1 V1 R S T AA AB AC AD AE AF AG AH AJ AK U

0 10 20 30 40 50m

N

Rev.	Description	Drawn	Checked	Approved	Date
–	1st SUBMISSION				3-2022

Rev.	Description	Drawn	Checked	Approved	Date

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F.S.D. Ref.
D.L.O. Ref.
Drawn Date 3-2022
Checked Date 3-2022
Approved Date 3-2022
Cad File No.

RONALD LU & PARTNERS
呂元祥建築師事務所

Project Title
PROPOSED COMMERCIAL DEVELOPMENT ON IL NO.8945 AT CAROLINE HILL ROAD, CAUSEWAY BAY, HONG KONG

Drawing Title
FIFTH FLOOR PLAN

Project No. 21105HK
Scale 1:750 (A3) Issue Date MAR 2022
Drawing No. MLP -010

Drawing Purpose

LEGEND

- APPLICATION SITE
- PINK HATCHED BLUE — NO STRUCTURE ERECTED ABOVE OR WITHIN 4M BELOW GROUND LEVEL
- PUBLIC OPEN SPACE
- PUBLIC OPEN SPACE (COVERED)
- COMMERCIAL/E&M
- G.I.C. FACILITIES
- G.I.C. FACILITIES (PERFORMING ARTS & CULTURAL FACILITIES)
- FUTURE FOOTBRIDGE
- LIGHT BUSES LAYBYS
- CARPARK (PVP)
- CARPARK (PRIVATE)
- CARPARK (G.I.C. FACILITIES)
- ACCESS ROAD
- LOADING/UNLOADING
- UNEXCAVATED
- 24-HR COVERED PEDESTRIAN WALKWAY
- PEDESTRIAN LINK

LEIGHTON ROAD

CAROLINE HILL ROAD

CAROLINE HILL ROAD

OVT

OVT

T1 & T2
COMMERCIAL
/ E&M
19 STOREYS
(6/F-27/F)

T3
COMMERCIAL
/ E&M
12 STOREYS
(3/F-17/F)

SITE OF FUTURE
DISTRICT COURT

7.5M

7.5M

A0 B C D E F G Z Y H J K L M N P O AK AJ AH AG AF AE AD AC AB AA T S R U V1 W1 U1 X1 Z1 Y1

0 10 20 30 40 50m

N

Rev.	Description	Drawn	Checked	Approved	Date
–	1st SUBMISSION				3-2022

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D.L.O. Ref.
Drawn Date 3-2022
Checked Date 3-2022
Approved Date 3-2022
Cad File No.

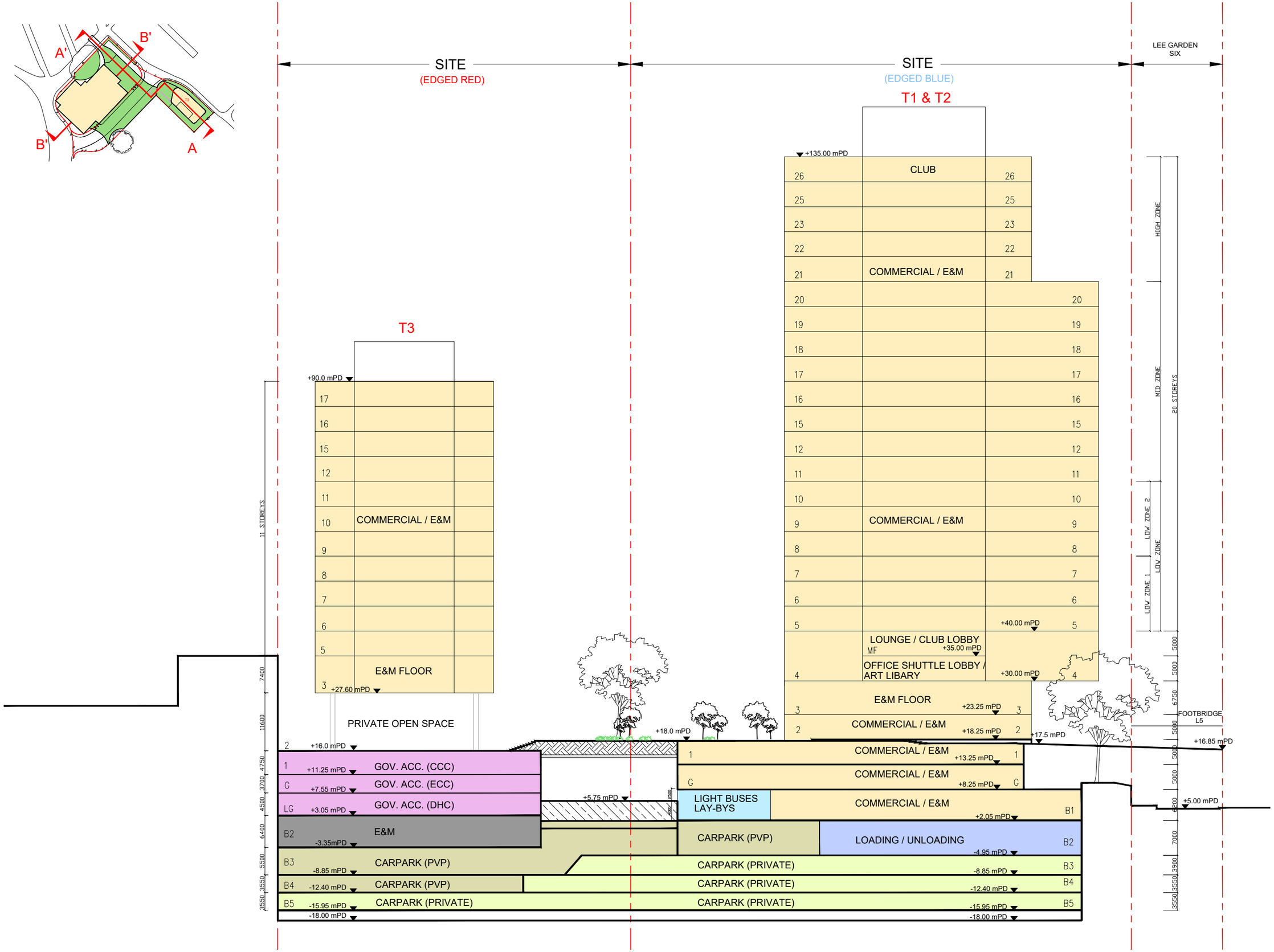
RONALD LU & PARTNERS
呂元祥建築師事務所

Project Title
PROPOSED COMMERCIAL DEVELOPMENT ON IL NO.8945 AT CAROLINE HILL ROAD, CAUSEWAY BAY, HONG KONG

Drawing Title
TYPICAL FLOOR PLAN

Project No. 21105HK
Scale 1:750 (A3) Issue Date MAR 2022
Drawing No. MLP-011

Drawing Purpose



A'
B'
B'
A
SITE
(EDGED RED)
SITE
(EDGED BLUE)
LEE GARDEN SIX
T1 & T2
T3
+135.00 mPD
CLUB
COMMERCIAL / E&M
COMMERCIAL / E&M
LOUNGE / CLUB LOBBY
MF
+35.00 mPD
OFFICE SHUTTLE LOBBY / ART LIBARY
+40.00 mPD
+30.00 mPD
E&M FLOOR
+23.25 mPD
COMMERCIAL / E&M
+18.25 mPD
+17.5 mPD
+16.85 mPD
+90.0 mPD
COMMERCIAL / E&M
E&M FLOOR
+27.60 mPD
PRIVATE OPEN SPACE
+16.0 mPD
+18.0 mPD
COMMERCIAL / E&M
+13.25 mPD
COMMERCIAL / E&M
+8.25 mPD
GOV. ACC. (CCC)
+11.25 mPD
GOV. ACC. (ECC)
+7.55 mPD
GOV. ACC. (DHC)
+3.05 mPD
+5.75 mPD
LIGHT BUSES LAY-BYS
COMMERCIAL / E&M
+2.05 mPD
+5.00 mPD
E&M
-3.35mPD
CARPARK (PVP)
LOADING / UNLOADING
-4.95 mPD
CARPARK (PVP)
-8.85 mPD
CARPARK (PRIVATE)
-8.85 mPD
CARPARK (PVP)
-12.40 mPD
CARPARK (PRIVATE)
-12.40 mPD
CARPARK (PRIVATE)
-15.95 mPD
CARPARK (PRIVATE)
-15.95 mPD
-18.00 mPD
-18.00 mPD
11 STOREYS
HIGH ZONE
MID ZONE
LOW ZONE 2
LOW ZONE 1
LOW ZONE
20 STOREYS
FOOTBRIDGE L5

1:700

A2 Layout Plan of Proposed Scheme

LEGEND

- APPLICATION SITE
- PINK HATCHED BLUE — NO STRUCTURE ERECTED ABOVE OR WITHIN 4M BELOW GROUND LEVEL
- PUBLIC OPEN SPACE
- COMMERCIAL/E&M
- G.I.C. FACILITIES
- FUTURE FOOTBRIDGE
- LIGHT BUSES LAYBYS
- CARPARK (PVP)
- CARPARK (PRIVATE)
- CARPARK (G.I.C. FACILITIES)
- ACCESS ROAD
- LOADING & UNLOADING CARPARK (PVP)
- UNEXCAVATED
- 24-HR PEDESTRIAN WALKWAY
- PUBLIC OPEN SPACE WITH 24-HR PEDESTRIAN WALKWAY
- PEDESTRIAN LINK
- E&M
- CIRCULATION/ E&M

FUTURE FOOTBRIDGE
(TO BE CONSTRUCTED BY OTHERS
AND SUBJECT TO DETAIL DESIGN)

CAROLINE HILL ROAD

MASONARY WALLS AND EARTHENWARE PIPES TO BE PRESERVED

LEIGHTON ROAD

OVT

24-HR COVERED PEDESTRIAN WALKWAY

+9.0
+17.64
+11.5
+18.70
+8.55
+119.90
+115.25
+135.0
+5.6
+129.65
+8.9
+18.70
+5.70
+90.0
+18.40
+21.50
+17.00
+10.20

T1
COMMERCIAL / E&M
+135.0

T2
COMMERCIAL / E&M
+135.0

T3
COMMERCIAL / E&M
+90.0

CANOPY ABOVE

COVERED LANDSCAPE BRIDGE/
PUBLIC OPEN SPACE

7.5m

7.5m

SITE OF FUTURE
DISTRICT COURT

OVT

CAROLINE HILL ROAD

MASONARY WALLS AND EARTHENWARE PIPES TO BE PRESERVED

0 10 20 30 40 50m

N

Rev.	Description	Drawn	Checked	Approved	Date
–	1st SUBMISSION				3-2022
A	1st AMENDMENT				9-2023
B	2nd AMENDMENT				1-2024

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F.S.D. Ref.
D.L.O. Ref.
Drawn Date 1-2024
Checked Date 1-2024
Approved Date 1-2024
Cad File No.

RONALD LU & PARTNERS
呂元祥建築師事務所

Project Title
PROPOSED COMMERCIAL DEVELOPMENT ON IL NO.8945 AT CAROLINE HILL ROAD, CAUSEWAY BAY, HONG KONG

Drawing Title
LAYOUT PLAN (ALL LEVELS)

Project No. 21105HK
Scale 1:750 (A3) Issue Date Sept 2024
Drawing No. MLP -001

Drawing Purpose

LEGEND

- APPLICATION SITE
- PINK HATCHED BLUE — NO STRUCTURE ERECTED ABOVE OR WITHIN 4M BELOW GROUND LEVEL
- PUBLIC OPEN SPACE
- COMMERCIAL/E&M
- G.I.C. FACILITIES
- FUTURE FOOTBRIDGE
- LIGHT BUSES LAYBYS
- CARPARK (PVP)
- CARPARK (PRIVATE)
- CARPARK (G.I.C. FACILITIES)
- ACCESS ROAD
- LOADING & UNLOADING CARPARK (PVP)
- UNEXCAVATED
- 24-HR PEDESTRIAN WALKWAY
- PUBLIC OPEN SPACE WITH 24-HR PEDESTRIAN WALKWAY
- PEDESTRIAN LINK
- E&M
- CIRCULATION / E&M

LEIGHTON ROAD

CAROLINE HILL ROAD

CAROLINE HILL ROAD

+4.97

+9.0

+11.5 VENT SHAFT

MASONRY WALLS AND EARTHENWARE PIPES TO BE PRESERVED

DISABLED ACCESS BETWEEN B5/F TO 2/F

24HR COVERED PEDESTRIAN WALKWAY

DISABLED ACCESS TO STREET LEVEL

+5.60

COMMERCIAL / E&M

+8.55

24HR OPEN PEDESTRAIN LINK BETWEEN B1/F LIGHT BUS LAY-BYS & GROUND LEVEL

TO LOADING / UNLOADING & LIGHT BUSES LAY-BYS

+8.55

DISABLED ACCESS BETWEEN B5/F TO 3/F EXCEPT B2/F

+5.60

6M

14M

28M

RETAINING STRUCTURE

DROP-OFF

PRIVATE LVL

+11.05 VENT SHAFT

TO CARPARK

+12.05 VENT SHAFT

+8.9

+11.1

SITE OF FUTURE DISTRICT COURT

OVT

OVT

G.I.C. FACILITIES (DAY CARE CENTER FOR THE ELDERLY) / E&M

+10.20

7.5M

DISABLED ACCESS BETWEEN B2/F TO 2/F

+10.20

DISABLED ACCESS BETWEEN B2/F TO 2/F

UG/F

DISABLED ACCESS BETWEEN B2/F TO 2/F

MASONRY WALLS AND EARTHENWARE PIPES TO BE PRESERVED

G.I.C. FACILITIES (DISTRICT HEALTH CENTER) / E&M

7.5M

+5.70

+5.70

DISABLED ACCESS BETWEEN B2/F TO 2/F

G/F

N

0 10 20 30 40 50m

Rev.	Description	Drawn	Checked	Approved	Date
–	1st SUBMISSION				3-2022
A	1st AMENDMENT				9-2023
B	2nd AMENDMENT				1-2024

Rev.	Description	Drawn	Checked	Approved	Date

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F.S.D. Ref.

D.L.O. Ref.

Drawn Date 1-2024

Checked Date 1-2024

Approved Date 1-2024

Cad File No.

RONALD LU & PARTNERS
呂元祥建築師事務所

Project Title
PROPOSED COMMERCIAL DEVELOPMENT ON IL NO.8945 AT CAROLINE HILL ROAD, CAUSEWAY BAY, HONG KONG

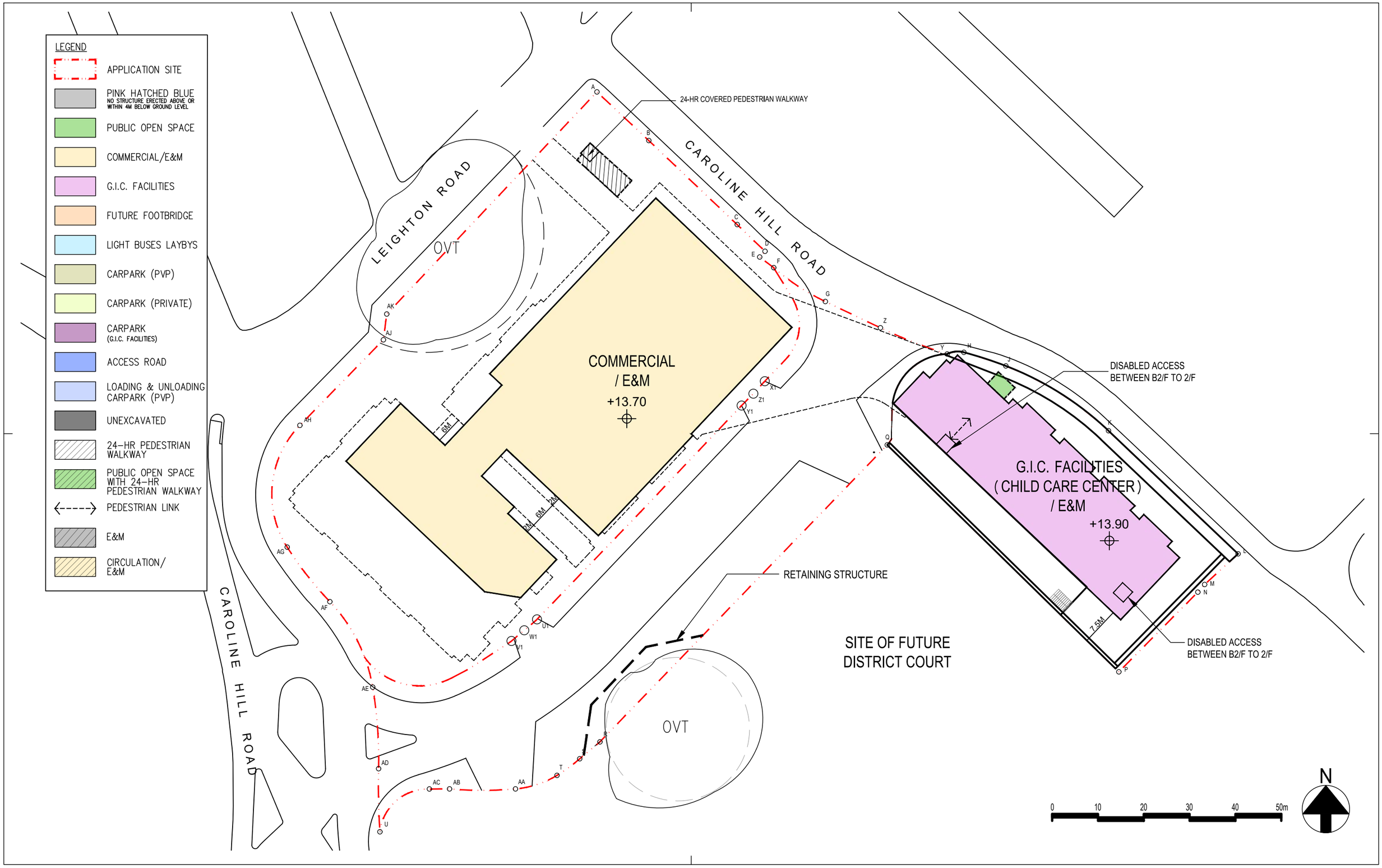
Drawing Title
GROUND FLOOR PLAN

Project No. 21105HK

Scale 1:750 (A3) Issue Date Sept 2024

Drawing No. MLP -006

Drawing Purpose



Rev.	Description	Drawn	Checked	Approved	Date
–	1st SUBMISSION				3-2022
A	1st AMENDMENT				9-2023
B	2nd AMENDMENT				1-2024

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B.D. Ref.
F.S.D. Ref.
D.L.O. Ref.
Drawn Date 1-2024
Checked Date 1-2024
Approved Date 1-2024
Cad File No.

RONALD LU & PARTNERS
呂元祥建築師事務所

Project Title
PROPOSED COMMERCIAL DEVELOPMENT ON IL NO.8945 AT CAROLINE HILL ROAD, CAUSEWAY BAY, HONG KONG

Drawing Title
FIRST FLOOR PLAN

Project No. 21105HK
Scale 1:750 (A3) Issue Date Sept 2024
Drawing No. MLP-007

Drawing Purpose

LEGEND

- APPLICATION SITE
- PINK HATCHED BLUE (NO STRUCTURE ERECTED ABOVE OR WITHIN 4M BELOW GROUND LEVEL)
- PUBLIC OPEN SPACE
- COMMERCIAL/E&M
- G.I.C. FACILITIES
- FUTURE FOOTBRIDGE
- LIGHT BUSES LAYBYS
- CARPARK (PVP)
- CARPARK (PRIVATE)
- CARPARK (G.I.C. FACILITIES)
- ACCESS ROAD
- LOADING & UNLOADING CARPARK (PVP)
- UNEXCAVATED
- 24-HR PEDESTRIAN WALKWAY
- PUBLIC OPEN SPACE WITH 24-HR PEDESTRIAN WALKWAY
- PEDESTRIAN LINK
- E&M
- CIRCULATION/ E&M

FUTURE FOOTBRIDGE
(TO BE CONSTRUCTED BY OTHERS
AND SUBJECT TO DETAIL DESIGN)

CONNECTION POINT FOR
FUTURE FOOTBRIDGE

DISABLED ACCESS
BETWEEN B5/F TO 2/F

LEIGHTON ROAD

CAROLINE HILL ROAD

24-HR COVERED PEDESTRIAN WALKWAY

+17.64

+18.70

COVERED LANDSCAPE BRIDGE/
COVERED PUBLIC OPEN SPACE

CANOPY ABOVE

ESCALATOR
TO / FROM
3F RETAIL

COMMERCIAL/
E&M

+18.70

DISABLED ACCESS
BETWEEN B5/F TO 3/F
EXCEPT B2/F

DISABLED ACCESS
BETWEEN B2/F TO 2/F

DISABLED ACCESS
BETWEEN B2/F TO 2/F

COMMERCIAL / E&M

+18.40

21.50

+17.00

OVT

OVT

SITE OF FUTURE
DISTRICT COURT

0 10 20 30 40 50m

N

Rev.	Description	Drawn	Checked	Approved	Date
–	1st SUBMISSION				3-2022
A	1st AMENDMENT				9-2023
B	2nd AMENDMENT				1-2024

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Drawn Date 1-2024
Checked Date 1-2024
Approved Date 1-2024
Cad File No.

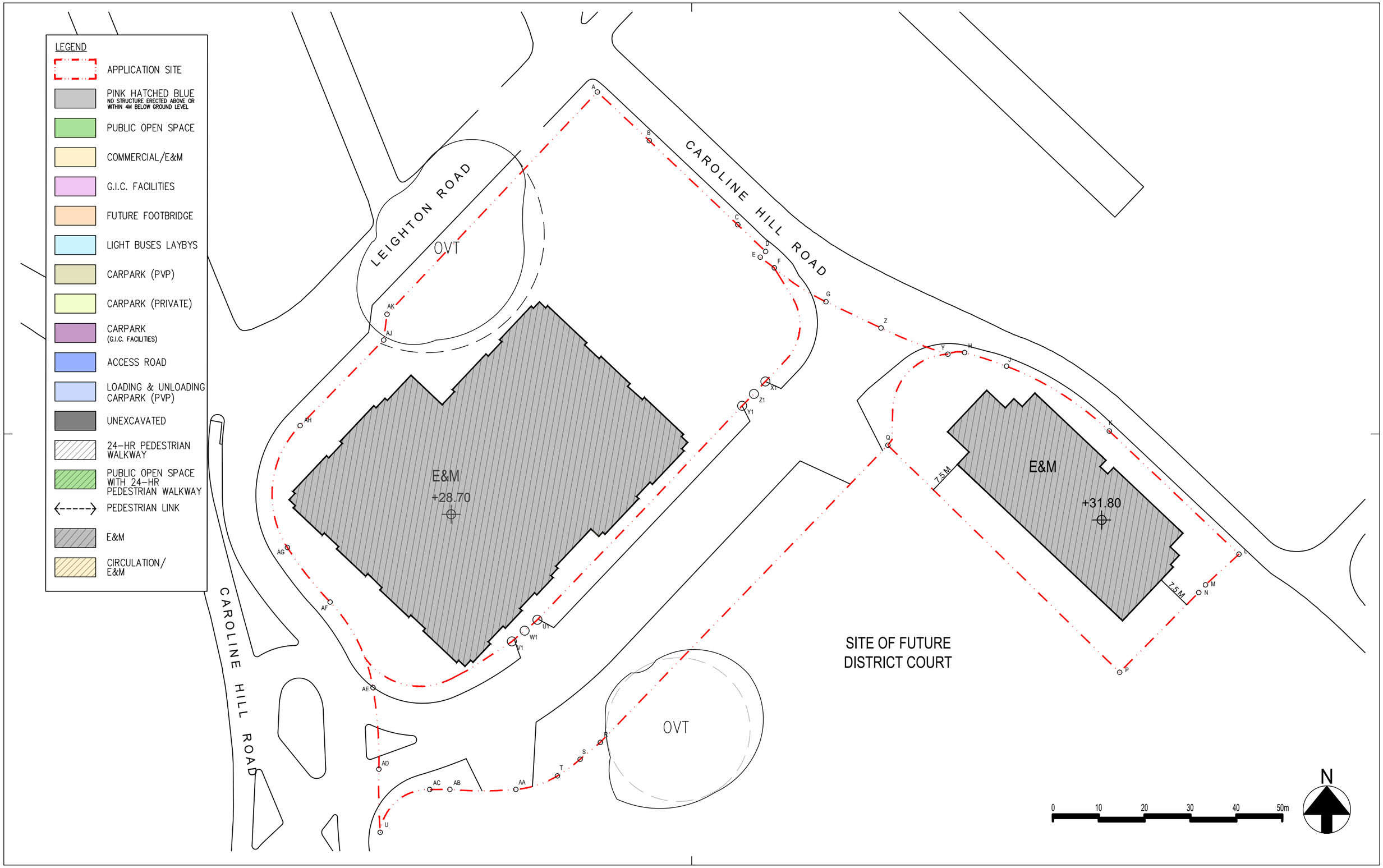
RONALD LU & PARTNERS
呂元祥建築師事務所

Project Title
PROPOSED COMMERCIAL DEVELOPMENT ON IL NO.8945 AT CAROLINE HILL ROAD, CAUSEWAY BAY, HONG KONG

Drawing Title
SECOND FLOOR PLAN

Project No. 21105HK
Scale 1:750 (A3) Issue Date Sept 2024
Drawing No. MLP -008

Drawing Purpose



Rev.	Description	Drawn	Checked	Approved	Date
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F.S.D. Ref.
D.L.O. Ref.

Drawn	Date	1-2024
Checked	Date	1-2024
Approved	Date	1-2024
Cad File No.		

RONALD LU & PARTNERS
呂元祥建築師事務所

Project Title
PROPOSED COMMERCIAL DEVELOPMENT ON IL NO.8945 AT CAROLINE HILL ROAD, CAUSEWAY BAY, HONG KONG

Drawing Title
FORTH FLOOR PLAN

Project No. 21105HK
Scale 1:750 (A3) Issue Date Sept 2024
Drawing No. MLP -009.1

Drawing Purpose

LEGEND

- APPLICATION SITE
- PINK HATCHED BLUE — NO STRUCTURE ERECTED ABOVE OR WITHIN 4M BELOW GROUND LEVEL
- PUBLIC OPEN SPACE
- COMMERCIAL/E&M
- G.I.C. FACILITIES
- FUTURE FOOTBRIDGE
- LIGHT BUSES LAYBYS
- CARPARK (PVP)
- CARPARK (PRIVATE)
- CARPARK (G.I.C. FACILITIES)
- ACCESS ROAD
- LOADING & UNLOADING CARPARK (PVP)
- UNEXCAVATED
- 24-HR PEDESTRIAN WALKWAY
- PUBLIC OPEN SPACE WITH 24-HR PEDESTRIAN WALKWAY
- PEDESTRIAN LINK
- E&M
- CIRCULATION / E&M

LEIGHTON ROAD

CAROLINE HILL ROAD

OVT

ESCALATOR TO / FROM 2F RETAIL

ESCALATOR TO / FROM 5F PACF

COMMERCIAL / E&M +23.70

E&M +31.80

7.5M

7.5M

SITE OF FUTURE DISTRICT COURT

OVT

A B C D E F G Z Y H J K L M N P Q X Z1 Y1 X1 U1 W1 V1 S R T AA AB AC AD AE AF AG AH AJ AK U

0 10 20 30 40 50m

N

Rev.	Description	Drawn	Checked	Approved	Date
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B	2nd AMENDMENT				1-2024

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D.L.O. Ref.

Drawn Date 1-2024

Checked Date 1-2024

Approved Date 1-2024

Cad File No.

RONALD LU & PARTNERS
呂元祥建築師事務所

Project Title
PROPOSED COMMERCIAL DEVELOPMENT ON IL NO.8945 AT CAROLINE HILL ROAD, CAUSEWAY BAY, HONG KONG

Drawing Title
THIRD FLOOR PLAN

Project No. 21105HK

Scale 1:750 (A3) Issue Date Jan 2024

Drawing No. MLP -009

Drawing Purpose

LEGEND

- APPLICATION SITE
- PINK HATCHED BLUE — NO STRUCTURE ERECTED ABOVE OR WITHIN 4M BELOW GROUND LEVEL
- PUBLIC OPEN SPACE
- COMMERCIAL/E&M
- G.I.C. FACILITIES
- FUTURE FOOTBRIDGE
- LIGHT BUSES LAYBYS
- CARPARK (PVP)
- CARPARK (PRIVATE)
- CARPARK (G.I.C. FACILITIES)
- ACCESS ROAD
- LOADING & UNLOADING CARPARK (PVP)
- UNEXCAVATED
- 24-HR PEDESTRIAN WALKWAY
- PUBLIC OPEN SPACE WITH 24-HR PEDESTRIAN WALKWAY
- PEDESTRIAN LINK
- E&M
- CIRCULATION/ E&M

LEIGHTON ROAD

CAROLINE HILL ROAD

OVT

G.I.C.FACILITIES
(PERFORMING ARTS & CULTURAL FACILITIES)
+34.60

COMMERCIAL/ E&M
+34.60

ESCALATOR TO / FROM 3F RETAIL

COMMERCIAL /E&M
+35.70

7.5M

7.5M

SITE OF FUTURE DISTRICT COURT

OVT

A B C D E F G Z Y H J K L M N P Q R S T U V V1 W1 U1 X1 Z1 Y1 AA AB AC AD AE AF AG AH AJ AK

0 10 20 30 40 50m

N

Rev.	Description	Drawn	Checked	Approved	Date
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A	1st AMENDMENT				9-2023
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Cad File No.

RONALD LU & PARTNERS
呂元祥建築師事務所

Project Title
PROPOSED COMMERCIAL DEVELOPMENT ON IL NO.8945 AT CAROLINE HILL ROAD, CAUSEWAY BAY, HONG KONG

Drawing Title
FIFTH FLOOR PLAN

Project No. 21105HK
Scale 1:750 (A3)
Issue Date Sept 2024
Drawing No. MLP -010

Drawing Purpose

LEGEND

- APPLICATION SITE
- PINK HATCHED BLUE (NO STRUCTURE ERECTED ABOVE OR WITHIN 4M BELOW GROUND LEVEL)
- PUBLIC OPEN SPACE
- COMMERCIAL/E&M
- G.I.C. FACILITIES
- FUTURE FOOTBRIDGE
- LIGHT BUSES LAYBYS
- CARPARK (PVP)
- CARPARK (PRIVATE)
- CARPARK (G.I.C. FACILITIES)
- ACCESS ROAD
- LOADING & UNLOADING CARPARK (PVP)
- UNEXCAVATED
- 24-HR PEDESTRIAN WALKWAY
- PUBLIC OPEN SPACE WITH 24-HR PEDESTRIAN WALKWAY
- PEDESTRIAN LINK
- E&M
- CIRCULATION/ E&M

LEIGHTON ROAD

CAROLINE HILL ROAD

CAROLINE HILL ROAD

OVT

OVT

T1 & T2
COMMERCIAL / E&M
19 STOREYS
(6/F-27/F)

T3
COMMERCIAL / E&M
12 STOREYS
(3/F-17/F)

7.5M

7.5M

SITE OF FUTURE DISTRICT COURT

A B C D E F G Z Y H J K L M N P Q R S T U AA AB AC AD AE AF AG AH AJ AK X1 Z1 Y1 U1 W1 V1

0 10 20 30 40 50m

N

Rev.	Description	Drawn	Checked	Approved	Date
–	1st SUBMISSION				3-2022
A	1st AMENDMENT				9-2023
B	2nd AMENDMENT				1-2024

Rev.	Description	Drawn	Checked	Approved	Date

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B.D. Ref.
F.S.D. Ref.
D.L.O. Ref.
Drawn Date 1-2024
Checked Date 1-2024
Approved Date 1-2024
Cad File No.

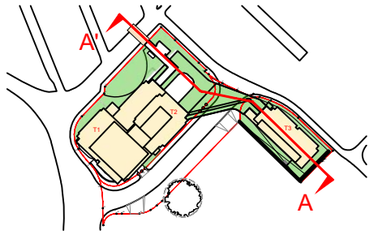
RONALD LU & PARTNERS
呂元祥建築師事務所

Project Title
PROPOSED COMMERCIAL DEVELOPMENT ON IL NO.8945 AT CAROLINE HILL ROAD, CAUSEWAY BAY, HONG KONG

Drawing Title
TYPICAL FLOOR PLAN

Project No. 21105HK
Scale 1:750 (A3)
Issue Date Sept 2024
Drawing No. MLP -011

Drawing Purpose



SITE
(EDGED RED)

SITE
(PINK HATCHED BLUE)

SITE
(EDGED BLUE)

LEIGHTON ROAD

LEE GARDEN SIX

T1 & T2

+135.00 mPD

27 27
26 26
25 25
23 23
22 22
21 21
20 20
19 19
18 18
17 COMMERCIAL / E&M 17
16 16
15 15
12 12
11 11
10 10
9 9
8 8
7 7
6 6
5 PERFORMING ARTS & CULTURAL FACILITIES +34.60 mPD 5
4 E&M +28.70 mPD 4
3 COMMERCIAL / E&M +23.70 mPD 3
2 COMMERCIAL / E&M +18.70 mPD 2
1 COMMERCIAL / E&M +13.70 mPD 1
G COMMERCIAL / E&M +8.55 mPD G
B1 COMMERCIAL / E&M +2.80 mPD B1
B2 LOADING & UNLOADING -4.35 mPD B2
B3 CARPARK (PRIVATE) -8.25 mPD B3
B4 CARPARK (PRIVATE) -11.80 mPD B4
B5 CARPARK (PRIVATE) -15.35 mPD B5
-18.00 mPD

19 STOREYS

T3

+90.0 mPD

17
16
15
12
11
10 COMMERCIAL / E&M
9
8
7
6
5
E&M
3 +31.80 mPD

12 STOREYS

COVERED PUBLIC OPEN SPACE

COVERED LANDSCAPE BRIDGE/ COVERED PUBLIC OPEN SPACE

2 +18.40 mPD
1 +13.90 mPD G.I.C. FACILITIES (CCC) / E&M
UG +10.20 mPD G.I.C. FACILITIES (DE) / E&M
G +5.70 mPD G.I.C. FACILITIES (DHC) / E&M
B2M +0.90 mPD E&M
B2 -4.35mPD CARPARK (PVP)

+18.70 mPD

+6.65 mPD

4000

CARPARK (G.I.C. FACILITIES)

LIGHT BUSES LAY-BYS

CARPARK (PVP)

FUTURE FOOTBRIDGE
(TO BE CONSTRUCTED BY OTHERS & SUBJECT TO DETAIL DESIGN)

+17.64 mPD

+16.80 mPD

+5.00 mPD

13400 4500 3700 4500 4800 5250

8500 5900 2500 2100 5000 5150 5750 7150 3900 3550 3550

0 10 20 30 40 50m

LEGEND

- APPLICATION SITE
- PINK HATCHED BLUE (NO STRUCTURE ERECTED ABOVE OR WITHIN 4M BELOW GROUND LEVEL)
- PUBLIC OPEN SPACE
- COMMERCIAL/E&M
- G.I.C. FACILITIES
- PERFORMING ARTS & CULTURAL FACILITIES
- FUTURE FOOTBRIDGE
- LIGHT BUSES LAYBYS
- CARPARK (PVP)
- CARPARK (PRIVATE)
- CARPARK (G.I.C. FACILITIES)
- ACCESS ROAD
- LOADING/UNLOADING
- UNEXCAVATED
- E&M

Rev.	Description	Drawn	Checked	Approved	Date
–	1st SUBMISSION				3-2022
A	1st AMENDMENT				9-2023
B	2nd AMENDMENT				1-2024

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B.D. Ref.
F.S.D. Ref.
D.L.O. Ref.

Drawn Date 1-2024
Checked Date 1-2024
Approved Date 1-2024
Cad File No.

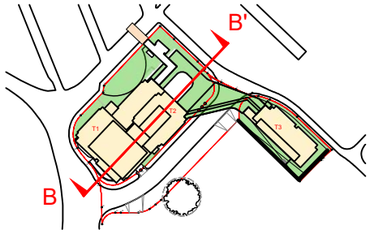
RONALD LU & PARTNERS
呂元祥建築師事務所

Project Title
PROPOSED COMMERCIAL DEVELOPMENT ON IL NO.8945 AT CAROLINE HILL ROAD, CAUSEWAY BAY, HONG KONG

Drawing Title
SECTION AA'

Project No. 21105HK
Scale 1:750 (A3)
Issue Date Sept 2024
Drawing No. MLP -012

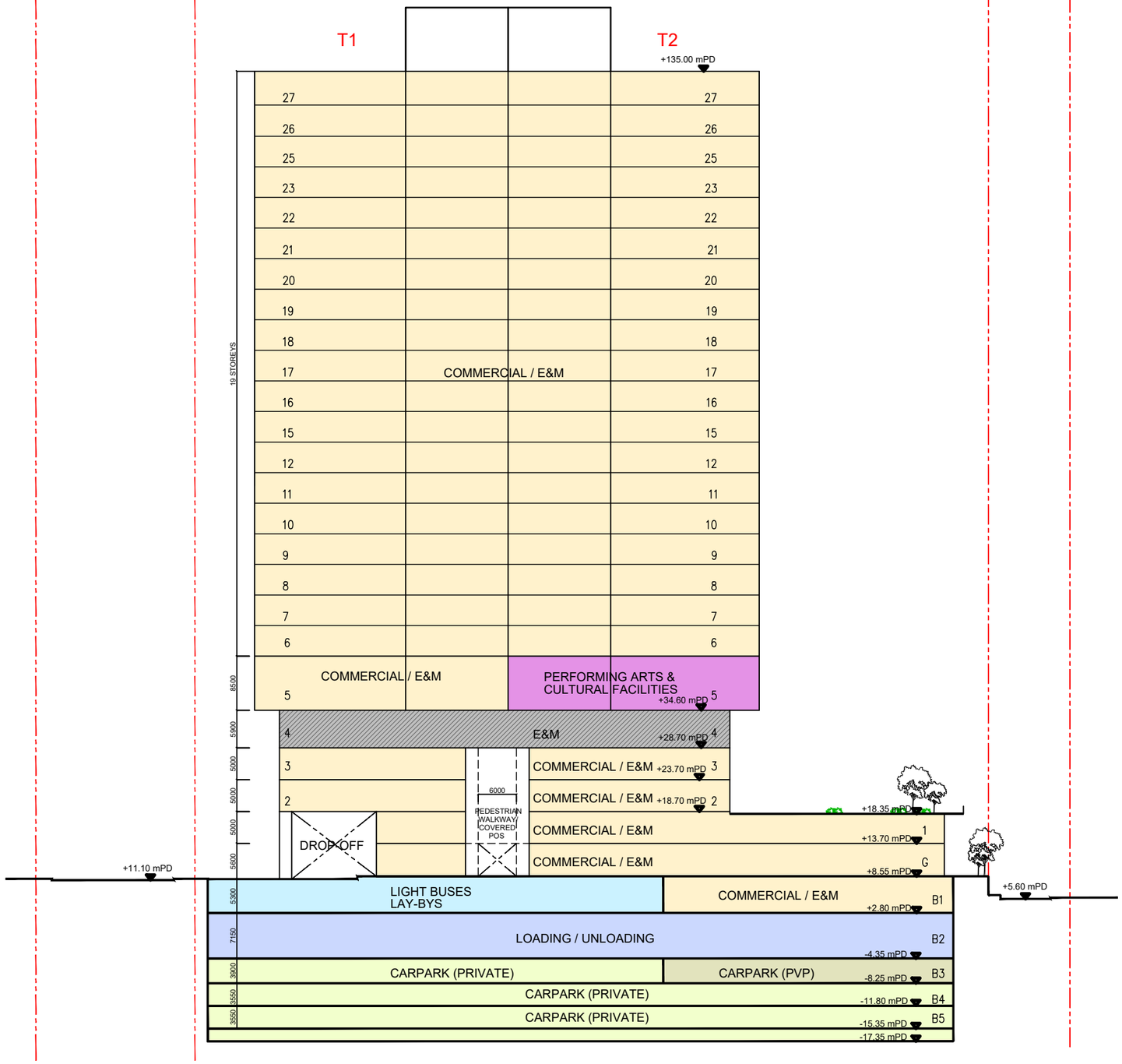
Drawing Purpose



CAROLINE HILL ROAD (WEST)

SITE
(EDGED BLUE)

CAROLINE HILL ROAD (EAST)



LEGEND

- APPLICATION SITE
- PINK HATCHED BLUE (NO STRUCTURE ERECTED ABOVE OR WITHIN 4M BELOW GROUND LEVEL)
- PUBLIC OPEN SPACE
- COMMERCIAL/E&M
- G.I.C. FACILITIES
- PERFORMING ARTS & CULTURAL FACILITIES
- FUTURE FOOTBRIDGE
- LIGHT BUSES LAYBYS
- CARPARK (PVP)
- CARPARK (PRIVATE)
- CARPARK (G.I.C. FACILITIES)
- ACCESS ROAD
- LOADING/UNLOADING
- UNEXCAVATED
- E&M

Rev.	Description	Drawn	Checked	Approved	Date
–	1st SUBMISSION				3-2022
A	1st AMENDMENT				9-2023
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Rev.	Description	Drawn	Checked	Approved	Date

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F.S.D. Ref.
D.L.O. Ref.
Drawn Date 1-2024
Checked Date 1-2024
Approved Date 1-2024
Cad File No.

RONALD LU & PARTNERS
呂元祥建築師事務所

Project Title
PROPOSED COMMERCIAL DEVELOPMENT ON IL NO.8945 AT CAROLINE HILL ROAD, CAUSEWAY BAY, HONG KONG

Drawing Title
SECTION BB'

Project No. 21105HK
Scale 1:750 (A3) Issue Date Sept 2024
Drawing No. MLP -013

Drawing Purpose

Appendix B

Layout Plan of Planned Development within Surrounding Area

B1 Layout Plan of Planned Development within Surrounding

申請編號 Application No. : A/H6/89
此頁摘自申請人提交的文件。
This page is extracted from applicant's submitted documents.

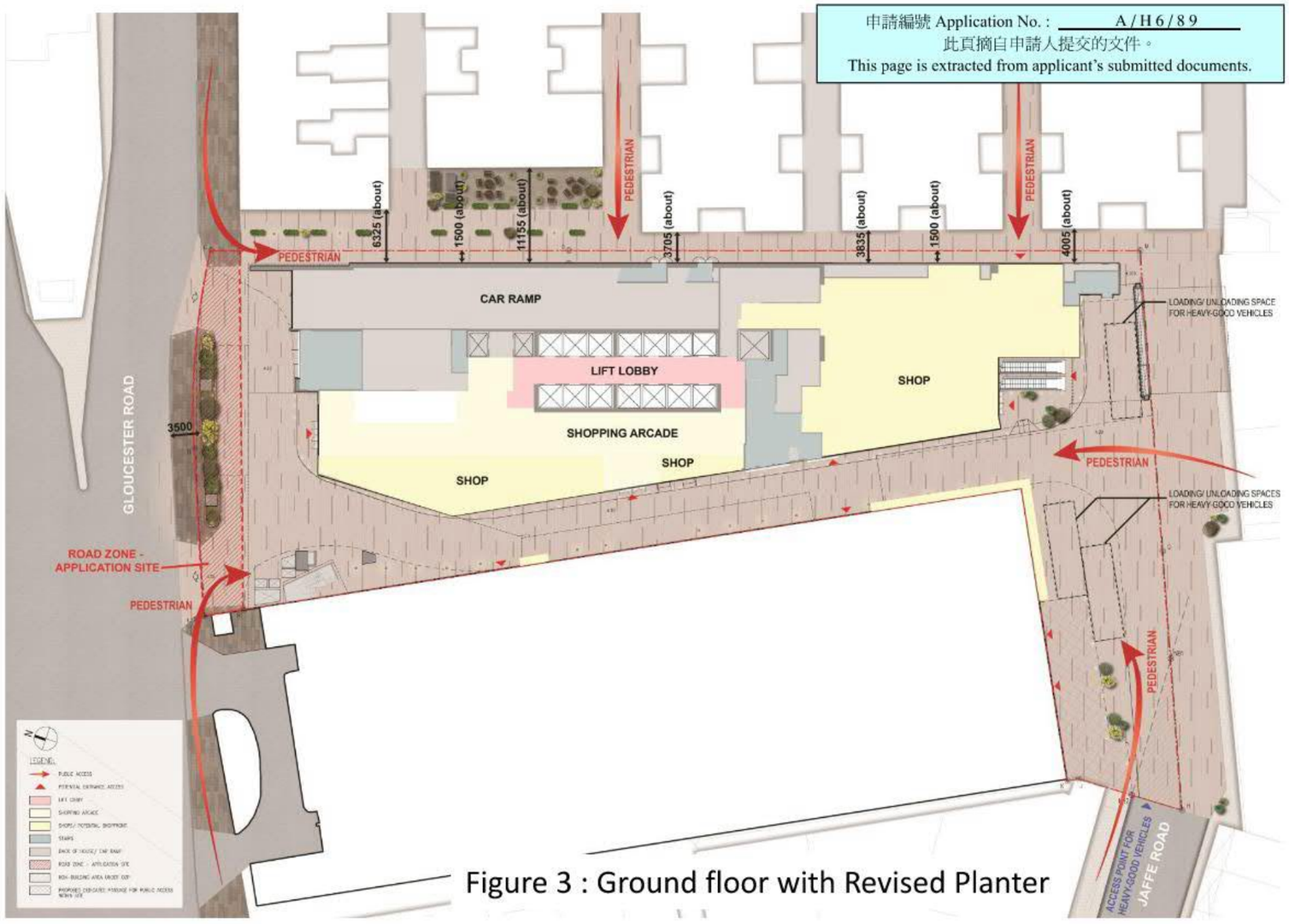
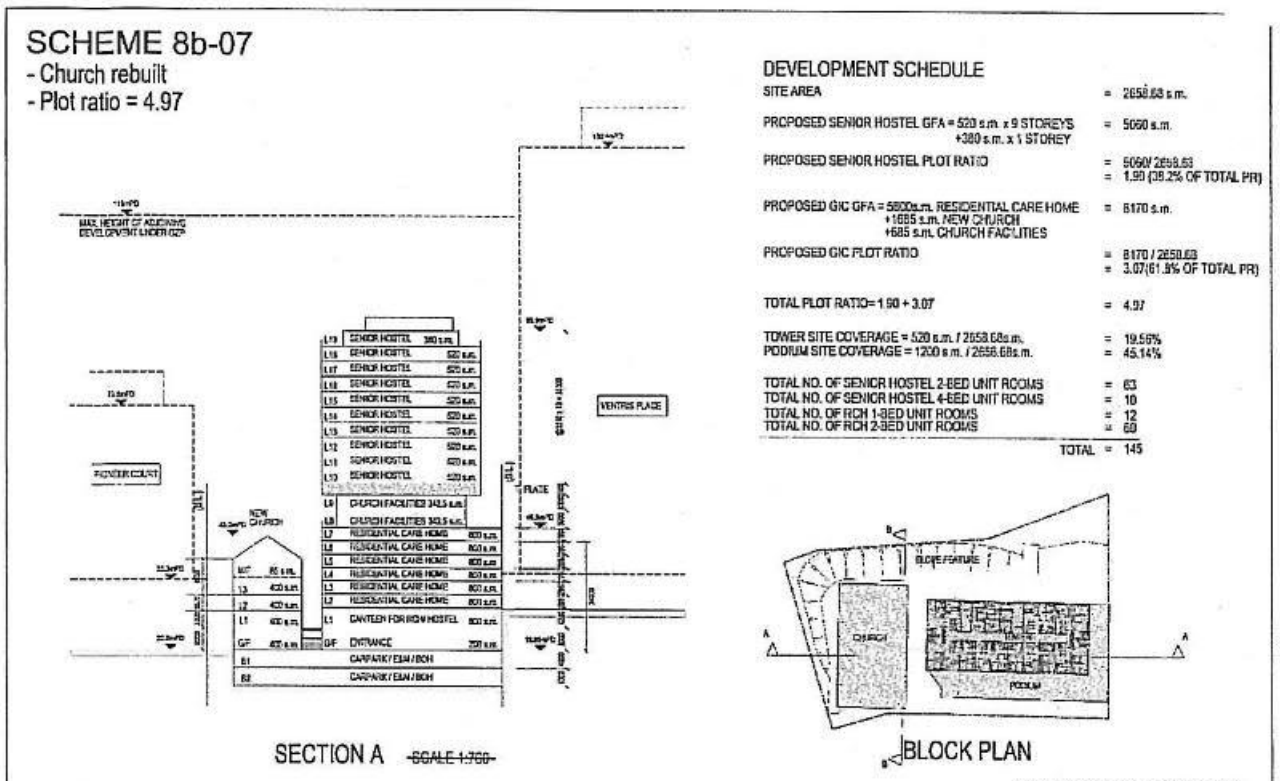
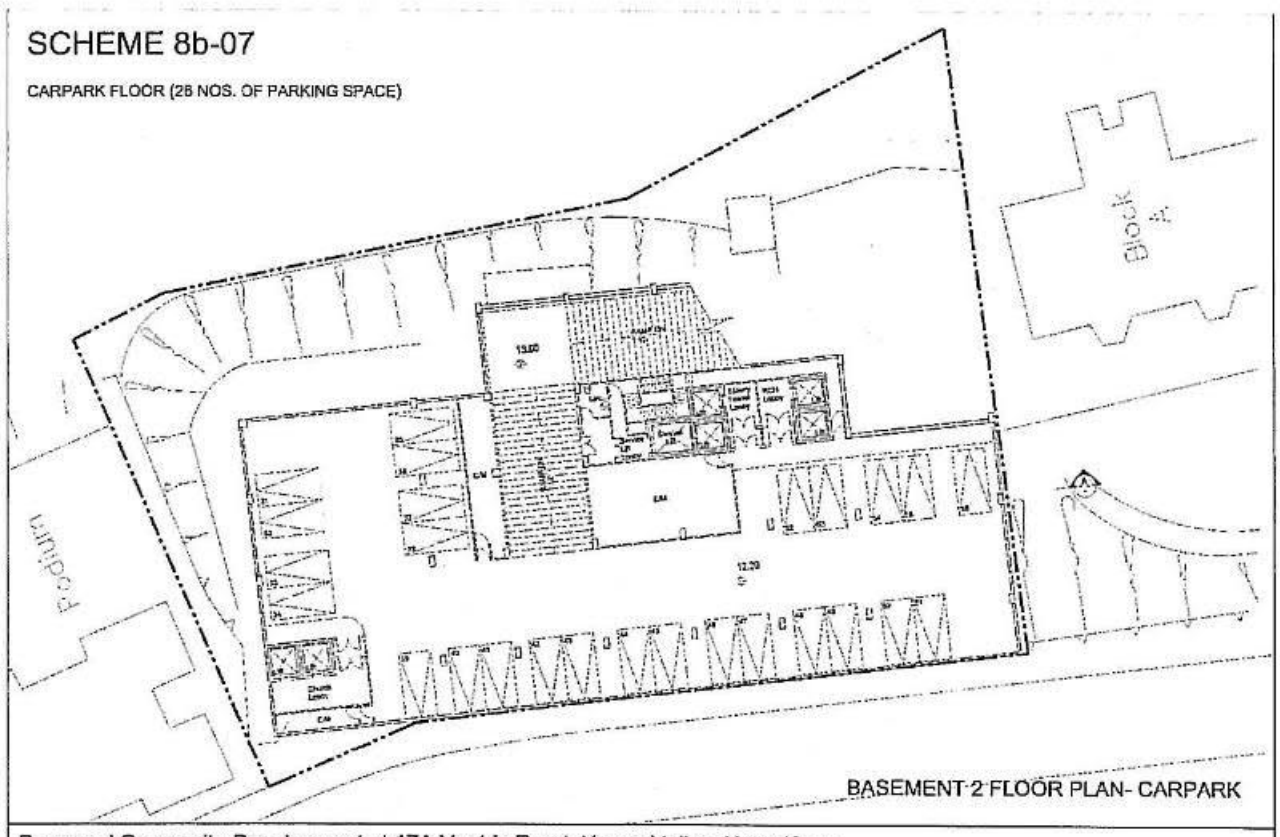


Figure 3 : Ground floor with Revised Planter

Figure B 1 #1 281 Gloucester Road Site





資料來源：由擬議人提供
SOURCE : SUBMITTED BY THE PROPONENT

參考編號 REFERENCE No.	繪圖 DRAWING
M/H7/11/9	1

Figure B 2 #2 17A and 17B Ventris Road Site -1



資料來源：由擬議人提供
SOURCE : SUBMITTED BY THE PROPONENT

參考編號 REFERENCE No.	繪圖 DRAWING
M/H7/11/9	9

Figure B 3 #2 17A and 17B Ventris Road Site - 2

附件2 ENCLOSURE 2

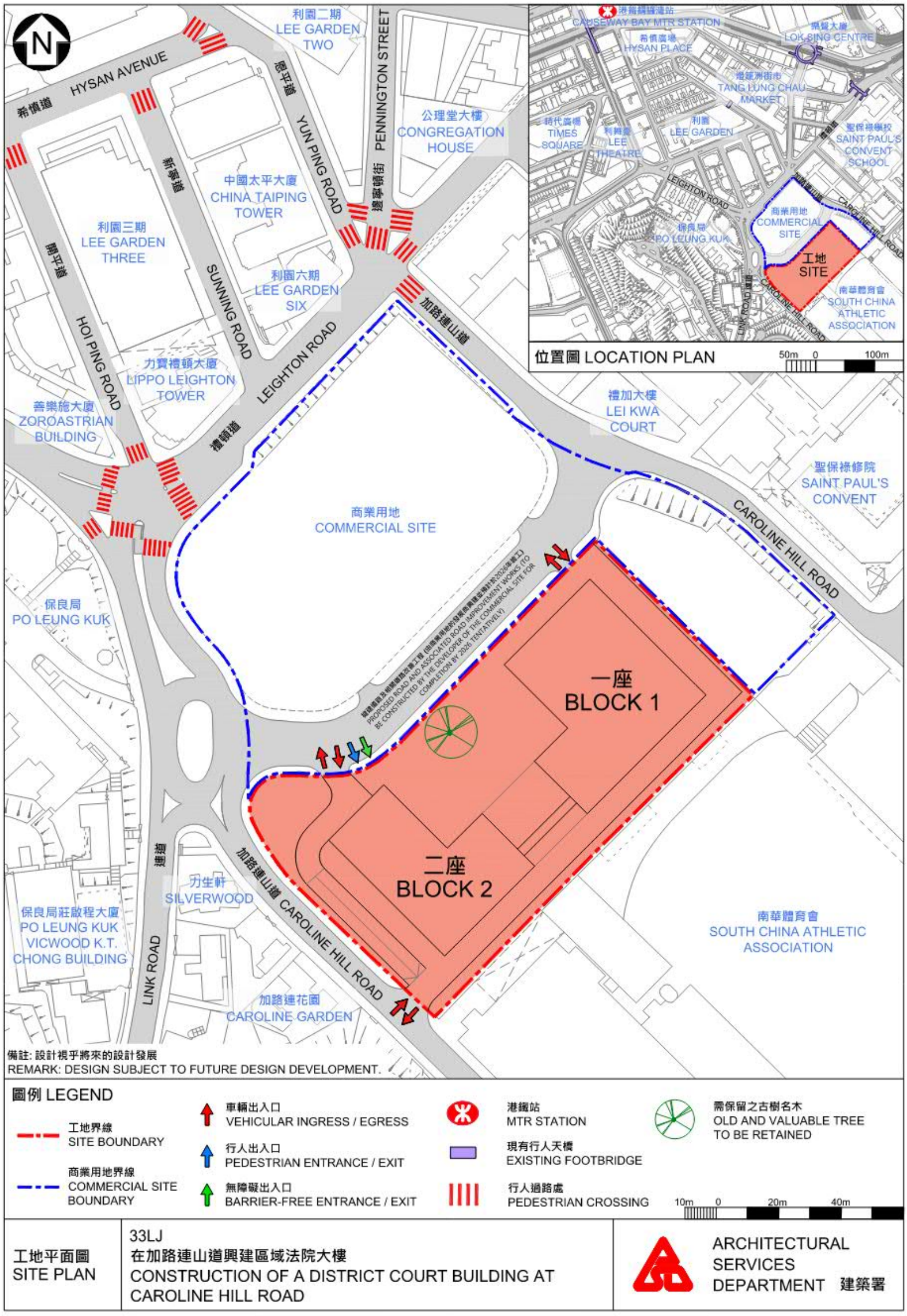


Figure B 4 #3 District Court at Caroline Hill Road – Layout

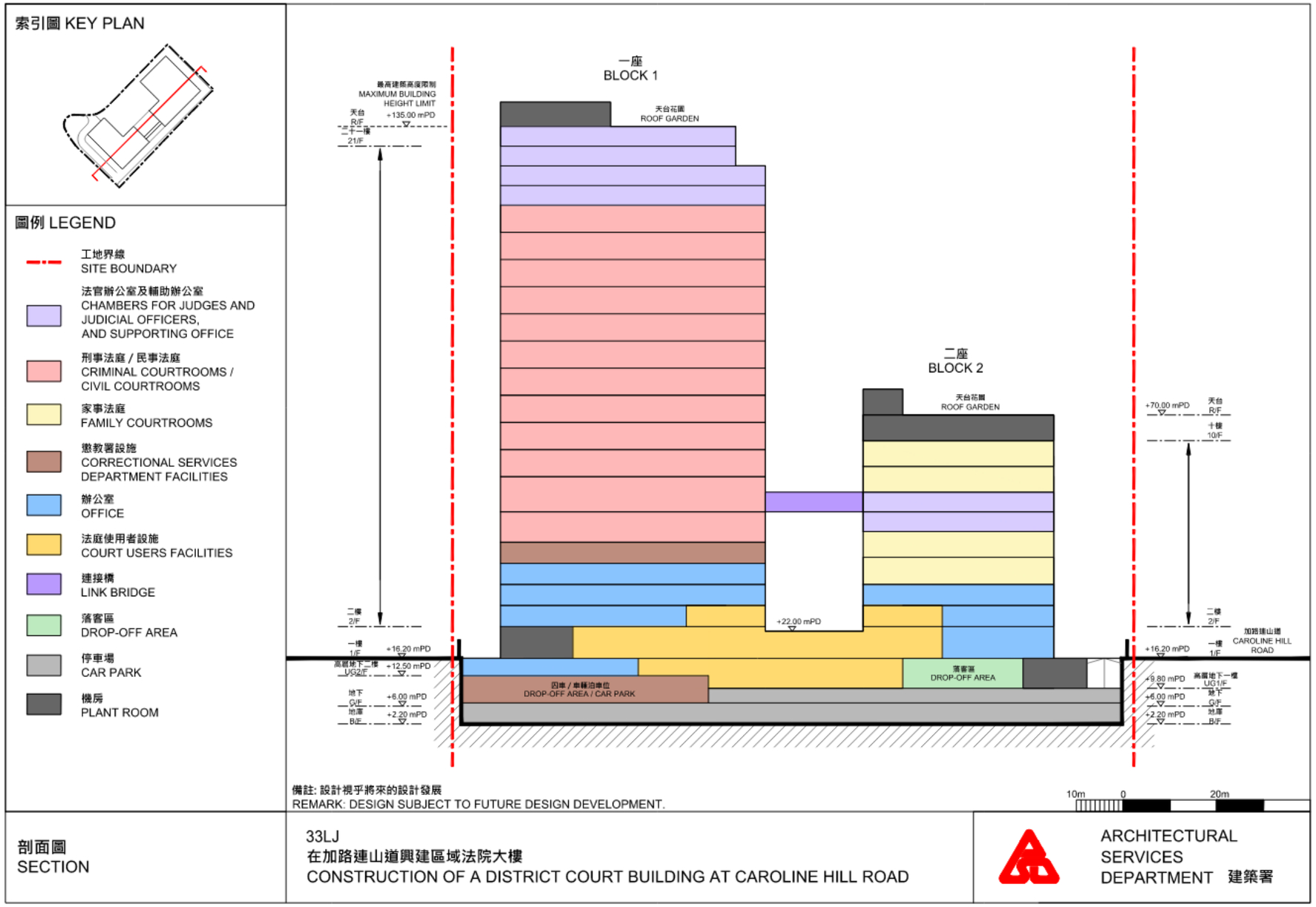


Figure B 5 #3 District Court at Caroline Hill Road - Section

申請編號 Application No. : A / H8 / 437
此頁摘自申請人提交的文件。
This page is extracted from applicant's submitted documents.



香港特別行政區政府渠務署 THE GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION DRAINAGE SERVICES DEPARTMENT	BINNIES HONG KONG LIMITED 賓尼斯工程顧問有限公司	Project Title: AGREEMENT NO. CE 79/2019 (DS) – CONSTRUCTION OF DRY WEATHER FLOW INTERCEPTOR AT HUNG HOM AND CAUSEWAY BAY – INVESTIGATION, DESIGN AND CONSTRUCTION	Drawing Title: PHOTOMONTAGE	Drawing no. FIGURE 11 Prepared WJB / Checked SW / Scale NTS

Plot Date: 2022/5/18 16:28:14
File Name: Y:\Daily Work\20220518\B1405692-A3

Figure B 6 #4 Planned Development on Construction of Dry Weather Flow Interceptor at Hung Hom and Causeway Bay

Appendix C

Contour Plots of Velocity Ratio (VR)

C1 Baseline Scheme

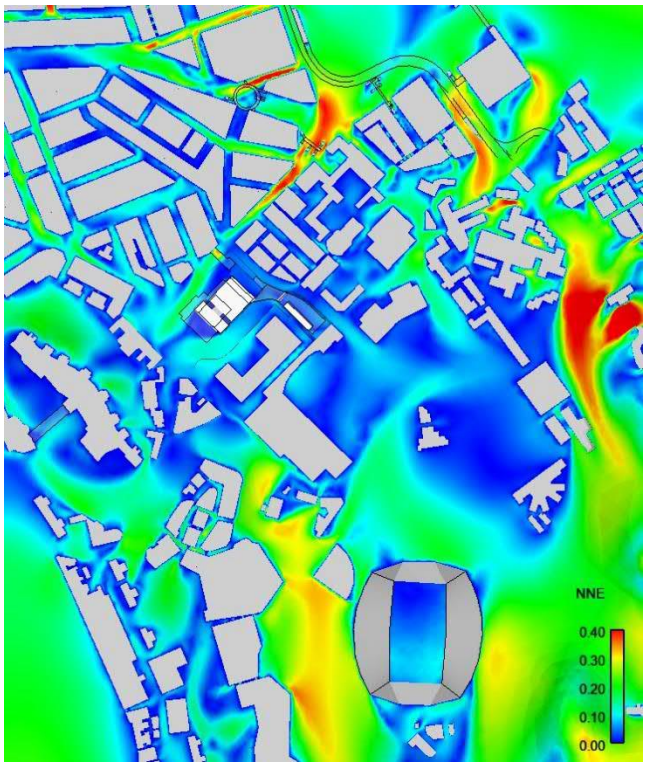


Figure C 1 Contour Plot of VR under NNE Wind

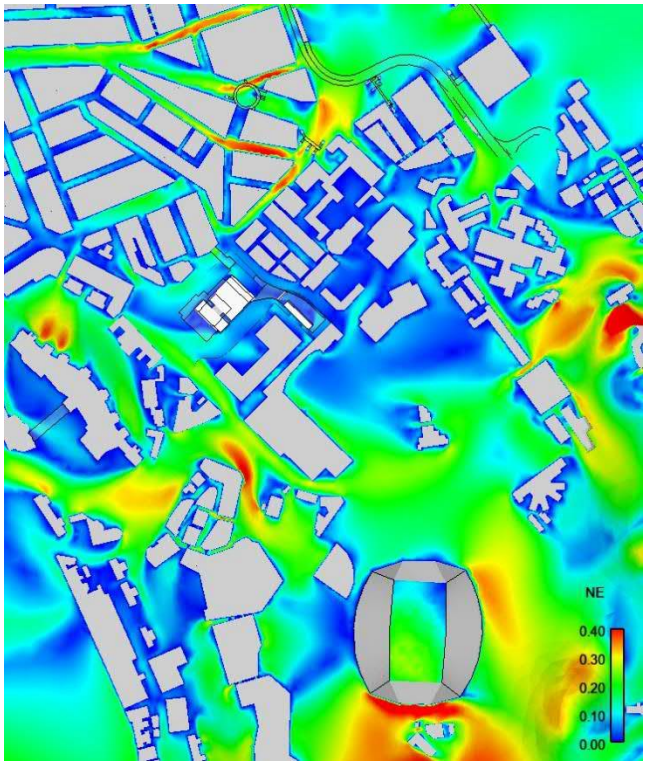


Figure C 2 Contour Plot of VR under NE Wind

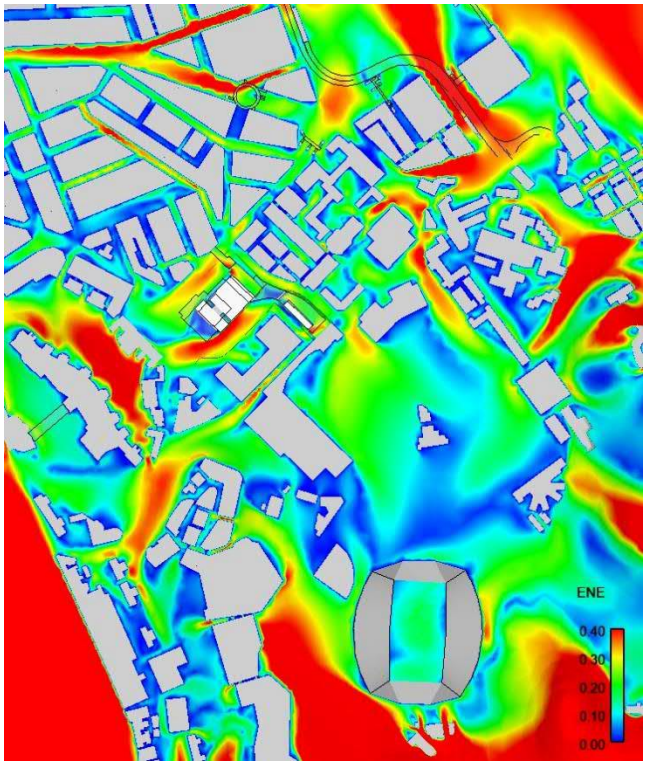


Figure C 3 Contour Plot of VR under ENE Wind

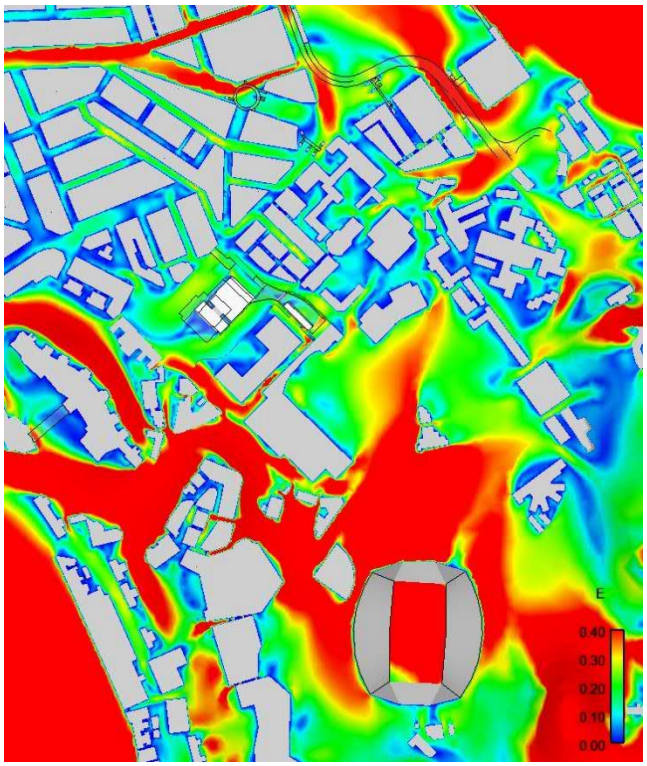


Figure C 4 Contour Plot of VR under E Wind

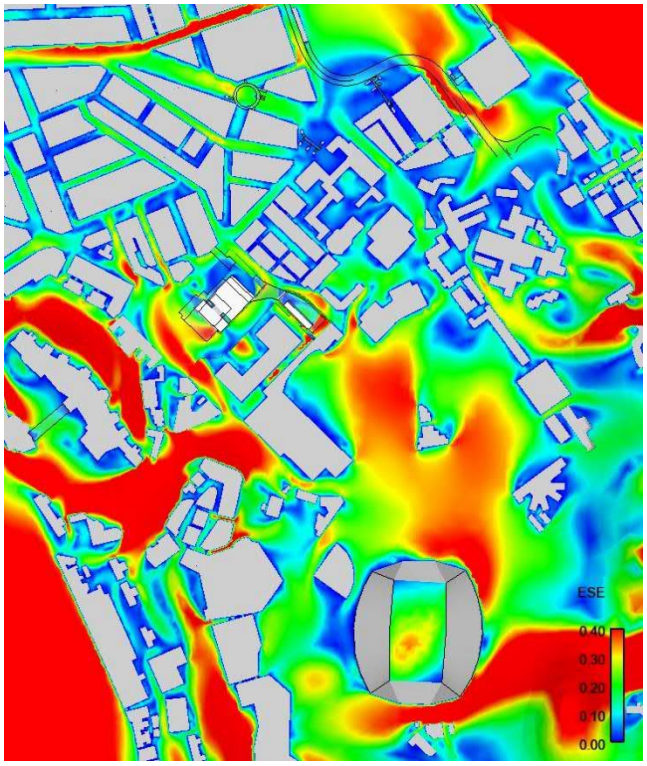


Figure C 5 Contour Plot of VR under ESE Wind

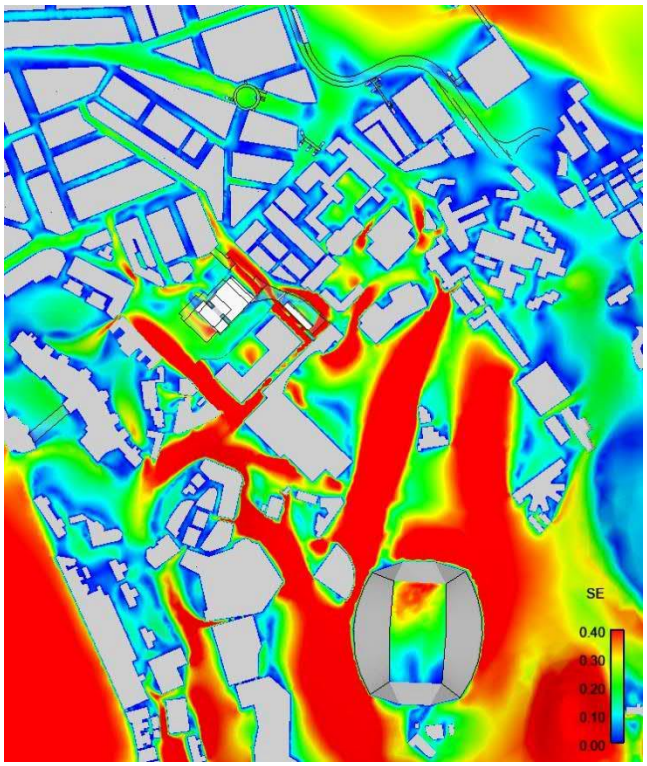


Figure C 6 Contour Plot of VR under SE Wind

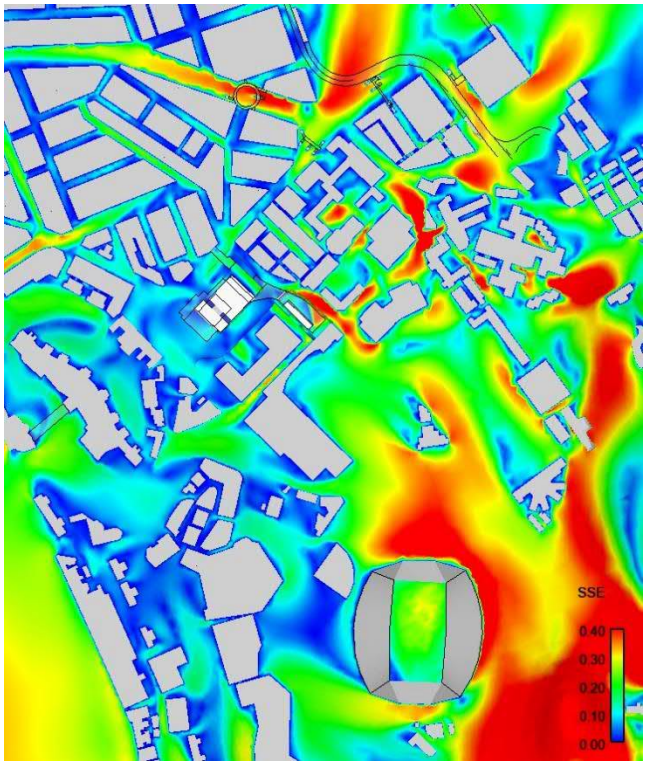


Figure C 7 Contour Plot of VR under SSE Wind

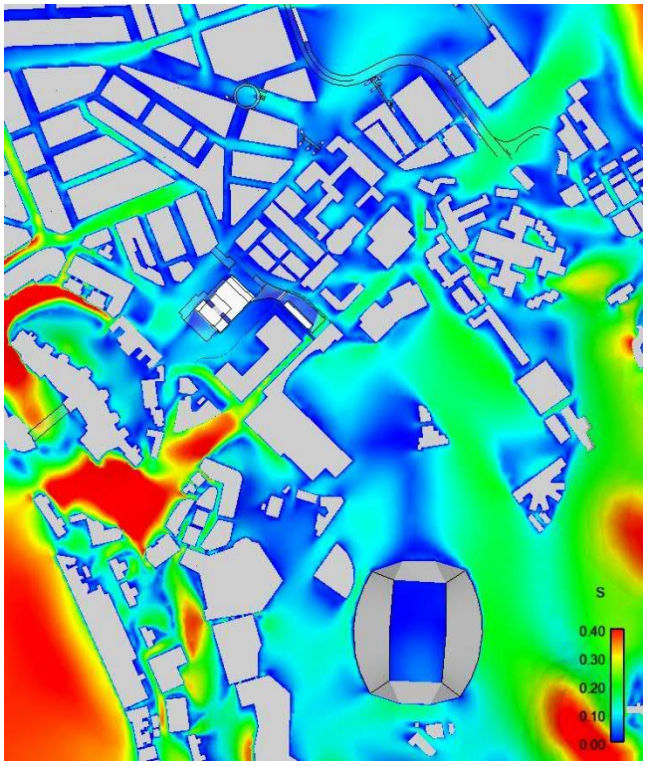


Figure C 8 Contour Plot of VR under S Wind

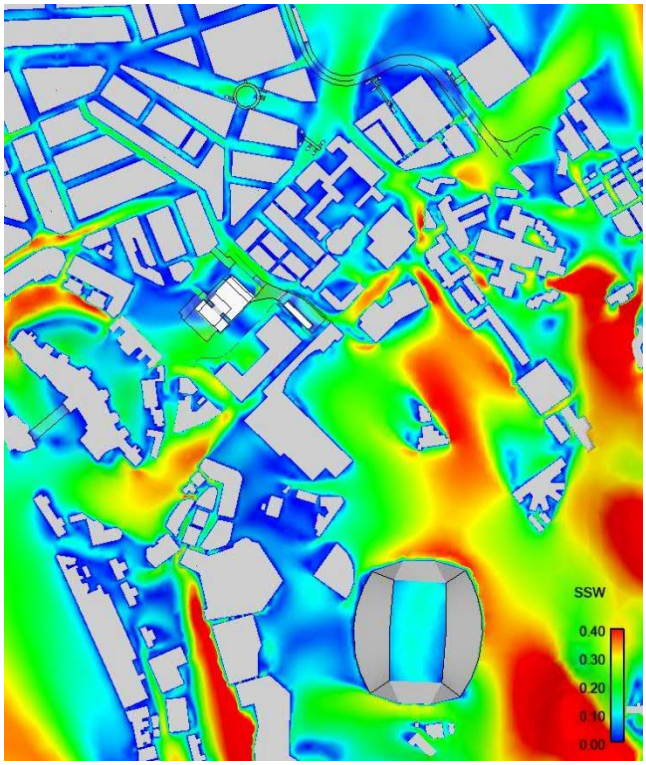


Figure C 9 Contour Plot of VR under SSW Wind

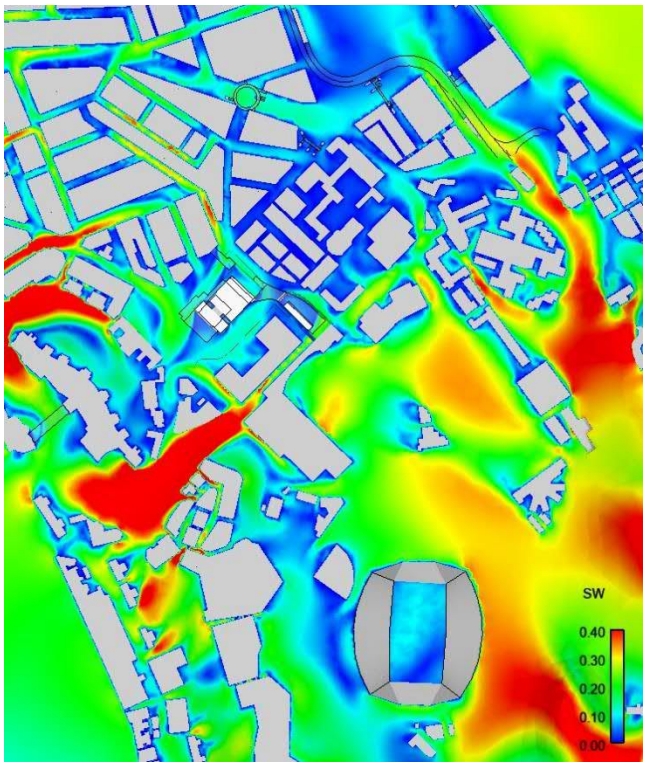


Figure C 10 Contour Plot of VR under SW Wind

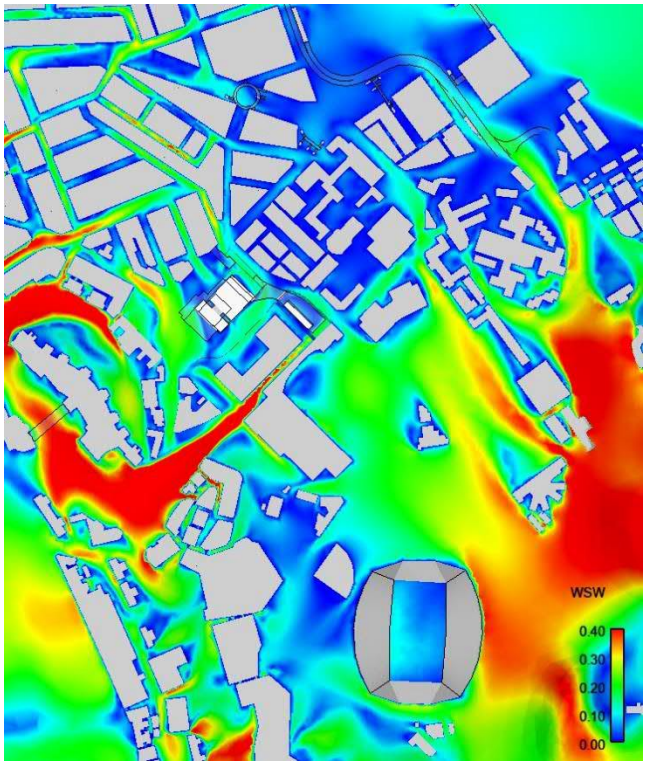


Figure C 11 Contour Plot of VR under WSW Wind

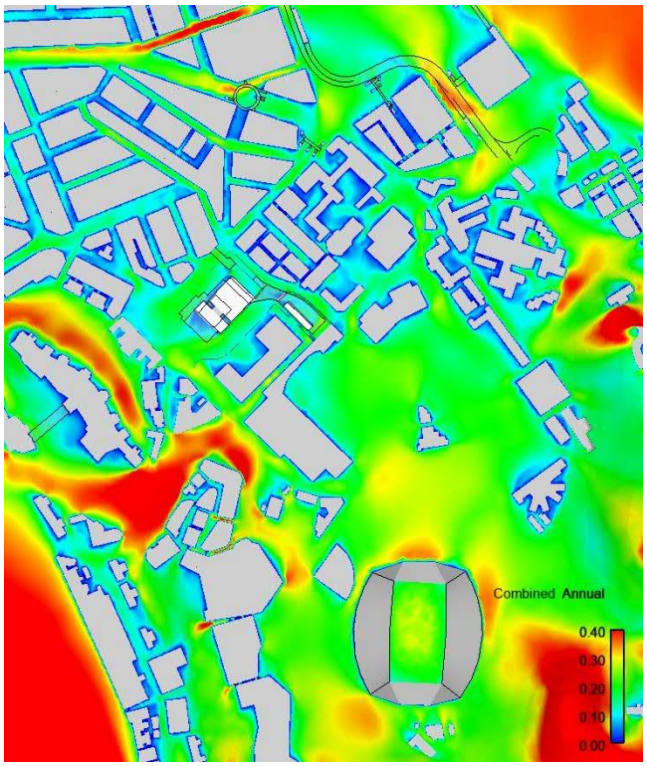


Figure C 12 Annual Weighted Average Contour Plot of VR

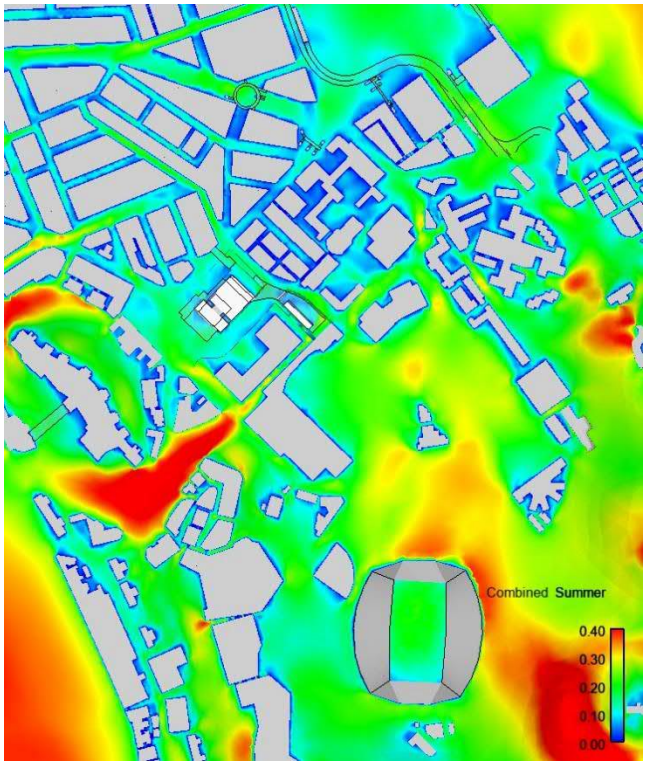


Figure C 13 Summer Weighted Average Contour Plot of VR

C2 Baseline Scheme (Computational Domain)

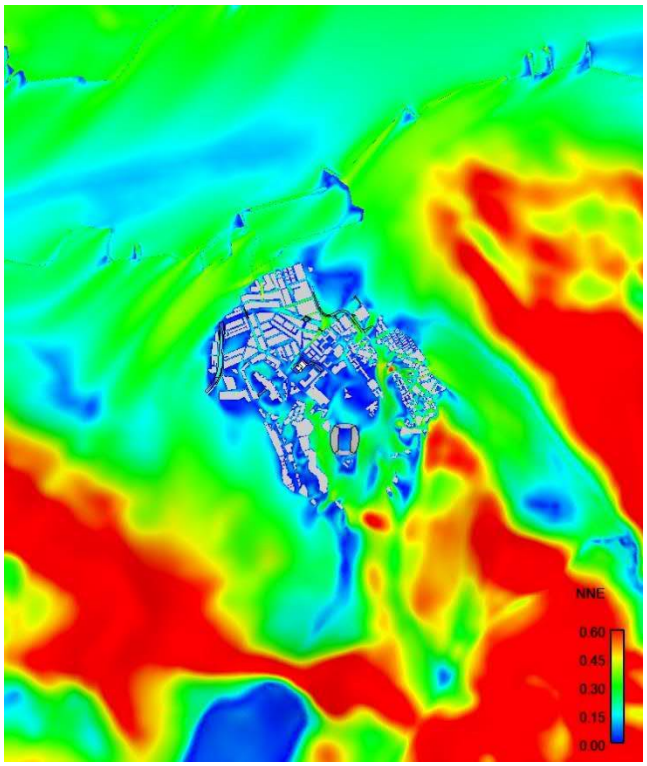


Figure C 14 Contour Plot of VR under NNE Wind

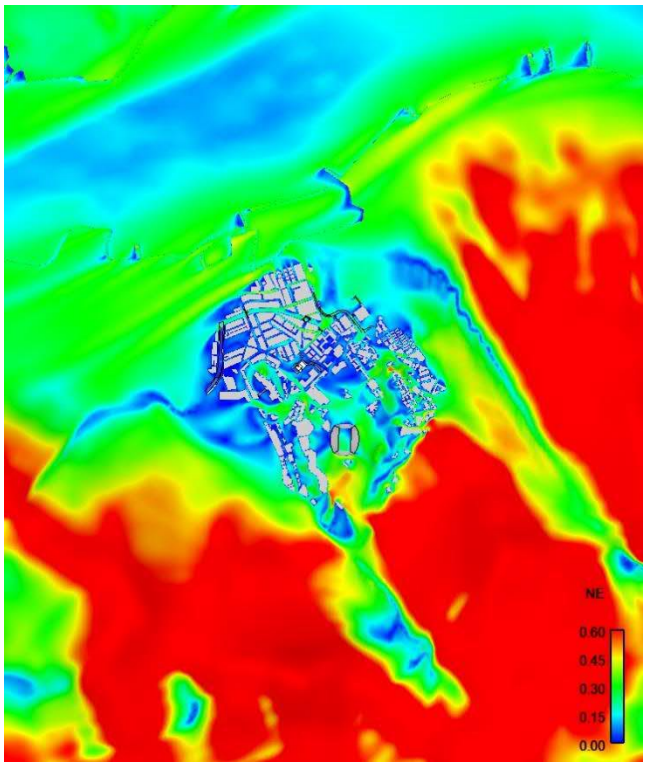


Figure C 15 Contour Plot of VR under NE Wind

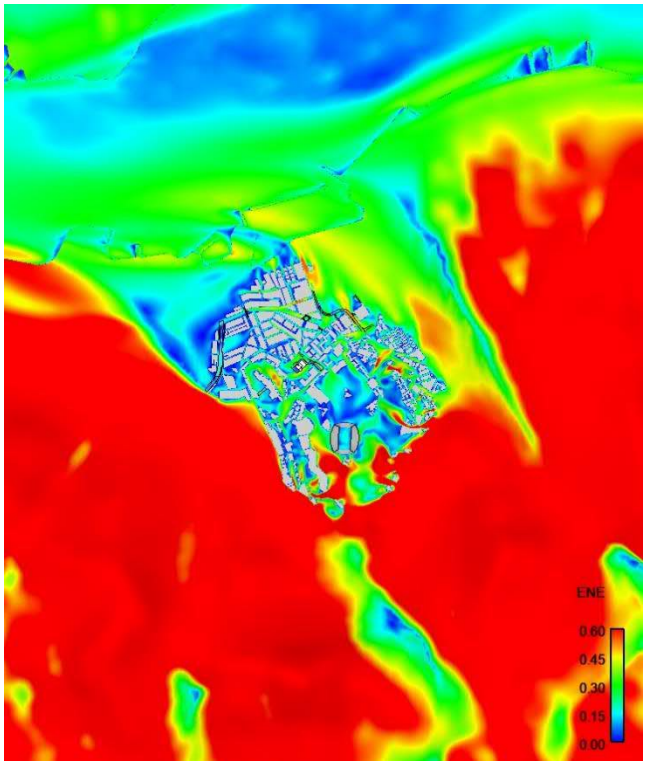


Figure C 16 Contour Plot of VR under ENE Wind

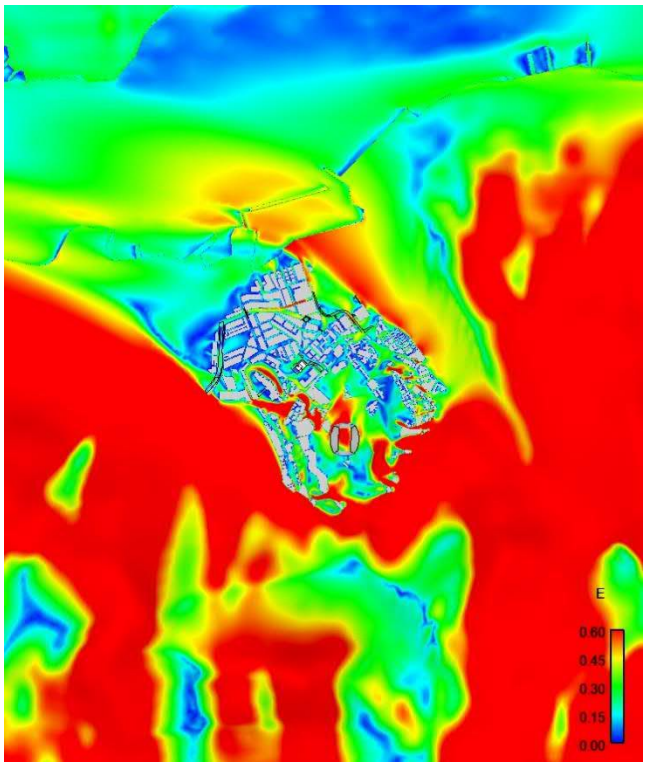


Figure C 17 Contour Plot of VR under E Wind

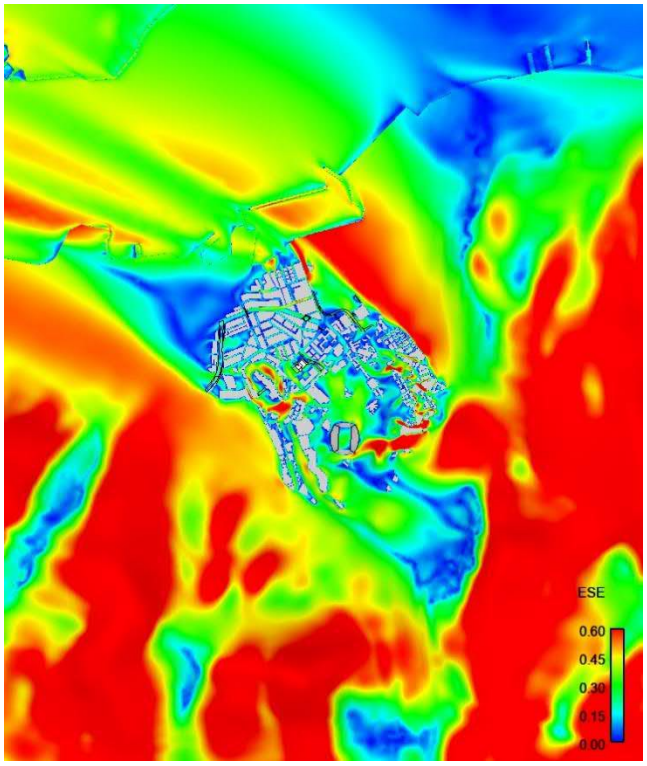


Figure C 18 Contour Plot of VR under ESE Wind

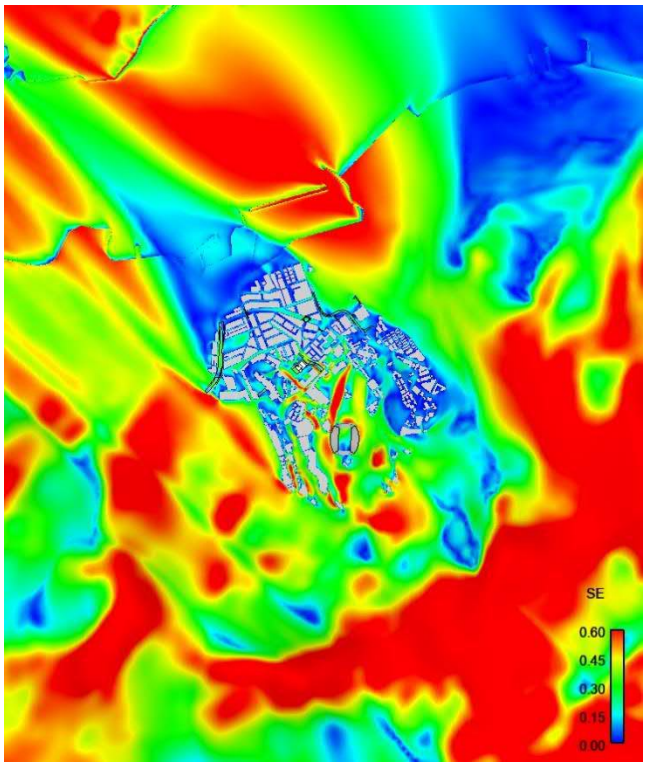


Figure C 19 Contour Plot of VR under SE Wind

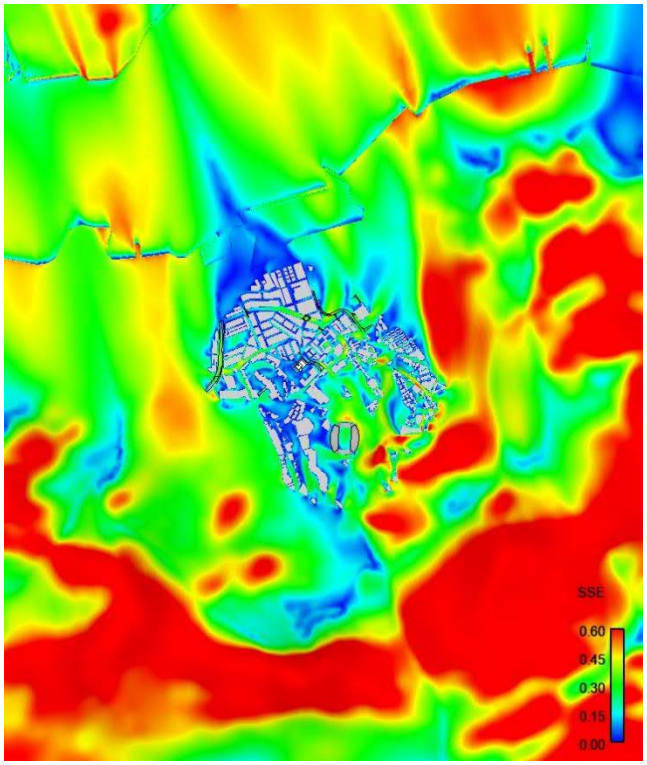


Figure C 20 Contour Plot of VR under SSE Wind

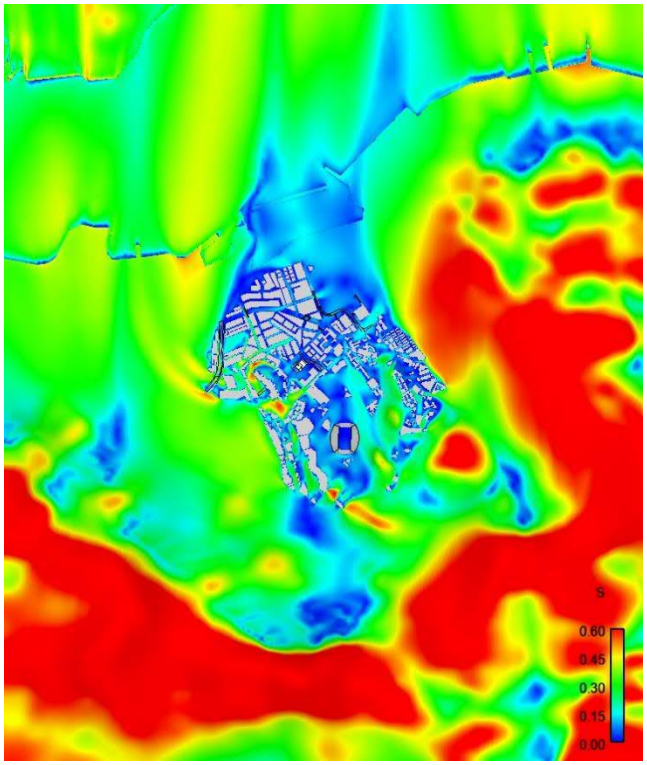


Figure C 21 Contour Plot of VR under S Wind

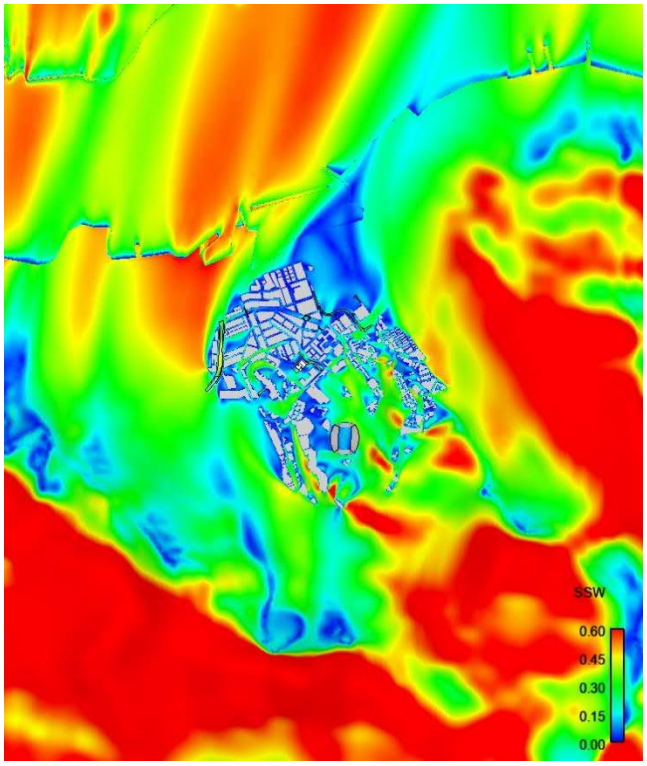


Figure C 22 Contour Plot of VR under SSW Wind

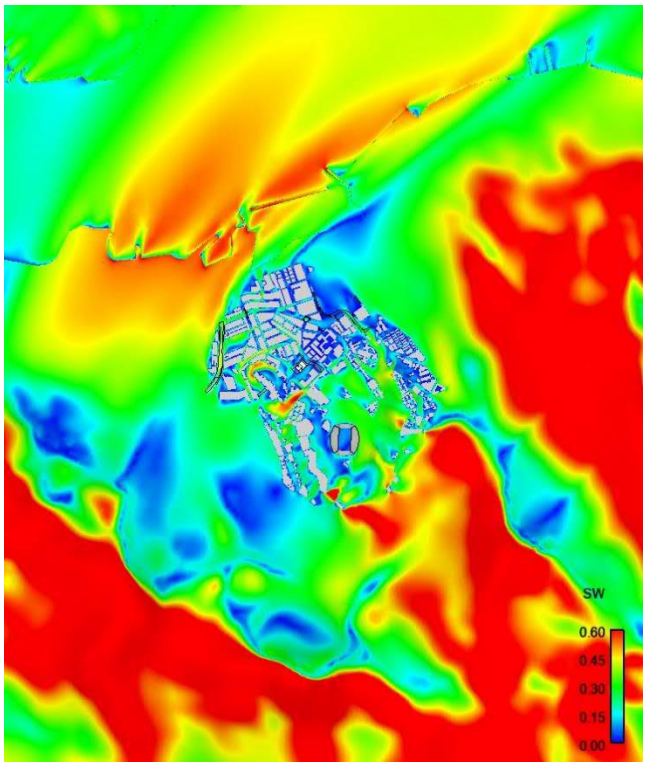


Figure C 23 Contour Plot of VR under SW Wind

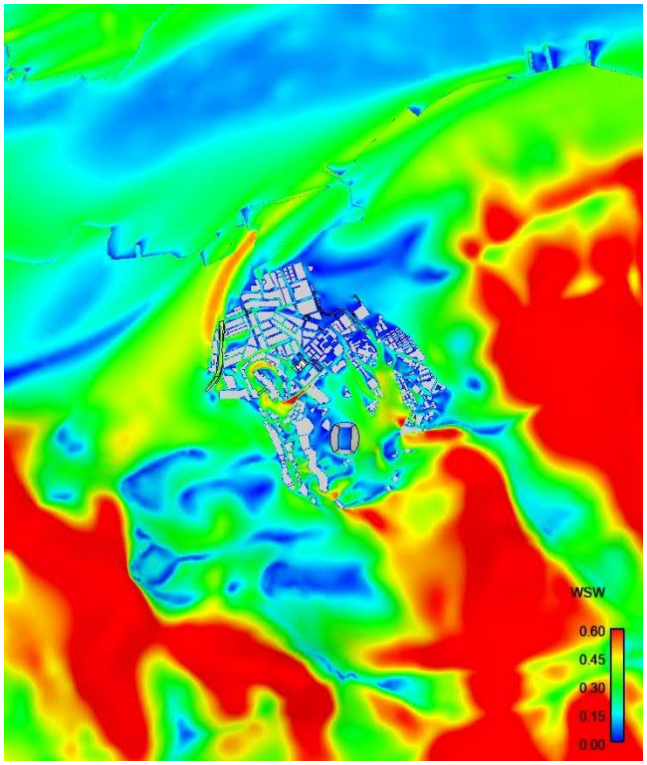


Figure C 24 Contour Plot of VR under WSW Wind

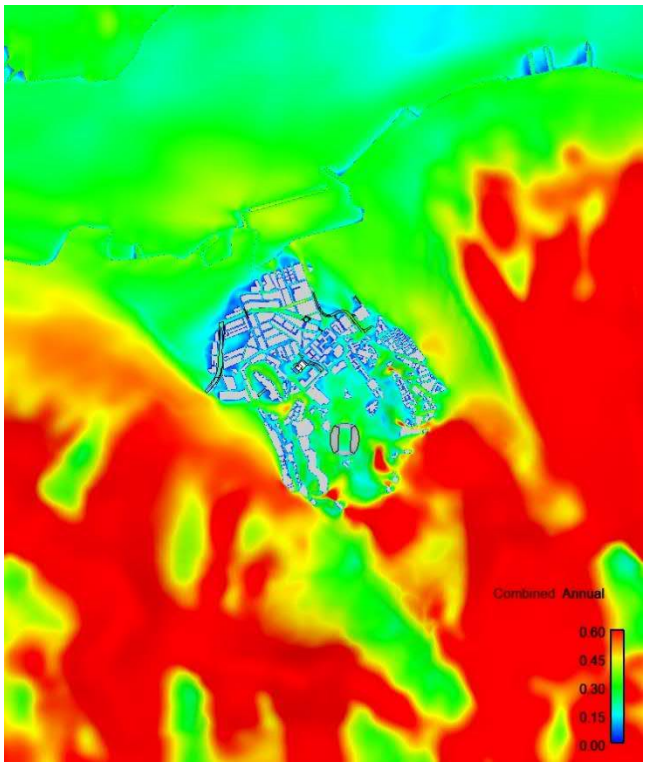


Figure C 25 Annual Weighted Average Contour Plot of VR

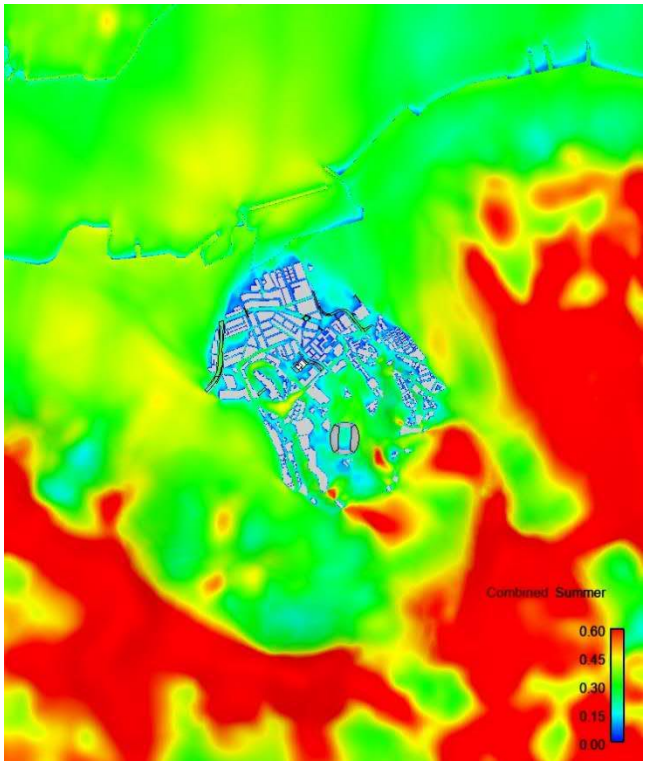


Figure C 26 Summer Weighted Average Contour Plot of VR

C3 Proposed Scheme

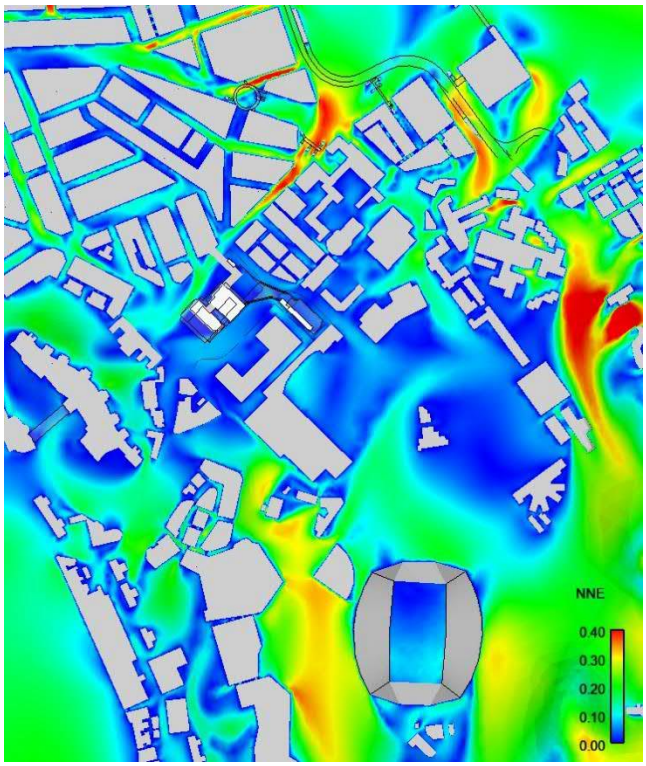


Figure C 27 Contour Plot of VR under NNE Wind

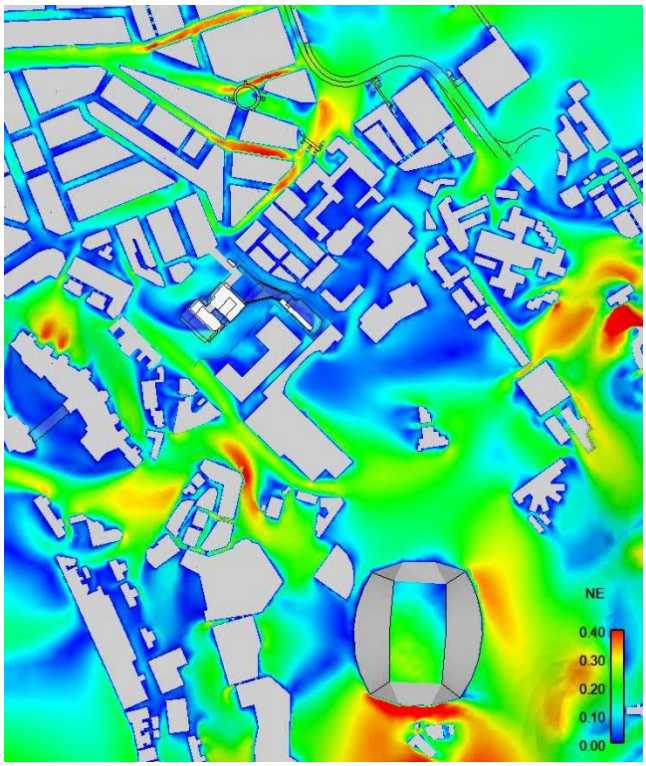


Figure C 28 Contour Plot of VR under NE Wind

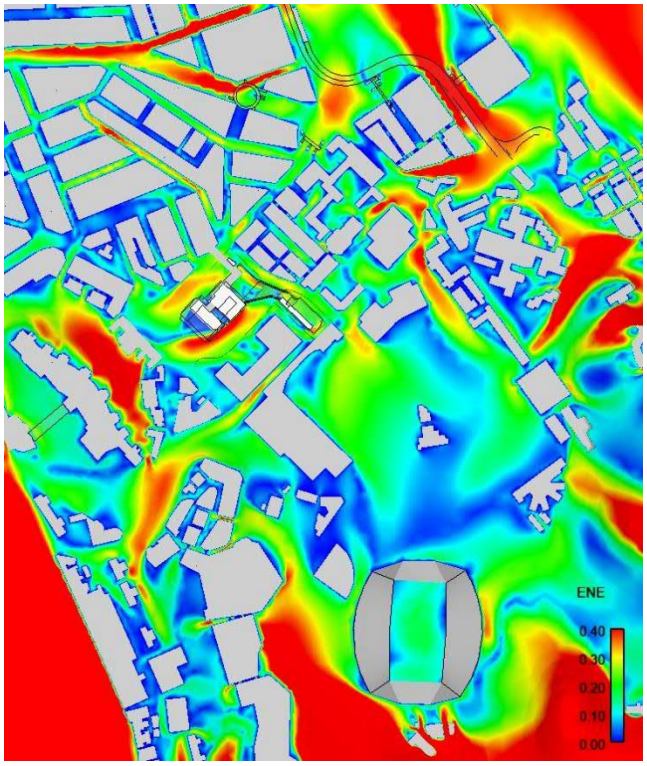


Figure C 29 Contour Plot of VR under ENE Wind

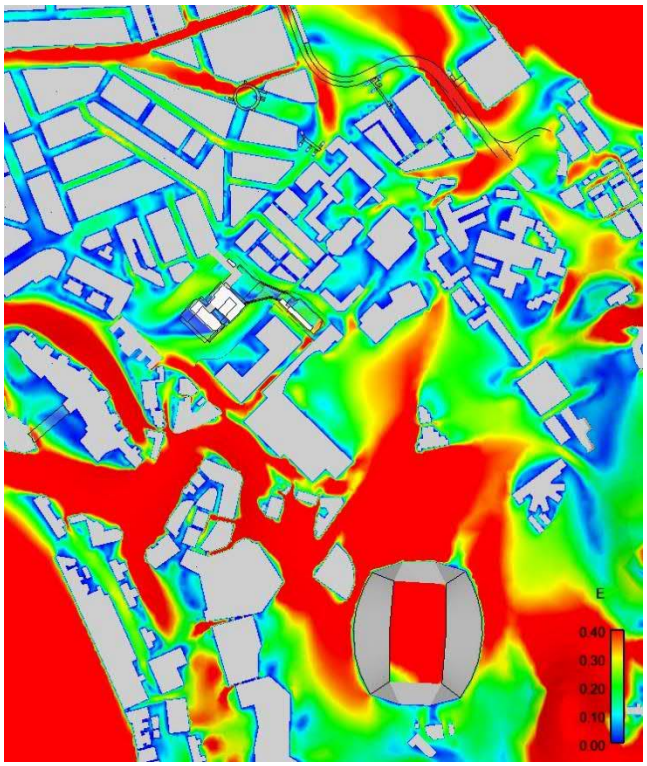


Figure C 30 Contour Plot of VR under E Wind

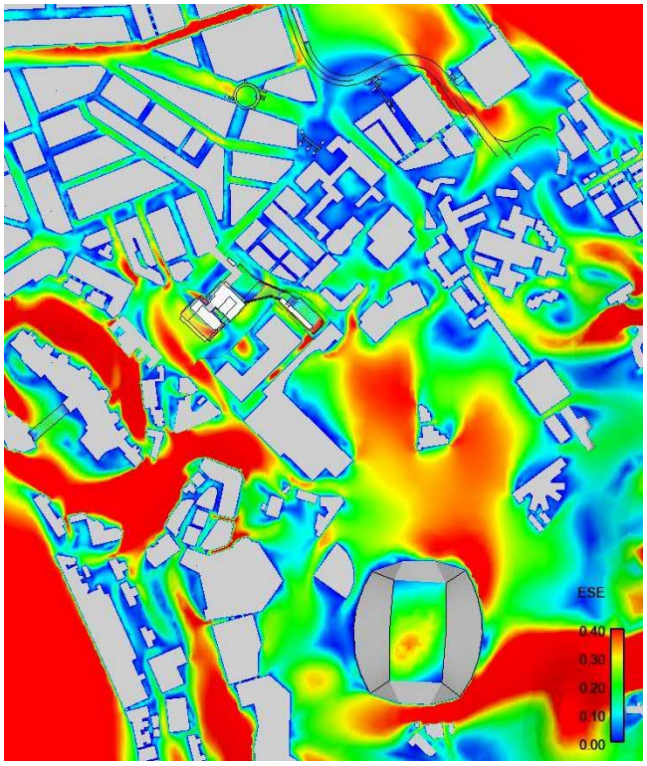


Figure C 31 Contour Plot of VR under ESE Wind

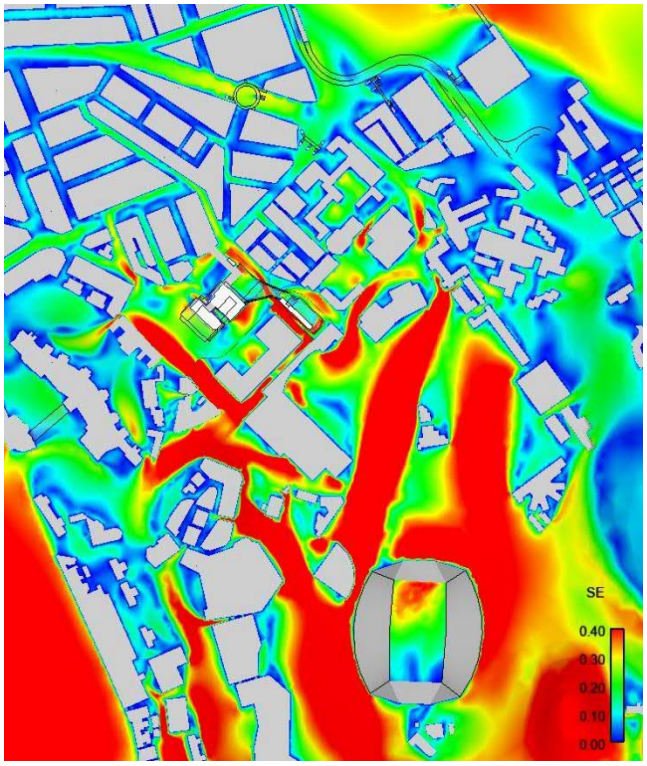


Figure C 32 Contour Plot of VR under SE Wind

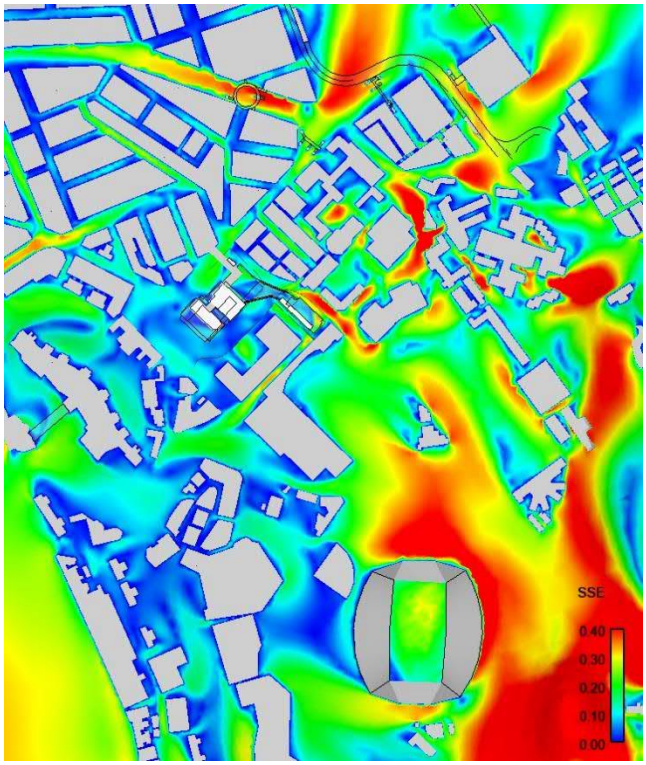


Figure C 33 Contour Plot of VR under SSE Wind

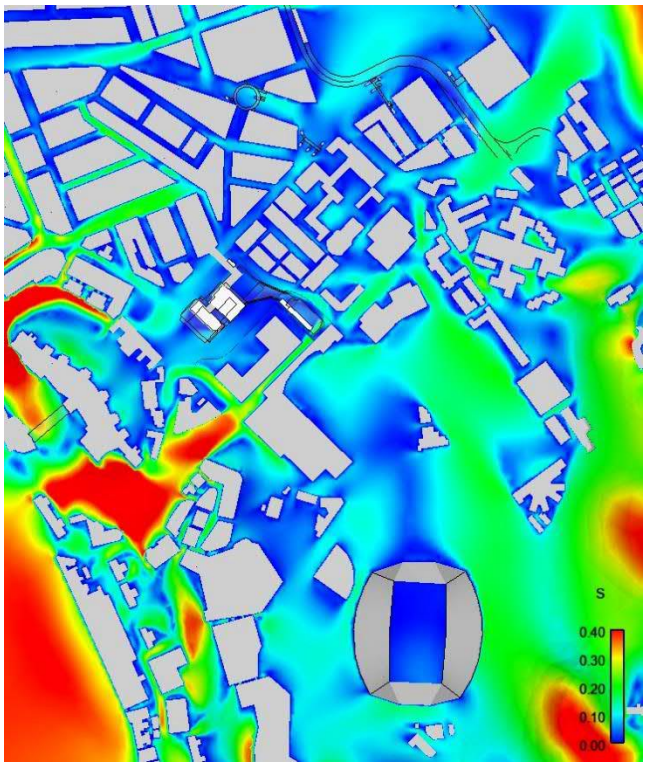


Figure C 34 Contour Plot of VR under S Wind

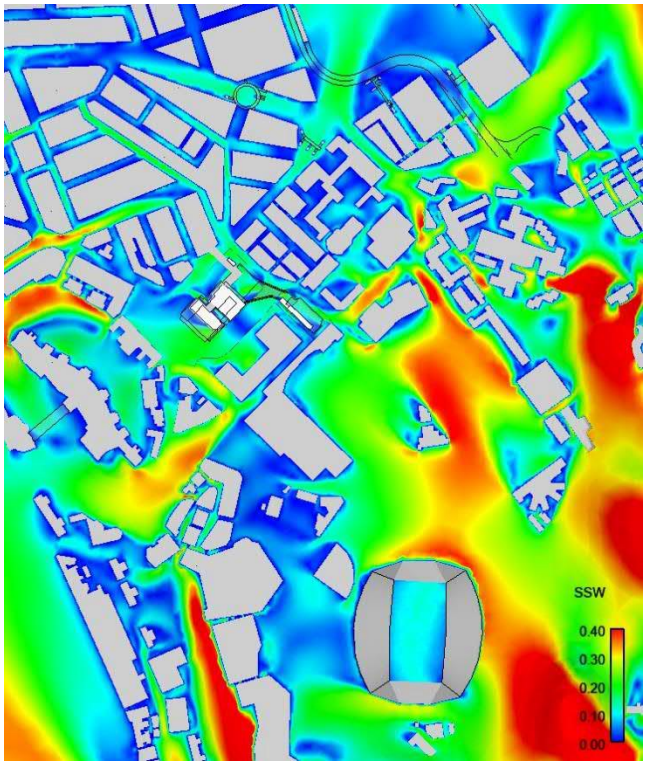


Figure C 35 Contour Plot of VR under SSW Wind

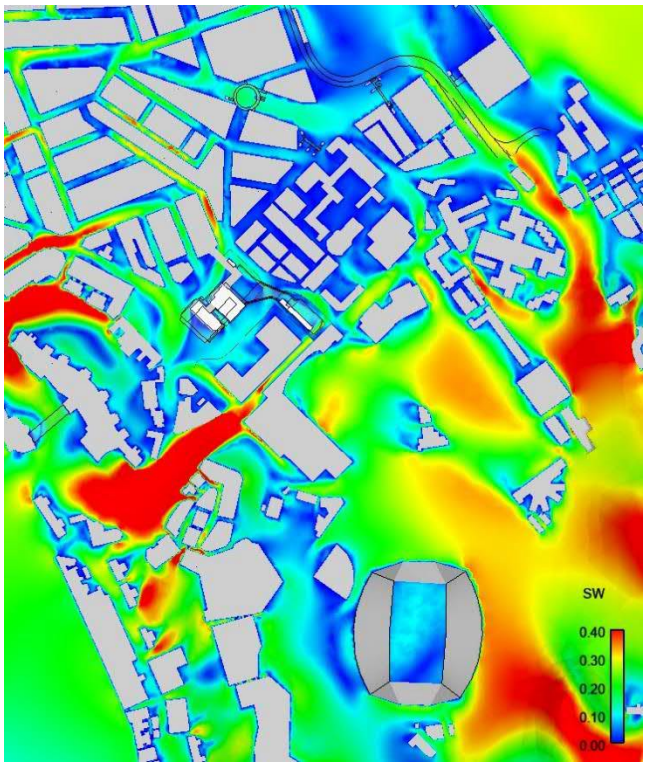


Figure C 36 Contour Plot of VR under SW Wind

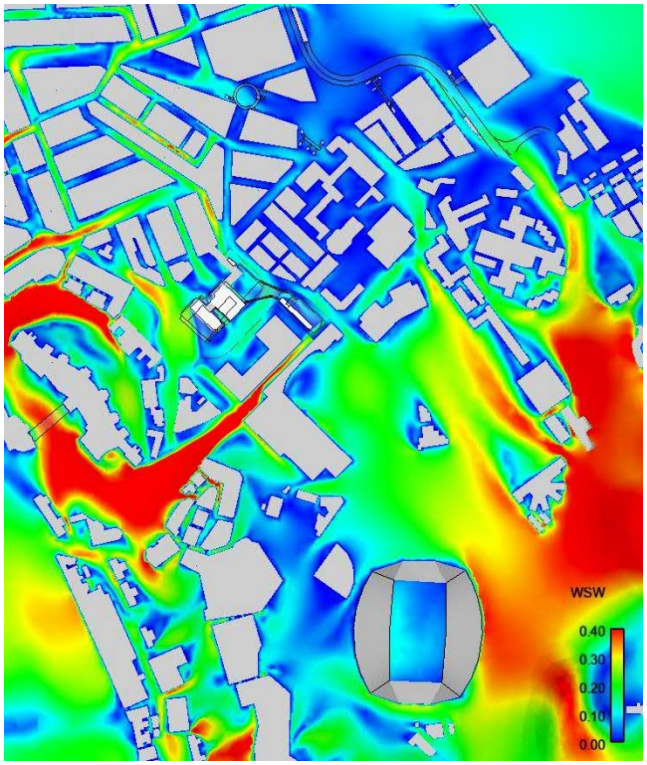


Figure C 37 Contour Plot of VR under WSW Wind

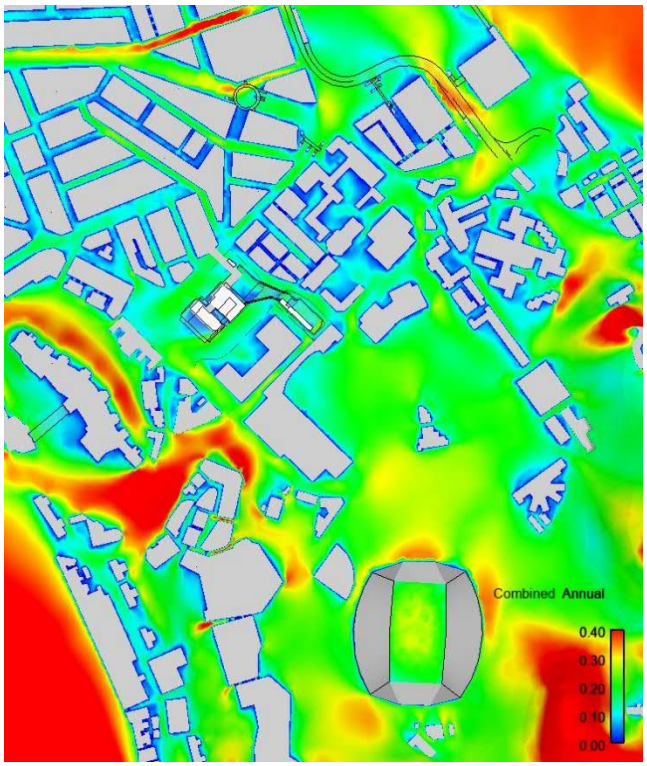


Figure C 38 Annual Weighted Average Contour Plot of VR

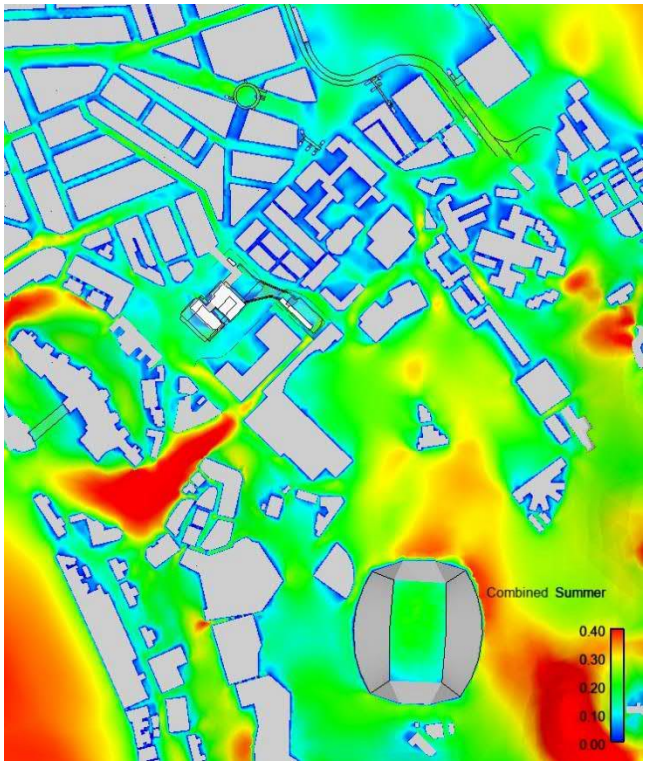


Figure C 39 Summer Weighted Average Contour Plot of VR

C4 Proposed Scheme (Computational Domain)

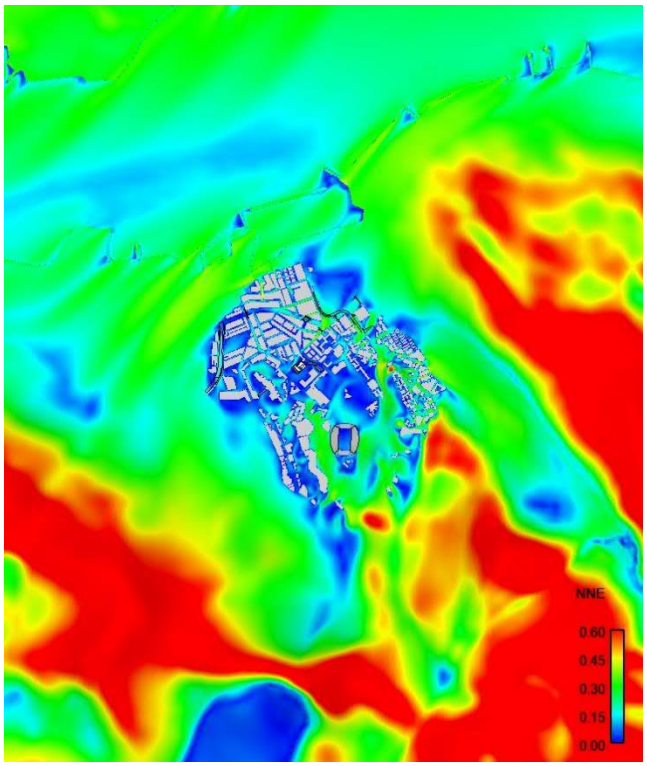


Figure C 40 Contour Plot of VR under NNE Wind

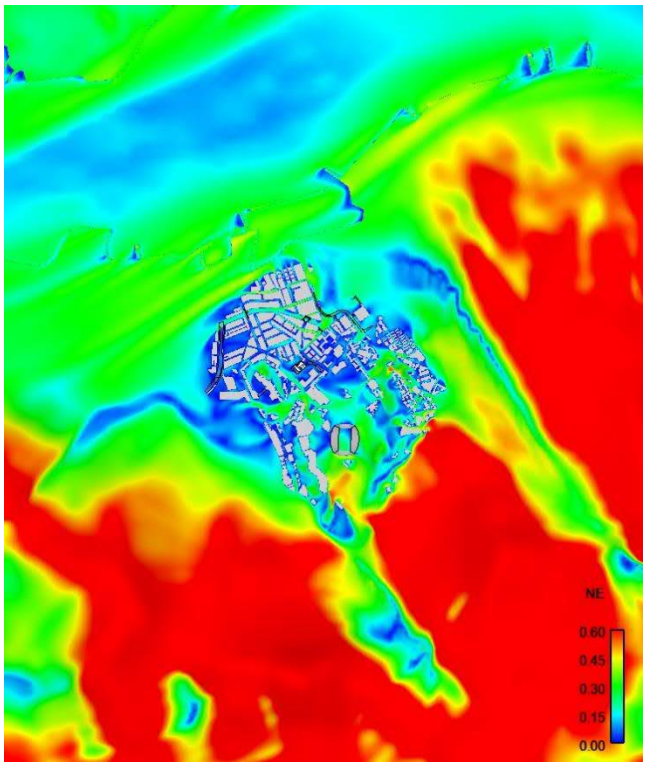


Figure C 41 Contour Plot of VR under NE Wind

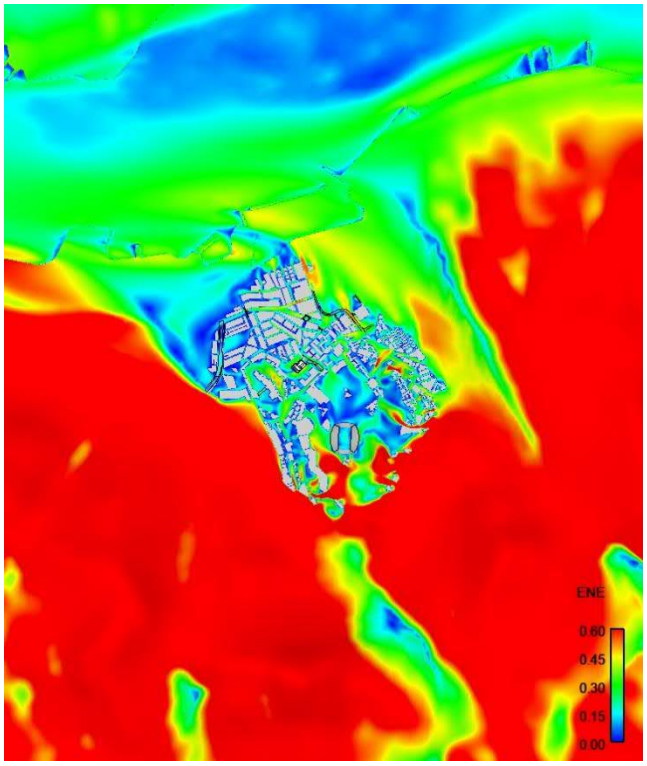


Figure C 42 Contour Plot of VR under ENE Wind

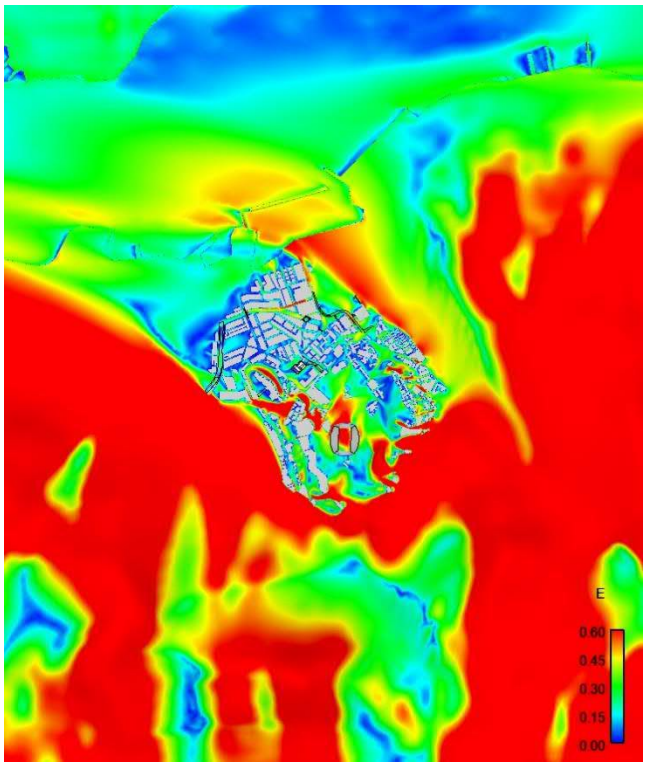


Figure C 43 Contour Plot of VR under E Wind

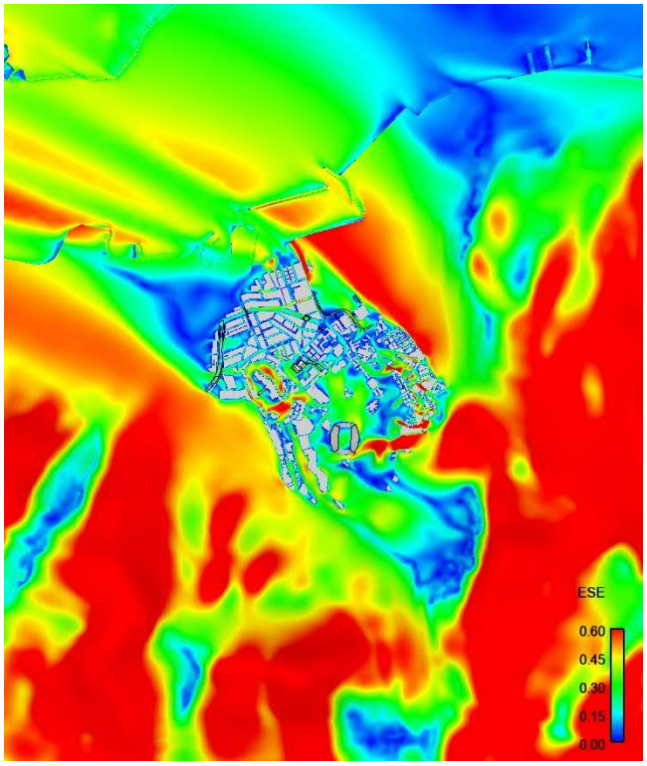


Figure C 44 Contour Plot of VR under ESE Wind

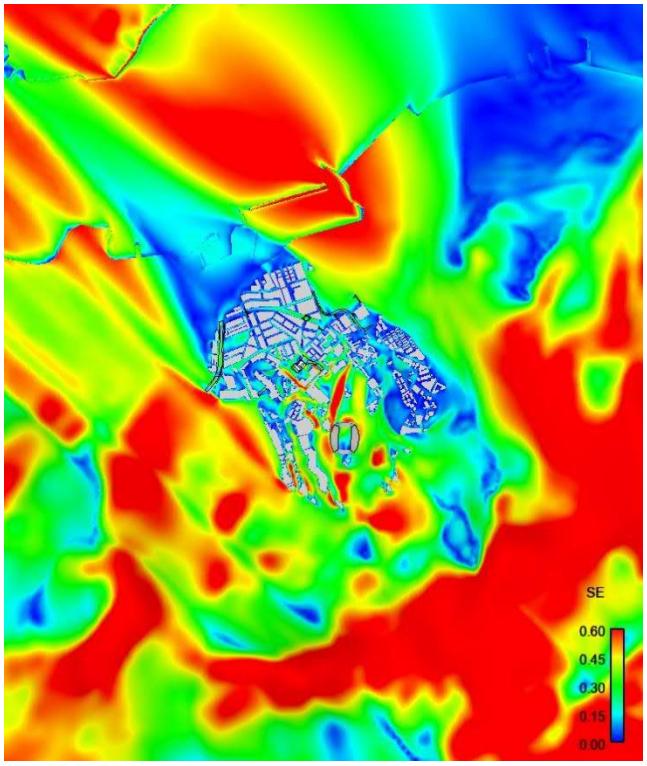


Figure C 45 Contour Plot of VR under SE Wind

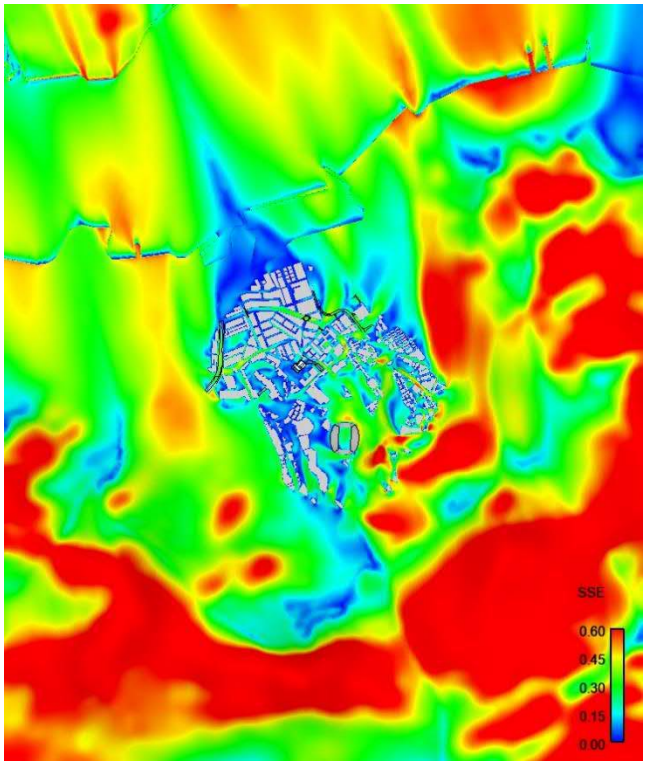


Figure C 46 Contour Plot of VR under SSE Wind

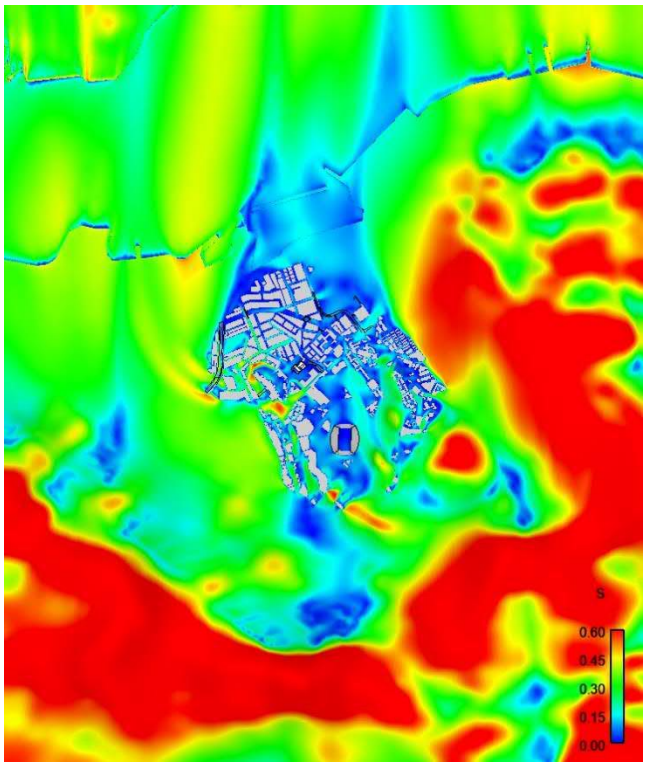


Figure C 47 Contour Plot of VR under S Wind

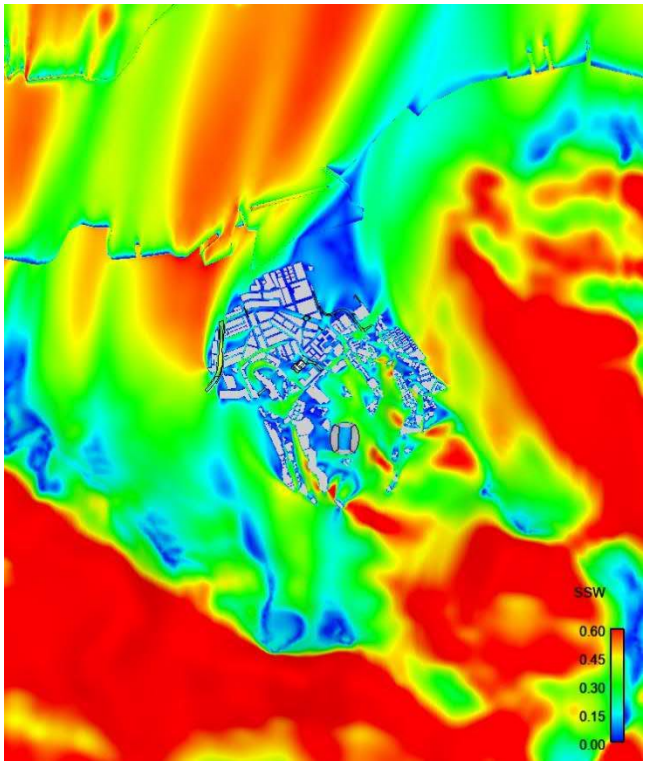


Figure C 48 Contour Plot of VR under SSW Wind

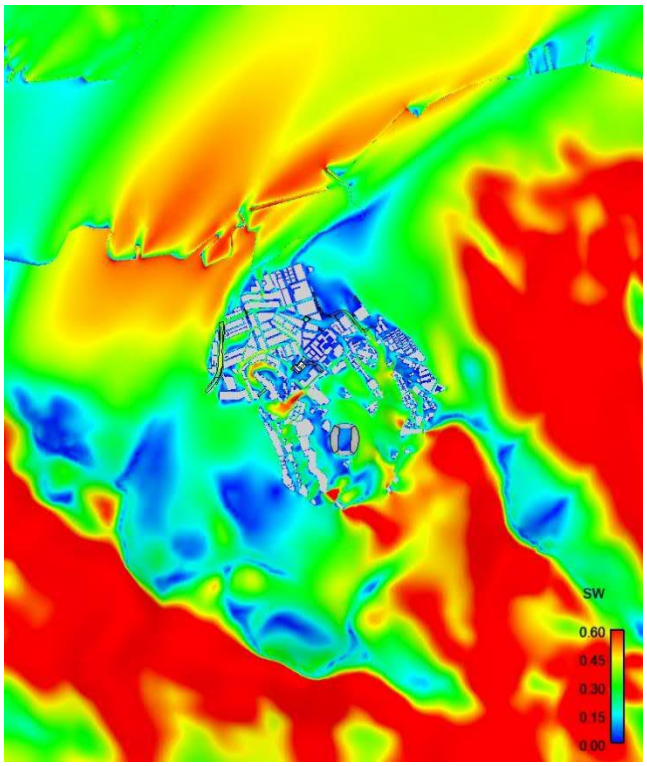


Figure C 49 Contour Plot of VR under SW Wind

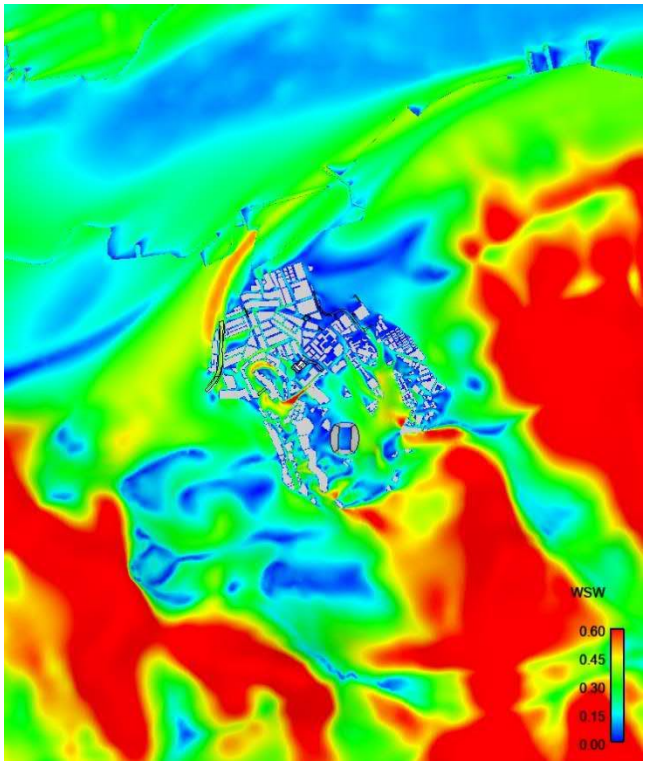


Figure C 50 Contour Plot of VR under WSW Wind

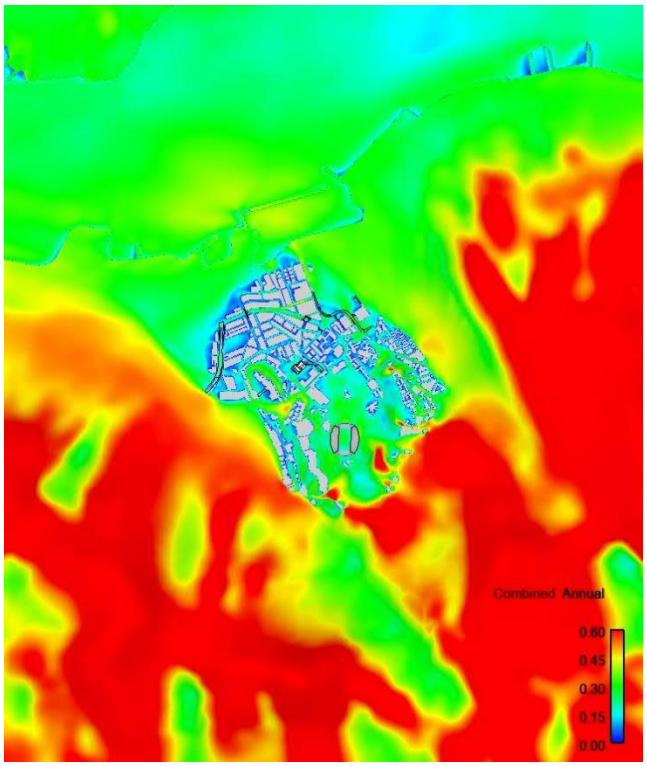


Figure C 51 Annual Weighted Average Contour Plot of VR

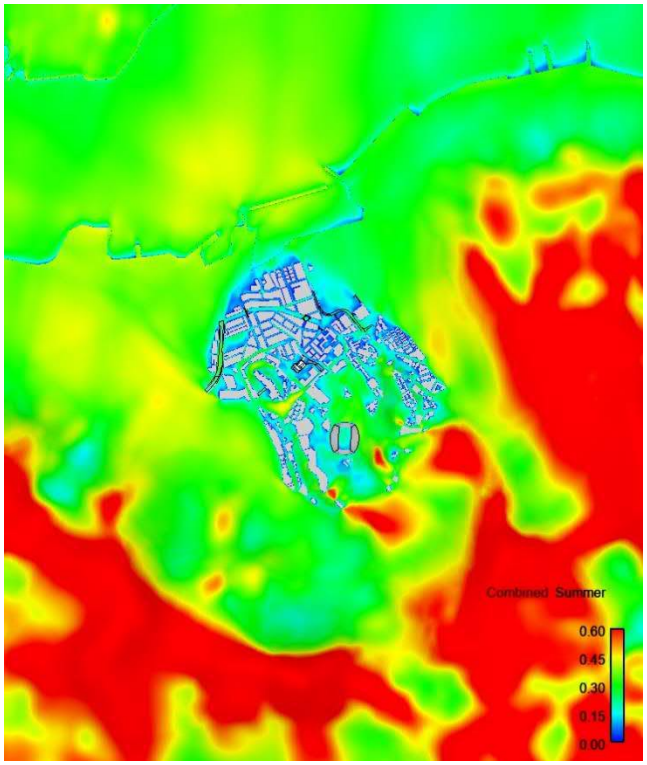


Figure C 52 Summer Weighted Average Contour Plot of VR

Appendix D

Vector Plots of Velocity Ratio (VR)

D1 Baseline Scheme

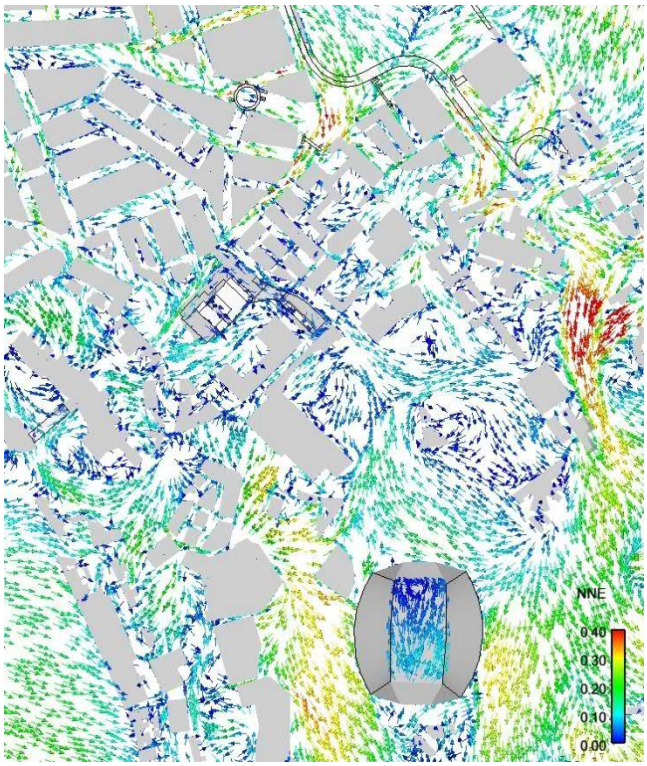


Figure D 1 Vector Plot of VR under NNE Wind

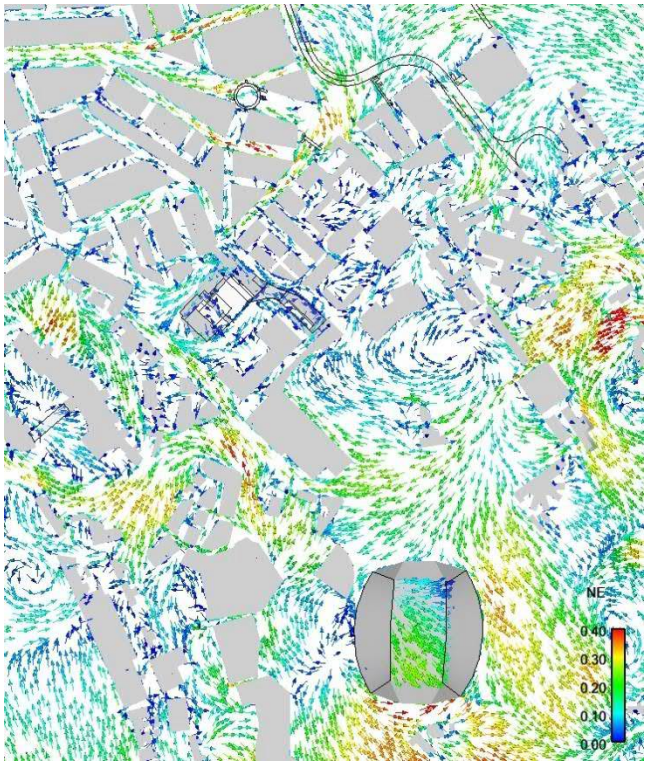


Figure D 2 Vector Plot of VR under NE Wind

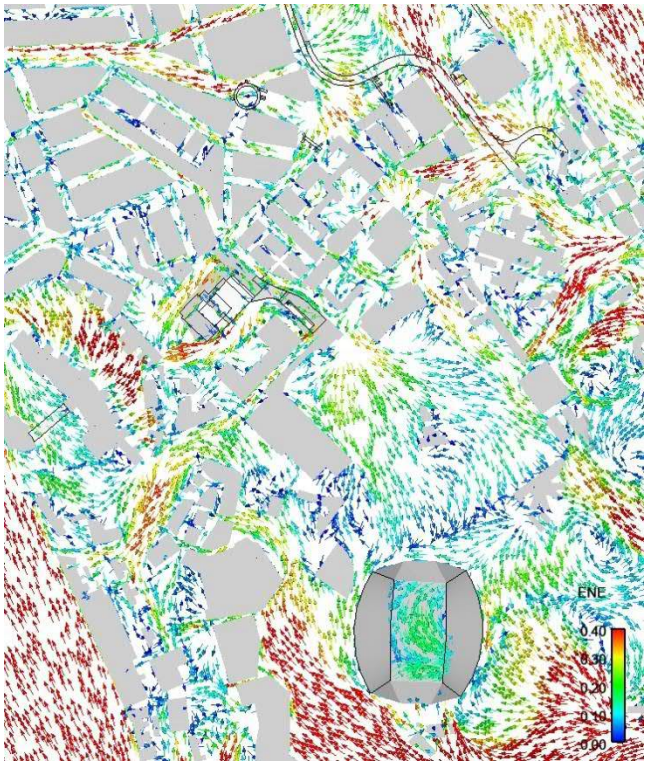


Figure D 3 Vector Plot of VR under ENE Wind

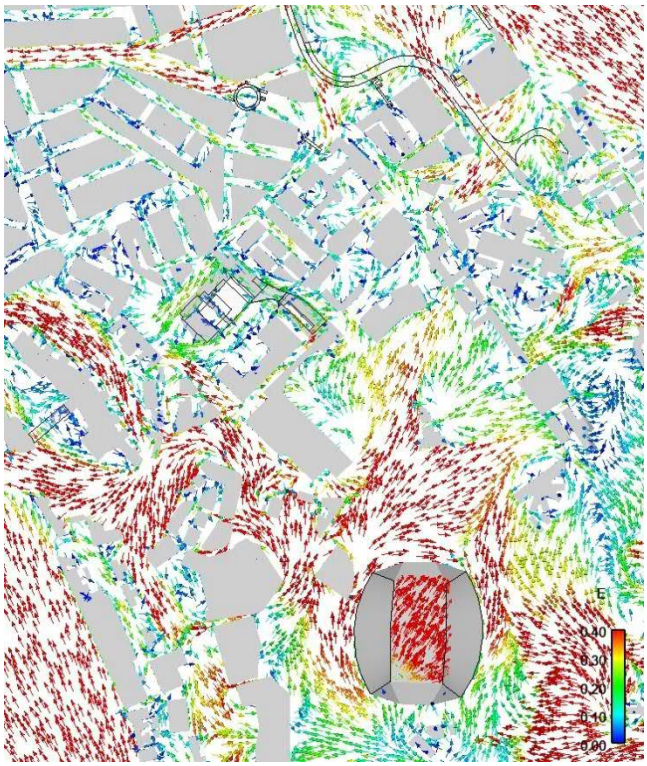


Figure D 4 Vector Plot of VR under E Wind

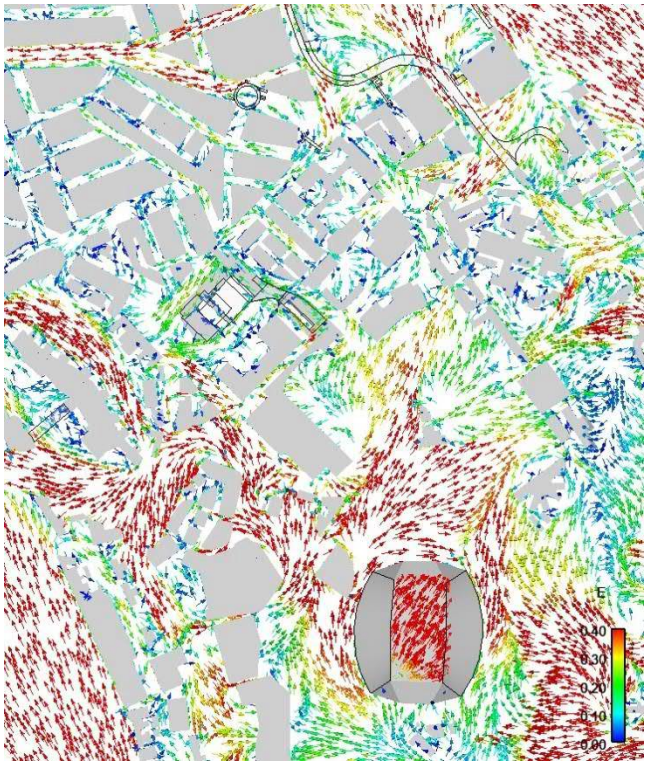


Figure D 5 Vector Plot of VR under ESE Wind

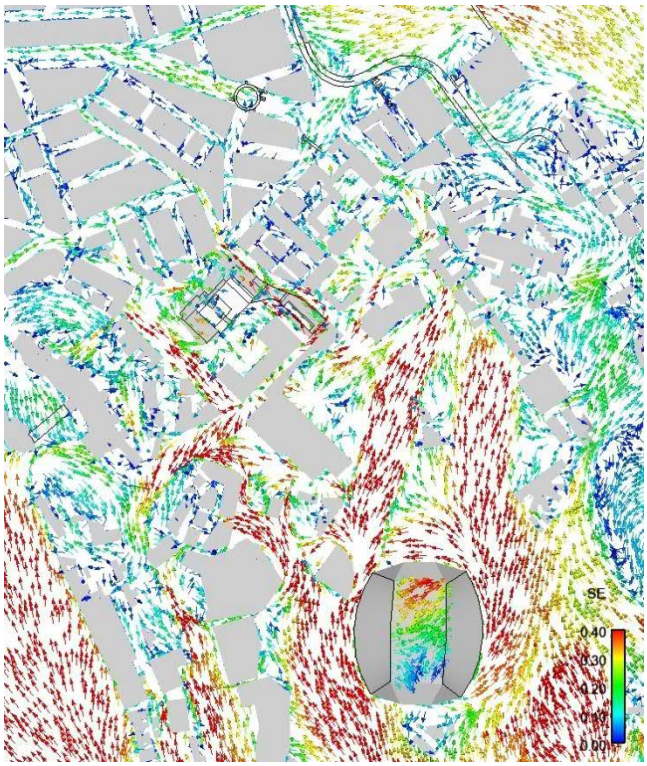


Figure D 6 Vector Plot of VR under SE Wind

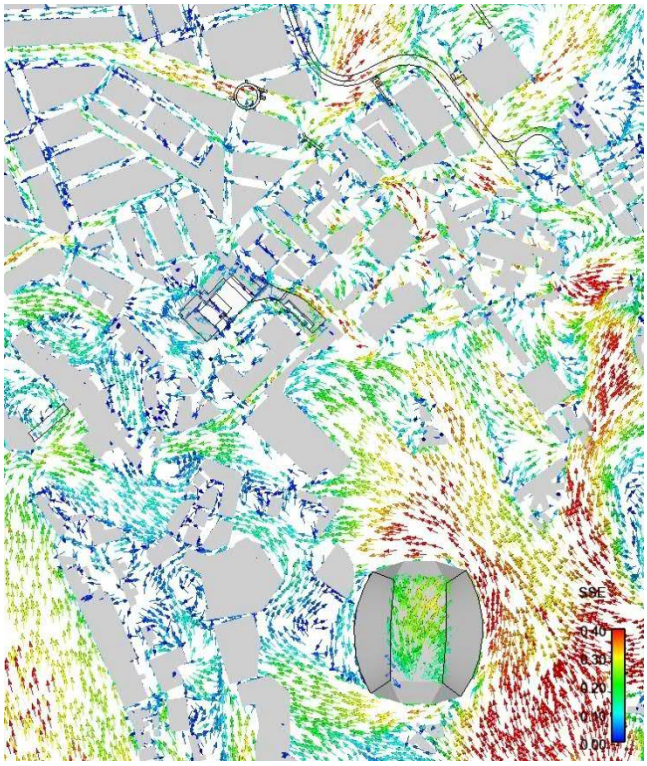


Figure D 7 Vector Plot of VR under SSE Wind

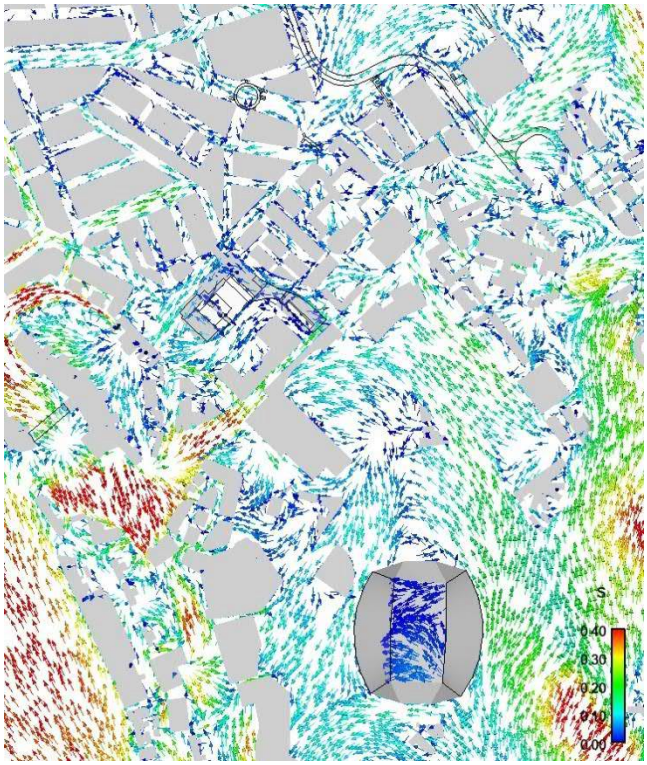


Figure D 8 Vector Plot of VR under S Wind

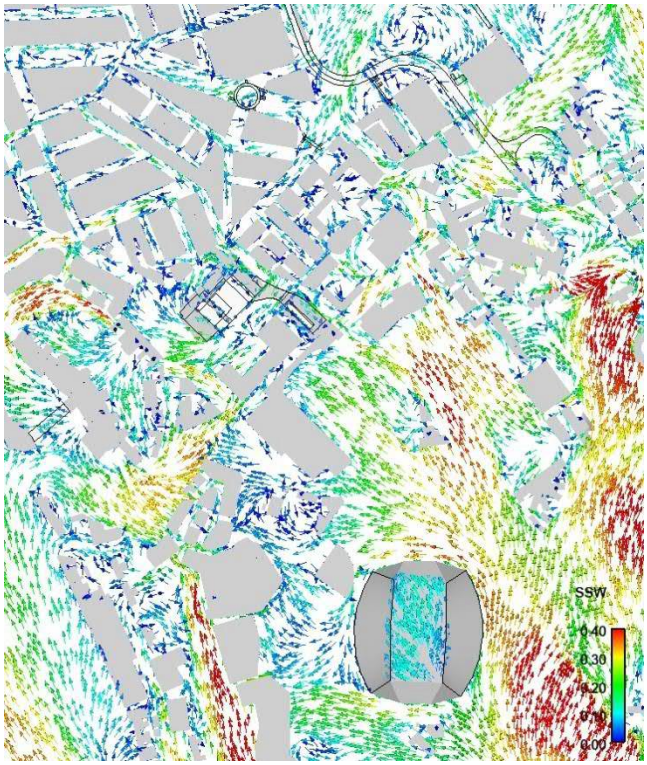


Figure D 9 Vector Plot of VR under SSW Wind

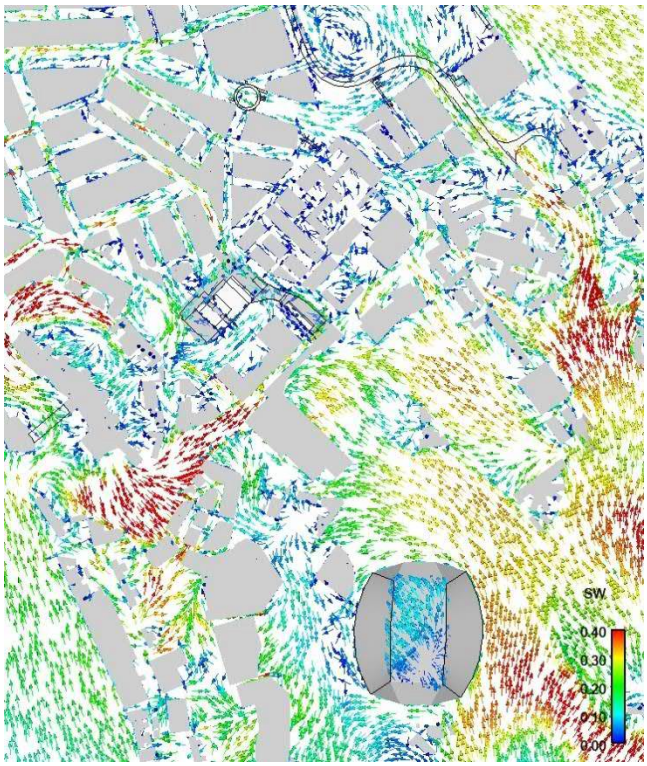


Figure D 10 Vector Plot of VR under SW Wind

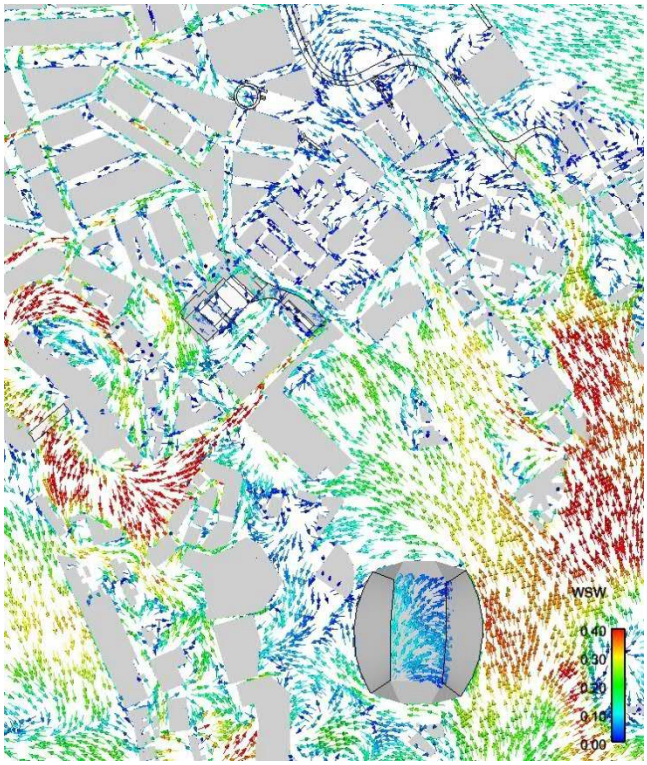


Figure D 11 Vector Plot of VR under WSW Wind

D2 Proposed Scheme

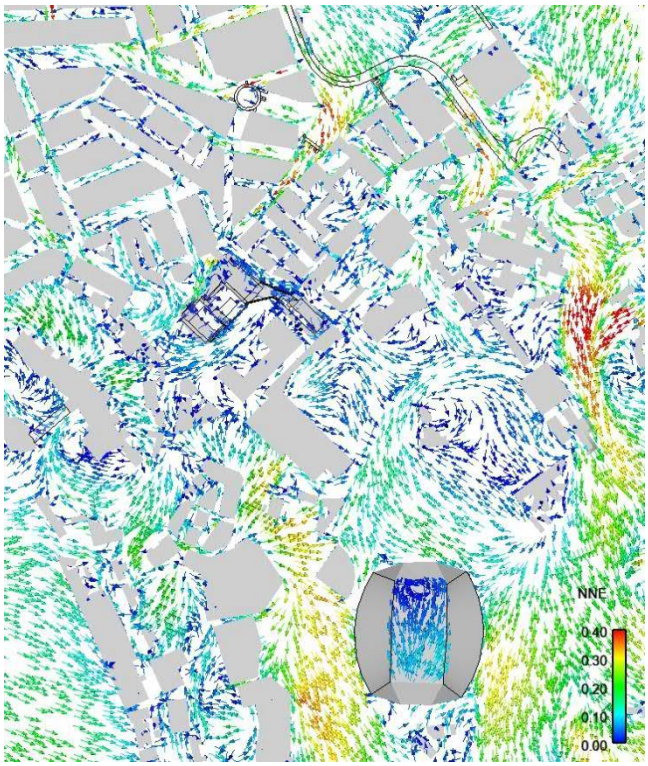


Figure D 12 Vector Plot of VR under NNE Wind

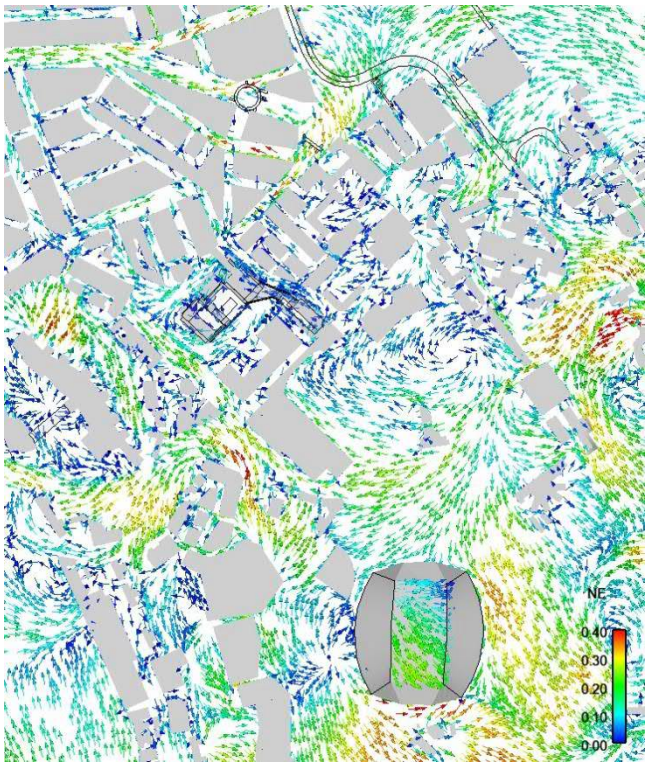


Figure D 13 Vector Plot of VR under NE Wind

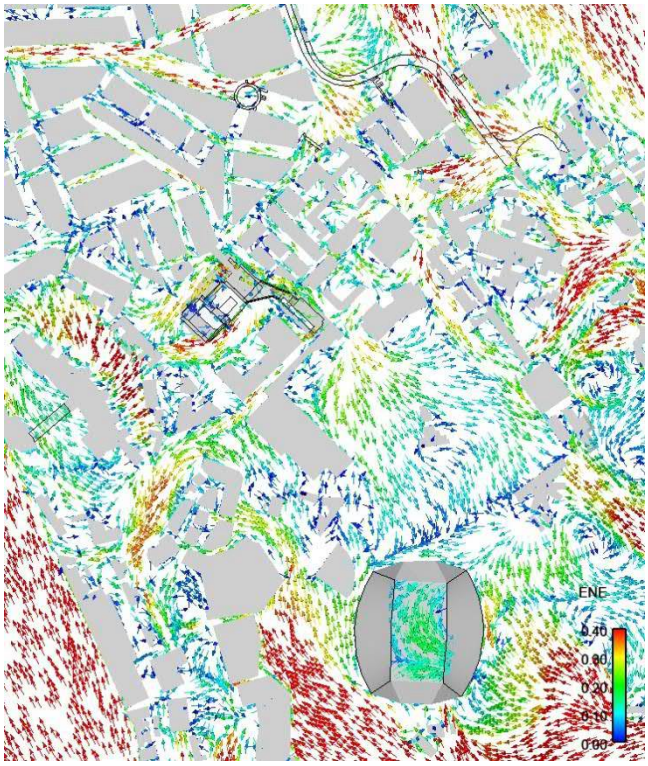


Figure D 14 Vector Plot of VR under ENE Wind

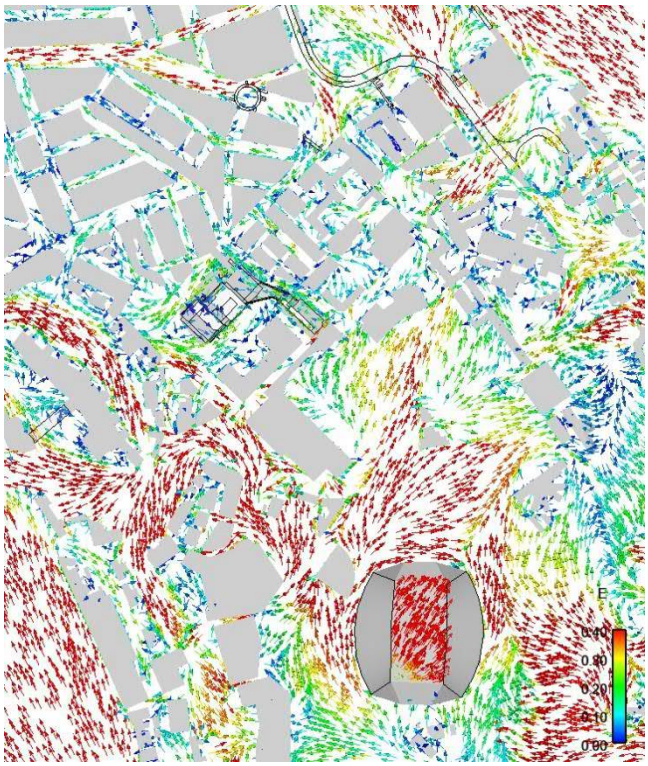


Figure D 15 Vector Plot of VR under E Wind

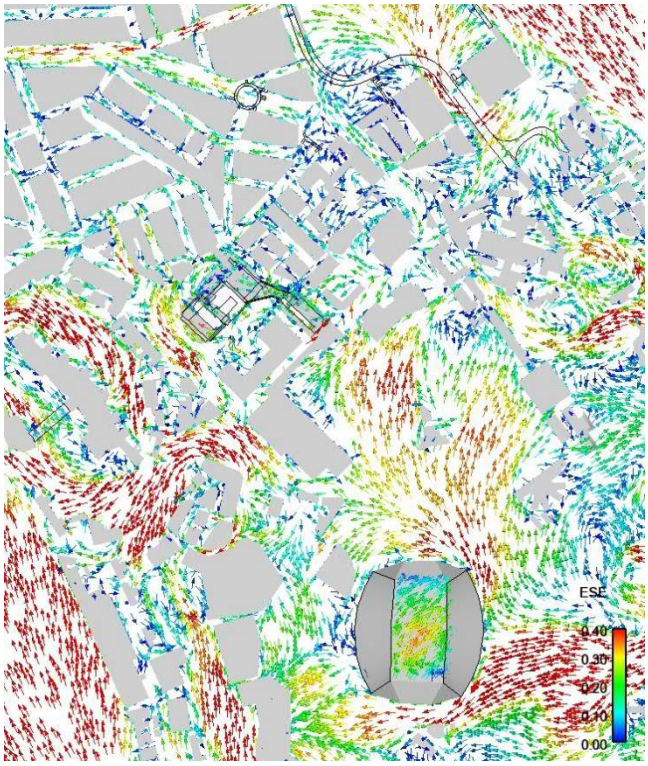


Figure D 16 Vector Plot of VR under ESE Wind

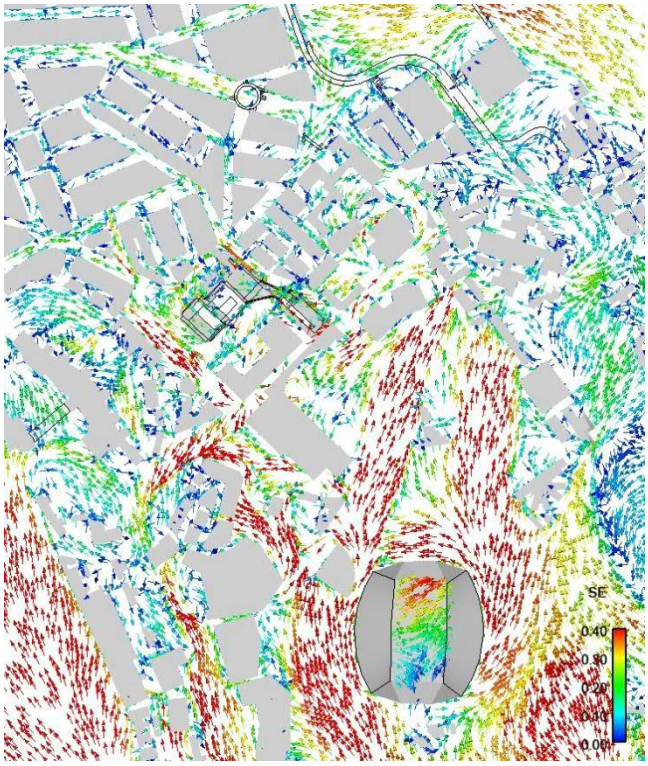


Figure D 17 Vector Plot of VR under SE Wind

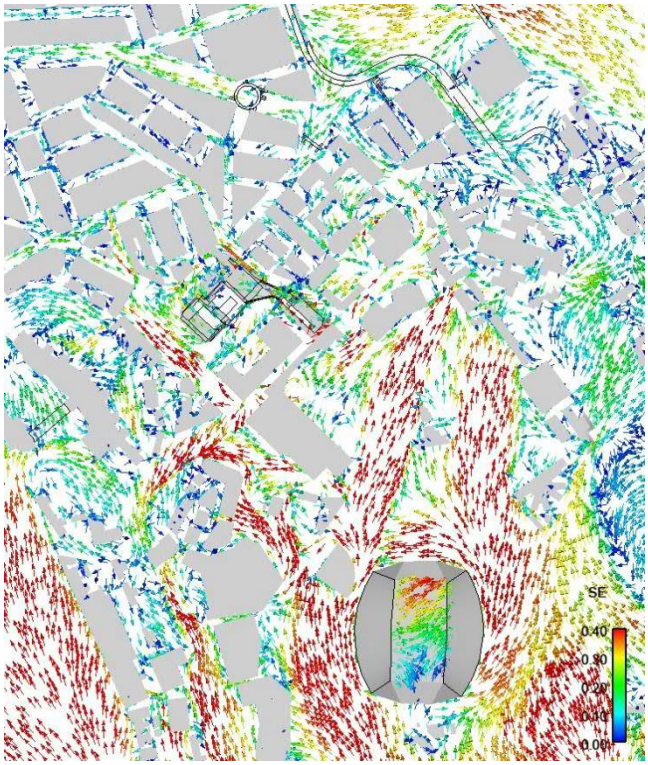


Figure D 18 Vector Plot of VR under SSE Wind

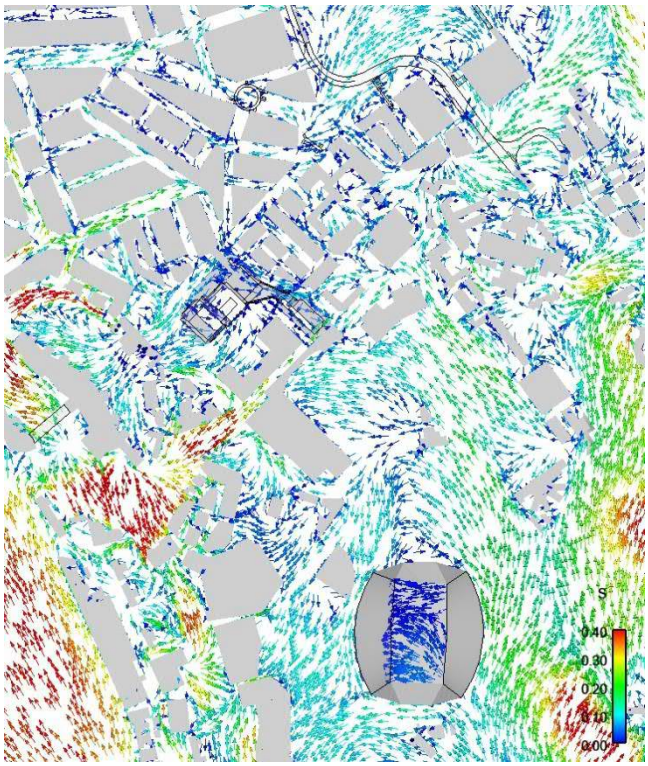


Figure D 19 Vector Plot of VR under S Wind

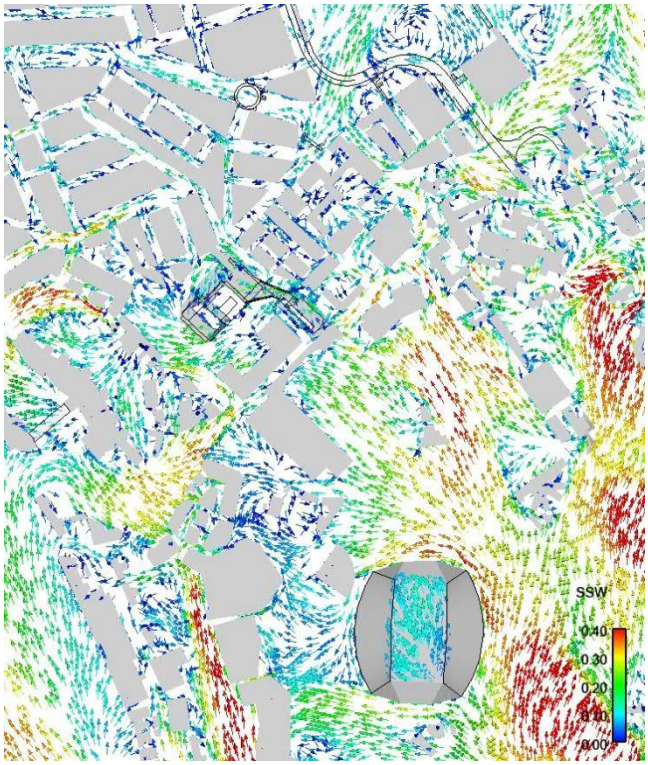


Figure D 20 Vector Plot of VR under SSW Wind

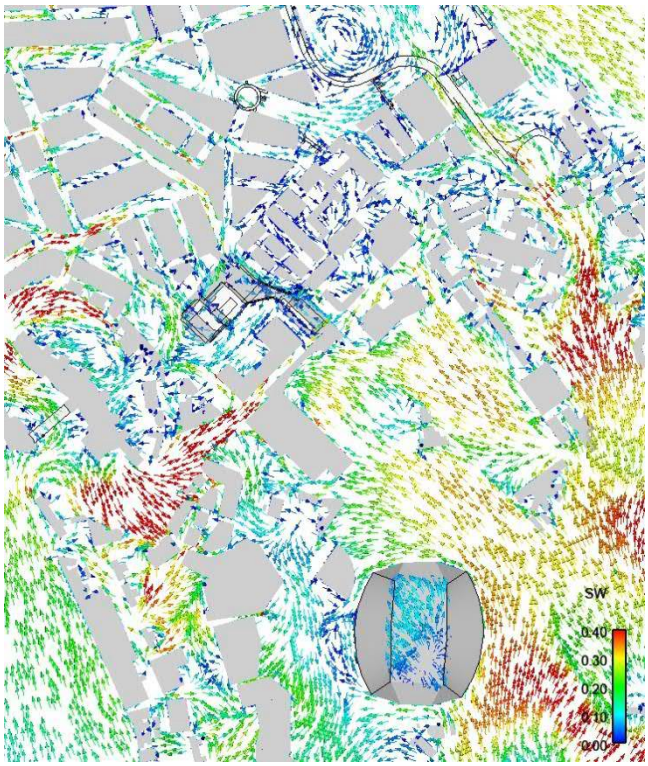


Figure D 21 Vector Plot of VR under SW Wind

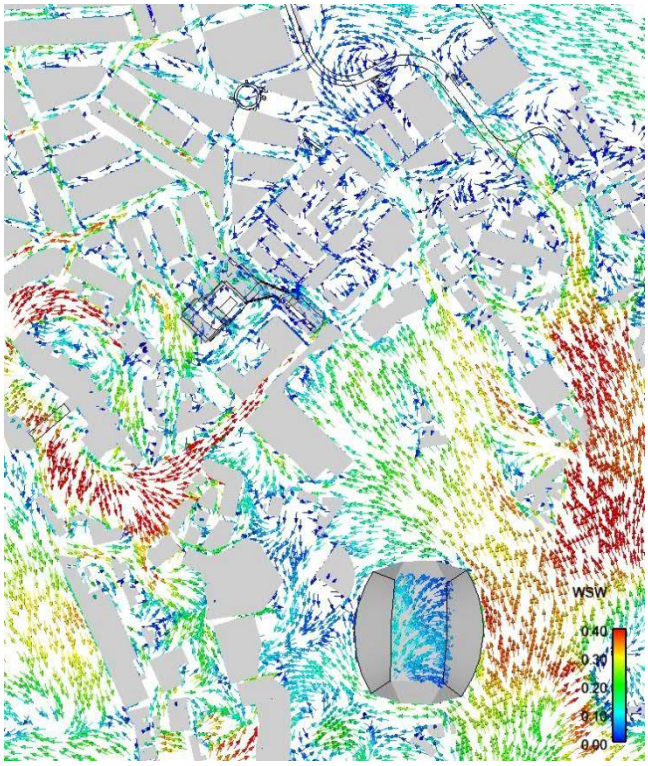


Figure D 22 Vector Plot of VR under WSW Wind

Appendix E

Velocity Ratio (VR) at Test Points

E1 Baseline Scheme

Table E1 Velocity Ratio of Perimeter Test Points

Points	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW
P1	0.04	0.06	0.23	0.13	0.16	0.23	0.16	0.07	0.14	0.15	0.14
P2	0.10	0.11	0.32	0.23	0.09	0.09	0.16	0.09	0.08	0.12	0.02
P3	0.12	0.10	0.34	0.22	0.10	0.10	0.16	0.08	0.10	0.05	0.06
P4	0.15	0.10	0.35	0.24	0.09	0.08	0.11	0.08	0.11	0.06	0.14
P5	0.19	0.12	0.34	0.27	0.13	0.22	0.06	0.09	0.09	0.04	0.04
P6	0.18	0.12	0.32	0.27	0.16	0.08	0.10	0.09	0.04	0.03	0.06
P7	0.17	0.10	0.30	0.25	0.14	0.20	0.06	0.10	0.04	0.10	0.10
P8	0.16	0.08	0.27	0.23	0.26	0.18	0.05	0.11	0.06	0.17	0.22
P9	0.13	0.06	0.23	0.20	0.29	0.22	0.06	0.11	0.06	0.19	0.23
P10	0.07	0.03	0.21	0.07	0.30	0.21	0.07	0.07	0.12	0.18	0.22
P11	0.07	0.11	0.16	0.14	0.31	0.21	0.08	0.08	0.18	0.04	0.20
P12	0.12	0.11	0.40	0.23	0.25	0.20	0.09	0.09	0.20	0.07	0.17
P13	0.11	0.10	0.35	0.17	0.18	0.19	0.06	0.09	0.20	0.10	0.14
P14	0.08	0.20	0.18	0.30	0.38	0.45	0.09	0.11	0.16	0.16	0.06
P15	0.12	0.07	0.31	0.13	0.10	0.14	0.04	0.09	0.18	0.11	0.08
P16	0.10	0.06	0.25	0.11	0.07	0.13	0.05	0.08	0.16	0.10	0.07
P17	0.10	0.07	0.26	0.10	0.06	0.13	0.05	0.09	0.16	0.12	0.10
P18	0.10	0.06	0.26	0.09	0.06	0.08	0.07	0.08	0.14	0.12	0.13
P19	0.09	0.05	0.27	0.08	0.07	0.07	0.03	0.07	0.10	0.12	0.14
P20	0.08	0.04	0.28	0.07	0.08	0.08	0.02	0.05	0.03	0.13	0.14
P21	0.06	0.05	0.27	0.09	0.09	0.08	0.03	0.04	0.05	0.13	0.15
P22	0.04	0.06	0.25	0.08	0.08	0.10	0.03	0.02	0.10	0.11	0.14
P23	0.02	0.06	0.24	0.06	0.06	0.10	0.03	0.01	0.14	0.07	0.11
P24	0.06	0.09	0.21	0.26	0.23	0.52	0.20	0.01	0.13	0.04	0.09
P25	0.05	0.07	0.17	0.24	0.26	0.53	0.22	0.01	0.04	0.03	0.08
P26	0.04	0.06	0.15	0.24	0.23	0.52	0.20	0.02	0.07	0.05	0.06
P27	0.05	0.05	0.17	0.26	0.23	0.52	0.17	0.03	0.11	0.06	0.05
P28	0.07	0.08	0.31	0.34	0.35	0.57	0.22	0.06	0.11	0.08	0.06
P29	0.06	0.08	0.22	0.30	0.37	0.49	0.20	0.16	0.08	0.27	0.23
P30	0.06	0.06	0.24	0.26	0.37	0.40	0.14	0.15	0.05	0.25	0.22
P31	0.07	0.07	0.27	0.28	0.40	0.44	0.20	0.13	0.12	0.20	0.18
P32	0.07	0.02	0.20	0.19	0.24	0.34	0.30	0.12	0.23	0.19	0.14
P33	0.05	0.03	0.23	0.27	0.28	0.42	0.36	0.13	0.19	0.19	0.16
P34	0.03	0.05	0.23	0.19	0.30	0.45	0.36	0.09	0.03	0.14	0.12
P35	0.03	0.06	0.27	0.18	0.30	0.46	0.25	0.08	0.03	0.10	0.09
P36	0.04	0.05	0.16	0.18	0.12	0.26	0.13	0.06	0.13	0.03	0.05
P37	0.05	0.06	0.18	0.20	0.23	0.25	0.10	0.07	0.14	0.05	0.05
P38	0.06	0.05	0.19	0.18	0.33	0.47	0.10	0.05	0.21	0.11	0.12
P39	0.06	0.06	0.24	0.18	0.19	0.41	0.02	0.05	0.18	0.11	0.12
P40	0.06	0.06	0.23	0.16	0.22	0.40	0.03	0.04	0.18	0.12	0.12
P41	0.05	0.06	0.21	0.13	0.24	0.40	0.04	0.02	0.19	0.12	0.12
P42	0.04	0.06	0.16	0.13	0.24	0.40	0.05	0.03	0.20	0.12	0.11

Table E2 Velocity Ratio of Overall Test Points

Points	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW
O1	0.04	0.13	0.18	0.77	0.25	0.33	0.33	0.01	0.13	0.09	0.05
O2	0.03	0.19	0.15	0.80	0.22	0.39	0.27	0.01	0.12	0.09	0.10
O3	0.08	0.27	0.13	0.67	0.35	0.20	0.24	0.02	0.12	0.10	0.11
O4	0.08	0.22	0.19	0.72	0.31	0.21	0.27	0.03	0.11	0.06	0.08
O5	0.11	0.26	0.16	0.57	0.10	0.07	0.19	0.05	0.08	0.05	0.05
O6	0.09	0.28	0.18	0.38	0.28	0.12	0.15	0.04	0.11	0.06	0.09
O7	0.05	0.11	0.20	0.05	0.25	0.22	0.02	0.23	0.11	0.05	0.10
O8	0.17	0.15	0.18	0.34	0.37	0.45	0.06	0.11	0.33	0.22	0.24
O9	0.05	0.29	0.29	0.87	0.51	0.64	0.07	0.36	0.40	0.39	0.38
O10	0.07	0.11	0.09	0.31	0.38	0.49	0.15	0.13	0.08	0.22	0.07
O11	0.05	0.03	0.11	0.13	0.02	0.08	0.18	0.13	0.13	0.06	0.04
O12	0.05	0.13	0.10	0.07	0.24	0.15	0.35	0.19	0.31	0.37	0.20
O13	0.03	0.10	0.10	0.15	0.29	0.29	0.29	0.14	0.22	0.35	0.18
O14	0.05	0.10	0.07	0.04	0.24	0.11	0.13	0.05	0.11	0.07	0.09
O15	0.06	0.31	0.47	0.28	0.16	0.08	0.26	0.05	0.06	0.26	0.29
O16	0.03	0.30	0.24	0.24	0.28	0.08	0.22	0.05	0.10	0.28	0.27
O17	0.03	0.27	0.13	0.23	0.30	0.12	0.18	0.06	0.14	0.27	0.17
O18	0.04	0.28	0.33	0.26	0.26	0.10	0.18	0.08	0.15	0.24	0.07
O19	0.03	0.03	0.06	0.13	0.09	0.18	0.15	0.07	0.17	0.11	0.13
O20	0.04	0.10	0.11	0.14	0.13	0.25	0.24	0.10	0.24	0.15	0.14
O21	0.04	0.10	0.17	0.12	0.13	0.29	0.22	0.09	0.22	0.14	0.08
O22	0.05	0.12	0.21	0.16	0.15	0.35	0.12	0.06	0.12	0.09	0.05
O23	0.05	0.08	0.28	0.19	0.16	0.23	0.36	0.17	0.33	0.22	0.13
O24	0.06	0.20	0.07	0.20	0.18	0.07	0.14	0.03	0.07	0.23	0.33
O25	0.02	0.03	0.04	0.06	0.04	0.05	0.14	0.03	0.05	0.17	0.23
O26	0.06	0.12	0.06	0.23	0.19	0.25	0.14	0.09	0.14	0.18	0.22
O27	0.10	0.09	0.15	0.25	0.20	0.39	0.32	0.14	0.37	0.31	0.23
O28	0.05	0.06	0.13	0.31	0.31	0.41	0.16	0.09	0.25	0.21	0.15
O29	0.02	0.03	0.07	0.31	0.09	0.45	0.16	0.15	0.33	0.31	0.24
O30	0.08	0.08	0.08	0.21	0.21	0.26	0.22	0.16	0.35	0.34	0.26
O31	0.03	0.18	0.11	0.25	0.33	0.43	0.17	0.15	0.28	0.34	0.29
O32	0.01	0.21	0.10	0.23	0.15	0.24	0.34	0.16	0.39	0.29	0.29
O33	0.01	0.14	0.14	0.41	0.36	0.45	0.32	0.18	0.36	0.21	0.31
O34	0.03	0.13	0.16	0.32	0.33	0.39	0.11	0.10	0.16	0.28	0.19
O35	0.03	0.21	0.07	0.48	0.34	0.35	0.32	0.14	0.35	0.30	0.24
O36	0.08	0.18	0.08	0.49	0.34	0.35	0.34	0.13	0.33	0.32	0.26
O37	0.14	0.19	0.08	0.58	0.32	0.20	0.35	0.06	0.27	0.28	0.23
O38	0.09	0.24	0.10	0.55	0.33	0.18	0.34	0.04	0.29	0.30	0.22
O39	0.06	0.16	0.11	0.21	0.13	0.15	0.29	0.09	0.19	0.21	0.32
O40	0.06	0.19	0.07	0.23	0.11	0.13	0.24	0.06	0.12	0.27	0.37
O41	0.04	0.19	0.05	0.14	0.10	0.13	0.20	0.09	0.18	0.25	0.26
O42	0.02	0.16	0.05	0.04	0.07	0.14	0.14	0.11	0.19	0.27	0.21
O43	0.09	0.07	0.07	0.05	0.12	0.38	0.32	0.16	0.34	0.28	0.16
O44	0.12	0.05	0.18	0.10	0.16	0.22	0.30	0.11	0.27	0.20	0.18
O45	0.16	0.10	0.34	0.18	0.22	0.45	0.55	0.18	0.38	0.23	0.20
O46	0.22	0.13	0.41	0.17	0.16	0.31	0.42	0.13	0.26	0.19	0.15
O47	0.15	0.08	0.32	0.08	0.06	0.15	0.16	0.18	0.38	0.33	0.16
O48	0.12	0.06	0.33	0.26	0.09	0.35	0.28	0.13	0.34	0.22	0.29

Points	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW
O49	0.10	0.03	0.27	0.22	0.04	0.26	0.10	0.19	0.35	0.31	0.31
O50	0.07	0.08	0.13	0.12	0.24	0.41	0.24	0.19	0.34	0.31	0.34
O51	0.05	0.18	0.20	0.21	0.25	0.19	0.27	0.14	0.24	0.29	0.37
O52	0.01	0.11	0.07	0.21	0.19	0.16	0.09	0.06	0.09	0.17	0.11
O53	0.04	0.20	0.07	0.36	0.34	0.44	0.31	0.18	0.32	0.33	0.32
O54	0.12	0.19	0.05	0.42	0.37	0.38	0.35	0.13	0.32	0.31	0.28
O55	0.16	0.16	0.05	0.67	0.32	0.40	0.42	0.04	0.27	0.25	0.18
O56	0.13	0.17	0.11	0.53	0.26	0.49	0.31	0.10	0.20	0.23	0.16
O57	0.14	0.22	0.16	0.58	0.28	0.63	0.28	0.09	0.21	0.24	0.19
O58	0.15	0.19	0.13	0.56	0.28	0.45	0.31	0.09	0.21	0.25	0.18
O59	0.14	0.19	0.13	0.55	0.26	0.51	0.31	0.10	0.20	0.24	0.17
O60	0.14	0.22	0.13	0.58	0.27	0.69	0.28	0.10	0.19	0.23	0.17
O61	0.12	0.14	0.06	0.86	0.21	0.43	0.40	0.03	0.32	0.23	0.14
O62	0.19	0.09	0.13	0.67	0.39	0.58	0.46	0.03	0.37	0.26	0.17
O63	0.15	0.09	0.04	0.48	0.27	0.35	0.12	0.09	0.12	0.18	0.11
O64	0.25	0.22	0.01	0.57	0.27	0.36	0.06	0.10	0.04	0.09	0.07
O65	0.31	0.07	0.16	0.44	0.04	0.29	0.02	0.03	0.10	0.03	0.01
O66	0.29	0.04	0.15	0.36	0.03	0.28	0.04	0.03	0.09	0.05	0.03
O67	0.29	0.25	0.10	0.71	0.11	0.24	0.12	0.05	0.03	0.07	0.04
O68	0.26	0.18	0.07	0.61	0.10	0.16	0.03	0.03	0.02	0.02	0.02
O69	0.06	0.24	0.13	0.64	0.05	0.29	0.05	0.04	0.03	0.05	0.02
O70	0.32	0.27	0.25	0.66	0.19	0.57	0.13	0.05	0.03	0.09	0.07
O71	0.08	0.05	0.23	0.33	0.37	0.45	0.22	0.10	0.24	0.25	0.19
O72	0.10	0.09	0.15	0.42	0.39	0.68	0.11	0.02	0.10	0.08	0.13
O73	0.08	0.07	0.12	0.52	0.37	0.54	0.11	0.01	0.10	0.08	0.11
O74	0.15	0.25	0.15	0.60	0.31	0.66	0.29	0.07	0.23	0.26	0.20
O75	0.14	0.23	0.12	0.59	0.27	0.70	0.27	0.09	0.19	0.23	0.17
O76	0.18	0.17	0.06	0.51	0.20	0.54	0.21	0.09	0.15	0.18	0.13
O77	0.06	0.25	0.02	0.34	0.26	0.28	0.19	0.09	0.16	0.24	0.19
O78	0.19	0.23	0.14	0.51	0.25	0.49	0.05	0.16	0.02	0.25	0.24
O79	0.01	0.05	0.26	0.18	0.24	0.24	0.15	0.11	0.20	0.28	0.16
O80	0.06	0.07	0.24	0.24	0.33	0.13	0.21	0.09	0.23	0.27	0.21
O81	0.10	0.09	0.17	0.32	0.36	0.64	0.23	0.03	0.24	0.14	0.20
O82	0.05	0.20	0.21	0.24	0.32	0.24	0.26	0.04	0.22	0.16	0.14
O83	0.02	0.18	0.21	0.16	0.09	0.18	0.20	0.05	0.19	0.32	0.19
O84	0.04	0.12	0.17	0.15	0.08	0.16	0.14	0.06	0.14	0.19	0.10
O85	0.04	0.23	0.33	0.64	0.32	0.60	0.08	0.13	0.21	0.37	0.28
O86	0.18	0.17	0.23	0.50	0.32	0.41	0.11	0.06	0.05	0.09	0.16
O87	0.24	0.34	0.05	0.78	0.22	0.39	0.04	0.02	0.05	0.20	0.11
O88	0.06	0.26	0.32	0.78	0.50	0.11	0.06	0.31	0.32	0.53	0.53
O89	0.14	0.10	0.09	0.06	0.10	0.22	0.04	0.08	0.19	0.26	0.25
O90	0.15	0.07	0.14	0.06	0.23	0.29	0.06	0.23	0.22	0.44	0.28
O91	0.04	0.02	0.06	0.08	0.09	0.06	0.06	0.09	0.29	0.18	0.09
O92	0.08	0.03	0.04	0.07	0.07	0.05	0.04	0.11	0.26	0.23	0.17
O93	0.15	0.14	0.11	0.24	0.11	0.04	0.01	0.16	0.14	0.32	0.09
O94	0.08	0.10	0.05	0.17	0.05	0.07	0.04	0.18	0.12	0.25	0.26
O95	0.11	0.10	0.09	0.05	0.08	0.07	0.03	0.20	0.23	0.35	0.46
O96	0.12	0.20	0.18	0.45	0.39	0.13	0.08	0.21	0.22	0.36	0.30
O97	0.13	0.14	0.21	0.48	0.34	0.12	0.05	0.18	0.17	0.26	0.24

Points	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW
O98	0.05	0.19	0.30	0.50	0.40	0.47	0.15	0.25	0.28	0.48	0.38
O99	0.12	0.29	0.36	0.74	0.60	0.36	0.11	0.42	0.33	0.54	0.45
O100	0.15	0.31	0.32	0.71	0.59	0.27	0.12	0.51	0.30	0.51	0.43
O101	0.18	0.28	0.31	0.60	0.54	0.27	0.10	0.47	0.28	0.43	0.41
O102	0.21	0.27	0.32	0.54	0.52	0.17	0.08	0.29	0.07	0.26	0.24
O103	0.13	0.28	0.25	0.64	0.61	0.22	0.09	0.45	0.35	0.56	0.52
O104	0.09	0.11	0.33	0.35	0.27	0.25	0.08	0.04	0.11	0.06	0.18
O105	0.16	0.29	0.32	0.32	0.31	0.06	0.06	0.10	0.07	0.05	0.05
O106	0.16	0.05	0.17	0.05	0.20	0.19	0.28	0.20	0.31	0.45	0.37
O107	0.07	0.21	0.23	0.07	0.15	0.07	0.09	0.29	0.29	0.39	0.35
O108	0.12	0.19	0.28	0.08	0.10	0.07	0.14	0.29	0.25	0.35	0.32
O109	0.15	0.14	0.21	0.10	0.14	0.03	0.12	0.30	0.28	0.31	0.34
O110	0.15	0.11	0.13	0.10	0.12	0.07	0.08	0.19	0.18	0.22	0.23
O111	0.13	0.09	0.05	0.15	0.07	0.21	0.30	0.20	0.31	0.35	0.34
O112	0.10	0.07	0.06	0.06	0.17	0.13	0.06	0.03	0.08	0.11	0.12
O113	0.06	0.04	0.09	0.06	0.07	0.03	0.02	0.02	0.12	0.18	0.19
O114	0.09	0.05	0.12	0.07	0.08	0.03	0.04	0.04	0.16	0.23	0.24
O115	0.07	0.09	0.34	0.23	0.20	0.21	0.23	0.08	0.20	0.29	0.23
O116	0.11	0.05	0.20	0.13	0.17	0.09	0.06	0.13	0.04	0.08	0.06
O117	0.13	0.07	0.29	0.19	0.20	0.12	0.10	0.14	0.05	0.07	0.04
O118	0.11	0.09	0.28	0.18	0.19	0.09	0.07	0.13	0.06	0.04	0.03
O119	0.06	0.03	0.09	0.10	0.16	0.32	0.14	0.03	0.04	0.04	0.04
O120	0.02	0.04	0.12	0.11	0.19	0.28	0.19	0.09	0.13	0.03	0.04
O121	0.03	0.04	0.25	0.13	0.19	0.18	0.19	0.11	0.18	0.11	0.04
O122	0.07	0.05	0.20	0.10	0.15	0.19	0.11	0.04	0.10	0.04	0.02
O123	0.07	0.03	0.22	0.17	0.03	0.08	0.14	0.03	0.06	0.02	0.04
O124	0.12	0.06	0.30	0.25	0.07	0.06	0.10	0.01	0.07	0.05	0.06
O125	0.05	0.03	0.15	0.14	0.08	0.22	0.38	0.11	0.08	0.03	0.04
O126	0.05	0.03	0.13	0.11	0.10	0.23	0.08	0.04	0.03	0.03	0.02
O127	0.06	0.04	0.15	0.08	0.07	0.06	0.04	0.06	0.03	0.01	0.01
O128	0.09	0.07	0.11	0.07	0.05	0.12	0.12	0.04	0.05	0.03	0.07
O129	0.31	0.25	0.20	0.19	0.08	0.17	0.29	0.11	0.14	0.05	0.07
O130	0.38	0.36	0.15	0.15	0.14	0.06	0.06	0.08	0.09	0.02	0.07
O131	0.05	0.07	0.09	0.14	0.09	0.08	0.01	0.05	0.06	0.03	0.03
O132	0.06	0.08	0.19	0.21	0.19	0.17	0.09	0.06	0.10	0.03	0.04
O133	0.03	0.09	0.17	0.21	0.19	0.16	0.11	0.05	0.10	0.07	0.09
O134	0.01	0.06	0.03	0.11	0.10	0.05	0.05	0.01	0.04	0.05	0.02
O135	0.01	0.03	0.05	0.06	0.05	0.02	0.03	0.02	0.01	0.07	0.04
O136	0.02	0.10	0.11	0.14	0.13	0.06	0.09	0.03	0.01	0.11	0.11
O137	0.01	0.03	0.04	0.06	0.03	0.03	0.04	0.02	0.07	0.17	0.19
O138	0.02	0.06	0.08	0.10	0.10	0.04	0.06	0.03	0.13	0.38	0.39
O139	0.02	0.03	0.02	0.07	0.06	0.02	0.05	0.04	0.03	0.28	0.27
O140	0.33	0.30	0.26	0.10	0.04	0.16	0.27	0.06	0.13	0.06	0.07
O141	0.08	0.26	0.12	0.14	0.10	0.05	0.12	0.05	0.04	0.09	0.09
O142	0.22	0.39	0.23	0.20	0.21	0.05	0.12	0.09	0.12	0.08	0.06
O143	0.21	0.35	0.23	0.22	0.22	0.07	0.04	0.08	0.10	0.10	0.11
O144	0.19	0.35	0.31	0.32	0.32	0.15	0.20	0.09	0.15	0.17	0.20
O145	0.13	0.26	0.22	0.23	0.23	0.09	0.11	0.02	0.12	0.12	0.07
O146	0.05	0.24	0.20	0.21	0.22	0.03	0.05	0.02	0.06	0.18	0.04

Points	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW
O147	0.16	0.08	0.25	0.21	0.16	0.18	0.36	0.10	0.10	0.12	0.02
O148	0.07	0.17	0.18	0.11	0.21	0.21	0.44	0.11	0.12	0.12	0.05
O149	0.25	0.33	0.49	0.52	0.31	0.24	0.38	0.07	0.16	0.14	0.10
O150	0.11	0.19	0.38	0.41	0.25	0.23	0.34	0.04	0.09	0.13	0.12
O151	0.20	0.21	0.07	0.17	0.19	0.10	0.08	0.05	0.07	0.02	0.04
O152	0.05	0.05	0.10	0.25	0.10	0.05	0.18	0.03	0.10	0.03	0.01
O153	0.04	0.06	0.19	0.28	0.12	0.04	0.22	0.06	0.05	0.01	0.03
O154	0.07	0.06	0.18	0.15	0.05	0.06	0.09	0.03	0.05	0.01	0.03
O155	0.08	0.04	0.18	0.24	0.14	0.12	0.35	0.12	0.19	0.17	0.07
O156	0.09	0.06	0.33	0.20	0.26	0.37	0.35	0.09	0.26	0.18	0.20
O157	0.10	0.27	0.17	0.40	0.37	0.13	0.11	0.19	0.07	0.27	0.21
O158	0.06	0.11	0.26	0.30	0.10	0.56	0.18	0.27	0.07	0.39	0.51
O159	0.03	0.25	0.09	0.42	0.29	0.55	0.02	0.05	0.19	0.07	0.03
O160	0.03	0.23	0.09	0.44	0.33	0.57	0.04	0.05	0.22	0.08	0.03
O161	0.07	0.24	0.09	0.46	0.40	0.62	0.11	0.06	0.25	0.15	0.05
O162	0.09	0.09	0.14	0.36	0.41	0.59	0.23	0.19	0.04	0.28	0.29
O163	0.10	0.11	0.31	0.28	0.38	0.35	0.29	0.19	0.06	0.25	0.37
O164	0.08	0.10	0.12	0.13	0.33	0.32	0.11	0.05	0.17	0.06	0.04
O165	0.05	0.06	0.33	0.38	0.19	0.45	0.28	0.24	0.11	0.34	0.41
O166	0.15	0.39	0.19	0.99	0.51	0.42	0.13	0.09	0.07	0.18	0.14
O167	0.10	0.30	0.21	0.75	0.49	0.42	0.21	0.13	0.05	0.20	0.07
O168	0.06	0.20	0.24	0.44	0.47	0.54	0.20	0.39	0.32	0.57	0.50
O169	0.07	0.10	0.17	0.23	0.16	0.22	0.11	0.15	0.25	0.16	0.19
O170	0.03	0.04	0.13	0.11	0.06	0.08	0.04	0.06	0.09	0.09	0.19
O171	0.03	0.17	0.07	0.61	0.36	0.10	0.13	0.23	0.17	0.14	0.21
O172	0.09	0.21	0.26	0.59	0.42	0.26	0.13	0.11	0.17	0.07	0.24
O173	0.12	0.17	0.46	0.56	0.42	0.16	0.14	0.08	0.14	0.10	0.21
O174	0.06	0.10	0.46	0.53	0.41	0.10	0.07	0.14	0.09	0.12	0.11
O175	0.12	0.24	0.16	0.36	0.31	0.21	0.15	0.23	0.20	0.14	0.12
O176	0.10	0.03	0.12	0.04	0.09	0.17	0.13	0.07	0.07	0.14	0.13
O177	0.10	0.17	0.11	0.09	0.07	0.42	0.08	0.05	0.09	0.16	0.20
O178	0.11	0.08	0.15	0.16	0.35	0.39	0.08	0.13	0.08	0.06	0.13
O179	0.09	0.05	0.21	0.17	0.24	0.22	0.06	0.06	0.06	0.07	0.11
O180	0.04	0.06	0.14	0.14	0.18	0.14	0.10	0.05	0.04	0.08	0.11
O181	0.10	0.12	0.06	0.20	0.36	0.25	0.13	0.12	0.09	0.18	0.27
O182	0.10	0.12	0.12	0.06	0.33	0.28	0.11	0.11	0.08	0.08	0.13
O183	0.13	0.07	0.04	0.04	0.29	0.27	0.13	0.15	0.07	0.04	0.06
O184	0.04	0.11	0.08	0.13	0.25	0.26	0.18	0.20	0.26	0.31	0.29
O185	0.10	0.15	0.04	0.10	0.20	0.08	0.09	0.21	0.20	0.21	0.18
O186	0.09	0.04	0.04	0.10	0.26	0.14	0.10	0.07	0.04	0.11	0.07
O187	0.07	0.09	0.14	0.16	0.35	0.17	0.10	0.05	0.07	0.15	0.15
O188	0.11	0.13	0.14	0.11	0.29	0.31	0.12	0.06	0.05	0.16	0.21
O189	0.11	0.12	0.12	0.15	0.07	0.06	0.08	0.18	0.04	0.10	0.13
O190	0.05	0.06	0.15	0.19	0.09	0.08	0.12	0.05	0.10	0.22	0.22
O191	0.11	0.08	0.07	0.14	0.08	0.04	0.14	0.06	0.10	0.18	0.19
O192	0.11	0.10	0.17	0.12	0.21	0.25	0.08	0.03	0.14	0.13	0.17
O193	0.06	0.22	0.23	0.21	0.18	0.33	0.04	0.07	0.14	0.37	0.32
O194	0.06	0.08	0.26	0.22	0.16	0.19	0.14	0.09	0.11	0.24	0.19
O195	0.04	0.04	0.30	0.19	0.15	0.15	0.19	0.11	0.17	0.31	0.22

Points	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW
O196	0.06	0.02	0.12	0.04	0.12	0.17	0.09	0.03	0.05	0.03	0.03
O197	0.05	0.04	0.14	0.15	0.18	0.16	0.19	0.08	0.05	0.04	0.03
O198	0.05	0.15	0.15	0.14	0.09	0.07	0.12	0.01	0.04	0.09	0.10

Table E3 Velocity Ratio of Special Test Points

Points	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW
S1	0.04	0.03	0.06	0.10	0.22	0.40	0.06	0.03	0.17	0.08	0.10
S2	0.05	0.06	0.13	0.17	0.19	0.11	0.05	0.02	0.17	0.11	0.16
S3	0.06	0.07	0.31	0.19	0.22	0.13	0.09	0.03	0.11	0.12	0.16
S4	0.08	0.06	0.34	0.16	0.19	0.15	0.09	0.05	0.02	0.11	0.13
S5	0.10	0.07	0.33	0.14	0.06	0.17	0.06	0.07	0.08	0.12	0.13
S6	0.11	0.09	0.32	0.16	0.11	0.18	0.03	0.09	0.16	0.12	0.11
S7	0.11	0.09	0.33	0.17	0.08	0.18	0.06	0.09	0.18	0.11	0.04
S8	0.12	0.10	0.39	0.20	0.20	0.18	0.08	0.09	0.20	0.08	0.17
S9	0.04	0.11	0.04	0.12	0.38	0.30	0.10	0.09	0.20	0.07	0.03
S10	0.01	0.03	0.01	0.05	0.32	0.33	0.08	0.05	0.13	0.04	0.10
S11	0.03	0.02	0.11	0.05	0.24	0.32	0.05	0.04	0.04	0.16	0.18
S12	0.12	0.08	0.28	0.22	0.14	0.23	0.07	0.10	0.03	0.13	0.10
S13	0.09	0.08	0.26	0.22	0.27	0.30	0.05	0.07	0.21	0.12	0.02
S14	0.04	0.09	0.26	0.23	0.04	0.16	0.08	0.05	0.05	0.12	0.07
S15	0.01	0.08	0.26	0.20	0.04	0.11	0.05	0.04	0.02	0.09	0.04
S16	0.01	0.04	0.11	0.12	0.04	0.11	0.02	0.02	0.05	0.04	0.02
S17	0.01	0.09	0.13	0.10	0.32	0.31	0.01	0.03	0.22	0.05	0.07
S18	0.01	0.12	0.20	0.15	0.33	0.31	0.01	0.03	0.23	0.12	0.17
S19	0.01	0.05	0.13	0.08	0.16	0.17	0.02	0.03	0.09	0.11	0.15
S20	0.04	0.09	0.30	0.20	0.07	0.31	0.11	0.03	0.11	0.06	0.13
S21	0.03	0.04	0.22	0.18	0.05	0.33	0.12	0.04	0.09	0.10	0.12
S22	0.04	0.02	0.24	0.19	0.28	0.46	0.19	0.06	0.26	0.09	0.13
S23	0.07	0.06	0.28	0.24	0.32	0.56	0.19	0.07	0.15	0.03	0.11
S24	0.04	0.05	0.28	0.15	0.04	0.10	0.12	0.03	0.10	0.05	0.04
S25	0.04	0.03	0.22	0.15	0.11	0.20	0.08	0.04	0.08	0.06	0.05
S26	0.05	0.01	0.18	0.19	0.16	0.18	0.06	0.03	0.11	0.04	0.04
S27	0.05	0.07	0.31	0.30	0.41	0.44	0.23	0.15	0.09	0.23	0.16
S28	0.06	0.06	0.34	0.25	0.35	0.43	0.14	0.15	0.06	0.22	0.20

Table E4 Velocity Ratio of Perimeter Test Points

Points	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW
P1	0.04	0.05	0.21	0.11	0.14	0.21	0.20	0.06	0.12	0.10	0.13
P2	0.09	0.08	0.28	0.20	0.21	0.10	0.22	0.08	0.13	0.19	0.07
P3	0.12	0.08	0.25	0.18	0.19	0.15	0.21	0.07	0.13	0.05	0.04
P4	0.16	0.10	0.29	0.22	0.17	0.16	0.19	0.08	0.14	0.08	0.16
P5	0.19	0.12	0.33	0.27	0.14	0.19	0.16	0.08	0.13	0.03	0.05
P6	0.16	0.11	0.32	0.26	0.33	0.20	0.07	0.09	0.16	0.04	0.10
P7	0.12	0.10	0.32	0.25	0.20	0.28	0.08	0.09	0.04	0.09	0.16
P8	0.12	0.05	0.29	0.21	0.28	0.28	0.03	0.10	0.06	0.19	0.22
P9	0.10	0.04	0.25	0.02	0.28	0.26	0.05	0.09	0.08	0.21	0.25
P10	0.01	0.02	0.05	0.07	0.27	0.24	0.07	0.01	0.15	0.17	0.26
P11	0.04	0.12	0.26	0.15	0.27	0.21	0.08	0.06	0.19	0.05	0.24
P12	0.08	0.11	0.39	0.22	0.23	0.19	0.08	0.08	0.19	0.07	0.17
P13	0.08	0.10	0.30	0.16	0.19	0.21	0.07	0.08	0.19	0.08	0.17
P14	0.05	0.20	0.14	0.32	0.35	0.46	0.08	0.10	0.17	0.12	0.08
P15	0.08	0.07	0.27	0.12	0.11	0.15	0.06	0.08	0.17	0.10	0.04
P16	0.07	0.05	0.23	0.10	0.06	0.11	0.06	0.07	0.16	0.10	0.08
P17	0.06	0.06	0.23	0.11	0.10	0.17	0.06	0.08	0.16	0.10	0.09
P18	0.06	0.06	0.22	0.11	0.10	0.19	0.03	0.07	0.14	0.11	0.11
P19	0.06	0.06	0.24	0.08	0.10	0.18	0.02	0.06	0.10	0.11	0.12
P20	0.05	0.04	0.27	0.08	0.11	0.22	0.03	0.04	0.03	0.12	0.12
P21	0.04	0.05	0.28	0.08	0.11	0.21	0.06	0.02	0.05	0.11	0.13
P22	0.01	0.06	0.26	0.08	0.08	0.10	0.04	0.01	0.10	0.10	0.12
P23	0.01	0.07	0.24	0.07	0.06	0.07	0.07	0.01	0.12	0.09	0.10
P24	0.10	0.09	0.21	0.26	0.21	0.56	0.19	0.01	0.13	0.03	0.02
P25	0.08	0.07	0.16	0.22	0.25	0.52	0.18	0.01	0.08	0.04	0.03
P26	0.06	0.05	0.11	0.21	0.23	0.53	0.19	0.02	0.10	0.04	0.05
P27	0.07	0.03	0.15	0.26	0.23	0.53	0.16	0.02	0.07	0.05	0.04
P28	0.07	0.08	0.22	0.31	0.34	0.49	0.19	0.08	0.08	0.07	0.08
P29	0.05	0.08	0.22	0.27	0.34	0.46	0.20	0.13	0.07	0.22	0.16
P30	0.05	0.07	0.26	0.27	0.35	0.37	0.16	0.15	0.04	0.22	0.16
P31	0.05	0.07	0.25	0.26	0.30	0.21	0.16	0.12	0.10	0.18	0.11
P32	0.06	0.03	0.19	0.12	0.17	0.24	0.23	0.12	0.22	0.17	0.12
P33	0.05	0.04	0.22	0.26	0.25	0.32	0.30	0.12	0.19	0.18	0.13
P34	0.03	0.05	0.24	0.19	0.24	0.32	0.32	0.11	0.06	0.14	0.09
P35	0.04	0.07	0.29	0.20	0.23	0.30	0.21	0.11	0.03	0.13	0.05
P36	0.04	0.06	0.20	0.19	0.15	0.13	0.17	0.08	0.14	0.08	0.02
P37	0.04	0.06	0.19	0.19	0.25	0.13	0.11	0.07	0.14	0.05	0.09
P38	0.07	0.05	0.23	0.17	0.18	0.48	0.12	0.05	0.07	0.11	0.12
P39	0.07	0.07	0.25	0.18	0.05	0.41	0.14	0.05	0.05	0.13	0.12
P40	0.06	0.06	0.23	0.16	0.09	0.35	0.12	0.04	0.12	0.13	0.13
P41	0.05	0.06	0.18	0.14	0.10	0.35	0.09	0.02	0.15	0.13	0.11
P42	0.04	0.05	0.12	0.15	0.09	0.35	0.02	0.04	0.17	0.12	0.10

Table E5 Velocity Ratio of Overall Test Points

Points	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW
O1	0.04	0.14	0.17	0.76	0.25	0.33	0.33	0.01	0.13	0.09	0.06
O2	0.02	0.19	0.15	0.80	0.22	0.39	0.27	0.01	0.11	0.09	0.10
O3	0.07	0.27	0.14	0.67	0.35	0.20	0.24	0.02	0.12	0.10	0.11
O4	0.08	0.22	0.19	0.72	0.32	0.21	0.27	0.03	0.11	0.06	0.09
O5	0.11	0.26	0.16	0.57	0.10	0.07	0.19	0.05	0.08	0.05	0.05
O6	0.09	0.28	0.17	0.39	0.28	0.12	0.15	0.04	0.11	0.05	0.09
O7	0.05	0.10	0.20	0.05	0.25	0.22	0.02	0.23	0.11	0.05	0.10
O8	0.17	0.14	0.18	0.34	0.37	0.45	0.05	0.11	0.33	0.22	0.25
O9	0.06	0.29	0.29	0.87	0.51	0.64	0.07	0.36	0.40	0.39	0.38
O10	0.06	0.12	0.10	0.33	0.40	0.48	0.15	0.12	0.07	0.22	0.06
O11	0.05	0.03	0.11	0.13	0.02	0.09	0.18	0.14	0.13	0.06	0.05
O12	0.04	0.13	0.10	0.07	0.23	0.15	0.35	0.19	0.31	0.37	0.18
O13	0.03	0.09	0.09	0.16	0.29	0.29	0.29	0.14	0.22	0.35	0.17
O14	0.05	0.10	0.07	0.03	0.24	0.11	0.13	0.05	0.11	0.07	0.09
O15	0.06	0.31	0.47	0.28	0.14	0.07	0.26	0.06	0.07	0.26	0.29
O16	0.02	0.30	0.24	0.24	0.27	0.08	0.22	0.05	0.10	0.28	0.27
O17	0.03	0.27	0.13	0.23	0.30	0.11	0.18	0.06	0.14	0.27	0.18
O18	0.03	0.28	0.33	0.26	0.27	0.10	0.18	0.08	0.15	0.24	0.08
O19	0.02	0.03	0.06	0.12	0.09	0.18	0.15	0.06	0.17	0.11	0.13
O20	0.04	0.10	0.11	0.13	0.13	0.25	0.24	0.10	0.25	0.15	0.14
O21	0.05	0.10	0.17	0.12	0.13	0.29	0.22	0.09	0.22	0.14	0.08
O22	0.05	0.12	0.20	0.15	0.15	0.35	0.12	0.06	0.12	0.09	0.05
O23	0.06	0.08	0.27	0.19	0.16	0.22	0.36	0.17	0.33	0.22	0.13
O24	0.06	0.20	0.07	0.23	0.18	0.07	0.14	0.03	0.07	0.23	0.33
O25	0.02	0.03	0.04	0.05	0.04	0.05	0.14	0.03	0.05	0.17	0.23
O26	0.06	0.12	0.06	0.23	0.19	0.25	0.14	0.09	0.14	0.18	0.22
O27	0.10	0.10	0.14	0.26	0.20	0.39	0.32	0.14	0.38	0.31	0.23
O28	0.03	0.06	0.13	0.32	0.31	0.42	0.16	0.10	0.25	0.21	0.15
O29	0.02	0.03	0.07	0.32	0.09	0.43	0.16	0.15	0.33	0.31	0.24
O30	0.07	0.08	0.08	0.21	0.21	0.26	0.22	0.16	0.35	0.34	0.27
O31	0.03	0.18	0.11	0.26	0.33	0.43	0.17	0.15	0.28	0.34	0.29
O32	0.02	0.21	0.10	0.23	0.15	0.25	0.34	0.16	0.40	0.29	0.29
O33	0.01	0.13	0.13	0.42	0.36	0.45	0.32	0.18	0.36	0.21	0.31
O34	0.03	0.13	0.16	0.32	0.33	0.39	0.11	0.10	0.16	0.28	0.20
O35	0.03	0.21	0.07	0.48	0.34	0.36	0.32	0.14	0.35	0.30	0.25
O36	0.08	0.18	0.08	0.48	0.34	0.35	0.34	0.13	0.33	0.32	0.27
O37	0.14	0.19	0.07	0.57	0.32	0.20	0.35	0.06	0.27	0.29	0.23
O38	0.09	0.24	0.09	0.54	0.33	0.18	0.34	0.05	0.29	0.30	0.22
O39	0.06	0.16	0.11	0.19	0.13	0.15	0.29	0.09	0.19	0.21	0.32
O40	0.06	0.18	0.06	0.26	0.11	0.13	0.24	0.06	0.12	0.27	0.37
O41	0.04	0.18	0.05	0.19	0.09	0.13	0.20	0.08	0.18	0.25	0.26
O42	0.02	0.16	0.04	0.08	0.06	0.13	0.14	0.11	0.19	0.27	0.22
O43	0.09	0.07	0.07	0.06	0.12	0.41	0.27	0.16	0.35	0.28	0.15
O44	0.12	0.05	0.18	0.09	0.16	0.27	0.31	0.11	0.27	0.20	0.17
O45	0.16	0.10	0.34	0.19	0.22	0.45	0.55	0.17	0.38	0.23	0.19
O46	0.21	0.13	0.41	0.17	0.17	0.31	0.42	0.13	0.26	0.19	0.15
O47	0.14	0.08	0.32	0.09	0.06	0.16	0.16	0.18	0.39	0.32	0.15
O48	0.11	0.05	0.32	0.26	0.09	0.33	0.28	0.13	0.34	0.22	0.29

Points	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW
O49	0.09	0.03	0.26	0.22	0.04	0.26	0.10	0.19	0.35	0.31	0.31
O50	0.06	0.08	0.12	0.12	0.24	0.41	0.24	0.19	0.34	0.31	0.34
O51	0.05	0.17	0.20	0.22	0.25	0.19	0.27	0.13	0.25	0.29	0.37
O52	0.01	0.11	0.07	0.24	0.19	0.16	0.09	0.06	0.09	0.17	0.11
O53	0.04	0.20	0.07	0.36	0.34	0.44	0.31	0.18	0.32	0.33	0.32
O54	0.12	0.19	0.06	0.42	0.37	0.38	0.35	0.13	0.32	0.31	0.28
O55	0.16	0.16	0.04	0.67	0.32	0.40	0.42	0.04	0.27	0.25	0.18
O56	0.13	0.16	0.10	0.52	0.26	0.49	0.31	0.10	0.20	0.23	0.16
O57	0.14	0.22	0.15	0.58	0.29	0.64	0.28	0.09	0.21	0.25	0.19
O58	0.14	0.19	0.12	0.55	0.28	0.45	0.31	0.09	0.22	0.25	0.19
O59	0.14	0.18	0.12	0.54	0.27	0.51	0.31	0.09	0.21	0.24	0.17
O60	0.14	0.21	0.12	0.57	0.27	0.69	0.28	0.10	0.19	0.24	0.18
O61	0.12	0.14	0.07	0.86	0.22	0.43	0.40	0.03	0.32	0.23	0.14
O62	0.19	0.09	0.14	0.67	0.39	0.58	0.46	0.04	0.37	0.26	0.18
O63	0.15	0.08	0.03	0.48	0.27	0.35	0.12	0.09	0.12	0.18	0.11
O64	0.26	0.23	0.01	0.57	0.28	0.36	0.06	0.10	0.04	0.09	0.07
O65	0.31	0.07	0.15	0.44	0.04	0.29	0.02	0.03	0.10	0.02	0.01
O66	0.29	0.04	0.15	0.36	0.03	0.28	0.04	0.03	0.09	0.05	0.03
O67	0.29	0.25	0.10	0.71	0.12	0.24	0.12	0.06	0.03	0.07	0.04
O68	0.26	0.19	0.07	0.61	0.10	0.16	0.03	0.04	0.02	0.02	0.02
O69	0.06	0.24	0.13	0.64	0.05	0.29	0.05	0.04	0.03	0.05	0.02
O70	0.32	0.27	0.26	0.66	0.20	0.57	0.13	0.04	0.03	0.09	0.07
O71	0.07	0.05	0.23	0.34	0.37	0.46	0.23	0.10	0.24	0.25	0.19
O72	0.10	0.09	0.15	0.41	0.39	0.69	0.11	0.02	0.10	0.08	0.13
O73	0.08	0.07	0.11	0.51	0.37	0.53	0.11	0.01	0.10	0.08	0.11
O74	0.15	0.25	0.14	0.59	0.31	0.67	0.29	0.06	0.23	0.26	0.20
O75	0.14	0.22	0.10	0.58	0.27	0.70	0.27	0.09	0.19	0.23	0.18
O76	0.17	0.16	0.06	0.51	0.21	0.54	0.21	0.10	0.15	0.18	0.13
O77	0.07	0.25	0.02	0.33	0.26	0.28	0.19	0.09	0.16	0.23	0.19
O78	0.18	0.23	0.14	0.51	0.25	0.49	0.05	0.16	0.02	0.24	0.24
O79	0.02	0.04	0.25	0.18	0.24	0.24	0.16	0.11	0.20	0.28	0.17
O80	0.06	0.07	0.24	0.25	0.33	0.14	0.21	0.10	0.23	0.27	0.22
O81	0.11	0.09	0.17	0.32	0.36	0.64	0.23	0.04	0.24	0.14	0.21
O82	0.04	0.20	0.20	0.24	0.32	0.23	0.26	0.05	0.22	0.16	0.14
O83	0.04	0.18	0.20	0.15	0.09	0.18	0.20	0.05	0.19	0.32	0.20
O84	0.07	0.12	0.16	0.15	0.08	0.16	0.14	0.06	0.14	0.20	0.11
O85	0.04	0.23	0.33	0.64	0.32	0.60	0.08	0.13	0.21	0.37	0.28
O86	0.18	0.17	0.22	0.50	0.32	0.41	0.11	0.06	0.05	0.09	0.16
O87	0.24	0.34	0.07	0.78	0.22	0.39	0.05	0.02	0.05	0.20	0.11
O88	0.09	0.26	0.32	0.78	0.50	0.08	0.06	0.32	0.32	0.54	0.53
O89	0.14	0.10	0.08	0.06	0.10	0.22	0.04	0.08	0.19	0.26	0.25
O90	0.15	0.07	0.14	0.06	0.23	0.29	0.06	0.24	0.22	0.44	0.28
O91	0.04	0.03	0.06	0.07	0.09	0.06	0.06	0.10	0.29	0.18	0.09
O92	0.08	0.03	0.04	0.07	0.07	0.05	0.04	0.11	0.26	0.23	0.17
O93	0.16	0.14	0.09	0.25	0.11	0.04	0.01	0.15	0.14	0.32	0.09
O94	0.09	0.10	0.05	0.17	0.05	0.08	0.04	0.18	0.12	0.25	0.26
O95	0.11	0.10	0.09	0.05	0.08	0.07	0.03	0.20	0.23	0.35	0.46
O96	0.11	0.19	0.18	0.45	0.39	0.13	0.07	0.21	0.22	0.36	0.30
O97	0.14	0.14	0.21	0.48	0.34	0.13	0.05	0.18	0.17	0.26	0.24

Points	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW
O98	0.09	0.18	0.28	0.51	0.41	0.46	0.14	0.27	0.28	0.48	0.39
O99	0.14	0.29	0.35	0.75	0.61	0.35	0.11	0.44	0.33	0.54	0.46
O100	0.15	0.31	0.31	0.71	0.59	0.26	0.12	0.52	0.30	0.51	0.43
O101	0.17	0.28	0.29	0.60	0.54	0.26	0.10	0.48	0.28	0.43	0.41
O102	0.21	0.27	0.26	0.54	0.53	0.15	0.08	0.29	0.07	0.26	0.25
O103	0.12	0.28	0.24	0.64	0.61	0.22	0.09	0.46	0.35	0.56	0.52
O104	0.10	0.11	0.33	0.35	0.26	0.25	0.07	0.03	0.11	0.06	0.17
O105	0.16	0.28	0.25	0.30	0.32	0.06	0.06	0.08	0.06	0.05	0.05
O106	0.17	0.05	0.15	0.03	0.20	0.19	0.28	0.19	0.31	0.46	0.37
O107	0.08	0.21	0.24	0.08	0.15	0.08	0.09	0.27	0.28	0.39	0.35
O108	0.13	0.15	0.28	0.08	0.10	0.07	0.14	0.29	0.25	0.35	0.32
O109	0.16	0.12	0.22	0.09	0.13	0.06	0.14	0.30	0.28	0.31	0.34
O110	0.16	0.11	0.18	0.11	0.10	0.12	0.07	0.19	0.18	0.22	0.23
O111	0.13	0.08	0.06	0.15	0.07	0.22	0.30	0.20	0.31	0.35	0.34
O112	0.10	0.09	0.06	0.05	0.17	0.12	0.04	0.04	0.08	0.11	0.12
O113	0.06	0.04	0.10	0.07	0.08	0.02	0.03	0.05	0.12	0.18	0.19
O114	0.08	0.05	0.13	0.08	0.08	0.03	0.05	0.06	0.16	0.23	0.24
O115	0.07	0.10	0.32	0.23	0.17	0.18	0.26	0.16	0.21	0.29	0.23
O116	0.12	0.05	0.21	0.14	0.16	0.07	0.06	0.17	0.04	0.08	0.06
O117	0.13	0.07	0.30	0.20	0.19	0.10	0.10	0.18	0.05	0.08	0.04
O118	0.12	0.10	0.26	0.19	0.18	0.06	0.07	0.17	0.06	0.04	0.03
O119	0.05	0.03	0.09	0.08	0.14	0.29	0.13	0.03	0.04	0.04	0.03
O120	0.02	0.05	0.12	0.11	0.17	0.27	0.17	0.09	0.13	0.04	0.03
O121	0.03	0.05	0.26	0.11	0.18	0.17	0.18	0.11	0.19	0.11	0.04
O122	0.07	0.05	0.19	0.11	0.15	0.19	0.12	0.04	0.11	0.04	0.02
O123	0.07	0.04	0.22	0.17	0.03	0.07	0.13	0.03	0.07	0.03	0.04
O124	0.12	0.07	0.30	0.25	0.06	0.06	0.09	0.01	0.07	0.04	0.06
O125	0.05	0.03	0.15	0.14	0.07	0.26	0.37	0.11	0.09	0.03	0.04
O126	0.05	0.03	0.12	0.11	0.10	0.24	0.09	0.05	0.04	0.03	0.02
O127	0.06	0.04	0.15	0.08	0.06	0.10	0.08	0.05	0.02	0.01	0.02
O128	0.09	0.07	0.11	0.07	0.04	0.12	0.12	0.04	0.05	0.02	0.07
O129	0.31	0.25	0.21	0.19	0.09	0.19	0.28	0.11	0.15	0.05	0.07
O130	0.38	0.36	0.15	0.15	0.14	0.06	0.07	0.07	0.09	0.02	0.07
O131	0.05	0.08	0.11	0.14	0.11	0.08	0.08	0.05	0.05	0.03	0.03
O132	0.06	0.09	0.19	0.21	0.20	0.14	0.13	0.05	0.08	0.02	0.04
O133	0.02	0.09	0.17	0.20	0.20	0.14	0.14	0.05	0.12	0.07	0.09
O134	0.01	0.06	0.03	0.11	0.09	0.05	0.04	0.01	0.05	0.05	0.02
O135	0.01	0.03	0.04	0.06	0.05	0.05	0.02	0.03	0.01	0.07	0.04
O136	0.01	0.10	0.11	0.14	0.13	0.09	0.09	0.03	0.01	0.11	0.11
O137	0.01	0.03	0.04	0.06	0.03	0.04	0.04	0.02	0.07	0.17	0.19
O138	0.02	0.06	0.08	0.11	0.10	0.06	0.06	0.01	0.12	0.38	0.38
O139	0.02	0.03	0.03	0.07	0.06	0.04	0.05	0.01	0.02	0.28	0.28
O140	0.33	0.30	0.27	0.10	0.04	0.17	0.27	0.06	0.13	0.05	0.07
O141	0.08	0.26	0.12	0.14	0.11	0.07	0.11	0.05	0.02	0.09	0.09
O142	0.22	0.39	0.23	0.20	0.21	0.07	0.10	0.09	0.09	0.08	0.06
O143	0.21	0.35	0.24	0.22	0.22	0.04	0.04	0.08	0.08	0.10	0.11
O144	0.19	0.35	0.31	0.32	0.32	0.14	0.19	0.09	0.14	0.17	0.20
O145	0.13	0.26	0.22	0.23	0.23	0.03	0.10	0.02	0.12	0.12	0.07
O146	0.05	0.24	0.20	0.21	0.22	0.04	0.04	0.03	0.08	0.18	0.04

Points	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW
O147	0.16	0.08	0.25	0.21	0.17	0.26	0.36	0.10	0.12	0.12	0.02
O148	0.07	0.17	0.18	0.11	0.22	0.29	0.43	0.11	0.13	0.12	0.05
O149	0.24	0.33	0.49	0.52	0.31	0.29	0.38	0.07	0.14	0.14	0.10
O150	0.11	0.19	0.38	0.41	0.26	0.27	0.33	0.03	0.12	0.13	0.12
O151	0.20	0.21	0.07	0.17	0.19	0.15	0.07	0.03	0.06	0.02	0.05
O152	0.05	0.05	0.12	0.25	0.07	0.11	0.20	0.04	0.07	0.02	0.02
O153	0.03	0.06	0.20	0.27	0.11	0.04	0.23	0.06	0.04	0.01	0.04
O154	0.07	0.06	0.18	0.14	0.05	0.04	0.10	0.03	0.03	0.01	0.04
O155	0.07	0.05	0.19	0.26	0.21	0.26	0.36	0.11	0.20	0.17	0.07
O156	0.08	0.06	0.32	0.21	0.26	0.36	0.31	0.08	0.24	0.15	0.17
O157	0.08	0.27	0.17	0.41	0.37	0.14	0.10	0.19	0.07	0.27	0.21
O158	0.06	0.11	0.25	0.27	0.12	0.51	0.22	0.27	0.07	0.40	0.53
O159	0.02	0.25	0.08	0.42	0.30	0.55	0.02	0.06	0.19	0.06	0.04
O160	0.01	0.23	0.09	0.45	0.32	0.59	0.05	0.06	0.23	0.06	0.03
O161	0.03	0.23	0.13	0.46	0.38	0.62	0.11	0.10	0.24	0.13	0.05
O162	0.08	0.09	0.09	0.38	0.43	0.61	0.25	0.20	0.08	0.29	0.30
O163	0.07	0.12	0.28	0.23	0.38	0.35	0.29	0.19	0.07	0.27	0.38
O164	0.02	0.09	0.11	0.10	0.32	0.27	0.21	0.03	0.16	0.05	0.06
O165	0.05	0.06	0.35	0.40	0.20	0.49	0.31	0.25	0.11	0.34	0.44
O166	0.13	0.38	0.19	0.97	0.52	0.44	0.13	0.09	0.07	0.17	0.14
O167	0.09	0.29	0.21	0.70	0.50	0.42	0.20	0.13	0.05	0.20	0.08
O168	0.08	0.18	0.24	0.43	0.48	0.53	0.20	0.40	0.32	0.57	0.51
O169	0.05	0.09	0.07	0.22	0.18	0.23	0.11	0.16	0.25	0.15	0.18
O170	0.03	0.04	0.13	0.11	0.07	0.08	0.04	0.07	0.08	0.10	0.18
O171	0.03	0.17	0.11	0.61	0.36	0.10	0.13	0.24	0.16	0.04	0.19
O172	0.08	0.21	0.26	0.59	0.41	0.27	0.13	0.13	0.17	0.08	0.22
O173	0.13	0.18	0.44	0.64	0.42	0.17	0.14	0.08	0.13	0.09	0.21
O174	0.11	0.08	0.43	0.55	0.40	0.08	0.08	0.14	0.09	0.17	0.11
O175	0.12	0.21	0.12	0.36	0.33	0.14	0.16	0.19	0.20	0.15	0.11
O176	0.11	0.04	0.11	0.07	0.07	0.23	0.14	0.09	0.09	0.15	0.11
O177	0.11	0.17	0.12	0.08	0.08	0.42	0.08	0.10	0.12	0.17	0.20
O178	0.10	0.14	0.16	0.08	0.34	0.38	0.05	0.12	0.11	0.07	0.10
O179	0.11	0.06	0.22	0.17	0.26	0.20	0.06	0.07	0.08	0.07	0.12
O180	0.04	0.03	0.17	0.13	0.16	0.12	0.11	0.05	0.07	0.08	0.11
O181	0.10	0.10	0.09	0.11	0.36	0.31	0.13	0.13	0.08	0.18	0.27
O182	0.10	0.14	0.13	0.12	0.34	0.30	0.12	0.10	0.09	0.08	0.14
O183	0.13	0.09	0.07	0.03	0.31	0.30	0.14	0.13	0.08	0.04	0.05
O184	0.03	0.11	0.05	0.14	0.26	0.27	0.18	0.21	0.26	0.31	0.30
O185	0.10	0.15	0.08	0.10	0.23	0.08	0.07	0.21	0.20	0.22	0.17
O186	0.09	0.07	0.06	0.13	0.28	0.15	0.07	0.04	0.05	0.11	0.07
O187	0.08	0.15	0.15	0.17	0.38	0.22	0.11	0.07	0.08	0.16	0.15
O188	0.10	0.12	0.16	0.14	0.25	0.28	0.12	0.06	0.07	0.18	0.23
O189	0.12	0.15	0.14	0.17	0.08	0.09	0.08	0.19	0.03	0.10	0.13
O190	0.04	0.05	0.19	0.19	0.11	0.09	0.12	0.05	0.10	0.22	0.21
O191	0.11	0.07	0.16	0.15	0.11	0.06	0.14	0.06	0.09	0.18	0.19
O192	0.13	0.09	0.18	0.15	0.18	0.25	0.08	0.03	0.12	0.14	0.18
O193	0.06	0.22	0.23	0.21	0.16	0.26	0.03	0.06	0.13	0.37	0.33
O194	0.07	0.08	0.28	0.22	0.16	0.19	0.16	0.11	0.12	0.24	0.20
O195	0.04	0.03	0.29	0.18	0.10	0.10	0.22	0.16	0.18	0.31	0.22

Points	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW
O196	0.05	0.02	0.13	0.04	0.08	0.15	0.08	0.03	0.05	0.04	0.03
O197	0.04	0.04	0.15	0.13	0.16	0.20	0.16	0.08	0.05	0.03	0.03
O198	0.05	0.14	0.12	0.14	0.05	0.05	0.12	0.01	0.11	0.09	0.10

Table E6 Velocity Ratio of Special Test Points

Points	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW
S1	0.07	0.02	0.14	0.08	0.22	0.33	0.07	0.03	0.16	0.09	0.12
S2	0.04	0.06	0.18	0.16	0.19	0.22	0.11	0.02	0.15	0.08	0.14
S3	0.04	0.08	0.32	0.19	0.24	0.32	0.09	0.02	0.10	0.09	0.14
S4	0.05	0.07	0.32	0.18	0.20	0.33	0.07	0.04	0.02	0.10	0.12
S5	0.06	0.07	0.28	0.15	0.08	0.18	0.03	0.06	0.08	0.10	0.12
S6	0.07	0.08	0.26	0.14	0.06	0.09	0.05	0.08	0.15	0.11	0.10
S7	0.08	0.09	0.29	0.15	0.07	0.13	0.07	0.08	0.18	0.10	0.08
S8	0.08	0.10	0.33	0.17	0.17	0.15	0.08	0.08	0.19	0.08	0.05
S9	0.07	0.13	0.41	0.25	0.34	0.21	0.09	0.09	0.21	0.09	0.03
S10	0.01	0.02	0.04	0.02	0.33	0.22	0.05	0.01	0.12	0.03	0.05
S11	0.01	0.02	0.03	0.02	0.29	0.27	0.02	0.01	0.03	0.05	0.19
S12	0.10	0.03	0.24	0.06	0.11	0.18	0.07	0.07	0.03	0.12	0.13
S13	0.06	0.05	0.21	0.18	0.28	0.16	0.05	0.06	0.14	0.11	0.11
S14	0.02	0.09	0.28	0.23	0.04	0.07	0.17	0.05	0.05	0.12	0.09
S15	0.01	0.08	0.31	0.18	0.01	0.04	0.15	0.04	0.06	0.16	0.02
S16	0.01	0.04	0.13	0.10	0.04	0.03	0.02	0.01	0.04	0.03	0.13
S17	0.04	0.08	0.04	0.08	0.38	0.30	0.10	0.02	0.21	0.14	0.16
S18	0.05	0.04	0.05	0.08	0.21	0.18	0.05	0.01	0.12	0.13	0.16
S19	0.03	0.07	0.19	0.14	0.08	0.17	0.02	0.05	0.07	0.09	0.13
S20	0.04	0.05	0.16	0.11	0.14	0.23	0.13	0.02	0.13	0.05	0.05
S21	0.03	0.01	0.10	0.11	0.15	0.14	0.07	0.03	0.21	0.05	0.10
S22	0.02	0.02	0.05	0.10	0.10	0.14	0.07	0.03	0.07	0.05	0.05
S23	0.04	0.03	0.20	0.18	0.17	0.21	0.09	0.05	0.15	0.06	0.07
S24	0.04	0.04	0.27	0.10	0.13	0.13	0.09	0.03	0.15	0.09	0.09
S25	0.03	0.02	0.22	0.17	0.15	0.14	0.07	0.04	0.13	0.11	0.07
S26	0.04	0.02	0.19	0.16	0.13	0.11	0.07	0.04	0.12	0.09	0.07
S27	0.04	0.07	0.29	0.33	0.43	0.37	0.25	0.17	0.10	0.26	0.16
S28	0.07	0.08	0.31	0.32	0.41	0.43	0.19	0.18	0.04	0.27	0.22

銅鑼灣
Causeway Bay



Annex E
Drainage Impact Assessment

Proposed Redevelopment at Caroline Hill Road, Causeway Bay

Drainage Impact Assessment (DIA)

Report Ref

04 | 13 August 2025

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 247866

Ove Arup & Partners Hong Kong Ltd
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ARUP

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Figure 4 Location of existing connection points inside the site boundary
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Location Plan of Caroline Hill Road Development

Appendix B

Layout Plan of OVT

Appendix C

Drainage Layout plan for Caroline Hill Road Development

Appendix D

Catchment plan for Caroline Hill Road Development

Appendix E

Pipe capacity check for Proposed Drainage discharge points

1 Introduction

1.1 General

This revised DIA had been submitted to support the Fresh S16 Planning Application with the revised layout plan submission. The recommendation established in the previously approved DIA remains unchanged.

2 The Development

The subject site is located at Causeway Bay at the junction of Caroline Hill Road and Leighton Road. The subject site area covers approx. 14,800m^2. It was occupied by the ex-Electrical and Mechanical Services Department (EMSD) Headquarters, the ex-Civil Aid Service Headquarters, the ex-Post Office Recreation Club and the PCCW Recreation Club.

Below is an aerial photograph of the subject site.

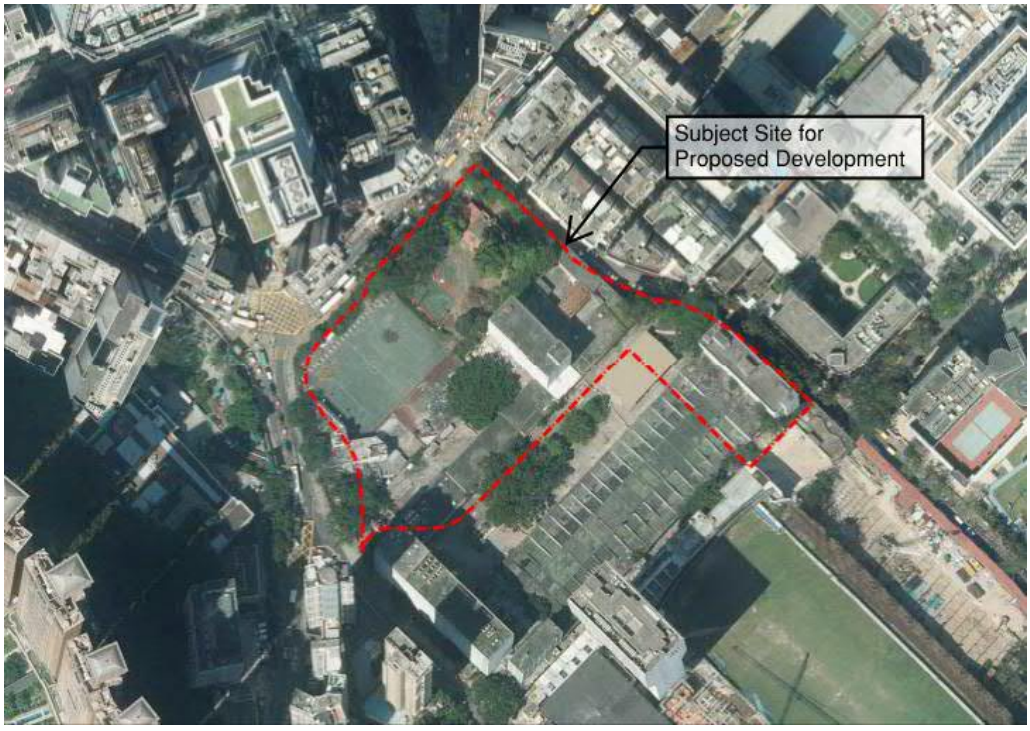


Figure 1 - Location of Subject Site

For the general arrangement in subject site, two office towers are separated by the future public road as shown in below proposed ground floor plan. Two existing Old and Valuable Trees (OVT) are observed in the subject site. One OVT (OVT No. HKP WCH/1) is located at the North of the subject site and next to Leighton Road. Another OVT (OVT No. EMSD WCH/1) is located at the South of the subject site and next to the Future Public Road.

Below is the proposed development plan which is presented in **Appendix A.**

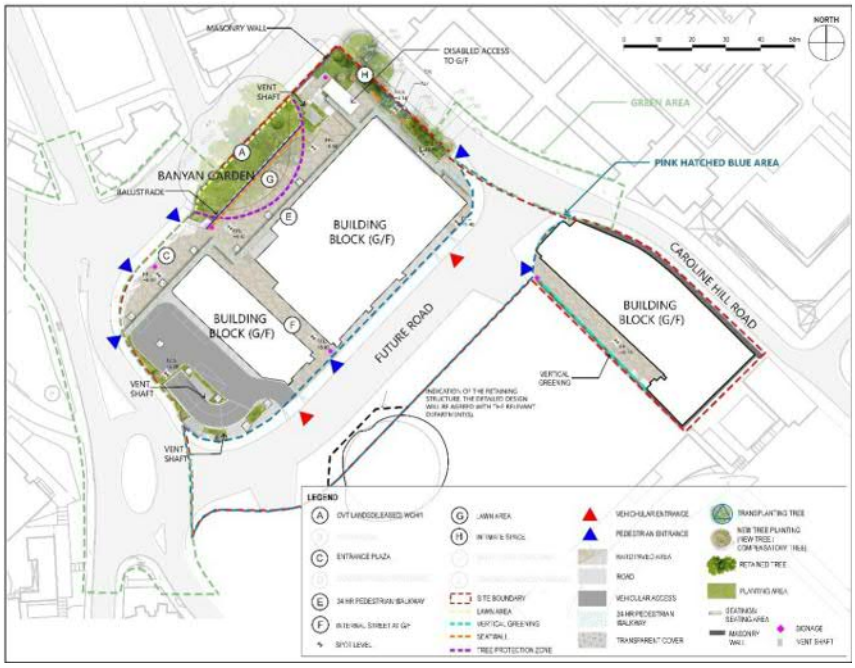


Figure 2 - Proposed Development Plan

Below is the layout plan for two old and valuable trees which is presented in **Appendix B.**



Figure 3 - OVT layout Plan

3 Methodology and Technical Approach

3.1 Assessment Approach

The DIA is following the standards set out in the Stormwater Drainage Manual (Fifth Edition) issued by *Drainage Services Department in January 2018 (DSD SDM*) and the Corrigendum No. 1/2022, 1/2024 and 2/2024.

3.1.1 Runoff Estimation

Flood Protection Level

The design standard for a drainage system shall be able to accommodate a flood event with a predefined return period, which the return period depends on the area and type of drainage system.

The design flood protection level is determined in accordance with *Table 10 of the DSD SDM*, which is reproduced in **Table 3.1**.

Table 3.1 – Recommended Design Return Periods based on Flood Levels

Category	**Return Period**
Intensively Used Agricultural Land	2-5 years
Village Drainage including Internal Drainage System under a Polder Scheme	10 years [1,3]
Main Rural Catchment Drainage Channels	50 years [2,3]
Urban Drainage trunk systems	200 years [4]
Urban drainage branch systems	50 years [4]

Notes:
1. The impact of a 50-year event should be assessed in each village to check whether a higher standard than 10 years can be justified.
2. Embanked channels must be capable of passing a 200-year flood within banks.
3. 'Village Drainage' refers to the local stormwater drainage system within a village. A stormwater drain conveying stormwater runoff from an upstream catchment but happens to pass through a village may need to be considered as either a 'Main Rural Catchment Drainage Channel' or 'Village Drainage', depending on the nature and size of the upstream catchment (refer to Section 6.6.1 of the DSD SDM.)
4. An 'Urban Drainage Branch System' is defined as a group or network of connecting drains collecting runoff from the urban area and conveying stormwater to a trunk drain, river or sea (refer to *Section 6.6.2 of the DSD SDM)*.
5. An 'Urban Drainage Trunk System' collects stormwater from branch drains and/or river inlets, and conveys the flow to outfalls in river or sea (refer to *Section 6.6.2 of the DSD SDM)*.

To assess the hydraulic performance of the proposed drainage system, a flood protection level with a return period of 50 years for "Urban Drainage Branch Systems" is used in this DIA.

Peak Runoff

The peak runoff is estimated using the Rational Method in accordance with *Section 7.5.2 of the DSD SDM* with the following equation:

$$Q = 0.278CiA$$

where, Q = peak runoff in m^3/s
C = runoff coefficient
i = rainfall intensity in mm/hr
A = catchment area in km^2

Runoff coefficient

The runoff coefficients, *C*, for different surface characteristic to be adopted in this DIA for the peak runoff estimation are referenced to *Section 7.5.2 (b) of the DSD SDM* and listed in **Table 3.2**.

Table 3.2 – Runoff Coefficient

Surface Characteristics	**Runoff Coefficient, C[1]**
Asphalt	0.70 – 0.95
Concrete	0.80 – 0.95
Brick	0.70 – 0.85
Grassland (heavy soil[2]) - Flat - Steep	 0.13 – 0.25 0.25 – 0.35
Grassland (sandy soil) - Flat - Steep	 0.05 – 0.15 0.15 – 0 20
Notes: 1. For steep natural slopes or areas where a shallow soil surface is underlain by an impervious rock layer, a higher C value of 0.4 – 0.9 may be applicable. 2. Heavy soil refers to fine grain soil composed largely of silt and clay.	

Referring to the equation for peak runoff estimation, a greater value of *C* implies a greater peak runoff. Considering that the effect of soaking in unpaved area may not be as high as grassland, to be conservative, the runoff coefficient for the unpaved area is assumed to be 0.35; and the runoff coefficient for the paved area is assumed to be 0.9.

Rainfall Intensity

The rainfall intensity is determined by the following equation with reference to *Section 4.3.3 of the DSD SDM*:

$$i = \frac{a}{(t_d + b)^c}$$

where, i = rainfall intensity in mm/hr
td = duration in minutes
a, b, c = storm constants

The storm constants, i.e. *a*, *b*, and *c*, under *Table 3a "Storm Constants for Different Return Period of HKO Headquarters" of the DSD SDM*, which are recommended for general application, are adopted in this DIA.

According to *Section 6.8 of the DSD SDM*, the rainfall in Hong Kong is projected to increase under climate change. Considering the effect of climate change, 11.1% rainfall increase for mid-21st century (2041 –2060) as given in *Table 28 of the DSD SDM* has been included in calculating the rainfall intensity. Therefore, the equation becomes:

$$i = \frac{a}{(t_d+b)^c} \times (1 + 11.1\%)$$

where, i = rainfall intensity in mm/hr
td = duration in minutes
a, b, c = storm constants

Time of Concentration

The duration of minutes, *td*, is referred to the time for a drop of water to flow from the remotest point in the catchment to its outlet, i.e. the time of concentration, *tc*.

3.1.2 System Capacity

The capacity of the existing drainage system is checked by using the continuity equation, assuming full-bore flow condition:

$$Q = VA$$

where, Q = peak runoff in m^3/s
V = cross-sectional mean velocity in m/s
A= cross-sectional area of the pipe/channel in m^2

The cross-section mean velocity, *V*, is estimated using the Colebrook White equation:

$$\bar{V} = -\sqrt{32gRS_f}\log\left[\frac{k_s}{14.8R} + \frac{1.255\nu}{R\sqrt{32gRS_f}}\right]$$

where, $\bar{V}$ = cross-sectional mean velocity (m/s)
S_f = friction gradient (dimensionless)
g = acceleration due to gravity (m/s^2)
R = hydraulic radius (m)
ks = surface roughness (m)
ν = kinematic viscosity (m^2/s)

Referring to the equation for cross-section mean velocity estimation, a greater value of ks implies a smaller velocity of the drainage system. To be conservative, the surface roughness is assumed to be 0.6 mm for precast concrete pipe and 0.03mm for PE pipes with reference to *Table 14 - Recommended Roughness Values ks of the DSD SDM*, considering the reduced hydraulic performance in future due to degradation of material.

3.1.3 Sub-Catchment area

The catchment plan for existing case, the Approval Scheme and the Proposed Scheme are attached in **Appendix D**. The changes in the planting area around the OVT are summarized in below table for easy reference.

Formerly EMSD development (the Existing Case)	
Paved	15,490.5m^2
Unpaved	133.5m^2
Approval Scheme	
Paved	14,050m^2
Unpaved	750m^2
Proposed Scheme	
Paved	14,133.5m^2
Unpaved	666.5m^2

Compared with the existing site, both the Approval Scheme and Proposed Scheme will have the landscape area increase from the existing case of 133.5m^2 by enlarging the area of OVT zone to 750m^2 for the Approval Scheme and 666.5m^2 for the Proposed Scheme.

3.2 Existing Drainage System

Based on the latest underground utility survey record, there are totally 10 existing drainage connection points inside the site boundary as shown in below figure, including three 150⌀, seven 225⌀ and one 375⌀ drainage pipes.

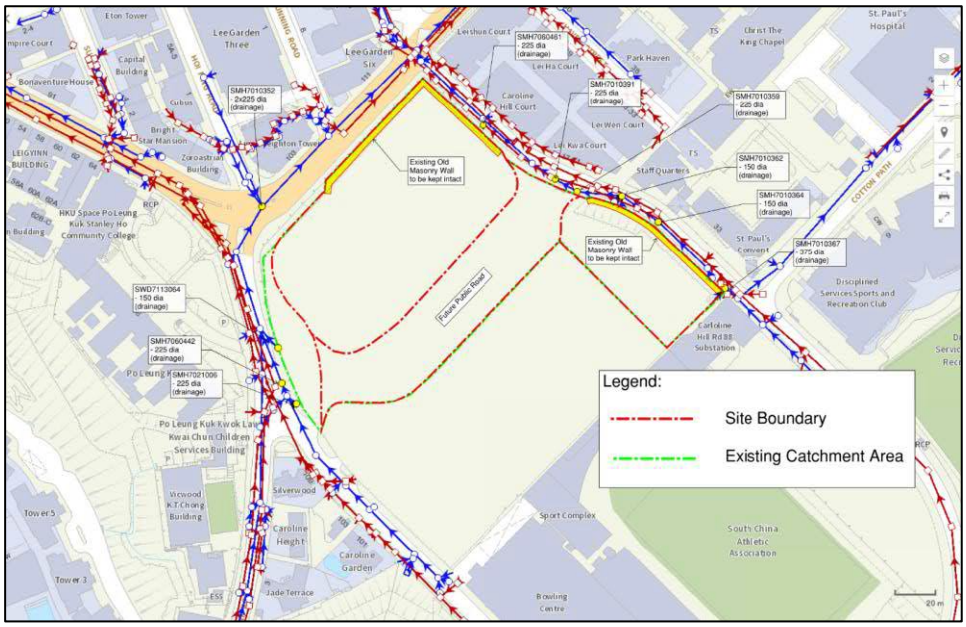


Figure 5 - Location of existing connection points inside the site boundary

Thus, total catchment area of 15,624m^2 in subject site is assumed to discharge to the nearest existing drainage system, which is located on the running southwest to northeast across the Tong Lo Wan Road. 15,490.5m^2 and 133.5m^2 are considered as paved and unpaved area respectively. The catchment area plan is presented in **Appendix D**.

The surface runoff is discharged to an existing 2250mm (w) x 2150mm (h) box culvert (SBP7001145), which is running along Tung Lo Wan Road. And then, the stormwater is discharge to Victoria Harbour, combining the surface runoff with road gullies and catchment from the upstream of Causeway Bay.

3.3 Proposed Drainage System

Proposed drainage discharge points are developed by keeping the similar catchment distribution as existing. The layout plan of existing and proposed drainage discharge points is presented in **Appendix C**.

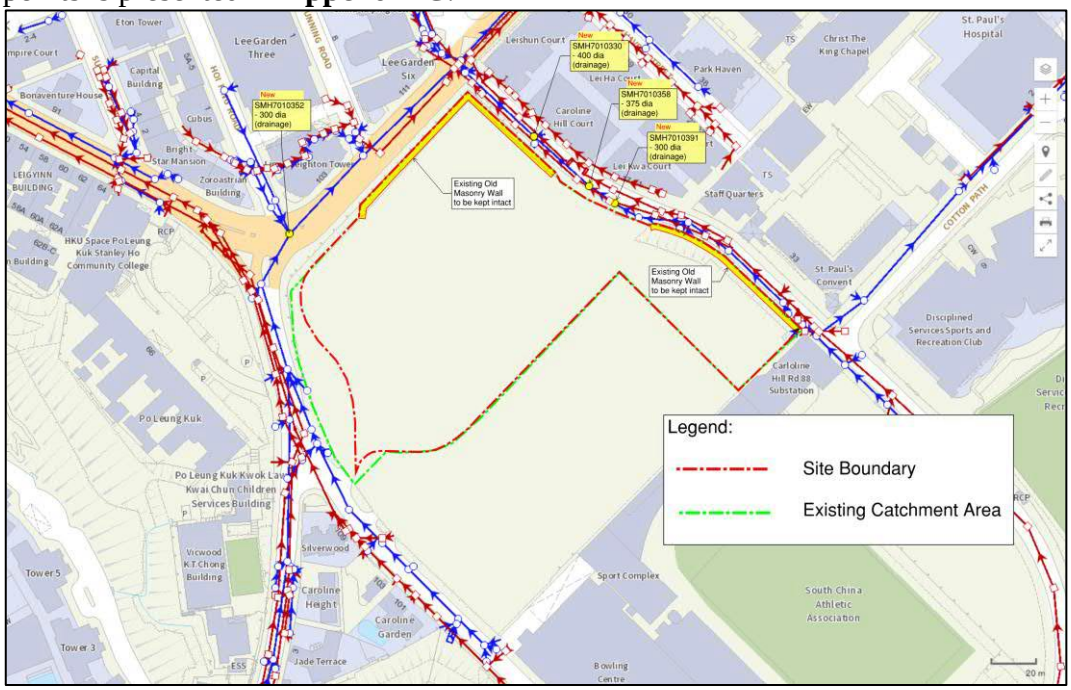


Figure 5 - Location of proposed connection points of subject site

Thus, for proposed development, total catchment area of 14,800m^2 within the subject site is assumed to discharge to the nearest existing drainage system, which is located on the running southwest to northeast across the Tong Lo Wan Road. 14,133.5m^2 and 666.5m^2 are considered as paved area and unpaved area. The catchment area plan is presented in **Appendix D**.

3.4 Potential Drainage Impacts

Currently, the surface runoff of subject site is discharged by the existing drainage discharge points, diverting to the existing 900⌀ drainage pipe along Leighton Road which is further diverted to the existing box culvert at Tung Lo Wan Road.

For the characteristic of the existing catchment, the paved and unpaved area are 15,490.5m^2 and 133.5m^2 respectively. For the characteristic of the catchment for proposed development, the unpaved area would be increased to 666.5m^2 by enlarging the area of OVT zone. Therefore, the total surface runoff from the site would be reduced. The surface runoff from the subject site would be then

discharged to the proposed drainage discharge points. The peak runoff to the existing branch of drainage pipe along Leighton Road should be reduced. Thus, there is no drainage impact to the existing drainage system as a result of the proposed redevelopment.

The summary table for the catchment of drainage connections is shown below.

	Existing Case					**Approved Scheme**				
	Downstream Manhole	Pipe dia. (mm)	Sub-Catchment ref.	Paved catchment (m^2)	Unpaved catchment (m^2)	Downstream Manhole	Pipe dia. (mm)	Sub-Catchment ref.	Paved catchment (m^2)	Unpaved catchment (m^2)
South of subject site	SMH7021006	225	A4, A5, 50%A7	751.6	0					
	SMH7060442	225	A2, A6	1352	0					
	SWD7113064	150	50%A7	349	0					
Total area of the South			A2, A4-A7	2,452.6	0					
North of subject site	SMH7010352	825	A2-A8, A10	5,610.3	133.5	SMH7010352	825	B2, B3, B4	4,500	750
Total area of the North			A2-A8, A10	5,610.3	133.5			B2, B3, B4	4,500	750
East of subject site	SMH7060461	225	A9, A11, A12	2,122	0	SMH7010330	400	B5, B6	3,400	0
	SMH7010391	225	A1, A13	4,937.7	0	SMH7010358	375	B1, B7	3,550	0
	SMH7010362	150	50%A14, 50%A15	1,410.3	0	SMH7010391	300	B8	2,600	0
	SMH7010364	150	50%A14, 50%A15	1,410.3	0					
Total area of the East			A1, A9, A11, A12, A13, A14, A15	9,880.2	0			B1, B5-B8	9,550	0
Total area of the site			A1-A15	15,490.5	133.5			B1-B8	14,050	750

	Proposed Scheme				
	Downstream Manhole	Pipe dia. (mm)	Sub-Catchment ref.	Paved catchment (m^2)	Unpaved catchment (m^2)
South of subject site					
Total area of the South					
North of subject site	SMH7010352	825	B2, B3, B4	4,824.0	426.0
Total area of the North			B2, B3, B4	4,824.0	426.0
East of subject site	SMH7010330	400	B5, B6	3,159.5	240.5
	SMH7010358	375	B1, B7	3,550	0
	SMH7010391	300	B8	2,600	0
Total area of the East			B1, B5-B8	9,309.5	240.5
Total area of the site			B1-B8	14,133.5	666.5

The summary table for the peak runoff of drainage connections is shown below.

	Existing Case					Approved Scheme				
	Sub-Catchment ref.	Paved catchment (m^2)	Unpaved catchment (m^2)	Peak Runoff (m^3/s)	Remark	Sub-Catchment ref.	Paved catchment (m^2)	Unpaved catchment (m^2)	Peak Runoff (m^3/s)	% change
South of subject site	A2, A4-A7	2452.6	0	0.146	-	-	-	-	-	-
North of subject site	A2-A8, A10,	5610.3	133.5	0.336	-	B2, B3, B4	4500	750	0.275	-18.06%
East of subject site	A1, A9, A11, A12, A13, A14, A15	9880.2	0	0.589	-	B1, B5-B8	9550	0	0.570	-3.34%
Total Peak Runoff	A1-A15	15,490.5	133.5	0.925	-	B1-B8	14050	750	0.845	-8.68%

	Proposed Scheme				
	Sub-Catchment ref.	Paved catchment (m^2)	Unpaved catchment (m^2)	Peak Runoff (m^3/s)	% change
South of subject site	-	-	-	-	-
North of subject site	B2, B3, B4	4,824.0	426.0	0.292	-13.18%
East of subject site	B1, B5-B8	9,309.5	240.5	0.557	-5.41%
Total Peak Runoff	B1-B8	14,133.5	666.5	0.849	-8.22%

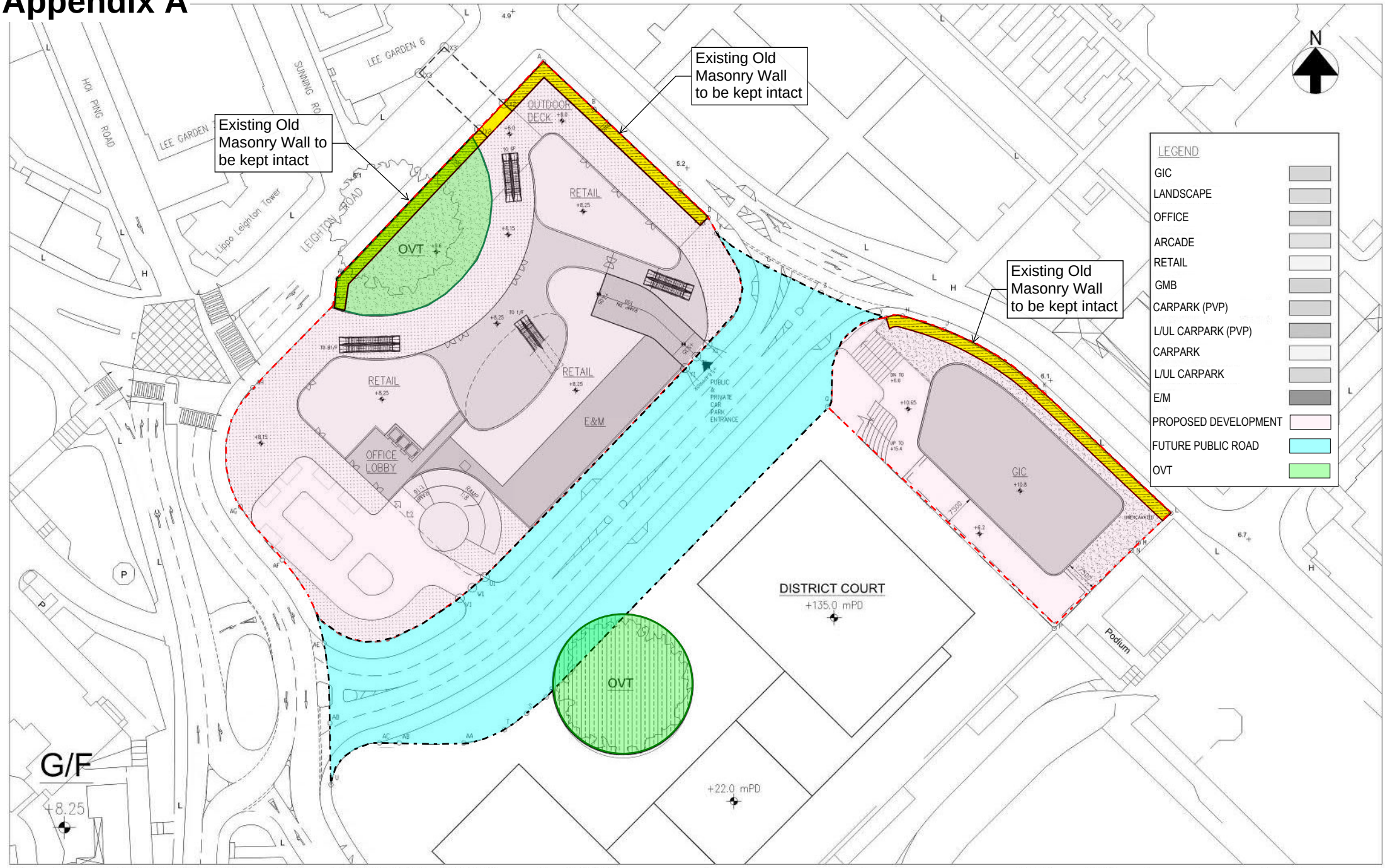
4 Conclusion

Since the total surface runoff for the proposed scheme will be reduced with enlarged landscape area when compared with the existing case, the peak runoff to the existing branch of drainage pipe along Leighton Road should also be reduced and should be beneficial to the existing drainage system. Therefore, it is concluded that there would be no impact to the existing drainage system as a result of the proposed scheme.

Appendix A

Layout Plan of Caroline Hill Road Development

Appendix A



Layout Plan of Caroline Hill Road Development

(Approved Layout Plan)

MASONRY WALL

DISABLED ACCESS TO G/F

VENT SHAFT

BANYAN GARDEN

BALUSTRADE

GREEN AREA

PINK HATCHED BLUE AREA

BUILDING BLOCK (G/F)

BUILDING BLOCK (G/F)

BUILDING BLOCK (G/F)

FUTURE ROAD

CAROLINE HILL ROAD

VERTICAL GREENING

VENT SHAFT

VENT SHAFT

INDICATION OF THE RETAINING STRUCTURE. THE DETAILED DESIGN WILL BE AGREED WITH THE RELEVANT DEPARTMENT(S).

NORTH

0 10 20 30 40 50m

LEGEND

- (A) OVT LANDSD(LEASED) WCH/1
- (B) FOOTBRIDGE
- (C) ENTRANCE PLAZA
- (D) COVERED PUBLIC OPEN SPACE
- (E) 24 HR PEDESTRIAN WALKWAY
- (F) INTERNAL STREET AT G/F
- SPOT LEVEL
- (G) LAWN AREA
- (H) INTIMATE SPACE
- (I) MULTI-FUNC. ROOF/LAWN AREA
- (J) COVERED LANDSCAPE BRIDGE
- SITE BOUNDARY
- LAWN AREA
- VERTICAL GREENING
- SEATWALL
- TREE PROTECTION ZONE
- VEHICHULAR ENTRANCE
- PEDESTRIAN ENTRANCE
- HARD PAVED AREA
- ROAD
- VEHICULAR ACCESS
- 24-HR PEDESTRIAN WALKWAY
- TRANSPARENT COVER
- TRANSPLANTING TREE
- NEW TREE PLANTING (NEW TREE / COMPENSATORY TREE)
- RETAINED TREE
- PLANTING AREA
- SEATINGS/ SEATING AREA
- MASONRY WALL
- SIGNAGE
- VENT SHAFT

REV	DATE	DESCRIPTION
–		

otherland
UNIT 2307-08, 23/F, NEW TECH PLAZA
34 TAI YAU STREET
SAN PO KONG KOWLOON, HONG KONG.
Tel: (852) 2893 0370 Fax: (852) 2893 3139
WWW.OTHERLAND.COM.HK

CLIENT:
TATCHEW HOLDINGS (HK) LIMITED

PROJECT:
CAROLINE HILL ROAD

TITLE:
APPENDIX (C) -
LANDSCAPE MASTER PLAN (GF)

SCALE:	1:750@A3
DRAWN BY:	CY
CHECKED BY:	PC
APPROVED BY:	PC
DRAWING DATE:	AUG 2025
PROJECT No:	HYSAN02
SHEET No: HYSAN02-LMP-C3-2	REV: –

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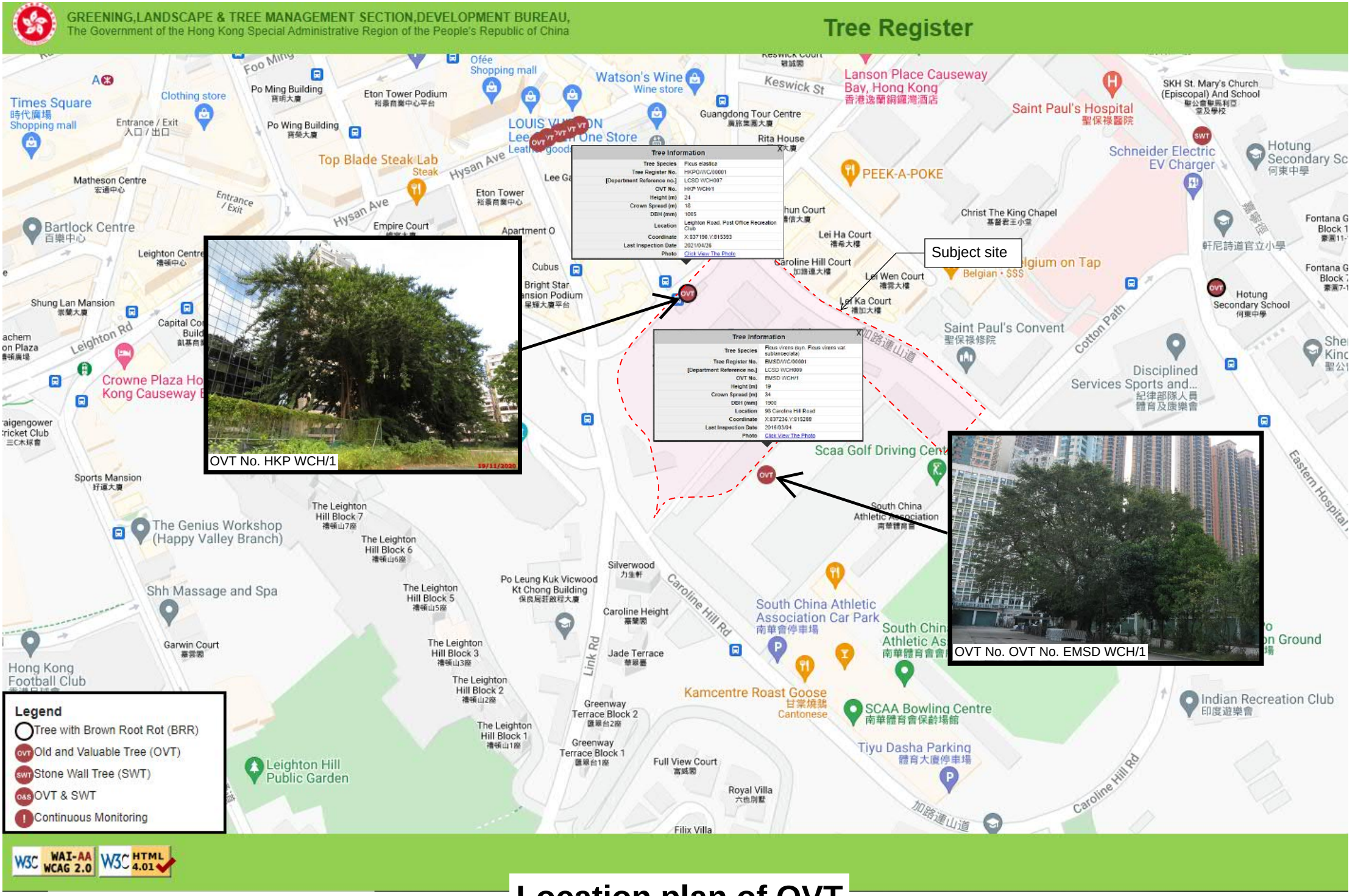
Appendix B

Layout Plan of OVT

Appendix B

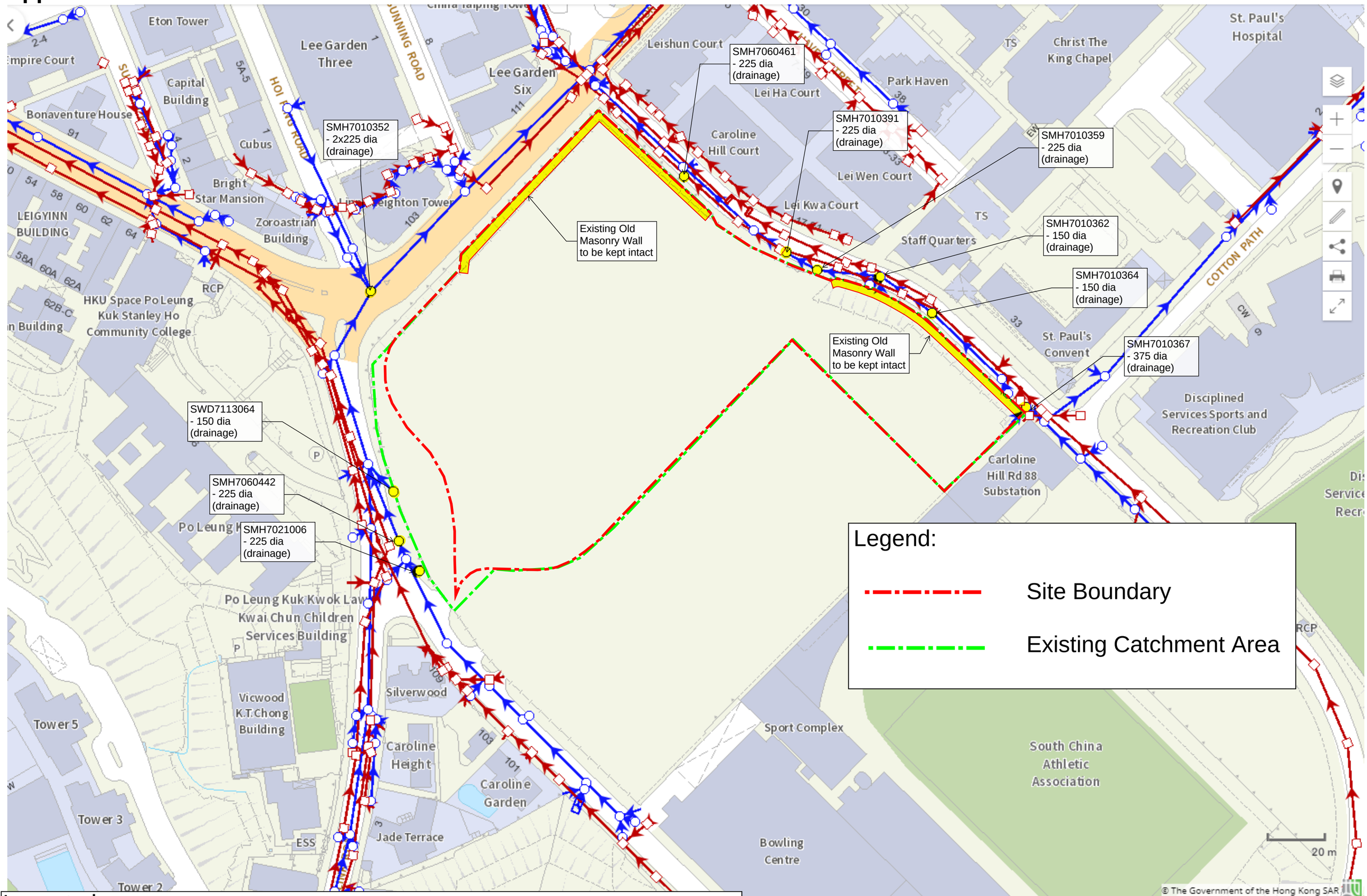


Location plan of OVT

Appendix C

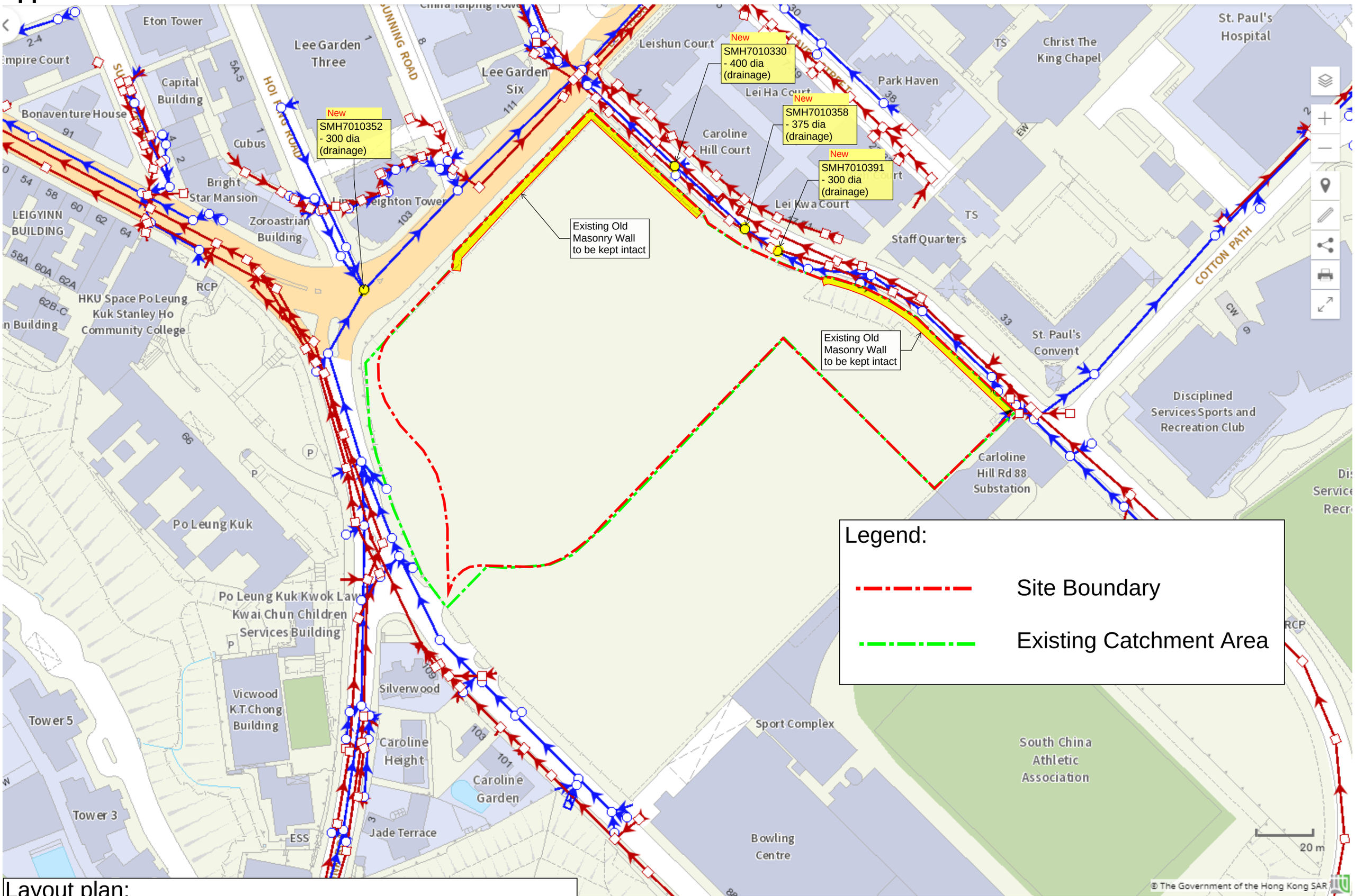
Drainage Layout plan for Caroline Hill Road Development

Appendix C



Layout plan:
Existing in-use drainage discharge points for formerly used development

Appendix C

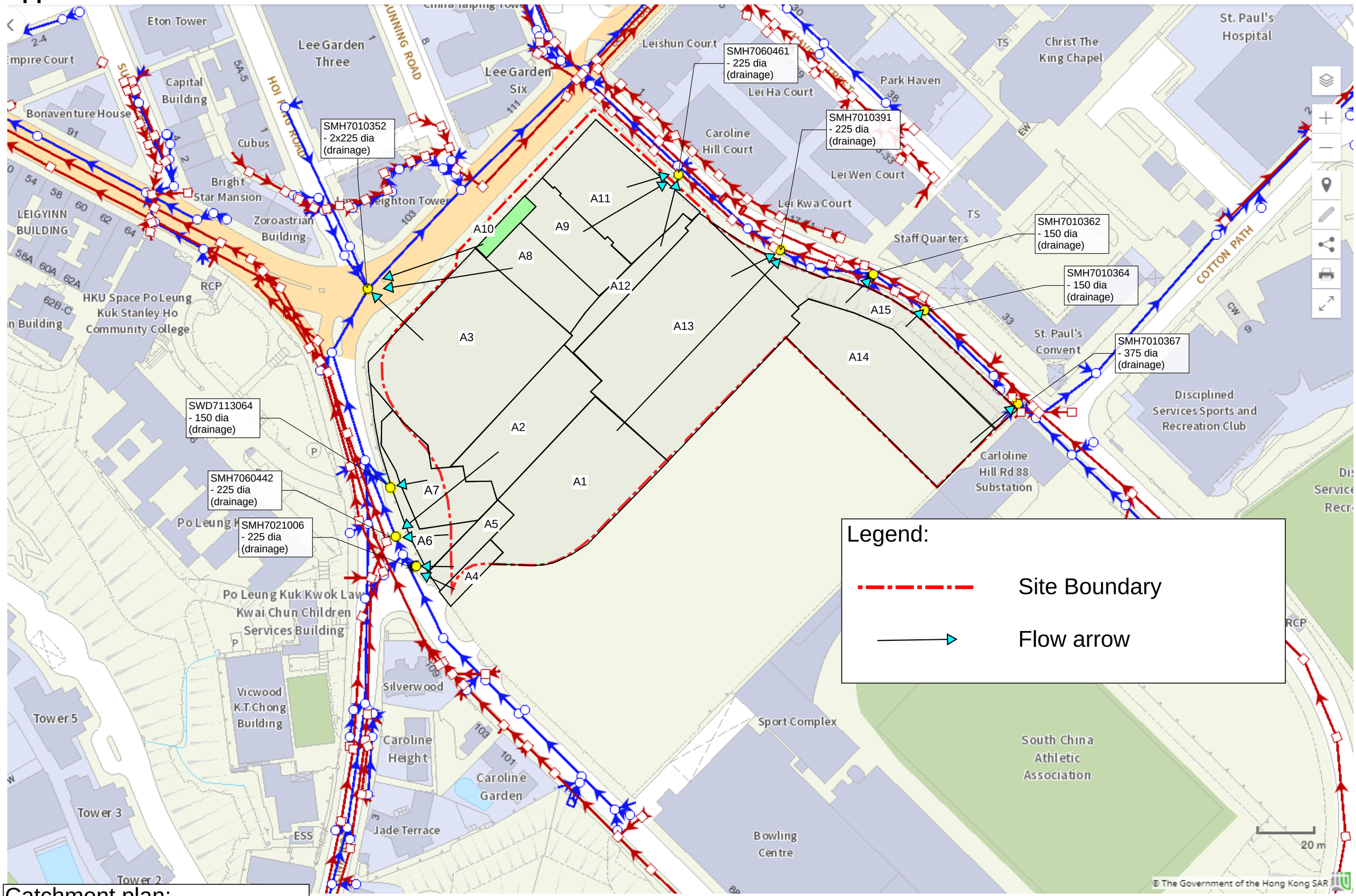


Layout plan:
Drainage discharge points for Proposed development

Appendix D

Catchment plan for Caroline Hill Road Development

Appendix D



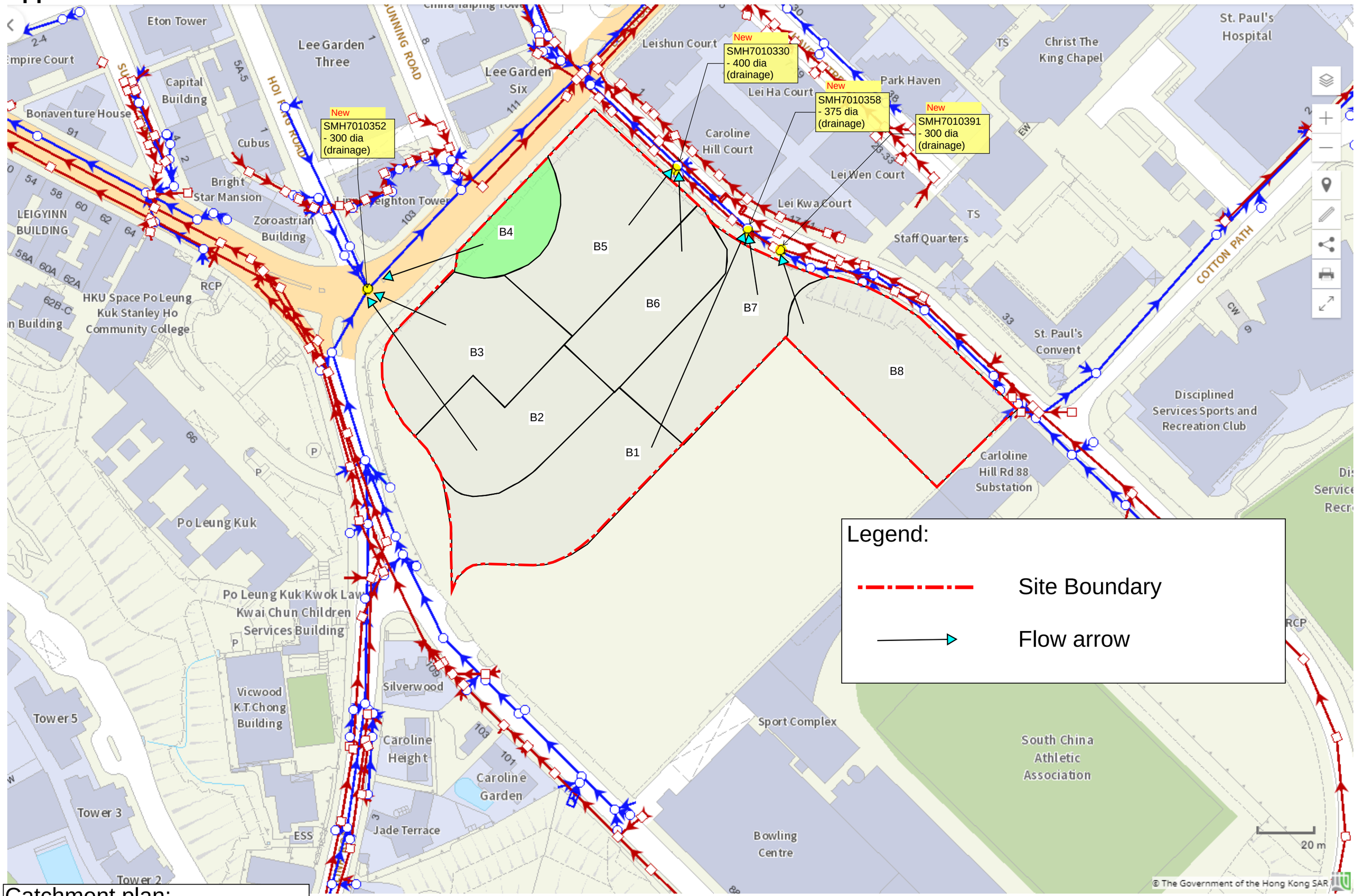
Legend:

Site Boundary

Flow arrow

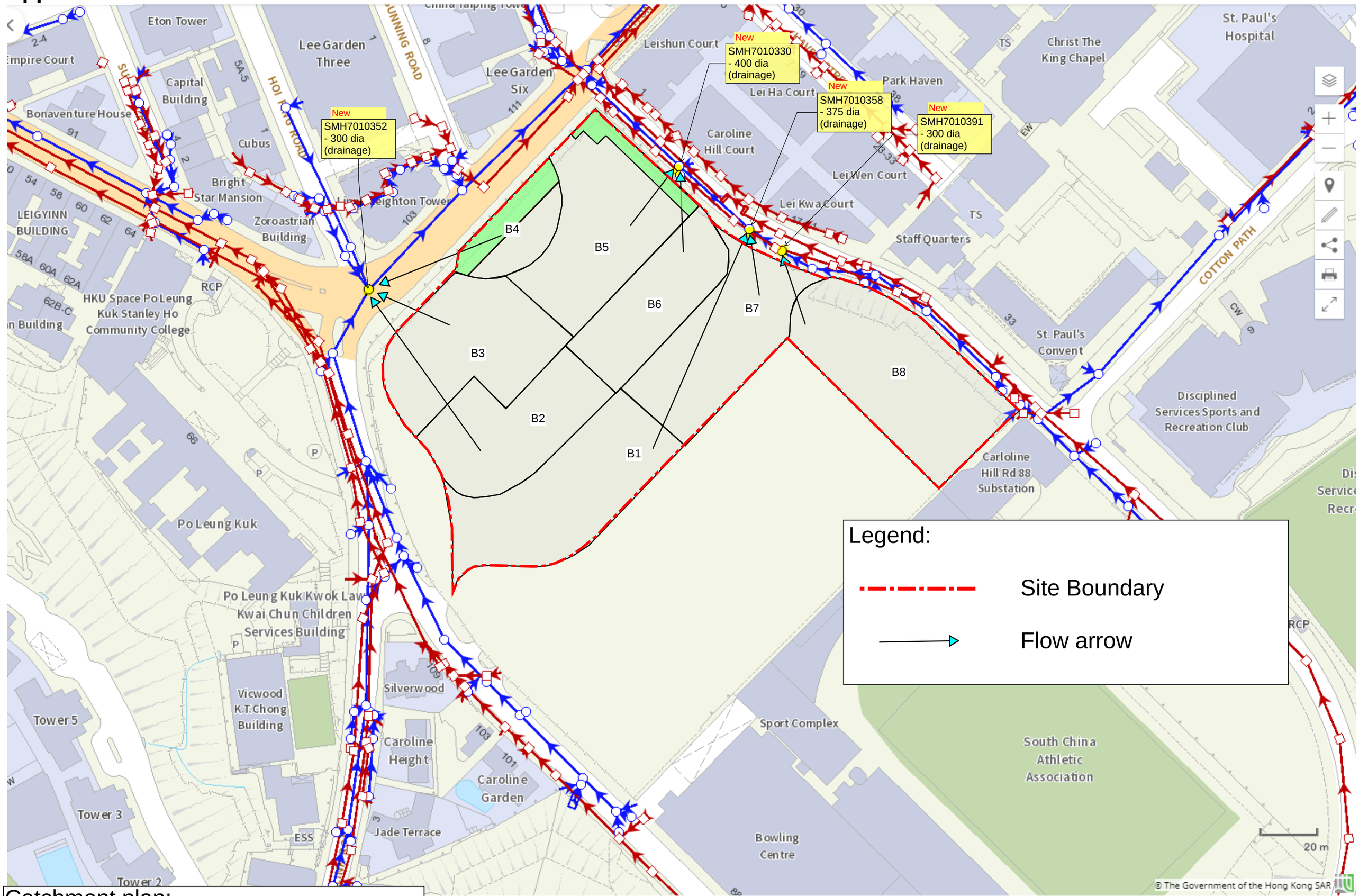
Catchment plan:
Formerly used development

Appendix D



Catchment plan:
Approval Layout Plan

Appendix D



Catchment plan:
Proposed Layout Plan

Appendix E

Pipe capacity check for Proposed Drainage discharge points

ARUP	Job No. 285077	Sheet No.	Rev. B
	Member/Location		
Job Title **Caroline Hill Road, Causeway Bay**	Drg. Ref.		
Calculation **Pipe Capacity Checking**	Made by IP	Date 7 Feb 2025	Chd. CC

Notes

1 Runoff Coeff., C = 0.90 (Paved)
0.35 (Steep natural slope)
0.35 (unpaved)

Return Period = 50 years (Main Rural Catchment Drainage Channels)

(Table 10, Stormwater Drainage Manual)

2 Calculate by Colebrook-White Equation

$$\bar{V} = -\sqrt{32gRS_f}\log\left[\frac{k_s}{14.8R} + \frac{1.255\nu}{R\sqrt{32gRS_f}}\right]$$

ν is kinematic viscosity of fluid = 1.14 x 10-6 m^2/s and g is the gravity = 9.81m/s^2
V is the velocity, R is the hydraulic radius and S is the gradient of the stormwater drain.

3 A 10% reduction in flow area is adopted to take into account the effects on flow capacity due to deposition of sediment in pipes.

4 Climate Change Factor (%) = 11.10%
(Table 28, Stormwater Drainage Manual, for rainfall increase at Mid 21st Century 2041 – 2060)

Rainfall Intensity, $I = a / (T_c + b)^c$ (Gumbel solution)

where :

a =	505.5
b =	3.29
c =	0.355

Return Period = 50 years **(Table 3a, Stormwater Drainage Manual)**
(Corrigendum No.1 2024 SDM)

Catchment Area Distribution			
Catchment Area	Area (m2)		
	paved	natural slope	unpaved
B1	2235	0	0
B2	2200	0	0
B3	2300	0	0
B4	324	0	426
B5	1492	0	241
B6	1068	0	0
B7	1915	0	0
B8	2600	0	0
Total	14134	0	667

Runoff Calculation
Return period = 50 years

Location		Sub-	Catchment Area of the development						Drainage Character					Hydraulic parameter		Time of the development			(i) Extreme	Peak	Full bore	%	Full bore
US	DS	Catchment	Paved		Steep Natural Slope		Unpaved		Drainage	Drainage size			Slope			t_e	t_f	t_c	mean intensity	Runoff	Capacity		Velocity
		Reference	Sub-Catchment (m^2)	Accumulative Area (m^2)	Sub-Catchment (m^2)	Accumulative Area (m^2)	Sub-Catchment (m^2)	Accumulative Area (m^2)	Shape	width/dia (mm)	height (mm)	length (m)	(S_f)	cross area (A) (m^2)	Hydraulic Diameter, D (m)	(min)	(min)	(min)	(1 in 50) with climate change (mm/h)	(m^3/s)	(m^3/s)		(m/s)
New 300⌀	SMH7010352	B2, B3, B4	4,824.0	4,342	0	0	426.0	149	Circular PE Pipe	300	-	-	0.100	0.06	0.28	5.00	0.00	5.00	265.1	0.292	0.41	71	6.43
New 400⌀	SMH7010330	B5, B6	3,159.5	2,844	0	0	240.5	84	Circular PE Pipe	400	-	-	0.010	0.11	0.37	5.00	0.00	5.00	265.1	0.191	0.26	73	2.31
New 375⌀	SMH7010358	B1, B7	3,550.0	3,195	0	0	0.0	0	Circular Concrete Pipe	375	-	-	0.026	0.10	0.35	5.00	0.00	5.00	265.1	0.212	0.28	77	2.77
New 300⌀	SMH7010391	B8	2,600.0	2,340	0	0	0.0	0	Circular PE Pipe	300	-	-	0.020	0.06	0.28	5.00	0.00	5.00	265.1	0.155	0.18	88	2.78

ARUP	Job No.	Sheet No.	Rev.
	285077		B
	Member/Location		
Job Title **Caroline Hill Road, Causeway Bay**	Drg. Ref.		
Calculation **Pipe Capacity Checking**	Made by IP	Date 7 Feb 2025	Chd. CC

Notes

1 Runoff Coeff., C = 0.90 (Paved)
0.35 (Steep natural slope)
0.35 (unpaved)

Return Period = 50 years (Main Rural Catchment Drainage Channels)

(Table 10, Stormwater Drainage Manual)

2 Calculate by Colebrook-White Equation

$$\bar{V} = -\sqrt{32gRS_f}\log\left[\frac{k_s}{14.8R} + \frac{1.255\nu}{R\sqrt{32gRS_f}}\right]$$

ν is kinematic viscosity of fluid = 1.14 x 10-6 m^2/s and g is the gravity = 9.81m/s^2
V is the velocity, R is the hydraulic radius and S is the gradient of the stormwater drain.

3 A 10% reduction in flow area is adopted to take into account the effects on flow capacity due to deposition of sediment in pipes.

4 Climate Change Factor (%) = 11.10%
(Table 28, Stormwater Drainage Manual, for rainfall increase at Mid 21st Century 2041 – 2060)

Rainfall Intensity, $I = a / (T_c + b)^c$ (Gumbel solution)

where :

a =	505.5
b =	3.29
c =	0.355

Return Period = 50 years

(Table 3a, Stormwater Drainage Manual)
(Corrigendum No.1 2024 SDM)

Catchment Area Distribution			
Catchment Area	Area (m2)		
	paved	natural slope	unpaved
B1	2235	0	0
B2	2200	0	0
B3	2300	0	0
B4	324	0	426
B5	1492	0	241
B6	1068	0	0
B7	1915	0	0
B8	2600	0	0
Total	14134	0	667

Comparison between Total Peak Runoff
Return period = 50 years

Proposed Development

Location		Sub-Catchment Reference	Catchment Area of the development						Drainage Character					Hydraulic parameter		Time of the development			(i) Extreme mean intensity (1 in 50) with climate change	Peak Runoff	Full bore Capacity	%	Full bore Velocity
			Paved		Steep Natural Slope		Unpaved		Drainage Shape	Drainage size			Slope									
US	DS		Sub-Catchment (m^2)	Accumulative Area (m^2)	Sub-Catchment (m^2)	Accumulative Area (m^2)	Sub-Catchment (m^2)	Accumulative Area (m^2)		width/dia (mm)	height (mm)	length (m)	(S_f)	cross area (A) (m^2)	Hydraulic Diameter, D (m)	t_e (min)	t_f (min)	t_c (min)	(mm/h)	(m^3/s)	(m^3/s)		(m/s)
	South of subject site	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	North of subject site	B2, B3, B4	4,824.0	4,342	0	0	426.0	149	Circular Concrete Pipe	-	-	-	-	-	-	5.00	0.00	5.00	265.1	0.292	-	-	-
-	East of subject site	B1, B5-B8	9,309.5	8,379	0	0	240.5	84	Circular Concrete Pipe	-	-	-	-	-	-	5.00	0.00	5.00	265.1	0.557	-	-	-
-	Total	B1-B8	14,133.5	12,720	0	0	666.5	233	Circular Concrete Pipe	-	-	-	-	-	-	5.00	0.00	5.00	265.1	0.849	-	-	-

Existing Development

Location		Sub-Catchment Reference	Catchment Area of the development						Drainage Character					Hydraulic parameter		Time of the development			(i) Extreme mean intensity (1 in 50) with climate change	Peak Runoff	Full bore Capacity	%	Full bore Velocity
			Paved		Steep Natural Slope		Unpaved		Drainage Shape	Drainage size			Slope									
US	DS		Sub-Catchment (m^2)	Accumulative Area (m^2)	Sub-Catchment (m^2)	Accumulative Area (m^2)	Sub-Catchment (m^2)	Accumulative Area (m^2)		width/dia (mm)	height (mm)	length (m)	(S_f)	cross area (A) (m^2)	Hydraulic Diameter, D (m)	t_e (min)	t_f (min)	t_c (min)	(mm/h)	(m^3/s)	(m^3/s)		(m/s)
	South of subject site	A2, A4-A7	2452.6	2,207	0	0	0	0	Circular Concrete Pipe	-	-	-	-	-	-	5.00	0.00	5.00	265.1	0.146	-	-	-
-	North of subject site	A2-A8, A10	5610.3	5,049	0	0	133.5	47	Circular Concrete Pipe	-	-	-	-	-	-	5.00	0.00	5.00	265.1	0.336	-	-	-
-	East of subject site	A1, A9, A11, A12, A13, A14, A15	9880.2	8,892	0	0	0	0	Circular Concrete Pipe	-	-	-	-	-	-	5.00	0.00	5.00	265.1	0.589	-	-	-
-	Total	A1-A15	15490.5	13,941	0	0	133.5	47	Circular Concrete Pipe	-	-	-	-	-	-	5.00	0.00	5.00	265.1	0.925	-	-	-

銅鑼灣
Causeway Bay



Annex F
Sewerage Impact Assessment

Proposed Redevelopment at Caroline Hill Road, Causeway Bay

Sewerage Impact Assessment for Proposed Redevelopment at Caroline Hill Road, Causeway Bay

Report Ref

07 | 11 April 2025

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 285077

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ARUP

Contents

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1	**Introduction**	**1**
1.1	Reference Materials	1
2	**The Development**	**1**
3	**Description of Existing Environment and Baseline Conditions**	**2**
3.1	Site Location and Topography	2
3.2	Approach and Methodology	2
3.3	Evaluation of Sewerage Impact	3
3.4	Sewage Generation from the Proposed Development	3
3.5	Impact of the Proposed Development	4
4	**Conclusion**	**5**

Appendices

Appendix A

Figures

Appendix B

Calculation

Appendix C

Design of Sewerage System from District Court Complex at Caroline Hill Road, ArchSD

1 Introduction

Sewerage Impact Assessment ("SIA") had been submitted in fulfilment of the Special Conditions (61) (a) of the Conditions of Sale of the Lot requiring for submission of a SIA and was approved by EPD and DSD on 5 January 2022 and 3 May 2022 respectively.

This revised SIA had been submitted to support the Fresh S16 Planning Application with the revised layout plan submission. The recommendation established in the previously approved SIA remains unchanged.

1.1 Reference Materials

In evaluating the sewerage impact arising from the proposed development, the following sources of information have been specifically referred to:

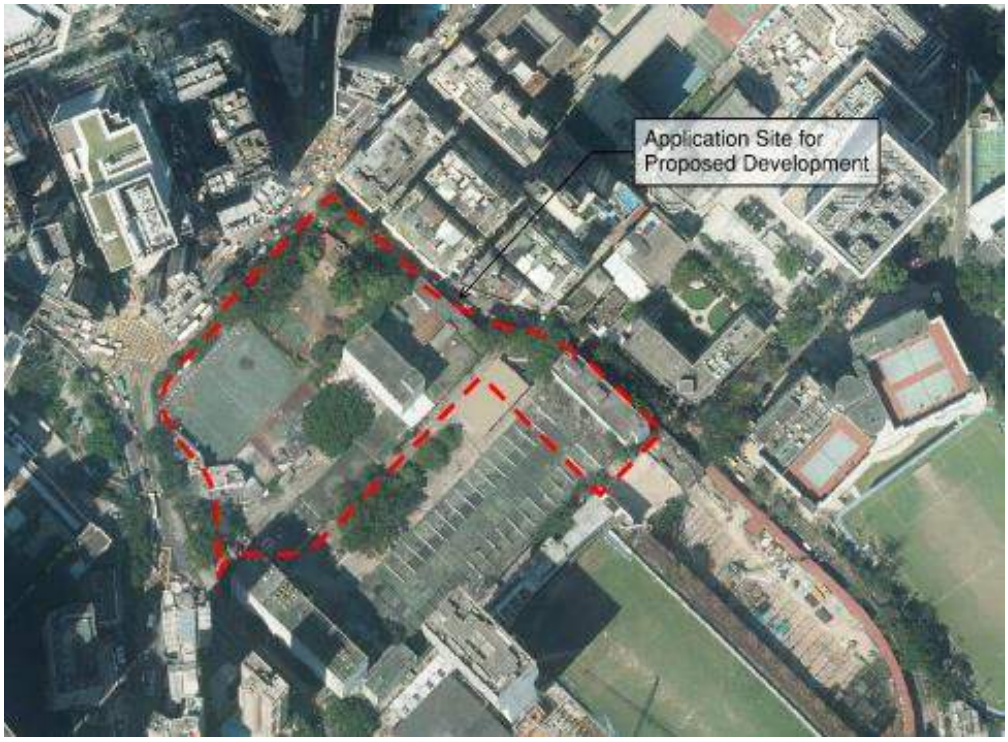
- Environmental Protection Department (EPD) Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning No. : EPD/TP 1/05;
- DSD Sewerage Manual – Key Planning Issues and Gravity Collection System; and
- Drainage Record Plans obtained from DSD.

2 The Development

For easy reference, a comparison table showing the difference between the Approved Scheme and the Proposed Scheme is shown in table below:

Description	**Approved Scheme (No. A/H7/181)**	**Proposed Scheme**	**Difference**
Project Title	Proposed Redevelopment at Caroline Hill Road, Causeway Bay		
Description	Two 25-storeys office towers (Tower 1 and Tower 2) and one 16-storeys office tower (Tower 3) for office, retail and GIC facilities use.		
Location	The site is located at Caroline Hill Road, Causeway Bay (see **Figure 1**).		
Land Use Zoning	Commercial		
Site Area	14,802 m^2	14,802 m^2	No change
Total Non-domestic GFA	102,000 m^2	102,000 m^2	No change
Office GFA	85,000 m^2	85,300 m^2	+300 m^2
Retail GFA	10,000 m^2	10,000 m^2	No change
Light Bus Lay-by GFA	2,000 m^2	1,600 m^2	-400 m^2
GIC GFA	3,000 m^2	3,100 m^2	+100 m^2
GIC GFA (Performing Art & Cultural Facilities)	2,000 m^2	2,000m^2	No change

Below is an aerial photograph of the Application Site.



3 Description of Existing Environment and Baseline Conditions

3.1 Site Location and Topography

The Application site is located at Causeway Bay at the junction of Caroline Hill Road and Leighton Road. The Application Site covers approximately 14802m^2 of area. It was occupied by the ex-Electrical and Mechanical Services Department (EMSD) Headquarters, the ex-Civil Aid Service Headquarters, the ex-Post Office Recreation Club and the PCCW Recreation Club.

3.2 Approach and Methodology

The sewage generated from the proposed development will be collected and conveyed to the existing sewerage system via the existing manhole FMH7058242 and FMH7058644. In order to assess the associated sewerage impact, the capacities of the existing public sewers along Caroline Hill Road were checked.

The adequacy of sewerage capacity along Caroline Hill Road was determined by using the estimate of future sewage generation from the proposed development.

The global unit flow factors recommended in the EPD Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning No.: EPD/TP 1/05 have been adopted in the estimation.

3.3 Evaluation of Sewerage Impact

The sewage flow estimation from the proposed development, the unit flow factors as stated in EPD/TP 1/05 have been adopted.

The capacities of sewers have been calculated based on Colebrook-White equation, assuming full bore flow as below:

(a) Pipe capacity is calculated based on the continuity equation

$Q = AV$

Where Q = pipe full flow capacity in m^3/s

A = pipe cross-sectional area in m^2

V = velocity at full bore flow in m/s

(b) Velocity at full bore flow is based on the Colebrook-White equation

$V= -(32gRS)^{0.5} \log \{(ks/14800R) + (1.255v/ R (32gRS)^{0.5})\}$

Where g = acceleration due to gravity in m/s^2

R = hydraulic radius in m

S = pipe gradient

ks = pipe roughness in mm

v = kinematic viscosity of water in m^2/s

(c) The sewerage impact due to the proposed development on the two existing public sewers have been evaluated by calculating the estimated peak flow against the capacity of the existing public sewer. One is the existing public sewer with downstream sewer of 600Ø run along the South of Caroline Hill Road. Another one is the existing public sewer with downstream sewer of 500Ø run along the East of Caroline Hill Road.

(d) The detailed calculations are provided in **Appendix B** for reference.

3.4 Sewage Generation from the Proposed Development

The prediction for the proposed development sewage generation has been based on the information extracted from the development schedule (refer to Section 2). The quantity of sewage generated by the proposed is estimated from expected total population.

The table showing the sewage generation of the proposed development is calculated based on the guideline set in EPD Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning and is shown on **Table B1** in **Appendix B** with the comparison between the Approved Scheme and the Proposed Scheme shown in the table below.

Description	Approved Scheme	Proposed Scheme	Difference
ADWF (m^3/day)	973.20	975.44	+2.24
Catchment Inflow Factor	1.0	1.0	No change
Contributing Population	3,604	3,613	+9
Global Peaking Factor	6	6	No change
Peak Discharge, L/s	67.58	67.74	+0.16

3.5 Impact of the Proposed Development

In order to assess the impact on the existing public sewer associated with the proposed development, the capacities of the existing public sewers have been checked and shown on **Tables B2** in **Appendix B**.

The estimation of sewage generation in the vicinity of the Application Site is based on the assumptions as below:

1) Existing public sewer information based on DSD drainage record plans and shown in **Figure 2-5**;

2) Existing development parameters in the vicinity of the proposed development are obtained from public domain and sewerage catchment plan shown in **Figure 6**;

3) Flow factors as per EPD Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning; and

4) Global peaking factor with stormwater allowance is adopted as per EPD Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning.

5) The sewage flow and tentative sewerage system from Proposed District Court Complex is based on the design reference to the approved technical feasibility statement from ArchSD and shown in **Figure 7**.

6) As per ArchSD's current design, the sewer of FC tower is recommended to be connected to the existing sewerage manhole FSH7003584 and that of DC tower is recommended to be connected to the existing sewerage manhole FMH7058644.

The peak sewage flow from the proposed development is slightly increased from 67.58 L/s to 67.74 L/s.

On the South side of Caroline Hill Road, it has proven that an existing public sewerage serving the Application Site comprising an existing 300Ø public gravity sewer running along the south of Caroline Hill Road and the downstream existing public sewer of 600Ø running along the Leighton Road has sufficient capacity to carry the estimated sewage from the Application Site.

On the East side of Caroline Hill Road, it has proven that an existing 400Ø public gravity sewer running along the east of Caroline Hill Road and the downstream

existing public sewer of 500Ø running along Leighton Road has sufficient capacity to carry the estimated sewage from the Application Site.

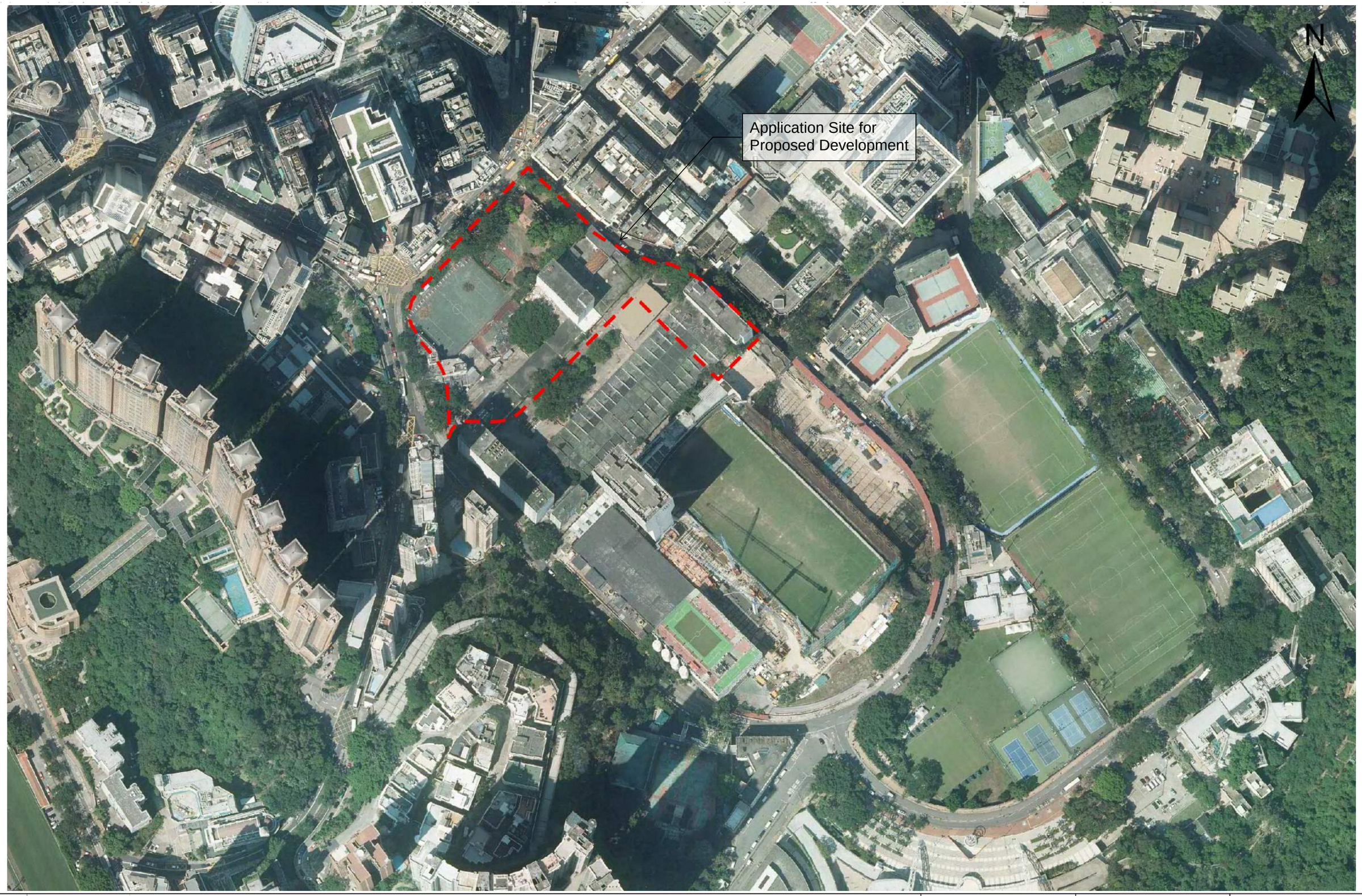
It is concluded that the proposed development would not result in any adverse sewerage impact to the existing public sewerage system. The capacities checking of the existing public sewers is shown in **Table B2**.

4 Conclusion

The peak sewage flow from the proposed development is slightly increased from 67.58 L/s to 67.74 L/s . It is observed that the two existing public sewerage serving the Application Site through existing FMH7058644 and FMH7058242 running along the Leighton Road, have sufficient capacity to carry the estimated sewage from the Application Site. It is concluded that the proposed development would not result in any adverse sewerage impact to the existing public sewerage system.

Appendix A

Figures



LEGEND

SITE BOUNDARY OF PROPOSED DEVELOPMENT

Mark | Date | By | Rev

Job Title
Proposed Redevelopment at Caroline Hill Road, Causeway Bay

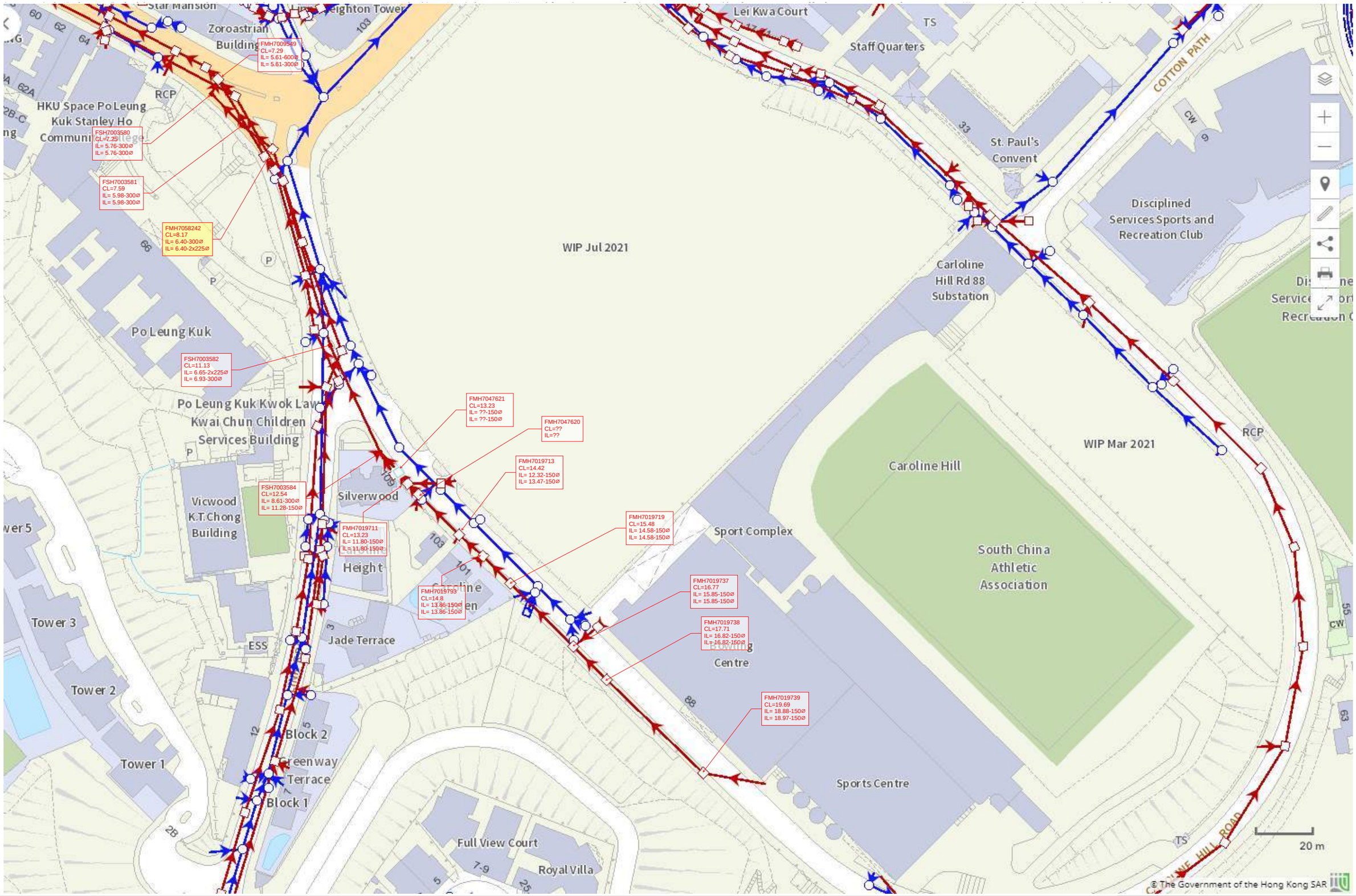
Drawing Title
LOCATION PLAN

ARUP

Scale
Drn. | Date | Chd. | Passed

Drawing Status
FOR REFERENCE

Job No.: 285077 | Drawing No.: FIGURE 1 | Rev.



Mark	Date	By	Rev

Job Title
Proposed Redevelopment at Caroline Hill Road, Causeway Bay

Drawing Title
EXISTING SEWERAGE LAYOUT PLAN - SOUTH

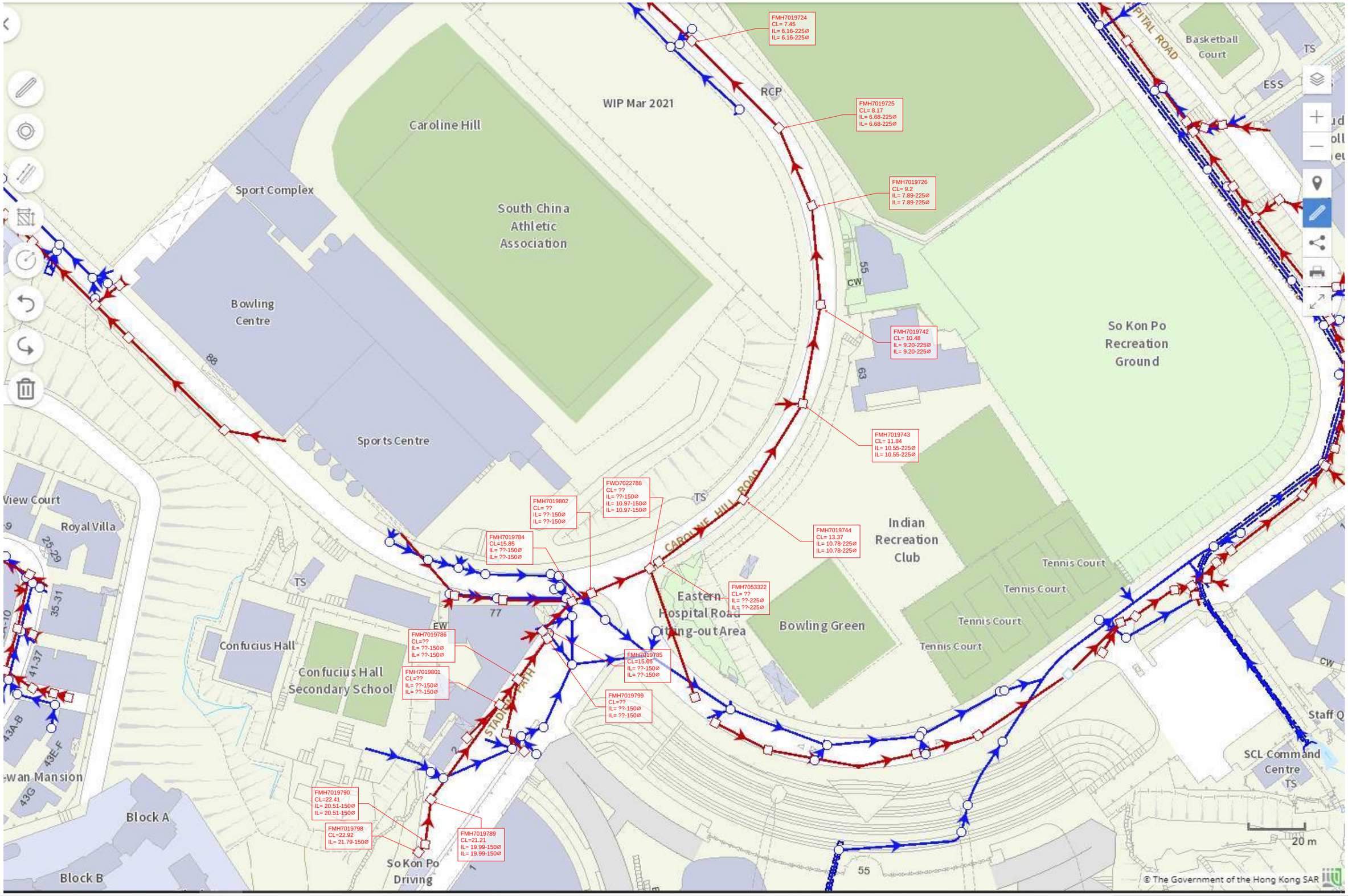
Drawing Status
FOR REFERENCE

ARUP

Scale

Drn.	Date	Chd.	Passed

Job No.	Drawing No.	Rev.
285077	FIGURE 2	



Mark	Date	By	Rev

Job Title
Proposed Redevelopment at Caroline Hill Road, Causeway Bay

Drawing Title
EXISTING SEWERAGE LAYOUT PLAN - EAST
(SHEET 1 OF 3)

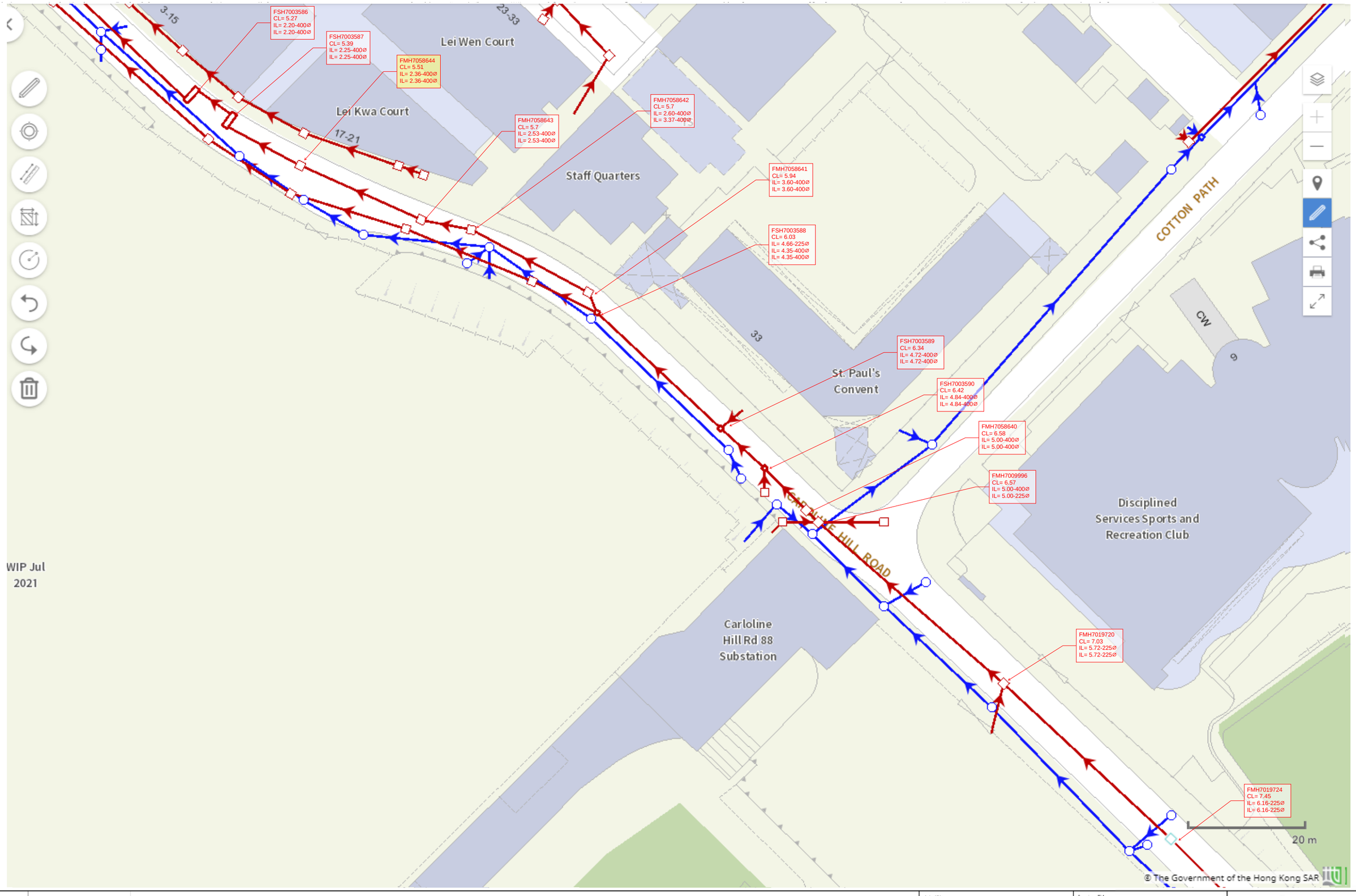
Drawing Status
FOR REFERENCE

ARUP

Scale

Drn.	Date	Chd.	Passed

Job No.	Drawing No.	Rev.
285077	FIGURE 3	



Mark	Date	By	Rev.

Job Title
Proposed Redevelopment at Caroline Hill Road, Causeway Bay

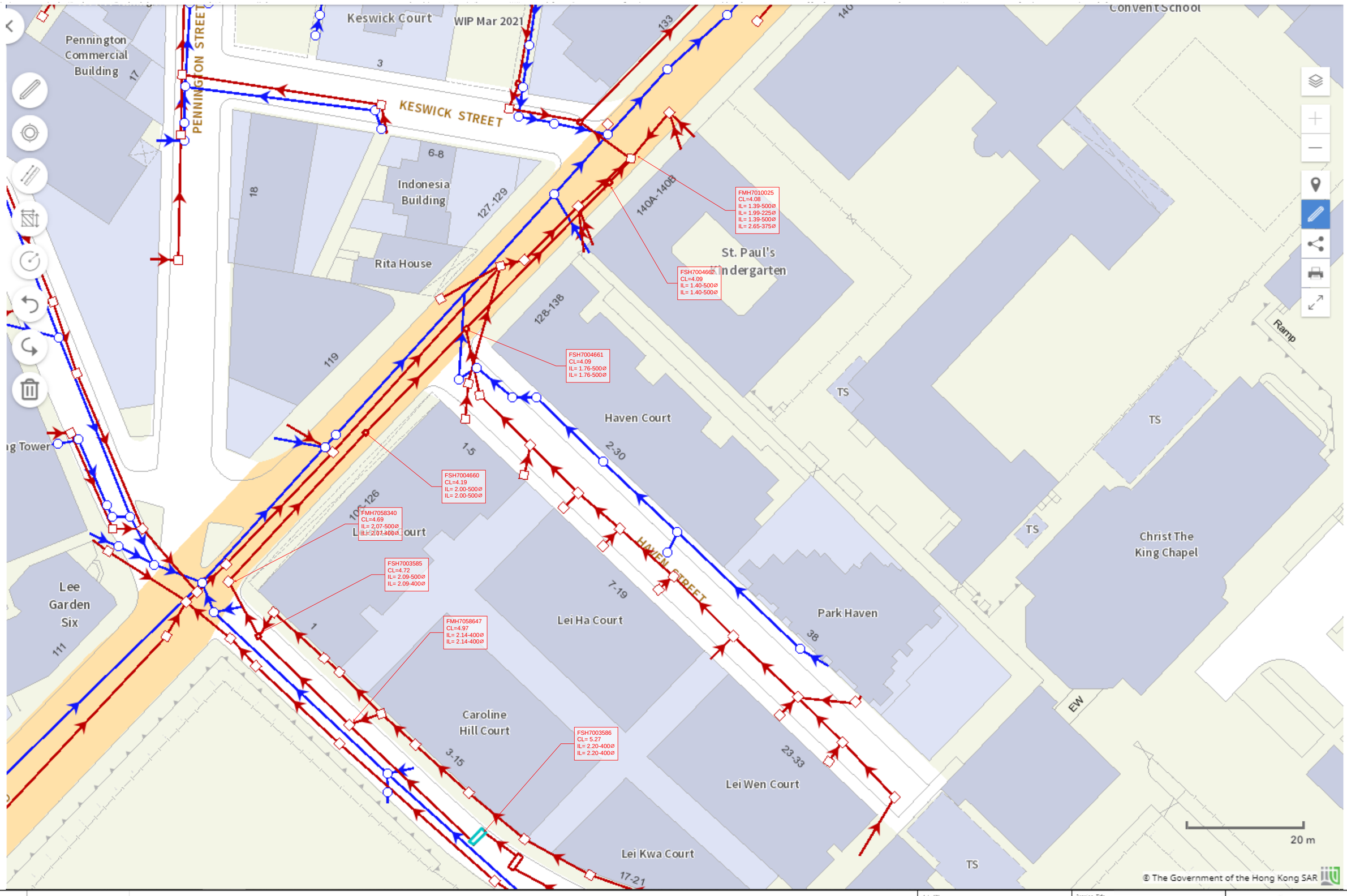
Drawing Title
EXISTING SEWERAGE LAYOUT PLAN - EAST
(SHEET 2 OF 3)

Drawing Status
FOR REFERENCE

ARUP

Scale:
Drn. Date Chd. Passed

Job No. 285077
Drawing No. FIGURE 4
Rev.



Mark	Date	By	Rev.

Job Title
Proposed Redevelopment at Caroline Hill Road, Causeway Bay

Drawing Title
EXISTING SEWERAGE LAYOUT PLAN - EAST
(SHEET 3 OF 3)

Drawing Status
FOR REFERENCE

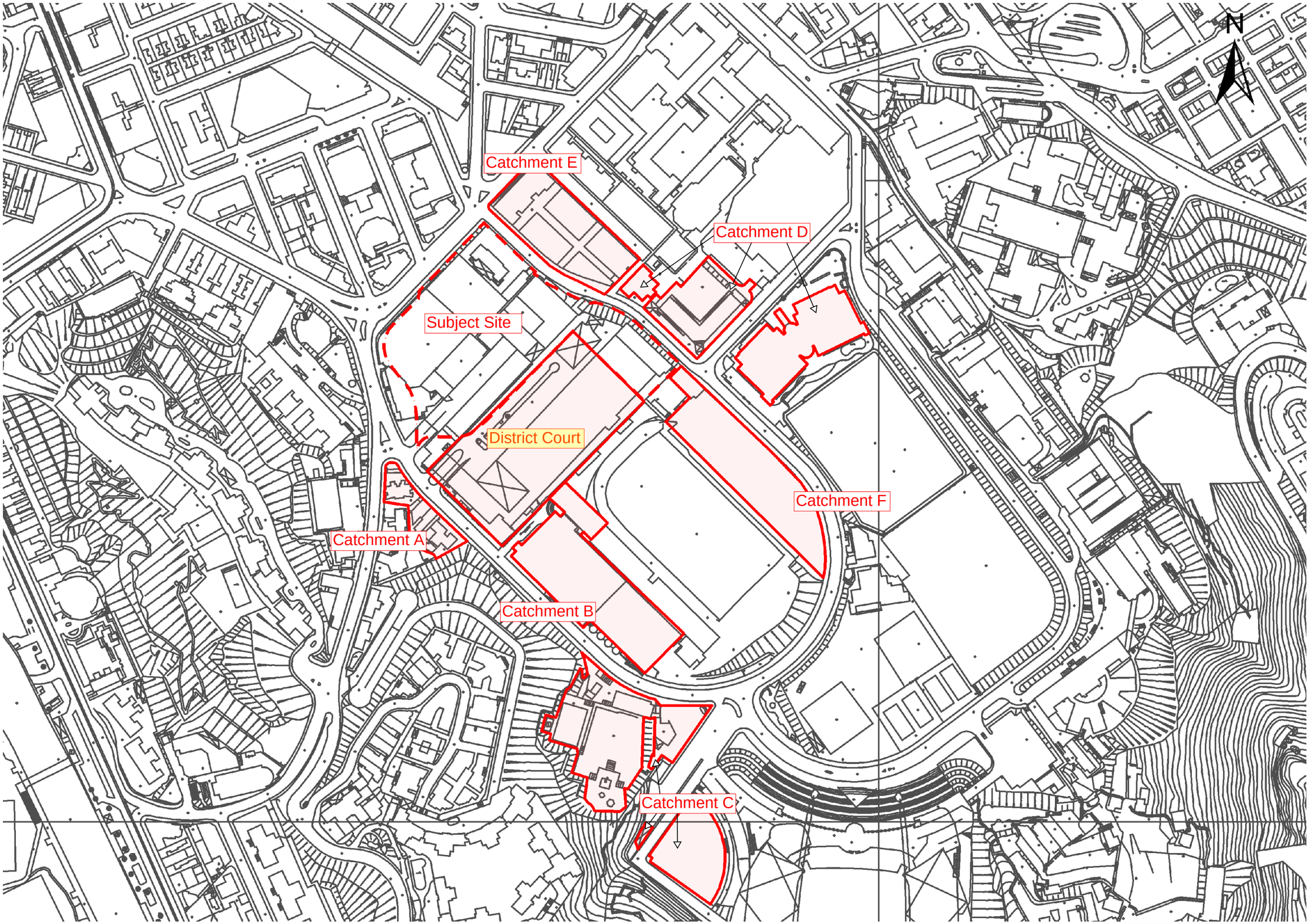
ARUP

Scale
Drn. Date Chd. Passed

Job No.: 285077

Drawing No.: FIGURE 5

Rev.



LEGEND

SEWAGE CATCHMENT

Mark	Date	By	Rev

Job Title
Proposed Redevelopment at Caroline Hill Road, Causeway Bay

Drawing Title
SEWAGE CATCHMENT PLAN

ARUP

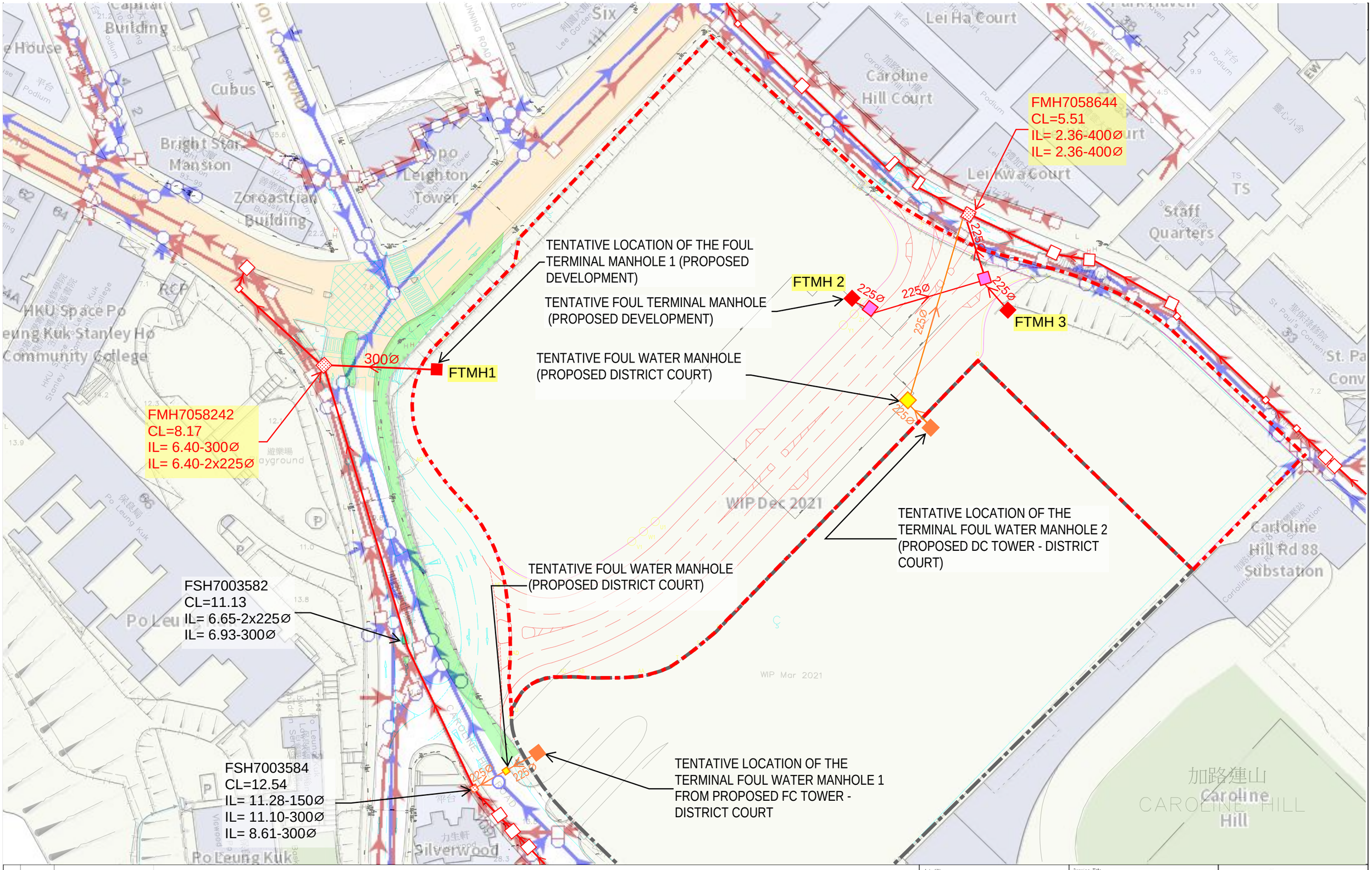
Scale
Drn. Date Chd. Passed

Drawing Status
FOR REFERENCE

Job No. 285077

Drawing No. FIGURE 6

Rev.



LEGEND

- PROPOSED TERMINAL FOUL WATER MANHOLE (PROPOSED DEVELOPMENT)
- PROPOSED TERMINAL FOUL WATER MANHOLE (PROPOSED DISTRICT COURT)
- SITE BOUNDARY OF PROPOSED DISTRICT COURT
- PROPOSED SEWER (PROPSOED DEVELOPMENT)
- PROPOSED SEWER (PROPOSED DISTRICT COURT)
- SITE BOUNDARY OF PROPOSED DEVELOPMENT
- PROPOSED CONNECTION POINT (PROPSOED DEVELOPMENT)
- PROPOSED CONNECTION POINT (PROPOSED DISTRICT COURT)
- PROPOSED FOUL WATER MANHOLE OF PROPOSED DEVELOPMENT
- PROPOSED FOUL WATER MANHOLE (PROPOSED DISTRICT COURT)

Mark | Date | By | Rev

Job Title: Proposed Redevelopment at Caroline Hill Road, Causeway Bay

Drawing Title: Proposed Connection at Caroline Hill Road, Causeway Bay

ARUP

Scale | Drn. | Date | Chd. | Passed

Drawing Status: FOR REFERENCE

Job No.: 285077

Drawing No.: FIGURE 7

Rev.

Appendix B

Calculation

TABLE B1
Sewage Flow Estimation for Proposed Development

(Based on EPD Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning)

Design Assumption:
Global Peaking Factor, P (Including Stormwater Allowance) as per Table T-5
Global Unit Flow Factors as per Tables T-2 and T-3
Catchment Inflow Factor for Wan Chai (PCIF = 1.0) as per Table T-4

Development Schedule		
Sewage Flow Estimation for Caroline Hill Road - South	**Estimation**	**Remark**
Proposed Development		
(S) Subject Site		
GFA (m^2) for Office use	85,300	
Worker Density (No. of Worker per 100m^2)	5.5	
No. of Employee	4,692	
Unit flow factor (m^3/person/day) - J6 Financial, Insurance, Real Estate & Business Services	0.08	
GFA (m^2) for F&B	10,000	
Worker Density (No. of Worker per 100m^2)	3.5	
No. of Employee	350	
Unit flow factor (m^3/person/day) - J10 Restaurant & Hotels	1.58	
GFA (m^2) for GIC	5,100	
Worker Density (No. of Worker per 100m^2)	3.3	
No. of Employee	168	
Unit flow factor (m^3/person/day) - J11 Community, Social & Personal Services	0.28	
Total ADWF, (m^3/day)	975.44	
70% of Total ADWF, (m^3/day)	682.8	
Total ADWF, (L/s)	11.29	
70% of Total ADWF, (L/s)	7.90	**New Development**
Catchment A		
A1 Silverwood		
Number of flats	81	
Population	219	
Unit flow factor (m^3/person/day) - Residential R2	0.27	
ADWF, (m^3/day)	59.05	
ADWF, (L/s)	0.68	**P_{CIF} = 1 included**
A2 103 Caroline Hill Road (CHR)		
Number of flats	8	
Population	22	
Unit flow factor (m^3/person/day) - Residential R2	0.270	
ADWF, (m^3/day)	5.83	
ADWF, (L/s)	0.07	**P_{CIF} = 1 included**
A3 Caroline Garden		
Number of flats	48	
Population	130	
Unit flow factor (m^3/person/day) - Residential R2	0.270	
ADWF, (m^3/day)	34.99	
ADWF, (L/s)	0.41	**P_{CIF} = 1 included**
Catchment B		
B1 Bowling centre		
GFA (m^2)	5704	
Worker Density (No. of Worker per 100m^2)	3.3	
No. of Employee	188	
Unit flow factor (m^3/person/day) - J11 Community, Social & Personal Services	0.28	
ADWF, (m^3/day)	52.71	
ADWF, (L/s)	0.61	**P_{CIF} = 1 included**
B2 Sport Complex		
GFA (m^2)	8352	
Worker Density (No. of Worker per 100m^2)	3.3	
No. of Employee	276	
Unit flow factor (m^3/person/day) - J11 Community, Social & Personal Services	0.28	
ADWF, (m^3/day)	77.17	
ADWF, (L/s)	0.89	**P_{CIF} = 1 included**
B3 Sports Centre (50%)		
GFA (m^2)	6351	
Worker Density (No. of Worker per 100m^2)	3.3	
No. of Employee	210	
Unit flow factor (m^3/person/day) - J11 Community, Social & Personal Services	0.28	
ADWF, (m^3/day)	29.34	
ADWF, (L/s)	0.34	**P_{CIF} = 1 included**
District Court		
District court - DC tower (connected to FMH7058644)		
ADWF, (m^3/day)	246.85	**According to recent SIA from development of District Court**
Peak Flow, (m^3/s)	0.0229	
District court - FC tower (connected to FSH7003584)		
ADWF, (m^3/day)	95.93	**According to recent SIA from development of District Court**
Peak Flow, (m^3/s)	0.0089	
Proposed Scenario Caroline Hill Road - South		
Total ADWF (m^3/day)	1,038	
Total ADWF (L/s)	12.01	
Contributing Population	3,844	
Global Peaking Factor	6.00	
Total Peak Flow (L/s)	72.07	

Notes:
Employment density shall refer to Commercial and Industrial Floor Space Utilization Survey published by PlanD.
Office = 5.5 employee per 100m^2 of GFA
Retails = 3.5 employee per 100m^2 of GFA
Community, Social & Personal Services = 3.3 employee per 100m^2 of GFA

TABLE B1
Sewage Flow Estimation for Proposed Development

(Based on EPD Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning)

Design Assumption:
Global Peaking Factor, P (Including Stormwater Allowance) as per Table T-5
Global Unit Flow Factors as per Tables T-2 and T-3
Catchment Inflow Factor for Wan Chai (PCIF = 1.0) as per Table T-4

Development Schedule		
Sewage Flow Estimation for Caroline Hill Road - East	**Estimation**	**Remark**
Proposed Development		
(S) Subject Site		
GFA (m^2) for Office use	85,300	
Worker Density (No. of Worker per 100m^2)	5.5	
No. of Employee	4,692	
Unit flow factor (m^3/person/day) - J6 Financial, Insurance, Real Estate & Business Services	0.08	
GFA (m^2) for Retail use	10,000	
Worker Density (No. of Worker per 100m^2)	3.5	
No. of Employee	350	
Unit flow factor (m^3/person/day) - J10 Restaurant & Hotels	1.58	
GFA (m^2) for GIC	5,100	
Worker Density (No. of Worker per 100m^2)	3.3	
No. of Employee	168	
Unit flow factor (m^3/person/day) - J11 Community, Social & Personal Services	0.28	
Total ADWF, (m^3/day)	975.44	
30% of Total ADWF, (m^3/day)	292.63	
Total ADWF, (L/s)	11.29	
30% of Total ADWF, (L/s)	3.39	**New Development**
Catchment B		
B3 Sports Centre (50%)		
GFA (m^2)	6351	
Worker Density (No. of Worker per 100m^2)	3.3	
No. of Employee	210	
Unit flow factor (m^3/person/day) - J11 Community, Social & Personal Services	0.28	
ADWF, (m^3/day)	29.34	
ADWF, (L/s)	0.34	**P_{CIF} = 1 included**
Catchment C		
C1 Confucius Hall Secondary School		
Number of students	360	
Number of staffs	29	
Unit flow factor (m^3/person/day) - students	0.04	
Unit flow factor (m^3/person/day) - staffs	0.28	
ADWF, (m^3/day)	22.52	
ADWF, (L/s)	0.26	**P_{CIF} = 1 included**
C2 So Kon Po Driving Test Centre		
GFA (m^2)	357	
Worker Density (No. of Worker per 100m^2)	3.3	
No. of Employee	12	
Unit flow factor (m^3/person/day) - J11 Community, Social & Personal Services	0.28	
ADWF, (m^3/day)	3.30	
ADWF, (L/s)	0.04	**P_{CIF} = 1 included**
C3 Olypmic House		
GFA (m^2)	4343	
Worker Density (No. of Worker per 100m^2)	3.3	
No. of Employee	143	
Unit flow factor (m^3/person/day) - J11 Community, Social & Personal Services	0.28	
ADWF, (m^3/day)	40.13	
ADWF, (L/s)	0.46	**P_{CIF} = 1 included**

TABLE B1
Sewage Flow Estimation for Proposed Development

(Based on EPD Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning)

Design Assumption:
Global Peaking Factor, P (Including Stormwater Allowance) as per Table T-5
Global Unit Flow Factors as per Tables T-2 and T-3
Catchment Inflow Factor for Wan Chai (PCIF = 1.0) as per Table T-4

Development Schedule			
Sewage Flow Estimation for Caroline Hill Road - East		**Estimation**	**Remark**
Catchment D			
D1	**Disciplined Services Sports and Recreation Club**		
	GFA (m^2)	10440	
	Worker Density (No. of Worker per $100m^2$)	3.3	
	No. of Employee	345	
	Unit flow factor (m^3/person/day) - J11 Community, Social & Personal Services	0.28	
	ADWF, (m^3/day)	96.47	
	ADWF, (L/s)	1.12	**P_{CIF} = 1 included**
D2	**St. Paul Convent**		
	GFA (m^2)	1528	
	Worker Density (No. of Worker per $100m^2$)	3.3	
	No. of Employee	50	
	Unit flow factor (m^3/person/day) - J11 Community, Social & Personal Services	0.28	
	ADWF, (m^3/day)	14.12	
	ADWF, (L/s)	0.16	**P_{CIF} = 1 included**
	Staff Quarters (D)		
D3	Number of units	25	
	Population	68	
	Unit flow factor (m^3/person/day) - Residential R2	0.27	
	ADWF, (m^3/day)	18.23	
	ADWF, (L/s)	0.21	**P_{CIF} = 1 included**
Catchment E			
E1	**Leishun Court**		
	Number of flats	120	
	Population	324	
	Unit flow factor (m^3/person/day) - Residential R2	0.27	
	ADWF, (m^3/day)	87.48	
	ADWF, (L/s)	1.01	**P_{CIF} = 1 included**
E2	**Caroline Hill Court**		
	Number of flats	1146	
	Population	3094	
	Unit flow factor (m^3/person/day) - Residential R2	0.27	
	ADWF, (m^3/day)	835.43	
	ADWF, (L/s)	9.67	**P_{CIF} = 1 included**
E3	**Lei Kwa Court**		
	Number of flats	56	
	Population	151	
	Unit flow factor (m^3/person/day) - Residential R2	0.27	
	ADWF, (m^3/day)	40.82	
	ADWF, (L/s)	0.47	**P_{CIF} = 1 included**
E4	**Lei Ha Court**		
	Number of flats	120	
	Population	324	
	Unit flow factor (m^3/person/day) - Residential R2	0.27	
	ADWF, (m^3/day)	87.48	
	ADWF, (L/s)	1.01	**P_{CIF} = 1 included**
E5	**Lei Wen Court**		
	Number of flats	146	
	Population	394	
	Unit flow factor (m^3/person/day) - Residential R2	0.27	
	ADWF, (m^3/day)	106.43	
	ADWF, (L/s)	1.23	**P_{CIF} = 1 included**
Catchment F			
F1	**Staff Quarters**		
	Number of units	35	
	Population	95	
	Unit flow factor (m^3/person/day) - Residential R2	0.27	
	ADWF, (m^3/day)	25.52	
	ADWF, (L/s)	0.30	**P_{CIF} = 1 included**
Proposed Scenario	Caroline Hill Road - East		
	Total ADWF (m^3/day)	1,656	
	Total ADWF (L/s)	19.17	
	Contributing Population	6,134	
	Global Peaking Factor	5.00	
	Total Peak Flow (L/s)	95.84	

Notes:
Employment density shall refer to Commercial and Industrial Floor Space Utilization Survey published by PlanD.
Office = 5.5 employee per $100m^2$ of GFA
Retails = 3.5 employee per $100m^2$ of GFA
Community, Social & Personal Services = 3.3 employee per $100m^2$ of GFA

Table B2 - Capacity Performance of Existing Sewer

Notes:
(1) Calculate by Colebrook-White Equation

$$\overline{V} = -\sqrt{32gRS_f}\log\left[\frac{k_s}{14.8R} + \frac{1.255\nu}{R\sqrt{32gRS_f}}\right]$$

where ks is roughness value
for clayware slimed sewers, ks equals 3mm
ν is kinematic viscosity of fluid = 1.14 x 10-6 m2/s and g is the gravity = 9.81m/s2
V is the velocity, D is the diameter of the sewer and S is the gradient of the sewer.

Abbreviation:

UP_MAN	Upstream Manhole	CON_POP	Contributing Population	DN_GL	Downstream Ground Level	CAP	Peak Pipe Capacity
DN_MAN	Downstream Manhole	DIA	Diameter	UP_INV	Upstream Invert Level	F/C	Peak Flow/Capacity
ADWF	Average Dry Weather Flow	LEN	Length	DN_INV	Downstream Invert Level		
ACC_ADWF	Accumulated Average Dry Weather Flow	UP_GL	Upstream Ground Level	VEL	Peak Pipe Velocity		

Proposed Development

Manhole		FROM SITE		CON_POP	PEAKING FACTOR	ACC_ADWF (L/s)	Peak Flow (L/s)	Existing Pipe Parameter										
UP_MAN No.	DN_MAN No.	Catchment	Description					DIA (D) (mm)	LEN (m)	UP_GL (mPD)	DN_GL (mPD)	UP_INV (mPD)	DN_INV (mPD)	Gradient (S)	VEL (m/s)	AREA (m^2)	CAP (L/s)	F/C (%)	Adequate Capacity?
Caroline Hill Road - South																			
FMH7019739	FMH7019738	B1, 50%B3	Bowling centre, Sports Centre (50%)	304	8	0.95	7.60	150	44.5	19.69	17.71	18.88	16.82	22	1.67	0.0177	29.54	25.7%	YES
FMH7019738	FMH7019737	B1, 50%B3	Bowling centre, Sports Centre (50%)	304	8	0.95	7.60	150	15.7	17.71	16.77	16.82	15.85	16	1.93	0.0177	34.11	22.3%	YES
FMH7019737	FMH7019719	B1, 50%B3, B2	Bowling centre, Sports Centre (50%), Sport Complex	590	8	1.84	14.74	150	29.6	16.77	15.48	15.85	14.58	23	1.61	0.0177	28.42	51.9%	YES
FMH7019719	FMH7019793	B1, 50%B3, B2	Bowling centre, Sports Centre (50%), Sport Complex	590	8	1.84	14.74	150	12.8	15.48	14.80	14.58	13.86	18	1.84	0.0177	32.55	45.3%	YES
FMH7019793	FMH7019713	B1, 50%B3, B2, A3	Bowling centre, Sports Centre (50%), Sport Complex, Caroline Garden	719	8	2.25	17.98	150	10.1	14.80	14.42	13.86	13.47	26	1.53	0.0177	26.96	66.7%	YES
FMH7019713	FMH7047620	B1, 50%B3, B2, A3	Bowling centre, Sports Centre (50%), Sport Complex, Caroline Garden	719	8	2.25	17.98	150	17.0	14.42	13.46	12.32	11.91	41	1.21	0.0177	21.41	84.0%	YES
FMH7047620	FMH7019711	B1, 50%B3, B2, A3, A2	Bowling centre, Sports Centre (50%), Sport Complex, Caroline Garden, 103 Caroline Hill Road	741	8	2.32	18.52	150	4.0	13.46	13.23	11.91	11.80	38	1.26	0.0177	22.26	83.2%	YES
FMH7019711	FMH7047621	B1, 50%B3, B2, A3, A2	Bowling centre, Sports Centre (50%), Sport Complex, Caroline Garden, 103 Caroline Hill Road	741	8	2.32	18.52	150	4.7	13.23	13.23	11.80	11.64	30	1.42	0.0177	25.04	74.0%	YES
FMH7047621	FSH7003584	B1, 50%B3, B2, A3, A2	Bowling centre, Sports Centre (50%), Sport Complex, Caroline Garden, 103 Caroline Hill Road	741	8	2.32	18.52	150	8.9	13.23	12.54	11.64	11.28	24	1.57	0.0177	27.72	66.8%	YES
FSH7003584	FSH7003582	B1, 50%B3, B2, A3, A2, A1	Bowling centre, Sports Centre (50%), Sport Complex, Caroline Garden, 103 Caroline Hill Road, Silverwood, District Court FC tower	1,315	6	4.11	24.65	300	38.8	12.54	11.13	8.61	6.93	23	2.59	0.0707	183.07	13.5%	YES
FSH7003582	FMH7058242	B1, 50%B3, B2, A3, A2, A1, G	Bowling centre, Sports Centre (50%), Sport Complex, Caroline Garden,103 Caroline Hill Road, Silverwood, District Court FC tower	1,315	6	4.11	24.65	2x225	67.4	11.13	4.44	6.65	6.40	269	0.62	0.0398	49.49	49.8%	YES
FMH7058242	FSH7003581	B1, 50%B3, B2, A3, A2, A1, G, 70%S	Bowling centre, Sports Centre (50%), Sport Complex, Caroline Garden,103 Caroline Hill Road, Silverwood, District Court FC tower, Proposed development (70%)	3,844	6	12.01	72.07	300	13.1	4.44	4.44	6.40	5.98	31	2.23	0.0707	157.51	45.8%	YES
FSH7003581	FSH7003580	B1, 50%B3, B2, A3, A2, A1, G, 70%S	Bowling centre, Sports Centre (50%), Sport Complex, Caroline Garden,103 Caroline Hill Road, Silverwood, District Court FC tower, Proposed development (70%)	3,844	6	12.01	72.07	300	14.4	4.44	4.44	5.98	5.76	65	1.54	0.0707	108.66	66.3%	YES
FSH7003580	FMH7009549	B1, 50%B3, B2, A3, A2, A1, G, 70%S	Bowling centre, Sports Centre (50%), Sport Complex, Caroline Garden,103 Caroline Hill Road, Silverwood, District Court FC tower, Proposed development (70%)	3,844	6	12.01	72.07	300	5.6	4.44	4.44	5.76	5.61	37	2.05	0.0707	144.60	49.8%	YES
FTMH 1	**FMH7058242**	**70%S**	Proposed development (70%)	2,529	6	7.90	47.42	300	3.0	8.00	4.44	6.43	6.40	100	1.24	0.0707	87.87	54.0%	YES
Caroline Hill Road - East																			
FMH7019744	FMH7019743	C1, C2, C3, 50%B3	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%)	353	8	1.1	8.82	225	37.5	13.37	11.84	10.78	10.55	163	0.80	0.0398	31.85	27.7%	YES
FMH7019743	FMH7019742	C1, C2, C3, 50%B3	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%)	353	8	1.1	8.82	225	33.4	11.84	10.48	10.55	9.20	25	2.06	0.0398	81.95	10.8%	YES
FMH7019742	FMH7019726	C1, C2, C3, 50%B3	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%)	353	8	1.1	8.82	225	33.4	10.48	9.20	9.20	7.89	25	2.03	0.0398	80.72	10.9%	YES
FMH7019726	FMH7019725	C1, C2, C3, 50%B3	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%)	353	8	1.1	8.82	225	28.3	9.20	8.17	7.89	6.68	23	2.12	0.0398	84.29	10.5%	YES
FMH7019725	FMH7019724	C1, C2, C3, 50%B3	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%)	353	8	1.1	8.82	225	41.5	8.17	7.45	6.68	6.16	80	1.15	0.0398	45.57	19.4%	YES
FMH7019724	FMH7019720	C1, C2, C3, 50%B3	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%)	353	8	1.1	8.82	225	38.1	7.45	7.03	6.16	5.72	87	1.10	0.0398	43.75	20.2%	YES
FMH7019720	FMH7009996	C1, C2, C3, 50%B3, F	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters	447	8	1.4	11.19	225	40.6	7.03	6.57	5.72	5.00	56	1.36	0.0398	54.24	20.6%	YES
FMH7009996	FMH7058640	C1, C2, C3, 50%B3, F, D1, D2	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent	857	8	2.68	21.43	400	3.1	6.57	6.58	5.00	5.00	2067	0.33	0.1257	41.34	51.8%	YES
FMH7058640	FSH7003590	C1, C2, C3, 50%B3, F, D1, D2	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent	857	8	2.68	21.43	400	10.1	6.58	6.42	5.00	4.84	63	1.90	0.1257	238.28	9.0%	YES
FSH7003590	FSH7003589	C1, C2, C3, 50%B3, F, D1, D2	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent	857	8	2.68	21.43	400	9.9	6.42	6.34	4.84	4.72	82	1.66	0.1257	208.38	10.3%	YES
FSH7003589	FSH7003588	C1, C2, C3, 50%B3, F, D1, D2	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent	857	8	2.68	21.43	400	28.4	6.34	6.03	4.72	4.35	77	1.72	0.1257	216.05	9.9%	YES
FSH7003588	FMH7058641	C1, C2, C3, 50%B3, F, D1, D2	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent	857	8	2.68	21.43	400	3.3	6.03	5.94	4.35	3.60	4	7.19	0.1257	903.58	2.4%	YES
FMH7058641	FMH7058642	C1, C2, C3, 50%B3, F, D1, D2	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent	857	8	2.68	21.43	400	21.9	5.94	5.70	3.60	3.37	95	1.54	0.1257	193.94	11.0%	YES
FMH7058642	FMH7058643	C1, C2, C3, 50%B3, F, D1, D2	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent	857	8	2.68	21.43	400	8.4	5.70	5.70	2.60	2.53	120	1.37	0.1257	172.71	12.4%	YES
FMH7058643	FMH7058644	C1, C2, C3, 50%B3, F, D1, D2	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent	857	8	2.68	21.43	400	22.4	5.70	5.51	2.53	2.36	134	1.30	0.1257	163.34	13.1%	YES
FMH7058644	FSH7003587	C1, C2, C3, 50%B3, F, D1, D2, 30%S	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent, District Court DC Tower, Proposed development (30%)	2,855	6	8.92	53.53	400	12.6	5.51	5.39	2.36	2.25	112	1.43	0.1257	179.19	29.9%	YES
FSH7003587	FSH7003586	C1, C2, C3, 50%B3, F, D1, D2, 30%S	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent, District Court DC Tower, Proposed development (30%)	2,855	6	8.92	53.53	400	6.2	4.53	5.27	2.25	2.20	124	1.35	0.1257	169.90	31.5%	YES
FSH7003586	FMH7058647	C1, C2, C3, 50%B3, F, D1, D2, 30%S	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent, District Court DC Tower, Proposed development (30%)	2,855	6	8.92	53.53	400	26.7	5.27	4.97	2.20	2.14	445	0.71	0.1257	89.51	59.8%	YES
FMH7058647	FSH7003585	C1, C2, C3, 50%B3, F, D1, D2, 30%S, 50%E2, 50%E3	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent, District Court DC Tower, Proposed development (30%), Caroline Hill Court (50%), Lei Kwa Court (50%)	4,478	6	13.99	83.96	400	19.6	4.97	4.72	2.14	2.09	392	0.76	0.1257	95.39	88.0%	YES
FSH7003585	FMH7058340	C1, C2, C3, 50%B3, F, D1, D2, 30%S, E2, E3, E5, E4, 50%E1	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent, District Court DC Tower, Proposed development (30%), Caroline Hill Court, Lei Kwa Court, Lei Wen Court, Lei Ha Court, Leishun Court (50%)	6,981	5	21.81	109.07	500	8.6	4.72	4.69	2.09	2.07	430	0.84	0.1963	164.90	66.1%	YES
FMH7058340	FSH7004660	C1, C2, C3, 50%B3, F, D1, D2, 30%S, E2, E3, E5, E4, 50%E1	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent, District Court DC Tower, Proposed development (30%), Caroline Hill Court, Lei Kwa Court, Lei Wen Court, Lei Ha Court, Leishun Court (50%)	6,981	5	21.81	109.07	500	32.5	4.69	4.19	2.07	2.00	464	0.81	0.1963	158.67	68.7%	YES
FSH7004660	FSH7004661	C1, C2, C3, 50%B3, F, D1, D2, 30%S, E2, E3, E5, E4, 50%E1	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent, District Court DC Tower, Proposed development (30%), Caroline Hill Court, Lei Kwa Court, Lei Wen Court, Lei Ha Court, Leishun Court (50%)	6,981	5	21.81	109.07	500	23.2	4.19	4.09	2.00	1.76	97	1.77	0.1963	348.44	31.3%	YES
FSH7004661	FSH7004662	C1, C2, C3, 50%B3, F, D1, D2, 30%S, E2, E3, E5, E4, 50%E1, D3	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent, District Court DC Tower, Proposed development (30%), Caroline Hill Court, Lei Kwa Court, Lei Wen Court, Lei Ha Court, Leishun Court (50%), Staff Quarters (D)	7,048	5	22.03	110.13	500	33.4	4.09	4.09	1.76	1.40	93	1.81	0.1963	355.68	31.0%	YES
FSH7004662	FMH7010025	C1, C2, C3, 50%B3, F, D1, D2, 30%S, E2, E3, E5, E4, 50%E1, D3	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent, District Court DC Tower, Proposed development (30%), Caroline Hill Court, Lei Kwa Court, Lei Wen Court, Lei Ha Court, Leishun Court (50%), Staff Quarters (D)	7,048	5	22.03	110.13	500	4.2	4.09	4.08	1.40	1.39	420	0.85	0.1963	166.85	66.0%	YES
FTMH 2	**FMH7058644**	**30%S**	Proposed development (30%)	1,084	6	3.39	20.32	225	3.0	8.00	5.51	2.39	2.36	100	1.02	0.0398	40.70	49.9%	YES

Appendix C

Design of Sewerage System from District Court Complex at Caroline Hill Road, ArchSD

CUNDALL

JOB NUMBER / FILE: 1032463

CALCULATION NUMBER: 01

DRAWING REFERENCE:

JOB TITLE:

Sewerage Impact Assessment for Discharge of Town Planning Board Approval Condition(s) for D&B District Court at Caroline Hill Road

REV:	CALCULATION BY:	DATE:	CHECKED BY:	VERIFIED BY:
E	R. Leung	22 Aug 2024	H. Wong	H. Wong

CALCULATION:

A01 Calculation of Sewage Loading from Site

Catchment	Sewer Manhole No.	Buildings in Zone	Type of Use	Updated Population (Updated on 22 March 2024)	Handwashing Flowrate (L/min)	Duration of Each Handwash (sec)	Flushing Demand (L/Flush)	Unit Flow Factor (m^3/day/ person)	Estimated Average Dry Weather Flow (m^3/day) (w/o relocation)	Remarks
Site	FMH7058644	East (DC Tower) - JJO and Staff	Institutional	741	-	-	-	0.28	207.48	Unit Flow Factor: GESF - Combined UFF of commercial employees and commercial activities in J11 Community, Social & Personal Services is 0.280 m3/person/day. Worker density: Population from the latest GBP(san-fit schedule) adopted in BEAM Plus.
		East (DC Tower) - Public	Institutional	5026	4.0	20.0	6.5	0.0078	39.37	Unit Flow Factor: Based on the BEAM Plus for New Buildings Version 2.0 WU P1 and WU7 assumption for water consumption calculation. Worker density: Population from the latest GBP(san-fit schedule) adopted in BEAM Plus.
Site	FSH7003584	West (FC Tower) - JJO and Staff	Institutional	311	-	-	-	0.28	87.08	Unit Flow Factor: GESF - Combined UFF of commercial employees and commercial activities in J11 Community, Social & Personal Services is 0.280 m3/person/day. Worker density: Population from the latest GBP(san-fit schedule) adopted in BEAM Plus.
		West (FC Tower) - Public	Institutional	1130	4.0	20.0	6.5	0.0078	8.8517	Unit Flow Factor: Based on the BEAM Plus for New Buildings Version 2.0 WU P1 and WU7 assumption for water consumption calculation. Worker density: Population from the latest GBP(san-fit schedule) adopted in BEAM Plus.

銅鑼灣
Causeway Bay



Annex G
Approved Traffic Review Report

12/05/2022

Reference number CHK50603110/CHC/L2200701/sys

PROPOSED COMMERCIAL DEVELOPMENT ON INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG

TRAFFIC REVIEW REPORT

SYSTRA MVA

IDENTIFICATION TABLE	
Project	Proposed Commercial Development on Inland Lot No. 8945, Causeway Bay, Hong Kong
Study	Traffic Review Report
Type of document	Revised Final Report
Date	12/05/2022
File name	L2200527 CHR_ Revised Traffic Review (20220414).docx
Reference number	CHK50603110/CHC/L2200701/sys

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1. INTRODUCTION

1.1 Background

1.1.1 The subject site with a total site area of approximately 14,802m^2 is situated Inland Lot No. 8945, Caroline Hill Road, Causeway Bay. The location of the subject site is indicated in **Drawing No. 1.1**.

1.1.2 The subject site was zoned "Commercial (2)" in the approved Wong Nai Chung Outline Zoning Plan (the WNC OZP). It was planned for commercial use with provision of Government Accommodation (including a child care centre, a day care centre for elderly and a district health centre), laybys for minibus and a public vehicle park (PVP).

1.1.3 Under the lease of the subject site (the Lease), a development with the total gross floor area (GFA) for of not less than 60,000m^2 and not exceed 100,000m^2 is permitted provided that the GFA for non-industrial use other than Government Accommodation, hotel and office uses is not exceeding 10,000m^2. Subject to the approval of Town Planning Board by considering the individual merits of the development, the provision of additional government, institution, community facilities would be allowed.

1.1.4 To support the developments at the subject site (the Development) and the District Court site (the District Court), a road scheme with road improvement works at Caroline Hill Road, Link Road, Hoi Ping Road and Leighton Road (the Road Scheme) was proposed in the Highways Department (HyD)'s Traffic Review Report in 2019, and Road Scheme was gazetted and authorized in December 2020. The formation of the Green Areas of the subject site as required under the Lease is subject to the Road Scheme.

1.1.5 To serve the vehicular access to the Developments as well as the District Court, it is required to form a new access road at the Pink Hatched Blue Strata (PHB Strata) of the subject site under the Lease.

1.1.6 As per the requirement of the Lease, i.e. the Special Condition No. (65)(a) in the Conditions of Sale, a traffic review report is required for submission to the Director for his approval. The traffic review report shall include the review and projection of the vehicular and pedestrian traffic conditions of the Green Areas, the PHB Strata and the local road network adjacent to and in the vicinity of the lot and the projected vehicular and pedestrian traffic for the future development at the lot and identification of appropriate traffic mitigation measures, road routings, adjustments, designs, improvement and other measures and works.

1.1.7 MVA Hong Kong Limited (MVA) is commissioned as a traffic consultant to conduct a traffic study and prepare a traffic review report.

1.1.8 The purpose of this study is to assess the future traffic condition upon the development at the subject site by taking into account the Road Scheme and identify appropriate traffic mitigation measures, adjustment to the design of the Road Scheme and the design of new access road.

1.2 Study Objectives

1.2.1 The main objectives of the study are as follows:

- To present the details on the Development such as the development parameters, internal transport provisions, proposed layout plan and access arrangements;
- To review the Road Scheme and discuss the proposed new access road layout at the PHB Strata;
- To undertake manual classified count traffic surveys and pedestrian head count surveys to determine the existing traffic and pedestrian conditions in the vicinity of the subject site;
- To study and assess the existing travel patterns, junction capacities in the local area adjacent to the subject site;
- To identify the traffic and pedestrian generation of subject site under the proposed development schedule and carry out distribution and assignment of the generated vehicular and pedestrian traffic;
- To estimate the future traffic and pedestrian flows for the design year on the surrounding local road and pedestrian networks;
- To assess the future traffic and pedestrian conditions of the surround local road and pedestrian networks of the design year; and
- To recommend traffic improvement measures to alleviate the foreseeable traffic problems on the surrounding local road networks, if necessary.

1.3 Structure of the Report

1.3.1 Following this introductory chapter, there are seven further chapters.

1.3.2 **Chapter 2** – *The Development*, which presents the development schedules of the Development, the internal transport provisions, the proposed layout plan and access arrangements.

1.3.3 **Chapter 3** – *The Road Scheme and New Access Road*, which review the Road Scheme and discuss the proposed road scheme for the Green Areas and the new access road at the PHB Strata.

1.3.4 **Chapter 4** – *Existing Traffic Conditions*, which describes the existing road network, presents the summary of traffic count surveys and assesses the existing traffic condition.

1.3.5 **Chapter 5 –** *Future Traffic Forecasts*, which discusses the design year and the future scenarios for assessments in this study, review the future road network in the vicinity of the subject site, anticipates the potential traffic generation and attraction of the Development at the subject site, summarises the methodology for future traffic forecasts, and presents the traffic forecast for the design year.

1.3.6 **Chapter 6 –** *Traffic Impact Assessment*, which presents the findings of the traffic impact assessment in the future design year and recommends traffic mitigation measures if necessary.

1.3.7 **Chapter 7 –** *Pedestrian Facilities and Assessment*, which reviews the existing and future pedestrian facilities and presents results and findings from the pedestrian assessments.

1.3.8 **Chapter 8 –** *Summary and Conclusion*, which summarizes the study findings and presents the conclusion for this traffic review report.

2. THE DEVELOPMENT

2.1 Proposed Development Schedule

2.1.1 With the proposed additional GIC facilities, i.e. the Performing Arts and Cultural Facilities for the benefit to the community, the total GFA of the Development is about 102,000m^2. The proposed development schedule are summarised in **Table 2.1**.

Table 2.1 Proposed Development Schedule

Site Area		14,802 m^2
GFA	Office	85,000 m^2
	Retail	10,000 m^2
	Lay-bys for Light Buses	2,000 m^2
	Government Accommodation (comprising a Child Care Centre, a Day Care Centre for the Elderly and a District Health Centre)	3,000 m^2
	Additional GIC facilities: Performing Arts and Cultural Facilities	2,000 m^2
	Total	**102,000 m^2**

Note: the about figures would be subject to further adjustment in the detail design

2.2 Internal Transport Provision

2.2.1 Based on the development schedule as listed in **Table 2.1**, the provisions of internal facilities for the Development including the light bus lay-bys and the Public Vehicle Park as required in accordance with the Lease are reviewed, and the proposed provisions are shown in **Table 2.2**.

Table 2.2 Summary on Internal Transport Facilities

Transport Facilities	Development Component	Development Parameters	Lease Requirement	Provision
Private Parking and Loading/Unloading				
Private Car Parking Space	Office	85,000 m^2	1 space for every 150 m^2 or part thereof of the first 15,000 m^2 GFA and 1 space for every 200 m^2 or part thereof of the remaining GFA for office purpose (1)	450
	Retail & Additional GIC Facilities	12,000 m^2	1 space for every 200 m^2 for non-industrial (excluding residential, office, hotel, godown and petrol filling station) purposes (2)	60
	Total			**510**
Motorcycle Parking Spaces	Office	85,000 m^2	10% of the total number of the office parking spaces (3)	45
	Retail & Additional GIC Facilities	12,000 m^2	10% of the total number of the non-industrial parking spaces (4)	6
	Total			**51**

Table 2.2 Summary on Internal Transport Facilities (Cont'd)

Transport Facilities	Development Component	Development Parameters	Lease Requirement	Provision
Layby for Taxi and Private Car	Office	85,000 m^2	1 space for every 20,000 m^2 GFA for office purpose (5)	5
Loading/ unloading Bays	Office	85,000 m^2	1 space for every 2,000 m^2 GFA for office purpose (6) (7)	HGV: 15 LGV: 27 (9) **Total: 42** (10)
	Retail & Additional GIC Facilities	12,000 m^2	1 space for every 800 m^2 GFA for non-industrial (excluding residential, office, hotel, godown and petrol filling station) purposes (6) (8)	HGV: 6 LGV: 10 **Total: 16** (10)
	Total			**HGV: 21** **LGV: 37** **Total: 58**
Public Vehicle Park and Light Bus Lay-bys				
Private Car Parking Spaces	Public Vehicle Park		100 spaces for the parking of private cars (11)	100
Goods Vehicle Parking Spaces			• 15 spaces for the parking of light goods vehicles (10) • 5 spaces for the parking of medium goods vehicles and heavy goods vehicles (11)	MGV/HGV: 5 LGV: 15 **Total: 20**
Coaches Parking Spaces			5 spaces for the parking of coaches (11)	5
Light Bus Lay-bys	Light Bus Lay-bys		4 lay-bys for the picking up and setting down of passengers from light buses (12)	4
Parking and Loading/unloading for Government Accommodation				
Loading/ unloading Bays	Day Care Centre for the Elderly		Not specified	1 (13)(14)
	Child Care Centre			1 (13)(14)
Light Buses Parking Spaces	Day Care Centre for the Elderly		3 spaces for the parking of light buses and belonging to the occupiers of the day care centre for the elderly (15)	3
	District Health Centre		1 space for the parking of light buses and belonging to the occupiers of the district health centre (16)	1
Private Car Parking Space	District Health Centre		1 space for the parking of motor vehicles and belonging to the occupiers of the district health centre (17)	1

Notes:
(1) Refer to Clause 43(a)(i)(I) of the Conditions of Sale
(2) Refer to Clause 43(a)(i)(II) of the Conditions of Sale
(3) Refer to Clause 43(c)(i)(I) of the Conditions of Sale
(4) Refer to Clause 43(c)(i)(II) of the Conditions of Sale
(5) Refer to Clause 44(a)(ii)(I) of the Conditions of Sale
(6) Refer to Clause 44(b)(i) of the Conditions of Sale, 65% (in numbers) of such spaces shall be used for the loading and unloading of light goods vehicles [7m(L) x 3.5m(W) x 3.6m(H)] and 35% (in numbers) of such spaces shall be used for loading and unloading of heavy goods vehicles [11m(L) x 3.5m(W) x 4.7m(H)]
(7) Refer to Clause 44(a)(i)(I) of the Conditions of Sale
(8) Refer to Clause 44(a)(i)(II) of the Conditions of Sale
(9) Including 1 loading bay shared with Child Care Centre and Day Care Centre for the Elderly
(10) Refer to Clause 46 of the Conditions of Sale, loading and unloading provisions, the Purchaser may increase or reduce the respective numbers of spaces required to be provided under the said Special Conditions by not more than 5% provided that the total number of spaces so increased ore reduced shall not exceed 50
(11) Refer to Clause 49(a) of the Conditions of Sale
(12) Refer to Clause 44(a)(iii) of the Conditions of Sale
(13) To be reserved out of the LGV loading/unloading bays for private use
(14) Refer to Clause 44(b)(i) of the Conditions of Sale
(15) Refer to Clause 23(a)(ii)(II) of the Conditions of Sale
(16) Refer to Clause 23(a)(iii)(III) of the Conditions of Sale
(17) Refer to Clause 23(a)(iii)(II) of the Conditions of Sale

2.3 Vehicular Access and Internal Traffic Arrangement

Vehicular Access

2.3.1 To facilitate the access of the Development as well as the future District Court, a new access road connecting Caroline Hill Road (East) and Caroline Hill Road (West) will be provided at the PHB Strata of the subject site. The proposed layout and traffic arrangement of the new access road will be discussed in **Section 3**.

2.3.2 For the purpose of serving different accesses to the various internal transport facilities to be provided in the Development, two vehicular accesses are planned at the on the new access road via the points as allowed under the Lease (i.e. x_1, y_1, z_1 and u_1, v_1, w_1). It is proposed that the eastern access of the Development will mainly serve the accesses for light buses, goods vehicles and coaches while the western access will mainly serve the accesses for private cars and taxis. The proposed access arrangement and the key ingress and egress traffic routes of the Development are shown in **Drawing No. 2.1** and **Drawing No. 2.2** respectively.

Internal Traffic Arrangement

2.3.3 Off-street pick-up/drop-off laybys for private cars and taxis would be provided at G/F via the western vehicular access as shown in **Drawing No. 2.1**.

2.3.4 It is planned that the light bus lay-bys would be located at B1/F and the laybys can be accessed via the eastern vehicular access as shown in **Drawing No. 2.3**.

2.3.5 Except for the one loading/unloading bay located at G/F to serve special operational needs, all the ancillary loading/unloading area would be provided at B2/F and to be access via the eastern vehicular access as shown in **Drawing No. 2.4**.

2.3.6 The public vehicle park for goods vehicles and coaches and the lay-by, car parking spaces and loading/unloading area for the Tower 3 GIC facilities will be provided at B3/F, and their ingress and egress would be served by the eastern car ramp via the eastern vehicular access. Whilst, B3/F would also provide ancillary and public car parks for private cars, and their ingress and egress would be served by the western car ramp via the western vehicular access. The internal traffic arrangement at B3 is shown in **Drawing No. 2.5**.

2.3.7 The car park floors at B4/F and B5/F would serve ancillary parking only and to be connected with B3/F by the internal car ramp on the western side as shown in **Drawing No. 2.6**.

2.3.8 To avoid obstruction to the public road due to the waiting vehicles to enter the car park, the entry gates of the car park would be located at B3/F in order to allow sufficient length for potential vehicle queueing as illustrated in **Drawing No. 2.7**.

2.3.9 With the provisions of two separated two-way car ramps, flexibility in car park access arrangement would be allowed to serve different management plans, e.g. during the peak period when the car park is fully utilized. As demonstrated in **Drawing No. 2.7**, it would be feasible to allow vehicle queuing at car ramp without obstructing the monthly parking users to access the car park by operating the western car ramp for ingress only. Since the internal connection between the public and ancillary car parks at B3/F would be reserved, egress of all car park related traffic can be managed to leave the car park via the eastern car ramp. The details of car park management plan would be further developed in the detail design stage to ensure the internal traffic can be properly managed.

2.4 Development Traffic

2.4.1 The potential traffic generation and attraction of the Development are estimated by the proposed development schedule as listed in **Table 2.1**, the trip rates as made reference to / derived from the mean trip rates as stipulated in TPDM as well as the consultant's in-house trip rates as obtained from various traffic surveys. The adopted trip rates and the estimated traffic generation and attraction of the Development are presented in **Table 2.3**. The details of the surveyed trip rates at the reference sites are attached in **Appendix F**.

Table 2.3 Estimated Traffic Generation of the Development in Design Scenario of 2031

Development Component	Weekday						Weekend	
	AM Peak		Noon Peak		PM Peak		Noon Peak	
	GEN	ATT	GEN	ATT	GEN	ATT	GEN	ATT
Adopted Trip Rates								
Office [1] [2] (pcu/hr/100 m^2)	0.1703	0.2452	0.1835	0.1748	0.1573	0.1175	0.1431	0.1589
Retail [3] [4] (pcu/hr/100 m^2)	0.2296	0.2434	0.3617	0.5302	0.3100	0.3563	0.2821	0.4817
GIC - Performing Arts and Cultural Facilities [5] (pcu/hr/100 m^2)	0.0600	0.0920	0.0626	0.1024	0.1644	0.0569	0.1492	0.1723
Child Care Centre [6] (pcu/hr/100 m^2)	0.9434	1.0377	0.5660	0.6604	0.2830	0.2830	0.0943	0.0943
Day Care Centre for the Elderly [7] (pcu/hr/100 m^2)	1.5094	0.5660	0.2830	1.1321	1.1321	1.3208	0.3774	0.5660
District Health Centre [8] (pcu/hr/100 m^2)	0.1770	0.3540	0.5310	0.7965	0.0973	0.0973	0.0885	0.0885
Public Vehicle Park [9] (pcu/hr/parking space)	0.0929	0.5897	0.2340	0.2000	0.4619	0.1500	0.6000	0.3220
Lay-bys for Light Bus [10] (pcu/hr/layby)	18	18	18	18	18	18	18	18
Estimated Trip Generation and Attraction of the Development (pcu/hr)								
Office (85,000 m^2)	145	208	156	149	134	100	122	135
Retail (10,000 m^2)	23	24	36	53	31	36	28	48
GIC - Performing Arts and Cultural Facilities (2,000 m^2)	1	2	1	2	3	1	3	3
Child Care Centre (850 m^2)	8	9	5	6	2	2	1	1
Day Care Centre for the Elderly (550 m^2)	8	3	2	6	6	7	2	3
District Health Centre (1,600 m^2)	3	6	8	13	2	2	1	1
Public Vehicle Park (125 spaces)	12	74	29	25	58	19	75	40
Lay-bys for Light Bus (4 Nos.)	72	72	72	72	72	72	72	72
Total	**272**	**398**	**309**	**326**	**308**	**239**	**304**	**303**

Notes: (1) TPDM mean trip rates for office adopted for Weekday AM and PM Peaks

(2) Trip rates for weekday and weekend noon peaks are derived from the surveyed variance to the weekday PM peak trips of office development and applied onto the TPDM trip rates for office

(3) TPDM mean trip rates for retail/shopping complex

(4) Trip rates for weekday and weekend noon peaks are derived from the surveyed variance to the weekday PM peak trips of retail development and applied onto the TPDM trip rates for retail/shopping complex

(5) Trip rates derived from the consultant's surveyed highest trip rates from Yao Tsung-I Academy, Kwai Tsing Theatre and M+

(6) Trip rates derived from the consultant's surveyed trip rates from SIA Shaukiwan Day Creche

(7) Trip rates derived from the consultant's surveyed trip rates from T.W.G.Hs. Anita Mui Day Care Centre for the Elderly
(8) Trip rates derived from the consultant's surveyed trip rates from Central District Health Centre General Outpatient Clinic
(9) Trip rates derived from the consultant's surveyed trip rates from ex-Murray Road Multi-storey Car Park
(10) Trip rates derived from the average peak frequencies of public light bus services in the vicinity.

2.4.2 As shown in **Table 2.3**, it is estimated that the Development would potentially generated a two-way traffic flow of about 670 pcus/hr during the AM peak hour, 635 pcus/hr during the weekday noon peak hour, 547 pcus/hr during the weekday PM peak hour and 607 pcus/hr during the weekend noon peak.

3. THE ROAD SCHEME AND NEW ACCESS ROAD

3.1 The Road Scheme

3.1.1 To support the Development and the future District Court, a Road Scheme with road improvement works at Caroline Hill Road, Link Road, Hoi Ping Road and Leighton Road was proposed in the Highways Department (HyD)'s Traffic Review Report in 2019 as exhibited in **Appendix A**. The Road Scheme was subsequently gazetted and authorized in December 2020.

3.1.2 The improvement works covered by the Road Scheme include:

(i) modification of the existing priority junction at Caroline Hill Road (West) / Link Road into a roundabout-like junction;
(ii) provision of an additional left-turning traffic lane at the eastern entry arm of Leighton Road at the junction of Leighton Road / Caroline Hill Road (West) / Hoi Ping Road;
(iii) modification of the "left-turn" lane to "left-turn and right turn" shared lane at the entry arm of Caroline Hill Road of the junction of Leighton Road / Caroline Hill Road (West) / Hoi Ping Road; and
(iv) road widening at Caroline Hill Road (East) near its junction with the future new access road to provide right-turn pocket and a refuge island for pedestrian.

3.1.3 The road layout at the Green Areas (the proposed road scheme) is reviewed and proposed with reference the Road Scheme as presented in **Drawing No. 3.1**.

3.1.4 For further improvement to the future traffic condition at the junction at Caroline Hill Road and Link Road, the proposed road scheme has included the proposed signal control arrangement at the junction.

3.2 The New Access Road

3.2.1 As required under the Lease, a new access road shall be formed at the PHB Strata to facilitate accesses to the Development and the future District Court for both the vehicular and pedestrian traffic.

3.2.2 The proposed layout of the new access road has taken into account the accessibility of both the future vehicular and pedestrian traffic as well as the constraint of the tree canopy of an old and valuable tree at the District Court site near the PHB Strata.

3.2.3 The new access road is proposed to connect with future road layout at the Green Areas on both the eastern and western section of Caroline Hill Road with provisions of two traffic lanes for each direction and minimum 3m wide footpaths on both sides.

3.2.4 To facilitate the north-south pedestrian movements along Caroline Hill Road, pedestrian crossings with provision of refuge islands will be provided at both ends of the new access road. Given that the overall length of the new access road is about 150m, an intermediate pedestrian crossing point is also proposed.

3.2.5 The proposed layout of the new access road is shown in **Drawing No. 3.1**.

4. EXISTING TRAFFIC SITUATION

4.1 Existing Road Network

4.1.1 Access of vehicular traffic to the subject site is mainly served by the district distributor Leighton Road, the local distributor Caroline Hill Road and the local road Link Road.

4.1.2 Leighton Road serves the southern part of Causeway Bay as a major east-west connection. It connects Causeway Road and Tung Lo Wan Road to the east and Morrison Hill Road to the west. Leighton Road is generally a two-way road with 1 to 3 traffic lanes in each direction, except that the road section between Tung Lo Wan Road and Caroline Hill Road (East) is a one-way carriageway running along southbound direction.

4.1.3 Caroline Hill Road is a U-shaped local distributor serving the developments near Hong Kong Stadium. Its western section, i.e. road section connecting the junction of Leighton Road / Hoi Ping Road, is a single 2-lane carriageway running in north-south direction. Its eastern section, i.e. road section connecting the junction of Leighton Road / Pennington Street / Yun Ping Road, is mainly a one-way northbound road between Stadium Path and Cotton Path.

4.1.4 Link Road is a single-2 carriageway connecting Caroline Hill Road (West) with Broadwood Road to the south. It mainly serves the local residential developments and is one of the corridors leading to the Jardine's Lookout area.

4.1.5 The existing road network in the vicinity of the subject site is shown in **Drawing No. 4.1**.

4.2 Existing Traffic Condition

4.2.1 To obtain the update traffic flows for the review on the existing traffic condition in the vicinity of the subject site, traffic surveys in the form of manual classified count were conducted to examine 17 junctions along the anticipated ingress and egress traffic routes of the subject site.

4.2.2 The traffic surveys were carried out between the hours of 08:00-10:00, 11:30-13:30 and 17:30-19:30 on a typical weekday and 11:30-13:30 on a weekend (Saturday) in mid-September 2021.

4.2.3 The locations of these junctions are identified in **Drawing No. 4.1** and **Table 4.1** below.

Table 4.1 Critical Junction of Assessment

Ref No.	Junctions	Method of Control	Drawing No.
J1	Hennessy Road / Percival Street	Signalised	4.2
J2	Matheson Street / Percival Street / Russell Street	Signalised	4.3
J3	Leighton Road / Percival Street / Hysan Avenue	Signalised	4.4
J4	Leighton Road / Hysan Avenue / Leighton Lane	Signalised	4.4
J5	Leighton Road / Caroline Hill Road (West) / Hoi Ping Road	Signalised	4.5
J6	Caroline Hill Road (West) / Link Road	Priority	4.6
J7	Caroline Hill Road / Cotton Path	Priority	4.7
J8	Leighton Road / Yun Ping Road / Pennington Street / Caroline Hill Road (East)	Signalised	4.8
J9	Causeway Road / Leighton Road / Tung Lo Wan Road / Irving Street	Signalised	4.9

Table 4.1 Critical Junction of Assessment (Cont'd)

Ref No.	Junctions	Method of Control	Drawing No.
J10	Causeway Road / Moreton Terrace	Signalised	4.10
J11	Pennington Street / Irving Street / Jardine's Bazaar	Signalised	4.11
J12	Link Road / Broadwood Road	Signalised	4.12
J13	Broadwood Road / Ventris Road	Priority	4.13
J14	Wong Nai Chung Road / Sports Road	Signalised	4.14
J15	Leighton Road / Wong Nai Chung Road	Signalised	4.15
J16	Tung Lo Wan Road / Eastern Hospital Road	Signalised	4.16
J17	Tung Lo Wan Road / Moreton Terrace	Signalised	4.17
J19	Hysan Avenue / Hoi Ping Road	Priority	4.18
J20	Tung Lo Wan Road / Tai Hang Road	Priority	4.17

4.2.4 Observed traffic data indicated that the AM, Noon and PM peak hour flows occurred during hours of 08:15-09:15, 12:00-13:00 and 17:45-18:45 respectively on a typical weekday, and the weekend peak hour flows occurred during the hours of 11:30-12:30. The weekday and weekend observed traffic flows are shown in **Drawing Nos. 4.19** and **4.20** respectively. The existing layouts of the junctions to be assessed are shown in **Drawing Nos. 4.2** to **4.18**.

4.2.5 To evaluate the existing traffic condition in the vicinity of the subject site, the operational performance of the identified junctions were assessed based on the observed traffic flows and their existing junction layouts and control methods. The junction assessment results are summarised in **Table 4.2**. The details of junction assessments are attached in **Appendix D**.

Table 4.2 Year 2021 Existing Operational Performance of Critical Junctions

Ref No.	Junctions	Method of Control	Year 2021 RC/RFC[(1)]			
			Weekday			Weekend
			AM	Noon	PM	Noon
J1	Hennessy Road / Percival Street	Signal	150%	83%	81%	68%
J2	Matheson Street / Percival Street / Russell Street	Signal	408%	297%	363%	270%
J3	Leighton Road / Percival Street / Hysan Avenue	Signal	67%	39%	52%	33%
J4	Leighton Road / Hysan Avenue / Leighton Lane	Signal	310%	302%	274%	169%
J5	Leighton Road / Caroline Hill Road (West) / Hoi Ping Road	Signal	21%	20%	32%	26%
J6	Caroline Hill Road (West) / Link Road	Priority	0.34	0.43	0.43	0.52
J7	Caroline Hill Road / Cotton Path	Priority	0.13	0.21	0.07	0.15
J8	Leighton Road / Yun Ping Road / Pennington Street / Caroline Hill Road (East)	Signal	37%	37%	24%	23%
J9	Causeway Road / Leighton Road / Tung Lo Wan Road / Irving Street	Signal	64%	46%	49%	46%
J10	Causeway Road / Moreton Terrace	Signal	49%	37%	29%	39%
J11	Pennington Street / Irving Street / Jardine's Bazaar	Signal	239%	198%	179%	191%
J12	Link Road / Broadwood Road	Signal	26%	34%	28%	24%
J13	Broadwood Road / Ventris Road	Priority	0.54	0.55	0.55	0.54
J14	Wong Nai Chung Road / Sports Road	Signal	201%	165%	170%	150%

Table 4.2 Year 2021 Existing Operational Performance of Critical Junctions (Cont'd)

Ref No.	Junctions	Method of Control	Year 2021 RC/RFC[1]			
			Weekday			Weekend
			AM	Noon	PM	Noon
J15	Leighton Road / Wong Nai Chung Road	Signal	44%	39%	37%	40%
J16	Tung Lo Wan Road / Eastern Hospital Road	Signal	71%	66%	94%	86%
J17	Tung Lo Wan Road / Moreton Terrace	Signal	47%	29%	35%	86%
J19	Hysan Avenue / Hoi Ping Road	Priority	0.42	0.41	0.42	0.40
J20	Tung Lo Wan Road / Tai Hang Road	Priority	0.66	0.68	0.70	0.35

Note: (1) RC = Reserve Capacity for Signal Junction
RFC = Ratio of Flow to Capacity for Priority Junction

4.2.6 The assessment results in **Table 4.2** indicate that all critical junctions are at present operating with adequate capacities during the AM, Noon and PM peaks on weekday, and Noon peak on weekend.

4.2.7 Apart from the junction assessment, queue length analysis is also conducted for the identified signal junctions. The queue length analysis results are summarised in below **Table 4.3.** The details of the queue length analysis and results are attached in **Appendix E**.

Table 4.3 Average Queue Length in Year 2021 Existing Scenario

Ref No.	Junctions	Movement	Capacity (m)	Average Queue Length (m)			
				Existing Scenario			
				Weekday			Weekend
				AM	Noon	PM	Noon
J1	Hennessy Road / Percival Street	Hennessy Road WB	150	24	28	33	29
		Hennessy Road EB	110	21	17	21	22
		Percival Street SB	34	23	25	26	26
J2	Matheson Street / Percival Street / Russell Street	Percival Street SB	65	15	19	19	20
		Matheson Street NB	65	7	10	11	10
J3	Leighton Road / Percival Street / Hysan Avenue	Leighton Road WB	150	25	31	30	39
		Leighton Road EB	115	21	32	23	32
		Percival Street SB	115	19	29	22	32
J4	Leighton Road / Hysan Avenue / Leighton Lane	Leighton Road WB	120	21	20	20	21
		Leighton Road EB	35	13	13	14	20
		Hysan Avenue SB	48	4	5	6	6
J5	Leighton Road / Caroline Hill Road (West)	Leighton Road WB	90	32	19	24	43
		Caroline Hill Road NB	90	19	33	20	27
		Leighton Road EB	115	37	16	34	23
		Hoi Ping Road SB	105	19	45	22	39
J8	Leighton Road / Yun Ping Road / Pennington Street / Caroline Hill Road (East)	Leighton Road WB	195	24	25	34	31
		Caroline Hill Road NB	175	6	6	5	14
		Leighton Road EB	85	30	31	40	37
J9	Causeway Road / Leighton Road / Tung Lo Wan Road / Irving Street	Causeway Road WB	95	31	34	36	36
		Tung Lo Wan Road NB	80	8	14	8	11
		Causeway Road EB	45	17	21	21	21
J10	Causeway Road / Moreton Terrace	Causeway Road WB	>200	21	20	21	23
		Moreton Terrace NB	120	50	44	53	48
		Causeway Road EB	90	24	29	28	29
J11	Pennington Street / Jardine's Bazaar / Irving Street	Irving Street WB	150	10	13	12	11
		Pennington Street NB 1st stop	100	16	22	20	19
		Pennington Street NB 2nd stop	40	11	12	13	12

Table 4.3 Average Queue Length in Year 2021 Existing Scenario (Cont'd)

Ref No.	Junctions	Movement	Capacity (m)	Average Queue Length (m)			
				Reference Scenario			
				Weekday			Weekend
				AM	Noon	PM	Noon
J12	Link Road / Broadwood Road	Link Road SB	155	51	35	47	38
		Broadwood Road (E) NB	140	35	32	35	30
		Broadwood Road (W) NB	>200	56	40	50	42
J14	Wong Nai Chung Road / Sports Road	Sports Road EB	180	15	14	16	15
		Wong Nai Chung Road SB	120	12	12	14	13
J15	Leighton Road / Wong Nai Chung Road	Leighton Road WB	155	21	22	23	22
		Leighton Rd EB	75	11	14	11	13
J16	Tung Lo Wan Road / Eastern Hospital Road	Tung Lo Wan Rd SB	85	24	23	22	24
		Ka Ning Path NB	95	27	26	25	26
J17	Tung Lo Wan Road / Moreton Terrace	Tung Lo Wan Rd EB (Section between Tai Hang Road and Moreton Terrace)	70	33	35	37	28
		Tung Lo Wan Rd WB (Section between Tung Lo Wan Road and Tung Lo Wan Drive)	>200	27	27	29	27
		Tung Lo Wan Rd EB (West of Tung Lo Wan Drive)	60	23	22	23	18
		Tung Lo Wan Drive SB	>200	22	26	27	18

4.2.8 As shown in **Table 4.3**, the results have indicated the available queue lengths provided at the signal junctions are sufficient to cater for existing average vehicle queues during peak hours.

5. TRAFFIC FORECASTS

5.1 Design Year and Future Scenarios to be Assessed

Design Year

5.1.1 In view of the formations of the Green Areas and the PHB Strata shall be completed by 30th June 2026 as per the requirements under the Lease while the Development is also targeted to be completed by 2026, a design of 2031 is adopted for assessment in this study. The adopted design year 2031 is also the one of the strategic study years adopted by the Government for the overall long term planning of Hong Kong's transportation system.

Future Scenario to be Assessed

5.1.2 To evaluate the effect to the surrounding road condition due to the Development as well as the road scheme proposed for the Green Areas and the PHB Strata, the below future scenarios will be assessed:

- Reference Scenario in Year 2031 – Future scenario in year 2031 under existing traffic arrangement without the development at the subject site; and
- Design Scenario in Year 2031 – Future scenario in year 2031 with proposed road scheme for Green Areas and the PHB Strata as well as the development at the subject site.

5.1.3 Given that the future ingress and egress of the District Court will rely on the future new access road at the PHB Strata, the future District Court is only taken into account in the Design Scenario.

5.2 Traffic Forecasts

Background Traffic Growth

5.2.1 To derive the year 2031 reference traffic flows, the background growth in traffic should be reviewed and identified for the area, which are made reference to the historical growth trend and the population and employment projections.

5.2.2 Transport Department has traffic count stations on the road sections in the vicinity of the subject site. The Average Annual Daily Traffic (A.A.D.T.) data from year 2015 to 2020 as reported in the Annual Traffic Census (ATC) are summarized in **Table 5.1**.

Table 5.1 Average Annual Daily Traffic (A.A.D.T.) Data ATC

Stn. No.	Road	AADT (Vehicle/Day)						Annual Growth Rate (% p.a.)
		2015	2016	2017	2018	2019	2020	
1107	Tung Lo Wan Road (Causeway Rd – Moreton Terrace)	18,890	18,300	18,350	18,040	18,060	17,010	-2.07%
1212	Irving Street and Pennington Street (Leighton Rd – Yee Wo St)	14,130	14,130	13,800	11,320	12,290	11,730	-3.65%
1212	Causeway Road (Tung Lo Wan Rd – Shelter St)	34,360	34,360	33,550	30,660	30,490	29,090	-3.28%
1414	Leighton Road (Tung Lo Wan Rd – Irving St)	25,060	25,060	24,470	24,900	22,970	21,040	-3.44%
1436	Percival Street (Hennessy Rd – Leighton Rd)	13,360	12,920	12,830	12,860	12,180	12,170	-1.85%
1819	Hennessy Road and Yee Wo Street (Percival St – Pennington St)	22,680	21,280	20,840	20,830	18,530	16,700	-5.94%
2016	Yee Wo Street (Pennington St – Tung Lo Wan Rd)	22,280	22,300	20,980	18,420	16,390	14,770	-7.89%
2035	Leighton Road (Wong Nai Chung Rd – Percival St)	28,000	27,960	27,110	28,080	27,830	26,470	-1.12%
2036	Leighton Road (Irving St – Percival St)	14,450	14,430	14,910	15,080	14,950	14,220	-0.32%
2608	Caroline Hill Road (Leighton Rd – Yun Ping Rd)	5,290	6,630	4,900	5,220	4,550	4,800	-1.93%
2623	Lee Garden Road (Hennessy Rd – Hysan Ave)	3,440	3,590	3,250	3,200	3,470	2,870	-3.56%
Total		**201,940**	**200,960**	**194,990**	**188,610**	**181,710**	**170,870**	**-3.29%**

Source: The Annual Traffic Census 2015 – 2020 as available on TD's website.

5.2.3 The A.A.D.T. flows in **Table 5.1** show that the overall average traffic growth on the road sections in the vicinity of the subject site decreased at the rate of -3.29% per annum for year 2015 to 2020.

5.2.4 Other than the historical trend, the population and employment estimates from Territorial Population and Employment Data Matrix (TPEDM) as available on Planning Department's website are also referred for the review on the background traffic growth. The population and employment estimates for Wan Chai in years 2021 and 2026 are presented in **Table 5.2**.

Table 5.2 Population and Employment Estimates from TPEDM

Planning Data for Wan Chai District	Year		Growth Rate (% p.a.)
	2021	2026	2026/2021
Population	157,650	147,150	-1.37%
Employment	297,650	293,650	-0.27%
Population + Employment	455,300	440,800	-0.65%

Source: 2016-based Territorial Population and Employment Data Matrix as available on Planning Department's website.

5.2.5 As presented in **Table 5.2**, the growth rates as derived from TPEDM estimates for Wan Chai District from year 2016 to 2026 are ranged from -1.37% to -0.27% p.a.

5.2.6 Although both the historical trend and planning data have reflected the negative growths for the area, a nominal traffic growth rate of +0.1% is adopted in this study to reflect the background traffic growth in the area from year 2021 to 2031 for a conservative approach.

Planned/Potential Future Developments

5.2.7 There are some planned/potential developments identified in the vicinity of the subject site including the adjoining District Court site. The planning parameters of these planned/committed developments are shown in the below **Table 5.3**. Adopting a conservative approach, it is assumed that these future developments will be completed and occupied before year 2031.

Table 5.3 Planning Parameter for Planned Future Developments

Site Ref. No.	Planned Future Developments (1)	Use	Details
1	District Court site (2)	District Court	Total GFA : 70,000 m^2
2	Commercial Development in 8 Leighton Road (3) (A/H7/172)	Commercial	Total GFA : 14,945 m^2
3	Commercial Development in 1-5 Irving Street and 14 Pennington Street (4)	Commercial	Total GFA of 7,548.8 m^2
4	Redevelopment of Po Leung Kuk Headquarters (5)	Social Services	The service quotas for social services will increase from the current 451 to 773 upon the completion of the redevelopment

Notes: (1) Locations are indicated in **Drawing No. 5.1**
(2) Refer to MPC Paper No.5/19 as available on Town Planning Board's website
(3) Refer to information on the approved application no. A/H7/172 as available from the Statutory Planning Portal 2 by Town Planning Board
(4) Refer to information as available in the Monthly Digest in May 2020 published by Building Department
(5) Refer to information in Po Leung Kuk Annual Report 2020 – 2021 as available from Po Leung Kuk's website

5.2.8 Apart from the future developments listed in the **Table 5.3**, it is noted that a redevelopment proposal of Hong Kong Stadium is being planned by the Government, and the proposal is being consulted with the Wan Chai District Council (WCDC). According to the information presented to WCDC by Leisure and Cultural Services Department (LCSD) in November 2021, the capacity of the stadium would be reduced from the existing 40,000 seats to 9,000 seats upon its redevelopment. Meanwhile, the redevelopment would provide athletics track, ancillary facilities such multi-function room, media centre, washroom, changing room, ambulance room, drug test room and nursery room as well as a public car park with not less than the existing provision of 50 parking spaces. Further details as well as it programme are yet available from public domain.

5.2.9 Since the redevelopment of Hong Kong Stadium would be targeted to serve mainly the local and school activities which would be held outside the communal peak periods, it is anticipated that the additional traffic induced by the redevelopment during the communal peak hours should not be significant. Nevertheless, a sensitivity test on the potential accumulated traffic impact due to the redevelopment of Hong Kong Stadium is conducted as attached in **Appendix C**.

5.2.10 The trip generations from the future developments as listed in **Table 5.3** are estimated by the corresponding parameters and the trip rates as made reference to / derived from the mean trip rates as stipulated in TPDM as well as the consultant's in-house trip rates as obtained from various traffic surveys. The adopted trip rates and estimated traffic generations of these future developments are summarized in **Tables 5.4**.

Table 5.4 Adopted Trip Rates and Estimated Traffic Generation of Planned Future Developments

	Weekday						Weekend	
	AM Peak		Noon Peak		PM Peak		Noon Peak	
	GEN	ATT	GEN	ATT	GEN	ATT	GEN	ATT
1. District Court Site – 70,000m² GFA								
Adopted Trip Rates (1) (pcu/hr/100 m²)	0.0606	0.0918	0.0483	0.0450	0.0466	0.0437	N/A	N/A
Estimated Trips (pcu/hr)	42	64	34	31	33	31	5(2)	5(2)
2. Commercial Development in 8 Leighton Road – 14,945 m² GFA								
Adopted Trip Rates (2) (3) (pcu/hr/100 m²)	0.1703	0.2452	0.1835	0.1748	0.1573	0.1175	0.1431	0.1589
Estimated Trips (pcu/hr)	25	37	27	26	24	18	21	24
3. Commercial Development in 1-5 Irving Street and 14 Pennington Street - 7,548.8 m² GFA								
Adopted Trip Rates (2) (3) (pcu/hr/100 m²)	0.1703	0.2452	0.1835	0.1748	0.1573	0.1175	0.1431	0.1589
Estimated Trips (pcu/hr)	13	19	14	13	12	9	11	12
4. Redevelopment of Po Leung Kuk Headquarters – Additional 322 Service Quotas								
Adopted Trip Rates (4) (pcu/hr/quota)	0.0487	0.0200	0.0200	0.0243	0.0177	0.0222	0.0155	0.0200
Estimated Trips (pcu/hr)	16	6	6	8	6	7	5	6

Notes: (1) Trip rates derived from the consultant's surveyed trip rates from Wanchai Tower and Lands Tribunal
(2) TPDM mean trip rates for office adopted for Weekday AM and PM Peaks
(3) Trip rates for weekday and weekend noon peaks are derived from the surveyed variance to the weekday PM peak trips of office development and applied onto the TPDM trip rates for office
(4) Trip rates derived from the consultant's surveyed trip rates from the existing Po Leung Kuk

Year 2031 Reference Traffic Flows

5.2.11 Given that there is no plan for any major road infrastructure in the vicinity of the subject site by the design year 2031, the 2031 reference traffic flows are derived by:

(i) Applying a growth rate of 0.1% p.a. on the 2021 observed flows upto the design year 2031; and

(ii) Superimposing the potential additional traffic as induced by the planned future developments in the vicinity of the subject site (**Table 5.4**), except for the District Court site, onto the traffic flows in (i).

5.2.12 The anticipated year 2031 weekday and weekend reference traffic flows are presented in **Drawing No. 5.2** and **Drawing No. 5.3** respectively.

Year 2031 Design Traffic Flows

5.2.13 As discussed in **Section 5.1**, the completions of the Development with the proposed road scheme at Green Areas and PHB Strata as well as the development at the District Court site will be considered in the Design Scenario.

5.2.14 The year 2031 design traffic flows are derived by superimposing the estimated trips of the Development (**Table 2.3**) and the development at the District Court site (**Table 5.4**) onto the year 2031 reference traffic flows (**Drawing No. 5.2** and **Drawing No. 5.3**) by taking into account the proposed road scheme for the Green Areas and PHB Strata (**Drawing 3.1**) and the anticipated trip distribution of the ingress and egress traffic (**Drawing Nos. 5.4** and **5.5**).

5.2.15 The anticipated year 2031 weekday and weekend design traffic flows are presented in **Drawing Nos. 5.6A** & **5.6B** and **Drawing Nos. 5.7A** & **5.7B** respectively.

6. TRAFFIC IMPACT ASSESSMENT

6.1 Junction Assessments for Year 2031 Reference and Design Scenarios

6.1.1 The operational performances of the junctions identified in **Section 4.2** are assessed with the derived 2031 reference and design traffic flows under the existing layouts and method of control except for the junctions of Leighton Road / Caroline Hill Road (West) / Hoi Ping Road (J5), Caroline Hill Road (West) / Link Road (J6) and the new junction of Caroline Hill Road (East) / New Access Road (J18) that the proposed road scheme at the Green Areas is taken into account.

6.1.2 As discussed in **Section 3.1**, the modification works at Junction J5 include the provision of an additional left-turning traffic lane at the eastern entry arm of Leighton Road and modification of the "left-turn" lane to "left-turn and right turn" shared lane at the entry arm of Caroline Hill Road. The future junction layout and arrangement of J5 are presented in **Drawing No. 6.1.**

6.1.3 To serve the future access from Caroline Hill Road (West) to the Development as well as the District Court Site, the existing priority junction J6 would be modified into roundabout-like junction in accordance with the Road Scheme. As discussed in **Section 3.1**, signal control arrangement is proposed in order to further improve the future traffic condition at the junction. The proposed junction layout and arrangement of J6 are presented in **Drawing No. 6.2**.

6.1.4 For comparison purpose, the operational performance of Junction J6 in the design scenario of year 2031 without the proposed signal control (i.e. priority control) is also assessed. The traffic arrangement and flow circulation at the junction J6 under priority control arrangement are shown in **Drawing Nos. 6.3A and 6.3B**.

6.1.5 On the other hand, a new junction J18 would be formed to serve the future access from Caroline Hill Road (East). The works for the new junction J18 involve road widening at Caroline Hill Road (East) near its junction with the future new access road to provide right-turn pocket and a refuge island for pedestrian. The future junction layout and arrangement of J18 are presented in **Drawing No. 6.4**.

6.1.6 The assessment results for reference and design year of 2031 are summarised in **Table 6.1**, and the details of junction assessments are attached in **Appendix D**.

Table 6.1 Year 2031 Operational Performance of Identified Key Junctions

Ref No.	Junctions	Method of Control	Year 2031 RC/RFC[(1)]							
			Reference Scenario				Design Scenario			
			Weekday			Weekend	Weekday			Weekend
			AM Peak	Noon Peak	PM Peak	Noon Peak	AM Peak	Noon Peak	PM Peak	Noon Peak
J1	Hennessy Road / Percival Street	Signal	143%	78%	80%	65%	122%	66%	74%	58%
J2	Matheson Street / Percival Street / Russell Street	Signal	391%	286%	356%	258%	348%	265%	335%	243%
J3	Leighton Road / Percival Street / Hysan Avenue	Signal	65%	38%	51%	31%	43%	26%	38%	22%

Table 6.1 Year 2031 Operational Performance of Identified Key Junctions (Cont'd)

Ref No.	Junctions	Method of Control	Year 2031 RC/RFC[(1)]							
			Reference Scenario				Design Scenario			
			Weekday			Weekend	Weekday			Weekend
			AM Peak	Noon Peak	PM Peak	Noon Peak	AM Peak	Noon Peak	PM Peak	Noon Peak
J4	Leighton Road / Hysan Avenue / Leighton Lane	Signal	304%	296%	269%	164%	304%	296%	269%	164%
J5	Leighton Road / Caroline Hill Road (West) / Hoi Ping Road	Signal	19%	15%	30%	26%	22%	25%	37%	33%
J6	*Existing Layout & Arrangement*									
	Caroline Hill Road (West) / Link Road	Priority	0.34	0.43	0.45	0.52	-	-	-	-
	Future Layout – Proposed Signal Control Arrangement									
	Caroline Hill Road (West) / Link Road / New Access Road	Signal	-	-	-	-	42%	47%	47%	48%
	Future Layout – Priority Control Arrangement									
	J6A - Caroline Hill Road (West) Southbound / U-turn	Priority	-	-	-	-	0.72	0.68	0.57	0.74
	J6B - Caroline Hill Road (West) Southbound / Access Road of CHR Site	Priority	-	-	-	-	0.45	0.50	0.51	0.46
	J6C - Caroline Hill Road (West) Southbound / Caroline Hill Road (West) Northbound / Link Road Southbound	Priority	-	-	-	-	0.38	0.49	0.51	0.58
J7	Caroline Hill Road / Cotton Path	Priority	0.13	0.21	0.07	0.15	0.23	0.29	0.15	0.22
J8	Leighton Road / Yun Ping Road / Pennington Street / Caroline Hill Road (East)	Signal	30%	33%	20%	19%	29%	33%	21%	20%
J9	Causeway Road / Leighton Road / Tung Lo Wan Road / Irving Street	Signal	57%	44%	45%	44%	47%	37%	40%	40%
J10	Causeway Road / Moreton Terrace	Signal	46%	35%	27%	37%	40%	29%	23%	32%
J11	Pennington Street / Irving Street / Jardine's Bazaar	Signal	230%	193%	175%	187%	230%	193%	175%	187%
J12	Link Road / Broadwood Road	Signal	25%	33%	27%	23%	19%	25%	20%	18%
J13	Broadwood Road / Ventris Road	Priority	0.55	0.55	0.56	0.54	0.58	0.59	0.58	0.58
J14	Wong Nai Chung Road / Sports Road	Signal	195%	161%	166%	146%	164%	142%	153%	132%
J15	Leighton Road / Wong Nai Chung Road	Signal	40%	35%	32%	37%	28%	20%	18%	24%
J16	Tung Lo Wan Road / Eastern Hospital Road	Signal	68%	65%	94%	84%	54%	55%	79%	72%
J17	Tung Lo Wan Road / Moreton Terrace	Signal	46%	27%	33%	84%	41%	25%	31%	78%
J18	Caroline Hill Road (East) / New Access Road	Priority	-	-	-	-	0.23	0.19	0.15	0.11
J19	Hysan Avenue / Hoi Ping Road	Priority	0.43	0.43	0.44	0.41	0.61	0.56	0.53	0.52
J20	Tung Lo Wan Road / Tai Hang Road	Priority	0.67	0.69	0.72	0.35	0.69	0.70	0.73	0.35

Note: (1) RC = Reserve Capacity for Signal Junction
RFC = Ratio of Flow to Capacity for Priority Junction

6.1.7 The assessment results in **Table 6.1** show that all identified junctions with their existing traffic arrangements will be operating within their capacities during the peak hours on weekday and weekend in the reference scenario of year 2031 without the Development and District Court. The junction J5 was identified the most critical junction in the reference scenario but its RC at 15% is still considered acceptable during the noon peak on weekday.

6.1.8 With implementation of the proposed road scheme at the Green Areas, the assessment results show that the operational performance of the critical junction J5 can be improved with sufficient reserve capacity to cater for the future traffic flows induced by the Development and the District Court in the design scenario of year 2031. Besides, the assessment results reveal that all identified junctions including the modified junction J6 with signal control and the new priority junction J18 will be operating adequate capacities in the design scenario of year 2031.

6.1.9 In addition, it was assessed that the junction performance at J6 would be still acceptable under the priority control arrangement. Nevertheless, the proposed signal control arrangement would offer a better scheme to avoid the potential grid-lock at the junction and to enhance road safety.

6.2 Queue Length Analysis for Year 2031 Reference and Design Scenarios

6.2.1 The estimated queue length along the approaching arms of the critical signal junctions based on 2031 traffic flow under reference and design scenarios are summarized in **Table 6.2** below. The details of the queue length analysis and results are attached in **Appendix E**.

Table 6.2 Average Queue Length in Year 2031 Reference and Design Scenarios

Ref No.	Junctions	Movement	Capacity (m)	Average Queue Length (m)							
				Reference Scenario				Design Scenario			
				Weekday			Weekend	Weekday			Weekend
				AM	Noon	PM	Noon	AM	Noon	PM	Noon
J1	Hennessy Road / Percival Street	Hennessy Road WB	150	25	28	33	29	27	30	34	30
		Hennessy Road EB	110	13	18	18	22	19	22	22	25
		Percival Street SB	34	24	25	26	26	24	25	26	26
J2	Matheson Street / Percival Street / Russell Street	Percival Street SB	65	15	20	19	21	17	21	21	22
		Matheson Street NB	65	8	10	11	11	8	10	11	11
J3	Leighton Road / Percival Street / Hysan Avenue	Leighton Road WB	150	25	32	25	39	30	38	35	45
		Leighton Road EB	115	21	31	19	33	25	35	25	36
		Percival Street SB	115	19	29	28	32	22	32	24	36
J4	Leighton Road / Hysan Avenue / Leighton Lane	Leighton Road WB	120	22	20	21	21	24	24	24	25
		Leighton Road EB	35	13	14	15	20	13	14	15	20
		Hysan Avenue SB	48	4	4	6	6	4	4	6	6
J5	Leighton Road / Caroline Hill Road (West)	Leighton Road WB	90	33	19	25	44	26	26	28	30
		Caroline Hill Road NB	90	19	34	21	27	42	46	49	48
		Leighton Road EB	115	39	16	35	23	20	25	29	36
		Hoi Ping Road SB	105	19	47	23	38	25	25	26	26
J6	Caroline Hill Road (West) / Link Road / New Access Road	Caroline Hill Road SB	40	N/A				29	26	25	28
		Link Road NB	100					34	36	36	36
		New Access Road WB	150					13	15	15	13
J8	Leighton Road / Yun Ping Road / Pennington Street / Caroline Hill Road (East)	Leighton Road WB	195	26	26	36	32	27	25	34	31
		Caroline Hill Road NB	175	5	6	5	13	9	11	10	19
		Leighton Road EB	85	32	32	42	39	31	31	41	37
J9	Causeway Road / Leighton Road / Tung Lo Wan Road / Irving Street	Causeway Road WB	95	32	35	36	37	35	37	38	38
		Tung Lo Wan Road NB	80	8	14	7	11	8	14	8	11
		Causeway Road EB	45	18	21	21	22	19	22	22	22
J10	Causeway Road / Moreton Terrace	Causeway Road WB	>200	22	20	21	23	25	22	23	26
		Moreton Terrace NB	120	48	45	54	49	65	56	63	61
		Causeway Road EB	90	24	29	28	29	25	24	29	29
J11	Pennington Street / Jardine's Bazaar / Irving Street	Irving Street WB	150	10	13	12	11	10	13	12	11
		Pennington Street NB 1st stop	100	17	22	20	19	16	22	19	19
		Pennington Street NB 2nd stop	40	11	12	13	12	11	12	13	12

Table 6.2 Average Queue Length in Year 2031 Reference and Design Scenarios (Cont'd)

Ref No.	Junctions	Movement	Capacity (m)	Average Queue Length (m)							
				Reference Scenario				Design Scenario			
				Weekday			Weekend	Weekday			Weekend
				AM	Noon	PM	Noon	AM	Noon	PM	Noon
J12	Link Road / Broadwood Road	Link Road SB	155	51	36	48	38	56	42	55	44
		Broadwood Road (E) NB	140	36	33	36	30	47	39	40	37
		Broadwood Road (W) NB	>200	57	40	51	44	60	42	55	46
J14	Wong Nai Chung Road / Sports Road	Sports Road EB	180	15	15	16	15	16	16	17	16
		Wong Nai Chung Road SB	120	12	13	14	13	13	13	14	13
J15	Leighton Road / Wong Nai Chung Road	Leighton Road WB	155	22	22	23	22	23	25	26	24
		Leighton Rd EB	75	11	14	11	13	12	14	11	13
J16	Tung Lo Wan Road / Eastern Hospital Road	Tung Lo Wan Rd SB	85	25	23	22	24	25	24	23	25
		Ka Ning Path NB	95	27	26	25	26	31	29	28	28
J17	Tung Lo Wan Road / Moreton Terrace	Tung Lo Wan Rd EB (Section between Tai Hang Road and Moreton Terrace)	70	33	33	35	28	35	36	39	30
		Tung Lo Wan Rd WB (Section between Tung Lo Wan Road and Tung Lo Wan Drive)	>200	28	30	32	27	28	28	30	27
		Tung Lo Wan Rd EB (West of Tung Lo Wan Drive)	60	24	24	26	18	24	23	24	18
		Tung Lo Wan Drive SB	>200	21	25	25	18	21	26	27	18

6.2.2 As shown in **Table 6.2**, the results have indicated the available queue lengths provided at the signal junctions including the modified junction J6 with signal control will be sufficient to cater for average vehicle queues during peak hour in both the reference and design scenarios of year 2031.

7. PEDESTRIAN FACILITIES AND ASSESSMENT

7.1 Existing Pedestrian Situation

7.1.1 Currently, the pedestrians in the Caroline Hill Road area are relying on the at-grade footpaths and pedestrian crossing facilities including the signalized and cautionary crossings provided at Caroline Hill Road and Leighton Road traveling to/from the central area of Causeway Bay, MTR station and other public transport facilities. The key pedestrian corridors are mainly Leighton Road, Hoi Ping Road, Sunning Road, Yun Ping Road and Pennington Street.

7.1.2 To obtain the update pedestrian flows for the review on the existing pedestrian situation in the vicinity of the subject site, pedestrian head count surveys have been conducted at the at-grade footpaths and pedestrian crossings along the key pedestrian corridors between the hours of 08:00-10:00, 11:30-13:30 and 17:30-19:30 on a typical weekday and the hours of 11:30-13:30 on a weekend (Saturday) in September 2021. The locations of the surveyed footpaths and pedestrian crossings are indicated in **Drawing No. 7.1**.

7.1.3 The observed pedestrian data indicated that AM, Noon and PM peak hour pedestrian flows occurred during hours of 08:15-09:15, 12:30-13:30 and 18:00-19:00 respectively on a typical weekday, and the weekend peak hour pedestrian flows during the hours of 11:30-12:30.

7.1.4 The pedestrian facilities are assessed by the surveyed peak pedestrian flows with reference to the criteria of Level-of-Service (LOS) from Highway Capacity Manual (HCM) 2000 as exhibited in TPDM. The observed pedestrian flows and LOS assessment results are summarized in the **Table 7.1**.

Table 7.1 Operational Performance of Existing Pedestrian Facilities

Location[1]	Clear Width (m)	Effective Width[2] (m)	Observed 2-way Pedestrian Flow[3] (Ped/hour)				Level-of-Service[4] (LOS)			
			Weekday			Weekend	Weekday			Weekend
			AM Peak	Noon Peak	PM Peak	Noon Peak	AM Peak	Noon Peak	PM Peak	Noon Peak
1	3.0	2.0	170	210	190	70	A	A	A	A
2	3.0	2.0	350	410	770	550	A	A	A	A
3	2.9	1.9	290	420	210	260	A	A	A	A
4	2.0	1.0	430	510	800	700	A	A	A	A
5	3.2	2.2	430	580	660	420	A	A	A	A
6	2.3	1.3	270	400	390	340	A	A	A	A
7	2.0	1.0	190	160	190	150	A	A	A	A
8	2.0	1.0	190	190	340	340	A	A	A	A
9	2.7	1.7	370	570	490	310	A	A	A	A
10	3.0	2.0	480	700	500	520	A	A	A	A
11	2.3	1.3	150	130	190	100	A	A	A	A
12	2.0	1.0	130	100	90	60	A	A	A	A
13	2.5	1.5	530	1190	850	910	A	A	A	A
14	2.5	1.5	330	790	680	640	A	A	A	A
15	2.2	1.2	850	1380	1050	1070	A	B	A	A
16	2.0	1.0	150	220	190	200	A	A	A	A
17	4.4	3.4	50	110	90	120	A	A	A	A
18	3.3	2.3	890	2380	1310	1350	A	B	A	A
19	3.0	2.0	480	1150	710	850	A	A	A	A
20	1.7	0.7	30	50	30	50	A	A	A	A
C1	4.0	4.0	520	530	430	410	A	A	A	A

Table 7.1 Operational Performance of Existing Pedestrian Facilities (Cont'd)

Location[1]	Clear Width (m)	Effective Width[2] (m)	Observed 2-way Pedestrian Flow[3] (Ped/hour)				Level-of-Service[4] (LOS)			
			Weekday			Weekend	Weekday			Weekend
			AM Peak	Noon Peak	PM Peak	Noon Peak	AM Peak	Noon Peak	PM Peak	Noon Peak
C2	3.6	3.6	130	240	220	270	A	A	A	A
C3	3.3	3.3	370	330	350	240	A	A	A	A
C4	3.3	3.3	280	500	400	290	A	A	A	A
C5	3.6	3.6	380	330	380	410	A	A	A	A
C6	6.8	6.8	790	1490	1080	1120	A	A	A	A
C7	4.0	4.0	1000	1710	1250	1300	A	A	A	A
C8	4.2	4.2	1310	2400	1730	1940	A	C	B	B
C9	4.2	4.2	220	390	260	350	A	A	A	A
C10	6.4	6.4	1210	2530	1750	1950	A	B	A	A

Notes:
(1) Refer to **Drawing No. 7.1**
(2) Effective Width = Clear Width – Dead Width. Dead width = 0.5m for clearance from kerb/structure on footpaths; and no dead width at pedestrian crossing
(3) Rounded to the nearest 10
(4) Based the criteria of LOS from HCM 2000 as exhibited in TPDM. In general, LOS A and B provide a good walking environment; LOS C and D are acceptable value; and LOS E and F reflect the design volume has approached or over the limit of walking capacity.

7.1.5 The assessment results in **Table 7.1** suggested that all footpaths and pedestrian crossing facilities in the pedestrian network surrounding the subject site are currently operating at LOS C or better.

7.2 Future Pedestrian Facilities

Proposed Road Scheme at Green Areas

7.2.1 In the proposed road scheme at the Green Areas, the eastern footpath at Caroline Hill Road (West) would be widened to 3.5m. To facilitate the road improvement at the junction of Caroline Hill Road (West) / Link Road, the existing cautionary crossing at Caroline Hill Road (West) outside Po Leung Kuk would be permanently suspended. Pedestrians could cross the road by using the adjacent signalized and cautionary crossing in the future upon the implementation of the proposed road scheme.

7.2.2 To cater for the increased pedestrian demand across Leighton Road upon the completion of the Development and the District Court, the signalized crossings at the eastern entry arm of junction of Leighton Road/Caroline Hill Road (West)/Yun Ping Road would be widened from the existing some 3m to 5m.

7.2.3 On Caroline Hill Road (East), there would be new cautionary crossing with refuge island provided near its junction with New Access Road. This new crossing would help on diverting the pedestrians to the wider footpath provided on the eastern side of Caroline Hill Road (East).

Pedestrian Links in Causeway Bay

7.2.4 The Chief Executive in Council has approved premium wavier for the pedestrian links in Causeway Bay (The Pedestrian Links) under the Policy of Facilitating Provision of Pedestrian Links by Private Sector in January 2021. The Pedestrian Links consist of a covered walkway along Yun Ping Road connecting Hysan Place with Lee Garden Two and four footbridges linking up Lee Garden Two, Lee Garden Three, Lee Garden Five, Lee Garden Six and the

subject site. The Pedestrian Links could divert pedestrians away from existing busy at-grade roads such as Yun Ping Road, Hysan Avenue, Pennington Street and Leighton Road. It would be a more direct, safe and comfortable access from the Causeway Bay MTR Station to the hinterland, covering areas frequented by pedestrians including the Development. The plan of Pedestrian Links as extracted from the Government's press release on 5 January 2021 is exhibited in **Appendix B**.

7.2.5 The Development will provide a footbridge connection to receive the future footbridge from Lee Garden Six, and the footbridge connection will link up with the internal pedestrian links/walkways leading to the public open space (POS), various commercial and community facilities as well as the street level of Caroline Hill Road as illustrated in **Drawing Nos. 7.2** and **7.3**.

7.2.6 To further enhance the pedestrian connectivity, accessibility and walkability, a landscape bridge is also proposed to link up the two portions of the subject site across the future new access road. Apart from the disable lift connecting the landscape bridge at 2/F with the GIC facilities and the ground level as shown in **Drawing Nos. 7.2** and **7.3**, shuttle lifts will also be provided at the Tower 3 site to serve the convenient pedestrian connection between 2/F and G/F during the office hours.

7.2.7 Furthermore, a proper pedestrian path will also be provided at the proposed POS of the Tower 3 site to serve as an alternative 24-hr pedestrian route between the landscape bridge's level and the ground level in a pleasant walkway environment as exhibited on the plan in **Appendix G**.

7.3 Pedestrian Forecasts and Future Pedestrian Condition

Background Pedestrian Growth

7.3.1 To derive the design year 2031 pedestrian flows in the pedestrian network, reference are made to the population and employment estimates from TPEDM in order to determine the background pedestrian growth in the area.

7.3.2 As discussed in **Section 5.2**, the estimates of both the population and employment for the Wan Chai District in the planning data were decreasing from year 2021 to 2026, and thus a nominal growth rate of +0.1% is adopted to cover the growth in background pedestrian flows from year 2021 upto the design year of 2031 for a conservative approach.

Pedestrian flows induced by the Development and the Planned Potential Future Developments

7.3.3 The potential pedestrian generation and attraction of the Development are estimated by the proposed development schedule as listed in **Table 2.1** and the consultant's in-house pedestrian trip rates as obtained from various traffic surveys. The adopted pedestrian trip rates and the estimated pedestrian generation and attraction of the Development are presented in **Table 7.2.** The details of the surveyed pedestrian trip rates at the reference sites are attached in **Appendix F**.

Table 7.2 Estimated Pedestrian Generation of the Development

Development Component	Weekday						Weekend	
	AM		Noon		PM		Noon	
	GEN	ATT	GEN	ATT	GEN	ATT	GEN	ATT
Office - 85,000 m²								
Adopted Trip Rates (1) (ped/hr/100 m²)	0.27	2.74	2.70	1.01	2.66	0.33	0.27	0.37
Estimated Trips (ped/hr)	230	2,329	2,295	859	2,261	281	230	315
Retail - 10,000 m²								
Adopted Trip Rates (2) (ped/hr/100 m²)	1.92	2.52	6.00	4.52	4.96	6.44	6.19	6.83
Estimated Trips (ped/hr)	192	252	600	452	496	644	619	683
Government Accommodation (Child Care Centre) – 805 m²								
Adopted Trip Rates (3) (ped/hr/100 m²)	0.35	0.68	0.66	0.19	0.41	0.15	3.21	1.60
Estimated Trips (ped/hr)	3	6	6	2	3	1	27	14
Government Accommodation (District Health Centre) – 1,600 m²								
Adopted Trip Rates (4) (ped/hr/100 m²)	2.39	6.52	0.80	1.15	2.13	1.20	1.86	2.12
Estimated Trips (ped/hr)	38	104	13	18	34	19	30	34
Government Accommodation (Day Care Centre for the Elderly) – 550 m²								
Adopted Trip Rates (5) (ped/hr/100 m²)	0.09	0.66	1.13	0.94	0.57	0.09	0.38	0.38
Estimated Trips (ped/hr)	1	4	6	5	3	1	2	2
Public Vehicle Park – 125 spaces								
Adopted Trip Rates (6) (ped/hr/space)	0.59	0.10	0.36	0.34	0.27	0.67	0.58	0.87
Estimated Trips (ped/hr)	74	13	45	43	34	84	73	109
Additional GIC Facilities (Performing Arts and Cultural Facilities) – 2,000 m²								
Adopted Trip Rates (7) (ped/hr/100 m²)	0.57	0.95	0.76	1.00	0.67	1.72	1.49	1.29
Estimated Trips (ped/hr)	11	19	15	20	13	34	30	26
Total	**549**	**2,727**	**2,980**	**1,399**	**2,844**	**1,064**	**1,011**	**1,183**

Notes:
(1) Pedestrian trip rates derived from the consultant's surveyed trip rates from office portion at Lee Garden One, Two and Three
(2) Pedestrian trip rates derived from the consultant's surveyed trip rates from retail portion at Lee Garden One, Two and Three
(3) Pedestrian trip rates derived from the consultant's surveyed trip rates from SIA Shaukiwan Day Creche
(4) Pedestrian trip rates derived from the consultant's surveyed trip from Central District Health Centre General Outpatient Clinic
(5) Pedestrian trip rates derived from the consultant's surveyed trip rates from T.W.G.Hs. Anita Mui Day Care Centre for the Elderly
(6) Pedestrian trip rates derived from consultant's surveyed trip rates from ex-Murray Road Multi-storey Car Park
(7) Pedestrian trip rates derived from the consultant's surveyed highest trip rates from Yao Tsung-I Academy, Kwai Tsing Theatre and M+

7.3.4 As discussed in **Section 5.2**, there are some planned/potential developments identified in the vicinity of the subject site as listed in **Table 5.3**. Additional pedestrian trips induced by these developments were estimated as shown in **Table 7.3.**

Table 7.3 Adopted Trip Rates and Estimated Pedestrian Generation of Planned Future Developments

	Weekday						Weekend	
	AM Peak		Noon Peak		PM Peak		Noon Peak	
	GEN	ATT	GEN	ATT	GEN	ATT	GEN	ATT
1. District Court Site – 70,000m² GFA								
Adopted Trip Rates (1) (ped/hr/100 m²)	0.25	2.71	1.70	0.84	1.22	0.43	N/A(2)	N/A(2)
Estimated Trips (ped/hr)	175	1,898	1,189	591	855	303	20(2)	20(2)
2. Commercial Development in 8 Leighton Road – 14,945 m² GFA								
Adopted Trip Rates (3) (ped/hr/100 m²)	0.27	2.74	2.70	1.01	2.66	0.33	0.27	0.37
Estimated Trips (ped/hr)	40	409	404	151	398	49	40	55
3. Commercial Development in 1-5 Irving Street and 14 Pennington Street - 7,548.8 m² GFA								
Adopted Trip Rates (3) (ped/hr/100 m²)	0.27	2.74	2.70	1.01	2.66	0.33	0.27	0.37
Estimated Trips (ped/hr)	20	207	204	76	201	25	20	28
4. Redevelopment of Po Leung Kuk Headquarters – Additional 322 Service Quotas								
Adopted Trip Rates (4) (ped/hr/quota)	0.31	0.52	0.51	0.24	0.59	0.08	0.17	0.05
Estimated Trips (ped/hr)	99	166	163	77	191	25	56	16

Notes: (1) Pedestrian trip rates derived from the consultant's surveyed trip rates from Wanchai Tower and Lands Tribunal in September 2021

(2) Since the existing Wanchai Tower and Lands Tribunal are closed in weekend, a nominal pedestrian trips of 20 ped/hr is adopted.

(3) Pedestrian trip rates derived from the consultant's surveyed trip rates from office portion at Lee Garden One, Two and Three

(4) Pedestrian trip rates derived from the consultant's surveyed trip rates from the existing Po Leung Kuk

7.3.5 The estimated pedestrian trips of the Development and the planned/potential developments were then distributed and assigned onto the pedestrian network based on the three future scenarios as follows:

- Reference Scenario in Year 2031 – under the existing pedestrian network without the Development, the District Court and the proposed road scheme at Green Areas;
- Design Scenario in Year 2031 – with the Development, the District Court and the proposed road scheme at Green Areas; and
- Ultimate Scenario in Year 2031 - with the Development, the District Court, the proposed road scheme at Green Areas as well as the future footbridge connecting the Development with Lee Garden Six.

Future Pedestrian Condition in Reference Scenario

7.3.6 The anticipated future pedestrian flows and the assessed LOS for footpaths and pedestrian crossing facilities in the reference scenario of year 2031 are shown in **Table 7.4**.

Table 7.4 Operational Performance of Pedestrian Facilities in Reference Scenario of Year 2031

Location[1]	Clear Width (m)	Effective Width[2] (m)	Year 2031 Two-way Pedestrian Flows[3] In Reference Scenario (Ped/hour)				Level-of-Service[4] (LOS)			
			Weekday			Weekend	Weekday			Weekend
			AM Peak	Noon Peak	PM Peak	Noon Peak	AM Peak	Noon Peak	PM Peak	Noon Peak
1	3.0	2.0	170	210	190	70	A	A	A	A
2	3.0	2.0	350	410	770	550	A	A	A	A
3	2.9	1.9	410	450	220	260	A	A	A	A
4	2.0	1.0	430	510	800	700	A	A	A	A
5	3.2	2.2	460	610	700	440	A	A	A	A
6	2.3	1.3	320	460	440	370	A	A	A	A
7	2.0	1.0	300	270	280	190	A	A	A	A
8	2.0	1.0	190	190	340	340	A	A	A	A
9	2.7	1.7	370	570	490	310	A	A	A	A
10	3.0	2.0	530	760	550	540	A	A	A	A
11	2.3	1.3	150	130	190	100	A	A	A	A
12	2.0	1.0	130	100	90	60	A	A	A	A
13	2.5	1.5	530	1200	860	920	A	A	A	A
14	2.5	1.5	350	820	700	640	A	A	A	A
15	2.2	1.2	880	1430	1080	1090	A	B	A	A
16	2.0	1.0	150	220	190	200	A	A	A	A
17	4.4	3.4	50	110	90	120	A	A	A	A
18	3.3	2.3	900	2410	1330	1370	A	B	A	A
19	3.0	2.0	480	1170	710	850	A	A	A	A
20	1.7	0.7	30	50	30	50	A	A	A	A
C1	4.0	4.0	750	720	600	480	A	A	A	A
C2	3.6	3.6	180	280	270	290	A	A	A	A
C3	3.3	3.3	540	470	470	280	A	A	A	A
C4	3.3	3.3	280	500	400	290	A	A	A	A
C5	3.6	3.6	380	330	380	410	A	A	A	A
C6	6.8	6.8	800	1510	1100	1130	A	A	A	A
C7	4.0	4.0	1020	1730	1270	1320	A	A	A	A
C8	4.2	4.2	1330	2430	1750	1960	A	C	B	B
C9	4.2	4.2	220	390	260	350	A	A	A	A
C10	6.4	6.4	1220	2550	1770	1970	A	B	A	A

Notes:
(1) Refer to **Drawing No. 7.1**
(2) Effective Width = Clear Width – Dead Width. Dead width = 0.5m for clearance from kerb/structure on footpaths; and no dead width at pedestrian crossing
(3) Rounded to the nearest 10
(4) Based the criteria of LOS from HCM 2000 as exhibited in TPDM. In general, LOS A and B provide a good walking environment; LOS C and D are acceptable value; and LOS E and F reflect the design volume has approached or over the limit of walking capacity.

7.3.7 As shown in the **Table 7.4**, the assessment results suggested that the existing footpaths and pedestrian crossing facilities in the surrounding will be able to cater for the future pedestrian flows in the reference scenario of year 2031 with operating at LOS C or better.

7.3.8 Apart from the footpaths and pedestrian crossing facilities, the LOS assessment on pedestrian waiting spaces provided at the two central refuge islands at the junction of Leighton Road / Yun Ping Road / Pennington Street / Caroline Hill Road (East) (Junction J8) are also conducted for the reference scenario of year 2031. The assessment results are summarized in the **Table 7.5**.

Table 7.5 Operational Performance of Central Refuge Islands at J8 in Reference Scenario of Year 2031

Location	Effective Area (m^2)	Estimated Average Number of Pedestrian Waiting at Refuge Island[1]				Level-of-Service[2] (LOS)			
		Weekday			Weekend	Weekday			Weekend
		AM Peak	Noon Peak	PM Peak	Noon Peak	AM Peak	Noon Peak	PM Peak	Noon Peak
Northern Refuge Island	18	10	15	15	14	A	B	B	A
Southern Refuge Island	21	2	4	3	4	A	A	A	A

Notes: (1) Estimated by the forecasted pedestrian crossing demand and MOC of the signal junction.

(2) Based on the criteria of LOS from Table 18-7 in Chapter 18 of HCM 2000, the LOS reflects the space per person which is computed by effective waiting area divided by waiting pedestrian. LOS is A for space > $1.2m^2$; B for space > 0.9-$1.2m^2$; C for space > 0.6-$0.9m^2$; D for space > 0.3-$0.6m^2$; E for space > 0.2-$0.3m^2$ and F for space ≤ $0.2m^2$.

7.3.9 As shown in **Table 7.5**, the assessment results suggested that the available waiting spaces provided on the refuge islands at Junction J8 will still able to cater for the anticipated waiting pedestrian demand at acceptable LOS in the reference scenario of year 2031.

Future Pedestrian Condition in Design Scenario

7.3.10 In the design scenario, the Development, the District Court and the proposed road scheme at Green Areas were taken into account for pedestrian forecast and assessment. The anticipated future pedestrian flows and the assessed LOS at the footpaths and pedestrian crossing facilities in the design scenario of year 2031 are shown in **Table 7.6**.

Table 7.6 Operational Performance of Pedestrian Facilities in Design Scenario of Year 2031

Location[1]	Clear Width (m)	Effective Width[2] (m)	Year 2031 Two-way Pedestrian Flows[3] In Design Scenario (Ped/hour)				Level-of-Service[4] (LOS)			
			Weekday			Weekend	Weekday			Weekend
			AM Peak	Noon Peak	PM Peak	Noon Peak	AM Peak	Noon Peak	PM Peak	Noon Peak
1	3.0	2.0	170	210	190	70	A	A	A	A
2	3.0	2.0	350	410	770	550	A	A	A	A
3	2.9	1.9	410	450	220	260	A	A	A	A
4[5]	3.5	2.5	1180	1160	1220	700	A	A	A	A
5	3.2	2.2	520	670	750	460	A	A	A	A
6	2.3	1.3	640	830	740	500	A	A	A	A
7	2.0	1.0	460	460	430	260	A	A	A	A
8	2.0	1.0	1450	1640	1530	860	C	C	C	A
9	2.7	1.7	370	570	490	310	A	A	A	A
10	3.0	2.0	690	950	700	610	A	A	A	A
11	2.3	1.3	150	130	190	100	A	A	A	A
12	2.0	1.0	130	100	90	60	A	A	A	A
13	2.5	1.5	1140	1910	1450	1180	A	B	B	A
14	2.5	1.5	990	1560	1300	900	A	B	A	A
15	2.2	1.2	1470	2110	1640	1330	B	C	B	B
16	2.0	1.0	520	650	550	350	A	A	A	A
17	4.4	3.4	50	110	90	120	A	A	A	A
18	3.3	2.3	900	2410	1330	1370	A	B	A	A
19	3.0	2.0	2030	2960	2180	1480	B	C	B	A
20	1.7	0.7	850	1000	810	390	B	C	B	A
C1	4.0	4.0	810	780	650	500	A	A	A	A
C2	3.6	3.6	550	710	630	440	A	A	A	A
C3	3.3	3.3	860	840	770	410	A	A	A	A
C4	3.3	3.3	440	690	550	360	A	A	A	A
C5[6]	5.0	5.0	1800	1960	1720	990	B	C	B	A
C6	6.8	6.8	1410	2220	1690	1390	A	A	A	A
C7	4.0	4.0	2250	3150	2430	1820	B	B	B	A
C8	4.2	4.2	3180	4560	3500	2720	C	**D**	**D**	C
C9	4.2	4.2	590	820	620	500	A	A	A	A
C10	6.4	6.4	3440	5110	3870	2880	B	**D**	C	B

Notes:
(1) Refer to **Drawing No. 7.1**
(2) Effective Width = Clear Width – Dead Width. Dead width = 0.5m for clearance from kerb/structure on footpaths; and no dead width at pedestrian crossing
(3) Rounded to the nearest 10
(4) Based the criteria of LOS from HCM 2000 as exhibited in TPDM. In general, LOS A and B provide a good walking environment; LOS C and D are acceptable value; and LOS E and F reflect the design volume has approached or over the limit of walking capacity
(5) The clear width of footpath will be widened from the existing 2m to 3.5m upon the implementation of the proposed road scheme at the Green Areas
(6) The crossing width will be widened from the existing 3.6m to 5m upon the implementation of the proposed road scheme at the Green Areas.

7.3.11 As shown in the **Table 7.6**, the assessment results suggested that all the pedestrian facilities in the surrounding will be still operated at LOS C or better in the design scenario of year 2031, except the pedestrian crossings (locations C8 and C10) at Leighton Road would operate at LOS D. Nevertheless, LOS D is still considered an acceptable level for operation at the existing pedestrian facilities especially the pedestrian situation will be improved upon the commissioning of the Pedestrian Links with future footbridge connecting the Development to Lee Garden Six.

7.3.12 Notwithstanding the future footbridges should be deemed as the long-term solution to enhance pedestrian conditions in the Causeway Bay South area, it is reviewed that slightly increase of the green time for the pedestrian crossings C6, C8 and C10 by 3 seconds for weekday noon would improve the pedestrian crossing C10 from LOS D to LOS C, while increasing the green time by 4 seconds for evening peak on weekday would improve the pedestrian crossing C8 from LOS D to LOS C. The proposed increase in pedestrian green time will not cause significant impact to junction performance and queue length.

7.3.13 The LOS assessment on pedestrian waiting spaces provided at the two central refuge islands Junction J8 are also conducted for the design scenario of year 2031. The assessment results are summarized in the **Table 7.7**.

Table 7.7 Operational Performance of Central Refuge Islands at J8 in Design Scenario of Year 2031

Location	Effective Area (m^2)	Estimated Average Number of Pedestrian Waiting at Refuge Island[(1)]				Level-of-Service[(2)] (LOS)			
		Weekday			Weekend	Weekday			Weekend
		AM Peak	Noon Peak	PM Peak	Noon Peak	AM Peak	Noon Peak	PM Peak	Noon Peak
Northern Refuge Island	18	28	27	25	20	C	C	C	C
Southern Refuge Island	21	8	7	7	6	A	A	A	A

Notes: (1) Estimated by the forecasted pedestrian crossing demand and MOC of the signal junction.

(2) Based on the criteria of LOS from Table 18-7 in Chapter 18 of HCM 2000, the LOS reflects the space per person which is computed by effective waiting area divided by waiting pedestrian. LOS is A for space > $1.2m^2$; B for space > 0.9-$1.2m^2$; C for space > 0.6-$0.9m^2$; D for space > 0.3-$0.6m^2$; E for space > 0.2-$0.3m^2$ and F for space ≤ $0.2m^2$.

7.3.14 As shown in **Table 7.7**, the assessment results suggested that the available waiting spaces provided on the refuge islands at Junction J8 will still able to cater for the anticipated waiting pedestrian demand at acceptable LOS in the design scenario of year 2031.

Future Pedestrian Condition in Ultimate Scenario

7.3.15 As discussed in **Section 7.2**, a footbridge connection will be provided at the Development to receive the future footbridge from Lee Garden Six, and the footbridge connection will link up the internal pedestrian links/walkways leading to the public open space, various commercial and community facilities as well as the street level of Caroline Hill Road.

7.3.16 With the connection to the future footbridge, the Development will be linked up with the Pedestrian Links such that the at-grade pedestrian flows would be diverted from the street level to the elevated level in particular the north-south movements between the MTR station and the subject site. The re-distribution of north-south pedestrian movements with the future footbridges is illustrated in **Drawing No. 7.4**.

7.3.17 By taking into account the future footbridge connection to Lee Garden Six, the future pedestrian flows in the ultimate scenario of year 2031 derived as shown **Table 7.8**. The results of LOS assessments for the ultimate scenario are also presented in the **Table 7.8**.

Table 7.8 Operational Performance of Pedestrian Facilities in Ultimate Scenario of Year 2031

Location[1]	Clear Width (m)	Effective Width[2] (m)	Observed 2-way Pedestrian Flow[3] (Ped/hour)				Level-of-Service[4] (LOS)			
			Weekday			Weekend	Weekday			Weekend
			AM Peak	Noon Peak	PM Peak	Noon Peak	AM Peak	Noon Peak	PM Peak	Noon Peak
1	3.0	2.0	170	210	190	70	A	A	A	A
2	3.0	2.0	350	410	770	550	A	A	A	A
3	2.9	1.9	410	450	220	260	A	A	A	A
4[5]	3.5	2.5	660	690	940	690	A	A	A	A
5	3.2	2.2	520	670	750	460	A	A	A	A
6	2.3	1.3	480	640	590	430	A	A	A	A
7	2.0	1.0	360	340	330	170	A	A	A	A
8	2.0	1.0	410	410	580	470	A	A	A	A
9	2.7	1.7	370	570	490	310	A	A	A	A
10	3.0	2.0	690	950	700	610	A	A	A	A
11	2.3	1.3	80	60	150	70	A	A	A	A
12	2.0	1.0	130	100	90	60	A	A	A	A
13	2.5	1.5	420	1290	820	800	A	A	A	A
14	2.5	1.5	370	960	710	650	A	A	A	A
15	2.2	1.2	1150	1770	1330	1190	A	C	B	B
16	2.0	1.0	330	430	370	270	A	A	A	A
17	4.4	3.4	50	110	90	120	A	A	A	A
18	3.3	2.3	900	2410	1330	1370	A	B	A	A
19	3.0	2.0	660	1610	930	890	A	A	A	A
20	1.7	0.7	380	480	380	210	A	A	A	A
C1	4.0	4.0	810	750	620	480	A	A	A	A
C2	3.6	3.6	390	520	480	370	A	A	A	A
C3	3.3	3.3	700	630	590	320	A	A	A	A
C4	3.3	3.3	380	600	490	360	A	A	A	A
C5[6]	5.0	5.0	660	630	670	540	A	A	A	A
C6	6.8	6.8	680	1520	1060	1040	A	A	A	A
C7	4.0	4.0	1310	2200	1530	1430	A	B	A	A
C8	4.2	4.2	1540	2920	2000	2020	A	C	B	B
C9	4.2	4.2	400	600	440	420	A	A	A	A
C10	6.4	6.4	1620	3250	2200	2110	A	B	B	A

Notes:
(1) Refer to **Drawing No. 7.1**
(2) Effective Width = Clear Width – Dead Width. Dead width = 0.5m for clearance from kerb/structure on footpaths; and no dead width at pedestrian crossing
(3) Rounded to the nearest 10
(4) Based the criteria of LOS from HCM 2000 as exhibited in TPDM. In general, LOS A and B provide a good walking environment; LOS C and D are acceptable value; and LOS E and F reflect the design volume has approached or over the limit of walking capacity
(5) The clear width of footpath will be widened from the existing 2m to 3.5m upon the implementation of the proposed road scheme at the Green Areas
(6) The crossing width will be widened from the existing 3.6m to 5m upon the implementation of the proposed road scheme at the Green Areas

7.3.18 As shown in **Table 7.8**, the operation performance of the critical pedestrian crossings at Leighton Road (locations C8 and C10) can be significantly improved to the LOS C or better upon commissioning of the future footbridge connecting the Development with Lee Garden Six.

7.3.19 In addition, the results of LOS assessment on pedestrian waiting space in **Table 7.9** also reflected that the future footbridge would help on improving the pedestrian waiting condition on the refuge islands at Junction J8.

Table 7.9 Operational Performance of Central Refuge Islands at J8 in Ultimate Scenario of Year 2031

Location	Effective Area (m^2)	Estimated Average Number of Pedestrian Waiting at Refuge Island(1)				Level-of-Service(2) (LOS)			
		Weekday			Weekend	Weekday			Weekend
		AM Peak	Noon Peak	PM Peak	Noon Peak	AM Peak	Noon Peak	PM Peak	Noon Peak
Northern Refuge Island	18	15	19	16	16	B	B	B	B
Southern Refuge Island	21	5	5	5	5	A	A	A	A

Notes: (1) Estimated by the forecasted pedestrian crossing demand and MOC of the signal junction.

(2) Based on the criteria of LOS from Table 18-7 in Chapter 18 of HCM 2000, the LOS reflects the space per person which is computed by effective waiting area divided by waiting pedestrian. LOS is A for space > $1.2m^2$; B for space > 0.9-$1.2m^2$; C for space > 0.6-$0.9m^2$; D for space > 0.3-$0.6m^2$; E for space > 0.2-$0.3m^2$ and F for space ≤ $0.2m^2$.

8. SUMMARY AND CONCULSION

8.1 Summary

8.1.1 To support the Development and the District Court, a road scheme with road improvement works at Caroline Hill Road, Link Road, Hoi Ping Road and Leighton Road was proposed in the HyD's Traffic Review Report in 2019, and Road Scheme was gazetted and authorized in December 2020. The formation of the Green Areas of the subject site as required under the Lease is subject to the Road Scheme.

8.1.2 To serve the vehicular access to the Developments as well as the District Court, it is required to form a new access road at the PHB Strata of the subject site under the Lease.

8.1.3 As per the requirement of the Lease, a traffic review report is required to review the vehicular and pedestrian traffic conditions of the Green Areas, the PHB Strata and the local road network adjacent to and in the vicinity of the lot and the projected vehicular and pedestrian traffic for the future development at the lot; and to identify appropriate traffic mitigation measures, road routings, adjustments, designs, improvement and other measures and works. In compliance with the lease requirement, MVA was commissioned as a traffic consultant to conduct a traffic study and prepare a traffic review report.

8.1.4 For the purpose of serving different accesses to the various internal transport facilities to be provided in the Development, two vehicular accesses were planned at the on the new access road via the points as allowed under the Lease. It was proposed that the eastern access of the Development will mainly serve the accesses for light buses, goods vehicles and coaches while the western access will only serve the accesses for private cars and taxis.

8.1.5 The internal transport facilities of the development were proposed following the requirements in the Lease.

8.1.6 The road layout at the Green Areas was reviewed and proposed with reference the Road Scheme in HyD's traffic review report. The improvement works covered by the proposed scheme include: (i) modification of the existing priority junction at Caroline Hill Road (West) / Link Road into a roundabout-like junction; (ii) provision of an additional left-turning traffic lane at the eastern entry arm of Leighton Road at the junction of Leighton Road / Caroline Hill Road (West) / Hoi Ping Road; (iii) modification of the "left-turn" lane to "left-turn and right turn" shared lane at the entry arm of Caroline Hill Road of the junction of Leighton Road / Caroline Hill Road (West) / Hoi Ping Road; and (iv) road widening at Caroline Hill Road (East) near its junction with the future new access road to provide right-turn pocket and a refuge island for pedestrian.

8.1.7 To further improve the future traffic condition at the junction of Caroline Hill Road (West) and Link Road, the proposed road scheme has included the proposed signal control arrangement at the junction.

8.1.8 The layout of the new access road at the PHB Strata was proposed by taking into account the accessibility of both the future vehicular and pedestrian traffic as well as the constraint of the tree canopy of an old and valuable tree at the District Court site near the PHB Strata. It was proposed to connect with future road layout at the Green Areas on both the eastern and western section of Caroline Hill Road with provisions of two traffic lanes for each direction, minimum 3m wide footpaths on both sides and cautionary crossings at both ends and the

mid-section of the road. In addition, an on-street lay-by was proposed on the southern side of the road to serve as an alternative drop-off point for the general public especially for the Government Accommodation.

8.1.9 To review the existing traffic condition, traffic surveys were conducted at the identified key junctions on a weekday and a weekend in mid-September 2021. Based on the observed traffic flows, the results of junction operational assessment revealed that all identified key junctions were operating within capacities.

8.1.10 In view of the formations of the Green Areas and the PHB Strata shall be completed by 30th June 2026 as per the requirements under the Lease while the Development is also targeted to be completed by 2026, a design of 2031 was adopted for assessments.

8.1.11 To evaluate the effect to the surrounding road condition due to the Development as well as the road scheme proposed for the Green Areas and the PHB Strata, two future scenarios in year 2031 were assessed. The reference Scenario considered the existing traffic arrangement will be maintained without the Development and the District Court; and the design scenario was taken into account the proposed road scheme for Green Areas and the PHB Strata, the Development and the District Court.

8.1.12 Traffic forecasts for the design year 2031 were formulated by taken into consideration (i) the background traffic growth as derived from historical traffic data and planning data; (ii) the additional traffic as induced by the planned future development in the vicinity including the District Court; and (iii) the development traffic of the Development.

8.1.13 Junction operational assessments were carried out and the results showed that all identified junctions with their existing traffic arrangements will be operating within their capacities during the peak hours on weekday and weekend in the reference scenario of year 2031.

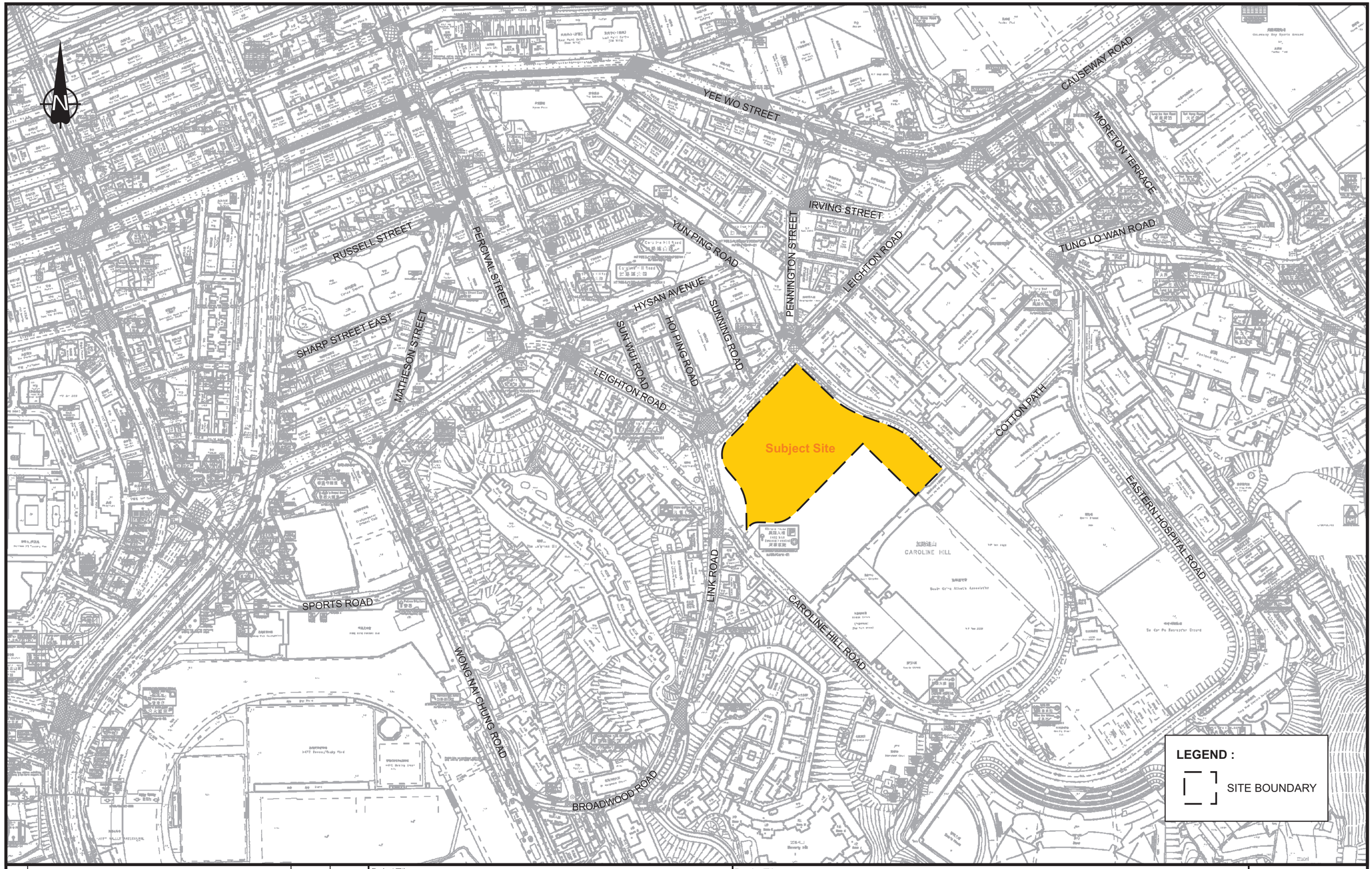
8.1.14 With implementation of the proposed road scheme at the Green Areas, the assessment results showed that all identified junctions, including the modified junction J5, the modified junction J6 with the proposed signal control arrangement and the new junction J18, will be operating with adequate capacities in the design scenario of year 2031.

8.1.15 In addition, pedestrian assessments was also conducted for the design year 2031. The assessment results suggested that all the pedestrian facilities in the surrounding will be still operated at acceptable LOS in the design scenario of year 2031. Upon the commissioning of the future footbridge connecting the Development with Lee Garden Six in the ultimate scenario, the pedestrian condition will be improved and all the pedestrian facilities in the surrounding will be operated at LOS C or better.

8.2 Conclusion

8.2.1 In conclusion, the results from this traffic review demonstrated that the surrounding road network with implementation of the proposed road scheme at the Green Areas and PHB Strata will be adequate to serve the future traffic demand upon the completions of the Development and the District Court. Meanwhile, the future footbridge connection and the proposed landscape bridge at the Development will improve the future pedestrian condition.

Drawings



Rev.	Description	Checked	Date
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-	-	-	-
-	-	-	-
-	-	-	-

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON
INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG
TRAFFIC REVIEW REPORT

Drawing Title

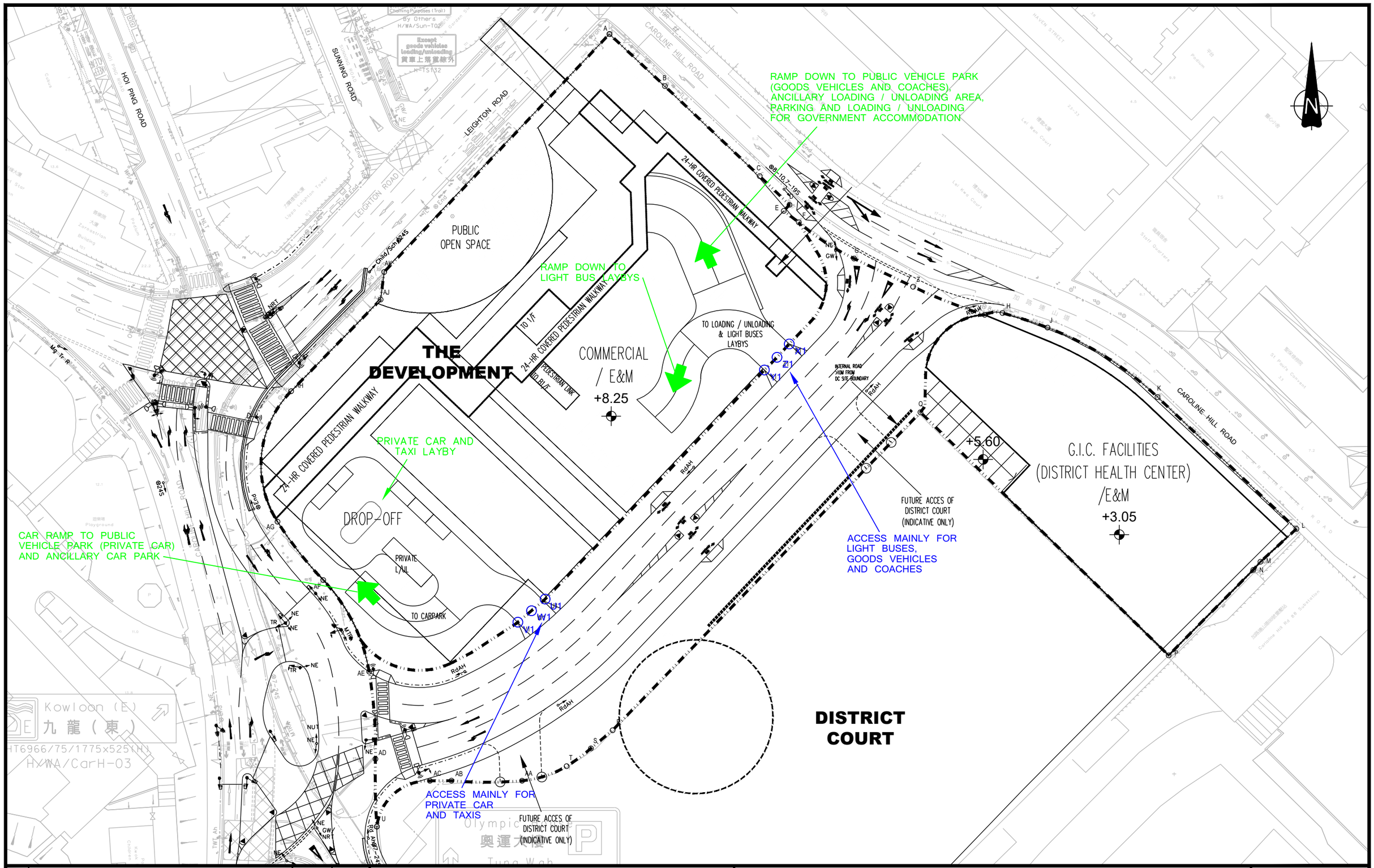
SITE LOCATION

Designed	Checked	Scale	Date	Drawing No.	Rev.
APU	CHC	NTS	DEC 2021	1.1	-

SYSTRA MVA

CHK50603110/TIA/F11.CDR/LLH/9DEC21

Original Size : A3



Rev.	Description	Checked	Date
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-	-	-	-
B	MINOR AMENDMENT	CHC	14APR22
A	TD'S COMMENTS INCORPORATED	CHC	28FEB22

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG TRAFFIC REVIEW REPORT

Drawing Title

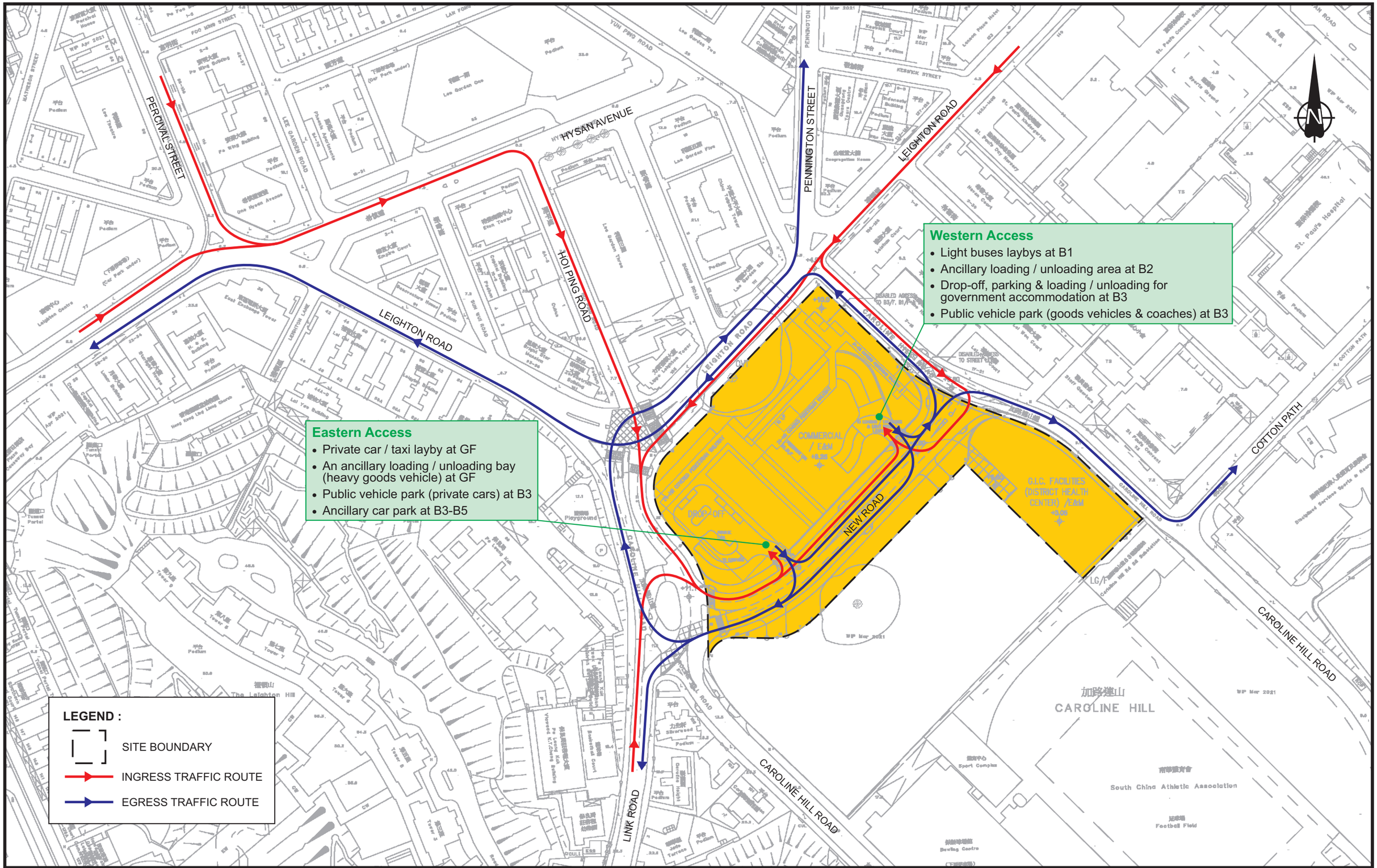
ACCESS ARRANGEMENT

Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	1:1000(A3)	DEC 2021	2.1	B

SYSTRA MVA

CHK50603110/TIA/F21-B.DWG/KCM/14APR22

Original Size : A3



Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
B	MINOR AMENDMENT	CHC	13APR22
A	TD'S COMMENTS INCORPORATED	CHC	24FEB22

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG TRAFFIC REVIEW REPORT

Drawing Title

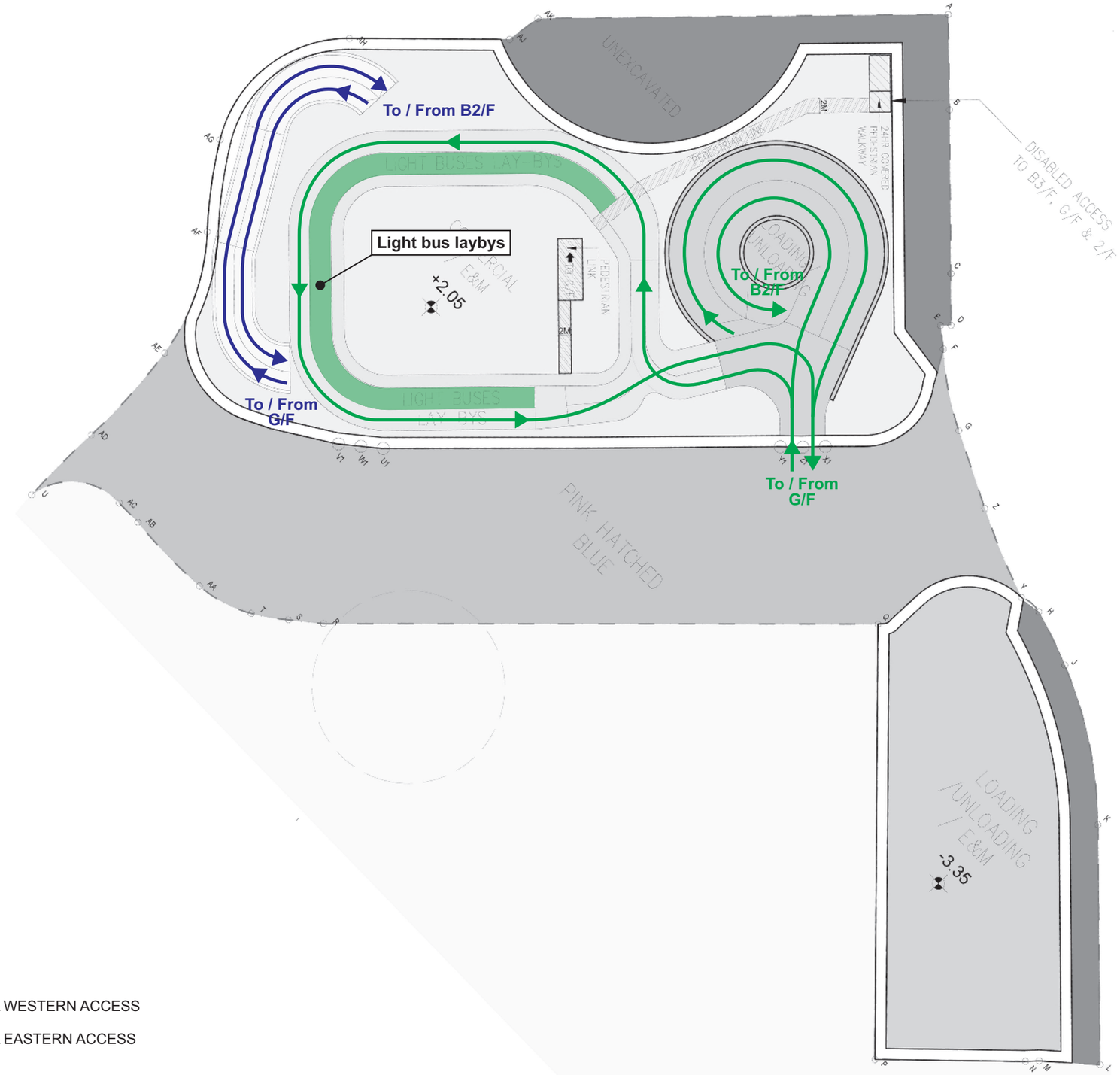
KEY INGRESS AND EGRESS TRAFFIC ROUTES

Designed	Checked	Scale	Date	Drawing No.	Rev.
APU	CHC	NTS	DEC 2021	2.2	B

SYSTRA MVA

CHK50603110/TIA/F22-B.CDR/LLH/13APR22

Original Size : A3



LEGEND :

VEHICULAR ROUTES VIA WESTERN ACCESS

VEHICULAR ROUTES VIA EASTERN ACCESS

Note :
Internal traffic arrangement shown on the drawing is indicative only and it is subject to detail design.

Rev.	Description	Checked	Date
-	-	-	-
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Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON
INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG
TRAFFIC REVIEW REPORT

Drawing Title

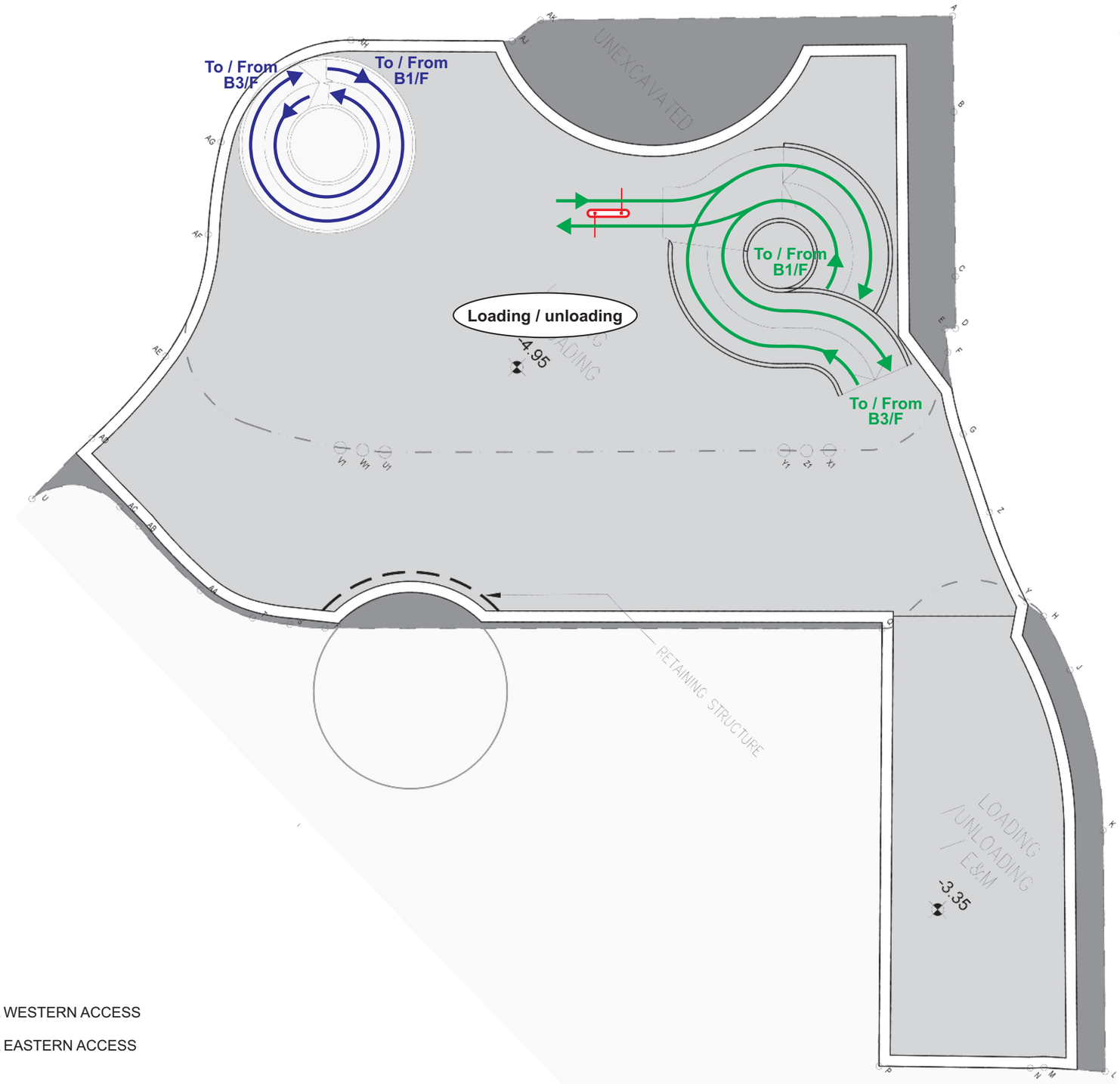
INTERNAL TRAFFIC ARRANGEMENT - B1/F

Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	NTS	APR 2022	2.3	-

SYSTRA MVA

CHK50603110/TIA/F23.CDR/LLH/11APR22

Original Size : A3



LEGEND :

- CONTROL GATE
- VEHICULAR ROUTES VIA WESTERN ACCESS
- VEHICULAR ROUTES VIA EASTERN ACCESS

Note :
Internal traffic arrangement shown on the drawing is indicative only and it is subject to detail design.

Rev.	Description	Checked	Date
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Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON
INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG
TRAFFIC REVIEW REPORT

Drawing Title

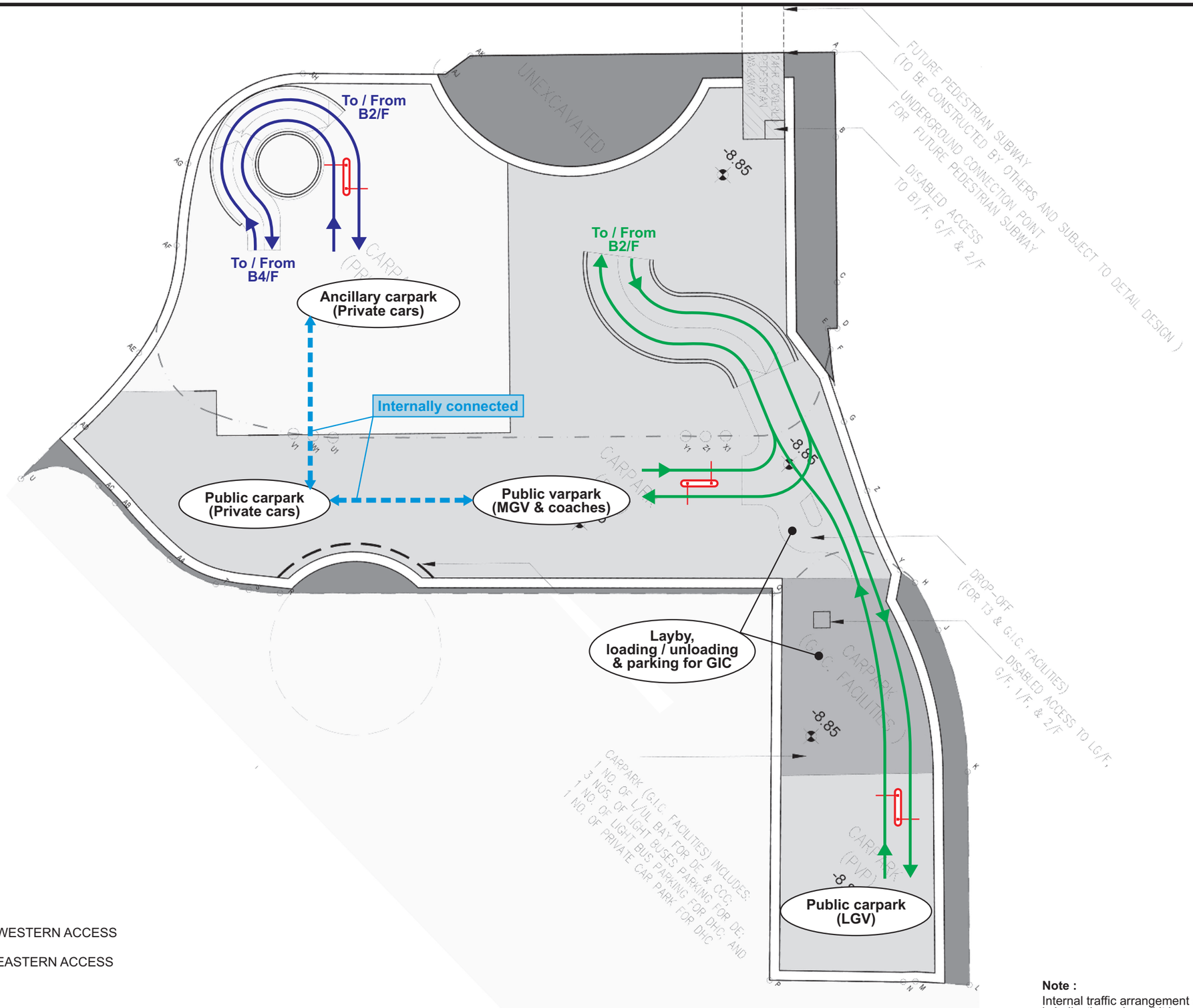
INTERNAL TRAFFIC ARRANGEMENT - B2/F

Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	NTS	APR 2022	2.4	-

SYSTRA MVA

CHK50603110/TIA/F24.CDR/LLH/11APR22

Original Size : A3



LEGEND :

- CONTROL GATE
- VEHICULAR ROUTES VIA WESTERN ACCESS
- VEHICULAR ROUTES VIA EASTERN ACCESS

Note :
Internal traffic arrangement shown on the drawing is indicative only and it is subject to detail design.

Rev.	Description	Checked	Date
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-	-	-	-
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Project Title

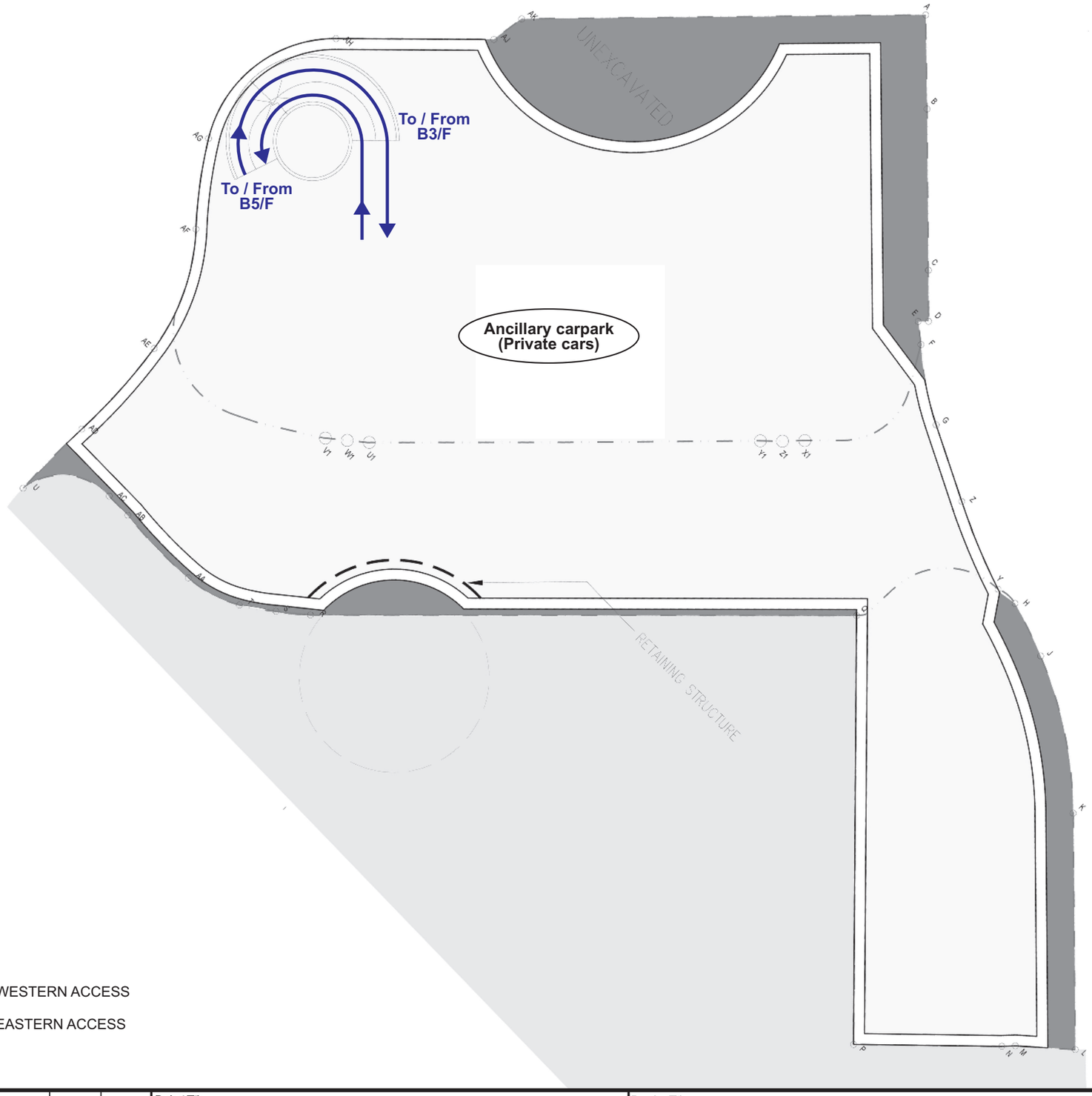
PROPOSED COMMERCIAL DEVELOPMENT ON INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG TRAFFIC REVIEW REPORT

Drawing Title

INTERNAL TRAFFIC ARRANGEMENT - B3/F

Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	NTS	APR 2022	2.5	-

SYSTRA MVA



LEGEND :

VEHICULAR ROUTES VIA WESTERN ACCESS

VEHICULAR ROUTES VIA EASTERN ACCESS

Note :
Internal traffic arrangement shown on the drawing is indicative only and it is subject to detail design.

Rev.	Description	Checked	Date
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-	-	-	-
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-	-	-	-

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON
INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG
TRAFFIC REVIEW REPORT

Drawing Title

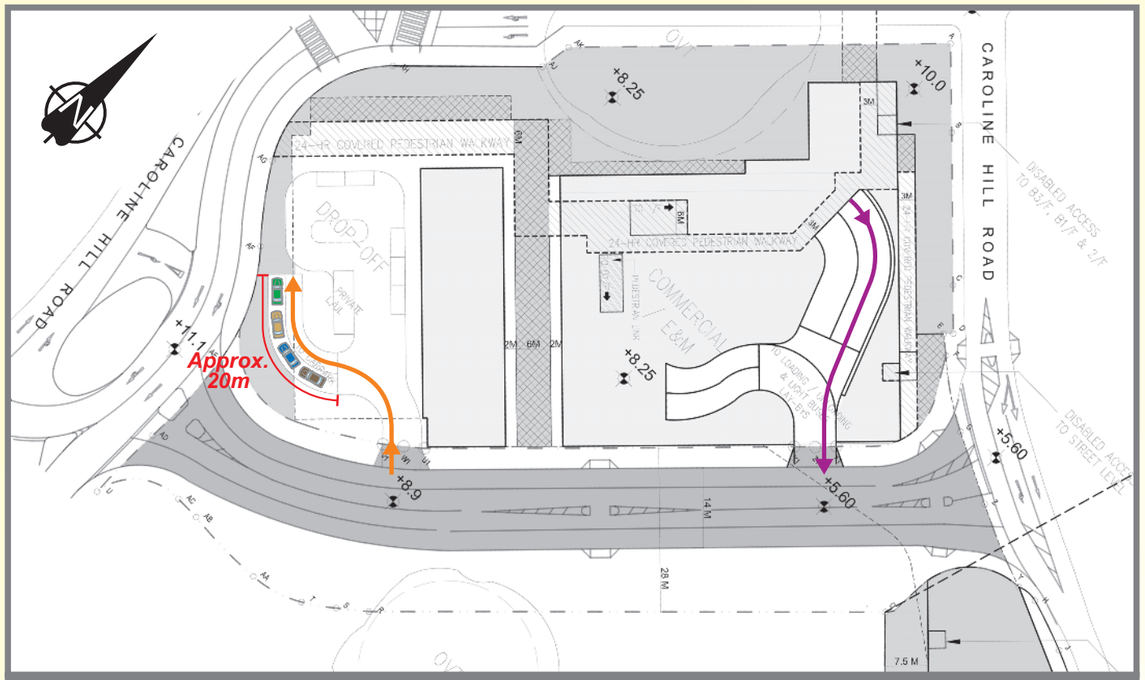
INTERNAL TRAFFIC ARRANGEMENT - B4/F & B5/F

Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	NTS	APR 2022	2.6	-

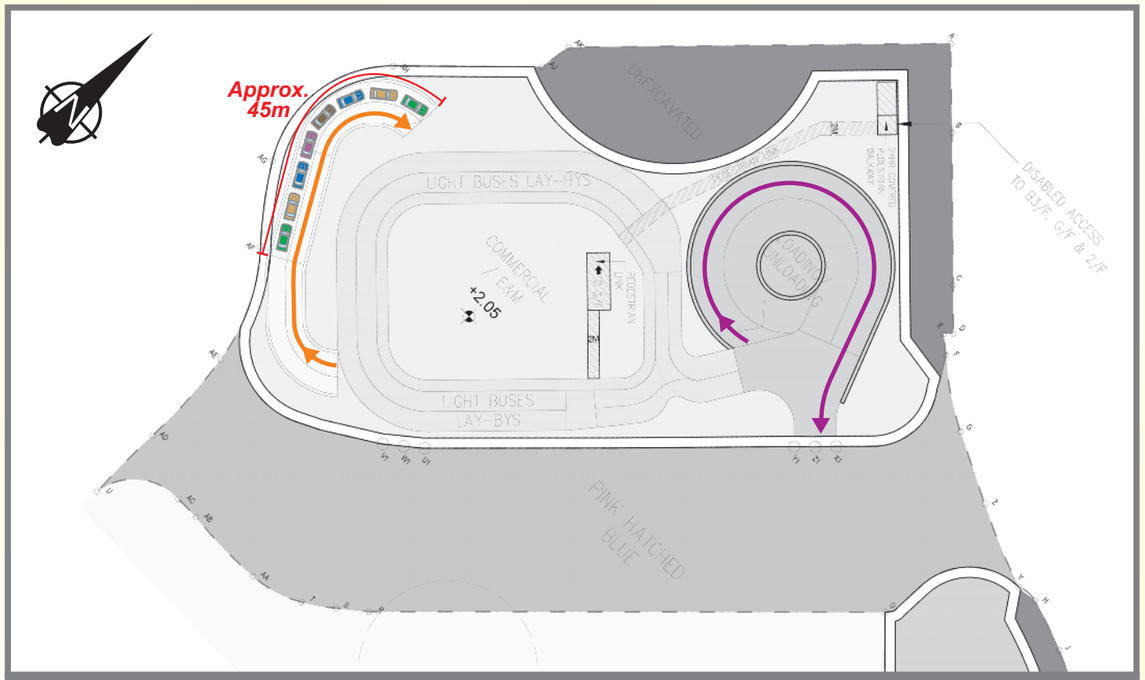
SYSTRA MVA

CHK50603110/TIA/F26.CDR/LLH/11APR22

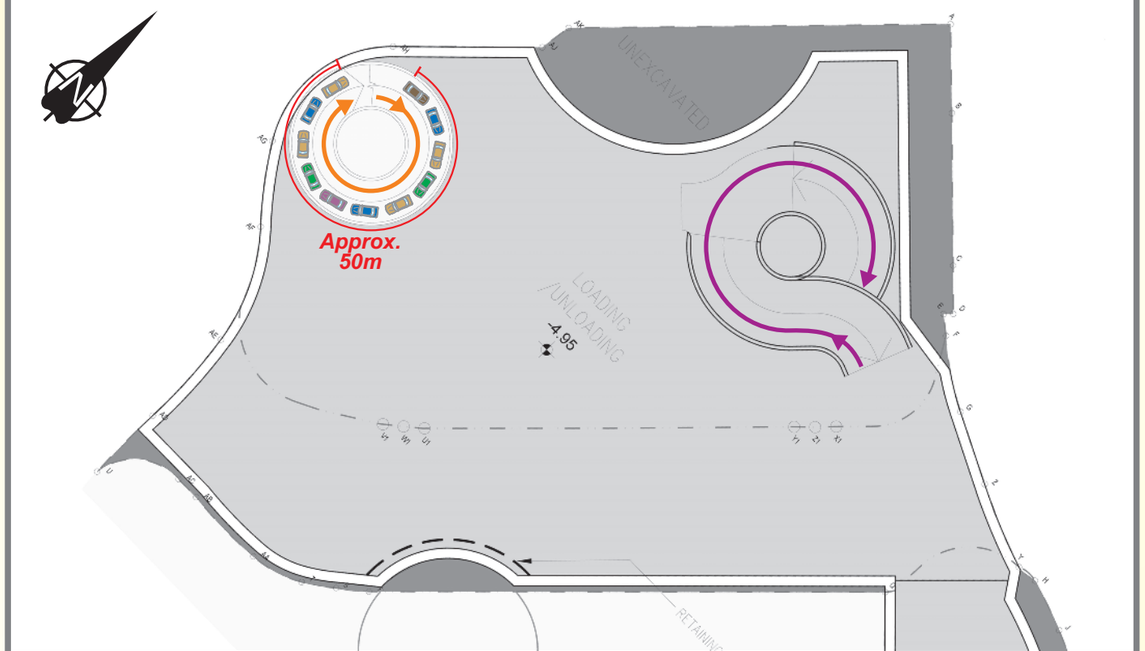
Original Size : A3



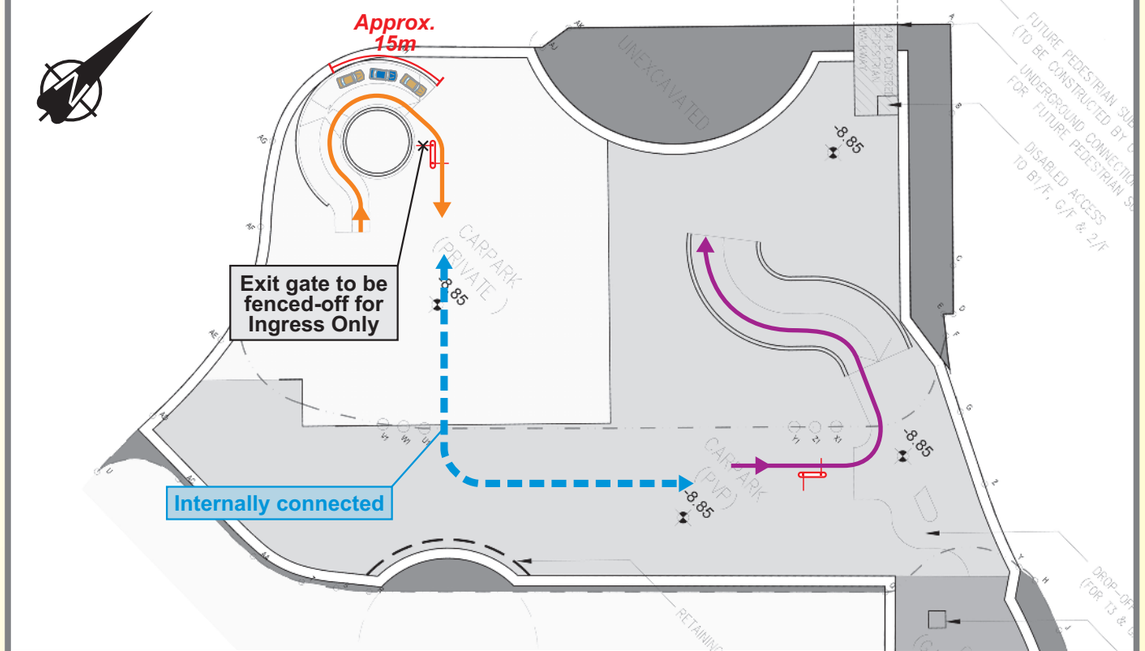
G/F



B1/F



B2/F



B3/F

Note :
Internal traffic arrangement shown on the drawing is indicative only and it is subject to detail design.

LEGEND : LOCATION OF CONTROL GATES | WAITING VEHICLE TO ACCESS CARPARK | BYPASS ROUTE FOR MONTHLY PARKING ACCESS | EXIT ROUTE OF CARPARK

Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
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-	-	-	-

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON
INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG
TRAFFIC REVIEW REPORT

Drawing Title

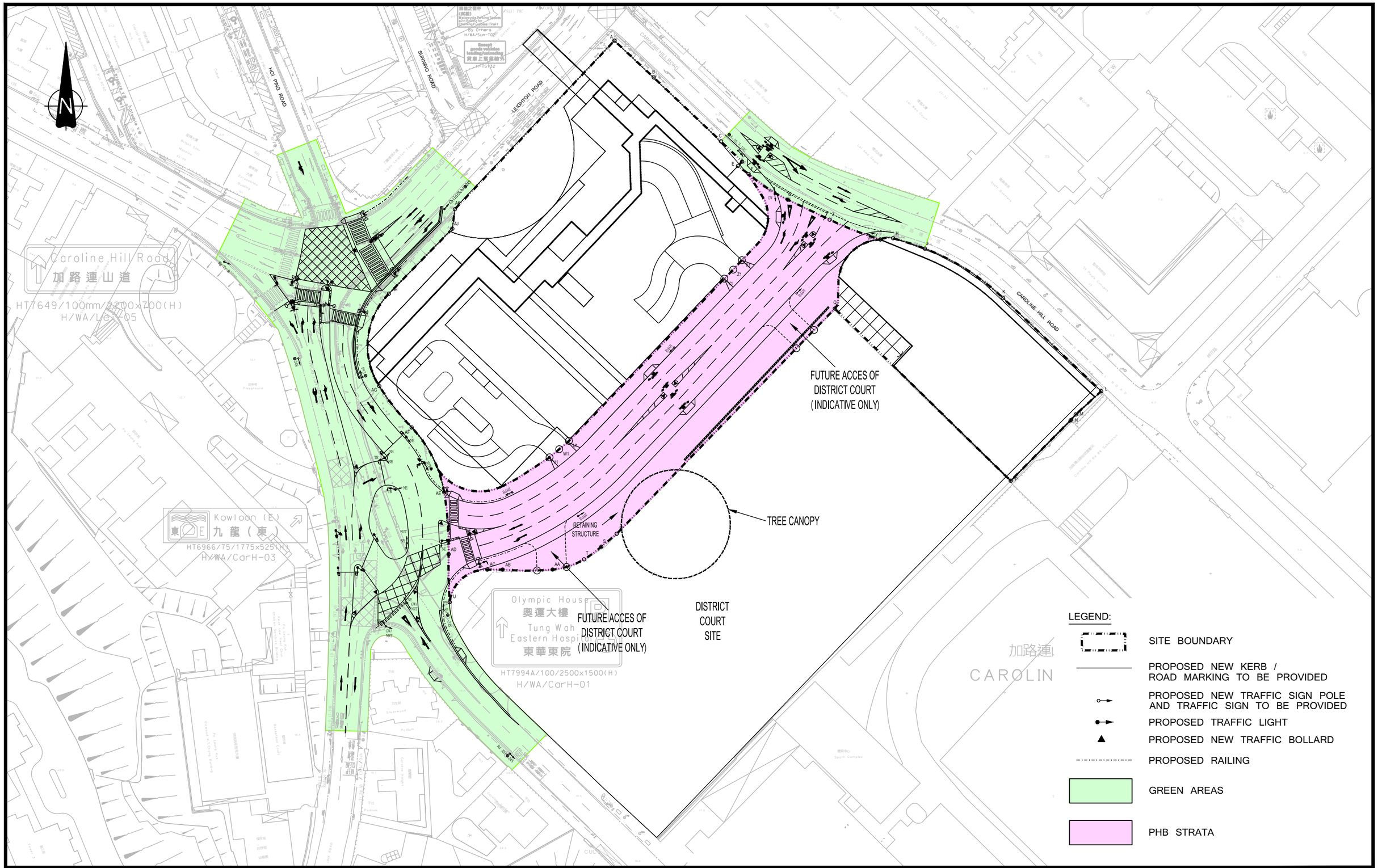
FLEXIBILITY IN TRAFFIC ARRANGEMENT

Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	NTS	APR 2022	2.7	-

SYSTRA MVA

CHK50603110/TIA/F27.CDR/LLH/11APR22

Original Size : A3



Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
B	MINOR AMENDMENT	CHC	13APR22
A	TD'S COMMENTS INCORPORATED	CHC	25FEB22

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG TRAFFIC REVIEW REPORT

Drawing Title

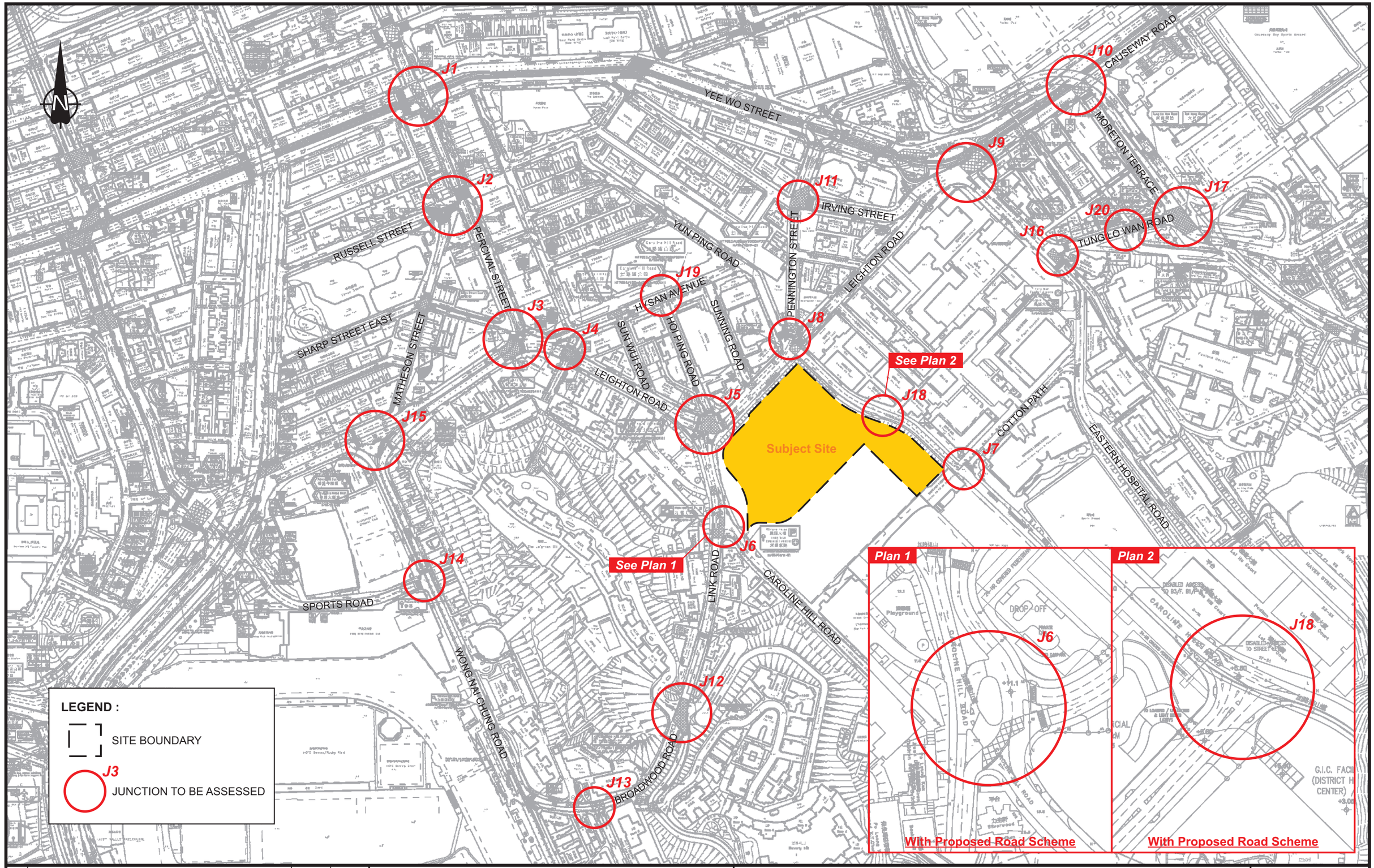
PROPOSED ROAD SCHEME AT GREEN AREAS AND THE NEW ROAD AT PHB STRATA

Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	1:1000(A3)	DEC 2021	3.1	B

SYSTRA MVA

CHK50603110/TIA/F31-B.DWG/CPW/13APR22

Original Size : A3



Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
B	MINOR AMENDMENT	CHC	13APR22
A	TD'S COMMENTS INCORPORATED	CHC	22FEB22

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG TRAFFIC REVIEW REPORT

Drawing Title

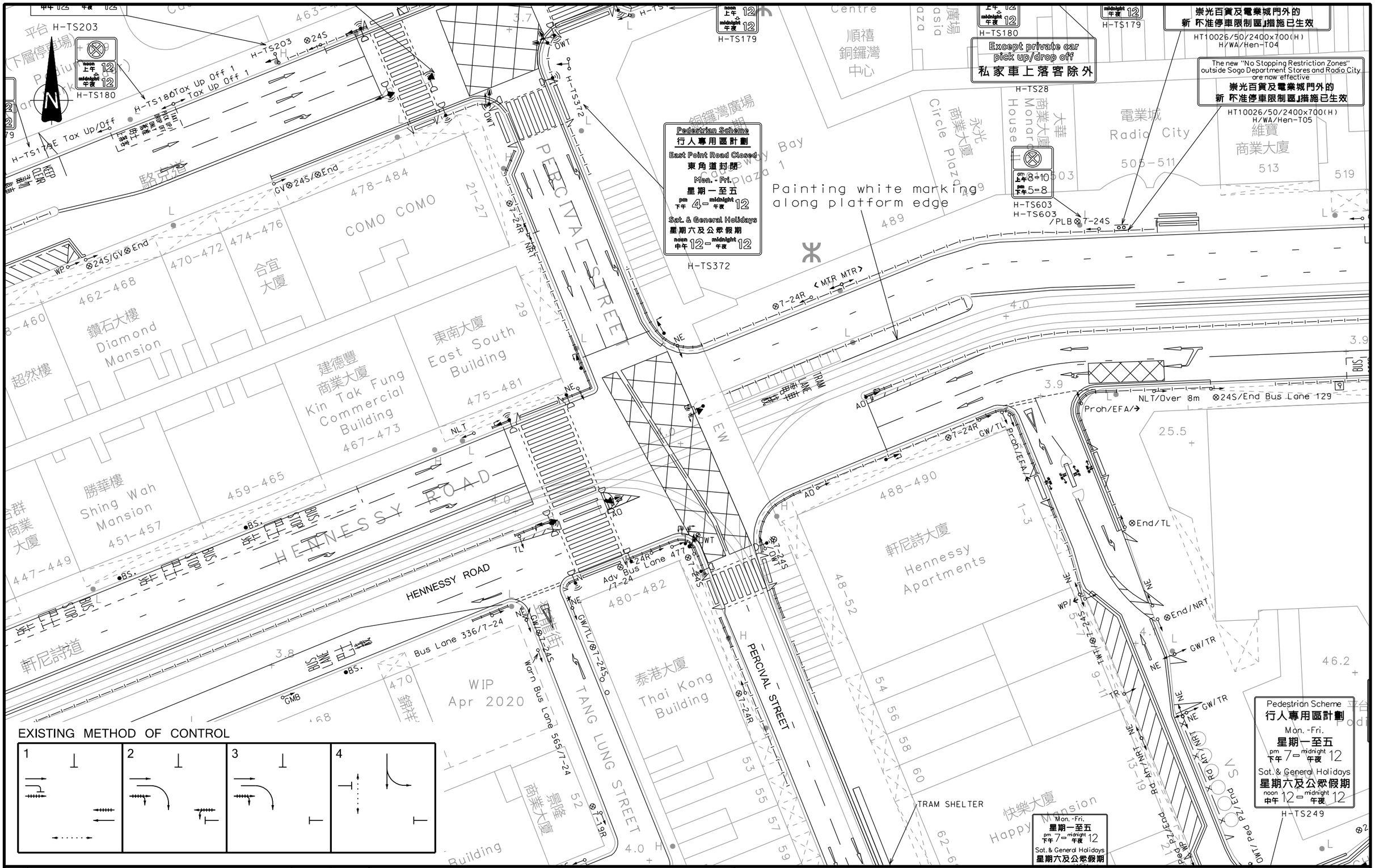
EXISTING ROAD NETWORK AND IDENTIFIED JUNCTIONS TO BE ASSESSED

Designed	Checked	Scale	Date	Drawing No.	Rev.
APU	CHC	NTS	DEC 2021	4.1	B

SYSTRA MVA

CHK50603110/TIA/F41-B.CDR/LLH/13APR22

Original Size : A3



EXISTING METHOD OF CONTROL

Rev.	Description	Checked	Date
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Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON
INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG
TRAFFIC REVIEW REPORT

Drawing Title

EXISTING JUNCTION LAYOUT OF HENNESSY ROAD / PERCIVAL STREET (J1)

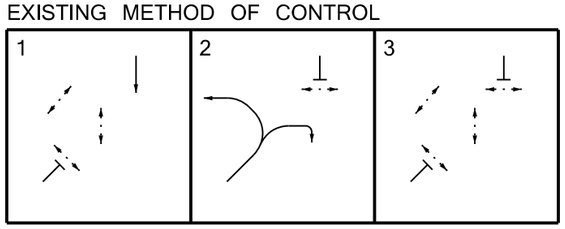
Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	1:500(A3)	DEC 2021	4.2	-

SYSTRA MVA

CHK50603110/TIA/F42.DGN/CKC/09DEC21

Original Size : A3

EXISTING METHOD OF CONTROL



Rev.	Description	Checked	Date
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-	-	-	-

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON
INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG
TRAFFIC REVIEW REPORT

Drawing Title

EXISTING JUNCTION LAYOUT OF MATHESON STREET / PERCIVAL STREET / RUSSELL STREET (J2)

Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	1:500(A3)	DEC 2021	4.3	-

SYSTRA MVA

CHK50603110/TIA/F43.DGN/CKC/09DEC21

Original Size : A3

Sharp Street East
霎東街
H/WA/Per-01

Leighton Road
禮頓道

HT7463/75mm/1650x1025(H)
H/WA/Hys-01

J3

J4

GIVE WAY TO TRAM
請讓
電車先行
H-TS156

Follow the Pedestrian Signal
過路請依
行人燈號
H-TS24

HT9553
H/WA/LeeGar-RS03

HT9553
H/WA/LeeGar-RS04

Caroline Hill Road
加路連山道

HT7462/75mm/1700x525(H)
H/WA/Lei-04

Beware of Tram Stopping
小心電車

Sharp Street East
霎東街
Podium

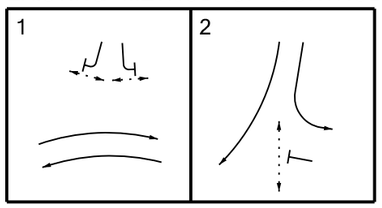
Russell Street
羅素街

LEIGHTON ROAD

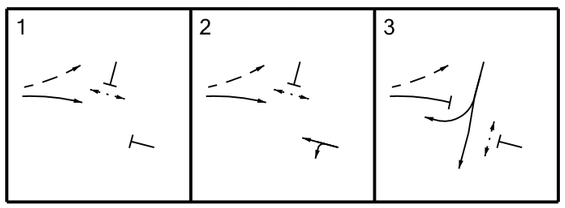
PERCIVAL STREET

HYSAN AVENUE

EXISTING METHOD OF CONTROL FOR J3



EXISTINIG METHOD OF CONTROL FOR J4



Rev.	Description	Checked	Date
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-	-	-	-

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON
INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG
TRAFFIC REVIEW REPORT

Drawing Title

EXISTING JUNCTION LAYOUT OF LEIGHTON ROAD / PERCIVAL STREET / HYSAN AVENUE (J3) AND LEIGHTON ROAD / HYSAN AVENUE / LEIGHTON LANE (J4)

Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	1:500(A3)	DEC 2021	4.4	-

SYSTRA MVA

CHK50603110/TIA/F44.DGN/CKC/09DEC21

Original Size : A3

HOI PING ROAD

SUNNING ROAD

LEIGHTON ROAD

CAROLINE HILL ROAD

Except goods vehicles loading/unloading 貨車上落貨除外

Caroline Hill Road 加路連山道

HT7653/100mm/2300x700(H)
H/WA/Lei-06

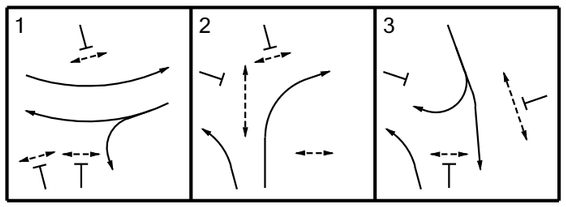
Caroline Hill Road 加路連山道

HT7649/100mm/2200x700(H)
H/WA/Lei-05

IL8945

WIP Mar 2021

EXISTING METHOD OF CONTROL



Rev.	Description	Checked	Date
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Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON
INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG
TRAFFIC REVIEW REPORT

Drawing Title

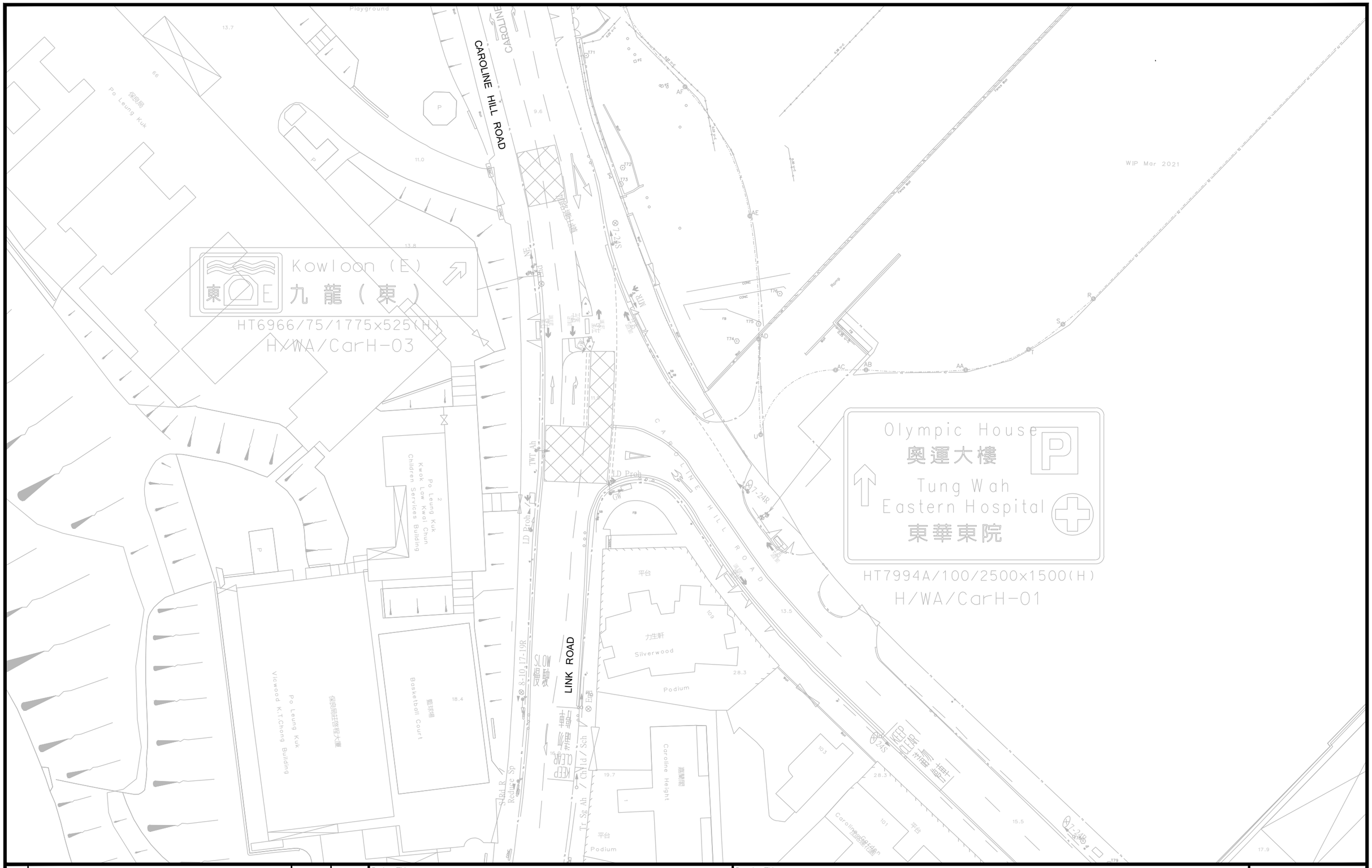
**EXISTING JUNCTION LAYOUT OF
LEIGHTON ROAD / CAROLINE HILL ROAD (WEST) (J5)**

Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	1:500(A3)	DEC 2021	**4.5**	-

SYSTRA MVA

CHK50603110/TIA/F45.DWG/CKC/09DEC21

Original Size : A3



Rev.	Description	Checked	Date
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Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON
INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG
TRAFFIC REVIEW REPORT

Drawing Title

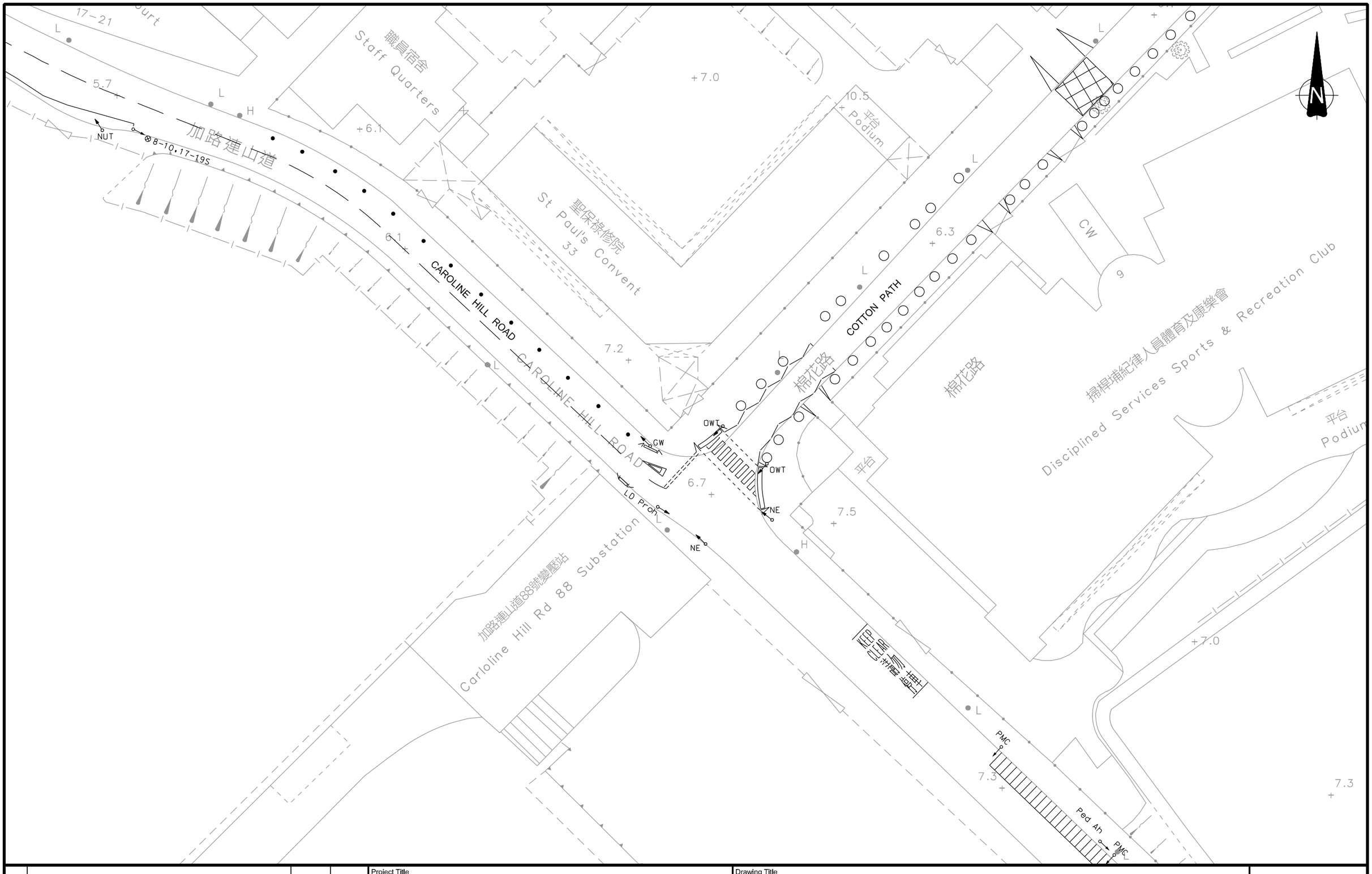
EXISTING JUNCTION LAYOUT OF CAROLINE HILL ROAD (WEST) / LINK ROAD (J6)

Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	1:500(A3)	DEC 2021	4.6	-

SYSTRA MVA

CHK50603110/TIA/F46.DWG/CKC/09DEC21

Original Size : A3



Rev.	Description	Checked	Date
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-	-	-	-

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON
INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG
TRAFFIC REVIEW REPORT

Drawing Title

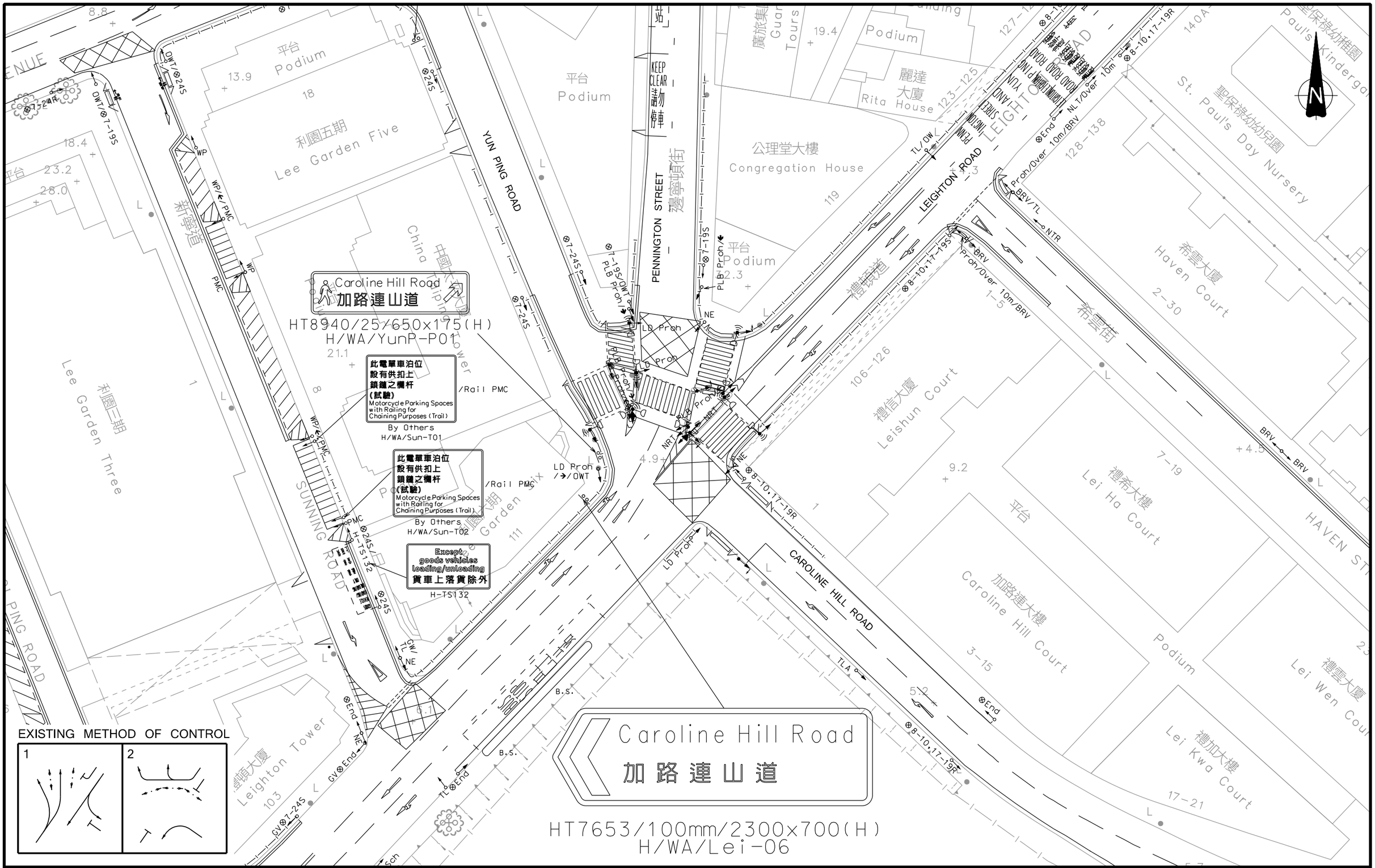
EXISTING JUNCTION LAYOUT OF CAROLINE HILL ROAD / COTTON PATH (J7)

Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	1:500(A3)	DEC 2021	**4.7**	-

SYSTRA MVA

CHK50603110/TIA/F47.DGN/CKC/09DEC21

Original Size : A3



Rev.	Description	Checked	Date
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-	-	-	-

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON
INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG
TRAFFIC REVIEW REPORT

Drawing Title

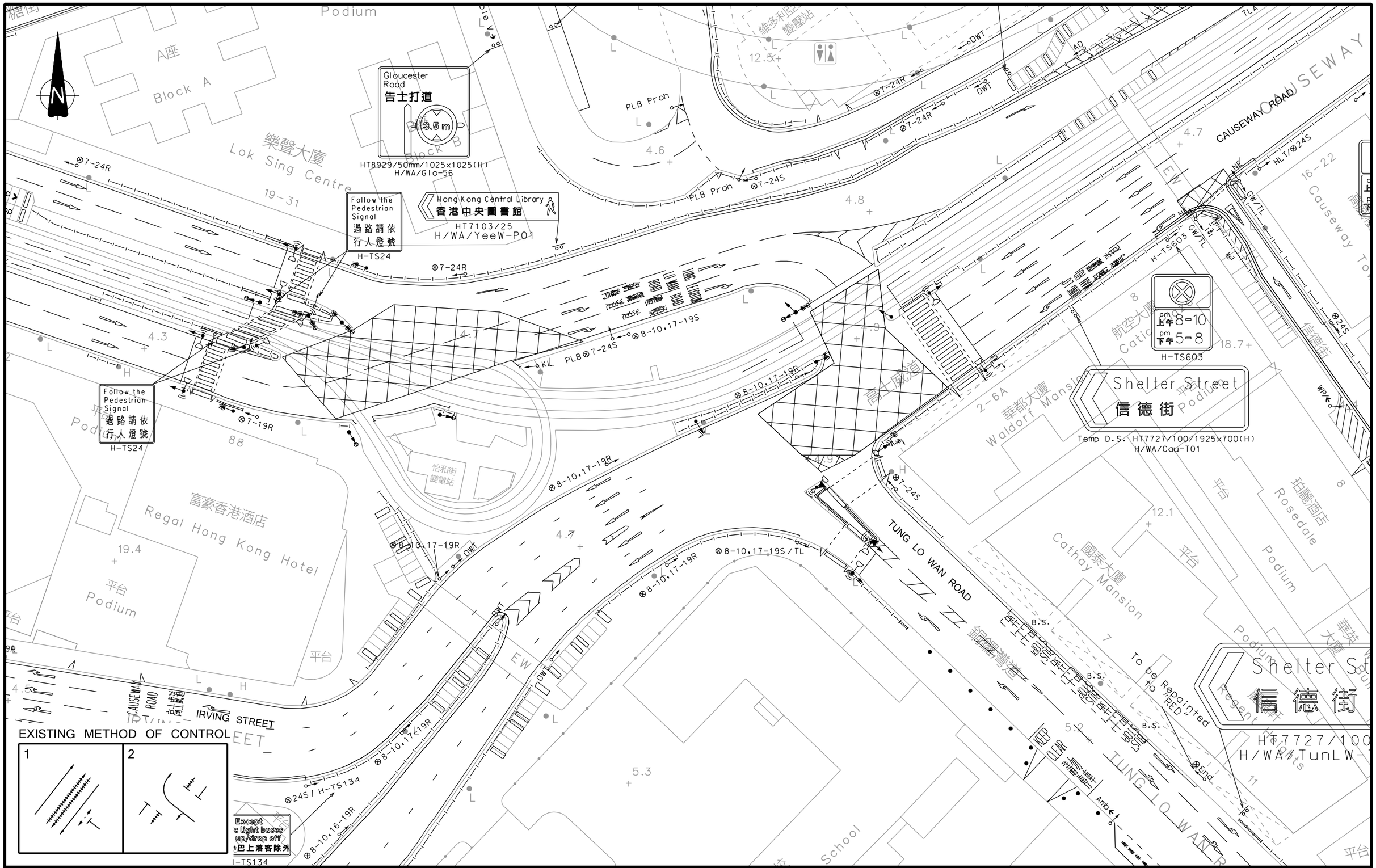
EXISTING JUNCTION LAYOUT OF LEIGHTON ROAD / YUN PING ROAD / PENNINGTON STREET / CAROLINE HILL ROAD (EAST) (J8)

Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	1:500(A3)	DEC 2021	4.8	-

SYSTRA MVA

CHK50603110/TIA/F48.DGN/CKC/09DEC21

Original Size : A3



Rev.	Description	Checked	Date
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-	-	-	-
-	-	-	-
-	-	-	-

Project Title

TRAFFIC CONSULTANCY SERVICE FOR COMMERCIAL DEVELOPMENT ON IL 8945, CAUSEWAY BAY, HONG KONG

Drawing Title

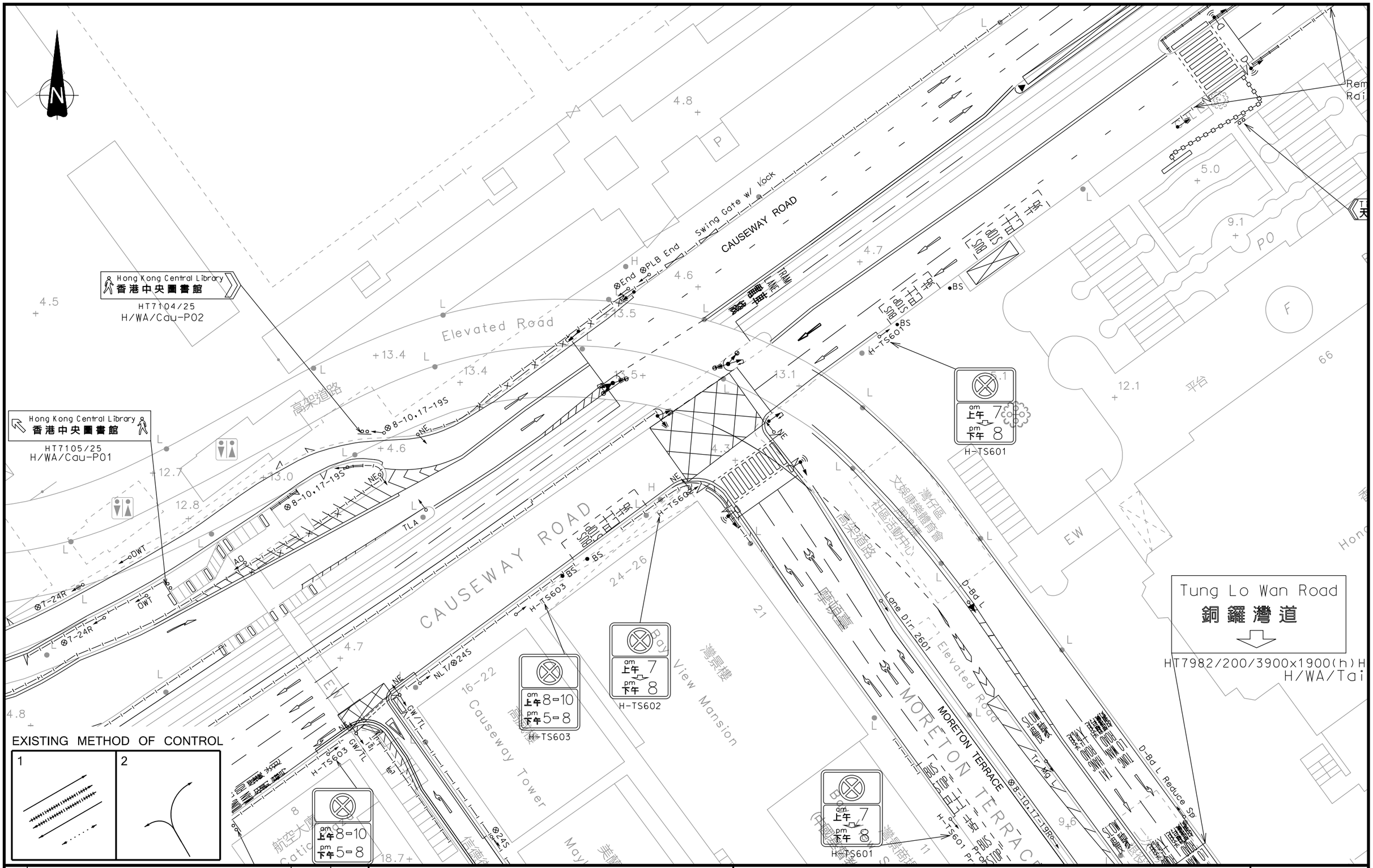
EXISTING JUNCTION LAYOUT OF CAUSEWAY ROAD / LEIGHTON ROAD / TUNG LO WAN ROAD / IRVING STREET (J9)

Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	1:500(A3)	DEC 2021	4.9	-

SYSTRA MVA

CHK50603110/TIA/F49.DGN/CKC/09DEC21

Original Size : A3



Rev.	Description	Checked	Date
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-	-	-	-
-	-	-	-
-	-	-	-

Project Title

TRAFFIC CONSULTANCY SERVICE FOR COMMERCIAL DEVELOPMENT ON IL 8945, CAUSEWAY BAY, HONG KONG

Drawing Title

EXISTING JUNCTION LAYOUT OF CAUSEWAY ROAD / MORETON TERRACE (J10)

Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	1:500(A3)	MAR 2022	4.10	-

SYSTRA MVA

CHK50603110/TIA/F410.DGN/CKC/01MAR22

Original Size : A3

Except goods vehicles loading/unloading
貨車上落貨除外
H-TS132

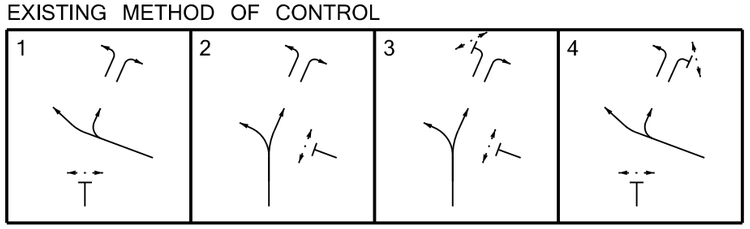
Except public light buses pick up/drop off
公共小巴上落客除外
H-TS134

Follow the Pedestrian Signal
過路請依行人燈號
H-TS24

Caroline Hill Road
加路連山道

HT7653/100mm/2300x700(H)
H/WA/YunP-01

EXISTING METHOD OF CONTROL



Rev.	Description	Checked	Date
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-	-	-	-
-	-	-	-

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG TRAFFIC REVIEW REPORT

Drawing Title

EXISTING JUNCTION LAYOUT OF PENNINGTON STREET / IRVING STREET / JARDINE'S BAZAAR (J11)

Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	1:500(A3)	DEC 2021	**4.11**	-

CHK50603110/TIA/F411.DGN/CKC/09DEC21

Original Size : A3

Caroline Hill Road
加路連山道

HT8971/75mm/1650x525(H)
H/WA/Bro-01

EXISTING METHOD OF CONTROL

1	2	3	4

Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON
INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG
TRAFFIC REVIEW REPORT

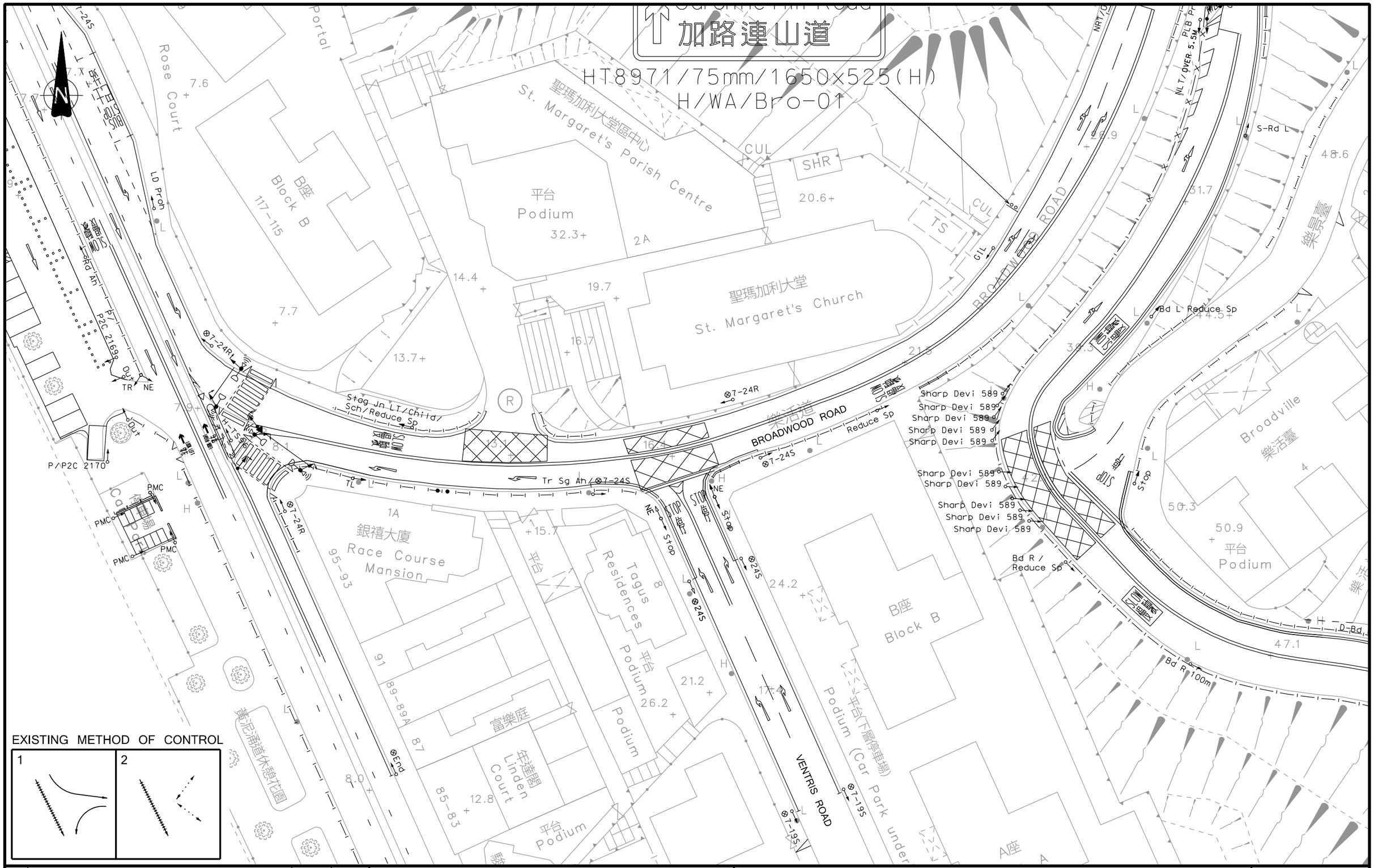
Drawing Title

EXISTING JUNCTION LAYOUT OF LINK ROAD / BROADWOOD ROAD (J12)

Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	1:500(A3)	DEC 2021	4.12	-

CHK50603110/TIA/F412.DGN/CKC/09DEC21

Original Size : A3



EXISTING METHOD OF CONTROL

Rev.	Description	Checked	Date
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Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON
INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG
TRAFFIC REVIEW REPORT

Drawing Title

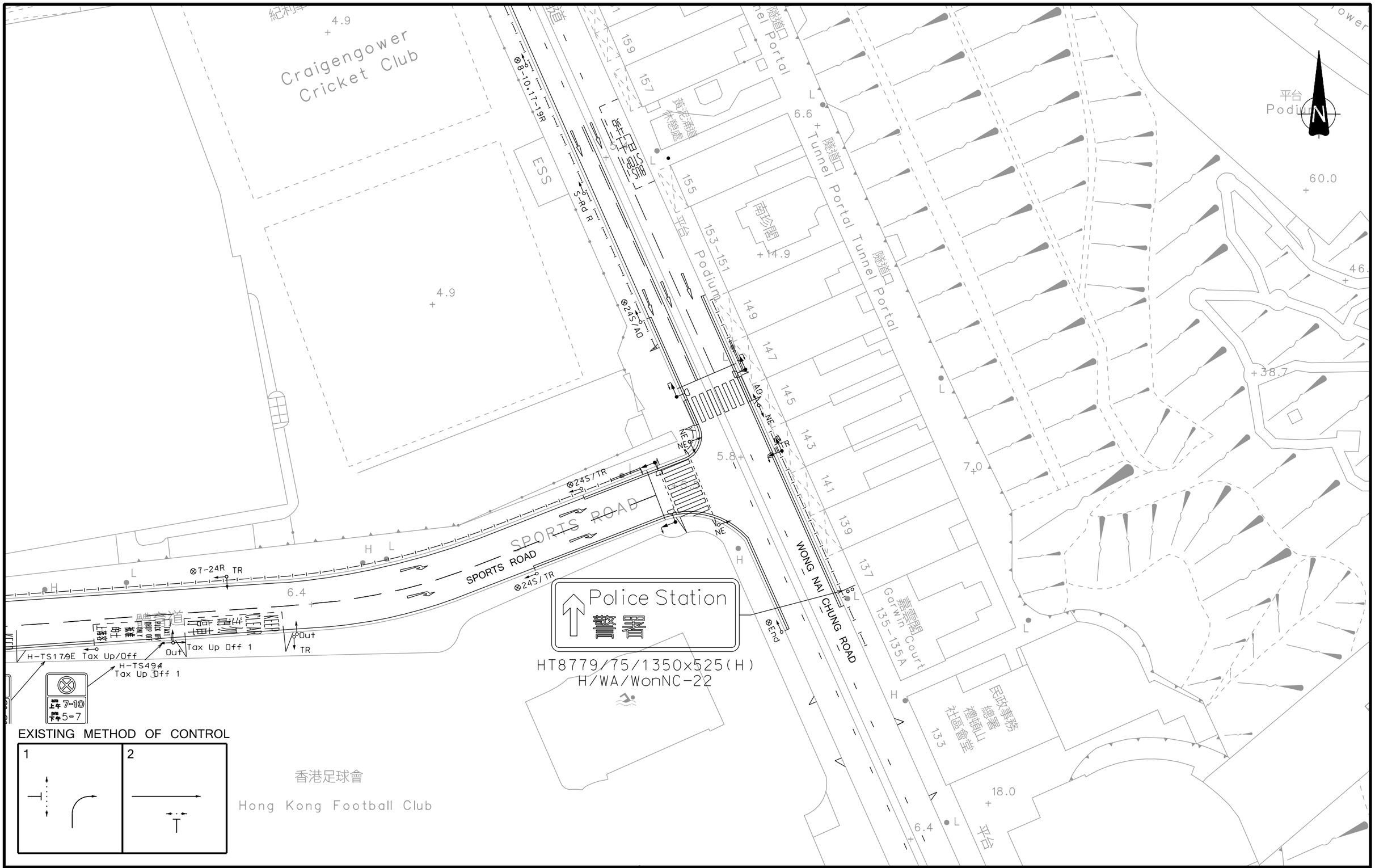
EXISTING JUNCTION LAYOUT OF BROADWOOD ROAD / VENTRIS ROAD (J13)

Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	1:500(A3)	DEC 2021	4.13	-

SYSTRA MVA

CHK50603110/TIA/F413.DGN/CKC/09DEC21

Original Size : A3



Rev.	Description	Checked	Date
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Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON
INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG
TRAFFIC REVIEW REPORT

Drawing Title

EXISTING JUNCTION LAYOUT OF WONG NAI CHUNG ROAD / SPORTS ROAD (J14)

Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	1:500(A3)	DEC 2021	4.14	-

SYSTRA MVA

CHK50603110/TIA/F414.DGN/CKC/09DEC21

Original Size : A3

LEIGHTON ROAD

To Matheson Street
(via Leighton Road)
往勿地臣街
(可經禮頓道)
Leighton Road
禮頓道
Matheson St.
勿地臣街
HT9049/30/
700x900(h)
H/WA/CanE-T02

Canal Road West
堅拿道西
HT82P1/75/
1600x525(h)
H/WA/CanE-08

H/WA/Lei-07
HT9231/75/1950x600(H)
Aberdeen Tunnel
香港仔隧道
1

Queen's Road East
皇后大道東
CW
HT9234/75/1750x525(H)
H/WA/Lei-08

HT7096/100/
975x575(h)
H/WA/CanE-13

TRAM POST

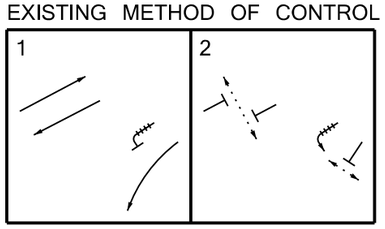
KOWLOON
九龍
HT6057/100/1950x700(H)
H/WA/Lei-02

HT 10169
H/WA/LeiHS03

HT 10169
H/WA/LeiHS02

WONG NAI CHUNG ROAD

EXISTING METHOD OF CONTROL



Rev.	Description	Checked	Date
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-	-	-	-
-	-	-	-

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON
INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG
TRAFFIC REVIEW REPORT

Drawing Title

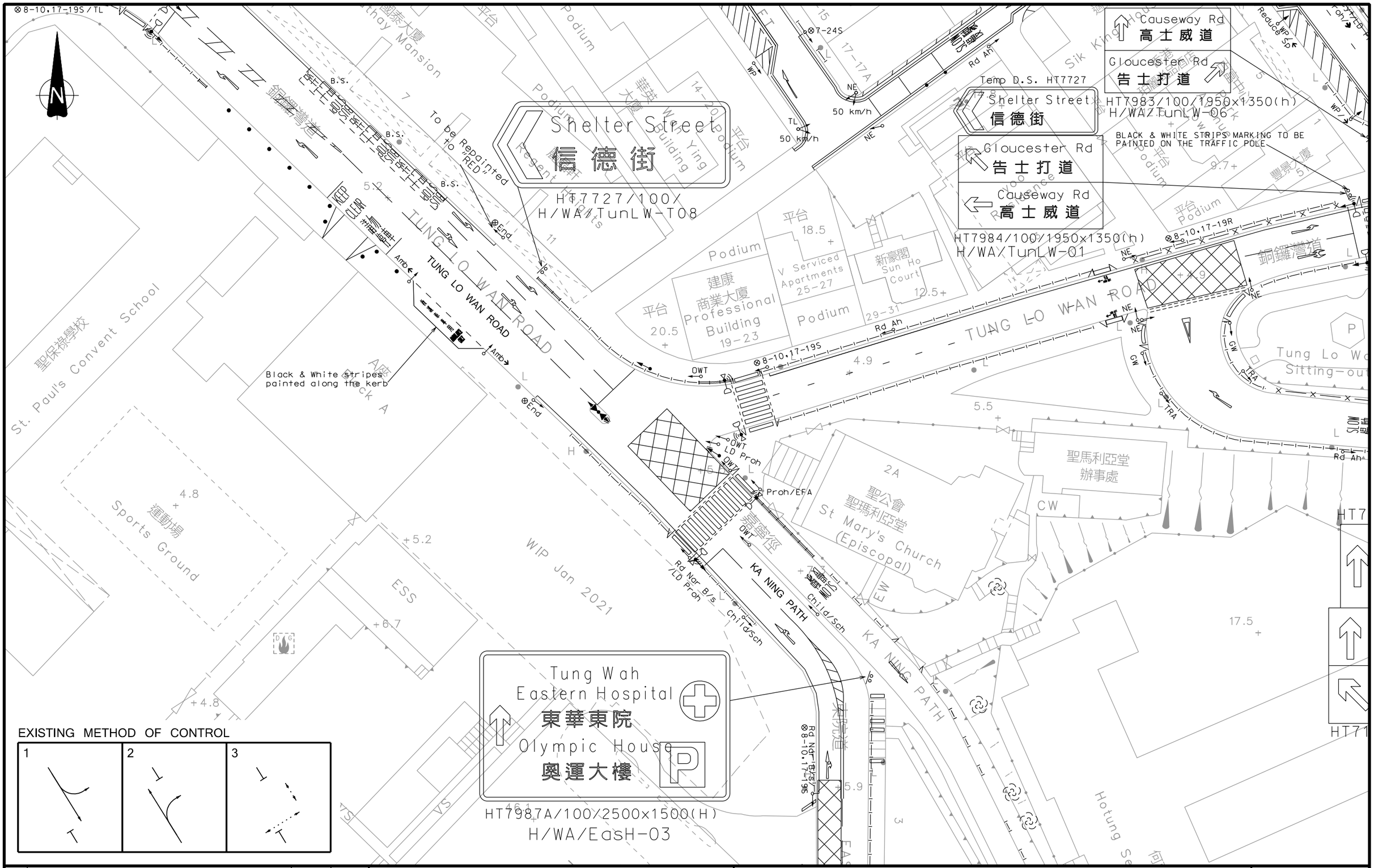
**EXISTING JUNCTION LAYOUT OF
LEIGHTON ROAD / WONG NAI CHUNG ROAD (J15)**

Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	1:500(A3)	DEC 2021	**4.15**	-

SYSTRA MVA

CHK50603110/TIA/F415.DGN/CKC/09DEC21

Original Size : A3



EXISTING METHOD OF CONTROL

1	2	3

Rev.	Description	Checked	Date
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-	-	-	-
-	-	-	-
-	-	-	-

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG TRAFFIC REVIEW REPORT

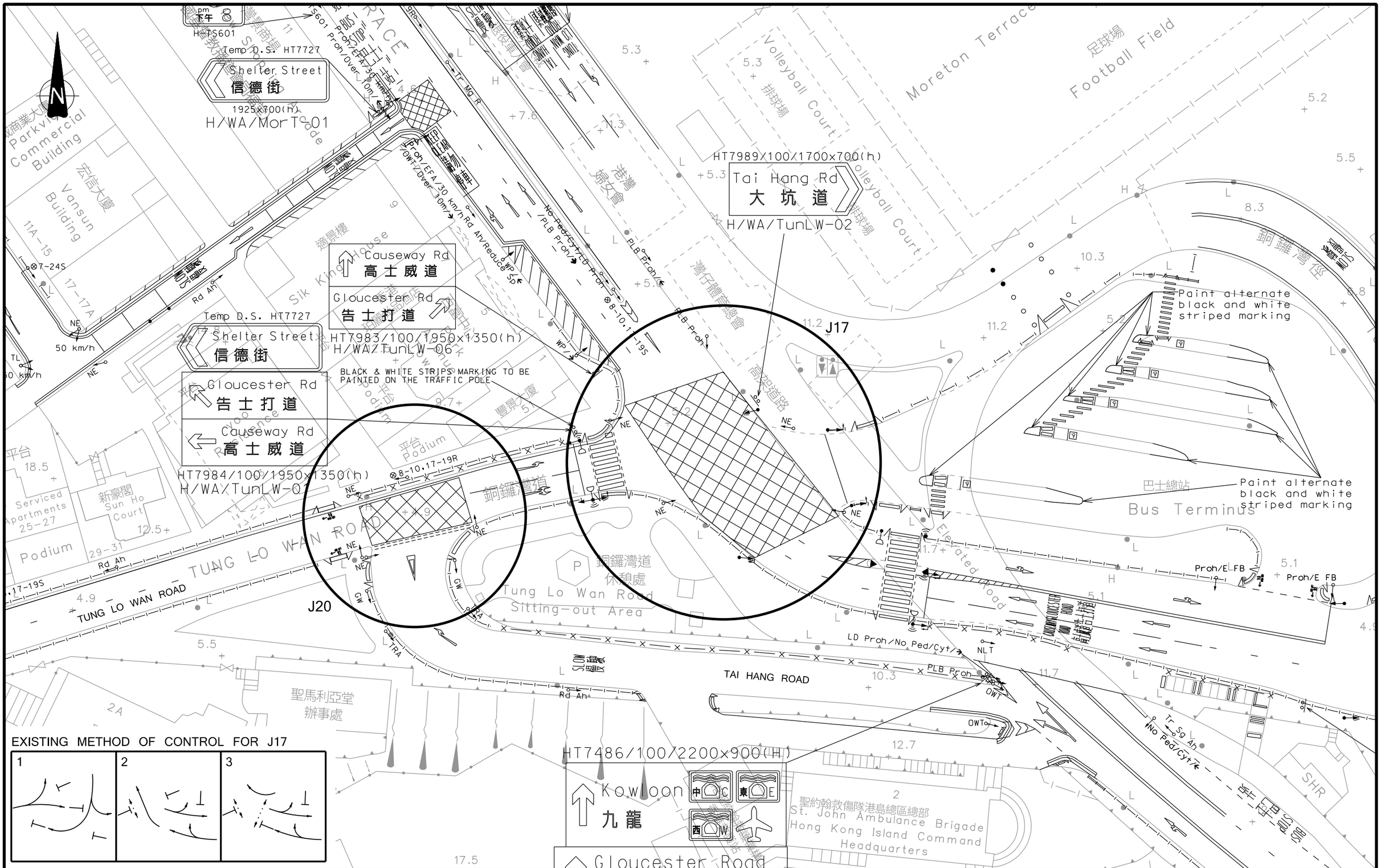
Drawing Title

EXISTING JUNCTION LAYOUT OF TUNG LO WAN ROAD / EASTERN HOSPITAL ROAD (J16)

Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	1:500(A3)	DEC 2021	**4.16**	-

CHK50603110/TIA/F416.DGN/CKC/09DEC21

Original Size : A3



EXISTING METHOD OF CONTROL FOR J17

Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
A	TD'S COMMENTS INCORPORATED	CHC	25FEB22

Project Title

TRAFFIC CONSULTANCY SERVICE FOR COMMERCIAL DEVELOPMENT ON IL 8945, CAUSEWAY BAY, HONG KONG

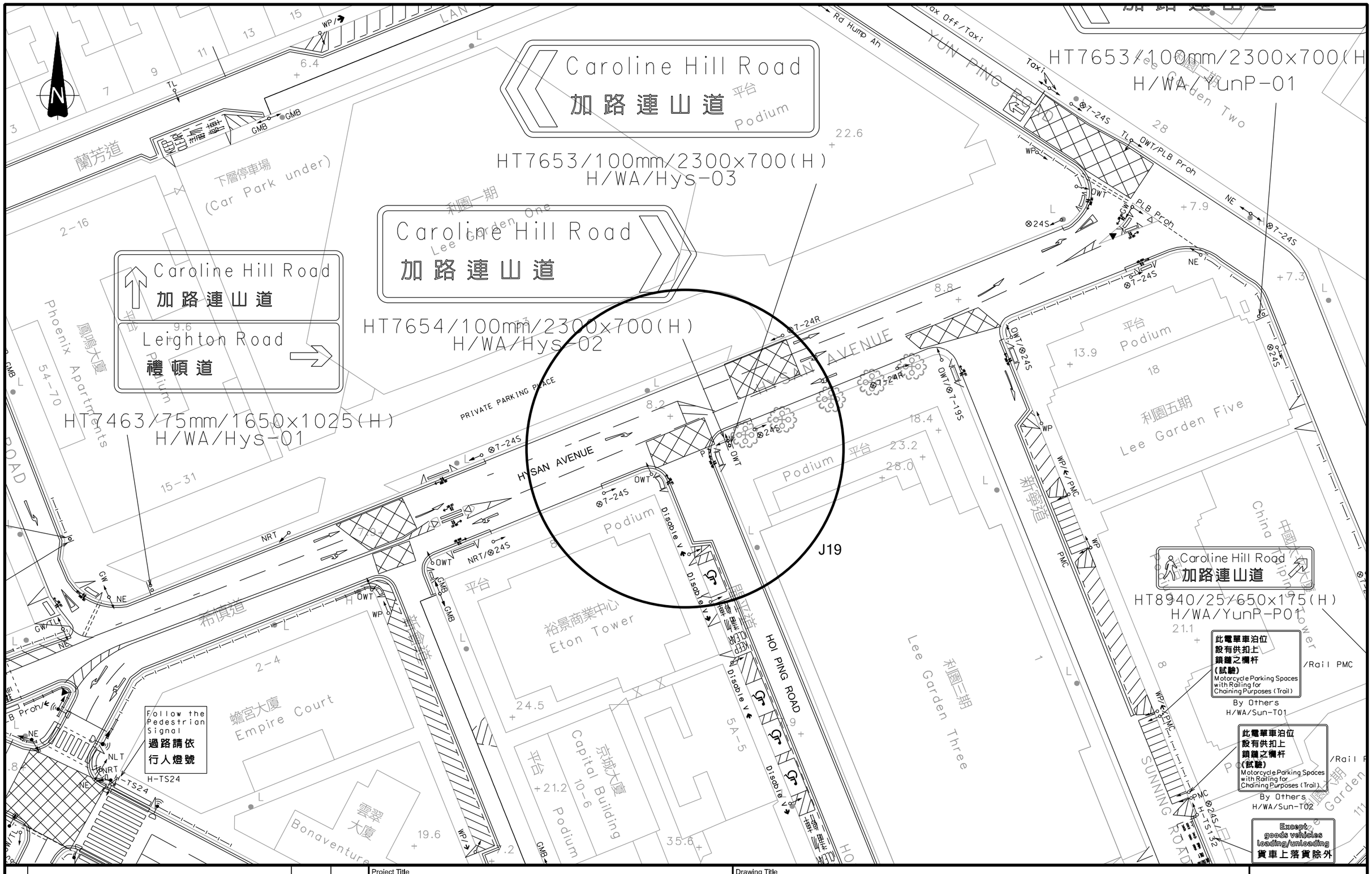
Drawing Title

EXISTING JUNCTION LAYOUT OF TUNG LO WAN ROAD / MORETON TERRACE (J17) AND TUNG LO WAN ROAD / TAI HANG ROAD (J20)

Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	1:500(A3)	DEC 2021	4.17	A

CHK50603110/TIA/F417-A.DGN/CKC/25FEB22

Original Size : A3



Rev.	Description	Checked	Date
-	-	-	-
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-	-	-	-
-	-	-	-

Project Title

TRAFFIC CONSULTANCY SERVICE FOR COMMERCIAL DEVELOPMENT ON IL 8945, CAUSEWAY BAY, HONG KONG

Drawing Title

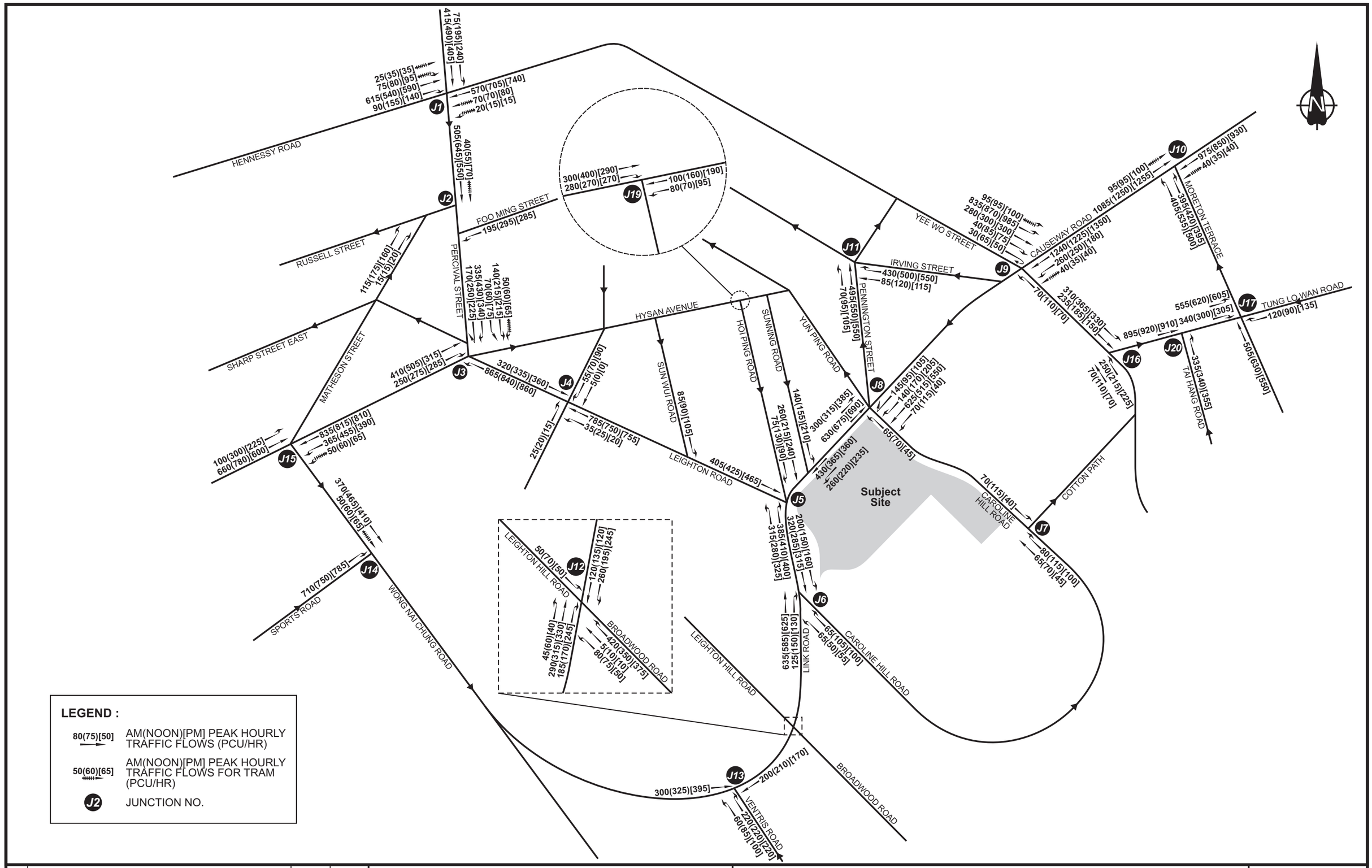
EXISTING JUNCTION LAYOUT OF HYSAN AVENUE / HOI PING ROAD (J19)

Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	1:500(A3)	FEB 2022	4.18	-

SYSTRA MVA

CHK50603110/TIA/F418.DGN/CKC/25FEB22

Original Size : A3



LEGEND :

80(75)[50]	AM(NOON)[PM] PEAK HOURLY TRAFFIC FLOWS (PCU/HR)
50(60)[65]	AM(NOON)[PM] PEAK HOURLY TRAFFIC FLOWS FOR TRAM (PCU/HR)
J2	JUNCTION NO.

Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
A	TD'S COMMENTS INCORPORATED	CHC	28FEB22

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG TRAFFIC REVIEW REPORT

Drawing Title

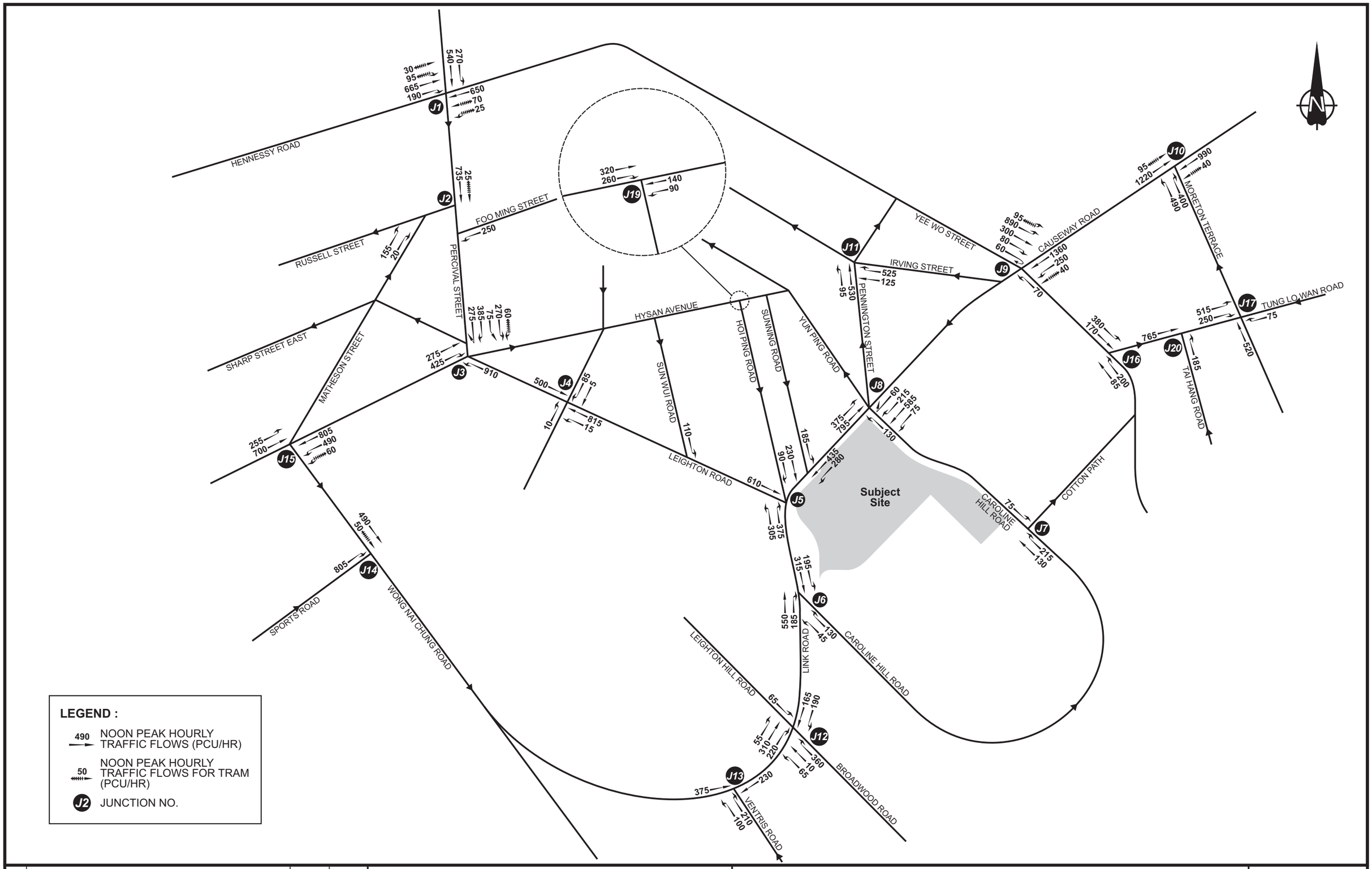
YEAR 2021 OBSERVED WEEKDAY TRAFFIC FLOWS

Designed	Checked	Scale	Date	Drawing No.	Rev.
APU	CHC	NTS	DEC 2021	4.19	A

SYSTRA MVA

CHK50603110/TIA/F419-A.CDR/LLH/28FEB22

Original Size : A3



Rev.	Description	Checked	Date
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-	-	-	-

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG TRAFFIC REVIEW REPORT

Drawing Title

YEAR 2021 OBSERVED WEEKEND TRAFFIC FLOWS

Designed	Checked	Scale	Date	Drawing No.	Rev.
APU	CHC	NTS	FEB 2022	4.20	-

SYSTRA MVA

CHK50603110/TIA/F420.CDR/LLH/28FEB22

Original Size : A3

Site	Key Future Development Site
1	District Court Site
2	Commercial Redevelopment at 8 Leighton Road
3	Commercial Development at 1-5 Irving Street and 14 Pennington Street
4	Expansion of the Po Leung Kuk Headquarter

Subject Site

Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON
INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG
TRAFFIC REVIEW REPORT

Drawing Title

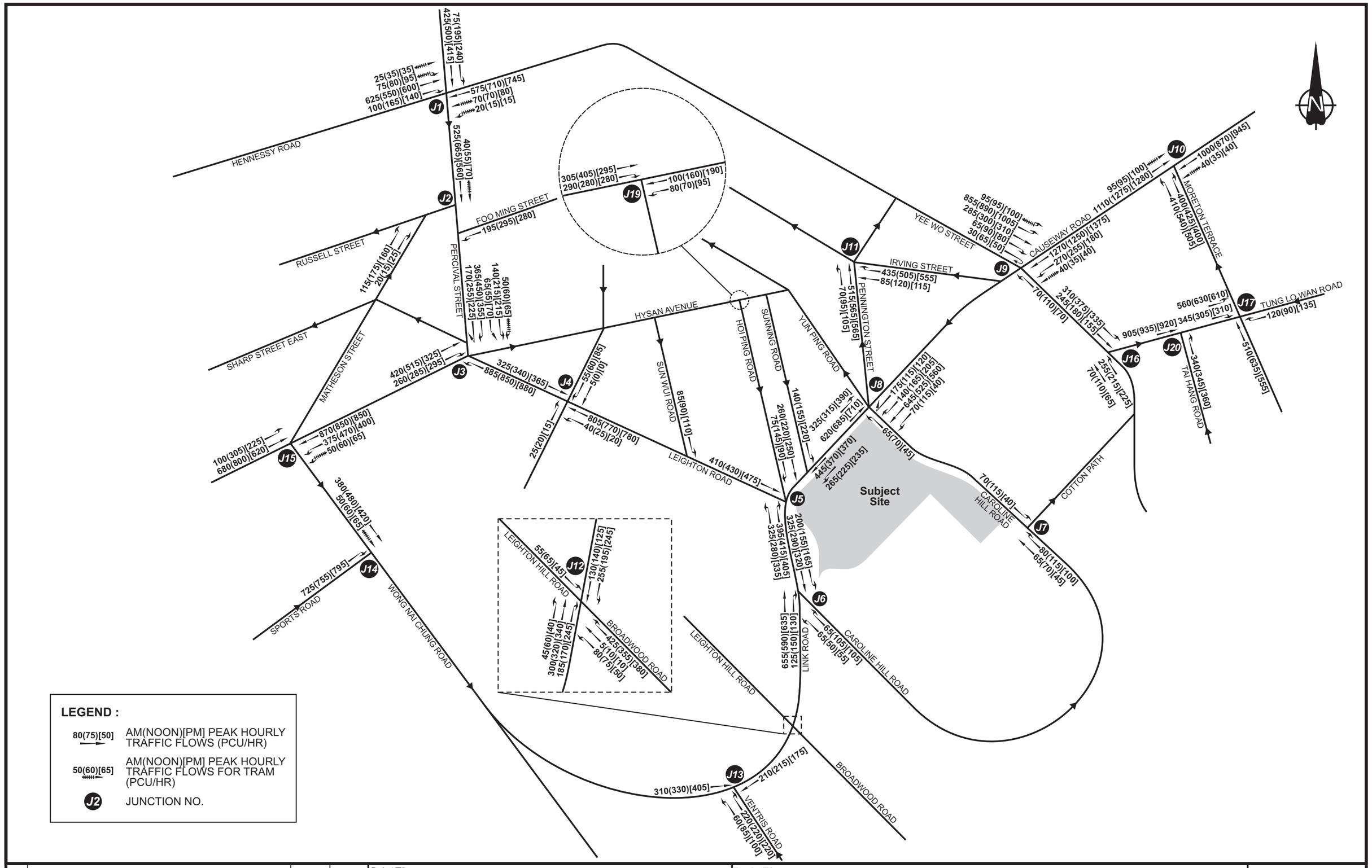
PLANNED / POTENTIAL FUTURE DEVELOPMENT IN THE VICINITY

Designed	Checked	Scale	Date	Drawing No.	Rev.
APU	CHC	NTS	DEC 2021	5.1	-

SYSTRA MVA

CHK50603110/TIA/F51.CDR/LLH/9DEC21

Original Size : A3



Rev.	Description	Checked	Date
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A	TD'S COMMENTS INCORPORATED	CHC	28FEB22

Project Title

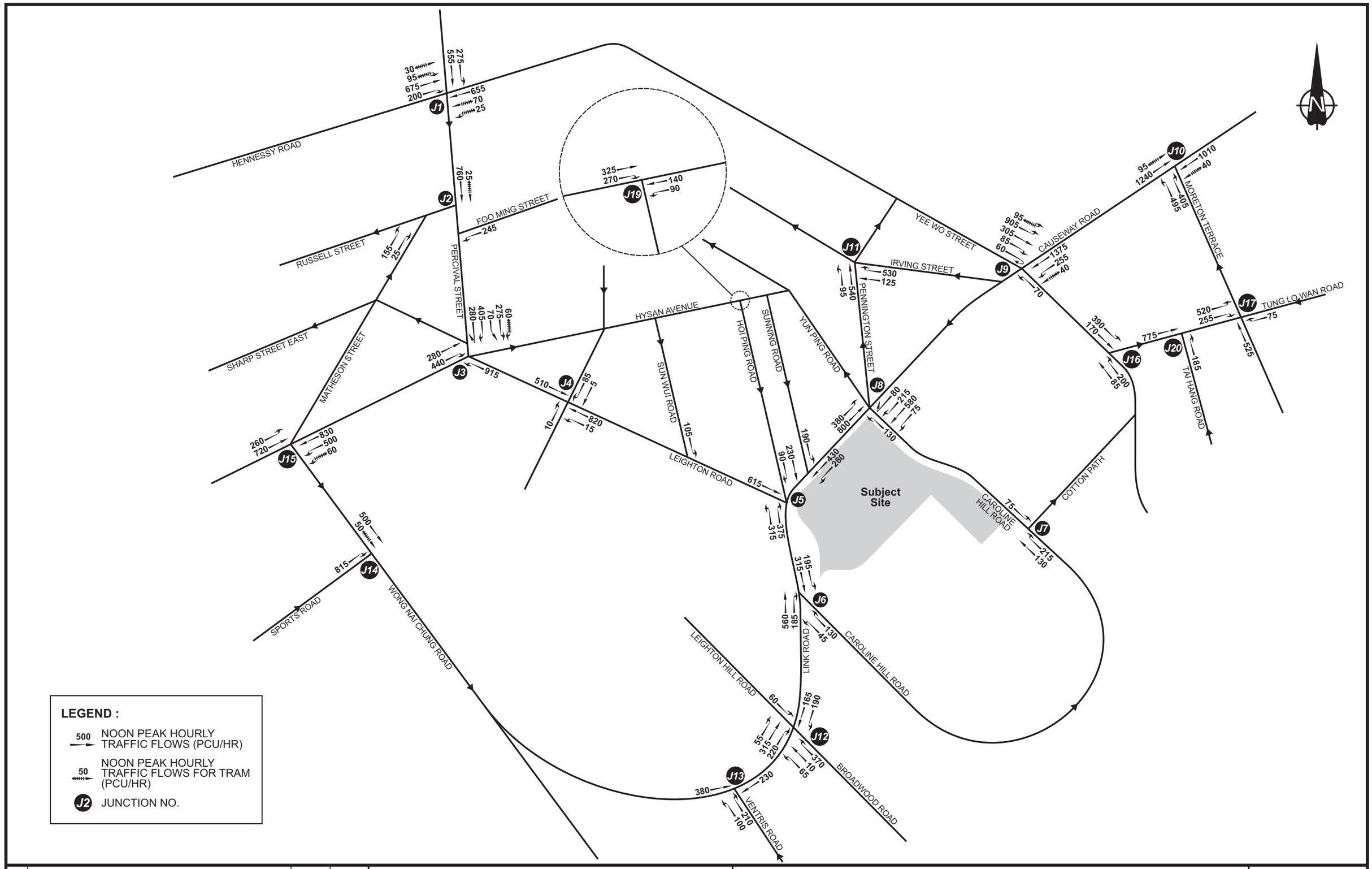
PROPOSED COMMERCIAL DEVELOPMENT ON INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG TRAFFIC REVIEW REPORT

Drawing Title

YEAR 2031 REFERENCE WEEKDAY TRAFFIC FLOWS

Designed	Checked	Scale	Date	Drawing No.	Rev.
APU	CHC	NTS	DEC 2021	5.2	A

SYSTRA MVA



Rev.	Description	Checked	Date
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-	-	-	-
-	-	-	-
A	TD'S COMMENTS INCORPORATED	CHC	28FEB22

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG TRAFFIC REVIEW REPORT

Drawing Title

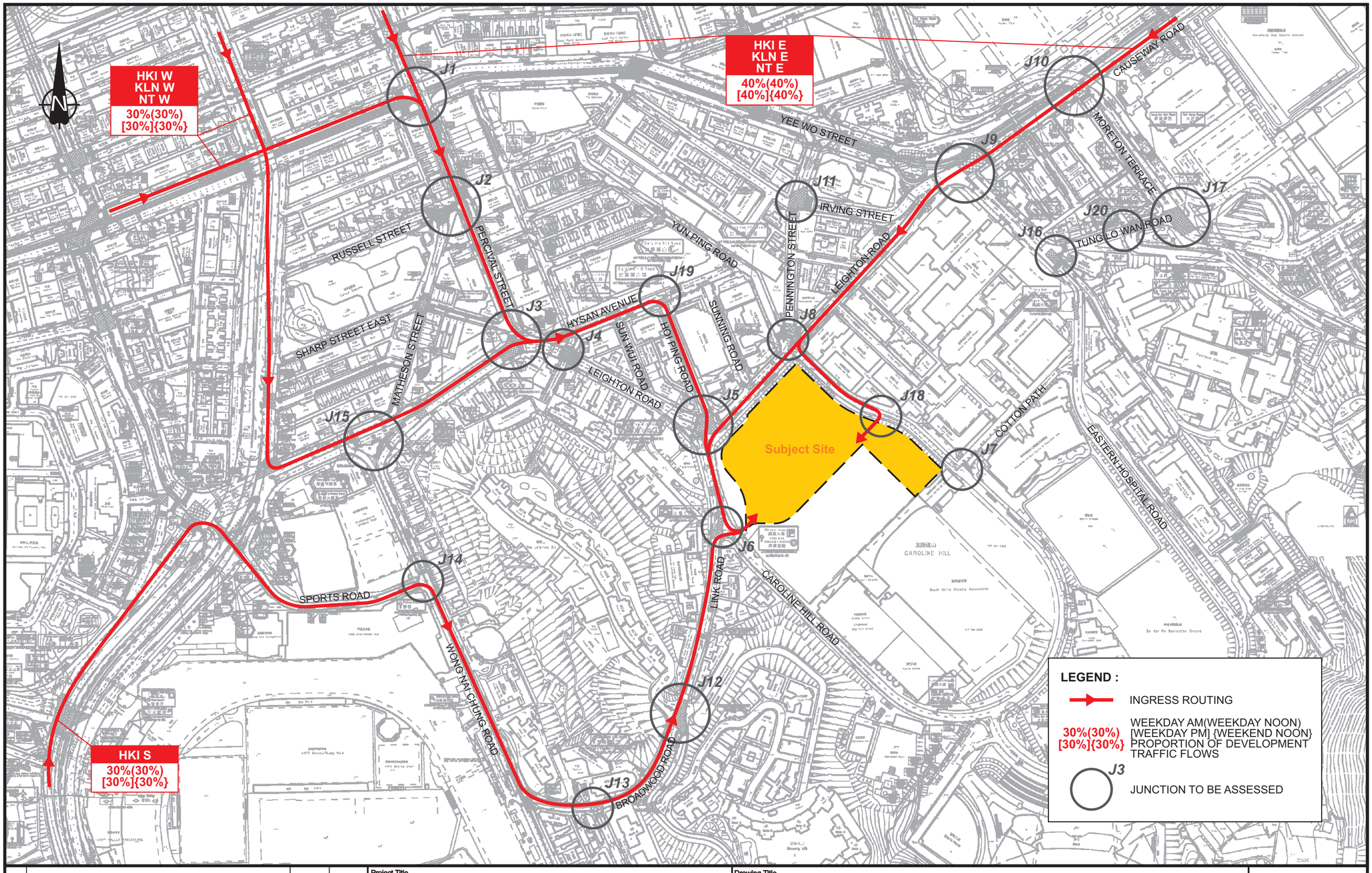
YEAR 2031 REFERENCE WEEKEND TRAFFIC FLOWS

Designed	Checked	Scale	Date	Drawing No.	Rev.
APU	CHC	NTS	DEC 2021	5.3	A

SYSTRA MVA

CHK50603110/TIA/F53-A.CDR/LLH/28FEB22

Original Size : A3



Rev.	Description	Checked	Date
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-	-	-	-
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-	-	-	-

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON
INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG
TRAFFIC REVIEW REPORT

Drawing Title

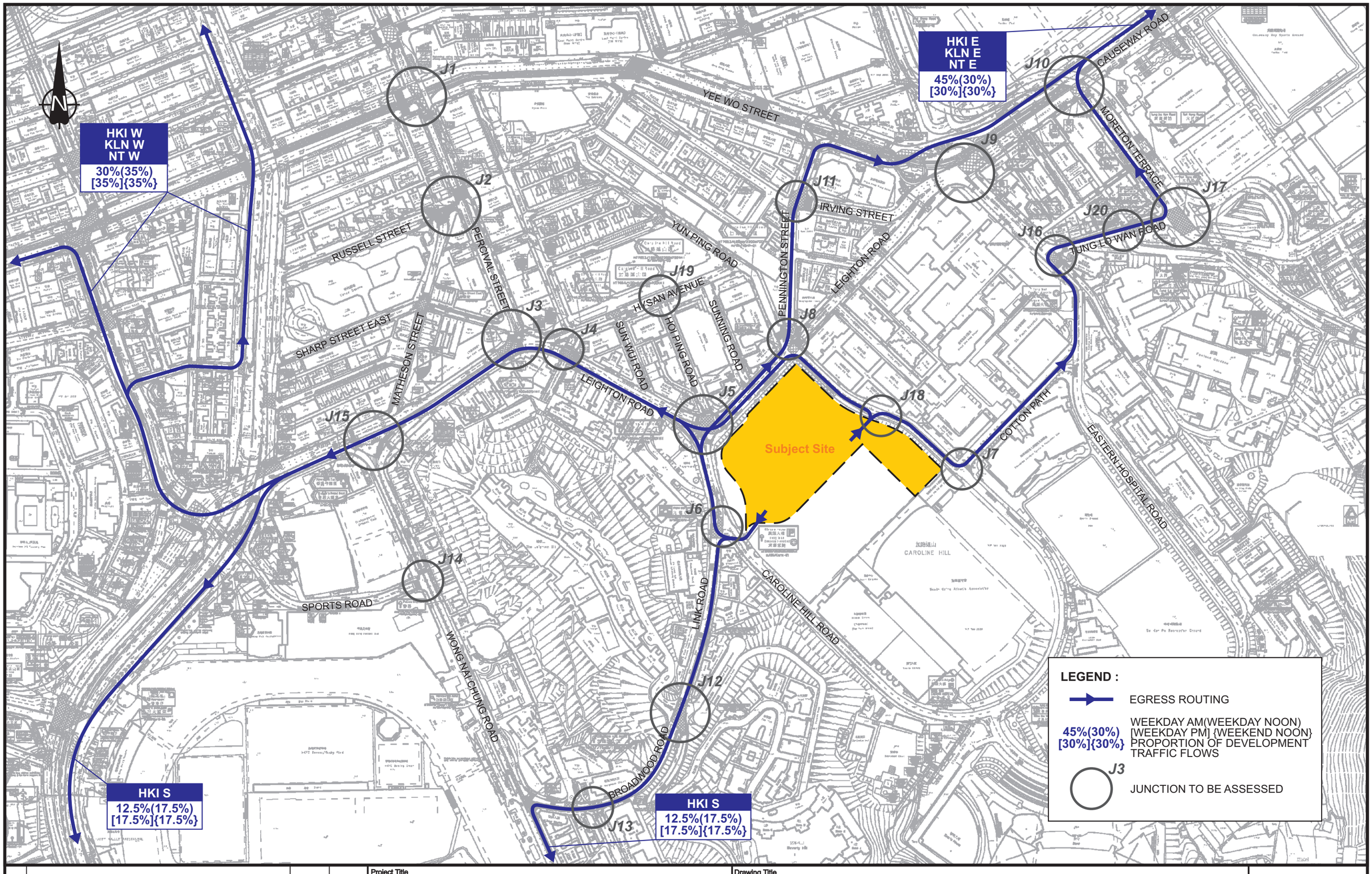
DISTRIBUTION OF DEVELOPMENT INGRESS TRAFFIC FLOWS

Designed	Checked	Scale	Date	Drawing No.	Rev.
LYK	CHC	NTS	MAR 2022	5.4	-

SYSTRA MVA

CHK50603110/TIA/F54.CDR/LLH/1MAR22

Original Size : A3



Rev.	Description	Checked	Date
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-	-	-	-
-	-	-	-
-	-	-	-

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON
INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG
TRAFFIC REVIEW REPORT

Drawing Title

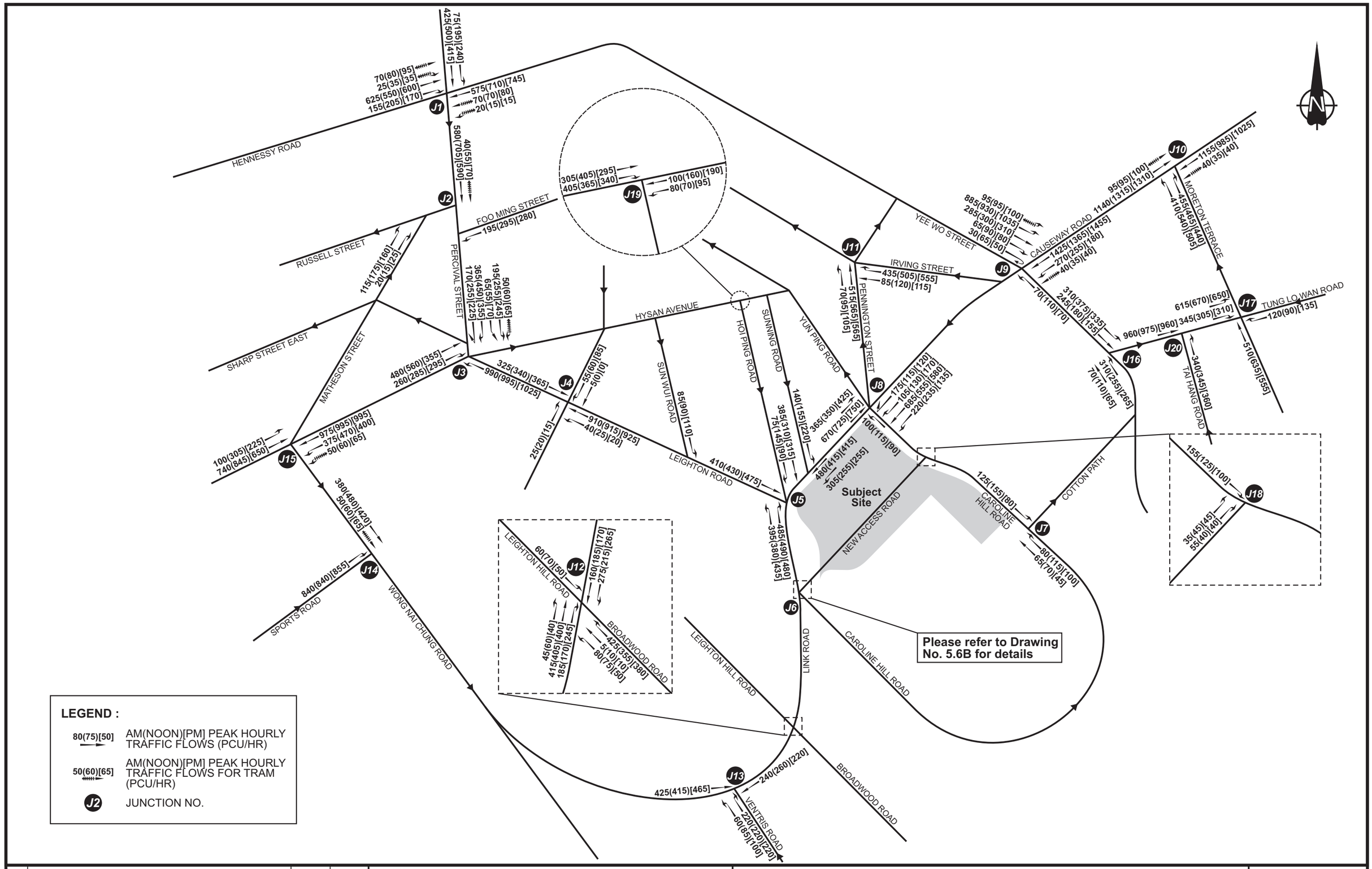
DISTRIBUTION OF DEVELOPMENT EGRESS TRAFFIC FLOWS

Designed	Checked	Scale	Date	Drawing No.	Rev.
LYK	CHC	NTS	MAR 2022	5.5	-

SYSTRA MVA

CHK50603110/TIA/F55.CDR/LLH/1MAR22

Original Size : A3



LEGEND :

80(75)[50] →	AM(NOON)[PM] PEAK HOURLY TRAFFIC FLOWS (PCU/HR)
50(60)[65] ⇢	AM(NOON)[PM] PEAK HOURLY TRAFFIC FLOWS FOR TRAM (PCU/HR)
J2	JUNCTION NO.

Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG TRAFFIC REVIEW REPORT

Drawing Title

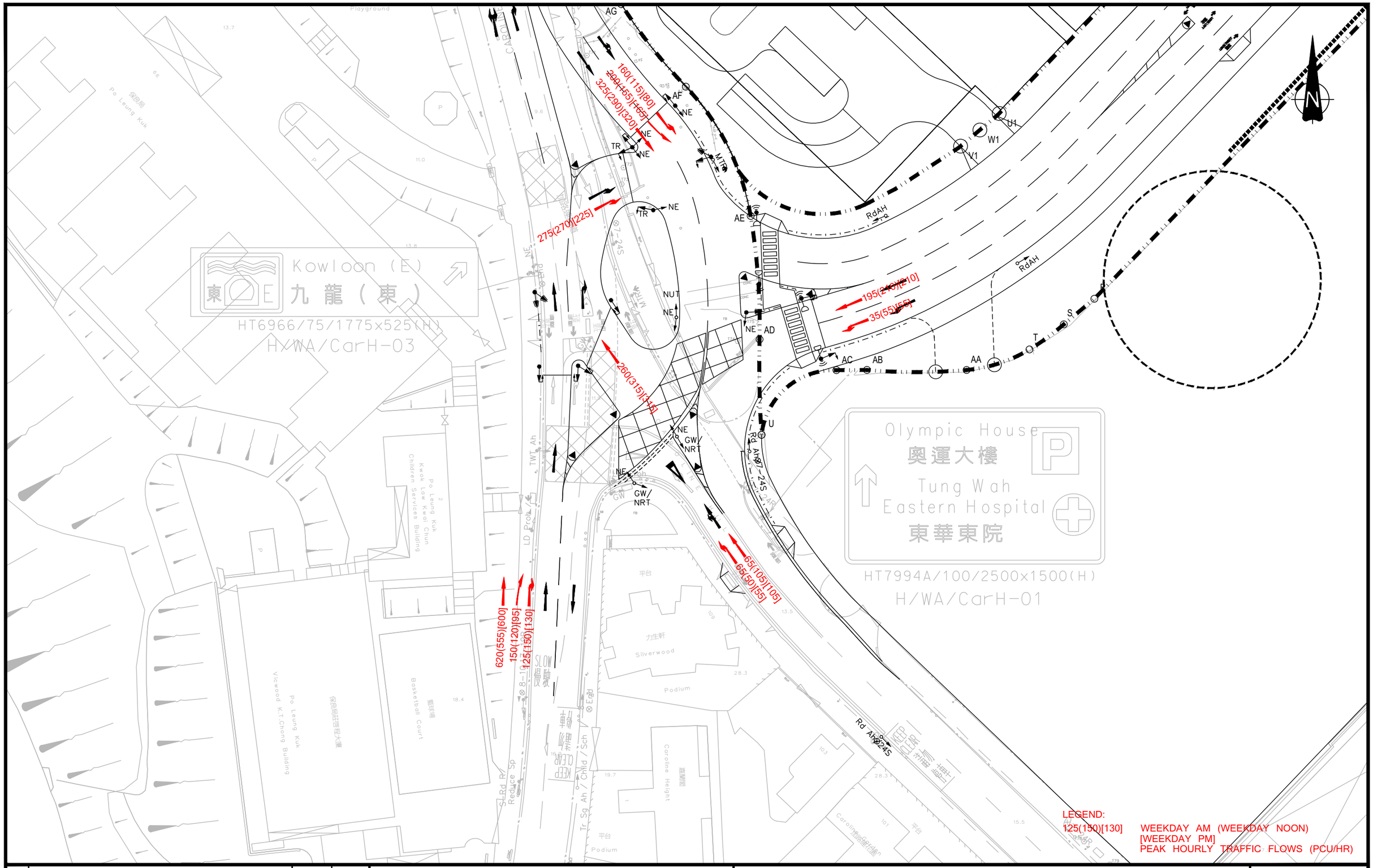
YEAR 2031 DESIGN WEEKDAY TRAFFIC FLOWS

Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	NTS	APR 2022	5.6A	-

SYSTRA MVA

CHK50603110/TIA/F56A.CDR/LLH/14APR22

Original Size : A3



LEGEND:
125(150)[130] WEEKDAY AM (WEEKDAY NOON) [WEEKDAY PM]
PEAK HOURLY TRAFFIC FLOWS (PCU/HR)

Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
A	MINOR AMENDMENT	CHC	12APR22

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON
INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG
TRAFFIC REVIEW REPORT

Drawing Title

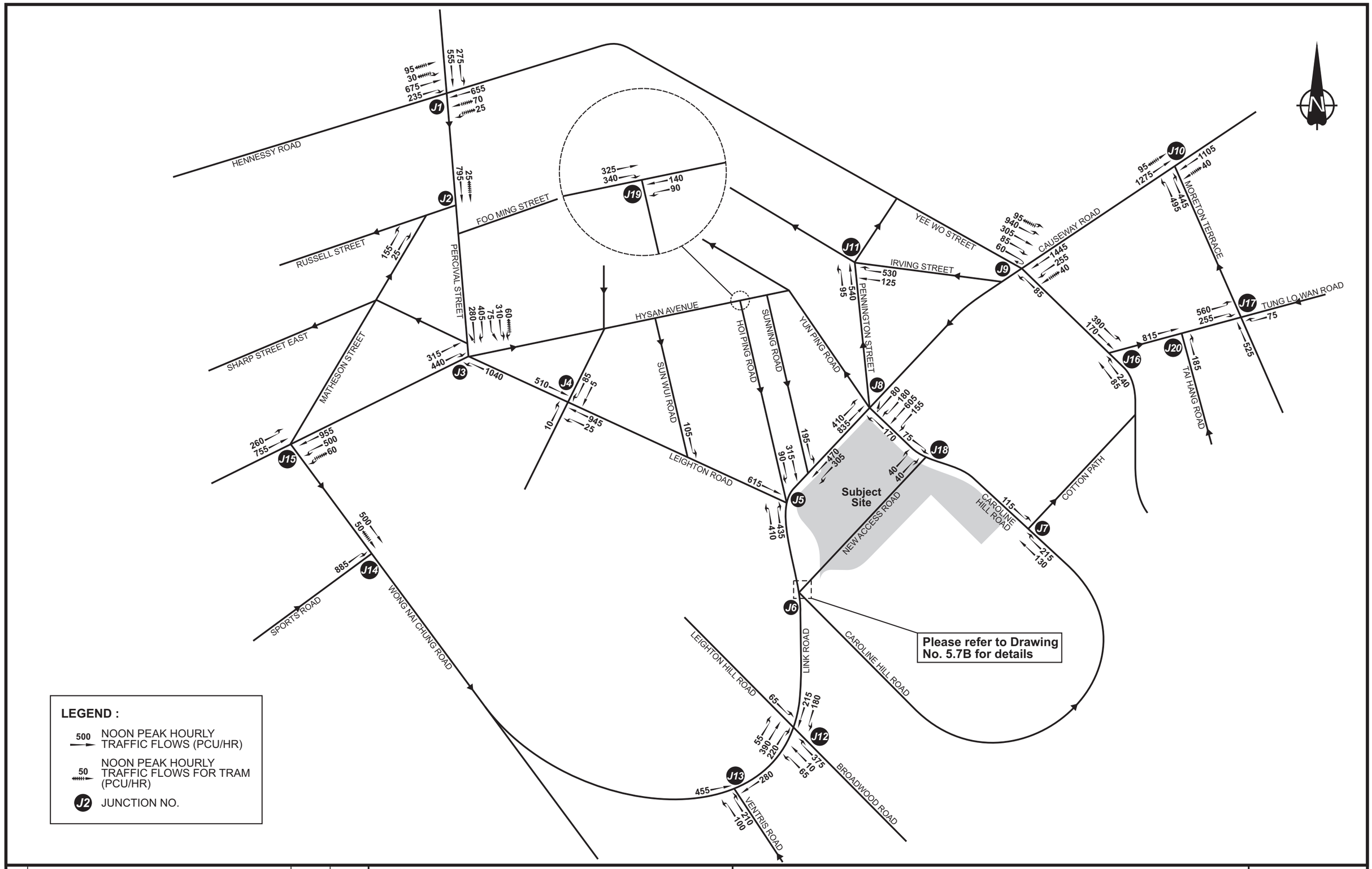
YEAR 2031 DESIGN WEEKDAY TRAFFIC FLOWS AT JUNCTIONS J6

Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	1:500(A3)	MAR 2022	5.6B	A

SYSTRA MVA

CHK50603110/TIA/F56B-A.DWG/KCM/12APR22

Original Size : A3



Rev.	Description	Checked	Date
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Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG TRAFFIC REVIEW REPORT

Drawing Title

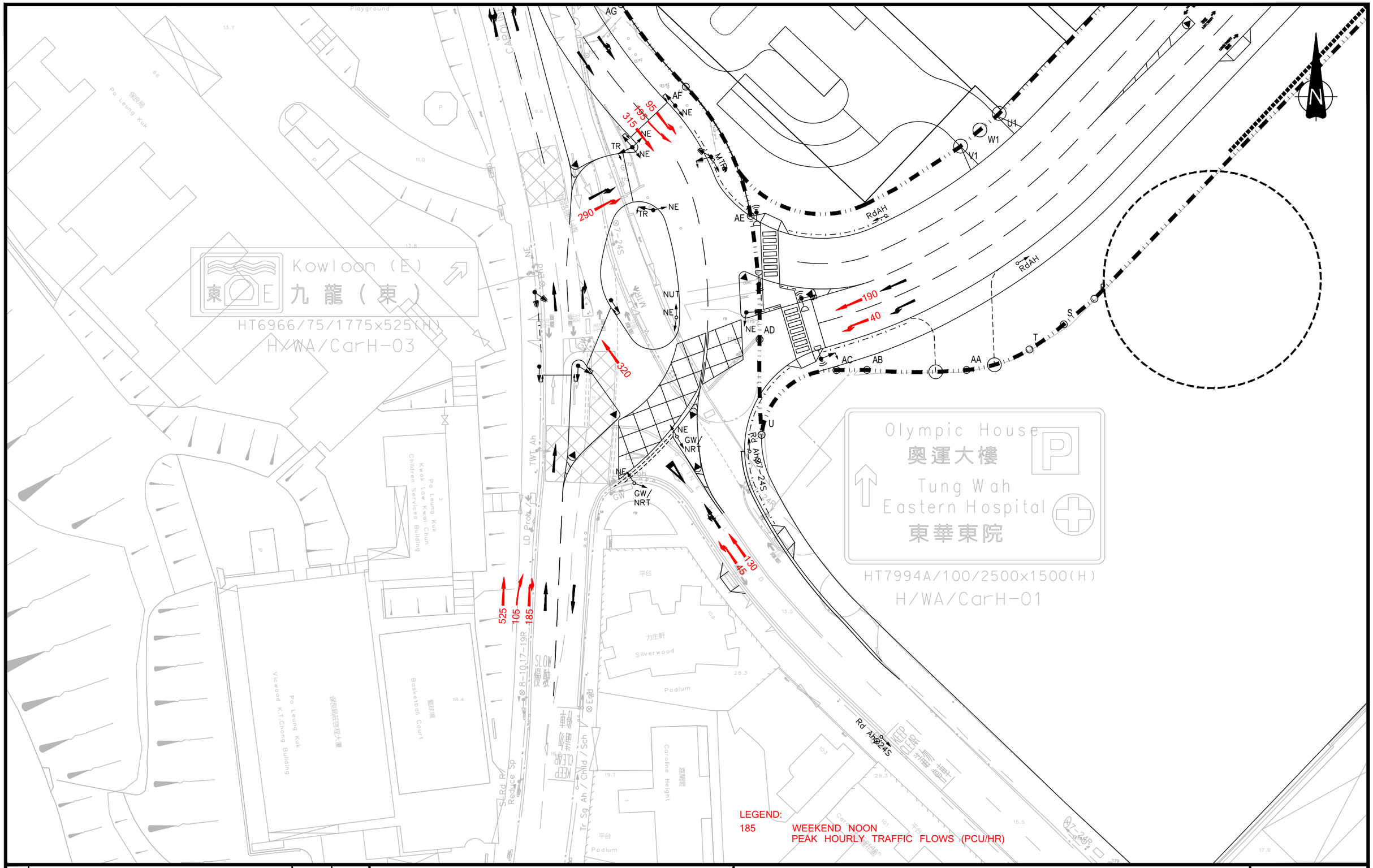
YEAR 2031 DESIGN WEEKEND TRAFFIC FLOWS

Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	NTS	APR 2022	5.7A	-

SYSTRA MVA

CHK50603110/TIA/F57A.CDR/LLH/14APR22

Original Size : A3



Rev.	Description	Checked	Date
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-	-	-	-
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A	MINOR AMENDMENT	CHC	12APR22

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON
INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG
TRAFFIC REVIEW REPORT

Drawing Title

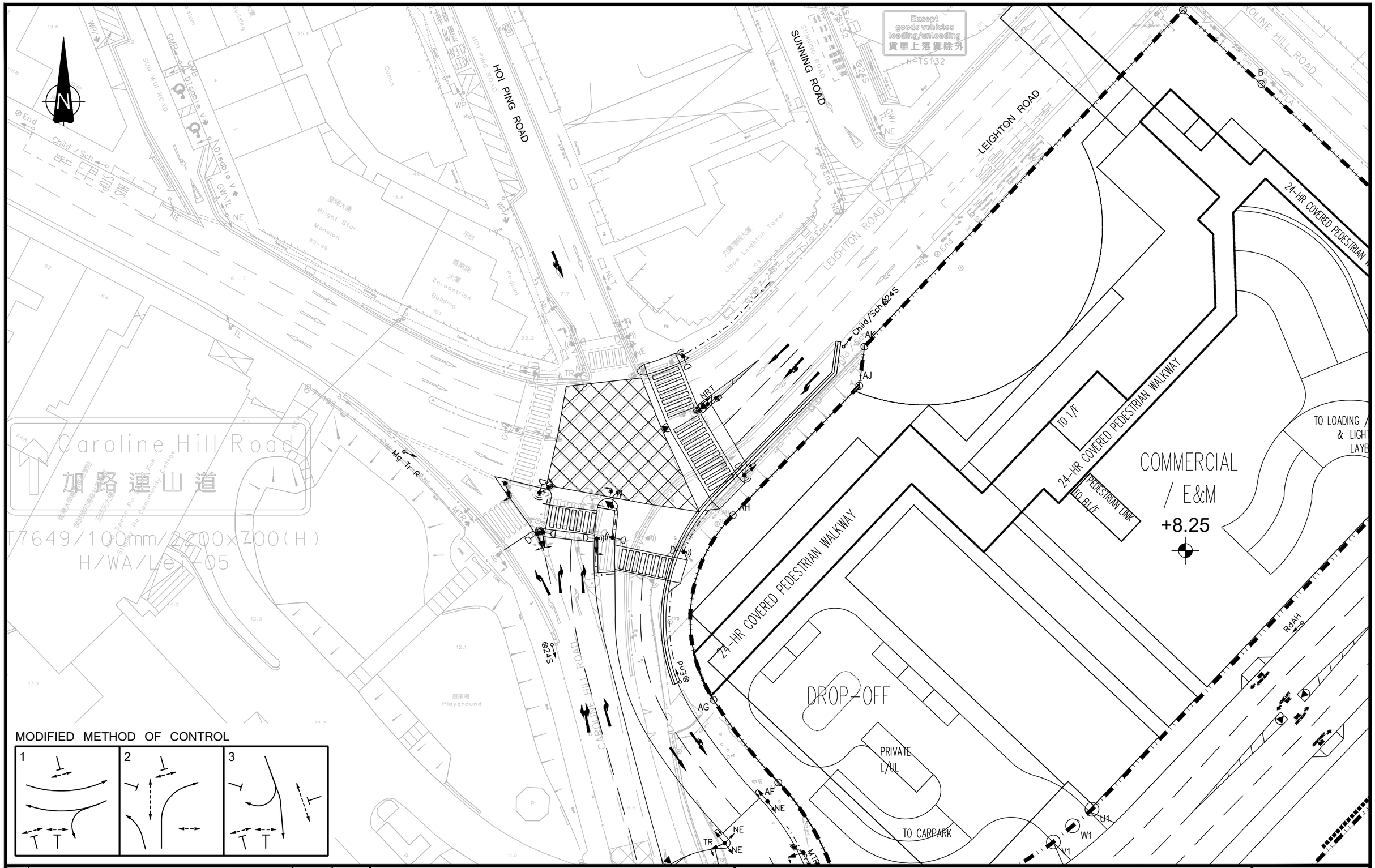
YEAR 2031 DESIGN WEEKEND TRAFFIC FLOWS AT JUNCTIONS J6

Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	1:500(A3)	MAR 2022	5.7B	A

SYSTRA MVA

CHK50603110/TIA/F57B-A.DWG/KCM/12APR22

Original Size : A3



Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
B	MINOR AMENDMENT	CHC	14APR22
A	TD'S COMMENTS INCORPORATED	CHC	25FEB22

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG TRAFFIC REVIEW REPORT

Drawing Title

FUTURE JUNCTION LAYOUT OF LEIGHTON ROAD / CAROLINE HILL ROAD (WEST) (J5)

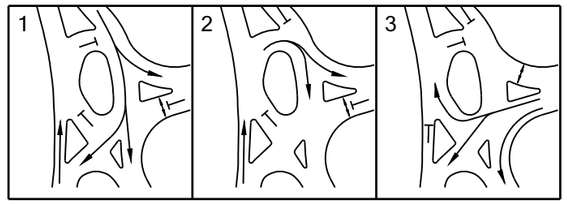
Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	1:500(A3)	DEC 2021	6.1	B

SYSTRA MVA

CHK50603110/TIA/F61-B.DWG/KCM/14APR22

Original Size : A3

PROPOSED METHOD OF CONTROL



NOTE:

THE LAYOUT, MOC, ROAD MARKING AND SIGNAGE ARRANGEMENTS ARE SUBJECT TO FURTHER REFINEMENT/ADJUSTMENT IN THE DETAIL DESIGN STAGE

Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
B	MINOR AMENDMENT	CHC	12APR22
A	TD'S COMMENTS INCORPORATED	CHC	25FEB22

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON
INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG
TRAFFIC REVIEW REPORT

Drawing Title

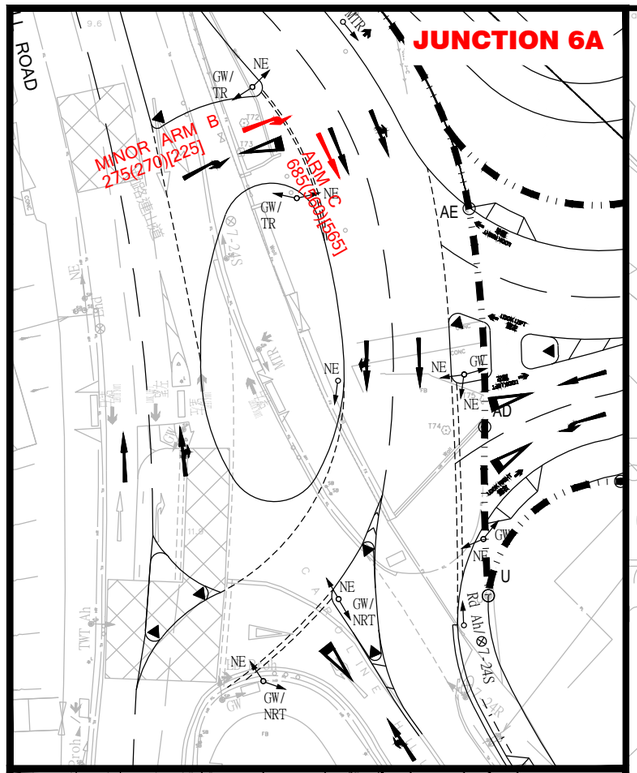
PROPOSED LAYOUT AND ARRANGEMENT FOR JUNCTION OF CAROLINE HILL ROAD (WEST) / LINK ROAD / NEW ACCESS ROAD (J6)

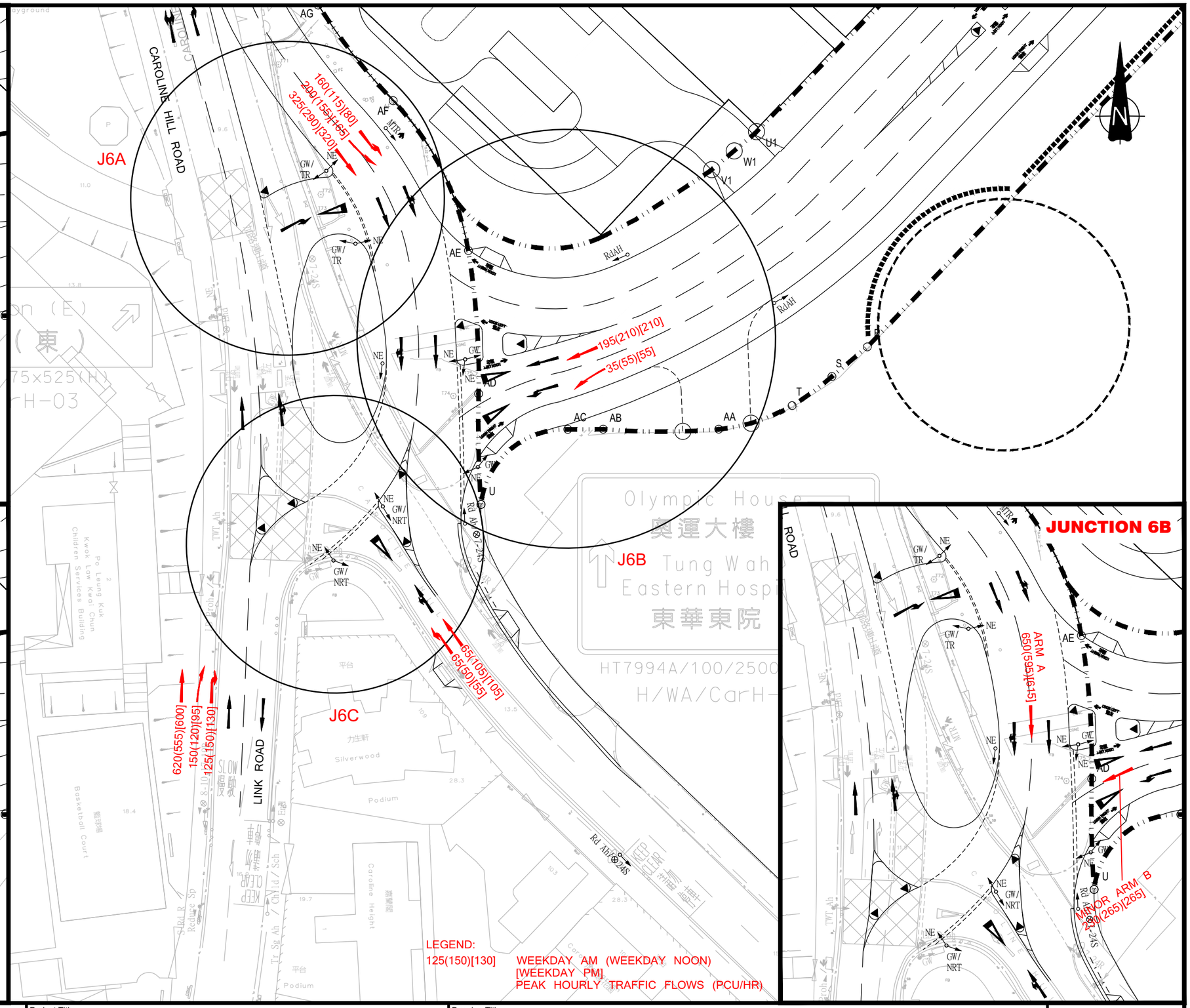
Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	1:500(A3)	DEC 2021	6.2	B

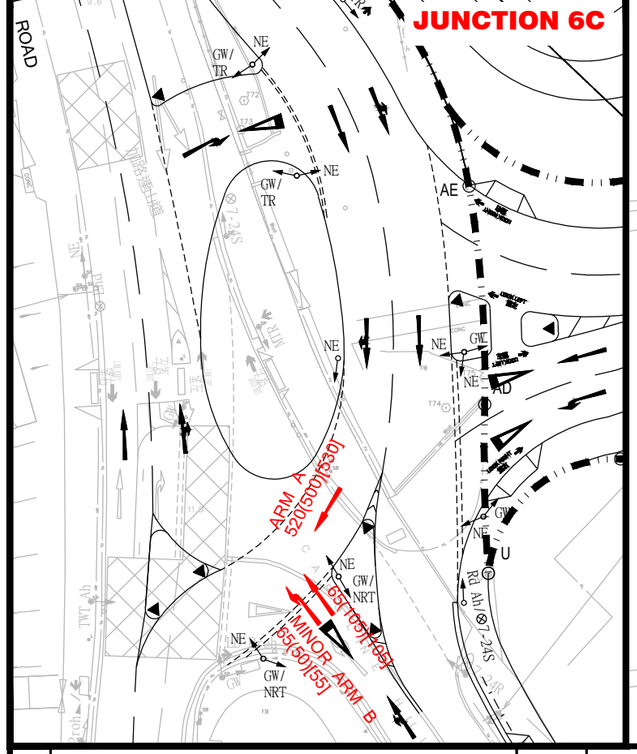
SYSTRA MVA

CHK50603110/TIA/F62-B.DWG/KCM/12APR22

Original Size : A3







LEGEND:
125(150)[130] WEEKDAY AM (WEEKDAY NOON) [WEEKDAY PM] PEAK HOURLY TRAFFIC FLOWS (PCU/HR)

Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG TRAFFIC REVIEW REPORT

Drawing Title

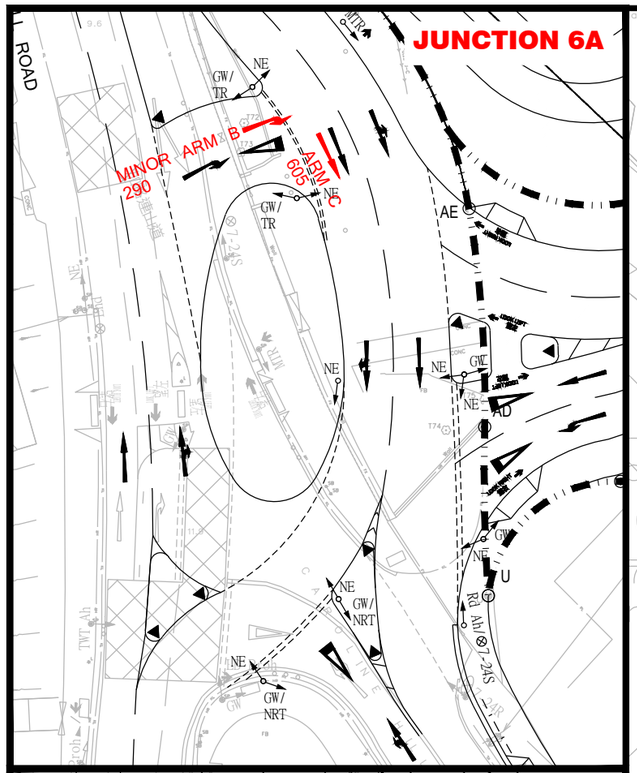
YEAR 2031 DESIGN WEEKDAY TRAFFIC FLOWS AT JUNCTION J6 UNDER PRIORITY CONTROL ARRANGEMENT

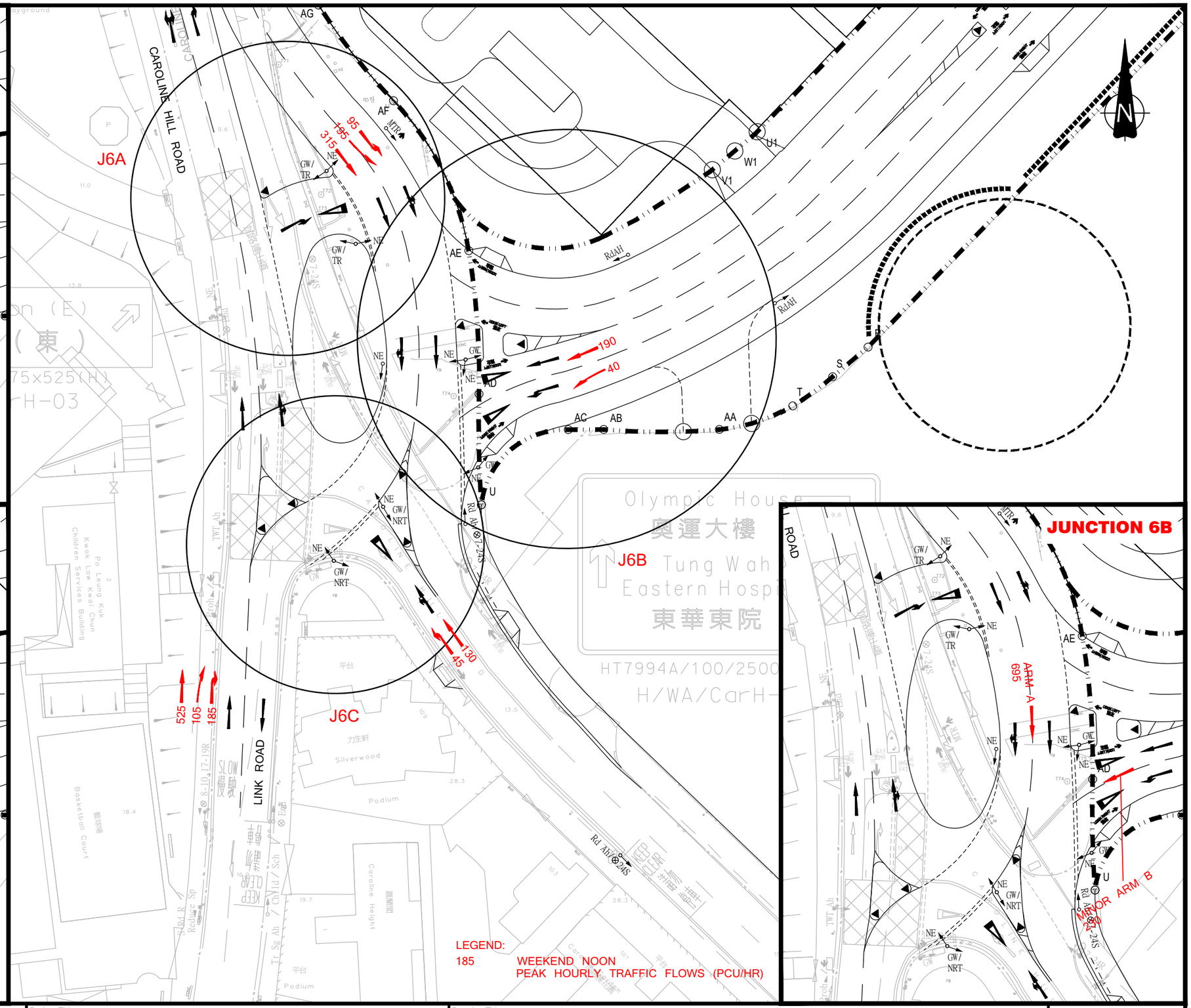
Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	1:500(A3)	MAY 2022	6.3A	-

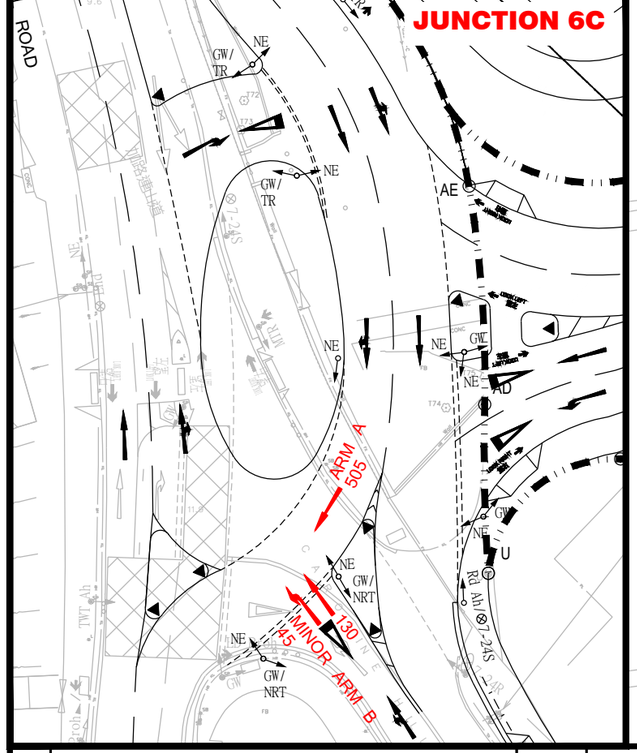
SYSTRA MVA

CHK50603110/TIA/F63A.DWG/CKC/12MAY22

Original Size : A3







LEGEND:
185 WEEKEND NOON PEAK HOURLY TRAFFIC FLOWS (PCU/HR)

Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG TRAFFIC REVIEW REPORT

Drawing Title

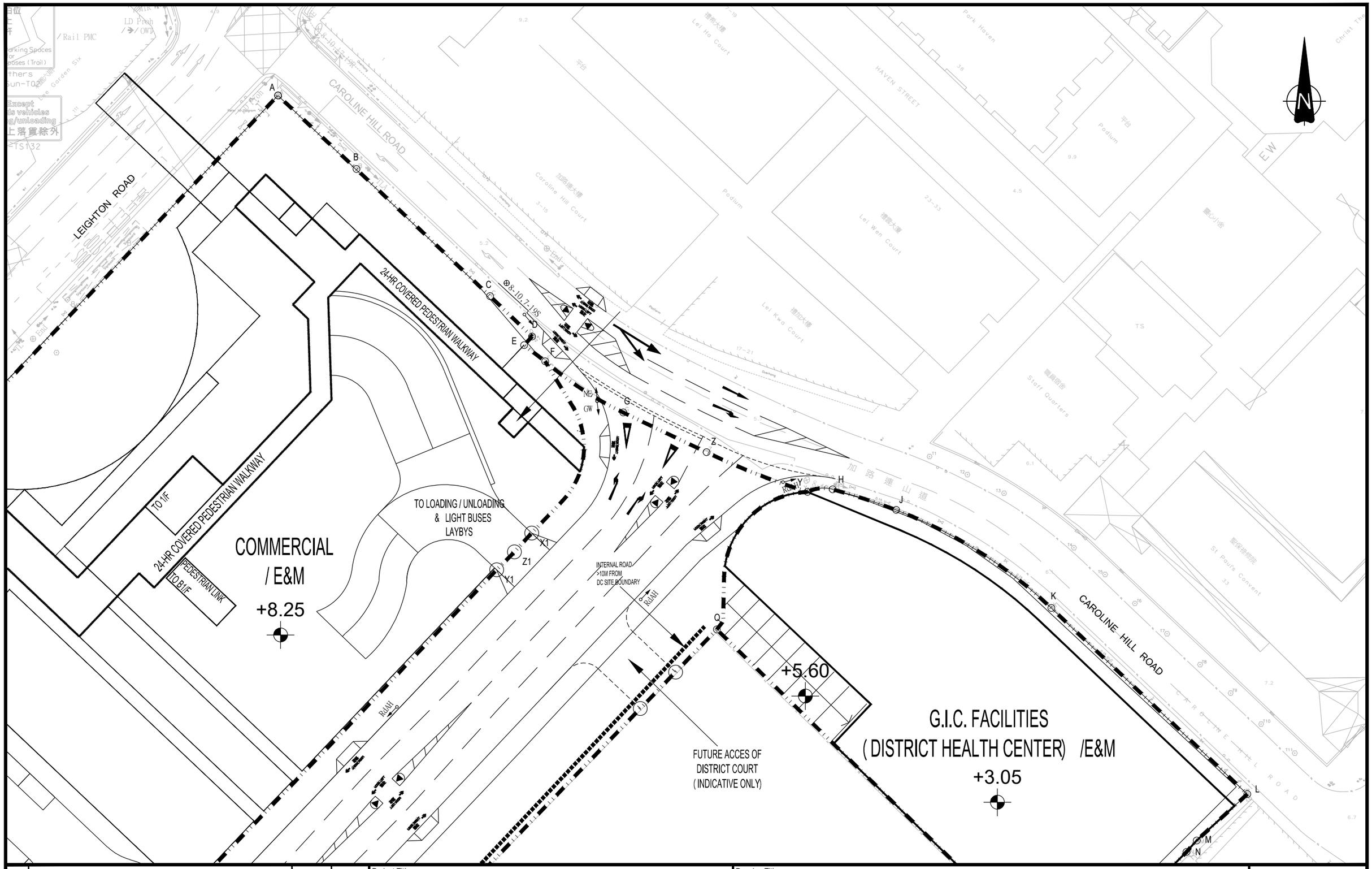
YEAR 2031 DESIGN WEEKEND TRAFFIC FLOWS AT JUNCTION J6 UNDER PRIORITY CONTROL ARRANGEMENT

Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	1:500(A3)	MAY 2022	6.3B	-

SYSTRA MVA

CHK50603110/TIA/F63B.DWG/CKC/12MAY22

Original Size : A3



Rev.	Description	Checked	Date
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-	-	-	-
-	-	-	-
-	-	-	-

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON
INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG
TRAFFIC REVIEW REPORT

Drawing Title

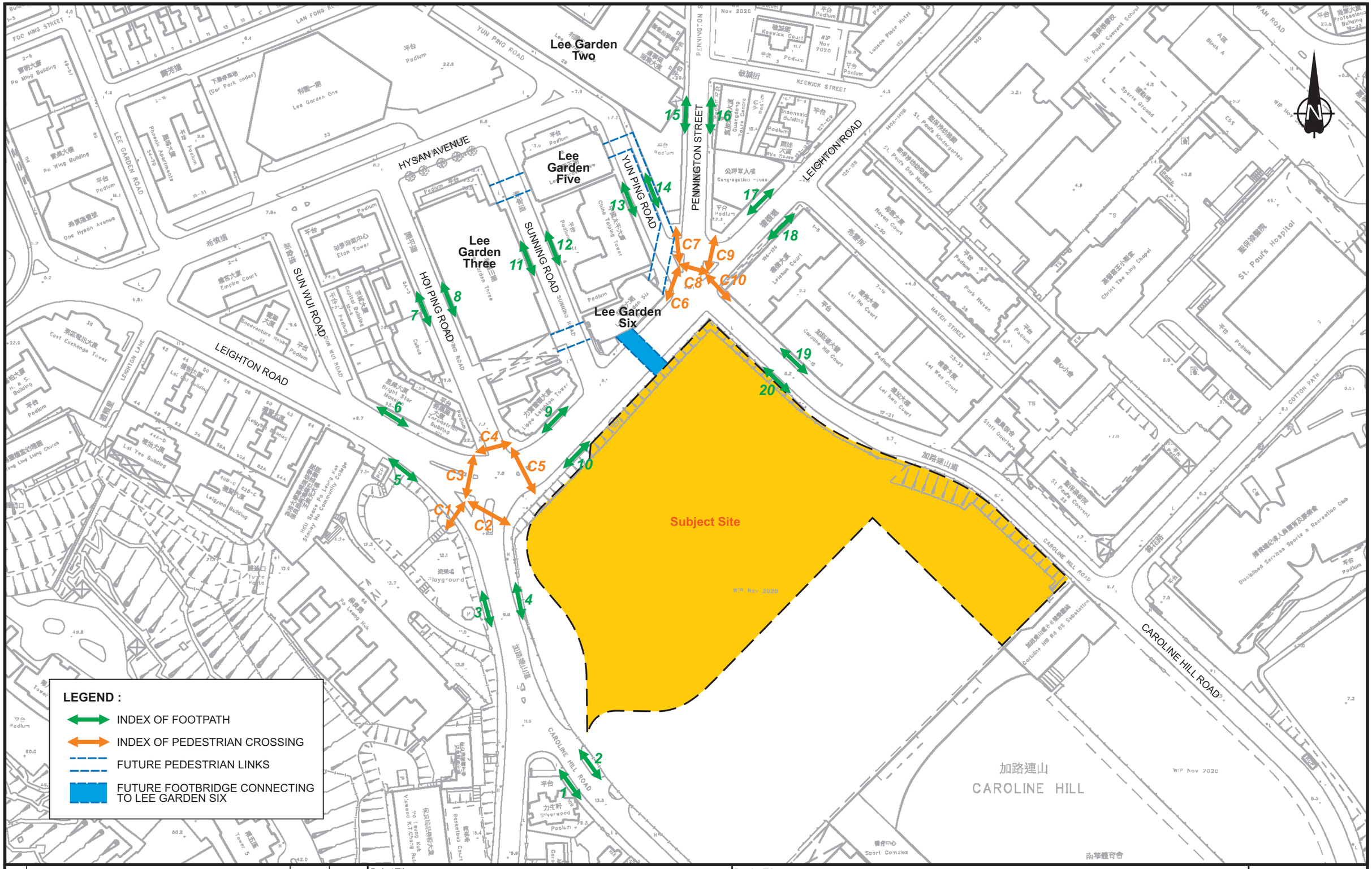
FUTURE JUNCTION LAYOUT OF CAROLINE HILL ROAD (EAST) / NEW ACCESS ROAD (J18)

Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	1:500(A3)	DEC 2021	6.4	-

SYSTRA MVA

CHK50603110/TIA/F64.DWG/CKC/12MAY22

Original Size : A3



Rev.	Description	Checked	Date
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-	-	-	-
-	-	-	-
-	-	-	-

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG TRAFFIC REVIEW REPORT

Drawing Title

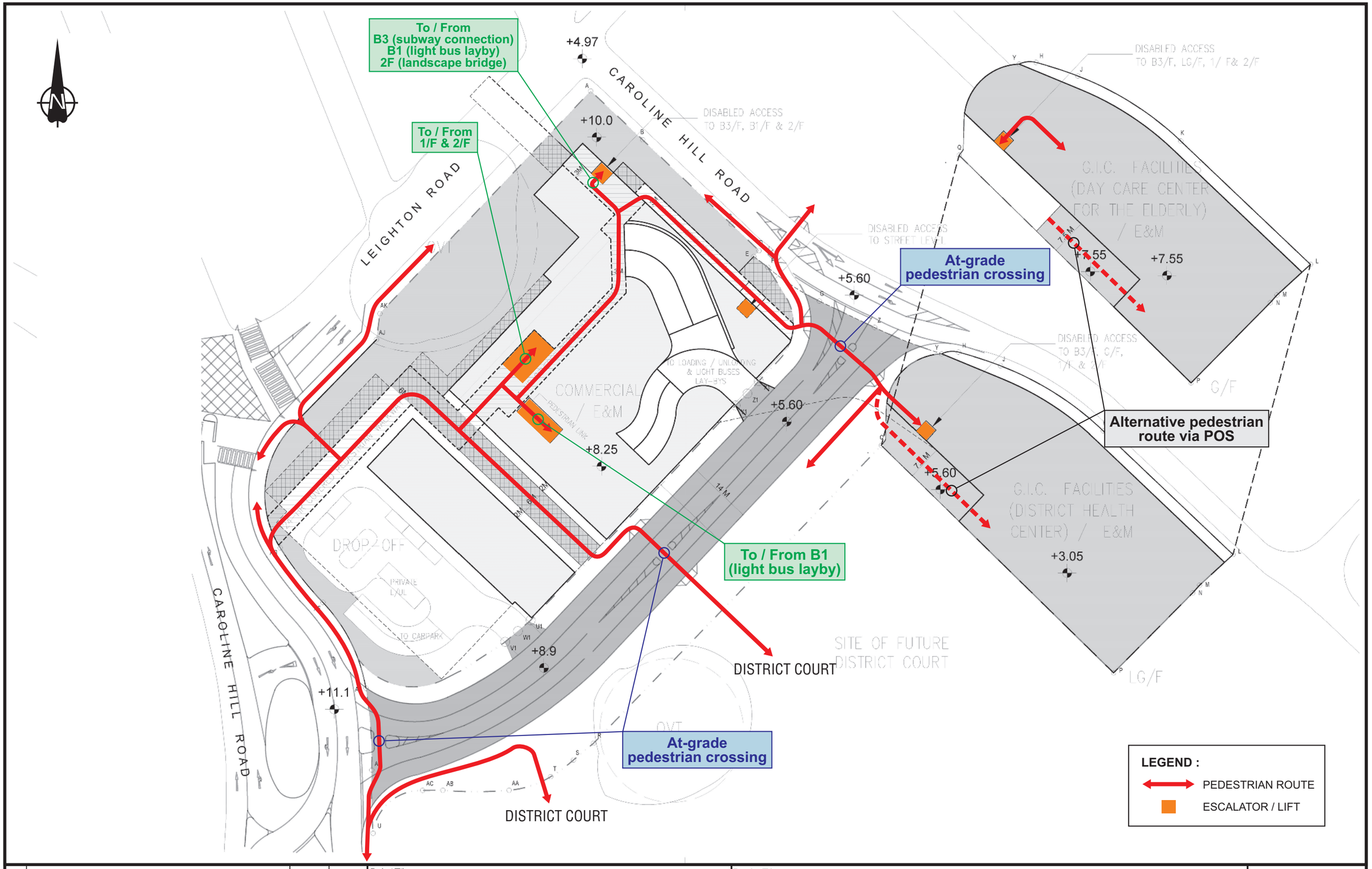
INDEX PLAN FOR FOOTPATHS AND PEDESTRIAN CROSSING

Designed	Checked	Scale	Date	Drawing No.	Rev.
APU	CHC	NTS	DEC 2021	7.1	-

SYSTRA MVA

CHK50603110/TIA/F71.CDR/LLH/9DEC21

Original Size : A3



Rev.	Description	Checked	Date
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-	-	-	-
-	-	-	-
A	MINOR AMENDMENT	CHC	13APR22

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON
INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG
TRAFFIC REVIEW REPORT

Drawing Title

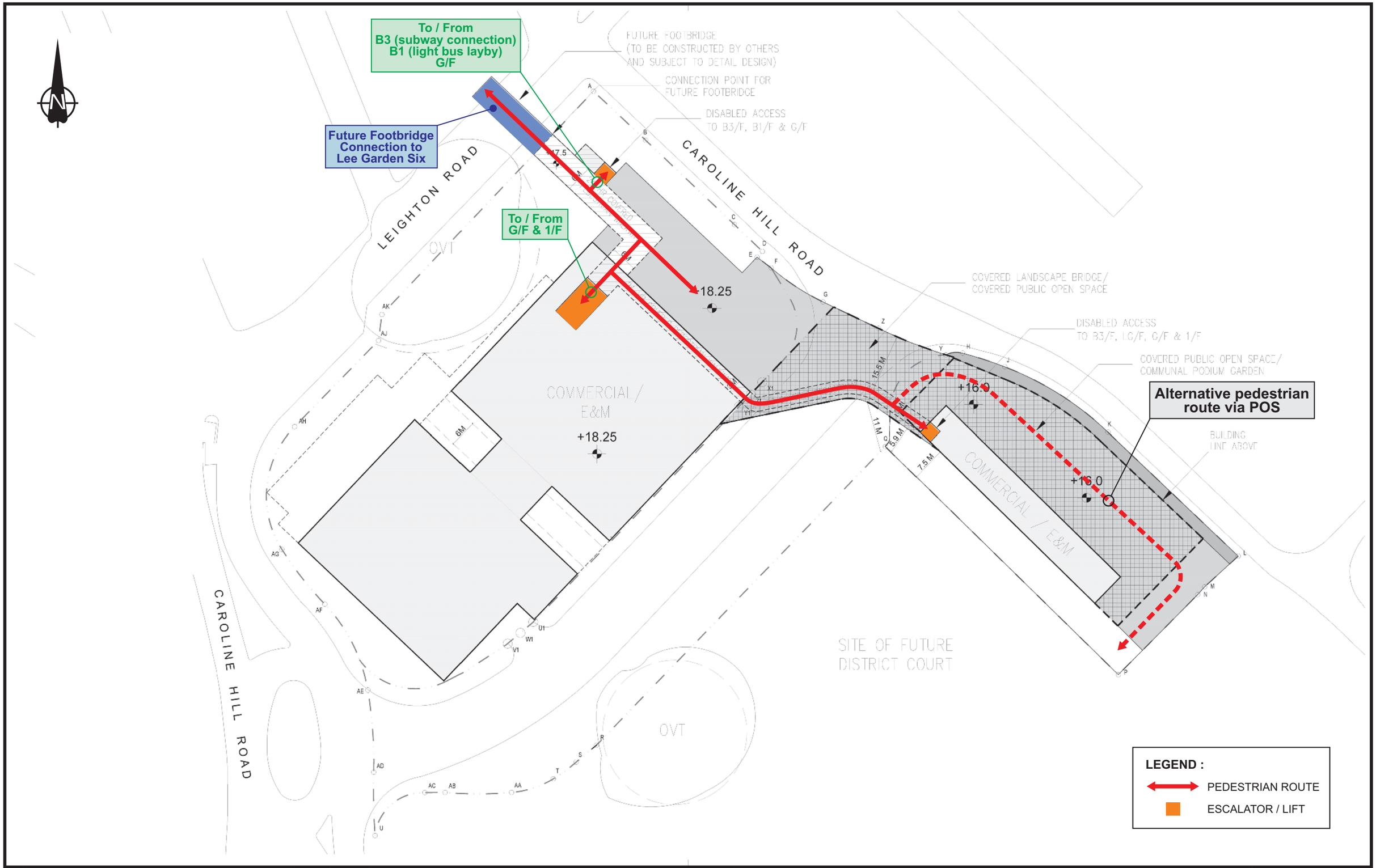
INTERNAL PEDESTRIAN CONNECTION (G/F)

Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	NTS	MAR 2022	7.2	A

SYSTRA MVA

CHK50603110/TIA/F72-A.CDR/LLH/13APR22

Original Size : A3



Rev.	Description	Checked	Date
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-	-	-	-
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A	MINOR AMENDMENT	CHC	13APR22

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON
INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG
TRAFFIC REVIEW REPORT

Drawing Title

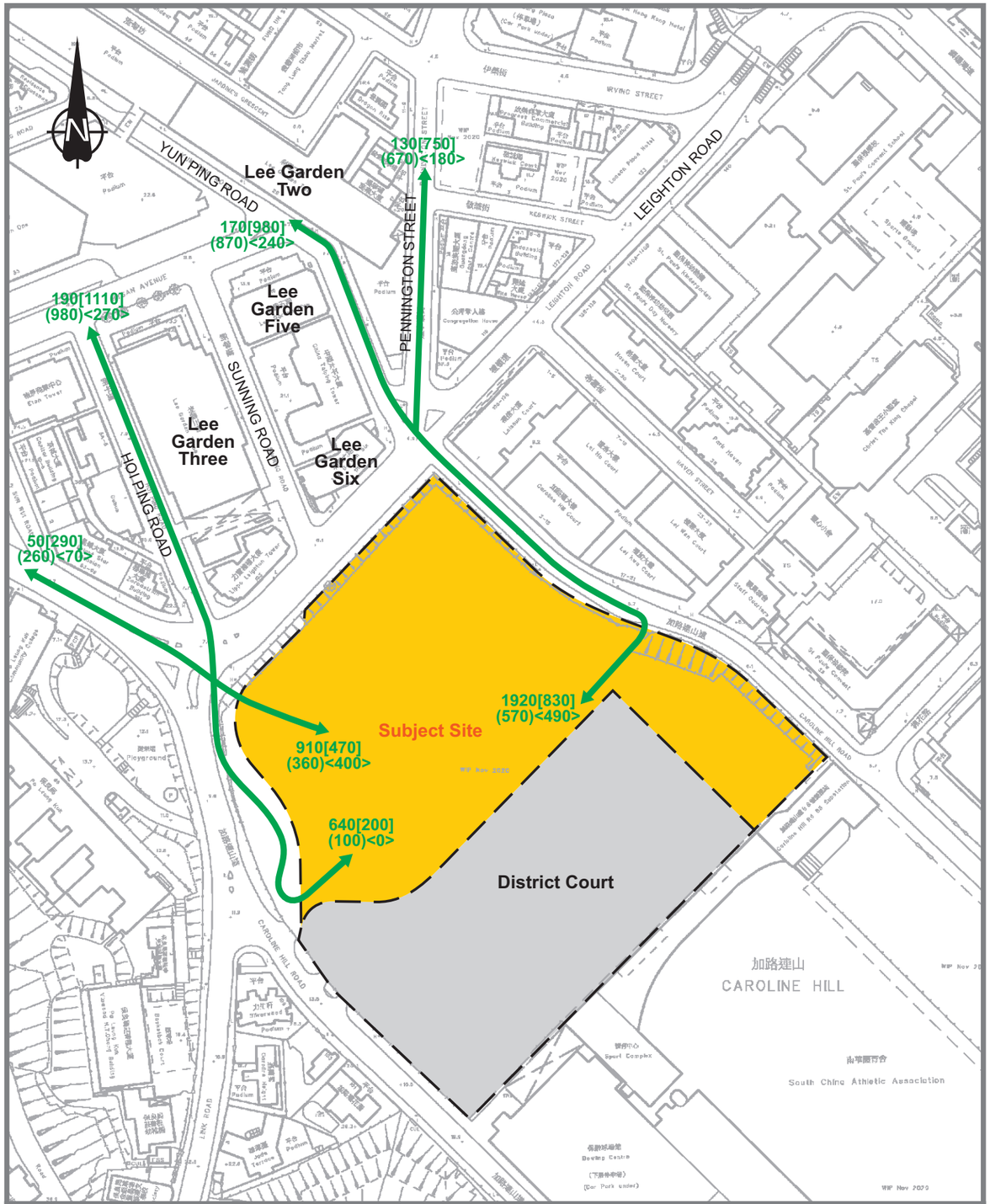
INTERNAL PEDESTRIAN CONNECTION (2/F – LANDSCAPE BRIDGE LEVEL)

Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	NTS	MAR 2022	7.3	A

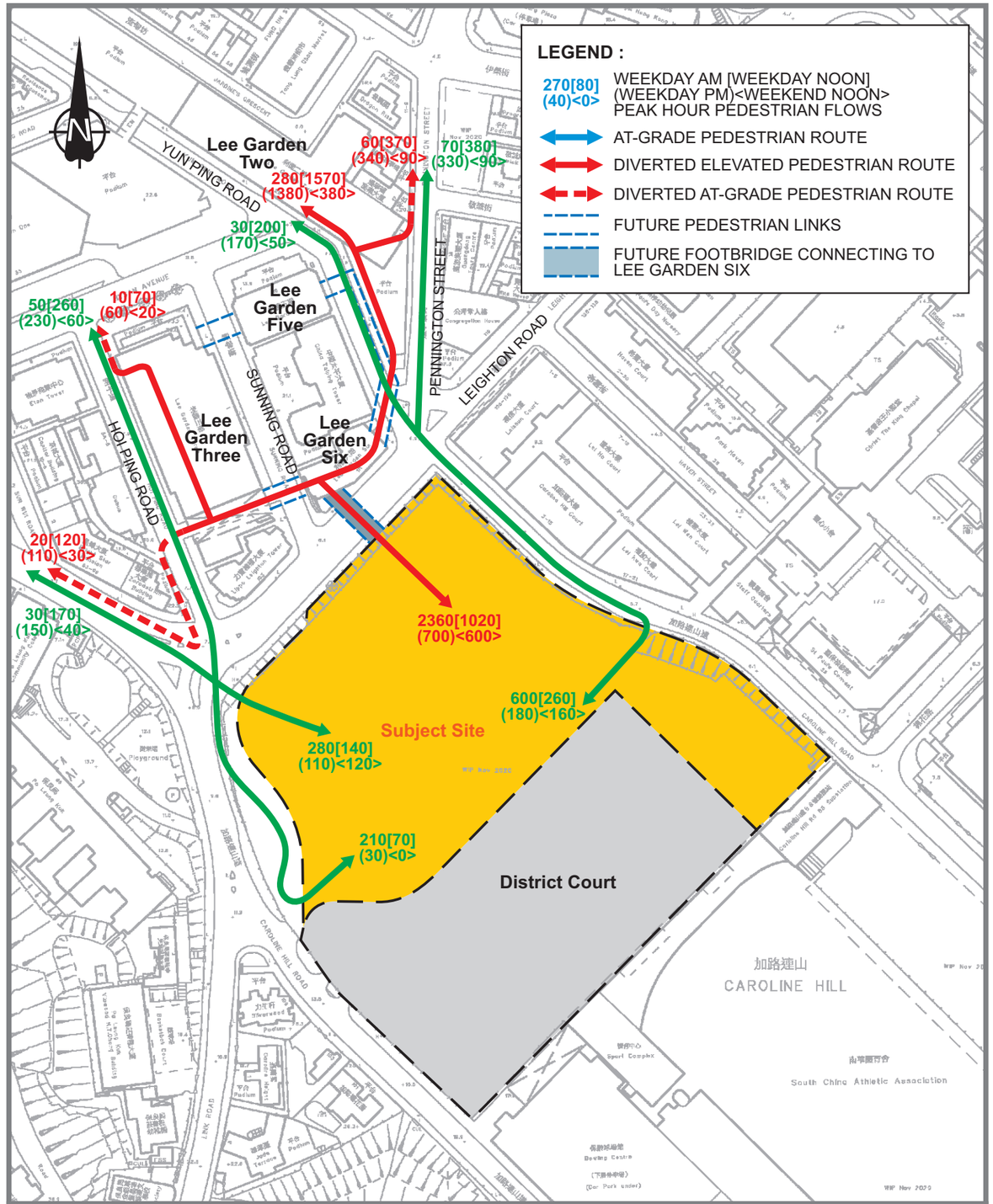
SYSTRA MVA

CHK50603110/TIA/F73-A.CDR/LLH/13APR22

Original Size : A3



N-S Pedestrian Movement in Year 2031 Design Scenario without Future Footbridges



N-S Pedestrian Movement in Year 2031 Ultimate Scenario with Future Footbridges

Rev.	Description	Checked	Date
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-	-	-	-
-	-	-	-
-	-	-	-

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG TRAFFIC REVIEW REPORT

Drawing Title

RE-DISTRIBUTION OF N-S PEDESTRIAN MOVEMENTS WITH FUTURE FOOTBRIDGES IN YEAR 2031 ULTIMATE SCENARIO

Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	NTS	MAR 2022	7.4	-

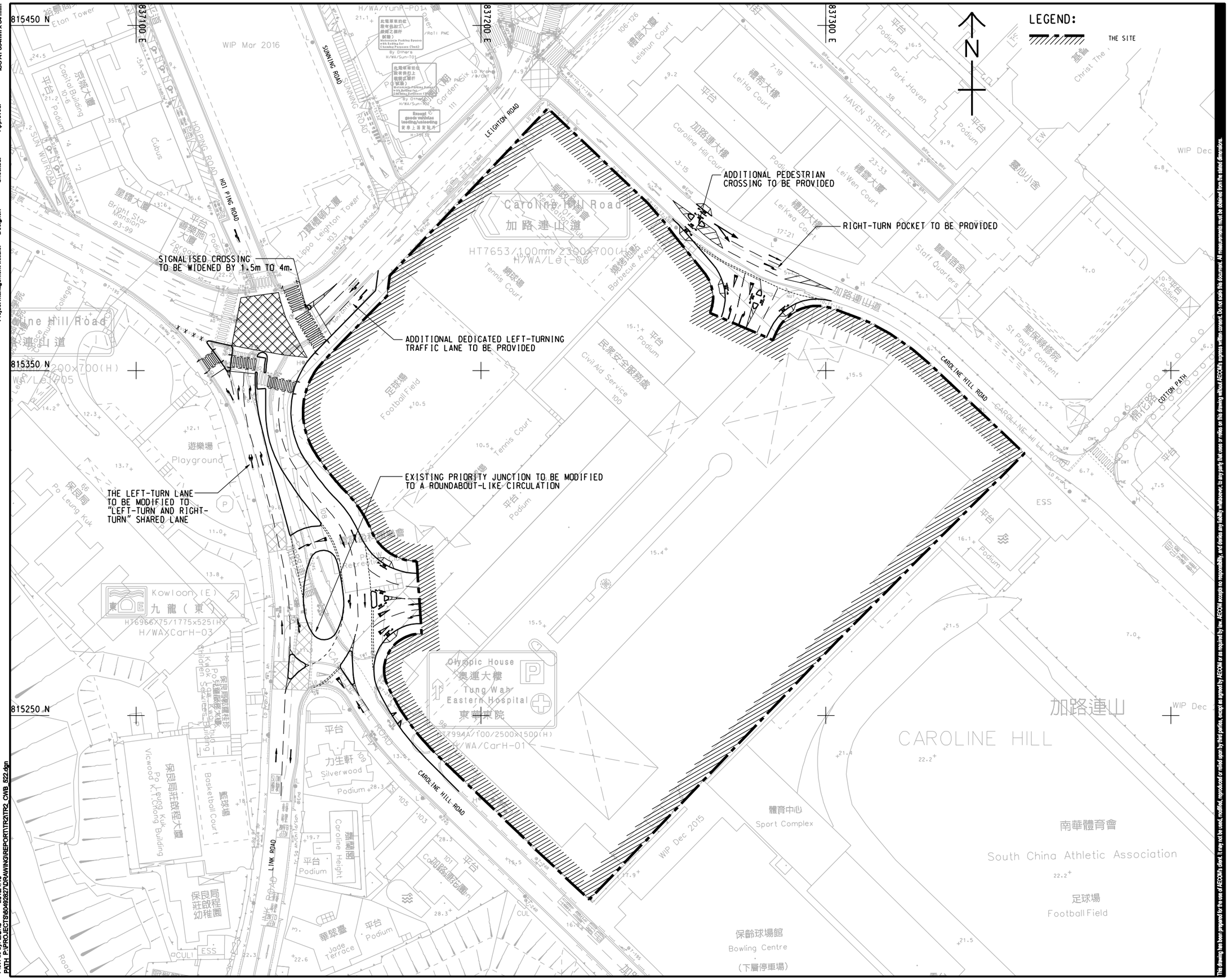
SYSTRA MVA

CHK50603110/TIA/F74.CDR/LLH/1MAR22

Original Size : A3

APPENDIX A – The Road Scheme As Proposed in HyD's Traffic Review Report

Source:
http://www.info.gov.hk/tpb/en/papers/MPC/626-mpc_5-19.pdf



Project Management Initials: Designer: Checked: Approved: ISO A1 594mm x 841mm

Plot File by: LUH9 2019/11/15
PATH: P:\PROJECTS\60492827\DRAWING\REPORT\TR2\TR2_CWB_522.dgn

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AECOM

PROJECT
項目
ROAD WORKS IN CONNECTION WITH PROPOSED SITES FOR HOUSING / COMMERCIAL DEVELOPMENT (PACKAGE1) - FEASIBILITY STUDY

CLIENT
業主
路政署 HIGHWAYS DEPARTMENT

CONSULTANT
工程顧問公司
AECOM Asia Company Ltd.
www.aecom.com

SUB-CONSULTANTS
分判工程顧問公司

ISSUE/REVISION
修訂

I/R 修訂	DATE 日期	DESCRIPTION 內容摘要	CHK. 核核

STATUS
現狀

SCALE 比例: A3 1 : 1000
DIMENSION UNIT 尺寸單位: METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號: 60492827
AGREEMENT NO. 協議編號: CE57/2015(HY)

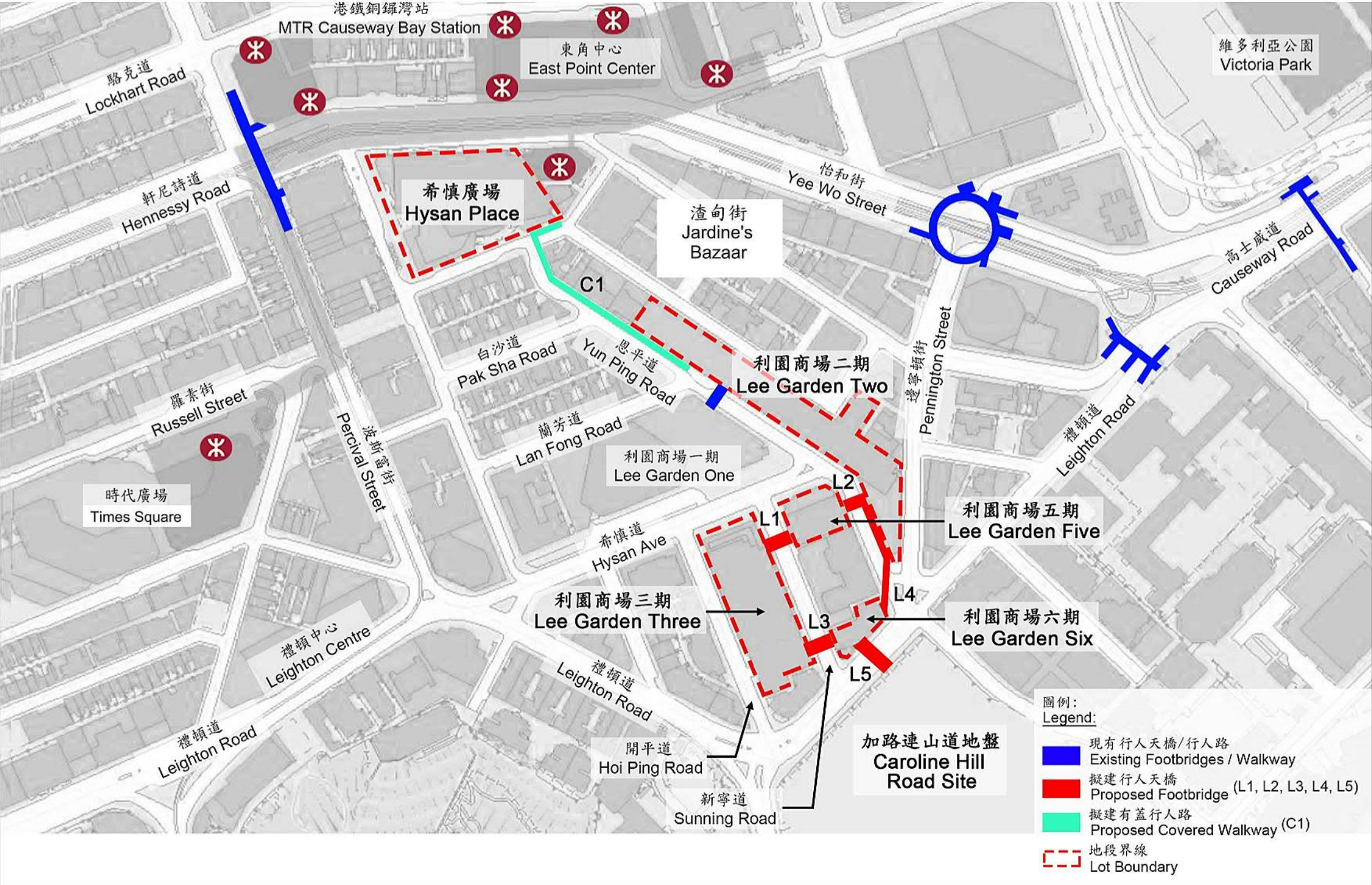
SHEET TITLE
圖紙名稱
PROPOSED ROAD SCHEME

SHEET NUMBER
圖紙編號
60492827/TR2/CWB_FIGURE 2.1

APPENDIX B – Plan of Pedestrian Links in Causeway Bay

Source:
https://gia.info.gov.hk/general/202101/05/P2021010500742_357901_1_1609851261905.pdf

Proposed provision of Pedestrian Links in Causeway Bay
銅鑼灣擬建行人通道走線



APPENDIX C – Sensitivity Test on Accumulated Traffic Impact with Redevelopment of Hong Kong Stadium

APPENDIX C –

SENSITIVITY TEST ON ACCUMULATED TRAFFIC IMPACT WITH REDEVELOPMENT OF HONG KONG STADIUM

C.1 Junction Assessments for Sensitivity Test

C.1.1 Based on the Discussion Paper No. 53/2021 – Redevelopment Proposal of Hong Kong Stadium as discussed on the 15th meeting of Wan Chai District Council Meeting on 16th November 2021, it is noted that the total number of seats for Hong Kong Stadium will be reduced from approximate 40,000 seats to 9,000 seats. In addition, the future redevelopment of Hong Kong Stadium will mainly host school athletic meet and local soccer game.

C.1.2 In order to estimate the traffic generation and attraction of the future redevelopment of Hong Kong Stadium, reference has made to the consultant's in-house traffic data obtained from traffic survey for Wan Chai Sports Ground in 2019 on a typical school event day with approximately 500 students, which exhibits similar purpose with the future redevelopment of Hong Kong Stadium.

C.1.3 Based on the result of the aforesaid trip generation survey for Wan Chai Sports Ground, it was observed that approximate 40 pcu/hr and 40 pcu/hr for trip generation and attraction respectively from an hour before the start time of the event at 0700 – 0800, and it does not coincide with the road network AM commuting peak (i.e. 0815 – 0915).

C.1.4 For conservative purpose, the traffic generation and attraction of 40 pcu/hr during the AM event peak are superimposed onto the year 2031 AM, Noon and PM peak hours design traffic flows for sensitivity test, and the results are listed in below **Table C1**.

Table C1 Junction Performance in Design Scenario of Year 2031 with Redevelopment of Hong Kong Stadium

Ref No.	Junctions	Method of Control	Design Scenario in Year 2031 RC/RFC[(1)]							
			Without the Redevelopment of Hong Kong Stadium				With the Redevelopment of Hong Kong Stadium			
			Weekday			Weekend	Weekday			Weekend
			AM	Noon	PM	Noon	AM	Noon	PM	Noon
J1	Hennessy Road / Percival Street	Signalised	122%	66%	74%	58%	122%	66%	74%	58%
J2	Matheson Street / Percival Street / Russell Street	Signalised	348%	265%	335%	243%	348%	265%	335%	243%
J3	Leighton Road / Percival Street / Hysan Avenue	Signalised	43%	26%	38%	22%	42%	26%	37%	21%
J4	Leighton Road / Hysan Avenue / Leighton Lane	Signalised	304%	296%	269%	164%	304%	296%	269%	164%
J5	Leighton Road / Caroline Hill Road (West)	Signalised	22%	25%	37%	33%	20%	24%	34%	31%
J6	Caroline Hill Road (West) / Link Road / New Access Road	Signalised	42%	47%	47%	48%	40%	43%	43%	43%

Ref No.	Junctions	Method of Control	Design Scenario in Year 2031 RC/RFC(1)							
			Without the Redevelopment of Hong Kong Stadium				With the Redevelopment of Hong Kong Stadium			
			Weekday			Weekend	Weekday			Weekend
			AM	Noon	PM	Noon	AM	Noon	PM	Noon
J7	Caroline Hill Road / Cotton Path	Priority	0.23	0.29	0.15	0.22	0.23	0.29	0.15	0.22
J8	Leighton Road / Yun Ping Road / Pennington Street / Caroline Hill Road (East)	Signalised	29%	33%	21%	20%	29%	33%	20%	19%
J9	Causeway Road / Leighton Road / Tung Lo Wan Road / Irving Street	Signalised	47%	37%	40%	40%	46%	37%	40%	39%
J10	Causeway Road / Moreton Terrace	Signalised	40%	29%	23%	32%	39%	28%	22%	31%
J11	Pennington Street / Jardine's Bazaar / Irving Street	Signalised	230%	193%	175%	187%	230%	193%	175%	187%
J12	Link Road / Broadwood Road	Signalised	19%	25%	20%	18%	19%	24%	19%	18%
J13	Broadwood Road / Ventris Road	Priority	0.58	0.59	0.58	0.58	0.59	0.59	0.59	0.58
J14	Wong Nai Chung Road / Sports Road	Signalised	164%	142%	153%	132%	162%	140%	150%	130%
J15	Leighton Road / Wong Nai Chung Road	Signalised	28%	20%	18%	24%	27%	18%	16%	22%
J16	Tung Lo Wan Road / Eastern Hospital Road	Signalised	54%	55%	79%	72%	51%	52%	76%	69%
J17	Tung Lo Wan Road / Moreton Terrace	Signalised	41%	25%	31%	78%	41%	25%	30%	78%
J18	Caroline Hill Road / Site Access	Priority	0.23	0.19	0.15	0.11	0.23	0.19	0.15	0.11
J19	Hysan Avenue / Hoi Ping Road	Priority	0.61	0.56	0.53	0.52	0.62	0.57	0.54	0.53
J20	Tung Lo Wan Road / Tai Hang Road	Priority	0.69	0.70	0.73	0.35	0.69	0.70	0.73	0.36

Note: (1) RC = Reserve Capacity for Signal Junction
RFC = Ratio of Flow to Capacity for Priority Junction

C.1.5 The assessment results in **Table C1** show that all identified junctions including the modified junction J5, the modified junction J6 with signal control arrangement as well as the new junction J18 at the Green Areas will be operating within their capacities in the design scenario of year 2031 with redevelopment of Hong Kong Stadium.

C.2 Pedestrian Assessments for Sensitivity Test

Sensitivity Test for Future Pedestrian Condition in Design Scenario

C.2.1 As mentioned above, the future redevelopment of Hong Kong Stadium will mainly host school athletic meet and local soccer game. Taking into consideration the local soccer games

are normally held on the non-peak time period, the assessment on pedestrian facilities by assuming school athletic meet with 1,000 attendances is conducted for this sensitivity test.

C.2.2 In general, arrival and dismissal time of school athletic meet are not overlapping the communal morning and evening peak hours. Nevertheless, the assessment is conducted by assuming the arrival and dismissal period overlaps with the observed communal peak hours in the study area. The pedestrian generation and attraction due to the school event are listed in **Table C2** below:

Table C2 Pedestrian Generation and Attraction of School Athletic Meet at the Redevelopment of Hong Kong Stadium

Event	Weekday						Weekend	
	AM		Noon		PM		Noon	
	GEN	ATT	GEN	ATT	GEN	ATT	GEN	ATT
School Athletic Meet	0	1,000	500	500	1,000	0	500	500

C.2.3 The additional pedestrian trips due to the event is then distributed and assigned onto the pedestrian network in Year 2031 Design Scenario, and the assessment results on the pedestrian facilities are summarized in **Tables C3.**

Table C3 Operational Performance of Pedestrian Facilities in Design Scenario of Year 2031 with Redevelopment of Hong Kong Stadium

Location[1]	Clear Width (m)	Effective Width[2] (m)	Year 2031 Two-way Pedestrian Flows[3] In Design Scenario With Redevelopment of Hong Kong Stadium (Ped/hour)				Level-of-Service[4] (LOS)			
			Weekday			Weekend	Weekday			Weekend
			AM Peak	Noon Peak	PM Peak	Noon Peak	AM Peak	Noon Peak	PM Peak	Noon Peak
1	3.0	2.0	170	210	190	70	A	A	A	A
2	3.0	2.0	600	710	1020	850	A	A	A	A
3	2.9	1.9	410	450	220	260	A	A	A	A
4[5]	3.5	2.5	1360	1380	1400	920	B	B	C	A
5	3.2	2.2	530	770	760	560	A	A	A	A
6	2.3	1.3	640	830	740	500	A	A	A	A
7	2.0	1.0	460	460	430	260	A	A	A	A
8	2.0	1.0	1620	1760	1700	980	C	C	C	B
9	2.7	1.7	370	570	490	310	A	A	A	A
10	3.0	2.0	690	950	700	610	A	A	A	A
11	2.3	1.3	150	130	190	100	A	A	A	A
12	2.0	1.0	130	100	90	60	A	A	A	A
13	2.5	1.5	1230	1970	1540	1240	A	B	B	A
14	2.5	1.5	1070	1620	1380	960	A	B	A	A
15	2.2	1.2	1470	2110	1640	1330	B	C	B	B
16	2.0	1.0	530	650	560	350	A	A	A	A
17	4.4	3.4	50	110	90	120	A	A	A	A
18	3.3	2.3	900	2410	1330	1370	A	B	A	A
19	3.0	2.0	2210	3080	2360	1600	B	C	B	A
20	1.7	0.7	850	1000	810	390	B	C	B	A
C1	4.0	4.0	820	880	660	600	A	A	A	A
C2	3.6	3.6	560	810	640	540	A	A	A	A
C3	3.3	3.3	860	840	770	410	A	A	A	A
C4	3.3	3.3	440	690	550	360	A	A	A	A
C5[6]	5.0	5.0	1970	2080	1890	1110	C	C	C	B

C6	6.8	6.8	1500	2280	1780	1450	A	A	A	A
C7	4.0	4.0	2330	3210	2510	1880	B	C	B	A
C8	4.2	4.2	3350	4680	3670	2840	**D**	**D**	**D**	C
C9	4.2	4.2	600	820	630	500	A	A	A	A
C10	6.4	6.4	3620	5230	4050	3000	C	**D**	C	B

Notes:
(1) Refer to **Drawing No. 7.1**
(2) Effective Width = Clear Width – Dead Width. Dead width = 0.5m for clearance from kerb/structure on footpaths; and no dead width at pedestrian crossing
(3) Rounded to the nearest 10
(4) Based the criteria of LOS from HCM 2000 as exhibited in TPDM. In general, LOS A and B provide a good walking environment; LOS C and D are acceptable value; and LOS E and F reflect the design volume has approached or over the limit of walking capacity
(5) The clear width of footpath will be widened from the existing 2m to 3.5m upon the implementation of the proposed road scheme at the Green Areas
(6) The crossing width will be widened from the existing 3.6m to 5m upon the implementation of the proposed road scheme at the Green Areas.

C.2.4 As shown in the **Table C3**, the assessment results suggested that all the pedestrian facilities in the surrounding will be still operated at LOS C or better in the design scenario of year 2031, except the pedestrian crossings (locations C8 and C10) at Leighton Road would operate at LOS D. Nevertheless, LOS D is still considered an acceptable level for operation at the existing pedestrian facilities especially the pedestrian situation will be improved upon the commissioning of the Pedestrian Links with future footbridge connecting the Development to Lee Garden Six.

C.2.5 Notwithstanding the future footbridges should be deemed as the long-term solution to enhance pedestrian conditions in the Causeway Bay South area, it is reviewed that slightly increase of the green time for the pedestrian crossings C6, C8 and C10 by 3 seconds for weekday noon would improve the pedestrian crossing C10 from LOS D to LOS C, while increasing the green time by 4 seconds for evening peak on weekday would improve the pedestrian crossing C8 from LOS D to LOS C. The proposed increase in pedestrian green time will not cause significant impact to junction performance and queue length.

Sensitivity Test for Future Pedestrian Condition in Ultimate Scenario

C.2.6 As discussed in **Section 7.2** of Traffic Review Report, a footbridge connection will be provided at the Development to receive the future footbridge from Lee Garden Six. With the connection to the future footbridge, the Development will be linked up with the Pedestrian Links such that the at-grade pedestrian flows would be diverted from the street level to the elevated level in particular the north-south movements between the MTR station and the subject site.

C.2.7 By taking into account the future footbridge connection to Lee Garden Six, the future pedestrian flows in the ultimate scenario of year 2031 with the redevelopment of Hong Kong Stadium are derived. The results of LOS assessments for the year 2301 ultimate scenario with redevelopment of Hong Kong Stadium are presented in the **Table C4**.

Table C4 Operational Performance of Pedestrian Facilities in Ultimate Scenario of Year 2031 with Redevelopment of Hong Kong Stadium

Location[1]	Clear Width (m)	Effective Width[2] (m)	Year 2031 Two-way Pedestrian Flows[3] In Ultimate Scenario With Redevelopment of Hong Kong Stadium (Ped/hour)				Level-of-Service[4] (LOS)			
			Weekday			Weekend	Weekday			Weekend
			AM Peak	Noon Peak	PM Peak	Noon Peak	AM Peak	Noon Peak	PM Peak	Noon Peak
1	3.0	2.0	170	210	190	70	A	A	A	A
2	3.0	2.0	420	590	880	730	A	A	A	A
3	2.9	1.9	410	450	220	260	A	A	A	A
4[5]	3.5	2.5	660	790	980	790	A	A	B	A
5	3.2	2.2	520	770	750	560	A	A	A	A
6	2.3	1.3	480	640	590	430	A	A	A	A
7	2.0	1.0	360	340	330	170	A	A	A	A
8	2.0	1.0	410	410	610	470	A	A	A	A
9	2.7	1.7	370	570	490	310	A	A	A	A
10	3.0	2.0	690	950	700	610	A	A	A	A
11	2.3	1.3	80	60	150	70	A	A	A	A
12	2.0	1.0	130	100	90	60	A	A	A	A
13	2.5	1.5	420	1290	840	800	A	A	A	A
14	2.5	1.5	370	960	730	650	A	A	A	A
15	2.2	1.2	1150	1770	1330	1190	A	C	B	B
16	2.0	1.0	340	430	380	270	A	A	A	A
17	4.4	3.4	50	110	90	120	A	A	A	A
18	3.3	2.3	900	2410	1330	1370	A	B	A	A
19	3.0	2.0	670	1610	970	890	A	A	A	A
20	1.7	0.7	380	480	380	210	A	A	A	A
C1	4.0	4.0	810	850	620	580	A	A	A	A
C2	3.6	3.6	390	620	480	470	A	A	A	A
C3	3.3	3.3	700	630	590	320	A	A	A	A
C4	3.3	3.3	380	600	490	360	A	A	A	A
C5[6]	5.0	5.0	660	630	700	540	A	A	A	A
C6	6.8	6.8	680	1520	1080	1040	A	A	A	A
C7	4.0	4.0	1310	2200	1550	1430	A	B	A	A
C8	4.2	4.2	1540	2920	2030	2020	A	C	B	B
C9	4.2	4.2	410	600	450	420	A	A	A	A
C10	6.4	6.4	1630	3250	2240	2110	A	B	A	A

Notes:
(1) Refer to **Drawing No. 7.1**
(2) Effective Width = Clear Width – Dead Width. Dead width = 0.5m for clearance from kerb/structure on footpaths; and no dead width at pedestrian crossing
(3) Rounded to the nearest 10
(4) Based the criteria of LOS from HCM 2000 as exhibited in TPDM. In general, LOS A and B provide a good walking environment; LOS C and D are acceptable value; and LOS E and F reflect the design volume has approached or over the limit of walking capacity
(5) The clear width of footpath will be widened from the existing 2m to 3.5m upon the implementation of the proposed road scheme at the Green Areas
(6) The crossing width will be widened from the existing 3.6m to 5m upon the implementation of the proposed road scheme at the Green Areas

C.2.8 As shown in **Table C4**, the operation performance of the critical pedestrian crossings at Leighton Road (locations C8 and C10) can be improved to the LOS C or better upon commissioning of the future footbridge connecting the Development with Lee Garden Six.

APPENDIX D – Junction Calculation Worksheets

Year 2021 Observed

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Hennessy Road / Percival Street Design Year: 2031

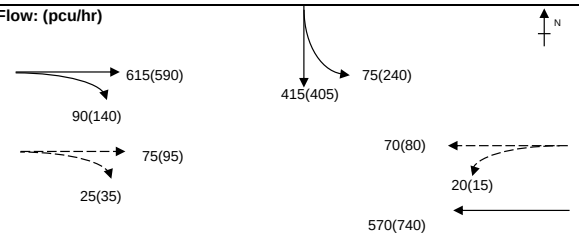
Description: 2021 Observed Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Hennessy Road WB	← *	A	1	3.800						1495	1495	235	0.157		306	0.205	0.205
	←	A	1	3.700						2125	2125	335	0.158	0.158	434	0.204	
Hennessy Road WB (Tram)	↓	D	2	3.000	20					1780	1780	20	0.011		15	0.008	
	←	A	1	3.000						2055	2055	70	0.034		80	0.039	
Hennessy Road EB	→ **	B	1,2,3	3.000						960	960	196	0.204		188	0.196	
	→	B	1,2,3	3.000						2055	2055	419	0.204		402	0.196	
	↘	C	2,3	3.000		25				1940	1940	90	0.046	0.046	140	0.072	0.072
Hennessy Road EB (Tram)	→	B	1,2,3	3.000						1915	1915	75	0.039		95	0.050	
	↓	C	2,3	3.000		25				1940	1940	25	0.013		35	0.018	
Percival Street SB	↳	E	4	3.300	10					1690	1690	75	0.044		240	0.142	0.142
	↓	E	4	3.300						2085	2085	207	0.099	0.099	202	0.097	
	↓	E	4	3.500						2105	2105	208	0.099		203	0.096	
Pedestrian Crossing		Fp	4	MIN GREEN + FLASH =	12	+	14	=	26								
		Gp	1	MIN GREEN + FLASH =	5	+	7	=	12								

Notes:

* = Site factor of 0.75 has been adopted.
** = Site factor of 0.5 has been adopted.

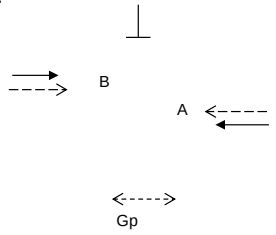
Flow: (pcu/hr)



Group	A,C,Fp	A,C,E	Group	A,C,Fp	A,C,E
y	0.204	0.303	y	0.277	0.419
L (sec)	46	19	L (sec)	46	19
C (sec)	120	120	C (sec)	120	120
y pract.	0.555	0.758	y pract.	0.555	0.758
R.C. (%)	172%	150%	R.C. (%)	100%	81%

Stage / Phase Diagrams

1.



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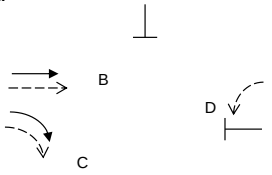

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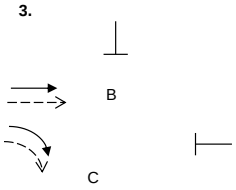

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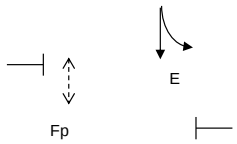


5.

I/G= 6		I/G= 8		I/G=		I/G= 8		I/G=	
I/G= 6		I/G= 8		I/G=		I/G= 8		I/G=	

Date: FEB, 2022 **Junction:** J1 Hennessy Road / Percival Street

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Hennessy Road / Percival Street Design Year: 2031

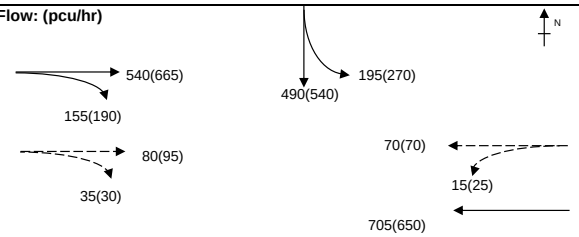
Description: 2021 Observed Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Hennessy Road WB	← *	A	1	3.800						1495	1495	291	0.195		268	0.179	
	←	A	1	3.700						2125	2125	414	0.195	0.195	382	0.180	0.180
Hennessy Road WB (Tram)	↓	D	2	3.000	20					1780	1780	15	0.008		25	0.014	
	←	A	1	3.000						2055	2055	70	0.034		70	0.034	
Hennessy Road EB	→ **	B	1,2,3	3.000						960	960	172	0.179		212	0.221	
	→	B	1,2,3	3.000						2055	2055	368	0.179		453	0.220	
	↘	C	2,3	3.000		25				1940	1940	155	0.080	0.080	190	0.098	0.098
Hennessy Road EB (Tram)	→	B	1,2,3	3.000						1915	1915	80	0.042		95	0.050	
	↓	C	2,3	3.000		25				1940	1940	35	0.018		30	0.015	
Percival Street SB	↳	E	4	3.300	10					1690	1690	195	0.115		270	0.160	0.160
	↓	E	4	3.300						2085	2085	244	0.117		269	0.129	
	↓	E	4	3.500						2105	2105	246	0.117		271	0.129	
Pedestrian Crossing		Fp	4	MIN GREEN + FLASH =			12	+	14	=	26			*			
		Gp	1	MIN GREEN + FLASH =			5	+	7	=	12						

Notes:

* = Site factor of 0.75 has been adopted.
** = Site factor of 0.5 has been adopted.

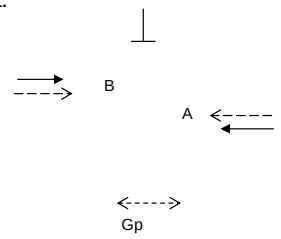
Flow: (pcu/hr)



Group	A,C,E	A,C,Fp	Group	A,C,Fp	A,C,E
y	0.392	0.275	y	0.278	0.437
L (sec)	19	46	L (sec)	46	19
C (sec)	104	104	C (sec)	104	104
y pract.	0.736	0.502	y pract.	0.502	0.736
R.C. (%)	88%	83%	R.C. (%)	81%	68%

Stage / Phase Diagrams

1.



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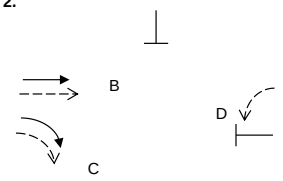

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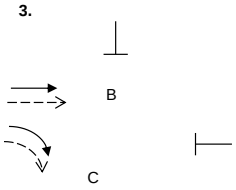

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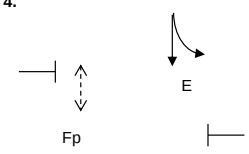


5.

I/G= 4		I/G= 8		I/G=		I/G= 10	26
I/G= 6		I/G= 8		I/G=		I/G= 8	

I/G=		**Date:**	FEB, 2022
I/G=		**Junction:**	J1 Hennessy Road / Percival Street

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Matheson Street / Percival Street / Russell Street Design Year: 2031

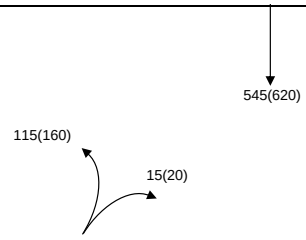
Description: 2021 Observed Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Percival Street	↓	A	1	3.600						1975	1975	273	0.138	0.138	310	0.157	0.157
SB	↓	A	1	3.600						1975	1975	272	0.138		310	0.157	
Matheson Street	↰	B	2	3.300	10					1690	1690	64	0.038		89	0.053	
NB	↰→	B	2	3.300	13.3	10		77% / 23%	78% / 22%	1735	1735	66	0.038		91	0.052	
Pedestrian Crossing		Cp	1,3	MIN GREEN + FLASH =			9	+	10	=	19						
		Dp	2,3	MIN GREEN + FLASH =			6	+	6	=	12			*			*

Notes:

TAC junction: Cycle time of 105s and 120s are adopted for AM and PM Peak

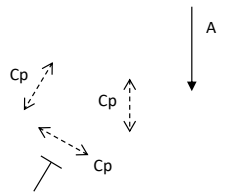
Flow: (pcu/hr)



Group	Cp,B	A,Dp	Group	Cp,B	A,Dp
y	0.038	0.138	y	0.053	0.157
L (sec)	30	23	L (sec)	30	23
C (sec)	105	105	C (sec)	120	120
y pract.	0.643	0.703	y pract.	0.675	0.728
R.C. (%)	1590%	408%	R.C. (%)	1182%	363%

Stage / Phase Diagrams

1.



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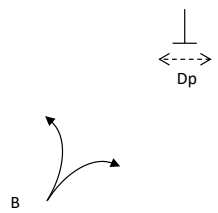

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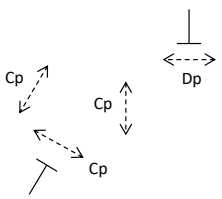


4.

5.

I/G= 4		I/G= 8	12	I/G=		I/G=	I/G=
I/G= 4		I/G= 8	12	I/G=		I/G=	I/G=

Date: FEB, 2022 **Junction:** J2 Matheson Street / Percival Street / Russell Street

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Matheson Street / Percival Street / Russell Street Design Year: 2031

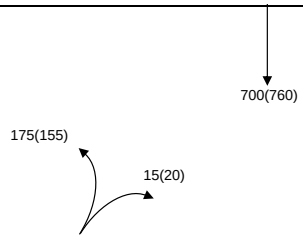
Description: 2021 Observed Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Percival Street	↓	A	1	3.600						1975	1975	350	0.177	0.177	380	0.192	0.192
SB	↓	A	1	3.600						1975	1975	350	0.177		380	0.192	
Matheson Street	↰↑↱	B	2	3.300	10					1690	1690	94	0.056		86	0.051	
NB	↰↑↱	B	2	3.300	13.3	10		84% / 16%	78% / 22%	1740	1735	96	0.055		89	0.051	
Pedestrian Crossing		Cp	1,3	MIN GREEN + FLASH =			9	+	10	=	19						
		Dp	2,3	MIN GREEN + FLASH =			6	+	6	=	12			*			*

Notes:

TAC junction: Cycle time of 105s and 110s are adopted for WD and WE Noon

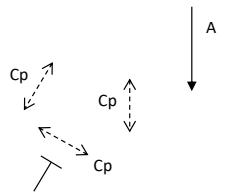
Flow: (pcu/hr)



Group	Cp,B	A,Dp	Group	Cp,B	A,Dp
y	0.056	0.177	y	0.051	0.192
L (sec)	30	23	L (sec)	30	23
C (sec)	105	105	C (sec)	110	110
y pract.	0.643	0.703	y pract.	0.655	0.712
R.C. (%)	1056%	297%	R.C. (%)	1176%	270%

Stage / Phase Diagrams

1.



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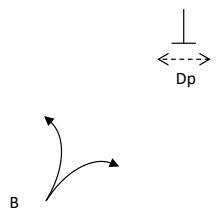

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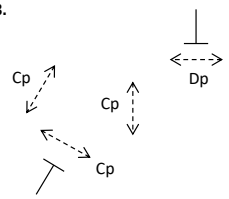


4.

5.

I/G= 4		I/G= 8	12	I/G=		I/G=	I/G=
I/G= 4		I/G= 8	12	I/G=		I/G=	I/G=

Date: FEB, 2022 **Junction:** J2 Matheson Street / Percival Street / Russell Street

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Percival Street / Hysan Avenue Design Year: 2031

Description: 2021 Observed Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Leighton Road WB	← *	E	1	3.500						1570	1570	422	0.269		420	0.268	
	← *	E	1	3.000						1645	1645	443	0.269		440	0.267	
Leighton Road EB	→ **	A	1	2.500						1120	1120	318	0.284	0.284	289	0.258	
	→ **	A	1	2.500						1205	1205	342	0.284		311	0.258	0.258
Percival Street SB	↳ **	C	2	4.000	25					1140	1140	210	0.184	0.184	290	0.254	0.254
Percival Street SB	* ↲	C	2	5.000		25				1595	1595	222	0.139		233	0.146	
	** ↲	C	2	3.500		20				1175	1175	163	0.139		172	0.146	
Pedestrian Crossing		Bp	1	MIN GREEN + FLASH =			16	+	7	=	23						
		Dp	2	MIN GREEN + FLASH =			5	+	12	=	17						

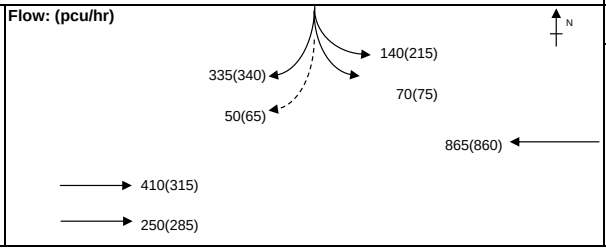
Notes:

TAC junction: Cycle time of 105s and 105s are adopted for AM and PM Peak

** = Site Factor of 0.6 adopted

* = Site Factor of 0.8 adopted

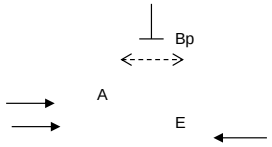
Flow: (pcu/hr)



Group	E,C	A,C	Group	E,C	A,C
y	0.454	0.468	y	0.522	0.512
L (sec)	9	14	L (sec)	9	14
C (sec)	105	105	C (sec)	105	105
y pract.	0.823	0.780	y pract.	0.823	0.780
R.C. (%)	81%	67%	R.C. (%)	58%	52%

Stage / Phase Diagrams

1.



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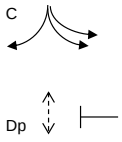


4.

5.

I/G= 8		I/G= 8		I/G=		I/G=		I/G=	
I/G= 8		I/G= 8		I/G=		I/G=		I/G=	

Date: FEB, 2022 **Junction:** (J3) Leighton Road / Percival Street / Hysan Avenue

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Percival Street / Hysan Avenue Design Year: 2031

Description: 2021 Observed Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Leighton Road WB	← *	E	1	3.500						1570	1570	410	0.261		444	0.283	
	← *	E	1	3.000						1645	1645	430	0.261		466	0.283	
Leighton Road EB	→ **	A	1	2.500						1120	1120	376	0.336	0.336	337	0.301	
	→ **	A	1	2.500						1205	1205	404	0.335		363	0.301	0.301
Percival Street SB	↳ **	C	2	4.000	25					1140	1140	275	0.241	0.241	345	0.303	0.303
Percival Street SB	* ↲	C	2	5.000		25				1595	1595	283	0.177		257	0.161	
	** ↲	C	2	3.300		20				1165	1165	207	0.178		188	0.161	
Pedestrian Crossing		Bp	1	MIN GREEN + FLASH =			16	+	7	=	23						
		Dp	2	MIN GREEN + FLASH =			5	+	12	=	17						

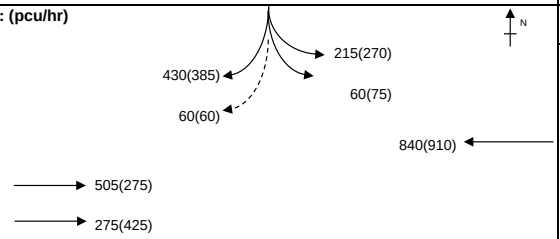
Notes:

TAC junction: Cycle time of 130s and 130s are adopted for WD and WE Noon

** = Site Factor of 0.6 adopted

* = Site Factor of 0.8 adopted

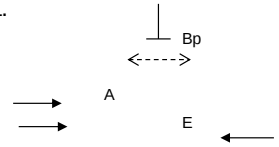
Flow: (pcu/hr)



Group	E,C	A,C	Group	E,C	A,C
y	0.503	0.577	y	0.586	0.604
L (sec)	9	14	L (sec)	9	14
C (sec)	130	130	C (sec)	130	130
y pract.	0.838	0.803	y pract.	0.838	0.803
R.C. (%)	67%	39%	R.C. (%)	43%	33%

Stage / Phase Diagrams

1.



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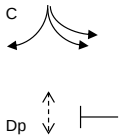


4.

5.

I/G= 8		I/G= 8		I/G=		I/G=		I/G=	
I/G= 8		I/G= 8		I/G=		I/G=		I/G=	

Date: FEB, 2022 **Junction:** (J3) Leighton Road / Percival Street / Hysan Avenue

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Hysan Avenue / Leighton Lane Design Year: 2031

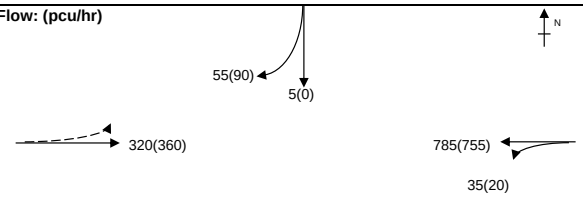
Description: 2021 Observed Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Leighton Road WB	↓	B	2	3.500	5			9%	5%	1915	1935	393	0.205		374	0.193	
	←	B	2	3.200						2075	2075	427	0.206		401	0.193	
Leighton Road EB	↗	(free flow)															
	→	A	1,2	3.500						1965	1965	320	0.163	0.163	360	0.183	0.183
Hysan Avenue SB	↓	C	3	3.300		17		84%	100%	1810	1785	32	0.018		48	0.027	
	↲	C	3	3.000		10				1585	1585	28	0.018		42	0.026	
Pedestrian Crossing		Dp	3	MIN GREEN + FLASH =			11	+	10	=	21			*			*
		Ep	1,2	MIN GREEN + FLASH =			6	+	7	=	13						

Notes:

TAC junction: Cycle time of 120s and 130s are adopted for AM and PM Peak

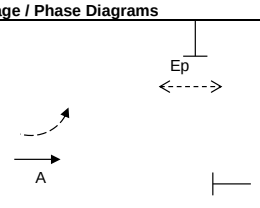
Flow: (pcu/hr)



Group	A,C	A,Dp	Group	A,C	A,Dp
y	0.181	0.163	y	0.210	0.183
L (sec)	9	31	L (sec)	9	31
C (sec)	120	120	C (sec)	130	130
y pract.	0.833	0.668	y pract.	0.838	0.685
R.C. (%)	361%	310%	R.C. (%)	299%	274%

Stage / Phase Diagrams

1.



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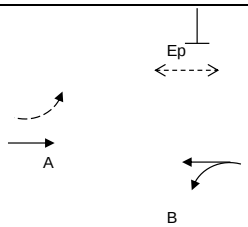

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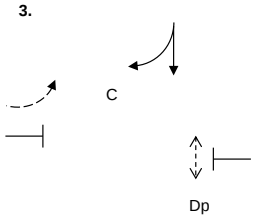


4.

5.

I/G= 4		I/G=		I/G= 7	21	I/G=		I/G=	
I/G= 4		I/G=		I/G= 7	21	I/G=		I/G=	

Date: FEB, 2022 **Junction:** (J4) Leighton Road / Hysan Avenue / Leighton Lane

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Hysan Avenue / Leighton Lane Design Year: 2031

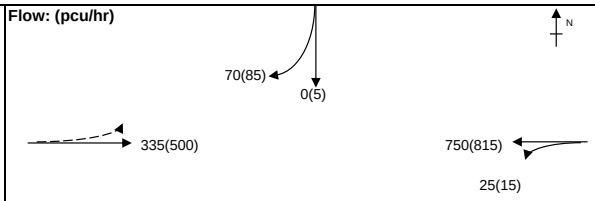
Description: 2021 Observed Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Leighton Road WB	↓	B	2	3.500	5			7%	4%	1925	1945	373	0.194		401	0.206	
	←	B	2	3.200						2075	2075	402	0.194		429	0.207	
Leighton Road EB	↗	(free flow)															
	→	A	1,2	3.500						1965	1965	335	0.170	0.170	500	0.254	0.254
Hysan Avenue	↓	C	3	3.300		17		100%	90%	1785	1805	37	0.021		48	0.027	
SB	↲	C	3	3.000		10				1585	1585	33	0.021		42	0.026	
Pedestrian Crossing		Dp	3	MIN GREEN + FLASH =			11	+	10	=	21			*			*
		Ep	1,2	MIN GREEN + FLASH =			6	+	7	=	13						

Notes:

TAC junction: Cycle time of 130s and 130s are adopted for WD and WE Noon

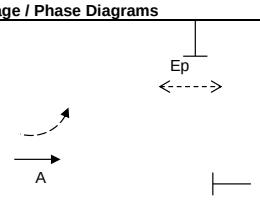
Flow: (pcu/hr)



Group	A,C	A,Dp	Group	A,C	A,Dp
y	0.191	0.170	y	0.281	0.254
L (sec)	9	31	L (sec)	9	31
C (sec)	130	130	C (sec)	130	130
y pract.	0.838	0.685	y pract.	0.838	0.685
R.C. (%)	338%	302%	R.C. (%)	198%	169%

Stage / Phase Diagrams

1.



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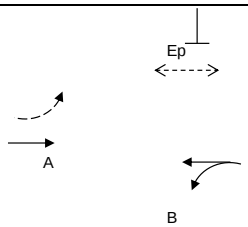

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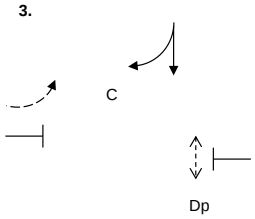


4.

5.

I/G= 4		I/G=		I/G= 7	21	I/G=		I/G=	
I/G= 4		I/G=		I/G= 7	21	I/G=		I/G=	

Date: FEB, 2022 **Junction:** (J4) Leighton Road / Hysan Avenue / Leighton Lane

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Caroline Hill Road (West) Design Year: 2031

Description: 2021 Observed Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Leighton Road WE	^	A	1	3.500	25			100%	100%	1110	1110	260	0.234	0.234	235	0.212	0.212
		A	1	3.000						2055	2055	430	0.209		360	0.175	
Caroline Hill Road		D	2,3	3.500	65					1920	1920	315	0.164		325	0.169	
NB	**	B	2	3.500		20				1665	1665	385	0.231	0.231	400	0.240	0.240
Leighton Road	#	A	1	3.500						1570	1570	174	0.111		200	0.127	
EB		A	1	3.300						2085	2085	231	0.111		265	0.127	
Hoi Ping Road		C	3	3.000						1915	1915	260	0.136	0.136	240	0.125	
SB	*	C	3	3.000		10				715	715	75	0.105		90	0.126	0.126

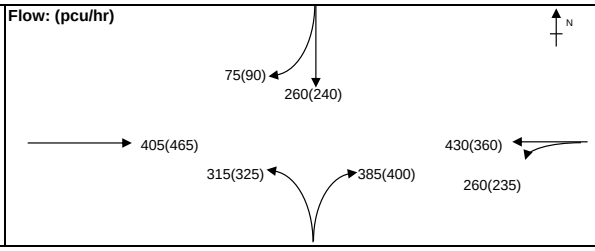
Pedestrian Crossing	Ep	1	MIN GREEN + FLASH =	10	+	5	=	15
	Fp	1,3	MIN GREEN + FLASH =	14	+	5	=	19
	Gp	2	MIN GREEN + FLASH =	14	+	5	=	19
	Hp	3	MIN GREEN + FLASH =	10	+	7	=	17
	Ip	1,2	MIN GREEN + FLASH =	11	+	6	=	17
	Jp	2	MIN GREEN + FLASH =	10	+	7	=	17

Notes:

TAC junction: Cycle time of 105s and 130s are adopted for AM and PM Peak
^ = Site Factor of 0.6 adopted due to merging traffic ahead
* = Site Factor of 0.4 adopted due to flare lane
** = Site Factor of 0.85 adopted

= Site Factor of 0.8 adopted

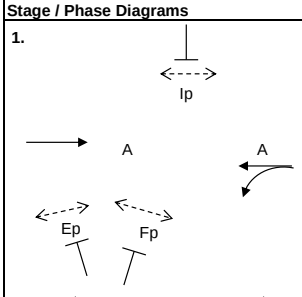
Flow: (pcu/hr)



Group	A,B,Hp	A,B,C	Group	A,B,Hp	A,B,C
y	0.465	0.601	y	0.452	0.578
L (sec)	38	20	L (sec)	38	20
C (sec)	105	105	C (sec)	130	130
y pract.	0.574	0.729	y pract.	0.637	0.762
R.C. (%)	23%	21%	R.C. (%)	41%	32%

Stage / Phase Diagrams

1.



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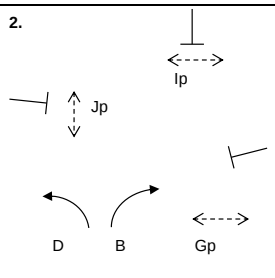

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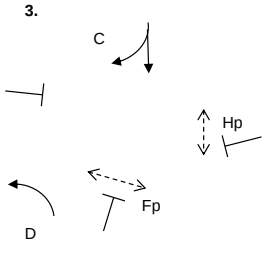

4.

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I/G= 8		I/G= 8		I/G= 7		I/G=	
I/G= 8		I/G= 8		I/G= 7		I/G=	

Date: FEB, 2022 **Junction:** J5 Leighton Road / Caroline Hill Road (West)

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Caroline Hill Road (West) Design Year: 2031

Description: 2021 Observed Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Leighton Road WE	^	A	1	3.500	25			100%	100%	1110	1110	220	0.198	0.198	280	0.252	0.252
		A	1	3.000						2055	2055	365	0.178		435	0.212	
Caroline Hill Road		D	2,3	3.500	65					1920	1920	280	0.146		305	0.159	
NB	**	B	2	3.500		20				1665	1665	410	0.246	0.246	375	0.225	0.225
Leighton Road	#	A	1	3.500						1570	1570	183	0.117		262	0.167	
EB		A	1	3.300						2085	2085	242	0.116		348	0.167	
Hoi Ping Road		C	3	3.000						1915	1915	215	0.112		230	0.120	
SB	*	C	3	3.000		10				715	715	130	0.182	0.182	90	0.126	0.126

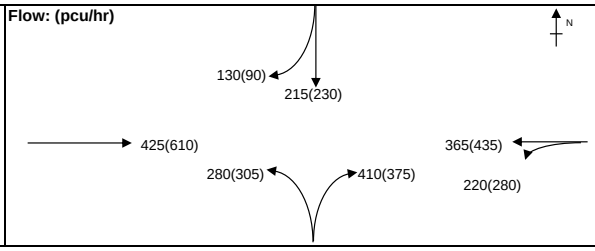
Pedestrian Crossing	Ep	1	MIN GREEN + FLASH =	10	+	5	=	15	
	Fp	1,3	MIN GREEN + FLASH =	14	+	5	=	19	
	Gp	2	MIN GREEN + FLASH =	14	+	5	=	19	
	Hp	3	MIN GREEN + FLASH =	10	+	7	=	17	
	Ip	1,2	MIN GREEN + FLASH =	11	+	6	=	17	
	Jp	2	MIN GREEN + FLASH =	10	+	7	=	17	

Notes:

TAC junction: Cycle time of 120s and 130s are adopted for WD and WE Noon
^ = Site Factor of 0.6 adopted due to merging traffic ahead
* = Site Factor of 0.4 adopted due to flare lane
** = Site Factor of 0.85 adopted

= Site Factor of 0.8 adopted

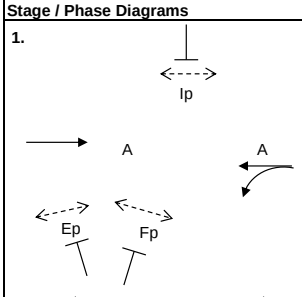
Flow: (pcu/hr)



Group	A,B,Hp	A,B,C	Group	A,B,Hp	A,B,C
y	0.444	0.626	y	0.477	0.603
L (sec)	38	20	L (sec)	38	20
C (sec)	120	120	C (sec)	130	130
y pract.	0.615	0.750	y pract.	0.637	0.762
R.C. (%)	38%	20%	R.C. (%)	33%	26%

Stage / Phase Diagrams

1.



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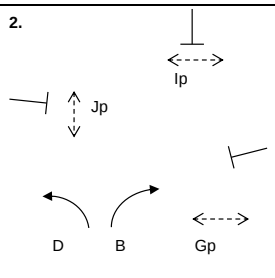

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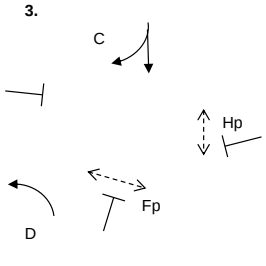


4.

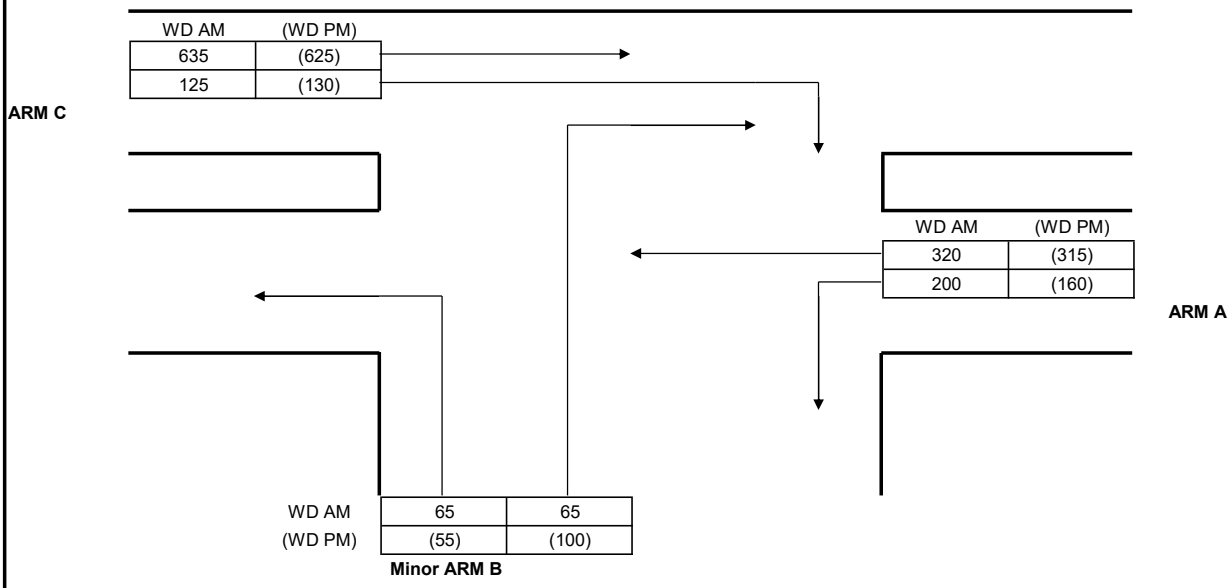
5.

I/G= 8		I/G= 8		I/G= 7		I/G=	
I/G= 8		I/G= 8		I/G= 7		I/G=	

Date: FEB, 2022 **Junction:** J5 Leighton Road / Caroline Hill Road (West)

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Caroline Hill Road (West) / Link Road			Ref. No.:	J6
Scheme:	2021 Observed Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Caroline Hill Road				
ARM B:	Caroline Hill Road				
ARM C:	Link Road				



GEOMETRY					
Major road width	W	9.40	Lane widths	w(b-a)	2.00
Central Reserve width	Wcr	0.00		w(b-c)	2.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	100	Calculated	D	0.80
	Vl(b-a)	100		E	0.77
	Vr(b-c)	20		F	0.65
	Vr(c-b)	100		Y	0.68

ANALYSIS			WD AM PEAK	(WD PM) PEAK
TRAFFIC FLOWS	q(c-a)		635	625
	q(c-b)		125	130
	q(a-b)		200	160
	q(a-c)		320	315
	q(b-a)		65	100
	q(b-c)		65	55
	f		0.50	0.35
		Factor		
CAPACITIES	Q(b-a)	1	311	315
	Q(b-c)	1	497	501
	Q(c-b)	1	398	405
	Q(b-ac)	1	383	363
RFC's	b-a		0.209	0.317
	b-c		0.131	0.110
	c-b		0.314	0.321
	b-ac		0.339	0.427
Worst RFC			**0.339**	**0.427**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

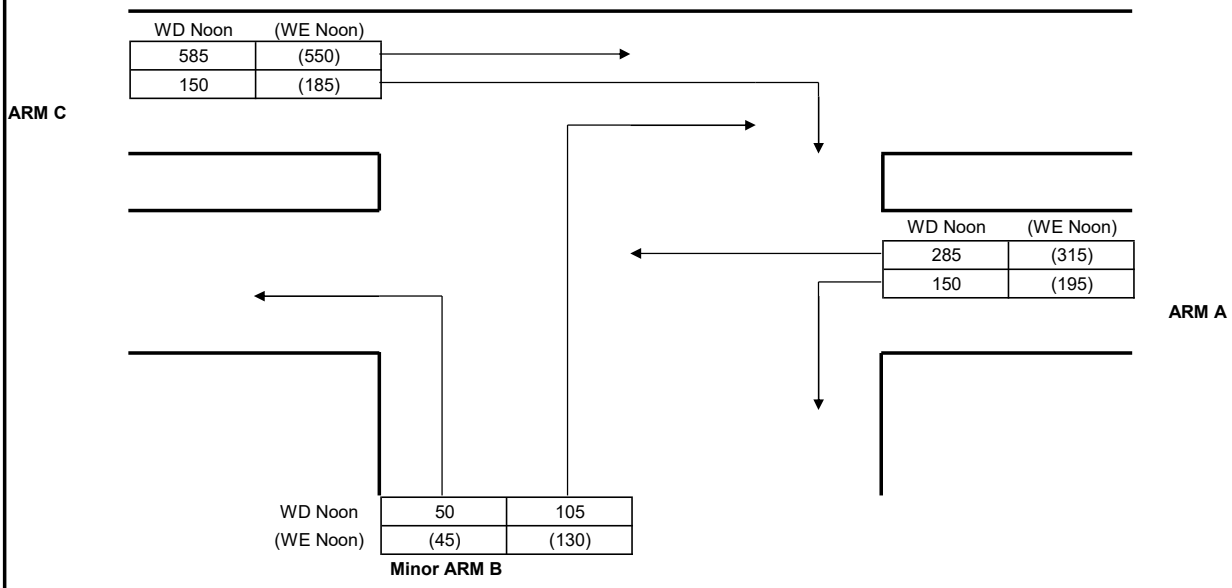
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Feb-22	Checked by:	CHC

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Caroline Hill Road (West) / Link Road			Ref. No.:	J6
Scheme:	2021 Observed Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Caroline Hill Road				
ARM B:	Caroline Hill Road				
ARM C:	Link Road				



GEOMETRY					
Major road width	W	9.40	Lane widths	w(b-a)	2.00
Central Reserve width	Wcr	0.00		w(b-c)	2.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	100	Calculated	D	0.80
	Vl(b-a)	100		E	0.77
	Vr(b-c)	20		F	0.65
	Vr(c-b)	100		Y	0.68

ANALYSIS			WD Noon PEAK	(WE Noon) PEAK
TRAFFIC FLOWS	q(c-a)		585	550
	q(c-b)		150	185
	q(a-b)		150	195
	q(a-c)		285	315
	q(b-a)		105	130
	q(b-c)		50	45
	f		0.32	0.26
		Factor		
CAPACITIES	Q(b-a)	1	321	306
	Q(b-c)	1	508	499
	Q(c-b)	1	412	400
	Q(b-ac)	1	364	340
RFC's	b-a		0.327	0.425
	b-c		0.098	0.090
	c-b		0.364	0.463
	b-ac		0.426	0.515
Worst RFC			**0.426**	**0.515**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

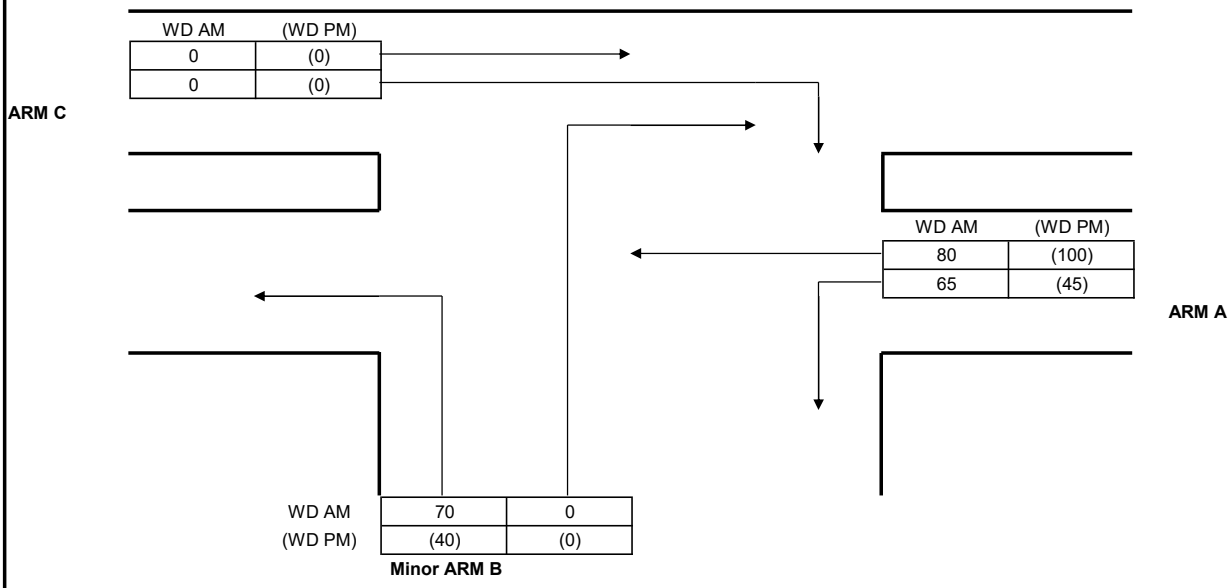
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Feb-22	Checked by:	CHC

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Caroline Hill Road / Cotton Path			Ref. No.:	J7
Scheme:	2021 Observed Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Caroline Hill Road				
ARM B:	Caroline Hill Road				
ARM C:	Cotton Path				



GEOMETRY					
Major road width	W	6.20	Lane widths	w(b-a)	2.00
Central Reserve width	Wcr	0.00		w(b-c)	2.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	100	Calculated	D	0.80
	Vl(b-a)	100		E	0.77
	Vr(b-c)	20		F	0.59
	Vr(c-b)	0		Y	0.79

ANALYSIS				
			WD AM PEAK	(WD PM) PEAK
TRAFFIC FLOWS	q(c-a)		0	0
	q(c-b)		0	0
	q(a-b)		65	45
	q(a-c)		80	100
	q(b-a)		0	0
	q(b-c)		70	40
	f		1.00	1.00
		Factor		
CAPACITIES	Q(b-a)	1	480	477
	Q(b-c)	1	550	547
	Q(c-b)	1	412	412
	Q(b-ac)	1	550	547
RFC's	b-a		0.000	0.000
	b-c		0.127	0.073
	c-b		0.000	0.000
	b-ac		0.127	0.073
Worst RFC			**0.127**	**0.073**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

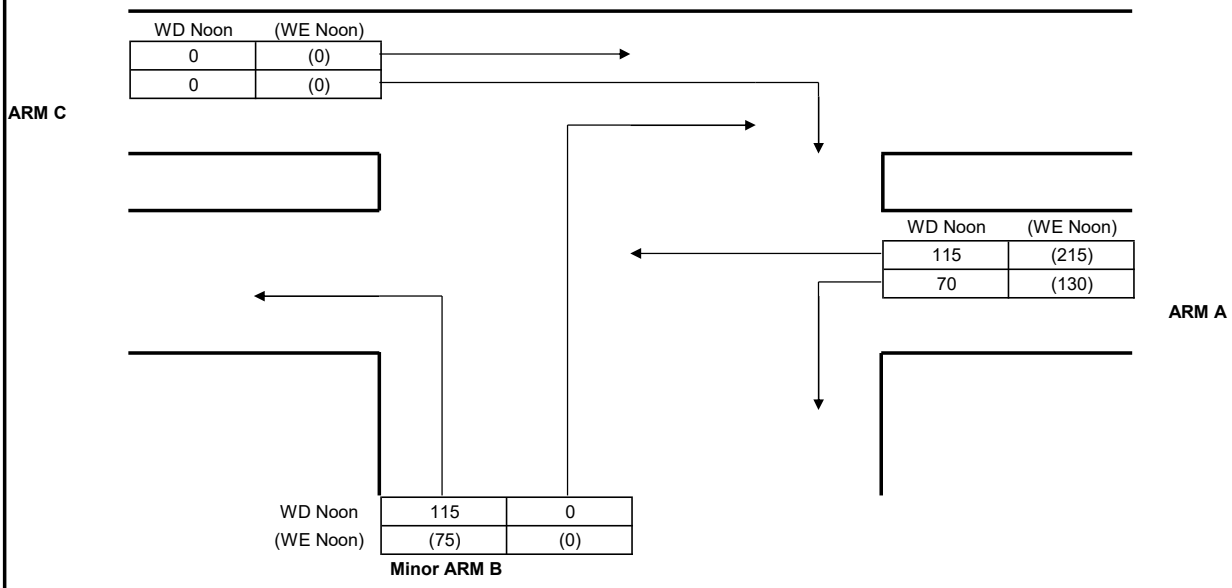
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Feb-22	Checked by:	CHC

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Caroline Hill Road / Cotton Path			Ref. No.:	J7
Scheme:	2021 Observed Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Caroline Hill Road				
ARM B:	Caroline Hill Road				
ARM C:	Cotton Path				



GEOMETRY

Major road width	W	6.20	Lane widths	w(b-a)	2.00
Central Reserve width	Wcr	0.00		w(b-c)	2.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	100	Calculated	D	0.80
	Vl(b-a)	100		E	0.77
	Vr(b-c)	20		F	0.59
	Vr(c-b)	0		Y	0.79

ANALYSIS

		Factor	WD Noon PEAK	(WE Noon) PEAK
TRAFFIC FLOWS	q(c-a)		0	0
	q(c-b)		0	0
	q(a-b)		70	130
	q(a-c)		115	215
	q(b-a)		0	0
	q(b-c)		115	75
	f		1.00	1.00
CAPACITIES	Q(b-a)	1	472	443
	Q(b-c)	1	541	514
	Q(c-b)	1	406	379
	Q(b-ac)	1	541	514
RFC's	b-a		0.000	0.000
	b-c		0.213	0.146
	c-b		0.000	0.000
	b-ac		0.213	0.146
Worst RFC			**0.213**	**0.146**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Feb-22	Checked by:	CHC

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Yun Ping Road / Pennington Street / Caroline Hill Road (East) Design Year: 2031

Description: 2021 Observed Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Leighton Road WE	↓ *	A	1	3.000	7			29%	19%	1080	1105	244	0.226		209	0.189	
	←	A	1	2.500						2005	2005	451	0.225		381	0.190	
Leighton Road WE	↑ **	C	2	3.500		9				1180	1180	285	0.242	0.242	310	0.263	0.263
Caroline Hill Road NB	↖ *	C	2	4.000	5					930	930	65	0.070		45	0.048	
Leighton Road EB	↗ **	A	1	3.000	15			69%	77%	1255	1245	433	0.345		499	0.401	0.401
	→ **	A	1	3.000						1440	1440	497	0.345	0.345	576	0.400	
Pedestrian Crossing		Bp	1	MIN GREEN + FLASH =			5	+	8	=	13						
		Dp	2	MIN GREEN + FLASH =			10	+	8	=	18						

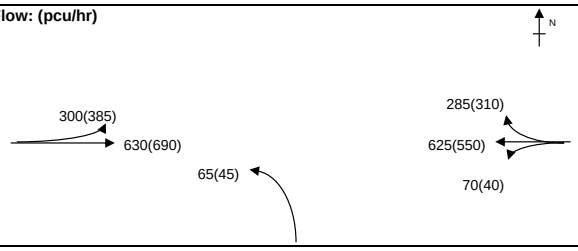
Notes:

TAC junction: Cycle time of 105s and 130s are adopted for AM and PM Peak

* = Site factor of 0.6 adopted

** = Site factor of 0.7 adopted

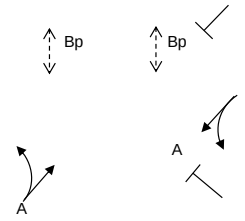
Flow: (pcu/hr)



Group	A,Dp	A,C	Group	A,Dp	A,C
y	0.345	0.587	y	0.401	0.664
L (sec)	27	11	L (sec)	27	11
C (sec)	105	105	C (sec)	130	130
y pract.	0.669	0.806	y pract.	0.713	0.824
R.C. (%)	94%	37%	R.C. (%)	78%	24%

Stage / Phase Diagrams

1.



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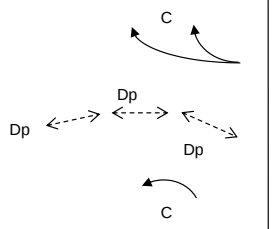


3.

4.

5.

I/G= 7		I/G= 6		I/G=		I/G=		I/G=	
I/G= 7		I/G= 6		I/G=		I/G=		I/G=	

Date: FEB, 2022 **Junction:** J8 Leighton Road / Yun Ping Road / Pennington Street / Caroline Hill

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Yun Ping Road / Pennington Street / Caroline Hill Road (East) Design Year: 2031

Description: 2021 Observed Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Leighton Road WE	↰ *	A	1	3.000	7			54%	33%	1030	1075	214	0.208		230	0.214	
	←	A	1	2.500						2005	2005	416	0.207		430	0.214	
Leighton Road WE	↰ **	C	2	3.500		9				1180	1180	265	0.225	0.225	275	0.233	0.233
Caroline Hill Road NB	↰ *	C	2	4.000	5					930	930	70	0.075		130	0.140	
Leighton Road EB	↱ **	A	1	3.000	15			68%	69%	1255	1255	461	0.367		545	0.434	0.434
	→ **	A	1	3.000						1440	1440	529	0.367	0.367	625	0.434	
Pedestrian Crossing		Bp	1	MIN GREEN + FLASH =			5	+	8	=	13						
		Dp	2	MIN GREEN + FLASH =			10	+	8	=	18						

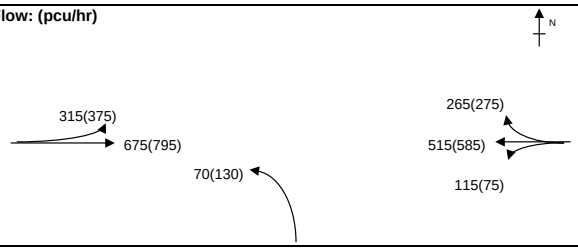
Notes:

TAC junction: Cycle time of 110s and 120s are adopted for WD and WE Noon

* = Site factor of 0.6 adopted

** = Site factor of 0.7 adopted

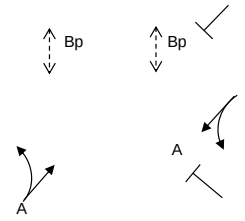
Flow: (pcu/hr)



Group	A,Dp	A,C	Group	A,Dp	A,C
y	0.367	0.592	y	0.434	0.667
L (sec)	27	11	L (sec)	27	11
C (sec)	110	110	C (sec)	120	120
y pract.	0.679	0.810	y pract.	0.698	0.818
R.C. (%)	85%	37%	R.C. (%)	61%	23%

Stage / Phase Diagrams

1.



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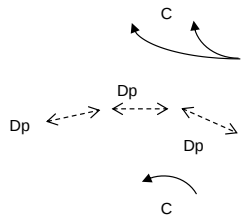


3.

4.

5.

I/G= 7		I/G= 6		I/G=		I/G=		I/G=	
I/G= 7		I/G= 6		I/G=		I/G=		I/G=	

Date: FEB, 2022 **Junction:** J8 Leighton Road / Yun Ping Road / Pennington Street / Caroline Hill

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Causeway Road / Leighton Road / Tung Lo Wan Road / Irving Street Design Year: 2031

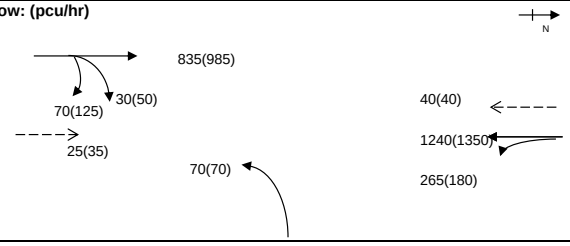
Description: 2021 Observed Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Causeway Road WB	↓ *	A	1	3.000	9					1150	1150	265	0.230	0.230	180	0.157	
Causeway Road WB	← *	A	1	3.000						1340	1340	305	0.228		332	0.248	0.248
	←	A	1	3.000						2055	2055	467	0.227		509	0.248	
	←	A	1	3.000						2055	2055	468	0.228		509	0.248	
Causeway Road WB (Tram)	⇐ **	F	1,2	3.000						1340	1340	40	0.030		40	0.030	
Tung Lo Wan Road NB	↖ **	B	2	4.000	25					1330	1330	70	0.053		70	0.053	
Causeway Road EB	→ (free flow)																
Causeway Road EB	↘ **	C	3	4.000		12				1255	1255	172	0.137	0.137	209	0.167	0.167
	↘ **	C	3	4.500		8				1300	1300	178	0.137		216	0.166	
Causeway Road EB (Tram)	⇒ **	F	1,2	3.000						1340	1340	25	0.019		35	0.026	
Pedestrian Crossing		Dp	2	MIN GREEN + FLASH =			7	+	8	=	15			*			*
		Ep	1,3	MIN GREEN + FLASH =			10	+	5	=	15						
		Gp	2,3	MIN GREEN + FLASH =			9	+	11	=	20						

Notes:

* = Site factor of 0.7 is adopted for on street activities on Leighton Road
** = Site factor of 0.7 is adopted for traffic queue

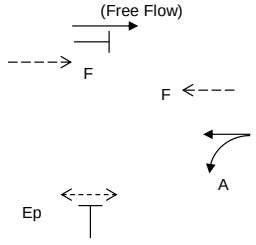
Flow: (pcu/hr)



Group	A,B,C	A,Dp,C	Group	A,B,C	A,Dp,C
y	0.420	0.367	y	0.467	0.414
L (sec)	20	33	L (sec)	20	33
C (sec)	100	100	C (sec)	105	105
y pract.	0.720	0.603	y pract.	0.729	0.617
R.C. (%)	71%	64%	R.C. (%)	56%	49%

Stage / Phase Diagrams

1.



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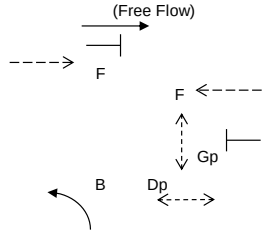

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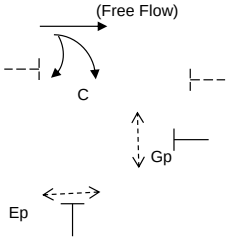


4.

5.

I/G= 7		I/G= 9	15	I/G= 4		I/G=	I/G=
I/G= 7		I/G= 9	15	I/G= 4		I/G=	I/G=

Date: FEB, 2022 **Junction:** J9 Causeway Road / Leighton Road / Tung Lo Wan Road / Irving Str

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Causeway Road / Leighton Road / Tung Lo Wan Road / Irving Street Design Year: 2031

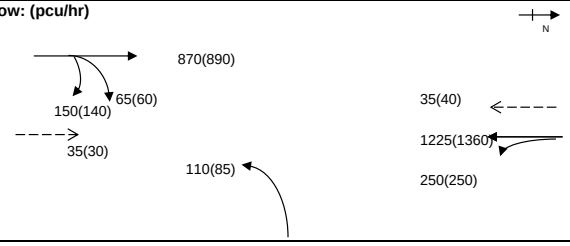
Description: 2021 Observed Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Causeway Road WB	↓ *	A	1	3.000	9					1150	1150	250	0.217		250	0.217	
Causeway Road WB	← *	A	1	3.000						1340	1340	301	0.225		334	0.249	
	←	A	1	3.000						2055	2055	462	0.225	0.225	513	0.250	0.250
	←	A	1	3.000						2055	2055	462	0.225		513	0.250	
Causeway Road WB (Tram)	⇐ **	F	1,2	3.000						1340	1340	35	0.026		40	0.030	
Tung Lo Wan Road NB	↖ **	B	2	4.000	25					1330	1330	110	0.083		85	0.064	
Causeway Road EB	→ (free flow)																
Causeway Road EB	↓ **	C	3	4.000		12				1255	1255	221	0.176		216	0.172	
	↓ **	C	3	4.500		8				1300	1300	229	0.176	0.176	224	0.172	0.172
Causeway Road EB (Tram)	⇒ **	F	1,2	3.000						1340	1340	35	0.026		30	0.022	
Pedestrian Crossing		Dp	2	MIN GREEN + FLASH =			7	+	8	=	15			*			*
		Ep	1,3	MIN GREEN + FLASH =			10	+	5	=	15						
		Gp	2,3	MIN GREEN + FLASH =			9	+	11	=	20						

Notes:

* = Site factor of 0.7 is adopted for on street activities on Leighton Road
** = Site factor of 0.7 is adopted for traffic queue

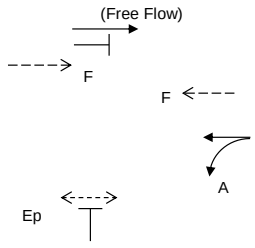
Flow: (pcu/hr)



Group	A,B,C	A,Dp,C	Group	A,B,C	A,Dp,C
y	0.484	0.401	y	0.486	0.422
L (sec)	20	33	L (sec)	20	33
C (sec)	95	95	C (sec)	105	105
y pract.	0.711	0.587	y pract.	0.729	0.617
R.C. (%)	47%	46%	R.C. (%)	50%	46%

Stage / Phase Diagrams

1.



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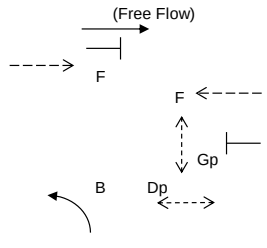

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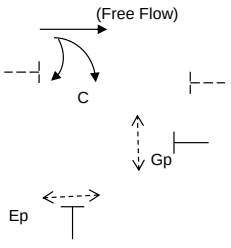

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5.

I/G= 7		I/G= 9	15	I/G= 4		I/G=	I/G=
I/G= 7		I/G= 9	15	I/G= 4		I/G=	I/G=

Date: FEB, 2022 **Junction:** J9 Causeway Road / Leighton Road / Tung Lo Wan Road / Irving Str

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Causeway Road / Moreton Terrace Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

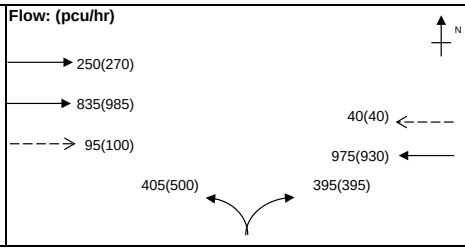
Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Causeway Road WB	← *	C	1	3.700						795	795	263	0.331		251	0.316	
	←	C	1	4.000						2155	2155	712	0.330		679	0.315	
Causeway Road - WB (Tram)	⇐	D	1	3.000						1915	1915	40	0.021		40	0.021	
Moreton Terrace - NB	↰ **	E	2	3.500	9					1685	1685	244	0.145		274	0.163	
	↰↑	E	2	3.300	15	20		58% / 42%	73% / 27%	1915	1905	278	0.145	0.145	310	0.163	0.163
	↱	E	2	3.500		15				1915	1915	278	0.145		311	0.162	
Causeway Road WB	→	A	1	3.500						1965	1965	250	0.127		270	0.137	
	→	A	1	3.500						2105	2105	835	0.397	0.397	985	0.468	0.468
Causeway Road - EB (Tram)	⇒	B	1	3.000						1915	1915	95	0.050		100	0.052	
Pedestrian Crossing		Fp	1	MIN GREEN + FLASH =			8	+	10	=	18						

Notes:

*Site Factor of 0.4 adopted due to bus stop near stop line

**Site Factor of 0.7 adopted due to bus stop near stop line

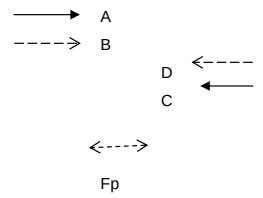
Flow: (pcu/hr)



Group	C,E	A,E	Group	C,E	A,E
y	0.476	0.542	y	0.478	0.631
L (sec)	10	10	L (sec)	10	10
C (sec)	100	100	C (sec)	105	105
y pract.	0.810	0.810	y pract.	0.814	0.814
R.C. (%)	70%	49%	R.C. (%)	70%	29%

Stage / Phase Diagrams

1.



2.



3.

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5.

I/G= 7		I/G= 5		I/G=		I/G=		I/G=	
I/G= 7		I/G= 5		I/G=		I/G=		I/G=	

Date: FEB, 2022 **Junction:** (J10) Causeway Road / Moreton Terrace

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Causeway Road / Moreton Terrace Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

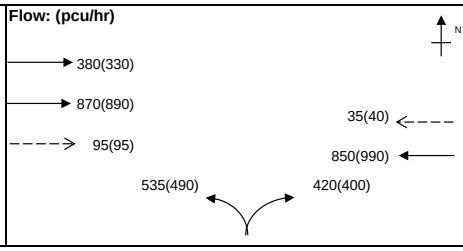
Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WDNN	Pro. Turning (%) WE NN	Revised Saturation Flow (pcu/hr) WD NN	Revised Saturation Flow (pcu/hr) WD NN	WD NN Flow (pcu/hr)	WD NN y Value	WD NN Critical y	WENN Flow (pcu/hr)	WENN y Value	WENN Critical y
Causeway Road WB	← *	C	1	3.700						795	795	229	0.288		267	0.336	
	←	C	1	4.000						2155	2155	621	0.288		723	0.335	
Causeway Road - WB (Tram)	⇐	D	1	3.000						1915	1915	35	0.018		40	0.021	
Moreton Terrace - NB	↰ **	E	2	3.500	9					1685	1685	292	0.173		272	0.161	
	↰↑	E	2	3.300	15	20		73% / 27%	71% / 29%	1905	1910	331	0.174	0.174	309	0.162	0.162
	↱	E	2	3.500		15				1915	1915	332	0.173		309	0.161	
Causeway Road WB	→	A	1	3.500						1965	1965	380	0.193		330	0.168	
	→	A	1	3.500						2105	2105	870	0.413	0.413	890	0.423	0.423
Causeway Road - EB (Tram)	⇒	B	1	3.000						1915	1915	95	0.050		95	0.050	
Pedestrian Crossing		Fp	1	MIN GREEN + FLASH =			8	+	10	=	18						

Notes:

*Site Factor of 0.4 adopted due to bus stop near stop line

**Site Factor of 0.7 adopted due to bus stop near stop line

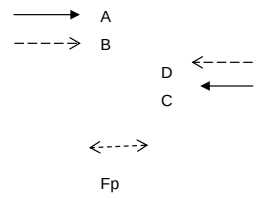
Flow: (pcu/hr)



Group	C,E	A,E	Group	C,E	A,E
y	0.462	0.587	y	0.498	0.585
L (sec)	10	10	L (sec)	10	10
C (sec)	95	95	C (sec)	105	105
y pract.	0.805	0.805	y pract.	0.814	0.814
R.C. (%)	74%	37%	R.C. (%)	64%	39%

Stage / Phase Diagrams

1.



2.



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5.

I/G= 7		I/G= 5		I/G=		I/G=		I/G=	
I/G= 7		I/G= 5		I/G=		I/G=		I/G=	

Date: FEB, 2022 **Junction:** J10 Causeway Road / Moreton Terrace

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Pennington Street / Jardine's Bazaar / Irving Street Design Year: 2031

Description: 2021 Observed Flows Designed By: LYK Checked By: CHC

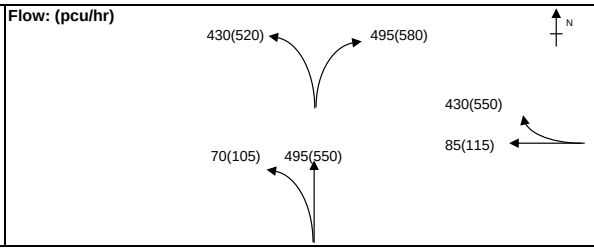
Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Irving Street WB	*←	A	1,4	3.000						960	960	78	0.081	0.081	100	0.104	
	↖	A	1,4	3.000		16		95%	92%	1885	1890	153	0.081		198	0.105	
	↰	A	1,4	3.000		13				1840	1840	149	0.081		192	0.104	
	↰	A	1,4	3.000		10				1665	1665	135	0.081		175	0.105	0.105
Pennington Street NB 1st stop line	↰↑	B	2,3	3.800	5			26%	34%	1850	1810	272	0.147	0.147	312	0.172	0.172
	↑	B	2,3	3.800						1995	1995	293	0.147		343	0.172	
Pennington Street NB 2nd stop line	↰	E	1,2,4	5.000	10					1840	1840	430	0.234		520	0.283	
	↱	F	1,2,3	3.500		10				1830	1830	264	0.144		310	0.169	
	↱	F	1,2,3	3.500		6.5				1595	1595	231	0.145		270	0.169	

Pedestrian Crossing								
	Cp	1,4	MIN GREEN + FLASH =	8	+	8	=	16
	Dp	2,3	MIN GREEN + FLASH =	8	+	8	=	22
	Gp	4	MIN GREEN + FLASH =	7	+	7	=	14
	Hp	3	MIN GREEN + FLASH =	6	+	6	=	12

Notes:

* = Site factor of 0.5 is adopted for bus stop at upstream

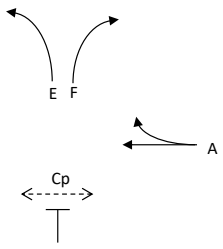
Flow: (pcu/hr)



Group	Cp,B	A,B	Group	Cp,B	A,B
y	0.147	0.228	y	0.172	0.277
L (sec)	24	14	L (sec)	24	14
C (sec)	100	100	C (sec)	100	100
y pract.	0.684	0.774	y pract.	0.684	0.774
R.C. (%)	365%	239%	R.C. (%)	297%	179%

Stage / Phase Diagrams

1.



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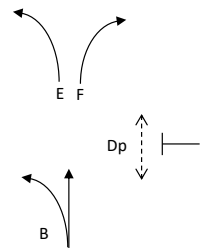

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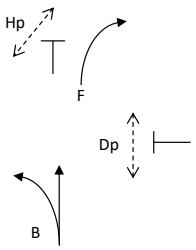

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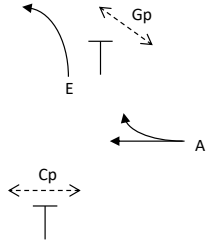


5.

I/G=		I/G= 8		I/G=		I/G= 8		I/G=			
I/G=		I/G= 8		I/G=		I/G= 8		I/G=			

Date: FEB, 2022 **Junction:** J11 Pennington Street / Jardine's Bazaar / Irving Street

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Pennington Street / Jardine's Bazaar / Irving Street Design Year: 2031

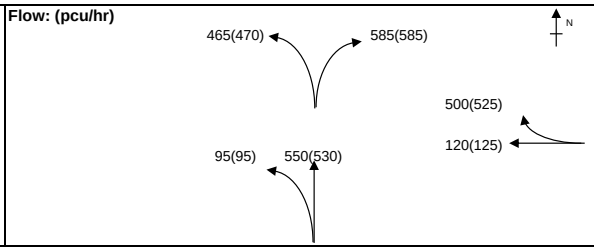
Description: 2021 Observed Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Irving Street WB	*←	A	1,4	3.000						960	960	94	0.098	0.098	98	0.102	
	↖↑	A	1,4	3.000		16		86%	86%	1900	1900	185	0.097		194	0.102	
	↖	A	1,4	3.000		13				1840	1840	180	0.098		188	0.102	0.102
	↖	A	1,4	3.000		10				1665	1665	161	0.097		170	0.102	
Pennington Street	↑	B	2,3	3.800	5			31%	32%	1825	1820	308	0.169		298	0.164	
NB 1st stop line	↑	B	2,3	3.800						1995	1995	337	0.169	0.169	327	0.164	0.164
Pennington Street	↰	E	1,2,4	5.000	10					1840	1840	465	0.253		470	0.255	
NB 2nd stop line	↱	F	1,2,3	3.500		10				1830	1830	313	0.171		313	0.171	
	↱	F	1,2,3	3.500		6.5				1595	1595	272	0.171		272	0.171	
Pedestrian Crossing		Cp	1,4	MIN GREEN + FLASH =			8	+	8	=	16						
		Dp	2,3	MIN GREEN + FLASH =			8	+	14	=	22						
		Gp	4	MIN GREEN + FLASH =			7	+	7	=	14						
		Hp	3	MIN GREEN + FLASH =			6	+	6	=	12						

Notes:

* = Site factor of 0.5 is adopted for bus stop at upstream

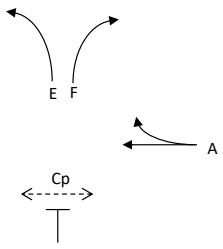
Flow: (pcu/hr)



Group	Cp,B	A,B	Group	Cp,B	A,B
y	0.169	0.267	y	0.164	0.266
L (sec)	24	14	L (sec)	24	14
C (sec)	120	120	C (sec)	100	100
y pract.	0.720	0.795	y pract.	0.684	0.774
R.C. (%)	326%	198%	R.C. (%)	317%	191%

Stage / Phase Diagrams

1.



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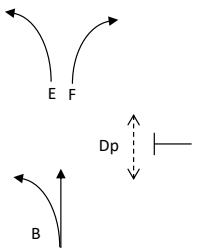

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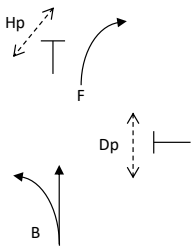
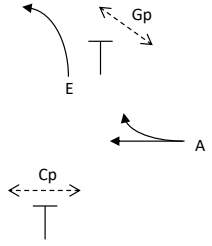


4.



5.

I/G=		I/G= 8		I/G=		I/G= 8		I/G=			
I/G=		I/G= 8		I/G=		I/G= 8		I/G=			

Date: FEB, 2022 **Junction:** J11 Pennington Street / Jardine's Bazaar / Irving Street

TRAFFIC SIGNALS CALCULATION

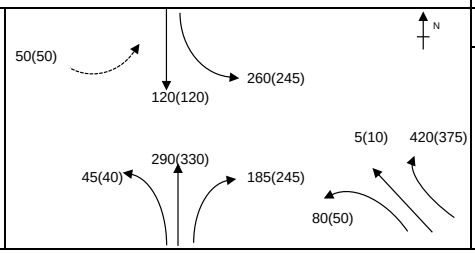
Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Link Road / Broadwood Road Design Year: 2031

Description: 2021 Observed Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Link Road		A	1	3.500	80			68%	67%	1940	1940	380	0.196	0.196	365	0.188	0.188
Broadwoord Road (E)		B	1,2	3.000	15			13%	11%	1890	1895	335	0.177		370	0.195	
		E	2	3.000		8				1730	1730	185	0.107	0.107	245	0.142	0.142
Broadwoord Road (W)		C	3	3.500	5	60		16% / 83%	11% / 86%	1840	1860	505	0.274	0.274	435	0.234	0.234
Leighton Hill Road		Priority Junction															
Pedestrian Crossing		Dp	4	MIN GREEN + FLASH =			5	+	7	=	12			*			*

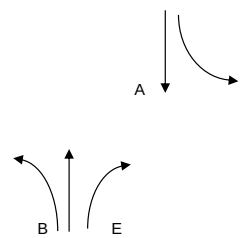
Notes:



Group	A,E,C	A,E,C,Dp	Group	A,E,C	A,E,C,Dp
y	0.577	0.577	y	0.564	0.564
L (sec)	16	27	L (sec)	16	27
C (sec)	140	140	C (sec)	135	135
y pract.	0.797	0.726	y pract.	0.793	0.720
R.C. (%)	38%	26%	R.C. (%)	41%	28%

Stage / Phase Diagrams

1.



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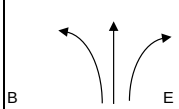
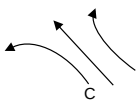


3.



4.



5.

I/G= 4		I/G= 3		I/G= 8		I/G= 3	12	I/G=	
I/G= 4		I/G= 3		I/G= 8		I/G= 3	12	I/G=	

Date: FEB, 2022 **Junction:** J12 Link Road / Broadwood Road

TRAFFIC SIGNALS CALCULATION

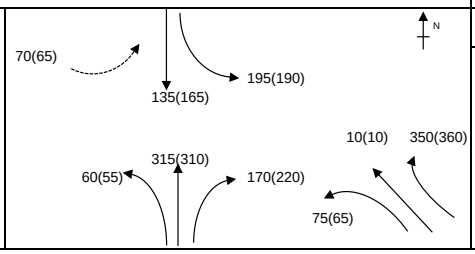
Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Link Road / Broadwood Road Design Year: 2031

Description: 2021 Observed Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Link Road		A	1	3.500	80			59%	54%	1945	1945	330	0.170	0.170	355	0.183	0.183
Broadwoord Road (E)		B	1,2	3.000	15			16%	15%	1885	1885	375	0.199		365	0.194	
		E	2	3.000		8				1730	1730	170	0.098	0.098	220	0.127	0.127
Broadwoord Road (W)		C	3	3.500	5	60		17% / 80%	15% / 83%	1835	1845	435	0.237	0.237	435	0.236	0.236
Leighton Hill Road		Priority Junction															
Pedestrian Crossing		Dp	4	MIN GREEN + FLASH =			5	+	7	=	12			*			*

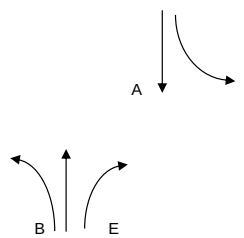
Notes:



Group	A,E,C	A,E,C,Dp	Group	A,E,C	A,E,C,Dp
y	0.505	0.505	y	0.545	0.545
L (sec)	16	27	L (sec)	16	27
C (sec)	110	110	C (sec)	110	110
y pract.	0.769	0.679	y pract.	0.769	0.679
R.C. (%)	52%	34%	R.C. (%)	41%	24%

Stage / Phase Diagrams

1.



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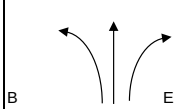

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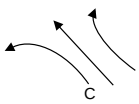

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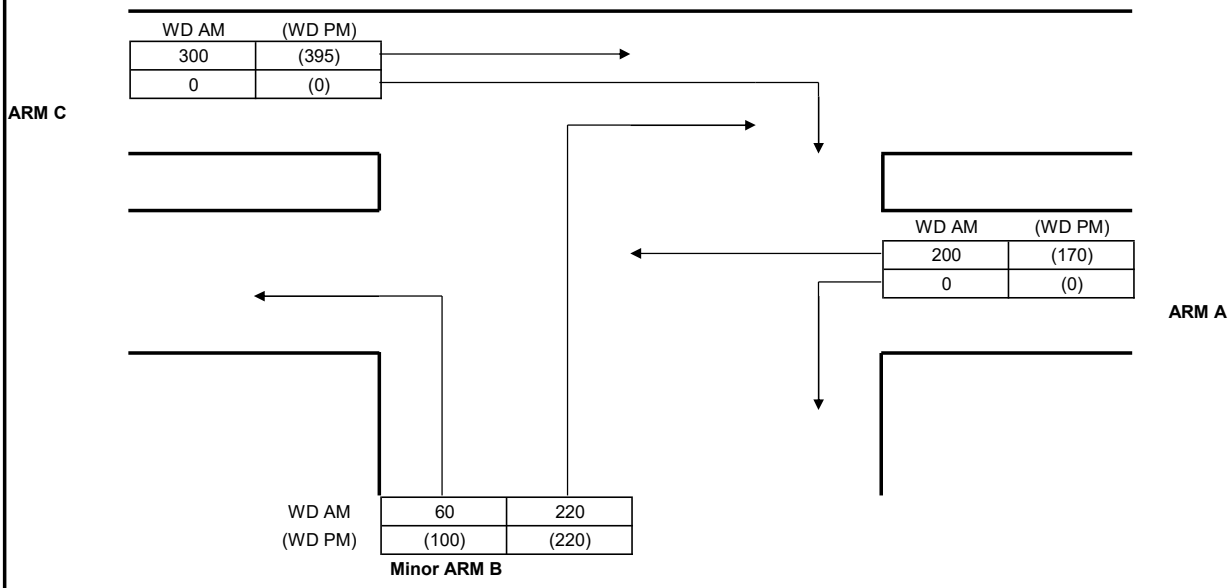
5.

I/G= 4		I/G= 3		I/G= 8		I/G= 3	12	I/G=	
I/G= 4		I/G= 3		I/G= 8		I/G= 3	12	I/G=	

Date: FEB, 2022 **Junction:** J12 Link Road / Broadwood Road

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Broadwood Road / Ventris Road			Ref. No.:	J13
Scheme:	2021 Observed Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Broadwood Road				
ARM B:	Ventris Road				
ARM C:	Broadwood Road				



GEOMETRY					
Major road width	W	6.50	Lane widths	w(b-a)	3.00
Central Reserve width	Wcr	0.00		w(b-c)	3.00
2 Lane Minor Arm (Y/N)		Y		w(c-b)	5.00
Visibilities	Vr(b-a)	15	Calculated	D	0.78
	Vl(b-a)	15		E	0.87
	Vr(b-c)	40		F	1.06
	Vr(c-b)	50		Y	0.78

ANALYSIS			WD AM PEAK	(WD PM) PEAK
TRAFFIC FLOWS	q(c-a)		300	395
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		200	170
	q(b-a)		220	220
	q(b-c)		60	100
	f		0.21	0.31
		Factor		
CAPACITIES	Q(b-a)	1	404	398
	Q(b-c)	1	600	607
	Q(c-b)	1	727	736
	Q(b-ac)	1	434	446
RFC's	b-a		0.545	0.553
	b-c		0.100	0.165
	c-b		0.000	0.000
	b-ac		0.000	0.000
Worst RFC			**0.545**	**0.553**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

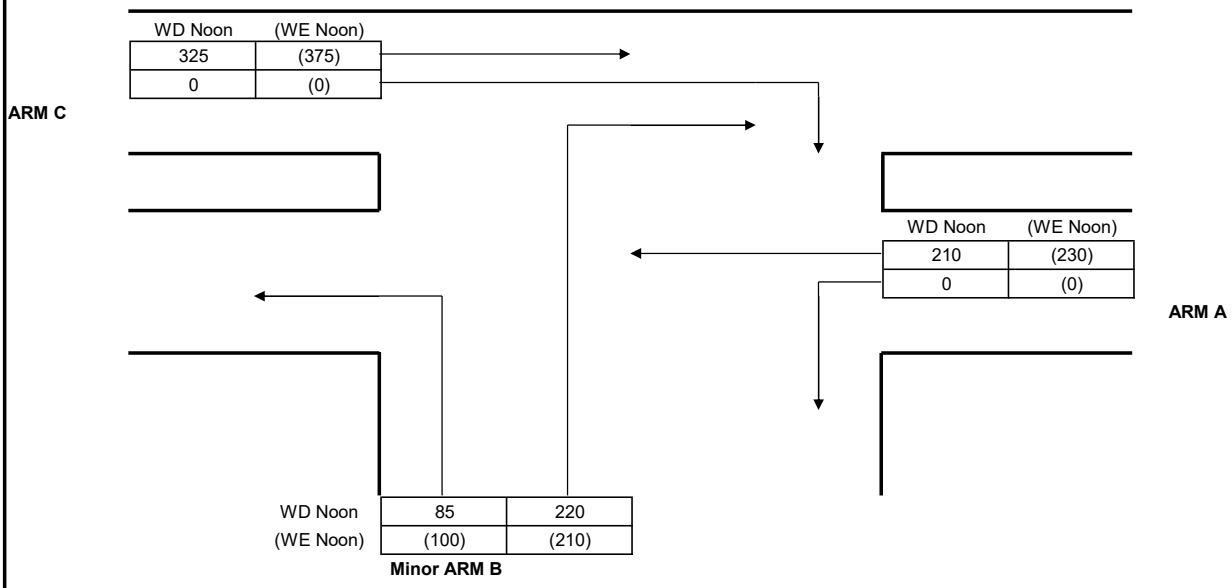
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Feb-22	Checked by:	CHC

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Broadwood Road / Ventris Road			Ref. No.:	J13
Scheme:	2021 Observed Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Broadwood Road				
ARM B:	Ventris Road				
ARM C:	Broadwood Road				



GEOMETRY					
Major road width	W	6.50	Lane widths	w(b-a)	3.00
Central Reserve width	Wcr	0.00		w(b-c)	3.00
2 Lane Minor Arm (Y/N)		Y		w(c-b)	5.00
Visibilities	Vr(b-a)	15	Calculated	D	0.78
	Vl(b-a)	15		E	0.87
	Vr(b-c)	40		F	1.06
	Vr(c-b)	50		Y	0.78

ANALYSIS			WD Noon PEAK	(WE Noon) PEAK
TRAFFIC FLOWS	q(c-a)		325	375
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		210	230
	q(b-a)		220	210
	q(b-c)		85	100
	f		0.28	0.32
		Factor		
CAPACITIES	Q(b-a)	1	398	387
	Q(b-c)	1	597	593
	Q(c-b)	1	724	718
	Q(b-ac)	1	439	435
RFC's	b-a		0.553	0.543
	b-c		0.142	0.169
	c-b		0.000	0.000
	b-ac		0.000	0.000
Worst RFC			**0.553**	**0.543**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Feb-22	Checked by:	CHC

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Wong Nai Chung Road / Sports Road Design Year: 2031

Description: 2021 Observed Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Sports Road	→	A	1	3.800		10				1735	1735	337	0.194		373	0.215	0.215
EB	→	A	1	3.800		13.5				1920	1920	373	0.194	0.194	412	0.215	
Wong Nai Chung Road SB	↓	B	2	3.000						1915	1915	137	0.072	0.072	155	0.081	0.081
	↓	B	2	3.000						2055	2055	146	0.071		165	0.080	
	↓	B	2	3.000						1915	1915	137	0.072		155	0.081	
Pedestrian Crossing		Cp	1	MIN GREEN + FLASH =			8	+	9	=	17						
		Dp	2	MIN GREEN + FLASH =			8	+	9	=	17						

Notes:

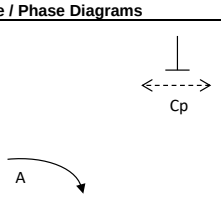
Flow: (pcu/hr)



Group	A,Dp	A,B	Group	A,Dp	A,B
y	0.194	0.266	y	0.215	0.296
L (sec)	27	10	L (sec)	27	10
C (sec)	90	90	C (sec)	90	90
y pract.	0.630	0.800	y pract.	0.630	0.800
R.C. (%)	224%	201%	R.C. (%)	193%	170%

Stage / Phase Diagrams

1.



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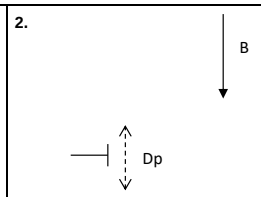

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I/G= 6		I/G= 6		I/G=		I/G=	

Date: FEB, 2022 **Junction:** J14 Wong Nai Chung Road / Sports Road

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

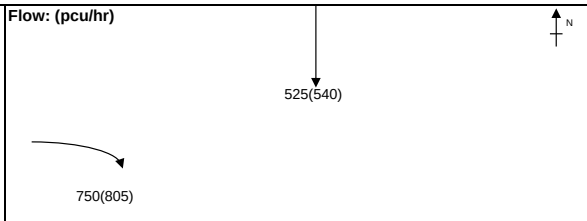
Junction: Wong Nai Chung Road / Sports Road Design Year: 2031

Description: 2021 Observed Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Sports Road	→	A	1	3.800		10				1735	1735	356	0.205		382	0.220	
EB	→	A	1	3.800		13.5				1920	1920	394	0.205	0.205	423	0.220	0.220
Wong Nai Chung Road SB	↓	B	2	3.000						1915	1915	171	0.089	0.089	176	0.092	0.092
	↓	B	2	3.000						2055	2055	183	0.089		188	0.091	
	↓	B	2	3.000						1915	1915	171	0.089		176	0.092	
Pedestrian Crossing		Cp	1	MIN GREEN + FLASH =			8	+	9	=	17						
		Dp	2	MIN GREEN + FLASH =			8	+	9	=	17						

Notes:

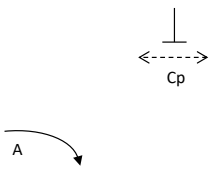
Flow: (pcu/hr)



Group	A,Dp	A,B	Group	A,Dp	A,B
y	0.205	0.295	y	0.220	0.312
L (sec)	27	10	L (sec)	27	10
C (sec)	75	75	C (sec)	75	75
y pract.	0.576	0.780	y pract.	0.576	0.780
R.C. (%)	181%	165%	R.C. (%)	161%	150%

Stage / Phase Diagrams

1.



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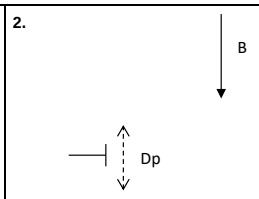

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I/G= 6		I/G= 6		I/G=		I/G=	
I/G= 6		I/G= 6		I/G=		I/G=	

Date: FEB, 2022 **Junction:** J14 Wong Nai Chung Road / Sports Road

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Wong Nai Chung Road Design Year: 2031

Description: 2021 Observed Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Leighton Road WB	↰	A	1	3.500	20					1830	1830	300	0.164		321	0.175	
	↰ *	A	1	3.500	25					395	395	65	0.165		69	0.175	
Leighton Road WB (Tram)	↰ *	B	2	3.000	40					370	370	50	0.135	0.135	65	0.176	0.176
Leighton Road WB	←***	A	1	3.000						1530	1530	659	0.431	0.431	639	0.418	0.418
	← *	A	1	3.000						410	410	176	0.429		171	0.417	
Leighton Road EB	→ *	A	1	3.500						395	395	106	0.268		97	0.246	
	→**	A	1	3.000						1030	1030	277	0.269		251	0.244	
	→**	A	1	3.000						1030	1030	277	0.269		252	0.245	
Pedestrian Crossing	Cp	2	MIN GREEN + FLASH =		10	+	9	=	19								
	Dp	2	MIN GREEN + FLASH =		7	+	7	=	14								

Notes:

TAC junction: Cycle time of 130s and 120s are adopted for AM and PM Peak

* = Site Factor of 0.2 has been adopted.

** = Site Factor of 0.5 has been adopted.

*** = Site Factor of 0.8 has been adopted.

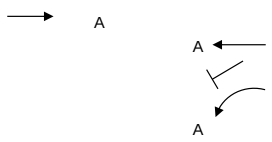
Flow: (pcu/hr)



Group	A,Cp	A,B	Group	A,Cp	A,B
y	0.431	0.566	y	0.418	0.593
L (sec)	30	12	L (sec)	30	12
C (sec)	130	130	C (sec)	120	120
y pract.	0.692	0.817	y pract.	0.675	0.810
R.C. (%)	61%	44%	R.C. (%)	62%	37%

Stage / Phase Diagrams

1.



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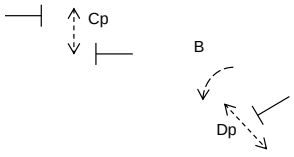

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I/G= 7		I/G= 7		I/G=		I/G=		I/G=	
I/G= 7		I/G= 7		I/G=		I/G=		I/G=	

Date: FEB, 2022 **Junction:** J15 Leighton Road / Wong Nai Chung Road

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Wong Nai Chung Road Design Year: 2031

Description: 2021 Observed Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Leighton Road WB		A	1	3.500	20					1830	1830	374	0.204		403	0.220	
	*	A	1	3.500	25					395	395	81	0.205		87	0.220	
Leighton Road WB (Tram)	*	B	2	3.000	40					370	370	60	0.162	0.162	60	0.162	0.162
Leighton Road WB	***	A	1	3.000						1530	1530	643	0.420	0.420	635	0.415	0.415
	*	A	1	3.000						410	410	172	0.420		170	0.415	
Leighton Road EB	*	A	1	3.500						395	395	125	0.316		113	0.286	
	**	A	1	3.000						1030	1030	328	0.318		293	0.284	
	**	A	1	3.000						1030	1030	327	0.317		294	0.285	
Pedestrian Crossing		Cp	2	MIN GREEN + FLASH =			10	+	9	=	19						
		Dp	2	MIN GREEN + FLASH =			7	+	7	=	14						

Notes:

TAC junction: Cycle time of 120s and 120s are adopted for WD and WE Noon

* = Site Factor of 0.2 has been adopted.

** = Site Factor of 0.5 has been adopted.

*** = Site Factor of 0.8 has been adopted.

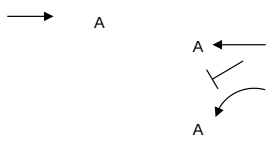
Flow: (pcu/hr)



Group	A,Cp	A,B	Group	A,Cp	A,B
y	0.420	0.582	y	0.415	0.577
L (sec)	30	12	L (sec)	30	12
C (sec)	120	120	C (sec)	120	120
y pract.	0.675	0.810	y pract.	0.675	0.810
R.C. (%)	61%	39%	R.C. (%)	63%	40%

Stage / Phase Diagrams

1.



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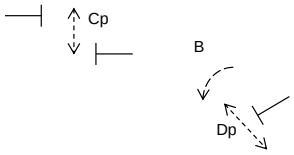

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I/G= 7		I/G= 7		I/G=		I/G=		I/G=	
I/G= 7		I/G= 7		I/G=		I/G=		I/G=	

Date: FEB, 2022 **Junction:** J15 Leighton Road / Wong Nai Chung Road

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Tung Lo Wan Road / Eastern Hospital Road Design Year: 2031

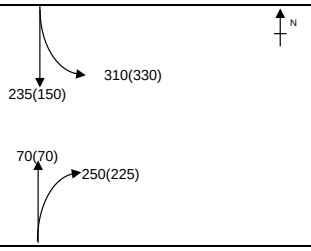
Description: 2021 Observed Flows Designed By: LYK Checked By: CHC

Approach	Movements		Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Tung Lo Wan Road SB	↳	*	A	1	3.300	25					1285	1285	212	0.165	0.165	187	0.146	
	↓		A	1	3.000	30			29%	49%	2025	2005	333	0.164		293	0.146	0.146
Ka Ning Path NB	↑		B	2	3.500		10		78%	76%	1760	1765	320	0.182	0.182	295	0.167	0.167
Pedestrian Crossing			Cp	3	MIN GREEN + FLASH =			7	+	8	=	15						
			Dp	3	MIN GREEN + FLASH =			8	+	14	=	22			*			*

Notes:

* = Site factor of 0.7 is adopted for the bus stop at downstream

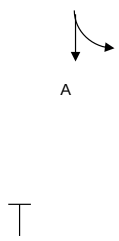
Flow: (pcu/hr)



Group	A,B,Cp	A,B,Dp	Group	A,B,Cp	A,B,Dp
y	0.347	0.347	y	0.313	0.313
L (sec)	31	34	L (sec)	31	34
C (sec)	100	100	C (sec)	105	105
y pract.	0.621	0.594	y pract.	0.634	0.609
R.C. (%)	79%	71%	R.C. (%)	102%	94%

Stage / Phase Diagrams

1.



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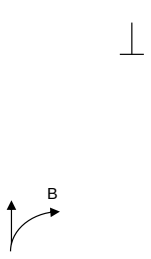

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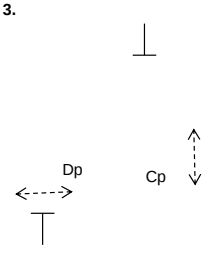

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I/G= 4		I/G= 5		I/G= 5	22	I/G=		I/G=	

Date: FEB, 2022 **Junction:** J16 Tung Lo Wan Road / Eastern Hospital Road

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Tung Lo Wan Road / Eastern Hospital Road Design Year: 2031

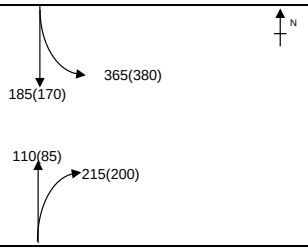
Description: 2021 Observed Flows Designed By: LYK Checked By: CHC

Approach	Movements		Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Tung Lo Wan Road SB	↳	*	A	1	3.300	25					1285	1285	214	0.167		215	0.167	0.167
	↓		A	1	3.000	30			45%	49%	2010	2005	336	0.167	0.167	335	0.167	
Ka Ning Path NB	↑		B	2	3.500		10		66%	70%	1790	1780	325	0.182	0.182	285	0.160	0.160
Pedestrian Crossing			Cp	3	MIN GREEN + FLASH =			7	+	8	=	15						
			Dp	3	MIN GREEN + FLASH =			8	+	14	=	22			*			*

Notes:

* = Site factor of 0.7 is adopted for the bus stop at downstream

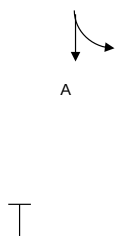
Flow: (pcu/hr)



Group	A,B,Cp	A,B,Dp	Group	A,B,Cp	A,B,Dp
y	0.349	0.349	y	0.327	0.327
L (sec)	31	34	L (sec)	31	34
C (sec)	95	95	C (sec)	105	105
y pract.	0.606	0.578	y pract.	0.634	0.609
R.C. (%)	74%	66%	R.C. (%)	94%	86%

Stage / Phase Diagrams

1.



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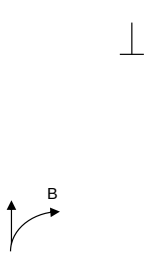

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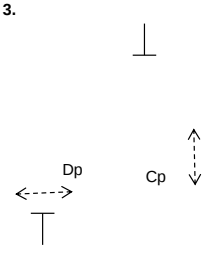

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I/G= 4		I/G= 5		I/G= 5	22	I/G=	I/G=
I/G= 4		I/G= 5		I/G= 5	22	I/G=	I/G=

Date: FEB, 2022 **Junction:** J16 Tung Lo Wan Road / Eastern Hospital Road

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

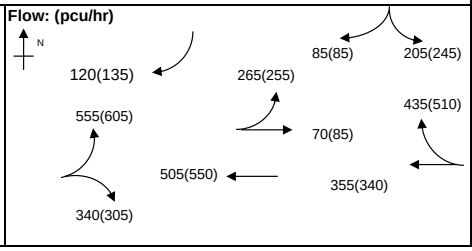
Junction: Tung Lo Wan Road / Moreton Terrace Design Year: 2031

Description: 2021 Observed Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) AM	Pro. Turning (%) PM	Revised Saturation Flow (pcu/hr) AM	Revised Saturation Flow (pcu/hr) PM	AM Peak Flow (pcu/hr)	AM Peak y Value	AM Peak Critical y	PM Peak Flow (pcu/hr)	PM Peak y Value	PM Peak Critical y
Tung Lo Wan Road WB	←	C	2	3.000						1915	1915	244	0.127		265	0.138	
	←	C	2	3.000						2055	2055	261	0.127		285	0.139	
Tung Lo Wan Road EB	↱	A	1	3.700	8					1670	1670	425	0.254	0.254	433	0.259	0.259
	↑↓	A	1	3.500	13	35		28% / 72%	36% / 64%	1850	1840	470	0.254		477	0.259	
Moreton Terrace PTI	↲	F	3	5.000		27				2005	2005	120	0.060		135	0.067	
Tung Lo Wan Road WB	←	E	2,3	3.700						1985	1985	355	0.179		340	0.171	
	↰	E	2,3	3.000		8		100%	100%	1535	1535	435	0.283	0.283	510	0.332	0.332
Tung Lo Wan Road EB	↱	E	2,3	5.000	13			79%	75%	1940	1945	335	0.173		340	0.175	
Tung Lo Wan Drive SB	↳	B	1	3.500	8	12		71% / 29%	74% / 26%	1680	1675	290	0.173		330	0.197	
Pedestrian Crossing		Dp	2,3	MIN GREEN + FLASH =			8	+	8	=	16						
		Gp	3	MIN GREEN + FLASH =			9	+	8	=	17						

Notes:

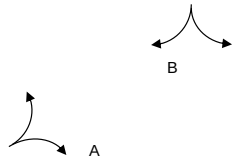
Flow: (pcu/hr)



Group	A,C,F	A,E	Group	A,C,F	A,E
y	0.442	0.538	y	0.465	0.592
L (sec)	19	12	L (sec)	19	12
C (sec)	100	100	C (sec)	105	105
y pract.	0.729	0.792	y pract.	0.737	0.797
R.C. (%)	65%	47%	R.C. (%)	58%	35%

Stage / Phase Diagrams

1.



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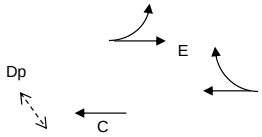

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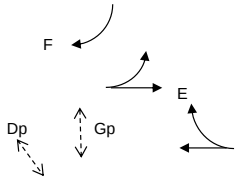


4.

5.

I/G= 7		I/G= 7		I/G=		I/G=		I/G=	
I/G= 7		I/G= 7		I/G=		I/G=		I/G=	

Date: FEB, 2022 **Junction:** (J17) Tung Lo Wan Road / Moreton Terrace

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

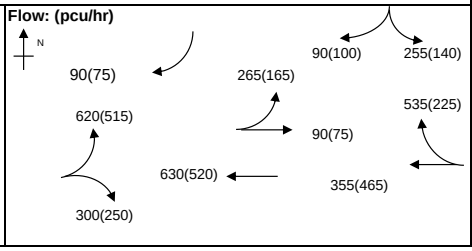
Junction: Tung Lo Wan Road / Moreton Terrace Design Year: 2031

Description: 2021 Observed Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Tung Lo Wan Road WB	←	C	2	3.000						1915	1915	304	0.159		251	0.131	0.131
	←	C	2	3.000						2055	2055	326	0.159		269	0.131	
Tung Lo Wan Road EB	↗	A	1	3.700	8					1670	1670	438	0.262		364	0.218	
	↑	A	1	3.500	13	35		38% / 62%	38% / 62%	1835	1835	482	0.263	0.263	401	0.219	0.219
Moreton Terrace PTI	↲	F	3	5.000		27				2005	2005	90	0.045		75	0.037	
Tung Lo Wan Road WB	←	E	2,3	3.700						1985	1985	355	0.179		381	0.192	
	↖	E	2,3	3.000		8		100%	73%	1535	1605	535	0.349	0.349	309	0.193	
Tung Lo Wan Road EB	↗	E	2,3	5.000	13			75%	69%	1945	1960	355	0.183		240	0.122	
Tung Lo Wan Drive SB	↓	B	1	3.500	8	12		74% / 26%	58% / 42%	1680	1690	345	0.205		240	0.142	
Pedestrian Crossing		Dp	2,3	MIN GREEN + FLASH =			8	+	8	=	16						
		Gp	3	MIN GREEN + FLASH =			9	+	8	=	17						*

Notes:

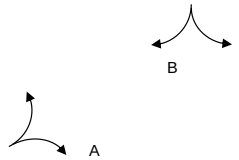
Flow: (pcu/hr)



Group	A,C,Gp	A,E	Group	A,C,F	A,C,Gp
y	0.421	0.611	y	0.387	0.350
L (sec)	29	12	L (sec)	19	29
C (sec)	95	95	C (sec)	105	105
y pract.	0.625	0.786	y pract.	0.737	0.651
R.C. (%)	48%	29%	R.C. (%)	90%	86%

Stage / Phase Diagrams

1.



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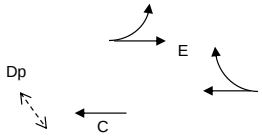

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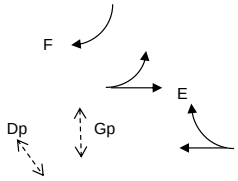


4.

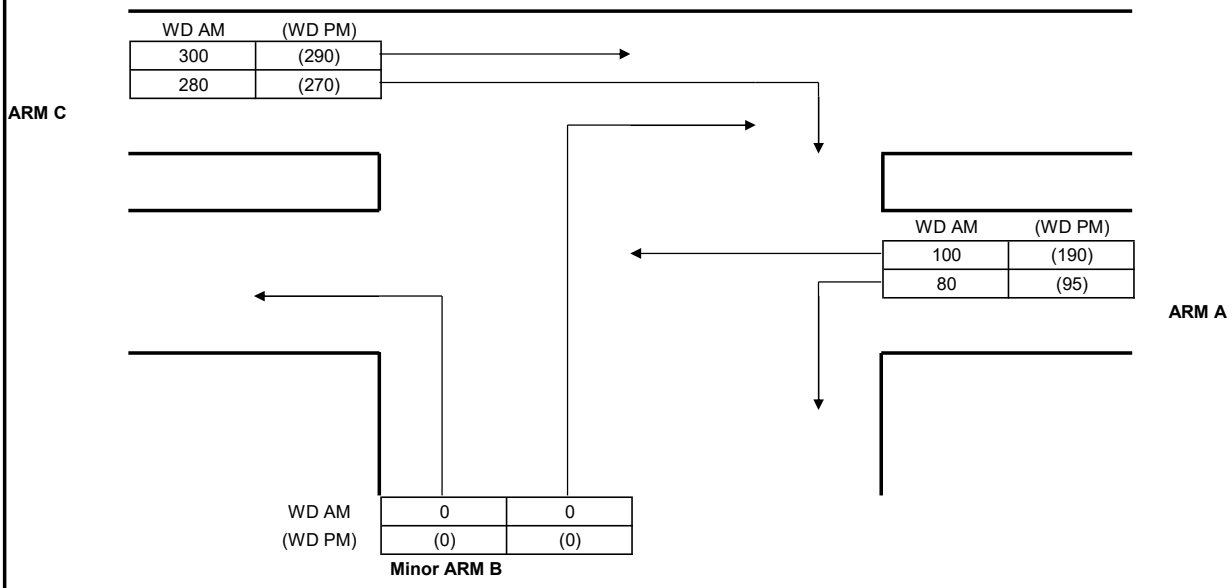
5.

I/G= 7		I/G= 7		I/G=		I/G=		I/G=	
I/G= 2		I/G= 7		I/G= 5	17	I/G=		I/G=	

Date: FEB, 2022 **Junction:** (J17) Tung Lo Wan Road / Moreton Terrace

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Hysan Avenue / Hoi Ping Road			Ref. No.:	J19
Scheme:	2021 Observed Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Hysan Avenue				
ARM B:	Hoi Ping Road				
ARM C:	Hysan Avenue				



GEOMETRY

Major road width	W	10.00	Lane widths	w(b-a)	0.00
Central Reserve width	Wcr	0.00		w(b-c)	0.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.30
Visibilities	Vr(b-a)	20	Calculated	D	0.55
	Vl(b-a)	20		E	0.60
	Vr(b-c)	20		F	0.95
	Vr(c-b)	100		Y	0.66

ANALYSIS

		Factor	WD AM PEAK	(WD PM) PEAK
TRAFFIC FLOWS	q(c-a)		300	290
	q(c-b)		280	270
	q(a-b)		80	95
	q(a-c)		100	190
	q(b-a)		0	0
	q(b-c)		0	0
	f		0.00	0.00
CAPACITIES	Q(b-a)	1	251	241
	Q(b-c)	1	427	413
	Q(c-b)	1	667	643
	Q(b-ac)	1	251	241
RFC's	b-a		0.000	0.000
	b-c		0.000	0.000
	c-b		0.420	0.420
	b-ac		0.000	0.000
Worst RFC			**0.420**	**0.420**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

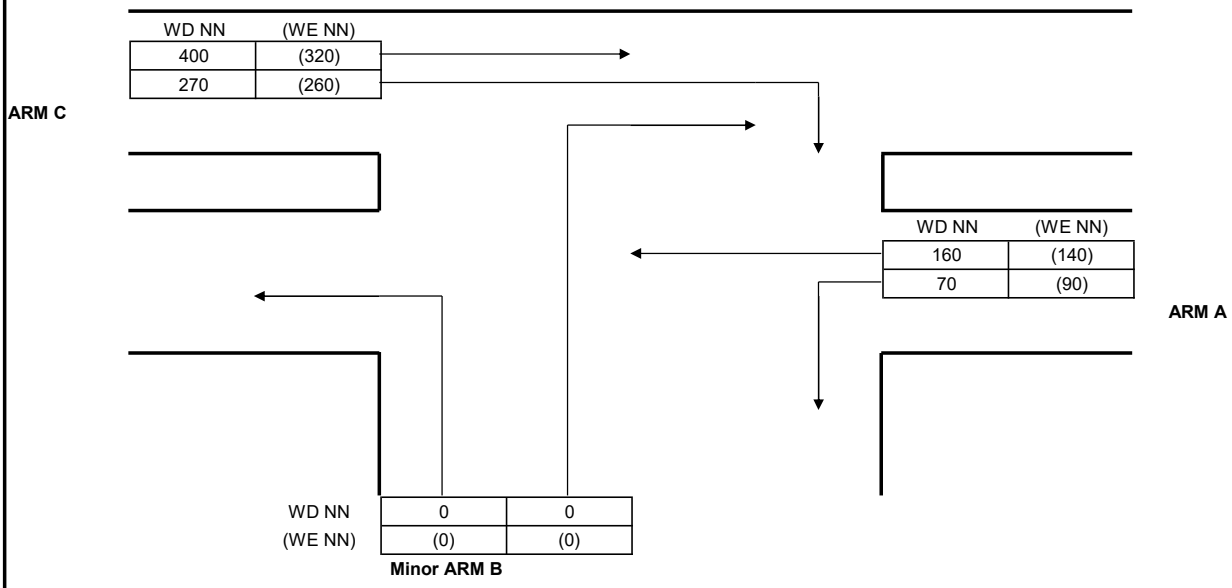
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Feb-22	Checked by:	CHC

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Hysan Avenue / Hoi Ping Road			Ref. No.:	J19
Scheme:	2021 Observed Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Hysan Avenue				
ARM B:	Hoi Ping Road				
ARM C:	Hysan Avenue				



GEOMETRY					
Major road width	W	10.00	Lane widths	w(b-a)	0.00
Central Reserve width	Wcr	0.00		w(b-c)	0.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.30
Visibilities	Vr(b-a)	20	Calculated	D	0.55
	Vl(b-a)	20		E	0.60
	Vr(b-c)	20		F	0.95
	Vr(c-b)	100		Y	0.66

ANALYSIS			WD NN PEAK	(WD NN) PEAK
TRAFFIC FLOWS	q(c-a)		400	320
	q(c-b)		270	260
	q(a-b)		70	90
	q(a-c)		160	140
	q(b-a)		0	0
	q(b-c)		0	0
	f		0.00	0.00
		Factor		
CAPACITIES	Q(b-a)	1	237	247
	Q(b-c)	1	419	420
	Q(c-b)	1	655	655
	Q(b-ac)	1	237	247
RFC's	b-a		0.000	0.000
	b-c		0.000	0.000
	c-b		0.412	0.397
	b-ac		0.000	0.000
Worst RFC			**0.412**	**0.397**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

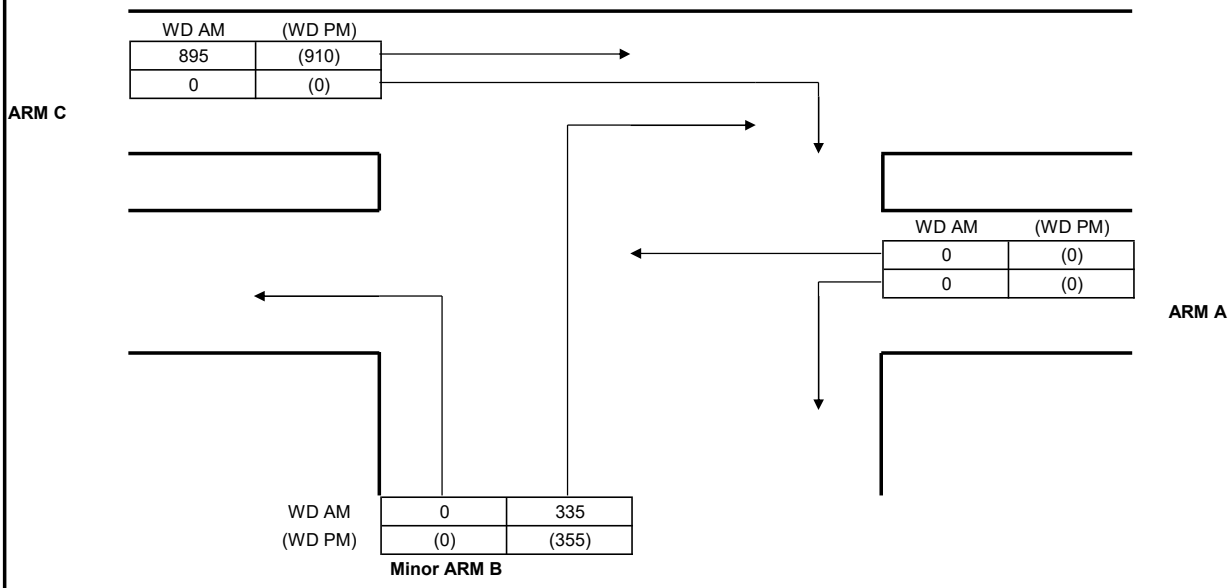
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Feb-22	Checked by:	CHC

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Tung Lo Wan Road / Tai Hang Road			Ref. No.:	J20
Scheme:	2021 Observed Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Tung Lo Wan Road				
ARM B:	Tai Hang Road				
ARM C:	Tung Lo Wan Road				



GEOMETRY					
Major road width	W	6.70	Lane widths	w(b-a)	6.70
Central Reserve width	Wcr	0.00		w(b-c)	0.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	20	Calculated	D	1.08
	Vl(b-a)	20		E	0.60
	Vr(b-c)	30		F	0.59
	Vr(c-b)	10		Y	0.77

ANALYSIS			WD AM PEAK	(WD PM) PEAK
TRAFFIC FLOWS	q(c-a)		895	910
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		0	0
	q(b-a)		335	355
	q(b-c)		0	0
	f		0.00	0.00
		Factor		
CAPACITIES	Q(b-a)	1	507	504
	Q(b-c)	1	450	450
	Q(c-b)	1	441	441
	Q(b-ac)	1	507	504
RFC's	b-a		0.661	0.704
	b-c		0.000	0.000
	c-b		0.000	0.000
	b-ac		0.661	0.704
Worst RFC			**0.661**	**0.704**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

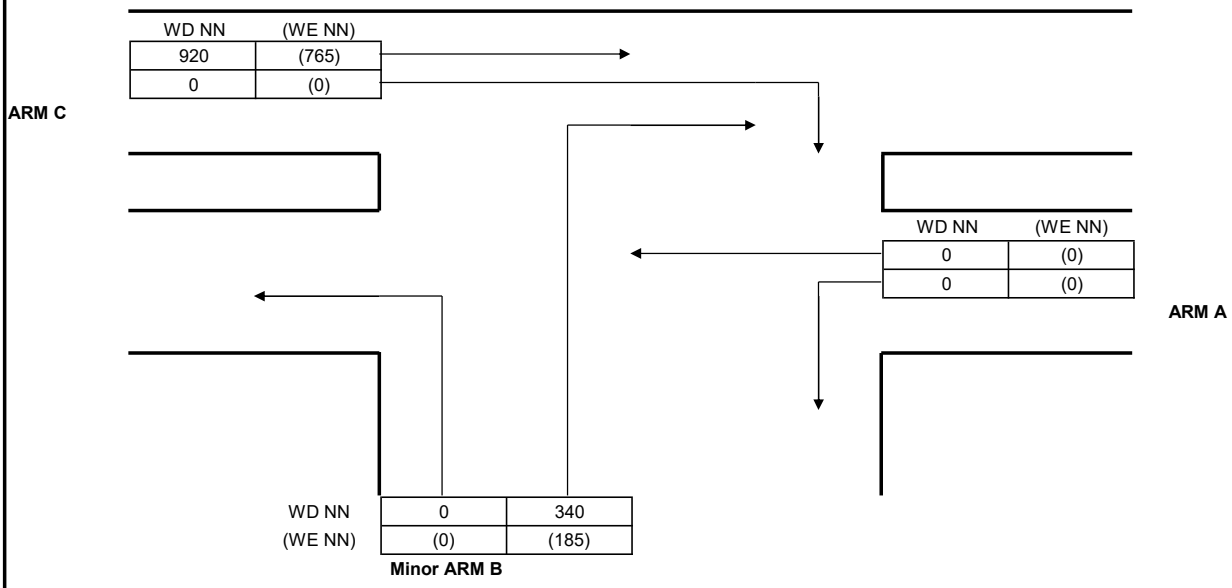
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Feb-22	Checked by:	CHC

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Tung Lo Wan Road / Tai Hang Road			Ref. No.:	J20
Scheme:	2021 Observed Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Tung Lo Wan Road				
ARM B:	Tai Hang Road				
ARM C:	Tung Lo Wan Road				



GEOMETRY					
Major road width	W	6.70	Lane widths	w(b-a)	6.70
Central Reserve width	Wcr	0.00		w(b-c)	0.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	20	Calculated	D	1.08
	Vl(b-a)	20		E	0.60
	Vr(b-c)	30		F	0.59
	Vr(c-b)	10		Y	0.77

ANALYSIS			WD NN PEAK	(WE NN) PEAK
TRAFFIC FLOWS	q(c-a)		920	765
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		0	0
	q(b-a)		340	185
	q(b-c)		0	0
	f		0.00	0.00
		Factor		
CAPACITIES	Q(b-a)	1	502	531
	Q(b-c)	1	450	450
	Q(c-b)	1	441	441
	Q(b-ac)	1	502	531
RFC's	b-a		0.677	0.348
	b-c		0.000	0.000
	c-b		0.000	0.000
	b-ac		0.677	0.348
Worst RFC			**0.677**	**0.348**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Feb-22	Checked by:	CHC

Year 2031 Reference

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Hennessy Road / Percival Street Design Year: 2031

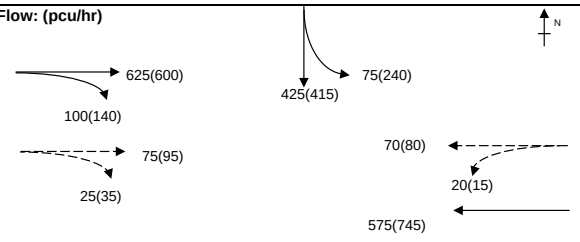
Description: 2031 Reference Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Hennessy Road WB	← *	A	1	3.800						1495	1495	237	0.159		308	0.206	0.206
	←	A	1	3.700						2125	2125	338	0.159	0.159	437	0.206	
Hennessy Road WB (Tram)	↓	D	2	3.000	20					1780	1780	20	0.011		15	0.008	
	←	A	1	3.000						2055	2055	70	0.034		80	0.039	
Hennessy Road EB	→**	B	1,2,3	3.000						960	960	199	0.207		191	0.199	
	→	B	1,2,3	3.000						2055	2055	426	0.207		409	0.199	
	↘	C	2,3	3.000		25				1940	1940	100	0.052	0.052	140	0.072	0.072
Hennessy Road EB (Tram)	→	B	1,2,3	3.000						1915	1915	75	0.039		95	0.050	
	↓	C	2,3	3.000		25				1940	1940	25	0.013		35	0.018	
Percival Street SB	↳	E	4	3.300	10					1690	1690	75	0.044		240	0.142	0.142
	↓	E	4	3.300						2085	2085	211	0.101		207	0.099	
	↓	E	4	3.500						2105	2105	214	0.102	0.102	208	0.099	
Pedestrian Crossing		Fp	4	MIN GREEN + FLASH =			12	+	14	=	26						
		Gp	1	MIN GREEN + FLASH =			5	+	7	=	12						

Notes:

* = Site factor of 0.75 has been adopted.
** = Site factor of 0.5 has been adopted.

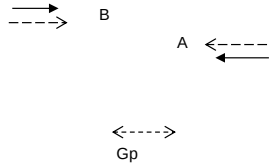
Flow: (pcu/hr)



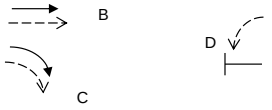
Group	A,C,Fp	A,C,E	Group	A,C,Fp	A,C,E
y	0.211	0.312	y	0.278	0.420
L (sec)	46	19	L (sec)	46	19
C (sec)	120	120	C (sec)	120	120
y pract.	0.555	0.758	y pract.	0.555	0.758
R.C. (%)	164%	143%	R.C. (%)	100%	80%

Stage / Phase Diagrams

1.



2.



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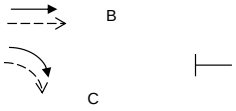

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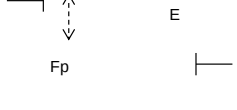


5.

I/G= 6		I/G= 8		I/G=		I/G= 8		I/G=	
I/G= 6		I/G= 8		I/G=		I/G= 8		I/G=	

Date: FEB, 2022 **Junction:** J1 Hennessy Road / Percival Street

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Hennessy Road / Percival Street Design Year: 2031

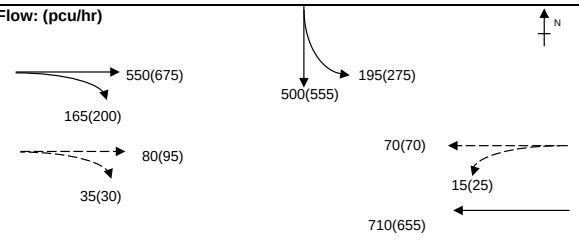
Description: 2031 Reference Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Hennessy Road WB	← *	A	1	3.800						1495	1495	293	0.196		271	0.181	0.181
	←	A	1	3.700						2125	2125	417	0.196	0.196	384	0.181	
Hennessy Road WB (Tram)	↓	D	2	3.000	20					1780	1780	15	0.008		25	0.014	
	←	A	1	3.000						2055	2055	70	0.034		70	0.034	
Hennessy Road EB	→ **	B	1,2,3	3.000						960	960	175	0.182		215	0.224	
	→	B	1,2,3	3.000						2055	2055	375	0.182		460	0.224	
	↘	C	2,3	3.000		25				1940	1940	165	0.085	0.085	200	0.103	0.103
Hennessy Road EB (Tram)	→	B	1,2,3	3.000						1915	1915	80	0.042		95	0.050	
	↓	C	2,3	3.000		25				1940	1940	35	0.018		30	0.015	
Percival Street SB	↳	E	4	3.300	10					1690	1690	195	0.115		275	0.163	0.163
	↓	E	4	3.300						2085	2085	249	0.119		276	0.132	
	↓	E	4	3.500						2105	2105	251	0.119		279	0.133	
Pedestrian Crossing		Fp	4	MIN GREEN + FLASH =			12	+	14	=	26			*			
		Gp	1	MIN GREEN + FLASH =			5	+	7	=	12						

Notes:

* = Site factor of 0.75 has been adopted.
** = Site factor of 0.5 has been adopted.

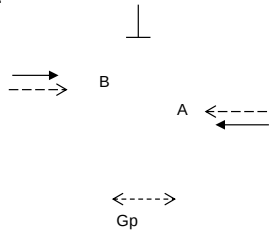
Flow: (pcu/hr)



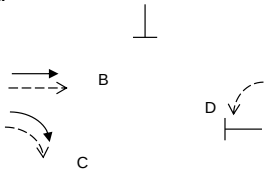
Group	A,C,E	A,C,Fp	Group	A,C,Fp	A,C,E
y	0.401	0.281	y	0.284	0.447
L (sec)	19	46	L (sec)	46	19
C (sec)	104	104	C (sec)	104	104
y pract.	0.736	0.502	y pract.	0.502	0.736
R.C. (%)	84%	78%	R.C. (%)	77%	65%

Stage / Phase Diagrams

1.



2.



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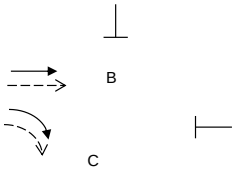

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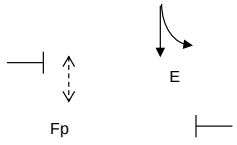


5.

I/G= 4		I/G= 8		I/G=		I/G= 10	26
I/G= 6		I/G= 8		I/G=		I/G= 8	

I/G=	
I/G=	

Date: FEB, 2022 **Junction:** J1 Hennessy Road / Percival Street

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Matheson Street / Percival Street / Russell Street Design Year: 2031

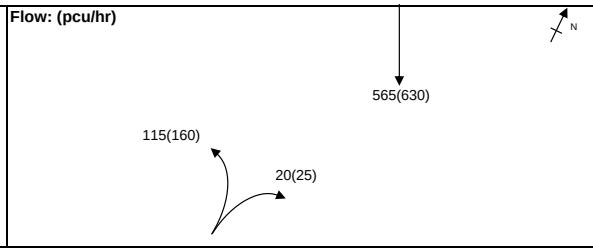
Description: 2031 Reference Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Percival Street	↓	A	1	3.600						1975	1975	283	0.143	0.143	315	0.159	0.159
SB	↓	A	1	3.600						1975	1975	282	0.143		315	0.159	
Matheson Street	↰	B	2	3.300	10					1690	1690	67	0.040		91	0.054	
NB	↰↑	B	2	3.300	13.3	10		71% / 29%	73% / 27%	1730	1730	68	0.039		94	0.054	
Pedestrian Crossing		Cp	1,3	MIN GREEN + FLASH =			9	+	10	=	19						
		Dp	2,3	MIN GREEN + FLASH =			6	+	6	=	12			*			*

Notes:

TAC junction: Cycle time of 105s and 120s are adopted for AM and PM Peak

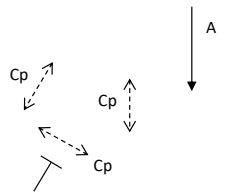
Flow: (pcu/hr)



Group	Cp,B	A,Dp	Group	Cp,B	A,Dp
y	0.040	0.143	y	0.054	0.159
L (sec)	30	23	L (sec)	30	23
C (sec)	105	105	C (sec)	120	120
y pract.	0.643	0.703	y pract.	0.675	0.728
R.C. (%)	1522%	391%	R.C. (%)	1142%	356%

Stage / Phase Diagrams

1.



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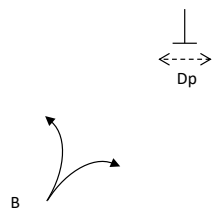

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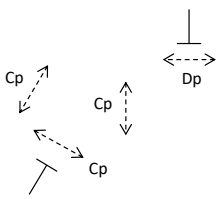


4.

5.

I/G= 4		I/G= 8	12	I/G=		I/G=	I/G=
I/G= 4		I/G= 8	12	I/G=		I/G=	I/G=

Date: FEB, 2022 **Junction:** J2 Matheson Street / Percival Street / Russell Street

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Matheson Street / Percival Street / Russell Street Design Year: 2031

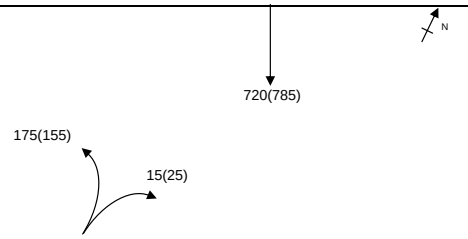
Description: 2031 Reference Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Percival Street	↓	A	1	3.600						1975	1975	360	0.182	0.182	393	0.199	0.199
SB	↓	A	1	3.600						1975	1975	360	0.182		392	0.198	
Matheson Street	↰	B	2	3.300	10					1690	1690	94	0.056		89	0.053	
NB	↰↑	B	2	3.300	13.3	10		84% / 16%	73% / 27%	1740	1730	96	0.055		91	0.053	
Pedestrian Crossing		Cp	1,3	MIN GREEN + FLASH =			9	+	10	=	19						
		Dp	2,3	MIN GREEN + FLASH =			6	+	6	=	12			*			*

Notes:

TAC junction: Cycle time of 105s and 110s are adopted for WD and WE Noon

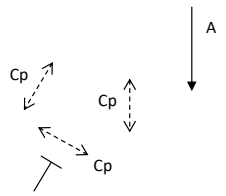
Flow: (pcu/hr)



Group	Cp,B	A,Dp	Group	Cp,B	A,Dp
y	0.056	0.182	y	0.053	0.199
L (sec)	30	23	L (sec)	30	23
C (sec)	105	105	C (sec)	110	110
y pract.	0.643	0.703	y pract.	0.655	0.712
R.C. (%)	1056%	286%	R.C. (%)	1143%	258%

Stage / Phase Diagrams

1.



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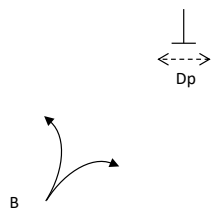

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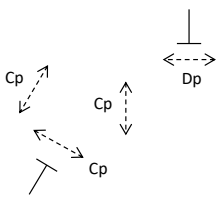


4.

5.

I/G= 4		I/G= 8	12	I/G=		I/G=	I/G=
I/G= 4		I/G= 8	12	I/G=		I/G=	I/G=

Date: FEB, 2022 **Junction:** J2 Matheson Street / Percival Street / Russell Street

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Percival Street / Hysan Avenue Design Year: 2031

Description: 2031 Reference Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Leighton Road WB	← *	E	1	3.500						1570	1570	432	0.275		430	0.274	
	← *	E	1	3.000						1645	1645	453	0.275		450	0.274	
Leighton Road EB	→ **	A	1	2.500						1120	1120	328	0.293	0.293	299	0.267	0.267
	→ **	A	1	2.500						1205	1205	352	0.292		321	0.266	
Percival Street SB	↳ **	C	2	4.000	25					1140	1140	205	0.180	0.180	285	0.250	0.250
Percival Street SB	* ↲	C	2	5.000		25				1595	1595	239	0.150		242	0.152	
	** ↲	C	2	3.500		20				1175	1175	176	0.150		178	0.151	
Pedestrian Crossing		Bp	1	MIN GREEN + FLASH =			16	+	7	=	23						
		Dp	2	MIN GREEN + FLASH =			5	+	12	=	17						

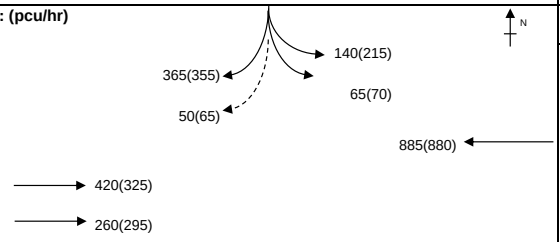
Notes:

TAC junction: Cycle time of 105s and 105s are adopted for AM and PM Peak

** = Site Factor of 0.6 adopted

* = Site Factor of 0.8 adopted

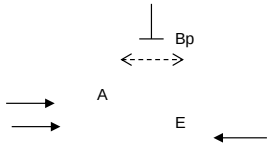
Flow: (pcu/hr)



Group	E,C	A,C	Group	E,C	A,C
y	0.455	0.473	y	0.524	0.517
L (sec)	9	14	L (sec)	9	14
C (sec)	105	105	C (sec)	105	105
y pract.	0.823	0.780	y pract.	0.823	0.780
R.C. (%)	81%	65%	R.C. (%)	57%	51%

Stage / Phase Diagrams

1.



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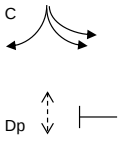


4.

5.

I/G= 8		I/G= 8		I/G=		I/G=	
I/G= 8		I/G= 8		I/G=		I/G=	

Date: FEB, 2022 **Junction:** (J3) Leighton Road / Percival Street / Hysan Avenue

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Percival Street / Hysan Avenue Design Year: 2031

Description: 2031 Reference Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Leighton Road WB	← *	E	1	3.500						1570	1570	415	0.264		447	0.285	
	← *	E	1	3.000						1645	1645	435	0.264		468	0.284	
Leighton Road EB	→ **	A	1	2.500						1120	1120	385	0.344		347	0.310	0.310
	→ **	A	1	2.500						1205	1205	415	0.344	0.344	373	0.310	
Percival Street SB	↳ **	C	2	4.000	25					1140	1140	270	0.237	0.237	345	0.303	0.303
Percival Street SB	* ↲	C	2	5.000		25				1595	1595	294	0.184		268	0.168	
	** ↲	C	2	3.500		20				1175	1175	216	0.184		197	0.168	
Pedestrian Crossing		Bp	1	MIN GREEN + FLASH =			16	+	7	=	23						
		Dp	2	MIN GREEN + FLASH =			5	+	12	=	17						

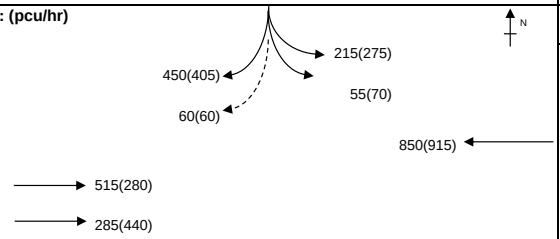
Notes:

TAC junction: Cycle time of 130s and 130s are adopted for WD and WE Noon

** = Site Factor of 0.6 adopted

* = Site Factor of 0.8 adopted

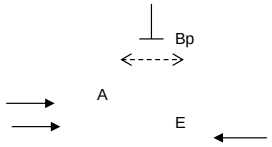
Flow: (pcu/hr)



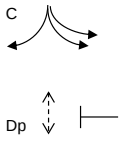
Group	E,C	A,C	Group	E,C	A,C
y	0.501	0.581	y	0.587	0.612
L (sec)	9	14	L (sec)	9	14
C (sec)	130	130	C (sec)	130	130
y pract.	0.838	0.803	y pract.	0.838	0.803
R.C. (%)	67%	38%	R.C. (%)	43%	31%

Stage / Phase Diagrams

1.



2.



4.

5.

I/G= 8		I/G= 8		I/G=		I/G=		I/G=	
I/G= 8		I/G= 8		I/G=		I/G=		I/G=	

Date: FEB, 2022 **Junction:** (J3) Leighton Road / Percival Street / Hysan Avenue

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Hysan Avenue / Leighton Lane Design Year: 2031

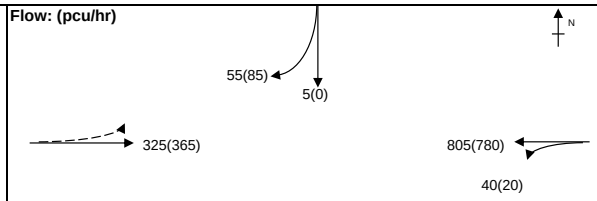
Description: 2031 Reference Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Leighton Road WB	↓	B	2	3.500	5			10%	5%	1910	1935	405	0.212		386	0.199	
	←	B	2	3.200						2075	2075	440	0.212		414	0.200	
Leighton Road EB	↗	(free flow)															
	→	A	1,2	3.500						1965	1965	325	0.165	0.165	365	0.186	0.186
Hysan Avenue SB	↓	C	3	3.300		17		84%	100%	1810	1785	32	0.018		45	0.025	
	↲	C	3	3.000		10				1585	1585	28	0.018		40	0.025	
Pedestrian Crossing		Dp	3	MIN GREEN + FLASH =			11	+	10	=	21			*			*
		Ep	1,2	MIN GREEN + FLASH =			6	+	7	=	13						

Notes:

TAC junction: Cycle time of 120s and 130s are adopted for AM and PM Peak

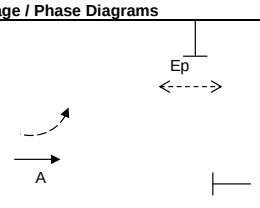
Flow: (pcu/hr)



Group	A,C	A,Dp	Group	A,C	A,Dp
y	0.183	0.165	y	0.211	0.186
L (sec)	9	31	L (sec)	9	31
C (sec)	120	120	C (sec)	130	130
y pract.	0.833	0.668	y pract.	0.838	0.685
R.C. (%)	355%	304%	R.C. (%)	297%	269%

Stage / Phase Diagrams

1.



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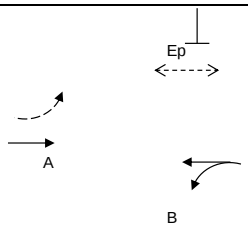

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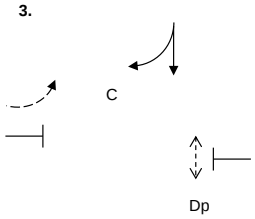


4.

5.

I/G= 4		I/G=		I/G= 7	21	I/G=		I/G=	
I/G= 4		I/G=		I/G= 7	21	I/G=		I/G=	

Date: FEB, 2022 **Junction:** J4 Leighton Road / Hysan Avenue / Leighton Lane

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Hysan Avenue / Leighton Lane Design Year: 2031

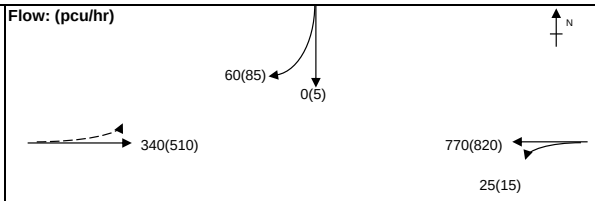
Description: 2031 Reference Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Leighton Road WB	↓	B	2	3.500	5			7%	4%	1925	1945	383	0.199		404	0.208	
	←	B	2	3.200						2075	2075	412	0.199		431	0.208	
Leighton Road EB	↗	(free flow)															
	→	A	1,2	3.500						1965	1965	340	0.173	0.173	510	0.260	0.260
Hysan Avenue SB	↓	C	3	3.300		17		100%	90%	1785	1805	32	0.018		48	0.027	
	↲	C	3	3.000		10				1585	1585	28	0.018		42	0.026	
Pedestrian Crossing		Dp	3	MIN GREEN + FLASH =			11	+	10	=	21			*			*
		Ep	1,2	MIN GREEN + FLASH =			6	+	7	=	13						

Notes:

TAC junction: Cycle time of 130s and 130s are adopted for WD and WE Noon

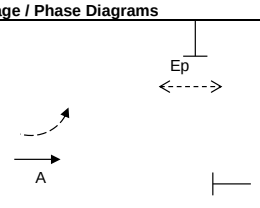
Flow: (pcu/hr)



Group	A,C	A,Dp	Group	A,C	A,Dp
y	0.191	0.173	y	0.286	0.260
L (sec)	9	31	L (sec)	9	31
C (sec)	130	130	C (sec)	130	130
y pract.	0.838	0.685	y pract.	0.838	0.685
R.C. (%)	339%	296%	R.C. (%)	193%	164%

Stage / Phase Diagrams

1.



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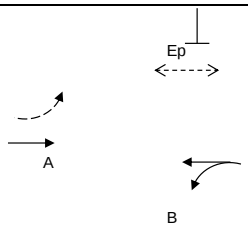

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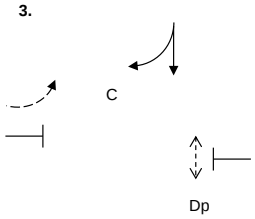


4.

5.

I/G= 4		I/G=		I/G= 7	21	I/G=		I/G=	
I/G= 4		I/G=		I/G= 7	21	I/G=		I/G=	

Date: FEB, 2022 **Junction:** (J4) Leighton Road / Hysan Avenue / Leighton Lane

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Caroline Hill Road (West) Design Year: 2031

Description: 2031 Reference Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Leighton Road WE	^	A	1	3.500	25			100%	100%	1110	1110	265	0.239	0.239	235	0.212	0.212
		A	1	3.000						2055	2055	445	0.217		370	0.180	
Caroline Hill Road		D	2,3	3.500	65					1920	1920	325	0.169		335	0.174	
NB	**	B	2	3.500		20				1665	1665	395	0.237	0.237	405	0.243	0.243
Leighton Road	#	A	1	3.500						1570	1570	176	0.112		204	0.130	
EB		A	1	3.300						2085	2085	234	0.112		271	0.130	
Hoi Ping Road		C	3	3.000						1915	1915	260	0.136	0.136	250	0.131	0.131
SB	*	C	3	3.000		10				715	715	75	0.105		90	0.126	

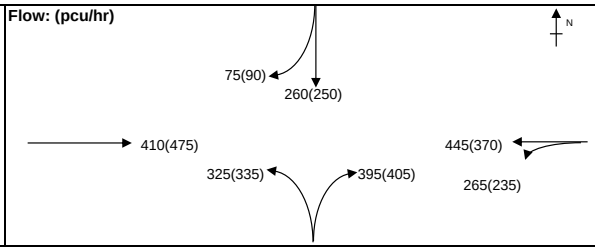
Pedestrian Crossing	Ep	1	MIN GREEN + FLASH =	10	+	5	=	15
	Fp	1,3	MIN GREEN + FLASH =	14	+	5	=	19
	Gp	2	MIN GREEN + FLASH =	14	+	5	=	19
	Hp	3	MIN GREEN + FLASH =	10	+	7	=	17
	Ip	1,2	MIN GREEN + FLASH =	11	+	6	=	17
	Jp	2	MIN GREEN + FLASH =	10	+	7	=	17

Notes:

TAC junction: Cycle time of 105s and 130s are adopted for AM and PM Peak
^ = Site Factor of 0.6 adopted due to merging traffic ahead
* = Site Factor of 0.4 adopted due to flare lane
** = Site Factor of 0.85 adopted

= Site Factor of 0.8 adopted

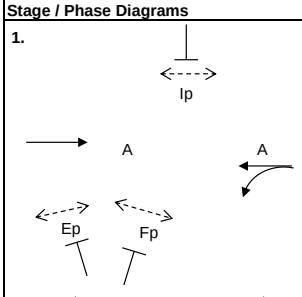
Flow: (pcu/hr)



Group	A,B,Hp	A,B,C	Group	A,B,Hp	A,B,C
y	0.476	0.612	y	0.455	0.586
L (sec)	38	20	L (sec)	38	20
C (sec)	105	105	C (sec)	130	130
y pract.	0.574	0.729	y pract.	0.637	0.762
R.C. (%)	21%	19%	R.C. (%)	40%	30%

Stage / Phase Diagrams

1.



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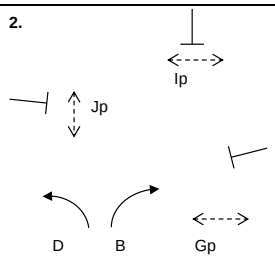

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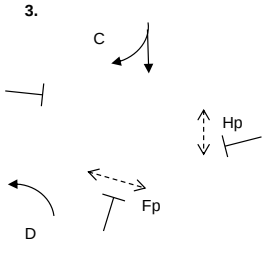


4.

5.

I/G= 8		I/G= 8		I/G= 7		I/G=	
I/G= 8		I/G= 8		I/G= 7		I/G=	

Date: FEB, 2022 **Junction:** J5 Leighton Road / Caroline Hill Road (West)

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Caroline Hill Road (West) Design Year: 2031

Description: 2031 Reference Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Leighton Road WE	^	A	1	3.500	25			100%	100%	1110	1110	225	0.203	0.203	280	0.252	0.252
		A	1	3.000						2055	2055	370	0.180		430	0.209	
Caroline Hill Road		D	2,3	3.500	65					1920	1920	280	0.146		315	0.164	
NB	**	B	2	3.500		20				1665	1665	415	0.249	0.249	375	0.225	0.225
Leighton Road	#	A	1	3.500						1570	1570	185	0.118		264	0.168	
EB		A	1	3.300						2085	2085	245	0.118		351	0.168	
Hoi Ping Road		C	3	3.000						1915	1915	220	0.115		230	0.120	
SB	*	C	3	3.000		10				715	715	145	0.203	0.203	90	0.126	0.126

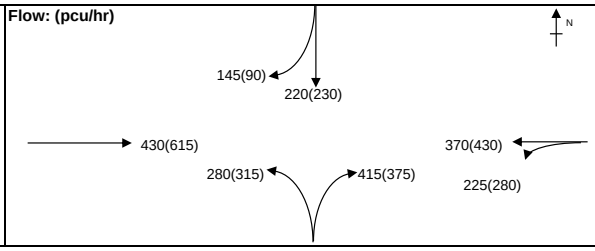
Pedestrian Crossing	Ep	1	MIN GREEN + FLASH =	10	+	5	=	15
	Fp	1,3	MIN GREEN + FLASH =	14	+	5	=	19
	Gp	2	MIN GREEN + FLASH =	14	+	5	=	19
	Hp	3	MIN GREEN + FLASH =	10	+	7	=	17
	Ip	1,2	MIN GREEN + FLASH =	11	+	6	=	17
	Jp	2	MIN GREEN + FLASH =	10	+	7	=	17

Notes:

TAC junction: Cycle time of 120s and 130s are adopted for WD and WE Noon
^ = Site Factor of 0.6 adopted due to merging traffic ahead
* = Site Factor of 0.4 adopted due to flare lane
** = Site Factor of 0.85 adopted

= Site Factor of 0.8 adopted

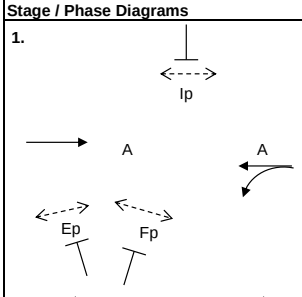
Flow: (pcu/hr)



Group	A,B,Hp	A,B,C	Group	A,B,Hp	A,B,C
y	0.452	0.655	y	0.477	0.603
L (sec)	38	20	L (sec)	38	20
C (sec)	120	120	C (sec)	130	130
y pract.	0.615	0.750	y pract.	0.637	0.762
R.C. (%)	36%	15%	R.C. (%)	33%	26%

Stage / Phase Diagrams

1.



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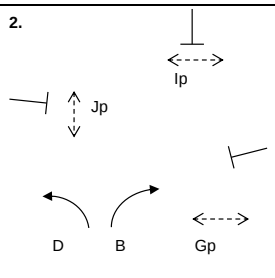

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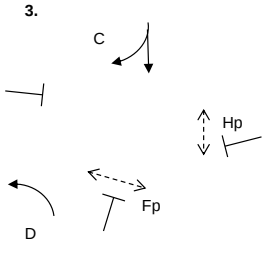


4.

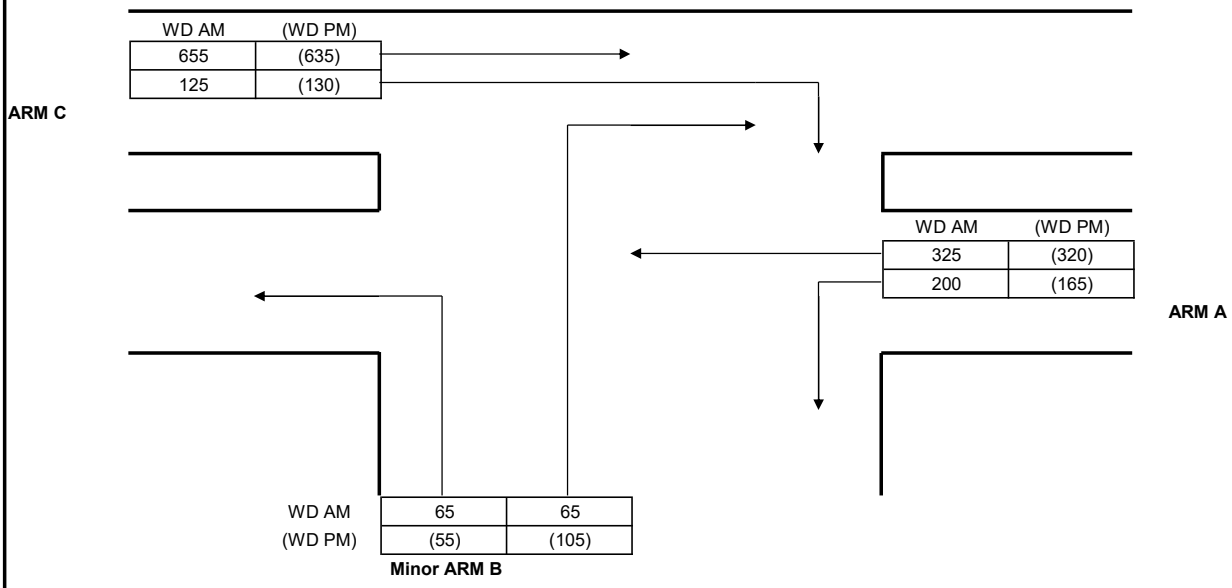
5.

I/G= 8		I/G= 8		I/G= 7		I/G=	
I/G= 8		I/G= 8		I/G= 7		I/G=	

Date: FEB, 2022 **Junction:** J5 Leighton Road / Caroline Hill Road (West)

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Caroline Hill Road (West) / Link Road			Ref. No.:	J6
Scheme:	2031 Reference Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Caroline Hill Road				
ARM B:	Caroline Hill Road				
ARM C:	Link Road				



GEOMETRY					
Major road width	W	9.40	Lane widths	w(b-a)	2.00
Central Reserve width	Wcr	0.00		w(b-c)	2.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	100	Calculated	D	0.80
	Vl(b-a)	100		E	0.77
	Vr(b-c)	20		F	0.65
	Vr(c-b)	100		Y	0.68

ANALYSIS			WD AM PEAK	(WD PM) PEAK
TRAFFIC FLOWS	q(c-a)		655	635
	q(c-b)		125	130
	q(a-b)		200	165
	q(a-c)		325	320
	q(b-a)		65	105
	q(b-c)		65	55
	f		0.50	0.34
		Factor		
CAPACITIES	Q(b-a)	1	308	313
	Q(b-c)	1	496	500
	Q(c-b)	1	397	404
	Q(b-ac)	1	380	359
RFC's	b-a		0.211	0.335
	b-c		0.131	0.110
	c-b		0.315	0.322
	b-ac		0.342	0.446
Worst RFC			**0.342**	**0.446**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

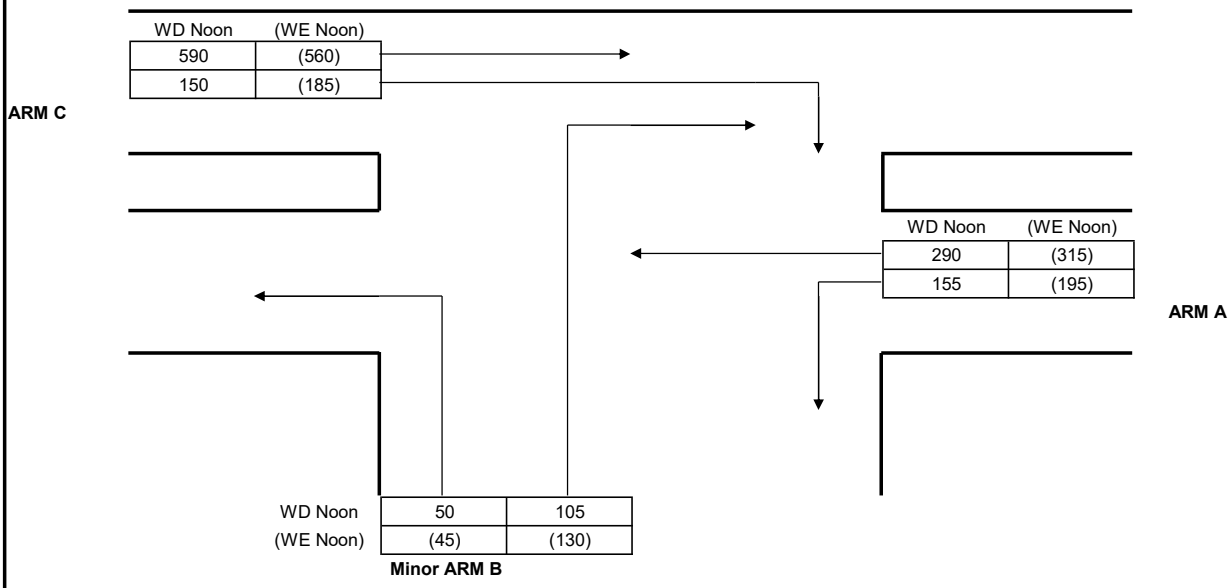
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Feb-22	Checked by:	CHC

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Caroline Hill Road (West) / Link Road			Ref. No.:	J6
Scheme:	2031 Reference Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Caroline Hill Road				
ARM B:	Caroline Hill Road				
ARM C:	Link Road				



GEOMETRY					
Major road width	W	9.40	Lane widths	w(b-a)	2.00
Central Reserve width	Wcr	0.00		w(b-c)	2.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	100	Calculated	D	0.80
	Vl(b-a)	100		E	0.77
	Vr(b-c)	20		F	0.65
	Vr(c-b)	100		Y	0.68

ANALYSIS			WD Noon PEAK	(WE Noon) PEAK
TRAFFIC FLOWS	q(c-a)		590	560
	q(c-b)		150	185
	q(a-b)		155	195
	q(a-c)		290	315
	q(b-a)		105	130
	q(b-c)		50	45
	f		0.32	0.26
		Factor		
CAPACITIES	Q(b-a)	1	319	305
	Q(b-c)	1	506	499
	Q(c-b)	1	410	400
	Q(b-ac)	1	362	339
RFC's	b-a		0.329	0.426
	b-c		0.099	0.090
	c-b		0.366	0.463
	b-ac		0.428	0.516
Worst RFC			**0.428**	**0.516**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

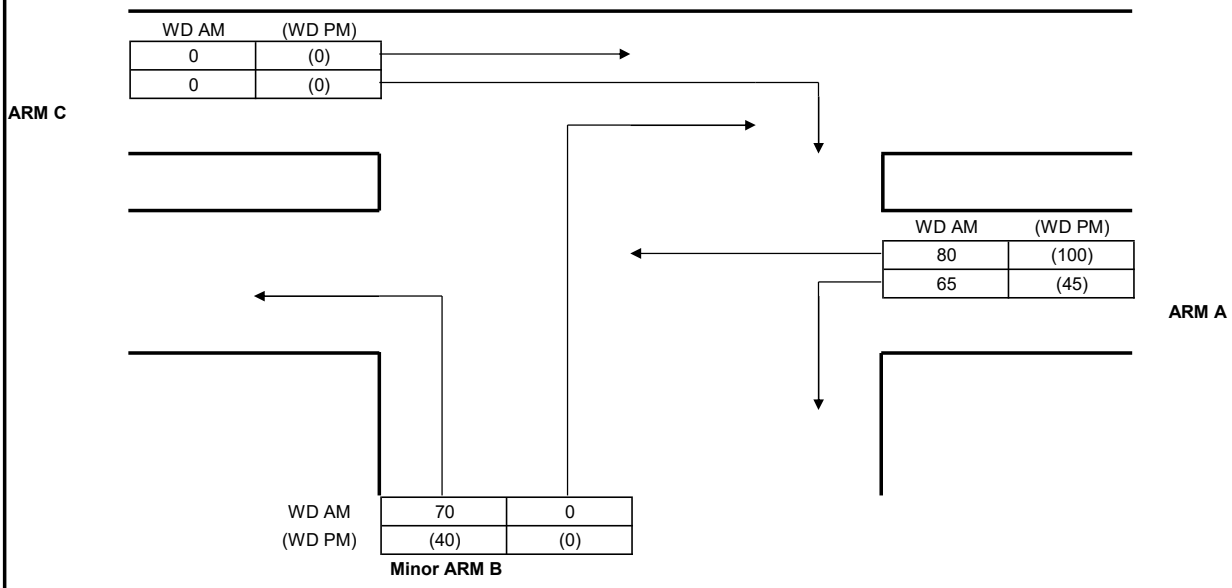
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Feb-22	Checked by:	CHC

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Caroline Hill Road / Cotton Path			Ref. No.:	J7
Scheme:	2031 Reference Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Caroline Hill Road				
ARM B:	Caroline Hill Road				
ARM C:	Cotton Path				



GEOMETRY					
Major road width	W	6.20	Lane widths	w(b-a)	2.00
Central Reserve width	Wcr	0.00		w(b-c)	2.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	100	Calculated	D	0.80
	Vl(b-a)	100		E	0.77
	Vr(b-c)	20		F	0.59
	Vr(c-b)	0		Y	0.79

ANALYSIS				
			WD AM PEAK	(WD PM) PEAK
TRAFFIC FLOWS	q(c-a)		0	0
	q(c-b)		0	0
	q(a-b)		65	45
	q(a-c)		80	100
	q(b-a)		0	0
	q(b-c)		70	40
	f		1.00	1.00
		Factor		
CAPACITIES	Q(b-a)	1	480	477
	Q(b-c)	1	550	547
	Q(c-b)	1	412	412
	Q(b-ac)	1	550	547
RFC's	b-a		0.000	0.000
	b-c		0.127	0.073
	c-b		0.000	0.000
	b-ac		0.127	0.073
Worst RFC			**0.127**	**0.073**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

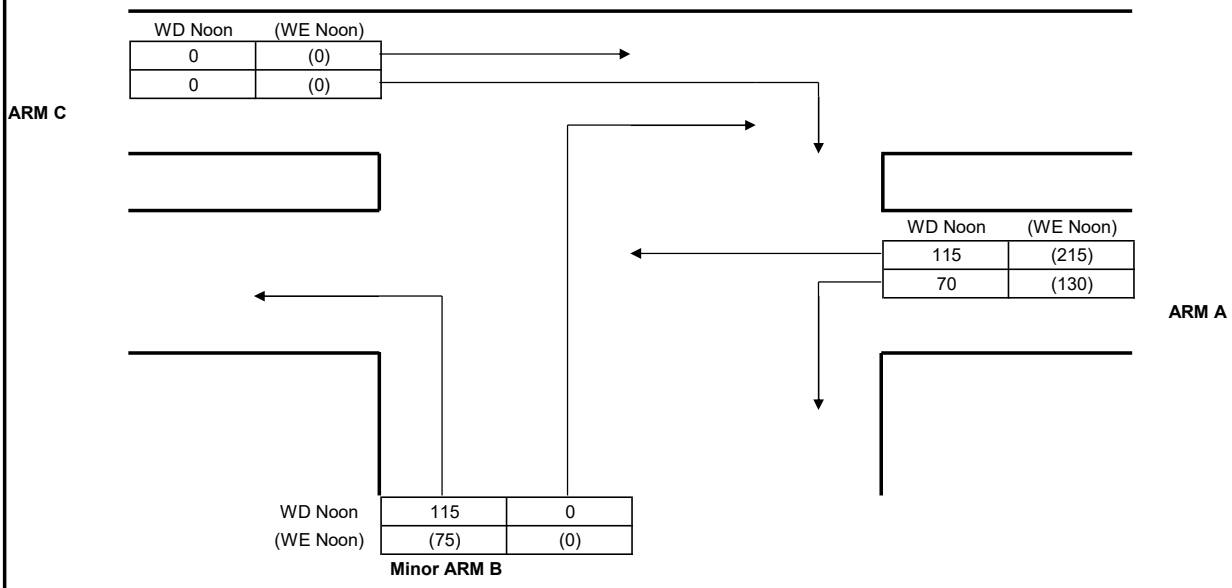
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Feb-22	Checked by:	CHC

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Caroline Hill Road / Cotton Path			Ref. No.:	J7
Scheme:	2031 Reference Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Caroline Hill Road				
ARM B:	Caroline Hill Road				
ARM C:	Cotton Path				



GEOMETRY

Major road width	W	6.20	Lane widths	w(b-a)	2.00
Central Reserve width	Wcr	0.00		w(b-c)	2.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	100	Calculated	D	0.80
	Vl(b-a)	100		E	0.77
	Vr(b-c)	20		F	0.59
	Vr(c-b)	0		Y	0.79

ANALYSIS

		Factor	WD Noon PEAK	(WE Noon) PEAK
TRAFFIC FLOWS	q(c-a)		0	0
	q(c-b)		0	0
	q(a-b)		70	130
	q(a-c)		115	215
	q(b-a)		0	0
	q(b-c)		115	75
	f		1.00	1.00
CAPACITIES	Q(b-a)	1	472	443
	Q(b-c)	1	541	514
	Q(c-b)	1	406	379
	Q(b-ac)	1	541	514
RFC's	b-a		0.000	0.000
	b-c		0.213	0.146
	c-b		0.000	0.000
	b-ac		0.213	0.146
Worst RFC			**0.213**	**0.146**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Feb-22	Checked by:	CHC

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Yun Ping Road / Pennington Street / Caroline Hill Road (East) Design Year: 2031

Description: 2031 Reference Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Leighton Road WE	↓ *	A	1	3.000	7			28%	19%	1085	1105	251	0.231		213	0.193	
	←	A	1	2.500						2005	2005	464	0.231		387	0.193	
Leighton Road WE	↑ **	C	2	3.500		9				1180	1180	315	0.267	0.267	325	0.275	0.275
Caroline Hill Road NB	↰ *	C	2	4.000	5					930	930	65	0.070		45	0.048	
Leighton Road EB	↗ **	A	1	3.000	15			74%	76%	1250	1245	439	0.351		510	0.410	
	→ **	A	1	3.000						1440	1440	506	0.351	0.351	590	0.410	0.410
Pedestrian Crossing		Bp	1	MIN GREEN + FLASH =			5	+	8	=	13						
		Dp	2	MIN GREEN + FLASH =			10	+	8	=	18						

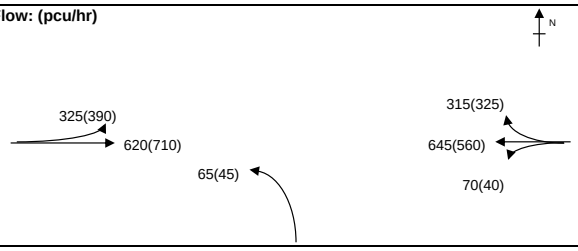
Notes:

TAC junction: Cycle time of 105s and 130s are adopted for AM and PM Peak

* = Site factor of 0.6 adopted

** = Site factor of 0.7 adopted

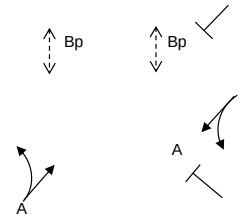
Flow: (pcu/hr)



Group	A,Dp	A,C	Group	A,Dp	A,C
y	0.351	0.618	y	0.410	0.685
L (sec)	27	11	L (sec)	27	11
C (sec)	105	105	C (sec)	130	130
y pract.	0.669	0.806	y pract.	0.713	0.824
R.C. (%)	90%	30%	R.C. (%)	74%	20%

Stage / Phase Diagrams

1.



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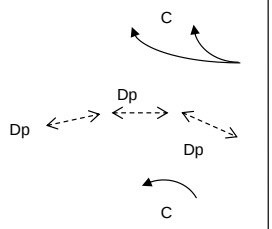


3.

4.

5.

I/G= 7		I/G= 6		I/G=		I/G=		I/G=	
I/G= 7		I/G= 6		I/G=		I/G=		I/G=	

Date: FEB, 2022 **Junction:** J8 Leighton Road / Yun Ping Road / Pennington Street / Caroline Hill

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Yun Ping Road / Pennington Street / Caroline Hill Road (East) Design Year: 2031

Description: 2031 Reference Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Leighton Road WE	*	A	1	3.000	7			53%	33%	1030	1075	217	0.211		228	0.212	
		A	1	2.500						2005	2005	423	0.211		427	0.213	
Leighton Road WE	**	C	2	3.500		9				1180	1180	280	0.237	0.237	295	0.250	0.250
Caroline Hill Road NB	*	C	2	4.000	5					930	930	70	0.075		130	0.140	
Leighton Road EB	**	A	1	3.000	15			68%	69%	1255	1255	466	0.371	0.371	550	0.438	0.438
	**	A	1	3.000						1440	1440	534	0.371		630	0.438	
Pedestrian Crossing		Bp	1	MIN GREEN + FLASH =			5	+	8	=	13						
		Dp	2	MIN GREEN + FLASH =			10	+	8	=	18						

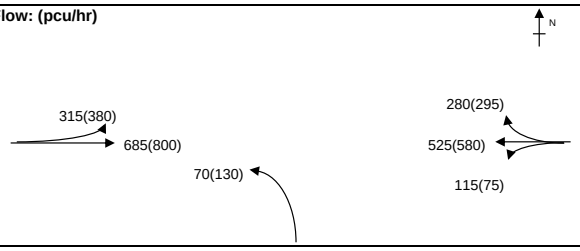
Notes:

TAC junction: Cycle time of 110s and 120s are adopted for WD and WE Noon

* = Site factor of 0.6 adopted

** = Site factor of 0.7 adopted

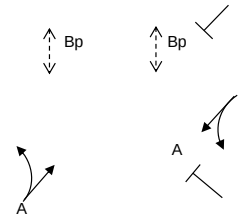
Flow: (pcu/hr)



Group	A,Dp	A,C	Group	A,Dp	A,C
y	0.371	0.609	y	0.438	0.688
L (sec)	27	11	L (sec)	27	11
C (sec)	110	110	C (sec)	120	120
y pract.	0.679	0.810	y pract.	0.698	0.818
R.C. (%)	83%	33%	R.C. (%)	59%	19%

Stage / Phase Diagrams

1.



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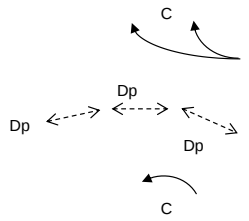


3.

4.

5.

I/G= 7		I/G= 6		I/G=		I/G=		I/G=	
I/G= 7		I/G= 6		I/G=		I/G=		I/G=	

Date: FEB, 2022 **Junction:** J8 Leighton Road / Yun Ping Road / Pennington Street / Caroline Hill

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Causeway Road / Leighton Road / Tung Lo Wan Road / Irving Street Design Year: 2031

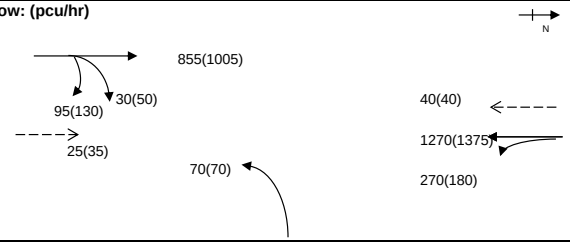
Description: 2031 Reference Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Causeway Road WB	↱ *	A	1	3.000	9					1150	1150	270	0.235	0.235	180	0.157	
Causeway Road WB	← *	A	1	3.000						1340	1340	312	0.233		338	0.252	
	←	A	1	3.000						2055	2055	479	0.233		519	0.253	0.253
	←	A	1	3.000						2055	2055	479	0.233		518	0.252	
Causeway Road WB (Tram)	⇐ **	F	1,2	3.000						1340	1340	40	0.030		40	0.030	
Tung Lo Wan Road NB	↰ **	B	2	4.000	25					1330	1330	70	0.053		70	0.053	
Causeway Road EB	→ (free flow)																
Causeway Road EB	↴ **	C	3	4.000		12				1255	1255	187	0.149	0.149	216	0.172	
	↴ **	C	3	4.500		8				1300	1300	193	0.148		224	0.172	0.172
Causeway Road EB (Tram)	⇒ **	F	1,2	3.000						1340	1340	25	0.019		35	0.026	
Pedestrian Crossing		Dp	2	MIN GREEN + FLASH =			7	+	8	=	15			*			*
		Ep	1,3	MIN GREEN + FLASH =			10	+	5	=	15						
		Gp	2,3	MIN GREEN + FLASH =			9	+	11	=	20						

Notes:

* = Site factor of 0.7 is adopted for on street activities on Leighton Road
** = Site factor of 0.7 is adopted for traffic queue

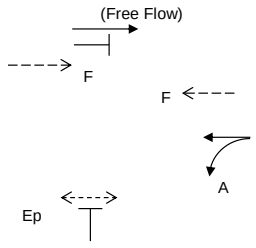
Flow: (pcu/hr)



Group	A,B,C	A,Dp,C	Group	A,B,C	A,Dp,C
y	0.436	0.384	y	0.477	0.425
L (sec)	20	33	L (sec)	20	33
C (sec)	100	100	C (sec)	105	105
y pract.	0.720	0.603	y pract.	0.729	0.617
R.C. (%)	65%	57%	R.C. (%)	53%	45%

Stage / Phase Diagrams

1.



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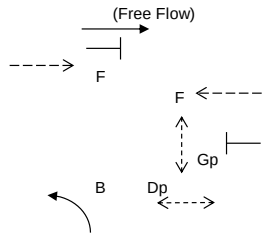

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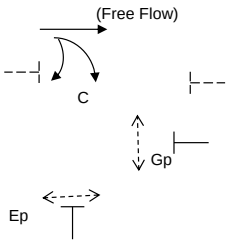


4.

5.

I/G= 7		I/G= 9	15	I/G= 4		I/G=	I/G=
I/G= 7		I/G= 9	15	I/G= 4		I/G=	I/G=

Date: FEB, 2022 **Junction:** (J9) Causeway Road / Leighton Road / Tung Lo Wan Road / Irving Str

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Causeway Road / Leighton Road / Tung Lo Wan Road / Irving Street Design Year: 2031

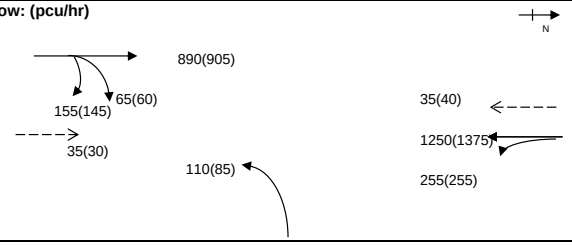
Description: 2031 Reference Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Causeway Road WB	↓ *	A	1	3.000	9					1150	1150	255	0.222		255	0.222	
Causeway Road WB	← *	A	1	3.000						1340	1340	307	0.229		338	0.252	
	←	A	1	3.000						2055	2055	472	0.230	0.230	519	0.253	0.253
	←	A	1	3.000						2055	2055	471	0.229		518	0.252	
Causeway Road WB (Tram)	⇐ **	F	1,2	3.000						1340	1340	35	0.026		40	0.030	
Tung Lo Wan Road NB	↖ **	B	2	4.000	25					1330	1330	110	0.083		85	0.064	
Causeway Road EB	→ (free flow)																
Causeway Road EB	↘ **	C	3	4.000		12				1255	1255	223	0.178		221	0.176	
	↘ **	C	3	4.500		8				1300	1300	232	0.178	0.178	229	0.176	0.176
Causeway Road EB (Tram)	⇒ **	F	1,2	3.000						1340	1340	35	0.026		30	0.022	
Pedestrian Crossing		Dp	2	MIN GREEN + FLASH =			7	+	8	=	15			*			*
		Ep	1,3	MIN GREEN + FLASH =			10	+	5	=	15						
		Gp	2,3	MIN GREEN + FLASH =			9	+	11	=	20						

Notes:

* = Site factor of 0.7 is adopted for on street activities on Leighton Road
** = Site factor of 0.7 is adopted for traffic queue

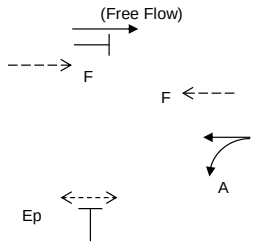
Flow: (pcu/hr)



Group	A,B,C	A,Dp,C	Group	A,B,C	A,Dp,C
y	0.491	0.408	y	0.493	0.429
L (sec)	20	33	L (sec)	20	33
C (sec)	95	95	C (sec)	105	105
y pract.	0.711	0.587	y pract.	0.729	0.617
R.C. (%)	45%	44%	R.C. (%)	48%	44%

Stage / Phase Diagrams

1.



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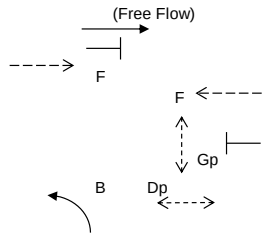

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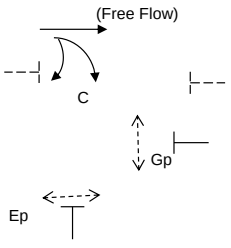


4.

5.

I/G= 7		I/G= 9	15	I/G= 4		I/G=	I/G=
I/G= 7		I/G= 9	15	I/G= 4		I/G=	I/G=

Date: FEB, 2022 **Junction:** J9 Causeway Road / Leighton Road / Tung Lo Wan Road / Irving Str

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Causeway Road / Moreton Terrace Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

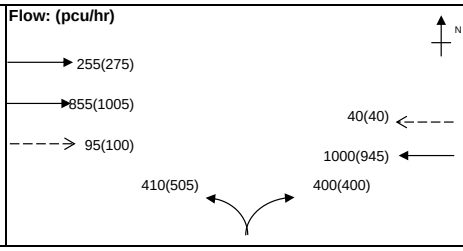
Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Causeway Road WB	← *	C	1	3.700						795	795	269	0.338		255	0.321	
	←	C	1	4.000						2155	2155	731	0.339		690	0.320	
Causeway Road - WB (Tram)	⇐	D	1	3.000						1915	1915	40	0.021		40	0.021	
Moreton Terrace - NB	↰ **	E	2	3.500	9					1685	1685	248	0.147	0.147	277	0.164	
	↰↑	E	2	3.300	15	20		58% / 42%	73% / 27%	1915	1905	281	0.147		313	0.164	
	↱	E	2	3.500		15				1915	1915	281	0.147		315	0.164	0.164
Causeway Road WB	→	A	1	3.500						1965	1965	255	0.130		275	0.140	
	→	A	1	3.500						2105	2105	855	0.406	0.406	1005	0.477	0.477
Causeway Road - EB (Tram)	⇒	B	1	3.000						1915	1915	95	0.050		100	0.052	
Pedestrian Crossing		Fp	1	MIN GREEN + FLASH =			8	+	10	=	18						

Notes:

*Site Factor of 0.4 adopted due to bus stop near stop line

**Site Factor of 0.7 adopted due to bus stop near stop line

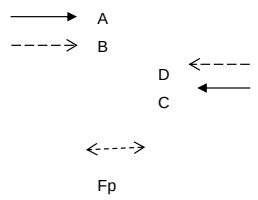
Flow: (pcu/hr)



Group	C,E	A,E	Group	C,E	A,E
y	0.486	0.553	y	0.485	0.642
L (sec)	10	10	L (sec)	10	10
C (sec)	100	100	C (sec)	105	105
y pract.	0.810	0.810	y pract.	0.814	0.814
R.C. (%)	67%	46%	R.C. (%)	68%	27%

Stage / Phase Diagrams

1.



2.



3.

4.

5.

I/G= 7		I/G= 5		I/G=		I/G=		I/G=	
I/G= 7		I/G= 5		I/G=		I/G=		I/G=	

Date: FEB, 2022 **Junction:** (J10) Causeway Road / Moreton Terrace

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Causeway Road / Moreton Terrace Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

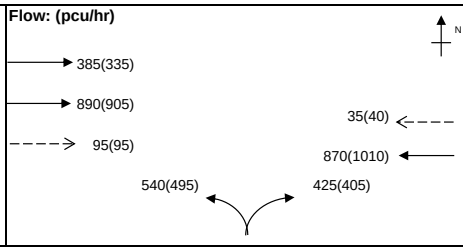
Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD NN	Pro. Turning (%) WE NN	Revised Saturation Flow (pcu/hr) WD NN	Revised Saturation Flow (pcu/hr) WE NN	WD NN Flow (pcu/hr)	WD NN y Value	WD NN Critical y	WE NN Flow (pcu/hr)	WE NN y Value	WE NN Critical y
Causeway Road WB	← *	C	1	3.700						795	795	234	0.294		272	0.342	
	←	C	1	4.000						2155	2155	636	0.295		738	0.342	
Causeway Road - WB (Tram)	⇐	D	1	3.000						1915	1915	35	0.018		40	0.021	
Moreton Terrace - NB	↰ **	E	2	3.500	9					1685	1685	295	0.175		275	0.163	
	↰↱	E	2	3.300	15	20		73% / 27%	71% / 29%	1905	1910	334	0.175		312	0.163	
	↱	E	2	3.500		15				1915	1915	336	0.175	0.175	313	0.163	0.163
Causeway Road WB	→	A	1	3.500						1965	1965	385	0.196		335	0.170	
	→	A	1	3.500						2105	2105	890	0.423	0.423	905	0.430	0.430
Causeway Road - EB (Tram)	⇒	B	1	3.000						1915	1915	95	0.050		95	0.050	
Pedestrian Crossing		Fp	1	MIN GREEN + FLASH =			8	+	10	=	18						

Notes:

*Site Factor of 0.4 adopted due to bus stop near stop line

**Site Factor of 0.7 adopted due to bus stop near stop line

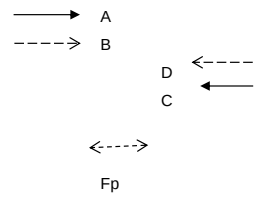
Flow: (pcu/hr)



Group	C,E	A,E	Group	C,E	A,E
y	0.471	0.598	y	0.506	0.593
L (sec)	10	10	L (sec)	10	10
C (sec)	95	95	C (sec)	105	105
y pract.	0.805	0.805	y pract.	0.814	0.814
R.C. (%)	71%	35%	R.C. (%)	61%	37%

Stage / Phase Diagrams

1.



2.



3.

4.

5.

I/G= 7		I/G= 5		I/G=		I/G=		I/G=	
I/G= 7		I/G= 5		I/G=		I/G=		I/G=	

Date: FEB, 2022 **Junction:** (J10) Causeway Road / Moreton Terrace

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Pennington Street / Jardine's Bazaar / Irving Street Design Year: 2031

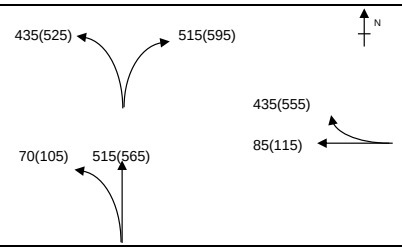
Description: 2031 Reference Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Irving Street WB	*←	A	1,4	3.000						960	960	79	0.082	0.082	101	0.105	
	↰	A	1,4	3.000		16		96%	93%	1885	1890	154	0.082		200	0.106	0.106
	↰	A	1,4	3.000		13				1840	1840	151	0.082		194	0.105	
	↰	A	1,4	3.000		10				1665	1665	136	0.082		175	0.105	
Pennington Street	↰↑	B	2,3	3.800	5			25%	33%	1855	1815	282	0.152	0.152	319	0.176	
NB 1st stop line	↑	B	2,3	3.800						1995	1995	303	0.152		351	0.176	0.176
Pennington Street	↰	E	1,2,4	5.000	10					1840	1840	435	0.236		525	0.285	
NB 2nd stop line	↱	F	1,2,3	3.500		10				1830	1830	275	0.150		318	0.174	
	↱	F	1,2,3	3.500		6.5				1595	1595	240	0.150		277	0.174	
Pedestrian Crossing		Cp	1,4	MIN GREEN + FLASH =			8	+	8	=	16						
		Dp	2,3	MIN GREEN + FLASH =			8	+	14	=	22						
		Gp	4	MIN GREEN + FLASH =			7	+	7	=	14						
		Hp	3	MIN GREEN + FLASH =			6	+	6	=	12						

Notes:

* = Site factor of 0.5 is adopted for bus stop at upstream

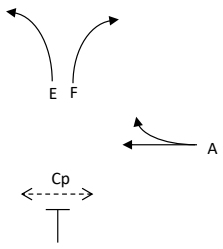
Flow: (pcu/hr)



Group	Cp,B	A,B	Group	Cp,B	A,B
y	0.152	0.234	y	0.176	0.282
L (sec)	24	14	L (sec)	24	14
C (sec)	100	100	C (sec)	100	100
y pract.	0.684	0.774	y pract.	0.684	0.774
R.C. (%)	350%	230%	R.C. (%)	289%	175%

Stage / Phase Diagrams

1.



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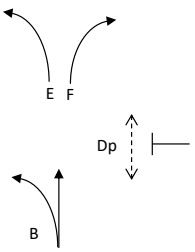

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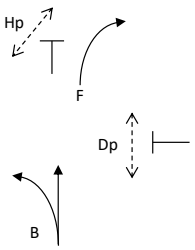

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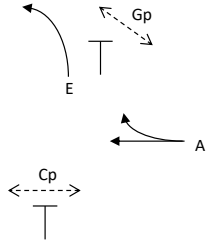


5.

I/G=		I/G= 8		I/G=		I/G= 8		I/G=			
I/G=		I/G= 8		I/G=		I/G= 8		I/G=			

Date: FEB, 2022 **Junction:** J11 Pennington Street / Jardine's Bazaar / Irving Street

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Pennington Street / Jardine's Bazaar / Irving Street Design Year: 2031

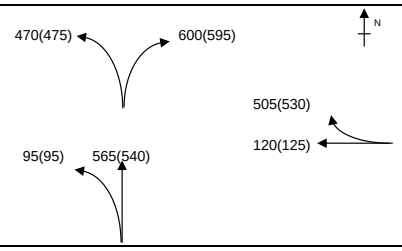
Description: 2031 Reference Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Irving Street WB	*←	A	1,4	3.000						960	960	94	0.098		99	0.103	
	↖↑	A	1,4	3.000		16		86%	87%	1900	1900	187	0.098		196	0.103	0.103
	↖	A	1,4	3.000		13				1840	1840	180	0.098		189	0.103	
	↖	A	1,4	3.000		10				1665	1665	164	0.098	0.098	171	0.103	
Pennington Street NB 1st stop line	↑	B	2,3	3.800	5			30%	31%	1830	1825	316	0.173	0.173	303	0.166	
	↑	B	2,3	3.800						1995	1995	344	0.172		332	0.166	0.166
Pennington Street NB 2nd stop line	↰	E	1,2,4	5.000	10					1840	1840	470	0.255		475	0.258	
	↱	F	1,2,3	3.500		10				1830	1830	321	0.175		318	0.174	
	↱	F	1,2,3	3.500		6.5				1595	1595	279	0.175		277	0.174	
Pedestrian Crossing		Cp	1,4	MIN GREEN + FLASH =			8	+	8	=	16						
		Dp	2,3	MIN GREEN + FLASH =			8	+	14	=	22						
		Gp	4	MIN GREEN + FLASH =			7	+	7	=	14						
		Hp	3	MIN GREEN + FLASH =			6	+	6	=	12						

Notes:

* = Site factor of 0.5 is adopted for bus stop at upstream

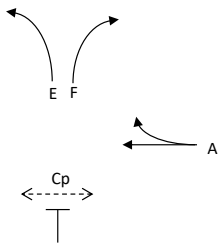
Flow: (pcu/hr)



Group	Cp,B	A,B	Group	Cp,B	A,B
y	0.173	0.271	y	0.166	0.270
L (sec)	24	14	L (sec)	24	14
C (sec)	120	120	C (sec)	100	100
y pract.	0.720	0.795	y pract.	0.684	0.774
R.C. (%)	317%	193%	R.C. (%)	311%	187%

Stage / Phase Diagrams

1.



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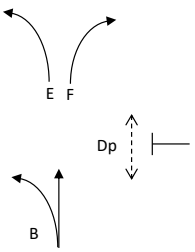

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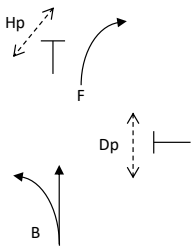

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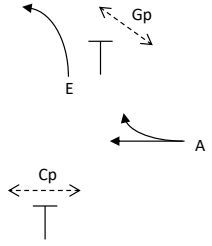


5.

I/G=		I/G= 8		I/G=		I/G= 8		I/G=			
I/G=		I/G= 8		I/G=		I/G= 8		I/G=			

Date: FEB, 2022 **Junction:** (J11) Pennington Street / Jardine's Bazaar / Irving Street

TRAFFIC SIGNALS CALCULATION

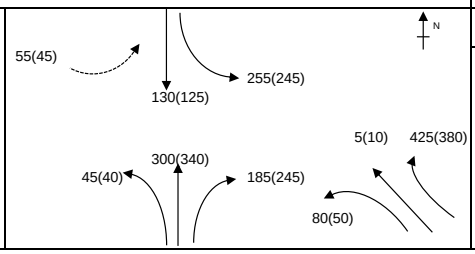
Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Link Road / Broadwood Road Design Year: 2031

Description: 2031 Reference Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Link Road		A	1	3.500	80			66%	66%	1940	1940	385	0.198	0.198	370	0.191	0.191
Broadwoord Road (E)		B	1,2	3.000	15			13%	11%	1890	1895	345	0.183		380	0.201	
		E	2	3.000		8				1730	1730	185	0.107	0.107	245	0.142	0.142
Broadwoord Road (W)		C	3	3.500	5	60		16% / 83%	11% / 86%	1840	1860	510	0.277	0.277	440	0.237	0.237
Leighton Hill Road		Priority Junction															
Pedestrian Crossing		Dp	4	MIN GREEN + FLASH =			5	+	7	=	12			*			*

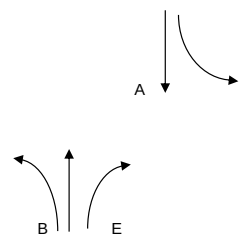
Notes:



Group	A,E,C	A,E,C,Dp	Group	A,E,C	A,E,C,Dp
y	0.583	0.583	y	0.569	0.569
L (sec)	16	27	L (sec)	16	27
C (sec)	140	140	C (sec)	135	135
y pract.	0.797	0.726	y pract.	0.793	0.720
R.C. (%)	37%	25%	R.C. (%)	39%	27%

Stage / Phase Diagrams

1.



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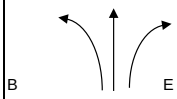

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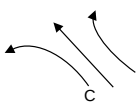


4.



5.

I/G= 4		I/G= 3		I/G= 8		I/G= 3	12	I/G=	
I/G= 4		I/G= 3		I/G= 8		I/G= 3	12	I/G=	

Date: FEB, 2022 **Junction:** (J12) Link Road / Broadwood Road

TRAFFIC SIGNALS CALCULATION

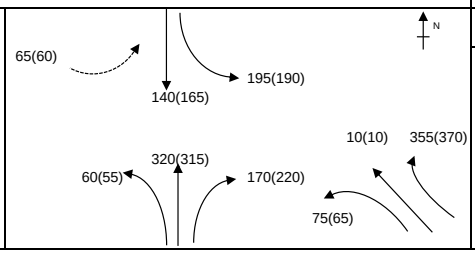
Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Link Road / Broadwood Road Design Year: 2031

Description: 2031 Reference Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Link Road		A	1	3.500	80			58%	54%	1945	1945	335	0.172	0.172	355	0.183	0.183
Broadwoord Road (E)		B	1,2	3.000	15			16%	15%	1885	1885	380	0.202		370	0.196	
		E	2	3.000		8				1730	1730	170	0.098	0.098	220	0.127	0.127
Broadwoord Road (W)		C	3	3.500	5	60		17% / 81%	15% / 83%	1835	1845	440	0.240	0.240	445	0.241	0.241
Leighton Hill Road		Priority Junction															
Pedestrian Crossing		Dp	4	MIN GREEN + FLASH =			5	+	7	=	12			*			*

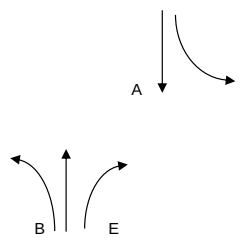
Notes:



Group	A,E,C	A,E,C,Dp	Group	A,E,C	A,E,C,Dp
y	0.510	0.510	y	0.551	0.551
L (sec)	16	27	L (sec)	16	27
C (sec)	110	110	C (sec)	110	110
y pract.	0.769	0.679	y pract.	0.769	0.679
R.C. (%)	51%	33%	R.C. (%)	40%	23%

Stage / Phase Diagrams

1.



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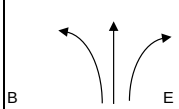

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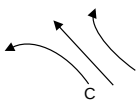


4.



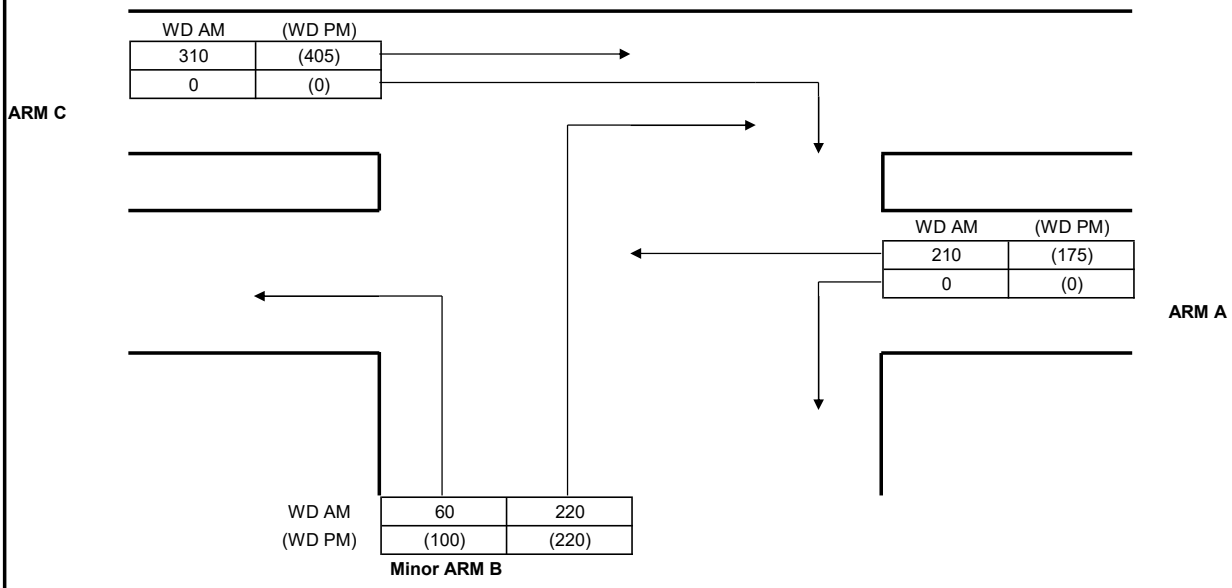
5.

I/G= 4		I/G= 3		I/G= 8		I/G= 3	12	I/G=	
I/G= 4		I/G= 3		I/G= 8		I/G= 3	12	I/G=	

Date: FEB, 2022 **Junction:** J12 Link Road / Broadwood Road

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Broadwood Road / Ventris Road			Ref. No.:	J13
Scheme:	2031 Reference Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Broadwood Road				
ARM B:	Ventris Road				
ARM C:	Broadwood Road				



GEOMETRY					
Major road width	W	5.50	Lane widths	w(b-a)	3.00
Central Reserve width	Wcr	0.00		w(b-c)	3.00
2 Lane Minor Arm (Y/N)		Y		w(c-b)	5.00
Visibilities	Vr(b-a)	15	Calculated	D	0.78
	Vl(b-a)	15		E	0.87
	Vr(b-c)	40		F	1.06
	Vr(c-b)	50		Y	0.81

ANALYSIS			WD AM PEAK	(WD PM) PEAK
TRAFFIC FLOWS	q(c-a)		310	405
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		210	175
	q(b-a)		220	220
	q(b-c)		60	100
	f		0.21	0.31
		Factor		
CAPACITIES	Q(b-a)	1	397	391
	Q(b-c)	1	595	604
	Q(c-b)	1	721	732
	Q(b-ac)	1	428	440
RFC's	b-a		0.554	0.563
	b-c		0.101	0.166
	c-b		0.000	0.000
	b-ac		0.000	0.000
Worst RFC			**0.554**	**0.563**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

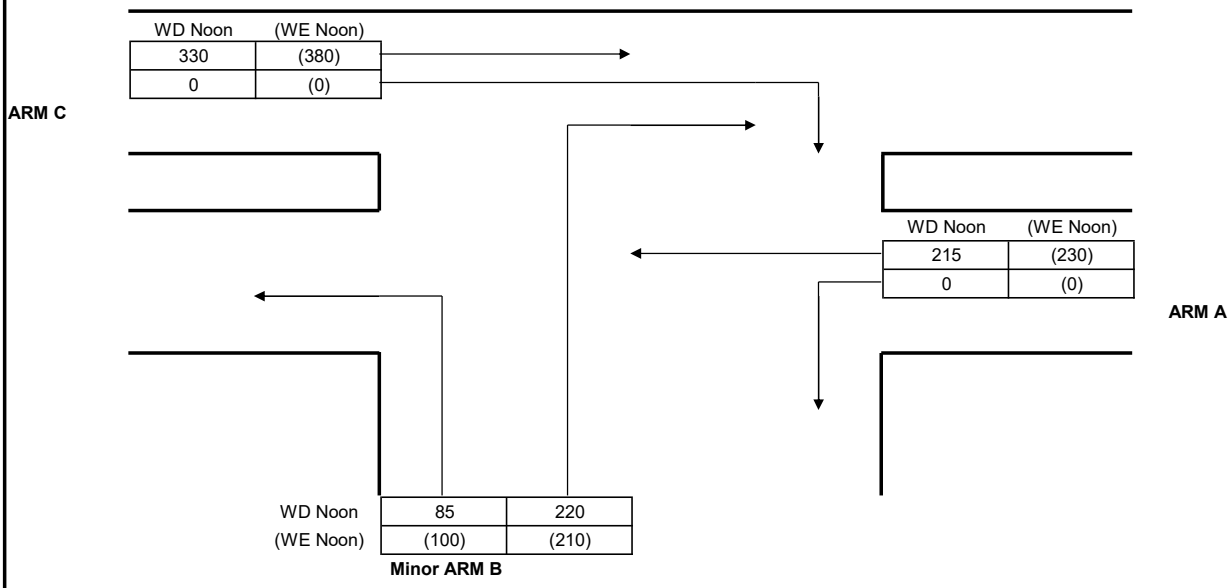
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Feb-22	Checked by:	CHC

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Broadwood Road / Ventris Road			Ref. No.:	J13
Scheme:	2031 Reference Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Broadwood Road				
ARM B:	Ventris Road				
ARM C:	Broadwood Road				



GEOMETRY					
Major road width	W	6.50	Lane widths	w(b-a)	3.00
Central Reserve width	Wcr	0.00		w(b-c)	3.00
2 Lane Minor Arm (Y/N)		Y		w(c-b)	5.00
Visibilities	Vr(b-a)	15	Calculated	D	0.78
	Vl(b-a)	15		E	0.87
	Vr(b-c)	40		F	1.06
	Vr(c-b)	50		Y	0.78

ANALYSIS			WD Noon PEAK	(WE Noon) PEAK
TRAFFIC FLOWS	q(c-a)		330	380
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		215	230
	q(b-a)		220	210
	q(b-c)		85	100
	f		0.28	0.32
		Factor		
CAPACITIES	Q(b-a)	1	397	386
	Q(b-c)	1	596	593
	Q(c-b)	1	723	718
	Q(b-ac)	1	438	435
RFC's	b-a		0.554	0.544
	b-c		0.143	0.169
	c-b		0.000	0.000
	b-ac		0.000	0.000
Worst RFC			**0.554**	**0.544**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Feb-22	Checked by:	CHC

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

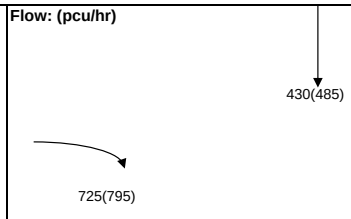
Junction: Wong Nai Chung Road / Sports Road Design Year: 2031

Description: 2031 Reference Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Sports Road	→	A	1	3.800		10				1735	1735	344	0.198		377	0.217	
EB	→	A	1	3.800		13.5				1920	1920	381	0.198	0.198	418	0.218	0.218
Wong Nai Chung Road SB	↓	B	2	3.000						1915	1915	140	0.073	0.073	158	0.083	0.083
	↓	B	2	3.000						2055	2055	150	0.073		169	0.082	
	↓	B	2	3.000						1915	1915	140	0.073		158	0.083	
Pedestrian Crossing		Cp	1	MIN GREEN + FLASH =			8	+	9	=	17						
		Dp	2	MIN GREEN + FLASH =			8	+	9	=	17						

Notes:

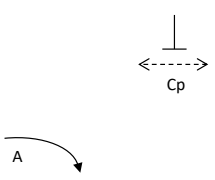
Flow: (pcu/hr)



Group	A,Dp	A,B	Group	A,Dp	A,B
y	0.198	0.272	y	0.218	0.300
L (sec)	27	10	L (sec)	27	10
C (sec)	90	90	C (sec)	90	90
y pract.	0.630	0.800	y pract.	0.630	0.800
R.C. (%)	217%	195%	R.C. (%)	189%	166%

Stage / Phase Diagrams

1.



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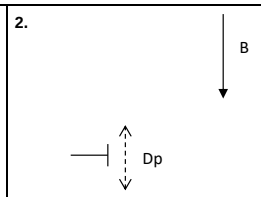

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5.

I/G= 6		I/G= 6		I/G=		I/G=	
I/G= 6		I/G= 6		I/G=		I/G=	

Date: FEB, 2022 **Junction:** J14 Wong Nai Chung Road / Sports Road

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

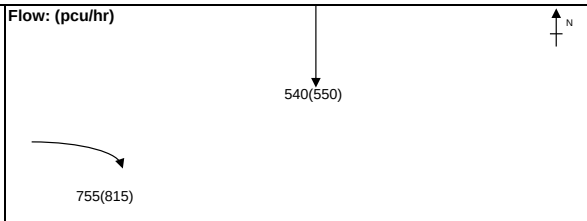
Junction: Wong Nai Chung Road / Sports Road Design Year: 2031

Description: 2031 Reference Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Sports Road	↱	A	1	3.800		10				1735	1735	358	0.206		387	0.223	0.223
EB	↱	A	1	3.800		13.5				1920	1920	397	0.207	0.207	428	0.223	
Wong Nai Chung Road SB	↓	B	2	3.000						1915	1915	176	0.092	0.092	179	0.093	0.093
	↓	B	2	3.000						2055	2055	188	0.091		192	0.093	
	↓	B	2	3.000						1915	1915	176	0.092		179	0.093	
Pedestrian Crossing		Cp	1	MIN GREEN + FLASH =			8	+	9	=	17						
		Dp	2	MIN GREEN + FLASH =			8	+	9	=	17						

Notes:

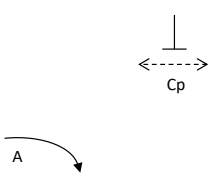
Flow: (pcu/hr)



Group	A,Dp	A,B	Group	A,Dp	A,B
y	0.207	0.299	y	0.223	0.317
L (sec)	27	10	L (sec)	27	10
C (sec)	75	75	C (sec)	75	75
y pract.	0.576	0.780	y pract.	0.576	0.780
R.C. (%)	179%	161%	R.C. (%)	158%	146%

Stage / Phase Diagrams

1.



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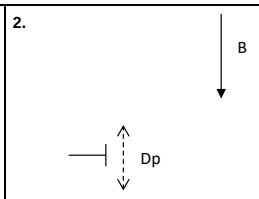


3.

4.

5.

I/G= 6		I/G= 6		I/G=		I/G=	
I/G= 6		I/G= 6		I/G=		I/G=	

Date: FEB, 2022 **Junction:** J14 Wong Nai Chung Road / Sports Road

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Wong Nai Chung Road Design Year: 2031

Description: 2031 Reference Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Leighton Road WB		A	1	3.500	20					1830	1830	308	0.168		329	0.180	
	*	A	1	3.500	25					395	395	67	0.170		71	0.180	
Leighton Road WB (Tram)	*	B	2	3.000	40					370	370	50	0.135	0.135	65	0.176	0.176
Leighton Road WB	***	A	1	3.000						1530	1530	686	0.448		670	0.438	
	*	A	1	3.000						410	410	184	0.449	0.449	180	0.439	0.439
Leighton Road EB	*	A	1	3.500						395	395	109	0.276		100	0.253	
	**	A	1	3.000						1030	1030	286	0.278		260	0.252	
	**	A	1	3.000						1030	1030	285	0.277		260	0.252	
Pedestrian Crossing		Cp	2	MIN GREEN + FLASH =			10	+ 9	=	19							
		Dp	2	MIN GREEN + FLASH =			7	+ 7	=	14							

Notes:

TAC junction: Cycle time of 130s and 120s are adopted for AM and PM Peak

* = Site Factor of 0.2 has been adopted.

** = Site Factor of 0.5 has been adopted.

*** = Site Factor of 0.8 has been adopted.

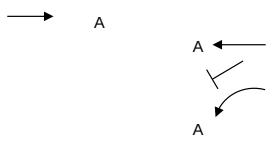
Flow: (pcu/hr)



Group	A,Cp	A,B	Group	A,Cp	A,B
y	0.449	0.584	y	0.439	0.615
L (sec)	30	12	L (sec)	30	12
C (sec)	130	130	C (sec)	120	120
y pract.	0.692	0.817	y pract.	0.675	0.810
R.C. (%)	54%	40%	R.C. (%)	54%	32%

Stage / Phase Diagrams

1.



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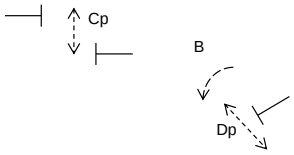

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I/G= 7		I/G= 7		I/G=		I/G=	
I/G= 7		I/G= 7		I/G=		I/G=	

Date: FEB, 2022 **Junction:** J15 Leighton Road / Wong Nai Chung Road

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Wong Nai Chung Road Design Year: 2031

Description: 2031 Reference Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Leighton Road		A	1	3.500	20					1830	1830	387	0.211		411	0.225	
WB	*	A	1	3.500	25					395	395	83	0.210		89	0.225	
Leighton Road WB (Tram)	*	B	2	3.000	40					370	370	60	0.162	0.162	60	0.162	0.162
Leighton Road	***	A	1	3.000						1530	1530	670	0.438		655	0.428	0.428
WB	*	A	1	3.000						410	410	180	0.439	0.439	175	0.427	
Leighton Road	*	A	1	3.500						395	395	129	0.327		116	0.294	
EB	**	A	1	3.000						1030	1030	335	0.325		302	0.293	
	**	A	1	3.000						1030	1030	336	0.326		302	0.293	
Pedestrian Crossing		Cp	2	MIN GREEN + FLASH =			10	+	9	=	19						
		Dp	2	MIN GREEN + FLASH =			7	+	7	=	14						

Notes:

TAC junction: Cycle time of 120s and 120s are adopted for WD and WE Noon

* = Site Factor of 0.2 has been adopted.

** = Site Factor of 0.5 has been adopted.

*** = Site Factor of 0.8 has been adopted.

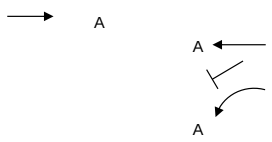
Flow: (pcu/hr)



Group	A,Cp	A,B	Group	A,Cp	A,B
y	0.439	0.601	y	0.428	0.590
L (sec)	30	12	L (sec)	30	12
C (sec)	120	120	C (sec)	120	120
y pract.	0.675	0.810	y pract.	0.675	0.810
R.C. (%)	54%	35%	R.C. (%)	58%	37%

Stage / Phase Diagrams

1.



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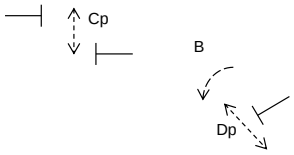


3.

4.

5.

I/G= 7		I/G= 7		I/G=		I/G=		I/G=	
I/G= 7		I/G= 7		I/G=		I/G=		I/G=	

Date: FEB, 2022 **Junction:** J15 Leighton Road / Wong Nai Chung Road

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Tung Lo Wan Road / Eastern Hospital Road Design Year: 2031

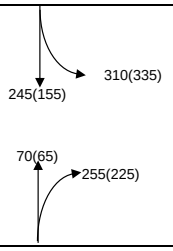
Description: 2031 Reference Flows Designed By: LYK Checked By: CHC

Approach	Movements		Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Tung Lo Wan Road SB	↳	*	A	1	3.300	25					1285	1285	215	0.167		191	0.149	
	↓		A	1	3.000	30			28%	48%	2025	2005	340	0.168	0.168	299	0.149	0.149
Ka Ning Path NB	↑		B	2	3.500		10		78%	78%	1760	1760	325	0.185	0.185	290	0.165	0.165
Pedestrian Crossing			Cp	3	MIN GREEN + FLASH =			7	+	8	=	15						
			Dp	3	MIN GREEN + FLASH =			8	+	14	=	22			*			*

Notes:

* = Site factor of 0.7 is adopted for the bus stop at downstream

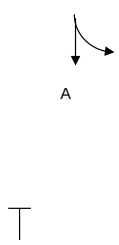
Flow: (pcu/hr)



Group	A,B,Cp	A,B,Dp	Group	A,B,Cp	A,B,Dp
y	0.353	0.353	y	0.314	0.314
L (sec)	31	34	L (sec)	31	34
C (sec)	100	100	C (sec)	105	105
y pract.	0.621	0.594	y pract.	0.634	0.609
R.C. (%)	76%	68%	R.C. (%)	102%	94%

Stage / Phase Diagrams

1.



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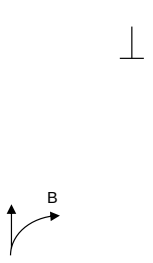

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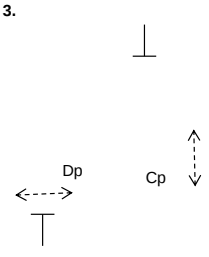

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I/G= 4		I/G= 5		I/G= 5	22	I/G=		I/G=	
I/G= 4		I/G= 5		I/G= 5	22	I/G=		I/G=	

Date: FEB, 2022 **Junction:** J16 Tung Lo Wan Road / Eastern Hospital Road

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Tung Lo Wan Road / Eastern Hospital Road Design Year: 2031

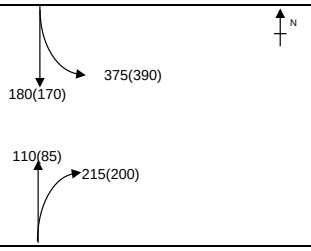
Description: 2031 Reference Flows Designed By: LYK Checked By: CHC

Approach	Movements		Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Tung Lo Wan Road SB	↳	*	A	1	3.300	25					1285	1285	217	0.169	0.169	219	0.170	0.170
	↓		A	1	3.000	30			47%	50%	2010	2005	338	0.168		341	0.170	
Ka Ning Path NB	↑		B	2	3.500		10		66%	70%	1790	1780	325	0.182	0.182	285	0.160	0.160
Pedestrian Crossing			Cp	3	MIN GREEN + FLASH =			7	+	8	=	15						
			Dp	3	MIN GREEN + FLASH =			8	+	14	=	22			*			*

Notes:

* = Site factor of 0.7 is adopted for the bus stop at downstream

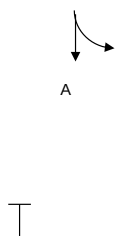
Flow: (pcu/hr)



Group	A,B,Cp	A,B,Dp	Group	A,B,Cp	A,B,Dp
y	0.350	0.350	y	0.331	0.331
L (sec)	31	34	L (sec)	31	34
C (sec)	95	95	C (sec)	105	105
y pract.	0.606	0.578	y pract.	0.634	0.609
R.C. (%)	73%	65%	R.C. (%)	92%	84%

Stage / Phase Diagrams

1.



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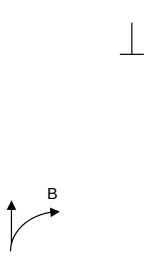

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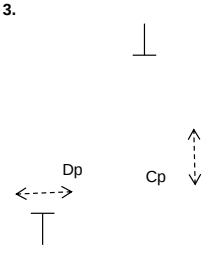


4.

5.

I/G= 4		I/G= 5		I/G= 5	22	I/G=	I/G=
I/G= 4		I/G= 5		I/G= 5	22	I/G=	I/G=

Date: FEB, 2022 **Junction:** J16 Tung Lo Wan Road / Eastern Hospital Road

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

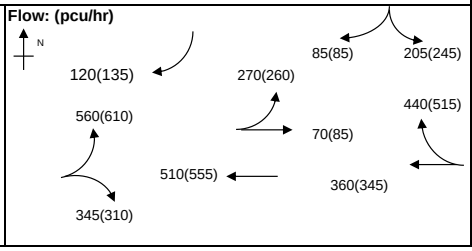
Junction: Tung Lo Wan Road / Moreton Terrace Design Year: 2031

Description: 2031 Reference Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) AM	Pro. Turning (%) PM	Revised Saturation Flow (pcu/hr) AM	Revised Saturation Flow (pcu/hr) PM	AM Peak Flow (pcu/hr)	AM Peak y Value	AM Peak Critical y	PM Peak Flow (pcu/hr)	PM Peak y Value	PM Peak Critical y
Tung Lo Wan Road WB	←	C	2	3.000						1915	1915	246	0.128		268	0.140	
	←	C	2	3.000						2055	2055	264	0.128		287	0.140	
Tung Lo Wan Road EB	↱	A	1	3.700	8					1670	1670	429	0.257		438	0.262	0.262
	↑	A	1	3.500	13	35		28% / 72%	36% / 64%	1850	1840	476	0.257	0.257	482	0.262	
Moreton Terrace PTI	↲	F	3	5.000		27				2005	2005	120	0.060		135	0.067	
Tung Lo Wan Road WB	←	E	2,3	3.700						1985	1985	360	0.181		345	0.174	
	↰	E	2,3	3.000		8		100%	100%	1535	1535	440	0.287	0.287	515	0.336	0.336
Tung Lo Wan Road EB	↱	E	2,3	5.000	13			79%	75%	1935	1945	340	0.176		345	0.177	
Tung Lo Wan Drive SB	↳	B	1	3.500	8	12		71% / 29%	74% / 26%	1680	1675	290	0.173		330	0.197	
Pedestrian Crossing		Dp	2,3	MIN GREEN + FLASH =			8	+	8	=	16						
		Gp	3	MIN GREEN + FLASH =			9	+	8	=	17						

Notes:

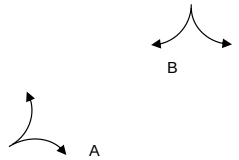
Flow: (pcu/hr)



Group	A,C,F	A,E	Group	A,C,F	A,E
y	0.446	0.544	y	0.470	0.598
L (sec)	19	12	L (sec)	19	12
C (sec)	100	100	C (sec)	105	105
y pract.	0.729	0.792	y pract.	0.737	0.797
R.C. (%)	64%	46%	R.C. (%)	57%	33%

Stage / Phase Diagrams

1.



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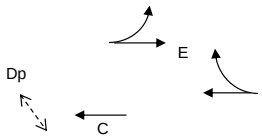

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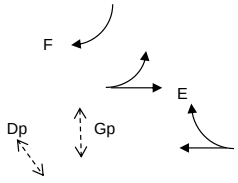


4.

5.

I/G= 7		I/G= 7		I/G=		I/G=		I/G=	
I/G= 7		I/G= 7		I/G=		I/G=		I/G=	

Date: FEB, 2022 **Junction:** (J17) Tung Lo Wan Road / Moreton Terrace

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

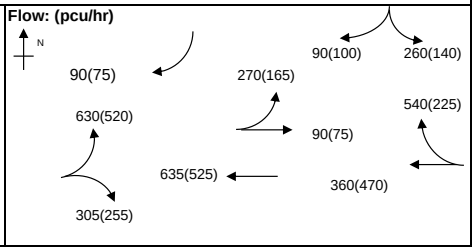
Junction: Tung Lo Wan Road / Moreton Terrace Design Year: 2031

Description: 2031 Reference Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Tung Lo Wan Road WB	←	C	2	3.000						1915	1915	306	0.160		253	0.132	
	←	C	2	3.000						2055	2055	329	0.160		272	0.132	0.132
Tung Lo Wan Road EB	↱	A	1	3.700	8					1670	1670	445	0.266		369	0.221	
	↱↑	A	1	3.500	13	35		38% / 62%	37% / 63%	1835	1835	490	0.267	0.267	406	0.221	0.221
Moreton Terrace PTI	↲	F	3	5.000		27				2005	2005	90	0.045		75	0.037	
Tung Lo Wan Road WB	←	E	2,3	3.700						1985	1985	360	0.181		384	0.193	
	←↑	E	2,3	3.000		8		100%	72%	1535	1605	540	0.352	0.352	311	0.194	
Tung Lo Wan Road EB	↑→	E	2,3	5.000	13			75%	69%	1945	1960	360	0.185		240	0.122	
Tung Lo Wan Drive SB	↓→	B	1	3.500	8	12		74% / 26%	58% / 42%	1675	1690	350	0.209		240	0.142	
Pedestrian Crossing		Dp	2,3	MIN GREEN + FLASH =			8	+	8	=	16						
		Gp	3	MIN GREEN + FLASH =			9	+	8	=	17						*

Notes:

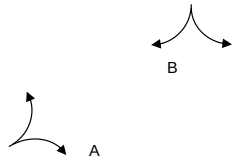
Flow: (pcu/hr)



Group	A,C,Gp	A,E	Group	A,C,F	A,C,Gp
y	0.427	0.619	y	0.391	0.354
L (sec)	29	12	L (sec)	19	29
C (sec)	95	95	C (sec)	105	105
y pract.	0.625	0.786	y pract.	0.737	0.651
R.C. (%)	46%	27%	R.C. (%)	89%	84%

Stage / Phase Diagrams

1.



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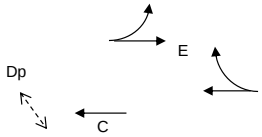

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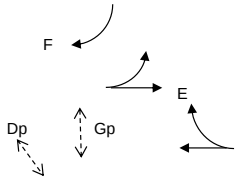


4.

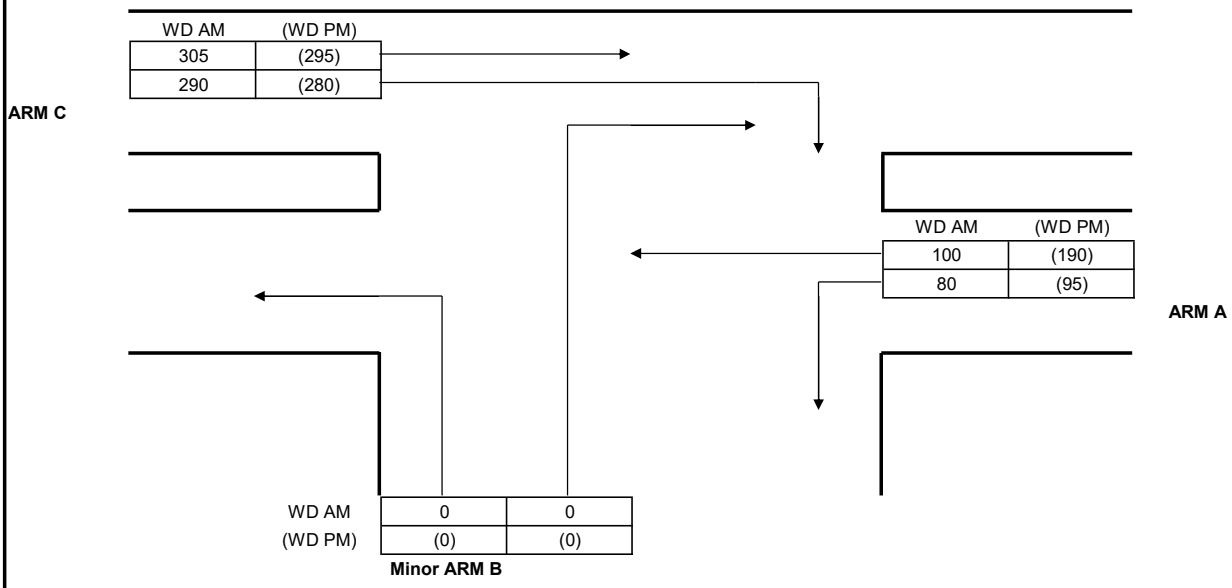
5.

I/G= 7		I/G= 7		I/G=		I/G=		I/G=	
I/G= 2		I/G= 7		I/G= 5	17	I/G=		I/G=	

Date: FEB, 2022 **Junction:** J17 Tung Lo Wan Road / Moreton Terrace

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Hysan Avenue / Hoi Ping Road			Ref. No.:	J19
Scheme:	2021 Observed Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Hysan Avenue				
ARM B:	Hoi Ping Road				
ARM C:	Hysan Avenue				



GEOMETRY					
Major road width	W	10.00	Lane widths	w(b-a)	0.00
Central Reserve width	Wcr	0.00		w(b-c)	0.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.30
Visibilities	Vr(b-a)	20	Calculated	D	0.55
	Vl(b-a)	20		E	0.60
	Vr(b-c)	20		F	0.95
	Vr(c-b)	100		Y	0.66

ANALYSIS			WD AM PEAK	(WD PM) PEAK
TRAFFIC FLOWS	q(c-a)		305	295
	q(c-b)		290	280
	q(a-b)		80	95
	q(a-c)		100	190
	q(b-a)		0	0
	q(b-c)		0	0
	f		0.00	0.00
		Factor		
CAPACITIES	Q(b-a)	1	249	239
	Q(b-c)	1	427	413
	Q(c-b)	1	667	643
	Q(b-ac)	1	249	239
RFC's	b-a		0.000	0.000
	b-c		0.000	0.000
	c-b		0.435	0.435
	b-ac		0.000	0.000
Worst RFC			**0.435**	**0.435**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

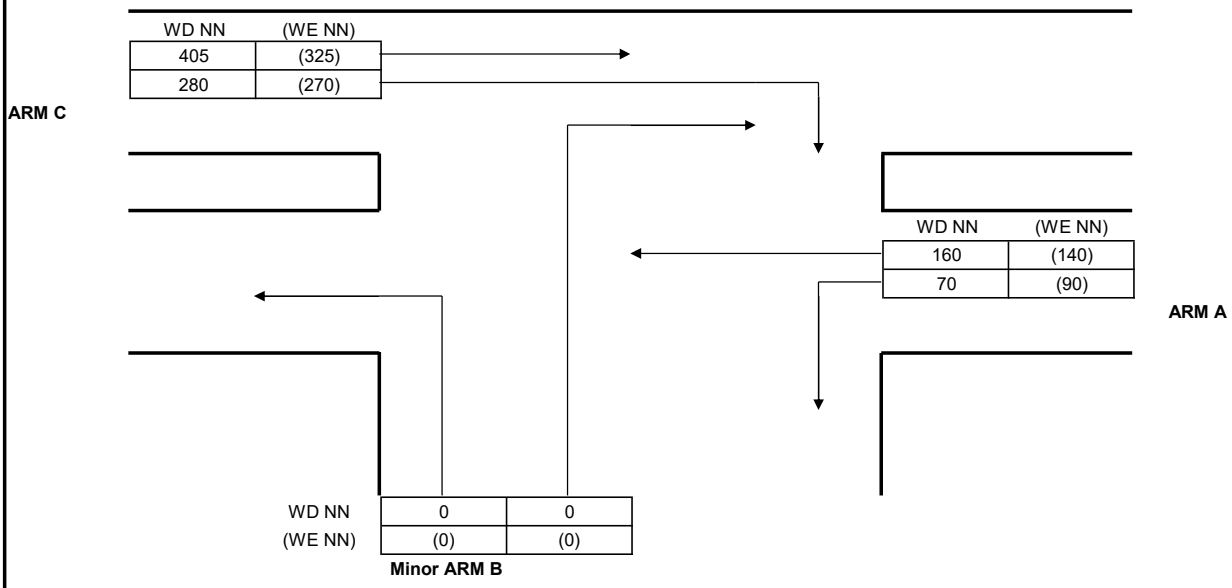
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Feb-22	Checked by:	CHC

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Hysan Avenue / Hoi Ping Road			Ref. No.:	J19
Scheme:	2021 Observed Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Hysan Avenue				
ARM B:	Hoi Ping Road				
ARM C:	Hysan Avenue				



GEOMETRY

Major road width	W	10.00	Lane widths	w(b-a)	0.00
Central Reserve width	Wcr	0.00		w(b-c)	0.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.30
Visibilities	Vr(b-a)	20	Calculated	D	0.55
	Vl(b-a)	20		E	0.60
	Vr(b-c)	20		F	0.95
	Vr(c-b)	100		Y	0.66

ANALYSIS

		Factor	WD NN PEAK	(WE NN) PEAK
TRAFFIC FLOWS	q(c-a)		405	325
	q(c-b)		280	270
	q(a-b)		70	90
	q(a-c)		160	140
	q(b-a)		0	0
	q(b-c)		0	0
	f		0.00	0.00
CAPACITIES	Q(b-a)	1	235	245
	Q(b-c)	1	419	420
	Q(c-b)	1	655	655
	Q(b-ac)	1	235	245
RFC's	b-a		0.000	0.000
	b-c		0.000	0.000
	c-b		0.427	0.412
	b-ac		0.000	0.000
Worst RFC			**0.427**	**0.412**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

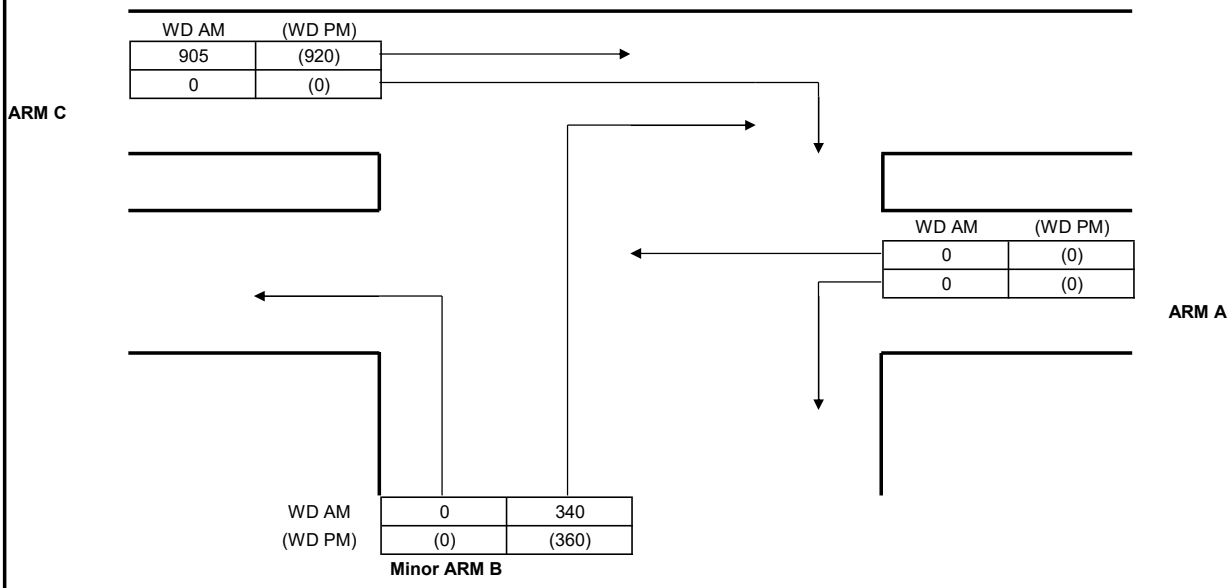
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Feb-22	Checked by:	CHC

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Tung Lo Wan Road / Tai Hang Road			Ref. No.:	J20
Scheme:	2031 Reference Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Tung Lo Wan Road				
ARM B:	Tai Hang Road				
ARM C:	Tung Lo Wan Road				



GEOMETRY

Major road width	W	6.70	Lane widths	w(b-a)	6.70
Central Reserve width	Wcr	0.00		w(b-c)	0.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	20	Calculated	D	1.08
	Vl(b-a)	20		E	0.60
	Vr(b-c)	30		F	0.59
	Vr(c-b)	10		Y	0.77

ANALYSIS

		Factor	WD AM PEAK	(WD PM) PEAK
TRAFFIC FLOWS	q(c-a)		905	920
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		0	0
	q(b-a)		340	360
	q(b-c)		0	0
	f		0.00	0.00
CAPACITIES	Q(b-a)	1	505	502
	Q(b-c)	1	450	450
	Q(c-b)	1	441	441
	Q(b-ac)	1	505	502
RFC's	b-a		0.673	0.717
	b-c		0.000	0.000
	c-b		0.000	0.000
	b-ac		0.673	0.717
Worst RFC			**0.673**	**0.717**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

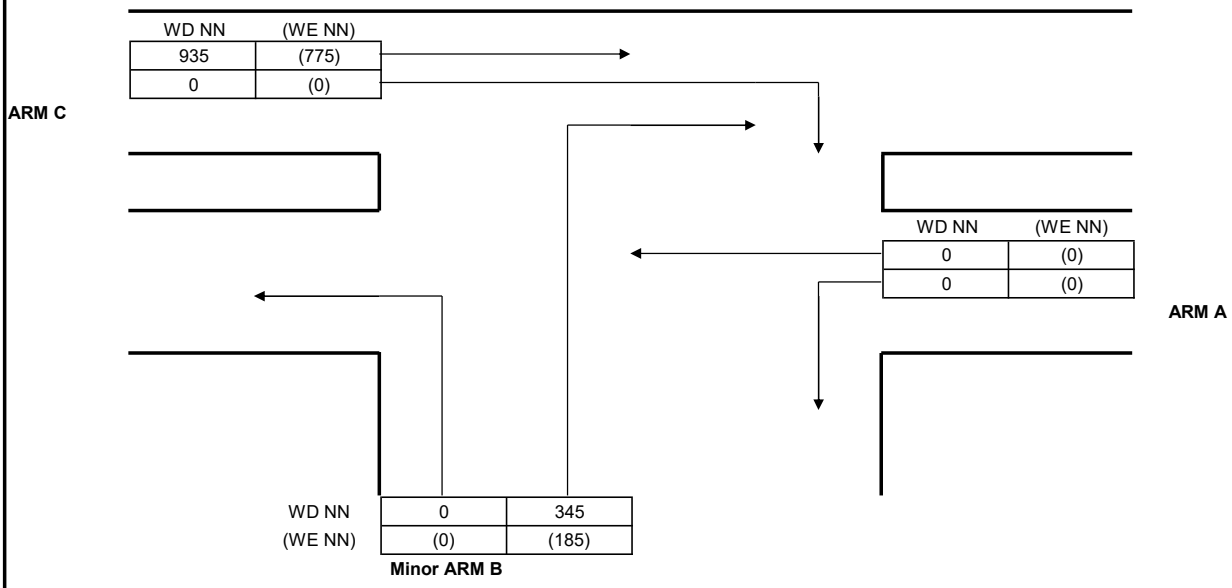
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Feb-22	Checked by:	CHC

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Tung Lo Wan Road / Tai Hang Road			Ref. No.:	J20
Scheme:	2031 Reference Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Tung Lo Wan Road				
ARM B:	Tai Hang Road				
ARM C:	Tung Lo Wan Road				



GEOMETRY					
Major road width	W	6.70	Lane widths	w(b-a)	6.70
Central Reserve width	Wcr	0.00		w(b-c)	0.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	20	Calculated	D	1.08
	Vl(b-a)	20		E	0.60
	Vr(b-c)	30		F	0.59
	Vr(c-b)	10		Y	0.77

ANALYSIS			WD NN PEAK	(WE NN) PEAK
TRAFFIC FLOWS	q(c-a)		935	775
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		0	0
	q(b-a)		345	185
	q(b-c)		0	0
	f		0.00	0.00
		Factor		
CAPACITIES	Q(b-a)	1	499	530
	Q(b-c)	1	450	450
	Q(c-b)	1	441	441
	Q(b-ac)	1	499	530
RFC's	b-a		0.691	0.349
	b-c		0.000	0.000
	c-b		0.000	0.000
	b-ac		0.691	0.349
Worst RFC			**0.691**	**0.349**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Feb-22	Checked by:	CHC

Year 2031 Design

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Hennessy Road / Percival Street Design Year: 2031

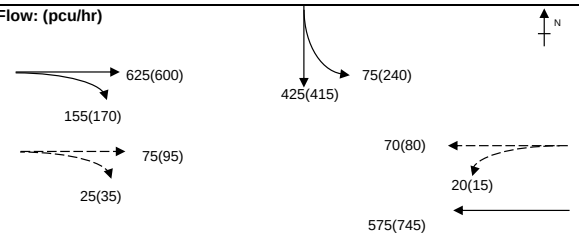
Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Hennessy Road WB	← *	A	1	3.800						1495	1495	237	0.159		308	0.206	0.206
	←	A	1	3.700						2125	2125	338	0.159	0.159	437	0.206	
Hennessy Road WB (Tram)	↓	D	2	3.000	20					1780	1780	20	0.011		15	0.008	
	←	A	1	3.000						2055	2055	70	0.034		80	0.039	
Hennessy Road EB	→ **	B	1,2,3	3.000						960	960	199	0.207		191	0.199	
	→	B	1,2,3	3.000						2055	2055	426	0.207		409	0.199	
	↘	C	2,3	3.000		25				1940	1940	155	0.080	0.080	170	0.088	0.088
Hennessy Road EB (Tram)	→	B	1,2,3	3.000						1915	1915	75	0.039		95	0.050	
	↓	C	2,3	3.000		25				1940	1940	25	0.013		35	0.018	
Percival Street SB	↳	E	4	3.300	10					1690	1690	75	0.044		240	0.142	0.142
	↓	E	4	3.300						2085	2085	211	0.101		207	0.099	
	↓	E	4	3.500						2105	2105	214	0.102	0.102	208	0.099	
Pedestrian Crossing		Fp	4	MIN GREEN + FLASH =	12	+	14	=	26								
		Gp	1	MIN GREEN + FLASH =	5	+	7	=	12								

Notes:

* = Site factor of 0.75 has been adopted.
** = Site factor of 0.5 has been adopted.

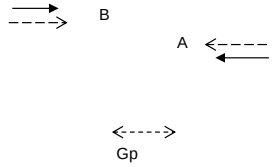
Flow: (pcu/hr)



Group	A,C,Fp	A,C,E	Group	A,C,Fp	A,C,E
y	0.239	0.341	y	0.294	0.436
L (sec)	46	19	L (sec)	46	19
C (sec)	120	120	C (sec)	120	120
y pract.	0.555	0.758	y pract.	0.555	0.758
R.C. (%)	132%	122%	R.C. (%)	89%	74%

Stage / Phase Diagrams

1.



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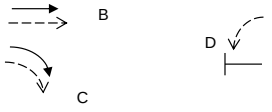

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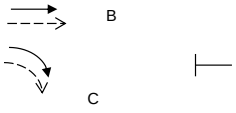

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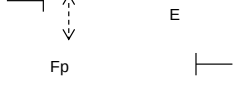


5.

I/G= 6		I/G= 8		I/G=		I/G= 8		I/G=	
I/G= 6		I/G= 8		I/G=		I/G= 8		I/G=	

Date: FEB, 2022 **Junction:** (J1) Hennessy Road / Percival Street

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Hennessy Road / Percival Street Design Year: 2031

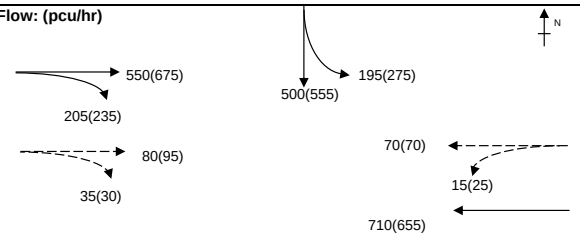
Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Hennessy Road WB	← *	A	1	3.800						1495	1495	293	0.196		271	0.181	0.181
	←	A	1	3.700						2125	2125	417	0.196	0.196	384	0.181	
Hennessy Road WB (Tram)	↓	D	2	3.000	20					1780	1780	15	0.008		25	0.014	
	←	A	1	3.000						2055	2055	70	0.034		70	0.034	
Hennessy Road EB	→ **	B	1,2,3	3.000						960	960	175	0.182		215	0.224	
	→	B	1,2,3	3.000						2055	2055	375	0.182		460	0.224	
	↘	C	2,3	3.000		25				1940	1940	205	0.106	0.106	235	0.121	0.121
Hennessy Road EB (Tram)	→	B	1,2,3	3.000						1915	1915	80	0.042		95	0.050	
	↓	C	2,3	3.000		25				1940	1940	35	0.018		30	0.015	
Percival Street SB	↳	E	4	3.300	10					1690	1690	195	0.115		275	0.163	0.163
	↓	E	4	3.300						2085	2085	249	0.119		276	0.132	
	↓	E	4	3.500						2105	2105	251	0.119		279	0.133	
Pedestrian Crossing		Fp	4	MIN GREEN + FLASH =			12	+	14	=	26			*			
		Gp	1	MIN GREEN + FLASH =			5	+	7	=	12						

Notes:

* = Site factor of 0.75 has been adopted.
** = Site factor of 0.5 has been adopted.

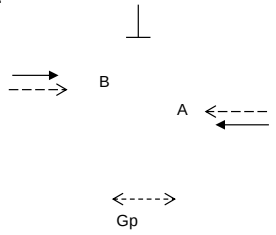
Flow: (pcu/hr)



Group	A,C,E	A,C,Fp	Group	A,C,Fp	A,C,E
y	0.421	0.302	y	0.302	0.465
L (sec)	19	46	L (sec)	46	19
C (sec)	104	104	C (sec)	104	104
y pract.	0.736	0.502	y pract.	0.502	0.736
R.C. (%)	75%	66%	R.C. (%)	66%	58%

Stage / Phase Diagrams

1.



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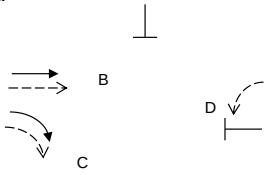

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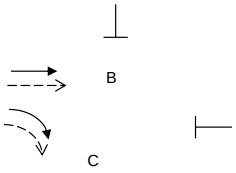

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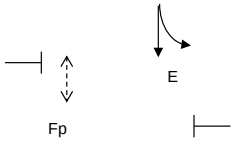


5.

I/G= 4		I/G= 8		I/G=		I/G= 10	26
I/G= 6		I/G= 8		I/G=		I/G= 8	

I/G=	
I/G=	

Date: FEB, 2022 **Junction:** (J1) Hennessy Road / Percival Street

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Matheson Street / Percival Street / Russell Street Design Year: 2031

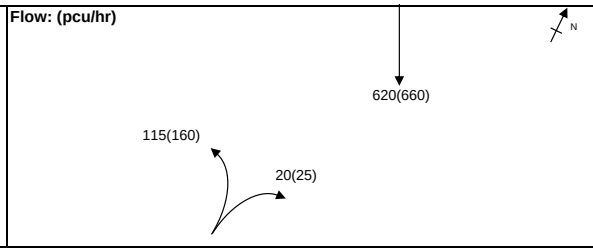
Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Percival Street	↓	A	1	3.600						1975	1975	310	0.157	0.157	330	0.167	0.167
SB	↓	A	1	3.600						1975	1975	310	0.157		330	0.167	
Matheson Street	↰	B	2	3.300	10					1690	1690	67	0.040		91	0.054	
NB	↰↑	B	2	3.300	13.3	10		71% / 29%	73% / 27%	1730	1730	68	0.039		94	0.054	
Pedestrian Crossing		Cp	1,3	MIN GREEN + FLASH =			9	+	10	=	19						
		Dp	2,3	MIN GREEN + FLASH =			6	+	6	=	12			*			*

Notes:

TAC junction: Cycle time of 105s and 120s are adopted for AM and PM Peak

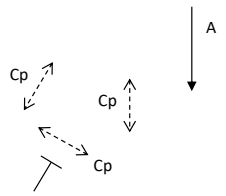
Flow: (pcu/hr)



Group	Cp,B	A,Dp	Group	Cp,B	A,Dp
y	0.040	0.157	y	0.054	0.167
L (sec)	30	23	L (sec)	30	23
C (sec)	105	105	C (sec)	120	120
y pract.	0.643	0.703	y pract.	0.675	0.728
R.C. (%)	1522%	348%	R.C. (%)	1142%	335%

Stage / Phase Diagrams

1.



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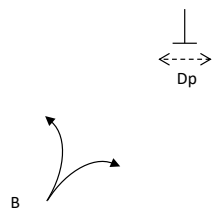

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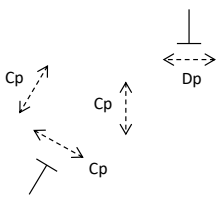


4.

5.

I/G= 4		I/G= 8	12	I/G=		I/G=	I/G=
I/G= 4		I/G= 8	12	I/G=		I/G=	I/G=

Date: FEB, 2022 **Junction:** J2 Matheson Street / Percival Street / Russell Street

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Matheson Street / Percival Street / Russell Street Design Year: 2031

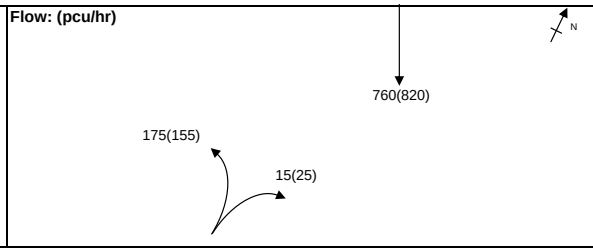
Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Percival Street	↓	A	1	3.600						1975	1975	380	0.192	0.192	410	0.208	0.208
SB	↓	A	1	3.600						1975	1975	380	0.192		410	0.208	
Matheson Street	↰	B	2	3.300	10					1690	1690	94	0.056		89	0.053	
NB	↱	B	2	3.300	13.3	10		84% / 16%	73% / 27%	1740	1730	96	0.055		91	0.053	
Pedestrian Crossing		Cp	1,3	MIN GREEN + FLASH =			9	+	10	=	19						
		Dp	2,3	MIN GREEN + FLASH =			6	+	6	=	12			*			*

Notes:

TAC junction: Cycle time of 105s and 110s are adopted for WD and WE Noon

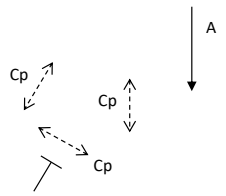
Flow: (pcu/hr)



Group	Cp,B	A,Dp	Group	Cp,B	A,Dp
y	0.056	0.192	y	0.053	0.208
L (sec)	30	23	L (sec)	30	23
C (sec)	105	105	C (sec)	110	110
y pract.	0.643	0.703	y pract.	0.655	0.712
R.C. (%)	1056%	265%	R.C. (%)	1143%	243%

Stage / Phase Diagrams

1.



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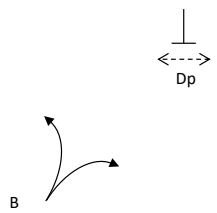

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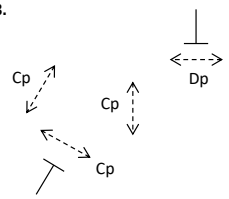


4.

5.

I/G= 4		I/G= 8	12	I/G=		I/G=	I/G=
I/G= 4		I/G= 8	12	I/G=		I/G=	I/G=

Date: FEB, 2022 **Junction:** J2 Matheson Street / Percival Street / Russell Street

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Percival Street / Hysan Avenue Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Leighton Road WB	← *	E	1	3.500						1570	1570	483	0.308		501	0.319	0.319
	← *	E	1	3.000						1645	1645	507	0.308		524	0.319	
Leighton Road EB	→ **	A	1	2.500						1120	1120	356	0.318		313	0.279	
	→ **	A	1	2.500						1205	1205	384	0.319	0.319	337	0.280	
Percival Street SB	↳ **	C	2	4.000	25					1140	1140	260	0.228	0.228	315	0.276	0.276
Percival Street SB	* ↲	C	2	5.000		25				1595	1595	239	0.150		242	0.152	
	** ↲	C	2	3.500		20				1175	1175	176	0.150		178	0.151	
Pedestrian Crossing		Bp	1	MIN GREEN + FLASH =			16	+	7	=	23						
		Dp	2	MIN GREEN + FLASH =			5	+	12	=	17						

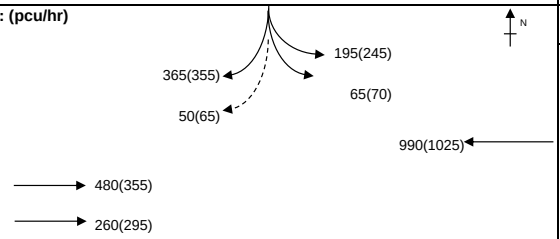
Notes:

TAC junction: Cycle time of 105s and 105s are adopted for AM and PM Peak

** = Site Factor of 0.6 adopted

* = Site Factor of 0.8 adopted

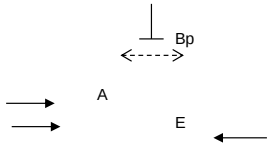
Flow: (pcu/hr)



Group	E,C	A,C	Group	A,C	E,C
y	0.536	0.547	y	0.556	0.595
L (sec)	9	14	L (sec)	14	9
C (sec)	105	105	C (sec)	105	105
y pract.	0.823	0.780	y pract.	0.780	0.823
R.C. (%)	53%	43%	R.C. (%)	40%	38%

Stage / Phase Diagrams

1.



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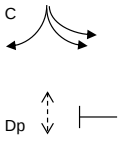


4.

5.

I/G= 8		I/G= 8		I/G=		I/G=	
I/G= 6		I/G= 5		I/G=		I/G=	

Date: FEB, 2022 **Junction:** (J3) Leighton Road / Percival Street / Hysan Avenue

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Percival Street / Hysan Avenue Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Leighton Road WB	← *	E	1	3.500						1570	1570	486	0.310		508	0.324	
	← *	E	1	3.000						1645	1645	509	0.309		532	0.323	
Leighton Road EB	→ **	A	1	2.500						1120	1120	407	0.363		364	0.325	0.325
	→ **	A	1	2.500						1205	1205	438	0.363	0.363	391	0.324	
Percival Street SB	↳ **	C	2	4.000	25					1140	1140	310	0.272	0.272	380	0.333	0.333
Percival Street SB	* ↲	C	2	5.000		25				1595	1595	294	0.184		268	0.168	
	** ↲	C	2	3.500		20				1175	1175	216	0.184		197	0.168	
Pedestrian Crossing		Bp	1	MIN GREEN + FLASH =			16	+	7	=	23						
		Dp	2	MIN GREEN + FLASH =			5	+	12	=	17						

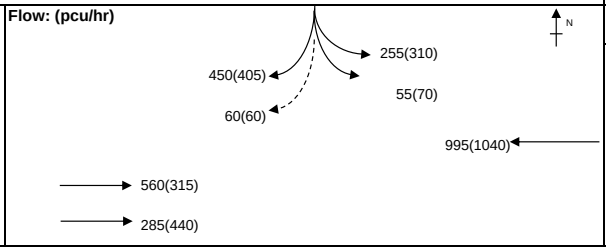
Notes:

TAC junction: Cycle time of 130s and 130s are adopted for WD and WE Noon

** = Site Factor of 0.6 adopted

* = Site Factor of 0.8 adopted

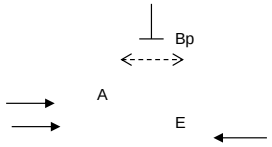
Flow: (pcu/hr)



Group	E,C	A,C	Group	E,C	A,C
y	0.581	0.635	y	0.657	0.658
L (sec)	9	14	L (sec)	9	14
C (sec)	130	130	C (sec)	130	130
y pract.	0.838	0.803	y pract.	0.838	0.803
R.C. (%)	44%	26%	R.C. (%)	28%	22%

Stage / Phase Diagrams

1.



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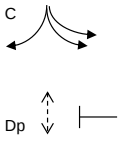


4.

5.

I/G= 8		I/G= 8		I/G=		I/G=		I/G=	
I/G= 8		I/G= 8		I/G=		I/G=		I/G=	

Date: FEB, 2022 **Junction:** (J3) Leighton Road / Percival Street / Hysan Avenue

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Hysan Avenue / Leighton Lane Design Year: 2031

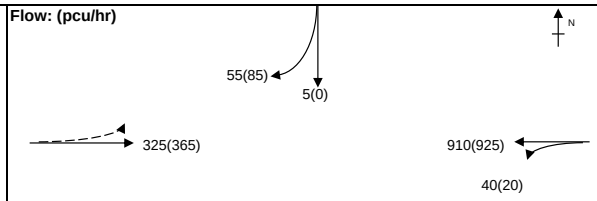
Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Leighton Road WB	↓	B	2	3.500	5			9%	4%	1915	1940	456	0.238		457	0.236	
	←	B	2	3.200						2075	2075	494	0.238		488	0.235	
Leighton Road EB	↗	(free flow)															
	→	A	1,2	3.500						1965	1965	325	0.165	0.165	365	0.186	0.186
Hysan Avenue SB	↓	C	3	3.300		17		84%	100%	1810	1785	32	0.018		45	0.025	
	↲	C	3	3.000		10				1585	1585	28	0.018		40	0.025	
Pedestrian Crossing		Dp	3	MIN GREEN + FLASH =			11	+	10	=	21			*			*
		Ep	1,2	MIN GREEN + FLASH =			6	+	7	=	13						

Notes:

TAC junction: Cycle time of 120s and 130s are adopted for AM and PM Peak

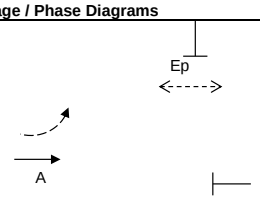
Flow: (pcu/hr)



Group	A,C	A,Dp	Group	A,C	A,Dp
y	0.183	0.165	y	0.211	0.186
L (sec)	9	31	L (sec)	9	31
C (sec)	120	120	C (sec)	130	130
y pract.	0.833	0.668	y pract.	0.838	0.685
R.C. (%)	355%	304%	R.C. (%)	297%	269%

Stage / Phase Diagrams

1.



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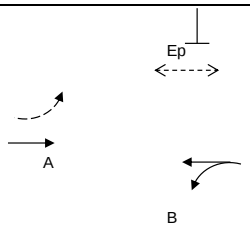

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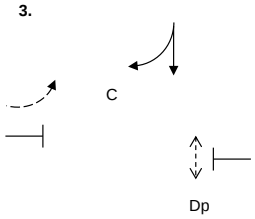


4.

5.

I/G= 4		I/G=		I/G= 7	21	I/G=		I/G=	
I/G= 4		I/G=		I/G= 7	21	I/G=		I/G=	

Date: FEB, 2022 **Junction:** (J4) Leighton Road / Hysan Avenue / Leighton Lane

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Hysan Avenue / Leighton Lane Design Year: 2031

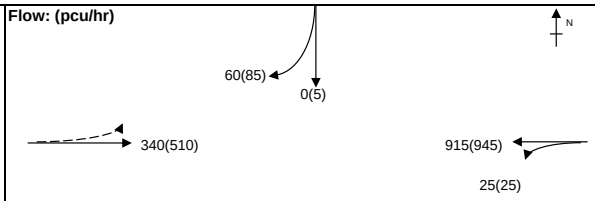
Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Leighton Road WB	↓	B	2	3.500	5			6%	5%	1935	1935	453	0.234		468	0.242	
	←	B	2	3.200						2075	2075	487	0.235		502	0.242	
Leighton Road EB	↗	(free flow)															
	→	A	1,2	3.500						1965	1965	340	0.173	0.173	510	0.260	0.260
Hysan Avenue SB	↓	C	3	3.300		17		100%	90%	1785	1805	32	0.018		48	0.027	
	↲	C	3	3.000		10				1585	1585	28	0.018		42	0.026	
Pedestrian Crossing		Dp	3	MIN GREEN + FLASH =			11	+	10	=	21			*			*
		Ep	1,2	MIN GREEN + FLASH =			6	+	7	=	13						

Notes:

TAC junction: Cycle time of 130s and 130s are adopted for WD and WE Noon

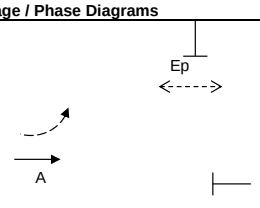
Flow: (pcu/hr)



Group	A,C	A,Dp	Group	A,C	A,Dp
y	0.191	0.173	y	0.286	0.260
L (sec)	9	31	L (sec)	9	31
C (sec)	130	130	C (sec)	130	130
y pract.	0.838	0.685	y pract.	0.838	0.685
R.C. (%)	339%	296%	R.C. (%)	193%	164%

Stage / Phase Diagrams

1.



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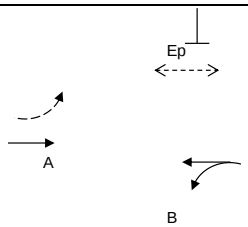

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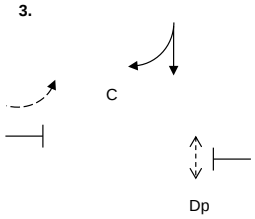

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I/G= 4		I/G=		I/G= 7	21	I/G=	I/G=
I/G= 4		I/G=		I/G= 7	21	I/G=	I/G=

Date: FEB, 2022 **Junction:** (J4) Leighton Road / Hysan Avenue / Leighton Lane

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Caroline Hill Road (West) Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Leighton Road WB	*	A	1	3.500	20					730	730	143	0.196		122	0.167	
	^	A	1	3.500	25			68%	65%	1215	1215	239	0.197	0.197	204	0.168	0.168
		A	1	3.000						2055	2055	403	0.196		344	0.167	
Caroline Hill Road NB		B	2	3.500	65	25		91% / 9%	96% / 4%	1915	1920	435	0.227	0.227	453	0.236	0.236
		B	2	3.500		20				1960	1960	445	0.227		462	0.236	
Leighton Road EB		A	1	3.500						985	985	132	0.134		152	0.154	
		A	1	3.300						2085	2085	278	0.133		323	0.155	
Hoi Ping Road SB		C	3	3.500						1965	1965	335	0.170		297	0.151	
	*	C	3	3.500		12		60%	83%	730	710	125	0.171	0.171	108	0.152	0.152

Pedestrian Crossing	Ep	1	MIN GREEN + FLASH =	10	+	5	=	15
	Fp	1,3	MIN GREEN + FLASH =	14	+	5	=	19
	Gp	2	MIN GREEN + FLASH =	14	+	5	=	19
	Hp	3	MIN GREEN + FLASH =	10	+	7	=	17
	Ip	1,2	MIN GREEN + FLASH =	11	+	6	=	17
	Jp	2	MIN GREEN + FLASH =	10	+	7	=	17

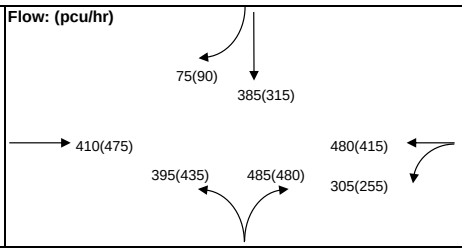
Notes:

TAC junction: Cycle time of 105s and 130s are adopted for AM and PM Peak

^Site Factor of 0.6 adopted due to merging traffic ahead

*Site factor of 0.4 applied due to flare lane

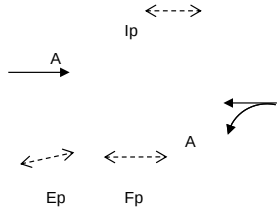
Flow: (pcu/hr)



Group	A,B,Hp	A,B,C	Group	A,B,Hp	A,B,C
y	0.424	0.595	y	0.404	0.556
L (sec)	38	20	L (sec)	38	20
C (sec)	105	105	C (sec)	130	130
y pract.	0.574	0.729	y pract.	0.637	0.762
R.C. (%)	35%	22%	R.C. (%)	58%	37%

Stage / Phase Diagrams

1.



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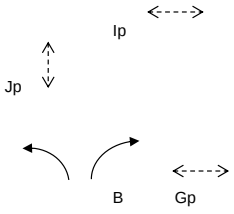

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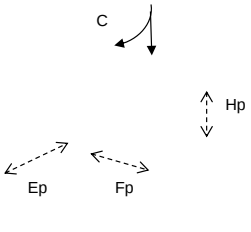

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I/G= 8		I/G= 8		I/G= 7		I/G=	
I/G= 8		I/G= 8		I/G= 7		I/G=	

Date: FEB, 2022 **Junction:** J5 Leighton Road / Caroline Hill Road (West)

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Caroline Hill Road (West) Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Leighton Road WB	*	A	1	3.500	20					730	730	122	0.167		142	0.195	
	^	A	1	3.500	25			65%	69%	1215	1215	204	0.168	0.168	235	0.193	
		A	1	3.000						2055	2055	344	0.167		398	0.194	
Caroline Hill Road NB		B	2	3.500	65	25		88% / 12%	98% / 2%	1915	1920	430	0.225	0.225	418	0.218	
		B	2	3.500		20				1960	1960	440	0.224		427	0.218	0.218
Leighton Road EB		A	1	3.500						985	985	138	0.140		197	0.200	
		A	1	3.300						2085	2085	292	0.140		418	0.200	0.200
Hoi Ping Road SB		C	3	3.500						1965	1965	310	0.158		297	0.151	
	*	C	3	3.500		12		100%	83%	700	710	145	0.207	0.207	108	0.152	0.152

Pedestrian Crossing								
	Ep	1	MIN GREEN + FLASH =	10	+	5	=	15
	Fp	1,3	MIN GREEN + FLASH =	14	+	5	=	19
	Gp	2	MIN GREEN + FLASH =	14	+	5	=	19
	Hp	3	MIN GREEN + FLASH =	10	+	7	=	17
	Ip	1,2	MIN GREEN + FLASH =	11	+	6	=	17
	Jp	2	MIN GREEN + FLASH =	10	+	7	=	17

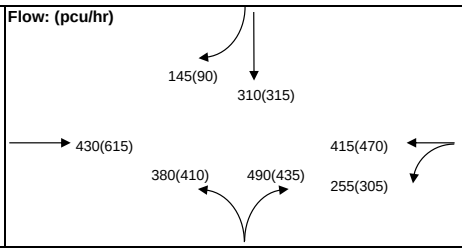
Notes:

TAC junction: Cycle time of 120s and 130s are adopted for WD and WE Noon Peak

^Site Factor of 0.6 adopted due to merging traffic ahead

*Site factor of 0.4 applied due to flare lane

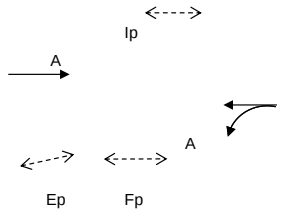
Flow: (pcu/hr)



Group	Ep,B,C	A,B,C	Group	A,B,Hp	A,B,C
y	0.432	0.600	y	0.418	0.570
L (sec)	33	20	L (sec)	38	20
C (sec)	120	120	C (sec)	130	130
y pract.	0.653	0.750	y pract.	0.637	0.762
R.C. (%)	51%	25%	R.C. (%)	52%	33%

Stage / Phase Diagrams

1.



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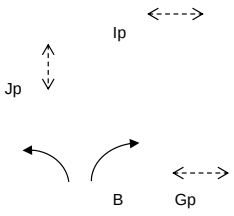

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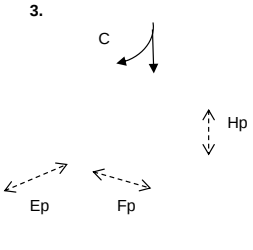

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5.

I/G= 8		I/G= 8		I/G= 7		I/G=	
I/G= 8		I/G= 8		I/G= 7		I/G=	

Date: FEB, 2022 **Junction:** J5 Leighton Road / Caroline Hill Road (West)

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

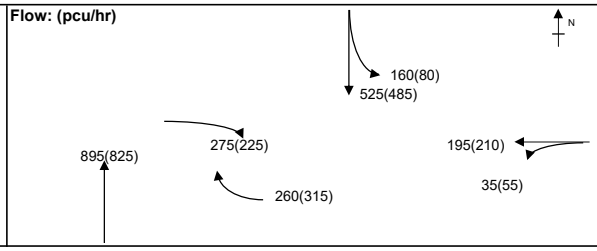
Junction: Caroline Hill Road (West) / Link Road / New Access Road Design Year: 2031

Description: 2031 Design Flows Under Signal Control Arrangement Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Link Road NB	↑	A	1,2	3.650						1980	1980	895	0.452	0.452	825	0.417	0.417
U-turn Slip Road EB	↱	B	2	5.000		5				1625	1625	275	0.169		225	0.138	
Access Road	←	C	3	3.650						2120	2120	195	0.092	0.092	210	0.099	
WB	↰	C	3	3.650	15					1800	1800	35	0.019		55	0.031	
Caroline Hill Road	↳	D	1	3.650	20			49%	30%	1910	1935	325	0.170		270	0.140	
SB	↓	D	1	3.650						2120	2120	360	0.170		295	0.139	
U-turn Slip Road WB	←	E	3	5.000						2115	2115	260	0.123		315	0.149	0.149
Pedestrian Crossing		Fp	3	MIN GREEN + FLASH =			11	+	5	=	16						
		Gp	1,2	MIN GREEN + FLASH =			9	+	5	=	14						

Notes:

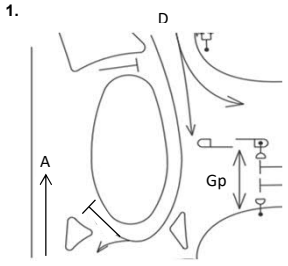
Flow: (pcu/hr)



Group	A,E	A,C	Group	A,C	A,E
y	0.575	0.544	y	0.516	0.566
L (sec)	8	15	L (sec)	15	8
C (sec)	105	105	C (sec)	105	105
y pract.	0.831	0.771	y pract.	0.771	0.831
R.C. (%)	45%	42%	R.C. (%)	50%	47%

Stage / Phase Diagrams

1.



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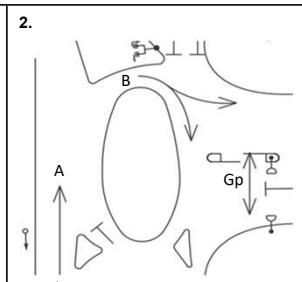

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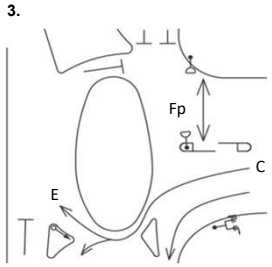

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I/G= 9		I/G=		I/G= 8		I/G=	I/G=
I/G= 5		I/G=		I/G= 5		I/G=	I/G=

Date: APR, 2022 **Junction:** J6R Caroline Hill Road (West) / Link Road / New Access Road

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

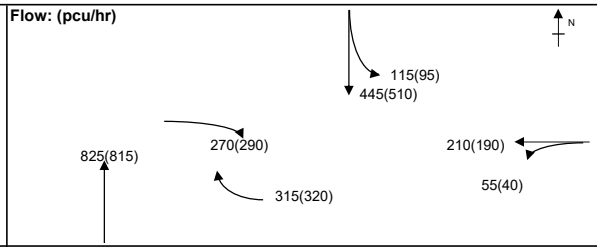
Junction: Caroline Hill Road (West) / Link Road / New Access Road Design Year: 2031

Description: 2031 Design Flows Under Signal Control Arrangement Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Link Road NB	↑	A	1,2	3.650						1980	1980	825	0.417	0.417	815	0.412	0.412
U-turn Slip Road EB	↱	B	2	5.000		5				1625	1625	270	0.166		290	0.178	
Access Road	←	C	3	3.650						2120	2120	210	0.099		190	0.090	
WB	↰	C	3	3.650	15					1800	1800	55	0.031		40	0.022	
Caroline Hill Road	↓	D	1	3.650	20			43%	33%	1920	1930	266	0.139		288	0.149	
SB	↓	D	1	3.650						2120	2120	294	0.139		317	0.150	
U-turn Slip Road WB	←	E	3	5.000						2115	2115	315	0.149	0.149	320	0.151	0.151
Pedestrian Crossing		Fp	3	MIN GREEN + FLASH =			11	+	5	=	16						
		Gp	1,2	MIN GREEN + FLASH =			9	+	5	=	14						

Notes:

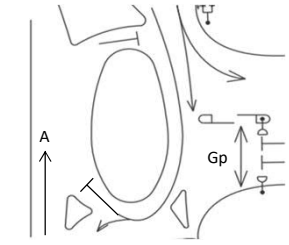
Flow: (pcu/hr)



Group	A,C	A,E	Group	A,C	A,E
y	0.516	0.566	y	0.501	0.563
L (sec)	15	8	L (sec)	15	8
C (sec)	105	105	C (sec)	105	105
y pract.	0.771	0.831	y pract.	0.771	0.831
R.C. (%)	50%	47%	R.C. (%)	54%	48%

Stage / Phase Diagrams

1.



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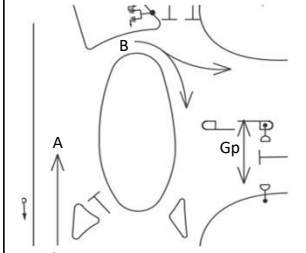

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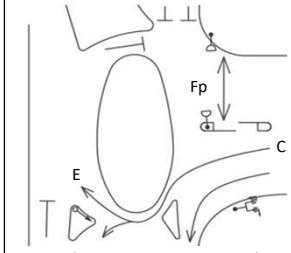

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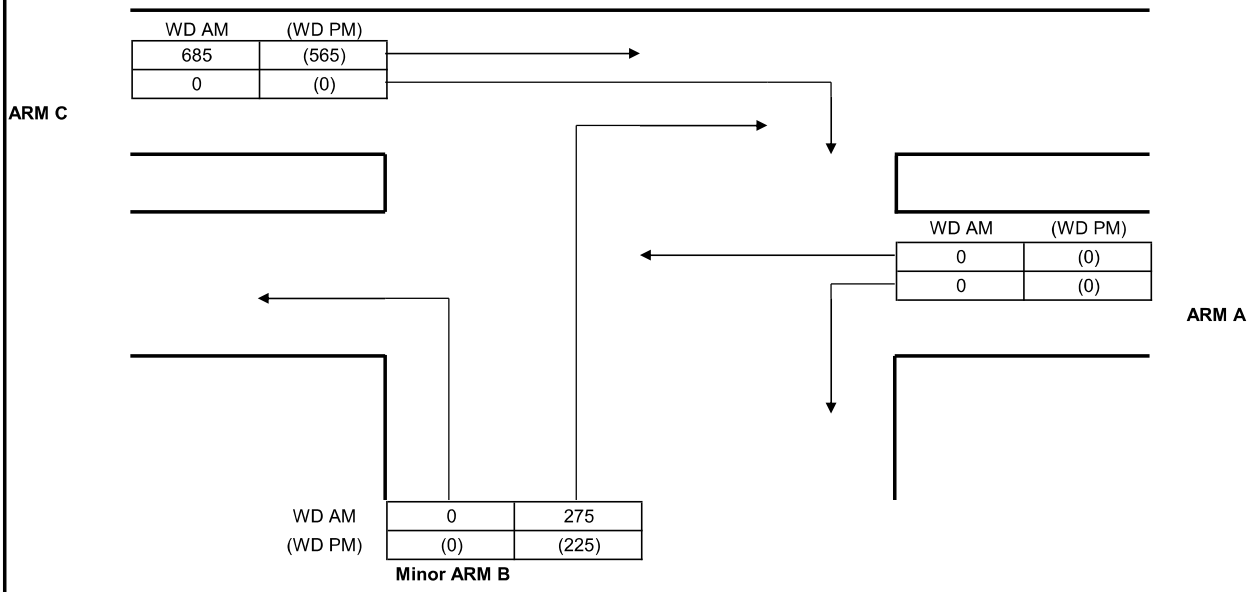
I/G= 5		I/G=		I/G= 5		I/G=	I/G=
I/G= 5		I/G=		I/G= 5		I/G=	I/G=

Date: APR, 2022 **Junction:** J6R Caroline Hill Road (West) / Link Road / New Access Road

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Caroline Hill Road (West) Southbound / U-turn			Ref. No.:	J6A
Scheme:	2031 Design Flows Under Priority Control Arrangement			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Caroline Hill Road SB				
ARM B:	U-turn Slip Road				
ARM C:	Caroline Hill Road SB				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	3.50
Central Reserve width	Wcr	0.00		w(b-c)	3.50
2 Lane Minor Arm (Y/N)		N		w(c-b)	2.20
Visibilities	Vr(b-a)	100	Calculated	D	0.94
	Vl(b-a)	100		E	0.90
	Vr(b-c)	20		F	0.85
	Vr(c-b)	100		Y	0.76

ANALYSIS			WD AM PEAK	(WD PM) PEAK
TRAFFIC FLOWS	q(c-a)		685	565
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		0	0
	q(b-a)		275	225
	q(b-c)		0	0
	f		0.00	0.00
		Factor		
CAPACITIES	Q(b-a)	0.8	382	397
	Q(b-c)	1	668	668
	Q(c-b)	1	632	632
	Q(b-ac)	1	382	397
RFC's	b-a		0.720	0.567
	b-c		0.000	0.000
	c-b		0.000	0.000
	b-ac		0.720	0.567
Worst RFC			**0.720**	**0.567**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

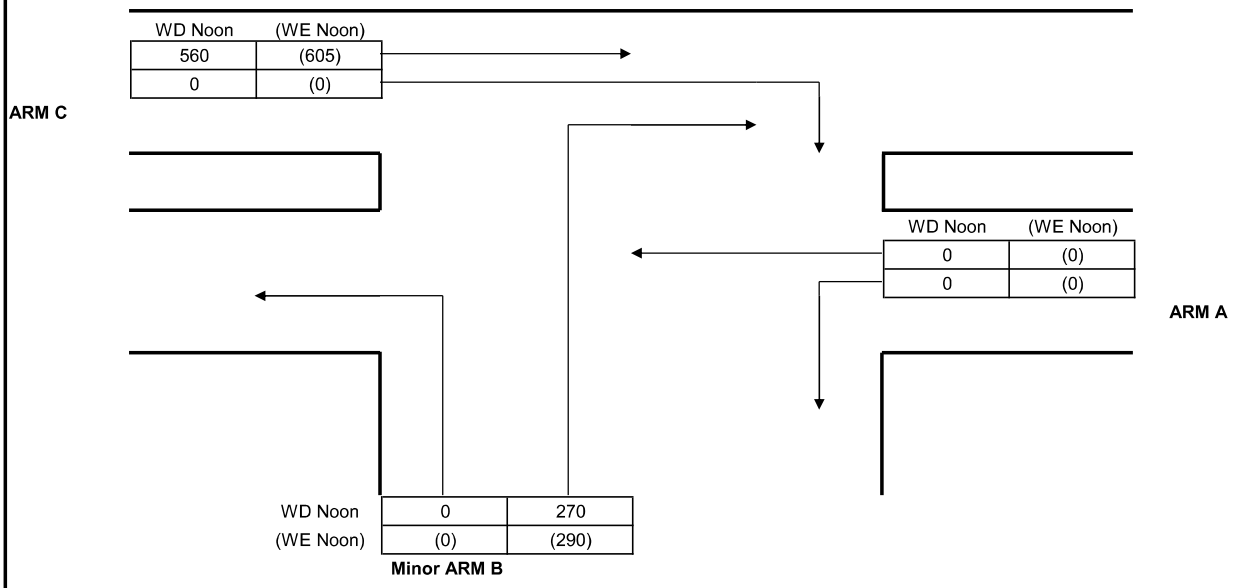
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Mar-22	Checked by:	CHC

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Caroline Hill Road (West) Southbound / U-turn			Ref. No.:	J6A
Scheme:	2031 Design Flows Under Priority Control Arrangement			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Caroline Hill Road SB				
ARM B:	U-turn Slip Road				
ARM C:	Caroline Hill Road SB				



GEOMETRY					
Major road width	W	7.00	Lane widths	w(b-a)	3.50
Central Reserve width	Wcr	0.00		w(b-c)	3.50
2 Lane Minor Arm (Y/N)		N		w(c-b)	2.20
Visibilities	Vr(b-a)	100	Calculated	D	0.94
	Vl(b-a)	100		E	0.90
	Vr(b-c)	20		F	0.85
	Vr(c-b)	100		Y	0.76

ANALYSIS			WD Noon PEAK	(WE Noon) PEAK
TRAFFIC FLOWS	q(c-a)		560	605
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		0	0
	q(b-a)		270	290
	q(b-c)		0	0
	f		0.00	0.00
		Factor		
CAPACITIES	Q(b-a)	0.8	398	392
	Q(b-c)	1	668	668
	Q(c-b)	1	632	632
	Q(b-ac)	1	398	392
RFC's	b-a		0.678	0.740
	b-c		0.000	0.000
	c-b		0.000	0.000
	b-ac		0.678	0.740
Worst RFC			**0.678**	**0.740**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

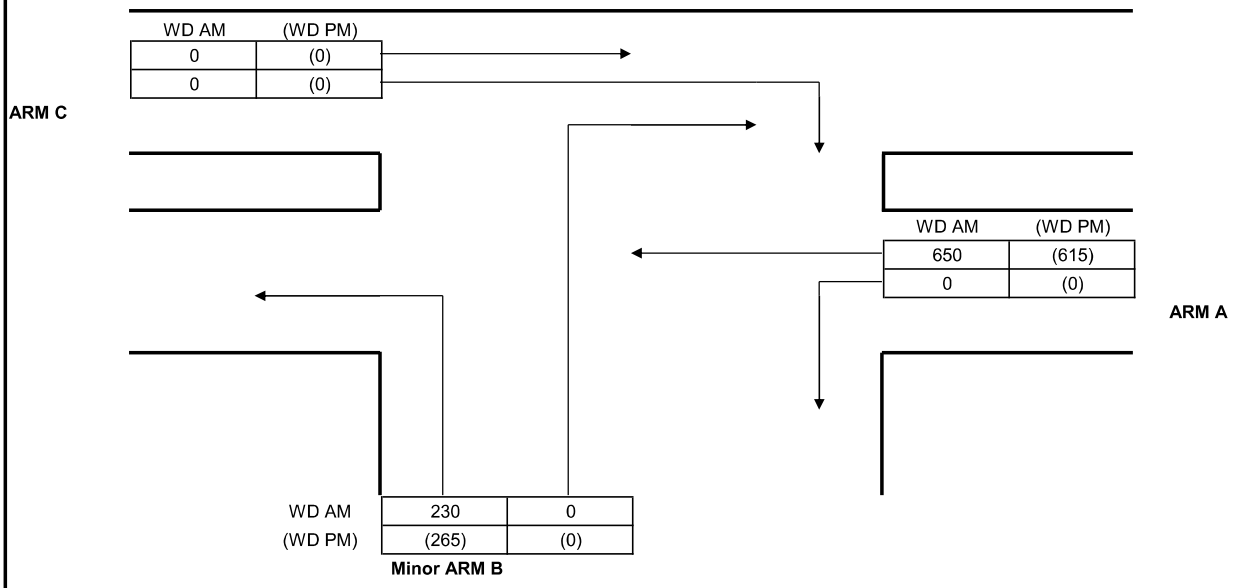
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Mar-22	Checked by:	CHC

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Caroline Hill Road (West) Southbound / Access Road of CHR Site			Ref. No.:	J6B
Scheme:	2031 Design Flows Under Priority Control Arrangement			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Caroline Hill Road SB				
ARM B:	Access Road				
ARM C:	Caroline Hill Road SB				



GEOMETRY					
Major road width	W	6.00	Lane widths	w(b-a)	3.00
Central Reserve width	Wcr	0.00		w(b-c)	3.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	2.20
Visibilities	Vr(b-a)	40	Calculated	D	0.81
	Vl(b-a)	40		E	0.92
	Vr(b-c)	100		F	0.85
	Vr(c-b)	100		Y	0.79

ANALYSIS			WD AM PEAK	(WD PM) PEAK
TRAFFIC FLOWS	q(c-a)		0	0
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		650	615
	q(b-a)		0	0
	q(b-c)		230	265
	f		1.00	1.00
		Factor		
CAPACITIES	Q(b-a)	1	358	366
	Q(b-c)	1	514	523
	Q(c-b)	1	473	481
	Q(b-ac)	1	514	523
RFC's	b-a		0.000	0.000
	b-c		0.447	0.507
	c-b		0.000	0.000
	b-ac		0.447	0.507
Worst RFC			**0.447**	**0.507**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

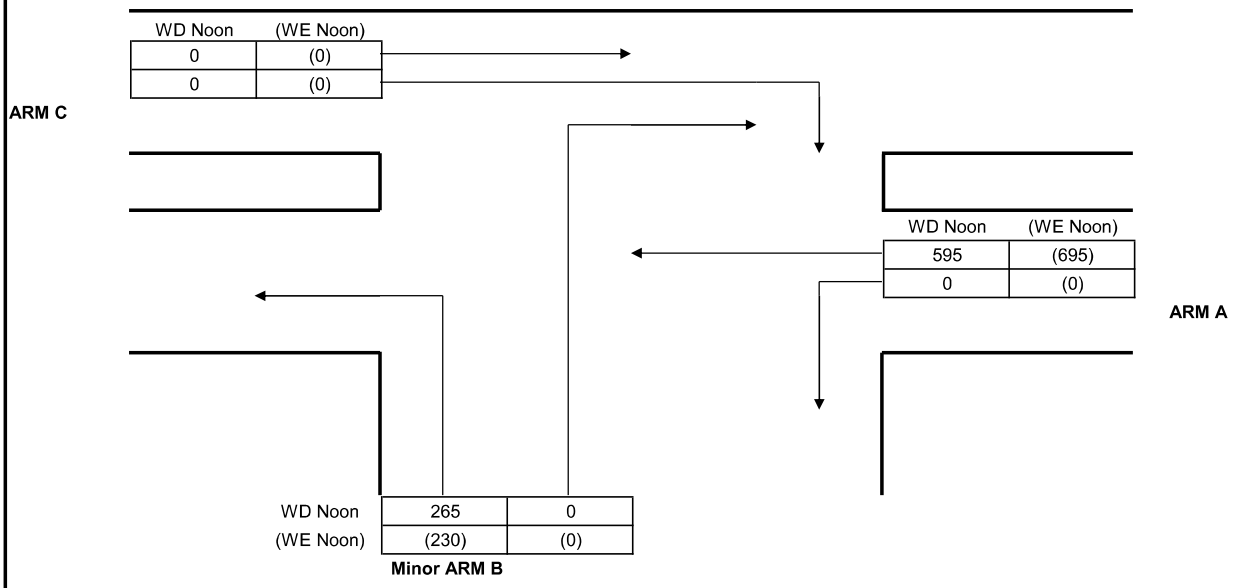
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Mar-22	Checked by:	CHC

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Caroline Hill Road (West) Southbound / Access Road of CHR Site			Ref. No.:	J6B
Scheme:	2031 Design Flows Under Priority Control Arrangement			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Caroline Hill Road SB				
ARM B:	Access Road				
ARM C:	Caroline Hill Road SB				



GEOMETRY					
Major road width	W	6.00	Lane widths	w(b-a)	3.00
Central Reserve width	Wcr	0.00		w(b-c)	3.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	2.20
Visibilities	Vr(b-a)	40	Calculated	D	0.81
	Vl(b-a)	40		E	0.92
	Vr(b-c)	100		F	0.85
	Vr(c-b)	100		Y	0.79

ANALYSIS				
			WD Noon PEAK	(WE Noon) PEAK
TRAFFIC FLOWS	q(c-a)		0	0
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		595	695
	q(b-a)		0	0
	q(b-c)		265	230
	f		1.00	1.00
		Factor		
CAPACITIES	Q(b-a)	1	370	347
	Q(b-c)	1	529	502
	Q(c-b)	1	486	462
	Q(b-ac)	1	529	502
RFC's	b-a		0.000	0.000
	b-c		0.501	0.458
	c-b		0.000	0.000
	b-ac		0.501	0.458
Worst RFC			**0.501**	**0.458**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

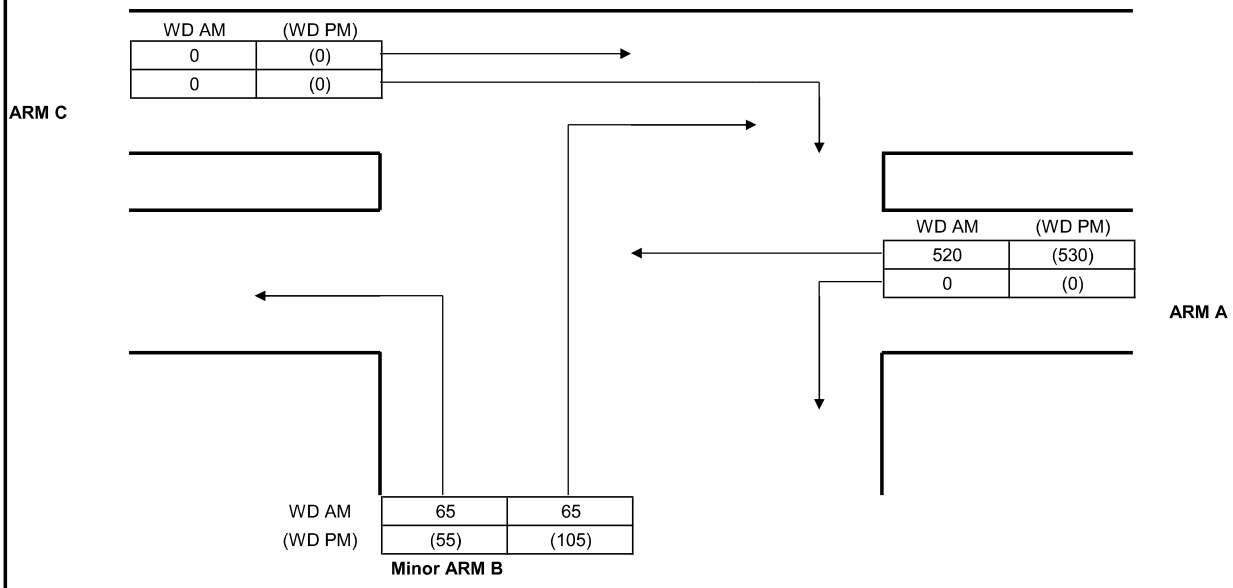
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Mar-22	Checked by:	CHC

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Caroline Hill Road (West) Southbound / Caroline Hill Road (West) Northbound / Link Road Southbound			Ref. No.:	J6C
Scheme:	2031 Design Flows Under Priority Control Arrangement			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Caroline Hill Road SB				
ARM B:	Caroline Hill Road NB				
ARM C:	Link Road				



GEOMETRY					
Major road width	W	6.00	Lane widths	w(b-a)	0.00
Central Reserve width	Wcr	0.00		w(b-c)	3.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	2.20
Visibilities	Vr(b-a)	20	Calculated	D	0.55
	Vl(b-a)	20		E	0.85
	Vr(b-c)	20		F	0.80
	Vr(c-b)	40		Y	0.79

ANALYSIS				
			WD AM PEAK	(WD PM) PEAK
TRAFFIC FLOWS	q(c-a)		0	0
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		520	530
	q(b-a)		65	105
	q(b-c)		65	55
	f		0.50	0.34
		Factor		
CAPACITIES	Q(b-a)	1	263	261
	Q(b-c)	1	508	506
	Q(c-b)	1	477	475
	Q(b-ac)	1	347	313
RFC's	b-a		0.247	0.402
	b-c		0.128	0.109
	c-b		0.000	0.000
	b-ac		0.375	0.511
Worst RFC			**0.375**	**0.511**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

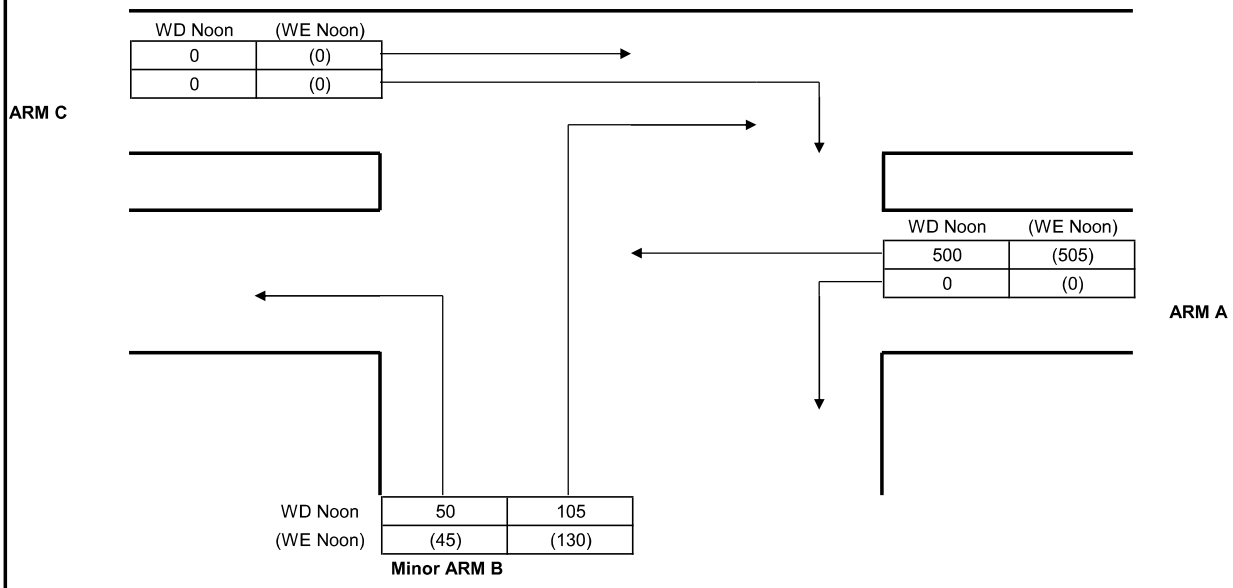
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Mar-22	Checked by:	CHC

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Caroline Hill Road (West) Southbound / Caroline Hill Road (West) Northbound / Link Road Southbound			Ref. No.:	J6C
Scheme:	2031 Design Flows Under Priority Control Arrangement			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Caroline Hill Road SB				
ARM B:	Caroline Hill Road NB				
ARM C:	Link Road				



GEOMETRY					
Major road width	W	6.00	Lane widths	w(b-a)	0.00
Central Reserve width	Wcr	0.00		w(b-c)	3.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	2.20
Visibilities	Vr(b-a)	20	Calculated	D	0.55
	Vl(b-a)	20		E	0.85
	Vr(b-c)	20		F	0.80
	Vr(c-b)	40		Y	0.79

ANALYSIS				
			WD Noon PEAK	(WE Noon) PEAK
TRAFFIC FLOWS	q(c-a)		0	0
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		500	505
	q(b-a)		105	130
	q(b-c)		50	45
	f		0.32	0.26
		Factor		
CAPACITIES	Q(b-a)	1	266	265
	Q(b-c)	1	513	512
	Q(c-b)	1	481	480
	Q(b-ac)	1	315	303
RFC's	b-a		0.395	0.491
	b-c		0.097	0.088
	c-b		0.000	0.000
	b-ac		0.492	0.578
Worst RFC			**0.492**	**0.578**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

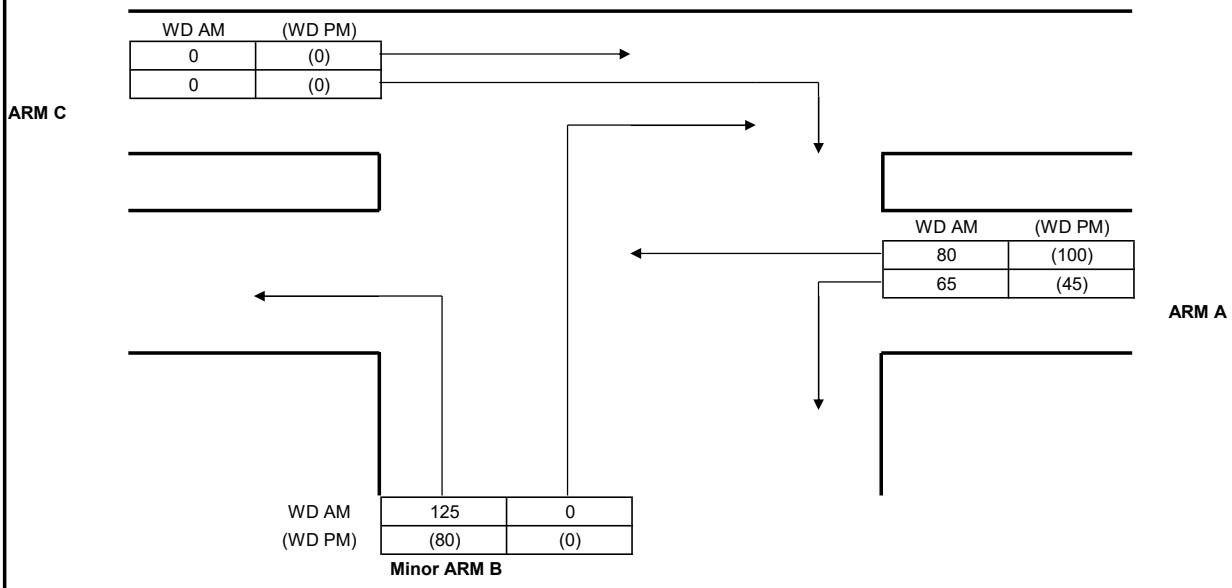
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Mar-22	Checked by:	CHC

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Caroline Hill Road / Cotton Path			Ref. No.:	J7
Scheme:	2031 Design Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Caroline Hill Road				
ARM B:	Caroline Hill Road				
ARM C:	Cotton Path				



GEOMETRY					
Major road width	W	6.20	Lane widths	w(b-a)	2.00
Central Reserve width	Wcr	0.00		w(b-c)	2.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	100	Calculated	D	0.80
	Vl(b-a)	100		E	0.77
	Vr(b-c)	20		F	0.59
	Vr(c-b)	0		Y	0.79

ANALYSIS				
			WD AM PEAK	(WD PM) PEAK
TRAFFIC FLOWS	q(c-a)		0	0
	q(c-b)		0	0
	q(a-b)		65	45
	q(a-c)		80	100
	q(b-a)		0	0
	q(b-c)		125	80
	f		1.00	1.00
		Factor		
CAPACITIES	Q(b-a)	1	480	477
	Q(b-c)	1	550	547
	Q(c-b)	1	412	412
	Q(b-ac)	1	550	547
RFC's	b-a		0.000	0.000
	b-c		0.227	0.146
	c-b		0.000	0.000
	b-ac		0.227	0.146
Worst RFC			**0.227**	**0.146**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

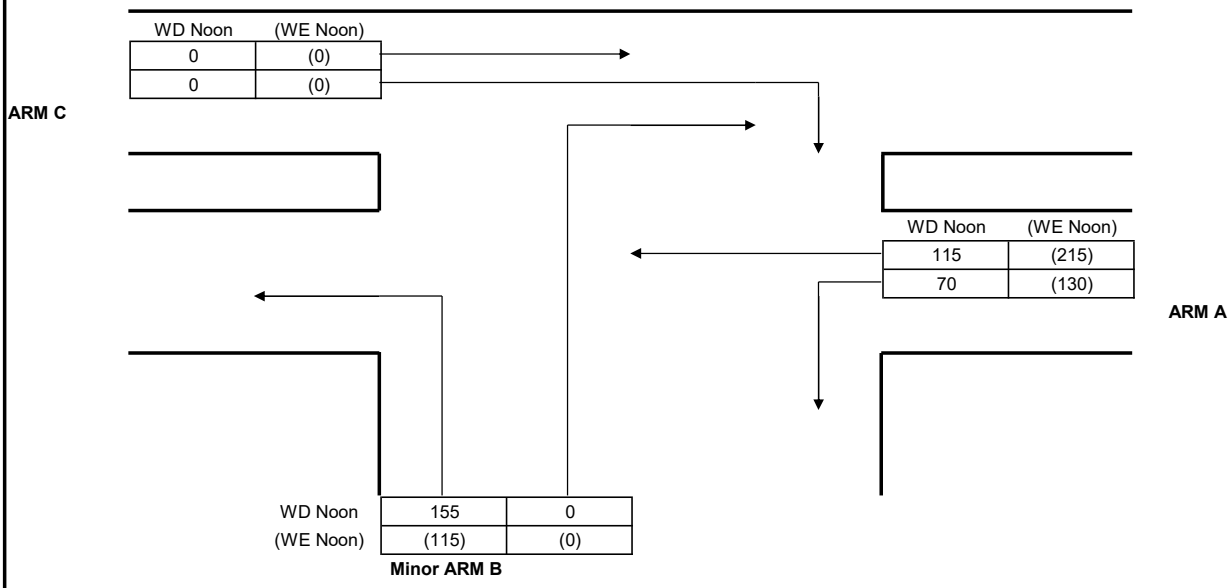
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Feb-22	Checked by:	CHC

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Caroline Hill Road / Cotton Path			Ref. No.:	J7
Scheme:	2031 Design Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Caroline Hill Road				
ARM B:	Caroline Hill Road				
ARM C:	Cotton Path				



GEOMETRY

Major road width	W	6.20	Lane widths	w(b-a)	2.00
Central Reserve width	Wcr	0.00		w(b-c)	2.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	100	Calculated	D	0.80
	Vl(b-a)	100		E	0.77
	Vr(b-c)	20		F	0.59
	Vr(c-b)	0		Y	0.79

ANALYSIS

			WD Noon PEAK	(WE Noon) PEAK
TRAFFIC FLOWS	q(c-a)		0	0
	q(c-b)		0	0
	q(a-b)		70	130
	q(a-c)		115	215
	q(b-a)		0	0
	q(b-c)		155	115
	f		1.00	1.00
		Factor		
CAPACITIES	Q(b-a)	1	472	443
	Q(b-c)	1	541	514
	Q(c-b)	1	406	379
	Q(b-ac)	1	541	514
RFC's	b-a		0.000	0.000
	b-c		0.287	0.224
	c-b		0.000	0.000
	b-ac		0.287	0.224
Worst RFC			**0.287**	**0.224**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Feb-22	Checked by:	CHC

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Yun Ping Road / Pennington Street / Caroline Hill Road (East) Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Leighton Road WE	*	A	1	3.000	7			73%	56%	995	1025	300	0.302		242	0.236	
		A	1	2.500						2005	2005	605	0.302		473	0.236	
Leighton Road WE	**	C	2	3.500		9				1180	1180	280	0.237	0.237	290	0.246	0.246
Caroline Hill Road NB	*	C	2	4.000	5					930	930	100	0.108		90	0.097	
Leighton Road EB	**	A	1	3.000	15			76%	78%	1245	1245	480	0.386	0.386	545	0.438	0.438
	**	A	1	3.000						1440	1440	555	0.385		630	0.438	
Pedestrian Crossing		Bp	1	MIN GREEN + FLASH =			5	+	8	=	13						
		Dp	2	MIN GREEN + FLASH =			10	+	8	=	18						

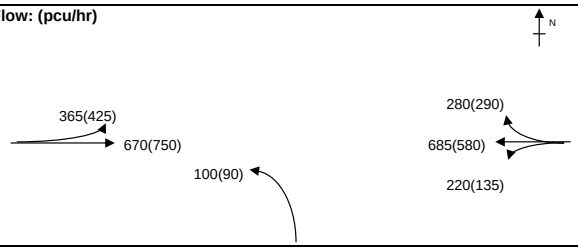
Notes:

TAC junction: Cycle time of 105s and 130s are adopted for AM and PM Peak

* = Site factor of 0.6 adopted

** = Site factor of 0.7 adopted

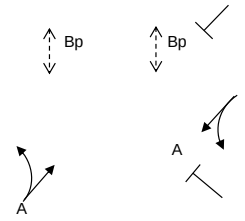
Flow: (pcu/hr)



Group	A,Dp	A,C	Group	A,Dp	A,C
y	0.386	0.623	y	0.438	0.684
L (sec)	27	11	L (sec)	27	11
C (sec)	105	105	C (sec)	130	130
y pract.	0.669	0.806	y pract.	0.713	0.824
R.C. (%)	73%	29%	R.C. (%)	63%	21%

Stage / Phase Diagrams

1.



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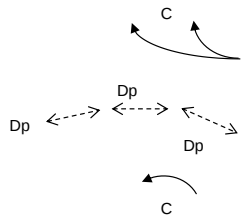


3.

4.

5.

I/G= 7		I/G= 6		I/G=		I/G=		I/G=	
I/G= 7		I/G= 6		I/G=		I/G=		I/G=	

Date: FEB, 2022 **Junction:** J8 Leighton Road / Yun Ping Road / Pennington Street / Caroline Hill

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Yun Ping Road / Pennington Street / Caroline Hill Road (East) Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Leighton Road WE	*	A	1	3.000	7			92%	61%	960	1015	256	0.267		256	0.252	
		A	1	2.500						2005	2005	534	0.266		504	0.251	
Leighton Road WE	**	C	2	3.500		9				1180	1180	245	0.208	0.208	260	0.220	0.220
Caroline Hill Road NB	*	C	2	4.000	5					930	930	115	0.124		170	0.183	
Leighton Road EB	**	A	1	3.000	15			70%	71%	1255	1250	500	0.398		579	0.463	0.463
	**	A	1	3.000						1440	1440	575	0.399	0.399	666	0.463	
Pedestrian Crossing		Bp	1	MIN GREEN + FLASH =			5	+	8	=	13						
		Dp	2	MIN GREEN + FLASH =			10	+	8	=	18						

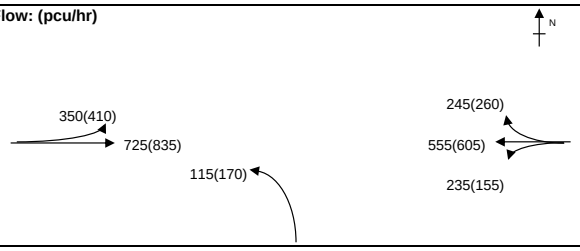
Notes:

TAC junction: Cycle time of 110s and 120s are adopted for WD and WE Noon

* = Site factor of 0.6 adopted

** = Site factor of 0.7 adopted

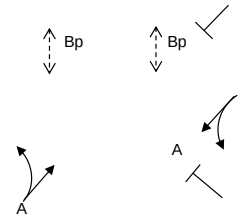
Flow: (pcu/hr)



Group	A,Dp	A,C	Group	A,Dp	A,C
y	0.399	0.607	y	0.463	0.684
L (sec)	27	11	L (sec)	27	11
C (sec)	110	110	C (sec)	120	120
y pract.	0.679	0.810	y pract.	0.698	0.818
R.C. (%)	70%	33%	R.C. (%)	51%	20%

Stage / Phase Diagrams

1.



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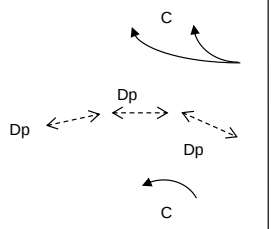


3.

4.

5.

I/G= 7		I/G= 6		I/G=		I/G=		I/G=	
I/G= 7		I/G= 6		I/G=		I/G=		I/G=	

Date: FEB, 2022 **Junction:** J8 Leighton Road / Yun Ping Road / Pennington Street / Caroline Hill

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Causeway Road / Leighton Road / Tung Lo Wan Road / Irving Street Design Year: 2031

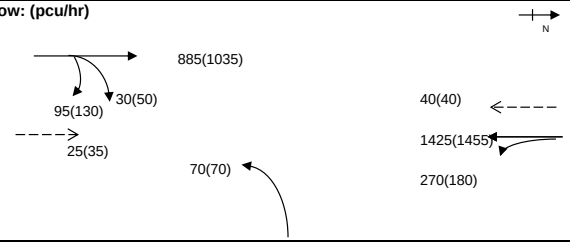
Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Causeway Road WB	↓ *	A	1	3.000	9					1150	1150	270	0.235		180	0.157	
Causeway Road WB	← *	A	1	3.000						1340	1340	350	0.261		358	0.267	0.267
	←	A	1	3.000						2055	2055	538	0.262	0.262	548	0.267	
	←	A	1	3.000						2055	2055	537	0.261		549	0.267	
Causeway Road WB (Tram)	⇐ **	F	1,2	3.000						1340	1340	40	0.030		40	0.030	
Tung Lo Wan Road NB	↖ **	B	2	4.000	25					1330	1330	70	0.053		70	0.053	
Causeway Road EB	→ (free flow)																
Causeway Road EB	↘ **	C	3	4.000		12				1255	1255	187	0.149	0.149	216	0.172	
	↘ **	C	3	4.500		8				1300	1300	193	0.148		224	0.172	0.172
Causeway Road EB (Tram)	⇒ **	F	1,2	3.000						1340	1340	25	0.019		35	0.026	
Pedestrian Crossing		Dp	2	MIN GREEN + FLASH =			7	+	8	=	15			*			*
		Ep	1,3	MIN GREEN + FLASH =			10	+	5	=	15						
		Gp	2,3	MIN GREEN + FLASH =			9	+	11	=	20						

Notes:

* = Site factor of 0.7 is adopted for on street activities on Leighton Road
** = Site factor of 0.7 is adopted for traffic queue

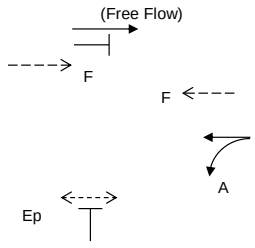
Flow: (pcu/hr)



Group	A,B,C	A,Dp,C	Group	A,B,C	A,Dp,C
y	0.463	0.411	y	0.492	0.439
L (sec)	20	33	L (sec)	20	33
C (sec)	100	100	C (sec)	105	105
y pract.	0.720	0.603	y pract.	0.729	0.617
R.C. (%)	55%	47%	R.C. (%)	48%	40%

Stage / Phase Diagrams

1.



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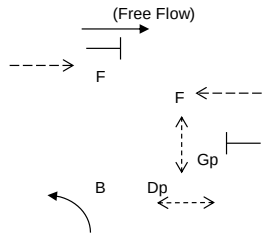

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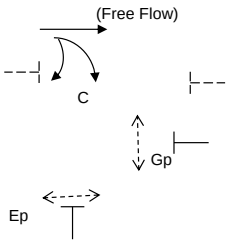


4.

5.

I/G= 7		I/G= 9	15	I/G= 4		I/G=	I/G=
I/G= 7		I/G= 9	15	I/G= 4		I/G=	I/G=

Date: FEB, 2022 **Junction:** J9 Causeway Road / Leighton Road / Tung Lo Wan Road / Irving Str

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Causeway Road / Leighton Road / Tung Lo Wan Road / Irving Street Design Year: 2031

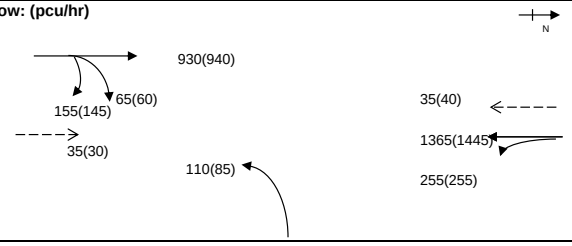
Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Causeway Road WB	↓ *	A	1	3.000	9					1150	1150	255	0.222		255	0.222	
Causeway Road WB	← *	A	1	3.000						1340	1340	336	0.251	0.251	355	0.265	
	←	A	1	3.000						2055	2055	514	0.250		545	0.265	0.265
	←	A	1	3.000						2055	2055	515	0.251		545	0.265	
Causeway Road WB (Tram)	⇐ **	F	1,2	3.000						1340	1340	35	0.026		40	0.030	
Tung Lo Wan Road NB	↖ **	B	2	4.000	25					1330	1330	110	0.083		85	0.064	
Causeway Road EB	→ (free flow)																
Causeway Road EB	↘ **	C	3	4.000		12				1255	1255	223	0.178		221	0.176	
	↘ **	C	3	4.500		8				1300	1300	232	0.178	0.178	229	0.176	0.176
Causeway Road EB (Tram)	⇒ **	F	1,2	3.000						1340	1340	35	0.026		30	0.022	
Pedestrian Crossing		Dp	2	MIN GREEN + FLASH =			7	+	8	=	15			*			*
		Ep	1,3	MIN GREEN + FLASH =			10	+	5	=	15						
		Gp	2,3	MIN GREEN + FLASH =			9	+	11	=	20						

Notes:

* = Site factor of 0.7 is adopted for on street activities on Leighton Road
** = Site factor of 0.7 is adopted for traffic queue

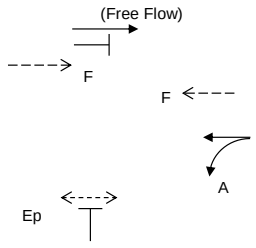
Flow: (pcu/hr)



Group	A,B,C	A,Dp,C	Group	A,B,C	A,Dp,C
y	0.512	0.429	y	0.505	0.441
L (sec)	20	33	L (sec)	20	33
C (sec)	95	95	C (sec)	105	105
y pract.	0.711	0.587	y pract.	0.729	0.617
R.C. (%)	39%	37%	R.C. (%)	44%	40%

Stage / Phase Diagrams

1.



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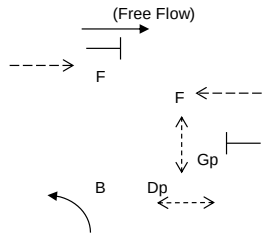

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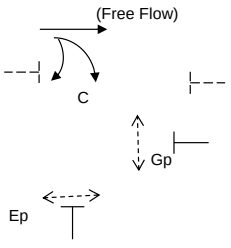


4.

5.

I/G= 7		I/G= 9	15	I/G= 4		I/G=	I/G=
I/G= 7		I/G= 9	15	I/G= 4		I/G=	I/G=

Date: FEB, 2022 **Junction:** J9 Causeway Road / Leighton Road / Tung Lo Wan Road / Irving Str

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Causeway Road / Moreton Terrace Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

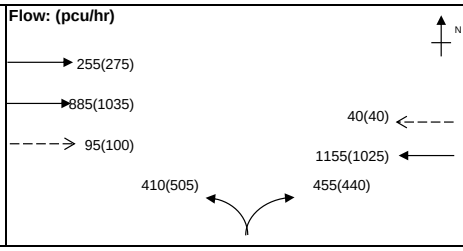
Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Causeway Road WB	← *	C	1	3.700						795	795	311	0.391		276	0.347	
	←	C	1	4.000						2155	2155	844	0.392		749	0.348	
Causeway Road - WB (Tram)	⇐	D	1	3.000						1915	1915	40	0.021		40	0.021	
Moreton Terrace - NB	↰ **	E	2	3.500	9					1685	1685	264	0.157		289	0.172	
	↰↱	E	2	3.300	15	20		49% / 51%	66% / 34%	1920	1910	301	0.157	0.157	328	0.172	0.172
	↱	E	2	3.500		15				1915	1915	300	0.157		328	0.171	
Causeway Road WB	→	A	1	3.500						1965	1965	255	0.130		275	0.140	
	→	A	1	3.500						2105	2105	885	0.420	0.420	1035	0.492	0.492
Causeway Road - EB (Tram)	⇒	B	1	3.000						1915	1915	95	0.050		100	0.052	
Pedestrian Crossing		Fp	1	MIN GREEN + FLASH =			8	+	10	=	18						

Notes:

*Site Factor of 0.4 adopted due to bus stop near stop line

**Site Factor of 0.7 adopted due to bus stop near stop line

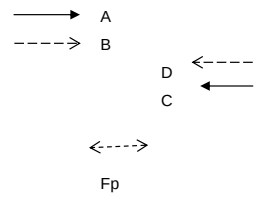
Flow: (pcu/hr)



Group	C,E	A,E	Group	C,E	A,E
y	0.548	0.577	y	0.519	0.663
L (sec)	10	10	L (sec)	10	10
C (sec)	100	100	C (sec)	105	105
y pract.	0.810	0.810	y pract.	0.814	0.814
R.C. (%)	48%	40%	R.C. (%)	57%	23%

Stage / Phase Diagrams

1.



2.



3.

4.

5.

I/G= 7		I/G= 5		I/G=		I/G=		I/G=	
I/G= 7		I/G= 5		I/G=		I/G=		I/G=	

Date: FEB, 2022 **Junction:** J10 Causeway Road / Moreton Terrace

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Causeway Road / Moreton Terrace Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

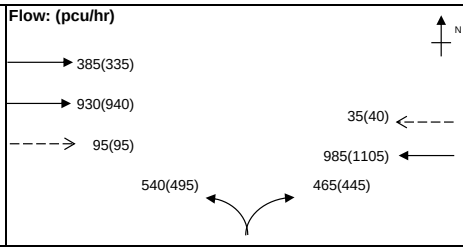
Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD NN	Pro. Turning (%) WE NN	Revised Saturation Flow (pcu/hr) WD NN	Revised Saturation Flow (pcu/hr) WE NN	WD NN Flow (pcu/hr)	WD NN y Value	WD NN Critical y	WE NN Flow (pcu/hr)	WE NN y Value	WE NN Critical y
Causeway Road WB	← *	C	1	3.700						795	795	265	0.333		298	0.375	
	←	C	1	4.000						2155	2155	720	0.334		807	0.374	
Causeway Road - WB (Tram)	⇐	D	1	3.000						1915	1915	35	0.018		40	0.021	
Moreton Terrace - NB	↰ **	E	2	3.500	9					1685	1685	307	0.182		287	0.170	
	↰↱	E	2	3.300	15	20		67% / 33%	64% / 36%	1910	1910	349	0.183	0.183	326	0.171	
	↱	E	2	3.500		15				1915	1915	349	0.182		327	0.171	0.171
Causeway Road WB	→	A	1	3.500						1965	1965	385	0.196		335	0.170	
	→	A	1	3.500						2105	2105	930	0.442	0.442	940	0.447	0.447
Causeway Road - EB (Tram)	⇒	B	1	3.000						1915	1915	95	0.050		95	0.050	
Pedestrian Crossing		Fp	1	MIN GREEN + FLASH =			8	+	10	=	18						

Notes:

*Site Factor of 0.4 adopted due to bus stop near stop line

**Site Factor of 0.7 adopted due to bus stop near stop line

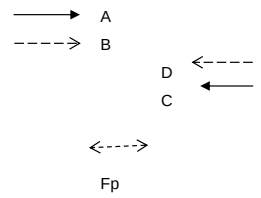
Flow: (pcu/hr)



Group	C,E	A,E	Group	C,E	A,E
y	0.517	0.625	y	0.546	0.617
L (sec)	10	10	L (sec)	10	10
C (sec)	95	95	C (sec)	105	105
y pract.	0.805	0.805	y pract.	0.814	0.814
R.C. (%)	56%	29%	R.C. (%)	49%	32%

Stage / Phase Diagrams

1.



2.



3.

4.

5.

I/G= 7		I/G= 5		I/G=		I/G=		I/G=	
I/G= 7		I/G= 5		I/G=		I/G=		I/G=	

Date: FEB, 2022 **Junction:** (J10) Causeway Road / Moreton Terrace

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Pennington Street / Jardine's Bazaar / Irving Street Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

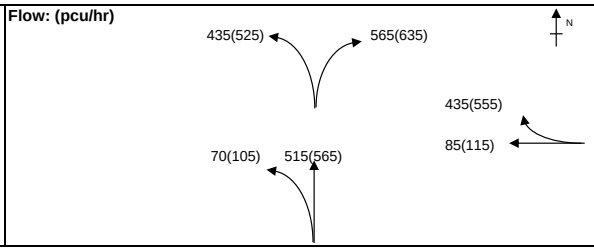
Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Irving Street WB	*←	A	1,4	3.000						960	960	79	0.082	0.082	101	0.105	
	↖	A	1,4	3.000		16		96%	93%	1885	1890	154	0.082		200	0.106	0.106
	↖	A	1,4	3.000		13				1840	1840	151	0.082		194	0.105	
	↖	A	1,4	3.000		10				1665	1665	136	0.082		175	0.105	
Pennington Street	↑	B	2,3	3.800	5			25%	33%	1855	1815	282	0.152	0.152	319	0.176	
NB 1st stop line	↑	B	2,3	3.800						1995	1995	303	0.152		351	0.176	0.176
Pennington Street	↰	E	1,2,4	5.000	10					1840	1840	435	0.236		525	0.285	
NB 2nd stop line	↱	F	1,2,3	3.500		10				1830	1830	302	0.165		339	0.185	
	↱	F	1,2,3	3.500		6.5				1595	1595	263	0.165		296	0.186	

Pedestrian Crossing	Cp	1,4	MIN GREEN + FLASH =	8	+	8	=	16
	Dp	2,3	MIN GREEN + FLASH =	8	+	14	=	22
	Gp	4	MIN GREEN + FLASH =	7	+	7	=	14
	Hp	3	MIN GREEN + FLASH =	6	+	6	=	12

Notes:

* = Site factor of 0.5 is adopted for bus stop at upstream

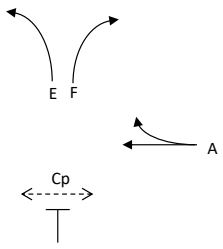
Flow: (pcu/hr)



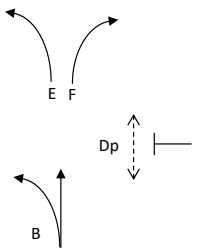
Group	Cp,B	A,B	Group	Cp,B	A,B
y	0.152	0.234	y	0.176	0.282
L (sec)	24	14	L (sec)	24	14
C (sec)	100	100	C (sec)	100	100
y pract.	0.684	0.774	y pract.	0.684	0.774
R.C. (%)	350%	230%	R.C. (%)	289%	175%

Stage / Phase Diagrams

1.



2.



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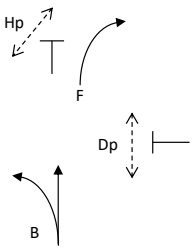

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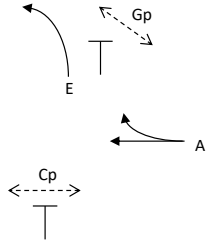


5.

I/G=		I/G= 8		I/G=		I/G= 8		I/G=	
I/G=		I/G= 8		I/G=		I/G= 8		I/G=	

Date: FEB, 2022 **Junction:** (J11) Pennington Street / Jardine's Bazaar / Irving Street

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Pennington Street / Jardine's Bazaar / Irving Street Design Year: 2031

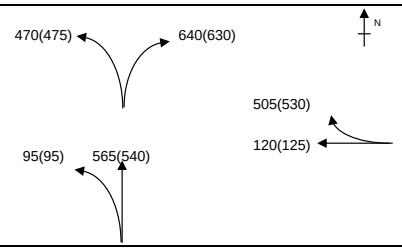
Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Irving Street WB	*←	A	1,4	3.000						960	960	94	0.098		99	0.103	
	↑←	A	1,4	3.000		16		86%	87%	1900	1900	187	0.098		196	0.103	0.103
	↑←	A	1,4	3.000		13				1840	1840	180	0.098		189	0.103	
	↑←	A	1,4	3.000		10				1665	1665	164	0.098	0.098	171	0.103	
Pennington Street NB 1st stop line	↑*	B	2,3	3.800	5			30%	31%	1830	1825	316	0.173	0.173	303	0.166	
	↑	B	2,3	3.800						1995	1995	344	0.172		332	0.166	0.166
Pennington Street NB 2nd stop line	↰	E	1,2,4	5.000	10					1840	1840	470	0.255		475	0.258	
	↱	F	1,2,3	3.500		10				1830	1830	342	0.187		337	0.184	
	↱	F	1,2,3	3.500		6.5				1595	1595	298	0.187		293	0.184	
Pedestrian Crossing		Cp	1,4	MIN GREEN + FLASH =			8	+	8	=	16						
		Dp	2,3	MIN GREEN + FLASH =			8	+	14	=	22						
		Gp	4	MIN GREEN + FLASH =			7	+	7	=	14						
		Hp	3	MIN GREEN + FLASH =			6	+	6	=	12						

Notes:

* = Site factor of 0.5 is adopted for bus stop at upstream

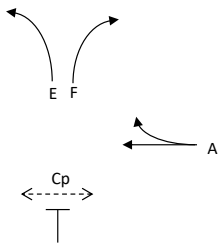
Flow: (pcu/hr)



Group	Cp,B	A,B	Group	Cp,B	A,B
y	0.173	0.271	y	0.166	0.270
L (sec)	24	14	L (sec)	24	14
C (sec)	120	120	C (sec)	100	100
y pract.	0.720	0.795	y pract.	0.684	0.774
R.C. (%)	317%	193%	R.C. (%)	311%	187%

Stage / Phase Diagrams

1.



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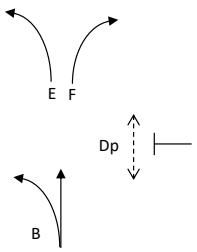

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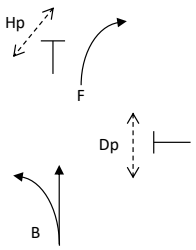

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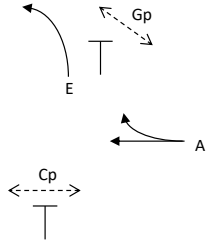


5.

I/G=		I/G= 8		I/G=		I/G= 8		I/G=			
I/G=		I/G= 8		I/G=		I/G= 8		I/G=			

Date: FEB, 2022 **Junction:** (J11) Pennington Street / Jardine's Bazaar / Irving Street

TRAFFIC SIGNALS CALCULATION

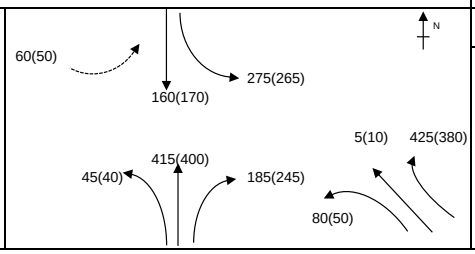
Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Link Road / Broadwood Road Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) AM	Pro. Turning (%) PM	Revised Saturation Flow (pcu/hr) AM	Revised Saturation Flow (pcu/hr) PM	AM Peak Flow (pcu/hr)	AM Peak y Value	AM Peak Critical y	PM Peak Flow (pcu/hr)	PM Peak y Value	PM Peak Critical y
Link Road		A	1	3.500	80			63%	61%	1940	1945	435	0.224	0.224	435	0.224	0.224
Broadwoord Road (E)		B	1,2	3.000	15			10%	9%	1895	1900	460	0.243		440	0.232	
		E	2	3.000		8				1730	1730	185	0.107	0.107	245	0.142	0.142
Broadwoord Road (W)		C	3	3.500	5	60		16% / 83%	11% / 86%	1840	1860	510	0.277	0.277	440	0.237	0.237
Leighton Hill Road	Priority Junction																
Pedestrian Crossing		Dp	4	MIN GREEN + FLASH =			5	+	7	=	12			*			*

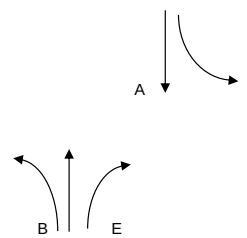
Notes:



Group	A,E,C	A,E,C,Dp	Group	A,E,C	A,E,C,Dp
y	0.608	0.608	y	0.602	0.602
L (sec)	16	27	L (sec)	16	27
C (sec)	140	140	C (sec)	135	135
y pract.	0.797	0.726	y pract.	0.793	0.720
R.C. (%)	31%	19%	R.C. (%)	32%	20%

Stage / Phase Diagrams

1.



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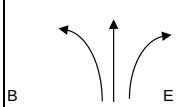

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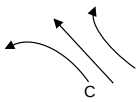


4.



5.

I/G= 4		I/G= 3		I/G= 8		I/G= 3	12	I/G=	
I/G= 4		I/G= 3		I/G= 8		I/G= 3	12	I/G=	

Date: FEB, 2022 **Junction:** J12 Link Road / Broadwood Road

TRAFFIC SIGNALS CALCULATION

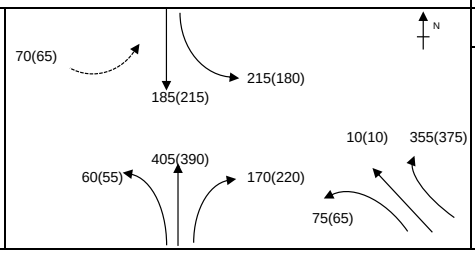
Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Link Road / Broadwood Road Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Link Road		A	1	3.500	80			54%	46%	1945	1950	400	0.206	0.206	395	0.203	0.203
Broadwoord Road (E)		B	1,2	3.000	15			13%	12%	1890	1890	465	0.246		445	0.235	
		E	2	3.000		8				1730	1730	170	0.098	0.098	220	0.127	0.127
Broadwoord Road (W)		C	3	3.500	5	60		17% / 81%	14% / 83%	1835	1845	440	0.240	0.240	450	0.244	0.244
Leighton Hill Road		Priority Junction															
Pedestrian Crossing		Dp	4	MIN GREEN + FLASH =			5	+	7	=	12			*			*

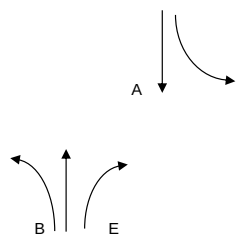
Notes:



Group	A,E,C	A,E,C,Dp	Group	A,E,C	A,E,C,Dp
y	0.544	0.544	y	0.574	0.574
L (sec)	16	27	L (sec)	16	27
C (sec)	110	110	C (sec)	110	110
y pract.	0.769	0.679	y pract.	0.769	0.679
R.C. (%)	41%	25%	R.C. (%)	34%	18%

Stage / Phase Diagrams

1.



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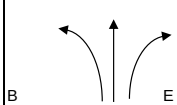

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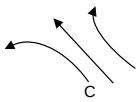


4.



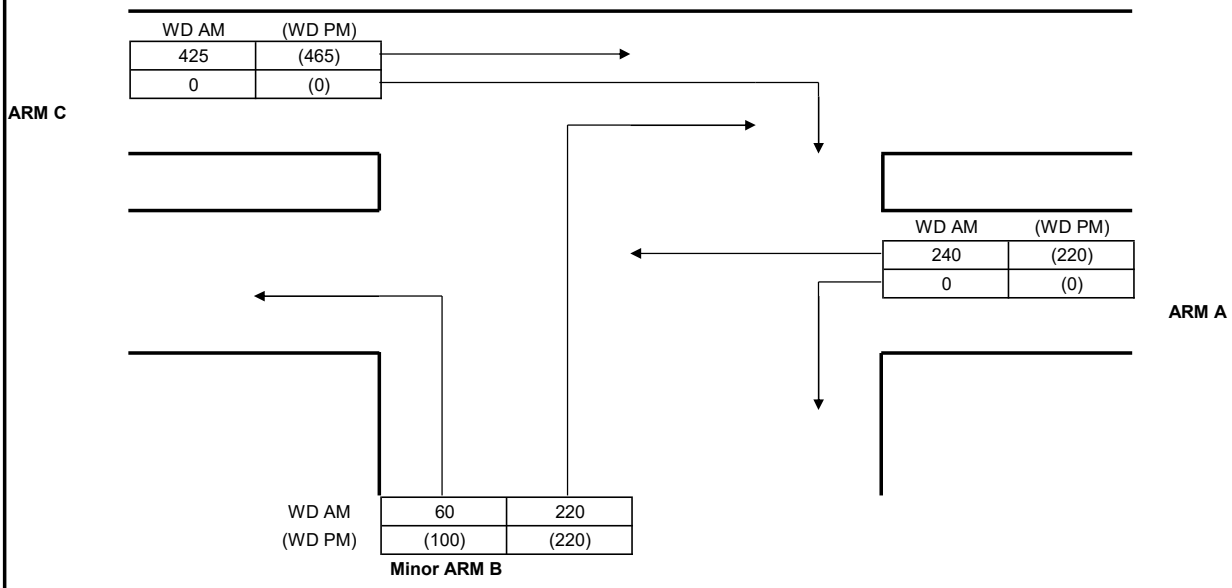
5.

I/G= 4		I/G= 3		I/G= 8		I/G= 3	12	I/G=	
I/G= 4		I/G= 3		I/G= 8		I/G= 3	12	I/G=	

Date: FEB, 2022 **Junction:** J12 Link Road / Broadwood Road

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Broadwood Road / Ventris Road			Ref. No.:	J13
Scheme:	2031 Design Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Broadwood Road				
ARM B:	Ventris Road				
ARM C:	Broadwood Road				



GEOMETRY					
Major road width	W	6.50	Lane widths	w(b-a)	3.00
Central Reserve width	Wcr	0.00		w(b-c)	3.00
2 Lane Minor Arm (Y/N)		Y		w(c-b)	5.00
Visibilities	Vr(b-a)	15	Calculated	D	0.78
	Vl(b-a)	15		E	0.87
	Vr(b-c)	40		F	1.06
	Vr(c-b)	50		Y	0.78

ANALYSIS			WD AM PEAK	(WD PM) PEAK
TRAFFIC FLOWS	q(c-a)		425	465
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		240	220
	q(b-a)		220	220
	q(b-c)		60	100
	f		0.21	0.31
		Factor		
CAPACITIES	Q(b-a)	1	378	377
	Q(b-c)	1	590	595
	Q(c-b)	1	715	721
	Q(b-ac)	1	410	426
RFC's	b-a		0.582	0.584
	b-c		0.102	0.168
	c-b		0.000	0.000
	b-ac		0.000	0.000
Worst RFC			**0.582**	**0.584**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

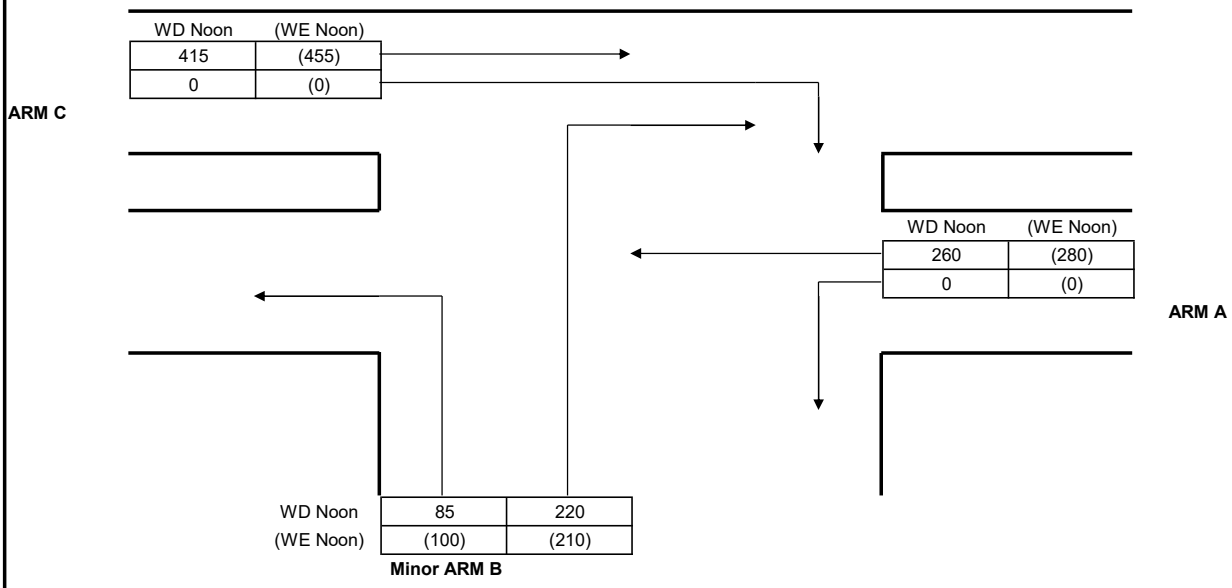
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Feb-22	Checked by:	CHC

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Broadwood Road / Ventris Road			Ref. No.:	J13
Scheme:	2031 Design Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Broadwood Road				
ARM B:	Ventris Road				
ARM C:	Broadwood Road				



GEOMETRY					
Major road width	W	6.50	Lane widths	w(b-a)	3.00
Central Reserve width	Wcr	0.00		w(b-c)	3.00
2 Lane Minor Arm (Y/N)		Y		w(c-b)	5.00
Visibilities	Vr(b-a)	15	Calculated	D	0.78
	Vl(b-a)	15		E	0.87
	Vr(b-c)	40		F	1.06
	Vr(c-b)	50		Y	0.78

ANALYSIS			WD Noon PEAK	(WE Noon) PEAK
TRAFFIC FLOWS	q(c-a)		415	455
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		260	280
	q(b-a)		220	210
	q(b-c)		85	100
	f		0.28	0.32
		Factor		
CAPACITIES	Q(b-a)	1	375	365
	Q(b-c)	1	585	580
	Q(c-b)	1	709	703
	Q(b-ac)	1	417	415
RFC's	b-a		0.587	0.575
	b-c		0.145	0.172
	c-b		0.000	0.000
	b-ac		0.000	0.000
Worst RFC			**0.587**	**0.575**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Feb-22	Checked by:	CHC

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

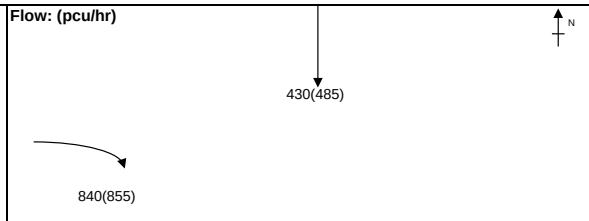
Junction: Wong Nai Chung Road / Sports Road Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Sports Road	→	A	1	3.800		10				1735	1735	399	0.230	0.230	406	0.234	0.234
EB	→	A	1	3.800		13.5				1920	1920	441	0.230		449	0.234	
Wong Nai Chung Road SB	↓	B	2	3.000						1915	1915	140	0.073	0.073	158	0.083	0.083
	↓	B	2	3.000						2055	2055	150	0.073		169	0.082	
	↓	B	2	3.000						1915	1915	140	0.073		158	0.083	
Pedestrian Crossing		Cp	1	MIN GREEN + FLASH =			8	+	9	=	17						
		Dp	2	MIN GREEN + FLASH =			8	+	9	=	17						

Notes:

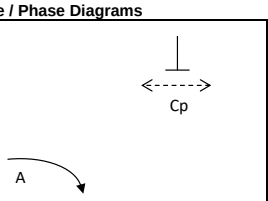
Flow: (pcu/hr)



Group	A,Dp	A,B	Group	A,Dp	A,B
y	0.230	0.303	y	0.234	0.317
L (sec)	27	10	L (sec)	27	10
C (sec)	90	90	C (sec)	90	90
y pract.	0.630	0.800	y pract.	0.630	0.800
R.C. (%)	174%	164%	R.C. (%)	169%	153%

Stage / Phase Diagrams

1.



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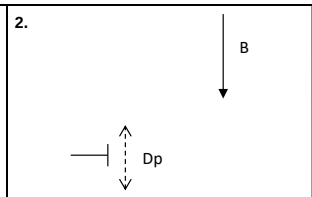

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I/G= 6		I/G= 6		I/G=		I/G=	
I/G= 6		I/G= 6		I/G=		I/G=	

Date: FEB, 2022 **Junction:** J14 Wong Nai Chung Road / Sports Road

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

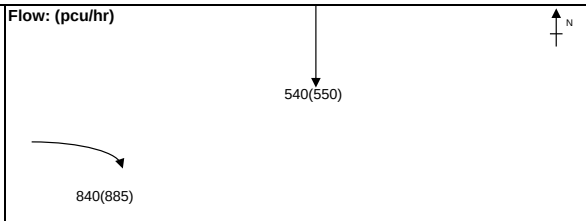
Junction: Wong Nai Chung Road / Sports Road Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Sports Road	→	A	1	3.800		10				1735	1735	399	0.230	0.230	420	0.242	
EB	→	A	1	3.800		13.5				1920	1920	441	0.230		465	0.242	0.242
Wong Nai Chung Road SB	↓	B	2	3.000						1915	1915	176	0.092	0.092	179	0.093	0.093
	↓	B	2	3.000						2055	2055	188	0.091		192	0.093	
	↓	B	2	3.000						1915	1915	176	0.092		179	0.093	
Pedestrian Crossing		Cp	1	MIN GREEN + FLASH =			8	+	9	=	17						
		Dp	2	MIN GREEN + FLASH =			8	+	9	=	17						

Notes:

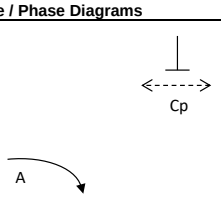
Flow: (pcu/hr)



Group	A,Dp	A,B	Group	A,Dp	A,B
y	0.230	0.322	y	0.242	0.336
L (sec)	27	10	L (sec)	27	10
C (sec)	75	75	C (sec)	75	75
y pract.	0.576	0.780	y pract.	0.576	0.780
R.C. (%)	150%	142%	R.C. (%)	138%	132%

Stage / Phase Diagrams

1.



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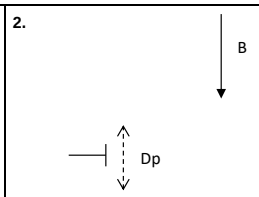

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I/G= 6		I/G= 6		I/G=		I/G=	
I/G= 6		I/G= 6		I/G=		I/G=	

Date: FEB, 2022 **Junction:** J14 Wong Nai Chung Road / Sports Road

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Wong Nai Chung Road Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Leighton Road WB		A	1	3.500	20					1830	1830	308	0.168		329	0.180	
	*	A	1	3.500	25					395	395	67	0.170		71	0.180	
Leighton Road WB (Tram)	*	B	2	3.000	40					370	370	50	0.135	0.135	65	0.176	0.176
Leighton Road WB	***	A	1	3.000						1530	1530	769	0.503	0.503	785	0.513	0.513
	*	A	1	3.000						410	410	206	0.502		210	0.512	
Leighton Road EB	*	A	1	3.500						395	395	119	0.301		105	0.266	
	**	A	1	3.000						1030	1030	311	0.302		272	0.264	
	**	A	1	3.000						1030	1030	310	0.301		273	0.265	
Pedestrian Crossing		Cp	2	MIN GREEN + FLASH =			10	+	9	=	19						
		Dp	2	MIN GREEN + FLASH =			7	+	7	=	14						

Notes:

TAC junction: Cycle time of 130s and 120s are adopted for AM and PM Peak

* = Site Factor of 0.2 has been adopted.

** = Site Factor of 0.5 has been adopted.

*** = Site Factor of 0.8 has been adopted.

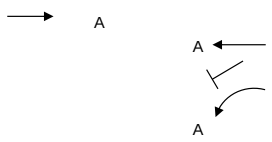
Flow: (pcu/hr)



Group	A,Cp	A,B	Group	A,Cp	A,B
y	0.503	0.638	y	0.513	0.689
L (sec)	30	12	L (sec)	30	12
C (sec)	130	130	C (sec)	120	120
y pract.	0.692	0.817	y pract.	0.675	0.810
R.C. (%)	38%	28%	R.C. (%)	32%	18%

Stage / Phase Diagrams

1.



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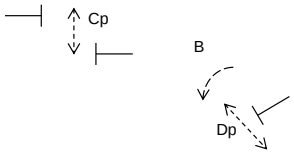

3.

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I/G= 7		I/G= 7		I/G=		I/G=		I/G=	
I/G= 7		I/G= 7		I/G=		I/G=		I/G=	

Date: FEB, 2022 **Junction:** J15 Leighton Road / Wong Nai Chung Road

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Wong Nai Chung Road Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Leighton Road WB		A	1	3.500	20					1830	1830	387	0.211		411	0.225	
	*	A	1	3.500	25					395	395	83	0.210		89	0.225	
Leighton Road WB (Tram)	*	B	2	3.000	40					370	370	60	0.162	0.162	60	0.162	0.162
Leighton Road WB	***	A	1	3.000						1530	1530	785	0.513	0.513	753	0.492	
	*	A	1	3.000						410	410	210	0.512		202	0.493	0.493
Leighton Road EB	*	A	1	3.500						395	395	136	0.344		121	0.306	
	**	A	1	3.000						1030	1030	354	0.344		317	0.308	
	**	A	1	3.000						1030	1030	355	0.345		317	0.308	
Pedestrian Crossing		Cp	2	MIN GREEN + FLASH =	10		+	9	=	19							
		Dp	2	MIN GREEN + FLASH =	7		+	7	=	14							

Notes:

TAC junction: Cycle time of 120s and 120s are adopted for WD and WE Noon

* = Site Factor of 0.2 has been adopted.

** = Site Factor of 0.5 has been adopted.

*** = Site Factor of 0.8 has been adopted.

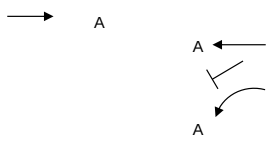
Flow: (pcu/hr)



Group	A,Cp	A,B	Group	A,Cp	A,B
y	0.513	0.675	y	0.493	0.655
L (sec)	30	12	L (sec)	30	12
C (sec)	120	120	C (sec)	120	120
y pract.	0.675	0.810	y pract.	0.675	0.810
R.C. (%)	32%	20%	R.C. (%)	37%	24%

Stage / Phase Diagrams

1.



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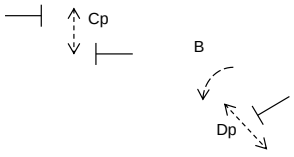

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I/G= 7		I/G= 7		I/G=		I/G=		I/G=	
I/G= 7		I/G= 7		I/G=		I/G=		I/G=	

Date: FEB, 2022 **Junction:** J15 Leighton Road / Wong Nai Chung Road

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Tung Lo Wan Road / Eastern Hospital Road Design Year: 2031

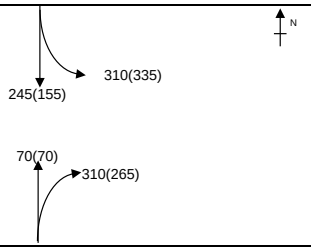
Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Tung Lo Wan Road SB	*	A	1	3.300	25					1285	1285	215	0.167		191	0.149	
		A	1	3.000	30			28%	48%	2025	2005	340	0.168	0.168	299	0.149	0.149
Ka Ning Path NB		B	2	3.500		10		82%	79%	1750	1755	380	0.217	0.217	335	0.191	0.191
Pedestrian Crossing		Cp	3	MIN GREEN + FLASH =			7	+	8	=	15						
		Dp	3	MIN GREEN + FLASH =			8	+	14	=	22			*			*

Notes:

* = Site factor of 0.7 is adopted for the bus stop at downstream

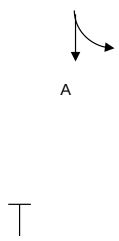
Flow: (pcu/hr)



Group	A,B,Cp	A,B,Dp	Group	A,B,Cp	A,B,Dp
y	0.385	0.385	y	0.340	0.340
L (sec)	31	34	L (sec)	31	34
C (sec)	100	100	C (sec)	105	105
y pract.	0.621	0.594	y pract.	0.634	0.609
R.C. (%)	61%	54%	R.C. (%)	87%	79%

Stage / Phase Diagrams

1.



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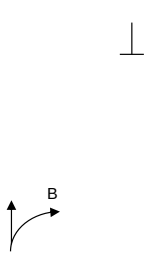

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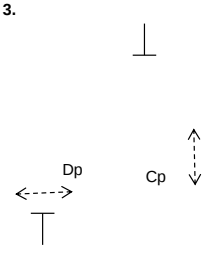

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I/G= 4		I/G= 5		I/G= 5	22	I/G=	I/G=
I/G= 4		I/G= 5		I/G= 5	22	I/G=	I/G=

Date: FEB, 2022 **Junction:** J16 Tung Lo Wan Road / Eastern Hospital Road

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Tung Lo Wan Road / Eastern Hospital Road Design Year: 2031

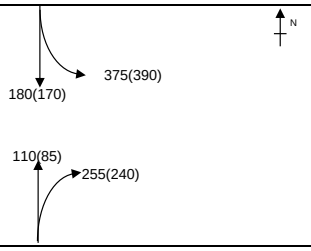
Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Tung Lo Wan Road SB	*	A	1	3.300	25					1285	1285	217	0.169	0.169	219	0.170	0.170
		A	1	3.000	30			47%	50%	2010	2005	338	0.168		341	0.170	
Ka Ning Path NB		B	2	3.500		10		70%	74%	1780	1770	365	0.205	0.205	325	0.184	0.184
Pedestrian Crossing		Cp	3	MIN GREEN + FLASH =			7	+	8	=	15						
		Dp	3	MIN GREEN + FLASH =			8	+	14	=	22			*			*

Notes:

* = Site factor of 0.7 is adopted for the bus stop at downstream

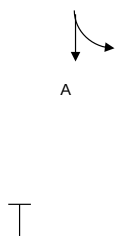
Flow: (pcu/hr)



Group	A,B,Cp	A,B,Dp	Group	A,B,Cp	A,B,Dp
y	0.374	0.374	y	0.354	0.354
L (sec)	31	34	L (sec)	31	34
C (sec)	95	95	C (sec)	105	105
y pract.	0.606	0.578	y pract.	0.634	0.609
R.C. (%)	62%	55%	R.C. (%)	79%	72%

Stage / Phase Diagrams

1.



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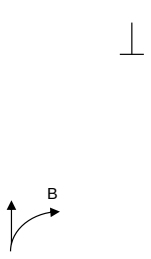

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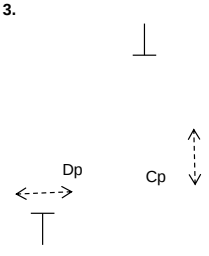

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I/G= 4		I/G= 5		I/G= 5	22	I/G=	I/G=
I/G= 4		I/G= 5		I/G= 5	22	I/G=	I/G=

Date: FEB, 2022 **Junction:** J16 Tung Lo Wan Road / Eastern Hospital Road

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

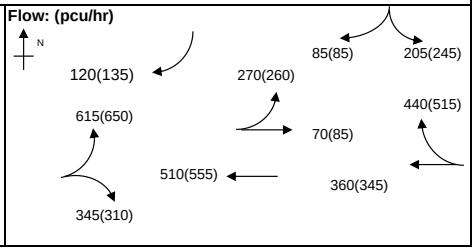
Junction: Tung Lo Wan Road / Moreton Terrace Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Tung Lo Wan Road WB	←	C	2	3.000						1915	1915	246	0.128		268	0.140	
	←	C	2	3.000						2055	2055	264	0.128		287	0.140	
Tung Lo Wan Road EB	↗	A	1	3.700	8					1670	1670	456	0.273		457	0.274	
	↑	A	1	3.500	13	35		32% / 68%	38% / 62%	1845	1835	504	0.273	0.273	503	0.274	0.274
Moreton Terrace PTI	↲	F	3	5.000		27				2005	2005	120	0.060		135	0.067	
Tung Lo Wan Road WB	←	E	2,3	3.700						1985	1985	360	0.181		345	0.174	
	↖	E	2,3	3.000		8		100%	100%	1535	1535	440	0.287	0.287	515	0.336	0.336
Tung Lo Wan Road EB	↗	E	2,3	5.000	13			79%	75%	1935	1945	340	0.176		345	0.177	
Tung Lo Wan Drive SB	↳	B	1	3.500	8	12		71% / 29%	74% / 26%	1680	1675	290	0.173		330	0.197	
Pedestrian Crossing		Dp	2,3	MIN GREEN + FLASH =			8	+	8	=	16						
		Gp	3	MIN GREEN + FLASH =			9	+	8	=	17						

Notes:

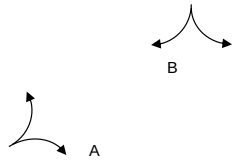
Flow: (pcu/hr)



Group	A,C,F	A,E	Group	A,C,F	A,E
y	0.461	0.560	y	0.481	0.610
L (sec)	19	12	L (sec)	19	12
C (sec)	100	100	C (sec)	105	105
y pract.	0.729	0.792	y pract.	0.737	0.797
R.C. (%)	58%	41%	R.C. (%)	53%	31%

Stage / Phase Diagrams

1.



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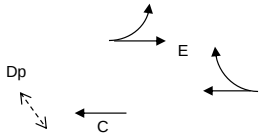

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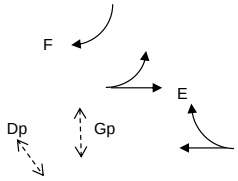

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I/G= 7		I/G= 7		I/G=		I/G=		I/G=	
I/G= 7		I/G= 7		I/G=		I/G=		I/G=	

Date: FEB, 2022 **Junction:** (J17) Tung Lo Wan Road / Moreton Terrace

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

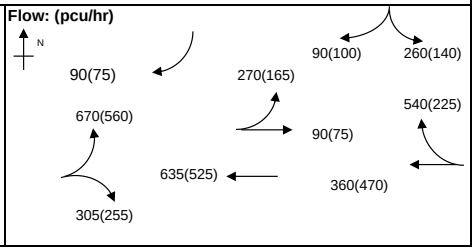
Junction: Tung Lo Wan Road / Moreton Terrace Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Tung Lo Wan Road WB	←	C	2	3.000						1915	1915	306	0.160		253	0.132	
	←	C	2	3.000						2055	2055	329	0.160		272	0.132	0.132
Tung Lo Wan Road EB	↱	A	1	3.700	8					1670	1670	465	0.278	0.278	389	0.233	0.233
	↕	A	1	3.500	13	35		40% / 60%	40% / 60%	1835	1835	510	0.278		426	0.232	
Moreton Terrace PTI	↲	F	3	5.000		27				2005	2005	90	0.045		75	0.037	
Tung Lo Wan Road WB	←	E	2,3	3.700						1985	1985	360	0.181		384	0.193	
	↰	E	2,3	3.000		8		100%	72%	1535	1605	540	0.352	0.352	311	0.194	
Tung Lo Wan Road EB	↱	E	2,3	5.000	13			75%	69%	1945	1960	360	0.185		240	0.122	
Tung Lo Wan Drive SB	↳	B	1	3.500	8	12		74% / 26%	58% / 42%	1675	1690	350	0.209		240	0.142	
Pedestrian Crossing		Dp	2,3	MIN GREEN + FLASH =			8	+	8	=	16						
		Gp	3	MIN GREEN + FLASH =			9	+	8	=	17						*

Notes:

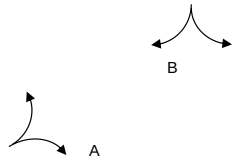
Flow: (pcu/hr)



Group	A,C,Gp	A,E	Group	A,C,F	A,C,Gp
y	0.439	0.630	y	0.403	0.365
L (sec)	29	12	L (sec)	19	29
C (sec)	95	95	C (sec)	105	105
y pract.	0.625	0.786	y pract.	0.737	0.651
R.C. (%)	43%	25%	R.C. (%)	83%	78%

Stage / Phase Diagrams

1.



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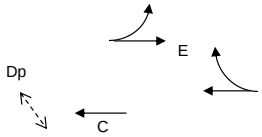

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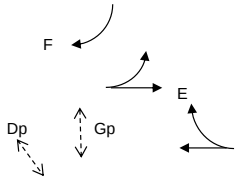

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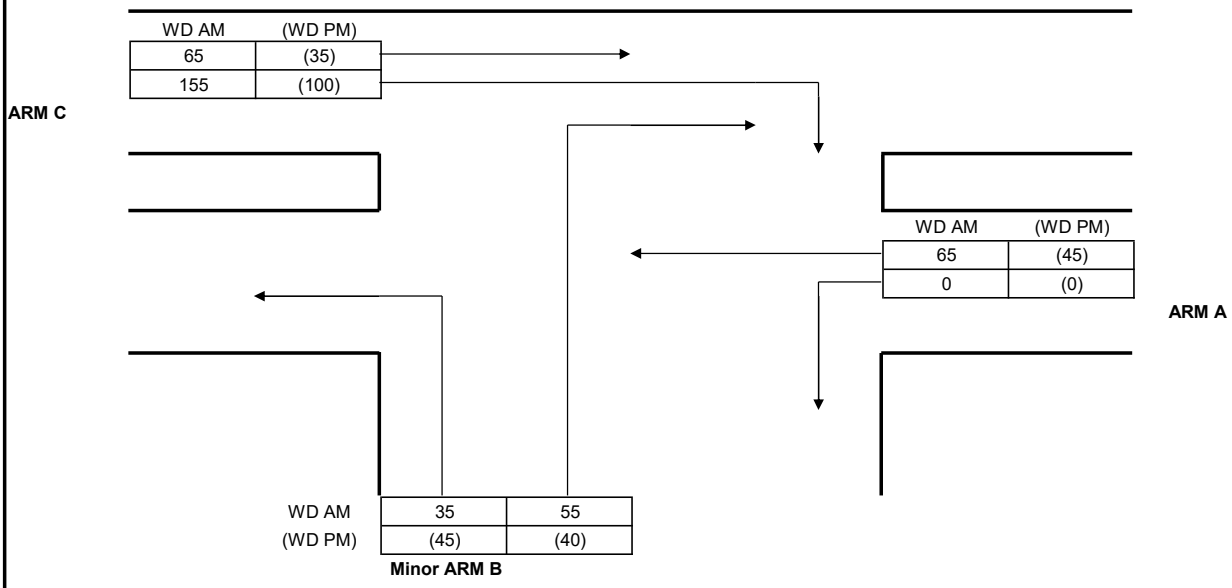
I/G= 7		I/G= 7		I/G=		I/G=		I/G=	
I/G= 2		I/G= 7		I/G= 5	17	I/G=		I/G=	

Date: FEB, 2022 **Junction:** (J17) Tung Lo Wan Road / Moreton Terrace

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Caroline Hill Road / Site Access			Ref. No.:	J18
Scheme:	2031 Design Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Caroline Hill Road				
ARM B:	Caroline Hill Road				
ARM C:	Cotton Path				



GEOMETRY

Major road width	W	7.25	Lane widths	w(b-a)	3.50
Central Reserve width	Wcr	0.00		w(b-c)	3.50
2 Lane Minor Arm (Y/N)		Y		w(c-b)	3.00
Visibilities	Vr(b-a)	45	Calculated	D	0.86
	Vl(b-a)	35		E	0.92
	Vr(b-c)	50		F	0.92
	Vr(c-b)	100		Y	0.75

ANALYSIS

		Factor	WD AM PEAK	(WD PM) PEAK
TRAFFIC FLOWS	q(c-a)		65	35
	q(c-b)		155	100
	q(a-b)		0	0
	q(a-c)		65	45
	q(b-a)		55	40
	q(b-c)		35	45
	f		0.39	0.53
CAPACITIES	Q(b-a)	1	460	488
	Q(b-c)	1	672	677
	Q(c-b)	1	671	676
	Q(b-ac)	1	524	573
RFC's	b-a		0.120	0.082
	b-c		0.052	0.066
	c-b		0.231	0.148
	b-ac		0.000	0.000
Worst RFC			**0.231**	**0.148**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

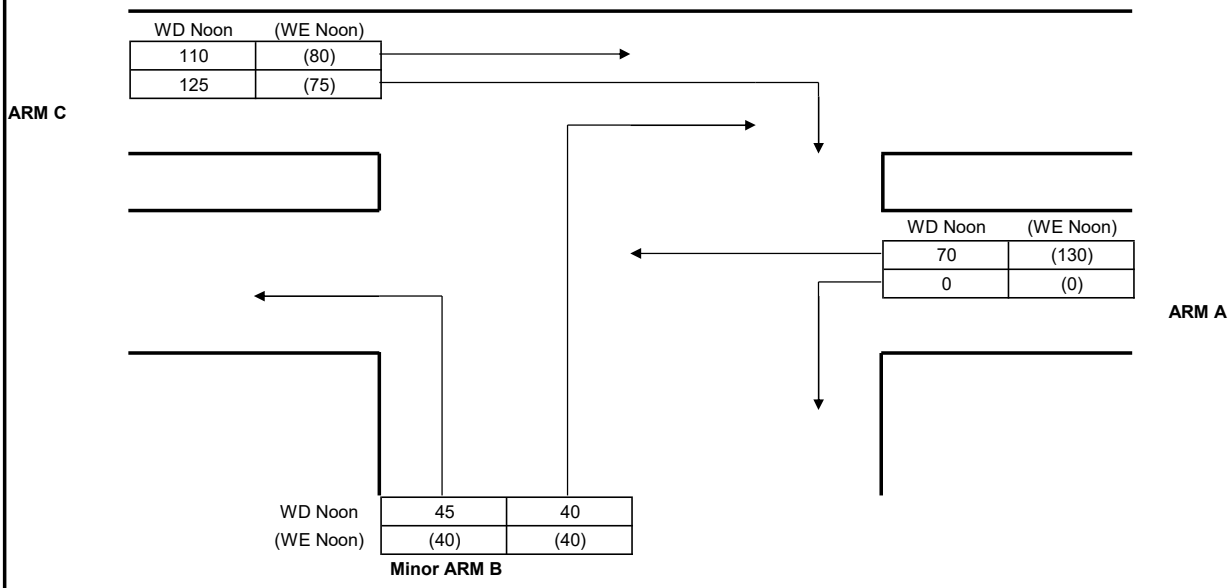
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Feb-22	Checked by:	CHC

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	#N/A			Ref. No.:	J18
Scheme:	2031 Design Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Caroline Hill Road				
ARM B:	Caroline Hill Road				
ARM C:	Cotton Path				



GEOMETRY

Major road width	W	7.25	Lane widths	w(b-a)	3.50
Central Reserve width	Wcr	0.00		w(b-c)	3.50
2 Lane Minor Arm (Y/N)		Y		w(c-b)	3.00
Visibilities	Vr(b-a)	45	Calculated	D	0.86
	Vl(b-a)	35		E	0.92
	Vr(b-c)	50		F	0.92
	Vr(c-b)	100		Y	0.75

ANALYSIS

		Factor	WD Noon PEAK	(WE Noon) PEAK
TRAFFIC FLOWS	q(c-a)		110	80
	q(c-b)		125	75
	q(a-b)		0	0
	q(a-c)		70	130
	q(b-a)		40	40
	q(b-c)		45	40
	f		0.53	0.50
CAPACITIES	Q(b-a)	1	462	469
	Q(b-c)	1	671	655
	Q(c-b)	1	669	654
	Q(b-ac)	1	553	547
RFC's	b-a		0.087	0.085
	b-c		0.067	0.061
	c-b		0.187	0.115
	b-ac		0.000	0.000
Worst RFC			**0.187**	**0.115**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

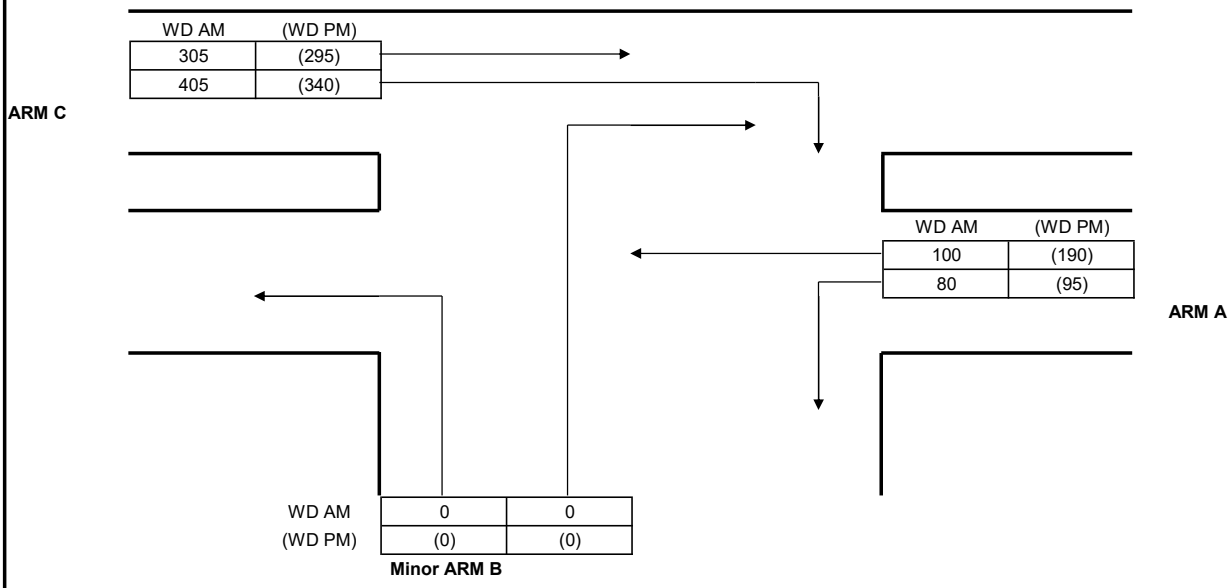
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Feb-22	Checked by:	CHC

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Hysan Avenue / Hoi Ping Road			Ref. No.:	J19
Scheme:	2021 Observed Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Hysan Avenue				
ARM B:	Hoi Ping Road				
ARM C:	Hysan Avenue				



GEOMETRY					
Major road width	W	10.00	Lane widths	w(b-a)	0.00
Central Reserve width	Wcr	0.00		w(b-c)	0.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.30
Visibilities	Vr(b-a)	20	Calculated	D	0.55
	Vl(b-a)	20		E	0.60
	Vr(b-c)	20		F	0.95
	Vr(c-b)	100		Y	0.66

ANALYSIS			WD AM PEAK	(WD PM) PEAK
TRAFFIC FLOWS	q(c-a)		305	295
	q(c-b)		405	340
	q(a-b)		80	95
	q(a-c)		100	190
	q(b-a)		0	0
	q(b-c)		0	0
	f		0.00	0.00
		Factor		
CAPACITIES	Q(b-a)	1	227	227
	Q(b-c)	1	427	413
	Q(c-b)	1	667	643
	Q(b-ac)	1	227	227
RFC's	b-a		0.000	0.000
	b-c		0.000	0.000
	c-b		0.607	0.529
	b-ac		0.000	0.000
Worst RFC			**0.607**	**0.529**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

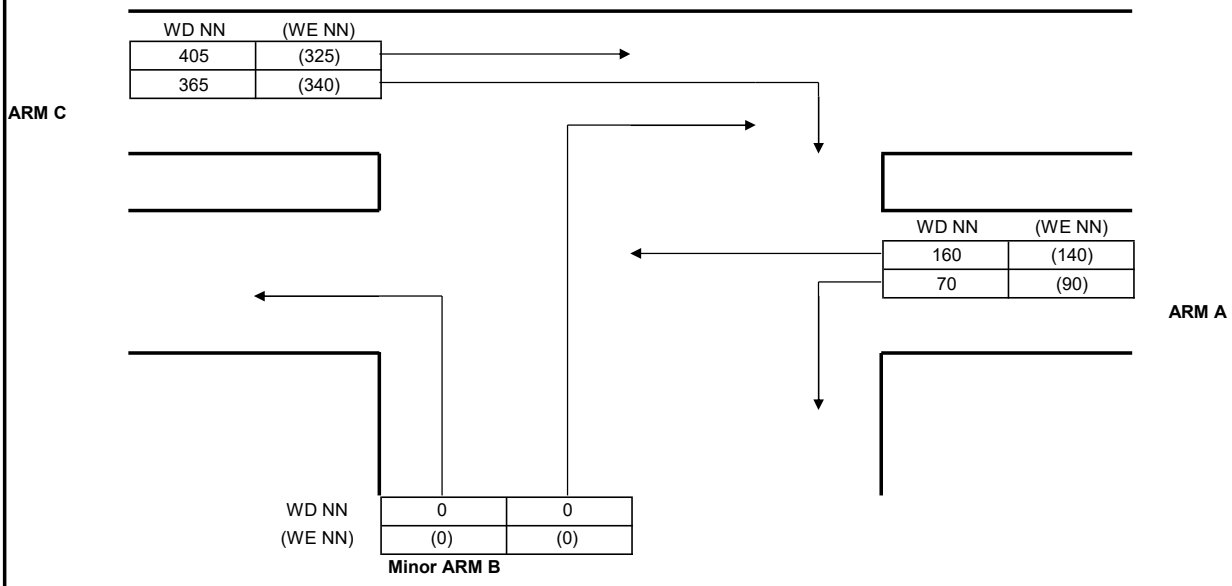
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Feb-22	Checked by:	CHC

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Hysan Avenue / Hoi Ping Road			Ref. No.:	J19
Scheme:	2021 Observed Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Hysan Avenue				
ARM B:	Hoi Ping Road				
ARM C:	Hysan Avenue				



GEOMETRY

Major road width	W	10.00	Lane widths	w(b-a)	0.00
Central Reserve width	Wcr	0.00		w(b-c)	0.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.30
Visibilities	Vr(b-a)	20	Calculated	D	0.55
	Vl(b-a)	20		E	0.60
	Vr(b-c)	20		F	0.95
	Vr(c-b)	100		Y	0.66

ANALYSIS

		Factor	WD NN PEAK	(WE NN) PEAK
TRAFFIC FLOWS	q(c-a)		405	325
	q(c-b)		365	340
	q(a-b)		70	90
	q(a-c)		160	140
	q(b-a)		0	0
	q(b-c)		0	0
	f		0.00	0.00
CAPACITIES	Q(b-a)	1	219	232
	Q(b-c)	1	419	420
	Q(c-b)	1	655	655
	Q(b-ac)	1	219	232
RFC's	b-a		0.000	0.000
	b-c		0.000	0.000
	c-b		0.557	0.519
	b-ac		0.000	0.000
Worst RFC			**0.557**	**0.519**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

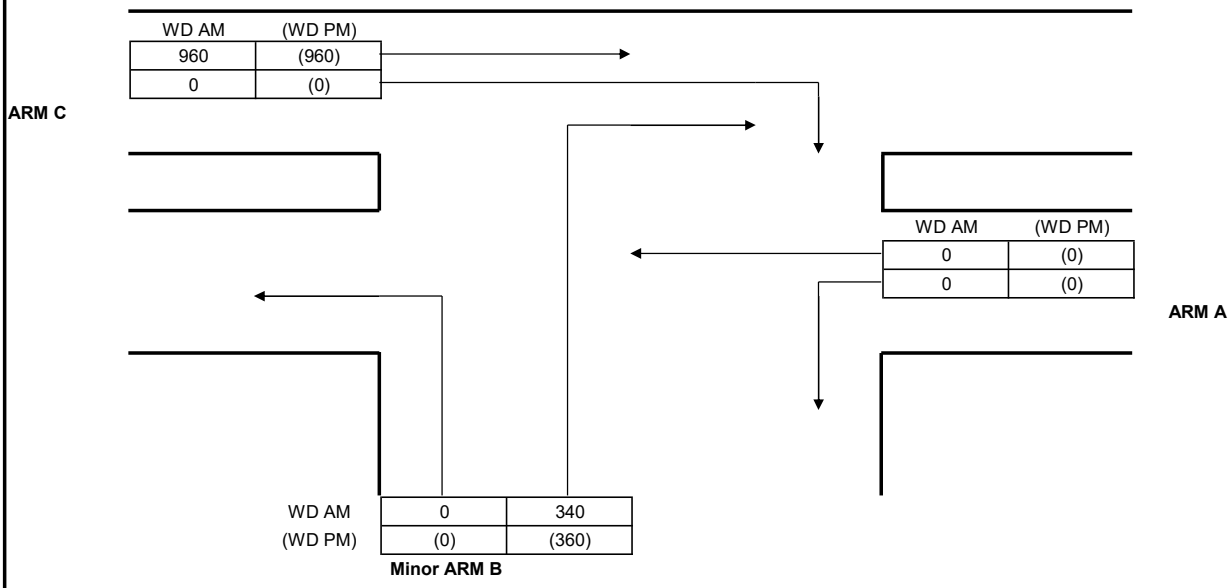
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Feb-22	Checked by:	CHC

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Tung Lo Wan Road / Tai Hang Road			Ref. No.:	J20
Scheme:	2031 Design Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Tung Lo Wan Road				
ARM B:	Tai Hang Road				
ARM C:	Tung Lo Wan Road				



GEOMETRY					
Major road width	W	6.70	Lane widths	w(b-a)	6.70
Central Reserve width	Wcr	0.00		w(b-c)	0.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	20	Calculated	D	1.08
	Vl(b-a)	20		E	0.60
	Vr(b-c)	30		F	0.59
	Vr(c-b)	10		Y	0.77

ANALYSIS			WD AM PEAK	(WD PM) PEAK
TRAFFIC FLOWS	q(c-a)		960	960
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		0	0
	q(b-a)		340	360
	q(b-c)		0	0
	f		0.00	0.00
		Factor		
CAPACITIES	Q(b-a)	1	494	494
	Q(b-c)	1	450	450
	Q(c-b)	1	441	441
	Q(b-ac)	1	494	494
RFC's	b-a		0.688	0.729
	b-c		0.000	0.000
	c-b		0.000	0.000
	b-ac		0.688	0.729
Worst RFC			**0.688**	**0.729**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

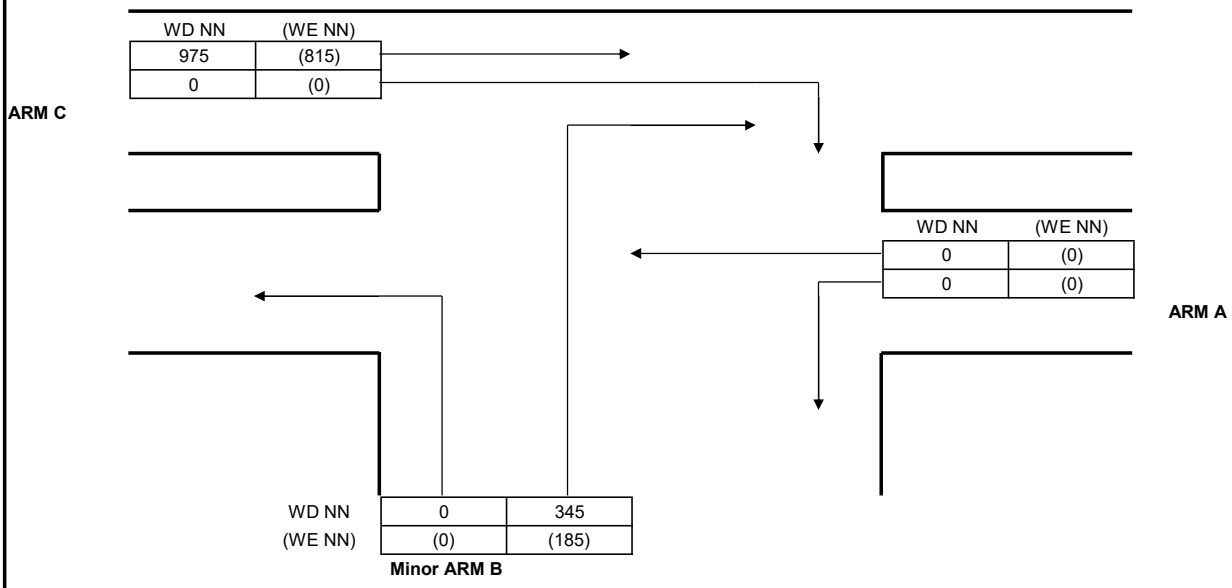
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Feb-22	Checked by:	CHC

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Tung Lo Wan Road / Tai Hang Road			Ref. No.:	J20
Scheme:	2031 Design Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Tung Lo Wan Road				
ARM B:	Tai Hang Road				
ARM C:	Tung Lo Wan Road				



GEOMETRY					
Major road width	W	6.70	Lane widths	w(b-a)	6.70
Central Reserve width	Wcr	0.00		w(b-c)	0.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	20	Calculated	D	1.08
	Vl(b-a)	20		E	0.60
	Vr(b-c)	30		F	0.59
	Vr(c-b)	10		Y	0.77

ANALYSIS			WD NN PEAK	(WE NN) PEAK
TRAFFIC FLOWS	q(c-a)		975	815
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		0	0
	q(b-a)		345	185
	q(b-c)		0	0
	f		0.00	0.00
		Factor		
CAPACITIES	Q(b-a)	1	492	522
	Q(b-c)	1	450	450
	Q(c-b)	1	441	441
	Q(b-ac)	1	492	522
RFC's	b-a		0.701	0.354
	b-c		0.000	0.000
	c-b		0.000	0.000
	b-ac		0.701	0.354
Worst RFC			**0.701**	**0.354**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Feb-22	Checked by:	CHC

Year 2031 Design
with Hong Kong Stadium
(Sensitivity Test)

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Hennessy Road / Percival Street Design Year: 2031

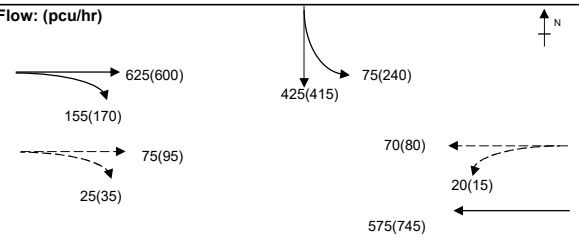
Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Hennessy Road WB	← *	A	1	3.800						1495	1495	237	0.159		308	0.206	0.206
	←	A	1	3.700						2125	2125	338	0.159	0.159	437	0.206	
Hennessy Road WB (Tram)	⇃	D	2	3.000	20					1780	1780	20	0.011		15	0.008	
	⇐	A	1	3.000						2055	2055	70	0.034		80	0.039	
Hennessy Road EB	→**	B	1,2,3	3.000						960	960	199	0.207		191	0.199	
	→	B	1,2,3	3.000						2055	2055	426	0.207		409	0.199	
	↘	C	2,3	3.000		25				1940	1940	155	0.080	0.080	170	0.088	0.088
Hennessy Road EB (Tram)	⇉	B	1,2,3	3.000						1915	1915	75	0.039		95	0.050	
	⇃	C	2,3	3.000		25				1940	1940	25	0.013		35	0.018	
Percival Street SB	↳	E	4	3.300	10					1690	1690	75	0.044		240	0.142	0.142
	↓	E	4	3.300						2085	2085	211	0.101		207	0.099	
	↓	E	4	3.500						2105	2105	214	0.102	0.102	208	0.099	
Pedestrian Crossing		Fp	4	MIN GREEN + FLASH =			12	+	14	=	26						
		Gp	1	MIN GREEN + FLASH =			5	+	7	=	12						

Notes:

* = Site factor of 0.75 has been adopted.
** = Site factor of 0.5 has been adopted.

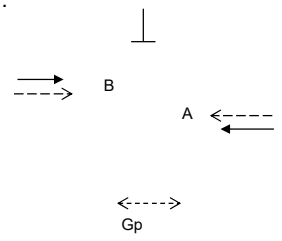
Flow: (pcu/hr)



Group	A,C,Fp	A,C,E	Group	A,C,Fp	A,C,E
y	0.239	0.341	y	0.294	0.436
L (sec)	46	19	L (sec)	46	19
C (sec)	120	120	C (sec)	120	120
y pract.	0.555	0.758	y pract.	0.555	0.758
R.C. (%)	132%	122%	R.C. (%)	89%	74%

Stage / Phase Diagrams

1.



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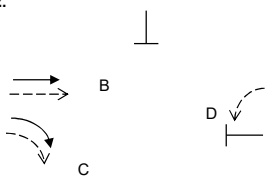

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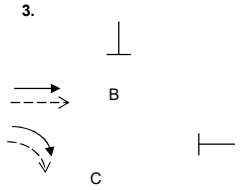

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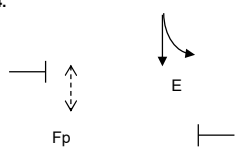


5.

I/G= 6		I/G= 8		I/G=		I/G= 8		I/G=	
I/G= 6		I/G= 8		I/G=		I/G= 8		I/G=	

Date: FEB, 2022 **Junction:** (J1) Hennessy Road / Percival Street

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Hennessy Road / Percival Street Design Year: 2031

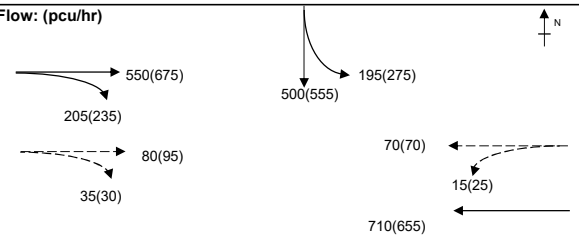
Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Hennessy Road WB	← *	A	1	3.800						1495	1495	293	0.196		271	0.181	0.181
	←	A	1	3.700						2125	2125	417	0.196	0.196	384	0.181	
Hennessy Road WB (Tram)	↓	D	2	3.000	20					1780	1780	15	0.008		25	0.014	
	←	A	1	3.000						2055	2055	70	0.034		70	0.034	
Hennessy Road EB	→ **	B	1,2,3	3.000						960	960	175	0.182		215	0.224	
	→	B	1,2,3	3.000						2055	2055	375	0.182		460	0.224	
	↘	C	2,3	3.000		25				1940	1940	205	0.106	0.106	235	0.121	0.121
Hennessy Road EB (Tram)	→	B	1,2,3	3.000						1915	1915	80	0.042		95	0.050	
	↓	C	2,3	3.000		25				1940	1940	35	0.018		30	0.015	
Percival Street SB	↳	E	4	3.300	10					1690	1690	195	0.115		275	0.163	0.163
	↓	E	4	3.300						2085	2085	249	0.119		276	0.132	
	↓	E	4	3.500						2105	2105	251	0.119		279	0.133	
Pedestrian Crossing		Fp	4	MIN GREEN + FLASH =			12	+	14	=	26			*			
		Gp	1	MIN GREEN + FLASH =			5	+	7	=	12						

Notes:

* = Site factor of 0.75 has been adopted.
** = Site factor of 0.5 has been adopted.

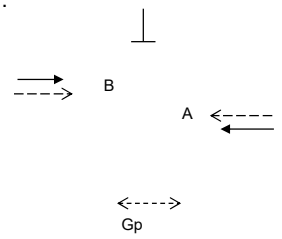
Flow: (pcu/hr)



Group	A,C,E	A,C,Fp	Group	A,C,Fp	A,C,E
y	0.421	0.302	y	0.302	0.465
L (sec)	19	46	L (sec)	46	19
C (sec)	104	104	C (sec)	104	104
y pract.	0.736	0.502	y pract.	0.502	0.736
R.C. (%)	75%	66%	R.C. (%)	66%	58%

Stage / Phase Diagrams

1.



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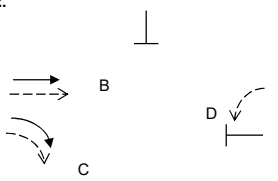

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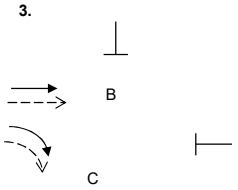

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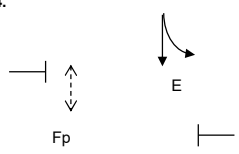


5.

I/G= 4		I/G= 8		I/G=		I/G= 10	26
I/G= 6		I/G= 8		I/G=		I/G= 8	

I/G=	
I/G=	

Date: FEB, 2022 **Junction:** (J1) Hennessy Road / Percival Street

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Matheson Street / Percival Street / Russell Street Design Year: 2031

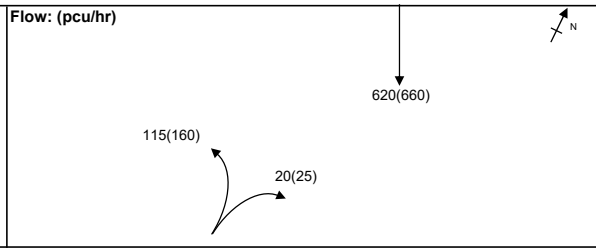
Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Percival Street	↓	A	1	3.600						1975	1975	310	0.157	0.157	330	0.167	0.167
SB	↓	A	1	3.600						1975	1975	310	0.157		330	0.167	
Matheson Street	↰ ↑	B	2	3.300	10					1690	1690	67	0.040		91	0.054	
NB	↑ →	B	2	3.300	13.3	10		71% / 29%	73% / 27%	1730	1730	68	0.039		94	0.054	
Pedestrian Crossing		Cp	1,3	MIN GREEN + FLASH =			9	+	10	=	19						
		Dp	2,3	MIN GREEN + FLASH =			6	+	6	=	12			*			*

Notes:

TAC junction: Cycle time of 105s and 120s are adopted for AM and PM Peak

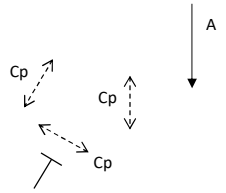
Flow: (pcu/hr)



Group	Cp,B	A,Dp	Group	Cp,B	A,Dp
y	0.040	0.157	y	0.054	0.167
L (sec)	30	23	L (sec)	30	23
C (sec)	105	105	C (sec)	120	120
y pract.	0.643	0.703	y pract.	0.675	0.728
R.C. (%)	1522%	348%	R.C. (%)	1142%	335%

Stage / Phase Diagrams

1.



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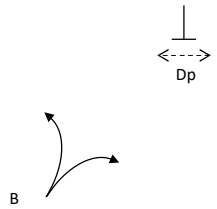

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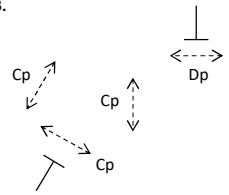


4.

5.

I/G= 4		I/G= 8	12	I/G=		I/G=	I/G=
I/G= 4		I/G= 8	12	I/G=		I/G=	I/G=

Date: FEB, 2022 **Junction:** (J2) Matheson Street / Percival Street / Russell Street

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Matheson Street / Percival Street / Russell Street Design Year: 2031

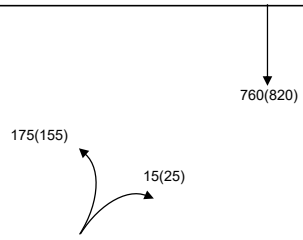
Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Percival Street	↓	A	1	3.600						1975	1975	380	0.192	0.192	410	0.208	0.208
SB	↓	A	1	3.600						1975	1975	380	0.192		410	0.208	
Matheson Street	↰ ↑	B	2	3.300	10					1690	1690	94	0.056		89	0.053	
NB	↑ →	B	2	3.300	13.3	10		84% / 16%	73% / 27%	1740	1730	96	0.055		91	0.053	
Pedestrian Crossing		Cp	1,3	MIN GREEN + FLASH =			9	+	10	=	19						
		Dp	2,3	MIN GREEN + FLASH =			6	+	6	=	12			*			*

Notes:

TAC junction: Cycle time of 105s and 110s are adopted for WD and WE Noon

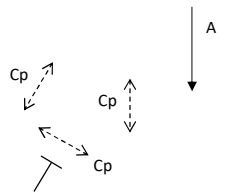
Flow: (pcu/hr)



Group	Cp,B	A,Dp	Group	Cp,B	A,Dp
y	0.056	0.192	y	0.053	0.208
L (sec)	30	23	L (sec)	30	23
C (sec)	105	105	C (sec)	110	110
y pract.	0.643	0.703	y pract.	0.655	0.712
R.C. (%)	1056%	265%	R.C. (%)	1143%	243%

Stage / Phase Diagrams

1.



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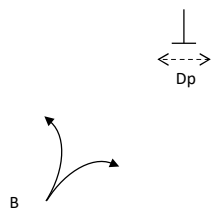

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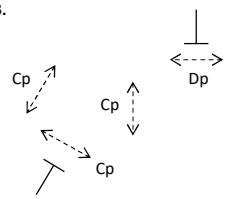


4.

5.

I/G= 4		I/G= 8	12	I/G=		I/G=	
I/G= 4		I/G= 8	12	I/G=		I/G=	

Date: FEB, 2022 **Junction:** (J2) Matheson Street / Percival Street / Russell Street

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Percival Street / Hysan Avenue Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Leighton Road	← *	E	1	3.500						1570	1570	491	0.313		510	0.325	
WB	← *	E	1	3.000						1645	1645	514	0.312		535	0.325	0.325
Leighton Road	→ **	A	1	2.500						1120	1120	361	0.322		318	0.284	
EB	→ **	A	1	2.500						1205	1205	389	0.323	0.323	342	0.284	
Percival Street SB	↳ **	C	2	4.000	25					1140	1140	260	0.228	0.228	315	0.276	0.276
Percival Street	* ↲	C	2	5.000		25				1595	1595	239	0.150		242	0.152	
SB	** ↲	C	2	3.500		20				1175	1175	176	0.150		178	0.151	
Pedestrian Crossing		Bp	1	MIN GREEN + FLASH =			16	+	7	=	23						
		Dp	2	MIN GREEN + FLASH =			5	+	12	=	17						

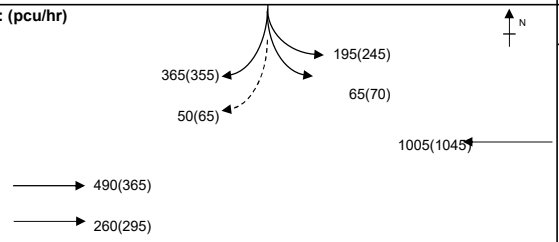
Notes:

TAC junction: Cycle time of 105s and 105s are adopted for AM and PM Peak

** = Site Factor of 0.6 adopted

* = Site Factor of 0.8 adopted

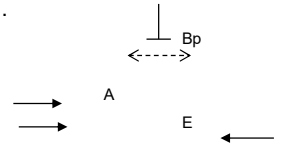
Flow: (pcu/hr)



Group	E,C	A,C	Group	A,C	E,C
y	0.541	0.551	y	0.560	0.602
L (sec)	9	14	L (sec)	14	9
C (sec)	105	105	C (sec)	105	105
y pract.	0.823	0.780	y pract.	0.780	0.823
R.C. (%)	52%	42%	R.C. (%)	39%	37%

Stage / Phase Diagrams

1.



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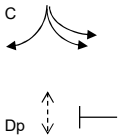


4.

5.

I/G= 8		I/G= 8		I/G=		I/G=		I/G=	
I/G= 6		I/G= 5		I/G=		I/G=		I/G=	

Date: FEB, 2022 **Junction:** (J3) Leighton Road / Percival Street / Hysan Avenue

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Percival Street / Hysan Avenue Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Leighton Road WB	← *	E	1	3.500						1570	1570	496	0.316		518	0.330	
	← *	E	1	3.000						1645	1645	519	0.316		542	0.329	
Leighton Road EB	→ **	A	1	2.500						1120	1120	412	0.368	0.368	369	0.329	0.329
	→ **	A	1	2.500						1205	1205	443	0.368		396	0.329	
Percival Street SB	↳ **	C	2	4.000	25					1140	1140	310	0.272	0.272	380	0.333	0.333
Percival Street SB	* ↲	C	2	5.000		25				1595	1595	294	0.184		268	0.168	
	** ↲	C	2	3.500		20				1175	1175	216	0.184		197	0.168	
Pedestrian Crossing		Bp	1	MIN GREEN + FLASH =			16	+	7	=	23						
		Dp	2	MIN GREEN + FLASH =			5	+	12	=	17						

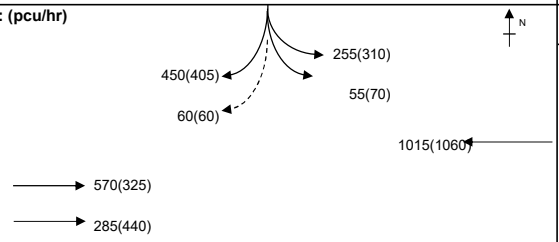
Notes:

TAC junction: Cycle time of 130s and 130s are adopted for WD and WE Noon

** = Site Factor of 0.6 adopted

* = Site Factor of 0.8 adopted

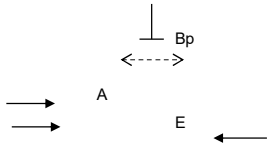
Flow: (pcu/hr)



Group	E,C	A,C	Group	E,C	A,C
y	0.588	0.640	y	0.663	0.663
L (sec)	9	14	L (sec)	9	14
C (sec)	130	130	C (sec)	130	130
y pract.	0.838	0.803	y pract.	0.838	0.803
R.C. (%)	43%	26%	R.C. (%)	26%	21%

Stage / Phase Diagrams

1.



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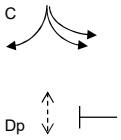


4.

5.

I/G= 8		I/G= 8		I/G=		I/G=		I/G=	
I/G= 8		I/G= 8		I/G=		I/G=		I/G=	

Date: FEB, 2022 **Junction:** (J3) Leighton Road / Percival Street / Hysan Avenue

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Hysan Avenue / Leighton Lane Design Year: 2031

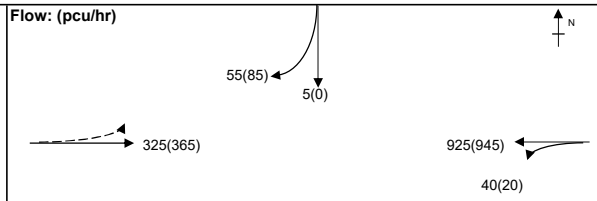
Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Leighton Road WB	↓	B	2	3.500	5			9%	4%	1915	1940	463	0.242		466	0.240	
	←	B	2	3.200						2075	2075	502	0.242		499	0.240	
Leighton Road EB	↗	(free flow)															
	→	A	1,2	3.500						1965	1965	325	0.165	0.165	365	0.186	0.186
Hysan Avenue	↓	C	3	3.300		17		84%	100%	1810	1785	32	0.018		45	0.025	
SB	↲	C	3	3.000		10				1585	1585	28	0.018		40	0.025	
Pedestrian Crossing		Dp	3	MIN GREEN + FLASH =			11	+	10	=	21			*			*
		Ep	1,2	MIN GREEN + FLASH =			6	+	7	=	13						

Notes:

TAC junction: Cycle time of 120s and 130s are adopted for AM and PM Peak

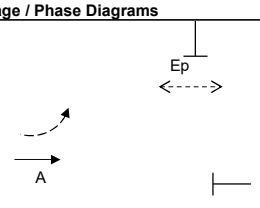
Flow: (pcu/hr)



Group	A,C	A,Dp	Group	A,C	A,Dp
y	0.183	0.165	y	0.211	0.186
L (sec)	9	31	L (sec)	9	31
C (sec)	120	120	C (sec)	130	130
y pract.	0.833	0.668	y pract.	0.838	0.685
R.C. (%)	355%	304%	R.C. (%)	297%	269%

Stage / Phase Diagrams

1.



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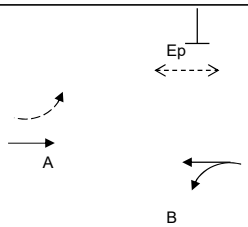

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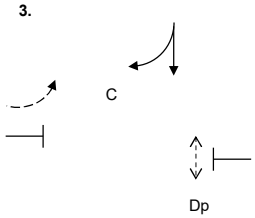


4.

5.

I/G= 4		I/G=		I/G= 7	21	I/G=		I/G=	
I/G= 4		I/G=		I/G= 7	21	I/G=		I/G=	

Date: FEB, 2022 **Junction:** (J4) Leighton Road / Hysan Avenue / Leighton Lane

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Hysan Avenue / Leighton Lane Design Year: 2031

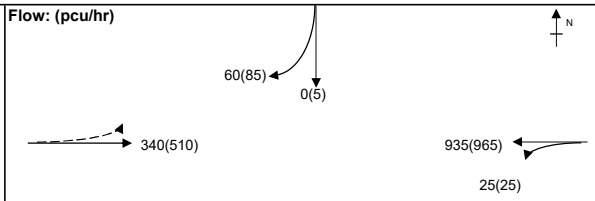
Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Leighton Road WB	↰	B	2	3.500	5			5%	5%	1935	1935	463	0.239		478	0.247	
	←	B	2	3.200						2075	2075	497	0.240		512	0.247	
Leighton Road EB	↗	(free flow)															
	→	A	1,2	3.500						1965	1965	340	0.173	0.173	510	0.260	0.260
Hysan Avenue	↰	C	3	3.300		17		100%	90%	1785	1805	32	0.018		48	0.027	
SB	↲	C	3	3.000		10				1585	1585	28	0.018		42	0.026	
Pedestrian Crossing		Dp	3	MIN GREEN + FLASH =			11	+	10	=	21			*			*
		Ep	1,2	MIN GREEN + FLASH =			6	+	7	=	13						

Notes:

TAC junction: Cycle time of 130s and 130s are adopted for WD and WE Noon

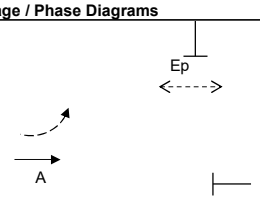
Flow: (pcu/hr)



Group	A,C	A,Dp	Group	A,C	A,Dp
y	0.191	0.173	y	0.286	0.260
L (sec)	9	31	L (sec)	9	31
C (sec)	130	130	C (sec)	130	130
y pract.	0.838	0.685	y pract.	0.838	0.685
R.C. (%)	339%	296%	R.C. (%)	193%	164%

Stage / Phase Diagrams

1.



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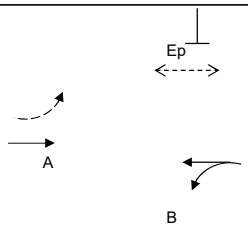

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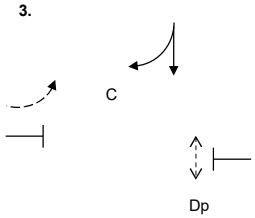

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I/G= 4		I/G=		I/G= 7	21	I/G=		I/G=	
I/G= 4		I/G=		I/G= 7	21	I/G=		I/G=	

Date: FEB, 2022 **Junction:** (J4) Leighton Road / Hysan Avenue / Leighton Lane

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Caroline Hill Road (West) Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Leighton Road WB	*	A	1	3.500	20					730	730	144	0.197		123	0.168	
	^	A	1	3.500	25			69%	67%	1215	1215	240	0.198		205	0.169	
		A	1	3.000						2055	2055	406	0.198	0.198	347	0.169	0.169
Caroline Hill Road NB		B	2	3.500	65	25		92% / 8%	98% / 2%	1915	1920	447	0.233		465	0.242	
		B	2	3.500		20				1960	1960	458	0.234	0.234	475	0.242	0.242
Leighton Road EB		A	1	3.500						985	985	132	0.134		152	0.154	
		A	1	3.300						2085	2085	278	0.133		323	0.155	
Hoi Ping Road SB		C	3	3.500						1965	1965	342	0.174		304	0.155	
	*	C	3	3.500		12		59%	81%	730	715	128	0.175	0.175	111	0.155	0.155

Pedestrian Crossing	Ep	1	MIN GREEN + FLASH =	10	+	5	=	15
	Fp	1,3	MIN GREEN + FLASH =	14	+	5	=	19
	Gp	2	MIN GREEN + FLASH =	14	+	5	=	19
	Hp	3	MIN GREEN + FLASH =	10	+	7	=	17
	Ip	1,2	MIN GREEN + FLASH =	11	+	6	=	17
	Jp	2	MIN GREEN + FLASH =	10	+	7	=	17

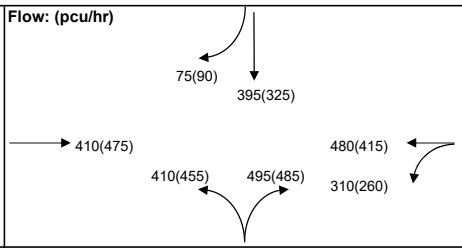
Notes:

TAC junction: Cycle time of 105s and 130s are adopted for AM and PM Peak

^Site Factor of 0.6 adopted due to merging traffic ahead

*Site factor of 0.4 applied due to flare lane

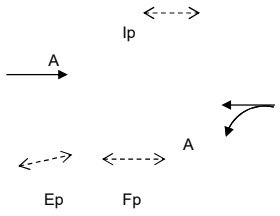
Flow: (pcu/hr)



Group	A,B,Hp	A,B,C	Group	A,B,Hp	A,B,C
y	0.431	0.607	y	0.411	0.566
L (sec)	38	20	L (sec)	38	20
C (sec)	105	105	C (sec)	130	130
y pract.	0.574	0.729	y pract.	0.637	0.762
R.C. (%)	33%	20%	R.C. (%)	55%	34%

Stage / Phase Diagrams

1.



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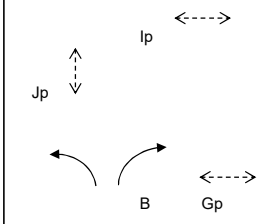

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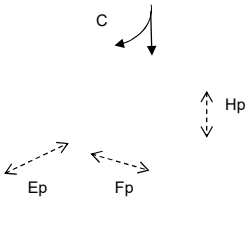

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I/G= 8		I/G= 8		I/G= 7		I/G=	
I/G= 8		I/G= 8		I/G= 7		I/G=	

Date: FEB, 2022 **Junction:** J5 Leighton Road / Caroline Hill Road (West)

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Caroline Hill Road (West) Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Leighton Road WB	*	A	1	3.500	20					730	730	123	0.168		142	0.195	
	^	A	1	3.500	25			67%	71%	1215	1210	205	0.169		237	0.196	
		A	1	3.000						2055	2055	347	0.169	0.169	401	0.195	
Caroline Hill Road NB		B	2	3.500	65	25		90% / 10%	100% / 0%	1915	1920	442	0.231		431	0.224	0.224
		B	2	3.500		20				1960	1960	453	0.231	0.231	439	0.224	
Leighton Road EB		A	1	3.500						985	985	138	0.140		197	0.200	
		A	1	3.300						2085	2085	292	0.140		418	0.200	0.200
Hoi Ping Road SB		C	3	3.500						1965	1965	320	0.163		304	0.155	
	*	C	3	3.500		12		100%	81%	700	715	145	0.207	0.207	111	0.155	0.155

Pedestrian Crossing	Ep	1	MIN GREEN + FLASH =	10	+	5	=	15
	Fp	1,3	MIN GREEN + FLASH =	14	+	5	=	19
	Gp	2	MIN GREEN + FLASH =	14	+	5	=	19
	Hp	3	MIN GREEN + FLASH =	10	+	7	=	17
	Ip	1,2	MIN GREEN + FLASH =	11	+	6	=	17
	Jp	2	MIN GREEN + FLASH =	10	+	7	=	17

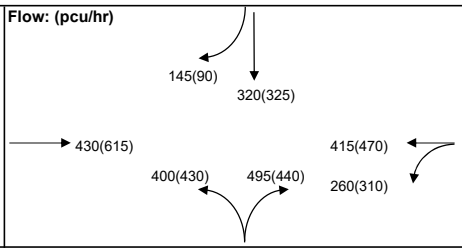
Notes:

TAC junction: Cycle time of 120s and 130s are adopted for WD and WE Noon Peak

^Site Factor of 0.6 adopted due to merging traffic ahead

*Site factor of 0.4 applied due to flare lane

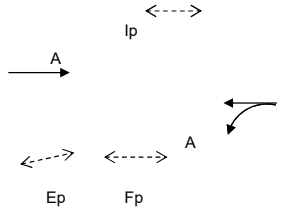
Flow: (pcu/hr)



Group	Ep,B,C	A,B,C	Group	A,B,Hp	A,B,C
y	0.438	0.607	y	0.425	0.580
L (sec)	33	20	L (sec)	38	20
C (sec)	120	120	C (sec)	130	130
y pract.	0.653	0.750	y pract.	0.637	0.762
R.C. (%)	49%	24%	R.C. (%)	50%	31%

Stage / Phase Diagrams

1.



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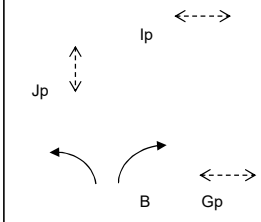

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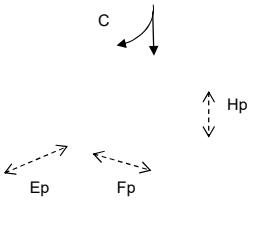


4.

5.

I/G= 8		I/G= 8		I/G= 7		I/G=	
I/G= 8		I/G= 8		I/G= 7		I/G=	

Date: FEB, 2022 **Junction:** J5 Leighton Road / Caroline Hill Road (West)

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

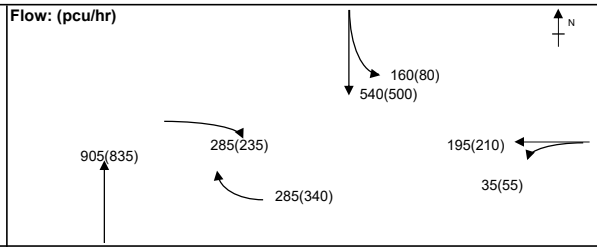
Junction: Caroline Hill Road (West) / Link Road / New Access Road Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Link Road NB	↑	A	1,2	3.650						1980	1980	905	0.457	0.457	835	0.422	0.422
U-turn Slip Road EB	↱	B	2	5.000		5				1625	1625	285	0.175		235	0.145	
Access Road	←	C	3	3.650						2120	2120	195	0.092		210	0.099	
WB	↰	C	3	3.650	15					1800	1800	35	0.019		55	0.031	
Caroline Hill Road	↓	D	1	3.650	20			48%	29%	1910	1940	332	0.174		277	0.143	
SB	↓	D	1	3.650						2120	2120	368	0.174		303	0.143	
U-turn Slip Road WB	←	E	3	5.000						2115	2115	285	0.135	0.135	340	0.161	0.161
Pedestrian Crossing		Fp	3	MIN GREEN + FLASH =			11	+	5	=	16						
		Gp	1,2	MIN GREEN + FLASH =			9	+	5	=	14						

Notes:

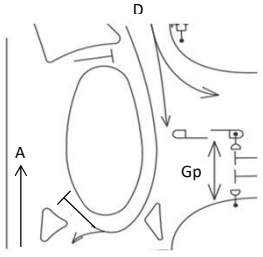
Flow: (pcu/hr)



Group	A,C	A,E	Group	A,C	A,E
y	0.549	0.592	y	0.521	0.582
L (sec)	15	8	L (sec)	15	8
C (sec)	105	105	C (sec)	105	105
y pract.	0.771	0.831	y pract.	0.771	0.831
R.C. (%)	41%	40%	R.C. (%)	48%	43%

Stage / Phase Diagrams

1.



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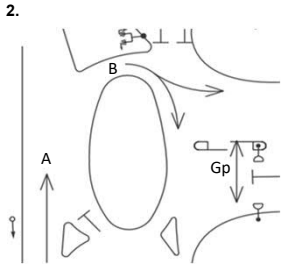

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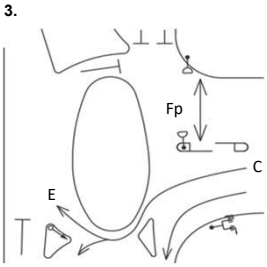

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I/G= 5		I/G=		I/G= 5		I/G=	I/G=
I/G= 5		I/G=		I/G= 5		I/G=	I/G=

Date: APR, 2022 **Junction:** J6R Caroline Hill Road (West) / Link Road / New Access Road

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

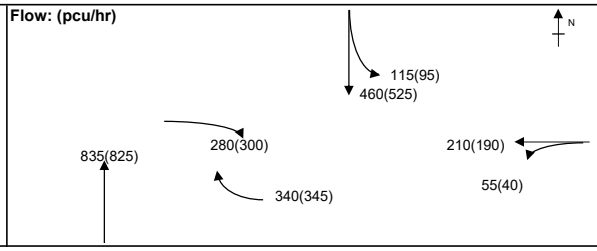
Junction: Caroline Hill Road (West) / Link Road / New Access Road Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Link Road NB	↑	A	1,2	3.650						1980	1980	835	0.422	0.422	825	0.417	0.417
U-turn Slip Road EB	↱	B	2	5.000		5				1625	1625	280	0.172		300	0.185	
Access Road	←	C	3	3.650						2120	2120	210	0.099		190	0.090	
WB	↰	C	3	3.650	15					1800	1800	55	0.031		40	0.022	
Caroline Hill Road	↓	D	1	3.650	20			42%	32%	1920	1935	273	0.142		296	0.153	
SB	↓	D	1	3.650						2120	2120	302	0.142		324	0.153	
U-turn Slip Road WB	←	E	3	5.000						2115	2115	340	0.161	0.161	345	0.163	0.163
Pedestrian Crossing		Fp	3	MIN GREEN + FLASH =			11	+	5	=	16						
		Gp	1,2	MIN GREEN + FLASH =			9	+	5	=	14						

Notes:

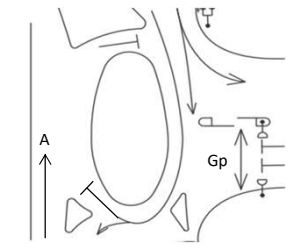
Flow: (pcu/hr)



Group	A,C	A,E	Group	A,C	A,E
y	0.521	0.582	y	0.506	0.580
L (sec)	15	8	L (sec)	15	8
C (sec)	105	105	C (sec)	105	105
y pract.	0.771	0.831	y pract.	0.771	0.831
R.C. (%)	48%	43%	R.C. (%)	52%	43%

Stage / Phase Diagrams

1.



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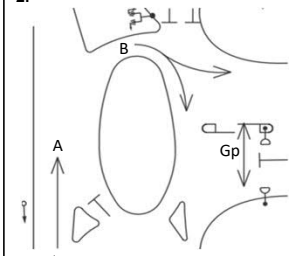

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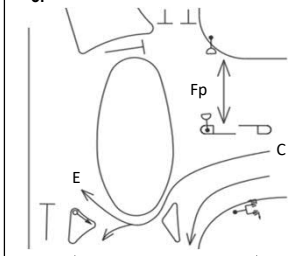

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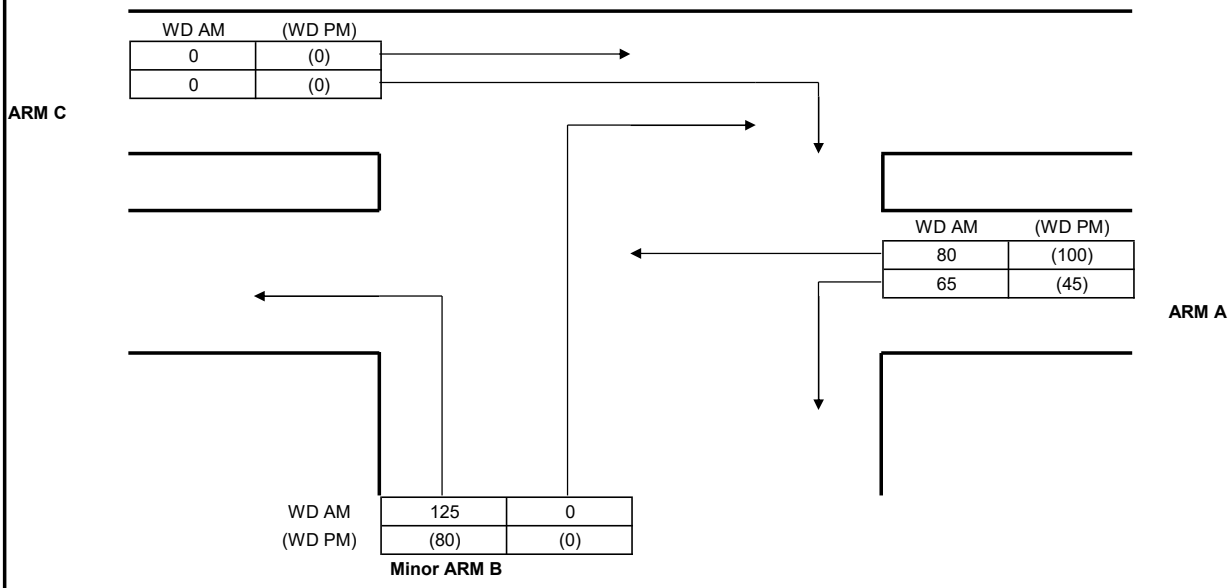
I/G= 5		I/G=		I/G= 5		I/G=	I/G=
I/G= 5		I/G=		I/G= 5		I/G=	I/G=

Date: APR, 2022 **Junction:** J6R Caroline Hill Road (West) / Link Road / New Access Road

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Caroline Hill Road / Cotton Path			Ref. No.:	J7
Scheme:	2031 Design Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Caroline Hill Road				
ARM B:	Caroline Hill Road				
ARM C:	Cotton Path				



GEOMETRY					
Major road width	W	6.20	Lane widths	w(b-a)	2.00
Central Reserve width	Wcr	0.00		w(b-c)	2.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	100	Calculated	D	0.80
	Vl(b-a)	100		E	0.77
	Vr(b-c)	20		F	0.59
	Vr(c-b)	0		Y	0.79

ANALYSIS				
			WD AM PEAK	(WD PM) PEAK
TRAFFIC FLOWS	q(c-a)		0	0
	q(c-b)		0	0
	q(a-b)		65	45
	q(a-c)		80	100
	q(b-a)		0	0
	q(b-c)		125	80
	f		1.00	1.00
		Factor		
CAPACITIES	Q(b-a)	1	480	477
	Q(b-c)	1	550	547
	Q(c-b)	1	412	412
	Q(b-ac)	1	550	547
RFC's	b-a		0.000	0.000
	b-c		0.227	0.146
	c-b		0.000	0.000
	b-ac		0.227	0.146
Worst RFC			**0.227**	**0.146**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

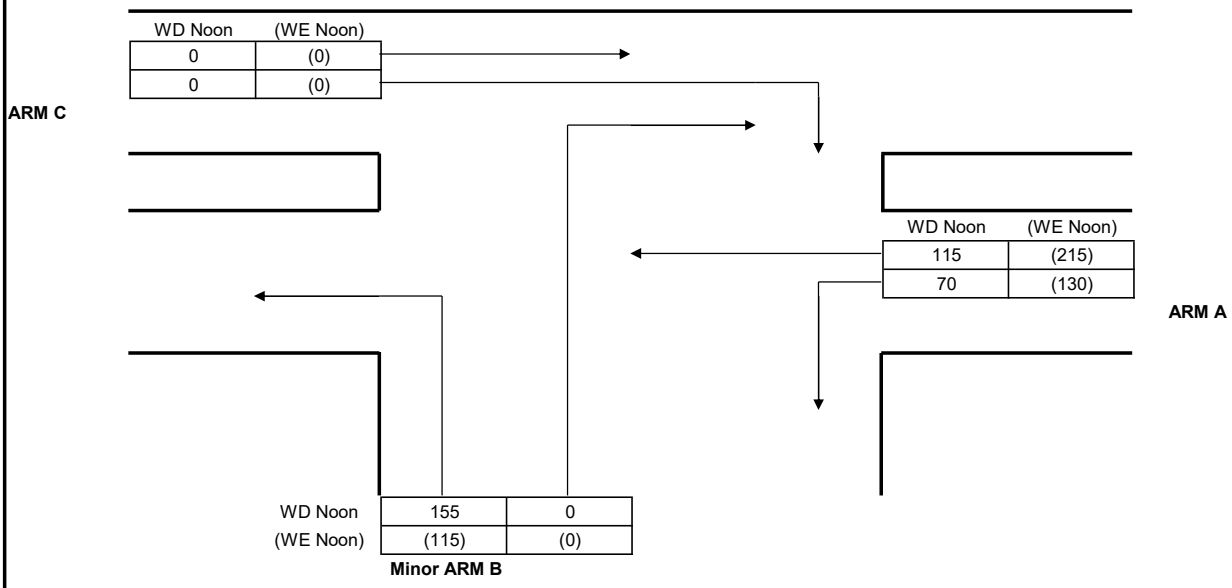
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Feb-22	Checked by:	CHC

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Caroline Hill Road / Cotton Path			Ref. No.:	J7
Scheme:	2031 Design Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Caroline Hill Road				
ARM B:	Caroline Hill Road				
ARM C:	Cotton Path				



GEOMETRY

Major road width	W	6.20	Lane widths	w(b-a)	2.00
Central Reserve width	Wcr	0.00		w(b-c)	2.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	100	Calculated	D	0.80
	Vl(b-a)	100		E	0.77
	Vr(b-c)	20		F	0.59
	Vr(c-b)	0		Y	0.79

ANALYSIS

		Factor	WD Noon PEAK	(WE Noon) PEAK
TRAFFIC FLOWS	q(c-a)		0	0
	q(c-b)		0	0
	q(a-b)		70	130
	q(a-c)		115	215
	q(b-a)		0	0
	q(b-c)		155	115
	f		1.00	1.00
CAPACITIES	Q(b-a)	1	472	443
	Q(b-c)	1	541	514
	Q(c-b)	1	406	379
	Q(b-ac)	1	541	514
RFC's	b-a		0.000	0.000
	b-c		0.287	0.224
	c-b		0.000	0.000
	b-ac		0.287	0.224
Worst RFC			**0.287**	**0.224**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Apr-22	Checked by:	CHC

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Yun Ping Road / Pennington Street / Caroline Hill Road (East) Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Leighton Road WE	*	A	1	3.000	7			73%	55%	995	1025	302	0.304		244	0.238	
		A	1	2.500						2005	2005	608	0.303		476	0.237	
Leighton Road WE	**	C	2	3.500		9				1180	1180	280	0.237	0.237	290	0.246	0.246
Caroline Hill Road NB	*	C	2	4.000	5					930	930	100	0.108		90	0.097	
Leighton Road EB	**	A	1	3.000	15			75%	78%	1245	1245	485	0.390	0.390	547	0.439	
	**	A	1	3.000						1440	1440	560	0.389		633	0.440	0.440
Pedestrian Crossing		Bp	1	MIN GREEN + FLASH =			5	+	8	=	13						
		Dp	2	MIN GREEN + FLASH =			10	+	8	=	18						

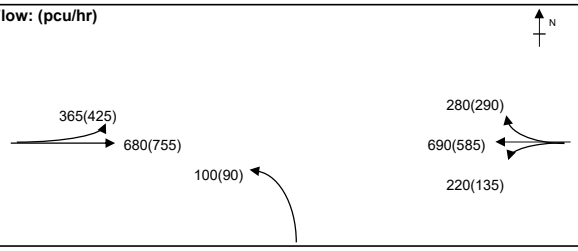
Notes:

TAC junction: Cycle time of 105s and 130s are adopted for AM and PM Peak

* = Site factor of 0.6 adopted

** = Site factor of 0.7 adopted

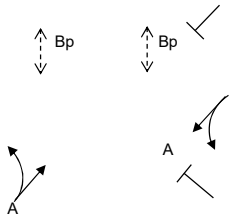
Flow: (pcu/hr)



Group	A,Dp	A,C	Group	A,Dp	A,C
y	0.390	0.627	y	0.440	0.685
L (sec)	27	11	L (sec)	27	11
C (sec)	105	105	C (sec)	130	130
y pract.	0.669	0.806	y pract.	0.713	0.824
R.C. (%)	72%	29%	R.C. (%)	62%	20%

Stage / Phase Diagrams

1.



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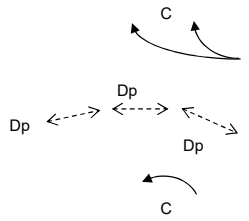


3.

4.

5.

I/G= 7		I/G= 6		I/G=		I/G=		I/G=	
I/G= 7		I/G= 6		I/G=		I/G=		I/G=	

Date: FEB, 2022 **Junction:** J8 Leighton Road / Yun Ping Road / Pennington Street / Caroline Hill

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Yun Ping Road / Pennington Street / Caroline Hill Road (East) Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Leighton Road WE	*	A	1	3.000	7			91%	60%	960	1020	258	0.269		258	0.253	
		A	1	2.500						2005	2005	537	0.268		507	0.253	
Leighton Road WE	**	C	2	3.500		9				1180	1180	245	0.208	0.208	260	0.220	0.220
Caroline Hill Road NB	*	C	2	4.000	5					930	930	115	0.124		170	0.183	
Leighton Road EB	**	A	1	3.000	15			70%	70%	1255	1250	503	0.401	0.401	582	0.466	0.466
	**	A	1	3.000						1440	1440	577	0.401		668	0.464	
Pedestrian Crossing		Bp	1	MIN GREEN + FLASH =			5	+	8	=	13						
		Dp	2	MIN GREEN + FLASH =			10	+	8	=	18						

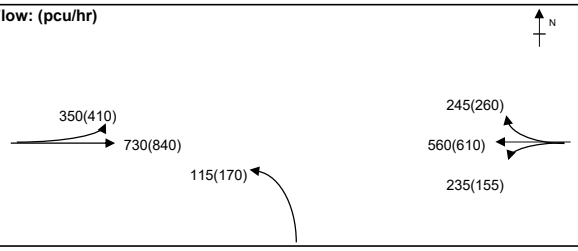
Notes:

TAC junction: Cycle time of 110s and 120s are adopted for WD and WE Noon

* = Site factor of 0.6 adopted

** = Site factor of 0.7 adopted

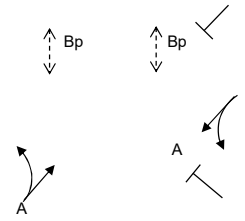
Flow: (pcu/hr)



Group	A,Dp	A,C	Group	A,Dp	A,C
y	0.401	0.608	y	0.466	0.686
L (sec)	27	11	L (sec)	27	11
C (sec)	110	110	C (sec)	120	120
y pract.	0.679	0.810	y pract.	0.698	0.818
R.C. (%)	69%	33%	R.C. (%)	50%	19%

Stage / Phase Diagrams

1.



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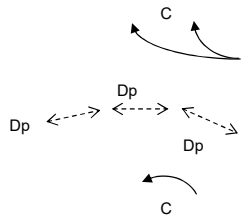

3.

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5.

I/G= 7		I/G= 6		I/G=		I/G=		I/G=	
I/G= 7		I/G= 6		I/G=		I/G=		I/G=	

Date: FEB, 2022 **Junction:** J8 Leighton Road / Yun Ping Road / Pennington Street / Caroline Hill

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Causeway Road / Leighton Road / Tung Lo Wan Road / Irving Street Design Year: 2031

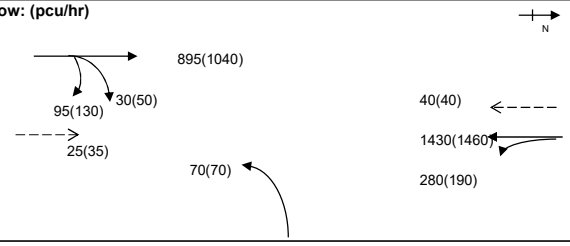
Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Causeway Road WB	↓ *	A	1	3.000	9					1150	1150	280	0.243		190	0.165	
Causeway Road WB	← *	A	1	3.000						1340	1340	352	0.263	0.263	359	0.268	
	←	A	1	3.000						2055	2055	539	0.262		550	0.268	
	←	A	1	3.000						2055	2055	539	0.262		551	0.268	0.268
Causeway Road WB (Tram)	⇐ **	F	1,2	3.000						1340	1340	40	0.030		40	0.030	
Tung Lo Wan Road NB	↖ **	B	2	4.000	25					1330	1330	70	0.053		70	0.053	
Causeway Road EB	→ (free flow)																
Causeway Road EB	↓ **	C	3	4.000		12				1255	1255	187	0.149	0.149	216	0.172	
	↓ **	C	3	4.500		8				1300	1300	193	0.148		224	0.172	0.172
Causeway Road EB (Tram)	⇒ **	F	1,2	3.000						1340	1340	25	0.019		35	0.026	
Pedestrian Crossing		Dp	2	MIN GREEN + FLASH =			7	+	8	=	15			*			*
		Ep	1,3	MIN GREEN + FLASH =			10	+	5	=	15						
		Gp	2,3	MIN GREEN + FLASH =			9	+	11	=	20						

Notes:

* = Site factor of 0.7 is adopted for on street activities on Leighton Road
** = Site factor of 0.7 is adopted for traffic queue

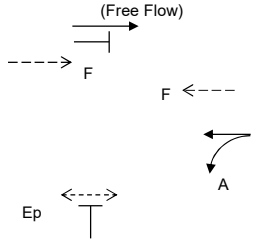
Flow: (pcu/hr)



Group	A,B,C	A,Dp,C	Group	A,B,C	A,Dp,C
y	0.464	0.412	y	0.493	0.440
L (sec)	20	33	L (sec)	20	33
C (sec)	100	100	C (sec)	105	105
y pract.	0.720	0.603	y pract.	0.729	0.617
R.C. (%)	55%	46%	R.C. (%)	48%	40%

Stage / Phase Diagrams

1.



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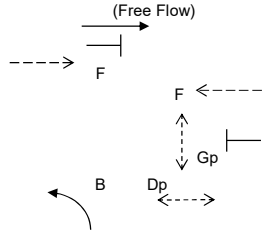

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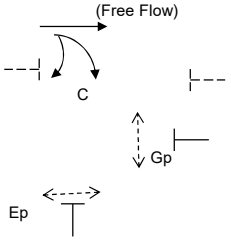


4.

5.

I/G= 7		I/G= 9	15	I/G= 4		I/G=	I/G=
I/G= 7		I/G= 9	15	I/G= 4		I/G=	I/G=

Date: FEB, 2022 **Junction:** J9 Causeway Road / Leighton Road / Tung Lo Wan Road / Irving Str

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Causeway Road / Leighton Road / Tung Lo Wan Road / Irving Street Design Year: 2031

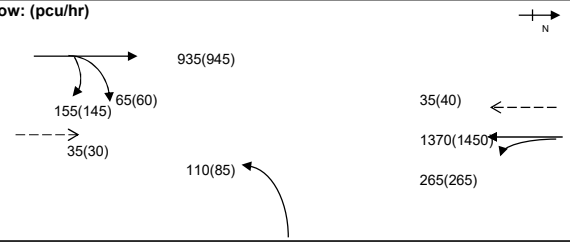
Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Causeway Road WB	↓ *	A	1	3.000	9					1150	1150	265	0.230		265	0.230	
Causeway Road WB	← *	A	1	3.000						1340	1340	337	0.251		357	0.266	0.266
	←	A	1	3.000						2055	2055	516	0.251		546	0.266	
	←	A	1	3.000						2055	2055	517	0.252	0.252	547	0.266	
Causeway Road WB (Tram)	⇐ **	F	1,2	3.000						1340	1340	35	0.026		40	0.030	
Tung Lo Wan Road NB	↖ **	B	2	4.000	25					1330	1330	110	0.083		85	0.064	
Causeway Road EB	→ (free flow)																
Causeway Road EB	↓ **	C	3	4.000		12				1255	1255	223	0.178		221	0.176	
	↓ **	C	3	4.500		8				1300	1300	232	0.178	0.178	229	0.176	0.176
Causeway Road EB (Tram)	⇒ **	F	1,2	3.000						1340	1340	35	0.026		30	0.022	
Pedestrian Crossing		Dp	2	MIN GREEN + FLASH =			7	+	8	=	15			*			*
		Ep	1,3	MIN GREEN + FLASH =			10	+	5	=	15						
		Gp	2,3	MIN GREEN + FLASH =			9	+	11	=	20						

Notes:

TAC junction: Cycle time of 95s and 105s are adopted for WD and WE Noon Peak
** = Site factor of 0.7 is adopted for traffic queue

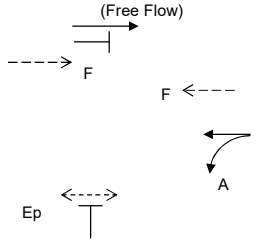
Flow: (pcu/hr)



Group	A,B,C	A,Dp,C	Group	A,B,C	A,Dp,C
y	0.513	0.430	y	0.506	0.443
L (sec)	20	33	L (sec)	20	33
C (sec)	95	95	C (sec)	105	105
y pract.	0.711	0.587	y pract.	0.729	0.617
R.C. (%)	39%	37%	R.C. (%)	44%	39%

Stage / Phase Diagrams

1.



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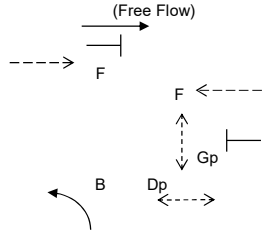

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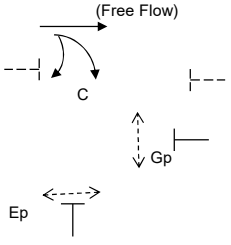


4.

5.

I/G= 7		I/G= 9	15	I/G= 4		I/G=	I/G=
I/G= 7		I/G= 9	15	I/G= 4		I/G=	I/G=

Date: FEB, 2022 **Junction:** J9 Causeway Road / Leighton Road / Tung Lo Wan Road / Irving Str

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Causeway Road / Moreton Terrace Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

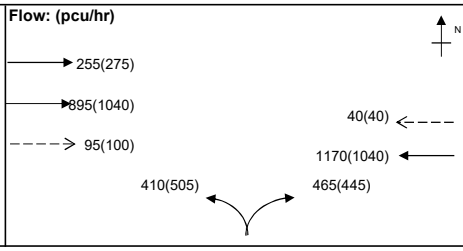
Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Causeway Road WB	← *	C	1	3.700						795	795	315	0.396		280	0.352	
	←	C	1	4.000						2155	2155	855	0.397		760	0.353	
Causeway Road - WB (Tram)	⇐	D	1	3.000						1915	1915	40	0.021		40	0.021	
Moreton Terrace - NB	↰ **	E	2	3.500	9					1685	1685	267	0.158		290	0.172	
	↰↑	E	2	3.300	15	20		47% / 53%	65% / 35%	1920	1910	304	0.158		330	0.173	0.173
	↱	E	2	3.500		15				1915	1915	304	0.159	0.159	330	0.172	
Causeway Road WB	→	A	1	3.500						1965	1965	255	0.130		275	0.140	
	→	A	1	3.500						2105	2105	895	0.425	0.425	1040	0.494	0.494
Causeway Road - EB (Tram)	⇒	B	1	3.000						1915	1915	95	0.050		100	0.052	
Pedestrian Crossing		Fp	1	MIN GREEN + FLASH =			8	+	10	=	18						

Notes:

*Site Factor of 0.4 adopted due to bus stop near stop line

**Site Factor of 0.7 adopted due to bus stop near stop line

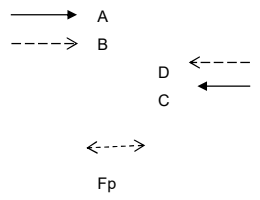
Flow: (pcu/hr)



Group	C,E	A,E	Group	C,E	A,E
y	0.555	0.584	y	0.525	0.667
L (sec)	10	10	L (sec)	10	10
C (sec)	100	100	C (sec)	105	105
y pract.	0.810	0.810	y pract.	0.814	0.814
R.C. (%)	46%	39%	R.C. (%)	55%	22%

Stage / Phase Diagrams

1.



2.



3.

4.

5.

I/G= 7		I/G= 5		I/G=		I/G=		I/G=	
I/G= 7		I/G= 5		I/G=		I/G=		I/G=	

Date: FEB, 2022 **Junction:** (J10) Causeway Road / Moreton Terrace

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Causeway Road / Moreton Terrace Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

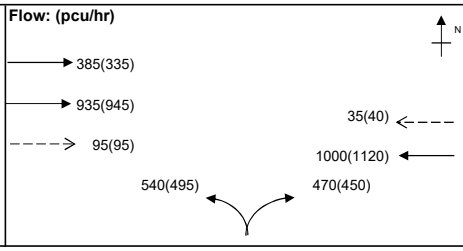
Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD NN	Pro. Turning (%) WE NN	Revised Saturation Flow (pcu/hr) WD NN	Revised Saturation Flow (pcu/hr) WE NN	WD NN Flow (pcu/hr)	WD NN y Value	WD NN Critical y	WE NN Flow (pcu/hr)	WE NN y Value	WE NN Critical y
Causeway Road WB	← *	C	1	3.700						795	795	269	0.338		302	0.380	
	←	C	1	4.000						2155	2155	731	0.339		818	0.380	
Causeway Road - WB (Tram)	⇐	D	1	3.000						1915	1915	35	0.018		40	0.021	
Moreton Terrace - NB	↰ **	E	2	3.500	9					1685	1685	309	0.183	0.183	289	0.172	
	↰↑	E	2	3.300	15	20		66% / 34%	63% / 37%	1910	1910	350	0.183		328	0.172	0.172
	↱	E	2	3.500		15				1915	1915	351	0.183		328	0.171	
Causeway Road WB	→	A	1	3.500						1965	1965	385	0.196		335	0.170	
	→	A	1	3.500						2105	2105	935	0.444	0.444	945	0.449	0.449
Causeway Road - EB (Tram)	⇒	B	1	3.000						1915	1915	95	0.050		95	0.050	
Pedestrian Crossing		Fp	1	MIN GREEN + FLASH =			8	+	10	=	18						

Notes:

*Site Factor of 0.4 adopted due to bus stop near stop line

**Site Factor of 0.7 adopted due to bus stop near stop line

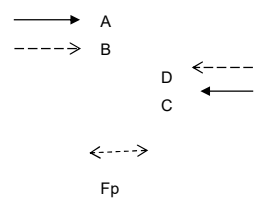
Flow: (pcu/hr)



Group	C,E	A,E	Group	C,E	A,E
y	0.523	0.628	y	0.552	0.621
L (sec)	10	10	L (sec)	10	10
C (sec)	95	95	C (sec)	105	105
y pract.	0.805	0.805	y pract.	0.814	0.814
R.C. (%)	54%	28%	R.C. (%)	48%	31%

Stage / Phase Diagrams

1.



2.



3.

4.

5.

I/G= 7		I/G= 5		I/G=		I/G=		I/G=	
I/G= 7		I/G= 5		I/G=		I/G=		I/G=	

Date: FEB, 2022 **Junction:** (J10) Causeway Road / Moreton Terrace

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Pennington Street / Jardine's Bazaar / Irving Street Design Year: 2031

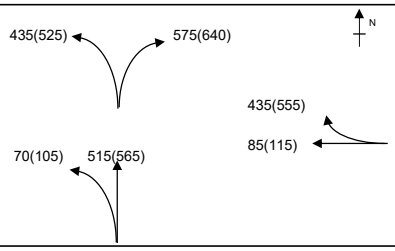
Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Irving Street WB	*←	A	1,4	3.000						960	960	79	0.082	0.082	101	0.105	
	↖↑	A	1,4	3.000		16		96%	93%	1885	1890	154	0.082		200	0.106	0.106
	↖	A	1,4	3.000		13				1840	1840	151	0.082		194	0.105	
	↖	A	1,4	3.000		10				1665	1665	136	0.082		175	0.105	
Pennington Street	↑	B	2,3	3.800	5			25%	33%	1855	1815	282	0.152	0.152	319	0.176	
NB 1st stop line	↑	B	2,3	3.800						1995	1995	303	0.152		351	0.176	0.176
Pennington Street	↰	E	1,2,4	5.000	10					1840	1840	435	0.236		525	0.285	
NB 2nd stop line	↱	F	1,2,3	3.500		10				1830	1830	307	0.168		342	0.187	
	↱	F	1,2,3	3.500		6.5				1595	1595	268	0.168		298	0.187	
Pedestrian Crossing		Cp	1,4	MIN GREEN + FLASH =			8	+	8	=	16						
		Dp	2,3	MIN GREEN + FLASH =			8	+	14	=	22						
		Gp	4	MIN GREEN + FLASH =			7	+	7	=	14						
		Hp	3	MIN GREEN + FLASH =			6	+	6	=	12						

Notes:

* = Site factor of 0.5 is adopted for bus stop at upstream

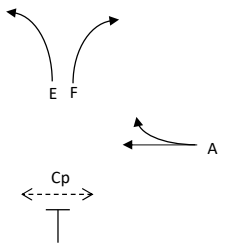
Flow: (pcu/hr)



Group	Cp,B	A,B	Group	Cp,B	A,B
y	0.152	0.234	y	0.176	0.282
L (sec)	24	14	L (sec)	24	14
C (sec)	100	100	C (sec)	100	100
y pract.	0.684	0.774	y pract.	0.684	0.774
R.C. (%)	350%	230%	R.C. (%)	289%	175%

Stage / Phase Diagrams

1.



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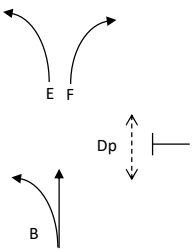

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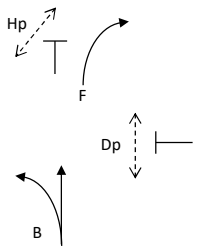

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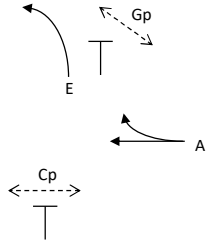


5.

I/G=		I/G= 8		I/G=		I/G= 8		I/G=			
I/G=		I/G= 8		I/G=		I/G= 8		I/G=			

Date: FEB, 2022 **Junction:** (J11) Pennington Street / Jardine's Bazaar / Irving Street

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Pennington Street / Jardine's Bazaar / Irving Street Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

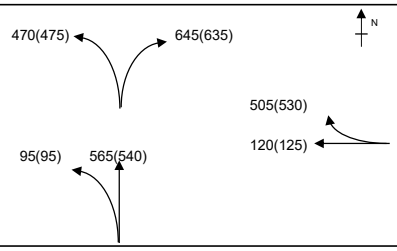
Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Irving Street WB	*←	A	1,4	3.000						960	960	94	0.098		99	0.103	
	↖↑	A	1,4	3.000		16		86%	87%	1900	1900	187	0.098		196	0.103	0.103
	↖	A	1,4	3.000		13				1840	1840	180	0.098		189	0.103	
	↖	A	1,4	3.000		10				1665	1665	164	0.098	0.098	171	0.103	
Pennington Street NB 1st stop line	↑	B	2,3	3.800	5			30%	31%	1830	1825	316	0.173	0.173	303	0.166	
	↑	B	2,3	3.800						1995	1995	344	0.172		332	0.166	0.166
Pennington Street NB 2nd stop line	↰	E	1,2,4	5.000	10					1840	1840	470	0.255		475	0.258	
	↱	F	1,2,3	3.500		10				1830	1830	345	0.189		339	0.185	
	↱	F	1,2,3	3.500		6.5				1595	1595	300	0.188		296	0.186	

Pedestrian Crossing								
	Cp	1,4	MIN GREEN + FLASH =	8	+	8	=	16
	Dp	2,3	MIN GREEN + FLASH =	8	+	8	=	22
	Gp	4	MIN GREEN + FLASH =	7	+	7	=	14
	Hp	3	MIN GREEN + FLASH =	6	+	6	=	12

Notes:

* = Site factor of 0.5 is adopted for bus stop at upstream

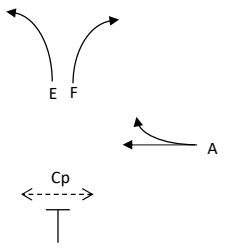
Flow: (pcu/hr)



Group	Cp,B	A,B	Group	Cp,B	A,B
y	0.173	0.271	y	0.166	0.270
L (sec)	24	14	L (sec)	24	14
C (sec)	120	120	C (sec)	100	100
y pract.	0.720	0.795	y pract.	0.684	0.774
R.C. (%)	317%	193%	R.C. (%)	311%	187%

Stage / Phase Diagrams

1.



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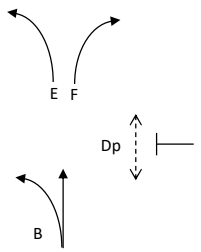

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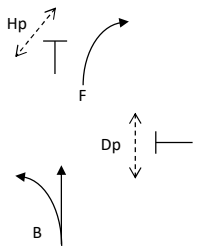

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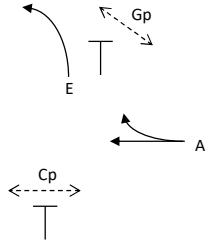


5.

I/G=		I/G= 8		I/G=		I/G= 8		I/G=	
I/G=		I/G= 8		I/G=		I/G= 8		I/G=	

Date: FEB, 2022 **Junction:** (J11) Pennington Street / Jardine's Bazaar / Irving Street

TRAFFIC SIGNALS CALCULATION

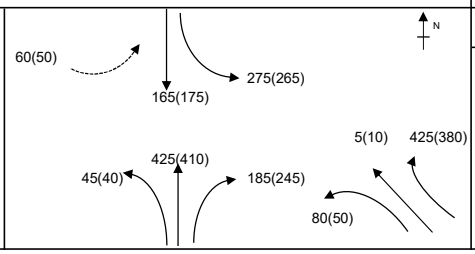
Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Link Road / Broadwood Road Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

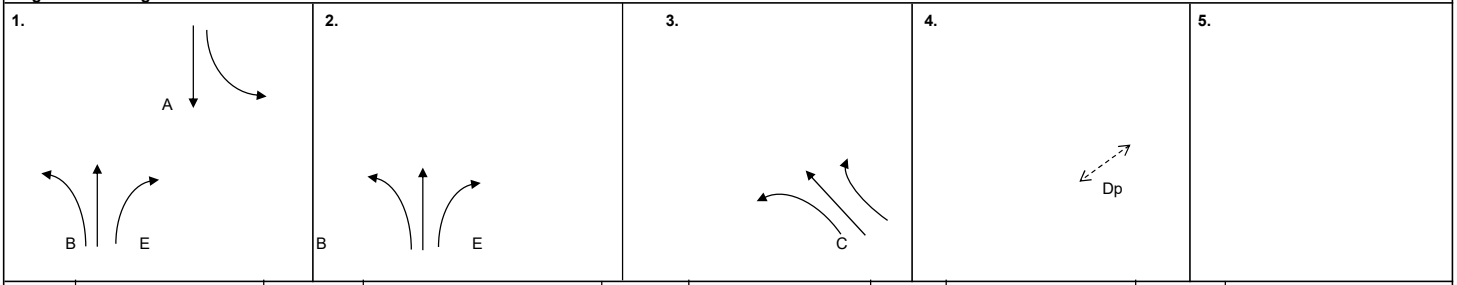
Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) AM	Pro. Turning (%) PM	Revised Saturation Flow (pcu/hr) AM	Revised Saturation Flow (pcu/hr) PM	AM Peak Flow (pcu/hr)	AM Peak y Value	AM Peak Critical y	PM Peak Flow (pcu/hr)	PM Peak y Value	PM Peak Critical y
Link Road		A	1	3.500	80			63%	60%	1940	1945	440	0.227	0.227	440	0.226	0.226
Broadwoord Road (E)		B	1,2	3.000	15			10%	9%	1895	1900	470	0.248		450	0.237	
		E	2	3.000		8				1730	1730	185	0.107	0.107	245	0.142	0.142
Broadwoord Road (W)		C	3	3.500	5	60		16% / 83%	11% / 86%	1840	1860	510	0.277	0.277	440	0.237	0.237
Leighton Hill Road		Priority Junction															
Pedestrian Crossing		Dp	4	MIN GREEN + FLASH =	5		+	7		=	12			*			*

Notes:



Group	A,E,C	A,E,C,Dp	Group	A,E,C	A,E,C,Dp
y	0.611	0.611	y	0.604	0.604
L (sec)	16	27	L (sec)	16	27
C (sec)	140	140	C (sec)	135	135
y pract.	0.797	0.726	y pract.	0.793	0.720
R.C. (%)	30%	19%	R.C. (%)	31%	19%

Stage / Phase Diagrams



I/G= 4		I/G= 3		I/G= 8		I/G= 3	12
I/G= 4		I/G= 3		I/G= 8		I/G= 3	12

I/G=

I/G=

Date: FEB, 2022

Junction: (J12) Link Road / Broadwood Road

TRAFFIC SIGNALS CALCULATION

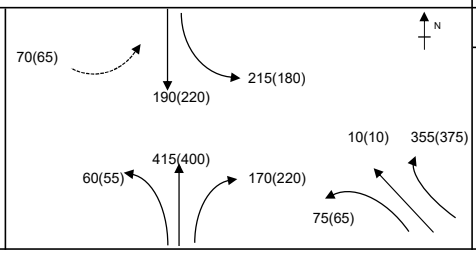
Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Link Road / Broadwood Road Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Link Road		A	1	3.500	80			53%	45%	1945	1950	405	0.208	0.208	400	0.205	0.205
Broadwoord Road (E)		B	1,2	3.000	15			13%	12%	1890	1890	475	0.251		455	0.241	
		E	2	3.000		8				1730	1730	170	0.098	0.098	220	0.127	0.127
Broadwoord Road (W)		C	3	3.500	5	60		17% / 81%	14% / 83%	1835	1845	440	0.240	0.240	450	0.244	0.244
Leighton Hill Road	Priority Junction																
Pedestrian Crossing		Dp	4	MIN GREEN + FLASH =			5	+	7	=	12			*			*

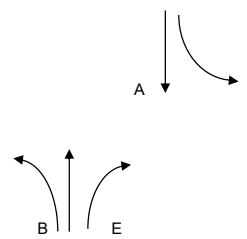
Notes:



Group	A,E,C	A,E,C,Dp	Group	A,E,C	A,E,C,Dp
y	0.546	0.546	y	0.576	0.576
L (sec)	16	27	L (sec)	16	27
C (sec)	110	110	C (sec)	110	110
y pract.	0.769	0.679	y pract.	0.769	0.679
R.C. (%)	41%	24%	R.C. (%)	33%	18%

Stage / Phase Diagrams

1.



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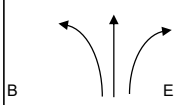

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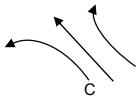


4.



5.

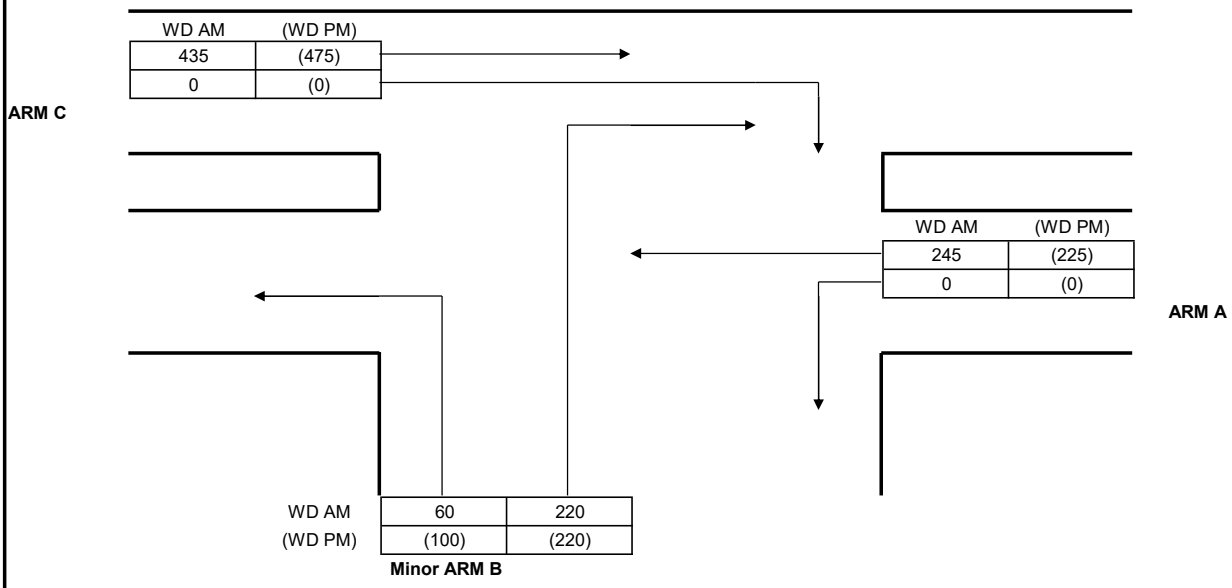
I/G= 4		I/G= 3		I/G= 8		I/G= 3	12
I/G= 4		I/G= 3		I/G= 8		I/G= 3	12

I/G=	
I/G=	

Date: FEB, 2022 **Junction:** J12 Link Road / Broadwood Road

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Broadwood Road / Ventris Road			Ref. No.:	J13
Scheme:	2031 Design Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Broadwood Road				
ARM B:	Ventris Road				
ARM C:	Broadwood Road				



GEOMETRY					
Major road width	W	6.50	Lane widths	w(b-a)	3.00
Central Reserve width	Wcr	0.00		w(b-c)	3.00
2 Lane Minor Arm (Y/N)		Y		w(c-b)	5.00
Visibilities	Vr(b-a)	15	Calculated	D	0.78
	Vl(b-a)	15		E	0.87
	Vr(b-c)	40		F	1.06
	Vr(c-b)	50		Y	0.78

ANALYSIS			WD AM PEAK	(WD PM) PEAK
TRAFFIC FLOWS	q(c-a)		435	475
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		245	225
	q(b-a)		220	220
	q(b-c)		60	100
	f		0.21	0.31
		Factor		
CAPACITIES	Q(b-a)	1	375	374
	Q(b-c)	1	589	594
	Q(c-b)	1	714	720
	Q(b-ac)	1	407	423
RFC's	b-a		0.587	0.588
	b-c		0.102	0.168
	c-b		0.000	0.000
	b-ac		0.000	0.000
Worst RFC			**0.587**	**0.588**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

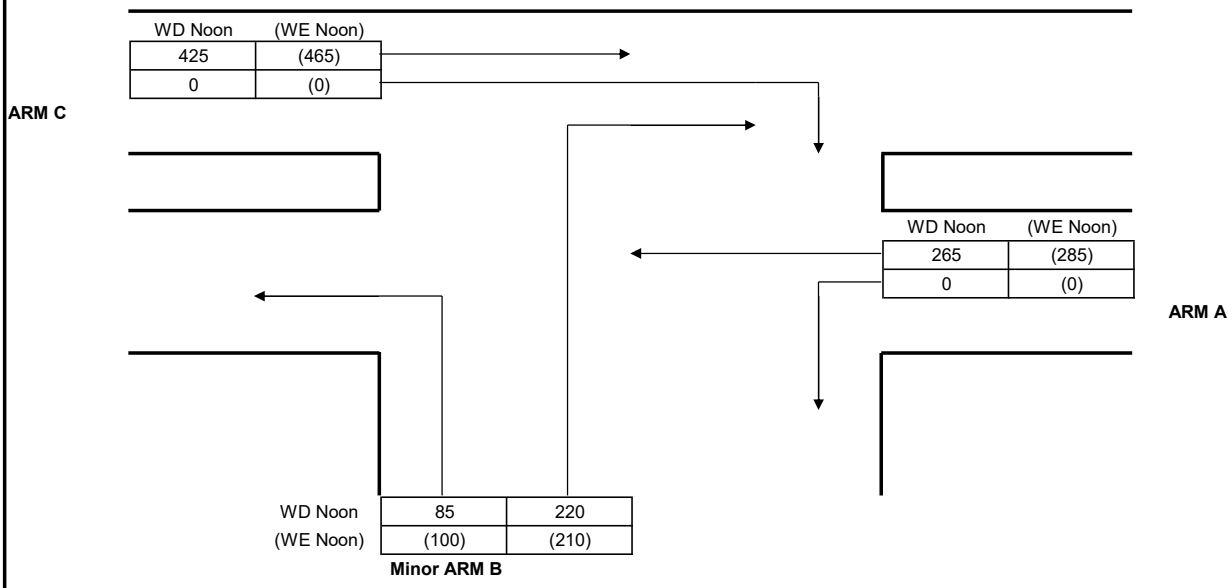
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Feb-22	Checked by:	CHC

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Broadwood Road / Ventris Road			Ref. No.:	J13
Scheme:	2031 Design Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Broadwood Road				
ARM B:	Ventris Road				
ARM C:	Broadwood Road				



GEOMETRY

Major road width	W	6.50	Lane widths	w(b-a)	3.00
Central Reserve width	Wcr	0.00		w(b-c)	3.00
2 Lane Minor Arm (Y/N)		Y		w(c-b)	5.00
Visibilities	Vr(b-a)	15	Calculated	D	0.78
	Vl(b-a)	15		E	0.87
	Vr(b-c)	40		F	1.06
	Vr(c-b)	50		Y	0.78

ANALYSIS

		Factor	WD Noon PEAK	(WE Noon) PEAK
TRAFFIC FLOWS	q(c-a)		425	465
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		265	285
	q(b-a)		220	210
	q(b-c)		85	100
	f		0.28	0.32
CAPACITIES	Q(b-a)	1	372	362
	Q(b-c)	1	584	579
	Q(c-b)	1	708	702
	Q(b-ac)	1	414	412
RFC's	b-a		0.591	0.580
	b-c		0.146	0.173
	c-b		0.000	0.000
	b-ac		0.000	0.000
Worst RFC			**0.591**	**0.580**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Apr-22	Checked by:	CHC

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

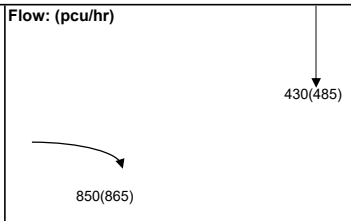
Junction: Wong Nai Chung Road / Sports Road Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Sports Road	→	A	1	3.800		10				1735	1735	403	0.232		411	0.237	0.237
EB	→	A	1	3.800		13.5				1920	1920	447	0.233	0.233	454	0.236	
Wong Nai Chung Road SB	↓	B	2	3.000						1915	1915	140	0.073	0.073	158	0.083	0.083
	↓	B	2	3.000						2055	2055	150	0.073		169	0.082	
	↓	B	2	3.000						1915	1915	140	0.073		158	0.083	
Pedestrian Crossing		Cp	1	MIN GREEN + FLASH =			8	+	9	=	17						
		Dp	2	MIN GREEN + FLASH =			8	+	9	=	17						

Notes:

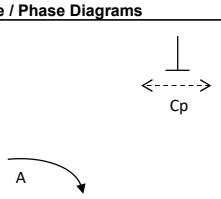
Flow: (pcu/hr)



Group	A,Dp	A,B	Group	A,Dp	A,B
y	0.233	0.306	y	0.237	0.319
L (sec)	27	10	L (sec)	27	10
C (sec)	90	90	C (sec)	90	90
y pract.	0.630	0.800	y pract.	0.630	0.800
R.C. (%)	171%	162%	R.C. (%)	166%	150%

Stage / Phase Diagrams

1.



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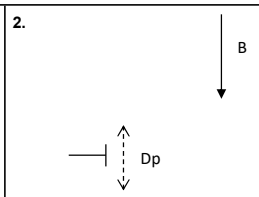

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I/G= 6		I/G= 6		I/G=		I/G=		I/G=	
I/G= 6		I/G= 6		I/G=		I/G=		I/G=	

Date: FEB, 2022 **Junction:** (J14) Wong Nai Chung Road / Sports Road

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

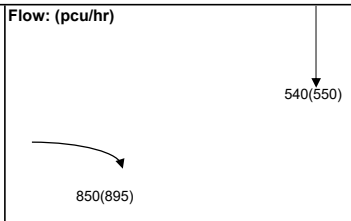
Junction: Wong Nai Chung Road / Sports Road Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Sports Road	→	A	1	3.800		10				1735	1735	403	0.232		425	0.245	0.245
EB	→	A	1	3.800		13.5				1920	1920	447	0.233	0.233	470	0.245	
Wong Nai Chung Road SB	↓	B	2	3.000						1915	1915	176	0.092	0.092	179	0.093	0.093
	↓	B	2	3.000						2055	2055	188	0.091		192	0.093	
	↓	B	2	3.000						1915	1915	176	0.092		179	0.093	
Pedestrian Crossing		Cp	1	MIN GREEN + FLASH =			8	+	9	=	17						
		Dp	2	MIN GREEN + FLASH =			8	+	9	=	17						

Notes:

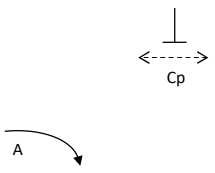
Flow: (pcu/hr)



Group	A,Dp	A,B	Group	A,Dp	A,B
y	0.233	0.325	y	0.245	0.338
L (sec)	27	10	L (sec)	27	10
C (sec)	75	75	C (sec)	75	75
y pract.	0.576	0.780	y pract.	0.576	0.780
R.C. (%)	147%	140%	R.C. (%)	135%	130%

Stage / Phase Diagrams

1.



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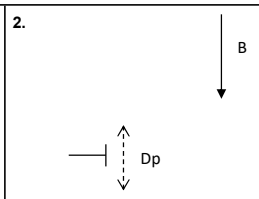

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I/G= 6		I/G= 6		I/G=		I/G=	
I/G= 6		I/G= 6		I/G=		I/G=	

Date: FEB, 2022 **Junction:** J14 Wong Nai Chung Road / Sports Road

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Wong Nai Chung Road Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Leighton Road	↰	A	1	3.500	20					1830	1830	308	0.168		329	0.180	
WB	↰ *	A	1	3.500	25					395	395	67	0.170		71	0.180	
Leighton Road WB (Tram)	↰ *	B	2	3.000	40					370	370	50	0.135	0.135	65	0.176	0.176
Leighton Road	←***	A	1	3.000						1530	1530	781	0.510	0.510	800	0.523	
WB	← *	A	1	3.000						410	410	209	0.510		215	0.524	0.524
Leighton Road	→ *	A	1	3.500						395	395	121	0.306		106	0.268	
EB	→**	A	1	3.000						1030	1030	314	0.305		277	0.269	
	→**	A	1	3.000						1030	1030	315	0.306		277	0.269	
Pedestrian Crossing	Cp	2	MIN GREEN + FLASH =				10	+	9	=	19						
	Dp	2	MIN GREEN + FLASH =				7	+	7	=	14						

Notes:

TAC junction: Cycle time of 130s and 120s are adopted for AM and PM Peak

* = Site Factor of 0.2 has been adopted.

** = Site Factor of 0.5 has been adopted.

*** = Site Factor of 0.8 has been adopted.

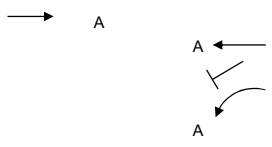
Flow: (pcu/hr)



Group	A,Cp	A,B	Group	A,Cp	A,B
y	0.510	0.646	y	0.524	0.700
L (sec)	30	12	L (sec)	30	12
C (sec)	130	130	C (sec)	120	120
y pract.	0.692	0.817	y pract.	0.675	0.810
R.C. (%)	36%	27%	R.C. (%)	29%	16%

Stage / Phase Diagrams

1.



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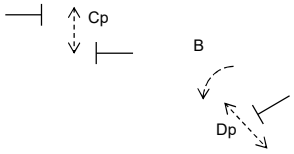

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I/G= 7		I/G= 7		I/G=		I/G=		I/G=	
I/G= 7		I/G= 7		I/G=		I/G=		I/G=	

Date: FEB, 2022 **Junction:** J15 Leighton Road / Wong Nai Chung Road

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Leighton Road / Wong Nai Chung Road Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Leighton Road WB		A	1	3.500	20					1830	1830	387	0.211		411	0.225	
	*	A	1	3.500	25					395	395	83	0.210		89	0.225	
Leighton Road WB (Tram)	*	B	2	3.000	40					370	370	60	0.162	0.162	60	0.162	0.162
Leighton Road WB	***	A	1	3.000						1530	1530	800	0.523		769	0.503	0.503
	*	A	1	3.000						410	410	215	0.524	0.524	206	0.502	
Leighton Road EB	*	A	1	3.500						395	395	138	0.349		123	0.311	
	**	A	1	3.000						1030	1030	358	0.348		321	0.312	
	**	A	1	3.000						1030	1030	359	0.349		321	0.312	
Pedestrian Crossing		Cp	2	MIN GREEN + FLASH =			10	+	9	=	19						
		Dp	2	MIN GREEN + FLASH =			7	+	7	=	14						

Notes:

TAC junction: Cycle time of 120s and 120s are adopted for WD and WE Noon

* = Site Factor of 0.2 has been adopted.

** = Site Factor of 0.5 has been adopted.

*** = Site Factor of 0.8 has been adopted.

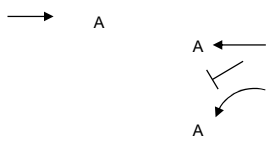
Flow: (pcu/hr)



Group	A,Cp	A,B	Group	A,Cp	A,B
y	0.524	0.687	y	0.503	0.665
L (sec)	30	12	L (sec)	30	12
C (sec)	120	120	C (sec)	120	120
y pract.	0.675	0.810	y pract.	0.675	0.810
R.C. (%)	29%	18%	R.C. (%)	34%	22%

Stage / Phase Diagrams

1.



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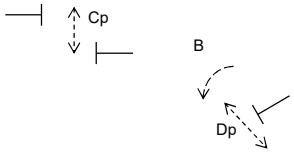

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I/G= 7		I/G= 7		I/G=		I/G=		I/G=	
I/G= 7		I/G= 7		I/G=		I/G=		I/G=	

Date: FEB, 2022 **Junction:** J15 Leighton Road / Wong Nai Chung Road

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Tung Lo Wan Road / Eastern Hospital Road Design Year: 2031

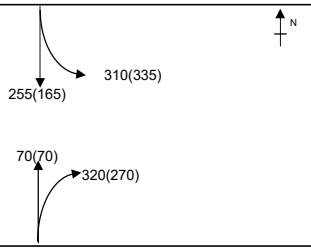
Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements		Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Tung Lo Wan Road SB		*	A	1	3.300	25					1285	1285	219	0.170		195	0.152	0.152
			A	1	3.000	30			26%	46%	2030	2010	346	0.170	0.170	305	0.152	
Ka Ning Path NB			B	2	3.500		10		82%	79%	1750	1755	390	0.223	0.223	340	0.194	0.194
Pedestrian Crossing			Cp	3	MIN GREEN + FLASH =			7	+	8	=	15						
			Dp	3	MIN GREEN + FLASH =			8	+	14	=	22			*			*

Notes:

* = Site factor of 0.7 is adopted for the bus stop at downstream

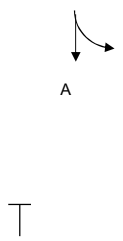
Flow: (pcu/hr)



Group	A,B,Cp	A,B,Dp	Group	A,B,Cp	A,B,Dp
y	0.393	0.393	y	0.345	0.345
L (sec)	31	34	L (sec)	31	34
C (sec)	100	100	C (sec)	105	105
y pract.	0.621	0.594	y pract.	0.634	0.609
R.C. (%)	58%	51%	R.C. (%)	84%	76%

Stage / Phase Diagrams

1.



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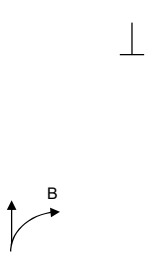

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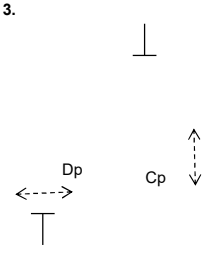

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I/G= 4		I/G= 5		I/G= 5	22	I/G=		I/G=	

Date: FEB, 2022 **Junction:** J16 Tung Lo Wan Road / Eastern Hospital Road

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

Junction: Tung Lo Wan Road / Eastern Hospital Road Design Year: 2031

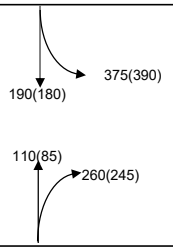
Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements		Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Tung Lo Wan Road SB	↳	*	A	1	3.300	25					1285	1285	220	0.171		223	0.174	0.174
	↓		A	1	3.000	30			45%	48%	2010	2005	345	0.172	0.172	347	0.173	
Ka Ning Path NB	↑		B	2	3.500		10		70%	74%	1780	1770	370	0.208	0.208	330	0.186	0.186
Pedestrian Crossing			Cp	3	MIN GREEN + FLASH =			7	+	8	=	15						
			Dp	3	MIN GREEN + FLASH =			8	+	14	=	22			*			*

Notes:

* = Site factor of 0.7 is adopted for the bus stop at downstream

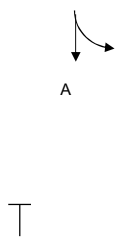
Flow: (pcu/hr)



Group	A,B,Cp	A,B,Dp	Group	A,B,Cp	A,B,Dp
y	0.380	0.380	y	0.360	0.360
L (sec)	31	34	L (sec)	31	34
C (sec)	95	95	C (sec)	105	105
y pract.	0.606	0.578	y pract.	0.634	0.609
R.C. (%)	60%	52%	R.C. (%)	76%	69%

Stage / Phase Diagrams

1.



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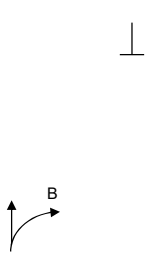

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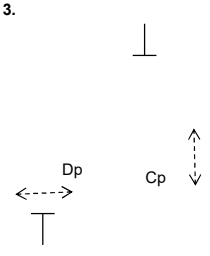

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5.

I/G= 4		I/G= 5		I/G= 5	22	I/G=	I/G=
I/G= 4		I/G= 5		I/G= 5	22	I/G=	I/G=

Date: FEB, 2022 **Junction:** J16 Tung Lo Wan Road / Eastern Hospital Road

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

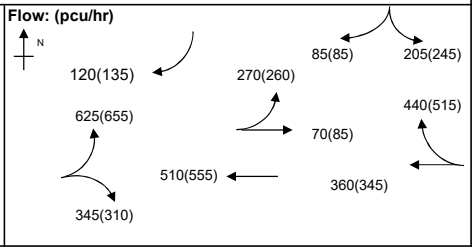
Junction: Tung Lo Wan Road / Moreton Terrace Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD AM	Pro. Turning (%) WD PM	Revised Saturation Flow (pcu/hr) WD AM	Revised Saturation Flow (pcu/hr) WD PM	WD AM Flow (pcu/hr)	WD AM y Value	WD AM Critical y	WD PM Flow (pcu/hr)	WD PM y Value	WD PM Critical y
Tung Lo Wan Road WB	←	C	2	3.000						1915	1915	246	0.128		268	0.140	
	←	C	2	3.000						2055	2055	264	0.128		287	0.140	
Tung Lo Wan Road EB	↱	A	1	3.700	8					1670	1670	461	0.276	0.276	460	0.275	0.275
	↑	A	1	3.500	13	35		32% / 68%	39% / 61%	1845	1835	509	0.276		505	0.275	
Moreton Terrace PTI	↲	F	3	5.000		27				2005	2005	120	0.060		135	0.067	
Tung Lo Wan Road WB	←	E	2,3	3.700						1985	1985	360	0.181		345	0.174	
	↰	E	2,3	3.000		8		100%	100%	1535	1535	440	0.287	0.287	515	0.336	0.336
Tung Lo Wan Road EB	↱	E	2,3	5.000	13			79%	75%	1935	1945	340	0.176		345	0.177	
Tung Lo Wan Drive SB	↳	B	1	3.500	8	12		71% / 29%	74% / 26%	1680	1675	290	0.173		330	0.197	
Pedestrian Crossing		Dp	2,3	MIN GREEN + FLASH =			8	+	8	=	16						
		Gp	3	MIN GREEN + FLASH =			9	+	8	=	17						

Notes:

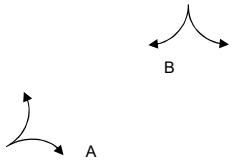
Flow: (pcu/hr)



Group	A,C,F	A,E	Group	A,C,F	A,E
y	0.464	0.563	y	0.483	0.611
L (sec)	19	12	L (sec)	19	12
C (sec)	100	100	C (sec)	105	105
y pract.	0.729	0.792	y pract.	0.737	0.797
R.C. (%)	57%	41%	R.C. (%)	53%	30%

Stage / Phase Diagrams

1.



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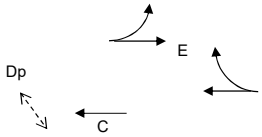

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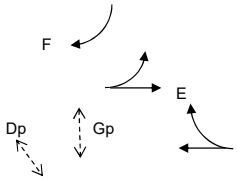


4.

5.

I/G= 7		I/G= 7		I/G=		I/G=		I/G=	
I/G= 7		I/G= 7		I/G=		I/G=		I/G=	

Date: FEB, 2022 **Junction:** J17 Tung Lo Wan Road / Moreton Terrace

TRAFFIC SIGNALS CALCULATION

Job No.: CHK50603110 **MVA HONG KONG LIMITED**

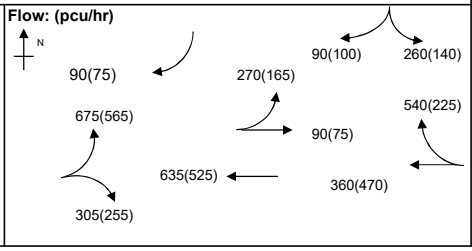
Junction: Tung Lo Wan Road / Moreton Terrace Design Year: 2031

Description: 2031 Design Flows Designed By: LYK Checked By: CHC

Approach	Movements	Phase	Stage	Width (m)	Radius (m) Left	Radius (m) Right	Gradient (%)	Pro. Turning (%) WD Noon	Pro. Turning (%) WE Noon	Revised Saturation Flow (pcu/hr) WD Noon	Revised Saturation Flow (pcu/hr) WE Noon	WD Noon Flow (pcu/hr)	WD Noon y Value	WD Noon Critical y	WE Noon Flow (pcu/hr)	WE Noon y Value	WE Noon Critical y
Tung Lo Wan Road WB	←	C	2	3.000						1915	1915	306	0.160		253	0.132	
	←	C	2	3.000						2055	2055	329	0.160		272	0.132	0.132
Tung Lo Wan Road EB	↱	A	1	3.700	8					1670	1670	467	0.280	0.280	391	0.234	0.234
	↑	A	1	3.500	13	35		41% / 59%	41% / 59%	1835	1835	513	0.280		429	0.234	
Moreton Terrace PTI	↲	F	3	5.000		27				2005	2005	90	0.045		75	0.037	
Tung Lo Wan Road WB	←	E	2,3	3.700						1985	1985	360	0.181		384	0.193	
	↖	E	2,3	3.000		8		100%	72%	1535	1605	540	0.352	0.352	311	0.194	
Tung Lo Wan Road EB	↑→	E	2,3	5.000	13			75%	69%	1945	1960	360	0.185		240	0.122	
Tung Lo Wan Drive SB	↓→	B	1	3.500	8	12		74% / 26%	58% / 42%	1675	1690	350	0.209		240	0.142	
Pedestrian Crossing		Dp	2,3	MIN GREEN + FLASH =			8	+	8	=	16						
		Gp	3	MIN GREEN + FLASH =			9	+	8	=	17						*

Notes:

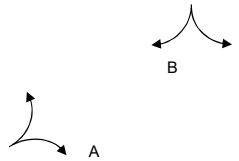
Flow: (pcu/hr)



Group	A,C,Gp	A,E	Group	A,C,F	A,C,Gp
y	0.440	0.631	y	0.404	0.366
L (sec)	29	12	L (sec)	19	29
C (sec)	95	95	C (sec)	105	105
y pract.	0.625	0.786	y pract.	0.737	0.651
R.C. (%)	42%	25%	R.C. (%)	83%	78%

Stage / Phase Diagrams

1.



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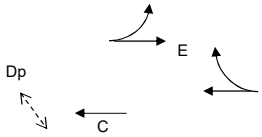

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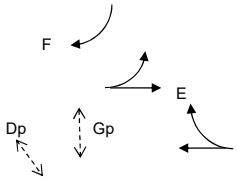


4.

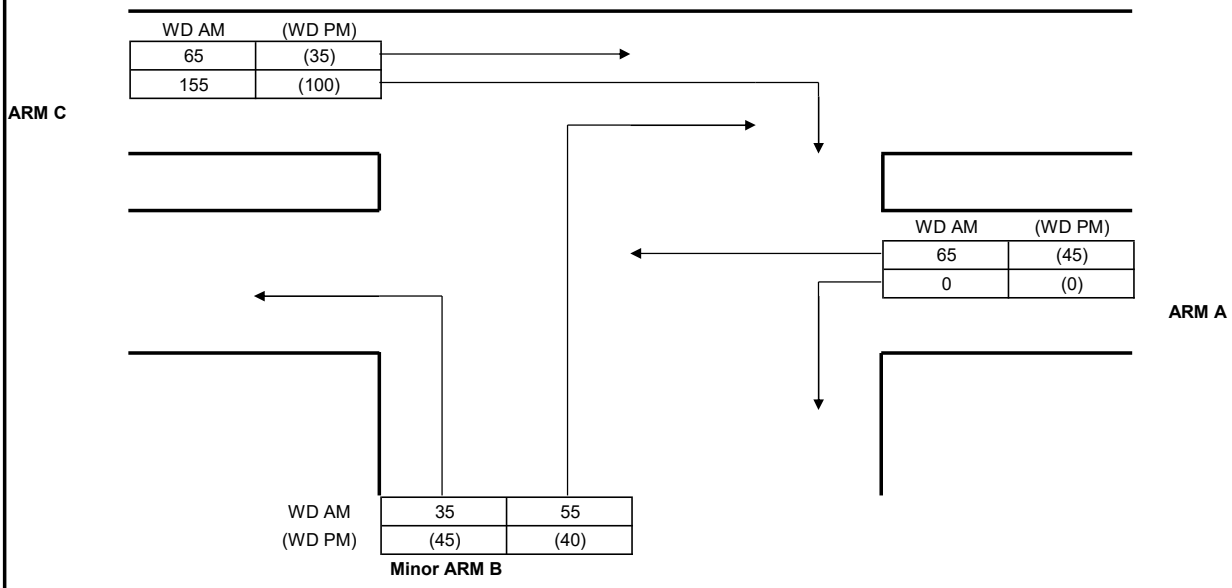
5.

I/G= 7		I/G= 7		I/G=		I/G=		I/G=	
I/G= 2		I/G= 7		I/G= 5	17	I/G=		I/G=	

Date: FEB, 2022 **Junction:** J17 Tung Lo Wan Road / Moreton Terrace

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Caroline Hill Road / Site Access			Ref. No.:	J18
Scheme:	2031 Design Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Caroline Hill Road				
ARM B:	Caroline Hill Road				
ARM C:	Cotton Path				



GEOMETRY

Major road width	W	7.25	Lane widths	w(b-a)	3.50
Central Reserve width	Wcr	0.00		w(b-c)	3.50
2 Lane Minor Arm (Y/N)		Y		w(c-b)	3.00
Visibilities	Vr(b-a)	45	Calculated	D	0.86
	Vl(b-a)	35		E	0.92
	Vr(b-c)	50		F	0.92
	Vr(c-b)	100		Y	0.75

ANALYSIS

		Factor	WD AM PEAK	(WD PM) PEAK
TRAFFIC FLOWS	q(c-a)		65	35
	q(c-b)		155	100
	q(a-b)		0	0
	q(a-c)		65	45
	q(b-a)		55	40
	q(b-c)		35	45
	f		0.39	0.53
CAPACITIES	Q(b-a)	1	460	488
	Q(b-c)	1	672	677
	Q(c-b)	1	671	676
	Q(b-ac)	1	524	573
RFC's	b-a		0.120	0.082
	b-c		0.052	0.066
	c-b		0.231	0.148
	b-ac		0.000	0.000
Worst RFC			**0.231**	**0.148**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

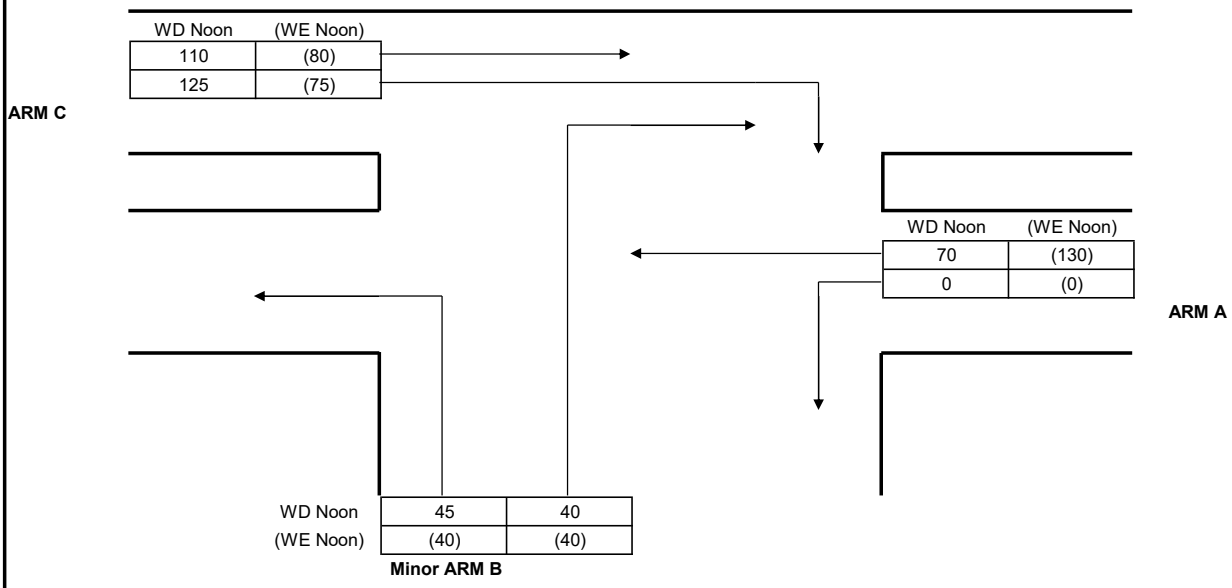
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Feb-22	Checked by:	CHC

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Caroline Hill Road / Site Access			Ref. No.:	J18
Scheme:	2031 Design Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Caroline Hill Road				
ARM B:	Caroline Hill Road				
ARM C:	Cotton Path				



GEOMETRY

Major road width	W	7.25	Lane widths	w(b-a)	3.50
Central Reserve width	Wcr	0.00		w(b-c)	3.50
2 Lane Minor Arm (Y/N)		Y		w(c-b)	3.00
Visibilities	Vr(b-a)	45	Calculated	D	0.86
	Vl(b-a)	35		E	0.92
	Vr(b-c)	50		F	0.92
	Vr(c-b)	100		Y	0.75

ANALYSIS

		Factor	WD Noon PEAK	(WE Noon) PEAK
TRAFFIC FLOWS	q(c-a)		110	80
	q(c-b)		125	75
	q(a-b)		0	0
	q(a-c)		70	130
	q(b-a)		40	40
	q(b-c)		45	40
	f		0.53	0.50
CAPACITIES	Q(b-a)	1	462	469
	Q(b-c)	1	671	655
	Q(c-b)	1	669	654
	Q(b-ac)	1	553	547
RFC's	b-a		0.087	0.085
	b-c		0.067	0.061
	c-b		0.187	0.115
	b-ac		0.000	0.000
Worst RFC			**0.187**	**0.115**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

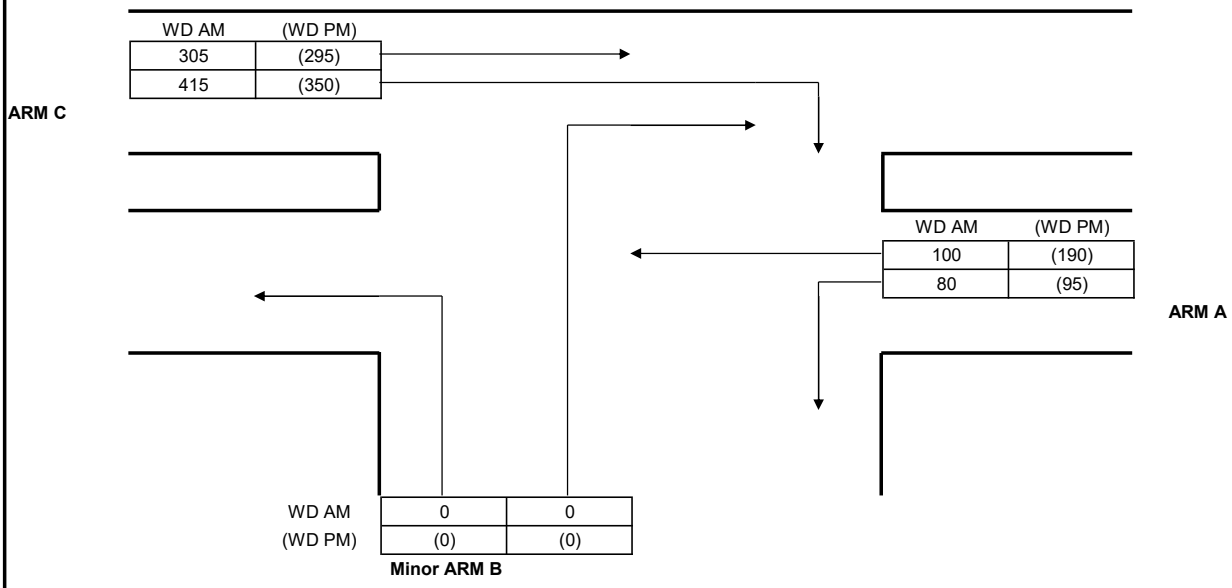
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Apr-22	Checked by:	CHC

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Hysan Avenue / Hoi Ping Road			Ref. No.:	J19
Scheme:	2021 Observed Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Hysan Avenue				
ARM B:	Hoi Ping Road				
ARM C:	Hysan Avenue				



GEOMETRY					
Major road width	W	10.00	Lane widths	w(b-a)	0.00
Central Reserve width	Wcr	0.00		w(b-c)	0.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.30
Visibilities	Vr(b-a)	20	Calculated	D	0.55
	Vl(b-a)	20		E	0.60
	Vr(b-c)	20		F	0.95
	Vr(c-b)	100		Y	0.66

ANALYSIS			WD AM PEAK	(WD PM) PEAK
TRAFFIC FLOWS	q(c-a)		305	295
	q(c-b)		415	350
	q(a-b)		80	95
	q(a-c)		100	190
	q(b-a)		0	0
	q(b-c)		0	0
	f		0.00	0.00
		Factor		
CAPACITIES	Q(b-a)	1	225	226
	Q(b-c)	1	427	413
	Q(c-b)	1	667	643
	Q(b-ac)	1	225	226
RFC's	b-a		0.000	0.000
	b-c		0.000	0.000
	c-b		0.622	0.544
	b-ac		0.000	0.000
Worst RFC			**0.622**	**0.544**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

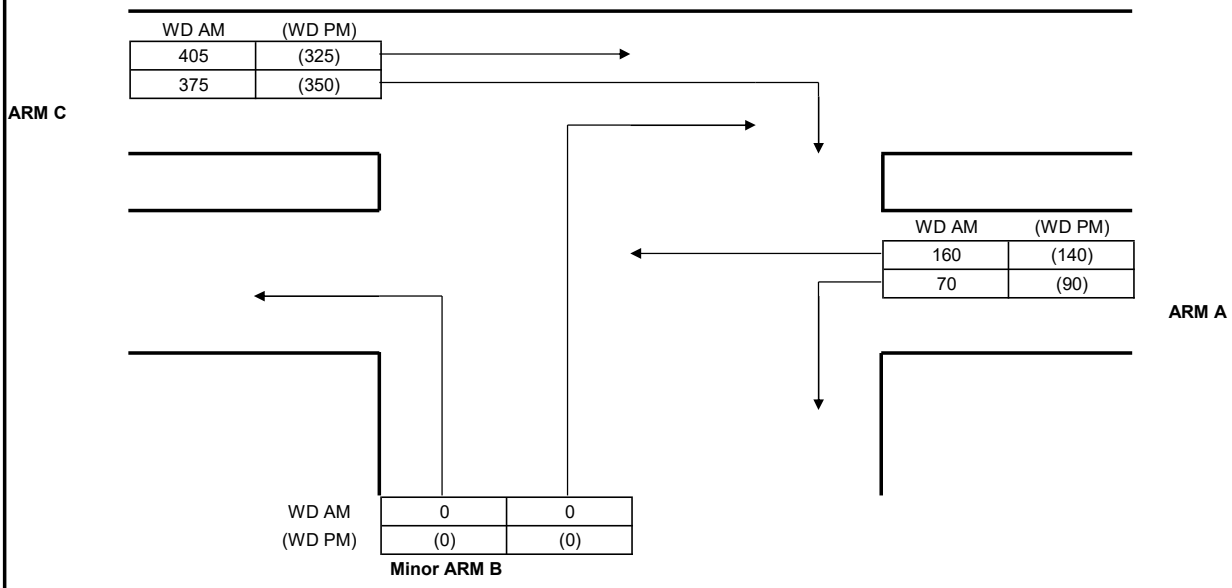
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Feb-22	Checked by:	CHC

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	#N/A			Ref. No.:	J19
Scheme:	2021 Observed Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Hysan Avenue				
ARM B:	Hoi Ping Road				
ARM C:	Hysan Avenue				



GEOMETRY					
Major road width	W	10.00	Lane widths	w(b-a)	0.00
Central Reserve width	Wcr	0.00		w(b-c)	0.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.30
Visibilities	Vr(b-a)	20	Calculated	D	0.55
	Vl(b-a)	20		E	0.60
	Vr(b-c)	20		F	0.95
	Vr(c-b)	100		Y	0.66

ANALYSIS			WD AM PEAK	(WD PM) PEAK
TRAFFIC FLOWS	q(c-a)		405	325
	q(c-b)		375	350
	q(a-b)		70	90
	q(a-c)		160	140
	q(b-a)		0	0
	q(b-c)		0	0
	f		0.00	0.00
		Factor		
CAPACITIES	Q(b-a)	1	217	230
	Q(b-c)	1	419	420
	Q(c-b)	1	655	655
	Q(b-ac)	1	217	230
RFC's	b-a		0.000	0.000
	b-c		0.000	0.000
	c-b		0.573	0.534
	b-ac		0.000	0.000
Worst RFC			**0.573**	**0.534**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

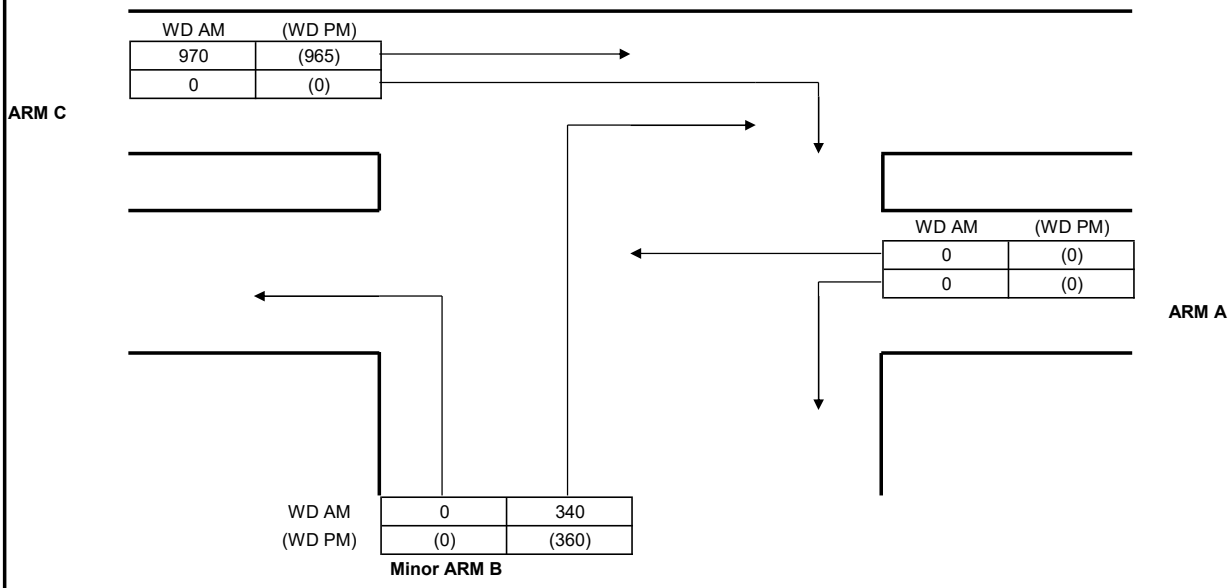
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Apr-22	Checked by:	CHC

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	Tung Lo Wan Road / Tai Hang Road			Ref. No.:	J20
Scheme:	2031 Design Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Tung Lo Wan Road				
ARM B:	Tai Hang Road				
ARM C:	Tung Lo Wan Road				



GEOMETRY					
Major road width	W	6.70	Lane widths	w(b-a)	6.70
Central Reserve width	Wcr	0.00		w(b-c)	0.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	20	Calculated	D	1.08
	Vl(b-a)	20		E	0.60
	Vr(b-c)	30		F	0.59
	Vr(c-b)	10		Y	0.77

ANALYSIS			WD AM PEAK	(WD PM) PEAK
TRAFFIC FLOWS	q(c-a)		970	965
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		0	0
	q(b-a)		340	360
	q(b-c)		0	0
	f		0.00	0.00
		Factor		
CAPACITIES	Q(b-a)	1	493	493
	Q(b-c)	1	450	450
	Q(c-b)	1	441	441
	Q(b-ac)	1	493	493
RFC's	b-a		0.690	0.730
	b-c		0.000	0.000
	c-b		0.000	0.000
	b-ac		0.690	0.730
Worst RFC			**0.690**	**0.730**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

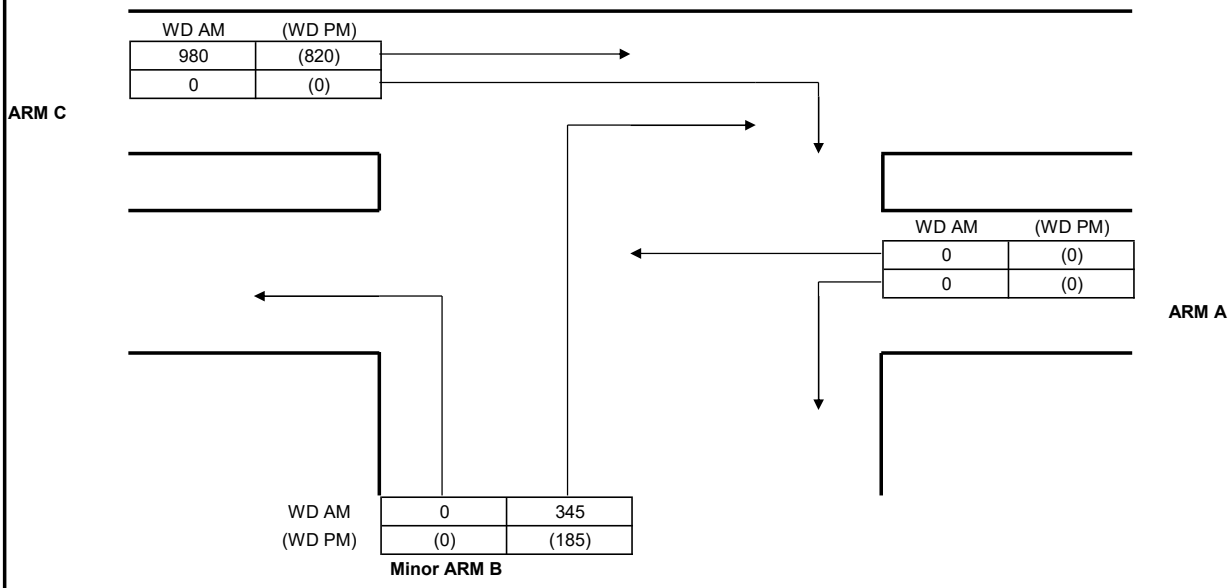
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Feb-22	Checked by:	CHC

Simplified Priority Junction Capacity Calculation

Job Title:	Traffic Consultancy Services for Commercial Development on IL No. 8945, Causeway Bay, Hong Kong				
Junction:	#N/A			Ref. No.:	J20
Scheme:	2031 Design Flows			Ref. No.:	
Year:	2031	Job No.:	CHK50603110	Rev.:	-
ARM A:	Tung Lo Wan Road				
ARM B:	Tai Hang Road				
ARM C:	Tung Lo Wan Road				



GEOMETRY					
Major road width	W	6.70	Lane widths	w(b-a)	6.70
Central Reserve width	Wcr	0.00		w(b-c)	0.00
2 Lane Minor Arm (Y/N)		N		w(c-b)	0.00
Visibilities	Vr(b-a)	20	Calculated	D	1.08
	Vl(b-a)	20		E	0.60
	Vr(b-c)	30		F	0.59
	Vr(c-b)	10		Y	0.77

ANALYSIS			WD AM PEAK	(WD PM) PEAK
TRAFFIC FLOWS	q(c-a)		980	820
	q(c-b)		0	0
	q(a-b)		0	0
	q(a-c)		0	0
	q(b-a)		345	185
	q(b-c)		0	0
	f		0.00	0.00
		Factor		
CAPACITIES	Q(b-a)	1	491	521
	Q(b-c)	1	450	450
	Q(c-b)	1	441	441
	Q(b-ac)	1	491	521
RFC's	b-a		0.703	0.355
	b-c		0.000	0.000
	c-b		0.000	0.000
	b-ac		0.703	0.355
Worst RFC			**0.703**	**0.355**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

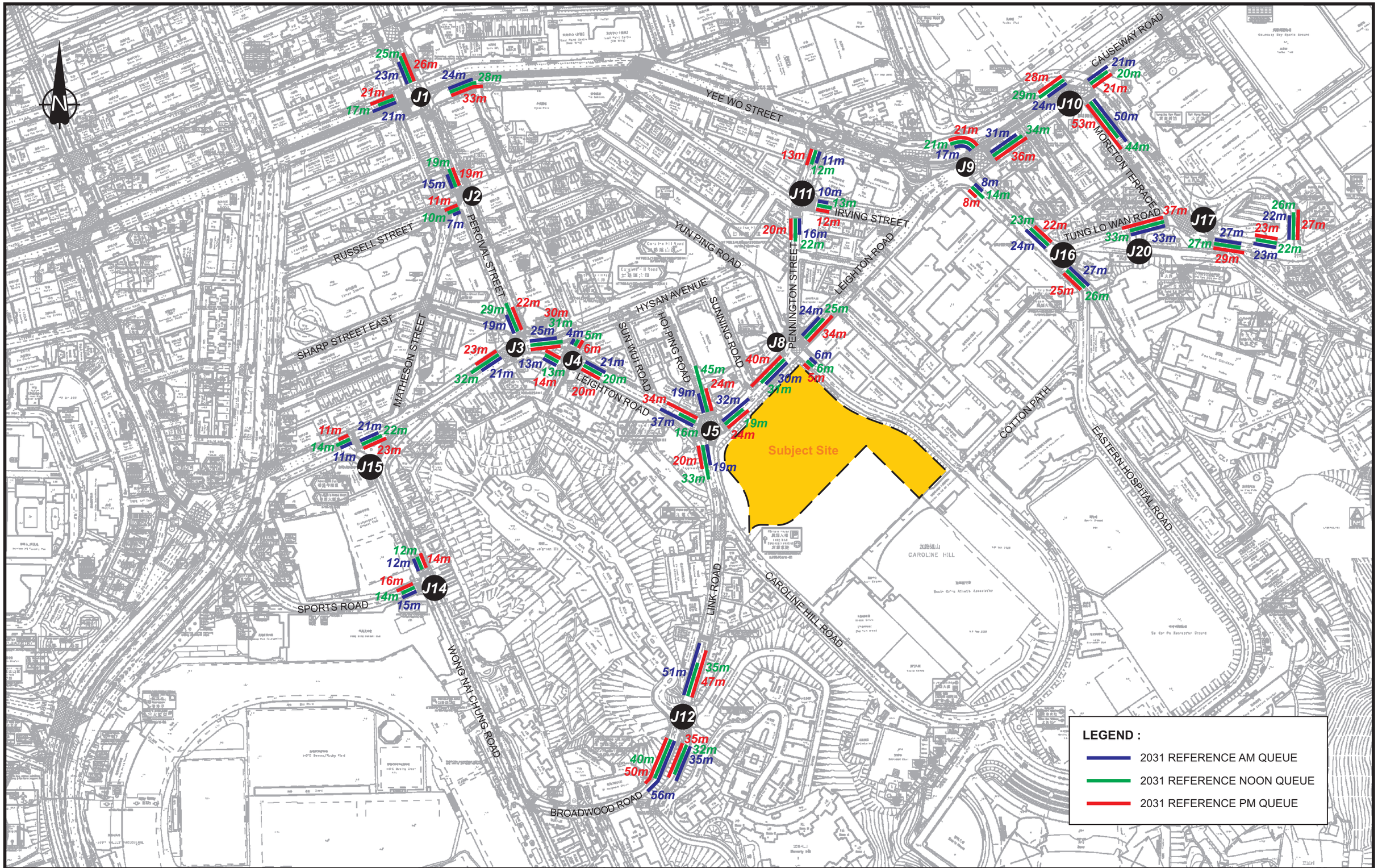
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	LYK	Date:	Apr-22	Checked by:	CHC

APPENDIX E – Estimated Queue Length at Signal Junctions and Worksheets

Year 2021 Observed



Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
A	MINOR AMENDMENT	CHC	13APR22

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG TRAFFIC REVIEW REPORT

Drawing Title

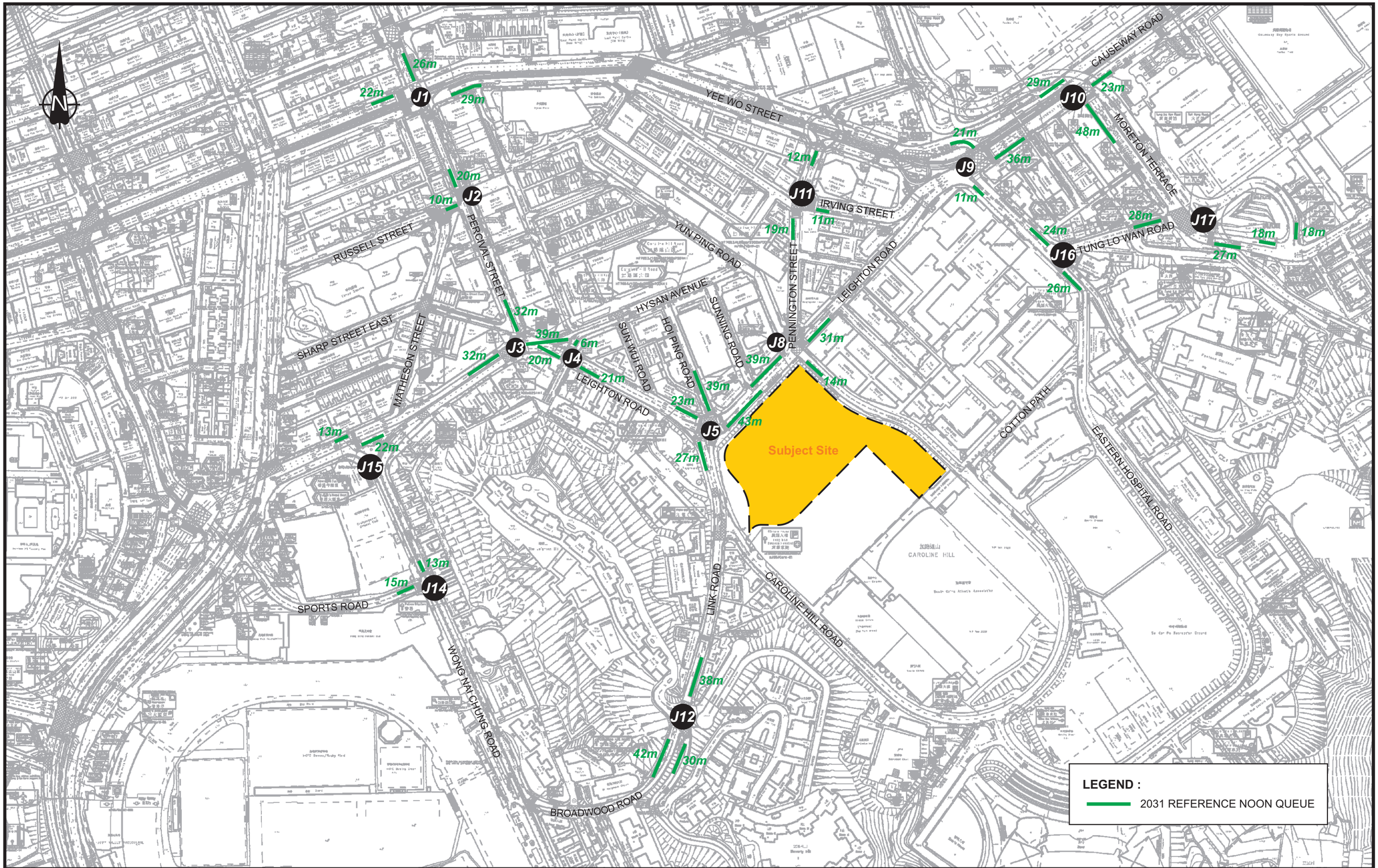
ESTIMATED AVERAGE QUEUE LENGTH FOR WEEKDAY UNDER YEAR 2021 EXISTING SCENARIO

Designed	Checked	Scale	Date	Drawing No.	Rev.
LYK	CHC	NTS	FEB 2022	E1	A

SYSTRA MVA

CHK50603110/TIA/E1-A.CDR/LLH/13APR22

Original Size : A3



Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
A	MINOR AMENDMENT	CHC	13APR22

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG TRAFFIC REVIEW REPORT

Drawing Title

ESTIMATED AVERAGE QUEUE LENGTH FOR WEEKEND UNDER YEAR 2021 EXISTING SCENARIO

Designed	Checked	Scale	Date	Drawing No.	Rev.
LYK	CHC	NTS	FEB 2022	E2	A

SYSTRA MVA

CHK50603110/TIA/E2-A.CDR/LLH/13APR22

Original Size : A3

Queue Length Analysis

SYSTRA MVA **MVA Hong Kong Ltd.**

Job No.	CHK50603110	Description	2021 Existing Flows
Job Title	tancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2021
Junction Name	Hennessy Road / Percival Street (J1)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	D	A	B	C	B	C	E	E	A	D	A	B	C	B	C
			Weekday AM									**Weekday Noon**						
		Unit	Hennessy Rd WB	Hennessy Rd WB (Tram) - LT	Hennessy Rd WB (Tram) - Ahead	Hennessy Rd EB -Ahead	Hennessy Rd EB - RT	Hennessy Rd EB (Tram) - Ahead	Hennessy Rd EB (Tram) - RT	Percival St SB - LT	Percival St SB - Ahead	Hennessy Rd WB	Hennessy Rd WB (Tram) - LT	Hennessy Rd WB (Tram) - Ahead	Hennessy Rd EB -Ahead	Hennessy Rd EB - RT	Hennessy Rd EB (Tram) - Ahead	Hennessy Rd EB (Tram) - RT
Cycle time	c	sec	120	120	120	120	120	120	120	120	120	104	104	104	104	104	104	104
Effective green time	g	sec	53	19	53	66	15	66	15	33	33	43	21	43	59	17	59	17
		pcu/hr	570	20	70	615	90	75	25	75	415	705	15	70	540	155	80	35
Design flow	q	veh/sec	0.122	0.004	0.015	0.131	0.019	0.016	0.005	0.016	0.089	0.151	0.003	0.015	0.115	0.033	0.017	0.007
		pcu/hr	3620	1780	2055	3015	1940	1915	1940	1690	4190	3620	1780	2055	3015	1940	1915	1940
Saturation flow	Q	veh/sec	0.774	0.380	0.439	0.644	0.415	0.409	0.415	0.361	0.895	0.774	0.380	0.439	0.644	0.415	0.409	0.415
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	1	1	2	1	1	1	1	2	2	1	1	2	1	1	1
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.442	0.158	0.442	0.550	0.125	0.550	0.125	0.275	0.275	0.413	0.202	0.413	0.567	0.163	0.567	0.163
Degree of saturation	x		0.357	0.071	0.077	0.371	0.371	0.071	0.103	0.161	0.360	0.471	0.042	0.082	0.316	0.489	0.074	0.110
	M		14.615	0.513	1.795	15.769	2.308	1.923	0.641	1.923	10.641	15.667	0.333	1.556	12.000	3.444	1.778	0.778
	y		0.157	0.011	0.034	0.204	0.046	0.039	0.013	0.044	0.099	0.195	0.008	0.034	0.179	0.080	0.042	0.018
	Qt	veh/sec	204.979	36.132	116.362	212.596	31.090	135.032	31.090	59.583	147.724	191.889	46.080	108.931	219.286	40.656	139.281	40.656
	x<1																	
	A	sec/veh	0.185	0.358	0.161	0.127	0.401	0.105	0.388	0.275	0.292	0.214	0.321	0.178	0.114	0.380	0.098	0.356
	B	sec/veh	0.099	0.003	0.003	0.109	0.110	0.003	0.006	0.016	0.101	0.210	0.001	0.004	0.073	0.234	0.003	0.007
	C	sec/veh	0.170	0.075	0.001	0.112	3.311	0.000	0.270	0.107	0.514	0.505	0.010	0.002	0.049	3.945	0.000	0.161
Average Queue Delay	D	sec/veh	23	44	20	16	51	13	47	34	36	23	34	19	12	43	10	38
	x>x'																	
	Z		-0.643	-0.929	-0.923	-0.629	-0.629	-0.929	-0.897	-0.839	-0.640	-0.529	-0.958	-0.918	-0.684	-0.511	-0.926	-0.890
	X'		0.738	0.682	0.709	0.741	0.680	0.715	0.680	0.690	0.719	0.725	0.683	0.701	0.733	0.682	0.710	0.682
	No	veh	-0.902	-1.053	-1.047	-0.894	-0.804	-1.058	-1.044	-0.984	-0.857	-0.732	-1.055	-1.033	-0.927	-0.601	-1.048	-1.021
Average Queue Delay	D	sec/veh	20	26	14	13	33	8	26	23	32	20	20	13	9	31	6	22
Average Delay		**sec/veh**	**23**	**44**	**20**	**16**	**51**	**13**	**47**	**34**	**36**	**23**	**34**	**19**	**12**	**43**	**10**	**38**
Average Queue	N = q(r/2+d)	veh	6.862	0.402	0.794	5.649	1.982	0.638	0.534	1.240	7.017	8.075	0.241	0.737	4.032	2.854	0.561	0.608
Average Queue Length	NL/n	metre	21	2	5	17	12	4	3	7	21	24	1	4	12	17	3	4
Average Queue	N=qr	veh	8.160	0.432	1.002	7.096	2.019	0.865	0.561	1.394	7.715	9.189	0.266	0.912	5.192	2.881	0.769	0.651
Average Queue Length	NL/n	metre	24	3	6	21	12	5	3	8	23	28	2	5	16	17	5	4
Average Queue	N=qr+No	veh	7.258	-0.621	-0.045	6.202	1.216	-0.192	-0.483	0.410	6.857	8.457	-0.789	-0.121	4.265	2.280	-0.279	-0.370
Average Queue Length	NL/n	metre	22	-4	0	19	7	-1	-3	2	21	25	-5	-1	13	14	-2	-2
Average Queue Length		**metre**	**24**	**3**	**6**	**21**	**12**	**5**	**3**	**8**	**23**	**28**	**2**	**5**	**16**	**17**	**5**	**4**
Maximum Queue Length		**metre**	**53**	**36**	**33**	**41**	**37**	**26**	**37**	**32**	**41**	**53**	**37**	**31**	**33**	**44**	**25**	**38**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2021 Existing Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2021
Junction Name	Hennessy Road / Percival Street (J1)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			E	E	A	D	A	B	C	B	C	E	E	A	D	A	B	C
			Weekday Noon		**Weekday PM**									**Weekend Noon**				
		Unit	Percival St SB - LT	Percival St SB - Ahead	Hennessy Rd WB	Hennessy Rd WB (Tram) - LT	Hennessy Rd WB (Tram) - Ahead	Hennessy Rd EB -Ahead	Hennessy Rd EB - RT	Hennessy Rd EB (Tram) - Ahead	Hennessy Rd EB (Tram) - RT	Percival St SB - LT	Percival St SB - Ahead	Hennessy Rd WB	Hennessy Rd WB (Tram) - LT	Hennessy Rd WB (Tram) - Ahead	Hennessy Rd EB -Ahead	Hennessy Rd EB - RT
Cycle time	c	sec	104	104	120	120	120	120	120	120	120	120	120	104	104	104	104	104
Effective green time	g	sec	25	25	50	21	50	66	17	66	17	34	34	35	23	35	59	19
		pcu/hr	195	490	745	15	80	600	140	95	35	240	415	655	25	70	675	200
Design flow	q	veh/sec	0.042	0.105	0.159	0.003	0.017	0.128	0.030	0.020	0.007	0.051	0.089	0.140	0.005	0.015	0.144	0.043
		pcu/hr	1690	4190	3620	1780	2055	3015	1940	1915	1940	1690	4190	3620	1780	2055	3015	1940
Saturation flow	Q	veh/sec	0.361	0.895	0.774	0.380	0.439	0.644	0.415	0.409	0.415	0.361	0.895	0.774	0.380	0.439	0.644	0.415
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	1	2	2	1	1	2	1	1	1	1	2	2	1	1	2	1
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.240	0.240	0.417	0.175	0.417	0.550	0.142	0.550	0.142	0.283	0.283	0.337	0.221	0.337	0.567	0.183
Degree of saturation	x		0.480	0.486	0.494	0.048	0.093	0.362	0.509	0.090	0.127	0.501	0.350	0.538	0.064	0.101	0.395	0.564
	M		4.333	10.889	19.103	0.385	2.051	15.385	3.590	2.436	0.897	6.154	10.641	14.556	0.556	1.556	15.000	4.444
	y		0.115	0.117	0.206	0.008	0.039	0.199	0.072	0.050	0.018	0.142	0.099	0.181	0.014	0.034	0.224	0.103
	Qt	veh/sec	52.083	129.130	193.376	39.936	109.776	212.596	35.235	135.032	35.235	61.389	152.201	156.188	50.468	88.665	219.286	45.439
	x<1																	
	A	sec/veh	0.326	0.327	0.214	0.343	0.177	0.126	0.397	0.107	0.375	0.299	0.285	0.269	0.308	0.228	0.121	0.372
	B	sec/veh	0.222	0.230	0.241	0.001	0.005	0.103	0.264	0.004	0.009	0.252	0.094	0.313	0.002	0.006	0.129	0.365
	C	sec/veh	2.425	1.370	0.613	0.024	0.003	0.101	5.354	0.000	0.316	2.193	0.444	1.154	0.019	0.011	0.124	4.722
Average Queue Delay	D	sec/veh	37	35	27	42	22	16	51	13	46	39	35	29	32	24	13	43
	x>x'																	
	Z		-0.520	-0.514	-0.506	-0.952	-0.907	-0.638	-0.491	-0.910	-0.873	-0.499	-0.650	-0.462	-0.936	-0.899	-0.605	-0.436
	X'		0.685	0.707	0.734	0.683	0.707	0.741	0.682	0.715	0.682	0.690	0.721	0.715	0.685	0.696	0.733	0.683
	No	veh	-0.620	-0.658	-0.724	-1.060	-1.036	-0.903	-0.564	-1.048	-1.021	-0.592	-0.871	-0.585	-1.041	-1.018	-0.850	-0.428
Average Queue Delay	D	sec/veh	27	31	23	25	16	13	38	8	28	30	31	26	20	17	10	33
Average Delay		**sec/veh**	**37**	**35**	**27**	**42**	**22**	**16**	**51**	**13**	**46**	**39**	**35**	**29**	**32**	**24**	**13**	**43**
Average Queue	N = q(r/2+d)	veh	3.180	7.780	9.807	0.292	0.966	5.496	3.070	0.812	0.729	4.186	6.901	8.891	0.389	0.876	5.165	3.635
Average Queue Length	NL/n	metre	19	23	29	2	6	16	18	5	4	25	21	27	2	5	15	22
Average Queue	N=qr	veh	3.292	8.271	11.143	0.317	1.197	6.923	3.081	1.096	0.770	4.410	7.626	9.657	0.433	1.032	6.490	3.632
Average Queue Length	NL/n	metre	20	25	33	2	7	21	18	7	5	26	23	29	3	6	19	22
Average Queue	N=qr+No	veh	2.672	7.613	10.420	-0.743	0.160	6.020	2.517	0.048	-0.250	3.818	6.755	9.072	-0.608	0.014	5.640	3.205
Average Queue Length	NL/n	metre	16	23	31	-4	1	18	15	0	-2	23	20	27	-4	0	17	19
Average Queue Length		**metre**	**20**	**25**	**33**	**2**	**7**	**21**	**18**	**7**	**5**	**26**	**23**	**29**	**3**	**6**	**19**	**22**
Maximum Queue Length		**metre**	**39**	**40**	**59**	**51**	**387**	**49**	**44**	**49**	**44**	**49**	**44**	**63**	**52**	**67**	**41**	**37**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2021 Existing Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2021
Junction Name	Hennessy Road / Percival Street (J1)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			B	C	E	E
			Weekend Noon			
		Unit	Hennessy Rd EB (Tram) - Ahead	Hennessy Rd EB (Tram) - RT	Percival St SB - LT	Percival St SB - Ahead
Cycle time	c	sec	104	104	104	104
Effective green time	g	sec	59	19	31	31
		pcu/hr	95	30	275	555
Design flow	q	veh/sec	0.020	0.006	0.059	0.119
		pcu/hr	1915	1940	1690	4190
Saturation flow	Q	veh/sec	0.409	0.415	0.361	0.895
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3
No. of lanes	n	lane	1	1	1	2
Length of a vehicle	L	metre	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.567	0.183	0.298	0.298
Degree of saturation	x		0.087	0.085	0.546	0.444
	M		2.111	0.667	6.111	12.333
	y		0.050	0.015	0.163	0.132
	Qt	veh/sec	139.281	45.439	64.583	160.121
	x<1					
	A	sec/veh	0.098	0.339	0.294	0.284
	B	sec/veh	0.004	0.004	0.328	0.178
	C	sec/veh	0.000	0.067	2.445	0.747
Average Queue Delay	D	sec/veh	10	36	34	30
	x>x'					
	Z		-0.913	-0.915	-0.454	-0.556
	X'		0.710	0.683	0.689	0.716
	No	veh	-1.041	-1.032	-0.488	-0.747
Average Queue Delay	D	sec/veh	6	22	26	27
Average Delay		**sec/veh**	**10**	**36**	**34**	**30**
Average Queue	N = q(r/2+d)	veh	0.669	0.502	4.127	7.920
Average Queue Length	NL/n	metre	4	3	25	24
Average Queue	N=qr	veh	0.913	0.545	4.290	8.657
Average Queue Length	NL/n	metre	5	3	26	26
Average Queue	N=qr+No	veh	-0.127	-0.487	3.802	7.911
Average Queue Length	NL/n	metre	-1	-3	23	24
Average Queue Length		**metre**	**5**	**3**	**26**	**26**
Maximum Queue Length		**metre**	**41**	**37**	**41**	**37**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA **MVA Hong Kong Ltd.**

Job No.	CHK50603110	Description	2021 Existing Flows
Job Title	tancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2021
Junction Name	Matheson Street / Percival Street / Russell Street (J2)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	B	A	B	A	B	A	B
			Weekday AM		**Weekday Noon**		**Weekday PM**		**Weekend Noon**	
		Unit	Percival St SB	Matheson St NB	Percival St SB	Matheson St NB	Percival St SB	Matheson St NB	Percival St SB	Matheson St NB
Cycle time	c	sec	105	105	105	105	120	120	110	110
Effective green time	g	sec	63	18	62	19	72	24	68	18
		pcu/hr	545	130	700	190	620	180	760	175
Design flow	q	veh/sec	0.116	0.028	0.150	0.041	0.132	0.038	0.162	0.037
		pcu/hr	3950	3425	3950	3430	3950	3425	3950	3425
Saturation flow	Q	veh/sec	0.844	0.732	0.844	0.733	0.844	0.732	0.844	0.732
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	2	2	2	2	2	2	2
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.600	0.171	0.590	0.181	0.600	0.200	0.618	0.164
Degree of saturation	x		0.230	0.221	0.300	0.306	0.262	0.263	0.311	0.312
	M		12.228	2.917	15.705	4.263	15.897	4.615	17.863	4.113
	y		0.138	0.038	0.177	0.055	0.157	0.053	0.192	0.051
	Qt	veh/sec	303.846	75.275	299.023	79.573	303.846	87.821	313.054	71.853
	x<1									
	A	sec/veh	0.093	0.357	0.102	0.355	0.095	0.338	0.090	0.369
	B	sec/veh	0.034	0.031	0.064	0.068	0.046	0.047	0.070	0.071
	C	sec/veh	0.008	0.450	0.028	0.834	0.015	0.511	0.027	1.048
Average Queue Delay	D	sec/veh	10	38	11	38	12	41	10	41
	x>x'									
	Z		-0.770	-0.779	-0.700	-0.694	-0.738	-0.737	-0.689	-0.688
	X'		0.759	0.692	0.757	0.693	0.771	0.699	0.766	0.692
	No	veh	-1.039	-0.936	-0.989	-0.864	-1.045	-0.914	-0.999	-0.858
Average Queue Delay	D	sec/veh	8	30	9	31	9	34	8	33
Average Delay		**sec/veh**	**10**	**38**	**11**	**38**	**12**	**41**	**10**	**41**
Average Queue	N = q(r/2+d)	veh	3.614	2.268	4.877	3.293	4.732	3.432	5.088	3.268
Average Queue Length	NL/n	metre	11	7	15	10	14	10	15	10
Average Queue	N=qr	veh	4.891	2.417	6.432	3.491	6.359	3.692	6.821	3.440
Average Queue Length	NL/n	metre	15	7	19	10	19	11	20	10
Average Queue	N=qr+No	veh	3.852	1.480	5.443	2.628	5.314	2.778	5.822	2.582
Average Queue Length	NL/n	metre	12	4	16	8	16	8	17	8
Average Queue Length		**metre**	**15**	**7**	**19**	**10**	**19**	**11**	**20**	**10**
Maximum Queue Length		**metre**	**32**	**19**	**39**	**20**	**38**	**21**	**41**	**20**

*Note: SG = Signal Group

Queue Length Analysis

MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2021 Existing Flows
Job Title	tancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2021
Junction Name	Leighton Road / Percival Street / Hysan Avenue (J3)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			E	A	C	C	E	A	C	C	E	A	C	C	E	A	C	C
			Weekday AM				**Weekday Noon**				**Weekday PM**				**Weekend Noon**			
		Unit	Leighton Rd WB	Leighton Road EB	Percival St SB - LT	Percival St SB - RT	Leighton Rd WB	Leighton Road EB	Percival St SB - LT	Percival St SB - RT	Leighton Rd WB	Leighton Road EB	Percival St SB - LT	Percival St SB - RT	Leighton Rd WB	Leighton Road EB	Percival St SB - LT	Percival St SB - RT
Cycle time	c	sec	105	105	105	105	130	130	130	130	105	105	105	105	130	130	130	130
Effective green time	g	sec	60	55	36	36	72	67	49	49	51	46	45	45	63	58	58	58
		pcu/hr	865	660	210	385	840	780	275	490	860	600	290	405	910	700	345	445
Design flow	q	veh/sec	0.185	0.141	0.045	0.082	0.179	0.167	0.059	0.105	0.184	0.128	0.062	0.087	0.194	0.150	0.074	0.095
		pcu/hr	3215	2325	1140	2770	3215	2325	1140	2760	3215	2325	1140	2770	3215	2325	1140	2760
Saturation flow	Q	veh/sec	0.687	0.497	0.244	0.592	0.687	0.497	0.244	0.590	0.687	0.497	0.244	0.592	0.687	0.497	0.244	0.590
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	2	1	2	2	2	1	2	2	2	1	2	2	2	1	2
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.571	0.524	0.343	0.343	0.554	0.515	0.377	0.377	0.486	0.438	0.429	0.429	0.485	0.446	0.446	0.446
Degree of saturation	x		0.471	0.542	0.537	0.405	0.472	0.651	0.640	0.471	0.551	0.589	0.594	0.341	0.584	0.675	0.678	0.361
	M		19.407	14.808	4.712	8.638	23.333	21.667	7.639	13.611	19.295	13.462	6.506	9.087	25.278	19.444	9.583	12.361
	y		0.269	0.284	0.184	0.139	0.261	0.335	0.241	0.178	0.267	0.258	0.254	0.146	0.283	0.301	0.303	0.161
	Qt	veh/sec	235.531	156.136	50.110	121.758	228.284	153.624	55.089	133.373	200.201	130.586	62.637	152.198	199.749	132.988	65.207	157.870
	x<1																	
	A	sec/veh	0.126	0.158	0.265	0.251	0.135	0.177	0.256	0.236	0.181	0.213	0.219	0.191	0.185	0.219	0.220	0.183
	B	sec/veh	0.209	0.321	0.312	0.138	0.211	0.607	0.569	0.210	0.338	0.422	0.433	0.088	0.410	0.700	0.715	0.102
	C	sec/veh	0.244	0.668	2.417	0.567	0.288	1.524	3.848	0.796	0.676	1.313	2.256	0.182	0.909	2.213	3.625	0.213
Average Queue Delay	D	sec/veh	14	18	32	27	18	25	39	32	20	24	28	21	25	31	35	25
	x>x'																	
	Z		-0.529	-0.458	-0.463	-0.595	-0.528	-0.349	-0.360	-0.529	-0.449	-0.411	-0.406	-0.659	-0.416	-0.325	-0.322	-0.639
	X'		0.739	0.716	0.685	0.706	0.752	0.725	0.690	0.718	0.728	0.708	0.688	0.714	0.742	0.718	0.694	0.727
	No	veh	-0.769	-0.578	-0.499	-0.774	-0.808	-0.324	-0.212	-0.715	-0.601	-0.442	-0.360	-0.865	-0.578	-0.201	-0.072	-0.874
Average Queue Delay	D	sec/veh	11	14	22	23	15	22	31	27	17	20	20	17	22	28	28	20
Average Delay		**sec/veh**	**14**	**18**	**32**	**27**	**18**	**25**	**39**	**32**	**20**	**24**	**28**	**21**	**25**	**31**	**35**	**25**
Average Queue	N = q(r/2+d)	veh	6.761	6.096	2.999	5.096	8.508	9.432	4.677	7.579	8.658	6.900	3.577	4.406	11.430	10.021	5.209	5.765
Average Queue Length	NL/n	metre	20	18	18	15	26	28	28	23	26	21	21	13	34	30	31	17
Average Queue	N=qr	veh	8.317	7.051	3.096	5.676	10.410	10.500	4.760	8.481	9.923	7.564	3.718	5.192	13.028	10.769	5.308	6.846
Average Queue Length	NL/n	metre	25	21	19	17	31	32	29	25	30	23	22	16	39	32	32	21
Average Queue	N=qr+No	veh	7.549	6.473	2.597	4.903	9.602	10.176	4.547	7.765	9.322	7.122	3.358	4.328	12.450	10.568	5.236	5.972
Average Queue Length	NL/n	metre	23	19	16	15	29	31	27	23	28	21	20	13	37	32	31	18
Average Queue Length		**metre**	**25**	**21**	**19**	**17**	**31**	**32**	**29**	**25**	**30**	**23**	**22**	**16**	**39**	**32**	**32**	**21**
Maximum Queue Length		**metre**	**46**	**41**	**42**	**37**	**54**	**54**	**62**	**48**	**46**	**38**	**66**	**37**	**63**	**56**	**67**	**41**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA **MVA Hong Kong Ltd.**

Job No.	CHK50603110	Description	2021 Existing Flows
Job Title	tancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2021
Junction Name	Leighton Road / Hysan Avenue / Leighton Lane (J4)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			B	A	C	B	A	C	B	A	C	B	A	C
			Weekday AM			**Weekday Noon**			**Weekday PM**			**Weekend Noon**		
		Unit	Leigthon Rd WB	Leighton Rd EB	Hysan Avenue SB	Leigthon Rd WB	Leighton Rd EB	Hysan Avenue SB	Leigthon Rd WB	Leighton Rd EB	Hysan Avenue SB	Leigthon Rd WB	Leighton Rd EB	Hysan Avenue SB
Cycle time	c	sec	120	120	120	130	130	130	130	130	130	130	130	130
Effective green time	g	sec	80	89	22	90	99	22	90	99	22	90	99	22
		pcu/hr	820	320	60	775	335	70	775	360	90	830	500	90
Design flow	q	veh/sec	0.175	0.068	0.013	0.166	0.072	0.015	0.166	0.077	0.019	0.177	0.107	0.019
		pcu/hr	3990	1965	3395	4000	1965	3370	4010	1965	3370	4020	1965	3390
Saturation flow	Q	veh/sec	0.853	0.420	0.725	0.855	0.420	0.720	0.857	0.420	0.720	0.859	0.420	0.724
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	1	2	2	1	2	2	1	2	2	1	2
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.667	0.742	0.183	0.692	0.762	0.169	0.692	0.762	0.169	0.692	0.762	0.169
Degree of saturation	x		0.308	0.220	0.096	0.280	0.224	0.123	0.279	0.241	0.158	0.298	0.334	0.157
	M		21.026	8.205	1.538	21.528	9.306	1.944	21.528	10.000	2.500	23.056	13.889	2.500
	y		0.206	0.163	0.018	0.194	0.170	0.021	0.193	0.183	0.027	0.206	0.254	0.027
	Qt	veh/sec	341.026	186.843	79.797	355.030	191.849	73.116	355.917	191.849	73.116	356.805	191.849	73.550
	x<1													
	A	sec/veh	0.070	0.040	0.339	0.059	0.034	0.352	0.059	0.035	0.355	0.060	0.038	0.355
	B	sec/veh	0.069	0.031	0.005	0.054	0.032	0.009	0.054	0.038	0.015	0.063	0.084	0.015
	C	sec/veh	0.019	0.003	0.064	0.010	0.003	0.138	0.010	0.005	0.240	0.014	0.025	0.236
Average Queue Delay	D	sec/veh	9	5	41	8	5	46	8	5	47	8	6	47
	x>x'													
	Z		-0.692	-0.780	-0.904	-0.720	-0.776	-0.877	-0.721	-0.759	-0.842	-0.702	-0.666	-0.843
	X'		0.784	0.732	0.697	0.798	0.739	0.696	0.799	0.739	0.696	0.799	0.739	0.697
	No	veh	-1.040	-0.999	-1.026	-1.089	-1.010	-1.013	-1.090	-0.999	-0.991	-1.079	-0.926	-0.992
Average Queue Delay	D	sec/veh	7	2	33	6	1	38	6	1	38	6	2	38
Average Delay		**sec/veh**	**9**	**5**	**41**	**8**	**5**	**46**	**8**	**5**	**47**	**8**	**6**	**47**
Average Queue	N = q(r/2+d)	veh	5.040	1.418	1.155	4.629	1.461	1.499	4.628	1.578	1.935	4.983	2.267	1.935
Average Queue Length	NL/n	metre	15	9	3	14	9	4	14	9	6	15	14	6
Average Queue	N=qr	veh	7.009	2.120	1.256	6.624	2.219	1.615	6.624	2.385	2.077	7.094	3.312	2.077
Average Queue Length	NL/n	metre	21	13	4	20	13	5	20	14	6	21	20	6
Average Queue	N=qr+No	veh	5.968	1.121	0.231	5.535	1.209	0.603	5.534	1.386	1.086	6.015	2.386	1.085
Average Queue Length	NL/n	metre	18	7	1	17	7	2	17	8	3	18	14	3
Average Queue Length		**metre**	**21**	**13**	**4**	**20**	**13**	**5**	**20**	**14**	**6**	**21**	**20**	**6**
Maximum Queue Length		**metre**	**41**	**36**	**18**	**39**	**38**	**18**	**39**	**40**	**18**	**40**	**48**	**18**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA — MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2021 Existing Flows
Job Title	tancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2021
Junction Name	Leighton Road / Percival Street / Hysan Avenue (J5)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	D	B	A	C	A	D	B	A	C	A	D	B	A	C	A
			Weekday AM					**Weekday Noon**					**Weekday PM**					
		Unit	Leighton Rd WB	CHR NB - LT	CHR NB - RT	Leighton Rd EB	Hoi Ping Rd SB	Leighton Rd WB	CHR NB - LT	CHR NB - RT	Leighton Rd EB	Hoi Ping Rd SB	Leighton Rd WB	CHR NB - LT	CHR NB - RT	Leighton Rd EB	Hoi Ping Rd SB	Leighton Rd WB
Cycle time	c	sec	105	105	105	105	105	120	120	120	120	120	130	130	130	130	130	130
Effective green time	g	sec	33	59	33	33	19	32	75	39	32	29	40	77	46	40	24	46
		pcu/hr	690	315	385	405	335	585	280	410	425	345	595	325	400	465	330	715
Design flow	q	veh/sec	0.147	0.067	0.082	0.087	0.072	0.125	0.060	0.088	0.091	0.074	0.127	0.069	0.085	0.099	0.071	0.153
		pcu/hr	3165	1920	1665	3655	2630	3165	1920	1665	3655	2630	3165	1920	1665	3655	2630	3165
Saturation flow	Q	veh/sec	0.676	0.410	0.356	0.781	0.562	0.676	0.410	0.356	0.781	0.562	0.676	0.410	0.356	0.781	0.562	0.676
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	1	1	2	2	2	1	1	2	2	2	1	1	2	2	2
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.314	0.562	0.314	0.314	0.181	0.267	0.625	0.325	0.267	0.242	0.308	0.592	0.354	0.308	0.185	0.354
Degree of saturation	x		0.694	0.292	0.736	0.353	0.704	0.693	0.233	0.758	0.436	0.543	0.611	0.286	0.679	0.413	0.680	0.638
	M		15.481	7.067	8.638	9.087	7.516	15.000	7.179	10.513	10.897	8.846	16.528	9.028	11.111	12.917	9.167	19.861
	y		0.218	0.164	0.231	0.111	0.127	0.185	0.146	0.246	0.116	0.131	0.188	0.169	0.240	0.127	0.125	0.226
	Qt	veh/sec	127.527	138.315	67.088	147.271	61.013	108.205	153.846	69.375	124.957	81.485	124.852	145.799	75.533	144.181	62.249	143.580
	x<1																	
	A	sec/veh	0.301	0.115	0.306	0.264	0.384	0.330	0.082	0.302	0.304	0.331	0.295	0.100	0.275	0.275	0.380	0.270
	B	sec/veh	0.785	0.060	1.024	0.096	0.837	0.783	0.036	1.185	0.169	0.322	0.480	0.057	0.718	0.146	0.721	0.564
	C	sec/veh	2.976	0.050	5.418	0.379	6.415	3.779	0.012	5.944	0.998	2.568	2.278	0.039	3.943	0.674	6.240	2.123
Average Queue Delay	D	sec/veh	34	13	39	28	46	42	10	44	37	42	40	14	40	36	53	37
	x>x'																	
	Z		-0.306	-0.708	-0.264	-0.647	-0.296	-0.307	-0.767	-0.242	-0.564	-0.457	-0.389	-0.714	-0.321	-0.587	-0.320	-0.362
	X'		0.707	0.710	0.690	0.713	0.688	0.706	0.721	0.693	0.712	0.697	0.715	0.723	0.697	0.722	0.692	0.722
	No	veh	-0.066	-0.903	0.255	-0.850	0.081	-0.063	-0.971	0.382	-0.749	-0.521	-0.408	-0.934	-0.086	-0.805	-0.060	-0.351
Average Queue Delay	D	sec/veh	31	8	34	24	41	39	6	40	33	36	36	9	35	32	49	34
Average Delay		**sec/veh**	**34**	**13**	**34**	**28**	**41**	**42**	**10**	**40**	**37**	**42**	**40**	**14**	**40**	**36**	**53**	**37**
Average Queue	N = q(r/2+d)	veh	10.309	2.416	6.182	5.581	6.345	10.758	1.972	7.389	7.389	6.415	10.789	2.798	7.024	8.097	7.503	12.012
Average Queue Length	NL/n	metre	31	14	37	17	19	32	12	44	22	19	32	17	42	24	23	36
Average Queue	N=qr	veh	10.615	3.096	5.923	6.231	6.156	11.000	2.692	7.096	7.991	6.708	11.442	3.681	7.179	8.942	7.474	12.833
Average Queue Length	NL/n	metre	32	19	36	19	18	33	16	43	24	20	34	22	43	27	22	39
Average Queue	N=qr+No	veh	10.549	2.193	6.178	5.381	6.237	10.937	1.722	7.478	7.242	6.187	11.034	2.746	7.093	8.138	7.414	12.483
Average Queue Length	NL/n	metre	32	13	37	16	19	33	10	45	22	19	33	16	43	24	22	37
Average Queue Length		**metre**	**32**	**19**	**37**	**19**	**19**	**33**	**16**	**45**	**24**	**20**	**34**	**22**	**43**	**27**	**23**	**39**
Maximum Queue Length		**metre**	**56**	**44**	**79**	**37**	**37**	**58**	**39**	**91**	**45**	**40**	**59**	**51**	**83**	**49**	**44**	**63**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2021 Existing Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2021
Junction Name	Leighton Road / Percival Street / Hysan Avenue (J5)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			D	B	A	C
			Weekend Noon			
		Unit	CHR NB - LT	CHR NB - RT	Leighton Rd EB	Hoi Ping Rd SE
Cycle time	c	sec	130	130	130	130
Effective green time	g	sec	71	41	46	23
		pcu/hr	305	375	610	320
Design flow	q	veh/sec	0.065	0.080	0.130	0.068
		pcu/hr	1920	1665	3655	2630
Saturation flow	Q	veh/sec	0.410	0.356	0.781	0.562
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3
No. of lanes	n	lane	1	1	2	2
Length of a vehicle	L	metre	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.546	0.315	0.354	0.177
Degree of saturation	x		0.291	0.714	0.472	0.688
	M		8.472	10.417	16.944	8.889
	y		0.159	0.225	0.167	0.122
	Qt	veh/sec	134.438	67.322	165.809	59.655
	x<1					
	A	sec/veh	0.122	0.302	0.251	0.386
	B	sec/veh	0.060	0.892	0.211	0.757
	C	sec/veh	0.059	5.313	0.754	6.688
Average Queue Delay	D	sec/veh	17	45	33	55
	x>x'					
	Z		-0.709	-0.286	-0.528	-0.312
	X'		0.719	0.694	0.730	0.692
	No	veh	-0.923	0.103	-0.746	-0.018
Average Queue Delay	D	sec/veh	12	40	30	50
Average Delay		**sec/veh**	**17**	**40**	**33**	**55**
Average Queue	N = q(r/2+d)	veh	3.016	7.183	9.833	7.386
Average Queue Length	NL/n	metre	18	43	29	22
Average Queue	N=qr	veh	3.845	7.131	10.949	7.316
Average Queue Length	NL/n	metre	23	43	33	22
Average Queue	N=qr+No	veh	2.923	7.234	10.203	7.298
Average Queue Length	NL/n	metre	18	43	31	22
Average Queue Length		**metre**	**23**	**43**	**33**	**22**
Maximum Queue Length		**metre**	**52**	**67**	**41**	**37**

*Note: SG = Signal Group

Queue Length Analysis

MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2021 Existing Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2021
Junction Name	hton Road / Yun Ping Road / Pennington Street / Caroline Hill Road (East)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	C	C	A	A	C	C	A	A	C	C	A	A	C	C	A
			Weekday AM				Weekday Noon				Weekday PM				Weekend Noon			
		Unit	Leighton Rd WB - RT	Leighton Rd WB - Ahead & LT	CHR NB	Leighton Rd EB	Leighton Rd WB - RT	Leighton Rd WB - Ahead & LT	CHR NB	Leighton Rd EB	Leighton Rd WB - RT	Leighton Rd WB - Ahead & LT	CHR NB	Leighton Rd EB	Leighton Rd WB - RT	Leighton Rd WB - Ahead & LT	CHR NB	Leighton Rd EB
Cycle time	c	sec	105	105	105	105	110	110	110	110	130	130	130	130	120	120	120	120
Effective green time	g	sec	55	39	39	55	61	38	38	61	72	47	47	72	71	38	38	71
		pcu/hr	695	285	65	930	630	265	70	990	590	310	45	1075	660	275	130	1170
Design flow	q	veh/sec	0.149	0.061	0.014	0.199	0.135	0.057	0.015	0.212	0.126	0.066	0.010	0.230	0.141	0.059	0.028	0.250
		pcu/hr	3085	1180	930	2695	3035	1180	930	2695	3110	1180	930	2685	3080	1180	930	2695
Saturation flow	Q	veh/sec	0.659	0.252	0.199	0.576	0.649	0.252	0.199	0.576	0.665	0.252	0.199	0.574	0.658	0.252	0.199	0.576
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	1	1	2	2	1	1	2	2	1	1	2	2	1	1	2
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.524	0.371	0.371	0.524	0.555	0.345	0.345	0.555	0.554	0.362	0.362	0.554	0.592	0.317	0.317	0.592
Degree of saturation	x		0.430	0.650	0.188	0.659	0.374	0.650	0.218	0.662	0.343	0.727	0.134	0.723	0.362	0.736	0.441	0.734
	M		15.593	6.394	1.458	20.865	14.808	6.229	1.645	23.269	16.389	8.611	1.250	29.861	16.923	7.051	3.333	30.000
	y		0.225	0.242	0.070	0.345	0.208	0.225	0.075	0.367	0.190	0.263	0.048	0.400	0.214	0.233	0.140	0.434
	Qt	veh/sec	207.173	56.190	44.286	180.983	215.775	52.261	41.189	191.603	220.828	54.694	43.107	190.651	233.632	47.906	37.756	204.428
	x<1																	
	A	sec/veh	0.146	0.260	0.212	0.173	0.125	0.276	0.232	0.157	0.123	0.276	0.214	0.166	0.106	0.304	0.271	0.147
	B	sec/veh	0.162	0.605	0.022	0.636	0.112	0.604	0.030	0.650	0.089	0.966	0.010	0.943	0.103	1.026	0.174	1.011
	C	sec/veh	0.222	3.767	0.084	1.310	0.109	4.242	0.175	1.229	0.079	5.963	0.034	1.868	0.077	7.071	1.866	1.741
Average Queue Delay	D	sec/veh	16	34	24	20	14	37	27	19	17	45	29	24	13	47	37	20
	x>x'																	
	Z		-0.570	-0.350	-0.812	-0.341	-0.626	-0.350	-0.782	-0.338	-0.657	-0.273	-0.866	-0.277	-0.638	-0.264	-0.559	-0.266
	X'		0.730	0.686	0.683	0.723	0.736	0.686	0.683	0.729	0.750	0.690	0.686	0.739	0.748	0.686	0.683	0.738
	No	veh	-0.801	-0.157	-0.966	-0.284	-0.878	-0.156	-0.947	-0.297	-0.941	0.197	-1.010	-0.087	-0.918	0.272	-0.693	-0.025
Average Queue Delay	D	sec/veh	13	26	9	17	11	29	12	16	13	38	14	21	10	40	22	18
Average Delay		**sec/veh**	**16**	**34**	**24**	**20**	**14**	**37**	**27**	**19**	**17**	**38**	**29**	**24**	**13**	**40**	**37**	**20**
Average Queue	N = q(r/2+d)	veh	6.124	4.050	0.789	8.956	5.249	4.123	0.947	9.222	5.748	5.700	0.677	12.132	5.343	5.166	2.166	11.121
Average Queue Length	NL/n	metre	18	24	5	27	16	25	6	28	17	34	4	36	16	31	13	33
Average Queue	N=qr	veh	7.425	4.019	0.917	9.936	6.596	4.077	1.077	10.365	7.312	5.498	0.798	13.323	6.910	4.818	2.278	12.250
Average Queue Length	NL/n	metre	22	24	6	30	20	24	6	31	22	33	5	40	21	29	14	37
Average Queue	N=qr+No	veh	6.624	3.862	-0.049	9.652	5.718	3.920	0.130	10.069	6.371	5.695	-0.212	13.236	5.992	5.091	1.585	12.225
Average Queue Length	NL/n	metre	20	23	0	29	17	24	1	30	19	34	-1	40	18	31	10	37
Average Queue Length		**metre**	**22**	**24**	**6**	**30**	**20**	**25**	**6**	**31**	**22**	**34**	**5**	**40**	**21**	**31**	**14**	**37**
Maximum Queue Length		**metre**	**44**	**58**	**30**	**54**	**39**	**57**	**31**	**55**	**43**	**75**	**31**	**68**	**41**	**71**	**35**	**64**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA **MVA Hong Kong Ltd.**

Job No.	CHK50603110	Description	2021 Existing Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2021
Junction Name	Causeway Road / Leighton Road / Tung Lo Wan Road / Irving Street (J9)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	A	F	B	C	F	A	A	F	B	C	F	A	A	F	B
			Weekday AM						**Weekday Noon**						**Weekday PM**			
		Unit	Causeway Rd WB - LT	Causeway Rd WB - Ahead	Causeway Rd WB (Tram)	Tung Lo Wan Rd NB	Causeway Rd EB	Causeway Rd EB (Tram)	Causeway Rd WB - LT	Causeway Rd WB - Ahead	Causeway Rd WB (Tram)	Tung Lo Wan Rd NB	Causeway Rd EB	Causeway Rd EB (Tram)	Causeway Rd WB - LT	Causeway Rd WB - Ahead	Causeway Rd WB (Tram)	Tung Lo Wan Rd NB
Cycle time	c	sec	100	100	100	100	100	100	100	100	100	100	100	100	105	105	105	105
Effective green time	g	sec	42	42	63	13	25	63	35	35	56	13	27	56	43	43	64	13
		pcu/hr	265	1240	40	70	350	25	250	1225	35	110	450	35	180	1350	40	70
Design flow	q	veh/sec	0.057	0.265	0.009	0.015	0.075	0.005	0.053	0.262	0.007	0.024	0.096	0.007	0.038	0.288	0.009	0.015
		pcu/hr	1150	5450	1340	1330	2555	1340	1150	5450	1340	1330	2555	1340	1150	5450	1340	1330
Saturation flow	Q	veh/sec	0.246	1.165	0.286	0.284	0.546	0.286	0.246	1.165	0.286	0.284	0.546	0.286	0.246	1.165	0.286	0.284
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	1	3	1	1	2	1	1	3	1	1	2	1	1	3	1	1
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.420	0.420	0.630	0.130	0.250	0.630	0.350	0.350	0.560	0.130	0.270	0.560	0.410	0.410	0.610	0.124
Degree of saturation	x		0.549	0.542	0.047	0.405	0.548	0.030	0.621	0.642	0.047	0.636	0.652	0.047	0.382	0.605	0.049	0.425
	M		5.662	26.496	0.855	1.496	7.479	0.534	5.342	26.175	0.748	2.350	9.615	0.748	4.038	30.288	0.897	1.571
	y		0.230	0.228	0.030	0.053	0.137	0.019	0.217	0.225	0.026	0.083	0.176	0.026	0.157	0.248	0.030	0.053
	Qt	veh/sec	61.923	293.462	108.231	22.167	81.891	108.231	51.603	244.551	96.205	22.167	88.442	96.205	60.379	286.142	104.713	21.111
	x<1																	
	A	sec/veh	0.219	0.218	0.071	0.399	0.326	0.070	0.270	0.273	0.099	0.413	0.323	0.099	0.207	0.232	0.079	0.405
	B	sec/veh	0.333	0.320	0.001	0.138	0.332	0.000	0.509	0.576	0.001	0.556	0.612	0.001	0.118	0.463	0.001	0.157
	C	sec/veh	1.746	0.592	0.000	4.526	2.406	0.000	3.566	1.401	0.000	11.092	3.436	0.000	0.549	0.918	0.000	5.375
Average Queue Delay	D	sec/veh	26	22	7	45	35	7	33	28	10	54	35	10	24	25	8	48
	x>x'																	
	Z		-0.451	-0.458	-0.953	-0.595	-0.452	-0.970	-0.379	-0.358	-0.953	-0.364	-0.348	-0.953	-0.618	-0.395	-0.951	-0.575
	X'		0.687	0.752	0.700	0.676	0.693	0.700	0.684	0.738	0.697	0.676	0.695	0.697	0.688	0.753	0.701	0.676
	No	veh	-0.477	-0.694	-1.049	-0.775	-0.494	-1.058	-0.257	-0.405	-1.047	-0.172	-0.184	-1.047	-0.774	-0.570	-1.050	-0.747
Average Queue Delay	D	sec/veh	17	20	1	19	29	1	24	26	3	37	31	3	14	23	2	21
Average Delay		**sec/veh**	**26**	**22**	**7**	**45**	**35**	**7**	**33**	**28**	**10**	**54**	**35**	**10**	**24**	**25**	**8**	**48**
Average Queue	N = q(r/2+d)	veh	3.114	13.616	0.220	1.318	5.394	0.137	3.497	15.849	0.240	2.288	6.901	0.240	2.124	16.159	0.247	1.401
Average Queue Length	NL/n	metre	19	27	1	8	16	1	21	32	1	14	21	1	13	32	1	8
Average Queue	N=qr	veh	3.284	15.368	0.316	1.301	5.609	0.198	3.472	17.014	0.329	2.045	7.019	0.329	2.385	17.885	0.350	1.376
Average Queue Length	NL/n	metre	20	31	2	8	17	1	21	34	2	12	21	2	14	36	2	8
Average Queue	N=qr+No	veh	2.807	14.674	-0.733	0.526	5.115	-0.860	3.215	16.609	-0.718	1.873	6.835	-0.718	1.611	17.315	-0.699	0.629
Average Queue Length	NL/n	metre	17	29	-4	3	15	-5	19	33	-4	11	21	-4	10	35	-4	4
Average Queue Length		**metre**	**20**	**31**	**2**	**8**	**17**	**1**	**21**	**34**	**2**	**14**	**21**	**2**	**14**	**36**	**2**	**8**
Maximum Queue Length		**metre**	**48**	**50**	**23**	**38**	**35**	**23**	**50**	**53**	**25**	**42**	**41**	**25**	**37**	**55**	**24**	**35**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2021 Existing Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2021
Junction Name	Causeway Road / Leighton Road / Tung Lo Wan Road / Irving Street (J9)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			C	F	A	A	F	B	C	F
			Weekday PM		**Weekend Noon**					
		Unit	Causeway Rd EB	Causeway Rd EB (Tram)	Causeway Rd WB - LT	Causeway Rd WB - Ahead	Causeway Rd WB (Tram)	Tung Lo Wan Rd NB	Causeway Rd EB	Causeway Rd EB (Tram)
Cycle time	c	sec	105	105	105	105	105	105	105	105
Effective green time	g	sec	29	64	43	43	64	13	29	64
		pcu/hr	425	35	250	1360	40	85	440	30
Design flow	q	veh/sec	0.091	0.007	0.053	0.291	0.009	0.018	0.094	0.006
		pcu/hr	2555	1340	1150	5450	1340	1330	2555	1340
Saturation flow	Q	veh/sec	0.546	0.286	0.246	1.165	0.286	0.284	0.546	0.286
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	1	1	3	1	1	2	1
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.276	0.610	0.410	0.410	0.610	0.124	0.276	0.610
Degree of saturation	x		0.602	0.043	0.531	0.609	0.049	0.516	0.624	0.037
	M		9.535	0.785	5.609	30.513	0.897	1.907	9.872	0.673
	y		0.166	0.026	0.217	0.250	0.030	0.064	0.172	0.022
	Qt	veh/sec	90.470	104.713	60.379	286.142	104.713	21.111	90.470	104.713
	x<1									
	A	sec/veh	0.314	0.078	0.223	0.232	0.079	0.410	0.316	0.078
	B	sec/veh	0.456	0.001	0.300	0.475	0.001	0.275	0.516	0.001
	C	sec/veh	2.733	0.000	1.666	0.941	0.000	7.853	3.003	0.000
Average Queue Delay	D	sec/veh	35	8	27	25	8	50	36	8
	x>x'									
	Z		-0.398	-0.957	-0.469	-0.391	-0.951	-0.484	-0.376	-0.963
	X'		0.696	0.701	0.688	0.753	0.701	0.676	0.696	0.701
	No	veh	-0.362	-1.053	-0.520	-0.559	-1.050	-0.557	-0.295	-1.056
Average Queue Delay	D	sec/veh	31	2	18	23	2	27	31	2
Average Delay		**sec/veh**	**35**	**8**	**27**	**25**	**8**	**50**	**36**	**8**
Average Queue	N = q(r/2+d)	veh	6.655	0.216	3.117	16.298	0.247	1.750	6.931	0.185
Average Queue Length	NL/n	metre	20	1	19	33	1	11	21	1
Average Queue	N=qr	veh	6.902	0.307	3.312	18.017	0.350	1.671	7.145	0.263
Average Queue Length	NL/n	metre	21	2	20	36	2	10	21	2
Average Queue	N=qr+No	veh	6.539	-0.746	2.792	17.458	-0.699	1.114	6.850	-0.793
Average Queue Length	NL/n	metre	20	-4	17	35	-4	7	21	-5
Average Queue Length		**metre**	**21**	**2**	**20**	**36**	**2**	**11**	**21**	**2**
Maximum Queue Length		**metre**	**41**	**59**	**63**	**52**	**67**	**41**	**37**	**63**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA **MVA Hong Kong Ltd.**

Job No.	CHK50603110	Description	2021 Existing Flows
Job Title	tancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2021
Junction Name	Causeway Road / Moreton Terrace (J10)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			C	D	E	E	A	B	C	D	E	E	A	B	C	D	E	E
			Weekday AM						**Weekday Noon**						**Weekday PM**			
		Unit	Causeway Rd WB	Causeway Rd WB (Tram)	Moreton Terrace NB-LT	Moreton Terrace NB-RT	Causeway Rd EB	Causeway Rd EB (Tram)	Causeway Rd WB	Causeway Rd WB (Tram)	Moreton Terrace NB-LT	Moreton Terrace NB-RT	Causeway Rd EB	Causeway Rd EB (Tram)	Causeway Rd WB	Causeway Rd WB (Tram)	Moreton Terrace NB-LT	Moreton Terrace NB-RT
Cycle time	c	sec	100	100	100	100	100	100	95	95	95	95	95	95	105	105	105	105
Effective green time	g	sec	66	64	23	23	66	64	59	54	25	25	59	57	70	68	24	24
		pcu/hr	975	40	405	395	1085	95	850	35	535	420	1250	95	930	40	500	395
Design flow	q	veh/sec	0.208	0.009	0.087	0.084	0.232	0.020	0.182	0.007	0.114	0.090	0.267	0.020	0.199	0.009	0.107	0.084
		pcu/hr	2950	1915	3600	1915	4070	1915	2950	1915	3590	1915	4070	1915	2950	1915	3590	1915
Saturation flow	Q	veh/sec	0.630	0.409	0.769	0.409	0.870	0.409	0.630	0.409	0.767	0.409	0.870	0.409	0.630	0.409	0.767	0.409
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.660	0.640	0.230	0.230	0.660	0.640	0.621	0.568	0.263	0.263	0.621	0.600	0.667	0.648	0.229	0.229
Degree of saturation	x		0.501	0.033	0.489	0.897	0.404	0.078	0.464	0.032	0.566	0.833	0.495	0.083	0.473	0.032	0.609	0.902
	M		20.833	0.855	8.654	8.440	23.184	2.030	17.254	0.710	10.860	8.526	25.374	1.928	20.865	0.897	11.218	8.862
	y		0.331	0.021	0.113	0.206	0.267	0.050	0.288	0.018	0.149	0.219	0.307	0.050	0.315	0.021	0.139	0.206
	Qt	veh/sec	249.615	157.128	106.154	56.468	344.385	157.128	234.885	139.555	121.120	64.609	324.062	147.308	252.137	158.999	105.201	56.117
	x<1																	
	A	sec/veh	0.086	0.066	0.334	0.373	0.079	0.068	0.101	0.095	0.319	0.348	0.104	0.084	0.081	0.063	0.346	0.375
	B	sec/veh	0.251	0.001	0.234	3.897	0.137	0.003	0.201	0.001	0.370	2.085	0.242	0.004	0.212	0.001	0.475	4.173
	C	sec/veh	0.220	0.000	1.621	11.126	0.065	0.000	0.183	0.000	1.911	8.086	0.196	0.000	0.166	0.000	2.871	11.541
Average Queue Delay	D	sec/veh	10	7	34	72	8	7	11	9	32	48	11	8	9	7	38	77
	x>x'																	
	Z		-0.499	-0.967	-0.511	-0.103	-0.596	-0.922	-0.536	-0.968	-0.434	-0.167	-0.505	-0.917	-0.527	-0.968	-0.391	-0.098
	X'		0.739	0.714	0.699	0.686	0.766	0.714	0.732	0.707	0.702	0.687	0.756	0.709	0.744	0.716	0.701	0.686
	No	veh	-0.725	-1.071	-0.632	1.869	-0.919	-1.050	-0.759	-1.062	-0.478	1.095	-0.782	-1.040	-0.779	-1.075	-0.357	1.943
Average Queue Delay	D	sec/veh	7	3	30	57	6	3	8	4	28	43	8	4	7	3	34	60
Average Delay		**sec/veh**	**10**	**7**	**34**	**57**	**8**	**7**	**11**	**9**	**32**	**43**	**11**	**8**	**9**	**7**	**38**	**60**
Average Queue	N = q(r/2+d)	veh	5.546	0.211	6.316	9.360	5.890	0.507	5.177	0.221	7.617	7.465	7.627	0.552	5.350	0.216	8.373	9.939
Average Queue Length	NL/n	metre	17	1	19	56	18	3	16	1	23	45	23	3	16	1	25	60
Average Queue	N=qr	veh	7.083	0.308	6.663	6.499	7.882	0.731	6.538	0.307	8.002	6.282	9.615	0.771	6.955	0.316	8.654	6.837
Average Queue Length	NL/n	metre	21	2	20	39	24	4	20	2	24	38	29	5	21	2	26	41
Average Queue	N=qr+No	veh	6.358	-0.763	6.031	8.368	6.964	-0.319	5.779	-0.756	7.524	7.377	8.833	-0.269	6.176	-0.759	8.297	8.779
Average Queue Length	NL/n	metre	19	-5	18	50	21	-2	17	-5	23	44	27	-2	19	-5	25	53
Average Queue Length		**metre**	**21**	**2**	**20**	**50**	**24**	**4**	**20**	**2**	**24**	**44**	**29**	**5**	**21**	**2**	**26**	**53**
Maximum Queue Length		**metre**	**48**	**25**	**35**	**71**	**51**	**25**	**42**	**25**	**43**	**76**	**54**	**25**	**44**	**24**	**45**	**82**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2021 Existing Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2021
Junction Name	Causeway Road / Moreton Terrace (J10)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	B	C	D	E	E	A	B
			Weekday PM		**Weekend Noon**					
		Unit	Causeway Rd EB	Causeway Rd EB (Tram)	Causeway Rd WB	Causeway Rd WB (Tram)	Moreton Terrace NB-LT	Moreton Terrace NB-RT	Causeway Rd EB	Causeway Rd EB (Tram)
Cycle time	c	sec	105	105	105	105	105	105	105	105
Effective green time	g	sec	70	68	68	66	26	26	68	66
		pcu/hr	1255	100	990	40	490	400	1220	95
Design flow	q	veh/sec	0.268	0.021	0.212	0.009	0.105	0.085	0.261	0.020
		pcu/hr	4070	1915	2950	1915	3595	1915	4070	1915
Saturation flow	Q	veh/sec	0.870	0.409	0.630	0.409	0.768	0.409	0.870	0.409
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	1	2	1	2	1	2	1
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.667	0.648	0.648	0.629	0.248	0.248	0.648	0.629
Degree of saturation	x		0.463	0.081	0.518	0.033	0.550	0.844	0.463	0.079
	M		28.157	2.244	22.212	0.897	10.994	8.974	27.372	2.131
	y		0.308	0.052	0.336	0.021	0.136	0.209	0.300	0.050
	Qt	veh/sec	347.863	158.999	244.933	154.322	114.127	60.794	337.924	154.322
	x<1									
	A	sec/veh	0.080	0.066	0.093	0.070	0.328	0.358	0.089	0.073
	B	sec/veh	0.199	0.004	0.279	0.001	0.337	2.274	0.199	0.003
	C	sec/veh	0.121	0.000	0.276	0.000	1.997	9.110	0.133	0.000
Average Queue Delay	D	sec/veh	9	7	11	7	36	55	10	8
	x>x'									
	Z		-0.537	-0.919	-0.482	-0.967	-0.450	-0.156	-0.537	-0.921
	X'		0.771	0.716	0.741	0.715	0.703	0.688	0.769	0.715
	No	veh	-0.870	-1.052	-0.703	-1.073	-0.521	1.194	-0.862	-1.051
Average Queue Delay	D	sec/veh	7	3	8	3	32	49	8	4
Average Delay		**sec/veh**	**9**	**7**	**11**	**7**	**36**	**49**	**10**	**8**
Average Queue	N = q(r/2+d)	veh	7.121	0.546	6.209	0.230	7.866	8.082	7.414	0.554
Average Queue Length	NL/n	metre	21	3	19	1	24	48	22	3
Average Queue	N=qr	veh	9.386	0.791	7.827	0.333	8.271	6.752	9.645	0.792
Average Queue Length	NL/n	metre	28	5	23	2	25	41	29	5
Average Queue	N=qr+No	veh	8.515	-0.262	7.124	-0.740	7.751	7.946	8.783	-0.260
Average Queue Length	NL/n	metre	26	-2	21	-4	23	48	26	-2
Average Queue Length		**metre**	**28**	**5**	**23**	**2**	**25**	**48**	**29**	**5**
Maximum Queue Length		**metre**	**54**	**44**	**63**	**52**	**67**	**67**	**41**	**37**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA **MVA Hong Kong Ltd.**

Job No.	CHK50603110	Description	2021 Existing Flows
Job Title	tancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2021
Junction Name	Pennington Street / Jardine's Bazaar / Irving Street (J11)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	B	E	F	A	B	E	F	A	B	E	F	A	B	E	F
			Weekday AM				**Weekday Noon**				**Weekday PM**				**Weekend Noon**			
		Unit	Irving St WB	Pennington St NB 1st stop	Pennington St NB 2nd stop - LT	Pennington St NB 2nd stop - RT	Irving St WB	Pennington St NB 1st stop	Pennington St NB 2nd stop - LT	Pennington St NB 2nd stop - RT	Irving St WB	Pennington St NB 1st stop	Pennington St NB 2nd stop - LT	Pennington St NB 2nd stop - RT	Irving St WB	Pennington St NB 1st stop	Pennington St NB 2nd stop - LT	Pennington St NB 2nd stop - RT
Cycle time	c	sec	100	100	100	100	120	120	120	120	100	100	100	100	100	100	100	100
Effective green time	g	sec	31	55	80	78	39	67	100	98	33	53	80	78	33	53	80	78
		pcu/hr	430	565	430	495	500	645	465	585	550	655	520	580	525	625	470	585
Design flow	q	veh/sec	0.092	0.121	0.092	0.106	0.107	0.138	0.099	0.125	0.118	0.140	0.111	0.124	0.112	0.134	0.100	0.125
		pcu/hr	6350	3845	1840	3425	6365	3820	1840	3425	6355	3805	1840	3425	6365	3815	1840	3425
Saturation flow	Q	veh/sec	1.357	0.822	0.393	0.732	1.360	0.816	0.393	0.732	1.358	0.813	0.393	0.732	1.360	0.815	0.393	0.732
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	4	2	1	2	4	2	1	2	4	2	1	2	4	2	1	2
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.310	0.550	0.800	0.780	0.325	0.558	0.833	0.817	0.330	0.530	0.800	0.780	0.330	0.530	0.800	0.780
Degree of saturation	x		0.218	0.267	0.292	0.185	0.242	0.302	0.303	0.209	0.262	0.325	0.353	0.217	0.250	0.309	0.319	0.219
	M		9.188	12.073	9.188	10.577	12.821	16.538	11.923	15.000	11.752	13.996	11.111	12.393	11.218	13.355	10.043	12.500
	y		0.068	0.147	0.234	0.145	0.079	0.169	0.253	0.171	0.087	0.172	0.283	0.169	0.082	0.164	0.255	0.171
	Qt	veh/sec	252.372	271.122	188.718	342.500	265.208	273.440	196.581	358.600	268.865	258.545	188.718	342.500	269.288	259.224	188.718	342.500
	x<1																	
	A	sec/veh	0.255	0.119	0.026	0.028	0.247	0.117	0.019	0.020	0.246	0.133	0.028	0.029	0.245	0.132	0.027	0.029
	B	sec/veh	0.031	0.049	0.060	0.021	0.039	0.066	0.066	0.028	0.047	0.078	0.096	0.030	0.042	0.069	0.075	0.031
	C	sec/veh	0.067	0.023	0.009	0.001	0.083	0.039	0.010	0.001	0.095	0.060	0.025	0.001	0.082	0.049	0.015	0.002
Average Queue Delay	D	sec/veh	26	12	3	3	30	15	3	3	25	14	4	3	25	14	3	3
	x>x'																	
	Z		-0.782	-0.733	-0.708	-0.815	-0.758	-0.698	-0.697	-0.791	-0.738	-0.675	-0.647	-0.783	-0.750	-0.691	-0.681	-0.781
	X'		0.740	0.745	0.722	0.765	0.758	0.761	0.736	0.790	0.745	0.742	0.722	0.765	0.745	0.742	0.722	0.765
	No	veh	-1.012	-0.989	-0.925	-1.076	-1.033	-0.997	-0.944	-1.109	-0.991	-0.936	-0.869	-1.058	-1.000	-0.950	-0.901	-1.057
Average Queue Delay	D	sec/veh	23	10	0	1	27	12	-1	1	22	11	0	1	22	11	0	1
Average Delay		**sec/veh**	**26**	**12**	**3**	**3**	**30**	**15**	**3**	**3**	**25**	**14**	**4**	**3**	**25**	**14**	**3**	**3**
Average Queue	N = q(r/2+d)	veh	5.540	4.195	1.218	1.484	7.526	5.653	1.280	1.707	6.860	5.226	1.515	1.754	6.535	4.965	1.347	1.770
Average Queue Length	NL/n	metre	8	13	7	4	11	17	8	5	10	16	9	5	10	15	8	5
Average Queue	N=qr	veh	6.340	5.433	1.838	2.327	8.654	7.304	1.987	2.750	7.874	6.578	2.222	2.726	7.516	6.277	2.009	2.750
Average Queue Length	NL/n	metre	10	16	11	7	13	22	12	8	12	20	13	8	11	19	12	8
Average Queue	N=qr+No	veh	5.328	4.444	0.913	1.251	7.621	6.308	1.044	1.641	6.883	5.642	1.354	1.668	6.516	5.327	1.108	1.693
Average Queue Length	NL/n	metre	8	13	5	4	11	19	6	5	10	17	8	5	10	16	7	5
Average Queue Length		**metre**	**10**	**16**	**11**	**7**	**13**	**22**	**12**	**8**	**12**	**20**	**13**	**8**	**11**	**19**	**12**	**8**
Maximum Queue Length		**metre**	**19**	**34**	**34**	**20**	**24**	**42**	**36**	**22**	**22**	**38**	**38**	**22**	**21**	**37**	**36**	**22**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA **MVA Hong Kong Ltd.**

Job No.	CHK50603110	Description	2021 Existing Flows
Job Title	tancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2021
Junction Name	Link Road / Broadwood Road (J12)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	B	E	C	A	B	E	C	A	B	E	C	A	B	E	C
			Weekday AM				**Weekday Noon**				**Weekday PM**				**Weekend Noon**			
		Unit	Link Rd SB	Broadwood Road (E) NB - Ahead & LT	Broadwood Road (E) NB - RT	Broadwood Road (W) NB	Link Rd SB	Broadwood Road (E) NB - Ahead & LT	Broadwood Road (E) NB - RT	Broadwood Road (W) NB	Link Rd SB	Broadwood Road (E) NB - Ahead & LT	Broadwood Road (E) NB - RT	Broadwood Road (W) NB	Link Rd SB	Broadwood Road (E) NB - Ahead & LT	Broadwood Road (E) NB - RT	Broadwood Road (W) NB
Cycle time	c	sec	140	140	140	140	110	110	110	110	135	135	135	135	110	110	110	110
Effective green time	g	sec	38	58	61	54	28	43	46	39	36	62	65	45	28	46	49	36
		pcu/hr	380	335	185	505	330	375	170	435	365	370	245	435	355	365	220	435
Design flow	q	veh/sec	0.081	0.072	0.040	0.108	0.071	0.080	0.036	0.093	0.078	0.079	0.052	0.093	0.076	0.078	0.047	0.093
		pcu/hr	1940	1890	1730	1840	1945	1885	1730	1835	1940	1895	1730	1860	1945	1885	1730	1845
Saturation flow	Q	veh/sec	0.415	0.404	0.370	0.393	0.416	0.403	0.370	0.392	0.415	0.405	0.370	0.397	0.416	0.403	0.370	0.394
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.271	0.414	0.436	0.386	0.255	0.391	0.418	0.355	0.267	0.459	0.481	0.333	0.255	0.418	0.445	0.327
Degree of saturation	x		0.722	0.428	0.245	0.712	0.667	0.509	0.235	0.669	0.706	0.425	0.294	0.702	0.717	0.463	0.285	0.720
	M		11.368	10.021	5.534	15.107	7.756	8.814	3.996	10.224	10.529	10.673	7.067	12.548	8.344	8.579	5.171	10.224
	y		0.196	0.177	0.107	0.274	0.170	0.199	0.098	0.237	0.188	0.195	0.142	0.234	0.183	0.194	0.127	0.236
	Qt	veh/sec	67.509	100.385	96.639	90.989	63.473	94.470	92.751	83.409	66.325	111.576	106.790	79.487	63.473	101.061	98.800	77.413
	x<1																	
	A	sec/veh	0.330	0.208	0.178	0.260	0.335	0.232	0.188	0.273	0.331	0.182	0.157	0.290	0.340	0.210	0.176	0.296
	B	sec/veh	0.935	0.160	0.040	0.878	0.666	0.264	0.036	0.675	0.845	0.157	0.061	0.825	0.909	0.200	0.057	0.928
	C	sec/veh	6.021	0.617	0.082	3.911	4.838	1.159	0.076	3.324	5.711	0.459	0.108	4.432	5.852	0.731	0.119	4.606
Average Queue Delay	D	sec/veh	52	31	26	41	41	28	22	34	50	26	22	44	44	25	20	38
	x>x'																	
	Z		-0.278	-0.572	-0.755	-0.288	-0.333	-0.491	-0.765	-0.331	-0.294	-0.575	-0.706	-0.298	-0.283	-0.537	-0.715	-0.280
	X'		0.696	0.709	0.708	0.705	0.689	0.699	0.698	0.695	0.695	0.712	0.710	0.700	0.689	0.701	0.700	0.694
	No	veh	0.135	-0.757	-0.943	0.032	-0.104	-0.595	-0.933	-0.123	0.054	-0.766	-0.906	0.009	0.144	-0.682	-0.893	0.142
Average Queue Delay	D	sec/veh	47	25	19	37	36	22	15	29	45	20	16	39	39	19	14	34
Average Delay		**sec/veh**	**47**	**31**	**26**	**37**	**41**	**28**	**22**	**34**	**45**	**26**	**22**	**39**	**39**	**25**	**20**	**34**
Average Queue	N = q(r/2+d)	veh	8.340	5.140	2.585	9.024	5.812	4.896	1.946	6.457	7.748	4.946	2.995	8.235	6.411	4.439	2.396	6.966
Average Queue Length	NL/n	metre	50	31	16	54	35	29	12	39	46	30	18	49	38	27	14	42
Average Queue	N=qr	veh	8.282	5.870	3.123	9.280	5.782	5.369	2.325	6.599	7.721	5.771	3.665	8.365	6.220	4.991	2.868	6.878
Average Queue Length	NL/n	metre	50	35	19	56	35	32	14	40	46	35	22	50	37	30	17	41
Average Queue	N=qr+No	veh	8.417	5.112	2.180	9.312	5.678	4.773	1.392	6.477	7.775	5.005	2.759	8.374	6.364	4.310	1.974	7.020
Average Queue Length	NL/n	metre	51	31	13	56	34	29	8	39	47	30	17	50	38	26	12	42
Average Queue Length		**metre**	**51**	**35**	**19**	**56**	**35**	**32**	**14**	**40**	**47**	**35**	**22**	**50**	**38**	**30**	**17**	**42**
Maximum Queue Length		**metre**	**94**	**72**	**43**	**101**	**71**	**66**	**36**	**78**	**89**	**71**	**49**	**93**	**76**	**63**	**40**	**84**

*Note: SG = Signal Group

Queue Length Analysis

MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2021 Existing Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2021
Junction Name	Wong Nai Chung Road / Sports Road (J14)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	B	A	B	A	B	A	B
			Weekday AM		**Weekday Noon**		**Weekday PM**		**Weekend Noon**	
		Unit	Sports Rd EB	Wong Nai Chung Rd SB	Sports Rd EB	Wong Nai Chung Rd SB	Sports Rd EB	Wong Nai Chung Rd SB	Sports Rd EB	Wong Nai Chung Rd SB
Cycle time	c	sec	90	90	75	75	90	90	75	75
Effective green time	g	sec	58	22	45	20	58	22	46	19
		pcu/hr	710	420	750	525	785	475	805	540
Design flow	q	veh/sec	0.152	0.090	0.160	0.112	0.168	0.101	0.172	0.115
		pcu/hr	3655	5885	3655	5885	3655	5885	3655	5885
Saturation flow	Q	veh/sec	0.781	1.257	0.781	1.257	0.781	1.257	0.781	1.257
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	3	2	3	2	3	2	3
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.644	0.244	0.600	0.267	0.644	0.244	0.613	0.253
Degree of saturation	x		0.301	0.292	0.342	0.335	0.333	0.330	0.359	0.362
	M		13.654	8.077	12.019	8.413	15.096	9.135	12.901	8.654
	y		0.194	0.071	0.205	0.089	0.215	0.081	0.220	0.092
	Qt	veh/sec	301.980	184.430	281.154	201.197	301.980	184.430	287.402	191.137
	x<1									
	A	sec/veh	0.078	0.307	0.101	0.295	0.080	0.310	0.096	0.307
	B	sec/veh	0.065	0.060	0.089	0.084	0.083	0.081	0.101	0.103
	C	sec/veh	0.020	0.275	0.043	0.306	0.031	0.377	0.049	0.419
Average Queue Delay	D	sec/veh	7	28	8	23	8	28	8	23
	x>x'									
	Z		-0.699	-0.708	-0.658	-0.665	-0.667	-0.670	-0.641	-0.638
	X'		0.745	0.716	0.729	0.712	0.745	0.716	0.730	0.710
	No	veh	-0.962	-0.911	-0.890	-0.862	-0.936	-0.877	-0.876	-0.829
Average Queue Delay	D	sec/veh	5	25	6	20	5	25	5	20
Average Delay		**sec/veh**	**7**	**28**	**8**	**23**	**8**	**28**	**8**	**23**
Average Queue	N = q(r/2+d)	veh	3.561	5.569	3.696	5.619	3.977	6.330	3.823	5.941
Average Queue Length	NL/n	metre	11	11	11	11	12	13	11	12
Average Queue	N=qr	veh	4.855	6.103	4.808	6.170	5.368	6.902	4.988	6.462
Average Queue Length	NL/n	metre	15	12	14	12	16	14	15	13
Average Queue	N=qr+No	veh	3.892	5.191	3.918	5.308	4.431	6.025	4.112	5.633
Average Queue Length	NL/n	metre	12	10	12	11	13	12	12	11
Average Queue Length		**metre**	**15**	**12**	**14**	**12**	**16**	**14**	**15**	**13**
Maximum Queue Length		**metre**	**32**	**19**	**39**	**20**	**38**	**21**	**41**	**20**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2021 Existing Flows
Job Title	tancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2021
Junction Name	Leigthon Road / Wong Nai Chung Road (J15)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	B	A	A	A	B	A	A	A	B	A	A	A	B	A	A
			Weekday AM				Weekday Noon				Weekday PM				Weekend Noon			
		Unit	Leighton Rd WB - LT	Leighton Rd WB (Tram)	Leighton Rd WB - Ahead	Leighton Rd EB	Leighton Rd WB - LT	Leighton Rd WB (Tram)	Leighton Rd WB - Ahead	Leighton Rd EB	Leighton Rd WB - LT	Leighton Rd WB (Tram)	Leighton Rd WB - Ahead	Leighton Rd EB	Leighton Rd WB - LT	Leighton Rd WB (Tram)	Leighton Rd WB - Ahead	Leighton Rd EB
Cycle time	c	sec	130	130	130	130	120	120	120	120	120	120	120	120	120	120	120	120
Effective green time	g	sec	90	28	90	90	78	30	78	78	76	32	76	76	78	30	78	78
		pcu/hr	365	50	835	660	455	60	815	780	390	65	810	600	490	60	805	700
Design flow	q	veh/sec	0.078	0.011	0.178	0.141	0.097	0.013	0.174	0.167	0.083	0.014	0.173	0.128	0.105	0.013	0.172	0.150
		pcu/hr	2225	370	1940	2455	2225	370	1940	2455	2225	370	1940	2455	2225	370	1940	2455
Saturation flow	Q	veh/sec	0.475	0.079	0.415	0.525	0.475	0.079	0.415	0.525	0.475	0.079	0.415	0.525	0.475	0.079	0.415	0.525
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	1	2	3	2	1	2	3	2	1	2	3	2	1	2	3
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.692	0.215	0.692	0.692	0.650	0.250	0.650	0.650	0.633	0.267	0.633	0.633	0.650	0.250	0.650	0.650
Degree of saturation	x		0.237	0.627	0.622	0.388	0.315	0.649	0.646	0.489	0.277	0.659	0.659	0.386	0.339	0.649	0.638	0.439
	M		10.139	1.389	23.194	18.333	11.667	1.538	20.897	20.000	10.000	1.667	20.769	15.385	12.564	1.538	20.641	17.949
	y		0.164	0.135	0.430	0.269	0.204	0.162	0.420	0.318	0.175	0.176	0.418	0.244	0.220	0.162	0.415	0.285
	Qt	veh/sec	197.485	10.217	172.189	217.899	185.417	11.859	161.667	204.583	180.662	12.650	157.521	199.338	185.417	11.859	161.667	204.583
	x<1																	
	A	sec/veh	0.057	0.356	0.083	0.065	0.077	0.336	0.106	0.090	0.082	0.326	0.115	0.089	0.079	0.336	0.105	0.086
	B	sec/veh	0.037	0.528	0.511	0.123	0.072	0.599	0.591	0.234	0.053	0.636	0.638	0.121	0.087	0.599	0.563	0.171
	C	sec/veh	0.007	16.175	0.775	0.069	0.035	14.335	1.040	0.247	0.022	13.804	1.199	0.092	0.049	14.335	0.982	0.150
Average Queue Delay	D	sec/veh	8	80	13	9	10	73	15	12	10	71	16	12	10	73	15	11
	x>x'																	
	Z		-0.763	-0.373	-0.378	-0.612	-0.685	-0.351	-0.354	-0.511	-0.723	-0.341	-0.341	-0.614	-0.661	-0.351	-0.362	-0.561
	X'		0.741	0.674	0.732	0.749	0.732	0.674	0.724	0.738	0.730	0.674	0.723	0.736	0.732	0.674	0.724	0.738
	No	veh	-1.005	-0.209	-0.444	-0.896	-0.927	-0.114	-0.333	-0.742	-0.954	-0.070	-0.281	-0.869	-0.905	-0.114	-0.359	-0.812
Average Queue Delay	D	sec/veh	4	34	9	6	6	34	11	9	7	36	13	8	6	34	11	8
Average Delay		**sec/veh**	**8**	**80**	**13**	**9**	**10**	**73**	**15**	**12**	**10**	**71**	**16**	**12**	**10**	**73**	**15**	**11**
Average Queue	N = q(r/2+d)	veh	2.170	1.395	5.869	4.121	3.009	1.508	6.274	5.488	2.700	1.599	6.635	4.299	3.267	1.508	6.168	4.828
Average Queue Length	NL/n	metre	7	8	18	8	9	9	19	11	8	10	20	9	10	9	19	10
Average Queue	N=qr	veh	3.120	1.090	7.137	5.641	4.083	1.154	7.314	7.000	3.667	1.222	7.615	5.641	4.397	1.154	7.224	6.282
Average Queue Length	NL/n	metre	9	7	21	11	12	7	22	14	11	7	23	11	13	7	22	13
Average Queue	N=qr+No	veh	2.115	0.880	6.693	4.745	3.157	1.040	6.981	6.258	2.712	1.152	7.334	4.772	3.493	1.040	6.865	5.470
Average Queue Length	NL/n	metre	6	5	20	9	9	6	21	13	8	7	22	10	10	6	21	11
Average Queue Length		**metre**	**9**	**8**	**21**	**11**	**12**	**9**	**22**	**14**	**11**	**10**	**23**	**11**	**13**	**9**	**22**	**13**
Maximum Queue Length		**metre**	**23**	**40**	**41**	**23**	**28**	**40**	**42**	**27**	**26**	**40**	**44**	**23**	**29**	**39**	**42**	**25**

*Note: SG = Signal Group

Queue Length Analysis

MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2021 Existing Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2021
Junction Name	Tung Lo Wan Road / Eastern Hospital Road (J16)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	B	A	B	A	B	A	B
			Weekday AM		**Weekday Noon**		**Weekday PM**		**Weekend Noon**	
		Unit	Tung Lo Wan Rd SB	Ka Ning Path NB	Tung Lo Wan Rd SB	Ka Ning Path NB	Tung Lo Wan Rd SB	Ka Ning Path NB	Tung Lo Wan Rd SB	Ka Ning Path NB
Cycle time	c	sec	100	100	95	95	105	105	105	105
Effective green time	g	sec	31	35	29	32	33	38	36	35
		pcu/hr	545	320	550	325	480	295	550	285
Design flow	q	veh/sec	0.116	0.068	0.118	0.069	0.103	0.063	0.118	0.061
		pcu/hr	3310	1760	3295	1790	3290	1765	3290	1780
Saturation flow	Q	veh/sec	0.707	0.376	0.704	0.382	0.703	0.377	0.703	0.380
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	1	2	1	2	1	2	1
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.310	0.350	0.305	0.337	0.314	0.362	0.343	0.333
Degree of saturation	x		0.531	0.519	0.547	0.539	0.464	0.462	0.488	0.480
	M		11.645	6.838	11.165	6.597	10.769	6.619	12.340	6.394
	y		0.165	0.182	0.167	0.182	0.146	0.167	0.167	0.160
	Qt	veh/sec	131.551	78.974	128.954	77.301	132.564	81.893	144.615	76.068
	x<1									
	A	sec/veh	0.285	0.258	0.290	0.269	0.275	0.244	0.259	0.265
	B	sec/veh	0.301	0.281	0.330	0.315	0.201	0.198	0.232	0.222
	C	sec/veh	1.339	1.548	1.471	1.801	0.903	1.020	0.887	1.347
Average Queue Delay	D	sec/veh	30	28	29	28	30	28	28	30
	x>x'									
	Z		-0.469	-0.481	-0.453	-0.461	-0.536	-0.538	-0.512	-0.520
	X'		0.707	0.692	0.704	0.690	0.709	0.694	0.712	0.692
	No	veh	-0.572	-0.555	-0.530	-0.507	-0.698	-0.667	-0.670	-0.632
Average Queue Delay	D	sec/veh	26	22	25	22	26	21	24	23
Average Delay		**sec/veh**	**30**	**28**	**29**	**28**	**30**	**28**	**28**	**30**
Average Queue	N = q(r/2+d)	veh	7.481	4.163	7.269	4.150	6.765	3.863	7.381	3.963
Average Queue Length	NL/n	metre	22	25	22	25	20	23	22	24
Average Queue	N=qr	veh	8.035	4.444	7.756	4.375	7.385	4.223	8.109	4.263
Average Queue Length	NL/n	metre	24	27	23	26	22	25	24	26
Average Queue	N=qr+No	veh	7.463	3.890	7.226	3.868	6.687	3.556	7.439	3.631
Average Queue Length	NL/n	metre	22	23	22	23	20	21	22	22
Average Queue Length		**metre**	**24**	**27**	**23**	**26**	**22**	**25**	**24**	**26**
Maximum Queue Length		**metre**	**45**	**56**	**44**	**54**	**42**	**52**	**45**	**52**

*Note: SG = Signal Group

Queue Length Analysis

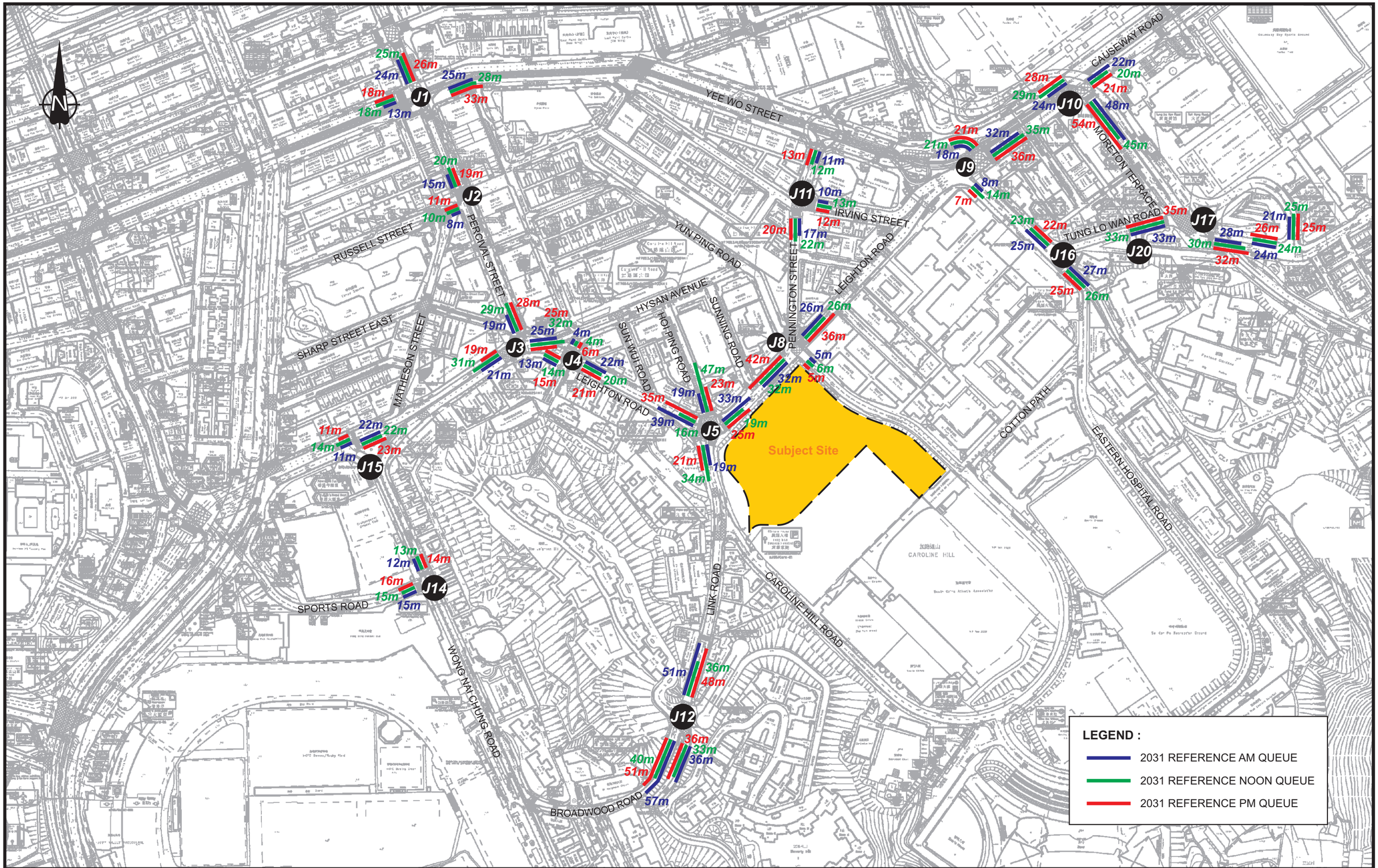
SYSTRA MVA **MVA Hong Kong Ltd.**

Job No.	CHK50603110	Description	2021 Existing Flows
Job Title	tancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2021
Junction Name	Tung Lo Wan Road / Moreton Terrace (J17)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	E	E	B	A	E	E	B	A	E	E	B	A	E	E	B
			Weekday AM				**Weekday Noon**				**Weekday PM**				**Weekend Noon**			
		Unit	Tung Lo Wan Rd EB (Section	Tung Lo Wan Rd WB (Section	Tung Lo Wan Rd EB (West of Tung Lo	Tung Lo Wan Drive SB	Tung Lo Wan Rd EB (Section	Tung Lo Wan Rd WB (Section	Tung Lo Wan Rd EB (West of Tung Lo	Tung Lo Wan Drive SB	Tung Lo Wan Rd EB (Section	Tung Lo Wan Rd WB (Section	Tung Lo Wan Rd EB (West of Tung Lo	Tung Lo Wan Drive SB	Tung Lo Wan Rd EB (Section	Tung Lo Wan Rd WB (Section	Tung Lo Wan Rd EB (West of Tung Lo	Tung Lo Wan Drive SB
Cycle time	c	sec	100	100	100	100	95	95	95	95	105	105	105	105	105	105	105	105
Effective green time	g	sec	42	46	46	42	36	47	47	36	41	52	52	41	48	45	45	48
		pcu/hr	895	790	335	290	920	890	355	345	910	850	340	330	765	690	240	240
Design flow	q	veh/sec	0.191	0.169	0.072	0.062	0.197	0.190	0.076	0.074	0.194	0.182	0.073	0.071	0.163	0.147	0.051	0.051
		pcu/hr	3520	3520	1940	1680	3505	3520	1945	1680	3510	3520	1945	1675	3505	3590	1960	1690
Saturation flow	Q	veh/sec	0.752	0.752	0.415	0.359	0.749	0.752	0.416	0.359	0.750	0.752	0.416	0.358	0.749	0.767	0.419	0.361
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	2	1	1	2	2	1	1	2	2	1	1	2	2	1	1
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.420	0.460	0.460	0.420	0.379	0.495	0.495	0.379	0.390	0.495	0.495	0.390	0.457	0.429	0.429	0.457
Degree of saturation	x		0.605	0.488	0.375	0.411	0.693	0.511	0.369	0.542	0.664	0.488	0.353	0.505	0.477	0.448	0.286	0.311
	M		19.124	16.880	7.158	6.197	18.675	18.066	7.206	7.003	20.417	19.071	7.628	7.404	17.163	15.481	5.385	5.385
	y		0.254	0.224	0.173	0.173	0.262	0.253	0.183	0.205	0.259	0.241	0.175	0.197	0.218	0.192	0.122	0.142
	Qt	veh/sec	189.538	207.590	114.410	90.462	170.283	223.266	123.367	81.619	175.714	223.492	123.492	83.852	205.421	197.253	107.692	99.048
	x<1																	
	A	sec/veh	0.226	0.188	0.176	0.203	0.261	0.171	0.156	0.243	0.251	0.168	0.154	0.231	0.188	0.202	0.186	0.172
	B	sec/veh	0.464	0.232	0.113	0.143	0.781	0.267	0.108	0.321	0.656	0.232	0.096	0.257	0.218	0.182	0.057	0.070
	C	sec/veh	1.161	0.451	0.259	0.503	2.099	0.445	0.191	1.552	1.811	0.384	0.167	1.203	0.432	0.396	0.124	0.148
Average Queue Delay	D	sec/veh	24	20	19	22	27	17	16	26	28	19	17	27	21	22	21	19
	x>x'																	
	Z		-0.395	-0.512	-0.625	-0.589	-0.307	-0.489	-0.631	-0.458	-0.336	-0.512	-0.647	-0.495	-0.523	-0.552	-0.714	-0.689
	X'		0.723	0.728	0.702	0.695	0.715	0.729	0.703	0.692	0.721	0.735	0.706	0.694	0.730	0.728	0.701	0.699
	No	veh	-0.451	-0.712	-0.802	-0.744	-0.109	-0.677	-0.810	-0.504	-0.258	-0.734	-0.836	-0.592	-0.735	-0.770	-0.894	-0.867
Average Queue Delay	D	sec/veh	21	17	13	15	24	14	11	19	25	16	12	20	18	19	15	13
Average Delay		**sec/veh**	**24**	**20**	**19**	**22**	**27**	**17**	**16**	**26**	**28**	**19**	**17**	**27**	**21**	**22**	**21**	**19**
Average Queue	N = q(r/2+d)	veh	10.102	7.887	3.288	3.169	11.050	7.833	3.039	4.080	11.646	8.178	3.187	4.141	8.041	7.676	2.591	2.449
Average Queue Length	NL/n	metre	30	24	20	19	33	23	18	24	35	25	19	25	24	23	16	15
Average Queue	N=qr	veh	11.092	9.115	3.865	3.594	11.598	9.128	3.641	4.349	12.444	9.626	3.850	4.513	9.317	8.846	3.077	2.923
Average Queue Length	NL/n	metre	33	27	23	22	35	27	22	26	37	29	23	27	28	27	18	18
Average Queue	N=qr+No	veh	10.641	8.404	3.064	2.850	11.489	8.451	2.831	3.846	12.186	8.892	3.014	3.921	8.583	8.076	2.183	2.056
Average Queue Length	NL/n	metre	32	25	18	17	34	25	17	23	37	27	18	24	26	24	13	12
Average Queue Length		**metre**	**33**	**27**	**23**	**22**	**35**	**27**	**22**	**26**	**37**	**29**	**23**	**27**	**28**	**27**	**18**	**18**
Maximum Queue Length		**metre**	**56**	**50**	**52**	**47**	**56**	**53**	**53**	**54**	**58**	**55**	**55**	**44**	**52**	**67**	**41**	**37**

*Note: SG = Signal Group

Year 2031 Reference



Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
A	MINOR AMENDMENT	CHC	13APR22

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG TRAFFIC REVIEW REPORT

Drawing Title

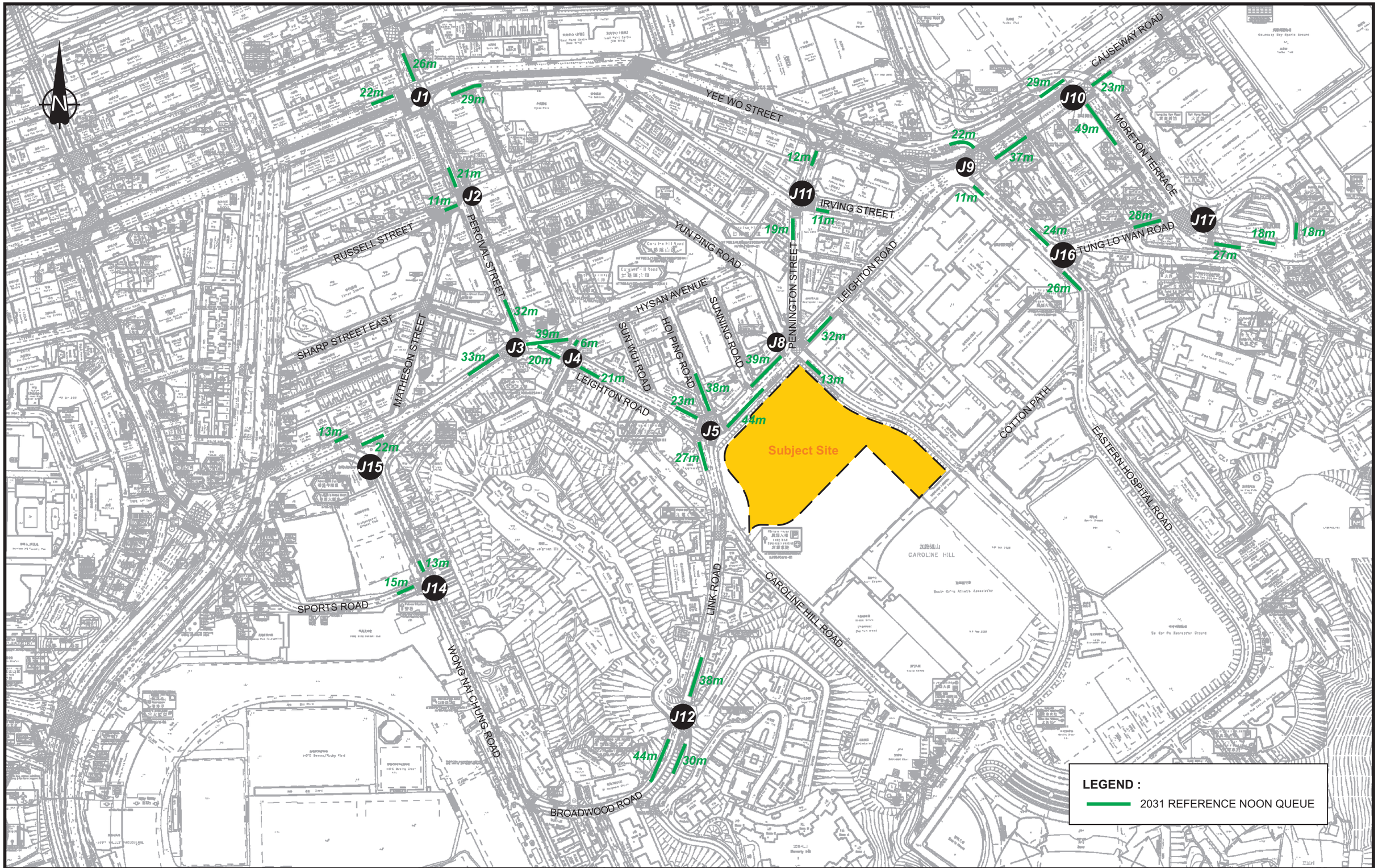
ESTIMATED AVERAGE QUEUE LENGTH FOR WEEKDAY UNDER YEAR 2031 REFERENCE SCENARIO

Designed	Checked	Scale	Date	Drawing No.	Rev.
LYK	CHC	NTS	FEB 2022	E3	A

SYSTRA MVA

CHK50603110/TIA/E3-A.CDR/LLH/13APR22

Original Size : A3



Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
A	MINOR AMENDMENT	CHC	13APR22

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON
INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG
TRAFFIC REVIEW REPORT

Drawing Title

ESTIMATED AVERAGE QUEUE LENGTH FOR WEEKEND UNDER YEAR 2031 REFERENCE SCENARIO

Designed	Checked	Scale	Date	Drawing No.	Rev.
LYK	CHC	NTS	FEB 2022	E4	A

SYSTRA MVA

CHK50603110/TIA/E4-A.CDR/LLH/13APR22

Original Size : A3

Queue Length Analysis

SYSTRA MVA MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2031 Reference Flows
Job Title	tancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	Hennessy Road / Percival Street (J1)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	D	A	B	C	B	C	E	E	A	D	A	B	C	B	C
			Weekday AM									Weekday Noon						
		Unit	Hennessy Rd WB	Hennessy Rd WB (Tram) - LT	Hennessy Rd WB (Tram) - Ahead	Hennessy Rd EB -Ahead	Hennessy Rd EB - RT	Hennessy Rd EB (Tram) - Ahead	Hennessy Rd EB (Tram) - RT	Percival St SB - LT	Percival St SB - Ahead	Hennessy Rd WB	Hennessy Rd WB (Tram) - LT	Hennessy Rd WB (Tram) - Ahead	Hennessy Rd EB -Ahead	Hennessy Rd EB - RT	Hennessy Rd EB (Tram) - Ahead	Hennessy Rd EB (Tram) - RT
Cycle time	c	sec	120	120	120	120	120	120	120	120	120	104	104	104	104	104	104	104
Effective green time	g	sec	52	21	52	75	17	75	17	32	32	42	22	42	67	18	67	18
		pcu/hr	575	20	70	625	100	75	25	75	425	710	15	70	550	165	80	35
Design flow	q	veh/sec	0.123	0.004	0.015	0.134	0.021	0.016	0.005	0.016	0.091	0.152	0.003	0.015	0.118	0.035	0.017	0.007
		pcu/hr	3620	1780	2055	3015	1940	1915	1940	1690	4190	3620	1780	2055	3015	1940	1915	1940
Saturation flow	Q	veh/sec	0.774	0.380	0.439	0.644	0.415	0.409	0.415	0.361	0.895	0.774	0.380	0.439	0.644	0.415	0.409	0.415
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	1	1	2	1	1	1	1	2	2	1	1	2	1	1	1
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.433	0.175	0.433	0.625	0.142	0.625	0.142	0.267	0.267	0.404	0.212	0.404	0.644	0.173	0.644	0.173
Degree of saturation	x		0.367	0.064	0.079	0.332	0.364	0.063	0.091	0.166	0.380	0.486	0.040	0.084	0.283	0.491	0.065	0.104
	M		14.744	0.513	1.795	16.026	2.564	1.923	0.641	1.923	10.897	15.778	0.333	1.556	12.222	3.667	1.778	0.778
	y		0.159	0.011	0.034	0.207	0.052	0.039	0.013	0.044	0.101	0.196	0.008	0.034	0.182	0.085	0.042	0.018
	Qt	veh/sec	201.111	39.936	114.167	241.587	35.235	153.446	35.235	57.778	143.248	187.426	48.274	106.398	249.020	43.047	158.167	43.047
	x<1																	
	A	sec/veh	0.191	0.344	0.166	0.089	0.388	0.073	0.373	0.281	0.299	0.221	0.313	0.184	0.077	0.374	0.066	0.348
	B	sec/veh	0.106	0.002	0.003	0.082	0.104	0.002	0.005	0.017	0.117	0.229	0.001	0.004	0.056	0.237	0.002	0.006
	C	sec/veh	0.198	0.045	0.001	0.043	2.694	0.000	0.159	0.128	0.633	0.590	0.007	0.002	0.018	3.712	0.000	0.123
Average Queue Delay	D	sec/veh	24	42	20	11	49	9	45	35	37	24	33	19	9	42	7	37
	x>x'																	
	Z		-0.633	-0.936	-0.921	-0.668	-0.636	-0.937	-0.909	-0.834	-0.620	-0.514	-0.960	-0.916	-0.717	-0.509	-0.935	-0.896
	X'		0.737	0.683	0.708	0.751	0.682	0.721	0.682	0.689	0.718	0.724	0.684	0.701	0.742	0.682	0.716	0.682
	No	veh	-0.890	-1.052	-1.046	-0.951	-0.808	-1.070	-1.043	-0.981	-0.832	-0.706	-1.054	-1.032	-0.971	-0.596	-1.059	-1.022
Average Queue Delay	D	sec/veh	20	26	14	8	33	5	27	24	32	21	19	13	6	31	3	22
Average Delay		**sec/veh**	**24**	**42**	**20**	**11**	**49**	**9**	**45**	**35**	**37**	**24**	**33**	**19**	**9**	**42**	**7**	**37**
Average Queue	N = q(r/2+d)	veh	7.073	0.390	0.810	4.503	2.143	0.503	0.518	1.261	7.316	8.331	0.237	0.754	3.174	2.993	0.436	0.598
Average Queue Length	NL/n	metre	21	2	5	14	13	3	3	8	22	25	1	5	10	18	3	4
Average Queue	N=qr	veh	8.355	0.423	1.017	6.010	2.201	0.721	0.550	1.410	7.991	9.406	0.263	0.927	4.348	3.032	0.632	0.643
Average Queue Length	NL/n	metre	25	3	6	18	13	4	3	8	24	28	2	6	13	18	4	4
Average Queue	N=qr+No	veh	7.465	-0.628	-0.028	5.058	1.393	-0.349	-0.493	0.429	7.159	8.700	-0.791	-0.104	3.378	2.436	-0.427	-0.379
Average Queue Length	NL/n	metre	22	-4	0	15	8	-2	-3	3	21	26	-5	-1	10	15	-3	-2
Average Queue Length		**metre**	**25**	**3**	**6**	**18**	**13**	**4**	**3**	**8**	**24**	**28**	**2**	**6**	**13**	**18**	**4**	**4**
Maximum Queue Length		**metre**	**53**	**36**	**33**	**41**	**37**	**26**	**37**	**32**	**41**	**53**	**37**	**31**	**33**	**44**	**25**	**38**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA — MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2031 Reference Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	Hennessy Road / Percival Street (J1)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			E	E	A	D	A	B	C	B	C	E	E	A	D	A	B	C
			Weekday Noon		**Weekday PM**									**Weekend Noon**				
		Unit	Percival St SB - LT	Percival St SB - Ahead	Hennessy Rd WB	Hennessy Rd WB (Tram) - LT	Hennessy Rd WB (Tram) - Ahead	Hennessy Rd EB -Ahead	Hennessy Rd EB - RT	Hennessy Rd EB (Tram) - Ahead	Hennessy Rd EB (Tram) - RT	Percival St SB - LT	Percival St SB - Ahead	Hennessy Rd WB	Hennessy Rd WB (Tram) - LT	Hennessy Rd WB (Tram) - Ahead	Hennessy Rd EB -Ahead	Hennessy Rd EB - RT
Cycle time	c	sec	104	104	120	120	120	120	120	120	120	120	120	104	104	104	104	104
Effective green time	g	sec	25	25	50	21	50	74	17	74	17	34	34	34	24	34	61	20
		pcu/hr	195	500	745	15	80	600	140	95	35	240	415	655	25	70	675	200
Design flow	q	veh/sec	0.042	0.107	0.159	0.003	0.017	0.128	0.030	0.020	0.007	0.051	0.089	0.140	0.005	0.015	0.144	0.043
		pcu/hr	1690	4190	3620	1780	2055	3015	1940	1915	1940	1690	4190	3620	1780	2055	3015	1940
Saturation flow	Q	veh/sec	0.361	0.895	0.774	0.380	0.439	0.644	0.415	0.409	0.415	0.361	0.895	0.774	0.380	0.439	0.644	0.415
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	1	2	2	1	1	2	1	1	1	1	2	2	1	1	2	1
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.240	0.240	0.417	0.175	0.417	0.617	0.142	0.617	0.142	0.283	0.283	0.327	0.231	0.327	0.587	0.192
Degree of saturation	x		0.480	0.496	0.494	0.048	0.093	0.323	0.509	0.080	0.127	0.501	0.350	0.553	0.061	0.104	0.382	0.536
	M		4.333	11.111	19.103	0.385	2.051	15.385	3.590	2.436	0.897	6.154	10.641	14.556	0.556	1.556	15.000	4.444
	y		0.115	0.119	0.206	0.008	0.039	0.199	0.072	0.050	0.018	0.142	0.099	0.181	0.014	0.034	0.224	0.103
	Qt	veh/sec	52.083	129.130	193.376	39.936	109.776	238.365	35.235	151.400	35.235	61.389	152.201	151.726	52.663	86.132	226.720	47.830
	x<1																	
	A	sec/veh	0.326	0.328	0.214	0.343	0.177	0.092	0.397	0.077	0.375	0.299	0.285	0.277	0.300	0.235	0.110	0.364
	B	sec/veh	0.222	0.245	0.241	0.001	0.005	0.077	0.264	0.004	0.009	0.252	0.094	0.343	0.002	0.006	0.118	0.310
	C	sec/veh	2.425	1.442	0.613	0.024	0.003	0.040	5.354	0.000	0.316	2.193	0.444	1.321	0.015	0.014	0.096	3.946
Average Queue Delay	D	sec/veh	37	35	27	42	22	12	51	9	46	39	35	30	32	25	12	41
	x>x'																	
	Z		-0.520	-0.504	-0.506	-0.952	-0.907	-0.677	-0.491	-0.920	-0.873	-0.499	-0.650	-0.447	-0.939	-0.896	-0.618	-0.464
	X'		0.685	0.707	0.734	0.683	0.707	0.749	0.682	0.720	0.682	0.690	0.721	0.714	0.685	0.695	0.735	0.684
	No	veh	-0.620	-0.641	-0.724	-1.060	-1.036	-0.956	-0.564	-1.060	-1.021	-0.592	-0.871	-0.548	-1.041	-1.016	-0.869	-0.500
Average Queue Delay	D	sec/veh	27	31	23	25	16	9	38	5	28	30	31	27	19	17	9	32
Average Delay		**sec/veh**	**37**	**35**	**27**	**42**	**22**	**12**	**51**	**9**	**46**	**39**	**35**	**30**	**32**	**25**	**12**	**41**
Average Queue	N = q(r/2+d)	veh	3.180	7.951	9.807	0.292	0.966	4.432	3.070	0.659	0.729	4.186	6.901	9.082	0.382	0.894	4.857	3.552
Average Queue Length	NL/n	metre	19	24	29	2	6	13	18	4	4	25	21	27	2	5	15	21
Average Queue	N=qr	veh	3.292	8.440	11.143	0.317	1.197	5.897	3.081	0.934	0.770	4.410	7.626	9.797	0.427	1.047	6.202	3.590
Average Queue Length	NL/n	metre	20	25	33	2	7	18	18	6	5	26	23	29	3	6	19	22
Average Queue	N=qr+No	veh	2.672	7.799	10.420	-0.743	0.160	4.941	2.517	-0.126	-0.250	3.818	6.755	9.249	-0.614	0.031	5.333	3.090
Average Queue Length	NL/n	metre	16	23	31	-4	1	15	15	-1	-2	23	20	28	-4	0	16	19
Average Queue Length		**metre**	**20**	**25**	**33**	**2**	**7**	**18**	**18**	**6**	**5**	**26**	**23**	**29**	**3**	**6**	**19**	**22**
Maximum Queue Length		**metre**	**39**	**40**	**59**	**51**	**387**	**49**	**44**	**49**	**44**	**49**	**44**	**63**	**52**	**67**	**41**	**37**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2031 Reference Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	Hennessy Road / Percival Street (J1)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			B	C	E	E
			Weekend Noon			
		Unit	Hennessy Rd EB (Tram) - Ahead	Hennessy Rd EB (Tram) - RT	Percival St SB - LT	Percival St SB - Ahead
Cycle time	c	sec	104	104	104	104
Effective green time	g	sec	61	20	31	31
		pcu/hr	95	30	275	555
Design flow	q	veh/sec	0.020	0.006	0.059	0.119
		pcu/hr	1915	1940	1690	4190
Saturation flow	Q	veh/sec	0.409	0.415	0.361	0.895
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3
No. of lanes	n	lane	1	1	1	2
Length of a vehicle	L	metre	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.587	0.192	0.298	0.298
Degree of saturation	x		0.085	0.080	0.546	0.444
	M		2.111	0.667	6.111	12.333
	y		0.050	0.015	0.163	0.132
	Qt	veh/sec	144.003	47.830	64.583	160.121
	x<1					
	A	sec/veh	0.090	0.331	0.294	0.284
	B	sec/veh	0.004	0.004	0.328	0.178
	C	sec/veh	0.000	0.051	2.445	0.747
Average Queue Delay	D	sec/veh	10	35	34	30
	x>x'					
	Z		-0.915	-0.920	-0.454	-0.556
	X'		0.712	0.684	0.689	0.716
	No	veh	-1.044	-1.033	-0.488	-0.747
Average Queue Delay	D	sec/veh	5	22	26	27
Average Delay		**sec/veh**	**10**	**35**	**34**	**30**
Average Queue	N = q(r/2+d)	veh	0.630	0.493	4.127	7.920
Average Queue Length	NL/n	metre	4	3	25	24
Average Queue	N=qr	veh	0.873	0.538	4.290	8.657
Average Queue Length	NL/n	metre	5	3	26	26
Average Queue	N=qr+No	veh	-0.171	-0.494	3.802	7.911
Average Queue Length	NL/n	metre	-1	-3	23	24
Average Queue Length		**metre**	**5**	**3**	**26**	**26**
Maximum Queue Length		**metre**	**41**	**37**	**41**	**37**

*Note: SG = Signal Group

Queue Length Analysis

MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2031 Reference Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	Matheson Street / Percival Street / Russell Street (J2)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	B	A	B	A	B	A	B
			Weekday AM		**Weekday Noon**		**Weekday PM**		**Weekend Noon**	
		Unit	Percival St SB	Matheson St NB	Percival St SB	Matheson St NB	Percival St SB	Matheson St NB	Percival St SB	Matheson St NB
Cycle time	c	sec	105	105	105	105	120	120	110	110
Effective green time	g	sec	63	18	62	19	72	24	68	18
		pcu/hr	565	135	720	190	630	185	785	180
Design flow	q	veh/sec	0.121	0.029	0.154	0.041	0.135	0.040	0.168	0.038
		pcu/hr	3950	3420	3950	3430	3950	3420	3950	3420
Saturation flow	Q	veh/sec	0.844	0.731	0.844	0.733	0.844	0.731	0.844	0.731
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	2	2	2	2	2	2	2
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.600	0.171	0.590	0.181	0.600	0.200	0.618	0.164
Degree of saturation	x		0.238	0.230	0.309	0.306	0.266	0.270	0.321	0.322
	M		12.676	3.029	16.154	4.263	16.154	4.744	18.451	4.231
	y		0.143	0.039	0.182	0.055	0.159	0.054	0.199	0.053
	Qt	veh/sec	303.846	75.165	299.023	79.573	303.846	87.692	313.054	71.748
	x<1									
	A	sec/veh	0.093	0.357	0.103	0.355	0.095	0.338	0.091	0.369
	B	sec/veh	0.037	0.034	0.069	0.068	0.048	0.050	0.076	0.076
	C	sec/veh	0.010	0.491	0.032	0.834	0.016	0.547	0.032	1.118
Average Queue Delay	D	sec/veh	10	38	11	38	12	41	10	41
	x>x'									
	Z		-0.762	-0.770	-0.691	-0.694	-0.734	-0.730	-0.679	-0.678
	X'		0.759	0.692	0.757	0.693	0.771	0.699	0.766	0.692
	No	veh	-1.034	-0.930	-0.983	-0.864	-1.042	-0.907	-0.991	-0.848
Average Queue Delay	D	sec/veh	8	30	9	31	9	34	8	34
Average Delay		**sec/veh**	**10**	**38**	**11**	**38**	**12**	**41**	**10**	**41**
Average Queue	N = q(r/2+d)	veh	3.755	2.358	5.028	3.293	4.814	3.531	5.272	3.364
Average Queue Length	NL/n	metre	11	7	15	10	14	11	16	10
Average Queue	N=qr	veh	5.071	2.510	6.615	3.491	6.462	3.795	7.045	3.538
Average Queue Length	NL/n	metre	15	8	20	10	19	11	21	11
Average Queue	N=qr+No	veh	4.037	1.580	5.633	2.628	5.419	2.888	6.054	2.690
Average Queue Length	NL/n	metre	12	5	17	8	16	9	18	8
Average Queue Length		**metre**	**15**	**8**	**20**	**10**	**19**	**11**	**21**	**11**
Maximum Queue Length		**metre**	**32**	**19**	**39**	**20**	**38**	**21**	**41**	**20**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA **MVA Hong Kong Ltd.**

Job No.	CHK50603110	Description	2031 Reference Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	Leighton Road / Percival Street / Hysan Avenue (J3)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			E	A	C	C	E	A	C	C	E	A	C	C	E	A	C	C
			Weekday AM				**Weekday Noon**				**Weekday PM**				**Weekend Noon**			
		Unit	Leighton Rd WB	Leighton Road EB	Percival St SB - LT	Percival St SB - RT	Leighton Rd WB	Leighton Road EB	Percival St SB - LT	Percival St SB - RT	Leighton Rd WB	Leighton Road EB	Percival St SB - LT	Percival St SB - RT	Leighton Rd WB	Leighton Road EB	Percival St SB - LT	Percival St SB - RT
Cycle time	c	sec	105	105	105	105	130	130	130	130	105	105	105	105	130	130	130	130
Effective green time	g	sec	61	56	35	35	72	69	47	47	61	56	35	35	64	59	57	57
		pcu/hr	885	680	205	415	850	800	270	510	880	620	285	420	915	720	345	465
Design flow	q	veh/sec	0.189	0.145	0.044	0.089	0.182	0.171	0.058	0.109	0.188	0.132	0.061	0.090	0.196	0.154	0.074	0.099
		pcu/hr	3215	2325	1140	2770	3215	2325	1140	2770	3215	2325	1140	2770	3215	2325	1140	2770
Saturation flow	Q	veh/sec	0.687	0.497	0.244	0.592	0.687	0.497	0.244	0.592	0.687	0.497	0.244	0.592	0.687	0.497	0.244	0.592
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	2	1	2	2	2	1	2	2	2	1	2	2	2	1	2
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.581	0.533	0.333	0.333	0.554	0.531	0.362	0.362	0.581	0.533	0.333	0.333	0.492	0.454	0.438	0.438
Degree of saturation	x		0.474	0.548	0.539	0.449	0.477	0.648	0.655	0.509	0.471	0.500	0.750	0.455	0.578	0.682	0.690	0.383
	M		19.856	15.256	4.599	9.311	23.611	22.222	7.500	14.167	19.744	13.910	6.394	9.423	25.417	20.000	9.583	12.917
	y		0.275	0.292	0.180	0.150	0.264	0.344	0.237	0.184	0.274	0.267	0.250	0.152	0.285	0.310	0.303	0.168
	Qt	veh/sec	239.457	158.974	48.718	118.376	228.284	158.210	52.840	128.393	239.457	158.974	48.718	118.376	202.919	135.281	64.083	155.710
	x<1																	
	A	sec/veh	0.121	0.154	0.271	0.261	0.135	0.168	0.267	0.250	0.121	0.148	0.296	0.262	0.180	0.216	0.226	0.189
	B	sec/veh	0.213	0.333	0.316	0.183	0.218	0.597	0.622	0.264	0.210	0.250	1.125	0.190	0.396	0.733	0.769	0.119
	C	sec/veh	0.239	0.672	2.568	0.822	0.302	1.422	4.406	1.105	0.233	0.465	6.899	0.852	0.848	2.243	3.958	0.274
Average Queue Delay	D	sec/veh	14	18	33	29	18	24	41	34	14	17	43	29	25	31	36	26
	x>x'																	
	Z		-0.526	-0.452	-0.461	-0.551	-0.523	-0.352	-0.345	-0.491	-0.529	-0.500	-0.250	-0.545	-0.422	-0.318	-0.310	-0.617
	X'		0.740	0.716	0.684	0.705	0.752	0.727	0.689	0.716	0.740	0.716	0.684	0.705	0.743	0.719	0.693	0.726
	No	veh	-0.768	-0.567	-0.493	-0.710	-0.800	-0.340	-0.150	-0.646	-0.771	-0.660	0.372	-0.702	-0.596	-0.174	-0.014	-0.850
Average Queue Delay	D	sec/veh	11	14	22	24	15	21	33	29	11	13	36	24	22	27	29	21
Average Delay		**sec/veh**	**14**	**18**	**33**	**29**	**18**	**24**	**41**	**34**	**14**	**17**	**36**	**29**	**25**	**31**	**36**	**26**
Average Queue	N = q(r/2+d)	veh	6.734	6.143	2.983	5.648	8.625	9.298	4.765	8.205	6.690	5.500	4.731	5.723	11.261	10.170	5.334	6.165
Average Queue Length	NL/n	metre	20	18	18	17	26	28	29	25	20	16	28	17	34	31	32	18
Average Queue	N=qr	veh	8.321	7.120	3.066	6.207	10.534	10.427	4.788	9.045	8.274	6.491	4.263	6.282	12.904	10.923	5.381	7.253
Average Queue Length	NL/n	metre	25	21	18	19	32	31	29	27	25	19	26	19	39	33	32	22
Average Queue	N=qr+No	veh	7.553	6.553	2.573	5.497	9.734	10.087	4.638	8.399	7.502	5.831	4.635	5.580	12.308	10.749	5.367	6.404
Average Queue Length	NL/n	metre	23	20	15	16	29	30	28	25	23	17	28	17	37	32	32	19
Average Queue Length		**metre**	**25**	**21**	**18**	**19**	**32**	**31**	**29**	**27**	**25**	**19**	**28**	**19**	**39**	**33**	**32**	**22**
Maximum Queue Length		**metre**	**46**	**41**	**42**	**37**	**54**	**54**	**62**	**48**	**46**	**38**	**66**	**37**	**63**	**56**	**67**	**41**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2031 Reference Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	Leighton Road / Hysan Avenue / Leighton Lane (J4)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			B	A	C	B	A	C	B	A	C	B	A	C
			Weekday AM			**Weekday Noon**			**Weekday PM**			**Weekend Noon**		
		Unit	Leigthon Rd WB	Leighton Rd EB	Hysan Avenue SB	Leigthon Rd WB	Leighton Rd EB	Hysan Avenue SB	Leigthon Rd WB	Leighton Rd EB	Hysan Avenue SB	Leigthon Rd WB	Leighton Rd EB	Hysan Avenue SB
Cycle time	c	sec	120	120	120	130	130	130	130	130	130	130	130	130
Effective green time	g	sec	80	89	22	90	99	22	90	99	22	90	99	22
		pcu/hr	845	325	60	795	340	60	800	365	85	835	510	90
Design flow	q	veh/sec	0.181	0.069	0.013	0.170	0.073	0.013	0.171	0.078	0.018	0.178	0.109	0.019
		pcu/hr	3985	1965	3395	4000	1965	3370	4010	1965	3370	4020	1965	3390
Saturation flow	Q	veh/sec	0.851	0.420	0.725	0.855	0.420	0.720	0.857	0.420	0.720	0.859	0.420	0.724
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	1	2	2	1	2	2	1	2	2	1	2
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.667	0.742	0.183	0.692	0.762	0.169	0.692	0.762	0.169	0.692	0.762	0.169
Degree of saturation	x		0.318	0.223	0.096	0.287	0.227	0.105	0.288	0.244	0.149	0.300	0.341	0.157
	M		21.667	8.333	1.538	22.083	9.444	1.667	22.222	10.139	2.361	23.194	14.167	2.500
	y		0.212	0.165	0.018	0.199	0.173	0.018	0.200	0.186	0.025	0.208	0.260	0.027
	Qt	veh/sec	340.598	186.843	79.797	355.030	191.849	73.116	355.917	191.849	73.116	356.805	191.849	73.550
	x<1													
	A	sec/veh	0.071	0.040	0.339	0.059	0.034	0.351	0.059	0.035	0.354	0.060	0.038	0.355
	B	sec/veh	0.074	0.032	0.005	0.058	0.033	0.006	0.058	0.039	0.013	0.064	0.088	0.015
	C	sec/veh	0.022	0.004	0.064	0.012	0.003	0.099	0.012	0.005	0.211	0.014	0.028	0.236
Average Queue Delay	D	sec/veh	9	5	41	8	5	46	8	5	47	8	6	47
	x>x'													
	Z		-0.682	-0.777	-0.904	-0.713	-0.773	-0.895	-0.712	-0.756	-0.851	-0.700	-0.659	-0.843
	X'		0.784	0.732	0.697	0.798	0.739	0.696	0.799	0.739	0.696	0.799	0.739	0.697
	No	veh	-1.033	-0.997	-1.026	-1.085	-1.008	-1.023	-1.085	-0.996	-0.997	-1.078	-0.920	-0.992
Average Queue Delay	D	sec/veh	7	2	33	6	1	37	6	1	38	6	2	38
Average Delay		**sec/veh**	**9**	**5**	**41**	**8**	**5**	**46**	**8**	**5**	**47**	**8**	**6**	**47**
Average Queue	N = q(r/2+d)	veh	5.209	1.441	1.155	4.758	1.484	1.283	4.789	1.602	1.826	5.016	2.318	1.935
Average Queue Length	NL/n	metre	16	9	3	14	9	4	14	10	5	15	14	6
Average Queue	N=qr	veh	7.222	2.153	1.256	6.795	2.252	1.385	6.838	2.418	1.962	7.137	3.378	2.077
Average Queue Length	NL/n	metre	22	13	4	20	14	4	21	15	6	21	20	6
Average Queue	N=qr+No	veh	6.189	1.156	0.231	5.710	1.245	0.362	5.753	1.421	0.965	6.059	2.458	1.085
Average Queue Length	NL/n	metre	19	7	1	17	7	1	17	9	3	18	15	3
Average Queue Length		**metre**	**22**	**13**	**4**	**20**	**14**	**4**	**21**	**15**	**6**	**21**	**20**	**6**
Maximum Queue Length		**metre**	**41**	**36**	**18**	**39**	**38**	**18**	**39**	**40**	**18**	**40**	**48**	**18**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2031 Reference Flows
Job Title	tancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	Leighton Road / Percival Street / Hysan Avenue (J5)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	D	B	A	C	A	D	B	A	C	A	D	B	A	C	A
			Weekday AM					**Weekday Noon**					**Weekday PM**					**Weekend Noon**
		Unit	Leighton Rd WB	CHR NB - LT	CHR NB - RT	Leighton Rd EB	Hoi Ping Rd SB	Leighton Rd WB	CHR NB - LT	CHR NB - RT	Leighton Rd EB	Hoi Ping Rd SB	Leighton Rd WB	CHR NB - LT	CHR NB - RT	Leighton Rd EB	Hoi Ping Rd SB	Leighton Rd WB
Cycle time	c	sec	105	105	105	105	105	120	120	120	120	120	130	130	130	130	130	130
Effective green time	g	sec	33	59	33	33	19	31	76	38	31	31	40	77	46	40	24	46
		pcu/hr	710	325	395	410	335	595	280	415	430	365	605	335	405	475	340	710
Design flow	q	veh/sec	0.152	0.069	0.084	0.088	0.072	0.127	0.060	0.089	0.092	0.078	0.129	0.072	0.087	0.101	0.073	0.152
		pcu/hr	3165	1920	1665	3655	2630	3165	1920	1665	3655	2630	3165	1920	1665	3655	2630	3165
Saturation flow	Q	veh/sec	0.676	0.410	0.356	0.781	0.562	0.676	0.410	0.356	0.781	0.562	0.676	0.410	0.356	0.781	0.562	0.676
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	1	1	2	2	2	1	1	2	2	2	1	1	2	2	2
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.314	0.562	0.314	0.314	0.181	0.258	0.633	0.317	0.258	0.258	0.308	0.592	0.354	0.308	0.185	0.354
Degree of saturation	x		0.714	0.301	0.755	0.357	0.704	0.728	0.230	0.787	0.455	0.537	0.621	0.295	0.687	0.422	0.700	0.634
	M		15.929	7.292	8.862	9.199	7.516	15.256	7.179	10.641	11.026	9.359	16.806	9.306	11.250	13.194	9.444	19.722
	y		0.224	0.169	0.237	0.112	0.127	0.188	0.146	0.249	0.118	0.139	0.191	0.174	0.243	0.130	0.129	0.224
	Qt	veh/sec	127.527	138.315	67.088	147.271	61.013	104.824	155.897	67.596	121.052	87.105	124.852	145.799	75.533	144.181	62.249	143.580
	x<1																	
	A	sec/veh	0.303	0.116	0.308	0.265	0.384	0.339	0.079	0.311	0.312	0.319	0.296	0.101	0.276	0.275	0.382	0.269
	B	sec/veh	0.890	0.065	1.162	0.099	0.837	0.972	0.034	1.455	0.190	0.312	0.510	0.062	0.756	0.154	0.818	0.549
	C	sec/veh	3.233	0.057	5.837	0.392	6.415	4.454	0.011	6.837	1.182	2.272	2.390	0.044	4.098	0.717	6.674	2.077
Average Queue Delay	D	sec/veh	34	13	40	29	46	44	10	47	38	40	40	14	40	37	54	37
	x>x'																	
	Z		-0.286	-0.699	-0.245	-0.643	-0.296	-0.272	-0.770	-0.213	-0.545	-0.463	-0.379	-0.705	-0.313	-0.578	-0.300	-0.366
	X'		0.707	0.710	0.690	0.713	0.688	0.705	0.722	0.693	0.710	0.699	0.715	0.723	0.697	0.722	0.692	0.722
	No	veh	0.034	-0.895	0.382	-0.846	0.081	0.124	-0.974	0.614	-0.718	-0.539	-0.378	-0.927	-0.047	-0.793	0.039	-0.365
Average Queue Delay	D	sec/veh	32	8	36	24	41	41	6	43	34	35	37	9	35	33	50	33
Average Delay		**sec/veh**	**32**	**13**	**36**	**29**	**41**	**41**	**10**	**43**	**38**	**40**	**40**	**14**	**40**	**37**	**50**	**37**
Average Queue	N = q(r/2+d)	veh	10.689	2.501	6.439	5.654	6.345	11.231	1.915	7.794	7.607	6.594	10.997	2.892	7.139	8.283	7.789	11.914
Average Queue Length	NL/n	metre	32	15	39	17	19	34	11	47	23	20	33	17	43	25	23	36
Average Queue	N=qr	veh	10.923	3.194	6.077	6.308	6.156	11.315	2.632	7.271	8.177	6.941	11.635	3.794	7.269	9.135	7.701	12.744
Average Queue Length	NL/n	metre	33	19	36	19	18	34	16	44	25	21	35	23	44	27	23	38
Average Queue	N=qr+No	veh	10.957	2.300	6.459	5.462	6.237	11.440	1.658	7.885	7.460	6.402	11.257	2.867	7.222	8.341	7.740	12.378
Average Queue Length	NL/n	metre	33	14	39	16	19	34	10	47	22	19	34	17	43	25	23	37
Average Queue Length		**metre**	**33**	**19**	**39**	**19**	**19**	**34**	**16**	**47**	**25**	**21**	**35**	**23**	**44**	**27**	**23**	**38**
Maximum Queue Length		**metre**	**56**	**44**	**79**	**37**	**37**	**58**	**39**	**91**	**45**	**40**	**59**	**51**	**83**	**49**	**44**	**63**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2031 Reference Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	Leighton Road / Percival Street / Hysan Avenue (J5)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			D	B	A	C
			Weekend Noon			
		Unit	CHR NB - LT	CHR NB - RT	Leighton Rd EB	Hoi Ping Rd SE
Cycle time	c	sec	130	130	130	130
Effective green time	g	sec	71	41	46	23
		pcu/hr	315	375	615	320
Design flow	q	veh/sec	0.067	0.080	0.131	0.068
		pcu/hr	1920	1665	3655	2630
Saturation flow	Q	veh/sec	0.410	0.356	0.781	0.562
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3
No. of lanes	n	lane	1	1	2	2
Length of a vehicle	L	metre	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.546	0.315	0.354	0.177
Degree of saturation	x		0.300	0.714	0.476	0.688
	M		8.750	10.417	17.083	8.889
	y		0.164	0.225	0.168	0.122
	Qt	veh/sec	134.438	67.322	165.809	59.655
	x<1					
	A	sec/veh	0.123	0.302	0.251	0.386
	B	sec/veh	0.064	0.892	0.216	0.757
	C	sec/veh	0.067	5.313	0.773	6.688
Average Queue Delay	D	sec/veh	17	45	33	55
	x>x'					
	Z		-0.700	-0.286	-0.524	-0.312
	X'		0.719	0.694	0.730	0.692
	No	veh	-0.914	0.103	-0.740	-0.018
Average Queue Delay	D	sec/veh	12	40	30	50
Average Delay		**sec/veh**	**17**	**40**	**33**	**55**
Average Queue	N = q(r/2+d)	veh	3.124	7.183	9.921	7.386
Average Queue Length	NL/n	metre	19	43	30	22
Average Queue	N=qr	veh	3.971	7.131	11.038	7.316
Average Queue Length	NL/n	metre	24	43	33	22
Average Queue	N=qr+No	veh	3.057	7.234	10.298	7.298
Average Queue Length	NL/n	metre	18	43	31	22
Average Queue Length		**metre**	**24**	**43**	**33**	**22**
Maximum Queue Length		**metre**	**52**	**67**	**41**	**37**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2031 Reference Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	hton Road / Yun Ping Road / Pennington Street / Caroline Hill Road (East)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	C	C	A	A	C	C	A	A	C	C	A	A	C	C	A
			Weekday AM				Weekday Noon				Weekday PM				Weekend Noon			
		Unit	Leighton Rd WB - RT	Leighton Rd WB - Ahead & LT	CHR NB	Leighton Rd EB	Leighton Rd WB - RT	Leighton Rd WB - Ahead & LT	CHR NB	Leighton Rd EB	Leighton Rd WB - RT	Leighton Rd WB - Ahead & LT	CHR NB	Leighton Rd EB	Leighton Rd WB - RT	Leighton Rd WB - Ahead & LT	CHR NB	Leighton Rd EB
Cycle time	c	sec	105	105	105	105	110	110	110	110	130	130	130	130	120	120	120	120
Effective green time	g	sec	53	41	41	53	60	39	39	60	71	48	48	71	69	40	40	69
		pcu/hr	715	315	65	945	640	280	70	1000	600	325	45	1100	655	295	130	1180
Design flow	q	veh/sec	0.153	0.067	0.014	0.202	0.137	0.060	0.015	0.214	0.128	0.069	0.010	0.235	0.140	0.063	0.028	0.252
		pcu/hr	3090	1180	930	2690	3035	1180	930	2695	3110	1180	930	2685	3080	1180	930	2695
Saturation flow	Q	veh/sec	0.660	0.252	0.199	0.575	0.649	0.252	0.199	0.576	0.665	0.252	0.199	0.574	0.658	0.252	0.199	0.576
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	1	1	2	2	1	1	2	2	1	1	2	2	1	1	2
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.505	0.390	0.390	0.505	0.545	0.355	0.355	0.545	0.546	0.369	0.369	0.546	0.575	0.333	0.333	0.575
Degree of saturation	x		0.458	0.684	0.179	0.696	0.387	0.669	0.212	0.680	0.353	0.746	0.131	0.750	0.370	0.750	0.419	0.761
	M		16.042	7.067	1.458	21.202	15.043	6.581	1.645	23.504	16.667	9.028	1.250	30.556	16.795	7.564	3.333	30.256
	y		0.231	0.267	0.070	0.351	0.211	0.237	0.075	0.371	0.193	0.275	0.048	0.410	0.213	0.250	0.140	0.438
	Qt	veh/sec	199.963	59.072	46.557	174.078	212.238	53.636	42.273	188.462	217.761	55.858	44.024	188.003	227.051	50.427	39.744	198.670
	x<1																	
	A	sec/veh	0.160	0.253	0.200	0.189	0.131	0.273	0.225	0.164	0.128	0.275	0.209	0.174	0.115	0.296	0.258	0.161
	B	sec/veh	0.194	0.739	0.020	0.797	0.122	0.677	0.029	0.724	0.096	1.095	0.010	1.126	0.109	1.125	0.151	1.215
	C	sec/veh	0.315	4.122	0.059	1.729	0.131	4.475	0.148	1.410	0.094	6.312	0.029	2.219	0.093	7.049	1.444	2.128
Average Queue Delay	D	sec/veh	18	33	22	22	15	37	27	20	17	45	28	25	14	46	35	22
	x>x'																	
	Z		-0.542	-0.316	-0.821	-0.304	-0.613	-0.331	-0.788	-0.320	-0.647	-0.254	-0.869	-0.250	-0.630	-0.250	-0.581	-0.239
	X'		0.728	0.687	0.684	0.721	0.735	0.686	0.683	0.728	0.749	0.690	0.686	0.738	0.746	0.687	0.683	0.736
	No	veh	-0.758	-0.017	-0.971	-0.123	-0.863	-0.078	-0.950	-0.224	-0.929	0.315	-1.011	0.073	-0.906	0.359	-0.728	0.158
Average Queue Delay	D	sec/veh	14	26	8	19	12	29	11	17	14	39	13	23	11	40	20	20
Average Delay		**sec/veh**	**18**	**33**	**22**	**22**	**15**	**37**	**27**	**20**	**17**	**39**	**28**	**23**	**14**	**40**	**35**	**20**
Average Queue	N = q(r/2+d)	veh	6.678	4.406	0.754	9.706	5.492	4.331	0.928	9.625	5.993	5.983	0.665	12.869	5.591	5.443	2.084	11.969
Average Queue Length	NL/n	metre	20	26	5	29	16	26	6	29	18	36	4	39	17	33	13	36
Average Queue	N=qr	veh	7.944	4.308	0.889	10.500	6.838	4.248	1.062	10.684	7.564	5.694	0.788	13.868	7.138	5.043	2.222	12.859
Average Queue Length	NL/n	metre	24	26	5	32	21	25	6	32	23	34	5	42	21	30	13	39
Average Queue	N=qr+No	veh	7.186	4.291	-0.082	10.377	5.975	4.170	0.112	10.460	6.635	6.010	-0.223	13.941	6.232	5.401	1.495	13.017
Average Queue Length	NL/n	metre	22	26	0	31	18	25	1	31	20	36	-1	42	19	32	9	39
Average Queue Length		**metre**	**24**	**26**	**5**	**32**	**21**	**26**	**6**	**32**	**23**	**36**	**5**	**42**	**21**	**32**	**13**	**39**
Maximum Queue Length		**metre**	**44**	**58**	**30**	**54**	**39**	**57**	**31**	**55**	**43**	**75**	**31**	**68**	**41**	**71**	**35**	**64**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2031 Reference Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	Causeway Road / Leighton Road / Tung Lo Wan Road / Irving Street (J9)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	A	F	B	C	F	A	A	F	B	C	F	A	A	F	B
			Weekday AM						**Weekday Noon**						**Weekday PM**			
		Unit	Causeway Rd WB - LT	Causeway Rd WB - Ahead	Causeway Rd WB (Tram)	Tung Lo Wan Rd NB	Causeway Rd EB	Causeway Rd EB (Tram)	Causeway Rd WB - LT	Causeway Rd WB - Ahead	Causeway Rd WB (Tram)	Tung Lo Wan Rd NB	Causeway Rd EB	Causeway Rd EB (Tram)	Causeway Rd WB - LT	Causeway Rd WB - Ahead	Causeway Rd WB (Tram)	Tung Lo Wan Rd NB
Cycle time	c	sec	100	100	100	100	100	100	100	100	100	100	100	100	105	105	105	105
Effective green time	g	sec	41	41	62	13	26	62	35	35	56	13	27	56	43	43	64	23
		pcu/hr	270	1270	40	70	380	25	255	1250	35	110	455	35	180	1375	40	70
Design flow	q	veh/sec	0.058	0.271	0.009	0.015	0.081	0.005	0.054	0.267	0.007	0.024	0.097	0.007	0.038	0.294	0.009	0.015
		pcu/hr	1150	5450	1340	1330	2555	1340	1150	5450	1340	1330	2555	1340	1150	5450	1340	1330
Saturation flow	Q	veh/sec	0.246	1.165	0.286	0.284	0.546	0.286	0.246	1.165	0.286	0.284	0.546	0.286	0.246	1.165	0.286	0.284
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	1	3	1	1	2	1	1	3	1	1	2	1	1	3	1	1
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.410	0.410	0.620	0.130	0.260	0.620	0.350	0.350	0.560	0.130	0.270	0.560	0.410	0.410	0.610	0.219
Degree of saturation	x		0.573	0.568	0.048	0.405	0.572	0.030	0.634	0.655	0.047	0.636	0.660	0.047	0.382	0.616	0.049	0.240
	M		5.769	27.137	0.855	1.496	8.120	0.534	5.449	26.709	0.748	2.350	9.722	0.748	4.038	30.849	0.897	1.571
	y		0.235	0.233	0.030	0.053	0.149	0.019	0.222	0.229	0.026	0.083	0.178	0.026	0.157	0.252	0.030	0.053
	Qt	veh/sec	60.449	286.474	106.513	22.167	85.167	106.513	51.603	244.551	96.205	22.167	88.442	96.205	60.379	286.142	104.713	37.350
	x<1																	
	A	sec/veh	0.227	0.227	0.074	0.399	0.322	0.074	0.271	0.274	0.099	0.413	0.324	0.099	0.207	0.233	0.079	0.322
	B	sec/veh	0.384	0.374	0.001	0.138	0.382	0.000	0.548	0.623	0.001	0.556	0.639	0.001	0.118	0.494	0.001	0.038
	C	sec/veh	2.113	0.730	0.000	4.526	2.547	0.000	3.791	1.491	0.000	11.092	3.539	0.000	0.549	0.977	0.000	0.612
Average Queue Delay	D	sec/veh	27	23	8	45	34	7	33	28	10	54	35	10	24	25	8	36
	x>x'																	
	Z		-0.427	-0.432	-0.952	-0.595	-0.428	-0.970	-0.366	-0.345	-0.953	-0.364	-0.340	-0.953	-0.618	-0.384	-0.951	-0.760
	X'		0.687	0.750	0.700	0.676	0.694	0.700	0.684	0.738	0.697	0.676	0.695	0.697	0.688	0.753	0.701	0.681
	No	veh	-0.414	-0.636	-1.048	-0.775	-0.437	-1.057	-0.213	-0.363	-1.047	-0.172	-0.156	-1.047	-0.774	-0.542	-1.050	-0.931
Average Queue Delay	D	sec/veh	19	21	2	19	29	1	25	27	3	37	31	3	14	23	2	19
Average Delay		**sec/veh**	**27**	**23**	**8**	**45**	**34**	**7**	**33**	**28**	**10**	**54**	**35**	**10**	**24**	**25**	**8**	**36**
Average Queue	N = q(r/2+d)	veh	3.276	14.340	0.227	1.318	5.791	0.141	3.591	16.227	0.240	2.288	6.995	0.240	2.124	16.508	0.247	1.148
Average Queue Length	NL/n	metre	20	29	1	8	17	1	22	32	1	14	21	1	13	33	1	7
Average Queue	N=qr	veh	3.404	16.011	0.325	1.301	6.009	0.203	3.542	17.361	0.329	2.045	7.097	0.329	2.385	18.216	0.350	1.226
Average Queue Length	NL/n	metre	20	32	2	8	18	1	21	35	2	12	21	2	14	36	2	7
Average Queue	N=qr+No	veh	2.990	15.374	-0.723	0.526	5.572	-0.854	3.329	16.998	-0.718	1.873	6.941	-0.718	1.611	17.674	-0.699	0.295
Average Queue Length	NL/n	metre	18	31	-4	3	17	-5	20	34	-4	11	21	-4	10	35	-4	2
Average Queue Length		**metre**	**20**	**32**	**2**	**8**	**18**	**1**	**22**	**35**	**2**	**14**	**21**	**2**	**14**	**36**	**2**	**7**
Maximum Queue Length		**metre**	**48**	**50**	**23**	**38**	**35**	**23**	**50**	**53**	**25**	**42**	**41**	**25**	**37**	**55**	**24**	**35**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2031 Reference Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	Causeway Road / Leighton Road / Tung Lo Wan Road / Irving Street (J9)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			C	F	A	A	F	B	C	F
			Weekday PM		**Weekend Noon**					
		Unit	Causeway Rd EB	Causeway Rd EB (Tram)	Causeway Rd WB - LT	Causeway Rd WB - Ahead	Causeway Rd WB (Tram)	Tung Lo Wan Rd NB	Causeway Rd EB	Causeway Rd EB (Tram)
Cycle time	c	sec	105	105	105	105	105	105	105	105
Effective green time	g	sec	29	64	42	42	63	13	30	63
		pcu/hr	440	35	255	1375	40	85	450	30
Design flow	q	veh/sec	0.094	0.007	0.054	0.294	0.009	0.018	0.096	0.006
		pcu/hr	2555	1340	1150	5450	1340	1330	2555	1340
Saturation flow	Q	veh/sec	0.546	0.286	0.246	1.165	0.286	0.284	0.546	0.286
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	1	1	3	1	1	2	1
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.276	0.610	0.400	0.400	0.600	0.124	0.286	0.600
Degree of saturation	x		0.624	0.043	0.554	0.631	0.050	0.516	0.616	0.037
	M		9.872	0.785	5.721	30.849	0.897	1.907	10.096	0.673
	y		0.172	0.026	0.222	0.252	0.030	0.064	0.176	0.022
	Qt	veh/sec	90.470	104.713	58.974	279.487	103.077	21.111	93.590	103.077
	x<1									
	A	sec/veh	0.316	0.078	0.231	0.241	0.082	0.410	0.310	0.082
	B	sec/veh	0.516	0.001	0.345	0.539	0.001	0.275	0.495	0.001
	C	sec/veh	3.003	0.000	2.015	1.098	0.000	7.853	2.782	0.000
Average Queue Delay	D	sec/veh	36	8	29	26	9	50	35	9
	x>x'									
	Z		-0.376	-0.957	-0.446	-0.369	-0.950	-0.484	-0.384	-0.963
	X'		0.696	0.701	0.687	0.752	0.700	0.676	0.697	0.700
	No	veh	-0.295	-1.053	-0.464	-0.495	-1.049	-0.557	-0.322	-1.055
Average Queue Delay	D	sec/veh	31	2	20	24	3	27	30	2
Average Delay		**sec/veh**	**36**	**8**	**29**	**26**	**9**	**50**	**35**	**9**
Average Queue	N = q(r/2+d)	veh	6.931	0.216	3.275	16.897	0.255	1.750	6.960	0.190
Average Queue Length	NL/n	metre	21	1	20	34	2	11	21	1
Average Queue	N=qr	veh	7.145	0.307	3.433	18.510	0.359	1.671	7.212	0.269
Average Queue Length	NL/n	metre	21	2	21	37	2	10	22	2
Average Queue	N=qr+No	veh	6.850	-0.746	2.969	18.014	-0.690	1.114	6.890	-0.786
Average Queue Length	NL/n	metre	21	-4	18	36	-4	7	21	-5
Average Queue Length		**metre**	**21**	**2**	**21**	**37**	**2**	**11**	**22**	**2**
Maximum Queue Length		**metre**	**41**	**59**	**63**	**52**	**67**	**41**	**37**	**63**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2031 Reference Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	Causeway Road / Moreton Terrace (J10)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			C	D	E	E	A	B	C	D	E	E	A	B	C	D	E	E
			Weekday AM						Weekday Noon						Weekday PM			
		Unit	Causeway Rd WB	Causeway Rd WB (Tram)	Moreton Terrace NB-LT	Moreton Terrace NB-RT	Causeway Rd EB	Causeway Rd EB (Tram)	Causeway Rd WB	Causeway Rd WB (Tram)	Moreton Terrace NB-LT	Moreton Terrace NB-RT	Causeway Rd EB	Causeway Rd EB (Tram)	Causeway Rd WB	Causeway Rd WB (Tram)	Moreton Terrace NB-LT	Moreton Terrace NB-RT
Cycle time	c	sec	100	100	100	100	100	100	95	95	95	95	95	95	105	105	105	105
Effective green time	g	sec	66	64	24	24	66	64	60	58	25	25	60	58	71	69	24	24
		pcu/hr	1000	40	410	400	1110	95	870	35	540	425	1275	95	945	40	505	400
Design flow	q	veh/sec	0.214	0.009	0.088	0.085	0.237	0.020	0.186	0.007	0.115	0.091	0.272	0.020	0.202	0.009	0.108	0.085
		pcu/hr	2950	1915	3075	1915	4070	1915	2950	1915	3075	1915	4070	1915	2950	1915	3075	1915
Saturation flow	Q	veh/sec	0.630	0.409	0.657	0.409	0.870	0.409	0.630	0.409	0.657	0.409	0.870	0.409	0.630	0.409	0.657	0.409
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.660	0.640	0.240	0.240	0.660	0.640	0.632	0.611	0.263	0.263	0.632	0.611	0.676	0.657	0.229	0.229
Degree of saturation	x		0.514	0.033	0.556	0.870	0.413	0.078	0.467	0.030	0.667	0.843	0.496	0.081	0.474	0.032	0.718	0.914
	M		21.368	0.855	8.761	8.547	23.718	2.030	17.660	0.710	10.962	8.627	25.881	1.928	21.202	0.897	11.330	8.974
	y		0.339	0.021	0.133	0.209	0.273	0.050	0.295	0.018	0.176	0.222	0.313	0.050	0.320	0.021	0.164	0.209
	Qt	veh/sec	249.615	157.128	94.615	58.923	344.385	157.128	238.866	149.892	103.745	64.609	329.555	149.892	255.739	161.337	90.110	56.117
	x<1																	
	A	sec/veh	0.087	0.066	0.333	0.365	0.079	0.068	0.096	0.077	0.329	0.349	0.099	0.080	0.077	0.060	0.356	0.376
	B	sec/veh	0.271	0.001	0.347	2.921	0.146	0.003	0.205	0.000	0.669	2.270	0.244	0.004	0.213	0.001	0.917	4.846
	C	sec/veh	0.247	0.000	2.332	9.970	0.073	0.000	0.179	0.000	3.273	8.344	0.190	0.000	0.160	0.000	4.787	11.907
Average Queue Delay	D	sec/veh	10	7	35	61	8	7	10	7	34	50	10	8	9	6	41	84
	x>x'																	
	Z		-0.486	-0.967	-0.444	-0.130	-0.587	-0.922	-0.533	-0.970	-0.333	-0.157	-0.504	-0.919	-0.526	-0.968	-0.282	-0.086
	X'		0.739	0.714	0.696	0.686	0.766	0.714	0.733	0.710	0.697	0.687	0.757	0.710	0.745	0.717	0.696	0.686
	No	veh	-0.704	-1.071	-0.486	1.522	-0.909	-1.050	-0.758	-1.067	-0.137	1.208	-0.784	-1.042	-0.781	-1.076	0.117	2.113
Average Queue Delay	D	sec/veh	7	3	30	52	6	3	7	3	30	44	8	3	6	2	38	62
Average Delay		**sec/veh**	**10**	**7**	**35**	**52**	**8**	**7**	**10**	**7**	**34**	**44**	**10**	**8**	**9**	**6**	**38**	**62**
Average Queue	N = q(r/2+d)	veh	5.719	0.211	6.391	8.436	6.045	0.507	5.124	0.194	7.940	7.701	7.518	0.533	5.249	0.208	8.804	10.665
Average Queue Length	NL/n	metre	17	1	19	51	18	3	15	1	24	46	23	3	16	1	26	64
Average Queue	N=qr	veh	7.265	0.308	6.658	6.496	8.064	0.731	6.506	0.277	8.077	6.357	9.535	0.751	6.865	0.308	8.740	6.923
Average Queue Length	NL/n	metre	22	2	20	39	24	4	20	2	24	38	29	5	21	2	26	42
Average Queue	N=qr+No	veh	6.561	-0.763	6.172	8.017	7.155	-0.319	5.749	-0.790	7.940	7.565	8.751	-0.290	6.084	-0.769	8.858	9.036
Average Queue Length	NL/n	metre	20	-5	19	48	21	-2	17	-5	24	45	26	-2	18	-5	27	54
Average Queue Length		**metre**	**22**	**2**	**20**	**48**	**24**	**4**	**20**	**2**	**24**	**45**	**29**	**5**	**21**	**2**	**27**	**54**
Maximum Queue Length		**metre**	**48**	**25**	**35**	**71**	**51**	**25**	**42**	**25**	**43**	**76**	**54**	**25**	**44**	**24**	**45**	**82**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2031 Reference Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	Causeway Road / Moreton Terrace (J10)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	B	C	D	E	E	A	B
			Weekday PM		**Weekend Noon**					
		Unit	Causeway Rd EB	Causeway Rd EB (Tram)	Causeway Rd WB	Causeway Rd WB (Tram)	Moreton Terrace NB-LT	Moreton Terrace NB-RT	Causeway Rd EB	Causeway Rd EB (Tram)
Cycle time	c	sec	105	105	105	105	105	105	105	105
Effective green time	g	sec	71	69	69	67	26	26	69	67
		pcu/hr	1280	100	1010	40	495	405	1240	95
Design flow	q	veh/sec	0.274	0.021	0.216	0.009	0.106	0.087	0.265	0.020
		pcu/hr	4070	1915	2950	1915	3075	1915	4070	1915
Saturation flow	Q	veh/sec	0.870	0.409	0.630	0.409	0.657	0.409	0.870	0.409
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	1	2	1	2	1	2	1
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.676	0.657	0.657	0.638	0.248	0.248	0.657	0.638
Degree of saturation	x		0.465	0.079	0.521	0.033	0.650	0.854	0.464	0.078
	M		28.718	2.244	22.660	0.897	11.106	9.087	27.821	2.131
	y		0.314	0.052	0.342	0.021	0.161	0.211	0.305	0.050
	Qt	veh/sec	352.833	161.337	248.535	156.661	97.619	60.794	342.894	156.661
	x<1									
	A	sec/veh	0.076	0.062	0.089	0.067	0.337	0.359	0.085	0.069
	B	sec/veh	0.202	0.003	0.283	0.001	0.604	2.500	0.200	0.003
	C	sec/veh	0.118	0.000	0.272	0.000	3.400	9.405	0.128	0.000
Average Queue Delay	D	sec/veh	9	7	10	7	38	57	10	7
	x>x'									
	Z		-0.535	-0.921	-0.479	-0.967	-0.350	-0.146	-0.536	-0.922
	X'		0.773	0.717	0.742	0.716	0.698	0.688	0.770	0.716
	No	veh	-0.871	-1.054	-0.702	-1.074	-0.210	1.318	-0.865	-1.053
Average Queue Delay	D	sec/veh	7	3	8	3	34	51	7	3
Average Delay		**sec/veh**	**9**	**7**	**10**	**7**	**38**	**51**	**10**	**7**
Average Queue	N = q(r/2+d)	veh	7.016	0.527	6.135	0.223	8.169	8.366	7.287	0.536
Average Queue Length	NL/n	metre	21	3	18	1	25	50	22	3
Average Queue	N=qr	veh	9.299	0.769	7.769	0.325	8.356	6.837	9.538	0.771
Average Queue Length	NL/n	metre	28	5	23	2	25	41	29	5
Average Queue	N=qr+No	veh	8.428	-0.285	7.067	-0.750	8.146	8.155	8.674	-0.282
Average Queue Length	NL/n	metre	25	-2	21	-4	24	49	26	-2
Average Queue Length		**metre**	**28**	**5**	**23**	**2**	**25**	**49**	**29**	**5**
Maximum Queue Length		**metre**	**54**	**44**	**63**	**52**	**67**	**67**	**41**	**37**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2031 Reference Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	Pennington Street / Jardine's Bazaar / Irving Street (J11)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	B	E	F	A	B	E	F	A	B	E	F	A	B	E	F
			Weekday AM				**Weekday Noon**				**Weekday PM**				**Weekend Noon**			
		Unit	Irving St WB	Pennington St NB 1st stop	Pennington St NB 2nd stop - LT	Pennington St NB 2nd stop - RT	Irving St WB	Pennington St NB 1st stop	Pennington St NB 2nd stop - LT	Pennington St NB 2nd stop - RT	Irving St WB	Pennington St NB 1st stop	Pennington St NB 2nd stop - LT	Pennington St NB 2nd stop - RT	Irving St WB	Pennington St NB 1st stop	Pennington St NB 2nd stop - LT	Pennington St NB 2nd stop - RT
Cycle time	c	sec	100	100	100	100	120	120	120	120	100	100	100	100	100	100	100	100
Effective green time	g	sec	30	56	80	78	39	67	100	98	32	54	80	78	33	53	80	78
		pcu/hr	435	585	435	515	505	660	470	600	555	670	525	595	530	635	475	595
Design flow	q	veh/sec	0.093	0.125	0.093	0.110	0.108	0.141	0.100	0.128	0.119	0.143	0.112	0.127	0.113	0.136	0.101	0.127
		pcu/hr	6350	3850	1840	3425	6365	3825	1840	3425	6355	3810	1840	3425	6365	3820	1840	3425
Saturation flow	Q	veh/sec	1.357	0.823	0.393	0.732	1.360	0.817	0.393	0.732	1.358	0.814	0.393	0.732	1.360	0.816	0.393	0.732
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	4	2	1	2	4	2	1	2	4	2	1	2	4	2	1	2
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.300	0.560	0.800	0.780	0.325	0.558	0.833	0.817	0.320	0.540	0.800	0.780	0.330	0.530	0.800	0.780
Degree of saturation	x		0.228	0.271	0.296	0.193	0.244	0.309	0.307	0.215	0.273	0.326	0.357	0.223	0.252	0.314	0.323	0.223
	M		9.295	12.500	9.295	11.004	12.949	16.923	12.051	15.385	11.859	14.316	11.218	12.714	11.325	13.568	10.150	12.714
	y		0.069	0.152	0.236	0.150	0.079	0.173	0.255	0.175	0.087	0.176	0.285	0.174	0.083	0.166	0.258	0.174
	Qt	veh/sec	244.231	276.410	188.718	342.500	265.208	273.798	196.581	358.600	260.718	263.769	188.718	342.500	269.288	259.564	188.718	342.500
	x<1																	
	A	sec/veh	0.263	0.114	0.026	0.028	0.247	0.118	0.019	0.020	0.253	0.128	0.028	0.029	0.245	0.132	0.027	0.029
	B	sec/veh	0.034	0.051	0.062	0.023	0.039	0.069	0.068	0.029	0.051	0.079	0.099	0.032	0.043	0.072	0.077	0.032
	C	sec/veh	0.084	0.023	0.010	0.001	0.085	0.043	0.010	0.001	0.117	0.057	0.027	0.002	0.085	0.052	0.016	0.002
Average Queue Delay	D	sec/veh	27	12	3	3	30	15	3	3	26	13	4	3	25	14	3	3
	x>x'																	
	Z		-0.772	-0.729	-0.704	-0.807	-0.756	-0.691	-0.693	-0.785	-0.727	-0.674	-0.643	-0.777	-0.748	-0.686	-0.677	-0.777
	X'		0.738	0.747	0.722	0.765	0.758	0.761	0.736	0.790	0.742	0.743	0.722	0.765	0.745	0.742	0.722	0.765
	No	veh	-1.001	-0.988	-0.922	-1.072	-1.031	-0.992	-0.941	-1.107	-0.979	-0.939	-0.865	-1.055	-0.998	-0.946	-0.898	-1.055
Average Queue Delay	D	sec/veh	24	9	0	1	27	12	-1	1	23	11	0	1	22	11	0	1
Average Delay		**sec/veh**	**27**	**12**	**3**	**3**	**30**	**15**	**3**	**3**	**26**	**13**	**4**	**3**	**25**	**14**	**3**	**3**
Average Queue	N = q(r/2+d)	veh	5.724	4.224	1.234	1.547	7.605	5.795	1.296	1.753	7.074	5.201	1.532	1.803	6.600	5.051	1.364	1.803
Average Queue Length	NL/n	metre	9	13	7	5	11	17	8	5	11	16	9	5	10	15	8	5
Average Queue	N=qr	veh	6.506	5.500	1.859	2.421	8.740	7.474	2.009	2.821	8.064	6.585	2.244	2.797	7.588	6.377	2.030	2.797
Average Queue Length	NL/n	metre	10	17	11	7	13	22	12	8	12	20	13	8	11	19	12	8
Average Queue	N=qr+No	veh	5.505	4.512	0.937	1.349	7.709	6.482	1.068	1.714	7.085	5.647	1.378	1.742	6.590	5.431	1.132	1.742
Average Queue Length	NL/n	metre	8	14	6	4	12	19	6	5	11	17	8	5	10	16	7	5
Average Queue Length		**metre**	**10**	**17**	**11**	**7**	**13**	**22**	**12**	**8**	**12**	**20**	**13**	**8**	**11**	**19**	**12**	**8**
Maximum Queue Length		**metre**	**19**	**34**	**34**	**20**	**24**	**42**	**36**	**22**	**22**	**38**	**38**	**22**	**21**	**37**	**36**	**22**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2031 Reference Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	Link Road / Broadwood Road (J12)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	B	E	C	A	B	E	C	A	B	E	C	A	B	E	C
			Weekday AM				**Weekday Noon**				**Weekday PM**				**Weekend Noon**			
		Unit	Link Rd SB	Broadwood Road (E) NB - Ahead & LT	Broadwood Road (E) NB - RT	Broadwood Road (W) NB	Link Rd SB	Broadwood Road (E) NB - Ahead & LT	Broadwood Road (E) NB - RT	Broadwood Road (W) NB	Link Rd SB	Broadwood Road (E) NB - Ahead & LT	Broadwood Road (E) NB - RT	Broadwood Road (W) NB	Link Rd SB	Broadwood Road (E) NB - Ahead & LT	Broadwood Road (E) NB - RT	Broadwood Road (W) NB
Cycle time	c	sec	140	140	140	140	110	110	110	110	135	135	135	135	110	110	110	110
Effective green time	g	sec	38	58	61	54	28	43	46	39	36	62	65	45	28	46	49	36
		pcu/hr	385	345	185	510	335	380	170	440	370	380	245	440	355	370	220	445
Design flow	q	veh/sec	0.082	0.074	0.040	0.109	0.072	0.081	0.036	0.094	0.079	0.081	0.052	0.094	0.076	0.079	0.047	0.095
		pcu/hr	1940	1890	1730	1840	1945	1885	1730	1835	1940	1895	1730	1860	1945	1885	1730	1845
Saturation flow	Q	veh/sec	0.415	0.404	0.370	0.393	0.416	0.403	0.370	0.392	0.415	0.405	0.370	0.397	0.416	0.403	0.370	0.394
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.271	0.414	0.436	0.386	0.255	0.391	0.418	0.355	0.267	0.459	0.481	0.333	0.255	0.418	0.445	0.327
Degree of saturation	x		0.731	0.441	0.245	0.719	0.677	0.516	0.235	0.676	0.715	0.437	0.294	0.710	0.717	0.469	0.285	0.737
	M		11.517	10.321	5.534	15.256	7.874	8.932	3.996	10.342	10.673	10.962	7.067	12.692	8.344	8.697	5.171	10.459
	y		0.198	0.183	0.107	0.277	0.172	0.202	0.098	0.240	0.191	0.201	0.142	0.237	0.183	0.196	0.127	0.241
	Qt	veh/sec	67.509	100.385	96.639	90.989	63.473	94.470	92.751	83.409	66.325	111.576	106.790	79.487	63.473	101.061	98.800	77.413
	x<1																	
	A	sec/veh	0.331	0.210	0.178	0.261	0.336	0.232	0.188	0.274	0.332	0.183	0.157	0.291	0.340	0.211	0.176	0.298
	B	sec/veh	0.994	0.174	0.040	0.918	0.708	0.275	0.036	0.707	0.898	0.169	0.061	0.867	0.909	0.208	0.057	1.032
	C	sec/veh	6.236	0.682	0.082	4.039	5.031	1.211	0.076	3.444	5.922	0.506	0.108	4.586	5.852	0.766	0.119	4.928
Average Queue Delay	D	sec/veh	52	31	26	41	42	28	22	34	50	26	22	44	44	25	20	39
	x>x'																	
	Z		-0.269	-0.559	-0.755	-0.281	-0.323	-0.484	-0.765	-0.324	-0.285	-0.563	-0.706	-0.290	-0.283	-0.531	-0.715	-0.263
	X'		0.696	0.709	0.708	0.705	0.689	0.699	0.698	0.695	0.695	0.712	0.710	0.700	0.689	0.701	0.700	0.694
	No	veh	0.191	-0.739	-0.943	0.070	-0.059	-0.582	-0.933	-0.089	0.106	-0.751	-0.906	0.051	0.144	-0.671	-0.893	0.241
Average Queue Delay	D	sec/veh	48	25	19	37	36	22	15	29	46	21	16	40	39	19	14	35
Average Delay		**sec/veh**	**48**	**31**	**26**	**37**	**42**	**28**	**22**	**34**	**46**	**26**	**22**	**40**	**39**	**25**	**20**	**35**
Average Queue	N = q(r/2+d)	veh	8.490	5.311	2.585	9.146	5.926	4.971	1.946	6.554	7.890	5.096	2.995	8.361	6.411	4.508	2.396	7.201
Average Queue Length	NL/n	metre	51	32	16	55	36	30	12	39	47	31	18	50	38	27	14	43
Average Queue	N=qr	veh	8.391	6.045	3.123	9.372	5.870	5.440	2.325	6.675	7.827	5.927	3.665	8.462	6.220	5.060	2.868	7.036
Average Queue Length	NL/n	metre	50	36	19	56	35	33	14	40	47	36	22	51	37	30	17	42
Average Queue	N=qr+No	veh	8.582	5.306	2.180	9.442	5.810	4.858	1.392	6.586	7.933	5.177	2.759	8.512	6.364	4.389	1.974	7.278
Average Queue Length	NL/n	metre	51	32	13	57	35	29	8	40	48	31	17	51	38	26	12	44
Average Queue Length		**metre**	**51**	**36**	**19**	**57**	**36**	**33**	**14**	**40**	**48**	**36**	**22**	**51**	**38**	**30**	**17**	**44**
Maximum Queue Length		**metre**	**94**	**72**	**43**	**101**	**71**	**66**	**36**	**78**	**89**	**71**	**49**	**93**	**76**	**63**	**40**	**84**

*Note: SG = Signal Group

Queue Length Analysis

MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2031 Reference Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	Wong Nai Chung Road / Sports Road (J14)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	B	A	B	A	B	A	B
			Weekday AM		**Weekday Noon**		**Weekday PM**		**Weekend Noon**	
		Unit	Sports Rd EB	Wong Nai Chung Rd SB	Sports Rd EB	Wong Nai Chung Rd SB	Sports Rd EB	Wong Nai Chung Rd SB	Sports Rd EB	Wong Nai Chung Rd SB
Cycle time	c	sec	90	90	75	75	90	90	75	75
Effective green time	g	sec	58	22	45	20	58	22	46	19
		pcu/hr	725	430	755	540	795	485	815	550
Design flow	q	veh/sec	0.155	0.092	0.161	0.115	0.170	0.104	0.174	0.118
		pcu/hr	3655	5885	3655	5885	3655	5885	3655	5885
Saturation flow	Q	veh/sec	0.781	1.257	0.781	1.257	0.781	1.257	0.781	1.257
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	3	2	3	2	3	2	3
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.644	0.244	0.600	0.267	0.644	0.244	0.613	0.253
Degree of saturation	x		0.308	0.299	0.344	0.344	0.338	0.337	0.364	0.369
	M		13.942	8.269	12.099	8.654	15.288	9.327	13.061	8.814
	y		0.198	0.073	0.207	0.092	0.218	0.082	0.223	0.093
	Qt	veh/sec	301.980	184.430	281.154	201.197	301.980	184.430	287.402	191.137
	x<1									
	A	sec/veh	0.079	0.308	0.101	0.296	0.081	0.311	0.096	0.307
	B	sec/veh	0.068	0.064	0.090	0.090	0.086	0.086	0.104	0.108
	C	sec/veh	0.021	0.292	0.045	0.330	0.033	0.397	0.052	0.440
Average Queue Delay	D	sec/veh	8	28	8	23	8	28	8	24
	x>x'									
	Z		-0.692	-0.701	-0.656	-0.656	-0.662	-0.663	-0.636	-0.631
	X'		0.745	0.716	0.729	0.712	0.745	0.716	0.730	0.710
	No	veh	-0.957	-0.905	-0.888	-0.852	-0.932	-0.870	-0.872	-0.821
Average Queue Delay	D	sec/veh	5	25	6	20	5	25	5	20
Average Delay		**sec/veh**	**8**	**28**	**8**	**23**	**8**	**28**	**8**	**24**
Average Queue	N = q(r/2+d)	veh	3.643	5.707	3.723	5.787	4.033	6.469	3.876	6.057
Average Queue Length	NL/n	metre	11	11	11	12	12	13	12	12
Average Queue	N=qr	veh	4.957	6.248	4.840	6.346	5.436	7.047	5.050	6.581
Average Queue Length	NL/n	metre	15	12	15	13	16	14	15	13
Average Queue	N=qr+No	veh	4.000	5.343	3.952	5.494	4.503	6.177	4.179	5.760
Average Queue Length	NL/n	metre	12	11	12	11	14	12	13	12
Average Queue Length		**metre**	**15**	**12**	**15**	**13**	**16**	**14**	**15**	**13**
Maximum Queue Length		**metre**	**32**	**19**	**39**	**20**	**38**	**21**	**41**	**20**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2031 Reference Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	Leigthon Road / Wong Nai Chung Road (J15)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	B	A	A	A	B	A	A	A	B	A	A	A	B	A	A
			Weekday AM				**Weekday Noon**				**Weekday PM**				**Weekend Noon**			
		Unit	Leighton Rd WB - LT	Leighton Rd WB (Tram)	Leighton Rd WB - Ahead	Leighton Rd EB	Leighton Rd WB - LT	Leighton Rd WB (Tram)	Leighton Rd WB - Ahead	Leighton Rd EB	Leighton Rd WB - LT	Leighton Rd WB (Tram)	Leighton Rd WB - Ahead	Leighton Rd EB	Leighton Rd WB - LT	Leighton Rd WB (Tram)	Leighton Rd WB - Ahead	Leighton Rd EB
Cycle time	c	sec	130	130	130	130	120	120	120	120	120	120	120	120	120	120	120	120
Effective green time	g	sec	91	27	91	91	79	29	79	79	77	31	77	77	78	30	78	78
		pcu/hr	375	50	870	680	470	60	850	800	400	65	850	620	500	60	830	720
Design flow	q	veh/sec	0.080	0.011	0.186	0.145	0.100	0.013	0.182	0.171	0.085	0.014	0.182	0.132	0.107	0.013	0.177	0.154
		pcu/hr	2225	370	1940	2455	2225	370	1940	2455	2225	370	1940	2455	2225	370	1940	2455
Saturation flow	Q	veh/sec	0.475	0.079	0.415	0.525	0.475	0.079	0.415	0.525	0.475	0.079	0.415	0.525	0.475	0.079	0.415	0.525
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	1	2	3	2	1	2	3	2	1	2	3	2	1	2	3
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.700	0.208	0.700	0.700	0.658	0.242	0.658	0.658	0.642	0.258	0.642	0.642	0.650	0.250	0.650	0.650
Degree of saturation	x		0.241	0.651	0.641	0.396	0.321	0.671	0.666	0.495	0.280	0.680	0.683	0.394	0.346	0.649	0.658	0.451
	M		10.417	1.389	24.167	18.889	12.051	1.538	21.795	20.513	10.256	1.667	21.795	15.897	12.821	1.538	21.282	18.462
	y		0.169	0.135	0.448	0.277	0.211	0.162	0.438	0.326	0.180	0.176	0.438	0.253	0.225	0.162	0.428	0.293
	Qt	veh/sec	199.679	9.852	174.103	220.321	187.794	11.464	163.739	207.206	183.040	12.254	159.594	201.960	185.417	11.859	161.667	204.583
	x<1																	
	A	sec/veh	0.054	0.363	0.082	0.062	0.074	0.343	0.104	0.087	0.078	0.334	0.114	0.086	0.079	0.336	0.107	0.087
	B	sec/veh	0.038	0.606	0.571	0.130	0.076	0.684	0.662	0.243	0.055	0.723	0.735	0.128	0.091	0.599	0.634	0.185
	C	sec/veh	0.007	18.391	0.873	0.073	0.036	16.273	1.159	0.252	0.022	15.594	1.370	0.096	0.054	14.335	1.130	0.171
Average Queue Delay	D	sec/veh	8	86	13	9	10	78	15	12	10	76	16	11	10	73	15	11
	x>x'																	
	Z		-0.759	-0.349	-0.359	-0.604	-0.679	-0.329	-0.334	-0.505	-0.720	-0.320	-0.317	-0.606	-0.654	-0.351	-0.342	-0.549
	X'		0.742	0.674	0.733	0.750	0.733	0.674	0.725	0.739	0.731	0.674	0.723	0.737	0.732	0.674	0.724	0.738
	No	veh	-1.004	-0.105	-0.390	-0.890	-0.923	-0.013	-0.267	-0.735	-0.953	0.028	-0.192	-0.862	-0.898	-0.114	-0.291	-0.796
Average Queue Delay	D	sec/veh	4	41	9	6	6	41	11	8	6	41	13	8	7	34	12	8
Average Delay		**sec/veh**	**8**	**86**	**13**	**9**	**10**	**78**	**15**	**12**	**10**	**41**	**16**	**11**	**10**	**73**	**15**	**11**
Average Queue	N = q(r/2+d)	veh	2.164	1.464	6.005	4.128	3.023	1.587	6.439	5.480	2.693	1.680	6.881	4.329	3.342	1.508	6.436	4.990
Average Queue Length	NL/n	metre	6	9	18	8	9	10	19	11	8	10	21	9	10	9	19	10
Average Queue	N=qr	veh	3.125	1.100	7.250	5.667	4.118	1.167	7.447	7.009	3.675	1.236	7.810	5.697	4.487	1.154	7.449	6.462
Average Queue Length	NL/n	metre	9	7	22	11	12	7	22	14	11	7	23	11	13	7	22	13
Average Queue	N=qr+No	veh	2.121	0.996	6.860	4.776	3.195	1.154	7.179	6.273	2.722	1.264	7.617	4.834	3.589	1.040	7.157	5.666
Average Queue Length	NL/n	metre	6	6	21	10	10	7	22	13	8	8	23	10	11	6	21	11
Average Queue Length		**metre**	**9**	**9**	**22**	**11**	**12**	**10**	**22**	**14**	**11**	**8**	**23**	**11**	**13**	**9**	**22**	**13**
Maximum Queue Length		**metre**	**23**	**40**	**41**	**23**	**28**	**40**	**42**	**27**	**26**	**40**	**44**	**23**	**29**	**39**	**42**	**25**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA **MVA Hong Kong Ltd.**

Job No.	CHK50603110	Description	2031 Reference Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	Tung Lo Wan Road / Eastern Hospital Road (J16)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	B	A	B	A	B	A	B
			Weekday AM		**Weekday Noon**		**Weekday PM**		**Weekend Noon**	
		Unit	Tung Lo Wan Rd SB	Ka Ning Path NB	Tung Lo Wan Rd SB	Ka Ning Path NB	Tung Lo Wan Rd SB	Ka Ning Path NB	Tung Lo Wan Rd SB	Ka Ning Path NB
Cycle time	c	sec	100	100	95	95	105	105	105	105
Effective green time	g	sec	31	35	29	32	34	37	37	34
		pcu/hr	555	325	555	325	490	290	560	285
Design flow	q	veh/sec	0.119	0.069	0.119	0.069	0.105	0.062	0.120	0.061
		pcu/hr	3310	1760	3295	1790	3290	1760	3290	1780
Saturation flow	Q	veh/sec	0.707	0.376	0.704	0.382	0.703	0.376	0.703	0.380
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	1	2	1	2	1	2	1
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.310	0.350	0.305	0.337	0.324	0.352	0.352	0.324
Degree of saturation	x		0.541	0.528	0.552	0.539	0.460	0.468	0.483	0.494
	M		11.859	6.944	11.266	6.597	10.994	6.506	12.564	6.394
	y		0.168	0.185	0.168	0.182	0.149	0.165	0.170	0.160
	Qt	veh/sec	131.551	78.974	128.954	77.301	136.581	79.512	148.632	73.895
	x<1									
	A	sec/veh	0.286	0.259	0.290	0.269	0.269	0.251	0.253	0.272
	B	sec/veh	0.319	0.295	0.340	0.315	0.196	0.205	0.226	0.242
	C	sec/veh	1.411	1.624	1.509	1.801	0.831	1.122	0.818	1.549
Average Queue Delay	D	sec/veh	30	29	29	28	29	29	28	31
	x>x'									
	Z		-0.459	-0.472	-0.448	-0.461	-0.540	-0.532	-0.517	-0.506
	X'		0.707	0.692	0.704	0.690	0.710	0.693	0.713	0.692
	No	veh	-0.551	-0.537	-0.519	-0.507	-0.708	-0.656	-0.680	-0.604
Average Queue Delay	D	sec/veh	26	22	25	22	25	21	24	24
Average Delay		**sec/veh**	**30**	**29**	**29**	**28**	**29**	**29**	**28**	**31**
Average Queue	N = q(r/2+d)	veh	7.634	4.238	7.344	4.150	6.779	3.876	7.371	4.050
Average Queue Length	NL/n	metre	23	25	22	25	20	23	22	24
Average Queue	N=qr	veh	8.183	4.514	7.827	4.375	7.434	4.214	8.137	4.324
Average Queue Length	NL/n	metre	25	27	23	26	22	25	24	26
Average Queue	N=qr+No	veh	7.631	3.977	7.308	3.868	6.726	3.558	7.456	3.719
Average Queue Length	NL/n	metre	23	24	22	23	20	21	22	22
Average Queue Length		**metre**	**25**	**27**	**23**	**26**	**22**	**25**	**24**	**26**
Maximum Queue Length		**metre**	**45**	**56**	**44**	**54**	**42**	**52**	**45**	**52**

*Note: SG = Signal Group

Queue Length Analysis

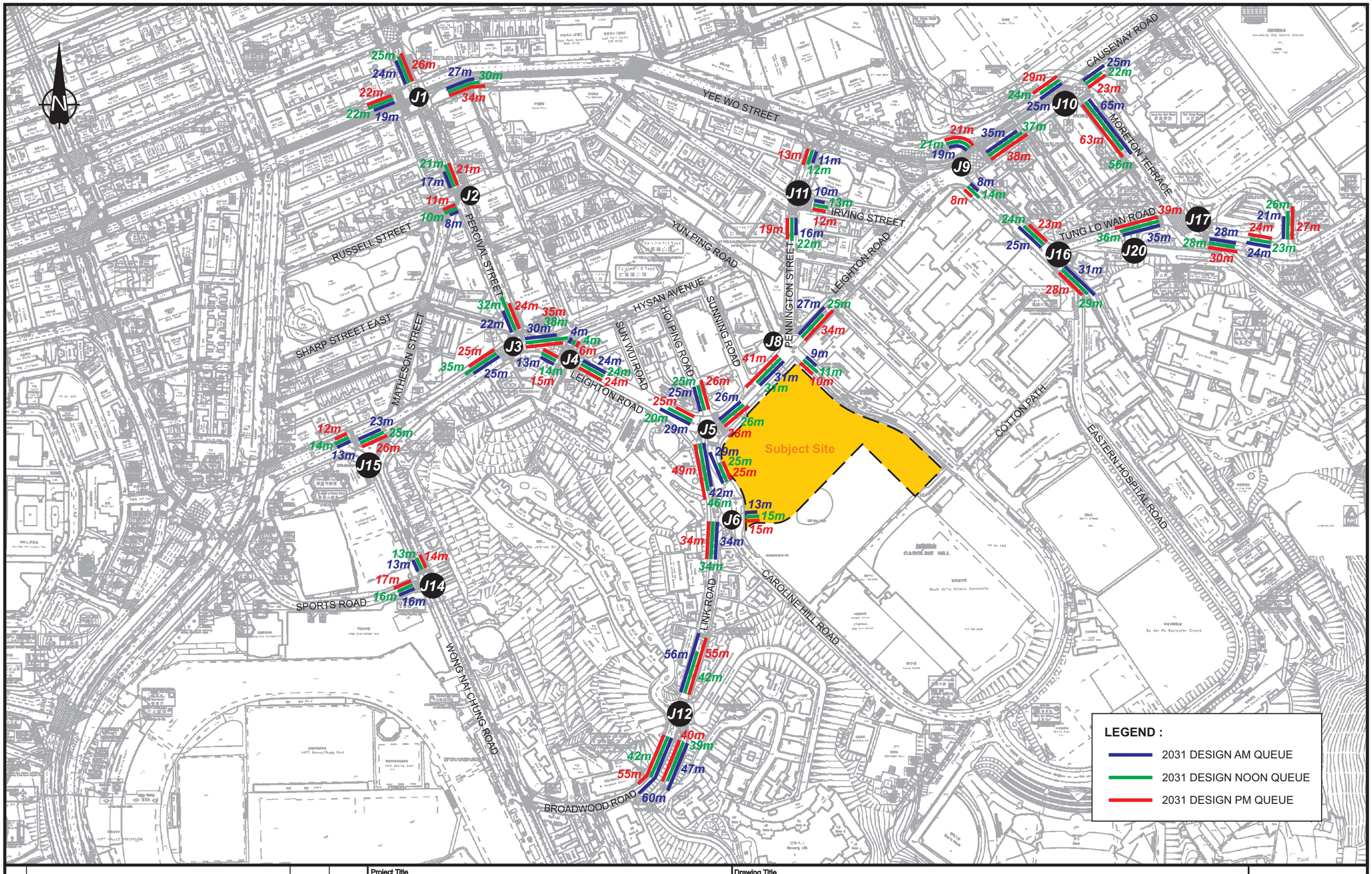
SYSTRA MVA **MVA Hong Kong Ltd.**

Job No.	CHK50603110	Description	2031 Reference Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	Tung Lo Wan Road / Moreton Terrace (J17)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	E	E	B	A	E	E	B	A	E	E	B	A	E	E	B
			Weekday AM				**Weekday Noon**				**Weekday PM**				**Weekend Noon**			
		Unit	Tung Lo Wan Rd EB (Section	Tung Lo Wan Rd WB (Section	Tung Lo Wan Rd EB (West of Tung Lo	Tung Lo Wan Drive SB	Tung Lo Wan Rd EB (Section	Tung Lo Wan Rd WB (Section	Tung Lo Wan Rd EB (West of Tung Lo	Tung Lo Wan Drive SB	Tung Lo Wan Rd EB (Section	Tung Lo Wan Rd WB (Section	Tung Lo Wan Rd EB (West of Tung Lo	Tung Lo Wan Drive SB	Tung Lo Wan Rd EB (Section	Tung Lo Wan Rd WB (Section	Tung Lo Wan Rd EB (West of Tung Lo	Tung Lo Wan Drive SB
Cycle time	c	sec	100	100	100	100	95	95	95	95	105	105	105	105	105	105	105	105
Effective green time	g	sec	43	45	45	43	40	43	43	40	46	47	47	46	48	45	45	48
		pcu/hr	905	800	340	290	930	910	365	355	920	860	345	330	775	695	240	240
Design flow	q	veh/sec	0.193	0.171	0.073	0.062	0.199	0.194	0.078	0.076	0.197	0.184	0.074	0.071	0.166	0.149	0.051	0.051
		pcu/hr	3520	3520	1935	1680	3505	3520	1945	1675	3510	3520	1945	1675	3505	3590	1960	1690
Saturation flow	Q	veh/sec	0.752	0.752	0.413	0.359	0.749	0.752	0.416	0.358	0.750	0.752	0.416	0.358	0.749	0.767	0.419	0.361
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	2	1	1	2	2	1	1	2	2	1	1	2	2	1	1
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.430	0.450	0.450	0.430	0.421	0.453	0.453	0.421	0.438	0.448	0.448	0.438	0.457	0.429	0.429	0.457
Degree of saturation	x		0.598	0.505	0.390	0.401	0.630	0.571	0.415	0.503	0.598	0.546	0.396	0.450	0.484	0.452	0.286	0.311
	M		19.338	17.094	7.265	6.197	18.878	18.472	7.409	7.206	20.641	19.295	7.740	7.404	17.388	15.593	5.385	5.385
	y		0.257	0.227	0.176	0.173	0.265	0.259	0.188	0.212	0.262	0.244	0.177	0.197	0.221	0.194	0.122	0.142
	Qt	veh/sec	194.051	203.077	111.635	92.615	189.204	204.265	112.868	90.418	197.143	202.002	111.618	94.078	205.421	197.253	107.692	99.048
	x<1																	
	A	sec/veh	0.219	0.196	0.183	0.196	0.228	0.202	0.184	0.213	0.214	0.202	0.185	0.197	0.189	0.202	0.186	0.172
	B	sec/veh	0.445	0.258	0.125	0.135	0.537	0.380	0.147	0.255	0.446	0.328	0.130	0.184	0.227	0.186	0.057	0.070
	C	sec/veh	1.067	0.537	0.318	0.436	1.308	0.812	0.381	0.988	1.054	0.729	0.345	0.631	0.452	0.406	0.124	0.148
Average Queue Delay	D	sec/veh	23	21	20	21	23	20	19	23	24	22	21	23	21	22	21	19
	x>x'																	
	Z		-0.402	-0.495	-0.610	-0.599	-0.370	-0.429	-0.585	-0.497	-0.402	-0.454	-0.604	-0.550	-0.516	-0.548	-0.714	-0.689
	X'		0.724	0.726	0.701	0.696	0.720	0.724	0.700	0.694	0.728	0.729	0.703	0.697	0.730	0.728	0.701	0.699
	No	veh	-0.476	-0.680	-0.782	-0.758	-0.368	-0.541	-0.748	-0.591	-0.488	-0.613	-0.779	-0.694	-0.725	-0.765	-0.894	-0.867
Average Queue Delay	D	sec/veh	20	18	14	15	21	18	14	16	21	19	15	16	18	19	15	13
Average Delay		**sec/veh**	**23**	**21**	**20**	**21**	**23**	**20**	**19**	**23**	**24**	**22**	**21**	**23**	**21**	**22**	**21**	**19**
Average Queue	N = q(r/2+d)	veh	9.978	8.213	3.433	3.090	10.048	9.010	3.511	3.799	10.454	9.418	3.678	3.675	8.161	7.738	2.591	2.449
Average Queue Length	NL/n	metre	30	25	21	19	30	27	21	23	31	28	22	22	24	23	16	15
Average Queue	N=qr	veh	11.022	9.402	3.996	3.532	10.929	10.111	4.056	4.172	11.598	10.658	4.276	4.160	9.439	8.910	3.077	2.923
Average Queue Length	NL/n	metre	33	28	24	21	33	30	24	25	35	32	26	25	28	27	18	18
Average Queue	N=qr+No	veh	10.547	8.722	3.214	2.774	10.562	9.570	3.308	3.581	11.110	10.045	3.497	3.466	8.714	8.145	2.183	2.056
Average Queue Length	NL/n	metre	32	26	19	17	32	29	20	21	33	30	21	21	26	24	13	12
Average Queue Length		**metre**	**33**	**28**	**24**	**21**	**33**	**30**	**24**	**25**	**35**	**32**	**26**	**25**	**28**	**27**	**18**	**18**
Maximum Queue Length		**metre**	**56**	**50**	**52**	**47**	**56**	**53**	**53**	**54**	**58**	**55**	**55**	**44**	**52**	**67**	**41**	**37**

*Note: SG = Signal Group

Year 2031 Design



Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
A	MINOR AMENDMENT	CHC	13APR22

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG TRAFFIC REVIEW REPORT

Drawing Title

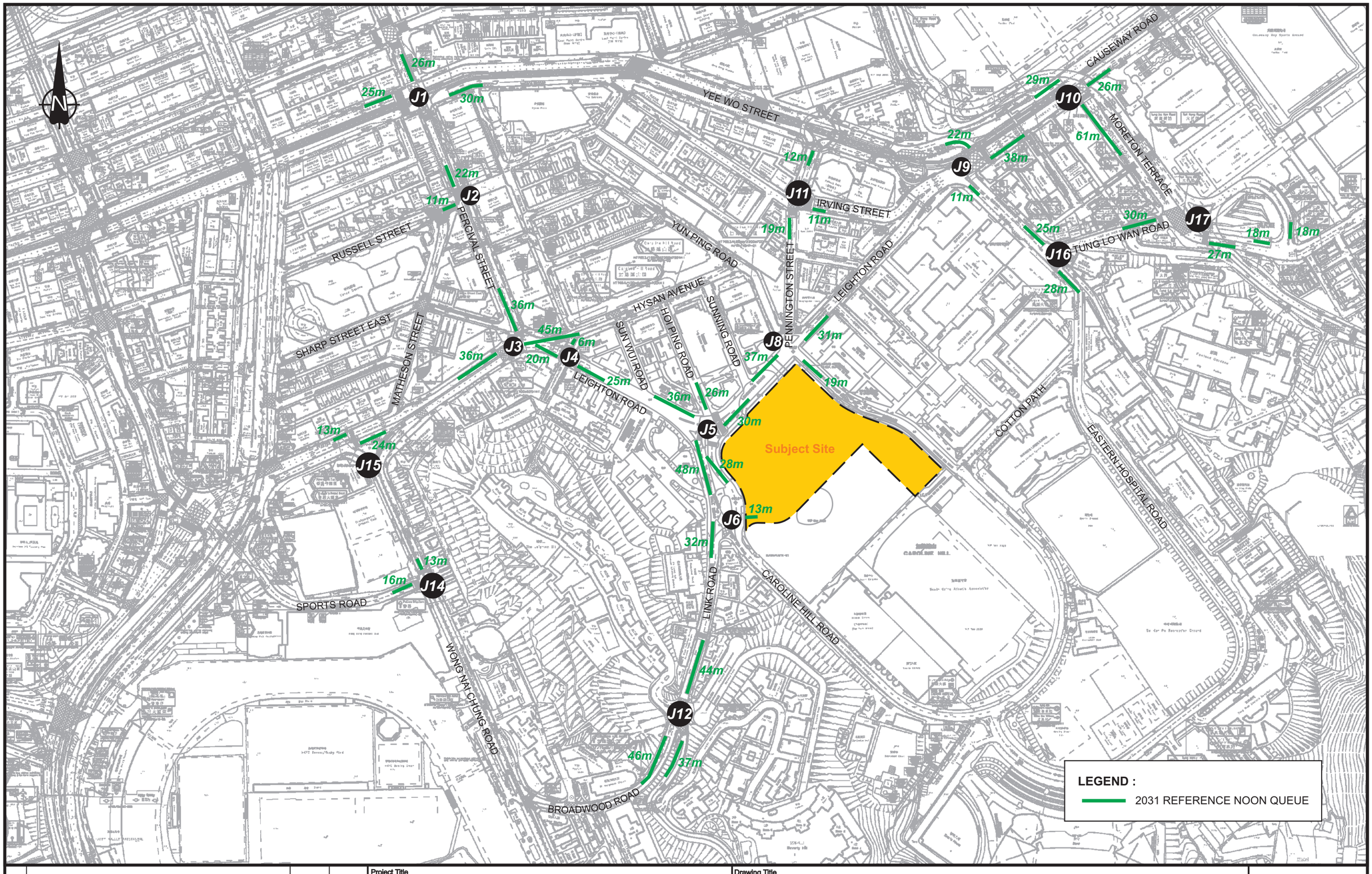
ESTIMATED AVERAGE QUEUE LENGTH FOR WEEKDAY UNDER YEAR 2031 DESIGN SCENARIO

Designed	Checked	Scale	Date	Drawing No.	Rev.
LYK	CHC	NTS	FEB 2022	E5	A

SYSTRA MVA

CHK50603110/TIA/E5-A.CDR/LLH/13APR22

Original Size : A3



Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
A	MINOR AMENDMENT	CHC	13APR22

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG TRAFFIC REVIEW REPORT

Drawing Title

ESTIMATED AVERAGE QUEUE LENGTH FOR WEEKEND UNDER YEAR 2031 DESIGN SCENARIO

Designed	Checked	Scale	Date	Drawing No.	Rev.
LYK	CHC	NTS	FEB 2022	E6	A

SYSTRA MVA

CHK50603110/TIA/E6-A.CDR/LLH/13APR22

Original Size : A3

Queue Length Analysis

SYSTRA MVA MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2031 Design Flows
Job Title	tancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	Hennessy Road / Percival Street (J1)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	D	A	B	C	B	C	E	E	A	D	A	B	C	B	C
			Weekday AM									Weekday Noon						
		Unit	Hennessy Rd WB	Hennessy Rd WB (Tram) - LT	Hennessy Rd WB (Tram) - Ahead	Hennessy Rd EB -Ahead	Hennessy Rd EB - RT	Hennessy Rd EB (Tram) - Ahead	Hennessy Rd EB (Tram) - RT	Percival St SB - LT	Percival St SB - Ahead	Hennessy Rd WB	Hennessy Rd WB (Tram) - LT	Hennessy Rd WB (Tram) - Ahead	Hennessy Rd EB -Ahead	Hennessy Rd EB - RT	Hennessy Rd EB (Tram) - Ahead	Hennessy Rd EB (Tram) - RT
Cycle time	c	sec	120	120	120	120	120	120	120	120	120	104	104	104	104	104	104	104
Effective green time	g	sec	47	27	47	75	23	75	23	32	32	39	25	39	67	21	67	21
		pcu/hr	575	20	70	625	155	75	25	75	425	710	15	70	550	205	80	35
Design flow	q	veh/sec	0.123	0.004	0.015	0.134	0.033	0.016	0.005	0.016	0.091	0.152	0.003	0.015	0.118	0.044	0.017	0.007
		pcu/hr	3620	1780	2055	3015	1940	1915	1940	1690	4190	3620	1780	2055	3015	1940	1915	1940
Saturation flow	Q	veh/sec	0.774	0.380	0.439	0.644	0.415	0.409	0.415	0.361	0.895	0.774	0.380	0.439	0.644	0.415	0.409	0.415
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	1	1	2	1	1	1	1	2	2	1	1	2	1	1	1
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.392	0.225	0.392	0.625	0.192	0.625	0.192	0.267	0.267	0.375	0.240	0.375	0.644	0.202	0.644	0.202
Degree of saturation	x		0.406	0.050	0.087	0.332	0.417	0.063	0.067	0.166	0.380	0.523	0.035	0.091	0.283	0.523	0.065	0.089
	M		14.744	0.513	1.795	16.026	3.974	1.923	0.641	1.923	10.897	15.778	0.333	1.556	12.222	4.556	1.778	0.778
	y		0.159	0.011	0.034	0.207	0.080	0.039	0.013	0.044	0.101	0.196	0.008	0.034	0.182	0.106	0.042	0.018
	Qt	veh/sec	181.774	51.346	103.189	241.587	47.671	153.446	47.671	57.778	143.248	174.038	54.857	98.798	249.020	50.222	158.167	50.222
	x<1																	
	A	sec/veh	0.220	0.304	0.192	0.089	0.355	0.073	0.331	0.281	0.299	0.243	0.291	0.202	0.077	0.356	0.066	0.324
	B	sec/veh	0.138	0.001	0.004	0.082	0.149	0.002	0.002	0.017	0.117	0.287	0.001	0.005	0.056	0.287	0.002	0.004
	C	sec/veh	0.364	0.010	0.003	0.043	2.335	0.000	0.036	0.128	0.633	0.872	0.003	0.005	0.018	3.504	0.000	0.056
Average Queue Delay	D	sec/veh	27	37	23	11	45	9	40	35	37	26	30	21	9	40	7	34
	x>x'																	
	Z		-0.594	-0.950	-0.913	-0.668	-0.583	-0.937	-0.933	-0.834	-0.620	-0.477	-0.965	-0.909	-0.717	-0.477	-0.935	-0.911
	X'		0.731	0.687	0.704	0.751	0.686	0.721	0.686	0.689	0.718	0.720	0.686	0.699	0.742	0.685	0.716	0.685
	No	veh	-0.833	-1.051	-1.037	-0.951	-0.730	-1.070	-1.044	-0.981	-0.832	-0.630	-1.054	-1.026	-0.971	-0.531	-1.059	-1.026
Average Queue Delay	D	sec/veh	24	24	17	8	33	5	27	24	32	23	19	15	6	31	3	21
Average Delay		**sec/veh**	**27**	**37**	**23**	**11**	**45**	**9**	**40**	**35**	**37**	**26**	**30**	**21**	**9**	**40**	**7**	**34**
Average Queue	N = q(r/2+d)	veh	7.821	0.356	0.894	4.503	3.089	0.503	0.473	1.261	7.316	8.918	0.224	0.805	3.174	3.574	0.436	0.567
Average Queue Length	NL/n	metre	23	2	5	14	19	3	3	8	22	27	1	5	10	21	3	3
Average Queue	N=qr	veh	8.969	0.397	1.092	6.010	3.213	0.721	0.518	1.410	7.991	9.861	0.253	0.972	4.348	3.636	0.632	0.621
Average Queue Length	NL/n	metre	27	2	7	18	19	4	3	8	24	30	2	6	13	22	4	4
Average Queue	N=qr+No	veh	8.136	-0.654	0.055	5.058	2.482	-0.349	-0.526	0.429	7.159	9.231	-0.800	-0.054	3.378	3.105	-0.427	-0.406
Average Queue Length	NL/n	metre	24	-4	0	15	15	-2	-3	3	21	28	-5	0	10	19	-3	-2
Average Queue Length		**metre**	**27**	**2**	**7**	**18**	**19**	**4**	**3**	**8**	**24**	**30**	**2**	**6**	**13**	**22**	**4**	**4**
Maximum Queue Length		**metre**	**46**	**37**	**29**	**36**	**38**	**23**	**38**	**34**	**44**	**50**	**36**	**30**	**29**	**39**	**23**	**37**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2031 Design Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	Hennessy Road / Percival Street (J1)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			E	E	A	D	A	B	C	B	C	E	E	A	D	A	B	C
			Weekday Noon		**Weekday PM**									**Weekend Noon**				
		Unit	Percival St SB - LT	Percival St SB - Ahead	Hennessy Rd WB	Hennessy Rd WB (Tram) - LT	Hennessy Rd WB (Tram) - Ahead	Hennessy Rd EB -Ahead	Hennessy Rd EB - RT	Hennessy Rd EB (Tram) - Ahead	Hennessy Rd EB (Tram) - RT	Percival St SB - LT	Percival St SB - Ahead	Hennessy Rd WB	Hennessy Rd WB (Tram) - LT	Hennessy Rd WB (Tram) - Ahead	Hennessy Rd EB -Ahead	Hennessy Rd EB - RT
Cycle time	c	sec	104	104	120	120	120	120	120	120	120	120	120	104	104	104	104	104
Effective green time	g	sec	25	25	48	24	48	74	20	74	20	34	34	33	26	33	61	22
		pcu/hr	195	500	745	15	80	600	170	95	35	240	415	655	25	70	675	235
Design flow	q	veh/sec	0.042	0.107	0.159	0.003	0.017	0.128	0.036	0.020	0.007	0.051	0.089	0.140	0.005	0.015	0.144	0.050
		pcu/hr	1690	4190	3620	1780	2055	3015	1940	1915	1940	1690	4190	3620	1780	2055	3015	1940
Saturation flow	Q	veh/sec	0.361	0.895	0.774	0.380	0.439	0.644	0.415	0.409	0.415	0.361	0.895	0.774	0.380	0.439	0.644	0.415
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	1	2	2	1	1	2	1	1	1	1	2	2	1	1	2	1
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.240	0.240	0.400	0.200	0.400	0.617	0.167	0.617	0.167	0.283	0.283	0.317	0.250	0.317	0.587	0.212
Degree of saturation	x		0.480	0.496	0.515	0.042	0.097	0.323	0.526	0.080	0.108	0.501	0.350	0.570	0.056	0.107	0.382	0.573
	M		4.333	11.111	19.103	0.385	2.051	15.385	4.359	2.436	0.897	6.154	10.641	14.556	0.556	1.556	15.000	5.222
	y		0.115	0.119	0.206	0.008	0.039	0.199	0.088	0.050	0.018	0.142	0.099	0.181	0.014	0.034	0.224	0.121
	Qt	veh/sec	52.083	129.130	185.641	45.641	105.385	238.365	41.453	151.400	41.453	61.389	152.201	147.263	57.051	83.598	226.720	52.613
	x<1																	
	A	sec/veh	0.326	0.328	0.227	0.323	0.187	0.092	0.381	0.077	0.354	0.299	0.285	0.285	0.285	0.241	0.110	0.354
	B	sec/veh	0.222	0.245	0.273	0.001	0.005	0.077	0.291	0.004	0.007	0.252	0.094	0.378	0.002	0.006	0.118	0.384
	C	sec/veh	2.425	1.442	0.765	0.011	0.004	0.040	4.729	0.000	0.154	2.193	0.444	1.512	0.009	0.017	0.096	4.084
Average Queue Delay	D	sec/veh	37	35	28	39	23	12	49	9	43	39	35	31	30	26	12	40
	x>x'																	
	Z		-0.520	-0.504	-0.485	-0.958	-0.903	-0.677	-0.474	-0.920	-0.892	-0.499	-0.650	-0.430	-0.944	-0.893	-0.618	-0.427
	X'		0.685	0.707	0.732	0.685	0.705	0.749	0.684	0.720	0.684	0.690	0.721	0.713	0.686	0.694	0.735	0.685
	No	veh	-0.620	-0.641	-0.682	-1.058	-1.032	-0.956	-0.528	-1.060	-1.025	-0.592	-0.871	-0.505	-1.042	-1.014	-0.869	-0.410
Average Queue Delay	D	sec/veh	27	31	25	25	17	9	38	5	28	30	31	28	19	18	9	32
Average Delay		**sec/veh**	**37**	**35**	**28**	**39**	**23**	**12**	**49**	**9**	**43**	**39**	**35**	**31**	**30**	**26**	**12**	**40**
Average Queue	N = q(r/2+d)	veh	3.180	7.951	10.211	0.279	1.005	4.432	3.595	0.659	0.697	4.186	6.901	9.276	0.368	0.912	4.857	4.084
Average Queue Length	NL/n	metre	19	24	31	2	6	13	22	4	4	25	21	28	2	5	15	25
Average Queue	N=qr	veh	3.292	8.440	11.462	0.308	1.231	5.897	3.632	0.934	0.748	4.410	7.626	9.937	0.417	1.062	6.202	4.118
Average Queue Length	NL/n	metre	20	25	34	2	7	18	22	6	4	26	23	30	3	6	19	25
Average Queue	N=qr+No	veh	2.672	7.799	10.780	-0.751	0.198	4.941	3.104	-0.126	-0.277	3.818	6.755	9.432	-0.625	0.048	5.333	3.707
Average Queue Length	NL/n	metre	16	23	32	-5	1	15	19	-1	-2	23	20	28	-4	0	16	22
Average Queue Length		**metre**	**20**	**25**	**34**	**2**	**7**	**18**	**22**	**6**	**4**	**26**	**23**	**30**	**3**	**6**	**19**	**25**
Maximum Queue Length		**metre**	**40**	**40**	**59**	**51**	**387**	**49**	**44**	**49**	**44**	**49**	**44**	**63**	**52**	**67**	**41**	**37**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2031 Design Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	Hennessy Road / Percival Street (J1)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			B	C	E	E
			Weekend Noon			
		Unit	Hennessy Rd EB (Tram) - Ahead	Hennessy Rd EB (Tram) - RT	Percival St SB - LT	Percival St SB - Ahead
Cycle time	c	sec	104	104	104	104
Effective green time	g	sec	61	22	31	31
		pcu/hr	95	30	275	555
Design flow	q	veh/sec	0.020	0.006	0.059	0.119
		pcu/hr	1915	1940	1690	4190
Saturation flow	Q	veh/sec	0.409	0.415	0.361	0.895
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3
No. of lanes	n	lane	1	1	1	2
Length of a vehicle	L	metre	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.587	0.212	0.298	0.298
Degree of saturation	x		0.085	0.073	0.546	0.444
	M		2.111	0.667	6.111	12.333
	y		0.050	0.015	0.163	0.132
	Qt	veh/sec	144.003	52.613	64.583	160.121
	x<1					
	A	sec/veh	0.090	0.316	0.294	0.284
	B	sec/veh	0.004	0.003	0.328	0.178
	C	sec/veh	0.000	0.030	2.445	0.747
Average Queue Delay	D	sec/veh	10	33	34	30
	x>x'					
	Z		-0.915	-0.927	-0.454	-0.556
	X'		0.712	0.685	0.689	0.716
	No	veh	-1.044	-1.034	-0.488	-0.747
Average Queue Delay	D	sec/veh	5	21	26	27
Average Delay		**sec/veh**	**10**	**33**	**34**	**30**
Average Queue	N = q(r/2+d)	veh	0.630	0.476	4.127	7.920
Average Queue Length	NL/n	metre	4	3	25	24
Average Queue	N=qr	veh	0.873	0.526	4.290	8.657
Average Queue Length	NL/n	metre	5	3	26	26
Average Queue	N=qr+No	veh	-0.171	-0.509	3.802	7.911
Average Queue Length	NL/n	metre	-1	-3	23	24
Average Queue Length		**metre**	**5**	**3**	**26**	**26**
Maximum Queue Length		**metre**	**41**	**37**	**41**	**37**

*Note: SG = Signal Group

Queue Length Analysis

MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2031 Design Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	Matheson Street / Percival Street / Russell Street (J2)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	B	A	B	A	B	A	B
			Weekday AM		**Weekday Noon**		**Weekday PM**		**Weekend Noon**	
		Unit	Percival St SB	Matheson St NB	Percival St SB	Matheson St NB	Percival St SB	Matheson St NB	Percival St SB	Matheson St NB
Cycle time	c	sec	105	105	105	105	120	120	110	110
Effective green time	g	sec	63	18	62	19	71	24	68	18
		pcu/hr	620	135	760	190	660	185	820	180
Design flow	q	veh/sec	0.132	0.029	0.162	0.041	0.141	0.040	0.175	0.038
		pcu/hr	3950	3420	3950	3430	3950	3420	3950	3420
Saturation flow	Q	veh/sec	0.844	0.731	0.844	0.733	0.844	0.731	0.844	0.731
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	2	2	2	2	2	2	2
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.600	0.171	0.590	0.181	0.592	0.200	0.618	0.164
Degree of saturation	x		0.262	0.230	0.326	0.306	0.282	0.270	0.336	0.322
	M		13.910	3.029	17.051	4.263	16.923	4.744	19.274	4.231
	y		0.157	0.039	0.192	0.055	0.167	0.054	0.208	0.053
	Qt	veh/sec	303.846	75.165	299.023	79.573	299.626	87.692	313.054	71.748
	x<1									
	A	sec/veh	0.095	0.357	0.104	0.355	0.100	0.338	0.092	0.369
	B	sec/veh	0.046	0.034	0.079	0.068	0.056	0.050	0.085	0.076
	C	sec/veh	0.014	0.491	0.040	0.834	0.022	0.547	0.038	1.118
Average Queue Delay	D	sec/veh	10	38	11	38	12	41	11	41
	x>x'									
	Z		-0.738	-0.770	-0.674	-0.694	-0.718	-0.730	-0.664	-0.678
	X'		0.759	0.692	0.757	0.693	0.770	0.699	0.766	0.692
	No	veh	-1.019	-0.930	-0.969	-0.864	-1.029	-0.907	-0.980	-0.848
Average Queue Delay	D	sec/veh	8	30	9	31	10	34	8	34
Average Delay		**sec/veh**	**10**	**38**	**11**	**38**	**12**	**41**	**11**	**41**
Average Queue	N = q(r/2+d)	veh	4.146	2.358	5.334	3.293	5.201	3.531	5.531	3.364
Average Queue Length	NL/n	metre	12	7	16	10	16	11	17	10
Average Queue	N=qr	veh	5.564	2.510	6.983	3.491	6.910	3.795	7.359	3.538
Average Queue Length	NL/n	metre	17	8	21	10	21	11	22	11
Average Queue	N=qr+No	veh	4.545	1.580	6.014	2.628	5.881	2.888	6.379	2.690
Average Queue Length	NL/n	metre	14	5	18	8	18	9	19	8
Average Queue Length		**metre**	**17**	**8**	**21**	**10**	**21**	**11**	**22**	**11**
Maximum Queue Length		**metre**	**32**	**19**	**39**	**20**	**39**	**21**	**41**	**20**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2031 Design Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	Leighton Road / Percival Street / Hysan Avenue (J3)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			E	A	C	C	E	A	C	C	E	A	C	C	E	A	C	C
			Weekday AM				**Weekday Noon**				**Weekday PM**				**Weekend Noon**			
		Unit	Leighton Rd WB	Leighton Road EB	Percival St SB - LT	Percival St SB - RT	Leighton Rd WB	Leighton Road EB	Percival St SB - LT	Percival St SB - RT	Leighton Rd WB	Leighton Road EB	Percival St SB - LT	Percival St SB - RT	Leighton Rd WB	Leighton Road EB	Percival St SB - LT	Percival St SB - RT
Cycle time	c	sec	105	105	105	105	130	130	130	130	105	105	105	105	130	130	130	130
Effective green time	g	sec	58	53	38	38	71	66	50	50	51	46	45	45	62	57	59	59
		pcu/hr	990	740	260	415	995	845	310	510	1025	650	315	420	1040	755	380	465
Design flow	q	veh/sec	0.212	0.158	0.056	0.089	0.213	0.181	0.066	0.109	0.219	0.139	0.067	0.090	0.222	0.161	0.081	0.099
		pcu/hr	3215	2325	1140	2770	3215	2325	1140	2770	3215	2325	1140	2770	3215	2325	1140	2770
Saturation flow	Q	veh/sec	0.687	0.497	0.244	0.592	0.687	0.497	0.244	0.592	0.687	0.497	0.244	0.592	0.687	0.497	0.244	0.592
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	2	1	2	2	2	1	2	2	2	1	2	2	2	1	2
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.552	0.505	0.362	0.362	0.546	0.508	0.385	0.385	0.486	0.438	0.429	0.429	0.477	0.438	0.454	0.454
Degree of saturation	x		0.557	0.631	0.630	0.414	0.567	0.716	0.707	0.479	0.656	0.638	0.645	0.354	0.678	0.741	0.734	0.370
	M		22.212	16.603	5.833	9.311	27.639	23.472	8.611	14.167	22.997	14.583	7.067	9.423	28.889	20.972	10.556	12.917
	y		0.308	0.318	0.228	0.150	0.309	0.363	0.272	0.184	0.319	0.280	0.276	0.152	0.323	0.325	0.333	0.168
	Qt	veh/sec	227.680	150.458	52.894	128.523	225.113	151.331	56.213	136.588	200.201	130.586	62.637	152.198	196.578	130.695	66.331	161.174
	x<1																	
	A	sec/veh	0.145	0.180	0.264	0.239	0.149	0.190	0.260	0.232	0.194	0.219	0.226	0.192	0.202	0.233	0.224	0.179
	B	sec/veh	0.351	0.538	0.537	0.146	0.371	0.902	0.853	0.220	0.627	0.563	0.585	0.097	0.715	1.057	1.016	0.109
	C	sec/veh	0.534	1.302	3.627	0.536	0.629	2.261	5.162	0.802	1.308	1.741	3.008	0.207	1.636	3.155	4.703	0.220
Average Queue Delay	D	sec/veh	16	21	34	26	21	27	42	31	22	25	29	21	28	34	37	24
	x>x'																	
	Z		-0.443	-0.369	-0.370	-0.586	-0.433	-0.284	-0.293	-0.521	-0.344	-0.362	-0.355	-0.646	-0.322	-0.259	-0.266	-0.630
	X'		0.736	0.714	0.685	0.707	0.751	0.725	0.690	0.719	0.728	0.708	0.688	0.714	0.741	0.717	0.694	0.728
	No	veh	-0.614	-0.343	-0.229	-0.767	-0.648	-0.046	0.085	-0.706	-0.317	-0.294	-0.187	-0.852	-0.295	0.134	0.223	-0.868
Average Queue Delay	D	sec/veh	14	18	25	22	18	25	35	27	19	22	22	17	25	31	31	20
Average Delay		**sec/veh**	**16**	**21**	**34**	**26**	**21**	**27**	**35**	**31**	**22**	**25**	**29**	**21**	**28**	**31**	**31**	**24**
Average Queue	N = q(r/2+d)	veh	8.424	7.430	3.735	5.299	10.631	10.740	5.400	7.779	10.719	7.614	3.996	4.584	13.749	11.333	5.878	5.929
Average Queue Length	NL/n	metre	25	22	22	16	32	32	32	23	32	23	24	14	41	34	35	18
Average Queue	N=qr	veh	9.942	8.222	3.722	5.941	12.544	11.556	5.299	8.718	11.827	8.194	4.038	5.385	15.111	11.777	5.765	7.054
Average Queue Length	NL/n	metre	30	25	22	18	38	35	32	26	35	25	24	16	45	35	35	21
Average Queue	N=qr+No	veh	9.328	7.880	3.493	5.174	11.896	11.509	5.384	8.012	11.510	7.901	3.852	4.533	14.816	11.911	5.988	6.187
Average Queue Length	NL/n	metre	28	24	21	16	36	35	32	24	35	24	23	14	44	36	36	19
Average Queue Length		**metre**	**30**	**25**	**22**	**18**	**38**	**35**	**32**	**26**	**35**	**25**	**24**	**16**	**45**	**36**	**36**	**21**
Maximum Queue Length		**metre**	**46**	**43**	**45**	**38**	**56**	**56**	**64**	**50**	**57**	**45**	**53**	**34**	**68**	**59**	**70**	**42**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA **MVA Hong Kong Ltd.**

Job No.	CHK50603110	Description	2031 Design Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	Leighton Road / Hysan Avenue / Leighton Lane (J4)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			B	A	C	B	A	C	B	A	C	B	A	C
			Weekday AM			**Weekday Noon**			**Weekday PM**			**Weekend Noon**		
		Unit	Leigthon Rd WB	Leighton Rd EB	Hysan Avenue SB	Leigthon Rd WB	Leighton Rd EB	Hysan Avenue SB	Leigthon Rd WB	Leighton Rd EB	Hysan Avenue SB	Leigthon Rd WB	Leighton Rd EB	Hysan Avenue SB
Cycle time	c	sec	120	120	120	130	130	130	130	130	130	130	130	130
Effective green time	g	sec	80	89	22	90	99	22	90	99	22	90	99	22
		pcu/hr	950	325	60	940	340	60	945	365	85	970	510	90
Design flow	q	veh/sec	0.203	0.069	0.013	0.201	0.073	0.013	0.202	0.078	0.018	0.207	0.109	0.019
		pcu/hr	3990	1965	3395	4010	1965	3370	4015	1965	3370	4010	1965	3390
Saturation flow	Q	veh/sec	0.853	0.420	0.725	0.857	0.420	0.720	0.858	0.420	0.720	0.857	0.420	0.724
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	1	2	2	1	2	2	1	2	2	1	2
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.667	0.742	0.183	0.692	0.762	0.169	0.692	0.762	0.169	0.692	0.762	0.169
Degree of saturation	x		0.357	0.223	0.096	0.339	0.227	0.105	0.340	0.244	0.149	0.349	0.341	0.157
	M		24.359	8.333	1.538	26.111	9.444	1.667	26.250	10.139	2.361	26.944	14.167	2.500
	y		0.238	0.165	0.018	0.234	0.173	0.018	0.235	0.186	0.025	0.242	0.260	0.027
	Qt	veh/sec	341.026	186.843	79.797	355.917	191.849	73.116	356.361	191.849	73.116	355.917	191.849	73.550
	x<1													
	A	sec/veh	0.073	0.040	0.339	0.062	0.034	0.351	0.062	0.035	0.354	0.062	0.038	0.355
	B	sec/veh	0.099	0.032	0.005	0.087	0.033	0.006	0.088	0.039	0.013	0.094	0.088	0.015
	C	sec/veh	0.038	0.004	0.064	0.026	0.003	0.099	0.026	0.005	0.211	0.030	0.028	0.236
Average Queue Delay	D	sec/veh	9	5	41	8	5	46	8	5	47	9	6	47
	x>x'													
	Z		-0.643	-0.777	-0.904	-0.661	-0.773	-0.895	-0.660	-0.756	-0.851	-0.651	-0.659	-0.843
	X'		0.784	0.732	0.697	0.799	0.739	0.696	0.799	0.739	0.696	0.799	0.739	0.697
	No	veh	-1.004	-0.997	-1.026	-1.052	-1.008	-1.023	-1.052	-0.996	-0.997	-1.045	-0.920	-0.992
Average Queue Delay	D	sec/veh	7	2	33	6	1	37	6	1	38	6	2	38
Average Delay		**sec/veh**	**9**	**5**	**41**	**8**	**5**	**46**	**8**	**5**	**47**	**9**	**6**	**47**
Average Queue	N = q(r/2+d)	veh	5.927	1.441	1.155	5.713	1.484	1.283	5.746	1.602	1.826	5.915	2.318	1.935
Average Queue Length	NL/n	metre	18	9	3	17	9	4	17	10	5	18	14	6
Average Queue	N=qr	veh	8.120	2.153	1.256	8.034	2.252	1.385	8.077	2.418	1.962	8.291	3.378	2.077
Average Queue Length	NL/n	metre	24	13	4	24	14	4	24	15	6	25	20	6
Average Queue	N=qr+No	veh	7.115	1.156	0.231	6.982	1.245	0.362	7.025	1.421	0.965	7.246	2.458	1.085
Average Queue Length	NL/n	metre	21	7	1	21	7	1	21	9	3	22	15	3
Average Queue Length		**metre**	**24**	**13**	**4**	**24**	**14**	**4**	**24**	**15**	**6**	**25**	**20**	**6**
Maximum Queue Length		**metre**	**44**	**36**	**18**	**44**	**38**	**18**	**44**	**40**	**18**	**45**	**48**	**18**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2031 Design Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	Leighton Road / Percival Street / Hysan Avenue (J5)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	B	A	C	A	B	A	C	A	B	A	C	A	B	A	C
			Weekday AM				Weekday Noon				Weekday PM				Weekend Noon			
		Unit	Leighton Rd WB	CHR NB	Leighton Rd EB	Hoi Ping Rd SB	Leighton Rd WB	CHR NB	Leighton Rd EB	Hoi Ping Rd SB	Leighton Rd WB	CHR NB	Leighton Rd EB	Hoi Ping Rd SB	Leighton Rd WB	CHR NB	Leighton Rd EB	Hoi Ping Rd SB
Cycle time	c	sec	105	105	105	105	120	120	120	120	130	130	130	130	130	130	130	130
Effective green time	g	sec	28	32	28	24	28	37	28	35	33	47	34	30	38	42	39	29
		pcu/hr	785	880	410	460	670	870	430	455	670	915	475	405	775	845	615	405
Design flow	q	veh/sec	0.168	0.188	0.088	0.098	0.143	0.186	0.092	0.097	0.143	0.196	0.101	0.087	0.166	0.181	0.131	0.087
		pcu/hr	4000	3875	3070	2695	4000	3875	3070	2665	4000	3840	3070	2675	4000	3880	3070	2675
Saturation flow	Q	veh/sec	0.855	0.828	0.656	0.576	0.855	0.828	0.656	0.569	0.855	0.821	0.656	0.572	0.855	0.829	0.656	0.572
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	3	2	2	2	3	2	2	2	3	2	2	2	3	2	2	2
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.267	0.305	0.267	0.229	0.233	0.308	0.233	0.292	0.254	0.362	0.262	0.231	0.292	0.323	0.300	0.223
Degree of saturation	x		0.736	0.745	0.501	0.747	0.718	0.728	0.600	0.585	0.660	0.659	0.592	0.656	0.663	0.674	0.668	0.679
	M		17.612	19.744	9.199	10.321	17.179	22.308	11.026	11.667	18.611	25.417	13.194	11.250	21.528	23.472	17.083	11.250
	y		0.196	0.227	0.134	0.171	0.168	0.225	0.140	0.171	0.168	0.238	0.155	0.151	0.194	0.218	0.200	0.151
	Qt	veh/sec	136.752	151.404	104.957	78.974	119.658	153.178	91.838	99.653	130.178	177.988	102.939	79.142	149.901	160.710	118.077	76.504
	x<1																	
	A	sec/veh	0.335	0.313	0.310	0.359	0.353	0.308	0.342	0.303	0.334	0.268	0.323	0.349	0.311	0.293	0.306	0.356
	B	sec/veh	1.026	1.089	0.251	1.101	0.913	0.975	0.451	0.413	0.640	0.637	0.428	0.626	0.652	0.697	0.671	0.717
	C	sec/veh	3.628	3.314	1.551	5.751	4.101	3.200	3.128	2.379	3.091	1.998	2.666	4.454	2.630	2.477	3.100	5.031
Average Queue Delay	D	sec/veh	38	35	34	43	45	39	43	38	45	36	43	48	42	39	42	49
	x>x'																	
	Z		-0.264	-0.255	-0.499	-0.253	-0.282	-0.272	-0.400	-0.415	-0.340	-0.341	-0.408	-0.344	-0.337	-0.326	-0.332	-0.321
	X'		0.710	0.714	0.701	0.693	0.710	0.721	0.701	0.703	0.717	0.734	0.707	0.699	0.724	0.728	0.713	0.698
	No	veh	0.147	0.181	-0.615	0.309	0.042	0.039	-0.385	-0.436	-0.255	-0.335	-0.433	-0.188	-0.276	-0.251	-0.205	-0.089
Average Queue Delay	D	sec/veh	36	34	29	40	43	37	38	34	42	34	39	44	39	37	39	46
Average Delay		**sec/veh**	**36**	**34**	**34**	**40**	**43**	**37**	**43**	**38**	**45**	**36**	**43**	**48**	**42**	**39**	**42**	**49**
Average Queue	N = q(r/2+d)	veh	12.767	13.503	6.343	8.219	12.976	14.976	8.158	7.843	13.364	15.161	9.286	8.489	14.520	15.069	11.477	8.653
Average Queue Length	NL/n	metre	26	41	19	25	26	45	24	24	27	45	28	25	29	45	34	26
Average Queue	N=qr	veh	12.916	13.726	6.746	7.962	13.171	15.429	8.453	8.264	13.887	16.228	9.744	8.654	15.235	15.889	11.958	8.740
Average Queue Length	NL/n	metre	26	41	20	24	26	46	25	25	28	49	29	26	30	48	36	26
Average Queue	N=qr+No	veh	13.062	13.907	6.131	8.270	13.213	15.469	8.068	7.828	13.632	15.893	9.310	8.466	14.959	15.638	11.754	8.651
Average Queue Length	NL/n	metre	26	42	18	25	26	46	24	23	27	48	28	25	30	47	35	26
Average Queue Length		**metre**	**26**	**42**	**20**	**25**	**26**	**46**	**25**	**25**	**28**	**49**	**29**	**26**	**30**	**48**	**36**	**26**
Maximum Queue Length		**metre**	**43**	**67**	**39**	**46**	**43**	**73**	**47**	**46**	**45**	**75**	**52**	**47**	**48**	**75**	**60**	**48**

*Note: SG = Signal Group

Queue Length Analysis

MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2031 Design Flows
Job Title	tancy Services for Commercial Development on IL No. 8945, Causeway Ba	Design Year	2031
Junction Name	Caroline Hill Road (Wes) / Link Road (J6)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	C	D	A	C	D	A	C	D	A	C	D
			Weekday AM			**Weekday Noon**			**Weekday PM**			**Weekend Noon**		
		Unit	Link Road NB	Access Road WB	Caroline Hill Road SB	Link Road NB	Access Road WB	Caroline Hill Road SB	Link Road NB	Access Road WB	Caroline Hill Road SB	Link Road NB	Access Road WB	Caroline Hill Road SB
Cycle time	c	sec	105	105	105	105	105	105	105	105	105	105	105	105
Effective green time	g	sec	75	15	38	71	19	33	71	19	36	71	19	33
		pcu/hr	895	230	685	825	265	560	825	265	565	815	230	605
Design flow	q	veh/sec	0.191	0.049	0.146	0.176	0.057	0.120	0.176	0.057	0.121	0.174	0.049	0.129
		pcu/hr	1980	3920	4030	1980	3920	4040	1980	3920	4055	1980	3920	4050
Saturation flow	Q	veh/sec	0.423	0.838	0.861	0.423	0.838	0.863	0.423	0.838	0.866	0.423	0.838	0.865
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	1	2	2	1	2	2	1	2	2	1	2	2
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.714	0.143	0.362	0.676	0.181	0.314	0.676	0.181	0.343	0.676	0.181	0.314
Degree of saturation	x		0.633	0.411	0.470	0.616	0.374	0.441	0.616	0.374	0.406	0.609	0.324	0.475
	M		20.080	5.160	15.369	18.510	5.946	12.564	18.510	5.946	12.676	18.285	5.160	13.574
	y		0.452	0.059	0.170	0.417	0.068	0.139	0.417	0.068	0.139	0.412	0.059	0.149
	Qt	veh/sec	181.319	71.795	186.984	171.648	90.940	162.784	171.648	90.940	178.242	171.648	90.940	163.187
	x<1													
	A	sec/veh	0.074	0.390	0.245	0.090	0.360	0.273	0.090	0.360	0.251	0.089	0.356	0.276
	B	sec/veh	0.545	0.143	0.208	0.495	0.111	0.174	0.495	0.111	0.139	0.474	0.078	0.215
	C	sec/veh	0.722	2.042	0.620	0.721	1.191	0.679	0.721	1.191	0.443	0.680	0.867	0.842
Average Queue Delay	D	sec/veh	10	42	27	12	39	29	12	39	27	11	38	30
	x>x'													
	Z		-0.367	-0.589	-0.530	-0.384	-0.626	-0.559	-0.384	-0.626	-0.594	-0.391	-0.676	-0.525
	X'		0.723	0.691	0.725	0.720	0.697	0.717	0.720	0.697	0.722	0.720	0.697	0.718
	No	veh	-0.372	-0.739	-0.732	-0.411	-0.796	-0.754	-0.411	-0.796	-0.810	-0.432	-0.850	-0.704
Average Queue Delay	D	sec/veh	7	35	23	8	33	26	8	33	24	8	32	26
Average Delay		**sec/veh**	**10**	**42**	**27**	**12**	**39**	**29**	**12**	**39**	**27**	**11**	**38**	**30**
Average Queue	N = q(r/2+d)	veh	4.772	4.268	8.790	5.028	4.618	7.830	5.028	4.618	7.431	4.945	3.987	8.512
Average Queue Length	NL/n	metre	29	13	26	30	14	23	30	14	22	30	12	26
Average Queue	N=qr	veh	5.737	4.423	9.807	5.994	4.870	8.615	5.994	4.870	8.330	5.921	4.226	9.308
Average Queue Length	NL/n	metre	34	13	29	36	15	26	36	15	25	36	13	28
Average Queue	N=qr+No	veh	5.365	3.684	9.075	5.583	4.074	7.861	5.583	4.074	7.520	5.489	3.377	8.603
Average Queue Length	NL/n	metre	32	11	27	33	12	24	33	12	23	33	10	26
Average Queue Length		**metre**	**34**	**13**	**29**	**36**	**15**	**26**	**36**	**15**	**25**	**36**	**13**	**28**
Maximum Queue Length		**metre**	**70**	**22**	**52**	**72**	**26**	**47**	**72**	**26**	**46**	**72**	**22**	**50**

*Note: SG = Signal Group

Queue Length Analysis

MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2031 Design Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	hton Road / Yun Ping Road / Pennington Street / Caroline Hill Road (East)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	C	C	A	A	C	C	A	A	C	C	A	A	C	C	A
			Weekday AM				Weekday Noon				Weekday PM				Weekend Noon			
		Unit	Leighton Rd WB - RT	Leighton Rd WB - Ahead & LT	CHR NB	Leighton Rd EB	Leighton Rd WB - RT	Leighton Rd WB - Ahead & LT	CHR NB	Leighton Rd EB	Leighton Rd WB - RT	Leighton Rd WB - Ahead & LT	CHR NB	Leighton Rd EB	Leighton Rd WB - RT	Leighton Rd WB - Ahead & LT	CHR NB	Leighton Rd EB
Cycle time	c	sec	105	105	105	105	110	110	110	110	130	130	130	130	120	120	120	120
Effective green time	g	sec	58	36	36	58	65	34	34	65	76	43	43	76	74	35	35	74
		pcu/hr	905	280	100	1035	790	245	115	1075	715	290	90	1175	760	260	170	1245
Design flow	q	veh/sec	0.193	0.060	0.021	0.221	0.169	0.052	0.025	0.230	0.153	0.062	0.019	0.251	0.162	0.056	0.036	0.266
		pcu/hr	3000	1180	930	2685	2965	1180	930	2695	3030	1180	930	2685	3020	1180	930	2690
Saturation flow	Q	veh/sec	0.641	0.252	0.199	0.574	0.634	0.252	0.199	0.576	0.647	0.252	0.199	0.574	0.645	0.252	0.199	0.575
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	1	1	2	2	1	1	2	2	1	1	2	2	1	1	2
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.552	0.343	0.343	0.552	0.591	0.309	0.309	0.591	0.585	0.331	0.331	0.585	0.617	0.292	0.292	0.617
Degree of saturation	x		0.546	0.692	0.314	0.698	0.451	0.672	0.400	0.675	0.404	0.743	0.293	0.749	0.408	0.755	0.627	0.751
	M		20.304	6.282	2.244	23.221	18.568	5.759	2.703	25.267	19.861	8.056	2.500	32.639	19.487	6.667	4.359	31.923
	y		0.302	0.237	0.108	0.385	0.266	0.208	0.124	0.399	0.236	0.246	0.097	0.438	0.252	0.220	0.183	0.463
	Qt	veh/sec	212.454	51.868	40.879	190.147	224.621	46.760	36.853	204.167	227.101	50.039	39.438	201.243	238.761	44.124	34.776	212.671
	x<1																	
	A	sec/veh	0.143	0.283	0.242	0.163	0.114	0.301	0.272	0.139	0.113	0.297	0.248	0.153	0.098	0.322	0.307	0.137
	B	sec/veh	0.329	0.778	0.072	0.806	0.185	0.687	0.133	0.701	0.137	1.074	0.061	1.114	0.141	1.167	0.526	1.129
	C	sec/veh	0.514	5.109	0.537	1.512	0.197	5.430	1.431	1.185	0.132	7.103	0.514	1.988	0.113	8.349	5.809	1.802
Average Queue Delay	D	sec/veh	16	38	28	19	13	41	34	17	15	49	35	22	13	51	46	19
	x>x'																	
	Z		-0.454	-0.308	-0.686	-0.302	-0.549	-0.328	-0.600	-0.325	-0.596	-0.257	-0.707	-0.251	-0.592	-0.245	-0.373	-0.249
	X'		0.732	0.685	0.682	0.725	0.739	0.684	0.681	0.732	0.752	0.688	0.684	0.743	0.750	0.685	0.682	0.741
	No	veh	-0.622	0.034	-0.857	-0.138	-0.796	-0.058	-0.755	-0.267	-0.888	0.306	-0.887	0.035	-0.876	0.404	-0.229	0.058
Average Queue Delay	D	sec/veh	13	30	13	17	10	32	18	15	12	42	19	20	10	44	33	17
Average Delay		**sec/veh**	**16**	**30**	**28**	**19**	**13**	**41**	**34**	**17**	**15**	**42**	**35**	**20**	**13**	**44**	**46**	**17**
Average Queue	N = q(r/2+d)	veh	7.686	4.315	1.340	9.454	6.068	4.127	1.768	9.115	6.484	5.721	1.507	12.401	5.771	5.209	3.197	11.134
Average Queue Length	NL/n	metre	23	26	8	28	18	25	11	27	19	34	9	37	17	31	19	33
Average Queue	N=qr	veh	9.089	4.128	1.474	10.394	7.596	3.979	1.868	10.337	8.250	5.391	1.673	13.558	7.470	4.722	3.088	12.237
Average Queue Length	NL/n	metre	27	25	9	31	23	24	11	31	25	32	10	41	22	28	19	37
Average Queue	N=qr+No	veh	8.466	4.162	0.617	10.256	6.800	3.921	1.113	10.070	7.362	5.697	0.786	13.593	6.594	5.126	2.859	12.295
Average Queue Length	NL/n	metre	25	25	4	31	20	24	7	30	22	34	5	41	20	31	17	37
Average Queue Length		**metre**	**27**	**25**	**9**	**31**	**23**	**25**	**11**	**31**	**25**	**34**	**10**	**41**	**22**	**31**	**19**	**37**
Maximum Queue Length		**metre**	**47**	**57**	**32**	**54**	**42**	**54**	**33**	**54**	**45**	**73**	**32**	**66**	**43**	**70**	**45**	**62**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2031 Design Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	Causeway Road / Leighton Road / Tung Lo Wan Road / Irving Street (J9)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	A	F	B	C	F	A	A	F	B	C	F	A	A	F	B
			Weekday AM						**Weekday Noon**						**Weekday PM**			
		Unit	Causeway Rd WB - LT	Causeway Rd WB - Ahead	Causeway Rd WB (Tram)	Tung Lo Wan Rd NB	Causeway Rd EB	Causeway Rd EB (Tram)	Causeway Rd WB - LT	Causeway Rd WB - Ahead	Causeway Rd WB (Tram)	Tung Lo Wan Rd NB	Causeway Rd EB	Causeway Rd EB (Tram)	Causeway Rd WB - LT	Causeway Rd WB - Ahead	Causeway Rd WB (Tram)	Tung Lo Wan Rd NB
Cycle time	c	sec	100	100	100	100	100	100	100	100	100	100	100	100	105	105	105	105
Effective green time	g	sec	43	43	53	13	24	53	36	36	57	13	26	57	44	44	65	13
		pcu/hr	270	1425	40	70	380	25	255	1365	35	110	455	35	180	1455	40	70
Design flow	q	veh/sec	0.058	0.304	0.009	0.015	0.081	0.005	0.054	0.292	0.007	0.024	0.097	0.007	0.038	0.311	0.009	0.015
		pcu/hr	1150	5450	1340	1330	2555	1340	1150	5450	1340	1330	2555	1340	1150	5450	1340	1330
Saturation flow	Q	veh/sec	0.246	1.165	0.286	0.284	0.546	0.286	0.246	1.165	0.286	0.284	0.546	0.286	0.246	1.165	0.286	0.284
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	1	3	1	1	2	1	1	3	1	1	2	1	1	3	1	1
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.430	0.430	0.530	0.130	0.240	0.530	0.360	0.360	0.570	0.130	0.260	0.570	0.419	0.419	0.619	0.124
Degree of saturation	x		0.546	0.608	0.056	0.405	0.620	0.035	0.616	0.696	0.046	0.636	0.685	0.046	0.374	0.637	0.048	0.425
	M		5.769	30.449	0.855	1.496	8.120	0.534	5.449	29.167	0.748	2.350	9.722	0.748	4.038	32.644	0.897	1.571
	y		0.235	0.261	0.030	0.053	0.149	0.019	0.222	0.250	0.026	0.083	0.178	0.026	0.157	0.267	0.030	0.053
	Qt	veh/sec	63.397	300.449	91.051	22.167	78.615	91.051	53.077	251.538	97.923	22.167	85.167	97.923	61.783	292.796	106.349	21.111
	x<1																	
	A	sec/veh	0.212	0.220	0.114	0.399	0.339	0.113	0.263	0.273	0.095	0.413	0.333	0.095	0.200	0.230	0.075	0.405
	B	sec/veh	0.328	0.472	0.002	0.138	0.505	0.001	0.494	0.795	0.001	0.556	0.744	0.001	0.111	0.559	0.001	0.157
	C	sec/veh	1.640	0.846	0.000	4.526	3.480	0.000	3.329	1.728	0.000	11.092	4.093	0.000	0.477	1.055	0.000	5.375
Average Queue Delay	D	sec/veh	25	23	12	45	37	11	32	28	10	54	37	10	23	25	8	48
	x>x'																	
	Z		-0.454	-0.392	-0.944	-0.595	-0.380	-0.965	-0.384	-0.304	-0.954	-0.364	-0.315	-0.954	-0.626	-0.363	-0.952	-0.575
	X'		0.688	0.753	0.695	0.676	0.692	0.695	0.685	0.740	0.697	0.676	0.694	0.697	0.688	0.755	0.701	0.676
	No	veh	-0.484	-0.562	-1.041	-0.775	-0.290	-1.051	-0.276	-0.219	-1.047	-0.172	-0.042	-1.047	-0.785	-0.494	-1.051	-0.747
Average Queue Delay	D	sec/veh	17	21	5	19	32	4	23	27	3	37	33	3	13	23	2	21
Average Delay		**sec/veh**	**25**	**23**	**12**	**45**	**37**	**11**	**32**	**28**	**10**	**54**	**37**	**10**	**23**	**25**	**8**	**48**
Average Queue	N = q(r/2+d)	veh	3.103	15.590	0.300	1.318	6.062	0.186	3.490	17.594	0.233	2.288	7.182	0.233	2.074	17.229	0.239	1.401
Average Queue Length	NL/n	metre	19	31	2	8	18	1	21	35	1	14	22	1	12	34	1	8
Average Queue	N=qr	veh	3.288	17.356	0.402	1.301	6.171	0.251	3.487	18.667	0.322	2.045	7.194	0.322	2.346	18.965	0.342	1.376
Average Queue Length	NL/n	metre	20	35	2	8	19	2	21	37	2	12	22	2	14	38	2	8
Average Queue	N=qr+No	veh	2.804	16.794	-0.639	0.526	5.881	-0.800	3.211	18.448	-0.726	1.873	7.153	-0.726	1.561	18.471	-0.709	0.629
Average Queue Length	NL/n	metre	17	34	-4	3	18	-5	19	37	-4	11	21	-4	9	37	-4	4
Average Queue Length		**metre**	**20**	**35**	**2**	**8**	**19**	**2**	**21**	**37**	**2**	**14**	**22**	**2**	**14**	**38**	**2**	**8**
Maximum Queue Length		**metre**	**53**	**52**	**26**	**38**	**36**	**26**	**55**	**55**	**25**	**42**	**41**	**25**	**39**	**56**	**23**	**38**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2031 Design Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	Causeway Road / Leighton Road / Tung Lo Wan Road / Irving Street (J9)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			C	F	A	A	F	B	C	F
			Weekday PM		**Weekend Noon**					
		Unit	Causeway Rd EB	Causeway Rd EB (Tram)	Causeway Rd WB - LT	Causeway Rd WB - Ahead	Causeway Rd WB (Tram)	Tung Lo Wan Rd NB	Causeway Rd EB	Causeway Rd EB (Tram)
Cycle time	c	sec	105	105	105	105	105	105	105	105
Effective green time	g	sec	28	65	43	43	64	13	29	64
		pcu/hr	440	35	255	1445	40	85	450	30
Design flow	q	veh/sec	0.094	0.007	0.054	0.309	0.009	0.018	0.096	0.006
		pcu/hr	2555	1340	1150	5450	1340	1330	2555	1340
Saturation flow	Q	veh/sec	0.546	0.286	0.246	1.165	0.286	0.284	0.546	0.286
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	1	1	3	1	1	2	1
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.267	0.619	0.410	0.410	0.610	0.124	0.276	0.610
Degree of saturation	x		0.646	0.042	0.541	0.647	0.049	0.516	0.638	0.037
	M		9.872	0.785	5.721	32.420	0.897	1.907	10.096	0.673
	y		0.172	0.026	0.222	0.265	0.030	0.064	0.176	0.022
	Qt	veh/sec	87.350	106.349	60.379	286.142	104.713	21.111	90.470	104.713
	x<1									
	A	sec/veh	0.325	0.075	0.224	0.237	0.079	0.410	0.318	0.078
	B	sec/veh	0.589	0.001	0.320	0.594	0.001	0.275	0.561	0.001
	C	sec/veh	3.453	0.000	1.781	1.155	0.000	7.853	3.192	0.000
Average Queue Delay	D	sec/veh	37	8	28	26	8	50	36	8
	x>x'									
	Z		-0.354	-0.958	-0.459	-0.353	-0.951	-0.484	-0.362	-0.963
	X'		0.695	0.701	0.688	0.753	0.701	0.676	0.696	0.701
	No	veh	-0.213	-1.054	-0.496	-0.455	-1.050	-0.557	-0.247	-1.056
Average Queue Delay	D	sec/veh	33	2	19	24	2	27	32	2
Average Delay		**sec/veh**	**37**	**8**	**28**	**26**	**8**	**50**	**36**	**8**
Average Queue	N = q(r/2+d)	veh	7.090	0.209	3.193	17.500	0.247	1.750	7.118	0.185
Average Queue Length	NL/n	metre	21	1	19	35	1	11	21	1
Average Queue	N=qr	veh	7.239	0.299	3.378	19.143	0.350	1.671	7.308	0.263
Average Queue Length	NL/n	metre	22	2	20	38	2	10	22	2
Average Queue	N=qr+No	veh	7.026	-0.754	2.882	18.688	-0.699	1.114	7.061	-0.793
Average Queue Length	NL/n	metre	21	-5	17	37	-4	7	21	-5
Average Queue Length		**metre**	**22**	**2**	**20**	**38**	**2**	**11**	**22**	**2**
Maximum Queue Length		**metre**	**42**	**59**	**63**	**52**	**67**	**41**	**37**	**63**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2031 Design Flows
Job Title	tancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	Causeway Road / Moreton Terrace (J10)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			C	D	E	E	A	B	C	D	E	E	A	B	C	D	E	E
			Weekday AM						Weekday Noon						Weekday PM			
		Unit	Causeway Rd WB	Causeway Rd WB (Tram)	Moreton Terrace NB-LT	Moreton Terrace NB-RT	Causeway Rd EB	Causeway Rd EB (Tram)	Causeway Rd WB	Causeway Rd WB (Tram)	Moreton Terrace NB-LT	Moreton Terrace NB-RT	Causeway Rd EB	Causeway Rd EB (Tram)	Causeway Rd WB	Causeway Rd WB (Tram)	Moreton Terrace NB-LT	Moreton Terrace NB-RT
Cycle time	c	sec	100	100	100	100	100	100	95	95	95	95	95	95	105	105	105	105
Effective green time	g	sec	66	64	24	24	66	64	60	58	25	25	66	64	70	68	25	25
		pcu/hr	1155	40	410	455	1140	95	985	35	540	465	1315	95	1025	40	505	440
Design flow	q	veh/sec	0.247	0.009	0.088	0.097	0.244	0.020	0.210	0.007	0.115	0.099	0.281	0.020	0.219	0.009	0.108	0.094
		pcu/hr	2950	1915	3605	1915	4070	1915	2950	1915	3595	1915	4070	1915	2950	1915	3595	1915
Saturation flow	Q	veh/sec	0.630	0.409	0.770	0.409	0.870	0.409	0.630	0.409	0.768	0.409	0.870	0.409	0.630	0.409	0.768	0.409
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.660	0.640	0.240	0.240	0.660	0.640	0.632	0.611	0.263	0.263	0.695	0.674	0.667	0.648	0.238	0.238
Degree of saturation	x		0.593	0.033	0.474	0.990	0.424	0.078	0.529	0.030	0.571	0.923	0.465	0.074	0.521	0.032	0.590	0.965
	M		24.679	0.855	8.761	9.722	24.359	2.030	19.995	0.710	10.962	9.439	26.693	1.928	22.997	0.897	11.330	9.872
	y		0.392	0.021	0.114	0.238	0.280	0.050	0.334	0.018	0.150	0.243	0.323	0.050	0.347	0.021	0.140	0.230
	Qt	veh/sec	249.615	157.128	110.923	58.923	344.385	157.128	238.866	149.892	121.289	64.609	362.510	165.398	252.137	158.999	109.737	58.455
	x<1																	
	A	sec/veh	0.095	0.066	0.326	0.379	0.080	0.068	0.102	0.077	0.319	0.359	0.069	0.056	0.085	0.063	0.338	0.377
	B	sec/veh	0.433	0.001	0.213	48.962	0.156	0.003	0.296	0.000	0.380	5.508	0.202	0.003	0.284	0.001	0.424	13.309
	C	sec/veh	0.482	0.000	1.402	13.817	0.082	0.000	0.313	0.000	1.949	10.589	0.105	0.000	0.261	0.000	2.513	13.238
Average Queue Delay	D	sec/veh	11	7	34	528	9	7	11	7	32	79	7	5	10	7	37	168
	x>x'																	
	Z		-0.407	-0.967	-0.526	-0.010	-0.576	-0.922	-0.471	-0.970	-0.429	-0.077	-0.535	-0.926	-0.479	-0.968	-0.410	-0.035
	X'		0.739	0.714	0.701	0.686	0.766	0.714	0.733	0.710	0.702	0.687	0.766	0.714	0.744	0.716	0.702	0.687
	No	veh	-0.545	-1.071	-0.662	3.519	-0.897	-1.050	-0.658	-1.067	-0.467	2.354	-0.850	-1.051	-0.705	-1.075	-0.418	3.017
Average Queue Delay	D	sec/veh	8	3	29	74	6	3	8	3	28	56	5	2	7	3	33	71
Average Delay		**sec/veh**	**11**	**7**	**34**	**74**	**9**	**7**	**11**	**7**	**32**	**56**	**7**	**5**	**10**	**7**	**37**	**71**
Average Queue	N = q(r/2+d)	veh	6.854	0.211	6.274	54.995	6.233	0.507	5.951	0.194	7.695	11.318	6.084	0.426	6.017	0.216	8.296	19.545
Average Queue Length	NL/n	metre	21	1	19	330	19	3	18	1	23	68	18	3	18	1	25	117
Average Queue	N=qr	veh	8.391	0.308	6.658	7.389	8.282	0.731	7.366	0.277	8.077	6.955	8.149	0.629	7.666	0.316	8.632	7.521
Average Queue Length	NL/n	metre	25	2	20	44	25	4	22	2	24	42	24	4	23	2	26	45
Average Queue	N=qr+No	veh	7.846	-0.763	5.996	10.907	7.385	-0.319	6.708	-0.790	7.610	9.309	7.298	-0.421	6.961	-0.759	8.215	10.538
Average Queue Length	NL/n	metre	24	-5	18	65	22	-2	20	-5	23	56	22	-3	21	-5	25	63
Average Queue Length		**metre**	**25**	**2**	**20**	**65**	**25**	**4**	**22**	**2**	**24**	**56**	**24**	**4**	**23**	**2**	**26**	**63**
Maximum Queue Length		**metre**	**54**	**25**	**35**	**82**	**53**	**25**	**47**	**25**	**42**	**84**	**56**	**25**	**47**	**24**	**45**	**92**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2031 Design Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	Causeway Road / Moreton Terrace (J10)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	B	C	D	E	E	A	B
			Weekday PM		Weekend Noon					
		Unit	Causeway Rd EB	Causeway Rd EB (Tram)	Causeway Rd WB	Causeway Rd WB (Tram)	Moreton Terrace NB-LT	Moreton Terrace NB-RT	Causeway Rd EB	Causeway Rd EB (Tram)
Cycle time	c	sec	105	105	105	105	105	105	105	105
Effective green time	g	sec	70	68	69	67	26	26	69	67
		pcu/hr	1310	100	1105	40	495	445	1275	95
Design flow	q	veh/sec	0.280	0.021	0.236	0.009	0.106	0.095	0.272	0.020
		pcu/hr	4070	1915	2950	1915	3595	1915	4070	1915
Saturation flow	Q	veh/sec	0.870	0.409	0.630	0.409	0.768	0.409	0.870	0.409
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	1	2	1	2	1	2	1
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.667	0.648	0.657	0.638	0.248	0.248	0.657	0.638
Degree of saturation	x		0.483	0.081	0.570	0.033	0.556	0.938	0.477	0.078
	M		29.391	2.244	24.792	0.897	11.106	9.984	28.606	2.131
	y		0.322	0.052	0.375	0.021	0.138	0.232	0.313	0.050
	Qt	veh/sec	347.863	158.999	248.535	156.661	114.127	60.794	342.894	156.661
	x<1									
	A	sec/veh	0.082	0.066	0.094	0.067	0.328	0.369	0.086	0.069
	B	sec/veh	0.225	0.004	0.378	0.001	0.348	7.153	0.217	0.003
	C	sec/veh	0.147	0.000	0.411	0.000	2.050	11.983	0.145	0.000
Average Queue Delay	D	sec/veh	9	7	11	7	36	102	10	7
	x>x'									
	Z		-0.517	-0.919	-0.430	-0.967	-0.444	-0.062	-0.523	-0.922
	X'		0.771	0.716	0.742	0.716	0.703	0.688	0.770	0.716
	No	veh	-0.845	-1.052	-0.609	-1.074	-0.508	2.572	-0.849	-1.053
Average Queue Delay	D	sec/veh	7	3	8	3	32	64	8	3
Average Delay		**sec/veh**	**9**	**7**	**11**	**7**	**36**	**64**	**10**	**7**
Average Queue	N = q(r/2+d)	veh	7.490	0.546	6.861	0.223	7.955	13.451	7.530	0.536
Average Queue Length	NL/n	metre	22	3	21	1	24	81	23	3
Average Queue	N=qr	veh	9.797	0.791	8.500	0.325	8.356	7.512	9.808	0.771
Average Queue Length	NL/n	metre	29	5	26	2	25	45	29	5
Average Queue	N=qr+No	veh	8.952	-0.262	7.891	-0.750	7.848	10.084	8.959	-0.282
Average Queue Length	NL/n	metre	27	-2	24	-4	24	61	27	-2
Average Queue Length		**metre**	**29**	**5**	**26**	**2**	**25**	**61**	**29**	**5**
Maximum Queue Length		**metre**	**56**	**44**	**63**	**52**	**67**	**67**	**41**	**37**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2031 Design Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	Pennington Street / Jardine's Bazaar / Irving Street (J11)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	B	E	F	A	B	E	F	A	B	E	F	A	B	E	F
			Weekday AM				**Weekday Noon**				**Weekday PM**				**Weekend Noon**			
		Unit	Irving St WB	Pennington St NB 1st stop	Pennington St NB 2nd stop - LT	Pennington St NB 2nd stop - RT	Irving St WB	Pennington St NB 1st stop	Pennington St NB 2nd stop - LT	Pennington St NB 2nd stop - RT	Irving St WB	Pennington St NB 1st stop	Pennington St NB 2nd stop - LT	Pennington St NB 2nd stop - RT	Irving St WB	Pennington St NB 1st stop	Pennington St NB 2nd stop - LT	Pennington St NB 2nd stop - RT
Cycle time	c	sec	100	100	100	100	120	120	120	120	100	100	100	100	100	100	100	100
Effective green time	g	sec	30	57	80	78	39	68	100	98	32	55	80	78	33	54	80	78
		pcu/hr	435	585	435	565	505	660	470	640	555	670	525	635	530	635	475	630
Design flow	q	veh/sec	0.093	0.125	0.093	0.121	0.108	0.141	0.100	0.137	0.119	0.143	0.112	0.136	0.113	0.136	0.101	0.135
		pcu/hr	6350	3850	1840	3425	6365	3825	1840	3425	6355	3810	1840	3425	6365	3820	1840	3425
Saturation flow	Q	veh/sec	1.357	0.823	0.393	0.732	1.360	0.817	0.393	0.732	1.358	0.814	0.393	0.732	1.360	0.816	0.393	0.732
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	4	2	1	2	4	2	1	2	4	2	1	2	4	2	1	2
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.300	0.570	0.800	0.780	0.325	0.567	0.833	0.817	0.320	0.550	0.800	0.780	0.330	0.540	0.800	0.780
Degree of saturation	x		0.228	0.267	0.296	0.211	0.244	0.304	0.307	0.229	0.273	0.320	0.357	0.238	0.252	0.308	0.323	0.236
	M		9.295	12.500	9.295	12.073	12.949	16.923	12.051	16.410	11.859	14.316	11.218	13.568	11.325	13.568	10.150	13.462
	y		0.069	0.152	0.236	0.165	0.079	0.173	0.255	0.187	0.087	0.176	0.285	0.185	0.083	0.166	0.258	0.184
	Qt	veh/sec	244.231	281.346	188.718	342.500	265.208	277.885	196.581	358.600	260.718	268.654	188.718	342.500	269.288	264.462	188.718	342.500
	x<1																	
	A	sec/veh	0.263	0.109	0.026	0.029	0.247	0.113	0.019	0.021	0.253	0.123	0.028	0.030	0.245	0.127	0.027	0.030
	B	sec/veh	0.034	0.048	0.062	0.028	0.039	0.067	0.068	0.034	0.051	0.075	0.099	0.037	0.043	0.068	0.077	0.036
	C	sec/veh	0.084	0.020	0.010	0.001	0.085	0.038	0.010	0.002	0.117	0.049	0.027	0.002	0.085	0.045	0.016	0.002
Average Queue Delay	D	sec/veh	27	11	3	3	30	14	3	3	26	13	4	3	25	13	3	3
	x>x'																	
	Z		-0.772	-0.733	-0.704	-0.789	-0.756	-0.696	-0.693	-0.771	-0.727	-0.680	-0.643	-0.762	-0.748	-0.692	-0.677	-0.764
	X'		0.738	0.748	0.722	0.765	0.758	0.763	0.736	0.790	0.742	0.745	0.722	0.765	0.745	0.743	0.722	0.765
	No	veh	-1.001	-0.995	-0.922	-1.062	-1.031	-0.998	-0.941	-1.099	-0.979	-0.947	-0.865	-1.046	-0.998	-0.954	-0.898	-1.047
Average Queue Delay	D	sec/veh	24	9	0	1	27	11	-1	1	23	10	0	1	22	11	0	1
Average Delay		**sec/veh**	**27**	**11**	**3**	**3**	**30**	**14**	**3**	**3**	**26**	**13**	**4**	**3**	**25**	**13**	**3**	**3**
Average Queue	N = q(r/2+d)	veh	5.724	4.096	1.234	1.706	7.605	5.648	1.296	1.877	7.074	5.048	1.532	1.932	6.600	4.905	1.364	1.916
Average Queue Length	NL/n	metre	9	12	7	5	11	17	8	6	11	15	9	6	10	15	8	6
Average Queue	N=qr	veh	6.506	5.375	1.859	2.656	8.740	7.333	2.009	3.009	8.064	6.442	2.244	2.985	7.588	6.241	2.030	2.962
Average Queue Length	NL/n	metre	10	16	11	8	13	22	12	9	12	19	13	9	11	19	12	9
Average Queue	N=qr+No	veh	5.505	4.380	0.937	1.594	7.709	6.335	1.068	1.909	7.085	5.496	1.378	1.939	6.590	5.287	1.132	1.914
Average Queue Length	NL/n	metre	8	13	6	5	12	19	6	6	11	16	8	6	10	16	7	6
Average Queue Length		**metre**	**10**	**16**	**11**	**8**	**13**	**22**	**12**	**9**	**12**	**19**	**13**	**9**	**11**	**19**	**12**	**9**
Maximum Queue Length		**metre**	**19**	**33**	**34**	**21**	**24**	**42**	**36**	**23**	**22**	**38**	**38**	**22**	**21**	**37**	**36**	**22**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2031 Design Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	Link Road / Broadwood Road (J12)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	B	E	C	A	B	E	C	A	B	E	C	A	B	E	C
			Weekday AM				**Weekday Noon**				**Weekday PM**				**Weekend Noon**			
		Unit	Link Rd SB	Broadwood Road (E) NB - Ahead & LT	Broadwood Road (E) NB - RT	Broadwood Road (W) NB	Link Rd SB	Broadwood Road (E) NB - Ahead & LT	Broadwood Road (E) NB - RT	Broadwood Road (W) NB	Link Rd SB	Broadwood Road (E) NB - Ahead & LT	Broadwood Road (E) NB - RT	Broadwood Road (W) NB	Link Rd SB	Broadwood Road (E) NB - Ahead & LT	Broadwood Road (E) NB - RT	Broadwood Road (W) NB
Cycle time	c	sec	140	140	140	140	110	110	110	110	135	135	135	135	110	110	110	110
Effective green time	g	sec	42	61	64	51	31	45	48	37	40	64	67	42	29	46	49	35
		pcu/hr	435	460	185	510	400	465	170	440	435	440	245	440	395	445	220	450
Design flow	q	veh/sec	0.093	0.098	0.040	0.109	0.085	0.099	0.036	0.094	0.093	0.094	0.052	0.094	0.084	0.095	0.047	0.096
		pcu/hr	1940	1895	1730	1840	1945	1890	1730	1835	1945	1900	1730	1860	1950	1890	1730	1845
Saturation flow	Q	veh/sec	0.415	0.405	0.370	0.393	0.416	0.404	0.370	0.392	0.416	0.406	0.370	0.397	0.417	0.404	0.370	0.394
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.300	0.436	0.457	0.364	0.282	0.409	0.436	0.336	0.296	0.474	0.496	0.311	0.264	0.418	0.445	0.318
Degree of saturation	x		0.747	0.557	0.234	0.761	0.730	0.601	0.225	0.713	0.755	0.488	0.285	0.760	0.768	0.563	0.285	0.767
	M		13.013	13.761	5.534	15.256	9.402	10.929	3.996	10.342	12.548	12.692	7.067	12.692	9.284	10.459	5.171	10.577
	y		0.224	0.243	0.107	0.277	0.206	0.246	0.098	0.240	0.224	0.232	0.142	0.237	0.203	0.235	0.127	0.244
	Qt	veh/sec	74.615	105.856	101.392	85.934	70.274	99.126	96.783	79.132	73.884	115.480	110.076	74.188	65.909	101.329	98.800	75.262
	x<1																	
	A	sec/veh	0.316	0.210	0.165	0.280	0.325	0.232	0.176	0.290	0.319	0.180	0.148	0.311	0.340	0.221	0.176	0.307
	B	sec/veh	1.106	0.350	0.036	1.210	0.985	0.454	0.033	0.885	1.162	0.233	0.057	1.206	1.274	0.363	0.057	1.259
	C	sec/veh	5.938	1.375	0.058	5.206	5.483	1.856	0.056	4.332	6.103	0.704	0.086	6.089	6.752	1.426	0.119	5.712
Average Queue Delay	D	sec/veh	50	32	24	45	42	28	20	37	49	26	21	49	46	27	20	41
	x>x'																	
	Z		-0.253	-0.443	-0.766	-0.239	-0.270	-0.399	-0.775	-0.287	-0.245	-0.512	-0.715	-0.240	-0.232	-0.437	-0.715	-0.233
	X'		0.699	0.711	0.709	0.703	0.691	0.700	0.700	0.694	0.698	0.713	0.711	0.698	0.690	0.701	0.700	0.693
	No	veh	0.279	-0.534	-0.955	0.349	0.208	-0.379	-0.942	0.097	0.337	-0.675	-0.915	0.376	0.477	-0.484	-0.893	0.450
Average Queue Delay	D	sec/veh	46	26	17	42	37	23	14	33	46	21	15	45	42	21	14	37
Average Delay		**sec/veh**	**46**	**32**	**24**	**42**	**37**	**28**	**20**	**33**	**46**	**26**	**21**	**45**	**42**	**27**	**20**	**37**
Average Queue	N = q(r/2+d)	veh	9.218	6.991	2.449	9.757	6.945	6.029	1.861	6.905	9.012	5.789	2.877	8.951	7.279	5.585	2.396	7.567
Average Queue Length	NL/n	metre	55	42	15	59	42	36	11	41	54	35	17	54	44	34	14	45
Average Queue	N=qr	veh	9.109	7.765	3.004	9.699	6.752	6.458	2.252	6.863	8.830	6.675	3.560	8.744	6.837	6.085	2.868	7.212
Average Queue Length	NL/n	metre	55	47	18	58	41	39	14	41	53	40	21	52	41	37	17	43
Average Queue	N=qr+No	veh	9.388	7.231	2.050	10.047	6.960	6.079	1.310	6.960	9.167	6.001	2.645	9.119	7.313	5.601	1.974	7.661
Average Queue Length	NL/n	metre	56	43	12	60	42	36	8	42	55	36	16	55	44	34	12	46
Average Queue Length		**metre**	**56**	**47**	**18**	**60**	**42**	**39**	**14**	**42**	**55**	**40**	**21**	**55**	**44**	**37**	**17**	**46**
Maximum Queue Length		**metre**	**101**	**86**	**42**	**106**	**82**	**76**	**35**	**81**	**99**	**77**	**47**	**99**	**86**	**73**	**40**	**89**

*Note: SG = Signal Group

Queue Length Analysis

MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2031 Design Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	Wong Nai Chung Road / Sports Road (J14)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	B	A	B	A	B	A	B
			Weekday AM		**Weekday Noon**		**Weekday PM**		**Weekend Noon**	
		Unit	Sports Rd EB	Wong Nai Chung Rd SB	Sports Rd EB	Wong Nai Chung Rd SB	Sports Rd EB	Wong Nai Chung Rd SB	Sports Rd EB	Wong Nai Chung Rd SB
Cycle time	c	sec	90	90	75	75	90	90	75	75
Effective green time	g	sec	61	19	46	19	59	21	47	18
		pcu/hr	840	430	840	540	855	485	885	550
Design flow	q	veh/sec	0.179	0.092	0.179	0.115	0.183	0.104	0.189	0.118
		pcu/hr	3655	5885	3655	5885	3655	5885	3655	5885
Saturation flow	Q	veh/sec	0.781	1.257	0.781	1.257	0.781	1.257	0.781	1.257
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	3	2	3	2	3	2	3
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.678	0.211	0.613	0.253	0.656	0.233	0.627	0.240
Degree of saturation	x		0.339	0.346	0.375	0.362	0.357	0.353	0.386	0.389
	M		16.154	8.269	13.462	8.654	16.442	9.327	14.183	8.814
	y		0.230	0.073	0.230	0.092	0.234	0.082	0.242	0.093
	Qt	veh/sec	317.600	159.281	287.402	191.137	307.187	176.047	293.650	181.077
	x<1									
	A	sec/veh	0.067	0.336	0.097	0.307	0.077	0.320	0.092	0.319
	B	sec/veh	0.087	0.092	0.112	0.103	0.099	0.096	0.122	0.124
	C	sec/veh	0.027	0.559	0.060	0.419	0.039	0.489	0.063	0.559
Average Queue Delay	D	sec/veh	7	31	8	23	7	29	7	24
	x>x'									
	Z		-0.661	-0.654	-0.625	-0.638	-0.643	-0.647	-0.614	-0.611
	X'		0.749	0.710	0.730	0.710	0.747	0.714	0.731	0.708
	No	veh	-0.940	-0.848	-0.860	-0.829	-0.918	-0.849	-0.851	-0.793
Average Queue Delay	D	sec/veh	4	27	5	20	5	26	5	21
Average Delay		**sec/veh**	**7**	**31**	**8**	**23**	**7**	**29**	**7**	**24**
Average Queue	N = q(r/2+d)	veh	3.774	6.078	4.011	5.941	4.197	6.608	4.061	6.216
Average Queue Length	NL/n	metre	11	12	12	12	13	13	12	12
Average Queue	N=qr	veh	5.205	6.524	5.205	6.462	5.663	7.151	5.295	6.699
Average Queue Length	NL/n	metre	16	13	16	13	17	14	16	13
Average Queue	N=qr+No	veh	4.265	5.675	4.345	5.633	4.745	6.301	4.444	5.905
Average Queue Length	NL/n	metre	13	11	13	11	14	13	13	12
Average Queue Length		**metre**	**16**	**13**	**16**	**13**	**17**	**14**	**16**	**13**
Maximum Queue Length		**metre**	**32**	**24**	**32**	**25**	**34**	**27**	**33**	**25**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA MVA Hong Kong Ltd.

Job No.	CHK50603110	Description	2031 Design Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	Leigthon Road / Wong Nai Chung Road (J15)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	B	A	A	A	B	A	A	A	B	A	A	A	B	A	A
			Weekday AM				**Weekday Noon**				**Weekday PM**				**Weekend Noon**			
		Unit	Leighton Rd WB - LT	Leighton Rd WB (Tram)	Leighton Rd WB - Ahead	Leighton Rd EB	Leighton Rd WB - LT	Leighton Rd WB (Tram)	Leighton Rd WB - Ahead	Leighton Rd EB	Leighton Rd WB - LT	Leighton Rd WB (Tram)	Leighton Rd WB - Ahead	Leighton Rd EB	Leighton Rd WB - LT	Leighton Rd WB (Tram)	Leighton Rd WB - Ahead	Leighton Rd EB
Cycle time	c	sec	130	130	130	130	120	120	120	120	120	120	120	120	120	120	120	120
Effective green time	g	sec	93	25	93	93	82	26	82	82	80	28	80	80	81	27	81	81
		pcu/hr	375	50	975	740	470	60	995	845	400	65	995	650	500	60	955	755
Design flow	q	veh/sec	0.080	0.011	0.208	0.158	0.100	0.013	0.213	0.181	0.085	0.014	0.213	0.139	0.107	0.013	0.204	0.161
		pcu/hr	2225	370	1940	2455	2225	370	1940	2455	2225	370	1940	2455	2225	370	1940	2455
Saturation flow	Q	veh/sec	0.475	0.079	0.415	0.525	0.475	0.079	0.415	0.525	0.475	0.079	0.415	0.525	0.475	0.079	0.415	0.525
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	1	2	3	2	1	2	3	2	1	2	3	2	1	2	3
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.715	0.192	0.715	0.715	0.683	0.217	0.683	0.683	0.667	0.233	0.667	0.667	0.675	0.225	0.675	0.675
Degree of saturation	x		0.236	0.703	0.703	0.421	0.309	0.748	0.751	0.504	0.270	0.753	0.769	0.397	0.333	0.721	0.729	0.456
	M		10.417	1.389	27.083	20.556	12.051	1.538	25.513	21.667	10.256	1.667	25.513	16.667	12.821	1.538	24.487	19.359
	y		0.169	0.135	0.503	0.301	0.211	0.162	0.513	0.344	0.180	0.176	0.513	0.265	0.225	0.162	0.492	0.308
	Qt	veh/sec	204.068	9.122	177.929	225.163	194.925	10.278	169.957	215.075	190.171	11.068	165.812	209.829	192.548	10.673	167.885	212.452
	x<1																	
	A	sec/veh	0.049	0.377	0.081	0.058	0.064	0.366	0.103	0.076	0.068	0.357	0.114	0.076	0.068	0.358	0.104	0.076
	B	sec/veh	0.036	0.830	0.830	0.153	0.069	1.113	1.129	0.256	0.050	1.147	1.283	0.131	0.083	0.930	0.982	0.191
	C	sec/veh	0.006	23.876	1.308	0.091	0.026	23.953	1.902	0.245	0.015	22.587	2.223	0.087	0.039	21.033	1.695	0.158
Average Queue Delay	D	sec/veh	7	103	13	8	8	107	16	10	9	103	17	10	9	95	16	10
	x>x'																	
	Z		-0.764	-0.297	-0.297	-0.579	-0.691	-0.252	-0.249	-0.496	-0.730	-0.247	-0.231	-0.603	-0.667	-0.279	-0.271	-0.544
	X'		0.744	0.673	0.734	0.751	0.735	0.673	0.727	0.742	0.733	0.674	0.725	0.740	0.734	0.674	0.726	0.741
	No	veh	-1.010	0.135	-0.161	-0.867	-0.938	0.352	0.143	-0.729	-0.966	0.377	0.282	-0.865	-0.915	0.221	0.018	-0.797
Average Queue Delay	D	sec/veh	3	58	10	5	5	64	13	7	5	63	15	7	5	55	13	7
Average Delay		**sec/veh**	**7**	**58**	**13**	**8**	**8**	**64**	**13**	**10**	**9**	**63**	**15**	**10**	**9**	**55**	**13**	**10**
Average Queue	N = q(r/2+d)	veh	2.026	1.660	6.617	4.256	2.741	1.972	7.390	5.299	2.453	2.066	7.972	4.156	3.036	1.808	7.163	4.787
Average Queue Length	NL/n	metre	6	10	20	9	8	12	22	11	7	12	24	8	9	11	21	10
Average Queue	N=qr	veh	2.965	1.122	7.708	5.850	3.816	1.205	8.079	6.861	3.419	1.278	8.504	5.556	4.167	1.192	7.958	6.292
Average Queue Length	NL/n	metre	9	7	23	12	11	7	24	14	10	8	26	11	13	7	24	13
Average Queue	N=qr+No	veh	1.955	1.257	7.547	4.984	2.879	1.557	8.222	6.132	2.453	1.655	8.787	4.691	3.251	1.413	7.977	5.495
Average Queue Length	NL/n	metre	6	8	23	10	9	9	25	12	7	10	26	9	10	8	24	11
Average Queue Length		**metre**	**9**	**8**	**23**	**12**	**11**	**9**	**25**	**14**	**10**	**10**	**26**	**11**	**13**	**8**	**24**	**13**
Maximum Queue Length		**metre**	**22**	**43**	**43**	**25**	**26**	**47**	**46**	**27**	**24**	**47**	**48**	**23**	**28**	**44**	**45**	**26**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA **MVA Hong Kong Ltd.**

Job No.	CHK50603110	Description	2031 Design Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	Tung Lo Wan Road / Eastern Hospital Road (J16)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	B	A	B	A	B	A	B
			Weekday AM		**Weekday Noon**		**Weekday PM**		**Weekend Noon**	
		Unit	Tung Lo Wan Rd SB	Ka Ning Path NB	Tung Lo Wan Rd SB	Ka Ning Path NB	Tung Lo Wan Rd SB	Ka Ning Path NB	Tung Lo Wan Rd SB	Ka Ning Path NB
Cycle time	c	sec	100	100	95	95	105	105	105	105
Effective green time	g	sec	29	37	28	33	31	40	34	37
		pcu/hr	555	380	555	365	490	335	560	325
Design flow	q	veh/sec	0.119	0.081	0.119	0.078	0.105	0.072	0.120	0.069
		pcu/hr	3310	1750	3295	1780	3290	1755	3290	1770
Saturation flow	Q	veh/sec	0.707	0.374	0.704	0.380	0.703	0.375	0.703	0.378
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	1	2	1	2	1	2	1
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.290	0.370	0.295	0.347	0.295	0.381	0.324	0.352
Degree of saturation	x		0.578	0.587	0.571	0.590	0.504	0.501	0.526	0.521
	M		11.859	8.120	11.266	7.409	10.994	7.516	12.564	7.292
	y		0.168	0.217	0.168	0.205	0.149	0.191	0.170	0.184
	Qt	veh/sec	123.064	83.013	124.507	79.271	124.530	85.714	136.581	79.963
	x<1									
	A	sec/veh	0.303	0.253	0.299	0.268	0.292	0.237	0.276	0.257
	B	sec/veh	0.396	0.417	0.381	0.425	0.257	0.252	0.291	0.283
	C	sec/veh	1.888	2.068	1.759	2.267	1.279	1.198	1.232	1.563
Average Queue Delay	D	sec/veh	32	28	30	29	32	27	30	29
	x>x'									
	Z		-0.422	-0.413	-0.429	-0.410	-0.496	-0.499	-0.474	-0.479
	X'		0.704	0.693	0.703	0.691	0.706	0.695	0.710	0.693
	No	veh	-0.456	-0.395	-0.468	-0.377	-0.624	-0.600	-0.593	-0.556
Average Queue Delay	D	sec/veh	28	22	26	23	28	21	26	23
Average Delay		**sec/veh**	**32**	**28**	**30**	**29**	**32**	**27**	**30**	**29**
Average Queue	N = q(r/2+d)	veh	7.973	4.865	7.515	4.651	7.205	4.272	7.853	4.409
Average Queue Length	NL/n	metre	24	29	23	28	22	26	24	26
Average Queue	N=qr	veh	8.420	5.115	7.946	4.835	7.748	4.653	8.496	4.722
Average Queue Length	NL/n	metre	25	31	24	29	23	28	25	28
Average Queue	N=qr+No	veh	7.964	4.721	7.477	4.458	7.124	4.053	7.902	4.167
Average Queue Length	NL/n	metre	24	28	22	27	21	24	24	25
Average Queue Length		**metre**	**25**	**31**	**24**	**29**	**23**	**28**	**25**	**28**
Maximum Queue Length		**metre**	**48**	**64**	**46**	**61**	**44**	**58**	**47**	**59**

*Note: SG = Signal Group

Queue Length Analysis

SYSTRA MVA **MVA Hong Kong Ltd.**

Job No.	CHK50603110	Description	2031 Design Flows
Job Title	ancy Services for Commercial Development on IL No. 8945, Causeway B	Design Year	2031
Junction Name	Tung Lo Wan Road / Moreton Terrace (J17)	Designed By	LYK
Approach		Checked By	CHC
Probability(1% / 5%)?	5%		

			A	E	E	B	A	E	E	B	A	E	E	B	A	E	E	B
			Weekday AM				**Weekday Noon**				**Weekday PM**				**Weekend Noon**			
		Unit	Tung Lo Wan Rd EB (Section	Tung Lo Wan Rd WB (Section	Tung Lo Wan Rd EB (West of Tung Lo	Tung Lo Wan Drive SB	Tung Lo Wan Rd EB (Section	Tung Lo Wan Rd WB (Section	Tung Lo Wan Rd EB (West of Tung Lo	Tung Lo Wan Drive SB	Tung Lo Wan Rd EB (Section	Tung Lo Wan Rd WB (Section	Tung Lo Wan Rd EB (West of Tung Lo	Tung Lo Wan Drive SB	Tung Lo Wan Rd EB (Section	Tung Lo Wan Rd WB (Section	Tung Lo Wan Rd EB (West of Tung Lo	Tung Lo Wan Drive SB
Cycle time	c	sec	100	100	100	100	95	95	95	95	105	105	105	105	105	105	105	105
Effective green time	g	sec	43	45	45	43	37	46	46	37	42	51	51	42	48	45	45	48
		pcu/hr	960	800	340	290	975	900	360	350	960	860	345	330	815	695	240	240
Design flow	q	veh/sec	0.205	0.171	0.073	0.062	0.208	0.192	0.077	0.075	0.205	0.184	0.074	0.071	0.174	0.149	0.051	0.051
		pcu/hr	3515	3520	1935	1680	3505	3520	1945	1675	3505	3520	1945	1675	3505	3590	1960	1690
Saturation flow	Q	veh/sec	0.751	0.752	0.413	0.359	0.749	0.752	0.416	0.358	0.749	0.752	0.416	0.358	0.749	0.767	0.419	0.361
PCU factor	f	pcu/veh	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
No. of lanes	n	lane	2	2	1	1	2	2	1	1	2	2	1	1	2	2	1	1
Length of a vehicle	L	metre	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Queue duration	t	hr	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667	0.1667
Ratio of effective green	g/c		0.430	0.450	0.450	0.430	0.389	0.484	0.484	0.389	0.400	0.486	0.486	0.400	0.457	0.429	0.429	0.457
Degree of saturation	x		0.635	0.505	0.390	0.401	0.714	0.528	0.382	0.537	0.685	0.503	0.365	0.493	0.509	0.452	0.286	0.311
	M		20.513	17.094	7.265	6.197	19.792	18.269	7.308	7.105	21.538	19.295	7.740	7.404	18.285	15.593	5.385	5.385
	y		0.273	0.227	0.176	0.173	0.278	0.256	0.185	0.209	0.274	0.244	0.177	0.197	0.233	0.194	0.122	0.142
	Qt	veh/sec	193.776	203.077	111.635	92.615	175.013	218.516	120.742	83.637	179.744	219.194	121.117	85.897	205.421	197.253	107.692	99.048
	x<1																	
	A	sec/veh	0.223	0.196	0.183	0.196	0.258	0.179	0.163	0.236	0.248	0.175	0.161	0.224	0.192	0.202	0.186	0.172
	B	sec/veh	0.553	0.258	0.125	0.135	0.893	0.295	0.118	0.311	0.744	0.255	0.105	0.239	0.263	0.186	0.057	0.070
	C	sec/veh	1.319	0.537	0.318	0.436	2.235	0.529	0.234	1.430	1.938	0.452	0.201	1.057	0.543	0.406	0.124	0.148
Average Queue Delay	D	sec/veh	24	21	20	21	27	18	17	25	28	19	18	26	21	22	21	19
	x>x'																	
	Z		-0.365	-0.495	-0.610	-0.599	-0.286	-0.472	-0.618	-0.463	-0.315	-0.497	-0.635	-0.507	-0.491	-0.548	-0.714	-0.689
	X'		0.724	0.726	0.701	0.696	0.716	0.728	0.702	0.692	0.722	0.734	0.705	0.695	0.730	0.728	0.701	0.699
	No	veh	-0.368	-0.680	-0.782	-0.758	-0.010	-0.642	-0.793	-0.517	-0.180	-0.706	-0.821	-0.616	-0.685	-0.765	-0.894	-0.867
Average Queue Delay	D	sec/veh	21	18	14	15	24	15	12	19	25	16	13	19	18	19	15	13
Average Delay		**sec/veh**	**24**	**21**	**20**	**21**	**27**	**18**	**17**	**25**	**28**	**19**	**18**	**26**	**21**	**22**	**21**	**19**
Average Queue	N = q(r/2+d)	veh	10.713	8.213	3.433	3.090	11.579	8.170	3.178	4.046	12.147	8.510	3.325	4.045	8.642	7.738	2.591	2.449
Average Queue Length	NL/n	metre	32	25	21	19	35	25	19	24	36	26	20	24	26	23	16	15
Average Queue	N=qr	veh	11.692	9.402	3.996	3.532	12.083	9.423	3.769	4.338	12.923	9.923	3.981	4.442	9.926	8.910	3.077	2.923
Average Queue Length	NL/n	metre	35	28	24	21	36	28	23	26	39	30	24	27	30	27	18	18
Average Queue	N=qr+No	veh	11.324	8.722	3.214	2.774	12.073	8.781	2.976	3.820	12.743	9.217	3.160	3.826	9.242	8.145	2.183	2.056
Average Queue Length	NL/n	metre	34	26	19	17	36	26	18	23	38	28	19	23	28	24	13	12
Average Queue Length		**metre**	**35**	**28**	**24**	**21**	**36**	**28**	**23**	**26**	**39**	**30**	**24**	**27**	**30**	**27**	**18**	**18**
Maximum Queue Length		**metre**	**59**	**50**	**52**	**47**	**58**	**53**	**53**	**54**	**60**	**55**	**55**	**44**	**52**	**67**	**41**	**37**

*Note: SG = Signal Group

APPENDIX F – Surveyed Trip Rates at Reference Sites

APPENDIX F – SURVEYED TRIP RATES AT REFERENCE SITES

F.1 Surveyed Vehicular Trips Rates at Reference Sites

	Weekday						Weekend	
	AM Peak		Noon Peak		PM Peak		Noon Peak	
	GEN	ATT	GEN	ATT	GEN	ATT	GEN	ATT
Survey at Jao Tsung-I Academy (Approx. 32,000m²), Kwai Tsing Theatre (Approx. 25,000m²) & M+ (Approx. 65,000m²) for GIC – Performing Arts and Cultural Facilities								
Surveyed Trips at Jao Tsung-I Academy (pcu/hr)	12	14	14	14	12	9	25	29
Surveyed Trips at Kwai Tsing Theatre (pcu/hr)	15	23	15	15	11	10	10	15
Surveyed Trips at M+ (1) (pcu/hr)	N/A	N/A	41	67	107	37	97	112
Derived Trip Rates of Jao Tsung-I Academy (pcu/hr/100m²)	0.0381	0.0444	0.0422	0.0422	0.0388	0.0291	0.0781	0.0906
Derived Trip Rates of Kwai Tsing Theatre (pcu/hr/100m²)	0.0600	0.0920	0.0600	0.0600	0.0440	0.0400	0.0400	0.0600
Derived Trip Rates of M+ (pcu/hr/100m²)	N/A	N/A	0.0626	0.1024	0.1644	0.0569	0.1492	0.1723
Survey at Hong Kong Society for the Protection of Children SIA Shaukiwan Day Creche (Approx. 1,060m²) for Child Care Centre								
Surveyed Trips (pcu/hr)	10	11	6	7	3	3	1	1
Derived Trip Rates (pcu/hr/100m²)	0.9434	1.0377	0.5660	0.6604	0.2830	0.2830	0.0943	0.0943
Survey at T.W.G.Hs. Anita Mui Day Care Centre (Approx. 530m²) for the Elderly for Day Care Centre for the Elderly								
Surveyed Trips (pcu/hr)	8	3	1.5	6	6	7	2	3
Derived Trip Rates (pcu/hr/100m²)	1.5094	0.5660	0.2830	1.1321	1.1321	1.3208	0.3774	0.5660
Survey at Central District Health Centre (Approx. 1,130m²) for District Health Centre								
Surveyed Trips (pcu/hr)	2	4	6	9	1	1	1	1
Derived Trip Rates (pcu/hr/100m²)	0.1770	0.3540	0.5310	0.7965	0.0973	0.0973	0.0885	0.0885
Survey at ex-Murray Road Multi-storey Carpark (Provision of 210 parking spaces) For Public Vehicle Park								
Surveyed Trips (pcu/hr)	20	124	49	42	97	32	126	68
Derived Trip Rates (pcu/hr/Parking space)	0.0929	0.5897	0.2340	0.2000	0.4619	0.1500	0.6000	0.3220
Survey at Wan Chai Tower & Lands Tribunal (Approx. 48,000m²) For Court Site								
Surveyed Trips (pcu/hr) (2)	87	132	70	65	67	63	N/A	N/A
Derived Trip Rates (pcu/hr/100m²)	0.1818	0.2754	0.1448	0.1350	0.1398	0.1312	N/A	N/A

Survey at Po Leung Kuk Headquarters (451 quota) For Redevelopment of Po Leung Kuk Headquarters								
Surveyed Trips (pcu/hr)	22	9	9	11	8	10	7	9
Derived Trip Rates (pcu/hr/quota)	0.0487	0.0200	0.0200	0.0243	0.0177	0.0222	0.0155	0.0200

Notes:
(1) M+ opens at 10:00 am which is later than communal morning peak hour
(2) The existing Wan Chai Tower and Lands Tribunal do not open on the weekend

F.2 Surveyed Pedestrian Trips Rates at Reference Sites

	Weekday						**Weekend**	
	AM Peak		**Noon Peak**		**PM Peak**		**Noon Peak**	
	GEN	**ATT**	**GEN**	**ATT**	**GEN**	**ATT**	**GEN**	**ATT**
Survey at Jao Tsung-I Academy (Approx. 32,000m²), Kwai Tsing Theatre (Approx. 25,000m²) & M+ (Approx. 65,000m²) for GIC – Performing Arts and Cultural Facilities								
Surveyed Trips at Jao Tsung-I Academy (ped/hr)	28	57	41	57	52	26	12	88
Surveyed Trips at Kwai Tsing Theatre (ped/hr)	142	237	189	251	135	431	373	322
Surveyed Trips at M+ (1) (ped/hr)	N/A	N/A	139	323	433	15	167	163
Derived Trip Rates of Jao Tsung-I Academy (ped/hr/100m²)	0.09	0.18	0.13	0.18	0.16	0.08	0.04	0.28
Derived Trip Rates of Kwai Tsing Theatre (ped/hr/100m²)	0.57	0.95	0.76	1.00	0.54	1.72	1.49	1.29
Derived Trip Rates of M+ (ped/hr/100m²)	N/A	N/A	0.21	0.50	0.67	0.02	0.26	0.25
Survey at Hong Kong Society for the Protection of Children SIA Shaukiwan Day Creche (Approx. 1,060m²) for Child Care Centre								
Surveyed Trips (ped/hr)	4	7	7	2	4	2	34	17
Derived Trip Rates (ped/hr/100m²)	0.35	0.68	0.66	0.19	0.41	0.15	3.21	1.60
Survey at T.W.G.Hs. Anita Mui Day Care Centre (Approx. 530m²) for the Elderly for Day Care Centre for the Elderly								
Surveyed Trips (ped/hr)	1	3	6	5	3	1	2	2
Derived Trip Rates (ped/hr/100m²)	0.09	0.66	1.13	0.94	0.57	0.09	0.38	0.38
Survey at Central District Health Centre (Approx. 1,130m²) for District Health Centre								
Surveyed Trips (ped/hr)	27	74	9	13	24	14	21	24
Derived Trip Rates (ped/hr/100m²)	2.39	6.52	0.80	1.15	2.13	1.20	1.86	2.12
Survey at ex-Murray Road Multi-storey Carpark (Provision of 210 parking spaces) For Public Vehicle Park								
Surveyed Trips (ped/hr)	124	21	76	71	57	141	122	183

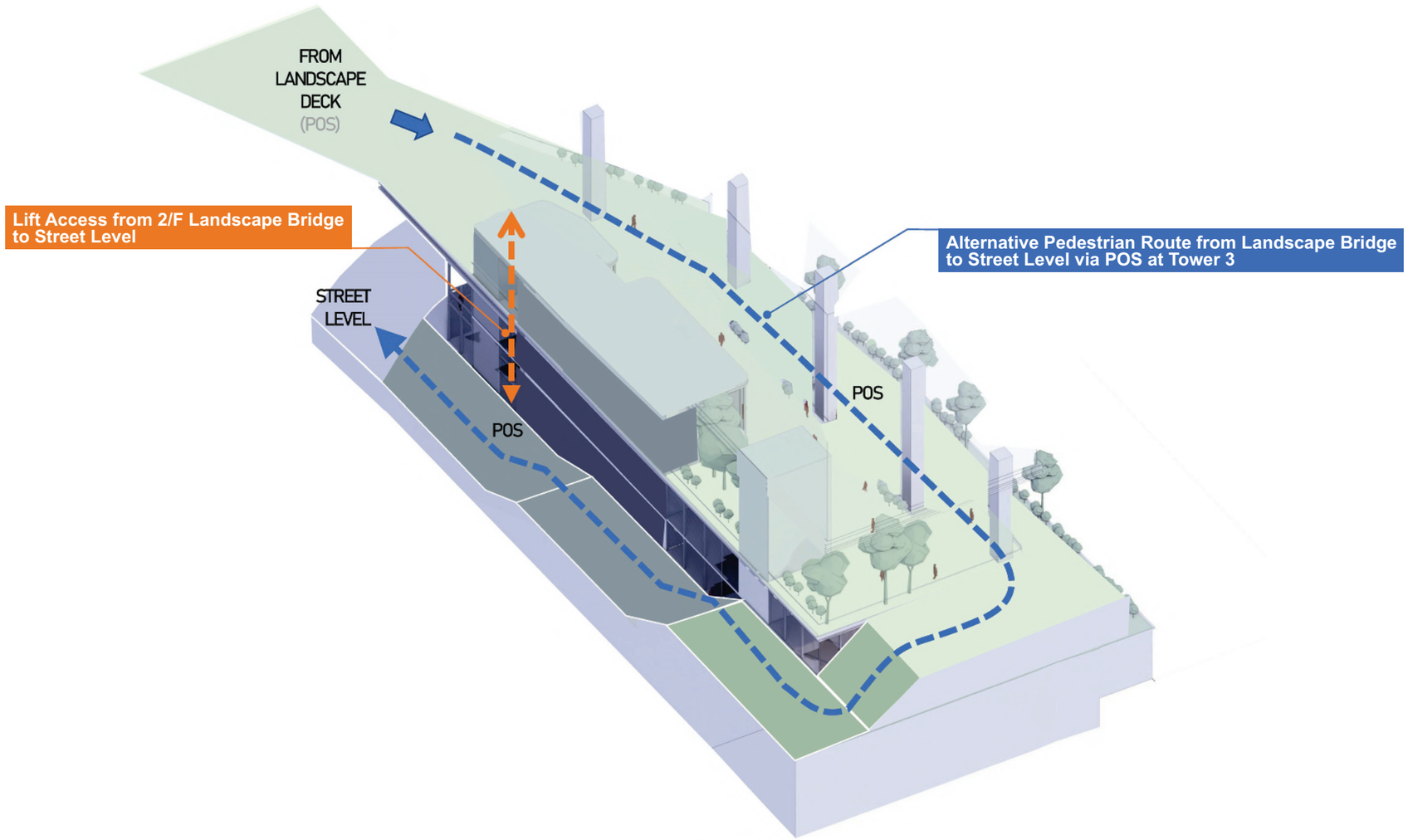
Derived Trip Rates (ped/hr/Parking space)	0.59	0.10	0.36	0.34	0.27	0.67	0.58	0.87
Survey at Wan Chai Tower & Lands Tribunal (Approx. 48,000m²) ***For Court Site***								
Surveyed Trips (ped/hr) (2)	120	1304	817	406	587	208	N/A	N/A
Derived Trip Rates (ped/hr/100m²)	0.25	2.71	1.70	0.84	1.22	0.43	N/A	N/A
Survey at Po Leung Kuk Headquarters (451 quota) ***For Redevelopment of Po Leung Kuk Headquarters***								
Surveyed Trips (ped/hr)	140	235	230	108	266	36	77	23
Derived Trip Rates (ped/hr/quota)	0.31	0.52	0.51	0.24	0.59	0.08	0.17	0.05

Notes:

(1) M+ opens at 10:00 am which is later than communal morning peak hour

(2) The existing Wan Chai Tower and Lands Tribunal do not open on the weekend

APPENDIX G – Alternative Pedestrian Route via POS at Tower 3



Note :
Images on the drawing are shown for reference only and subject to detail design

Rev.	Description	Checked	Date
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON
INLAND LOT NO. 8945, CAUSEWAY BAY, HONG KONG
TRAFFIC REVIEW REPORT

Drawing Title

ALTERNATIVE PEDESTRIAN ROUTE VIA POS AT TOWER 3

Designed	Checked	Scale	Date	Drawing No.	Rev.
TCW	CHC	NTS	APR 2022	G1	-

SYSTRA MVA

CHK50603110/TIA/G1.CDR/LLH/14APR22

Original Size : A3

銅鑼灣



Causeway Bay

Annex H
Approved Geotechnical Planning Review Report

Patchway Holdings (HK) Limited

Proposed Commercial Development on Inland Lot No.8945, Causeway Bay, Hong Kong

Geotechnical Planning Review Report

REP/03-20/01

Issue | Nov 2021

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number OC1373

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ARUP

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Appendices

Appendix A

GEO Advice Note for Planning Application

Appendix B

Ground Investigation Records

Appendix C

Groundwater Monitoring Record

Appendix D

Architectural Drawings

Appendix E

Schematic Design of Foundation and Site Formation Works

1 Introduction

1.1 Background

Ove Arup & Partners Hong Kong Limited (Arup) has been commissioned by the Patchway Holdings (HK) Limited (the Applicant) to submit an application to the Town Planning Board (TPB) under Section 16 of the Town Planning Ordinance (Cap. 131) in respect of Inland Lot No. 8945, Causeway Bay, Hong Kong.

This S16 Planning Application seeks for proposed minor relaxation of gross floor area (GFA) restrictions for a proposed commercial, social welfare facilities and cultural venue project.

1.2 Scope of this Report

In accordance with the "GEO Advice Note for Planning Applications" (GEO, 2007) (refer to **Appendix A**), a Geotechnical Planning Review Report is required in support of the Proposed Development, which is proposed for the commercial development, as the site falls into the following criteria:

1) where the maximum gradient across a site from boundary to boundary, or for a large site across any 50m long strip, is greater than 15°,

2) where a slope steeper than 30°, or retaining wall, or combination of the two with a height greater than 6 m exists on the site or within 6 m of the site, or

3) where there is ground outside the site but in the same catchment that is at an angular elevation of more than 20° from the site and there is ground sloping at more than 15° within 50m upslope of the site.

This Geotechnical Planning Review Report essentially comprises the following contents:

1) The appropriate portion of the published 1:5,000-scale topographical map or maps marked up to show the site boundary, the location of the features referred to in paragraph 1 above, and details of the Proposed Development including any site formation and foundation works;

2) a review of how the retaining walls and/or slopes, including natural terrain, shown on the plan may affect, or be affected by, the Proposed Developments and in relation to this, an assessment of geotechnical feasibility of the Proposed Development including an outline of any further studies that may be required; and

3) a list of data sources used in compiling the Report. Common data sources normally include the GEO's Slope Information System, the Natural Terrain Landslide Inventory maps, the published 1: 20,000-scale geological maps and the relevant Geotechnical Area Studies Programme (GASP) Report.

2 List of Data Sources

The data sources of this report are list as follow:

1) Slope information from GEO's Slope Information System
2) Existing ground investigation record from Digital Geotechnical Information Unit (DGIU)
3) Published 1:20,000-scale Solid and Superficial Geological Map Sheet No. 6 (GEO, 1989)
4) Geotechnical Area Studies Programme (GASP) Report, GASP I: Hong Kong and Kowloon (GCO, 1987)
5) Lands Department 1: 1,000 and 1: 5,000 scale topographic maps

3 Site Description

3.1 The Site

The Site is located at urban area in Causeway Bay with two levels of ground of approximately +9.5mPD and +15.3mPD. Leighton Road is located to its northwest, Caroline Hill Road is located to its southwest and northeast, South China Athletic Association and a planned Judicial Complex for District Court is located to its southeast. Two old and valuable trees grow partly within the Site and tree preservation with appropriate protection measures shall be carried out under the lease. There are existing masonry walls and earthenware pipes located within the Site, conservation, preservation, maintenance and repair of the walls and pipes shall be carried out under the lease. The site location plan is shown in **Figure 3.1**.

3.2 Registered Man-made Features

There are altogether 7 existing registered geotechnical features within 50m away from the application site boundary. Geotechnical Features Nos. 11SW-B/FR190, 11SW-B/FR193, 11SW-B/FR32 and 11SW-B/R817 are located within/ partially within the application site. The locations of the existing geotechnical features are shown in **Figure 3.2**. The general information for these registered features are summarised as follows:

Registered Feature Number	Date of Formation	Maintenance Party	Distance from Site Boundary	Nature	Max. Height (m)	Length (m)	Average Slope/ Wall Face angle (degree)	Recent Upgrading Records
11SW-B/FR190	Pre-1977	IL 8945	Within the Site	Fill slope and retaining wall	1 (Slope Part) 3 (Wall Part)	40	20 (Slope Part) 85 (Wall Part)	N/A
11SW-B/FR193	Pre-1977	IL 8945	Within the Site	Fill slope and retaining wall	1 (Slope Part) 3.5 (Wall Part)	50	30 (Slope Part) 85 (Wall Part)	N/A
11SW-B/FR32	Pre-1977	IL 8945	Within the Site	Fill slope and retaining wall	5 (Slope Part) 4 (Wall Part)	85	35 (Slope Part) 85 (Wall Part)	N/A
11SW-B/R817	Pre-1977	IL 8945	Partially within the Site	Retaining wall	3	20	90	N/A

Registered Feature Number	Date of Formation	Maintenance Party	Distance from Site Boundary	Nature	Max. Height (m)	Length (m)	Average Slope/ Wall Face angle (degree)	Recent Upgrading Records
11SW-B/CR386	Pre-1977	IL9011	23m	Cut slope and retaining wall	1.5 (Slope Part) 1.5 (Wall Part)	40	35 (Slope Part) 90 (Wall Part)	N/A
11SW-B/C628	Pre-1977	IL9011	35m	Cut slope	3	65	35	N/A
11SW-B/CR263	Pre-1977	IL9011	35m	Cut slope and retaining wall	3.5 (Slope Part) 2.3 (Wall Part)	55 (Slope Part) 30.1 (Wall Part)	50 (Slope Part) 90 (Wall Part)	N/A
Unregistered Retaining Walls	N/A	N/A	3m	Retaining wall	<3m	113	90	N/A

3.3 Natural Terrain Hazard

There is no natural terrain identified in the vicinity of the Application Site.

4 Desk Study

4.1 Topography

The Application Site is located at the Caroline Hill where the Caroline Hill Road is along the southwestern and northeastern boundaries, and the Leighton Road is along the northwestern boundary of the Application Site. The 1:1,000 scale topographic maps indicate that the Application Site comprises two vacant platforms at +10 mPD and +15 mPD respectively, with all superstructures being demolished. The topography of the Application Site is present in **Figures 4.1 and 4.2**.

4.2 Geological Setting

All available geological information covering the Site, including geological map sheets at 1: 20,000 and 1: 100,000 scales published by the Hong Kong Geological Survey and the accompanying geological memoirs have been reviewed. Details of the geological information sources include the following:

- Fyfe, J.A., Shaw, R., Campbell, S.D.G., Lai, K.W. & Kirk, P.A. (2000). Quaternary Geology of Hong Kong. Hong Kong Geological Survey. 210p.
- Geotechnical Control Office (1987). GASP I - Geotechnical Area Studies Programme – Hong Kong and Kowloon. Geotechnical Control Office, Hong Kong. 170p.
- Geotechnical Engineering Office (2007). Engineering Practice in Hong Kong. Geotechnical Engineering Office, Hong Kong. 278p.
- Geotechnical Engineering Office (2012). Map HGM 20, Sheet 11 (2nd Edition) Hong Kong and Kowloon: Solid and Superficial Geology (1: 20,000 map). Geotechnical Engineering Office, Hong Kong. 1 map.
- Langford, R.L., Lai, K.W., Arthurton, R.S. and Shaw, R. (1989). Hong Kong Geological Survey Memoir No. 2: Geology of Hong Kong Island and Kowloon. Geotechnical Engineering Office, Hong Kong. 134p.
- Sewell, R.J., Campbell, S.D.G., Fletcher, C.J.N., Lai, K.W. & Kirk, P.A. (2000). The Pre-Quaternary Geology of Hong Kong. Hong Kong Geological Survey, Geotechnical Engineering Office, Hong Kong, 181p.

Based on the 1:20,000-scale Geological Map Sheet 11 Edition II **(Figures 4.3 and 4.4**), the Application Site is predominantly underlain by equigranular medium-grained biotite granite (Klk-gm) of Kowloon Granite. Alluvium (Qfa) of Fanling Formation, which comprises well sorted to semi-sorted grey to yellowish brown clay, silt, sand and gravel, is also present at the northern portion of the Application Site. Fill materials were not identified at the Application Site and its vicinity based on the published geological maps.

An NE-SW trending inferred fault was identified immediately to the west of the Application Site.

The Engineering Geology Map in the Geotechnical Area Study Programme (GASP) Report, namely GASP I: Hong Kong and Kowloon (GCO, 1987) (**Figure 4.5**) indicates that the Application Site is predominately overlain by alluvium deposits.

4.3 Site History

A preliminary Aerial Photograph Interpretation (API) has been conducted to review photos taken between 1963 and 2018 in order to determine the site history of the sites and their surroundings.

Prior to 1963, a platform had been formed at the northwestern portion of the Application Site, with the Post Office Club and the Cable & Wireless Sport Club found at the northern and southern portions of the platform respectively. Buildings had been constructed at the middle portion of the Application Site. Electrical & Mechanical Office was built at the eastern portion and immediately to the southeast of the Application Site. Caroline Hill Road had been formed to the southwest and along the northeastern boundary of the Application Site. Leighton Road had been formed along the northeastern portion of the Application Site, whereas Sports Ground and Stadium of the South China Athletic Association had been formed to the southeast of Application Site. The slope feature nos. 11SW-B/FR190, 11SW-B/FR193 and 11SW-B/FR32 had been formed along the northwestern boundary, along the northeastern boundary and along the eastern boundary respectively.

Between 1963 and 1973, structures at the middle portion of the Application Site were demolished and an elevated platform had been formed in that location. A structure had been built to the south of the Application Site. The slope feature no. 11SW-B/R817 had been formed at the southwestern portion of the Application Site.

Between 1973 and 1982, Civil Aid Service Headquarters had been built at the middle portion of the Application Site. Government Offices had been built in the northern portion of the Application Site.

Between 1982 and 1993, a podium had been formed across the eastern portion of the Application Site.

Between 1993 and 2003, the Government Offices at the northern portion of the Application Site had been reconstructed to be the Highway Department Hong Kong Region. Construction work was noted to the southeast of the Application Site.

Between 2003 and 2018, no significant changes were observed in the Application Site.

In 2021, the Application Site is vacant with all superstructures being demolished.

4.4 Ground Investigation Records

The existing boreholes with ground investigation records available from Digital Geotechnical Information Unit (DGIU). Plans showing the location of the existing ground investigation records and the proposed site-specific ground investigation are shown in **Figure 4.6** and **Figure 4.7** respectively. The relevant GI records are attached in **Appendix B**. The records showed that the materials encountered within the Application Site may include Fill, Alluvium, Completely to Highly Decomposed Granite (Grade V/IV material), Moderately to Slightly Decomposed Granite (Grade III/II material).

A general summary of the observed ground conditions from the site-specific GI and the existing GI records from the adjacent projects are presented in **Table 4.1** and **Table 4.2** respectively.

Table 4.1: Summary of geological conditions from the site-specific ground investigation records

Borehole No.	Ground Level (mPD)	Termination Level (mPD)	Top level of Strata below ground (mPD)			
			FILL	ALL	CD/ HD materials	MD/ SD materials
DH02	+9.81	-28.75	+9.81	+1.36	-3.29	-23.19
DH03	+9.55	-16.21	+9.55	-	+2.55	-10.51
DH04	+9.57	-30.32	+9.57	-	+6.57	-24.67
DH06	+11.28	-19.92	+11.28	+4.08	-5.92	-14.17
DH13 (S/P)	+6.83	-25.85	+6.83	-	+1.83	-20.46
DH14	+6.85	-27.16	+6.85	-	+3.85	-21.97
DH18	+11.09	-35.76	+11.09	-	+3.85	-30.48
DH23	+11.11	-30.21	+11.11	-	+6.11	-24.52

Table 4.2: Summary of geological conditions from the existing ground investigation records from the adjacent projects

Borehole No.	Ground Level (mPD)	Termination Level (mPD)	Top level of Strata below ground (mPD)			
			FILL	ALL	CD/ HD materials	MD/ SD materials
68444/BH1	+14.31	-18.97	+14.31	+3.41	+0.31	-13.65
68444/BH2	+14.45	-21.21	+14.45	+8.66	-1.35	-15.74
68444/BH3	+15.20	-25.81	+15.20	+4.30	-3.70	-20.25
68444/BH4	+15.38	-19.33	+15.38	+6.48	+2.48	-14.00
68444/BH7	+15.21	-28.56	+15.21	-	+6.31	-23.19
68444/BH8	+15.37	-24.47	+15.37	+8.27	+0.47	-19.19
68444/BH9	+15.19	-29.70	+15.19	+1.99	-4.01	-24.25
68444/BH12	+15.29	-31.69	+15.29	-	+0.39	-26.31

Borehole No.	Ground Level (mPD)	Termination Level (mPD)	Top level of Strata below ground (mPD)			
			FILL	ALL	CD/ HD materials	MD/ SD materials
68444/BH13	+15.39	-19.62	+15.39	-	+1.59	-14.46
68444/BH14	+15.37	-26.68	+15.37	+3.47	-0.53	-21.22
68444/BH15	+15.35	-29.43	+15.35	+2.95	+1.85	-24.35
68444/BH21	+15.43	-31.63	+15.43	-	+6.53	-26.34
68444/BH22	+15.41	-33.57	+15.41	-	+5.51	-28.37
68444/BH23	+15.43	-15.24	+15.43	-	+9.63	-9.90
68444/BH24	+15.40	-31.51	+15.40	+7.50	+1.00	-25.56
68444/BH25	+15.33	-37.59	+15.33	+4.43	-1.57	-31.69
68444/BH26	+15.28	-46.55	+15.28	+4.38	-0.38	-41.10
68444/BH27	+15.37	-45.75	+15.37	+8.47	+0.47	-40.35
68444/BH28	+15.43	-42.77	+15.43	-	+4.53	-37.55
68444/BH29	+15.43	-45.17	+15.43	-	+8.53	-39.79
68444/BH30	+15.44	-24.84	+15.44	-	+7.44	-19.81
68444/BH31	+15.44	-25.09	+15.44	-	+7.44	-20.00
68444/BH32	+15.41	-23.15	+15.41	-	+6.51	-18.05
68444/BH33	+15.29	-9.77	+15.29	-	+10.39	-4.77
68444/BH34	+15.37	-31.17	+15.37	+6.47	+5.37	-25.91
68444/BH35	+15.25	-40.45	+15.25	+4.35	-0.75	-34.96
68444/BH36	+15.22	-40.11	+15.22	+6.32	+0.32	-33.52
68444/BH37	+15.28	-42.36	+15.28	-	+4.38	-36.72
68444/BH38	+15.24	-44.16	+15.24	-	+6.34	-39.16
68444/BH39	+15.45	-46.81	+15.45	-	+6.55	-41.23
68444/BH40	+15.45	-51.13	+15.45	-	+9.45	-45.81
68444/BH41	+15.42	-6.17	+15.42	-	-9.32	-0.90
68444/BH42	+15.40	-6.22	+15.40	-	+12.50	-1.00
67763/BH5	+15.04	-34.15	+15.04	+2.04	-1.46	-28.70
67763/BH6	+15.12	-29.68	+15.12	-	+10.62	-24.50
67763/BH10	+15.07	-40.00	+15.07	+3.07	-2.93	-34.91
67763/BH11	+15.17	-29.48	+15.17	-	+4.67	-24.93
67763/BH16	+15.24	-39.41	+15.24	-	+2.74	-33.58
67763/BH17	+15.29	-38.03	+15.29	-	+4.79	-33.38
67763/BH18	+15.25	-36.78	+15.25	-	+6.75	-31.01
67763/BH19	+15.24	-25.46	+15.24	-	+11.24	-19.01
67763/BH20	+15.25	-37.55	+15.25	-	+9.75	-32.22

Site-specific ground investigation works have been conducted on the existing masonry walls (Feature Nos. 11SW-B/FR32, 11SW-B/FR190 and 11SW-B/FR193) to enable better understanding of the walls' geometry and composing materials. The proposed works comprise of trial pits behind masonry walls, inspection pits in front of wall toe and coreholes at selected locations at wall face. From the as-built ground investigation records, it was found that the walls

were made up with concrete and granite blocks. The relevant GI records are attached in **Appendix B**.

The strengthening proposal and any protection or mitigation measures for the Grade 3 Historic Structures would be further reviewed in the detailed design stage.

4.5 Measured Groundwater Table

The past groundwater monitoring records from the adjacent projects obtained from Slope Information System (SIS) are presented in **Appendix C** and are summarised in the **Table 4.3** below. The measured groundwater level from standpipes varies from +6.60 to +8.90mPD. In the ground investigation stage of the project, standpipes and piezometers will be installed for the use in monitoring the groundwater level within the site. These project-specific groundwater monitoring records will then be used to review the design groundwater level of the project in the detailed design stage.

Table 4.3: Summary of measured groundwater level

Monitoring Station No.	Ground Level (mPD)	Tip Level (mPD)	Measured Groundwater Level (mPD)		Date
			Lowest	Highest	
68445/BH4(S)	+15.38	-9.62	+6.72	+6.93	Oct 2020
68445/BH4(P)	+15.38	-12.62	+7.18	+7.27	Oct 2020
68445/BH15(S)	+15.35	-9.65	+7.08	+7.46	Oct 2020
68445/BH15(P)	+15.35	-23.15	+7.55	+7.79	Oct 2020
68445/BH22(S)	+15.41	-9.59	+8.70	+8.90	Aug to Sep 2020
68445/BH22(P)	+15.41	-27.17	+9.00	+9.11	Aug to Sep 2020
68445/BH25(S)	+15.33	-9.67	+8.27	+8.77	Oct 2020
68445/BH25(P)	+15.33	-31.17	+8.78	+9.01	Oct 2020
68445/BH28(S)	+15.43	-9.57	+7.53	+7.89	Sep 2020
68445/BH28(P)	+15.43	-36.57	+11.83	+12.07	Sep 2020
68445/BH30(S)	+15.44	-9.56	+6.60	+7.03	Sep 2020
68445/BH30(P)	+15.44	-18.56	+6.69	+6.92	Sep 2020
67763/BH10 (S)	+15.07	+2.57	+7.51	+7.55	Sep 2019
67763/BH10 (P)	+15.07	+0.07	+7.39	+7.45	Sep 2019

5 Envisaged Geotechnical Works

5.1 Proposed Development

The Application site is zoned "Commercial (2)' on the approved Wong Nai Chung OZP No. S/H7/21, covered the entire 'C(2) zone and has an area of about 14,802m^2. The proposed Project consists of three commercial towers with five levels of basements including lay-bys for light buses at B1/F, public and private vehicle park at B2 to B5, and 24 storeys at Towers 1 and 2 and 18 storeys at Tower 3. The proposed Project under the Layout Plan will yield a total of 102,000m^2 accountable GFA and the maximum building height of the proposed building is approximately 135mPD. Relevant drawings are given in Appendix D for reference.

The envisaged geotechnical works for the proposed structure, including foundation, excavation, pile caps and basement construction. The following sections discuss the envisaged design and feasibility of such geotechnical works.

5.2 Envisaged Foundation Works

The foundation for the proposed development shall be in the form of deep foundation in view of the dead loads of high-rise buildings, ground water uplift of deep basement and the available competent grade III or better rock condition. From the available preliminary GI information, the competent rock was found at reasonable depth for the construction of piled foundation.

Deep foundation such as bored piles, will be considered for supporting the tower structures where loading is heavy. Deep foundation such as rock-socketed H-piles, will be considered for supporting the podium and basement footprint, where the resistance to groundwater uplift is more critical. The future foundation design will strictly follow the foundation design requirements as stipulated in Code of Practice for Foundations 2017.

5.3 Envisaged Excavation Works

Based on the General Buildings Plan, the proposed development is to construct maximum 5 levels of basement with planned final excavation level of -18.0mPD, which requires excavation with depth ranges from 28m to 33m.

To facilitate the construction of pile caps and basement, a temporary lateral support system, such as sheet pile wall or pipe pile wall supported by struts (with appropriate preloading), will be proposed to be installed around the footprint of the basement structure. Grout curtain will also be proposed to provide adequate water cut-off performance. The proposed ELS system will be designed to limit the ground movement to the acceptable limits. Both top-down and bottom-up construction methods are considered feasible for the project and the project team will adopt a suitable construction method to suit with the proposed project development in the detailed design stage.

The envisaged excavation scheme is shown in Appendix E.

5.4 Envisaged Site Formation Works

Site formation submission may be required subject to any existing features within the site found require upgrading works in the detailed design stage.

6 Impact of Proposed Development to Adjacent Existing Man-made Features

Modification works may be provided to the Feature No. 11SW-B/FR32 to suit with the project development.

Feature No. 11SW-B/R817 is planned to be demolished as part of the feature boundary has fallen into the building footprint. As the other part of the feature boundary was located outside the Site boundary, the project team will communicate with the relevant government authorities and to go through the normal procedures/ submission process required, if any, before the demolishment of the part of the feature that is located outside the site boundary.

Although Feature Nos. 11SW-B/FR190, 11SW-B/FR193 and 11SW-B/FR32 are located within the Site boundary, appropriate excavation and lateral support (ELS) system will be designed to minimise the ground movements to an allowable extent and to maintain the stability of the features during excavation. Moreover, a setback distance of the temporary pile walls from the existing features will be provided in order to minimize any possible disturbance to the features due to the proposed construction works. Stability of these 3 geotechnical features which may affect or be affected by the proposed works will be checked and reviewed in the detailed design stage. If necessary, upgrading works will be proposed to fulfil the statutory requirements.

Other features, comprising Feature Nos. 11SW-B/CR386, 11SW-B/C628 and 11SW-B/CR263 are located far away from the Site (i.e. 23m, 35m and 35m respectively) and thus the effect to the features caused by the proposed works may be negligible. The effect of the proposed works to these 3 geotechnical features will be reviewed in the detailed design stage. It is noted that part of the unregistered retaining wall located outside the site boundary which runs along the Caroline Hill Road and Leighton Road are proposed to be removed for the road widening for Leighton road subject to the approval by relevant authorities. The effect of the proposed works to the aforesaid unregistered retaining walls before its removal will be reviewed in the detailed design stage.

7 Conclusion

A geotechnical planning review has been conducted for the proposed Application Site at Inland Lot No.8945 that may affect, or be affected by, man-made slopes or retaining wall features in accordance to "GEO Advice Note for Planning Applications" (GEO, 2007) in support of the Proposed Amendment under Section 16 of the Town Planning Ordinance (Cap. 131).

This geotechnical planning review illustrates the technical feasibility of the possible foundation and site formation schemes for the proposed development given the site geology and the presence of existing geotechnical features.

Modification works may be provided to the Feature No. 11SW-B/FR32 to suit with the project development.

Feature No. 11SW-B/R817 is planned to be demolished as part of the feature boundary has fallen into the building footprint. As the other part of the feature boundary was located outside the Site boundary, the project team will communicate with the relevant government authorities and to go through the normal procedures/ submission process required, if any, before the demolishment of the part of the feature that is located outside the site boundary.

Although Feature Nos. 11SW-B/FR190, 11SW-B/FR193 and 11SW-B/FR32 are located within the Site boundary, appropriate excavation and lateral support (ELS) system will be designed to minimise the ground movements to an allowable extent and to maintain the stability of the features during excavation. Moreover, a setback distance of the temporary pile walls from the existing features will be provided in order to minimize any possible disturbance to the features due to the proposed construction works. Stability of these 3 geotechnical features which may affect or be affected by the proposed works will be checked and reviewed in the detailed design stage. If necessary, upgrading works will be proposed to fulfil the statutory requirements.

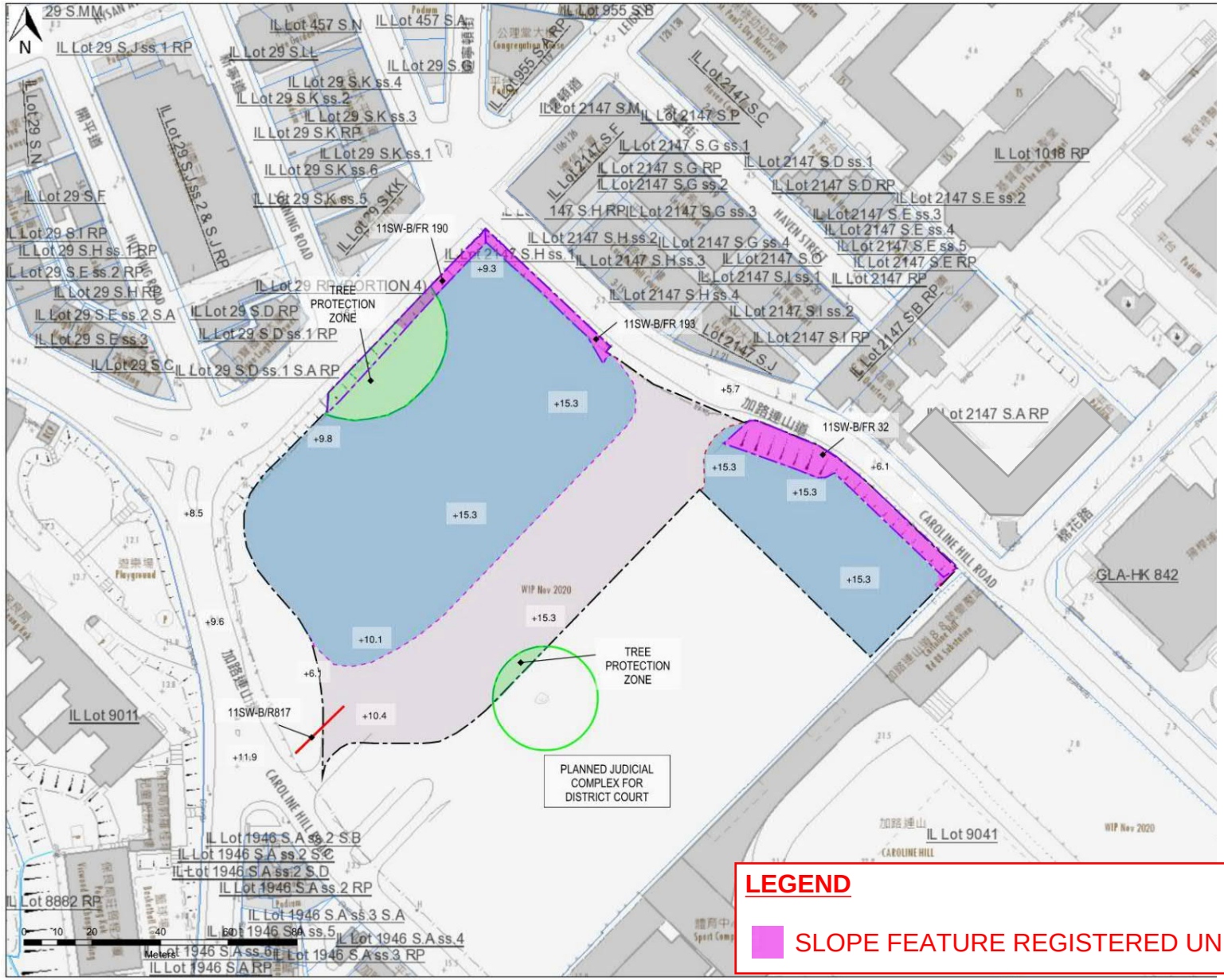
Other features, comprising Feature Nos. 11SW-B/CR386, 11SW-B/C628 and 11SW-B/CR263 are located far away from the Site (i.e. 23m, 35m and 35m respectively) and thus the effect to the features caused by the proposed works may be negligible. The effect of the proposed works to these 3 geotechnical features will be reviewed in the detailed design stage. It is noted that part of the unregistered retaining wall located outside the site boundary which runs along the Caroline Hill Road and Leighton Road are proposed to be removed for the road widening for Leighton road subject to the approval by relevant authorities. The effect of the proposed works to the aforesaid unregistered retaining walls before its removal will be reviewed in the detailed design stage.

Large diameter bored piles and a combination of large diameter bored piles and socketed steel H-piles are both considered as the feasible foundation schemes for the proposed development. The proposed podium structure will be founded on structures with piles founded on Category 1(c) rock.

Sheet pile wall or pipe pile wall with multi-layers of temporary struts (applying pre-loading if necessary) are considered as the feasible ELS scheme to facilitate the basement excavation.

Based on the available information, the proposed development is considered geotechnically feasible. Further recommendation of the stability assessment of the adjacent features and the detailed design of the foundation and site formation scheme are to be submitted at a later stage upon approval of the Proposed Amendment.

Figure



LEGEND

SLOPE FEATURE REGISTERED UNDER GEO SYSTEM

Job Title

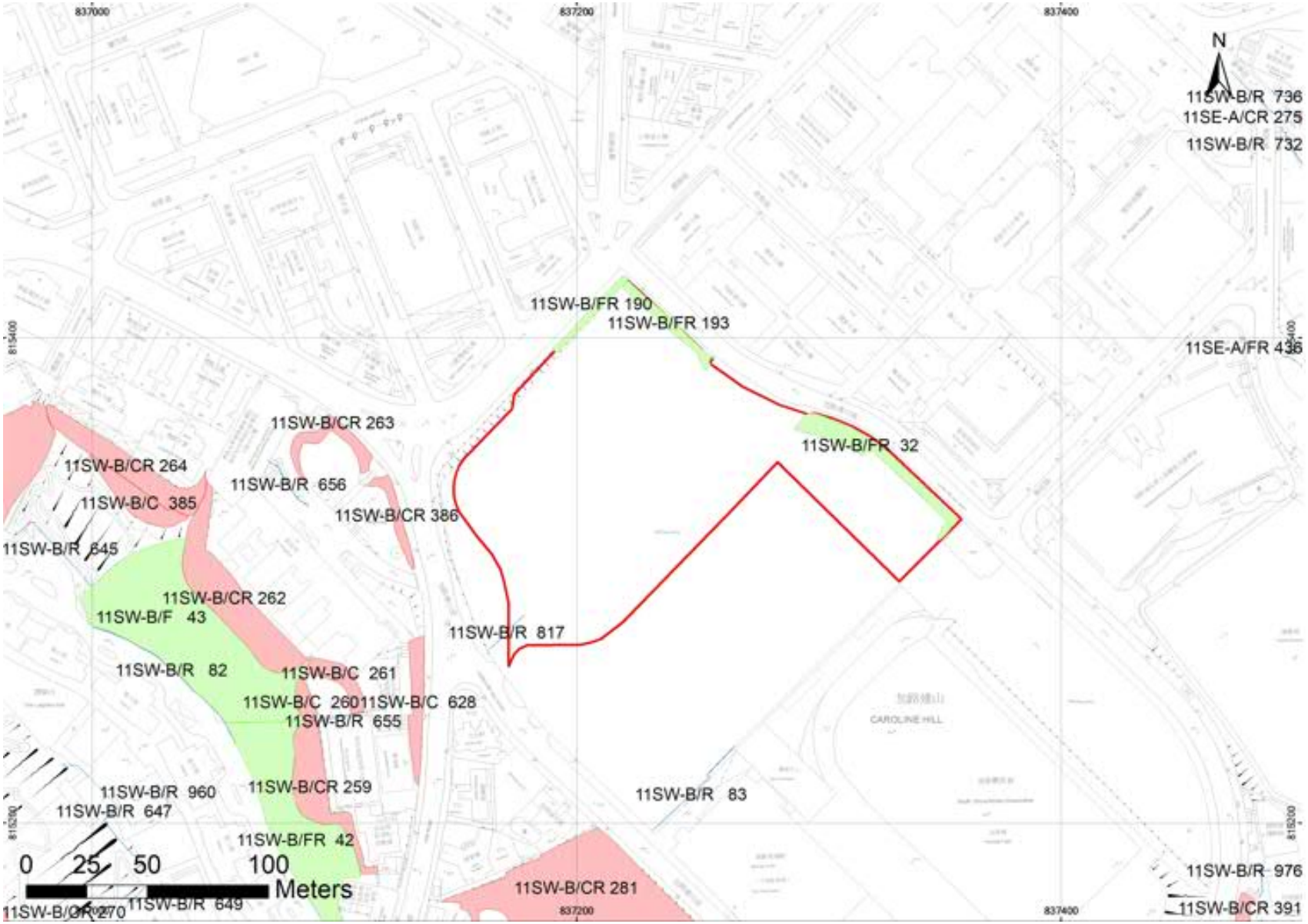
Proposed Commercial Development on Inland Lot No.8945, Causeway Bay, Hong Kong

Drawing Title

Site Location Plan

ARUP Ove Arup & Partners Hong Kong Limited

Scale	As shown						
Drawn	MS	Date	11/2021	Checked	KM	Approved	JY
Job No.	OC1373	Figure No.	1	Rev.			



Job Title

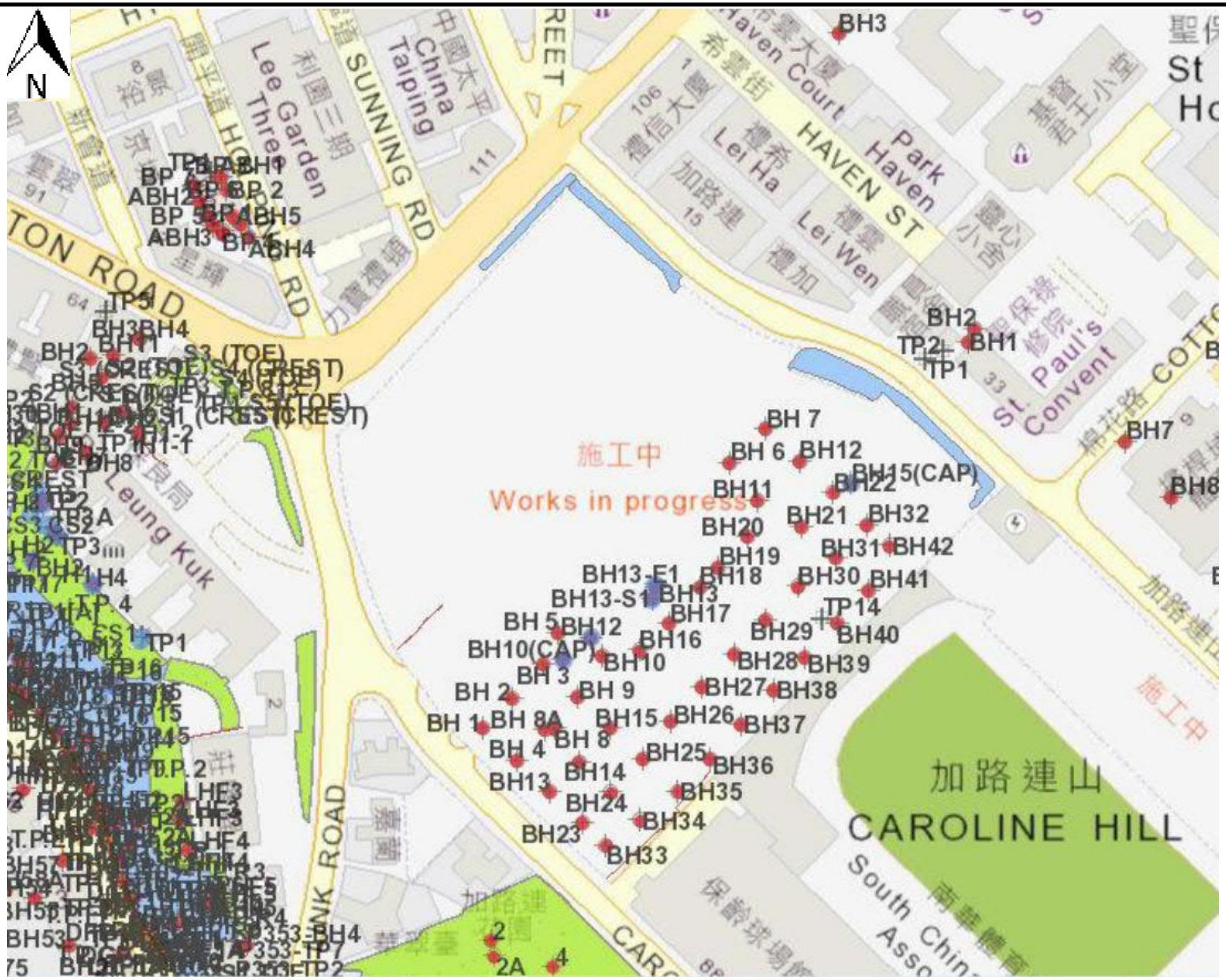
Proposed Commercial Development on Inland Lot No.8945, Causeway Bay, Hong Kong

Drawing Title

Location of Existing Geotechnical Features

ARUP Ove Arup & Partners Hong Kong Limited

Scale	As shown						
Drawn	MS	Date	11/2021	Checked	KM	Approved	JY
Job No.	OC1373	Figure No.	2	Rev.			



Job Title

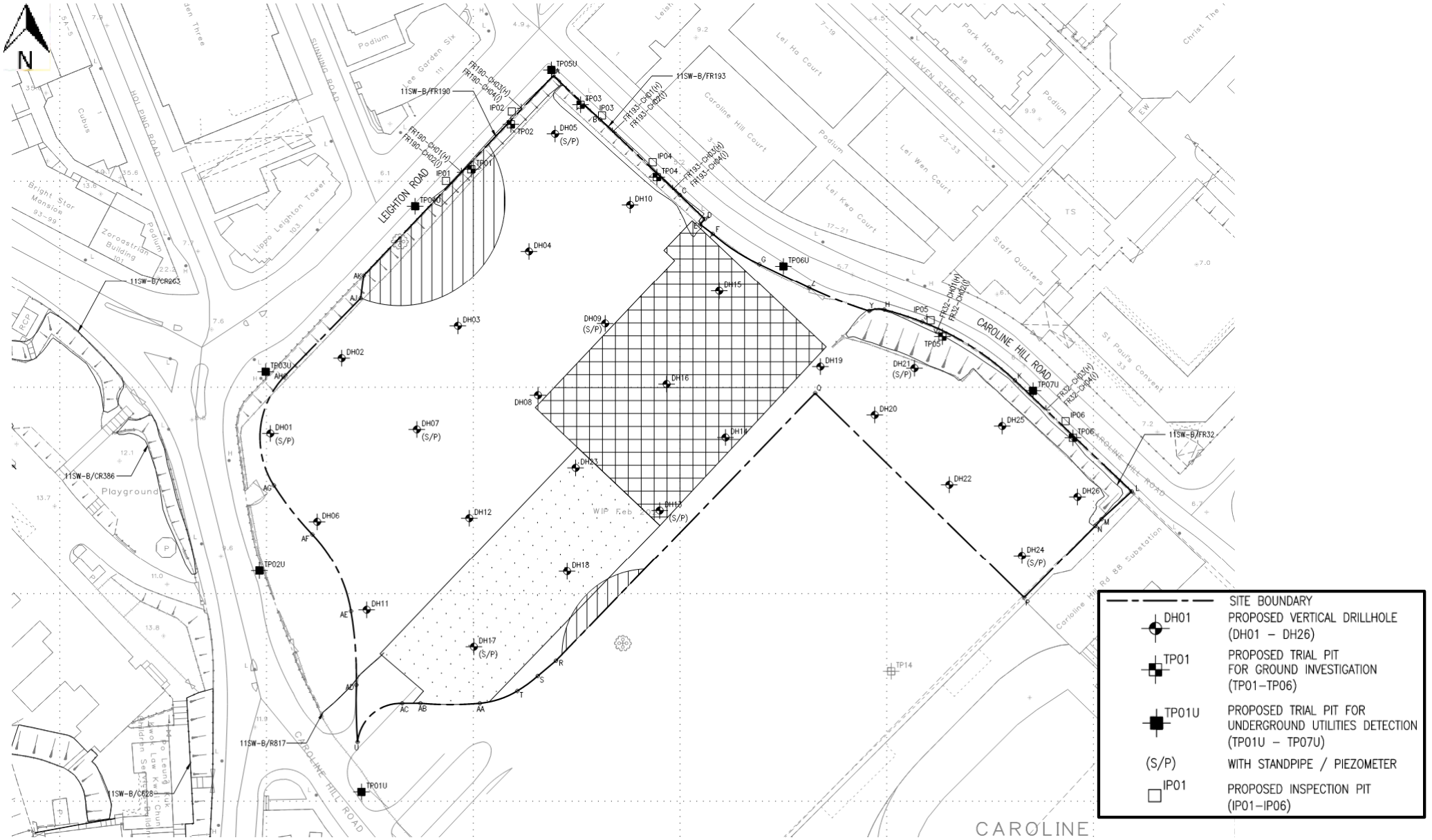
Proposed Commercial Development on Inland Lot No.8945, Causeway Bay, Hong Kong

Drawing Title

Location of Existing Ground Investigation Records

ARUP Ove Arup & Partners Hong Kong Limited

Scale	As shown						
Drawn	MS	Date	11/2021	Checked	KM	Approved	JY
Job No.	OC1373	Figure No.	3	Rev.			



Job Title

Proposed Commercial Development on Inland Lot No.8945, Causeway Bay, Hong Kong

Drawing Title

Proposed Site-Specific Ground Investigation Plan

ARUP Ove Arup & Partners Hong Kong Limited

Scale	As shown						
Drawn	MS	Date	11/2021	Checked	KM	Approved	JY
Job No.	OC1373	Figure No.	4	Rev.			

Appendix A

GEO Advice Note for Planning Application

GEO ADVICE NOTE FOR PLANNING APPLICATIONS UNDER TOWN PLANNING ORDINANCE (CAP. 131)

Requirements for a Geotechnical Planning Review Report in support of planning applications

1. For developments that may affect, or be affected by, natural terrain or man-made slopes or retaining walls, applicants should submit a Geotechnical Planning Review Report with their planning application. In general, a Geotechnical Planning Review Report will be required if any of the following criteria apply :-

   (i) where the maximum gradient across a site from boundary to boundary, or for a large site across any 50m long strip, is greater than 15°,

   (ii) where a slope steeper than 30°, or retaining wall, or combination of the two with a height greater than 6m exists on the site or within 6m of the site, or

   (iii) where there is ground outside the site but in the same catchment that is at an angular elevation of more than 20° from the site and there is ground sloping at more than 15° within 50m upslope of the site.

2. The essential contents of a Geotechnical Planning Review Report are :-

   (i) The appropriate portion of the published 1:5000-scale topographical map or maps marked up to show the site boundary, the location of the features referred to in paragraph 1 above, and details of the proposed development including any site formation and the layout of any structures,

   (ii) a review of how the retaining walls and/or slopes, including natural terrain, shown on the plan may affect, or be affected by, the proposed development and in relation to this, an assessment of the geotechnical feasibility of the proposed development including an outline of any further studies that may be required, and

   (iii) a list of data sources used in compiling the Report. Common data sources normally include the GEO's Slope Information System, the Natural Terrain Landslide Inventory maps, the published 1:20,000-scale geological maps and the relevant Geotechnical Area Studies Programme (GASP) Report, all of which are available in the Civil Engineering Library which is situated within the Civil Engineering and Development Building.

3. Applications will not normally be accepted if there is very steeply sloping ground next to the site. For guidance, this should be taken as ground outside the site which is at an angular elevation of greater than 35° from the site and which is also more than 50m higher than the site. Sites subject to major past instability will also not generally be accepted for development.

4. Further information can be obtained from the Geotechnical Engineering Office, Civil Engineering and Development Building, 101 Princess Margaret Road, Homantin, Kowloon, fax 2714 0247.

April 2007

Appendix B

Ground Investigation Records

Project-Specific Ground Investigation Records

Drillholes

Gammon

DRILLHOLE RECORD

HOLE No. **DH02**

SHEET **1** of **4**

PROJECT Ground Investigation Works for the Commercial Development on IL No 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT No. J3957
MACHINE & No. 005	E N	DATE from 29/10/2021 to 02/11/2021
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	GROUND LEVEL +9.81 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Description
29/10/2021	SX	0.00m at 08:00							A 0.45 0.50 B 0.95 1.00 C 1.45 1.50 D 1.95 2.00 (INSPECTION PIT)		0.00			Brown, spotted grey, fine to coarse SAND with some subangular fine to coarse gravel sized rock and concrete fragments. (FILL) 0.00 - 1.00m: With some rootlets.
								1,1 1,2,1,1 N=5	1 2.40 2.45		1.00 2.00			Loose, brown, fine to coarse SAND with some subangular fine to medium gravel sized rock fragments. (FILL)
				0					2 4.00 4.10		3.00			Brown, fine to coarse SAND. (FILL)
				25 100				31 bls	T146 3 4.30		4.10 4.30			Orangish brown, COBBLE sized rock fragments. (FILL)
								1,1 1,2,2,3 N=8	4 4.70 4.75 5 5.15 5.20					Brown, fine to coarse SAND. (FILL)
	SX 6.00 PX	1.72m at 18:00		90					T146 6.00		6.00			Brownish pink, COBBLE and BOULDER with occasional subangular coarse gravel sized rock fragments. (FILL)
29/10/2021 30/10/2021		5.42m at 08:00		55					T146 T146 6.30					
				0					6 6.90 7.90		6.90			Brown, slightly silty fine to coarse SAND. (FILL)
				100				33 bls	7 8.00		8.00			Greyish brown, slightly silty fine to coarse SAND. (FILL)
								2,2 3,2,5,3 N=13	8 8.40 9 8.45 10 8.85 8.90		8.45			Medium dense, dark grey, very silty fine to coarse SAND with some decayed wood fragments and organic matter. (ALLUVIUM?)
											10.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (76/100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED **M H CHIU**

DATE **03/11/2021**

CHECKED **K M LO**

DATE **04/11/2021**

REMARKS

1. Inspection pit was dug to 2.00m depth.
2. Falling head permeability test was carried out at 10.50-12.00m depth.

PRELIMINARY

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Gammon

DRILLHOLE RECORD

HOLE No. **DH02**

SHEET **2** of **4**

PROJECT Ground Investigation Works for the Commercial Development on IL No 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT No. J3957
MACHINE & No. 005	E N	DATE from 29/10/2021 to 02/11/2021
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	GROUND LEVEL mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No.	Samples Type	Samples Depth	Reduced Level	Depth (m)	Legend	Grade	Description
				0							10.00		10.00			As sheet 1 of 4.
				100				45 bls	11		11.00					
									12		11.10					
								2,4 4,6,7,10 N=27	13		11.50					
									14		11.55					
									15		11.95 12.00					
				100					16		13.10		13.10		V	Extremely weak, orangish pink, spotted light grey and white, completely decomposed GRANITE. (Slightly silty fine to coarse SAND with some subangular fine gravel sized rock fragments)
	PX 14.20 HX							2,4 4,6,9,13 N=32	17		14.10					
									18		14.20					
									19		14.60 14.65					
				96					20		15.10					
								10,15 20,24,39,51 N=134	21		16.10					
									22		16.20					
									23		16.60 16.65					
				100					24		17.10					
								10,12 21,26,39,60 N=146	25		18.10					
									26		18.20					
									27		18.60 18.65					
				92					28		19.10		20.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (76/100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED **M H CHIU**

DATE **03/11/2021**

CHECKED **K M LO**

DATE **04/11/2021**

REMARKS

PRELIMINARY

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Gammon

DRILLHOLE RECORD

HOLE No. **DH02**

SHEET **3** of **4**

PROJECT Ground Investigation Works for the Commercial Development on IL No 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES E N	PROJECT No. J3957
MACHINE & No. 005		DATE from 29/10/2021 to 02/11/2021
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	GROUND LEVEL mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Description
													20.00		V	As sheet 2 of 4.
								10,19 25,31,39,62 N=157	29 30		20.10 20.20					
		0.92m at 18:00							31		20.60 20.65					
30/10/2021 01/11/2021		5.27m at 08:00		100					32		21.10					
									33		22.10					
								20,25 80,120/75mm 200bls/150mm	34 35		22.20 22.45 22.50					
								50/50mm 200/50mm 200bls/50mm	36		24.20 24.25 24.30					
				86					37		25.10		25.10		V	Extremely weak, orangish brown, spotted light grey and white, completely decomposed GRANITE. (Slightly silty fine to coarse SAND with much subangular fine gravel sized rock fragments)
								50/35mm 200/65mm 200bls/65mm	38 39		26.10 26.20 26.25 26.30					
								50/30mm 200/70mm 200bls/70mm	40		28.20 28.25 28.30					
				63	63	63	4.0				28.60		28.60		III	Moderately strong, orangish brown, spotted light grey, black and white, moderately decomposed medium grained GRANITE. Joint is medium spaced, rough undulating, narrow, iron stained, dipping 0°-10°.
							N.R.			T2101			28.85 29.00		V	28.85 - 29.00m: No recovery. Inferred as completely decomposed GRANITE.
				81					41		29.00				V	Very weak, orangish brown, spotted light grey

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (76/100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED **M H CHIU**

DATE **03/11/2021**

CHECKED **K M LO**

DATE **04/11/2021**

REMARKS

PRELIMINARY

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Gammon

DRILLHOLE RECORD

HOLE No. **DH02**

SHEET **4** of **4**

PROJECT Ground Investigation Works for the Commercial Development on IL No 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT No. J3957
MACHINE & No. 005	E N	DATE from 29/10/2021 to 02/11/2021
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	GROUND LEVEL mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Description
								↓ 50/35mm 200/65mm 200bls/65mm	42 ● 30.00 43 ● 30.10 30.15 30.20		30.00		V	and white, completely decomposed GRANITE. (Subangular fine to coarse GRAVEL sized rock fragments in sandy matrix)
								↓ 50/25mm 200/55mm 200bls/55mm	44 ● 32.10 32.13 32.18		32.10		IV	Weak, orangish brown, spotted light grey and white, highly decomposed GRANITE. (Subangular fine to coarse GRAVEL sized rock fragments)
	HX 33.00			100	90	86	7.7		33.00		33.00		II	Strong, pinkish grey , spotted black and white, slightly decomposed, medium grained GRANITE. Joints are widely to medium, locally closely to very closely spaced, rough and smooth planar, extremely narrow, dipping 0°-10°, 20°-30°, 40°-50° and 60°-70°.
							26.0 3.3		T2I01					
				100	100	100	>20 1.8		34.20					
01/11/2021		0.32m at 18:00							T2I01					
02/11/2021		10.13m at 08:00		100	99	94	>20 0.7		35.69					
									T2I01					
				100	100	100			37.19					
									T2I01					
02/11/2021		18:00					>20		38.56		38.56			End of hole at 38.56m depth.

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (76/100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED **M H CHIU**

DATE **03/11/2021**

CHECKED **K M LO**

DATE **04/11/2021**

REMARKS

PRELIMINARY

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DRILLHOLE RECORD

HOLE No. **DH03**

SHEET **1** of **3**

PROJECT Ground Investigation Works for the Commercial Development on IL No 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT No. J3957
MACHINE & No. 4-1485	E N	DATE from 26/10/2021 to 28/10/2021
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	GROUND LEVEL +9.55 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No.	Samples Type	Samples Depth	Reduced Level	Depth (m)	Legend	Grade	Description
26/10/2021	HX	08:00											0.00			Orangish brown, fine to coarse SAND with occasional subangular fine to coarse gravel and cobble sized rock and concrete fragments and rootlets. (FILL)
									A		0.45 0.50		0.50			Loose, orangish brown, spotted dark grey, slightly silty fine to coarse SAND with some subangular fine gravel sized rock fragments. (FILL) 0.50 - 1.00m: With occasional rootlets.
									B	INSPECTION PIT	0.95 1.00		1.00			
									C		1.45 1.50					
								1,2 2,2,2,2 N=8	D		1.95 2.00					
									1							
									2		2.40 2.45		3.00			Medium dense, greyish brown, slightly silty fine to coarse SAND with some subangular fine gravel sized rock fragments. (FILL)
				100					3		3.00					
								2,2 2,3,3,3 N=11	4		4.00 4.10					
									5							
									6		4.50 4.55		5.00			Medium dense, brown, fine to coarse SAND. (FILL)
				0							5.00					
				28				40 bls	7		6.00					
									8		6.10					
									9		6.50 6.55					
								2,2 3,3,4,5 N=15	10							
		18:00							11		6.95		7.00			
26/10/2021 27/10/2021		08:00		100					12		7.00				V	Extremely weak, orangish brown, completely decomposed GRANITE. (Silty fine to coarse SAND with some subangular fine gravel sized rock fragments)
									13		8.00					
								2,3 3,3,3,4 N=13	14		8.10					
									15		8.50 8.55					
													9.00			
				100					16		9.00				V	Extremely weak, greyish pink, spotted white, completely decomposed GRANITE. (Silty fine to coarse SAND with some subangular fine gravel sized rock fragments)
													10.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (76/100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED **M H CHIU**

DATE **29/10/2021**

CHECKED **K M LO**

DATE **30/10/2021**

REMARKS

1. Inspection pit was dug to 2.00m depth.
2. Packer (Water Absorption) tests were carried out at 3.00m-5.00m, 15.00m-17.00m and 21.56m-25.76m depths.
3. Acoustic televiewer survey was carried out at 20.06m-25.76m depth.

PRELIMINARY

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DRILLHOLE RECORD

HOLE No. **DH03**

SHEET **2** of **3**

PROJECT Ground Investigation Works for the Commercial Development on IL No 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT No. J3957
MACHINE & No. 4-1485	E N	DATE from 26/10/2021 to 28/10/2021
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	GROUND LEVEL mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Description
													10.00		V	As sheet 1 of 3.
				95				2,3 4,4,6,7 N=21	17		10.00					
									18		10.10					
									19		10.50 10.55					
									20		11.00					
								2,3 5,5,7,8 N=25	21		12.00					
									22		12.10					
									23		12.50 12.55					
				100					24		13.00					
								3,4 5,7,8,10 N=30	25		14.00					
									26		14.10					
									27		14.50 14.55					
				90					28		15.00					
								3,4 6,7,9,11 N=33	29		16.00					
									30		16.10					
									31		16.50 16.55					
				90					32		17.00		17.00			17.00 - 19.00m: Orangish brown, spotted white.
									33		18.00					
								3,5 7,9,11,19 N=46	34		18.10					
									35		18.50 18.55					
				90					36		19.00		19.00		V	Extremely weak, light greyish pink, spotted white, completely decomposed GRANITE. (Silty fine to coarse SAND with much subangular fine to medium gravel sized rock fragments)
	HX								37		19.96		20.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (76/100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED **M H CHIU**

DATE **29/10/2021**

CHECKED **K M LO**

DATE **30/10/2021**

REMARKS

PRELIMINARY

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Gammon

DRILLHOLE RECORD

HOLE No. **DH03**

SHEET **3** of **3**

PROJECT Ground Investigation Works for the Commercial Development on IL No 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT No. J3957
MACHINE & No. 4-1485	E N	DATE from 26/10/2021 to 28/10/2021
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	GROUND LEVEL mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Description
	20.06			100	100	91	5.0 2.1		20.06		20.00 20.06		II	As sheet 2 of 3. Strong, orangish pink, spotted light, black and white, slightly decomposed medium grained GRANITE. Joints are medium, locally closely to very closely spaced, rough planar and undulating, extremely to very narrow, iron stained, dipping 0°-10°, 10°-20° and 70°-80°. 20.99 - 21.85m: Pink.
									T2IO1		20.99			
				90	90	82			21.62		21.85			
							20.0 6.2 14.3 6.2 N.R. 5.0		T2IO1		22.82			
											22.97		V	22.82 - 22.97m: No recovery. Inferred as completely decomposed GRANITE.
				93	89	73	N.I. 20.0 10.5 5.6 1.9		23.17		23.17		II III	23.17 - 23.45m: Moderately strong, moderately decomposed.
									T2IO1		23.45		II	
27/10/2021		18:00												
28/10/2021		08:00		100	100	100			24.62					
									T2IO1					
28/10/2021		18:00							25.76		25.76			End of hole at 25.76m depth.

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (76/100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED **M H CHIU**

DATE **29/10/2021**

CHECKED **K M LO**

DATE **30/10/2021**

REMARKS

PRELIMINARY

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DRILLHOLE RECORD

HOLE No. **DH04**

SHEET **1** of **4**

PROJECT Ground Investigation Works for the Commercial Development on IL No 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT No. J3957
MACHINE & No. 4-1485	E N	DATE from 01/11/2021 to 03/11/2021
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	GROUND LEVEL +9.57 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Description
01/11/2021	SX	08:00							A 0.45–0.50 B 0.95–1.00 C 1.45–1.50 D 1.95–2.00 1 2.00 2 2.40–2.45		0.00 0.50 1.00			Brown and grey, fine to coarse SAND with some subangular fine to coarse gravel sized rock and concrete fragments and rootlets. (FILL) Loose, brown, fine to coarse SAND with some subangular fine to medium gravel sized rock fragments. (FILL) 0.50 - 1.00m: With some rootlets.
				95				1,1 1,2,2,2 N=7	3 3.00 4 4.00 5 4.10 6 4.50–4.55		3.00		V	Extremely weak, orangish brown, spotted light grey and white, completely decomposed GRANITE. (Slightly silty fine to coarse SAND with some subangular fine gravel sized rock fragments)
	SX 5.00 PX			100				1,2 2,2,3,3 N=10	7 5.00 8 6.00 9 6.10 10 6.50–6.55					
				90				2,3 3,4,5,5 N=17	11 7.00 12 8.00 13 8.10 14 8.50–8.55		7.00			7.00 - 9.00m: Orangish pink, spotted light grey and white.
				100				2,2 3,3,4,5 N=15	15 9.00		9.00 10.00			

INSPECTION PIT

- ● Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (76/100mm)
- ↓ Standard penetration test
- VB Vibrocore sample
- ▲ Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- V In-situ vane shear test
- Pressuremeter Test

LOGGED **M H CHIU**

DATE **04/11/2021**

CHECKED **K M LO**

DATE **05/11/2021**

REMARKS

1. Inspection pit was dug to 2.00m depth.

PRELIMINARY

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DRILLHOLE RECORD

HOLE No. **DH04**

SHEET **2** of **4**

PROJECT Ground Investigation Works for the Commercial Development on IL No 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT No. J3957
MACHINE & No. 4-1485	E N	DATE from 01/11/2021 to 03/11/2021
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	GROUND LEVEL mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Description
													10.00		V	As sheet 1 of 4.
				90				2,3 4,4,6,6 N=20	16 17 18		10.00 10.10 10.50 10.55		11.00		V	Extremely weak, grey, spotted orangish pink and white, completely decomposed GRANITE. (Slightly silty fine to coarse SAND with much subangular fine gravel sized rock fragments)
								3,3 4,4,6,8 N=22	19 20 21 22		11.00 12.00 12.10 12.50 12.55					
				90				3,4 4,5,7,8 N=24	23 24 25 26		13.00 14.00 14.10 14.50 14.55		15.00		V	Extremely weak, orangish pink, spotted light grey, black and white, completely decomposed GRANITE. (Slightly silty fine to coarse SAND with some subangular fine gravel sized rock fragments)
	PX 15.00 HX			85				2,3 4,4,6,9 N=23	27 28 29 30		15.00 16.00 16.10 16.50 16.55					
				90				3,4 6,7,9,11 N=33	31 32 33 34		17.00 18.00 18.10 18.50 18.55					
01/11/2021 02/11/2021		5.10m at 18:00 4.50m at 08:00		85					35		19.00		19.00 20.00			19.00 - 23.00m: Orangish brown.

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (76/100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED **M H CHIU**

DATE **04/11/2021**

CHECKED **K M LO**

DATE **05/11/2021**

REMARKS

PRELIMINARY

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Gammon

DRILLHOLE RECORD

HOLE No. **DH04**

SHEET **3** of **4**

PROJECT Ground Investigation Works for the Commercial Development on IL No 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES E N	PROJECT No. J3957
MACHINE & No. 4-1485		DATE from 01/11/2021 to 03/11/2021
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	GROUND LEVEL mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Description
								3,4 6,6,7,8 N=27	36		20.00		20.00		V	As sheet 2 of 4.
									37		20.10					
									38		20.50 20.55					
								3,5 7,7,9,11 N=34	39		22.10					
									40		22.50 22.55					
				90					41		23.00		23.00		IV	Weak, orangish brown, spotted black and white, highly decomposed GRANITE. (Subangular fine to coarse GRAVEL sized rock fragments)
								50/40mm 200/70mm 200bls/70mm	42		24.00 24.10		24.10		IV	Weak, orangish brown, spotted black and white, highly decomposed GRANITE. (Subangular fine to coarse GRAVEL sized rock fragments in sandy matrix)
									43		24.16 24.21					
				98	80	62	N.I. 10.0				24.51		24.51		III	Moderately weak to moderately strong, brownish pink, spotted light grey, black and white, moderately decomposed fine to medium grained GRANITE. Joints are closely to very closely, locally medium spaced, rough planar undulating, extremely to very narrow, iron and manganese stained, dipping 0°-10°.
							>20			T2101						
							7.7				25.76					
				92	49	49	14.9 2.1			T2101			26.74		IV	Weak, brownish pink, spotted black and white, highly decomposed GRANITE. (Subangular fine to coarse GRAVEL with occasional cobble sized rock fragments)
							>20 N.A.									
							>20				27.00					
				0												
				0					44		28.00 28.10					
								50/20mm 200/60mm 200bls/60mm	45		29.10 29.20					
									46		29.23 29.28		30.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (76/100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED **M H CHIU**

DATE **04/11/2021**

CHECKED **K M LO**

DATE **05/11/2021**

REMARKS

PRELIMINARY

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DRILLHOLE RECORD

HOLE No. **DH04**

SHEET **4** of **4**

PROJECT Ground Investigation Works for the Commercial Development on IL No 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT No. J3957
MACHINE & No. 4-1485	E N	DATE from 01/11/2021 to 03/11/2021
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	GROUND LEVEL mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Description
											30.00		IV	As sheet 3 of 4.
								50/20mm 200/50mm 200bls/50mm	47 31.20 31.22 31.27					
				0					32.10					
				0					48 33.10 33.20					
	HX 34.24								49 34.14					
				100	98	93	12.5 >20 1.2		34.24		34.24		II	Strong, greyish pink, spotted light grey, black and white, slightly decomposed medium grained GRANITE. Joints are widely, locally medium to very closely spaced, smooth planar, extremely narrow, clean, dipping 10°-20°, 20°-30° and 50°-60°.
				100	100	100			T2IOI 35.71					
02/11/2021		5.10m at 18:00							T2IOI					
03/11/2021		4.85m at 08:00		100	100	100			36.82					
									T2IOI					
				100	100	100			38.35					
							5.0 1.0		T2IOI					
03/11/2021		18:00							39.89		39.80 39.89			End of hole at 39.89m depth.

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (76/100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED **M H CHIU**

DATE **04/11/2021**

CHECKED **K M LO**

DATE **05/11/2021**

REMARKS

PRELIMINARY

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DRILLHOLE RECORD

HOLE No. **DH06**

SHEET **1** of **4**

PROJECT Ground Investigation Works for the Commercial Development on IL No 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT No. J3957
MACHINE & No. 005	E N	DATE from 25/10/2021 to 27/10/2021
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	GROUND LEVEL +11.28 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Description
25/10/2021	SX	08:00									0.00			
									A 0.45 0.50 B 0.95 1.00 C 1.45 1.50 D 1.95 (INSPECTION PIT)		0.15			Pinkish brown and grey, subangular fine to coarse GRAVEL and COBBLE sized rock and concrete fragments in sandy matrix. (FILL)
														Pinkish brown, spotted grey, fine to coarse SAND with some subangular fine to medium gravel sized rock and concrete fragments. (FILL)
								1,2 2,1,3,2 N=8	1 2.00 2 2.40 2.45		2.00			Loose, orangish pink, slightly silty fine to coarse SAND with some subangular fine gravel sized rock fragments. (FILL)
				0					3 3.00 4.00		3.00			Orangish pink, slightly silty fine to coarse SAND with occasional subangular fine to coarse GRAVEL sized rock fragments. (FILL)
				85				1,2 2,3,2,2 N=9	4 4.10 5 5.10 6 5.20 7 5.60 5.65		4.10			Firm, greyish brown, sandy SILT with some subangular fine gravel sized rock fragments. (FILL)
	SX 6.10 PX			67					8 6.10 9 7.10		7.20			Dense, grey, silty fine to coarse SAND. (ALLUVIUM)
				100				2,4 6,6,10,11 N=33	10 7.20 11 8.20 12 8.30 13 8.70 8.75		9.20			Dense, grey, dappled orangish brown, very silty fine to coarse SAND with occasional subangular fine gravel sized rock fragments. (ALLUVIUM)
				100					14 9.20		10.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (76/100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED **M H CHIU**

DATE **28/10/2021**

CHECKED **K M LO**

DATE **29/10/2021**

REMARKS

1. Inspection pit was dug to 2.00m depth.

PRELIMINARY

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Gammon

DRILLHOLE RECORD

HOLE No. **DH06**

SHEET **2** of **4**

PROJECT Ground Investigation Works for the Commercial Development on IL No 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT No. J3957
MACHINE & No. 005	E N	DATE from 25/10/2021 to 27/10/2021
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	GROUND LEVEL mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Description
													10.00			As sheet 1 of 4.
				100				3,4 7,7,11,15 N=40	15		10.20					
									16		10.30					
		0.92m at 18:00							17		10.70 10.75					
25/10/2021 26/10/2021		7.42m at 08:00		95					18		11.20		11.20			Dense, light brown, slightly silty fine to coarse SAND. (ALLUVIUM)
								4,4 10,10,11,17 N=48	19		12.20					
									20		12.30					
									21		12.70 12.75					
				100					22		13.20		13.20			Very dense, light yellowish grey, spotted light brown and orangish brown, angular fine to coarse SAND with some subangular fine gravel sized rock fragments. (ALLUVIUM)
								4,5 6,12,13,20 N=51	23		14.20					
									24		14.30					
									25		14.70 14.75					
				100					26		15.20		15.20			Pinkish brown, silty fine to coarse SAND with some subangular fine gravel sized rock fragments. (ALLUVIUM)
									27		16.20		16.30			Very dense, light brown, fine to coarse SAND. (ALLUVIUM)
								3,3 9,12,16,16 N=53	28		16.30					
									29		16.70 16.75					
				100					30		17.20		17.20		V	Extremely weak, dark orangish brown and orangish pink, spotted white, completely decomposed GRANITE. (Silty fine to coarse SAND with some subangular fine gravel sized rock fragments)
									31		18.20					
								4,6 10,12,11,19 N=52	32		18.30					
									33		18.70 18.75					
				100					34		19.20		20.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (76/100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED **M H CHIU**

DATE **28/10/2021**

CHECKED **K M LO**

DATE **29/10/2021**

REMARKS

PRELIMINARY

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DRILLHOLE RECORD

HOLE No. **DH06**

SHEET **3** of **4**

PROJECT Ground Investigation Works for the Commercial Development on IL No 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT No. J3957
MACHINE & No. 005	E N	DATE from 25/10/2021 to 27/10/2021
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	GROUND LEVEL mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Description
				100				6,6 12,13,14,17 N=56	35 20.20 36 20.30 37 20.70 20.75		20.00		V	As sheet 2 of 4.
26/10/2021	PX 22.30	0.82m at 18:00												
27/10/2021	HX	11.43m at 08:00						4,8 12,15,23,30 N=80	38 22.30 39 22.70 22.75					
				100					40 23.20					
								19,20 25,25,30,39 N=119	41 24.20 42 24.30 43 24.70 24.75					
	HX 25.45													
				97	0	0	19.0		T2I01 25.45		25.45		III	Moderately weak to moderately strong, orangish pink, mottled light grey and black, moderately decomposed altered porphyritic medium grained GRANITE. Joints are medium to very closely spaced, rough planar and undulating, extremely narrow to narrow, iron and manganese stained, dipping 20°-30°, 60°-70° and 80°-90°.
							>20				25.80		III	
				97	93	82	5.9		T2I01 25.80					
							10.0							
							4.4							
							15.4							
							4.5							
				100	92	92	>20		T2I01 26.98					Moderately strong, orangish pink, mottled light grey and black, moderately decomposed altered porphyritic medium grained GRANITE. Joints are medium to closely, locally very closely spaced, rough and smooth, planar and undulating, extremely narrow to narrow, chlorite coated and iron stained, dipping 0°-10°, 40°-50° and 80°-90°.
							8.6							
							3.4							
							5.4							
							1.8		T2I01 28.45					
				100	73	73								
							5.6							
							9.1							
							3.8				29.12			
							6.2		T2I01				II	Strong, orangish pink, mottled light grey and black, slightly decomposed altered porphyritic medium grained GRANITE. Joints are medium, locally closely spaced, smooth planar, extremely narrow, chlorite coated, dipping 60°-70° and
							5.0							
							2.1		29.93					

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (76/100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED **M H CHIU**

DATE **28/10/2021**

CHECKED **K M LO**

DATE **29/10/2021**

REMARKS

PRELIMINARY

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Gammon

DRILLHOLE RECORD

HOLE No. **DH06**

SHEET **4** of **4**

PROJECT Ground Investigation Works for the Commercial Development on IL No 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES E N	PROJECT No. J3957
MACHINE & No. 005		DATE from 25/10/2021 to 27/10/2021
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	GROUND LEVEL mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Description
27/10/2021		5.34m at 18:00		100	100	100			T2101 31.20		30.00 31.20		II	80°-90°.
														End of hole at 31.20m depth.

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (76/100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED **M H CHIU**

DATE **28/10/2021**

CHECKED **K M LO**

DATE **29/10/2021**

REMARKS

PRELIMINARY

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Gammon

DRILLHOLE RECORD

HOLE No. **DH13(S/P)**

SHEET **1** of **4**

PROJECT Ground Investigation Works for the Commercial Development on IL No 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT No. J3957
MACHINE & No. 20-134	E N	DATE from 26/10/2021 to 29/10/2021
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	GROUND LEVEL +6.83 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Description
26/10/2021	SX	08:00											0.00			Grey and brown, subangular fine to coarse GRAVEL sized rock and concrete fragments in sandy matrix. (FILL)
									A		0.45 0.50		0.50			Loose, yellowish brown, slightly silty fine to coarse SAND with some subangular fine gravel sized rock fragments. (FILL)
									B	INSPECTION PIT	0.95 1.00					
									C		1.45 1.50					
									D		1.95					
								1,2 2,2,2,3 N=9	1		2.00					
									2		2.40 2.45					
				100					3		3.00					
									4		4.00		4.10			
								2,2 2,3,3,4 N=12	5		4.10					Medium dense, greyish brown, silty fine to coarse SAND with occasional subangular fine gravel sized rock fragments. (FILL)
									6		4.50 4.55					
				90					7		5.00		5.00		V	Extremely weak, orangish pink, spotted light grey, black and white, completely decomposed GRANITE. (Silty fine to coarse SAND with some subangular fine gravel sized rock fragments)
	SX 6.00 PX								8		6.00					
								3,4 4,5,5,6 N=20	9		6.10					
									10		6.50 6.55					
				100					11		7.00					
									12		8.00					
								2,3 3,5,6,10 N=24	13		8.10					
									14		8.50 8.55					
				100					15		9.00		10.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (76/100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED **M H CHIU**

DATE **30/10/2021**

CHECKED **K M LO**

DATE **01/11/2021**

REMARKS

1. Inspection pit was dug to 2.00m depth on 23/10/2021.
2. Standpipe was installed at 15.00m depth.
3. Piezometer was installed at 23.50m depth.

PRELIMINARY

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DRILLHOLE RECORD

HOLE No. **DH13(S/P)**

SHEET **2** of **4**

PROJECT Ground Investigation Works for the Commercial Development on IL No 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT No. J3957
MACHINE & No. 20-134	E N	DATE from 26/10/2021 to 29/10/2021
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	GROUND LEVEL mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Description
								3,3 14,16,17,18 N=65	16 10.00 17 10.10 18 10.50 10.55 19 11.00 20 12.00		10.00		V	As sheet 1 of 4.
				100				18,19 19,21,37,38 N=115	21 12.10 22 12.50 12.55 23 13.00		12.10		V	Extremely weak, orangish brown, spotted light grey, black and white, completely decomposed GRANITE. (Silty fine to coarse SAND with some subangular fine to coarse gravel sized rock fragments)
				100				4,11 25,52,65,58/65mm 200bls/290mm	24 14.00 25 14.10 26 14.49 14.54					
26/10/2021 27/10/2021		1.50m at 18:00 1.35m at 08:00		90					27 15.00					
								8,16 28,58,69,45/45mm 200bls/270mm	28 16.00 29 16.10 30 16.47 16.52					
				100					31 17.00					
								9,20 30,60,82,28/15mm 200bls/240mm	32 18.00 33 18.10 34 18.44 18.49					
	PX 20.00			90					35 19.00		20.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (76/100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED **M H CHIU**

DATE **30/10/2021**

CHECKED **K M LO**

DATE **01/11/2021**

REMARKS

PRELIMINARY

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Gammon

DRILLHOLE RECORD

HOLE No. **DH13(S/P)**

SHEET **3** of **4**

PROJECT Ground Investigation Works for the Commercial Development on IL No 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT No. J3957
MACHINE & No. 20-134	E N	DATE from 26/10/2021 to 29/10/2021
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	GROUND LEVEL mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Description
	HX							11,23 40,68,92/75mm 200bls/225mm	36 37 38		20.00 20.10 20.425 20.475		20.00		V	As sheet 2 of 4.
				90					39		21.00					
								14,27 38,62,100/70mm 200bls/220mm	40 41 42		22.00 22.10 22.42 22.47					
27/10/2021	HX 24.16	1.30m at 18:00							43		24.10		24.10		V	
28/10/2021		1.20m at 08:00		47	40	35	5.3	50/10mm 200/50mm 200bls/50mm			24.11 24.16		24.16		III	Very weak, orangish brown, spotted light grey, black and white, completely decomposed GRANITE. (Subangular fine to coarse GRAVEL sized rock fragments in sandy matrix)
							>20			T2101			24.82		V	Moderately weak to moderately strong, pink, dappled orangish brown, spotted light grey, black and white, moderately decomposed medium grained GRANITE. Joints are closely, locally very closely spaced, rough planar and undulating, extremely narrow to narrow, iron stained, dipping 0°-10° and 20°-30°.
				0			N.R.				25.66		24.86 25.66		V	24.82m: Very weak, orangish brown, completely decomposed GRANITE (40mm thick). (Silty fine to coarse SAND with some subangular fine to coarse gravel)
				0					44		26.66 26.76		26.76		IV	24.86 - 25.66m: No recovery. Inferred as completely decomposed GRANITE.
				100	100	100	2.3		45		27.19 27.29		27.29		II	Extremely weak, orangish brown, completely decomposed GRANITE. (Silty fine to coarse SAND with occasional subangular fine gravel sized rock fragments)
							0.9			T2101						Weak, orangish brown, spotted light grey, black and white, highly decomposed GRANITE. (Subangular fine to coarse GRAVEL sized rock fragments)
				98	96	96					28.38					Strong, pink, dappled orangish brown, spotted light grey, black and white, slightly decomposed medium grained GRANITE. Joints are very widely to widely, locally medium to very closely spaced, rough planar and undulating, extremely narrow to narrow, iron stained, dipping 0°-10° and 60°-70°.
28/10/2021		1.55m at 18:00								T2101	29.96		30.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (76/100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED **M H CHIU**

DATE **30/10/2021**

CHECKED **K M LO**

DATE **01/11/2021**

REMARKS

PRELIMINARY

t:\gintw\library\library ags 3.0 (01 dec 2019).glb\3110 geo drillhole (march 2014)\

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DRILLHOLE RECORD

HOLE No. **DH13(S/P)**

SHEET **4** of **4**

PROJECT Ground Investigation Works for the Commercial Development on IL No 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT No. J3957
MACHINE & No. 20-134	E N	DATE from 26/10/2021 to 29/10/2021
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	GROUND LEVEL mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
29/10/2021		1.35m at 08:00		100	99	95	≥20 17 0.4		T2101 31.33 T2101 32.68		30.00 30.15		II	As sheet 3 of 4. 30.15m: Fine grained GRANITE (70mm thick).
				100	100	100								
29/10/2021		1.40m at 18:00									32.68			End of hole at 32.68m depth.

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (76/100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED **M H CHIU**

DATE **30/10/2021**

CHECKED **K M LO**

DATE **01/11/2021**

REMARKS

PRELIMINARY

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Gammon

DRILLHOLE RECORD

HOLE No. **DH14**

SHEET **1** of **4**

PROJECT Ground Investigation Works for the Commercial Development on IL No 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT No. J3957
MACHINE & No. 20-134	E N	DATE from 01/11/2021 to 04/11/2021
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	GROUND LEVEL +6.85 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Description
01/11/2021	SX	08:00									0.00			Pinkish brown, fine to coarse SAND with much subangular fine to coarse gravel and occasional cobble sized rock and concrete fragments. (FILL)
									A 0.45 0.50		0.50			Loose, pinkish brown, slightly silty fine to coarse SAND with some subangular fine gravel sized rock fragments. (FILL)
									INSPECTION PIT B 0.95 1.00 C 1.45 1.50 D 1.95					
								2.2 2,2,2,3 N=9	1 2.00 2 2.40 2.45					
				100					3 3.00		3.00		V	Extremely weak, orangish pink, spotted light grey and white, completely decomposed GRANITE. (Slightly silty fine to coarse SAND with some subangular fine gravel sized rock fragments)
								2.3 3,3,6,7 N=19	4 4.00 5 4.10 6 4.50 4.55		4.10		V	Extremely weak, orangish brown, spotted white, completely decomposed GRANITE. (Slightly silty fine to coarse SAND with occasional subangular fine gravel sized rock fragments)
				95					7 5.00		5.00		V	Extremely weak, orangish pink, spotted light grey, orangish brown and white, completely decomposed GRANITE. (Silty fine to coarse SAND with some subangular fine gravel sized rock fragments)
	SX 6.00 PX													
								3,3 6,6,8,11 N=31	8 6.00 9 6.10 10 6.50 6.55					
				100					11 7.00					
								4,6 6,9,9,10 N=34	12 8.00 13 8.10 14 8.50 8.55					
				95					15 9.00		10.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (76/100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED **M H CHIU**

DATE **05/11/2021**

CHECKED **K M LO**

DATE **06/11/2021**

REMARKS

1. Inspection pit was dug to 2.00m depth.
2. Packer (Water Absorption) test was carried out at 30.32m-34.01m depth.
3. Acoustic televiewer survey was carried out at 28.82m-34.01m depth.

PRELIMINARY

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Gammon

DRILLHOLE RECORD

HOLE No. **DH14**

SHEET **2** of **4**

PROJECT Ground Investigation Works for the Commercial Development on IL No 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT No. J3957
MACHINE & No. 20-134	E N	DATE from 01/11/2021 to 04/11/2021
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	GROUND LEVEL mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Description
								4,5 7,10,11,11 N=39	16 17 18		10.00 10.10 10.50 10.55		10.00		V	As sheet 1 of 4.
				100				2,3 8,17,22,27 N=74	19 20 21 22		11.00 12.00 12.10 12.50 12.55		11.00		V	Extremely weak, light pink, spotted grey, orangish brown and white, completely decomposed GRANITE. (Slightly silty fine to coarse SAND with some subangular fine gravel sized rock fragments)
				100				4,8 9,16,23,27 N=75	23 24 25 26		13.00 14.00 14.10 14.50 14.55		14.10		V	Extremely weak, orangish brown, spotted grey and white, completely decomposed GRANITE. (Slightly silty fine to coarse SAND with some subangular fine gravel sized rock fragments)
01/11/2021 02/11/2021		1.80m at 18:00 1.50m at 08:00		100				24,26 27,28,31,34 N=120	27 28 29 30		15.00 16.00 16.10 16.50 16.55		17.00		V	Extremely weak, orangish pink, spotted light grey and white, completely decomposed GRANITE. (Slightly silty fine to coarse SAND with some subangular fine gravel sized rock fragments)
	PX 18.10 HX			100				13,20 28,28,32,26 N=114	31 32 33 34		17.00 18.00 18.10 18.50 18.55		20.00			
				100					35		19.00					

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (76/100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED **M H CHIU**

DATE **05/11/2021**

CHECKED **K M LO**

DATE **06/11/2021**

REMARKS

PRELIMINARY

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DRILLHOLE RECORD

HOLE No. **DH14**

SHEET **3** of **4**

PROJECT Ground Investigation Works for the Commercial Development on IL No 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT No. J3957
MACHINE & No. 20-134	E N	DATE from 01/11/2021 to 04/11/2021
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	GROUND LEVEL mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Description
								13,28 33,52,67,48/25mm 200bls/250mm	36 37 38		20.00 20.10 20.45 20.50		20.00		V	As sheet 2 of 4.
				0					39		21.00 22.00		21.00		V	Extremely weak, orangish brown, spotted light grey and white, completely decomposed GRANITE. (Fine to coarse SAND)
				0							22.10		22.10		V	Extremely weak, orangish brown, spotted grey and white, completely decomposed GRANITE. (Slightly silty fine to coarse SAND with some subangular fine gravel sized rock fragments)
								97,3/3mm 200/52mm 200bls/52mm	40 41		23.10 23.20 23.28 23.33		23.20		IV	Weak, orangish brown, spotted light grey and white, highly decomposed GRANITE. (Subangular fine to coarse GRAVEL sized rock fragments in sandy matrix)
02/11/2021 03/11/2021		1.55m at 18:00 1.60m at 08:00						50/20mm 200/40mm 200bls/40mm	42		25.20 25.21 25.26		26.10		IV	Weak, orangish brown, spotted light grey and white, highly decomposed GRANITE. (Subangular fine to coarse GRAVEL and COBBLE sized rock fragments in sandy matrix)
				0					43		26.10 27.10 27.20					
				0					44 45		28.20 28.30 28.32		28.30		IV	Weak, orangish brown, spotted light grey and white, highly decomposed GRANITE. (Subangular fine to coarse GRAVEL sized rock fragments in sandy matrix)
	HX 28.82			100	98	80	2.2 16.7 5.9 >20 0.4	50/5mm 200/15mm 200bls/15mm		T2I01	28.82		28.82		II	Strong, pink, spotted light grey, black and white, slightly decomposed medium to coarse grained GRANITE. Joints are very widely to widely, locally medium to very closely spaced, rough planar, extremely to very narrow, iron stained, dipping 0°-10° and 80°-90°.
													29.55			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (76/100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED **M H CHIU**

DATE **05/11/2021**

CHECKED **K M LO**

DATE **06/11/2021**

REMARKS

PRELIMINARY

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DRILLHOLE RECORD

HOLE No. **DH14**

SHEET **4** of **4**

PROJECT Ground Investigation Works for the Commercial Development on IL No 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT No. J3957
MACHINE & No. 20-134	E N	DATE from 01/11/2021 to 04/11/2021
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	GROUND LEVEL mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Description
				100	100	100			30.01		30.00		II	29.55m: Moderately weak, orangish brown, moderately decomposed (50mm thick).
									T2101					
03/11/2021		1.80m at 18:00							31.48					
04/11/2021		1.50m at 08:00		99	97	92	5.9				32.13			
							≥20		T2101					32.13m: Weak, highly decomposed (40mm thick). (Angular fine to coarse GRAVEL)
							10.0							
							0.6		33.02					
				100	100	100			T2101					
04/11/2021		1.55m at 18:00							34.01		34.01			End of hole at 34.01m depth.

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (76/100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED **M H CHIU**

DATE **05/11/2021**

CHECKED **K M LO**

DATE **06/11/2021**

REMARKS

PRELIMINARY

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DRILLHOLE RECORD

HOLE No. **DH18**

SHEET **1** of **5**

PROJECT Ground Investigation Works for the Commercial Development on IL No 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT No. J3957
MACHINE & No. 78-006	E N	DATE from 01/11/2021 to 08/11/2021
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	GROUND LEVEL +11.09 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
01/11/2021 08:00	SX										0.00			Brown and grey, subangular fine to coarse GRAVEL sized rock and concrete fragments in sandy matrix. (FILL)
									A 0.45 0.50		0.50			Medium dense, brown, slightly silty fine to coarse SAND with some subangular fine gravel sized rock fragments. (FILL)
									B 0.95 1.00					
									C 1.45 1.50					
									D 1.95					
								1,2 2,2,3,3 N=10	1 2.00 2 2.40 2.45					
				86					3 3.00		3.00			Firm, yellowish brown, sandy SILT with occasional subangular fine gravel sized rock fragments. (FILL)
								3,4 4,4,5,5 N=18	4 4.00 5 4.10 6 4.50 4.55					
				0					5.00		5.00			Firm, yellowish brown, sandy SILT with some subangular coarse gravel sized rock fragments. (FILL)
	SX 6.10 PX			40					7 6.00 8 6.10		6.10			Yellowish brown, silty fine to coarse SAND with some subangular fine to medium gravel sized rock fragments. (FILL)
								3,3 5,6,7,8 N=26	9 7.10 10 7.20 11 7.60 7.65		7.20		V	Extremely weak, yellowish brown, spotted grey and orangish brown, completely decomposed GRANITE. (Slightly silty fine to coarse SAND with some subangular fine gravel sized rock fragments)
				90					12 8.10					
								4,4 6,8,10,11 N=35	13 9.10 14 9.20 15 9.60 9.65		10.00			

INSPECTION PIT

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (76/100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED **M H CHIU**

DATE **09/11/2021**

CHECKED **K M LO**

DATE **10/11/2021**

REMARKS

1. Inspection pit was dug to 2.00m depth.

PRELIMINARY

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Gammon

DRILLHOLE RECORD

HOLE No. **DH18**

SHEET **2** of **5**

PROJECT Ground Investigation Works for the Commercial Development on IL No 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT No. J3957
MACHINE & No. 78-006	E N	DATE from 01/11/2021 to 08/11/2021
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	GROUND LEVEL mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Description
				95				4,6 7,8,12,12 N=39	16 10.10 17 11.10 18 11.20 19 11.60 11.65		10.00 10.10		V	As sheet 1 of 5. Extremely weak, light pink, spotted grey, orangish brown and white, completely decomposed GRANITE. (Slightly silty fine to coarse SAND with some subangular fine gravel sized rock fragments)
01/11/2021		6.10m at 18:00												
02/11/2021		6.05m at 08:00		86				10,21 31,45,55,62 N=193	20 12.10 21 13.10 22 13.20 23 13.60 13.65					
				90				14,16 39,52,76,33/15mm 200bls/240mm	24 14.10 25 15.10 26 15.20 27 15.54 15.59					
				90				16,20 42,52,80,26/15mm 200bls/240mm	28 16.10 29 17.10 30 17.20 31 17.54 17.59					
				86					32 18.10					
	PX 19.54 HX	6.10m at						20,28 68,82,50/40mm 200bls/190mm	33 19.10 34 19.20 35 19.49 19.54		20.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (76/100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED **M H CHIU**

DATE **09/11/2021**

CHECKED **K M LO**

DATE **10/11/2021**

REMARKS

PRELIMINARY

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Gammon

DRILLHOLE RECORD

HOLE No. **DH18**

SHEET **3** of **5**

PROJECT Ground Investigation Works for the Commercial Development on IL No 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT No. J3957
MACHINE & No. 78-006	E N	DATE from 01/11/2021 to 08/11/2021
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	GROUND LEVEL mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Description
02/11/2021 03/11/2021		~~18:00~~ 6.15m at 08:00		100									20.00			
								25,25/50mm 72,89,39/25mm 200bls/175mm	36 37 38 39		20.10 21.10 21.20 21.45 21.50		20.10		V	As sheet 2 of 5. Extremely weak, orangish brown, spotted grey and white, completely decomposed GRANITE. (Slightly silty fine to coarse SAND with some subangular fine gravel sized rock fragments)
								35,15/20mm 80,95,25/15mm 200bls/165mm	40 41		23.20 23.41 23.46					
				95					42		24.10		24.10		V	Extremely weak, pink, spotted grey and white, completely decomposed GRANITE. (Slightly silty fine to coarse SAND with some subangular fine gravel sized rock fragments)
								43,7/5mm 92,108/65mm 200bls/140mm	43 44 45		25.10 25.20 25.37 25.42					
				0				50/75mm 98,102/50mm 200bls/125mm	46 47		27.20 27.35 27.40		28.10		V	Very weak, brownish pink, spotted grey and white, completely decomposed GRANITE. (Slightly silty fine to coarse SAND with much subangular fine gravel sized rock fragments)
				0					48		29.10 29.20		30.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (76/100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED **M H CHIU**

DATE **09/11/2021**

CHECKED **K M LO**

DATE **10/11/2021**

REMARKS

PRELIMINARY

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Gammon

DRILLHOLE RECORD

HOLE No. **DH18**

SHEET **4** of **5**

PROJECT Ground Investigation Works for the Commercial Development on IL No 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT No. J3957
MACHINE & No. 78-006	E N	DATE from 01/11/2021 to 08/11/2021
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	GROUND LEVEL mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Description
				0					49 30.20		30.00		V	As sheet 3 of 5.
				100	100	100	2.2		30.30		30.30		II	Strong, pink, spotted light grey, black and white, slightly decomposed medium to coarse grained GRANITE. Joints are widely, locally medium spaced, rough planar and undulating, extremely narrow to narrow, iron stained, dipping 10°-20°.
		6.20m at 18:00					0.7		T2I01					
03/11/2021									31.23					
04/11/2021		6.10m at 08:00		58	58	58			T2I01					
							N.R.				32.15		V	32.15 - 32.81m: No recovery. Inferred as completely decomposed GRANITE.
				0					32.81		32.81		IV	Weak, orangish brown, spotted light grey, black and white, highly decomposed GRANITE. (Subangular fine to coarse GRAVEL sized rock fragments)
									50 33.81 33.91					
				0										
									51 34.91 35.01					
								50/15mm 200/25mm 200blS/25mm	52 35.05					
									35.36		35.36			
				15	8	0	N.I.		T2I01		35.48		III	Moderately weak, orangish brown, spotted light grey, black and white, moderately decomposed medium grained GRANITE. Joints are very closely spaced, rough undulating, narrow, iron stained, dipping 0°-10°.
							N.R.						V	35.36m: Weak, highly decomposed (60mm thick). (Subangular fine to coarse GRAVEL)
		6.20m at 18:00									36.15			35.48 - 36.15m: No recovery. Inferred as completely decomposed GRANITE.
04/11/2021														
05/11/2021		6.20m at 08:00		0					36.15				V	Extremely weak, orangish brown, spotted grey, completely decomposed GRANITE. (Slightly silty fine to coarse SAND with some subangular fine gravel sized rock fragments)
		6.15m at 18:00							53 37.15		37.25			
05/11/2021									37.25				IV	Weak, orangish brown, spotted light grey, black and white, highly decomposed GRANITE. (Subangular fine to coarse GRAVEL sized rock fragments)
06/11/2021		6.15m at 08:00		0					54 37.57		37.67		III	Strong, pink, spotted light grey, black and white, slightly decomposed medium to coarse grained GRANITE. Joints are widely to medium, locally closely to very closely spaced, rough planar and undulating, extremely narrow to narrow, iron stained, dipping 0°-10° and 10°-20°.
	HX 37.67			100	98	89	13.8		37.67				II	37.67 - 37.98m: Moderately strong, orangish pink, dappled orangish brown, moderately decomposed.
							7.7		T2I01		37.98			38.60 - 38.95m: Mottled grey.
							2.2							
				100	100	93			38.51		38.60			
							20.0				38.95			
							0.8		T2I01					
											40.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (76/100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED **M H CHIU**

DATE **09/11/2021**

CHECKED **K M LO**

DATE **10/11/2021**

REMARKS

PRELIMINARY

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DRILLHOLE RECORD

HOLE No. **DH18**

SHEET **5** of **5**

PROJECT Ground Investigation Works for the Commercial Development on IL No 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT No. J3957
MACHINE & No. 78-006	E N	DATE from 01/11/2021 to 08/11/2021
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	GROUND LEVEL mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Description
				83	74	39	9.5				40.00		II	As sheet 4 of 5.
							>20				40.54		III	40.54 - 41.05m: Moderately strong, orangish pink, moderately decomposed.
							13.3				41.05		V	41.05 - 41.32m: No recovery. Inferred as completely decomposed GRANITE.
							N.R.				41.32		III	41.32 - 41.52m: Moderately weak, moderately decomposed.
							>20				41.52		II	
				100	100	95	3.8		40.01		41.57		II	Strong, pink, spotted light grey, black and white, slightly decomposed medium to coarse grained GRANITE. Joints are widely, locally medium and very closely spaced, rough and smooth, planar and undulating, tight to extremely narrow, chlorite coated, iron and manganese stained, dipping 0°-10°, 10°-20° and 30°-40°.
							>20		T2101					
							1.0							
06/11/2021		6.10m at 18:00												
08/11/2021		6.10m at 08:00		100	100	95	0.5		41.57					
									T2101					
									43.10					
									T2101					
				100	100	100			44.66					
									T2101					
				100	100	100			45.90					
									T2101					
		6.00m at 18:00									46.49			46.49 - 46.85m: Greyish pink, fine grained GRANITE.
08/11/2021									46.85		46.85			End of hole at 46.85m depth.

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (76/100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED **M H CHIU**

DATE **09/11/2021**

CHECKED **K M LO**

DATE **10/11/2021**

REMARKS

PRELIMINARY

t:\gintw\library\library ags 3.0 (01 dec 2019).glb\3110 geo drillhole (march 2014)\

Gammon

DRILLHOLE RECORD

HOLE No. **DH23**

SHEET **1** of **5**

PROJECT Ground Investigation Works for the Commercial Development on IL No 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT No. J3957
MACHINE & No. 78-006	E N	DATE from 23/10/2021 to 29/10/2021
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	GROUND LEVEL +11.11 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Description
23/10/2021	SX	08:00									0.00			Orangish brown and grey, subangular coarse GRAVEL and COBBLE sized rock and concrete fragments in sandy silty matrix. (FILL)
									A 0.45 0.50		0.50			Orangish brown, spotted grey, slightly silty fine to coarse SAND with some subangular fine gravel sized rock and concrete fragments. (FILL)
									INSPECTION PIT B 0.95 1.00 C 1.45 1.50					
									D 1.95		2.00			
								2.2 2,2,2,3 N=9	1 2.00 2 2.40 2.45					Loose, orangish brown, slightly silty fine to coarse SAND with some subangular fine gravel sized rock fragments. (FILL)
				100					3 3.00					
								1,2 2,2,3,3 N=10	4 4.00 4.10 5		4.10			
									6 4.50 4.55					Medium dense, brownish grey, slightly silty fine to coarse SAND with some subangular fine gravel sized rock fragments. (FILL)
				90					7 5.00		5.00		V	Extremely weak, orangish brown, completely decomposed GRANITE. (Slightly silty fine to coarse SAND with some subangular fine gravel sized rock fragments)
	SX 6.00 PX													
		4.40m at 18:00						2,3 3,4,4,5 N=16	8 6.00 9 6.10 10 6.50 6.55					
23/10/2021 25/10/2021		4.25m at 08:00									7.00		V	Extremely weak, brownish grey, completely decomposed GRANITE. (Slightly silty fine to coarse SAND with some subangular fine gravel sized rock fragments)
				90					11 7.00					
								8,9 8,8,10,12 N=38	12 8.00 13 8.10 14 8.50 8.55					
				90					15 9.00		10.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (76/100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED **M H CHIU**

DATE **30/10/2021**

CHECKED **K M LO**

DATE **01/11/2021**

REMARKS

1. Inspection pit was dug to 2.00m depth on 21/10/2021.
2. Packer (Water Absorption) test was carried out at 37.60m-41.32m depth.
3. Acoustic televiewer survey was carried out at 35.63m-41.32m depth.

PRELIMINARY

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Gammon

DRILLHOLE RECORD

HOLE No. **DH23**

SHEET **2** of **5**

PROJECT Ground Investigation Works for the Commercial Development on IL No 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT No. J3957
MACHINE & No. 78-006	E N	DATE from 23/10/2021 to 29/10/2021
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	GROUND LEVEL mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Description
													10.00		V	As sheet 1 of 5.
								8,10 12,18,20,30 N=80	16		10.00					
									17		10.10					
									18		10.50 10.55					
				100					19		11.00					
									20		12.00					
								4,11 11,14,21,35 N=81	21		12.10					
									22		12.50 12.55					
				100					23		13.00					
									24		14.00					
								8,12 11,15,23,26 N=75	25		14.10					
									26		14.50 14.55					
				100					27		15.00					
									28		16.00					
								10,13 15,18,25,38 N=96	29		16.10					
									30		16.50 16.55					
				100					31		17.00					
		4.30m at 18:00							32		18.00					
25/10/2021	PX 18.10								33		18.10					
26/10/2021	HX	4.00m at 08:00						10,17 20,21,28,35 N=104	34		18.50 18.55					
				83					35		19.00		20.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (76/100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED **M H CHIU**

DATE **30/10/2021**

CHECKED **K M LO**

DATE **01/11/2021**

REMARKS

PRELIMINARY

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DRILLHOLE RECORD

HOLE No. **DH23**

SHEET **3** of **5**

PROJECT Ground Investigation Works for the Commercial Development on IL No 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT No. J3957
MACHINE & No. 78-006	E N	DATE from 23/10/2021 to 29/10/2021
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	GROUND LEVEL mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Description
													20.00		V	As sheet 1 of 5.
								11,19 22,25,30,38 N=115	36	●	20.00 20.10					
									37							
									38	●	20.50 20.55					
				90					39		21.00					
									40		22.00					
								11,21 23,25,32,41 N=121	41		22.10					
									42	●	22.50 22.55					
								22,25 23,29,32,45 N=129	43		24.10					
									44	●	24.50 24.55					
				0							25.00					
26/10/2021		4.10m at 18:00							45	●	26.00					
27/10/2021		4.20m at 08:00		0							26.10					
									46	●	27.10					
									47		27.20					
								14,31 46,62,92/75mm 200blS/225mm	48	●	27.525 27.575					
											29.20					
								29,21/10mm 60,83,57/25mm 200blS/175mm	49	●	29.41 29.46		30.00			

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (76/100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED **M H CHIU**

DATE **30/10/2021**

CHECKED **K M LO**

DATE **01/11/2021**

REMARKS

PRELIMINARY

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DRILLHOLE RECORD

HOLE No. **DH23**

SHEET **4** of **5**

PROJECT Ground Investigation Works for the Commercial Development on IL No 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT No. J3957
MACHINE & No. 78-006	E N	DATE from 23/10/2021 to 29/10/2021
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	GROUND LEVEL mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
											30.00		V	As sheet 1 of 5.
				0					30.10					
									50 31.10					
				0					31.20					
		4.20m at 18:00							51 32.20					
27/10/2021									32.30					
28/10/2021		4.50m at 08:00						50/75mm 200/75mm 200bls/75mm	52 32.40 32.45					
				96	82	69	11.8		32.65		32.65		III	Moderately strong, orangish brown, spotted light grey, black and white, moderately decomposed medium grained GRANITE. Joints are medium, locally closely to very closely spaced, rough undulating, very narrow to narrow, iron and manganese stained, dipping 0°-10° and 40°-50°. 32.82 - 33.28m: Strong, pink, slightly decomposed. 33.28 - 33.40m: Moderately weak. 33.83 - 34.19m: Moderately weak.
							2.2				32.82		II	
							>20				33.28		III	
							2.3		T2I01		33.40			
							5.9				33.83			
							>20				34.19			
				0					34.19				IV	
									53 34.50		34.60		III	Weak, pink, spotted light grey, black and white, highly decomposed GRANITE. (Subangular fine to coarse GRAVEL sized rock fragments in sandy matrix)
				98	91	73	>20		34.60					
		4.30m at 18:00					5.0		T2I01					
28/10/2021							7.7		35.04		35.04		V	Moderately weak to moderately strong, orangish pink, spotted light grey, black and white, moderately decomposed medium grained GRANITE. Joints are closely to very closely spaced, rough planar and undulating, extremely to very narrow, iron stained, dipping 0°-10°.
29/10/2021		4.23m at 08:00												
	HX 35.63			0					54 35.53		35.63		III	
				88	85	85	5.0		35.63					
							>20		T2I01		36.10		II	Very weak, orangish brown, completely decomposed GRANITE. (Slightly silty fine to coarse SAND with much subangular fine to coarse gravel sized rock fragments)
				100	83	83	1.1		36.10		36.30		III	
									T2I01		36.72		II	Moderately weak to moderately strong, pink, dappled orangish brown, spotted light grey, black and white, moderately decomposed medium grained GRANITE. Joints are closely, locally very closely spaced, rough planar and undulating, extremely to very narrow, iron stained, dipping 0°-10°.
				97	97	68			36.80					
							17.8				37.05			
							4.7				37.24			
							2.2		T2I01		37.60			
				100	100	88			38.31					Strong, pink, spotted light grey, black and white, slightly decomposed medium grained GRANITE. Joints are widely to medium, locally closely to very closely spaced, rough planar and undulating, extremely to very narrow, iron stained, dipping 0°-10°, 10°-20°, 20°-30° and 30°-40°. 36.30 - 36.72m: Moderately strong, dappled orangish brown, moderately decomposed. 37.05m: Moderately weak, moderately decomposed (50mm thick). 37.24 - 37.60m: Fine grained GRANITE.
							1.2				38.31			
									T2I01		38.45			
							2.9				39.12		III	
							14.3				39.28		II	
							9.1							
				100	100	94	>20		39.77					
							3.4		T2I01					

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (76/100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED **M H CHIU**

DATE **30/10/2021**

CHECKED **K M LO**

DATE **01/11/2021**

REMARKS

PRELIMINARY

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Gammon

DRILLHOLE RECORD

HOLE No. **DH23**

SHEET **5** of **5**

PROJECT Ground Investigation Works for the Commercial Development on IL No 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT No. J3957
MACHINE & No. 78-006	E N	DATE from 23/10/2021 to 29/10/2021
FLUSHING MEDIUM WATER	ORIENTATION **Vertical**	GROUND LEVEL mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m)	Legend	Grade	Description
				100	100	94	17.4 5.9 1.8		No. Type Depth T2101		40.00		II	38.31 - 38.45m: Fused with fine grained GRANITE. 39.12 - 39.28m: Moderately strong, moderately decomposed.
29/10/2021		4.50m at 18:00							41.32		41.32			End of hole at 41.32m depth.

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample (76/100mm)
- Standard penetration test
- Vibrocore sample
- Water sample
- Piezometer / Standpipe tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED **M H CHIU**

DATE **30/10/2021**

CHECKED **K M LO**

DATE **01/11/2021**

REMARKS

PRELIMINARY

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Coreholes

Gammon

COREHOLE RECORD

HOLE No. **FR32-CH01(H)**

SHEET 1 of 1

PROJECT Ground Investigation Works for the Commercial Development on IL No. 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT NO. J3957
MACHINE & No. CH2	E 837313.52 N 815363.58	DATE from 20/01/2022 to 20/01/2022
FLUSHING MEDIUM WATER	ORIENTATION 204°/Horizontal	GROUND LEVEL + 9.12 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
20/01/2022		10:00		100					0.00 HX	9.12	0.00			Pink, BOULDER sized rock fragments. (MASONRY WALL)
				67					0.76 HX	9.12	0.76			Pinkish brown, mottled grey, COBBLE and BOULDER with some subangular coarse gravel sized rock and concrete fragments binded with cement soil mortar. (MASONRY WALL?)
				43					1.46 HX	9.12	1.46			0.76m: Binded with cement soil mortar. Brown, silty fine to coarse SAND with some subangular fine to coarse gravel and cobble sized rock fragments. (FILL)
				48					2.50 HX					
				49					3.30 HX					
20/01/2022		Dry at 16:00							4.02	9.12	4.02			End of hole at 4.02m depth.

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Water sample
- Standpipe tip
- Piezometer tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED M H CHIU

DATE 21/01/2022

CHECKED K M LO

DATE 22/01/2022

REMARKS

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J3957 ADDITIONAL CH.GPJ

Gammon

COREHOLE RECORD

HOLE No. **FR32-CH02(I)**

SHEET 1 of 1

PROJECT Ground Investigation Works for the Commercial Development on IL No. 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT NO. J3957
MACHINE & No. CH2	E 837313.75 N 815363.63	DATE from 18/01/2022 to 19/01/2022
FLUSHING MEDIUM WATER	ORIENTATION **204°/30°**	GROUND LEVEL + 6.81 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Description
18/01/2022		10:00		100					0.00	6.81	0.00			Pink, BOULDER sized rock fragment. (MASONRY WALL)
				100					HX 0.37	6.63	0.37			Brown, mottled grey, BOULDER with some cobble sized rock and concrete fragments binded with cement soil mortar. (MASONRY WALL?) 0.37m: Binded with cement soil mortar. 0.62 - 1.25m: Grey.
										6.50	0.62			
		Dry at 16:00							HX	6.19	1.25			
18/01/2022									1.45					
19/01/2022		Dry at 10:00		52					HX	5.95	1.72			No recovery.
									2.05	5.79	2.05			Brownish pink, subangular fine to coarse GRAVEL and COBBLE sized rock and concrete fragments binded with cement soil mortar. (MASONRY WALL?)
				22					NX					
				47					2.73					
				19					NX 3.05	5.29	3.05			Brown, very silty fine to coarse SAND with occasional subangular fine gravel sized rock fragments. (FILL)
									NX					
19/01/2022		Dry at 16:00							4.10	4.76	4.10			End of hole at 4.10m depth.

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Water sample
- Standpipe tip
- Piezometer tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED M H CHIU

DATE 20/01/2022

CHECKED K M LO

DATE 21/01/2022

REMARKS

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J3957 ADDITIONAL CH.GPJ

Gammon

COREHOLE RECORD

HOLE No. **FR32-CH03(H)**

SHEET 1 of 1

PROJECT Ground Investigation Works for the Commercial Development on IL No. 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT NO. J3957
MACHINE & No. CH1	E 837336.81 N 815345.97	DATE from 19/01/2022 to 19/01/2022
FLUSHING MEDIUM WATER	ORIENTATION 226°/Horizontal	GROUND LEVEL + 9.17 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
19/01/2022		10:00		100					0.00 HX	9.17	0.00			Pink, BOULDER sized rock fragment. (MASONRY WALL)
				100					0.38 HX	9.17	0.38			Pinkish brown, mottled grey, BOULDER sized concrete fragments. (MASONRY WALL?) 0.38m: Binded with cement soil mortar.
				94					0.80 HX					
				57					1.30 HX	9.17	1.30			Brown and pink, subangular fine to coarse GRAVEL and COBBLE sized rock and concrete fragments. (FILL)
				86					2.00 HX					
				38					3.10 HX					
19/01/2022		Dry at 16:00							4.10	9.17	4.10			End of hole at 4.10m depth.

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Water sample
- Standpipe tip
- Piezometer tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED M H CHIU

DATE 20/01/2022

CHECKED K M LO

DATE 21/01/2022

REMARKS

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J3957 ADDITIONAL CH.GPJ

Gammon

COREHOLE RECORD

HOLE No. **FR32-CH04(I)**

SHEET 1 of 1

PROJECT Ground Investigation Works for the Commercial Development on IL No. 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT NO. J3957
MACHINE & No. CH1	E 837336.70 N 815346.32	DATE from 18/01/2022 to 18/01/2022
FLUSHING MEDIUM WATER	ORIENTATION 226°/30°	GROUND LEVEL + 6.88 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Description
18/01/2022		10:00		100					HX 0.00	6.88	0.00			Grey, COBBLE and BOULDER sized rock and concrete fragments binded with cement soil mortar. (MASONRY WALL)
				94					HX 0.43	6.67	0.43			Brown, mottled grey, BOULDER with some angular fine to coarse gravel and cobble sized rock and concrete fragments binded with cement soil mortar. (MASONRY WALL?) 0.43m: Binded with cement soil mortar.
				46					HX 0.96					
				93					HX 1.52					
				78					HX 2.10					
				89					HX 2.60	5.58	2.60			Brown, very silty fine to coarse SAND. (FILL)
				74					HX 3.05					
				90					HX 3.55					
18/01/2022		Dry at 16:00							4.05	4.86	4.05			End of hole at 4.05m depth.

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Water sample
- Standpipe tip
- Piezometer tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED M H CHIU

DATE 19/01/2022

CHECKED K M LO

DATE 20/01/2022

REMARKS

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J3957 ADDITIONAL CH.GPJ

Gammon

COREHOLE RECORD

HOLE No.
FR190-CH01(H)

SHEET 1 of 1

PROJECT Ground Investigation Works for the Commercial Development on IL No. 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT NO. J3957
MACHINE & No. CH2	E 837204.34 N 815409.59	DATE from 07/01/2022 to 10/01/2022
FLUSHING MEDIUM WATER	ORIENTATION 149°/Horizontal	GROUND LEVEL + 7.57 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
07/01/2022		10:00 Dry at 16:00		100					HX 0.00	7.57	0.00			Pink, BOULDER sized rock fragment. (MASONRY WALL)
				100					HX 0.32	7.57	0.32			Orangish brown, dappled pink and grey, BOULDER with much cobble sized rock and concrete fragments binded with cement mortar. (MASONRY WALL?)
07/01/2022 10/01/2022		Dry at 10:00		78					HX 0.77					0.32m: Binded with cement mortar.
				87					HX 1.15	7.57	1.15			Brown, slightly silty fine to coarse SAND with much subangular fine to coarse gravel sized rock fragments. (FILL)
				50					HX 2.10					
				46					HX 2.60					
				35					HX 3.10					
10/01/2022		Dry at 16:00							HX 4.10	7.57	4.10			End of hole at 4.10m depth.

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Water sample
- Standpipe tip
- Piezometer tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED M H CHIU
DATE 11/01/2022
CHECKED K M LO
DATE 12/01/2022

REMARKS

t:\gintw\library\library ags 3.0 (01 dec 2019).glb\3823 cedd (drillhole)

J3957 ADDITIONAL CH.GPJ

Gammon

COREHOLE RECORD

HOLE No. **FR190-CH02(I)**

SHEET 1 of 1

PROJECT Ground Investigation Works for the Commercial Development on IL No. 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES E 837204.42 N 815409.73	PROJECT NO. J3957
MACHINE & No. CH2		DATE from 17/01/2022 to 17/01/2022
FLUSHING MEDIUM WATER	ORIENTATION **149°/45°**	GROUND LEVEL + 7.16 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
17/01/2022		10:00		100					0.00	7.16	0.00			Pink, BOULDER sized rock fragment. (MASONRY WALL)
									HX	6.95	0.30			Pinkish grey, BOULDER with occasional subangular coarse gravel and cobble sized rock and concrete fragments binded with cement mortar. (MASONRY WALL?) 0.30m: Binded with cement soil mortar.
				88					0.90					
									HX					
				100					1.75					
									HX					
				88					2.10	5.68	2.10			Brown, fine to coarse SAND with some subangular fine to coarse gravel sized rock fragments. (FILL)
									HX					
				44					3.20					
									HX					
17/01/2022		Dry at 16:00							4.00	4.33	4.00			End of hole at 4.00m depth.

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Water sample
- Standpipe tip
- Piezometer tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED M H CHIU

DATE 18/01/2022

CHECKED K M LO

DATE 19/01/2022

REMARKS

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J3957 ADDITIONAL CH.GPJ

Gammon

COREHOLE RECORD

HOLE No.
FR190-CH03(H)

SHEET 1 of 1

PROJECT Ground Investigation Works for the Commercial Development on IL No. 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES E 837213.47 N 815419.26	PROJECT NO. J3957
MACHINE & No. CH1		DATE from 07/01/2022 to 10/01/2022
FLUSHING MEDIUM WATER	ORIENTATION **145°/Horizontal**	GROUND LEVEL + 7.46 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Description
07/01/2022		10:00		94						HX	0.00	7.46	0.00			Pink, BOULDER sized rock fragment. (MASONRY WALL)
				98						HX	0.34	7.46	0.34			Greyish pink, BOULDER sized concrete fragment. (MASONRY WALL?)
				78						HX	0.78	7.46	0.78			0.34m: Binded with cement soil mortar.
				55						HX	1.28					Brown, slightly silty fine to coarse SAND with much subangular fine to coarse gravel sized rock fragments. (FILL)
07/01/2022		Dry at 16:00								HX	2.10					
10/01/2022		Dry at 10:00		55						HX	3.10					
				64						HX		7.46	3.85			3.85 - 4.20m: COBBLE.
10/01/2022		Dry at 16:00									4.20	7.46	4.20			End of hole at 4.20m depth.

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Water sample
- Standpipe tip
- Piezometer tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED **M H CHIU**

DATE **11/01/2022**

CHECKED **K M LO**

DATE **12/01/2022**

REMARKS

t:\gintw\library\library ags 3.0 (01 dec 2019).glb\3823 cedd (drillhole)

J3957 ADDITIONAL CH.GPJ

Gammon

COREHOLE RECORD

HOLE No.
FR190-CH04(I)

SHEET 1 of 1

PROJECT Ground Investigation Works for the Commercial Development on IL No. 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT NO. J3957
MACHINE & No. CH1	E 837213.34 N 815419.19	DATE from 17/01/2022 to 17/01/2022
FLUSHING MEDIUM WATER	ORIENTATION **145°/45°**	GROUND LEVEL + 6.67 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Description
17/01/2022		10:00		100					0.00	6.67	0.00			
										6.58	0.13			Pink, COBBLE and BOULDER sized rock fragments. (MASONRY WALL) 0.13m: Binded with cement mortar.
										6.25	0.59			0.59m: Binded with cement soil mortar.
				83					0.80	6.10	0.80			Grey, BOULDER with occasional subangular coarse gravel and cobble sized rock and concrete fragments binded with cement mortar. (MASONRY WALL?) 0.80m: Binded with cement mortar.
				94					1.55					
				92					2.40	4.97	2.40			Brown, silty fine to coarse SAND with some subangular fine gravel sized rock fragments. (FILL)
				68					3.05					
17/01/2022		Dry at 16:00							4.00	3.84	4.00			End of hole at 4.00m depth.

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Water sample
- Standpipe tip
- Piezometer tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED M H CHIU
DATE 18/01/2022
CHECKED K M LO
DATE 19/01/2022

REMARKS

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J3957 ADDITIONAL CH.GPJ

Gammon

COREHOLE RECORD

HOLE No.
FR193-CH01(H)

SHEET 1 of 1

PROJECT Ground Investigation Works for the Commercial Development on IL No. 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT NO. J3957
MACHINE & No. CH1	E 837235.78 N 815410.10	DATE from 17/01/2022 to 17/01/2022
FLUSHING MEDIUM WATER	ORIENTATION 230°/Horizontal	GROUND LEVEL + 7.57 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
17/01/2022		10:00		100					0.00 HX	7.57	0.00			Pink, BOULDER sized rock fragment. (MASONRY WALL)
				83					0.36 HX	7.57	0.40			Pinkish brown, mottled grey, COBBLE with some subangular fine to coarse gravel sized rock and concrete fragments binded with cement soil mortar. (MASONRY WALL?)
				74					0.78 HX	7.57	0.78			0.40m: Binded with cement soil mortar.
				49					1.25 HX					Brown, silty fine to coarse SAND with some subangular fine to coarse gravel and occasional cobble sized rock and wood fragments. (FILL)
				53					2.00 HX					
				47					2.60 HX					
				47					3.20 HX					
17/01/2022		Dry at 16:00							4.05	7.57	4.05			End of hole at 4.05m depth.

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Water sample
- Standpipe tip
- Piezometer tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED M H CHIU
DATE 18/01/2022
CHECKED K M LO
DATE 19/01/2022

REMARKS

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J3957 ADDITIONAL CH.GPJ

Gammon

COREHOLE RECORD

HOLE No.
FR193-CH02(I)

SHEET 1 of 1

PROJECT Ground Investigation Works for the Commercial Development on IL No. 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT NO. J3957
MACHINE & No. CH1	E 837235.58 N 815410.36	DATE from 20/01/2022 to 20/01/2022
FLUSHING MEDIUM WATER	ORIENTATION **230°/45°**	GROUND LEVEL + 6.64 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Description
20/01/2022		10:00		100						HX	0.00	6.64	0.00			Pink, BOULDER sized rock fragment. (MASONRY WALL)
				62						HX	0.48	6.30	0.48			Pinkish brown, mottled grey, COBBLE sized rock and concrete fragments binded with cement soil mortar. (MASONRY WALL?)
				56						HX	1.00	5.93	1.00			0.48m: Binded with cement soil mortar.
				83						HX	1.50					Brown, silty fine to coarse SAND with some subangular fine to coarse gravel sized rock fragments. (FILL)
				40						HX	2.10					
				40						NX	3.10					
20/01/2022		Dry at 16:00								NX	4.10	3.74	4.10			End of hole at 4.10m depth.

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Water sample
- Standpipe tip
- Piezometer tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED **M H CHIU**

DATE **21/01/2022**

CHECKED **K M LO**

DATE **22/01/2022**

REMARKS

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J3957 ADDITIONAL CH.GPJ

Gammon

COREHOLE RECORD

HOLE No.
FR193-CH03(H)

SHEET 1 of 1

PROJECT Ground Investigation Works for the Commercial Development on IL No. 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT NO. J3957
MACHINE & No. CH1	E 837247.55 N 815398.74	DATE from 21/01/2022 to 21/01/2022
FLUSHING MEDIUM WATER	ORIENTATION 230°/Horizontal	GROUND LEVEL + 8.10 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
21/01/2022		10:00		100					HX 0.00	8.10	0.00			Pink, BOULDER sized rock fragment. (MASONRY WALL)
				46					HX 0.35	8.10	0.35			0.35m: Cement soil mortar at interface.
										8.10	0.55			Pink, subangular fine to coarse GRAVEL and COBBLE sized rock and concrete fragments. (FILL)
				33					HX 1.00					Brown, silty fine coarse SAND with occasional subangular fine to coarse gravel sized rock and wood fragments. (FILL)
				50					HX 1.60					
				40					HX 2.10					
									HX 3.10					
				27					HX 3.65					
				49					HX					
21/01/2022		Dry at 16:00							4.30	8.10	4.30			End of hole at 4.30m depth.

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Water sample
- Standpipe tip
- Piezometer tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED M H CHIU

DATE 22/01/2022

CHECKED K M LO

DATE 24/01/2022

REMARKS

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J3957 ADDITIONAL CH.GPJ

Gammon

COREHOLE RECORD

HOLE No. **FR193-CH04(I)**

SHEET 1 of 1

PROJECT Ground Investigation Works for the Commercial Development on IL No. 8945, Causeway Bay, Hong Kong

METHOD Rotary	CO-ORDINATES	PROJECT NO. J3957
MACHINE & No. CH1	E 837247.70 N 815398.77	DATE from 21/01/2022 to 21/01/2022
FLUSHING MEDIUM WATER	ORIENTATION 230°/45°	GROUND LEVEL + 6.63 mPD

Drilling Progress	Casing depth/size	Water Depth (m)	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples (No. Type Depth)	Reduced Level	Depth (m)	Legend	Grade	Description
21/01/2022		10:00		100					0.00	6.63	0.00			Pink, BOULDER sized rock fragment. (MASONRY WALL)
									HX	6.49	0.20			Pinkish brown, mottled grey, BOULDER with some cobble sized rock and concrete fragments binded with cement soil mortar. (MASONRY WALL?) 0.20m: Binded with cement soil mortar. 0.54m: Binded with cement soil mortar.
				100					0.54	6.25	0.54			
									HX					
									1.40	5.64	1.40			Pinkish brown, subangular coarse GRAVEL and COBBLE sized rock and concrete fragments. (FILL)
				50					NX 1.80	5.36	1.80			Brownish grey, silty fine to coarse SAND with some subangular fine to coarse gravel sized rock fragments. (FILL)
				29					NX					
				40					2.50					
									NX					
				83					3.00					
									NX					
				83					3.60					
									NX					
21/01/2022		Dry at 16:00							4.20	3.66	4.20			End of hole at 4.20m depth.

- Small disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- Piston sample
- Standard penetration test
- Water sample
- Standpipe tip
- Piezometer tip
- Permeability test
- Packer (Water Absorption) test
- Impression packer test
- Acoustic Televiewer Survey Test
- In-situ vane shear test
- Pressuremeter Test

LOGGED M H CHIU

DATE 22/01/2022

CHECKED K M LO

DATE 24/01/2022

REMARKS

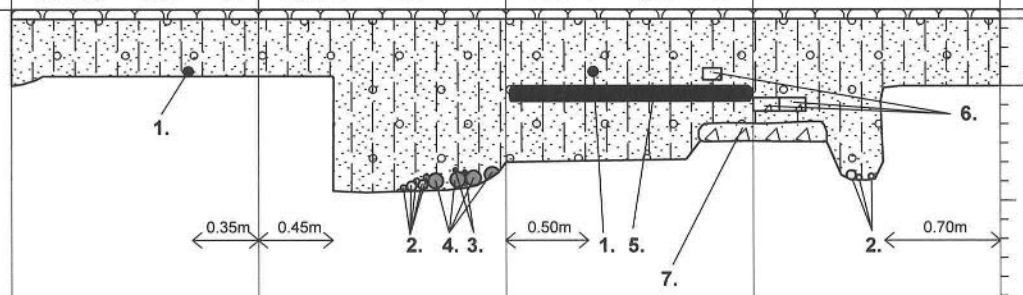
t:\gintw\library\library ags 3.0 (01 dec 2019).glb\3823 cedd (drillhole)

J3957 ADDITIONAL CH.GPJ

Trial Pits

Gammon	CONTRACT No.	PROJECT NO. J3957	Logged by : M H CHIU Date : 19/01/2022 Checked by : K M LO Date : 20/01/2022	Co-ordinates : E 837172.81 N 815256.37 Ground Level : + 12.35 mPD	Excavation Dates: 18/01/2022 to 18/01/2022 Backfill Dates: 24/01/2022	TRIAL PIT No. TP01U
	PROJECT: Ground Investigation Works for the Commercial Development on IL No. 8945, Causeway Bay, Hong Kong					

Sample & Tests	Depth (m)	Sketch	Depth (m)	Legend	Grade	Description
		Face A 1.50 m, Face B 1.50 m, Face C 1.50 m, Face D 1.50 m	0.05			Grey, BRICK.
			0.40			Dense, moist, brown, silty fine to coarse SAND with some subangular fine to coarse gravel sized rock and concrete fragments. (FILL)



1. Blue, PVC pipe (Dia. 50mm). (WSD)
2. Yellow, pilot cable (Dia. 30-50mm). (HK Electric)
3. Pink, optical fibre cable (Dia. 20mm). (HK Electric)
4. Green, PVC pipe (Dia. 80mm). (HK Electric)
5. Blue, PVC pipe (Dia. 80mm). (HGC Broadband)
6. Grey, CONCRETE plate (size: 750mm x 150mm x 50mm). (HK Electric)
7. Grey, CONCRETE (100mm thick).

End of trial pit at 0.95m depth. (Maximum)

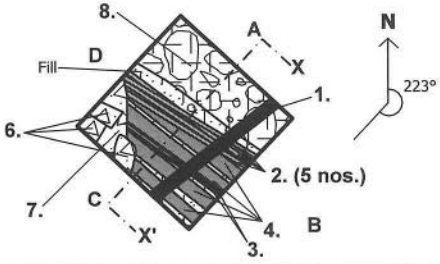
8. Greyish brown, COBBLE and BOULDER with much subangular fine to coarse gravel sized rock and concrete fragments in sandy silty matrix. (FILL)

Depth scale: 1.00, 2.00, 3.00, 4.00, 5.00

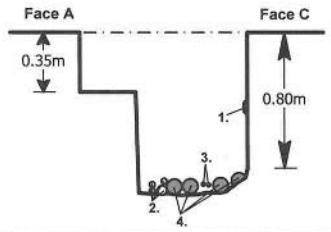
SYMBOL

- Small disturbed
- Large disturbed
- U76 Undisturbed (Vertical sample)
- U100 Undisturbed (Vertical sample)
- U76 Undisturbed (Horizontal sample)
- U100 Undisturbed (Horizontal sample)
- Block sample
- In-situ density test
- Water sample
- Water seepage
- N - Schmidt Hammer test
- Standpipe tip
- Piezometer tip

PLAN



SECTION (X-X')



REMARKS

Shoring: No **Water Seepage:** No

Stability: Stable **Maximum Depth:** 0.95m

1. Small disturbed samples were taken out at 0.50m and 0.95m depths.

TRIAL PIT RECORD

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Gammon

CONTRACT No.	PROJECT NO. J3957
PROJECT: Ground Investigation Works for the Commercial Development on IL No. 8945, Causeway Bay, Hong Kong	

Logged by : M H CHIU
Date : 18/01/2022
Checked by : K M LO
Date : 19/01/2022

Co-ordinates :
E 837153.95
N 815290.87
Ground Level :
+ 10.48 mPD

Excavation Dates:
17/01/2022 to 17/01/2022
Backfill Dates:
24/01/2022

TRIAL PIT No.
TP02U

TRIAL PIT RECORD

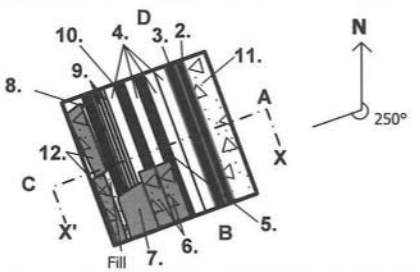
Sample & Tests	Depth (m)	Sketch	Depth (m)	Legend	Grade	Description
		Face A 1.50 m / Face B 1.50 m / Face C 1.50 m / Face D 1.50 m				
	1.00		0.03			Grey, CONCRETE surface.
			0.15			1. Brown, MASONRY WALL. Loose, dry, brownish grey, subangular fine to coarse GRAVEL and COBBLE sized rock and concrete fragments in sandy silty matrix. (FILL)
			0.90			Dense, moist, brown, slightly silty fine to coarse SAND with some subangular fine to coarse gravel sized rock fragments. (FILL)
	2.00					2. Dark brown, gas pipe (Dia. 105mm). (Towngas) 3. Dark brown, water pipe (Dia. 105mm). (WSD) 4. White, PVC pipe (Dia. 110mm). (Wharf T&T) 5. Blue, PVC pipe (Dia. 90mm). (HGC Broadband) 6. Grey, CONCRETE plate (size: 750mm x 150mm x 50mm). 7. Grey, PVC pipe (Dia. 110-140mm). 8. Black, cable (Dia. 80mm). (HK Electric) 9. Yellow, pilot cable (Dia. 30mm). (HK Electric) 10. Dark blue, PVC pipe (Dia. 110mm). (HGC Broadband)
	3.00					End of trial pit at 0.90m depth.
	4.00					11. Grey, CONCRETE. 12. Grey, CONCRETE plate (Size: 750mm x 150mm x 50mm). (HK Electric)
	5.00					

Face B: 0.25m, 0.15m, 0.70m
Face D: 0.15m, 0.25m

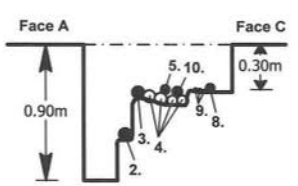
SYMBOL

- Small disturbed
- Large disturbed
- U76 Undisturbed (Vertical sample)
- U100 Undisturbed (Vertical sample)
- U76 Undisturbed (Horizontal sample)
- U100 Undisturbed (Horizontal sample)
- Block sample
- In-situ density test
- Water sample
- Water seepage
- N - Schmidt Hammer test
- Standpipe tip
- Piezometer tip

PLAN



SECTION (X-X')



REMARKS

Shoring: No **Water Seepage:** No
Stability: Stable **Maximum Depth:** 0.90m

1. Small disturbed samples were taken at 0.50m and 0.90m depths.

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Gammon

CONTRACT No.	PROJECT NO. J3957	Logged by : M H CHIU	Co-ordinates : E 837150.40	Excavation Dates: 14/01/2022 to 14/01/2022	TRIAL PIT No.
PROJECT: Ground Investigation Works for the Commercial Development on IL No. 8945, Causeway Bay, Hong Kong		Date : 15/01/2022	N 815353.88	Backfill Dates: 18/01/2022	TP03U
		Checked by : K M LO	Ground Level : + 7.73 mPD		
		Date : 17/01/2022			

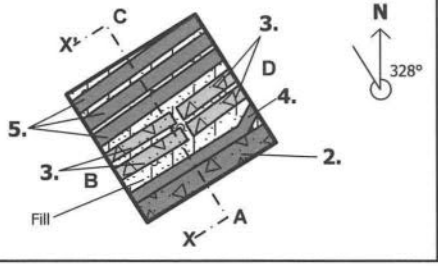
TRIAL PIT RECORD

Sample & Tests	Depth (m)	Sketch	Depth (m)	Legend	Grade	Description
1 @ 0.50m 2 @ 0.75m	1.00 2.00 3.00 4.00 5.00	Face A 1.50 m; Face B 1.50 m; Face C 1.50 m; Face D 1.50 m 1. 2. 3. 4. 5. 0.40m	0.05 0.10 0.15 0.75			Dark brown, BRICK. 1. Greyish brown, MASONRY WALL. Loose, dry, brown, fine to coarse SAND. (FILL) Dense, dry, grey, subangular fine to coarse GRAVEL and COBBLE sized rock and concrete fragments in sandy silty matrix. (FILL) Dense, moist, orangish brown, silty fine to coarse SAND with some subangular fine to coarse gravel sized rock fragments. (FILL) 2. Grey, CONCRETE slab (300-400mm thick). 3. Light grey, CONCRETE plate (size: 750mm x 150mm x 50mm). (HK Electric) 4. Grey, PVC pipe (Dia. 110mm). (ATC) 5. Grey, PVC pipe (Dia. 110mm). (HK Telecom) End of trial pit at 0.75m depth.

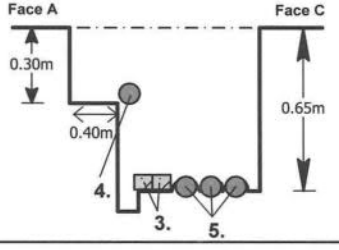
SYMBOL

- Small disturbed
- Large disturbed
- U76 Undisturbed (Vertical sample)
- U100 Undisturbed (Vertical sample)
- U76 Undisturbed (Horizontal sample)
- U100 Undisturbed (Horizontal sample)
- Block sample
- In-situ density test
- Water sample
- Water seepage
- N - Schmidt Hammer test
- Standpipe tip
- Piezometer tip

PLAN



SECTION (X-X')



REMARKS

Shoring: No **Water Seepage:** No

Stability: Stable **Maximum Depth:** 0.75m

1. Small disturbed samples were taken at 0.50m and 0.75m depths.

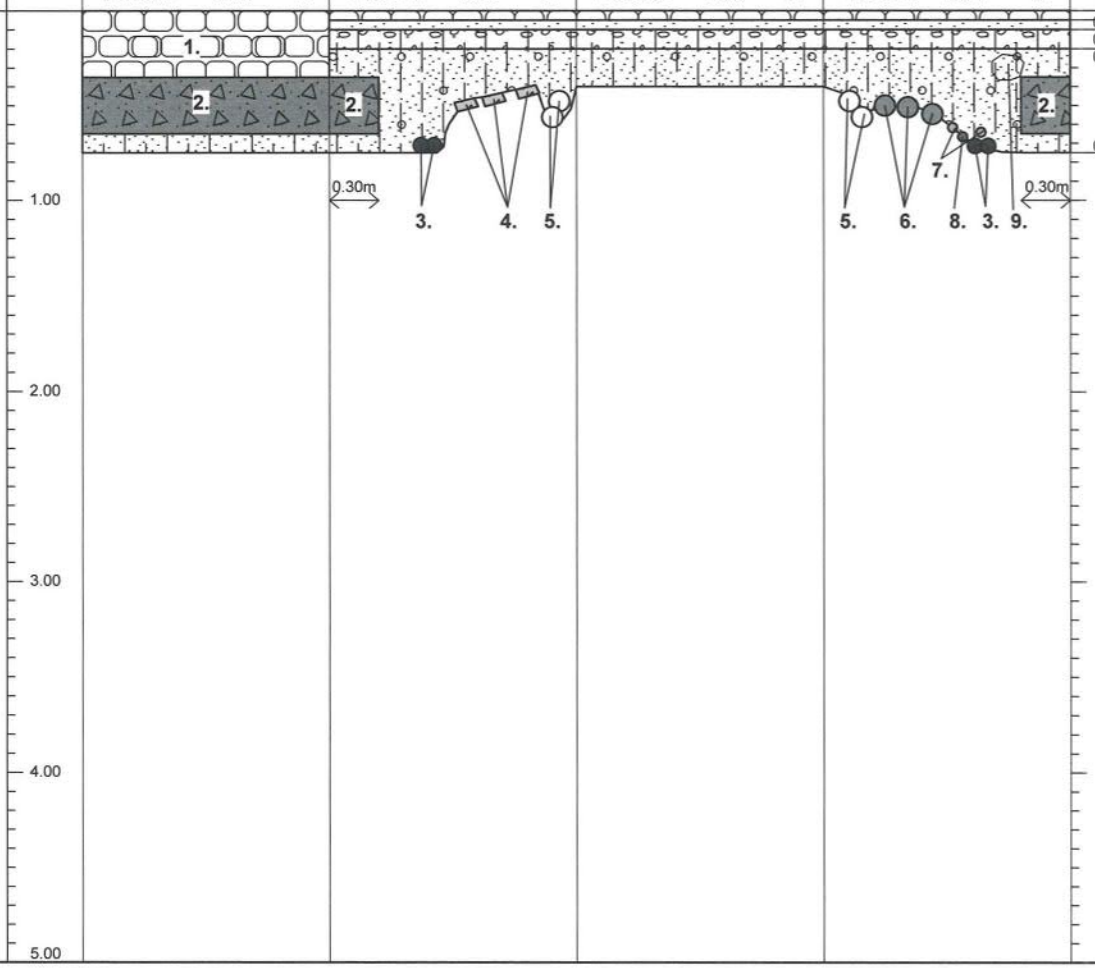
t:\gintw\library\ags 3.0 (01 dec 2019).glb\3823 cedd (trial pit)

Gammon

CONTRACT No.	PROJECT NO. J3957	Logged by : M H CHIU	Co-ordinates : E 837166.05 N 815370.44	Excavation Dates: 14/01/2022 to 14/01/2022	TRIAL PIT No.
PROJECT: Ground Investigation Works for the Commercial Development on IL No. 8945, Causeway Bay, Hong Kong		Date : 15/01/2022	Ground Level : + 7.01 mPD	Backfill Dates: 18/01/2022	TP04U
		Checked by : K M LO			
		Date : 17/01/2022			

TRIAL PIT RECORD

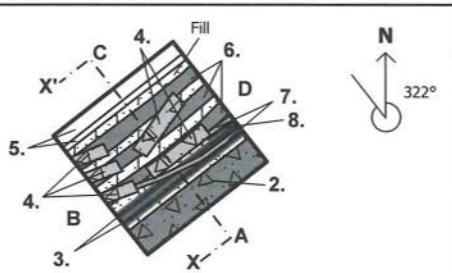
Sample & Tests	Depth (m)	Sketch	Depth (m)	Legend	Grade	Description
		Face A 1.50 m / Face B 1.50 m / Face C 1.50 m / Face D 1.50 m				
	0		0.05			Dark brown, BRICK.
			0.10			1. Greyish brown, MASONRY WALL.
1			0.20			Loose, dry, brown, fine to coarse SAND. (FILL)
2			0.75			Dense, dry, grey, subangular fine to coarse GRAVEL and COBBLE sized rock and concrete fragments in sandy silty matrix. (FILL)
	1.00					Dense, moist, pinkish brown, silty fine to coarse SAND with some subangular fine to coarse gravel sized rock fragments. (FILL)
	2.00					2. Greyish brown, CONCRETE slab (300mm thick). 3. Grey, PVC pipe (Dia. 80mm). (HGC Broadband) 4. Light grey, CONCRETE plate (size: 750mm x 150mm x 50mm). (HK Electric) 5. White, PVC pipe (Dia. 110mm). (Wharf T&T) 6. Grey, PVC pipe (Dia. 110mm). (HK Telecom) 7. Yellow, pilot cable (Dia. 50mm). (HK Electric) 8. Pink, cable (Dia. 20mm). 9. Loose, dappled grey.
	3.00					End of trial pit at 0.75m depth.
	4.00					
	5.00					



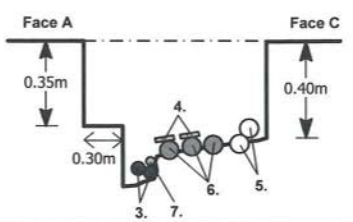
SYMBOL

- Small disturbed
- Large disturbed
- U76 Undisturbed (Vertical sample)
- U100 Undisturbed (Vertical sample)
- U76 Undisturbed (Horizontal sample)
- U100 Undisturbed (Horizontal sample)
- Block sample
- In-situ density test
- Water sample
- Water seepage
- N - Schmidt Hammer test
- Standpipe tip
- Piezometer tip

PLAN



SECTION (X-X')



REMARKS

Shoring: No **Water Seepage:** No

Stability: Stable **Maximum Depth:** 0.75m

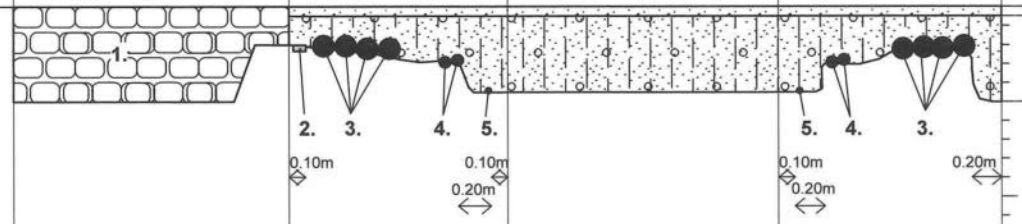
1. Small disturbed samples were taken at 0.50m and 0.75m depths.

t:\gintw\library\gqs 3.0 (01 dec 2019).glb\3823 cedd (trial pit)

TRIAL PIT RECORD

Gammon	CONTRACT No.	PROJECT NO. J3957	Logged by : M H CHIU Date : 18/01/2022 Checked by : K M LO Date : 19/01/2022	Co-ordinates : E 837225.73 N 815420.58 Ground Level : + 4.85 mPD	Excavation Dates: 17/01/2022 to 17/01/2022 Backfill Dates: 21/01/2022	TRIAL PIT No. TP05U
	PROJECT: Ground Investigation Works for the Commercial Development on IL No. 8945, Causeway Bay, Hong Kong					

Sample & Tests	Depth (m)	Sketch	Depth (m)	Legend	Grade	Description
		Face A 1.50 m; Face B 1.20 m; Face C 1.50 m; Face B 1.20 m	0.05			Grey, CONCRETE surface.
			0.50			1. Brown, MASONRY WALL. Dense, moist, brown, slightly silty fine to coarse SAND with some subangular fine to coarse gravel sized rock and concrete fragments. (FILL) 2. Grey, CONCRETE block (50mm thick). 3. Black, PVC pipe (Dia. 110mm). (New World) 4. Blue, PVC pipe (Dia. 60mm). (HGC Broadband) 5. Blue, low voltage cable (Dia. 30mm). (Highway) End of trial pit at 0.50m depth. 6. Grey, CONCRETE.

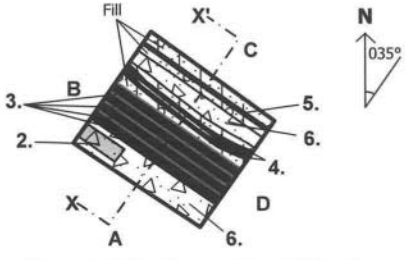


Depth scale: 1.00, 2.00, 3.00, 4.00, 5.00

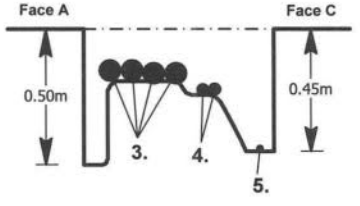
SYMBOL

- Small disturbed
- Large disturbed
- U76 Undisturbed (Vertical sample)
- U100 Undisturbed (Vertical sample)
- U76 Undisturbed (Horizontal sample)
- U100 Undisturbed (Horizontal sample)
- Block sample
- In-situ density test
- Water sample
- Water seepage
- N - Schmidt Hammer test
- Standpipe tip
- Piezometer tip

PLAN



SECTION (X-X')



REMARKS

Shoring: No **Water Seepage:** No

Stability: Stable **Maximum Depth:** 0.50m

1. Small disturbed sample was taken at 0.50m depth.

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Gammon

CONTRACT No.	PROJECT NO. J3957
PROJECT: Ground Investigation Works for the Commercial Development on IL No. 8945, Causeway Bay, Hong Kong	

Logged by : M H CHIU
Date : 19/01/2022
Checked by : K M LO
Date : 20/01/2022

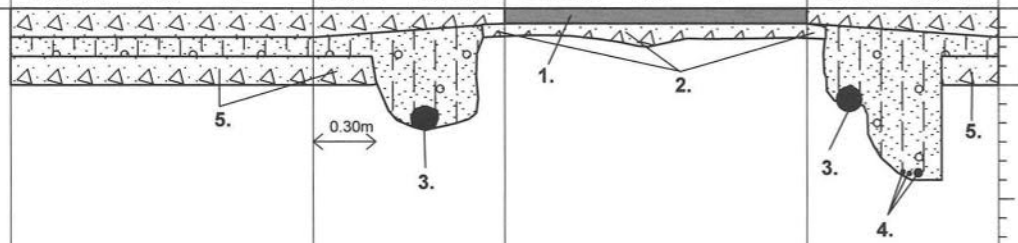
Co-ordinates :
E 837305.23
N 815368.09
Ground Level :
+ 5.86 mPD

Excavation Dates:
18/01/2022 to 18/01/2022
Backfill Dates:
24/01/2022

TRIAL PIT No.
TP06U

TRIAL PIT RECORD

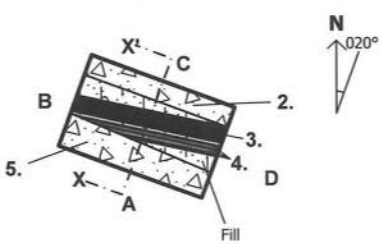
Sample & Tests	Depth (m)	Sketch	Depth (m)	Legend	Grade	Description
		Face A 1.50 m / Face B 0.95 m / Face C 1.50 m / Face D 0.95 m	0.15			Grey, CONCRETE surface.
			0.40			1. Grey, kerb. Dense, moist, brownish grey, silty fine to coarse SAND with some subangular fine to coarse gravel sized rock and concrete fragments. (FILL)
1						2. Grey, CONCRETE.
2	1.00					3. Black, PVC pipe (Dia. 130mm). (HK Telecom)
						4. Black, cable (Dia. 20-40mm). (HK Electric)
						5. Grey, CONCRETE slab (150mm thick).
	2.00					End of trial pit at 0.90m depth. (Maximum)
	3.00					
	4.00					
	5.00					



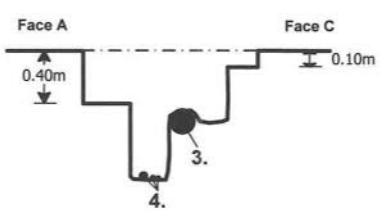
SYMBOL

- Small disturbed
- Large disturbed
- U76 Undisturbed (Vertical sample)
- U100 Undisturbed (Vertical sample)
- U76 Undisturbed (Horizontal sample)
- U100 Undisturbed (Horizontal sample)
- Block sample
- In-situ density test
- Water sample
- Water seepage
- N - Schmidt Hammer test
- Standpipe tip
- Piezometer tip

PLAN



SECTION (X-X')



REMARKS

Shoring: No **Water Seepage:** No
Stability: Stable **Maximum Depth:** 0.90m

1. Small disturbed samples were taken out at 0.50m and 0.90m depths.

t:\gintw\library\ags 3.0 (01 dec 2019).glb\3823 cedd (trial pit)

Inspection Pits

Gammon

INSPECTION PIT RECORD

HOLE No. **IP01**

SHEET 1 of 1

PROJECT Ground Investigation Works for the Commercial Development on IL No. 8945, Causeway Bay, Hong Kong

METHOD HAND DUG	CO-ORDINATES E 837205.48 N 815411.32	PROJECT NO. J3957
MACHINE & No. N/A		DATE from 14/01/2022 to 14/01/2022
FLUSHING MEDIUM N/A	ORIENTATION **Vertical**	GROUND LEVEL + 5.61 mPD

Progress	Water Depth (m)	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Description
			5.61	0.00			
14/01/2022 10:00			5.56	0.05			Dark brown, BRICK.
			5.51	0.10			0.00 - 0.45m: Masonry wall. (Face A)
							Loose, dry, brown, slightly silty fine to coarse SAND. (FILL)
			5.41	0.20			Loose, dry, grey, subangular fine to coarse GRAVEL sized concrete fragments in sandy silty matrix. (FILL)
							Dense, moist, brown, slightly silty fine to coarse SAND with some subangular fine to coarse gravel sized rock fragments. (FILL)
14/01/2022 16:00		1 ● 0.45	5.21	0.40			0.20 - 0.40m: Dark grey, PVC pipe (Dia. 200mm). (Face C)
			5.16	0.45			End of inspection pit at 0.45m depth.
							Bottom: Grey, 3 nos. of PVC pipes (Dia. 110mm).
				3.00			

- ● Small disturbed sample
- ▨ U76 undisturbed sample
- ■ U100 undisturbed sample
- ▲ Water sample
- ¦ Large disturbed sample
- Standpipe tip
- Piezometer tip

LOGGED M H CHIU AC

DATE 15/01/2022

CHECKED K M LO

DATE 17/01/2022

REMARKS

1. Small disturbed sample was taken at 0.45m depth.

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Gammon

INSPECTION PIT RECORD

HOLE No. **IP02**

SHEET 1 of 1

PROJECT Ground Investigation Works for the Commercial Development on IL No. 8945, Causeway Bay, Hong Kong

METHOD HAND DUG	CO-ORDINATES E 837212.24 N 815418.43	PROJECT NO. J3957
MACHINE & No. N/A		DATE from 14/01/2022 to 14/01/2022
FLUSHING MEDIUM N/A	ORIENTATION **Vertical**	GROUND LEVEL + 5.33 mPD

Progress	Water Depth (m)	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Description
			5.33	0.00			
14/01/2022	10:00		5.28	0.05			Dark brown, BRICK. 0.00 - 0.80m: Masonry wall. (Face A)
			5.13	0.20			Loose, dry, brownish grey, slightly silty fine to coarse SAND with some subangular fine to coarse gravel sized concrete fragments. (FILL)
		1 ● 0.50					Dense, moist, brown, slightly fine to coarse SAND with occasional subangular fine to coarse gravel sized rock and bitumen fragments. (FILL)
			4.73	0.60			0.60 - 0.71m: Grey, 2 nos. of PVC pipes (Dia. 110mm) were encountered on face B and D.
			4.62	0.71			
14/01/2022	16:00	2 ● 0.80	4.53	0.80			End of inspection pit at 0.80m depth. Bottom: Grey, CONCRETE.
				3.00			

- Small disturbed sample
- U76 undisturbed sample
- U100 undisturbed sample
- Water sample
- Large disturbed sample
- Standpipe tip
- Piezometer tip

LOGGED **M H CHIU**

DATE **15/01/2022**

CHECKED **K M LO**

DATE **17/01/2022**

REMARKS

1. Small disturbed samples were taken at 0.50m and 0.80m depths.

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Gammon

INSPECTION PIT RECORD

HOLE No. **IP03**

SHEET 1 of 1

PROJECT Ground Investigation Works for the Commercial Development on IL No. 8945, Causeway Bay, Hong Kong

METHOD HAND DUG	CO-ORDINATES	PROJECT NO. J3957
MACHINE & No. N/A	E 837232.82 N 815413.37	DATE from 17/01/2022 to 17/01/2022
FLUSHING MEDIUM N/A	ORIENTATION **Vertical**	GROUND LEVEL + 4.94 mPD

Progress	Water Depth (m)	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Description
			4.94	0.00			
17/01/2022	10:00		4.89	0.05			Grey, CONCRETE surface. 0.00 - 0.60m: Masonry wall. (Face A) Loose, dry, grey, subangular fine to coarse GRAVEL and COBBLE sized rock and concrete fragments in sandy silty matrix. (FILL)
			4.64	0.30			Dense, moist, brown, slightly silty fine to coarse SAND with occasional subangular fine to coarse gravel and cobble sized rock and concrete fragments. (FILL)
		1 0.50					
			4.34	0.60			0.60 - 0.75m: Brownish grey, CONCRETE was encountered on face A.
			4.19	0.75			
		2 1.00					
17/01/2022	16:00	3 1.10	3.84	1.10			End of inspection pit at 1.10m depth. Bottom: Grey, 2 nos. of PVC pipes (Dia. 80mm).
				3.00			

- Small disturbed sample
- U76 undisturbed sample
- U100 undisturbed sample
- Water sample
- Large disturbed sample
- Standpipe tip
- Piezometer tip

LOGGED **M H CHIU**

DATE **18/01/2022**

CHECKED **K M LO**

DATE **19/01/2022**

REMARKS

1. Small disturbed samples were taken at 0.50m, 1.00m and 1.10m depths.

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Gammon

INSPECTION PIT RECORD

HOLE No. **IP04**

SHEET 1 of 1

PROJECT Ground Investigation Works for the Commercial Development on IL No. 8945, Causeway Bay, Hong Kong

METHOD HAND DUG	CO-ORDINATES	PROJECT NO. J3957
MACHINE & No. N/A	E 837244.02 N 815402.69	DATE from 17/01/2022 to 17/01/2022
FLUSHING MEDIUM N/A	ORIENTATION **Vertical**	GROUND LEVEL + 5.17 mPD

Progress	Water Depth (m)	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Description
17/01/2022			5.17	0.00			
	10:00		5.12	0.05			Grey, CONCRETE surface. 0.00 - 0.25m: Masonry wall. (Face A)
			4.97	0.20			Loose, moist, brown, slightly silty fine to coarse SAND with occasional subangular fine to coarse gravel sized rock and concrete fragments. (FILL) 0.20m: Blue, 2 nos. of PVC pipes (Dia.60mm) were encountered on face B and D.
			4.92	0.25			
			4.87	0.30			0.20 - 0.30m: Grey, CONCRETE was encountered on face A, B and D.
	16:00	1 ● 0.40					
17/01/2022			4.77	0.40			End of inspection pit at 0.40m depth.
				3.00			

- Small disturbed sample
- U76 undisturbed sample
- U100 undisturbed sample
- Water sample
- Large disturbed sample
- Standpipe tip
- Piezometer tip

LOGGED **M H CHIU** Ae

DATE **18/01/2022**

CHECKED **K M LO** M

DATE **19/01/2022**

REMARKS

1. Small disturbed sample was taken at 0.40m depth.

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Gammon

INSPECTION PIT RECORD

HOLE No. **IP05**

SHEET 1 of 1

PROJECT Ground Investigation Works for the Commercial Development on IL No. 8945, Causeway Bay, Hong Kong

METHOD HAND DUG	CO-ORDINATES	PROJECT NO. J3957
MACHINE & No. N/A	E 837312.39 N 815365.00	DATE from 18/01/2022 to 18/01/2022
FLUSHING MEDIUM N/A	ORIENTATION **Vertical**	GROUND LEVEL + 5.91 mPD

Progress	Water Depth (m)	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Description
18/01/2022	10:00		5.91	0.00			Grey, CONCRETE surface.
			5.81	0.10			0.00 - 0.20m: Grey, CONCRETE DRAINAGE CHANNEL was encountered on face A.
			5.76	0.15			Dense, moist, brown, silty fine to coarse SAND with some subangular fine to coarse gravel sized rock and concrete fragments. (FILL)
			5.71	0.20			0.15 - 0.30m: Grey and dark grey, subangular fine to coarse GRAVEL sized concrete and bitumen fragments in sandy silty matrix. (Face D)
			5.61	0.30			0.30 - 2.00m: Loose, with some cobble and boulder sized rock fragments. (Face A, B and D)
		1 0.50					
		2 1.00					
		3 1.50					
18/01/2022	16:00	4 2.00	3.91	2.00			End of inspection pit at 2.00m depth.
				3.00			

- Small disturbed sample
- U76 undisturbed sample
- U100 undisturbed sample
- Water sample
- Large disturbed sample
- Standpipe tip
- Piezometer tip

LOGGED **M H CHIU**

DATE **19/01/2022**

CHECKED **K M LO**

DATE **20/01/2022**

REMARKS

1. Small disturbed samples were taken at 0.50m, 1.00m, 1.50m and 2.00m depths.

t:\gintw\library\ags 3.0 (01 dec 2019).glb\3823 cedd (inspection pit)

Gammon

INSPECTION PIT RECORD

HOLE No. **IP06**

SHEET 1 of 1

PROJECT Ground Investigation Works for the Commercial Development on IL No. 8945, Causeway Bay, Hong Kong

METHOD HAND DUG	CO-ORDINATES	PROJECT NO. J3957
MACHINE & No. N/A	E 837346.33 N 815337.56	DATE from 18/01/2022 to 18/01/2022
FLUSHING MEDIUM N/A	ORIENTATION **Vertical**	GROUND LEVEL + 6.34 mPD

Progress	Water Depth (m)	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Description
18/01/2022			6.34	0.00			
	10:00		6.26	0.08			Grey, CONCRETE surface. 0.00 - 0.13m: Masonry wall. (Face A)
			6.21	0.13			Dense, moist, brown, silty fine to coarse SAND with some subangular fine to coarse gravel sized rock and concrete fragments. (FILL) 0.08m: Root (Dia. 30mm) was encountered on face A. 0.13 - 0.23m: Grey, CONCRETE slab was encountered on face A, B and D.
			6.11	0.23			
	16:00	1 ● 0.35					
18/01/2022			5.99	0.35			End of inspection pit at 0.35m depth.
				3.00			

- Small disturbed sample
- U76 undisturbed sample
- U100 undisturbed sample
- Water sample
- Large disturbed sample
- Standpipe tip
- Piezometer tip

LOGGED **M H CHIU**

DATE **19/01/2022**

CHECKED **K M LO**

DATE **20/01/2022**

REMARKS

1. Small disturbed sample was taken at 0.35m depth.

t:\gintw\library\ags 3.0 (01 dec 2019).glb\3823 cedd (inspection pit)

Adjacent Ground Investigation Records - GIU Report No. 68444

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 1**

SHEET 1 of 4

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-6	E 837 191.24 N 815 245.63	DATE from 03/10/2020 to 09/10/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +14.31 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
03/10/2020	SW	Dry at 08:00 Dry at 18:00								+14.21	0.10			CONCRETE SLAB.
03/10/2020 07/10/2020		Dry at 08:00							Inspection pit A 0.45 0.50 B 0.90	+13.36	0.95			Grey (N6), silty fine to medium SAND with much angular to subangular fine to coarse gravel sized strong granite, concrete, cement sand mortar and brick fragments. (FILL)
				37					0.95 T6-146					Grey (N6), angular coarse GRAVEL and COBBLE sized moderately strong to strong granite, concrete, brick and wood fragments. (FILL)
			80						2.40 T6-146					
				46										
	4.00 SW PW								3.90	+10.41	3.90			Stiff, red (2.5YR 4/8), sandy clayey SILT with occasional fine to medium gravel sized moderately weak to moderately strong granite. (FILL)
								(1, 2, 2, 2, 2, 4) N = 10	4.00 4.10 1 2 4.40 4.45					
				100					4.90 3					
								(2, 2, 2, 2, 3, 3) N = 10	4 5.90 6.00 5 6.10 6 6.40 6.45					
			70						6.90	+7.41	6.90			Stiff to very stiff, yellowish red (5YR 5/8), sandy clayey SILT with some fine gravel of quartz. (FILL)
				100					7 7.90 8.00					
								(2, 2, 2, 2, 2, 5) N = 11	8 8.10 9 10 8.40 8.45					
				100					8.90 11					
									12 9.90	+4.31	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 10/01/2020

CHECKED BY PETER CHU

DATE 12/10/2020

REMARKS
1. Inspection pit excavated from 0.00m-0.95m.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 1**

SHEET 2 of 4

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-6	E 837 191.24 N 815 245.63	DATE from 03/10/2020 to 09/10/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +14.31 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(1, 2, 4, 11, 5, 8) N = 28	13 10.00 14 10.10 10.40 10.45					As Sheet 1 of 4.
				100					10.90	+3.41	10.90			Stiff, light grey (N7), sandy clayey SILT with some subangular fine gravel of quartz. (ALLUVIUM)
								(1, 2, 4, 5, 5, 8) N = 22	15 16 11.90 12.00 17 12.10 18 12.40 12.45	+2.31	12.00			Very stiff, brown (10YR 5/3) spotted white and grey, sandy clayey SILT with some fine gravel. (ALLUVIUM)
				95					12.90 19 20 13.90	+1.41	12.90			Very stiff, light grey (N7), sandy clayey SILT with some fine gravel. (ALLUVIUM)
07/10/2020		0.40m at 18:00						(2, 3, 4, 6, 4, 6) N = 20	14.00 21 14.10 22 14.40 14.45	+0.31	14.00			Extremely weak, reddish yellow (5YR 6/8), completely decomposed medium grained GRANITE. (Very stiff, sandy clayey SILT with some fine gravel)
08/10/2020		1.80m at 08:00	70						14.90 23 24 15.90	-1.69	16.00		V	
				100				(6, 17, 10, 9, 11, 12) N = 42	16.00 25 16.10 26 16.40 16.45					Extremely weak, reddish yellow (5YR 6/8) to light red (10R 7/8), completely decomposed medium grained GRANITE. (Clayey silty medium to coarse SAND with some fine gravel)
									16.90 27 28 17.90	-3.69	18.00		V	
				100				(3, 6, 10, 12, 13, 17) N = 52	18.00 29 18.10 30 18.40 18.45					Extremely weak, red (10R 5/6), completely decomposed medium grained GRANITE. (Slightly clayey silty medium to coarse SAND with much fine to medium gravel)
									18.90 31 32 19.90	-4.59 -5.69	18.90 20.00		V	Extremely weak, yellowish brown (10YR 5/8) to red (10R 5/6), completely decomposed medium grained GRANITE. (Medium to coarse SAND with some fine gravel)

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 10/01/2020

CHECKED BY PETER CHU

DATE 12/10/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 1**

SHEET 3 of 4

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-6	E 837 191.24 N 815 245.63	DATE from 03/10/2020 to 09/10/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +14.31 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(2, 8, 17, 19, 24, 30) N = 90	33 20.00 20.10 34 20.40 20.45					As Sheet 2 of 4.
	22.00 PW HW							(5, 10, 12, 14, 19, 32) N = 77	35 22.00 22.10 36 22.40 22.45				V	
			70					(7, 12, 18, 22, 31, 45) N = 116	37 24.00 24.10 38 24.40 24.45					
	26.13 HW							(50/50mm 200/70mm) 200blS/70mm	39 26.00 26.07 26.12	-11.69	26.00		IV	Weak, yellowish brown (10YR 5/4), highly decomposed medium grained GRANITE. (Sandy fine to medium GRAVEL)
							NI		27.96	-13.65	27.96			Strong, pinkish grey spotted black, slightly decomposed slightly epidotized medium grained GRANITE. Joints are closely to medium spaced, smooth planar, extremely narrow, iron oxide stained, epidote coated, dipping at 0°-10° and 10°-20°.
				100	84	66			T2-101					
							11.4		28.52	-14.50	28.81		II	
			80	100	95	60			T2-101					28.81- 29.33m: Fine grained GRANITE.
							6.2		29.51	-15.02	29.33			
				100	99	86			T2-101	-15.69	30.00			

- Small Disturbed Sample
- Large Disturbed Sample
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- U100 Undisturbed Sample
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- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 10/01/2020

CHECKED BY PETER CHU

DATE 12/10/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 1**

SHEET 4 of 4

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-6	E 837 191.24 N 815 245.63	DATE from 03/10/2020 to 09/10/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +14.31 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
							10.9						II	As Sheet 3 of 4.
		0.50m at 18:00		100	99	86			T2-101	-16.24	30.55			
										-16.29	30.60		III	
08/10/2020							2.7			-16.43	30.74		II	30.55- 30.60m: PEGMATITE.
09/10/2020		1.50m at 08:00							30.97	-16.59	30.90		III	30.60- 30.74m: Moderately strong, moderately decomposed.
										-16.71	31.02		II	
			80							-17.12	31.43		III	30.90- 31.02m: Fine grained GRANITE.
				100	100	91	15.4		T2-101	-17.21	31.52			
										-17.36	31.67			31.02- 31.43m: Moderately strong, moderately decomposed.
										-17.44	31.75			
										-17.51	31.82			31.43- 31.52m: Fine grained GRANITE.
									32.47				II	
		1.00m at 18:00		99	96	95	4.5		T2-101					31.52- 31.75m: Moderately strong, moderately decomposed.
09/10/2020									33.28	-18.97	33.28			31.67- 31.82m: Fine grained GRANITE.
														End of drillhole at 33.28m.

- Small Disturbed Sample
- Large Disturbed Sample
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- U76 Undisturbed Sample
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- Piston Sample
- Water Sample
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- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 10/01/2020

CHECKED BY PETER CHU

DATE 12/10/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 2**

SHEET 1 of 4

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-3	E 837 200.51 N 815 255.43	DATE from 10/09/2020 to 23/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +14.45 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
10/09/2020	SW	Dry at 08:00							INSPECTION PIT A	+14.05	0.40			CONCRETE SLAB.
10/09/2020									0.45	+14.00	0.45			Dark grey (N4), silty fine to medium SAND with much angular to subangular fine to medium gravel sized granite, concrete and brick fragments. (FILL)
18/09/2020		Dry at 08:00		57					T2-101					Grey (N5), angular COBBLE sized reinforced concrete fragments. (FILL)
			80	42					1.50	+12.95	1.50			Grey (N5) and red (10R 4/8), angular coarse GRAVEL and COBBLE sized concrete and brick fragments. (FILL)
									T2-101					
			70					(1, 1, 2, 2, 3, 5) N = 12	2.50	+11.95	2.50			Stiff, reddish brown (5YR 5/4), sandy clayey SILT. (FILL)
									1 2.60					
									2 2.90	+11.45	3.00			Grey (N5) and red (10R 4/8), angular to subangular COBBLE with some coarse gravel sized concrete and brick fragments. (FILL)
				94					2.95 3.00					
									T2-101					
	4.06 SW PW								4.06	+10.39	4.06			Grey (N5), reinforced CONCRETE.
			80	100					T2-101					
		1.35m at 18:00												
18/09/2020									5.52					
19/09/2020		1.50m at 08:00		100					T2-101 5.79 5.80	+8.66	5.79			
								(2, 2, 3, 4, 5, 5) N = 17	3 5.90					Very stiff, yellowish red (5YR 5/8) to reddish yellow (5YR 7/8), sandy clayey SILT with some fine gravel of quartz. (ALLUVIUM)
									4 6.20 6.25					
				100					6.70 5					
			70					(1, 1, 2, 3, 4, 6) N = 15	6 7.70 7.80 7.90					
									7 8 8.20 8.25					
				100					8.70 9					
									10 9.70 9.80 9.90	+4.45	10.00			

- Small Disturbed Sample
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- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 23/09/2020

CHECKED BY PETER CHU

DATE 24/09/2020

REMARKS
1. Inspection pit excavated from 0.00m-0.45m.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 2**

SHEET 2 of 4

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-3	E 837 200.51 N 815 255.43	DATE from 10/09/2020 to 23/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +14.45 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(1, 2, 2, 3, 5, 7) N = 17	11 12	10.20 10.25				As Sheet 1 of 4.
										10.70				
		11.30m at 18:00		100					13					
19/09/2020									14	11.70 11.80	+2.65	11.80		
21/09/2020		11.30m at 08:00						(2, 2, 4, 4, 5, 6) N = 19	15	11.90				Very stiff, light grey (N7) dappled reddish yellow, sandy clayey SILT with much subangular fine gravel of quartz and feldspar. (ALLUVIUM)
									16	12.20 12.25				
										12.70	+1.75	12.70		
				100					17					Very stiff, reddish yellow (5YR 6/8), sandy clayey SILT with much subangular fine gravel of quartz and feldspar. (ALLUVIUM)
									18	13.70 13.80	+0.65	13.80		
								(3, 4, 4, 5, 5, 7) N = 21	19	13.90				Very stiff, light grey (N7) dappled reddish yellow, sandy clayey SILT with much subangular fine gravel of quartz and feldspar. (ALLUVIUM)
									20	14.20 14.25				
										14.70	-0.25	14.70		
			70	100					21					Light grey (N7), clayey silty coarse SAND with much subangular fine gravel of quartz and feldspar. (ALLUVIUM)
									22	15.70 15.80	-1.35	15.80		
								(2, 5, 9, 13, 15, 19) N = 56	23	15.90				Extremely weak, reddish yellow (5YR 7/8), completely decomposed medium grained GRANITE. (Slightly clayey silty medium to coarse SAND with some fine gravel)
									24	16.20 16.25				
										16.70				
				100					25					
	17.80 PW													
	HW								26	17.70 17.80			V	
								(3, 4, 8, 12, 15, 18) N = 53	27	17.90				
									28	18.20 18.25				
										18.70				
				100					29					
		11.30m at 18:00												
21/09/2020									30	19.70	-5.35	19.80		
22/09/2020		11.30m								19.80 19.90	-5.55	20.00	V	Extremely weak, yellowish red (5YR 5/8), completely

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- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 23/09/2020

CHECKED BY PETER CHU

DATE 24/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 2**

SHEET 3 of 4

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-3	E 837 200.51 N 815 255.43	DATE from 10/09/2020 to 23/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +14.45 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
		at 08:00						(4, 5, 7, 12, 15, 21) N = 55	31 20.20 32 20.25				V	decomposed fine grained GRANITE. (Slightly clayey silty fine to medium SAND)
								(5, 9, 16, 18, 19, 21) N = 74	21.80 33 21.90 34 22.20 22.25					
									23.80	-9.35	23.80			
								(6, 12, 15, 17, 18, 20) N = 70	23.80 35 23.90 36 24.20 24.25					Extremely weak, pinkish grey (5YR 7/2), completely decomposed medium grained GRANITE. (Silty medium to coarse SAND with some fine gravel)
			70											
								(7, 13, 15, 18, 20, 21) N = 74	25.80 37 25.90 38 26.20 26.25				V	
									27.80	-13.35	27.80			
								(8, 15, 21, 38, 45, 53) N = 157	27.80 39 27.90 40 28.20 28.25				V	Extremely weak, yellowish red (5YR 5/8), completely decomposed medium grained GRANITE. (Medium to coarse SAND with much fine gravel)
	29.79 HW									-15.25	29.70			
			80	100	20	0	NA	T2-101	29.79	-15.55	30.00		IV	Moderately weak, brown (10YR 4/3), highly

- Small Disturbed Sample
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- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 23/09/2020

CHECKED BY PETER CHU

DATE 24/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 2**

SHEET 4 of 4

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-3	E 837 200.51 N 815 255.43	DATE from 10/09/2020 to 23/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +14.45 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				100	20	0	NA		T2-101 30.19	-15.74	30.19		IV	decomposed medium grained GRANITE. (Sandy coarse GRAVEL and COBBLE)
				100	100	84	4.1		T2-101 31.16				III	Moderately strong, yellowish brown, moderately decomposed medium grained GRANITE. Joints are medium locally very closely spaced, rough and smooth planar, extremely narrow, iron and manganese oxides stained, dipping at 0°-10°, 10°-20° and 60°-70°.
				100	92	72	>20		T2-101	-17.39	31.84		II	
										-17.57	32.02		III	31.84- 32.02m: Strong, slightly decomposed.
									32.46	-18.01	32.46			
										-18.22	32.67			Strong, pinkish grey spotted black and white, slightly decomposed medium grained GRANITE. Joints are medium spaced, smooth planar, extremely narrow, iron oxide stained, epidote coated, dipping at 0°-10°, 10°-20°, 40°-50° and 60°-70°.
			80	100	100	100			T2-101	-18.90	33.35		II	32.53- 32.67m: PEGMATITE.
22/09/2020		11.30m at 18:03												
23/09/2020		11.45m at 08:00					1.9		33.80					32.67- 33.35m: Fine grained GRANITE.
				100	93	91			T2-101	-20.19	34.64		III	34.64- 35.09m: Moderately strong, moderately decomposed.
									34.99	-20.64	35.09			
		11.35m at 18:03		100	100	100			T2-101				II	
23/09/2020									35.66	-21.21	35.66			End of drillhole at 35.66m.

- Small Disturbed Sample
- Large Disturbed Sample
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- U76 Undisturbed Sample
- U100 Undisturbed Sample
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- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG
DATE 23/09/2020
CHECKED BY PETER CHU
DATE 24/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 3**

SHEET 1 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CS60	E 837 210.82 N 815 266.33	DATE from 26/09/2020 to 07/10/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.20 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
26/09/2020	SW	Dry at 08:00							A 0.45–0.50 B 0.95–1.00 C 1.45–1.50 D 1.95–2.00	+15.05	0.15			CONCRETE SLAB. Firm to stiff, yellowish red (5YR 5/8), silty clayey fine to medium SAND with some subangular fine gravel sized moderately strong quartz and granite. (FILL)
26/09/2020		Dry at 18:00												
03/10/2020		Dry at 08:00						(2, 2, 1, 2, 2, 2) N = 7	1 2.10–2.40 2 2.45–2.90					
				100					3 2.90–3.90					
	4.00 SW							(2, 2, 2, 2, 2, 3) N = 9	4 4.00–4.10 5 4.40–4.45 6 4.90					
	PW			100					7 5.90–6.00 8 6.10–6.40					
			70					(2, 2, 3, 2, 3, 2) N = 10	9 6.45–6.90 10 7.90–8.00					
				100					11 8.10–8.40 12 8.45–8.90					
								(3, 3, 2, 3, 3, 3) N = 11	13 8.90–9.90 14	+6.30	8.90			Very stiff, brown (10YR 4/3), sandy clayey SILT with occasional angular to subangular fine gravel. (FILL)
				100					15					
									16	+5.20	10.00			

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- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 08/10/2020

CHECKED BY PETER CHU

DATE 09/10/2020

REMARKS
1. Inspection pit excavated from 0.00m-2.00m.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 3**

SHEET 2 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CS60	E 837 210.82 N 815 266.33	DATE from 26/09/2020 to 07/10/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.20 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(3, 3, 4, 4, 4, 5) N = 17	17 10.00–10.10 18 10.40–10.45	+4.30	10.90			As Sheet 1 of 5.
				100					19 10.90–11.90					Light grey (N7), silty slightly clayey medium to coarse SAND. (ALLUVIUM)
		4.00m at 18:00						(4, 4, 4, 5, 6, 6) N = 21	20 11.90–12.00 21 12.10 22 12.40–12.45	+3.20	12.00			Very stiff to hard, reddish yellow (5YR 7/8) to yellowish red (5YR 5/8), sandy clayey SILT with some subangular fine gravel of quartz. (ALLUVIUM)
03/10/2020 05/10/2020		4.50m at 08:00		100				32 blows	23 12.90 24 13.35–13.40					
								(4, 5, 5, 6, 8, 8) N = 27	25 14.00–14.10 26 14.40–14.45					
			70						27 14.90	+0.30	14.90			Stiff, reddish yellow (5YR 7/8), silty CLAY. (ALLUVIUM)
				95					28 15.90–16.00	-0.80	16.00			Very stiff, grey (N5), silty CLAY. (ALLUVIUM)
								(3, 4, 4, 4, 4, 5) N = 17	29 16.10 30 16.40–16.45					
				97					31 16.90	-1.70	16.90			Medium dense, light grey (N5), silty clayey fine to medium SAND. (ALLUVIUM)
								(4, 4, 5, 5, 6, 7) N = 23	32 17.90–18.00 33 18.10 34 18.40–18.45					
				92					35 18.90	-3.70	18.90		V	Extremely weak, yellowish red (5YR 5/8), completely decomposed medium grained GRANITE. (Slightly clayey silty medium to coarse SAND with some fine gravel)
	20.00 PW								36 19.90	-4.80	20.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 08/10/2020

CHECKED BY PETER CHU

DATE 09/10/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 3**

SHEET 3 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CS60	E 837 210.82 N 815 266.33	DATE from 26/09/2020 to 07/10/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.20 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
	HW							(6, 8, 10, 14, 18, 25) N = 67	37 20.00–20.10 38 20.40–20.45				V	As Sheet 2 of 5.
								(15, 24, 25, 33, 42, 55) N = 155	39 22.00–22.10 40 22.40–22.45	-6.80	22.00			Extremely weak, yellowish brown (10YR 5/8), completely decomposed medium grained GRANITE. (Slightly clayey silty fine to medium SAND with occasional fine gravel)
			70					(11, 15, 12, 9, 15, 28) N = 64	41 24.00–24.10 42 24.40–24.45					
								(15, 35, 66, 134/75mm) 200blS/150mm	43 26.00 44 26.25–26.30				V	
05/10/2020 06/10/2020		6.20m at 18:00 6.50m at 08:00						(50/75mm 200/75mm) 200blS/75mm	45 28.00–28.10–28.15					
								(50/50mm		-14.80	30.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG
DATE 08/10/2020
CHECKED BY PETER CHU
DATE 09/10/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 3**

SHEET 4 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CS60	E 837 210.82 N 815 266.33	DATE from 26/09/2020 to 07/10/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.20 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(200/70mm) 200bls/70mm	46 30.00 30.07 30.12					Weak, yellowish red (5YR 5/8), highly decomposed medium grained GRANITE. (Sandy fine to medium GRAVEL)
								(50/50mm 200/70mm) 200bls/70mm	47 32.00 32.07 32.12					
			70										IV	
								(50/40mm 200/60mm) 200bls/60mm	48 34.00 34.05 34.10					
	35.45 HW								35.45	-20.25	35.45			
				96	68	68	NI 5.6		T2-101					Moderately strong, greenish grey, moderately decomposed epidotized medium grained GRANITE. Joints are closely to medium spaced, rough and smooth planar, extremely narrow, iron oxide stained, epidote coated, dipping at 20°-30°, 50°-60°, 60°-70° and 70°-80°. 35.45- 35.87m: Fine grained GRANITE with pegmatite.
									35.92	-20.67	35.87			
				100	92	69	NI 6.0 13.3		T2-101					
			80						37.36				III	
				100	92	92	2.8		T2-101					
									38.90	-23.49	38.69			
				100	100	100	0.0		T2-101				II	Strong, pink dappled green, slightly decomposed slightly epidotized medium grained GRANITE. No joint.
										-24.80	40.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 08/10/2020

CHECKED BY PETER CHU

DATE 09/10/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 3**

SHEET 5 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CS60	E 837 210.82 N 815 266.33	DATE from 26/09/2020 to 07/10/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.20 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
06/10/2020		6.80m at 19:00		100	100	100			T2-101					As Sheet 4 of 5.
07/10/2020		7.00m at 08:00	80	100	100	100	0.0		40.40 T2-101				II	
07/10/2020									41.01	-25.81	41.01			End of drillhole at 41.01m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG
DATE 08/10/2020
CHECKED BY PETER CHU
DATE 09/10/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 4**

SHEET 1 of 4

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 202.14 N 815 235.32	DATE from 03/10/2020 to 09/10/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.38 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
03/10/2020	SW	Dry at 08:00								+15.28	0.10			CONCRETE SLAB.
		Dry at 18:00							A 0.45 0.50					Reddish brown (5YR 4/3), medium to coarse SAND with much angular to subangular fine to coarse gravel sized concrete, wood and plastic fragments. (FILL)
03/10/2020									B 0.95 C 1.00	+14.28	1.10			
07/10/2020		Dry at 08:00		41					1.05 1.10 T6-120					Grey (N6), angular to subangular coarse GRAVEL and COBBLE sized moderately strong to strong granite, concrete, steel, wood, glass and brick fragments. (FILL)
				44					2.20 T6-120					
			80						3.70 T6-120					
				38					5.00 T6-120					
				56					5.50 T6-120					
	6.00 SW			72					6.00	+9.38	6.00			
	PW							(2, 3, 4, 3, 3, 3) N = 13	1 6.10 2 6.40 6.45					Stiff, red (10R 5/6), sandy clayey SILT. (FILL)
									6.90 3					
				100					4 7.90 8.00	+7.48	7.90			
			70					(3, 4, 5, 4, 5, 4) N = 18	5 8.10 6 8.40 8.45					Very stiff, reddish brown (5YR 5/3), sandy clayey SILT. (FILL)
									8.90	+6.48	8.90			
				100					7 8 9.90	+5.38	10.00			Very stiff, yellowish brown (10YR 5/8), sandy clayey SILT. (ALLUVIUM)

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 10/09/2020

CHECKED BY PETER CHU

DATE 12/09/2020

REMARKS
1. Inspection pit excavated from 0.00m-1.10m.
2. A piezometer tip was installed at 28.00m depth.
3. A standpipe was installed to 25.00m depth.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 4**

SHEET 2 of 4

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 202.14 N 815 235.32	DATE from 03/10/2020 to 09/10/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.38 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(7, 6, 4, 4, 5, 4) N = 17	9 10.00–10.10 10 10.40–10.45					As Sheet 1 of 4.
										+4.48	10.90			Medium dense, yellowish brown (10TYR 5/8), silty slightly clayey medium to coarse SAND. (ALLUVIUM)
				85					11 10.90–11.90 12 12.00–12.10					
07/10/2020		6.20m at 18:00						(6, 7, 5, 4, 6, 5) N = 20	13 12.40–12.45 14					
08/10/2020		4.00m at 08:00								+2.48	12.90			
				100				32 b/s	15 12.90–13.35 16 13.40					Extremely weak, yellowish brown (10YR 5/8) to light red (2.5YR 6/6) spotted white and grey, completely decomposed medium grained GRANITE. (Silty medium to coarse SAND with much fine gravel)
								(8, 9, 12, 14, 25, 41) N = 92	17 14.00–14.10 18 14.40–14.45					
			70						14.90					
				90					19 20 15.90–16.00					
								(9, 11, 13, 17, 26, 44) N = 100	21 16.10 22 16.40–16.45				V	
				100					16.90 23					
									24 17.90–18.00 25 18.10 26 18.40–18.45					
								(14, 17, 19, 25, 37, 55) N = 136						
				90					18.90 27					
	20.00 PW								28 19.90	-4.62	20.00			

- Small Disturbed Sample
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- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 10/09/2020

CHECKED BY PETER CHU

DATE 12/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 4**

SHEET 3 of 4

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 202.14 N 815 235.32	DATE from 03/10/2020 to 09/10/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.38 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
	HW							(11, 17, 29, 38, 51, 67) N = 185	29 20.00 20.10 30 20.40 20.45				V	As Sheet 2 of 4.
								(50/60mm 200/50mm) 200bls/50mm	31 22.00 22.06 22.11	-6.62	22.00			Weak, yellowish brown (10YR 5/8), highly decomposed medium grained GRANITE. (Sandy fine to medium GRAVEL)
			70					(50/50mm 200/50mm) 200bls/50mm	32 24.00 24.05 24.10				IV	
								(50/50mm 200/40mm) 200bls/40mm	33 26.00 26.04 26.09					
			80	100	87	77	6.1	T2-101	27.94	-12.56	27.94		III	Moderately strong, yellowish brown, moderately decomposed medium grained GRANITE. Joints are very closely to closely spaced, rough planar, extremely narrow, iron oxide stained, dipping at 0°-10°, 10°-20° and 40°-50°.
							>20			-12.75	28.13			
										-13.09	28.47			
										-13.20	28.58			
	29.35 HW									-13.43	28.81			
			70					(50/50mm 200/50mm) 200bls/50mm	28.81 28.90 28.95 29.00 34				IV	28.13- 28.47m: With very closely spaced subhorizontal microfractures.
										-14.00	29.38			
			80	100	95	89	NI 5.3	T2-101	29.38	-14.16	29.54		III	28.58- 28.81m: With very closely spaced subhorizontal microfractures.
										-14.32	29.70		II	
										-14.62	30.00		III	

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 10/09/2020

CHECKED BY PETER CHU

DATE 12/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 4**

SHEET 4 of 4

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 202.14 N 815 235.32	DATE from 03/10/2020 to 09/10/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.38 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				100	95	89	5.3		T2-101	-14.74	30.12			Weak, yellowish brown (10YR 5/8), highly decomposed medium grained GRANITE. (Sandy fine to medium GRAVEL)
				100	100	100			30.48 T2-101					Strong, pink spotted black and white, slightly decomposed medium grained GRANITE. Joints are closely to medium locally very closely spaced, rough and smooth planar, extremely narrow, iron oxide stained, epidote coated, dipping at 0°-10°, 10°-20°, 30°-40°, 50°-60° and 70°-80°.
				100	96	90	2.5		30.93 T2-101				II	29.38- 29.54m: Moderately strong, moderately decomposed.
			80						32.03	-16.81	32.19			29.70- 30.12m: Moderately strong, moderately decomposed.
										-17.01	32.39		III	
										-17.09	32.47			32.19- 34.71m: Slightly epitodized.
				100	100	90	6.3		T2-101	-17.47	32.85			32.39- 32.47m: Moderately strong, moderately decomposed.
08/10/2020		6.00m at 18:00								-17.91	33.29			
09/10/2020		4.00m at 08:00							33.46				II	32.85- 33.29m: PEGMATITE.
				100	78	38	>20		T2-101					
		6.00m at 18:00					10.0							
09/10/2020							>20		34.71	-19.33	34.71			End of drillhole at 34.71m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 10/09/2020

CHECKED BY PETER CHU

DATE 12/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 7**

SHEET 1 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 282.96 N 815 342.63	DATE from 18/08/2020 to 24/08/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.21 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
18/08/2020	SW	Dry at 08:00								+15.06	0.15			CONCRETE SLAB.
									A 0.45 0.50	+14.71	0.50			Reddish yellow (7.5YR 6/8), silty medium to coarse SAND with some subangular fine to medium gravel sized moderately strong to strong granite. (FILL)
									B 0.95 1.00					Loose, red (2.5YR 5/6), clayey silty medium to coarse SAND with some subangular fine gravel. (FILL)
		Dry at 18:00							C 1.45 1.50					
18/08/2020									D 1.95 2.00					
20/08/2020		Dry at 08:00						(1, 1, 1, 1, 1, 1) N = 4	1 2.10 2 2.40 2.45					
	2.90 SW								2.90	+12.31	2.90			
	PW			100					3					Firm, red (2.5YR 5/6), sandy clayey SILT with some subangular fine gravel sized moderately weak granite and quartz. (FILL)
								(1, 1, 2, 1, 2, 1) N = 6	4 3.90 4.00 5 4.10 6 4.40 4.45					
									4.90	+10.31	4.90			
				100					7					Stiff, yellowish red (5YR 6/8), sandy clayey SILT with some subangular fine gravel of quartz. (RESIDUAL SOIL)
			70					(2, 1, 2, 3, 2, 2) N = 9	8 5.90 6.00 9 6.10 10 6.40 6.45				VI	
				100					6.90 11					
		3.00m at 18:00						(3, 2, 3, 4, 3, 2) N = 12	12 7.90 8.00 13 8.10 14 8.40 8.45					
20/08/2020														
21/08/2020		3.00m at 08:00												
				100					8.90 15	+6.31	8.90		V	Extremely weak, yellowish red (5YR 6/8), completely decomposed medium grained GRANITE. (Clayey silty fine to medium SAND with some subangular fine gravel of quartz)
									16 9.90	+5.21	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 24/08/2020

CHECKED BY PETER CHU

DATE 25/08/2020

REMARKS
1. Inspection pit excavated from 0.00m-2.00m.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 7**

SHEET 2 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 282.96 N 815 342.63	DATE from 18/08/2020 to 24/08/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.21 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(3, 2, 2, 2, 4, 4) N = 12	17 10.00 18 10.10 10.40 10.45					As Sheet 1 of 5.
				100					10.90 19 20 11.90 12.00				V	
								(2, 3, 4, 3, 3, 4) N = 14	21 12.10 22 12.40 12.45					
									12.90	+2.31	12.90			Extremely weak, dark reddish brown (5YR 3/2), completely decomposed medium grained GRANITE. (Slightly clayey silty fine to medium SAND)
				95					23				V	
								(4, 5, 7, 8, 12, 17) N = 44	24 13.90 25 14.00 14.10 26 14.40 14.45					
									14.90	+0.31	14.90			Extremely weak, dark reddish yellow (5YR 6/8), completely decomposed medium grained GRANITE. (Clayey silty fine to medium SAND with some fine gravel)
	16.00 PW		70	100					27 28 15.90 16.00					
	HW							(4, 8, 10, 13, 19, 28) N = 70	29 16.10 30 16.40 16.45				V	
									16.90 31 32 17.90 18.00					
				100				(5, 7, 10, 19, 27, 43) N = 99	33 18.10 34 18.40 18.45					
									18.90	-3.69	18.90			Extremely weak, pale red (10R 6/4) spotted white, completely decomposed medium grained GRANITE. (Clayey silty fine to medium SAND with some fine gravel)
				100					35				V	
									36 19.90	-4.79	20.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 24/08/2020

CHECKED BY PETER CHU

DATE 25/08/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 7**

SHEET 3 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 282.96 N 815 342.63	DATE from 18/08/2020 to 24/08/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.21 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
			70					(6, 8, 12, 17, 28, 43) N = 100	37 20.00 20.10 38 20.40 20.45				V	As Sheet 2 of 5.
		1.60m at 18:00	80	100	96	71	8.9	T2-101	21.95	-6.74	21.95		III	Moderately strong, yellowish brown, moderately decomposed medium grained GRANITE. Joints are closely spaced, rough planar, extremely narrow, iron oxide stained, dipping at 10°-20°.
21/08/2020										-7.17	22.38			
22/08/2020		9.50m at 08:00						(50/50mm 200/30mm) 200bls/30mm	22.85 39 22.90 22.93 22.98	-7.64	22.85		IV	22.38- 22.85m: With very closely spaced subhorizontal microfractures. Weak, yellowish brown (10YR 5/8) spotted black and white, highly decomposed medium grained GRANITE. (Fine to medium GRAVEL)
			70					(50/60mm 200/40mm) 200bls/40mm	40 24.90 24.95 25.00	-9.69	24.90		V	Extremely weak, yellowish brown (10YR 5/8) and pinkish grey (5YR 7/2), completely decomposed medium grained GRANITE. (Clayey silty medium to coarse SAND with much fine to medium gravel)
								(50/60mm 200/40mm) 200bls/40mm	41 26.90 26.95 27.00					
								(50/60mm 200/30mm) 200bls/30mm	42 28.90 28.94 28.99	-14.79	30.00			

- Small Disturbed Sample
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- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 24/08/2020

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REMARKS

泰昇地基工程有限公司
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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 7**

SHEET 4 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 282.96 N 815 342.63	DATE from 18/08/2020 to 24/08/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.21 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
														As Sheet 3 of 5.
			70					(50/50mm I 200/40mm) 200blS/40mm	43 30.90 30.94 30.99				V	
								(50/40mm I 200/30mm) 200blS/30mm	44 32.90 32.92 32.97	-17.69	32.90		IV	Weak, pinkish grey (5YR 7/2), highly decomposed medium grained GRANITE. (Fine to medium GRAVEL)
										-17.93	33.14			
				100	100	100	11.1		T2-101				II	Strong, pinkish grey spotted black and white, slightly decomposed medium grained GRANITE. Joints are medium to widely locally very closely to closely spaced, rough and smooth planar, extremely narrow, iron oxide stained, dipping at 0°-10°, 50°-60° and 60°-70°.
							0.6		34.59					
				100	95	82	15.4		T2-101	-19.96	35.17		III	35.17- 35.90m: Moderately strong, moderately decomposed.
			80							-20.19 -20.30	35.40 35.51		II	35.40- 35.51m: With very closely spaced subhorizontal microfractures.
				100	97	97			35.87	-20.69	35.90		III	36.35- 36.89m: Moderately strong, moderately decomposed.
				100	100	100	2.4		T2-101	-21.14	36.35		II	
									36.61	-21.68	36.89		III	37.68- 38.13m: Moderately strong, moderately decomposed.
				94	61	36	17.5		T2-101	-22.47	37.68		IV	Weak, yellowish brown (10YR 5/8), highly decomposed medium grained GRANITE. (Sandy Fine to medium GRAVEL)
	38.40 HW								37.43					
			70					(50/50mm I 200/40mm) 200blS/40mm	T2-101	-22.92	38.13		III	Strong, yellowish brown spotted black and white, slightly decomposed medium grained GRANITE. Joints are medium to widely locally very closely to closely spaced, smooth planar, extremely narrow, iron oxide stained, dipping at 0°-10° and 10°-20°.
									38.13 38.15 38.19 38.24					
				100	100	67	12.5		45	-23.19	38.40		II	
							3.0		T2-101					
			80				12.8		38.40	-23.47	38.68		III	38.40- 38.68m: Moderately strong, moderately decomposed.
				100	98	83	1.5		38.83 T2-101				II	
										-24.79	40.00			

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- Water Sample
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- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 7**

SHEET 5 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 282.96 N 815 342.63	DATE from 18/08/2020 to 24/08/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.21 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
							>20		40.08					As Sheet 4 of 5.
				100	100	100	1.4		T2-101				II	
									41.51	-26.30	41.51			
							14.3						III	
			80							-26.62	41.83			41.51- 41.83m: Moderately strong, moderately decomposed.
				100	90	77			T2-101					
							1.0		42.88				II	
		1.90m at 18:01		100	100	100			T2-101					
22/08/2020									43.77	-28.56	43.77			End of drillhole at 43.77m.

- Small Disturbed Sample
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DATE 24/08/2020

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泰昇地基工程有限公司
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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 8**

SHEET 1 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-3	E 837 214.30 N 815 245.59	DATE from 23/09/2020 to 28/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.37 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
23/09/2020	SW	Dry at 08:00							INSPECTION PIT A 0.45 B 0.50 0.65	+15.27	0.10			CONCRETE SLAB.
										+14.87	0.50			Red (2.5YR 4/8), medium to coarse SAND. (FILL)
23/09/2020										+14.67	0.70			Red (2.5YR 4/8), clayey silty medium to coarse SAND with some subangular fine gravel sized moderately strong granite, quartz and occasional brick fragments. (FILL)
24/09/2020		Dry at 08:00	80	98					0.70 T2-101 1.65 T2-101 2.25					Grey (N6) and red (2.5YR 5/8), angular to subangular COBBLE with some coarse gravel sized brick and concrete fragments. (FILL)
				88						+13.12	2.25			
			70					(1, 1, 2, 2, 3, 4) N = 11	2.30 1 2.40 2.70 2 2.75					Medium dense, reddish brown (5YR 5/4), silty clayey medium to coarse SAND. (FILL)
			80	100					2.80 T2-101 3.10	+12.57	2.80			Grey (N6) and red (2.5YR 5/8), angular COBBLE with some coarse gravel sized concrete, brick, tile and plastic fragments. (FILL)
								(1, 1, 1, 3, 4, 7) N = 15	3.20 3 3.50 4 3.55	+12.27	3.10			Very stiff, red (2.5YR 5/8), sandy clayey SILT. (FILL)
									4.00					
				100					5					
	5.10 SW								5.00 6 5.10	+10.27	5.10			
	PW							(2, 3, 5, 5, 6, 6) N = 22	5.20 7 5.50 8 5.55					Very stiff, red (2.5YR 5/8), sandy clayey SILT with occasional decayed wood fragments. (FILL)
									6.00					
			70	100					9					
									7.00 10 7.10	+8.27	7.10			
								(3, 4, 4, 4, 4, 5) N = 17	7.20 11 7.50 12 7.55					Very stiff, greyish brown (10YR 5/2), sandy clayey SILT. (ALLUVIUM)
									8.00	+7.37	8.00			
				100					13					Very stiff, brown (10YR 4/3), sandy clayey SILT with occasional subangular fine gravel of strong granite and much quartz. (ALLUVIUM)
									14 9.00 9.10	+6.27	9.10			
								(2, 3, 4, 4, 3, 4) N = 15	15 9.20 16 9.50 9.55					Medium dense, white (N8) spotted grey, silty clayey medium to coarse SAND. (ALLUVIUM)
										+5.37	10.00			

- Small Disturbed Sample
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- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 28/09/2020

CHECKED BY PETER CHU

DATE 29/09/2020

REMARKS
1. Inspection pit excavated from 0.00m-0.70m.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 8**

SHEET 2 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-3	E 837 214.30 N 815 245.59	DATE from 23/09/2020 to 28/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.37 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
									10.00					As Sheet 1 of 5.
		9.30m at 18:00		0					17 11.00 11.10					
24/09/2020				100				26 bls	18 11.50 19 11.55					
25/09/2020		9.50m at 08:00							12.00	+3.37	12.00			
								(1, 2, 2, 5, 7, 9) N = 23	20 12.10 21 12.40 12.45					Medium dense, yellowish brown (10YR 5/8) spotted white, medium to coarse SAND. (ALLUVIUM)
									12.90	+2.47	12.90			
				0										White (N8) spotted grey, silty clayey medium to coarse SAND. (ALLUVIUM)
									22 13.90	+1.37	14.00			
				100				29 bls	14.00 23 24 14.40 14.45					Stiff, white (N8) spotted grey, silty clayey medium to coarse SAND. (ALLUVIUM)
									14.90	+0.47	14.90			
			70					(3, 4, 5, 5, 7, 9) N = 26	15.00 25 26 15.30 15.35					Extremely weak, red (2.5YR 5/8), completely decomposed medium grained GRANITE. (Silty clayey fine SAND with some fine gravel)
									15.80				V	
				100					27					
	16.90 PW								28 16.80 16.90	-1.53	16.90			
	HW							(3, 7, 8, 12, 12, 15) N = 47	17.00 29 30 17.30 17.35					Extremely weak, pinkish grey (5YR 7/2) spotted grey and yellowish brown, completely decomposed medium grained GRANITE. (Medium to coarse SAND with some fine gravel)
									17.80					
				100					31				V	
									32 18.80 18.90					
								(5, 8, 10, 13, 15, 21) N = 59	19.00 33 34 19.30 19.35					
									19.80	-4.43	19.80			
				100						-4.63	20.00		V	Extremely weak, yellowish red (5YR 5/8) dappled

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- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 28/09/2020

CHECKED BY PETER CHU

DATE 29/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 8**

SHEET 3 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-3	E 837 214.30 N 815 245.59	DATE from 23/09/2020 to 28/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.37 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
25/09/2020 26/09/2020		9.50m at 18:00 9.50m at 08:00	70	100				(6, 10, 15, 18, 21, 28) N = 82 (7, 13, 18, 19, 23, 32) N = 92 (15, 19, 23, 25, 32, 43) N = 123 (10, 18, 24, 30, 39, 50) N = 143 (9, 15, 25, 33, 44, 54) N = 156	35 36 20.80 20.90 21.00 37 38 21.30 21.35 39 22.90 23.00 40 23.30 23.35 41 24.90 25.00 42 25.30 25.35 43 26.90 27.00 44 27.30 27.35 45 28.90 29.00 46 29.30 29.35	-14.63	30.00		V	yellowish brown, completely decomposed medium grained GRANITE. (Medium to coarse SAND with much fine gravel)

- Small Disturbed Sample
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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 8**

SHEET 4 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-3	E 837 214.30 N 815 245.59	DATE from 23/09/2020 to 28/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.37 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
														As Sheet 2 of 5.
								(10, 40/70mm 125, 75/60mm) 200bls/135mm	47 30.90 31.13 31.18				V	
			70											
								(50/70mm 120/75mm, 80/35mm) 200bls/110mm	48 32.90 33.03 33.08					
	34.56 HW									-19.19	34.56			
				100	60	0	NI		T2-101 34.56 34.66	-19.29	34.66		III	Moderately strong, reddish brown, moderately decomposed medium grained GRANITE. Rock is non-intact.
										-19.49	34.86			
										-19.55	34.92			
							13.0			-19.79	35.16			
				100	97	69			T2-101	-19.84	35.21			Moderately strong, yellowish brown, moderately decomposed medium grained GRANITE. Joints are closely to medium spaced, rough and smooth planar, extremely narrow, iron oxide stained, dipping at 0°-10°, 10°-20°, 20°-30° and 50°-60°.
										-20.37	35.74			
									35.90	-20.76	36.13			
							1.8			-21.00	36.37			34.86- 34.92m: PEGMATITE.
		9.30m at 18:00		100	100	100			T2-101					35.16- 35.21m: PEGMATITE.
26/09/2020										-21.54	36.91			
28/09/2020		9.30m at 08:00	80						37.11	-21.69	37.06			35.74- 36.13m: PEGMATITE.
										-22.01	37.38		III	36.37- 36.91m: Fine grained GRANITE.
							10.2							37.06- 37.38m: Fine grained GRANITE.
				100	100	92			T2-101					
										-22.83	38.20			
										-23.05	38.42			38.20- 38.42m: Fine grained GRANITE.
									38.54					
				100	100	93	4.3		T2-101	-23.68	39.05			
									39.25	-23.91	39.28			39.05- 39.28m: Fine grained GRANITE.
		9.50m at 18:00		100	93	90			T2-101	-24.20	39.57			
28/09/2020										-24.30	39.67			
									39.84	-24.47	39.84			39.57- 39.67m: Fine grained GRANITE.

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SHEET 5 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-3	E 837 214.30 N 815 245.59	DATE from 23/09/2020 to 28/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.37 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
														End of drillhole at 39.84m.

- Small Disturbed Sample
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泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 8A**

SHEET 1 of 1

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 211.41 N 815 245.13	DATE from 10/09/2020 to 17/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.36 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
10/09/2020	SW	Dry at 08:00								+15.26	0.10			CONCRETE SLAB.
									INSPECTION PIT A 0.45 0.50 B 0.75					Reddish brown (5YR 5/4), silty medium to coarse SAND with some subangular fine to medium gravel sized brick and asphalt fragments. (FILL)
										+14.56	0.80			
		Dry at 18:00		64					0.80 T6-120					Grey (N5) and yellowish red (5YR 5/8), angular to subangular coarse GRAVEL and COBBLE sized moderately strong to strong granite, brick and concrete fragments. (FILL)
10/09/2020									1.50					
17/09/2020		Dry at 08:00		23					T6-120					
	3.00 SW													
	HW								3.00 T6-120	+12.36 +12.22 +12.09	3.00 3.14 3.27			CONCRETE. 3.14- 3.27m: Rusted iron pipe.
				83										
									4.50 T6-120	+10.86	4.50			Reinforced CONCRETE.
				92										
		Dry at 18:00							5.50 T6-120					
17/09/2020	5.76 HW			100					5.76	+9.60	5.76			End of drillhole at 5.76m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 18/09/2020

CHECKED BY PETER CHU

DATE 19/09/2020

REMARKS
1. Inspection pit excavated from 0.00m-0.80m.
2. The drillhole terminated at 5.76m due to encountering rebars.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 9**

SHEET 1 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-3	E 837 221.72 N 815 256.03	DATE from 28/09/2020 to 03/10/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.19 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
28/09/2020	SW	Dry at 08:00								+14.99	0.20			CONCRETE SLAB.
									A 0.45 0.50					Red (10R 5/6), clayey silty fine to medium SAND with much subrounded and subangular fine to medium gravel sized moderately weak to moderately strong granite, quartz and concrete fragments. (FILL)
									B 0.95 1.00	+14.19	1.00			
			80	100					16-120 1.10	+14.09	1.10			Grey (N6) and light red (10R 6/8), angular COBBLE sized concrete and brick fragments. (FILL)
								(1, 1, 1, 2, 2, 5) N = 10	1 1.20 1.30					Stiff to very stiff, red (2.5YR 5/8), sandy clayey SILT with some subangular fine gravel sized quartz. (FILL)
									2 1.60 1.65					
				100					2.10					
									3					
	3.65 SW								4 3.10 3.20 3.30					
	PW							(1, 2, 2, 3, 3, 4) N = 12	5					
									6 3.60 3.65					
									4.10					
				100					7					
									8 5.10 5.20 5.30					
			70					(1, 1, 2, 2, 3, 3) N = 10	9					
									10 5.60 5.65					
									6.10					
		6.30m at 18:00		100					11					
28/09/2020									12 7.10 7.20	+7.99	7.20			
29/09/2020		7.20m at 08:00						(1, 1, 3, 4, 7, 9) N = 23	13 7.30					7.20- 8.10m: Medium dense, silty clayey medium to coarse SAND. (FILL)
									14 7.60 7.65					
									8.10	+7.09	8.10			
				100					15					
									16 9.10 9.20 9.30					
								(1, 1, 2, 4, 5, 8) N = 19	17					
									18 9.60 9.65					
										+5.19	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 05/10/2020

CHECKED BY PETER CHU

DATE 06/10/2020

REMARKS
1. Inspection pit excavated from 0.00m-1.00m.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 9**

SHEET 2 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-3	E 837 221.72 N 815 256.03	DATE from 28/09/2020 to 03/10/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.19 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
									10.10					As Sheet 1 of 5.
				100					19					
									20 11.10 11.20	+3.99	11.20			
								(1, 1, 1, 3, 5, 7) N = 16	21 11.30 22 11.60 11.65					Stiff, dark reddish grey (5YR 4/2), sandy clayey SILT with occasional subangular fine gravel sized quartz. (FILL)
										+3.09	12.10			
				0					12.10 23					Stiff, reddish yellow (5YR 6/8) and very dark grey (N3), silty CLAY with some subangular coarse gravel and cobble sized brick fragments. (FILL)
									24 13.10 13.20	+1.99	13.20			
				100				31 blis	25 26 13.60 13.65					Very stiff, dark grey (N4), sandy clayey SILT with some subangular fine gravel sized quartz. (ALLUVIUM)
	14.10 PW HW							(1, 1, 2, 2, 5, 7) N = 16	14.10 14.20 27 28 14.50 14.55					
			70							+0.19	15.00			
				0					15.10 29 16.10 16.20	-1.01	16.20			Yellowish brown (10YR 5/4), silty medium to coarse SAND with some subangular fine gravel. (ALLUVIUM)
				0				31 blis	30 16.60 16.65					Stiff, yellowish brown (10YR 5/4), sandy clayey SILT. (ALLUVIUM)
										-1.91	17.10			
								(2, 2, 5, 7, 11, 15) N = 38	17.10 17.20 31 32 17.50 17.55					Dense, pale brown (10YR 6/3), medium to coarse SAND with much subrounded and subangular fine gravel of quartz. (ALLUVIUM)
									18.10					
				100					33					
									34 19.10 19.20	-4.01	19.20			
								(6, 8, 13, 14, 15, 17) N = 59	19.30 35 36 19.60 19.65				V	Extremely weak, yellowish red (5YR 5/8) to yellowish brown (10YR 5/4), completely decomposed medium grained GRANITE. (Silty medium to coarse SAND with some fine gravel)
										-4.81	20.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 05/10/2020

CHECKED BY PETER CHU

DATE 06/10/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 9**

SHEET 3 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-3	E 837 221.72 N 815 256.03	DATE from 28/09/2020 to 03/10/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.19 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
29/09/2020 30/09/2020		6.50m at 18:00 9.10m at 08:00	70	100				(5, 6, 7, 7, 8, 9) N = 31 (6, 7, 7, 9, 10, 9) N = 35 (6, 8, 11, 12, 14, 13) N = 50 (9, 14, 20, 28, 35, 40) N = 123 (12, 29, 36, 42, 59, 62) N = 199	37 (20.10) 38 (21.10 21.20) 39 (21.30) 40 (21.60 21.65) 41 (23.10 23.20) 42 (23.50 23.55) 43 (25.10 25.20) 44 (25.50 25.55) 45 (27.10 27.20) 46 (27.50 27.55) 47 (29.10 29.20) 48 (29.50 29.55)	-14.81	30.00		V	As Sheet 2 of 5.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
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- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 05/10/2020

CHECKED BY PETER CHU

DATE 06/10/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 9**

SHEET 4 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-3	E 837 221.72 N 815 256.03	DATE from 28/09/2020 to 03/10/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.19 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
													V	As Sheet 2 of 5.
								(50/70mm 200/70mm) 200bls/70mm	49 31.10 31.19 31.24	-15.91	31.10			Weak, yellowish brown (10YR 5/4), highly decomposed medium grained GRANITE. (Fine to medium GRAVEL)
30/09/2020		8.10m at 18:00												
03/10/2020		10.00m at 08:00						(50/50mm 200/70mm) 200bls/70mm	50 33.10 33.17 33.22					
			70											
								(50/30mm 200/70mm) 200bls/70mm	51 35.10 35.15 35.20				IV	
								(50/30mm 200/70mm) 200bls/70mm	52 37.10 37.15 37.20					
	39.29 HW							(50/40mm 200/60mm) 200bls/60mm	53 39.10 39.15 39.20 39.29 39.44	-24.10	39.29		IV	Moderately weak, reddish brown (5YR 5/3), highly decomposed medium grained GRANITE. (Coarse GRAVEL and COBBLE)
			80	93 / 100	0 / 100	0 / 100	NA / 1.0	T2-101 / T2-101	T2-101	-24.25 / -24.51	39.44 / 39.70		III	Moderately strong, reddish brown spotted white locally
										-24.81	40.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 05/10/2020

CHECKED BY PETER CHU

DATE 06/10/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 9**

SHEET 5 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-3	E 837 221.72 N 815 256.03	DATE from 28/09/2020 to 03/10/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.19 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
03/10/2020		8.20m at 18:00	80	100 100 100 100	100 100 100 100	100 100 100 100	1.0 2.0		T2-101 40.88 T2-101 42.06 T2-101 43.52 T2-101 44.69	-25.23 -26.71 -27.00 -27.71 -28.08 -29.70	40.42 41.90 42.19 42.90 43.27 44.89		III	dappled green, moderately decomposed medium grained GRANITE. Joints are medium to widely spaced, rough and smooth planar, extremely narrow, iron oxide stained, epidote coated, dipping at 30°-40° and 50°-60°. 39.70- 40.42m: Fine grained GRANITE. 41.90- 42.19m: Fine grained GRANITE. 42.90- 43.27m: Fine grained GRANITE. End of drillhole at 44.89m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 05/10/2020

CHECKED BY PETER CHU

DATE 06/10/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH12**

SHEET 1 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 293.86 N 815 332.32	DATE from 18/08/2020 to 26/08/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.29 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
18/08/2020	SW	Dry at 08:00							A 0.45 0.50 B 0.95 1.00 C 1.45 1.50 D 1.95	+15.14	0.15			CONCRETE SLAB. Yellowish red (5YR 5/8), sandy clayey SILT with some fine to medium gravel sized moderately weak granite and quartz. (FILL)
18/08/2020		Dry at 18:00								+13.29	2.00			
24/08/2020		Dry at 08:00						(1, 2, 1, 1, 1, 2) N = 5	1 2.00 2.10 2 2.40 2.45					Firm, red (10R 5/8), sandy clayey SILT with some subangular fine gravel of quartz. (FILL)
	4.00 SW / PW			100					3 2.90 4 3.90 4.00 4.10					
								(1, 1, 2, 1, 1, 2) N = 6	5 4.40 4.45 6					
										+10.39	4.90			Firm to stiff, yellowish red (5YR 5/6), sandy clayey SILT with some fine gravel of quartz. (RESIDUAL SOIL)
				85					7 4.90 8 5.90 6.00 6.10					
24/08/2020		4.00m at 18:00	70					(2, 1, 2, 1, 2, 2) N = 7	9 6.40 6.45 10					
25/08/2020		4.00m at 08:00							11 6.90					
				100					12 7.90 8.00 8.10				VI	
								(2, 1, 2, 2, 2, 2) N = 8	13 14 8.40 8.45					
									15 8.90					
				100					16 9.90	+5.29	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 27/08/2020

CHECKED BY PETER CHU

DATE 28/08/2020

REMARKS
1. Inspection pit excavated from 0.00m-2.00m.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH12**

SHEET 2 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 293.86 N 815 332.32	DATE from 18/08/2020 to 26/08/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.29 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(2, 2, 3, 2, 2, 3) N = 10	17 10.00 18 10.10 10.40 10.45				VI	As Sheet 1 of 5.
				85					10.90	+4.39	10.90			Very stiff, red (10R 5/8), sandy clayey SILT with with some fine gravel of quartz. (RESIDUAL SOIL)
								(3, 4, 3, 5, 6, 8) N = 22	19 20 11.90 12.00 21 12.10 22 12.40 12.45				VI	
				100					12.90					
								(4, 6, 7, 9, 14, 20) N = 50	23 24 13.90 14.00 25 14.10 26 14.40 14.45					
			70						14.90	+0.39	14.90			Extremely weak, red (10R 4/8) spotted white, completely decomposed medium grained GRANITE. (Silty clayey fine to medium SAND)
	16.00 PW / HW			100					27 28 15.90 16.00 29 16.10 30 16.40 16.45				V	
								(5, 7, 8, 10, 14, 28) N = 60	16.90					
				100					31 32 17.90	-2.71	18.00			
								(6, 8, 11, 14, 17, 30) N = 72	18.00 33 18.10 34 18.40 18.45					Extremely weak, red (10R 4/8), completely decomposed medium grained GRANITE. (Silty medium to coarse SAND with some fine gravel)
									18.90				V	
				100					35 36 19.90	-4.71	20.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
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- U100 Undisturbed Sample
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- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 27/08/2020

CHECKED BY PETER CHU

DATE 28/08/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH12**

SHEET 3 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 293.86 N 815 332.32	DATE from 18/08/2020 to 26/08/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.29 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
25/08/2020 26/08/2020		7.00m at 18:00 9.00m at 08:00						(6, 9, 12, 17, 25, 36) N = 90	37 20.00 20.10 38 20.40 20.45				V	As Sheet 2 of 5.
								(8, 11, 17, 19, 25, 43) N = 104	39 22.00 22.10 40 22.40 22.45	-6.71	22.00			Extremely weak, reddish yellow (5YR 7/8), completely decomposed medium grained GRANITE. (Silty medium to coarse SAND with much fine gravel)
			70					(10, 13, 19, 27, 43, 64) N = 153	41 24.00 24.10 42 24.40 24.45					
								(50/60mm 200/40mm) 200bls/40mm	43 26.00 26.05 26.10				V	
								(50/50mm 200/40mm) 200bls/40mm	44 28.00 28.04 28.09					
								(50/50mm		-14.71	30.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 27/08/2020

CHECKED BY PETER CHU

DATE 28/08/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH12**

SHEET 4 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 293.86 N 815 332.32	DATE from 18/08/2020 to 26/08/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.29 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(200/40mm) 200bls/40mm	45 30.00 30.04 30.09					As Sheet 3 of 5.
								(50/50mm 200/40mm) 200bls/40mm	46 32.00 32.04 32.09					
								(50/40mm 200/30mm) 200bls/30mm	47 34.00 34.02 34.07				V	
			70											
								(50/50mm 200/40mm) 200bls/40mm	48 36.00 36.04 36.09					
								(50/40mm 200/30mm) 200bls/30mm	49 38.00 38.02 38.07	-23.09	38.38			
								(50/30mm		-24.71	40.00		IV	Weak, yellowish brown (10YR 5/8), highly decomposed medium grained GRANITE. (Medium GRAVEL)

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 27/08/2020

CHECKED BY PETER CHU

DATE 28/08/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH12**

SHEET 5 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 293.86 N 815 332.32	DATE from 18/08/2020 to 26/08/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.29 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								200/20mm) 200bls/20mm	40.00 40.05				IV	As Sheet 4 of 5.
	41.60 HW		70						41.60	-26.31	41.60			
				100	92	69	15.8		T2-101				III	Moderately strong, yellowish brown, moderately decomposed medium grained GRANITE. Joints are medium locally very closely to closely spaced, rough and smooth planar, extremely narrow, iron and manganese oxides stained, chlorite coated, dipping at 0°-10°, 10°-20° and 70°-80°.
				100	100	69	3.7		43.02 T2-101					
							17.6		44.12	-28.83	44.12			
			80	100	100	100			T2-101				II	Strong, pinkish grey spotted black and white, slightly decomposed medium grained GRANITE. Joints are medium spaced, smooth planar, extremely narrow, iron oxide stained, chlorite and kaolin coated, dipping at 60°-70°.
							2.4		45.53 T2-101					
26/08/2020		10.00m at 18:00		100	100	94			46.98	-31.69	46.98			
														End of drillhole at 46.98m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG
DATE 27/08/2020
CHECKED BY PETER CHU
DATE 28/08/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH13**

SHEET 1 of 4

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-25	E 837 213.03 N 815 225.01	DATE from 03/10/2020 to 07/10/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.39 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
03/10/2020	PW									+15.29	0.10			CONCRETE SLAB.
									A 0.45	+14.89	0.50			Grey (N5), sandy angular coarse GRAVEL sized brick and concrete fragments. (FILL)
				60				T6-120	0.50					Grey (N5) and red (2.5YR 4/8), angular to subangular coarse GRAVEL and COBBLE sized concrete, brick, steel and wood fragments. (FILL)
				58				T6-120	1.50					
			80	71				T6-120	2.80					
				74				T6-120	4.20					
				68				T6-120	5.30					
									6.10	+9.29	6.10			
								(1, 1, 1, 1, 1, 1) N = 4	1 6.20 2 6.50					Firm, yellowish red (5YR 5/8) to yellowish brown (10YR 5/4), sandy clayey SILT with occasional subangular fine gravel sized moderately strong granite and quartz. (FILL)
				95					6.55 7.00 3					
			70					(1, 2, 1, 1, 2, 2) N = 6	4 8.00 5 8.10 6 8.20 8.50 8.55					
									9.00	+6.39	9.00			
				100					7				VI	Stiff, yellowish red (5YR 5/8), sandy clayey SILT with some subangular fine gravel of quartz. (RESIDUAL SOIL)
										+5.39	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 08/10/2020

CHECKED BY PETER CHU

DATE 09/10/2020

REMARKS
1. Inspection pit excavated from 0.00m-0.50m.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH13**

SHEET 2 of 4

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-25	E 837 213.03 N 815 225.01	DATE from 03/10/2020 to 07/10/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.39 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
03/10/2020 05/10/2020		3.80m at 18:00 4.60m at 08:00						(1, 2, 2, 2, 3) N = 10	8 9 10	+5.29	10.10		VI	As Sheet 1 of 4. Stiff. yellowish brown (10YR 5/8), sandy clayey SILT. (RESIDUAL SOIL)
			70	95					11 12	+4.39	11.00		V	Extremely weak, yellowish brown (10YR 5/8), completely decomposed medium grained GRANITE. (Slightly silty clayey medium to coarse SAND with much fine gravel)
								(12, 17, 76, 124/65mm) 200b/s/140mm	13	+3.00	12.39		III	Moderately strong, yellowish brown, moderately decomposed medium grained GRANITE. Joints are widely spaced, rough planar, extremely narrow, iron oxide stained, dipping at 20°-30°.
			80	86	96	96	0.7		T2-101	+2.61	12.78		II	
										+2.24	13.15		III	12.78- 13.15m: Strong, slightly decomposed.
	14.00 PW HW							(6, 8, 13, 16, 21, 34) N = 84	14 15	+1.59	13.80			Extremely weak, pale red (10R 7/4) to yellowish brown (10YR 5/4), completely decomposed medium grained GRANITE. (Slightly clayey silty medium to coarse SAND with much fine gravel)
				85					16					
								(4, 7, 9, 10, 14, 19) N = 52	17 18 19					
			70	85					20				V	
								(5, 8, 10, 12, 16, 23) N = 61	21 22 23					
				95					24 25					
		4.90m								-4.61	20.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 08/10/2020

CHECKED BY PETER CHU

DATE 09/10/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH13**

SHEET 3 of 4

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-25	E 837 213.03 N 815 225.01	DATE from 03/10/2020 to 07/10/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.39 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
05/10/2020 06/10/2020		at 18:00 4.90m at 08:00	70					(5, 8, 15, 17, 36, 53) N = 121	26 27 20.20 20.25				V	As Sheet 2 of 4.
			80	89	89	89	2.5	T2-101	21.20 22.00	-5.81 -6.61	21.20 22.00		III	Moderately strong, yellowish brown, moderately decomposed medium grained GRANITE. Joints are medium spaced, rough planar, extremely narrow, iron oxide stained, dipping at 0°-10°.
			70					(6, 10, 15, 21, 26, 32) N = 94	28 22.10 29 22.40 22.45				V	Extremely weak, yellowish brown (10YR 5/8), completely decomposed medium grained GRANITE. (Medium to coarse SAND with some fine gravel)
			80	100	67	67	8.0 NA	T2-101	23.30 23.60	-7.91 -8.16 -8.21	23.30 23.55 23.60		III IV	Moderately strong, yellowish brown, moderately decomposed medium grained GRANITE. Joints are closely spaced, rough planar, extremely narrow, iron oxide stained, dipping at 20°-30° and 30°-40°. 23.55- 23.60m: Moderately weak, highly decomposed. (Medium to coarse GRAVEL)
								(6, 9, 13, 15, 22, 31) N = 81	30 23.70 31 24.00 24.05					Extremely weak, yellowish red (5YR 5/8), completely decomposed medium grained GRANITE. (Silty medium to coarse SAND with some fine gravel)
			70					(14, 27, 41, 77, 82/30mm) 200blS/180mm	25.60 32 25.88 25.93				V	
								(50/60mm 135/75mm, 65) 200blS/150mm	27.60 33 27.70 27.75					
	29.85 HW							(50/50mm 200/50mm) 200blS/50mm	29.60 34 29.66 29.71	-14.46	29.85			
			80	100	100	88	1.0	T2-101	29.85	-14.61	30.00		III	Moderately strong, yellowish brown, moderately

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 08/10/2020

CHECKED BY PETER CHU

DATE 09/10/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH13**

SHEET 4 of 4

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-25	E 837 213.03 N 815 225.01	DATE from 03/10/2020 to 07/10/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.39 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				100	100	88	1.0		T2-101	-15.07	30.46		III	decomposed medium grained GRANITE. Joints are medium to widely locally very closely to closely spaced, rough planar, extremely narrow, iron and manganese oxides stained, dipping at 0°-10°, 10°-20° and 70°-80°.
							20.0			-15.75	31.14			30.46- 31.14m: With very closely spaced subhorizontal microfractures.
							3.4		31.30	-16.10	31.49			
				100	82	54	>20		T2-101	-16.58	31.97			31.49- 31.97m: With very closely spaced subhorizontal microfractures.
							7.0			-16.92	32.31		II	
			80							-17.04	32.43		III	32.31- 32.43m: Strong, slightly decomposed.
									32.64	-17.25	32.64			Strong, pinkish grey spotted black and white, slightly decomposed medium grained GRANITE. Joints are closely to medium spaced, smooth planar, extremely narrow, epidote coated, dipping at 0°-10°.
				100	100	100			T2-101					
06/10/2020 07/10/2020		4.10m at 18:00					2.1		33.93				II	
		6.30m at 08:00												
				100	100	94			T2-101					
07/10/2020		4.20m at 18:00							35.01	-19.62	35.01			
														End of drillhole at 35.01m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 08/10/2020

CHECKED BY PETER CHU

DATE 09/10/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH14**

SHEET 1 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CS60	E 837 222.31 N 815 234.82	DATE from 10/09/2020 to 19/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.37 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
10/09/2020	SW	Dry at 08:00								+15.17	0.20			CONCRETE SLAB.
									A 0.45	+14.87	0.50			Brown (10YR 5/3), medium to coarse SAND with some angular to subangular fine to medium gravel sized moderately strong to strong granite. (FILL)
									B 0.95 1.00					Firm, red (10R 5/8), sandy clayey SILT with some angular to subangular fine to medium gravel sized moderately strong to strong granite and quartz. (FILL)
									C 1.45 1.50					
10/09/2020		Dry at 18:00							D 1.95 2.00					
15/09/2020		Dry at 08:00	70					(2, 2, 1, 2, 1, 2) N = 6	1 2 2.40 2.45					
	2.80 SW PW								2.80	+12.57	2.80			
			80	70				T2-101						Grey (N6) and yellowish red (5YR 5/8), angular coarse GRAVEL and COBBLE sized strong granite, concrete and brick fragments. (FILL)
									3.80	+11.57	3.80			
			70					(2, 3, 4, 4, 3, 4) N = 15	3 4 4.40 4.45					Stiff, red (10R 5/8), sandy clayey SILT. (FILL)
		2.20m at 18:00		76					4.65	+10.72	4.65			
15/09/2020								T2-101	5.05					Brown (N6) and yellowish red (5YR 5/8), angular BOULDER with some cobble and occasional gravel sized concrete fragments. (FILL)
16/09/2020		2.30m at 08:00	80	60				T2-101						
									5.50	+9.87	5.50			Very stiff, yellowish red (5YR 5/8) spotted white and grey, sandy clayey SILT. (FILL)
									5.90					
				90					5 6 6.90 7.00					
								(2, 3, 3, 4, 5, 6) N = 18	7 8 7.40 7.45					
			70						7.90					
				85					9 10 8.90 9.00					
								(4, 4, 4, 5, 7, 7) N = 23	11 12 9.40 9.45					
									9.90	+5.47 +5.37	9.90 10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 21/09/2020

CHECKED BY PETER CHU

DATE 22/09/2020

REMARKS
1. Inspection pit excavated from 0.00m-2.00m.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH14**

SHEET 2 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CS60	E 837 222.31 N 815 234.82	DATE from 10/09/2020 to 19/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.37 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				98					13					Stiff, reddish brown (5YR 5/3), sandy clayey SILT with some subangular and subrounded fine gravel sized moderately weak granite and quartz. (FILL)
									14 10.90 11.00	+4.37	11.00			
								(4, 6, 6, 8, 12, 12) N = 38	15 11.10 16 11.40 11.45					Hard, brown (10YR 4/3), clayey SILT. (FILL)
										+3.47	11.90			
		5.00m at 18:00		100				55 bls	17 18 12.35 12.40					Very dense, yellow (10YR 4/3), slightly clayey silty medium to coarse SAND with some subangular and subrounded fine gravel of quartz. (ALLUVIUM)
16/09/2020 17/09/2020		6.30m at 08:00						(2, 4, 12, 19, 20, 24) N = 75	19 13.00 13.10 20 13.40 13.45					
										+1.47	13.90			
				100				104 bls	21 22 14.35 14.40					Very dense, white (N8) spotted grey, slightly clayey silty medium to coarse SAND with some subangular and subrounded fine gravel of quartz. (ALLUVIUM)
			70							+0.37	15.00			
								(5, 6, 6, 8, 10, 13) N = 37	23 15.10 24 15.40 15.45				VI	Hard, reddish yellow (5YR 6/8), sandy clayey SILT with some subangular fine gravel of quartz. (RESIDUAL SOIL)
										-0.53	15.90			
				100				71 bls	25 26 16.35 16.40					Extremely weak, light red (10R 6/8) spotted white, completely decomposed medium grained GRANITE. (Slightly clayey silty medium to coarse SAND with some fine gravel)
								(5, 7, 11, 14, 18, 18) N = 61	27 17.00 17.10 28 17.40 17.45				V	
										-2.53	17.90			
				100					29					Extremely weak, pale red (10R 7/4) spotted white and grey, completely decomposed medium grained GRANITE. (Silty medium to coarse SAND with some fine gravel)
	19.00 PW HW								30 18.90 19.00 31 19.10 32 19.40 19.45				V	
								(6, 16, 23, 30, 37, 49) N = 139						
										-4.63	20.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 21/09/2020

CHECKED BY PETER CHU

DATE 22/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
（泰昇集團成員 A member of Tysan Group）

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH14**

SHEET 3 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CS60	E 837 222.31 N 815 234.82	DATE from 10/09/2020 to 19/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.37 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
														As Sheet 2 of 5.
								(8, 19, 21, 23, 27, 35) N = 106	33 21.00 21.10 34 21.40 21.45					
17/09/2020		7.00m at 18:00						(10, 17, 23, 25, 32, 40) N = 120	35 23.00 23.10 36 23.40 23.45					
18/09/2020		7.20m at 08:00	70					(22, 23, 60, 140) 200bls/150mm	37 25.00 25.25 25.30				V	
								(50/75mm 200/75mm) 200bls/75mm	38 27.00 27.10 27.15					
								(50/75mm 200/75mm) 200bls/75mm	39 29.00 29.10 29.15	-14.63	30.00			

- Small Disturbed Sample
- Large Disturbed Sample
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- U100 Undisturbed Sample
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- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 21/09/2020

CHECKED BY PETER CHU

DATE 22/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH14**

SHEET 4 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CS60	E 837 222.31 N 815 234.82	DATE from 10/09/2020 to 19/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.37 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
													V	As Sheet 2 of 5.
								(50/50mm 200/70mm) 200blsl70mm	40 31.00 31.07 31.12	-15.63	31.00		IV	Weak, yellowish red (5YR 5/8), highly decomposed medium grained GRANITE. (Sandy fine to medium GRAVEL)
			70							-17.09	32.46		IV	Moderately weak, yellowish red (5YR 4/6) locally pink, highly decomposed medium grained GRANITE. (BOULDER with some cobble in a matrix of sand)
							NA		32.46	-17.27	32.64		III	
							4.8			-17.49	32.86			32.64- 32.86m: Moderately strong, moderately decomposed GRANITE.
			80	93	0	0		T2-101		-18.43	33.80		IV	32.86- 33.80m: Epidotized.
				97	0	0	NA	T2-101	33.86					
									35.30	-19.93	35.30			
			70					(50/40mm 200/60mm) 200blsl60mm	41 35.50 35.55 35.60				IV	Weak, yellowish red (5YR 5/8), highly decomposed medium grained GRANITE. (Fine to medium GRAVEL)
	36.20 HW									-20.83	36.20		IV	Moderately weak, yellowish red (5YR 4/6) locally pink spotted green, highly decomposed medium grained GRANITE. (BOULDER with some gravel and cobble in a matrix of clayey silty sand)
				100	39	31	NA	T2-101	36.20	-21.22	36.59		III	
										-21.45	36.82		II	36.59- 36.82m: Moderately strong, moderately decomposed GRANITE.
							1.6			-21.63	37.00			36.82- 37.00m: Strong, slightly decomposed GRANITE.
			80	100	98	93		T2-101	37.00					Strong, pink spotted grey and green, slightly decomposed medium grained GRANITE. Joints are closely to medium locally very closely and widely spaced, smooth planar, extremely narrow, iron oxide stained, epidote coated, dipping at 20°-30°, 40°-50°, 50°-60°, 60°-70° and 70°-80°.
							11.1							37.00- 39.44m: Epidotized.
									38.50				II	
				100	100	90	4.3	T2-101		-24.07	39.44			
18/09/2020		7.50m at 18:00							39.95	-24.63	40.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 21/09/2020

CHECKED BY PETER CHU

DATE 22/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH14**

SHEET 5 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CS60	E 837 222.31 N 815 234.82	DATE from 10/09/2020 to 19/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.37 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
19/09/2020		7.50m at 08:00		100	92	70	18.2		T2-101 40.81					As Sheet 4 of 5.
			80				5.3						II	
19/09/2020		7.35m at 18:00		100	100	75			T2-101 42.05	-26.68	42.05			
														End of drillhole at 42.05m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 21/09/2020

CHECKED BY PETER CHU

DATE 22/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH15**

SHEET 1 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 232.62 N 815 245.72	DATE from 26/09/2020 to 07/10/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.35 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
26/09/2020	SW	Dry at 08:00								+15.20	0.15			CONCRETE SLAB.
									A 0.45 0.50					Firm to stiff, red (10R 5/8), sandy clayey SILT with some subangular fine to medium gravel sized moderately strong granite and cement sand mortar. (FILL)
									B 0.95 1.00					
									C 1.45 1.50					
		Dry at 18:00							D 1.95 2.00					
26/09/2020 - 03/10/2020		Dry at 08:00						(1, 1, 2, 2, 1, 2) N = 7	1 2 2.40 2.45					
									2.90					
				100					3					
	4.00 SW								4 3.90 4.00					
	PW							(2, 1, 2, 2, 3, 3) N = 10	5 4.10 6 4.40 4.45					
									4.90					
			70	100					7					
									8 5.90 6.00					
								(2, 2, 3, 2, 2, 3) N = 10	9 6.10 10 6.40 6.45					
									6.90					
				100					11					
									12 7.90 8.00					
								(2, 3, 2, 3, 3, 4) N = 12	13 8.10 14 8.40 8.45					
									8.90	+6.45	8.90			Yellowish red (5YR 5/8) and grey (N6), angular coarse GRAVEL and COBBLE sized strong granite and concrete fragments. (FILL)
			80	57					T6-120					
									9.50 9.60	+5.85	9.50			Very stiff, red (10R 5/8), sandy clayey SILT. (FILL)
			70					(4, 6, 8, 7, 7, 6) N = 28	15 16 9.90	+5.35	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 08/10/2020

CHECKED BY PETER CHU

DATE 09/10/2020

REMARKS
1. Inspection pit excavated from 0.00m-2.00m.
2. A piezometer tip was installed at 38.50m depth.
3. A standpipe was installed to 25.00m depth.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH15**

SHEET 2 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 232.62 N 815 245.72	DATE from 26/09/2020 to 07/10/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.35 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				85					9.95 10.40 17 18 11.40 11.50 11.60 (9, 6, 7, 8, 7, 7) N = 29 19 20 11.90 11.95					As Sheet 1 of 5.
				0					12.40 21 13.40	+2.95 +1.85	12.40 13.50			Firm, light grey (N7) dappled light yellowish brown, sandy silty CLAY with occasional subangular fine gravel of quartz. (ALLUVIUM)
			70	100				(4, 2, 9, 10, 14, 16) N = 49	13.50 22 23 14.50 14.60 14.70 24 25 15.00 15.05				V	Extremely weak, yellowish brown (10YR 5/8), completely decomposed medium grained GRANITE. (Medium to coarse SAND with some fine gravel)
				85					15.50 26 27 16.50 16.60	-0.15 -1.25	15.50 16.60		V	Extremely weak, light reddish brown (5YR 6/4), completely decomposed medium grained GRANITE. (Medium to coarse SAND with some fine gravel)
				95				(6, 8, 10, 13, 17, 26) N = 66	16.70 28 29 17.00 17.05 17.50 30 31 18.50 18.60 18.70 (7, 10, 10, 16, 21, 33) N = 80 32 33 19.00 19.05 19.50				V	Extremely weak, yellowish brown (10YR 5/8), completely decomposed medium grained GRANITE. (Medium to coarse SAND with some fine gravel)
				100						-4.65	20.00			

- Small Disturbed Sample
- Large Disturbed Sample
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- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 08/10/2020

CHECKED BY PETER CHU

DATE 09/10/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH15**

SHEET 3 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 232.62 N 815 245.72	DATE from 26/09/2020 to 07/10/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.35 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
03/10/2020 05/10/2020	20.50 PW HW	6.50m at 18:00 6.00m at 08:00	70	100				(8, 12, 17, 22, 32, 42) N = 113 (14, 14, 17, 22, 32, 52) N = 123 (13, 22, 32, 42, 51, 60) N = 185 (50/60mm 200/50mm) 200blS/50mm (50/60mm 200/50mm) 200blS/50mm	34 35 20.50 20.60 20.70 36 37 21.00 21.05 38 22.60 22.70 39 23.00 23.05 40 24.60 24.70 41 25.00 25.05 42 26.60 26.66 26.71 43 28.60 28.66 28.71	-9.25 -14.65	24.60 30.00		V V	As Sheet 2 of 5. Extremely weak, light red (10R 6/8), completely decomposed medium grained GRANITE. (Slightly clayey silty medium to coarse SAND with some fine to medium gravel)

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 08/10/2020

CHECKED BY PETER CHU

DATE 09/10/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
（泰昇集團成員 A member of Tysan Group）

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH15**

SHEET 4 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 232.62 N 815 245.72	DATE from 26/09/2020 to 07/10/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.35 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
														As Sheet 3 of 5.
								(50/50mm 200/50mm) 200bls/50mm	44 30.60 30.65 30.70				V	
								(50/50mm 200/50mm) 200bls/50mm	45 32.60 32.65 32.70	-17.25	32.60			Weak, reddish brown (5YR 5/4), highly decomposed medium grained GRANITE. (Sandy fine to medium GRAVEL)
			70					(50/50mm 200/50mm) 200bls/50mm	46 34.60 34.65 34.70					
								(50/40mm 200/40mm) 200bls/40mm	47 36.60 36.63 36.68				IV	
								(50/40mm 200/30mm) 200bls/30mm	48 38.60 38.62 38.67					
	39.70 HW										39.70			
			80	95	57	21	NI		T2-101	-24.35 -24.49 24.59	39.70 39.84 39.94		III	Moderately strong, yellowish brown, moderately

- Small Disturbed Sample
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- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 08/10/2020

CHECKED BY PETER CHU

DATE 09/10/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH15**

SHEET 5 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 232.62 N 815 245.72	DATE from 26/09/2020 to 07/10/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.35 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				95	57	21	9.3		T2-101	-24.81	40.16			decomposed medium grained GRANITE. Joints are closely to medium spaced, rough and smooth planar, extremely narrow, iron oxide stained, epidote coated, dipping at 30°-40° and 50°-60°.
									40.70	-25.01	40.36			
										-25.35	40.70			39.84- 39.94m: PEGMATITE.
							4.3			-25.82	41.17			
				100	87	82			T2-101				III	39.94- 40.16m: Fine to medium grained GRANITE.
							NI							40.16- 40.36m: PEGMATITE.
							8.5		42.12					40.70- 42.49m: Slightly epidotized.
			80							-27.14	42.49			40.70- 41.17m: Fine grained GRANITE.
							NI							
				96	79	59	9.1		T2-101	-27.44	42.79			
										-27.59	42.94			42.79- 42.94m: Fine grained GRANITE.
		7.00m at 18:00								-27.66	43.01			Strong, pinkish grey spotted black and white, slightly decomposed medium grained GRANITE. Joints are closely to medium spaced, smooth planar, tight, clean, dipping at 10°-20°.
05/10/2020									43.52					
06/10/2020		7.00m at 08:00					2.8			-28.50	43.85		II	42.94- 43.01m: Fine grained GRANITE.
				100	100	98			T2-101	-28.68	44.03			
		6.50m at 18:00								-28.93	44.28			43.85- 44.03m: PEGMATITE.
										-29.11	44.46			
06/10/2020									44.78	-29.43	44.78			44.28- 44.46m: Fine grained GRANITE with pegmatite.
														End of drillhole at 44.78m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 08/10/2020

CHECKED BY PETER CHU

DATE 09/10/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH21**

SHEET 1 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-20	E 837 294.45 N 815 311.12	DATE from 18/08/2020 to 02/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.43 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
18/08/2020	SW	Dry at 08:00								+15.28	0.15			CONCRETE SLAB.
									A 0.45 0.50					Loose, red (10R 5/8) spotted white, silty slightly clayey fine to medium SAND with some subangular fine gravel sized quartz. (FILL)
									B 0.95 1.00					
		Dry at 18:00							C 1.45 1.50					
18/08/2020									D 1.95 2.00					
29/08/2020		Dry at 08:00						(1, 1, 2, 1, 2, 2) N = 7	1 2.10 2 2.40 2.45					
	2.90 SW								2.90					
	PW			95					3					
									3.90 4.00					
								(1, 1, 2, 2, 3, 3) N = 10	4 4.10 5 6 4.40 4.45					
									4.90	+10.53	4.90			Stiff to very stiff, yellowish red (5YR 5/8), sandy clayey SILT with much subangular fine gravel of quartz. (RESIDUAL SOIL)
				95					7					
			70						5.90 6.00					
								(2, 2, 4, 4, 4, 6) N = 18	8 6.10 9 10 6.40 6.45					
									6.90				VI	
				100					11					
									12 7.90 8.00					
								(1, 2, 2, 2, 3, 6) N = 13	13 8.10 14 8.40 8.45					
	8.90 PW									+6.53	8.90			
	HW								8.90					Extremely weak, reddish yellow (5YR 6/8), completely decomposed medium grained GRANITE. (Medium to coarse SAND with some fine to medium gravel)
				100					15				V	
									16 9.90	+5.43	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 03/09/2020

CHECKED BY PETER CHU

DATE 04/09/2020

REMARKS
1. Inspection pit excavated from 0.00m-2.00m.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH21**

SHEET 2 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-20	E 837 294.45 N 815 311.12	DATE from 18/08/2020 to 02/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.43 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(2, 2, 3, 5, 7, 10) N = 25	17 10.00–10.10 18 10.40–10.45				V	As Sheet 1 of 5.
				95					10.90	+4.53	10.90			Extremely weak, red (10R 6/8) spotted white and dark brown, completely decomposed medium grained GRANITE. (Medium to coarse SAND with some fine to medium gravel)
								(2, 3, 3, 4, 5, 8) N = 20	19 20 11.90–12.00 21 12.10 22 12.40–12.45					
				100					12.90 23					
								(3, 2, 3, 3, 4, 10) N = 20	24 13.90–14.00 25 14.10 26 14.40–14.45				V	
			70						14.90					
				95					27					
29/08/2020		5.45m at 18:00						(2, 3, 3, 5, 6, 10) N = 24	28 15.90–16.00 29 16.10 30 16.40–16.45					
31/08/2020		7.43m at 08:00							16.90					
				90					31					
								(6, 9, 12, 14, 15, 24) N = 65	32 17.90–18.00 33 18.10 34 18.40–18.45	-2.57	18.00		V	Extremely weak, yellowish red (5YR 5/8) spotted dark brown, completely decomposed medium grained GRANITE. (Silty fine to medium SAND)
									18.90	-3.47	18.90			Extremely weak, red (10R 5/8) spotted white and dark brown, completely decomposed medium grained GRANITE. (Silty medium to coarse SAND)
				100					35 36 19.90	-4.57	20.00		V	

- Small Disturbed Sample
- Large Disturbed Sample
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- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 03/09/2020

CHECKED BY PETER CHU

DATE 04/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH21**

SHEET 3 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-20	E 837 294.45 N 815 311.12	DATE from 18/08/2020 to 02/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.43 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(4, 6, 10, 18, 25, 52) N = 105	37 20.00 20.10 38 20.40 20.45				V	As Sheet 2 of 5.
								(6, 10, 12, 21, 28, 49) N = 110	22.00 39 22.10 40 22.40 22.45	-6.57	22.00			Extremely weak, pink (5YR 7/3), completely decomposed medium grained GRANITE. (Silty medium to coarse SAND with some fine gravel)
			70					(8, 14, 17, 20, 25, 27) N = 89	24.00 41 24.10 42 24.40 24.45					
								(8, 11, 16, 16, 18, 21) N = 71	26.00 43 26.10 44 26.40 26.45				V	
								(6, 10, 16, 19, 20, 32) N = 87	28.00 45 28.10 46 28.40 28.45	-14.57	30.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 03/09/2020

CHECKED BY PETER CHU

DATE 04/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH21**

SHEET 4 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-20	E 837 294.45 N 815 311.12	DATE from 18/08/2020 to 02/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.43 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(5, 20, 24, 26, 28, 43) N = 121	47 30.00 30.10 48 30.40 30.45				V	As Sheet 3 of 5.
								(5, 12, 17, 19, 29, 44) N = 109	49 32.00 32.10 50 32.40 32.45					
31/08/2020 01/09/2020		6.21m at 18:00 9.43m at 08:00	70					(11, 39/65mm 200/20mm) 200blS/20mm	51 34.00 34.11 34.16					
								(27, 23/15mm 200/10mm) 200blS/10mm	52 36.00 36.05 36.10	-20.57	36.00		IV	Weak, pink (5YR 7/3), highly decomposed medium grained GRANITE. (Sandy fine to medium GRAVEL)
	37.55 HW								37.55	-22.12	37.55		IV	Moderately strong, yellowish brown, moderately decomposed medium grained GRANITE. Joints are closely locally very closely and medium spaced, rough and smooth planar, extremely narrow, iron and manganese oxides stained, dipping at 0°-10°, 10°-20° and 70°-80°.
			80	96	46	43	NA 8.7 NI 6.9 NI	T2-101		-22.51	37.94			37.55- 37.94m: Moderately weak, highly decomposed. (Coarse GRAVEL and COBBLE)
				92	92	38	12.3	T2-101	38.70				III	
				100	100	61		T2-101	39.20	-24.57	40.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 03/09/2020

CHECKED BY PETER CHU

DATE 04/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH21**

SHEET 5 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-20	E 837 294.45 N 815 311.12	DATE from 18/08/2020 to 02/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.43 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
														As Sheet 4 of 5.
				100	100	61	2.0		T2-101 40.60				III	
							12.3							
				100	39	38			T2-101	-25.81	41.24			
		6.43m at 18:00					NA						IV	41.24- 41.77m: Moderately weak, highly decomposed with very closely subhorizontal microfractures. (COBBLE and some coarse gravel)
01/09/2020										-26.34	41.77		III	
02/09/2020		9.78m at 08:00					>20		41.84	-26.41	41.84			Moderately strong, reddish brown, moderately decomposed medium grained GRANITE. Joints are closely locally very closely and widely spaced, rough and smooth planar, extremely narrow, iron and manganese oxides stained, dipping at 0°-10°, 10°-20° and 30°-40°.
				100	87	82	5.7		T2-101				III	
									43.20					
			80	100	100	83			T2-101	-28.34	43.77			
							1.5		43.83				II	43.77- 44.61m: Strong, slightly decomposed.
				100	98	84			T2-101	-29.18	44.61			
							19.0						III	
							5.6		45.28	-29.88	45.31			
										-30.08	45.51		II	
										-30.18	45.61		III	45.31- 45.51m: Strong, slightly decomposed.
				100	96	92	1.3		T2-101				II	45.61- 46.26m: Strong, slightly decomposed.
										-30.83	46.26			
									46.43					
		6.33m at 18:00		100	100	100	>20		T2-101				III	
02/09/2020									47.06	-31.63	47.06			
														End of drillhole at 47.06m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 03/09/2020

CHECKED BY PETER CHU

DATE 04/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH22**

SHEET 1 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 304.76 N 815 322.02	DATE from 27/08/2020 to 29/08/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.41 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
27/08/2020	SW	Dry at 08:00								+15.26	0.15			CONCRETE SLAB.
									A 0.45 0.50					Red (10R 5/8), sandy clayey SILT with much subangular fine to medium gravel sized moderately weak to moderately strong granite and tuff. (FILL)
									B 0.95 1.00					
									C 1.45 1.50					
									D 1.95	+13.41	2.00			
								(3, 1, 2, 1, 1, 1) N = 5	1 2.00 2.10 2 2.40 2.45					Firm to stiff, yellowish red (5YR 5/6) and yellowish brown (10YR 5/4), sandy clayey SILT with some subangular fine gravel sized quartz. (FILL)
	2.90 SW								2.90					
	PW			100					3					
								(1, 3, 1, 1, 2, 2) N = 6	4 3.90 4.00 5 4.10 6 4.40 4.45					
			70						4.90					
				100					7					
									8 5.90 6.00					
								(2, 3, 2, 2, 3, 2) N = 9	9 10 6.40 6.45					
									6.78	+8.63	6.78			
			80	48				T2-101	7.18 7.20	+8.23	7.18			Pinkish grey (5YR 7/2), subangular BOULDER sized strong granite. (FILL)
								(4, 6, 8, 9, 10, 14) N = 41	11 12 7.30 7.60 7.65					Hard, yellowish red (5YR 5/8), sandy clayey SILT. (RESIDUAL SOIL)
									7.90					
			70	100					13				VI	
									14 8.90 9.00 9.10					
								(3, 6, 7, 9, 14, 20) N = 50	15 16 9.40 9.45					
									9.90	+5.51 +5.41	9.90 10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 29/08/2020

CHECKED BY PETER CHU

DATE 31/08/2020

REMARKS
1. Inspection pit excavated from 0.00m-2.00m.
2. A piezometer tip was installed at 42.58m depth.
3. A standpipe was installed to 25.00m depth.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH22**

SHEET 2 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 304.76 N 815 322.02	DATE from 27/08/2020 to 29/08/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.41 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
27/08/2020 28/08/2020	16.00 PW HW	9.00m at 18:00 9.15m at 08:00	70 80	100 100 20	0	0	NI NR	(5, 8, 10, 14, 21, 35) N = 80 (3, 5, 4, 5, 7, 10) N = 26 (4, 6, 8, 11, 13, 11) N = 43 (3, 6, 9, 8, 10, 12) N = 39 (4, 7, 10, 12, 14, 22) N = 58	17 18 19 20 T2-101 21 22 23 24 25 26 27 28 29 30 31 32 T2-101 33 34 35 36	+3.61 +3.57 +3.41 +1.41 +0.51 -1.49 -2.39 -2.43 -2.59 -4.59	11.80 11.84 12.00 14.00 14.90 16.90 17.80 17.84 18.00 20.00		V III V	Extremely weak, red (10R 4/6), completely decomposed medium grained GRANITE. (Hard, sandy clayey SILT) Moderately strong, yellowish brown, moderately decomposed medium grained GRANITE. Rock is non-intact. 11.84- 12.00m: No recovery assumed to be completely decomposed GRANITE. Extremely weak, light red (10R 6/6) spotted white, completely decomposed medium grained GRANITE. (Very stiff, sandy clayey SILT) Extremely weak, light red (10R 6/6), completely decomposed medium grained GRANITE. (Medium to coarse SAND with much fine gravel) Extremely weak, red (10R 5/8) spotted white, completely decomposed medium grained GRANITE. (Slightly silty fine to medium SAND with some fine gravel) Extremely weak, red (10R 5/8) spotted and dappled white, completely decomposed medium grained GRANITE. (Silty clayey fine to medium SAND with much fine to medium gravel) Strong, white, slightly decomposed QUARTZ VEIN. Rock is non-intact. 17.84- 18.00m: No recovery assumed to be completely decomposed GRANITE. Extremely weak, red (10R 5/8) spotted grey and white, completely decomposed medium grained GRANITE. (Silty slightly clayey fine to medium SAND with much fine to medium gravel)

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG
DATE 29/08/2020
CHECKED BY PETER CHU
DATE 31/08/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH22**

SHEET 3 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 304.76 N 815 322.02	DATE from 27/08/2020 to 29/08/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.41 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(4, 6, 10, 11, 14, 15) N = 50	37 20.00–20.10 38 20.40–20.45				V	As Sheet 2 of 5.
								(6, 8, 11, 17, 26, 43) N = 97	39 22.00–22.10 40 22.40–22.45	-6.59	22.00			Extremely weak, yellow (10YR 7/6), completely decomposed medium grained GRANITE. (Slightly clayey silty medium to coarse SAND with much fine gravel)
			70					(8, 11, 17, 28, 33, 52) N = 130	41 24.00–24.10 42 24.40–24.45				V	
								(10, 14, 27, 39, 42, 60) N = 168	43 26.00–26.10 44 26.40					
								(50/70mm 200/40mm) 200bls/40mm	45 28.00–28.06–28.11					
								(50/60mm		-14.59	30.00			

- Small Disturbed Sample
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- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 29/08/2020

CHECKED BY PETER CHU

DATE 31/08/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH22**

SHEET 4 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 304.76 N 815 322.02	DATE from 27/08/2020 to 29/08/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.41 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(50/50mm 200/40mm) 200bls/40mm	46 30.00 30.05 30.10					As Sheet 3 of 5.
								(50/50mm 200/40mm) 200bls/40mm	47 32.00 32.04 32.09					
			70					(50/50mm 200/40mm) 200bls/40mm	48 34.00 34.04 34.09				V	
								(50/50mm 200/40mm) 200bls/40mm	49 36.00 36.04 36.09					
								(50/50mm 200/40mm) 200bls/40mm	50 38.00 38.04 38.09	-22.59	38.00		IV	Weak, yellowish brown (10YR 5/8), highly decomposed medium grained GRANITE. (Sandy fine to medium GRAVEL)
								(50/50mm		-24.59	40.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
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- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 29/08/2020

CHECKED BY PETER CHU

DATE 31/08/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH22**

SHEET 5 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 304.76 N 815 322.02	DATE from 27/08/2020 to 29/08/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.41 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
			70					(200/30mm) 200bls/30mm	51 40.00 40.03 40.08				IV	As Sheet 4 of 5.
									40.98	-25.57	40.98			
			80	100	68	47	9.5	T2-101		-25.99	41.40		III	Moderately strong, yellowish brown, moderately decomposed medium grained GRANITE. Joints are closely spaced, rough and smooth planar, extremely narrow, iron oxide stained, dipping at 0°-10° and 10°-20°.
							NA		41.58	-26.17	41.58		IV	41.40- 41.58m: Moderately weak, highly decomposed. (COBBLE)
28/08/2020		9.00m at 18:00												
29/08/2020		9.10m at 08:00	70					(50/50mm) 200/30mm) 200bls/30mm	52 42.50 42.53 42.58				IV	Weak, yellowish brown (10YR 5/8), highly decomposed medium grained GRANITE. (Sandy fine to medium GRAVEL)
	43.78 HW								43.78	-28.37	43.78			
				100	97	86	10.4	T2-101		-28.90	44.31		III	Strong, pinkish grey spotted black and white, slightly decomposed medium grained GRANITE. Joints are medium to widely locally very closely to closely spaced, rough and smooth planar, extremely narrow, iron and manganese oxides stained, chlorite coated, dipping at 0°-10°, 30°-40°, 40°-50° and 60°-70°. 43.78- 44.31m: Moderately strong, moderately decomposed.
				100	97	97	3.5	T2-101	45.21					
			80	100	100	85		T2-101	46.00					
				100	97	91		T2-101	46.74				II	
							0.0		48.14					
29/08/2020		9.50m at 18:00		100	100	83		T2-101	48.98	-33.57	48.98			
							>20							End of drillhole at 48.98m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 29/08/2020

CHECKED BY PETER CHU

DATE 31/08/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH23**

SHEET 1 of 4

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-25	E 837 223.48 N 815 215.14	DATE from 21/09/2020 to 26/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.43 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
21/09/2020	HW	Dry at 08:00 Dry at 18:00								+15.28	0.15			CONCRETE SLAB.
21/09/2020									A 0.45 0.50					Light brownish grey (10YR 6/2), medium to coarse SAND with much fine to medium gravel sized strong granite, concrete, iron and wood fragments. (FILL)
22/09/2020		Dry at 08:00							B 0.90 0.95	+14.48	0.95			Grey (N5) and brown (10YR 4/3), angular coarse GRAVEL and COBBLE sized concrete, brick, iron, wood and tile fragments. (FILL)
				77					T2-101					
									2.30					
			70	77					T2-101					
									3.80					
				63					T2-101					
									5.00					
				69					T2-101					
									5.80	+9.63	5.80			
								(1, 2, 2, 2, 3, 3) N = 10	1 5.90					Extremely weak, red (2.5YR 4/8), completely decomposed medium grained GRANITE. (Sandy clayey SILT with occasional fine gravel)
									2 6.20 6.25					
			80						6.70				V	
				90					3					
									4 7.60	+7.73	7.70			
				100	100	100			7.70					Strong, pinkish grey spotted black and white, slightly decomposed medium grained GRANITE. Joints are widely spaced, rough and smooth planar, extremely narrow, iron oxide stained, dipping at 0°-10°.
									T2-101					
			70				0.3		8.64				II	
		5.40m at 18:00		100	100	100			T2-101					
22/09/2020									9.58					
23/09/2020		5.10m at		100	100	100			T2-101	+5.43	10.00			

- Small Disturbed Sample
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- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 26/09/2020

CHECKED BY PETER CHU

DATE 28/09/2020

REMARKS
1. Inspection pit excavated from 0.00m-0.95m.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH23**

SHEET 2 of 4

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-25	E 837 223.48 N 815 215.14	DATE from 21/09/2020 to 26/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.43 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
		08:00		100	100	100			T2-101 10.20					
										+5.01	10.42			10.00- 10.42m: Fine grained GRANITE.
			70	100	100	100	0.3		T2-101	+4.54	10.89		II	
										+4.26	11.17			10.89- 11.17m: Fine to medium grained GRANITE.
										+4.20	11.23			
		5.30m at 18:00							11.37	+4.06	11.37			11.23- 11.37m: Fine to medium grained GRANITE.
				93	93	93			T2-101	+3.95	11.48			
23/09/2020										+3.63	11.80			11.48- 11.80m: Fine to medium grained GRANITE.
24/09/2020		5.10m at 08:00	80					(5, 9, 21, 39, 140/70mm) 200b/s/220mm	11.82 5 6 12.12	+3.26	12.17		V	Extremely weak, yellowish red (5YR 5/8), completely decomposed medium grained GRANITE. (Medium to coarse SAND with much fine gravel)
									12.17	+2.89	12.54		III	
				100	92	92			T2-101					Strong, pinkish grey spotted black and white, slightly decomposed medium grained GRANITE. Joints are widely spaced, rough planar, extremely narrow, iron oxide stained, dipping at 0°-10° and 60°-70°.
			70				0.4		13.14					12.17- 12.54m: Moderately strong, moderately decomposed.
				100	100	100			T2-101				II	
									14.56					
				67	67	67			T2-101	+0.63	14.80			
								(5, 6, 12, 15, 21, 26) N = 74	14.80 14.90 7 8 15.20 15.25					Extremely weak, yellowish red (5YR 5/8) to reddish brown (5YR 5/4) spotted white, completely decomposed medium grained GRANITE. (Silty clayey medium to coarse SAND with much fine gravel)
									15.70					
				90					9					
			80						10 16.70 16.80 16.90				V	
								(3, 6, 8, 10, 11, 13) N = 42	11 12 17.20 17.25					
									17.70					
				0					13 18.10	-2.77	18.20			
							20.0		18.20				III	Strong, pinkish grey spotted black and white, slightly decomposed medium grained GRANITE. Joints are widely to medium locally very closely spaced, rough planar, extremely narrow, iron oxide stained, dipping at 0°-10°, 10°-20°, 50°-60° and 60°-70°.
										-3.17	18.60			18.20- 18.60m: Moderately strong, moderately decomposed.
			70	100	99	95	0.3		T2-101				II	
24/09/2020		4.90m at 18:00												
25/09/2020		4.60m at		100	100	100			T2-101 19.66 T2-101 19.91	-4.57	20.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 26/09/2020

CHECKED BY PETER CHU

DATE 28/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH23**

SHEET 3 of 4

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-25	E 837 223.48 N 815 215.14	DATE from 21/09/2020 to 26/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.43 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
		08:00		100	100	100			T2-101 20.34					As Sheet 2 of 4.
				100	100	100			T2-101 20.64					
			70	100	100	100	0.3		T2-101 21.53				II	
				92	92	92	3.5		T2-101 22.40	-6.40 -6.97	21.83 22.40		III	21.83- 22.40m: Moderately strong, moderately decomposed.
								(6, 10, 15, 17, 17, 22) N = 71	14 22.50 15 22.80 22.85					Extremely weak, yellowish red (5YR 5/8) spotted white and dark grey, completely decomposed medium grained GRANITE. (Silty medium to coarse SAND)
			80										V	
								(11, 25, 36, 47, 63, 54/35mm) 200blS/260mm	16 24.40 17 24.76 24.81					
	25.33 HW									-9.90	25.33			
							18.0			-10.22	25.65		II	Strong, pinkish grey spotted black and white, slightly decomposed medium grained GRANITE. Joints are widely to medium locally very closely spaced, rough and smooth planar, extremely narrow, iron and manganese oxides stained, dipping at 0°-10°, 10°-20°, 50°-60° and 60°-70°.
				100	97	64				-10.32	25.75		III	25.65- 25.75m: Moderately strong, moderately decomposed.
							1.3		T2-101 26.63					
				100	100	85	>20		T2-101					
			70										II	
							3.9		28.12					
		4.90m at 18:00		100	100	98			T2-101					
25/09/2020									29.44					
26/09/2020		5.30m at 08:00		100	100	100	0.0		T2-101	-14.57	30.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 26/09/2020

CHECKED BY PETER CHU

DATE 28/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH23**

SHEET 4 of 4

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-25	E 837 223.48 N 815 215.14	DATE from 21/09/2020 to 26/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.43 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
26/09/2020			70	100	100	100	0.0		T2-101 30.67	-15.24	30.67		II	As Sheet 3 of 4.
														End of drillhole at 30.67m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG
DATE 26/09/2020
CHECKED BY PETER CHU
DATE 28/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH24**

SHEET 1 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CS60	E 837 232.75 N 815 224.95	DATE from 19/09/2020 to 30/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.40 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
19/09/2020	SW	Dry at 08:00 Dry at 18:00							INSPECTION PIT A 0.45 0.50 B 0.95	+15.25	0.15			CONCRETE SLAB. Yellowish red (5YR 5/8), sandy clayey SILT with some angular to subangular fine to coarse gravel sized strong granite, quartz and concrete fragments. (FILL)
19/09/2020 22/09/2020		Dry at 08:00	80	65				T6-146	1.00	+14.40	1.00			Grey (N6), subangular COBBLE sized concrete and stell fragments. (FILL)
			70					(2, 2, 3, 2, 2, 3) N = 10	1 2 1.80 2.00 2.10 2.40 2.45	+13.60	1.80			Stiff, yellowish red (5YR 5/8), sandy clayey SILT. (FILL)
	3.00 SW PW		80	24 21				T6-120 T6-120	3.00 4.00 5.00	+12.40	3.00			Grey (N6), subangular COBBLE with some coarse gravel and occasional boulder sized concrete and steel fragments. (FILL)
								(2, 3, 3, 2, 3, 3) N = 11	3 4 5.10 5.40 5.45 5.90 5 6 6.90 7.00	+10.40	5.00			Stiff, yellowish red (5YR 5/8), sandy clayey SILT with some subangular fine gravel sized quartz. (FILL)
22/09/2020		5.42m at 18:00	70	90				(2, 2, 2, 3, 3, 3) N = 11	7.10 7 8 7.40 7.45	+7.50	7.90			
25/09/2020		5.50m at 08:00		100				(3, 3, 3, 4, 4, 5) N = 16	7.90 9 10 8.90 9.00 9.10 11 12 9.40 9.45 9.64	+5.76	9.64			Very stiff, yellowish brown (10YR 5/4), sandy clayey SILT with some subangular fine gravel of quartz. (ALLUVIUM)
			80	100				T6-120		+5.40	10.00			Yellowish brown (10YR 5/8), subangular BOULDER and occasional cobble of moderately strong granite.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 03/10/2020

CHECKED BY PETER CHU

DATE 05/10/2020

REMARKS
1. Inspection pit excavated from 0.00m-1.00m.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH24**

SHEET 2 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CS60	E 837 232.75 N 815 224.95	DATE from 19/09/2020 to 30/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.40 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
25/09/2020		5.90m at 18:00	80	100 / 100 / 100					T6-120 10.70 / T6-120 12.03 / T6-120 12.46	+2.94	12.46			(ALLUVIUM)
26/09/2020		5.50m at 08:00						(3, 3, 4, 5, 6, 6) N = 21	13 13.40 13.45					Yellowish brown (10YR 5/4), fine to medium SAND. (ALLUVIUM)
				0				36 bls	13.90					
				100				74 bls	14 14.35 / 15 14.40 / 16 14.85 14.90	+1.00	14.40		V	Extremely weak, light red (10R 6/8) to dark greyish brown (10YR 3/2), completely decomposed medium grained GRANITE. (Slightly silty clayey fine to medium SAND)
			70					(4, 7, 8, 18, 18, 24) N = 68	15.50 15.60 / 17 15.90 / 18 15.95					
									16.40	-1.00	16.40			
26/09/2020		6.00m at 18:00		95					19				V	Extremely weak, light red (10R 6/8) spotted white and brown, completely decomposed medium grained GRANITE. (Slightly silty clayey fine to medium SAND with some fine gravel)
28/09/2020		6.20m at 08:00						(5, 7, 10, 14, 18, 28) N = 170	20 17.40 17.50 / 21 17.60 / 22 17.90 17.95					
	19.50 PW / HW			90					18.40 / 23 / 24 19.40 19.50					
								(8, 10, 18, 24, 32, 44) N = 118	19.60 / 25 / 26 19.90	-4.60	20.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 03/10/2020

CHECKED BY PETER CHU

DATE 05/10/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH24**

SHEET 3 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CS60	E 837 232.75 N 815 224.95	DATE from 19/09/2020 to 30/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.40 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
									19.95					As Sheet 2 of 5.
								(7, 9, 14, 20, 28, 40) N = 102	27 21.50 21.60 28 21.90 21.95					
								(8, 12, 15, 22, 30, 42) N = 109	29 23.50 23.60 30 23.90 23.95					
			70										V	
								(8, 11, 14, 21, 27, 40) N = 102	31 25.50 25.60 32 25.90 25.95					
								(25, 25/35mm 75, 125/75mm) 200bls/150mm	33 27.50 34 27.71 27.76					
								(50/75mm 200/75mm) 200bls/75mm	35 29.50 29.60 29.65	-14.60	30.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 03/10/2020

CHECKED BY PETER CHU

DATE 05/10/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH24**

SHEET 4 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CS60	E 837 232.75 N 815 224.95	DATE from 19/09/2020 to 30/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.40 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
													V	As Sheet 2 of 5.
								(50/75mm 200/75mm) 200bls/75mm	36 31.50 31.60 31.65	-16.10	31.50			Weak, yellowish brown (10YR 5/4), highly decomposed medium grained GRANITE. (Fine to medium GRAVEL)
			70					(50/50mm 200/70mm) 200bls/70mm	37 33.50 33.57 33.62					
								(50/40mm 200/60mm) 200bls/60mm	38 35.50 35.55 35.60				IV	
								(50/40mm 200/60mm) 200bls/60mm	39 37.50 37.55 37.60 37.85	-22.45	37.85			
			80	99	71	65	NI 3.7		T2-101	-23.22	38.62		III	Moderately strong, reddish brown spotted green and grey, moderately decomposed slightly epidotized medium grained GRANITE. Joints are closely to medium spaced, rough planar, extremely narrow, iron oxide stained, epidote coated, dipping at 20°-30°, 40°-50° and 80°-90°.
										-23.55	38.95		II	
28/09/2020		6.50m at 18:00					8.0			-23.95	39.35		III	38.62- 38.95m: Strong, slightly decomposed.
29/09/2020		7.00m at 08:00	70					(50/40mm 200/60mm) 200bls/60mm	40 39.50 39.55 39.60	-24.60	40.00		IV	Weak, pinkish grey (5YR 7/2) dappled green, highly decomposed slightly epidotized medium grained GRANITE. (Sandy fine to medium GRAVEL)

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 03/10/2020

CHECKED BY PETER CHU

DATE 05/10/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH24**

SHEET 5 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CS60	E 837 232.75 N 815 224.95	DATE from 19/09/2020 to 30/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.40 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
			70										IV	As Sheet 4 of 5.
	40.80 HW						NA			-25.40	40.80		IV	
				94	49	37	5.9		T2-101 40.80	-25.56	40.96		IV	Strong, pinkish grey spotted green, slightly decomposed slightly epidotized medium grained GRANITE. Joints are closely spaced, rough planar, extremely narrow, iron oxide stained, epidote coated, dipping at 0°-10° and 60°-70°.
							NI			-26.10	41.50		II	40.80- 40.96m: Moderately weak, highly decomposed. (Sandy medium to coarse GRAVEL and occasional cobble)
				100	77	57	9.2		T2-101 41.50					
									42.49					Strong, pinkish grey spotted black and white, slightly decomposed medium grained GRANITE. Joints are medium to widely locally closely spaced, rough and smooth planar, extremely narrow, epidote coated, dipping at 0°-10° and 10°-20°.
				100	100	85			T2-101	-27.65	43.05			
										-27.95	43.35			43.05- 43.35m: Fine grained GRANITE with pegmatite.
			80						43.49					
										-28.45	43.85			
				100	96	83	2.4		T2-101	-28.75	44.15		II	43.85- 44.15m: Fine grained GRANITE with pegmatite.
										-28.84	44.24			
										-29.00	44.40			44.24- 44.40m: With closely spaced irregular pegmatite veins (10-40mm thick).
29/09/2020		7.20m at 18:00												
30/09/2020		7.20m at 08:00							44.74	-29.54	44.94			44.94- 45.40m: Fine grained GRANITE with pegmatite.
				100	100	97			T2-101	-30.00	45.40			
							0.6							
									46.18					
		7.10m at 18:00		100	100	100			T2-101					
30/09/2020									46.91	-31.51	46.91			
														End of drillhole at 46.91m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 03/10/2020

CHECKED BY PETER CHU

DATE 05/10/2020

REMARKS

秦昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(秦昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH25**

SHEET 1 of 6

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 243.06 N 815 235.85	DATE from 21/09/2020 to 30/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.33 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
21/09/2020	SW	Dry at 08:00								+15.18	0.15			CONCRETE SLAB.
									A 0.45 0.50					Weak red (10R 5/4), silty clayey fine to medium SAND with much subangular fine to medium gravel sized strong granite, concrete, cement sand mortar and asphalt fragments. (FILL)
		Dry at 18:00							B 0.95 1.00					
21/09/2020									C 1.25	+14.03	1.30			
25/09/2020		Dry at 08:00	80	14				T2-101	1.30					Pinkish grey (5YR 7/2), angular COBBLE sized strong granite. (FILL)
										+13.33	2.00			
								(1, 2, 3, 3, 2, 2) N = 10	1 2.00 2.10 2 2.40 2.45					Stiff, yellowish brown (10YR 5/4), sandy clayey SILT with some subangular fine gravel sized moderately weak granite. (FILL)
	2.90 SW PW													
				100					3 2.90 4 3.90 4.00					
								(2, 1, 2, 3, 2, 2) N = 9	5 4.10 6 4.40 4.45					
										+10.43	4.90			
				100					7 4.90					Stiff, yellowish red (10YR 5/8), sandy clayey SILT with some subangular fine gravel sized quartz. (FILL)
			70						8 5.90 6.00					
								(2, 3, 2, 3, 3, 4) N = 12	9 6.10 10 6.40 6.45					
									6.90					
				100					11 7.90					
									12 8.00 13 8.10					
								(2, 3, 3, 4, 3, 4) N = 14	14 8.40 8.45					
										+6.43	8.90			
				100					15 8.90					Hard, yellowish red (10YR 5/8), sandy clayey SILT with some subangular fine gravel sized quartz. (FILL)
									16 9.90	+5.33	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 03/10/2020

CHECKED BY PETER CHU

DATE 05/10/2020

REMARKS
1. Inspection pit excavated from 0.00m-1.30m.
2. A piezometer tip was installed at 46.50m depth.
3. A standpipe was installed to 25.00m depth.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH25**

SHEET 2 of 6

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 243.06 N 815 235.85	DATE from 21/09/2020 to 30/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.33 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(4, 6, 7, 8, 8, 7) N = 30	17 10.00–10.10 18 10.40–10.45					As Sheet 1 of 6.
										+4.43	10.90			
				100					19 10.90–11.90					Hard, grey (N6) dappled red, slightly sandy clayey SILT. (ALLUVIUM)
								(4, 6, 7, 7, 9, 8) N = 31	20 11.90–12.00 21 12.10 22 12.40–12.45					
25/09/2020		6.50m at 18:00								+2.43	12.90			
26/09/2020		6.00m at 08:00		100					23 12.90–13.90					Very dense, white (N8) spotted grey, slightly clayey silty medium to coarse SAND with some fine gravel of quartz. (ALLUVIUM)
								(4, 7, 9, 13, 12, 17) N = 51	24 14.00 25 14.10 26 14.40–14.45					
			70						27 14.90–15.90	-0.67	16.00			
				100				(4, 7, 9, 10, 10, 15) N = 44	28 16.00 29 16.10 30 16.40–16.45					Hard, white (N8) spotted grey, sandy clayey SILT with some subangular fine gravel of quartz. (ALLUVIUM)
										-1.57	16.90			
				100					31 16.90–17.90				V	Extremely weak, reddish yellow (5YR 6/8) spotted grey, completely decomposed medium grained GRANITE. (Silty clayey fine to medium SAND with some fine gravel)
								(5, 8, 11, 14, 19, 30) N = 74	32 18.00 33 18.10 34 18.40–18.45					
										-3.57	18.90			
				100					35 18.90–19.90				V	Extremely weak, light red (10R 6/8) spotted black and white dappled brown, completely decomposed medium grained GRANITE. (Silty fine to medium SAND with some fine gravel)
									36	-4.67	20.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 03/10/2020

CHECKED BY PETER CHU

DATE 05/10/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH25**

SHEET 3 of 6

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 243.06 N 815 235.85	DATE from 21/09/2020 to 30/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.33 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(7, 10, 15, 27, 32, 46) N = 120	37 20.00 20.10 38 20.40 20.45				V	As Sheet 2 of 6.
										-6.67	22.00			
								(8, 11, 10, 15, 16, 25) N = 66	39 22.00 22.10 40 22.40 22.45					Extremely weak, yellowish brown (10YR 5/4), completely decomposed medium grained GRANITE. (Silty clayey fine to medium SAND with some fine gravel)
	24.00 PW HW							(9, 9, 13, 17, 28, 42) N = 100	41 24.00 24.10 42 24.40 24.45				V	
			70							-10.67	26.00			
								(9, 12, 28, 31, 45, 69) N = 173	43 26.00 26.10 44 26.40 26.45					Extremely weak, light red (10R 6/8) and yellowish brown (10YR 5/4), completely decomposed medium grained GRANITE. (Clayey silty fine to medium SAND with some fine gravel)
26/09/2020 28/09/2020		7.00m at 18:00 6.30m at 08:00						(13, 35, 73, 127/35mm) 200blS/110mm	45 28.00 28.20 28.25				V	
								(50/60mm		-14.67	30.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 03/10/2020

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REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH25**

SHEET 4 of 6

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 243.06 N 815 235.85	DATE from 21/09/2020 to 30/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.33 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
			70					(50/40mm 200/40mm) 200bls/40mm	46 30.00 30.07 30.12				IV	Weak, light red (10R 6/8) dappled yellowish brown and green spotted grey, highly decomposed slightly epidotized medium grained GRANITE. (Fine to medium GRAVEL)
								(50/50mm 200/50mm) 200bls/50mm	47 32.00 32.05 32.13					
								(50/40mm 200/30mm) 200bls/30mm	48 34.00 34.02 34.07					
								(50/50mm 200/40mm) 200bls/40mm	49 36.00 36.04 36.09					
								(50/50mm 200/40mm) 200bls/40mm	50 38.00 38.02 38.07					
								(50/40mm		-24.67	40.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 03/10/2020

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REMARKS

泰昇地基工程有限公司 TYSAN FOUNDATION LIMITED (泰昇集團成員 A member of Tysan Group)	DRILLHOLE RECORD CONTRACT No. TC G518	DRILLHOLE No. BH25 SHEET 5 of 6

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES E 837 243.06 N 815 235.85	W.O. No. ASD 012560
MACHINE / No. CCL-1		DATE from 21/09/2020 to 30/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.33 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
			70					200/30mm) 200bls/30mm	51 40.00 40.02 40.07 40.29	-24.96	40.29		IV	As Sheet 4 of 6.
			80	100	96	89	NI 7.6		T2-101 41.39				III	Moderately strong, yellowish brown spotted green, moderately decomposed slightly epidotized medium grained GRANITE. Joints are closely spaced, rough planar, extremely narrow, iron and manganese oxides stained, dipping at 20°-30°, 30°-40° and 60°-70°.
				89	67	67	NI		T2-101 41.93					
				100	84	84	6.6		T2-101 42.99					
				88	32	20	14.3 NA		T2-101 43.54	-27.89	43.22		IV	43.22- 43.54m: Moderately weak, highly decomposed. (COBBLE with some coarse gravel)
			70					(50/50mm 200/30mm) 200bls/30mm	52 43.60 43.63 43.68	-28.21	43.54		IV	Weak, yellowish brown (10YR 5/8) dappled green, highly decomposed slightly epidotized medium grained GRANITE. (Fine to medium GRAVEL)
								(50/50mm 200/30mm) 200bls/30mm	53 45.60 45.63 45.68					
	46.84 HW								46.84	-31.51	46.84			
		7.00m at 18:00	80	93	20	0	NA 14.0		T2-101 47.53	-31.69	47.02		IV	Moderately strong, red dappled dark green and yellowish brown, moderately decomposed slightly epidotized medium grained GRANITE. Joints are closely spaced, rough and smooth planar, extremely narrow, iron and manganese oxides stained, dipping at 20°-30° and 80°-90°.
28/09/2020										-31.93	47.26		III	46.84- 47.02m: Moderately weak, highly decomposed. (Coarse GRAVEL and COBBLE)
29/09/2020		6.00m at 08:00		100	88	81	NI 3.8		T2-101 48.53	-32.20	47.53		II	47.26- 47.53m: PEGMATITE.
				100	100	100			T2-101 49.37	-32.28	47.61			Strong, red dappled dark green spotted grey, slightly decomposed slightly epidotized medium grained GRANITE. Joints are medium spaced, rough and smooth planar, extremely narrow to very narrow, epidote and calcite coated (<2mm thick), dipping at 0°-10°, 10°-20°, 60°-70° and 70°-80°.
				100	100	90	4.3		T2-101	-34.67	50.00			47.53- 47.61m: Quartz vein (80mm thick), dipping at 0°.

● Small Disturbed Sample	Standard Penetration Test
Large Disturbed Sample	Permeability Test
SPT Liner Sample	Impression Packer Test
U76 Undisturbed Sample	Borehole Televiewer Test
U100 Undisturbed Sample	Pressuremeter Test
Mazier Sample	Standpipe Tip
Piston Sample	Piezometer Tip
▲ Water Sample	In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 03/10/2020

CHECKED BY PETER CHU

DATE 05/10/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH25**

SHEET 6 of 6

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 243.06 N 815 235.85	DATE from 21/09/2020 to 30/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.33 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
29/09/2020		7.00m at 18:00	80	100	100	90	4.3		T2-101 50.24					As Sheet 5 of 6.
				100	100	100	1.9		T2-101 51.61				II	
				100	100	100			T2-101 52.92	-37.59	52.92			End of drillhole at 52.92m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG
DATE 03/10/2020
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DATE 05/10/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH26**

SHEET 1 of 7

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 252.00 N 815 248.03	DATE from 19/09/2020 to 24/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.28 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
19/09/2020	SW	Dry at 08:00								+15.13	0.15			CONCRETE SLAB.
									A 0.45 0.50	+14.78	0.50			Red (10R 5/8), silty fine SAND. (FILL)
									B 0.95 1.00					Yellowish red (5YR 5/6), medium to coarse SAND. (FILL)
		Dry at 18:00							C 1.45 1.50					
19/09/2020									D 1.95	+13.28	2.00			
21/09/2020		Dry at 08:00						(1, 2, 1, 2, 2, 1) N = 6	1 2.00 2.10 2 2.40 2.45					Firm to stiff, yellowish red (5YR 5/8), sandy clayey SILT with some subangular fine gravel sized moderately weak granite and quartz. (FILL)
	4.00 SW PW			100					3 2.90					
								(2, 2, 1, 2, 2, 2) N = 7	4 3.90 5 4.00 4.10 6 4.40 4.45					
			70	95					7 4.90					
								(2, 2, 3, 2, 3, 3) N = 11	8 5.90 9 6.00 6.10 10 6.40 6.45					
									6.90	+8.38	6.90			Stiff, yellowish red (5YR 5/8), sandy clayey SILT with some subangular fine gravel sized quartz. (FILL)
				100					11					
								(4, 4, 5, 6, 7, 10) N = 28	12 7.90 8.00 13 8.10 14 8.40 8.45	+7.28	8.00			Medium dense, yellowish brown (10YR 5/6), silty medium to coarse SAND with some fine gravel sized quartz. (FILL)
										+6.38	8.90			
				100					8.90 15					Very dense, yellowish red (5YR 5/8), silty medium to coarse SAND with much subangular fine gravel sized quartz. (FILL)
									16 9.90	+5.28	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 25/09/2020

CHECKED BY PETER CHU

DATE 26/09/2020

REMARKS
1. Inspection pit excavated from 0.00m-2.00m.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH26**

SHEET 2 of 7

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES E 837 252.00 N 815 248.03	W.O. No. ASD 012560
MACHINE / No. CCL-1		DATE from 19/09/2020 to 24/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.28 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
21/09/2020		8.10m at 18:00	70	100 100 100 100				(4, 6, 8, 13, 17, 29) N = 67	17 18	+4.38	10.90			As Sheet 1 of 7.
								(8, 10, 14, 17, 20, 42) N = 93	19 20 21 22	+2.38	12.90			Very dense, light grey (N7), silty medium to coarse SAND with much subangular fine gravel of quartz. (ALLUVIUM)
								(3, 4, 5, 4, 5, 5) N = 19	23 24 25 26	+0.38	14.90		VI	Very stiff, reddish yellow (5YR 6/8), sandy clayey SILT with much subangular fine gravel of quartz. (RESIDUAL SOIL)
								(3, 8, 12, 17, 21, 39) N = 89	27 28 29 30	-1.62	16.90		V	Extremely weak, yellowish brown (10YR 5/4) spotted white and grey, completely decomposed medium grained GRANITE. (Silty medium to coarse SAND with some fine gravel)
								(7, 12, 12, 23, 35, 42) N = 112	31 32 33 34	-3.62	18.90		V	Extremely weak, dark reddish grey (5YR 4/2), completely decomposed medium grained GRANITE. (Silty medium to coarse SAND with much fine gravel)
									35 36	-4.72	20.00		V	Extremely weak, yellowish brown (10YR 5/4), completely decomposed medium grained GRANITE. (Silty medium to coarse SAND with some fine gravel)

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 25/09/2020

CHECKED BY PETER CHU

DATE 26/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH26**

SHEET 3 of 7

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 252.00 N 815 248.03	DATE from 19/09/2020 to 24/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.28 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
22/09/2020		7.00m at 08:00						(8, 11, 15, 17, 28, 43) N = 103	37 20.00–20.10 38 20.40–20.45				V	As Sheet 2 of 7.
										-6.72	22.00			
	24.00 PW / HW		70					(9, 13, 19, 27, 35, 55) N = 136	39 22.00–22.10 40 22.40–22.45				V	Extremely weak, light yellowish brown (10YR 6/4), completely decomposed medium grained GRANITE. (Fine to medium SAND)
								(10, 17, 29, 38, 52, 60) N = 179	41 24.00–24.10 42 24.40–24.45					
								(11, 19, 29, 36, 44, 67) N = 176	43 26.00–26.10 44 26.40–26.45					
										-12.72	28.00			
								(19, 30, 72, 128) 200blsr150mm	45 28.00–28.25 28.30				V	Extremely weak, light reddish brown (5YR 6/4), completely decomposed medium grained GRANITE. (Silty medium to coarse SAND with occasional fine gravel)
								(50/60mm		-14.72	30.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

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REMARKS

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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH26**

SHEET 4 of 7

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 252.00 N 815 248.03	DATE from 19/09/2020 to 24/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.28 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(50/50mm 200/50mm) 200b/s/50mm	46 30.00 30.06 30.11					As Sheet 3 of 7.
								(50/50mm 200/50mm) 200b/s/50mm	47 32.00 32.05 32.10				V	
			70					(50/40mm 200/50mm) 200b/s/50mm	48 34.00 34.04 34.09					
								(50/40mm 200/50mm) 200b/s/50mm	49 36.00 36.04 36.09	-20.72	36.00			Weak, yellowish brown (10YR 5/8), highly decomposed fine grained GRANITE. (Sandy medium to coarse GRAVEL)
								(50/40mm 200/40mm) 200b/s/40mm	50 38.00 38.05 38.10				IV	
								(50/30mm		-24.72	40.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

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REMARKS

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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH26**

SHEET 5 of 7

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 252.00 N 815 248.03	DATE from 19/09/2020 to 24/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.28 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(50/30mm 200/40mm) 200bls/40mm	51 40.00 40.02 40.07				IV	As Sheet 4 of 7.
			70					(50/30mm 200/40mm) 200bls/40mm	52 42.00 42.02 42.07					
									42.90	-27.62	42.90			
		7.30m at 18:00	80	98	0	0	NA	T2-101		-27.95 -28.05	43.23 43.33		IV	Moderately weak, yellowish brown (10YR 5/4) spotted dark brown and white, highly decomposed medium grained GRANITE. (COBBLE with some coarse gravel) 42.90- 43.33m: Fine grained GRANITE.
22/09/2020									43.90	-28.62	43.90			
23/09/2020		6.00m at 08:00	70					(50/30mm 200/40mm) 200bls/40mm	53 44.00 44.02 44.07				IV	43.23m: PEGMATITE (20mm thick), dipping at 25°. Weak, yellowish brown (10YR 5/8), highly decomposed fine grained GRANITE. (Sandy fine to medium GRAVEL)
									44.80	-29.52	44.80			
							NA			-29.67	44.95		IV	Moderately weak, yellowish brown (10YR 5/4) spotted grey and white, highly decomposed medium grained GRANITE. (COBBLE and BOULDER with some coarse gravel) 44.95- 45.35m: Fine grained GRANITE. 45.06- 45.35m: Moderately strong, moderately decomposed GRANITE.
							10.3			-29.78	45.06		III	
				89	20	15		T2-101		-30.07	45.35			
			80				NA		45.90				IV	
				100	52	35		T2-101		-31.29	46.57			
							9.1						III	Moderately strong, yellowish brown, moderately decomposed fine grained GRANITE. Joints are very closely to closely spaced, rough and smooth planar, extremely narrow, iron and manganese oxides stained, dipping at 10°-20° and 30°-40°.
								(50/40mm 200/50mm) 200bls/50mm	54 47.34 47.35 47.40 47.45	-32.06	47.34			
			70							-32.53	47.81		IV	Weak, yellowish red (5YR 5/8), highly decomposed fine grained GRANITE. (Sandy fine to medium GRAVEL)
									47.81					
			80	100	0	0	NA	T2-101		-33.42	48.70		IV	Moderately weak, yellowish red (10YR 5/4) spotted grey and white, highly decomposed fine grained GRANITE. (COBBLE and BOULDER with some coarse gravel) 48.70- 49.12m: Medium grained GRANITE.
									49.24	-33.84 -33.96	49.12 49.24			
			70					(50/30mm 200/20mm) 200bls/20mm	55 49.30 49.35 49.51	-34.23	49.51		IV	Weak, yellowish red (5YR 5/8), highly decomposed fine grained GRANITE. (Fine to medium GRAVEL)
										-34.31	49.59		III	
			80	97	39	23	>20	T2-101		-34.45	49.73		IV	Moderately strong, yellowish brown, moderately decomposed medium grained GRANITE. Joints are
							NA			-34.54	49.82		III	
							6.7			-34.72	50.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 25/09/2020

CHECKED BY PETER CHU

DATE 26/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH26**

SHEET 6 of 7

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 252.00 N 815 248.03	DATE from 19/09/2020 to 24/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.28 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				97	39	23	NA 11.5		T2-101	-34.66 -34.75	49.94 50.03		IV	very closely to closely spaced, rough and smooth planar, extremely narrow, iron and manganese oxides stained, dipping at 0°-10°, 30°-40° and 40°-50°.
							NI			-35.04 -35.06	50.32 50.34		III	
									50.67	-35.39	50.67		IV	
				88	45	30	NA 13.1		T2-101	-35.49 -35.60 -35.83	50.77 50.88 51.11		III	49.59- 49.73m: Moderately weak, highly decomposed. (COBBLE) 49.82- 49.94m: Fine grained GRANITE.
										-36.33	51.61			
							NA			-36.50	51.78		V	50.03- 50.34m: Moderately weak, highly decomposed. (COBBLE)
			80						52.08				IV	50.32- 50.77m: Fine grained GRANITE.
							>20			-37.19	52.47			
							NI 14.3							50.67- 50.77m: Moderately weak, highly decomposed. (Sandy coarse GRAVEL)
				96	36	10	NI 9.1		T2-101	-37.50 -37.71	52.78 52.99			
							NI			-37.80 -37.94	53.08 53.22		III	50.88- 51.11m: PEGMATITE. 51.11- 51.61m: Fine grained GRANITE.
							17.9		53.54	-38.26	53.54			
		7.10m at 18:00		96	55	21	17.1		T2-101	-38.54 -38.64 -38.76	53.82 53.92 54.04			51.61- 51.78m: No recovery assumed to be completely decomposed GRANITE.
23/09/2020							NA		54.27	-38.99	54.27		IV	
24/09/2020		6.00m at 08:00						(50/40mm 200/30mm) 200blS/30mm	56	54.30 54.32 54.37				51.78- 52.47m: Moderately weak, highly decomposed. (Coarse GRAVEL and COBBLE)
			70										IV	52.47- 52.78m: Fine grained GRANITE. 52.99- 53.08m: Fine grained GRANITE. 53.08- 53.22m: PEGMATITE. 53.22- 53.54m: Fine grained GRANITE. 53.82- 53.92m: Fine grained GRANITE.
	56.38 HW							(50/30mm 200/20mm) 200blS/20mm	57	56.30 56.35 56.38	-41.10	56.38		54.04- 54.27m: Moderately weak, highly decomposed. (Sandy coarse GRAVEL and COBBLE)
							NI							Weak, pinkish grey (5YR 7/3), highly decomposed medium grained GRANITE. (Fine to medium GRAVEL)
				97	45	16	9.1		T2-101					
							NI		57.11				III	
				100	58	34	5.6		T2-101					Moderately strong, yellowish brown, moderately decomposed medium grained GRANITE. Joints are closely spaced, rough and smooth planar, extremely narrow, iron and manganese oxides stained, dipping at 10°-20°, 40°-50° and 50°-60°.
			80				15.6			-42.69	57.97			
									58.42	-43.15	58.43			57.97- 58.43m: PEGMATITE.
				100	96	96	2.9		T2-101				II	Strong, pink spotted green and light grey, slightly decomposed slightly epidotized medium grained GRANITE. Joints are medium spaced, rough and smooth planar, extremely narrow, epidote coated, dipping at 10°-20° and 70°-80°.
										-44.38	59.66			
										-44.52	59.80			59.66- 59.80m: Fine grained GRANITE.
									59.88	-44.64	59.92			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
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- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 25/09/2020

CHECKED BY PETER CHU

DATE 26/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH26**

SHEET 7 of 7

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 252.00 N 815 248.03	DATE from 19/09/2020 to 24/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.28 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				100	100	100			T2-101	-44.90	60.18			59.66- 59.80m: Fine grained GRANITE. 59.80- 59.92m: PEGMATITE. 59.92- 60.18m: Fine grained GRANITE.
			80				2.9		61.23				II	
24/09/2020		7.00m at 18:00		100	100	100			T2-101 61.83	-46.55	61.83			End of drillhole at 61.83m.

- Small Disturbed Sample
- Large Disturbed Sample
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- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 25/09/2020

CHECKED BY PETER CHU

DATE 26/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH27**

SHEET 1 of 7

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-25	E 837 262.31 N 815 258.93	DATE from 02/09/2020 to 21/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.37 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
02/09/2020	PW	Dry at 08:00								+15.22	0.15			CONCRETE SLAB.
									A 0.45 0.50					Loose to medium dense, red (10R 5/8), silty slightly clayey fine to medium SAND with some subangular fine gravel sized moderately weak to strong granite and quartz. (FILL)
									B 0.95 1.00					
									C 1.45 1.50					
		Dry at 18:00							D 1.95 2.00					
02/09/2020									2.10					
15/09/2020		Dry at 08:00						(1, 2, 2, 2, 2, 2) N = 8	1 2.40 2.45					
				90					2.90					
									3					
									3.90 4.00					
								(1, 2, 2, 2, 2, 3) N = 9	4 4.10 5					
									6 4.40 4.45					
									4.90					
				90					7					
			70						5.90 6.00					
								(2, 2, 2, 3, 3, 4) N = 12	8 6.10 9 6.40 10 6.45					
									6.90	+8.47	6.90			Stiff, yellowish red (5YR 5/8), sandy clayey SILT with some subangular fine gravel of quartz. (ALLUVIUM)
				100					11					
									7.90 8.00					
								(1, 2, 2, 2, 2, 3) N = 9	12 8.10 13 8.40 14 8.45					
									8.90	+6.47	8.90			Stiff, reddish yellow (5YR 7/8), sandy clayey SILT with occasional subangular fine gravel of quartz. (ALLUVIUM)
				85					15					
									9.90 16	+5.37	10.00			

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- U76 Undisturbed Sample
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- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 21/09/2020

CHECKED BY PETER CHU

DATE 22/09/2020

REMARKS
1. Inspection pit excavated from 0.00m-2.00m.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH27**

SHEET 2 of 7

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-25	E 837 262.31 N 815 258.93	DATE from 02/09/2020 to 21/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.37 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
16/06/2020 15/09/2020		6.20m at 08:00 4.70m at 18:00												As Sheet 1 of 7.
				100				(2, 2, 3, 3, 4, 4) N = 14	17 10.00 18 10.10 10.40 10.45	+4.47	10.90			Stiff, red (10R 5/8), sandy clayey SILT with occasional subangular fine gravel of quartz. (ALLUVIUM)
									19 10.90 20 11.90 12.00					
								(2, 2, 3, 3, 4, 4) N = 14	21 12.10 22 12.40 12.45	+2.47	12.90			
				100					23 12.90					Stiff, white (N8), sandy clayey SILT with occasional subangular fine gravel of quartz. (ALLUVIUM)
								(2, 2, 3, 3, 3, 4) N = 13	24 13.90 14.00 25 14.10 26 14.40 14.45					
										+0.47	14.90			
			70	100					27 14.90				V	Extremely weak, yellowish red (5YR 5/8), completely decomposed fine to medium grained GRANITE. (Sandy clayey SILT)
								(2, 3, 3, 4, 4, 4) N = 15	28 15.90 16.00 29 16.10 30 16.40 16.45	-0.63	16.00		V	Extremely weak, red (10R 5/8), completely decomposed fine grained GRANITE. (Sandy clayey SILT)
										-1.53	16.90			
				100					31 16.90				V	Extremely weak, light red (10R 6/8), completely decomposed medium grained GRANITE. (Sandy clayey SILT with some subangular fine gravel)
									32 17.90 18.00	-2.63	18.00			
								(3, 3, 5, 6, 9, 13) N = 33	33 18.10 34 18.40 18.45				V	Extremely weak, pale red (10R 6/4), completely decomposed fine grained GRANITE. (Sandy clayey SILT)
	18.90 PW HW									-3.53	18.90			
				100					35 18.90				V	Extremely weak, pale red (10R 7/4) dappled yellowish red, completely decomposed medium grained GRANITE. (Silty fine to medium SAND with some subangular fine gravel)
									36 19.90	-4.63	20.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 21/09/2020

CHECKED BY PETER CHU

DATE 22/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH27**

SHEET 3 of 7

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-25	E 837 262.31 N 815 258.93	DATE from 02/09/2020 to 21/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.37 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(5, 7, 10, 11, 13, 16) N = 50	37 20.00 20.10 38 20.40 20.45					As Sheet 2 of 7.
								(7, 10, 12, 17, 29, 31) N = 89	39 22.00 22.10 40 22.40 22.45					
			70					(6, 9, 11, 15, 25, 30) N = 81	41 24.00 24.10 42 24.40 24.45	-8.63	24.00		V	24.00- 28.00m: Fine grained GRANITE.
16/06/2020		4.60m at 18:00						(9, 15, 24, 27, 38, 50) N = 139	43 26.00 26.10 44 26.40 26.45					
17/09/2020		6.10m at 08:00						(7, 17, 25, 36, 41, 58) N = 160	45 28.00 28.10 46 28.40 28.45	-12.63	28.00			
										-14.63	30.00			

- Small Disturbed Sample
- Large Disturbed Sample
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- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG
DATE 21/09/2020
CHECKED BY PETER CHU
DATE 22/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH27**

SHEET 4 of 7

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-25	E 837 262.31 N 815 258.93	DATE from 02/09/2020 to 21/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.37 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(8, 16, 23, 29, 43, 51) N = 146	47 30.00–30.10 48 30.40–30.45					Extremely weak, yellowish brown (10YR 5/8), completely decomposed medium grained GRANITE. (Medium to coarse SAND with some subangular gravel)
			70					(23, 27/55mm 63, 76, 71/60mm) 210blS/210mm	49 32.00 50 32.29–32.34				V	
			80	66	72	72	NI 5.6	T2-101	33.80	-18.43	33.80		III	Moderately strong, yellowish red, moderately decomposed medium grained GRANITE. Joints are very closely to closely spaced, rough planar, extremely narrow, iron oxide stained, dipping at 0°-10° and 10°-20°.
								(50/60mm 200/70mm) 200blS/70mm	51 34.30–34.43	-18.93	34.30		V	Extremely weak, dark yellowish brown (10YR 4/4), completely decomposed medium grained GRANITE. (Medium to coarse SAND with much fine to medium gravel)
			70					(36, 14/15mm 122, 78/25mm) 200blS/100mm	52 36.30–36.49	-20.93	36.30		V	Extremely weak, yellowish brown (10YR 5/8), completely decomposed medium grained GRANITE. (Medium to coarse SAND with some fine gravel)
								(50/50mm 200/60mm) 200blS/60mm	53 38.30–38.41					
		4.50m	80	97	81	74	NI 6.7 NA 4.2	T2-101	38.85	-23.48 -23.60 -23.67 -23.74 -24.17 -24.63	38.85 38.97 39.04 39.11 39.54 40.00		III IV II III	Moderately strong, reddish brown, moderately decomposed medium grained GRANITE. Joints are closely to medium spaced, rough planar, extremely narrow, iron and manganese oxides stained, dipping at 0°-10° and 10°-20°.

- Small Disturbed Sample
- Large Disturbed Sample
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- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 21/09/2020

CHECKED BY PETER CHU

DATE 22/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH27**

SHEET 5 of 7

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-25	E 837 262.31 N 815 258.93	DATE from 02/09/2020 to 21/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.37 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
17/09/2020 18/09/2020		at 18.00 6.00m at 08:00	80	97 79	81 67	74 0	4.2	(50/70mm 200/60mm) 200bls/60mm	T2-101 40.21 T2-101 40.30 54 40.38 40.43	-24.93	40.30		III	38.97- 39.11m: PEGMATITE. 39.04- 39.11m: Moderately weak, highly decomposed. (Sandy medium to coarse GRAVEL) 39.11- 39.54m: Strong, slightly decomposed. Extremely weak, yellowish red (5YR 5/8), completely decomposed fine to medium grained GRANITE. (Silty fine to medium SAND)
								(50/30mm 200/50mm) 200bls/50mm	55 42.30 42.33 42.38				V	
			70					(50/40mm 200/50mm) 200bls/50mm	56 44.30 44.34 44.39					
								(50/30mm 200/40mm) 200bls/40mm	57 46.30 46.32 46.37	-30.93	46.30		IV	Weak, yellowish red (5YR 5/8) spotted dark grey and white, highly decomposed medium grained GRANITE. (Sandy fine to medium GRAVEL)
								(50/30mm 200/40mm) 200bls/40mm	58 48.30 48.32 48.37 48.65	-33.28	48.65			
			80	100	57	44	6.3 >20 NI		T2-101 T2-101 49.85	-33.88	49.25		III	Moderately strong, pink dappled yellowish red, moderately decomposed medium grained GRANITE. Joints are very closely to closely spaced, rough planar, extremely narrow, iron and manganese oxides stained, dipping at 0°-10°, 10°-20°, 20°-30° and 50°-60°.
		4.60m		94	33	32	15.0			-34.63	50.00			

- Small Disturbed Sample
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- Standpipe Tip
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LOGGED BY CALVIN TSANG

DATE 21/09/2020

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REMARKS

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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH27**

SHEET 6 of 7

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-25	E 837 262.31 N 815 258.93	DATE from 02/09/2020 to 21/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.37 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
18/09/2020 19/09/2020		at 18:00 6.15m at 08:00	80	94	33	32	NA 8.1 NA		T2-101	-34.68 34.89 -35.26	50.05 50.26 50.63		IV III IV	49.25- 51.30m: With very closely spaced subhorizontal microfractures. 50.05- 50.26m: Moderately weak, highly decomposed. (Sandy fine to medium GRAVEL) 50.63- 51.30m: Moderately weak, highly decomposed. (Sandy fine to medium GRAVEL)
			70					(50/60mm 200/70mm) 200blS/70mm	59 51.30 51.32 51.37	-35.93	51.30		IV	Weak, yellowish red (5YR 5/8), highly decomposed medium grained GRANITE. (Sandy fine to medium GRAVEL)
	52.32 HW								52.32	-36.95	52.32			Moderately strong, yellowish brown, moderately decomposed medium grained GRANITE. Joints are very closely to closely locally medium to widely spaced, smooth planar, extremely narrow, iron and manganese oxides stained, dipping at 0°-10°, 10°-20° and 80°-90°.
				100	97	83	3.4 17.6		T2-101					
				100	86	68	1.1 10.7		53.82 T2-101				III	
							NI		55.28					
				100	43	19	>20 NA 10.7		T2-101	-40.08 -40.35	55.45 55.72		IV III	55.45- 55.72m: Moderately weak, highly decomposed. (Sandy medium to coarse GRAVEL and COBBLE)
			80	100	99	88			55.96 T2-101	-40.59	55.96			55.45- 55.96m: With very closely spaced subhorizontal microfractures.
				100	99	83	3.2		56.72 T2-101	-42.08 -42.32	57.45 57.69		III II	Strong, pinkish grey spotted black and white, slightly decomposed medium grained GRANITE. Joints are medium to widely locally very closely to closely spaced, smooth planar, extremely narrow, iron oxide stained, chlorite coated, dipping at 0°-10°, 10°-20°, 30°-40° and 60°-70°. 55.96- 57.45m: Moderately strong, moderately decomposed.
							17.1		58.21	-43.03	58.40		III	57.69- 58.40m: Moderately strong, moderately decomposed.
				100	100	94	4.5		T2-101				II	
				100	97	86	>20 1.4		59.62 T2-101	-44.63	60.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 21/09/2020

CHECKED BY PETER CHU

DATE 22/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH27**

SHEET 7 of 7

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-25	E 837 262.31 N 815 258.93	DATE from 02/09/2020 to 21/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.37 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
19/09/2020		4.50m at 18:00	80	100	97	86	1.4		T2-101 61.12	-45.75	61.12		II	As Sheet 6 of 7.
														End of drillhole at 61.12m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG
DATE 21/09/2020
CHECKED BY PETER CHU
DATE 22/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH28**

SHEET 1 of 6

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 272.62 N 815 269.83	DATE from 31/08/2020 to 15/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.43 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
31/08/2020	SW	Dry at 08:00							A 0.45 0.50 B 0.95 1.00 C 1.45 1.50 D 1.95 2.00	+15.28	0.15			CONCRETE. Firm, light red (10R 6/8), sandy clayey SILT with some subangular fine to medium gravel sized moderately weak granite, quartz and cement sand mortar. (FILL)
31/08/2020		Dry at 18:00												
10/09/2020		Dry at 08:00						(1, 1, 2, 1, 1, 1) N = 5	1 2.10 2.40 2.45 2 2.90					
	2.90 SW													
	PW			100					3 3.90 4.00 4.10 4					
								(2, 2, 1, 2, 2, 2) N = 7	5 4.40 4.45 6 4.90	+10.53	4.90			
				100					7 5.90 6.00 6.10 8				VI	Stiff, red (10R 5/8), sandy clayey SILT with some subangular fine gravel of quartz. (RESIDUAL SOIL)
			70					(2, 3, 3, 4, 3, 3) N = 13	9 6.40 6.45 10 6.90	+8.53	6.90			
				100					11 7.90 8.00 8.10 12				VI	Very stiff, light red (10R 7/8) dappled red, sandy clayey SILT with some fine gravel of quartz. (RESIDUAL SOIL)
								(2, 3, 4, 4, 3, 5) N = 16	13 8.40 8.45 14 8.90	+6.53	8.90			
				100					15 9.90 16	+5.43	10.00		VI	Very stiff, reddish yellow (5YR 7/8), sandy clayey SILT with some subangular fine to medium gravel of quartz. (RESIDUAL SOIL)

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 15/09/2020

CHECKED BY PETER CHU

DATE 16/09/2020

REMARKS
1. Inspection pit excavated from 0.00m-2.00m.
2. A piezometer tip was installed at 52.00m depth.
3. A standpipe was installed to 25.00m depth.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH28**

SHEET 2 of 6

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 272.62 N 815 269.83	DATE from 31/08/2020 to 15/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.43 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(3, 4, 6, 5, 7, 10) N = 28	17 10.00–10.10 18 10.40–10.45				VI	As Sheet 1 of 6.
										+4.53	10.90			
				100					19 10.90–11.90					Extremely weak, yellowish brown (10YR 5/4) spotted white, completely decomposed fine grained GRANITE. (Silty clayey fine SAND)
								(3, 5, 4, 5, 6, 8) N = 23	20 12.00–12.10 21 12.40–12.45					
				100					23 12.90–13.90	+2.53	12.90			12.90- 14.00m: Pale red (10R 6/4).
10/09/2020		8.00m at 18:00											V	
11/09/2020		9.00m at 08:00						(3, 3, 4, 4, 7, 6) N = 21	24 14.00–14.10 25 14.40–14.45	+1.43	14.00			
			70							+0.53	14.90			14.90- 16.00m: Pale red (10R 6/4).
				100					27 14.90–15.90					
								(3, 4, 5, 6, 8, 7) N = 26	28 16.00–16.10 29 16.40–16.45	-0.57	16.00			
				100					31 16.90–17.90	-1.47	16.90			Extremely weak, red (10R 5/8) streaked white, completely decomposed fine to medium grained GRANITE. (Silty clayey fine to medium SAND)
								(4, 6, 9, 8, 8, 10) N = 35	32 18.00–18.10 33 18.40–18.45				V	
				100					35 18.90–19.90	-4.57	20.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 15/09/2020

CHECKED BY PETER CHU

DATE 16/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH28**

SHEET 3 of 6

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 272.62 N 815 269.83	DATE from 31/08/2020 to 15/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.43 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(4, 9, 11, 15, 17, 35) N = 78	37 20.00–20.10 38 20.40–20.45				V	As Sheet 2 of 6.
								(6, 10, 17, 23, 31, 45) N = 116	39 22.00–22.10 40 22.40–22.45	-6.57	22.00		V	Extremely weak, yellow (10YR 7/8) spotted white, completely decomposed fine to medium grained GRANITE. (Silty fine to medium SAND)
	24.00 PW HW		70					(7, 13, 18, 27, 39, 53) N = 137	41 24.00–24.10 42 24.40–24.45	-8.57	24.00		V	Extremely weak, yellowish red (5YR 5/8), completely decomposed medium grained GRANITE. (Slightly clayey silty medium to coarse SAND with some fine gravel)
								(10, 17, 28, 49, 52, 60) N = 189	43 26.00–26.10 44 26.40–26.45				V	
								(13, 30, 47, 52, 101/50mm) 200blls/200mm	45 28.00 46 28.30–28.35	-14.57	30.00			
								(50/60mm						

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 15/09/2020

CHECKED BY PETER CHU

DATE 16/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH28**

SHEET 4 of 6

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 272.62 N 815 269.83	DATE from 31/08/2020 to 15/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.43 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(50/50mm 200/40mm) 200bls/40mm	47 30.00 30.05 30.10					As Sheet 3 of 6.
								(50/50mm 200/40mm) 200bls/40mm	48 32.00 32.05 32.10					
								(50/50mm 200/40mm) 200bls/40mm	49 34.00 34.05 34.10					
			70										V	
								(50/50mm 200/40mm) 200bls/40mm	50 36.00 36.02 36.07					
								(50/50mm 200/40mm) 200bls/40mm	51 38.00 38.05 38.10					
								(50/50mm		-24.57	40.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 15/09/2020

CHECKED BY PETER CHU

DATE 16/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH28**

SHEET 5 of 6

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 272.62 N 815 269.83	DATE from 31/08/2020 to 15/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.43 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
11/09/2020 12/09/2020		8.50m at 18:00 8.00m at 08:00	70					(50/40mm 200/40mm) 200bls/40mm	52 40.00 40.04 40.09				V	As Sheet 3 of 6.
								(50/50mm 200/30mm) 200bls/30mm	53 42.00 42.03 42.08	-26.57	42.00		IV	Weak, yellowish red (5YR 5/8), highly decomposed medium grained GRANITE. (Sandy fine to medium GRAVEL)
										-27.41	42.84		III	
			80	100	98	94	8.2		T2-101	-27.52	42.95		II	Strong, pinkish grey spotted black and white, slightly decomposed medium grained GRANITE. Joints are closely to medium spaced, rough and smooth planar, extremely narrow, iron oxide stained, dipping at 0°-10° and 10°-20°. 42.84- 42.95m: Moderately strong, moderately decomposed.
				100	100	100	3.1		44.04 T2-101					
									44.43	-29.00	44.43			
			70					(50/60mm 200/30mm) 200bls/30mm	54 44.50 44.54 44.59				IV	Weak, yellowish red (5YR 5/8), highly decomposed medium grained GRANITE. (Sandy fine to medium GRAVEL)
								(50/40mm 200/20mm) 200bls/20mm	55 46.50 46.51 46.56					
								(50/30mm 200/20mm) 200bls/20mm	56 48.50 48.55					
									49.48	-34.05	49.48			
			80	100	74	62	>20		T2-101	-34.57	50.00		III	Moderately strong, yellowish brown, moderately decomposed medium grained GRANITE. Joints are very closely to closely locally medium spaced, rough
							9.6							

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 15/09/2020

CHECKED BY PETER CHU

DATE 16/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH28**

SHEET 6 of 6

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 272.62 N 815 269.83	DATE from 31/08/2020 to 15/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.43 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
							9.6			-34.77	50.20		II	and smooth planar, extremely narrow, iron oxide stained, dipping at 0°-10° and 10°-20°.
			80	100	74	62	NI		T2-101				III	50.00- 50.20m: Strong, slightly decomposed.
							2.3	(50/30mm ↓ 200/20mm) 200b/s/20mm	50.98 51.00 57 51.05	-35.55	50.98			50.20- 50.98m: With very closely spaced subhorizontal microfractures.
			70										IV	Weak, yellowish red (5YR 5/6) spotted white, highly decomposed medium grained GRANITE. (Fine to medium GRAVEL)
									51.84	-36.41	51.84			Moderately strong, yellowish brown, moderately decomposed medium grained GRANITE. Joints are closely spaced, rough planar, extremely narrow, iron oxide stained, dipping at 0°-10° and 10°-20°.
	52.40 HW		80	100	96	96	5.4		T2-101	-36.60	52.03		III	
								(50/40mm ↓ 200/20mm) 200b/s/20mm	52.40 58 52.41 52.46	-36.97	52.40			51.84- 52.03m: With very closely spaced subhorizontal microfractures.
			70										IV	
										-37.55	52.98			Weak, yellowish red (5YR 5/6) spotted white, highly decomposed medium grained GRANITE. (Fine to medium GRAVEL)
							NA							
12/09/2020		8.00m at 18:00		100	84	62	8.2		T2-101				III	Moderately strong, reddish brown, moderately decomposed medium grained GRANITE. Joints are closely to medium locally very closely spaced, rough and smooth planar, extremely narrow, iron oxide stained, chlorite coated, dipping at 0°-10° and 30°-40°.
15/09/2020		8.00m at 08:00					>20							
				99	89	52	3.8		53.88	-39.10	54.53		II	
									T2-101	-39.26	54.69			54.53- 54.69m: Strong, slightly decomposed.
							12.7		55.35					
			80							-40.39	55.82			55.82- 56.69m: Fine grained GRANITE.
				95	64	36	NI		T2-101					
							3.8		56.83	-41.26	56.69		III	
				100	99	89	2.9		T2-101					
15/09/2020		9.00m at 18:00							58.20	-42.77	58.20			
														End of drillhole at 58.20m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 15/09/2020

CHECKED BY PETER CHU

DATE 16/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH29**

SHEET 1 of 7

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-25	E 837 282.92 N 815 280.73	DATE from 31/08/2020 to 14/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.43 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
31/08/2020	PW	Dry at 08:00								+15.28	0.15			CONCRETE SLAB.
									A 0.45 0.50					Firm, red (10R 5/8), sandy clayey SILT with some subangular fine to medium gravel sized moderately weak granite, quartz, brick and concrete fragments. (FILL)
									B 0.95 1.00					
									C 1.45 1.50					
31/08/2020		Dry at 18:00							D 1.95 2.00 2.10					
09/09/2020		Dry at 08:00						(1, 1, 1, 2, 2) N = 7	1 2 2.40 2.45					
									2.90	+12.53	2.90			Firm to stiff, yellowish red (5YR 5/8), sandy clayey SILT with some subangular fine gravel of quartz. (RESIDUAL SOIL)
				100					3					
								(1, 1, 2, 2, 1, 2) N = 7	4 3.90 4.00 4.10 5 6 4.40 4.45					
									4.90				VI	
				100					7					
			70					(1, 2, 2, 3, 3, 4) N = 12	8 5.90 6.00 6.10 9 10 6.40 6.45					
									6.90	+8.53	6.90			Extremely weak, light red (10R 6/8), completely decomposed medium grained GRANITE. (Stiff, sandy clayey SILT with occasional fine gravel)
				100					11					
								(2, 2, 2, 3, 4, 5) N = 14	12 7.90 8.00 8.10 13 14 8.40 8.45					
									8.90				V	
				100					15					
									16 9.90	+5.43	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 15/09/2020

CHECKED BY PETER CHU

DATE 16/09/2020

REMARKS
1. Inspection pit excavated from 0.00m-2.00m.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH29**

SHEET 2 of 7

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-25	E 837 282.92 N 815 280.73	DATE from 31/08/2020 to 14/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.43 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				100				(2, 2, 3, 3, 4, 4) N = 14	17 10.00 18 10.10 10.40 10.45 10.90				V	Extremely weak, reddish yellow (5YR 7/8) dappled red, completely decomposed medium grained GRANITE. (Silty clayey fine to medium SAND)
								(2, 2, 3, 4, 4, 5) N = 16	19 20 11.90 12.00 12.10 21 22 12.40 12.45 12.90	+2.53	12.90			
				90					23					Extremely weak, red (10R 5/6), completely decomposed medium grained GRANITE. (Silty slightly clayey fine to medium SAND with some fine gravel)
09/09/2020 10/09/2020		7.50m at 18:00 8.40m at 08:00	70					(2, 2, 2, 3, 3, 3) N = 11	24 13.90 14.00 14.10 25 26 14.40 14.45 14.90					
				100					27				V	
								(4, 6, 9, 11, 13, 20) N = 53	28 15.90 16.00 16.10 29 30 16.40 16.45 16.90					
				100					31					
								(4, 6, 7, 11, 14, 19) N = 51	32 17.90 18.00 18.10 33 34 18.40 18.45 18.90	-2.57	18.00			Extremely weak, pale red (10R 6/4), completely decomposed medium grained GRANITE. (Silty fine to medium SAND with some fine gravel)
				100					35				V	
									36 19.90	-4.57	20.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 15/09/2020

CHECKED BY PETER CHU

DATE 16/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH29**

SHEET 3 of 7

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-25	E 837 282.92 N 815 280.73	DATE from 31/08/2020 to 14/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.43 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
	20.45 PW HW							(4, 7, 10, 14, 19, 23) N = 66	37 20.00 20.10 38 20.40 20.45					As Sheet 2 of 7.
								(4, 9, 13, 16, 18, 25) N = 72	39 22.00 22.10 40 22.40 22.45				V	
			70					(4, 6, 13, 18, 21, 28) N = 80	41 24.00 24.10 42 24.40 24.45	-8.57	24.00			Extremely weak, yellowish red (5YR 5/8), completely decomposed medium grained GRANITE. (Silty medium to coarse SAND with some fine gravel)
								(5, 8, 10, 19, 25, 33) N = 87	43 26.00 26.10 44 26.40 26.45				V	
								(9, 13, 19, 22, 37, 46) N = 124	45 28.00 28.10 46 28.40 28.45	-14.57	30.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 15/09/2020

CHECKED BY PETER CHU

DATE 16/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH29**

SHEET 4 of 7

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-25	E 837 282.92 N 815 280.73	DATE from 31/08/2020 to 14/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.43 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
10/09/2020 11/09/2020		6.50m at 18:00 8.70m at 08:00	70					(7, 14, 20, 28, 40, 51) N = 139 (14, 36/55mm 73, 127/65mm) 200b/s/140mm (50/60mm 200/70mm) 200b/s/70mm (50/50mm 200/70mm) 200b/s/70mm (50/40mm 200/50mm) 200b/s/50mm (50/50mm	47 30.00 30.10 48 30.40 30.45 49 32.00 50 32.22 32.27 51 34.00 34.08 34.13 52 36.00 36.07 36.12 53 38.00 38.04 38.09	-20.57 -24.57	36.00 40.00		V IV	As Sheet 3 of 7. Weak, light red (10R 6/8), highly decomposed medium grained GRANITE. (Sandy medium to coarse GRAVEL)

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 15/09/2020

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REMARKS

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TYSAN FOUNDATION LIMITED
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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH29**

SHEET 5 of 7

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-25	E 837 282.92 N 815 280.73	DATE from 31/08/2020 to 14/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.43 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(200/70mm) 200bls/70mm	54 40.00 40.07 40.12					Very weak, yellowish red (5YR 5/8), highly decomposed medium grained GRANITE. (Sandy fine to medium GRAVEL)
								(50/40mm 200/50mm) 200bls/50mm	55 42.00 42.04 42.09					
								(50/40mm 200/60mm) 200bls/60mm	56 44.00 44.05 44.10					
			70										IV	
								(50/30mm 200/40mm) 200bls/40mm	57 46.00 46.02 46.07					
								(50/40mm 200/50mm) 200bls/50mm	58 48.00 48.04 48.09					
								(50/30mm		-34.57	50.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 15/09/2020

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REMARKS

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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH29**

SHEET 6 of 7

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-25	E 837 282.92 N 815 280.73	DATE from 31/08/2020 to 14/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.43 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
			70					(200/50mm) 200blS/50mm	59 50.00 50.03 50.08	-35.02	50.45		IV	As Sheet 5 of 7.
				100	94	89	6.3		50.45	-35.25	50.68		III	Moderately strong, reddish brown to yellowish brown, moderately decomposed medium grained GRANITE. Joints are very closely to closely spaced, rough and smooth planar, extremely narrow, iron and manganese oxides stained, dipping at 0°-10° and 10°-20°.
			80					T2-101	51.33					50.45- 50.68m: Fine grained GRANITE.
		7.20m at 18:00		90	56	19	16.7	T2-101		-36.36	51.79			
11/09/2020							NA			-36.70	52.13		IV	51.79- 52.13m: Moderately weak, highly decomposed. (Coarse GRAVEL and COBBLE)
12/09/2020		8.90m at 08:00						(50/30mm) 200/50mm) 200blS/50mm	60 52.13 52.16 52.21					Very weak, yellowish red (5YR 5/8), highly decomposed medium grained GRANITE. (Sandy medium to coarse GRAVEL)
			70										IV	
								(50/40mm) 200/50mm) 200blS/50mm	61 54.13 54.16 54.21					
	55.22 HW								55.22	-39.79	55.22			
				100	91	54	11.8	T2-101						Moderately strong, reddish brown, moderately decomposed medium grained GRANITE. Joints are widely locally closely spaced, rough and smooth planar, extremely narrow, iron and manganese oxides stained, chlorite coated, dipping at 20°-30° and 30°-40°.
		7.40m at 18:00		100	98	82		T2-101	56.15					
12/09/2020									56.77					
14/09/2020		9.10m at 08:00		100	100	100		T2-101					III	
			80						57.67					
				100	100	100	1.0	T2-101						
										-43.40	58.83			
									59.17	-43.92	59.35			Strong, pink spotted black and white, slightly decomposed medium grained GRANITE. Joints are widely spaced, smooth planar, tight, clean, dipping at 0°-10° and 20°-30°.
				100	100	100		T2-101		-44.07	59.50		II	
										-44.57	60.00			59.35- 59.50m: PEGMATITE.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 15/09/2020

CHECKED BY PETER CHU

DATE 16/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH29**

SHEET 7 of 7

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-25	E 837 282.92 N 815 280.73	DATE from 31/08/2020 to 14/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.43 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
14/09/2020		7.50m at 18:00	80	100	100	100	1.0		T2-101 60.60	-45.17	60.60		II	As Sheet 6 of 7.
														End of drillhole at 60.60m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

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TYSAN FOUNDATION LIMITED
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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH30**

SHEET 1 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-25	E 837 293.23 N 815 291.63	DATE from 28/08/2020 to 07/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.44 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
28/08/2020	SW	Dry at 08:00								+15.29	0.15			CONCRETE SLAB.
									A 0.45 0.50					Firm to stiff, yellowish red (5YR 5/8), sandy clayey SILT with some subangular fine gravel sized moderately weak to moderately strong granite and quartz. (FILL)
									B 0.95 1.00					
		Dry at 18:00							C 1.45 1.50					
28/08/2020									D 1.95 2.00 2.10					
02/09/2020		Dry at 08:00						(1, 1, 2, 2, 1, 2) N = 7	1 2 2.40 2.45					
									2.90					
				100					3					
									3.90 4.00 4.10					
	4.45 SW PW							(1, 2, 2, 2, 3, 3) N = 10	4 5 6 4.40 4.45					
									4.90	+10.54	4.90			Stiff, yellowish brown (10YR 5/8) dappled red, sandy clayey SILT. (FILL)
				95					7					
		4.60m at 18:00	70						5.90 6.00 6.10	+9.44	6.00			Firm, red (2.5YR 5/8), sandy clayey SILT with some subangular fine gravel sized moderately weak to moderately strong granite. (FILL)
02/09/2020								(1, 1, 1, 1, 1, 2) N = 5	8 9 10 6.40 6.45					
03/09/2020		6.10m at 08:00							6.90	+8.54	6.90			Firm, red (2.5YR 5/8), sandy clayey SILT with some subangular fine gravel sized quartz. (RESIDUAL SOIL)
				95					11				VI	
									7.90 8.00 8.10	+7.44	8.00			Extremely weak, red (10R 5/8) spotted white, completely decomposed medium grained GRANITE. (Stiff, sandy clayey SILT)
								(1, 1, 1, 2, 2, 3) N = 8	12 13 14 8.40 8.45				V	
									8.90	+6.54	8.90			Extremely weak, yellowish brown (10YR 5/8) spotted white, completely decomposed medium grained GRANITE. (Silty fine to medium SAND with some fine gravel)
				100					15				V	
									16 9.90	+5.44	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 08/09/2020

CHECKED BY PETER CHU

DATE 09/09/2020

REMARKS
1. Inspection pit excavated from 0.00m-2.00m.
2. A piezometer tip was installed at 34.00m depth.
3. A standpipe was installed to 25.00m depth.

泰昇地基工程有限公司
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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH30**

SHEET 2 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-25	E 837 293.23 N 815 291.63	DATE from 28/08/2020 to 07/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.44 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(2, 2, 3, 3, 5) N = 14	17 10.00–10.10 18 10.40–10.45				V	As Sheet 1 of 5.
				100					10.90	+4.54	10.90			Extremely weak, red (10R 5/8) dappled yellowish brown spotted white, completely decomposed medium grained GRANITE. (Silty fine to medium SAND with some fine gravel)
								(2, 2, 2, 3, 4, 5) N = 14	19 20 11.90–12.00 21 12.10 22 12.40–12.45					
				95					12.90				V	
								(2, 3, 4, 5, 7, 9) N = 25	23 24 13.90–14.00 25 14.10 26 14.40–14.45					
			70						14.90	+0.54	14.90			Extremely weak, red (10R 5/8) spotted white and grey, completely decomposed medium grained GRANITE. (Silty medium to coarse SAND with some fine gravel)
03/09/2020		5.80m at 18:00		95					27 28 15.90–16.00 29 16.10 30 16.40–16.45					
04/09/2020		8.05m at 08:00						(2, 4, 5, 7, 8, 13) N = 33	16.90				V	
	18.00 PW HW			100					31 32 17.90–18.00 33 18.10 34 18.40–18.45					
								(3, 3, 5, 7, 9, 12) N = 33	18.90	-3.46	18.90			Extremely weak, red (10R 5/8) spotted dark brown and white, completely decomposed medium grained GRANITE. (Silty medium to coarse SAND with some fine gravel)
				95					35 36 19.90	-4.56	20.00		V	

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 08/09/2020

CHECKED BY PETER CHU

DATE 09/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH30**

SHEET 3 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-25	E 837 293.23 N 815 291.63	DATE from 28/08/2020 to 07/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.44 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(9, 15, 24, 28, 33, 41) N = 126	37 20.00–20.10 38 20.40–20.45				V	As Sheet 2 of 5.
								(9, 15, 22, 26, 27, 30) N = 105	39 22.00–22.10 40 22.40–22.45	-6.56	22.00			Extremely weak, red (10R 5/8) dappled reddish brown and dark brownish grey, completely decomposed medium grained GRANITE. (Silty fine to medium SAND)
			70					(6, 8, 12, 15, 17, 23) N = 67	41 24.00–24.10 42 24.40–24.45				V	
								(7, 12, 16, 19, 20, 37) N = 92	43 26.00–26.10 44 26.40–26.45	-10.56	26.00			Extremely weak, pale red (10R 7/4), completely decomposed medium grained GRANITE. (Silty medium to coarse SAND with some fine gravel)
								(11, 15, 13, 19, 22, 35) N = 89	45 28.00–28.10 46 28.40–28.45				V	
										-14.56	30.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
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- Pressuremeter Test
- Standpipe Tip
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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH30**

SHEET 4 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-25	E 837 293.23 N 815 291.63	DATE from 28/08/2020 to 07/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.44 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
			70					(6, 13, 20, 23, 30, 41) N = 114	47 30.00 48 30.10 30.40 30.45				V	Extremely weak, pale red (10R 7/2), completely decomposed medium grained GRANITE. (Fine to medium SAND)
									31.05	-15.61	31.05			
				97	75	61	NI 7.8 NI		T2-101				III	Moderately strong, yellowish brown, moderately decomposed medium grained GRANITE. Joints are closely locally very closely and widely spaced, rough planar, extremely narrow, iron oxide stained, kaolin coated (<2mm), dipping at 20°-30°, 30°-40°, 50°-60° and 60°-70°.
		7.55m at 18:00					7.1			-16.69	32.13			
04/09/2020									32.36					32.13- 33.46m: With some pegmatite (20-50mm thick).
05/09/2020		8.20m at 08:00	80							-17.34	32.78			
				100	99	97	0.8		T2-101	-17.61	33.05		II	32.13- 32.78m: Fine to medium grained GRANITE.
										-18.02	33.46			32.78- 33.05m: Strong, slightly decomposed.
										-18.16	33.60		III	33.05- 33.60m: Fine to medium grained GRANITE.
										-18.42	33.86			
				100	91	78	>20 5.6		33.86 T2-101	-18.60	34.04			33.86- 34.04m: With very closely spaced microfractures, dipping at 20°-30°.
		7.30m at 18:00							34.40	-18.96	34.40			
05/09/2020								(6, 11, 17, 23, 26, 47) N = 113	34.50 49 50 34.80 34.85				V	Extremely weak, pale red (10R 7/4) dappled yellowish brown, completely decomposed medium grained GRANITE. (Silty fine to medium SAND)
07/09/2020	35.25 HW	8.70m at 08:00	70							-19.81	35.25			
				100	100	100	2.9		35.25 T2-101	-20.52	35.96		III	Moderately strong, yellowish brown, moderately decomposed fine to medium grained GRANITE. Joints are medium to widely locally very closely spaced, rough and smooth planar, extremely narrow, iron oxide stained, dipping at 0°-10°, 10°-20°, 50°-60° and 70°-80°.
							18.2		36.64					35.96- 38.39m: Medium grained GRANITE.
				100	100	93			T2-101	-21.44	36.88		II	36.88- 37.12m: Strong, slightly decomposed.
			80							-21.68	37.12			
				100	100	100	0.8		37.88 T2-101	-22.95	38.39		III	
				98	98	98			39.31 T2-101	-24.20	39.64			
										-24.28	39.72			39.64- 39.72m: PEGMATITE.
										-24.56	40.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 08/09/2020

CHECKED BY PETER CHU

DATE 09/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH30**

SHEET 5 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-25	E 837 293.23 N 815 291.63	DATE from 28/08/2020 to 07/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.44 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
07/09/2020			80	98	98	98	0.8		T2-101 40.28	-24.84	40.28		III	As Sheet 4 of 5. End of drillhole at 40.28m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG
DATE 08/09/2020
CHECKED BY PETER CHU
DATE 09/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH31**

SHEET 1 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-20	E 837 305.35 N 815 300.81	DATE from 18/08/2020 to 28/08/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.44 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
18/08/2020	SW	Dry at 08:00							A 0.45 0.50	+15.29	0.15			CONCRETE SLAB.
									B 0.95 1.00					Loose, yellowish red (5YR 5/8), silty medium to coarse SAND with some subangular fine gravel sized granite. (FILL)
		Dry at 18:00							C 1.45 1.50					
18/08/2020									D 1.95 2.00 2.10					
22/08/2020		Dry at 08:00						(1, 1, 1, 2, 2, 2) N = 7	1 2.40 2.45					
	2.90 SW								2.90					
	PW			100					3					
									3.90 4.00 4.10	+11.54	3.90			Firm, yellowish red (5YR 5/8) spotted white, clayey SILT with occasional subangular fine gravel sized quartz. (FILL)
								(1, 2, 2, 2, 2, 2) N = 8	4 5 6 4.40 4.45					
									4.90	+10.54	4.90			Medium dense, yellowish red (5YR 5/8), silty medium to coarse SAND with much subangular fine to medium gravel sized moderately strong granite and quartz. (FILL)
				90					7					
			70						8 5.90 6.00 6.10					
								(1, 1, 2, 3, 4, 6) N = 15	9 10 6.40 6.45					
									6.90	+8.54	6.90			Firm, yellowish red (5YR 5/8), sandy clayey SILT with some subangular fine gravel sized quartz and brick fragments. (FILL)
				90					11					
									12 7.90 8.00	+7.44	8.00			Extremely weak, red (10R 5/8), completely decomposed medium grained GRANITE. (Silty medium to coarse SAND with some fine gravel)
								(2, 2, 3, 4, 4, 6) N = 17	13 8.10 14 8.40 8.45					
	8.90 PW HW								8.90				V	
				95					15					
									16 9.90	+5.44	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
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- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 29/08/2020

CHECKED BY PETER CHU

DATE 31/08/2020

REMARKS
1. Inspection pit excavated from 0.00m-2.00m.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH31**

SHEET 2 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-20	E 837 305.35 N 815 300.81	DATE from 18/08/2020 to 28/08/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.44 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(2, 2, 8, 10, 10, 12) N = 40	17 10.00–10.10 18 10.40–10.45				V	As Sheet 1 of 5.
										+4.54	10.90			
				100					19 10.90–11.90				V	Extremely weak, yellowish brown (10R 5/4), completely decomposed medium grained GRANITE. (Silty medium to coarse SAND with some fine gravel)
22/08/2020		7.03m at 18:00						(4, 16, 24, 30, 32, 41) N = 127	20 12.00–12.10 21 12.40–12.45 22					
24/08/2020		8.82m at 08:00								+2.54	12.90			
				100					23 12.90–13.90				V	Extremely weak, dark reddish grey (5YR 4/2), completely decomposed medium grained GRANITE. (Silty medium to coarse SAND with some fine gravel)
								(17, 33/65mm 200/20mm) 200blS/20mm	24 14.00 25 14.10 26 14.15					
										+0.54	14.90			
			70	95					27 14.90–15.90				V	Extremely weak, yellowish brown (10YR 5/8), completely decomposed medium grained GRANITE. (Silty fine to medium SAND with some fine gravel)
								(6, 10, 12, 19, 23, 35) N = 89	28 29 16.00–16.10 30 16.40–16.45					
				100					31 16.90–17.90				V	
									32	-2.56	18.00			
								(5, 11, 14, 17, 20, 31) N = 82	33 18.00–18.10 34 18.40–18.45				V	Extremely weak, light red (10R 7/8) spotted black, completely decomposed medium grained GRANITE. (Silty fine to medium SAND with some fine gravel)
										-3.46	18.90			
				95					35 18.90–19.90				V	Extremely weak, pinkish grey (5YR 7/2) mottled and spotted white, completely decomposed medium grained GRANITE. (Silty medium to coarse SAND with some fine gravel)
									36	-4.56	20.00			

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- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 29/08/2020

CHECKED BY PETER CHU

DATE 31/08/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH31**

SHEET 3 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-20	E 837 305.35 N 815 300.81	DATE from 18/08/2020 to 28/08/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.44 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(11, 15, 17, 21, 24, 33) N = 95	37 20.00–20.10 38 20.40–20.45					As Sheet 2 of 5.
								(5, 9, 15, 15, 27, 41) N = 98	39 22.00–22.10 40 22.40–22.45				V	
			70					(5, 8, 15, 17, 26, 39) N = 97	41 24.00–24.10 42 24.40–24.45					
24/08/2020		6.01m at 18:00						(11, 21, 32, 34, 54, 60/65mm) 200blS/290mm	43 26.00–26.09 44 26.39–26.44	-10.56	26.00		V	Extremely weak, yellowish brown (10YR 5/8), completely decomposed medium grained GRANITE. (Silty fine to medium SAND with occasional fine gravel)
25/08/2020		10.03m at 08:00								-12.01	27.45			
				93	79	79	7.1	T2-101	27.59	-12.23	27.67		III	Strong, pinkish grey spotted black and white, slightly decomposed medium grained GRANITE. Joints are widely locally very closely to closely spaced, rough planar, extremely narrow, iron and manganese oxides stained, dipping at 0°-10° and 20°-30°. 27.45- 27.67m: Moderately strong, moderately decomposed.
				100	100	100	0.7	T2-101					II	
			80						28.49	-13.43	28.87			
				100	98	90	>20	T2-101		-13.72	29.16		III	28.87- 29.16m: Moderately strong, moderately decomposed with very closely spaced subhorizontal microfractures.
				100	100	94	0.7	T2-101	29.50				II	
										-14.56	30.00			

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- Permeability Test
- Impression Packer Test
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- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 29/08/2020

CHECKED BY PETER CHU

DATE 31/08/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH31**

SHEET 4 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-20	E 837 305.35 N 815 300.81	DATE from 18/08/2020 to 28/08/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.44 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
							0.7		T2-101	-14.90	30.34		II	As Sheet 3 of 5.
				100	100	94				-15.04	30.48		III	
							NA			-15.16	30.60		IV	30.34- 30.48m: Moderately strong, moderately decomposed.
							11.1		30.75				III	
										-15.55	30.99			30.48- 30.60m: Moderately weak, highly decomposed. (Sandy coarse GRAVEL and COBBLE)
			80	97	97	97	1.5		T2-101				II	
										-16.21	31.65			30.60- 30.99m: Moderately strong, moderately decomposed.
		7.97m at 18:00								-16.43	31.87		III	
									32.05	-16.69	32.13		II	31.65- 31.87m: Moderately strong, moderately decomposed.
25/08/2020				46	43	43	NR		T2-101	-16.77	32.21		III	
27/08/2020		11.22m at 08:00						(29, 21/15mm 200/20mm) 200blS/20mm	45	-16.96	32.40		V	32.13- 32.21m: Moderately strong, moderately decomposed.
									32.40 32.46 32.51					32.21- 32.40m: No recovery assumed to be completely decomposed GRANITE.
			70										IV	Weak, pinkish grey (5YR 7/2), highly decomposed medium grained GRANITE. (Sandy fine to medium GRAVEL)
								(30, 20/10mm 200/15mm) 200blS/15mm	45					
	35.44 HW								34.40 34.45 34.50					
									35.44	-20.00	35.44			
							NI						III	Moderately strong, yellowish brown spotted white, moderately decomposed medium grained GRANITE. Joints are widely locally closely to medium spaced, rough planar, extremely narrow, iron and manganese oxides stained, dipping at 0°-10°, 20°-30°, 40°-50° and subvertical.
							9.1							
				100	96	90	1.0		T2-101					
							16.0		36.80					
										-21.78	37.22			
				100	97	86			T2-101				II	37.22- 37.85m: Strong, slightly decomposed.
			80							-22.41	37.85			
										-22.48	37.92		III	
									38.05	-22.55	37.99			37.92- 37.99m: PEGMATITE.
										-22.73	38.17			
							1.3							38.17- 39.27m: Strong, slightly decomposed.
				98	96	96			T2-101				II	
		8.43m at 18:00												
27/08/2020										-23.83	39.27			
28/08/2020		11.35m at 08:00							39.30					
				100	92	85			T2-101	-24.10	39.54		III	
										-24.20	39.64			39.54- 39.64m: PEGMATITE.
										-24.44	39.88			
										-24.56	40.00			

- Small Disturbed Sample
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- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 29/08/2020

CHECKED BY PETER CHU

DATE 31/08/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH31**

SHEET 5 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-20	E 837 305.35 N 815 300.81	DATE from 18/08/2020 to 28/08/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.44 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
28/08/2020			80	100	92	85	7.7 NA 3.4		T2-101	-24.66 -24.80 -24.85 40.53 -24.93 -25.09	40.10 40.24 40.29 40.37 40.53		IV III	39.88- 40.29m: With very closely spaced subhorizontal microfractures. 40.10- 40.24m: Moderately weak, highly decomposed. (Sandy coarse GRAVEL and COBBLE) 40.37- 40.53m: PEGMATITE. End of drillhole at 40.53m.

- Small Disturbed Sample
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- Permeability Test
- Impression Packer Test
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- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG
DATE 29/08/2020
CHECKED BY PETER CHU
DATE 31/08/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH32**

SHEET 1 of 4

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-19	E 837 315.65 N 815 311.71	DATE from 18/08/2020 to 25/08/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.41 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
18/08/2020	HW	Dry at 08:00								+15.21	0.20			CONCRETE SLAB.
									A 0.45 0.50					Medium dense, yellowish red (5YR 5/6), slightly clayey silty medium to coarse SAND with much subangular fine gravel sized moderately weak to moderately strong granite and quartz. (FILL)
									B 0.95 1.00					
		Dry at 18:00							C 1.45 1.50					
18/08/2020									D 1.95 2.00 2.10					
19/08/2020		Dry at 08:00						(2, 2, 3, 3, 4) N = 13	1 2.40 2.45					
				90					2.90					
									3					
									4 3.90 4.00 4.10					
								(2, 2, 3, 4, 4, 5) N = 16	5 6 4.40 4.45					
									4.90					
				100					7					
		0.70m at 18:00	70						8 5.90 6.00 6.10					
								(2, 2, 3, 3, 4, 5) N = 15	9 10 6.40 6.45					
19/08/2020									6.90	+8.51	6.90			Very stiff, red (2.5YR 5/6), sandy clayey SILT with some subangular fine gravel of moderately weak granite and quartz. (RESIDUAL SOIL)
20/08/2020		3.60m at 08:00							11					
				100					12 7.90 8.00 8.10				VI	
								(2, 3, 3, 3, 4, 6) N = 16	13 14 8.40 8.45					
									8.90	+6.51	8.90			Extremely weak, light red (2.5YR 6/8), completely decomposed medium grained GRANITE. (Medium to coarse SAND with much subangular fine gravel)
				95					15				V	
									16 9.90	+5.41	10.00			

- Small Disturbed Sample
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- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 26/08/2020

CHECKED BY PETER CHU

DATE 27/08/2020

REMARKS
1. Inspection pit excavated from 0.00m-2.00m.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH32**

SHEET 2 of 4

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-19	E 837 315.65 N 815 311.71	DATE from 18/08/2020 to 25/08/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.41 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
20/08/2020		2.50m at 18:00	70	100 100 100 100 100				(2, 2, 3, 3, 4, 5) N = 15 (2, 2, 3, 4, 4, 6) N = 17 (2, 3, 4, 6, 7, 9) N = 26 (4, 8, 10, 13, 19, 23) N = 65 (4, 9, 13, 20, 30, 48) N = 111 (50/30mm	17 10.00 18 10.10 10.40 10.45 19 10.90 20 11.90 12.00 12.10 21 22 12.40 12.45 23 12.90 24 13.90 14.00 14.10 25 26 14.40 14.45 27 14.90 28 15.90 16.00 16.10 29 30 16.40 16.45 31 16.90 32 17.90 18.00 18.10 33 34 18.40 18.45 35 18.90 36 19.90	+4.51 +2.51 +0.51 -2.59 -3.49 -4.59	10.90 12.90 14.90 18.00 18.90 20.00		V	As Sheet 1 of 4. Extremely weak, reddish yellow (7.5YR 6/6), completely decomposed fine grained GRANITE. (Clayey silty fine to medium SAND) Extremely weak, red (2.5YR 5/8), completely decomposed medium grained GRANITE. (Silty medium to coarse SAND) Extremely weak, light red (10R 7/8), completely decomposed medium grained GRANITE. (Medium to coarse SAND with much fine to medium gravel) Extremely weak, reddish yellow (5YR 6/8), completely decomposed medium grained GRANITE. (Fine to medium SAND with some fine gravel) Extremely weak, pinkish grey (10YR 6/2), completely decomposed medium grained GRANITE. (Medium to coarse SAND with much fine to medium gravel)

- Small Disturbed Sample
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LOGGED BY CALVIN TSANG

DATE 26/08/2020

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REMARKS

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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH32**

SHEET 3 of 4

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-19	E 837 315.65 N 815 311.71	DATE from 18/08/2020 to 25/08/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.41 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
21/08/2020		3.10m at 08:00	70					200/70mm) 200bls/70mm	37	20.00 20.05	-4.82	20.23	V	As Sheet 2 of 4.
										20.10 20.23	-5.12	20.53	III	Strong, pinkish grey spotted black and white, slightly decomposed medium grained GRANITE. Joints are widely spaced, rough planar, extremely narrow, iron oxide stained, dipping at 10°-20°. 20.23- 20.53m: Moderately strong, moderately decomposed.
				100	100	100			T2-101					
										21.50				
			80	100	100	100	0.2		T2-101				II	
										23.02				
				100	100	100			T2-101					
		6.70m at 18:00									-8.90	24.31		
21/08/2020									T2-101	24.55 24.60	-9.19	24.60	III	24.31- 24.60m: Moderately strong, moderately decomposed.
22/08/2020		3.60m at 08:00		100	0	0	NI	(18, 29, 32, 43, 52, 66) N = 193	38	24.70				Extremely weak, dark reddish brown (5YR 3/4), completely decomposed medium grained GRANITE. (Medium to coarse SAND with much fine to medium gravel)
									39	25.00 25.05				
			70										V	
	27.04 HW							(20, 30/15mm 200/60mm) 200bls/60mm	40	26.60 26.70 26.75				
										27.04	-11.63	27.04		
							NI				-11.92	27.33	III	Strong, pinkish grey spotted black and white, slightly decomposed medium grained GRANITE. Joints are medium to widely spaced, rough planar, extremely narrow, iron oxide stained, dipping at 0°-10°. 27.04- 27.33m: Moderately strong, moderately decomposed.
				100	96	96			T2-101					
			80				0.0			28.54			II	
				100	100	100			T2-101					
											-14.59	30.00		

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 26/08/2020

CHECKED BY PETER CHU

DATE 27/08/2020

REMARKS

泰昇地基工程有限公司 TYSAN FOUNDATION LIMITED (泰昇集團成員 A member of Tysan Group)	DRILLHOLE RECORD CONTRACT No. TC G518	DRILLHOLE No. BH32 SHEET 4 of 4

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES E 837 315.65 N 815 311.71	W.O. No. ASD 012560
MACHINE / No. DR-19		DATE from 18/08/2020 to 25/08/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.41 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
22/08/2020		8.20m at 18:00	80	100	100	100	2.2		T2-101 30.00 31.06	-14.90 -15.65	30.31 31.06		III II	30.00- 30.31m: Moderately strong, moderately decomposed.
24/08/2020		8.20m at 08:00	70					(50/30mm 200/70mm) 200bls/70mm	41 31.10 31.15 31.20				V	Extremely weak, light brownish grey (10YR 6/2), completely decomposed medium grained GRANITE. (Medium to coarse SAND with some fine gravel)
24/08/2020		9.30m at 18:00						(50/30mm 200/70mm) 200bls/70mm	42 33.10 33.15 33.20 33.46	-18.05	33.46			
25/08/2020		10.00m at 08:00	80	100	97	97	3.6		T2-101 34.99	-19.12	34.53		III	Strong, pinkish grey spotted black and white, slightly decomposed medium grained GRANITE. Joints are medium to widely spaced, rough and smooth planar, extremely narrow, iron oxide stained, dipping at 20°-30°. 33.46- 34.53m: Moderately strong, moderately decomposed.
				100	100	100			T2-101 35.72				II	
				100	100	100	0.2		T2-101 36.55	-21.14	36.55			
				100	100	100			T2-101 37.89	-21.82 -22.06 -22.33	37.23 37.47 37.74		III II III	36.55- 37.23m: Moderately strong, moderately decomposed. 37.47- 37.74m: Moderately strong, moderately decomposed.
25/08/2020				100	100	100			T2-101 38.56	-22.83 -23.15	38.24 38.56		II III	38.24- 38.56m: Moderately strong, moderately decomposed. End of drillhole at 38.56m.

● Small Disturbed Sample	Standard Penetration Test
Large Disturbed Sample	Permeability Test
SPT Liner Sample	Impression Packer Test
U76 Undisturbed Sample	Borehole Televiewer Test
U100 Undisturbed Sample	Pressuremeter Test
Mazier Sample	Standpipe Tip
Piston Sample	Piezometer Tip
▲ Water Sample	In-situ Vane Shear Test

LOGGED BY CALVIN TSANG
DATE 26/08/2020
CHECKED BY PETER CHU
DATE 27/08/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH33**

SHEET 1 of 3

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-25	E 837 231.20 N 815 207.84	DATE from 26/09/2020 to 30/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.29 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
26/09/2020	PW									+15.14	0.15			CONCRETE SLAB.
									A 0.45 0.50 B 0.95 1.00 C 1.45 1.50 D 1.95				VI	Red (2.5YR 5/8), sandy clayey SILT. (RESIDUAL SOIL)
								(1, 1, 1, 2, 3, 3) N = 9	1 2.00 2.10 2 2.40 2.45	+13.29	2.00			Stiff, red (2.5YR 5/8), sandy clayey SILT with some subangular fine gravel of quartz. (RESIDUAL SOIL)
				90					3 2.90				VI	
								(1, 1, 2, 1, 2, 3) N = 8	4 3.90 4.00 5 4.10 6 4.40 4.45					
		3.70m at 18:00	70							+10.39	4.90			
				90					7 4.90 8 5.90 6.00				V	Extremely weak, weak red (10R 5/4), completely decomposed medium grained GRANITE. (Silty clayey fine to medium SAND with some fine gravel)
26/09/2020 28/09/2020		4.90m at 08:00						(1, 2, 2, 2, 2, 2) N = 8	9 6.10 10 6.40 6.45	+9.29	6.00		V	Extremely weak, red (2.5YR 5/8), completely decomposed fine to medium grained GRANITE. (Stiff, sandy clayey SILT)
										+8.39	6.90			
				90					11 6.90 12 7.90 8.00				V	Extremely weak, reddish yellow (5YR 7/8), completely decomposed fine grained GRANITE. (Stiff, sandy clayey SILT)
								(1, 2, 2, 3, 3, 3) N = 11	13 8.10 14 8.40 8.45	+7.29	8.00		V	Extremely weak, yellowish red (5YR 5/8), completely decomposed fine grained GRANITE. (Silty fine to medium SAND)
	8.90 PW									+6.39	8.90			
	HW			0					15 8.90 9.07	+6.12	9.17		V	Extremely weak, reddish yellow (5YR 6/8), completely decomposed medium grained GRANITE. (Silty fine to medium SAND with much fine gravel and occasional cobble)
			80	99	97	97	0.4		T2-101 9.17 T2-101 9.87	+5.29	10.00		II	Strong, pinkish grey spotted black and white, slightly decomposed medium grained GRANITE. Joints are

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 03/10/2020

CHECKED BY PETER CHU

DATE 05/10/2020

REMARKS
1. Inspection pit excavated from 0.00m-2.00m.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH33**

SHEET 2 of 3

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-25	E 837 231.20 N 815 207.84	DATE from 26/09/2020 to 30/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.29 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				100	100	100			T2-101 10.66				II	widely spaced, rough planar, extremely narrow, iron oxide stained, dipping at 0°-10° and 20°-30°.
			80				0.4			+4.12	11.17			
				100	98	98			T2-101 11.70				III	11.17- 11.70m: Moderately strong, moderately decomposed.
										+3.59	11.70			Extremely weak, dark yellowish brown (10YR 6/4) to yellowish brown (10YR 5/6), completely decomposed medium grained GRANITE. (Medium to coarse SAND with much fine gravel)
								(2, 2, 4, 6, 6, 7) N = 23	16 11.80 17 12.10 12.15					
			70	100					18 12.60				V	
								(3, 5, 7, 8, 9, 11) N = 35	19 13.60 13.70 20 13.80 21 14.10 14.15					
				0					22 14.60 14.70	+0.69 +0.49	14.60 14.80		IV	Weak, yellowish red (5YR 5/8), highly decomposed medium grained GRANITE. (Coarse GRAVEL)
							NI							
			80	94	66	66	0.0		T2-101 14.80	-0.10	15.39		III	Moderately strong, yellowish brown, moderately decomposed medium grained GRANITE. Joints are very widely spaced, rough planar, extremely narrow, iron oxide stained, dipping at 30°-40°.
							NA		15.60	-0.31	15.60		IV	
		5.10m at 18:00						(8, 11, 13, 10, 8, 7) N = 38	23 15.70 24 16.00 16.05					15.39- 15.60m: Moderately weak, highly decomposed. (Sandy COBBLE)
28/09/2020														
29/09/2020		5.45m at 08:00	70	94					25 16.50				V	Extremely weak, light yellowish brown (10YR 6/4) to yellowish red (5YR 5/8), completely decomposed medium grained GRANITE. (Medium to coarse SAND with much fine gravel)
									26 17.30 17.40	-2.11	17.40			
				94	92	92			T2-101 18.30				II	Strong, pinkish grey spotted black and white, slightly decomposed medium grained GRANITE. Joints are medium spaced, rough planar, extremely narrow, iron oxide stained, dipping at 0°-10°, 30°-40° and 40°-50°.
			80				1.7			-3.74	19.03			
				92	89	89			T2-101 19.20	-3.91	19.20		III	19.03- 19.20m: Moderately strong, moderately decomposed.
			70					(8, 13, 11, 15, 17, 25) N = 68	27 19.30 28 19.60 19.65				V	Extremely weak, light yellowish brown (10YR 6/4), completely decomposed medium grained GRANITE.
	20.06									-4.71	20.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 03/10/2020

CHECKED BY PETER CHU

DATE 05/10/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH33**

SHEET 3 of 3

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-25	E 837 231.20 N 815 207.84	DATE from 26/09/2020 to 30/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.29 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
29/09/2020	HW	5.10m at 18:00		100	98	98			T2-101	20.06				(Silty medium to coarse SAND with some fine gravel)
30/09/2020		5.50m at 08:00		100	100	100			T2-101	-4.77	20.06		III	Strong, pinkish grey spotted black and white, slightly decomposed medium grained GRANITE. Joints are widely spaced, rough planar, extremely narrow, iron oxide stained, dipping at 0°-10° and 30°-40°.
			80	100	100	100	0.2		T2-101	-5.07	20.36			20.06- 20.36m: Moderately strong, moderately decomposed.
				100	100	100			T2-101	20.90				
				100	100	100			T2-101	22.23			II	
30/09/2020		5.20m at 18:00		89	86	86			T2-101	23.45				
										24.69				
										25.06				
										-9.77	25.06			End of drillhole at 25.06m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG
DATE 03/10/2020
CHECKED BY PETER CHU
DATE 05/10/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH34**

SHEET 1 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-6	E 837 242.29 N 815 215.93	DATE from 26/09/2020 to 05/10/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.37 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
26/09/2020	SW	Dry at 08:00								+15.22	0.15			CONCRETE SLAB.
26/09/2020		Dry at 18:00							A 0.45 0.50					Reddish brown (5YR 4/3), medium to coarse SAND with some subrounded and subangular fine to medium gravel sized moderately strong to strong granite, quartz and concrete fragments. (FILL)
30/09/2020		Dry at 08:00	80	44					B 0.95 1.00 C 1.15 1.20	+14.17	1.20			Grey (N6) and light red (2.5YR 6/8), angular COBBLE with some coarse gravel sized concrete fragments in a matrix of silty clayey sand. (FILL)
									T2-101	+13.37	2.00			Stiff, yellowish red (5YR 5/8), sandy clayey SILT with some subangular fine gravel of quartz. (FILL)
								(1, 2, 2, 2, 3, 3) N = 10	1 2.00 2.10 2 2.40 2.45					
	2.90 SW PW			100					2.90 3					
								(1, 2, 2, 3, 3, 3) N = 11	4 3.90 4.00 5 4.10 6 4.40 4.45					
				100					4.90 7					
			70					(1, 1, 2, 2, 3, 4) N = 11	8 5.90 6.00 9 6.10 10 6.40 6.45					
									6.90	+8.47	6.90			Stiff, reddish yellow (5YR 6/8), sandy clayey SILT with some fine gravel of quartz. (FILL)
				100					11					
								(1, 2, 2, 3, 2, 4) N = 11	12 7.90 8.00 13 8.10 14 8.40 8.45					
									8.90	+6.47	8.90			White (N8) dappled light reddish brown, silty clayey medium to coarse SAND with much fine gravel. (ALLUVIUM)
				100					15					
									16 9.90	+5.37	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 05/10/2020

CHECKED BY PETER CHU

DATE 06/10/2020

REMARKS
1. Inspection pit excavated from 0.00m-1.20m.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH34**

SHEET 2 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-6	E 837 242.29 N 815 215.93	DATE from 26/09/2020 to 05/10/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.37 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				100				(1, 1, 2, 2, 4, 5) N = 13	17 10.00 18 10.10 10.40 10.45				V	Extremely weak, yellowish red (5YR 5/8), completely decomposed medium grained GRANITE. (Stiff, sandy clayey SILT with some fine gravel)
									10.90 19 20 11.90 12.00					
								(1, 1, 2, 3, 4, 4) N = 13	21 12.10 22 12.40 12.45					
									12.90	+2.47	12.90			
				100					23				V	Extremely weak, red (10R 5/8) spotted white, completely decomposed medium grained GRANITE. (Stiff to very stiff, sandy clayey SILT with some fine gravel)
			70					(1, 2, 2, 4, 7, 7) N = 20	24 13.90 14.00 25 14.10 26 14.40 14.45					
				100					14.90 27 28 15.90 16.00					
								(2, 5, 5, 6, 8, 11) N = 30	29 16.10 30 16.40 16.45					
									16.90	-1.53	16.90			
				100					31 32 17.90 18.00				V	Extremely weak, pale red (10R 7/4), completely decomposed medium grained GRANITE. (Medium to coarse SAND with much fine to medium gravel)
30/09/2020		0.70m at 18:00						(3, 6, 9, 10, 11, 14) N = 44	33 18.10 34 18.40 18.45					
03/10/2020		1.70m at 08:00		100					18.90 35					
									36 19.90	-4.63	20.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 05/10/2020

CHECKED BY PETER CHU

DATE 06/10/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH34**

SHEET 3 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-6	E 837 242.29 N 815 215.93	DATE from 26/09/2020 to 05/10/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.37 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
	22.00 PW / HW		70					(5, 8, 12, 15, 15, 16) N = 58 (5, 9, 12, 16, 16, 17) N = 61 (6, 12, 14, 14, 16, 16) N = 62 (6, 11, 15, 15, 17, 19) N = 66 (10, 21, 33, 35, 37, 42) N = 147	37 20.00–20.10 38 20.40–20.45 39 22.00–22.10 40 22.40–22.45 41 24.00–24.10 42 24.40–24.45 43 26.00–26.10 44 26.40–26.45 45 28.00–28.10 46 28.40–28.45	-14.63	30.00		V	As Sheet 2 of 5.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG
DATE 05/10/2020
CHECKED BY PETER CHU
DATE 06/10/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH34**

SHEET 4 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-6	E 837 242.29 N 815 215.93	DATE from 26/09/2020 to 05/10/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.37 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(11, 28, 30, 41, 45, 58) N = 174	47 30.00 30.10 48 30.40 30.45				V	As Sheet 2 of 5.
								(17, 33/40mm 115, 85/50mm) 200bls/125mm	49 32.00 50 32.19 32.24	-16.63	32.00			Extremely weak, yellowish brown (10YR 5/8), completely decomposed medium grained GRANITE. (Medium to coarse SAND with much fine to medium gravel)
			70					(50/60mm 200/70mm) 200bls/70mm	51 34.00 34.08 34.13					
03/10/2020 -05/10/2020		0.70m at 18:00 1.80m at 08:00						(50/50mm 200/70mm) 200bls/70mm	52 36.00 36.07 36.12				V	
								(50/40mm 200/60mm) 200bls/60mm	53 38.00 38.05 38.10					
								(50/10mm		-24.63	40.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 05/10/2020

CHECKED BY PETER CHU

DATE 06/10/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH34**

SHEET 5 of 5

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-6	E 837 242.29 N 815 215.93	DATE from 26/09/2020 to 05/10/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.37 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								T 200/50mm) 200bls/50mm	54 40.00 40.01 40.06					As Sheet 4 of 5.
	41.28 HW		70							-25.91	41.28		V	
				89	86	51	14.0		T2-101 41.28 – 42.70	-26.53	41.90			Moderately strong, reddish brown, moderately decomposed medium grained GRANITE. Joints are very closely to closely spaced, smooth planar, extremely narrow, iron oxide stained, dipping at 20°-30°, 30°-40°, 50°-60°, 60°-70° and 70°-80°.
										-26.78	42.15			41.90- 42.15m: Fine grained GRANITE with pegmatite.
				100	75	28	13.3		T2-101 42.70 – 43.72					
							>20							
			80				8.6						III	
				99	81	53			T2-101 43.72 – 45.22	-28.93	44.30			44.30- 44.65m: Fine grained GRANITE with pegmatite.
							12.2			-29.28	44.65			
										-29.85	45.22			45.22- 45.48m: Fine grained GRANITE with pegmatite.
										-30.11	45.48			
				100	97	72	5.1		T2-101 45.22 – 46.54					
05/10/2020		0.60m at 18:00								-31.19 -31.17	46.47 46.54			46.47- 46.54m: Fine grained GRANITE with pegmatite. End of drillhole at 46.54m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 05/10/2020

CHECKED BY PETER CHU

DATE 06/10/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH35**

SHEET 1 of 6

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-6	E 837 254.41 N 815 225.11	DATE from 19/09/2020 to 29/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.25 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
19/09/2020	SW	Dry at 08:00								+15.10	0.15			CONCRETE SLAB.
									A 0.45 0.50					Weak red (10R 5/3), sandy clayey SILT with much subangular fine gravel sized moderately weak to moderately strong granite. (FILL)
									B 0.95 1.00					
									C 1.45 1.50					
		Dry at 18:00							D 1.95	+13.25	2.00			
19/09/2020 25/09/2020		Dry at 08:00						(1, 2, 2, 2, 2, 3) N = 9	1 2.00 2.10 2 2.40 2.45					Stiff, weak red (10R 5/3), sandy clayey SILT with some subangular fine gravel sized moderately weak granite and quartz. (FILL)
									2.90	+12.35	2.90			Stiff, yellowish red (5YR 5/8) and yellowish brown (10YR 5/6), sandy clayey SILT with some fine gravel sized quartz and plagioclase. (FILL)
	4.00 SW PW			100				(2, 2, 3, 3, 3, 4) N = 13	3 4 3.90 4.00 5 4.10 6 4.40 4.45					
			70	100				(2, 2, 2, 3, 3, 5) N = 13	4.90 7 8 5.90 6.00 9 6.10 10 6.40 6.45					
				100					6.90 11					
								(2, 2, 2, 3, 3, 5) N = 13	12 7.90 8.00 13 8.10 14 8.40 8.45					
				100					8.90 15					
									16 9.90	+5.25	10.00			

- Small Disturbed Sample
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- U100 Undisturbed Sample
- Mazier Sample
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- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 30/09/2020

CHECKED BY PETER CHU

DATE 03/10/2020

REMARKS
1. Inspection pit excavated from 0.00m-2.00m.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH35**

SHEET 2 of 6

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-6	E 837 254.41 N 815 225.11	DATE from 19/09/2020 to 29/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.25 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
25/09/2020 26/09/2020		0.60m at 18:00 1.20m at 08:00						(1, 2, 2, 3, 3, 4) N = 12	17 10.00–10.10 18 10.40–10.45	+4.35	10.90			Stiff, light reddish brown (5YR 6/4), sandy clayey SILT. (FILL)
				100					19 10.90–11.90					Stiff, white (N8) spotted grey dappled yellowish brown, sandy clayey SILT with some fine gravel sized quartz and plagioclase. (ALLUVIUM)
								(2, 2, 2, 3, 4, 4) N = 13	20 12.00 21 12.10 22 12.40–12.45	+3.25	12.00			Stiff, reddish yellow (5YR 6/8), sandy clayey SILT. (ALLUVIUM)
				100					23 12.90–13.90	+2.35	12.90			Stiff, white (N8) dappled red, sandy clayey SILT with some fine gravel of quartz. (ALLUVIUM)
			70					(1, 2, 3, 4, 5, 7) N = 19	24 14.00 25 14.10 26 14.40–14.45	+1.25	14.00			Medium dense, white (N8) spotted grey, clayey silty medium to coarse SAND with much fine gravel of quartz. (ALLUVIUM)
				100					27 14.90–15.90	-0.75	16.00			
								(5, 9, 13, 15, 13, 16) N = 57	28 16.00 29 16.10 30 16.40–16.45				V	Extremely weak, light yellowish brown (10YR 6/4), completely decomposed medium grained GRANITE. (Medium to coarse SAND with much fine gravel)
				100					31 16.90–17.90	-1.65	16.90		V	Extremely weak, yellowish brown (10YR 5/8) spotted white, completely decomposed medium grained GRANITE. (Sandy clayey SILT with some fine gravel)
								(7, 15, 17, 16, 13, 14) N = 60	32 18.00 33 18.10 34 18.40–18.45	-2.75	18.00		V	Extremely weak, dark yellowish brown (10YR 4/8), completely decomposed medium grained GRANITE. (Medium to coarse SAND with some fine gravel)
				100					35 18.90–19.90	-3.65	18.90		V	Extremely weak, pinkish grey (5YR 7/2) spotted white and grey dappled brown, completely decomposed medium grained GRANITE. (Medium to coarse SAND with some fine gravel)
									36	-4.75	20.00			

- Small Disturbed Sample
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- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 30/09/2020

CHECKED BY PETER CHU

DATE 03/10/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH35**

SHEET 3 of 6

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-6	E 837 254.41 N 815 225.11	DATE from 19/09/2020 to 29/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.25 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
														As Sheet 2 of 6.
	22.00 PW							(6, 8, 10, 13, 14, 17) N = 54	37 20.00 20.10 38 20.40 20.45					
	HW							(6, 12, 14, 15, 15, 16) N = 60	39 22.00 22.10 40 22.40 22.45					
			70					(7, 18, 21, 23, 22, 24) N = 90	41 24.00 24.10 42 24.40 24.45				V	
26/09/2020		0.50m at 18:00						(16, 23, 23, 28, 32, 36) N = 119	43 26.00 26.10 44 26.40 26.45					
28/09/2020		1.70m at 08:00						(17, 33/30mm 114, 86/40mm) 200bls/115mm	45 28.00 46 28.17 28.22					
								(50/30mm		-14.75	30.00			

- Small Disturbed Sample
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- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 30/09/2020

CHECKED BY PETER CHU

DATE 03/10/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH35**

SHEET 4 of 6

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-6	E 837 254.41 N 815 225.11	DATE from 19/09/2020 to 29/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.25 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(200/70mm) 200bls/70mm	47 30.00 30.05 30.10					Extremely weak, yellowish brown (10YR 4/8), completely decomposed medium grained GRANITE. (Medium to coarse SAND with much fine to medium gravel)
								(50/25mm 200/65mm) 200bls/65mm	48 32.00 32.04 32.09					
								(50/30mm 200/70mm) 200bls/70mm	49 34.00 34.04 34.09					
			70										V	
								(50/15mm 200/65mm) 200bls/65mm	50 36.00 36.03 36.08					
								(50/20mm 200/70mm) 200bls/70mm	51 38.00 38.04 38.09					
								(50/10mm		-24.75	40.00			

- Small Disturbed Sample
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- U100 Undisturbed Sample
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- Piston Sample
- Water Sample
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- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 30/09/2020

CHECKED BY PETER CHU

DATE 03/10/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH35**

SHEET 5 of 6

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-6	E 837 254.41 N 815 225.11	DATE from 19/09/2020 to 29/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.25 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(200/60mm) 200bls/60mm	52 40.00 40.02 40.07					As Sheet 4 of 6.
								(50/15mm 200/65mm) 200bls/65mm	53 42.00 42.03 42.08					
								(50/20mm 200/70mm) 200bls/70mm	54 44.00 44.04 44.09					
			70										V	
								(50/15mm 200/65mm) 200bls/65mm	55 46.00 46.03 46.08					
								(50/15mm 200/65mm) 200bls/65mm	56 48.00 48.03 48.08					
								(50/10mm		-34.75	50.00			

- Small Disturbed Sample
- Large Disturbed Sample
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- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 30/09/2020

CHECKED BY PETER CHU

DATE 03/10/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH35**

SHEET 6 of 6

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-6	E 837 254.41 N 815 225.11	DATE from 19/09/2020 to 29/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.25 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
	50.21 HW		70					1 200/60mm) 200b/s/60mm	57 50.00				V	As Sheet 4 of 6.
							NI		50.02	-34.96	50.21			
									50.07	-35.05	50.30			Strong, pink and red, slightly decomposed medium grained GRANITE. Joints are closely and widely locally very closely and medium spaced, smooth planar, extremely narrow, iron oxide stained, epidote coated, dipping at 20°-30°, 30°-40° and 50°-60°.
				100	81	81	4.6		50.21 T2-101	-35.37	50.62		II	
										-35.99	51.24			50.30- 50.62m: Fine grained GRANITE with pegmatite.
							>20			-36.11	51.36			
							6.3		51.56	-36.52	51.77		III	51.24- 51.77m: Fine grained GRANITE with pegmatite.
				100	87	74	>20		T2-101	-36.96	52.21			51.36- 52.21m: Moderately strong, moderately decomposed.
			80							-37.41	52.66			
										-37.69	52.94			52.66- 52.94m: Fine grained GRANITE with pegmatite.
									53.06	-37.72	52.97			
										-38.44	53.69			52.97- 53.69m: With closely spaced pegmatite veins (40-70mm thick).
				100	100	100	1.2		T2-101	-38.77	54.02		II	53.69- 54.02m: Fine grained GRANITE with pegmatite.
28/09/2020		0.70m at 18:00								-38.98	54.23			
29/09/2020		1.50m at 08:00							54.56					54.02- 54.23m: With closely spaced pegmatite quartz (40-70mm thick).
										-39.69	54.94			
		1.20m at 18:00		100	83	61	12.8		T2-101					54.94- 55.70m: Epidotized.
29/09/2020										-40.27	55.52			
									55.70	-40.45	55.70			55.52- 55.70m: Fine grained GRANITE with pegmatite.
														End of drillhole at 55.70m.

- Small Disturbed Sample
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- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 30/09/2020

CHECKED BY PETER CHU

DATE 03/10/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH36**

SHEET 1 of 6

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-6	E 837 264.72 N 815 236.01	DATE from 19/09/2020 to 25/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.22 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
19/09/2020	SW	Dry at 08:00							A 0.45 0.50	+15.07	0.15			CONCRETE SLAB.
									B 0.95 1.00					Very stiff, yellowish red (5YR 5/6), sandy clayey SILT with occasional coarse gravel sized cement sand mortar. (FILL)
									C 1.45 1.50					
		Dry at 18:00							D 1.95 2.00					
19/09/2020 21/09/2020		Dry at 08:00						(2, 3, 3, 4, 4, 6) N = 17	1 2.10 2 2.40 2.45					
				100					2.90 3					
	4.00 SW PW							(3, 3, 4, 5, 5, 7) N = 21	3.90 4 4.00 5 4.10 6 4.40 4.45					
				100					4.90 7					
			70					(3, 3, 4, 4, 5, 4) N = 17	5.90 8 6.00 9 6.10 10 6.40 6.45					
				100					6.90 11					
								(3, 3, 3, 3, 4, 4) N = 14	7.90 12 8.00 13 8.10 14 8.40 8.45	+7.22	8.00			Medium dense, yellowish red (5YR 5/6), silty clayey medium to coarse SAND. (FILL)
									8.90	+6.32	8.90			Very stiff, yellowish brown (10YR 5/4), sandy clayey SILT. (ALLUVIUM)
				100					15 16 9.90	+5.22	10.00			

- Small Disturbed Sample
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- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 25/09/2020

CHECKED BY PETER CHU

DATE 26/09/2020

REMARKS
1. Inspection pit excavated from 0.00m-2.00m.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH36**

SHEET 2 of 6

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-6	E 837 264.72 N 815 236.01	DATE from 19/09/2020 to 25/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.22 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
									17 10.00–10.10					Medium dense, yellowish brown (10YR 5/4), silty clayey medium to coarse SAND. (ALLUVIUM)
								(2, 3, 2, 4, 3, 4) N = 13	18 10.40–10.45					
										+4.32	10.90			Very stiff, reddish yellow (5YR 6/8), sandy clayey SILT with some subrounded fine gravel of plagioclase and quartz. (ALLUVIUM)
				100					19 10.90–11.90					
									20 12.00–12.10	+3.22	12.00			Medium dense, yellowish brown (10YR 5/4), silty clayey medium to coarse SAND. (ALLUVIUM)
		0.40m at 18:00						(3, 5, 6, 7, 7, 7) N = 27	21 12.40–12.45					
21/09/2020										+2.32	12.90			Very stiff, light yellowish brown (10YR 6/4), sandy clayey SILT with much fine gravel of quartz. (ALLUVIUM)
22/09/2020		1.10m at 08:00		100					22 12.90–13.90					
									23 14.00–14.10					
									24 14.40–14.45	+1.22	14.00			Stiff, red (2.5YR 5/8) dappled dark grey, sandy clayey SILT. (ALLUVIUM)
								(3, 3, 3, 4, 3, 4) N = 14	25 14.90–15.90					
									26 16.00–16.10	+0.32	14.90			Extremely weak, yellowish red (5YR 5/8), completely decomposed medium grained GRANITE. (Silty clayey fine SAND)
			70	100					27 16.40–16.45				V	
									28 16.90–17.90	-0.78	16.00			Extremely weak, red (2.5YR 5/8), completely decomposed fine grained GRANITE. (Slightly clayey silty fine to medium SAND)
								(4, 5, 5, 8, 8, 9) N = 30	29 18.00–18.10				V	
									30 18.40–18.45	-1.68	16.90			Extremely weak, red (2.5YR 5/8), completely decomposed medium grained GRANITE. (Clayey silty medium to coarse SAND with much fine gravel)
				100					31 18.90–19.90				V	
									32 20.00–20.10	-3.68	18.90			Extremely weak, pinkish grey (5YR 7/2), completely decomposed medium grained GRANITE. (Clayey silty medium to coarse SAND with some fine gravel)
								(4, 9, 11, 13, 13, 14) N = 51	33 20.40–20.45					
									34 20.90–21.90				V	
				100					35 22.00–22.10	-4.78	20.00			
									36 22.40–22.45					

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 25/09/2020

CHECKED BY PETER CHU

DATE 26/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH36**

SHEET 3 of 6

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-6	E 837 264.72 N 815 236.01	DATE from 19/09/2020 to 25/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.22 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(6, 11, 16, 13, 14, 17) N = 60	37 20.00 20.10 38 20.40 20.45					As Sheet 2 of 6.
	22.00 PW							(5, 10, 11, 15, 19, 23) N = 68	39 22.00 22.10 40 22.40 22.45				V	
22/09/2020	HW	0.50m at 18:00						(7, 11, 14, 14, 16, 19) N = 63	41 24.00 24.10 42 24.40 24.45	-8.78	24.00			Extremely weak, yellowish brown (10YR 5/4), completely decomposed medium grained GRANITE. (Medium to coarse SAND with much fine to medium gravel)
23/09/2020		1.20m at 08:00	70					(8, 13, 16, 19, 20, 22) N = 77	43 26.00 26.10 44 26.40 26.45				V	
								(8, 17, 23, 20, 21, 24) N = 88	45 28.00 28.10 46 28.40 28.45	-14.78	30.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 25/09/2020

CHECKED BY PETER CHU

DATE 26/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH36**

SHEET 4 of 6

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-6	E 837 264.72 N 815 236.01	DATE from 19/09/2020 to 25/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.22 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(9, 19, 21, 19, 22, 25) N = 87	47 30.00 30.10 48 30.40 30.45					As Sheet 3 of 6.
								(18, 32/45mm 95, 105/35mm) 200blS/110mm	49 32.00 50 32.18 32.23					
								(50/20mm 200/70mm) 200blS/70mm	51 34.00 34.04 34.09					
			70										V	
								(50/25mm 200/75mm) 200blS/75mm	52 36.00 36.05 36.10					
								(50/20mm 200/70mm) 200blS/70mm	53 38.00 38.04 38.09					
		0.60m at						(50/15mm		-24.78	40.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

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DATE 25/09/2020

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泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH36**

SHEET 5 of 6

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-6	E 837 264.72 N 815 236.01	DATE from 19/09/2020 to 25/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.22 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
~~23/09/2020~~ 24/09/2020		~~18:00~~ 1.80m at 08:00												As Sheet 3 of 6.
								(50/20mm 200/70mm) 200bls/70mm	55 42.00 42.04 42.09					
			70					(50/15mm 200/65mm) 200bls/65mm	56 44.00 44.03 44.08				V	
	45.38 HW							(50/30mm 200/60mm) 200bls/60mm	57 46.00 46.04 46.09					
								(50/15mm 200/65mm) 200bls/65mm	58 48.00 48.03 48.08					
									48.38	-33.16	48.38			
							NI			-33.33	48.55		III	Moderately strong, pink dappled yellowish brown, moderately decomposed medium grained GRANITE. Joints are very closely to closely spaced, rough and smooth planar, extremely narrow, iron and manganese oxides stained, kaolin coated (<2mm), dipping at 10°-20° and 60°-70°.
							NA			-33.52	48.74		IV	
							>20		T2-101	-33.86	49.08		III	
			80	98	37	9	10.8			-34.17	49.39			
										-34.32	49.54			
									49.54					
				100	80	35	NI 12.7		T2-101	-34.77	49.99		III	48.55- 48.74m: Moderately weak, highly decomposed. (Sandy fine to coarse GRAVEL)

- Small Disturbed Sample
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- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

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DATE 25/09/2020

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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH36**

SHEET 6 of 6

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-6	E 837 264.72 N 815 236.01	DATE from 19/09/2020 to 25/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.22 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				100	80	35			T2-101 50.50					49.08m: PEGMATITE (30mm thick), dipping at 10°. 49.39- 49.54m: Fine grained GRANITE.
										-35.53	50.75			Moderately strong, yellowish brown, moderately decomposed medium grained GRANITE. Joints are closely to medium spaced, rough and smooth planar, extremely narrow, iron oxide stained, dipping at 20°-30°, 30°-40° and 60°-70°. 49.54- 49.99m: Fine grained GRANITE with pegmatite.
				100	97	42	12.7		T2-101 51.45					
				100	93	55			T2-101 52.40					50.75- 53.52m: With very closely spaced subhorizontal microfractures.
			80				8.5						III	
				100	94	63			T2-101 53.38					
										-38.31	53.53			
										-38.38	53.60			53.53- 53.77m: Fine grained GRANITE. 53.60m: PEGMATITE (30mm thick), dipping at 10°.
		0.80m at 18:00		100	96	96			T2-101	-38.55	53.77			
24/09/2020										-38.63	53.85			
25/09/2020		1.80m at 08:00					3.1		54.28	-39.06	54.28			53.85- 54.28m: With very closely spaced subhorizontal microfractures.
										-39.21	54.43			
				100	98	90			T2-101					54.43- 55.02m: Fine grained GRANITE with pegmatite.
										-39.80	55.02			
25/09/2020										-39.90	55.12			55.12- 55.33m: With very closely spaced subhorizontal microfractures.
									55.33	-40.11	55.33			End of drillhole at 55.33m.

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- Water Sample
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- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 25/09/2020

CHECKED BY PETER CHU

DATE 26/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH37**

SHEET 1 of 6

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CS60	E 837 275.03 N 815 246.91	DATE from 31/08/2020 to 14/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.28 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
31/08/2020	SW	Dry at 08:00							A 0.45–0.50	+15.13	0.15			CONCRETE.
									B 0.95–1.00					Loose, reddish brown (5YR 5/4) spotted white, silty medium to coarse SAND with much subangular fine gravel sized moderately weak to moderately strong granite and quartz. (FILL)
		Dry at 18:00							C 1.45–1.50					
31/08/2020									D 1.95–2.00					
09/09/2020		Dry at 08:00						(2, 3, 2, 2, 3, 3) N = 10	1 2.10–2.40					
	2.90 SW								2.45–2.90					
	PW			90					3					
									3.90–4.10					
								(2, 2, 2, 2, 2, 2) N = 8	4 5 6 4.40–4.45					
									4.90	+10.38	4.90			Firm, yellowish brown (10YR 5/4), sandy clayey SILT. (RESIDUAL SOIL)
			70	95					7				VI	
								(1, 1, 2, 1, 2, 2) N = 7	8 5.90–6.10					
									9 10 6.40–6.45					
									6.90	+8.38	6.90			Stiff, yellowish red (5YR 5/8), sandy clayey SILT with some subangular fine gravel of quartz. (RESIDUAL SOIL)
				95					11					
									7.90–8.10					
								(1, 1, 2, 2, 2, 2) N = 8	12 13 14 8.40–8.45				VI	
									8.90					
				100					15					
									16 9.90	+5.28	10.00			

- Small Disturbed Sample
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- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 15/09/2020

CHECKED BY PETER CHU

DATE 16/09/2020

REMARKS
1. Inspection pit excavated from 0.00m-2.00m.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH37**

SHEET 2 of 6

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CS60	E 837 275.03 N 815 246.91	DATE from 31/08/2020 to 14/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.28 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(2, 2, 2, 2, 2, 2) N = 8	17 10.00 18 10.10 10.40 10.45				VI	As Sheet 1 of 6.
										+4.38	10.90			
				100					19 10.90				V	Extremely weak, yellowish brown (10YR 5/8) dappled black, completely decomposed medium grained GRANITE. (Very stiff, sandy clayey SILT)
09/09/2020		6.10m at 18:00						(2, 4, 4, 5, 5, 6) N = 20	20 11.90 12.00 21 12.10 22 12.40 12.45					
10/09/2020		6.60m at 08:00								+2.38	12.90			
				100					23 12.90				V	Extremely weak, reddish yellow (5YR 6/8) spotted white dappled red, completely decomposed medium grained GRANITE. (Very stiff, sandy clayey SILT)
								(2, 4, 6, 5, 6, 6) N = 23	24 13.90 14.00 25 14.10 26 14.40 14.45					
			70							+0.38	14.90			
				100					27 14.90				V	Extremely weak, reddish yellow (5YR 7/8) spotted grey and white, completely decomposed medium grained GRANITE. (Silty clayey fine to medium SAND)
								(4, 6, 8, 11, 13, 17) N = 49	28 15.90 16.00 29 16.10 30 16.40 16.45					
										-1.62	16.90			
				100					31 16.90				V	Extremely weak, light red (10R 6/8) spotted grey and white, completely decomposed medium grained GRANITE. (Silty medium to coarse SAND with some fine gravel)
								(5, 9, 12, 15, 20, 21) N = 68	32 17.90 18.00 33 18.10 34 18.40 18.45					
				100					35 18.90					
									36 19.90	-4.72	20.00			

- Small Disturbed Sample
- Large Disturbed Sample
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- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 15/09/2020

CHECKED BY PETER CHU

DATE 16/09/2020

REMARKS

秦昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(秦昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH37**

SHEET 3 of 6

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CS60	E 837 275.03 N 815 246.91	DATE from 31/08/2020 to 14/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.28 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(5, 8, 12, 11, 15, 18) N = 56	37 20.00 20.10 38 20.40 20.45				V	As Sheet 2 of 6.
								(5, 8, 14, 13, 15, 17) N = 59	39 22.00 22.10 40 22.40 22.45	-6.72	22.00			Extremely weak, weak red (10R 6/4) spotted grey and white, completely decomposed medium grained GRANITE. (Silty medium to coarse SAND with some fine gravel)
			70					(5, 9, 11, 13, 16, 19) N = 59	41 24.00 24.10 42 24.40 24.45				V	
								(12, 21, 34, 34, 46, 58) N = 172	43 26.00 26.10 44 26.40 26.45					
	28.00 PW HW							(11, 20, 25, 34, 40, 49) N = 148	45 28.00 28.10 46 28.40 28.45	-12.72	28.00		V	Extremely weak, red (10R 5/8), completely decomposed fine to medium grained GRANITE. (Silty medium SAND with occasional fine gravel)
										-14.72	30.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
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- Pressuremeter Test
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- Piezometer Tip
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DATE 15/09/2020

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DATE 16/09/2020

REMARKS

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(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH37**

SHEET 4 of 6

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CS60	E 837 275.03 N 815 246.91	DATE from 31/08/2020 to 14/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.28 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
10/09/2020		6.50m at 18:00						(11, 19, 26, 37, 43, 50) N = 156	47 30.00 30.10 48 30.40 30.45					As Sheet 3 of 6.
11/09/2020		6.80m at 08:00						(12, 24, 32, 44, 53, 66) N = 195	49 32.00 32.10 50 32.40 32.45				V	
			70					(13, 35, 46, 68, 80, 6/25mm) 200blS/250mm	51 34.00 34.05 52 34.35 34.40	-18.72	34.00			Extremely weak, yellowish brown (10YR 5/8), completely decomposed medium grained GRANITE. (Silty medium to coarse SAND with some fine gravel)
								(50/75mm 200/75mm) 200blS/75mm	53 36.00 36.10 36.15				V	
								(50/75mm 200/75mm) 200blS/75mm	54 38.00 38.10 38.15	-22.72	38.00			Extremely weak, pink (10R 8/3) spotted grey and white, completely decomposed medium grained GRANITE. (Silty medium to coarse SAND with some fine gravel)
		7.00m at								-24.72	40.00		V	

- Small Disturbed Sample
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- Water Sample
- Standard Penetration Test
- Permeability Test
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DRILLHOLE No. **BH37**

SHEET 5 of 6

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CS60	E 837 275.03 N 815 246.91	DATE from 31/08/2020 to 14/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.28 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
11/09/2020 12/09/2020		18:00 7.20m at 08:00						(50/75mm 200/75mm) 200bls/75mm	55 40.00 40.10 40.15				V	As Sheet 4 of 6.
								(50/50mm 200/70mm) 200bls/70mm	56 42.00 42.07 42.12	-26.72	42.00			Weak, yellowish brown (10YR 5/8), highly decomposed medium grained GRANITE. (Sandy fine to medium GRAVEL)
			70					(50/50mm 200/70mm) 200bls/70mm	57 44.00 44.07 44.12					
								(50/40mm 200/60mm) 200bls/60mm	58 46.00 46.05 46.10				IV	
								(50/40mm 200/60mm) 200bls/60mm	59 48.00 48.05 48.10					
12/09/2020		7.10m at 18:00						(50/40mm		-34.72	50.00			

- Small Disturbed Sample
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- Mazier Sample
- Piston Sample
- Water Sample
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DRILLHOLE No. **BH37**

SHEET 6 of 6

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CS60	E 837 275.03 N 815 246.91	DATE from 31/08/2020 to 14/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.28 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
14/09/2020		7.20m at 08:00						200/60mm) 200lbs/60mm	60 50.00 50.05 50.10				IV	As Sheet 5 of 6.
	51.79 HW		70							-36.51	51.79		IV	
				87	0	0	NI	T2-101	51.79	-36.72	52.00		III	Moderately weak, pale red (10R 6/4) dappled yellowish red, highly decomposed medium grained GRANITE. (Coarse GRAVEL and COBBLE)
									52.09	-36.81	52.09			52.00- 52.09m: Moderately strong, moderately decomposed GRANITE.
				100	100	100	5.3	T2-101						Moderately strong, reddish brown spotted black and white, moderately decomposed medium grained GRANITE. Joints are closely locally medium and very closely spaced, rough and smooth planar, extremely narrow, iron and manganese oxides stained, dipping at 20°-30°, 50°-60° and 70°-80°.
									53.26	-38.26	53.54			53.54- 54.58m: Fine grained GRANITE.
							>20							
				100	94	87	2.9	T2-101		-39.30	54.58		III	
			80						54.76	-39.65	54.93			54.93- 55.46m: With very closely spaced subhorizontal microfractures.
				100	89	79	6.7	T2-101		-40.18	55.46			
									56.25	-41.22	56.50			56.50- 57.64m: Strong, slightly decomposed.
				100	100	91	7.5	T2-101					II	
14/09/2020		7.10m at 18:00							57.64	-42.36	57.64			End of drillhole at 57.64m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 15/09/2020

CHECKED BY PETER CHU

DATE 16/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH38**

SHEET 1 of 6

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-20	E 837 285.33 N 815 257.81	DATE from 31/08/2020 to 09/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.24 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
31/08/2020	SW	Dry at 08:00								+15.09	0.15			CONCRETE SLAB.
									A 0.45 0.50					Yellowish brown (10YR 5/8), sandy clayey SILT with some subangular fine to medium gravel sized moderately weak to moderately strong granite and quartz. (FILL)
									B 0.95 1.00					
		Dry at 18:00							C 1.45 1.50					
31/08/2020									D 1.95	+13.24	2.00			
03/09/2020		Dry at 08:00						(1, 1, 2, 1, 2) N = 7	1 2.00 2.10 2 2.40 2.45					Firm to stiff, red (2.5YR 5/8), sandy clayey SILT with some subangular fine gravel sized quartz. (RESIDUAL SOIL)
	2.90 SW PW			100					3 2.90				VI	
								(1, 1, 1, 2, 3, 4) N = 10	4 3.90 4.00 5 4.10 6 4.40 4.45					
									4.90	+10.34	4.90			
				100					7					Stiff to very stiff, red (2.5YR 5/8) dappled reddish yellow, sandy clayey SILT. (RESIDUAL SOIL)
			70					(1, 2, 2, 2, 3, 5) N = 12	8 5.90 6.00 9 6.10 10 6.40 6.45					
									6.90				VI	
		1.45m at 18:00		90					11					
03/09/2020									12 7.90 8.00 13 8.10 14 8.40 8.45					
04/09/2020		5.76m at 08:00						(1, 2, 3, 3, 4, 6) N = 16						
	8.90 PW HW									+6.34	8.90			
				95					15 8.90				V	Extremely weak, reddish yellow (5YR 7/6), completely decomposed fine grained GRANITE. (Very stiff, sandy clayey SILT with occasional fine gravel of quartz)
									16 9.90	+5.24	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 10/09/2020

CHECKED BY PETER CHU

DATE 11/09/2020

REMARKS
1. Inspection pit excavated from 0.00m-2.00m.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH38**

SHEET 2 of 6

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-20	E 837 285.33 N 815 257.81	DATE from 31/08/2020 to 09/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.24 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(2, 2, 3, 5, 7, 10) N = 25	17 10.00 18 10.10 10.40 10.45				V	As Sheet 1 of 6.
				100					10.90	+4.34	10.90			Extremely weak, yellowish red (5YR 5/8), completely decomposed fine grained GRANITE. (Clayey silty fine SAND)
								(1, 2, 2, 2, 3, 7) N = 14	19 20 11.90 12.00 21 12.10 22 12.40 12.45				V	
				100					12.90	+2.34	12.90			Extremely weak, red (10R 5/8) dappled black and white, completely decomposed medium grained GRANITE. (Clayey silty fine to medium SAND with some fine to medium gravel)
			70					(2, 2, 4, 6, 10, 14) N = 34	23 24 13.90 14.00 25 14.10 26 14.40 14.45				V	
				100					14.90					
								(2, 3, 5, 7, 10, 15) N = 37	27 28 15.90 16.00 29 16.10 30 16.40 16.45					
				100					16.90					
								(2, 5, 9, 11, 16, 21) N = 57	31 32 17.90 18.00 33 18.10 34 18.40 18.45	-2.76	18.00		V	Extremely weak, pinkish grey (5YR 7/2) dappled yellowish brown, completely decomposed medium grained GRANITE. (Slightly clayey silty medium to coarse SAND with some fine gravel)
				100					18.90 35 36 19.90	-4.76	20.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 10/09/2020

CHECKED BY PETER CHU

DATE 11/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH38**

SHEET 3 of 6

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-20	E 837 285.33 N 815 257.81	DATE from 31/08/2020 to 09/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.24 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(3, 6, 8, 22, 23, 27) N = 60	37 20.00 20.10 38 20.40 20.45					As Sheet 2 of 6.
								(5, 9, 10, 18, 20, 29) N = 77	39 22.00 22.10 40 22.40 22.45					
04/09/2020		5.45m at 18:00						(9, 14, 20, 22, 22, 33) N = 97	41 24.00 24.10 42 24.40 24.45					
05/09/2020		6.78m at 08:00	70										V	
								(7, 14, 17, 19, 21, 24) N = 81	43 26.00 26.10 44 26.40 26.45					
								(6, 11, 16, 20, 23, 25) N = 84	45 28.00 28.10 46 28.40 28.45	-14.76	30.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 10/09/2020

CHECKED BY PETER CHU

DATE 11/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH38**

SHEET 4 of 6

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-20	E 837 285.33 N 815 257.81	DATE from 31/08/2020 to 09/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.24 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(13, 28, 32, 33, 35, 47) N = 147	47 30.00–30.10 48 30.40–30.45					As Sheet 2 of 6.
								(10, 19, 26, 30, 34, 49) N = 139	49 32.00–32.10 50 32.40–32.45					
			70					(8, 16, 27, 30, 45, 56) N = 158	51 34.00–34.10 52 34.40–34.45				V	
								(18, 30, 40, 51, 62, 47/25mm) 200blS/250mm	53 36.00–36.05 54 36.35–36.40					
05/09/2020 07/09/2020		6.11m at 18:00 9.79m at 08:00						(15, 29, 40, 52, 67, 41/15mm) 200blS/240mm	55 38.00–38.04 56 38.34–38.39	-24.76	40.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 10/09/2020

CHECKED BY PETER CHU

DATE 11/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH38**

SHEET 5 of 6

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-20	E 837 285.33 N 815 257.81	DATE from 31/08/2020 to 09/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.24 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(10, 18, 26, 29, 34, 42) N = 131	57 40.00 40.10 58 40.40 40.45					As Sheet 2 of 6.
								(13, 22, 26, 30, 38, 56) N = 150	59 42.00 42.10 60 42.40 42.45					
			70					(14, 29, 57, 40, 49, 60) N = 206	61 44.00 44.10 62 44.40 44.45				V	
								(13, 31, 37, 44, 63, 56/55mm) 200blS/280mm	63 46.00 46.08 64 46.38 46.43					
								(15, 34, 41, 56, 66, 37/25mm) 200blS/250mm	65 48.00 48.05 66 48.35 48.40	-32.76	48.00		IV	Weak, yellowish brown (10YR 5/4), highly decomposed medium grained GRANITE. (Sandy fine to medium GRAVEL)
										-34.76	50.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 10/09/2020

CHECKED BY PETER CHU

DATE 11/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH38**

SHEET 6 of 6

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-20	E 837 285.33 N 815 257.81	DATE from 31/08/2020 to 09/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.24 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(18, 32/55mm 200/20mm) 200blS/20mm	67	50.00 50.10 50.15				As Sheet 5 of 6.
			70										IV	
	52.00 HW									-36.76	52.00			
				98	13	13	NA		T2-101	52.00			IV	Moderately strong, yellowish brown, moderately decomposed medium grained GRANITE. Joints are closely spaced, rough planar, extremely narrow, iron oxide stained, dipping at 0°-10°, 30°-40° and 70°-80°.
										-37.54	52.78			52.00- 52.78m: Moderately weak, highly decomposed. (Sandy medium to coarse GRAVEL and COBBLE)
				100	85	76	7.0		T2-101	52.92			III	52.00- 54.40m: With very closely spaced subhorizontal microfractures.
										53.71				
				97	41	30	NI		T2-101	-38.98	54.22			
							NA			-39.16	54.40		IV	54.22- 54.40m: Moderately weak, highly decomposed. (Medium to coarse GRAVEL)
										54.40				Moderately strong, yellowish brown to reddish brown, moderately decomposed medium grained GRANITE. Joints are closely to medium locally very closely spaced, rough and smooth planar, extremely narrow, iron and manganese oxides stained, chlorite coated, dipping at 0°-10° and 20°-30°.
				100	96	91	4.8		T2-101					54.40- 55.97m: With very closely spaced subhorizontal microfractures.
07/09/2020		7.04m at 18:00								-40.19	55.43			55.43- 55.47m: PEGMATITE.
08/09/2020		10.15m at 08:00	80							-40.23	55.47			
										55.71				
										-40.73	55.97			55.97- 56.01m: PEGMATITE.
										-40.77	56.01			
							9.8			-40.90	56.14			56.01- 56.14m: Fine grained GRANITE.
				100	99	92			T2-101	-41.22	56.46		III	56.46- 57.19m: With very closely spaced subhorizontal microfractures.
										-41.60	56.84			56.84- 56.88m: PEGMATITE.
										-41.64	56.88			
										57.11				
							4.0			-41.95	57.19			
				100	82	71			T2-101					
							>20			58.30				
										-43.69	58.93			
08/09/2020		7.44m at 18:00		100	96	78	3.8		T2-101	-44.16	59.40		II	58.93- 59.40m: Strong, slightly decomposed.
										59.40				End of drillhole at 59.40m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 10/09/2020

CHECKED BY PETER CHU

DATE 11/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH39**

SHEET 1 of 7

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 295.64 N 815 268.71	DATE from 31/08/2020 to 10/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.45 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
31/08/2020	SW	Dry at 08:00							A 0.45–0.50 B 0.95–1.00 C 1.45–1.50 D 1.95–2.00	+15.30	0.15			CONCRETE SLAB.
		Dry at 18:00								+13.45	2.00			Yellowish red (5YR 5/8), sandy clayey SILT with some subangular fine gravel sized moderately weak to moderately strong granite and quartz. (FILL)
31/08/2020 07/09/2020		Dry at 08:00						(2, 1, 2, 1, 2, 2) N = 7	1 2.00–2.10 2 2.40–2.45					Firm to stiff, yellowish red (5YR 5/8) to red (10R 5/8), sandy clayey SILT with some subangular fine gravel of quartz. (RESIDUAL SOIL)
	4.00 SW PW			100					3 2.90–3.90					
								(2, 2, 2, 1, 2, 2) N = 7	4 4.00–4.10 5 4.40–4.45 6 4.90					
			70	100					7 5.90–6.00 8 6.10–6.40 9 6.45				VI	
								(2, 2, 3, 2, 2, 4) N = 11	10 6.90–7.90 11 8.00–8.40					
				100					12 8.45–8.90	+6.55	8.90			
								(2, 3, 4, 2, 3, 4) N = 13	13 9.90 14 10.00				V	Extremely weak, yellowish brown (10YR 5/8) dappled red, completely decomposed medium grained GRANITE. (Very stiff, sandy clayey SILT with some subangular fine gravel)
				100					15 10.90–11.00 16 11.90–12.00	+5.45	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
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- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 10/09/2020

CHECKED BY PETER CHU

DATE 11/09/2020

REMARKS
1. Inspection pit excavated from 0.00m-2.00m.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH39**

SHEET 2 of 7

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 295.64 N 815 268.71	DATE from 31/08/2020 to 10/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.45 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(3, 5, 4, 4, 5, 4) N = 17	17 10.00–10.10 18 10.40–10.45				V	As Sheet 1 of 7.
				100					19 10.90					
								(3, 4, 6, 5, 6, 8) N = 25	20 11.90–12.00 21 12.10 22 12.40–12.45					
									23 12.90	+2.55	12.90		V	Extremely weak, red (10R 5/6) spotted white, completely decomposed medium grained GRANITE. (Clayey silty fine to medium SAND)
07/09/2020		9.00m at 18:00		100				(4, 5, 7, 6, 7, 9) N = 29	24 13.90–14.00 25 14.10 26 14.40–14.45					
08/09/2020		9.00m at 08:00	70						27 14.90	+0.55	14.90		V	Extremely weak, yellowish brown (10YR 5/4) spotted white and grey, completely decomposed medium grained GRANITE. (Silty medium to coarse SAND with some fine gravel)
				100				(5, 7, 9, 10, 13, 22) N = 54	28 15.90–16.00 29 16.10 30 16.40–16.45					
									31 16.90	-1.45	16.90		V	Extremely weak, red (10R 5/6) spotted white and grey, completely decomposed medium grained GRANITE. (Silty medium to coarse SAND with some fine gravel)
				100				(8, 9, 12, 17, 25, 46) N = 100	32 17.90–18.00 33 18.10 34 18.40–18.45					
				85					35 18.90 36 19.90	-4.55	20.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 10/09/2020

CHECKED BY PETER CHU

DATE 11/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH39**

SHEET 3 of 7

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 295.64 N 815 268.71	DATE from 31/08/2020 to 10/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.45 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
08/09/2020		9.10m at 18:00						(9, 13, 17, 24, 34, 50) N = 125	37 20.00 20.10 38 20.40 20.45					As Sheet 2 of 7.
09/09/2020		9.10m at 08:00						(14, 15, 12, 28, 42, 51) N = 133	39 22.00 22.10 40 22.40 22.45				V	
			70					(15, 30, 42, 158) 200blS/150mm	41 24.00 24.25 24.30	-8.55	24.00		V	Extremely weak, dusky red (10R 3/2), completely decomposed medium grained GRANITE. (Silty medium to coarse SAND)
	26.00 PW							(50/70mm 200/50mm) 200blS/50mm	42 26.00 26.07 26.12	-10.55	26.00		V	Extremely weak, yellowish brown (10YR 5/8) spotted white and dark brown, completely decomposed medium grained GRANITE. (Clayey silty fine to medium SAND with occasional fine gravel)
	HW							(50/70mm 200/60mm) 200blS/60mm	43 28.00 28.08 28.13				V	
								(50/70mm		-14.55	30.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 10/09/2020

CHECKED BY PETER CHU

DATE 11/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH39**

SHEET 4 of 7

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 295.64 N 815 268.71	DATE from 31/08/2020 to 10/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.45 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(50/70mm) 200/70mm 200bls/70mm	44 30.00 30.09 30.14				V	Extremely weak, yellowish brown (10YR 5/8) dappled white, completely decomposed medium grained GRANITE. (Slightly clayey silty fine to medium SAND with occasional fine gravel)
								(50/50mm 200/50mm) 200bls/50mm	45 32.00 32.05 32.10	-16.55	32.00		IV	Weak, yellowish brown (10YR 5/8) spotted white and dark yellowish brown, highly decomposed medium grained GRANITE. (Medium GRAVEL in a matrix of clayey silty sand)
			70					(50/50mm 200/50mm) 200bls/50mm	46 34.00 34.05 34.10	-18.55	34.00		IV	Weak, yellowish brown (10YR 5/8) spotted white and grey, highly decomposed medium grained GRANITE. (Sandy fine to medium GRAVEL)
								(50/60mm 200/40mm) 200bls/40mm	47 36.00 36.05 36.10					
								(50/50mm 200/40mm) 200bls/40mm	48 38.00 38.02 38.07					
								(50/50mm		-24.55	40.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 10/09/2020

CHECKED BY PETER CHU

DATE 11/09/2020

REMARKS

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TYSAN FOUNDATION LIMITED
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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH39**

SHEET 5 of 7

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 295.64 N 815 268.71	DATE from 31/08/2020 to 10/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.45 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(50/50mm 200/50mm) 200blS/50mm	49 40.00 40.05 40.10					As Sheet 4 of 7.
								(50/50mm 200/40mm) 200blS/40mm	50 42.00 42.04 42.09					
								(50/50mm 200/40mm) 200blS/40mm	51 44.00 44.04 44.09					
			70										IV	
								(50/50mm 200/40mm) 200blS/40mm	52 46.00 46.04 46.09					
								(50/50mm 200/30mm) 200blS/30mm	50 48.00 48.03 48.08					
								(50/50mm		-34.55	50.00			

- Small Disturbed Sample
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- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

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DATE 10/09/2020

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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH39**

SHEET 6 of 7

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 295.64 N 815 268.71	DATE from 31/08/2020 to 10/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.45 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(50/50mm 200/40mm) 200blS/40mm	51 50.00 50.04 50.09					As Sheet 4 of 7.
								(50/50mm 200/30mm) 200blS/30mm	52 52.00 52.03 52.08					
			70										IV	
								(50/50mm 200/30mm) 200blS/30mm	53 54.00 54.03 54.08					
								(50/50mm 200/20mm) 200blS/20mm	54 56.00 56.02 56.07					
	56.68 HW									-41.23	56.68			
							1.1		56.68					Moderately strong, yellowish brown, moderately decomposed medium grained GRANITE. Joints are closely to medium locally widely spaced, rough and smooth planar, extremely narrow, iron and manganese oxides stained, chlorite coated, dipping at 0°-10°, 10°-20°, 30°-40° and 70°-80°.
				100	100	96			T2-101	-41.99	57.44			
										-42.36	57.81			
			80				5.2		58.05				III	57.44- 57.81m: With very closely spaced subhorizontal microfractures.
				99	99	96			T2-101					
							1.9		59.55					
				96	89	65	12.2		T2-101	-44.37	59.82			
										-44.55	60.00		II	

- Small Disturbed Sample
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- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

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DATE 10/09/2020

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REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH39**

SHEET 7 of 7

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 295.64 N 815 268.71	DATE from 31/08/2020 to 10/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.45 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
09/09/2020		9.13m at 18:00	80	96	89	65	12.2		T2-101	-44.60	60.05		III	59.82- 60.05m: Strong, slightly decomposed.
									60.84	-45.34	60.79			60.79- 62.26m: Strong, slightly decomposed.
				99	99	93	2.3		T2-101	-46.27	61.72		II	61.72- 62.26m: Epidotized.
									62.26	-46.81	62.26			End of drillhole at 62.26m.

- Small Disturbed Sample
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- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 10/09/2020

CHECKED BY PETER CHU

DATE 11/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH40**

SHEET 1 of 7

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 305.94 N 815 279.61	DATE from 18/08/2020 to 05/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.45 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
18/08/2020	SW	Dry at 08:00								+15.30	0.15			CONCRETE SLAB.
									A 0.45 0.50					Red (10R 5/8), sandy clayey SILT with much subangular fine gravel sized moderately weak granite, quartz and cement sand mortar. (FILL)
									B 0.95 1.00					
		Dry at 18:00							C 1.45 1.50					
18/08/2020									D 1.95	+13.45	2.00			
31/08/2020		Dry at 08:00						(1, 1, 2, 1, 2, 1) N = 6	1 2.00 2.10					Firm, yellowish red (5YR 5/8), sandy clayey SILT with some subangular fine gravel. (FILL)
									2 2.40 2.45					
				90					3 2.90					
	4.00 SW								4 3.90 4.00					
	PW							(1, 2, 1, 1, 2, 1) N = 5	5 4.10					
									6 4.40 4.45					
									4.90					
				90					7					
			70						8 5.90 6.00	+9.45	6.00			Extremely weak, red (10R 4/8) dappled dark grey and white, completely decomposed medium grained GRANITE. (Stiff to very stiff, sandy clayey SILT with much fine gravel)
								(1, 2, 2, 1, 2, 1) N = 6	9 6.10					
									10 6.40 6.45					
									6.90					
				100					11					
									12 7.90 8.00				V	
								(2, 1, 2, 3, 3, 3) N = 11	13 8.10					
									14 8.40 8.45					
									8.90					
				100					15					
									16 9.90					

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- U100 Undisturbed Sample
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- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 05/09/2020

CHECKED BY PETER CHU

DATE 07/09/2020

REMARKS
1. Inspection pit excavated from 0.00m-2.00m.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH40**

SHEET 2 of 7

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 305.94 N 815 279.61	DATE from 18/08/2020 to 05/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.45 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
31/08/2020 01/09/2020		9.00m at 18:00 9.30m at 08:01						(3, 4, 3, 4, 4, 5) N = 16	17 10.00 18 10.10 10.40 10.45	+4.55	10.90		V	
	12.00 PW HW			100				(4, 7, 10, 14, 19, 35) N = 78	19 10.90 20 11.90 12.00 21 12.10 22 12.40 12.45				V	Extremely weak, yellowish brown (10YR 5/8) spotted grey and light yellowish brown, completely decomposed medium grained GRANITE. (Silty medium to coarse SAND with much fine gravel)
			70	100				(6, 8, 11, 17, 22, 48) N = 98	23 12.90 24 13.90 14.00 25 14.10 26 14.40 14.45					
				100				(50/60mm 200/40mm) 200blS/40mm	27 14.90 28 15.90 16.00 29 16.05 16.10	+0.55	14.90		V	Extremely weak, dark reddish grey (5YR 4/2), completely decomposed medium grained GRANITE. (Medium to coarse SAND with much fine gravel)
			80	100	100	100	0.7	T2-101	16.40	-0.95	16.40		II	Strong, pink spotted black and white, slightly decomposed medium grained GRANITE. Joints are widely spaced, rough planar, extremely narrow, iron oxide stained, dipping at 0°-10°.
								(8, 12, 25, 35, 42, 60) N = 162	17.75 30 17.90 18.00 31 18.20 18.25	-2.30	17.75		IV	Weak, dark reddish grey (5YR 4/2), highly decomposed medium grained GRANITE. (Sandy fine to medium GRAVEL)
			70	90					18.90	-3.45	18.90		V	Extremely weak, red (10R 5/8) spotted dark grey, completely decomposed medium grained GRANITE. (Medium to coarse SAND with some fine gravel)
01/09/2020		9.30m at 18:00						(50/50mm	32 33 19.90	-4.55	20.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
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- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 05/09/2020

CHECKED BY PETER CHU

DATE 07/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH40**

SHEET 3 of 7

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 305.94 N 815 279.61	DATE from 18/08/2020 to 05/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.45 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
02/09/2020		9.00m at 08:00						(50/30mm) 200/30mm 200bls/30mm	34 20.00 20.03 20.08					Weak, yellowish brown (10YR 5/8) spotted dark grey, highly decomposed medium grained GRANITE. (Sandy fine to medium GRAVEL)
			70					(50/40mm 200/30mm) 200bls/30mm	35 22.00 22.02 22.07				IV	
										-8.13	23.58			
			80	100	78	78	NI 3.4		T2-101	-8.61	24.06		III	Moderately strong, yellowish brown, moderately decomposed medium grained GRANITE. Joints are medium spaced, rough and smooth planar, extremely narrow, iron and manganese oxides stained, dipping at 0°-10° and 30°-40°.
										-8.82	24.27		II	
										-9.06	24.51		III	
				100	0	0	NA		24.68 T2-101				IV	24.06- 24.27m: Strong, slightly decomposed. 24.51- 25.20m: Moderately weak, highly decomposed. (COBBLE and some coarse gravel)
								(50/60mm 200/40mm) 200bls/40mm	25.20 36 25.25 25.30	-9.75	25.20			Weak, yellowish brown (10YR 5/8) spotted white and grey, highly decomposed medium grained GRANITE. (Sandy fine to medium GRAVEL)
			70					(50/50mm 200/40mm) 200bls/40mm	37 27.20 27.22 27.27				IV	
								(50/50mm 200/40mm) 200bls/40mm	38 29.20 29.24 29.29	-14.55	30.00			

- Small Disturbed Sample
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- U100 Undisturbed Sample
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- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 05/09/2020

CHECKED BY PETER CHU

DATE 07/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH40**

SHEET 4 of 7

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 305.94 N 815 279.61	DATE from 18/08/2020 to 05/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.45 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
02/09/2020 03/09/2020		9.00m at 18:00 9.10m at 08:00	70					(50/50mm 200/50mm) 200blS/50mm	39 31.20 31.25 31.30					As Sheet 3 of 7.
								(50/60mm 200/40mm) 200blS/40mm	40 33.20 33.25 33.30					
								(50/50mm 200/40mm) 200blS/40mm	41 35.20 35.24 35.29				IV	
								(50/50mm 200/30mm) 200blS/30mm	42 37.20 37.23 37.28					
								(50/60mm 200/40mm) 200blS/40mm	43 39.20 39.25 39.30	-24.55	40.00			

- Small Disturbed Sample
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- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
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SHEET 5 of 7

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 305.94 N 815 279.61	DATE from 18/08/2020 to 05/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.45 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
														As Sheet 3 of 7.
								(50/50mm 200/40mm) 200bls/40mm	44 41.20 41.24 41.29					
								(50/50mm 200/40mm) 200bls/40mm	45 43.20 43.25 43.30					
			70					(50/50mm 200/40mm) 200bls/40mm	46 45.20 45.24 45.29				IV	
								(50/50mm 200/30mm) 200bls/30mm	47 47.20 47.23 47.28					
								(50/50mm 200/40mm) 200bls/40mm	48 49.20 49.23 49.28	-34.55	50.00			

- Small Disturbed Sample
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DRILLHOLE RECORD

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SHEET 6 of 7

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 305.94 N 815 279.61	DATE from 18/08/2020 to 05/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.45 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
														As Sheet 3 of 7.
			70					(50/50mm I 200/30mm) 200blS/30mm	49 51.20 51.23 51.28				IV	
								(50/50mm I 200/30mm) 200blS/30mm	50 53.20 53.23 53.28					
									53.63	-38.18	53.63			
			80	100	93	64	4.0		T2-101				III	Moderately strong, reddish brown spotted white, moderately decomposed medium grained GRANITE. Joints are medium locally very closely spaced, rough planar, extremely narrow, iron oxide stained, dipping at 20°-30° and 30°-40°.
							17.1							
							NI	(50/50mm I 200/40mm) 200blS/40mm	51 54.78 54.80 54.84 54.89	-39.33	54.78			
			70										IV	Weak, pinkish grey (5YR 7/2) spotted white and grey, highly decomposed medium grained GRANITE. (Fine to medium GRAVEL)
										-40.31	55.76			
				100	68	57	NI		T2-101				III	Moderately strong, reddish brown spotted white, moderately decomposed medium grained GRANITE. Joints are closely to medium locally very closely spaced, rough and smooth planar, extremely narrow, iron oxide stained, chlorite coated, dipping at 0°-10°, 40°-50° and 60°-70°. 56.43- 56.56m: No recovery assumed to be completely decomposed GRANITE. 56.56- 57.54m: Strong, slightly decomposed.
							7.4		56.20	-40.98	56.43			
							NR			-41.11	56.56		V	
				88	64	57			T2-101				II	
									57.27	-42.09	57.54			
		9.30m at 18:00	80	100	97	97			T2-101					
03/09/2020				100	100	100	2.2		T2-101					
04/09/2020		9.00m at 08:00							58.04 58.15					
				100	94	90			T2-101				III	
									59.50					
				83	22	0	>20		T2-101					
			70					I (50/50mm	59.86 59.90 52	-44.41 -44.55	59.86 60.00		IV	

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 05/09/2020

CHECKED BY PETER CHU

DATE 07/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH40**

SHEET 7 of 7

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. CCL-1	E 837 305.94 N 815 279.61	DATE from 18/08/2020 to 05/09/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.45 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
	60.58 HW		70					200/30mm) 200b/s/30mm	59.93 59.98				IV	Weak, pinkish grey (5YR 7/2) spotted white dappled yellowish brown, highly decomposed medium grained GRANITE. (Medium GRAVEL)
				100	85	47	12.5		T2-101 60.58	-45.13	60.58		III	Moderately strong, reddish brown spotted white, moderately decomposed medium grained GRANITE. Joints are closely spaced, rough and smooth planar, extremely narrow, iron and manganese oxides stained, epidote coated, dipping at 0°-10°, 50°-60° and 70°-80°.
							NA			-45.69	61.14		IV	
										-45.81	61.26		III	
				100	100	100	0.7		T2-101 61.36	-45.91	61.36			61.14- 61.26m: Moderately weak, highly decomposed. (COBBLE and some coarse gravel)
				100	100	100	3.1		T2-101 62.41	-47.81	63.26		II	Moderately strong, reddish brown spotted white, moderately decomposed medium grained GRANITE. Joints are medium to widely locally closely spaced, rough and smooth planar, extremely narrow, iron oxide stained, dipping at 0°-10°, 20°-30°, 40°-50°, 50°-60° and 70°-80°. 61.36- 63.26m: Strong, slightly decomposed and slightly epidotized.
			80	99	81	81	3.4		T2-101 63.62				III	
				100	100	85	8.0		T2-101 65.00					
04/09/2020		9.00m at 18:00		100	78	78			T2-101 65.93 66.58	-51.13	66.58			
														End of drillhole at 66.58m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 05/09/2020

CHECKED BY PETER CHU

DATE 07/09/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH41**

SHEET 1 of 3

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-20	E 837 316.25 N 815 290.51	DATE from 18/08/2020 to 21/08/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.42 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
18/08/2020	SW	Dry at 08:00							A 0.45 0.50	+15.37	0.05			CONCRETE SLAB.
									B 0.95 1.00					Loose, red (2.5YR 5/8), clayey silty fine to medium SAND with some subangular fine to medium gravel sized moderately strong to strong granite, tile and cement sand mortar. (FILL)
									C 1.45 1.50					
								(1, 1, 2, 1, 2, 2) N = 7	D 1.95 2.00 2.10					
									1					
									2 2.40 2.45					
	2.90 SW								2.90					
	PW		70	90					3					
									4 3.90 4.00 4.10					
								(1, 1, 1, 2, 3, 3) N = 9	5					
									6 4.40 4.45	+10.88	4.54			
				100	100	100			4.54					Strong, pinkish grey spotted black and white, slightly decomposed medium grained GRANITE. Joints are widely spaced, rough planar, extremely narrow, iron oxide stained, dipping at 30°-40°.
			80				0.6		T2-101				II	
				100	98	98			5.28					
									T2-101					
		5.12m at 18:00							6.10 6.20	+9.32	6.10			Extremely weak, red (10R 5/8), completely decomposed medium grained GRANITE. (Clayey silty fine to medium SAND with some fine gravel of quartz)
18/08/2020								(3, 3, 4, 5, 6, 7) N = 22	7					
19/08/2020		7.21m at 08:00							8 6.50 6.55					
									7.00					
				100					9				V	
			70						10 8.00 8.10 8.20					
								(1, 2, 3, 3, 5, 9) N = 20	11					
									12 8.50 8.55					
	9.00 PW								9.00	+6.42	9.00			
	HW			85					13				V	Extremely weak, yellowish brown (10YR 5/8), completely decomposed medium grained GRANITE. (Slightly clayey silty medium to coarse SAND with much fine gravel)
										+5.42	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 24/08/2020

CHECKED BY PETER CHU

DATE 25/08/2020

REMARKS
1. Inspection pit excavated from 0.00m-2.00m.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH41**

SHEET 2 of 3

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-20	E 837 316.25 N 815 290.51	DATE from 18/08/2020 to 21/08/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.42 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
19/08/2020		4.65m at 18:00	70					(3, 21, 31, 32, 33, 35) N = 131	14 15 16	10.00 10.10 10.20 10.50 10.55			V	As Sheet 1 of 3.
20/08/2020		8.46m at 08:00								10.85				
			80	100	100	100	1.5		T2-101	+4.57	10.85		II	Strong, pinkish grey spotted black and white, slightly decomposed medium grained GRANITE. Joints are widely spaced, rough planar, extremely narrow, iron oxide stained, dipping at 0°-10°.
										11.50				
								(4, 15, 32, 42, 87, 39/5mm) 200blS/230mm	17 18	11.53 11.83 11.88			V	Extremely weak, brownish yellow (10YR 6/8), completely decomposed medium grained GRANITE. (Silty medium to coarse SAND with much fine gravel)
										+3.12	12.30			
			70	87	77	77	3.3		T2-101	12.30			II	Strong, pinkish grey, slightly decomposed medium grained GRANITE. Joints are medium spaced, rough planar, extremely narrow, iron oxide stained, dipping at 0°-10°, 10°-20° and 30°-40°.
										+2.62	12.80		III	
								(15, 35/25mm 200/10mm) 200blS/10mm	19	12.90 +2.52 12.96 13.01	12.90		IV	
										+2.12	13.30			12.80- 12.90m: Moderately strong, moderately decomposed.
				93	0	0	NA		T2-101	13.30 +1.87	13.55		IV	
				100	100	88	6.9		T2-101	13.59 +1.83	13.59		III	Weak, dark yellowish brown (10YR 4/6), highly decomposed medium grained GRANITE. (Sandy fine to medium GRAVEL)
			80	100	100	100	0.6		T2-101	+1.12	14.30		II	Strong, pinkish grey spotted black and white, slightly decomposed medium grained GRANITE. Joints are closely and widely spaced, rough and smooth planar, extremely narrow, iron oxide stained, dipping at 0°-10°, 30°-40° and 40°-50°.
										14.34 +0.73	14.69			13.30- 13.55m: Moderately weak, highly decomposed. (Sandy coarse GRAVEL and COBBLE)
				98	70	70	NA		T2-101	15.24 -0.22	15.64		III	13.55- 14.30m: Moderately strong, moderately decomposed.
								(31, 19/25mm 200/10mm) 200blS/10mm	20	-0.30 15.90 -0.48	15.72 15.90		IV	
	16.32 HW		70							15.96 16.01 -0.90	16.32		IV	13.59- 14.69m: With some fine grained GRANITE dykes.
							>20			16.32			III	
				100	93	93	6.0		T2-101	-1.22	16.64		II	15.64- 15.72m: Moderately strong, moderately decomposed.
										-1.37	16.79		III	15.72- 15.90m: Moderately weak, highly decomposed. (Sandy coarse GRAVEL and COBBLE)
										-1.67	17.09			
				100	92	74			T2-101	17.20 -2.18	17.60		II	Weak, dark greyish brown (10YR 3/2), highly decomposed medium grained GRANITE. (Sandy medium to coarse GRAVEL)
										-2.32	17.74			
										-2.54	17.96			
			80				NI			18.06 -2.73	18.15		III	Moderately strong, yellowish brown, moderately decomposed medium grained GRANITE. Joints are closely locally widely and very closely spaced, rough planar, extremely narrow, iron oxide stained, dipping at 0°-10°, 20°-30° and 70°-80°.
										-2.89	18.31			
		7.13m at 18:00		100	68	53	6.8		T2-101	-3.10	18.52			16.32- 17.09m: Fine grained GRANITE.
20/08/2020										19.00 -3.78	19.20			
21/08/2020		10.47m at 08:00												16.64- 16.79m: Strong, slightly decomposed.
				100	95	95	0.4		T2-101	-4.58	20.00		II	17.60- 17.74m: Strong, slightly decomposed.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 24/08/2020

CHECKED BY PETER CHU

DATE 25/08/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH41**

SHEET 3 of 3

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-20	E 837 316.25 N 815 290.51	DATE from 18/08/2020 to 21/08/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.42 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
21/08/2020		8.22m at 18:00	80	100	100	100	0.4		19.96 T2-101 20.90 T2-101 21.59	-4.67 -4.77 -6.17	20.09 20.19 21.59		II	17.96- 18.15m: PEGMATITE. 18.31- 18.52m: Fine grained GRANITE. Strong, pinkish grey spotted black and white, slightly decomposed medium grained GRANITE. Joints are widely spaced, smooth planar, extremely narrow to tight, clean, dipping at 0°-10°. 20.09- 20.19m: Fine grained GRANITE. End of drillhole at 21.59m.
				100	100	97								

- Small Disturbed Sample
- Large Disturbed Sample
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- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 24/08/2020

CHECKED BY PETER CHU

DATE 25/08/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH42**

SHEET 1 of 3

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-19	E 837 322.92 N 815 304.84	DATE from 18/08/2020 to 29/08/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.40 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
18/08/2020	HW	Dry at 08:00								+15.25	0.15			CONCRETE SLAB.
									A 0.45 0.50					Red (10R 5/8), silty slightly clayey medium to coarse SAND with some subangular fine gravel sized moderately strong granite, quartz and brick fragments. (FILL)
									B 0.95 1.00					
		Dry at 18:00							C 1.45 1.50					
18/08/2020									D 1.95 2.00 2.10					
26/08/2020		Dry at 08:00						(2, 2, 3, 3, 3, 4) N = 13	1 2 2.40 2.45					
									2.90	+12.50	2.90			Extremely weak, red (10R 5/8), completely decomposed medium grained GRANITE. (Stiff, sandy clayey SILT)
				90					3				V	
								(2, 2, 3, 3, 4, 4) N = 14	4 3.90 4.00 4.10					
									5 6 4.40 4.45					
									4.90	+10.50	4.90			Extremely weak, yellowish red (5YR 5/8), completely decomposed medium grained GRANITE. (Silty clayey fine to medium SAND)
			70	100					7				V	
								(2, 2, 3, 3, 3, 5) N = 14	8 5.90 6.00 6.10					
									9 10 6.40 6.45					
									6.90	+8.50	6.90			Extremely weak, pale red (10R 6/4), completely decomposed medium grained GRANITE. (Slightly clayey silty fine to medium SAND with some fine gravel)
				100					11				V	
								(2, 3, 3, 3, 4, 4) N = 14	12 7.90 8.00 8.10					
									13 14 8.40 8.45					
		3.00m at 18:00		0					8.90	+6.50	8.90		IV	Weak, yellow (10YR 7/8), highly decomposed medium grained GRANITE. (Sandy coarse GRAVEL and COBBLE)
26/08/2020									15 9.25 9.35					
27/08/2020		5.00m at 08:00	80	100	100	100	0.4	T2-101	9.42	+5.98	9.42		II	Strong, light pinkish grey spotted black and white, slightly decomposed medium grained GRANITE. Joints are widely spaced, rough planar, extremely
										+5.40	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 29/08/2020

CHECKED BY PETER CHU

DATE 31/08/2020

REMARKS
1. Inspection pit excavated from 0.00m-2.00m.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH42**

SHEET 2 of 3

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-19	E 837 322.92 N 815 304.84	DATE from 18/08/2020 to 29/08/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.40 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				100	100	100			T2-101	10.53				narrow, iron oxide stained, dipping at 0°-10° and 30°-40°.
			80	100	99	99	0.4		T2-101	12.07			II	
										+3.33	12.07			Weak, yellowish brown (10YR 5/8), highly decomposed medium grained GRANITE. (Sandy fine to medium GRAVEL)
				100					16	12.10				
								(50/30mm 200/70mm) 200blS/70mm	17	13.10			IV	
									18	13.20				
										13.25				
										13.30				
										14.10				
			70	100					19	+1.30	14.10		V	Extremely weak, dark greyish brown (10YR 4/2), completely decomposed medium grained GRANITE. (Silty fine to medium SAND)
		8.20m at 18:00								15.10				
27/08/2020									20	+0.20	15.20			
28/08/2020		10.50m at 08:00						(5, 8, 12, 16, 20, 27) N = 75	21	15.20			V	Extremely weak, reddish yellow (5YR 7/6), completely decomposed medium grained GRANITE. (Silty fine to medium SAND)
									22	15.30				
										15.60				
										15.65				
										-0.70	16.10			
	16.40 HW			0					23	16.10			IV	Weak, yellowish brown (10YR 5/6), completely decomposed medium grained GRANITE. (Sandy medium to coarse GRAVEL)
										16.20				
										16.30				
				100	100	100				-1.00	16.40		III	
									T2-101	16.40				
										-1.12	16.52		II	
										16.73				
										-1.33	16.73		III	
										-1.51	16.91			Strong, pinkish grey spotted black and white, slightly decomposed medium grained GRANITE. Joints are widely spaced, rough planar, extremely narrow, iron oxide stained, dipping at 0°-10° and 10°-20°.
				100	100	100	1.4		T2-101					16.40- 16.52m: Moderately strong, moderately decomposed.
			80										II	16.73- 16.91m: Moderately strong, moderately decomposed.
										18.26				
				100	100	100				-2.87	18.27			18.27- 18.95m: Moderately strong, moderately decomposed.
									T2-101	-3.17	18.57		III	
										18.81				
										-3.55	18.95			18.57- 18.95m: Fine grained GRANITE.
				100	100	100	0.0		T2-101				II	
										-4.30	19.70			
										-4.47	19.87			
										-4.60	20.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 29/08/2020

CHECKED BY PETER CHU

DATE 31/08/2020

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH42**

SHEET 3 of 3

PROJECT PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012560
MACHINE / No. DR-19	E 837 322.92 N 815 304.84	DATE from 18/08/2020 to 29/08/2020
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.40 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
28/08/2020		0.20m at 18:00	80	100 100	100 100	100 100	0.0		T2-101 T2-101 21.37 21.62	-4.98 -6.22	20.38 21.62		II	19.70- 19.87m: Fine grained GRANITE. 20.38m: PEGMATITE (30mm thick), dipping at 20°. End of drillhole at 21.62m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 29/08/2020

CHECKED BY PETER CHU

DATE 31/08/2020

REMARKS

Adjacent Ground Investigation Records - GIU Report No. 67763

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 5**

SHEET 1 of 5

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. CS60	E 837 215.59 N 815 276.77	DATE from 17/08/2019 to 05/09/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.04 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
17/08/2019	SW	Dry at 08:00							A 0.45 0.50 B 0.95 1.00 C 1.45 1.50 D 1.95	+14.84	0.20			CONCRETE. Reddish yellow (5YR 6/6), silty SAND with angular to subangular fine to medium gravel sized moderately weak to strong granite. (FILL)
17/08/2019		Dry at 18:00								+13.04	2.00			
29/08/2019		Dry at 08:00						(1, 2, 1, 1, 1, 1) N = 4	1 2.00 2.10 2 2.40 2.45 2.50 3 4 3.50 3.60					Loose to medium dense, reddish brown (5YR 5/4), silty clayey SAND with much angular to subangular fine gravel sized moderately weak granite. (FILL)
				100										
								(1, 1, 1, 1, 1, 2, 2) N = 6	5 4.00 4.10 6 4.40 4.45 4.50 7 8 5.50 5.60					
			70	100										
	6.50 SW							(1, 2, 2, 2, 2, 3) N = 9	9 6.00 6.10 10 6.40 6.45 6.50 11					
	PW			100					12 7.50 7.60					
								(2, 2, 3, 3, 3, 4) N = 13	13 8.00 8.10 14 8.40 8.45 8.50 15					
				100					16 9.50 9.60					
										+5.04	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 05/09/2019

CHECKED BY PETER CHU

DATE 06/09/2019

REMARKS
1. Inspection pit excavated from 0.00m-2.00m.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
（泰昇集團成員 A member of Tysan Group）

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 5**

SHEET 2 of 5

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. CS60	E 837 215.59 N 815 276.77	DATE from 17/08/2019 to 05/09/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.04 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(3, 4, 4, 5, 5, 6) N = 20	17 10.00 10.10 18 10.40 10.45 10.50	+4.54	10.50			As Sheet 1 of 5.
				0										Light brownish grey (10YR 6/2), silty fine to coarse SAND. (FILL)
				85					19 11.50 11.60 20 21 12.60 12.70	+3.44	11.60			Stiff, black (N2.5), slightly sandy clayey SILT with occasional subangular fine gravel sized quartz. (FILL)
29/08/2019 30/08/2019		2.00m at 18:00 2.60m at 08:00						(3, 3, 4, 3, 3, 5) N = 15	22 13.00 13.10 23 13.40 13.45 13.50	+2.04	13.00			Medium dense to dense, reddish yellow (5YR 7/8), slightly clayey silty SAND with some subangular fine gravel of quartz. (ALLUVIUM)
				0					24 14.50 14.60					
			70	0				43 bls (3, 4, 6, 7, 8, 10) N = 31	25 15.05 15.10 15.20 26 27 15.50 15.55					
				100					16.50 28 29 17.50 17.60	-1.46	16.50		V	Extremely weak, reddish yellow (5YR 6/8), completely decomposed medium grained GRANITE. (Very stiff, sandy clayey SILT with some subangular fine gravel of quartz)
				85				(2, 3, 3, 4, 6, 8) N = 21	18.00 18.10 30 31 18.40 18.45 18.50 32 33 19.50 19.60	-3.46	18.50		V	Extremely weak, red(10R 5/8), completely decomposed medium grained GRANITE. (Dense, slightly clayey silty SAND with much subangular fine gravel of quartz)
	20.00 PW									-4.96	20.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
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- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 05/09/2019

CHECKED BY PETER CHU

DATE 06/09/2019

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 5**

SHEET 3 of 5

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. CS60	E 837 215.59 N 815 276.77	DATE from 17/08/2019 to 05/09/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.04 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
	HW							(3, 5, 7, 10, 11, 14) N = 42	34 20.00 20.10 35 20.40 20.45					As Sheet 2 of 5.
								(5, 7, 8, 10, 15, 20) N = 54	36 22.00 22.10 37 22.40 22.45					
			70					(7, 10, 12, 12, 24, 30) N = 78	38 24.00 24.10 39 24.40 24.45				V	
								(8, 10, 14, 18, 26, 36) N = 94	40 26.00 26.10 41 26.40 26.45					
								(12, 16, 19, 21, 28, 40) N = 108	42 28.00 28.10 43 28.40 28.45	-14.96	30.00			

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- Permeability Test
- Impression Packer Test
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- Pressuremeter Test
- Standpipe Tip
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- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 05/09/2019

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REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 5**

SHEET 4 of 5

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. CS60	E 837 215.59 N 815 276.77	DATE from 17/08/2019 to 05/09/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.04 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(11, 18, 22, 35, 46, 52) N = 155	44 30.00 30.10 45 30.40 30.45				V	As Sheet 2 of 5.
										-16.96	32.00			
30/08/2019 04/09/2019		2.10m at 18:00 2.50m at 08:00						(13, 20, 24, 32, 42, 54) N = 152	46 32.00 32.10 47 32.40 32.45				V	Extremely weak, brown (10YR 5/3), completely decomposed medium grained GRANITE. (Very dense, clayey silty SAND with much subangular fine gravel of quartz)
										-18.96	34.00			
			70					(32, 18/25mm 70, 130/25mm) 200bls/100mm	48 34.00 34.15 34.20				V	Extremely weak, light reddish brown (5YR 6/4), completely decomposed medium grained GRANITE. (Very dense, slightly clayey silty SAND with much angular to subangular fine to medium gravel)
								(30, 20/25mm 75, 125/25mm) 200bls/100mm	49 36.00 36.15 36.20					
								(50/75mm 200/75mm) 200bls/75mm	50 38.00 38.10 38.15					
										-24.96	40.00			

- Small Disturbed Sample
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- Water Sample
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- Permeability Test
- Impression Packer Test
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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 5**

SHEET 5 of 5

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. CS60	E 837 215.59 N 815 276.77	DATE from 17/08/2019 to 05/09/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.04 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(50/75mm 200/75mm) 200bls/75mm	51 40.00 40.10 40.15				V	As Sheet 4 of 5.
			70					(50/30mm 200/70mm) 200bls/70mm	52 42.00 42.05 42.10	-26.96	42.00		IV	Very weak, yellowish red (5YR 5/8), highly decomposed medium grained GRANITE. (Angular fine to medium GRAVEL in a matrix of silty sand)
	43.05 HW									-28.01	43.05		III	Moderately weak, yellowish red locally green, highly decompsoed chloritized medium grained GRANITE. Joints are closely spaced, rough planar and undulating, extremely narrow, iron oxide stained, dipping at 0°-10° and 60°-70°.
				70	51	51	5.9 NI NR		T2-101	-28.30	43.34		V	
										-28.46	43.50		III	
				100	100	100	5.9		T2-101	-28.70	43.74		II	
				100	100	81			T2-101	-28.84	43.88			43.34- 43.50m: No recovery assumed to be completely decomposed GRANITE.
														43.74- 43.88m: Strong, slightly decomposed.
				100	100	93	2.8		T2-101		44.55		II	Strong, pinkish grey to reddish grey locally green, slightly decomposed medium grained GRANITE. Joints are closely to medium locally very closely spaced, smooth planar and undulating, extremely narrow to tight, chlorite and kaolin coated (<2mm), dipping at 0°-10°, 20°-30°, 40°-50° and 70°-80°.
									T2-101		45.83			43.88- 46.87m: Chloritized.
			80				>20			-31.16	46.20		IV	
				97	90	85			T2-101	-31.26	46.30			46.20- 46.30m: Moderately weak, highly decomposed.
		2.20m at 18:00								-31.83	46.87			
04/09/2019							5.8							
05/09/2019		2.55m at 08:00		100	97	97			T2-101		47.20		II	
											48.08			
										-33.19	48.23			48.23- 49.19m: Chloritized.
				100	100	100	2.1		T2-101					
05/09/2019		2.15m at 18:00								-34.15	49.19			
														End of drillhole at 49.19m.

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- Water Sample
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- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 05/09/2019

CHECKED BY PETER CHU

DATE 06/09/2019

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 6**

SHEET 1 of 5

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. D60	E 837 271.21 N 815 331.62	DATE from 16/08/2019 to 23/08/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.12 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
16/08/2019	HW	Dry at 08:00							A 0.45 0.50 INSPECTION PIT B 0.95 1.00 C 1.45 1.50 D 1.95	+14.97	0.15			CONCRETE. Yellowish red (5YR 5/6), sandy clayey SILT with much subangular fine gravel sized moderately weak to moderately granite and quartz. (FILL)
16/08/2019		Dry at 18:00								+13.12	2.00			
21/08/2019		Dry at 08:00		88				(1, 2, 2, 2, 2, 2) N = 8	1 2.00 2.10 2 2.40 2.45 2.50 3 4 3.50 3.60				VI	Firm, red (25YR 5/8), sandy clayey SILT with much subangular fine gravel of quartz. (RESIDUAL SOIL)
								(1, 2, 1, 2, 2, 2) N = 7	5 6 4.00 4.10 4.40					
				90					7 4.45 4.50 8 5.50 5.60	+10.62	4.50		V	Extremely weak, reddish yellow (5YR 6/8), completely decomposed medium grained GRANITE. (Clayey silty SAND with much subangular fine gravel of quartz)
			70					(2, 3, 2, 3, 4, 3) N = 12	9 6.00 6.10 10 6.40 6.45 6.50 11					
				85					12 7.50 7.60	+9.12	6.00		V	Extremely weak, red (10R 5/6), completely decomposed medium grained GRANITE. (Medium dense, clayey silty SAND with much subangular fine gravel of quartz)
								(3, 2, 3, 2, 4, 4) N = 13	13 8.00 8.10 14 8.40 8.45 8.50 15					
				90					16 9.50 9.60	+5.12	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
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- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 27/08/2019

CHECKED BY PETER CHU

DATE 28/08/2019

REMARKS
1. Inspection pit excavated from 0.00m-2.00m.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 6**

SHEET 2 of 5

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. D60	E 837 271.21 N 815 331.62	DATE from 16/08/2019 to 23/08/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.12 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				95				(2, 3, 3, 2, 3, 5) N = 13	17 10.00 18 10.10 10.40 10.45 10.50 19 20 11.50 11.60					As Sheet 1 of 5.
				95				(2, 3, 2, 3, 5, 4) N = 14	12.00 12.10 21 22 12.40 12.45 12.50 23 24 13.50 13.60				V	
			70	95				(4, 4, 6, 9, 11, 11) N = 37	14.00 14.10 25 26 14.40 14.45 14.50 27 28 15.50 15.60	+1.12	14.00			Extremely weak, pale red (10R 7/4) to weak red (10R 5/4), completely decomposed medium grained GRANITE. (Dense to very dense, silty SAND with much subangular fine gravel of quartz)
				95				(4, 5, 8, 10, 13, 12) N = 43	16.00 16.10 29 30 16.40 16.45 16.50 31 32 17.50 17.60				V	
				95				(6, 5, 10, 13, 13, 17) N = 53	18.00 18.10 33 34 18.40 18.45 18.50 35 36 19.50 19.60	-3.38	18.50			Extremely weak, pink (10R 8/4) spotted white (N8) and grey (N6), completely decomposed medium grained GRANITE. (Very dense, silty SAND with much subangular fine gravel)
21/08/2019 22/08/2019		5.30m at 18:00 9.83m at								-4.88	20.00		V	

- Small Disturbed Sample
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- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 27/08/2019

CHECKED BY PETER CHU

DATE 28/08/2019

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 6**

SHEET 3 of 5

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. D60	E 837 271.21 N 815 331.62	DATE from 16/08/2019 to 23/08/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.12 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
		08:00						(5, 8, 13, 9, 13, 20) N = 55	37 20.00 20.10 38 20.40 20.45					As Sheet 2 of 5.
								(9, 8, 15, 15, 20, 28) N = 78	39 22.00 22.10 40 22.40 22.45					
			70					(12, 17, 23, 26, 25, 31) N = 105	41 24.00 24.10 42 24.40 24.45				V	
								(15, 16, 27, 28, 33, 45) N = 133	43 26.00 26.10 44 26.40 26.45					
								(6, 5, 10, 13, 13, 17) N = 53	45 28.00 28.10 46 28.40 28.45	-14.88	30.00			

- Small Disturbed Sample
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LOGGED BY CALVIN TSANG

DATE 27/08/2019

CHECKED BY PETER CHU

DATE 28/08/2019

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 6**

SHEET 4 of 5

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. D60	E 837 271.21 N 815 331.62	DATE from 16/08/2019 to 23/08/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.12 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(14, 20, 31, 43, 50, 56) N = 180	47 30.00–30.10 48 30.40–30.45					Extremely weak, light red (10R 7/8), completely decomposed medium grained GRANITE. (Very dense, silty SAND with much subangular fine gravel)
			70					(9, 8, 15, 15, 20, 28) N = 78	49 32.00–32.10 50 32.40–32.45				V	
								(50/50mm 92, 108/45mm) 200blS/120mm	51 34.00–34.12–34.17	-19.27	34.39			
				91	87	72	NI 4.5 NI		T2-101 34.39–35.73					Moderately strong, yellowish brown spotted grey and white, moderately decomposed medium grained GRANITE. Joints are closely to medium locally widely spaced, rough planar and undulating, extremely narrow, iron oxide stained, kaolin coated (<2mm), dipping at 0°-10°, 10°-20° and 60°-70°.
			80	95	100	100	6.1 1.1		T2-101 35.73–37.22				III	
				96	100	91	7.0		T2-101 37.22–38.70	-23.58	38.70			37.28- 38.70m: With very closely spaced subhorizontal joints.
	39.62 HW		70					(50/40mm 112/75mm, 88/25mm) 200blS/100mm	52 39.00–39.09–39.14	-24.50	39.62		IV	Weak, reddish yellow (5YR 6/8), highly decomposed medium grained GRANITE. (Angular fine to medium GRAVEL)
			80	96	95	95	NI 1.5		T2-101 39.62	-24.60 -24.88	39.72 40.00		III II	Strong, pinkish grey spotted black and white, slightly decomposed medium grained GRANITE. Joints are

- Small Disturbed Sample
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LOGGED BY CALVIN TSANG

DATE 27/08/2019

CHECKED BY PETER CHU

DATE 28/08/2019

REMARKS

泰昇地基工程有限公司
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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH 6**

SHEET 5 of 5

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. D60	E 837 271.21 N 815 331.62	DATE from 16/08/2019 to 23/08/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.12 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
22/08/2019		3.10m at 18:00		96	95	95	1.5		T2-101 40.24				II	widely locally very closely spaced, smooth planar, extremely narrow, iron and manganese oxide stained, chlorite coated (<2mm), dipping at 0°-10° and 80°-90°. 39.62- 39.72m: Moderately strong, moderately decomposed.
				100	100	99			T2-101 41.72	-26.02	41.14		III	41.14- 42.19m: Moderately strong, moderately decomposed.
23/08/2019		11.11m at 08:00	80	99	99	83	>20		T2-101 43.19	-27.07	42.19		II	
				100	100	100	0.4		T2-101 43.84					
23/08/2019				100	100	100			T2-101 44.80	-29.68	44.80			End of drillhole at 44.80m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 27/08/2019

CHECKED BY PETER CHU

DATE 28/08/2019

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
（泰昇集團成員 A member of Tysan Group）

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH10**

SHEET 1 of 6

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. DR60	E 837 229.63 N 815 269.16	DATE from 17/08/2019 to 31/08/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.07 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
17/08/2019	SW	Dry at 08:00								+14.87	0.20			CONCRETE.
									A 0.45 0.50					Yellowish red (5YR 4/6), clayey silty SAND with much angular to subangular fine to medium gravel sized moderately weak to moderately strong granite and brick fragments. (FILL)
									B 0.95 1.00					
									C 1.45 1.50					
17/08/2019		Dry at 18:00							D 1.95	+13.07	2.00			
27/08/2019		Dry at 08:00						(3, 2, 3, 3, 3) N = 12	1 2.00 2.10					Medium dense, reddish brown (5YR 5/4), clayey silty SAND with much subangular fine occasional medium grave sized moderately weak granite and quartz. (FILL)
				100					2 2.40 2.45 2.50					
									3					
									4 3.50 3.60					
	4.00 SW													
	PW							(2, 3, 3, 2, 3, 4) N = 12	5 4.00 4.10					
									6 4.40 4.45 4.50					
				100					7					
			70						8 5.50 5.60					
								(2, 3, 3, 3, 4, 4) N = 14	9 6.00 6.10	+9.07	6.00			Stiff, reddish brown (5YR 4/3), sandy clayey SILT with much subangular fine gravel sized moderately weak granite and wood fragments. (FILL)
									10 6.40 6.45 6.50					
				100					11					
									12 7.50 7.60					
										+7.07	8.00			
								(2, 3, 2, 3, 2, 3) N = 10	13 8.00 8.10					Medium dense, yellowish red (10YR 5/6), clayey silty SAND with much subangular fine gravel sized moderately weak granite and quartz. (FILL)
									14 8.40 8.45 8.50					
				100					15					
		1.50m at 18:00							16 9.50 9.60					
27/08/2019														
28/08/2019		6.50m at								+5.07	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 31/08/2019

CHECKED BY PETER CHU

DATE 02/09/2019

REMARKS
1. Inspection pit excavated from 0.00m-2.00m.
2. A piezometer tip was installed at 15.00m depth.
3. A standpipe was installed to 12.50m depth.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
（泰昇集團成員 A member of Tysan Group）

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH10**

SHEET 2 of 6

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. DR60	E 837 229.63 N 815 269.16	DATE from 17/08/2019 to 31/08/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.07 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
		08:00		100				(2, 2, 3, 2, 3, 3) N = 11	17 10.00 18 10.10 10.40 10.45 10.50 19 20 11.50 11.60					Stiff, black (N2.5), sandy clayey SILT with much subangular fine gravel sized quartz. (FILL)
									12.00	+3.07	12.00			
				100				(2, 2, 3, 2, 3, 4) N = 12	21 12.10 22 12.40 12.45 12.50 23 24 13.50 13.60					Medium dense, light grey (N7), clayey silty SAND with some subangular fine grave lof quartz. (ALLUVIUM)
									14.00	+1.07	14.00			
			70	100				(3, 2, 3, 2, 4, 4) N = 13	25 14.10 26 14.40 14.45 14.50 27 28 15.50 15.60					Stiff, very pale brown (10YR 7/4), sandy clayey SILT with some subangular fine gravel of quartz. (ALLUVIUM)
									16.00	-0.93	16.00			
				100				(3, 2, 3, 4, 4, 4) N = 15	29 16.10 30 16.40 16.45 16.50 31 32 17.50 17.60					Medium dense, light grey (N7), silty fine SAND with some subangular fine grave lof quartz. (ALLUVIUM)
	18.00 PW HW									-2.93	18.00			
				100				(3, 5, 5, 6, 6, 8) N = 25	33 18.10 34 18.40 18.45 18.50 35 36 19.50 19.60				V	Extremely weak, reddish yellow (5YR 7/6), completely decomposed medium grained GRANITE. (Medium dense, silty SAND with some fine gravel of quartz)
										-4.93	20.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 31/08/2019

CHECKED BY PETER CHU

DATE 02/09/2019

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH10**

SHEET 3 of 6

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. DR60	E 837 229.63 N 815 269.16	DATE from 17/08/2019 to 31/08/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.07 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
			70					(5, 7, 10, 13, 18, 22) N = 63	37 20.00 20.10 38 20.40 20.45	-5.73	20.80		V	Extremely weak, reddish grey (5YR 5/2), completely decomposed medium grained GRANITE. (Very dense, silty SAND with much subangular fine gravel)
			80	75	3	0	NI	T2-101	20.80				III	Moderately strong, yellowish brown spotted black and white, moderately decomposed medium grained GRANITE. Rock is non-intact.
									21.60	-6.53	21.60			Extremely weak, pale red (10R 6/3), completely decomposed medium grained GRANITE. (Very dense, silty SAND with much subangular fine gravel)
								(7, 10, 14, 21, 25, 30) N = 90	39 22.00 22.10 40 22.40 22.45					
								(7, 10, 16, 21, 28, 32) N = 97	41 24.00 24.10 42 24.40 24.45					
			70										V	
								(8, 12, 17, 24, 30, 38) N = 109	43 26.00 26.10 44 26.40 26.45					
								(9, 13, 18, 27, 34, 43) N = 122	45 28.00 28.10 46 28.40 28.45					
										-14.93	30.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 31/08/2019

CHECKED BY PETER CHU

DATE 02/09/2019

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH10**

SHEET 4 of 6

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. DR60	E 837 229.63 N 815 269.16	DATE from 17/08/2019 to 31/08/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.07 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(8, 14, 21, 31, 40, 53) N = 145	47 30.00 30.10 48 30.40 30.45					As Sheet 3 of 6.
								(10, 15, 24, 35, 44, 60) N = 163	49 32.00 32.10 50 32.40 32.45				V	
			70					(9, 13, 25, 38, 52, 69) N = 184	51 34.00 34.10 52 34.40 34.45					
28/08/2019		1.50m at 18:00						(11, 15, 27, 40, 54, 76) N = 197	53 36.00 36.10 54 36.40 36.45	-20.93	36.00			Extremely weak, reddish yellow (5YR 6/6), completely decomposed medium grained GRANITE. (Very dense, silty SAND with much subangular fine gravel)
29/08/2019		7.00m at 08:00						(19, 31, 53, 69, 78/75mm) 200blS/225mm	55 38.00 38.10 56 38.40 38.45				V	
										-24.93	40.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 31/08/2019

CHECKED BY PETER CHU

DATE 02/09/2019

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH10**

SHEET 5 of 6

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. DR60	E 837 229.63 N 815 269.16	DATE from 17/08/2019 to 31/08/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.07 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(15, 35, 73, 127/75mm) 200bls/150mm	57 40.00 58 40.25 40.30					As Sheet 4 of 6.
								(50/25mm 200/75mm) 200bls/75mm	59 42.00 42.05 42.10				V	
			70					(50/30mm 200/70mm) 200bls/70mm	60 44.00 44.05 44.10	-28.93	44.00			
								(50/25mm 200/75mm) 200bls/75mm	61 46.00 46.05 46.10				IV	Weak, reddish yellow (5YR 6/6), highly decomposed medium grained GRANITE. (Angular fine to medium GRAVEL)
	47.48 HW									-32.41	47.48			
							NI		47.48	-32.57	47.64		IV	Moderately strong, yellowish brown, moderately decomposed medium grained GRANITE. Joints are very closely to closely spaced, rough and smooth planar, extremely narrow, iron and manganese oxide stained, chlorite coated, dipping at 0°-10°, 30°-40° and 40°-50°. 47.48- 47.64m: Moderately weak, highly decomposed. 48.31- 48.60m: Moderately weak, highly decomposed.
							9.0						III	
				81	54	25		T2-101		-33.24	48.31			
							NI			-33.53	48.60		IV	
			80				19.2		48.78					
							NI						III	
				92	65	47	9.3	T2-101		-34.67	49.74			
							>20			-34.85 -34.91	49.92 49.98		IV	

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 31/08/2019

CHECKED BY PETER CHU

DATE 02/09/2019

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH10**

SHEET 6 of 6

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. DR60	E 837 229.63 N 815 269.16	DATE from 17/08/2019 to 31/08/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.07 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
							17.1		49.98				III	49.74- 49.92m: Moderately weak, highly decomposed. Moderately strong, yellowish brown to reddish brown, moderately decomposed medium grained GRANITE. Joints are closely to medium locally very closely spaced, rough and smooth planar, extremely narrow, iron and manganese oxide stained, chlorite coated (<2mm), dipping at 0°-10°, 10°-20°, 40°-50° and 60°-70°.
				95	82	56	>20		T2-101					
									50.91					
				100	100	93	9.6		T2-101					
									51.90					
										-37.33	52.40			
			80							-37.43	52.50		III	52.40- 52.50m: Pegmatite.
		1.70m at 18:00		99	95	87	4.4		T2-101					
29/08/2019										-38.23	53.30			
30/08/2019		7.00m at 08:00							53.34	-38.35	53.42			53.30- 53.42m: Pegmatite.
				98	100	95	2.4		T2-101					
									54.50					
		5.00m at 18:00		100	100	91			T2-101					
30/08/2019									55.07	-40.00	55.07			End of drillhole at 55.07m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 31/08/2019

CHECKED BY PETER CHU

DATE 02/09/2019

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH11**

SHEET 1 of 5

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. DR60	E 837 280.17 N 815 319.50	DATE from 16/08/2019 to 26/08/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.17 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
16/08/2019	HW	Dry at 08:00							A 0.45 0.50 B 0.95 1.00 C 1.45 1.50 D 1.95	+14.97	0.20			CONCRETE. Yellowish red (5YR 5/6), silty clayey SAND with much angular to subangular fine gravel sized quartz, plagioclase and asphalt fragments. (FILL)
16/08/2019		Dry at 18:00								+13.17	2.00			
21/08/2019		Dry at 08:00		100				(2, 2, 2, 3, 2, 3) N = 10	1 2.00 2.10 2 2.40 2.45 2.50 3 4 3.50 3.60					Stiff, dark yellowish brown (10YR 4/4), sandy clayey SILT with occasional fine gravel sized asphalt and brick fragments. (FILL)
										+11.17	4.00			
			70	90				(2, 2, 3, 2, 2, 2) N = 9	4.00 4.10 5 6 4.40 4.45 4.50 7 8 5.50 5.60					Stiff to very stiff, red (2.5YR 5/8), sandy clayey SILT with much subangular fine gravel of quartz. (RESIDUAL SOIL)
				100				(3, 2, 3, 3, 3, 4) N = 13	6.00 6.10 9 10 6.40 6.45 6.50 11 12 7.50 7.60				VI	
				100				(2, 3, 3, 3, 4, 6) N = 16	8.00 8.10 13 14 8.40 8.45 8.50 15 16 9.50 9.60					
										+5.17	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 27/08/2019

CHECKED BY PETER CHU

DATE 28/08/2019

REMARKS
1. Inspection pit excavated from 0.00m-2.00m.
2. A piezometer tip was installed at 15.00m depth.
3. A standpipe was installed to 12.00m depth.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH11**

SHEET 2 of 5

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. DR60	E 837 280.17 N 815 319.50	DATE from 16/08/2019 to 26/08/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.17 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(3, 4, 4, 5, 6, 6) N = 21	17 10.00–10.10 18 10.40–10.45	+4.67	10.50		VI	As Sheet 1 of 5.
				100					19 10.50–11.50 20 11.60–12.00	+3.17	12.00		V	Extremely weak, red (2.5YR 5/6), completely decomposed medium grained GRANITE. (Clayey silty SAND with much subangular fine gravel of quartz)
				100				(4, 5, 5, 6, 7, 7) N = 25	21 12.00–12.10 22 12.40–12.45 23 12.50–13.50 24 13.60–14.00	+1.17	14.00		V	Extremely weak, red (10R 5/6)), completely decomposed medium grained GRANITE. (Medium dense, clayey silty SAND with much subangular fine gravel of quartz)
			70	100				(5, 7, 7, 9, 10, 15) N = 41	25 14.00–14.10 26 14.40–14.45 27 14.50–15.50 28 15.60–16.00				V	Extremely weak, red (10R 5/6) and reddish yellow (5YR 7/6) spotted grey and white, completely decomposed medium grained GRANITE. (Dense to very dense, silty SAND with much subangular fine gravel of quartz)
				100				(6, 8, 10, 13, 15, 23) N = 61	29 16.00–16.10 30 16.40–16.45 31 16.50–17.50 32 17.60–18.00					
21/08/2019 22/08/2019		9.50m at 18:00 9.50m at 08:00		100				(7, 10, 14, 17, 21, 25) N = 77	33 18.00–18.10 34 18.40–18.45 35 18.50–19.50 36 19.60–20.00	-4.83	20.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 27/08/2019

CHECKED BY PETER CHU

DATE 28/08/2019

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH11**

SHEET 3 of 5

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. DR60	E 837 280.17 N 815 319.50	DATE from 16/08/2019 to 26/08/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.17 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(8, 15, 20, 23, 38, 32) N = 113	37 20.00 20.10 38 20.40 20.45	-5.33	20.50		V	As Sheet 2 of 5.
				100					39 20.50 21.50 40 21.60					Extremely weak, light red (10R 6/6), completely decomposed medium grained GRANITE. (Very dense, silty SAND with much subangular fine gravel of quartz)
			70					(7, 15, 18, 22, 27, 33) N = 100	41 22.00 22.10 42 22.40 22.45				V	
								(8, 16, 29, 35, 39, 54) N = 157	43 24.00 24.10 44 24.40 24.45					
								(10, 17, 32, 42, 50, 58) N = 182	45 26.00 26.10 46 26.40 26.45					
								(11, 18, 30, 41, 58, 77) N = 206	47 28.00 28.10 48 28.40 28.45					
								(17, 33/15mm		-14.83	30.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 27/08/2019

CHECKED BY PETER CHU

DATE 28/08/2019

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH11**

SHEET 4 of 5

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. DR60	E 837 280.17 N 815 319.50	DATE from 16/08/2019 to 26/08/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.17 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
			70					68, 132/65mm) 200bls/140mm	49 30.00 50 30.18 30.23	-15.18	30.35		V	As Sheet 3 of 5.
									30.35	-15.30	30.47		IV	Moderately strong, yellowish brown spotted black and white, moderately decomposed medium grained GRANITE. Rock is non-intact.
			80	67	7	0	NI	T2-101		-15.68	30.85		III	30.35- 30.47m: Moderately weak, highly decomposed.
										-15.88	31.05		IV	
							NR						V	30.85- 31.05m: Moderately weak, highly decomposed.
									31.40	-16.23	31.40			31.05- 31.40m: No recovery assumed to be completely decomposed GRANITE.
22/08/2019		7.50m at 18:00						(50/50mm 127/75mm, 73/35mm) 200bls/110mm	51 32.00 32.11 32.16					Extremely weak, light red (10R 6/6), completely decomposed medium grained GRANITE. (Very dense, silty SAND with much subangular fine gravel of quartz)
23/08/2019		10.00m at 08:00	70										V	
								(50/45mm 123/75mm, 77/30mm) 200bls/105mm	52 34.00 34.10 34.15					
									35.03	-19.86	35.03			
				98	97	97	4.1	T2-101					III	Moderately strong, reddish brown to yellowish brown, moderately decomposed medium grained GRANITE. Joints are very closely to closely locally medium spaced, rough planar and smooth undulating, extremely narrow, iron and manganese oxide stained, dipping at 0°-10°, 20°-30° and 50°-60°.
							>20		36.00	-20.90	36.07			
				67	52	44	NI	T2-101		-21.18	36.35		IV	36.07- 36.35m: Moderately weak, highly decomposed.
							NR			-21.43	36.60		V	36.35- 36.60m: No recovery assumed to be completely decomposed GRANITE.
			80				6.8		36.75				III	
				85	77	58	NI 4.4	T2-101						
							NI			-22.72	37.89		V	37.89- 38.12m: No recovery assumed to be completely decomposed GRANITE.
							NR			-22.95	38.12		IV	
							12.5		38.25				V	38.12- 38.43m: Moderately weak, highly decomposed.
				40	0	0	NI NR	T2-101		-23.26	38.43			
								(50/15mm 200/65mm) 200bls/65mm	53 38.70 38.73 38.78	-23.53	38.70		IV	38.43- 38.70m: No recovery assumed to be completely decomposed GRANITE.
	39.15 HW		70						39.15	-23.98	39.15			
										-24.13	39.30		III	Weak, reddish yellow (5YR 6/6), highly decomposed medium grained GRANITE. (Angular fine to medium GRAVEL)
			80	84	76	76	6.3	T2-101		-24.57	39.74		II	
										-24.83	40.00		III	

- Small Disturbed Sample
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- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 27/08/2019

CHECKED BY PETER CHU

DATE 28/08/2019

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH11**

SHEET 5 of 5

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. DR60	E 837 280.17 N 815 319.50	DATE from 16/08/2019 to 26/08/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.17 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
23/08/2019		10.50m at 18:00	80	97	87	87	NI 1.1		40.10 T2-101 40.85	-25.31 -25.74	40.48 40.91		III II	Moderately strong, reddish brown to yellowish brown spotted black and white, moderately decomposed medium grained GRANITE. Joints are very closely to closely locally widely spaced, rough planar and smooth undulating, extremely narrow, iron and manganese oxide stained, dipping at 20°-30°, 30°-40° and 40°-50°.
				89	63	51	14.8 >20		T2-101	-26.22 -26.32 -26.54	41.39 41.49 41.71		III IV/III III	39.30- 39.74m: Strong, slightly decomposed.
				96	87	87	1.6 3.8		41.80 T2-101	-26.94 -27.34	42.11 42.51		II III II	40.48- 40.91m: Strong, slightly decomposed. 41.39- 41.49m: Weak to moderately weak, highly to moderately decomposed. 41.71- 42.11m: Strong, slightly decomposed.
				96	79	66	8.3 NI 8.6		43.20 T2-101 44.65	-27.89 -28.21 -28.28 -29.48	43.06 43.38 43.45 44.65		III	42.51- 43.06m: Strong, slightly decomposed. 43.38- 43.45m: Moderately weak, moderately decomposed.
														End of drillhole at 44.65m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
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- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG
DATE 27/08/2019
CHECKED BY PETER CHU
DATE 28/08/2019

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH16**

SHEET 1 of 6

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. D60	E 837 241.91 N 815 270.97	DATE from 17/08/2019 to 29/08/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.24 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
17/08/2019	HW	Dry at 08:00							A 0.45 0.50 B 0.95 1.00 C 1.45 1.50 D 1.95	+15.14	0.10			CONCRETE. Light red (10R 7/6), sandy SILT with much subangular fine to medium gravel sized moderately weak granite. (FILL)
17/08/2019		Dry at 18:00								+13.24	2.00			
24/08/2019		Dry at 08:00		95				(2, 1, 1, 2, 2, 2) N = 7	1 2.00 2.10 2 2.40 2.45 2.50 3 4 3.50 3.60					Firm, red (10R 5/6), sandy clayey SILT with much subangular fine gravel of moderately weak granite and quartz. (FILL)
								(1, 2, 2, 2, 2, 2) N = 8	5 4.00 4.10 6 4.40 4.45 4.50 7 8 5.50 5.60					
		5.20m at 18:00	70	85										
24/08/2019								(2, 1, 2, 1, 1, 2) N = 6	9 6.00 6.10 10 6.40 6.45 6.50 11 12 7.50 7.60					
26/08/2019		5.03m at 08:00		90										
								(2, 2, 1, 2, 2, 2) N = 7	13 8.00 8.10 14 8.40 8.45 8.50 15 16 9.50 9.60	+6.74	8.50			Stiff, red (2.5YR 5/8), sandy clayey SILT with some subangular fine gravel of quartz. (RESIDUAL SOIL)
				90						+5.24	10.00		VI	

- Small Disturbed Sample
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- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 30/08/2019

CHECKED BY PETER CHU

DATE 31/08/2019

REMARKS
1. Inspection pit excavated from 0.00m-2.00m.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH16**

SHEET 2 of 6

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. D60	E 837 241.91 N 815 270.97	DATE from 17/08/2019 to 29/08/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.24 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(2, 2, 3, 2, 3, 3) N = 11	17 (10.00–10.10), 18 (10.40–10.45)	+4.64	10.60		VI	Stiff, reddish yellow (5YR 6/8), sandy clayey SILT. (RESIDUAL SOIL)
				100					19 (10.50–11.50), 20 (11.60–12.00)				VI	Stiff, reddish yellow (5YR 7/6), sandy clayey SILT with some subangular fine gravel. (RESIDUAL SOIL)
								(2, 3, 3, 2, 3, 4) N = 12	21 (12.10–12.40), 22 (12.45–12.50)	+2.74	12.50			
				95					23 (13.50–14.00), 24 (14.10–14.40)				V	Extremely weak, pink (5YR 8/3), completely decomposed medium grained GRANITE. (Very stiff, sandy clayey SILT with some subangular fine gravel)
								(4, 3, 4, 5, 7, 7) N = 23	25 (14.10–14.40), 26 (14.45–14.50)	+0.74	14.50			
			70	90					27 (15.50–16.00), 28 (16.10–16.40)				V	Extremely weak, reddish yellow (5YR 6/8), completely decomposed fine grained GRANITE. (Dense, silty SAND)
								(4, 6, 7, 10, 10, 12) N = 39	29 (16.45–16.50), 30 (17.50–17.60)	-1.26	16.50			
				95					31 (18.00–18.10), 32 (18.40–18.50)				V	Extremely weak, red (2.5YR 5/8), completely decomposed fine grained GRANITE. (Silty SAND with some subangular fine gravel)
								(7, 10, 12, 9, 15, 15) N = 51	33 (19.50–19.60), 34 (20.00–20.00)	-2.76	18.00			
				95					35 (20.00–20.00), 36 (20.00–20.00)	-4.76	20.00		V	Extremely weak, pale red (10R 6/4), completely decomposed fine grained GRANITE. (Very dense, silty SAND with much subangular fine to medium gravel)

- Small Disturbed Sample
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- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 30/08/2019

CHECKED BY PETER CHU

DATE 31/08/2019

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH16**

SHEET 3 of 6

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. D60	E 837 241.91 N 815 270.97	DATE from 17/08/2019 to 29/08/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.24 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(4, 9, 11, 14, 18, 17) N = 60	37 20.00 20.10 38 20.40 20.45				V	As Sheet 2 of 6.
26/08/2019		6.10m at 18:00	70					(8, 9, 13, 20, 18, 27) N = 78	39 22.00 22.10 40 22.40 22.45					
27/08/2019		8.90m at 08:00							22.95	-7.71	22.95			
			80	91	82	76	NI 2.9		T2-101				III	Moderately strong, yellowish brown, moderately decomposed medium grained GRANITE. Joints are medium spaced, rough planar, extremely narrow, iron oxide stained, dipping at 0°-10°, 40°-50° and 80°-90°.
									23.75	-8.51	23.75			
			70					(13, 11, 14, 18, 20, 36) N = 88	41 24.00 24.10 42 24.40 24.45				V	Extremely weak, pale red (10R 6/4), completely decomposed fine grained GRANITE. (Very dense, silty SAND)
									24.90	-9.66	24.90			
				89	67	67	NI		T2-101				II	Strong, pinkish grey spotted black and white, slightly decomposed medium grained GRANITE. Joints are widely spaced, rough planar and undulating, extremely narrow, iron oxide stained, dipping at 0°-10°, 10°-20° and 40°-50°.
			80						25.62					
				100	100	100	1.3		T2-101					
									26.62	-11.38	26.62			
			70					(15, 22, 24, 31, 42, 57) N = 154	43 26.80 26.90 44 27.20 27.25				V	Extremely weak, pale red (10R 6/4), completely decomposed fine grained GRANITE. (Very dense, clayey silty SAND with some subangular fine gravel)
								(15, 14, 23, 38, 35, 45) N = 141	45 28.80 28.90 46 29.20 29.25					
										-14.76	30.00			

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LOGGED BY CALVIN TSANG

DATE 30/08/2019

CHECKED BY PETER CHU

DATE 31/08/2019

REMARKS

泰昇地基工程有限公司
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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH16**

SHEET 4 of 6

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. D60	E 837 241.91 N 815 270.97	DATE from 17/08/2019 to 29/08/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.24 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
													V	As Sheet 3 of 6.
			70					(50/50mm 110/75mm, 90/45mm) 200blS/120mm	47 30.80 30.92 30.97	-15.56	30.80		IV	Weak, pale red (10R 7/4), highly decomposed medium grained GRANITE. (Angular fine GRAVEL)
										-16.24	31.48		II	Moderately strong, yellowish brown spotted black and white, moderately decomposed medium grained GRANITE. Joints are medium spaced, rough planar and undulating, iron oxide stained, dipping at 0°-10° and 10°-20°.
			80	92	84	84	NI 4.0		T2-101 31.48 32.78	-16.62	31.86		III	31.48- 31.86m: Strong, slightly decomposed.
								(13, 20, 26, 37, 40, 53) N = 156	48 33.00 33.10 49 33.40 33.45	-17.54	32.78		V	Extremely weak, strong brown (7.5YR 5/6), completely decomposed fine grained GRANITE. (Very dense, silty SAND with much subangular fine gravel)
			70					(50/30mm 200/70mm) 200blS/70mm	50 35.00 35.05 35.10	-19.76	35.00		V	Extremely weak, pale red (10R 7/4), completely decomposed fine grained GRANITE. (Very dense, silty SAND with much subangular fine to medium gravel)
								(50/70mm 125/75mm, 75/35mm) 200blS/110mm	51 37.00 37.13 37.18	-21.76	37.00		IV	Weak, yellowish red (5YR 5/8), highly decomposed medium grained GRANITE. (Angular fine to medium GRAVEL in a matrix of sand)
			80	93	50	0	13.3		T2-101 37.30 37.60	-22.06	37.30		IV	
										-22.29	37.53		V	Moderately weak, yellowish brown, highly decomposed fine grained GRANITE. Joints are closely spaced, rough planar and undulating, extremely narrow, iron oxide stained, dipping at 0°-10° and 20°-30°. 37.53- 37.60m: Medium grained GRANITE.
			70					(50/60mm 200/50mm) 200blS/50mm	52 39.00 39.06 39.11	-22.36	37.60			Extremely weak, reddish brown (5YR 4/4), completely decomposed fine grained GRANITE. (Very dense, SAND with much angular to subangular fine to medium gravel)
										-24.76	40.00			

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DRILLHOLE RECORD

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DRILLHOLE No. **BH16**

SHEET 5 of 6

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. D60	E 837 241.91 N 815 270.97	DATE from 17/08/2019 to 29/08/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.24 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
														As Sheet 4 of 6.
								(50/45mm 200/55mm) 200blS/55mm	D 53 41.00 41.05 41.10				V	
27/08/2019		6.60m at 18:00	70					(13, 37/25mm 133, 67/15mm) 200blS/90mm	D 54 43.00 43.14 43.19	-27.76	43.00		V	Extremely weak, light reddish brown (5YR 6/4), completely decomposed fine grained GRANITE. (Very dense, SAND with much angular to subangular fine to medium gravel)
28/08/2019		9.21m at 08:00						(50/50mm 95, 105/45mm) 200blS/120mm	D 55 45.00 45.12 45.17				V	
	46.10 HW									-30.86	46.10			
							NI		46.10					Moderately strong, pinkish grey spotted yellowish brown and white, moderately decomposed medium grained GRANITE. Joints are very closely to closely locally medium spaced, rough planar and undulating, extremely narrow, iron oxide stained, dipping at 0°-10° and 60°-70°.
				96	91	91	7.4		T2-101				III	
							1.9		47.56	-32.54	47.78			
			80							-32.59	47.83			47.78- 47.83m: PEGMATITE.
				96	75	62	>20		T2-101	-33.28	48.52		IV	
							5.7			-33.58	48.82		III	48.52- 48.82m: Moderately weak, highly decomposed.
							NI			-33.65	48.89		II	48.89- 49.02m: Strong, slightly decomposed.
				100	100	100	1.9		49.02 T2-101	-33.78	49.02		II	Moderately strong, red dappled yellowish brown spotted black and white, moderately decomposed medium grained GRANITE. Joints medium locally very closely to closely spaced, smooth planar and
										-34.76	50.00			

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REMARKS

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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH16**

SHEET 6 of 6

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. D60	E 837 241.91 N 815 270.97	DATE from 17/08/2019 to 29/08/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.24 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				100	100	100			T2-101	-35.09	50.33		II	undulating, extremely narrow to tight, iron oxide stained, kaolin and chlorite coated (<2mm), dipping at 0°-10°, 10°-20°, 20°-30° and 70°-80°.
									50.52				III	49.02- 50.33m: Strong, slightly decomposed.
				100	100	100	1.9		T2-101	-36.12	51.36			
										-36.20	51.44		II	51.36- 51.93m: Strong, slightly decomposed.
										-36.28	51.52			51.44- 51.52m: PEGMATITE.
									52.02	-36.69	51.93			
			80				13.2							
				100	94	71	6.0		T2-101				III	
									53.43	-38.37	53.61			
													II	53.61- 54.07m: Strong, slightly decomposed.
				100	100	95	0.8		T2-101	-38.83	54.07		III	
		7.95m at 18:00								-39.13	54.37		II	
28/08/2019										-39.31	54.55		III	54.37- 54.55m: Strong, slightly decomposed.
									54.65	-39.41	54.65			End of drillhole at 54.65m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 30/08/2019

CHECKED BY PETER CHU

DATE 31/08/2019

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH17**

SHEET 1 of 6

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. DR60	E 837 251.66 N 815 279.53	DATE from 29/08/2019 to 05/09/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.29 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
29/08/2019	HW	Dry at 08:00							INSPECTION PIT A 0.45 0.50	+14.79	0.50			Grey (N5), angular coarse GRAVEL sized concrete fragments. (FILL)
29/08/2019														
30/08/2019		Dry at 08:00	80	98					T6-131					Grey (N5), angular COBBLE sized concrete fragments with iron. (FILL)
									1.80	+13.49	1.80			Grey (N5), angular BOULDER sized concrete fragments with iron. (FILL)
				92					T6-131 2.30	+12.99	2.30			
								(1, 2, 2, 2, 1, 2) N = 7	1 2.50 2.60 2.90 2.95 3.00					Firm, red (2.5YR 5/8), sandy clayey SILT with some subangular fine to medium gravel sized moderately weak granite and quartz. (FILL)
				95					3 4.00 4.10					
								(1, 1, 2, 2, 1, 2) N = 7	4.50 4.60 5 6 4.90 4.95 5.00					
			70	95					7 8 6.00 6.10					
								(1, 2, 2, 2, 2, 2) N = 8	6.50 6.60 9 10 6.90 6.95 7.00					
				100					11 12 8.00 8.10					
								(2, 2, 1, 2, 3, 3) N = 9	8.50 8.60 13 14 8.90 8.95 9.00	+6.29	9.00			Stiff, strong brown (7.5YR 4/6), sandy clayey SILT. (FILL)
				90					15	+5.29	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 05/09/2019

CHECKED BY PETER CHU

DATE 06/09/2019

REMARKS
1. Inspection pit excavated from 0.00m-0.50m.
2. A piezometer tip was installed at 15.00m depth.
3. A standpipe was installed to 12.50m depth.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH17**

SHEET 2 of 6

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. DR60	E 837 251.66 N 815 279.53	DATE from 29/08/2019 to 05/09/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.29 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
									16 10.00–10.10					As Sheet 1 of 6.
									10.50	+4.79	10.50			
								(4, 4, 3, 4, 5, 4) N = 16	17 10.60					Extremely weak, reddish yellow (5YR 7/8), completely decomposed medium grained GRANITE. (Very stiff, sandy clayey SILT with some subangular fine gravel of quartz)
				85					18 10.90–10.95 19 11.00				V	
									20 12.00–12.10					
								(3, 5, 4, 5, 6, 7) N = 22	21 12.50–12.60 22 12.90–12.95					
									23 13.00	+2.29	13.00			Extremely weak, white (5YR 8/1) dappled reddish yellow (5YR 7/8), completely decomposed fine gained GRANITE. (Dense, fine to medium SAND)
				100					24 14.00–14.10				V	
		4.58m at 18:00						(7, 5, 8, 11, 15, 15) N = 49	25 14.50–14.60 26 14.90–14.95					
30/08/2019										+0.29	15.00			Extremely weak, yellowish red (5YR 5/8), completely decomposed medium grained GRANITE. (Dense to very dense, clayey silty SAND with some subangular fine gravel)
02/09/2019		8.50m at 08:00	70	95					27 15.00					
									28 16.00–16.10					
		4.85m at 18:00						(5, 8, 8, 10, 9, 12) N = 39	29 16.50–16.60 30 16.90–16.95					
02/09/2019													V	
03/09/2019		8.60m at 08:00		90					31 17.00					
									32 18.00–18.10					
								(7, 9, 12, 13, 12, 14) N = 51	33 18.50–18.60 34 18.90–18.95					
										-3.71	19.00			Extremely weak, red (10R 4/8), completely decomposed medium grained GRANITE. (Very dense, silty SAND with much subangular fine gravel)
				95					35 19.00				V	
										-4.71	20.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 05/09/2019

CHECKED BY PETER CHU

DATE 06/09/2019

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH17**

SHEET 3 of 6

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. DR60	E 837 251.66 N 815 279.53	DATE from 29/08/2019 to 05/09/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.29 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
									36 20.00–20.10					As Sheet 2 of 6.
								(10, 8, 13, 16, 17, 23) N = 69	37 20.50–20.60 38 20.90–20.95				V	
										-7.21	22.50			
								(11, 15, 27, 38, 42, 57) N = 164	39 22.50–22.60 40 22.90–22.95					Extremely weak, yellowish red (5YR 5/6), completely decomposed fine grained GRANITE. (Very dense, fine to medium SAND)
			70					(11, 18, 27, 35, 40, 46) N = 148	41 24.50–24.60 42 24.90–24.95					
								(11, 16, 20, 29, 38, 44) N = 131	43 26.50–26.60 44 26.90–26.95				V	
								(12, 19, 25, 29, 39, 42) N = 135	45 28.50–28.60 46 28.90–28.95					
										-14.71	30.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 05/09/2019

CHECKED BY PETER CHU

DATE 06/09/2019

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH17**

SHEET 4 of 6

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. DR60	E 837 251.66 N 815 279.53	DATE from 29/08/2019 to 05/09/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.29 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
														As Sheet 3 of 6.
								(13, 18, 22, 29, 40, 48) N = 139	47 30.50 30.60 48 30.90 30.95				V	
								(15, 25, 32, 40, 51, 59) N = 182	49 32.50 32.60 50 32.90 32.95					
			70											
								(18, 0, 36, 50, 71, 43/15mm) 200bls/240mm	51 34.50 34.54 52 34.84 34.89	-19.21	34.50			Extremely weak, light red (2.5YR 7/6), completely decomposed medium grained GRANITE. (Very dense, silty SAND with much subangular fine gravel)
								(12, 33, 58, 72, 70/30mm) 200bls/180mm	53 36.50 54 36.78 36.83				V	
										-23.09	38.38			
			80	94	90	90	1.0		T2-101 38.38 38.43				II	Strong, pinkish grey, slightly decomposed medium grained GRANITE. Joints are widely spaced, rough planar, extremely narrow, iron oxide stained, dipping at 0°-10° and 20°-30°.
										-24.14	39.43			
03/09/2019		5.00m at 18:00	70					(12, 20, 23, 39, 42, 48) N = 152	55 39.50 39.60 56 39.90	-24.71	40.00		V	Extremely weak, reddish yellow (5YR 7/8), completely decomposed medium grained GRANITE. (Very dense, silty SAND with much subangular fine gravel)

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 05/09/2019

CHECKED BY PETER CHU

DATE 06/09/2019

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH17**

SHEET 5 of 6

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. DR60	E 837 251.66 N 815 279.53	DATE from 29/08/2019 to 05/09/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.29 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
04/09/2019		8.50m at 08:00							39.95					As Sheet 4 of 6.
								(22, 28/35mm 89, 111/65mm) 200bls/140mm	57 41.50 58 41.70 41.75				V	
								(50/70mm 127/75mm, 76/25mm) 203bls/100mm	59 43.50 43.56 43.61	-28.21	43.50			Extremely weak, pinkish grey (5YR 6/2), completely decomposed medium grained GRANITE. (Very dense, SAND with much subangular fine gravel)
			70											
								(50/60mm 200/50mm) 200bls/50mm	60 45.50 45.56 45.61				V	
	47.80 HW							(50/40mm 200/60mm) 200bls/60mm	61 47.50 47.55 47.60	-32.51	47.80			
							NI		47.80				III	Moderately strong, pinkish grey dappled yellowish brown, moderately decomposed medium grained GRANITE. Joints are closely to medium locally very closely spaced, rough and smooth planar, extremely narrow, iron and manganese oxide stained, chlorite coated, dipping at 0°-10°, 10°-20°, 60°-70° and 70°-80°.
							11.5							
			80	99	96	88			T2-101	-33.35	48.64		IV	
										-33.38	48.67			
							4.6		49.17				III	48.64- 48.67m: Moderately weak, highly decomposed.
				100	100	100			T2-101	-34.48	49.77			
							2.1			-34.71	50.00		II	

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 05/09/2019

CHECKED BY PETER CHU

DATE 06/09/2019

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH17**

SHEET 6 of 6

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. DR60	E 837 251.66 N 815 279.53	DATE from 29/08/2019 to 05/09/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.29 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
04/09/2019			80	100	100	100	6.3		T2-101 50.65	-35.33	50.62		II	49.77- 50.62m: Strong, slightly decomposed.
							18.1			-35.88	51.17		III	
				99	95	59			T2-101	-36.08	51.37		II	
							3.1			-36.34	51.63		III	51.17- 51.37m: Strong, slightly decomposed.
									52.15	-36.54	51.83			51.63- 53.32m: Strong, slightly decomposed.
				99	91	50	>20		T2-101				II	51.63- 51.83m: Fine grained GRANITE with pegmatite vein.
							8.9		53.32	-38.03	53.32			End of drillhole at 53.32m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 05/09/2019

CHECKED BY PETER CHU

DATE 06/09/2019

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH18**

SHEET 1 of 6

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. D60	E 837 261.39 N 815 291.46	DATE from 29/08/2019 to 11/09/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.25 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
29/08/2019	HW	Dry at 08:00							INSPECTION PIT A 0.65 0.70 B 1.15	+15.05	0.20			CONCRETE.
29/08/2019		Dry at 18:00								+14.05	1.20			Yellowish brown (5YR 5/6), sandy clayey SILT with much subangular fine gravel sized moderately weak granite and quartz. (FILL)
06/09/2019		Dry at 08:00	80	57					T2-101 1.20 1.55	+13.70	1.55			Light red (10R 7/6) and grey (N7), angular COBBLE and occasional gravel sized concrete fragments. (FILL)
								(1, 2, 1, 2, 2, 3) N = 8	1 2.00 2.10 2 2.40 2.45 2.50 3 3.50 3.60 4					Firm, yellowish brown (5YR 5/6), sandy clayey SILT with much subangular fine gravel sized moderately weak granite and quartz. (FILL)
				95				(2, 2, 1, 2, 3, 3) N = 9	5 4.00 4.10 6 4.40 4.45 4.50 7 5.50 5.60 8					
			70	95				(1, 2, 1, 2, 1, 2) N = 6	6.00 6.10 9 10 6.40 6.45 6.50 11 7.50 7.60 12	+8.75	6.50			Firm, yellowish red (5YR 5/6) to reddish yellow (5YR 7/8), sandy clayey SILT. (FILL)
				85										
								(1, 2, 2, 2, 2, 2) N = 8	8.00 8.10 13 14 8.40 8.45 8.50 15 9.50 9.60 16	+6.75	8.50		V	Extremely weak, red (10R 5/8), completely decomposed medium grained GRANITE. (Medium dense, clayey silty SAND)
				85						+5.25	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 11/09/2019

CHECKED BY PETER CHU

DATE 12/09/2019

REMARKS
1. Inspection pit excavated from 0.00m-1.20m.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH18**

SHEET 2 of 6

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. D60	E 837 261.39 N 815 291.46	DATE from 29/08/2019 to 11/09/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.25 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
													V	As Sheet 1 of 6.
				100				(2, 3, 4, 3, 3, 5) N = 15	17 10.00 10.10 18 10.40 10.45 10.50	+4.75	10.50			Extremely weak, yellowish red (5YR 5/8) spotted white (N8) and dark reddish brown (5YR 3/2), completely decomposed medium grained GRANITE. (Medium dense to dense, clayey silty SAND with some to much subangular fine gravel of quartz)
									19 20 11.50 11.60					
								(3, 4, 3, 4, 5, 7) N = 19	21 12.00 12.10 22 12.40 12.45 12.50					
				95					23 24 13.50 13.60					
								(5, 5, 7, 10, 9, 12) N = 38	25 14.00 14.10 26 14.40 14.45 14.50				V	
			70	95					27 28 15.50 15.60					
								(6, 6, 8, 11, 10, 13) N = 42	29 16.00 16.10 30 16.40 16.45 16.50					
				95					31 32 17.50 17.60					
								(6, 5, 9, 13, 13, 16) N = 51	33 18.00 18.10 34 18.40 18.45 18.50	-2.75	18.00			Extremely weak, yellowish red (5YR 5/8) spotted white (N8) and dark reddish brown (5YR 3/2), completely decomposed medium grained GRANITE. (Medium dense to dense, clayey silty SAND with some to much subangular fine gravel of quartz)
				95					35 36 19.50 19.60				V	
										-4.75	20.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 11/09/2019

CHECKED BY PETER CHU

DATE 12/09/2019

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH18**

SHEET 3 of 6

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. D60	E 837 261.39 N 815 291.46	DATE from 29/08/2019 to 11/09/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.25 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
								(7, 10, 18, 21, 26, 33) N = 98	37 20.00–20.10 38 20.40–20.45				V	As Sheet 2 of 6.
										-6.75	22.00			
06/09/2019		3.95m at 18:00						(8, 13, 18, 23, 35, 41) N = 117	39 22.00–22.10 40 22.40–22.45					Extremely weak, pale red (10R 6/4), completely decomposed medium grained GRANITE. (Very dense, silty SAND with some subangular fine gravel of quartz)
07/09/2019		9.33m at 08:00	70											
								(13, 12, 19, 18, 25, 39) N = 101	41 24.00–24.10 42 24.40–24.45				V	
								(15, 18, 20, 23, 35, 44) N = 122	43 26.00–26.10 44 26.40–26.45					
			80	93	85	78	2.6		T2-101 27.45–28.30	-12.20 -12.30	27.45 27.55		III II	Strong, pinkish grey spotted black and white, slightly decomposed medium grained GRANITE. Joints are closely spaced, rough planar, extremely narrow, iron oxide stained, dipping at 0°-10°.
							NI			-12.90 -13.05	28.15 28.30		IV	27.45- 27.55m: Moderately strong, moderately decomposed.
			70					(50/40mm 112/75mm, 88/25mm) 200blS/100mm	45 28.50–28.64				IV	28.15- 28.30m: Moderately weak, highly decomposed.
										-13.95	29.20			Weak, yellowish red (5YR 5/8), highly decomposed medium grained GRANITE. (Angular fine to medium GRAVEL)
			80	94	94	94	3.7		T2-101 29.20–	-14.45 -14.52 -14.75	29.70 29.77 30.00		II III II	Strong, pinkish grey spotted black and white, slightly decomposed medium grained GRANITE. Joints are closely spaced, rough planar, extremely narrow, iron

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 11/09/2019

CHECKED BY PETER CHU

DATE 12/09/2019

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH18**

SHEET 4 of 6

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. D60	E 837 261.39 N 815 291.46	DATE from 29/08/2019 to 11/09/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.25 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
			80	94	94	94	3.7		T2-101 30.27	-14.90	30.15		II	oxide stained, dipping at 0°-10° and 10°-20°.
										-15.02	30.27		III	
								(20, 28, 58, 72, 70/30mm) 200bls/180mm	46 30.50 47 30.78 30.83					29.70- 29.77m: Moderately strong, moderately decomposed. 30.15- 30.27m: Moderately strong, moderately decomposed.
			70										V	Extremely weak, pale red (10R 6/4), completely decomposed medium grained GRANITE. (Very dense, silty SAND with much subangular fine gravel of quartz)
								(50/70mm 200/50mm) 200bls/50mm	48 32.50 32.57 32.62	-17.25	32.50		IV	Weak, yellowish red (5YR 5/8), highly decomposed medium grained GRANITE. (Angular fine to medium GRAVEL)
	33.30 HW									-18.05	33.30		III	Moderately strong, yellowish brown spotted black and white, moderately decomposed medium grained GRANITE. Joints are closely to medium locally very closely spaced, rough and smooth planar, extremely narrow, iron oxide stained, chlorite coated, kaolin coated (<2mm), dipping at 0°-10°, 10°-20°, 40°-50°, 50°-60°, 60°-70°, 70°-80° and 80°-90°.
							3.2		33.30	-18.40	33.65		II	
				73	53	45	NI		T2-101	-18.65	33.90		III	
							NR			-18.80	34.05		IV	
							NI			-19.02	34.27		V	
							7.1		34.62	-19.37	34.62		III	33.65- 33.90m: Strong, slightly decomposed.
				68	60	51	NI		T2-101	-19.65	34.90		V	34.05- 34.27m: Moderately weak, highly decomposed.
							NR			-19.91	35.16		III	
							3.4		35.43	-20.18	35.43		II	34.27- 34.62m: No recovery assumed to be completely decomposed GRANITE.
										-20.54	35.79		III	
				93	85	85	NI		T2-101	-20.88	36.13		V	34.90- 35.16m: No recovery assumed to be completely decomposed GRANITE.
							NR			-20.98	36.23		III	35.43- 35.79m: Strong, slightly decomposed.
			80				4.8		36.93	-21.77	37.02		II	36.13- 36.23m: No recovery assumed to be completely decomposed GRANITE.
										-22.02	37.27		III	37.02- 37.27m: Strong, slightly decomposed.
07/09/2019		4.85m at 18:00		96	88	64			T2-101					
09/09/2019		9.40m at 08:00					18.2		37.83	-22.88	38.13		II	
				97	90	75	6.4		T2-101	-23.28	38.53		III	38.13- 38.53m: Strong, slightly decomposed.
							NI		39.33					
				93	81	70	3.1		T2-101	-24.48	39.73		II	
										-24.55	39.80			
										-24.75	40.00			

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- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 11/09/2019

CHECKED BY PETER CHU

DATE 12/09/2019

REMARKS

泰昇地基工程有限公司
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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH18**

SHEET 5 of 6

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. D60	E 837 261.39 N 815 291.46	DATE from 29/08/2019 to 11/09/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.25 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				93	81	70	3.1		T2-101	40.20			II	39.73- 40.31m: Strong, slightly decomposed.
							NI			-25.06	40.31		III	39.73- 39.80m: Fine grained GRANITE.
				89	62	41	8.3		T2-101	-25.48	40.73		IV/III	40.43- 41.29m: With very closely spaced subhorizontal microfractures.
							>20			-25.58	40.83			
										41.15				40.73- 40.83m: Moderately weak, highly to moderately decomposed.
							4.4			-26.04	41.29			
				87	60	39	9.5		T2-101				III	
										42.65				
				99	97	75	7.3		T2-101					
										44.15				
							NI			-28.90	44.15		IV/III	
										-29.04	44.29			44.15- 44.29m: Moderately weak, highly to moderately decomposed.
			80	91	77	73	4.6		T2-101				III	
										-30.17	45.42			
							16.7			-30.40	45.65		IV/III	45.42- 45.65m: Moderately weak, highly to moderately decomposed.
				84	65	13	13.5		T2-101	45.65			III	
							NI			-30.91	46.16		IV	
										-31.01	46.26		III	
										46.40				
										-31.15	46.40			46.16- 46.26m: Moderately weak, highly decomposed.
				100	100	89	7.2		T2-101				III	Strong, pinkish grey spotted black and white, slightly decomposed medium grained GRANITE. Joints are closely to medium locally very closely and widely spaced, smooth planar, extremely narrow, iron oxide stained, dipping at 0°-10° and 20°-30°.
										-31.86	47.11			46.40- 47.11m: Moderately strong, moderately decomposed.
										47.23				
							4.2			-32.67	47.92		II	
				100	98	77			T2-101					47.92- 49.43m: Moderately strong, moderately decomposed.
		4.80m at 18:00					17.1			48.68			III	
09/09/2019														
11/09/2019		9.50m at 08:00												
				100	97	94	7.0		T2-101					
										-34.18	49.43			
							1.0			49.83			II	
				100	100	83			T2-101	-34.75	50.00			

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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH18**

SHEET 6 of 6

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. D60	E 837 261.39 N 815 291.46	DATE from 29/08/2019 to 11/09/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.25 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				100	100	83	1.0		T2-101	-35.14	50.39		II	As Sheet 5 of 6.
							12.8			-35.35	50.60		III	50.39- 50.60m: Moderately strong, moderately decomposed.
			80						50.66					
				100	99	93	1.9		T2-101				II	
11/09/2019		4.90m at 18:00					19.0		52.03	-36.78	52.03			End of drillhole at 52.03m.

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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH19**

SHEET 1 of 5

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. CS60	E 837 267.44 N 815 297.87	DATE from 29/08/2019 to 13/09/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.24 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
29/08/2019	PW	Dry at 08:00								+15.04	0.20			CONCRETE.
									INSPECTION PIT A 0.45 0.50					Red (2.5YR 4/6), sandy clayey SILT with much subangular fine to medium gravel sized moderately strong granite, quartz and brick fragments. (FILL)
		Dry at 18:00							B 0.95 1.00 C 1.15	+14.04	1.20			
29/08/2019 06/09/2019		Dry at 08:00	80	58					T2-101 1.20	+13.64	1.60			Grey (N7), angular COBBLE and some coarse gravel sized concrete fragments. (FILL)
								(2, 2, 2, 2, 3, 2) N = 9	1 2 2.00 2.10 2.40 2.45 2.50					Stiff, red (2.5YR 4/6), sandy clayey SILT with much subangular fine gravel sized moderately strong granite and quartz. (FILL)
			70	100					3					
									4 3.50 3.60 T2-101	+11.64	3.60		III	Moderately strong, yellowish brown spotted black and white, medium grained GRANITE. Rock is generally highly fractured and non-intact.
			80	88	0	0	NI >20			+11.24	4.00		V	Extremely weak, yellowish red (5YR 5/8), completely decomposed medium grained GRANITE. (Medium dense, clayey silty SAND with much angular to subangular fine gravel)
								(3, 3, 3, 2, 4, 4) N = 13	5 4.00 4.10 6 4.40 4.45 4.50	+10.74	4.50			
				95					7					Extremely weak, yellowish red (5YR 5/8) to pale red (10R 6/4), completely decomposed medium grained GRANITE. (Medium dense, silty SAND with much angular to subangular fine to medium gravel)
			70						8 5.50 5.60				V	
								(4, 4, 4, 5, 6, 8) N = 23	9 6.00 6.10 10 6.40 6.45 11 6.50 6.90 12 7.00					
		7.00m at 18:00		32					7.18					
06/09/2019 07/09/2019	7.18 PW	7.00m at 08:00								+8.06	7.18			Strong, pinkish grey spotted black and white, moderately decomposed medium grained GRANITE. Joints widely locally very closely spaced, rough planar, extremely narrow, iron oxide stained, dipping at 0°-10° and 30°-40°.
	HW			100	100	100			T2-101					
			80				0.3		8.62				II	
				100	100	100			T2-101					
				91	76	76			T2-101 9.82	+5.24	10.00			

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LOGGED BY CALVIN TSANG

DATE 13/09/2019

CHECKED BY PETER CHU

DATE 16/09/2019

REMARKS
1. Inspection pit excavated from 0.00m-1.20m.
2. A piezometer tip was installed at 33.20m depth.
3. A standpipe was installed to 15.00m depth.

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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH19**

SHEET 2 of 5

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. CS60	E 837 267.44 N 815 297.87	DATE from 29/08/2019 to 13/09/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.24 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				91	76	76	>20		T2-101	+5.18	10.06		III	As Sheet 1 of 5.
									10.27	+5.04	10.20		IV	
										+4.97	10.27		V	10.06- 10.20m: Moderately strong, moderately decomposed.
			80						10.65	+4.59	10.65			
				100	100	100	1.1		T2-101	+4.53	10.71		IV	10.20- 10.27m: Moderately weak, highly decomposed.
		6.70m at 18:00											II	Wash boring, assumed to be completely decomposed GRANITE.
07/09/2019										+3.69	11.55			
09/09/2019		7.00m at 08:00							11.60	+3.64	11.60		IV	Strong, pinkish grey spotted black and white, slightly decomposed medium grained GRANITE. Joints widely spaced, rough planar, extremely narrow, iron oxide stained, dipping at 0°-10° and 30°-40°.
									12.00				V	10.65- 10.71m: Moderately strong, moderately decomposed.
								(5, 7, 8, 10, 13, 20) N = 51	12.10 13					
									12.40 14	+2.74	12.50			11.55- 11.60m: Moderately strong, moderately decomposed.
									12.45 12.50					
				95					15					Extremely weak, reddish brown (5YR 4/4), completely decomposed medium grained GRANITE. (Very dense, silty SAND with some subangular fine gravel of quartz)
									13.50 16 13.60				V	Extremely weak, red (10R 5/8), completely decomposed medium grained GRANITE. (Very dense, silty SAND with some subangular fine gravel of quartz)
								(8, 10, 12, 17, 22, 28) N = 79	14.00 14.10 17					
									14.40 18 14.45	+0.74	14.50			
									14.50 19					Extremely weak, yellowish red (5YR 5/8), completely decomposed medium grained GRANITE. (Very dense, silty SAND with much angular to subangular fine gravel)
			70	100					15.50 20 15.60					
								(50/50mm 200/70mm) 200blS/70mm	16.00 21 16.07 16.12					
									16.50				V	
				100					22					
									17.50 23 17.60					
								(50/50mm 200/70mm) 200blS/70mm	18.00 24 18.07 18.12					
									18.40	-3.16	18.40		III	Moderately strong, yellowish brown spotted black and white, moderately decomposed medium grained GRANITE. Joints are very closely spaced, rough planar and undulating, extremely narrow, iron oxide stained, dipping at 0°-10°, 20°-30° and 30°-40°.
			80	90	70	33	17.3		T2-101	-3.37	18.61		IV	
										-3.47	18.71		III	
										-3.68	18.92		IV	
							>20		19.00	-3.76	19.00			
			70	73					25				V	18.61- 18.71m: Moderately weak, highly decomposed.
									19.80 19.90 26 19.93	-4.69 -4.74	19.93 19.98			18.92- 19.00m: Moderately weak, highly decomposed.

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- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 13/09/2019

CHECKED BY PETER CHU

DATE 16/09/2019

REMARKS

泰昇地基工程有限公司
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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH19**

SHEET 3 of 5

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. CS60	E 837 267.44 N 815 297.87	DATE from 29/08/2019 to 13/09/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.24 mP.D.

Drilling Progress	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
						1.5		T2-101	-5.32	20.56		III II	Extremely weak, yellowish red (5YR 5/8) spotted white (N8), completely decomposed medium grained GRANITE. (Silty SAND with much subangular fine to medium gravel)
	6.50m at 18:00	80	82	82	57	>20						IV	Strong, pinkish grey spotted black and white, slightly decomposed medium grained GRANITE. Joints widely locally very closely spaced, rough planar and undulating, extremely narrow, iron oxide stained, dipping at 0°-10° and 20°-30°.
09/09/2019									-5.86	21.10			19.93- 19.98m: Moderately strong, moderately decomposed.
10/09/2019	8.50m at 08:00	70						21.10	-6.08	21.32		V	20.56- 21.10m: Moderately weak, highly decomposed.
								21.32	-6.12	21.36		IV	Wash boring, assumed to be completely decomposed GRANITE.
									-6.19	21.43		III	
						3.3			-6.26	21.50			
			100	100	98			T2-101	-6.64	21.88			
									-7.62	22.86			Strong, pinkish grey spotted black and white, slightly decomposed medium grained GRANITE. Joints medium to widely locally very closely spaced, rough planar and undulating, extremely narrow, iron oxide stained, dipping at 10°-20° and 20°-30°.
		80						22.84	-7.71	22.95		II	21.32- 21.36m: Moderately weak, highly decomposed.
			100	100	100	0.7			-7.75	22.99			21.36- 21.43m: Moderately strong, moderately decomposed.
								T2-101	-7.82	23.06			21.50- 21.88m: Porphyritic fine grained GRANITE.
			99	96	95			24.07					
								T2-101	-9.70	24.94			22.86- 22.95m: Porphyritic fine grained GRANITE.
						>20		25.06	-9.82	25.06		III	22.99- 23.06m: Pegmatite.
							(8, 12, 18, 28, 44, 60) N = 150	25.50					24.94- 25.06m: Moderately strong, moderately decomposed.
								25.60					Extremely weak, red (2.5YR 4/8), completely decomposed medium grained GRANITE. (Very dense, silty SAND with much angular to subangular fine to medium gravel)
		70						27					
								28					
								25.90					
								25.95				V	
								27.50	-12.26	27.50			
						17.6						III	Moderately strong, yellowish brown spotted black and white, moderately decomposed medium grained GRANITE. Joints are closely to medium locally very closely spaced, rough planar and undulating, extremely narrow, iron oxide stained, dipping at 0°-10° and 30°-40°.
		80	96	89	82	4.3		T2-101	-12.63	27.87			
						13.3			-12.81	28.05		IV	27.87- 28.05m: Moderately weak, highly decomposed.
								28.05					
							(50/40mm 200/60mm) 200blS/60mm	28.50					Moderately weak, pale red (10R 6/4) spotted white (N8) and very dark grey (5YR 3/1), highly decomposed medium grained GRANITE. (Angular medium to coarse GRAVEL)
								29					
								28.55					
								28.60					
		70										IV	
									-14.76	30.00			

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REMARKS

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DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH19**

SHEET 4 of 5

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. CS60	E 837 267.44 N 815 297.87	DATE from 29/08/2019 to 13/09/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.24 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
														As Sheet 3 of 5.
10/09/2019 11/09/2019		8.00m at 18:00 8.50m at 08:00	70					(50/30mm 200/70mm) 200bls/70mm	30 30.50 30.55 30.60				IV	
	33.72 HW							(50/30mm 200/50mm) 200bls/50mm	31 32.50 32.53 32.58					
										-18.48	33.72		III	
										-18.59	33.83		V	Moderately strong, yellowish brown spotted black and white, moderately decomposed medium grained GRANITE. Joints are very closely locally widely spaced, rough and smooth planar, extremely narrow, iron oxide stained, dipping at 0°-10° and 80°-90°.
				53	47	32	>20 NR		33.72 T2-101	-18.84	34.08		III	
									34.25	-19.01	34.25		III	33.83- 34.08m: No recovery assumed to be completely decomposed GRANITE.
				100	100	100	0.5		T2-101	-19.44	34.68		II	Moderately strong, yellowish brown spotted black and white, moderately decomposed medium grained GRANITE. Joints are medium to widely locally very closely to closely spaced, rough planar and undulating, extremely narrow, iron oxide stained, dipping at 20°-30°, 40°-50° and 80°-90°.
										-20.26	35.50			34.68- 35.50m: Strong, slightly decomposed.
				99	99	90	8.6		35.75 T2-101	-20.96	36.20			36.20- 36.37m: Pegmatite.
			80							-21.13	36.37			
							0.7		36.87 T2-101				III	
				99	99	99	11.8			-22.67	37.91			37.91- 38.09m: With very closely subhorizontal microfractures.
										-22.85	38.09			
									38.37	-23.41	38.65			38.65- 39.52m: With very closely subhorizontal microfractures.
				97	93	93	2.3		T2-101					
							10.0		39.47	-24.28	39.52			
				98	93	93	>20		T2-101	-24.76	40.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 13/09/2019

CHECKED BY PETER CHU

DATE 16/09/2019

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH19**

SHEET 5 of 5

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. CS60	E 837 267.44 N 815 297.87	DATE from 29/08/2019 to 13/09/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.24 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
11/09/2019		8.20m at 18:00	80	98	93	93	1.2		T2-101 40.70	-24.81 -25.46	40.05 40.70		II	As Sheet 4 of 5. 40.05- 40.70m: Strong, slightly decomposed. End of drillhole at 40.70m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG
DATE 13/09/2019
CHECKED BY PETER CHU
DATE 16/09/2019

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH20**

SHEET 1 of 6

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. CS60	E 837 276.95 N 815 307.73	DATE from 16/08/2019 to 28/08/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.25 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
16/08/2019	SW	Dry at 08:00 Dry at 18:00							INSPECTION PIT A 0.45 0.50 B 0.95	+15.05	0.20			CONCRETE.
16/08/2019										+14.25	1.00			Dark reddish brown (5YR 3/3), silty clayey SAND with much angular to subangular fine to coarse gravel sized moderately strong granite and brick fragments. (FILL)
22/08/2019		Dry at 08:00	80	88				T2-101	1.00 1.50	+13.75	1.50			Grey (N6), angular COBBLE sized concrete fragments. (FILL)
				0				(2, 1, 1, 1, 1, 1) N = 4	1 2.00 2.10 2 2.40 2.45 2.50					Firm to stiff, yellowish red (5YR 5/8), sandy clayey SILT with much angular to subangular fine to coarse gravel sized granite, quartz, brick and tile fragments. (FILL)
				0					3 3.50 3.60					
									4 4.60 4.70					
22/08/2019	5.50 SW	4.60m at 18:00						(2, 2, 3, 3, 3, 4) N = 13	5 5.00 5.10 6 5.40 5.45 5.50	+9.75	5.50			
23/08/2019	PW	5.30m at 08:00	70	95					7 6.50 6.60 8					Extremely weak, yellowish red (5YR 5/8) and red (10R 4/8), completely decomposed medium grained GRANITE. (Medium dense to dense, clayey silty SAND with much subangular fine gravel of quartz)
								(3, 3, 3, 3, 4, 4) N = 14	9 7.00 7.10 10 7.40 7.45 7.50				V	
				100					11					
									12 8.50 8.60					
								(5, 6, 6, 8, 12, 15) N = 41	13 9.00 9.10 14 9.40 9.45 9.50					
				95						+5.25	10.00			

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 28/08/2019

CHECKED BY PETER CHU

DATE 29/08/2019

REMARKS
1. Inspection pit excavated from 0.00m-1.00m.

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH20**

SHEET 2 of 6

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. CS60	E 837 276.95 N 815 307.73	DATE from 16/08/2019 to 28/08/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.25 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				95					15 16 10.50 10.60				V	As Sheet 1 of 6.
									11.00	+4.25	11.00			
								(2, 8, 12, 16, 21, 28) N = 77	17 11.10 18 11.40 11.45 11.50					Extremely weak, red (2.5YR 5/8), completely decomposed medium grained GRANITE. (Very dense, clayey silty SAND with much subangular fine gravel of quartz)
				95					19 20 12.50 12.60					
								(8, 10, 13, 29, 28, 40) N = 110	13.00 13.10 21 22 13.40 13.45 13.50				V	
				100					23 24 14.50 14.60					
			70					(10, 15, 18, 25, 35, 48) N = 126	15.00 15.10 25 26 15.40 15.45 15.50	-0.25	15.50			Extremely weak, yellowish red (5YR 4/6), completely decomposed medium grained GRANITE. (Clayey silty SAND with some to much subangular fine gravel of quartz)
				100					27 28 16.50 16.60				V	
								(9, 17, 22, 31, 35, 76) N = 164	17.00 17.10 29 30 17.40 17.45 17.50	-1.75	17.00			Extremely weak, reddish yellow (5YR 6/8), completely decomposed medium grained GRANITE. (Very dense, silty SAND with much fine gravel of quartz)
				100					31 32 18.50 18.60				V	
23/08/2019 24/08/2019	19.00 PW HW	5.00m at 18:00 5.60m at 08:00						(17, 33, 58, 142/75mm) 200blS/150mm	19.00 33 34 19.25 19.30 19.50	-4.25	19.50			
				90						-4.75	20.00		V	Extremely weak, pale red (10R 6/8), completely decomposed medium grained GRANITE. (Very dense, silty SAND with much fine gravel)

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
- U76 Undisturbed Sample
- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 28/08/2019

CHECKED BY PETER CHU

DATE 29/08/2019

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH20**

SHEET 3 of 6

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. CS60	E 837 276.95 N 815 307.73	DATE from 16/08/2019 to 28/08/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.25 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
				90					35					As Sheet 2 of 6.
									36 20.50 20.60					
								(50/75mm 200/75mm) 200bls/75mm	37 21.00 21.10 21.15				V	
			70											
								(50/30mm 200/50mm) 200bls/50mm	38 23.00 23.03 23.08	-7.75	23.00		IV	Weak, reddish yellow (5YR 6/8), highly decomposed medium grained GRANITE. (Angular fine to medium GRAVEL)
			80	99	92	88	5.9		T2-101 23.30 23.81	-8.05	23.30		III	Moderately strong, yellowish brown spotted black and white, moderately decomposed medium grained GRANITE. Joints are closely spaced, rough planar and undulating, extremely narrow, iron oxide stained, dipping at 0°-10° and 30°-40°.
										-8.56	23.81			Extremely weak, reddish yellow (5YR 7/8), completely decomposed medium grained GRANITE. (Very dense, silty SAND with some subangular fine gravel)
								(12, 17, 18, 18, 25, 37) N = 98	39 25.00 25.10 40 25.40 25.45				V	
			70							-11.75	27.00			Extremely weak, pale red (10R 7/4), completely decomposed medium grained GRANITE. (Very dense, silty SAND with some subangular fine gravel)
								(20, 28, 35, 41, 55, 69) N = 200	41 27.00 27.10 42 27.40 27.45				V	
								(18, 32, 60, 140/75mm) 200bls/150mm	43 29.00 29.25 29.30	-14.75	30.00			

- Small Disturbed Sample
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- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 28/08/2019

CHECKED BY PETER CHU

DATE 29/08/2019

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH20**

SHEET 4 of 6

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. CS60	E 837 276.95 N 815 307.73	DATE from 16/08/2019 to 28/08/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.25 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
														As Sheet 3 of 6.
			70					(50/75mm 200/75mm) 200blS/75mm	44 31.00 31.10 31.15				V	
								(50/40mm 200/60mm) 200blS/60mm	45 33.00 33.05 33.10	-17.75	33.00		IV	Weak, yellowish red (5YR 5/6), highly decomposed medium grained GRANITE. (Angular fine to medium GRAVEL)
	34.01 HW									-18.76	34.01		II	Strong, pinkish grey to reddish grey spotted black and white, slightly decomposed medium grained GRANITE. Joints are widely locally closely spaced, rough planar and smooth undulating, extremely narrow to tight, iron and manganese oxide stained, dipping at 0°-10° and 20°-30°.
										-19.02	34.27		III	
										-19.12	34.37		II	
										-19.47	34.72		III	
		5.00m at 18:00								-19.81	35.06			
24/08/2019				100	100	97	6.1		T2-101	34.01				
26/08/2019		8.50m at 08:00								35.53				34.27- 34.37m: Moderately strong, moderately decomposed.
				100	100	100	0.3		T2-101				II	34.72- 35.06m: Moderately strong, moderately decomposed.
			80							36.80				
				91	88	88			T2-101	-22.45	37.70		III	Moderately strong, yellowish brown spotted black and white, moderately decomposed medium grained GRANITE. Joints are closely locally very closely and medium spaced, rough planar and smooth undulating, extremely narrow, iron and manganese oxide stained, dipping at 0°-10°, 20°-30°, 50°-60°, 60°-70° and 80°-90°.
							NI			-22.70	37.95		IV	
							NR			-22.76	38.01		V	
							7.1			-22.89	38.14		III	
				56	25	25	NI		T2-101	38.30 -23.11	38.36		IV	
							NR			-23.20	38.45		V	
										-23.39	38.64			
										38.90 -23.65	38.90			37.95- 38.01m: Moderately weak, highly decomposed.
				72	59	52	4.2		T2-101	-24.03	39.28		III	
							NI			-24.36	39.61		IV	38.01- 38.14m: No recovery assumed to be completely decomposed GRANITE.
							NR			-24.51	39.76		V	
										-24.75	40.00			

- Small Disturbed Sample
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- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 28/08/2019

CHECKED BY PETER CHU

DATE 29/08/2019

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH20**

SHEET 5 of 6

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. CS60	E 837 276.95 N 815 307.73	DATE from 16/08/2019 to 28/08/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.25 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
							15.4		40.05	-24.80	40.05		III	38.36- 39.28m: With very closely spaced subhorizontal microfractures.
				90	83	74	NI 6.7		T2-101	-25.22	40.47		II	
										-25.44	40.69			38.45- 38.64m: Moderately weak, highly decomposed.
							NI		40.77					38.64- 38.90m: No recovery assumed to be completely decomposed GRANITE.
				98	86	67			T2-101					39.61- 39.76m: Moderately weak, highly decomposed.
							7.5			-26.53	41.78			39.76- 40.05m: No recovery assumed to be completely decomposed GRANITE.
									42.28					40.47- 40.69m: Strong, slightly decomposed.
				100	100	95	2.1		T2-101				III	41.78- 43.89m: With very closely spaced subhorizontal microfractures.
							16.7							
				99	95	89	2.7		T2-101					
									43.79	-28.64	43.89			
										-29.39	44.64			
							NI		44.64				IV	44.64- 45.51m: Moderately weak, highly decomposed.
			80	54	5	0			T2-101	-29.86	45.11			
							NR						V	45.11- 45.51m: No recovery assumed to be completely decomposed GRANITE.
									45.51	-30.26	45.51			
				99	96	85	5.8		T2-101				III	
		7.70m at 18:00												
26/08/2019							>20							
27/08/2019		8.50m at 08:00							46.68	-31.56	46.81			
				16	0	0	NR		T2-101				V	46.81- 47.47m: No recovery assumed to be completely decomposed GRANITE.
									47.47	-32.22	47.47			
							15.4							Strong, pinkish grey to reddish grey spotted black and white, slightly decomposed medium grained GRANITE. Joints are widely to medium locally very closely to closely spaced, smooth planar, extremely narrow to tight, iron oxide stained, chlorite and kaolin coated (<2mm), dipping at 0°-10°, 10°-20°, 50°-60° and 70°-80°. 47.47- 48.98m: Moderately strong, moderately decomposed.
				100	100	99	4.0		T2-101				III	
							15.4		48.40					
										-33.73	48.98			
				98	95	60	>20		T2-101					
							5.8						II	
				100	100	100	0.6		T2-101	49.80				
										-34.75	50.00			

- Small Disturbed Sample
- Large Disturbed Sample
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- Water Sample
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- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 28/08/2019

CHECKED BY PETER CHU

DATE 29/08/2019

REMARKS

泰昇地基工程有限公司
TYSAN FOUNDATION LIMITED
(泰昇集團成員 A member of Tysan Group)

DRILLHOLE RECORD

CONTRACT No. TC G518

DRILLHOLE No. **BH20**

SHEET 6 of 6

PROJECT PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)

METHOD ROTARY CORED	CO-ORDINATES	W.O. No. ASD 012516
MACHINE / No. CS60	E 837 276.95 N 815 307.73	DATE from 16/08/2019 to 28/08/2019
FLUSHING MEDIUM WATER	ORIENTATION Vertical	GROUND LEVEL +15.25 mP.D.

Drilling Progress	Casing depth/size	Water level (m) Shift start/ end	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level (mPD)	Depth (m)	Legend	Grade	Description
														As Sheet 5 of 6.
				100	100	100			T2-101	-35.63	50.88		II	
			80				0.6		51.29	-36.28	51.53		III	50.88- 51.53m: Moderately strong, moderately decomposed.
										-36.64	51.89		II	
				100	99	91			T2-101	-36.84	52.09		III	
27/08/2019		8.00m at 18:00							52.80	-37.55	52.80		II	51.89- 52.09m: Moderately strong, moderately decomposed.
														End of drillhole at 52.80m.

- Small Disturbed Sample
- Large Disturbed Sample
- SPT Liner Sample
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- U100 Undisturbed Sample
- Mazier Sample
- Piston Sample
- Water Sample
- Standard Penetration Test
- Permeability Test
- Impression Packer Test
- Borehole Televiewer Test
- Pressuremeter Test
- Standpipe Tip
- Piezometer Tip
- In-situ Vane Shear Test

LOGGED BY CALVIN TSANG

DATE 28/08/2019

CHECKED BY PETER CHU

DATE 29/08/2019

REMARKS

Appendix C

Groundwater Monitoring Record

GIU Report
No. 68445

TYSAN FOUNDATION LIMITED

						Hole No. :	**BH4**
						Piezometer ID. :	**P**
						Standpipe ID. :	**S**
Contract No. :	**TC G518**			Works Order No. :	**ASD 012560**	Date of installation :	**09/10/2020**
Project :	**PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)**					Supervised by :	**Tiger Ng**
Co-ordinates :	E **837202.14** N **815235.32**			Ground Level :	**+15.38** mPD	Date checked :	**10/10/2020**
Response Zone of Piezometer	: **-11.62** mPD to **-13.12** mPD			Piezometer (P) Tip Level :	**-12.62** mPD	Checked by :	**Peter Chu**
Response Zone of Standpipe	: **13.88** mPD to **-10.12** mPD			Standpipe (S) Tip Level :	**-9.62** mPD	Dip Meter ID :	**TSMT-46**
Remarks :							

STANDPIPE / PIEZOMETER INSTALLATION DETAILS AND GROUNDWATER MONITORING RECORDS

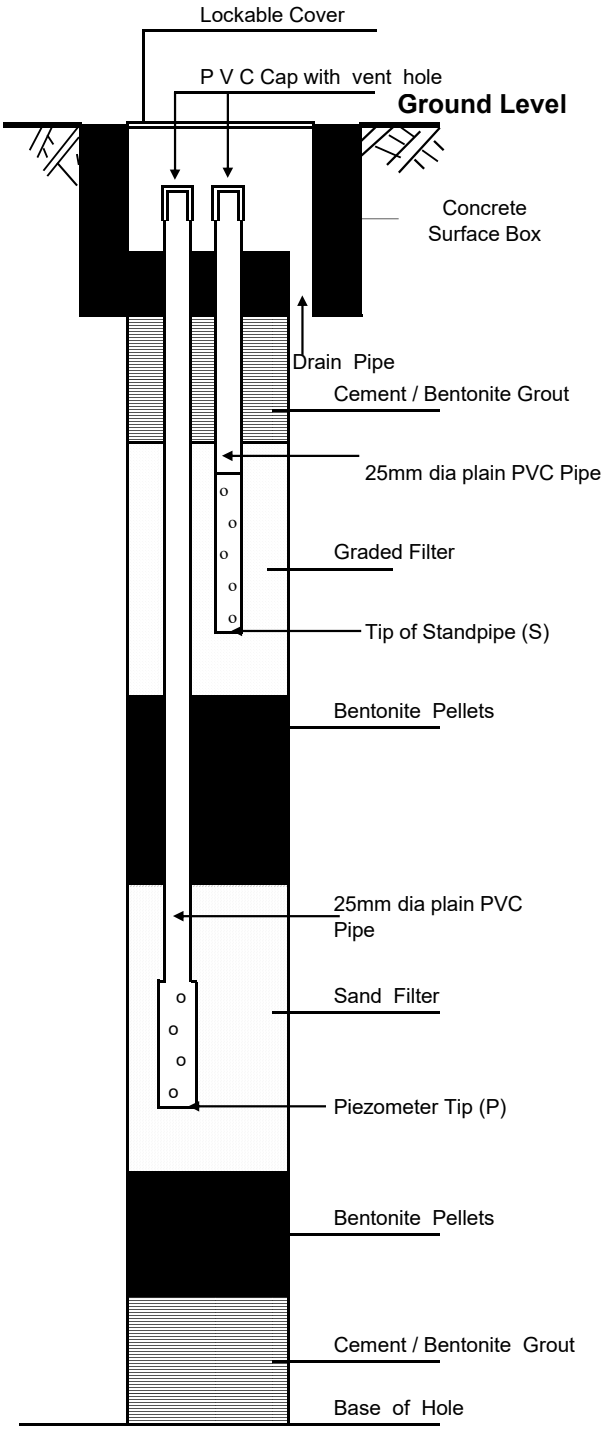
STANDPIPE

Date	Depth of G.W.L. (m)
10/10/2020	8.45
12/10/2020	8.53
14/10/2020	8.46
15/10/2020	8.52
16/10/2020	8.59
17/10/2020	8.66
19/10/2020	8.63

PIEZOMETER

Date	Depth of G.W.L. (m)
10/10/2020	8.11
12/10/2020	8.15
14/10/2020	8.11
15/10/2020	8.13
16/10/2020	8.16
17/10/2020	8.20
19/10/2020	8.17

Reduced Level (mPD)	Depth (m)
15.38	0.00
15.36	0.02
15.08	0.30
13.88	1.50
-9.62	25.00
-10.12	25.50
-11.62	27.00
-12.62	28.00
-13.12	28.50
-14.12	29.50
-19.33	34.71



(Not to Scale)

BUCKETS (IF ANY)	
Date Installed :	NA
Depth (m) from :	NA
Depth (m) to :	NA
Spacing (m) :	NA

TYSAN FOUNDATION LIMITED

				Hole No. :	**BH15**
				Piezometer ID. :	**P**
				Standpipe ID. :	**S**
Contract No. :	**TC G518**	Works Order No. :	**ASD 012560**	Date of installation :	**07/10/2020**
Project :	**PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)**			Supervised by :	**Tiger Ng**
Co-ordinates :	E **837232.62** N **8152454.72**	Ground Level :	**+15.35** mPD	Date checked :	**08/10/2020**
Response Zone of Piezometer :	**-22.15** mPD to **-23.65** mPD	Piezometer (P) Tip Level :	**-23.15** mPD	Checked by :	**Peter Chu**
Response Zone of Standpipe :	**13.85** mPD to **-10.15** mPD	Standpipe (S) Tip Level :	**-9.65** mPD	Dip Meter ID :	**TSMT-46**
Remarks :					

STANDPIPE / PIEZOMETER INSTALLATION DETAILS AND GROUNDWATER MONITORING RECORDS

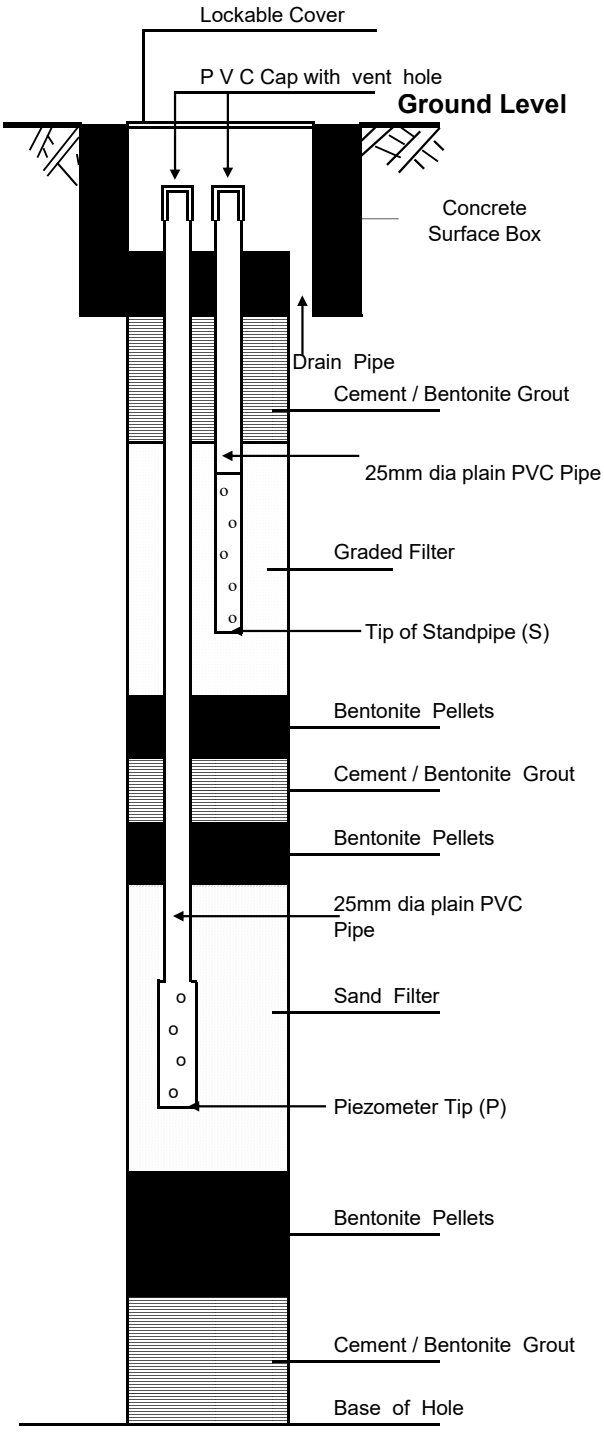
STANDPIPE

Date	Depth of G.W.L. (m)
08/10/2020	7.89
09/10/2020	7.97
10/10/2020	8.11
12/10/2020	8.21
14/10/2020	8.15
15/10/2020	8.20
16/10/2020	8.27

PIEZOMETER

Date	Depth of G.W.L. (m)
08/10/2020	7.56
09/10/2020	7.65
10/10/2020	7.69
12/10/2020	7.76
14/10/2020	7.62
15/10/2020	7.73
16/10/2020	7.80

Reduced Level (mPD)	Depth (m)
15.35	0.00
15.30	0.05
15.05	0.30
13.85	1.50
-9.65	25.00
-10.15	25.50
-11.15	26.50
-21.15	36.50
-22.15	37.50
-23.15	38.50
-23.65	39.00
-24.65	40.00
-29.43	44.78



(Not to Scale)

BUCKETS (IF ANY)	
Date Installed :	NA
Depth (m) from :	NA
Depth (m) to :	NA
Spacing (m) :	NA

TYSAN FOUNDATION LIMITED

Hole No.	:	BH22			
Piezometer ID.	:	P			
Standpipe ID.	:	S			
Contract No.	:	TC G518	Works Order No. :	ASD 012560	Date of installation : 29/08/2020
Project	:	PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)			Supervised by : Tiger Ng
Co-ordinates	:	E 837304.76 N 815322.02	Ground Level :	+15.41 mPD	Date checked : 31/08/2020
Response Zone of Piezometer	:	-26.17 mPD to -27.67 mPD	Piezometer (P) Tip Level :	-27.17 mPD	Checked by : Peter Chu
Response Zone of Standpipe	:	13.91 mPD to -10.09 mPD	Standpipe (S) Tip Level :	-9.59 mPD	Dip Meter ID : TSMT-46
Remarks	:				

STANDPIPE / PIEZOMETER INSTALLATION DETAILS AND GROUNDWATER MONITORING RECORDS

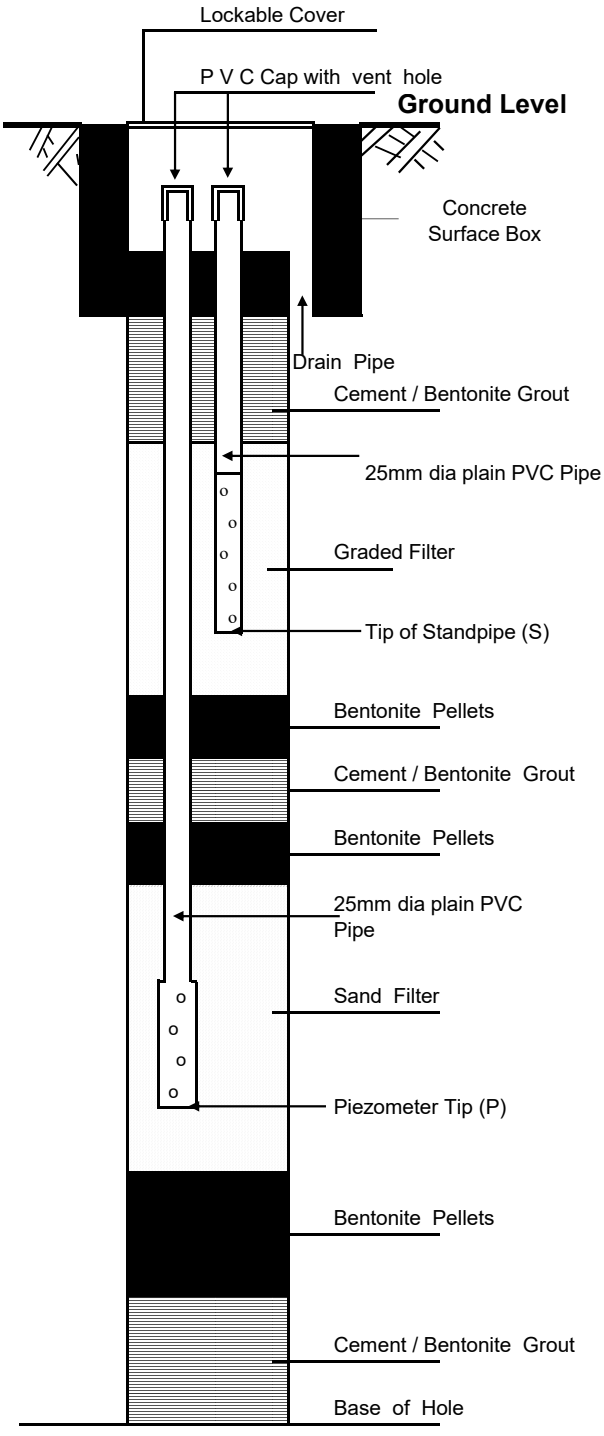
STANDPIPE

Date	Depth of G.W.L. (m)
31/08/2020	6.70
01/09/2020	6.68
02/09/2020	6.64
03/09/2020	6.67
04/09/2020	6.71
05/09/2020	6.53
07/09/2020	6.51

PIEZOMETER

Date	Depth of G.W.L. (m)
31/08/2020	6.37
01/09/2020	6.33
02/09/2020	6.41
03/09/2020	6.34
04/09/2020	6.40
05/09/2020	6.34
07/09/2020	6.30

Reduced Level (mPD)	Depth (m)
15.41	0.00
15.36	0.05
15.11	0.30
13.91	1.50
-9.59	25.00
-10.09	25.50
-11.09	26.50
-25.17	40.58
-26.17	41.58
-27.17	42.58
-27.67	43.08
-28.67	44.08
-33.57	48.98



(Not to Scale)

BUCKETS (IF ANY)	
Date Installed :	NA
Depth (m) from :	NA
Depth (m) to :	NA
Spacing (m) :	NA

TYSAN FOUNDATION LIMITED

				Hole No. :	BH25
				Piezometer ID. :	P
				Standpipe ID. :	S
Contract No. :	TC G518	Works Order No. :	ASD 012560	Date of installation :	30/09/2020
Project :	PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)			Supervised by :	Tiger Ng
Co-ordinates :	E 837243.06 N 815235.85	Ground Level :	+15.33 mPD	Date checked :	03/10/2020
Response Zone of Piezometer :	-30.17 mPD to -31.67 mPD	Piezometer (P) Tip Level :	-31.17 mPD	Checked by :	Peter Chu
Response Zone of Standpipe :	13.83 mPD to -10.17 mPD	Standpipe (S) Tip Level :	-9.67 mPD	Dip Meter ID :	TSMT-46
Remarks :					

STANDPIPE / PIEZOMETER INSTALLATION DETAILS AND GROUNDWATER MONITORING RECORDS

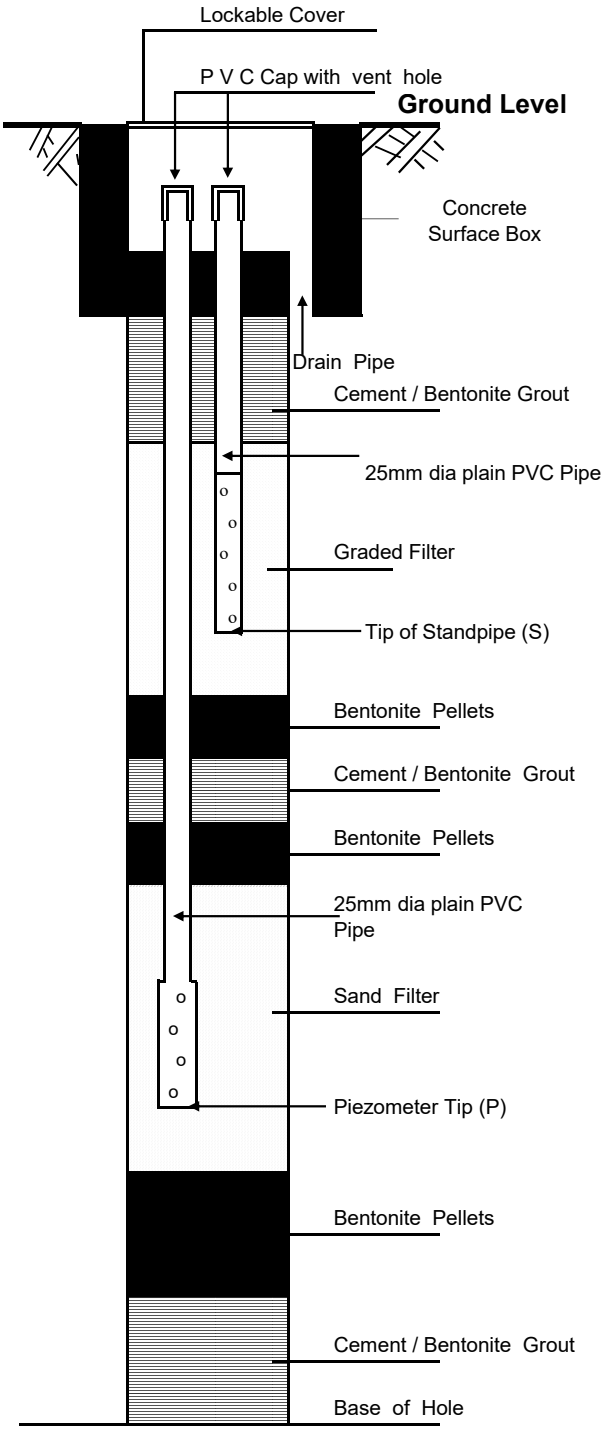
STANDPIPE

Date	Depth of G.W.L. (m)
03/10/2020	6.58
05/10/2020	6.56
06/10/2020	6.71
07/10/2020	6.82
08/10/2020	6.89
09/10/2020	6.94
10/10/2020	7.06

PIEZOMETER

Date	Depth of G.W.L. (m)
03/10/2020	6.32
05/10/2020	6.34
06/10/2020	6.40
07/10/2020	6.44
08/10/2020	6.47
09/10/2020	6.51
10/10/2020	6.55

Reduced Level (mPD)	Depth (m)
15.33	0.00
15.28	0.05
15.03	0.30
13.83	1.50
-9.67	25.00
-10.17	25.50
-11.17	26.50
-29.17	44.50
-30.17	45.50
-31.17	46.50
-31.67	47.00
-32.67	48.00
-37.59	52.92



(Not to Scale)

BUCKETS (IF ANY)	
Date Installed :	NA
Depth (m) from :	NA
Depth (m) to :	NA
Spacing (m) :	NA

TYSAN FOUNDATION LIMITED

Hole No.	:	BH28			
Piezometer ID.	:	P			
Standpipe ID.	:	S			
Contract No.	:	TC G518	Works Order No. :	ASD 012560	Date of installation : 15/09/2020
Project	:	PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)			Supervised by : Tiger Ng
Co-ordinates	:	E 837272.62 N 815269.83	Ground Level :	+15.43 mPD	Date checked : 16/09/2020
Response Zone of Piezometer	:	-35.57 mPD to -37.07 mPD	Piezometer (P) Tip Level :	-36.57 mPD	Checked by : Peter Chu
Response Zone of Standpipe	:	13.93 mPD to -10.07 mPD	Standpipe (S) Tip Level :	-9.57 mPD	Dip Meter ID : TSMT-46
Remarks	:				

STANDPIPE / PIEZOMETER INSTALLATION DETAILS AND GROUNDWATER MONITORING RECORDS

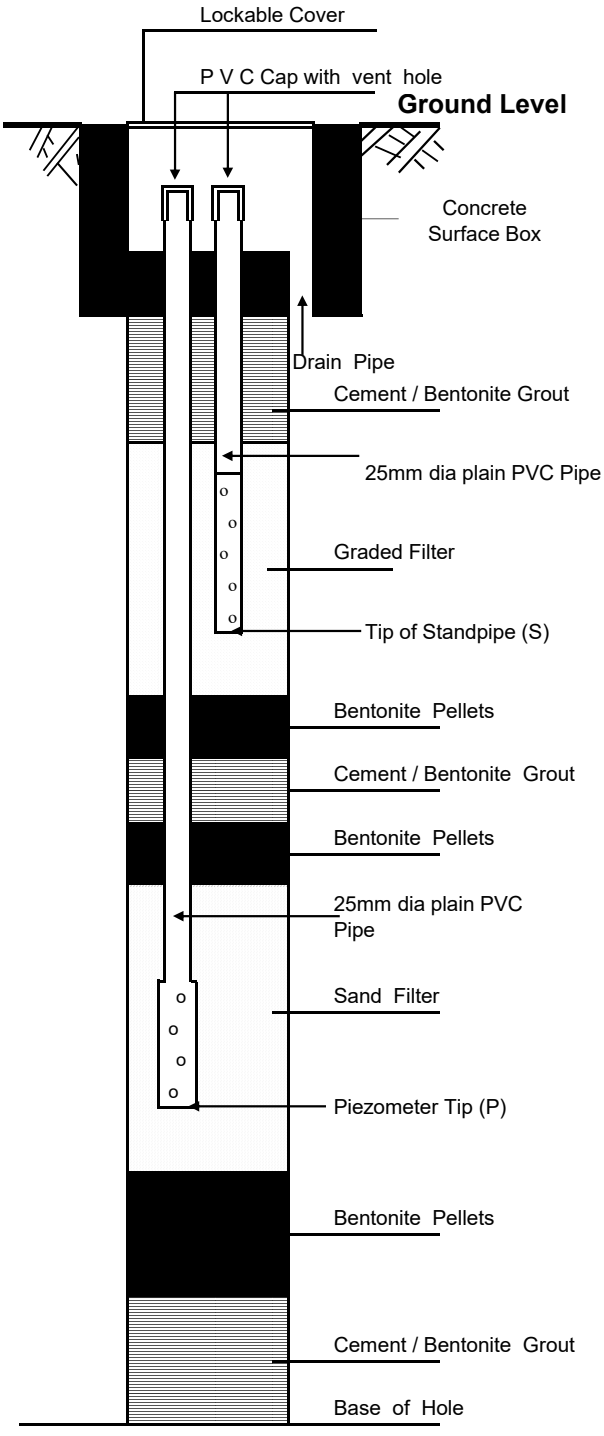
STANDPIPE

Date	Depth of G.W.L. (m)
16/09/2020	7.83
17/09/2020	7.90
18/09/2020	7.69
19/09/2020	7.62
21/09/2020	7.54
22/09/2020	7.70
23/09/2020	7.76

PIEZOMETER

Date	Depth of G.W.L. (m)
16/09/2020	3.60
17/09/2020	3.58
18/09/2020	3.54
19/09/2020	3.46
21/09/2020	3.42
22/09/2020	3.36
23/09/2020	3.54

Reduced Level (mPD)	Depth (m)
15.43	0.00
15.39	0.04
15.13	0.30
13.93	1.50
-9.57	25.00
-10.07	25.50
-11.07	26.50
-34.57	50.00
-35.57	51.00
-36.57	52.00
-37.07	52.50
-38.07	53.50
-42.77	58.20



(Not to Scale)

BUCKETS (IF ANY)

Date Installed :	NA
Depth (m) from :	NA
Depth (m) to :	NA
Spacing (m) :	NA

TYSAN FOUNDATION LIMITED

				Hole No. :	**BH30**
				Piezometer ID. :	**P**
				Standpipe ID. :	**S**
Contract No. :	**TC G518**	Works Order No. :	**ASD 012560**	Date of installation :	**07/09/2020**
Project :	**PWP Item No. 033LJ - Construction of the District Court Complex at Caroline Hill Road (Phase 2)**			Supervised by :	**Tiger Ng**
Co-ordinates :	E **837293.23** N **815291.63**	Ground Level :	**+15.44** mPD	Date checked :	**08/09/2020**
Response Zone of Piezometer :	**-17.56** mPD to **-19.06** mPD	Piezometer (P) Tip Level :	**-18.56** mPD	Checked by :	**Peter Chu**
Response Zone of Standpipe :	**13.94** mPD to **-10.06** mPD	Standpipe (S) Tip Level :	**-9.56** mPD	Dip Meter ID :	**TSMT-46**
Remarks :					

STANDPIPE / PIEZOMETER INSTALLATION DETAILS AND GROUNDWATER MONITORING RECORDS

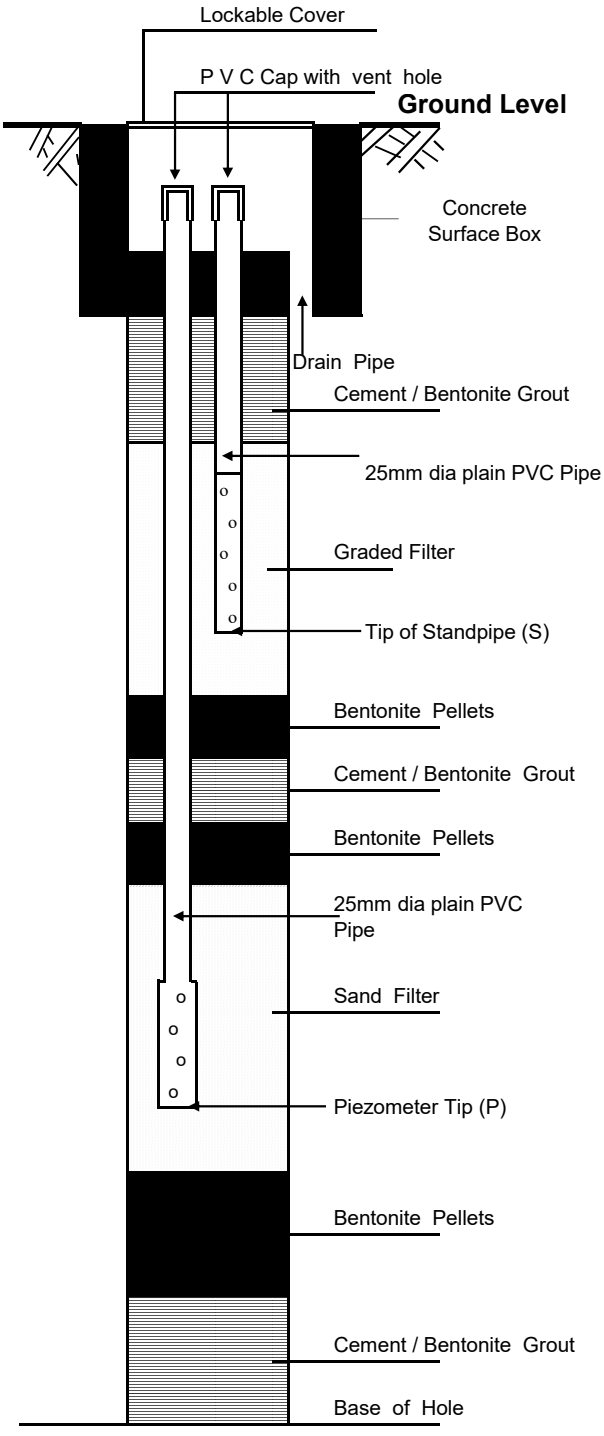
STANDPIPE

Date	Depth of G.W.L. (m)
08/09/2020	8.84
09/09/2020	8.68
10/09/2020	8.58
11/09/2020	8.51
12/09/2020	8.45
14/09/2020	8.48
15/09/2020	8.41

PIEZOMETER

Date	Depth of G.W.L. (m)
08/09/2020	8.75
09/09/2020	8.73
10/09/2020	8.67
11/09/2020	8.64
12/09/2020	8.61
14/09/2020	8.58
15/09/2020	8.52

Reduced Level (mPD)	Depth (m)
15.44	0.00
15.41	0.03
15.14	0.30
13.94	1.50
-9.56	25.00
-10.06	25.50
-11.06	26.50
-16.56	32.00
-17.56	33.00
-18.56	34.00
-19.06	34.50
-20.06	35.50
-24.84	40.28



(Not to Scale)

BUCKETS (IF ANY)	
Date Installed :	NA
Depth (m) from :	NA
Depth (m) to :	NA
Spacing (m) :	NA

GIU Report
No. 67763

TYSAN FOUNDATION LIMITED

Hole No.	:	BH10					
Piezometer ID.	:	P					
Standpipe ID.	:	S					
Contract No.	:	TC G518	Works Order No. :	ASD 012516			
Date of test	:	02/09/2019					
Project	:	PWP Item No. 286ZX - Construction of the District Court Complex at Caroline Hill Road (Phase 1)					
Supervised by	:	Derek Wong					
Co-ordinates	:	E 837229.63 N 815269.16	Ground Level	:	+15.07	mPD	
Date checked	:	03/09/2019					
Response Zone of Piezometer	:	0.87 mPD to -0.43 mPD	Piezometer (P) Tip Level	:	0.07	mPD	
Checked by	:	Peter Chu					
Response Zone of Standpipe	:	13.07 mPD to 2.07 mPD	Standpipe (S) Tip Level	:	2.57	mPD	
Dip Meter ID	:	TSMT-31					
Remarks	:						

STANDPIPE / PIEZOMETER INSTALLATION DETAILS AND GROUNDWATER MONITORING RECORDS

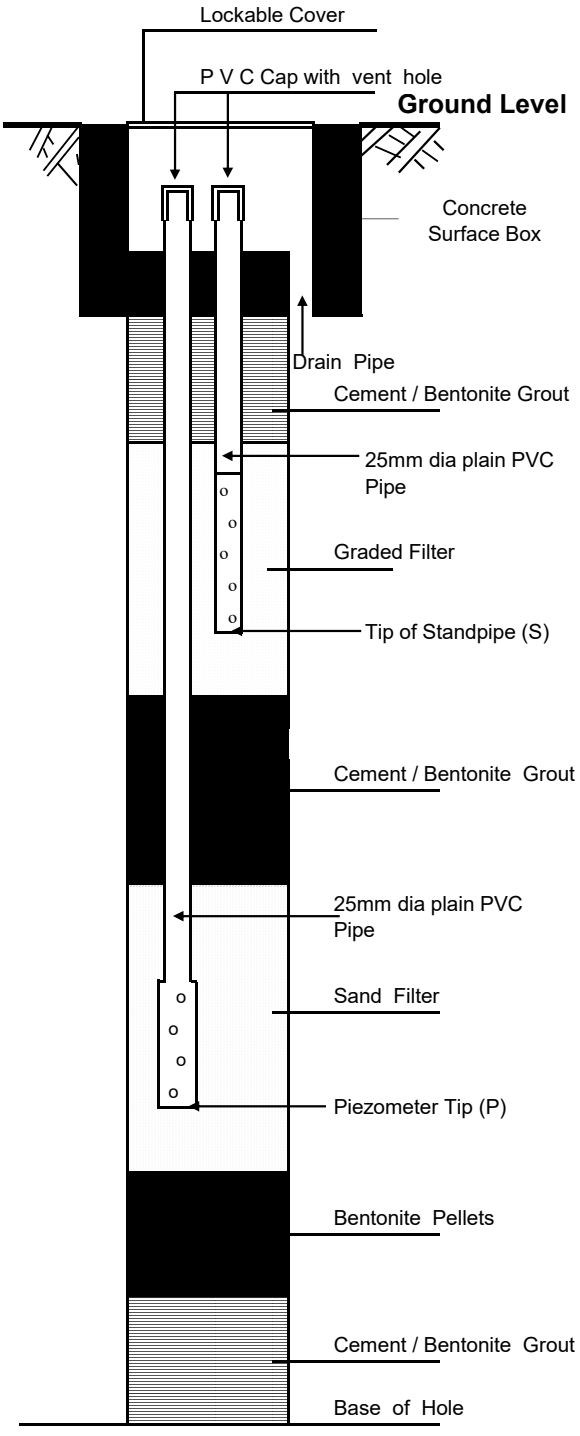
STANDPIPE

Date	Depth of G.W.L. (m)
03/09/2019	7.52
04/09/2019	7.55
05/09/2019	7.55
06/09/2019	7.56
08/09/2019	7.54
09/09/2019	7.55
10/09/2019	7.56

PIEZOMETER

Date	Depth of G.W.L. (m)
03/09/2019	7.62
04/09/2019	7.63
05/09/2019	7.65
06/09/2019	7.65
08/09/2019	7.66
09/09/2019	7.68
10/09/2019	7.67

Reduced Level (mPD)	Depth (m)
15.07	0.00
14.97	0.10
14.77	0.30
13.07	2.00
2.57	12.50
2.07	13.00
0.87	14.20
0.07	15.00
-0.43	15.50
-1.43	16.50
-40.00	55.07



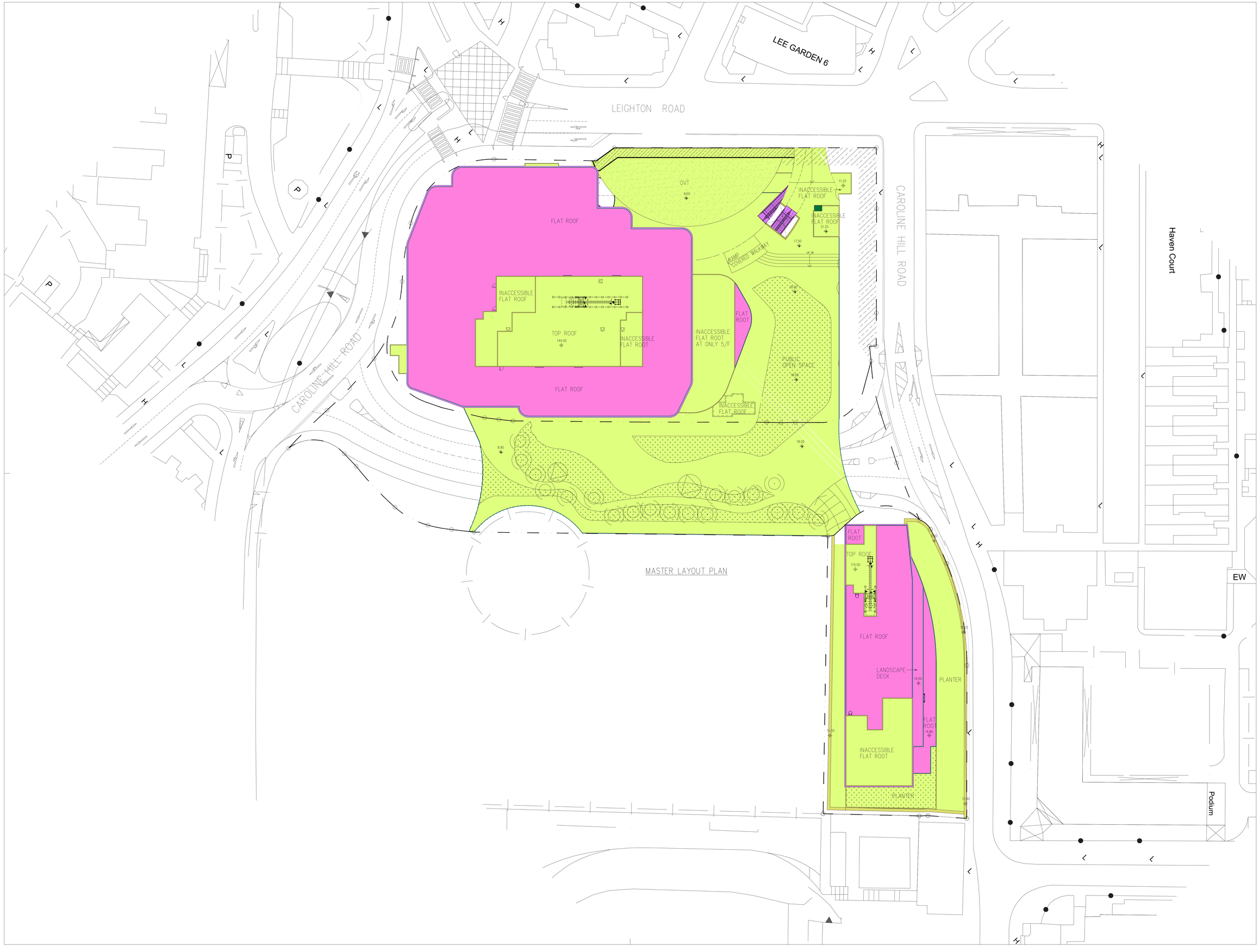
(Not to Scale)

BUCKETS (IF ANY)

Date Installed :	
Depth (m) from :	
Depth (m) to :	
Spacing (m) :	

Appendix D

Architectural Drawings



B.D. Ref : -
F.S.D. Ref : -
D.L.O. Ref : -

Rev.	Description	Drawn	Checked	Approved	Date
-	1st BD SUBMISSION	SZO	JHY	VML	10/11/2021

RONALD LU & PARTNERS
呂元祥建築師事務所

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

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Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON IL No. 8945 AT CAROLINE HILL ROAD CAUSEWAY BAY HONG KONG

Drawing Title

MASTER LAYOUT PLAN

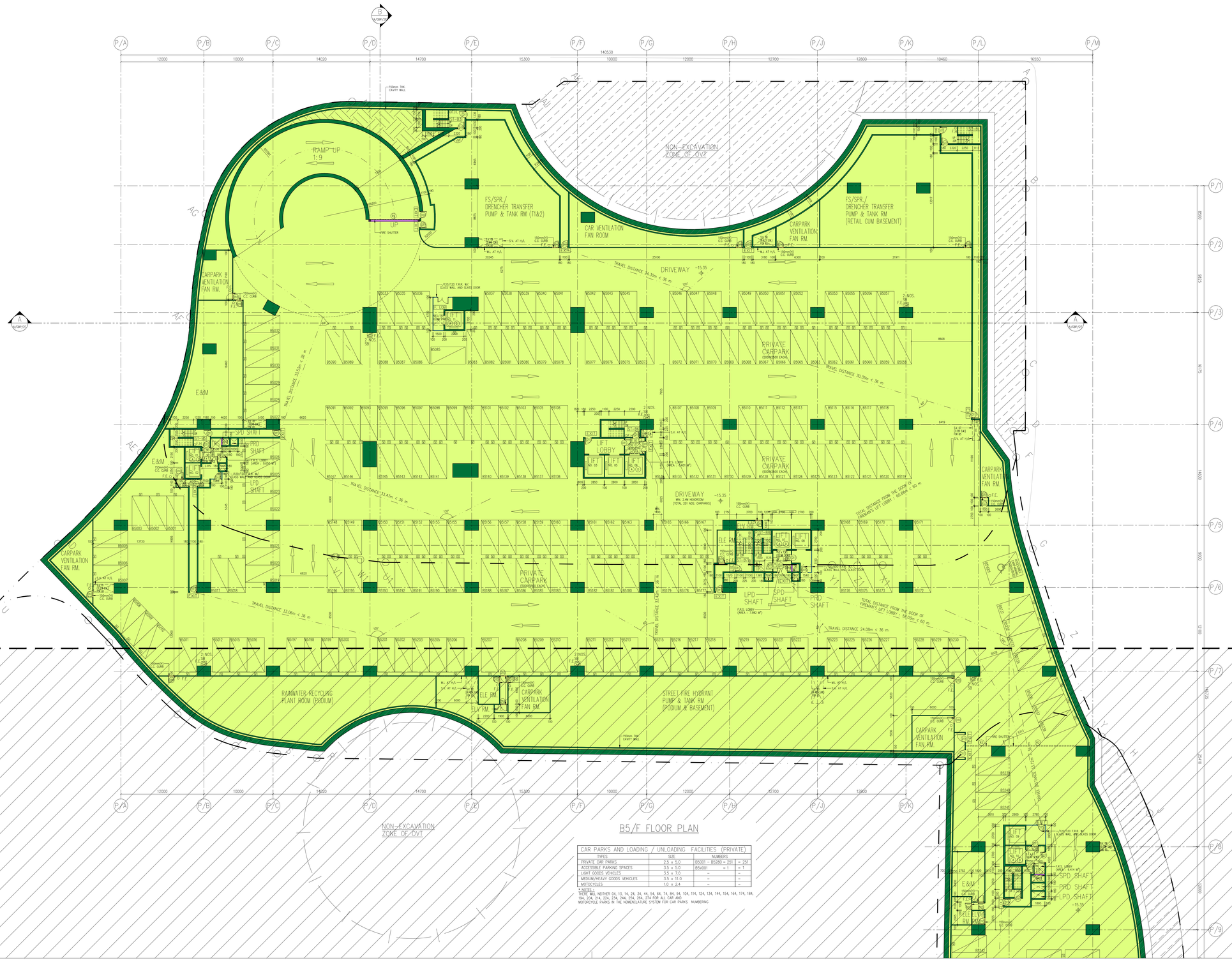
Drawn By	SZO	Date	10/11/2021
Checked By	JHY	Date	10/11/2021
Approved By	VML	Date	10/11/2021
Project No.	21105HK	Issue Date	10/11/2021
Cad File No.	-		
Scale	1:300		
Drawing No.	A/GBP_02		

AP's Signature

CHEUNG Man-Ching, Anthony
Authorized Person (Architect)

Drawing Purpose

Buildings Department



B5/F FLOOR PLAN

CAR PARKS AND LOADING / UNLOADING FACILITIES (PRIVATE)			
TYPES	SIZE	NUMBERS	
PRIVATE CAR PARKS	2.5 x 5.0	B5001 – B5280 = 251	= 251
ACCESSIBLE PARKING SPACES	3.5 x 5.0	B5V001	= 1
LIGHT GOODS VEHICLES	3.5 x 7.0	–	–
MEDIUM/HEAVY GOODS VEHICLES	3.5 x 11.0	–	–
MOTOCYCLES	1.0 x 2.4	–	–

* NOTES :
THERE WILL NEITHER 04, 13, 14, 24, 34, 44, 54, 64, 74, 84, 94, 104, 114, 124, 134, 144, 154, 164, 174, 184, 194, 204, 214, 224, 234, 244, 254, 264, 274 FOR ALL CAR AND MOTORCYCLE PARKS IN THE NOMENCLATURE SYSTEM FOR CAR PARKS NUMBERING

B.D. Ref : -
F.S.D. Ref : -
D.L.O. Ref : -

Rev.	Description	Drawn	Checked	Approved	Date
-	1st BD SUBMISSION	SZO	JHY	VML	10/11/2021

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Do not scale off drawings.

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Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON IL No. 8945 AT CAROLINE HILL ROAD CAUSEWAY BAY HONG KONG

Drawing Title

BASEMENT 5 FLOOR PLAN(1)

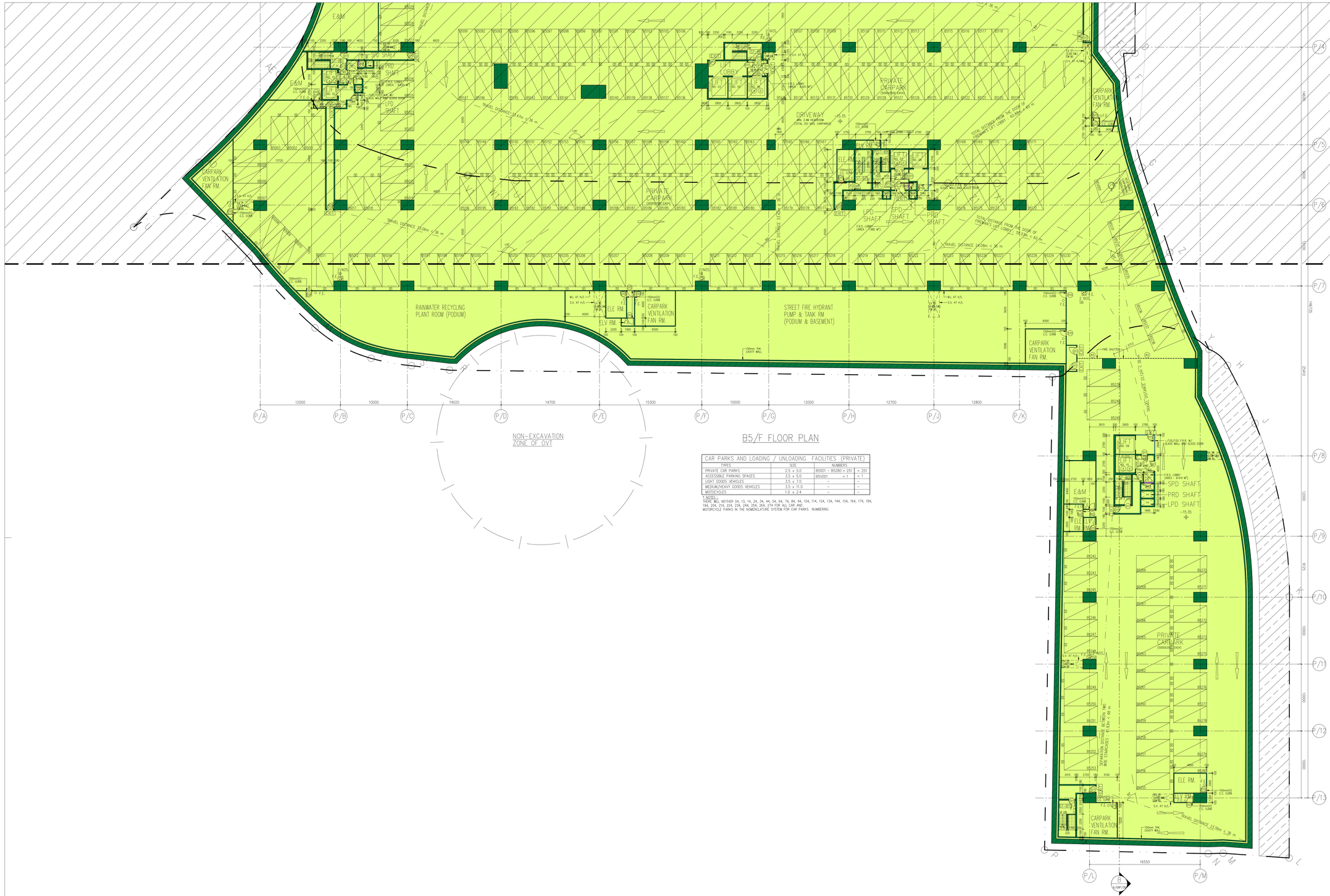
Drawn By	SZO	Date	10/11/2021
Checked By	JHY	Date	10/11/2021
Approved By	VML	Date	10/11/2021
Project No.	21105HK	Issue Date	10/11/2021
Cad File No.	-		
	-		
Scale	1:200		
Drawing No.	A/GBP_03		

AP's Signature

CHEUNG Man-Ching, Anthony
Authorized Person (Architect)

Drawing Purpose

Buildings Department



B5/F FLOOR PLAN

CAR PARKS AND LOADING / UNLOADING FACILITIES (PRIVATE)			
TYPES	SIZE	NUMBERS	
PRIVATE CAR PARKS	2.5 x 5.0	B5001 – B5280 = 251	= 251
ACCESSIBLE PARKING SPACES	3.5 x 5.0	B5V001	= 1
LIGHT GOODS VEHICLES	3.5 x 7.0	–	–
MEDIUM/HEAVY GOODS VEHICLES	3.5 x 11.0	–	–
MOTOCYCLES	1.0 x 2.4	–	–

* NOTES :
THERE WILL NEITHER 04, 13, 14, 24, 34, 44, 54, 64, 74, 84, 94, 104, 114, 124, 134, 144, 154, 164, 174, 184, 194, 204, 214, 224, 234, 244, 254, 264, 274 FOR ALL CAR AND MOTORCYCLE PARKS IN THE NOMENCLATURE SYSTEM FOR CAR PARKS NUMBERING

B.D. Ref : -
F.S.D. Ref : -
D.L.D. Ref : -

Rev.	Description	Drawn	Checked	Approved	Date
-	1st BD SUBMISSION	SZO	JHY	VML	10/11/2021

RONALD LU & PARTNERS
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Project Title
PROPOSED COMMERCIAL DEVELOPMENT ON IL No. 8945 AT CAROLINE HILL ROAD CAUSEWAY BAY HONG KONG

Drawing Title
BASEMENT 5 FLOOR PLAN(2)

Drawn By	SZO	Date	10/11/2021
Checked By	JHY	Date	10/11/2021
Approved By	VML	Date	10/11/2021
Project No.	21105HK	Issue Date	10/11/2021
Cad File No.	-		
	-		
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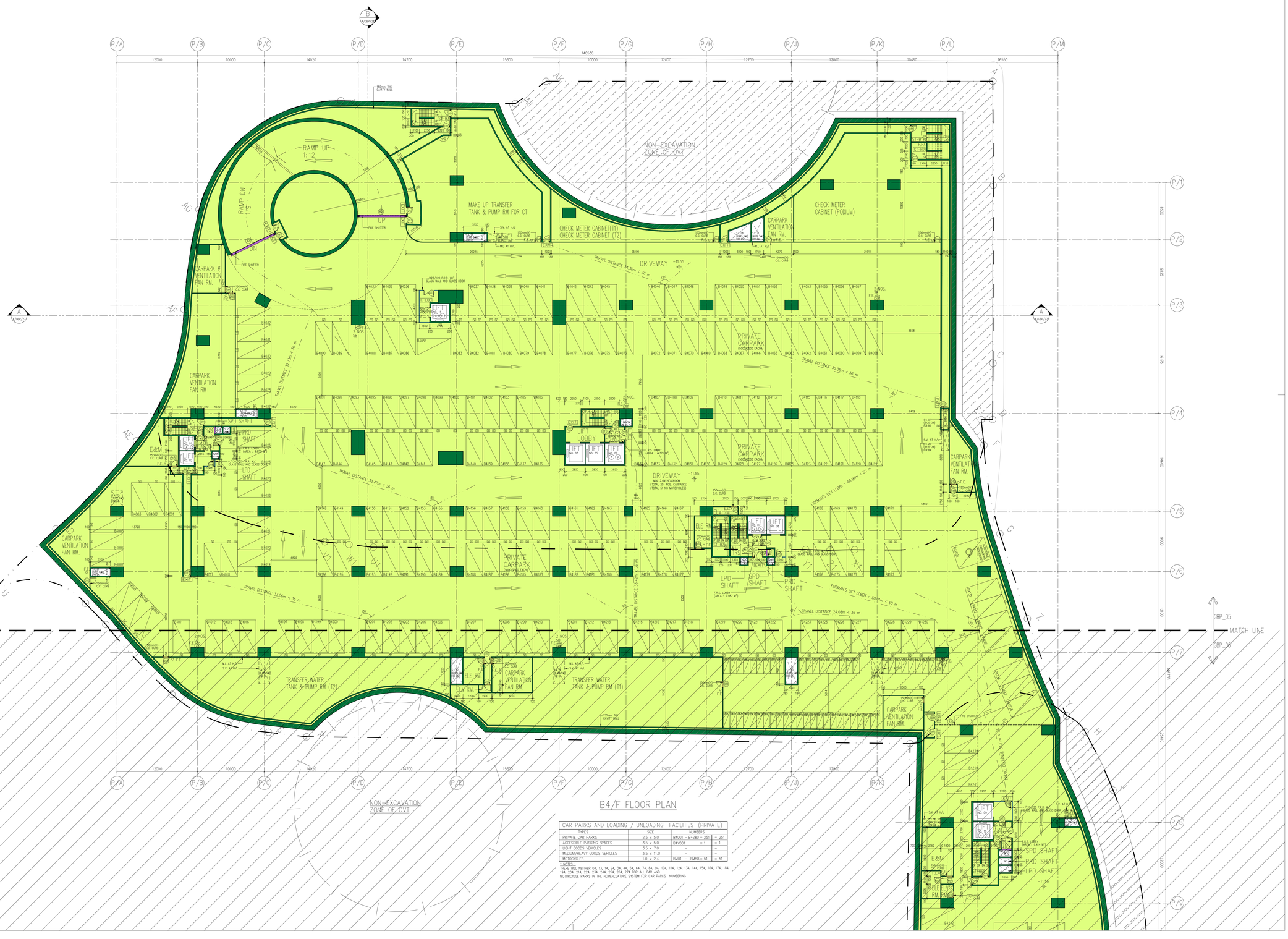
Drawing No.	A/GBP_04		

AP's Signature

CHEUNG Man-Ching, Anthony
Authorized Person (Architect)

Drawing Purpose
Buildings Department


P/A
P/B
P/C
P/D
P/E
P/F
P/G
P/H
P/J
P/K
P/L
P/M
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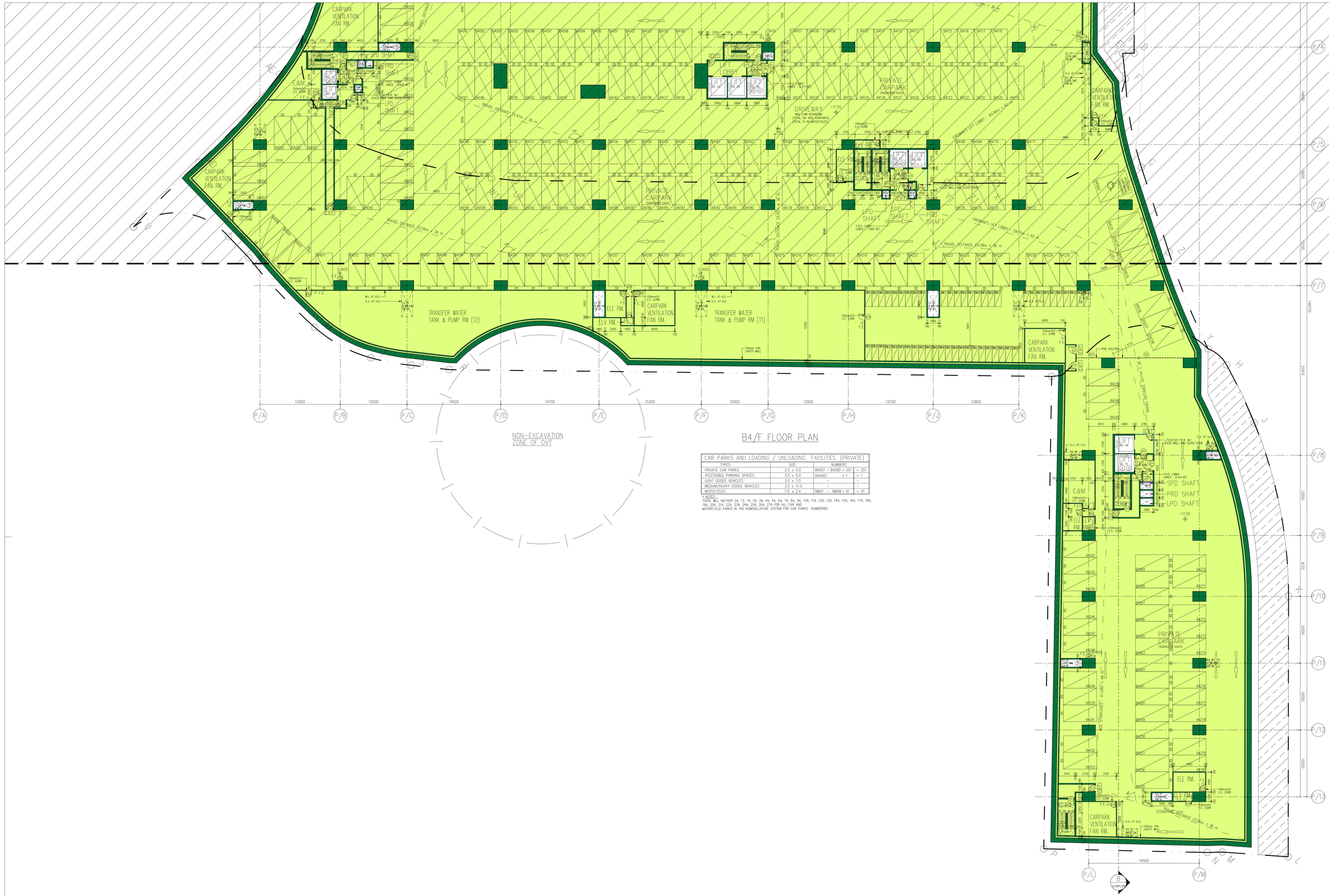
10000
14020
14700
15300
10000
12000
12700
12800
10460
16550
P/1
P/2
P/3
P/4
P/5
P/6
P/7
P/8
P/9
8500
9825
9175
14400
9000
2100
2400
RAMP UP 1:12
RAMP DN 1:9
UP
DN
FIRE SHUTTER
NON-EXCAVATION ZONE OF OVT
MAKE UP TRANSFER TANK & PUMP RM FOR CT
CHECK METER CABINET(T1)
CHECK METER CABINET (T2)
CHECK METER CABINET (PODIUM)
CARPARK VENTILATION FAN RM.
DRIVEWAY
-11.55
TRAVEL DISTANCE 34.30m < 36 m
TRAVEL DISTANCE 32.12m < 36 m
TRAVEL DISTANCE 33.47m < 36 m
TRAVEL DISTANCE 33.06m < 36 m
TRAVEL DISTANCE 30.35m < 36 m
TRAVEL DISTANCE 24.08m < 36 m
FIREMAN'S LIFT LOBBY : 60.98m < 60 m
FIREMAN'S LIFT LOBBY : 58.70m < 60 m
PRIVATE CARPARK (INCLUDING E.V.C.P.)
LIFT LOBBY
LIFT NO. 03
LIFT NO. 05
LIFT NO. 06
LIFT NO. 07
LIFT NO. 08
LIFT NO. 09
LIFT NO. 10
LIFT NO. 11
LIFT NO. 12
LIFT NO. 13
LIFT NO. 14
LIFT NO. 15
LIFT NO. 16
LIFT NO. 17
LIFT NO.



B4/F FLOOR PLAN

CAR PARKS AND LOADING / UNLOADING FACILITIES (PRIVATE)			
TYPES	SIZE	NUMBERS	
PRIVATE CAR PARKS	2.5 x 5.0	B4001 – B4280 = 251	= 251
ACCESSIBLE PARKING SPACES	3.5 x 5.0	B4V001 – = 1	= 1
LIGHT GOODS VEHICLES	3.5 x 7.0	– –	–
MEDIUM/HEAVY GOODS VEHICLES	3.5 x 11.0	– –	–
MOTOCYCLES	1.0 x 2.4	BM01 – BM58 = 51	= 51

* NOTES :
THERE WILL NEITHER 04, 13, 14, 24, 34, 44, 54, 64, 74, 84, 94, 104, 114, 124, 134, 144, 154, 164, 174, 184, 194, 204, 214, 224, 234, 244, 254, 264, 274 FOR ALL CAR AND MOTORCYCLE PARKS IN THE NOMENCLATURE SYSTEM FOR CAR PARKS NUMBERING

B.D. Ref : -
F.S.D. Ref : -
D.L.O. Ref : -

Rev.	Description	Drawn	Checked	Approved	Date
-	1st BD SUBMISSION	SZO	JHY	VML	10/11/2021

RONALD LU & PARTNERS
呂元祥建築師事務所

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Do not scale off drawings.

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Project Title
PROPOSED COMMERCIAL DEVELOPMENT ON IL No. 8945 AT CAROLINE HILL ROAD CAUSEWAY BAY HONG KONG

Drawing Title
BASEMENT 4 FLOOR PLAN(2)

Drawn By	SZO	Date	10/11/2021
Checked By	JHY	Date	10/11/2021
Approved By	VML	Date	10/11/2021
Project No.	21105HK	Issue Date	10/11/2021
Cad File No.	-		
Scale	1:200		
Drawing No.	A/GBP_06		

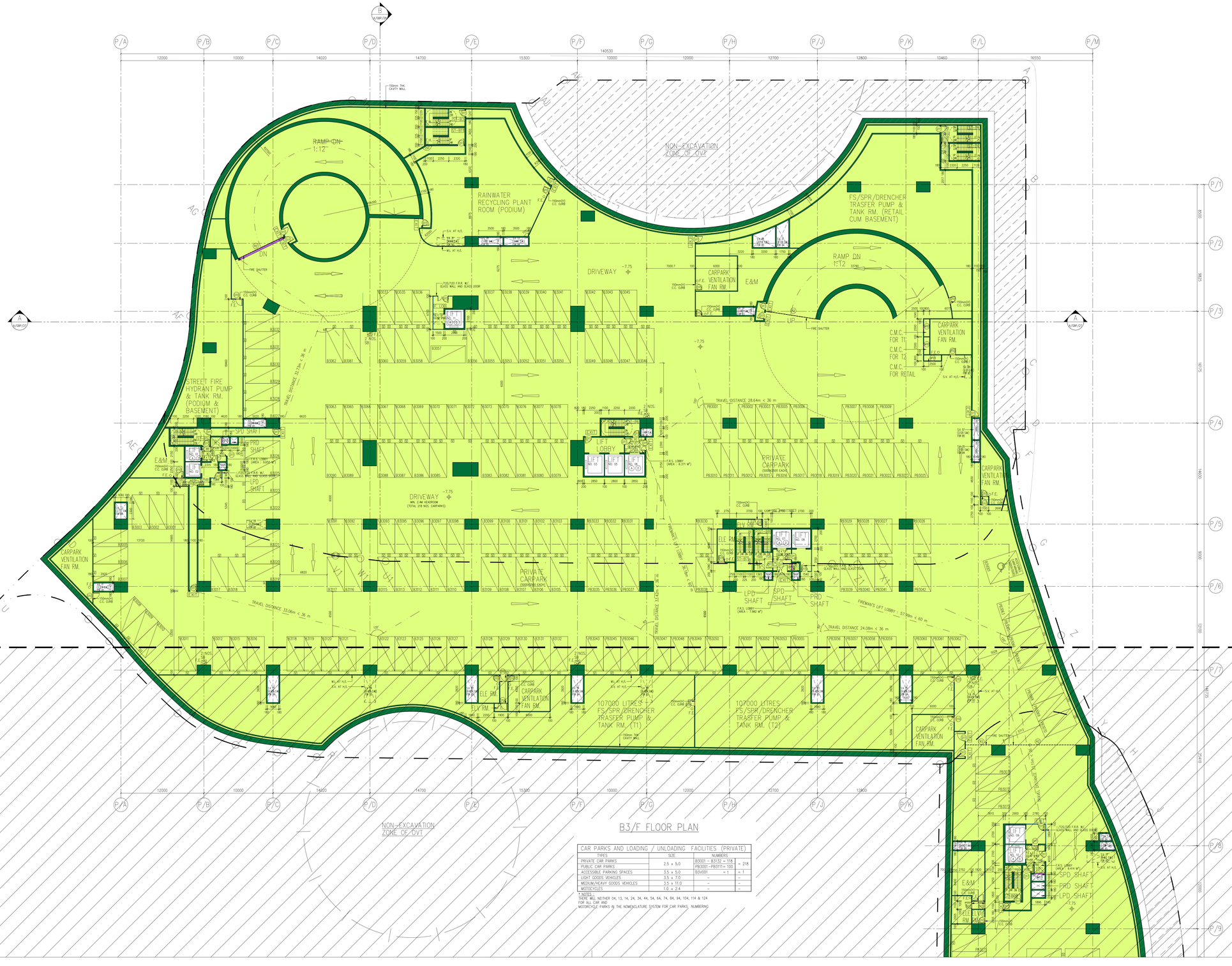
AP's Signature

CHEUNG Man-Ching, Anthony
Authorized Person (Architect)

Drawing Purpose
Buildings Department

B.D. Ref : -
F.S.D. Ref : -
D.L.O. Ref : -

Rev.	Description	Drawn	Checked	Approved	Date
-	1st BD SUBMISSION	SZO	JHY	VML	10/11/2021


P/A
P/B
P/C
P/D
P/E
P/F
P/G
P/H
P/J
P/K
P/L
P/M
P/1
P/2
P/3
P/4
P/5
P/6
P/7
P/8
P/9
140530
12000
10000
14020
14700
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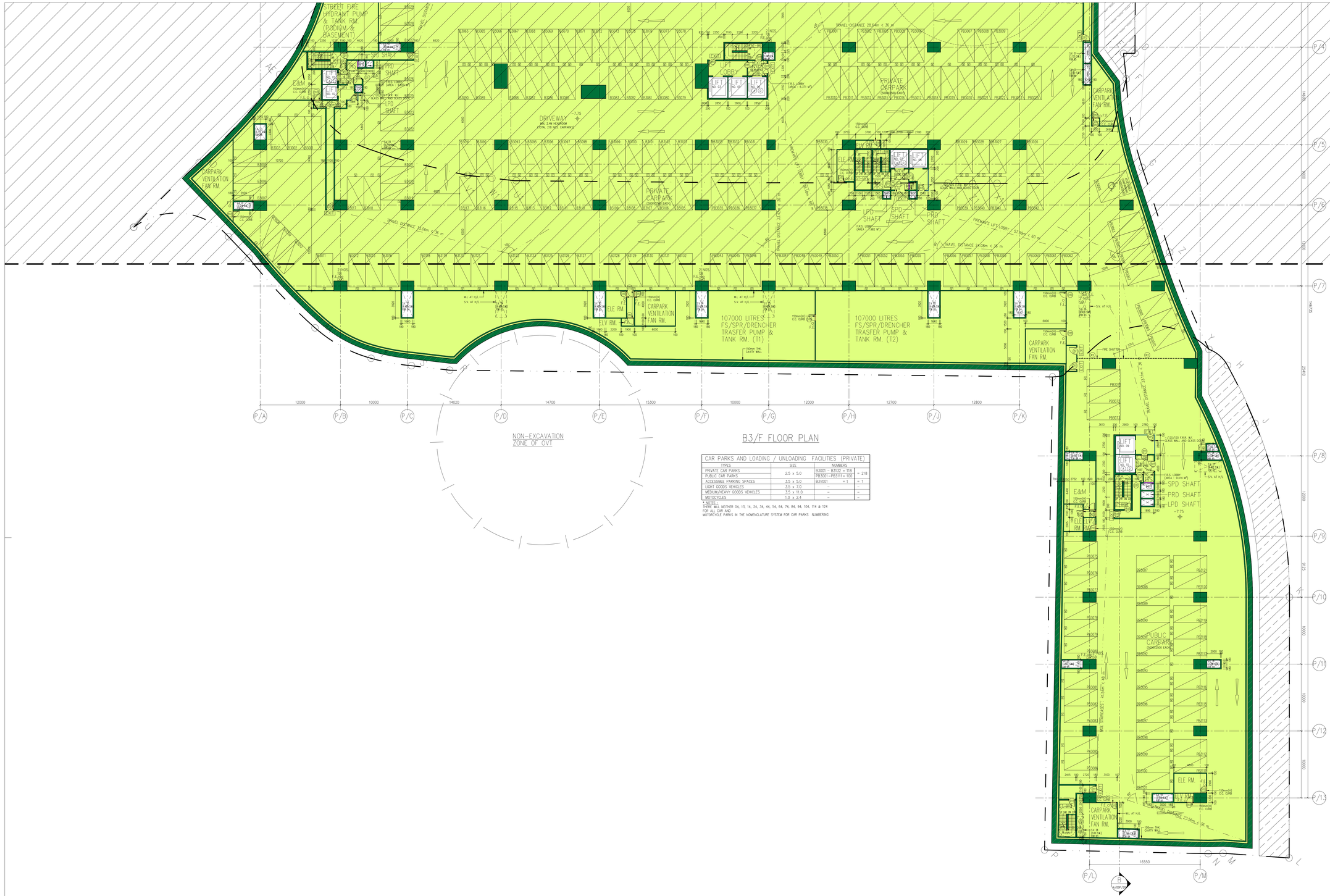
8500
12700
12700
12700



B3/F FLOOR PLAN

CAR PARKS AND LOADING / UNLOADING FACILITIES (PRIVATE)			
TYPES	SIZE	NUMBERS	
PRIVATE CAR PARKS	2.5 x 5.0	B3001 – B3132 = 118 PB3001 – PB3111 = 100	= 218
ACCESSIBLE PARKING SPACES	3.5 x 5.0	B3V001	= 1
LIGHT GOODS VEHICLES	3.5 x 7.0	–	–
MEDIUM/HEAVY GOODS VEHICLES	3.5 x 11.0	–	–
MOTOCYCLES	1.0 x 2.4	–	–

* NOTE:
THERE WILL NEITHER 04, 13, 14, 24, 34, 44, 54, 64, 74, 84, 94, 104, 114 & 124 FOR ALL CAR AND MOTORCYCLE PARKS IN THE NOMENCLATURE SYSTEM FOR CAR PARKS NUMBERING

B.D. Ref : -
F.S.D. Ref : -
D.L.D. Ref : -

Rev.	Description	Drawn	Checked	Approved	Date
-	1st BD SUBMISSION	SZO	JHY	VML	10/11/2021

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Project Title
PROPOSED COMMERCIAL DEVELOPMENT ON IL No. 8945 AT CAROLINE HILL ROAD CAUSEWAY BAY HONG KONG

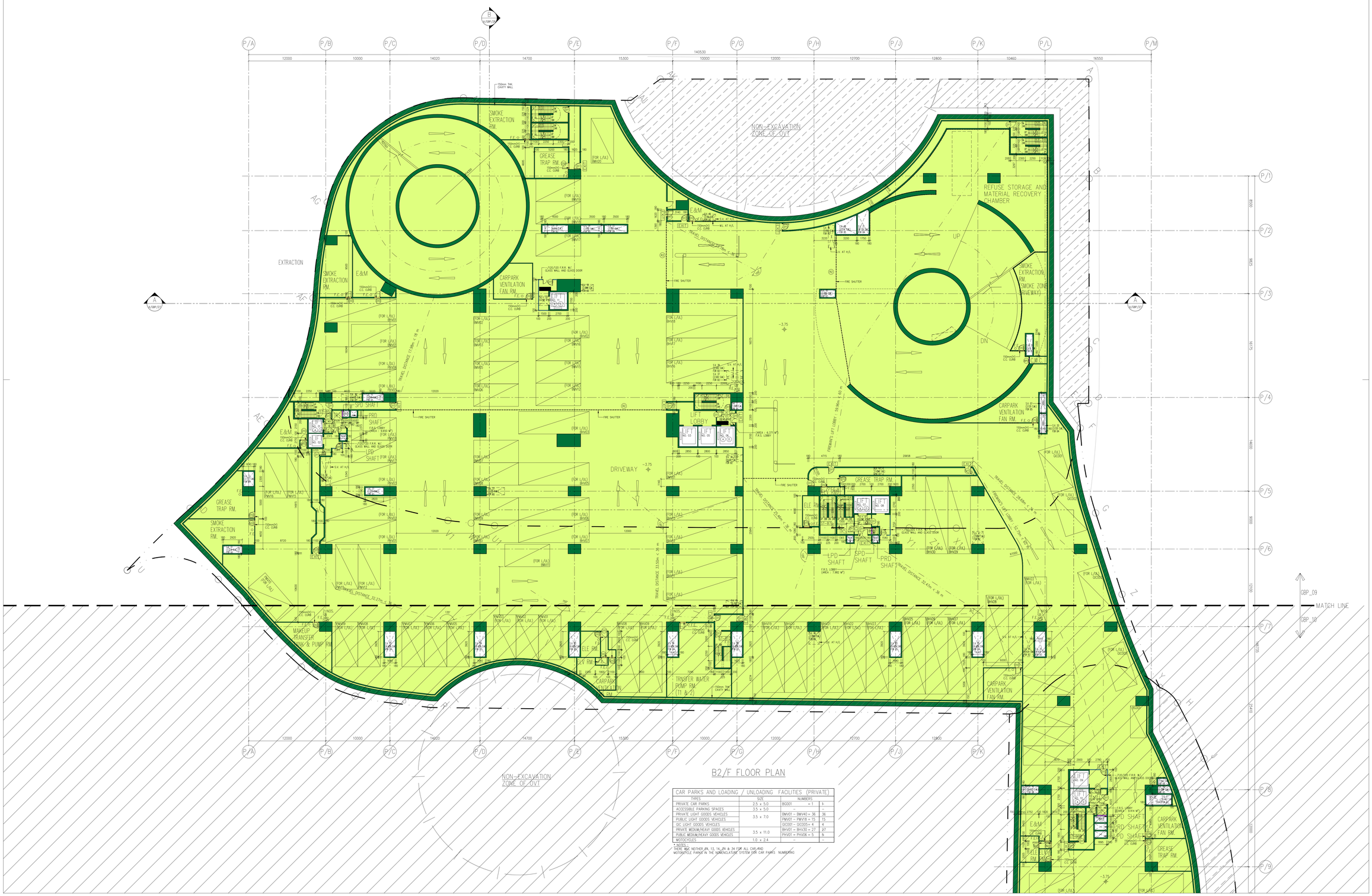
Drawing Title
BASEMENT 3 FLOOR PLAN(2)

Drawn By	SZO	Date	10/11/2021
Checked By	JHY	Date	10/11/2021
Approved By	VML	Date	10/11/2021
Project No.	21105HK	Issue Date	10/11/2021
Cad File No.	-		
Scale	1:200		
Drawing No.	A/GBP_08		

AP's Signature

CHEUNG Man-Ching, Anthony
Authorized Person (Architect)

Drawing Purpose
Buildings Department



B2/F FLOOR PLAN

CAR PARKS AND LOADING / UNLOADING FACILITIES (PRIVATE)			
TYPES	SIZE	NUMBERS	
PRIVATE CAR PARKS	2.5 x 5.0	BG001 = 1	1
ACCESSIBLE PARKING SPACES	3.5 x 5.0	–	–
PRIVATE LIGHT GOODS VEHICLES	3.5 x 7.0	BMV01 – BMV40 = 36	36
PUBLIC LIGHT GOODS VEHICLES		PMV01 – PMV18 = 15	15
GIC LIGHT GOODS VEHICLES		GIC001 – GIC005 = 4	4
PRIVATE MEDIUM/HEAVY GOODS VEHICLES	3.5 x 11.0	BHV01 – BHV30 = 27	27
PUBLIC MEDIUM/HEAVY GOODS VEHICLES		PHV01 – PHV06 = 5	5
MOTOCYCLES	1.0 x 2.4	–	–

* NOTES :-
THERE WILL NEITHER JIN, 13, 14, 24 & 34 FOR ALL CAR AND MOTORCYCLE PARKS IN THE NOMENCLATURE SYSTEM FOR CAR PARKS NUMBERING

B.D. Ref : -
F.S.D. Ref : -
D.L.O. Ref : -

Rev	Description	Drawn	Checked	Approved	Date
-	1st BD SUBMISSION	SZO	JHY	VML	10/11/2021

RONALD LU & PARTNERS
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Project Title
PROPOSED COMMERCIAL DEVELOPMENT ON IL No. 8945 AT CAROLINE HILL ROAD CAUSEWAY BAY HONG KONG

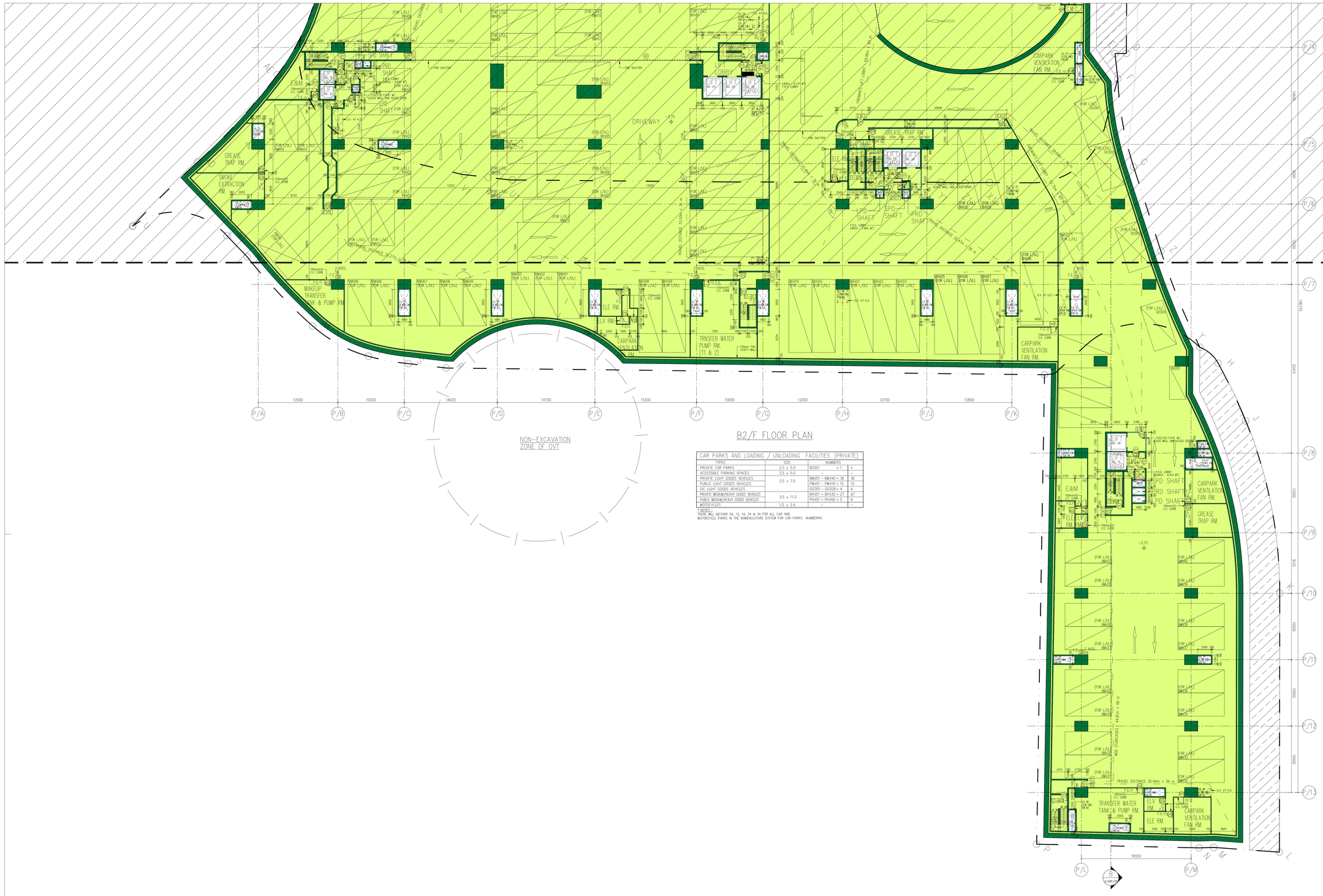
Drawing Title
BASEMENT 2 FLOOR PLAN(1)

Drawn By	SZO	Date	10/11/2021
Checked By	JHY	Date	10/11/2021
Approved By	VML	Date	10/11/2021
Project No.	21105HK	Issue Date	10/11/2021
Cad File No.	–		
Scale	1:200		
Drawing No.	A/GBP_09		

AP's Signature

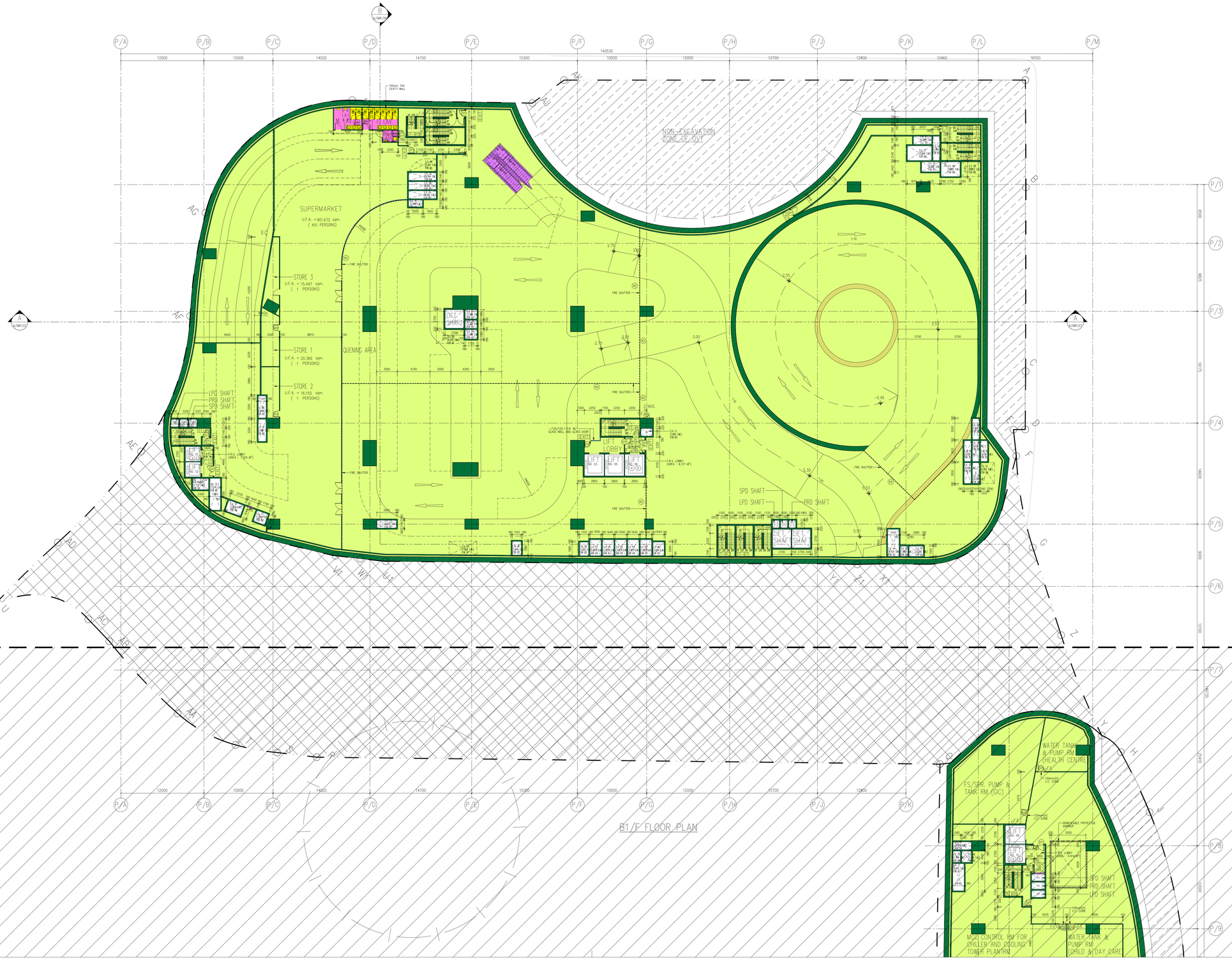
CHEUNG Man-Ching, Anthony
Authorized Person (Architect)

Drawing Purpose
Buildings Department


DRIVEWAY
GREASE TRAP RM.
SMOKE EXHAUSTION RM.
MAKEUP WATER TANK & PUMP RM.
ELE RM.
ELV RM.
CARPARK VENTILATION FAN RM.
TRANSFER WATER PUMP RM. (T1 & 2)
LIFT LOBBY
LIFT NO. 01
LIFT NO. 02
LIFT NO. 03
LIFT NO. 04
LIFT NO. 05
LIFT NO. 06
LIFT NO. 07
LIFT NO. 08
LIFT NO. 09
LIFT NO. 10
LIFT NO. 11
LIFT NO. 12
LIFT NO. 13
LIFT NO.

B.D. Ref : -
F.S.D. Ref : -
D.L.O. Ref : -

Rev.	Description	Drawn	Checked	Approved	Date
-	1st BD SUBMISSION	SZO	JHY	VML	10/11/2021



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Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON IL No. 8945 AT CAROLINE HILL ROAD CAUSEWAY BAY HONG KONG

Drawing Title

BASEMENT 1 FLOOR PLAN(1)

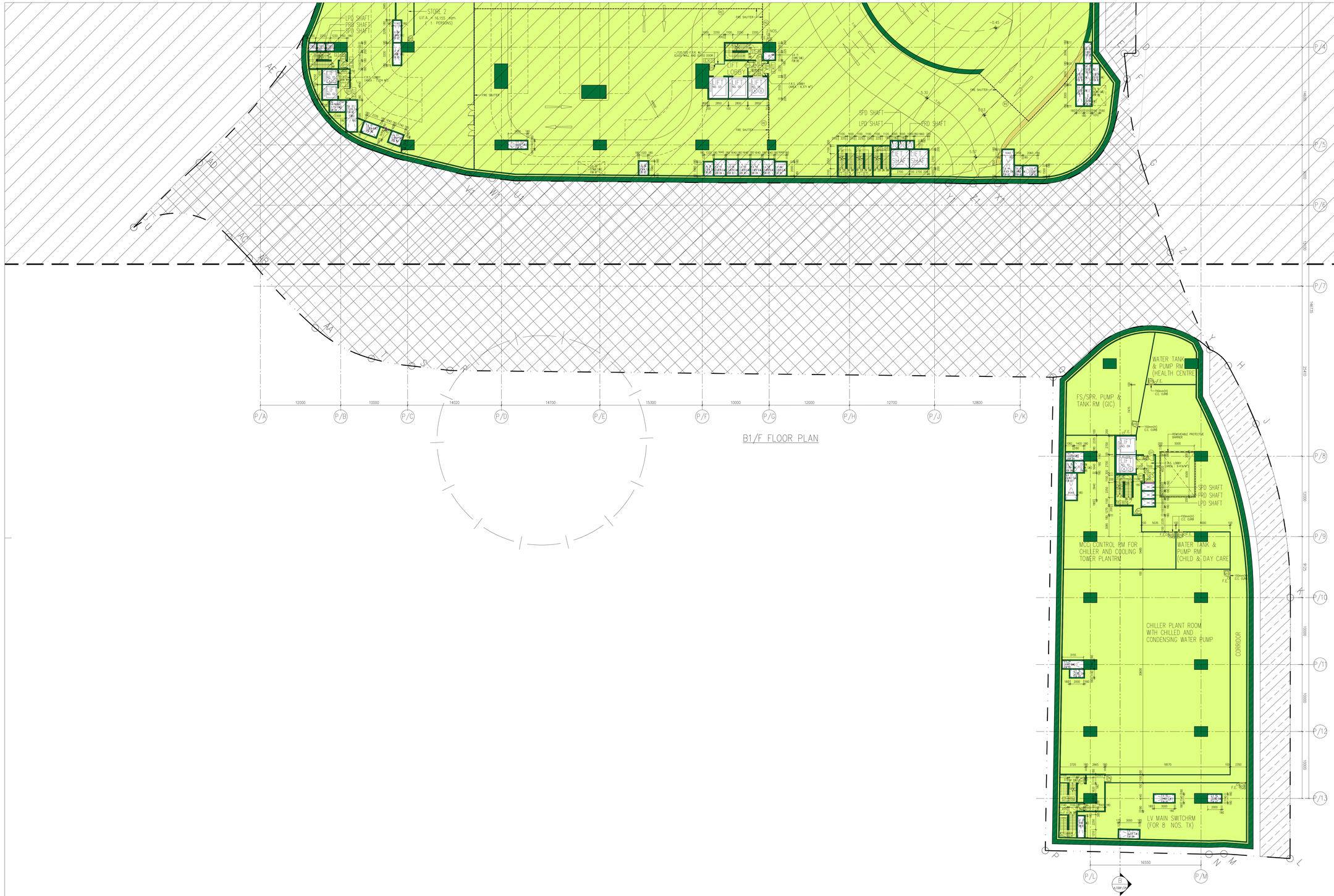
Drawn By	SZO	Date	10/11/2021
Checked By	JHY	Date	10/11/2021
Approved By	VML	Date	10/11/2021
Project No.	21105HK	Issue Date	10/11/2021
Cad File No.	-		
Scale	1:200		
Drawing No.	A/GBP_11		

AP's Signature

CHEUNG Man-Ching, Anthony
Authorized Person (Architect)

Drawing Purpose

Buildings Department


STORE 2
(I.F.A. = 16.155 sq.m.
1 PERSONS)
P/S SHAFT
P/D SHAFT
S/PD SHAFT
LIFT
OBBY
LIFT
NO. 10
LIFT
NO. 11
LIFT
NO. 12
LIFT
NO. 13
LIFT
NO. 14
LIFT
NO. 15
LIFT
NO. 16
LIFT
NO. 17
LIFT
NO. 18
LIFT
NO. 19
LIFT
NO. 20
LIFT
NO. 21
LIFT
NO. 22
LIFT
NO.

LEE GARDEN 6

LEIGHTON ROAD

CAROLINE HILL ROAD

LEGEND:

24-HOUR PEDESTRIAN WALKWAYS AND LIFT LOBBY

F&R
U.F.A. = 328.261 sqm.
(329 PERSONS)

OVT

VOID

TX LIFT LOBBY

KIT
U.F.A. = 59.770 sqm.
(14 PERSONS)

MAIN ENTRANCE

RETAIL 1
U.F.A. =238.943 sqm.
(80 PERSONS)

RETAIL 2
U.F.A. = 672.481 sqm.
(225 PERSONS)

SHUTTLE PASSENGER LIFT LOBBY

RAMP UP 1:10

RAMP DN 1:10

PUBLIC & PRIVATE CAR PARK ENTRANCE

MATCH LINE

G/F FLOOR PLAN

AHU ROOM

OFFICE LOBBY

CIC LOBBY

WATER METER RM.(CIC)

CHECK METER CABINET (CIC)

PAVEMENT

EXISTING MASONRY WALL

BD Ref : -
F.S.D. Ref : -
D.L.O. Ref : -

Rev.	Description	Drawn	Checked	Approved	Date
-	1st BD SUBMISSION	SZO	JHY	VML	10/11/2021

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呂元祥建築師事務所

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Project Title
PROPOSED COMMERCIAL DEVELOPMENT ON IL No. 8945 AT CAROLINE HILL ROAD CAUSEWAY BAY HONG KONG

Drawing Title
G/F FLOOR PLAN(1)

Drawn By	SZO	Date	10/11/2021
Checked By	JHY	Date	10/11/2021
Approved By	VML	Date	10/11/2021
Project No.	21105HK	Issue Date	10/11/2021
Cad File No.	-		
Scale	1:200		
Drawing No.	A/GBP_13		

AP's Signature

CHEUNG Man-Ching, Anthony
Authorized Person (Architect)

Drawing Purpose
Buildings Department

B.D. Ref : -
F.S.D. Ref : -
D.L.D. Ref : -

Rev.	Description	Drawn	Checked	Approved	Date
-	1st BD SUBMISSION	SZO	JHY	VML	10/11/2021

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Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON IL No. 8945 AT CAROLINE HILL ROAD CAUSEWAY BAY HONG KONG

Drawing Title

G/F FLOOR PLAN(2)

Drawn By	SZO	Date	10/11/2021
Checked By	JHY	Date	10/11/2021
Approved By	VML	Date	10/11/2021
Project No.	21105HK	Issue Date	10/11/2021
Cad File No.	-		
	-		
Scale	1:200		
Drawing No.	A/GBP_14		

AP's Signature

CHEUNG Man-Ching, Anthony
Authorized Person (Architect)

Drawing Purpose

Buildings Department

G/F FLOOR PLAN

LG/F FLOOR PLAN

MAIN ENTRANCE

RETAIL 1
U.F.A. = 238.943 sqm.
(80 PERSONS)

SHUTTLE PASSENGER LIFT LOBBY

RETAIL 2
U.F.A. = 622.481 sqm.
(226 PERSONS)

RAMP 1:10

FS CONTROL ROOM

PUBLIC & PRIVATE CAR PARK ENTRANCE

MATCH LINE

AHU ROOM

LOBBY

ELECT./ELV ROOM

DISTRICT HEALTH CENTRE
U.F.A. = 944.420 sqm.
(105 PERSONS)

PLANTER

WATER TANK AND PUMP ROOM (DISTRICT HEALTH CENTER)

GREASE TRAP ROOM (CHILDREN CARE CENTER)

GAS CONTROL COMPARTMNT (CHILDREN CARE CENTER)

OFFICE LOBBY

GIC LOBBY

WATER METER RM.(GIC)

CHECK METER CABINET (GIC)

CHILD CARE CENTRE
U.F.A. =664.433 sqm.
(167 PERSONS)

WATER TANK AND PUMP ROOM (CHILDREN CARE CENTER)

TX. & HV SWITCH RM. GIC & T3

TX. & HV SWITCH RM. MVAC

E&M

FS/SPR TRANSFER PUMP & TANK RM. (T3)

UNEXCAVATED

PAVEMENT

EXISTING MASONRY WALL

EXISTING MASONRY WALL

CBP_13

CBP_14

CAROLINE HILL ROAD

P/A P/B P/C P/D P/E P/F P/G P/H P/J P/K P/L P/M

P/7 P/8 P/9 P/10 P/11 P/12 P/13 P/14

LEGEND:

24-HOUR PEDESTRIAN WALKWAYS AND LIFT LOBBY



B.D. Ref :	-
F.S.D. Ref :	-
D.L.O. Ref :	-

Rev	Description	Drawn	Checked	Approved	Date
-	1st BD SUBMISSION	SZO	JHY	VML	10/11/2021

RONALD LU & PARTNERS

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Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON IL No. 8945 AT CAROLINE HILL ROAD CAUSEWAY BAY HONG KONG

Drawing Title

1/F FLOOR PLAN(1)

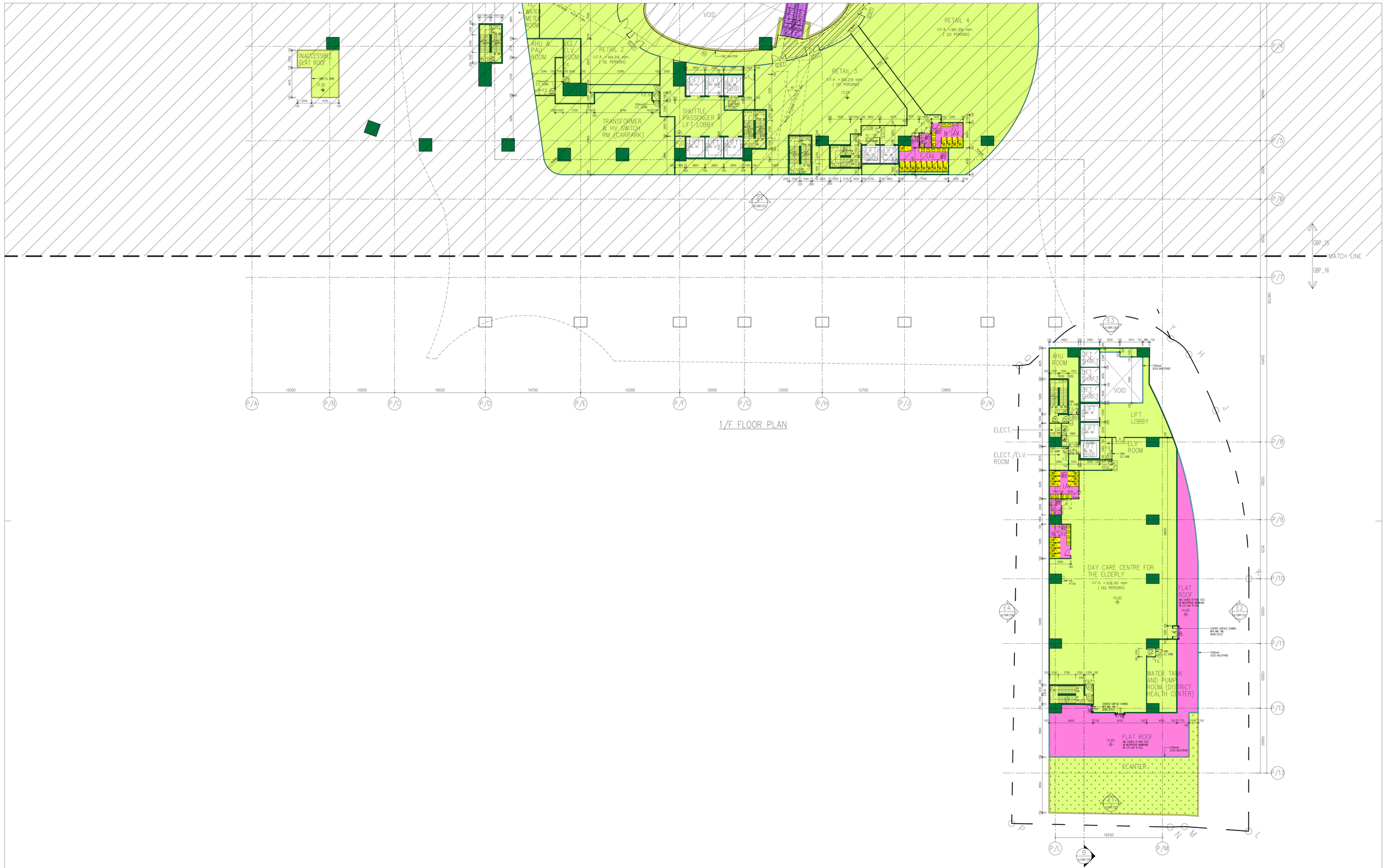
Drawn By	SZO	Date	10/11/2021
Checked By	JHY	Date	10/11/2021
Approved By	VML	Date	10/11/2021
Project No.	21105HK	Issue Date	10/11/2021
Cad File No.	-		
Scale	1:200		
Drawing No.	A/GBP_15		

AP's Signature

CHEUNG Man-Ching, Anthony
Authorized Person (Architect)

Drawing Purpose

Buildings Department



1/F FLOOR PLAN

B.D. Ref : -
F.S.D. Ref : -
D.L.D. Ref : -

Rev.	Description	Drawn	Checked	Approved	Date
-	1st BD SUBMISSION	SZO	JHY	VML	10/11/2021

RONALD LU & PARTNERS
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Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON IL No. 8945 AT CAROLINE HILL ROAD CAUSEWAY BAY HONG KONG

Drawing Title

1/F FLOOR PLAN(2)

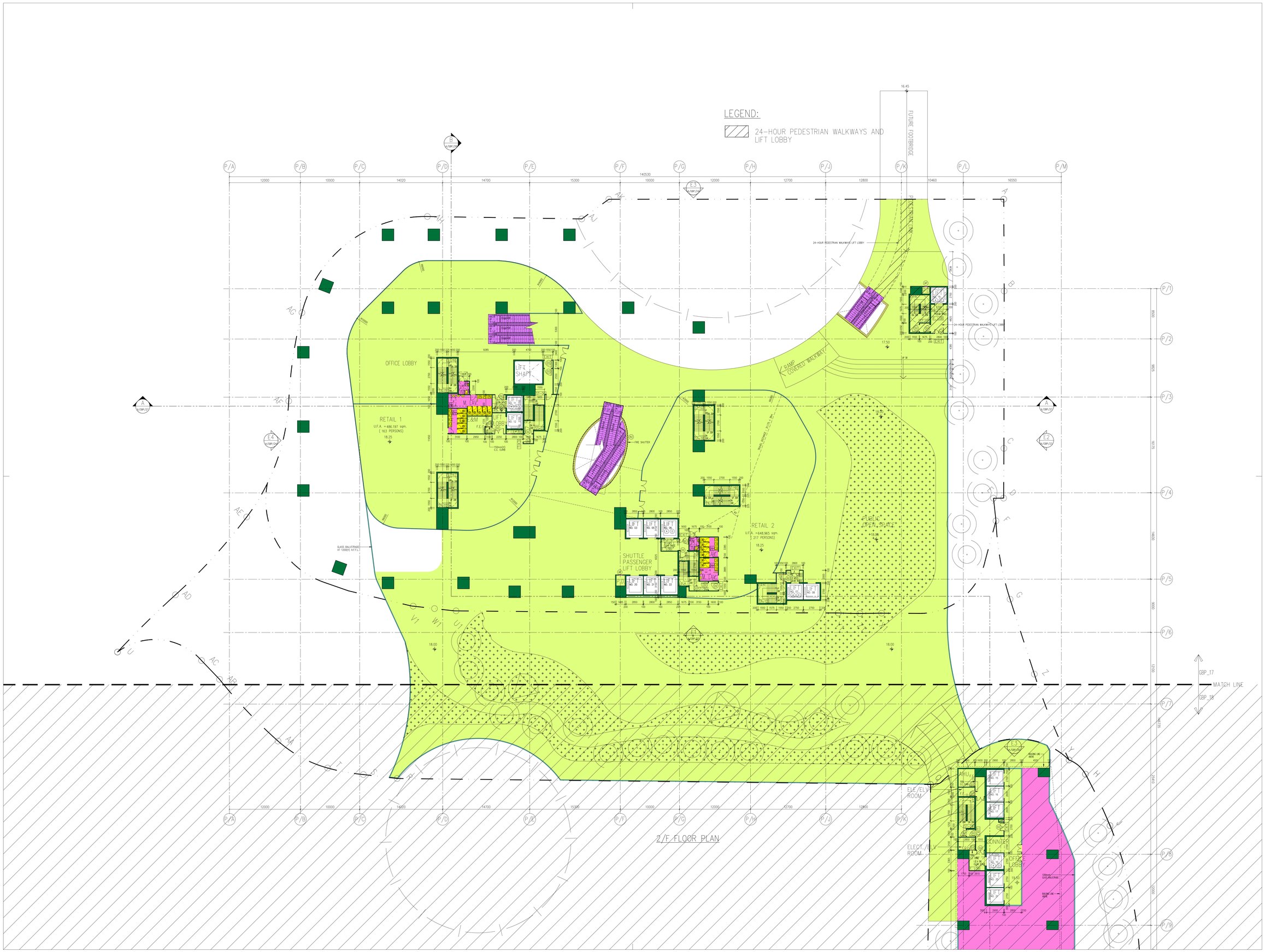
Drawn By	SZO	Date	10/11/2021
Checked By	JHY	Date	10/11/2021
Approved By	VML	Date	10/11/2021
Project No.	21105HK	Issue Date	10/11/2021
Cad File No.	-		
	-		
Scale	1:200		
Drawing No.	A/GBP_16		

AP's Signature

CHEUNG Man-Ching, Anthony
Authorized Person (Architect)

Drawing Purpose

Buildings Department



B.D. Ref : -

F.S.D. Ref : -

D.L.O. Ref : -

Rev	Description	Drawn	Checked	Approved	Date
-	1st BD SUBMISSION	SZO	JHY	VML	10/11/2021

RONALD LU & PARTNERS

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Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON IL No. 8945 AT CAROLINE HILL ROAD CAUSEWAY BAY HONG KONG

Drawing Title

2/F FLOOR PLAN(1)

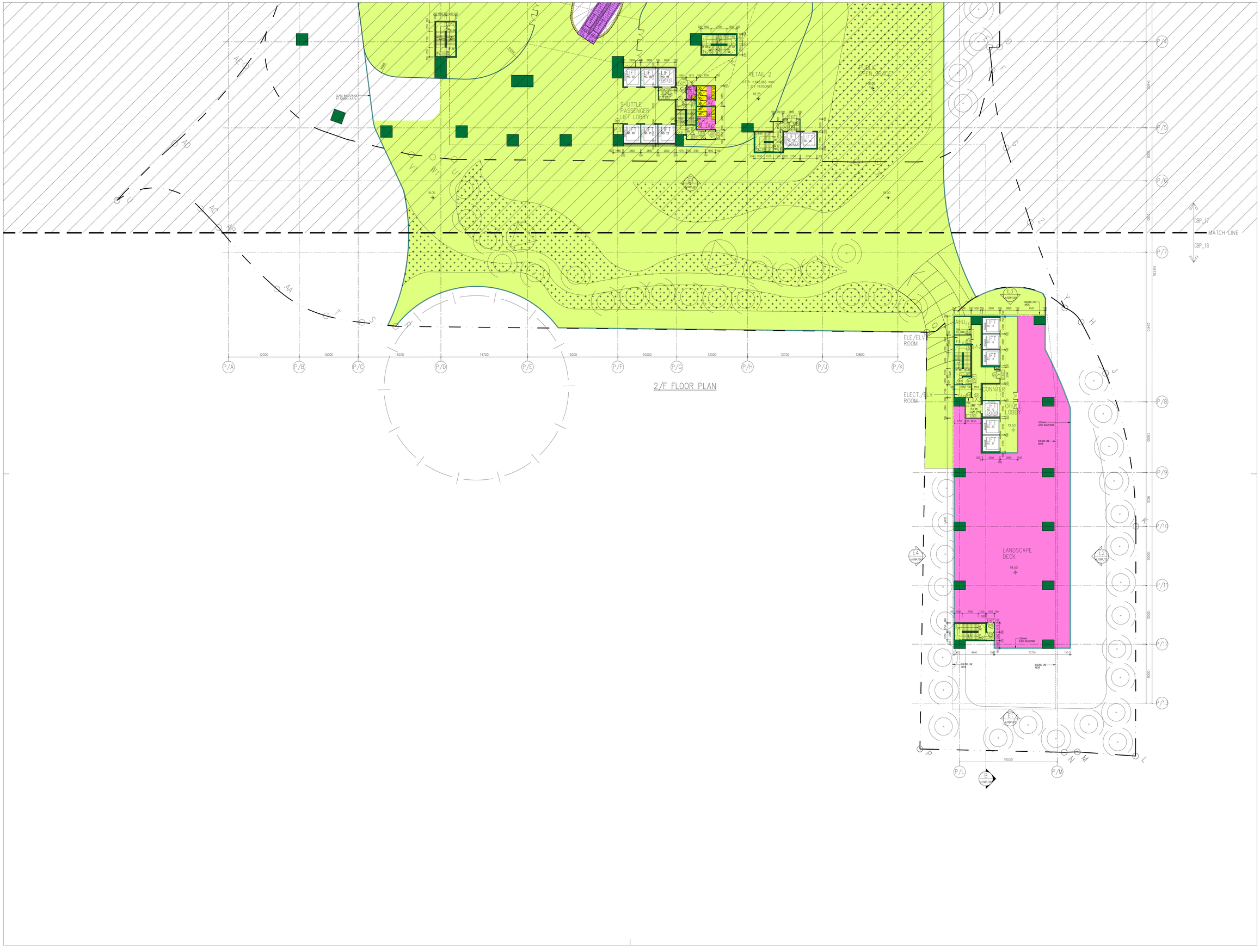
Drawn By	SZO	Date	10/11/2021
Checked By	JHY	Date	10/11/2021
Approved By	VML	Date	10/11/2021
Project No.	21105HK	Issue Date	10/11/2021
Cad File No.	-		
Scale	1:200		
Drawing No.	A/GBP_17		

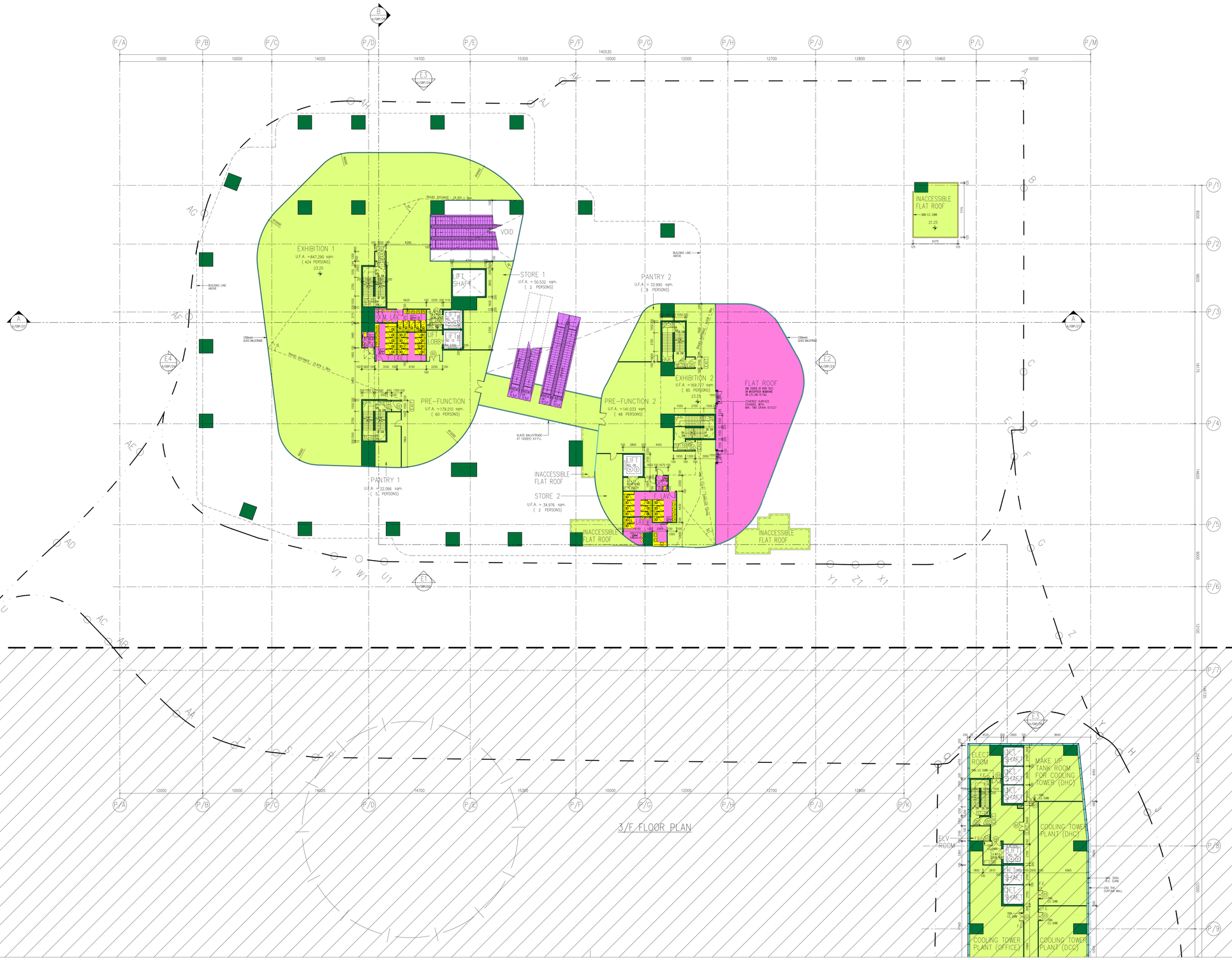
AP's Signature

CHEUNG Man-Ching, Anthony
Authorized Person (Architect)

Drawing Purpose

Buildings Department


CAROLINE HILL ROAD
CAUSEWAY BAY TYPHOON SHELTER
SHUTTLE PASSENGER LIFT LOBBY
RETAIL 2
GFA =645.965 sq.m.
227 PERSONS
PUBLIC OPEN SPACE
GLASS BALUSTRADE AT 1100mm A.F.L.
LIFT NO. 03
LIFT NO. 20
LIFT NO. 21
LIFT NO. 22
LIFT NO. 23
LIFT NO. 24
LIFT NO. 25
LIFT NO. 26
LIFT NO. 27
LIFT NO. 28
LIFT NO. 29
LIFT NO. 30
LIFT NO. 31
LIFT NO. 32
LIFT NO.



B.D. Ref : -

F.S.D. Ref : -

D.L.O. Ref : -

Rev	Description	Drawn	Checked	Approved	Date
-	1st BD SUBMISSION	SZO	JHY	VML	10/11/2021

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Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON IL No. 8945 AT CAROLINE HILL ROAD CAUSEWAY BAY HONG KONG

Drawing Title

3/F FLOOR PLAN(1)

Drawn By	SZO	Date	10/11/2021
Checked By	JHY	Date	10/11/2021
Approved By	VML	Date	10/11/2021
Project No.	21105HK	Issue Date	10/11/2021
Cad File No.	-		
Scale	1:200		
Drawing No.	A/GBP_19		

AP's Signature

CHEUNG Man-Ching, Anthony
Authorized Person (Architect)

Drawing Purpose

Buildings Department

B.D. Ref : -

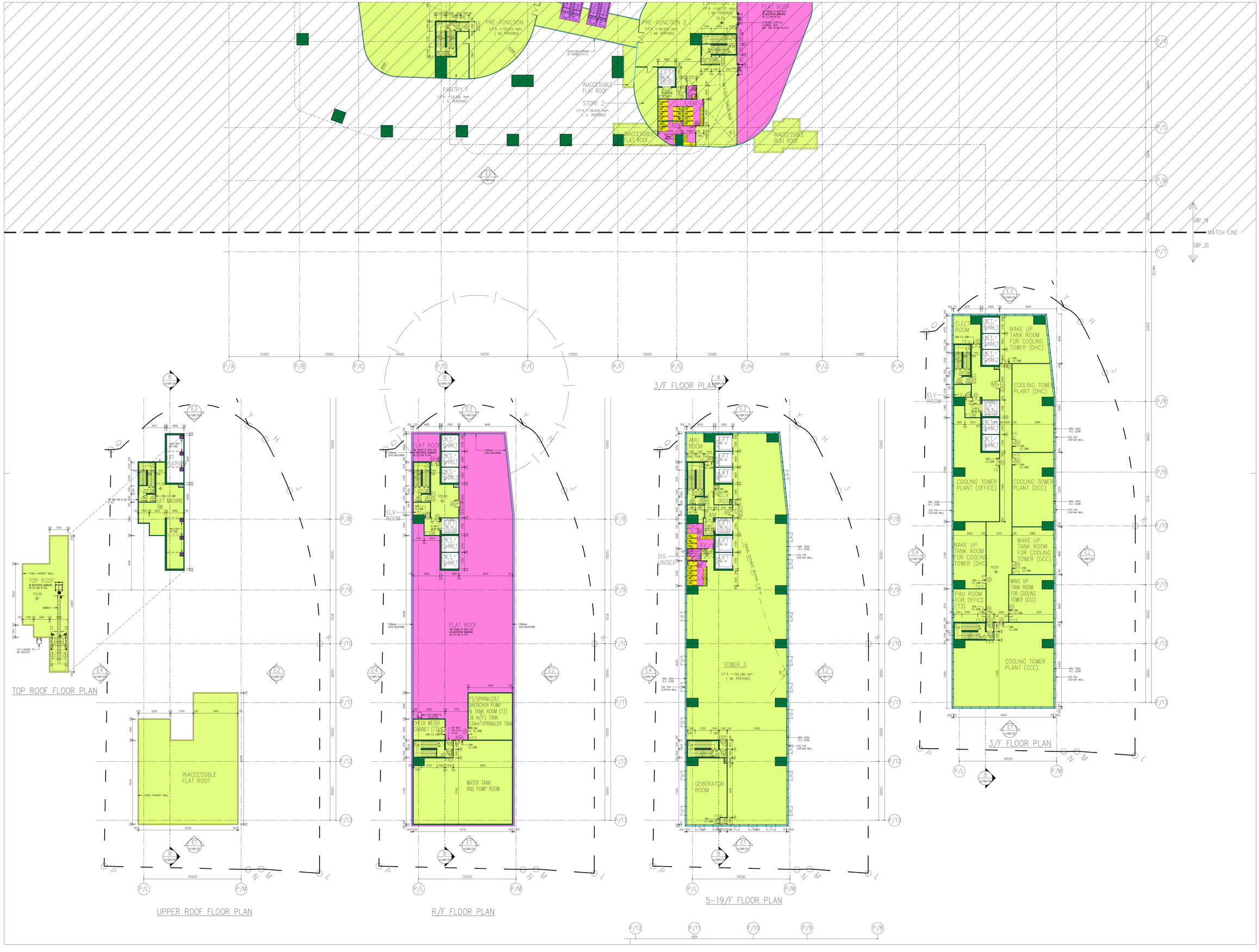
F.S.D. Ref : -

D.L.D. Ref : -

Rev.	Description	Drawn	Checked	Approved	Date
-	1st BD SUBMISSION	SZO	JHY	VML	10/11/2021

RONALD LU & PARTNERS

呂元祥建築師事務所



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Project Title

PROPOSED COMMERCIAL DEVELOPMENT ON IL No. 8945 AT CAROLINE HILL ROAD CAUSEWAY BAY HONG KONG

Drawing Title

3/F & 5-19/F FLOOR PLAN

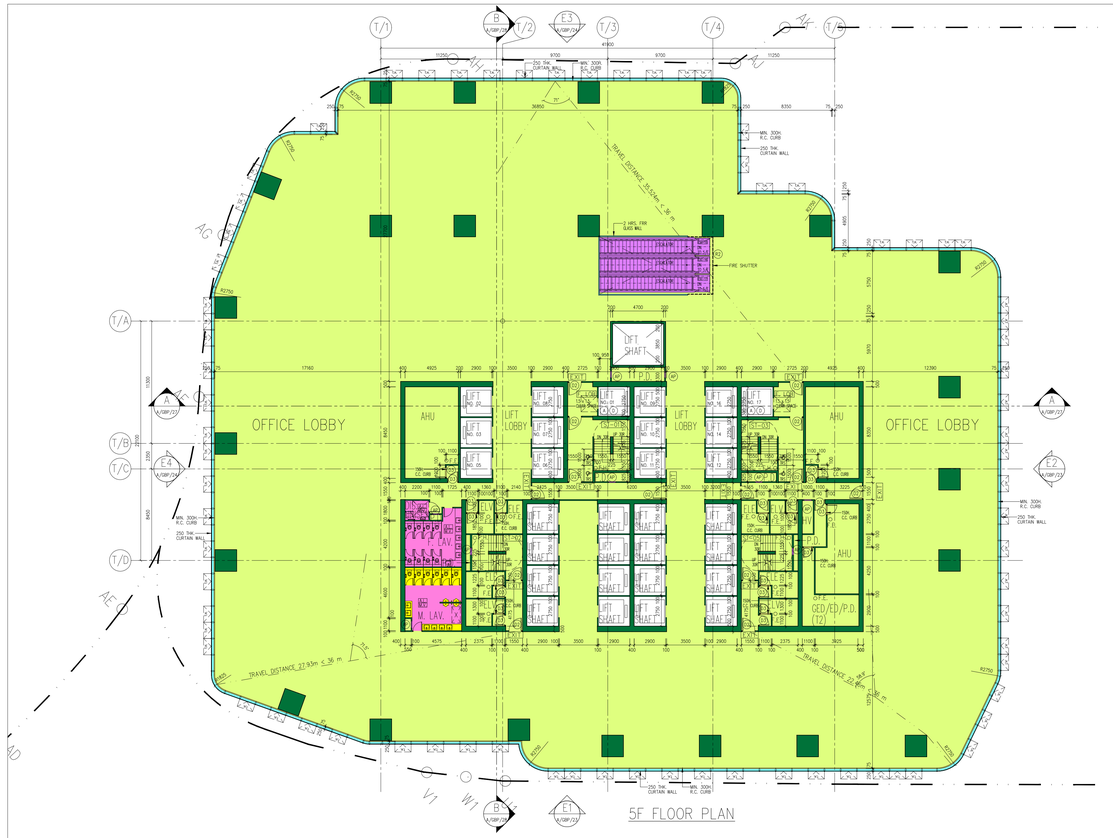
Drawn By	SZO	Date	10/11/2021
Checked By	JHY	Date	10/11/2021
Approved By	VML	Date	10/11/2021
Project No.	21105HK	Issue Date	10/11/2021
Cad File No.	-		
Scale	1:200		
Drawing No.	A/GBP_20		

AP's Signature

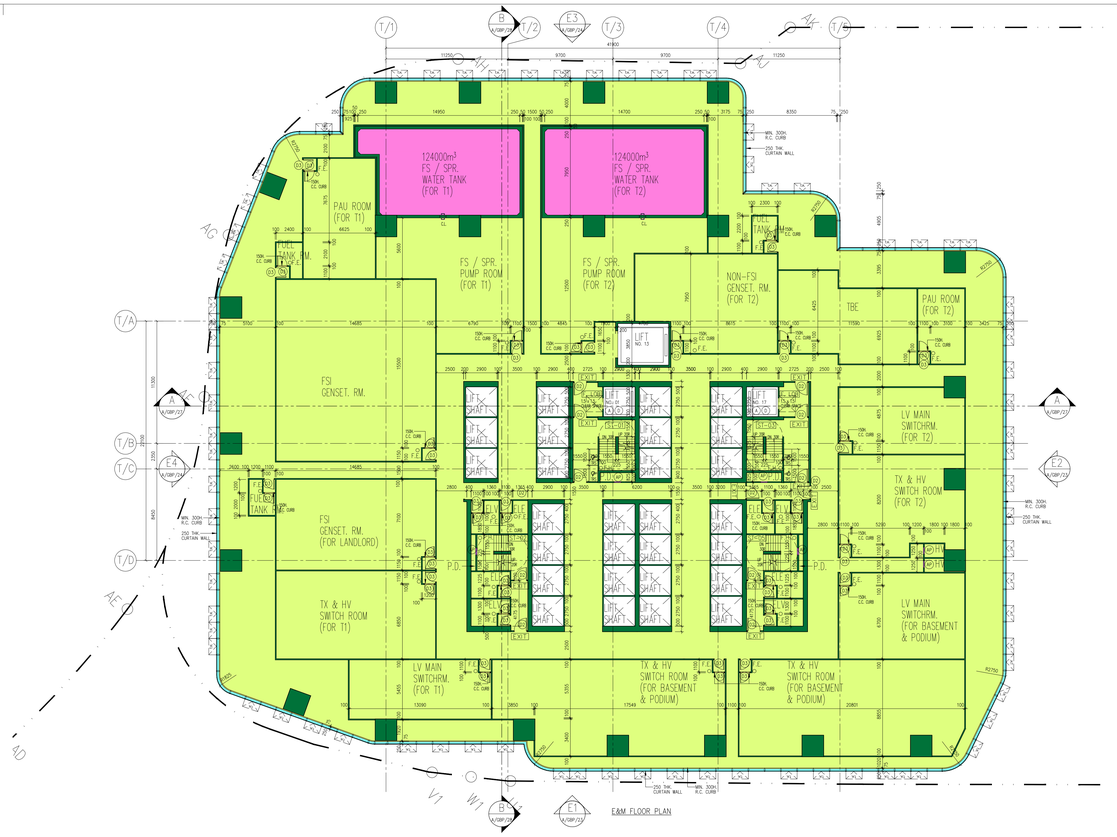
CHEUNG Man-Ching, Anthony
Authorized Person (Architect)

Drawing Purpose

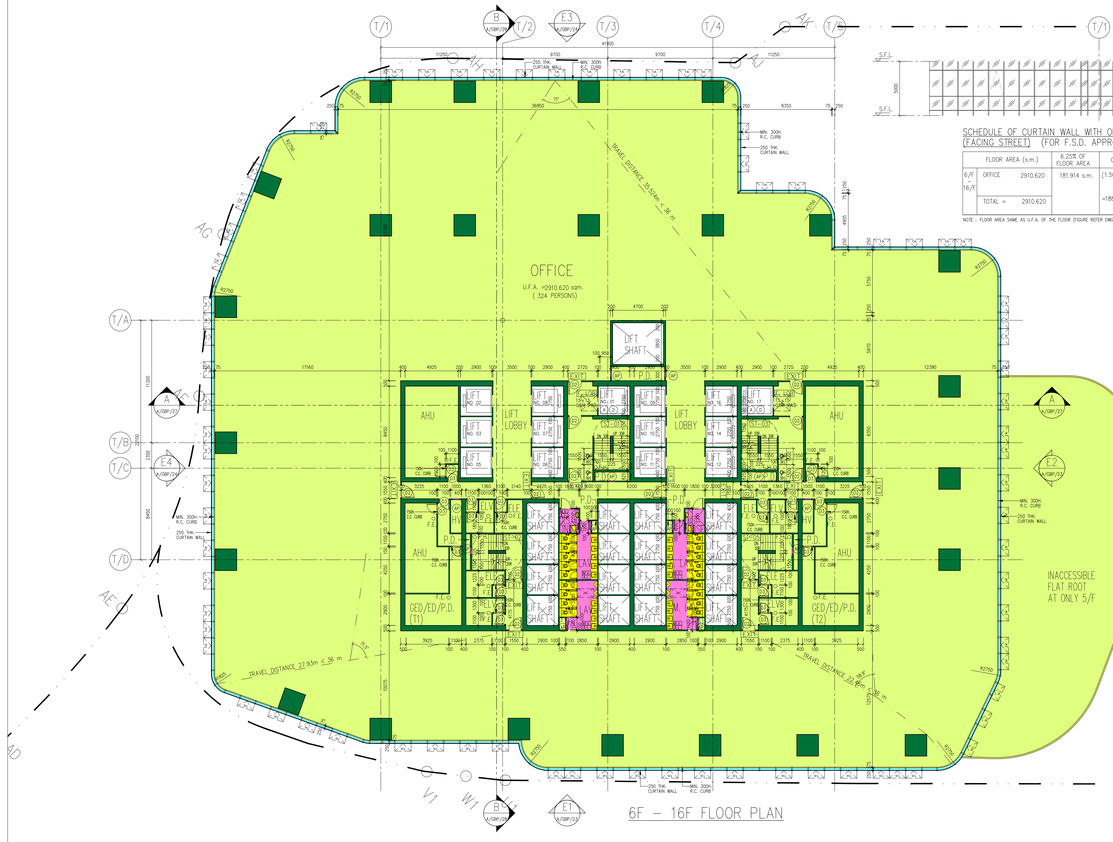
Buildings Department



5F FLOOR PLAN



E&M FLOOR PLAN



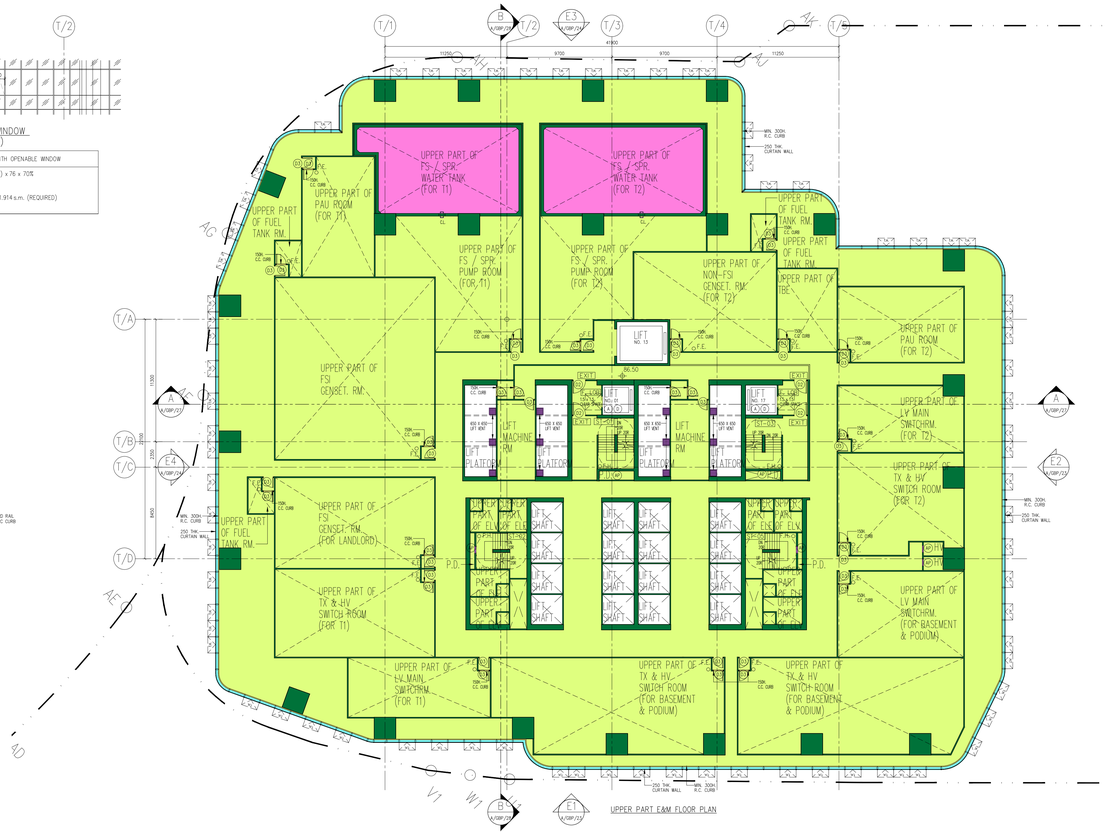
6F – 16F FLOOR PLAN

S.F.I.

SCHEDULE OF CURTAIN WALL WITH OPENABLE WINDOW (FACING STREET) (FOR F.S.D. APPROVAL ONLY)

FLOOR	AREA (s.m.)	6.25% OF FLOOR AREA	CURTAIN WALL WITH OPENABLE WINDOW
6/F – 16/F	OFFICE 2910.620	181.914 s.m.	(1.500 (W) x 2.359(H) x 76 x 70)%
	TOTAL = 2910.620		=188.248s.m. > 181.914 s.m. (REQUIRED)

NOTE : FLOOR AREA SAME AS U.F.A. OF THE FLOOR (FIGURE REFER DWG NO. A/GBP/17)



UPPER PART E&M FLOOR PLAN

Rev.	Description	Drawn	Checked	Approved	Date
-	1st BD SUBMISSION	SZO	JHY	VML	10/11/2021

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Project Title
PROPOSED COMMERCIAL DEVELOPMENT ON IL No. 8945 AT CAROLINE HILL ROAD CAUSEWAY BAY HONG KONG

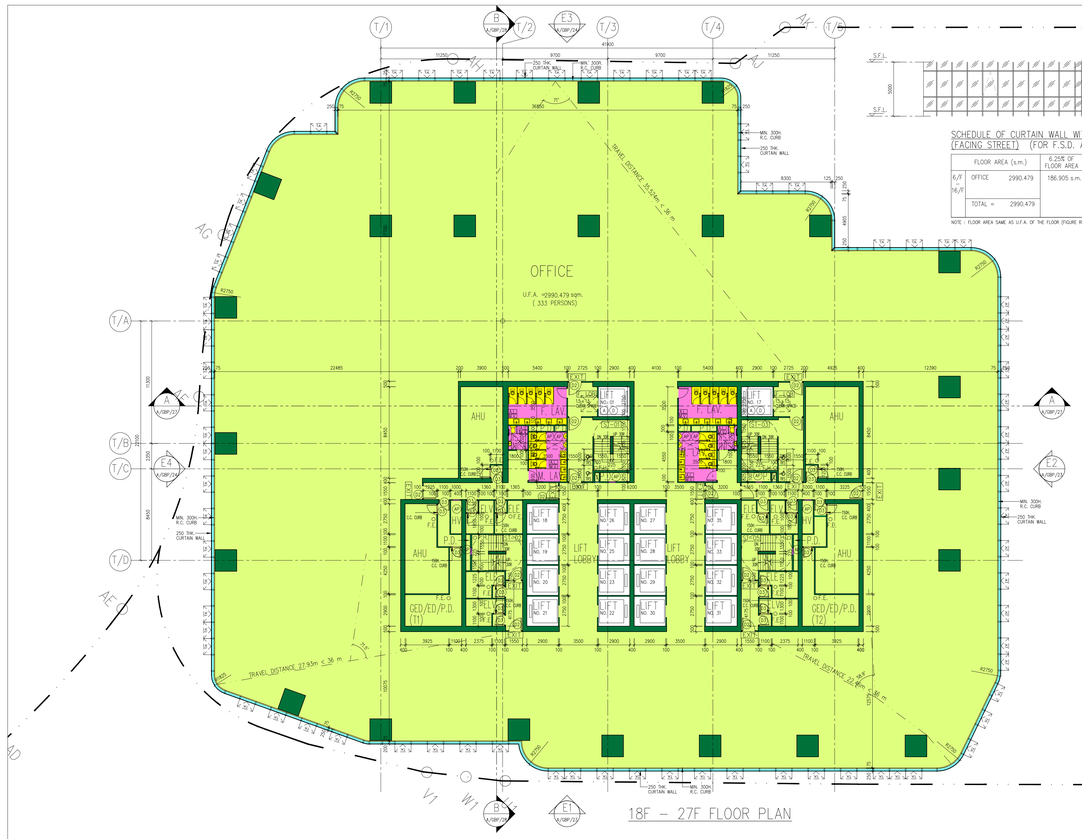
Drawing Title
5F, 6F – 16F, E&M & UPPER PART E&M FLOOR PLAN

Drawn By	SZO	Date	10/11/2021
Checked By	JHY	Date	10/11/2021
Approved By	VML	Date	10/11/2021
Project No.	2105HK	Issue Date	10/11/2021
Cad File No.	-		
Scale	1:200		
Drawing No.	A/GBP_21		

AP's Signature

CHEUNG Man-Ching, Anthony
Authorized Person (Architect)

Drawing Purpose
Buildings Department



18F – 27F FLOOR PLAN

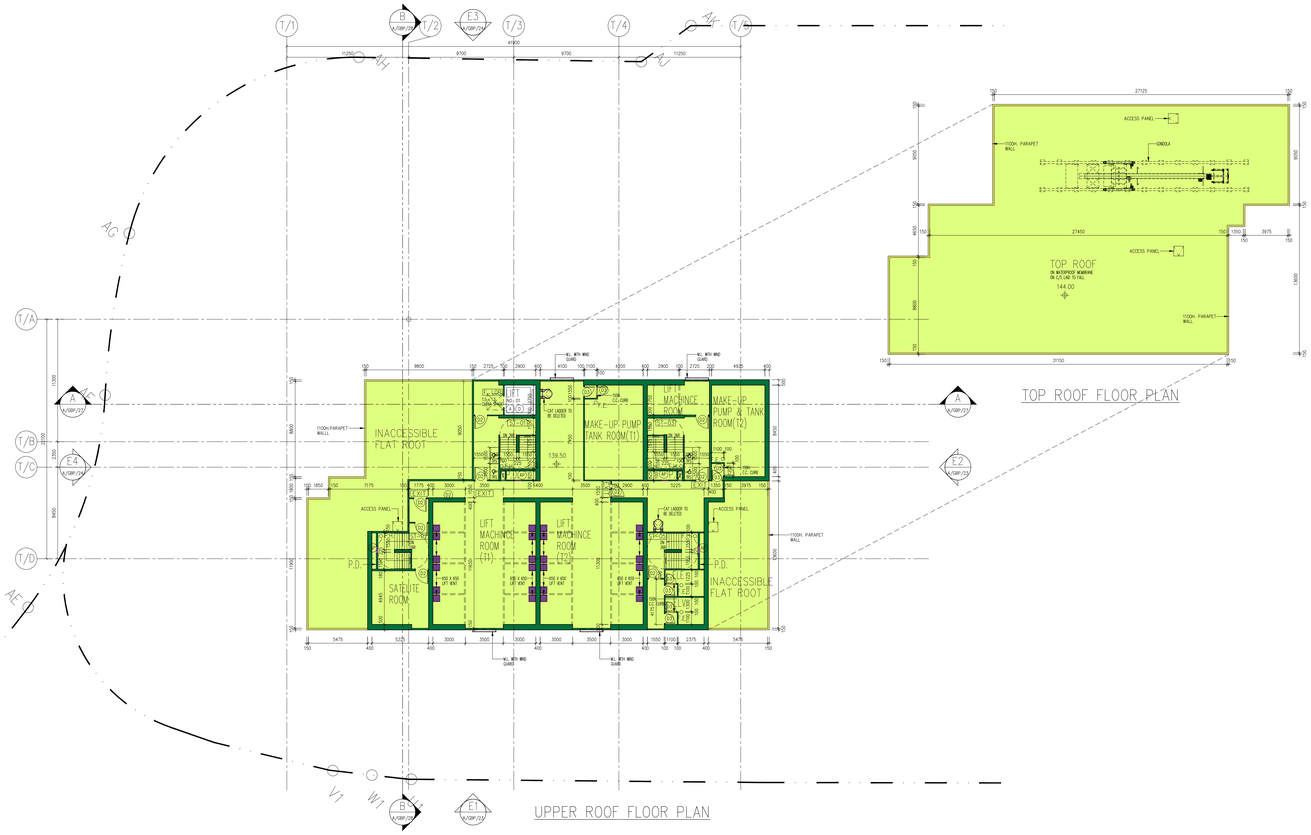
SCHEDULE OF CURTAIN WALL WITH OPENABLE WINDOW (FACING STREET) (FOR F.S.D. APPROVAL ONLY)

	FLOOR AREA (s.m.)		0.25% OF FLOOR AREA	CURTAIN WALL WITH OPENABLE WINDOW
6/F – 16/F	OFFICE	2990.479	186.905 s.m.	(1,500 (W) x 2,359(H) x 76 x 70% =188.248s.m. > 186.905s.m. (REQUIRED)
	TOTAL =	2990.479		

NOTE : FLOOR AREA SAME AS U.F.A. OF THE FLOOR (FIGURE REFER DWG NO. A/GBP/17)



R/F FLOOR PLAN



UPPER ROOF FLOOR PLAN

TOP ROOF FLOOR PLAN

Rev.	Description	Drawn	Checked	Approved	Date
-	1st BD SUBMISSION	SZO	JHY	VML	10/11/2021

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Project Title
PROPOSED COMMERCIAL DEVELOPMENT ON IL No. 8945 AT CAROLINE HILL ROAD CAUSEWAY BAY HONG KONG

Drawing Title
18F – 27F, R/F, UPPER ROOF & TOP ROOF FLOOR PLAN

Drawn By	SZO	Date	10/11/2021
Checked By	JHY	Date	10/11/2021
Approved By	VML	Date	10/11/2021
Project No.	21105HK	Issue Date	10/11/2021
Cad File No.	-		
	-		
Scale	1:200		
Drawing No.	A/GBP_22		

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CHEUNG Man-Ching, Anthony
Authorized Person (Architect)

Drawing Purpose
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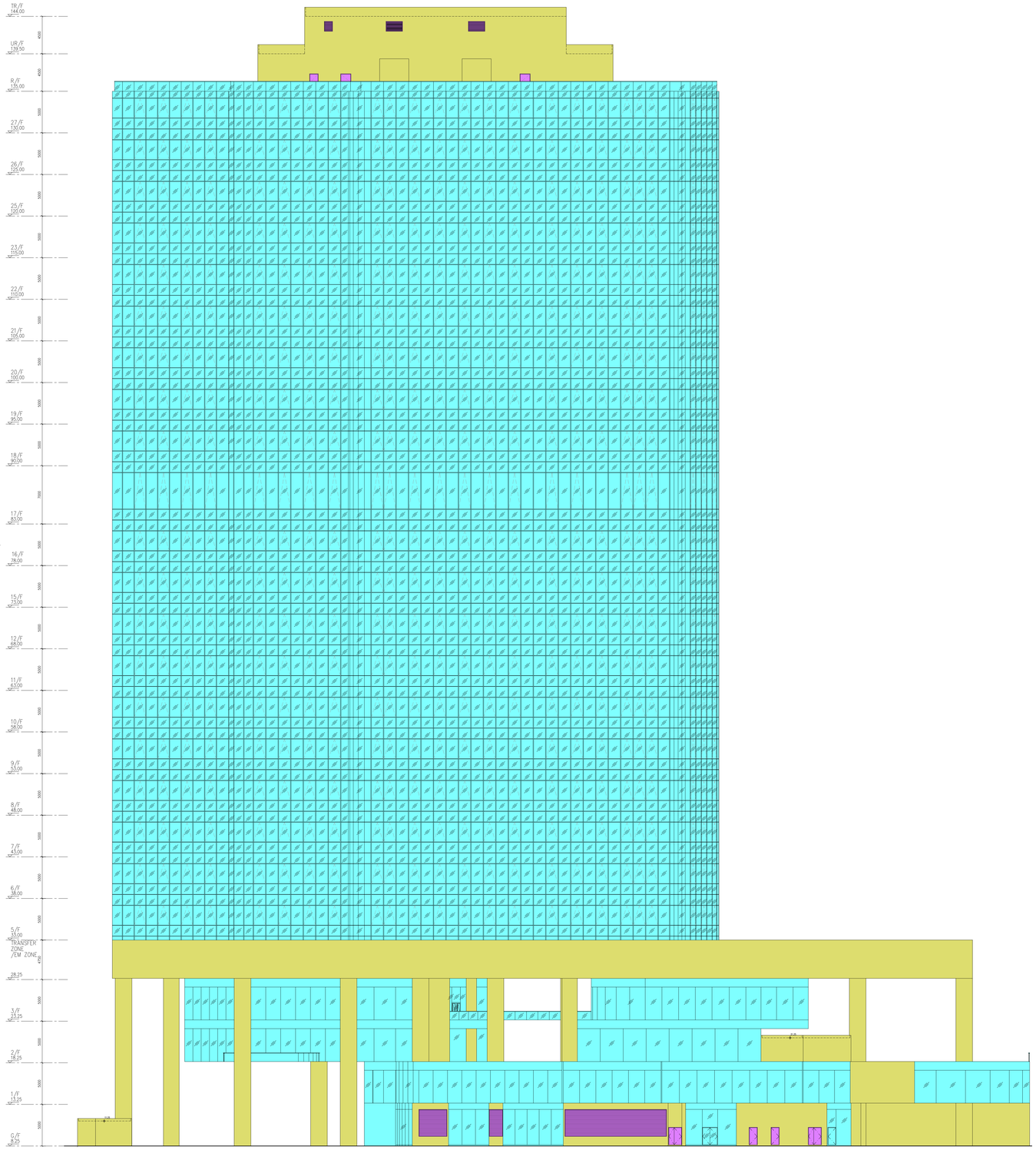

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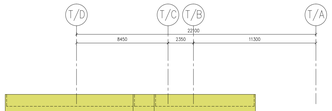

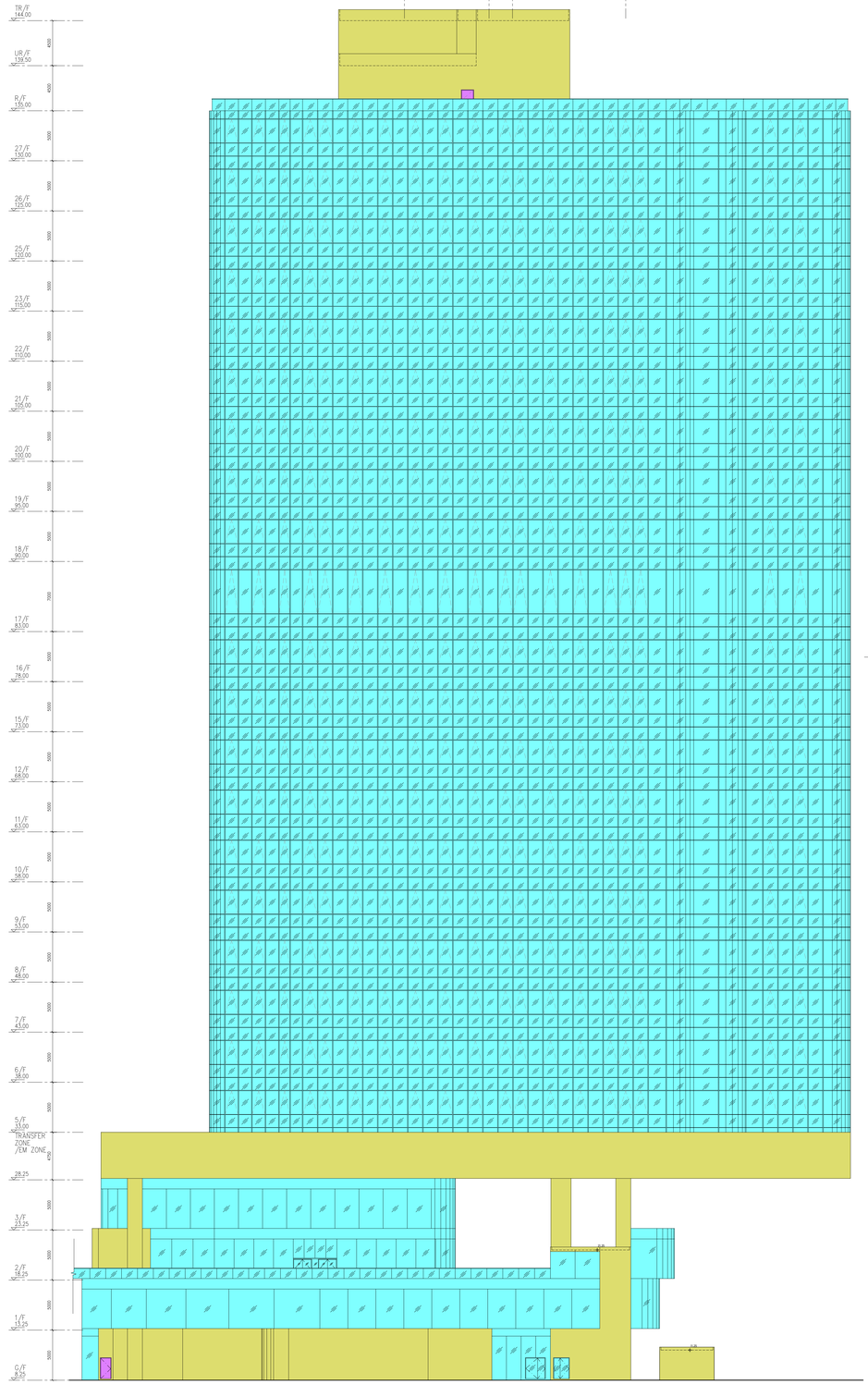

E2 ELEVATION
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B.D. Ref : -

F.S.D. Ref : -

D.L.O. Ref : -

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ELEVATION (1)

Drawn By	SZO	Date	10/11/2021
Checked By	JHY	Date	10/11/2021
Approved By	VML	Date	10/11/2021
Project No.	21105HK	Issue Date	10/11/2021
Cad File No.	-		
Scale	1:200		
Drawing No.	A/GBP_23		

AP's Signature

CHEUNG Man-Ching, Anthony
Authorized Person (Architect)

Drawing Purpose

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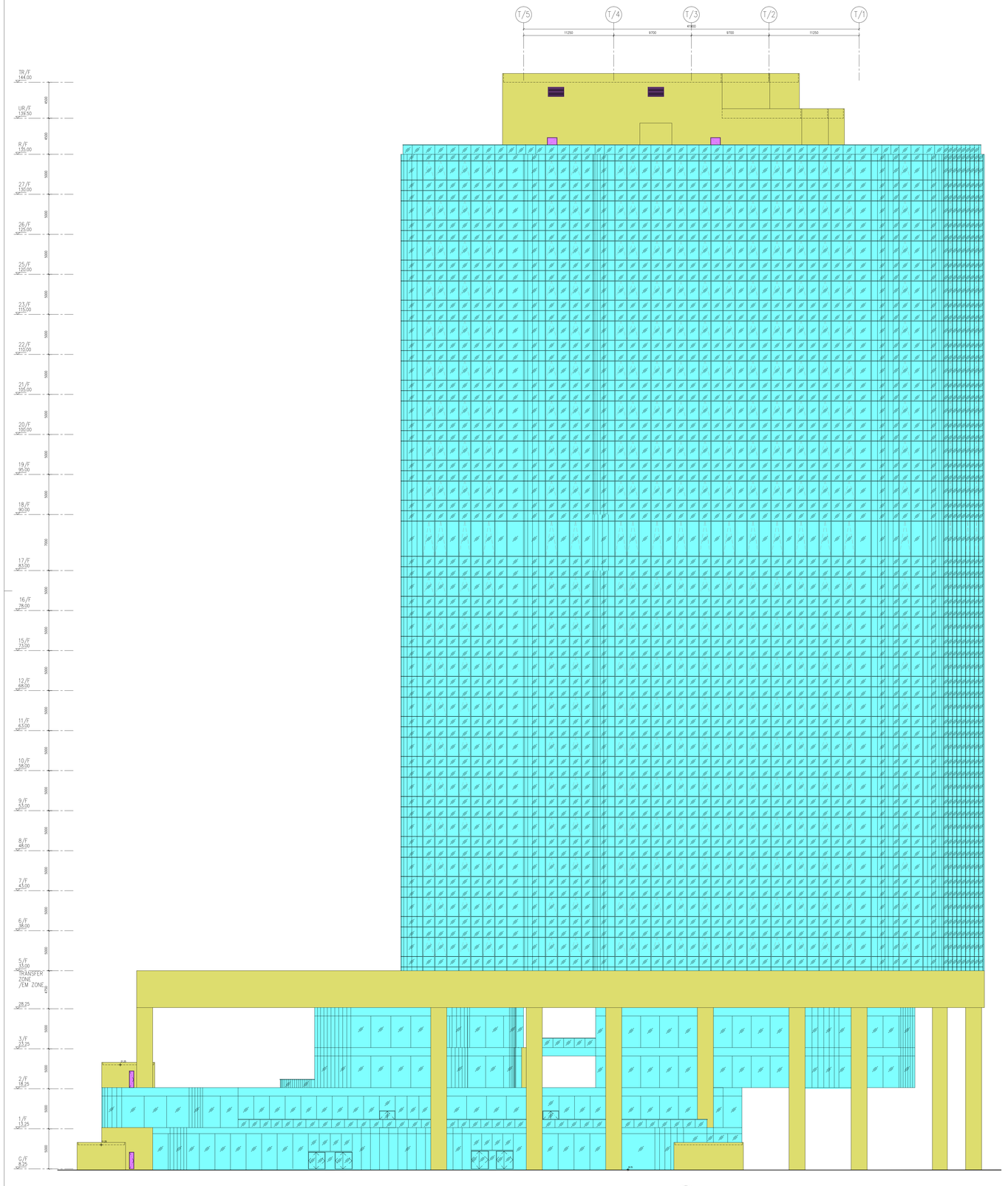

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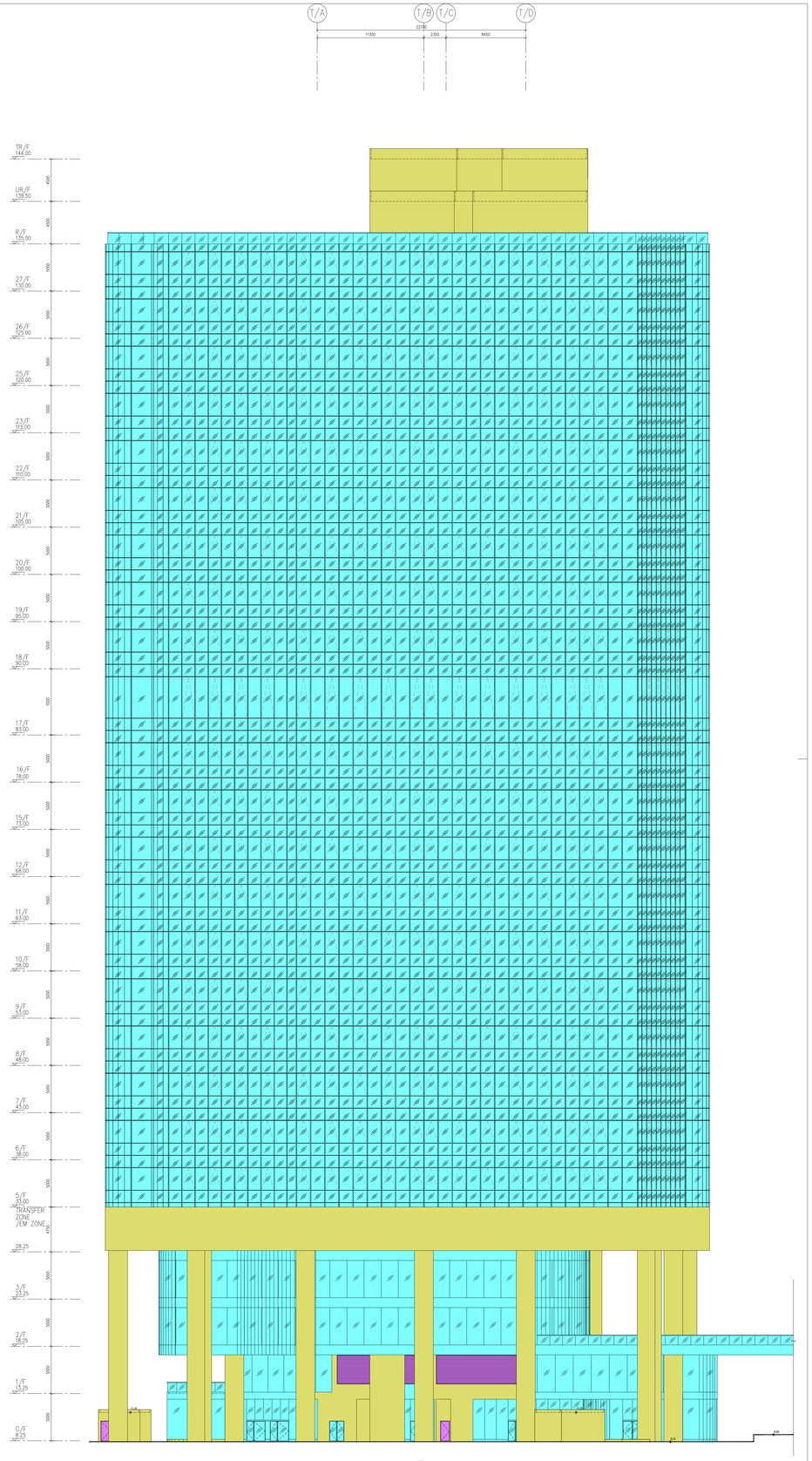

E4 ELEVATION
SCALE: 1:200

B.D. Ref : -
F.S.D. Ref : -
D.L.O. Ref : -

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Drawing Title

ELEVATION (2)

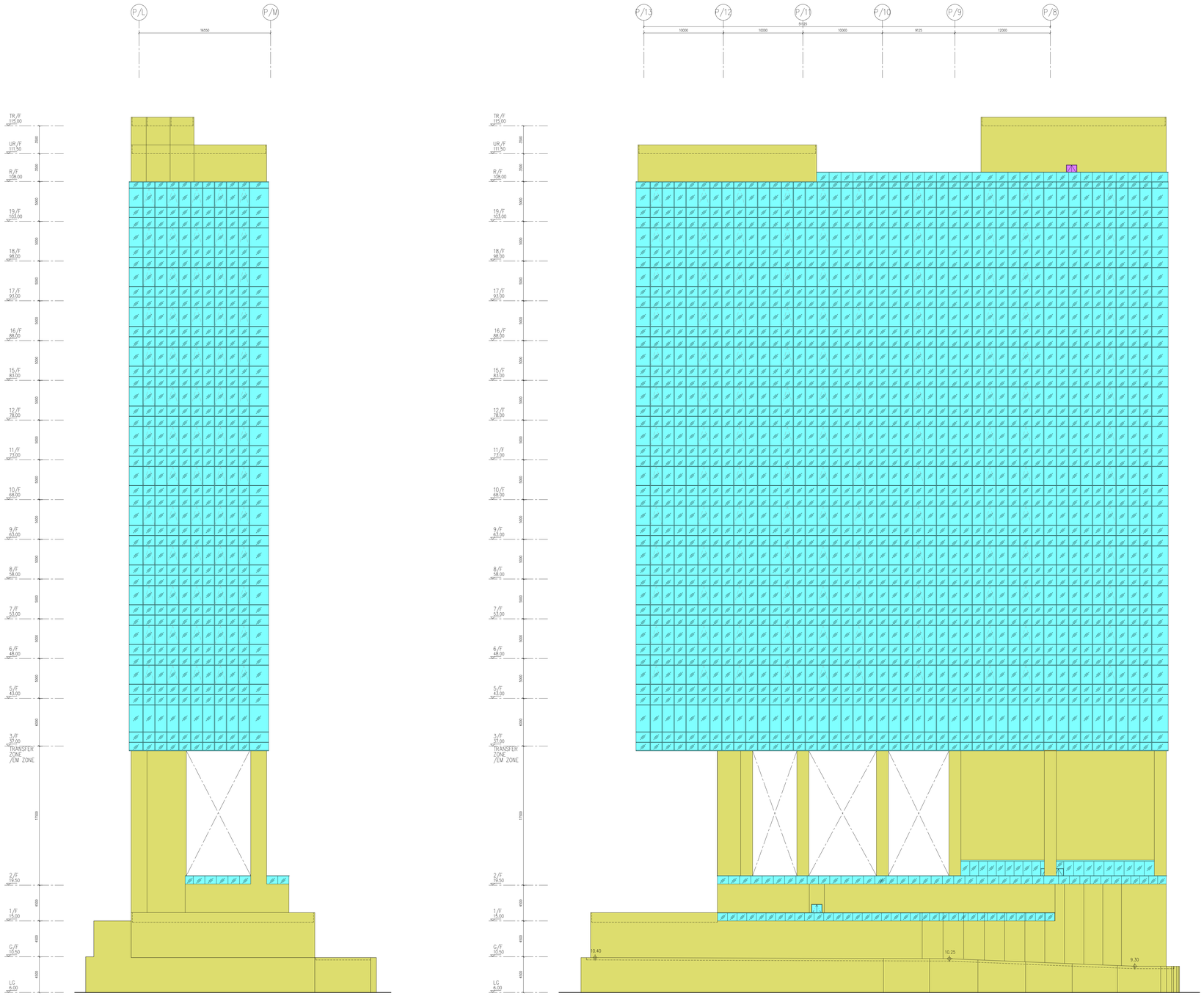
Drawn By	SZO	Date	10/11/2021
Checked By	JHY	Date	10/11/2021
Approved By	VML	Date	10/11/2021
Project No.	21105HK	Issue Date	10/11/2021
Cad File No.	-		
Scale	1:200		
Drawing No.	A/GBP_24		

AP's Signature

CHEUNG Man-Ching, Anthony
Authorized Person (Architect)

Drawing Purpose

Buildings Department



E1 ELEVATION
SCALE: 1:200

E2 ELEVATION
SCALE: 1:200

B.D. Ref : -
F.S.D. Ref : -
D.L.O. Ref : -

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Drawing Title

GIC ELEVATION (1)

Drawn By	SZO	Date	10/11/2021
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Approved By	VML	Date	10/11/2021
Project No.	21105HK	Issue Date	10/11/2021
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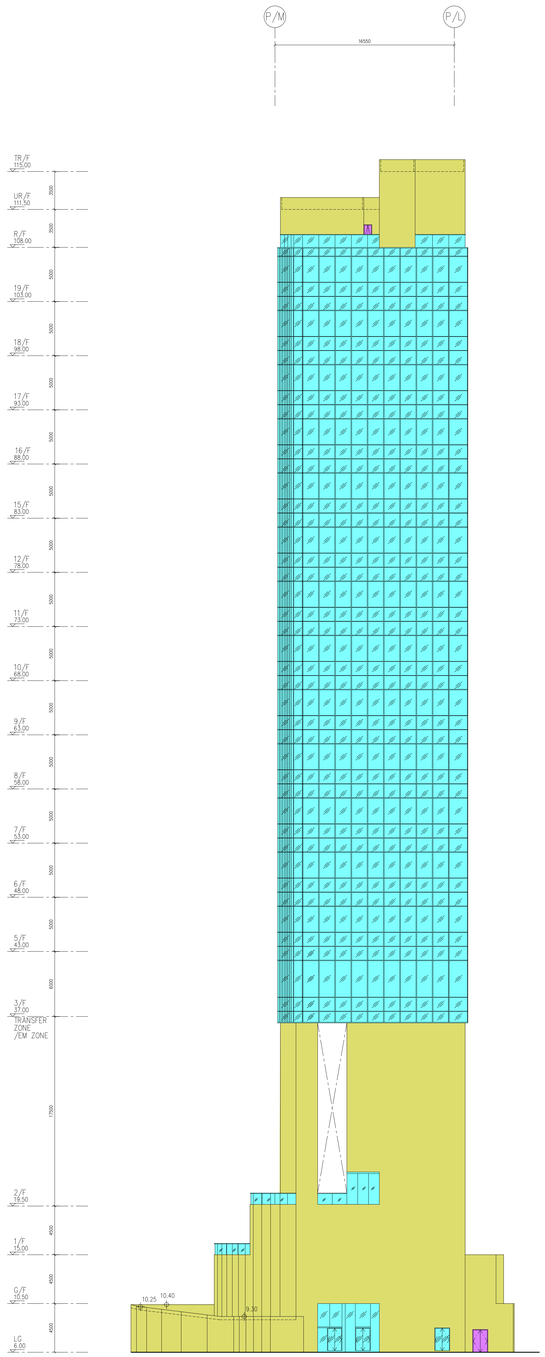
Drawing No.	A/GBP_25		

AP's Signature

CHEUNG Man-Ching, Anthony
Authorized Person (Architect)

Drawing Purpose

Buildings Department



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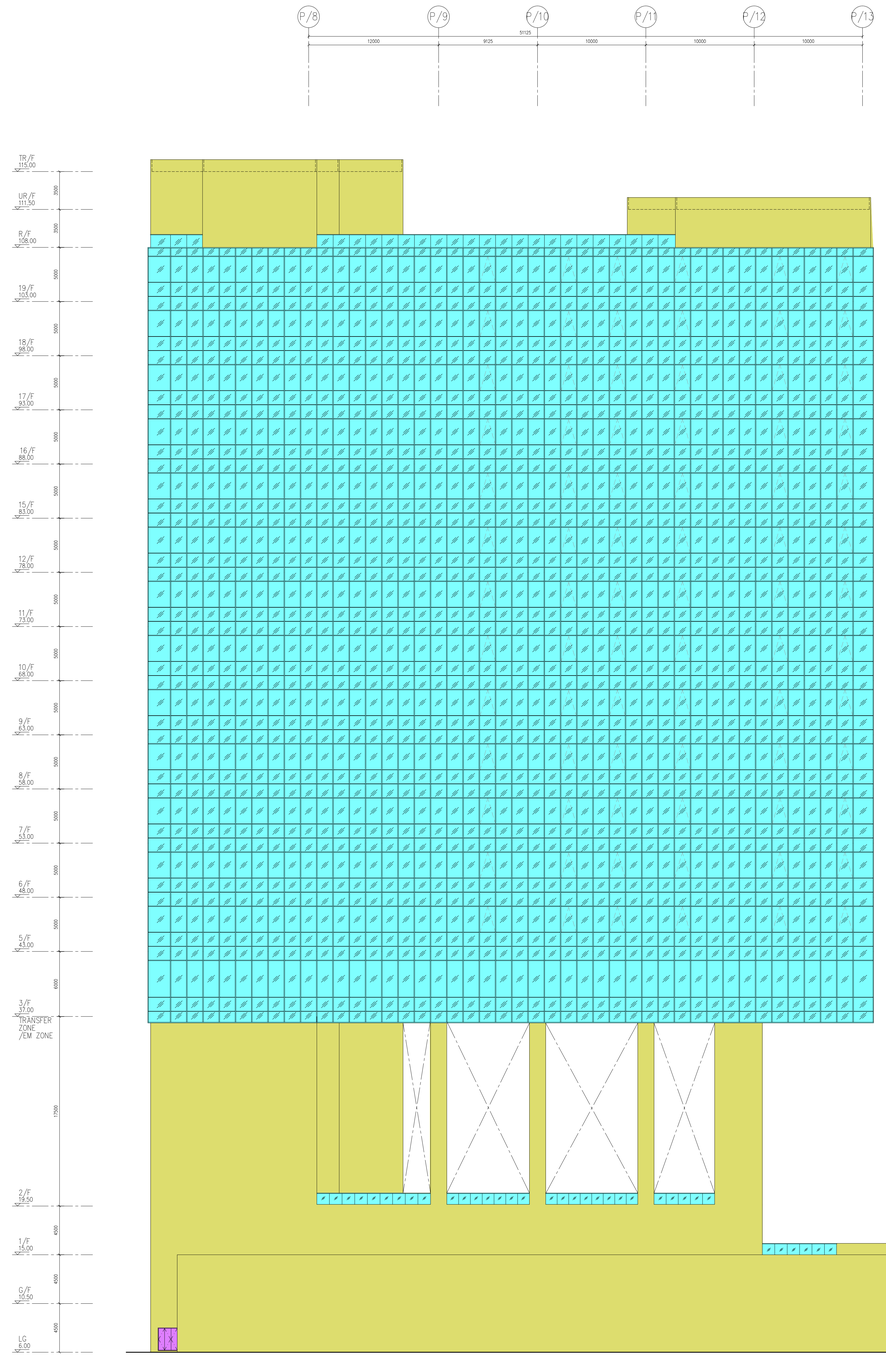

E4 ELEVATION
SCALE: 1:200

B.D. Ref : -
F.S.D. Ref : -
D.L.O. Ref : -

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Drawing Title

GIC ELEVATION (2)

Drawn By	SZO	Date	10/11/2021
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Approved By	VML	Date	10/11/2021
Project No.	2110SHK	Issue Date	10/11/2021
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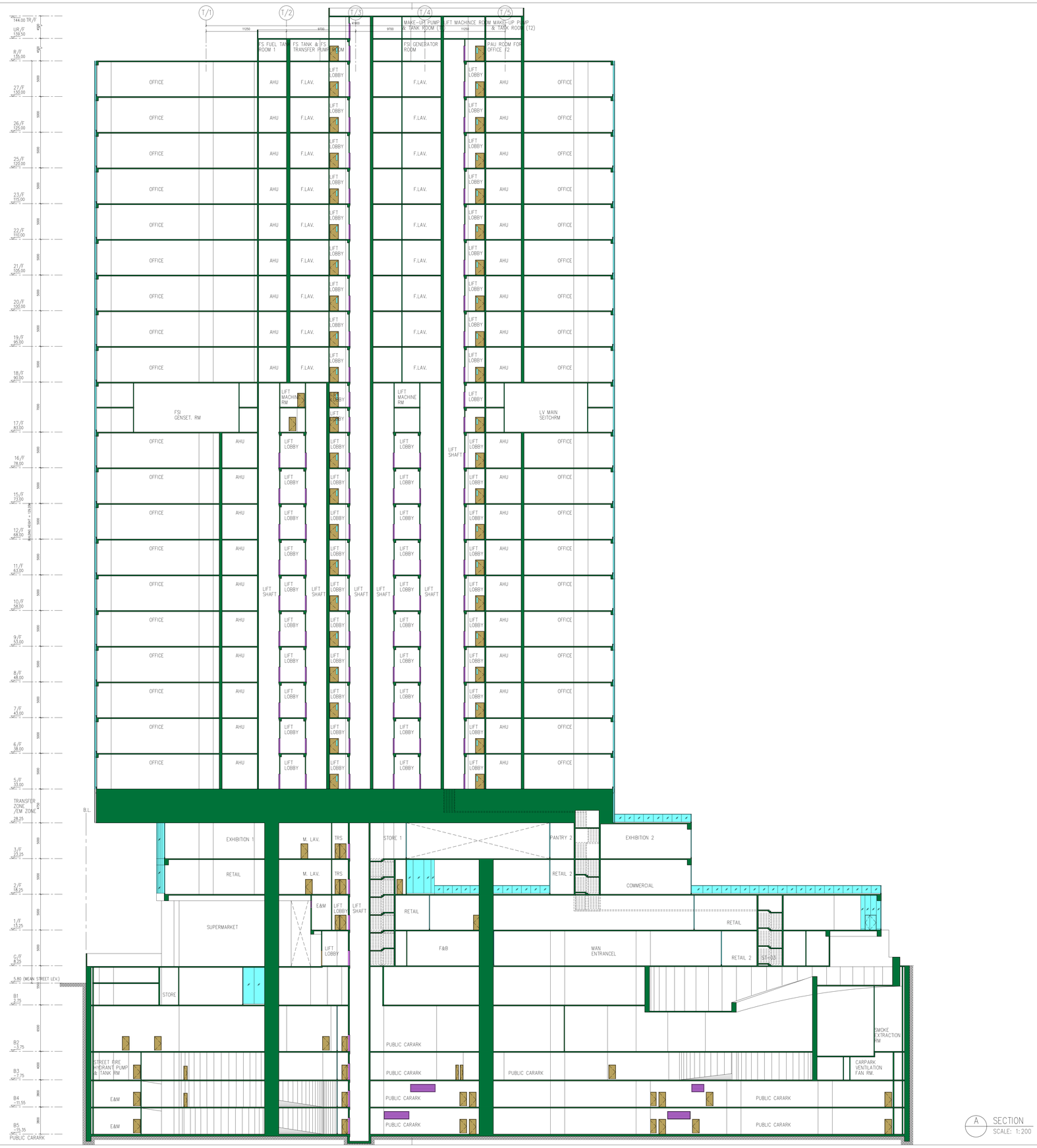
AP's Signature

CHEUNG Man-Ching, Anthony
Authorized Person (Architect)

Drawing Purpose

Buildings Department



A SECTION
SCALE: 1:200

B.D. Ref : -

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D.L.O. Ref : -

Rev.	Description	Drawn	Checked	Approved	Date
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PROPOSED COMMERCIAL DEVELOPMENT ON IL No. 8945 AT CAROLINE HILL ROAD CAUSEWAY BAY HONG KONG

Drawing Title

SECTION A-A

Drawn By	SZO	Date	10/11/2021
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Project No.	21105HK	Issue Date	10/11/2021
Cad File No.	-		
Scale	1:200		
Drawing No.	A/GBP_27		

AP's Signature

CHEUNG Man-Ching, Anthony
Authorized Person (Architect)

Drawing Purpose

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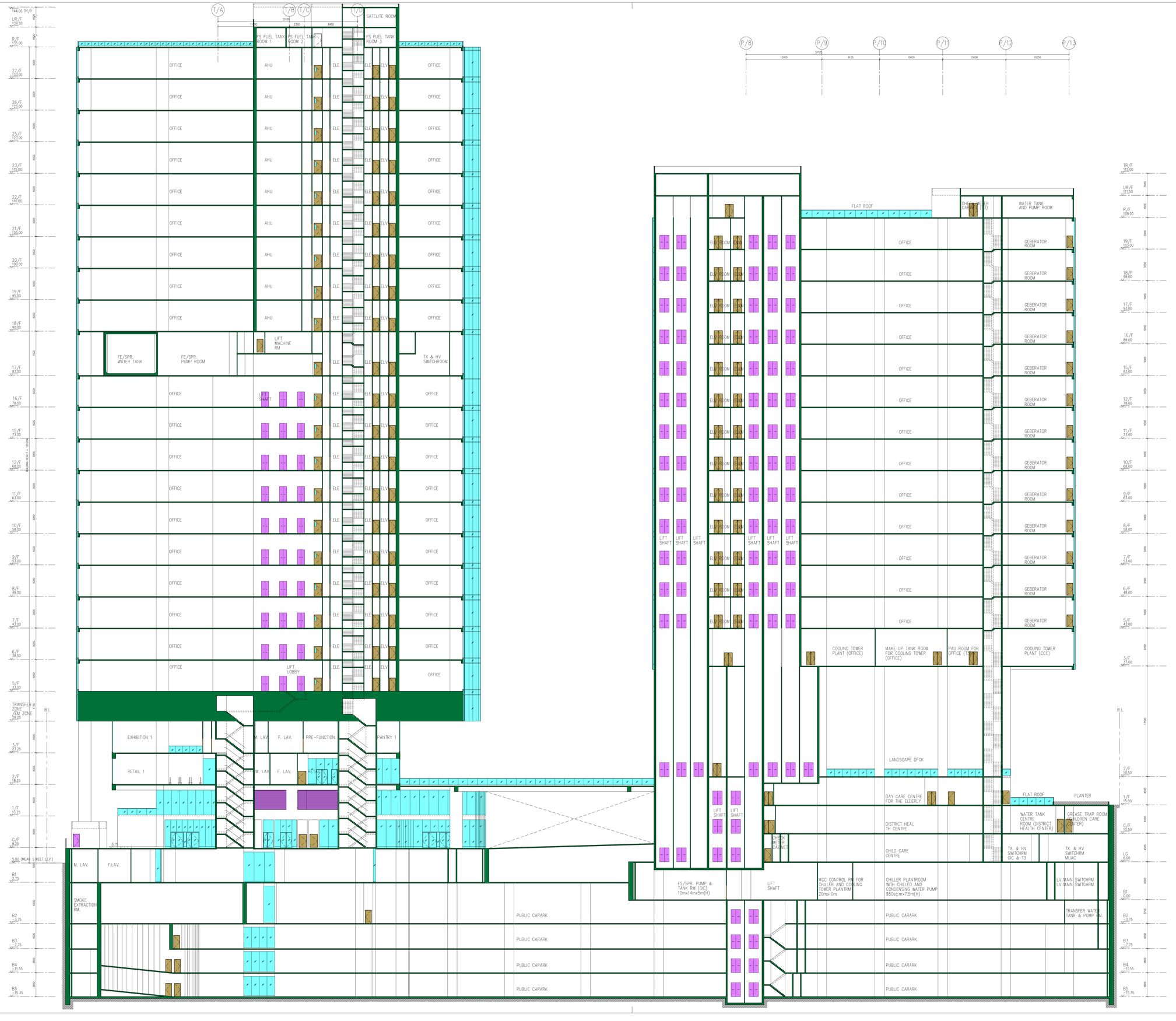

B SECTION
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Rev	Description	Drawn	Checked	Approved	Date
-	1st BD SUBMISSION	SZO	JHY	VML	10/11/2021

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PROPOSED COMMERCIAL DEVELOPMENT ON IL No. 8945 AT CAROLINE HILL ROAD CAUSEWAY BAY HONG KONG

Drawing Title

SECTION B–B

Drawn By	SZO	Date	10/11/2021
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Approved By	VML	Date	10/11/2021
Project No.	21105HK	Issue Date	10/11/2021
Cad File No.	-		
Scale	1:200		
Drawing No.	A/GBP_28		

AP's Signature

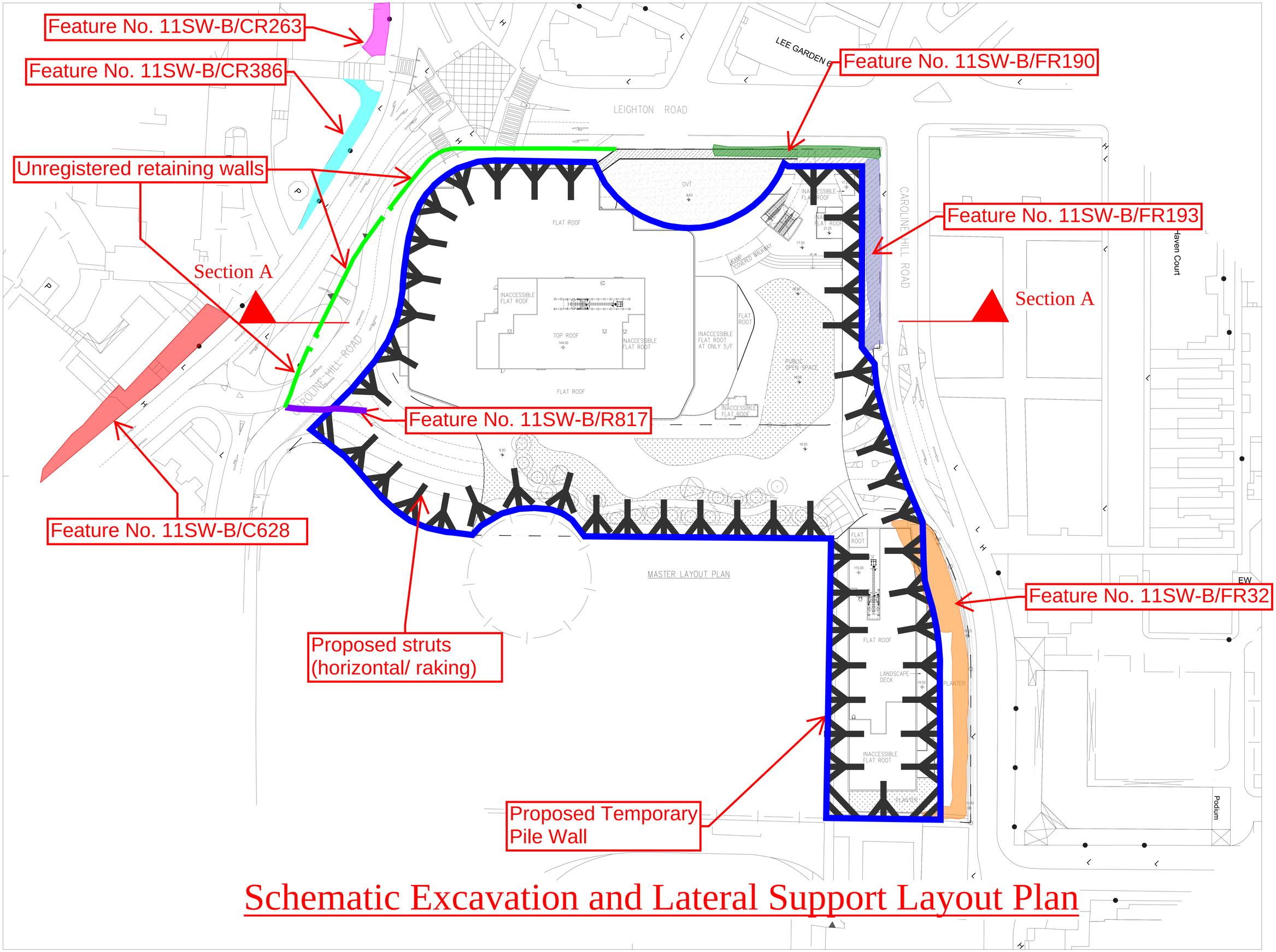
CHEUNG Man-Ching, Anthony
Authorized Person (Architect)

Drawing Purpose

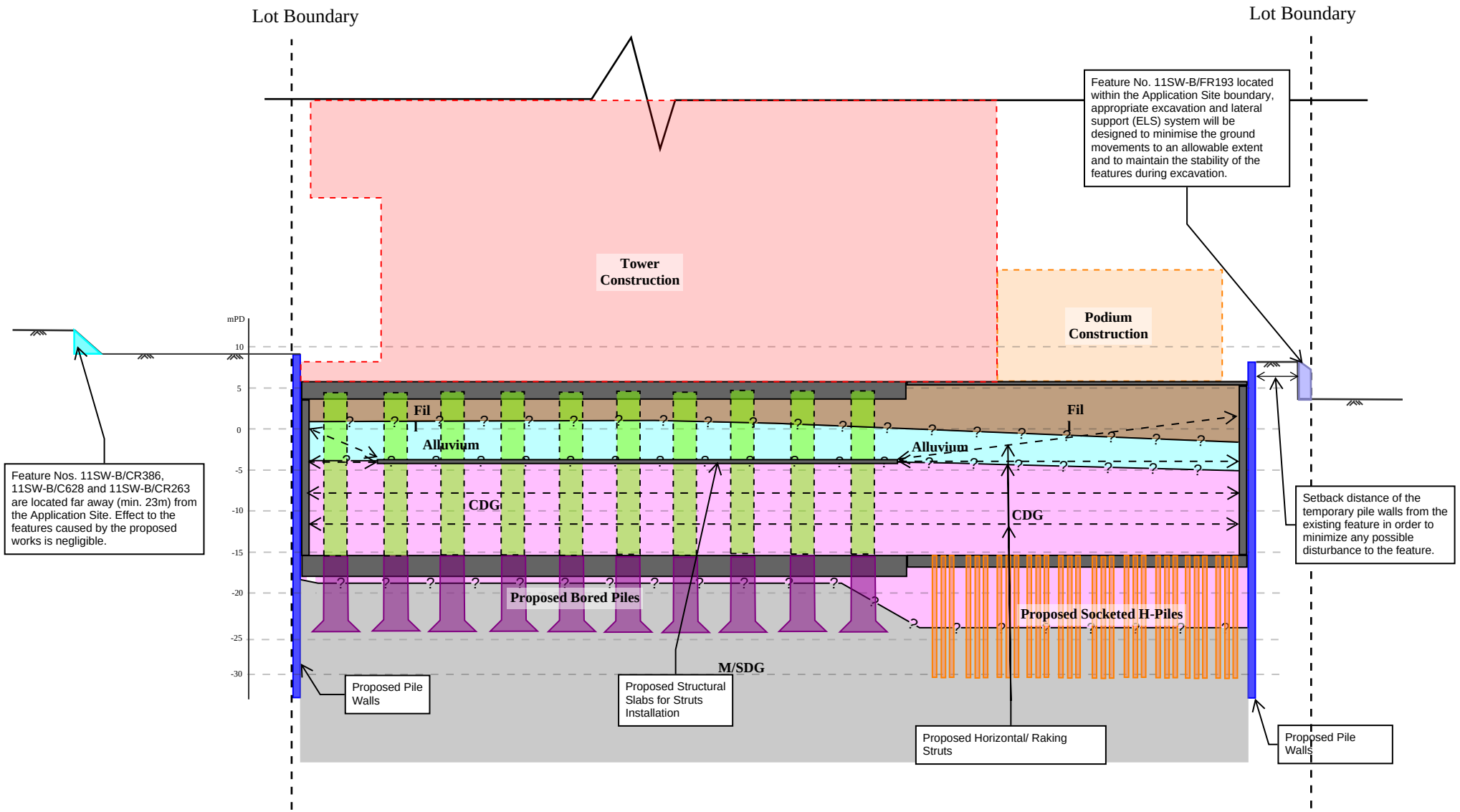
Buildings Department

Appendix E

Schematic Design of Foundation and Site Formation Works



Schematic Excavation and Lateral Support Layout Plan


Lot Boundary
Lot Boundary
Feature No. 11SW-B/FR193 located within the Application Site boundary, appropriate excavation and lateral support (ELS) system will be designed to minimise the ground movements to an allowable extent and to maintain the stability of the features during excavation.
Tower Construction
Podium Construction
mPD
10
5
0
-5
-10
-15
-20
-25
-30
Fil
Alluvium
Fil
Alluvium
CDG
CDG
Proposed Bored Piles
Proposed Socketed H-Piles
M/SDG
Feature Nos. 11SW-B/CR386, 11SW-B/C628 and 11SW-B/CR263 are located far away (min. 23m) from the Application Site. Effect to the features caused by the proposed works is negligible.
Setback distance of the temporary pile walls from the existing feature in order to minimize any possible disturbance to the feature.
Proposed Pile Walls
Proposed Structural Slabs for Struts Installation
Proposed Horizontal/ Raking Struts
Proposed Pile Walls

Section A

銅鑼灣
Causeway Bay

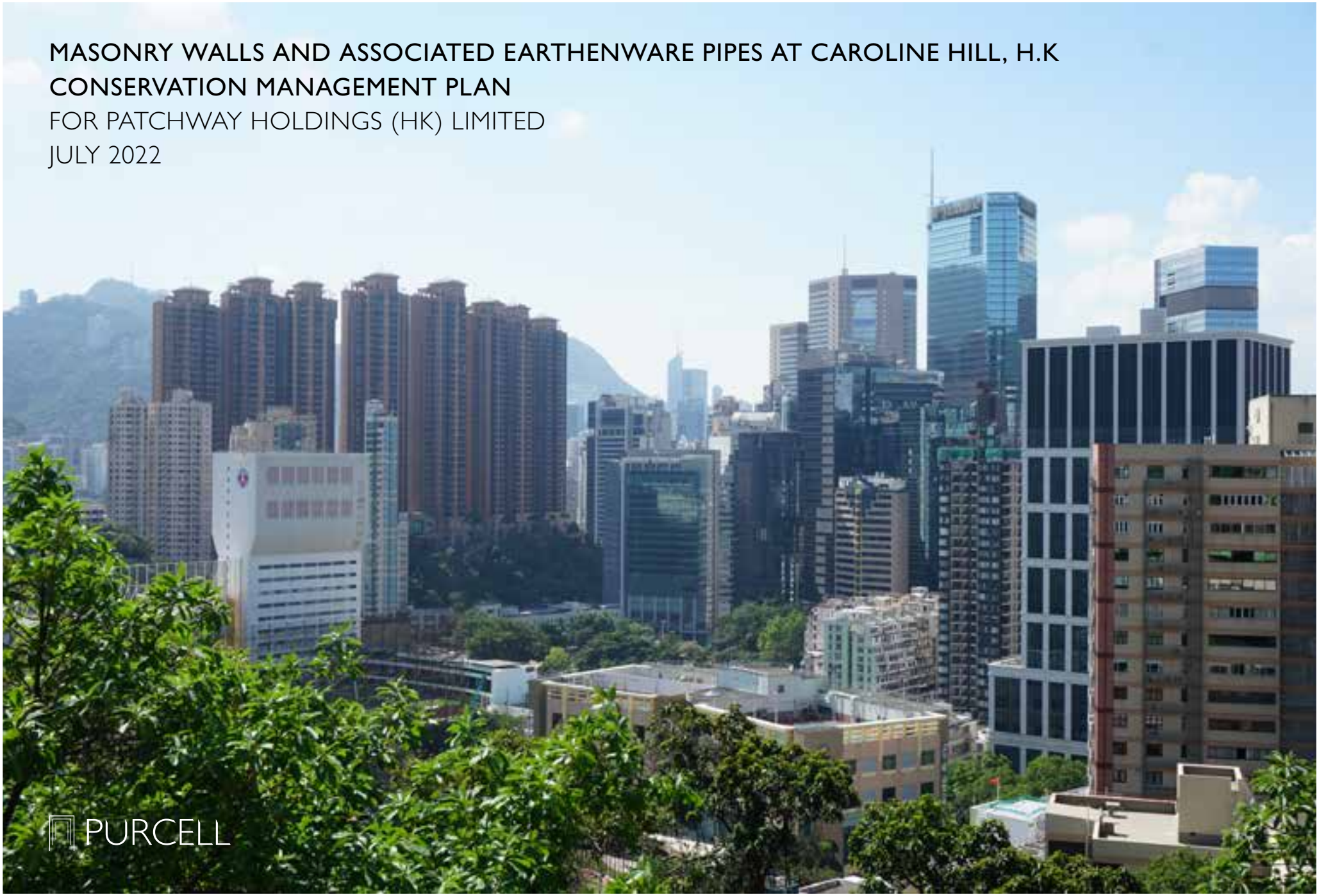


Annex I
Approved Conservation Management Plan

MASONRY WALLS AND ASSOCIATED EARTHENWARE PIPES AT CAROLINE HILL, H.K
CONSERVATION MANAGEMENT PLAN

FOR PATCHWAY HOLDINGS (HK) LIMITED

JULY 2022



PURCELL

Steve Phillips/Ryan Sun/Ella Chan
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October 2021

CAROLINE HILL, HK: CONSERVATION MANAGEMENT PLAN

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HOW TO USE THIS DOCUMENT

An overview of this CMP, what its aims and objectives are and how it has been structured, can be found on pages **06-07.** The document is of considerable size and for ease of use has been produced to be read on-screen as a PDF. It contains a series of features that make it easier to use and navigate between the sections.

- The contents page allows users to navigate directly to the required section by clicking on the required section.
- The descriptions section for each component allows you to navigate directly to the significance for that component.
- The buttons along the bottom of each page will allow you to navigate around the document as follows:
  - Contents: This will take you to the contents page which is also hyperlinked, so you can jump to a different section.
  - Introduction: This will take you to the Introduction section.
  - Understanding: This will take you to the Understanding section.
  - History and Context: This will take you to the History and Context section.
  - Significance: This will take you to the Significance section.
  - Conservation Framework: This will take you to the Conservation Framework section.
  - Issues and Opportunities: This will take you to the Issues and Opportunities section.
  - Next Steps: This will take you to the Action Plan and the individual actions ordered by priority.

ABBREVIATIONS

CMP	Conservation Management Plan
CDE	Character Defining Element
HIA	Heritage Impact Assessment
AAB	Antiquities Advisory Board
AMO	Antiquities and Monuments Office
ASD	Architectural Services Department
EMSD	Electrical and Mechanical Services Department
CEDD	Civil Engineering and Development Department
PWD	Public Works Department (1883 to 2002)
CWC	Cable and Wireless Club
PORC	Post Office Recreation Club

CHAPTER 01:
INTRODUCTION

1.1 PURPOSE AND SCOPE OF CMP

The historic masonry walls and earthenware pipes at Caroline Hill are one of the few surviving fabrics within the Site demonstrating its linkage with the historical evolution of the Sookunpoo area and Causeway Bay district.

This CMP has been commissioned by Patchway Holdings (HK) Limited. The purpose of this CMP is to understand the historic development of the site and manage any change to the historic masonry walls in relation to slope no.11SW-B/FR 193 and 11SW-B/FR 32 as well as the associated earthenware pipes sensitively.

A CMP is a detailed strategic non-statutory document that reports the findings of archival research, which is then used to present a clear understanding of the historic element so that informed decisions can be made about its future. The objective is to manage sensitively any change that is essential to its future, so that the restored element is fit for purpose in the long term and able to be appreciated by the public as a heritage asset. At the simplest level a CMP describes:

- What your heritage is;
- Why it matters and to whom;
- What is happening to it;
- What the key issues are you need to be aware of to look after it; and
- What should be done to preserve and enhance it;

A CMP must be a living document, having a clearly defined purpose, to be used and updated as required. The preparation of this document is not an end in itself, but will inform and shape future decision-making through understanding and specifically, the assessment of significance. Having a robust CMP will pay dividends in the long-term by providing a firm foundation for management and expenditure decisions.

The principal chapters of the CMP encompass:

- Understanding (Chapter 2): describing the Site and its setting, management, use and designations.
- History (Chapter 3): detailing the development of the Site within its wider historical context.
- Significance (Chapter 4): assessing what makes the Site important from an aesthetic, historic, scientific and social point of view in order to establish the heritage value of the building/structure.
- Issues and Opportunities (Chapter 5): Identifies and discusses the issues raised by the emerging proposals for the building in the statutory, commercial, and cultural context. It also identifies opportunities to preserve or enhance cultural value.
- Conservation Framework (Chapter 6): Provides a high-level strategy for the long-term management of the building/structure, which is presented as a series of policy statements, including nontechnical guidelines.

The CMP study area (shown on Fig. 2.1.2) focuses on the graded historic building boundary, with considerations given to the immediate setting where this is necessary to inform the management of the Site.

1.2 METHODOLOGY

This CMP follows the research and assessment methodology set out in The Burra Charter 2013,[01] and uses the Burra Charter terminology where otherwise noted.

The first step in the Burra charter process is understanding. The following sources of information were consulted to research the history, use, associations, and fabric of the site:

A Archival and desktop study. Archives, documents, maps, plans, and photographs available are obtained from sources including:

- Antiquities and Monuments Office (AMO); historic plans, articles and reports, architectural plans
- Architectural Services Department (ASD); architectural plans
- Hong Kong Museum of History's Resource Centre (HKMHRC); historic photographs
- Hong Kong Public Library (HKPL) and its website (MMIS); historic photographs, old HK newspaper
- Hong Kong University Library (HKUL) and its website (Digital Repository @ HKUL); historic photographs, Public Works Department Annual Reports, Hong Kong and Far East Builder
- Information Services Department (ISD); historic photographs
- Lands Department (LD) and its website (HKMS 2.0); aerial photographs, ordinance and gazette plans
- National Archives, Kew (NA); historic plans of Hong Kong

01 The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance 2013

- Public Records Office (PRO); Government Correspondence, architectural plans, historic photographs
- HK Government Gazette
- HK Journals Online

B Site inspections

Next, the site's cultural significance and character were assessed, and a Statement of Significance and Schedule of Character-defining Elements were developed. An assessment of the significance of the whole site, as well as for individual buildings and features was also undertaken.

Issues and Opportunities were identified and the constraints of the site in its current condition were analysed. These provide insight into opportunities available for the site, especially with regards to possible future development.

A Conservation Framework, including Conservation Policies, was developed to guide the future use and maintenance of the site and to protect its the heritage and significance.

1.3 EXISTING INFORMATION

This report is based on readily available information. It should not be regarded as a definitive history of the site. The major construction and alteration activities within the site and on adjacent areas are generally well documented within the Hong Kong Gazette, Public Works Report and Architectural Services Department archives. However, original construction drawings of the masonry walls and earthenware pipes could not be sourced when this CMP was prepared. While further research may uncover more historical documents, reports, and publication, it is beyond the scope of this CMP. However, the research carried out to date, as expressed in this report, is considered sufficient for the current purposes.

1.4 GAPS IN KNOWLEDGE

At the time of publication, the following gaps in knowledge are as follows:

- Historic record drawings of the masonry walls and earthenware pipes
- Maintenance information of the masonry walls from 1920 to 1980

1.5 AUTHORSHIP

Purcell, specialist conservation architects and heritage consultants based in Hong Kong, UK and Australia, researched and wrote this CMP. A team of experienced consultants from Purcell jointly contributed to the completion of this CMP including:

- Steve Phillips, BA(Hons) IntArch MA/DipArch RIBA HKICON(Assoc.), Associate Partner
- Ryan Sun, BSc MSc(Conservation) HKICON, Senior Architectural Conservationist
- Jack Chui, BEng MSc(Arch. Cons & Design) HKICON, Senior Architectural Conservationist
- Ella Chan, BA(Cons.), Architectural Conservationist

1.6 COPYRIGHT

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CHAPTER 02:
UNDERSTANDING

2.1 LOCATION AND SETTING

The Site is located at Caroline Hill Road (Inland Lot No. 8945), on Caroline Hill, Causeway Bay, Hong Kong Island.

Caroline Hill is in the Sookunpoo area, which is located on the southern end of East Point, now Causeway Bay (originally named Tung Lo Wan). To the west is Leighton Hill with Morrison Hill further west. The Tai Hang and Tin Hau areas are to the east of Caroline Hill (see Fig. 2.1.1).

From historic maps before the 20th century, Caroline Hill was two hills separated by a narrow road.

The area began to develop from the late 19th century to 1930s. Key constructions of buildings in different typologies/uses, such as industry, education, institution and recreation during this period included:

1840s
Morgan's bungalow (residential)

1898
Hong Kong Cotton Spinning, Weaving and Dyeing Company (industrial)

1914 to 1920
St. Paul's Hospital, Convent and Convent School (institutional)

1916
Ellis Kadoorie School for Indians (institutional)

1917
Indian Recreation Club (recreational)

1922-24
Queen's College (institutional) site formation and preparation works.

1927
South China Athletic Association (SCAA) (recreational) on the southern part of the Caroline Hill

1928
Christ the King Chapel (Grade 1) (religious)

Part of Caroline Hill, namely I.L. 358 was surrendered by the HongKong Land Investment and Agency Company Limited (now known as Hongkong Land Holdings Limited) to the government in 1921. The site formation works carried out directly afterwards for the Queen's College, have largely shaped the current appearance of Caroline Hill. Caroline Hill is now divided into three platforms, stepping up the hill from the north to the south.

By the 1940s, four schools had opened and then closed in Caroline Hill. This included:

- Sookunpoo School: 1855 to 1905;
- St. Francis College: 1862 to 1887;
- Victoria British School: 1905 to 1931; and
- Junior Technical School: 1933 to 1941.

With education providers moving away from the site, and following the war, from the early 1950s, the lower platform of the site (adjacent to Leighton Road) was turned into recreational grounds, becoming home to the Post Office Recreation Club, and the Cable and Wireless Club (later renamed as PCCW Recreation Club).

The middle platform of Caroline Hill remained in use as government facilities / offices from 1940s until their demolition in 2019. Since 2019, both the lower and middle platform have remained vacant. The higher platform, which is currenlty on the south side of I.L.8945, has been used by South China Athletic Association since 1927 but has undergone some major developments and alterations. Though the higher platform is outside I.L.8945, being part of the Caroline Hill, it will be briefly discussed in this document where relevant.



Fig. Fig. 2.1.1. Existing map with indications of Site and surrounding areas. (Source: Google, modified by Purcell.)



KEY
- Indicative Site Boundary
- Lower Platform
- Middle Platform
- Higher Platform

This plan is not to scale

Fig. 2.1.2. Indicative site boundary of I.L. 8945 with existing Site context and indication of low, middle and high platform, 2019, E056756C
Source: Survey and Mapping Office, Lands Department, The Government of Hong Kong and Hong Kong Geodata Store, modified by Purcell.

2.2 SITE OVERVIEW AND CONTEXT

The Site is an irregular shape with an area of 14,802 sqm. The northern end of the site is bounded by Leighton Road, while the U-shaped Caroline Hill Road encloses the west and east sides. The Site generally slopes from the lowest point near the southeast corner to the highest point on the southwest side at the junction of Link Road and Caroline Hill Road. The southeast corner of the site extends to the current Caroline Hill Road Substation.

The Lands Department require the section between Leighton Road and the junction of Caroline Hill and Link Roads for road widening and traffic improvement works. A new access road will be constructed to the south of the Site.

The east, north and west sides of the site have masonry retaining / boundary walls in place with three slope numbers assigned, 11SW-B/FR 193, 11SW-B/FR 32 and 11SW-B/FR 190 (see Fig. 2.2.1).

Two of the masonry walls (11SW-B/FR 193 and 11SW-B/FR 32), including the earthenware pipes, are Grade 3 listed. Although the third masonry wall (11SW-B/FR 190) is not graded, the land lease requires it to be retained.



Fig. 2.2.1. Indicative Site boundary of I.L. 8945 with adjacent lot numbers. Source: Base map from Hong Kong Map Service 2.0, attributed by the Government and Hong Kong Geodata Store. Modified by Purcell.

① View Point
→ View Direction

This plan is not to scale

1. Grade 3 Masonry Wall (slope no.: 11SW-B/FR 193) is approximately 52 m in length with one earthenware pipe
2. Grade 3 Masonry Wall (slope no.: 11SW-B/FR 32) is approximately 76 m in length with one earthenware pipe and one replacement cast iron pipe
3. Non-graded Masonry Wall (slope no. 11SW-B/FR 190) is approximately 38 m in length



Fig. 2.2.2. View No.1: West side of the Site, looking north with SCAA in the sightline. Source: Purcell, 2021.



Fig. 2.2.3. View No.2: At the junction of Leighton Road, Hoi Ping Road and Caroline Hill Road outside Po Leung Kuk. Source: Purcell, 2021.



Fig. 2.2.4. View No.3: At the junction of Leighton Road, Yun Ping Road, Pennington Street and Caroline Hill Road looking towards the intersection between 11SW-B/FR 193 and 11SW-B/FR 190. Source: Purcell, 2021.



Fig. 2.2.5. View No.4: East side of the Site, looking north, featuring wall 11SW-B/FR 193. Source: Purcell, 2021.



Fig. 2.2.6. Looking south towards the Site from Tai Hang Road. Source: Purcell, 2021.



Fig. 2.2.7. Looking west towards the Site from Wang Fung Terrace. Source: Purcell, 2021.

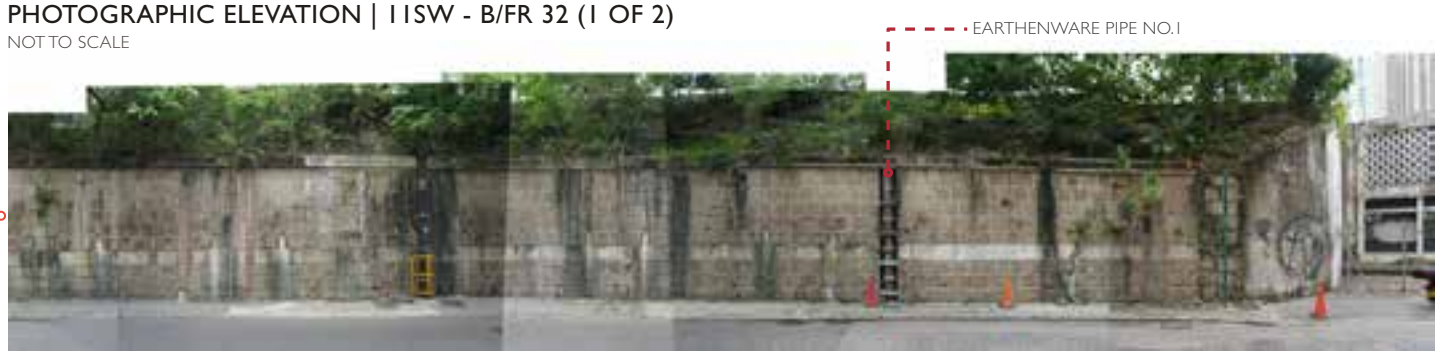
The photographic elevations of the existing masonry retaining/ boundary walls are shown on the next three pages.

Streetscape of the Site along Caroline Hill Road East





PHOTOGRAPHIC ELEVATION | 11SW - B/FR 32 (1 OF 2)
NOT TO SCALE



PHOTOGRAPHIC ELEVATION | 11SW - B/FR 32 (2 OF 2)
NOT TO SCALE



PHOTOGRAPHIC ELEVATION | 11SW - B/FR 193
NOT TO SCALE

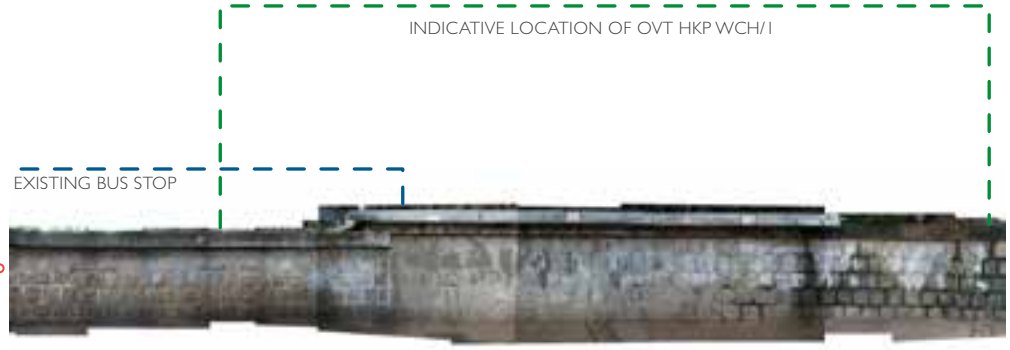
Fig. 2.2.8 Streetscape of 11SW - B/FR 32 and 11SW - B/FR 193 from Caroline Hill Road. (Source: Purcell, 2021)

Streetscape of the Site along Leighton Road





PHOTOGRAPHIC ELEVATION | 11SW - B/FR 190 (1 OF 2)
NOT TO SCALE



PHOTOGRAPHIC ELEVATION |11SW - B/FR 190 (1 OF 2)
NOT TO SCALE



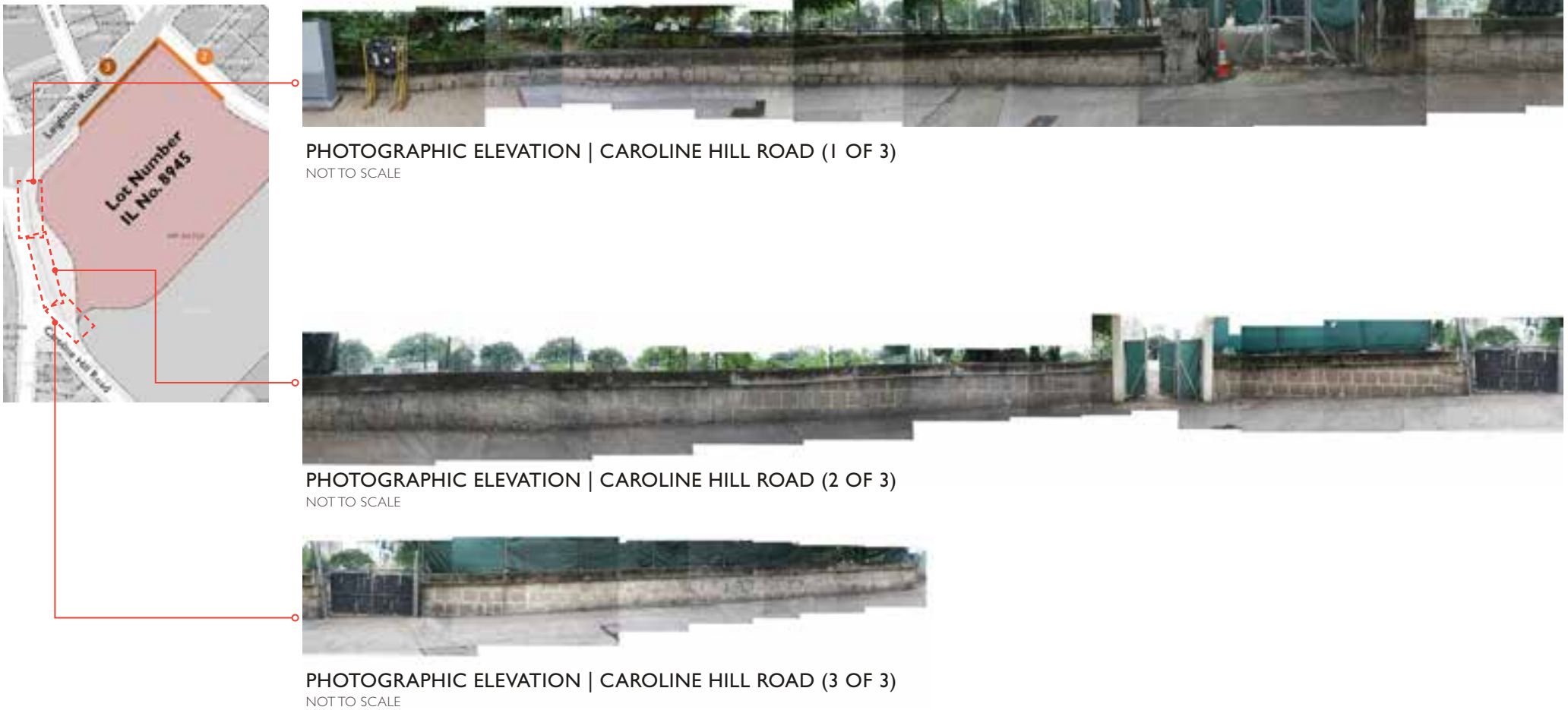
PHOTOGRAPHIC ELEVATION | LEIGHTON ROAD
NOT TO SCALE



PHOTOGRAPHIC ELEVATION | LEIGHTON ROAD (CONT'D)
NOT TO SCALE

Fig. 2.2.9 Streetscape of 11SW - B/FR 190 from Leighton Road. (Source: Purcell, 2021)

Streetscape of the Site along Northwest Leighton Road



PHOTOGRAPHIC ELEVATION | CAROLINE HILL ROAD (1 OF 3)
NOT TO SCALE

PHOTOGRAPHIC ELEVATION | CAROLINE HILL ROAD (2 OF 3)
NOT TO SCALE

PHOTOGRAPHIC ELEVATION | CAROLINE HILL ROAD (3 OF 3)
NOT TO SCALE

Fig. 2.2.10 Streetscape of masonry walls from the Northwest of Leighton Road. (Source: Purcell, 2021)

Within a half kilometer radius of the masonry walls and earthenware pipes, there are 10 historic buildings that have been graded and featured on the AAB Assessment Register when this document is prepared. The date of completion and uses of these buildings indicate major phases of development in the region, which serves as a contributing factor to the significance of the walls. These, with the masonry walls and earthenware pipes, are shown in the table and Fig 2.2.11 below.

	TITLE	DATE	GRADING	ORIGINAL USE	CURRENT USE
01	Masonry Wall and Earthenware Pipes at Caroline Hill Road	1920s	3	Site formation of Queen's College	Boundary wall
02	St. Paul's Convent Church	1928	1	Church	Church
03	Po Leung Kuk, Main Building	1932	2	School, dormitory	Museum, Headquarters office, Memorial Hall, Domitory
04	S.K.H. St. Mary's Church	1937	1	Church	Church
05	S.K.H. St. Mary's Church, General Office	1954	3	Office, vicarage, school	Activity centre, study room
06	Shing Kwong Church, The Church of Christ in China	1927	2	Church	Church
07	St. John Ambulance Brigade Hong Kong Island Area Headquarters	1935	2	Headquarters office	Headquarters office
08	Confucius Hall	1935	1	Public place and community hall	Cultural venue, assembly hall, staff quarters
09	St. Margaret's Church	1923	1	Church	Church
10	Tung Wah Eastern Hospital	1929	2	Hospital	Hospital

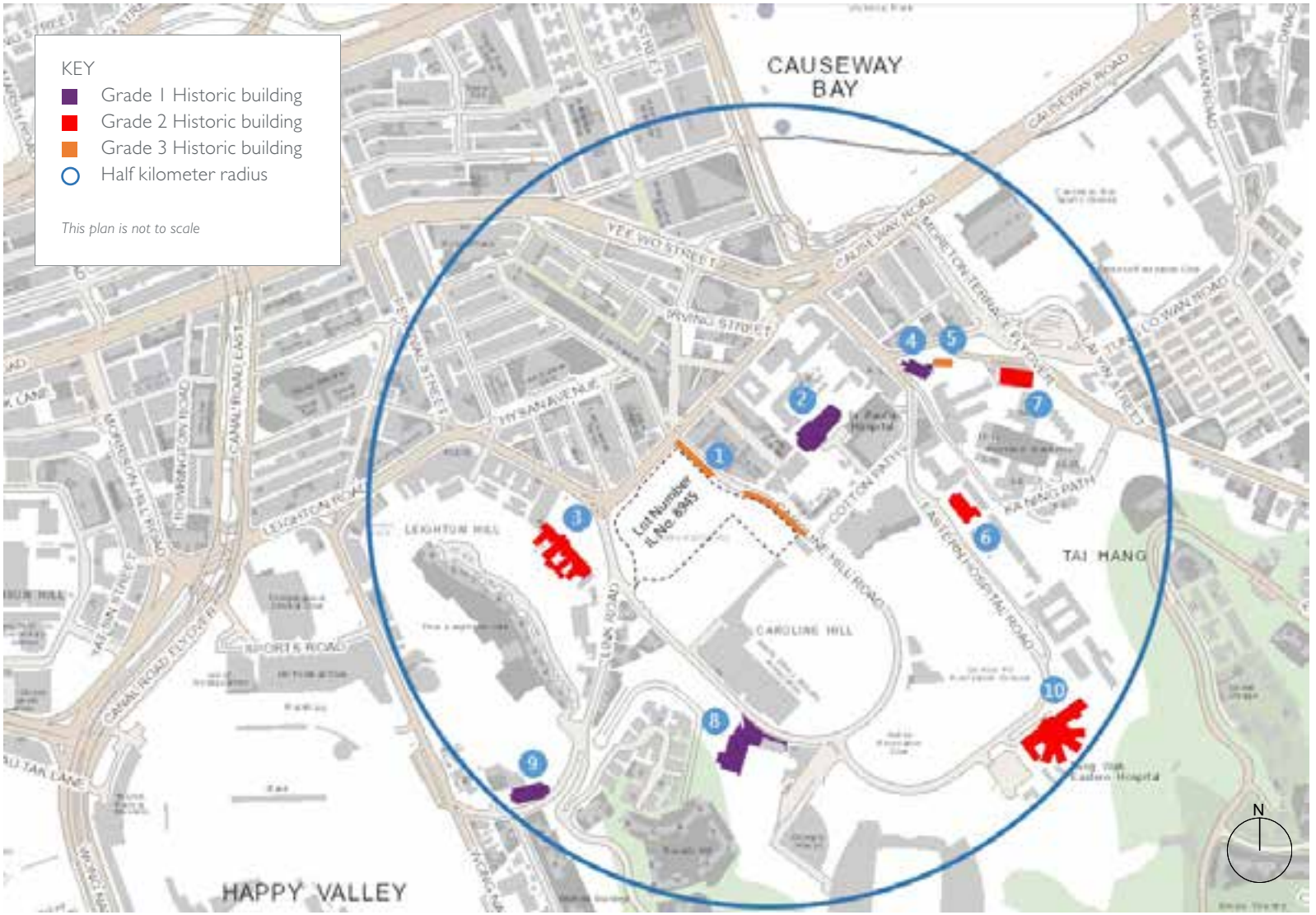


Fig. 2.2.11. Neighboring Historic Buildings in a 0.5km radius of Caroline Hill. Source: Base map from GeoInfo Map HK. Modified by Purcell.

2.3 MANAGEMENT AND USE

The walls were originally constructed as part of the site works for Queen's College in the 1920s. They later stood as the boundary walls of:

- the Victoria British School from the 1900s to 1930s;
- the Junior Technical School from the 1930s to 1940s;
- the government Electrical and Mechanical Services Department Headquarters from 1955 to 2005,
- the Civil Aid Services Headquarters, Post Office Recreation Club, and Cable and Wireless Club (later Pacific Century Cyber Works Recreation Club) from the 1950s to 2019.

The Lands Department announced the disposal of the Site (Inland Lot No. 8945) by public tender on March 23rd 2021. It was awarded to the highest tenderer, Patchway Holdings (HK) Limited, parent companies: Hysan Development Company Limited and Chime Corporation Limited (Member of Chinachem Group) on a 50-year land grant.

According to the press releases by the Government of HKSAR,

Inland Lot No. 8945 has a site area of about 14,802 square metres and is designated for non-industrial (excluding residential, godown and petrol filling station) purposes. The minimum gross floor area and the maximum gross floor area are 60,000 sq m and 100,000 sq m respectively. Both include the gross floor area of the Government Accommodation, being a child care centre, a day care centre for the elderly and a district health centre, but exclude the gross floor area of the public vehicle park, all to be constructed by the purchaser under the Conditions of Sale.

The slope maintenance responsibility information system indicated that the current maintenance agent of the three retaining walls was the Architectural Services Department. The responsible lot and party of 11SW-B/FR190 and 11SW-B/FR193 was post office while the Electrical and Mechanical Services Department was responsible to 11S-B/FR32.

2.4 DESIGNATIONS

The two masonry walls (11SW-B/FR193 and 11SW-B/FR32) and associated earthenware pipes were confirmed as Grade 3 Historic Buildings in December 2019 (N339) in recognition of the site's historical links with the Sookunpoo (now Causeway Bay) district. The extent of the masonry wall covered by this designation is shown on Fig. 2.2.1.

According to the Antiquities and Monuments Office (AMO) and Antiquities Advisory Board (AAB) in Hong Kong, grade 3 historic buildings are "buildings of some merit and preservation in some form would be desirable and alternative means should be considered if preservation is not practicable" [02].

Grade 3 Historic Buildings are not protected under the Antiquities and Monuments Ordinance, however, administrative measures and economic incentives have been undertaken by Government to encourage owners to conform to a policy of retention.

02 Antiquities and Monuments Office, "1,444 Historic Buildings and New Items in addition to 1,444 Historic Buildings - Definition of the Gradings", 2012, http://www.aab.gov.hk/en/built3.php

2.5 SUMMARY TIMELINE

1800s

1845
Name of "Morgan's Bungalow" first shown on a 1845 plan

1855
Establishment of Sookunpoo school

1862-87
St Francis College established on I.L. 358 at Sookunpoo [03]

1900s

1905
Sookunpoo school relocated, the Site then housed the Victoria British School

1917
Establishment of Indian Recreation Club [04]

1919
Sookunpoo Valley Recreation Ground allotted for recreation and sports activities

1921
I.L. 358 surrendered to government

1921
New premises of Queen's College in Caroline Hill was rumored

1922-24
Queen's College site formation and preparation in progress

1923
Construction of road encircling new Queen's College

1925
Construction of the new Queen's College was discontinued due to the Canton-Hong Kong Strike

1926
Extensive damages were done to retaining walls by heavy rain and storms, walls were rebuilt

1927
Southern part of Caroline Hill was allotted to South China Athletic Association

1928
A portion of land allocated for the United Services Recreation Ground, more retaining walls were built on the Site

1931
Victoria British School closed, proposal of setting up technical school system

03 Ha Keloon Louis, 2018. The Foundation of the Catholic Mission in Hong Kong, 1841-1894, Appendix IV, p.516.

04 Indian Recration Club. "Facts about IRC." https://indianrecreationclub.com/about-irc/

1900s (cont'd)

1933
Junior Technical School founded, White George as the first principal

1941
Junior Technical School closed, a portion of land to the northwest of the school was allotted to the Post Office Recreation Club

1941-45
Land Transport Section set up buildings in Caroline Hill

1948
The Electrical and Mechanical Office of the Public Works Department was formed as an amalgamation of the existing Electrical and Land Transport Offices

1949
Planning of new workshops for Electrical and Mechanical Office (E&M) of Public Works Department

1953
Cable and Wireless Club and Post Office Recreation Club opened

1955
First stage of Public Works Department office construction. E&M workshops completed. Part of the masonry wall was demolished. Opening of old Government Stadium and requisition of Sookunpoo cottages [05].

1958
Additional land allotted to Cable and Wireless Club [06]

1966
Second stage of Public Works Department office construction. E&M offices completed. Civil Aid Services Headquarters moved into the E&M offices

1994
Opening of Hong Kong Stadium after reconstruction

1999-2000
Large amount of masonry walls masonry walls were demolished as part of the modification works to the SCAA stadium

2000s

2005
E&M offices moved out from Site

2006
Civil Aid Services Headquarters moved out from Site

2017
Demolition of the Electrical and Mechanical Services Department Headquarters, Civil Aid Services building, Post Office Recreation Club and PCCW Recreation Club commenced

2019
Demolitions on Site completed

2021
Tender awarded to Patchway Holdings (HK) Limited on 12 May in land sale

05 HKRS163-1-1849 Resettlement - Mount Davis and Sookunpoo Resettlement Area - Requisitioning of Cottages

06 HKRS156-1-5886 Bathing Shed - Application from the Post Office Recreation Club for the Allocation of a site on the HK Island

CHAPTER 03:
HISTORY AND CONTEXT

3.1 SOOKUNPOO AND BOWRINGTON DISTRICT

3.1.1 Sookunpoo and Bowrington District in the 19th century

Hong Kong Island was occupied by the British in 1841. The British government developed Victoria City from 1843 and divided it into four wans, namely Sai Wan (西環), Sheung Wan (上環), Choong Wan or Chung Wan (中環), and Ha Wan (下環). The Chinese further separated these places into nine yeuks (districts), with East Point and Happy Valley included in the ninth yeuk. [07] East Point and Happy Valley marked the eastern boundaries of the City of Victoria, so the area was less densely populated, and less developed, compared to the rest of the four wans in the 19th century. Drawing (Fig. 3.1.1.1) from the 1840s show the region was hilly with several rice fields. The hills were named Leighton Hill, Morrison Hill, Caroline Hill, and East Point Hill.

1. Caroline Hill
2. Leighton Hill
3. East Point Hill
4. Morrison Hill

This plan is not to scale

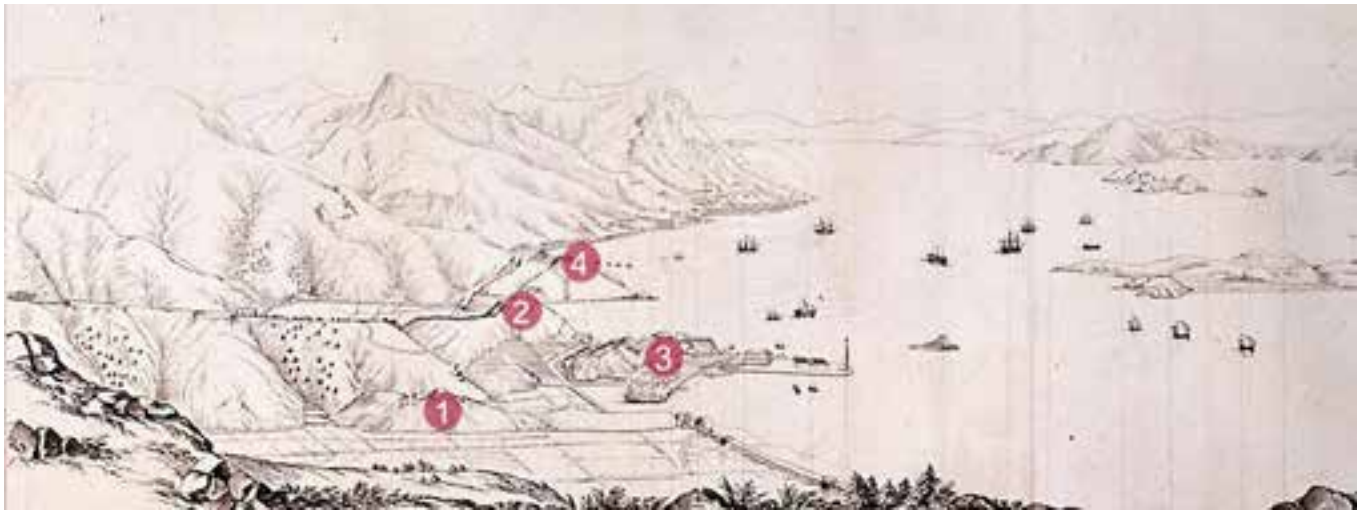


Fig. 3.1.1.1. Victoria Harbour, drawn by Thomas Bernard Collinson, 1845 (Source: Wikimedia Commons)

07 Joseph S P Ting, et al., 1999. City of Victoria : a selection of the museum's historical photographs 2nd ed., Hong Kong: Hong Kong Museum of History, p.85.

Caroline Hill is in what was then called the Sookunpoo district (now known as So Kon Po, Chinese: 掃桿埔).[08] Caroline Hill was surrounded by the paddy fields of Sookunpoo and its village.

Sookunpoo can be translated as "the straw broom plain", or possibly, "the straw broom landing place".[09] Sookunpoo village was a small village prior to British establishment of Hong Kong in 1841. The Hong Kong Gazette of 1841 lists Sookunpoo[10] as a "hamlet" with around 10 people. Major activities in Sookunpoo and Tung Lo Wan revolved around farming, "paddy fields" can be seen in various maps. Sookunpoo was believed to be originally owned by the Liu (廖) clan,[11] whose ancestors originally came from Fujian, China.

Captain William Morgan, a ship captain, (who may have been the Hong Kong manager of Jardine Matheson, who built the earliest settlements under colonial rule in East Point in 1872), purchased the first piece of land in East Point during the first land auction in Hong Kong on 14 June 1841. Morgan went on to buy land on Caroline Hill (I.L. 358) and build the Morgan Bungalow there. [12]

08 The place was first named Soo-koon-poo (Chinese name: 掃竿浦) when it appeared in the Hong Kong Gazette May 1841. However, the name appeared differently in various maps probably due to different versions of translation. It appeared as Sukunpu in the aerial photo of 1844 and as Sookunpoo or Soo Kun Poo in colonial documents or in most later maps of 1859 onwards. The name of the place was changed to So Kon Po since the 1950s. "Sookunpoo" is used in this report since this name is used most in colonial historical documents.

09 Revd. Carl T. Smith, Notes on the So Kon Po Valley and Village. Journal of the Hong Kong Branch of the Royal Asiatic Society. Vol. 23 (1983), p. 12.

10 The place was named "Soo-koon-poo" in the document.

11 香港掌故, 麥敬灝白。花油之香 飄過掃桿埔 https://www1.hkej.com/dailynews/articlePrint/id/1214705

12 Dafydd Emrys Evans, Jardine,Matheson & Company's First Site in Hong Kong, Journal of the Hong Kong Branch of the Royal Asiatic Society. Vol. 8 (1968), p. 150, 152.

The Happy Valley racecourse in Bowrington district was completed in 1845 alongside with several cemeteries built to the west boundary of the racecourse, chronologically the Protestant and the Parsee Cemetery; then the Mahommedan Cemetery (also the Indian Soldiers Cemetery) and the Roman Catholic Cemetery; and later the Hindu Cemetery. To the southeast of the racecourse was a Chinese village called the Wong Nei Chung Village.

Wong Nai Chung and Sookunpoo valleys suffered from poor sanitary conditions due to farming activities. Yellow mud stream, as its name indicates, discharged from surrounding hills of the Wong Nai Chung valley, creating swamps and lethal health conditions.[13] The colonial government issued an order in 1844 to ban rice cultivation in the area. The land was purchased by the Government from its Chinese owners, then drained, after which, health conditions improved.[14] New crops were introduced. Later, the land was subdivided into five Farm Lots and sold on 1 July 1846. Meanwhile, Tung Lo Wan bay, where the village of Sookunpoo was located, changed from being paddy fields to being the centre for the salt trade.[15]

Jardine Matheson built extensive houses and shops in East Point for their employees. The companies' presence also attracted many Chinese. They settled in a haphazard manner beyond Jardine Matheson's property, extending and enlarging the Sookunpoo village.[16] Many streets were named after Jardine Matheson, including Jardine's Bazaar, Yee Wo Street, Matheson Street, and Percival Street.

According to historic maps, it is believed that Morgan's Bungalow was built on the Caroline Hill in early to mid 1840s and the Sookunpoo school was later built to the northwest of it, to provide education to children in the Sookunpoo district. Not much is known about the School due to insufficient record information.

In 1855, Sir John Bowring proposed a reclamation plan for the shallow water region in Tung Lo Wan. This region was partly reclaimed in 1855, and reclamation was completed in 1864. The reclamation project also included the construction of the Bowrington Canal (see Fig. 3.1.1.2) to the west of Matheson's houses in the inland area of East Point, and reclamation of the marshland on both sides of the canal, which diverted water from Wong Nai Chung village and the racecourse to the sea, to improve the sanitary conditions in the region. In 1883, the first typhoon shelter in Hong Kong, a heavy rockfill breakwater was built.[17] "*In 1884, 23 acres of land were reclaimed at Causeway Bay. With the construction of the causeway joining Kellett Island and the shore of Tang Lung Chau, Tung Lo Wan got its new English name, Causeway Bay, from the new causeway.*"[18]



Fig. 3.1.1.2 East Point in 1870s, showing the Bowrington Canal, Jardine properties and the East Point Hill. (Source: Hysan Development)

13 C. Michael Guilford. A Look Back: Civil Engineering in Hong Kong 1841-1941. Journal of the Hong Kong Branch of the Royal Asiatic Society, Vol. 37 (1998), p. 91.

14 CO. 129-11, No. 28

15 Revd. Carl T. Smith, Notes on the So Kon Po Valley and Village. Journal of the Hong Kong Branch of the Royal Asiatic Society. Vol. 23 (1983), p.14.

16 Smith, 1983, p.13.

17 C. Michael Guilford. A Look Back: Civil Engineering in Hong Kong 1841-1941. Journal of the Hong Kong Branch of the Royal Asiatic Society, Vol. 37 (1998), p. 83.

18 Anthony Siu Kwok-kin. Tung Lo Wan. Journal of the Hong Kong Branch of the Royal Asiatic Society, Vol. 29 (1989), p.398.

3.1.2 Causeway Bay in the early 20th Century

Entering the 20th century, Victoria City further expanded on its East and West boundaries. There were increasing infrastructural, industrial, entertainment, recreational, and institutional and religious developments in the Causeway Bay district. These are briefly discussed as follows:

Recreational Development in Causeway Bay

Since the completion of the Happy Valley Racecourse in 1845 and subsequent population growth and other developments in Causeway Bay, there was a significant increase of recreational facilities in the area.

The site on the north of the Racecourse was originally public garden according to *Plan of the City of Victoria Hong Kong 1889* but it was transferred to recreation ground sometime between 1889 to 1901. The site was then referred as Happy Valley Recreation Grounds in some later publications and maps. The Happy Valley Recreation Grounds later became the home of Hong Kong Football Club,[19] Craigengower Cricket Club[20] and Hong Kong Police Cricket Club (see Fig. 3.1.2.1).[21]

The Royal Hong Kong Golf Club, after its establishment in 1889, was first located on the northwest corner of the Racecourse site before the courses in Deep Water Bay and Fanling were established in 1898 and 1911 respectively. The Happy Valley property was handed over to the government in 1947. [22]

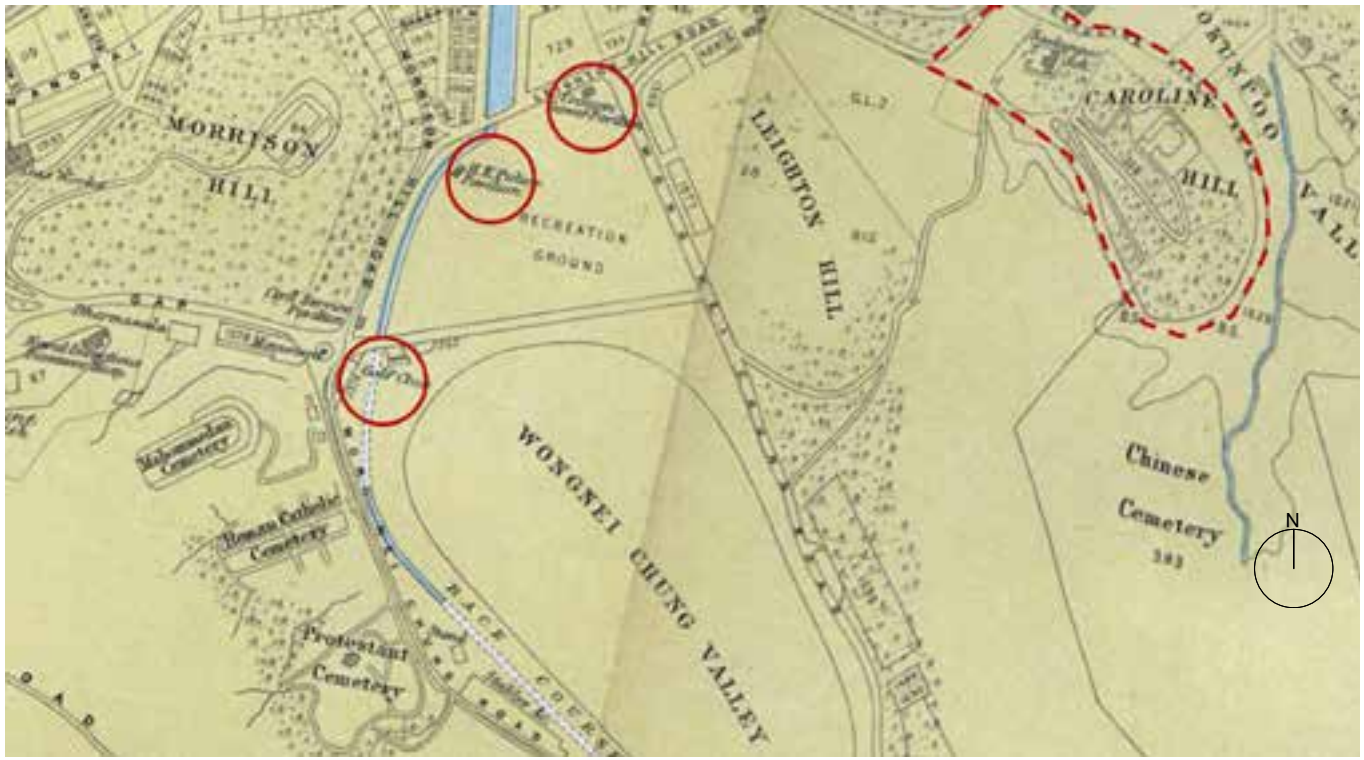


Fig. 3.1.2.1. Plan of the City of Victoria Hong Kong (corrected to 1909). (Source: Directory & Chronicle of China, Japan, Corea etc etc, 1909, modified by Purcell)

19 The Hong Kong Football Club was founded in 1886.

20 The Craigengower Cricket Club, founded in 1894, relocated to its current site from the cricket site on Bonham Road in c.1909.

21 (The Hong Kong Police Cricket Club was) "formed (in 1904) from a small number of expatriate police officers relaxing at the Police Recreation Club (PRC), a team was first entered in the Hong Kong Cricket League in the 1904/05 season. Its 'pavilion' was a rudimentary mat-shed on ground donated by a neighbouring club on the edge of the Happy Valley Racecourse." Source: Ian Lacy-Smith, n.c. A Hong Kong Policeman & Cricket. https://www.britishempire.co.uk/article/hongkongpolicemanandcricket.htm

22 Hong Kong Golf Club. Heritage. https://www.hkgolfclub.org/cms/the-club/heritage/

In 1917, just one year after the opening of Ellis Kadoorie School for Indians, Indian Creation Club was founded with its clubhouse built on the southeast of the Caroline Hill.

In 1927, the government allotted the southern part of the Site at Caroline Hill to the South China Athletic Association (SCAA) [23] following the request from Lee Hysan, who was the chairman of the organization at the time [24]. It was noted that the Mok family joint sponsored the establishment of SCAA.[25] The first stadium was completed in 1934 with 2-storey concrete clubhouse together with spectator stands. The site was occupied by Japanese Army during WWII.

There were a few other recreational facilities established during this period of time in Causeway Bay including the Chinese Recreation Club set up in Tai Hang in 1912, which is still in operation today [26].

Institutional and Religious Development in Sookunpoo

Due to the growth of Causeway Bay in the early 20th century, there was growing demand for institutional and religious facilities.

In 1905, Victoria British School was established and opened on the previous site occupied by Sookunpoo School in Caroline Hill but was later closed in 1931. This will be discussed further in Chapter 3.2.2.

In 1914, the land and buildings of the Hong Kong Cotton Spinning, Weaving and Dyeing Company Ltd were purchased by the French Sisters of St. Paul de Chartres, providing accommodation for a convent, the St. Paul's Convent School, an orphanage, a hospital and a church.

Almost at the same time when the St. Paul's hospital was first established, on 16 October 1916, the Ellis Kadoorie School for Indians (now Sir Ellis Kadoorie Primary School) was opened by the Governor Henry May.

In 1918, the Japanese Benevolent Society was transferred to the Sookunpoo valley (I.L. 1879).

Besides these, the Queen's College had plans to construct a new premise at Caroline Hill in 1922. Site formation was carried out from 1922 to 1926 but the construction of the school was eventually cancelled due to the Canton-Hong Kong Strike from 1925 to 1926. This will be further illustrated in Chapter 3.2.

According to the record plans, major development took place to the southern part of Sookunpoo while Tung Wah Eastern Hospital was established in 1929.

In 1932, the Main Building of Po Leung Kuk was built at the site on No.66 Leighton Road, to the west of Caroline Hill, as its new headquarters.[27] The Main Building of Po Leung Kuk still remains intact today with very limited alterations to its original appearance, despite six major extensions within the site in since 1940.

In 1933, two years after the closure of Victoria British School, Junior Technical School was set up on the same site in Caroline Hill. This will be further elaborated in Chapter 3.2.2.

The establishments of other institutions and religious buildings during the period in the proximity of the Site are summarized as below:

- The Belilios Reformatory, 1900 to c.1952
- Shing Kwong Church of the Church of Christ in China[28] (Grade 2), 1927 -
- Parsee Prayer House, known as Zoroastrian Building, 1931
- Chinese temple (the Confucius Hall) (Grade 1), 1935 -
- St. John Ambulance Brigade Hong Kong Island Area Headquarters (Grade 2), 1935 -
- St. Mary's Anglican Church[29] (Grade I), 1937 -

23 A football club first established in 1908 and formerly named the Chinese Football Team.

24 Hong Kong: South China Athletic Association, n.d.. "History". https://www.scaa.org.hk/index.php/About/about_history/l/tchinese.html

25 莫華釗. et al., 2009. Timeless legacy : the Mok family collections, p. 17, Hong Kong: Art Museum, Institute of Chinese Studies, Chinese University of Hong Kong.

26 Chinese Recreation Club..Introduction of the Club - the Early Years. https://www.crchk.org/en_club.aspx?uid=1

27 South China Morning Post, 19th July 1930. "Work of Po Leung Kuk."

28 This congregation considers itself the successor to a chapel built by the London Missionary Society in Tai Ping Shan in the 1860's. The chapel building was demolished at the time of the clearance of the Tai Ping Shan area at the turn of the century. (Source: Revd. Carl T. Smith, Notes on the So Kon Po Valley and Village. Journal of the Hong Kong Branch of the Royal Asiatic Society. Vol. 23 (1983), p. 17.

29 St. Mary's Anglican Church is at the junction of Tai Hang Road and Eastern Hospital Road. The congregation began in the chapel of the Eyre Diocesan Refuge for destitute women in 1912. In 1914 the Refuge was moved to Kowloon, but Anglicans in the east part of Hong Kong continued to meet there for worship. A vestry was formed in 1920 and plans were discussed for a new building. It was not until 1930, however, that a large fund-raising plan was undertaken. Finally, on 12 July 1936, ground was broken for a new church. It was officially opened on Christmas Eve 1937. In 1954 another building containing offices, kindergarten and vicarage was completed, and in 1958 the foundation stone for the Primary School was laid. (Source: Revd. Carl T. Smith, Notes on the So Kon Po Valley and Village. Journal of the Hong Kong Branch of the Royal Asiatic Society. Vol. 23 (1983), p. 17.

Development of Other Industries in Sookunpoo and Causeway Bay

Since the 1870s, the industrial sector played a major role in the development of Causeway Bay. One of the key industrial developments near Caroline Hill was the establishment of the Hong Kong Cotton Spinning, Weaving and Dyeing Company (see Fig. 3.1.2.2) under Jardine Matheson & Co. Ltd. in 1898.[30] In 1931, Cotton Path was established, with its naming referencing the earlier cotton mills.[31]

The development of entertainment industry in Causeway Bay in the early 20th century was initiated by the establishment of the two amusement parks (Yue Yuen 愉園 [32] and Camphor Garden 樟園 [33]). Following a major fire at the Happy Valley Racecourse in 1918, both amusement parks closed down. Lee Garden - a tycoon's villa transformed into a Chinese amusement park by Lee Hysan, was completed in 1925 soon after Lee Hysan purchased the East Point Hill from Jardine in 1923.



Fig. 3.1.2.2 Cotton Mills of the Hong Kong Cotton Spinning, Weaving and Dyeing Company Ltd. (Source: Wright, Arnold (ed.) 1908. Twentieth Century Impressions of Hong Kong, p.236. Singapore: Graham Brash.)

30 Revd. Carl T. Smith, Notes on the So Kon Po Valley and Village. Journal of the Hong Kong Branch of the Royal Asiatic Society. Vol. 23 (1983).p. 15.

31 Hong Kong Government Gazette, 10th July, 1931. Notice 436 in Government Gazette.

32 China Mail, 20 September 1898. "Happy Retreat."

33 華字日報, 1916年10月11日, "新樟園潛社詩鐘"

3.1.3 Mid-20th Century to Nowadays

Following the decline of the entertainment industry in Causeway Bay, the district continued to grow in institutional and recreational development in the mid to late 20th century. Commercial activities also started and quickly expanded in East Point, which in turn increased the demand for improved infrastructure.

Continuation of Institutional Development in Sookunpoo and Tai Hang

Following the boom of several institutions and religious societies established in Sookunpoo in the early 20th century, various institutions continued to set foot in Sookunpoo and Tai Hang in the mid to late 20th century.

Queen's College was relocated from its previous campus in Kennedy Road to the corner of Causeway Road and Tung Lo Wan Road on 21 May 1950. The college building was a two-storey structure with three basketball courts, a volleyball court and space for a gym, canteen etc. amounting to 94,600 sq. ft (Fig.3.1.3.1).[34]

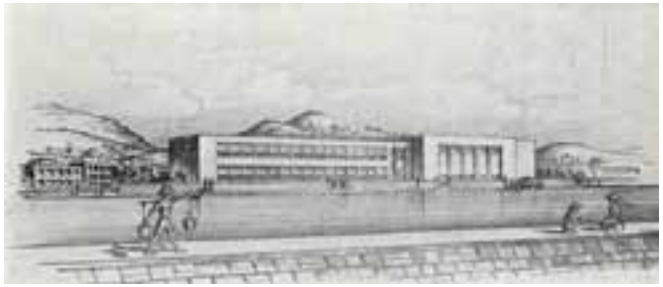


Fig. 3.1.3.1 Queen's College in new premise (Source: Hong Kong and Far East Builder 1950, vol. 8, no. 3)

34 Hong Kong and Far East Builder 1950, vol. 8, no. 3, p.33. "The New Queen's College."

Apart from Queen's College, other institutions that were established around the same time and in the proximity of the site are summarized as below:

- Hennessy Road Government Primary School (1949–)
- Ho Tung Technical School, now Ho Tung Secondary School[35] (1953–)
- Eastern Hospital Road Government School (1958–1977)
- Buddhist Wong Cheuk Um Primary School (1959–)
- Buddhist Wong Fung Ling College (1959–)
- Sheng Kung Hui Kindergarten[36] (2012–)

Continuation of Recreational Development in Sookunpoo

Lots of improvements were made to recreational facilities in Causeway Bay in the late 20th century. Apart from recreational grounds for existing clubs, three different stadiums were constructed in Causeway Bay in the 1950s. The Hong Kong Football Club stadium had been rebuilt in 1953, with its re-opening in 1954.[37] In addition, in 1953, the South China Athletic Association demolished their old stadium to construct a new stadium with the capacity of around 12,000 people. The SCAA was later further expanded in 1966, 1976 and 1988. These works included the construction of the Land Bowling Centre, the 7 storey Sport Centre and the 17 storey Sports Complex.

35 Hotung Secondary School, 2016. "School Profile 2016-2017 Hotung Secondary School". Retrieved September 2021, from http://web.hotungss.edu.hk/HP/docs/information/intro160E.pdf

36 Sheng Kung Hui Kindergarten Hong Kong. "School profile." Retrieved September 2021, from https://www.skhkg.edu.hk/?page_id=310

37 Denis Way, 2011. "Along the sports road : the Hong Kong Football Club, its environs and personalities 1886-2011." Hong Kong: Hong Kong Football Club



Fig. 3.1.3.2 Hong Kong stadium in 1958 (Source: Bruce Deadman, digitalized by gwulo https://gwulo.com/atom/31468)



Fig. 3.1.3.3 Hong Kong stadium today with SCAA and Disciplined Services Sports Centre in the near background (Source: Purcell, 2021)

The Government Stadium (later Hong Kong Stadium) (Fig. 3.1.3.2 & 3.1.3.3) was later erected on 3 December 1955.[38] It was the largest outdoor sports and recreational facility in Hong Kong and can accommodate more than 28,000 people.

Apart from stadiums, three additional recreational clubs were also built in the 1950s. Following the closure of Junior Technical School in 1941, a portion of land northwest in Caroline Hill was allotted to the Post Office Recreation Club. The Cable and Wireless Club were opened in 1952. [39] Both will be further discussed in Chapter 3.2.3. The Disciplined Services Sports and Recreation Club was also established at 9 Cotton Path in 2001 to replace the former Disciplined Services Sports Centre at Kai Tak Airport.

Development of Other Industries in Causeway Bay

A land reclamation scheme commenced soon after World War II. With the typhoon shelter being moved northwards to its present location.[40] The reclamation began in 1951 and completed in 1953. The original typhoon shelter was reclaimed and formed the Victoria Park that offer the general a host of recreational facilities.[41]

Due to the rapid development of Causeway Bay, the Canal Road Flyover was built in 1971 with the cross harbour tunnel connecting the Hong Kong Island to Kowloon Peninsula.

Commercial developments of Causeway Bay can be traced back to 1960 when Japanese department store Daimaru opened its Hong Kong branch on Paterson Street. With the completion of Causeway Bay MTR station in 1985, the district continued to be a hub for commercial and entertainment activities. Old buildings were torn down and were replaced by new Grade A office buildings. Following the success of Lee Garden Amusement Park[42] and the old Lee Theatre,[43] Hysan family expanded their business in Causeway Bay since the early 21st century by building various office, retail and residential tenant space including Lee Garden One to Six,[44] Hysan Place, Lee Theatre, One Hysan Avenue and Leighton Centre.

38 China Mail, 5 December 1955.

39 South China Morning Post, 10th July 1952. "Cable & Wireless Sports Club".

40 Ho Pui-yin, 2004. "Challenges for an Evolving City - 160 Years of Port and Land Development in Hong Kong." The Commercial Press.

41 South China Morning Post., 25th March 1955. "Victoria Park Recreation."

42 The Lee Garden Amusement Park was constructed in 1920s and demolished in 1930s. (Source: Hysan Development)

43 Lee Theatre was built in 1925 and demolished in 1991, making way for present Lee Theatre Plaza. (Source: Hysan Development)

44 Lee Garden One was completed in 1997 after Lee Garden Hotel was demolished. (Source: Hysan Development)

3.2 CAROLINE HILL

3.2.1 Caroline Hill in the 19th century

According to an article named "Caroline Hill" by B.A. COAD, Brigadier, Caroline Hill was named after Caroline Preston, the wife of a doctor, William J. Preston. Caroline died in early 1852 soon after she arrived Hong Kong. William Preston worked in the apothecary trade as a druggist and operated the Hong Kong Dispensary from 1850 to 1856. In 1856, he handed over the dispensary to another druggist and left Hong Kong. He might have come back to Hong Kong and worked under Dr. Thomas Boswall Watson, one of the founders of the Watson chemist chain.[45]

Shown in the map of 1859 (Fig.3.2.1.1), Caroline hill was a hill of two bluffs separated by a narrow road in the plummeted area in the middle. The hill therefore split into North and South portions since the 1840s. Morgan's bungalow was the first building constructed towards the south of Caroline Hill and it is believed that the bungalow was built by Captain William Morgan for himself.[46] It was unclear on the building's function since the name of the bungalow no longer exists in maps after 1844 but the structure still exists on a 1923 map [47].

Sookunpoo school was established in 1855 to the northeast of Morgan's bungalow on Caroline Hill. It first appears on maps from 1889 (Fig 3.2.1.2).

A school named St. Francis College on I.L. 358 at Sookunpoo was mentioned in the book "*The Foundation of the Catholic Mission in Hong Kong, 1841-1894*" with a duration from 1862 to 1887 on Caroline Hill but without any further elaboration.[48]

Very little information about Sookunpoo school and St. Francis College were found when this document was prepared. It remains unknown where exactly St. Francis College was located within the I.L. 358. It is possible that Morgan's bungalow was transformed into St. Francis College after Captain William Morgan died on 14 July 1843 in Macau [49], which may explain the renovations with additions built towards the west and with the associated building demolished observed in maps dated 1840s to 1880s.



Fig. 3.2.1.1. 1859 map showing the original topography of Caroline Hill. (Source: National Archive, National Archive CO 700/HongKongandChina54)

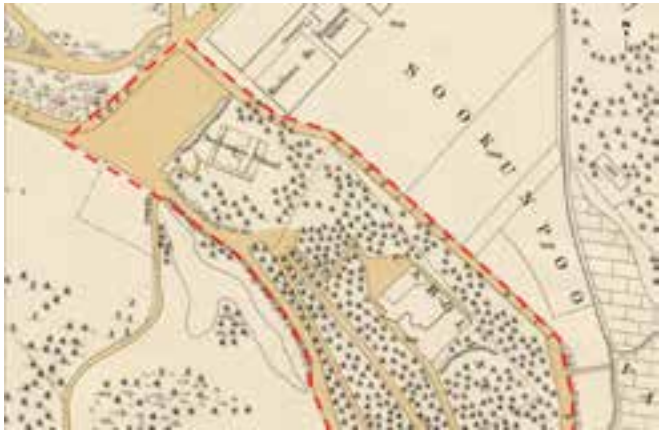


Fig. 3.2.1.2. 1889 map showing the Sookunpoo School at the north side of Caroline Hill. (Source: National Archive, National Archive CO 700/HongKongandChina7)

Indicative boundary of Caroline HIll

45 South China Morning Post. 20th April 1950. "Caroline Hill".

46 Dafydd Emrys Evans, Jardine,Matheson & Company's First Site in Hong Kong, Journal of the Hong Kong Branch of the Royal Asiatic Society.Vol. 8 (1968), p.152.

47 National Archive, 1923, reference no. MPGG 1/115. Map extracted from CO 129/502/5, Hong Kong surveyed by Captn. Sir Edward Belcher.

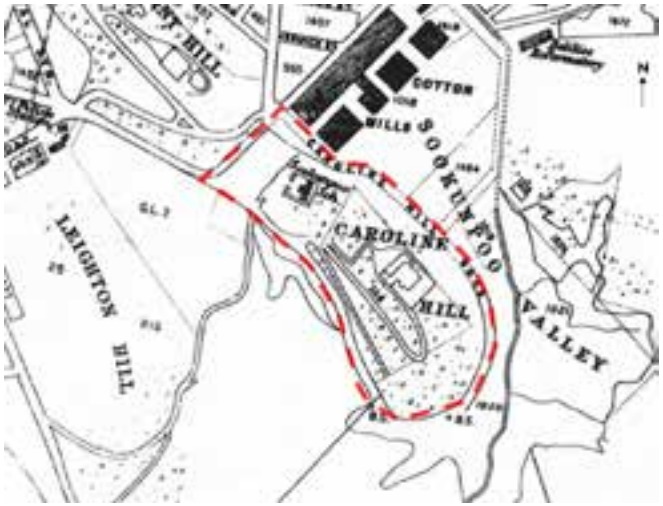
48 Ha Keloon Louis, 2018. The Foundation of the Catholic Mission in Hong Kong, 1841-1894, Appendix IV, p.516.

49 Shyama Peebles, n.d. Old Protestant Cemetery in Macau. https://gwulo.com/sites/gwulo.com/files/Gwulo-Macau-Old-Protestant-Cemetery.pdf

Caroline Hill was once described as

> "nothing but a thickly wooded hill"[50] while the Caroline Hill Road being *"only a few feet wide, and the over-hanging trees to successfully kept out of the sun that the place was in almost complete darkness soon after 5.30pm and very few people ever used the road after then"*.[51]

According to historical maps, the two buildings, Sookunpoo school and Morgan's bungalow, are believed to be the only two buildings that existed on Caroline Hill (Fig.3.2.2.1). Since the early 20th century the area changed rapidly, as land was reclaimed.



Indicative boundary of Caroline HIll

Fig. 3.2.2.1. Plan of the City of Victoria, Hong Kong, 1903. (Source: National Collection of Aerial Photography, MFQ 1113631/9)

50 The Hong Kong Sunday, Herald, 8th November 1936. "Good Old Days At Sookunpoo".

51 The Hong Kong Sunday, Herald, 1936.

3.2.2 Caroline Hill in the early 20th century

The Victoria British School was opened on 20 March 1905 on the same Site where the Sookunpoo School was previously located.[52] The school was set up after the Kowloon British School in Yaumati largely due to the instrumentality of Mr. Irving.[53] Admission was limited to only children of European parentage. The mixed school was run by headmaster Mr. W.H. Williams. The arrangements were that boys over twelve "*will not be admitted or allowed to remain at the Kowloon school*"; while girls over twelve "*will not be admitted or allowed to remain at the Victoria School*".[54]

Earliest record plans of the school date to 1914 (Fig. 3.2.2.2). The two storey school building had brick facades, but it is unclear whether these were red or grey bricks. The dining room and head mistress drawing room were on the ground floor while an assembly hall, the head mistress' and assistant headmistress' bedroom were on the first floor.[55]

52 Hong Kong Government Gazette, 6th March 1908. GA 1905 no.74, Victoria British School - Opening of, and Rules for.

53 G. H. Bateson Wright, D.D, n.d. (Oxon.), Headmaster of Queen's College, Hongkong. Twentieth Century Impressions of Hongkong, Shanghai, and other Treaty Ports of China. Under Education column. https://en.wikisource.org/wiki/Page:Twentieth_Century_Impressions_of_Hongkong,_Shanghai,_and_other_Treaty_Ports_of_China.djvu/129

54 Hong Kong Government Gazette, 6th March 1908. GA 1905 no.74, Victoria British School - Opening of, and Rules for.

55 Hong Kong Public Records Office. CO-129-414p214-221 Sketch plans for - Proposed additions to Victoria School.

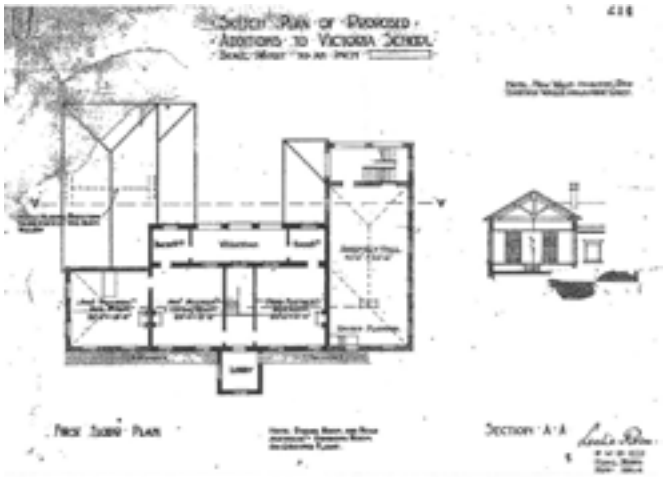


Fig. 3.2.2.2. Sketch plans of the Victoria British School. (Source: Hong Kong Public Record Office. CO-129-414p214-221 Sketch plans for - Proposed additions to Victoria School.)

Proposals (Fig. 3.2.2.3) were made later in 1918 to construct an additional storey to accommodate a living, bed and bathroom.[56] The proposed 1918 alteration and addition (A&A) plans show the school occupying the same site as the Sookunpoo School but the orientation and layout of the building was different. The A&A plans however correspond to the 1924 aerial photos which illustrate the school had been designed with a C-shape plan, facing northeast.

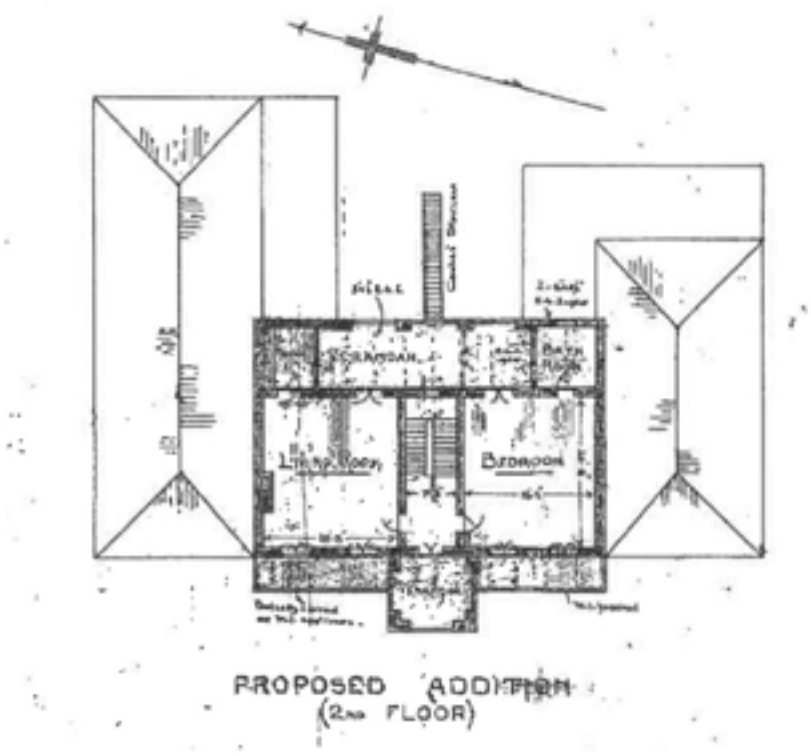


Fig. 3.2.2.3. Plans of Victoria British School. (Source: Hong Kong Public Record Office. CO-129-341p579-586 Plans of Victoria British School.)

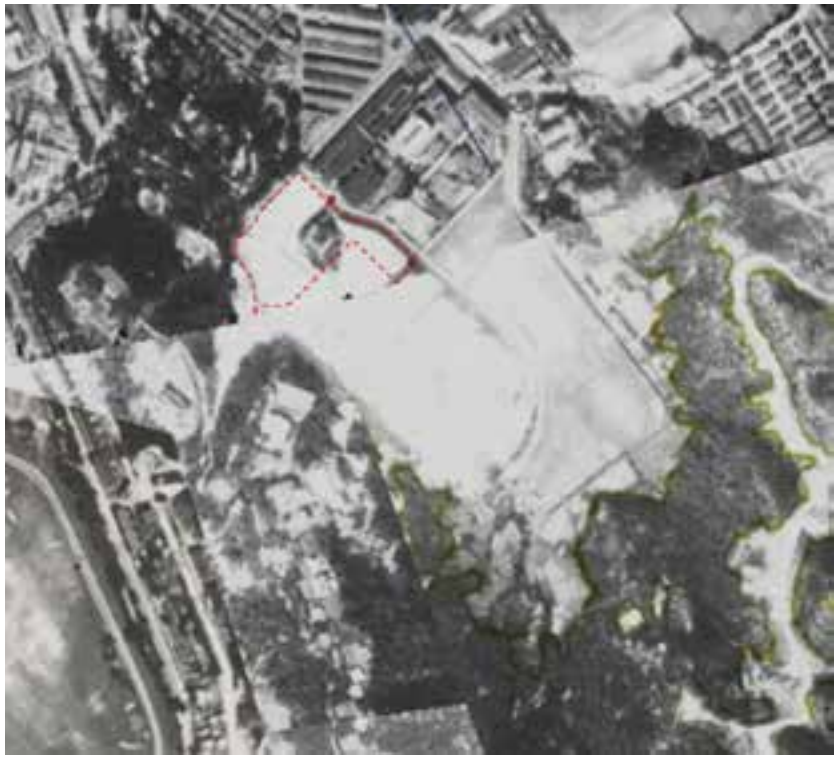


Fig. 3.2.2.4. Aerial photo of Caroline Hill in 1924. (Source: National Collection of Aerial Photography, 1924. NCAP-000-000-348-917.)

Indicative Site boundary

56 Hong Kong Public Records Office. CO-129-341p579-586 Plans of Victoria British School.

To the southeast of Caroline Hill, the Sookunpoo Valley Recreation Ground was allotted to several parties for recreation and sports activities since 1919.[57] Records showed that the recreation ground was being shared between the South China Athletic Football Club, the Hongkong Hockey Club, and the Indian Recreation Club and Indian Boys' School, for football, hockey, and cricket and tennis use respectively. The ground was later allocated to the army and the Indian Recreation Club for football and hockey, and cricket and tennis between 1921[58] and 1922[59].

In October 1921, Inland Lot 358 was surrendered to the government from the HongKong Land Investment and Agency Company Limited for $160,000 (See Fig. 3.2.2.5). A map from 1903 showed that I.L. 358 was on the south of Caroline Hill, where the Morgan Bungalow was located. The exact boundary of I.L. 358 can be seen on 3.2.1.2 and 3.2.2.1

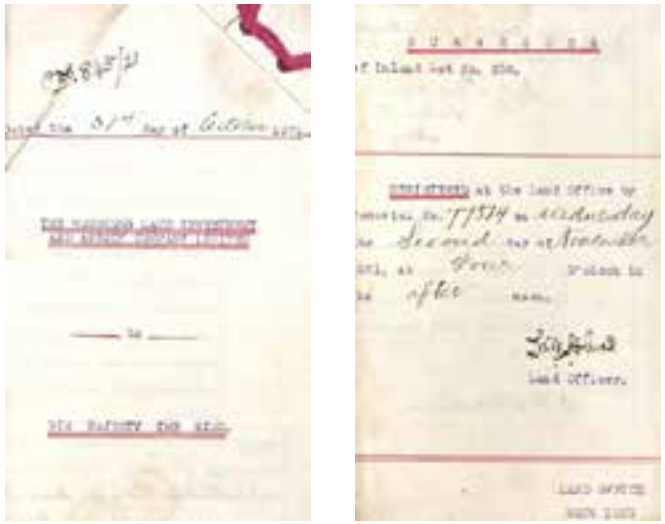


Fig. 3.2.2.5. Surrender of Inland Lot No. 358 (Source: Hong Kong Public Records Office. HKRS265-11a-767-11 I.L. No. 358-SURRENDER)

Site formation of Queen's College

While Victoria British School was founded in the former Sookunpoo school site, the Queen's College (originally in Hollywood Road) planned to establish their new school premise in Caroline Hill area. Plans of the school was considered as early as 1918–1925 when Mr Bertram Tanner was the Headmaster of the school.[60] In 1921, the Yellow Dragon (the long-established Queen's College school magazine), reported that a new Queen's College would be built on the Site at Caroline Hill.[61]

The Public Works Department Administrative Report in 1921 stated that the "rebuilding of Queen's College" was planned on I.L. 358. The site area was around 200,500 sq. ft and the total Cost was estimated to be $160,000.[62] Construction started with the site works. Tenders were received by September 1922,[63] and a contract was issued in November 1922 to Messrs. Kin Lee and Co. The contract included levelling the site, road formation, and filling in the low-lying areas at, and around, Caroline Hill. By the end of the year satisfactory progress was made.[64]

In 1923, progress was made on the "cutting and retaining walling". 270,000 cubic yards (about 206429.8 msq.) were cut and deposited over the area to a proved formation level.[65] Meanwhile, the construction of 1,100 lin. ft. rubble retaining wall started during the year and was completed upon 1924.[66] It is however unclear where this mentioned retaining wall is located.

57 Hong Kong Government Gazette, 31st October 1919. GA 1919 no.508, Sookunpoo Valley Recreation Ground,-Schedule of allotments.

58 Hong Kong Government Gazette, 30th September 1921. GA 1921 no.401, Sookunpoo Valley Recreation Ground,-Schedule of allotments.

59 Hong Kong Government Gazette, 30th September 1922. GA 1921 no.445, Sookunpoo Valley Recreation Ground,-Schedule of allotments.

60 Gwenneth Stokes, 1962. "Queen's College 1862-1962", p120-121

61 Queen's College, 1921. Yellow Dragon 1921, p.13.

62 Report of the Director of Public Works, for the Year 1921

63 Hong Kong Government Gazette, 18th August 1922. GA 1922 (suppl) no.252, Tenders invited for Site for Queen's College at Caroline Hill

64 Report of the Director of Public Works, for the Year 1922, p.115.

65 Report of the Director of Public Works, for the Year 1923, p.74-75.

66 Report of the Director of Public Works, for the Year 1923, p.74.

Construction of Surrounding Roads

In connection with the new Queen's College, a road (possibly the current Caroline Hill Road) encircling the site was formed in 1923. The area of the road was around 82,595 sq. ft. and costed $13,259.50.[67] Construction work was interrupted by two heavy rains in 1925, but road formation works were completed within the year. Caroline Hill Road was extended to I.L. 2147.[68]

Discontinuation of Queen's College Construction

Mr. Joseph de Rome, the 6th Headmaster of Queen's College mentioned that he had seen the blueprints of the new Queen's College in the late 1930s. Even though site preparations were carried out from 1921, the item and the estimated total of $1,000,000 (for the construction of Queen's College) only appear in the Public Works Department Administrative Reports until 1926 as the school was not constructed at last. The decision to halt the construction was probably due to the civil unrest in the Southern parts of China, commonly known as the Canton-Hong Kong Strike from June 1925 to October 1926.[69]

Damages and Repairs

Apart from damages caused during those heavy rains in 1925, it was reported in 1926 and 1927 that the walls and the stormwater drains at Caroline Hill Road were significantly damaged.[70] The stormwater drains in Caroline Hill Road were cleaned and repaired.

Extensive damage was also caused by the storm in April 1926 to the east side of the retaining walls encircling the site. Further damage by storm occurred between July 18th to 19th. By the end of the year, the damaged portion of the wall was taken down with there being preparations to rebuild them.

However, the contracts for the site formation and road construction works issued in 1922 completed by the end of 1926. Rainstorm repair works were carried out on an order before contract termination, at a cost of $4768.46, A total of $174,729.98 was spent for the site formation of Queen's College from 1921 to 1926.[71]

Formation of Recreation Ground

By 1925, slopes of different levels were formed within the Site, which is largely in align with the existing site topology with three platforms (Fig. 2.1.2 and 3.2.2.8). The area at 50.00 A.O.D. (equal to approximately 15 mPD) was planned for the Navy's recreational use.[72] In relation to this, more retaining walls were needed to be built at the Queen's College Site. Tenders were received in April 1928. The works included the erection of a length of concrete backed walling in rubble facework together with any necessary piling to foundations and contingent drainage work.[73]

According to a letter from the Lieutenant Colonel L. S. Amery on 10th February 1928, there were long discussions between the Naval Commander-in-Chief, the General Officer Commanding, the War Memorial Committee and the Lieutenant Colonel to transfer the patch of land into a Naval and military recreation ground. The name of the recreation ground was renamed "United Services Recreation Ground" in official documents dated 14th December 1928 (Fig. 3.2.2.6 and 3.2.2.7). As the site was originally intended for the new Queen's College at the cost of $214,400, an additional fifty to sixty thousand would be needed to complete and transform the Site into a satisfactory recreation ground. The recreation ground was to be "made available as soon as practicable". This would amount to a total of over $260,000. The sum consisted of public subscription, a contribution of $200,000 from the Government and a large contribution from the Sharp Trust.[74]

The Victoria British School continued to operate in the former

67 Report of the Director of Public Works, for the Year 1923, p.45.

68 Report of the Director of Public Works, for the Year 1925, p.87

69 Gwenneth Stokes, 1962. "Queen's College 1862-1962", p120-121

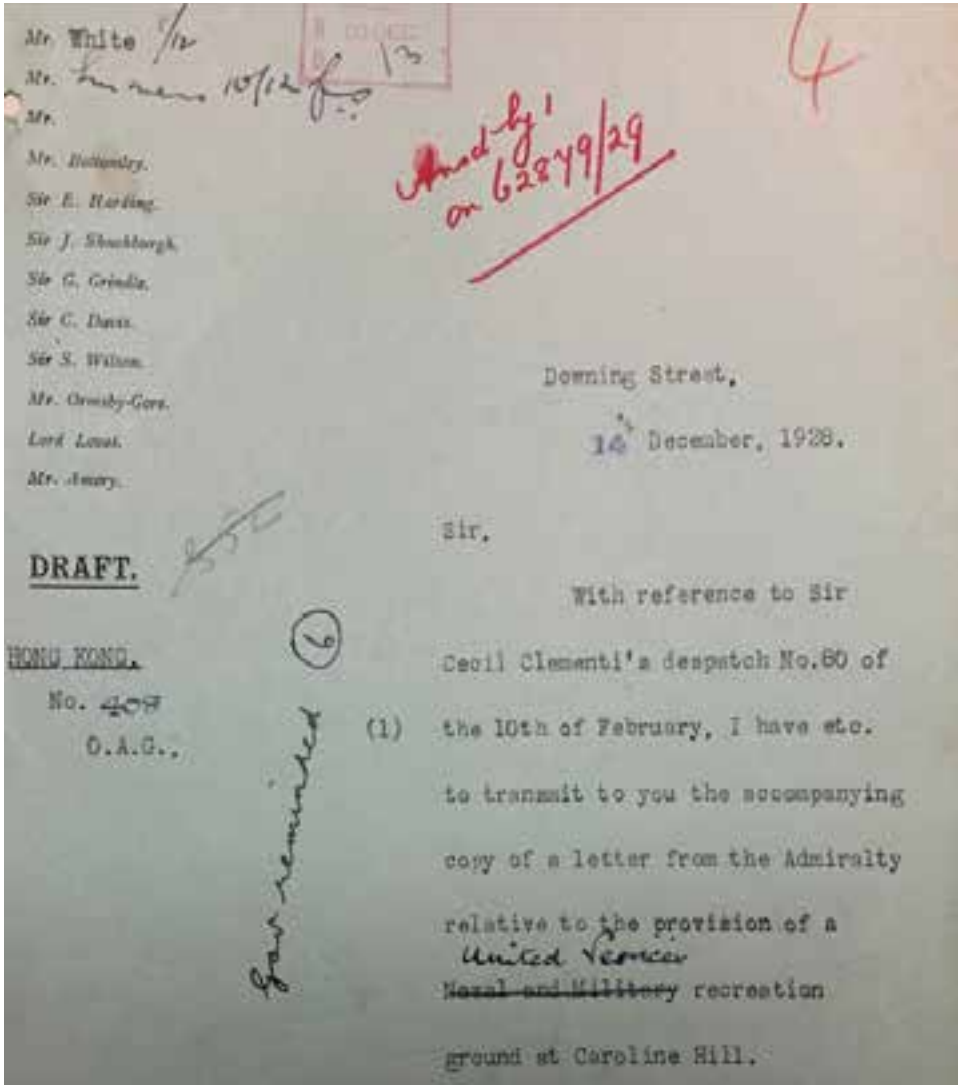
70 Report of the Director of Public Works, for the Year 1927, p.30

71 Report of the Director of Public Works, for the Year 1926, p.129

72 Report of the Director of Public Works, for the Year 1925, p.72

73 Hong Kong Government Gazette, 30th March 1928. GA 1928 (suppl) no.92, Tenders invited for the construction of a Retaining Wall at Queen's College Site-Sookunpoo

74 National Archives, Kew. CO 129-510-3, Use of Caroline Hill for naval and military recreation ground.



Mr. White 5/12
Mr. [illegible] 10/12
Mr.
Mr. Bottomley.
Sir E. Harding.
Sir J. Shuckburgh.
Sir G. Grindle.
Sir C. Davis.
Sir S. Wilson.
Mr. Ormsby-Gore.
Lord Lovat.
Mr. Amery.

DRAFT.

HONG KONG.
No. 409
O.A.G.,

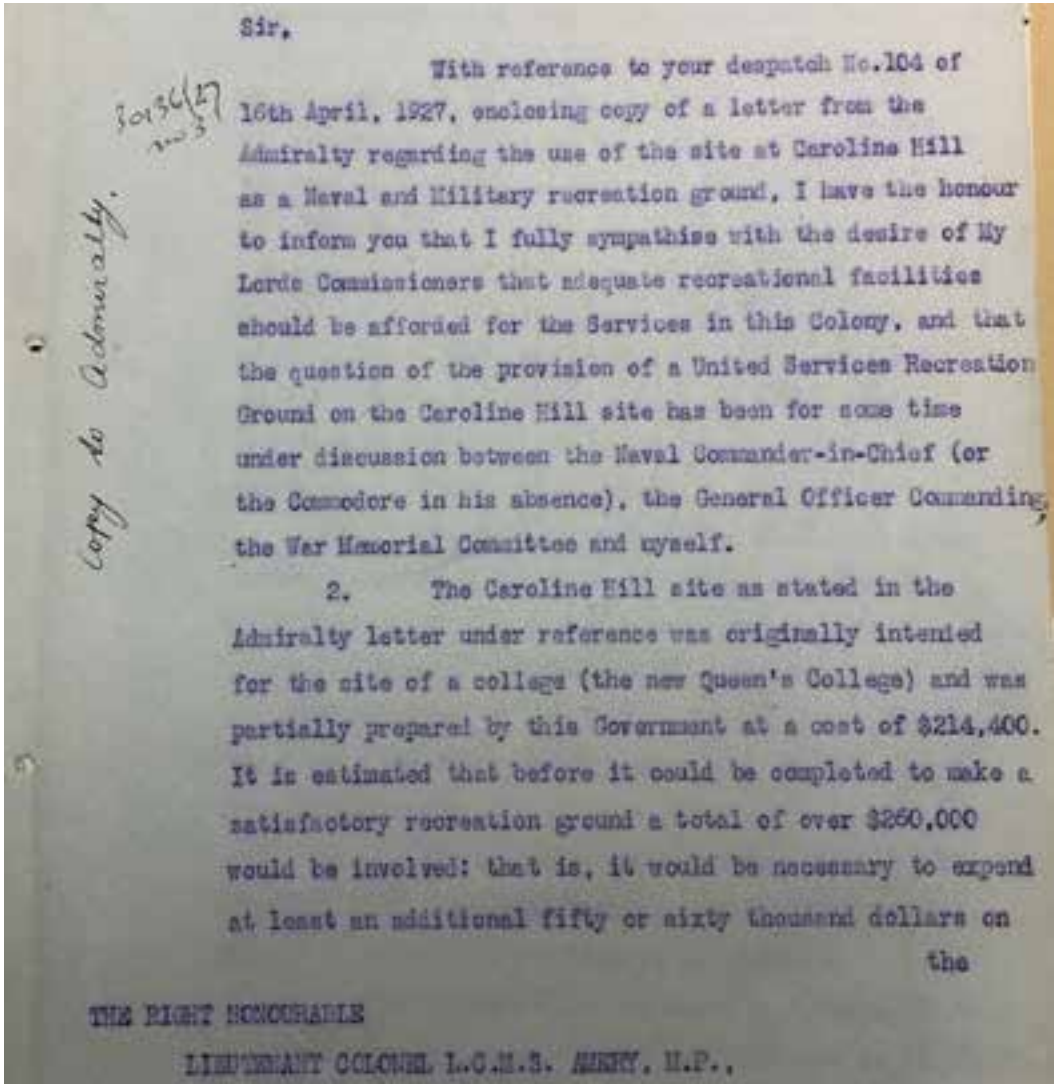
Amd by 1 on 62879/29

Downing Street,
14th December, 1928.

Sir,

With reference to Sir Cecil Clementi's despatch No.80 of the 10th of February, I have etc. to transmit to you the accompanying copy of a letter from the Admiralty relative to the provision of a ~~Naval and Military~~ United Services recreation ground at Caroline Hill.

Gov reminded



Sir,

With reference to your despatch No.104 of 16th April, 1927, enclosing copy of a letter from the Admiralty regarding the use of the site at Caroline Hill as a Naval and Military recreation ground, I have the honour to inform you that I fully sympathise with the desire of My Lords Commissioners that adequate recreational facilities should be afforded for the Services in this Colony, and that the question of the provision of a United Services Recreation Ground on the Caroline Hill site has been for some time under discussion between the Naval Commander-in-Chief (or the Commodore in his absence), the General Officer Commanding, the War Memorial Committee and myself.

2. The Caroline Hill site as stated in the Admiralty letter under reference was originally intended for the site of a college (the new Queen's College) and was partially prepared by this Government at a cost of $214,400. It is estimated that before it could be completed to make a satisfactory recreation ground a total of over $260,000 would be involved: that is, it would be necessary to expend at least an additional fifty or sixty thousand dollars on the

THE RIGHT HONOURABLE
LIEUTENANT COLONEL L.C.M.S. AMERY, M.P.,

Copy to Admiralty.

Fig. 3.2.2.6 Letter of discussions on the United Services Recreation Ground. (Source: National Archives, Kew. CO 129-510-3, Use of Caroline Hill for naval and military recreation ground.)

Fig. 3.2.2.7. Despatch 80 dated 10th February 1928 with discussions on the recreational ground. (Source: National Archives, Kew. CO 129-510-3, Use of Caroline Hill for naval and military recreation ground.)

Sookunpoo school site while the site formation of Queen's College took place from 1921 to 1926. However, in 1931 the government decided to close the Victoria British School. Approximately 50 students were affected and were transferred to the Quarry Bay School.

A c.1930 aerial photo (Fig. 3.2.2.8), shows that the site formation and relevant repair works of the entire Caroline Hill were largely completed. The building within the site is either the Victoria British School or the Junior Technical School which replaced it. The Morgan bungalow has been demolished. In the meantime, the St. Paul's Hospital, Convent and Convent School were completed while the Christ the King Chapel seemed to be still under construction. Some factory buildings and chimney previously belonging to the Hong Kong Cotton Spinning, Weaving and Dyeing Company still existed.

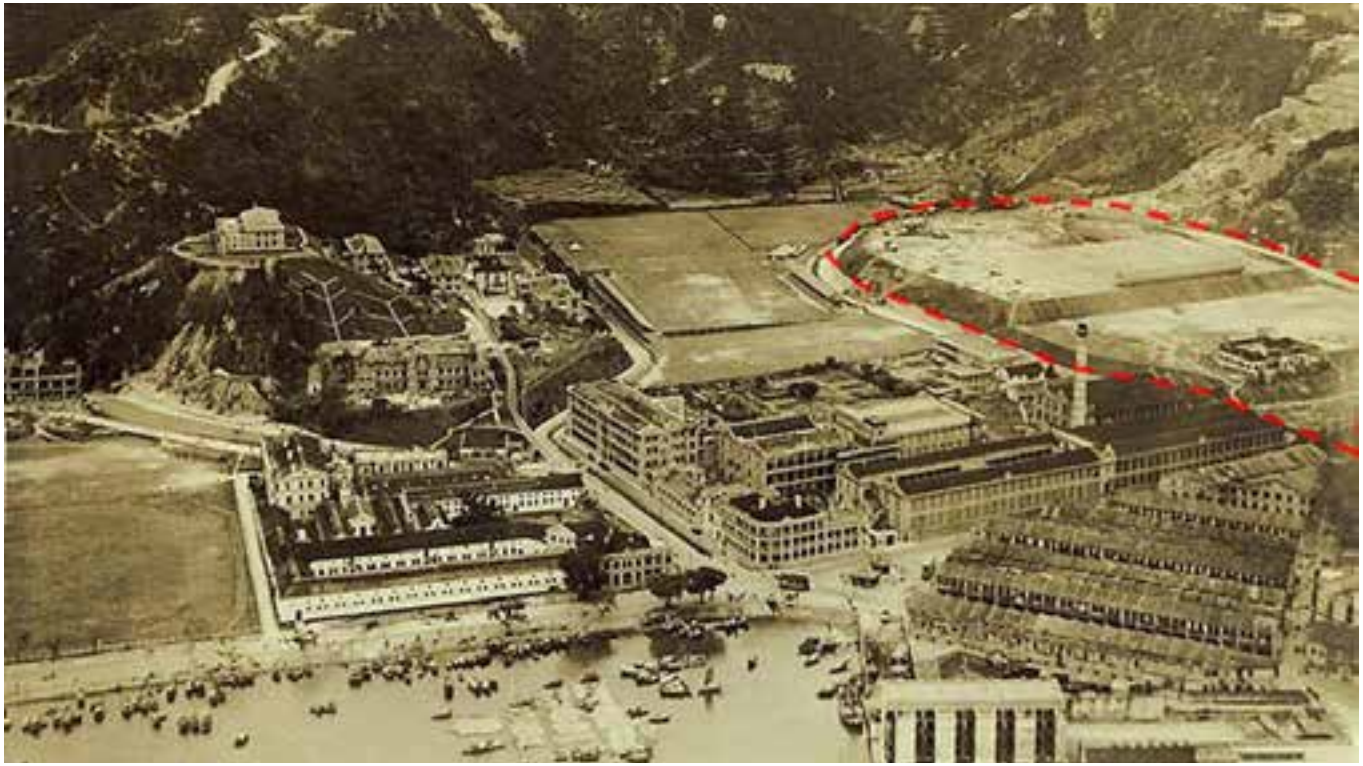


Fig. 3.2.2.8. Aerial View of Causeway Bay in late 1920s or early 1930s. (Source: H Wong, digitalized by flickr, https://www.flickr.com/photos/35328107@N08/4257151205) N08/4257151205)

Indicative boundary of Caroline HIll

Set up of the Junior Technical School

On the same year when Victoria British School closed, a committee was formed under the chairmanship of then Vice-Chancellor of the Hong Kong University, Sir William Hornell, to consider the possibility of introducing a system of technical education. One of the three recommendations in the report included the setting up of a Junior Technical School.[75] Following the report, the Government ventured into full-time technical education in 1933, with the Junior Technical School being founded in the same year. Mr George White became the first principal of the Junior Technical School.

The Junior Technical School was set up at the former Victoria British School in Caroline Hill. The school ran a limited, four-year course designed mainly as pre-apprentice training for engineering trades.[76] Student were aged between 12 to 16, with priority given to the sons of workers from the neighbouring Dockyards. Entry to the school was based on student completing an intelligence test, strict medical examinations and the discretion of the principal. Courses in the school include English, Arithmetic, Algebra, Machine Drawing, Woodwork, Pattern making and Engineering licence.[77]

75 Dr. D. D. Waters, 2000. "A Brief History of Technical Education in Hong Kong 1863 to 1980." Journal of the Royal Asiatic Society Hong Kong Branch, Vol. 40 (2000), p. 213

76 Vocational and Professional Education and Training (VPET) Repository. "Junior Technical School." Accessed on September 2021, retrieved from https://vpet.vtc.edu.hk/wiki/index.php?title=Junior_Technical_School

77 South China Morning Post, 15th March 1935. "Technical Education: Principal of junior technical school of colony's needs."

The Junior Technical School was temporarily closed during Japanese occupation and in 1941 had vacated the site. It reopened after WWII, moving location to share the campus known as the "Red Brick House" on Wood Road in Wanchai with the Hong Kong Technical College, which was previously named the Government Trade School and later became the Hong Kong Polytechnic University now in Hung Hom. The Junior Technical School has also been renamed, and today is the Tang Shiu Kin Victoria Government Secondary School. [78]

On the same year of the school's opening, it was reported that 108 feet of 6" cast iron piping were added to Caroline Hill Road as part of the Water Works in that year. [79]

Post Office Recreation Club ("PORC")

A portion of land to the northwest of the site of Junior Technical School was closed off and allotted to the Post Office Recreation Club in early 1941. This was acknowledged by A.B. Purves, the Director of Public Works, Chairman of Recreation Grounds Committee on 14th March 1941.[80] The lot number, as shown in the later drawings, was GLA-HK 707. The PORC was later constructed in the 1950s and will be further discussed in section 3.2.3.

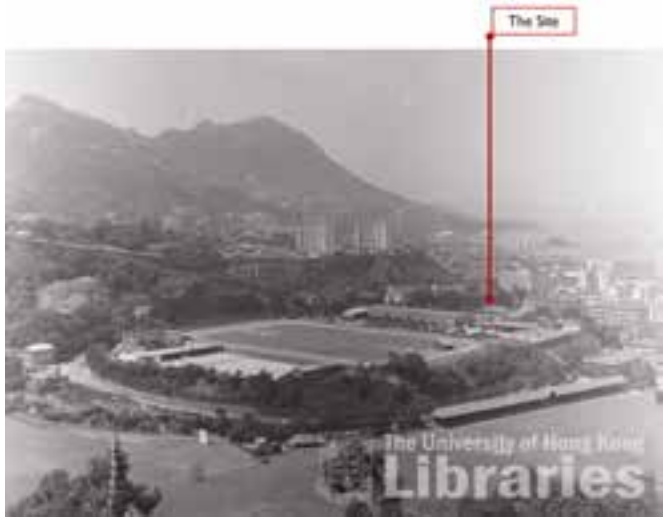


Fig. 3.2.2.9 Caroline Hill in the 1940s, looking westwards. The stadium of SCAA was completed and the land transport section of Public Works Department stood to the Northwest of it. (Source: HKU Library Special Collections, reference no. WCT-018)

Land Transport Section Offices

The Land Transport Section of the Public Works Department were built on Caroline Hill during the Japanese Occupation from 1941 to 1945 and on the site of Junior Technical School. The old school buildings were used as offices and stores by the Electrical and Mechanical Office. Needing workshops, the Japanese built two single storey buildings from hollow concrete blocks. The Japanese temporarily extended these workshops using wood framed structures, until later permanent buildings were completed (Fig. 3.2.2.9 and 3.2.2.10).[81]



Fig. 3.2.2.10 Caroline Hill in the 1940s, looking eastwards. The stadium of SCAA was completed and the land transport section of Public Works Department stood to the Northwest of it. (Source: HKU Library Special Collections, reference no. WCT-017)

78 Vocational Training Council, n.d. Junior Technical School. https://vpet.vtc.edu.hk/wiki/index.php?title=Junior_Technical_School

79 Report of the Director of Public Works, for the Year 1933, p.32

80 Hong Kong Government Gazette, 21st March 1941. GA 1941 no.343, Temporary closure of a portion of area 'C', Caroline Hill Recreation Ground.

81 Hong Kong and Far East Builder, 1955, vol. 11, no. 2. "New P.W.D. Workshops" p.33.

3.2.3 Caroline Hill in the late 20th century to present

In 1948, the Electrical Section and the Land Transport Section were combined to form the Electrical and Mechanical Office of the Public Works Department.[82] Their main duties were to rehabilitate Government's electrical machineries and installations, and to organize the Government's transport fleet. The fleet consisted of a large and varied assortment of ex-Army and requisitioned vehicles. They were to be converted into an effective unit and to establish a Workshop Organisation for the efficient maintenance and repair of all electrical and mechanical equipments (Fig. 3.2.3.1).[83]

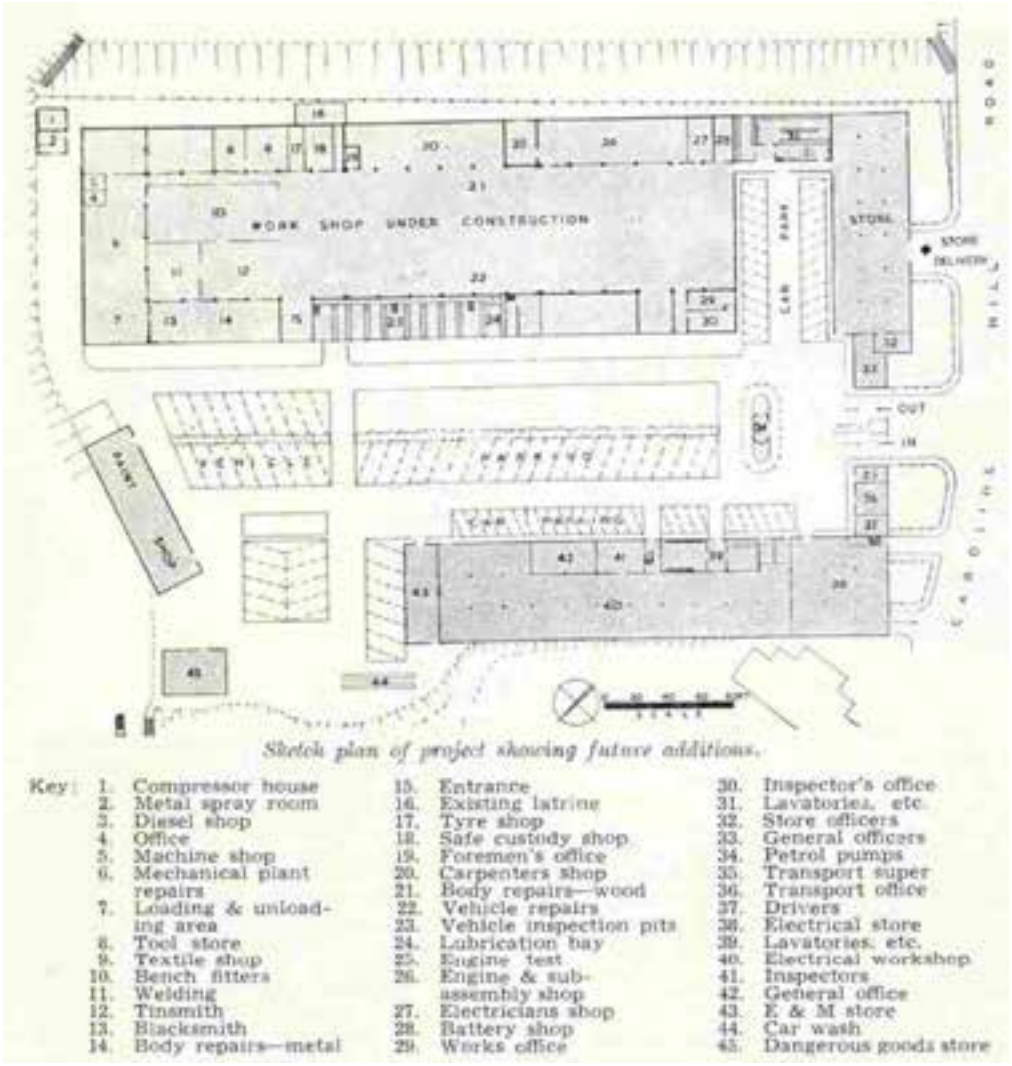


Fig. 3.2.3.1 Proposed plan of the new Public Works Department workshops. Source: Hong Kong and Far East Builder 1955, vol. 11, no. 2, p. 34

82 Hong Kong and Far East Builder, 1955.

83 Hong Kong and Far East Builder, 1955.

It was planned that the new Office would move into the Caroline Hill site. Planning of the new workshops started in 1949.[84] Several sites in North Point and Morrison Hill were also considered but the site in Caroline Hill turned out to be *"the most suitable"*.[85] However, the planning progress was delayed due to stringent financial conditions and difficulties in obtaining structural steel. With steel in short supply, the buildings original design steel framed design was scrapped. The new design would be a reinforced concrete building. The estimate cost of the new building amounted to $3,000,000.00.[86]

The construction of the workshops consisted of two parts,

"Part 1 – Construction of new mechanical workshops, and demolition of the existing workshop buildings

Part 2 – Construction of new stores, electrical workshops and office accommodation, and demolition of the existing office and stores buildings. Additional facilities being provided in the Second Stage are shower and cloakroom facilities for the workshop personnel and a canteen."

The first stage of the construction was completed by the end of September 1955. One of the most significant elements of the design was the expressed reinforced concrete framework that enabled a large clear floor space for the workshops (Fig. 3.2.3.2, 3.2.3.3 and 3.2.3.4).[87] They were designed in the Architectural Office of the Public Works Department in close consultation with the engineers of the Electrical and Mechanical Office.



Fig. 3.2.3.2 Work in progress and the physical models of the workshops. (Source: Hong Kong and Far East Builder 1955 vol. 11, no. 2, p. 35)

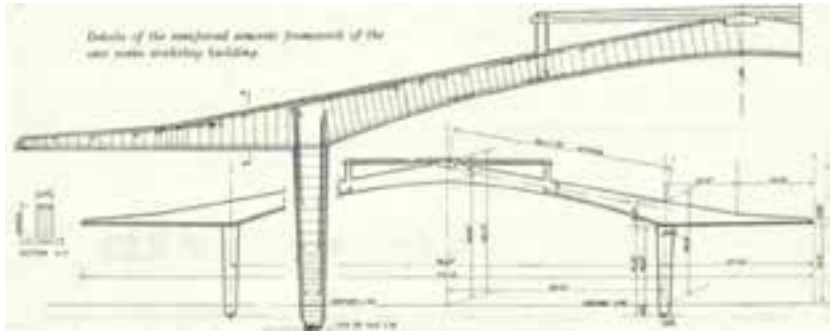


Fig. 3.2.3.3 Details of the reinforced concrete framework of the new main workshop building. (Source: Hong Kong and Far East Builder 1955, vol. 11, no. 2, p. 35)



Fig. 3.2.3.4 Part of the new mechanical workshops can be seen on the right side of this photo showing the rebuilding of the SCAA stadium in 1953. (Source: Bruce Deadman, digitalized by Gwulo)

84 Hong Kong and Far East Builder, 1955.

85 Hong Kong and Far East Builder, 1955.

86 Hong Kong and Far East Builder, 1955.

87 *The main building is 363 ft long (around 110m) and 131 ft wide (around 39m). In order to attain a closer agreement between the thrust line and the outline of the frame, a gable shape bent was chosen – the gable shape has the inherent advantages of the arch form. By haunching the members at the apex and at the column head, adequate sections are provided for maximum bending moments without penalizing the entire framing.* (Source: Hong Kong and Far East Builder 1955, vol. 11, no. 2, p.33)

In parallel with the construction of the first stage of Electrical and Mechanical Office, two recreation clubs were established and built during the same period.

The Cable and Wireless Club ("CWC") was opened in July 1952 by Mrs. H.C. Baker [88]. The clubhouse was located on the west of the Electrical and Mechanical Office, opposite to Po Leung Kuk. According to the approved record drawings by the Building Authority in 1952, the building was single storey with a hall, library, verandah, cloak, lavatories, 1no. boys' room, store, bar and kitchen. The site was named as Caroline Hill Recreation Ground "C", and was later renamed as I.L. 8597 (Fig. 3.2.3.5). [89]

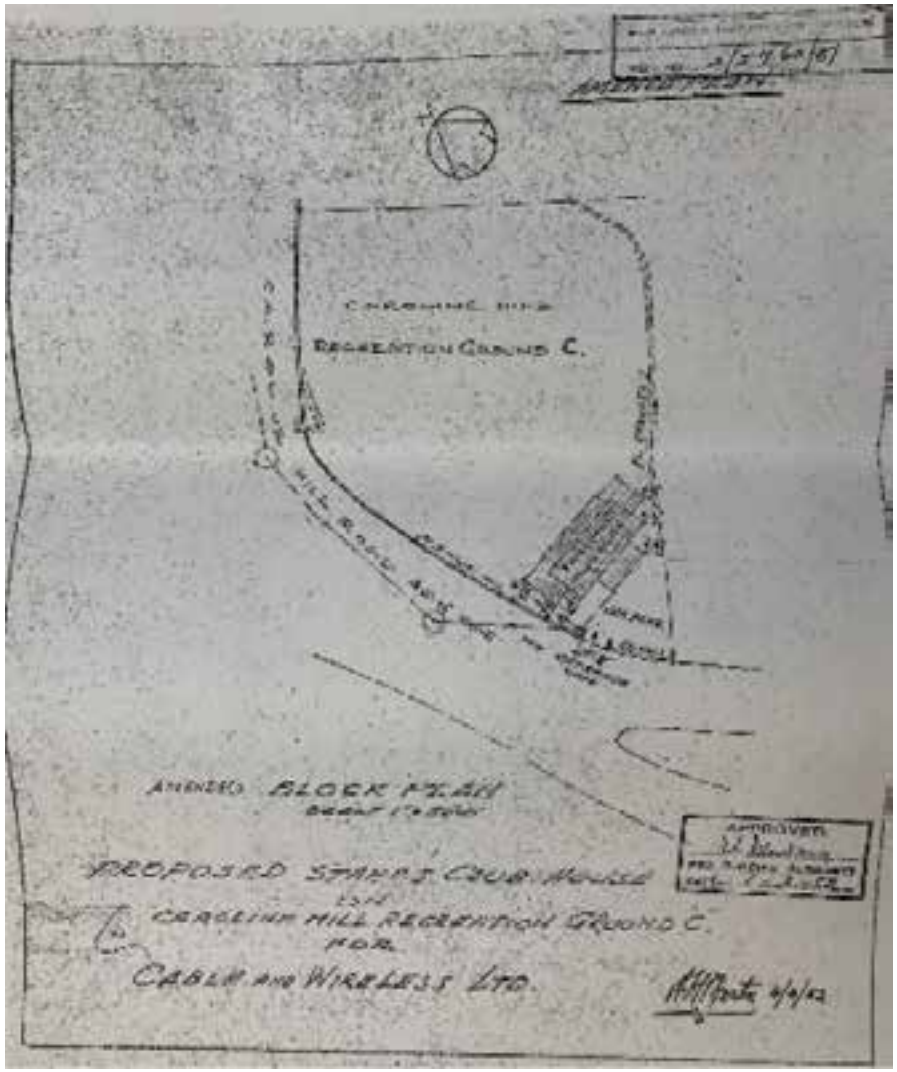


Fig. 3.2.3.5 Amended Block Plan for the proposed Cable and Wireless Clubhouse on Caroline Hill Recreation Ground C in 1952. (Source: Record Drawings DLO File_004)

88 South China Morning Post, 10th July 1952. "Cable & Wireless Sports Club".

89 HKRS156-1-5886 Bathing Shed - Application from the Post Office Recreation Club for the Allocation of a site on the HK Island

The Post Office Recreation Club ("PORC") to the Northwest of the former school site (Fig. 3.2.3.6 and 3.2.3.7) were allotted at the same time with the CWC in 1941. It was opened in May 1953 by Mrs. L. C. Saville, president of the club [90]. The one-storey clubhouse was designed by Mr. G. D. Su of Hsin Yieh Architects.[91] The area between the PORC and CWC was divided into a mini football pitch and several tennis courts.

A further major redevelopment in Caroline Hill was the reconstruction of the SCAA stadium (see Fig. 3.2.3.6 and 3.2.3.7). On the site of an early stadium built in 1934, a new redeveloped SCAA stadium was completed in 1953 [92]. A key change in the redevelopment plan was a change in the stadium's orientation, being altered from NE/SW to NW/SE. Studying the photo (Fig.3.2.3.8) and later map (Fig.3.2.3.9) in detail, a new access ramp features near the junction of Caroline Hill Road and Cotton Path. The construction of this access ramp would likely have required sections of the retaining walls to be demolished but the photo suggests the rest of the wall along the southern portion of Caroline Hill Road was unaltered.

Across the 1950s and 60s, EMSD was know for its vehicle workshops and vehicle repairing services. The vehicle workshops in Caroline Hill oversaw the repair of government vehicles until its relocation to Chai Wan in the mid-2014.[93]





Fig. 3.2.3.6 (left) and 3.2.3.7 (right) Aerial photos of Caroline Hill in 1949 (left) and 1963 (right). (Source: Survey and Mapping Office, Lands Department, The Government of Hong Kong and Hong Kong Geodata Store)

Indicative Site boundary



Fig. 3.2.3.8 Enlarged aerial photos of Caroline Hill in 1963.. (Source: Survey and Mapping Office, Lands Department, The Government of Hong Kong and Hong Kong Geodata Store)



Fig. 3.2.3.9 Part of the masonry walls are demolished for the construction of EMSD offices. (Source: Survey and Mapping Office, Lands Department, The Government of Hong Kong and Hong Kong Geodata Store, 196-SE-16, 1968)

90 South China Morning Post. 5th May 1953. "New Post Office Clubhouse at Caroline Hill". p. 3.

91 South China Morning Post. 5th May 1953.

92 South China Athletic Association, n.d. "History". https://www.scaa.org.hk/index.php/About/about_history/l/english.html

93 Development Bureau, HKSAR. (2017) Blog Article from Former Secretary for Development, Mr. Paul Chan - Farewell to Caroline Hill. Accessed on October 2021, accessed from https://www.devb.gov.hk/en/home/Blog_Archives1/index_id_110.html

There were major changes to the Site in mid 1960s. To facilitate constructing the second stage of the Electrical and Mechanical Offices, part of the retaining walls to the southeast of the PORC (see Fig. 3.2.3.9 and 3.2.3.10, the missing section between the currently graded walls) were demolished during 1960 to 1967. The old offices were demolished, and new electrical and mechanical office accommodation expanded across Caroline Hill. A new opening was made to the south the Cable and Wireless Club for vehicles' entry.

The first Civil Aid Services Headquarters was also built as part of the second stage of the Electrical and Mechanical Offices in 1966.[94] This can be observed from the survey plan dated 1968 (Fig. 3.2.3.9) and aerial photo dated 1967 (Fig. 3.2.3.10). The 7-storey building was built in a Modernist style, with panels on the northeast façade being painted in light blue. The Apprentice Training Centre was also set up in EMSD offices later in 1975 [95].

In 1991, it was reported that three sides of the SCAA stadium, the north, east and south stands, would be demolished. [96] The alterations to the stadium reduced the spectator seating to just 8,000 to 10,000[97]. The pitch itself was sub-divided with part of it being for use as a golf driving range. Judging by the aerial photos dated 2000 (Fig. 3.2.3.11), when the stadium stands were demolished, a significant portion of the masonry retaining walls along Caroline Hill Road were taken down, and replaced with hoardings, most of which still exist today. Only a small portion of the old masonry walls at the junction between Caroline Hill Road, Stadium Path and Eastern Hospital Road still survive today.

94 South China Morning Post, 20th June 1966. "New C.A.S. Headquarters".

95 Departmental Report by the Director of Public Works 1973, p. 95 item 8.56

96 大公報, 20 March 1991. 南華體育會運動設施　將分期進行維修改建　保齡球場館所有球道重新裝修　足球場設三面看台另興建宿舍.. Hong Kong. p. 8

97 South China Morning Post, June 6th 1995. "$300m plan for SCAA".

The Electrical and Mechanical Office and the Civil Aid Service Headquarters moved away from the Site in 2005 and 2006 respectively. Following their departure, a series of other government departments then used the site.[98] Their stay was short lived as more suitable and fit for purpose properties had been found elsewhere in the city. The site was vacated by all tenants in around 2018.[99]

In 2017, documents from the Legislative Council Finance Subcommittee reported the planned demolition of buildings on the Caroline Hill. Works included:

- Demolition of E&M offices and workshops, CAS headquarters, Post Office Recreation Club, and PCCW Recreation Club.[100]
- Interruption or redirection of basement facilities
- Formation of entrances to the level of current paved walkway
- Closure of Site after demolition works

With a site area totalling 26,300m^2, the demolition cost $52.6M. 87 out of 120 trees were kept, including three important trees and two trees listed as old and valuable trees (OVT). Demolition works commence in mid-2017 and were completed in 2019.

98 香港立法會財務委員會·工務小組委員會討論文 PWSC(201 6 -1 7) 47. Accessed on September 2021, retrieved from legco.gov.hk/yr16-17/chinese/fc/pwsc/papers/p16-47c.pdf

99 Government Property Agency, (2019). Vacant premises surplus to the operational needs of the Government located in urban area and with floor area over 100 m2. Accessed on October 2021, retrieved from https://gia.info.gov.hk/general/201904/03/P2019040300484_307674_1_1554278557815.pdf

100 香港立法會財務委員會·工務小組委員會討論文 PWSC(201 6 -1 7) 47 。Accessed on September 2021, retrieved from legco.gov.hk/yr16-17/chinese/fc/pwsc/papers/p16-47c.pdf



Fig. 3.2.3.10 Aerial photo showing the completed second stage of the Electrical and Mechanical Offices in 1967. (Source: Survey and Mapping Office, Lands Department, The Government of Hong Kong and Hong Kong Geodata Store, 1967)



Fig. 3.2.3.11 Enlarged aerial photos of Caroline Hill in 2000. (Source: Survey and Mapping Office, Lands Department, The Government of Hong Kong and Hong Kong Geodata Store)

3.3 EXISTING MASONRY WALLS AND ASSOCIATED PIPEWORK

3.3.1 Existing Masonry Walls and Copings

No record drawings or technical information of the original construction of the masonry walls were found when this document was prepared.

According to a study report published by CEDD, [101] there are twelve typical types of masonry wall construction in Hong Kong. They are summarized in the table below:

TYPE NO.	DESCRIPTION	REFERENCE PHOTO	EXAMPLE
1	Dry Packed Random Rubble Wall[102]		11SW-B/CR 406 Hong Kong Zoological and Botanical Gardens

Fig. 3.3.1.1 Photo of retaining wall 11SW-B/CR 406 in Hong Kong Zoological and Botanical Gardens

101 Civil Engineering and Development Department, 1980. "Appendix A: Report on the Study of Old Masonry Retaining Walls." Accessed on September 2021, retrieved by https://www.cedd.gov.hk/filemanager/eng/content_182/er31_appendix.pdf

102 Most dry packed walls do not exist in Hong Kong anymore.

TYPE NO.	DESCRIPTION	REFERENCE PHOTO	EXAMPLE
2	Pointed Random Rubble Wall	 *Fig. 3.3.1.2 Photo of retaining wall 11SW-A/R 962 Former Hollywood Road Police Quarters*	11SW-A/R 962 Former Hollywood Road Police Quarters
3	Dry Packed Squared Rubble Wall[103]	N/A	Former 11SW-A/R109, now demolished/ modified
4	Dry Packed Squared Wall with Horizontal Beams[104]	N/A	Former 11SW-A/R163, now demolished/ modified

103 Most dry packed walls do not exist in Hong Kong anymore.

104 Most dry packed walls do not exist in Hong Kong anymore.

TYPE NO.	DESCRIPTION	REFERENCE PHOTO	EXAMPLE
5	Pointed Squared Rubble Wall	 *Fig. 3.3.1.3 Photo of retaining wall 11SW-A/R 838 Forbes Street, Kennedy Town*	11SW-A/R838 Forbes Street, Kennedy Town
6	Pointed Squared Rubble Wall with Horizontal Beams	 *Fig. 3.3.1.4 Photo of retaining wall 11SW-A/R141*	11SW-A/R141 Aberdeen Street, Behind Ming Hing House, Sheung Wan

TYPE NO.	DESCRIPTION	REFERENCE PHOTO	EXAMPLE
7	Dressed Block Wall	 *Fig. 3.3.1.5 Photo of retaining wall 11SW-A/CR 566 Forbes Street, Kennedy Town*	11SW-A/CR566 Forbes Street, Kennedy Town
8	Dressed Block Wall with Horizontal Beams	 *Fig. 3.3.1.6 Photo of retaining wall 11SW-B/R 55 10 Hollywood Road, Central Police Station*	11SW-B/R 55 10 Hollywood Road, Central Police Station

TYPE NO.	DESCRIPTION	REFERENCE PHOTO	EXAMPLE
9	Tied Face Wall	 *Fig. 3.3.1.7 Photo of retaining wall 11SW-B/R 80 Battery Path*	11SW-B/R 80 Battery Path
10	Tied Face Wall with Horizontal Beams	 *Fig. 3.3.1.8 Photo of former retaining wall 11SW-A/R45*	Former 11SW-A/R45, now demolished

TYPE NO.	DESCRIPTION	REFERENCE PHOTO	EXAMPLE
11	Random Rubble Wall with Stone Ties	 *Fig. 3.3.1.9 Photo of retaining wall 11SW-A/R 70 Hollywood Road Police R & F Married Quarters, Central*	11SW-A/R 70 Hollywood Road Police R & F Married Quarters, Central
12	Recent Masonry Walls (concrete walls with stone facing)	 *Fig. 3.3.1.10 Photo of retaining wall 11SW-B/CR 5 Glenealy Path*	11SW-B/CR 5 Glenealy Path

When considering the definitions and due to the walls various heights, the masonry walls at Caroline Hill would be categorized under "Dressed Block Wall with Horizontal Beams" and "Dressed Block Wall". The extents of each type of masonry walls are indicated in Fig. 3.3.1.13. There are two types of coping details found on the existing masonry walls. One is with vermiculated rustication in framed panels (Fig. 3.3.1.11) and the other is plainly rendered (Fig. 3.3.1.12). The extents of each type of coping design are indicated in Fig. 3.3.1.14. Both coping designs project outwards with the incorporation of drip details. The top surface of the coping falls inward to a drainage channel.

The masonry walls were first shown in an aerial photo dated late 1920s or 1930s (Fig 3.3.1.15) when the site formation of Caroline Hill had largely been completed. In a later photo c.1945 (Fig 3.3.1.16) taken looking from Leighton Road towards the newly completed Po Leung Kuk, the coping detail is notably different from the detail today (Fig. 3.3.1.18). Judging from the deteriorated section shown in the photo, the original coping design seems to be a thin layer of concrete screeding applied on top of the granite blocks. The current vermiculated rustication coping design can probably be traced back to before the 1950s judging from a Public Works Department photo (Fig. 3.3.1.17) showing a Hong Kong Government Department Despatch Service Van parking in front of the masonry walls on the east of Caroline Hill Road as well as another photo dated mid-1950s (Fig. 3.3.1.19) showing same details on the west of Caroline Hill Road.



Fig. 3.3.1.11 Existing coping with vermiculated rustication, 2021. (Source: Purcell, 2021)



Fig. 3.3.1.12. Existing coping with plain rendered finish, 2021. (Source: Purcell, 2021)

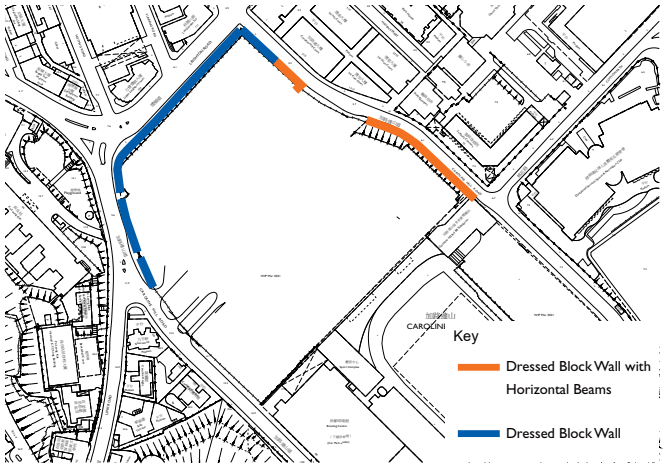


Fig. 3.3.1.13. Location plan indicating the extents of two types of masonry walls. (Source: Survey and Mapping Office, Lands Department, The Government of Hong Kong and Hong Kong Geodata Store. Modified by Purcell)

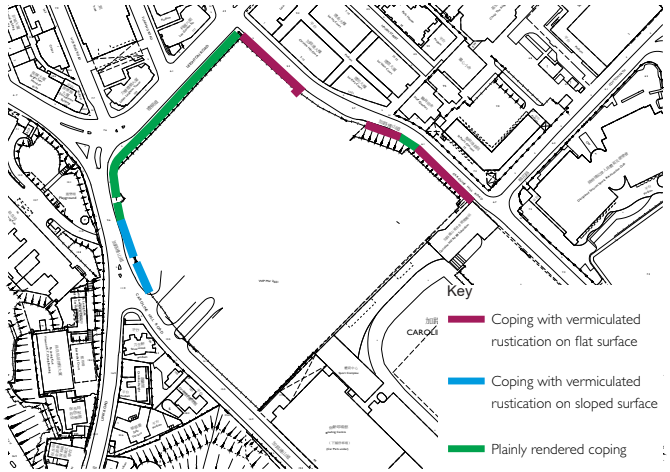


Fig. 3.3.1.14. Location plan indicating the extent of two types of coping designs.. (Source: Survey and Mapping Office, Lands Department, The Government of Hong Kong and Hong Kong Geodata Store. Modified by Purcell)



Fig. 3.3.1.15. Aerial photo dated late 1920s or early 1930s showing the largely completed site formation works at Caroline Hill. (Source: H Wong, digitalized by flickr, https://www.flickr.com/photos/35328107@N08/4257151205)



Fig. 3.3.1.17. Photo showing motor despatch van with masonry wall at Caroline Hill behind. (Source: HKRS246-1-28-2_No. 523/50 Motor Despatch Van, dated 3 March 1950)



Fig. 3.3.1.16. Photo dated c.1945 showing the masonry wall opposite Po Leung Kuk with different coping detail. (Source: Life Magazine)



Fig. 3.3.1.18. Existing view on Leighton Road looking towards Po Leung Kuk. (Source: Purcell, 2021)

The first details of retaining wall construction date to the 1923 Buildings Ordinance. There were changes introduced in 1935, then later again in 1950. A summary of the construction requirements is outlined below:

> *"All masonry and brick walls exceeding 12 feet in height shall be provided with lacing or bond courses of good cement concrete at least one foot in depth extending throughout the full thickness of the wall. The lacing courses shall be thoroughly keyed into the wall on their upper and lower beds. The distance between the top of the foundation courses and first of such lacing courses and the distance between any two adjacent lacing courses shall not exceed 6 feet measured vertically. In the case of a masonry wall the stones shall be roughly squared and have flat beds, and bond or header stones at least 2 feet 6 inches in length must be inserted in alternate courses and laid to break joint and there shall not be less than one such bond or header stone to every square yard of surface area of the wall. At the back of every retaining wall (except when such is constructed in dry masonry) there shall be formed a layer of hand-packed broken brick or granite of a thickness of at least 12 inches and every such wall shall also be provided with weepholes of not less than 3 inches internal diameter and at least one such weephole shall be provided to every four superficial yards of the face of the wall.*
>
> *Every retaining wall shall be provided with a proper coping of cement concrete or other impervious material approved by the Building Authority and adequate channels shall be formed at the top and toe of every such wall to intercept and carry off storm water."*

Reviewing the walls against the 1935 Buildings Ordinance, details of existing provision of coping, lacing courses and weephole provision, appear to comply with the standards of the day.

Due to the lack of record drawings and early maintenance records, it is uncertain whether there has been any major update or modifications carried out by Public Works Department to upgrade the masonry walls to standards in later Buildings Ordinances.



Fig. 3.3.1.19. The coping design with vermiculated rustication is also visible in a photo taken at the junction of Link Road and Caroline Hill Road looking north with the Cable and Wireless Club in the near background. dating to the mid-1950s. (Source: unknown author)

3.3.2 Existing Earthenware Pipes

There are a total of three exposed, built-in vertical pipes installed in the masonry walls 11SW-B/FR 193 and 11SW-B/FR 32. The one located in 11SW-B/FR 193 and one of the two in 11SW-B/FR 32 are eartehnware pipes of similar design. The other one in 11SW-B/FR 32 is a cast iron pipe (Fig. 3.3.2.3). According to ASD's 2013 maintenance records, the cast iron pipe was a recent replacement of an earlier earthenware pipe which was damaged by the growth of tree roots which had penetrated the pipe.

All three pipes function as the above ground drainage to discharge the rainwater collected from the slope above.



Fig. 3.3.2.1. Cast iron replacement pipe. (Source: Purcell, 2021)



Fig. 3.3.2.2 Existing condition of earthenware pipe. (Source: Purcell, 2021)



Fig. 3.3.2.3 Bottom part of the earthenware pipe with historical repairs. (Source: Purcell, 2021)

Earthenware pipe (or glazed clay pipe, also more commonly known as vitrified clay pipe) is made by firing clay in the kiln with extra application to create glazing. The history of the use of clay pipe dates back to early civilizations in Babylonia. It was not widely used across the globe until late 1800s to 1900s after the development of glazing technology. Glazing greatly improves the life span and resistance to almost all domestic and industrial sewage. The term "glazed earthenware pipe" was first mentioned in the 1898 Public Works Report:

> *"In Hongkong a perfect system of pipe sewers has been laid, of sufficient capacity to carry sullage water from the houses, and practically all houses are now connected with these sewers by properly trapped house connections of glazed earthenware pipes."*

There are frequent references to glazed earthenware pipe in the Public Works Reports, noting their use on various building or infrastructure projects during the early 1910s.

Though the term "glazed clay pipe" and "vitrified clay pipe" are now commonly used interchangeably, there is difference between the two with regards to the glazing process. The glazing on the glazed clay pipe is formed by apply a salt glaze to both its exterior and interior, or being dipped in glaze, to seal the surface before being fired, due the limits of temperature the kiln was able to achieve in the past. On the other hand, the glazing on the vitrified clay pipe is formed directly by the melting of earthenware inside the kiln with a higher temperature with the help of the later technology improvements. By this definition, the existing two earthenware pipes can be categorized as glazed clay pipes.

Glazed or vitrified clay pipes are very heavy. Logistic arrangements were probably challenging in the past, considering they are large in size and were commonly used for underground sewage. This is likely a key reason why its popularity dwindled post 1950s, as well as there being the emergence of ductile iron pipe and PVC pipes. There are some other disadvantages to glazed clay pipe or vitrified clay pipe, including:

1. high brittleness, which can form cracks allowing root intrusion;
2. the maximum internal pipe pressure is lower than that of metal ones, which means it is not suitable for usage in the areas with higher water pressure;
3. limitation in length due to the constraints in the manufacturing process.

The two existing earthenware pipes are generally in fair condition without major defects. Historical patch repairs were noted in ASD's maintenance records. No manufacturer's marks were found in the easily accessible areas around the pipes, nor on the original construction drawings and specifications. It is therefore unknown whether they are original to the 1920s construction of the masonry walls.

3.4 MAPS/ AERIAL PHOTOS PROGRESSION

1845

- Jardine settled in East Point, constructing offices, godowns and the Matheson Bungalow
- Morgan's Bungalow (ID 1) was constructed
- Residence of Merears Ho [105] was built to the southwest of Morgan's Bungalow, on the present Happy Valley Racecourse

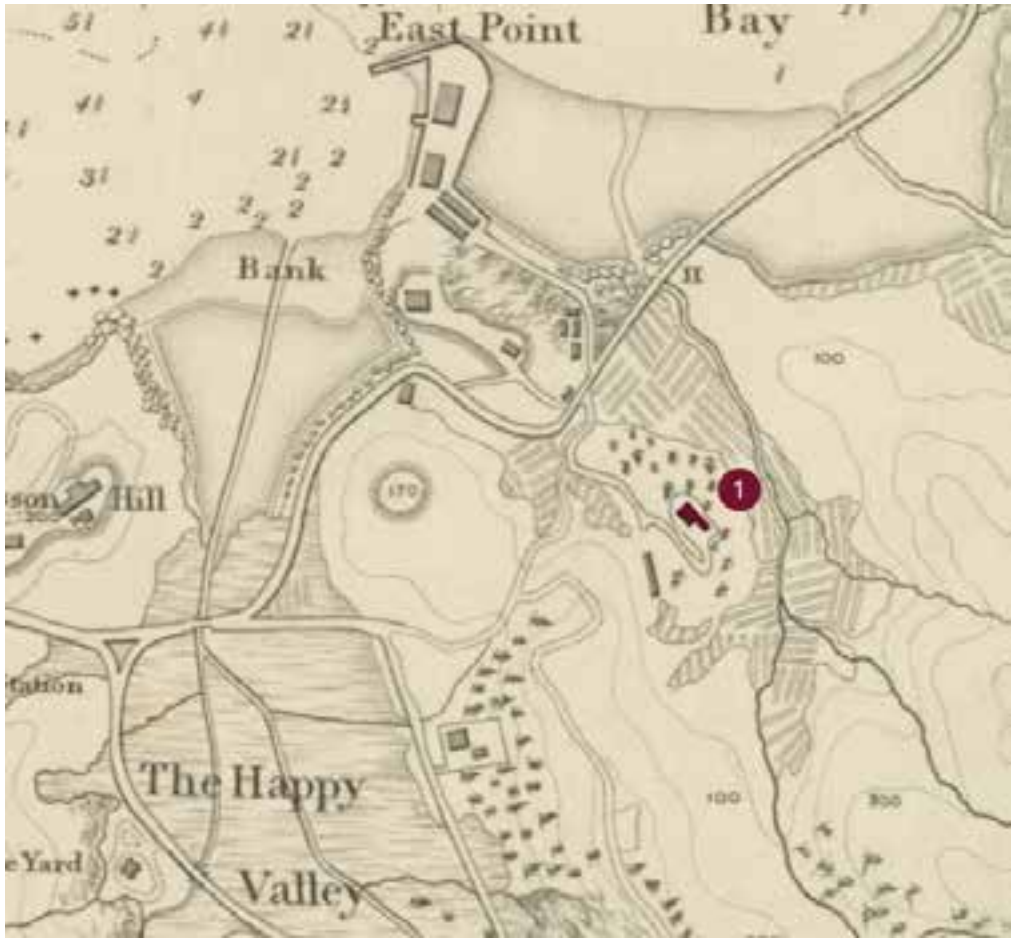


Fig. 3.4.1 Details of Plan of Victoria, Hong Kong, 1845. Source: National Library of Scotland, digitalized by hkmaps.hk

105 The name of the residence is shown on the National Archive, 1845-1846 Plan of Victoria. WO 78/479. They are the buildings to the east of "The Happy Valley" on this map.

1889

- Sookunpoo valley, Caroline Hill and Leighton Hill were used to be surrounded by a vast amount of vegetation
- Sookunpoo School (ID 2) stood on the north of Caroline Hill
- Morgan's Bungalow or possibly St. Francis College (ID 1) stood on the same lot in Caroline Hill yet its name was removed from the map
- The Caroline Hill Road was formed
- Chinese cemetery located to the south of Caroline Hill
- Wong Nai Chung Valley Racecourse was built
- A public garden was proposed to the North of Wong Nai Chung Valley
- The Bowrington Canal was formed running through Russell Street, Stamp Street East and ended to the north of the racecourse



Fig. 3.4.2 Details of Plan of the City of Victoria, Hong Kong, 1889, National Archive CO 700/HONG KONG AND CHINA7 Source: The National Archives, Kew, digitalized by gwulo.com

1901

- Sookunpoo School (ID 2) and the Morgan's Bungalow or possibly St. Francis College (ID 1) remained
- The Hong Kong Cotton-spinning, Weaving and Dyeing Company (ID 3) were completed to the northeast of Sookunpoo School. The complex included the mills, Reelines Ho. and Scutching Ho's residence, Engines and Boilers and godowns
- Belilios Reformatory was located to the east of Sookunpoo



Fig. 3.4.3 Details of Plan of the City of Victoria, Hong Kong, 1901, National Archive CO 700/HONG KONG AND CHINA21 Source: The National Archives, Kew, digitalized by gwulo.com

1924

- The Hong Kong Cotton-spinning, Weaving and Dyeing Company (ID 3) remained
- The layout of Sookunpoo School was changed after the Site was hand over to the Victoria British School (ID 4)
- The Site at Caroline Hill was formed, the hills were levelled
- Morgan's Bungalow or possibly St. Francis College was demolished
- The Queen's Recreation Ground was formed from land reclamation
- Recreation grounds to the east of Caroline Hill was formed
- St. Margaret's Church (ID 5) was completed



Fig. 3.4.4 Aerial photo of Happy Valley, Hong Kong, 1924, NCAP-000-000-348-917 Source: National Collection of Aerial Photography

1934

- East Point Hill was flattened
- The building of Victoria British School (ID 4) still existed
- A stadium was built by the South China Athletics Association across Caroline Hill
- Po Leung Kuk (ID 6) was completed
- Christ the King Chapel (ID 7) was completed
- Tung Wah East Hospital (ID 8) was completed
- Shing Kwong Church (ID 9) was completed
- Indian Recreation Club (ID 10) was completed
- A path was opened from the West of Caroline Hill to the School (ID 11)
- Part of the cotton mill's structures were demolished by St Paul's
- Hong Kong Electric Company's staff quarters were built
- Construction of the Leighton Hill government quarters
- Zoroastrian building was completed

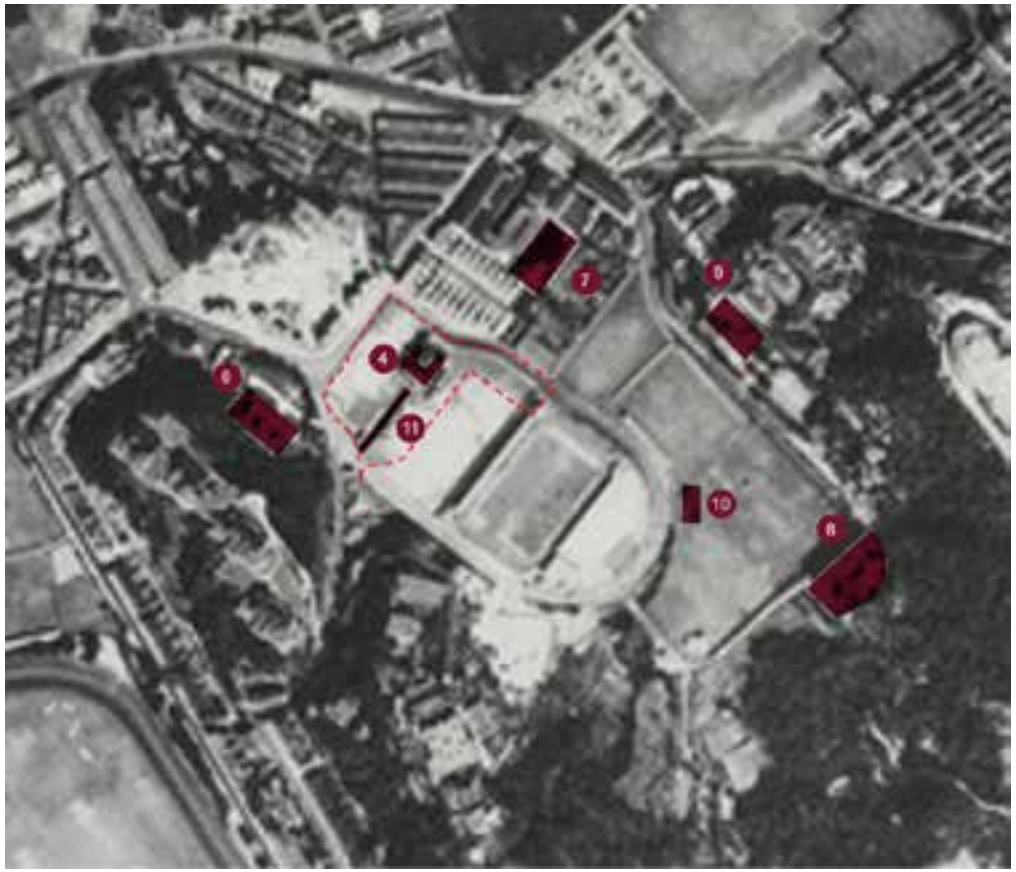


Fig. 3.4.5 Aerial photo of Happy Valley, Hong Kong, 1934, NCAP-000-000-348-404 Source: National Collection of Aerial Photography

1945

- Land Transport Section set up buildings in Caroline Hill. The old Junior Technical School buildings were used as offices and stores by the Electrical and Mechanical Office. Two new workshops (ID 12) were built by Japanese.
- S.K.H. St. Mary's Church (ID 13) was completed
- St. John Ambulance Brigade Hong Kong Island Area Headquarters (ID 14) was established
- Confucius Hall (ID 15) was established
- A building (ID 16) was built by the South China Athletic Association to the south of the stadium



Fig. 3.4.6 Aerial photo of Caroline Hill and surrounding environment, Hong Kong, 1945, 1945_681_6-4067 Source: Survey and Mapping Office, Lands Department, The Government of Hong Kong and Hong Kong Geodata Store

1949

- Leighton Hill Government Quarters (ID 17) were completed
- Part of Cotton Mills buildings were demolished by St. Paul's
- Construction of St. Paul's Nursery (ID18) and Dormitory (ID19)
- More site constructions of small building structures/sheds and large number of vehicles were observed within the site of Land Transport Section.

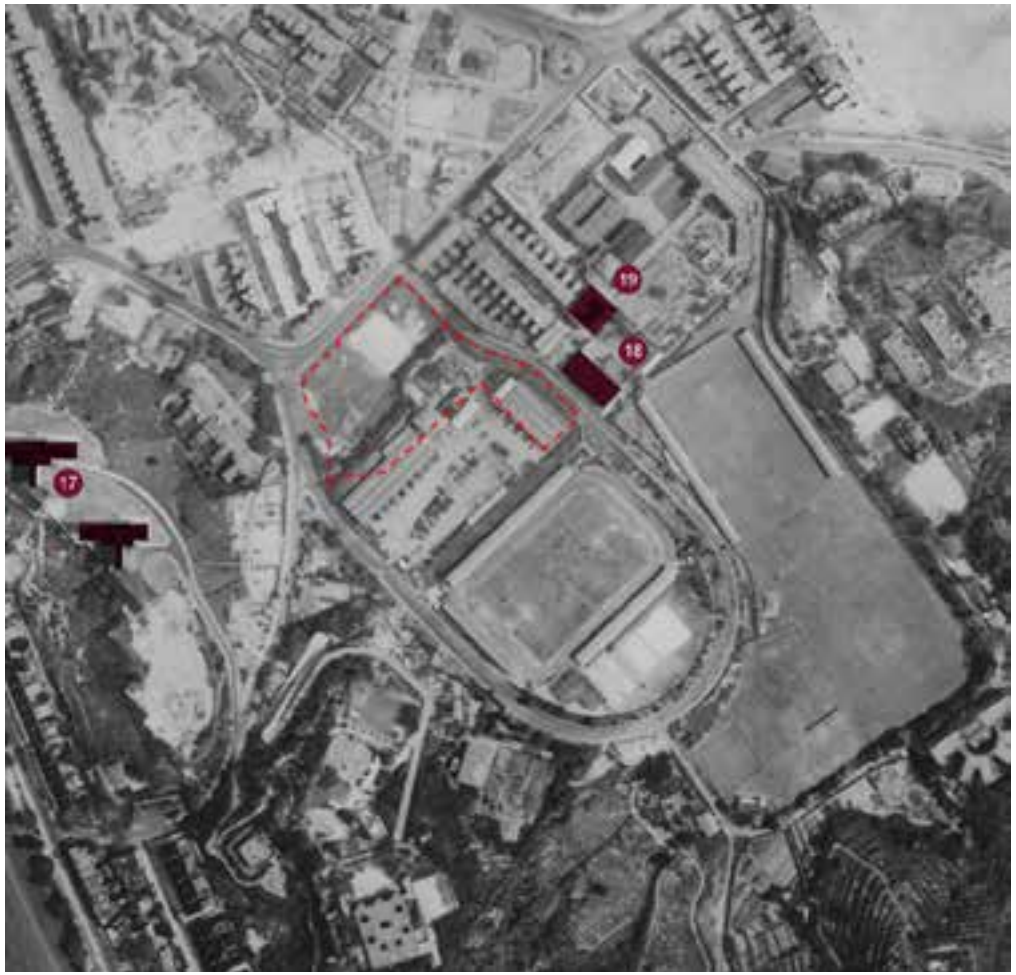


Fig. 3.4.7 Aerial photo of Caroline Hill and surrounding environment, Hong Kong, 1949, 1949_81A_128-6077 Source: Survey and Mapping Office, Lands Department, The Government of Hong Kong and Hong Kong Geodata Store

1963

- Cable and Wireless Club (ID 20) and Post Office Recreation Club (ID 21) were completed
- A mini football court and several tennis courts were set up between Post Office Recreation Club and Cable and Wireless Club
- New Electrical and Mechanical workshops (ID 22) for the Public Works Department were completed
- Portion of the retaining walls (ID 23) were demolished due to the construction of new workshops
- New South China Athletics Association stadium was constructed. Access ramp was built near the junction between Cotton Path and Caroline Hill Road, which involved the partial demolition of the retaining wall (ID 24)
- Chinese Congregational Church was completed
- The old Government Stadium (later Hong Kong Stadium) was completed
- S.K.H. St. Mary's Church General Office was constructed
- Other major constructions included construction of Ho Tung Technical School, Buddhist Wong Cheuk Um Primary School, Buddhist Wong Fung Ling School, Sheng Kung Hui Kindergarten, St. Mary's Church Primary School, Eastern Hospital Road Government School, Church of Christ and School, Hennessy Road Government Primary School

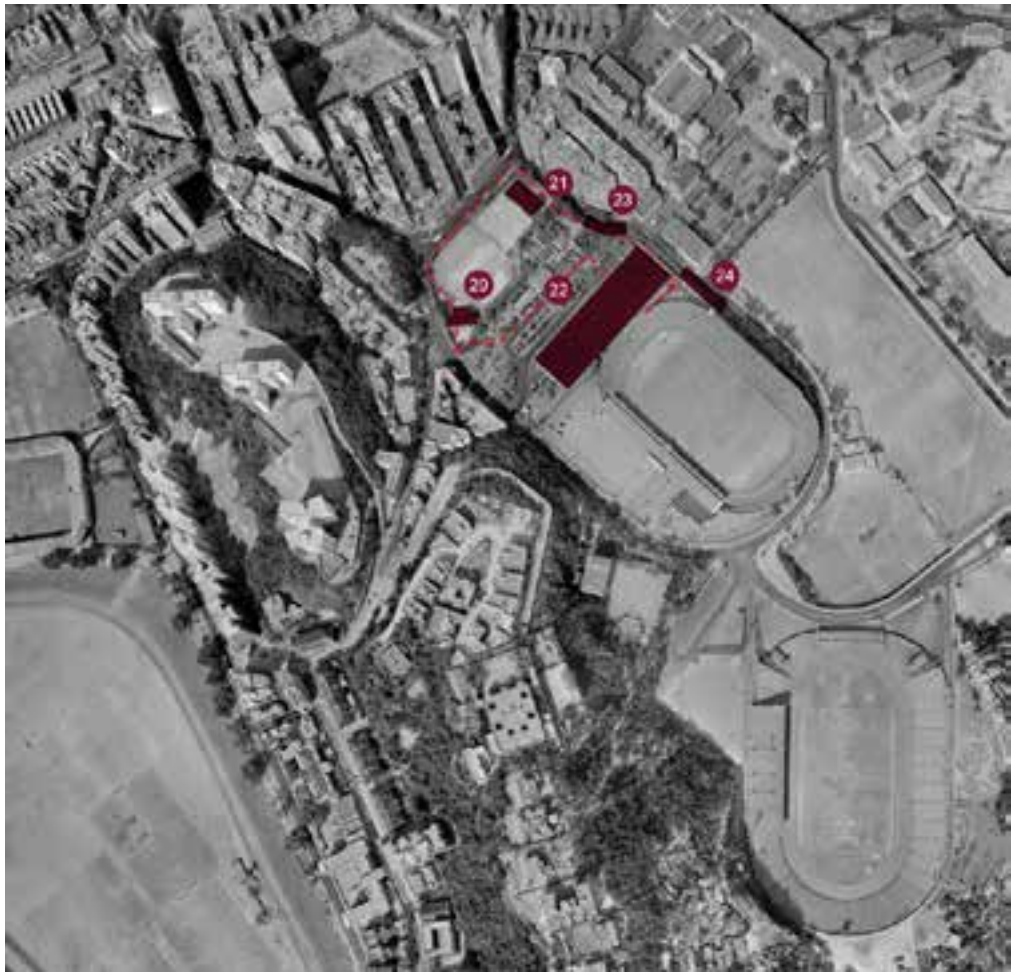


Fig. 3.4.8 Aerial photo of Caroline Hill and surrounding environment, Hong Kong, 1963, 1963_1963-7061 Source: Survey and Mapping Office, Lands Department, The Government of Hong Kong and Hong Kong Geodata Store

1967

- Civil Aid Services headquarters (ID 25) were completed
- New offices for the Public Works Department (ID 26) were completed
- Bowling centre of South China Athletic Association (ID 27) was completed
- Fontana Garden was constructed

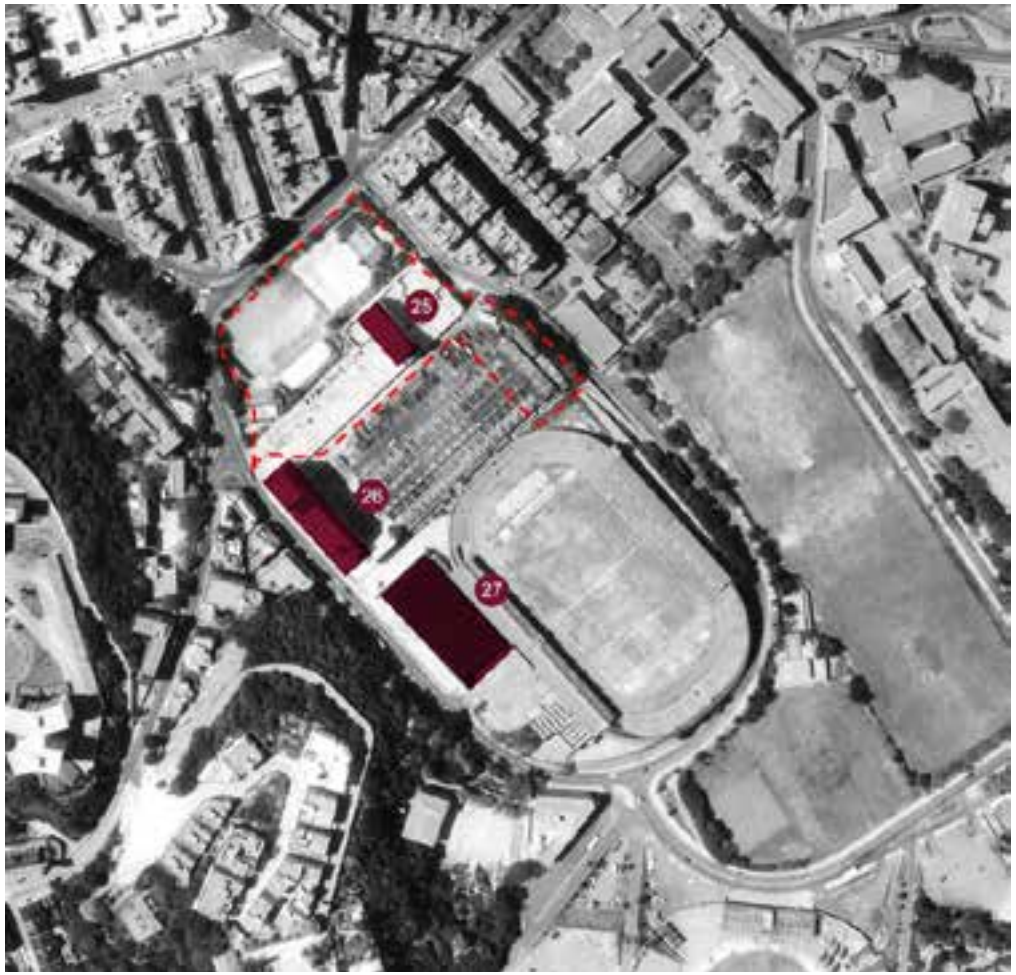


Fig. 3.4.9 Aerial photo of Caroline Hill and surrounding environment, Hong Kong, 1967, 1967_1967-5612 Source: Survey and Mapping Office, Lands Department, The Government of Hong Kong and Hong Kong Geodata Store

1976

- Sport Centre in SCAA (ID 28) was completed
- St. Paul's Nursery was demolished, the New Convent Building (ID 29) was constructed

1988

- Additions to Cable and Wireless Club (ID 30) completed
- Reconstruction of St. Paul's Convent School (ID 31) completed
- Construction of Beverly Hill
- Construction of Lee Garden and One Hysan Avenue

N

Indicative Site boundary

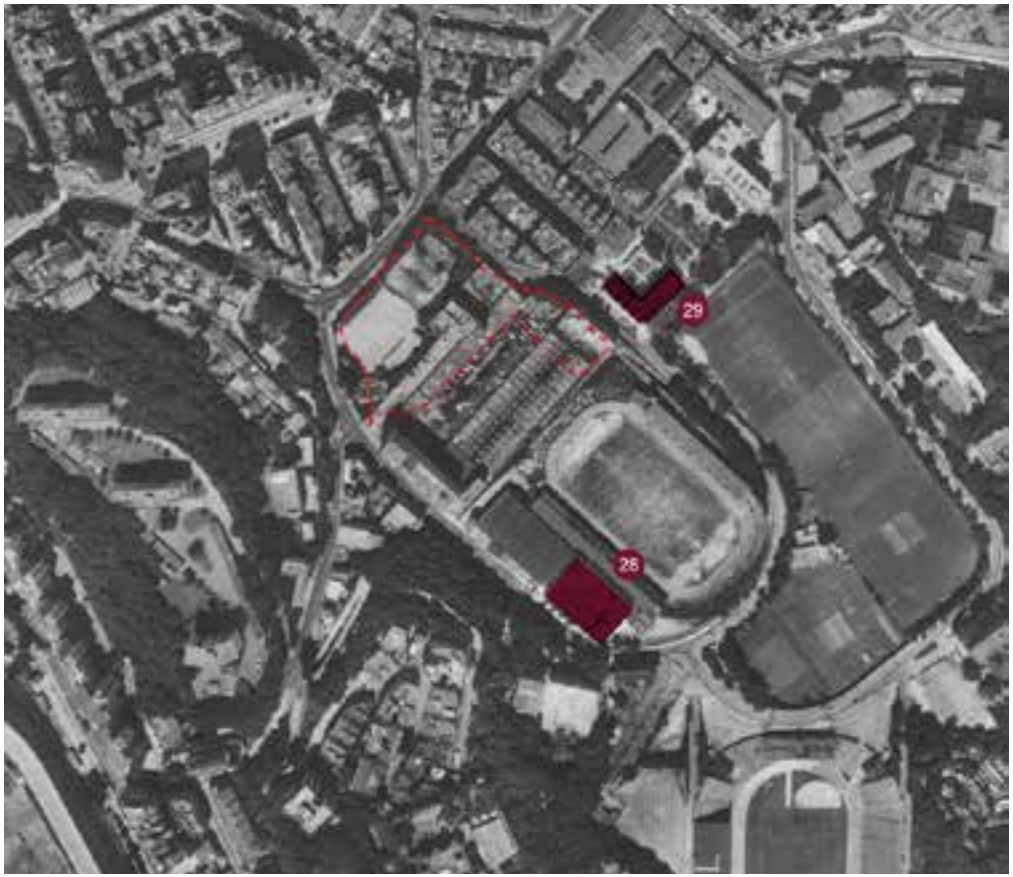


Fig. 3.4.10 Aerial photo of Caroline Hill and surrounding environment, Hong Kong, 1976, 1976_15498 Source: Survey and Mapping Office, Lands Department, The Government of Hong Kong and Hong Kong Geodata Store



Fig. 3.4.11 Aerial photo of Caroline Hill and surrounding environment, Hong Kong, 1988, 1988_A14420 Source: Survey and Mapping Office, Lands Department, The Government of Hong Kong and Hong Kong Geodata Store

1995

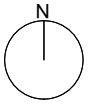
- The Site remained similar to 1988
- Reconstruction of Hong Kong Stadium completed



Fig. 3.4.12 Aerial photo of Caroline Hill and surrounding environment, Hong Kong, 1995, 1995_CN12640 Source: Survey and Mapping Office, Lands Department, The Government of Hong Kong and Hong Kong Geodata Store

2019

- The Site remained similar to 1995
- Further development of SCAA site with modifications to pitch and the adjacent slope on the Northeast side
- Large amount of masonry retaining walls (ID 32) along Caroline Hill Road were demolished





Indicative Site boundary



Fig. 3.4.13 Aerial photo of Caroline Hill and surrounding environment, Hong Kong, 2019, E056551C Source: Survey and Mapping Office, Lands Department, The Government of Hong Kong and Hong Kong Geodata Store

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CHAPTER 04:
SIGNIFICANCE

4.1 DEFINING THE SIGNIFICANCE OF MASONRY WALLS AND ASSOCIATED EARTHENWARE PIPES AT CAROLINE HILL ROAD

4.1.1 Significance as the Basis of Conservation

The philosophy of conservation is centred on significance. It helps to define what contribution various aspects of a place make to a wider understanding and appreciation of history, society and culture. As such, understanding the significance of the masonry walls and associated earthenware pipes at Caroline Hill is integral to its preservation, which will be an important consideration for all decision-making about the structure, both now and in the future. 'Significance lies at the heart of every conservation action... unless we understand why a place is worthy of conservation, the whole business of conservation makes very little sense'.[106]

This section defines the importance, also known as cultural significance, of the masonry walls and associated earthenware pipes at Caroline Hill. This importance is both tangible and intangible and both contribute to understanding what should be retained and conserved.

The section first defines significance and how it is assessed (Section 4.1), followed by a Statement of Significance, which is broken down into sections according to the heritage values of the Site. The Character-Defining Elements (CDEs) are tabled in the Section 4.5.

106 Clark, K. Informed Conservation, (2001).

4.1.2 Defining Significance

Significance – or, as it is also known, cultural significance – has been defined by ICOMOS as the, *'aesthetic, historic, scientific, social or spiritual value for past, present or future generations… Cultural significance is embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects'.*[107]

This description and definition of significance is generally acceptable on an international basis, with variations on the language and approach but the overarching message remains clear: at the heart of significance is the understanding of why places are valued and who they are valuable to. This sentiment is described by ICOMOS as follows:

'Places of cultural significance enrich people's lives, often providing a deep and inspirational sense of connection to community and landscape, to the past and to lived experiences'.[108]

In the case of masonry walls and associated earthenware pipes at Caroline Hill Road, the aspect of importance to people is essential to understanding and assessing its significance, in terms of the historic relationships and associations it had with the local community as a recurring recreational and institutional venue within the city. The masonry walls have also shaped the streetscape and become one of the key characters of the Caroline Hill area since they were originally built.

107 The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance 2013

108 The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance 2013

4.2 CRITERIA AND METHODOLOGY

While significance can be assessed and discussed with regards to factual and often tangible characteristics such as its aesthetic and design qualities, new and/or unique technologies and associations with important people or events, an important additional element of significance is what makes things valued by the people who experience and appreciate them. In this way, assessing significance can be subjective. It is therefore important to combine a broad set of principles to enable significance to be understood.

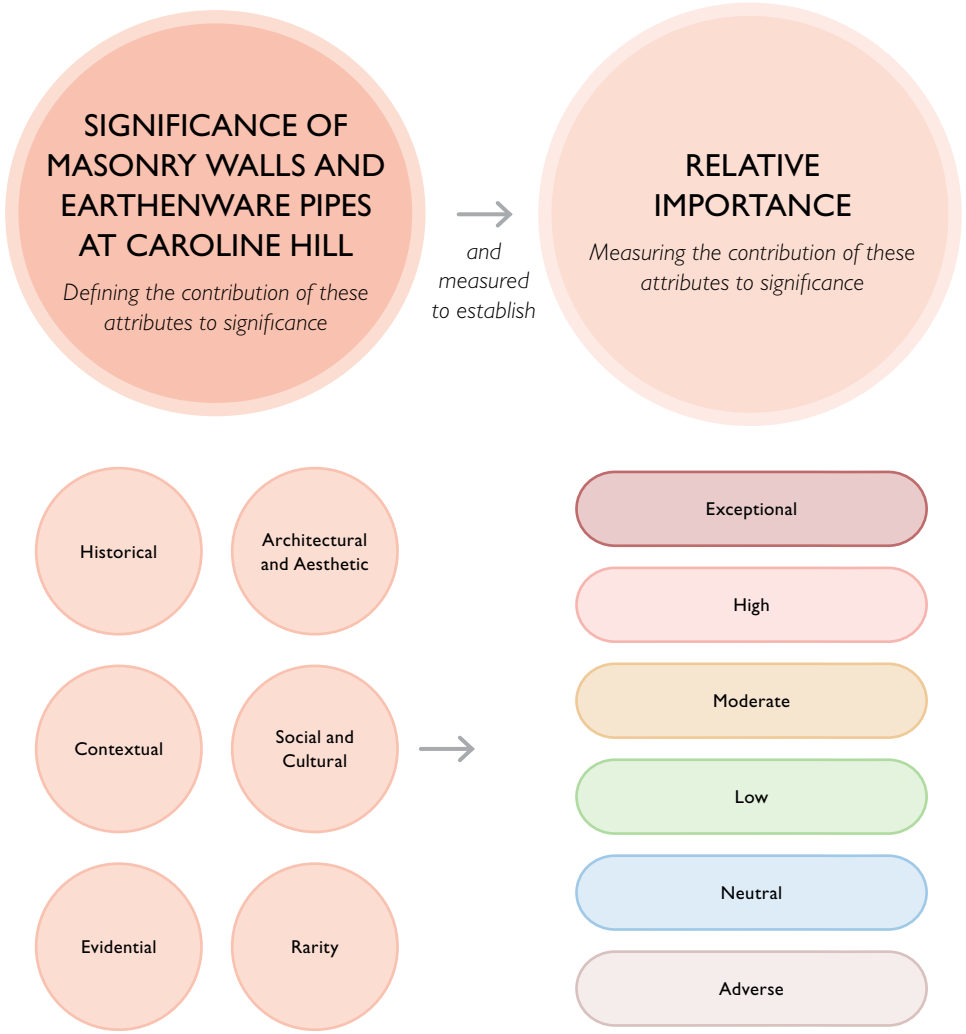
For the purposes of this CMP, significance is the overarching analysis and understanding of what is important about the masonry walls and associated earthenware pipes at Caroline Hill Road. This section brings together information in the earlier sections of the CMP concerning the history of the masonry walls and earthenware pipes, the wider context and information about the site, both its earlier and recent uses before it was made vacant.

The assessment of significance is based on a range of characteristics, known as heritage values, that contribute to its overall importance. Individual sites and buildings will have a number of heritage values that are uniquely applicable to them, however, all will have a core set of values that are in common. The masonry walls and associated earthenware pipes at Caroline Hill Road is considered to have the following heritage values [109]:

4.3.1 Historical Value
4.3.2 Architectural and Aesthetic Value
4.3.3 Contextual Value
4.3.4 Social and Cultural Value
4.3.5 Evidential Value
4.4.6 Rarity

109 It will be seen by inspection that the terms used in the list of values are derived from a variety of sources in order to represent the cultural significance of the building to best effect. See Article 5, The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance 2013; and Understanding Heritage Values, Conservation Principles Policies and Guidance. Historic England 2008

The assessment of significance for the masonry walls and earthenware pipes has been carried out using the process set out below. This process can be used to assess the level of contribution a key value makes to significance at both a macro (the whole) and micro (a component) level.



	SIGNIFICANCE LEVEL	DEFINITION
POSITIVE	*Exceptional*	Where an individual space or element is assessed as displaying a strong contribution to the overall significance of the place. Spaces, elements or fabric exhibit a high degree of intactness and quality, though minor alterations or degradation may be evident.
POSITIVE	*High*	Where an individual space or element is assessed as making a substantial contribution to the overall significance of the place. Spaces, elements or fabric originally of substantial quality, yet may have undergone considerable alteration or adaption resulting in presentation which is either incomplete or ambiguous. The category also includes spaces, elements or fabric of average quality in terms of design and materials, but which exhibit a high degree of intactness.
POSITIVE	*Moderate*	Where an individual space or element is assessed as making a moderate contribution to the overall significance of the place. Spaces, elements or fabric originally of some intrinsic quality, and may have undergone alteration or degradation. In addition, elements of relatively new construction, where the assessment of significance is difficult, may be included. This category also includes original spaces, elements or fabric of any quality which have undergone extensive alteration or adaption.
POSITIVE	*Low*	Where an individual space or element is assessed as making a minor contribution to the overall significance of the place, especially when compared to other features. Spaces, elements or fabric originally of little intrinsic quality, any may have undergone alteration or degradation. This category also includes original spaces, elements or fabric of any quality which have undergone extensive alteration or adaption to the extent that only isolated remnants survive (resulting in a low degree of intactness and quality of presentation).
	Neutral	Where an individual space or element is assessed as having an unimportant relationship with the overall significance of the place. Spaces, elements or fabric are assessed as having little or no significance.
NEGATIVE	*Adverse*	Where an individual space or element detracts from the appreciation of cultural significance, by adversely affecting or obscuring other significant areas, elements or items.

4.3 ASSESSMENT OF HERITAGE VALUES

4.3.1 Historical Values

Caroline Hill	**Moderate**

Following the establishment of the City of Victoria, growth primarily occurred around Central, before gradually moving towards the west and east starting at the end of the nineteenth century. Developments in East Point were initiated by Jardine Matheson and Co. Ltd while the inland of Sookunpoo and Wong Nai Chung were mostly used for residential and agricultural purposes at the time.

Following the establishment of the Hong Kong Cotton Spinning, Weaving and Dyeing Company in 1898, which in the 1910s transformed into the St. Paul's Convent School cluster, more and more institutions began to establish themselves in Sookunpoo. In Caroline Hill, multiple schools were established on the former Sookunpoo school site. These schools included the Victoria British School from 1905 to 1931 (during which the masonry walls were built for the site formation of Queen's College from 1922 to 1926) and the Junior Technical School from 1933 to 1941.

Since late 1920s, following the growth of population and the establishment of institutional facilities, Caroline Hill gradually transferred into a site for recreational facilities and government buildings. In 1927, the South China Athletic Association moved in and is today, one of the oldest recreational facilities in Sookunpoo. In 1928, a portion of land on the south of Caroline Hill was allocated for the United Services Recreational Ground in 1928. During the 1950s, the Post Office Recreational Club and the Cable and Wireless Club were established on the north side of Caroline Hill. From the 1950s, there has been a variety of different government buildings, including the EMSD workshop and CAS headquarters constructed on the site. The last surviving of these was demolished in 2017.

The site of Caroline Hill has witnessed the development of Sookunpoo since the establishment of Victoria City and has served various purposes, mainly including residential, institutional and recreational. Despite that the existences of these uses are mostly short-lived and there are little relations between owners or users of different buildings established within the Site, the Caroline Hill does embrace a rich history that tells its unique development over the times.

Masonry walls (graded portion)	**Moderate**

The existing graded masonry walls bordering the Caroline Hill site on the east originate to the 1920s and their construction as part of the site formation for the proposed Queen's College campus. Although the construction of the Queen's College was never realized, certain portions of the masonry walls have remained through to the present day, a century later.

The earliest maintenance records of the walls can be traced back to 1926 when a storm and heavy rainfall damaged a section along the eastern edge. The damage was significant to the extent that required sections of the wall to be taken down and rebuilt. The records do not however, identify the precise extent that was reconstructed.

Based on the existing available information, the current graded portion of the masonry walls have a higher level of intactness comparing to others. This is emphasized by the surviving earthenware pipes that are embedded within the wall. This detail is rare in Hong Kong (refer to 4.3.6 for its rarity).

Masonry walls (non-graded portion)	**Low**

Throughout the years, different portions of the walls were reported to be altered, rebuilt, and in cases demolished.

Survey plans from 1960 and 1968 clearly shown that parts of masonry walls were taken down during this period to facilitate the construction of the Electrical and Mechanical Offices. As also shown on the drawings, the new office building facade was designed to be in the same plane as the masonry walls.

For the non-graded portion of wall along Leighton Road, the aerial photo dated 1963, and survey maps dated 1958, 1960, 1968 and 1970, collectively illustrate the masonry walls alignment has been modified. However, there is no record information that details the works, and/or whether any wall reconstruction was done using salvaged granite.

Other physical changes to the walls appear minimal, although one change was observed during site inspections carried in September 2021. A section of missing dressed granite blocks is found at the junction between the Leighton Road and the east Caroline Hill Road. (Fig. 4.3.1.1)

Whilst there is an abundance of historic aerial photos of the site, the masonry walls are often obscured from view due by the presence of vegetation or the camera angle used. With the absence of slope maintenance records between the 1930s to 1980s, mapping the walls historical development cannot be completed at this stage.

Based on the above and the limited archival information uncovered to date, the significance of the non-graded masonry wall portion is low.

Earthenware pipes	**Moderate**

There are a total of two earthenware pipes installed within masonry walls 11SW-B/FR 193 and 11SW-B/FR 32. The use of clay pipes dates to the late 1800s to the early 1900s when the technology of ceramic glazing was developed to improve the durability and life span of pipes. The term "glazed earthenware pipes" was first mentioned in the Public Works Report in 1898 and was frequently used in the early 1910s. [110] There were two principal types of glazed pipes. "Glazed clay pipes" which is where the glaze was formed by applying a layer of salt glaze to the exterior and interior of pipes. Whereas a "vitrified clay pipes", was glazed by dipping the pipe into the glaze, sealing the surface before being fired.

Per current archival studies, it is not known whether the earthenware pipes are original to the construction of the masonry walls 1920s. There is however a reference[111] in the Public Works Report 1926 mentioning that "rainstorm repair works were being carried out" at the Caroline Hill site and "contingent drainage works".



Fig. 4.3.1.1 Junction between the Leighton Road and the east Caroline Hill Road. (Source: Purcell)

110 "Earthenware pipes" appear in Public Works Report in 1910, 1911, 1912, 1913, and 1917

111 HK Government Gazette 1928

4.3.2 Architectural and Aesthetic Value

Overall design	Moderate

The masonry walls at Caroline Hill have unique features that sets it apart from the typical design that is observed elsewhere in Hong Kong. This uniqueness is from the earthenware pipes built-in to the masonry walls and the coping design which had a vermiculated rustication set within a framed panel. The aesthetic value of the wall is further reinforced by its relationship with the vegetation above.

Masonry wall design	Moderate

The extent of the existing Grade 3 masonry walls, namely 11SW-B/FR32 and 11SW-B/FR193 (according to the Slope Information System) followed a typical 1920s to 1930s retaining wall design, which was composed of dressed granite blocks with cement bond courses, horizontal concrete banding courses, and copings that incorporated a drainage channel on the top. The masonry wall design at Caroline Hill would therefore have complied with Building Ordinance in force at the time. The variation in height of the walls is representative of the site's topography following the site formation works completed in the 1920s.

Coping design	Moderate

There is no current archival or physical evidence that supports the coping design with vermiculated rustication in framed panels being original. Photographic records (Fig. 3.3.1.6) indicate it may originate to the mid-1950s. A possible explanation for its addition to the masonry wall was in response to changes to the Buildings Ordinance in 1935, with the detail being added during planned maintenance. Its relative uniqueness is due in part to a ballshaped profile being impressed into the roughcast texture either by either workers manually on site or as part of a pre-formed mould. Both cases would demonstrate a relatively high degree of craftsmanship that would not be typical of such a utilitarian structure. The coping when added, included a drip profile which would divert water away from the masonry wall surface and to avoid staining the granite below.

Earthenware pipes	Moderate

Like other earthenware pipes found elsewhere in Hong Kong, the two surviving earthenware pipes within the graded extent are of standard design, that would have been mass produced. Their architectural and aesthetic value is therefore moderate. With the earthenware pipes being built-in to recessed pockets within masonry wall, this detailing is rarely seen in Hong Kong. Embedded the pipes within the wall was likely a more costly construction detail, but it may have been a site-specific response due to the limited width of Caroline Hill Road and avoiding obstructions on the public footpath. There is however no archival evidence to date that explains why this detail was adopted. The uniqueness of this detail is further elaborated in the Rarity section on page 78.

4.3.3 Contextual Value

Contribution to streetscape	High

With Causeway Bay rapidly developing from the late 20th century, East Point was reclaimed and heavily developed. However, the Sookunpoo and Caroline Hill regions of Causeway Bay have remained relatively intact. Although traces of flattening the original hilly nature of the Caroline Hill can be found before the establishment of Sookunpoo school in 1905, the later Queen's College site stepped formation works in the 1920s and the subsequent construction of the masonry retaining walls are surviving evidence of the original topography of Caroline Hill.

Although parts of the walls were demolished and altered before the 1950s, the streetscape of Caroline Hill Road and Leighton Road has remained largely intact since the walls were first built. A photo showing Causeway Bay (Fig.3.2.2.8) in the 1920s indicated that the Caroline Hill area was always elevated from the neighbouring Sookunpoo and Bowrington districts. This corresponds to the current site condition. With the sites stepped topography and a lack of street-level entrances[112], the site itself has always been relatively secluded and disconnected. The Queens College site formation works that introduced the masonry walls were a notable feature at street level setting Caroline Hill apart from the character of traditional streets in the Causeway Bay. Same photograph (Fig. 3.2.2.8) shows the Site after it had been flattened as part of the site formation works. Site formation works felled a significant quantity of trees, and according to ariel photographs, it wasn't until the 1960s that trees were reintroduced to the site. Two of these trees are likely to be those listed under the Register of Old and Valuable Trees. One of the OVTs is an India-rubber Tree (botanical name: Ficus elastica)[113] located in the former Post Office Recreation Club site near Leighton Street (Fig. 4.3.3.1). The other one is a big-leaved fig (botanical name: Ficus virens)[114] located in the centre of the former EMSD office site, which will be preserved by adjacent government development.

The Caroline Hill bus stop on Leighton Road has been positioned under the Indian-rubber Tree (OVT HKP WCH/1) long before positioned for now (Fig. 4.3.3.3). The OVT has a crown spread of 18m. With tree extending above the bus stop forming a wall of tree roots behind the bus stop, it provides a considerable area of shading. Both the masonry wall and the OVT form a very unique character to the streetscape, which can be appreciated by public transport users and pedestrians.

The masonry walls which are topped by a distinctive band of vegetation, including existing trees, clearly define the Caroline Hill site and are the main features that the public observe (Fig. 4.3.3.2). Views towards the Site from street level is however limited due to the elevated levels. The walls, trees and elevated site level create an interesting relationship with the streets around the site, the character of which is extremely familiar to people who live, work and socialize in Causeway Bay.



Fig. 4.3.3.1. Photo of the India-rubber tree (HKP WCH/1). (Source: Purcell, 2021)



Fig. 4.3.3.2 View of Caroline Hill from the junction of Leighton Hill and Caroline Hill Road. (Source: Purcell, 2021)



Fig. 4.3.3.3 Bus stop below the Indian-rubber tree. (Source: Purcell, 2021)

112 Historically, one entrance was seen in the east of Caroline Hill Road from the 1920s and the other was shown in the west junction of Leighton Road and Caroline Hill Road from the 1930s,

113 under the registration number HKP WCH/1 maintained by the Hong Kong Post. It has a height of 24m and a crown spread of 18m

114 under the registration number of EMSD WCH/1 maintained by the EMSD. It has a height of 19m and a crown spread of 34m

4.3.4 Social and Cultural Value

Overall Social Value	**Moderate**

Across the site's history and its utilisation, there have been three notable associations that are discussed in this section. These include:

1. Recreation
2. Education
3. Public sector

Each of the various buildings that were built to support these uses had limited the general public's access to them. For example, the recreational clubs were for private members only. Similarly, the government facilities for EMSD and CAS were not publicly accessible. This limited accessibility means the public's collective memory and association with the activities within the Site and its former buildings is low.

This is also echoed in very early development on the site including the construction of Morgan's bungalow and the later development of Jardines. Since their association with the site ceased long ago, they offer little contribution to the overall cultural significance of Caroline Hill.

By contrast, there is considerably more social and cultural value accrued within with wider Caroline Hill area, through the general public's connection to the masonry walls that form a key component of the streetscape around Caroline Hill. This collective memory of the area is reinforced by the masonry walls being driven past by private car learner driver whilst on their road practical (driving) test, as well as being the main pedestrian thoroughfare for event goers to access the Hong Kong Stadium (previously known as old Government Stadium) for large-scale recreational events (sports and concerts).

Association with recreational use and events	**Moderate**

Recreational uses within Caroline Hill have existed from the 1920s to the present day, and is summarised as follows:

- South China Athletics Association (1927 to now)
- Cable and Wireless Club (1952 to 2019)
- Post Office Recreation Club (1953 to 2019)

Among these three recreational organizations, the most significant one is the South China Athletic Association, whose football team in particular, has been extremely successful. The Association also provides affordable sporting facilities to its club members.

There are also other notable recreational facilities in close proximity to Caroline Hill as discussed in Section 3.1.2, such as Indian Recreational Club and Happy Valley Racecourse, which are still in operation.

Since these club facilities are primarily private and non-public interfacing, their contributions to the social and cultural value of the site is considered to be limited.

Caroline Hill Road has and continues to be principal pedestrian route for the public to arrive at the Hong Kong Stadium (previously known as old Government Stadium), on the event or match days.

Capitalising on the popularity of football in the early 20th century, when the 2,8000-seater old Government Stadium was opened in mid 1950s, it was regarded as *"the premier sporting venue in the territory"* and *"a venue for important athletic competitions, inter-school competitions, school athletic meets, etc."* [115]

As demand for a large capacity venue grew, the stands of old Government Stadium were demolished. These were replaced by new stands and the stadium was renamed as the Hong Kong stadium. The new stadium reopened in March 1994, with a larger, maximum seating capacity of 40,000. Today, the stadium continues to serve local and international visitors for major sporting matches and social events. Notable past events held at the Hong Kong Stadium include:

- Hong Kong Sevens (since 1976)
- 2009 East Asian Games
- Hong Kong Scout Rally
- Hong Kong First Division League [116]
- 1:99 Fund Raiser Concert in 2003 [117]

The social and cultural value of Caroline Hill spans generations due to there being many long-lasting recreational uses, as well as different events often held annually at the Hong Kong Stadium. Due to this association, the overall significance is moderate.

115 Hong Kong Stadium Leisure and Cultural Services Department, 2015. "About the Stadium". https://www.lcsd.gov.hk/en/stadium/hks/history.html

116 文匯報 · 15 July 2009."2009/10賽季各球會主場".

117 香港演藝人協會 , 2003 "1 : 99大匯演" . http://hkpag.org/?p=1657

Association with educational uses	**Moderate**

Another important long-lasting use of the site is education. Before WWII, four different school had campuses in Caroline Hill:

- Sookunpoo School: 1855 to 1905;
- St. Francis College: 1862 to 1887;
- Victoria British School: 1905 to 1931; and
- Junior Technical School: 1933 to 1941.

The last school in the area ceased teaching during World War II. It was not until 1975 that educational use in the area returned. This was in the form of an Apprentice Training Centre that was established as part of the construction of EMSD offices and workshops on the site. The Centre was set up to develop and nurture E&M engineers (Fig.4.3.4.1) and it played an important role in educating professionals and skilled workers, reflecting the social values of the site. The EMSD facilities and its staff trained over 5,000 professionals and skilled workers during 60 years of operation. [118]

For several decades, the vehicle workshops and vehicle repairing services were a "golden brand" in the community, described by the Former Secretary for Development during the demolition of EMSD in 2013. The workshops and repairing services were responsible for repairing the entire fleet of government vehicles. Trainees with boiler suits attended classes and practice sessions in the centre as part of their training.[119]

118 Development Bureau, HKSAR. (2017) Blog Article from Former Secretary for Development, Mr. Paul Chan - Farewell to Caroline Hill. Accessed on October 2021, accessed from https://www.devb.gov.hk/en/home/Blog_Archives1/index_id_110.html

119 Development Bureau, HKSAR. (2017) Blog Article from Former Secretary for Development, Mr. Paul Chan - Farewell to Caroline Hill. Accessed on October 2021, accessed from https://www.devb.gov.hk/en/home/Blog_Archives1/index_id_110.html

Association with government facilities	**Low**

During the Japanese occupation of Hong Kong from 1941 to 1945, the Land Transport Section of the Public Works Department was set up in the former Junior Technical School building. Since then, a series of government facilities have operated on the site, which includes the Public Works Department workshops, the Electrical and Mechanical Offices and Headquarters (EMSD), and the Civil Aid Services (CAS) Headquarters.

Founded in 1952 under the CAS ordinance, the Civil Aid Services first headquarters building was built on the project site in Caroline Hill. In 2006, CAS later relocated its headquarters to Yau Ma Tei, where it remains today. In recent years, other government departments, such as Highway Department and Drainage Services Department, have temporarily occupied the site. Once these departments vacated the site, the buildings were demolished.

Although the public has some connection with the EMSD and CAS government departments that operated on the site, as these buildings was largely non-publicly accessible, the assessment of their social and cultural value is considered to be low.

Driving exam	**Moderate**

The streets around Caroline Hill have featured in the road practical (driving) test route for private car learner drivers from as early as the 1960s (Fig. 4.3.3.4), right up to the present day. In recent years, it has also been part of the test route for learner drivers of light goods vehicles. Historically, motorcyclists also used to do their road tests around Caroline Hill, but in recent years, the test route has since been moved elsewhere. [120]

120 Legislative Council Hong Kong, 2019. "LCQ20: Traffic conditions in Causeway Bay and Happy Valley". https://www.legco.gov.hk/yr19-20/english/panels/tp/papers/tpcb4-156-2-e.pdf



Fig. 4.3.4.4 Trainees attending classes in the Apprentice Training Centre (Source: Development Bureau, HKSAR)



Fig. 4.3.4.5 Driving exam passing Caroline Hill Road. (Source: Facebook)

4.3.5 Evidential Value

Evidential value is a term not widely known in Hong Kong, where it is better known as 'intactness'. It has been described by Historic England (the main statutory heritage body in England) as '*value deriving from the potential of a place to yield evidence about past human activity*'. This means the physical and archival evidence and the general ability of a place to demonstrate how it was used and by whom.

Masonry wall	**Moderate**

The existing graded masonry walls are surviving physical evidence of the original topography of Caroline Hill despite that alterations and modifications were made over the years.

According to Public Works Report, alterations were made to the walls in 1926, 1928 and after 1955. In 1926, "extensive damage was done by storm in April on the east side of the retaining walls". In 1928, an approach road was constructed "from the eastern part of the road encircling Caroline Hill". The 1963 survey plan (Fig. 3.2.3.8) shows that a portion of masonry wall (the current missing section between the two graded walls) was demolished to facilitate the construction works of the second phase of EMSD offices. However, there was missing detailed information on the positions and locations of these alterations.

Although the relevant slope maintenance records are acquired from ASD, there are no records available between the 1930s to 1980, which leads to a large gap of information in understanding the historical development of the masonry walls.

The existing graded masonry walls including the concrete banding were found to be in fair condition with isolated cracks observed, possibly caused by pressure of the tree roots behind. Staining is concentrated near the weep holes and beneath the coping. Graffiti paint and concrete patch repairs on the surface of the granite stones are found in the section of wall near the junction with Leighton Road. Overall, the existing graded masonry walls represent a moderate level of intactness.

It should be considered that a comprehensive archival information should be established to better manage the historical structure.

Masonry wall coping design	**Moderate**

Although archival records are limited, based on site inspection, there is a high degree of intactness in the current coping, especially the one with vermiculated rustication set within a framed panel. Whilst changes in the coping design can be observed through historic photographs, it is not known why or exactly when the current detail was constructed. Based on the existing available information, it can only be suspected that the coping was added in the late 1940s as a response to the upgrade of Building Ordinance in 1935.

Earthenware pipes	**Moderate**

There is no evidence to suggest any major alterations to the two surviving earthenware pipes. Given their expected age, there is evidence of some wear and tear, which is evident in some areas of localised patch repairs. In general, these two pipes are in fair condition. According to ASD's maintenance record, in 2013, an earthenware pipe near Cotton Path was replaced by a cast iron pipe as it had been damaged beyond repair by tree roots penetrating the pipe.

It is not known whether the earthenware pipe will remain functional after the site's redevelopment, however a strategy for their ongoing care and maintenance should be prepared and implemented.

4.3.6 Rarity

Overall design	High

The detail comprising the integration of above ground earthenware pipes by creating recesses in 1920s masonry retaining walls along with a vermiculated rustication coping design, it not commonly found in Hong Kong and is therefore quite rare. This overall design also reflects certain technical considerations. The recessing of the pipe into the wall was likely intentional to avoid intrusions into the pedestrian highway, despite the fact this design detail being more costly to construct.

Masonry Wall coping design	Moderate

As mentioned in 4.4.2, the coping design with vermiculated rustication illustrates a non-typical standard of craftsmanship, and is a rare surviving example in Hong Kong.

Earthenware pipes	Moderate

As described in 4.3.2, earthenware or glazed clay pipes are not unique in terms of materiality, and these were mass produced. Their use ultimately declined in the 1950s as ductile iron and PVC pipes came to prominence as a replacement choice, since these materials were lighter weight, easier to transport and install.

Since clay pipes were mainly used for underground sewage, surviving examples of clay pipes above ground drainage are rare. Due to the pipes weight, the logistics for installing them vertically by workers would have been challenging. Similar surviving glazed clay pipes are observed on Chinese tenement houses of the 1950s Wing Lee Street Building (Fig. 4.3.6.1), and on the west elevation of Li Hall, St. John's Cathedral (Fig. 4.3.6.2).



Fig. 4.3.6.1 Clay pipe in Wing Lee Street from around the 1950s. (Source: Purcell, 2021)



Fig. 4.3.6.2 Glazed clay pipe on masonry wall to the west of Li Hall, St John's Cathedral, possibly from the 1920s during the construction of former Li Hall. (Source: Purcell, 2021)

4.4 CHARACTER-DEFINING ELEMENTS

4.4.1 Criteria

This section provides a summary description and analysis of the significance of individual elements of the site (commonly known as Character Defining Elements (CDEs) in Hong Kong). These elements may include spaces, architectural details, landscape elements or any other individual features of the site. The table is intended to provide a summary understanding of the site and help to gauge impacts, inform policies and to guide future decisions for any change.

Five levels of significance and their definitions have been used to describe the elements individually as set out in section 4.2. The criteria used to assess the significance of each element are the values described in sections 4.4.1 – 4.4.6. Where these criteria conflict, the resultant assessment score is aggregated. Each entry in the schedule is accompanied by a photograph of a sample of the item described. Similar examples of each item can be seen by observation.

The entries are arranged in the following order:

4.4.2 Schedule of character-defining elements
1. Masonry Walls
2. Site

Brief guidance notes are given in the right-hand column of the table for each item.

4.4.2 Schedule of Character-Defining Elements

ELEMENT NO.	DESCRIPTION	PHOTO	SIGNIFICANCE	CONSERVATION RECOMMENDATION	LOCATION PLANS (INDICATIVE ONLY)
MASONRY WALL IN RELATION TO SLOPE NO. 11SW-B/FR 193, 11SW-B/FR 190 AND 11SW-B/FR 32					
1.01	Vermiculated rusticated coping design (Approximate length is 125 m)	 *Fig. 4.4.2.1 The vermiculated rustication patterns on the coping. (Source: Purcell, 2021)*	Moderate	The vermiculated rustication is known to exist before 1950 and is therefore early fabric. These panels should be conserved. Where they are damaged or missing, they should be reinstated. A section of coping should by sampled and analysed to inform the repair/reinstatement on a like-for-like basis. To be read in conjunction with Policy 6.6.1, 6.6.2, 6.6.3, and 6.8.1	
1.02	Plainly rendered coping design (Approximate length is 41 m)	 *Fig. 4.4.2.2 Plainly rendered coping along Leighton Road. (Source: Purcell, 2021)*	Neutral	Further investigation/opening up should be undertaken to establish whether there is any evidence of a vermiculated rustication underneath. Reinstatement works should be carried out if evidence is found that the coping design was modified or covered in the past. To be read in conjunction with Policy 6.6.1, 6.6.2, 6.6.3, and 6.8.1	

ELEMENT NO.	DESCRIPTION	PHOTO	SIGNIFICANCE	CONSERVATION RECOMMENDATION	LOCATION PLANS (INDICATIVE ONLY)
1.03	Glazed Clay (earthenware) Pipes	 *Fig. 4.4.2.3 Glazed clay pipe on masonry wall 11SW-B/FR 193. (Source: Purcell, 2021)*	Moderate	Although the earthenware pipe(s) may become redundant, they should still be conserved to prevent against deterioration. Poor past repairs shall be unpicked and made good properly. To be read in conjunction with Policy 6.6.1, 6.6.2, 6.6.3, 6.7.5, and 6.7.6	
1.04	Cast iron pipe	 *Fig. 4.4.2.4 Cast iron pipe on masonry wall 11SW-B/FR 193. (Source: Purcell, 2021)*	Neutral/ Adverse	Consideration shall be given to replace cast iron pipe by a replica earthenware pipe on a like-for-like basis to enhance the relevant heritage significance. To be read in conjunction with Policy 6.6.4.	

ELEMENT NO.	DESCRIPTION	PHOTO	SIGNIFICANCE	CONSERVATION RECOMMENDATION	LOCATION PLANS (INDICATIVE ONLY)
1.05	Other associated modern pipework	 *Fig. 4.4.2.5 Cast iron pipe on masonry wall 11SW-B/FR 193. (Source: Purcell, 2021)*	Adverse	Later added E&M services shall be removed. Any new E&M services shall avoid being fixed on the street facing side. To be read in conjunction with Policy 6.8.3	N/A
1.06	Dressed granite blocks and horizontal concrete banding (Approximate length is 166 m)	 *Fig. 4.4.2.6 The well-dressed masonry walls. (Source: Purcell, 2021)*	Moderate	The dressed granite block walls with horizontal concrete banding should be repaired, conserved and maintained to keep its appearance as it is at present. To be read in conjunction with Policy 6.6.1, 6.6.2, 6.6.3, 6.6.4, 6.7.2, 6.7.5, and 6.7.6.	

ELEMENT NO.	DESCRIPTION	PHOTO	SIGNIFICANCE	CONSERVATION RECOMMENDATION	LOCATION PLANS (INDICATIVE ONLY)
1.07	Graffiti paint and concrete cover-ups on masonry walls	 *Fig. 4.4..2.7 A part of the painted masonry walls. (Source: Purcell, 2021)*	Adverse	Develop a cleaning and repair strategy to remove/ unpick the undesired graffiti and poorly executed historic repairs. To be read in conjunction with Policy 6.6.2, 6.6.3 and 6.6.4	N/A

ELEMENT NO.	DESCRIPTION	PHOTO	SIGNIFICANCE	CONSERVATION RECOMMENDATION	LOCATION PLANS (INDICATIVE ONLY)
SITE					
2.01	Streetscape along Caroline Hill Road	 *Fig. 4.4.2.9 The view of Caroline Hill Road from a distant, showing how the walls make a significant impact to the streetscape. (Source: Purcell, 2021)*	High	By virtue of the Grade 3 listing, the graded walls are already recognised by the statutory authority as being historically and culturally significant and as having a positive contribution to the streetscape. These walls shall be retained in their entirety as much as possible, and should be conserved and repaired as appropriate. To be read in conjunction with Policy 6.6.1, 6.6.6, 6.7.1, 6.7.2 and 6.8.2.	

ELEMENT NO.	DESCRIPTION	PHOTO	SIGNIFICANCE	CONSERVATION RECOMMENDATION	LOCATION PLANS (INDICATIVE ONLY)
2.02	Streetscape along Leighton Road	 *Fig. 4.4.2.10 View of the walls along Leighton Road (Source: Purcell, 2021)*	High	This portion of masonry wall along Leighton Road is not graded. Part of the wall is to be retained while the rest is scheduled to be demolished to facilitate road widening works. It should be acknowledged that the non-graded wall also has similar historical and cultural significance as the graded masonry walls since they both define the original plot and were constructed as part of the sites original formation works. The retained section in relation with slope no. 11SW-B/FR 190 should be conserved and repaired as appropriate. Any necessary new interventions for access within this section of wall are acceptable subject to review of detailed proposal. For the demolished portion, consideration shall be given to salvage the granite and reused for repairs elsewhere in the Site as far as necessary and practical. To be read in conjunction with Policy 6.6.1, 6.6.5, 6.6.6 and 6.8.4.	

ELEMENT NO.	DESCRIPTION	PHOTO	SIGNIFICANCE	CONSERVATION RECOMMENDATION	LOCATION PLANS (INDICATIVE ONLY)
2.03	Trees surrounding Caroline Hill	 *Fig. 4.4.2.11 Aerial photo showing greeneries surrounding the site, 1995, 1995_CN12640* *(Source: Survey and Mapping Office, Lands Department, The Government of Hong Kong and Hong Kong Geodata Store)*  *Fig. 4.4.2.12 View of the existing trees at the corner of Leighton Road and Caroline Hill Road (Source: Purcell, 2021)*	High	The masonry wall and the banding of vegetation along the top of it and on the slope beyond are intrinsically linked. Collectively they are significant to the streetscape and the character of Caroline Hill. Efforts should be made to preserve the vegetation and to retain OVT and existing trees in-situ where feasible. To be read in conjunction with Policy 6.6.5 and 6.6.6.	N/A

CHAPTER 05:
ISSUES AND OPPORTUNITIES

5.1 INTRODUCTION

Every historic building, structure and site faces unique issues: some of which may negatively affect their heritage value, and others which may require awareness and appropriate action but are not necessarily detrimental to the site unless poorly managed. These can range from substantially deteriorating built fabric as a result of neglect or extreme weather, to the need to prepare and apply for permits to carry out work.

This section of the CMP is written in the expectation that the developer plans to restore the masonry walls and earthenware pipes and to preserve are far as practical the appearance of the streetscape.

Opportunities for enhancing the significance of the site are also identified. Methodologies, recommendations and policies for addressing the issues are set out in the conservation framework. The presumption is to recognise that long-term sustainability is vital and that change may be a necessary component to achieve this aim. This in particular is driven by the requirement to enhance the site accessibility which is distinctly enclosed. At the same time, heritage values are sacrosanct and cannot authentically be re-created. The task therefore, is to manage change, sensitively.

5.2 ISSUES

From the turn of the twenty-first century there has been growing interest in building conservation in Hong Kong and what this means for the reuse of existing buildings/ structure. The development at Caroline Hill presents a unique example to conserve an important feature within the streetscape.

The intention of the conservation approach is to attempt to make the changes in a way that does as little as possible to change the original or early features.

Partial Loss of Original Function as Retaining Wall

Major site formation and excavation works within the Site are required to facilitate the redevelopment scheme and its associated planning requirements. This mainly includes the formation of new roads across the Site from east to west, as well as the construction of basement floors.

As a result of this construction, the function of part of the masonry walls will be altered. In some areas, the masonry wall will no longer act as a retaining wall.

Where this applies, if the back face of the masonry walls is exposed in the future design proposals and will be visible to the public, the wall face treatment should be further studied once its original surface treatment is identified.

Streetscape

There are 3 distinguishable layers which can be observed at street level. This layering comprises the masonry walls, an elevated platform (slope) and green buffer formed by various species of trees. The trees provide a pleasant screening between the elevated site and its adjacent pedestrian streets.

The current proposal is to preserve the Old and Valuable Tree (OVT) HKPWCH/1 as well as other selective existing trees on top and just behind graded masonry wall in relation to slope no.11SW-B/FR 193, with other vegetation being removed. The loss of vegetation will largely alter the character of the streetscape and the impression of a somewhat luscious and tree-shaded site in an urban context would be altered. The site will no longer be distinguishable from other parts of Causeway Bay.

Since the masonry walls and vegetation are intrinsically linked, design proposals should exploit the landscaping atop of the masonry walls to ensure the site heritage values are preserved. Aside the preservation of the OVT, it is recommended that where feasible the existing trees are retained insitu, or where unavoidable, they are replaced with suitable alternatives.



Fig. 5.2.1 View from Pennington Street showing the three distinguishable layers of masonry walls, buildings and greeneries. (Source: Purcell, 2021)

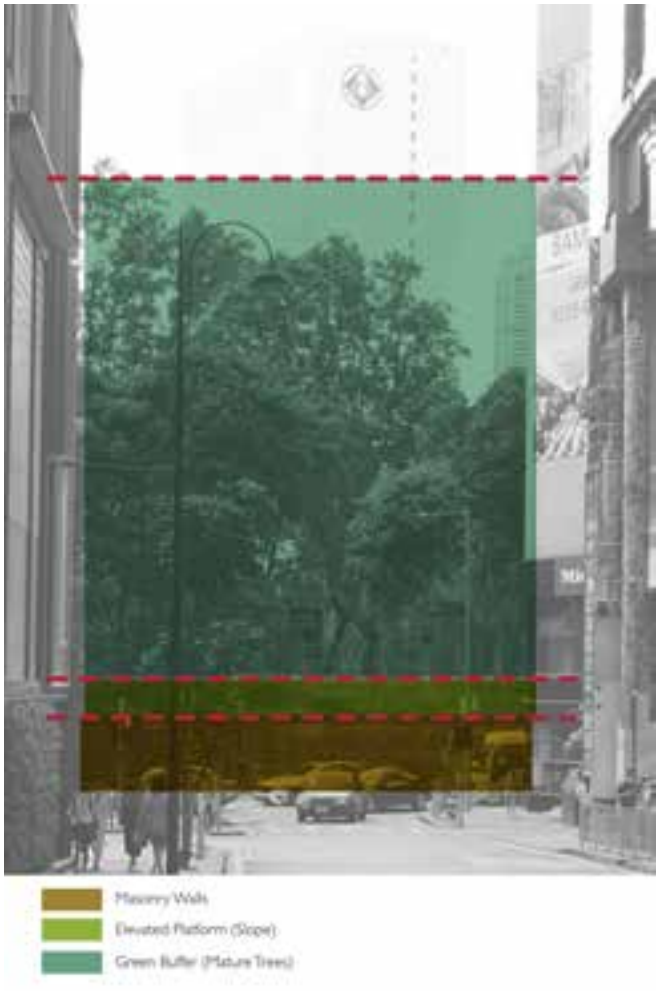


Fig. 5.2.2 Diagram showing three layers: walls, building and trees. (Source: Purcell, 2021)



Fig. 5.2.3 An image showing the panoramic view of tree buffer looking from the middle platform of the site (Source: Purcell, 2021)

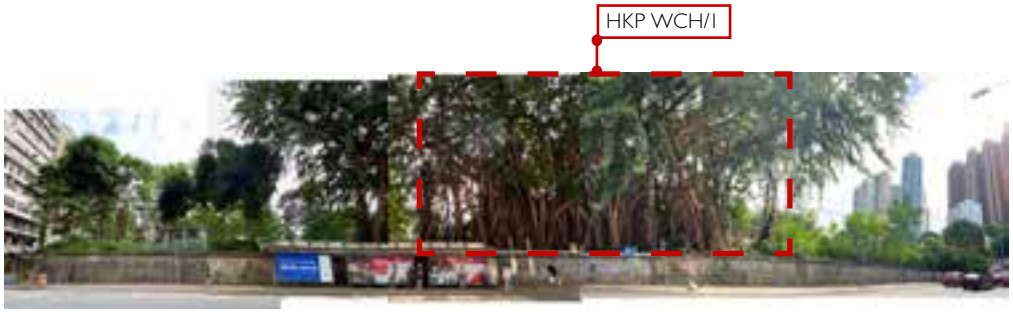


Fig. 5.2.4 An image showing the panoramic view of streetscape looking from Leighton Road (Source: Purcell, 2021)

OVT Registration No. HKP WCH/1

Per the lease condition, the OVT on the site is an extremely rare surviving large tree in Causeway Bay. The tree whilst not unique on a city-wide scale, in the context of Causeway Bay it is impressive due to its urban location.

This tree significantly contributes to the streetscape of Leighton Road. Its height and large canopy afford a wide expanse of shading to the street and bus stop below. Whilst the precise date of the tree is not known, it has significant contextual value and is engrained in the collective memory of people who reside and work in the vicinity of the site.

Its retention in-situ may require structural strengthening to the non-graded wall (in relation to slope no.11SW-B/FR 190) below.

Another issue is that the OVT is reported to have brown root rot infection which may also have long-term implications on the non-graded wall below.

Under the Manual on the Management of Brown Root Rot Disease issued by the Greening, Landscape and Tree Management Section of Development Bureau, Greening, Landscape and Tree Management Section, Development Bureau,[121] trees confirmed with Brown Root Rot Disease should be removed within 4 weeks upon diagnosis. Old and Valuable Trees infected with the disease require continuous monitoring every 3 months and appropriate mitigation measures should be completed within 6 weeks to ensure public safety is maintained.

121 Greening, Landscape and Tree Management Section, Development Bureau (2019), Manual on the Management of Brown Root Rot Disease, https://www.greening.gov.hk/ filemanager/content/pdf/knowledge_database/Manual-on-the-Management-of-Brown-Root-Rot-Disease.pdf

Structural Investigation and Potential Structural Strengthening Works

Due to the insufficient archival records, structural investigation using both destructive and non-destructive method is likely required in order to establish a comprehensive understanding on the structural condition and stability of the masonry walls. Where destructive method is proposed, the locations shall be minimized as far as feasible to avoid unnecessary loss of historic fabric.

To comply with the latest building code/ ordinance, following the initial assessment by the structural engineer, structural strengthening/ enhancement measures are likely to be necessary for the following reasons:

> *"Based on the preliminary field investigations on the geometry of the existing masonry walls, the stability of the masonry walls under the current loading condition is not able to meet the current geotechnical standards.*
>
> *Since there are a number of trees to be retained on top of the existing slopes above the masonry walls, the existing loading condition to the masonry walls will not be relieved during/after the future development. Therefore, potential structural enhancement works to the masonry walls are expected during the future development in order to fulfill the current design standards."*

Such structural strengthening/ enhancement is deemed to be challenging when considering retaining the existing trees and soil behind. Some new structural intervention might be required and this may be visible from outside the site. This would induce both physical and visual impacts on the existing historic fabric. A careful and sensitive approach that explores a range of options may be necessary in order to minimize and/or mitigate the relevant heritage impact.

Potential Alterations

To comply with fire precaution, security, health and safety, means of escape and access, and barrier free access etc., the new development may require alterations to the masonry walls, such as new openings.

Where alterations are unavoidable, there should be done that is distinct and is complementary to the heritage value.

5.3 OPPORTUNITIES

The following section describes the opportunities that arise from the emerging design proposals for the redevelopment of the site. The opportunities that arise from this development are described below:

Representation of the Historic Fabric

Preliminary site surveys suggest the walls are generally sound. To enhance the aesthetic value of the walls, key elements of conservation works include:

- restore the vermiculated rusticated coping;
- general cleaning and removal of graffiti on masonry elements;
- removal of poorly executed historic repairs and make good using like-for-like materials.

To support the restoration works, a detailed condition survey is required. It is also recommended that samples of the existing mortar are analysed to facilitate the like-for-like repairs.

Restoration of Coping Design

The vermiculated rustication coping design is a distinctive element of the masonry walls at Caroline Hill. Its design on city wide basis is rare and possible unique to this site. Read with section 4.3.

The design is evidence of craftsmanship that would not be typical of this construction. Further investigation shall be carried out to parts of the plain render coping to verify whether there is any evidence of the vermiculated profile beneath. Reinstatement proposals will require physical evidence. If the profile exists, the current scheme affords the opportunity to restore the coping design and to re-present it. This will have a positive beneficial impact on the street scene and would enhance the wall's aesthetic value.

Representation of the Landscape and Vegetation

As outlined in the character-defining elements schedule, the site is partially surrounded by vegetation which contributes to creating a relatively enclosed nature of the site along its north and eastern sides. The existing trees including the OVT (HKP WCH/1) are later additions to the site, possibly during the 1960s. Due to the site's unusual elevated nature, these trees may have been introduced to shield the various buildings built on the site (all demolished) from neighbouring buildings and the public walking on the adjacent streets.

As a highly significant feature of the extant site, a master landscape plan should be developed, with its primary objective to retain and enhance the vegetation and its contribution to the sites overall setting.

Enhanced Site Accessibility

Since the 1920s, the site's usage has restricted public access to it. The ensuing commercial development will introduce public access to the site for the first time whilst integrating the site into the urban fabric. The site itself and its layout will create a link to further new buildings, including a District Courthouse. The plan also includes connecting the site back to the MTR Station in Causeway Bay via a series of pedestrian bridges that link various Lee Garden buildings.

Interpretation of Masonry Walls

With the development opening up the site for public access, there is an opportunity to introduce an interpretation strategy to explain how the walls have been a key character of the streetscape as well as educating public on the following:

- Association with the development of institutions in Sookunpoo district;
- Association with the development of recreational clubs in Sookunpoo district; and
- Association with the development of government facilities in Caroline Hill area.

CHAPTER 06:
CONSERVATION FRAMEWORKS

6.1 INTRODUCTION

6.1.1 Purpose of the Conservation Framework

The conservation framework provides an overarching strategy for the conservation and management of future change to the graded walls and earthenware pipes at Caroline Hill, as well as the non-graded masonry wall (related to slope no.11SW-B/FR 190) that are required to be retained under the lease. The purpose of the framework is to set out the policies that will guide future decision-making, taking into account general best practice in conservation and the challenges and opportunities posed by the development proposal. This is not intended to be a rigid set of rules; rather, it looks to provide realistic guidance with reasonable flexibility to reflect the future use of the site and the proposals to embed the site into its urban context.

The conservation framework should be taken into consideration and applied in every instance where change is proposed that will or may affect the significance of the site; from minor repairs through to major alteration. Reference should also be made to the recommendations in chapter 5 of this CMP ('Issues and Opportunities'), which responds to specific issues, opportunities that should be actively addressed in the near and foreseeable future.

It is important that the best practice approach set out in the conservation framework is applied now and for the foreseeable future to avoid any gradual erosion of character and significance over time, for example, due to uncontrolled and insensitive maintenance works.

6.1.2 Defining Conservation

Conservation is defined as 'the process of maintaining and managing change to a heritage asset in a way that sustains and where appropriate enhances its significance'. Conservation is not a process that precludes change but one that enables it to occur without diminishing the significance of a heritage asset and one that is mindful of the long-term future. The foundation for conservation is the understanding, retention, and enhancement of significance. An understanding of significance should underpin every act that affects decision making and changes to a heritage asset.

The purpose of conservation is to preserve a place of heritage value indefinitely. Fundamental to achieving this is for the place to have a meaningful use that will ensure it is cared for. It does not seek to prevent all change, nor does it aim to preserve a place in its entirety, preventing progression and use. Implicit in the concept of conservation is the acceptance of sensitive and appropriate change as the demands made of heritage assets evolve over time. It is often by virtue of building's ability to adapt to changing needs that it will survive at all.

'Conservation used to be synonymous with preservation. Yet conservation today is something much more dynamic, which ranges from maintenance and repair, through to finding appropriate new uses when necessary. Conservation may include interpretation, presentation, access, new development, marketing, research, fund-raising, or publication. It is as much about facilitation and mediation, as it is about regulation. Conservation is becoming increasingly positive and proactive, rather than negative and re-active'.

- Kate Clark, Informed Conservation, (2001).

6.1.3 Conservation Framework

The conservation framework should be at the centre of all decision-making with regards to conservation, repair, redevelopment, and change. This framework has been developed specifically for the Grade 3 masonry walls and the associated earthenware pipes, and non-graded masonry wall as part of this CMP. It is based on current best practice.

It should be noted that the Conservation Management Plan represents the opinions of the authors of the document. It does not have any statutory significance – although it is hoped that after appropriate consultation and discussion and potential amendment it may be possible to have an agreed document that all interested parties see as setting out policies for the future development of the site.

The significance of the site will change over a period of time and as it is developed. It is important that the plan in its present form is seen as relevant to the situation in late 2021. The Conservation Management Plan will need to be regularly updated as changes are made to the historic structure on the site.

The first principle of good conservation practice is to remain focused and aware of what makes a place important and where there is potential for conflict and make decisions founded on a clear understanding of significance.

It is essential that this philosophy is understood and applied by the developer, and by contractors and consultants involved in the care of the built fabric, together with those responsible for the building's operation and management.

Conservation management planning is now widely recognised as best practice for the long-term care and managed change of heritage assets and, as such, has become a principal tool in the process of conservation. and revitalisation It is the aim of this conservation framework to set out the strategic overarching guidance for the long-term management of the historic fabric feeding into the more detailed guidance concerning the short-term actions related to the site's redevelopment.

The research, content and presentation of a conservation management plan is informed by a variety of charters and guidance published by governments and agencies around the World. This CMP has been prepared to accord with the terminology set out in the Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance 2013, as noted at 1.2, which is a common reference document used in Hong Kong. Other such documents are also valid; details of these are listed in the bibliography.

6.2 CONSERVATION BEST PRACTICE – MANAGING CHANGE

There is no generally accepted detailed definition of 'best practice' in conservation; rather, it is a term used to describe the various methodologies, practices, systems and philosophies that result in the successful maintenance, conservation and management of a heritage asset. The application of the appropriate methods at the masonry walls and associated earthenware pipes at Caroline Hill will ensure its significance is protected and, where possible, further revealed. This will prevent the erosion of or damage to the integrity and character of the site as a whole and its component features.

In addition to the guidance and methodologies outlined in the following sections, there is considerable guidance available from various international conservation bodies and charters:

6.3 CONSERVATION MANAGEMENT AND IMPORTANCE OF SIGNIFICANCE

The masonry walls and associated earthenware pipes at Caroline Hill will need to be adaptable to suit new functional needs, for example to accommodate any new interventions. A careful balance will need to be found between meeting the functional, operational and environmental needs of the business and the significance of the built fabric. These changes can be achieved through sensitive management of the design development and the building post-handover.

Conservation management is defined as 'the process of maintaining and managing change to a heritage asset in a way that preserves and where appropriate enhances its significance. As such, it seeks to strike a balance between retaining cultural significance and fitness for purpose.

Of primary importance to the conservation of all heritage assets is the understanding, retention and enhancement of significance. 'Significance lies at the heart of every conservation action – which for the historic environment means the recognition of a public interest in what may be a privately-owned asset.

Conservation management does not seek to prevent change, nor does it aim to preserve a place in its entirety. Implicit in the concept is the acceptance of sensitive and appropriate change as the requirements for heritage assets evolve over time. Conservation Management Planning is now widely recognised as best practice for the long-term care and managed change of heritage assets and as such it has become the tool to deliver successful, long-term, beneficial use.

6.3.2 Understanding Capacity for Change

It is accepted that heritage assets may need to be adapted over time to accommodate new and potentially unforeseen circumstances. In order to successfully retain the significance of the site while maintaining an environment where cultural and social activities can flourish, it is essential to identify where change is possible. This relates to the ability to make physical changes to the built fabric and open spaces of the site without causing harm to its overall significance. It is not plausible to establish with certainty the capacity for change on the site at any given point in time. Rather, the intention is to establish a system for assessing the capacity for change within specific area(s) as and when alterations are proposed. Identifying the capacity for change should always be based on an in-depth understanding of the significance of built fabric balanced against the pressure for change on the site.

It is a central principle of good conservation that one should work with the "grain" of the building, structure or site, not against it. In practice, this means seeking solutions that entail minimal change to significant historic fabric and, where possible, focusing necessary alterations on fabric and spaces of lower or no significance. It also applies within individual rooms, where, for example, one is seeking to install new building services in an historic building. Arranging services installations in a manner that works with the geometry of the space is often highly effective at preserving significance whilst obtaining fitness for purpose. As such, the significance of built fabric spaces should be a principal consideration when examining the capacity for change.

6.3.3 Assessing the Impact of Change

The process of assessing heritage impact is an essential means of ensuring that any proposed change will not cause harm to a heritage asset and that it will be carried out in an appropriate manner. It is vital that a careful balance is found between meeting the operational needs of a site and the significance of its built fabric, features and spaces.

The process of assessing heritage impact has been adopted by the historic built environment sector as a way of understanding the impact that physical change will have on the significance of a place. Where major change is proposed, the setting of the graded masonry walls should also be taken into consideration, not just the built fabric in insolation. This is where early and on-going consultation the relevant authorities will be highly beneficial.

The process of assessing heritage impact is as follows:

Step 1: Identify the need for change.

- For example: repairs, refurbishment of WCs, cleaning, service upgrades, creation of additional space for storage.

Step 2: Understand the affected area and its setting.

- Identify a study area which will include the area affected and its wider setting, as appropriate.
- How has the study area developed and in what historical context? See CMP section 3 – History & Context.
- How is the area/feature significant and to what level? See CMP section 4 – Significance.
- Is further research or assessment needed to gain a fuller understanding of the above? Engage a specialist to carry out further investigations if deemed necessary.

Step 3: Prepare sensitive design proposals.

- Develop the proposals with an understanding and respect of the significance of the study area.
- Engage specialist advice as necessary.
- Enter pre-work consultation discussions with the relevant authorities and stakeholders.

Step 4: Assess the impact of the proposed change against the following criteria.

	LEVEL OF IMPACT	DEFINITION
POSITIVE	*Highly Beneficial*	The proposal considerably enhances the significance of the heritage asset(s), and/or the ability to appreciate its heritage values.
	Moderately Beneficial	The proposal enhances to a clearly discernible extent the significance of the heritage asset(s), and/or the ability to appreciate its heritage values.
	Minimally Beneficial	The proposal enhances to a minor extent the significance of the heritage asset(s), and/or the ability to appreciate its heritage values.
	Neutral	The proposal does not change the significance of the heritage asset(s), and/or the ability to appreciate its heritage values.
NEGATIVE (if no mitigation measures present)	*Minimally Harmful*	The proposal damages to a minor extent the significance of the heritage asset(s), and/or the ability to appreciate its heritage values.
	Moderately Harmful	The proposal damages to a clearly discernible extent the significance of the heritage asset(s), and/or the ability to appreciate its heritage values.
	Highly Harmful	The proposal substantially damages the significance of the heritage asset(s), and/or the ability to appreciate its heritage values.

Step 5: Review and amend the design as necessary.

If unacceptable change is identified, the design team should work with the relevant authority and stakeholders to consider mitigating measures or changes to the design that will reduce heritage impact.

Following the completion of new design proposals, steps 4 and 5 should be repeated as necessary until harm to the heritage value is either removed or reduced to an acceptable level.

Step 6: Monitor the implementation of a Heritage Impact Assessment

Careful monitoring of the works may be required, for example, where statutory authorities have had a hand in the development of the design or where the work is of high profile and of interest to a large number of stakeholders.

6.4 INTRODUCTION TO THE POLICIES

(Note: All policies in this chapter should be read in conjunction with each other)

The following set of policies and guidelines are designed to manage any change to the Grade 3 historic masonry walls in relation to slope no.11SW-B/FR 193 and 11SW-B/FR 32 and earthenware pipes sensitively. Some of these are also applicable to the non-graded section in relation to slope no. 11SW-B/FR 190. In simple terms they provide a 'to-do' list for the project team and the future operator. They have been developed through a holistic review and assessment of the site, a robust understanding of significance, the identification of issues and opportunities and knowledge of national and local statutory requirements relating to heritage assets.

In total there are 25 No. policies, which are averaged according to the following broad themes:

6.5 Administration (9No.)
6.6 Retention and Maintenance of the historic fabric (6No.)
6.7 Management of change (6No.)
6.8 Enhancement of significance (4No.)

The policies are set out in a tabular format to aid navigation. Each policy statement is provided with a short explanation of its purpose, followed by a justification, and lastly, a guidance note. This last is in effect, the 'to-do' item. In all cases, statements are kept short and to the point.

It is important to remember that a CMP is a management tool that is typically written in parallel with the project development and as such it should be reviewed and amended if necessary. It should in any case be reviewed and updated regularly or when a major alteration to the building is being considered.

In general, the following key principles apply:

- Where it is feasible to do so, the loss of historic fabric should be kept to a minimum. This applies during the detailed design development and the design and execution of temporary works, as well as the permanent works.
- If deemed necessary, all interventions to the graded masonry walls should be designed and constructed so that they are reversible where it is feasible to do so.
- The alteration and additions to the historic structures should have regard to the authenticity and integrity of the historic fabric. This means ensuring that where repairs are necessary, that matching materials and components are used provided always that the materials embodied in the element to be repaired are fit for purpose.
- The heritage significance of the fabric should be observed at all times, particularly during construction operations, which means ensuring that adequate protection of retained elements is installed and maintained throughout the duration of the works.
- New additions should be "of their time", which means they should be distinguishable from the existing fabric so that the narrative of the building can be understood.

POLICY NO.	POLICY	OBJECTIVES OF THE POLICY	JUSTIFICATION FOR THE POLICY	GUIDANCE
6.5 ADMINISTRATION				
CP6.5.1	**The developer will adopt the policies contained within this CMP.**	To ensure that the principal aims of the CMP are implemented.	Failure to implement the policies of the CMP will risk erosion of the cultural heritage value of the historic structure.	Disseminate the Policy section of this CMP across the project team and monitor the design development of the project against the policy provisions.
CP6.5.2	**Make the CMP available to any parties with a legitimate interest in the site, such as different stakeholders, local statutory bodies and district council.**	To promote interest in the historic fabric and demonstrate due diligence in its care.	Although the CMP is a privately owned document, other parties with an interest to the site, including the Antiquities and Monuments Office, should be involved in the ongoing development of the CMP.	Consult AMO and other stakeholders during the development and future update of the CMP.
CP6.5.3	**Record any past and future changes to the built fabric and log in the archive so that the evolution of masonry walls is understood in the future.**	To keep the archive up to date so that it remains a useful repository of information that is available for periodic review and update of the CMP. To ensure a holistic understanding of the site.	The system of recording needs to transcend staff changes to ensure continuity over time.	All records related to the development and changes to the walls including layout plans, photographic and cartographic survey, a description of works, and who carried out the works should be kept.
CP6.5.4	**Review the CMP and update whenever necessary to reflect any material changes in circumstances or when a major change is being considered.**	To ensure that the CMP remains up to date.	To promote interest in the masonry walls and associated earthenware pipes and demonstrate due diligence in its care.	Reviews can be undertaken internally or by a specialist heritage consultant. It is recommended that notes or records of changes are kept enabling easy updating of the CMP.

POLICY NO.	POLICY	OBJECTIVES OF THE POLICY	JUSTIFICATION FOR THE POLICY	GUIDANCE
CP6.5.5	**Where new alterations and additions are proposed, consult all relevant statutory bodies.**	To ensure that all statutory requirements, for example, relating to the building regulations, are fully understood prior to finalising the scheme design at an early stage.	Compliance with statutory requirements is essential to achieve fitness for purpose. They also present significant threats to the values of the heritage. Early consultation would provide maximum opportunity to seek ways to mitigate any adverse impacts on the heritage values.	All relevant statutory bodies are to be consulted including but not limited to the Antiquities and Monuments Office and Buildings Department.
CP6.5.6	**All signage to the masonry walls, including site operations and statutory requirements, shall conform to pre-agreed criteria as regards location, positioning, fixing design and illumination.**	To ensure that signage is controlled across all legal, commercial, aesthetic and heritage-related aspects.	The effective control of signage is essential to ensure that operational need and impact on the heritage values of the site are balanced and that irreversible damage is avoided.	Commission and implement a comprehensive signage strategy that embraces all aspects of signage. Post-handover, provide detailed directions to the operator covering all permanent and temporary signage.
CP6.5.7	**A maintenance plan for the masonry walls and associated earthenware pipes should be drawn up and implemented upon completion of the project.**	To ensure that the heritage values of the walls are maintained. To ensure a comprehensive understanding of the condition and requirements of the site. To enable efficient planning of works and forecasting of expenditure. To ensure small issues do not become large and costly problems through lack of monitoring.	The physical condition of the site is an important component of its cultural significance: failure to maintain the site correctly risks the loss of heritage values.	Draw up a Maintenance Plan for the management agent to implement upon completion of the project.

POLICY NO.	POLICY	OBJECTIVES OF THE POLICY	JUSTIFICATION FOR THE POLICY	GUIDANCE
CP6.5.8	**A record for the masonry walls and associated earthenware pipes should be kept of the maintenance work that has been done, in order that in future those who are responsible for management and maintenance are aware of what has taken place, by whom and when.**	Having a record of previous works is helpful when seeking to know what is effective and when diagnosing the causes of performance failures.	Continuity of approach is valuable to successive management teams over an extended period.	The operator should maintain a record of all works that have been carried out.
CP6.5.9	**Add to the archive record of the site any new material that is collected regarding the history or any other material that may add to the understanding of the site.**	To ensure that the archive, and the CMP, remains up to date and is an authoritative source of information about the site.	The reliability and comprehensive nature of the archive and CMP is essential to its usefulness as a means of managing the site.	The archive shall be properly maintained. Develop a methodology and access policy to ensure that this information is readily available to anyone with a legitimate interest in the site.
6.6 RETENTION AND MAINTENANCE OF THE HISTORIC FABRIC				
CP6.6.1	**The historic masonry walls should be retained as much as possible and should be carefully repaired with matching materials and appropriate craftsmanship.**	To retain the walls as a witness to the historical development of the Sookunpoo area, also as physical evidence of the original topography of Caroline Hill	The historic masonry walls that surround I.L. 8945 are one of the features that define the site and largely shape the existing streetscape since the 1920s.	To ensure that the walls are retained as far as possible and repaired with appropriate materials and craftsmanship.
CP6.6.2	**Materials for repairs should be selected to match the existing on a like-for-like basis.**	To ensure that repairs are carried out sensitively.	Poorly executed repairs using non-matching materials would be likely to have an adverse impact on the heritage values of the walls.	Measures should be taken to ensure compliance and to ensure that the specification of materials is appropriate.
CP6.6.3	**Implement appropriate quality control of all material alterations to the masonry walls and associated earthenware pipes**	To ensure that the works are carried out according to appropriate quality standards.	Poor quality control is likely to result in poor standards and have an adverse impact on the heritage values of the walls and create an increased maintenance burden in the future.	To ensure that appropriate trade skills are supplied and maintained throughout the construction phase and post completion maintenance.

POLICY NO.	POLICY	OBJECTIVES OF THE POLICY	JUSTIFICATION FOR THE POLICY	GUIDANCE
CP6.6.4	**Rectify poorly executed past repairs on the masonry walls and associated earthenware pipes**	To enhance the significance of the walls	According to item 2.04 to 2.07 in section 4.5.2, poor workmanship in past replacement of cast iron pipe and other associated modern pipework, graffiti paint and cement patch repairs on masonry walls have neutral or adverse impact on the historic structure.	Past repairs with poor workmanship should be rectified with materials matching the existing on a like-for-like basis (refer to CP6.2.2).
CP6.6.5	**The OVT HKP WCH/1 should be preserved insitu and it is preferable to preserve other existing trees around the site where feasible.**	To preserve the streetscape of Caroline Hill Road and Leighton Road.	The greenery of Caroline Hill have significantly contributed to the streetscape of Sookunpoo since the 1960s. The OVT and other existing trees are also intrinsically linked with the masonry walls.	Greenery around the site shall be preserved as far as practical to preserve a vegetation buffer between street level and the elevated level of the site. Accredited arborists may need to be consulted to carry out a feasibility study for keeping trees within the site. Also, the OVT within the site currently listed under the Register of Old and Valuable Trees is to be properly protected, monitored and managed.
CP6.6.6	**The landscape design in future redevelopment should consider the significance of the contribution of existing OVT, other existing trees and masonry walls.**	To represent the landscape setting of the site, and to keep the streetscape and the character of Caroline Hill.	The existing greenery, together with the slope and masonry wall below has formed a key character of the streetscape since the 1960s. This contribution contributes to the social, aesthetic and historical values of the site.	Considerations should be made to assess the significance of existing landscape. A proper landscape design can enhance the significance of the site. Develop a visual impact assessment to evaluate the impact of development on the surrounding buildings and key sightlines along the major roads that surround the site.

POLICY NO.	POLICY	OBJECTIVES OF THE POLICY	JUSTIFICATION FOR THE POLICY	GUIDANCE
6.7 MANAGEMENT OF CHANGE				
CP6.7.1	**Any change to the masonry walls and associated earthenware pipes which are deemed necessary, should be designed to minimise the loss of the historic fabric and should preserve the sense of enclosure and the streetscape that has existed since the 1920s.**	To retain the sense of enclosure and characteristic of the streetscape.	The masonry walls and associated earthenware pipes took part in forming the enclosure and the streetscape of adjacent streets.	Any proposed change within the extent of the masonry walls shall strictly follow the requirements set out in the lease requirements, including obtaining the necessary approvals from relevant authorities. Specifically, change to the graded masonry walls should be minimised as far as possible and designed to retain the sense of enclosure and characteristic of the streetscape.
CP6.7.2	**The graded masonry walls and earthenware pipes shall be conserved in appropriate context where feasible.**	To retain the topography of the site, which contributes to the historical significance of the retaining walls.	As mentioned in section 5.0, the topography of the site is a significant feature that have existed since the 1920s. Therefore, it is not only the masonry works of the walls that matter but also the function of it, having to hold the earth of Caroline Hill in the past decades as well as retaining the topography of the site.	The original retaining function of the masonry wall may be lost in the development. Consideration shall therefore be given to retain the retaining function where feasible so that the historic structure is conserved in context.
CP6.7.3	**Commission inspection and investigation of the principal structural elements of the walls, including the reinforced concrete banding and granite.**	To establish at an early stage that the principal Character-defining Elements of the walls are capable of retention and re-use. To facilitate future repair/ structural enhancement (if any) strategy.	If investigations reveal that these elements cannot be re-used it would potentially have a major impact on the efficacy of the restoration scheme.	Commission a comprehensive survey of condition of the reinforced concrete banding and granite and assess the findings against the performance standards required to achieve statutory compliance with regards to structural safety.

POLICY NO.	POLICY	OBJECTIVES OF THE POLICY	JUSTIFICATION FOR THE POLICY	GUIDANCE
CP6.7.4	**Prepare a scheme of opening-up for the purpose of ascertaining condition and existence of surviving original or early historic fabric, inclusive of masonry walls and plain rendered coping, where relevant.**	To understand the nature and condition of the historic fabric where it is currently obscured from view.	Opening up will be required to ascertain potentially key information to support the future repair works especially whether the vermiculated rusticated coping design exists behind plain rendered coping, as well as any historic masonry structure behind the current cement render finish at the junction of Caroline Hill Road and Leighton Road.	Prepare and carry out a scheme of selected opening up.
CP6.7.5	**Adopt necessary monitoring to the graded masonry walls and earthenware pipes during any works that might adversely impact the historic fabric.**	To preserve and protect the historic fabric in-situ.	Adverse impact or damages to the masonry walls and earthenware pipes will cause loss of historic fabric and diminish its heritage value.	The monitoring proposal for the proposed works would be agreed with relevant authorities before commencement of work. The condition of the graded masonry walls shall be inspected regularly during any construction works that might adversely impact the historic fabric.
CP6.7.6	**Prior to any programme of works, a photographic and cartographic survey of the masonry walls and earthenware pipes should be completed.** **Photographs should be related to a layout plan and should be deposited in an appropriate archive.**	To carry out a contemporaneous record and documentation of the historic fabric before the commencement of any construction work.	This will ensure there is not only an historical record, but it will also as a reference archive for all future work.	The surveys should be commissioned, and the completed surveys should be shared with the Antiquities and Monuments Office for their records.

POLICY NO.	POLICY	OBJECTIVES OF THE POLICY	JUSTIFICATION FOR THE POLICY	GUIDANCE
6.8 ENHANCEMENT OF SIGNIFICANCE				
CP6.8.1	**Coping design of the masonry walls should all be maintained, conserved, and reinstated where the parts were removed.**	To preserve the rarity of the masonry walls coping design	The vermiculated rusticated coping design is a rare design in Hong Kong. (refer to section 4.4.6)	Such design should therefore be maintained and conserved. Further investigation should be carried out in parts of the wall where the coping design differs from the original design. Reinstatement works should be carried out if evidence is found that the coping design was modified or covered in the past.
CP6.8.2	**Any interventions to the graded masonry walls and the associated earthenware pipes should seek to enhance, rather than detract, from the significance of the site.**	To ensure that the heritage values of the masonry walls are preserved or enhanced wherever it is feasible to do so.	The heritage values of the masonry walls are key elements of its significance.	Develop the design proposals for the masonry walls and earthenware pipes in a general accordance with this CMP.
CP6.8.3	**Unsympathetic modern accretions such as pipework and signage on the masonry walls should be removed and be accompanied by proposals that seek to carefully and sensitively make good the substrate and finishes from which they are removed.**	This is to enhance the character, appearance and heritage value of the historic fabric	Elements that are judged to have an adverse impact on the masonry walls and earthenware pipes will diminish its heritage value.	Assess the impact of elements that have an adverse impact on the historic fabric and include for their removal.
CP6.8.4	**Proposals for activating the site should be considered and may require new interventions.**	To enable the public to gain access at a variety of positions.	The streetscape is a significant character of the site. Enabling visitors to access from a variety of positions would reveal aspects of significance that would enhance their understanding and appreciation of the masonry walls and earthenware pipes.	The location of any proposed intervention can be within the extent of non-graded masonry walls in order to avoid disturbance to the graded masonry walls. Any affected materials in the non-graded masonry walls should be considered to be recorded and salvaged for repairs elsewhere.

6.9 CONSERVATION BEST PRACTICE - MAINTENANCE AND REPAIR

6.9.1 Workmanship and Materials

High-quality workmanship be a consistent aim. An inconsistent or inappropriate quality of workmanship or materials can have a negative impact on significance, both with regards to built fabric and aesthetic value. This impact frequently builds up over time, resulting in the incremental loss of significance

and gradual erosion of character. It is therefore important pro-actively to ensure that the appropriate materials and workmanship are applied when carrying out works on any scale. Contractors with expertise on restoring heritage should be appointed to carry out the repair and restoration works.

Is it important that any new intervention takes into consideration the original and early materials and components as these strongly contribute to the character of the masonry walls and earthenware pipes.

Any decisions related to material change need to take into account the significance and component heritage values attached to a particular area or feature, as well as its wider context. There is also potential to identify where original materials and methods have failed, and learn lessons from this to ensure the longevity of the structures.

In many cases, the materials used should be sourced as direct replacements as far as is possible to ensure consistency; for example, stone sourced from the same or comparable quarries and finished in a like-for-like manner. This will ensure that any new material will blend in more quickly. This may potentially be a lengthy and complicated process to achieve the correct results and will likely require specialist investigation to inform the specification of materials and techniques. Adopting this approach will, however, protect the significance of the site and could save time in the future when tasks are repeated.

Regular inspection by a conservation-accredited architect or conservationist will substantially streamline the process of ensuring appropriate workmanship and materials, which should be considered on a case-by-case basis. No assumption should be made that a solution in one area will be suitable in another until the relevant assessments have been carried out.

6.9.2 Preventative Maintenance

Planned preventative maintenance will ensure the long-term condition of the masonry walls and associated earthenware pipes at Caroline Hill. At the completion of the project, a detailed Maintenance Plan should be prepared and implemented. The plan should set out the frequency of repair work, define the materials to be used, and set out the need for specialist advisors and skilled work people. This should be the starting point for anyone managing the day to day running of the site from a practical repair and maintenance point of view. Good planned maintenance is the best way of ensuring the long term viability of the site. Properly planned maintenance using the correct materials and skilled labour is the best way of maintaining the historic significance of the site as a whole.

There are several key features to good planned maintenance. The management of the planned maintenance work is crucial – this will ensure that the work is carried out at the appropriate intervals by adequately skilled craftsmen and that the work is properly checked to ensure that it has been completed to an appropriate standard. Good management of the work cannot be completed entirely from an office but it does need responsible staff to be engaging with the work people and checking on the quality of the work being completed.

A sensible system of planned alerts for upcoming work is very desirable. This can be something as simple as an outlook diary with a series of recurring tasks and diary prompts. Alternatively, it can be one of the many commercial building management programmes that generates work tickets – such systems are good for the maintenance of mechanical and electrical plant but tend to be less good for the practical building maintenance. Whichever system is used, it is important to keep a good record of what has been done (see the section below) and to ensure that feed-back is recorded from anyone carrying out maintenance work. The craftsmen completing this work are likely to be in the best possible position to see more serious problems in the building fabric and with a good reporting system the remedying of these defects can be planned in with future works programmes. Use of appropriately skilled work people is important for good routine maintenance and repair work. It may be tempting to use the site 'handyman' to carry out minor tasks and in many cases this may be appropriate – but recognising the skills required (or lack of them) is essential if work is to be carried out to an appropriate standard. This applies to relatively simple tasks like painting where proper preparation is essential to the life expectancy of the paint system.

In summary, the overall benefit this brings is:

01 The upkeep of the masonry walls' and earthenware pipes' appearance
02 The ability to plan ahead financially so that an allocated fund is readily available and funding for more substantial work can be recognised in advance
03 The ability to allocate resources in advance, both inhouse and externally
04 Reassurance that the built fabric is regularly inspected and monitored
05 The extension of the masonry walls' and earthenware pipes' life span
06 The prevention of damage to or loss of original fabric
07 An overall reduction in running costs.

Reactive maintenance would be inevitable, especially within historic structures and in climates like that of Hong Kong. However, a pre-emptive scheme of maintenance will prevent ad hoc repairs which are often more expensive than planned work and are frequently carried out as a result of an emergency. Not only is this a threat to the significance of the historic structures, but it is also a potential extra cost. Successful preventative maintenance is founded on an understanding of current condition. Continually updating these inspections of the walls' and pipes' condition will provide the most up-to-date list of priorities requiring immediate attention. Additionally, they will recognise any potential issues in advance which can be monitored and action taken as soon as it becomes necessary or the resources become available. Planning ahead is key to a successful programme of preventative maintenance. However, there will also be times of the year where unpredictable weather conditions or other factors may inhibit easy access to difficult to reach parts.

6.9.3 Approaches to Repair

Repair differs from maintenance in that the latter should not involve any change. The purpose of repair is to remedy defects caused by deterioration or damage whilst maintaining the overall character of a place. It should be undertaken with conservation as a primary objective and an understanding of significance as its founding principle. The general presumption in conservation best practice is in favour of like-for-like repair: using the same materials and techniques as the existing element to be repaired. The exact way in what a repair is carried out and in which materials needs to be carefully considered. The more closely-matching the repair is, the more likely it is to successfully match the existing character of the building or area being repaired. In some instances, original materials may no longer be available or have since been found to be unsafe. Care must therefore be taken to choose an appropriate alternative material that matches the nature, colour and texture of the original as closely as possible. The exception to this is where previous repairs have been carried out inappropriately and are either not in keeping with the character of the site or have a negative impact on its significance. This might include incorrectly specified mortar for pointing, or the use of concrete to repair stonework. Where this occurs, steps need to be taken to reverse the inappropriate intervention and instigate repairs which are in keeping with the original construction and traditional methods/ materials used. Regular inspection should identify specific instances of inappropriate previous repair and make recommendations to rectify these. It is essential that proposals for any renewal are informed by the heritage impact assessment process (see section 6.3). Careful consideration needs to be given as to whether the heritage values of the building can be recovered or will be permanently harmed, and the balance of losing significance against long-term benefits. The aim when carrying out repairs, irrespective of their scale, should be that the intervention is reversible, meaning that they can be removed without causing further change or damage to the historic fabric. Repairs should cause the minimum degree of intervention necessary, being as discrete and non-invasive as possible, especially where highly or moderately significant historic built fabric is affected. As much of the original fabric as possible should be retained. This helps to ensure that significance is retained both in the short term whilst the repair is carried out and in the future through on-going maintenance.

The concept of reversibility should be applied to more considerable changes beyond repair. Whilst a decision today may be made with all good intentions and informed by as deep an understanding as possible, future generations may be able to improve on these interventions to better enhance the significance of the site.

6.10 CONSERVATION BEST PRACTICE – RESEARCH AND RECORDING

It is important that any change is recorded and archived as a means of understanding how today's decisions have been made and also as a record of unsuccessful intervention. To that end, it is important that any proposals package is as detailed as possible so that the work can be understood in context. This information should include, but not be limited to:

01 The work carried out
02 The reason why it was needed
03 What materials and methods were trailed, and why those discarded were unsuccessful
04 What materials and methods were ultimately used
05 Any additional findings made during the course of work

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PART 07:
NEXT STEPS

7.1 SUBMISSION TO AMO FOR APPROVAL

The CMP should be submitted to Lands Department and Antiquities and Monuments Office for approval as part of the lease requirements.

7.2 ADOPTION AND IMPLEMENTATION OF CMP

The CMP is a living document and it will need regular reviewing to ensure that the policies stay relevant in the future.

The adoption and implementation of this CMP is the responsibility of the developer. As the CMP provides ongoing guidance, policies and recommendations for the future conservation of the site, it is important that it is referred to each time changes that could impact upon the significance of the site are considered.

It is especially important to understand the process for managing change (Section 6.2) and to apply this to all decision-making around the built fabric, structures, and overall character of the site, as well as to review all proposals for change against the conservation policies (Section 6.4 to 6.8). Wherever possible, further opportunities for improvement should be considered. The CMP should be used as the basis for Stakeholder consultation and a reference for the project team as the design is developed. The Antiquities and Monuments Office (AMO) should also see the CMP as the basis for consideration of any plans for change.

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Historic Building Appraisal

Masonry Wall and Earthenware Pipes at Caroline Hill Road
Causeway Bay, H.K

Historical Interest

The history of the existing masonry wall and earthenware pipes at Caroline Hill Road (加路連山道) can be traced back to the early 1920s, but it has undergone alterations over the past decades. The road surrounds Caroline Hill (加路連山),[1] which is situated in a district locally known as So Kon Po (or in the past Soo Kun Poo, 掃桿埔, literally straw broom plain). In the old days, the district extended to the north-west of the Soo Kun Poo Valley (掃桿埔谷) to encompass the area to the north-east side of the old East Point Hill, now the area of Hysan Avenue (希慎道) and Lee Gardens (利園), while the south-east was Caroline Hill. There was a Chinese settlement approximately on the site of today's Irving Street (伊榮街) and Keswick Street (敬誠街) at the time the British occupied Hong Kong. In 1842, this village of Soo Kun Poo had a population of about eighty people. The names of Caroline Hill and Caroline Hill Road are first shown on plans dating to the 1860s. Earlier still, according to a plan dated 1845, a house named Morgan's Bungalow had by then been built at the present location of the South China Athletic Association (SCAA, 南華體育會), with Sukunpu Valley (i.e. Soo Kun Poo Valley) to the east of the house. The district was sparsely populated. For instance, a plan dated 1859 shows the Soo Kun Poo Valley and paddy fields on the east and south-east side of Caroline Hill, while to its west and south-west were other hills with some Western-style houses. A Chinese Cemetery, later known as Mount Caroline Cemetery (咖啡園墳場, literally coffee gardens cemetery), was established to the south of Caroline Hill, approximately around today's Hong Kong Stadium, before 1856. Caroline Hill remained quite free of development around the 1930s.

Apart from the former Morgan's Bungalow (altered or rebuilt as St. Francis' College for missions in the Provinces of Guangdong and Guangxi in 1862) on the private lot of Inland Lot No. 358 (I.L. 358), a plan of 1867 also shows a Sookunpoo School (掃桿埔官立學校) on the adjoining plot of government land at Caroline Hill. The school was established in 1855.

According to a plan dated 1889, the former Morgan's Bungalow and Sookunpoo School stood on elevated platforms bounded by natural slopes. In 1921, the private lot of I.L. 358 was surrendered to the government. Then

[1] It was said that Caroline Hill was named after Caroline Preston, wife of a doctor, William J. Preston. Caroline died in early 1852 soon after arriving in Hong Kong. William worked in the apothecary trade as a druggist. He operated the Hong Kong Dispensary from 1850 to 1856. In 1856, he handed over the dispensary to another druggist and left Hong Kong. He might have come back to Hong Kong and worked under Dr Thomas Boswall Watson, one of the founders of the Watson chemist chain.

between 1922 and 1924, a masonry retaining wall was built as part of the site formation works in preparation for a new site for Queen's College at the former I.L. 358. The site levelling works, road building and filling of low-lying areas at and around Caroline Hill were reported to have begun by Messrs. Kin Lee and Co. in 1922 and completed in 1924. A plan of 1922 and an aerial photo dated 1924 show that the retaining wall actually extended along both the prospective site for Queen's College and the site of Sookunpoo School. However, construction of a new Queen's College on Caroline Hill was eventually dropped for financial reasons, and the site was allotted to the South China Athletic Association and Navy Recreational Club in 1927.

Sookunpoo School was relocated in 1905. The old school site was then used by other schools,[2] until it was allocated to the then Public Works Department for erecting new office and workshop buildings for the Electrical and Mechanical Office (now known as the Electrical and Mechanical Services Department) under it. Constructions were carried out in the 1950s by stage, with some later additions in the 1970s. Besides, a Post Office Recreation Club (郵政體育會) was erected to the northwest of the old school site (or at the junction of Caroline Hill and Leighton Road), and opened in May 1953. A new access stairway was opened at the masonry wall on Caroline Hill Road between the Post Office Recreation Club and the Electrical and Mechanical Office.

Over the years, a large portion of the 1920s' masonry retaining wall was altered or demolished. For instance, the north-western section of the wall, which extends along Leighton Road between the two ends of Caroline Hill Road, has at times between the 1960s and 1980s been subjected to re-alignment and partial demolition.[3] The existing masonry wall with earthenware pipes at Caroline Hill Road has thus become the oldest and most intact surviving section of the retaining wall. It is now a retaining wall of Slope Feature Nos. 11SW-B/FR 193 and 11SW-B/FR 32 registered in the Slope Maintenance Responsibility Information System of the Lands Department.

[2] Sookunpoo School was established in 1855. It was said that the school had been renamed Tang-lung-chau School. However, the name of Sookunpoon School was still marked on a plan dated 1889. In 1905, the school was relocated. The old school premise then underwent some structural improvements and became the home of the Victoria British School, which was opened on 20 March 1905 to correspond to the Kowloon British School, as a result of a petition to the government for establishing such a school on Hong Kong Island in August 1904. It was co-educational and only admitted European children not over twelve years old. In 1932, the school was closed due to the falling off in attendance, and the children were sent to the Central British School at Quarry Bay. The school premise was then used to operate the Junior Technical School, which was opened in 1933. Only 40 students were admitted in the first academic year. They were sons of dockyard and employees of the Public Works Department. It was a secondary school and expected to give those boys an opportunity of filling certain positions, such as foremen and draftsmen. It ceased operation during the Japanese Occupation (1941 – 1945) and re-opened in 1948. The school site was later allocated to the then Public Works Department for erecting a new workshop for the Electrical and Mechanical Office under it.

[3] Alterations are shown by the aerial photos of 1945, 1949, 1961 and 1975; maps of 1958, 1968, 1971, 1976, 1979 and 1989; and the architectural drawings of the PCCW Recreation Club.

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The retaining wall of 11SW-B/FR 193 and 11SW-B/FR 32 is built of dressed granite blocks with copings in vermiculated rustification and has a drainage channel above. It contains two built-in earthenware pipes with sound condition, which are said to have been commonly used before the 1970s. There is another built-in pipe, but it is made of cast iron, with traces that it was a later replacement of an earlier earthenware pipe years ago. Wall "11SW-B/FR 193", which starts at its intersection with Leighton Road, increases in height from the north corner of the site towards the south, which results in a change from eight to nine courses over its length. The southern portion of this retaining wall has a cement concrete bond course at a level of five courses above ground. Wall "11SW-B/FR 32" increases in height from the north to the south, and, as a result, ranges from nine to ten courses. It also contains cement concrete bond courses.

Architectural Merit

According to the Buildings Ordinance 1935, there was a new requirement on the construction of masonry and brick retaining walls that exceed 12 feet in height, that is, they must be provided with lacing or bond courses of good cement concrete at least one foot in depth and extending throughout the full thickness of the wall. Moreover, the distance between any two adjacent bond courses could not exceed six feet when measured vertically. According to government records, wall "11SW-B/FR 193" is 3.5 metres in height (approx. 12 feet), while wall "11SW-B/FR 32" is four metres high (approx. 13 feet). Those cement concrete bond courses suggest that the wall might have, over the past decades, undergone alteration and upgrading works by the works department, which might have made reference to the aforesaid requirement in the Buildings Ordinance 1935.

The wall at Caroline Hill Road is a typical example of dressed block masonry retaining walls. It serves as a reminder of the historical streetscape of Caroline Hill and So Kon Po. The built-in earthenware pipes are rather iconic features of the wall.

Social Value & Local Interest

The masonry wall with built-in earthenware pipes on Caroline Hill Road has group value with other historic buildings, including the Race Course Fire Memorial (馬場先難友紀念碑) (declared monument), St. Paul's Convent Church (聖保祿修院) (Grade 1), Po Leung Kuk, Main Building (保良局主樓) (Grade 2), Shing Kwong Church (聖光堂) (Grade 2), S.K.H. St. Mary's Church (聖公會聖馬利亞堂) (Grade 1), Tung Wah Eastern Hospital (東華東院) (Grade 2) and St. Margaret's Church (聖瑪加利大堂) (Grade 1).

Group Value

While the wall is a typical example of dressed block masonry retaining walls, the cement concrete bond courses are probably a tangible reminder of the

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change in the statutory requirements for the construction of masonry retaining walls before the Second World War, while also suggesting that the original 1920s' wall underwent alterations over the past decades. The earthenware pipes in the wall, which are said to have been commonly used before the 1970s, help to retain the historic character of the wall.

Value & Authenticity

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銅鑼灣
Causeway Bay



Annex J
Water Supply Impact

[redacted]

From: terry_cw_law@wsd.gov.hk
Sent: 2024年3月19日星期二 10:58
To: Lai, Marco Tsz-Kin
Cc: [redacted]
Subject: RE: Basic Information of Eastern & No. 2 Fresh Water Service Reservoirs (I.L. No. 8945 CHR - Fresh s16 Application with LP Submission - Pre-submission)
Attachments: 285077_W001-LAYOUT.pdf; Residual Head Calculation.pdf

Dear Marco,

We have no further comment on your supplementary information provided in the emails below, for the subject Pre-submission. Please incorporate all those information onto formal submission.
Regards,
Terry LAW
E/P(SD2), System Planning

Construction Division, WSD
Tel: 2152 5737

[redacted]

[redacted]

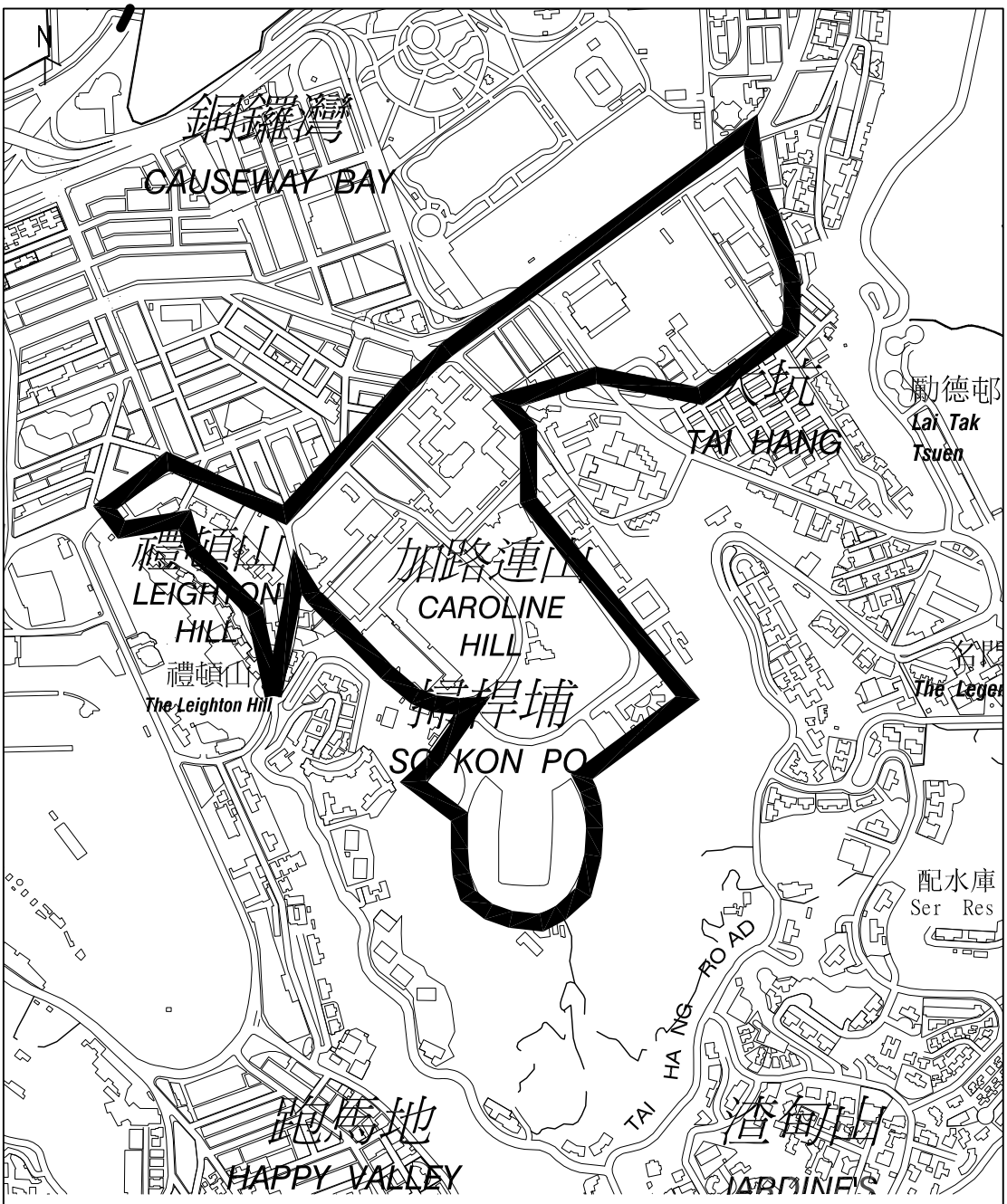
From: Chris Chan <Chris.Chan@arup.com>
Sent: 2024年3月18日星期一 16:34
To: tak_chuen_leung@wsd.gov.hk
Cc: [redacted]
Subject: RE:CHR Site IL No. 8945 Causeway Bay - Pressure for the Proposed DN200 Freshwater Main
Attachments: 285077_W001-LAYOUT.pdf

Dear Leung Sir (WSD),

We discussed today that the proposed DN200 freshwater main will be in a loop system to be connected to the existing DN450 freshwater main at Leighton Road and the existing DN150 freshwater main at Caroline Hill Road East near Lei Kwa Court.
The approximate pressure head as advised by you today would be approximate 80m at the DN450 freshwater main at Leighton Road and 70m at the DN150 freshwater main at Caroline Hill Road East near Lei Kwa Court.
Drawing is marked up as attached for easy reference. Thanks.

Regards,

Chris Chan
Arup
Level 5 Festival Walk, 80 Tat Chee Avenue,
Kowloon Tong, Kowloon, Hong Kong,
Main : +852 2528 3031
Direct: +852 2268 3510
Fax : +852 2268 3954
chris.chan@arup.com



Scheme Area
at Causeway Bay (3)

Plan No. PSA/CB3/10/001
Base Plan No. 11
Date 22.10.2010

Project Name: **Proposed Office Development at Caroline Hill Road, Causeway Bay**
Daily Water Demand Calculation

Calculation of Peak Daily Demand

1. AC Make-up Water

As per CT1A,
Estimated peak daily make-up water demand by T1T2 cooling tower = 843.02 m^3/day

As per CT1A,
Estimated peak daily make-up water demand by T3 cooling tower = 21.36 m^3/day

Total peak daily make-up water demand of CHR = 864.38 m^3/day

2. Water Consumption Estimation for Proposed Development

(Based on EPD Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning)

Design Assumption:

Global Unit Flow Factors as per Tables T-2 and T-3
Catchment Inflow Factor for Wan Chai (PCIF = 1.0) as per Table T-4

Estimated Water Consumption for Caroline Hill Road		**Estimation**
(1)	GFA (m^2) for Office use	85,300
(2)	Assumed 60% for Usable Floor Area	51,180
(3)	Worker Density (No. of Worker per 100m^2)	3.2
(4)	No. of Employee	1,638
(5)	Unit flow factor (m^3/person/day) - J6 Financial, Insurance, Real Estate & Business Services	0.08
(6)	Sub-total Daily Water Consumption (m^3/day)	131.0
(7)	GFA (m^2) for Non Domestic	10,000
(8)	Assumed 60% for Usable Floor Area	6,000
(9)	50% GFA (m^2) for F&B	3,000
(10)	Worker Density (No. of Worker per 100m^2)	5.1
(11)	No. of Employee	153
(12)	Unit flow factor (m^3/person/day) - J10 Restaurant & Hotels	1.58
(13)	Sub-total Daily Water Consumption (m^3/day)	241.7
(14)	50% GFA (m^2) for Retail	3,000
(15)	Worker Density (No. of Worker per 100m^2)	2.1
(16)	No. of Employee	63
(17)	Unit flow factor (m^3/person/day) - J4 Wholesale & Retail	0.28
(18)	Sub-total Daily Water Consumption (m^3/day)	17.6
(19)	GFA (m^2) for GIC	3,100
(20)	Assumed 60% for Usable Floor Area	1,860
(21)	Worker Density (No. of Worker per 100m^2)	2.3
(22)	No. of Employee	43
(23)	Unit flow factor (m^3/person/day) - J11 Community, Social & Personal Services	0.28
(24)	Sub-total Daily Water Consumption (m^3/day)	12.0
(25)	**Total Daily Water Consumption (6)+(13)+(18)+(24), (m^3/day)**	402.4

3.Total Water Consumption Estimation for Proposed Development

AC Make-up Water **+** Daily water Consumption = 864.38 + 3x 402.4 (as per DI-1309, item 19 requirement)
= 2071.52 m^3/d

Calculation of Pipe Capacity

DN150 Water PE Pipe Capacity

Nominal Diameter (mm)	Internal Diameter (mm)	Pipe Material
200	200	DI
150	147	PE100 (OD180)

Q = AV
DN150 Water Pipe Capacity = $\pi (0.0736)^2$ (1.5) 1.5m/s as per WSD DI1309 requirement
(Assume 1.5 m/s) = 0.0255 m^3/s
= 2205.52 m^3/d

DN150 Water Pipe Capacity = $\pi (0.0736)^2$ (2.0)
(Assume 2.0 m/s) = 0.0340 m^3/s
= 2940.69 m^3/d

DN200 Water Ductile Iron Pipe Capacity

Q = AV
Ø200 Water Pipe Capacity = $\pi (0.100)^2$ (1.5) 1.5m/s as per WSD DI1309 requirement
(Assume 1.5 m/s) = 0.0471 m^3/s
= 4071.50 m^3/d

Ø150 Water Pipe Capacity = $\pi (0.100)^2$ (2.0)
(Assume 2.0 m/s) = 0.0628 m^3/s
= 5428.67 m^3/d

Since 2071.518 m^3/d < 2205.52 m^3/d therefore DN150 Water pipe is enough for the whole CHR development

Project: Proposed Commercial Redevelopment, I.L. 8945 at Caroline Hill Road, Causeway bay, Hong Kong

Title: AC Make Up Water and Bleed-off Water Sizing

Assumption:

Condenser Water Inlet Temperature	Ti	=	38.5	℃
Condenser Water Inlet Temperature	To	=	33.5	℃
Temperature Differential	DT= Ti-To	=	5	℃
Specific Heat Capacity	Cp	=	4.18	KJ/Kg-K
Total Evaporation Losses	Ls	=	0.835	%
Drift Rate		=	0.05	%

Note: according to section 3.6.5 of the COP (part 1) by EMSD

Cooling Tower Information:

Cooling Tower Capacity	1085	TR
No. of Cooling Tower	8	

Calculation:

(A) Circulation Rate (L/s) = Cooling Tower (duty) heat rejection capacity in kW / (4.18 X 5)
= (1085 x 3.517 x 8) / (4.18 x 5)
= 1460.65 L/s

(B) Evaporation Rate (L/s) = 0.835% x A
= 0.00835 x 1460.65
= 12.196 L/s

Note: Default is 0.835% of circulation rate

(C) Drift Rate (L/s) = 0.005% x A
= 0.00005 x 1460.65
= 0.073 L/s

(D) Cycle of Concentration = 6

Note: Cycle of concentration shall be maintained at 6 for fresh water type cooling tower according to section 3.4.3.2 of the COP (part 3) by EMSD

(E) Bleed-off Rate (L/s) = {Evaporation loss - [(Cycle of concentration - 1) x Drift Loss]} / (Cycle of concentration - 1)
= {B - [(D - 1) x C]} / (D - 1)
= {12.196 - [(6 - 1) x 0.073]} / (6 - 1)
= 2.37 L/s

(F) Make-up Water (L/s) = (B + C + E)
= (12.196 + 0.073 + 2.37)
= 14.636 L/s

(G) Operation Hours for Cooling Tower = 16 Hours

Remark: Average daily consumption is assumed as 50% of daily peak consumption

Estimated average daily make-up water consumption
= (F x G x 3600) x 50% / 1000
= (14.636 x 16 x 3600) x 50% / 1000
= 421.51 m3 / day =281m^3/day (mean daily consumption)

Estimated peak daily bleed-off water volume
= (E x G x 3600) x 50% / 1000
= (2.37 x 16 x 3600) x 50% / 1000
= 68.15 m3 / day

Note: capacity of the bleed-off tank shall be designed to store water for not less than 2 hours operation according to section 5.2.4 of the COP (part 1) by EMSD

Project: District Health Center at Proposed Commercial Redevelopment, I.L. 8945 at Caroline Hill Road, Causeway bay, Hong Kong

Title: AC Make Up Water and Bleed-off Water Sizing

Assumption:

Condenser Water Inlet Temperature	Ti	=	37	°C
Condenser Water Inlet Temperature	To	=	32	°C
Temperature Differential	DT= Ti-To	=	5	°C
Specific Heat Capacity	Cp	=	4.18	KJ/Kg-K
Total Evaporation Losses	Ls	=	0.835	%
Drift Rate		=	0.05	%

Note: according to section 3.6.5 of the COP (part 1) by EMSD

Cooling Tower Information:

Cooling Tower Capacity	110 TR
No. of Cooling Tower	2

Calculation:

(A) Circulation Rate (L/s) = Cooling Tower (duty) heat rejection capacity in kW / (4.18 X 5)
= (110 x 3.517 x 2) / (4.18 x 5)
= 37.02 L/s

(B) Evaporation Rate (L/s) = 0.835% x A
= 0.00835 x 37.02
= 0.309 L/s

Note: Default is 0.835% of circulation rate

(C) Drift Rate (L/s) = 0.005% x A
= 0.00005 x 37.02
= 0.002 L/s

(D) Cycle of Concentration = 6

Note: Cycle of concentration shall be maintained at 6 for fresh water type cooling tower according to section 3.4.3.2 of the COP (part 3) by EMSD

(E) Bleed-off Rate (L/s) = {Evaporation loss - [(Cycle of concentration - 1) x Drift Loss]} / (Cycle of concentration - 1)
= {B - [(D - 1) x C]} / (D - 1)
= {0.309 - [(6 - 1) x 0.002]} / (6 - 1)
= 0.06 L/s

(F) Make-up Water (L/s) = (B + C + E)
= (0.309 + 0.002 + 0.06)
= 0.371 L/s

(G) Operation Hours for Cooling Tower = 16 Hours

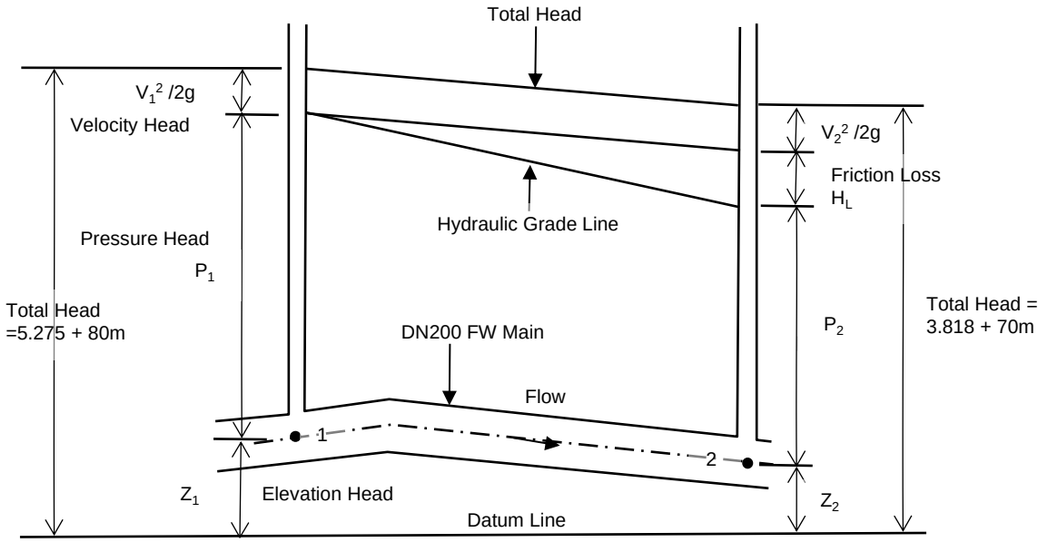
Remark: Average daily consumption is assumed as 50% of daily peak consumption

Estimated average daily make-up water consumption
= (F x G x 3600) x 50% / 1000
= (0.371 x 16 x 3600) x 50% / 1000
= 10.68 m3 / day =7.12m^3/day (mean daily consumption)

Estimated peak daily bleed-off water volume
= (E x G x 3600) x 50% / 1000
= (0.06 x 16 x 3600) x 50% / 1000
= 1.73 m3 / day

Note: capacity of the bleed-off tank shall be designed to store water for not less than 2 hours operation according to section 5.2.4 of the COP (part 1) by EMSD

ARUP	Job No.	Sheet No.	Rev.
	285077	1	
	Member/Location		
Job Title: Development on IL No.8945	Drg. Ref.	W/001 and W/002	
Calculation: Calculation for DN200 Residual Head	Made by: CC	Date: 18/03/2024	Chd.: HWC



	Ch. (m)	Z (m)	Total Head (m)	Remark
1	0	5.275	85.275	As given by WSD, the approx Head at DN450 = 80m
2	262.9	3.818	73.818	As given by WSD, the approx Head at DN450 = 70m

1 - Connection at DN450

2 - Connection at DN150

Assume the worst case when the DN200 fresh water main runs at peak velocity of 1.5m/s.

Friction Loss by Hazen-Williams Equation

$H_L = 10.583\ L\ Q^{1.85} / C^{1.85}\ d^{4.87}$

Where
- H_L = Friction loss (m)
- L = Length of pipe run (m)
- Q = Peak flow (m^3/s)
- C = Hazen-Williams Coefficient = 140 (for DI pipe with cement lining)
- d = Pipe diameter (m)

	Ch. (m)	Z (m)	V (m/s)	d (m)	$V^2/2g$ (m)	Q (m^3/s)	H_L (m)	P (m)
1	0.000	5.275	1.500	0.200	0.115	0.047	0.000	79.885
2	262.900	3.818	1.500	0.200	0.115	0.047	2.652	67.234

Therefore, the residual head along the proposed DN200 freshwater main during peak flow condition will have sufficient residual head more than 20m head.

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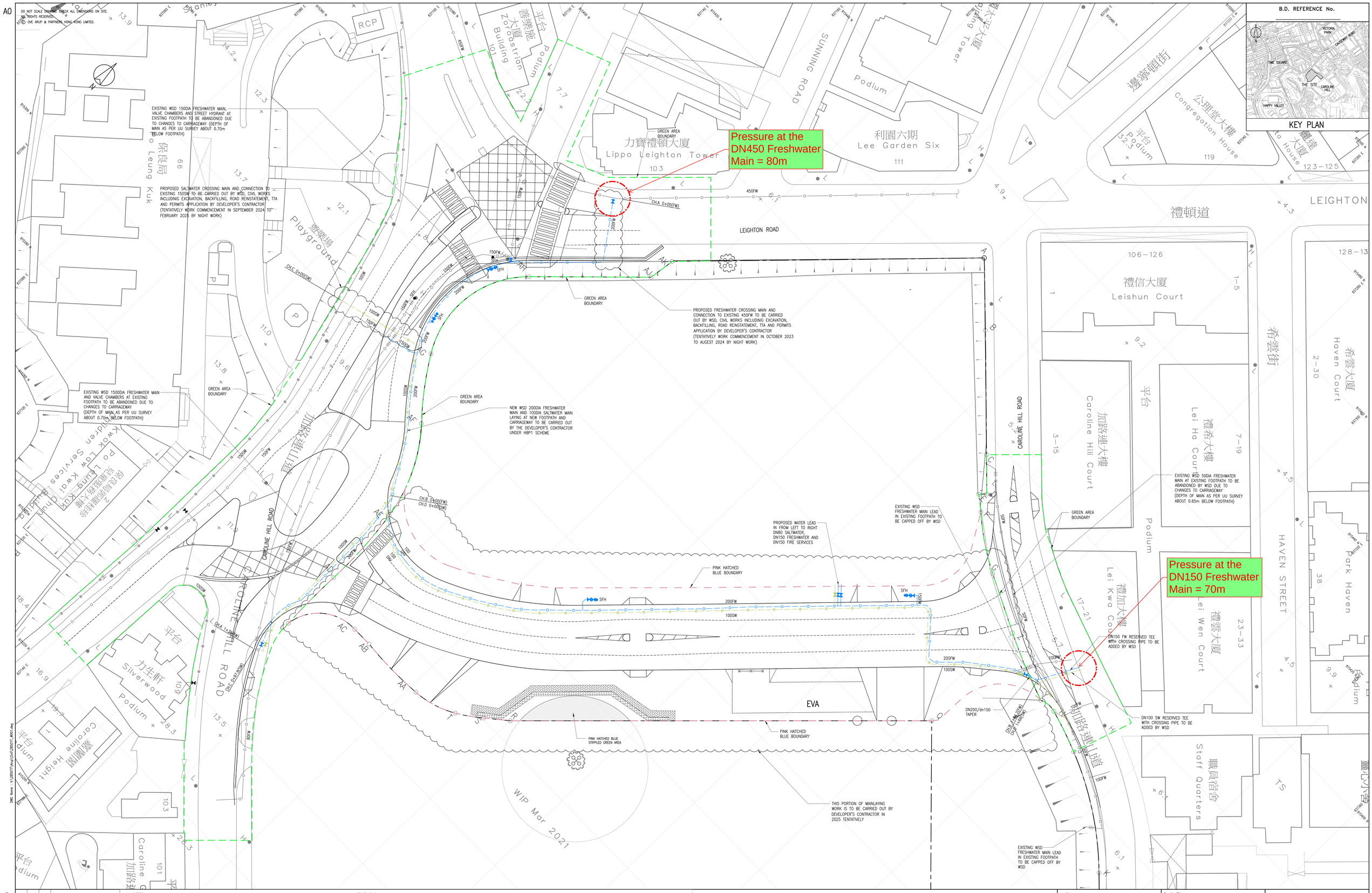


B.D. REFERENCE No.

KEY PLAN

Mark	Date	By	Rev.
A	05/23	EC	REVISED
–	03/23	EC	TENDER ADDENDUM

PLOTTING SCALE = 1 : 1

NOTES:

1. THE PROPOSED WATER MAIN DIVERSION IS TO BE CARRIED BY THE DEVELOPER'S CONTRACTOR UNDER HBP1 SCHEME INCLUDING ALL CIVIL WORKS SUCH AS EXCAVATION, BACKFILLING, TTA AND PERMITS APPLICATION EXCEPT THE PROPOSED CROSSINGS AT LEIGHTON ROAD AND CAROLINE HILL ROAD AND CONNECTION TO EXISTING WATER MAINS TO BE CARRIED OUT BY WSD (REFER TO MARKUP ON PLAN).
2. ALL PROPOSED WATER MAINS SHOULD HAVE MINIMUM COVER OF 1000mm MEASURED FROM FINISHED ROAD LEVEL AND 600mm MEASURED FROM FINISHED FOOTPATH LEVEL.
3. PROPOSED WATERWORKS SHALL FOLLOW DETAILS FROM LATEST WSD STANDARD DRAWINGS.

LEGENDS:

- 100FW — EXISTING FRESH WATER MAIN
- 100SW — EXISTING SALT WATER MAIN
- 100SW — PROPOSED DN100 PE100 SALT WATER MAIN
- 200FW — PROPOSED DN200 DUCTILE IRON FRESH WATER MAIN
- SFH — PROPOSED FRESH WATER STREET FIRE HYDRANT
- 100 DAV — PROPOSED DN100 DOUBLE AIR VALVE

Job Title: COMMERCIAL DEVELOPMENT ON IL NO.8945 CAUSEWAY BAY, HONG KONG

Drawing Title: PROPOSED FRESHWATER AND SALTWATER MAIN DIVERSION LAYOUT PLAN

Drawing Status: REVISED

ARUP

Scale: 1:250 @A0, 1:500 @A2

Drn. EC | Date 03/2023 | Chd. CC | Passed JY

Job No. 285077 | Drawing No. W/001 | Rev. A

銅鑼灣



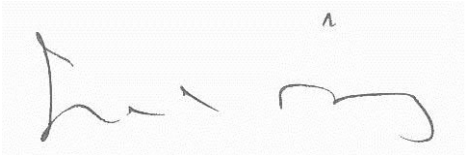
Causeway Bay

Annex K

Tree Protection Proposal for OVT (Registration No. LANDSD(LEASED) WCH/1) by Individual Tree Specialist – Professor Jim Chi Yung, BH, JP

A new lease of life for OVT WCH/1 in the commercial development on IL No. 8945, Causeway Bay, Hong Kong

Report text
Accompanied by a PowerPoint presentation with 36 slides



Prepared by Professor C.Y. Jim
Independent Tree Expert
27 August 2025

A new lease of life for OVT WCH/1 in the commercial development on IL No. 8945, Causeway Bay, Hong Kong

1. Introduction

2. Tree performance and prognosis

2.1. OVT growth and tree form

2.1. Existing soil conditions and root growth limitations

2.2. Urgent need to offer a new lease of life to the stifled OVT

3. Proposed OVT protection-cum-rehabilitation scheme

3.1. Site demarcation into three soil-rooting zones

3.2. Designing a rooting highway traversing the three soil-rooting zones

3.3. Minimising excavation influence on roots

3.4. Soil enhancement treatments in the New tree strip

3.5. Innovative nurturing of sturdy root stands in the New tree strip

3.6. Soil replacement at the New soil crescent

3.7. Synopsis of notable soil improvements

3.8. Proposed implementation strategy for the Scheme

4. Preparation of the high-quality fabricated soil mix (FSM)

4.1. Specifying the FSM

4.2. Specifying ingredient I: Completely decomposed granite (CDG)

4.3.Specifying ingredient 2: Mature organic compost (MOC)

5. Method statements for soil and root works

5.1. Soil treatments at the northern belt of the New tree strip

5.2. Soil treatment and root preservation at the southern belt of the New tree strip

5.3. Installing 18 vertical mulching holes in the New tree strip

5.4. Installing six lateral root paths in the New tree strip

5.5. Soil replacement and soil cell installation in the New soil crescent

6. Summary and conclusion

1. Introduction

The site at IL No. 8945 ("Project") for a commercial development includes a tree protection clause in the land lease. A large Old and Valuable Tree (OVT) at the front of Leighton Road is required to be protected. A Pink Hatched Green Area (PHGA) has been demarcated on a map in the lease document, which coincides with a Tree Protection Zone (TPZ) defined by the tree's dripline but minus the part hanging above the Leighton Road outside the site boundary.

The land lease stipulates protection of the TPZ, which is a roughly semi-circular area of about 555 m^2 inside the Project site. The Client wishes to include a southern part of the TPZ area in a Banyan Plaza, which will provide a rare town square in the busy commercial district of Causeway Bay. Its implementation requires a level change in a portion of the TPZ. Accordingly, an alternative tree protection-cum-rehabilitation scheme ("Scheme") that diverged from existing thinking was developed to find a win-win solution.

The Scheme is based on the present OVT's declining growth and inordinately poor site conditions, and a dim prognosis of its performance in the next few decades. The most restrictive tree growth factor is the severe shortage of open soil area, lack of good quality soil, and the extensive proportion of the TPZ dominated by highly compacted soil sealed by impermeable paving. The Scheme attempts to resolve these apparently intractable tree-growth impediments by improving the soil area, volume, and quality to trigger a new lease of life to the declining tree. It offers a co-use of a portion of the TPZ land, with the surface for Plaza and the underlying space for soft landscape in the form of high-quality and uncompacted soil to optimise tree root growth.

With reference to implementing the Scheme, the Independent Tree Expert (ITE) is expected to help the Client regarding:

(1) Leading the project's landscape team to prepare the manual for the post-construction maintenance of the OVT, which includes a maintenance schedule.
(2) Helping the Client to scrutinise the credentials and experience of a Qualified Professional who will shoulder the duties of monitoring and supervising the works associated with the OVT for effective implementation of the Scheme on site in accordance with the design and method statements.
(3) Advising the Qualified Professional in preparing the quarterly reports on the OVT, which should include photo records for the site works affecting the OVT, to be submitted to the Lands Department.

2. Tree performance and prognosis

2.1. OVT growth and tree form

The OVT, labelled WCH/1 in the government's OVT Register, is a large Indian Rubber Tree (*Ficus elastica*) that has dwelt at the roadside site at Leighton Road for about eight decades. Instead of developing a normal rounded crown in vertical projection, it has formed an unnatural oval shape with the major axis aligned with the road (Slide 1). The crown measures 44 m by 26.4 m, covering 912 m^2.

Old photographs of Leighton Road were mined from Google Maps to assess the tree's growth in recent decades. The oldest available photograph was recorded in May 2009, which was compared with the latest one dated February 2024 (Slide 2). The images indicate that the tree's growth has reached a ceiling and has hardly expanded in 15 years. The stagnated development could be attributed to the extremely confined and harsh growth conditions. The struggling tree may have exhausted the limited soil potential of the constrained site, resulting in stagnated growth.

Examination of recent photographs signifies tree decline. A large proportion of the Google Street View frontal photographs are of poor quality, which cannot be used for visual tree assessment. Two images with better quality were extracted to compare recent tree performance between May 2019 and February 2024 (Slide 3). They show that the OVT has demonstrated symptoms of decline, indicated by a reduction in foliage density. The tree is suffering from the brown root rot disease. The moth attack in June 2024 has caused complete defoliation, which has mobilized its food reserve stored in large stems and roots to develop a new crop of leaves.

The food reserve of a large tree has a limited capacity, especially for an emaciated tree. Even for a relatively healthy tree, recovering from three major defoliation events is the upper limit. The OVT may not have the capability to tackle another episode of a major pest or disease attack. In other words, the next drastic attack may considerably weaken the tree and push it further down the decline spiral to lapse into the irreversible state. If the reserve is too meagre or the natural enemy assault is too severe, it may kill the tree. In sum, the present quite fresh green leaves on the OVT should not be interpreted as a sign of good health. It should only be construed as the fresh green colour of new leaves. Something must be done to prevent further drastic pest infestation to avoid this latent threat. The tree management and treatment must include measures to rehabilitate its health to strengthen its ability to resist or pest pathogenic incursions and restock its food reserve. This rehabilitation exercise must be implemented at an

early opportunity before the tree declines to an irreversible stage.

The tree's crown development is pronouncedly asymmetrical in the north-south direction along the minor axis of oval shape. Excluding the 3.5 m width of supports provided by the Existing tree strip, the crown spread was measured from a vertical aerial photograph (Slide 4). The north crown labelled the Road side is shorter at 8.8 m or 38.4% of the weight. The south crown labelled the Plaza side is notably longer at 14.1 m or 61.6% of the weight. This gross imbalance in crown weight distribution imposes a stress on the tree's supporting system, composed of a main trunk plus many root stands that serve as secondary trunks. With a long cantilever length, the south crown is prone to fork failure and branch breakage. This part of the tree will hang above the proposed Plaza, which will attract heavy patronage, especially on weekends and holidays. It is pertinent to do something in advance to abate this potential hazard. Additional support is required on the south side to prop the extended south crown. This is especially indispensable given that the tree is suffering from the debilitating brown root rot disease.

2.2. Existing soil conditions and root growth limitations

The OVT's growing site demonstrates the grave soil constraints faced by many urban trees in Hong Kong. The only open soil area supporting tree growth is a narrow Existing tree strip at merely 3.5 m wide (Slide 3). Moreover, the soil is lifted above the adjoining road surface at +6.0 mPD, with the linear soil body supported by a low masonry retaining wall. To its north is the completely paved road with no possibility of root extension.

To its south is a completely paved sports ground at an elevated level of about +9.6 mPD. The soil underneath the hard and impermeable paving is heavily compacted with limited porosity, water and nutrients, hence it is unsuitable for root growth. A few roots may have ventured sporadically into this soil through the occasional crevices in the soil body. Otherwise, most of OVT's roots are growing at a high density in the Existing soil strip. As the soil in this confined strip has a sloping surface, the material is likely to have been somewhat compacted to a medium level with reduced porosity. It is amenable to root growth, but cannot be regarded as a good soil.

The sizeable Indian Rubber Tree has vividly displayed the banyan character of the species. It develops two kinds of roots, namely the normal subterranean roots and soft aerial roots that can become woody root stands. This OVT sent many aerial roots downward to reach the soil in the Existing tree strip. Thereafter, they lignified into root stands, which tend to be inosculated (fusion of adjoining woody tissue) with adjacent root stands to form a compact supporting

complex (Slide 5). The supplementary woody columns have allowed the tree to extend eastward and westward along the narrow Existing tree strip to prop branches to form an unusually broad oval tree crown covering 44 m.

The root stands are so densely developed that they form an impenetrable mass, maximizing the use of the limited open soil area (Slides 5 and 6). They are literally making use of every inch of the tree strip to develop root stands. A very narrow metal receptacle installed about two decades ago has been filled with root stands (Slide 7). These visual clues send clear body language to tree assessors that the tree has exhausted the capacity of the limited soil width for root stand growth and is crying out for help to provide additional soil area. The present soil constraint has evidently stressed the tree and imposed a lid on its further growth (cf. Section 2.1, second paragraph). In response, some measures should be applied to free the tree from the stifling soil bondage.

2.3. Urgent need to offer a new lease of life to the stifled OVT

OVTs in other places are often given special treatments to help their growth. For precious old but declining trees, specially designed measures have been developed to rehabilitate them. Amongst various techniques, soil improvement and replacement have been adopted to revive trees in distress (Slide 8). Such high-order arboricultural practices have been recorded in different parts of China (e.g., Slide 9) and other countries (e.g., Slide 10). In some enlightened urban tree management cases, the poor soil of an entire street can be replaced by good soil to foster tree performance in a holistic and long-term manner (e.g., Slide 11).

Such soil treatments are applied in response to the degraded soil conditions that have chronically weakened the victim trees. The soil quality can be upgraded by various means, such as removing the impermeable paving, loosening the soil, adding organic amendments or fertilizers, inserting pipes filled with porous soil, and opening trenches filled with good soil. The package of restorative approaches should be tailor-made to the specific soil limitations. If the *in-situ* soil condition is too poor to be rectified, the entire soil volume under the tree crown can be replaced with a well-prepared fabricated soil mix (FSM).

The subject OVT has been severely constrained by the soil limitation for about eight decades. The poor tree has exhausted the limited site potential and displayed stagnated growth. The recent attacks by the brown root rot disease and moth have triggered tree decline. The enfeebled tree will be less able to resist or tolerate future attack by natural enemies. It may become more susceptible to invasion by wood-decay fungi to weaken its structure and increasing the risk of

branch breakage. The asymmetrical crown and uneven weight distribution present a risk of branch failure for the users of the Plaza, which is expected to be heavily patronised. If tree protection follows the passive approach by keeping the *status quo*, the tree may continue to decline.

To our understanding, the key objective of preserving an OVT is to ensure that the meritorious tree will remain strong, stable and safe for some years to come. It is expected to continue to contribute to ecological, environmental, landscape and socioeconomic functions to embellish the site and its environs. Some innovative and proactive measures can be applied to help the tree regain its health and continue to perform for many years to come.

3. Proposed OVT protection-cum-rehabilitation scheme

3.1. Site demarcation into three soil-rooting zones

The soil improvement methods are based firmly on recent tree and soil science research. They include the application of recent soil science research findings to urban tree management (Slide 12); the need to expand and connect soil bodies to improve urban tree growth (Slide 13); the application of urban soil science to landscape architecture practice (Slide 14): and enlisting the deep research results on heritage trees to improve their long-term health and safety (Slide 15).

Adhering to the fundamental principle of OVT conservation, a tailor-made protection-cum-rehabilitation scheme ("Scheme") was developed to fit the purpose of the project. Special measures were custom-designed catering to the OVT's specific site and tree conditions and projected use of the site. Starting with the current state of a semi-circular area sealed by impermeable hard paving and underlain by poor-quality compacted soil, the Scheme proposes a tripartite division of the site into three soil-rooting zones (Slide 16). Each zone will receive different treatments to maximise its capability to improve the OVT's growth in the long run. The pertinent objective is to transform a routine OVT protection scheme to an innovative OVT protection-cum-rehabilitation joint scheme, expanding the vista of tree protection to cover the realm of rehabilitation. The growth of the champion tree should be accompanied by champion-quality soil. The soil must be rootable rather than just any residual poor-quality material.

By expanding the rootable soil area by over four times compared with the present state and also improving the soil quality, our Scheme aims squarely at providing a new lease of life to the declining tree. Adding Zones 2 and 3 will considerably increase the OVT's rootable soil

area (Slide 16) by connecting the soil in contiguous zones (Slide 17). Therefore, the development project offers a rare opportunity, once in a century, to revive the old tree. A condensed outline of the three zones is given below. Details are explained in the following subsections. Cross sections of the rootable-soil zones are depicted in Slides 18 and 19.

(1) *Zone 1 Existing tree strip*: The 3.5 m wide and 170 m^2 soil area with massive subterranean roots and root stands will be left undisturbed.
(2) *Zone 2 New tree strip*: This is a new planting area that measures 5.7 m wide and 270 m^2 soil area will be transformed from the previous paved sports ground to open soil with soil enhancement treatments and root preservation.
(3) *Zone 3 New soil crescent*: This segment has a maximum width of 9.8 m and a 285 m^2 soil area. We propose to replace the compacted low-quality site soil with a high-quality uncompacted fabricated soil mix. Due to overlapping with the proposed Plaza, it is designed for the co-use of the precious land resource to create a win-win scenario. The modern soil cell technique will be adopted to build a suspended pavement and hold the rootable soil below it.

3.2. Designing a rooting highway traversing the three soil-rooting zones

The Scheme is not just providing good soil for root development in the soil-rooting zones. It aims at applying the principle of soil contiguity and continuity to foster tree root growth in confined urban sites (Slide 17). In this enlightened urban forestry practice, a tree planting site with a limited soil volume can be connected to an adjacent or nearby site and borrow the soil for root development.

The crux of the proposed design is to connect the soil in the three soil-rooting zones so that they provide an uninterrupted *rooting highway* for the OVT's roots to grow from the Existing tree strip into the New tree strip, and then into the New soil crescent (Slides 18 and 19). This soil continuity brings a substantially enlarged rootable soil catchment. Using the Existing tree strip as the basis, the open soil area will be increased from 19% to 49%, and the total rootable soil area from 19% to 80% (Slide 16). This approach denotes the most optimal way to meet the soil needs of the large old tree.

The substantial rootable soil refurbishment is tantamount to returning the entire tree protection zone (TPZ) inside the development site to the OVT's root development. It should be noted that on the Road side, this soil refurbishment is not possible. This continuous soil body traversing the three zones is envisaged to provide a lot more water, nutrients and strengthen its root

anchorage to raise tree stability and safety. The soil improvement and replacement will ensure that the roots will grow liberally in the zones. The tree will have the chance to rejuvenate.

It is necessary to build a new balustrade to stop visitors from moving into the New and Existing tree strips because of the hazard of people falling down to the Leighton Road level (Slides 18 and 19). The balustrades are anchored and stabilized by a series of balustrade footings. The size, shape and thickness of the reinforced concrete footings are designed according to relevant building regulations. They will be installed along the southern edge of the New tree strip. Each balustrade footing will support a post. The posts will support a beam that runs above the new ground surface. The new balustrade will then be built on the beam. The balustrade footing design has been adjusted to minimise the blockage of root passage from the New tree strip into the New soil crescent. The finely adjusted design only blocks 6.4% of the circa 44 m length of the interface (Slide 18). Between the balustrade footings, the rooting highway will not encounter any obstruction (Slide 19).

3.3. Minimising excavation influence on roots

The New tree strip shall be divided into a 3.5-m-wide north belt and a 2.2-m-wide south belt (Slides 18 and 19). They shall receive different soil treatments, after which both belts will receive the same improvements. The original soil and embodied roots in the northern belt will be kept intact. A small amount of fabricated soil mix will be added to replace the space vacated by the paving removal (area A marked on Slide 18). The southern belt will be excavated to install the balustrade footings. On the four sides of each balustrade footing, the site soil will be excavated to form safe and stable 30-degree slopes. To reduce impacts on preserved roots and soil, the reinforced concrete balustrade footings and associated posts and beams shall be considered for prefabrication in a factory and transported to the site for installation. The dimensions of the balustrade footings will be reviewed in detail design stage, and the technical design submission will be submitted to related government departments in due course.

The excavation will affect the few roots in the New tree strip and the New soil crescent. Measures are proposed to preserve and minimise disturbing the roots there. The excavation exercise will be conducted in four phases, to be separated by a three-week recuperation period to allow the tree to adapt to the root disturbance (Slide 20). It will proceed in sequence as AA, BB, and CC pairs on the two sides of the strip. Finally, segment D will be excavated. The excavation segments shall correspond to the balustrade footings. The sequence is based on the assumption that fewer roots are found on the two sides and more in the central portion. The

roots at the interface of the two zones will be carefully cut using a clean arborist secateur or saw.

In the course of excavation in the southern belt of the New tree strip, special precautions are proposed to preserve roots with >10 mm diameter (Slide 21). The target roots encountered during excavation will be carefully lowered onto the 30-degree slope surface. They will be covered by four layers of hessian and kept moist at all times. No human traffic, building materials or construction machines or tools shall be allowed to contact these preserved roots covered by hessian. A prominent cordon shall be established around the preserved roots to exclude disturbances. As soon as the completion of the balustrade footing, the hessian shall be removed, and the fabricated soil mix shall be refilled to the finished sloping surface and irrigated to nurture these salvaged roots.

On the Road side, the subterranean roots and masses of root stands in the Existing tree strip will not be disturbed (Slide 25). As the principal source of anchorage and support, they will continue to hold the OVT. On the Plaza side, the 5.7 m wide New tree strip will preserve the small number of existing roots growing in the compacted soil. The Scheme will bring a broadened rectangular rootable soil of 9.2 m width (3.5 m Existing tree strip plus 5.7 m New tree strip) and about 44 m length, offering circa 405 m^2 of open (unsealed) soil for root development. This area is equivalent to about 70% of the OVT's crown area on the Plaza side. In other words, this expanded rootable soil body can hold about 70% of the OVT's root system, because of the absence of rootable soil on the Road side. Moreover, this rootable soil volume is proximal to the tree trunk, and therefore accommodates most of the structural roots and the thickest roots that contribute to anchorage. The roots that will be removed in the New soil crescent are situated farther away from the trunk and therefore contain few structural roots. If present, they are likely to be thinner and much less important for tree anchorage. Therefore, it is envisaged that the OVT will remain stable despite the soil treatments.

With the removal of the impermeable paving and improvement of soil properties in the New tree strip, a significant amount of new subterranean roots and new root stands will develop in due course to further strengthen the tree's anchorage. The provision of good quality and uncompacted soil in the New soil crescent adds a considerable soil volume to rehabilitate the OVT. In the long run, the tree's health and stability are expected to be enhanced. The OVT is suffering from Brown Root Rot disease, which may aggravate to compromise the mechanical strength of the preserved roots in the Existing and New tree strips. The OVT's condition will be continually monitored to evaluate whether cabling is necessary at a later stage.

3.4. Soil enhancement treatments in the New tree strip

The New tree strip shall receive two special soil treatments to enhance its ability to support root growth. They include installing vertical mulching holes and lateral root paths. The former enhances the drainage and aeration of the compacted soil formerly sitting below the concrete paving. The added high-quality soil also raises the water and nutrient capacities of the soil. The latter provides root-friendly paths to foster and guide root growth through the new tree strip into the New soil crescent. They can significantly increase the rootable soil volume of the site and, in turn, improve the performance of the OVT.

The designated positions and orientations of these two soil improvement features are depicted in Slide 22. Eighteen vertical mulching holes will be opened at the proposed locations. The holes are 10 cm diameter, 70 cm deep and inclined at 20 degrees towards the New soil crescent. The lateral root paths are 15 cm wide, 70 cm deep in the form of vertical trenches oriented perpendicular to the long axis of the tree strip. An example of vertical mulching is shown in Slide 23, and an example of rooting trenches in Slide 24.

3.5. Innovative nurturing of sturdy root stands in the New tree strip

The New tree strip will provide excellent opportunities for the OVT to thrive. The notably enlarged open soil area and soil improvements will permit a significantly expanded root system to absorb a lot more water and nutrients to support its vigorous growth and develop new root stands to prop its enlarged crown.

The new root stands that will grow in the New tree strip will provide essential reinforcement to the large tree's support system. It will shorten the branch cantilever on the Plaza side from 14.1 m to 9.8 m (compare Slide 25 with Slide 4). The notional weights of the north and south crowns will become 47.3% versus 52.7%, providing a far more balanced crown. This is a critical tree stabilization measure that will reduce the hazard of branch failure to the plaza users. The new root stands will also augment the ability of the tree to prop up its rather heavy and sprawling crown. The root stands, upon reaching the open soil, will send out many normal subterranean roots to significantly increase the tree's soil catchment area. A lot more water and nutrients will be captured by the enhanced root system, raising photosynthetic capacity and food production and replenishing the depleted food storage.

The root stand development in the New tree strip can be moulded by skilful adjustment of aerial root growth locations and directions. The new aerial roots are soft and pliable. They are

proposed to be guided to form two or three-dimensional complex root stands with a higher mechanical strength and load-bearing capacity (Slide 26). By applying the science of the banyan growth habit, instead of the routine single pole configuration, they can be steered to form an A-frame and tripod to support large branches and a flying buttress or compound buttress to support the main trunk or thickened secondary trunks. These lignified and inosculated root stands will provide sturdier and more assured supplementary support to the OVT.

3.6. Soil replacement at the New soil crescent

The New soil crescent (demarcated in Slides 16 and 18) is designed for soil replacement. A new fabricated soil mix will replace the existing low-quality and heavily compacted site soil. In this way, the current paved area with few roots growing in the compacted soil will be converted into an area with uncompacted and excellent soil to foster root growth.

The land area of the New soil crescent will be shared by dual uses, namely the Plaza and the soil to support root growth. Three methods are available to support suspended paving and allow rootable soil to be placed below it (Slide 27). This Scheme adopts the modern soil cell technique. The load of the paving and pedestrians will be transmitted via the soil cell framework to the bottom subgrade layer. Some examples of soil cell materials and configurations are shown in Slides 28 and 29, including cases where a high load-bearing capacity is required for road use.

A schematic section of the soil cell design is depicted in Slide 30. A strong open capping board can be placed on the top of the soil cell to form a base to deposit the subbase material. The firm and stable subbase can then support the new paving slabs. The paving slabs will be designed with gaps or holes to allow entry of water and air into the soil underneath.

The existing paving and soil will be removed down to +8.1 mPD (Slides 18 and 19). The base will be compacted to support soil cells, which in turn will support the hard paving. A 600 mm layer of high-quality fabricated soil mix will fill the interstices of the soil cells. The OVT's roots can travel from the two tree strips to enter the New soil crescent. Thus, the soil under the entire area of the New soil crescent, amounting to 285 m^2, does not need to be compacted at all. This excellent growth medium shall permit vigorous and abundant root growth from the OVT. Many new roots generated at the New tree strip will extend into and ramify liberally in the New soil crescent.

3.7. Synopsis of notable soil improvements

The wide range of soil improvements to enhance future OVT growth can be comprehended by comparing the present and future soil attributes, i.e., before or after beneficial soil treatments (Slide 31). The 175 m^2 Existing tree strip will be kept undisturbed, hence the original unsealed soil will remain medium in rating with reference to compaction, porosity, and root density, and harbouring plenty of root stands.

The New tree strip will witness significant and lasting improvements in soil quality. This zone offers 270 m^2 of open soil to increase the rootable soil area by 154%. The transformation will change the land cover from sealed to open to permit free infiltration of water and air into the soil and unobstructed development of new root stands in a mode similar to the Existing tree strip. Soil compaction will be relieved by vertical mulching holes and lateral root paths. With the addition of an excellent fabricated soil mix, the soil quality will be lifted from poor to good. More importantly, soil porosity will be considerably enhanced, with conversion from low to high porosity at the improved locations and in the newly added soil mix. Root density is expected to rise from the present meagre to a medium level. Root stands will shift from none at present to plenty.

The soil at the New soil crescent, covering 285 m^2 and adding 163% of rootable soil area compared with the Existing tree strip, will be completely replaced. The existing poor-quality site soil, beset by heavy compaction, high stone content, little organic matter and plant nutrients, is unsuitable for root growth. This in situ soil will be completely removed, and the vacated site will be filled with a high-quality and uncompacted FSM. The originally sealed area will be converted to new paving slabs that allow entry of water and air into the new soil. The soil compaction status will be transformed from heavy compaction to uncompacted. Soil quality in general will change from poor to excellent. Soil porosity will be raised from the present low level to a high level typical of the best soil for plant growth. Root density is anticipated to shift from the present trace to the future high level. As this site will be paved, it is not designed for root stand development.

The soil that will fill the New soil crescent will be the highest quality among the three soil-rooting zones. It will serve as a main source of water and nutrient supply to boost the OVT's future performance. The best practice high-quality fabricated soil mix based on my research findings (Slide 32) will be applied (cf. Section 4 for its specification).

The most critical attribute that is gravely inadequate in urban planting sites is soil porosity. The improvement in terms of equivalent porosity and equivalent rootable soil area has been calculated (Slide 33) based on my recent research findings (Slide 34). The New tree strip is envisaged to bring an additional 192% of new soil porosity to root growth, and the New soil crescent will bring an additional 185%. They represent plenty of pore openings in the soil to allow water and air infiltration and transmission, storage and release of plant-available nutrients, and unimpeded drainage and aeration. These essential attributes for root growth will be instrumental in boosting the OVT's vigour and vitality.

Overall, the 555 m^2 TPZ will be divided into two zones. As much as 48.6% of the TPZ will be designated for the OVT's exclusive use in the New tree strip, which will not allow visitor access. Only the remaining 51.4% will be allocated for the New soil crescent for joint use by the Plaza and the OVT.

3.8. Proposed implementation strategy for the Scheme

The Scheme involves a series of steps that can be scheduled logically to deliver a smooth implementation. The following sequence is proposed together with the critical stages at which the ITE will inspect the site and the associated works:

(1) Removing the hard paving and subbase in the New tree strip and the northern circa 2.5 m belt of the New soil crescent. *[ITE site inspection of the paving removal step at the New tree strip]*
(2) Excavating in four sequential phases to install the balustrade footings by forming 30-degree cut slopes around them.
(3) Preserving roots exposed in excavating the southern belt of the New tree strip by resting them on the 30-degree cut slope.
(4) Cutting roots at the interface between the New tree strip and the New soil crescent. *[ITE site inspection of the root cutting work]*
(5) Installing the balustrade footings and associated posts and the above-ground beam.
(6) Ordering the fabricated soil mix (FSM) in advance according to specifications (Section 4) and arrange for in-time delivery.
(7) Ordering bark mulch materials inoculated with *Trichoderma*.
(8) Ordering the modular soil cell system with the required load-bearing capacity and height to hold a 600 mm deep soil layer, and arrange for in-time delivery.
(9) Ordering the paving slabs to pave the New soil crescent area, with connection details to allow entry of water and air into the new soil, to be equipped with a removable design.

(10) Filling the northern belt of the New tree strip with FSM to the finished sloping level, to be slightly tamped to a dry bulk density of about 1.3 Mg/m^3. *[ITE site inspection before backfilling the New tree strip with FSM]*

(11) Refilling with FSM the excavated southern belt of the New tree strip to the finished sloping level and restoring the preserved root to their approximate original positions, to be slightly tamped to a dry bulk density of about 1.3 Mg/m^3.

(12) Removing the hard paving and subbase in the remaining part of the New soil crescent.

(13) Removing the site soil in the New soil crescent down to circa +8.1 mPD.

(14) Compacting the bottom of the New soil crescent area to a prescribed maximum dry density that can support the load of the soil cells and the paving to create a flat finished base at +8.1 mPD. *[ITE site inspection before installing the soil cells]*

(15) Installing the soil cells to fill the New soil crescent area.

(16) Filling the interstices of the soil cells with FSM, to be slightly tamped to a dry bulk density of about 1.3 Mg/m^3.

(17) Inserting the load-bearing soil cell cap with the required load-bearing capacity.

(18) Laying the geotextile sheet on the soil cell cap.

(19) Installing the porous subbase.

(20) Installing the paving slab.

(21) Installing the automatic drip irrigation system for the New tree strip.

(22) Producing the final version of the post-construction OVT maintenance manual, which includes a maintenance schedule.

4. Preparation of the high-quality fabricated soil mix (FSM)

The proposed New tree strip and New soil crescent offer wonderful opportunities to improve the soil quality and volume for the OVT. It is essential to ensure that the best soil specifications and designs are prescribed to offer a new lease of life for the trapped large tree. The proposed fabricated soil mix (FSM) has been specially designed to provide optimal physical, chemical and biological properties to foster root growth. It makes use of locally available mineral materials, the completely decomposed granite (CDG) and mature organic compost (MOC) to prepare the mix.

4.1. Specifying the FSM

(1) The surface layer of the new tree strip and the entire soil replacement portion of the new soil crescent shall be filled by a high-quality soil layer analogous to the topsoil in

mature natural tropical forests, characterised by organic matter enrichment and sufficient nutrient reserve.

(2) The FSM, composed of two ingredients, shall be prepared: completely decomposed granite (CDG) and mature organic compost (MOC). Please refer to Sections 4.2 and 4.3 for the specifications for these two key ingredients.

(3) The two ingredients shall be mixed thoroughly off-site with a mechanical rotary mixer in an 80:20 v/v ratio. Mixing shall only be conducted when the constituent materials are in the air-dry moisture state.

(4) If stockpiling is necessary after mixing, waterproof covers shall protect the material from the elements. Do not allow the prepared FSM mixture to be stockpiled for over five days. It should be applied to the landscaping sites as soon as possible.

(5) The FSM shall have a good soil structure that can supply a balanced distribution of macropores, mesopores and micropores conducive to root growth, with sufficient capacity to hold plant-available moisture and nutrients. It shall also permit unimpeded infiltration of rain and irrigation water to replenish the soil moisture, drain excess water away from the rooting zone, and exchange air between the atmosphere and the soil.

(6) There shall be enough nutrient reserves held in the partly decomposed humic substances of the MOC. Upon decomposition, the MOC will release plant-available nutrients to support tree growth. The organic matter shall have a specified amount of two essential nutrient elements, often in short supply in tropical soil. The MOC shall furnish a sufficient and sustained nitrogen and phosphorus supply.

(4) The FSM shall have the following essential properties that are favourable to tree growth:

(a) Final bulk density after settlement lies in the 1.35 to 1.40 Mg/m^3 range, aiming to supply circa 50% total porosity v/v.

(b) Stone (> 2 mm diameter) content not more than 10% by weight.

(c) Free from stones > 30 mm in diameter.

(d) Sandy loam texture (US Department of Agriculture definition, evenly textured, with no more than 70% (w/w) sand particles (0.05–2.0 mm diameter), and not less than 15% (w/w) clay particles (< 0.002 mm diameter).

(e) Free-flowing, friable, loose, and non-sticky consistency.

(f) Well aggregated with granular and/or fine blocky soil structure class (US Department of Agriculture definition).

(g) Free from impurities and undesirable constituents such as cement, concrete, plaster, brick, asphalt, sticky clay, grasses, weeds, vegetative materials (woody roots and branches), oil, chemical, glass, plastic, paper, waste wood, and other rubbish, artifacts and deleterious substances.

(h) Soil reaction (pH in 1:2.5 soil:water ratio w/w and glass electrode) in the range of 5.5 to 6.5.

(i) Electrical conductivity (1:5 soil:water extract and conductivity meter) not more than 2.0 dS/cm.

(j) Total nitrogen content (Kjeldahl method or equivalent) not less than 2% by weight for topsoil.

(k) Total phosphorus (Perchloric acid digestion and colorimetry) not less than 200 mg/kg for topsoil.

4.2. Specifying ingredient I: Completely decomposed granite (CDG)

(1) Granular, free-flowing, friable and loose consistency.

(2) Free from stones with a diameter >30 mm.

(3) Taken from the upper part of the granite weathering crust, free from unweathered or partly weathered core stones or rock fragments.

(4) Uniform composition for the entire supply batch.

(5) Free of impurities and ingredients harmful to plants, humans or animals.

4.3. Specifying ingredient 2: Mature organic compost (MOC)

(1) Fully mature compost material.

(2) Composed of not less than 90% organic matter.

(3) Uniform and consistent composition for the entire supply.

(4) Granular and free-flowing.

(5) Free from materials containing pathogens or other toxic ingredients known to be detrimental to plants, humans, or animals.

(6) Does not emit toxic or obnoxious fumes.

(7) Free from unpleasant odour.

(8) Does not generate heat that will raise the temperature to >5°C above the ambient air temperature.

(9) With a carbon-nitrogen ratio in the range 25–50.

5. Method statements for soil and root works

5.1. Soil treatments at the northern belt of the New tree strip

(1) The existing impermeable hard paving shall be carefully removed, taking precautions to minimise disturbing the roots and soil lying underneath.
(2) Hand-held manual drilling tools shall be employed to break the hard paving and the underlying compacted subbase layer.
(3) Care should be taken to avoid excessive breaking of the hard paving into too small fragments and fine particles.
(4) The broken paving fragments shall be removed from the soil surface.
(5) The exposed soil shall be scarified manually down to 10 cm with a horticultural rake. Care should be taken not to sever or damage roots with >10 mm diameter.
(6) The exposed soil shall be covered by wet hessian to prevent drying out.
(7) Within two days of completing the above scarification step, the exposed soil shall be covered by FSM to form a finished sloping surface as shown in Slides 18 and 19. The filled soil shall be lightly tamped with a spade to bring a bulk density of about 1.3 Mg/m^3.
(8) Precautions shall be adopted to avert undue compaction and smearing of the FSM during installation.
(9) Within one day of completing the FSM filling, the exposed surface shall be covered by a 5-cm layer of bark mulch to protect the soil from wind and water erosion, stop rain splash structural damage, suppress weed growth, prevent high soil temperature, and conserve soil moisture by suppressing evaporation. The mulch material shall be treated with *Tricoderma* to control the spread of Brown Root Rot disease.
(10) Immediately after completing the above tasks, the soil area shall be cordoned off to prevent unnecessary intrusion by humans, materials, vehicles, and machines.

Special precautions: It is essential to install the FSM promptly after paving removal to avoid the risks of soil degradation and loss during the exposed period. The soil work shall only be conducted on days without rainfall. If the Hong Kong Observatory predicts heavy rain, all soil work shall stop. After rainfall, the soil shall be allowed to shed the excess soil moisture by drainage and evaporation to eliminate the wet soil state. The soil works shall not resume until the site soil has become dry to moist.

5.2. Soil treatment and root preservation at the southern belt of the New tree strip

(1) The existing impermeable hard paving shall be carefully removed, taking precautions to minimise disturbing the roots and soil lying underneath.

(2) Hand-held manual drilling tools shall be employed to break the hard paving and the underlying compacted subbase layer.

(3) Once the underlying site soil is exposed, the ensuing excavation shall be conducted with proprietary Air Spade equipment (https://www.airspade.com/) that can remove the mineral particles whilst preserving most of the roots.

(4) Special precautions must be taken to avoid aerial spread of suspended fine soil particles during excavation. The accompanied air suction equipment must be used properly in conjunction with the supersonic pneumatic excavator.

(5) The land surface shall be lowered to form a 30-degree slope to build the balustrade footings as shown in Slides 18 and 19.

(6) To minimise impacts on the OVT, the excavation to build the balustrade footings shall be conducted in four phases as illustrated in Slide 20. A three-week recuperation period shall be inserted between two consecutive phases.

(7) All structural roots >10 cm diameter exposed by the Air Spade excavation must not be cut or harmed. They shall be manually lowered to the rest on the finished 30-degree slope surface, covered by four layers of hessian, which shall be kept continuously moist by water sprays. This procedure is illustrated by Slide 21.

(8) No human traffic, building materials or construction machines or tools shall be allowed to contact the preserved roots covered by hessian.

(9) A prominent cordon shall be established around the excavation area to exclude disturbances.

(10) At the interface of the New tree strip and the New soil crescent, the exposed roots >10 mm diameter shall be cut by a clean and sharp arborist secateur or saw. The cut surface must be perpendicular to the root, flat and smooth. No tissue fraying or tearing shall be permitted. All fresh-cut root surfaces shall immediately be painted with a proprietary arboricultural fungicide.

(11) During the building of the balustrade footings, all exposed soil surfaces shall be shielded by a protective sheet against the elements.

(12) The exposed soil shall be covered by wet hessian to prevent drying out.

(13) Within two days of completing the balustrade footing work, the soil surface layer shall be scarified manually down to 10 cm with a horticultural rake. Care should be taken not to sever or damage roots with >10 mm diameter, and not to disturb the preserved roots.

(14) Within two days of completing the scarification task, FSM shall fill the 30-degree cut slope to a new finished level indicated by Slides 18 and 19. The filled soil shall be lightly tamped with a spade to bring a bulk density of about 1.3 Mg/m^3.

(15) Within one day of completing the FSM filling, the exposed surface shall be covered by a 5-cm layer of bark mulch to protect the soil from wind and water erosion, stop rain splash structural damage, suppress weed growth, prevent high soil temperature, and conserve soil moisture by suppressing evaporation. The mulch material shall be treated with *Tricoderma* to control the spread of Brown Root Rot disease.

(16) Immediately after completing the above tasks, the soil area shall be cordoned off to prevent unnecessary intrusion by humans, materials, vehicles, and machines.

Special precautions: All procedures involving preserving and cutting roots must only be conducted by an arborist who has relevant working experience in root work. Ordinary construction workers must not carry out such work.

5.3. Installing 18 vertical mulching holes in the New tree strip

(1) After completing the excavation and balustrade footing works explained in Sections 5.1 and 5.2, the New tree strip is ready for installing two types of soil improvements, namely vertical mulching and lateral root paths.

(2) The exposed soil shall be covered by wet hessian to prevent drying out.

(3) The New soil strip shall be divided into seven segments, namely five core segments and two wider edge segments, as shown in Slide 22.

(4) In the middle of each core segment, two vertical mulching holes shall be opened with an Air Spade. At each of the edge segments, four vertical mulching holes shall be opened. The holes shall be situated 1.8 m from the northern and southern long edges of the New tree strip.

(5) Each hole shall have a diameter of 10 cm, go down to 70 cm depth, and be inclined at 20 degrees towards the south side (i.e., pointing towards the New soil crescent) (Slide 22b).

(6) After removing the site soil in the excavation hole, the vacated space shall be filled by FSM, to be slightly tamped to a bulk density of about 1.3 Mg/m^3.

(7) Within one day of completing the vertical mulching works, the exposed surface shall be covered by a 5-cm layer of bark mulch to protect the soil from rain splash, running water and wind. The mulch material shall be treated with *Tricoderma* to control the spread of Brown Root Rot disease.

5.4. Installing six lateral root paths in the New tree strip

(1) After completing the excavation and balustrade footing works explained in Sections 5.1 and 5.2, the New tree strip is ready for installing two types of soil improvements, namely vertical mulching and lateral root paths.
(2) Referring to Slide 22, six lateral root paths in the form of trenches shall be opened with Air Spade at the boundaries of the New tree strip segments.
(3) Each trench shall measure 15 cm wide and 70 cm deep, to be excavated vertically and oriented perpendicular to the long axis of the New tree strip (Slide 22c).
(4) The >10 mm diameter structural roots encountered in the course of excavating the trenches shall be kept and moistened by water sprays.
(5) Within one day of removing the soil in the trench, the vacated space shall be filled by FSM, to be slightly tamped to a bulk density of about 1.3 Mg/m^3.
(6) Within one day of completing the lateral root path works, the exposed surface shall be covered by a 5-cm layer of bark mulch to protect the soil.
(7) After completing the soil improvement work, an automatic irrigation system using proprietary trickle heads shall be installed to supply supplementary water to the trees. A rainfall detector shall be installed to stop the watering when a given amount of rainfall has been received.

Special precautions: All procedures involving preserving and cutting roots must only be conducted by an arborist who has relevant working experience in root work. Ordinary construction workers must not carry out such work.

5.5. Soil replacement and soil cell installation in the New soil crescent

(1) The paving and subbase in the New soil crescent shall be removed.
(2) The site soil shall be removed down to circa +8.1 mPD (Slides 18−19).
(3) The bottom of the excavated area shall be compacted to form a finished firm base at +8.1 mPD to support the soil cells (Slides 27−30), which shall in turn support the new hard paving.
(4) Assemble the modular soil cells to the required height.
(5) Insert the FSM up to the top of the soil cells.
(6) Slightly tamp the FSM to a resulting bulk density of about 1.3 Mg/m^3.
(7) Install the top porous cap.
(8) Install the geotextile sheet.
(9) Install the porous subbase.

(10) Install the paving slabs, with a removable design to allow management of the soil held in the soil cell interstices (design details to be determined in due course).

Special precautions: Acquire a soil cell system with a finished height to match our 600 mm soil depth need, and with a strong top cap to support the subbase and the paving slabs.

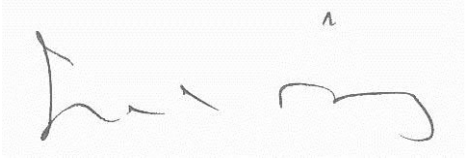
6. Summary and conclusion

The Scheme can realize two goals: protection and rehabilitation of the OVT, and provision of a new plaza in the dense and heavily patronized commercial precinct, which hitherto has only one small town square (Slide 35). The gist of the proposed OVT protection-cum-rehabilitation scheme is condensed below (Slide 36):

(1) The tailor-made OVT protection-cum-rehabilitation scheme is based on detailed tree and site assessment and understanding of the unique banyan growth habit.
(2) The open soil area compared to the large tree with a sprawling crown is piteously tiny and grossly inadequate.
(3) Despite the legendary banyan vigour and tenacity, the tree's growth form has been severely constrained and shaped by the narrow Existing planting strip.
(4) The tree has exhausted the capacity of the limited soil body, and its growth has reached the allowable upper ceiling.
(5) With evident tree decline in recent years and a dim prognosis, keeping existing growth conditions largely unaltered or applying routine treatments cannot help.
(6) The emaciated OVT demands innovative rehabilitation measures to arrest its decline and revive its health.
(7) The only soil improvement area lies in the Plaza, but it has heavily compacted soil sealed by impermeable paving, which is unsuitable for root growth.
(8) This Scheme adopts innovative soil rehabilitation by improving rootable soil area, soil continuity, connectivity, and quality.
(9) It achieves synergies among the tree, Plaza, and citizens, and co-existence among tree conservation, town planning, and urban amenity.
(10) It offers a rare opportunity to accomplish a substantial OVT rehabilitation case in the dense core of Hong Kong.
(11) It furnishes a fine example of co-using a piece of precious urban land in our compact city for both hard and soft landscaping.

A new lease of life for OVT WCH/1 in the commercial development on IL No. 8945, Causeway Bay, Hong Kong

PowerPoint presentation (36 slides)



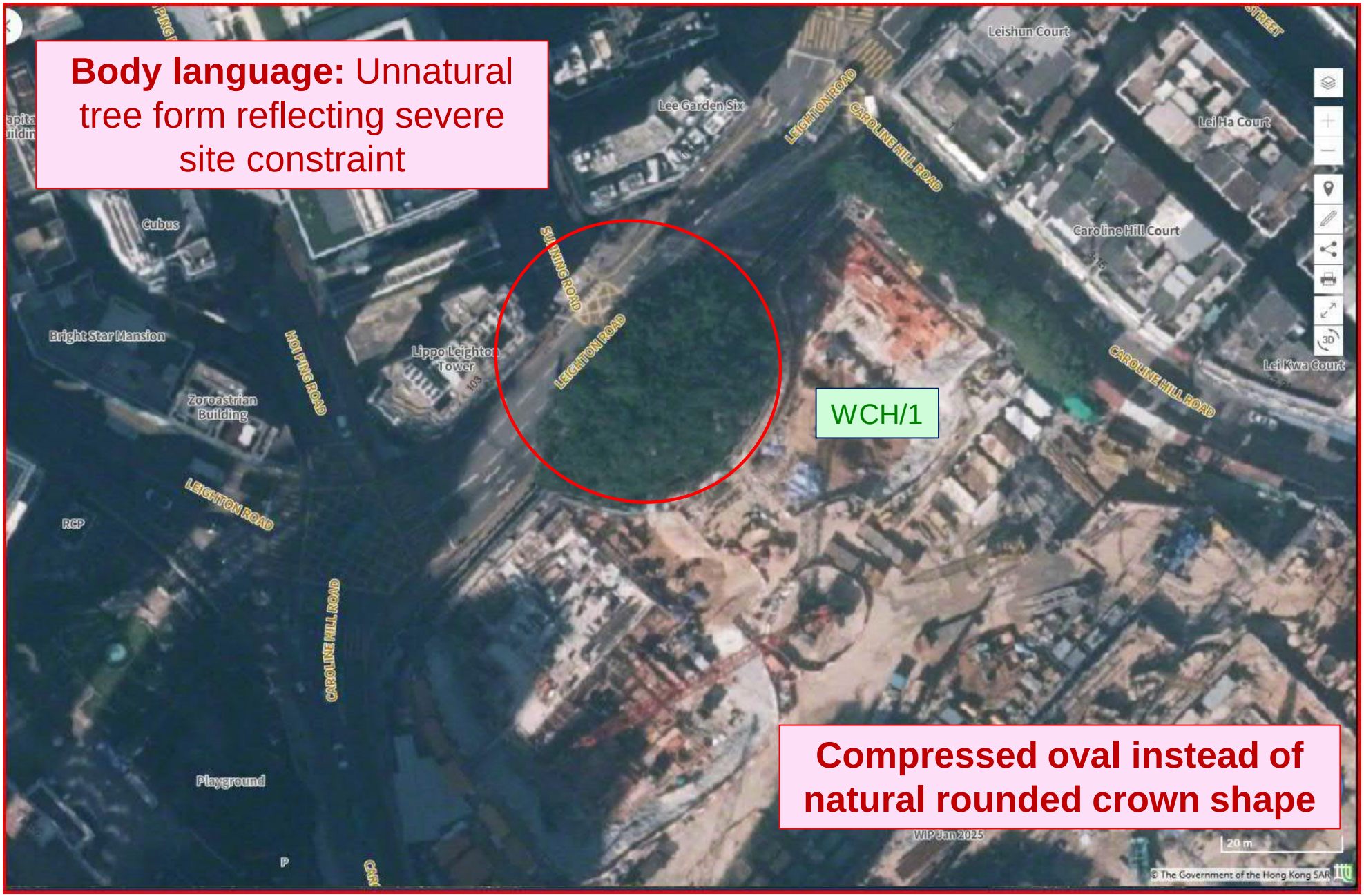
Prepared by Professor C.Y. Jim
Independent Tree Expert
27 August 2025

A new lease of life for OVT WCH/1 in the commercial development on IL No. 8945 Causeway Bay, Hong Kong

CY Jim
Independent tree expert

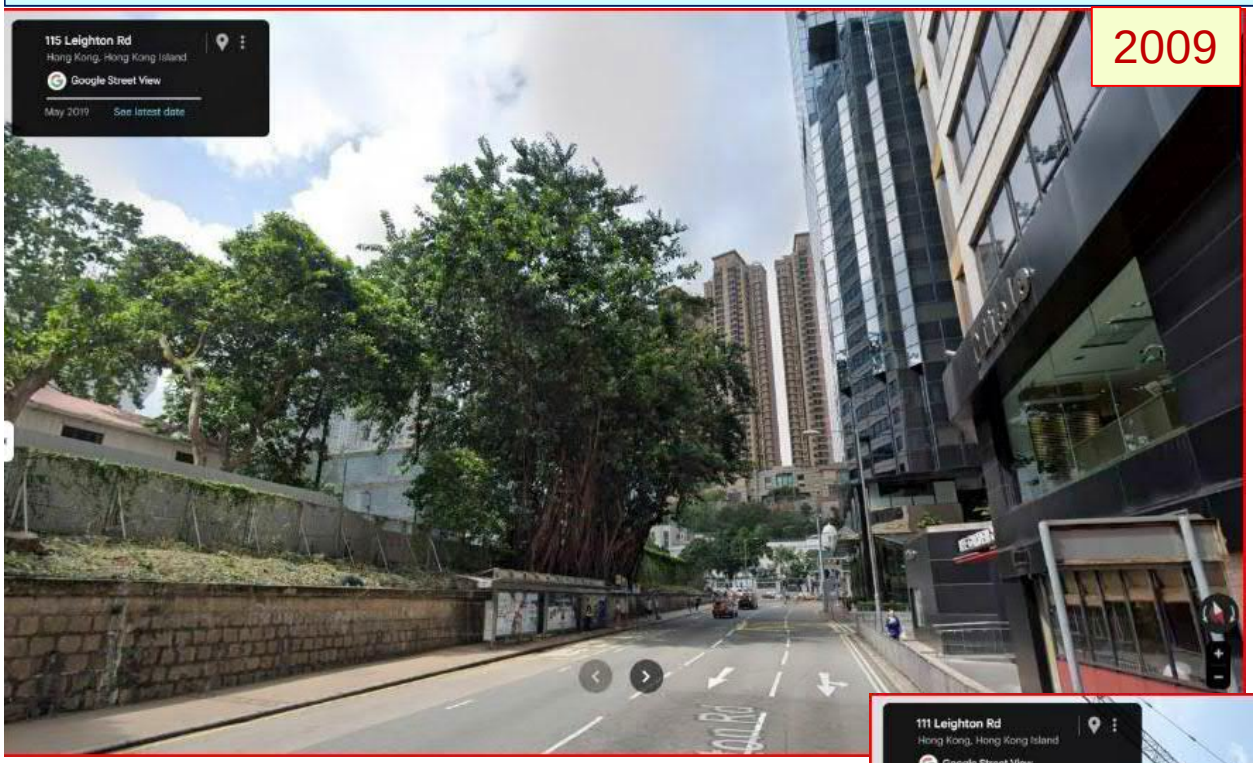
Version 5 20250813

Slide 1. Aerial view of the development site and the WCH/1 OVT in 2024. The circle indicates normal crown growth without the physical site constraints.



CY Jim Independent Tree Expert: LG8 OVT

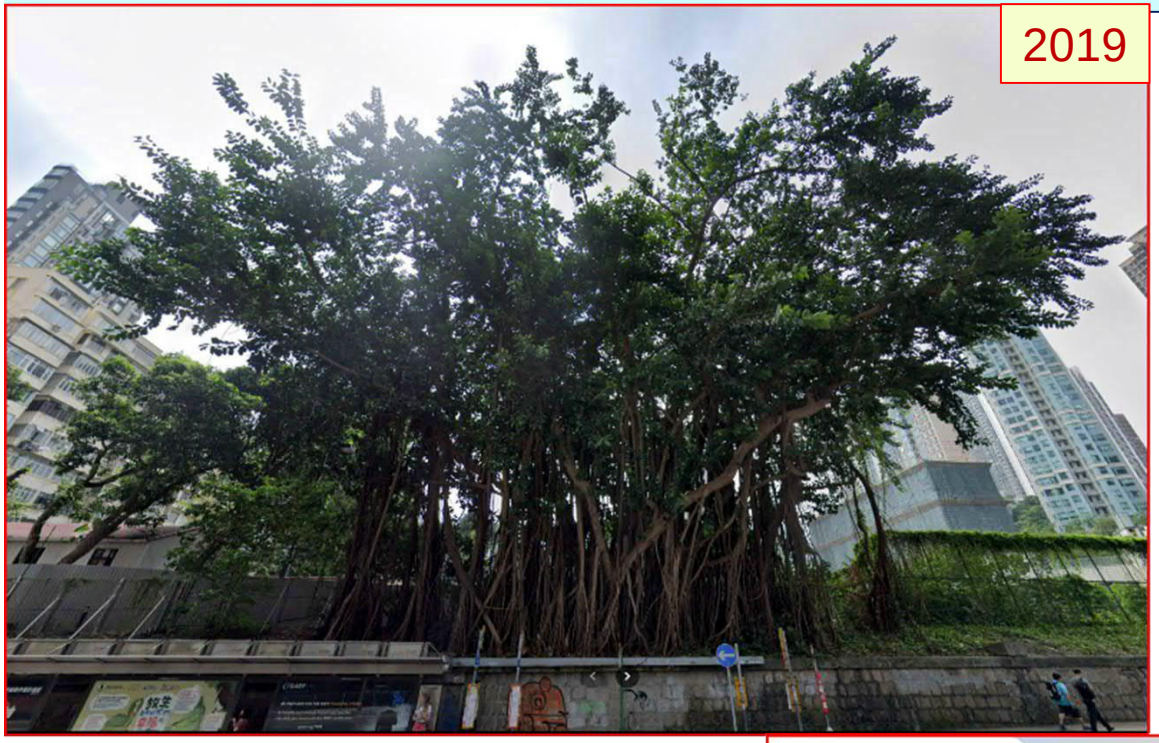
Slide 2. Lateral view of OVT WCH/1 in May 2009 and Feb 2024 (Google Street View), indicating limited growth increment in 15 years.



Stagnated tree growth:
Limited by extreme soil constraint

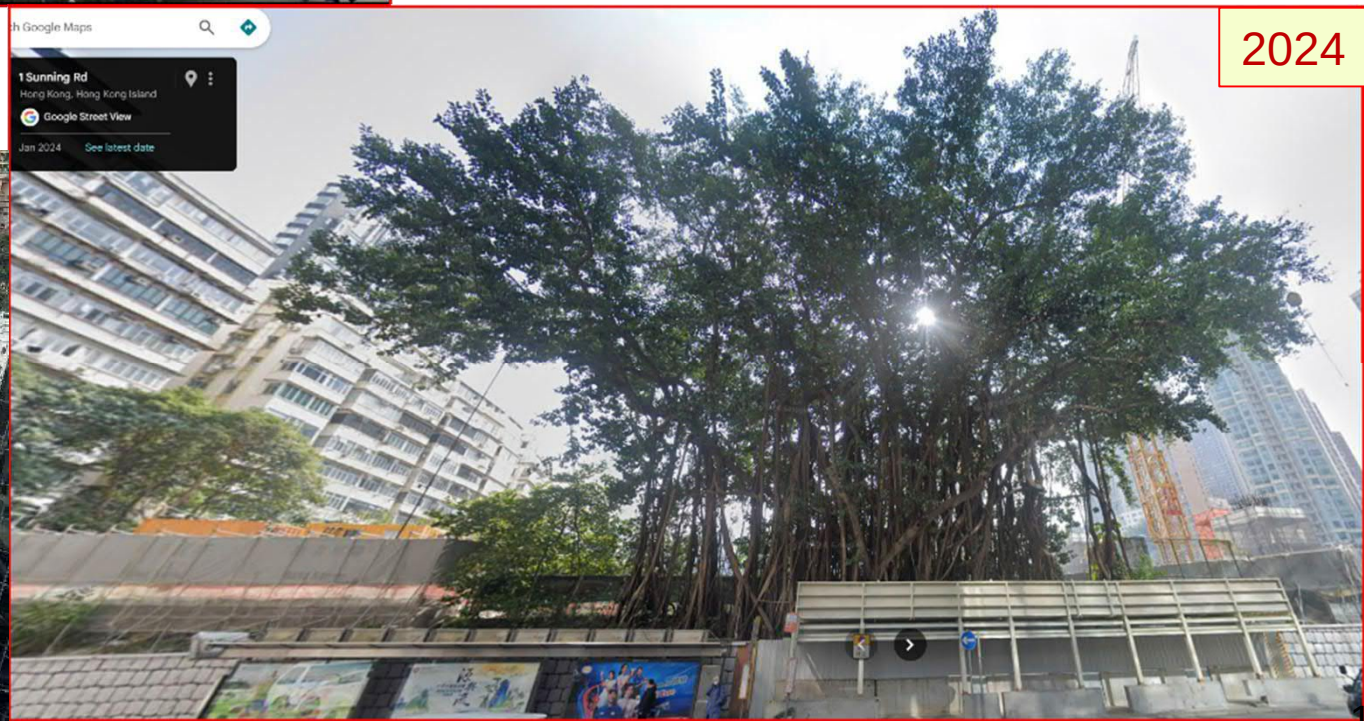


Slide 3. OVT WCH/1 has shown decline symptoms in recent years (Google Street View May 2019 and Feb 2024), with evident reduction in foliage density.

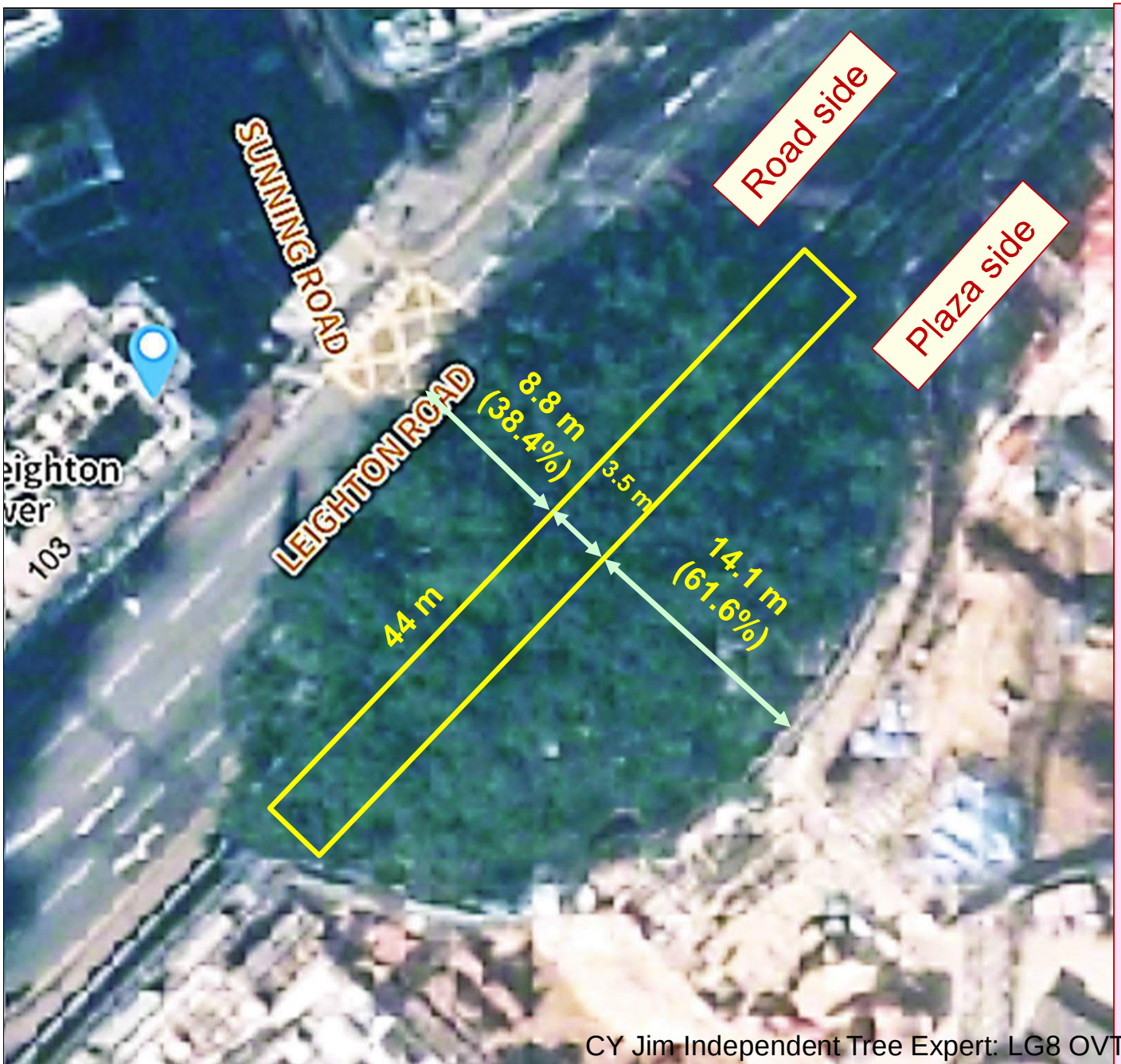


Evident tree decline:
Has exhausted the capacity of the limited soil resource
Compromised by Brown root rot disease and moth attack





Slide 4. The open soil area available for root stand development is confined to the narrow Existing tree strip, constraining the tree's ability to anchor itself securely.



Asymmetrical oval crown development and unbalanced weight distribution:

- Major axis 44 m
- Minor axis 26.4 m
- Crown area 912 m^2
- 38.4% on Road side
- 61.6% on Plaza side

- The plaza will attract heavy visitor patronage for a long duration every day especially on weekends and holidays

- Need to find effective and long-term ways to abate the risk of tree failure, such as branch breakage, to pedestrians

- Especially that the tree is infected and weakened by brown root rot disease

Slide 5. The linear belt of dense and extensively fused (inosculated) root stands of OVT WCH/1 (Google Street View May 2022) support the wide oval-shaped crown.



Slide 6. Cramped development of the root stands of the large OVT WCH/1 trapped in the narrow (c. 3.5 m width) Existing tree strip (Google Street View May 2022).



Slide 7. A narrow hanging metal receptacle installed at the top of the masonry wall has been occupied by the vigorous root stand growth of OVT WCH/1 (Google Street View May 2022).



Slide 8. Proactive rehabilitation of OVT can replace passive protection.

中文百科全書
https://www.newton.com.tw › wiki › 古樹名木養護復壯技術

古樹名木養護復壯技術 - 中文百科全書

古樹名木養護復壯技術

摘 要：古樹名木是中華民族悠久歷史與文化的象徵，是綠色文物、活的化石，是自然界和前人留給我們的無價珍寶,具有重要的歷史價值和科研價值。但長期以來，由於環境、人為、自然災害、病蟲危害等原因，造成古樹名木衰老及死亡。因此必須採取搶救性措施，加強對古樹名木的管理和養護來延緩古樹名木的衰老。

2.4換土

Innovative rehabilitation: Soil replacement

古樹幾百年甚至上千年生長在一個地方，土壤肥分有限，常呈現缺肥症狀，如果採用上述辦法仍無法滿足，或者由於生長位置受到地形、生長空間等立地條件的限制，而無法實施上述的復壯措施，可考慮更新土壤的辦法。如北京市故宮園林科從1962年起開始用換土的方法搶救古樹，使老樹復壯。典型的例子有：皇極門內寧壽門外的一株古松，當時幼芽萎縮，葉子枯黃，好似被火燒焦一般，職工們在樹冠投影範圍內，對大的主根部分進行換土，挖土深0.5m（隨時將暴露出來的根用浸濕的草袋子蓋上），以原來的舊土與沙土、腐葉土、大糞、鋸末、少量化肥混合均勻之後填埋其上，換土半年之後，這株古松重新長出新梢，地下部分長出2～3cm的鬚根，終於死而復生。另外如1975年對一株瀕於死亡的古松的採取的換土處理，這棵樹換土時深挖達1.5m，面積也超出了樹冠投影部分。同時挖深達4m的排水溝，下層填以大卵石，中層填以碎石和粗砂，上面以細砂和園土填平，以排水順暢。目前，故宮裡凡是經過換土的古松，均已返老還童，鬱鬱蔥蔥，很有生氣。此法很值得學習推廣。

Slide 9. Recent extensive OVT rehabilitation conducted in China's Jilin Province.

搶救復壯古樹名木「一樹一策」煥生機

2025年07月31日 10:40

據中國吉林網報道，自今年開展全省古樹名木搶救復壯工作以來，共搶救復壯瀕危衰弱古樹19株，使古樹得到了有效保護，讓古樹名木重新煥發了生機。

在吉林省汪清縣紅日村有一株老白榆樹，樹齡大約200多年，有豐富的歷史和文化價值。但由於土壤貧瘠、立地環境較差等多方面因素影響，目前古樹枝葉稀疏，整體長勢衰弱，病蟲危害嚴重。

汪清縣林業局生態修復科科長洪正日說：「今年在省林業和草原局的資金扶持和技術指導下，我們邀請相關專家對白榆進行『會診』，經過綜合分析和研究，制定了詳細的復壯方案。首先，在古樹名木樹幹3米外設立大理石保護圍欄，防止古樹名木遭受人畜破壞。其次，進行地上和地下生長環境改良，包括樹洞修補、清理腐爛木質部及對蛀干害蟲滅殺、更換透氣鋪裝、挖設復壯溝、鋪置透氣管等。我們對樹體安裝支撐架進行加固，排除了安全隱患。同時，我們還加強了日常的巡查和養護工作，定期對古樹名木進行病蟲害防治、枯枝修剪、施肥等養護，確保它們的健康生長。」

Slide 10. A meritorious example of heritage tree rehabilitation in Tokyo.



Slide 11. Soil refurbishment of the entire street to revamp soil conditions for trees.



Wholesale soil replacement and soil cell installation to overhaul soil volume and quality for urban trees

Slide 12. Research informing practice:
High quality growth medium to improve New tree strip and New soil crescent.

Socio-Ecological Practice Research (Jim 2019)

Socio-Ecological Practice Research (2019) 1:41–53
https://doi.org/10.1007/s42532-018-00005-z

PERSPECTIVE ESSAY

Resolving intractable soil constraints in urban forestry through research–practice synergy

C. Y. Jim[1]

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Abstract
In compact urban areas, grey infrastructure tends to prevail over green infrastructure. The tight urban fabric challenges tree growth and restricts development of greener and healthier cities. The admirable forest-city goal demands innovative methods and solutions tailor-made to tackle inherent constraints. Research findings could be more proactively transformed and transferred into practices. The aerial tree growth space, relatively less difficult to ameliorate, attracts more attention. The more intractable subterranean constraints of confined soil volume acutely restrict root growth, root spread and tree health and contribute extensively to premature decline and tree hazard. Soil surface sealing by impermeable paving is associated with compaction, organic matter deficit, low nutrient and water holding capacity and meagre nutrient stock. Scanty application of research findings has kept practice quality at a low level, rendering the persistent soil problems in the bane of urban forestry. A systematic survey of state of play provides hints on novel solutions derived from existing knowledge and proposes new research practice. A package of measures with generic connotations has been distilled from the survey of chronic, critical yet widely neglected urban soil management issues. Urban forest managers and researchers can jointly adopt out-of-the-box thinking and generate actionable translational research. Policy makers and practitioners can more promptly be informed by new harvests of research–practice synergy. Intimate and reciprocal interactions between science and practice can be proactively nurtured to raise the quality of urban landscape.

Keywords Urban soil constraint · Bane of urban forestry · Soil volume limitation · Soil sealing · Re-naturalization in urban forestry · Landscape altruism

1 The intractable soil constraints and the knowledge–practice gaps

In dense city areas, the artificial paving and structures dominate the land cover (Arnold and Gibbons 1996, pp. 245–247; Salvati et al. 2016, pp. 424–425). Trees are sequestered and literally squeezed out of the compact built-up fabric (Jim et al. 2018, pp. 3–6). The conflicts between trees and the urban matrix have attracted the attention of urban forest researchers (McPherson et al. 2001, pp. 22–23; Jim and Chan 2016, pp. 77–79), often focusing on the above-ground part and neglecting the below-ground soil component (Haan et al. 2012, pp. 318–319; McGrath and Henry 2014, pp. 111–113).

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The limited urban soil management tends to concentrate on chemical properties, especially soil fertility, echoing a legacy from agricultural practice (Sarah et al. 2015, pp. 395–396; Musielok et al. 2018, pp. 274–276). The physical soil properties have been studied extensively by researchers, yet they are commonly neglected at the practice front (Perry 1994, pp. 4–7; Sanders and Grabosky 2014, pp. 302–303). The critical tree growth issues include soil structure, aggregate stability, bulk density, porosity (Jim 1998a, pp. 237–242; Puskás and Farsang 2009, pp. 270–271), soil volume restriction and soil sealing (Jim 2017, pp. 274–278; Just et al. 2018, pp. 143–144). Their prevention and amelioration have remained scanty and ineffectual (Koeser et al. 2013, pp. 655–656).

The lack of soil volume for tree roots is a common problem facing tree managers in compact urban areas (Urban et al. 1988, pp. 59–61; Casey Trees 2008, pp. 2–3; LANDCOM 2008, pp. 16–18). The critical soil attributes, associated constraints and consequences on soil properties and

Table 1 Main neglected physical constraints of urban tree planting and proposed research–practice agenda to fill the knowledge–practice gaps

		Consequence												Knowledge-practice gap				
		Soil								Root								
Soil attribute	Constraint	Confined soil depth	Confined soil width	Limited available moisture	Restricted infiltration	Restricted permeability	Restricted evaporation	Poor drainage	Limited aeration	Elevated soil temperature	Root suppression	Shallow rooting	Poor anchorage	Cracked & heaved paving	Basic research	Planting site design	Drainage design	Soil amelioration	Soil design	Tree species selection
(a) Soil volume restriction: Natural composition	Stony soil			✔							✔		✔			×		×		
	Subsurface stone layer	✔									✔	✔	✔			×		×		
	Large boulder	✔	✔	✔							✔		✔			×				
	Shallow rocky base	✔		✔				✔			✔		✔			×				
	Excessively sandy soil			✔							✔		✔					×		×
	Excessively clayey soil			✔				✔	✔		✔		✔				×	×		×
(b) Soil volume restriction: Material organization	Dense or compacted soil	✔		✔	✔	✔		✔	✔		✔	✔	✔	✔	×			×		
	Textural discontinuity			✔		✔		✔			✔	✔	✔		×			×		
	High water table	✔						✔			✔	✔	✔		×		×			×
	Shallow solum	✔		✔							✔	✔	✔	✔				×		×
	Subsurface hardpan	✔		✔		✔		✔			✔	✔	✔					×		
(c) Soil volume restriction: Structure & porosity	Unstable aggregates			✔	✔	✔		✔	✔		✔		✔		×			×	×	
	Limited total porosity			✔	✔	✔		✔	✔		✔		✔		×			×	×	
	Lacking macropores (>60 μm)				✔	✔		✔			✔				×			×	×	
	Lacking mesopores (0.2– 60 μm)			✔							✔				×			×	×	
	Lacking micropores (<0.2 μm)										✔				×			×	×	
(d) Soil volume restriction: Artificial installation	Buried rubble layer	✔		✔		✔		✔			✔	✔	✔					×		
	Buried paving	✔		✔		✔		✔			✔	✔	✔					×		
	Buried utility line	✔	✔								✔		✔			×				
	Buried utility duct	✔	✔								✔	✔	✔			×				
	Buried utility box	✔	✔								✔		✔			×				
	Basement	✔	✔	✔				✔			✔	✔	✔			×	×			
	Building foundation	✔	✔	✔				✔			✔	✔	✔			×	×			
	Concrete root barrier	✔	✔								✔		✔		×					
(e) Soil volume restriction: Planting site design	Small tree pit	✔	✔	✔							✔	✔	✔	✔		×			×	×
	Small container	✔	✔	✔				✔			✔	✔	✔			×	×		×	×
	Narrow tree strip		✔								✔		✔			×			×	×
	Shallow tree strip	✔		✔							✔	✔	✔	✔		×			×	×
	Narrow planter		✔								✔		✔			×			×	×
	Shallow planter	✔		✔							✔	✔	✔			×	×		×	×
(f) Soil sealing: Paving	Impervious pour concrete	✔		✔	✔		✔		✔	✔	✔	✔	✔	✔	×	×				×
	Impervious asphalt	✔		✔	✔		✔		✔	✔	✔	✔	✔	✔	×	×				×
	Clogged porous material	✔		✔	✔		✔		✔	✔	✔		✔	✔	×	×				
	Clogged pervious material	✔		✔	✔		✔		✔	✔	✔		✔	✔	×	×				
(g) Soil sealing: Soil degradation	Compacted soil in open unit pavers			✔	✔				✔		✔		✔		×			×	×	
	Compacted surface soil			✔	✔				✔		✔		✔					×	×	
	Surface crusting			✔	✔		✔		✔		✔		✔		×			×	×	

Slide 13. Research informing practice:
Resolving the bane of urban forestry: Soil limitations and rootability confinement.

Plant Soil (2023) 483:153–180
https://doi.org/10.1007/s11104-022-05728-3

RESEARCH ARTICLE

Rootability confinement and soil-husbandry solutions for urban trees in sealed and insular sites

C. Y. Jim

Plant and Soil (Jim 2023)

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Abstract

Aims Cramped and sealed sites common in compact city areas limit tree growth due to multiple physical restrictions and physiological stresses. Fast urbanization and densification have intensified the pressure on urban trees, demanding innovative methods and solutions. The subaerial tree-growth space attracts more attention, but the more intractable subterranean rootability constraints are often overlooked. They are expressed as external (macro-scale) soil-body volume and internal (micro-scale) soil-pore volume limitations. The double jeopardy of urban soil insularity acutely restricts root growth, root spread, tree health, and stability.

Methods Some novel solutions can be distilled from a comprehensive review of recent research findings to bring effective relief.

Results Pedestrians and vehicles can co-use the expanded soil area in dense urban areas. Various creative soil expansion techniques can allow tree roots to break out from conventional confined tree pits or tree strips. Subsurface connections can link a planting site to an adjacent one or a nearby green patch. The soil union could be realized by subsurface soil conduits (large-diameter buried pipes) or subsurface soil corridors covered by pier-supported paving. In the spirit of landscape altruism, soil sharing by neighbor trees optimizes using the scarce rootable soil resource. Internal soil volume expansion can be accompanied by high-quality soil mix and compaction-prevention measures to resolve porosity and rootability deficit.

Conclusions Urban tree managers can adopt out-of-the-box thinking in managing critical physical soil deficiencies. New research findings can more promptly inform policymakers and practitioners. Close interactions between science and practice can be proactively cultivated.

Keywords Urban soil insularity · Soil porosity · Soil sealing · Soil compaction · Available soil volume · Soil sharing

Introduction

People living in cities experience different levels of detachment from nature. Some cities are well-endowed with natural enclaves with rich nature contents to bring many ecosystem services to inhabitants. Others could be deprived of nature and its multiple benefits (European Commission 2015; Elliot et al. 2022). Detachment from nature could degrade the quality of life, well-being, welfare, and happiness. Over half of the human population lives in cities (The World Bank 2020), which is expected to reach 70%

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Type and variant	Planting site epithet	Site: Pit	Site: Strip	Location: Footpath	Location: Carriageway	Location: Proximal green patch [a]	Expansion [b]: Elongation	Expansion [b]: Widening	Expansion [b]: Linkage	Connection: Open-soil pit or strip	Connection: Open-soil peninsula [c]	Connection: Subsurface soil conduit [d]	Connection: Subsurface soil corridor [e]	Geometry: Planar configuration of tree pit or strip and their expansions and connectors [f]
1	***Contiguous pit expansion***													
1a	Pit original	✓		✓										
1b	Pit elongation	✓		✓			✓							
1c	Pit widening	✓		✓				✓						
1d	Pit enlargement	✓		✓			✓	✓						
1e	Pit enlargement to chamber	✓		✓	✓									
2	***Contiguous strip expansion***													
2a	Strip original		✓	✓						✓				
2b	Strip elongation		✓	✓			✓			✓				
2c	Strip widening		✓	✓				✓		✓				
2d	Strip enlargement		✓	✓			✓	✓		✓				
3	***In-situ pit connection by subsurface soil conduit***													
3a	Pit original–conduit linkage	✓		✓					✓			✓		
3b	Pit elongation–conduit linkage	✓		✓			✓		✓			✓		
3c	Pit widening–conduit linkage	✓		✓				✓	✓			✓		
3d	Pit enlargement–conduit linkage	✓		✓			✓	✓	✓			✓		
4	***In-situ pit connection by subsurface soil corridor***													
4a	Pit original–corridor linkage	✓		✓					✓				✓	
4b	Pit elongation–corridor linkage	✓		✓			✓		✓				✓	
4c	Pit widening–corridor linkage	✓		✓				✓	✓				✓	
4d	Pit enlargement–corridor linked	✓		✓			✓	✓	✓				✓	

Fig. 5 External soil volume solutions: Key geometric enhancement measures of six principal types and 26 variants based on soil-body expansion and connection (Source: the author)

Slide 14. Research informing practice: Innovative techniques to improve rootable soil volume, connectivity and quality.

Soil volume restrictions and urban soil design for trees in confined planting sites

Journal of Landscape Architecture (Jim 2019)

Chi Yung Jim Education University of Hong Kong

Abstract

Urban trees often suffer from poor soil conditions, compromising their health and safety and raising management issues. In compact development areas, planting sites are beset by critical physical soil constraints, especially confined soil volume on narrow roadsides. These include internal (micro-scale) restrictions due to compaction and excessive coarse fractions such as gravels, and external (macro-scale) restrictions due to limited soil depth and width. *Soil area provision* (SAP) is assessed based on the moisture need of trees. A creative soil design scheme is proposed to expand soil volume, based on the principle of *soil volume sharing*, *subsurface soil conduits*, and *subsurface soil corridors* supplementing the routine open soil corridor. SAP could extend from the narrow footpath to the adjoining carriageway as a *soil peninsula* and green space as *offset soil volume*. The study aimed at knowledge exchange among science, policies, and practices, with implications for the sustainable management of many roadside trees in cities.

Soil compaction / soil area provision / subsurface soil conduit / subsurface soil corridor / offset soil volume / soil volume sharing

Introduction

Soils in human settlements are subject to drastic and intensive disturbances due to the addition, removal, mixing, and transformation of soil constituents. Such unnatural processes can disturb or arrest normal pedogenesis and soil horizon development.[1] With different modes and magnitude of impacts, urban soils tend to be highly variable from natural to disturbed and to entirely artificial types.

Accidental or intentional human actions have altered urban soils in terms of composition, organization, properties, and behaviour. As planting media, the heterogeneous technogenic soils[2] suffer from multiple physical and chemical limitations. Artificial materials, including demolition wastes and construction rubble,[3] induce poor plant growth.[4] Poor urban soils undermine the growth rate, health, vigour, establishment, and long-range welfare of urban trees,[5] imposing fundamental stress factors in arboriculture.[6]

Urban green infrastructure, including urban green spaces and constituent trees, offers multiple ecosystem services and nature-based solutions for liveable and sustainable cities, and prepares cities for climate-change impacts.[7] In compact cities, the keen competition for developable land has suppressed the space available for greening and lowered the urban landscape quality.[8] The dense urban fabric is restrictive to tree growth, especially on roadsides, where the soil and aboveground environments confine both root and shoot expansion.[9]

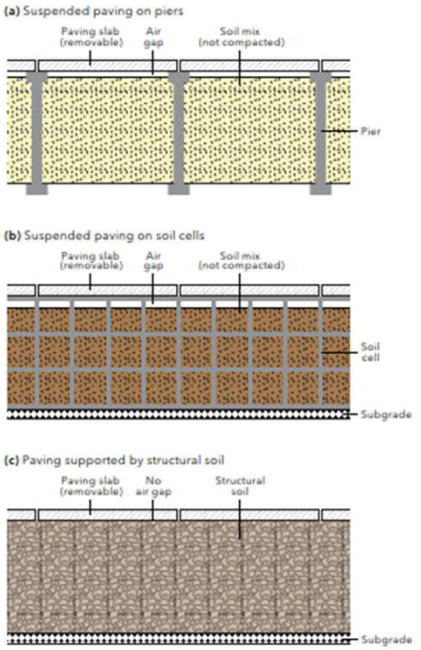


Figure 7 Three innovative methods to avoid soil compaction and enhance tree growth at confined sites: (a) suspended paving on piers, (b) suspended paving on soil cells, and (c) paving supported by load-bearing structural soil.



Figure 8 Innovative three-dimensional roadside soil design scheme (SDS) to improve the geometry and connectivity of soil volume to facilitate root spread and tree growth. The six types (1 to 6) of soil designs are each subdivided into two to four subtypes (a to d) to provide a comprehensive synopsis of enhancement options. The first subtype (a) denotes the restrictive situation, and the other subtypes (b to d) indicate the possibilities for improved soil volume design.

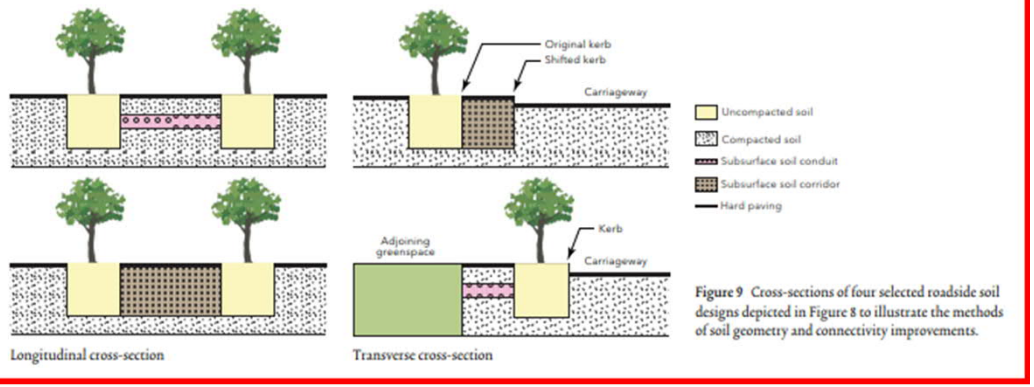


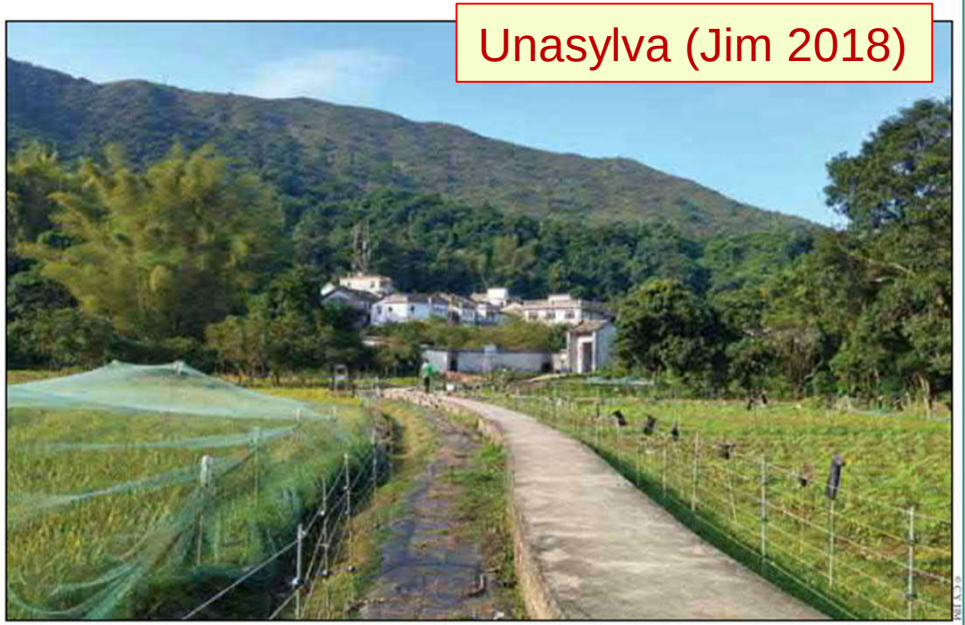
Figure 9 Cross-sections of four selected roadside soil designs depicted in Figure 8 to illustrate the methods of soil geometry and connectivity improvements.

Slide 15. Research informing practice: Understanding OVT constraints to find tailor-made and sustainable solutions.

Protecting heritage trees in urban and peri-urban environments

C.Y. Jim

Unasylva (Jim 2018)



Some individual trees perform especially important cultural functions, and strong community involvement is crucial for their conservation and management in urban settings.

People have held trees in high esteem and awe since antiquity. Primitive peoples recognized that trees were notably bigger, stronger, more majestic and longer-lived than most other organisms. Intimate interactions with nature have increased human awareness of trees progressively; over time, particular trees have instilled in people a sense of fraternity, fear, generosity, providence, ubiquity, immortality, eternity and divinity.

As benevolent providers and protectors of humans, certain trees have acquired special status. Beginning with admiration and respect, attitudes evolved to adoration and reverence and then to veneration and worship (Taylor, 1979; Dafni, 2006). Traversing geographical, temporal and cultural divides, tree worship is common in many ancient polytheistic belief systems. Many mythologies, legends and folklores are associated with beloved or feared trees, indicating a continued and widespread human deference to them. Many indigenous cultures have bestowed a sacred standing on individual trees and groves, seeing them as deities or the abodes of certain spirits.

The pragmatic contributions of trees to farming communities in soil and water conservation and microclimatic amelioration are well recognized. In East Asia, such contributions have been practised systematically as feng shui or geomancy (Han, 2001; Coggins *et al.*, 2012). Such

Above: Traditional villages in southern China are protected by upslope feng shui (geomancy) groves. This photo shows the well-preserved tradition in the village of Lai Chi Wo, Hong Kong

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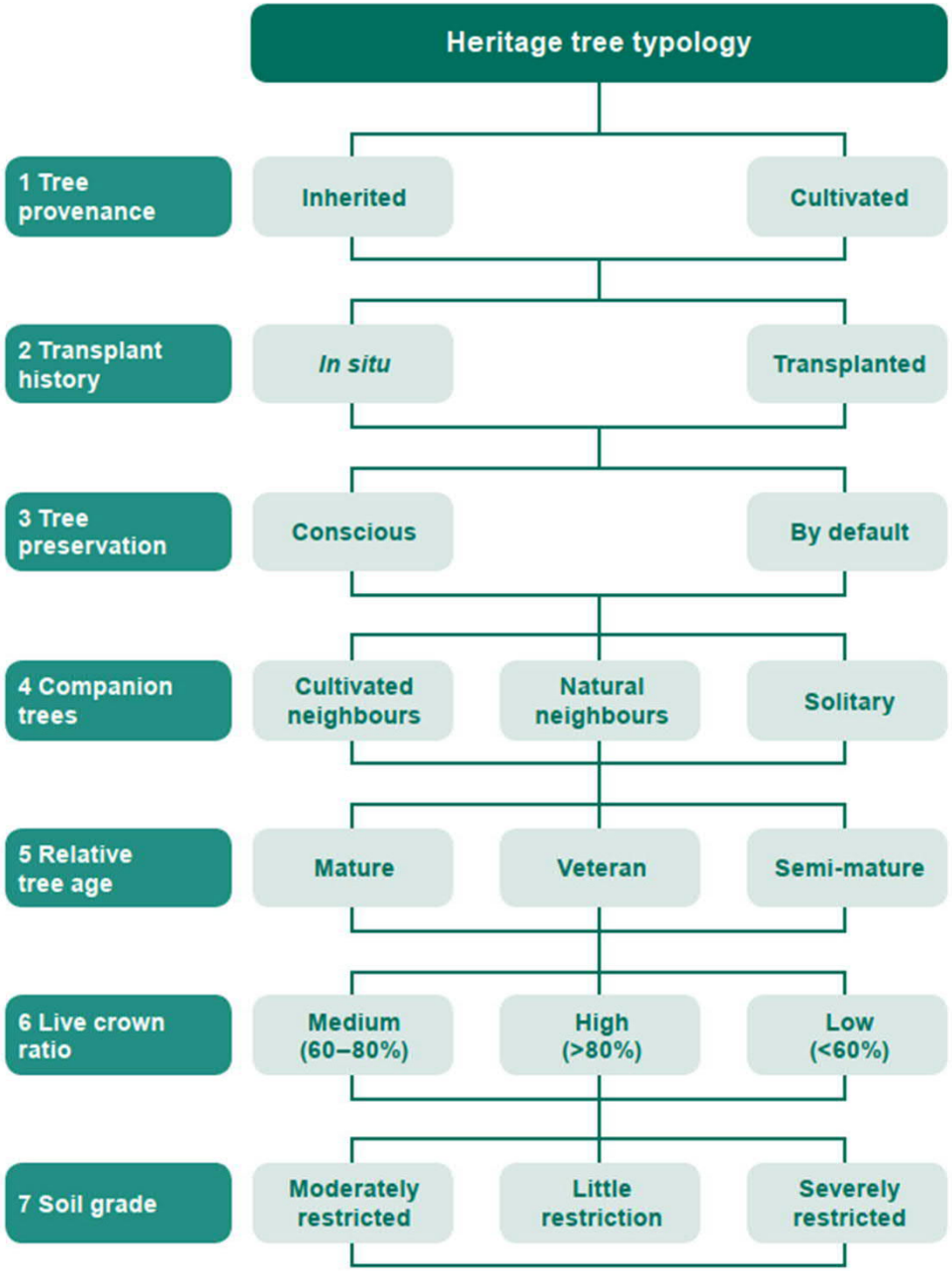

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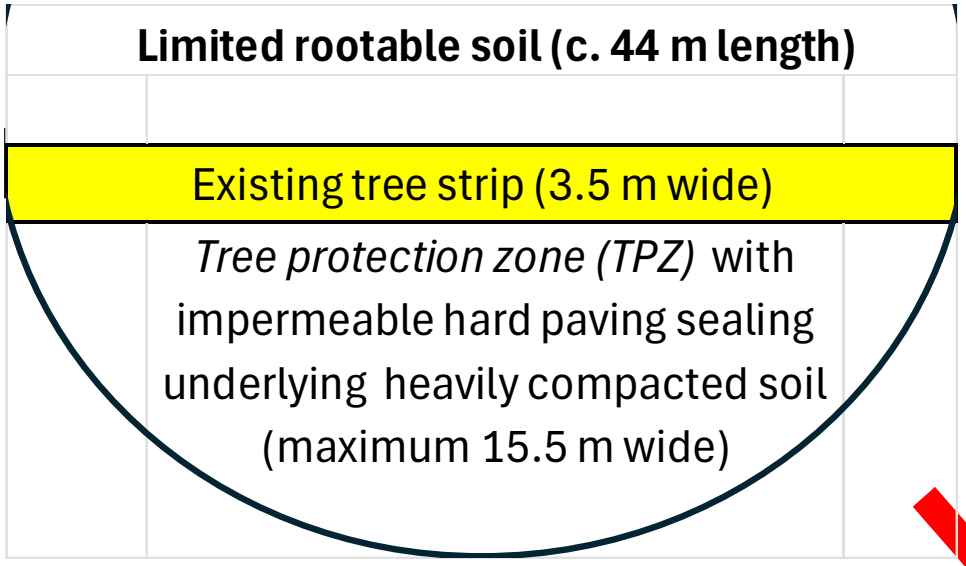
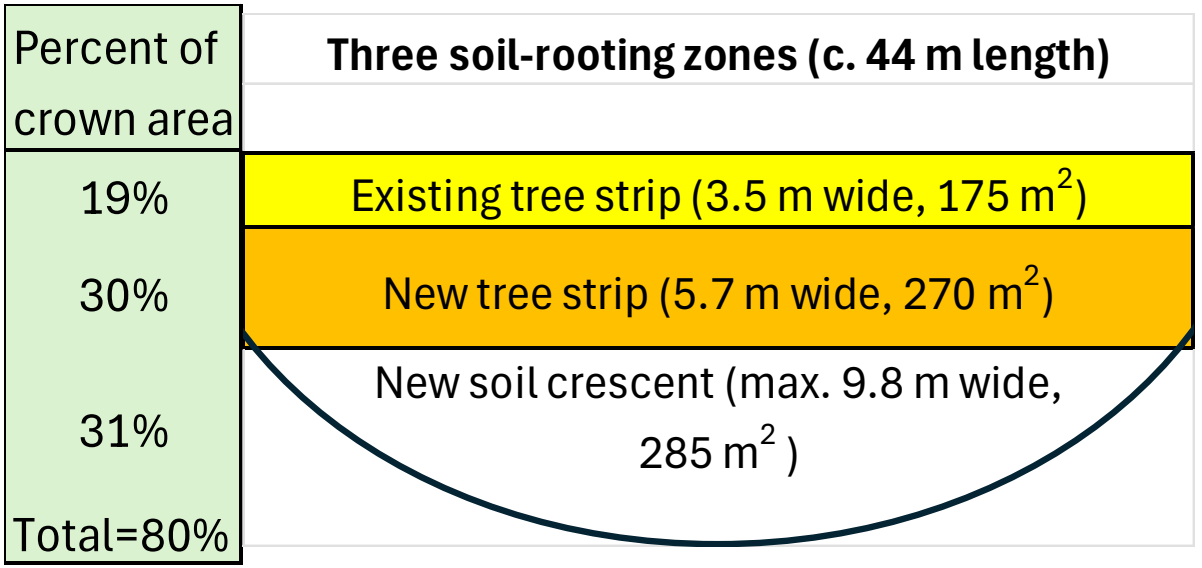
Slide 16. The bulk of the site is sealed by hard paving with underlying heavily compacted soil unsuitable for root growth. This proposal to improve soil conditions can significantly foster growth of subterranean roots and root stands.



The OVT desperately needs a new lease of life:
Solution: OVT *protection-cum-rehabilitation scheme* by improving soil volume, connectivity and quality

Increasing the rootable soil area by over four times from 19% of crown area to 80%

Devoting 49% of the 555 m^2 designated tree protection zone (TPZ) for exclusive use by the OVT

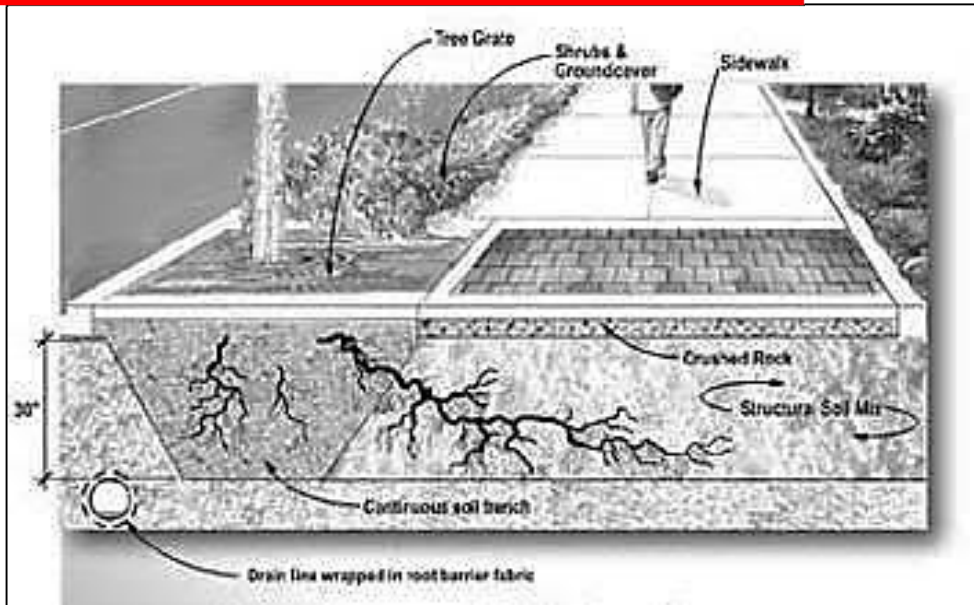


Slide 17. Application of rootability rehabilitation: Root trench connection to adjacent soil areas.

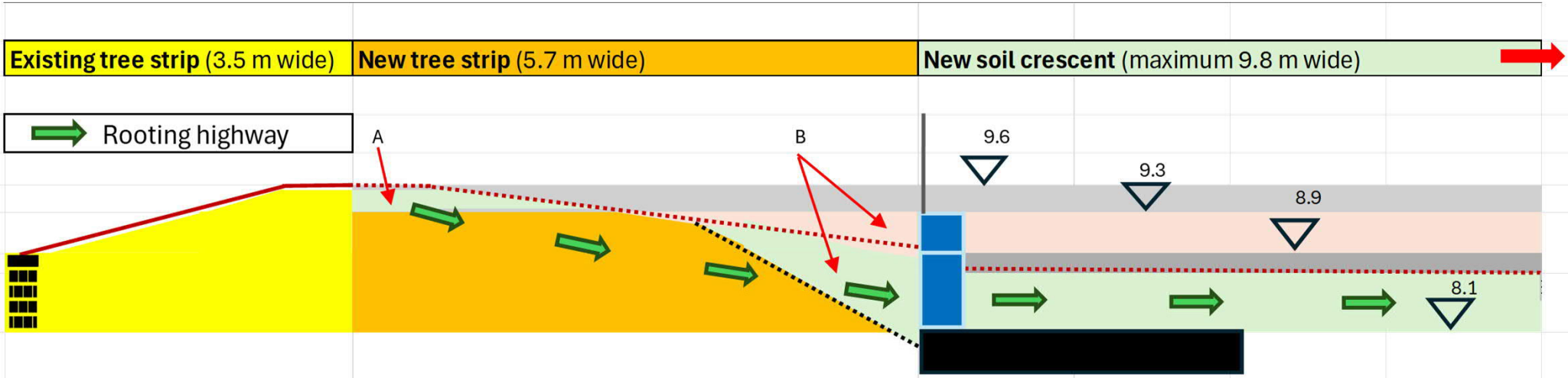
6	***Ex-situ pit or strip connection with proximal green patch by subsurface soil conduit or soil corridor***								
6a	Pit original–conduit linkage to green patch	✓	✓	✓	✓		✓	✓	
6b	Pit elongation–conduit linkage to green patch	✓	✓	✓	✓	✓	✓	✓	
6c	Pit enlargement–conduit linkage to green patch	✓	✓	✓	✓	✓	✓	✓	
6d	Pit original–corridor linkage to green patch	✓	✓	✓	✓		✓		✓
6e	Pit elongation–corridor linkage to green patch	✓	✓	✓	✓	✓	✓		✓
6f	Pit enlargement–corridor linkage to green patch	✓	✓	✓	✓	✓	✓		✓

Application of the soil continuity principle

Connect the three soil-rooting zones



Slide 18. Proposed design for rootable soil expansion and improvement in the three soil-rooting zones: At the balustrade footing position.

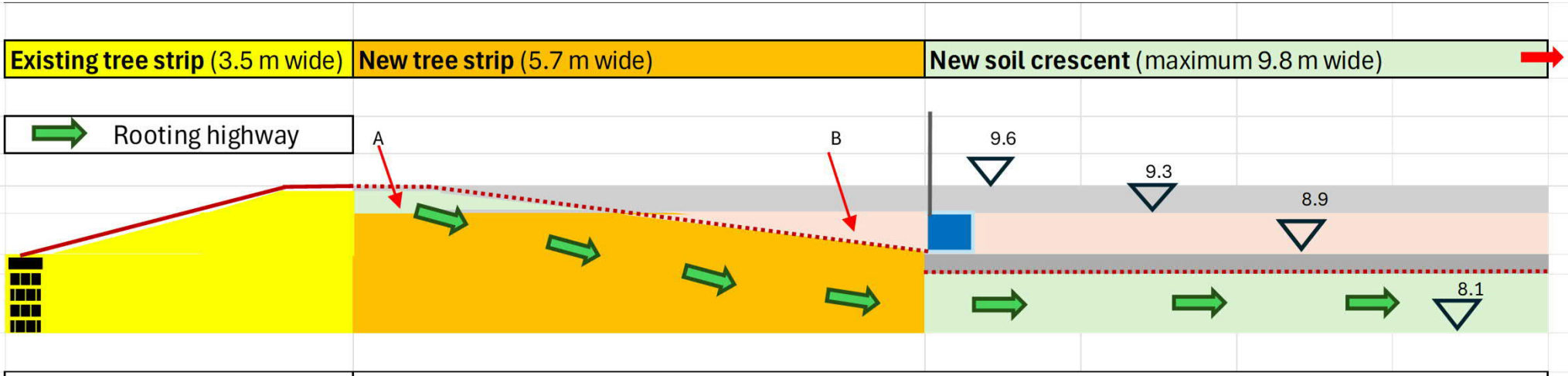


Retain existing soil surface	Form new soil surface (dotted red line) and expand rootable soil area under TPZ with improved soil	
Do not disturb the moderately compacted existing soil on the slope, which is filled with abundant subsurface roots and root stands.	Remove existing paving and the soil on the right side (B area pink and green) to form the required 30 degree slope (black dotted line) for safe excavation to install the blustrade footing; add new soil on left side (A area); after builidng the balustrade, refill with fabricated soil mix (B area green); improve the soil by adding vertical mulching and lateral root paths.	Remove existing paving and underlying compacted soil down to 8.1 mPD; build the balustrade footing (black feature, dimensions to be determined); install the soil cells (in gree area); fill the interstices of soil cells with good-quality tree growth medium (a fabricated soil mix); install the new hard paving (dark gray layer).

Site-specific design:
Expand soil catchment area
Establish soil continuity and connectivity
Improve rootable soil quality

Interface between New tree strip and New soil crescent:
7 posts each 0.4 m thick = 2.8 m
(2.8 m/44.0 m) x 100 = 6.4%, very limited obstacle to root growth

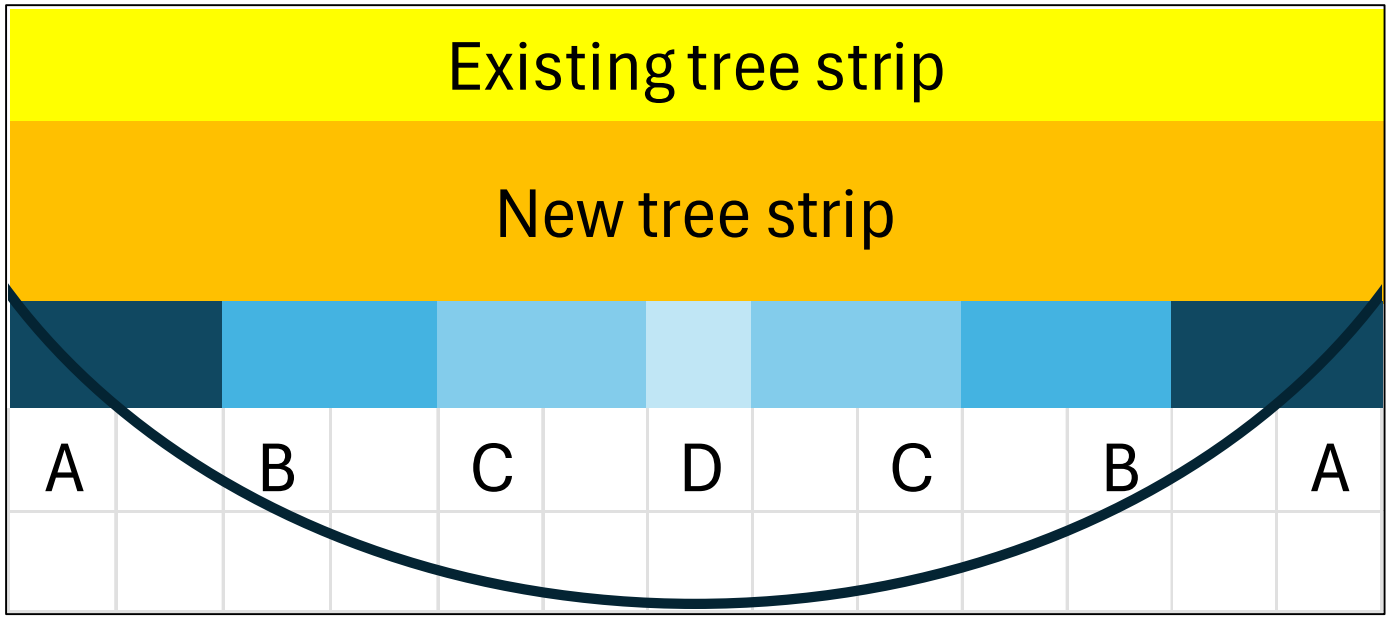
Slide 19. Proposed design for rootable soil expansion and improvement in the three soil-rooting zones: Between the balustrade footing position.



Retain existing soil surface	Form new soil surface (dotted red line) and expand rootable soil area under TPZ with improved soil	
Do not disturb the moderately compacted existing soil on the slope, which is filled with abundant subsurface roots and root stands.	Remove existing paving and the soil on the right side (B area); add new soil on left side (A area); improve the soil by adding vertical mulching and lateral root paths.	Remove existing paving and underlying compacted soil down to 8.1 mPD; build the balustrade beam (black feature); install the soil cells (in gree area); fill the interstices of soil cells with good-quality tree growth medium (a fabricated soil mix); install the new hard paving (dark gray layer).

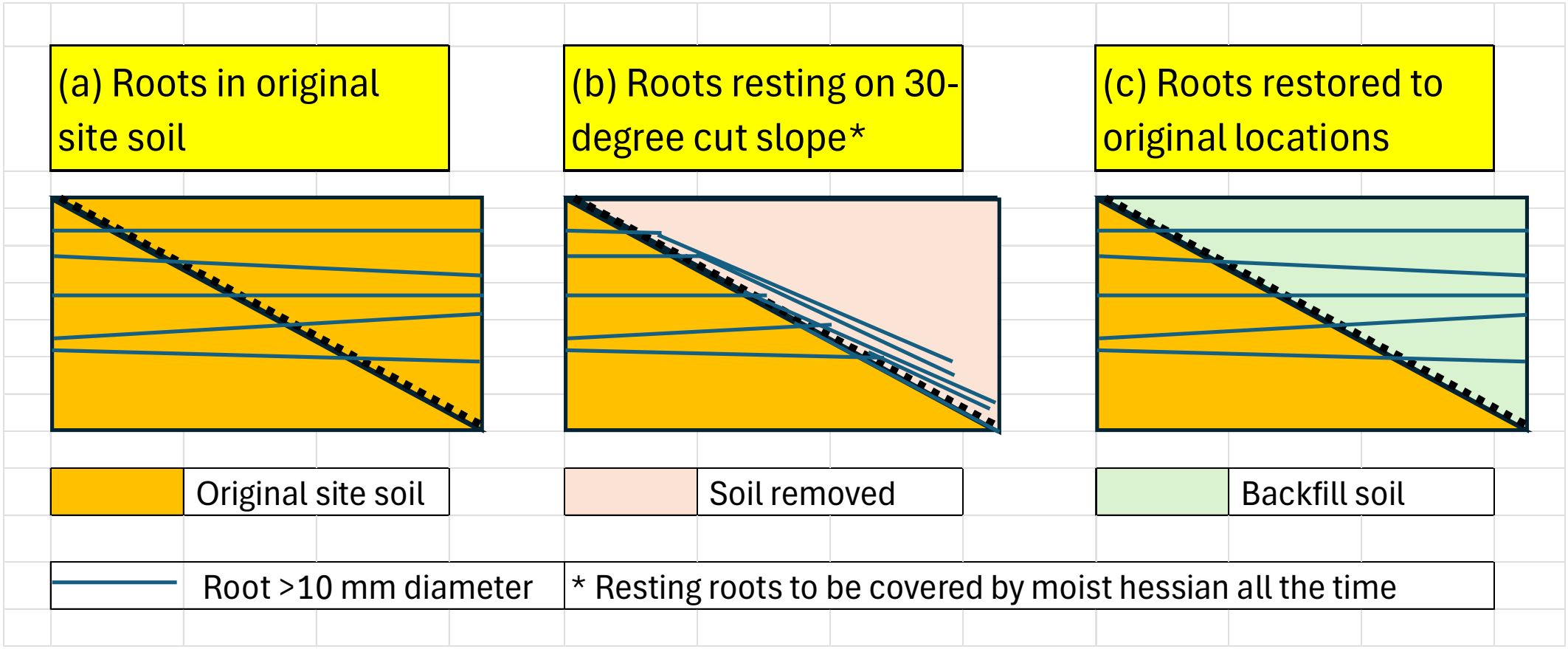
Site-specific design:
Expand soil catchment area
Establish soil continuity and connectivity
Improve rootable soil quality

Slide 20. Proposed phased soil excavation to install seven balustrade footings at the northern edge of the New soil crescent, in sequence from A to D, with a three-week recuperation interval between consecutive phases.



Site-specific design:
Extend soil excavation duration
Insert three-week recuperation gap
Minimise impact on OVT
Keep roots >10 mm diameter for excavation in the New tree strip
Refill excavation in the New tree strip promptly with high-quality soil

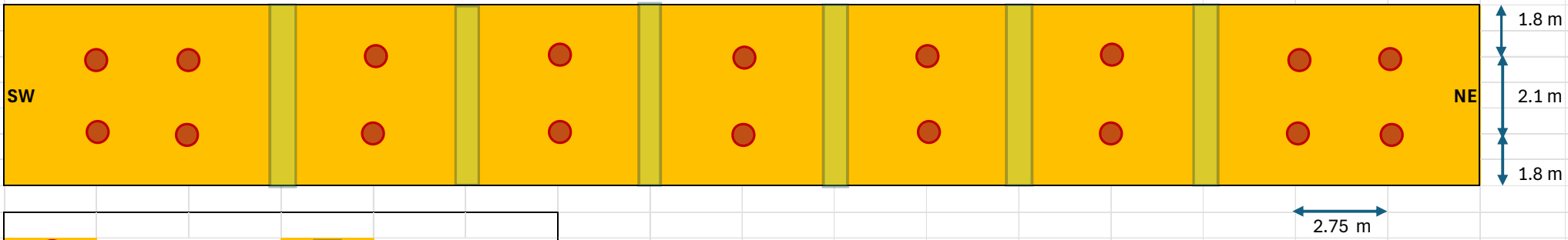
Slide 21. Proposed method to preserve roots in the southern portion of the New tree strip during excavation to form the 30-degree slope to install the balustrade footings.



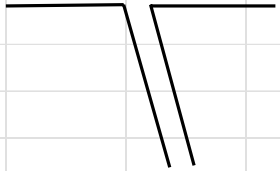
Application of root protection measures:
Salvage roots in the excavated soil
Keep soil moist all the time under hessian cover
Backfill with high-quality soil as soon as possible

Slide 22. Schematic design of vertical mulching and lateral root path to be installed at the New tree strip.

(a) Installation patterns of 18 vertical mulching holes and 6 lateral root paths between the balustrade footings



(b) Section of vertical mulching hole



10 cm diameter cylindrical hole, remove soil in the hole and fill with a fabricated soil mix
70 cm length
20 degree inclination towards the New soil crescent

(c) Section of lateral root path



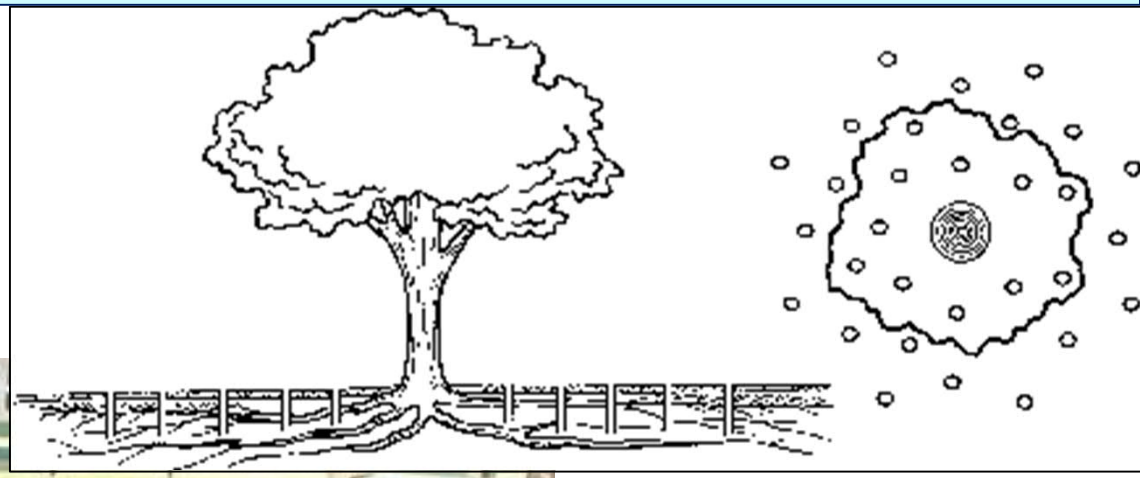
15 cm width trench, remove soil in the trench and fill with a fabricated soil mix
70 cm depth
Trench perpendicular to the New tree strip

(d) Excavation method

An Air Spade equipment (https://www.airspade.com/) is preferred. Special precautions must be taken to avoid aerial spread of suspended fine soil particles during excavation. The proprietary air suction equipment must be used in conjunction with the supersonic pneumatic excavator. All structural roots >10 cm diameter must not be cut or harmed during excavation. Before filling with fabricated soil mix, these exposed roots should be kept continuously moist by water sprays.

Site-specific design:
Improve soil quality
Channel roots towards New soil crescent

Slide 23. An example of rootability rehabilitation: Vertical mulching by air spade.





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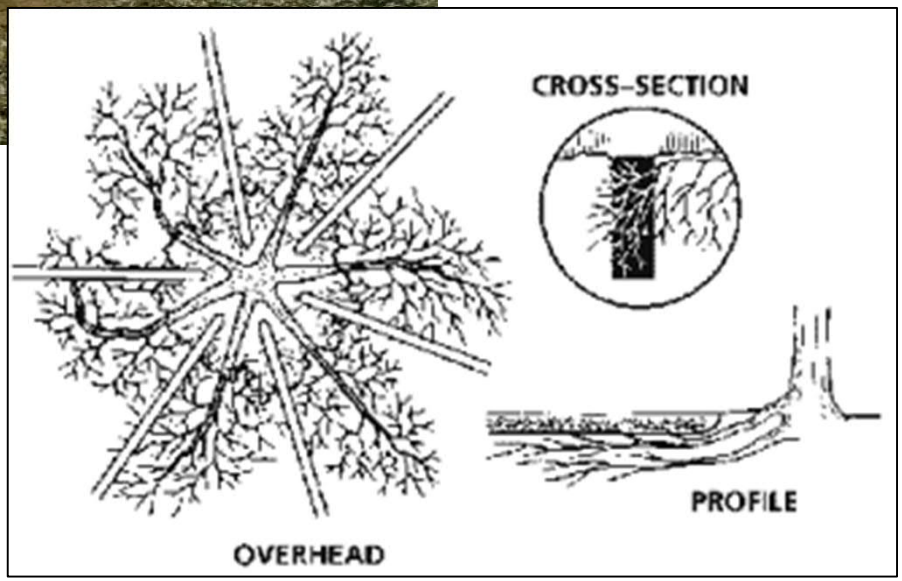
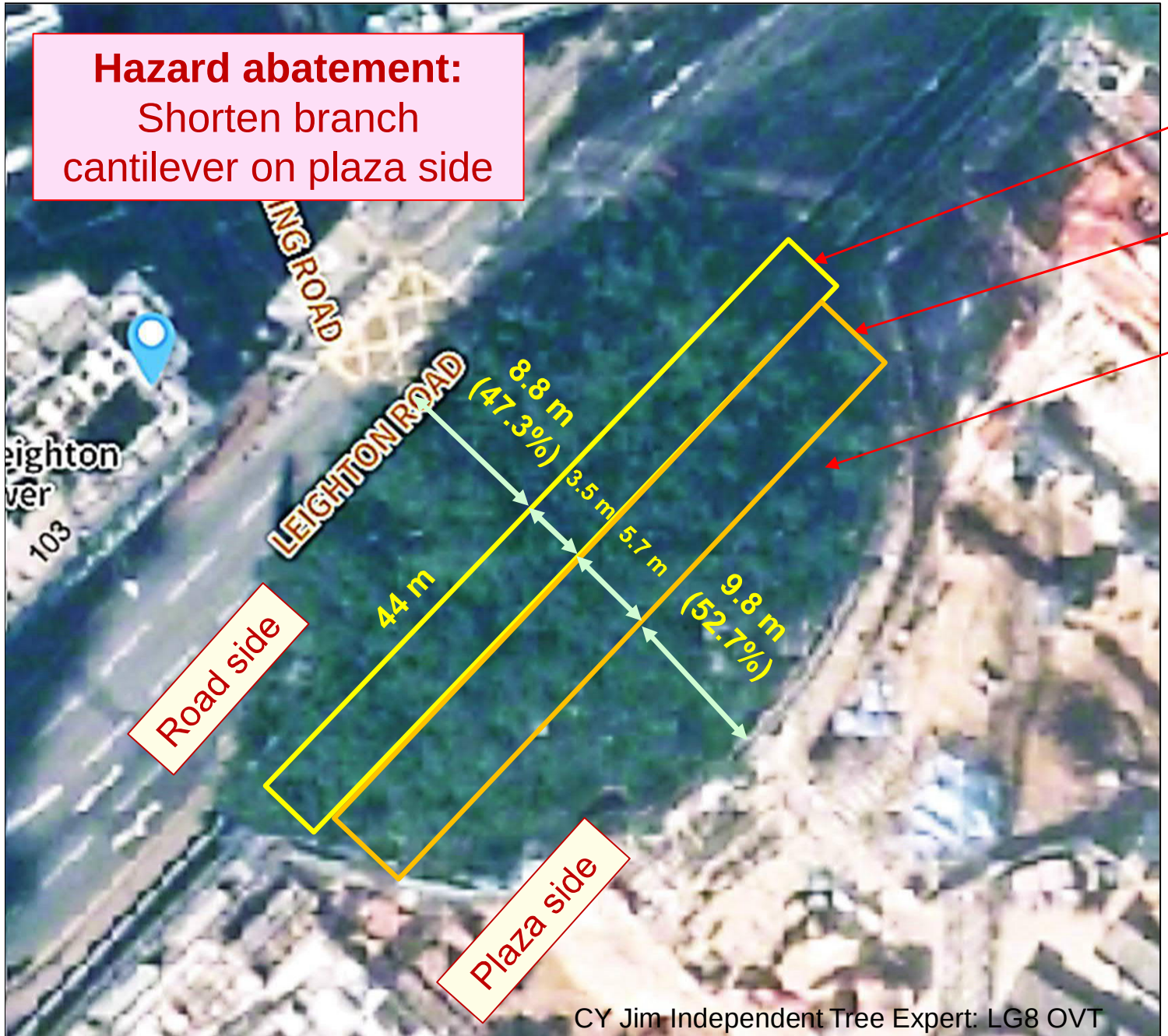
Slide 24. An example of rootability rehabilitation: Trenching by air spade.





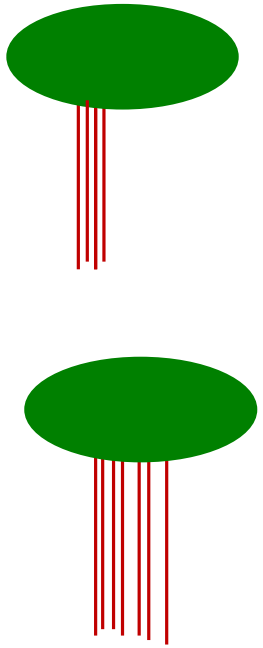
Slide 25. The open soil area available for root stand development will be be increased by nearly four times to significantly enhance the stability and safety of the large OVT hanging above the future plaza.



Existing tree strip

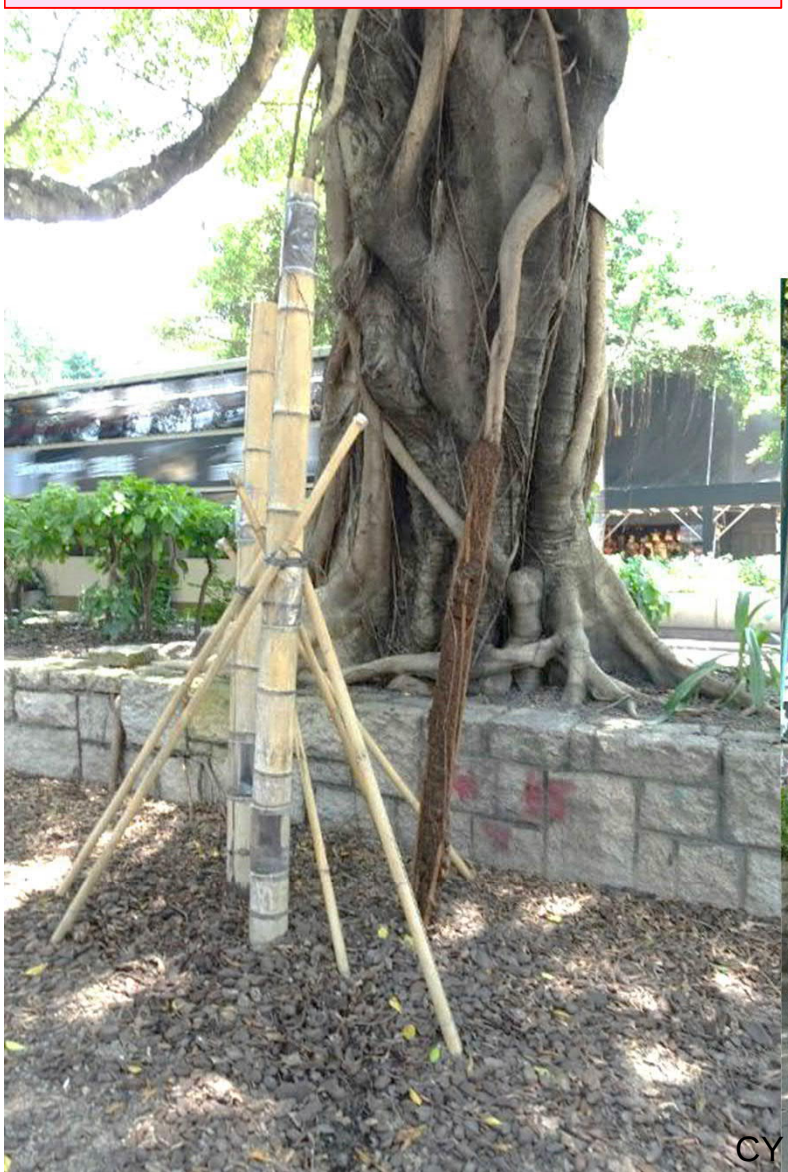
New tree strip

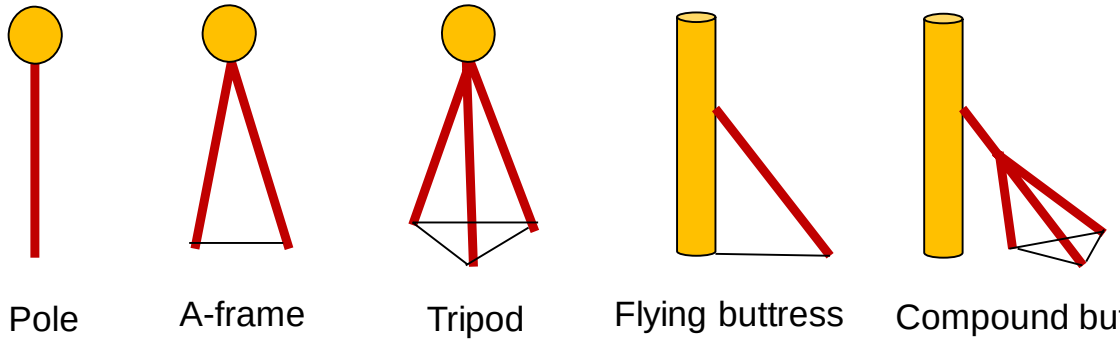
New soil crescent

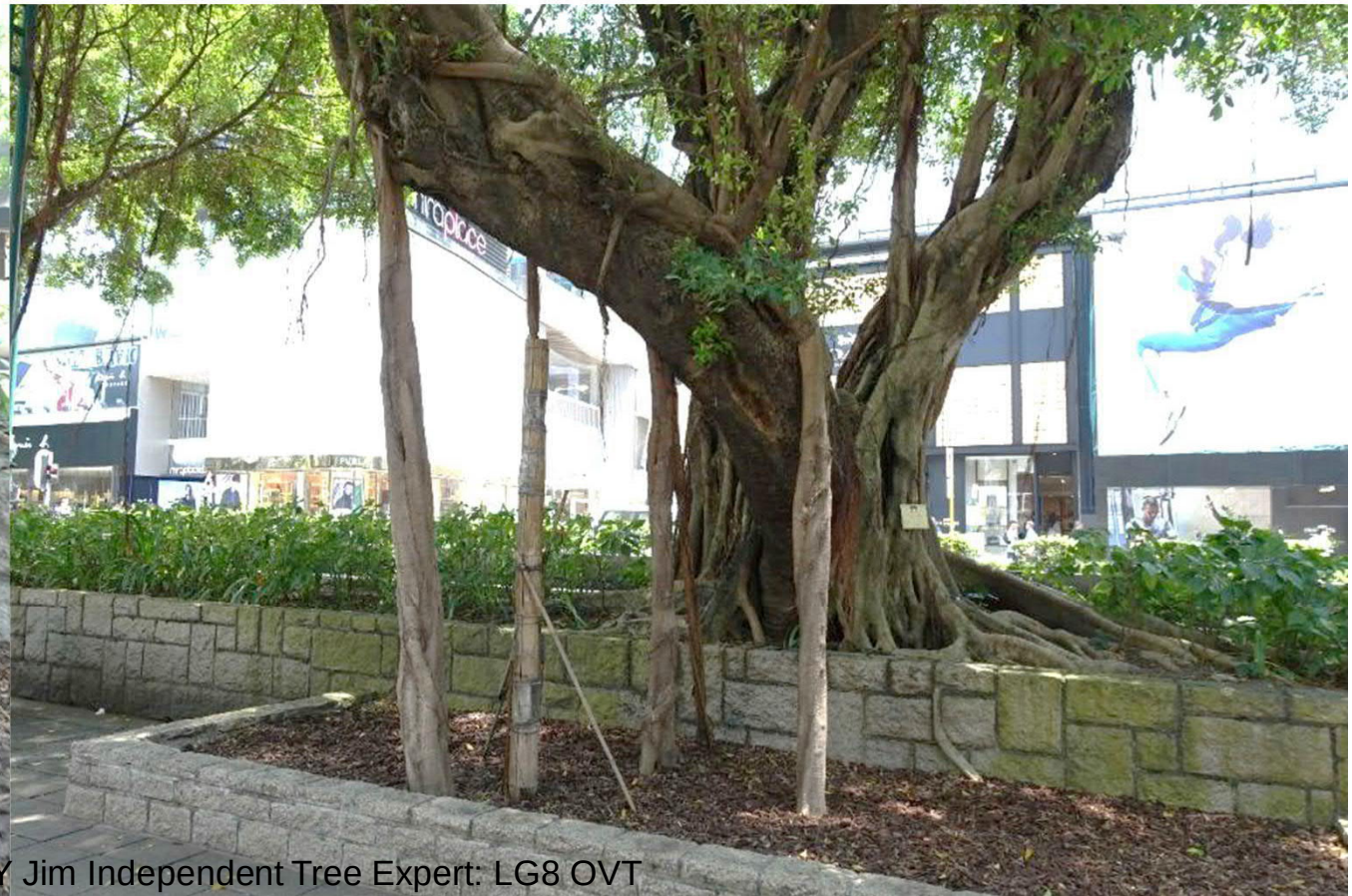


Slide 26. Proposed innovative sculpting of future root stands in the New tree strip to reinforce the mechanical support of the OVT crown situated above the plaza.

Innovative application of tree science: Aerial root lignification and inosculation







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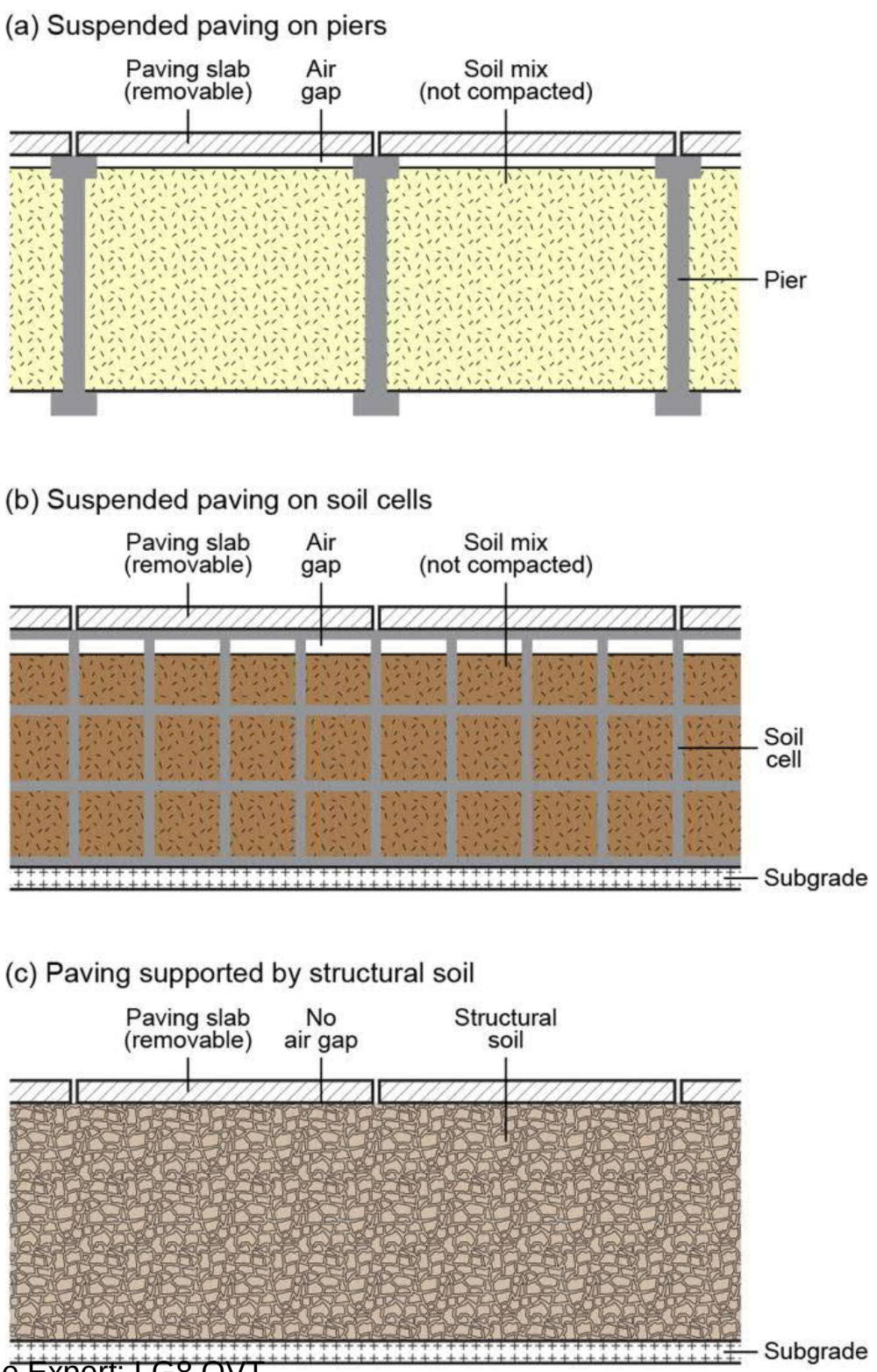
Slide 27. Three available techniques for suspended paving to improve soil conditions for tree growth.

Adopting the modern soil cell method to co-use the plaza land:

- Supporting the paving for hard landscape
- Accommodating uncompacted soil underneath for soft landscape to foster root growth

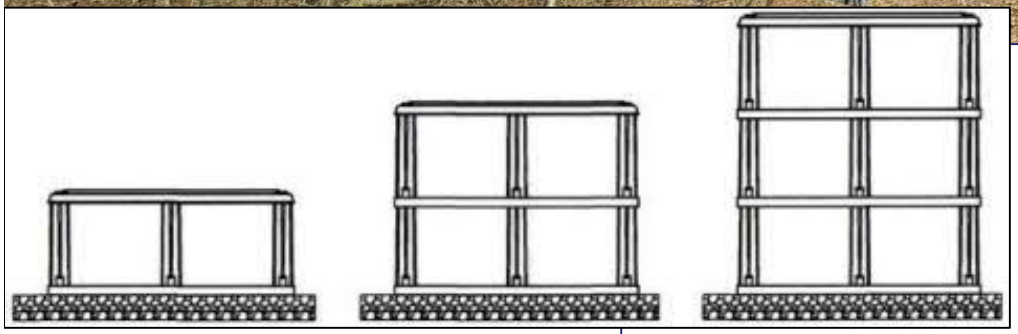


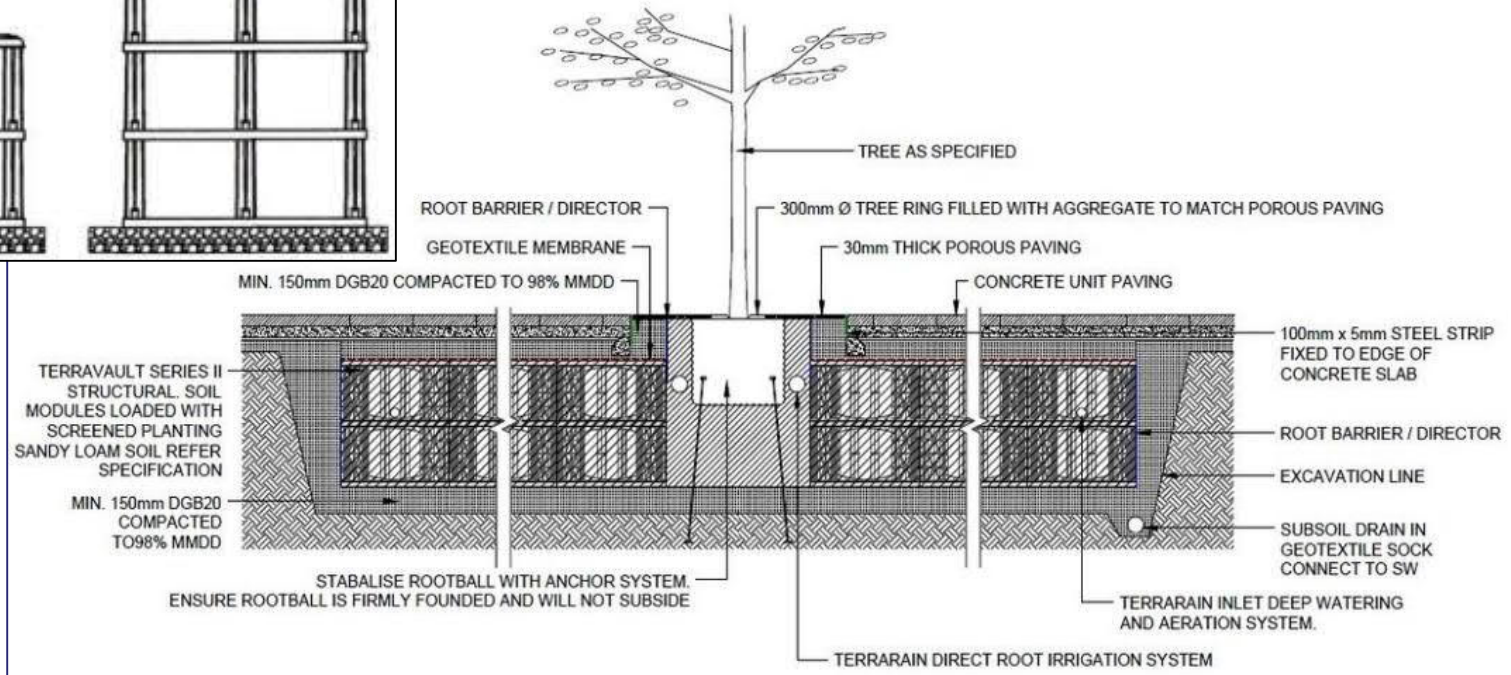
Slide 28. Some examples of soil cells.







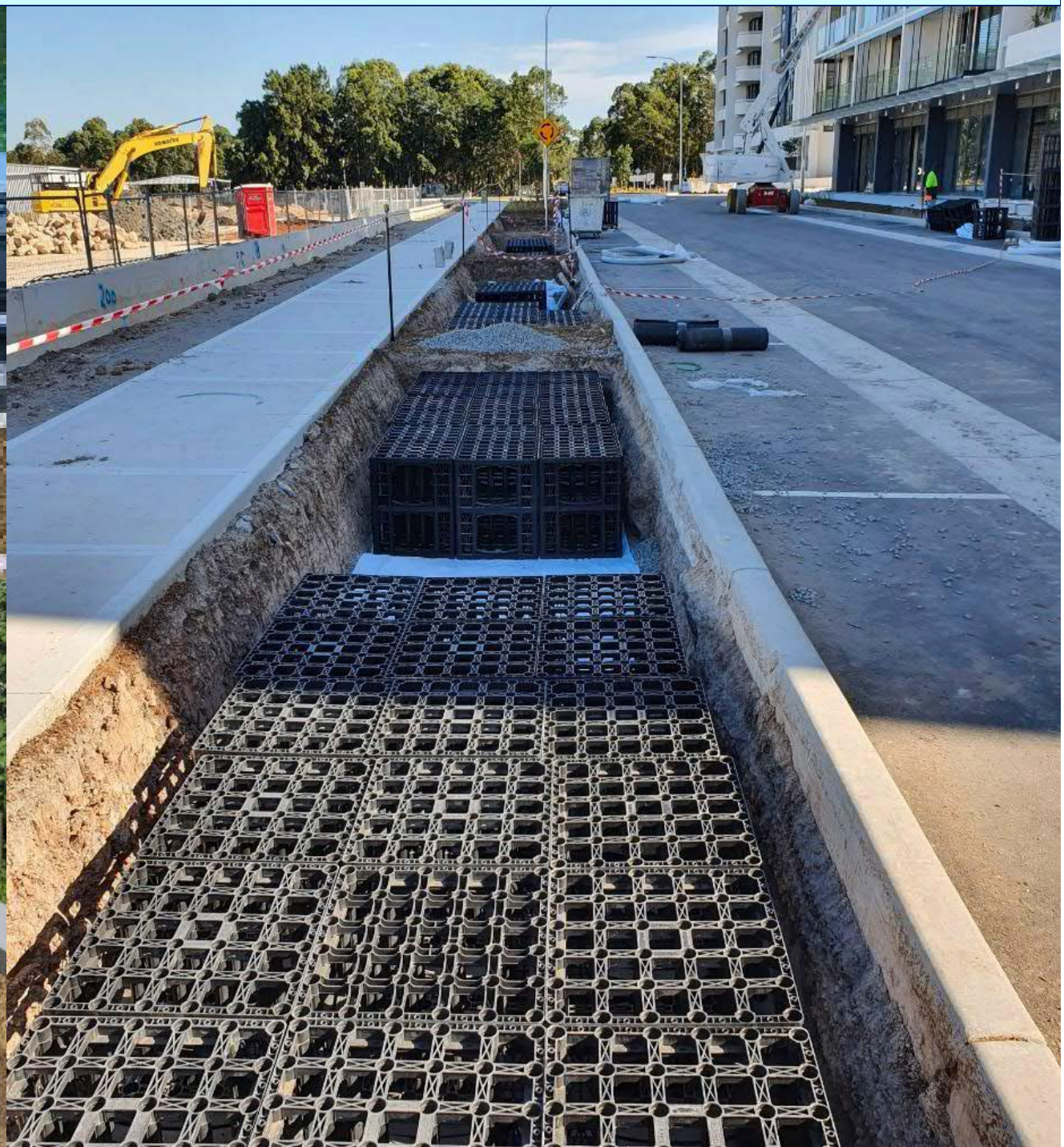




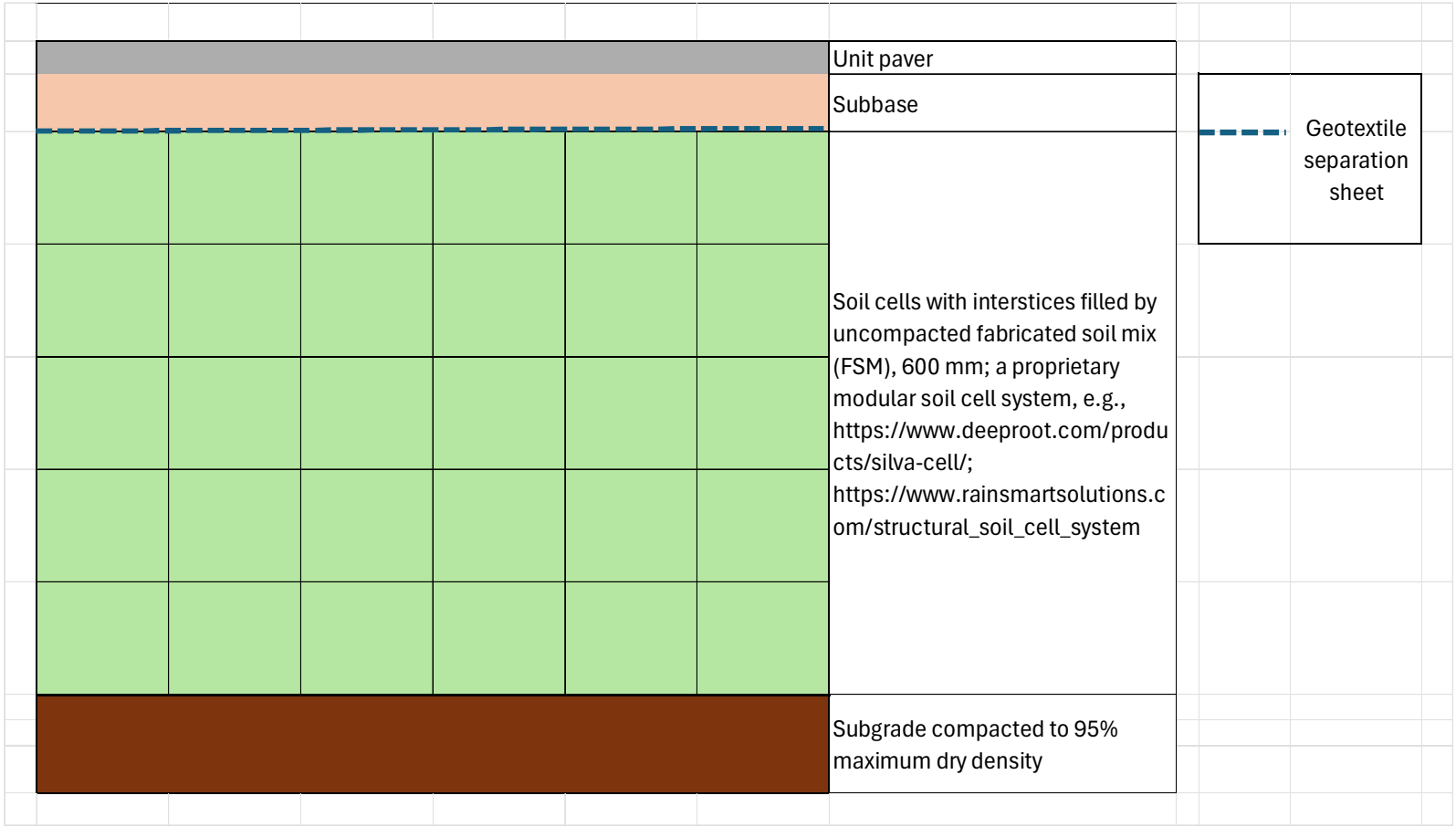
Slide 29. Examples of soil cell applications at road areas demanding a high load bearing capacity.







Slide 30. Schematic section of the soil cell to be installed at the New soil crescent.



Application of modern soil cell technique:

Support the paving and pedestrian load

Provide room for uncompacted soil

Allow rainwater and air infiltration

Facilitate soil management

Slide 31. Synopsis of the substantial improvements in soil volume and quality by soil treatments tailored-made for the New tree strip and New soil crescent.

	Soil-rooting zone	Zone dimension			Soil origin	Soil sealing		Soil compaction	
		Width (m)	Area (m^2)	Area (%)		Present	Future	Present	Future
1	Existing tree strip	3.5	175	100	Original	Open	Open	Medium	Medium
2	New tree strip	5.7	270	154	Improved	Sealed	Open	High	Medium to high
3	New soil crescent	Max. 9.8	285	163	Replaced	Sealed	Permeable	High	Uncompacted
	Total		730	417					

	Soil-rooting zone	Soil quality		Soil porosity (%)		Root density		Root stand	
		Present	Future	Present	Future	Present	Future	Present	Future
1	Existing tree strip	Fair	Fair	38 (medium)	38 (medium)	Medium	Medium	Plenty	Plenty
2	New tree strip	Poor	Good	27 (low)	27 (low) & 50 (high)	Meagre	Medium	Nil	Plenty
3	New soil crescent	Poor	Excellent	27 (low)	50 (high)	Trace	High	Nil	Nil

Site-specific design:

Overcome present serious soil constraints

Enhance soil volume and quality significantly

Allow more growth of subterranean roots

Foster development of more root stands

A new lease of life for the OVT

Slide 32. Research informing practice:
Good quality growth medium to improve New tree strip and New soil crescent.

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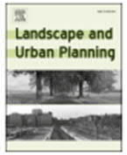

Research Paper

Improving soil specification for landscape tree planting in the tropics

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Landscape and Urban Planning (Jim 2021)

HIGHLIGHTS

- Tropical urban forestry beset by infertile soil demands dedicated soil specifications.
- Local and international specifications are critically reviewed to inform improvements.
- Critical concerns and general principles of soil specification design are elucidated.
- Selected soil attributes and assessment methods are justified in a new specification.
- The new specifications provide keystone and multiplier benefits to landscape plants.

ARTICLE INFO

Keywords:
Urban forest
Urban soil quality
Urban soil limitation
Fabricated soil mix
Soil specification
Knowledge transfer

ABSTRACT

Tree growth in urban areas is beset by multiple stresses, of which the soil component has imposed severe constraints. In the tropics, the inherently infertile and acidic soils present challenges that demand dedicated solutions. Yet, the key edaphic issues have remained poorly understood and often inadequately evaluated and improved. Where site soil is poor or absent, a soil specification usually prescribes a fabricated soil mix. Unfortunately, these documents frequently include non-essential attributes or exclude essential ones. The specified ranges and thresholds tend to detach from soil science concepts or are irrelevant to local conditions. Some projects would adopt specifications prepared for other local or international sites without modifications to match site requirements. Errors tend to be copied and propagated in different documents. Knowledge transfer from researchers to practitioners can improve the soil specifications to resolve a significant and chronic weakness in urban forestry. Five representative local documents and five from other countries were critically evaluated in detail to distill 21 principal concerns and 20 principles of soil specification design. The knowledge base informed the development of a rationalized and improved soil specification for urban forestry in the tropics. It included the fabricated topsoil mix and fabricated subsoil mix to meet most planting needs, and a dedicated fabricated lightweight mix for planting on rooftops with limited load-bearing capacity. Further explanations justified using local raw materials, soil sampling strategy, soil properties, recommended ranges, and standard laboratory testing methods. Other tropical regions can modify the proposed specification to fit local circumstances and specific landscape needs.

1. Introduction

Soil plays a crucial role in the formative and sustainable growth of landscape trees. The significant departure from nature in cities demands extra efforts to maintain urban trees (Spirn, 1984). Tree growth problems are often associated with poor urban soil quality and restrictive soil volume (Patterson et al., 1980; Craul, 1991; Schindelbeck et al., 2008). The suboptimal tree performance brings cascading consequences on landscape quality, useful life span, tree hazard, management burden, resource utilization and ecosystem service. In many places, the soil remains a tenaciously weak link in arboricultural practice (Jim, 2017, 2019a; Hilbert et al., 2019).

Urban forestry practice can identify tough trees for challenging situations, as well as improve site and soil conditions to avoid stressing trees (Ware, 1988; Kumar & Hundal, 2016). Urban soils suffer from considerable spatial variations and persistent problems (Pavao-Zuckerman, 2008; Greinert, 2015). Trees planted in paved and impermeable areas encounter acute restrictions due to surface sealing, low soil quality and limited soil volume (Mullaney et al., 2015). The widely installed tree pits are often too small with highly confined rooting volume. In

Table 2
The proposed improved specification of growing media for tropical urban forestry.

	Attribute	Test method	Reference	Fabricated topsoil mix[a]	Fabricated subsoil mix[a]	Fabricated lightweight mix[a,b]
				FTM	FSM	FLM
A	***Components and mixing***					
1	Completely decomposed granite CDG (part m/m)	State in Declaration of Compliance		3	6	2
2	Mature compost (part m/m)	State in Declaration of Compliance	Brinton, 2000	1	1	1
3	Exfoliated vermiculite or substitute[c] (5–10 mm) (part m/m)	State in Declaration of Compliance		NA	NA	1
4	Fertilizer rate, slow release (g/m^3)[d]	State in Declaration of Compliance		100	50	100
5	Protection of delivered soil[e]			Required for >5 days of exposure to the elements	Required for >5 days of exposure to the elements	Required for >5 days of exposure to the elements
6	Stockpiling duration (week)[f]	State in Declaration of Compliance		0–4	0–4	0–4
7	Thorough mixing method for $<4\ m^3$	State in Declaration of Compliance		Manual blending is acceptable	Manual blending is acceptable	Manual blending is acceptable
8	Thorough mixing method for $>4\ m^3$	State in Declaration of Compliance		Rotary tumbler	Rotary tumbler	Rotary tumbler
9	Quality of blending	Visual inspection at various locations and depths		Visual inspection of every delivered soil batch to ensure homogeneous blending	Visual inspection of every delivered soil batch to ensure homogeneous blending	Visual inspection of every delivered soil batch to ensure homogeneous blending
B	***Qualitative traits***					
1	Material source information	Source of compost[g]		State in Declaration of Compliance	State in Declaration of Compliance	State in Declaration of Compliance
2	Consistence	USDA scheme	National Soil Survey Center, 2012	Free flowing, friable, non-plastic to slightly plastic, non-sticky to slightly sticky	Free flowing, friable, non-plastic to slightly plastic, non-sticky to slightly sticky	Free flowing, friable, non-plastic to slightly plastic, non-sticky to slightly sticky
3	Soil structure	USDA scheme	Ditto	Mainly granular (>90%)	Mixture of blocky and granular	Mainly granular (>90%)
C	***Qualitative traits: negative vetting***					
1	Free from deleterious ingredients	Synthetic, harmful and undesirable substances[h]		Required	Required	Required
2	Solid debris					
	> 2 mm (% m/m)	Dry sieving of >2 mm fraction		<5	<5	<5
	> 25 mm (% m/m)			Nil	Nil	Nil
3	Free from toxic or obnoxious odour or fumes	Olfactory detection at the time of soil delivery to the site		Required	Required	Required
D	***Quantitative physical limits***					
1	Stone content, general (any axis)					
	> 2 mm (% m/m)	Dry sieving of >2 mm fraction	Soil Survey Division Staff, 1993	<25	<25	<25
	> 25 mm (%, m/m)			<10	<10	<10
	> 50 mm (%, m/m)			Nil	Nil	Nil
2	Stone content, special (any axis, mm)[i]					
	> 2 mm (% m/m)	Dry sieving of >2 mm fraction	Ditto	<10	NA	<10
	> 25 mm (%, m/m)			Nil	NA	Nil
	Stone shape	Visual comparison with stone shape chart	National Soil Survey Center, 2012	No stone in angular and very angular categories	No stone in angular and very angular categories	No stone in angular and very angular categories
3	Soil particle size distribution	USDA scheme	Ditto			
	Sand (0.05–2.0 mm) (% m/m)	Hydrometer	Gee & Or, 2002	40–70	40–70	40–70
	Silt (0.002–0.05 mm) (% m/m)			15–35	15–35	15–35
	Clay (<0.002 mm) (% m/m)			10–30	10–30	10–30
4	Soil textural class	USDA scheme	National Soil Survey Center, 2012	Sandy loam, followed by loam and sandy clay loam	Sandy loam, followed by loam and sandy clay loam	Sandy loam, followed by loam and sandy clay loam
5	Bulk density (Mg/m^3)	Core method, cylinder minimum 5 cm diameter and 10 cm height	Grossman & Reinsch, 2002	1.2–1.4	1.2–1.4	1.2–1.4
6	Aggregate stability (% m/m)	Wet aggregate stability	Nimmo & Perkins, 2002	>75	>75	> 75
E	***Quantitative chemical limits***					
1	pH	1:2.5 soil:water extract, glass electrode	Thomas, 1996	5.5–7.0	5.5–7.0	5.5–7.0

(continued on next page)

CY Jim Independent Tree Expert: LG8 OVT

Slide 33. Calculated soil porosity volume and equivalent porosity and rootable soil area of the three soil-rooting zones after soil improvement or replacement.

Soil-rooting zone	Width (m)	Area (m^2)	Tree rooting depth (m)	Soil volume (m^3)	Estimated bulk density (kg/m^3)[a]	Porosity (%)[b]	Porosity volume (m^3)	Equivalent porosity (%)	Equivalent rootable soil area (m^2)[d]
1. Existing tree strip	3.5	120	1.0	120	1650	37.7	45.2	100.0	122.0
2. New tree strip	5.7	230	1.0	230	1935	37.7	86.7	191.7	233.8
3. New soil crescent	9.8[e]	280	0.6	168	1330	50.0	84.0	185.7	226.5
Total		630		518			216.0	477.3	582.4
Increase (%)[f]		525		432			477.3	477.3	477.3

[a] The soil in the existing tree strip is somewhat compacted to stabilize the slope, with an estimated bulk density of 1650 kg/m^3 and 37.7% porosity. For the new tree strip that occupies the existing sports ground with hard paving, the underlying subbase is assumed to be compacted to 90% of maximum dry density. With a common particle density of 2650 kg/m^3 and a maximum dry density of 2150 kg/m^3, the bulk density is calculated to be 1935 kg/m^3, with 27% porosity. The soil mix to be placed in the new soil crescent is not compacted to provide optimal conditions for root growth, with a bulk density of 1330 kg/m^3 and 50% porosity.

[b] The formula to calculate porosity in soil physics is: Porosity = 1 - (Bulk density/Particle density) x 100.

[c] The formula to calculate the porosity volume of a soil-rooting zone is: Porosity volume = Soil volume x (Porosity/100)

[d] The equivalent rootable soil area uses the existing tree strip soil as the baseline to calculate the contribution of the additional porosity volume of the new tree strip and new soil crescent.

[e] the new soil crescent has a base length of 44 m and a width (approximate radius) of 12 m.

[f] The increase (%) uses the existing tree strip as the baseline to calculate.

Site-specific design:

Considerable increase in soil porosity to pump-prime root growth

Slide 34. Research informing practice: Critical contribution of soil porosity to tree growth.

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Porosity of roadside soil as indicator of edaphic quality for tree planting

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Ecological Engineering (Jim 2018)

ARTICLE INFO

Keywords:
Urban soil compaction
Roadside tree pit
Soil quality deficit
Pore size distribution
Critical pore-volume threshold
Continuous coarse matrix principle

ABSTRACT

Roadside tree pits commonly suffer from small size, poor soil, and heavy compaction. Their three soil types with different properties, respectively site soil, backfill and rootball, could constrain tree establishment and long-term growth. Sixty-nine soil samples were taken from 19 tree pits, with multiple artificial layers sampled separately, at roadside sites in Hong Kong. They were analyzed for profile characteristics, pH, bulk density and particle-size distributions. Pores were divided by into three classes: (1) unavailable moisture UM at < 0.2 μm (also known as micro-pores); (2) available water AW at 0.2–60 μm (meso-pores); and (3) and air capacity AC at > 60 μm (macro-pores). Critical pore-volume thresholds, namely extreme, marginal and optimal, assessed soil-porosity quality. Site soils were heavily compacted with < 40% and < 30% total porosity, denoting respectively marginal and extreme thresholds, equivalent to bulk density exceeding 1.6 and 1.9 Mg/m^3. The upper soil zone was more compacted than middle and lower zones to generate undesirable surface sealing. Backfill and rootball soils had less stressful porosity and bulk-density limitations. Long-term root growth into site soil would be hampered to suppress tree health and stability. The excessively sandy texture, upon compaction to a certain degree, generated a continuous coarse matrix. It established inter-granular contacts and high load-bearing capacity to arrest further compaction. Some AW pores could be sustained for available-water storage to support tree growth. The findings could inform porosity specification in urban soil management to foster roadside tree performance.

1. Introduction

1.1. Urban greening and soil limitations

With increasing population and preference to live in cities, urbanization has progressed at a fast pace in various places. Many cities in developing countries are expanding by sprawling into green fields or raising development intensity in urbanized areas. Some cities in the developed world have adopted densification of built-up lands by infilling (Lehmann, 2010). As cities are becoming more compact, the attendant problems of degraded environmental quality and livability have aggravated. The urban heat island effect, poor ventilation and low air quality have become common urban maladies. Municipal administrations are attempting to prevent or cure them (Burton, 2002; OECD, 2012; Shi et al., 2016).

Urban greening offers a cost-effective way to improve urban livability and sustainability. A comprehensive urban green infrastructure has been advocated by planting trees and associated vegetation in a city-wide green-space system (Benedict and McMahon, 2002). Greenery can be inserted into the urban matrix through different means (Svendsen et al., 2012; Young and McPherson, 2013). A green infrastructure typology could include inherited and created natural areas, as well as conversion from brown fields and gray fields of building roofs and walls (Jim, 2017a). The roadside strip has been widely enlisted for linear tree planting to penetrate cramped neighborhoods. For some compact built-up areas, the roadside is often the only plantable space for trees.

Roadside planting areas, however, are beset with multiple constraints and stresses to tree growth (Jim, 2017b; Richter, 2007). Above ground, trunk and crown expansion could be physically obstructed by adjoining buildings and their appurtenances, street lighting, traffic signs, advertisement signs, railings, fire hydrants, street furniture, vehicle clearance, sightline clearance for traffic safety, and adequate passage for pedestrian movement. Below ground, the restrictions are equally stifling. If a dedicated tree strip of sufficient width is designated with freedom from underground utility lines and installations, the soil condition for tree growth is usually more favorable (Bieller, 1992). Nevertheless, many roadside sites are not wide enough to furnish it. Instead, inadequate tree pits are often dug in the footpath to induce stifled tree growth, establishment failure, premature decline, and high mortality (Haan et al., 2012; McGrath and Henry, 2014).

Worldwide, millions of roadside trees are accommodated in tree

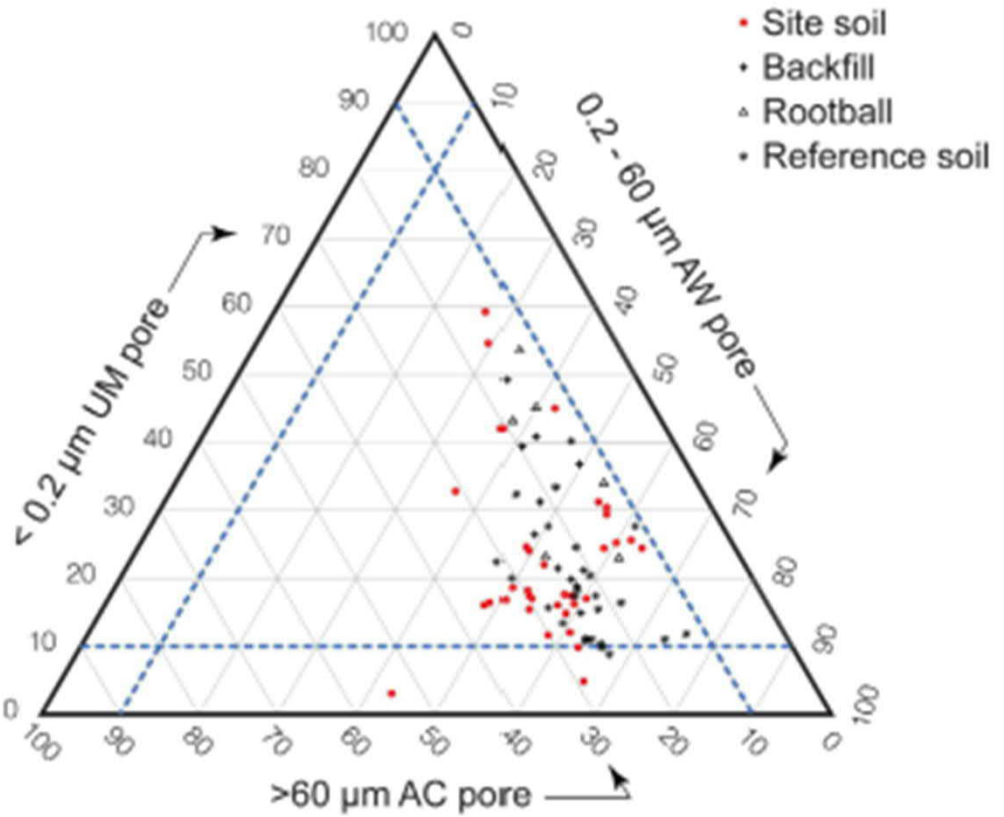
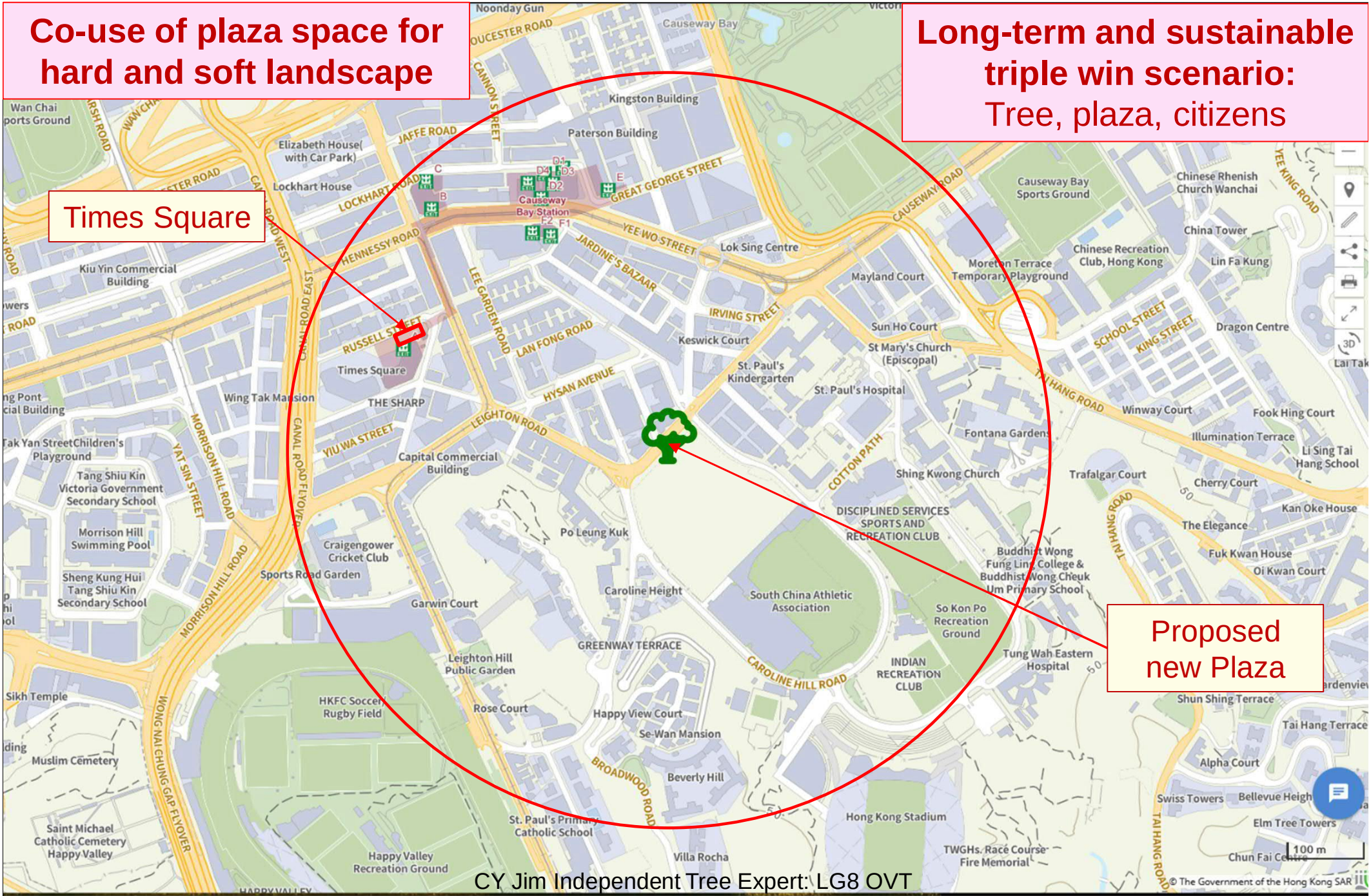


Fig. 2. The porosity triangle showing distributions of four types of soil samples by three cardinal pore-size classes, respectively unavailable moisture (UM), available water (AW) and air capacity (AC) pores. The 10% extreme critical pore-volume thresholds (CPT) for the three pore-size classes have been marked as dashed blue lines. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

Slide 35. Only one small town square is found within 500 m radius (covering 78.54 ha) of the proposed plaza in the heavily patronised commercial precinct.



CY Jim Independent Tree Expert: LG8 OVT

Slide 36. Summary of the proposed OVT protection-cum-rehabilitation scheme.

(1) The tailor-made OVT *protection-cum-rehabilitation scheme* is based on detailed tree and site assessment and understanding of the unique banyan growth habit.
(2) The open soil area compared to the large tree with a sprawling crown is piteously tiny and grossly inadequate.
(3) Despite the legendary banyan vigour and tenacity, the tree's growth form has been severely constrained and shaped by the narrow Existing planting strip.
(4) The tree has exhausted the capacity of the limited soil body, and its growth has reached the allowable upper ceiling.
(5) With evident tree decline in recent years and a dim prognosis, keeping existing growth conditions largely unaltered or applying routine treatments cannot help.
(6) The emaciated OVT demands innovative rehabilitation measures to arrest its decline and revive its health.
(7) The only soil improvement area lies in the Plaza, but it has heavily compacted soil sealed by impermeable paving, which is unsuitable for root growth.
(8) This Scheme adopts innovative soil rehabilitation by improving rootable soil area, soil continuity, connectivity, and quality.
(9) It achieves synergies among the tree, Plaza, and citizens, and co-existence among tree conservation, town planning, and urban amenity.
(10) It offers a rare opportunity to accomplish a substantial OVT rehabilitation case in the dense core of Hong Kong.
(11) It furnishes a fine example of co-using a piece of precious urban land in our compact city for both hard and soft landscaping.

End of presentation
Thank you

Questions and comments are welcome

URBIS Limited
Planning, Urban Design, Landscape, Golf & Environmental Consultants

By Hand and by Email (tpbsubmission@pland.gov.hk)

Our Ref : HDL3-DM-2368-250464L
23 September 2025

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

Attention: Secretary of Town Planning Board

Dear Sir/Madam,

Section 16 Planning Application under the Town Planning Ordinance (Cap.131) for Submission of Layout Plan in "Commercial (2)" Zone for Patchway Holdings (HK) Limited at Inland Lot No. 8945, Causeway Bay
A/H7/188 – SUBMISSION OF FURTHER INFORMATION 1

We are writing with respect to the submission of the captioned application and are pleased to submit herewith Further Information (FI) 1 with regard to that application. This FI addresses the following issue:

- Revised technical sewerage assessment without major changes in the assumptions and methodologies, findings and proposed mitigation measures, where appropriate.

Please kindly find attached the following updated and revised item for your necessary action:

- Annex F – Sewerage Impact Assessment

Please kindly note that the item above does not constitute a significant or material change to the proposed scheme, and we would like to request for an exemption from publication and recounting requirements under the provisions of Section 5 of TPB-PG No.32B.

To facilitate understanding of this matter, relevant email correspondence dated 19 September 2025 with the Drainage Services Department is attached for reference.

Should you have any queries, please do not hesitate to contact [redacted], Town Planner at URBIS Limited by phone [redacted] or via email [redacted].

Yours faithfully

For and on behalf of URBIS Limited

David Morkel MRTPI MHKIP MHKIUD RPP
DM/SY/cs

Encl.

From: Chris Chan
To: hwwong03@dsd.gov.hk
Cc: Louis Wu; Samantha Yung
Subject: RE: IL8945, Causeway Bay - S16 Application for OVT
Date: Friday, September 19, 2025 6:37:09 PM
Attachments: Caroline Hill Road SIA report (07) r1.pdf

Dear Mr. WONG (DSD),

Regarding a recent S16 Planning Application for the OVT of the captioned development, we had submitted a Sewerage Impact Assessment (Rev 7) to support the captioned application. Due to recent site investigation, there is minor changes to the sewerage connection at terminal manhole FTMH1 whilst all the peak sewage flows remain unchanged.
Please find attached the revised SIA incorporated this minor change to the sewerage connection for terminal manhole FTMH1, with no changes in the assumptions, methodologies, findings and the proposed mitigation measure, for your review..

Should you have any queries, please do not hesitate to contact the undersigned.

Regards,

Chris Chan
Arup
Level 5 Festival Walk, 80 Tat Chee Avenue,
Kowloon Tong, Kowloon, Hong Kong,
Main [redacted]
Direct:[redacted]
Fax : [redacted]
[redacted]

Electronic mail messages entering and leaving Arup business systems are scanned for viruses and acceptability of content.

銅鑼灣
Causeway Bay



Annex F
Sewerage Impact Assessment

Proposed Redevelopment at Caroline Hill Road, Causeway Bay

Sewerage Impact Assessment for Proposed Redevelopment at Caroline Hill Road, Causeway Bay

Report Ref

07 | 19 September 2025

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 285077

Ove Arup & Partners Hong Kong Ltd
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Kowloon Tong
Kowloon
Hong Kong
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ARUP

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3.1	Site Location and Topography	2
3.2	Approach and Methodology	2
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4	**Conclusion**	**5**

Appendices

Appendix A

Figures

Appendix B

Calculation

Appendix C

Design of Sewerage System from District Court Complex at Caroline Hill Road, ArchSD

1 Introduction

Sewerage Impact Assessment ("SIA") had been submitted in fulfilment of the Special Conditions (61) (a) of the Conditions of Sale of the Lot requiring for submission of a SIA and was approved by EPD and DSD on 5 January 2022 and 3 May 2022 respectively.

This revised SIA had been submitted to support the Fresh S16 Planning Application with the revised layout plan submission. The recommendation established in the previously approved SIA remains unchanged.

1.1 Reference Materials

In evaluating the sewerage impact arising from the proposed development, the following sources of information have been specifically referred to:

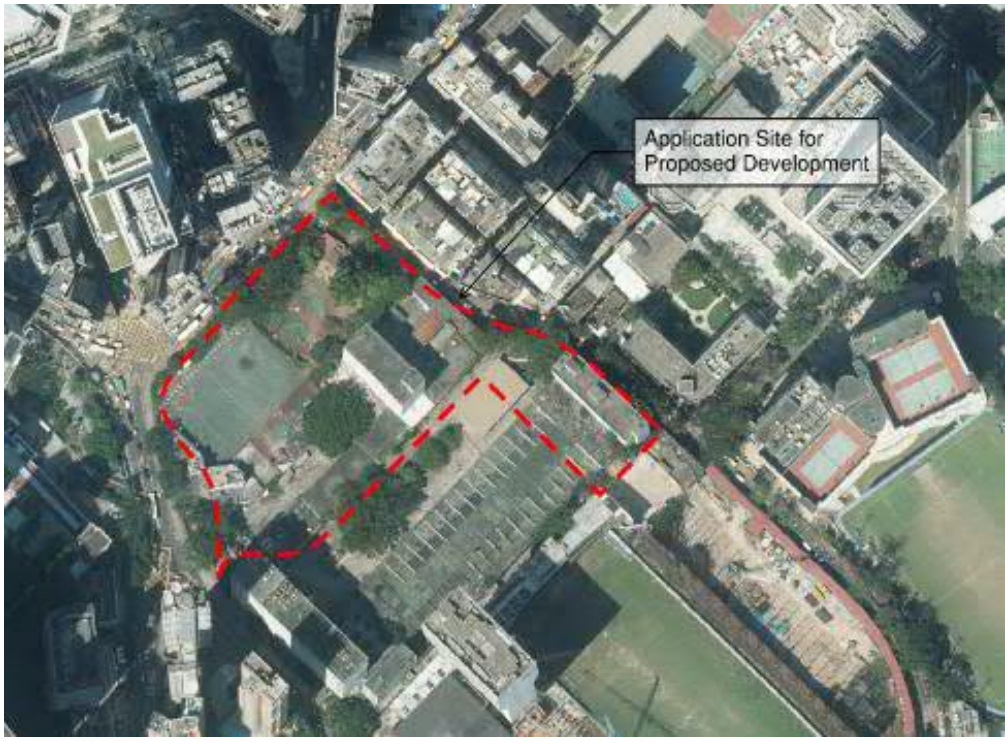
- Environmental Protection Department (EPD) Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning No. : EPD/TP 1/05;
- DSD Sewerage Manual – Key Planning Issues and Gravity Collection System; and
- Drainage Record Plans obtained from DSD.

2 The Development

For easy reference, a comparison table showing the difference between the Approved Scheme and the Proposed Scheme is shown in table below:

Description	**Approved Scheme (No. A/H7/181)**	**Proposed Scheme**	**Difference**
Project Title	Proposed Redevelopment at Caroline Hill Road, Causeway Bay		
Description	Two 25-storeys office towers (Tower 1 and Tower 2) and one 16-storeys office tower (Tower 3) for office, retail and GIC facilities use.		
Location	The site is located at Caroline Hill Road, Causeway Bay (see **Figure 1**).		
Land Use Zoning	Commercial		
Site Area	14,802 m^2	14,802 m^2	No change
Total Non-domestic GFA	102,000 m^2	102,000 m^2	No change
Office GFA	85,000 m^2	85,300 m^2	+300 m^2
Retail GFA	10,000 m^2	10,000 m^2	No change
Light Bus Lay-by GFA	2,000 m^2	1,600 m^2	-400 m^2
GIC GFA	3,000 m^2	3,100 m^2	+100 m^2
GIC GFA (Performing Art & Cultural Facilities)	2,000 m^2	2,000m^2	No change

Below is an aerial photograph of the Application Site.



3 Description of Existing Environment and Baseline Conditions

3.1 Site Location and Topography

The Application site is located at Causeway Bay at the junction of Caroline Hill Road and Leighton Road. The Application Site covers approximately 14802m^2 of area. It was occupied by the ex-Electrical and Mechanical Services Department (EMSD) Headquarters, the ex-Civil Aid Service Headquarters, the ex-Post Office Recreation Club and the PCCW Recreation Club.

3.2 Approach and Methodology

The sewage generated from the proposed development will be collected and conveyed to the existing sewerage system via the existing manhole FMH7058242 and FMH7058644. In order to assess the associated sewerage impact, the capacities of the existing public sewers along Caroline Hill Road were checked.

The adequacy of sewerage capacity along Caroline Hill Road was determined by using the estimate of future sewage generation from the proposed development.

The global unit flow factors recommended in the EPD Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning No.: EPD/TP 1/05 have been adopted in the estimation.

3.3 Evaluation of Sewerage Impact

The sewage flow estimation from the proposed development, the unit flow factors as stated in EPD/TP 1/05 have been adopted.

The capacities of sewers have been calculated based on Colebrook-White equation, assuming full bore flow as below:

(a) Pipe capacity is calculated based on the continuity equation

$Q = AV$

Where Q = pipe full flow capacity in m^3/s

A = pipe cross-sectional area in m^2

V = velocity at full bore flow in m/s

(b) Velocity at full bore flow is based on the Colebrook-White equation

$V= -(32gRS)^{0.5} \log \{(ks/14800R) + (1.255v/ R (32gRS)^{0.5})\}$

Where g = acceleration due to gravity in m/s^2

R = hydraulic radius in m

S = pipe gradient

ks = pipe roughness in mm

v = kinematic viscosity of water in m^2/s

(c) The sewerage impact due to the proposed development on the two existing public sewers have been evaluated by calculating the estimated peak flow against the capacity of the existing public sewer. One is the existing public sewer with downstream sewer of 600Ø run along the South of Caroline Hill Road. Another one is the existing public sewer with downstream sewer of 500Ø run along the East of Caroline Hill Road.

(d) The detailed calculations are provided in **Appendix B** for reference.

3.4 Sewage Generation from the Proposed Development

The prediction for the proposed development sewage generation has been based on the information extracted from the development schedule (refer to Section 2). The quantity of sewage generated by the proposed is estimated from expected total population.

The table showing the sewage generation of the proposed development is calculated based on the guideline set in EPD Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning and is shown on **Table B1** in **Appendix B** with the comparison between the Approved Scheme and the Proposed Scheme shown in the table below.

Description	Approved Scheme	Proposed Scheme	Difference
ADWF (m^3/day)	973.20	975.44	+2.24
Catchment Inflow Factor	1.0	1.0	No change
Contributing Population	3,604	3,613	+9
Global Peaking Factor	6	6	No change
Peak Discharge, L/s	67.58	67.74	+0.16

3.5 Impact of the Proposed Development

In order to assess the impact on the existing public sewer associated with the proposed development, the capacities of the existing public sewers have been checked and shown on **Tables B2** in **Appendix B**.

The estimation of sewage generation in the vicinity of the Application Site is based on the assumptions as below:

1) Existing public sewer information based on DSD drainage record plans and shown in **Figure 2-5**;

2) Existing development parameters in the vicinity of the proposed development are obtained from public domain and sewerage catchment plan shown in **Figure 6**;

3) Flow factors as per EPD Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning; and

4) Global peaking factor with stormwater allowance is adopted as per EPD Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning.

5) The sewage flow and tentative sewerage system from Proposed District Court Complex is based on the design reference to the approved technical feasibility statement from ArchSD and shown in **Figure 7**.

6) As per ArchSD's current design, the sewer of FC tower is recommended to be connected to the existing sewerage manhole FSH7003584 and that of DC tower is recommended to be connected to the existing sewerage manhole FMH7058644.

The peak sewage flow from the proposed development is slightly increased from 67.58 L/s to 67.74 L/s.

On the South side of Caroline Hill Road, it has proven that an existing public sewerage serving the Application Site comprising an existing 300Ø public gravity sewer running along the south of Caroline Hill Road and the downstream existing public sewer of 600Ø running along the Leighton Road has sufficient capacity to carry the estimated sewage from the Application Site.

On the East side of Caroline Hill Road, it has proven that an existing 400Ø public gravity sewer running along the east of Caroline Hill Road and the downstream

existing public sewer of 500Ø running along Leighton Road has sufficient capacity to carry the estimated sewage from the Application Site.

The sewerage connection proposal for the Application Site as shown in **Figure 7** had been updated based the approved BD drainage submission and the proposed change in connection from terminal manhole FTMH1 based on the exact site condition.

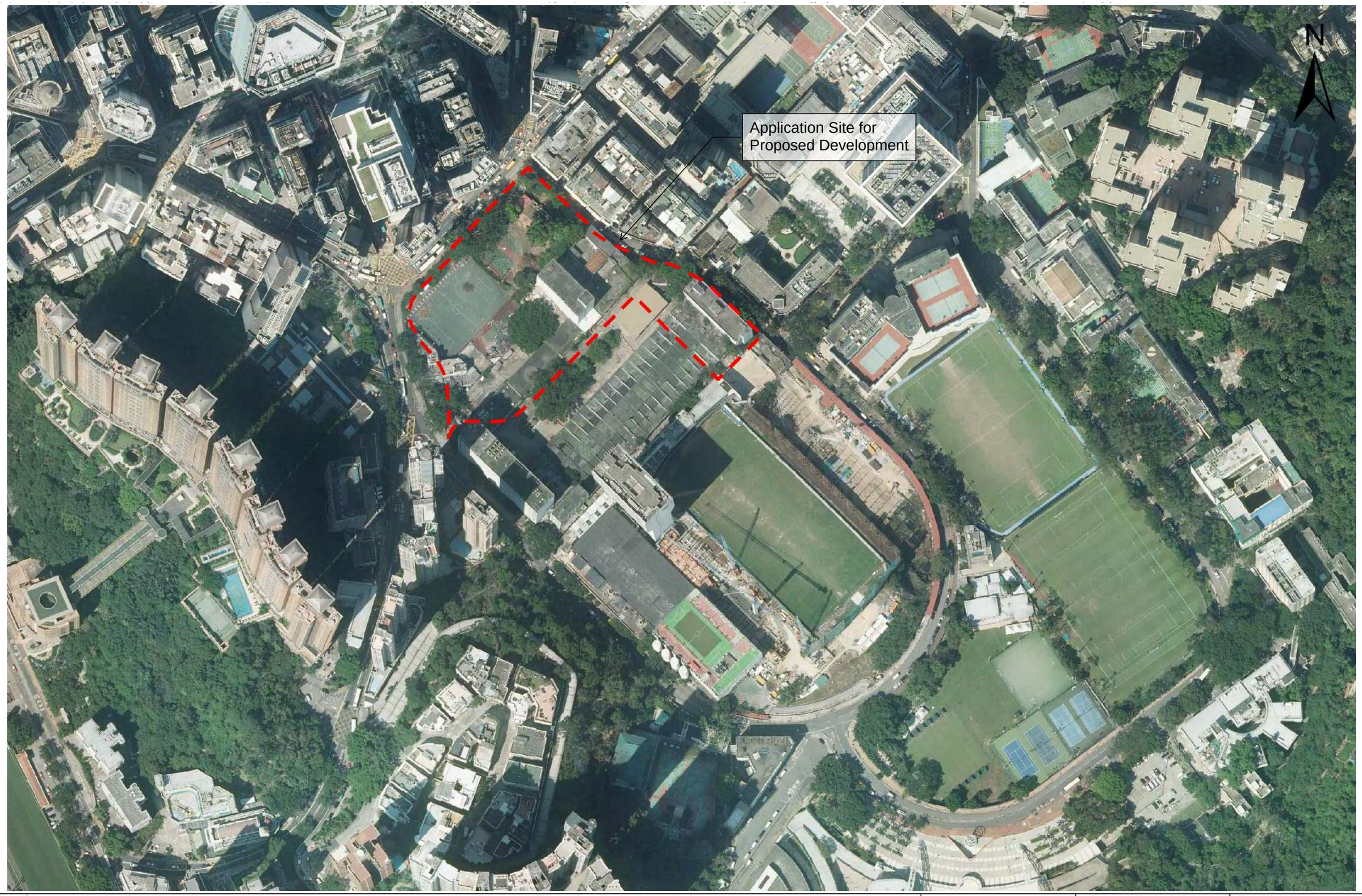
It is concluded that the proposed development would not result in any adverse sewerage impact to the existing public sewerage system. The capacities checking of the existing public sewers is shown in **Table B2**.

4 Conclusion

The peak sewage flow from the proposed development is slightly increased from 67.58 L/s to 67.74 L/s . It is observed that the two existing public sewerage serving the Application Site through the existing FMH7058644 and FMH7058242 running along the Leighton Road, have sufficient capacity to carry the estimated sewage from the Application Site. It is concluded that the proposed development would not result in any adverse sewerage impact to the existing public sewerage system.

Appendix A

Figures



LEGEND

SITE BOUNDARY OF PROPOSED DEVELOPMENT

Mark | Date | By | Rev

Job Title
Proposed Redevelopment at Caroline Hill Road, Causeway Bay

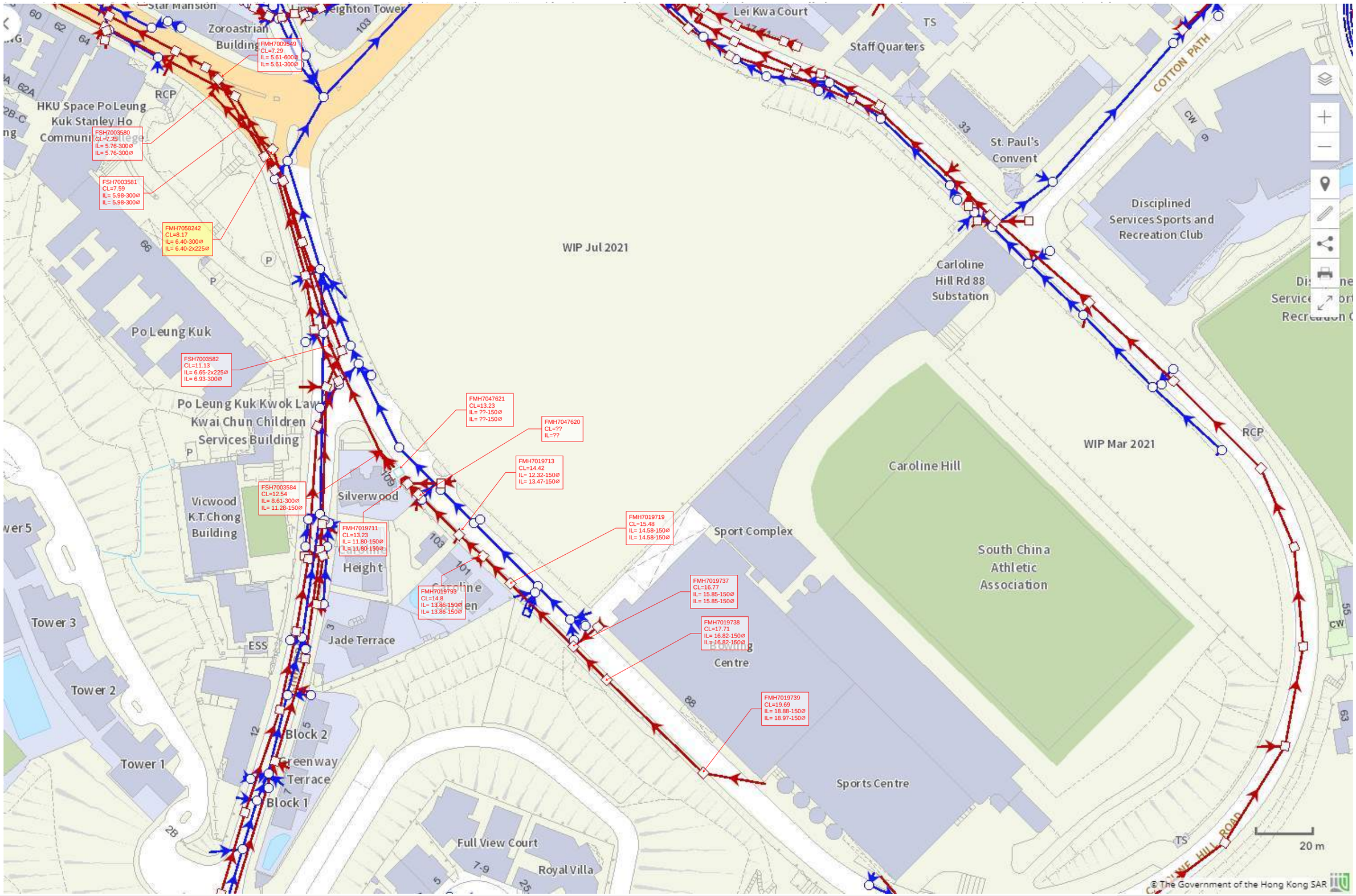
Drawing Title
LOCATION PLAN

ARUP

Scale
Drn. | Date | Chd. | Passed

Drawing Status
FOR REFERENCE

Job No.: 285077 | Drawing No.: FIGURE 1 | Rev.



Mark	Date	By	Rev

Job Title
Proposed Redevelopment at Caroline Hill Road, Causeway Bay

Drawing Title
EXISTING SEWERAGE LAYOUT PLAN - SOUTH

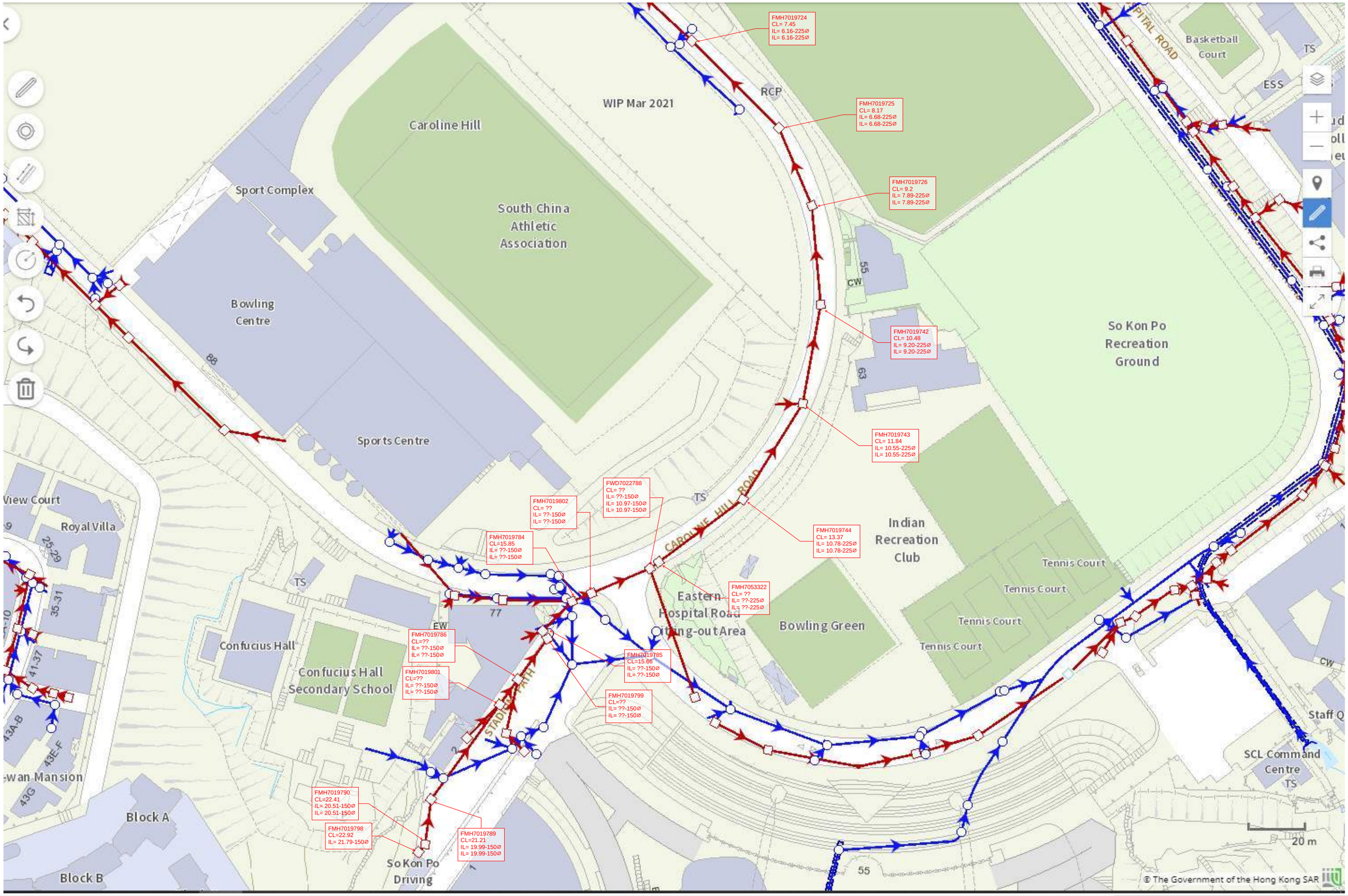
Drawing Status
FOR REFERENCE

ARUP

Scale

Drn.	Date	Chd.	Passed

Job No.	Drawing No.	Rev.
285077	FIGURE 2	



Mark	Date	By	Rev

Job Title
Proposed Redevelopment at Caroline Hill Road, Causeway Bay

Drawing Title
EXISTING SEWERAGE LAYOUT PLAN - EAST
(SHEET 1 OF 3)

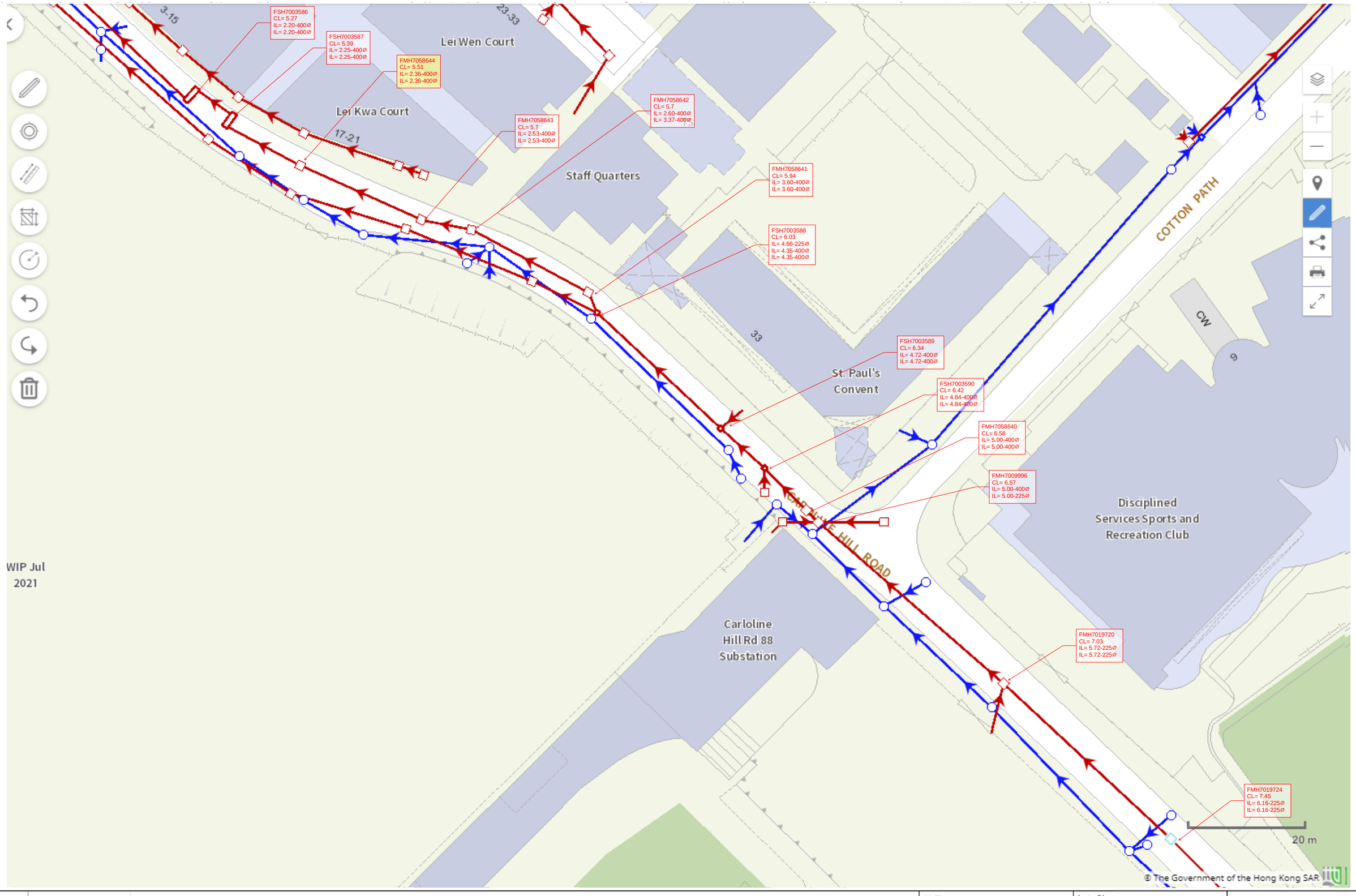
Drawing Status
FOR REFERENCE

ARUP

Scale

Drn.	Date	Chd.	Passed

Job No.	Drawing No.	Rev.
285077	FIGURE 3	



Mark	Date	By	Rev.

Job Title
Proposed Redevelopment at Caroline Hill Road, Causeway Bay

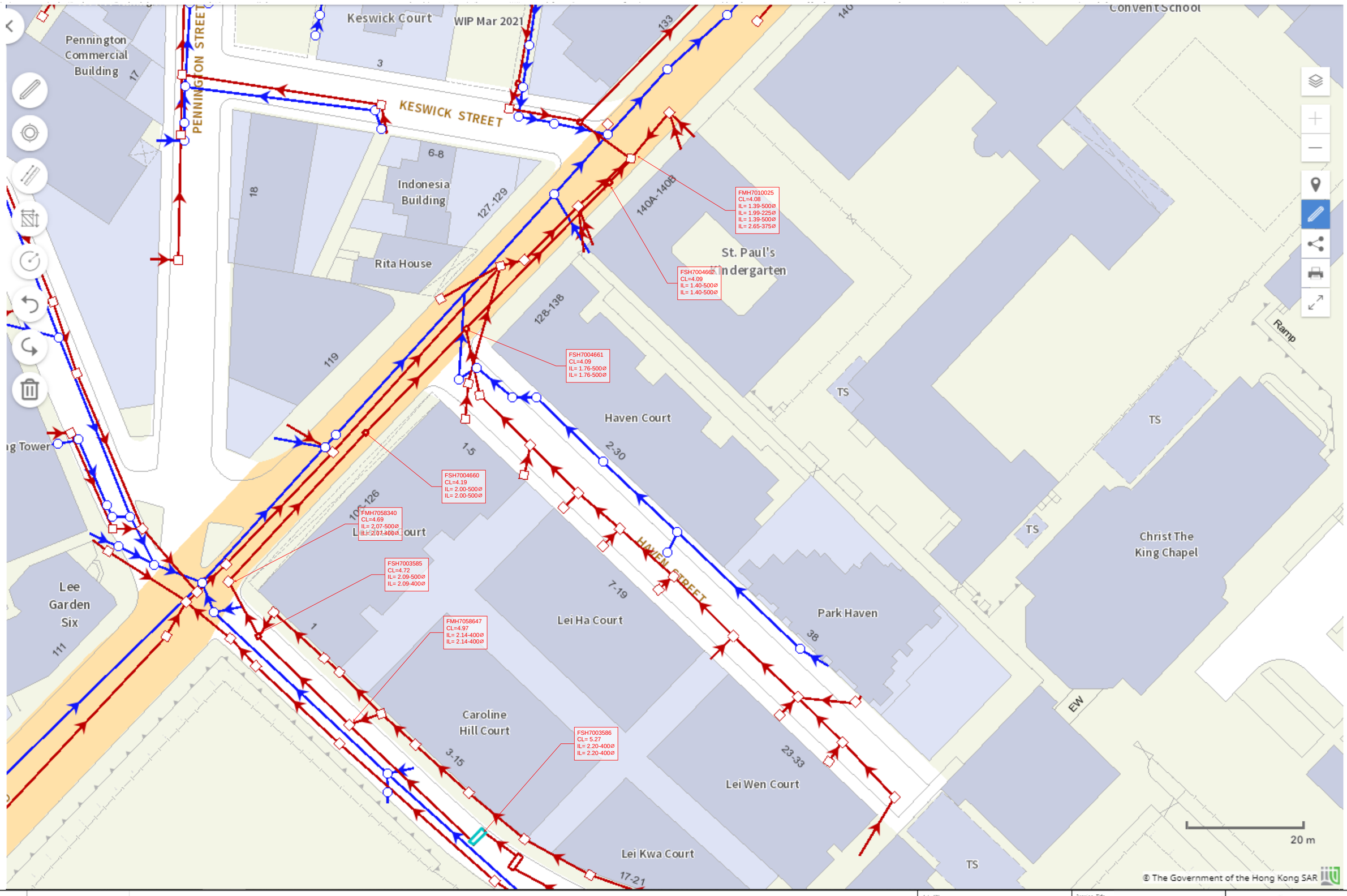
Drawing Title
EXISTING SEWERAGE LAYOUT PLAN - EAST
(SHEET 2 OF 3)

Drawing Status
FOR REFERENCE

ARUP

Scale:
Drn. Date Chd. Passed

Job No. 285077
Drawing No. FIGURE 4
Rev.



Mark	Date	By	Rev.

Job Title
Proposed Redevelopment at Caroline Hill Road, Causeway Bay

Drawing Title
EXISTING SEWERAGE LAYOUT PLAN - EAST
(SHEET 3 OF 3)

Drawing Status
FOR REFERENCE

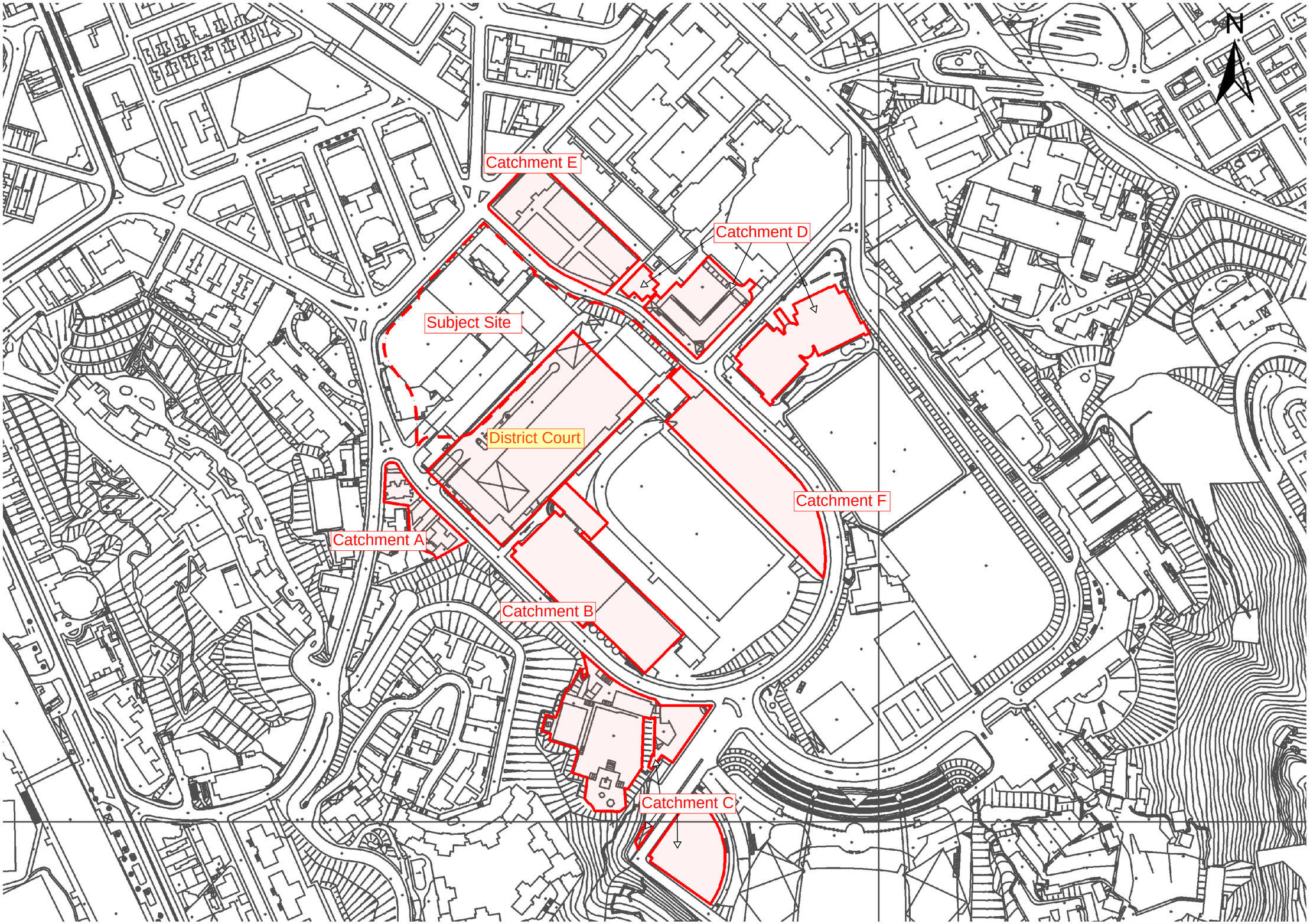
ARUP

Scale
Drn. Date Chd. Passed

Job No.: 285077

Drawing No.: FIGURE 5

Rev.



LEGEND

SEWAGE CATCHMENT

Mark	Date	By	Rev

Job Title
Proposed Redevelopment at Caroline Hill Road, Causeway Bay

Drawing Title
SEWAGE CATCHMENT PLAN

ARUP

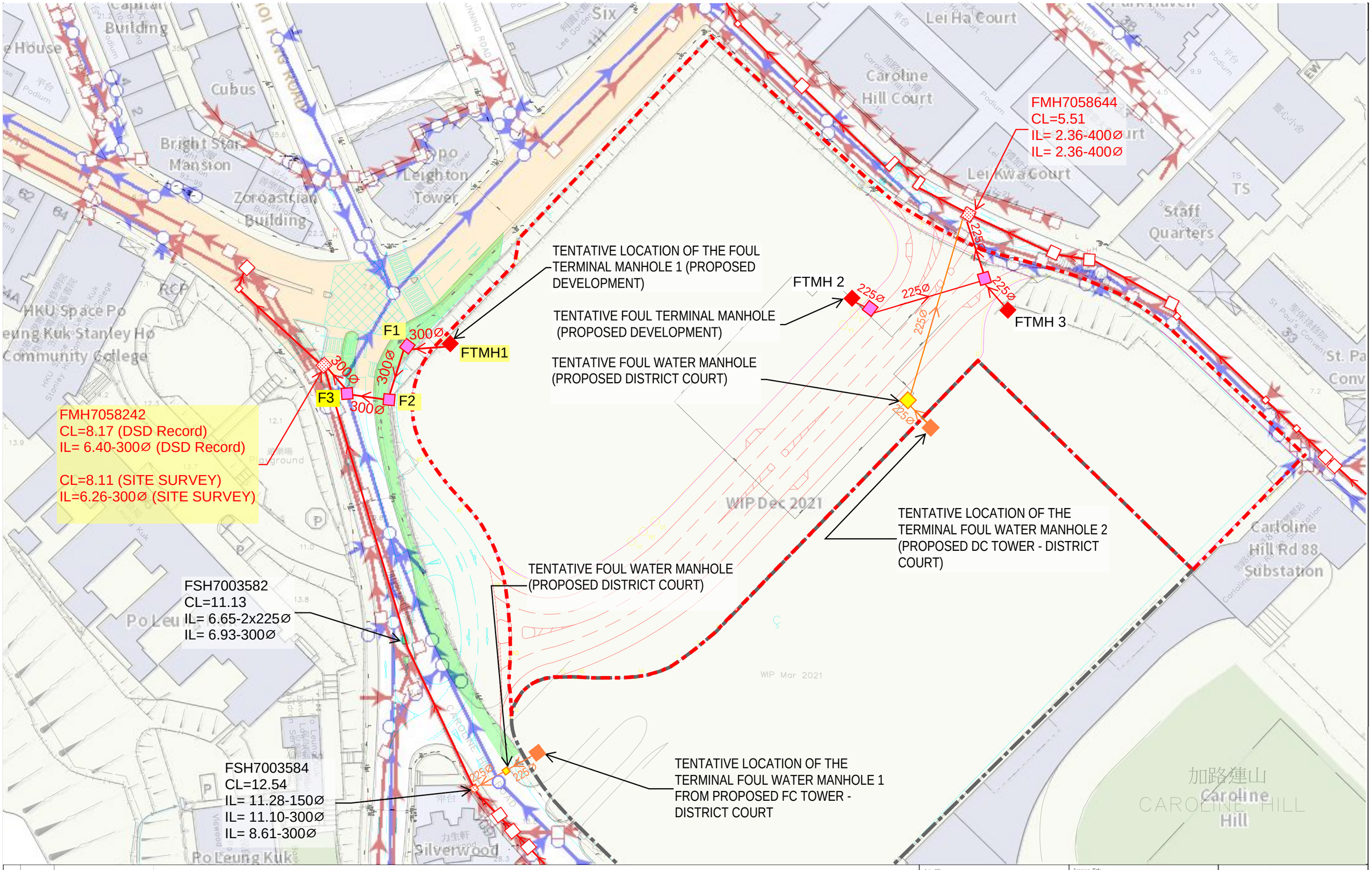
Scale
Drn. Date Chd. Passed

Drawing Status
FOR REFERENCE

Job No. 285077

Drawing No. FIGURE 6

Rev.



LEGEND

- PROPOSED TERMINAL FOUL WATER MANHOLE (PROPOSED DEVELOPMENT)
- PROPOSED TERMINAL FOUL WATER MANHOLE (PROPOSED DISTRICT COURT)
- SITE BOUNDARY OF PROPOSED DISTRICT COURT
- PROPOSED SEWER (PROPSOED DEVELOPMENT)
- PROPOSED SEWER (PROPOSED DISTRICT COURT)
- SITE BOUNDARY OF PROPOSED DEVELOPMENT
- PROPOSED CONNECTION POINT (PROPSOED DEVELOPMENT)
- PROPOSED CONNECTION POINT (PROPOSED DISTRICT COURT)
- PROPOSED FOUL WATER MANHOLE OF PROPOSED DEVELOPMENT
- PROPOSED FOUL WATER MANHOLE (PROPOSED DISTRICT COURT)

Mark	Date	By	Rev

Job Title: Proposed Redevelopment at Caroline Hill Road, Causeway Bay

Drawing Title: Proposed Connection at Caroline Hill Road, Causeway Bay

Drawing Status: FOR REFERENCE

ARUP

Scale

Drn. Date Chd. Passed

Job No. 285077

Drawing No. FIGURE 7

Rev.

Appendix B

Calculation

TABLE B1
Sewage Flow Estimation for Proposed Development

(Based on EPD Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning)

Design Assumption:
Global Peaking Factor, P (Including Stormwater Allowance) as per Table T-5
Global Unit Flow Factors as per Tables T-2 and T-3
Catchment Inflow Factor for Wan Chai (PCIF = 1.0) as per Table T-4

Development Schedule		
Sewage Flow Estimation for Caroline Hill Road - South	**Estimation**	**Remark**
Proposed Development		
(S) Subject Site		
GFA (m^2) for Office use	85,300	
Worker Density (No. of Worker per 100m^2)	5.5	
No. of Employee	4,692	
Unit flow factor (m^3/person/day) - J6 Financial, Insurance, Real Estate & Business Services	0.08	
GFA (m^2) for F&B	10,000	
Worker Density (No. of Worker per 100m^2)	3.5	
No. of Employee	350	
Unit flow factor (m^3/person/day) - J10 Restaurant & Hotels	1.58	
GFA (m^2) for GIC	5,100	
Worker Density (No. of Worker per 100m^2)	3.3	
No. of Employee	168	
Unit flow factor (m^3/person/day) - J11 Community, Social & Personal Services	0.28	
Total ADWF, (m^3/day)	975.44	
70% of Total ADWF, (m^3/day)	682.8	
Total ADWF, (L/s)	11.29	
70% of Total ADWF, (L/s)	7.90	**New Development**
Catchment A		
A1 Silverwood		
Number of flats	81	
Population	219	
Unit flow factor (m^3/person/day) - Residential R2	0.27	
ADWF, (m^3/day)	59.05	
ADWF, (L/s)	0.68	**P_{CIF} = 1 included**
A2 103 Caroline Hill Road (CHR)		
Number of flats	8	
Population	22	
Unit flow factor (m^3/person/day) - Residential R2	0.270	
ADWF, (m^3/day)	5.83	
ADWF, (L/s)	0.07	**P_{CIF} = 1 included**
A3 Caroline Garden		
Number of flats	48	
Population	130	
Unit flow factor (m^3/person/day) - Residential R2	0.270	
ADWF, (m^3/day)	34.99	
ADWF, (L/s)	0.41	**P_{CIF} = 1 included**
Catchment B		
B1 Bowling centre		
GFA (m^2)	5704	
Worker Density (No. of Worker per 100m^2)	3.3	
No. of Employee	188	
Unit flow factor (m^3/person/day) - J11 Community, Social & Personal Services	0.28	
ADWF, (m^3/day)	52.71	
ADWF, (L/s)	0.61	**P_{CIF} = 1 included**
B2 Sport Complex		
GFA (m^2)	8352	
Worker Density (No. of Worker per 100m^2)	3.3	
No. of Employee	276	
Unit flow factor (m^3/person/day) - J11 Community, Social & Personal Services	0.28	
ADWF, (m^3/day)	77.17	
ADWF, (L/s)	0.89	**P_{CIF} = 1 included**
B3 Sports Centre (50%)		
GFA (m^2)	6351	
Worker Density (No. of Worker per 100m^2)	3.3	
No. of Employee	210	
Unit flow factor (m^3/person/day) - J11 Community, Social & Personal Services	0.28	
ADWF, (m^3/day)	29.34	
ADWF, (L/s)	0.34	**P_{CIF} = 1 included**
District Court		
District court - DC tower (connected to FMH7058644)		
ADWF, (m^3/day)	246.85	**According to recent SIA from development of District Court**
Peak Flow, (m^3/s)	0.0229	
District court - FC tower (connected to FSH7003584)		
ADWF, (m^3/day)	95.93	**According to recent SIA from development of District Court**
Peak Flow, (m^3/s)	0.0089	
Proposed Scenario Caroline Hill Road - South		
Total ADWF (m^3/day)	1,038	
Total ADWF (L/s)	12.01	
Contributing Population	3,844	
Global Peaking Factor	6.00	
Total Peak Flow (L/s)	72.07	

Notes:
Employment density shall refer to Commercial and Industrial Floor Space Utilization Survey published by PlanD.
Office = 5.5 employee per 100m^2 of GFA
Retails = 3.5 employee per 100m^2 of GFA
Community, Social & Personal Services = 3.3 employee per 100m^2 of GFA

TABLE B1
Sewage Flow Estimation for Proposed Development

(Based on EPD Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning)

Design Assumption:
Global Peaking Factor, P (Including Stormwater Allowance) as per Table T-5
Global Unit Flow Factors as per Tables T-2 and T-3
Catchment Inflow Factor for Wan Chai (PCIF = 1.0) as per Table T-4

Development Schedule		
Sewage Flow Estimation for Caroline Hill Road - East	**Estimation**	**Remark**
Proposed Development		
(S) Subject Site		
GFA (m^2) for Office use	85,300	
Worker Density (No. of Worker per 100m^2)	5.5	
No. of Employee	4,692	
Unit flow factor (m^3/person/day) - J6 Financial, Insurance, Real Estate & Business Services	0.08	
GFA (m^2) for Retail use	10,000	
Worker Density (No. of Worker per 100m^2)	3.5	
No. of Employee	350	
Unit flow factor (m^3/person/day) - J10 Restaurant & Hotels	1.58	
GFA (m^2) for GIC	5,100	
Worker Density (No. of Worker per 100m^2)	3.3	
No. of Employee	168	
Unit flow factor (m^3/person/day) - J11 Community, Social & Personal Services	0.28	
Total ADWF, (m^3/day)	975.44	
30% of Total ADWF, (m^3/day)	292.63	
Total ADWF, (L/s)	11.29	
30% of Total ADWF, (L/s)	3.39	**New Development**
Catchment B		
B3 Sports Centre (50%)		
GFA (m^2)	6351	
Worker Density (No. of Worker per 100m^2)	3.3	
No. of Employee	210	
Unit flow factor (m^3/person/day) - J11 Community, Social & Personal Services	0.28	
ADWF, (m^3/day)	29.34	
ADWF, (L/s)	0.34	**P_{CIF} = 1 included**
Catchment C		
C1 Confucius Hall Secondary School		
Number of students	360	
Number of staffs	29	
Unit flow factor (m^3/person/day) - students	0.04	
Unit flow factor (m^3/person/day) - staffs	0.28	
ADWF, (m^3/day)	22.52	
ADWF, (L/s)	0.26	**P_{CIF} = 1 included**
C2 So Kon Po Driving Test Centre		
GFA (m^2)	357	
Worker Density (No. of Worker per 100m^2)	3.3	
No. of Employee	12	
Unit flow factor (m^3/person/day) - J11 Community, Social & Personal Services	0.28	
ADWF, (m^3/day)	3.30	
ADWF, (L/s)	0.04	**P_{CIF} = 1 included**
C3 Olypmic House		
GFA (m^2)	4343	
Worker Density (No. of Worker per 100m^2)	3.3	
No. of Employee	143	
Unit flow factor (m^3/person/day) - J11 Community, Social & Personal Services	0.28	
ADWF, (m^3/day)	40.13	
ADWF, (L/s)	0.46	**P_{CIF} = 1 included**

TABLE B1
Sewage Flow Estimation for Proposed Development

(Based on EPD Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning)

Design Assumption:
Global Peaking Factor, P (Including Stormwater Allowance) as per Table T-5
Global Unit Flow Factors as per Tables T-2 and T-3
Catchment Inflow Factor for Wan Chai (PCIF = 1.0) as per Table T-4

Development Schedule			
Sewage Flow Estimation for Caroline Hill Road - East		**Estimation**	**Remark**
Catchment D			
D1	**Disciplined Services Sports and Recreation Club**		
	GFA (m^2)	10440	
	Worker Density (No. of Worker per $100m^2$)	3.3	
	No. of Employee	345	
	Unit flow factor (m^3/person/day) - J11 Community, Social & Personal Services	0.28	
	ADWF, (m^3/day)	96.47	
	ADWF, (L/s)	1.12	**P_{CIF} = 1 included**
D2	**St. Paul Convent**		
	GFA (m^2)	1528	
	Worker Density (No. of Worker per $100m^2$)	3.3	
	No. of Employee	50	
	Unit flow factor (m^3/person/day) - J11 Community, Social & Personal Services	0.28	
	ADWF, (m^3/day)	14.12	
	ADWF, (L/s)	0.16	**P_{CIF} = 1 included**
	Staff Quarters (D)		
D3	Number of units	25	
	Population	68	
	Unit flow factor (m^3/person/day) - Residential R2	0.27	
	ADWF, (m^3/day)	18.23	
	ADWF, (L/s)	0.21	**P_{CIF} = 1 included**
Catchment E			
E1	**Leishun Court**		
	Number of flats	120	
	Population	324	
	Unit flow factor (m^3/person/day) - Residential R2	0.27	
	ADWF, (m^3/day)	87.48	
	ADWF, (L/s)	1.01	**P_{CIF} = 1 included**
E2	**Caroline Hill Court**		
	Number of flats	1146	
	Population	3094	
	Unit flow factor (m^3/person/day) - Residential R2	0.27	
	ADWF, (m^3/day)	835.43	
	ADWF, (L/s)	9.67	**P_{CIF} = 1 included**
E3	**Lei Kwa Court**		
	Number of flats	56	
	Population	151	
	Unit flow factor (m^3/person/day) - Residential R2	0.27	
	ADWF, (m^3/day)	40.82	
	ADWF, (L/s)	0.47	**P_{CIF} = 1 included**
E4	**Lei Ha Court**		
	Number of flats	120	
	Population	324	
	Unit flow factor (m^3/person/day) - Residential R2	0.27	
	ADWF, (m^3/day)	87.48	
	ADWF, (L/s)	1.01	**P_{CIF} = 1 included**
E5	**Lei Wen Court**		
	Number of flats	146	
	Population	394	
	Unit flow factor (m^3/person/day) - Residential R2	0.27	
	ADWF, (m^3/day)	106.43	
	ADWF, (L/s)	1.23	**P_{CIF} = 1 included**
Catchment F			
F1	**Staff Quarters**		
	Number of units	35	
	Population	95	
	Unit flow factor (m^3/person/day) - Residential R2	0.27	
	ADWF, (m^3/day)	25.52	
	ADWF, (L/s)	0.30	**P_{CIF} = 1 included**
Proposed Scenario	Caroline Hill Road - East		
	Total ADWF (m^3/day)	1,656	
	Total ADWF (L/s)	19.17	
	Contributing Population	6,134	
	Global Peaking Factor	5.00	
	Total Peak Flow (L/s)	95.84	

Notes:
Employment density shall refer to Commercial and Industrial Floor Space Utilization Survey published by PlanD.
Office = 5.5 employee per $100m^2$ of GFA
Retails = 3.5 employee per $100m^2$ of GFA
Community, Social & Personal Services = 3.3 employee per $100m^2$ of GFA

Table B2 - Capacity Performance of Existing Sewer

Notes:
(1) Calculate by Colebrook-White Equation

$$\overline{V} = -\sqrt{32gRS_f}\,\log\left[\frac{k_s}{14.8R} + \frac{1.255\nu}{R\sqrt{32gRS_f}}\right]$$

where ks is roughness value
for clayware slimed sewers, ks equals 3mm
ν is kinematic viscosity of fluid = 1.14 x 10-6 m2/s and g is the gravity = 9.81m/s2
V is the velocity, D is the diameter of the sewer and S is the gradient of the sewer.

Abbreviation:

UP_MAN	Upstream Manhole	CON_POP	Contributing Population	DN_GL	Downstream Ground Level	CAP	Peak Pipe Capacity
DN_MAN	Downstream Manhole	DIA	Diameter	UP_INV	Upstream Invert Level	F/C	Peak Flow/Capacity
ADWF	Average Dry Weather Flow	LEN	Length	DN_INV	Downstream Invert Level		
ACC_ADWF	Accumulated Average Dry Weather Flow	UP_GL	Upstream Ground Level	VEL	Peak Pipe Velocity		

Proposed Development

Manhole		FROM SITE		CON_POP	PEAKING FACTOR	ACC_ADWF (L/s)	Peak Flow (L/s)	Existing Pipe Parameter										
UP_MAN No.	DN_MAN No.	Catchment	Description					DIA (D) (mm)	LEN (m)	UP_GL (mPD)	DN_GL (mPD)	UP_INV (mPD)	DN_INV (mPD)	Gradient (S)	VEL (m/s)	AREA (m^2)	CAP (L/s)	F/C (%)	Adequate Capacity?
Caroline Hill Road - South																			
FMH7019739	FMH7019738	B1, 50%B3	Bowling centre, Sports Centre (50%)	304	8	0.95	7.60	150	44.5	19.69	17.71	18.88	16.82	22	1.67	0.0177	29.54	25.7%	YES
FMH7019738	FMH7019737	B1, 50%B3	Bowling centre, Sports Centre (50%)	304	8	0.95	7.60	150	15.7	17.71	16.77	16.82	15.85	16	1.93	0.0177	34.11	22.3%	YES
FMH7019737	FMH7019719	B1, 50%B3, B2	Bowling centre, Sports Centre (50%), Sport Complex	590	8	1.84	14.74	150	29.6	16.77	15.48	15.85	14.58	23	1.61	0.0177	28.42	51.9%	YES
FMH7019719	FMH7019793	B1, 50%B3, B2	Bowling centre, Sports Centre (50%), Sport Complex	590	8	1.84	14.74	150	12.8	15.48	14.80	14.58	13.86	18	1.84	0.0177	32.55	45.3%	YES
FMH7019793	FMH7019713	B1, 50%B3, B2, A3	Bowling centre, Sports Centre (50%), Sport Complex, Caroline Garden	719	8	2.25	17.98	150	10.1	14.80	14.42	13.86	13.47	26	1.53	0.0177	26.96	66.7%	YES
FMH7019713	FMH7047620	B1, 50%B3, B2, A3	Bowling centre, Sports Centre (50%), Sport Complex, Caroline Garden	719	8	2.25	17.98	150	17.0	14.42	13.46	12.32	11.91	41	1.21	0.0177	21.41	84.0%	YES
FMH7047620	FMH7019711	B1, 50%B3, B2, A3, A2	Bowling centre, Sports Centre (50%), Sport Complex, Caroline Garden, 103 Caroline Hill Road	741	8	2.32	18.52	150	4.0	13.46	13.23	11.91	11.80	38	1.26	0.0177	22.26	83.2%	YES
FMH7019711	FMH7047621	B1, 50%B3, B2, A3, A2	Bowling centre, Sports Centre (50%), Sport Complex, Caroline Garden, 103 Caroline Hill Road	741	8	2.32	18.52	150	4.7	13.23	13.23	11.80	11.64	30	1.42	0.0177	25.04	74.0%	YES
FMH7047621	FSH7003584	B1, 50%B3, B2, A3, A2	Bowling centre, Sports Centre (50%), Sport Complex, Caroline Garden, 103 Caroline Hill Road	741	8	2.32	18.52	150	8.9	13.23	12.54	11.64	11.28	24	1.57	0.0177	27.72	66.8%	YES
FSH7003584	FSH7003582	B1, 50%B3, B2, A3, A2, A1	Bowling centre, Sports Centre (50%), Sport Complex, Caroline Garden, 103 Caroline Hill Road, Silverwood, District Court FC tower	1,315	6	4.11	24.65	300	38.8	12.54	11.13	8.61	6.93	23	2.59	0.0707	183.07	13.5%	YES
FSH7003582	FMH7058242	B1, 50%B3, B2, A3, A2, A1, G	Bowling centre, Sports Centre (50%), Sport Complex, Caroline Garden,103 Caroline Hill Road, Silverwood, District Court FC tower	1,315	6	4.11	24.65	2x225	67.4	11.13	8.11	6.65	6.26	173	0.78	0.0398	61.88	39.8%	YES
FMH7058242	FSH7003581	B1, 50%B3, B2, A3, A2, A1, G, 70%S	Bowling centre, Sports Centre (50%), Sport Complex, Caroline Garden,103 Caroline Hill Road, Silverwood, District Court FC tower, Proposed development (70%)	3,844	6	12.01	72.07	300	13.1	8.11	7.59	6.26	5.98	47	1.82	0.0707	128.56	56.1%	YES
FSH7003581	FSH7003580	B1, 50%B3, B2, A3, A2, A1, G, 70%S	Bowling centre, Sports Centre (50%), Sport Complex, Caroline Garden,103 Caroline Hill Road, Silverwood, District Court FC tower, Proposed development (70%)	3,844	6	12.01	72.07	300	14.4	7.59	7.25	5.98	5.76	65	1.54	0.0707	108.66	66.3%	YES
FSH7003580	FMH7009549	B1, 50%B3, B2, A3, A2, A1, G, 70%S	Bowling centre, Sports Centre (50%), Sport Complex, Caroline Garden,103 Caroline Hill Road, Silverwood, District Court FC tower, Proposed development (70%)	3,844	6	12.01	72.07	300	5.6	7.25	7.29	5.76	5.61	37	2.05	0.0707	144.60	49.8%	YES
FTMH 1	**F1**	**70%S**	Proposed development (70%)	2,529	6	7.90	47.42	300	9.8	8.90	7.80	6.710	6.595	86	1.34	0.0707	95.01	49.9%	YES
F1	**F2**	**70%S**	Proposed development (70%)	2,529	6	7.90	47.42	300	15.0	7.80	8.25	6.575	6.475	150	1.01	0.0707	71.71	66.1%	YES
F2	**F3**	**70%S**	Proposed development (70%)	2,529	6	7.90	47.42	300	9.0	8.25	8.45	6.455	6.395	150	1.01	0.0707	71.71	66.1%	YES
F3	**FMH7058242**	**70%S**	Proposed development (70%)	2,529	6	7.90	47.42	300	7.5	8.45	8.11	6.375	6.325	150	1.01	0.0707	71.71	66.1%	YES
Caroline Hill Road - East																			
FMH7019744	FMH7019743	C1, C2, C3, 50%B3	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%)	353	8	1.1	8.82	225	37.5	13.37	11.84	10.78	10.55	163	0.80	0.0398	31.85	27.7%	YES
FMH7019743	FMH7019742	C1, C2, C3, 50%B3	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%)	353	8	1.1	8.82	225	33.4	11.84	10.48	10.55	9.20	25	2.06	0.0398	81.95	10.8%	YES
FMH7019742	FMH7019726	C1, C2, C3, 50%B3	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%)	353	8	1.1	8.82	225	33.4	10.48	9.20	9.20	7.89	25	2.03	0.0398	80.72	10.9%	YES
FMH7019726	FMH7019725	C1, C2, C3, 50%B3	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%)	353	8	1.1	8.82	225	28.3	9.20	8.17	7.89	6.68	23	2.12	0.0398	84.29	10.5%	YES
FMH7019725	FMH7019724	C1, C2, C3, 50%B3	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%)	353	8	1.1	8.82	225	41.5	8.17	7.45	6.68	6.16	80	1.15	0.0398	45.57	19.4%	YES
FMH7019724	FMH7019720	C1, C2, C3, 50%B3	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%)	353	8	1.1	8.82	225	38.1	7.45	7.03	6.16	5.72	87	1.10	0.0398	43.75	20.2%	YES
FMH7019720	FMH7009996	C1, C2, C3, 50%B3, F	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters	447	8	1.4	11.19	225	40.6	7.03	6.57	5.72	5.00	56	1.36	0.0398	54.24	20.6%	YES
FMH7009996	FMH7058640	C1, C2, C3, 50%B3, F, D1, D2	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent	857	8	2.68	21.43	400	3.1	6.57	6.58	5.00	5.00	2067	0.33	0.1257	41.34	51.8%	YES
FMH7058640	FSH7003590	C1, C2, C3, 50%B3, F, D1, D2	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent	857	8	2.68	21.43	400	10.1	6.58	6.42	5.00	4.84	63	1.90	0.1257	238.28	9.0%	YES
FSH7003590	FSH7003589	C1, C2, C3, 50%B3, F, D1, D2	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent	857	8	2.68	21.43	400	9.9	6.42	6.34	4.84	4.72	82	1.66	0.1257	208.38	10.3%	YES
FSH7003589	FSH7003588	C1, C2, C3, 50%B3, F, D1, D2	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent	857	8	2.68	21.43	400	28.4	6.34	6.03	4.72	4.35	77	1.72	0.1257	216.05	9.9%	YES
FSH7003588	FMH7058641	C1, C2, C3, 50%B3, F, D1, D2	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent	857	8	2.68	21.43	400	3.3	6.03	5.94	4.35	3.60	4	7.19	0.1257	903.58	2.4%	YES
FMH7058641	FMH7058642	C1, C2, C3, 50%B3, F, D1, D2	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent	857	8	2.68	21.43	400	21.9	5.94	5.70	3.60	3.37	95	1.54	0.1257	193.94	11.0%	YES
FMH7058642	FMH7058643	C1, C2, C3, 50%B3, F, D1, D2	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent	857	8	2.68	21.43	400	8.4	5.70	5.70	2.60	2.53	120	1.37	0.1257	172.71	12.4%	YES
FMH7058643	FMH7058644	C1, C2, C3, 50%B3, F, D1, D2	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent	857	8	2.68	21.43	400	22.4	5.70	5.51	2.53	2.36	134	1.30	0.1257	163.34	13.1%	YES
FMH7058644	FSH7003587	C1, C2, C3, 50%B3, F, D1, D2, 30%S	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent, District Court DC Tower, Proposed development (30%)	2,855	6	8.92	53.53	400	12.6	5.51	5.39	2.36	2.25	112	1.43	0.1257	179.19	29.9%	YES
FSH7003587	FSH7003586	C1, C2, C3, 50%B3, F, D1, D2, 30%S	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent, District Court DC Tower, Proposed development (30%)	2,855	6	8.92	53.53	400	6.2	4.53	5.27	2.25	2.20	124	1.35	0.1257	169.90	31.5%	YES
FSH7003586	FMH7058647	C1, C2, C3, 50%B3, F, D1, D2, 30%S	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent, District Court DC Tower, Proposed development (30%)	2,855	6	8.92	53.53	400	26.7	5.27	4.97	2.20	2.14	445	0.71	0.1257	89.51	59.8%	YES
FMH7058647	FSH7003585	C1, C2, C3, 50%B3, F, D1, D2, 30%S, 50%E2, 50%E3	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent, District Court DC Tower, Proposed development (30%), Caroline Hill Court (50%), Lei Kwa Court (50%)	4,478	6	13.99	83.96	400	19.6	4.97	4.72	2.14	2.09	392	0.76	0.1257	95.39	88.0%	YES
FSH7003585	FMH7058340	C1, C2, C3, 50%B3, F, D1, D2, 30%S, E2, E3, E5, E4, 50%E1	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent, District Court DC Tower, Proposed development (30%), Caroline Hill Court, Lei Kwa Court, Lei Wen Court, Lei Ha Court, Leishun Court (50%)	6,981	5	21.81	109.07	500	8.6	4.72	4.69	2.09	2.07	430	0.84	0.1963	164.90	66.1%	YES
FMH7058340	FSH7004660	C1, C2, C3, 50%B3, F, D1, D2, 30%S, E2, E3, E5, E4, 50%E1	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent, District Court DC Tower, Proposed development (30%), Caroline Hill Court, Lei Kwa Court, Lei Wen Court, Lei Ha Court, Leishun Court (50%)	6,981	5	21.81	109.07	500	32.5	4.69	4.19	2.07	2.00	464	0.81	0.1963	158.67	68.7%	YES
FSH7004660	FSH7004661	C1, C2, C3, 50%B3, F, D1, D2, 30%S, E2, E3, E5, E4, 50%E1	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent, District Court DC Tower, Proposed development (30%), Caroline Hill Court, Lei Kwa Court, Lei Wen Court, Lei Ha Court, Leishun Court (50%)	6,981	5	21.81	109.07	500	23.2	4.19	4.09	2.00	1.76	97	1.77	0.1963	348.44	31.3%	YES
FSH7004661	FSH7004662	C1, C2, C3, 50%B3, F, D1, D2, 30%S, E2, E3, E5, E4, 50%E1, D3	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent, District Court DC Tower, Proposed development (30%), Caroline Hill Court, Lei Kwa Court, Lei Wen Court, Lei Ha Court, Leishun Court (50%), Staff Quarters (D)	7,048	5	22.03	110.13	500	33.4	4.09	4.09	1.76	1.40	93	1.81	0.1963	355.68	31.0%	YES
FSH7004662	FMH7010025	C1, C2, C3, 50%B3, F, D1, D2, 30%S, E2, E3, E5, E4, 50%E1, D3	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent, District Court DC Tower, Proposed development (30%), Caroline Hill Court, Lei Kwa Court, Lei Wen Court, Lei Ha Court, Leishun Court (50%), Staff Quarters (D)	7,048	5	22.03	110.13	500	4.2	4.09	4.08	1.40	1.39	420	0.85	0.1963	166.85	66.0%	YES
FTMH 2	**FMH7058644**	**30%S**	Proposed development (30%)	1,084	6	3.39	20.32	225	3.0	8.00	5.51	2.39	2.36	100	1.02	0.0398	40.70	49.9%	YES

Appendix C

Design of Sewerage System from District Court Complex at Caroline Hill Road, ArchSD

CUNDALL

JOB NUMBER / FILE: 1032463

CALCULATION NUMBER: 01

DRAWING REFERENCE:

JOB TITLE:

Sewerage Impact Assessment for Discharge of Town Planning Board Approval Condition(s) for D&B District Court at Caroline Hill Road

REV:	CALCULATION BY:	DATE:	CHECKED BY:	VERIFIED BY:
E	R. Leung	22 Aug 2024	H. Wong	H. Wong

CALCULATION:

A01 Calculation of Sewage Loading from Site

Catchment	Sewer Manhole No.	Buildings in Zone	Type of Use	Updated Population (Updated on 22 March 2024)	Handwashing Flowrate (L/min)	Duration of Each Handwash (sec)	Flushing Demand (L/Flush)	Unit Flow Factor (m^3/day/ person)	Estimated Average Dry Weather Flow (m^3/day) (w/o relocation)	Remarks
Site	FMH7058644	East (DC Tower) - JJO and Staff	Institutional	741	-	-	-	0.28	207.48	Unit Flow Factor: GESF - Combined UFF of commercial employees and commercial activities in J11 Community, Social & Personal Services is 0.280 m3/person/day. Worker density: Population from the latest GBP(san-fit schedule) adopted in BEAM Plus.
		East (DC Tower) - Public	Institutional	5026	4.0	20.0	6.5	0.0078	39.37	Unit Flow Factor: Based on the BEAM Plus for New Buildings Version 2.0 WU P1 and WU7 assumption for water consumption calculation. Worker density: Population from the latest GBP(san-fit schedule) adopted in BEAM Plus.
Site	FSH7003584	West (FC Tower) - JJO and Staff	Institutional	311	-	-	-	0.28	87.08	Unit Flow Factor: GESF - Combined UFF of commercial employees and commercial activities in J11 Community, Social & Personal Services is 0.280 m3/person/day. Worker density: Population from the latest GBP(san-fit schedule) adopted in BEAM Plus.
		West (FC Tower) - Public	Institutional	1130	4.0	20.0	6.5	0.0078	8.8517	Unit Flow Factor: Based on the BEAM Plus for New Buildings Version 2.0 WU P1 and WU7 assumption for water consumption calculation. Worker density: Population from the latest GBP(san-fit schedule) adopted in BEAM Plus.

By Hand and by Email (tpbsubmission@pland.gov.hk)

Our Ref : HDL3-DM-2368-250495L
17 October 2025

Urbis Limited
Planning, Urban Design, Landscape, Golf & Environmental Consultants

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

Attention: Secretary of Town Planning Board

Dear Sir/Madam,

Section 16 Planning Application under the Town Planning Ordinance (Cap.131) for Submission of Layout Plan in "Commercial (2)" Zone for Patchway Holdings (HK) Limited at Inland Lot No. 8945, Causeway Bay
A/H7/188 – SUBMISSION OF FURTHER INFORMATION 2

We are writing with respect to the submission of the captioned application and are pleased to submit herewith Further Information (FI) 2 with regard to that application.

Please kindly find attached the following updated and revised items for your necessary action:

- Planning Statement;
- Revised Figures;
- Replacement Page of Annex B – Layout Plan;
- Replacement Pages of Annex C – Landscape Master Plan;
- Annex E – Drainage Impact Assessment;
- Replacement Pages of Annex F – Sewerage Impact Assessment; and
- Response to Comments.

Please kindly note that the items above do not constitute a significant or material change to the proposed scheme, and we would like to request for an exemption from publication and recounting requirements under the provisions of Section 5 of TPB-PG No.32B.

Should you have any queries, please do not hesitate to contact Miss Samantha YUNG, Town Planner at URBIS Limited by phone at [redacted] via email [redacted].

Yours faithfully

For and on behalf of URBIS Limited

David Morkel MRTPI MHKIP MHKIUD RPP
DM/SY/cs

Encl.

Patchway Holdings (HK) Limited

銅鑼灣

Causeway Bay



Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

A/H7/188 Further Information 2

Planning Statement

Urbis Limited

October 2025

Patchway Holdings (HK) Limited

Submission of Layout Plan and Application for Commercial Development on IL No8945 Causeway Bay, Hong Kong under s16 of the Town Planning Ordinance (Cap.131)

Planning Statement

Document No. 005

URBIS Limited

October 2025

In association with
Ronald Lu & Partners (Hong Kong) Ltd.
ARUP
WSP
Otherland Limited
MVA Hong Kong Ltd.
Arcadis Hong Kong Ltd.

Prepared by :	*Samantha Yung MRTPI*	17 October 2025 Date
Checked by :	*David Morkel MRTPI MHKIP MHKIUD RPP*	17 October 2025 Date
Approved for Issue by:	*Alan Macdonald MRTPI FHKIP FHKIUD RPP*	17 October 2025 Date

Revision Log		
Revision	Issue Date	Description
Rev. 0 Draft	20250818	First Draft Issue
Rev. 0 Final	20250827	First Final Issue
Rev. 1 Final	20251017	Further Information 2

Executive Summary

This planning application relates to Inland Lot No. 8945, Caroline Hill Road, Causeway Bay, Hong Kong. It is prepared and submitted under Section 16 of the Town Planning Ordinance (Cap.131) on behalf of Patchway Holdings (HK) Limited (the Applicant), to seek approval from the Town Planning Board (TPB/the Board) for amendment of an approved Layout Plan for a proposed commercial and social welfare facility project.

The Application Site is zoned "Commercial (2)" ("C(2)") on the approved Wong Nai Chung Outline Zoning Plan (OZP) No. S/H7/21. It covers the majority of the "C(2)" zone in the OZP and has an area of about 14,802m^2. All the proposed uses in the approved Layout Plan, including 'Office', 'Shop and Services', 'Eating Place', 'Social Welfare Facility', 'Public Clinic', 'Place of Recreation, Sports or Culture', 'Public Transport Terminus or Station' and 'Public Vehicle Park (excluding container vehicle)', are Column 1 uses which are always permitted in the "C(2)" zone. According to the Remarks of the Notes of the "C(2)" zone in the OZP, for any new development within the zone, a Layout Plan shall be submitted for the approval of the Board.

A Layout Plan for the Application Site submitted as a Section 16 application (No. A/H7/181) was approved by the TPB on 6 May 2022. The approved Layout Plan (the 'Approved S16 Scheme') includes three commercial towers, comprising social welfare facilities, which include a Child Care Centre (CCC), a Day Care Centre for the Elderly (DE) and a District Health Centre (DHC), as well as commercial uses and performing arts and cultural facilities (PACF). The 2/F podium and Landscape Bridge, together with a public open space (POS) in the form of a semi-internal corridor, and an area around the Old and Valuable Tree (OVT) (Registration No. LANDSD(LEASED) WCH/1)(Previous Registration No. HKP WCH/1) on G/F, will provide a POS of at least 6,000m^2 in total, as required in the Notes of the OZP. The approved Project will yield a total of 102,000m^2 countable GFA, the maximum allowable under the OZP.

Subsequent to the approved Section 16 application, a Section 16A application (No. A/H7/181-2) for amendments to the approved Layout Plan (the 'Approved S16A Scheme') was approved by the Director of Planning, under the delegated authority of the TPB, on 29 May 2025. It included the following three Class B amendments as defined by the TPB Guidelines for Class A and Class B amendments to Approved Development Proposals (TPB PG-No.36C):

- Changes in the size of the setback at 2/F of Tower 3 from northeastern site boundary;
- Changes in the location of Government, Institution or Community (GIC) facilities, including the PACF (Towers 1 & 2) and the CCC, DE and DHC (Tower 3); and
- Changes in the location and layout of private and public car parks, car park for GIC facilities with its designated drop-off, loading/ unloading areas, internal roads and light buses lay-bys on B4-5/F, B3/F, B2/F and B1/F.

In addition to the above, the Section 16A application included a number of Class A amendments to the Approved Development Proposal - which do not require permission from either the TPB or their delegated authority.

This Application (for 'the Current Scheme') proposes *one material change* to the Approved S16A Scheme as follows:

The Application Site contains a large Fig tree (*Ficus elastica*) abutting Leighton Road, partly supported by an existing masonry wall. Although affected by Brown Root Rot Disease (BRRD), the tree is recognized by Government as an OVT (Registration No. LANDSD(LEASED) WCH/1). A tree protection zone (TPZ), which is currently covered by an extensive hard, impermeable concrete slab, is identified in the Lease. In the previous approved Section 16 and Section 16A applications for this project, a 'Banyan Garden' surrounding the OVT, along with an entrance plaza and internal street, were proposed as part of the POS at the G/F level.

According to a more detailed analysis of the OVT's condition undertaken by an Independent Tree Specialist, Professor Jim Chi Yung, BH, JP, the tree's crown vitality is declining and its root health is under stress. It has developed a sprawling horizontal canopy with extensive aerial roots due to its site constraints. Its growth is severely limited by:

- A shortage of open, good-quality soil;
- A high proportion of the TPZ being compacted and sealed over with impermeable paving; and
- Chronic soil compaction and reduced root aeration.

Without intervention, its long-term prognosis is poor, and it is unlikely to maintain good performance for more than a few decades.

Through collaboration with the independent tree specialist, landscape architects, architects, and structural engineers, an enhanced scheme for this area has been developed to achieve a win-win solution between tree preservation and public interest. In particular, the current approach will:

- Protect and Rehabilitate the OVT;
- Enhance Public Access and Enjoyment at the POS; and
- Enhance Cultural Placemaking.

The Current Scheme introduces three soil-rooting zones within the TPZ. Each zone will receive different treatments to maximise its capability to improve the OVT's growth in the long run. This approach responds to the OVT's declining growth, severely degraded site conditions, and an unfavourable long-term prognosis. Its greatest constraints, including an acute shortage of open soil, poor soil quality, and a TPZ largely covered by highly compacted and impermeable paving, have severely limited the tree's vitality. To address these entrenched challenges, the Current Scheme proposes to enhance the soil area, volume, and quality, giving the tree a new lease of life.

During the detailed design stage, it became evident that the previous Approved S16 Scheme would significantly limit the area of POS accessible by the public as it would require physical barriers including perimeter balustrades, which fully restrict public access to the Banyan Garden's lawn area, to prevent potential BRRD spread. The Current Scheme achieves a superior balance by a co-use arrangement within part of the TPZ: a surface will form part of the TPZ to serve as a civic plaza, whilst the space underneath will be filled with high-quality, uncompacted soil to encourage optimal root development. This innovative, science-based arboricultural intervention not only rehabilitates the OVT, but also demonstrates how valuable urban land resources can achieve public amenity and heritage tree conservation purposes. It represents a model for urban forestry and sustainable development in Hong Kong's dense core, striking a careful balance between preservation and public benefit.

The Current Scheme will offer an opportunity for users to experience the magnificent tree in close proximity and provide a flexible and multi-functional open space beneath it. This space has the potential for positive community and placemaking benefits as a space for temporary non-commercial cultural events and activities. This ensures the tree remains not only a natural heritage landmark but also a living element of the public's collective memory.

In addition to the amendment to the Banyan Garden, this application proposes the *following minor amendments* to the Approved S16A Scheme:

(1) As detailed architectural design has continued to develop, the location of POS, as well as the distribution of areas between covered and non-covered POS needs to be slightly amended. The total area of POS provided remains unchanged;
(2) The design development of the POS during detailed design stage has resulted in the need for an amendment to the soft and hard landscape design of the POS at 2/F from that shown in the Approved S16A Scheme; and

(3) As agreed with relevant Government departments during detailed design stage, the provisions of loading/unloading area and lay-by are slightly amended to tally with the approved General Building Plans (GBPs) whilst the total number of provisions remains unchanged.

The technical assessments carried out for the two approved schemes are, to a large extent, applicable to the Current Scheme, with minor updates where necessary to account for the Current Scheme.

In summary, as with the Approved S16 Scheme and the Approved S16A Scheme, the Current Scheme proposed by the Applicant:

- fulfills the requirements of layout plan submission under Remarks of the Notes of the "C(2)" zone on the approved Wong Nai Chung OZP No. S/H7/21;
- complies with material requirements and development parameters of the approved Wong Nai Chung OZP No. S/H7/21;
- preserves designated features of historical and natural value located on the site;
- results in an enhanced provision and distribution of POS;
- aligns with Government policy objectives in fostering arts, culture and tourism development;
- enhances air ventilation through building design and layout;
- enhances pedestrian connectivity to the surrounding area and walkability in the wider area;
- integrates the required GIC facilities with the commercial Project for the benefit of the public;
- alleviates traffic congestion in the area through incorporation of the gazetted 'Proposed Road Improvement Works at Caroline Hill Road, Link Road, Hoi Ping Road and Leighton Road'; and
- poses no insurmountable adverse impacts in terms of technical aspects.

However, importantly, this Application for the Current Scheme **provides significant enhancements** to the Approved S16A Scheme. Specifically it:

- protects and rehabilitates the OVT through different treatments within the three soil-rooting zones;
- allows the public to enjoy the POS at the TPZ; and
- includes an enhanced cultural placemaking proposal furthering community cultural and arts enjoyment of the Banyan Garden (when compared to both approved schemes).

In light of the abovementioned merits of the proposed changes proposed to the Approved S16A Scheme, favourable consideration of this application is respectfully requested from the Town Planning Board for the Current Scheme, as set out in this Layout Plan.

內容摘要

（內容如有差異，請以英文版本為準）

本規劃申請位於銅鑼灣加路連山道內地段 8945 號，博威控股 (香港)有限公司(下稱「申請人」）現按第 131 章城市規劃條例第 16 條，向城市規劃委員會(下稱「城規會」）提交對已核准發展藍圖的修訂以供核准，以發展商業、社會福利設施項目。

申請地點位於黃泥涌分區計劃大綱核准圖編號 S/H7/21(下稱「大綱圖」）的「商業（2）」地帶，並覆蓋「商業（2）」地帶大部分範圍，面積為 14,802 平方米。 已核准發展藍圖中的所有擬議用途，包括「辦公室」、「商店及服務行業」、「食肆」、「社會福利設施」、「政府診所」、「康樂文娛場所」、「公共車輛總站或車站」及「公眾停車場（貨櫃車除外）」，皆為「商業（2）」地帶內經常准許的第一欄用途。根據大綱圖內有關「商業（2）」地帶下註釋的備註，在地帶範圍內，任何新發展或現有建築物的重建，都必須提交一份發展藍圖，以供城規會核准。

根據第 16 條提出規劃許可申請（編號：A/H7/181）的發展藍圖已於 2022 年 5 月 6 日獲城規會批准。已核准發展藍圖 (即「已批准的 S16 方案」）包括三座商業大樓，設有社會福利設施，包括一間幼兒中心、一間長者日間護理中心及一間地區康健中心，以及商業用途和演藝及文化設施。已核准發展藍圖的二樓平台上的休憩用地將設有蓋景觀橋，橫跨地盤內的擬議道路，並延伸至通往利園六期的擬議行人天橋。已核准發展藍圖包括於二樓平台及有蓋景觀橋、地面的綠走廊及近古樹名木的範圍提供約 6,000 平方米作公眾休憩用地，以符合大綱圖內註釋的備註中的要求。本申請下的已核准發展藍圖達至大綱圖上訂明的最高准許總樓面面積，為 102,000 平方米。

繼第 16 條申請獲批准後，第 16A 條申請（編號：A/H7/181-2）亦於 2025 年 5 月 29 日獲規劃署署長根據城市規劃委員會授權批准。該申請旨在修訂已核准發展藍圖（即「已批准的 S16A 方案」），並包括根據城市規劃委員會對已獲核准的發展計劃作出 A 類及 B 類修訂的指引（TPB PG-No.36C）所界定的以下三項 B 類修訂：

- 第 3 座二樓由東北面地界向後移範圍的大小變更；
- 政府、機構或社區設施位置的變更，包括第 1 及第 2 座的演藝及文化設施，以及第 3 座的幼兒中心、長者日間護理中心和地區康健中心；以及
- 私人及公共停車場的位置和佈局變更，包括政府、機構或社區設施專用停車及其指定的落客處、上落客貨貨車處、內街，以及位於 B4-5 層、B3 層、B2 層及 B1 層的小巴避車處的調整。

除上述內容，根據《城市規劃條例》第 16A 條提交的申請亦包括若干屬於對核准發展計劃作出的 A 類修訂，此類修訂無需城市規劃委員會或其授權人員的批准。

本申請（即「現行方案」）就根據《城市規劃條例》第 16A 條已批准的 S16A 方案提出一項實質性變更，詳情如下：

申請地點包括一棵大型榕樹（印度榕），毗鄰禮頓道，部分由現有石牆支撐。儘管受到褐根病的影響，該樹木被列入為古樹名木（編號：LANDSD(LEASED) WCH/1）。契約內列明的樹木保護範圍，目前被大面積、堅硬、不可滲透的混凝土板覆蓋。在先前根據第 16 條及第 16A 條提出並已核准的規劃許可申請中，擬議項目在地下設置一個環繞該古樹名木的「榕樹花園」，以及一個入口廣場和內部街道，作為公衆休憩用地的一部分。

根據獨立樹木專家詹志勇教授，榮譽勳章，太平紳士對該古樹名木狀況的詳細分析，樹冠的活力正在下降，根部健康也面臨壓力。由於場地限制，它形成了橫向擴展的樹冠，並長出了大量氣根。其生長受到以下因素的嚴重限制：

- 缺乏開放且優質的土壤；
- 樹木保護區的大部分區域被壓實並覆蓋了不透水的鋪裝材料；以及
- 土壤長期壓實，導致根部通氣能力下降。

如果不進行干預，其長期前景堪憂，預計難以維持良好狀態超過幾十年。

透過與獨立樹木專家、園境師、建築師及結構工程師的合作，現就該範圍制定出一項優化方案，在保育樹木與保障公眾利益之間取得雙贏局面。具體而言，現行方案將：

- 保護並修復古樹名木；
- 提升公眾於公眾休憩用地的可達性與使用體驗；以及
- 加強文化地方營造。

為應對古樹名木生長衰退及場地條件惡化的問題，現行方案於樹木保護區內劃分三個土壤生根區域，並針對各區域施以不同的修復處理，以提升其對樹木長遠生長的支持能力。此策略正面回應古樹因土壤面積不足、土質劣化及樹木保護區範圍內鋪面高度壓實且不透水等因素所導致的生長困境。透過擴大土壤面積、增加土壤容量及改善土壤品質，方案旨在重塑生長環境，延續古樹生命力。

在詳細設計階段，先前已批准的 S16 方案為防止褐根病的潛在擴散，擬於榕樹園草坪區設置包括周邊欄杆的物理屏障，大幅限制公眾進入公眾休憩用地。此做法雖具保護作用，卻犧牲了空間的可達性與公眾享用權益。相比之下，現行方案採用更進取且整合性的設計，於樹木保護區內引入共用安排：地面部分設計為市民廣場，供公眾使用；而地下則填充高品質、未壓實的土壤，以促進樹木根系的最佳生長。此科學為本的樹藝干預措施不僅有助於修復古樹名木，亦保留了公眾的使用權益。此設計展示了如何在香港高密度核心地區，透過策略性規劃，讓城市土地資源同時實現文化遺產保育與社區福祉。它為城市林業與可持續發展樹立了典範，亦與政府推動的綠化、景觀提升及氣候韌性目標相契合。

現行方案讓市民近距離接觸這瑰麗的古樹，並在其下方設置一個靈活多功能的開放空間。該空間具備舉辦非商業性、臨時性文化活動的潛力，為社區帶來正面的地方營造效益。此設計不僅讓古樹繼續作為自然文化遺產地標存在，更可成為公眾集體記憶中的活元素。

除了對「榕樹花園」的修訂外，此申請亦就已批准的 S16A 方案提出以下若干輕微修訂：

(1) 隨着詳細建築設計持續發展，公眾休憩空間的位置，以及有蓋與無蓋公共休憩空間的面積分佈，需作出輕微修訂。惟所提供的公眾休憩用地總面積維持不變；

(2) 在詳細設計階段，公眾休憩用地的設計發展導致需對二樓公眾休憩用地的種植花卉樹木／園景建築設計上作出修訂，以配合實際情況，與已批准的 S16A 方案所示略有不同；以及

(3) 在詳細設計階段與相關政府部門所商定，對上落客貨車處及避車處的提供稍作修改，以符合已批准的建築圖則，惟所提供的總數目維持不變。

對兩個已獲批准方案所進行的技術評估在很大程度上適用於現行方案，並在必要時作出少量更新以反映現行方案。

總結而言，與已批准的 S16 方案及已批准的 S16A 方案相同，申請人所提出的現行方案：

- 符合大綱圖內《註釋》下的備註中有關提交發展藍圖的要求；
- 遵守大綱圖內的發展參數及所有重要要求；
- 完全保留申請地點內具自然及歷史價值的特徵；
- 提供更多具質素及更妥善分佈的公眾休憩用地；
- 符合政府在促進藝術、文化和旅遊發展方面的政策目標；
- 透過建築設計及佈局，改善地區的空氣流通；
- 提高地區內的行人連接性及易行度；
- 有效地融合所需要的政府、機構或社區設施；
- 透過已刊憲的加路連山道、連道、開平道及禮頓道擬建道路改善工程，舒緩地區交通擠塞問題；以及

- 於技術層面不會產生不可克服的負面影響。

然而, 此申請對現有方案針對已批准的 S16A 方案提供了**顯著的改進**。具體而言，它：

- 通過在三個土壤生根區域內採用不同的處理方式，保護並修復古樹名木；
- 讓公眾能夠在樹木保護範圍內享用公眾休憩用地；以及
- 提供一個優化文化與地方營造和人流通行的建議，進一步促進社區於「榕樹花園」的文化和藝術享受(與已批准方案相比）。

基於上述已批准的 S16A 方案擬議變更的裨益，懇請城規會對本規劃申請現行方案藍圖作出正面積極的考慮。

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LIST OF ABBREVIATIONS

AMO	Antiquities and Monuments Office
AVA	Air Ventilation Assessment
BD	Buildings Department
BH	Building Height

CCC	Child Care Centre
C(2)	Commercial (2)
DBH	Diameter at Breast Height
DE	Day Care Centre for the Elderly
DHC	District Health Centre
ELS	Excavation and Lateral Support
ES	Explanatory Statement
FSM	Fabricated Soil Mix
GFA	Gross Floor Area
"G/IC"	"Government, Institution or Community" (zone)
GIC	Government, Institution or Community
HGV	Heavy Goods Vehicle
HyD	Highways Department
LGV	Light Goods Vehicle
LMP	Landscape Master Plan
MGV	Medium Goods Vehicle
MLP	Master Layout Plan
NOFA	Net Operating Floor Area
OVT	Old and Valuable Trees
OZP	Outline Zoning Plan
POS	Public Open Space
PR	Plot Ratio
TPB	Town Planning Board
TPDM	Transport Planning and Design Manual
TPZ	Tree Protection Zone

1 Introduction

1.1 BACKGROUND AND PURPOSE OF THE APPLICATION

1.1.1. URBIS Limited is commissioned by Patchway Holdings (HK) Limited ("the Applicant") to seek approval under Section 16 of the Town Planning Ordinance (Cap.131) for amendments to a Layout Plan approved by the Town Planning Board ("TPB"/ the "Board") (Application No. A/H7/181) with subsequent amendments accepted by the Director of Planning, under the delegated authority of the TPB, under Section 16A (Application No. A/H7/181-2).

1.1.2. The application relates to a commercial development with social welfare facilities at Inland Lot (IL) 8945 Caroline Hill Road, Causeway Bay, Hong Kong (**Figure 1.1** refers).

1.1.3. The Application Site falls within the Approved Wong Nai Chung Outline Zoning Plan (OZP) No. S/H7/21. **Figure 1.2** depicts the current OZP zonings of the project site and its environs. The Site (or 'Application Site') falls within an area zoned as "Commercial (2)" ("C(2)"). According to the Notes of the OZP, 'Office', 'Shop and Services', 'Eating Place', 'Social Welfare Facility', 'Public Clinic', 'Place of Recreation, Sports or Culture', 'Public Transport Terminus or Station' and 'Public Vehicle Park (excluding container vehicle)' are Column 1 uses which are always permitted in the "C(2)" zone.

1.1.4. Notwithstanding that the above uses are permitted as of right, according to the OZP's Remarks of the Notes of the "C(2)" zone, for any new development within the zone, a Layout Plan shall be submitted for the approval of the Board.

1.1.5. A previous Layout Plan for this project, submitted under Section 16 of the Town Planning Ordinance (Cap.131), was approved on 6 May 2022 (Application No. A/H7/181). This is referred to in this Planning Statement as the 'Approved S16 Scheme'.

1.1.6. An application under Section 16A of the Town Planning Ordinance (Cap.131) for amendments to the Approved S16 Scheme was approved on 29 May 2025 (Application No. A/H7/181-2). This is referred to in this Planning Statement as the 'Approved S16A Scheme'. It included the following three Class B amendments according to the TPB Guidelines for Class A and Class B amendments to Approved Development Proposals (TPB PG-No.36C):

- Changes in the size of the setback at 2/F of Tower 3 from northeastern site boundary;
- Changes in the location of Government, Institution or Community (GIC) facilities, including the performing arts and cultural facilities (PACF) (Towers 1 & 2) and the Child Care Centre (CCC), a Day Care Centre for the Elderly (DE) and a District Health Centre (DHC) (Tower 3); and
- Changes in the location and layout of private and public car parks, car park for GIC facilities with its designated drop-off, loading/ unloading areas, internal roads and light buses lay-bys on B4-5/F, B3/F, B2/F and B1/F.

1.1.7. In addition to the above, the Approved S16A Scheme included a number of Class A amendments to the Approved S16 Scheme - which do not require permission from either the TPB or their delegated authority.

1.1.8. This 'Current Scheme' application proposes the following amendment to the Approved S16A Scheme:

- Enhancements to the design of a publicly accessible Banyan Garden forming part of the G/F Public Open Space (POS) to protect and rehabilitate a Government designated 'Old and Valuable Tree' (OVT) and to optimise the extent of the accessible public open space (POS) at the same time.

1.1.9. In addition to the amendment to the Banyan Garden, this application proposes the following minor

changes to the Approved S16A Scheme:

- As detailed architectural design has continued to develop, the location of POS, as well as the distribution of areas between covered and non-covered POS needs to be slightly amended. The total area of POS provided remains unchanged;
- The design development of the POS during detailed design stage has resulted in the need for an amendment to the soft and hard landscape design of the POS at 2/F from that shown in the Approved S16A Scheme; and
- As agreed with relevant Government departments during detailed design stage, the provisions of loading/unloading area and lay-by are slightly amended to tally with the approved General Building Plans (GBPs) whilst the total number of provisions remains unchanged.

1.1.10. The technical assessments carried out for the two approved schemes are, to a large extent, applicable to the Current Scheme, with minor updates where necessary to account for the Current Scheme.

1.1.11. The purpose of this Planning Statement is to present the current Layout Plan design proposals (referred to in this Planning Statement as the 'Current Scheme'); relevant technical assessments; and to provide supporting planning justifications, for the consideration of the Board.

1.2 LAND STATUS

1.1.12. In March 2021, the Lands Department announced that the Application Site at Inland Lot No. 8945, designated for non-industrial (excluding residential, godown and petrol filling station) purposes, in the 2020-21 Land Sale Programme would be disposed of by public tender. The Conditions of Sale included specification of the minimum and maximum gross floor area (GFA) which also includes the GFA of the 'Government Accommodation' (a Child Care Centre, a Day Care Centre for the Elderly and a District health Centre) but excludes the GFA of the required public vehicle park, all to be constructed by the purchaser under the Conditions of Sale.

1.2.1 In May 2021, the land sale tender was awarded to the Applicant. As the sole landowner of the Application Site, the Applicant is prepared to realise the proposed commercial Project, together with its associated social welfare facilities and additional PACF presented in this Approved Layout Plan.

1.3 PLANNING HISTORY

1.3.1 On the previous Approved Wong Nai Chung OZP No. S/H7/19, the northern portion of the Application Site was zoned "Other Specified Uses" annotated "Sports and Recreation Club" ("OU(SRC)") and was occupied by the recreation clubs of the Post Office and PCCW; and the southern portion was zoned "G/IC" and occupied by the ex-headquarters building and vehicle depot of the Electrical and Mechanical Services Department (EMSD), as well as office buildings of Highways Department (HyD) and Civil Aid Services.

1.3.2 The Government commissioned consultancy studies in 2013 to review the development options and assess the development potential of the Application Site. The 2017-18 Budget indicated that to maintain Hong Kong's status as an international financial centre, it was necessary to ensure a continuous supply of office space, especially Grade A office space. Therefore, while the consultancy Study identified the southern portion of the Application Site for the provision of a district court, the rest of the site was proposed to be rezoned from "OU(SRC)"and "G/IC" to "C(2)". Moreover, in the Chief Executive's Policy Address 2017, it was proposed that a DHC would be set up in each district with a view to enhancing public awareness of disease prevention. The Food and Health Bureau has therefore proposed to have the Wan Chai DHC incorporated into the commercial development at the Application Site.

1.3.3 During the rezoning process, the TPB decided to impose a requirement in the OZP for the submission

of a layout plan to the Board under the Section 16 planning application system of the Town Planning Ordinance (Cap.131), given that the commercial site is located at a prime location with a future district court development nearby.

1.3.4 A notional scheme showing the possible layout of the building blocks and open spaces, without PACF, was presented by Planning Department (PlanD) for the reference of the TPB on the rezoning of the Application Site. It was prepared to facilitate the preparation of technical assessments to support the amendments of the OZP (**Annex A-1**).

1.3.5 At the same time, the TPB raised concerns towards the undesirable residual open space at the south-eastern corner of the Application Site (**Annex A-2**).

1.3.6 In the TPB meeting, it was mentioned that an integrated design of the Application Site and the future District Court site can be achieved as demonstrated in the indicative scheme with a deck provided over the internal road, linking the two sites together (**Annex A-1**).

1.3.7 During PlanD's consultation with District Council on the rezoning proposal and consideration of representations regarding the OZP amendment, the District Council and TPB noted that there was a strong demand of cultural, arts and performing facilities in Causeway Bay. Therefore, the Explanatory Statement of the OZP states at Clause 8.1.3 that "the project proponent of the site is encouraged to provide more GIC facilities taking into account the current deficit in Wan Chai District and for the benefit of the community. PACF are also compatible uses in the "C(2)".

1.3.8 The rezoning of the Application Site was approved by the TPB on 11 September 2020 and the OZP incorporating the rezoning of the Application Site was approved by the Chief Executive in Council on 24 November 2020.

1.3.9 In March 2022, a submission of a Layout Plan for the proposed permitted commercial development (Office, Eating Place, Shop and Services) with Social Welfare Facility, Public Clinic, Place of Recreation, Sports or Culture, Public Transport Station and Public Vehicle Park (excluding Container Vehicle), and minor relaxation of gross floor area restriction (from 100,000m^2 to 102,000m^2 (2%) to accommodate 2,000m^2 of additional PACF on 5/F of Towers 1 and 2) was made by the Applicant to the TPB under Section 16 of the Town Planning Ordinance (Application No. A/H7/181). It was approved on 6 May 2022 subject to conditions in the Board's letter of 20 May 2022 (ref. TPB/A/H7/181) (**Annex A-3**).

1.3.10 Subsequent to the approved Section 16 application, a Section 16A application (No. A/H7/181-2) for amendments to the approved Layout Plan was approved by the Director of Planning, under the delegated authority of the TPB, on 29 May 2025 (ref. TPB/A/H7/181-2) (**Annex A-4**).

1.3.11 The status of compliance with each condition under the approved Section 16 application (No. A/H7/181) and the approved Section 16A application (No. A/H7/181-2) is summarised in **Table 1.1** below.

Table 1.1 Status of Compliance with Each Condition Under the Approved Section 16 Application (No. A/H7/181) and the Approved Section 16A Application (No. A/H7/181-2)

Condition		Status
(a)	The design and provision of vehicular access, car parking and loading/unloading facilities for the proposed development to the satisfaction of the Commissioner for Transport or of the TPB;	The design and provision of vehicular access, car parking and loading/unloading facilities for the proposed development was submitted in the General Building Plans (GBPs) on which Transport Department has been consulted. The latest revision of the GBPs has been approved by Buildings Department on 5 March 2025 (**Annex A-5**).
(b)	The submission and implementation of a revised Landscape Master Plan to the satisfaction of the Director of Planning or of the TPB; and	The submission of a revised Landscape Master Plan (LMP) for partial compliance with this approval condition has been accepted by the Director of Planning on 12 August 2022 (**Annex A-6**). The full compliance with this approval condition rests upon the implementation of the approved LMP (which has not yet been achieved) to the satisfaction of the Director of Planning or of the TPB.
(c)	The submission of a Conservation Management Plan and implementation of the mitigation measures identified therein before commencement of works to the satisfaction of the Commissioner of Heritage or of the TPB.	The submission of Conservation Management Plan (CMP) for partial compliance with this approval condition has been accepted by the Antiques and Monuments Office (AMO) on 18 July 2022 (**Annex A-7**). The full compliance with this approval condition rests upon the implementation of the mitigation measures identified in the CMP before commencement of works (which is still ongoing and has not yet been achieved) to the satisfaction of the Commissioner of Heritage or of the TPB.
(d)*	The submission and implementation of a traffic management plan to demonstrate the proposed internal traffic and transport arrangements for vehicles and pedestrians to the satisfaction of C for T or of the TPB.	The traffic management plan will be submitted and implemented to the satisfaction of C for T or of the TPB in due course.

Note:
Condition (d) was introduced under the approval of the Section 16A application (No. A/H7/181-2).

2 Site Context and Features

2.1 SITE LOCATION, EXISTING CONDITION AND SURROUNDING DEVELOPMENT

2.1.1 The Application Site is located at the junction of Caroline Hill Road and Leighton Road, south of the commercial area of Causeway Bay on Hong Kong Island (**Figure 2.1** refers). The Application Site is bounded by Leighton Road to the northwest, by Caroline Hill Road to the northeast and southwest, and by land designated for the future District Court development and by the South China Athletic Association to its southeast.

2.1.2 Prior to commencement of construction works, the Application Site was mostly vacant. Structures and facilities associated with its former use as the recreation clubs of the Post Office and PCCW; the ex-headquarters building and vehicle depot of the Electrical and Mechanical Services Department (EMSD) and offices of the Highways Department (HyD) and Civil Aid Services were disused or demolished, except for the two remaining structures at the south-eastern part of the Site (one structure with one-storey height from level +10.0mPD to +15.0mPD approximately; and the other structure with two-storey height from level +5.0mPD to +15.0mPD approximately). The south-eastern part of the Application Site has an elevation of approximately +15.3mPD, while the remaining areas are at approximately +10.3mPD to +9.3mPD. Caroline Hill Road to the northeast of the Application Site has existing levels ranging from approximately +4.9mPD to +6.4mPD. Caroline Hill Road to the southwest of the Application Site has existing levels ranging from approximately +8.1mPD to +11.9mPD. Ground level elevations on Leighton Road to the north-west of the Application Site range from approximately +7.6mPD to +4.9mPD.

2.1.3 In terms of surrounding land use context, the areas to the north and northwest of the Application Site across Leighton Road consist mainly of office/commercial developments. Building height restrictions in this area range from 130-135mPD (**Figure 1.2** refers). The Causeway Bay Mass Transit Railway (MTR) Station is located within 500m of the Site (**Figure 2.2** refers). GIC uses of the Po Leung Kuk, residential developments and schools are located to the west and south across Caroline Hill Road (**Figure 2.2** refers). The South China Athletics Association, the Hong Kong Stadium and other sports clubs/recreational grounds are located to the southeast and east. St. Paul's Hospital and approximately 13-storey high residential uses in Haven Street zoned "Other Specified Uses" annotated "Mixed Use" are located to the southeast and east, with some sites undergoing redevelopment/renovation. Car repair workshops and eating places are currently found on the ground floors of developments along the eastern section of Caroline Hill Road near the Haven Street cluster.

2.1.4 Located at the junction of Leighton Road and Caroline Hill Road, the Application Site is within an area subject to occasional heavy traffic and traffic congestion. Leighton Road is a district distributor serving the southern part of Causeway Bay. Several bus stops are located along the road. Caroline Hill Road is a single two-way carriageway that abuts the northern and southern edges of the Application Site. Photos showing the surrounding context are depicted in **Figures 2.3a to 2.3c**.

2.2 HERITAGE FEATURES

2.2.1 The Application Site contains two sections of existing masonry retaining walls (Slope Feature Nos. 11SW-B/FR 193 and 11SW-B/FR 32) and two associated earthenware pipes which are on the northeast side of the Application Site and are Grade 3 historic structures (N339) designated on 12 December 2019 (**Figure 2.4** refers). The walls are important historic features of the streetscape (**Figures 2.5** refers).

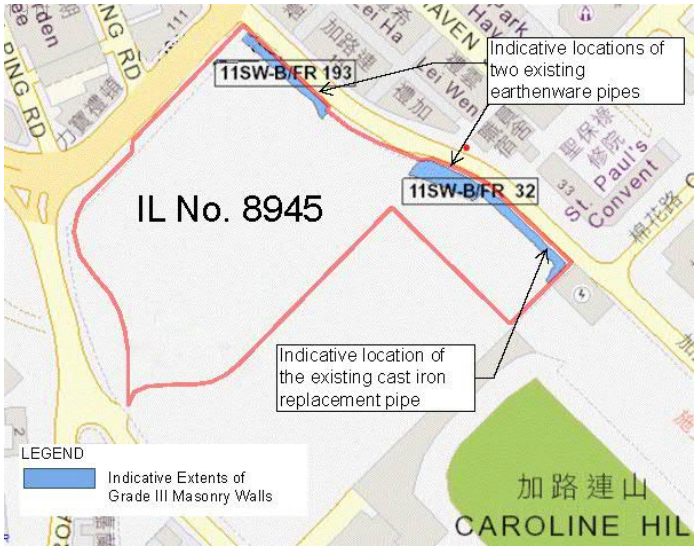


Figure 2.4 Location of Grade 3 Masonry Walls and Earthenware Pipes

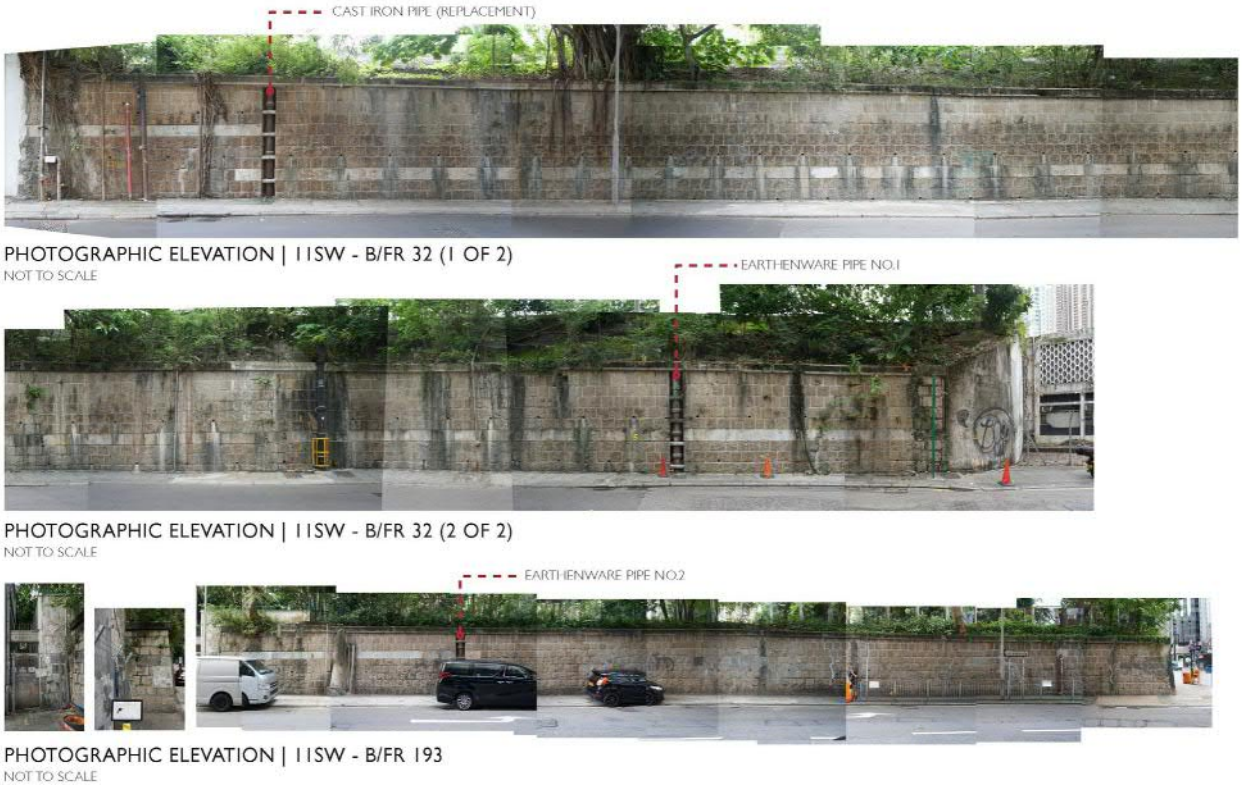


Figure 2.5 Photos of Grade 3 Masonry Walls and Earthenware Pipes

2.2.2 The graded masonry walls are built of roughly dressed granite blocks in stretcher bond with concrete bond courses and weep holes at different levels. The copings are finished in framed vermiculated rustication with drainage provision above. There are also two earthenware pipes (known as vitrified clay pipe) installed vertically in recessed setbacks within the masonry walls.

2.2.3 There are a number of other historic buildings/structures in the proximity of the Application Site, including St. Paul's Convent Church (Grade 1), Po Leung Kuk, Main Building (Grade 1), Confucius Hall (Grade 1), Shing Kwong Church (Grade 2), S.K.H. St. Mary's Church (Grade 1), Tung Wah Eastern

Hospital (Grade 2), St. Margaret's Church (Grade 1) and the Racecourse Fire Memorial (Declared Monument). **Table 2.1** and **Figure 2.6** show the detail and location of the historic buildings/structures in the surrounding.

Table 2.1 Historic Buildings/Structures in the Vicinity of the Application Site

	Historic Buildings/Structures	Date	Grading	Original Use	Current Use
1	Masonry Wall and Earthenware Pipes at Caroline Hill Road	1920s	3	Site formation of Queen's College	Boundary wall
2	St. Paul's Convent Church	1928	1	Church	Church
3	Po Leung Kuk, Main Building	1932	1	School, dormitory	Museum, Headquarters office, Memorial Hall
4	S.K.H. St. Mary's Church	1937	1	Church	Church
5	S.K.H. St. Mary's Church, General Office	1954	3	Office, vicarage, school	Activity centre, study room
6	Shing Kwong Church, The Church of Christ in China	1927	2	Church	Church
7	St. John Ambulance Brigade Hong Kong Island Area Headquarters	1935	2	Headquarters office	Headquarters office
8	Confucius Hall	1935	1	Public place and community hall	Cultural venue, assembly hall, staff quarters
9	St. Margaret's Church	1923	1	Church	Church
10	Tung Wah Eastern Hospital	1929	2	Hospital	Hospital

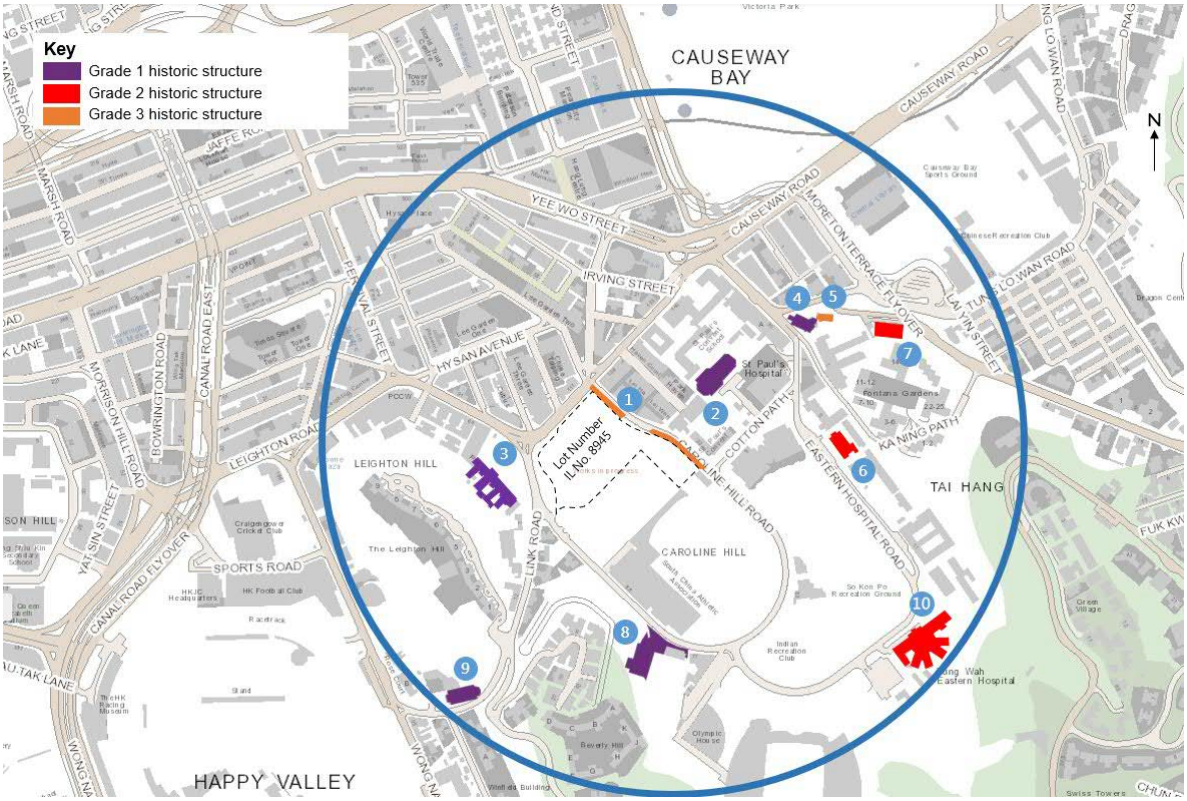


Figure 2.6 Plan Showing Historic Buildings/Structures in Vicinity of the Application Site

2.3 TREES AND VEGETATION

2.3.1 A total of 57 nos. of trees were surveyed on 21 August 2021 within the Application Site boundary, and are illustrated on the Approved Tree Survey Plan. Detailed tree findings are further elaborated in **Annex C**.

3 Outline Zoning Plan Provisions, Parameters and Requirements

3.1 OZP PLANNING INTENTION

3.1.1 Under the Remarks of the current OZP, the "C(2)" zone is stated to be "intended primarily for commercial development, which may include uses such as office, shop, services, place of entertainment, eating place and hotel, functioning as territorial business/financial centre(s) and regional or district commercial/shopping centre. These areas are usually major employment nodes".

3.2 DEVELOPMENT PARAMETERS AND FACILITIES PERMITTED UNDER THE OZP

3.2.1 According to the OZP Schedules of Uses, the following uses (inter alia) are always permitted within "Commercial" zones of the OZP:

- Office
- Eating Place
- Shop and Services
- Social Welfare Facility
- Public Clinic
- Place of Recreation, Sports and Culture
- Public Transport Terminus or Station
- Public Vehicle Park (excluding container vehicle)

3.2.2 The relevant development parameters of the Application Site stipulated on the OZP and in the Remarks of the Notes of the OZP under the "C(2)" zone are as listed as below:

- maximum gross floor area of 100,000m^2, or the gross floor area of the existing building, whichever is the greater, and it shall include the gross floor area of GIC facilities as required by the Government
- a public transport facility for minibuses shall be provided;
- a public vehicle park of not less than 125 parking spaces shall be provided; and
- a POS of not less than 6,000m^2 shall also be provided.

3.2.3 The Remarks of the "Commercial" zone in the OZP state:

"(6) Based on the individual merits of a development or redevelopment proposal, minor relaxation of the building height/gross floor area restrictions"…."may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.".

3.2.4 In addition to the above, the Explanatory Statement of the OZP (which is not formally a part of the statutory OZP itself) mentions in the "C(2)" zone the following key development requirements:

- a District Health Centre with a Net Operating Floor Area (NOFA) of about 1,000m^2;
- a Child Care Centre with a NOFA of about 531m^2;
- a Day Care Centre for the Elderly with a NOFA of about 358m^2;
- more cultural GIC facilities (optional);
- a public transport facility for minibuses (underground);

- a public car park (underground) of not less than 100 private cars parking spaces and 25 commercial vehicles;
- a clear building gap of not less than 25m in width across the central portion of the site in a northwest-southeast direction;
- retention of stone retaining walls[1];
- retention of OVT (No. LANDSD(LEASED) WCH/1); and
- an underground connection point within the site for the possible pedestrian subway to MTR Station.

3.2.5 In Para 8.1.3 of the Explanatory Statement of the Approved OZP, provision of PACF is stated to be "encouraged" but is not required.

3.3 REQUIREMENTS OF LAYOUT PLAN SUBMISSION

3.3.1 The Remarks of the "Commercial" zone in the OZP state 'a Layout Plan shall be submitted for the approval of the Town Planning Board'. **Table 3.1** specifies the requirements of the Layout Plan submission and the relevant sections of this Layout Plan in fulfilment of the requirements.

Table 3.1 Requirements of Layout Plan Submission under "C(2)" zone of the Approved Wong Nai Chung OZP No. S/H7/21 and the Relevant Sections of this Layout Plan Submission

Layout Plan Submission Requirements	Relevant Sections of the Statement
The area of the proposed land uses, the nature, position, dimensions, and heights of all buildings (including structures) to be erected on the site	▪ **Tables 4.1 to 4.3** ▪ Layout Plans at **Annex B**
The proposed total gross floor area for various uses and facilities	
The details and extent of GIC facilities, parking, loading/unloading and public transport facilities and open space to be provided within the site	
The alignment, widths and levels of any podium, footbridges, elevated walkways and roads to be constructed within the site	
The landscape and urban design proposals within the site	▪ Landscape Master Plan at **Annex C** ▪ Urban Design Proposal at **Section 4.6** and figure for urban design analysis at **Figures 4.23a and 4.23b** ▪ Landscape Proposal at **Section 4.7**
An air ventilation assessment report to identify the exact alignment of the building gap(s) and/or other enhancement measures for design improvements	▪ AVA at **Annex D**
Prior consultation with the Antiquities and Monuments Office (AMO) should be made if	▪ Approved CMP **at Annex I**

[1] As stated in the Explanatory Statement of the OZP, "the stone retaining walls along the northern and eastern peripheries of the site (except the portions being affected by the road improvement works) shall be preserved".

Layout Plan Submission Requirements	Relevant Sections of the Statement
any development, redevelopment and/or rezoning proposals might affect a declared monument and graded historic buildings/structures and their immediate environs	

3.4 FACILITIES WHICH ARE ENCOURAGED UNDER THE OZP

3.4.1 During PlanD's consultation with District Council on the rezoning proposal and consideration of representations of the OZP amendment, the District Council and TPB noted that there was a strong demand of cultural, arts and performing facilities in Causeway Bay. As noted above, the Explanatory Statement of the OZP states at Clause 8.1.3 that "the project proponent of the site is encouraged to provide more GIC facilities taking into account the current deficit in Wan Chai District and for the benefit of the community. PACF are also compatible uses in the "C(2)".

4 Development Proposal

4.1 INTRODUCTION

4.1.1 This section of the Planning Statement describes the Layout Plan for the Current Scheme development proposal (the 'Current Scheme') for which Section 16 approval is sought. This Current Scheme differs from the Approved S16A Scheme under Section 16A application (No. A/H7/181-2) in the ways described below.

4.2 AMENDMENTS TO THE 'APPROVED S16A SCHEME'

Enhanced Design and Layout of Banyan Garden

4.2.1 The Application Site contains a large Fig tree (*Ficus elastica*) of more than 60 -70 years old abutting Leighton Road, partly supported by an existing masonry wall. Although affected by Brown Root Rot Disease (BRRD), the tree is recognized as an OVT (Registration No. LANDSD(LEASED) WCH/1). A tree protection zone (TPZ) has been identified under the Lease as a Pink Hatched Green Area. The existing OVT (Registration No. LANDSD(LEASED) WCH/1) within its TPZ should be preserved in situ in accordance with Development Bureau Technical Circular (Works) No. 5/2020 on "Registration and Preservation of Old and Valuable Trees" (DEVB TC(W) No. 5/2020) and integrated into the design of the at-grade POS.

4.2.2 In the previously approved development proposals, i.e. the Approved S16 Scheme and the Approved S16A Scheme, a Banyan Garden surrounding the OVT, along with an entrance plaza and internal street, was proposed as part of the POS at the G/F level (see **Figures 4.1 and 4.2**). Nevertheless, during the detailed design stage, it became evident that the design of these approved schemes would significantly limit public access and enjoyment at the POS as it requires physical barriers, including perimeter balustrades, to fully restrict public access to the Banyan Garden's lawn area, in order to prevent potential spread of BRRD (which can be spread by spores attached to the soles of shoes or on clothing).

4.2.3 An Independent Tree Specialist, Professor Jim Chi Yung, BH, JP ("Prof. Jim") has been appointed by the Applicant to undertake a more detailed analysis of the OVT's condition. His findings are as follows:

4.2.4 The tree's crown vitality is declining and its root health is under stress. It has developed a sprawling horizontal canopy with extensive aerial roots due to its site constraints. Its growth is severely limited by:

- A shortage of open, good-quality soil;
- A high proportion of the TPZ being compacted and sealed with impermeable paving; and
- Chronic soil compaction and reduced root aeration.

4.2.5 Without intervention, its long-term prognosis is poor, and it is unlikely to maintain good performance for more than a few decades.

4.2.6 In this regard, the Current Scheme presents a rare opportunity to rehabilitate a declining OVT through science-based arboricultural innovation, co-use of valuable urban land resources for both public enjoyment and heritage tree conservation, and demonstrate a model project for urban forestry and sustainable development in Hong Kong's dense urban core. The enhanced design of the Current Scheme has been developed to achieve a win-win solution between tree preservation and public interest. In particular, the approach of the Current Scheme will:

- Protect and rehabilitate the OVT;

- Enhance public access and enjoyment at the POS; and
- Enhance cultural placemaking.

4.2.7 The enhancements to the Banyan Garden are described below and the proposed Landscape Master Plan (LMP) is shown in **Figure 4.3**.

Protection and rehabilitation of OVT

4.2.8 In the Current Scheme, with the additional support of the Independent Tree Specialist, a more detailed analysis of the OVT's condition has been undertaken to formulate an enhanced design deemed most appropriate for the future Banyan Garden.

4.2.9 **Proposed OVT Protection-cum-rehabilitation Scheme –** The Current Scheme adopts a protection-cum-rehabilitation approach to address both the OVT's declining health and the need to protect it during nearby development. It introduces three soil-rooting zones within the TPZ, including (see **Figures 4.4a – 4.4b**):

(1) Zone 1 Existing tree strip: The 3.5 m wide and 170 m^2 soil area with massive subterranean roots and root stands will be left undisturbed.

(2) Zone 2 New tree strip: This is a new planting area that measures 5.7 m wide and 270 m^2 soil area will be transformed from the previous paved sports ground to open soil with soil enhancement treatments and root preservation.

(3) Zone 3 New soil crescent: This segment has a maximum width of 9.8 m and a 285 m^2 soil area. We propose to replace the compacted low-quality site soil with a high-quality uncompacted fabricated soil mix. Overlapping the proposed Plaza, it is designed for the co-use of precious land resources to create a win-win scenario. The modern soil cell technique will be adopted to build a suspended pavement and hold the rootable soil below it.

4.2.10 Each zone will receive different treatments to maximise its capability to improve the OVT's growth in the long run. Key measures include:

- Designing a rooting highway traversing these zones;
- Minimizing excavation impacts on roots;
- Soil enhancement treatments in the new tree strip;
- Innovative nurturing of sturdy root stands;
- Soil replacement in the new soil crescent;
- Synopsis of notable soil improvements;
- Implementation strategy for the scheme; and
- Preparation of a high-quality fabricated soil mix (FSM).

4.2.11 To ensure effective implementation of the above measures, the Independent Tree Specialist will perform the following duties:

- Leading the project's landscape team to prepare the manual for the post-construction maintenance of the OVT, which includes a maintenance schedule.
- Helping the Client to scrutinise the credentials and experience of a Qualified Professional who will shoulder the duties of monitoring and supervising the works associated with the OVT for effective implementation of the Scheme on site in accordance with the design and method statements.
- Advising the Qualified Professional in preparing the quarterly reports on the OVT, which should

include photo records for the site works affecting the OVT, to be submitted to the Lands Department.

4.2.12 Detailed supporting information is provided in **Annex K** for PlanD's reference only.

Enhancement in Public Access and Enjoyment at the POS

4.2.13 In both previously approved development proposals, a Banyan Garden was proposed as an open lawn area surrounding the OVT (see **Figures 4.1 and 4.2**). However, as mentioned in para. 4.2.2, during the detailed design stage, it became evident that the design of these approved schemes would require physical barriers, including perimeter balustrades, to fully restrict public access to the Banyan Garden's lawn area, in order to prevent potential spread of BRRD (which can be spread by spores attached to the soles of shoes or on clothing). This would significantly limit public access and enjoyment at the POS.

4.2.14 To enhance public accessibility and enjoyment at the Banyan Garden, the Current Scheme proposes a suspended pavement within *Zone 3 (New soil crescent)* under the proposed protection-cum-rehabilitation approach, to prevent the potential spread of BRRD, as well as to allow public access and encourage closer interaction with the tree, fostering a deeper connection between the community and nature. It also enables the creation of a flat, open plaza surface suitable for hosting a wide range of cultural, artistic, and community events in safe conditions. An integrated seat wall balustrade will be introduced between *Zone 2 (New tree strip)* and *Zone 3 (New soil crescent)*, serving as a physical safety barrier to address the level difference between the proposed Banyan Garden at +8.9 mPD (i.e. finished floor level refers) and Leighton Road at approx. +6.0 mPD as stipulated in Building (Planning) Regulations (Cap. 123F). The balustrade will also restrict public access to *Zones 1 (Existing tree strip) and 2 (New tree strip)* to prevent the potential spread of the BRRD. A comparison of the Banyan Garden under its existing condition, Approved Scheme, and Current Scheme is shown in **Figure 4.5**.

4.2.15 Under the Current Scheme, the area of POS provision at the Banyan Garden remains unchanged. The enhancements in public access and enjoyment at the POS under the current design of the Banyan Garden are illustrated in **Figures 4.6a, 4.6b and 4.7**, and discussed as follows.

4.2.16 **Balancing Public Access and Tree Preservation** – Beyond preserving the OVT, the Current Scheme balances tree health, public accessibility, and placemaking. Under both previously approved schemes, perimeter balustrades would fully restrict public access to the Banyan Garden's lawn to prevent BRRD spread, limiting usable open space. In contrast, the Current Scheme enhances the tree's growing conditions and prevents potential spread of BRRD while maintaining a usable, open plaza. The 9.8-metre-wide subterranean soil crescent integrates ecological restoration and urban design, expanding rootable soil volume and supporting the levelled surface of a new civic plaza above, capable of hosting exhibitions, performances, and seasonal events.

4.2.17 **Integrated Soil System for Dual Functionality –** To achieve this balance, the soil crescent incorporates modular soil cell systems filled with uncompacted, high-quality fabricated soil mix. These systems are engineered to bear the load of pedestrian traffic and temporary installations while maintaining optimal conditions for root growth, water infiltration, and air exchange. The result is a multifunctional landscape that not only rehabilitates a heritage tree but also enriches the urban experience for residents and visitors. By seamlessly integrating ecological infrastructure with public amenities, the design ensures that the Banyan Garden becomes both a sanctuary for nature and a stage for cultural expression.

4.2.18 **Integrated Arboricultural and Public Space Strategy –** This integrated approach satisfies both arboricultural requirements for the future growth of OVT and public space objectives, representing a significant improvement over the 'either/or' solution in both of the approved schemes. Monitoring protocols will be implemented to assess the long-term effectiveness of these mitigation measures.

Enhancement in Cultural Placemaking

4.2.19 **Enhanced Cultural Placemaking, Circulation and Safety –** The design of the future Banyan Garden is envisioned as a vibrant, multifunctional space that harmonizes ecological preservation with cultural storytelling and public engagement. At the heart of this vision is the integration of a new soil crescent beneath the plaza, which not only supports the health and stability of the OVT but also enables the creation of a flat, open plaza surface suitable for hosting a wide range of cultural, artistic, and community events in safe conditions. This dual-purpose design ensures that the space remains both ecologically functional and socially dynamic (**Figures 4.6a – 4.6b** refers).

4.2.20 **Supporting Community Arts and PACF Integration –** As well as enhancing the functionality of the POS, the Banyan Garden will also offer the potential for community arts activities such as temporary art installations, outdoor performances and light shows for the public. To synergize with the PACF on 5/F of Towers 1 and 2, some of the performances and cultural events will be organised by the operator of the PACF to create a rich cultural experience. Under the Current Scheme, the Banyan Garden will form an enhanced, vibrant public space. It will serve as a landmark, natural heritage resource and an element of the collective memory of the public, enhancing the sense of place and stimulating a sense of identity (**Figure 4.7** refers).

4.2.21 **Plaza Layout and Pedestrian Circulation –** The overall layout of the plaza prioritizes safe and intuitive circulation, with clear sightlines, barrier-free access, and shaded resting areas. The integration of storytelling elements into functional infrastructure, such as seating, paving, and balustrades, creates a layered public realm that invites reflection, learning, and interaction. For instances, an integrated seat wall balustrade, serving both as a physical safety barrier (to address the level difference between the proposed Banyan Garden and Leighton Road as stipulated in Building (Planning) Regulations (Cap. 123F)), will also serve as a boundary and as a storytelling medium. In doing so, the Banyan Garden becomes more than just a civic space; it becomes a living archive of Hong Kong's urban and ecological heritage, rooted in the legacy of Lee Gardens and designed for the enjoyment of future generations. The new paved area adjacent to the building frontage in the Current Scheme will enhance pedestrian access and circulation space when compared to both of the approved schemes. The proposed Banyan Garden, entrance plaza, and internal street at the G/F level, covering approximately 2,835m^2, will serve as a vital link for pedestrians, connecting Leighton Road to an interim platform at +8.9mPD and onward to the Landscape Bridge at +18.75mPD (i.e. finished floor level refers).

Minor Amendments to the Location of POS and Distribution of Areas between Covered and Non-covered POS

4.2.22 Under the Approved S16A Scheme, POS provision of approximately 2,850m^2 was proposed at G/F and approximately 3,150m^2 at 2/F and UG/F (see **Figures 4.8a – 4.8b**). As detailed architectural design has progressed, it has resulted in a minor change to the location of POS from that in the approved Layout Plan, resulting in approximately 2,835m^2 of POS provision at G/F and 3,165m^2 at 2/F, 1/F and UG/F (see **Figures 4.9a – 4.9b**). The development of architectural design has also resulted in a slight adjustment to the distribution of areas between non-covered and covered POS under the Current Scheme (**Table 4.1** refers). The total area of POS provision remains unchanged.

Minor Amendment to the Soft/ Hard Landscape Design at 2/F

4.2.23 Under the Approved S16A Scheme, the POS at the 2/F level is designed to adjoin a small private open space known as the Event Plaza (refer to **Figure 4.2**). While the Event Plaza is privately managed, it will remain accessible to the public for the majority of the time. Temporary barriers will only be introduced during special events to manage crowd flows and ensure safety. To maintain a cohesive spatial experience, a unified landscape design will be implemented across both the POS and the Event Plaza, ensuring visual and functional continuity. Importantly, there will be no permanent physical

barriers separating the two zones, reinforcing the sense of openness and shared public realm.

4.2.24 To further enhance the integration between the POS and the private open space, a subtle demarcation, such as a metal strip divider, will be installed between planting areas to indicate the boundary without disrupting visual harmony. The detailed design of this interface will be refined during the next stage of development.

1.1.1 Landscape Adjustment and Design Refinement – During detailed design, the demarcation strategy between the POS and the private open space has led to a minor amendment in the placement of soft and hard landscape elements compared to both of the approved schemes. These adjustments are necessary to reflect operational needs during events and to enhance the overall aesthetic quality of the landscape. The total area of POS under the Current Scheme remains unchanged (see **Figures 4.9a - b**), ensuring compliance with planning requirements while allowing for improved spatial organization.

4.2.25 As part of the Current Scheme, the landscape design at the 2/F level has been enriched with additional features that elevate both the aesthetic and functional quality of the public open space. Notably, new water features have been introduced to create dynamic visual corridors that enhance spatial connectivity and offer a calming sensory experience for visitors. These elements not only contribute to the visual identity of the plaza but also help define movement patterns and gathering zones. In addition, variations in planter edge treatments have been thoughtfully incorporated to serve dual purposes, providing soft boundaries for planting areas while also functioning as informal seating options. These sitting-out areas are designed to encourage public interaction, rest, and enjoyment, making the space more inclusive and user-friendly (**Figure 4.10** refers).

4.2.26 Despite these enhancements, the fundamental design framework and guiding principles of the approved schemes remain unchanged. The provision of POS and tree compensation measures will continue to align with the original planning intent and statutory requirements. The current refinements are focused on improving the spatial experience and visual richness of the landscape, without altering the overall layout or reducing the designated POS area. These updates reflect a commitment to delivering a high-quality urban environment that balances ecological integrity with public amenity, ensuring that the space remains both functional and inspiring for everyday use and special events alike.

Minor Amendments to the Provisions of Loading/Unloading Area and Lay-by to tally with the Approved GBPs

4.2.27 Under both Approved S16 and S16A Schemes, a total of 5 motor vehicle lay-bys are proposed. As agreed with relevant Government departments during detailed design stage, a motor vehicle lay-by is omitted at G/F, whilst a motor vehicle lay-by at B2/F is to be shared with the GIC facilities as required under the Lease. The total number of motor vehicle lay-bys remains as 5 (**Table 4.2** refers). On top of this, as required under the Lease, a loading/unloading space for Heavy Goods Vehicles shall be shared with the District Health Centre (DHC), as indicated in a remark supplemented in **Table 4.2**. The total number of loading/unloading area and lay-by provisions remains unchanged under the Current Scheme. These amendments tally with the GBPs which were approved by the Building Plan Unit of Lands Department on 25 July 2025.

4.3 CURRENT SCHEME – DEVELOPMENT PROPOSAL AND ARCHITECTURAL LAYOUT

Layout and Architectural Design

4.3.1 The proposed Project consists of three commercial towers, namely Tower 1 & Tower 2 with 25 storeys (at the Edged Blue Site) and Tower 3 with 16 storeys (at the Edged Red Site) (**Figure 4.11** refers).

4.3.2 There are five levels of basements which include one level of Commercial & Lay-bys for Light Buses at B1/F and 4 levels of basement carpark for Public Vehicle Park and Private Parking at B2-B5/F. A

retaining structure will be constructed in the Application Site up to the level of and surrounding a portion of the OVT (No. JUD WCH/1 (Previous Registration No. EMSD WCH/1)) in the adjacent District Court site. The architectural drawings and plan showing the area and depth of excavation are at **Figure 4.12**. The site formation plans with the additional protective barrier in the retaining structure and updated retaining wall extent were submitted to BD.

4.3.3 The 2/F podium is proposed (Level +18.70mPD) with a fully covered and enclosed Landscape Bridge over a new internal access road connecting the Edged Blue Site with the Edged Red Site. The 2/F podium will serve as part of the POS and as a pedestrian link that connects Towers 1 & 2 with Tower 3 and the GIC facilities.

4.3.4 The GIC facilities required under the OZP, which include a Child Care Centre (CCC), a Day Care Centre for the Elderly (DE) and a District Health Centre (DHC), are located at the podium level of Tower 3, occupying 3 storeys (at G/F – 1/F) and integrated with the covered POS at 2/F. The requirements for DHC, CCC and DE with NOFA of approximately 1,000m^2, 531m^2 and 358m^2 will be complied with, as stated in the ES of the OZP.

4.3.5 The additional PACF under the Approved S16 Scheme (No. A/H7/181) is subject to a permitted minor relaxation of GFA of approximately 2,000 m^2. The overall total GFA will remain unchanged as 102,000m^2 when compared with the Approved S16 Scheme.

4.3.6 In the Approved S16A Scheme, there is a minor redistribution of GFA, when compared to the Approved S16 Scheme, in terms of the provision of the required GIC facilities, light bus lay-bys and office. The previously approved GIC GFA of approximately 3,000m^2 was estimated based on a preliminary layout. The layout of GIC facilities has been further refined during liaison with relevant departments to facilitate future operations. The total GFA of GIC facilities is approximately 3,100m^2 under the Approved S16A Scheme with the provision of the minimum required NOFA inclusive as listed on the Lease. In addition, the B1/F layout, consisting of a commercial area, driveway and light bus lay-bys has been updated under the Approved S16A Scheme. The length of the driveway is reduced and the total GFA of the light bus lay-bys is approximately 1,600m^2, which complies with the minimum length, width and headroom of light bus lay-bys under Lease requirements. With the abovementioned changes in the non-domestic GFA, the office GFA is updated to approximately 85,300m^2 in order to utilise the entire development potential of 102,000m^2 of GFA.

4.3.7 While the building height of Towers 1 and 2 remains unchanged when compared to the Approved S16 Scheme, the 5/F level has been raised from +28.75mPD to +34.60mPD due to the requirement for an additional E&M floor on level 4/F at +28.70mPD under the Approved S16A Scheme. A full E&M floor at 4/F level is required between the retail podium and the office tower portion due to the high demand for power supply supporting the EV chargers for private car parking spaces, which has been identified during the design development stage. There will be express escalators bypassing 4/F to access 5/F directly from 3/F.

4.3.8 A comparison of the development schedules and provision of internal transport facilities between the Approved S16 Scheme (No. A/H7/181), Approved S16A Scheme (No. A/H7/181-2) and the Current Scheme are listed in **Tables 4.1 to 4.2** with proposed land uses by floor listed in **Table 4.3**.

Table 4.1: Comparison between Development Schedules of the Approved S16 Scheme, the Approved S16A Scheme and the Current Scheme

Development Parameters	Approved S16 Scheme (No. A/H7/181)	Approved S16A Scheme (No. A/H7/181-2)	Current Scheme	Difference between Current Scheme and Approved S16A Scheme
Application Site Area	Approx. 14,802 m^2	Approx. 14,802 m^2	Approx. 14,802 m^2	No change
Total GFA^	102,000 m^2	102,000 m^2	102,000 m^2	No change
▪ Office	Approx. 85,000 m^2	Approx. 85,300 m^2	Approx. 85,300 m^2	No change
▪ Retail	Approx. 10,000 m^2	Approx. 10,000 m^2	Approx. 10,000 m^2	No change
▪ Light Bus Lay-bys	Approx. 2,000 m^2	Approx. 1,600 m^2	Approx. 1,600 m^2	No change
▪ GIC Facilities required under OZP (Including DHC, CCC, DE)	Approx. 3,000 m^2	Approx. 3,100 m^2	Approx. 3,100 m^2	No change
▪ Additional GIC facilities (Performing Arts and Cultural Facilities)	Approx. 2,000 m^2	Approx. 2,000 m^2	Approx. 2,000 m^2	No change
Plot Ratio	Approx. 6.89	Approx. 6.89	Approx. 6.89	No change
No. of Blocks	3	3	3	No change
Site Coverage	65%	65%	65%	No change
Building Height	T1 and T2: 135mPD T3: 90mPD	T1 and T2: 135mPD T3: 90mPD	T1 and T2: 135mPD T3: 90mPD	No change
No. of Storeys				
▪ Basement	5 Storeys	5 Storeys	5 Storeys	No change
▪ Towers 1 and 2	24 Storeys	25 Storeys	25 Storeys	No change
▪ Tower 3	16 Storeys	16 Storeys	16 Storeys	No change
Public Open Space Provision^	6,000m^2	6,000m^2	6,000m^2	No change
▪ G/F:	Approx. 3,000m^2	Approx. 2,850m^2	Approx. 2,835m^2	-15m^2
- (incl non-covered POS)	Approx. 2,300m^2	Approx. 2,230m^2	Approx. 2,190m^2	-40m^2
- (incl. covered POS)	Approx. 700m^2	Approx. 620m^2	Approx. 645m^2	+25m^2
▪ 2/F, 1/F and UG/F:	Approx. 3,000m^2	Approx. 3,150m^2	Approx. 3,165m^2	+15m^2
- (Incl non-covered POS)	Approx. 1,250m^2	Approx. 1,490m^2	Approx. 1,488m^2	-2m^2
- (Incl. covered POS)	Approx. 1,750m^2	Approx. 1,660m^2	Approx. 1,677m^2	+17m^2
Greenery Coverage*				
▪ Total	Approx. 2,970 m^2	Approx. 2,970 m^2	Approx. 2,970 m^2	No change
Completion year	Q3 2029	Q3 2029	Q3 2029	No change

^Public Open Space of 6,000 m^2 to be exempted from GFA calculations.

* For PlanD's reference only.

Table 4.2: Comparison between Provision of Internal Transport Facilities of the Approved S16 Scheme, the Approved S16A Scheme and the Current Scheme

Internal Transport Facilities	Approved S16 Scheme (No. A/H7/181)		Approved S16A Scheme (No. A/H7/181-2)		Current Scheme (Remains Unchanged compared to the Approved S16A Scheme (No. A/H7/181-2))	
Private Parking & Loading/Unloading (L/UL)						
	Office	Retail and Performing Arts & Cultural Facilities	Office	Retail and Performing Arts & Cultural Facilities	Office	Retail and Performing Arts & Cultural Facilities
Private Car Parking Spaces	450	60	452	60#	452	60#
Motorcycle Parking Spaces	45	6	46	6#	46	6#
Loading/Unloading Spaces and lay-bys ▪ Motor Vehicle ▪ Light Goods Vehicle ▪ Heavy Goods Vehicle	 5 27* 15	 - 10 6	 5 27* 15	 - 10 6	 5^ 27* 15@	 - 10 6
Public Vehicle Park and Lay-by						
Private Car Parking Spaces	100		100		100	
Light Goods Vehicle Parking Spaces	15		15		15	
Medium/Heavy Goods Vehicle Parking Spaces	5		5		5	
Coaches Parking Spaces	5		5		5	
Light Bus Lay-bys	4		4		4	
Parking for GIC Facilities Required under the Lease						
Light Buses Parking Spaces (Day Care Centre for the Elderly)	3		3		3	
Motor Vehicle Parking Space (District Health Centre)	1		1		1	
Light Bus Parking Space (District Health Centre)	1		1		1	
Accessible Car Park (District Health Centre)	-		1		1	

*****including 1 L/UL space (shared with Child Care Centre and Day Care Centre for the Elderly) located at B2/F.
#Including 10 nos. private car parking spaces and 1 no. motorcycle parking space to be delineated for Performing Arts & Cultural Facilities.
^including 1 motor vehicle lay-by (shared with GIC Facilities) located at B2/F.
@ including 1 L/UL space (shared with District Health Centre) located at B2/F.

Table 4.3: Land Uses by Floor under the Current Scheme (Remains Unchanged compared to the Approved S16A Scheme (No. A/H7/181-2))

Floor	Main Use	Floor	Main Use
Edged Blue Site (Towers 1 and 2)		**Edged Red Site (Tower 3)**	
B4-B5/F	Private Vehicle Park	B4-5/F	Private Vehicle Park
B3/F	Public and Private Vehicle Park	B3/F	Private Vehicle Park
B2/F	Public Vehicle Park; Ancillary L/UL Area; Parking for GIC Facilities Required under the Lease	B2/F	Public Vehicle Park
B1/F	Commercial; Light Bus Lay-bys; E&M	B2M/F	E&M
G/F	Commercial; Public Open Space; E&M	G/F	GIC Facility (District Health Centre); Public Open Space; E&M
1/F	Commercial; E&M	UG/F	GIC Facility (Day Care Centre for the Elderly); Public Open Space; E&M
2/F	Commercial; Public Open Space; E&M	1/F	GIC Facility (Child Care Centre); E&M
3/F	Commercial; E&M	2/F	Commercial; Public Open Space; E&M
4/F	E&M	3/F-17/F (4, 13 and 14/F omitted)	Commercial; E&M
5/F	GIC Facilities (Performing Arts and Cultural Facilities); Commercial; E&M		
6/F-27/F (13, 14 and 24/F omitted)	Commercial; E&M		

4.4 CURRENT SCHEME - SITE PLANNING AND LAYOUT PRINCIPLES

Tower Dispositions and Open Space at Podium Level

4.4.1 Under the approved schemes, the towers are located in the north-west of the Application Site which integrates the fragmented open spaces proposed in the original layout under PlanD's rezoning conceptual scheme (**Figure 4.13**) and also creates large open space at the eastern part of the Application Site (**Figure 4.14**). Such tower disposition also responds to the Explanatory Statement of the OZP which states that the POS should be provided in the eastern portion of the Site facing Caroline Hill Road (East) and at-grade in the northern portion facing Leighton Road in order to enhance visual openness and pedestrian access. The approved disposition of towers does not affect the air ventilation performance at street levels and contributes to air ventilation with several wind enhancement features when compared with the statutory OZP rezoning indicative scheme in the previous application. The

Event Plaza will serve as an open space resource for Causeway Bay south and also as a recreational facility for the local community (**Figures 4.15a and 4.15b** refers).

Multi-Level Access and Pedestrian Connectivity

4.4.2 To enhance pedestrian accessibility and their walking experience, multi-level pedestrian access is proposed in this Project. This includes access to the Project from both street level and at an elevated level. Pedestrian access points at street level are located at +5.6mPD from Caroline Hill Road (East); at +7.00mPD from Leighton Road and at +8.90mPD from the new internal access road. The demolition works of the existing basement were completed to facilitate the construction of internal access road. A footbridge connecting the Application Site with Lee Garden Six at +17.64mPD is also proposed. This footbridge will form part of an elevated walkway system that connects the Lee Gardens Area all the way to the Causeway Bay MTR Station at Hysan Place. The proposed pedestrian connections and circulation routes are indicated in **Figures 4.16 and 4.17**.

Open Space and Landscape Bridge at 2/F

4.4.3 To further enhance pedestrian connectivity and integration between the Edged Blue and Edged Red Sites, a Landscape Bridge is provided at 2/F (Level +18.70mPD) spanning across the new internal access road and connecting the two parts of the Application Site. The Landscape Bridge will be fully covered and enclosed at the two sides facing Caroline Hill Road to the east and the new internal road to the west. This will serve as a major part of the covered POS and the design is to create a covered landscape area with ample greenery. The Landscape Bridge will extend all the way into the covered POS under Tower 3 in order to provide a well-integrated POS connecting two parts of the Application Site. This Landscape Bridge will also serve as a pedestrian link connecting the western and eastern parts of the Application Site, providing a seamless pedestrian connection with weather-proof protection and reducing pedestrian and vehicular conflict at the new access road below (**Figure 4.9b** refers).

Provision of Additional GIC Facilities – Performing Arts and Cultural Facilities (PACF)

4.4.4 As explained in Section 3.4, the Explanatory Statement in the OZP states that the project proponent for the Application Site is encouraged to provide additional GIC facilities such as PACF which are compatible uses under the zoning. PACF with a floor area of 2,000m^2 are therefore proposed at 5/F of Towers 1 and 2. Staircase, escalators and barrier free access will be provided to facilitate visitors to access the facilities on 5/F.

4.4.5 In a previous Section 16 application (No. A/H7/181) for this project, which was approved by the TPB on 6 May 2022, the development proposal included an additional 2,000m^2 of PACF on 5/F of Towers 1 and 2 to be operated by a non-profit organisation. In the Approved S16A Scheme (No. A/H7/181-2), the PACF was proposed to be relocated from the west to the east side on the same floor for better separation between the office lobby circulation and the cultural venue, in order to minimise mutual disturbance in daily operations. Construction works by the Applicant are ongoing on the basis of the design of the approved development proposal including the PACF. The Applicant has also been engaging in discussions with potential NGO operator of the PACF, namely EXCEL (Extension and Continuing Education for Life) Limited, a registered charitable institution which is fully self-sustained and which is a *non-profit making organisation.* EXCEL is a subsidiary of the Hong Kong Academy for Performing Arts (HKAPA), which is experienced in the operation of community cultural venues.

4.4.6 The Applicant will work with the organisation to operate exhibition venues and theatre on a non-profit basis for various types of cultural activities for the public to enjoy, including but not limited to visual arts, music, drama and dance. Floor space will also be provided for interactive workshops between artists and public participants. This can foster cultural development by supporting local artists and community groups, and respond to the deficit of GIC facilities in Wan Chai District.

Visual Corridor between the Two OVTs

4.4.7 In order to preserve views of the two OVTs at street level, a visual corridor of 6m wide is proposed at the podium between Towers 1 and 2, 3-storeys high. Such corridor shall allow visual connections between the two OVTs and integrate better with the existing site context. The visual corridor will also serve as a POS where street life and activities could take place. It will also act as an internal street to allow a more direct pedestrian access to the District Court to the south. (Appendix F3 of **Annex C** and **Figures 4.18a to 4.18c** refer).

Setback at Street and Podium Levels to Enhance Air Ventilation

4.4.8 Sufficient setback has been allowed at both the street and podium levels to enhance air ventilation and also allow a higher degree of visual openness. At the street level, setback is provided from the building edge for elevated design on G/F in the western portion of the Application Site abutting Caroline Hill Road (West), to enhance air ventilation and accommodate a drop-off area. In addition, setback is also proposed at grade from north-eastern boundary along the masonry wall at Caroline Hill Road (East). At the podium level, sufficient building setback is provided from north-eastern site boundary above 2/F and from the south-western boundary of Towers 1 & 2 and Tower 3. The Approved S16A Scheme proposed an increase in the size of setback of the podium at the north-eastern side of Towers 1 and 2 from 2/F and above to create a more efficient and spacious sense of arrival from the link bridge which will connect Lee Garden 6 to the future pedestrian walkway system in the Lee Garden area and Causeway Bay MTR station. The setback will be widened from approximately 23m to 36m. These setbacks will act as the major wind enhancement features (**Section 5.2** refers).

4.4.9 Furthermore, setback is proposed above 2/F from the south-western boundary abutting the District Court site. The extents of the setbacks are shown in **Figures 4.19a to 4.19b**.

Raised Tower and Covered Public Open Space at 2/F of Tower 3

4.4.10 In order to further enhance air ventilation flow, Tower 3 is proposed to be raised above the podium level at 2/F with the provision of covered POS underneath. The covered POS area will be landscaped with greenery. By raising the tower above the podium level, it will allow passage of air flow underneath, and, thereby, facilitate air ventilation at podium level (**Section 5.2** refers).

4.4.11 In the Approved S16 Scheme, a void of approximately 18m (W) x 13.4m (H) above the 2/F level at Tower 3 was proposed as one of the major wind enhancement features. As detailed architectural design has continued to progress, an amendment to the design of the 2/F level of Tower 3 is required, including an extension of the lift lobby towards the elevated void to allow more space for the circulation and unimpeded flow of office users. The amended elevated void, which varies from approximately 21m at its widest to 16m at its narrowest, with a void height maintained at approximately 13.4m, was approved in the Approved S16A Scheme (Application No. A/H7/181-2).

Integration of GIC Facilities with Public Open Space

4.4.12 The GIC facilities required under the OZP, namely the CCC, DE and the DHC, will be provided at the podium of Tower 3 at G/F to 1/F. It could be easily accessed from the street level at G/F or from the Landscape Bridge. Drop-off, L/UL and parking for these three GIC facilities are provided at B2/F of Tower 3 with direct disabled access to the GIC facilities.

4.4.13 There are minor level changes of the GIC facilities in the Approved S16A Scheme compared to the Approved S16 Scheme. The lowest floor will be slightly raised from +4.10mPD to +5.70mPD to flush with the adjoining street level. This will result in the levels of all three floors being raised by 1.6mPD. The lowest storey is thus renamed as "G/F" with the subsequent floor as "UG/F". The maximum height of Tower 3 at +90mPD will remain unchanged as per the Approved S16 Scheme. This change will improve pedestrian access to the GIC premises and will mean that the staircase between G/F and 1/F

in the Approved S16 Scheme can be omitted. This will also help to enhance the barrier-free access and facilitate a more welcoming access especially for children and the elderly.

4.4.14 The 3-storey GIC complex will be well-integrated with the POS and green landscape. POS areas incorporated into G/F, UG/F and 2/F of Tower 3 will feature landscaping and vertical greening, including green walls adorned with climbers, to create an inviting entrance to the upper ground floor lobby. With additional POS being integrated throughout the area, the visitor experience and social interaction can be enhanced.

4.4.15 The levels of POS were at +5.60mPD on G/F, +8.60mPD on UG/F, and +12.30mPD on 1/F under the Approved S16 Scheme. Compared with the Approved S16 Scheme, a portion of the POS is sunken to be located at +10.20mPD on UG/F of Tower 3, connecting the POS at +5.70mPD on G/F under the Approved S16A Scheme. Throughout the previous liaison with relevant departments, it was advised that the design should be updated to allow for more natural daylight into the GIC facilities. Therefore, a strip of POS will be carved out surrounding the GIC facilities to maximise the window frontage (**Figure 4.20d** refers). Sufficient windows and natural daylight will be allowed at both eastern and western sides of the GIC facilities (**Figures 4.20a to 4.20d** refer). Under the Approved S16A Scheme, the middle levels of the POS are now referred as UG/F. Therefore, the design intent remains unchanged compared to the Approved S16 Scheme in that pedestrians will be connected via POS from 2/F to street level (**Figure 4.17** refers).

4.5 CURRENT SCHEME – VEHICULAR / PEDESTRIAN CIRCULATION AND INTERNAL PARKING PROVISION

Vehicular Access Arrangement

4.5.1 Two vehicular accesses are proposed for the Project, located at the eastern and western portion of the new internal access road. To facilitate better traffic operation, the western vehicular access will mainly serve ingress and egress of private cars and taxis only. The eastern vehicular access will mainly serve light buses, goods vehicles as well as providing for the layby and parking spaces for the Tower 3 GIC facilities. The vehicular ingress and egress routes, as well as the vehicular access arrangements for the Project are shown on **Figures 4.21a and 4.21b**.

Internal Vehicular Circulation and Parking Provision

4.5.2 Off-street pick-up/drop-off laybys for private cars and taxis will be provided at G/F via the western vehicular access. Four light bus lay-bys will be located at B1 and the laybys can be accessed via the eastern vehicular access. Except for the one loading/unloading bay located at G/F to serve special operational needs, the ancillary loading/unloading area will be provided at B2. The public vehicle park for coaches and goods vehicles, the lay-by, car parking spaces and loading/unloading area for the Tower 3 GIC facilities will be provided at B2/F. The public vehicle park for private cars will be provided at B3/F whilst an ancillary car park will be located at B3 – B5/F.

4.5.3 The internal parking provision is summarised in **Table 4.2** above. The Remarks of the Notes of the OZP under the "C(2)" zone stipulate that a public vehicle park of not less than 125 parking spaces should be provided in the Application Site. The Explanatory Statement of the OZP (para 8.1.3) states that an underground public vehicle park with not less than 100 private car parking spaces and 25 commercial vehicle vehicles parking spaces shall be provided. **Table 4.2** demonstrates compliance with these requirements in the OZP.

4.5.4 The internal traffic arrangement for private cars including the access to the lay-by for GIC facilities located at B2/F as required under the OZP is shown on **Figure 4.22a**. The internal traffic arrangement for light buses, goods vehicles and coaches is shown on **Figure 4.22b**.

Pedestrian Circulation

4.5.5 Multi-level pedestrian links and walkway system accesses are proposed in this Project to enhance pedestrian accessibility. The proposed Landscape Bridge at 2/F acts as an important route providing a seamless weather-proof, barrier-free and grade-separated pedestrian connection between the Edged Blue and Edged Red Sites in the Application Site and to Lee Garden Six. This will create a continuous elevated deck connecting the various commercial and GIC facilities in the Application Site with the future pedestrian walkway system at the Lee Gardens area and then leading on to Causeway MTR Station. This is a great benefit to the public especially for visitors (e.g. children, the elderly and disabled) to the GIC facilities at the Edged Red Site of the Application since it is a safer and more direct pedestrian route than crossing the new internal access road. At-grade pedestrian accesses will be provided at the street levels of Leighton Road, Caroline Hill Road and pedestrian link will be provided at the new internal access road between the Application Site and the District Court site. Vertical pedestrian links by means of ramps, escalators, lifts and stairs will be provided to connect the elevated pedestrian link at podium level with the public and community facilities (i.e. POS, the light bus lay-bys, public vehicle park and GIC facilities in Tower 3), and the main accesses of buildings and pedestrian accesses at street level. The proposed pedestrian connections and circulation routes are indicated in **Figures 4.16 and 4.17**.

4.5.6 In addition, as required by Para 8.1.3 of the Explanatory Statement of the OZP, a potential subway connection will be reserved at B3 near the northern corner of the Application Site for a potential future pedestrian subway by the Government. Should the potential subway be realised, passenger's lifts and other vertical circulation will be provided at the entrance of the subway at B3/F - with a suitable internal layout - to bring pedestrians to the upper commercial floors such that there is no cross traffic between vehicles and pedestrians.

4.5.7 As aforementioned in **Table 1.1**, to comply with the approval Condition (a) under the approved Section 16 application (No. A/H7/181), the design and provision of vehicular access, car parking and loading/unloading facilities for the proposed development was submitted in the General Building Plans (GBPs) on which Transport Department has been consulted. The latest revision of the GBPs has been approved by Buildings Department on 5 March 2025 (**Annex A-4**).

4.6 CURRENT SCHEME - URBAN DESIGN PROPOSAL

Urban Design Context

4.6.1 Key urban design considerations of the Project include the following:

- Compatibility with the surroundings in terms of the scale, massing, and outlook;
- Physical and visual connectivity with the surroundings;
- Respect for and integration with the existing natural and cultural context, in particular the OVT abutting Leighton Road and the graded heritage walls; and
- Provision of a visual corridor between the OVTs on Leighton Road and at the future District Court Site.

4.6.2 In terms of the urban design context, areas to the north of the Application Site from Hysan Avenue to Hennessy Road are predominantly commercial developments and an internationally-reputed shopping district. The said areas are at all times busy at the street level. Areas to the south of the Application Site are mainly GIC facilities including many of the large-scale recreational grounds of the central urban districts of Hong Kong Island, such as the South China Athletic Association (SCAA), Indian Recreational Club, Hong Kong Cricket Association, and Hong Kong Stadium. They are, except for Hong Kong Stadium, mostly private clubs and offer a relatively tranquil environment. The areas immediately

surrounding the Application Site are a mixture of the above two uses. There are several Grade A commercial offices to its immediate north of the Application Site such as Lee Garden Six and the Lippo Leighton Tower. The Po Leung Kuk complex is at its immediate west and behind it, the high-end residential complex of Leighton Hill. To its immediate east along Leighton Road and Caroline Hill Road East are a continuous row of old tenement buildings (tong lau) whose street-level shops mainly serve the surrounding neighbourhood, and which include small restaurants and cafés. To its immediate south is the future District Court site. Leighton Road and the commercial Project therefore act as an edge that naturally delineates the hustle and bustle of northern Causeway Bay and the tranquil GIC zones around Caroline Hill Road.

4.6.3 The Application Site itself contains two features that contribute to the unique character and cultural context of the urban landscape. A large *Ficus elastica* OVT (Registration No. LANDSD(LEASED) WCH/1) abutting Leighton Road has a canopy that spreads some 40 metres over the road although the tree sits on only a 3.5m-wide existing slope. The tree stands on an existing masonry wall. The wall extends along the whole length of the Leighton Road boundary and Caroline Hill Road at the eastern boundary of the Application Site where part of it includes earthenware pipes on it which are a graded historic structure. There is another OVT (No. JUD WCH/1) at the south side of the Application Site within the proposed District Court site with part of the TPZ falling within the Application Site. This will be duly considered in the interfacing design. Relevant tree submissions such as Tree Preservation and Removal Proposal, detailed arboricultural assessment and method statements according to DEVB TC(W) No. 5/2020 as well as the Tree Protection Plan of the OVT JUD WCH/1 were made accordingly for any construction works or works area within the TPZ of the concerned OVT. Coordination with the District Court site such as design interface, sequence of works, protective measures and monitoring during construction etc. shall be conducted.

Urban Design Proposal

4.6.4 In terms of compatibility with its urban context, the scale of the commercial Project is compatible with the surrounding areas, with its maximum height set at 135mPD, the same as the commercial development to its north and the future District Court development to its south. A footbridge will be constructed to connect Lee Garden Six across Leighton Road to the podium level at approximately +18.70mPD in the Application Site. The footbridge offers a diversion for pedestrians from the existing busy Leighton Road, for a safer and more comfortable access to the various parts of the Project and completes an important part of the above-ground pedestrian network from Causeway Bay MTR Station to this area. **Figures 4.23a and 4.23b** depict the urban design analysis for the proposed Layout Plan.

4.6.5 Under the OZP and the Lease, it is stipulated that a POS of not less than 6,000m^2 shall be provided. The POS will comprise two portions. The first portion is a Banyan Garden and entrance plaza accessible from Leighton Road with its entry at the western side of the OVT, which is close to the existing pedestrian crossing on Leighton Road, outside the south-west corner of the Lippo Leighton Tower for the convenience and safety of pedestrians. A 24 hour-pedestrian walkway runs along the Banyan Garden, with an internal street creating a visual corridor between the two OVTs (LANDSD(LEASED) WCH/1 & JUD WCH/1), and enhancing both the physical and visual connection between them. The second portion is the POS at 2/F and UG/F and the associated POS surrounding the GIC facilities. It serves as the core of the POS, extending from the future footbridge connecting to Lee Garden Six across the Application Site to Tower 3. Details of the disposition and design of the POS are covered in **Section 4.7**. The disposition of the POS is shown in Appendix E under **Annex C**.

4.6.6 The OVT and the Grade 3 historic structure (the masonry wall and associated earthenware pipes) which contribute to the unique character to the surroundings are well respected in terms of visual connectivity through the creation of the Banyan Garden. A tree cluster situated on the masonry wall abutting the corner of Leighton Road and Caroline Hill Road East adds to the unique character to the

surroundings. As such, the OVT and the tree cluster situated on masonry walls are to be preserved in-situ as far as practically possible. The detailed tree treatment proposal is further elaborated in **Annex C**.

4.7 CURRENT SCHEME - LANDSCAPE PROPOSAL

Landscape Design and Open Space Provision

4.7.1 As aforementioned in **Table 1.1**, to comply with the approval Condition (b) under the approved Section 16 application (No. A/H7/181), the submission of a revised Landscape Master Plan (LMP) for partial compliance with this approval condition has been accepted by the Director of Planning on 12 August 2022 (**Annex A-5**). The 1st amendment submission of the LMP, tallying with the latest GBP submission was submitted to Planning Department on 10 January 2025. Full compliance with this approval condition rests upon the implementation of the approved LMP (which has not yet been achieved) to the satisfaction of the Director of Planning or of the TPB.

4.7.2 The LMP for the Current Scheme is shown in **Figures 4.3 and 4.24a to 4.24b**, as well as Appendix C under **Annex C**. Based on the unique character of the Site identified in the urban design analysis, landscape design should embrace on the one hand, this part of Causeway Bay to the north as having a higher-end commercial and retail character, but on the other hand, it should respect the tranquillity of the neighbourhood to its south. The key distinctive features: that is, the OVTs and the masonry wall, as well as the trees situated on the masonry wall will be integrated into the landscape design alongside the functional and aesthetic requirements of the Application Site. In addition, a variety of landscape elements will be strategically placed throughout the area to create a harmonious blend between the building and its surroundings. Landscaping and vertical greening within the POS areas at G/F, UG/F and 2/F of Tower 3 is designed to provide a green wall with climbers to create a welcoming entrance to the tower lobby. Greenery area is provided at R/F of Tower 3.

4.7.3 In the future post-pandemic era, functional open space will be one of the most valuable assets to public. The Landscape Bridge across the internal access road can increase the external site capacity and provide high-quality and safe open space to the public. In total a minimum POS provision of at least 6,000m^2 will be provided as required by the Remarks of the Notes of the OZP under the "C(2)" zone.

Banyan Garden at G/F

4.7.4 The OVT, perched atop a historic masonry wall 2 to 3 metres above Leighton Road, stands as a prominent natural landmark in the urban fabric. Its expansive canopy and aerial roots extend nearly 40 metres along the street, forming a green threshold between city and nature. The proposed Banyan Garden, entrance plaza, and internal street at G/F level, covering approximately 2,835m^2 will form a vital pedestrian linkage, connecting Leighton Road to an interim platform at +8.9mPD and ultimately to the Landscape Bridge at +18.75mPD (i.e. finished floor level).

4.7.5 The Banyan Garden is conceived as a restorative civic space that celebrates and safeguards the OVT while offering a dynamic public realm. Informed by expert input from the independent tree specialist, the Current Scheme significantly improves the tree's long-term growing conditions through the expansion of the rooting zone from the current 3.5-metre-wide strip to a total soil width of approximately 19 metres. This includes the addition of a subterranean soil crescent beneath the plaza, filled with uncompacted, fabricated soil mix within modular soil cell systems to facilitate healthy root development.

4.7.6 The Banyan Garden represents a refined integration of ecological infrastructure and urban design. By merging technical tree rehabilitation with multifunctional public use, the scheme creates a layered landscape that serves both environmental and social needs. The information related to tree protection

measures for the OVT, as outlined in this section and throughout the submission, is for PlanD's reference and subject to detailed design.

Public Open Space at 2/F and UG/F

4.7.7 A total area of approximately 3,165m^2 comprises the remaining portion of the POS at 2/F and UG/F, with a minor portion at 1/F. The POS at 2/F podium is designed to let visitors escape from the hustle and bustle of Causeway Bay and enjoy a moment of tranquillity. At the same time, this is designed to respect the existing natural and cultural context. A number of existing trees on site will be transplanted and brought back to the POS at 2/F and UG/F. This area will provide open lawns for multi-use purposes by groups or individuals. Within the 2/F podium, a small area will be designated for non-POS use, namely the Event Plaza. The public can still access and use the space most of the time, except during special events when temporary barriers will be erected along the perimeter of this area. A unified landscape design will be adopted for the entire open space at 2/F regardless of whether it is a POS or non-POS area. This approach aims to achieve an integrated design and provide high-quality open space for public enjoyment, without any physical barriers. There will not be any physical barriers between the two spaces but clear demarcation will be implemented between the POS and private open space, such as a metal strip to be installed in between, and incorporating a different paving colour and material. Detailed paving design will be further developed at a later stage.

4.7.8 The Landscape Bridge featuring a transparent cover will allow its primary users - being elderly, young children and patients travelling to Tower 3 GIC facilities, access to carefully design natural elements and biophilic design, which is beneficial to ensure health and welling as recommended by the World Health Organization, accelerating recovery rates, reducing stress and enhancing the mental relaxation of the GIC users and public. Additionally, quality landscape and greenery will be strategically placed throughout the Covered Landscape Bridge. An internal headroom of approximately 6m and ample sunlight will be provided by the transparent cover.

4.7.9 According to WELL standards, creating space for physical activity is important for encouraging physical movement and fostering a healthy lifestyle and their standards suggest that a minimum space of 1,860m^2 is required for the Project. The Landscape Bridge connected to the covered POS under Tower 3 can contribute to this purpose. Apart from the area, the quality and usability of the POS is crucial. Innovative devices and ideas for smart microclimate control in the covered parts of the Landscape Bridge are to be incorporated to increase its usable period.

4.7.10 The POS at G/F Banyan Garden and 2/F podium will be accessible to the public 24-hours a day with barrier-free access. To cater for the heavy pedestrian flows and at the same time provide a natural urban environment, there will be an appropriate balance between hard (paved) and soft (planted) landscape.

Tree Preservation and Removal Proposal

4.7.11 In the Landscape Master Plan, 15 existing trees - including the OVT (LANDSD(LEASED) WCH/1) situated on and/or abutting the masonry retaining walls – are to be retained at their original locations. Four trees are suitable for transplanting and will be transplanted out of and back to the Project. Among the trees to be transplanted, five trees have unexpectedly failed since the approval of the planning application (No. A/H7/181), due to natural events and causes, including typhoons. Proposed permanent receptor sites for transplanted trees have been identified at the site entrance at Leighton Road and at the podium (2/F) within the Lot boundary.

4.7.12 There are 38 trees assessed as not being feasible for transplanting / relocation, and these are to be felled, with compensation tree planting being provided. These include two *Michelia* x *alba* trees which are a species protected under the Forests and Countryside Ordinance (T31 and T33). The detailed treatment of all trees and justifications of tree felling is further elaborated in **Annex C** and summarised

in **Table 4.4**.

Table 4.4: Summary of Tree Recommendation

Recommendation	Nos. of Trees under Current Scheme (Remains Unchanged compared to the Approved S16A Scheme (No. A/H7/181-2))
Tree to be retained	15
Tree to be transplanted	4
Tree to be felled	38
Total (Existing Trees within Site Boundary)	57

Compensatory Tree Planting

4.7.13 The compensation ratio of felled trees will be not less than 1:1 in terms of quantity, in accordance with LAO PN No. 6/2023.

4.7.14 In order to compensate for the loss of trees within the Lot, 38 high quality Heavy Standard trees are to be planted alongside the western sections of Caroline Hill Road, and at the podium level (2/F). The compensatory ratio in terms of number will be at least 1:1 and in terms of diameter at breast height (DBH) will be at least 1:0.13. Besides, in accordance with the Lease, 22 nos. of additional trees shall be planted with the Lot apart from the retaining trees, transplanting trees, as well as compensatory trees. The additional trees are referred to as "new trees". A summary of the compensatory/ new tree planting ratio is presented in **Table 4.5**. A detailed proposal is further presented in **Annex C**.

Table 4.5: Compensatory Planting Ratio

Compensatory Metrics	Statistic / Ratio under Current Scheme (Remains Unchanged compared to the Approved S16A Scheme (No. A/H7/181-2))
Nos. of felled trees	38
Aggregated total DBH of felled trees	19,885mm
Nos. of compensatory trees	38 (Heavy standard DBH: 75mm)
Total aggregated DBH of compensatory trees	2,850mm
Compensatory Planting Ratio (by number)	1:1
Compensatory Planting Ratio (by DBH)	1:0.14
New Trees (stipulated under Lease)	22

4.7.15 In the Approved S16 Scheme, compensatory/ new trees were proposed to be planted alongside the eastern and western sections of Caroline Hill Road (G/F), and at the podium level (2/F). During the detailed design and site coordination stages, it has become clear that it is unavoidable to locate a series of underground utilities and structural works at G/F level. As such, there is insufficient space available for planting new trees. The infrastructure features and technical reasons for this are as follows:

- Terminal manhole which the setting out and invert levels are controlled by the city main;
- Basement smoke vents which are required to be distributed along basement wall below as prescribed under building code; and
- Over 60% (72m out of 120m) of the frontage facing Leighton Road is occupied by OVT LANDSD(LEASED) WCH/1 and the retained masonry wall, and it is therefore unavoidable to arrange most E&M openings and installation at G/F level.

4.7.16 To maintain the number of trees committed to in the Approved S16 Scheme, some of the new trees (originally at G/F) will therefore be relocated to the open space on the 2/F where major pedestrian flows from the Lee Gardens area through the elevated walkway system is anticipated, so as to ensure public enjoyment of the trees. Such amendment was reflected in the Approved S16A Scheme.

4.8 CURRENT SCHEME - TREATMENT OF HERITAGE FEATURES

4.8.1 The masonry walls around the Application Site are one of the features that define the character of the Application Site and contribute to its significance. The walls are also an important part of the streetscape. The Grade 3 historic structure, including the existing graded masonry walls and two earthenware pipes in their entirety will be kept, conserved and preserved as required under the lease in this Project proposal.

4.8.2 In accordance with the Explanatory Statement of the OZP, prior consultation was conducted with AMO and it is confirmed with AMO that there will be no alteration to the masonry walls and earthenware pipes, except for any necessary structural strengthening works required to fulfil relevant statutory requirements.

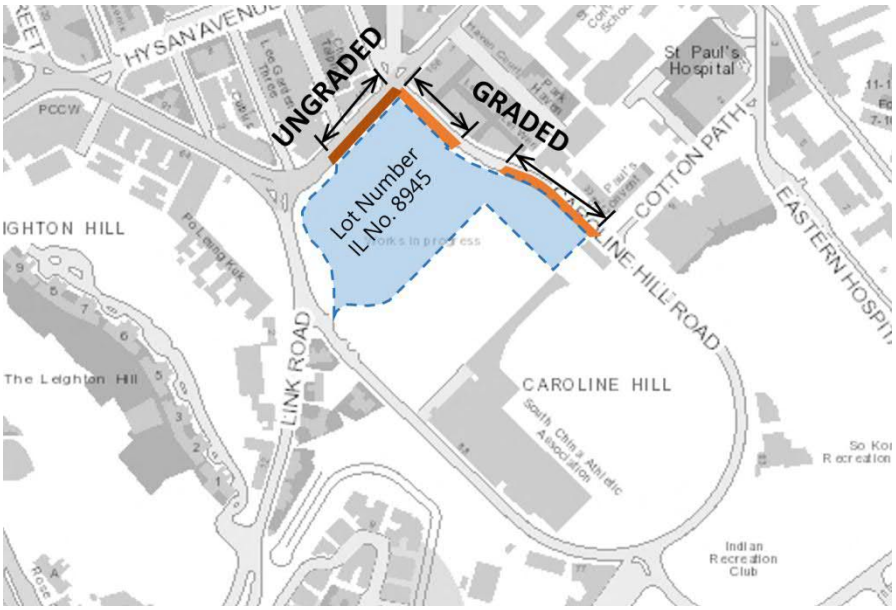


Figure 4.25: Plan Showing the Graded and Ungraded Parts of the Masonry Walls Required to be Preserved

5 Technical Assessments

5.1 INTRODUCTION

5.1.1 The following is a summary of technical assessments carried out for the Approved Layout Plan, where necessary with minor updates in the reports of Air Ventilation Assessment (**Annex D**), Drainage Impact Assessment (**Annex E**), and Sewage Impact Assessment (**Annex F**) to account for the Current Scheme.

5.2 SUMMARY OF AIR VENTILATION ASSESSMENT

5.2.1 An Air Ventilation Assessment – Initial Study (**Annex D**) was carried out for the Baseline Scheme (i.e. the Approved S16 Scheme) and the Approved S16A Scheme (No. A/H7/181-2) (i.e. remains the same as the Current Scheme).

5.2.2 Under this Current Scheme, several wind enhancement features are provided, including:

1) T1 -15m setback from the building edge for elevated design on G/F with 15m (W) x 8.5m (H);
2) T2 - building setback of min. 36m from north-eastern site boundary above 2/F;
3) T3 – Approximately 16~21m width and 13.4m height elevated design with additional void of approximately 5m width and 8.4m height above extended lift lobby of T3 on podium level;
4) T1 – building setback of approximately 5m on average from the south-western boundary;
5) T2 - building setback of 4m at grade from north-eastern boundary;
6) T3 - building setback of 7.5m above 2/F from south-western boundary abutting the district court site; and
7) T1 - min. 6m internal street of T1 on G/F.

5.2.3 The results of the assessment demonstrate that the ventilation performance will be similar under the Baseline and the Current Schemes under both annual and summer wind conditions.

5.2.4 Findings of the Air Ventilation Assessment – Initial Study are contained in **Annex D**.

5.3 GEOTECHNICAL PLANNING REVIEW

5.3.1 A Geotechnical Planning Review was conducted for the proposed Application Site at Inland Lot No.8945 in accordance with "GEO Advice Note for Planning Applications" (GEO, 2007) and was approved under previous planning submission (No. A/H7/181). There is no update further to the approved Geotechnical Planning Review Report, since there is no change in geotechnical view under this planning submission.

5.3.2 The approved Geotechnical Planning Review report (**Annex H**) (under previous planning submission) demonstrated that the proposed Project is geotechnically feasible.

5.4 DRAINAGE IMPACTS

5.4.1 A Drainage Impact Assessment (**Annex E**) was conducted for the proposed Application Site at Inland Lot No.8945.

5.4.2 Since the total surface runoff for the Current Scheme will be reduced with enlarged landscape area when compared with the existing case, the peak runoff to the existing branch of drainage pipe along Leighton Road should also be reduced and should be beneficial to the existing drainage system. Therefore, it is concluded that there would be no impact to the existing drainage system as a result of the Current Scheme. The Drainage Impact Assessment will be kept updated to be in line with the construction work on site for DSD review.

5.5 SEWERAGE IMPACTS

5.5.1 A Sewerage Impact Assessment (**Annex F**) was conducted for the proposed Application Site at Inland Lot No.8945.

5.5.2 The peak sewage flow from the Current Scheme is slightly increased from 67.58 L/s to 67.74 L/s. The assessment results demonstrated that the existing public sewerage system serving the Application Site has sufficient capacity to carry the estimated sewage from the Current Scheme, and hence, the development will cause no impact to the existing public sewerage system. The Sewerage Impact Assessment will be kept updated to in line with the construction work on site for DSD review.

5.6 TRAFFIC IMPACTS

5.6.1 A Traffic Review Report (TRR) (**Annex G**) to assess the potential traffic impact due to the proposed development at the Application Site with a total GFA of 102,000m^2 was submitted and approved by Transport Department in year 2022. The approved TRR concluded that the surrounding road network with implementation of the proposed road scheme at the Green Areas and a new internal access road between the Application Site and the District Court site will be adequate to serve the future traffic demand upon the completions of the Project.

5.6.2 Since the total GFA of the proposed development is the same (i.e. 102,000m^2) while the adjustment to the parameters of office and GIC facilities is very minor, there will be no apparent increase in the overall traffic induced by the proposed development when compared to the Approved S16 Scheme (No. A/H7/181) as assessed in the approved TRR. Therefore, the conclusion as drawn from the previous approved TRR is still valid.

5.7 AIR QUALITY IMPACTS

5.7.1 There are no polluting uses such as industrial buildings or trunk roads near the Application Site, and hence, it is expected that there will be no air quality impact to the site. In addition, the buildings within the site will comply with requirements of the HKPSG.

5.7.2 The project team will observe all relevant environmental protection ordinances and requirements and implement pollution control measures to minimise any potential environmental impact/nuisance during construction stage.

5.8 NOISE IMPACTS

5.8.1 Although openable windows will be provided at some commercial and government, institution and community areas within the Project in order to meet the requirements under the Buildings Ordinance, during normal operation, centralized heat, ventilation and air conditioning system or split type air conditioning units, and mechanical ventilation will be provided as the primary source of providing ventilation for the spaces. Hence, it is expected there will be no adverse noise impact on the proposed Project.

5.8.2 The project team will observe all relevant environmental protection ordinances and requirements and implement noise control measures to minimise any potential environmental impact/nuisance during construction stage.

5.9 CONSERVATION MANAGEMENT PLAN

5.9.1 The Conservation Management Plan (CMP) for Grade 3 Masonry Walls and Earthenware Pipes (**Annex I**) was prepared and submitted to AMO in accordance with Special Condition Clause 3(b) of the Conditions of Sale No. 20379. As aforementioned in **Table 1.1**, this submission of the CMP serves as partial compliance with the approval Condition (c) under the approved Section 16 application (No. A/H7/181) and has been accepted by the AMO on 18 July 2022 (**Annex A-6**). Full compliance with this approval condition rests upon the implementation of the mitigation measures identified in the CMP before commencement of works (which is still ongoing and has not yet been achieved) to the

satisfaction of the Commissioner of Heritage or of the TPB.

5.10 WATER SUPPLY IMPACTS

5.10.1 To be in line with Government's Fresh Water Cooling Towers Scheme (FWCT Scheme), fresh water cooling towers are proposed to be used in this project which is within the Scheme Designated Area of Causeway Bay (3) (**Annex J**).

5.10.2 Regarding the FWCT Scheme for the proposed development, the corresponding calculation of daily water demand (Potable and AC make up water) and residual head for proposed new DN200 freshwater main was conducted to demonstrate that the water supply impact on the fresh water demand is acceptable. It has been concluded that a Water Impact Assessment is not required. Supplementary information was prepared by the consultants and was received by WSD on March 2024 with no further comment from them (**Annex J**).

5.10.3 The WWO542 approval for potable water and flushing water supplies on October 2023 included the water demand of the FWCT Scheme with lead-in pipe sizes of dia. 150mm. The fresh water demand for the whole development including the capacity for FWCT was calculated and is considered sufficient.

5.10.4 The proposed new DN200 freshwater main will be in a loop system to be connected to the existing DN450 freshwater main at Leighton Road and the existing DN150 freshwater main at Caroline Hill Road East near Lei Kwa Court. The approximate pressure head as advised by WSD will be 80m at the DN450 freshwater main at Leighton Road and 70m at the DN150 freshwater main at Caroline Hill Road East near Lei Kwa Court. The residual head along the proposed DN200 freshwater main during peak flow condition will have sufficient residual head of more than 20m which fulfils the minimum requirement advised by WSD.

5.11 LANDSCAPE IMPACTS

5.11.1 A total of 57 trees, including OVT (LANDS(LEASED) WCH/1), were recorded within the site. Some trees will be unavoidably affected by the proposed works, including the construction of commercial towers, a Public Open Space, GIC facilities, vehicular access, and associated infrastructure. In addition, several trees were removed under the Emergency Tree Felling Procedure, with reports submitted to the Lands Department accordingly.

5.11.2 A total of 38 trees are proposed to be removed, while 15 trees, including the OVT (T69), are recommended to be retained in-situ, and 4 trees are proposed for transplanting. To mitigate natural loss, 60 trees are proposed for planting within the site, including 22 additional trees as stipulated in Clause 13(m) under the Lease of Inland Lot No. 8945.

5.11.3 As such, no significant landscape impact is anticipated for this Project. A detailed assessment of impacts on existing landscape resources and the proposed mitigation measures (compensatory planting) is provided in **Annex C** (Landscape Master Plan).

6 Planning Justifications

6.1 COMPLIANCE WITH DEVELOPMENT PARAMETERS AND OZP REQUIREMENTS

6.1.1 As shown in **Table 6.1** below, the Layout Plan for the Current Scheme complies in all material respects with the development parameters and planning intention for the "C(2)" zone as stated in the OZP, with due consideration to the unique circumstances of the Application Site.

Table 6.1: Development Restrictions under "C(2)" Zone of the Approved Wong Nai Chung OZP No. S/H7/21 and the Relevant Sections of this Layout Plan Submission

Development Restrictions	OZP / Notes Requirements	Explanatory Statement Requirements	Relevant Planning Statement Sections
GFA	100,000m^2 (including the GFA of GIC facilities as required by the Government)	▪ No more than 10,000m^2 shall be allocated to retail uses, with due consideration of the traffic capacity in the area	**Table 4.1; Sections 4.3**
GIC Facilities		▪ District Health Centre with Net Operating Floor Area of about 1,000m^2 ▪ Child Care Centre with a Net Operating Floor Area of about 531m^2 ▪ Day Care Centre for the Elderly with a Net Operating Floor Area of about 358m^2 ▪ Project proponent is encouraged to provide more GIC facilities taking into account the current deficit in Wan Chai District ▪ Performing arts and cultural facilities are also compatible uses in the "C(2)" site	**Table 4.1;** Floor Plans at **Annex B**
Building Height (BH)	Maximum 135mPD	/	**Table 4.1;** Section at **Annex B**
Public Transport Facility	A public transport facility for minibuses shall be provided	A public transport facility for minibuses (underground) shall be provided	**Table 4.1;** B1 Plan at **Annex B**
Internal Transport Facilities	A Public Vehicle Park (PVP) of not less than 125 parking spaces shall be provided	A public car park (underground) of not less than 100 private car parking spaces and 25 commercial vehicle parking spaces shall be provided	B1 to B5 Floor Plans at **Annex B**
Public Open Space	Not less than 6,000m^2	▪ Design of the open space should be well integrated with the facilities	

Development Restrictions	OZP / Notes Requirements	Explanatory Statement Requirements	Relevant Planning Statement Sections
		provided and be user friendly and easily accessible ▪ Should be designed as a quality place for the public to interact and enjoy the built environment and its special features, including the Old and Valuable Trees (OVTs) and stone retaining walls ▪ To enhance visual openness and to ensure easy accessibility by public, the open space shall be provided in the eastern portion facing Caroline Hill Road and at-grade in the northern portion fronting Leighton Road	▪ Landscape Master Plan at **Annex C** ▪ Urban Design Proposal at **Section 4.6** and figure for urban design analysis at **Figures 4.23a and 4.23b**
Urban Design/ Landscape/ Tree Preservation	Submission of Landscape and Urban Design Proposals	▪ Landscape submission required under Lease ▪ The OVT (No. LANDSD(LEASED) WCH/1) shall be preserved with sensitive protection method throughout the development process ▪ Existing trees found within the site and trees situating on and/or abutting the stone retaining walls shall also be preserved as far as possible ▪ Preservation of stone retaining walls along the northern and eastern peripheries of the site (except the portions being affected by the road improvement works) ▪ Podium-free design is encouraged with a view to maximising the opportunities for at-grade greening, tree preservation and enhancement of air ventilation at pedestrian level	▪ Landscape Proposal at **Section 4.7** ▪ Approved CMP at **Annex I**
Air Ventilation Assessment (AVA)	Submission of AVA	▪ According to the findings of AVA 2018, a clear building gap of not less than 25m in width across the central portion of the site (assuming podium-free design) in a northwest-southeast direction involving the OVT (No. LANDSD(LEASED) WCH/1) shall be provided to facilitate better air ventilation in the area.	AVA at **Annex D**

Development Restrictions	OZP / Notes Requirements	Explanatory Statement Requirements	Relevant Planning Statement Sections
Pedestrian Connections	/	The future developer shall reserve an underground connection point within the Application Site for the possible pedestrian subway to MTR Station which is subject to further feasibility study	B3 Plan at **Annex B**

6.1.2 The proposed Project set out in this application, contains a number of significant planning merits. These and other considerations are described below.

6.2 ENHANCED CULTURAL, PUBLIC OPEN SPACE AND APPEAL OF LANDSCAPE TO CREATE VIBRANT URBAN REALM

6.2.1 With more than 100 years of curating the physical and social dimensions of the Lee Gardens Area, the Applicant has been continuously committed to placemaking to connect the development with the surrounding neighbourhoods in Causeway Bay. The proposed development, forming a new large-scale strategic project located within the Lee Garden area, is envisioned to establish a new green landmark in Causeway Bay and create a new benchmark for future urban environment. Adopting a cultural placemaking approach at the provision of POS will play a vital role in attracting more footfall to the proposed development and creating a vibrant urban realm in the neighbourhood.

6.2.2 As required by the Explanatory Statement of the OZP, a minimum of 6,000m^2 of POS will be provided as part of the Project. Also as required by the Explanatory Statement of the OZP, much of this space will be provided on the eastern side of the Application Site. In contrast to the design of the POS in the rezoning application for the site, the POS which is open to public 24 hours a day, in the Layout Plan is an integrated open space network that is not fragmented by the intervening internal road.

6.2.3 As discussed in **Section 4.7**, the POS will comprise two portions. The Banyan Garden, entrance plaza, and internal street at G/F, covering a total area of approximately 2,835m^2, will be included in the POS (Appendix E of LMP under **Annex C** refers). This portion will serve as a connection for pedestrians traveling from Leighton Road to the interim platform.

Enhanced Cultural Placemaking at Banyan Garden at G/F

6.2.4 The Banyan Garden is designed not only to preserve the OVT but also to celebrate its significance as a natural and cultural landmark. By creating an immersive environment around the tree, the project invites the public to interact with and appreciate its beauty, fostering a deeper connection between the community and nature.

6.2.5 The Banyan Garden is conceived as a restorative civic space that celebrates and safeguards the OVT while offering a dynamic public realm. Informed by expert input from the independent tree specialist, the Current Scheme significantly improves the tree's long-term growing conditions through the expansion of the rooting zone from the current 3.5-metre-wide strip to a total soil width of approximately 19 metres. This includes the addition of a subterranean soil crescent beneath the plaza, filled with uncompacted, fabricated soil mix within modular soil cell systems to facilitate healthy root development.

6.2.6 The installation of balustrades, use of lightweight planting materials, and creation of a functional circulation area demonstrate a commitment to both tree preservation, public enjoyment and safety.

These measures ensure the OVT remains a centrepiece of the urban landscape while providing a high-quality, accessible public space for all to enjoy.

6.2.7 The current alternative design of the Banyan Garden will provide a flexible and multi-functional open space located around the OVT for non-commercial cultural and arts events, such as outdoor performances, installations and light shows for the public to enjoy. To synergize with the PACF on 5/F of Towers 1 and 2, some of the performances and cultural events will be organised by the operator of the PACF to create rich cultural experiences. It will also achieve a synergy effect with the al fresco dining and retail at G/F where the diners and the public can enjoy the unique setting of the Banyan Garden, forming a vibrant open space. It will serve as a landmark, natural heritage resource and an element of the collective memory of the public, enhancing the sense of place and stimulating a sense of identity (**Figures 4.6a, 4.6b and 4.7** refers).

Other Provisions of Public Open Space in the Approved S16A Scheme

6.2.8 A total area of approximately 3,165m^2 comprises a core portion of the POS at 2/F and UG/F. The open space on 2/F will integrate the Edged Blue and Edged Red sites of the Project and act as a community node to pull in pedestrian flow via the elevated pedestrian walkway. The POS at 2/F podium will be designed with various types of open spaces, including open lawn, multi-functional area and covered POS. Additional landscape elements with multiple smaller paths will be integrated into the open space at 2/F. There will be the provision of flexible and multifunctional open space at 2/F, enhancing the opportunities for chance encounters and will also diversify the use and appeal of the landscape as a whole (**Figure 4.10** refers).

6.2.9 The open space at the podium level is proposed outside the building entrances to provide maximum flexibility to users, and also to provide a sheltered area of relief from the urban density in the city. Meandering routes are designed to encourage people to walk through the greenery. Pocket spaces within these areas are proposed to encourage people to enjoy the environment. In particular, the extensive covered POS at 2/F, extending from the Landscape Bridge to Tower 3, will provide a seamless pedestrian connection with weather-proof protection. In addition, increased greenery coverage will help to mitigate the urban heat island effect. This open space area is envisioned to be busy year-round.

6.2.10 To enhance the visitor experience and encourage social interaction, the POS will be integrated throughout the area. For example, POS areas will be incorporated around T3 on the G/F, UG/F, and 2/F. These areas will feature landscape and vertical greening, including green walls with climbers, to create an inviting entrance to the Tower's upper ground floor lobby. These POS locations will provide opportunities for visitors and users to rest, gather, and enjoy the surroundings.

6.2.11 The Applicant will follow the requirements of the "Public Open Space in Private Developments Design and Management Guidelines" promulgated by the Development Bureau.

6.3 IN LINE WITH GOVERNMENT POLICY OBJECTIVES IN FOSTERING ARTS, CULTURE AND TOURISM DEVELOPMENT

6.3.1 The National 14th Five-Year Plan defined a direction and guiding policy as "shaping tourism with cultural activities and promoting culture through tourism" (page 91 – 92) to achieve the integrated development of culture and tourism. It is also stated in the Chief Executive's 2024 Policy Address to set out the Government's initiatives in promoting Hong Kong's cultural and creative industries as well as the tourism industry (para. 129 – 133).

6.3.2 In addition, the Culture, Sports and Tourism Bureau (CSTB) published the "Blueprint for Arts and Culture and Creative Industries Development" on 26 November 2024. This set out a clear vision, principles and strategic directions for the future development of the arts, culture and creative industries to further consolidate Hong Kong's position as an East-meets-West centre for international

cultural exchanges. In particular, one of the principles of the Blueprint (page 29) is to promote "market-driven development and integration of culture, sports and tourism" which encourages the private sector to participate and invest in the development of the arts, culture and creative industries. It is stated in the Blueprint (page 31) that:

"We should build a comprehensive and sustainable ecosystem for the arts, culture and creative industries, develop platforms which are conducive to industry development, and encourage the private sector's participation and support for the development of the sectors."

6.3.3 It is also stated in the Blueprint that limited venue supply has been one of the major constraints that hinder the development of arts and culture sectors on a larger scale.

6.3.4 The CSTB also published the "Development Blueprint for Hong Kong's Tourism Industry 2.0" on 30 December 2024 to enhance cultural confidence and revitalise Hong Kong tourism's industry. To instill the concept of "tourism is everywhere" in Hong Kong, in-depth integration of culture and tourism will be promoted by "bringing together traditional elements, pop culture, performing arts, cultural festivals, and innovative experiences" (page 36).

6.3.5 The Applicant shares many of the Government's policy objectives and has a strong track record in transforming Lee Gardens area into a vibrant, contemporary environment and destination, with a unique Hong Kong character, making it an attractive destination for leading multinational corporations, international visitors and local residents. The approved development demonstrates the Applicant's continuous commitment to fostering the private sector's support in developing platforms that nurture arts, culture and tourism development in Hong Kong. This approved proposal includes a 2,000m^2 PACF. The Applicant has been engaging in discussions with a potential NGO operator of the PACF, namely EXCEL, which is a subsidiary of the Honk Kong Academy of Performing Arts, to operate the facility and provide various types of cultural activities for the public to enjoy.

6.3.6 In addition to the PACF, the alternative design of the Banyan Garden at G/F does not only serve as a POS, but it also enables a flexibility that can accommodate multi-functional non-commercial uses, such as outdoor performances, arts and culture events and light shows. To synergize with the PACF on 5/F of Towers 1 and 2, some of the performances and cultural events will be organised by the operator of the PACF to create rich cultural experiences.

6.3.7 With the unique setting of the OVT and the graded masonry wall, such performances and events will present the city's rich natural and human heritage to the tourists through innovative and distinctive experiences. The creation of this flexible community space will help to cultivate visitors' and tourists' appreciation of Hong Kong's culture, thereby telling the good stories of Hong Kong. Importantly it will also respond positively to the Government's policies on culture and tourism, outlined above.

6.4 PRESERVATION OF DESIGNATED OVTS AND HERITAGE FEATURES

6.4.1 All parts of the graded masonry wall including the earthenware pipes, as well as the OVTs, will be preserved as part of the Project under the Layout Plan. For the masonry walls and earthenware pipes, as required by the Explanatory Statement of the OZP, prior consultation was conducted with AMO and they note that such features are to be preserved in-situ and that as the proposal does not pose any impact on the Grade 3 historic structure. They will be maintained as an important part of the streetscape as an expression of the history of the Causeway Bay area.

6.5 INTEGRATION OF COMMUNITY FACILITIES

6.5.1 The GIC facilities mentioned in the Explanatory Statement of the OZP are located in an integrated location together in G/F to 1/F in Tower 3. With floor space reserved for a DHC, CCC and DE, the proposed Project will alleviate the lack of social welfare facilities in Wan Chai District and fully satisfy the requirements of the OZP. The DHC at the Application Site will fulfill the Government's aspirations

of moving forward from treatment-oriented to prevention-focused healthcare, with the Wan Chai DHC at the Application Site acting as the core centre among other satellite centres in the district in the future. The provision of CCC and DE can meet the service demand of centre-based community care services for the elderly in Wan Chai District.

6.5.2 As explained in **Section 4.4**, the GIC facilities are well integrated with the POS, opening up to the green landscape and natural daylight, thereby providing a pleasant and comfortable environment for the users of the GIC facilities.

6.6 ENHANCED AIR VENTILATION THROUGH BUILDING DESIGN AND LAYOUT

6.6.1 To enhance the wind performance, the Tower 2 setback above 2/F is widened from 23m to min. 36m under the Approved S16A Scheme as well as the Current Scheme. This setback provides higher wind permeability for incoming wind especially from the podium of the proposed District Court and thereby facilitates leeward side ventilation performance.

6.6.2 The building design of the the Approved S16A Scheme as well as Current Scheme will bring enhancement to air ventilation. With the incorporation of building separation and set back, compliance with Sustainable Building Design Guidelines under PNAP-APP 152 will be ensured.

6.7 ENHANCED PEDESTRIAN CONNECTIVITY AND WALKABILITY

6.7.1 The Current Scheme will significantly enhance pedestrian connectivity within the district. The POS, which is open to public for 24 hours a day, together with the 24-hour pedestrian walkway, will connect the site from the podium level at 2/F with Lee Garden Six across Leighton Road. The fully covered and enclosed Landscape Bridge over the future internal road, which forms a part of the covered POS, provides a seamless pedestrian connection between the western and eastern parts of the Application Site, spanning the internal road and allowing easy access to the GIC facilities in Tower 3. The Landscape Bridge spanning the internal road is covered which provides a comfortable walking experience. The public using the GIC facilities and employees at the offices of Tower 3 at the eastern end of the site can reach the centre of Causeway Bay swiftly. The elevated walkway will also facilitate pedestrians to access the Application Site, extending the vibrancy of the well-established cluster of retail facilities in Causeway Bay. Pedestrians who walk to reach the re-provisioned light bus lay-bys at the Application Site will also enjoy the convenience of the walkway system.

6.7.2 With its multi-level walkway system, the proposed Project under the Layout Plan can significantly improve the walking experience in the area and promote a functional synergy between commercial heart of Causeway Bay and the Application Site.

6.8 TRAFFIC IMPROVEMENTS THROUGH ROAD IMPROVEMENT WORKS

6.8.1 With Leighton Road being a district distributor, the road junctions nearby experience high traffic volumes. During peak periods, traffic queues may tail back to the junction of Leighton Road and Yun Ping Road, resulting in traffic congestion on the wider local road network.

6.8.2 With the proposed two-way internal road connecting Caroline Hill Road (West) and Caroline Hill Road (East), access can be facilitated for the different users of the Application Site and concentration of traffic at particular neighbourhood junctions avoided.

6.8.3 The Layout Plan offers a set back at Caroline Hill Road (West) and a portion of Leighton Road near its junction with Caroline Hill Road (West) for the gazetted 'Proposed Road Improvement Works at Caroline Hill Road, Link Road, Hoi Ping Road and Leighton Road'. Detailed design of the concerned road improvement works has been submitted and approved by relevant Government departments. The road improvement works, which the Applicant has committed to under the lease, will alleviate the traffic congestion in the area and improve traffic flows.

6.9 NO INSURMOUNTABLE TECHNICAL IMPACTS

6.9.1 As demonstrated in **Section 5** and technical assessments at **Annexes D to J**, the current scheme will not create any adverse drainage, sewerage, noise, air quality, water supply, geotechnical, traffic or air ventilation impacts.

6.9.2 As such, the Project under the Layout Plan for the Current Scheme will not result in any insurmountable technical impacts.

7 Implementation

7.1 PROGRAMME AND PHASING

7.1.1 The construction completion of the Project under the Layout Plan for the Current Scheme, as well as under the Lease, remains the same as that in the Approved Layout Plan, i.e. Q3 of 2029.

7.1.2 The new internal access road and the associated road improvement works (the gazetted 'Proposed Road Improvement Works at Caroline Hill Road, Link Road, Hoi Ping Road and Leighton Road') will be completed by the Applicant by 30 June 2026.

7.1.3 The required GIC facilities including the CCC, DE and DHC, will also be available for occupation and operation by 30 September 2029 as required under Lease.

7.2 RESPONSIBILITY FOR CONSTRUCTION AND MANAGEMENT

7.2.1 As required under Lease, the POS (including the landscape bridge and its relevant structural supports) and public vehicle park will be constructed, operated and maintained at the Applicant's cost.

7.2.2 The proposed internal road will also be constructed and maintained at the Applicant's cost until it is surrendered to the Government as required under the Lease. Requirements under the Transport Planning and Design Manual (TPDM) will be observed and associated details will be submitted to HyD and relevant Government departments for approval.

7.2.3 The Applicant will construct the CCC, DE and DHC in accordance with the Technical Schedule under Lease and other relevant regulations and guidelines.

7.2.4 The light bus lay-bys constructed at the Applicants' cost will be accessible to the public 24 hours a day as required under Lease.

7.2.5 The detailed design of structural features, utilities, drainage, etc. as well as necessary regulatory and Lease submissions will be made in the future at the appropriate point in time.

8 Conclusion

8.1 SUMMARY

8.1.1 This Application presents the proposed Current Scheme Layout Plan for the Commercial Project on Caroline Hill Road, Causeway Bay. As with the Layout Plans previously approved by TPB (the Approved S16 Scheme' and the 'Approved S16A Scheme'), this Current Scheme proposed by the Applicant:

- fulfills the requirements of layout plan submission under Remarks of the Notes of the "C(2)" zone on the approved Wong Nai Chung OZP No. S/H7/21;
- complies with material requirements and development parameters of the approved Wong Nai Chung OZP No. S/H7/21;
- preserves designated features of historical and natural value located on the site;
- results in an enhanced provision and distribution of POS;
- aligns with Government policy objectives in fostering arts, culture and tourism development;
- enhances air ventilation through building design and layout;
- enhances pedestrian connectivity to the surrounding area and walkability in the wider area;
- integrates the required GIC facilities with the commercial Project for the benefit of the public;
- alleviates traffic congestion in the area through incorporation of the gazetted 'Proposed Road Improvement Works at Caroline Hill Road, Link Road, Hoi Ping Road and Leighton Road'; and
- poses no insurmountable adverse impacts in terms of technical aspects.

8.1.2 However, importantly, this Application **provides significant enhancements to the previously Approved S16A Scheme**. Specifically, these enhancements are that it:

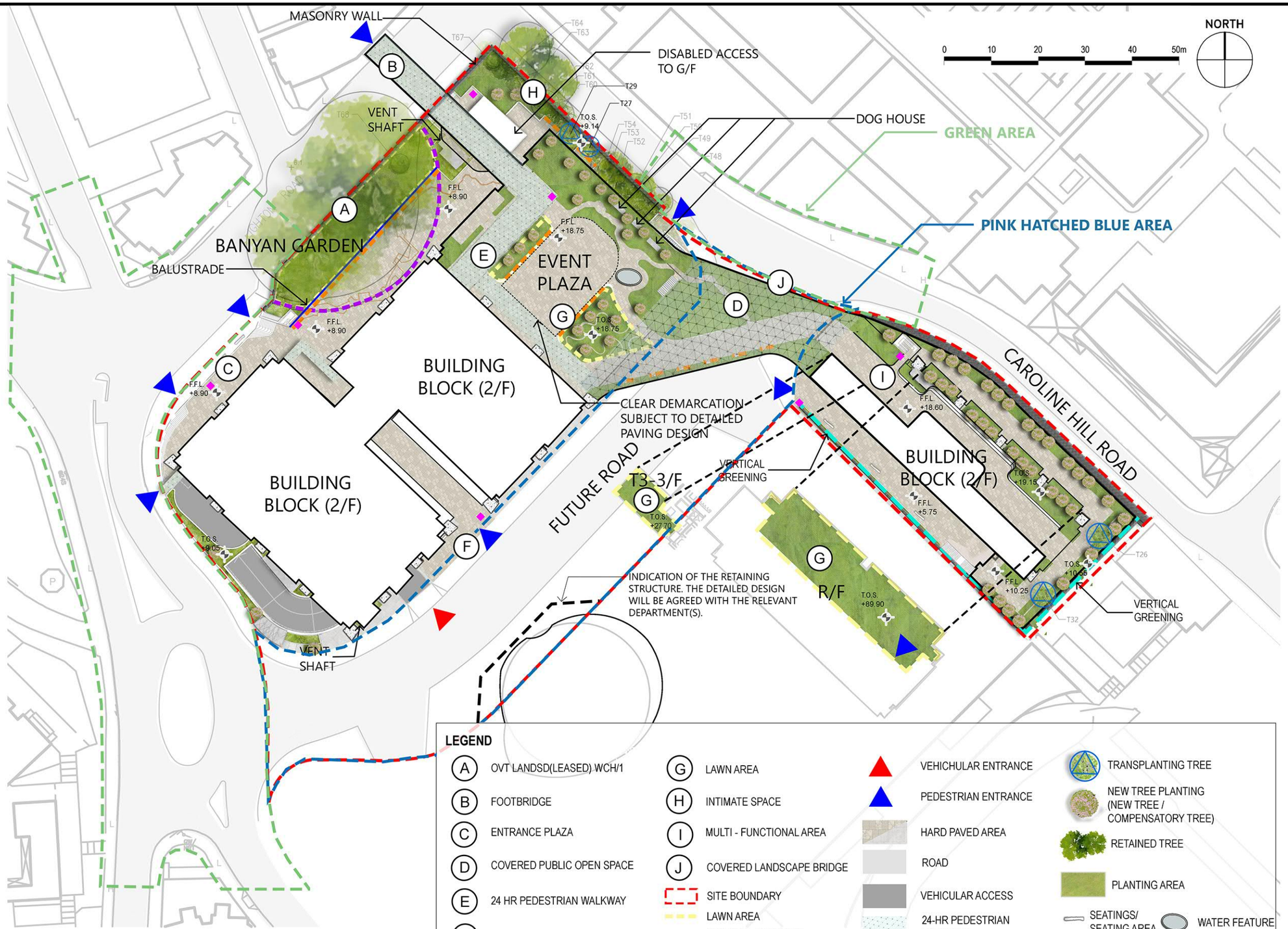
- protects and rehabilitates the OVT through different treatments within the three soil-rooting zones;
- allows the public to enjoy the POS at the TPZ; and
- includes an enhanced cultural placemaking proposal furthering community cultural and arts enjoyment of the Banyan Garden (compared to the approved schemes).

8.1.3 The Applicant therefore respectfully requests the Town Planning Board, exercising its powers under Section 16 of the Town Planning Ordinance (Cap 131), to approve the proposed Layout Plan, with or without condition.

銅鑼灣
Causeway Bay



Revised Figures



LEGEND

- A OVT LANDSD(LEASED) WCH/1
- B FOOTBRIDGE
- C ENTRANCE PLAZA
- D COVERED PUBLIC OPEN SPACE
- E 24 HR PEDESTRIAN WALKWAY
- F INTERNAL STREET AT G/F
- SPOT LEVEL
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- SEATINGS/ SEATING AREA
- WATER FEATURE
- SIGNAGE
- MASONRY WALL
- VENT SHAFT

Remark: For PlanD's reference only

Patchway Holdings (HK) Limited

Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Title: Landscape Master Plan – Overall under Current Scheme

Scale	Date	Figure No.
1:850 @ A3	October 2025	**4.3**



* IMAGE FOR REFERENCE ONLY, SUBJECT TO DETAIL DESIGN

Patchway Holdings (HK) Limited

Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Title: Artist's Impression of G/F Banyan Garden 1/2

Scale	Date	Figure No.
N.T.S.	October 2025	**4.6a**



* IMAGE FOR REFERENCE ONLY, SUBJECT TO DETAIL DESIGN

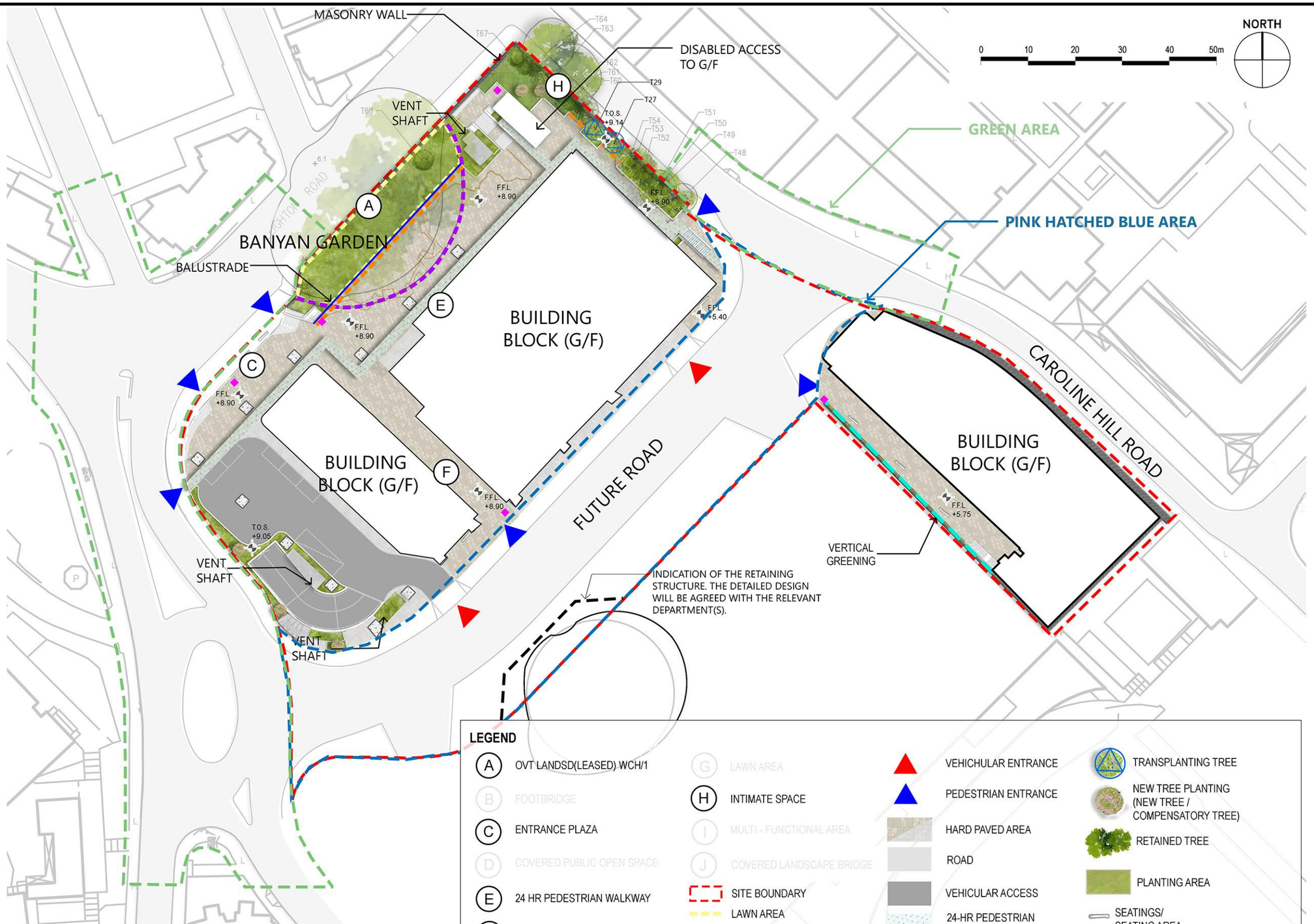
Patchway Holdings (HK) Limited

Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Ubis 雅邦 Limited

Title: Artist's Impression of G/F Banyan Garden 2/2

Scale	Date	Figure No.
N.T.S.	October 2025	**4.6b**



otherland

Patchway Holdings (HK) Limited

Submission of Layout Plan and Application for Commercial Development on IL No. 8945 Causeway Bay, Hong Kong

Title

Landscape Master Plan – G/F under Current Scheme

Scale	Date	Figure No.
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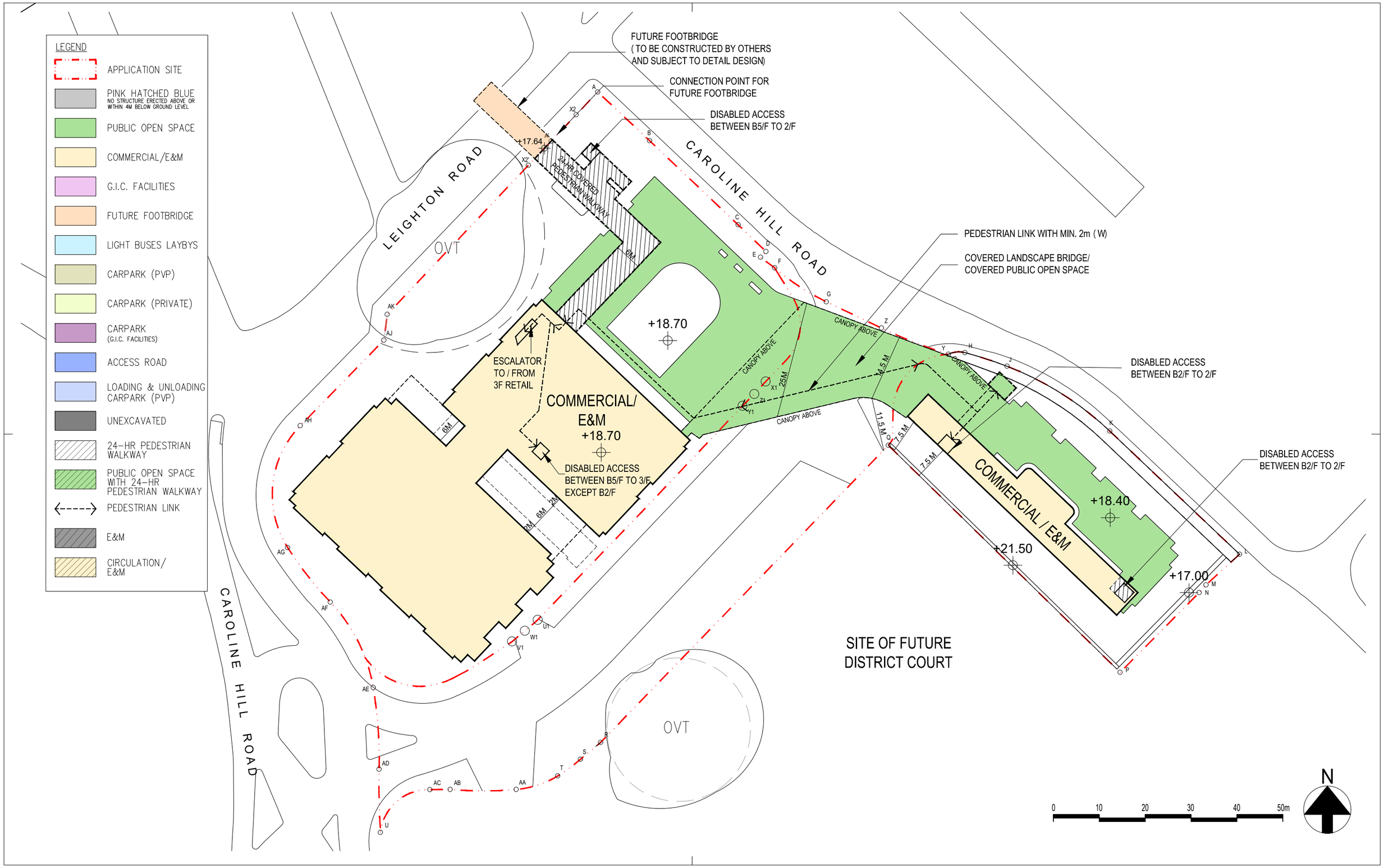
銅鑼灣
Causeway Bay



Replacement Pages of Annex B
Layout Plan



Rev.	Description	Drawn	Checked	Approved	Date
–	1st SUBMISSION				3-2022
A	1st AMENDMENT				9-2023
B	2nd AMENDMENT				1-2024

Rev.	Description	Drawn	Checked	Approved	Date

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

This drawing is to be read in conjunction with the specification and any discrepancies are to be immediately reported to the Architect.

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B.D. Ref.
F.S.D. Ref.
D.L.O. Ref.
Drawn Date 1-2024
Checked Date 1-2024
Approved Date 1-2024
Cad File No.

RONALD LU & PARTNERS
呂元祥建築師事務所

Project Title
PROPOSED COMMERCIAL DEVELOPMENT ON IL NO.8945 AT CAROLINE HILL ROAD, CAUSEWAY BAY, HONG KONG

Drawing Title
SECOND FLOOR PLAN

Project No. 21105HK
Scale 1:750 (A3) Issue Date Sept 2024
Drawing No. MLP -008

Drawing Purpose

銅鑼灣

Causeway Bay



Replacement Pages of Annex C
Landscape Master Plan

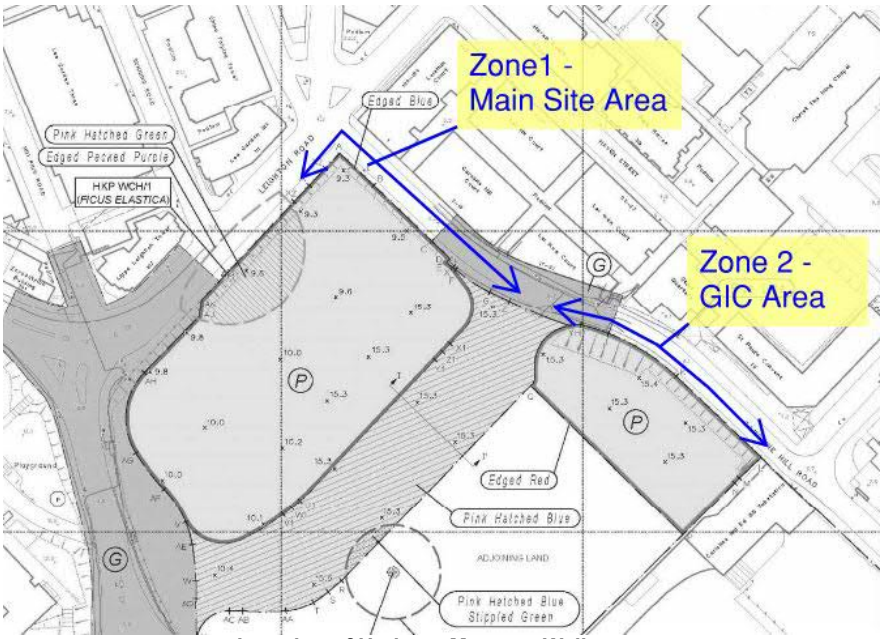
3.2 Tree Treatment (For PlanD's Reference Only)

3.2.1 Some trees will be unavoidably affected by the works by for proposed commercial towers, Public Open Space, GIC facilities, vehicular access and associated works. And some trees were felled under Emergency Tree Felling Procedure, which have been submitted to Lands Department after the removal works respectively.

3.2.2 The tree conditions, practicability of retaining and transplanting, and consideration for removal of trees in poor condition have been assessed on a case-by-case basis in the TAS. Detailed assessment for those trees with high value for priority preservation is presented in **Section 3.7**. The recommended tree treatment for all surveyed trees is presented in **Annex A – Tree Treatment Plan**.

3.3 Tree to be Retained (For PlanD's Reference Only)

3.3.1 According to Clause 13 – Preservation of Tree under the Lease of Inland Lot No. 8945, the OVT (T69) shall be preserved. Some of trees (including OVT (T69)) are scattered at the narrow strip that slopes down to the top of heritage masonry wall, the masonry walls are located along Caroline Hill Road to the north end of the site at Leighton Road. (refers to the figure below).



Location of Heritage Masonry Walls

3.3.2 In accordance with Clause 8.1.3 under explanatory statement of Approved Wong Nai Chung Outline Zoning Plan No. S/H7/21, *"Existing trees found within the site and trees situating on and/or abutting the stone retaining walls shall also be preserved as far as possible."* The project landscape architect has together with the project's structural and geotechnical engineer studied the feasibility on the preservation of the trees at the top of heritage walls as further elaborated in the following section.

3.4 Feasibility on the Tree Preservation along Masonry Walls (For PlanD's Reference Only)

3.4.1 Under lease, these heritage masonry walls are to be preserved and maintained. Substantial parts of the wall are approximately 3 meters to 5 meters tall with an additional sloped soil, where existing trees are located. The top of this slope is at approximately +10mPD (at Zone 1 – Main Site Area) to +15.0 mPD (at Zone 2 – GIC Area) (refers to figures below). The combined heritage retaining wall and the heritage retaining wall and the soil slope are considered as a geotechnical slope feature.

3.5.3 Having reviewed the suitability of individual species, their locations within the site, particularly those on slopes, their individual sizes, the ages of the specimens, current tree form, health condition, only four (4) nos. of affected trees are recommended to be transplanted, the proposed permanent receptor site will be replanted back to the Lot. The Tree Protection Zone (TPZ) of each tree to be transplanted will be erected before site clearance, the trees will be relocated to the onsite/ offsite receptor site by the landscape contractor, and will be reinstated to the permanent receptor site with the Lot.

3.6 Tree to be Felled (For PlanD's Reference Only)

3.6.1 Apart from the trees to be retained (15 nos.) and transplanted trees (4 nos.), the rest of surveyed trees (38 nos.) (including the two rare species T31 and T33; and two mature trees (T25 and T77) are proposed to be felled with compensation. Detailed justification of the removal of rare or protected species, and mature trees are further elaborated in **Section 3.7**.

3.7 Further Assessment for the Trees with High Value for Priority Preservation (For PlanD's Reference Only)

Register OVT (T69)

3.7.1 According to *Clause 13 – Preservation of Tree* under Inland Lot No. 8945, the OVT (T69) shall be preserved. Also, given the OVT has thrived for years under harsh condition, growing under a substantially large concrete slab with no significant health deterioration. While only a portion of its trunk remains within the open soil planter which is fully exposed beyond the slab's coverage, the tree has adapted to survive with severely limited access to air and water at its root zone. And this scheme is to enlarge the planting area from about 3.5m to about 9m width for significantly improving OVT's growing environment, no significant impacts will be caused to the OVT compared to the existing condition. Details assessment is further elaborated in **Annex K - 'Tree Protection Proposal for OVT (Registration No. LANDSD(LEASED) WCH/1) by Individual Tree Specialist – Professor Jim Chi Yung, BH, JP' of the Planning Statement**.

Tree of Rare or Protected Species

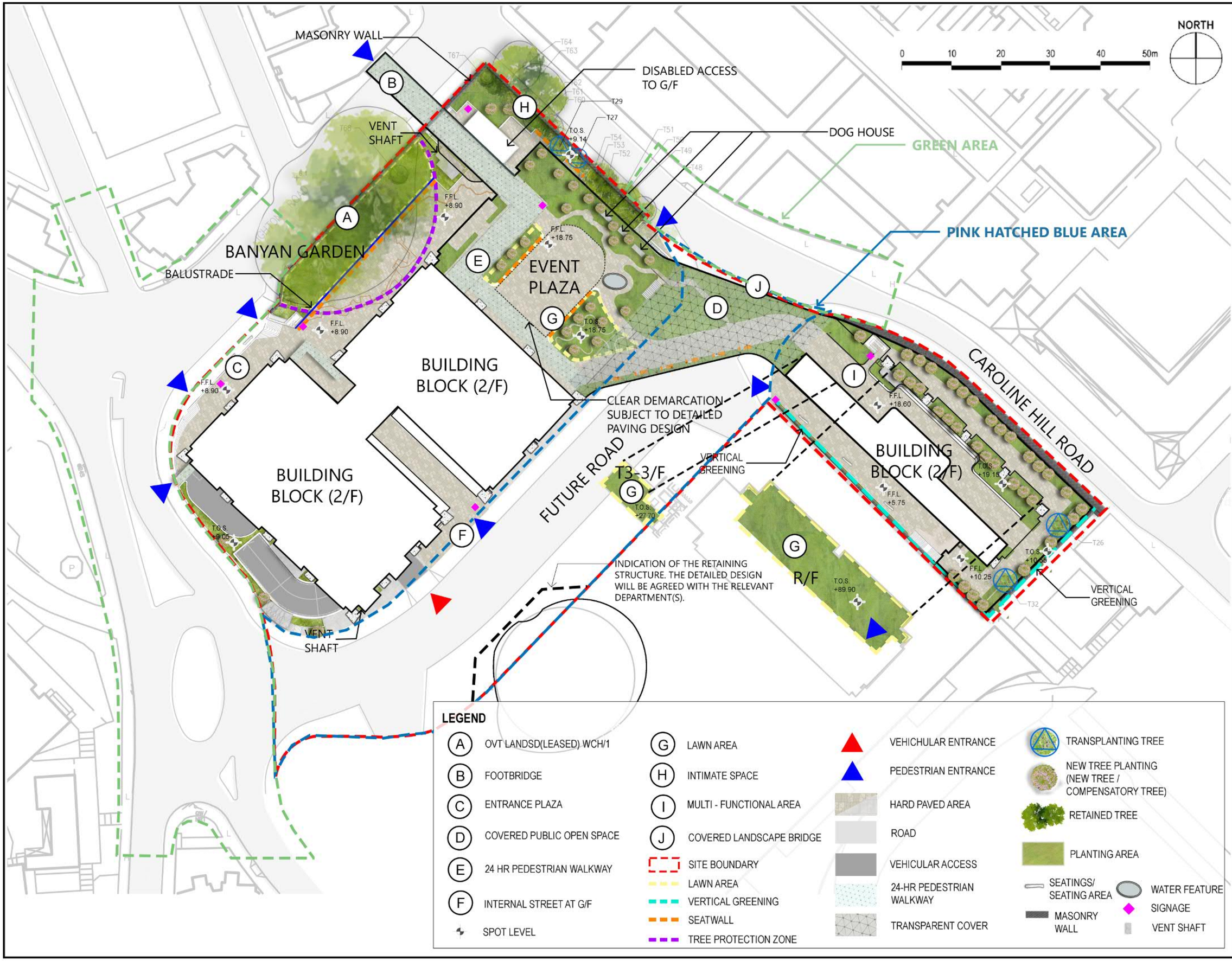
3.7.2 Two (2) mature trees - *Michelia* x *alba* (T31 and T33) identified as protected species under Forestry Regulation (Cap. 96A) are located within site. Given both trees are in direct conflict with the proposed development they cannot be retained in-situ. According to the *GLTMS DEVB – Guidelines on Tree Transplanting*, trees with the following features should not be considered for transplanting under normal circumstances, e.g. tree with large size; or with poor health, structure or form. As T31 has a large size (DBH: 995mm; Height: 28m; Crown: 10m, 28m tall). In accordance with *GLTMS DEVB – Guidelines on Tree Transplanting,* a root ball with at least 8-10m diameter is needed. To transplant such a large tree, massive scale of receptor site and lifting machine are essential, however, given the site surrounding by the high-rise building clusters with narrow vehicular paths, and inappropriate area for temporary holding nursery. After considering the mobility and survival rate, T31 is therefore not recommended to be transplanted.

3.7.3 T33 has had temporary supports installed by others consisting of heavy-duty I-beams, and have obviously been considered to be a hazard in the recent past and have had their risk of collapse mitigated. The tree's health is not in decline at present but the angle of lean is of some concern and its long-term structural stability must be questioned. Hence, the rates of survival will be low. T33 is also not feasible to transplant. Both T31 and T33 are therefore proposed to be felled with compensation.

Mature Trees

3.7.4 Two (2) mature trees - *Ficus microcarpa* (T25 and T77) are found with 3,000mm DBH at 1.3m above ground level.

Appendix C
Landscape Master Plan



LEGEND

- A — OVT LANDSD(LEASED) WCH/1
- B — FOOTBRIDGE
- C — ENTRANCE PLAZA
- D — COVERED PUBLIC OPEN SPACE
- E — 24 HR PEDESTRIAN WALKWAY
- F — INTERNAL STREET AT G/F
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- RETAINED TREE
- PLANTING AREA
- SEATINGS/ SEATING AREA
- MASONRY WALL
- WATER FEATURE
- SIGNAGE
- VENT SHAFT

REV	DATE	DESCRIPTION
–		

otherland
UNIT 2307-08, 23/F, NEW TECH PLAZA,
34 TAI YAU STREET
SAN PO KONG KOWLOON, HONG KONG,
Tel: (852) 2893 0370 Fax: (852) 2893 3139
WWW.OTHERLAND.COM.HK

CLIENT:
PATCHWAY HOLDINGS (HK) LIMITED

PROJECT:
CAROLINE HILL ROAD

TITLE:
APPENDIX C1 -
LANDSCAPE MASTER PLAN (OVERALL)

SCALE:	1:750@A3
DRAWN BY:	OY
CHECKED BY:	PC
APPROVED BY:	PC
DRAWING DATE:	AUG 2025
PROJECT No:	HYSAN02
SHEET No: HYSAN02-LMP-C1-2	REV: –

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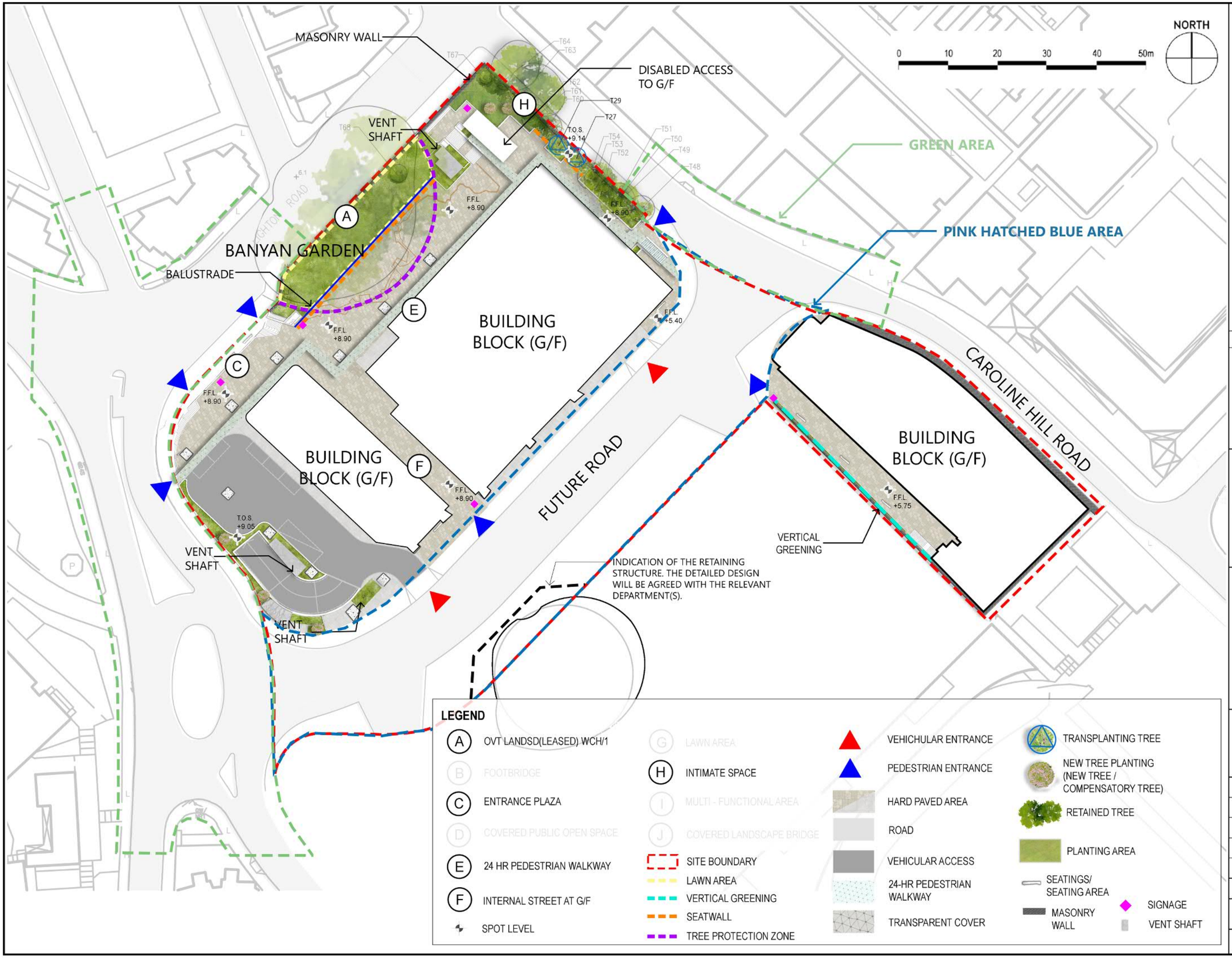

REV	DATE	DESCRIPTION
–		

otherland
UNIT 2307-08, 23/F, NEW TECH PLAZA,
34 TAI YAU STREET
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Tel: (852) 2893 0370 Fax: (852) 2893 3139
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CLIENT:
PATCHWAY HOLDINGS (HK) LIMITED

PROJECT:
CAROLINE HILL ROAD

TITLE:
APPENDIX C2 -
LANDSCAPE MASTER PLAN (G/F)

SCALE:	1:750@A3
DRAWN BY:	OY
CHECKED BY:	PC
APPROVED BY:	PC
DRAWING DATE:	AUG 2025
PROJECT No:	HYSAN02
SHEET No: HYSAN02-LMP-C2-2	REV: –

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Appendix F
Landscape Sections



KEY PLAN

T1 & T2

CAROLINE
HILL ROAD



0 1 2 3 4 5m

REV	DATE	DESCRIPTION
–		

otherland

UNIT 2307-08, 23/F, NEW TECH PLAZA
34 TAI YAU STREET
SAN PO KONG KOWLOON, HONG KONG,
Tel: (852) 2893 0370 Fax: (852) 2893 3139
WWW.OTHERLAND.COM.HK

CLIENT:
PATCHWAY HOLDINGS (HK) LIMITED

PROJECT:
CAROLINE HILL ROAD

TITLE:
APPENDIX F2 -
LANDSCAPE SECTION
(BETWEEN DEVELOPMENT & MASONRY WALL)

SCALE:	1:200 @ A3
DRAWN BY:	CY
CHECKED BY:	PC
APPROVED BY:	PC
DRAWING DATE:	AUG 2025
PROJECT No:	HYSAN02
SHEET No: HYSAN02-LMP-F2-1	REV: –

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銅鑼灣
Causeway Bay



Annex E
Drainage Impact Assessment

Proposed Redevelopment at Caroline Hill Road, Causeway Bay

Drainage Impact Assessment (DIA)

Report Ref

05 | 10 October 2025

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 247866

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Hong Kong
www.arup.com

ARUP

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3.1 Assessment Approach 3
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3.3 Proposed Drainage System 7
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4 Conclusion 9

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Table 3.2 Runoff Coefficient

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Figure 2 Proposed Development Plan
Figure 3 OVT layout Plan
Figure 4 Location of existing connection points inside the site boundary
Figure 5 Location of proposed connection points of subject site

Appendices

Appendix A

Location Plan of Caroline Hill Road Development

Appendix B

Layout Plan of OVT

Appendix C

Drainage Layout plan for Caroline Hill Road Development

Appendix D

Catchment plan for Caroline Hill Road Development

Appendix E

Pipe capacity check for Proposed Drainage discharge points

1 Introduction

1.1 General

This revised DIA had been submitted to support the Fresh S16 Planning Application with the revised layout plan submission. The recommendation established in the previously approved DIA remains unchanged.

2 The Development

The subject site is located at Causeway Bay at the junction of Caroline Hill Road and Leighton Road. The subject site area covers approx. 14,800m^2. It was occupied by the ex-Electrical and Mechanical Services Department (EMSD) Headquarters, the ex-Civil Aid Service Headquarters, the ex-Post Office Recreation Club and the PCCW Recreation Club.

Below is an aerial photograph of the subject site.

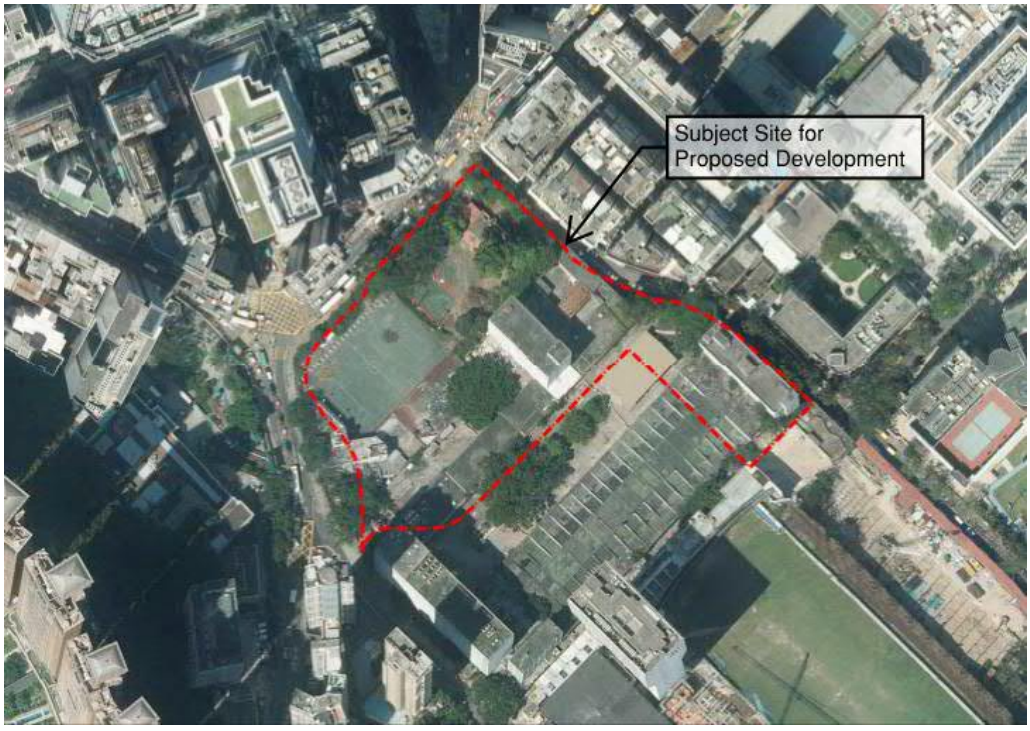


Figure 1 - Location of Subject Site

For the general arrangement in subject site, two office towers are separated by the future public road as shown in below proposed ground floor plan. Two existing Old and Valuable Trees (OVT) are observed in the subject site. One OVT (OVT No. HKP WCH/1) is located at the North of the subject site and next to Leighton Road. Another OVT (OVT No. EMSD WCH/1) is located at the South of the subject site and next to the Future Public Road.

Below is the proposed development plan which is presented in **Appendix A.**

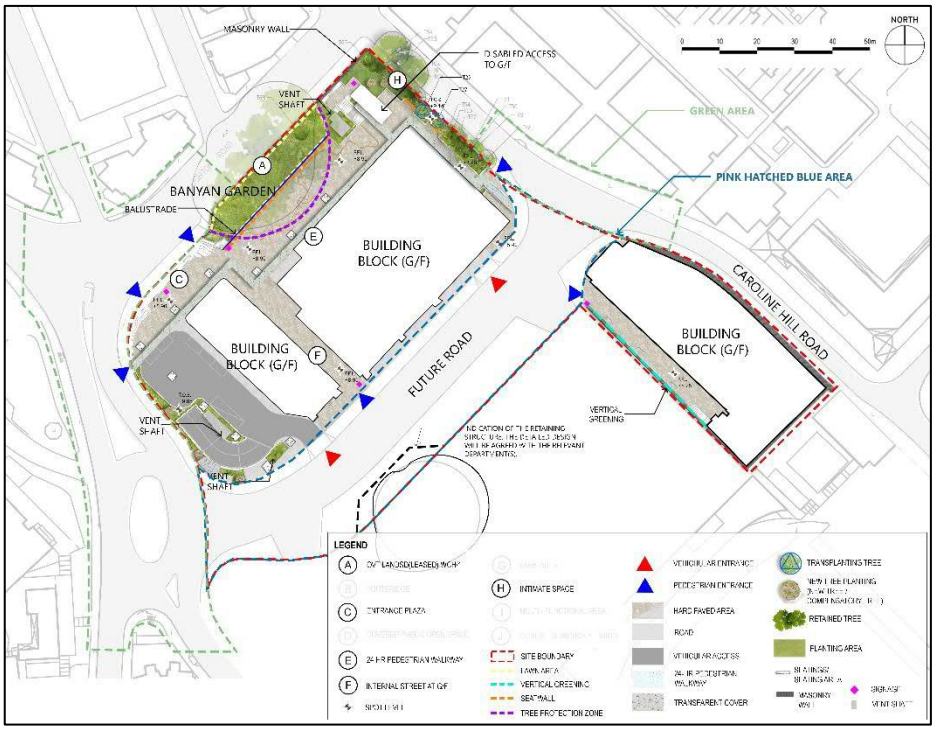


Figure 2 - Proposed Development Plan

Below is the layout plan for two old and valuable trees which is presented in **Appendix B.**



Figure 3 - OVT layout Plan

3 Methodology and Technical Approach

3.1 Assessment Approach

The DIA is following the standards set out in the Stormwater Drainage Manual (Fifth Edition) issued by *Drainage Services Department in January 2018 (DSD SDM*) and the Corrigendum No. 1/2022, 1/2024 and 2/2024.

3.1.1 Runoff Estimation

Flood Protection Level

The design standard for a drainage system shall be able to accommodate a flood event with a predefined return period, which the return period depends on the area and type of drainage system.

The design flood protection level is determined in accordance with *Table 10 of the DSD SDM*, which is reproduced in **Table 3.1**.

Table 3.1 – Recommended Design Return Periods based on Flood Levels

Category	Return Period
Intensively Used Agricultural Land	2-5 years
Village Drainage including Internal Drainage System under a Polder Scheme	10 years [1,3]
Main Rural Catchment Drainage Channels	50 years [2,3]
Urban Drainage trunk systems	200 years [4]
Urban drainage branch systems	50 years [4]

Notes:
1. The impact of a 50-year event should be assessed in each village to check whether a higher standard than 10 years can be justified.
2. Embanked channels must be capable of passing a 200-year flood within banks.
3. 'Village Drainage' refers to the local stormwater drainage system within a village. A stormwater drain conveying stormwater runoff from an upstream catchment but happens to pass through a village may need to be considered as either a 'Main Rural Catchment Drainage Channel' or 'Village Drainage', depending on the nature and size of the upstream catchment (refer to Section 6.6.1 of the DSD SDM.)
4. An 'Urban Drainage Branch System' is defined as a group or network of connecting drains collecting runoff from the urban area and conveying stormwater to a trunk drain, river or sea (refer to *Section 6.6.2 of the DSD SDM)*.
5. An 'Urban Drainage Trunk System' collects stormwater from branch drains and/or river inlets, and conveys the flow to outfalls in river or sea (refer to *Section 6.6.2 of the DSD SDM)*.

To assess the hydraulic performance of the proposed drainage system, a flood protection level with a return period of 50 years for "Urban Drainage Branch Systems" is used in this DIA.

Peak Runoff

The peak runoff is estimated using the Rational Method in accordance with *Section 7.5.2 of the DSD SDM* with the following equation:

$$Q = 0.278CiA$$

where, Q = peak runoff in m^3/s
C = runoff coefficient
i = rainfall intensity in mm/hr
A = catchment area in km^2

Runoff coefficient

The runoff coefficients, C, for different surface characteristic to be adopted in this DIA for the peak runoff estimation are referenced to *Section 7.5.2 (b) of the DSD SDM* and listed in **Table 3.2**.

Table 3.2 – Runoff Coefficient

Surface Characteristics	**Runoff Coefficient, C[1]**
Asphalt	0.70 – 0.95
Concrete	0.80 – 0.95
Brick	0.70 – 0.85
Grassland (heavy soil[2]) - Flat - Steep	 0.13 – 0.25 0.25 – 0.35
Grassland (sandy soil) - Flat - Steep	 0.05 – 0.15 0.15 – 0 20
Notes: 1. For steep natural slopes or areas where a shallow soil surface is underlain by an impervious rock layer, a higher C value of 0.4 – 0.9 may be applicable. 2. Heavy soil refers to fine grain soil composed largely of silt and clay.	

Referring to the equation for peak runoff estimation, a greater value of C implies a greater peak runoff. Considering that the effect of soaking in unpaved area may not be as high as grassland, to be conservative, the runoff coefficient for the unpaved area is assumed to be 0.35; and the runoff coefficient for the paved area is assumed to be 0.9.

Rainfall Intensity

The rainfall intensity is determined by the following equation with reference to *Section 4.3.3 of the DSD SDM*:

$$i = \frac{a}{(t_d + b)^c}$$

where, i = rainfall intensity in mm/hr
td = duration in minutes
a, b, c = storm constants

The storm constants, i.e. *a*, *b*, and *c*, under *Table 3a "Storm Constants for Different Return Period of HKO Headquarters" of the DSD SDM*, which are recommended for general application, are adopted in this DIA.

According to *Section 6.8 of the DSD SDM*, the rainfall in Hong Kong is projected to increase under climate change. Considering the effect of climate change, 16.0% rainfall increase and design allowance of 12.1% rainfall increase for end-21st century as given in *Table 28 and 31 of the DSD SDM* has been included in calculating the rainfall intensity. Therefore, the equation becomes:

$$i = \frac{a}{(t_d+b)^c} \times (1 + 16.0\% + 12.1\%)$$

where, i = rainfall intensity in mm/hr
td = duration in minutes
a, b, c = storm constants

Time of Concentration

The duration of minutes, *td*, is referred to the time for a drop of water to flow from the remotest point in the catchment to its outlet, i.e. the time of concentration, *tc*.

3.1.2 System Capacity

The capacity of the existing drainage system is checked by using the continuity equation, assuming full-bore flow condition:

$$Q = VA$$

where, Q = peak runoff in m^3/s
V = cross-sectional mean velocity in m/s
A = cross-sectional area of the pipe/channel in m^2

The cross-section mean velocity, *V*, is estimated using the Colebrook White equation:

$$\bar{V} = -\sqrt{32gRS_f}\log\left[\frac{k_s}{14.8R} + \frac{1.255\nu}{R\sqrt{32gRS_f}}\right]$$

where, $\bar{V}$ = cross-sectional mean velocity (m/s)
S_f = friction gradient (dimensionless)
g = acceleration due to gravity (m/s^2)
R = hydraulic radius (m)
ks = surface roughness (m)
ν = kinematic viscosity (m^2/s)

Referring to the equation for cross-section mean velocity estimation, a greater value of ks implies a smaller velocity of the drainage system. To be conservative, the surface roughness is assumed to be 0.6 mm for precast concrete pipe and 0.03mm for PE pipes with reference to *Table 14 - Recommended Roughness Values ks of the DSD SDM*, considering the reduced hydraulic performance in future due to degradation of material. The design calculation should also take into consideration of pipe siltation as per DSD SDM Section 9.3.

3.1.3 Sub-Catchment area

The catchment plan for existing case, the Approval Scheme and the Proposed Scheme are attached in **Appendix D**. The changes in the planting area around the OVT are summarized in below table for easy reference.

Formerly EMSD development (the Existing Case)	
Paved	15,490.5m^2
Unpaved	133.5m^2
Approval Scheme	
Paved	14,050m^2
Unpaved	750m^2
Proposed Scheme	
Paved	14,133.5m^2
Unpaved	666.5m^2

Compared with the existing site, both the Approval Scheme and Proposed Scheme will have the landscape area increase from the existing case of 133.5m^2 by enlarging the area of OVT zone to 750m^2 for the Approval Scheme and 666.5m^2 for the Proposed Scheme.

3.2 Existing Drainage System

Based on the latest underground utility survey record, there are totally 10 existing drainage connection points inside the site boundary as shown in below figure, including three 150⌀, seven 225⌀ and one 375⌀ drainage pipes.

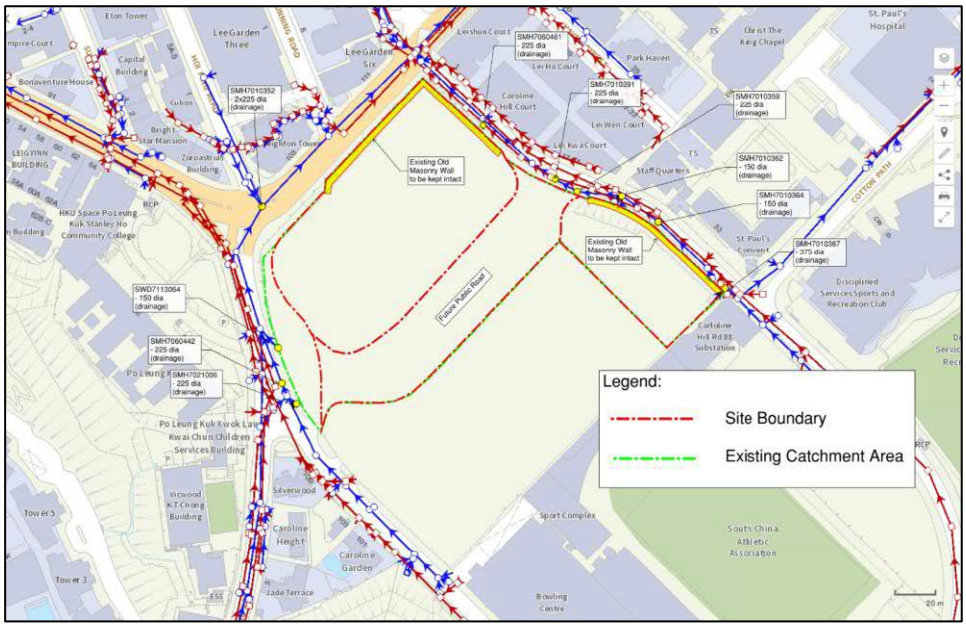


Figure 5 - Location of existing connection points inside the site boundary

Thus, total catchment area of 15,624m^2 in subject site is assumed to discharge to the nearest existing drainage system, which is located on the running southwest to northeast across the Tong Lo Wan Road. 15,490.5m^2 and 133.5m^2 are considered as paved and unpaved area respectively. The catchment area plan is presented in **Appendix D**.

The surface runoff is discharged to an existing 2250mm (w) x 2150mm (h) box culvert (SBP7001145), which is running along Tung Lo Wan Road. And then, the stormwater is discharge to Victoria Harbour, combining the surface runoff with road gullies and catchment from the upstream of Causeway Bay.

3.3 Proposed Drainage System

Proposed drainage discharge points are developed by keeping the similar catchment distribution as existing. The layout plan of existing and proposed drainage discharge points is presented in **Appendix C**.

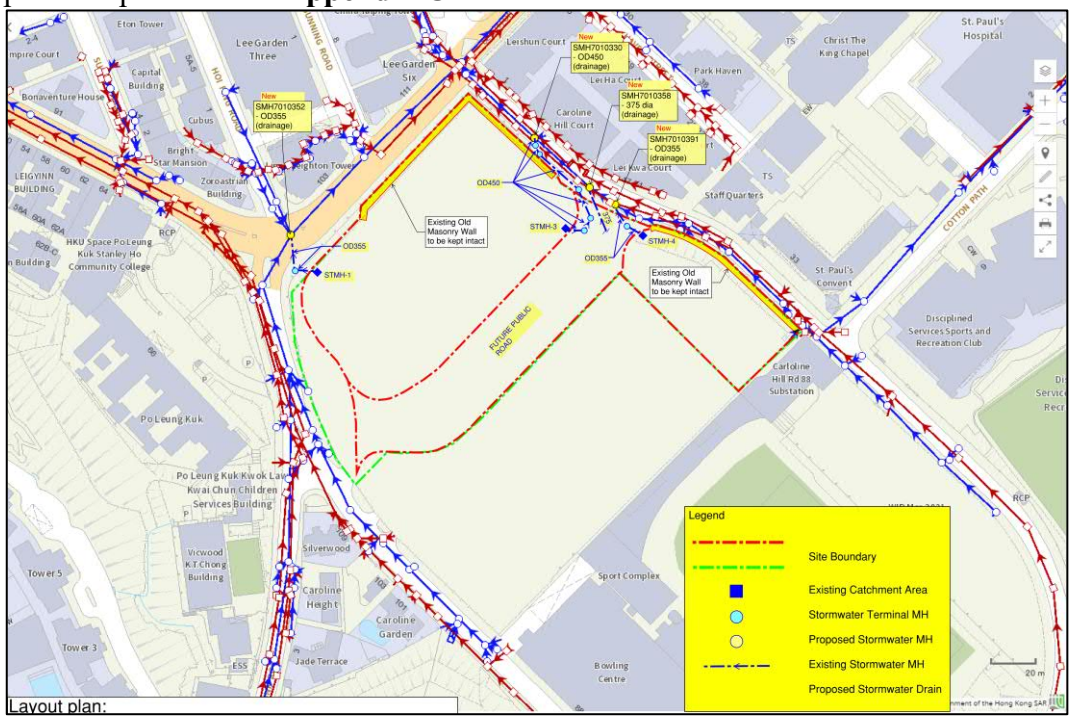


Figure 5 - Location of proposed connection points of subject site

Thus, for proposed development, total catchment area of 14,800m^2 within the subject site is assumed to discharge to the nearest existing drainage system, which is located on the running southwest to northeast across the Tong Lo Wan Road. 14,133.5m^2 and 666.5m^2 are considered as paved area and unpaved area. The catchment area plan is presented in **Appendix D**.

3.4 Potential Drainage Impacts

Currently, the surface runoff of subject site is discharged by the existing drainage discharge points, diverting to the existing 900⌀ drainage pipe along Leighton Road which is further diverted to the existing box culvert at Tung Lo Wan Road.

For the characteristic of the existing catchment, the paved and unpaved area are 15,490.5m^2 and 133.5m^2 respectively. For the characteristic of the catchment for proposed development, the unpaved area would be increased to 666.5m^2 by enlarging the area of OVT zone. Therefore, the total surface runoff from the site

would be reduced. The surface runoff from the subject site would be then discharged to the proposed drainage discharge points. The peak runoff to the existing branch of drainage pipe along Leighton Road should be reduced. Thus, there is no drainage impact to the existing drainage system as a result of the proposed redevelopment.

The summary table for the catchment of drainage connections is shown below.

	Existing Case					**Approved Scheme**				
	Downstream Manhole	Pipe dia. (mm)	Sub-Catchment ref.	Paved catchment (m^2)	Unpaved catchment (m^2)	Downstream Manhole	Pipe dia. (mm)	Sub-Catchment ref.	Paved catchment (m^2)	Unpaved catchment (m^2)
South of subject site	SMH7021006	225	A4, A5, 50%A7	751.6	0					
	SMH7060442	225	A2, A6	1352	0					
	SWD7113064	150	50%A7	349	0					
Total area of the South			A2, A4-A7	2,452.6	0					
North of subject site	SMH7010352	825	A2-A8, A10	5,610.3	133.5	SMH7010352	825	B2, B3, B4	4,500	750
Total area of the North			A2-A8, A10	5,610.3	133.5			B2, B3, B4	4,500	750
East of subject site	SMH7060461	225	A9, A11, A12	2,122	0	SMH7010330	400	B5, B6	3,400	0
	SMH7010391	225	A1, A13	4,937.7	0	SMH7010358	375	B1, B7	3,550	0
	SMH7010362	150	50%A14, 50%A15	1,410.3	0	SMH7010391	300	B8	2,600	0
	SMH7010364	150	50%A14, 50%A15	1,410.3	0					
Total area of the East			A1, A9, A11, A12, A13, A14, A15	9,880.2	0			B1, B5-B8	9,550	0
Total area of the site			A1-A15	15,490.5	133.5			B1-B8	14,050	750

	Proposed Scheme				
	Downstream Manhole	Pipe dia. (mm)	Sub-Catchment ref.	Paved catchment (m^2)	Unpaved catchment (m^2)
South of subject site					
Total area of the South					
North of subject site	SMH7010352	825	B2, B3, B4	4,824.0	426.0
Total area of the North			B2, B3, B4	4,824.0	426.0
East of subject site	SMH7010330	400	B5, B6	3,159.5	240.5
	SMH7010358	375	B1, B7	3,550	0
	SMH7010391	300	B8	2,600	0
Total area of the East			B1, B5-B8	9,309.5	240.5

Total area of the site			B1-B8	14,133.5	666.5

The summary table for the peak runoff of drainage connections is shown below.

	Existing Case					Approved Scheme				
	Sub-Catchment ref.	Paved catchment (m^2)	Unpaved catchment (m^2)	Peak Runoff (m^3/s)	Remark	Sub-Catchment ref.	Paved catchment (m^2)	Unpaved catchment (m^2)	Peak Runoff (m^3/s)	% change
South of subject site	A2, A4-A7	2452.6	0	0.169	-	-	-	-	-	-
North of subject site	A2-A8, A10,	5610.3	133.5	0.387	-	B2, B3, B4	4,500	750	0.317	-18.06%
East of subject site	A1, A9, A11, A12, A13, A14, A15	9880.2	0	0.679	-	B1, B5-B8	9,550	0	0.657	-3.34%
Total Peak Runoff	A1-A15	15,490.5	133.5	1.066	-	B1-B8	14,050	750	0.974	-8.68%

	Proposed Scheme				
	Sub-Catchment ref.	Paved catchment (m^2)	Unpaved catchment (m^2)	Peak Runoff (m^3/s)	% change
South of subject site	-	-	-	-	-
North of subject site	B2, B3, B4	4,824.0	426.0	0.336	-13.17%
East of subject site	B1, B5-B8	9,309.5	240.5	0.643	-5.41%
Total Peak Runoff	B1-B8	14,133.5	655.5	0.979	-8.22%

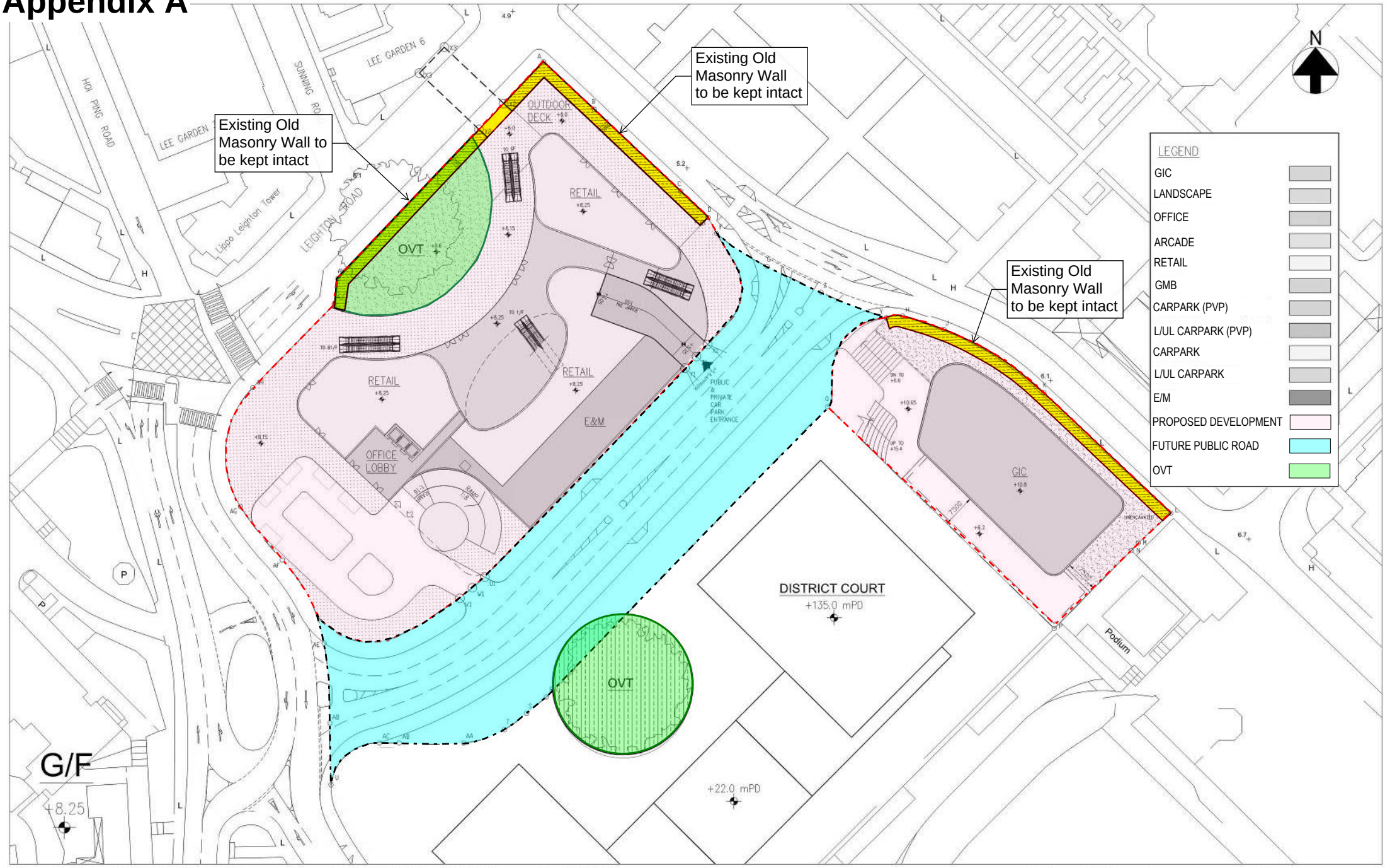
4 Conclusion

Since the total surface runoff for the proposed scheme will be reduced with enlarged landscape area when compared with the existing case, the peak runoff to the existing branch of drainage pipe along Leighton Road should also be reduced and should be beneficial to the existing drainage system. Therefore, it is concluded that there would be no impact to the existing drainage system as a result of the proposed scheme.

Appendix A

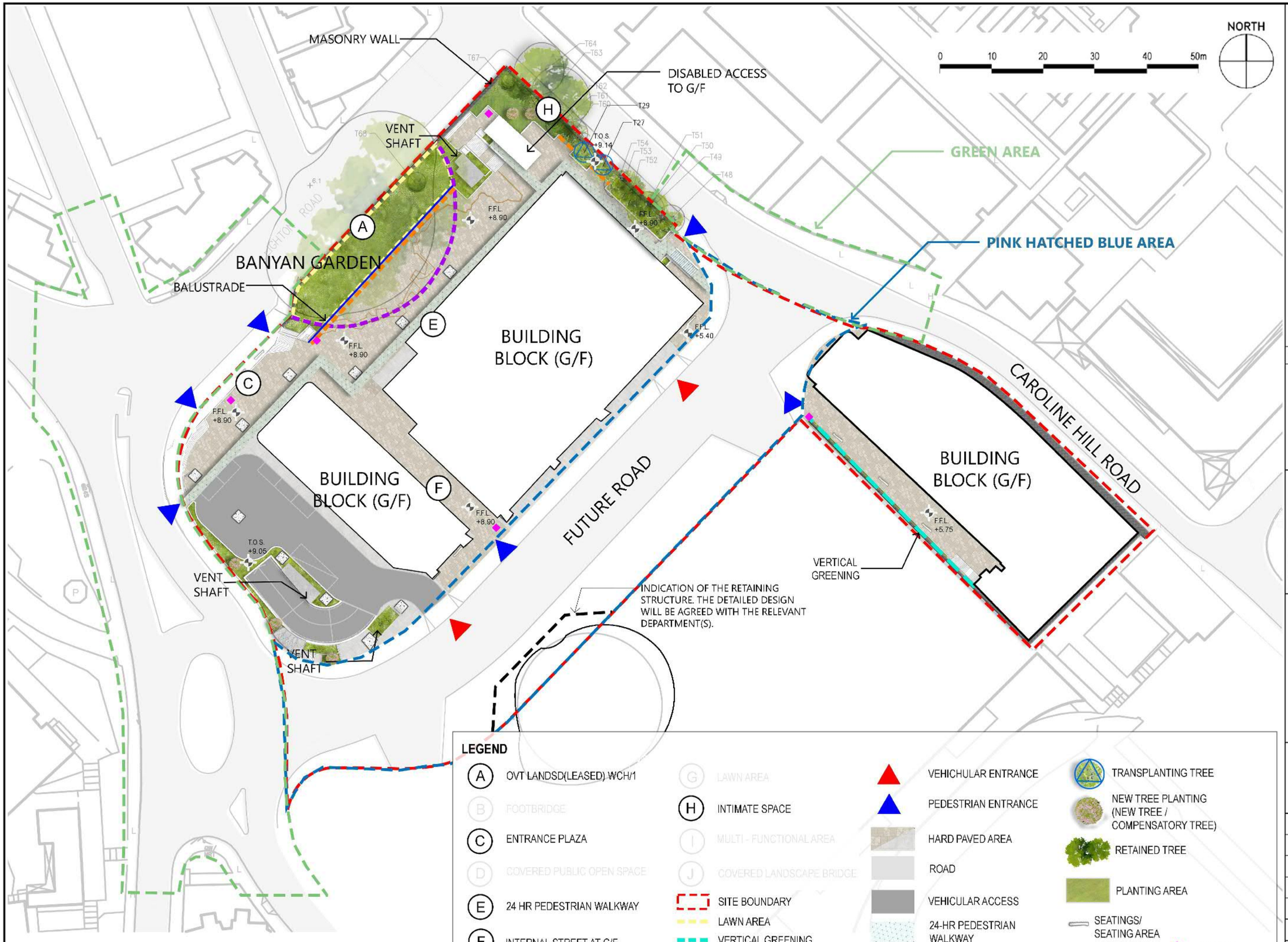
Layout Plan of Caroline Hill Road Development

Appendix A



Layout Plan of Caroline Hill Road Development

(Approved Layout Plan)



LEGEND

- A — OVT LANDSD(LEASED) WCH/1
- B — FOOTBRIDGE
- C — ENTRANCE PLAZA
- D — COVERED PUBLIC OPEN SPACE
- E — 24 HR PEDESTRIAN WALKWAY
- F — INTERNAL STREET AT G/F
- SPOT LEVEL
- G — LAWN AREA
- H — INTIMATE SPACE
- I — MULTI - FUNCTIONAL AREA
- J — COVERED LANDSCAPE BRIDGE
- SITE BOUNDARY
- LAWN AREA
- VERTICAL GREENING
- SEATWALL
- TREE PROTECTION ZONE
- VEHICHULAR ENTRANCE
- PEDESTRIAN ENTRANCE
- HARD PAVED AREA
- ROAD
- VEHICULAR ACCESS
- 24-HR PEDESTRIAN WALKWAY
- TRANSPARENT COVER
- TRANSPLANTING TREE
- NEW TREE PLANTING (NEW TREE / COMPENSATORY TREE)
- RETAINED TREE
- PLANTING AREA
- SEATINGS/ SEATING AREA
- MASONRY WALL
- SIGNAGE
- VENT SHAFT

REV	DATE	DESCRIPTION
–		

otherland
UNIT 2307-08, 23/F, NEW TECH PLAZA,
34 TAI YAU STREET
SAN PO KONG KOWLOON, HONG KONG,
Tel: (852) 2893 0370 Fax: (852) 2893 3139
WWW.OTHERLAND.COM.HK

CLIENT:
PATCHWAY HOLDINGS (HK) LIMITED

PROJECT:
CAROLINE HILL ROAD

TITLE:
APPENDIX C2 -
LANDSCAPE MASTER PLAN (G/F)

SCALE:	1:750@A3
DRAWN BY:	OY
CHECKED BY:	PC
APPROVED BY:	PC
DRAWING DATE:	AUG 2025
PROJECT No:	HYSAN02
SHEET No: HYSAN02-LMP-C2-2	REV: –

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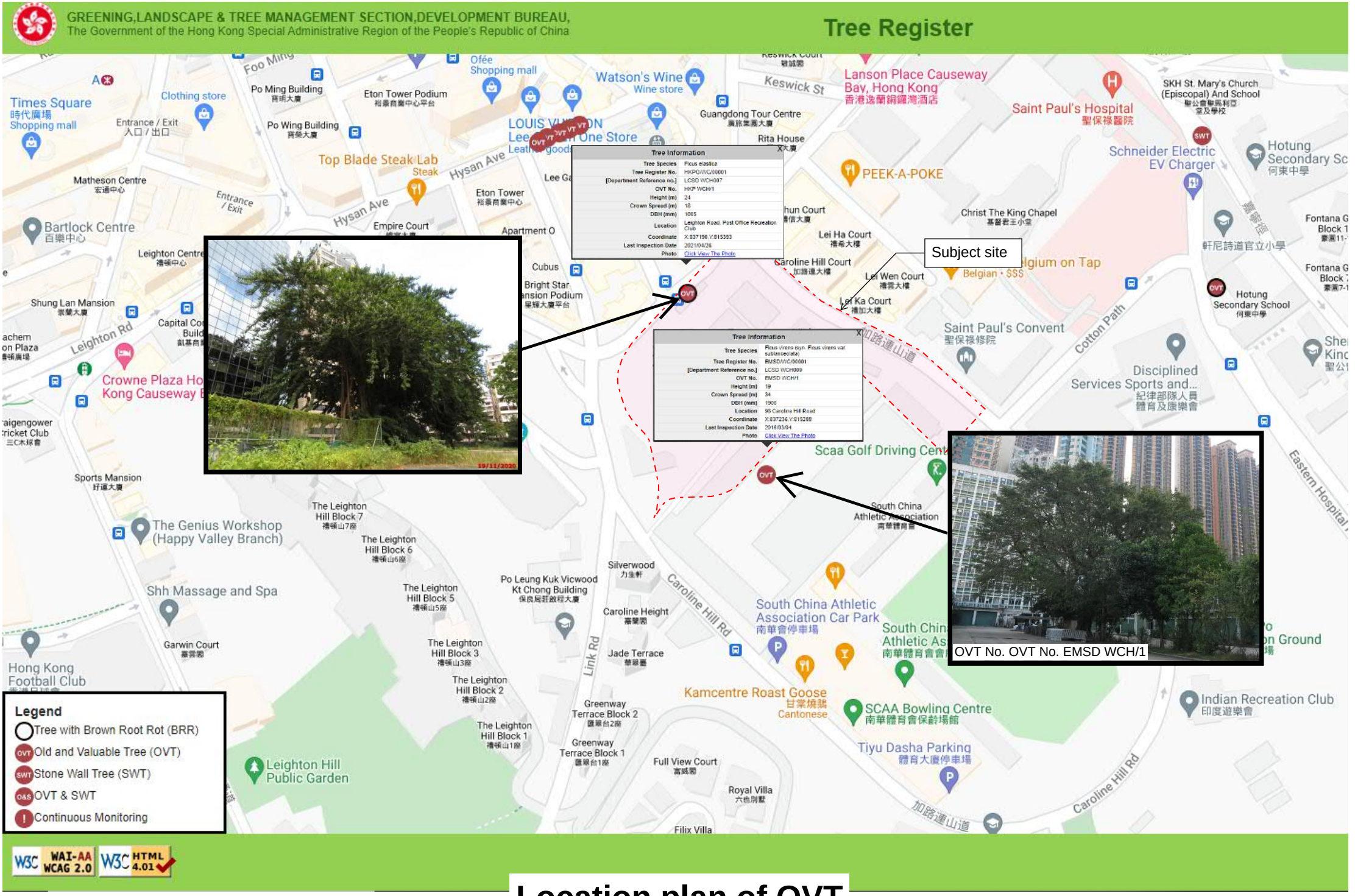
Appendix B

Layout Plan of OVT

Appendix B



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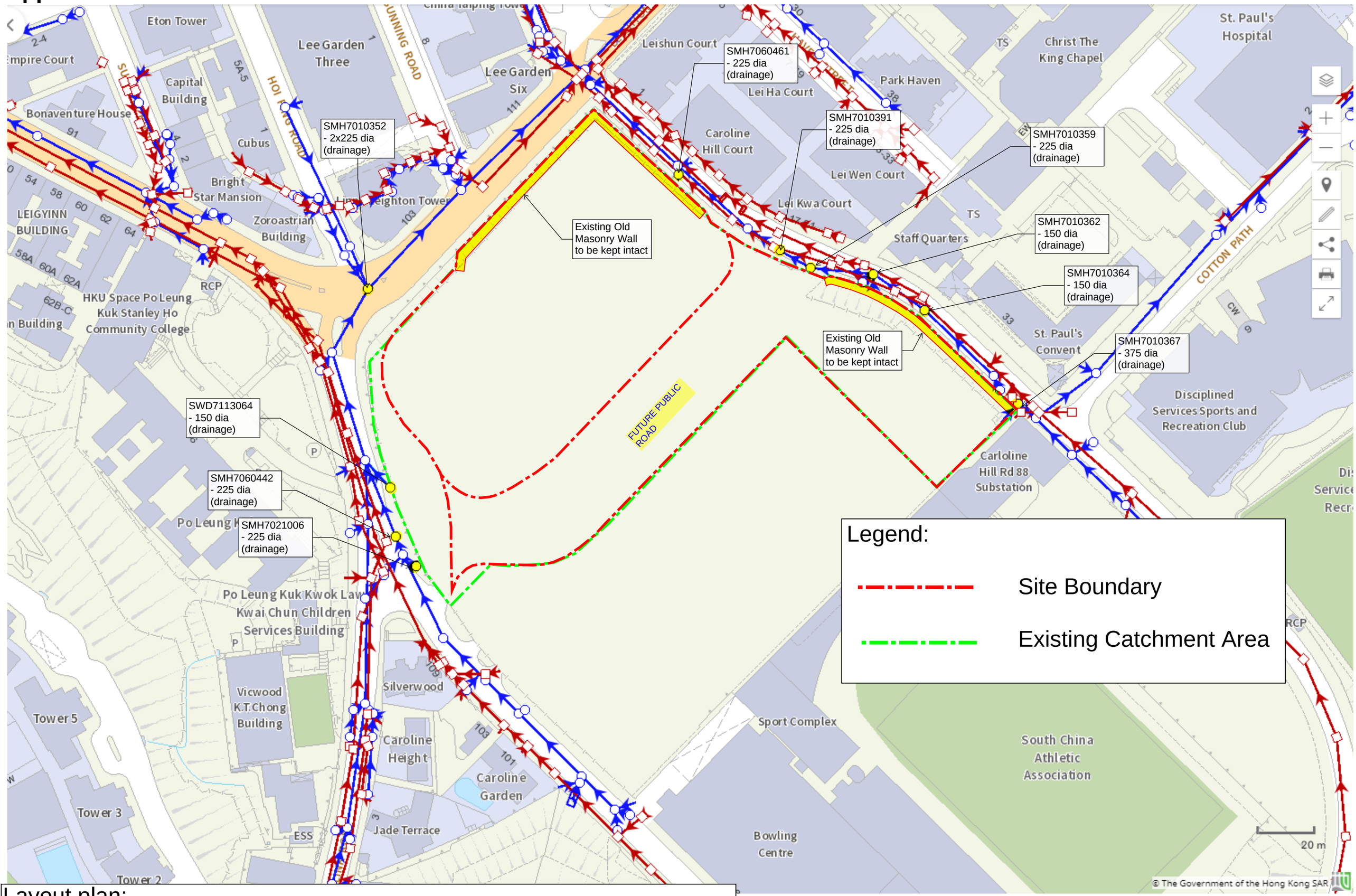
Location plan of OVT

Appendix C

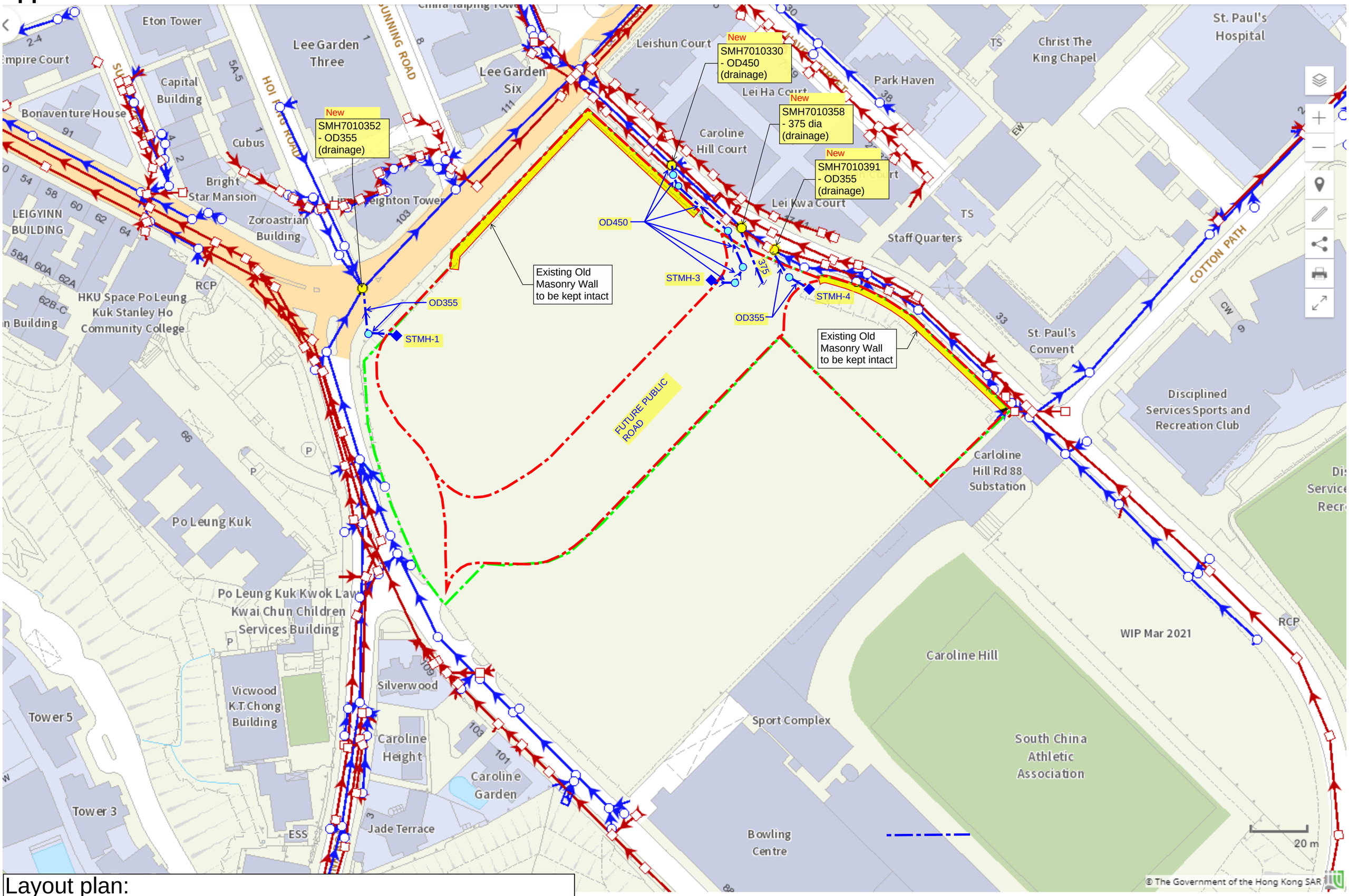
Drainage Layout plan for Caroline Hill Road Development

Appendix C



Layout plan:
Existing in-use drainage discharge points for formerly used development

Appendix C

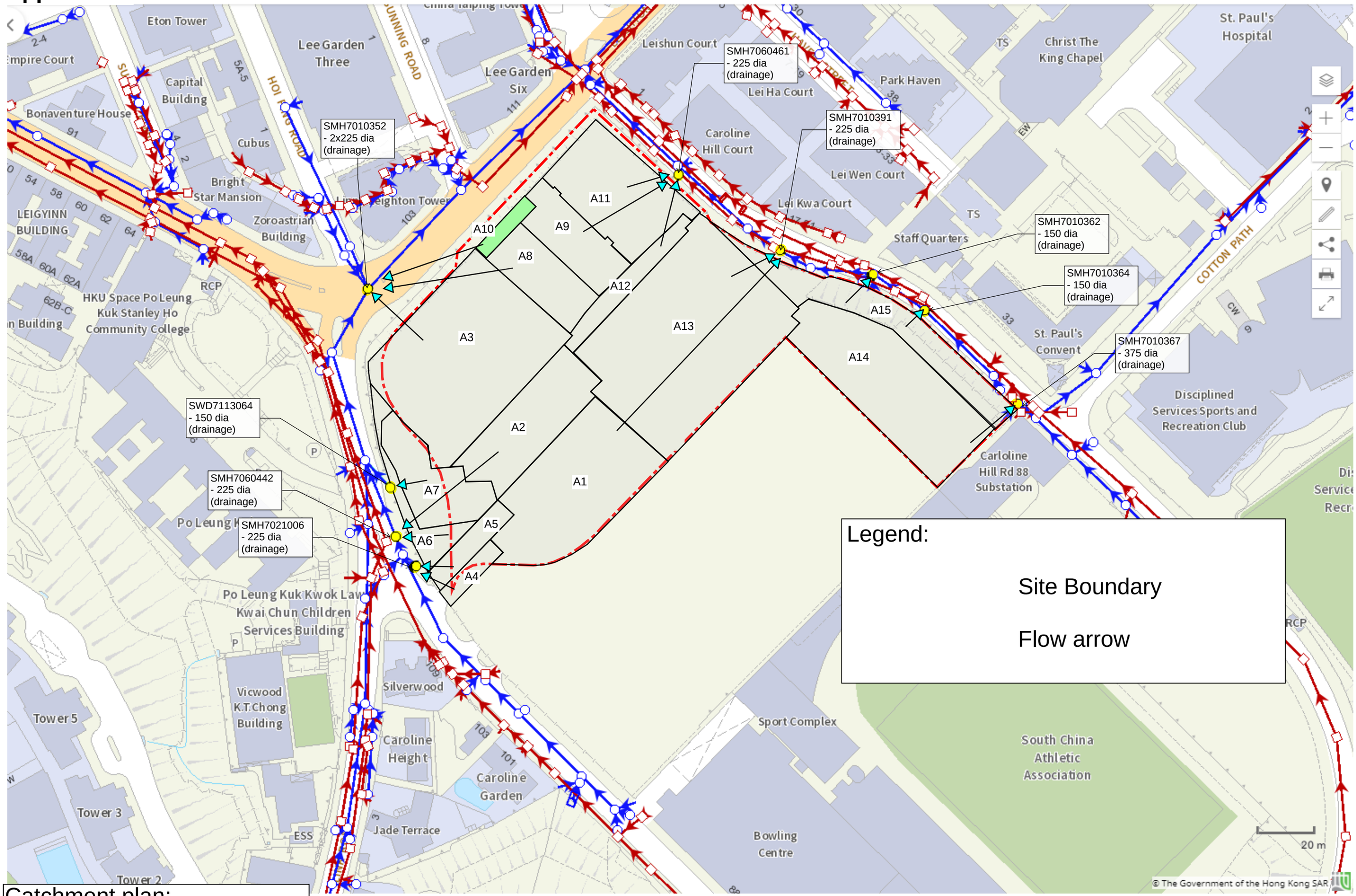


Layout plan:
Drainage discharge points for Proposed development

Appendix D

Catchment plan for Caroline Hill Road Development

Appendix D



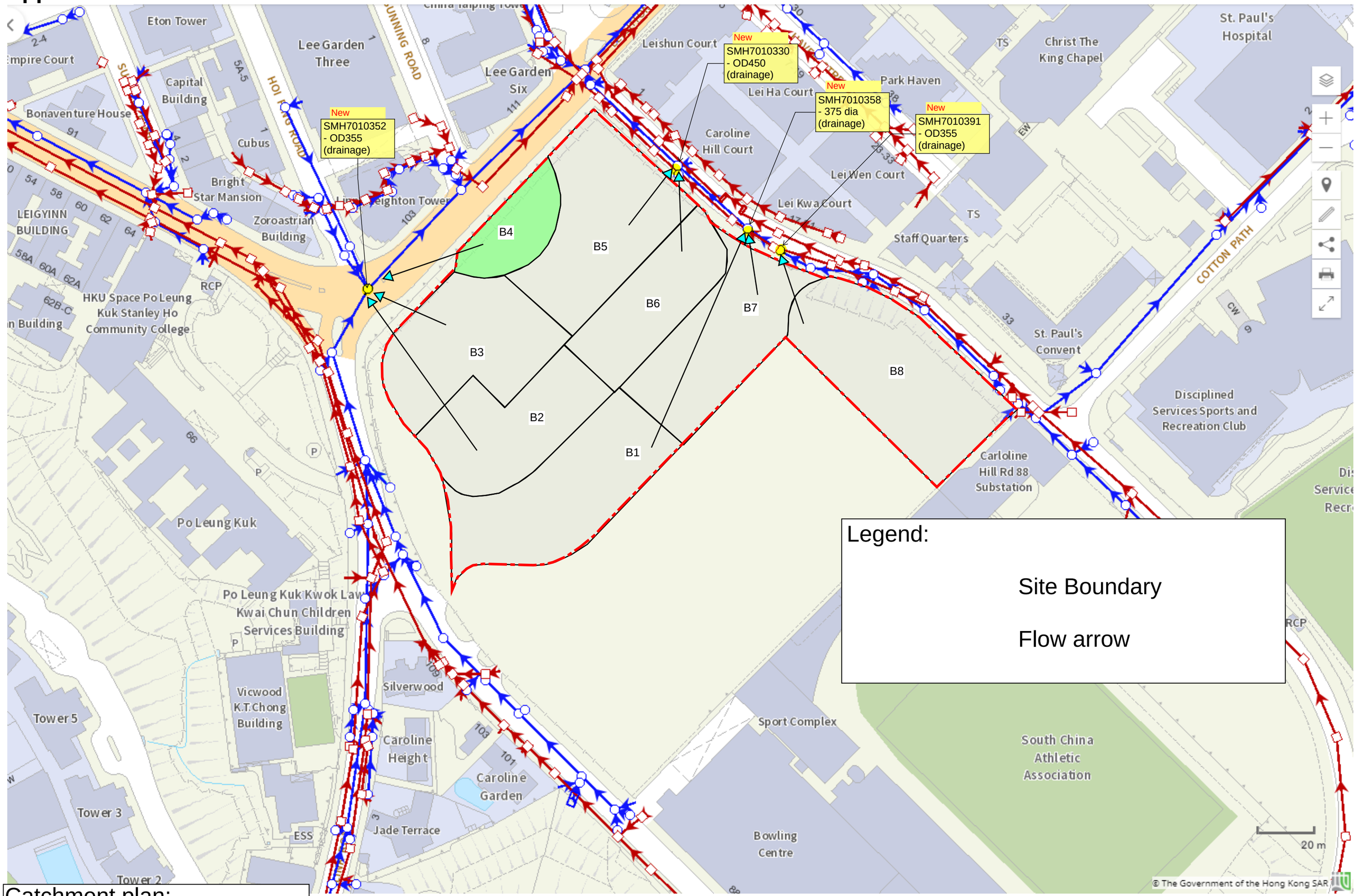
Legend:

Site Boundary

Flow arrow

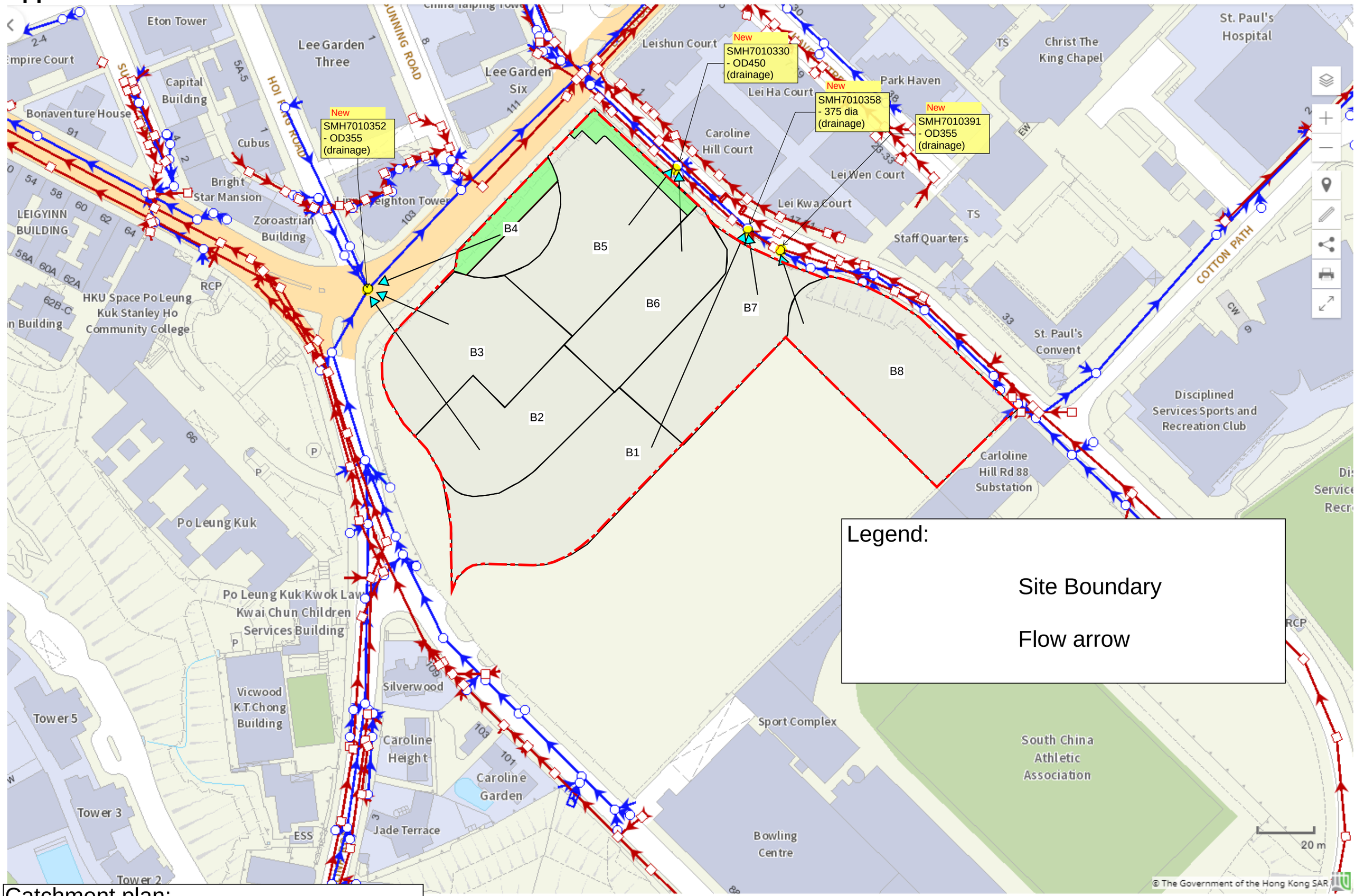
Catchment plan:
Formerly used development

Appendix D



Catchment plan:
Approval Layout Plan

Appendix D



Catchment plan:
Proposed Layout Plan

Appendix E

Pipe capacity check for Proposed Drainage discharge points

ARUP	Job No. 285077	Sheet No.	Rev. C
	Member/Location		
Job Title **Caroline Hill Road, Causeway Bay**	Drg. Ref.		
Calculation **Pipe Capacity Checking**	Made by IP	Date 10 Oct 2025	Chd. CC

Notes

1 Runoff Coeff., C = 0.90 (Paved)
0.35 (Steep natural slope)
0.35 (unpaved)

Return Period = 50 years (Main Rural Catchment Drainage Channels)

(Table 10, Stormwater Drainage Manual)

2 Calculate by Colebrook-White Equation

$$\bar{V} = -\sqrt{32gRS_f}\,\log\left[\frac{k_s}{14.8R} + \frac{1.255\nu}{R\sqrt{32gRS_f}}\right]$$

ν is kinematic viscosity of fluid = 1.14 x 10-6 m^2/s and g is the gravity = 9.81m/s^2
V is the velocity, R is the hydraulic radius and S is the gradient of the stormwater drain.

3 A 10% reduction in flow area is adopted to take into account the effects on flow capacity due to deposition of sediment in pipes.

4 Climate Change Factor (%) =16.0% + 12.1% = 28.1%
(Table 28 and 31, Stormwater Drainage Manual, for rainfall increase at End 21st)

Rainfall Intensity, $I = a / (T_c + b)^c$ (Gumbel solution)

where :

a =	505.5
b =	3.29
c =	0.355

Return Period = 50 years

(Table 3a, Stormwater Drainage Manual)
(Corrigendum No.1 2024 SDM)

Catchment Area Distribution			
Catchment Area	Area (m2)		
	paved	natural slope	unpaved
B1	2235	0	0
B2	2200	0	0
B3	2300	0	0
B4	361	0	389
B5	1492	0	241
B6	1068	0	0
B7	1915	0	0
B8	2600	0	0
Total	14170.5	0	629.5

Runoff Calculation
Return period = 50 years

Location		Sub-Catchment Reference	Catchment Area of the development						Drainage Character					Hydraulic parameter		Time of the development			(i) Extreme mean intensity (1 in 50) with climate change	Peak Runoff	Full bore Capacity	%	Full bore Velocity	
US	DS		Paved		Steep Natural Slope		Unpaved		Drainage Shape	Drainage size			Slope			t_e	t_f	t_c					
			Sub-Catchment (m^2)	Accumulative Area (m^2)	Sub-Catchment (m^2)	Accumulative Area (m^2)	Sub-Catchment (m^2)	Accumulative Area (m^2)		width/dia (mm)	height (mm)	length (m)	(S_f)	cross area (A) (m^2)	Hydraulic Diameter, D (m)	(min)	(min)	(min)	(mm/h)	(m^3/s)	(m^3/s)		(m/s)	
STMH-1	SMH7010352	B2, B3, B4	4,861.0	4,375	0	0	389.0	136	Circular PE Pipe	311.6	-	-	0.100	0.07	0.29	5.00	0.00	5.00	305.6	0.338	0.45	75	6.58	PE100-RC, SDR 17, PN10, OD355, ID311.6
STMH-3	SMH7010330	B5, B6	3,159.5	2,844	0	0	240.5	84	Circular PE Pipe	395.2	-	-	0.010	0.11	0.37	5.00	0.00	5.00	305.6	0.220	0.25	87	2.29	PE100-RC, SDR 17, PN10, OD450, ID395.2
Future Public Road Drainage	SMH7010358	B1, B7	3,550.0	3,195	0	0	0.0	0	Circular Concrete Pipe	375	-	-	0.026	0.10	0.35	5.00	0.00	5.00	305.6	0.244	0.28	89	2.77	
STMH-4	SMH7010391	B8	2,600.0	2,340	0	0	0.0	0	Circular PE Pipe	311.6	-	-	0.020	0.07	0.29	5.00	0.00	5.00	305.6	0.179	0.20	92	2.84	PE100-RC, SDR 17, PN10, OD355, ID311.6

ARUP	Job No.	Sheet No.	Rev.
	285077		C
	Member/Location		
Job Title **Caroline Hill Road, Causeway Bay**	Drg. Ref.		
Calculation **Pipe Capacity Checking**	Made by IP	Date 10 Oct 2025	Chd. CC

Notes

1 Runoff Coeff., C = 0.90 (Paved)
0.35 (Steep natural slope)
0.35 (unpaved)

Return Period = 50 years (Main Rural Catchment Drainage Channels)

(Table 10, Stormwater Drainage Manual)

2 Calculate by Colebrook-White Equation

$$\bar{V} = -\sqrt{32gRS_f}\,\log\left[\frac{k_s}{14.8R} + \frac{1.255\nu}{R\sqrt{32gRS_f}}\right]$$

ν is kinematic viscosity of fluid = 1.14 x 10-6 m^2/s and g is the gravity = 9.81m/s^2
V is the velocity, R is the hydraulic radius and S is the gradient of the stormwater drain.

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(Table 28 and 31, Stormwater Drainage Manual, for rainfall increase at End 21st)

Rainfall Intensity, $I = a / (T_c + b)^c$ (Gumbel solution)

where :

a =	505.5
b =	3.29
c =	0.355

Return Period = 50 years

(Table 3a, Stormwater Drainage Manual)
(Corrigendum No.1 2024 SDM)

Catchment Area Distribution			
Catchment Area	Area (m2)		
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B3	2300	0	0
B4	361	0	389
B5	1492	0	241
B6	1068	0	0
B7	1915	0	0
B8	2600	0	0
Total	14170.5	0	629.5

Comparison between Total Peak Runoff
Return period = 50 years

Proposed Development																								
Location		Sub-Catchment Reference	Catchment Area of the development						Drainage Character						Hydraulic parameter		Time of the development			(i) Extreme mean intensity (1 in 50) with climate change	Peak Runoff	Full bore Capacity	%	Full bore Velocity
US	DS		Paved		Steep Natural Slope		Unpaved		Drainage Shape	Drainage size			Slope				t_e	t_f	t_c					
			Sub-Catchment (m^2)	Accumulative Area (m^2)	Sub-Catchment (m^2)	Accumulative Area (m^2)	Sub-Catchment (m^2)	Accumulative Area (m^2)		width/dia (mm)	height (mm)	length (m)	(S_f)	cross area (A) (m^2)	Hydraulic Diameter, D (m)	(min)	(min)	(min)	(mm/h)	(m^3/s)	(m^3/s)		(m/s)
	South of subject site	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	North of subject site	B2, B3, B4	4,824.0	4,342	0	0	426.0	149	Circular Concrete Pipe	-	-	-	-	-	-	5.00	0.00	5.00	305.6	0.336	-	-	-
-	East of subject site	B1, B5-B8	9,309.5	8,379	0	0	240.5	84	Circular Concrete Pipe	-	-	-	-	-	-	5.00	0.00	5.00	305.6	0.643	-	-	-
-	Total	B1-B8	14,133.5	12,720	0	0	666.5	233	Circular Concrete Pipe	-	-	-	-	-	-	5.00	0.00	5.00	305.6	0.979	-	-	-

Existing Development																								
Location		Sub-Catchment Reference	Catchment Area of the development						Drainage Character						Hydraulic parameter		Time of the development			(i) Extreme mean intensity (1 in 50) with climate change	Peak Runoff	Full bore Capacity	%	Full bore Velocity
US	DS		Paved		Steep Natural Slope		Unpaved		Drainage Shape	Drainage size			Slope				t_e	t_f	t_c					
			Sub-Catchment (m^2)	Accumulative Area (m^2)	Sub-Catchment (m^2)	Accumulative Area (m^2)	Sub-Catchment (m^2)	Accumulative Area (m^2)		width/dia (mm)	height (mm)	length (m)	(S_f)	cross area (A) (m^2)	Hydraulic Diameter, D (m)	(min)	(min)	(min)	(mm/h)	(m^3/s)	(m^3/s)		(m/s)
	South of subject site	A2, A4-A7	2452.6	2,207	0	0	0	0	Circular Concrete Pipe	-	-	-	-	-	-	5.00	0.00	5.00	305.6	0.169	-	-	-
-	North of subject site	A2-A8, A10	5610.3	5,049	0	0	133.5	47	Circular Concrete Pipe	-	-	-	-	-	-	5.00	0.00	5.00	305.6	0.387	-	-	-
-	East of subject site	A1, A9, A11, A12, A13, A14, A15	9880.2	8,892	0	0	0	0	Circular Concrete Pipe	-	-	-	-	-	-	5.00	0.00	5.00	305.6	0.679	-	-	-
-	Total	A1-A15	15490.5	13,941	0	0	133.5	47	Circular Concrete Pipe	-	-	-	-	-	-	5.00	0.00	5.00	305.6	1.066	-	-	-

銅鑼灣
Causeway Bay



Replacement Pages of Annex F
Sewerage Impact Assessment

Proposed Redevelopment at Caroline Hill Road, Causeway Bay

Sewerage Impact Assessment for Proposed Redevelopment at Caroline Hill Road, Causeway Bay

Report Ref

08 | 10 October 2025

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 285077

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ARUP

existing public sewer of 500Ø running along Leighton Road has sufficient capacity to carry the estimated sewage from the Application Site.

The sewerage connection proposal for the Application Site as shown in **Figure 7** had been updated based the approved BD drainage submission and the proposed change in connection from terminal manhole FTMH1 based on the exact site condition. The proposed sewerage connection will use polyethylene (PE100-RC) pipes as the pipe material.

It is concluded that the proposed development would not result in any adverse sewerage impact to the existing public sewerage system. The capacities checking of the existing public sewers is shown in **Table B2**.

4 Conclusion

The peak sewage flow from the proposed development is slightly increased from 67.58 L/s to 67.74 L/s . It is observed that the two existing public sewerage serving the Application Site through the existing FMH7058644 and FMH7058242 running along the Leighton Road, have sufficient capacity to carry the estimated sewage from the Application Site. It is concluded that the proposed development would not result in any adverse sewerage impact to the existing public sewerage system.

Appendix A

Figures

FMH7058644
CL=5.51
IL= 2.36-400⌀
IL= 2.36-400⌀

TENTATIVE LOCATION OF THE FOUL TERMINAL MANHOLE 1 (PROPOSED DEVELOPMENT)

FTMH 2

TENTATIVE FOUL TERMINAL MANHOLE (PROPOSED DEVELOPMENT)

FTMH 3

TENTATIVE FOUL WATER MANHOLE (PROPOSED DISTRICT COURT)

FMH7058242
CL=8.17 (DSD Record)
IL= 6.40-300⌀ (DSD Record)

CL=8.11 (SITE SURVEY)
IL=6.26-300⌀ (SITE SURVEY)

TENTATIVE LOCATION OF THE TERMINAL FOUL WATER MANHOLE 2 (PROPOSED DC TOWER - DISTRICT COURT)

TENTATIVE FOUL WATER MANHOLE (PROPOSED DISTRICT COURT)

FSH7003582
CL=11.13
IL= 6.65-2x225⌀
IL= 6.93-300⌀

FSH7003584
CL=12.54
IL= 11.28-150⌀
IL= 11.10-300⌀
IL= 8.61-300⌀

TENTATIVE LOCATION OF THE TERMINAL FOUL WATER MANHOLE 1 FROM PROPOSED FC TOWER - DISTRICT COURT

LEGEND

- PROPOSED TERMINAL FOUL WATER MANHOLE (PROPOSED DEVELOPMENT)
- PROPOSED TERMINAL FOUL WATER MANHOLE (PROPOSED DISTRICT COURT)
- SITE BOUNDARY OF PROPOSED DISTRICT COURT
- PROPOSED SEWER (PROPSOED DEVELOPMENT)
- PROPOSED SEWER (PROPOSED DISTRICT COURT)
- SITE BOUNDARY OF PROPOSED DEVELOPMENT
- PROPOSED CONNECTION POINT (PROPSOED DEVELOPMENT)
- PROPOSED CONNECTION POINT (PROPOSED DISTRICT COURT)
- PROPOSED FOUL WATER MANHOLE OF PROPOSED DEVELOPMENT
- PROPOSED FOUL WATER MANHOLE (PROPOSED DISTRICT COURT)

Mark | Date | By | Rev

Job Title: Proposed Redevelopment at Caroline Hill Road, Causeway Bay

Drawing Title: Proposed Connection at Caroline Hill Road, Causeway Bay

Drawing Status: FOR REFERENCE

ARUP

Scale | Drn. | Date | Chd. | Passed

Job No. 285077 | Drawing No. FIGURE 7 | Rev.

Appendix B

Calculation

Table B2 - Capacity Performance of Proposed and Existing Sewer

Notes:
(1) Calculate by Colebrook-White Equation

$$\overline{V} = -\sqrt{32gRS_f}\,\log\left[\frac{k_s}{14.8R} + \frac{1.255\nu}{R\sqrt{32gRS_f}}\right]$$

where ks is roughness value for clayware slimed sewers, ks equals 3mm and PE100-RC sewers, ks equals 1.5mm.
ν is kinematic viscosity of fluid = 1.14 x 10-6 m2/s and g is the gravity = 9.81m/s2
V is the velocity, D is the diameter of the sewer and S is the gradient of the sewer.

Abbreviation:

UP_MAN	Upstream Manhole	CON_POP	Contributing Population	DN_GL	Downstream Ground Level	CAP	Peak Pipe Capacity
DN_MAN	Downstream Manhole	DIA	Diameter	UP_INV	Upstream Invert Level	F/C	Peak Flow/Capacity
ADWF	Average Dry Weather Flow	LEN	Length	DN_INV	Downstream Invert Level		
ACC_ADWF	Accumulated Average Dry Weather Flow	UP_GL	Upstream Ground Level	VEL	Peak Pipe Velocity		

Proposed Development

Manhole		FROM SITE		CON_POP	PEAKING FACTOR	ACC_ADWF (L/s)	Peak Flow (L/s)	Existing Pipe Parameter											
UP_MAN No.	DN_MAN No.	Catchment	Description					DIA (D) (mm)	LEN (m)	UP_GL (mPD)	DN_GL (mPD)	UP_INV (mPD)	DN_INV (mPD)	Gradient (S)	VEL (m/s)	AREA (m^2)	CAP (L/s)	F/C (%)	Adequate Capacity?	
Caroline Hill Road - South																				
FMH7019739	FMH7019738	B1, 50%B3	Bowling centre, Sports Centre (50%)	304	8	0.95	7.60	150	44.5	19.69	17.71	18.88	16.82	22	1.67	0.0177	29.54	25.7%	YES	
FMH7019738	FMH7019737	B1, 50%B3	Bowling centre, Sports Centre (50%)	304	8	0.95	7.60	150	15.7	17.71	16.77	16.82	15.85	16	1.93	0.0177	34.11	22.3%	YES	
FMH7019737	FMH7019719	B1, 50%B3, B2	Bowling centre, Sports Centre (50%), Sport Complex	590	8	1.84	14.74	150	29.6	16.77	15.48	15.85	14.58	23	1.61	0.0177	28.42	51.9%	YES	
FMH7019719	FMH7019793	B1, 50%B3, B2	Bowling centre, Sports Centre (50%), Sport Complex	590	8	1.84	14.74	150	12.8	15.48	14.80	14.58	13.86	18	1.84	0.0177	32.55	45.3%	YES	
FMH7019793	FMH7019713	B1, 50%B3, B2, A3	Bowling centre, Sports Centre (50%), Sport Complex, Caroline Garden	719	8	2.25	17.98	150	10.1	14.80	14.42	13.86	13.47	26	1.53	0.0177	26.96	66.7%	YES	
FMH7019713	FMH7047620	B1, 50%B3, B2, A3	Bowling centre, Sports Centre (50%), Sport Complex, Caroline Garden	719	8	2.25	17.98	150	17.0	14.42	13.46	12.32	11.91	41	1.21	0.0177	21.41	84.0%	YES	
FMH7047620	FMH7019711	B1, 50%B3, B2, A3, A2	Bowling centre, Sports Centre (50%), Sport Complex, Caroline Garden, 103 Caroline Hill Road	741	8	2.32	18.52	150	4.0	13.46	13.23	11.91	11.80	38	1.26	0.0177	22.26	83.2%	YES	
FMH7019711	FMH7047621	B1, 50%B3, B2, A3, A2	Bowling centre, Sports Centre (50%), Sport Complex, Caroline Garden, 103 Caroline Hill Road	741	8	2.32	18.52	150	4.7	13.23	13.23	11.80	11.64	30	1.42	0.0177	25.04	74.0%	YES	
FMH7047621	FSH7003584	B1, 50%B3, B2, A3, A2	Bowling centre, Sports Centre (50%), Sport Complex, Caroline Garden, 103 Caroline Hill Road	741	8	2.32	18.52	150	8.9	13.23	12.54	11.64	11.28	24	1.57	0.0177	27.72	66.8%	YES	
FSH7003584	FSH7003582	B1, 50%B3, B2, A3, A2, A1	Bowling centre, Sports Centre (50%), Sport Complex, Caroline Garden, 103 Caroline Hill Road, Silverwood, District Court FC tower	1,315	6	4.11	24.65	300	38.8	12.54	11.13	8.61	6.93	23	2.59	0.0707	183.07	13.5%	YES	
FSH7003582	FMH7058242	B1, 50%B3, B2, A3, A2, A1, G	Bowling centre, Sports Centre (50%), Sport Complex, Caroline Garden,103 Caroline Hill Road, Silverwood, District Court FC tower	1,315	6	4.11	24.65	2x225	67.4	11.13	8.11	6.65	6.26	173	0.78	0.0398	61.88	39.8%	YES	
FMH7058242	FSH7003581	B1, 50%B3, B2, A3, A2, A1, G, 70%S	Bowling centre, Sports Centre (50%), Sport Complex, Caroline Garden,103 Caroline Hill Road, Silverwood, District Court FC tower, Proposed development (70%)	3,844	6	12.01	72.07	300	13.1	8.11	7.59	6.26	5.98	47	1.82	0.0707	128.56	56.1%	YES	proposed terminal manhole
FSH7003581	FSH7003580	B1, 50%B3, B2, A3, A2, A1, G, 70%S	Bowling centre, Sports Centre (50%), Sport Complex, Caroline Garden,103 Caroline Hill Road, Silverwood, District Court FC tower, Proposed development (70%)	3,844	6	12.01	72.07	300	14.4	7.59	7.25	5.98	5.76	65	1.54	0.0707	108.66	66.3%	YES	
FSH7003580	FMH7009549	B1, 50%B3, B2, A3, A2, A1, G, 70%S	Bowling centre, Sports Centre (50%), Sport Complex, Caroline Garden,103 Caroline Hill Road, Silverwood, District Court FC tower, Proposed development (70%)	3,844	6	12.01	72.07	300	5.6	7.25	7.29	5.76	5.61	37	2.05	0.0707	144.60	49.8%	YES	
FTMH 1	**F1**	**70%S**	Proposed development (70%)	2,529	6	7.90	47.42	311.6	9.8	8.90	7.80	6.710	6.595	86	1.54	0.0763	117.18	40.5%	YES	
F1	**F2**	**70%S**	Proposed development (70%)	2,529	6	7.90	47.42	311.6	15.0	7.80	8.25	6.575	6.475	150	1.16	0.0763	88.39	53.6%	YES	PE100-RC, SDR 17, PN10, OD355, ID311.6
F2	**F3**	**70%S**	Proposed development (70%)	2,529	6	7.90	47.42	311.6	9.0	8.25	8.45	6.455	6.395	150	1.16	0.0763	88.39	53.6%	YES	
F3	**FMH7058242**	**70%S**	Proposed development (70%)	2,529	6	7.90	47.42	311.6	7.5	8.45	8.11	6.375	6.325	150	1.16	0.0763	88.39	53.6%	YES	
Caroline Hill Road - East																				
FMH7019744	FMH7019743	C1, C2, C3, 50%B3	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%)	353	8	1.1	8.82	225	37.5	13.37	11.84	10.78	10.55	163	0.80	0.0398	31.85	27.7%	YES	
FMH7019743	FMH7019742	C1, C2, C3, 50%B3	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%)	353	8	1.1	8.82	225	33.4	11.84	10.48	10.55	9.20	25	2.06	0.0398	81.95	10.8%	YES	
FMH7019742	FMH7019726	C1, C2, C3, 50%B3	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%)	353	8	1.1	8.82	225	33.4	10.48	9.20	9.20	7.89	25	2.03	0.0398	80.72	10.9%	YES	
FMH7019726	FMH7019725	C1, C2, C3, 50%B3	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%)	353	8	1.1	8.82	225	28.3	9.20	8.17	7.89	6.68	23	2.12	0.0398	84.29	10.5%	YES	
FMH7019725	FMH7019724	C1, C2, C3, 50%B3	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%)	353	8	1.1	8.82	225	41.5	8.17	7.45	6.68	6.16	80	1.15	0.0398	45.57	19.4%	YES	
FMH7019724	FMH7019720	C1, C2, C3, 50%B3	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%)	353	8	1.1	8.82	225	38.1	7.45	7.03	6.16	5.72	87	1.10	0.0398	43.75	20.2%	YES	
FMH7019720	FMH7009996	C1, C2, C3, 50%B3, F	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters	447	8	1.4	11.19	225	40.6	7.03	6.57	5.72	5.00	56	1.36	0.0398	54.24	20.6%	YES	
FMH7009996	FMH7058640	C1, C2, C3, 50%B3, F, D1, D2	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent	857	8	2.68	21.43	400	3.1	6.57	6.58	5.00	5.00	2067	0.33	0.1257	41.34	51.8%	YES	
FMH7058640	FSH7003590	C1, C2, C3, 50%B3, F, D1, D2	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent	857	8	2.68	21.43	400	10.1	6.58	6.42	5.00	4.84	63	1.90	0.1257	238.28	9.0%	YES	
FSH7003590	FSH7003589	C1, C2, C3, 50%B3, F, D1, D2	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent	857	8	2.68	21.43	400	9.9	6.42	6.34	4.84	4.72	82	1.66	0.1257	208.38	10.3%	YES	
FSH7003589	FSH7003588	C1, C2, C3, 50%B3, F, D1, D2	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent	857	8	2.68	21.43	400	28.4	6.34	6.03	4.72	4.35	77	1.72	0.1257	216.05	9.9%	YES	
FSH7003588	FMH7058641	C1, C2, C3, 50%B3, F, D1, D2	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent	857	8	2.68	21.43	400	3.3	6.03	5.94	4.35	3.60	4	7.19	0.1257	903.58	2.4%	YES	
FMH7058641	FMH7058642	C1, C2, C3, 50%B3, F, D1, D2	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent	857	8	2.68	21.43	400	21.9	5.94	5.70	3.60	3.37	95	1.54	0.1257	193.94	11.0%	YES	
FMH7058642	FMH7058643	C1, C2, C3, 50%B3, F, D1, D2	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent	857	8	2.68	21.43	400	8.4	5.70	5.70	2.60	2.53	120	1.37	0.1257	172.71	12.4%	YES	
FMH7058643	FMH7058644	C1, C2, C3, 50%B3, F, D1, D2	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent	857	8	2.68	21.43	400	22.4	5.70	5.51	2.53	2.36	134	1.30	0.1257	163.34	13.1%	YES	
FMH7058644	FSH7003587	C1, C2, C3, 50%B3, F, D1, D2, 30%S	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent, District Court DC Tower, Proposed development (30%)	2,855	6	8.92	53.53	400	12.6	5.51	5.39	2.36	2.25	112	1.43	0.1257	179.19	29.9%	YES	proposed terminal manhole
FSH7003587	FSH7003586	C1, C2, C3, 50%B3, F, D1, D2, 30%S	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent, District Court DC Tower, Proposed development (30%)	2,855	6	8.92	53.53	400	6.2	4.53	5.27	2.25	2.20	124	1.35	0.1257	169.90	31.5%	YES	
FSH7003586	FMH7058647	C1, C2, C3, 50%B3, F, D1, D2, 30%S	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent, District Court DC Tower, Proposed development (30%)	2,855	6	8.92	53.53	400	26.7	5.27	4.97	2.20	2.14	445	0.71	0.1257	89.51	59.8%	YES	
FMH7058647	FSH7003585	C1, C2, C3, 50%B3, F, D1, D2, 30%S, 50%E2, 50%E3	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent, District Court DC Tower, Proposed development (30%), Caroline Hill Court (50%), Lei Kwa Court (50%)	4,478	6	13.99	83.96	400	19.6	4.97	4.72	2.14	2.09	392	0.76	0.1257	95.39	88.0%	YES	
FSH7003585	FMH7058340	C1, C2, C3, 50%B3, F, D1, D2, 30%S, E2, E3, E5, E4, 50%E1	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent, District Court DC Tower, Proposed development (30%), Caroline Hill Court, Lei Kwa Court, Lei Wen Court, Lei Ha Court, Leishun Court (50%)	6,981	5	21.81	109.07	500	8.6	4.72	4.69	2.09	2.07	430	0.84	0.1963	164.90	66.1%	YES	
FMH7058340	FSH7004660	C1, C2, C3, 50%B3, F, D1, D2, 30%S, E2, E3, E5, E4, 50%E1	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent, District Court DC Tower, Proposed development (30%), Caroline Hill Court, Lei Kwa Court, Lei Wen Court, Lei Ha Court, Leishun Court (50%)	6,981	5	21.81	109.07	500	32.5	4.69	4.19	2.07	2.00	464	0.81	0.1963	158.67	68.7%	YES	
FSH7004660	FSH7004661	C1, C2, C3, 50%B3, F, D1, D2, 30%S, E2, E3, E5, E4, 50%E1	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent, District Court DC Tower, Proposed development (30%), Caroline Hill Court, Lei Kwa Court, Lei Wen Court, Lei Ha Court, Leishun Court (50%)	6,981	5	21.81	109.07	500	23.2	4.19	4.09	2.00	1.76	97	1.77	0.1963	348.44	31.3%	YES	
FSH7004661	FSH7004662	C1, C2, C3, 50%B3, F, D1, D2, 30%S, E2, E3, E5, E4, 50%E1, D3	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent, District Court DC Tower, Proposed development (30%), Caroline Hill Court, Lei Kwa Court, Lei Wen Court, Lei Ha Court, Leishun Court (50%), Staff Quarters (D)	7,048	5	22.03	110.13	500	33.4	4.09	4.09	1.76	1.40	93	1.81	0.1963	355.68	31.0%	YES	
FSH7004662	FMH7010025	C1, C2, C3, 50%B3, F, D1, D2, 30%S, E2, E3, E5, E4, 50%E1, D3	Confucius Hall Secondary School, So Kon Po Driving Test Centre, Olypmic House, Sports Centre (50%), Staff Quarters, Disciplined Services Sports and Recreation Club, St. Paul Convent, District Court DC Tower, Proposed development (30%), Caroline Hill Court, Lei Kwa Court, Lei Wen Court, Lei Ha Court, Leishun Court (50%), Staff Quarters (D)	7,048	5	22.03	110.13	500	4.2	4.09	4.08	1.40	1.39	420	0.85	0.1963	166.85	66.0%	YES	
FTMH 2	**FMH7058644**	**30%S**	Proposed development (30%)	1,084	6	3.39	20.32	219.6	3.0	8.00	5.51	2.39	2.36	100	1.13	0.0379	42.76	47.5%	YES	PE100-RC, SDR 17, PN10, OD250, ID219.6

Application for Planning Permission under Section 16
of the Town Planning Ordinance (Cap. 131)

Submission of Layout Plan and Proposed Minor Relaxation of GFA Restriction for Permitted 'Eating Place', 'Office', 'Shop and Services', 'Place of Recreation, Sports or Culture', 'Public Clinic', 'Public Transport Terminus or Station', 'Public Vehicle Park (excluding container vehicle)' and 'Social Welfare Facility Uses' at Inland Lot 8945, Caroline Hill Road, Causeway Bay, Hong Kong

Planning Application No. A/H7/188

Further Information 2

Response to Comments

October 2025

PLANNING APPLICATION NO. A/H7/188		
1. LANDS DEPARTMENT Date : 9 October 2025 District Land Officer/Hong Kong East (contact officer: Ms. Phoebe TAI, Tel.: 2835 1635) via email from Mr. Harvey Ting Hin LAW, TP/HK10 Tel.: 2231 4929		
Comments		**Responses**
	Land Status (a) The Lot, with an area of 14,802 m^2, was sold by public tender to Patchway Holdings (HK) Limited, the applicant for the Submission, for a term of 50 years from 10 June 2021. The use and development of the Lot is governed by the Conditions of Sale No. 20379 dated 10 June 2021 as varied and modified by a modification letter dated 7 November 2024 and a consent letter dated 26 November 2024 (collectively referred to as "the C/S") which restricts the Lot for non-industrial (excluding residential, godown and petrol filling station) purposes with a total gross floor area (GFA) not exceeding 102,000m^2. The development on the Lot shall be completed on or before 30 September 2029.	Noted. The proposed development will be completed on or before 30 September 2029.
	(b) There are other salient conditions / restrictions relating to preservation of the Masonry Walls and Earthenware Pipes, carrying out road improvement works within Green Areas, formation of internal access road within Pink Hatched Blue Stratum and Pink Hatched Blue Stippled Green Stratum ("PHB Strata"), preservation of trees including Old and Valuable Trees (OVTs), Landscape Master Plan ("LMP"), construction of the subway connection and the footbridge connection, vehicular access, parking and loading / unloading (L/UL) requirements, provision of POS of not less than 6,000 m^2, babycare room and lactation room, pedestrian links, pedestrian walkways, Government accommodation (including a Child Care Centre, a Day Care Centre for the Elderly and a District Health Centre), provision of public vehicle park ("PVP") and the performing arts and cultural facilities ("PACF") and submission of traffic review and various technical assessments / features / review.	Noted. The proposed development will comply with relevant requirements as stipulated in the Lease.
	General (c) The proposed development should in all respects comply with the	Noted. We will provide relevant submission to LandsD for compliance checking at detailed development stage.

PLANNING APPLICATION NO. A/H7/188		
	C/S governing the Lot. We reserve our position and comments on the extent of compliance with the C/S, which will be provided upon receipt of the relevant submissions for compliance checking under the C/S. For the avoidance of doubt, nothing in the Submission should in any event prejudice the Government's right and position to reject, disapprove, etc. any submissions under the C/S, including those which are consistent with the Submission but in conflict with any of the terms and conditions of the C/S.	
	<u>Amendment to the design and layout of Banyan Garden and landscape design on 2/F</u> (d) With reference to paras. 4.2.7 to 4.2.11 and Figure 4.4a and 4.4b of the PS, three soil-rooting zones are introduced within the Pink Hatched Green Area (i.e. Tree Protection Zone) of OVT No. LANDSD(LEASED) WCH/1 ("the OVT") with different treatments to each zone. Some structures / works, such as a balustrade, are proposed within the Pink Hatched Green Area in relation to the OVT. The Applicant's attention is therefore drawn to Special Condition ("SC") (13) of the C/S concerning the preservation of the OVT. This condition stipulates, inter alia, that no alteration works may be carried out, and no building or structure may be erected or constructed within the Pink Hatched Green Area, except for specific works explicitly permitted under the condition, such as landscaping works to be carried out in accordance with the Approved Landscape Master Plan (as approved by the Director of Planning under SC (14) of the C/S) or works in relation to the construction of the POS. Noting that the revised design of Banyan Garden has been incorporated into the LMP at Annex C of the Submission, without prejudice to the generality of para. (c) above including but not limited to the extent of compliance of SC No. (13) of the C/S, we defer to the relevant bureaux / departments (B/Ds), such as PlanD to consider and comment on the acceptability of the proposed structures / works within the Pink Hatched Green Area at this stage.	Noted. We will further liaise with relevant B/Ds, including PlanD, on the concerned matter.
	(e) While PlanD would be responsible for considering the landscape submission, including the LMP, **LAT** of this department has no in-principle objection to the planning application No. A/H7/188 relating to the preservation of OVT No. LANDSD(LEASED) WCH/1 based on the information provided.	Noted and thank you.

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	<u>Minor Amendment to the location and distribution of the Public Open Space</u> (f) As observed from para. 4.2.19 and Figures 4.8a to 4.9d of the PS, the total area of the POS provided will be maintained at about 6,000 m^2 with a redistribution of about 15 m^2 of POS from G/F to 2/F and UG/F. While such provision still fulfills the minimum area requirement of the POS as stipulated in SC (15) of the C/S, this condition also stipulates that the POS be located, formed, serviced, landscaped, planted, treated and provided in such manner and with such materials, equipment and facilities including the landscape works provided in accordance with the Approved LMP (as approved by the Director of Planning under SC (14) of the C/S). In this regard, and without prejudice to the generality of para. (c) above, we defer to the relevant B/Ds, such as **PlanD** to consider and comment on whether the proposed POS area is acceptable at this stage.	Noted. We will further liaise with relevant B/Ds, including PlanD, on the concerned matter.
	(g) As noted from paras. 4.2.16 to 4.2.18 of the PS, the Applicant intends to utilize the larger paved and lawn areas within the Banyan Garden for cultural, artistic and community activities. The Applicant's attention should be drawn to the "Design and Management Guidelines for Public Open Space in Private Developments" published by DEVB. Depending on the nature of the proposed activities, a waiver of relevant restrictions under the C/S might be required.	Noted. The proposed development will follow the requirements of the "Design and Management Guidelines for Public Open Space in Private Developments" published by DEVB.
	<u>Updated sharing arrangement of lay-by and loading/unloading bay with GA</u> (h) While the sharing arrangement of lay-bys and loading/unloading spaces have been updated, it is noted that only one motor vehicle lay-by and two loading/unloading spaces for shared use with Government accommodation are mentioned in Table 4.2. The applicant is advised to observe and comply with the shared-use arrangement as required under the C/S, e.g. SC (43)(b)(ii), (44)(a)(ii)(II) and (44)(b)(i)(I) & (II) and closely liaise with relevant B/Ds, including **TD**, **HHB** and **SWD** in this regard. The extent of compliance with the parking, loading and unloading requirements (including those for the PVP) as stipulated in the C/S would be considered at the building plan submission stage	Noted. We will further liaise with relevant B/Ds, including TD, HHB and SWD at building plan submission stage.
	(i) According to Table 4.2 of the PS, 10 nos. of private car parking spaces and 1 no. of motorcycle parking space will be delineated	Noted. We will further liaise with relevant B/Ds, including DEVB at building plan submission stage.

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	for the PACF. Provision of the PACF is required and governed by the modification letter dated 7 November 2024. The Applicant is reminded to observe and comply with the terms and conditions of the said modification letter. In particular, attention is drawn to SC (73)(b)(i) of the C/S, which specifies that the respective numbers of spaces for the parking of motor vehicles and for the parking of motor cycles to be provided for the PACF shall be determined by the Secretary for Development. Advice from **DEVB** shall be sought in this regard.	
	Other Comments (j) Without prejudice to the generality of para. (c) above, I have the following preliminary observations which are by no means exhaustive:	
	(i) Regarding the subway connection and the footbridge connecting the Application Site with Lee Garden Six outlined in paras. 4.4.2 and 4.5.6 and as shown on the Layout Plan Drawing Nos. MLP-003 and 008, the applicant should bear in mind the requirements under SC (19) and (20) of the C/S, particularly the locations and level of connections.	Noted. The proposed development will comply with relevant requirements under the Lease.
	(ii) For the pedestrian walkways and pedestrian links that are indicated on the layout plan and the figures of the PS, without prejudice to the generality of para. (c) above, including but not limited to the extent of compliance of SC (21) of the C/S, we defer to the relevant B/Ds, such as **TD** to consider and comment on the acceptability of the pedestrian walkways and pedestrian links at this stage.	Noted. We will further liaise with relevant B/Ds, including TD, on the concerned matter.
	(iii) Para. 4.8.2 of the PS mentions that the Grade 3 historic structure, including the existing graded masonry walls and earthenware pipes will be kept, conserved and preserved as required under lease. Given that masonry walls and earthenware pipes as shown by dotted brown lines on the plan (PLAN II) annexed to the C/S also include the ungraded portion as shown in Figure No. 4.25 of the PS, the Applicant is reminded to also keep, conserve and preserve the ungraded portion of masonry walls as required under SC (3) of the C/S.	Noted. The proposed development will comply with relevant requirements under the Lease.

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	(iv)	The erection of the footbridge mentioned in paras 4.4.3 and 4.5.5, shown on Figure 4.3, MLP-001 and MLP-008 of the PS should be confined within a specific area of the PHB Strata, which is permitted under the terms outlined in the consent letter issued by this office on 26 November 2024. The Applicant is reminded to observe and comply with the terms and conditions of the said consent letter, which include the minimum vertical clearance (i.e. not less than 5.1m above ground level), the permitted users (i.e. for pedestrian passageway or open space or both) and the designated boundary for the footbridge's erection (i.e. edged brown on the plan annexed to the consent letter) stipulated in the said consent letter. Furthermore, the consent letter mandates that the footbridge be constructed to such levels, alignment and dispositions, with such materials and to such standards and designs as shall be approved by the Director of Lands. Comments on the footbridge are reserved and will be provided upon receipt of the relevant submissions for compliance checking under the C/S.	Noted. We will provide relevant submission to LandsD for compliance checking at detailed development stage.
	(v)	According to para. 4.3.2 of the PS and Figure 4.24a of the PS, a retaining structure will be erected within or around the PHB Strata in relation to OVT (JUD WCH/1). The Applicant's attention is therefore drawn to SC (10)(a) of the C/S, which specifies that no building or structure may be erected or constructed within the PHB Strata, except for the Tree Protection Measures for OVT (JUD WCH/1) and structures provided in relation to the formation of the PHB Strata. Any other structures would require the consent of the Director of Lands.	Noted. The proposed development will comply with relevant requirements under the Lease.
	(vi)	The PS has included information related to tree protection measures of the OVT. In this connection, the Applicant should be reminded to observe and comply with SC (13)(f) of the C/S. Specifically, the Lot Owner is required to obtain the written consent of the Director of Lands prior to the undertaking of the Tree Protection Measures for the OVT.	Noted. The proposed development will comply with relevant requirements under the Lease.
	(vi)	It is noted from Table 1.1 (d) that the traffic management plan under the condition(d) of the approved planning scheme has yet to be submitted to TD. The Applicant is	Noted. The proposed development will comply with relevant requirements under the Lease.

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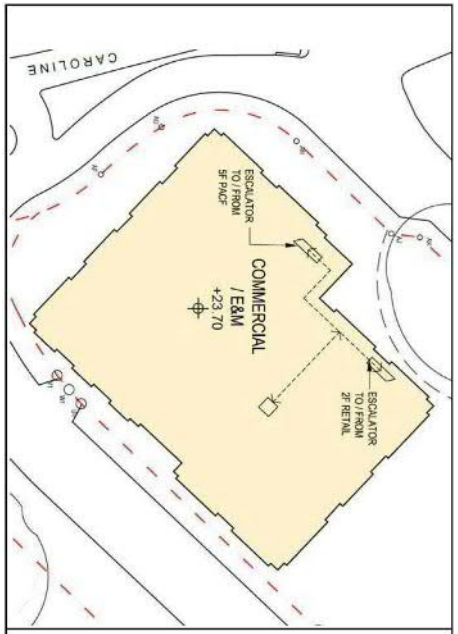
		reminded to observe and comply with SC(4)(a) of the C/S which stipulates the details regarding the formation of the Green Area on the plan (PLAN II) annexed to the C/S.	
	(vii)	For other technical assessment at the appendices of the PS, I trust the relevant departments would consider and provide comments on them.	Noted.
	(viii)	Based on a review of the current planning scheme and the Stage 1 approved GBP on 25.7.2025, BPU of this Department has the following observations:-	
		(I) While the proposed POS GFA of 6,000m² meets the minimum lease requirement, the figure is less than the provision in the Stage 1 approved GBP. PlanD's comment should be sought on whether the proposed POS area is acceptable under SC(15) of the C/S.	Noted. We will further liaise with PlanD should there be any comments.
		(II) The Pedestrian Walkway adjoining the internal street at G/F, along with the disabled access and lift lobby at 2/F (refer to Layout Plan at Annex B), differ from the approved Stage 1 approved GBP. Our comments on the Pedestrian Walkway under SC(21)(d) are reserved and will be provided in the development submission stage.	Noted. The detailed pedestrian layout will be provided to BPU at the development submission stage for further approval.
		(III) Two unannotated areas at 2/F, located adjacent to commercial zones (refer to Layout Plan at Annex B), and a deviation in the building layout at 3/F (shown in the plan at **Annex**) compared to the approved GBP are noted. The applicant is required to clarify the intended use of these areas during the development submission stage.	Noted. The detailed layout of 2/F & 3/F will be provided to BPU at the development submission stage for further approval.
		(IV) In view of the above, our comment from development plan processing perspective will be provided in the development submission stage	Noted. We will further liaise with BPU at the development submission stage.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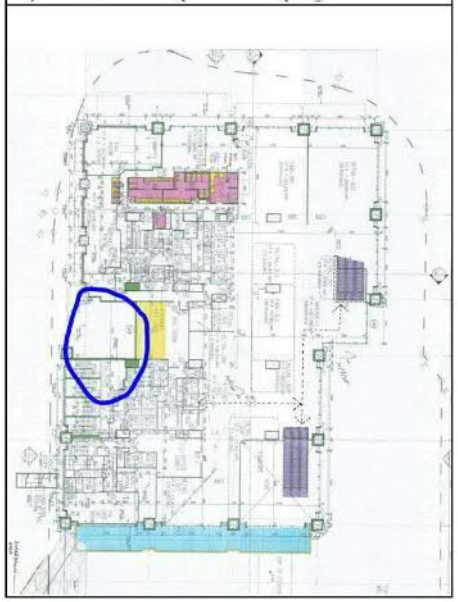

Annex

PLANNING APPLICATION NO. A/H7/188		
2. DEVELOPMENT BUREAU Date : 9 October 2025 Tree Management Office, Greening, Landscape and Tree Management Section (contact officer: Dr. Flora LEUNG, Tel.: 3509 7367) via email from Mr. Harvey Ting Hin LAW, TP/HK10 Tel.: 2231 4929		
	Comments	**Responses**
	OVT LANDSD(LEASED) WCH/1 (HKP WCH/1)	
	No adverse comment from this office on Annex K Tree Protection Proposal for OVT is provided. The applicant is reminded to strictly follow the proposal and advice from the Independent Tree Specialist, with particular attention on root preservation for effective tree management.	Noted and thank you.
	OVT JUD WCH/1 (EMSD WCH/1)	
	Noted in the Appendix C Landscape Master Plan that the detailed design of the retaining structure next to the OVT JUD WCH/1 (EMSD WCH/1) will be provided later for seeking the relevant government departments' agreement. Comment is reserved at this stage.	Noted.
3. ARCHITECTURAL SERVICES DEPARTMENT Date : 9 October 2025 Project Management Branch 1 (contact officer: Ms. Tracy YIU, Tel.: 2867 1059) via email from Mr. Harvey Ting Hin LAW, TP/HK10 Tel.: 2231 4929		
	Comments	**Responses**
	Comment on Appendix C:-	
	1. Sheet HYSAN02-LMP-F3-1: "The retaining structure for law court OVT"should be the retaining wall proposed by the Lot owner as part of its site formation works to facilitate its internal road design, but not as tree protection measures for Law Court OVT. The design of the internal road and retaining structures shall be coordinated with ArchSD and supplemented separately.	Noted. We will further coordinate with ArchSD separately.
	2. Sheet No.: HYSAN02-LMP-F7-1: Our previous comment referred, please clarify the clearance between the top of wall and the top of the vertical green support system, and ensure the plants would not intrude into District Court site.	Please note that a minimum clearance of 4.5 m will be maintained between the top of the wall and the top of the vertical green support system. In addition, no self-clinging climbing species are proposed; therefore, the plants will not intrude into the District Court site.

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	3. Sheet HYSAN03-LMP-C3-2: Please ensure the provision of sufficient offset of the transplanted trees location to the edge of the DCCH boundary. We noted from previous R to C that there shall be at least 6m of clear separation from the edge of the tree's dripline to the edge of the DCCH boundary.	Please note that at least 6 m of clear separation from the edge of the tree's dripline to the edge of the DCCH boundary will still be maintained.
4. BUILDINGS DEPARTMENT Date : 9 October 2025 (contact officer: Ms. Janet LI, Tel.: 3162 8807) via email from Mr. Harvey Ting Hin LAW, TP/HK10 Tel.: 2231 4929		
Comments		**Responses**
	a) Regarding the change in covered area of Public Open Space (POS) of current scheme, the respective change in accountable GFA under the Buildings Ordinance should be incorporated in General Building Plans (GBP) submission for approval by the Building Authority.	Noted. The updated detail layout and respective GFA calculation has been incorporated into the latest GBP Amendment for BD's approval.
	b) Regarding the new balustrade proposed at open lawn area of the banyan garden, our previous comments in memo dated 19 March 2025 are still valid, which is copied at below for easy reference:- "Under section 37(2) of Building (Construction) Regulation, if the difference between 2 adjacent levels (whether or not within a building) exceeds 600 mm, a protective barrier must be provided at the higher level to restrict or control the movement of persons, objects and vehicles. For your information, there is a metal balustrade at 1300mm height above finish floor level at the relevant area in the approved GBP."	Noted. A balustrade will be provided at the relevant area and has been incorporated into the latest GBP Amendment for BD's approval.
5. DRAINAGE SERVICES DEPARTMENT Date : 9 October 2025 (contact officer: Mr. Keith WONG tel: 3101 2376) via email from Mr. Harvey Ting Hin LAW, TP/HK10 Tel.: 2231 4929		
Comments		**Responses**
	1. Drainage Impact Assessment	

PLANNING APPLICATION NO. A/H7/188		
	a) Please indicate the proposed terminal stormwater manhole(s) in the layout plan.	The proposed stormwater terminal manholes are indicated on the layout plan in Appendix C.
	b) Please advise the pressure rating for the proposed PE drainage pipes. Please use the actual internal diameter for the proposed DN300 and DN400 PE pipes in the design calculation that presented in Appendix E.	Design calculation in Appendix E has been revised to indicate the PE100-RC, SDR17 and PN10 requirement for the proposed PE drainage connection with estimation based on internal diameter.
	c) The design calculation should also take into consideration of pipe siltaton as per DSD's Stormwater Design Manual Section 9.3.	Design calculation in Appendix E has been revised to include the siltation allowance.
	d) Effect of climate change with design allowance in end=21st Century scenario (i.e. 16.0%+12.1% = 28.1%) should be adopted according to Corrigendum No 1/2022 of Stormwater Drainage Manual.	Design calculation in Appendix E has been revised to include the end 21st century scenario of 28.1%.
	2. <u>Sewerage Impact Assessment</u> It is noted that the consultant provided a SIA submission via email of 19 September 2025. Comments were provided to the consultant via his letter ref. (01C8CL) in DSD HK 10/11/8945 dated 2 October 2025.	DSD's comment under their letter (01C8CL) in DSD HK 10/11/8945 dated 2 October 2025 is as follows:- "I refer to your e-mail dated 19 September 2025 regarding the captioned subject. Please find our comments below:- 1. As per DSD's Corrigendum No. 1/2024 for Sewerage Manual Part 1, polyethylene (PE) pipes should be used for sewers with diameter not exceeding 375mm. Please review Table B2 and update the design calculation accordingly." [Reply: New sewer will use polyethylene (PE100-RC, SDR17 and PN10) pipes. Table B2 has been revised to update the design calculation accordingly.]
6. FOOD AND ENVIRONMENTAL HYGIENE DEPARTMENT Date : 9 October 2025 <u>(contact officer: Ms. Stella KWOK, tel: 3141 1229)</u> via email from Mr. Harvey Ting Hin LAW, TP/HK10 Tel.: 2231 4929		
Comments		**Responses**
	i. If any Food and Environmental Hygiene Department's (FEHD) facility is affected by the development, FEHD's prior consent must be obtained.	Noted.

PLANNING APPLICATION NO. A/H7/188		
	ii. If provision of cleansing service for new roads, streets, cycle tracks, footpaths, paved areas etc, is required, FEHD should be separately consulted. Prior consent from FEHD must be obtained.	Noted.
	iii. No environmental nuisance should be generated to the surroundings. Also, arrangement shall be made to dispose any waste so generated from commercial / trading activities properly at own expenses.	Noted.
	iv. Proper licence / permit issued by FEHD is required if there is any food business / catering service / activities regulated by the Director of Food and Environmental Hygiene under the Public Health and Municipal Services Ordinance (Cap. 132) and other relevant legislation for the public.	Noted.
7. FIRE SERVICES DEPARTMENT Date : 9 October 2025 (contact officer: Mr. QIU Yi, tel: 2733 5845) via email from Mr. Harvey Ting Hin LAW, TP/HK10 Tel.: 2231 4929		
Comments		**Responses**
	i. Detailed fire safety requirements will be formulated upon receipt of a formal submission of Short Term Tenancy or Short Term Waiver, general building plans or referral of the application via the relevant licensing authority.	Noted.
	ii. The provision of emergency vehicular access in the subject work shall comply with the requirements as stipulated in Section 6, Part D of the Code of Practice for Fire Safety in Buildings 2011.	Noted. Relevant submissions will be provided at detailed development stage for further approval.
8. SOCIAL WELFARE DEPARTMENT Date : 9 October 2025 (contact officer: Ms. Emily TAI, tel: 2116 3582) via email from Mr. Harvey Ting Hin LAW, TP/HK10 Tel.: 2231 4929		
Comments		**Responses**
	Please note that the area of Child Care Centre should be approximately 530 m^2 instead of 531 m^2 as currently indicated. Please review and rectify relevant parts of the Planning Statements, including but not limited to part 3.2.4, 4.3.4 and Table 6.1.	Please note that the NOFA for Child Care Centre as discussed in paras. 3.2.4, 4.3.4 and Table 6.1 of the Planning Statement refers to the requirement under the Explanatory Statement of the OZP, which is about 531m^2.

PLANNING APPLICATION NO. A/H7/188		
9. PLANNING DEPARTMENT - Urban Design Unit, Urban Design & Landscape Section, Planning Department Date : 9 October 2025 Urban Design and Visual Perspectives (contact officer: Miss. Vanessa TSANG, tel. 3565 3942) via email from Mr. Harvey Ting Hin LAW, TP/HK10 Tel.: 2231 4929		
Comments		**Responses**
	1.) The current proposal does not exceed the BH restriction of 135mPD stipulated in the "C(2)" zone. The proposed minor relaxation of the GFA restriction of 100,000m2 to 102,000m2 (+2%) (the same total GFA as in the approved s.16A scheme of A/H7/181-2) which is considered relatively minor. As gathered from the submission (Table 4.1 and Section 1.1), there is no change in major development parameters as compared with the approved s.16A scheme (e.g. GFA, plot ratio, site coverage). The submission involves enhancements to the design of the Banyan Garden, revised distribution of areas within the public open space (POS) and soft & hard landscape design of the POS. The proposed development is commensurate with the intended scale and visual character of the area.	Agreed.
	2.) Similar to the approved s.16A scheme, the twin towers (Towers 1 and 2) are located in the northwestern portion, while Tower 3 is at the southeastern portion. Besides, the POS proposed at the eastern portion facing Caroline Hill Road (East) in form of landscaped bridge and at-grade at the northern portion facing Leighton Road is planned to respond to the ES of the OZP for enhancing the visual openness and ensuring easy accessibility by the public.	Agreed.
	3.) As noted from para. 4.4.7 of the Planning Statement and Figures 4.18a to 4.18c, a 'visual corridor' of 6m wide and 3-storey high is proposed on G/F between T1 and T2, allowing visual connections of the two OVTs (one at Leighton Road and another one at the future District Court adjacent to the Site) at street level. The angle of direct sight of the two OVTs appears to be rather narrow, nevertheless, the visual linkage through kinetic viewing points along the corridor would help, in response to the ES of the OZP, enhance the public enjoyment of the built environment and the OVTs. The corridor also serve as part of the POS as well as a more direct pedestrian access to the future District Court.	Agreed.

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	4.) Multi-level pedestrian links are proposed to promote the pedestrian connectivity and walkability, in particular, the landscape bridge connecting the Event Plaza at 2/F of Towers 1 and 2 (at about 18.75mPD), extending from the future footbridge connecting to Lee Garden Six across Leighton Road and the Site to Tower 3. It will provide a weather-proof, barrier-free and grade-separated connection.	Agreed.
	Air Ventilation Perspective 5.) An AVA– Initial Study using computational fluid dynamics has been carried out to compare the pedestrian-level air ventilation performance of the Baseline Scheme (the approved scheme of A/H7/181) and the Proposed Scheme. The Proposed Scheme has incorporated mainly: (1) at-grade elevated design at T1 of 8.5m high and 15m set back from the building edge; (2) minimum 36m tower setback from northeast site boundary above 2/F at T2; (3) elevated design of 13.4m high and average of 18m setback at 2/F of T3 (with a lift lobby of about 5m x 5m x 15m (W X H X L); and other mitigation measures. It is noted that the consultant did not include the lift lobby on the 2/F of T3 in the simulation model. According to the AVA, the potential impact of the lift lobby to the ventilation performance is not significant. According to the simulation results, the performances of the Proposed Scheme on pedestrian wind environment are comparable with the Baseline Scheme under both annual and summer conditions.	Agreed.
	Landscape Planning Perspective (contact officer: Mr. CM NGAI, tel. 3565 3955)	
	General Comments	
	2. It is noted that the major change as compared with the latest approved s. 16A scheme under Application No. A/H7/181-2 ("the Approved s.16A Scheme") is the treatment within the Tree Protection Zone ("TPZ") of the OVT No. LANDSD(LEASED) WCH/1 ("the OVT") in the G/F Banyan Garden. The "Lawn Area" under the OVT as per the Approved s.16A Scheme has reduced by approximately half in area and replaced by soil cells with hard paving finishes, while the remaining planting area under the OVT is proposed to be inaccessible/ enclosed by a balustrade. While LU	Noted. Information related to tree protection measures of the OVT under lease regime and proposed works within the TPZ of the OVT for compliance with BD has been indicated as "for PlanD's reference only".

PLANNING APPLICATION NO. A/H7/188		
	has no adverse comment on the revised layout as the overall landscape quality and function have been maintained, the applicant is advised that all information related to tree protection measures of the OVT under lease regime and proposed works within the TPZ of the OVT (e.g. balustrade) for compliance with Buildings Department ("BD") requirements are outside the ambit of PlanD and should be indicated as "For PlanD's reference only". The applicant/consultant is reminded that consent/approval from the relevant authority(ies) should be sought accordingly. This comment is applicable to all relevant annexes, paragraphs, tables and drawings related to the OVT under this application (particularly Annex K), which would not be exhaustively listed.	
	Advisory Comments	
	3. The applicant is advised that approval of the application does not imply approval of TPRP and the tree works, if any, such as pruning, transplanting, felling and the works within the Tree Protection Zone of the OVT under the lease. Tree preservation and removal applications should be submitted direct to relevant authority(ies) for approval.	Noted.
	4. The applicant is reminded that site coverage of greenery calculations for compliance with BD's PNAP-APP 152 are outside the ambit of PlanD, and all site coverage of greenery calculations should be submitted separately to BD/LandsD for approval.	Noted. Relevant submissions will be made to BD and LandsD for further approval.
10. ANTIQUITIES AND MONUMENTS OFFICE, DEVELOPMENT BUREAU - Executive Secretary (Antiquities & Monuments) Date : 14 October 2025 (contact officer: Ms. Phoebe TANG, tel: 2655 0836) via email from Mr. Harvey Ting Hin LAW, TP/HK10 Tel.: 2231 4929		
Comments		**Responses**
	Graded Structure 2. We note from the SPS that the Applicant will preserve in-situ the two sections of the **Masonry Wall and Earthenware Pipes at Caroline Hill Road** (with Slope Feature Nos. 11SW- B/FR 193 and 11SW-B/FR 32) (collectively referred to as the "Graded Structure"), which is a **Grade 3** historic structure in Causeway Bay.	Agreed.

PLANNING APPLICATION NO. A/H7/188		
	Annex I – Approved Conservation Management Plan 3. In accordance with Special Condition Clause 3(b) of the Conditions of Sale No. 20379 dated 10 June 2021, the Applicant submitted a Conservation Management Plan (CMP) for the conservation of the Graded Structure, which was subsequently accepted by AMO on 18 July 2022. The Applicant is required to implement the CMP in all respects to the satisfaction of AMO under the abovementioned clause. The Applicant is therefore reminded to implement the mitigation measures as set out in the accepted CMP before commencing any works for full compliance.	Noted. The mitigation measures as set out in the accepted CMP will be implemented before commencement of works for full compliance of relevant requirement.
	Supporting Planning Statement (August 2025) 4. It is mentioned in Footnote 1 on p.20 and Table 6.1 that "Preservation of stone retaining walls along the northern and eastern peripheries of the site (except the portions being effected by the road improvement works)". Please clarify whether the stone retaining walls refer to the Graded Structure. If the Graded Structure is to be affected, please provide details, such as location and extent of the portions to be affected by the road improvement works, and submit the details to AMO for comments.	The concerned sections in the Supporting Planning Statement are a direct quote from the Explanatory Statement of the Approved Wong Nai Chung OZP No. S/H7/21 and are specifically adopted in relevant sections of the Planning Statement where the OZP requirements are discussed. Please refer to details in the MPC Paper No. 5/19 for Further Consideration of Proposed Amendments to the Approved Wong Nai Chung Outline Zoning Plan No.S/H7/19 for reference (see: https://www.tpb.gov.hk/en/papers/MPC/626-mpc_5-19.pdf). The Applicant will continue to maintain the Grade 3 historic structure, including the existing graded masonry walls and two earthenware pipes in their present configuration in this Project. Therefore, the CMP accepted by AMO on 18 July 2022, which serves as partial compliance with the approval condition (c) under the approved Section 16 application (No. A/H7/181), remains valid.
	Annex C – Landscape Master Plan (LMP)(Rev.0) 5. It is noted from section 3.4.5 that a total of 7.5m construction setback from the boundary line to the Graded Structure (Slope Feature No. 11SW-B/FR 193) is recommended. However, according to sheet no. HYSAN02-LMP-F2-1 of Appendix F Landscape Sections, the construction setback is 8000mm. The Applicant should clarify the discrepancy and ensure that the Graded Structure will not be adversely affected by the proposed construction works.	The construction setback from the boundary line to the Graded Structure is confirmed to be 7500mm, which is in line with section 3.4.5. Sheet no. HYSAN02-LMP-F2-1 of Appendix F 'Landscape Sections' has been amended to tally with the same setback distance of 7500mm. The Graded Structure will not be adversely affected by the proposed construction.

PLANNING APPLICATION NO. A/H7/188		
	6. Referring to the visual coordinator plan between two Old and Valuable Tree (OVT) at sheet no. HYSAN02-LMP-F3-1 of Appendix F Landscape Sections, it is noted that an OVT (Registration No. LANDSD (LEASED) WCH/1) abutting Leighton Road is to be preserved in-situ and integrated into the proposed Banyan Garden. This OVT is partly supported by an existing masonry wall (Slope Feature No. 11SW-B/FR 190), which connects to the Graded Structure. The Applicant should ensure that the proposed works at the Banyan Garden would not adversely affect the Graded Structure.	Noted. The preserved OVT (Registration No. LANDSD (LEASED) WCH/1) abutting Leighton Road and the proposed works would not adversely affect the Graded Structure.
T	7. Referring to sheet no. HYSAN02-LMP-F4-1 of Appendix F Landscape Sections, it is noted that Tower 3 and its associated construction adjoins the Graded Structure (Slope Feature No. 11SW-B/FR 32). The Applicant is advised to devise and implement appropriate precautionary, protective and mitigation measures during all stages of works to ensure that the Graded Structure will not be adversely affected by the proposed works. AMO would provide comments upon receipt of departmental referral on relevant submissions.	Noted. Precautionary protective and mitigation measures would be implemented during all stages of works.
	8. Referring to the Soiling Plan at sheet no. HYSAN02-LMP-APP-I2 of Appendix I2, it is noted that a layer of 1200mm top soil will be planted at both G/F and UG. The Applicant should ensure that the proposed works would not cause disturbance to the Graded Structure.	Noted, the additional soiling has been reviewed and will cause no disturbance to the Graded Structure.
	9. Referring to the Tree Treatment Plan at Annex A, it is noted that several existing trees along the top of the Graded Structure (Slope Feature Nos. 11SW-B/FR 193 and 11SW-B/FR 32) are proposed to be felled. The Applicant is advised to carry out the tree felling and planting works with due care and ensure that the structural integrity and historic fabrics of the Graded Structure would not be adversely affected by the proposed works. It is also noted from the New Tree Planting Plan, sheet no. HYSAN02-LMP-B-3 of Appendix B that several new trees are proposed to be planted along the top of the Graded Structure (Slope Feature No. 11SW-B/FR 32). The Applicant should ensure that the planting would not cause disturbance to the Graded Structure and	Noted. The proposed tree felling and new tree planting would not cause disturbance to the Graded Structure and the roots of the proposed tree species would be prevented from penetrating into the Graded Structure.

PLANNING APPLICATION NO. A/H7/188		
	the roots of the proposed tree species should avoid penetrating into the Graded Structure. AMO would provide comments upon receipt of departmental referral on relevant submissions.	
	Figures 10. Referring to Figure 4.3 LMP Overall under Current Scheme and Figure 4.9a Provision of POS G/F under Current Scheme, there is a proposed vent shaft near the Banyan Garden. The Applicant should ensure that all works for the vent shaft shall not cause disturbance to the Graded Structure.	Noted. All works for the vent shaft will not cause disturbance to the Graded Structure.
	11. Referring to Figure 4.20a, it indicates that light-weight mass would be filled in-between the proposed basement wall of Tower 3 and the Graded Structure (Slope Feature No. 11SW-B/FR 32). The Applicant should ensure that the structural integrity and historic fabrics of the Graded Structure would not be adversely affected by the proposed works. AMO would provide comments upon receipt of departmental referral on relevant submissions.	Noted. The structural integrity and historic fabrics of the Graded Structure would not be adversely affected by the proposed works.
	General Comments 12. The non-graded masonry wall, i.e. Slope Feature No. 11SW-B/FR 190 is required to be retained under the Special Conditions Clause (3) of the land lease for the subject lot (Inland Lot No. 8945). AMO is not in a position to comment. You may wish to consult LandsD regarding the proposed works from lease control perspective.	Noted. We will further liaise with LandsD on the subject matter at detailed development stage.
	13. As regards other relevant submissions affecting the Graded Structure, such as building plans, survey/ study of the Graded Structure and mitigation measures for the protection of the Graded Structure, AMO will provide comments upon receipt from departmental circulation.	Noted.
11. THE JUDICIARY – Judiciary Administrator Date : 14 October 2025 (contact officer: Mr. Roy NG, tel: 2867 2135) via email from Mr. Harvey Ting Hin LAW, TP/HK10 Tel.: 2231 4929		

PLANNING APPLICATION NO. A/H7/188		
Comments		**Responses**
	2. We understand that the planning application no. A/H7/188 mainly involves-	
	(i) revised preservation measures and layout for the garden surrounding OVT No. LANDSD(LEASED) WCH/1, and amendments to the 2/F landscape design of the Event Plaza as well as for the area within the fully enclosed area of the footbridge, with no change to the level, form, enclosure provision, design intent, etc. of the fully enclosed and covered footbridge connecting to the Tower 3;	Agreed.
	(ii) minor amendment to the location and distribution of Public Open Space on Towers 1 and 2 side (i.e. no change to the Tower 3 open space area), with cancellation of 24-hour pedestrian walkway within the fully enclosed footbridge; and	Agreed.
	(iii) an addition of a new planting area on 3/F of the Tower 3 (c.f. figure 4.3).3.	Agreed.
	Our comments are as follows- (a) while no comment is made to layout and landscape design of Public Open Spaces proposed in this planning application, we note a new planting area close to the perimeter wall of the District Court Building is proposed in the 3/F of Tower 3 with top of soil at +23.25mPD. Since this new planting area will be higher than the perimeter wall of the District Court, it may pose security concern to the District Court Building. Thus, the applicant should confirm that this new planting area is accessible by maintenance, security and horticulture personnel only and not for general public's access. The applicant should also confirm that the accessible level of the new planting area should not exceed +23.25mPD. In this connection, we consider that the original floor level of the roof top of +25.9mPD from the approved General Building Plan provided to the Judiciary in September 2024 (BD ref: BD 2/3014/21) is superseded by this planning application;	The proposed planting area will not be opened for general public access and will be accessible by maintenance, security and horticulture personnel only. A 7.5m setback from District Court Building site boundary will be retained. The topsoil level of the planter at Tower 3 3/F roof top shall be **+27.70 mPD** instead of +23.25mPD according to the latest GBP submitted separately to BD. The LMP has been revised accordingly in Figure 4.3 of the Planning Statement and Appendix C of Annex C – Landscape Master Plan.
	(b) regarding para. 9 of your memo dated 15 September, the Judiciary has no expertise to comment on the technical assessments such as Air Ventilation Assessment, Drainage Impact Assessment, etc. We defer them to relevant competent agencies to review and comment.	Noted and thank you.
	4. We would like to re-iterate our requirements that the covered footbridge design shall be fully enclosed and would not pose any security risks to all court users of the District Court, and that Judiciary	Noted.

PLANNING APPLICATION NO. A/H7/188		
	and the project team of the District Court site of ArchSD should be consulted for the final form and details of the footbridge (including technical specifications thereof) during the detail design development stage. Judiciary expects that the materials of the footbridge cover shall be sturdy and resistant to physical attack.	
	5. On a separate note, our previous comment on the landscaping for the Pink Hatched Blue Area dated 24 March 2025 vide an email to HKDPO of PlanD is still valid.	The detailed design of the landscape for the Pink Hatched Blue Area, will be further coordinated with your office and relevant departments separately.
12. TRANSPORT DEPARTMENT Date : 15 October 2025 (contact officer: Ms. Priscilla SUM, tel: 2829 5408) via email from Mr. Harvey Ting Hin LAW, TP/HK10 Tel.: 2231 4929		
Comments		**Responses**
	Major comments on the application	
	1. The pedestrian walkway adjoining the disable access and lift lobby at 2/F (refer to Layout Plan at Annex B of the submission), differ from the approved scheme in BCIII meeting on 15 May 2025. Please advise the latest arrangement of the pedestrian walkway and waiting space for pedestrians at the lift lobby.	Please be informed that the concerned pedestrian walkway design remains the same in principle with minor adjustment. The latest GBP with the detailed layout was submitted to BD for approval and circulation to relevant departments for comment. Please refer to the enclosed updated Layout Plan (MLP-008) to tally with the pedestrian walkway delineation for your information.
	2. Please advise the general width of the pedestrian link, including those passing through public open space at 2/F, to ensure that adequate space will be allowed for pedestrian passage.	The pedestrian link pass through the public open space at 2/F will have minimum width of 2m. Please refer to the enclosed updated Layout Plan (MLP-008) for your information.
	3. Refer to Table 4.3 of the Planning Statement, the descriptions of Main use of B3/F to B5/F under Tower 3 (Edged Red Site) are not aligned with the Layout Plan at Annex B of the submission.	Please note that certain portions of the proposed private vehicle parks fall within the Edged Red Site at B3/F to B5/F. Therefore, the description in Table 4.3 tallies with that shown in the Layout Plan.
	4. We note from the Layout Plan, Drawing No. MLP-001. MLP-008, MLP-012 that the "FUTURE FOOTBRIDGE (TO BE CONSTRUCTED BY OTHERS AND SUBJECT TO DETAIL DESIGN)". Please advise the completion programme of the concerned footbridge since it is essential to provide grade separated pedestrian linkage across Leighton Road.	The concerned footbridge is anticipated to be completed by the 2nd quarter of 2026 subject to the site progress.

PLANNING APPLICATION NO. A/H7/188		
13. PLANNING DEPARTMENT Date : 16 October 2025 (contact officer: Mr. Harvey LAW, tel: 2231 4929)		
Comments		**Responses**
	We have the following comments/observation from district planning perspective:	
	It is noted that the current scheme proposed installation of perimeter balustrades to limit public access, as a measure to contain the spread of Brown Root Rot Disease. In comparison, both the 2022 and 2025 approved schemes proposed an open lawn within the Bayan Garden for multi-purpose use. The applicant should provide justifications demonstrating how the current scheme constitutes a significant enhancement over the approved schemes, in particular in terms of quality of the open space and public enjoyment.	The Banyan Garden was proposed as an open lawn area under the Approved Schemes. However, during the detailed design stage, it became evident that the design of these approved schemes would require physical barriers, including perimeter balustrades, to fully restrict public access to the Banyan Garden's lawn area, in order to prevent potential spread of BRRD. This would significantly limit public access and enjoyment of the POS. In comparison, the Current Scheme proposes a protection-cum-rehabilitation approach, which introduces a suspended pavement that prevents the potential spread of BRRD. It allows public access and encourages closer interaction with the tree, fostering a deeper connection between the community and nature. The suspended pavement also enables the creation of a flat, open plaza surface suitable for hosting a wide range of cultural, artistic, and community events in safe conditions. An integrated seat wall balustrade will be introduced between *Zone 2 (New tree strip)* and *Zone 3 (New soil crescent)*, serving as a physical safety barrier to address the level difference between the proposed Banyan Garden and Leighton Road as stipulated in Building (Planning) Regulations (Cap. 123F). The balustrade will also restrict public access to Zones 1 (Existing tree strip) and 2 (New tree strip) to prevent the potential spread of the BRRD. Please refer to new elaborations in paras. 4.2.13 – 4.2.15 of the Planning Statement.
	We also note that there is an update on the sharing arrangement of the lay-by and loading/unloading bay with the GIC facilities at B2/F. Please ensure that this revised arrangement is clearly specified and elaborated in the planning statement.	Relevant elaborations have been supplemented in para. 4.2.27 of the Planning Statement.
	Specific comments	

PLANNING APPLICATION NO. A/H7/188		
	Figure 4.3: Please revise Figure 4.3 to reflect that area "G" is designated as a hard paved surface rather than a lawn.	Figures 4.3, 4.24a and Annex C Landscape Master Plan have been rectified.
	Figures 4.5 & 4.6: Please confirm whether the proposed layout of the Bayan garden under the current scheme is consistence with the proposed plan. The areas of zones and zone 2 seems disproportionate. Please update the figures and provide more photomontage for better illustration.	Figure 4.5 has been reviewed and no change is required. The artist's impression of the Banyan Garden has been updated in Figure 4.6a whilst a new artist's impression of the Banyan Garden has been supplemented as Figure 4.6b. Kindly note that illustrations shown in Figures 4.5, 4.6a and 4.6b are for reference only, and subject to detail design.
	Annex K (the Tree Protection Proposal for Old and Valuable Tree (OVT): Please provide information on the estimated age of the OVT for information.	The OVT is of more than 60-70 years old. This has been supplemented in para. 4.2.1 of the Planning Statement.

By Hand and by Email (tpbsubmission@pland.gov.hk)

Our Ref : HDL3-DM-2368-250505L
22 October 2025

Urbis Limited
Planning, Urban Design, Landscape, Golf & Environmental Consultants

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

Attention: Secretary of Town Planning Board

Dear Sir/Madam,

Section 16 Planning Application under the Town Planning Ordinance (Cap.131) for Submission of Layout Plan in "Commercial (2)" Zone for Patchway Holdings (HK) Limited at Inland Lot No. 8945, Causeway Bay
A/H7/188 – SUBMISSION OF FURTHER INFORMATION

We are writing with respect to the submission of the captioned application and are pleased to submit herewith Further Information (FI) with regard to that application.

Please kindly find attached the following updated and revised item for your necessary action:

- Replacement Page of Annex B – Layout Plan

Please kindly note that the item above does not constitute a significant or material change to the proposed scheme, and we would like to request for an exemption from publication and recounting requirements under the provisions of Section 5 of TPB-PG No.32B.

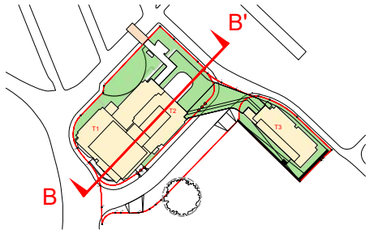
Should you have any queries, please do not hesitate to contact Miss Samantha YUNG, Town Planner at URBIS Limited by phone [redacted] or via email [redacted].

Yours faithfully

For and on behalf of URBIS Limited

David Morkel MRTPI MHKIP MHKIUD RPP
DM/SY/cs

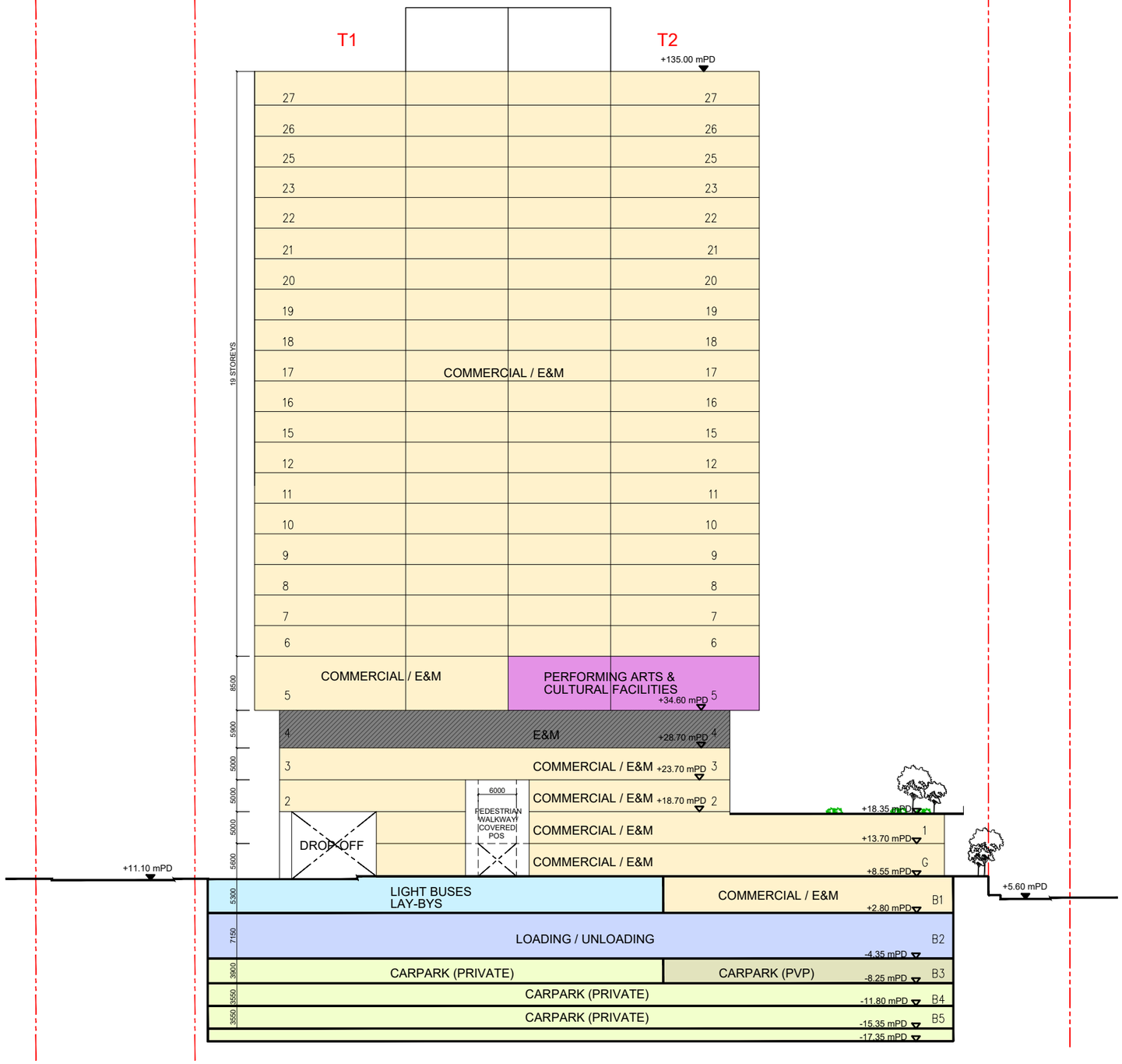
Encl.



CAROLINE HILL ROAD (WEST)

SITE
(EDGED BLUE)

CAROLINE HILL ROAD (EAST)



LEGEND

- APPLICATION SITE
- PINK HATCHED BLUE (NO STRUCTURE ERECTED ABOVE OR WITHIN 4M BELOW GROUND LEVEL)
- PUBLIC OPEN SPACE
- COMMERCIAL/E&M
- G.I.C. FACILITIES
- PERFORMING ARTS & CULTURAL FACILITIES
- FUTURE FOOTBRIDGE
- LIGHT BUSES LAYBYS
- CARPARK (PVP)
- CARPARK (PRIVATE)
- CARPARK (G.I.C. FACILITIES)
- ACCESS ROAD
- LOADING/UNLOADING
- UNEXCAVATED
- E&M

0 10 20 30 40 50m

Rev.	Description	Drawn	Checked	Approved	Date
–	1st SUBMISSION				3-2022
A	1st AMENDMENT				9-2023
B	2nd AMENDMENT				1-2024

Rev.	Description	Drawn	Checked	Approved	Date

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

This drawing is to be read in conjunction with the specification and any discrepancies are to be immediately reported to the Architect.

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.

B.D. Ref.
F.S.D. Ref.
D.L.O. Ref.
Drawn Date 1-2024
Checked Date 1-2024
Approved Date 1-2024
Cad File No.

RONALD LU & PARTNERS
呂元祥建築師事務所

Project Title
PROPOSED COMMERCIAL DEVELOPMENT ON IL NO.8945 AT CAROLINE HILL ROAD, CAUSEWAY BAY, HONG KONG

Drawing Title
SECTION BB'

Project No. 21105HK
Scale 1:750 (A3) Issue Date Sept 2024
Drawing No. MLP -013

Drawing Purpose

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

Harvey Ting Hin LAW/PLAND

寄件者: Samantha Yung <[redacted]
寄件日期: 2025年10月22日星期三 16:17
收件者: TPB Submission/PLAND
副本: Tony Kam Yee YIP/PLAND; Harvey Ting Hin LAW/PLAND; URBIS-HDL3-CWB8945; Lai Wai Man [RLPHK]; Grand TSE [RLPHK]; 'p21105'
主旨: RE: No. A/H7/188 - Submission of Further Information

類別: Internet Email

Dear Sir/Madam,

My preceding email refers.

We would like to supplement that the subject FI submission includes a revised section (MLP-013) under Annex B – Layout Plan to rectify the architectural layout of 3/F in Towers 1 and 2. The revised section tallies with the Third Floor Plan (MLP-009) submitted under the Approved Section 16A Application (No. A/H7/181-2) and the captioned application (No. A/H7/188).

Thank you.

Regards,

Samantha

Samantha Yung MRTPI | Town Planner
URBIS Limited
T +852 2802 3333 | **D** +852 3126 1330 | **F** +852 2802 8662 | Please visit our website www.urbis.com.hk for latest news and information

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From: Samantha Yung <[redacted]>
Sent: Wednesday, October 22, 2025 3:40 PM
To: TPB Submission/PLAND <tpbsubmission@pland.gov.hk>
Cc: tkyyip@pland.gov.hk; hthlaw@pland.gov.hk; URBIS-HDL3-CWB8945 <URBIS-HDL3-CWB8945@urbis.com.hk>
Subject: No. A/H7/188 - Submission of Further Information

Dear Sir/Madam,

Section 16 Planning Application under the Town Planning Ordinance (Cap.131) for Submission of Layout Plan in "Commercial (2)" Zone for Patchway Holdings (HK) Limited at Inland Lot No. 8945, Causeway Bay
A/H7/188 – SUBMISSION OF FURTHER INFORMATION

We are writing with respect to the submission of the captioned application and are pleased to submit herewith Further Information (FI) with regard to that application.

Please kindly find the following updated and revised item for your necessary action:

- Replacement Page of Annex B – Layout Plan

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

Soft copy of the submission has been uploaded to the link below. Four hard copies of the submission will be delivered to your office in due course.
https://fespld.pland.gov.hk/FsShare?key=A_H7_188

Should you have any queries, please do not hesitate to contact Miss Samantha YUNG, Town Planner at URBIS Limited by phone at [redacted] via email [redacted]

Regards,

Samantha

Samantha Yung MRTPI | Town Planner
URBIS Limited
[redacted] | Please visit our website www.urbis.com.hk for latest news and information

Appendix II of
MPC Paper No. A/H7/188

Comparison of Key Development Parameters, Main Uses and Provision of Internal Transport Facilities for the 2022 Approved Scheme, the 2025 Approved Scheme and the Current Scheme

Table 1.1 - A comparison of the key development parameters for the 2022 Approved Scheme, the 2025 Approved Scheme and the Current Scheme

Development Parameters	2022 Approved Scheme (No. A/H7/181)	2025 Approved Scheme (No. A/H7/181-2)	Current Scheme	Difference
	(a)	(b)	(c)	(c) - (b)
Total Site Area (m^2)	About 14,802	About 14,802	About 14,802	No Change
Maximum Total GFA (m^2)	102,000	102,000	102,000	No Change
(a) Office	*About 85,000*	*About 85,300*	*About 85,300*	No Change
(b) Retail	*About 10,000*	*About 10,000*	*About 10,000*	No Change
(c) GIC facilities required under OZP	*About 3,000*	*About 3,100*	*About 3,100*	No Change
(d) Light Bus Lay-bys	*About 2,000*	*About 1,600*	*About 1,600*	No Change
(e) GIC facilities for PACF	*About 2,000*	*About 2,000*	*About 2,000*	No Change
Plot Ratio	About 6.89	About 6.89	About 6.89	No Change
Maximum Site Coverage	65%	65%	65%	No Change
No. of Towers	3 (T1, T2 and T3)	3 (T1, T2 and T3)	3 (T1, T2 and T3)	No Change
Maximum BHs	+135mPD (T1 & T2) +90mPD (T3)	+135mPD (T1 & T2) +90mPD (T3)	+135mPD (T1 & T2) +90mPD (T3)	No Change
No. of Storeys	24 (T1 & T2) 16 (T3) (all excluding 5 basements)	25 (T1 & T2) 16 (T3) (all excluding 2 to 5 basements)	25 (T1 & T2) 16 (T3) (all excluding 2 to 5 basements)	No Change
POS to be provided	6,000m^2 (with 2,450m^2 covered open space)	6,000m^2 (with 2,280m^2 covered open space)	6,000m^2 (with 2,322m^2 covered open space)	No Change (+ 42m^2 covered open space)
(a) G/F - *Covered open space* - *Non-covered open space*	About 3,000m^2 *About 700m^2* *About 2,300m^2*	About 2,850m^2 *About 620m^2* *About 2,230m^2*	About 2,835m^2 *About 645m^2* *About 2,190m^2*	-15m^2 *+25m^2* *-40m^2*
(b) UG/F, 1/F and 2/F - *Covered open space* - *Non-covered open space*	About 3,000m^2 *About 1,750m^2* *About 1,250m^2*	About 3,150m^2 *About 1,660m^2* *About 1,490m^2*	About 3,165m^2 *About 1,677m^2* *About 1,488m^2*	+15m^2 *+17m^2* *-2m^2*
Greenery Coverage (m^2)	2,970	2,970	2,970	*No Change*
Anticipated Year of Completion	Q3/2029	Q3/2029	Q3/2029	*No Change*

Table 1.2 - A comparison of the main uses by floor between the 2022 Approved Scheme, the 2025 Approved Scheme and the Current Scheme

Tower 1 & Tower 2			
	2022 Approved Scheme (No. A/H7/181)	**2025 Approved Scheme (No. A/H7/181-2)**	**Current Scheme**
Floor	**Main Uses**		
B4 - B5/F	Private Vehicle Park		
B3/F	Private Vehicle Park and Public VehiclePark		
B2/F	Loading/Unloading (L/UL) Bays	L/UL Bays/ Public VehiclePark/ Parking for GIC Facilities	
B1/F	Commercial, Light Buses Lay-bys, E&M		
G/F	POS (Banyan Garden), 24-hour covered pedestrian walkway (with widths of about 3m and 6m), Commercial, E&M		
1/F	Commercial, 24-hour covered pedestrian walkway (with a width of about 6m), E&M		
2/F	Footbridge and 24-hour covered pedestrian walkway (with a width of about 6m) connecting the Site and Lee Garden Six		
	Commercial, Urban Park/ Landscape Bridge (with widths from about 15.5m to 25.4m), 24-hour covered pedestrian walkway (with a width of about 3m), E&M	Commercial, Event Plaza/Landscape Bridge (with widths from about 15.5m to 25.4m), 24-hour covered pedestrian walkway (with a width of about 3m), E&M	
3/F	Commercial, E&M		
4/F	--	E&M	
5/F	GIC Facilities (Performing Arts and Cultural Facilities), Commercial, E&M		
6/F – 27/F (13/F, 14/F and 24/F omitted)	Commercial, E&M		

Tower 3			
	2022 Approved Scheme (No. A/H7/181)	**2025 Approved Scheme (No. A/H7/181-2)**	**Current Scheme**
Floor	**Main Uses**		
B4 - B5/F	Private Vehicle Park	--	
B3/F	Public Vehicle Park/ Parking for GIC Facilities	--	
B2/F	L/UL Bays	Public Vehicle Park	
B2M/F	--	E&M	
B1	Commercial, Light Buses Lay-bys, E&M		
G/F	GIC Facility (DHC), POS, E&M		
UG/F	GIC Facility (DCCE) , POS, E&M		
1/F	GIC Facility (CCC), E&M		
2/F	Covered POS/Communal Podium Garden, Commercial, E&M	Commercial, E&M	
3/F – 17/F (4/F, 13/F and 14/F omitted)	Commercial, E&M		

Table 1.3 - A comparison of internal transport facilities under the 2022 Approved Scheme, the 2025 Approved Scheme and the Current Scheme

	2022 Approved Scheme (No. A/H7/181) (a)	**2025 Approved Scheme (No. A/H7/181-2) (b)**	**Current Scheme (c)**	**Difference (c)-(b)**
Public Vehicle Park and Lay-by				
Private Car Parking Spaces	100	100	100	No Change
Light Goods Vehicle Parking Spaces	15	15	15	No Change
Medium/Heavy Goods Vehicle Parking Spaces	5	5	5	No Change
Coaches Parking Spaces	5	5	5	No Change
Light Bus Lay-bys	4	4	4	No Change
Private Parking & L/UL				
(I) Parking and L/UL for Commercial Development	624	627	627	No Change
Private Car Parking Spaces	450 (Office)	452 (Office)	452 (Office)	No Change
	60 (Retail and PACF)	60# (Retail and PACF)	60# (Retail and PACF)	No Change
Motorcycle Parking Spaces	45 (Office)	46 (Office)	46 (Office)	No Change
	6 (Retail and PACF)	6# (Retail and PACF)	6# (Retail and PACF)	No Change
Motor Vehicle L/UL Spaces/ Lay-bys	5	5	5^	No Change
Light Goods Vehicle L/UL Spaces/ Lay-bys	27* (Office)	27* (Office)	27* (Office)	No Change
	10 (Retail and PACF)	10 (Retail and PACF)	10 (Retail and PACF)	No Change
Heavy Goods Vehicle L/UL Spaces/ Lay-bys	15 (Office)	15 (Office)	15@ (Office)	No Change
	6 (Retail and PACF)	6 (Retail and PACF)	6 (Retail and PACF)	No Change
(II) Parking and L/UL for GIC Facilities	5	6	6	No Change
Light Buses Parking Spaces (DCCE)	3	3	3	No Change
Private Car Parking Space (DHC)	1	1	1	No Change
Light Bus Parking Space (DHC)	1	1	1	No Change
Accessible Car Parking Space (DHC)	0	1	1	No Change

***** including 1 L/UL bay shared with the CCC and the DCCE at B2/F

including 10 private car parking spaces and 1 motorcycle parking space to be delineated for PACF

^including 1 motor vehicle lay-by shared with GIC facilities at B2/F

@ including 1 L/UL space shared with DHC facilities at B2/F

Appendix III of
MPC Paper No. A/H7/188

Previous Applications covering the Application Site

Approved Applications

Application No.	Proposed Use(s)	Date of Consideration	Approval Conditions
A/H7/181	Submission of Layout Plan and Proposed Minor Relaxation of Gross Floor Area Restriction for Permitted 'Eating Place', 'Office', 'Shop and Services', 'Place of Recreation, Sports or Culture', 'Public Clinic', 'Public Transport Terminus or Station', 'Public Vehicle Park (excluding container vehicle)' and 'Social Welfare Facility' Uses	6.5.2022 (the Metro Planning Committee)	(1) to (3)
A/H7/181-2		29.5.2025 (Director of Planning)	(1) to (2) and (4) to (5)

Approval conditions

(1) The design and provision of vehicular access, car parking and loading/unloading facilities for the proposed development to the satisfaction of the Commissioner for Transport (C for T) or of the Town Planning Board (the Board).

(2) The submission and implementation of a revised Landscape Master Plan to the satisfaction of the Director of Planning or of the Board.

(3) The submission of a Conservation Management Plan (CMP) and implementation of the mitigation measures identified therein before commencement of works to the satisfaction of the Commissioner for Heritage or of the Board.

(4) The submission of a CMP and implementation of the mitigation measures identified therein before commencement of works to the satisfaction of the Executive Secretary (Antiquities & Monuments) of the Antiquities and Monuments Office or of the Board.

(5) The submission and implementation of a traffic management plan to demonstrate the proposed internal traffic and transport arrangements for vehicles and pedestrians to the satisfaction of C for T or of the Board.

Detailed Departmental Comments

1. Comments of the District Lands Officer/Hong Kong East, Lands Department:

General

(a) the proposed development should in all respects comply with the Conditions of Sale (C/S) governing Inland Lot No. 8945 (the Lot). She reserves her position and comments on the extent of compliance with the C/S, which will be provided upon receipt of the relevant submissions for compliance checking under the C/S. For the avoidance of doubt, nothing in the Submission should in any event prejudice the Government's right and position to reject, disapprove, etc. any submissions under the C/S, including those which are consistent with the Submission but in conflict with any of the terms and conditions of the C/S;

Updated sharing arrangement of lay-by and loading/unloading bay with Government Accommodation (GA)

(b) while the sharing arrangement of lay-bys and loading/unloading spaces have been updated, it is noted that only one motor vehicle lay-by and two loading/unloading spaces for shared use with GA are mentioned in Table 4.2. The applicant is advised to observe and comply with the shared-use arrangement as required under the C/S, e.g. Special Condition (SC) (43)(b)(ii), (44)(a)(ii)(II) and (44)(b)(i)(I) & (II) and closely liaise with relevant bueaux/departments (B/Ds), including Transport Department (TD), Health Bureau and Social Welfare Department in this regard. The extent of compliance with the parking, loading and unloading requirements (including those for the public vehicle park (PVP)) as stipulated in the C/S would be considered at the building plan submission stage; and

(c) according to Table 4.2 of the planning statement (PS), 10 nos. of private car parking spaces and 1 no. of motorcycle parking space will be delineated for the performing arts and cultural facilities (PACF). Provision of the PACF is required and governed by the modification letter dated 7.11.2024. The applicant is reminded to observe and comply with the terms and conditions of the said modification letter. In particular, attention is drawn to SC (73)(b)(i) of the C/S, which specifies that the respective numbers of spaces for the parking of motor vehicles and for the parking of motor cycles to be provided for the PACF shall be determined by the Secretary for Development. Advice from Development Bureau shall be sought in this regard;

Other Comments

(d) without prejudice to the generality of para. (a) above, she has the following preliminary observations which are by no means exhaustive:

(i) regarding the subway connection and the footbridge connecting the Application Site with Lee Garden Six outlined in paras. 4.4.2 and 4.5.6 and as shown on the Layout Plan Drawing Nos. MLP-003 and 008, the applicant should bear in mind the requirements under SC (19) and (20) of the C/S, particularly the locations and level of connections;

(ii) for the pedestrian walkways and pedestrian links that are indicated on the layout plan and the figures of the PS, without prejudice to the generality of para. (a) above,

including but not limited to the extent of compliance of SC (21) of the C/S, she defers to the relevant B/Ds, such as TD to consider and comment on the acceptability of the pedestrian walkways and pedestrian links at this stage;

(iii) para. 4.8.2 of the PS mentions that the Grade 3 historic structure, including the existing graded masonry walls and earthenware pipes will be kept, conserved and preserved as required under lease. Given that masonry walls and earthenware pipes as shown by dotted brown lines on the plan (PLAN II) annexed to the C/S also include the ungraded portion as shown in Figure No. 4.25 of the PS, the Applicant is reminded to also keep, conserve and preserve the ungraded portion of masonry walls as required under SC (3) of the C/S;

(iv) the erection of the footbridge mentioned in paras 4.4.3 and 4.5.5, shown on Figures 4.3, MLP-001 and MLP-008 of the PS should be confined within a specific area of the Pink Hatched Blue Stratum and Pink Hatched Blue Stippled Green Stratum (PHB Strata), which is permitted under the terms outlined in the consent letter issued by her office on 26 November 2024. The Applicant is reminded to observe and comply with the terms and conditions of the said consent letter, which include the minimum vertical clearance (i.e. not less than 5.1m above ground level), the permitted users (i.e. for pedestrian passageway or open space or both) and the designated boundary for the footbridge's erection (i.e. edged brown on the plan annexed to the consent letter) stipulated in the said consent letter. Furthermore, the consent letter mandates that the footbridge be constructed to such levels, alignment and dispositions, with such materials and to such standards and designs as shall be approved by the Director of Lands. Comments on the footbridge are reserved and will be provided upon receipt of the relevant submissions for compliance checking under the C/S;

(v) according to para. 4.3.2 of the PS and Figure 4.24a of the PS, a retaining structure will be erected within or around the PHB Strata in relation to old and valuable tree (OVT) (JUD WCH/1). The Applicant's attention is therefore drawn to SC (10)(a) of the C/S, which specifies that no building or structure may be erected or constructed within the PHB Strata, except for the Tree Protection Measures for OVT (JUD WCH/1) and structures provided in relation to the formation of the PHB Strata. Any other structures would require the consent of the Director of Lands;

(vi) the PS has included information related to tree protection measures of the OVT. In this connection, the Applicant should be reminded to observe and comply with SC (13)(f) of the C/S. Specifically, the Lot Owner is required to obtain the written consent of the Director of Lands prior to the undertaking of the Tree Protection Measures for the OVT;

(vii) it is noted from Table 1.1 (d) that the traffic management plan under the condition(d) of the approved planning scheme has yet to be submitted to TD. The Applicant is reminded to observe and comply with SC(4)(a) of the C/S which stipulates the details regarding the formation of the Green Area on the plan (PLAN II) annexed to the C/S.

(viii) for other technical assessment at the appendices of the PS, I trust the relevant departments would consider and provide comments on them;

(ix) based on a review of the current planning scheme and the Stage 1 approved general building plan (GBP) on 25.7.2025, the Building Plan Unit (BPU) of this Department has the following observations:-

(I) while the proposed public open space (POS) gross floor area (GFA) of 6,000m² meets the minimum lease requirement, the figure is less than the provision in the Stage 1 approved general building plans (GBP). PlanD's comment should be sought on whether the proposed POS area is acceptable under SC(15) of the C/S;

(II) the Pedestrian Walkway adjoining the internal street at G/F, along with the disabled access and lift lobby at 2/F (refer to Layout Plan at Annex B), differ from the approved Stage 1 approved GBP. Her comments on the Pedestrian Walkway under SC(21)(d) are reserved and will be provided in the development submission stage; and

(III) two unannotated areas at 2/F, located adjacent to commercial zones (refer to Layout Plan at Annex B), and a deviation in the building layout at 3/F compared to the approved GBP are noted. The applicant is required to clarify the intended use of these areas during the development submission stage;

2. Comments of the Chief Architect/3, Architectural Branch Division 3, Architectural Services Department:

with reference to the layout plan and the comparison table (Table 4.2) provided, it is noted that some of the provision/ arrangement proposed by the Authorised Person (AP) seem to be not aligned with the parking, lay-bys and loading/unloading requirements stipulated in the SC(23), SC(43) and SC(44). The AP should clearly indicate the provision and compare with the requirements for consideration;

3. Comments of the Commissioner for Heritage and the Executive Secretary (Antiquities & Monuments), Antiquities and Monuments Office (AMO):

Annex I – Approved Conservation Management Plan (CMP)

(a) in accordance with SC Clause 3(b) of the C/S, the applicant submitted a CMP for the conservation of the Graded Structure, which was subsequently accepted by AMO on 18 July 2022. The applicant is required to implement the CMP in all respects to the satisfaction of AMO under the abovementioned clause. The applicant is reminded to implement the mitigation measures as set out in the accepted CMP before commencing any works for full compliance;

Annex C – Landscape Master Plan (LMP)(Rev.0)

(b) referring to the visual coordinator plan between two Old and Valuable Tree (OVT) at sheet no. HYSAN02-LMP-F3-1 of Appendix F Landscape Sections, it is noted that an OVT (Registration No. LANDSD (LEASED) WCH/1) abutting Leighton Road is to be preserved in-situ and integrated into the proposed Banyan Garden. This OVT is partly supported by an existing masonry wall (Slope Feature No. 11SW-B/FR 190), which connects to the Graded Structure. The Applicant should ensure that the proposed works at the Banyan Garden would

not adversely affect the Graded Structure;

(c) referring to sheet no. HYSAN02-LMP-F4-1 of Appendix F Landscape Sections, it is noted that Tower 3 and its associated construction adjoins the Graded Structure (Slope Feature No. 11SW-B/FR 32). The Applicant is advised to devise and implement appropriate precautionary, protective and mitigation measures during all stages of works to ensure that the Graded Structure will not be adversely affected by the proposed works. AMO would provide comments upon receipt of departmental referral on relevant submissions;

(d) referring to the Soiling Plan at sheet no. HYSAN02-LMP-APP-I2 of Appendix I2, it is noted that a layer of 1200mm top soil will be planted at both G/F and UG. The Applicant should ensure that the proposed works would not cause disturbance to the Graded Structure;

(e) referring to the Tree Treatment Plan at Annex A, it is noted that several existing trees along the top of the Graded Structure (Slope Feature Nos. 11SW-B/FR 193 and 11SW-B/FR 32) are proposed to be felled. The Applicant is advised to carry out the tree felling and planting works with due care and ensure that the structural integrity and historic fabrics of the Graded Structure would not be adversely affected by the proposed works. It is also noted from the New Tree Planting Plan, sheet no. HYSAN02-LMP-B-3 of Appendix B that several new trees are proposed to be planted along the top of the Graded Structure (Slope Feature No. 11SW-B/FR 32). The Applicant should ensure that the planting would not cause disturbance to the Graded Structure and the roots of the proposed tree species should avoid penetrating into the Graded Structure. AMO would provide comments upon receipt of departmental referral on relevant submissions;

Figures

(f) referring to Figure 4.3 LMP Overall under Current Scheme and Figure 4.9a Provision of POS G/F under Current Scheme, there is a proposed vent shaft near the Banyan Garden. The Applicant should ensure that all works for the vent shaft shall not cause disturbance to the Graded Structure; and

(g) referring to Figure 4.20a, it indicates that light-weight mass would be filled in-between the proposed basement wall of Tower 3 and the Graded Structure (Slope Feature No. 11SW-B/FR 32). The Applicant should ensure that the structural integrity and historic fabrics of the Graded Structure would not be adversely affected by the proposed works. AMO would provide comments upon receipt of departmental referral on relevant submissions;

4. Comments of the Chief Engineer, Hong Kong & Islands, Drainage Services Department:

Drainage Impact Assessment:

(a) DN300 is not standard size for PE pipes. Please propose appropriate pipe size in the drainage proposal for discharging stormwater runoff to manholes SMH7010332 and SMH7010391. Please use the correct internal pipe sizes in the hydraulic calculation;

(b) the proposed stormwater terminal manholes still not shown in the figure enclosed in Appendix D as commented earlier. Please shown clearly their intended locations; please also advise the invert levels of the proposed stormwater terminal manholes;

(c) please advise how the proposed DN400 PE pipe from proposed stormwater terminal manhole

will be connected to SMH7010330 while maintaining the existing old masonry wall intact;

Sewerage Impact Assessment:

(d) for PE pipes, DN225 represents the outer pipe diameter equals to 225mm. The internal diameter should be the outer diameter less than the pipe thickness. Please update the hydraulic calculations that presented in Appendix B2 using the correct pipe internal diameters; and

(e) please also review the proposed DN300 PE pipes, seems DN300 is not standard size for PE pipes;

5. Comments of the Chief Building Surveyor/Hong Kong East & Heritage, Buildings Department:

(a) regarding the change in covered area of POS of current scheme in para. 8, the respective change in accountable GFA under the Buildings Ordinance should be incorporated in GBP submission for approval by the Building Authority; and

(b) regarding the new balustrade proposed at open lawn area of the Banyan Garden in para. 10(g), her previous comments are still valid:-

"Under section 37(2) of Building (Construction) Regulation, if the difference between 2 adjacent levels (whether or not within a building) exceeds 600 mm, a protective barrier must be provided at the higher level to restrict or control the movement of persons, objects and vehicles. For your information, there is a metal balustrade at 1300mm height above finish floor level at the relevant area in the approved GBP.";

6. Comments of the Director of Food and Environmental Hygiene:

(a) if any Food and Environmental Hygiene Department's (FEHD) facility is affected by the development, FEHD's prior consent must be obtained;

(b) if provision of cleansing service for new roads, streets, cycle tracks, footpaths, paved areas etc, is required, FEHD should be separately consulted. Prior consent from FEHD must be obtained;

(c) no environmental nuisance should be generated to the surroundings. Also, arrangement shall be made to dispose any waste so generated from commercial / trading activities properly at own expenses; and

(d) proper licence / permit issued by FEHD is required if there is any food business / catering service / activities regulated by the Director of Food and Environmental Hygiene under the Public Health and Municipal Services Ordinance (Cap. 132) and other relevant legislation for the public;

7. Comments of the Chief Architect 103, Projects Management Branch, Architectural Services Department (CA 103, PMB, ArchSD):

Comments on Appendix C:-

(a) sheet HYSAN02-LMP-F3-1: The retaining structure for law court OVT should be the retaining wall proposed by the Lot owner as part of its site formation works to facilitate its internal road design, but not as tree protection measures for Law Court OVT. The design of the internal road and retaining structures shall be coordinated with ArchSD and supplemented separately;

(b) sheet No.: HYSAN02-LMP-F7-1: Our His previous comment referred, please clarify the clearance between the top of wall and the top of the vertical green support system, and ensure the plants would not intrude into District Court site; and

(c) sheet HYSAN03-LMP-C3-2: Please ensure the provision of sufficient offset of the transplanted trees location to the edge of the DCCH boundary. He noted from previous response-to-comment that there shall be at least 6m of clear separation from the edge of the tree's dripline to the edge of the DCCH boundary.

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

From: [redacted]
Sent: 2025-10-03 星期五 21:46:48
To: tpbpd/PLAND <tpbpd@pland.gov.hk>
Subject: A/H7/188 Inland Lot No. 8945, Caroline Hill Road MLP

Dear TPB Members,

A/H7/186 withdrawn

A/H7/188
Inland Lot No. 8945, Caroline Hill Road, Causeway Bay
Site area: About 14,802sq.m
Zoning: "Commercial (2)"
Applied development: Submission of Layout Plan: 3 Commercial Towers / Eating Places and Shops / PR 6.89 (6.76) / 135mPD / SC 65% / 6,000sq.m POS / Retail / Public Clinic / PTT or Station / 575 (563) Vehicle Parking / 132 Public Vehicle Park
Social Welfare Facility: Tower 3 G/F – 1/F integrated with the **covered public open space** at 2/F.
District Health Centre with a Net Operating Floor Area of about 1,000m2
Child Care Centre with a NOFA of about 531m2
Day Care Centre for the Elderly with a NOFA of about 358m2
Total: 1,889sq.mts

The latest plan is nothibng more than moving the pieces to the advantage of the developer.

Previous objections relevant and upheld.

The communit interests have been well and truely trashed.

Not only will 40% of the so called 'open space' be under cover, the outdoor areas are nothing more than left over corners of the plot with lots of paving and potted plants

Mary Mulvihill

From: [redacted]
To: tpbpd <tpbpd@pland.gov.hk>
Date: Friday, 2 May 2025 10:19 PM HKT
Subject: Re: A/H7/186 Inland Lot No. 8945, Caroline Hill Road MLP

Dear TPB Members,

Apologies, the additional developer that appears to be the instigator of the decision, regrettably approved by TPB, to replace the genuine Open Space with a third tower is of course Chinachem not Chinese Estates.

The Green Cover has now been miraculously restored to 2,970sq.ft. How this is achieved when: G/F close to Banyan Tree

"During the detailed design and site coordination stages, it has become clear that it is unavoidable to locate a series of underground utilities and structural works in the mentioned area. As such, ***there is insufficient space available for planting new trees****.*

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To maintain the number of trees committed to in the approved scheme, all concerned new trees (originally at G/F) will therefore ***be relocated to the open space on the 2/F"***

Site Cover is how much space is included, not how many trees are being stuffed into another open space.

As the Responses tables indicate, there are many anomalies with regard to the data provided. Members have a duty to question the calculations. They should also consider how the developers have gradually chipped away at the number of trees to be retained and transplanted under the convenient excuse of Emergency Tree Felling procedure. What Emergency? There were no major weather incidents in recent months that would justify felling more trees. This is of course nothing more than the typical scenario of promises made to be broken, the gradual reduction in the pledges that justified the original approval.

Then there is the issue of the impact of vent shaft from the underground car park on the OVY:

"This vent shaft is for basement carpark exhaust, the content of which is similar to that emitted from the vehicles passing by on Leighton Road abutting the OVT. Since the OVT has survived for many years beside this heavily trafficked road, we believe that it is unlikely this exhaust may potentially cause harm to the OVT"

Suck it up OVT. Going forward in addition to the traffic on Leighton Road, that will inevitably generated increased emissions when the development is launched, the OVT will have to cope with discharge from the parking lot. And do this on its own as it previously had the assistance of other trees.

Members have a duty to question how then applicant can claim that the current MLP is even better than the extremely flawed original

Mary Mulvihill

From: [redacted]
To: tpbpd <tpbpd@pland.gov.hk>
Date: Tuesday, 25 March 2025 9:19 PM HKT
Subject: A/H7/186 Inland Lot No. 8945, Caroline Hill Road MLP

Dear TPB Members,

Strong Objections.

The devil is in the details. While the planning statment indicates that there is no increase in GFA, the plans show otherwise.

Note that the consultant has gone back to Application 181 (4.1A) not the more recent 185. (Appendix C1) Green shaded areas behind the Building Block providing a buffer to the Future Road have disappeared.

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

The Artist's Impression 94.9b) also shows that the amount of OS OPEN TO THE SKY, which is what genuine Open Space should be especially as this provision was imposed to boost the quota of Public Open Space not Private in the district and to compensate for the transformation of what was once low rise recreation space to bulky tall wall effect, is in fact very limited.

That genuine OS has been further whittled down is borne out in the significant **decrease in Greenery Cover from 2,970 to 2,320sq.m**.

There is an increase in the footbridges and this is also a cause for concern. When K11 TST was built the footbridge over the OS there was designated for connectivity only but has long been used as commercial space. No enforcement action has ever been taken.

That the developers will gradually introduce commercial uses into the covered space is the inevitable intention.

Members have a duty to consider how the community has been shafted with this development. The original promise was a proper park beside the court complex but when Chinese Estates came on board the third tower was introduced. So 6,000sq.mts is now reduced to just over 2,000.

But with no avenues for the community to genuinely object - the only plans that ever get tweaked at TPB are those opposed by folk with deep pockets like the Golf Club - its a case of SUCK IT UP and be grateful for the crumbs that get thrown our way.

Previous objections relevant and upheld.

Mary Mulvihill

From: [redacted]
To: tpbpd <tpbpd@pland.gov.hk>
Date: Friday, 12 April 2024 10:20 PM HKT
Subject: A/H7/185 Inland Lot No. 8945, Caroline Hill Road

A/H7/185

Inland Lot No. 8945, Caroline Hill Road, Causeway Bay

Site area: About 14,802sq.m

Zoning: "Commercial (2)"

Applied development: Submission of Layout Plan: 3 Commercial Towers / Eating Places and Shops / PR 6.76 / 135mPD / SC 65% / 6,000sq.m POS / Retail / Public Clinic / PTT or Station / 563 Vehicle Parking / 132 Public Vehicle Park

Social Welfare Facility: Tower 3 G/F – 1/F integrated with the **covered public open space** at 2/F.

District Health Centre with a Net Operating Floor Area of about 1,000m2

Child Care Centre with a NOFA of about 531m2

Day Care Centre for the Elderly with a NOFA of about 358m2

Total: 1,889sq.mts

Dear TPB Members,

One of the main concerns of the community with regard to the rezoning of the PCCW Recreation Club was that the large site that was previously dedicated to recreation should retain a substantial element of community and recreational use. All along participants in the process were reassured that there would be a genuine open-air park but it this has been replaced with an additional commercial tower.

Around 40% of OS is covered and significant tracts of it are nothing more than pedestrian connections masquerading as open space.

The first portion is a Banyan Garden and entrance plaza. A 24 hour-**pedestrian walkway** with an internal street runs through the Banyan Garden. Area of 2,850m2

The second portion is the Event Plaza at 2/F and the associated POS surrounding the GIC facilities connecting the Event Plaza. It serves as the core of the POS. Area of 3,150m

The Landscape Bridge will be fully covered and enclosed at the two sides facing Caroline Hill Road to the east and the new internal road to the west. This will serve as a **major part of the covered public open space** and the design i**s to create a covered landscape area with ample greenery**. The Landscape Bridge will extend all the way **into the cover public open space under Tower 3** in order to provide a well-integrated public open space. Not a glimpse of the sky, how can this be acceptable? The developer claims that this is acceptable under the PPP formula, but that is misleading as the open space promised at this development was to mitigate the removal of the large recreational grounds previously on the site and to reflect the original zoning.

The planning statement emphasises **biophilic** design and allow the development **to provide healthy and comfortable outdoor space** for the public but, in reality, much of the space is enclosed and climate controlled.

Biophilic "the practice of connecting people and nature within our built environments and communities"

Essentially instead of getting a proper dedicated OS that could incorporate a number of facilities like children's playground, elderly exercise facilities and even a small ball park, etc, the OS is now nothing more than pockets of left over space, enclosed corridors and roof tops.

In addition, '*a small area" will be designated for non POS use although this area will still form part of the Event Plaza. The public can still access and use the space* ***most of the time, except during special events*** *when temporary barriers will be erected along the perimeter of this area."*

Presumably this is for commercial use, the wording is vague, no data provided with regard to how many events are planned, their duration, the impact on the POS.

There is also the issue of LAWN. Where? The towers are built on a massive podium. Apart from the area around the OVTs there is no at grade land. This should be challenged. A platform underneath a footbridge and in the shadow of a tall podium is certainly not an appropriate location.

The image of the 'Multi-Functional space is telling. This is nothing more than a covered corridor with what looks like marble seating, most uncomfortable, with no supports, no tables to place food on, play games on.

GIC Facilities add up to less than 2,000sq.m instead of the mandated 3,000sq.m.

STRONGEST OBJECTIONS TO THE REMOVAL OF THE ARTS AND CULTURAL FACILITIES. THERE WAS NEVER ANY MENTION THAT THIS SPACE WAS INTENDED TO BE A REVENUE GENERATING OPERATION.

I WOULD REMIND TPB MEMBERS THAT ONE OF THE DEVELOPERS IS CHINACHEM. REMINDER THAT THIS FIRM IS THE ESTATE OF NINA WANG, THAT WAS DECREED IN 2022 TO BE A CHARITABLE FOUNDATION. ITS STATUS IS THEREFORE AKIN TO THAT TO THAT OF THE JOCKEY CLUB AND IT SHOULD TAKE AN ACTIVE PART IN SUPPORTING THE VARIOUS FACETS OF COMMUNITY LIFE AS HKJC DOES.

Re: A/H7/181: additional 2,000m2 of Performing Arts and Cultural Facilities operated by non-profit organisation was permitted with minor relaxation of GFA on 6 May 2022. Under the current Layout Plan the cultural facilities will be omitted and a Communal Podium Garden is instead proposed on 5/F of Towers 1 and 2 to provide **sheltered view** at the lower levels to soften the building's edge.

The proposed replacement Community Podium Garden would technically also not generate profit? However, suspicions would be that the plan is to introduce catering outlets at the centre and effectively turn it into a food court.

The cultural facilities were proposed as a 'sweetener' when the developers submitted plans to change the original plan for two towers and a large GENUINE park to three towers with the open space effectively nothing more than walkways, terraces and under cover. With approval achieved, they now want to renege on this amenity.

Will TPB members have the balls to insist that the facilities related to Application 181 are realized, or will they allow further chipping away of the community benefits of the project?

Strong objections also to the submission of additional information so close to the deadline. This has deprived some interested parties of the time required to read through and digest the many issues raised. It would appear that the

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

intention is to steam roll through the application when the correct procedure would be to request a deferment that would allow the community adequate time to process the many amendments to the original material. Some folk who submitted their views before the additional information was posted may not even be aware of it. This is in contrary to the guidelines stipulation the duration of a consultation process.

Previous objections applicable and upheld.

From: [redacted]

To: tpbpd <tpbpd@pland.gov.hk>
Date: Friday, 8 April 2022 3:06 AM CST
Subject: A/H7/181 Lot 8945 Caroline Hill Hysan

A/H7/181

Inland Lot No. 8945, Caroline Hill Road, Causeway Bay

Site area: About 14,802sq.m

Zoning: "Commercial (2)"

Applied development: Proposed MR of GFA for Permitted Eating Place, Office, Place of Recreation, Sports or Culture, Public Clinic, PTT or Station, Public Vehicle Park (excluding container vehicle), Shop and Services and Social Welfare Facility / 3 Towers / PR 6.89 / OS 6,000sq.m

Dear TPB Members,

Strongest objections. I would remind members that the site in question was originally zoned for community use, Sports and Recreation Club and GIC.

I attended the OZP and the representatives of the interested developer, who eventually acquired the site, made all sorts of promises with regard to the provision of a genuine EXPANSIVE and community friendly Open Space.

But there have been radical changes to the layout presented at OZP. Instead of two towers with a 25m gap on the main site with wide open space in front and a large independent OS on the back lot, the developer is now effectively removing the OS at the back and placing another tower there.

So instead of a public park the OS would be reduced to nothing more than corridors between and on the periphery of the site. The OS would be pockets and narrow left over spaces instead of a proper park. In fact much of the proposed OS is nothing more than a landscaped roof top and a covered bridge! Combined with the bulky court buildings to be erected on the back of the site the 'green' areas at the back should not even be counted as OS as they will be merely access alley ways lined by wall effect.

THE COMMUNITY HAS BEEN DEPRIVED OF A LARGE SITE. IT IS TOTALLY UNACCEPTABLE THAT NOW NOT EVEN THE PROMISED PUBLIC PARK WOULD NOT BE PROVIDED.

It is also interesting to note that despite the traffic issues in the district and the deficit in local OS, the parking facilities have been increased by over 200 vehicles while the OS is reduced to nothing more than corridors. This is a striking example of where the priorities lie, and they certainly are not in line with what the community aspires to.

Members must firmly reject this preposterous application as this is not the 6,000sq.m genuine POS that was considered when approval was given to the OZP.

Mary Mulvihill

Recommended Advisory Clauses

(a) to note the comments of the District Lands Officer/Hong Kong East, Lands Department (LandsD) that:

(i) the proposed development should in all respects comply with the Conditions of Sale (C/S) governing Inland Lot No. 8945 (the Lot). Her comments on the extent of compliance with the C/S would be provided upon receipt of the relevant submissions for compliance checking under C/S. For the avoidance of doubt, nothing in the current application should in any event prejudice the Government's right and position to reject, disapprove, etc. any submissions under the C/S, including those which are consistent with the current scheme but in conflict with any of the terms and conditions of the C/S;

(ii) to note Special Condition (SC)(13) of the C/S concerning the preservation of the old and valuable tree (OVT). This condition stipulates inter alia, that no alteration works may be carried out, and no building or structure may be erected or constructed within the Pink Hatched Green Area, except for specific works explicitly permitted under the condition, such as landscaping works to be carried out in accordance with the approved Landscape Master Plan (LMP) or works in relation to the construction of the public open space (POS);

(iii) to note the "Design and Management Guidelines for POS in Private Development" published by the Development Bureau (DEVB). Depending on the nature of the proposed activities, a waiver of relevant restrictions under the C/S might be required;

(iv) to observe and comply with the shared-use arrangement as required under the C/S, e.g. SC (43)(b)(ii), (44)(a)(ii)(II) and (44)(b)(i)(I) & (II) and closely liaise with relevant bueaux/departments (B/Ds), including Transport Department (TD), Health Bureau and Social Welfare Department in this regard. The extent of compliance with the parking, loading and unloading requirements (including those for the public vehicle park (PVP)) as stipulated in the C/S would be considered at the building plan submission stage;

(v) to observe and comply with the terms and conditions of the modification letter dated 7.11.2024. In particular, attention is drawn to SC (73)(b)(i) of the C/S, which specifies that the respective numbers of spaces for the parking of motor vehicles and for the parking of motor cycles to be provided for the performing arts and cultural facilities (PACF) shall be determined by the Secretary for Development. Advice from DEVB shall be sought in this regard;

(vi) to note the requirements of the subway connection and the footbridge connecting the Site with Lee Garden Six under SC(19) and (20) of the C/S, particular the locations and the level of connections;

(vii) to keep, conserve and preserve the ungraded portion of masonry walls as required under SC (3) of the C/S;

(viii) to observe and comply with the terms and conditions of the consent letter issued by her office on 26.11.2024, which include the minimum vertical clearance (i.e. not less than 5.1m above ground level), the permitted users (i.e. for pedestrian passageway or open space or both) and the designated boundary for the footbridge's erection (i.e. edged brown on the plan annexed to the consent letter) stipulated in the said consent letter. Furthermore, the consent letter mandates that the footbridge be constructed to such levels, alignment and dispositions, with such materials and to such standards and designs as shall be approved by the Director of Lands. Comments on the footbridge are reserved and will be provided upon receipt of the relevant submissions for compliance checking under the C/S;

(ix) to note SC (10)(a) of the C/S, which specifies that no building or structure may be erected or constructed within the Pink Hatched Blue Stratum and Pink Hatched Blue Stippled Green Stratum ("PHB Strata"), except for the Tree Protection Measures for OVT (JUD WCH/1) and structures provided in relation to the formation of the PHB Strata. Any other structures would require the consent of the Director of Lands;

(x) regarding the tree protection measures of the OVT, the Applicant should be reminded to observe and comply with SC (13)(f) of the C/S. Specifically, the Lot Owner is required to obtain the written consent of the Director of Lands prior to the undertaking of the Tree Protection Measures for the OVT;

(xi) regarding the traffic management plan, the Applicant is reminded to observe and comply with SC(4)(a) of the C/S which stipulates the details regarding the formation of the Green Area on the plan (PLAN II) annexed to the C/S;

(xii) the Applicant is required to clarify the intended use of the unannotated areas and the deviation in building layout compared to the approved GBP during the development submission stage; and

(xiii) her comment from development plan processing perspective will be provided in the development submission stage; and

(b) to note the comments of the Chief Architect/3, Architectural Branch Division 3, Architectural Services Department that the applicant should observe and comply with the shared-use arrangement as required under the Conditions of Sale (C/S) and closely liaise with relevant bueaux/departments (B/Ds), including Transport Department, Health Bureau and Social Welfare Department in this regard;

(c) to note the comments of the Head of Greening, Landscape and Tree Management Section, Development Bureau to strictly follow the proposal and advice from the Independent Tree Specialist, with particular attention on root preservation for effective tree management. Besides, she reserves comment on the detailed design of the retaining structure next to OVT JUD WCH/1;

(d) to note the comments of the Chief Town Planner/Urban Design and Landscape, PlanD that approval of the application does not imply approval of tree preservation and

removal proposal and the tree works, if any, such as pruning, transplanting, felling and the works within the Tree Protection Zone of OVT under the lease. Tree preservation and removal applications should be submitted direct to relevant authority(ies) for approval; and to remind that site coverage of greenery calculations for compliance with BD's Practice Note for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers (PNAP) APP-152 are outside the ambit of Planning Department, and all site coverage of greenery calculations should be submitted separately to Buildings Department (BD)/LandsD for approval;

(e) to note the comments of the Executive Secretary (Antiquities & Monuments), Antiquities and Monuments Office (AMO) that the Applicant is required to implement the Conservation Management Plan (CMP) in all respects to the satisfaction of AMO. The Applicant is therefore reminded to implement the mitigation measures as set out in the accepted CMP before commencing any works for full compliance; to ensure that the proposed works at the Banyan Garden would not adversely affect the Graded Structure; to ensure that the planting would not cause disturbance to the Graded Structure and the roots of the proposed tree species should avoid penetrating into the Graded Structure; and to ensure that the structural integrity and historic fabrics of the Graded Structure would not be adversely affected by the proposed works;

(f) to note the comments of the Chief Engineer, Hong Kong & Islands, Drainage Services Department that to update the hydraulic calculation for drainage impact assessment and sewerage impact assessment with appropriate pipe size in detail design stage;

(g) to note the comments of the Chief Building Surveyor/Hong Kong East & Heritage, Buildings Department (BD) that:

(i) the change in covered area of POS of current scheme and the respective change in accountable GFA under the Buildings Ordinance should be incorporated in GBP submission for approval by the Building Authority; and

(ii) regarding the new balustrade proposed at open lawn area of the Banyan Garden in para. 10(g), under section 37(2) of Building (Construction) Regulation, if the difference between 2 adjacent levels (whether or not within a building) exceeds 600 mm, a protective barrier must be provided at the higher level to restrict or control the movement of persons, objects and vehicles. For your information, there is a metal balustrade at 1300mm height above finish floor level at the relevant area in the approved GBP;

(h) to note the comments of the Director of Food and Environmental Hygiene that:-

(a) if any Food and Environmental Hygiene Department's (FEHD) facility is affected by the development, FEHD's prior consent must be obtained;

(b) if provision of cleansing service for new roads, streets, cycle tracks, footpaths, paved areas etc, is required, FEHD should be separately consulted. Prior consent from FEHD must be obtained;

(c) no environmental nuisance should be generated to the surroundings. Also, arrangement shall be made to dispose any waste so generated from commercial /

trading activities properly at own expenses; and

(d) proper licence / permit issued by FEHD is required if there is any food business / catering service / activities regulated by the Director of Food and Environmental Hygiene under the Public Health and Municipal Services Ordinance (Cap. 132) and other relevant legislation for the public;

(i) to note the comments of the Director of Fire Services that detailed fire services requirements will be formulated upon receipt of a formal submission of short term tenancy or short term wavier, GBP or referral of application via relevant licensing authority. Furthermore, the emergency vehicular access provision for the proposed development should comply with the requirements as stipulated in Section 6, Part D of the Code of Practice for Fire Safety in Buildings 2011;

(j) to note the comments of the Judiciary Administrator, the Judiciary that the covered footbridge design shall be fully enclosed and would not pose any security risks to all court users of the District Court, and that Judiciary and the project team of the District Court site of Architectural Services Department (ArchSD) should be consulted for the final form and details of the footbridge (including technical specifications thereof) during the detail design development stage. Judiciary expects that the materials of the footbridge cover shall be sturdy and resistant to physical attack; and

(k) to note the comments of the Chief Architect 103, Projects Management Branch, ArchSD that the retaining structure for law court OVT should be the retaining wall proposed by the Lot owner as part of its site formation works to facilitate its internal road design, but not as tree protection measures for Law Court OVT. The design of the internal road and retaining structures shall be coordinated with ArchSD and supplemented separately; to ensure the plants would not intrude into District Court site; and the provision of sufficient offset of the transplanted trees location to the edge of the District Court site boundary.