2025年 10月 2 3日
此文件在_____收到，城市規劃委員會只會在收到所有必要的資料及文件後才正式確認收到申請的日期。

This document is received on 2025 -10- 2 3.
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

2502225 26/9 By Hand

Form No. S16-I 表格第 S16-I 號

For Official Use Only 請勿填寫此欄	Application No. 申請編號	A/H17/144
	Date Received 收到日期	2025 -10- 2 3

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)

Blue Water Group Management Limited

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

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

KTA Planning 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）	No. 66 Deep Water Bay Road, Shouson Hill, Hong Kong (Rural Building Lot No.573)
(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 2043.869 sq.m 平方米 ☑ About 約 ☑ Gross floor area 總樓面面積 1532.902 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 Shouson Hill & Repulse Bay Outline Zoning Plan No. S/H17/13
(e)	Land use zone(s) involved 涉及的土地用途地帶	Residential (Group C) 3 ("R(C)3")
(f)	Current use(s) 現時用途	6 nos. of 4-storey houses with carports (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 ....18/09/2025..... (DD/MM/YYYY), this application involves a total of .....1..... "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 1 "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)
1	No. 66 Deep Water Bay Road, Shouson Hill, Hong Kong (Rural Building Lot No.573)	26/09/2025

(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 供第(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 .....sq. m 平方米 to 至 .....sq. m 平方米
☑	Site coverage restriction 上蓋面積限制	From 由 25 % to 至 Not more than 37 %
☐	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 供第(v)類申請

(a) Proposed use(s)/development 擬議用途/發展	Proposed Minor Relaxation of Site Coverage Restriction for Permitted House Development (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	1532.902 sq.m 平方米	☑About 約
Proposed plot ratio 擬議地積比率	0.75	☑About 約
Proposed site coverage 擬議上蓋面積	Not more than 37 %	☐About 約
Proposed no. of blocks 擬議座數	2 houses	
Proposed no. of storeys of each block 每座建築物的擬議層數	3 storeys on top of 1 storey of carport ☐ include 包括.....storeys of basements 層地庫 ☐ exclude 不包括.....storeys of basements 層地庫	
Proposed building height of each block 每座建築物的擬議高度	104.5 mPD 米(主水平基準上)	☑About 約
	18 m 米	☑About 約

☑ Domestic part 住用部分

GFA 總樓面面積 ..... 1532.902 sq. m 平方米 ☑About 約

number of Units 單位數目 ..... 2 houses

average unit size 單位平均面積 ..... 766.451 sq. m 平方米 ☑About 約

estimated number of residents 估計住客數目 9

☐ 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) .....

☐ office 辦公室 ..... 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)
.....
.....
.....

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

☐ Open space 休憩用地 (please specify land area(s) 請註明地面面積)

☐ 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 ..... 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)

[Block number] [座數]	[Floor(s)] [層數]	[Proposed use(s)] [擬議用途]
Houses 1 and 2	B/F	Carpark and E&M Facilities
	G/F	Living Room, Dining Room, Kitchen, Lounge, Store Room, Cloakroom, Wine Cellar, Swimming Pool and Outdoor Garden
	1/F	Bedrooms, Living Room, Gym, Music Entertainment Room, Maid Quarter, Outdoor Garden and Flat Roof
	2/F	Bedrooms, Study Room, Massage Room, Indoor Pool and E&M Facilities
	R/F	Flat Roof and E&M Plant Room

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

Swimming Pool and Outdoor Garden

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)

End of 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)) Access Road off Deep Water Bay Road ☐ There is a proposed access. (please illustrate on plan and specify the width) 有一條擬議車路。（請在圖則顯示，並註明車路的闊度）
	No 否	☐
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 4 Motorcycle Parking Spaces 電單車車位 ____ Light Goods Vehicle Parking Spaces 輕型貨車泊車位 ____ Medium Goods Vehicle Parking Spaces 中型貨車泊車位 ____ Heavy Goods Vehicle Parking Spaces 重型貨車泊車位 ____ Others (Please Specify) 其他 (請列明) ____ _____ ____ _____ ____
	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 ____ Coach Spaces 旅遊巴車位 ____ Light Goods Vehicle Spaces 輕型貨車車位 ____ Medium Goods Vehicle Spaces 中型貨車車位 ____ Heavy Goods Vehicle Spaces 重型貨車車位 ____ Others (Please Specify) 其他 (請列明) ____ _____ ____ _____ ____
	No 否	☐

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 Please refer to the attached Supporting Planning Statement
	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..... sq.m 平方米 ☐About 約 Depth of excavation 挖土深度 .....m 米 ☐About 約
	No 否	☐
Would the development proposal cause any adverse impacts? 擬議發展計劃會否造成不良影響？	On environment 對環境	Yes 會 ☐ No 不會 ☑
	On traffic 對交通	Yes 會 ☐ No 不會 ☑
	On water supply 對供水	Yes 會 ☐ No 不會 ☑
	On drainage 對排水	Yes 會 ☐ No 不會 ☑
	On slopes 對斜坡	Yes 會 ☐ No 不會 ☑
	Affected by slopes 受斜坡影響	Yes 會 ☐ No 不會 ☑
	Landscape Impact 構成景觀影響	Yes 會 ☐ No 不會 ☑
	Tree Felling 砍伐樹木	Yes 會 ☐ No 不會 ☑
	Visual Impact 構成視覺影響	Yes 會 ☐ No 不會 ☑
	Others (Please Specify) 其他 (請列明)	Yes 會 ☐ No 不會 ☑
	_____	
	_____	
	Please state measure(s) to minimise the impact(s). For tree felling, please state the number, diameter at breast height and species of the affected trees (if possible) 請註明盡量減少影響的措施。如涉及砍伐樹木，請說明受影響樹木的數目、及胸高度的樹幹直徑及品種(倘可) Please refer to the attached Supporting Planning Statement	

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。

Please refer to the attached Supporting Planning Statement

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

KITTY WONG ..... DIRECTOR .....

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
Others 其他 .....

on behalf of 代表 KTA Planning Limited .....

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

Date 日期 26/9/2025 ..... (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	No. 66 Deep Water Bay Road, Shouson Hill, Hong Kong (Rural Building Lot No.573)
Site area 地盤面積	2043.869 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 Shouson Hill & Repulse Bay Outline Zoning Plan No. S/H17/13
Zoning 地帶	Residential (Group C) 3 ("R(C)3")
Applied use/ development 申請用途/發展	Proposed Minor Relaxation of Site Coverage Restriction for Permitted House Development

(i) Gross floor area and/or plot ratio 總樓面面積及／或地積比率		sq.m 平方米		Plot Ratio 地積比率	
	Domestic 住用	2043.869	☑ About 約 ☐ Not more than 不多於	0.75	☑About 約 ☐Not more than 不多於
	Non-domestic 非住用		☐ About 約 ☐ Not more than 不多於		☐About 約 ☐Not more than 不多於
(ii) No. of blocks 幢數	Domestic 住用	2 Houses			
	Non-domestic 非住用				
	Composite 綜合用途				

(iii)	Building height/No. of storeys 建築物高度／層數	Domestic 住用	About 18 m 米 ☐ (Not more than 不多於)
			About 104.5 mPD 米(主水平基準上) ☐ (Not more than 不多於)
			3 storeys on top of 1 storey of carport 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)
			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)*
		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		Not more than 37 % ☐ About 約
(v)	No. of units 單位數目		2 Houses
(vi)	Open space 休憩用地	Private 私人	sq.m 平方米 ☐ Not less than 不少於
		Public 公眾	sq.m 平方米 ☐ Not less than 不少於

(vii) No. of parking spaces and loading / unloading spaces 停車位及上落客貨車位數目	Total no. of vehicle parking spaces 停車位總數 Private Car Parking Spaces 私家車車位 Motorcycle Parking Spaces 電單車車位 Light Goods Vehicle Parking Spaces 輕型貨車泊車位 Medium Goods Vehicle Parking Spaces 中型貨車泊車位 Heavy Goods Vehicle Parking Spaces 重型貨車泊車位 Others (Please Specify) 其他 (請列明) _____ _____	4 4
	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 Coach Spaces 旅遊巴車位 Light Goods Vehicle Spaces 輕型貨車車位 Medium Goods Vehicle Spaces 中型貨車位 Heavy Goods Vehicle Spaces 重型貨車車位 Others (Please Specify) 其他 (請列明) _____ _____	

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

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

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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PLANNING LIMITED
規劃顧問有限公司

UNIT K, 16/F, MG TOWER
133 HOI BUN ROAD, KWUN TONG
KOWLOON, HONG KONG
九龍觀塘海濱道133號
萬兆豐中心16樓K室

[redacted]

Our Ref: S3068a/66DWBR/25/005Lg

22 October 2025

By Hand and Email

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

Dear Sir/Madam,

Proposed Minor Relaxation of Site Coverage Restriction
for Permitted House Development
in "Residential (Group C)3" Zone,
No. 66 Deep Water Bay Road, Shouson Hill, Hong Kong
- Section 16 Planning Application -

Reference is made to the captioned S16A Planning Application which was submitted to the Town Planning Board on 26 September 2025.

We would like to clarify that the planning application only involves "Residential (Group C)3" Zone.

Please note that updating to the Supporting Planning Statement has been made including updated Traffic Assessment Report and carparking provisions. To reflect these updates, replacement pages of the Form No. S16-1 and 4 copies of the Supporting Planning Statement with updated basement floor plan and technical assessments are enclosed.

Should you have any queries in relation to the attached, please do not hesitate to contact the undersigned at [redacted] or our Mr Wilson Man at [redacted]

Thank you for your kind attention.

Yours faithfully
For and on behalf of
KTA PLANNING LIMITED

Kitty Wong

Encl. Replacement pages of Form No. S16-1 and Supporting Planning Statement (4 hardcopies)

cc. the Applicant & Team

KW/WM/vy

bsi ISO 9001 Quality Management Systems CERTIFIED
FS 579819

S16 PLANNING APPLICATION
APPROVED SHOUSON HILL AND REPULSE BAY
OUTLINE ZONING PLAN NO. S/H17/13

Proposed Minor Relaxation of Site Coverage Restriction for Permitted House Development in "Residential (Group C) 3" Zone, No. 66 Deep Water Bay Road, Shouson Hill, Hong Kong

SUPPORTING PLANNING STATEMENT

October 2025

Applicant:
Blue Water Group Management Limited

Consultancy Team:
KTA Planning Ltd.
Aurecon Hong Kong Ltd.
CM Wong & Associates Ltd.
Ko Landscape Architects Ltd.
Kwong Wah Consultants Ltd.
LANBASE Surveyors Ltd.
MVA Hong Kong Ltd.

S3068a/PS/V04

PLANNING LIMITED
規劃顧問有限公司

Executive Summary

The Applicant, Blue Water Group Management Limited is seeking approval from the Town Planning Board ("TPB") under section 16 of the Town Planning Ordinance for the minor relaxation of site coverage restriction for the permitted house development at No. 66 Deep Water Bay Road, Shouson Hill, Hong Kong ("the Site"). The Site falls within an area zoned "Residential (Group C) 3" ("R(C)3") on the Approved Shouson Hill and Repulse Bay Outline Zoning Plan No. S/H17/13 ("Approved OZP").

The Applicant seeks to redevelop the Site into two 3-storey houses on top of 1 storey of carports. Minor relaxation of site coverage restriction from 25% to not more than 37% is sought to allow more design flexibility and to bring about enhancement to the overall aesthetic coherence of the area through adoption of innovative building design.

The proposed minor relaxation of site coverage restriction is justified on the following grounds:

- The Proposal will be in-line with the general guidelines established by the TPB in relation to the relaxation of domestic site coverage control.
- The Proposed Development would respect the existing character of the Area.
- The Proposed Development has incorporated interesting building design with ample greenery provision at multi-levels to soften the form of the buildings and enhance the sense of visual integration. Compared with the existing rigid and bulky building form, the Proposed Development could bring about visual enhancement to the surrounding.
- The Proposed Development would Continue to Meet the prevailing planning Intention of the "Residential (Group C)" Zone.
- The approval of this planning application is consistent with TPB's previous decisions.
- Various technical assessments have been carried out and the findings concluded that the Proposal is technically feasible without posing negative impact onto the surrounding environment.

In light of justifications given throughout the Supporting Planning Statement, we sincerely request the TPB to give favourable consideration to this Planning Application.

申請摘要
（內文如有差異，應以英文版本為準）

申請人Blue Water Group Management Limited 擬就《城市規劃條例》第16條向城市規劃委員會(下稱「城規會」) 申請略為放寬在香港壽臣山深水灣道66號的上蓋面積作經常准許之「屋宇」用途。申請地點主要位於壽臣山及淺水灣分區計劃核准大綱圖編號S/H17/13（下稱「核准圖」）的「住宅(丙類)」地帶內。

申請人計劃在申請地點興建兩棟三層高的屋宇，以及一層開敞式停車間。申請人希望將申請地點的上蓋面積限制由25%略為放寬至不多於37%，以容許更大的設計彈性並透過具創意的設計優化區內環境。

擬議發展的主要理據如下：

- 擬議發展將符合城市規劃委員會就放寬住宅上蓋面積限制所制定的一般性指引。
- 擬議發展項目將尊重並保持該區的現有特色。
- 與現時的建築物相比，擬議發展加入了具創意的建築設計，並採用多層式綠化，以柔化建築形態並與周邊環境融合。
- 擬議發展將繼續符合「住宅(丙類)」 地帶的規劃意向。
- 批准此規劃申請與城規會過往的決定一致。
- 多個技術評估報告均證明擬議發展將不會對地區造成不良影響。

基於以上各項規劃理據，申請人希望是次的規劃申請能獲城規會支持。

Executive Summary
申請摘要

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S16 Planning Application
Approved Shouson Hill and Repulse Bay OZP No. S/H17/13

Proposed Minor Relaxation of Site Coverage Restriction for Permitted House Development in "Residential (Group C) 3" Zone No. 66 Deep Water Bay Road, Shouson Hill, Hong Kong

Supporting Planning Statement

1 INTRODUCTION

1.1 Purpose

1.1.1 This Supporting Planning Statement is prepared and submitted on behalf of Blue Water Group Management Limited ("the Applicant") to seek approval from the Town Planning Board ("TPB") under Section 16 of the Town Planning Ordinance for the proposed minor relaxation of site coverage restriction from 25% to not more than 37% for permitted house development at No.66 Deep Water Bay Road, Shouson Hill, Hong Kong ("the Application Site" or "the Site"). The Site falls within area zoned "Residential (Group C) 3" ("R(C)3") on the Approved Shouson Hill and Repulse Bay Outline Zoning Plan ("Approved OZP") No. S/H17/13. This Planning Statement is to provide the TPB with the necessary information to facilitate consideration of this Planning Application.

1.2 Report Structure

1.2.1 Following this Introductory Section, the site and planning context will be briefly set out in Section 2. Schematic layout of the Proposed Development will be described in Section 3. The planning merits and justifications of the Proposed Development are included in Section 4. Section 5 concludes and summarizes this Supporting Planning Statement.

2 SITE AND PLANNING CONTEXT

2.1 Site Location and Existing Condition

2.1.1 The Site is located at No. 66 Deep Water Bay Road, Shouson Hill, Hong Kong, overlooking Deep Water Bay to its south. The Site is currently occupied by 6 nos. of 4-storey houses with carports completed in 1990. The existing buildings and main entrance are situated at level of about 91mPD (**Photo 2.1** refers), while the swimming pool and outdoor garden are located on the lower platform at about 85mPD (**Photo 2.2** refers). The total area of the Site is about 2,043.869 sq.m. Vehicular access to the Site is via a local access (right-of-way) leading to Deep Water Bay Road.

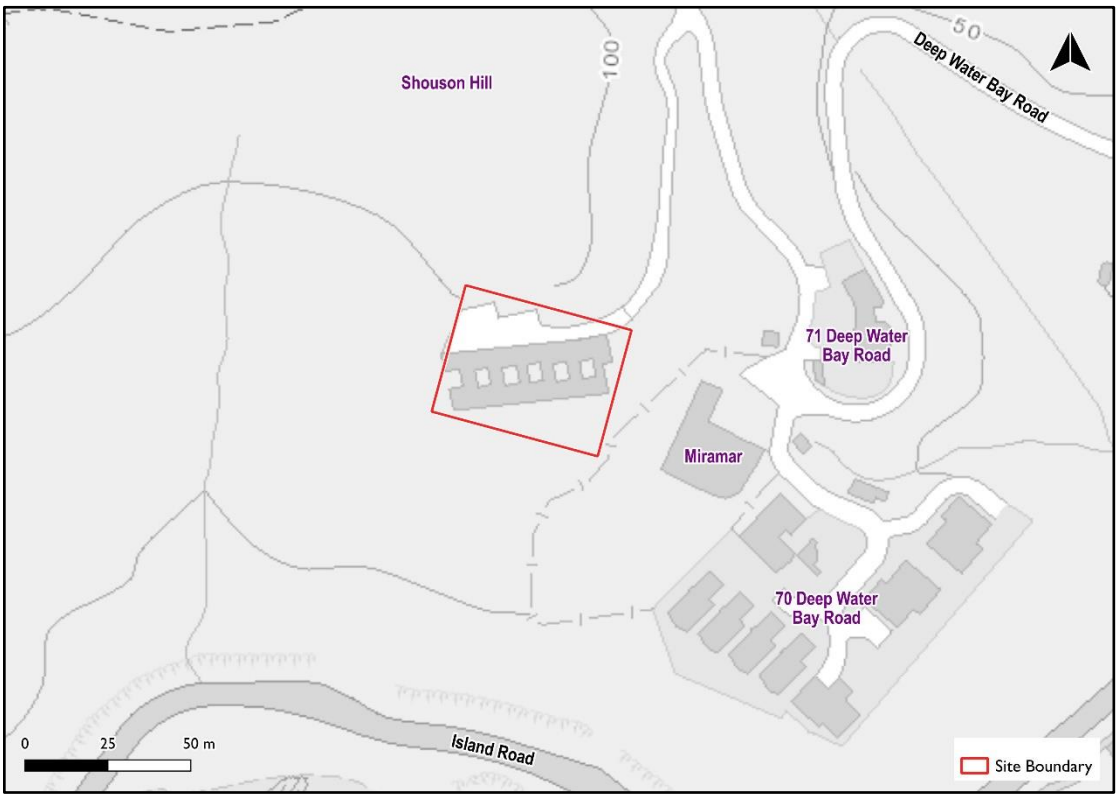


Figure 2.1 Site Location Plan



Photo 2.1 Existing Site Condition as viewed from the Main Entrance



Photo 2.2 Existing Site Condition as viewed from the Lower Platform

2.2 Development History of the Site

2.2.1 A house was erected within the Site before 1980. It was later demolished around 1984 to make way for the development of the existing 6 nos. of 4-storey houses with carports completed in 1990.

2.3 Land Status

2.3.1 The Site is registered as Rural Building Lot (RBL) No. 573 (**Figure 2.2** refers). According to the prevailing lease executed on 4 April 1968 and varied by a Deed of Variation on 9 May 1988, the existing lease governing the lot is restricted to residential purpose. The Site is also restricted to a maximum of 3 storeys (excluding single storey carport) with a maximum GFA of 1,532.89m^2 and maximum site coverage of 25%.

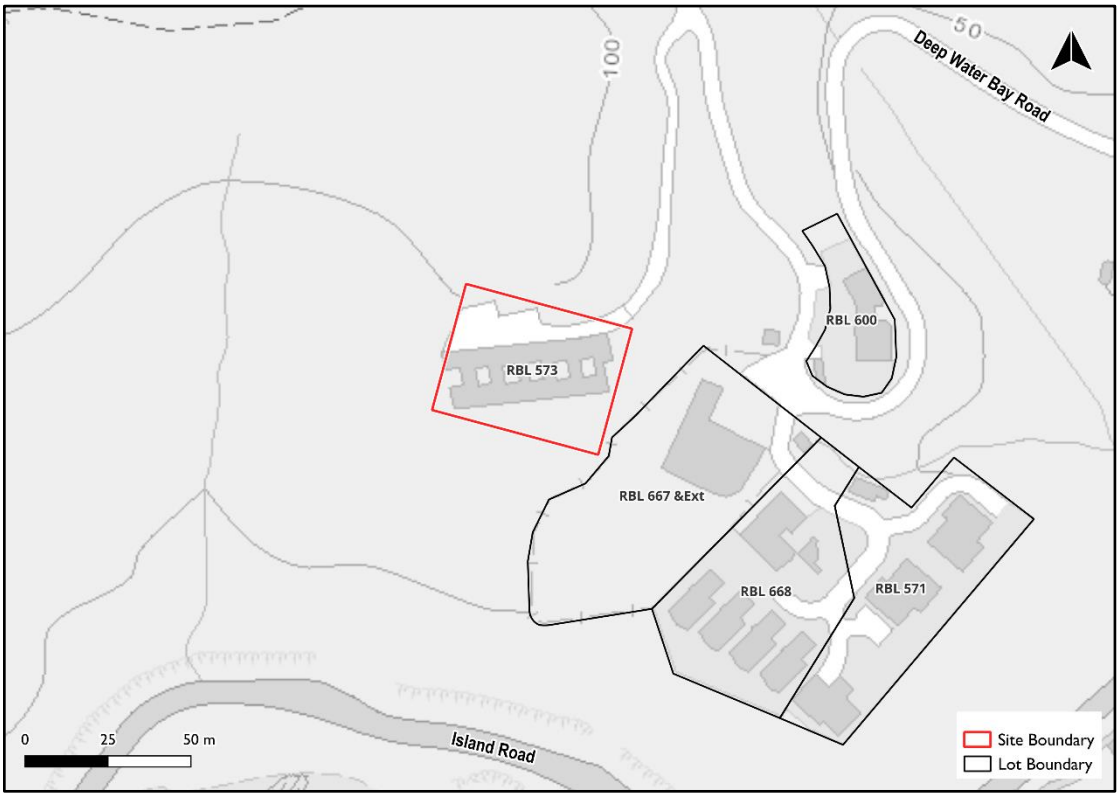


Figure 2.2 Lot Index Plan

2.4 Planning Context

Statutory Planning Context

2.4.1 The Site is mainly zoned "Residential (Group C) 3" (i.e. about 1971.615 sq.m., 96.5%) on the Approved Shouson Hill & Repulse Bay Outline Zoning Plan ("Approved OZP") No. S/H17/13, while a minor portion of the Site along the southern and eastern boundaries is zoned "Green Belt" (i.e. about 72.254 sq.m., 3.5%) due to discrepancies between the lot and zoning boundaries on the Approved OZP. (**Figures 2.3 and 2.4** refer).

2.4.2 According to the Statutory Notes of the Approved OZP, the "R(C)" zone is "*intended primarily for low-rise, low-density residential developments where commercial uses serving the residential neighbourhood may be permitted on application to the Town Planning Board*". 'House' is column 1 use which is always permitted.

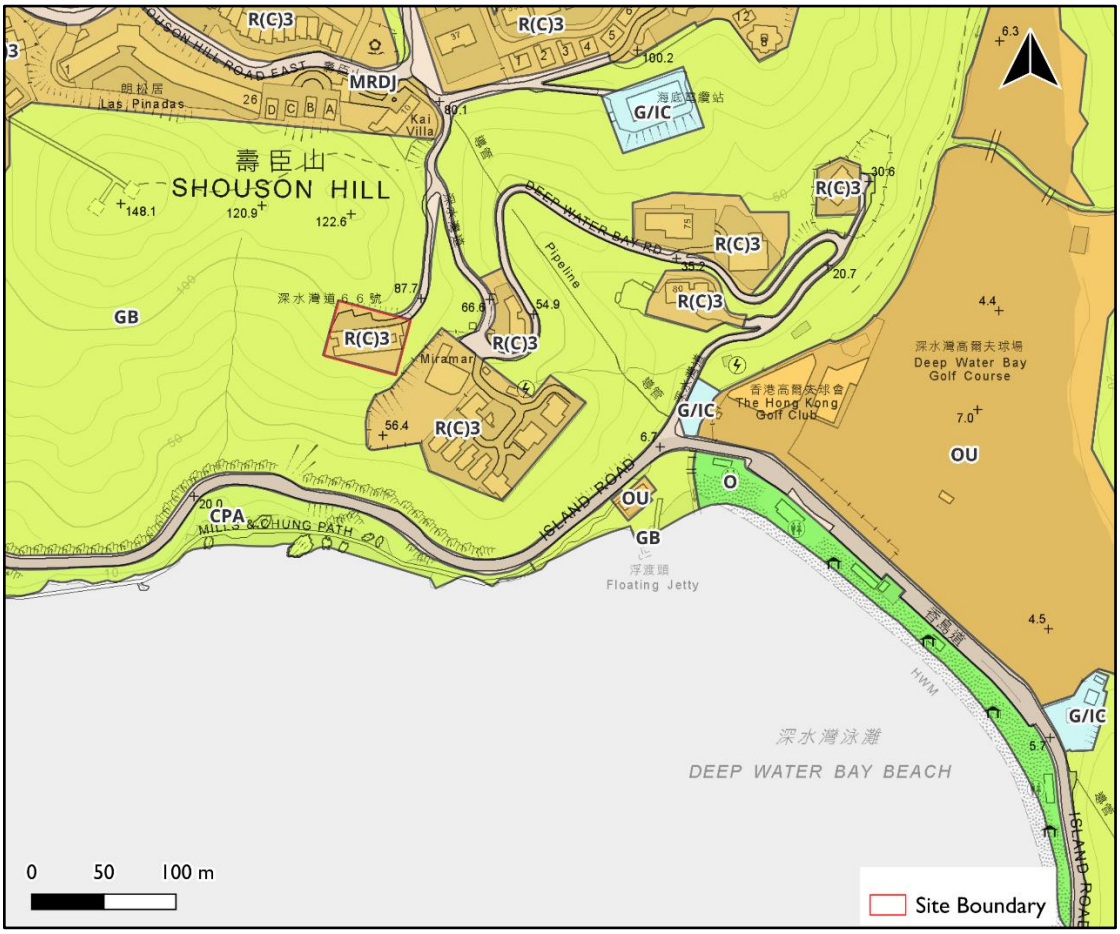


Figure 2.3 Zoning Context Plan (Extracted from Approved Shouson Hill & Repulse Bay OZP No. S/H17/13)

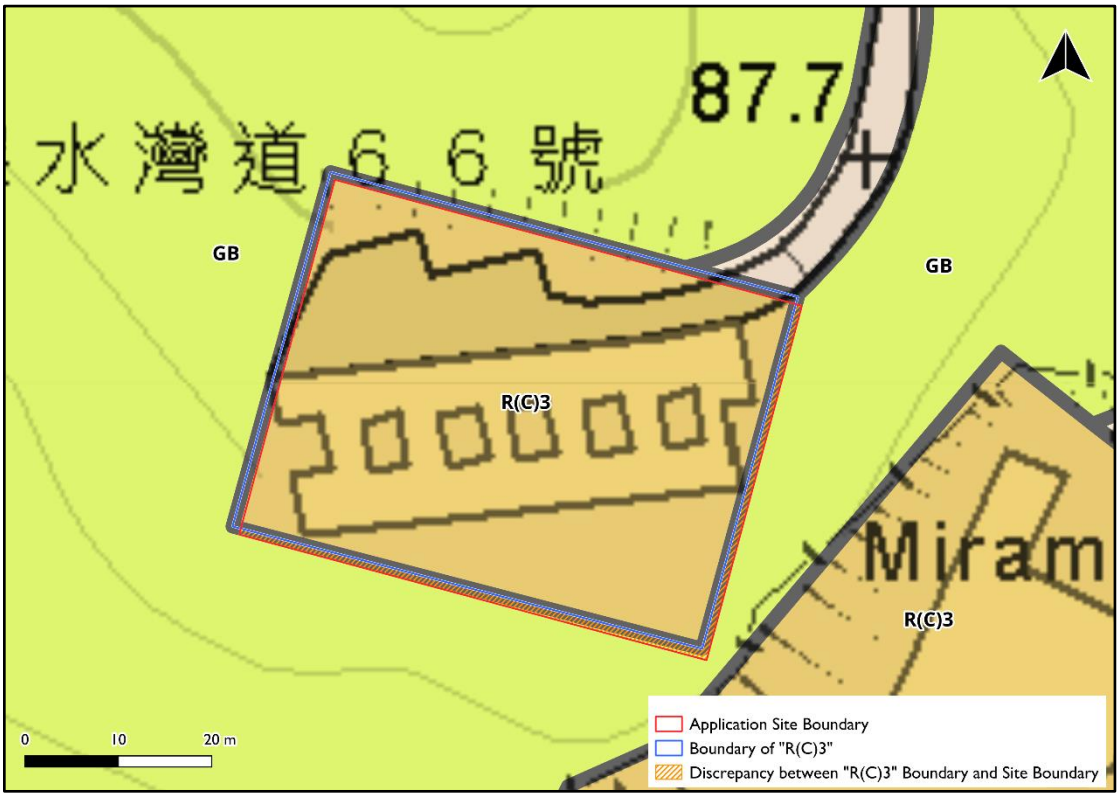


Figure 2.4 Discrepancy of Site Boundary and "R(C)3" Zoning Boundary (Extracted from Approved Shouson Hill & Repulse Bay OZP No. S/H17/13)

2.4.3 Under the "Remarks" section of the Statutory Notes attached to the Approved OZP, it is stated that development falling within the "R(C)3" sub-area of the "R(C)" zone is subjected to a maximum 3 storeys in addition to 1 storey of carports or the height of existing building, whichever is the greater. The "R(C)" zone also stipulates the maximum plot ratio and site coverage restrictions in accordance with the number of storeys used for domestic purposes as follows.

Table 2.1 Maximum Plot Ratio and Site Coverage of "R(C)" Zone

Height- No. of Storeys Used for Domestic Purposes	Maximum Plot Ratio	Maximum Site Coverage (%)
3	0.75	25

2.4.4 It is also stated that "*based on the individual merits of a development or redevelopment proposal, minor relaxation of the plot ratio, site coverage and building height restrictions may be considered by the Town Planning Board ("TPB") on application under section 16 of the Town Planning Ordinance*".

Non-Statutory Planning Context

Explanatory Statement of the Approved OZP

2.4.5 As stated in the Explanatory Statement ("ES") of the Approved OZP, the building height, site coverage and plot ratio restrictions under the "R(C)" zone are closely based on those imposed administratively by the Government in Special Control Areas and are intended:

(a) to preserve the existing amenities and characters of the Area;
(b) to preserve significant public views;
(c) to avoid overburdening the access road system; and
(d) to avoid excessive development.

2.4.6 The purpose of the provision for minor relaxation of the development restrictions is to allow the TPB to consider proposals for building layout and design which, while not strictly complying with the stated restrictions, meet the planning objectives. It is also hoped to encourage imaginative designs which are adapted to the characteristics of particular sites, and overcome the need for stilting or allow for the conservation of environmentally important natural features or mature vegetation. Each proposal will be considered strictly on its own merits.

Special Control Area (SCA/H16/2)

2.4.7 The Site falls within a Special Control Area ("SCA") (No. SCA/H16/2) which has been established since 1980 to provide the necessary administrative planning control (through lease conditions as well as OZPs) over the developments in the area. The purposes of SCA are to avoid overburdening the existing road network and to restrict intensive development having regarding to the geotechnical, topographical and infrastructural constrains of the area. It is also designated to preserve the well-established residential character and amenity value of the area, which is mainly an attractive and prestigious garden estate comprising low-rise house developments. Most of the residential developments within the SCA are located along hillsides intermixed with the natural landscape features, amidst a pleasant and tranquil living environment. Such a character of the area is well established and there has not been any drastic change in the past years.

TPB's General Guidelines in Relation to the Relaxation of Domestic Site Coverage Control

2.4.8 According to Chapter 2 of the Hong Kong Planning Standards and Guidelines ("HKPSG"), the Site is located in Residential Zone 3 ("R3"). In 2000, the TPB agreed as a general guideline to adopt the relaxation of the maximum domestic site coverage to 66% and 50% respectively for sites falling within Residential Zone 2 and Residential Zone 3 in the Metro and New Town areas and to 40% for sites in the rural areas and those falling

within Residential Zone 4 Area in the New Towns[1]. The main purpose is to provide design flexibility to cater for site constraint and innovative design. As the control on plot ratio and building height would remain unchanged, a relaxation of site coverage restriction would not increase the development intensity of the Site.

2.5 Surrounding Land Use Context

2.5.1 The Site and its surrounding area are characterized by generally hilly with steep ravines covered by dense vegetation. Majority of the Site falling within an area zoned "R(C)3" is located in a low-rise residential neighbourhood embraced by a vast vegetated area in Shouson Hill (**Figure 2.5** refers). Details of the surrounding land uses are as follows:

- To the northwest of the Site is Shouson Hill (at level of about 148.1mPD) zoned "Green Belt", and to the further north is Shouson Hill residential area zoned "R(C)3";

- To the northeast is a local access connected to Deep Water Bay Road;

- To the east and southeast are 4 low-density residential developments, namely Miramar, No.70, No.71 and No.72 Deep Water Bay Road, which are also zoned as "R(C)3"; and

- To the immediate south is a vegetated slope leading down to Island Road. Further to the south and southeast is Deep Water Bay area, where various recreational facilities including The Hong Kong Golf Club, Deep Water Bay Beach and Barbecue Area are located at the east of Deep Water Bay.

[1] MPC Paper No. A/H17/141A prepared by Planning Department for consideration by the TPB on 28 January 2022



Figure 2.5 Surrounding Land Use Context

2.6 Accessibility

2.6.1 Vehicular access to the Site is via the Right-of-Way located off Deep Water Bay Road. The Deep Water Bay area is accessible by taxi and mini-bus that is routed along Deep Water Bay Road.

3 THE PROPOSED DEVELOPMENT SCHEME

3.1 The Indicative Development Scheme

3.1.1 Schematic drawings for the Proposed House Development are presented in **Appendix 1** of this Supporting Planning Statement. The Proposed Development includes two 3-storey houses on top of 1-storey of basement carports. Based on a plot ratio of about 0.75 and a site area of about 2,043.869 sq.m, a total gross floor area (GFA) of about 1,532.902 sq.m. To overcome the site coverage restriction under the "R(C)3" zone which dictates 25% for a 3-storey domestic building, a minor relaxation of site coverage restriction from 25% to not more than 37% is sought. It is anticipated that the Proposed Development would be completed by 2029. **Table 3.1** summarizes the key development data of the Proposed Development.

Table 3.1 Key Development Parameters

Key Parameters	
Site Area	About 2,043.869m^2
Total Plot Ratio	About 0.75
Total GFA	About 1,532.902m^2
No. of House	2
No. of Storey	3 storeys on top of 1 storey of carports
Building Height (Main Roof)	About 104.5mPD
Site Coverage	Not more than 37%

3.1.2 The predominant use of the carport level would be for car parking purpose with not less than 50% of the carport level areas dedicated for car parking use (including carpark associated uses such as driveways and ramps). The relevant calculation and layout is included at **Appendix 1**.

3.2 Key Design Considerations

3.2.1 In formulating the Indicative Development Scheme, the schematic design has taken into account the various site constraints as well as design considerations in order to ensure that the Scheme is designed to create a high-quality development in harmony with surrounding environment. The Proposed Development adopts a number of sensitive design measures to respond positively to the surrounding low-density residential neighbourhood as follows:

Responding to the Existing Topography

3.2.2 The architectural design of the Proposed Development is intricately aligned with the Site's natural topography and slopes. The building form and height have been calibrated to harmonize with the existing southward sloping of

Shouson Hill. This not only ensures that the Proposed Development is visually integrated with its surroundings but also enhances the overall aesthetic coherence of the neighborhood. A stepping height profile descending from Shouson Hill towards Deep Water Bay will be maintained upon redevelopment (**Figures 3.1a** and **3.1b** refer). The design respects the undulations of the terrain, allowing the structure to nestle within the landscape while maintaining compatibility with adjacent developments.



Figure 3.1a Existing Building in the Site and Topographical and Physical Setting in the Vicinity



Figure 3.1b Responsive Development Profile with the Existing Topographical and Physical Setting in the Vicinity

Adoption of Sensible Building Height

3.2.3 The Proposed Development is designed with a building height of about +104.5mPD, which is similar to that of the existing buildings (i.e. about +103.055mPD) (**Figures 3.1a and 3.1b** refer). This careful consideration of building height promotes visual continuity and spatial harmony within the area. By responding to the topographical features, the design achieves a balance that respects both the skyline and the human scale, ensuring compatibility with surrounding developments (**Figure 3.2** refers). The sensible building height profile would align with the ridgeline of Shouson Hill behind and blend in more harmoniously with the surrounding neighbourhood. This approach mitigates any potential disruption to the ambient character of the locality while reinforcing a sense of place.



Figure 3.2 Sensible Building Height Responding to the Existing Topographical Features of Shouson Hill

Innovative Building Design

3.2.4 In contrast with the traditional rectangular and rigid building form, the Proposed Development features a terraced architectural style. This innovative design includes outdoor terraces at multiple levels, i.e. ground level, 1/F and 2/F, which fosters a seamless indoor-outdoor connection. Particularly along the facade facing Deep Water Bay, these terraces serve as inviting spaces for social interaction and relaxation. This thoughtful design would create visual relief and enhance the architectural interest of the structure. It will not only enrich the user experience but also contributes positively to the overall visual landscape (**Figure 3.3** refers).

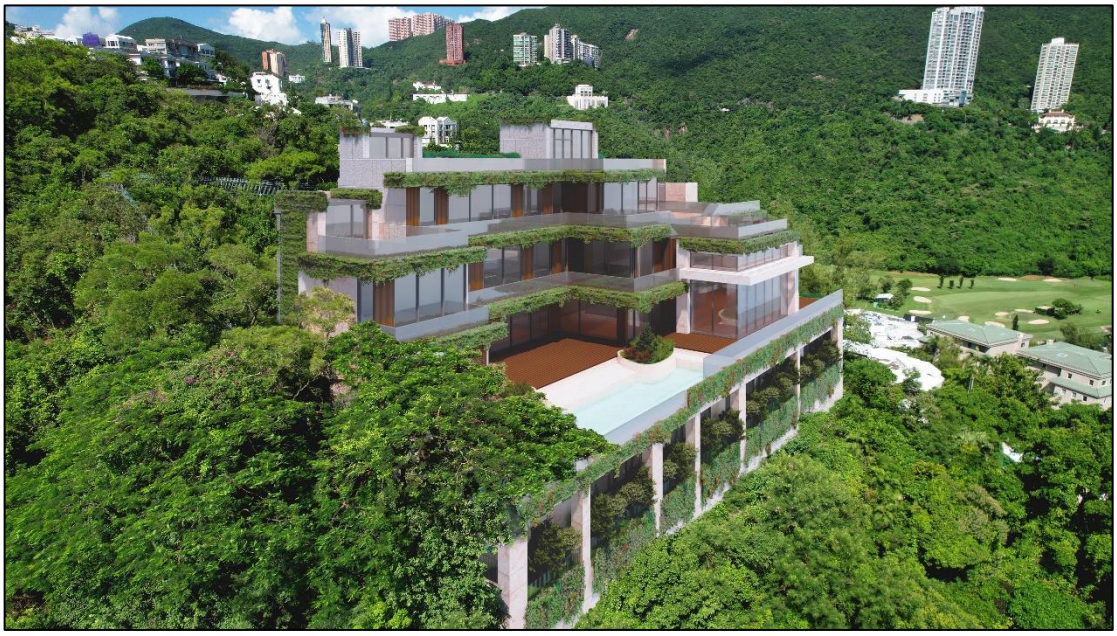


Figure 3.3 Terraced Design adopted at the Proposed Development

Adaptive Building Footprint Design

3.2.5 Terraced designed resulting from building setbacks of various facades has been incorporated in the Proposed Development. The larger footprint at G/F has allowed a gradual descending of footprint at 1/F and 2/F with site coverage of about 29% and 15% respectively (**Figures 3.4a** to **3.4c** refer). The increased design flexibility enabled by the proposed minor relaxation of site coverage restriction allows varied building profiles and incorporation of terraces for greenery opportunities while reducing the building bulk when viewed from various key sensitive viewpoints.

Optimised Floor-to-Floor Height

3.2.6 The Proposed Development incorporates optimized floor-to-floor height to enhance spatial quality and functionality. With a height of approximately 4.5m per floor, the design not only ensures adequate headroom and flexibility for residential use, but also maximise natural sunlight penetration deeper into the interior spaces. Such design could enhance the overall comfort and foster a healthier, safer, and more energy-efficient living environment.

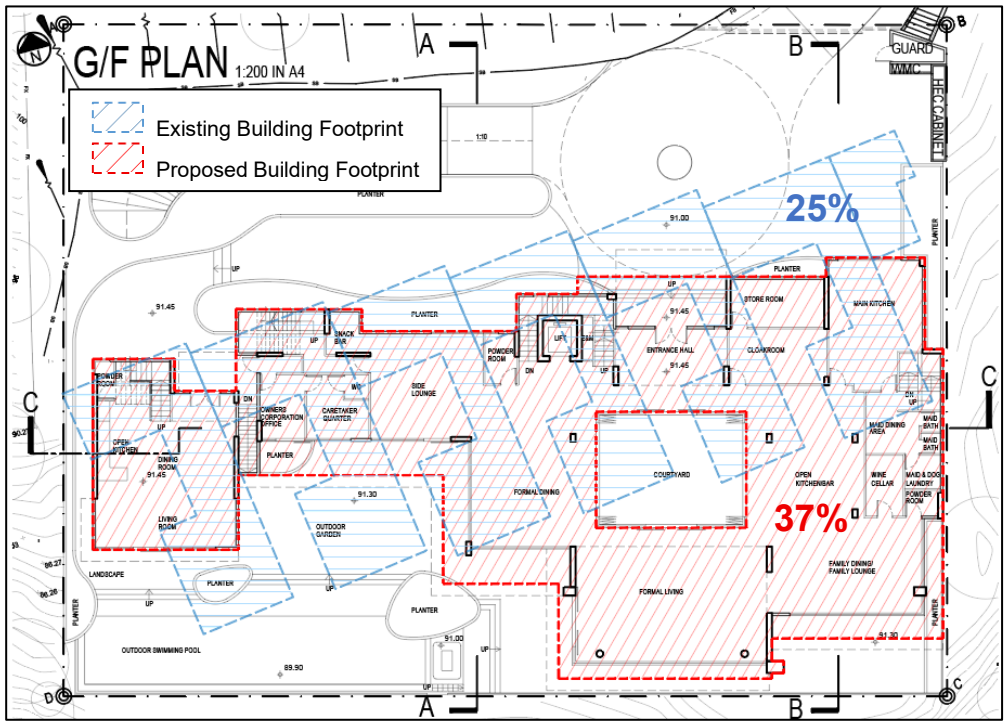


Figure 3.4a Site Coverage Comparison on G/F

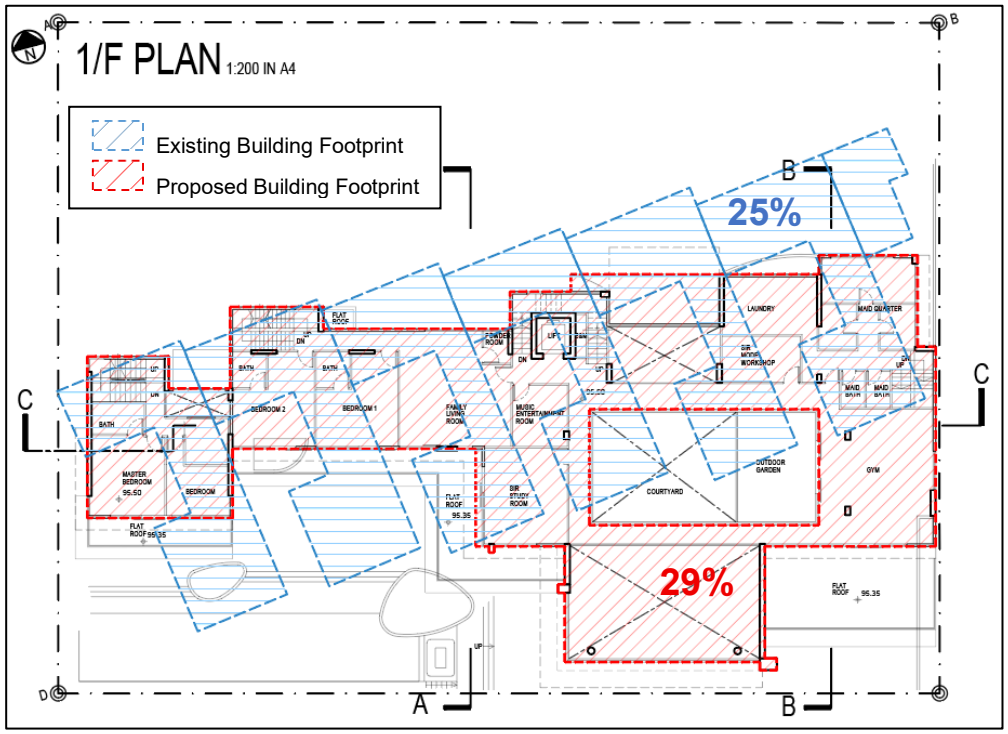


Figure 3.4b Site Coverage Comparison on 1/F

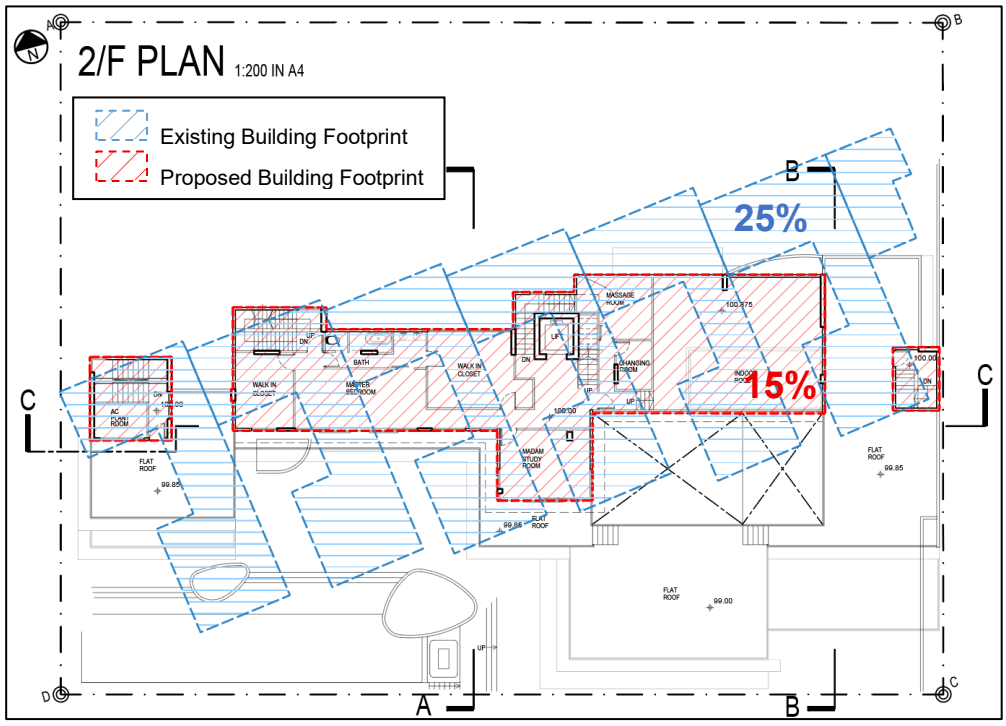


Figure 3.4c Site Coverage Comparison on 2/F

Greenery Coverage

3.2.7 Not less than 20% greenery coverage of site area will be provided at the Proposed Development, including external landscape area, courtyard and greenery buffer along the southeastern and southwestern boundaries of the Site. By integrating ample landscape treatment, the Proposed Development enhances its aesthetic appeal while promoting sense of visual integration with the surrounding vegetated environment.

Special Landscape Treatment

3.2.8 To minimize the visual bulk of the Proposed Development as far as practicable, a special landscape treatment is devised in particular for the façade of the underground carports. The basement level is purposely setback for the provision of approximately 2m wide planting strip. This design effectively breaks the massing of the building and reduces the visual impact of the basement carport. Additionally, the extensive landscape treatment including edge plantings and vertical green walls would function as a green buffer that softens the transition between the built environment and natural surroundings. This landscaping design not only soften the concrete edges but also contributes to the overall environmental quality, promoting a more pleasant and visually appealing atmosphere (**Figure 3.5** refers).

3.2.9 Edge planting and vertical greening are integrated to enhance the transition between the Proposed Development and its surroundings. Planters with native shrubs and trailing plants are incorporated along balcony edges on G/F, 1/F, 2/F, and R/F, while vertical greening on the southeastern facade minimizes perceived building bulk and reinforces Shouson Hill's rural character. This multi-level greening approach mitigates potential visual impacts, ensuring a seamless integration with adjacent vegetated areas and the existing building structure.

Neigbourhood Compatibility

3.2.10 The existing low-density residential neighborhood and overall amenities of Shouson Hill will be maintained and enhanced in the context of this Planning Application. The use of timber materials on the outdoor terraces and extensive greenery would blend the Proposed Development with the existing natural environment. Taking into account the surrounding low-rise house developments along the Deep Water Bay Road, it is considered highly compatible with both the tranquil residential area and the natural setting.



Figure 3.5 Special Landscape Treatment at Basement Façade

3.3 Landscape Design Considerations

3.3.1 The proposed landscaped areas are designed to create a green and inviting environment for recreational and passive needs of future users while seamlessly integrating with the surrounding rural residential character. The landscape provisions for the Proposed Development are mainly on the B/F, G/F, 1/F and 2/F. The multi-level greenery design features a variety of

planters with tall shrubs and trailing plants, including a 2m wide planting strip along the southwestern building façade on basement floor, which serves as a landscape buffer and enhances visual appeal from the south. Shaded trees and shrubs will be strategically placed at the entrance and along the vehicular ramp, fostering a welcoming atmosphere. Additionally, trailing plants along the southeastern edge on G/F and 2/F as well as the vertical green wall will soften the form of the building and enhance visual integration with the surroundings environment. An open-air courtyard garden has also been proposed in the center of the Proposed Development to provide an outdoor area for relaxation and recreation, while allowing natural light to penetrate interior space. Overall, the landscape design not only can promote a human-nature harmonious environment, but also bring visual enhancement from both the views along Deep Water Bay Road and neighboring properties.

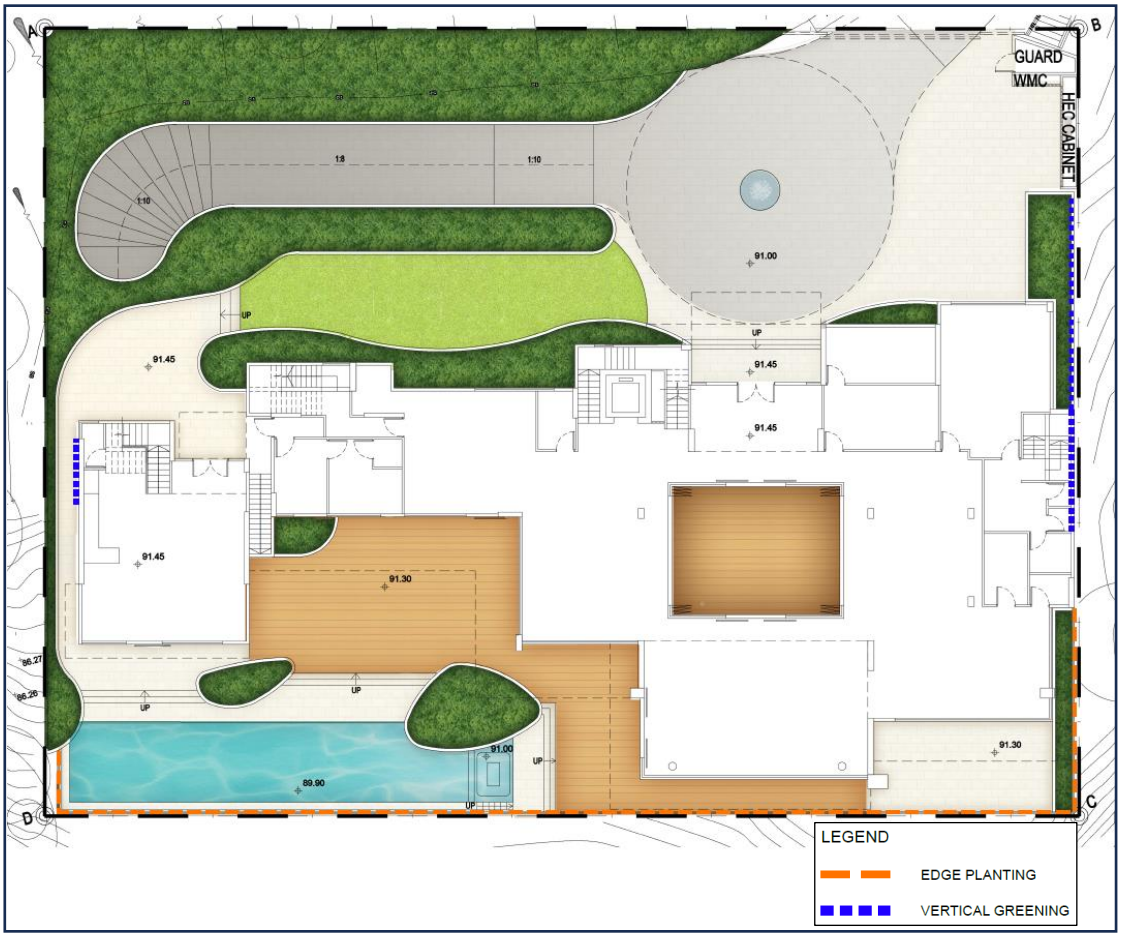


Figure 3.6 Landscape Master Plan (Overall)

3.4 Access Arrangement and Transportation Provisions

3.4.1 Vehicular access to the Proposed Development will be provided via the ingress/egress point off Deep Water Bay Road. It is proposed to have a total of 4 nos. of private car parking spaces (**Table 3.2** refers).

Table 3.2 Internal Transport Facilities Provision

Types of Facilities	Proposed Provision
Car Parking Spaces	
• Residential	4 nos.
Total	**4 nos.**

4 PLANNING MERITS AND JUSTIFICATIONS

4.1 In-line with the General Guideline Established by the Town Planning Board in relation to Relaxation of Domestic Site Coverage Control

4.1.1 As mentioned in **Section 2.4.8**, the TPB has agreed to adopt the relaxation of the maximum domestic site coverage to 50% for sites falling within Residential Zone 3 Areas in the Metro area upon application to the TPB under section 16 of the Town Planning Ordinance. The purpose for relaxation is to allow "design flexibility to cater for site constraint and innovative design". This Planning Application for minor relaxation of site coverage restriction from 25% to not more than 37% is way below the maximum permissible site coverage of 50%. The relaxation of site coverage restriction has allowed considerable design flexibility for the incorporation of a terraced building design with variations in building height. By responding to the existing topographical features, the Proposed Development would continue to respect the skyline while in keeping with the rural residential character of the surrounding setting. The Proposed Development with setback of various facades would help to create visual relief and contribute positively to the overall visual landscape. It will be in-line with the general guidelines established by the TPB in relation to the relaxation of domestic site coverage control.

4.2 The Proposed Development Would Respect the Existing Character of the Area

4.2.1 The Site is adjacent to various low-rise and low-density residential developments in the Shouson Hill residential area. The Proposed Development is permitted as of right under the "R(C)3" zone and is in-line with the planning intention for low-rise, low density residential developments". The Proposed Development with plot ratio of about 0.75 and building height of about 104.5mPD is similar with the existing residential buildings which is considered compatible with the adjacent low-rise residential developments within the various "R(C)" zones in the vicinity. By responding positively to the existing setting which is naturally vegetated with low-rise residential neighbourhood, the Applicant has carefully considered the building orientation, form and facade setback to achieve an interesting building design. Not less than 20% of greenery coverage will be incorporated in the Proposed Development including landscape area, courtyard, outdoor terraces and greenery along the southeastern and southwestern boundary of the Site. A special landscape treatment is proposed at the basement carport façade with approximately 2m wide setback for the provision of landscape planting to effectively break down the visual mass of the structure and soften the transition between the built environment and natural landscape in the surrounding context. This building and landscaping design would contribute to the overall

environmental quality and respect the existing character of the area.

4.3 The Proposed Development Will Bring About Enhancement to the Overall Aesthetic Coherence of the Area

4.3.1 The Visual Impact Assessment ("VIA") in **Appendix 4** analysed the visual appraisal of the Proposed Development with minor relaxation of site coverage in terms of visual composition, visual obstruction, effect on public views and effect on visual resources against existing condition. The photomontages revealed that the Proposed Development would result in negligible to enhanced visual change from the chosen public viewpoints.

4.3.2 Compared with the existing rigid and bulky building blocks, the Proposed Development has adopted an interesting built form, creative articulation of building edges, variations in building height and façade setback. The larger footprint at G/F has allowed a gradual descending of footprint at 1/F and 2/F with site coverage of about 29% and 15% respectively. Varying levels of flat roof and stepped built form have been incorporated in the building design. The form and mass of the proposed building would create a more synergistic and visually permeable layout amidst the backdrop of Shouson Hill which would not affect the visual openness towards the visual resources. Ample greenery at multiple levels have been proposed to soften the building bulk and enhance the sense of visual integration, in particular the building edges fronting onto low-rise residential cluster at its southeast. With the introduction of special landscape treatment at the basement façade, the perceived building bulk could also be reduced. It is believed that the interesting and sensitive architectural design will bring enhancement to the overall aesthetic coherence of the area.

4.4 Continue to Meet the Prevailing Planning Intention of the "Residential (Group C)" Zone

4.4.1 The Proposed Development is in line with the statutory planning intention in respect of the "R(C)3" zone for low-rise, low-density residential development. "House" use is always permitted under "R(C)3" zoning. The proposed plot ratio of 0.75 and 3 domestic storeys with 1 storey of carports are conforming to the development parameters of the "R(C)3" zone.

4.4.2 It is stated in the "Remarks" section of the Statutory Notes that "*based on the individual merits of a development or redevelopment proposal, minor relaxation of the plot ratio, site coverage and building height restrictions may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance*". The proposed minor relaxation of site coverage restriction will enable the Proposed Development to accommodate the permissible PR in a larger floorplate and allow more design flexibility in the domestic block to soften the building bulk and to enable a development

that can better fit in with the rural residential setting and the local character.

4.4.3 Furthermore, the proposed minor relaxation of site coverage restriction would not jeopardize the intentions for imposing various development restrictions on the "R(C)" zone, including (i) to preserve the existing amenities and characters of the Area; (ii) to preserve significant public views; (iii) to avoid overburdening the access road system; and (iv) to avoid excessive development.

4.4.4 The Proposed Development is designed to harmonize with the established character and amenities of the area. The architecture, building orientation, setbacks, and landscaping treatment would ensure that the redevelopment could seamlessly integrate into the existing residential neighborhood. While the building height of the Proposed Development would be maintained as 3-storey, the low-rise nature of the area could be preserved and no significant public views are affected as demonstrated in the VIA (**Appendix 4** refers).

4.5 The Approval of the Planning Application is Consistent with Town Planning Board's Decision on Previous Decision

4.5.1 There are a number of approved Planning Applications for minor relaxation of site coverage restriction in the "R(C)" zone within the same OZP. **Table 4.1** set out briefly the details of similar Planning Applications approved by the TPB in the previous years.

Table 4.1 Similar Planning Applications Approved by the TPB in previous years

	Planning Application No.	Address	Zoning	Applied Uses	Date of Approval
1	A/H17/99	40 Island Road	"R(C)2" and "OU(P)"	Minor relaxation of site coverage restriction from 25% to not exceeding 27%	4/4/2003
2	A/H17/101	11 and 12 Headland Road, South Bay	"R(C)3"	Minor relaxation of site coverage restriction from 25% to not exceeding 35%	25/6/2004
3	A/H17/102	77 Deep Water Bay Road (within Special Control Area)	"R(C)3"	Minor relaxation of site coverage restriction from 25% to not exceeding 34%	15/8/2003
4	A/H17/107	14 Headland Road	"R(C)3"	Minor relaxation of site coverage restriction from 25% to not exceeding 39%	26/3/2004
5	A/H17/108	20 Repulse Bay Road	"R(C)3"	Minor relaxation of site coverage restriction from 25% to not exceeding 48%	30/4/2004

	Planning Application No.	Address	Zoning	Applied Uses	Date of Approval
6	A/H17/115	14 Headland Road	"R(C)3"	Minor relaxation of site coverage restriction from 25% to not exceeding 35%	28/4/2006
7	A/H17/116	11 and 12 Headland Road, South Bay	"R(C)3"	Minor relaxation of site coverage restriction from 25% to not exceeding 35%	7/7/2006
8	A/H17/117	38 Repulse Bay Road	"R(C)3"	Minor relaxation of site coverage restriction from 25% to not exceeding 40%	14/9/2007
9	A/H17/125	15 South Bay Road, Repulse Bay	"R(C)5"	Minor relaxation of site coverage restriction from 25% to 29% for permitted house development	5/8/2011
10	A/H17/126	15 South Bay Road, Repulse Bay	"R(C)5"	Minor relaxation of site coverage restriction from 25% to 29% for permitted house development	18/11/2011
11	A/H17/130	36 Repulse Bay Road	"R(C)3"	Minor relaxation of site coverage restriction from 25% to 29.83% for permitted 3-storey house redevelopment	16/8/2013
12	A/H17/132	7 Headland Road, South Bay	"R(C)3"	Minor relaxation of site coverage restriction from 25% to 27% for permitted flat development	25/4/2014
13	A/H17/136	2 Headland Road, South Bay	"R(C)3"	Minor relaxation of site coverage restriction from 25% to 30% for permitted flat development	3/2/2017
14	A/H17/140	39 South Bay Road, South Bay	"R(C)5"	Minor relaxation of site coverage restriction from 22.5% to 28% for permitted 'Flat' use	4/10/2019
15	A/H17/141	92 Repulse Bay Road, Repulse Bay	"R(C)5"	Minor relaxation of site coverage restriction from 22.5% to 30% for permitted 'Flat' use	28/1/2022

4.5.2 A total of 15 Planning Applications have been approved by the TPB for minor relaxation of site coverage restriction since 2003 in the vicinity of the Site. Thus, the approval of the current Planning Application involving minor relaxation of site coverage restriction from 25% to not more than 37% in the will be consistent with TPB's previous decisions.

4.6 The Proposal is Technically Feasible

Tree Aspect (Appendix 2 refers)

4.6.1 The building footprint has taken into account five existing trees with Diameter at Breast Height ("DBH") larger than 95mm. All 5 nos. of trees are already dead and unavoidably come into conflict with the development of the proposed ramp connecting the basement carpark. To compensate for the loss, 5 nos. of Heavy Standard Trees (DBH of 80 to 150mm) will be planted. Sufficient soil depth (about 1200mm) and planting density (not less than 5m spacing) will be reserved for the proposed compensatory trees. It is concluded that the Proposed Development includes necessary measures to mitigate the loss of existing trees while ensuring the preservation of surrounding vegetation.

Traffic Aspect (Appendix 3 refers)

4.6.2 As mentioned in **Section 3.4**, an underground basement carport with 4 private car parking spaces would be provided. The swept path analysis for maneuvering on the ground and basement floors, as detailed in the Traffic Review Report (**Appendix 3** refers), demonstrates that sufficient horizontal clearance can be provided. Additionally, the traffic review assessed the potential impact on the surrounding road network. As the site is being redeveloped from six houses to two, the vehicular traffic generation and attraction of the proposed development will decrease compared to existing conditions. Therefore, adverse traffic impacts are not anticipated from a traffic engineering perspective.

Visual Aspect (Appendix 4 refers)

4.6.3 A total of 4 public viewing points (VPs) were identified to assess the visual impact of the Proposed Development. As seen from the photomontages in the Visual Impact Assessment ("VIA"), the overall visual impact caused by the Proposed Development will be negligible. VP1 to VP4 provide mid-range and distant views of the Proposed Development. With the proposed terraced design and carefully thought-out building form and disposition, it will be visually compatible with the surrounding settings and respect on the topographical settings of Shouson Hill. While the Proposed Development will continue to blend in well with the existing low-rise residential developments, the visual impacts of these VPs would be negligible.

Air Quality Aspect (Appendix 5 refers)

4.6.4 The air quality impact assessment indicates that potential air quality impacts during both construction and operational phases are minimal. During construction, fugitive dust is the primary concern. However, effective dust control measures will be implemented in accordance with the Air Pollution Control (Construction Dust) Regulation to mitigate the potential impact. For

the operational phase, the redevelopment with the same use is not expected to introduce additional air pollution sources, ensuring that air quality remains comparable to existing conditions. With the implementation of the recommended environmental mitigation measures, no adverse environment impact from the proposed development is anticipated.

Noise Aspects (Appendix 5 refers)

4.6.5 The noise impact assessment evaluates potential noise impacts during construction and operation. Construction activities will primarily use powered mechanical equipment. With noise mitigation measures implemented, including the use of temporary acoustic barriers, and avoiding simultaneous operation of noisy equipment, the potential impacts on nearby noise-sensitive receivers could be minimized. The operational phase will include fixed plant noise sources, which are expected to comply with acceptable noise levels. With the implementation of the recommended environmental mitigation measures, no adverse environment impact from the proposed development is anticipated.

Waste Management Aspect (Appendix 5 refers)

4.6.6 Review on the potential impact form waste management perspective has been conducted. During construction, the potential waste generated from the existing building has been categorized into construction and demolition materials, chemical waste, and general refuse. Management practices will focus on minimizing waste generation, encouraging recycling, and ensuring proper disposal methods. Moreover, a Waste Management Plan will be developed to outline handling procedures, aiming to mitigate environmental impacts associated with waste. With the implementation of the recommended environmental mitigation measures, no adverse environment impact from the proposed development is anticipated.

Water Quality Aspect (Appendix 5 refers)

4.6.7 The potential water quality impacts during construction phase will primarily arise from surface runoff and accidental chemical spills. To prevent contamination, good site practices should be implemented and complied with the Water Pollution Control Ordinance. During operation, the proposed development is expected to manage surface runoff effectively, ensuring compliance with local regulations and minimal adverse impacts on water quality. With the implementation of the recommended environmental mitigation measures, no adverse environment impact from the proposed development is anticipated.

Sewerage Aspect (Appendix 6 refers)

4.6.8 The potential sewerage impact arising from the Site has been quantitatively assessed by comparing the estimated sewage flow from the Proposed Development and the capacity of the existing sewerage system in the vicinity. While the Proposed Development will have reduced population and the size of swimming pool, the overall sewerage discharge from the site will be reduced by 15.2%. The existing permanent sewerage facilities, comprising underground vitrified clay pipe with 150mm diameter and manholes, the government sewer at Deep Water Bay Road has sufficient capacity for the sewerage discharge from the site. The SIA concludes that the Proposed Development would not have adverse impact to the sewerage facility at the vicinity.

Drainage Aspect (Appendix 7 refers)

4.6.9 The Drainage Impact Assessment has been conducted to assess the potential impact on existing drainage infrastructure and evaluates changes in stormwater runoff resulting form the Proposed Development. Compared with the existing condition of the Site, the Proposed Development improves drainage efficiency by consolidating runoff into a single discharge point at the southwestern corner of the Site. No uncontrolled runoff will flow onto government slopes or adjacent property. While the assessment illustrated that the utilization rate of the 600mm U-channel is only 12.7%, there is sufficient capacity to accommodate the increased flows and no adverse impacts are anticipated on the existing drainage infrastructure.

Geotechnical Aspect (Appendix 8 refers)

4.6.10 To assess the geology of the Site and identify potential geotechnical constraints, a Geotechnical Planning Review Report has been prepared. According to the Hong Kong Geological Survey Map Sheet, no fault or photo lineament has been recorded within or in the vicinity of the Site. Furthermore, various landslides inventories and studies recorded that none relict or recent landslides are observed within and in the surrounding of the Site. The schematic geotechnical works for the Proposed Development has also been included in the report to demonstrated that the Proposed Development is geotechnically viable. Any geotechnical features within the site will be upgraded to meet current engineering standards if required. A comprehensive site investigation is recommended to confirm subsurface conditions, which will inform the foundation design and excavation plans. A monitoring program will also be implemented to ensure safety during the demolition and construction phases.

5. SUMMARY AND CONCLUSION

5.1 In light of the above, it is evident that the proposed minor relaxation of site coverage restriction for the permitted house development at the Site should be favourably considered by the TPB from land use planning perspective.

5.2 The Planning Department is respectfully requested to give favourable consideration to support the Planning Application in planning context based on the following:

a) The Applicant is seeking approval from the TPB under Section 16 of the Town Planning Ordinance for the proposed minor relaxation of site coverage restriction from 25% to not more than 37% for the permitted house development at the Site.

b) The Proposal will be in-line with the general guidelines established by the TPB in relation to the relaxation of domestic site coverage control.

c) The Proposed Development would respect the existing character of the Area.

d) The Proposed Development has incorporated interesting building design with ample greenery provision at multi-levels to soften the form of the buildings and enhance the sense of visual integration. Compared with the existing rigid and bulky building form, the Proposed Development could bring about visual enhancement to the surrounding.

e) The Proposed Development would Continue to Meet the Prevailing Planning Intention of the "Residential (Group C)" Zone.

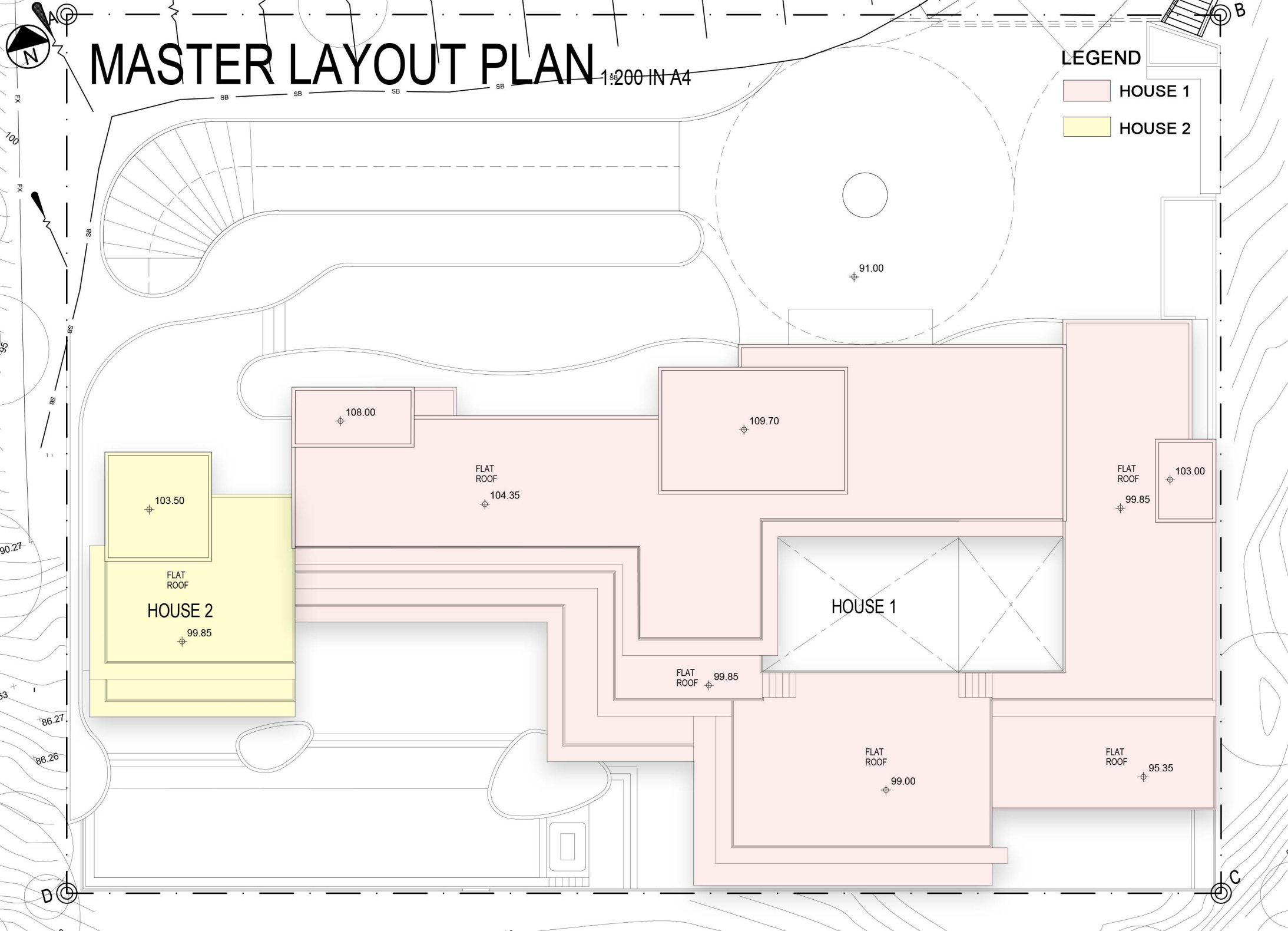
f) The approval of this planning application is consistent with TPB's previous decisions.

g) Various technical assessments have been carried out and the findings concluded that the Proposal is technically feasible without posing negative impact onto the surrounding environment.

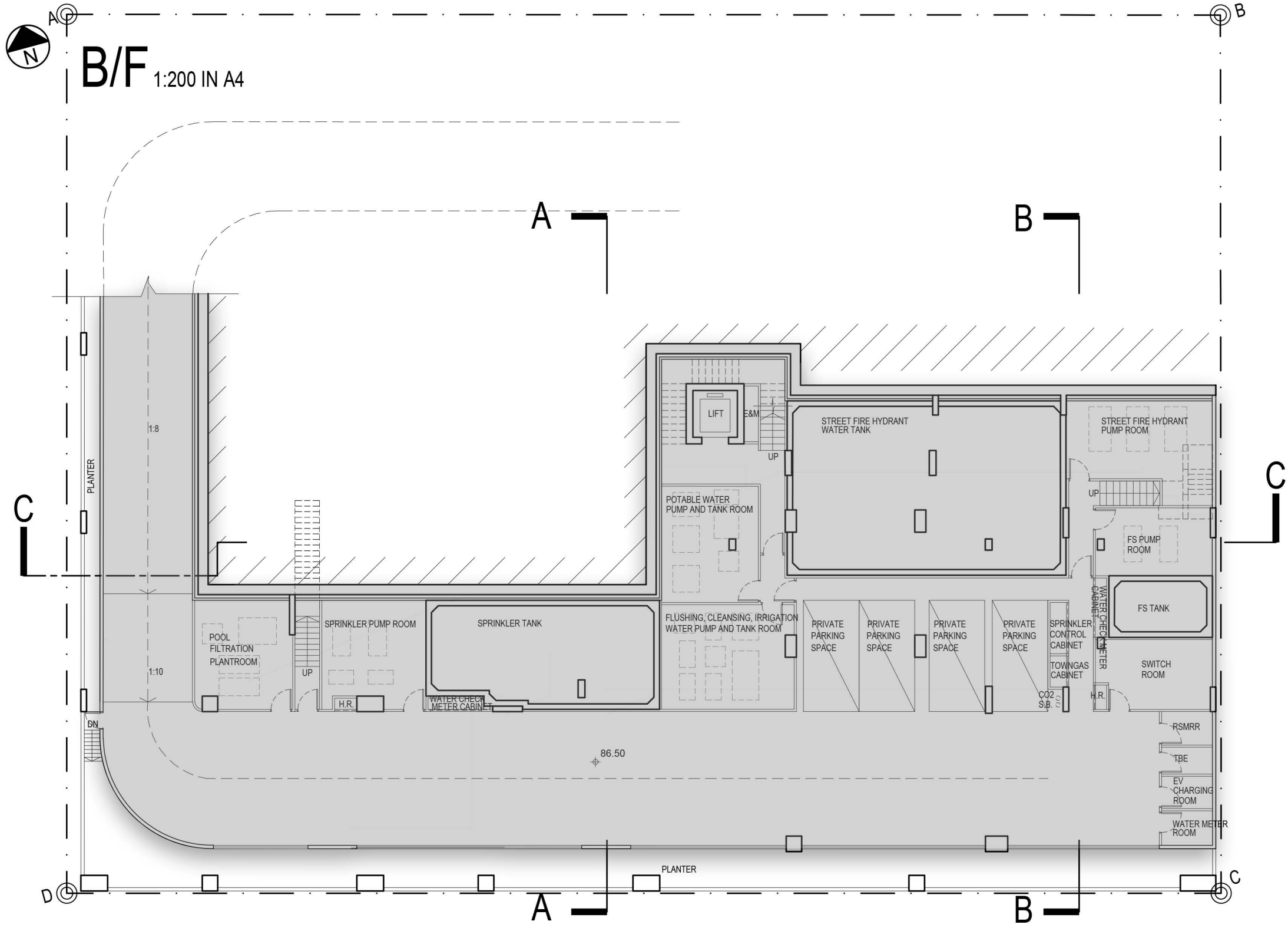
Appendix 1

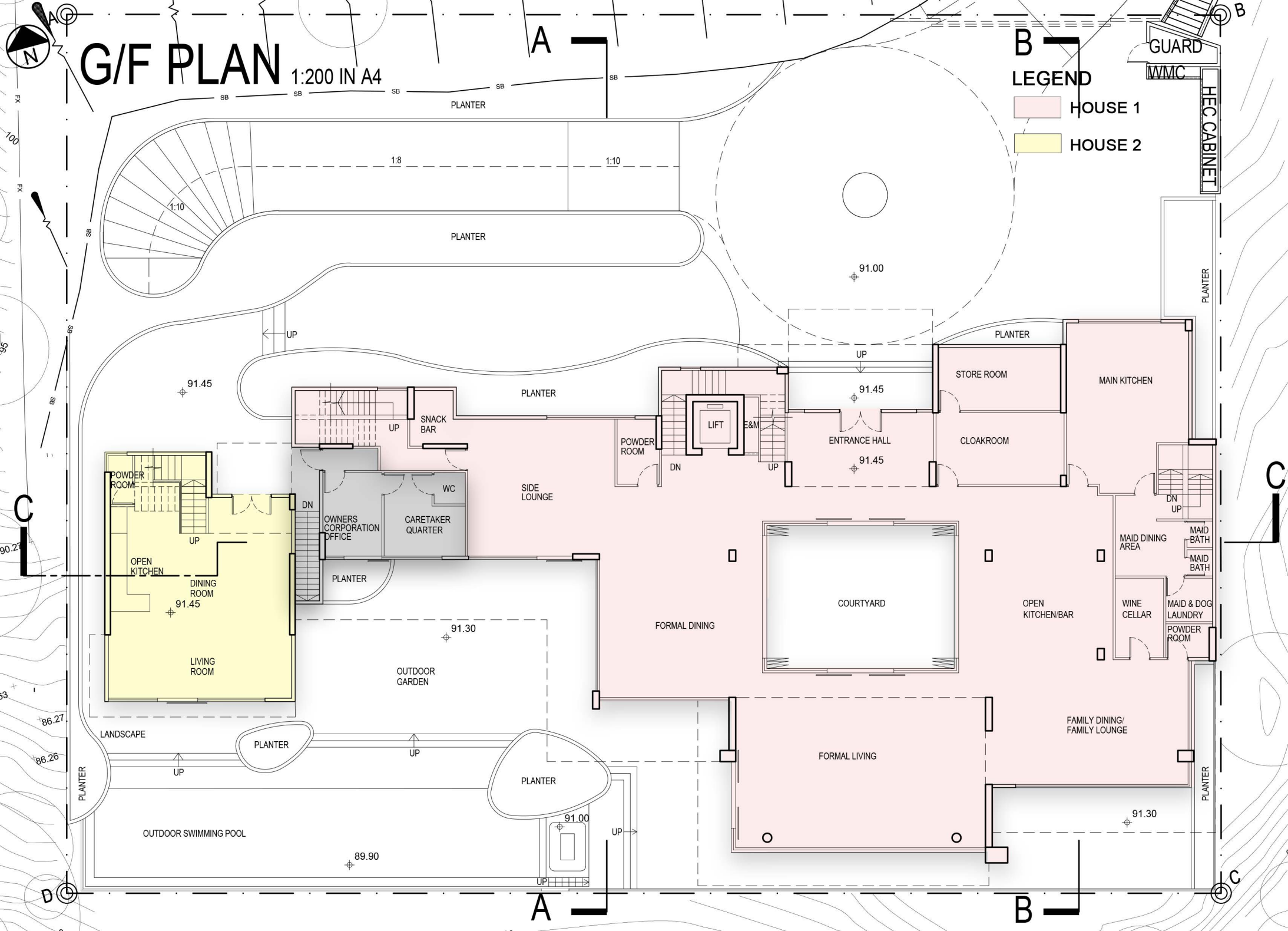
Architectural Drawings

MASTER LAYOUT PLAN 1:200 IN A4



B/F 1:200 IN A4


A
B
C
D
N
LIFT
E&M
UP
STREET FIRE HYDRANT WATER TANK
STREET FIRE HYDRANT PUMP ROOM
POTABLE WATER PUMP AND TANK ROOM
FS PUMP ROOM
FS TANK
WATER CHECK METER CABINET
SWITCH ROOM
1:8
PLANTER
POOL FILTRATION PLANTROOM
1:10
SPRINKLER PUMP ROOM
SPRINKLER TANK
H.R.
WATER CHECK METER CABINET
FLUSHING, CLEANSING, IRRIGATION WATER PUMP AND TANK ROOM
PRIVATE PARKING SPACE
PRIVATE PARKING SPACE
PRIVATE PARKING SPACE
PRIVATE PARKING SPACE
SPRINKLER CONTROL CABINET
TOWNGAS CABINET
CO2 S.B.
H.R.
DN
86.50
RSMRR
TBE
EV CHARGING ROOM
WATER METER ROOM
PLANTER


G/F PLAN 1:200 IN A4
LEGEND
HOUSE 1
HOUSE 2
GUARD
WMC
HEC CABINET
PLANTER
1:8
1:10
1:10
91.00
91.45
91.45
91.45
91.30
91.30
91.00
89.90
86.27
86.26
SNACK BAR
LIFT
E&M
POWDER ROOM
ENTRANCE HALL
CLOAKROOM
STORE ROOM
MAIN KITCHEN
SIDE LOUNGE
POWDER ROOM
WC
OWNERS CORPORATION OFFICE
CARETAKER QUARTER
OPEN KITCHEN
DINING ROOM
LIVING ROOM
COURTYARD
FORMAL DINING
OPEN KITCHEN/BAR
MAID DINING AREA
MAID BATH
MAID BATH
WINE CELLAR
MAID & DOG LAUNDRY
POWDER ROOM
FAMILY DINING/ FAMILY LOUNGE
FORMAL LIVING
OUTDOOR GARDEN
LANDSCAPE
OUTDOOR SWIMMING POOL
UP
DN
SB
FX
A
B
C
D

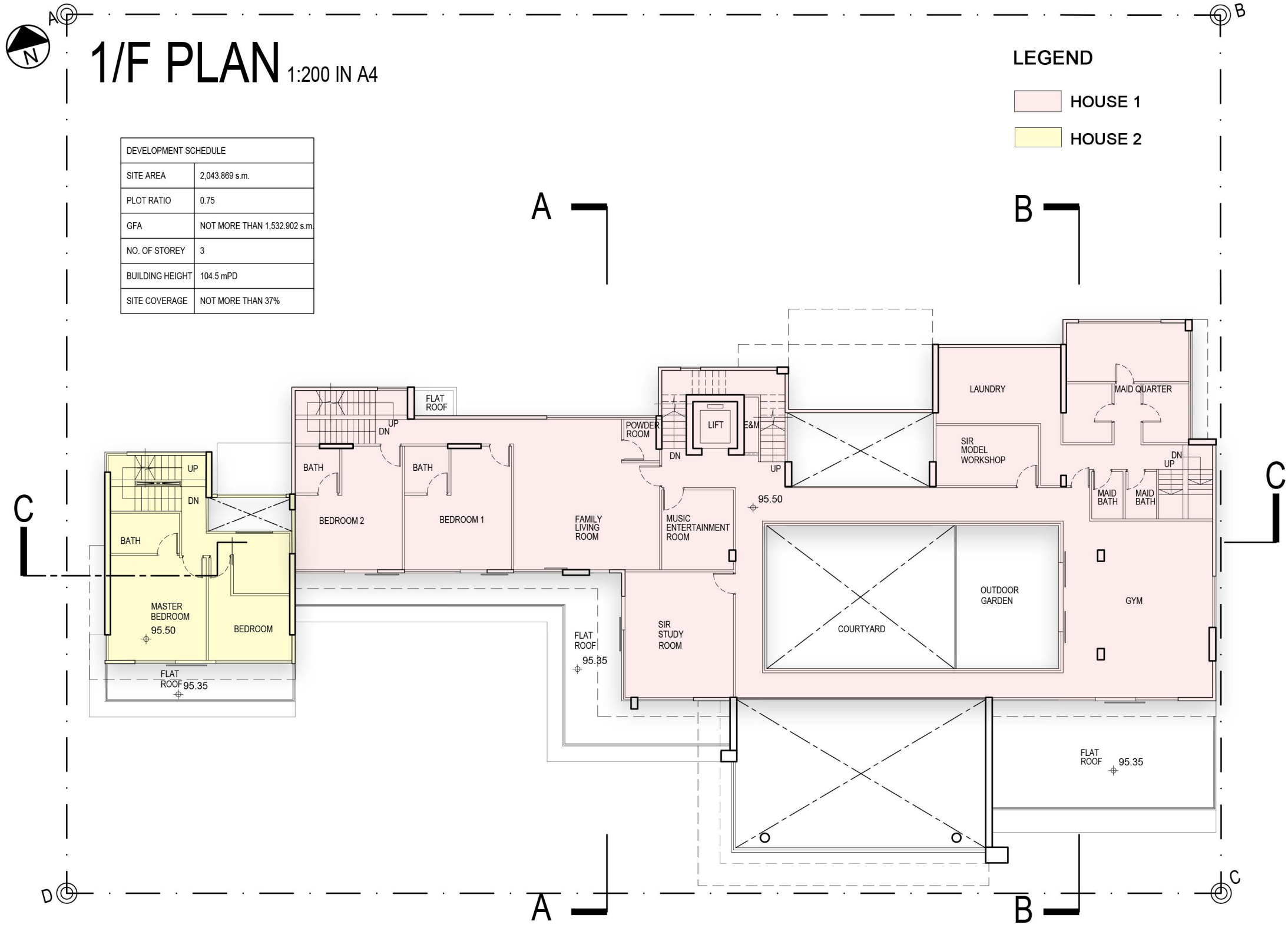
1/F PLAN 1:200 IN A4

DEVELOPMENT SCHEDULE	
SITE AREA	2,043.869 s.m.
PLOT RATIO	0.75
GFA	NOT MORE THAN 1,532.902 s.m.
NO. OF STOREY	3
BUILDING HEIGHT	104.5 mPD
SITE COVERAGE	NOT MORE THAN 37%

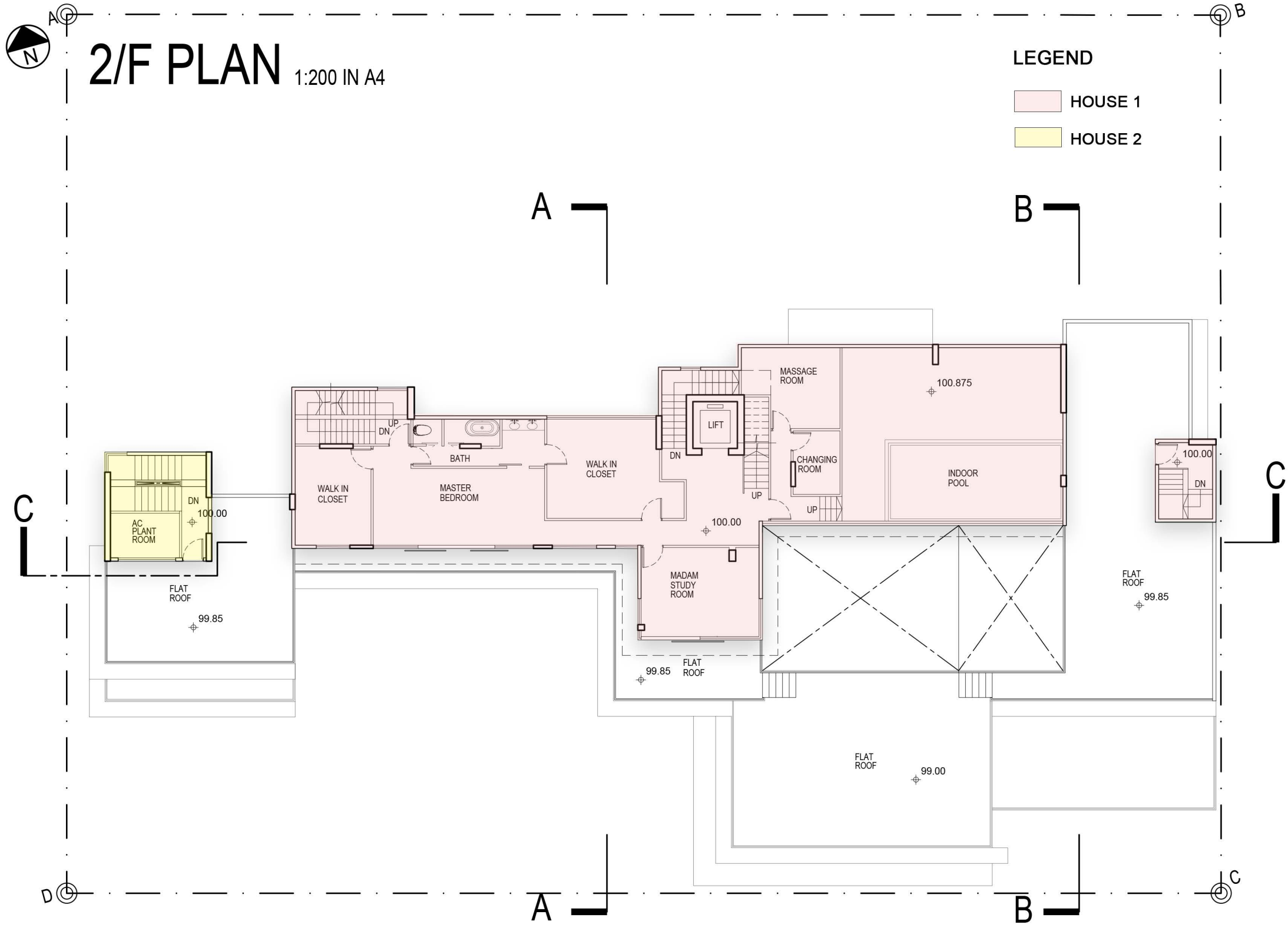
LEGEND

HOUSE 1

HOUSE 2



2/F PLAN 1:200 IN A4

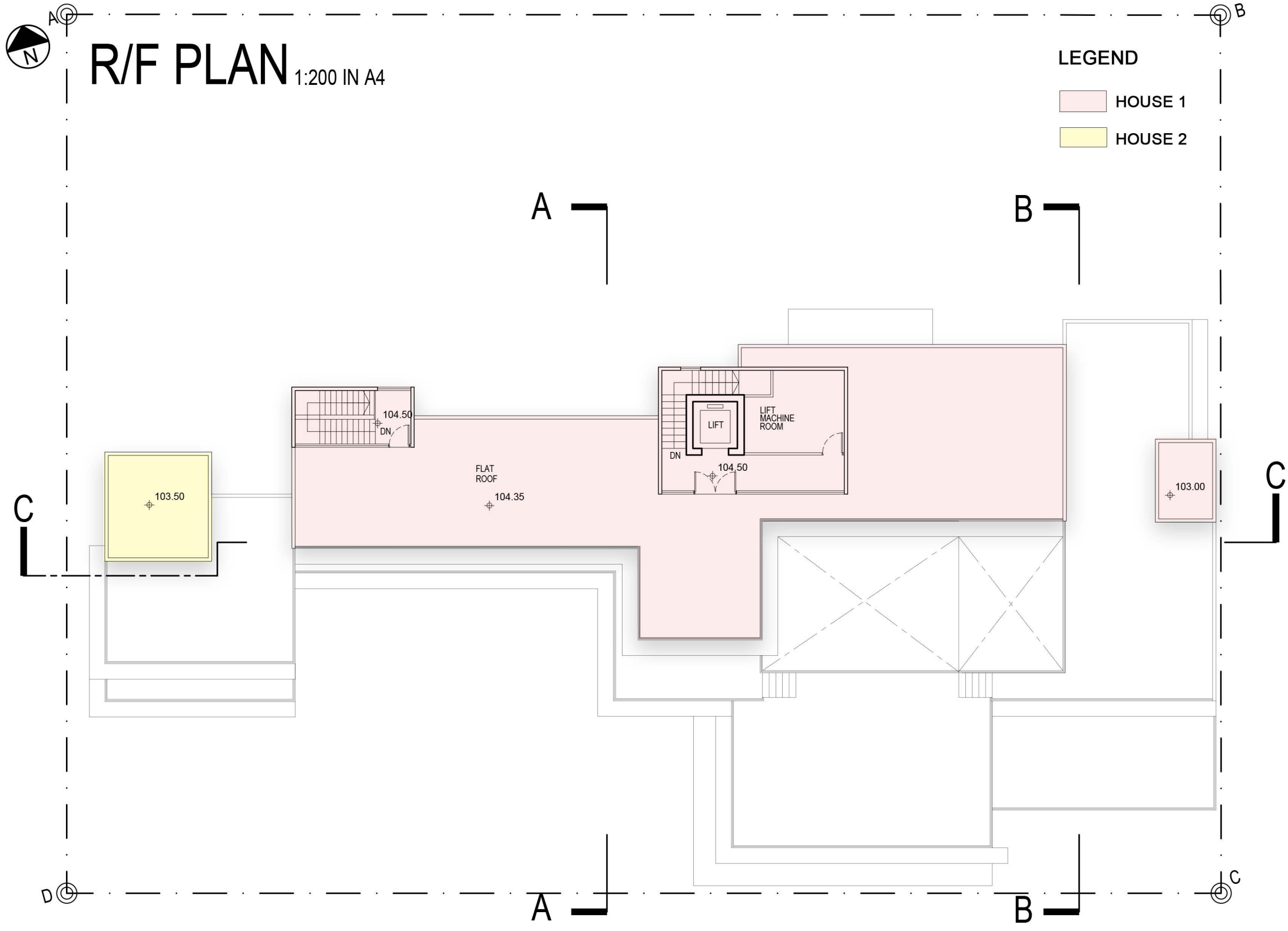


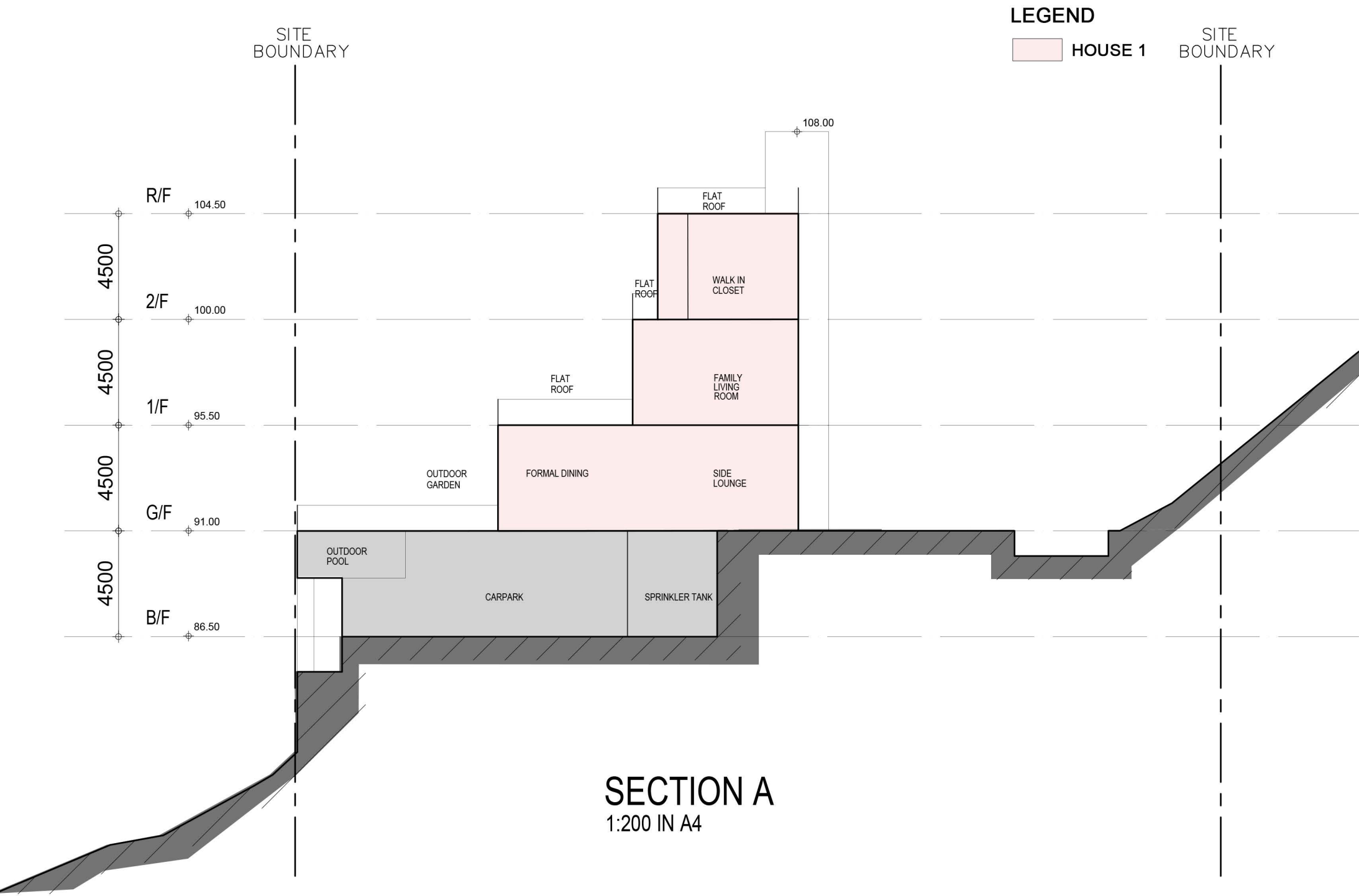
R/F PLAN 1:200 IN A4

LEGEND

HOUSE 1

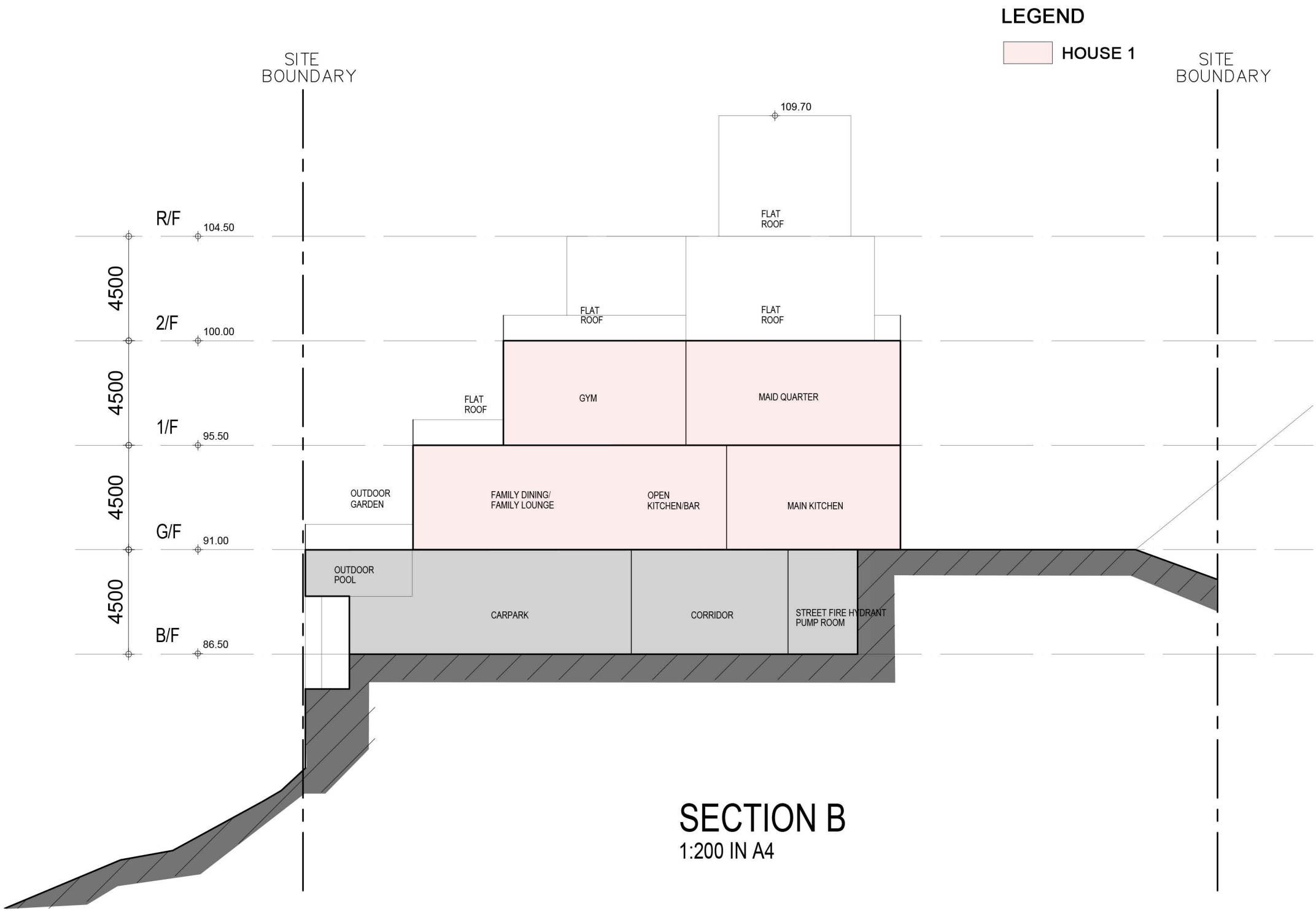
HOUSE 2





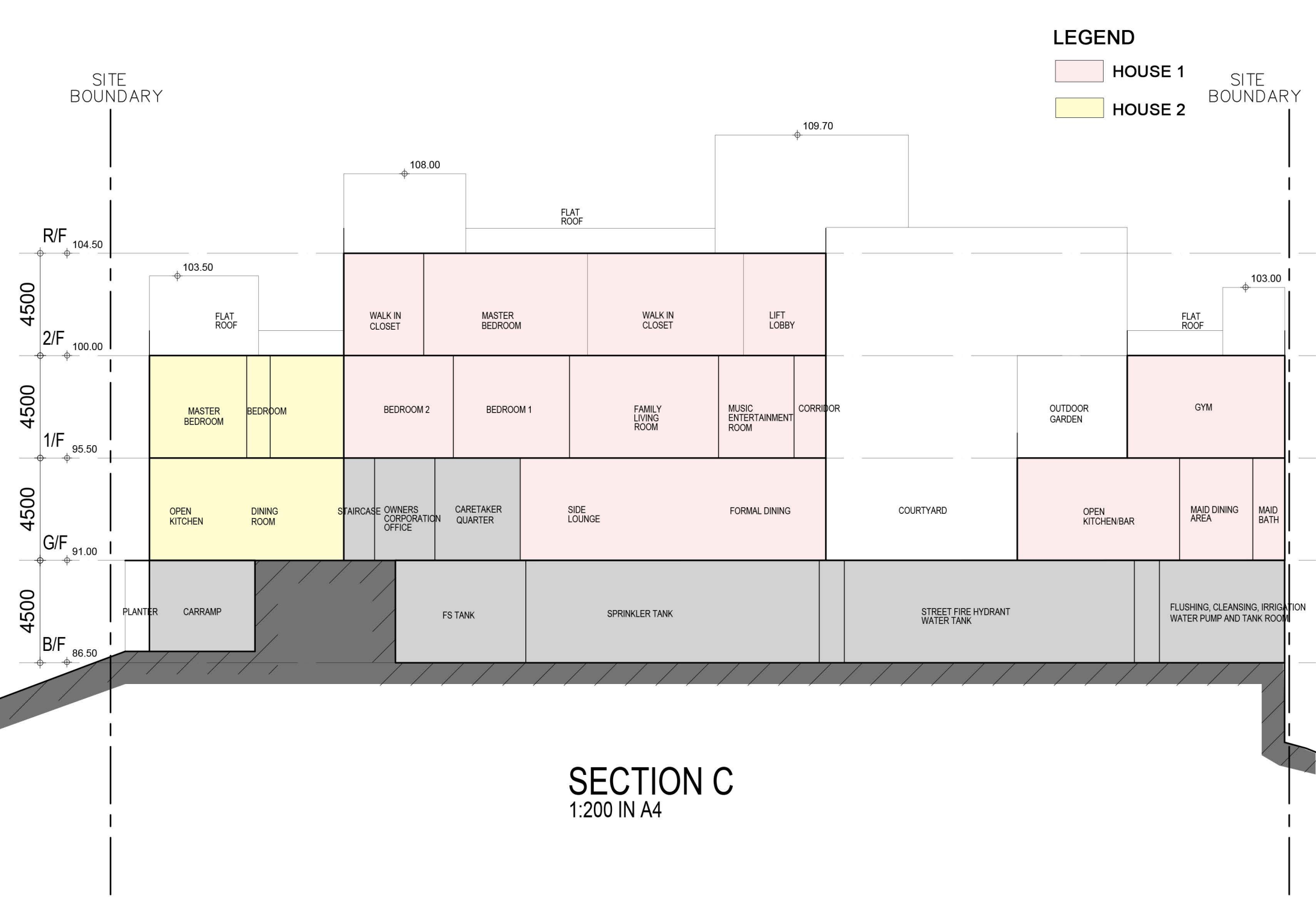
SECTION A

1:200 IN A4



SECTION B

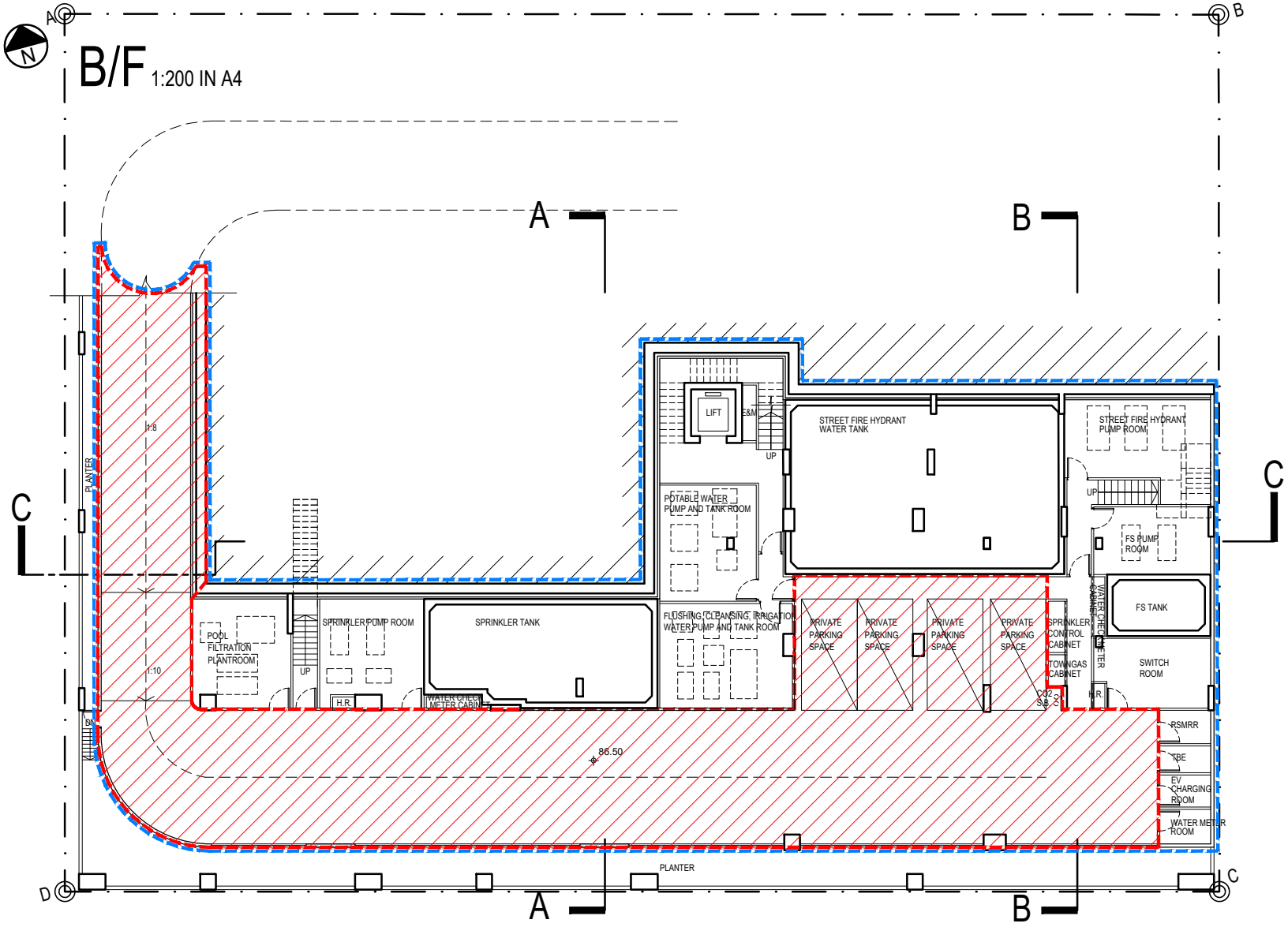
1:200 IN A4



SECTION C

1:200 IN A4

PERCENTAGE OF AREA FOR CAR PARKING USE



PERCENTAGE OF AREA FOR CAR PARKING USE:
AREA FOR CAR PARKING USE /AREA FOR CARPORT x 100
448.600 / 896.544 x 100 = 50.037 > 50% AREA OF CARPORT

AREA OF CAR PARKING USE
AREA OF CARPORT

Appendix 2

Landscape Design Proposal

Ko Landscape Architects Ltd
高天佑景觀設計有限公司

Landscape Design Proposal

in support of

S16 PLANNING APPLICATION FOR

66 DEEP WATER BAY ROAD HOUSE DEVELOPMENT

RURAL BUILDING LOT NO. 573

Applicant:
Blue Water Group Management Limited

Ref: 20250926_KOLA_630_S16 Landscape Design Proposal_R4

21th October 2025

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Appendix E5	Landscape Master Plan- RF
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Appendix E10	Tree Survey Plan
Appendix E11	Tree Treatment Plan
Appendix E12	Compensatory Tree Plan
Appendix E13	Tree Assessment Schedule
Appendix E14	Tree Photographical Record

1.0 INTRODUCTION

1.1 This report contains a landscape design proposal in support of the Section 16 Planning Application for 66 Deep Water Bay Road Residence located at 66 Deep Water Bay Road, Deep Water Bay, HKSAR (Rural Lot No. 573) (hereafter referred as the "Application Site"). The application site is currently zoned as "Residential (Group C)" on the Approved Shouson Hill & Repulse Bay Outline Zoning Plan No. S/H17/13.

1.2 The Application Site covers a total land area of approximately 2,043.869m². This proposal outlines the landscape design and includes a landscape layout with proposed tree planting strategy and planting for the Application Site. The proposal also demonstrates that the landscape design is intended to minimize visual impact of the Proposed Development by injecting natural greenery throughout and along the edges where physically feasible. This report describes the proposed landscape design and its landscape impacts within the existing landscape context.

1.3 The Proposed Scheme is a 3-storey high residential buildings and communal facilities.

2.0 EXISTING SITE CONDITIONS

2.1 Context/ General Neighborhood

2.1.1 The surrounding land-use of the Application Site is Green Belt (GB) directly to the north, west and south-west. Approximately 60m directly north and uphill of the application site is Shouson Hill Trigonometrical Station.

2.1.2 There is a collection of Residential Lots (R(C)3) to the east and south-east, including Miramar and Nos. 70-72 Deep Water Bay Road. A further 100 metres or so south of the application site and separated by Island Road is a shoreline under Coastal Protection Area (CPA) land use.

2.2 The Site

2.2.1 The Application Site covers a total land area of approximately 2,043.869 m². There are six existing multi-storey buildings (Units A-F) and a semi-covered outdoor car park within the Application Site. The northern portion of the site is generally flat with concrete-paved hard stand. Directly north of this hard stand area is a raised planter with some existing trees growing. Extending into the application site, directly north is a steep rock slope that is naturally vegetated with some existing trees growing.

2.2.2 The southern portion of the site is made up of paved surfaces within a swimming pool setting surrounds. This pool deck area (+85mPD) is set approximately 6 metres lower than the arrival driveway (+91mPD) and is connected by a series of staircases running along the eastern boundary.

2.2.3 The site plan and existing landscape features in the Subject Site and its surroundings are shown in the photos below:



Photo 1 – Aerial Photo of Proposed Application Site



Photo 2 – Photo of Driveway and Main gate taken from rooftop of existing units



Photo 3 – Existing Swimming Pool Environment



Photo 4 – Photo Driveway and undercover parking bays are Northern side of Site

3.0 PROPOSED DEVELOPMENT FORM

3.1 Building Layout

3.1.1 The proposed building is a single 3-storey on top of 1-storey basement carport which is intended to serve as a private residence.

3.1.2 The new private residence will be set amongst a generous at-grade landscape garden which presents planting along key edges of the building in order to create a softer transition with the naturally vegetated hill slopes that surround it.

3.1.3 The development comprises a basement with carparking spaces and E/M facilities. The frontage of the basement is enhanced with a strip of natural vegetation, which adds substantial greenery to this southern façade as viewed from lower down the hill.

3.1.4 At Ground Level and at the second floor, the landscape design incorporates trailing planting along the eastern façade to breakdown the elevational mass of the building.

4.0 TREE PRESERVATION SCHEME

4.1 Existing Vegetation

4.1.1 The tree survey was carried out on 15th April 2025. There are **5** nos. existing trees found within the Application Site. All surveyed trees found are dead trees. See **Appendix E13 & E14** for the complete Tree Assessment Schedule and Tree Photographical Record. No existing trees outside the application site will be affected by the proposed development.

4.1.2 None of the trees surveyed are protected species listed under Forestry Regulations, Forests and Countryside Ordinance (Cap.96 sub. leg.) or "Old and Valuable Tree" as defined in ETWB TV (W) No. 29/2004 "Registration of old and Valuable Trees" or "Champion Tree" as identified in the book "Champion Trees in Urban Hong Kong". See **Appendix E13 & E14** for the complete Tree Assessment Schedule and Tree Photographical Record.

4.1.3 Undersized trees / plants with DBH less than 95mm observed within the site boundary will not be recorded in this Tree Preservation and Removal Proposal and they all will be removed during site clearance works.

4.2 General

4.2.1 The tree treatment proposal is made based on the proposed development layout, which is superimposed on the Tree Survey Plan. A Tree Survey Plan, Tree Treatment Plan and Compensatory Tree Plan are shown in **Appendix E10, E11** and **E12** respectively.

4.3 Trees to be Retained

4.3.1 Of all of the 5 nos. existing trees surveyed within site boundary, **no** trees are proposed to be retained and protected and **no** trees are proposed to be retained with pruning.

4.3.2 The preservation and protection of retained trees will be carried out according to the requirements as stipulated in

- General Specification for Building 2022 Edition GS Section 25.69
- Guidelines on Tree Preservation during Development from GLTMS, DevB

- General Specification for Civil Engineering Works 2006 Edition – Section 26 Clause 26.08 to 26.13

4.4 Trees to be Transplanted

4.4.1 **No** trees within the application boundary will be proposed for transplanting.

4.5 Trees to be Felled

4.5.1 **5 no.** trees within the application boundary are proposed to be felled. All 5 no. trees are already dead and unavoidably come in conflict with the development where the construction of a basement ramp is planned.

4.6 Definitions

4.6.1 Scope of Survey: To survey all 'trees' within the Tree Survey Area in accordance with government requirement.

4.6.2 Tree: A woody plant with a stem diameter over 95mm measured at a point 1.3m above the root collar (DBH).

4.6.3 DBH: Diameter at Breast Height as defined in the Practice Note Issue No. 2/2006 issued by AFCD.

4.7 Topographic Survey and Basic Tree Data

4.7.1 The Topographic Survey was carried out by a qualified Land Surveyor. Measurements of tree dimensions and locations of existing trees within Tree Survey Area were recorded in this application.

4.7.2 Tree number is assigned for each surveyed tree and is clearly marked on site with an identity label showing the tree number. Position of each tree is plotted on the topographic plans.

4.7.3 All trees are identified by genus and species or in some cases by genus only if full identification is not possible. Where necessary, identification is verified / assisted by Hong Kong Herbarium published by AFCD.

4.7.4 Measurements of trees include DBH, overall height and average crown spread of each tree.

4.7.5 The following information on each tree are included in the Tree Assessment Schedule:

a. Tree Number;
b. Tree Species (Scientific name and Chinese name);
c. Overall Height (in metres);
d. DBH (in millimetres);
e. Average Crown Spread (in metres);
f. Proposed Treatment (Retain/ Transplant/ Fell); and
g. Other Remarks.

4.8 The tree survey and tree treatment plans will include the following details:

4.8.1 Tree locations, tree identification numbers, tree crown spread, adjacent ground levels and above-ground features;

4.8.2 Trees to be retained, transplanted within the site, transplant off-site or felled presented in different colours;

4.8.3 An overlay of site formation plan showing the proposed layout of the development, extent of excavation works, proposed utilities, vehicular access, the formation or finished levels as well as the extent of temporary works and facilities (e.g. site offices storage areas, etc.) so as to ensure that the TPZs should not be encroached upon or affected by the works;

4.8.4 Highlight TPZs around all trees proposed for retention. Assessment should be made on the potential impacts of building foundations and other structures on retained trees;

4.8.5 Where appropriate, a cross-section showing the proposed architectural and engineering features around trees proposed to be retained should be provided to show that sufficient vertical and horizontal space can be reserved for TPZs. On the other hand, for trees proposed to be felled due to changes in level, a cross-section showing the original and finished levels should be provided if the features that may affect retention of trees cannot be shown on a plan;

4.8.6 The proposed permanent and temporary works have been superimposed on the existing topographic survey and all affected trees are assessed with recommended treatments. Trees not affected by the temporary or permanent construction works will be retained and protected throughout the construction period. Trees conflicting with the works are assessed on their suitability for successful transplantation. Trees not suitable for transplanting are proposed to be felled (with adequate justification).

4.9 Criteria for Recommended Treatment of Existing Trees

4.9.1 The preferred option for all trees is to be retained in-situ unless they pose a threat to the public or they are undesirable species (e.g. *Leucaena leucocephala*), or they genuinely conflict with the Project.

4.9.2 The felling of a tree will be justified by criteria such as the following:

a. No irreplaceable, rare or protected species (under Forestry Regulation Cap.96) is felled.

b. The felling would not cause a serious loss of species diversity in the subject area.

c. A genuine development or traffic need exists, which cannot be reasonably overcome.

d. Adequate compensatory tree planting is to be implemented.

e. The tree is not an unusually large or fine example of its species.

f. The tree is in poor condition or is unsuitable for transplanting due to its low survival potential.

g. The tree is not in the list of Champion Trees (Ref: Jim, C.Y. 1994. Champion Trees in Urban Hong Kong. Urban Council, Hong Kong) nor Unusual Trees (Ref: AFCD's Register of Unusual Trees in Rural Areas).

h. The tree is neither a significant landmark tree and does not have special Fung Shui or cultural significance.

i. Existing site conditions are such that transplantation would be hazardous to the public.

j. The tree is dead, hazardous or diseased.

k. A tree that has been rendered unstable because of the removal of neighbouring trees may be considered for felling.

l. The tree possesses invasive habits.

4.10 Tree Photography

4.10.1 Photographs comply with the following:

a. Where practical and safety considerations allow, the whole form of an individual tree will be shown;

b. Where obstacles are present (e.g. structures, other trees / vegetations nearby, dense climber covering, etc.), the main tree trunk(s) from the base level to at least 3m in height will be shown;

c. Where special features at the trunk base are present (e.g. exposed roots, special rooting medium, etc.), the photograph of the tree is taken to highlight the relevant features while showing as much of the tree structure as possible.

4.11 References

4.11.1 Ordinances, Circulars and Practice Notes

The Law of Hong Kong Chapter 96.	Forest and Countryside Ordinance
The Law of Hong Kong Chapter 586	Animals and Plants (Protection of Endangered Species) Ordinance
DEVB TCW No. 5/2020	Registration and Preservation of Old and Valuable Trees
DEVB TCW No. 4/2020	Tree Preservation
DEVB TCW No. 1/2018	Soft Landscape Provisions for Highway Structures
DEVB TCW No. 6/2015	Maintenance of Vegetation and Hard Landscape Features
LAO/LandsD Practice Note 6/2023	Processing of Tree Preservation and Removal Proposal for Building Development in Private Projects – Compliance with Tree Preservation Clause under Lease
AFCD Conservation Practice Note No. 2	Measurement of Diameter at Breast Height (DBH)
AFCD Conservation Practice Note No. 3	The Use of Plant Names

Publications

HU, Q. et al (2003) *Rare and Precious Plants of Hong Kong*. AFCD, HKSAR
Jim, C.Y. (1994). *Champion Trees in Urban Hong Kong*. Urban Council, Hong Kong.
Leisure and Culture Services Department. *Register of Old and Valuable Trees*. Website: http://ovt.lcsd.gov.hk/ovt/
Webb, R. (1991). *Tree Planting and Maintenance in Hong Kong*. Standing Interdepartmental Landscape Technical Group, Hong Kong Government, Hong Kong.
GEO Publication No. 1/2011 Technical Guidelines on Landscape Treatment for Slopes, GEO, CEDD, HKSAR

4.12 Compensatory Planting Proposal

4.12.1 No. of proposed felled tree (DBH≧95mm) is **5**. To compensate for the loss, **5** nos. of Heavy Standard Tree (DBH of 80 to 150 mm) will be planted (planting density shall be at minimum 5m spacing). The planting area for compensatory tree will have a soil depth of 1200mm excluding draining layer.

4.12.2 All the compensatory trees within site boundary shall be maintained by land owner.

4.12.3 Heavy Standard Trees shall have the following characteristics:

a. A sturdy straight stem at least 2000mm high from the root collar to the lowest branch,

b. Stem diameter exceeding 80mm but not exceeding 150mm measured at a height of 1.3m from the root collar,

c. According to species, either a well-balanced branching head or a well-defined straight and upright leader with branches growing out from the stem with reasonable symmetry, and a minimum length of 800mm,

d. Total height above the root collar exceeding 3500mm but not exceeding 5000mm,

e. A rootball at least 500-1200mm in diameter and 300-800mm deep,

f. When container grown trees are required, grown in a container at least 750mm in diameter and 600mm deep, and

g. Free of any pest, non-symbiotic fungi, disease and parasitic plants.

4.12.4 Tree Treatment

A summary of proposed treatments to existing trees within the Application Site is summarized in the below table.

Table A - Tree Treatment Summary:

	Within Application Site
Existing Trees	**5**
To Be Retained	**0**
To Be Retained with Pruning	**0**
To Be Felled	**5**
To Be Transplanted	**0**
Compensatory Trees	**5**

5.0 LANDSCAPE DESIGN PROPOSAL

5.1 The Landscape Design is an important contributor to the establishment of a sense of nature within its natural hillside setting and to its neighborhoods. All external spaces within the site development should take place within a framework with a clear strategy. Design of open spaces should be welcoming and inviting so as to encourage movement of pedestrians along safe and attractive areas, providing landscape vista and activity nodes for the enjoyment of its residents and users.

A modern and clean approach is proposed to be applied to the overall landscape design to match the style of architecture, presented as **Appendix E1, E2, E3, E4, E5 and E6**. All planting species have been carefully selected to be predominantly native species with low maintenance and irrigation requirements which aesthetically fits with the minimalistic theme. The current development options allow for landscaped areas at the basement level, ground floor level, and planters on 2/F podium garden.

5.2 The landscape design strategically identifies and maximizes the amenity value of the visually significant characters, namely the natural vegetation found on Shouson Hill. Vegetation covers nearly three-quarters of the hill, with species including mandarin shrubs, mangrove trees, palm trees and some coniferous forest trees. By doing so, the designed external areas integrate with the key natural elements of the site context, the development, the adjacent access road and the neighborhood holistically. The Landscape Design has been developed to:

a) Create a landscape character commensurate with the specific site conditions;

b) Ensure the landscape character is consistent with the overall design language and aesthetic

of the architectural elements;

c) Ensure the Proposed Development is sensitively integrated into the surrounding areas. Trailing plants along the south-eastern edge on G/F and 2/F as well as the vertical green wall will soften the form of the building and enhance visual integration with the surroundings environment. The extensive landscape treatment including edge plantings and vertical green walls would function as a green buffer that softens the transition between the built environment and natural surroundings.

d) Minimise the visual impact of the Proposed Development through sensitive landscape treatment such as a green buffer planting;

e) Create suitable outdoor spaces for passive recreational activities; and

f) Promote the use of indigenous plant species throughout the landscape in order to encourage bio-diversity in what is a sensitive green belt environment.

g) Barrier free access and disability inclusion will be incorporated in all landscape areas as appropriate. All landscape areas will be designed and detailed according to the current version of BD's Design Manual – Barrier Free Access.

6.0 LANDSCAPE DESIGN COMPONENTS

Planters on Basement Floor

6.1 Landscaping proposal at the basement floor is illustrated in **Appendix E1**. Planters at the basement level will be planted with both tall shrubs and trailing plants to the south-western building façade shall provide landscape buffers and visual relief and enhancement for the site when viewed from the southern direction.

Planters on Ground Floor

6.2 Landscaping proposal on the ground floor is illustrated in **Appendix E2**. Planters on the ground floor will feature shrubs and compensatory trees, creating a welcoming and lush atmosphere. Considered application of trailing plants to the building façade shall provide landscape buffers and visual relief and enhancement for the site. Native and low maintenance planting species will be predominantly planted and spread across 1/F areas to create a human-nature harmonious environment.

Planter on 2/F

6.3 Landscaping proposal on 2/F is illustrated in **Appendix E4**. Native and low maintenance planting species will be predominantly planted along the south-eastern edge at 2/F. It will also assist to soften the building edge in the views looking from both street levels along Deep Water Bay Road and also neighbouring houses.

Soft Landscape

6.4 The landscape design has maximised the opportunities for tree and shrub planting within the development site. The basis for the proposed planting scheme would be to provide a green and comfortable environment for future user's recreational and passive needs. Shade trees with dense canopy and flowering shrubs in addition to the use of hard landscape treatments would be used to emphasize the landscape character of the site.

6.5 Although there is difficulty assessing the species of the 5 no. dead trees (T1 – T5), the five dead trees appear to be of the same species. Hence the 3 different compensatory tree species that have been proposed immediately contribute to the bio-diversity of the site. Furthermore, two of the three species proposed are native to Hong Kong which further applies a sensitive approach to planting given the natural surroundings of the Green Belt hill slopes.

6.6 In addition to the design of the hard landscape, the well-combined native and evergreen, broadleaf and/or ornamental trees and/or flowering shrubs will emphasize the character of each of the landscape/activities zones described above, to screen and visually soften the appearance of the

development.

6.7 Whilst the soft landscape design is subject to further review during the detailed design stage of the project, the following description seeks to establish some guiding principles that are important for implementing the landscape as part of the overall scheme and in ensuring its feasibility and suitability.

6.8 The plant species for the landscaped areas will be selected to provide colour throughout the year with seasonal variation. This will be achieved through the selection of species with interesting form, colour and texture of their foliage and through the use of flowering species to provide an architectural highlight. Shade tolerant species will be considered in the planting area with less sunlight exposure.

6.9 Trees are specified in a combination of various sizes. The following species in **Table B** will form the basis of the planting design proposals, subject to further development at the detailed design stage.

Table B - Proposed Planting Mix

Botanical Name	DBH Φ (mm)	Height (H) x Spread (S)(mm)	Spacing (mm)
Tree (for compensatory tree and)			
Lagerstroemia speciosa	100	5000Hx3500S	Min. 4000 CC
Pongamia pinnata	100	5000Hx3000S	Min. 4000 CC
Syzygium hancei	100	4000Hx3000S	Min. 4000 CC

Botanical Name	Height (H) x Spread (S)(mm)	Spacing (mm)
Shrub		
Alpinia zerumbet variegata	600H x 400S	300
Asparagus densiflorus 'Msyersii'	300H x 300S	200
Dizygotheca elegantissima	800H x 500S	400
Dracaena fragrans 'Lemon Lime'	900H x 500S	400
Duranta erecta	400H x 400S	400
Dypsis lutescens	1200H x 500S	500
Fagraea ceilanica	750H x 600S	600
Ligustrum sinense 'Variegata'	500H x 400S	400
Rhapis humilis	900H x 600S	500
Schefflera arboricola 'Variegata'	600H x 600S	600
Ground Cover		
Cuphea hyssopifolia	200H x 200S	150
Coleus blumei	300H x 300S	300
Ophiopogon aponicas 'Variegata'	200H x 150S	150
Trailing Vine Plants		
Vernonia elaeagnifolia	1000L x 200S	150
Self-Climbing Plants		
Ficus pumila	300L x 200S	150

Soil Depth for Planting Areas

6.10 In order to ensure that these planting proposals are feasible, it is proposed that an adequate planting medium be incorporated into the design of the soft landscape areas. For example, the tree planting in planter or planting area will utilise a minimum 1200mm depth of planting medium, 600mm depth of soil will be required for shrub areas and a minimum soil depth of 300mm for lawn. These are minimum soil depths required in planting areas and planters with exclusion of structural and drainage layers to ensure healthy plant establishment.

Irrigation and Drainage

6.11 The proposed irrigation system will be via automatic/ manual water point operation, covering the entire planting area within the site. The proposed source of water supply is subject to final approval from the Water Services Department. Sub-Soil drainage shall be provided for all planting areas.

Hard Landscape

6.12 The paving will be an important element of the open space design, both in aesthetic terms and in producing a hardwearing landscape for future users. On pedestrian routes the design of the proposed paving will highlight the ground of the site and key nodal points. These surfaces would be constructed with high quality materials in feature patterns achieved through the use of colour, texture and finishes designed to establish themes across the development site.

6.13 Wherever it is anticipated that there will be some pedestrian activity, the pavement proposed shall be considerably hard-wearing such as natural granite or homogenous tiles. For more intentionally static areas such as seating alcoves or swimming pool decking, the materiality of the pavements and the seating may become "softer" in the sense of being more relaxed and conducive to spending time.

6.14 Non-slip paving materials will be selected to suit the various recreational areas within the site and the proposed finishes and materials are summarised below:

- Planter, Podium Garden, Landscape Greenery and Courtyard Garden: A combination of natural and artificial granite and/or recycled pavers with different sizes and colours to form attractive patterns, and responding to the overall design theme and character of individual sitting out area.
- Wherever possible all open spaces will cater for multiple use needs including people with impaired ability and access for the disabled provided in accordance with Building Department's Design Manual on 'Barrier Free Access, 2008'.

Lighting

6.15 The lighting design concept for the landscaped areas will be designed to contribute to the quality of the development in nocturnal views providing an aesthetically pleasing environment through the creation of mood and highlighting of landscape elements. All the accessible points and sitting out areas will be provided with sufficient illumination to meet the required lighting standards. Lighting designed for all open space will be carefully designed to avoid glare and shall be effective in energy saving. A timer switch control system shall be provided and where possible the lighting will be designed to avoid spillage and potential glare impacts.

7.0 LANDSCAPE MANAGEMENT AND MAINTENANCE

7.1 Upon completion of the construction works, a 12-months defect liability period will be implemented which applies to both hard and soft landscaping works. The soft landscape specialist contractor will be responsible for the maintenance of planting during this first year following practical completion to ensure proper establishment of planting works. Ultimately the property management team of proposed development will employ maintenance staff to take care of all landscape areas including hard and soft landscape works as described below:

Hard Landscape Elements

I - Routine Maintenance (Daily –Weekly)

a. Rubbish and litter removal;
b. Sweeping and cleaning;
c. Water feature cleaning; and
d. Damage inspection and repair for site furniture and light bulb replacement.

II – Annual / Long Term Maintenance

a. Repainting;
b. Resurfacing of worn pavements;
c. Replacing worn parts site furniture, lighting fixture and other facilities;
d. Replacement of worn landscape furniture; and
e. Soft Landscape Elements

Soft Landscape Elements

7.2 The softworks contractor will be responsible for a 12-month establishment period of plants after practical completion of the planting works. It allows a period of time for proper establishment of the plants.

7.3 Upon the end of the 12-months establishment period, the developer will employ maintenance staff to take care of all landscape areas within the development.

7.4 Movable elevated work platform will be used for the maintenance of green wall, if any.

8.0 GREENERY COVERAGE

8.1 The required greenery coverage is 20% of the site area. Based on the landscape design described in this report, the greenery area requirement has been achieved.

8.2 The means street level has been determined to be defined by level of the arrival driveway (+91mPD), hence all floors of the development are considered to fall within Primary Zone.

8.3 The greenery coverage plans of B/F, G/F and 2/F are shown in **Appendix E7, E8 and E9.** The site coverage of greenery calculation is shown in **Table C**. The greenery coverage plans and the site coverage of greenery calculation are for PlanD's reference only.

Table C - Greenery Coverage Calculations

Site Area	2,043.869 m^2	
Greenery Coverage		**Remarks**
B/F (Primary Zone)	Approx. 75.53 m^2	Edge of Undercover Landscape within 45 degree projection zone
G/F (Primary Zone)	Approx. 312.63 m^2	
1/F (Primary Zone)	Approx. 0 m^2	
2/F (Primary Zone)	Approx. 26.27 m^2	
R/F (Primary Zone)	Approx. 0m^2	
Total Greenery Area	**Achieved 20.28%** Approx. 414.43 m^2	Required 20% Required 408.77 m^2
Primary Zone Greenery	**Achieved 20.28%** Approx. 414.43 m^2	Required 10% Required 204.38 m^2

APPENDIX E1 – E6

Landscape Master Plan

Appendix E1 Landscape Master Plan- BF

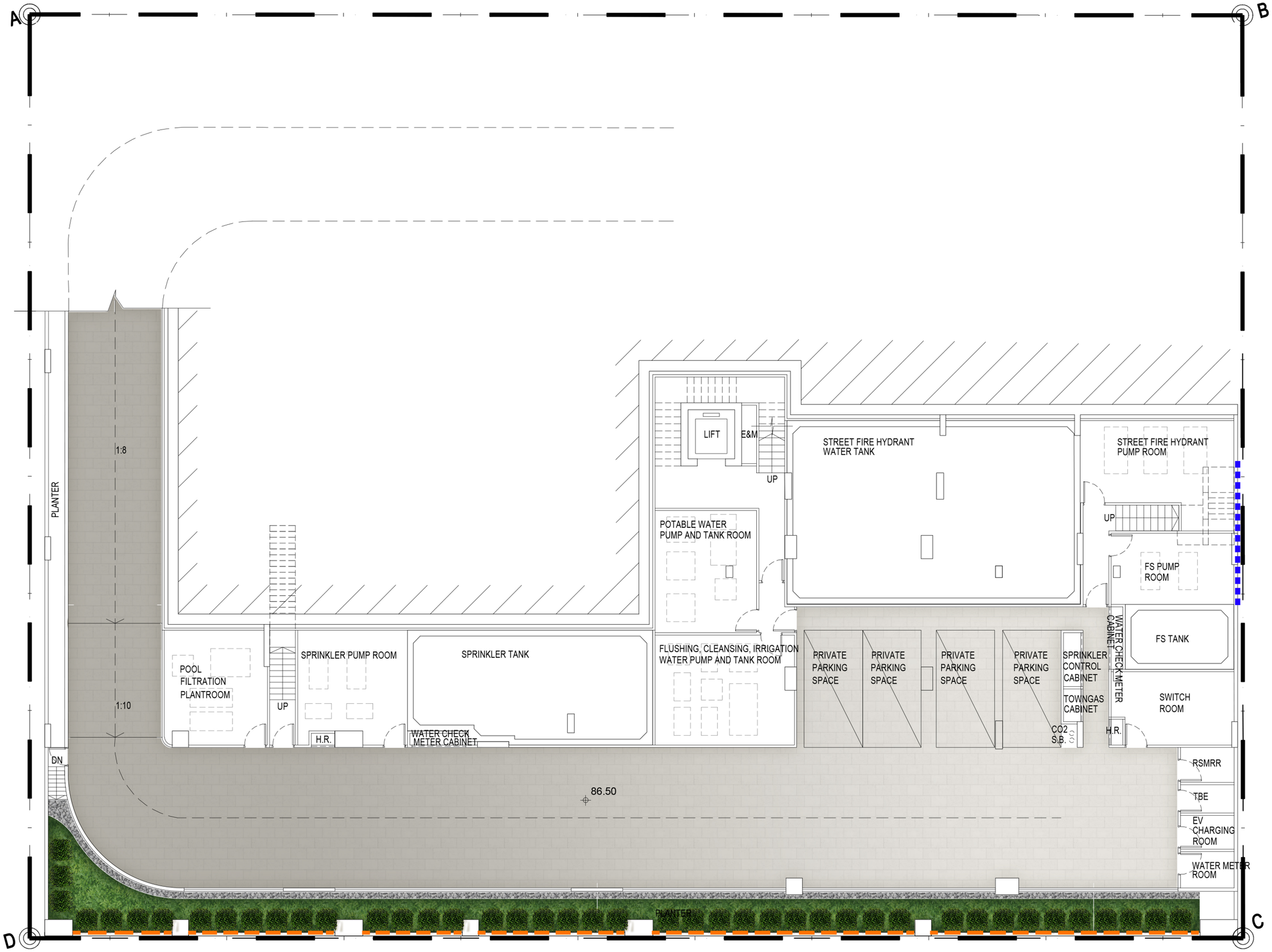
Appendix E2 Landscape Master Plan- GF

Appendix E3 Landscape Master Plan- 1F

Appendix E4 Landscape Master Plan- 2F

Appendix E5 Landscape Master Plan- RF

Appendix E6 Landscape Master Plan- Overall



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-	FIRST ISSUANCE	MAY 2025

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LEGEND

EDGE PLANTING

VERTICAL GREENING

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Project

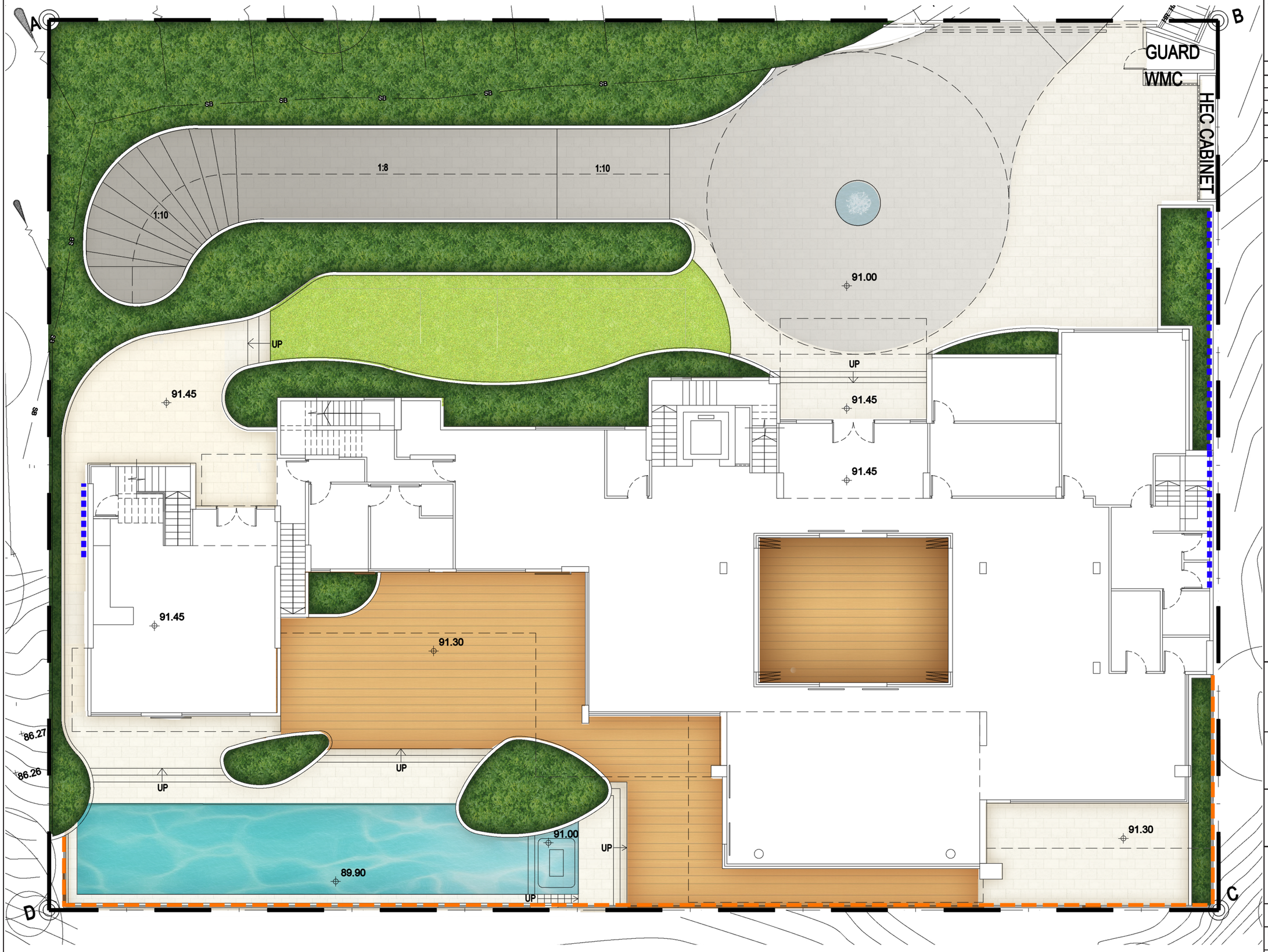
66 DEEP WATER BAY

Drawing Title

LANDSCAPE MASTER PLAN - BF

Scale	Size	Project Number
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Issue Status		Drawing Number
/		LMP1.01

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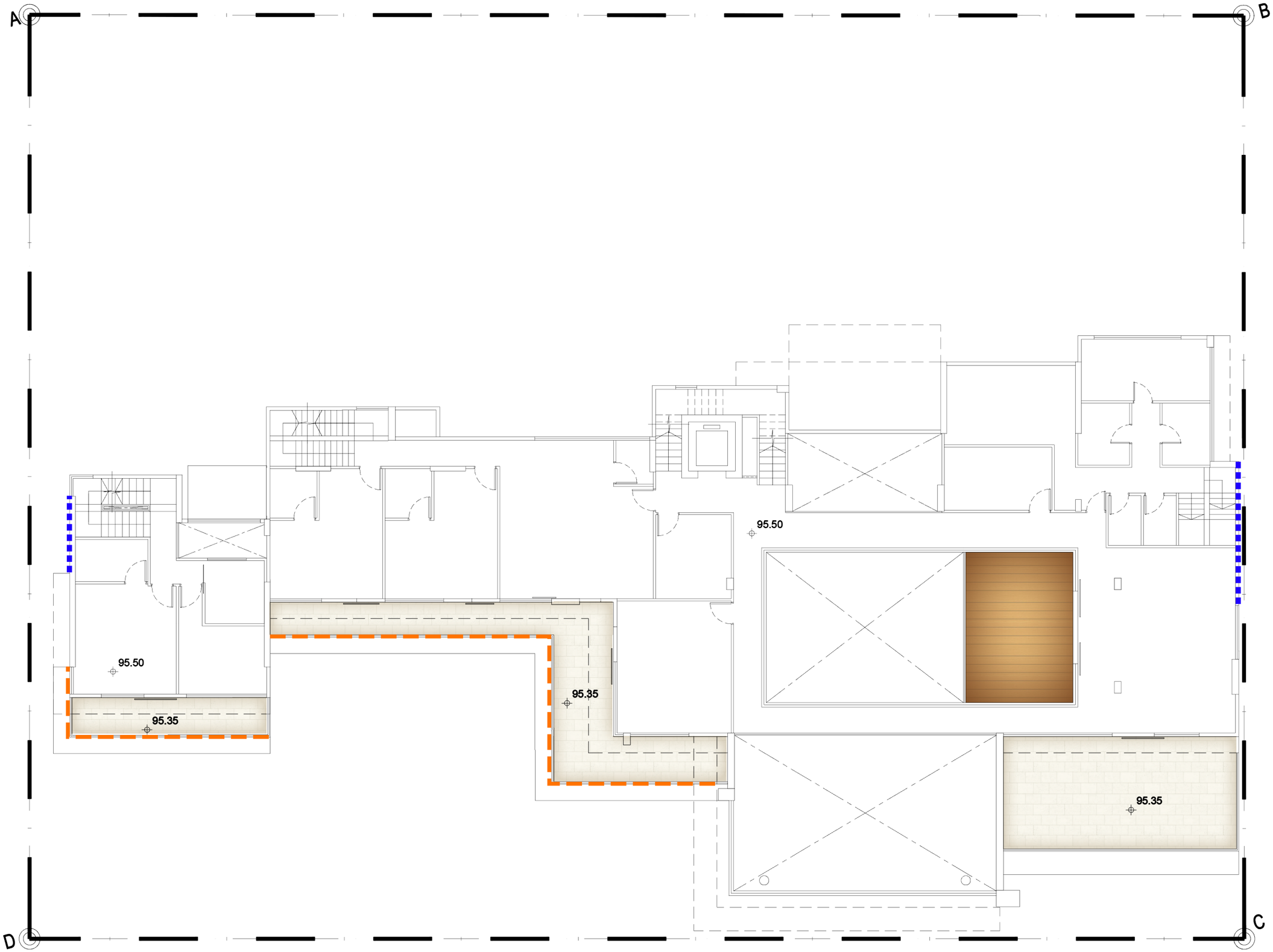
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LANDSCAPE MASTER PLAN - GF

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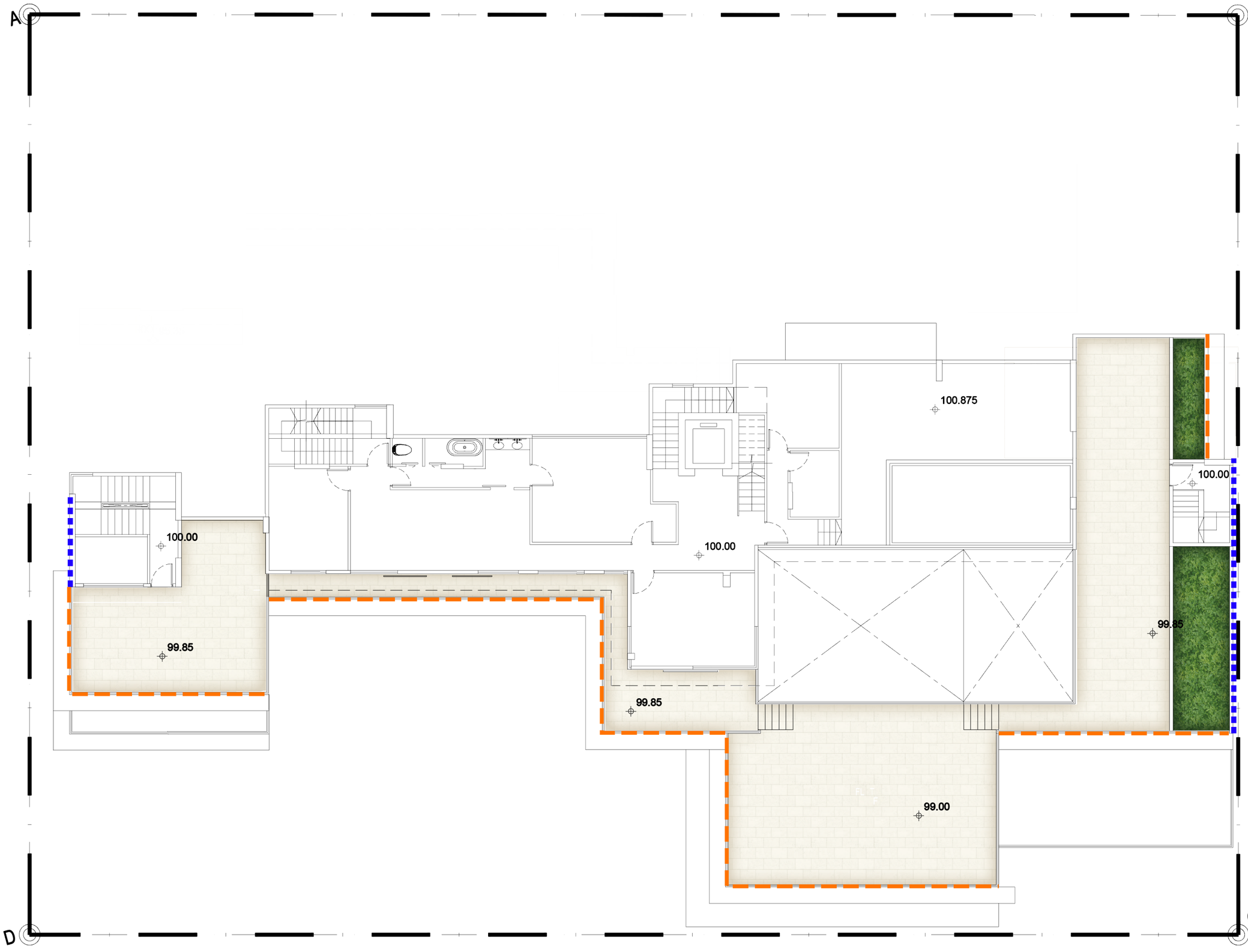
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Drawing Title

LANDSCAPE MASTER PLAN - 1F

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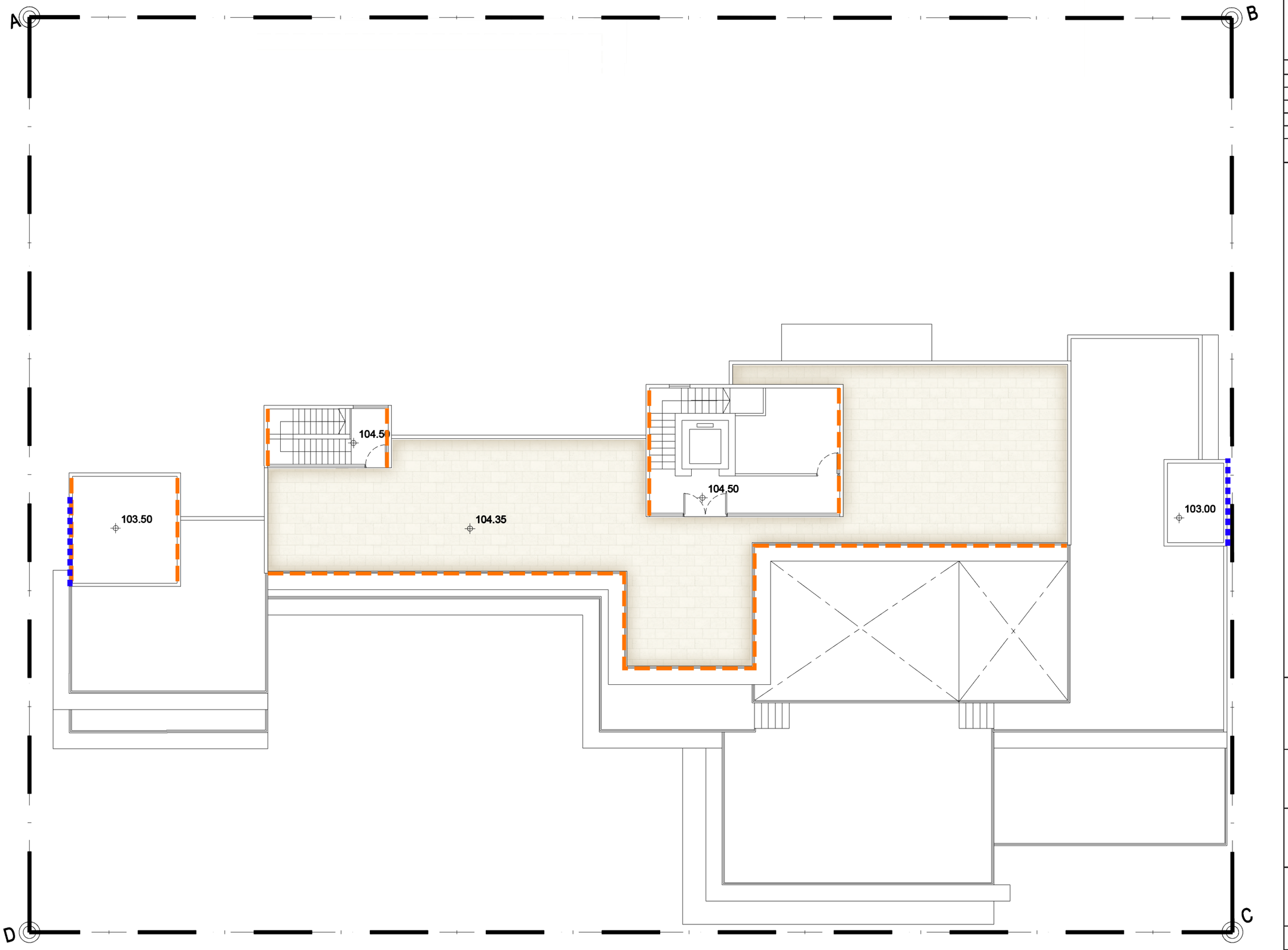
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Drawing Title

LANDSCAPE MASTER PLAN - 2F

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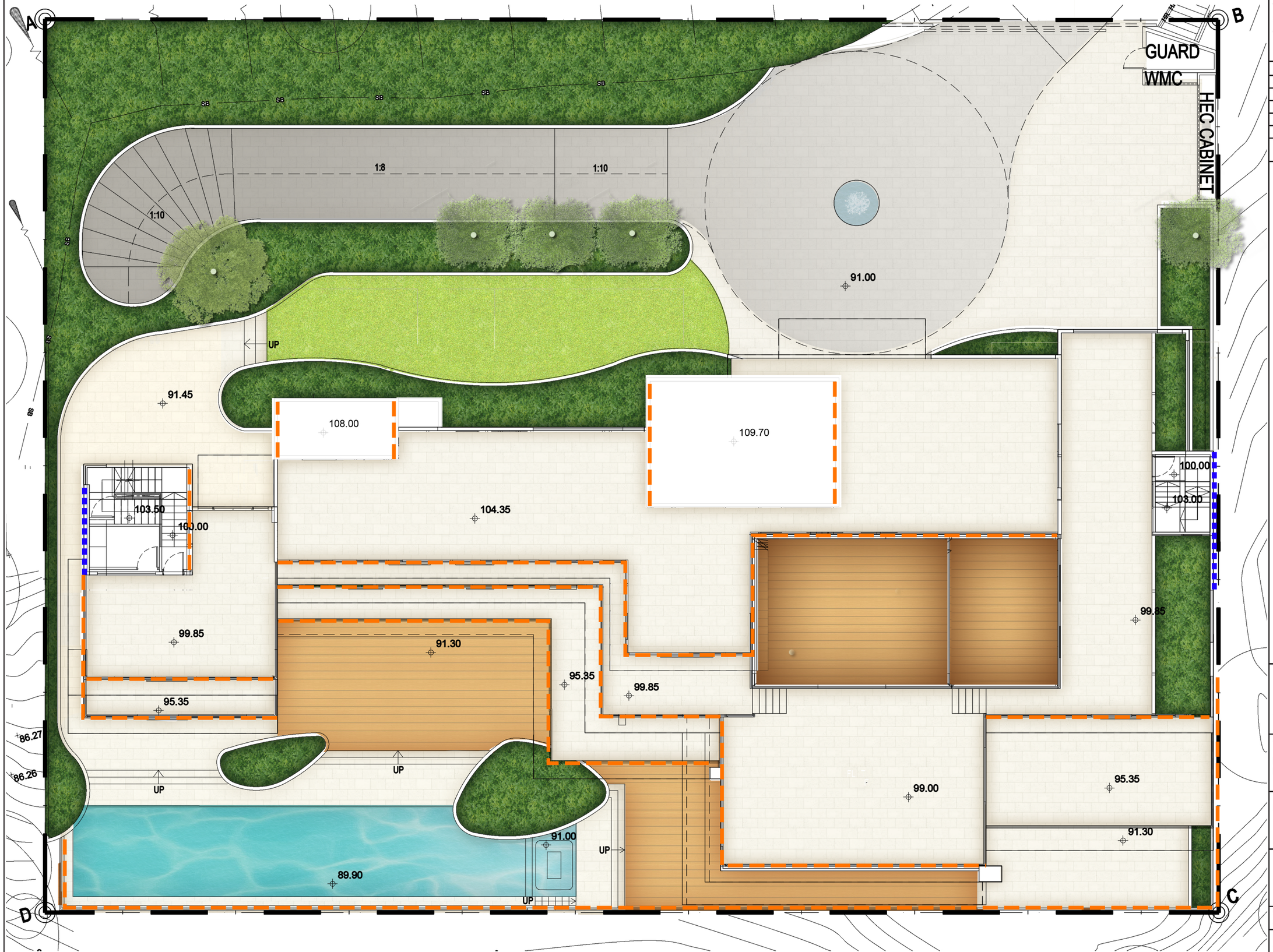
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- EDGE PLANTING
- VERTICAL GREENING

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LANDSCAPE MASTER PLAN - OVERALL

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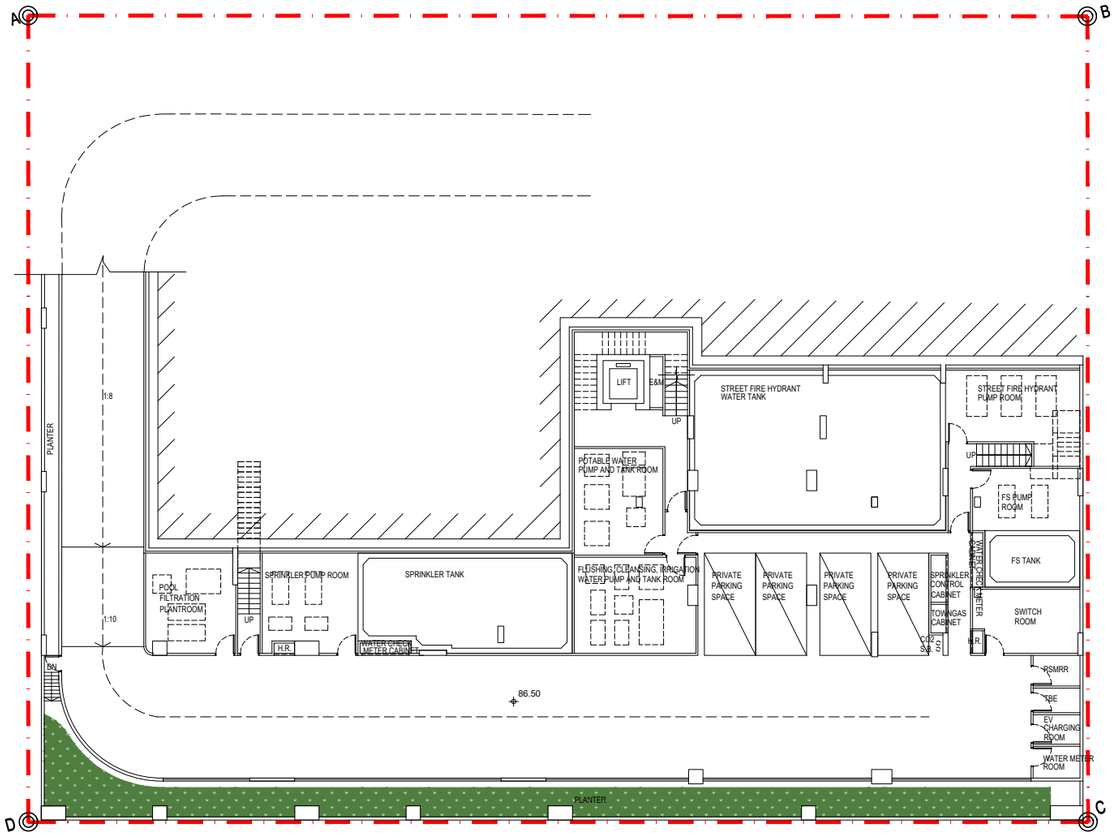
APPENDIX E7 – E9

Greenery Coverage Plan

Appendix E7 Greenery Coverage Plan- BF

Appendix E8 Greenery Coverage Plan- GF

Appendix E9 Greenery Coverage Plan- 2F



GREENERY AREA ON BF
= 75.53 m2

GREENERY AREA ON BF
= 75.53 m2

A GREENERY AREA PLAN (BF)
SCALE

1:300 @A3

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LEGEND

NOTIONAL BOUNDARY

TREE LOCATION AND CROWN

ID + LEVEL TREE NO. & LEVEL (ROOT COLLAR)

NEW TREE

GREENERY AREA (MIN. 300 SOIL DEPTH)

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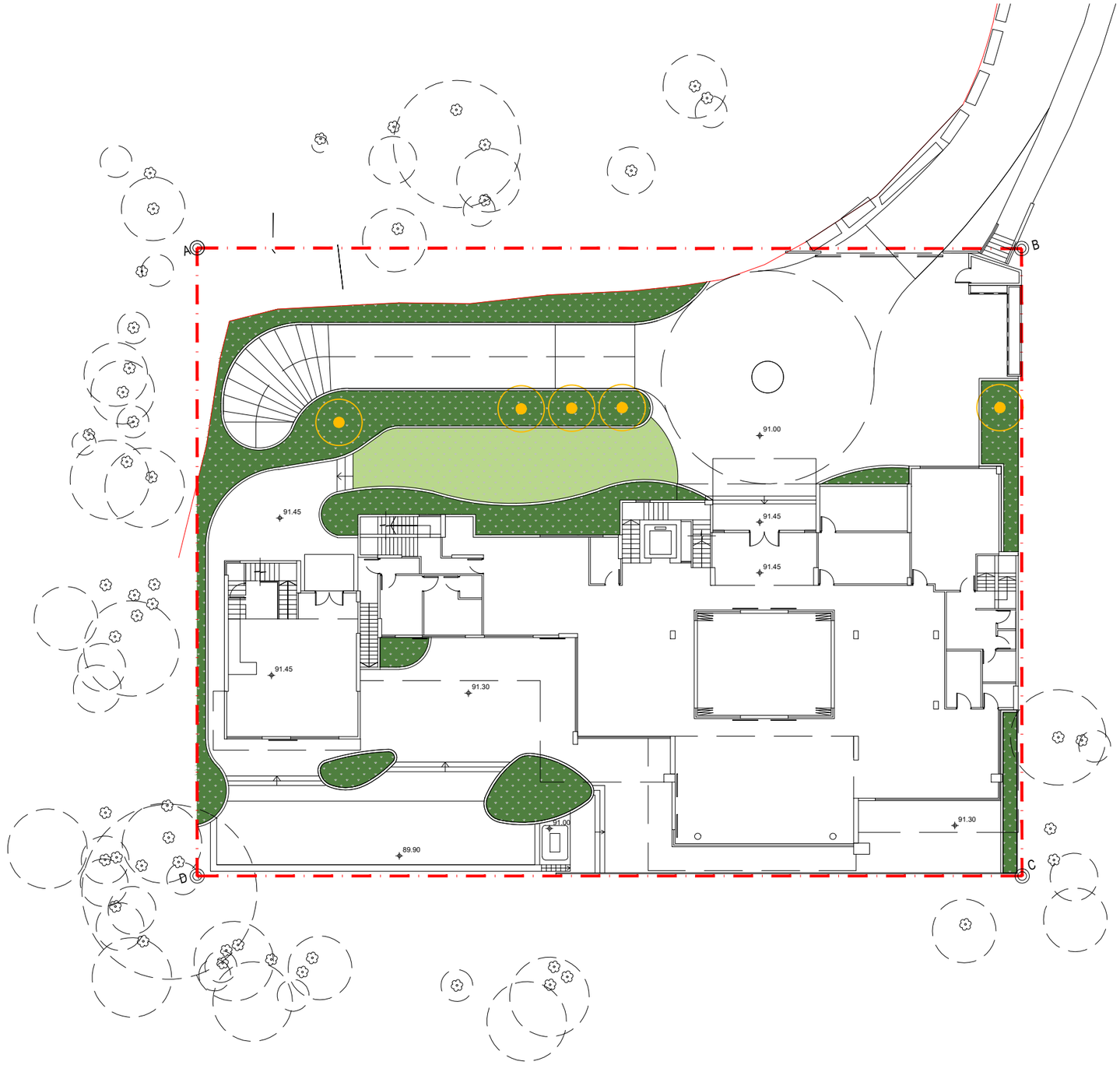
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Project
66 DEEP WATER BAY

Drawing Title
GREENERY AREA PLAN - BF

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AS SHOWN	A3	KOLA630
Issue Status		Drawing Number
/		PP-1.04.1

Ref.
PP-1.04.1 GREENERY AREA PLAN - BF.DWG



GREENERY AREA ON GF
= 312.63 m2

A TREE PLANTING PLAN (GF)

SCALE 1:300 @A3

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LEGEND

- NOTIONAL BOUNDARY
- TREE LOCATION AND CROWN
- ID + LEVEL — TREE NO. & LEVEL (ROOT COLLAR)
- NEW TREE
- GREENERY AREA (MIN. 300 SOIL DEPTH)
- GREENERY AREA - LAWN (MIN. 300 SOIL DEPTH)

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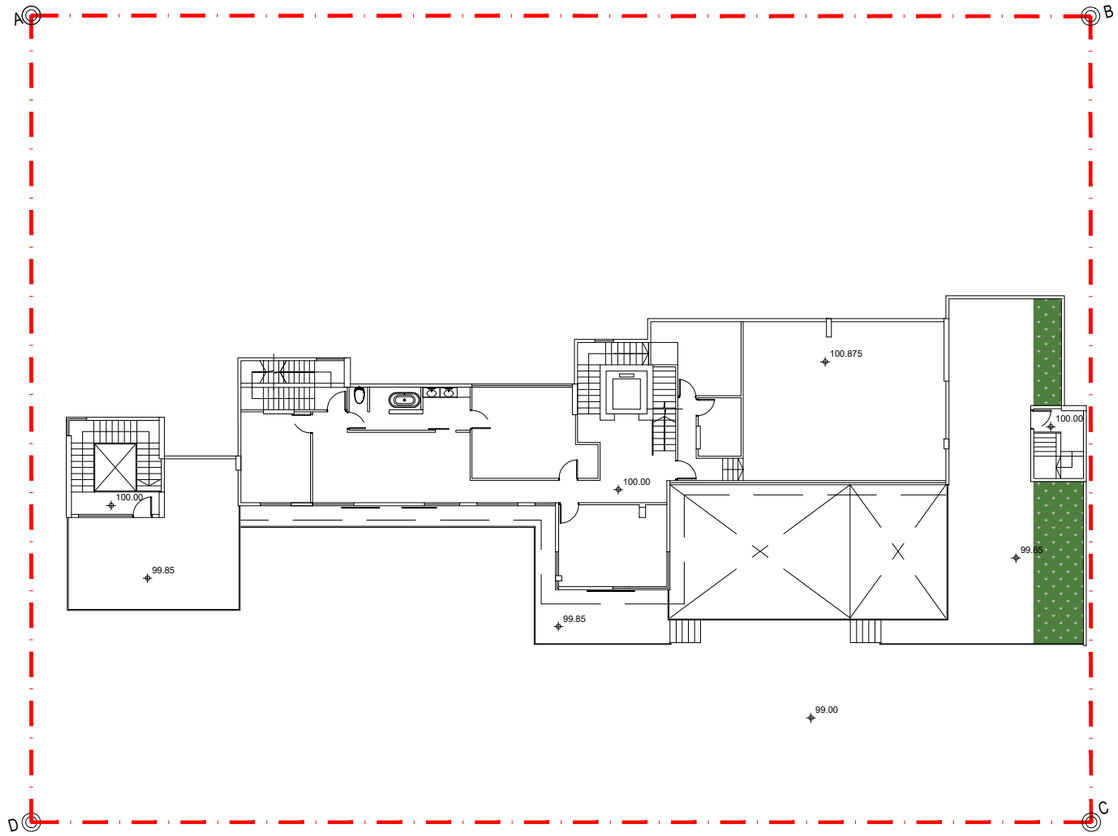
Client
BLUE WATER GROUP MANAGEMENT LIMITED

Project
66 DEEP WATER BAY

Drawing Title
GREENERY AREA PLAN - GF

Scale	Size	Project Number
AS SHOWN	A3	KOLA630
Issue Status		Drawing Number
/		PP-1.04.2

Ref.
PP-1.04.2 GREENERY AREA PLAN - GF_R1.DWG



GREENERY AREA ON 2F
= 26.27 m2

TOTAL GREENERY AREA (BF + GF + 2F)
= 75.53 + 312.63+ 26.27
= 414.43 m2

A GREENERY AREA PLAN (2F)

SCALE 1:300 @A3

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Rev.	Description	Date
-	FIRST ISSUANCE	MAY 2025

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NM	YK

LEGEND

- NOTIONAL BOUNDARY
- TREE LOCATION AND CROWN
- ID + LEVEL — TREE NO. & LEVEL (ROOT COLLAR)
- NEW TREE
- GREENERY AREA (MIN. 300 SOIL DEPTH)

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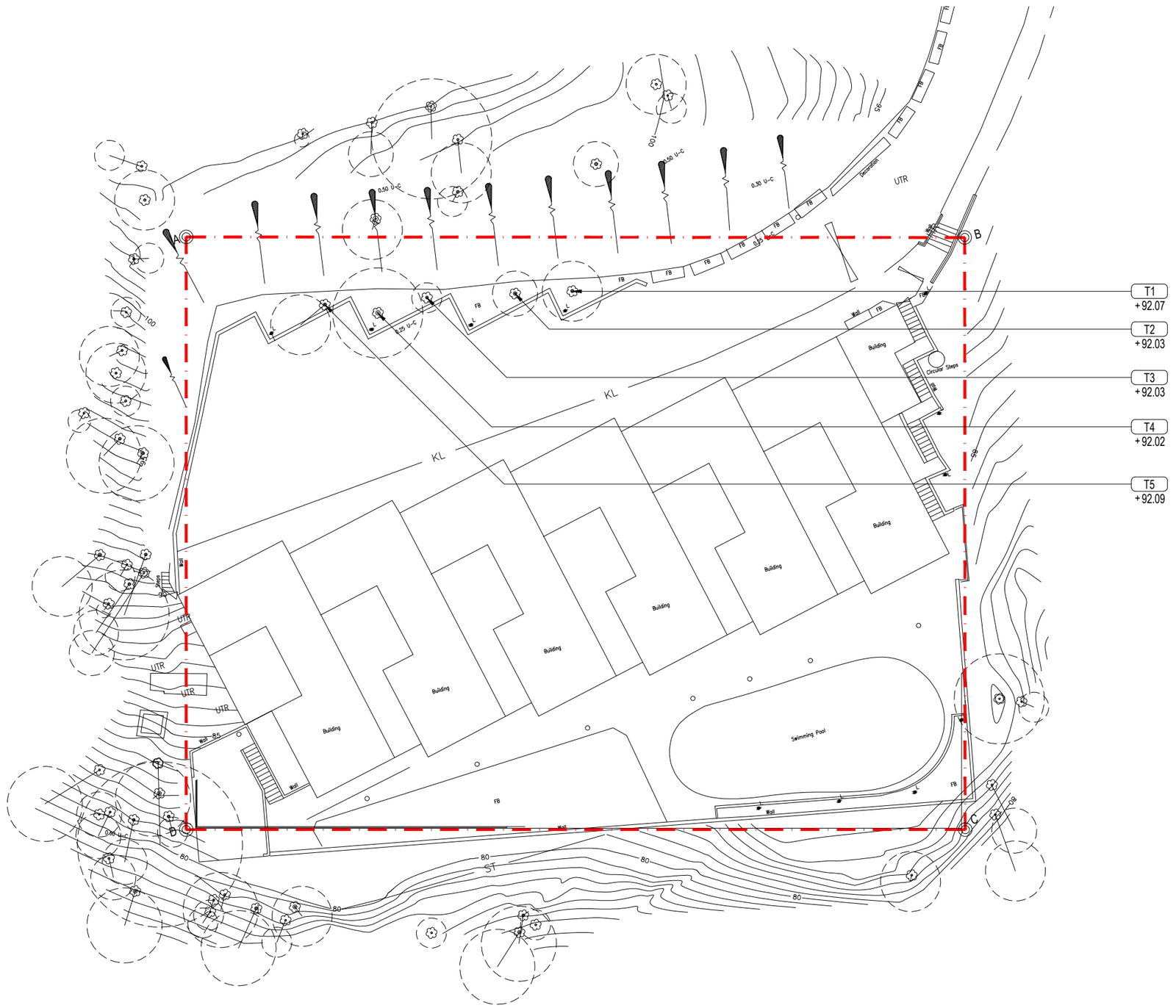
Drawing Title
GREENERY AREA PLAN - 2F

Scale	Size	Project Number
AS SHOWN	A3	KOLA630
Issue Status		Drawing Number
/		PP-1.04.3

Ref.
PP-1.04.3 GREENERY AREA PLAN - 1F_R1.DWG

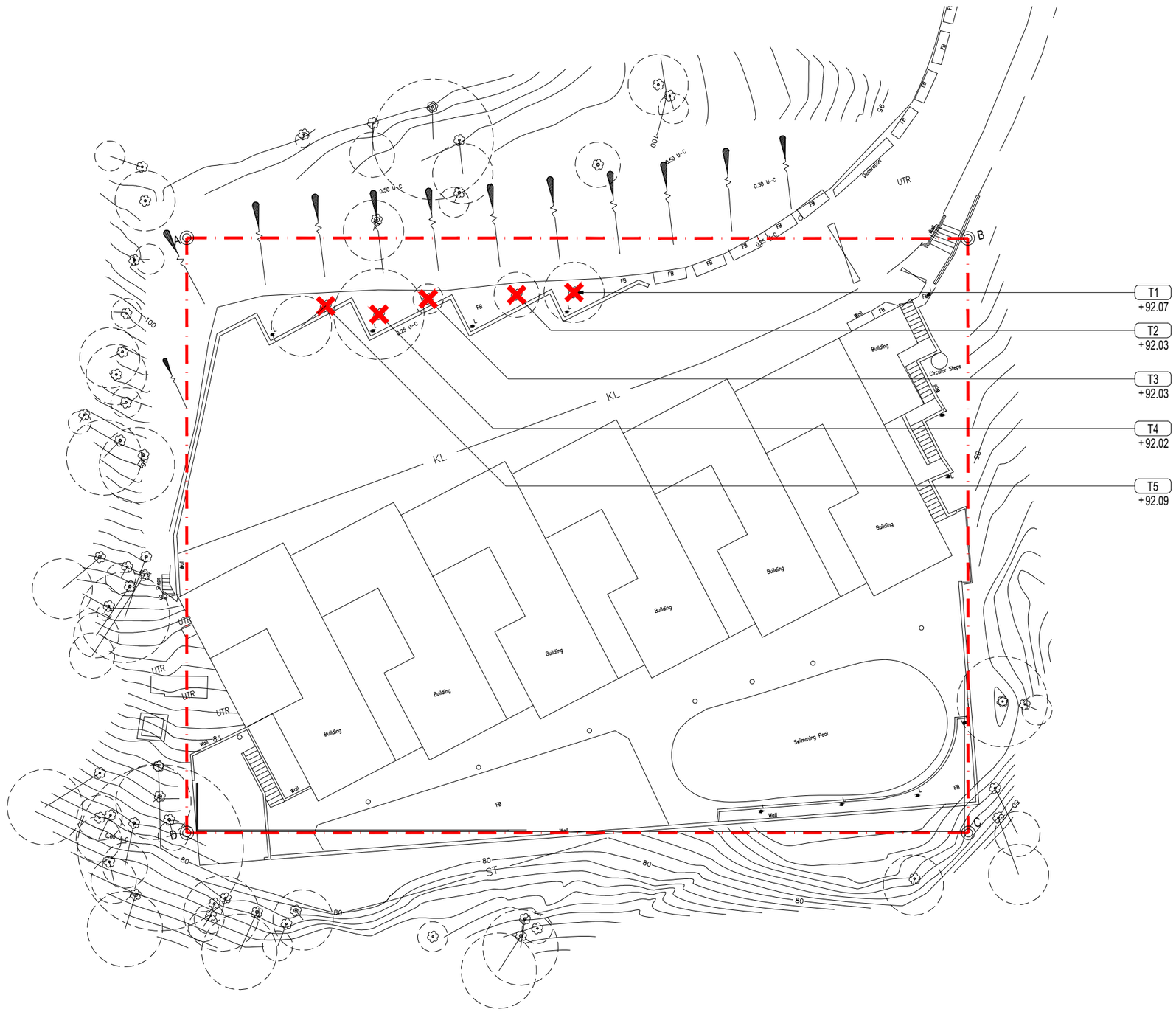
APPENDIX E10

Tree Survey Plan


A
B
C
T1
+92.07
T2
+92.03
T3
+92.03
T4
+92.02
T5
+92.09
KL
KL
ST
Building
Building
Building
Building
Building
Building
Swimming Pool
Circular Steps
Wall
Wall
Wall

APPENDIX E11

Tree Treatment Plan



A TREE TREATMENT PLAN

SCALE 1:300 @A3

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Rev.	Description	Date
-	FIRST ISSUANCE	MAY 2025

Draw by	App
NM	YK

LEGEND

- NOTIONAL BOUNDARY
- ID + LEVEL — TREE NO. & LEVEL (ROOT COLLAR)
- TREE TO BE RETAINED
- TREE TO BE FELLED

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Project
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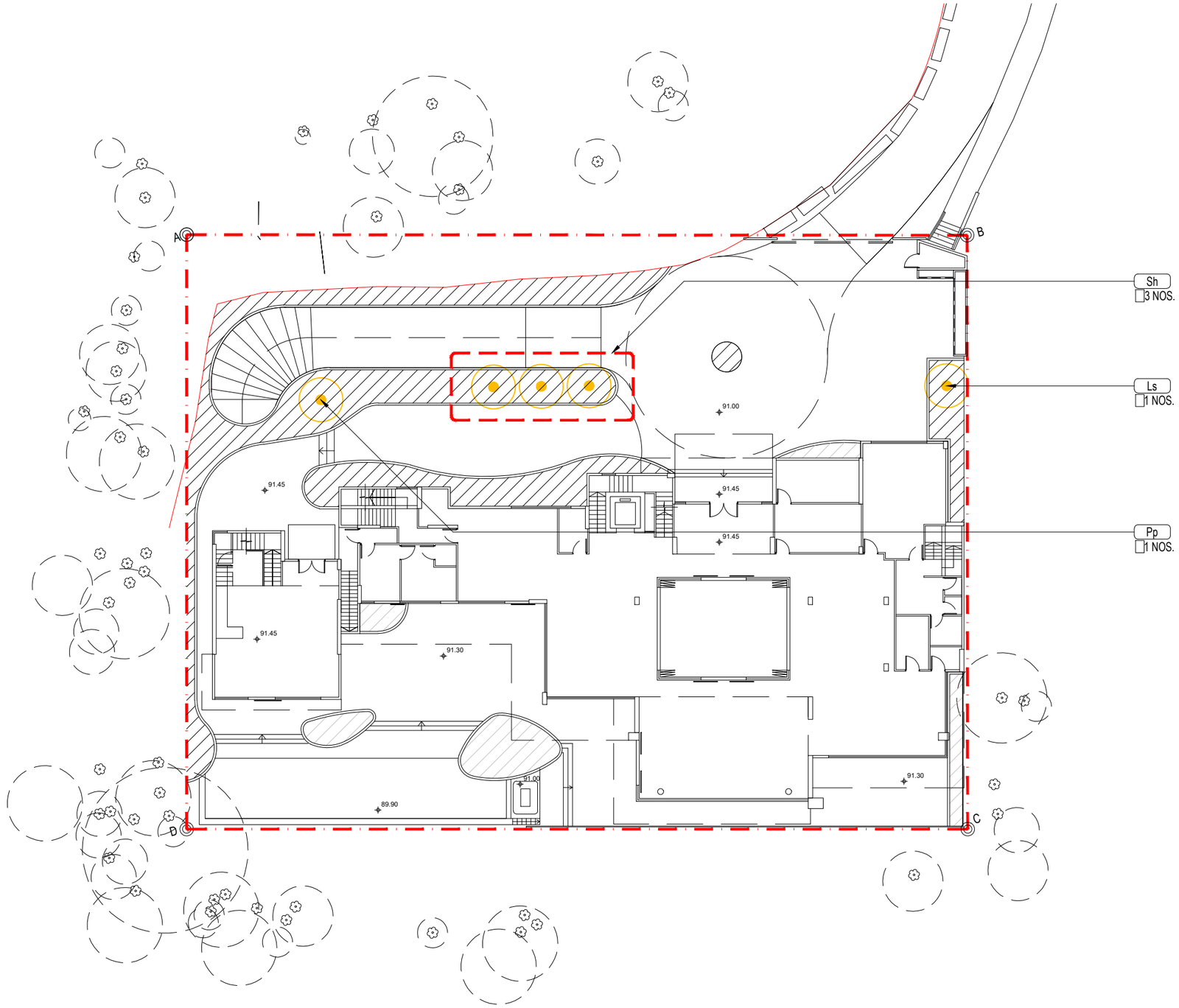
Drawing Title
TREE TREATMENT PLAN

Scale	Size	Project Number
AS SHOWN	A3	KOLA630
Issue Status /		Drawing Number PP-1.02

Ref.
PP-1.02 TREE TREATMENT PLAN_R2.DWG

APPENDIX E12

Compensatory Tree Plan



A TREE PLANTING PLAN (GF)

SCALE 1:300 @A3

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Rev.	Description	Date
-	FIRST ISSUANCE	MAY 2025

Draw by	App
NM	YK

LEGEND

NOTIONAL BOUNDARY

TREE LOCATION AND CROWN

ID + LEVEL TREE NO. & LEVEL (ROOT COLLAR)

NEW TREE

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Project
66 DEEP WATER BAY

Drawing Title
TREE PLANTING PLAN (G/F)

Scale	Size	Project Number
AS SHOWN	A3	KOLA630
Issue Status /		Drawing Number PP-1.03

Ref.
PP-1.03 TREE PLANTING PLAN_R1.DWG

APPENDIX E13

Tree Assessment Schedule

TREE ASSESSMENT SCHEDULE

Location: No. 66 Deep Water Bay Road **Weather Condition at Time of Inspection:** Sunny

Tree No.	Species		Tree Size			Recommendation (Retain/ Transplant/ Fell)	Remarks
	Scientific Name	Chinese Name	Height (m)	DBH (mm)	Crown Spread (m)		
T1	Dead tree	死樹	6	178	3	Fell	No foliage; Loose bark; Trunk cavity; Climbers
T2	Dead tree	死樹	5	233	2	Fell	No foliage; Loose bark
T3	Dead tree	死樹	3	140	2	Fell	No foliage; Loose bark
T4	Dead tree	死樹	7	280	4	Fell	No foliage; Loose bark; Trunk wound
T5	Dead tree	死樹	5	210	3	Fell	No foliage; Loose bark

Summary Table

	Number of Trees
Tree to be Retained	0
Tree to be Transplanted	0
Tree to be Felled	5
Total Numbers of Existing Tree(s)	0

APPENDIX E14

Tree Photographical Record

Tree Inspection Report
Location: No. 66 Deep Water Bay Road
Photographic Record



T1___Tag



T1___Wholeview



T1__Root condition



T1_Climbers (1)



T1_Climbers (2)



T1_Dead tree (Loose bark) (1)



T1_Dead tree (Loose bark) (2)



T1_Dead tree (Loose bark) (3)

Tree Inspection Report
Location: No. 66 Deep Water Bay Road
Photographic Record



T1_Dead tree (No foliage 1) (1)



T1_Dead tree (No foliage 1) (2)



T1_Dead tree (No foliage 2) (1)



T1_Dead tree (No foliage 2) (2)



T1_Trunk cavity



T2___Wholeview



T2__Root condition



T2_Dead tree (Loose bark) (1)



T2_Dead tree (Loose bark) (2)



T2_Dead tree (No foliage 1) (1)



T2_Dead tree (No foliage 1) (2)



T2_Dead tree (No foliage 2) (1)

Tree Inspection Report
Location: No. 66 Deep Water Bay Road
Photographic Record



T2_Dead tree (No foliage 2) (2)



T3___Tag



T3___Wholeview



T3__Root condition



T3_Dead tree (Loose bark 1) (1)



T3_Dead tree (Loose bark 1) (2)



T3_Dead tree (Loose bark 2) (1)



T3_Dead tree (Loose bark 2) (2)



T3_Dead tree (No foliage 1) (1)



T3_Dead tree (No foliage 1) (2)



T3_Dead tree (No foliage 1) (3)



T3_Dead tree (No foliage 1) (4)

Tree Inspection Report
Location: No. 66 Deep Water Bay Road
Photographic Record



T4___Tag



T4___Wholeview



T4__Root condition



T4_Dead tree (No foliage 1) (1)



T4_Dead tree (No foliage 1) (2)



T4_Dead tree (No foliage 2) (1)



T4_Dead tree (No foliage 2) (2)



T4_Dead tree (Loose bark 1) (1)



T4_Dead tree (Loose bark 1) (2)



T4_Dead tree (Loose bark 2) (1)



T4_Dead tree (Loose bark 2) (2)



T4_Trunk wound (1)



T4_Trunk wound (2)



T5___Tag



T5___Wholeview



T5__Root condition



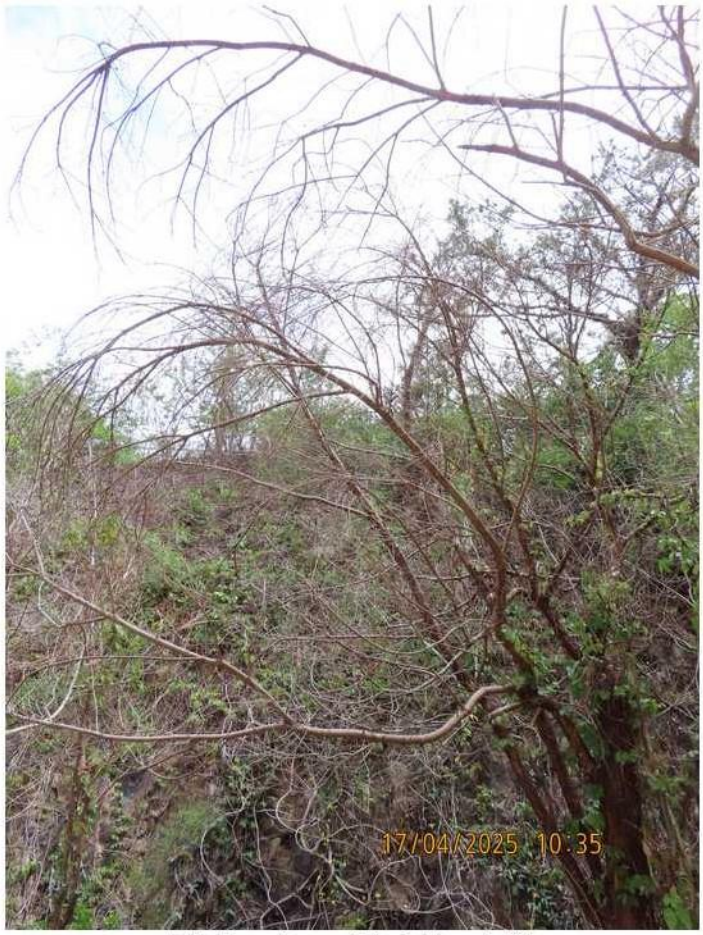
T5_Dead tree (Loose bark) (1)



T5_Dead tree (Loose bark) (2)



T5_Dead tree (Loose bark) (3)



T5_Dead tree (No foliage) (1)

Tree Inspection Report
Location: No. 66 Deep Water Bay Road
Photographic Record



T5_Dead tree (No foliage) (2)

Appendix 3

Traffic Assessment Report

21/10/2025

Reference number CHK50850710

SECTION 16 PLANNING APPLICATION FOR THE PROPOSED RESIDENTIAL DEVELOPMENT AT NO. 66 DEEP WATER BAY ROAD, SHOUSON HILL, HONG KONG

FINAL TRAFFIC ASSESSMENT REPORT



SYSTRA MVA

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Drawing No. 4.1	**Year 2032 Reference Traffic Flows**
Drawing No. 4.2	**Year 2032 Design Traffic Flows**

1. INTRODUCTION

1.1. Background

1.1.1. The Subject Site is located at No. 66 Deep Water Bay Road, Shouson Hill, Hong Kong where it is zoned as "R(C)3" in accordance with the approved Shouson Hill & Repulse Bay Outline Zoning Plan No. S/H17/13. The Subject Site currently comprises 6 houses with 12 car parking spaces. An approximately 4.0m wide Right of Way (ROW) provides access for the Subject Site via Deep Water Bay Road.

1.1.2. The Client intends to redevelop the Subject Site into 2 houses and increase the maximum permitted site coverage from 25% to 37%. The 2 houses will be expected to be completed by Year 2029. Due to the proposed increase in the permitted site coverage, a Section 16 Planning Application will therefore be required.

1.1.3. MVA Hong Kong Ltd. has been commissioned as the traffic consultant to prepare a traffic study to review the traffic impact inducted by the proposed change of development parameters of the Subject Site and provide traffic engineering input in support of the Section 16 Planning Application. The location of the Subject Site is shown in **Drawing No. 1.1**.

2. THE SUBJECT SITE

2.1. Existing Development Parameter and Provision of Internal Transport Facilities

2.1.1. The existing development parameter for the Subject Site is summarized in **Table 2.1** below.

Table 2.1 The Existing Development Parameter for the Subject Site

	The Existing Development Parameters
Site Area	About 2,043.869 m^2 (1)
Domestic Plot Ratio (PR)	0.75
No. of houses	6 (2)
Maximum Domestic Gross Floor Area (GFA)	1,532.902 m^2 (Approximately 255m^2 GFA per house)

Note:
(1) Based on the lease.
(2) Based on the General Building Plan (GBP) approved in Year 1990.

2.1.2. With reference to the General Building Plan (GBP) approved in Year 1990, the Subject Site comprises of 6 houses, the existing provision of internal transport facilities under lease requirement is summarized in **Table 2.2** below.

Table 2.2 Requirement on the Provision of Internal Transport Facilities under Lease Requirement and Existing Provision

Transport Facilities	Development Component	Development Parameters (1)	Existing Provision (2)
Private Car Parking Space	Residential (6 houses)	1,532.902 m^2 (Approximately 255m^2 GFA per house)	12
		Total Car Parking Space	**12 (3)**

Note:
(1) Based on the lease.
(2) Based on the General Building Plan (GBP) approved in Year 1990.
(3) Under the Lease requirement, car parking spaces should be provided at a rate of not less than 1.5 spaces for each residential unit in the building or buildings erected or to be erected on the said piece or parcel of ground or not less than 2 spaces for each free-standing dwelling unit.

2.1.3. As shown in the above **Table 2.2**, with reference to the lease requirement, not less than 1.5 no. of private car parking spaces should be provided for each residential unit, therefore a total 12 nos. of car parking spaces are currently provided within the Subject Site.

2.2. Proposed Development Schedule and Provision of Internal Transport Facilities

2.2.1. Under the proposed residential redevelopment, the Client intends to redevelop into 2 houses and the development parameters are summarised in **Table 2.3** below.

Table 2.3 Development Parameter for the Proposed Residential Development

	Development Parameters
Site Area	About 2,043.869 m^2
Domestic Plot Ratio (PR)	0.75
No. of houses	2
Maximum Domestic Gross Floor Area (GFA)	1,532.902 m^2 (Approximately 1,370 m^2 GFA for House 1 and 162 m^2 GFA for House 2)

2.2.2. The internal transport provision of parking facilities are proposed in accordance with the lease requirement. The proposed provision of internal transport facilities under the proposed residential redevelopment is summarised in **Table 2.4** below.

Table 2.4 Proposed Provision of Internal Transport Facilities under Lease Requirement

Transport Facilities	Development Component	Development Parameters	Proposed Provision (1)
Private Car Parking Space	Residential (2 houses)	1,532.902 m^2 (Approximately 1,370 m^2 GFA for House 1 and 162 m^2 GFA for House 2)	4
		Total Car Parking Space	**4**

Note:

(1) Under the Lease requirement, car parking spaces should be provided at a rate of not less than 1.5 spaces for each residential unit in the building or buildings erected or to be erected on the said piece or parcel of ground or not less than 2 spaces for each free-standing dwelling unit.

2.2.3. Based on the development parameters of the Subject Site given in **Table 2.2** and **2.4**, the net difference of internal transport facilities between the existing condition and the proposed residential redevelopment are presented in **Table 2.5** below**.**

Table 2.5 Net difference of Existing and Proposed Provision of Internal Transport Facilities

Transport Facilities		Existing Provision based on GBP approved in Year 1990 (1) (A)	Proposed Provision for the Residential Redevelopment based on lease requirement (B)	Net Change ((B) – (A))
Private Car Parking Space	Residential	12	4	-8
Total Net Difference for Internal Transport Facilities		**12**	**4**	**-8**

Note:

(1) Based on the latest General Building Plan (GBP) approved in Year 1990.

2.2.4. As indicated in **Table 2.5**, the number of private car parking spaces will be reduced significantly from 12 nos. to 4 nos. due to the change of development parameters from 6 houses into 2 houses.

2.2.5. Sufficient manoeuvring space is allowed for the internal circulation for the proposed residential development and all the internal access roads can comply with government standards. The internal Ground floor and basement floor layout are illustrated in **SK1** and **SK2 in Annex A**.

2.2.6. Swept paths of private vehicles manoeuvring at Ground floor and basement floor are conducted and illustrated in **SK3** to **SK6** in **Annex A** respectively and sufficient horizontal clearance can be provided with smooth manoeuvring of vehicles achieved.

3. EXISTING TRAFFIC CONTEXT

3.1. Existing Road Network

3.1.1. The Subject Site is mainly served by Deep Water Bay Road which is connected to Island Road to the south and Shouson Hill Road East to the north. Currently, there is a 4m wide Right-of-way (ROW) connecting the Subject Site and Deep Water Bay Road. The ingress and egress traffic routing for the Subject Site is illustrated in **Drawing No. 3.1.**

3.1.2. Deep Water Bay Road is a local distributor running in a north-south direction connection Repulse Bay Road to the north and Island Road to the south. It is a single two carriageway with one traffic lane for both northbound and southbound traffic.

3.1.3. Island Road is a primary distributor running in an east-west direction connecting Repulse Bay to the east and Wong Chuk Hang Road to the west. It is a single two carriageway with one traffic lane for both eastbound and westbound traffic.

3.1.4. Shouson Hill Road East is a local road within Shouson Hill area which provide accesses for the adjacent developments in the area. It is a single two carriageway with one traffic lane for each bound of traffic.

3.2. Existing Junctions to be assessed

3.2.1. In order to assess the road links and junctions in the vicinity of the Subject Site, 2 junctions are identified to be assessed as listed in **Table 3.1**. The location of the identified junctions within the Area of Influence (AOI) are shown in **Drawing No. 3.2** and the existing junction layout of the identified junctions are shown in **Drawing No. 3.3 to 3.4**.

Table 3.1 Identified Critical junctions to be assessed

Ref	Junctions	Type pf Junction	Figure No.
J1	Island Road/ Deep Water Bay Road	Priority	**3.3**
J2	Shouson Hill Road East/ Deep Water Bay Road	Priority	**3.4**

3.2.2. To determine the existing traffic conditions of the identified critical junctions, manual classified count survey for J1 to J2 were carried out during the AM Peak between 07:00am to 09:30am and PM Peak between 4:30pm to 7:00pm on a typical weekday in October 2025.

3.2.3. Based on the observed traffic flows, it revealed that the AM and PM peak hours occurred during 7:45am to 8:45am and 4:45pm and 5:45pm respectively. The 2025 observed peak hour traffic flows are shown in **Figure 3.4**.

Junction Capacity Assessment

3.2.4. Based on the 2025 observed traffic flows as presented in **Drawing No. 3.5**, the existing operational performance of the identified critical junctions are assessed under the current junction configuration. The results are summarised in **Table 3.2** below.

Table 3.2 2025 Observed Junction Performance

Ref	Junctions	Type pf Junction	Year 2025 DFC	
			AM Peak	PM Peak
J1	Island Road/ Deep Water Bay Road	Priority	0.046	0.055
J2	Shouson Hill Road East/ Deep Water Bay Road	Priority	0.042	0.075

Note:
(1) DFC – Design flow to capacity ratio for roundabout/ priority junction. DFC ≤ 0.85 implies the roundabout/ priority junction operates with ample capacity, 0.85 < DFC < 1.0 implies the roundabout/ priority junction operates near capacity; DFC > 1.0 implied the roundabout/ priority junction is overloaded with traffic queue expected.

3.2.5. As indicated in above **Table 3.2**, all identified junctions are currently operating within their capacities during the AM Peak and PM Peak. Detailed calculations of the junction assessment are shown in **Annex B** of this report.

Road Links Capacity Assessment

3.2.6. Road link capacity analysis in terms of Volume-to-Capacity (V/C) ratio for the identified road links as shown in **Drawing No. 3.2** are also conducted based on the 2025 observed peak hour traffic flows. The results are summarised in **Table 3.3** below.

Table 3.3 2025 Observed Road Links Performance

Link No	Road Link	Direction	Design Capacity (1) (pcu/hr)	Year 2025 Observed Peak Flows (pcu/hr) (2)		Year 2025 V/C Ratio (3)	
				AM Peak	PM Peak	AM Peak	PM Peak
L1	Deep Water Bay Road	NB	404	15	10	0.04	0.02
		SB	404	15	15	0.04	0.04
L2	Deep Water Bay Road	NB	404	20	35	0.05	0.09
		SB	404	40	30	0.10	0.07

Note:
(1) Design flow capacity derived from Transport Planning and Design Manual (TPDM) Volume 2 Chapter 2 paragraph 2.4.1.1. Design Flow Capacity = 400 veh/hr each bound x surveyed pcu factor 1.01 (observed average values) = 404 pcu/hr (HV% less than 15%)
(2) The observed traffic flow refers to **Drawing No. 3.5**
(3) V/C Ratio – volume to capacity ratio for road link. V/C ratio < implies the road has sufficient capacity to cope with the anticipated traffic volume. A V/C ratio above 1.0 indicates the onset of mild congestion and a 1.0< V/C Ratio <1.2 indicates a manageable degree of congestion along the road; V/C ratio > 1.2 implies the road link is overloaded with extensively long traffic queue.

3.2.7. The assessment results in **Table 3.3** indicated that all the identified road links are operating with sufficient capacities during AM Peak and PM Peak.

4. TRAFFIC FORECASTS AND ASSESSMENT

4.1 Design Year

4.1.1 It is planned that the proposed residential redevelopment would be completed by Year 2029 tentatively. To assess the impact on the local road network due to the proposed residential redevelopment, Year 2032 (i.e. 3 years after completion of the proposed residential redevelopment) is adopted as the design year for this study.

4.1.2 It is anticipated that the future local road network will remain unchanged and there is no plan for any major road infrastructure in the vicinity by 2032. Therefore, reference (background) traffic flows for design year 2032 would be derived from the expected growth of traffic in the area with reference to the historical growth trend and area planning data, then assigning the estimated trips generation of the proposed residential redevelopment in the vicinity to the existing road network.

4.2 Year 2032 Reference Traffic Flows

4.2.1 To forecast the 2032 traffic flows, an appropriate growth factor will be identified as reference scenario. The growth factors will be derived based on the historical growth trend and the population and employment projections with reference to the following information:

- Historical traffic data of the Annual Traffic Census (ATC) reports published annually by Transport Department in **Table 4.1**;
- 2021-Based Territorial Population and Employment Data Matrices (TPEDM) planning data published by Planning Department for years 2021-2031 in **Table 4.2**;
- Projections of Population Distribution 2025-2031 by District Council District published by Planning Department in **Table 4.3**; and
- Hong Kong Population Projections 2022-2046 published by Census and Statistics Department in **Table 4.4**.

Historical Trend

4.2.2 Transport Department has traffic count stations in the vicinity of the Subject Site where covers the key access junctions of the subject site. The Average Annual Daily Traffic (A.A.D.T.) data from year 2013 to 2023 as reported in the latest Annual Traffic Census (ATC) are summarized in **Table 4.1**.

Table 4.1 Average Annual Daily Traffic (A.A.D.T.) Data

ATC Stn. No.	Road Section	A.A.D.T. (Vehicle/Day)											Annual Growth Rate (% p.a.)	
		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2018/ 2023	2013/ 2018
1223	Wong Chuk Hang Rd (Nam Fung Rd – Shouson Hill Rd)	19,260	19,430	19,030	19,080	18,860	18,210	16,040	15,500	16,750	15,930	20,140	2.04%	-1.11%
1423	Island Rd (Deep Water Bay Rd – Shouson Hill Rd)	17,190	18,200	18,470	18,520	18,310	18,220	20,850	22,470	24,280	23,090	23,610	5.32%	1.17%
1618	Island Rd (Deep Water Bay Rd – Repulse Bay Rd)	17,080	17,240	18,300	20,190	19,960	19,860	20,070	21,750	24,620	23,420	23,940	3.81%	3.06%
1858	Deep Water Bay Rd (Nam Fung Rd – Wong Nai Chung Gap Rd)	10,620	10,410	10,610	12,290	13,230	12,770	13,060	12,280	14,270	12,610	12,750	-0.03%	3.76%
2612	Deep Water Bay Rd (Nam Fung RD – Island Rd)	4,390	4,360	4,640	5,070	5,390	3,930	4,950	5,420	4,930	4,940	4,740	3.82%	-2.19%
2637	Shouson Hill Rd (Shouson Hill Rd – restricted boundary)	790	720	810	790	970	800	1,000	1,230	1,000	1,030	980	4.14%	0.25%
Total		69,330	70,360	71,860	75,940	76,720	73,790	75,970	78,650	85,850	81,020	86,160	**3.15%**	1.25%

Source: The Annual Traffic Census 2013 - 2023 as available on Transport Department's website

4.2.3 The A.A.D.T. flows in **Table 4.1** show that the overall average traffic growth on the road sections in the vicinity of the Subject Site, a historical growth rate of +1.25% per annum is derived for years from 2013 to 2018. Although the year 2019 – 2023 ATC traffic data would be affected by pandemic, the overall average traffic growth rate is also derived as reference and it is noted that +3.15% per annum from year 2018 to 2023.

Planning Data

4.2.4 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 Eastern District in year 2021, 2026 and 2031 are presented in **Table 4.2**.

Table 4.2 Population and Employment Estimates from TPEDM

Planning Data District	TPEDM Estimates	Population			Growth Rate (% p.a.)	
		2021	2026	2031	2021/2031	2026/2031
Southern	Population	263,300	258,800	267,200	0.15%	0.64%
	Employment	117,200	126,700	121,850	0.39%	-0.78%

Source: 2021 - based Territorial Population and Employment Data Matrix as available on Planning Department's website

4.2.5 As presented in **Table 4.2**, the growth rates as derived from the TPEDM estimates for Southern District from year 2021 to 2031 are ranged from -0.78% to +0.64% p.a.

4.2.6 The Projections of Population Distribution 2025-2031 by District Council District published by Planning Department and Hong Kong Population Projections 2022-2046 published by Census and Statistics Department are shown in **Tables 4.3** to **4.4** respectively.

Table 4.3 Growth Rates Derived from Projection of Distribution by District 2025-2031

Year	Projection of Population by District Council District, 2025-2031[(1)]
2025	259,600
2026	258,800
2027	262,500
2028	261,600
2029	263,900
2030	266,900
2031	267,200
Growth Rates Derived from Project of Population by District Council District (Annual Growth Rate (%))	
2025/2031	0.48%

Note:
(1) "Projected Population by District Council District, 2024-2031" is taken from Table 1 of "Projections of Population Distribution 2025-2031" published by Planning Department of the HKSAR Government in August 2023.
(Source: https://www.pland.gov.hk/pland_en/resources/population_data/pop_dist_proj/index.html)

4.2.7 **Table 4.3** indicates the average annual growth rates of population in the area from 2025 to 2031 is +0.48%.

Table 4.4 Growth Rates Derived from Hong Kong Population Projections 2025-2032

Year	Projection of Hong Kong Population Projections, 2025-2032 [(1)]
2025	7,559,800
2026	7,596,800
2027	7,638,700
2028	7,684,500
2029	7,731,100
2030	7,777,100
2031	7,820,200
2032	7,862,100
Growth Rates Derived from Project of Population by Hong Kong Population Projections (Annual Growth Rate (%))	
2025/2032	+0.56%

Note:
(1) According to "Hong Kong Population Projections 2022-2046" published by the Census and Statistics Department of the HKSAR Government in August 2023 (Source: https://www.censtatd.gov.hk/en/data/stat_report/product/B1120015/att/B1120015092023XXXXB01.pdf)

4.2.8 **Table 4.4** indicates the average annual growth rates of population in Hong Kong is +0.56% from 2025 to 2032.

4.2.9 Based on the results given by A.A.D.T. historical data and TPEDM estimates, the annual growth rates are ranging from -0.78% to +3.15%.

4.2.10 For conservative approach, it is assumed to have a local traffic growth of **+3.15 % per annum**, to cover the growth from observed year of 2025 to design year of 2032 for assessment. It is deemed sufficient to allow for any unexpected future growth as a result of some unexpected

changes in land use or redevelopment in the area. This adopted growth rates would be able to ensure a conservative estimation of future traffic flows.

Year 2032 Reference Traffic Flows

4.2.11 According to **Chapters 4.1** to **4.2**, the year 2032 reference traffic flows (With the existing 6 residential houses) were derived by applying the adopted growth rate of +3.15 % per annum from 2025 to 2032 on the observed 2025 traffic flows.

4.2.12 As the Subject Site is currently vacant, the trip generation and attraction of the existing 6 residential houses should be considered in order to produce 2032 Reference Traffic Flows to reflect a more realistic condition.

Vehicular Trip Rates for Subject Site under existing condition of 6 residential houses

4.2.13 To estimate the traffic generation and attraction of the 6 residential houses, reference has been made to the Transport Planning and Design Manual (TPDM) published by Transport Department. The adopted vehicular trip rates and the traffic generation and attraction of the Subject site under existing condition are listed in **Table 4.5** and **4.6** below.

Table 4.5 Adopted Vehicular Trip Rates for Subject Site under the Existing Condition

Development Type		Adopted Vehicular Trip Rates (pcu/hr/flat)			
		AM Peak		PM Peak	
		Generation	Attraction	Generation	Attraction
Residential	Approximately 255m^2 GFA per house (1)(2)	0.3524	0.2837	0.2842	0.3948

Note:
(1) Adopted trip rates based on Private Housing: Low Density/ R(C) with Average Flat Size of 240m^2
(2) Taking into consideration of the remoteness of the Subject Site and lack of public transport services in the vicinity, the upper limit trip rates is adopted for the Subject Site.

Table 4.6 Adopted Traffic Generation and Attraction for Subject Site under the Existing Condition

Development		Vehicular Trip (pcu/hr)			
		AM Peak		PM Peak	
		Generation	Attraction	Generation	Attraction
Residential	6 houses	3	2	2	3

4.2.14 As indicated in **Table 4.6**, it is summarized that the Subject Site under existing condition of 6 houses will generate and attract a total of 5 pcus (2-way) during AM Peak hour and 5 pcus (2-way) during PM Peak hour respectively.

4.2.15 The trip generation and attraction of the existing 6 residential houses as shown in **Table 4.6** above will be superimposed onto the year 2032 traffic flows to produce a more realistic condition. The 2032 reference traffic flows are shown in **Drawing No. 4.1**.

4.3 Year 2032 Design Traffic Flows (With Proposed Residential Redevelopment)

Vehicular Trip Rates for the Proposed Residential Redevelopment

4.3.1 To estimate the traffic generation and attraction of the proposed residential redevelopment, reference has been made to the Transport Planning and Design Manual (TPDM) published by Transport Department. It is understood that there is no specific vehicular trip rate for house with flat size at around or over 1,000m^2 for House 1. Therefore, in-house traffic generation and attraction surveys were conducted on a typical weekday in September 2025 at 4 residential houses in Southern District with similar sizes and parking provision (i.e. 2 parking space per house) as House 1. The traffic generation and attraction survey results are summarised in **Table 4.7** below.

Table 4.7 Identified Traffic Generation and attraction surveys at 4 Residential Houses in Southern District with similar sizes as House 1

Development Type [1]		Vehicular Trips (pcu/hr)			
		AM Peak		PM Peak	
		Generation	Attraction	Generation	Attraction
Residential House A	Approx. 900 m^2 GFA	1	0	0	1
Residential House B	Approx. 1,000 m^2 GFA	2	1	0	2
Residential House C	Approx 920 m^2 GFA	0	0	0	0
Residential House D	Approx 1,120 m^2 GFA	1	1	0	1

Note:
(1) Residential House A, B and C are located along Repulse Bay Road while Residential House D is located at South Bay Road.

4.3.2 As indicated in **Table 4.7**, it is summarised that Residential House B will generate the most traffic amongst the 4 identified residential houses, therefore the vehicular trips generated from Residential House B will be adopted as the vehicular trips generated from our proposed House 1.

4.3.3 The adopted vehicular trip rates and the traffic generation and attraction of the proposed residential redevelopment are listed in **Table 4.8** and **4.9** below.

Table 4.8 Adopted Vehicular Trip Rates for Proposed Residential Redevelopment

Development Type		Adopted Vehicular Trip Rates (pcu/hr/flat)			
		AM Peak		PM Peak	
		Generation	Attraction	Generation	Attraction
House 1	Approximately 1,370 m^2 GFA[1]	2	1	0	2
House 2	Approximately 180 m^2 GFA [2][3]	0.3276	0.2407	0.2233	0.3097

Note:
(1) With reference to **Table 4.7,** adopted vehicular trips are based on our in-house traffic generation and attraction surveys conducted on a typical weekday in September 2025 at 4 residential houses in Southern District with similar sizes as House 1.
(2) With reference to **Table 2.3,** adopted trip rates based on Private Housing: Low Density/ R(C) with Average Flat Size of 180m^2

(3) Taking into consideration of the remoteness of the Subject Site and lack of public transport services in the vicinity, the upper limit trip rates is adopted for the Subject Site.

Table 4.9 Adopted Traffic Generation and attraction for Proposed Residential Redevelopment

Development		Vehicular Trip (pcu/hr)			
		AM Peak		PM Peak	
		Generation	Attraction	Generation	Attraction
Residential	House 1	2	1	0	2
	House 2	1	1	1	1

4.3.4 As indicated in **Table 4.9**, it is summarized that the proposed residential redevelopment will generate and attract a total of 5 pcus (2-way) during AM Peak and 4 pcus (2-way) during PM Peak respectively.

Comparison of Vehicular Traffic Generation and Attraction for the Subject Site under the Existing Condition and Proposed Residential Redevelopment

4.3.5 Based on the development parameter of the Subject Site given in **Table 2.1** and **2.3** and the vehicular traffic generation and attraction as shown in **Tables 4.6** and **4.9**, the net difference of vehicular traffic generation and attraction between the existing condition and the proposed residential redevelopment are presented in **Table 4.10**.

Table 4.10 Net Difference of Vehicular Trip Generation and Attraction for Subject Site under the Existing Condition and Proposed Residential Redevelopment

Development Type	GFA (1)	Vehicular Trip (pcu/hr)			
		AM Peak		PM Peak	
		Generation	Attraction	Generation	Attraction
Subject Site under Existing Condition [a]	1,532.902m^2	3	2	2	3
Proposed Residential Redevelopment [b]		3	2	1	3
Net Difference [b] – [a]		**0**	**0**	**-1**	**0**

Note:
(1) Refer to **Table 2.1** and **2.3**, the maximum domestic GFA for Subject Site is 1,532.902m^2.

4.3.6 As shown in **Table 4.10**, it is revealed that there will be no additional vehicular traffic generation for the proposed residential redevelopment as compared with the existing condition during AM Peak, while there will be less vehicular traffic generated from the proposed residential redevelopment as compared to the existing condition during the PM Peak.

Year 2032 Design Traffic Flows (With Proposed Residential Redevelopment)

4.3.7 The net difference of vehicular trip generation and attraction for the Subject Site under the condition and the proposed residential redevelopment as shown in **Table 4.10** above will be superimposed onto the year 2032 reference traffic flows as shown in **Drawing No. 4.1**. The 2032 design traffic flows are shown in **Drawing No. 4.2**

5 TRAFFIC IMPACT ASSESSMENTS

5.1 Junction Operational Assessment

5.1.1. The operational performances of the junctions as identified in **Chapter 3.2** are assessed with the 2032 reference traffic flows (**Drawing No. 4.1**) and design traffic flows (**Drawing No. 4.2**).

5.1.2. The assessment results are summarised in **Table 5.1**, and the details of junction assessments are attached in **Annex B**.

Table 5.1 Year 2032 Junctions Operation Performance

Ref	Junctions	Type of Junction	Year 2032 DFC (1)			
			Reference Scenario (With the Existing 6 Residential Houses)		Design Scenario (With the Proposed Residential Redevelopment)	
			AM Peak	PM Peak	AM Peak	PM Peak
J1	Island Road/ Deep Water Bay Road	Priority	0.107	0.106	0.107	0.075
J2	Shouson Hill Road East / Deep Water Bay Road	Priority	0.055	0.098	0.055	0.098

Note:
(1) DFC = Ratio of flow to capacity for a priority junction. DFC $\leq$ 0.85 implies the priority junction operates with ample capacity, 0.85 < RC < 1.00 implies the priority junction operates near capacity; DFC is over 1.00 implies the priority junction is overloaded with traffic queue expected.

5.1.3. **Table 5.1** indicates that all the key access junctions will be operating within capacity during both AM peak and PM peak under both the reference and design scenarios in the design year 2032.

5.2 Road Links Capacity Assessment

5.2.1 Road link capacity analysis in terms of Volume-to-Capacity (V/C) ratio for the identified road links as shown in **Drawing No. 3.2** are also conducted based on the 2032 reference traffic flow and design traffic flows. The results are summarised in **Table 5.2** below.

Table 5.2 2032 Reference and Design Road Links Performance

Link No	Road Link	Direction	Design Capacity (1) (pcu/hr)	Year 2032 Reference Flows (pcu/hr) (2) and V/C Ratio (3)		Year 2032 Design Flows (pcu/hr) (2) and V/C Ratio (3)	
				AM Peak	PM Peak	AM Peak	PM Peak
L1	Deep Water Bay Road	NB	404	15 (0.04)	15 (0.04)	15 (0.04)	15 (0.04)
		SB	404	25 (0.06)	20 (0.05)	25 (0.06)	15 (0.04)
L2	Deep Water Bay Road	NB	404	25 (0.06)	45 (0.11)	25 (0.06)	45 (0.11)
		SB	404	50 (0.12)	40 (0.10)	50 (0.12)	40 (0.10)

Note:

(1) Design flow capacity derived from Transport Planning and Design Manual (TPDM) Volume 2 Chapter 2 paragraph 2.4.1.1. Design Flow Capacity = 400 veh/hr each bound x surveyed pcu factor 1.01 (observed average values) = 404 pcu/hr (HV% less than 15%)

(2) The 2032 reference and design traffic flow can refers to **Drawing No. 4.1 & 4.2**

(3) V/C Ratio – volume to capacity ratio for road link. V/C ratio < implies the road has sufficient capacity to cope with the anticipated traffic volume. A V/C ratio above 1.0 indicates the onset of mild congestion and a 1.0< V/C Ratio <1.2 indicates a manageable degree of congestion along the road; V/C ratio > 1.2 implies the road link is overloaded with extensively long traffic queue.

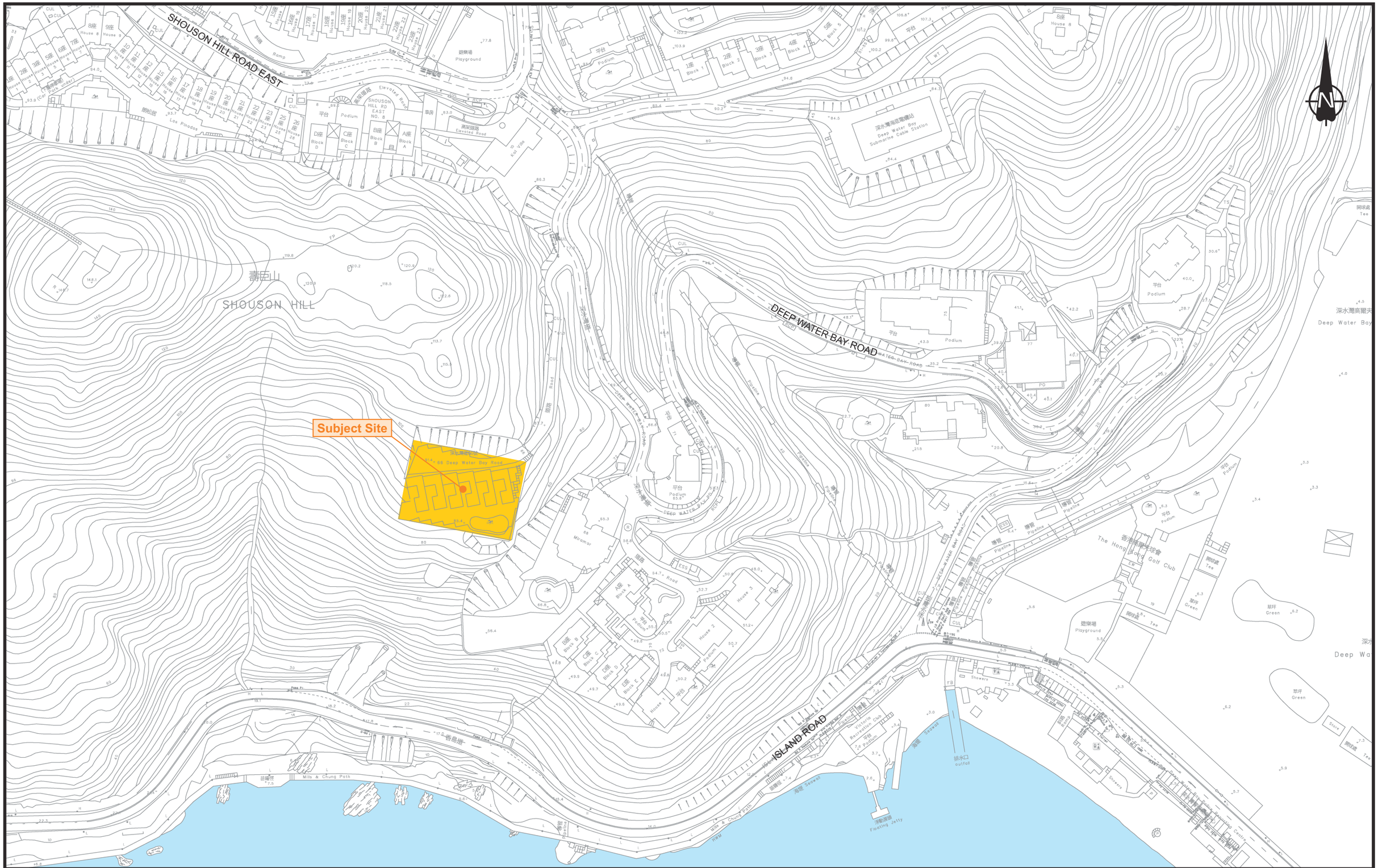
5.2.2 The assessment results in **Table 5.2** indicated that all the identified road links are operating with sufficient capacities during AM peak and PM peak.

6 CONCLUSION

6.1.1 The overall internal transport facilities will be reduced from 12 car parking spaces for the existing condition of 6 residential houses to 4 car parking spaces for the proposed residential redevelopment.

6.1.2 The overall vehicular traffic generation and attraction of the proposed residential redevelopment will be less than that of the existing condition of 6 residential houses. Referring to the result of traffic assessment in Chapter 5 above, the proposed residential redevelopment will not pose any adverse traffic impact on the concerned road links and junctions in the vicinity of the Subject Site.

6.1.3 Therefore, the proposed residential redevelopment is considered acceptable from traffic engineering point of view.



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Project Title

SECTION 16 PLANNING APPLICATION FOR THE PROPOSED RESIDENTIAL DEVELOPMENT AT NO. 66, DEEP WATER BAY ROAD, SHOUSON HILL, HONG KONG

Drawing Title

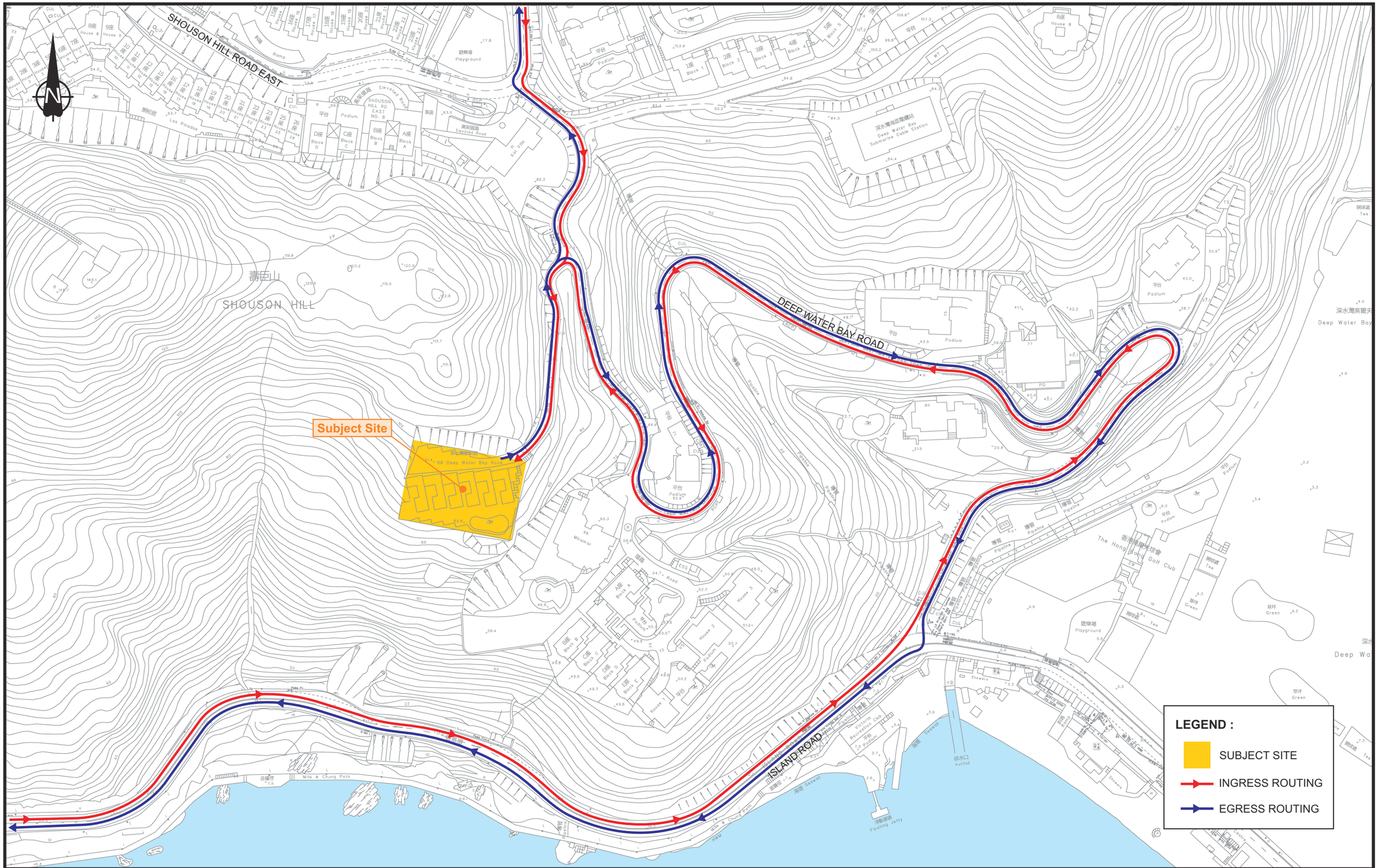
LOCATION OF SUBJECT SITE

Designed	Checked	Scale	Date	Drawing No.	Rev.
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SYSTRA MVA

CHK50850710/TIA/F11.CDR/LLH/16OCT25

Original Size : A3



Rev.	Description	Checked	Date
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Project Title

SECTION 16 PLANNING APPLICATION FOR THE PROPOSED RESIDENTIAL DEVELOPMENT AT NO. 66, DEEP WATER BAY ROAD, SHOUSON HILL, HONG KONG

Drawing Title

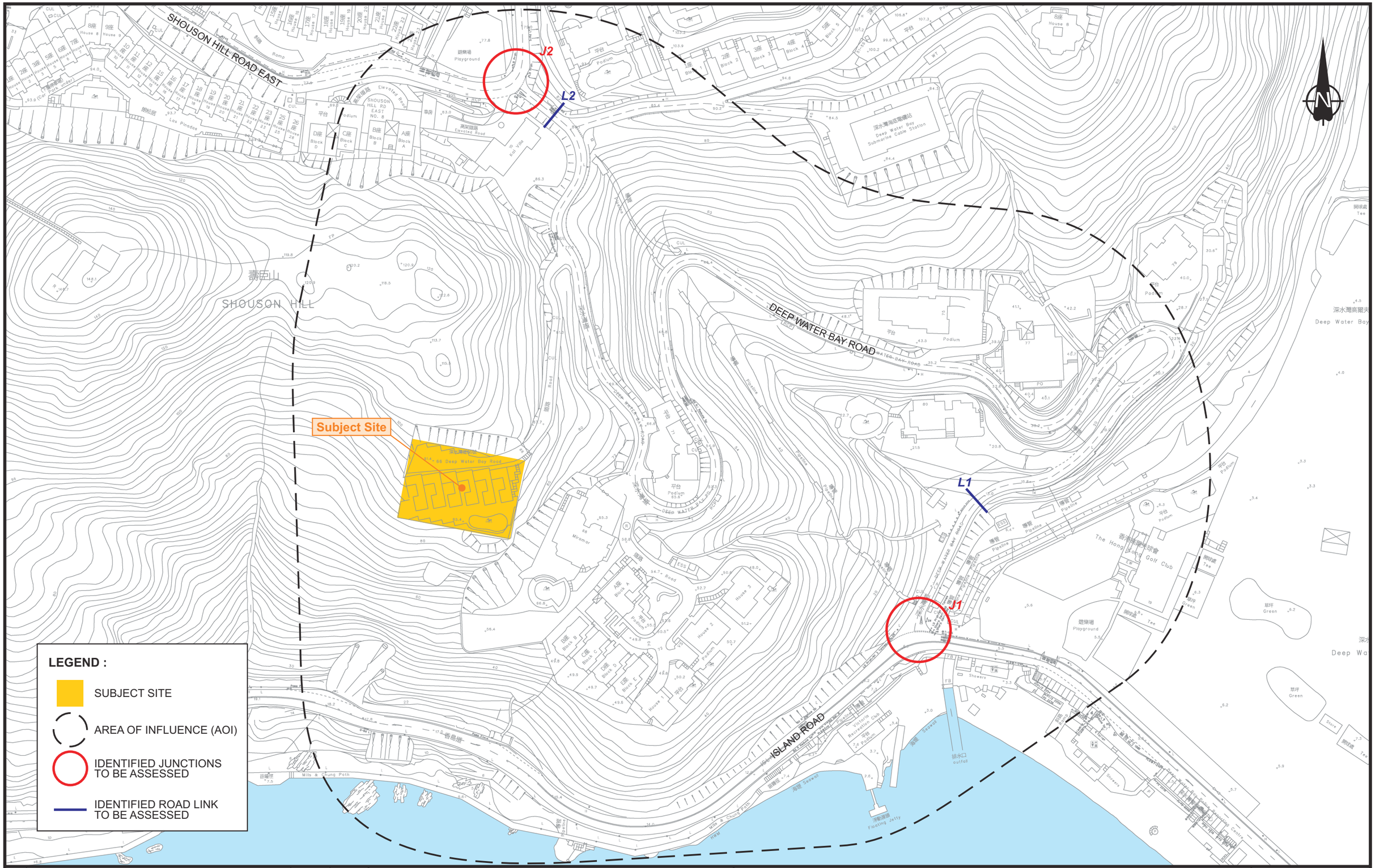
INGRESS / EGRESS ROUTING TO / FROM SUBJECT SITE

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WFT	SKK	NTS	OCT 2025	3.1	-

SYSTRA MVA

CHK50850710/TIA/F31.CDR/LLH/16OCT25

Original Size : A3



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Project Title

SECTION 16 PLANNING APPLICATION FOR THE PROPOSED RESIDENTIAL DEVELOPMENT AT NO. 66, DEEP WATER BAY ROAD, SHOUSON HILL, HONG KONG

Drawing Title

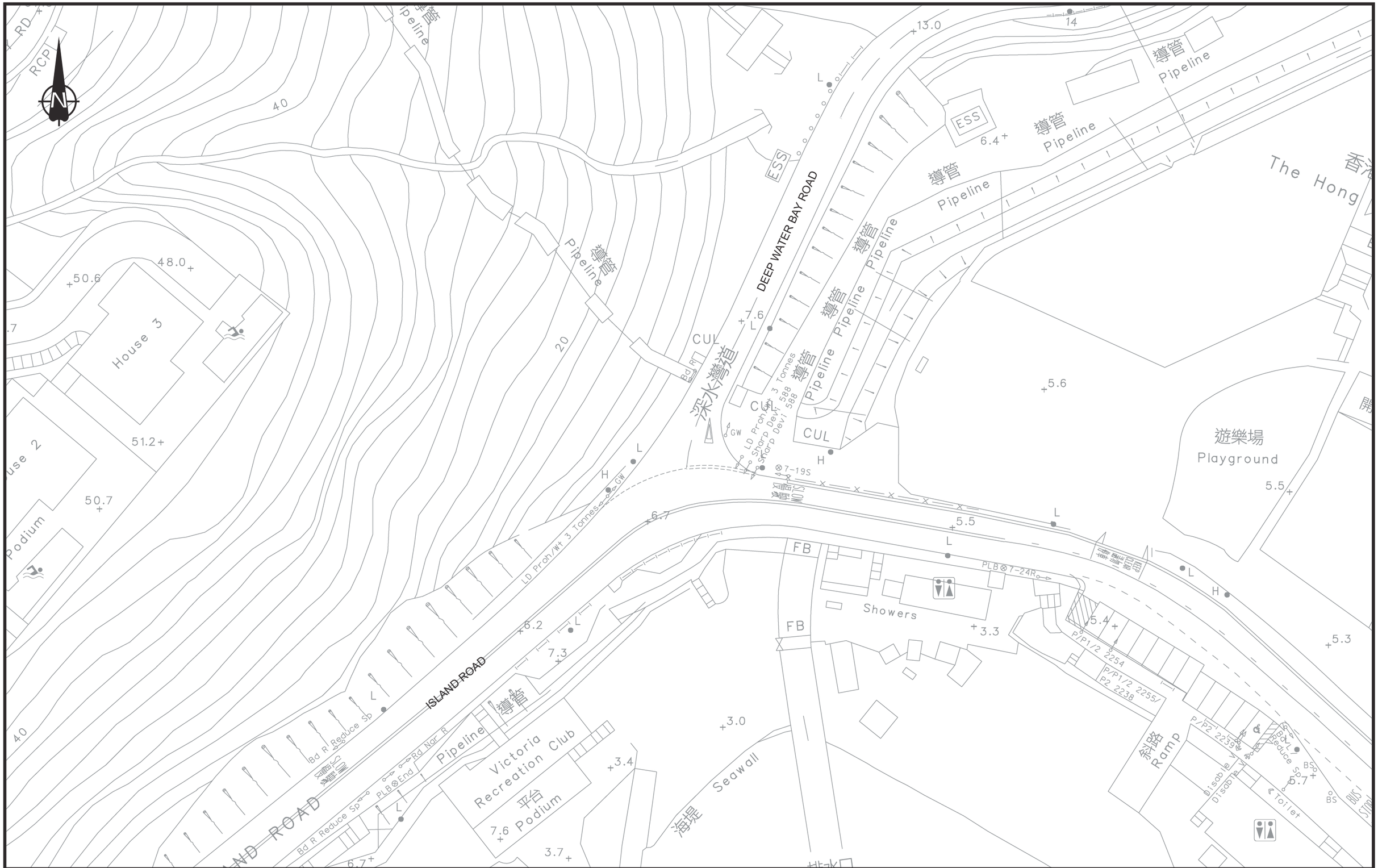
IDENTIFIED JUNCTIONS AND ROAD LINKS

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SYSTRA MVA

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Original Size : A3



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Project Title

SECTION 16 PLANNING APPLICATION FOR
THE PROPOSED RESIDENTIAL DEVELOPMENT AT
NO. 66, DEEP WATER BAY ROAD, SHOUSON HILL,
HONG KONG

Drawing Title

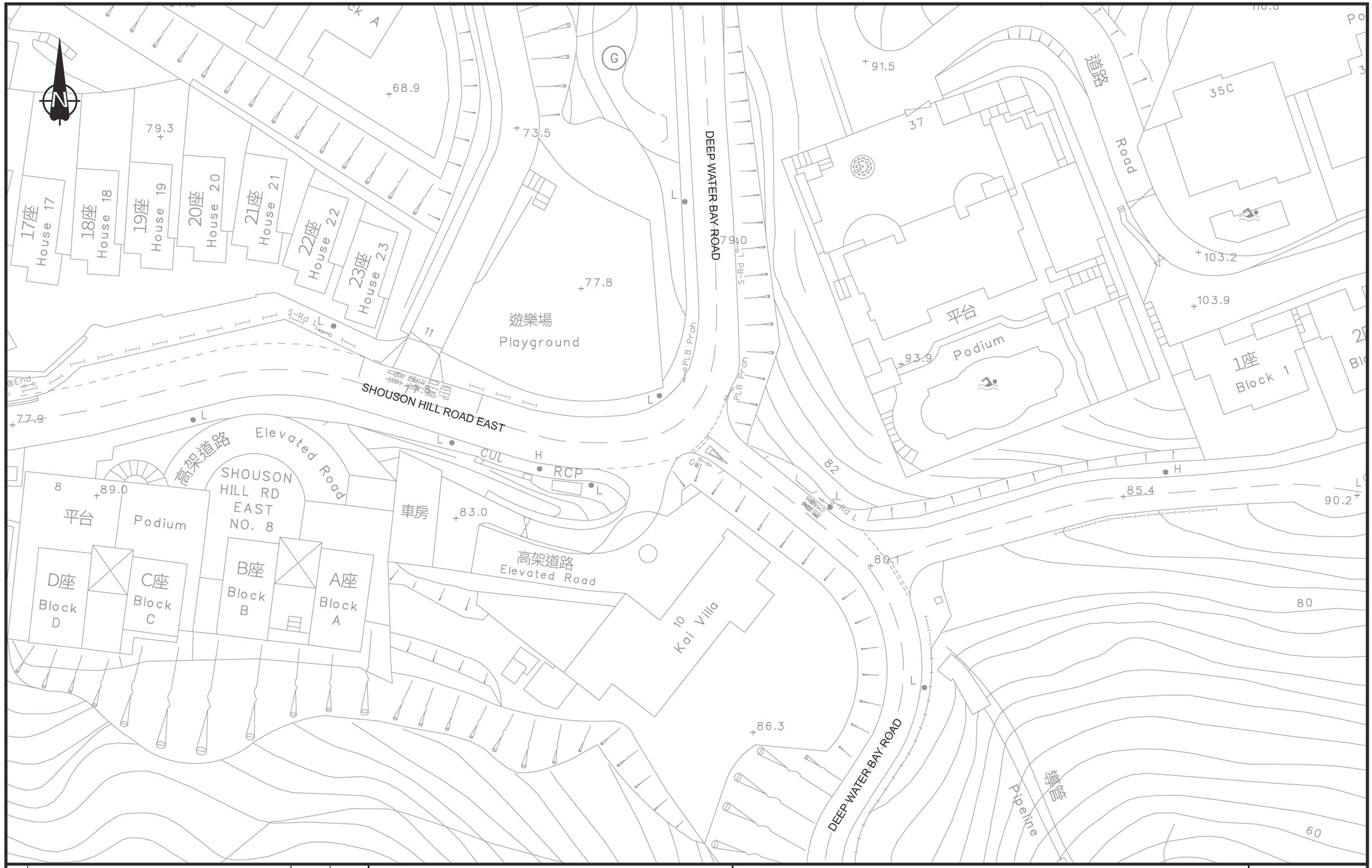
EXISTING JUNCTION LAYOUT OF ISLAND ROAD / DEEP WATER BAY ROAD (J1)

Designed	Checked	Scale	Date	Drawing No.	Rev.
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SYSTRA MVA

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Original Size : A3



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Project Title

SECTION 16 PLANNING APPLICATION FOR THE PROPOSED RESIDENTIAL DEVELOPMENT AT NO. 66, DEEP WATER BAY ROAD, SHOUSON HILL, HONG KONG

Drawing Title

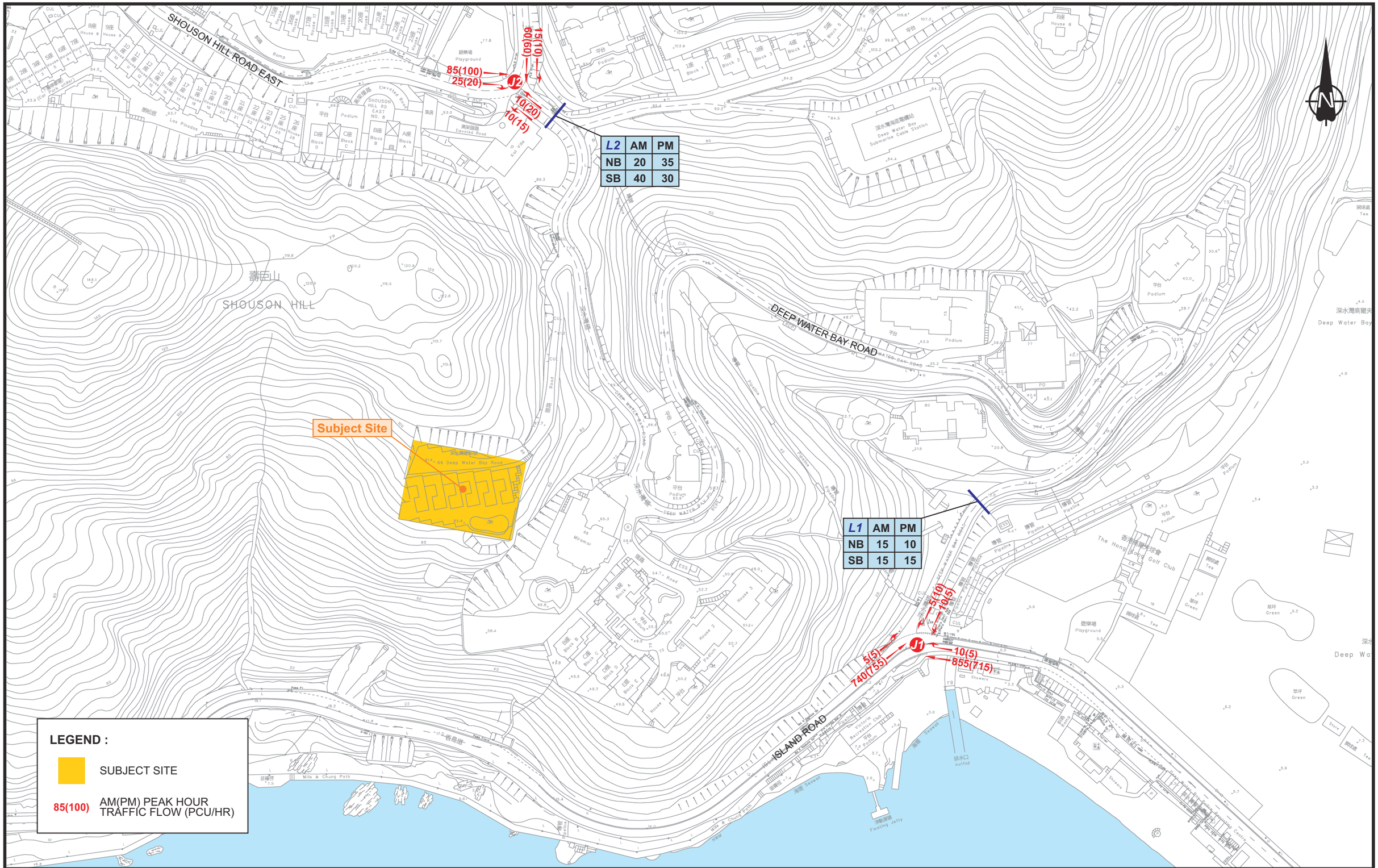
EXISTING JUNCTION LAYOUT OF SHOUSON HILL ROAD EAST / DEEP WATER BAY ROAD (J2)

Designed	Checked	Scale	Date	Drawing No.	Rev.
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SYSTRA MVA

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Original Size : A3



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Project Title

SECTION 16 PLANNING APPLICATION FOR THE PROPOSED RESIDENTIAL DEVELOPMENT AT NO. 66, DEEP WATER BAY ROAD, SHOUSON HILL, HONG KONG

Drawing Title

YEAR 2025 OBSERVED TRAFFIC FLOWS

Designed	Checked	Scale	Date	Drawing No.	Rev.
WFT	SKK	NTS	OCT 2025	3.5	-

SYSTRA MVA

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Original Size : A3

SHOUSON HILL ROAD EAST

DEEP WATER BAY ROAD

ISLAND ROAD

壽臣山
SHOUSON HILL

Subject Site

L2	AM	PM
NB	25	45
SB	50	40

L1	AM	PM
NB	15	15
SB	25	20

105(120)
30(25)
75(70)
20(15)
15(25)
10(20)
10(15)
155(155)
5(5)
920(940)
10(10)
1060(890)

LEGEND :

SUBJECT SITE

85(100) AM(PM) PEAK HOUR TRAFFIC FLOW (PCU/HR)

Rev.	Description	Checked	Date
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Project Title

SECTION 16 PLANNING APPLICATION FOR THE PROPOSED RESIDENTIAL DEVELOPMENT AT NO. 66, DEEP WATER BAY ROAD, SHOUSON HILL, HONG KONG

Drawing Title

YEAR 2032 REFERENCE TRAFFIC FLOWS

Designed	Checked	Scale	Date	Drawing No.	Rev.
WFT	SKK	NTS	OCT 2025	4.1	-

SYSTRA MVA

CHK50850710/TIA/F41.CDR/LLH/16OCT25

Original Size : A3

SHOUSON HILL ROAD EAST

DEEP WATER BAY ROAD

ISLAND ROAD

壽臣山
SHOUSON HILL

Subject Site

L2	AM	PM
NB	25	45
SB	50	40

L1	AM	PM
NB	15	15
SB	25	15

105(120)
30(25)
75(70)
20(15)
15(25)
10(20)
10(10)
155(155)
5(5)
920(940)
10(10)
1060(890)

LEGEND :

SUBJECT SITE

85(100) AM(PM) PEAK HOUR TRAFFIC FLOW (PCU/HR)

Rev.	Description	Checked	Date
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Project Title

SECTION 16 PLANNING APPLICATION FOR THE PROPOSED RESIDENTIAL DEVELOPMENT AT NO. 66, DEEP WATER BAY ROAD, SHOUSON HILL, HONG KONG

Drawing Title

YEAR 2032 DESIGN TRAFFIC FLOWS

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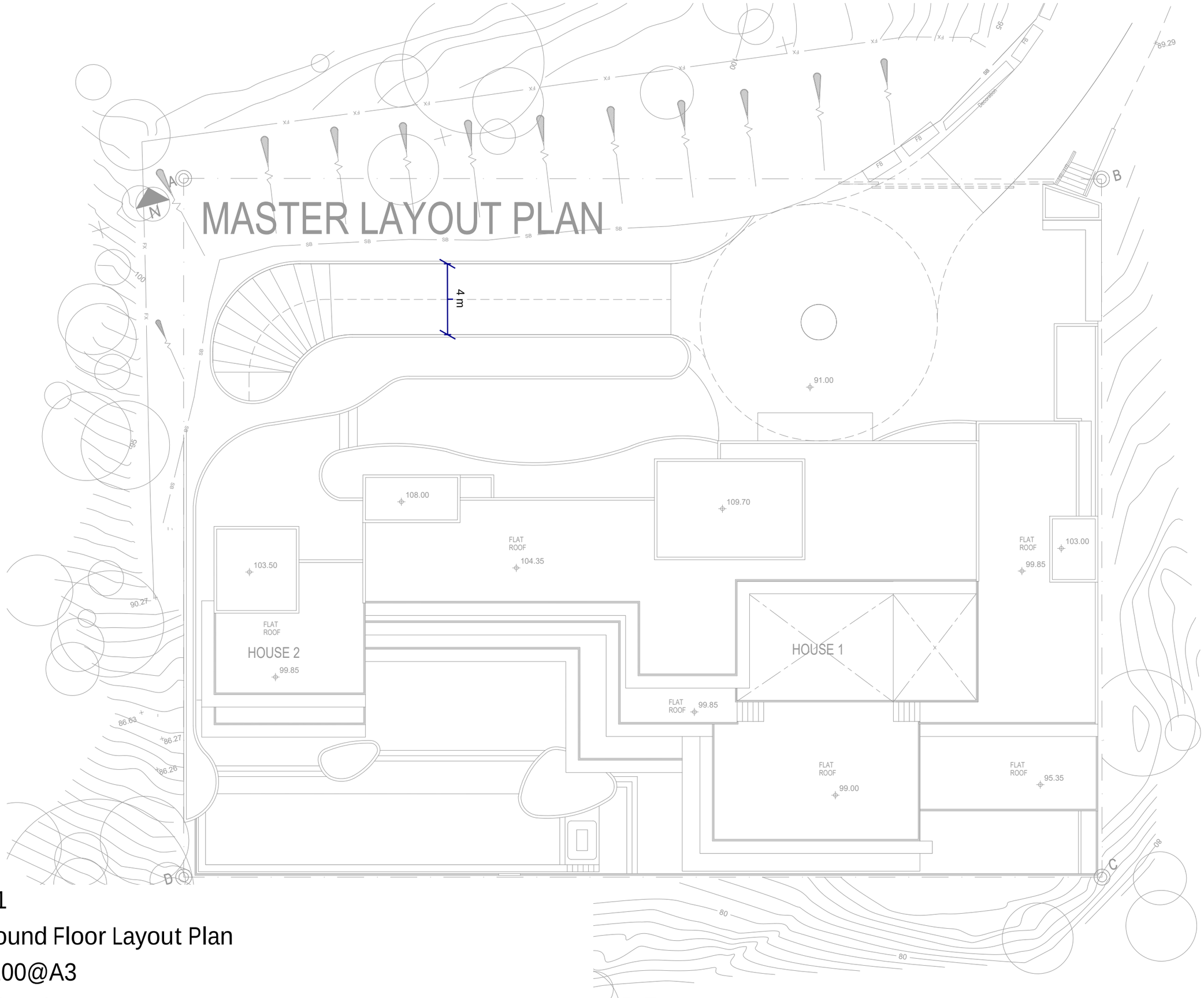
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Original Size : A3

Annex A

MASTER LAYOUT PLAN

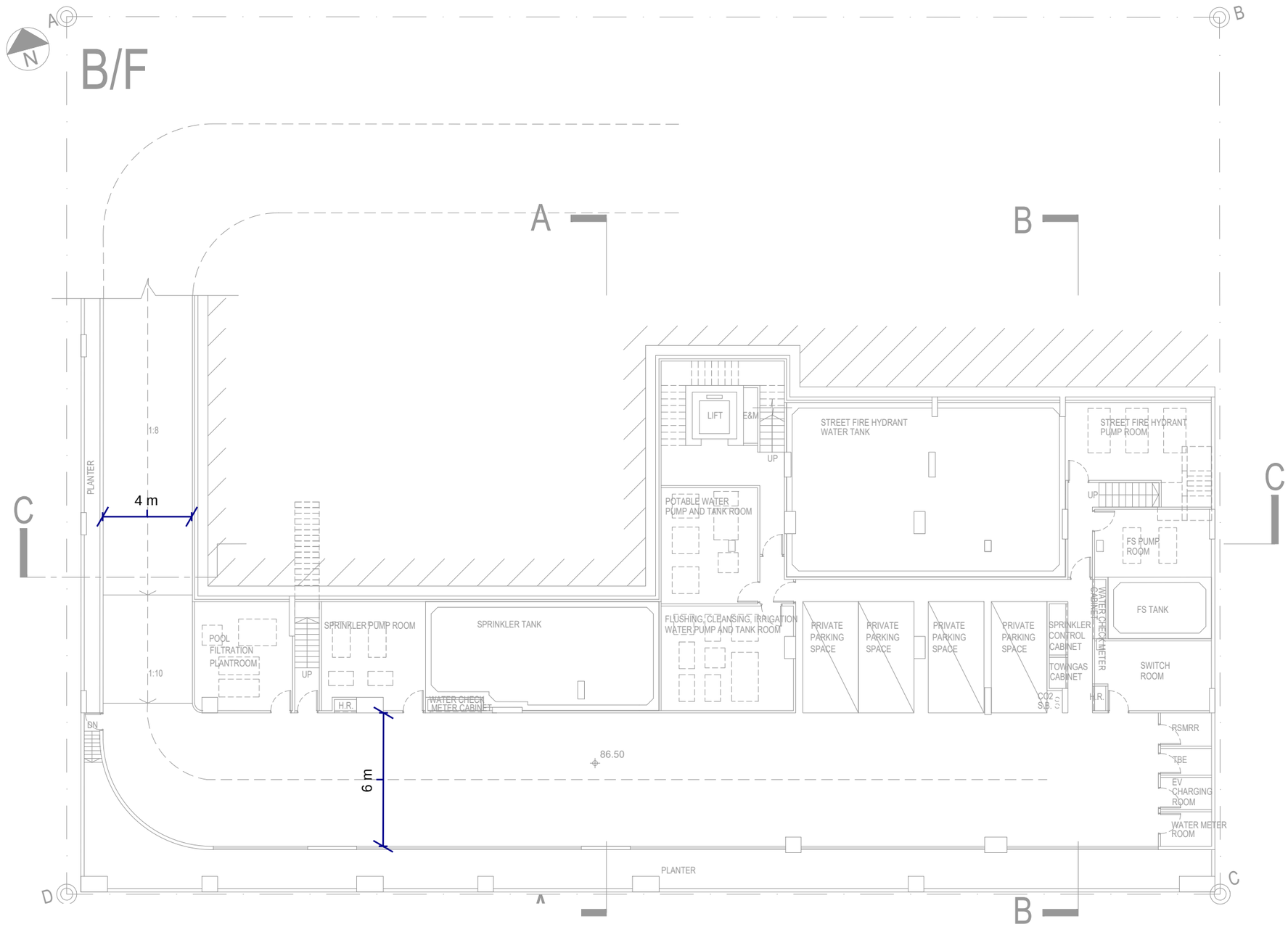


SK1

Ground Floor Layout Plan

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2025-10-17



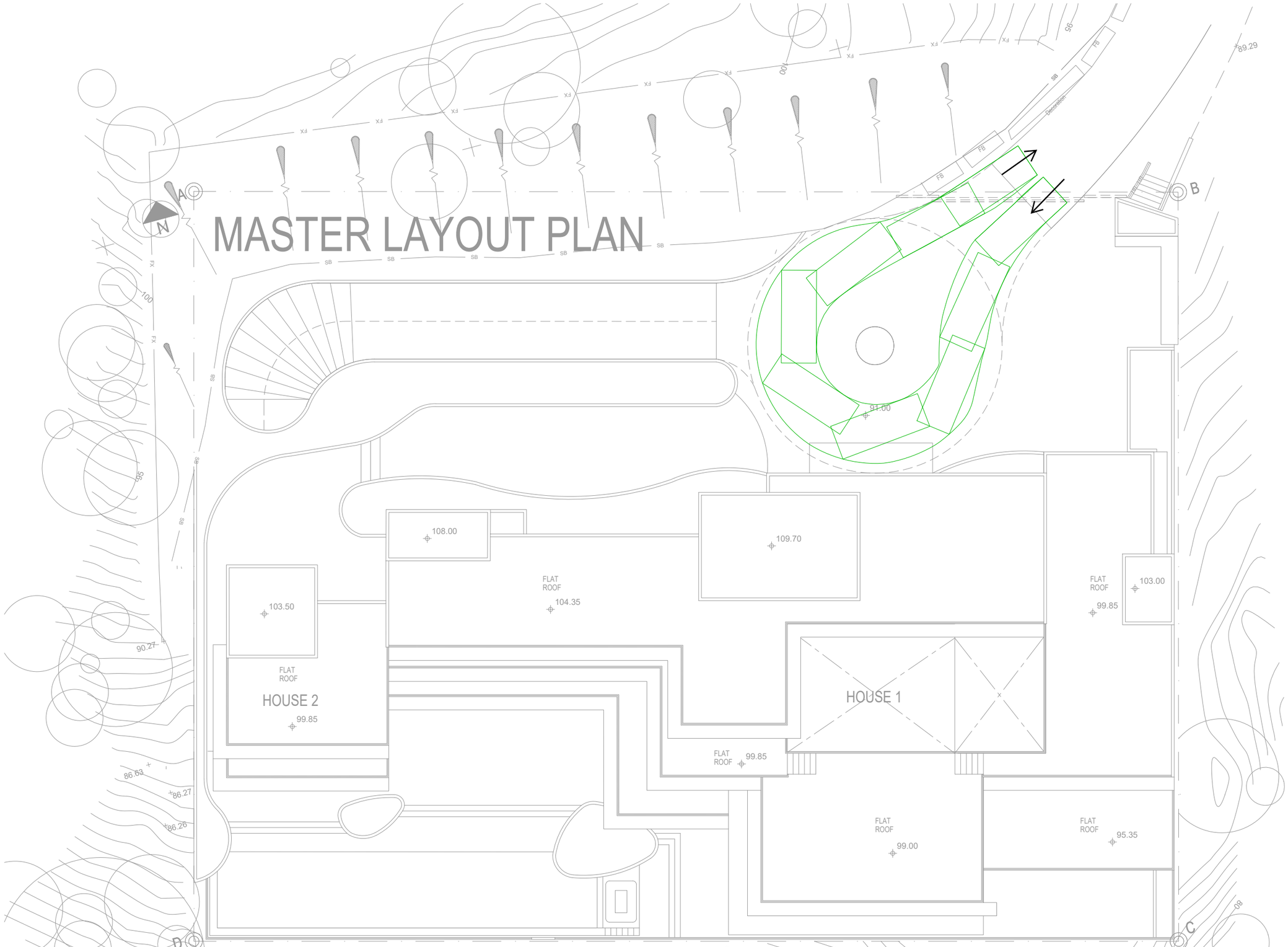
SK2

Basement Floor Layout Plan

1:200@A3

2025-10-17

MASTER LAYOUT PLAN



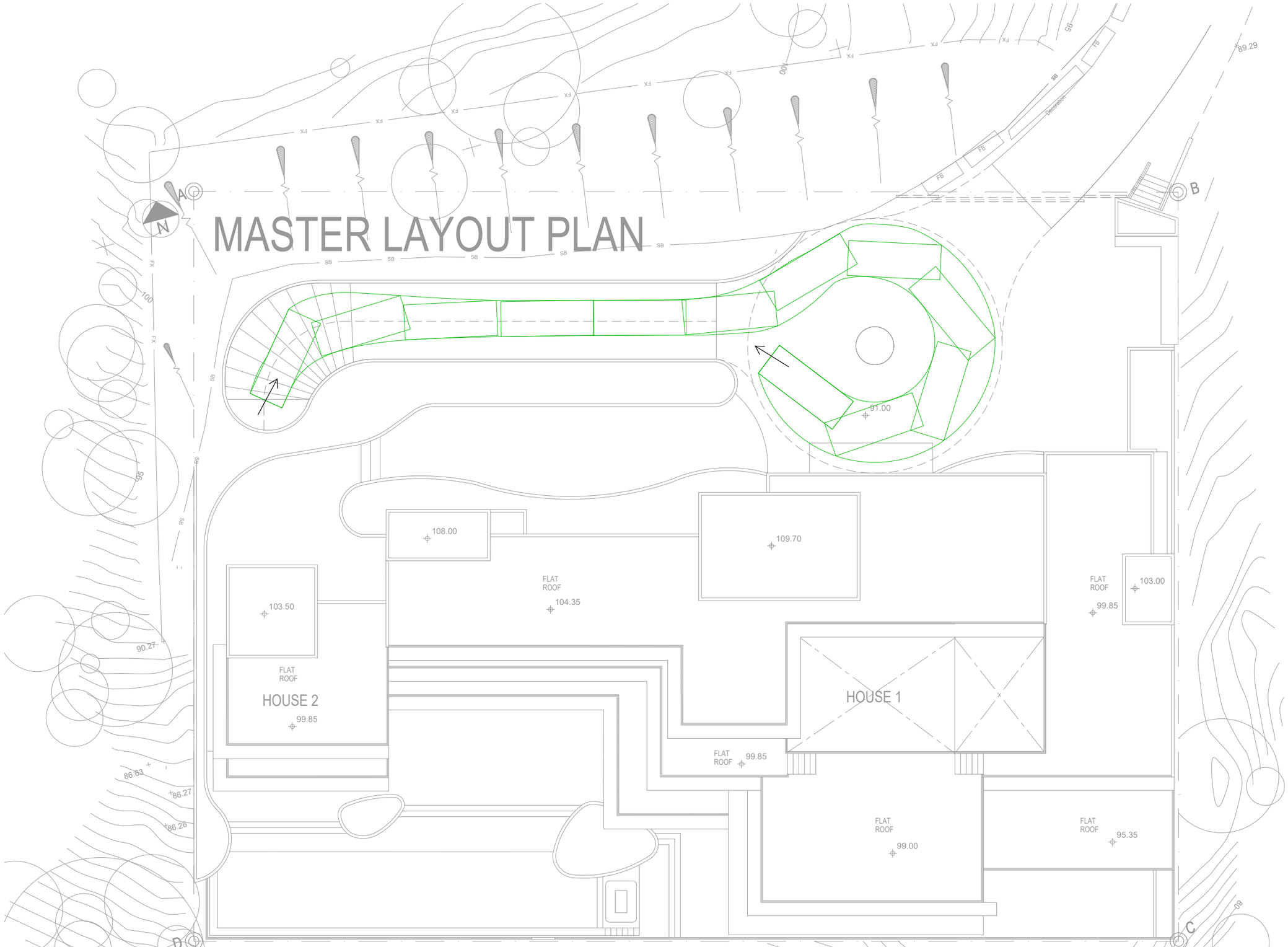
SK3

Swept Path Analysis of Private Vehicle at Ground Floor

1:200@A3

2025-10-17

MASTER LAYOUT PLAN

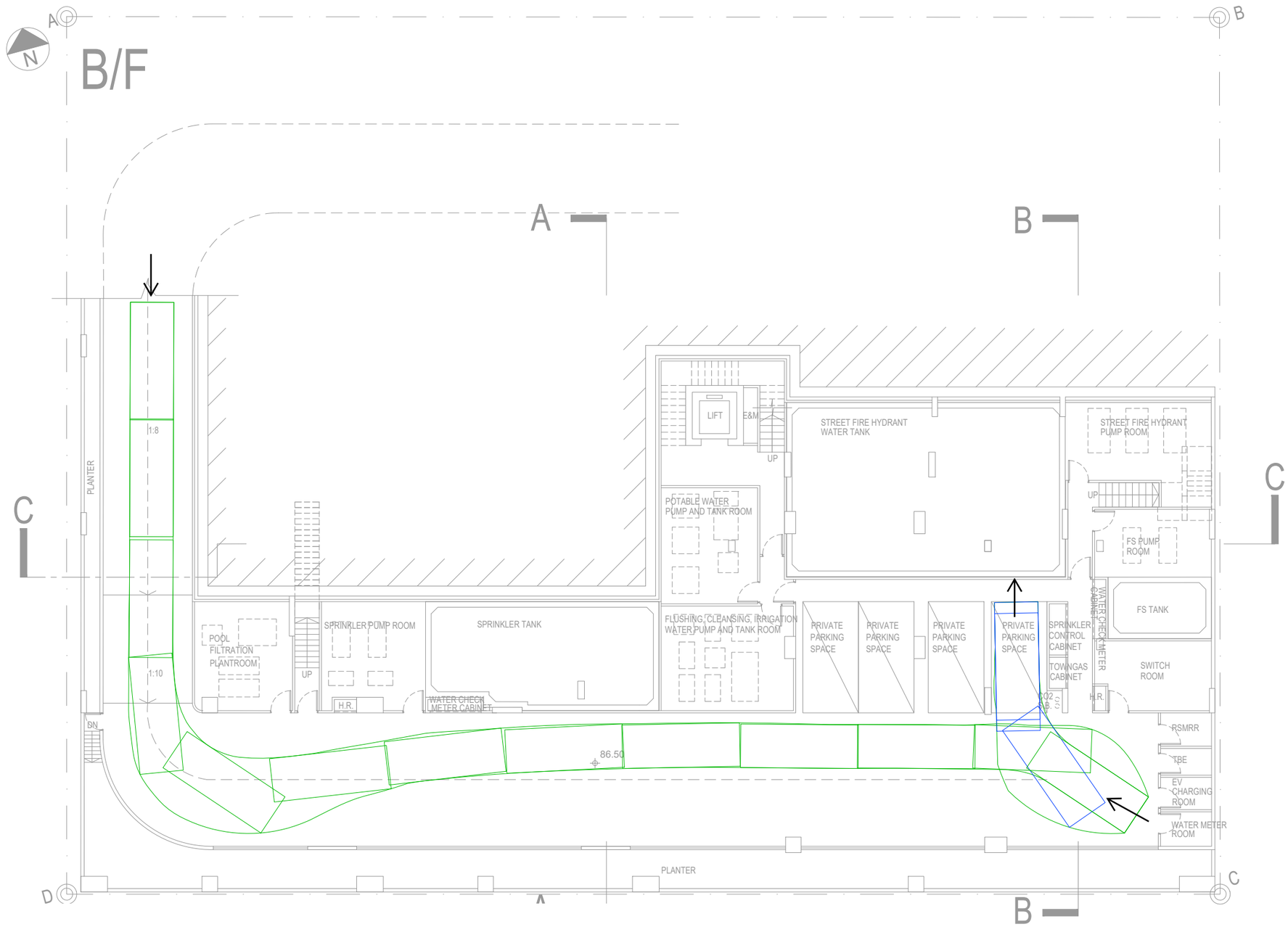


SK4

Swept Path Analysis of Private Vehicle at Ground Floor

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2025-10-17

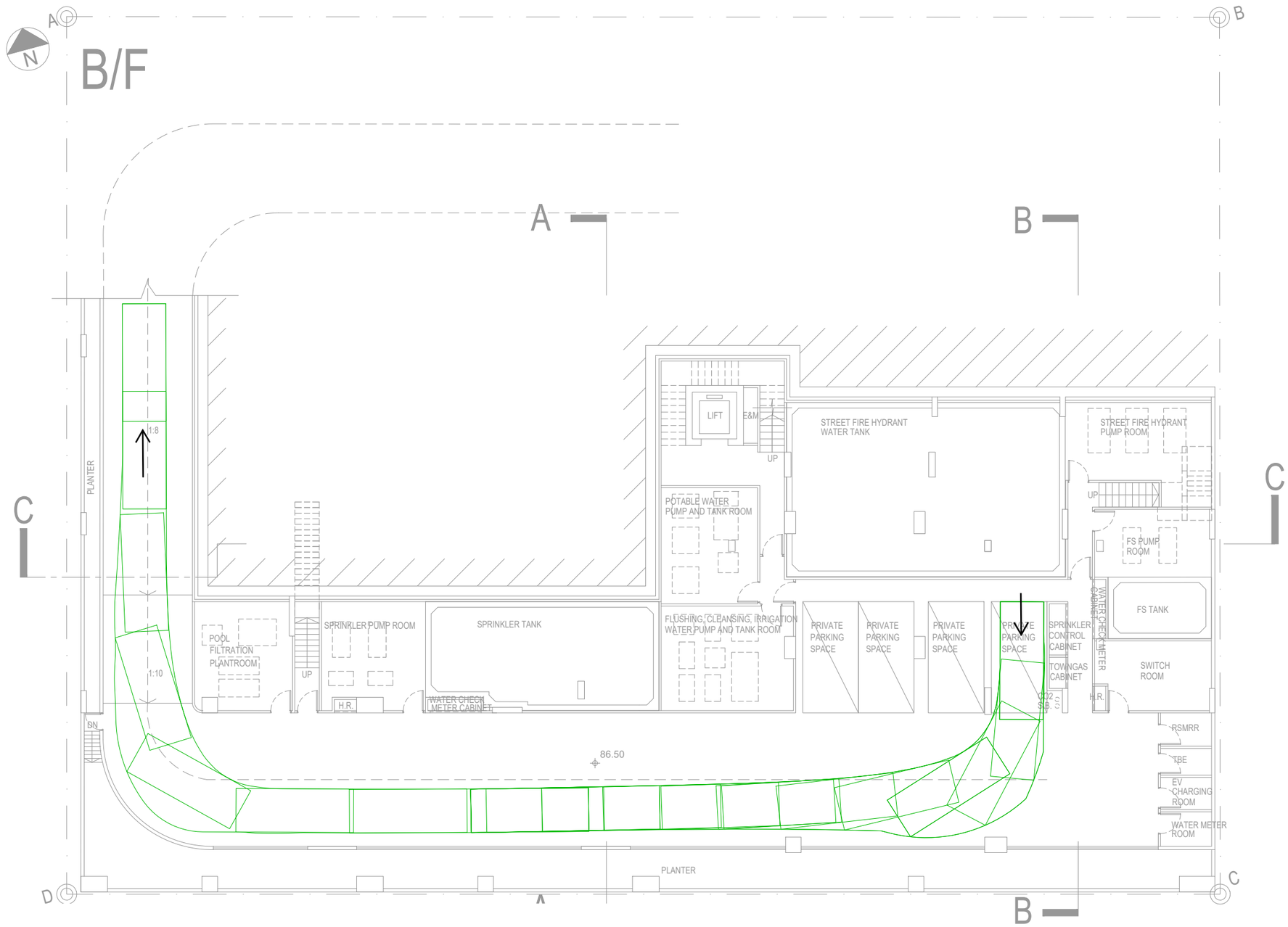


SK5

Swept Path Analysis of Private Vehicle at Basement Floor (Ingress)

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2025-10-17



SK6

Swept Path Analysis of Private Vehicle at Basement Floor (Egress)

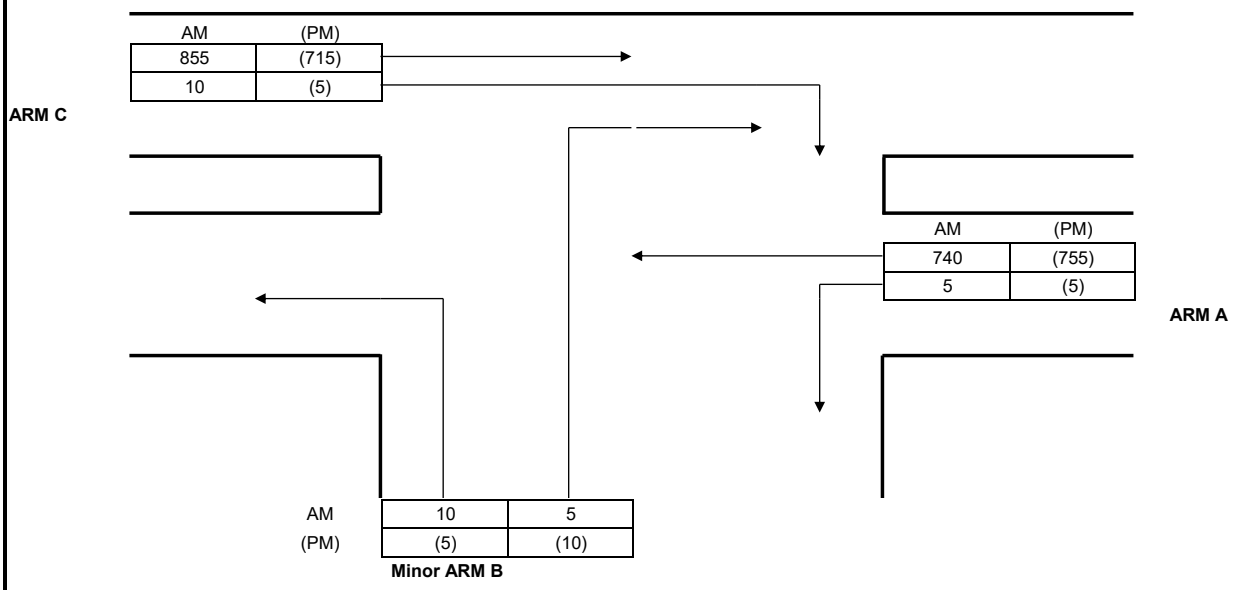
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2025-10-17

Annex B

Simplified Priority Junction Capacity Calculation

Job Title:	Residential in Southern District				
Junction:	Island Road / Deep Water Bay Road (J1)			Ref. No.:	J1 (2025 obs)
Scheme:	2025 Observed			Ref. No.:	
Year:	2025	Job No.:	CHK50850710	Rev.:	-
ARM A:	Island Road (EB)				
ARM B:	Deep Water Bay Road (SB)				
ARM C:	Island Road (WB)				



GEOMETRY

Major road width	W	6.75	Lane widths	w(b-a)	2.01
Central Reserve width	Wcr	0.00		w(b-c)	2.01
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.00
Visibilities	Vr(b-a)	110	Calculated	D	0.79
	Vl(b-a)	60		E	0.84
	Vr(b-c)	110		F	0.88
	Vr(c-b)	50		Y	0.77

ANALYSIS

		Factor	AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		855	715
	q(c-b)		10	5
	q(a-b)		5	5
	q(a-c)		740	755
	q(b-a)		5	10
	q(b-c)		10	5
	f		0.67	0.33
CAPACITIES	Q(b-a)	1	211	228
	Q(b-c)	1	451	447
	Q(c-b)	1	472	469
	Q(b-ac)	1	327	273
RFC's	b-a		0.024	0.044
	b-c		0.022	0.011
	c-b		0.021	0.011
	b-ac		0.046	0.055
Worst RFC			**0.046**	**0.055**

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)

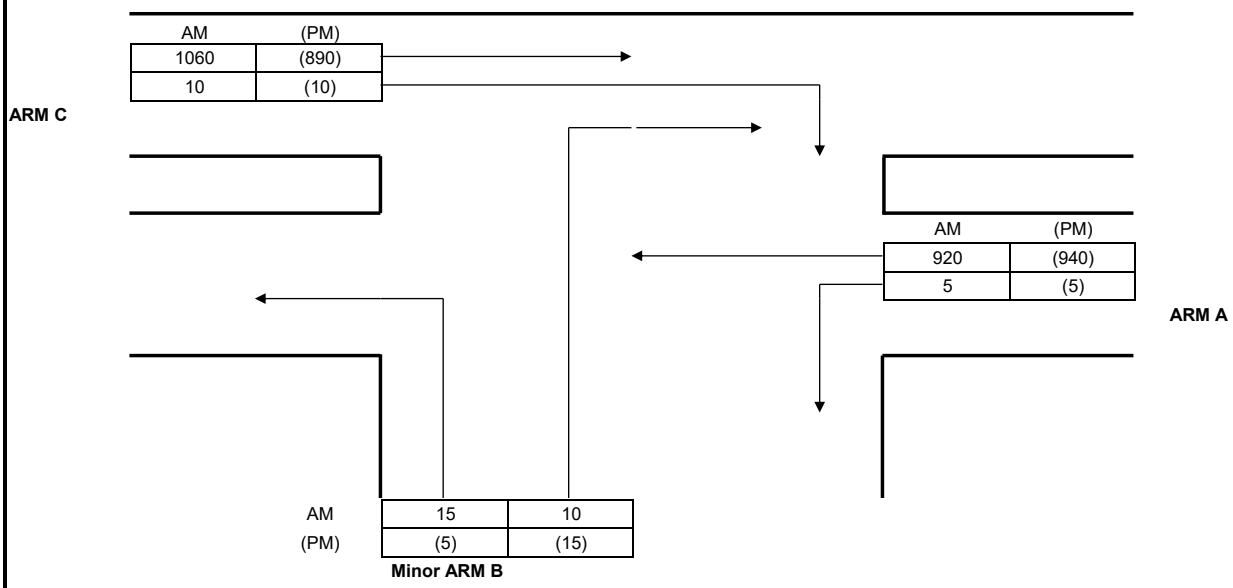
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	Date: Oct-25	Checked by:

Simplified Priority Junction Capacity Calculation

Job Title:	Residential in Southern District				
Junction:	Island Road / Deep Water Bay Road (J1)			Ref. No.:	J1 (2032 ref)
Scheme:	2032 Reference			Ref. No.:	
Year:	2025	Job No.:	CHK50850710	Rev.:	-
ARM A:	Island Road (EB)				
ARM B:	Deep Water Bay Road (SB)				
ARM C:	Island Road (WB)				



GEOMETRY

Major road width	W	6.75	Lane widths	w(b-a)	2.01
Central Reserve width	Wcr	0.00		w(b-c)	2.01
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.00
Visibilities	Vr(b-a)	110	Calculated	D	0.79
	Vl(b-a)	60		E	0.84
	Vr(b-c)	110		F	0.88
	Vr(c-b)	50		Y	0.77

ANALYSIS

		Factor	AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		1060	890
	q(c-b)		10	10
	q(a-b)		5	5
	q(a-c)		920	940
	q(b-a)		10	15
	q(b-c)		15	5
	f		0.60	0.25
CAPACITIES	Q(b-a)	1	142	161
	Q(b-c)	1	409	404
	Q(c-b)	1	428	423
	Q(b-ac)	1	233	189
RFC's	b-a		0.070	0.093
	b-c		0.037	0.012
	c-b		0.023	0.024
	b-ac		0.107	0.106
Worst RFC			**0.107**	**0.106**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

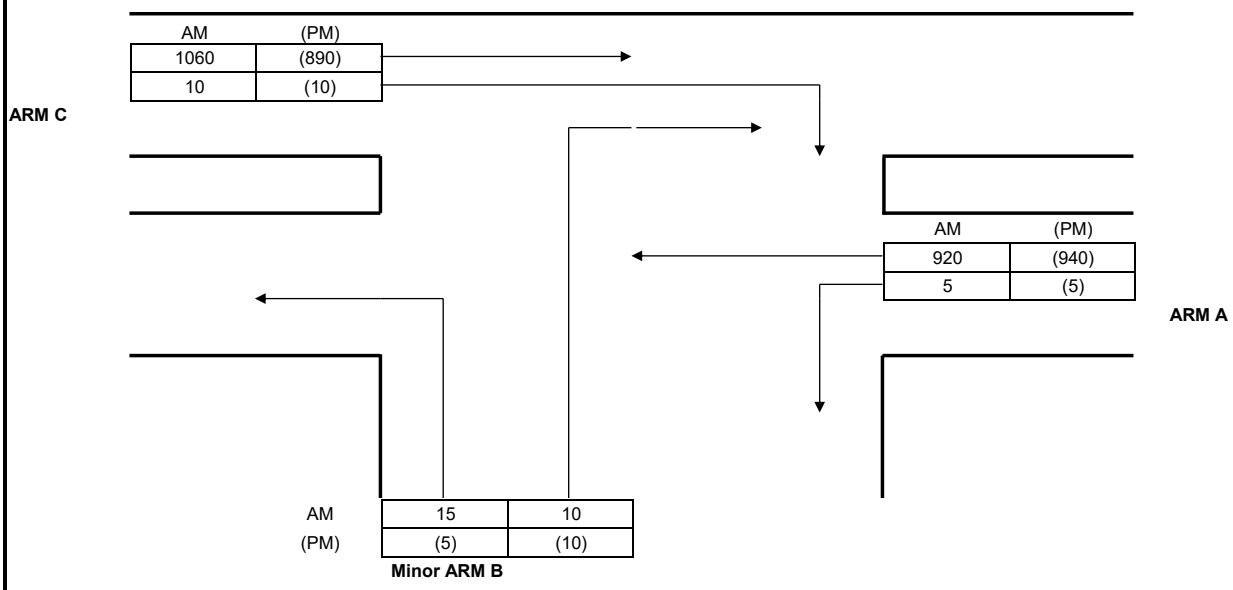
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	Date: Oct-25	Checked by:

Simplified Priority Junction Capacity Calculation

Job Title:	Residential in Southern District				
Junction:	Island Road / Deep Water Bay Road (J1)			Ref. No.:	J1 (2032 des)
Scheme:	2032 Design			Ref. No.:	
Year:	2025	Job No.:	CHK50850710	Rev.:	-
ARM A:	Island Road (EB)				
ARM B:	Deep Water Bay Road (SB)				
ARM C:	Island Road (WB)				



GEOMETRY

Major road width	W	6.75	Lane widths	w(b-a)	2.01
Central Reserve width	Wcr	0.00		w(b-c)	2.01
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.00
Visibilities	Vr(b-a)	110	Calculated	D	0.79
	Vl(b-a)	60		E	0.84
	Vr(b-c)	110		F	0.88
	Vr(c-b)	50		Y	0.77

ANALYSIS

		Factor	AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		1060	890
	q(c-b)		10	10
	q(a-b)		5	5
	q(a-c)		920	940
	q(b-a)		10	10
	q(b-c)		15	5
	f		0.60	0.33
CAPACITIES	Q(b-a)	1	142	161
	Q(b-c)	1	409	404
	Q(c-b)	1	428	423
	Q(b-ac)	1	233	201
RFC's	b-a		0.070	0.062
	b-c		0.037	0.012
	c-b		0.023	0.024
	b-ac		0.107	0.075
Worst RFC			**0.107**	**0.075**

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)

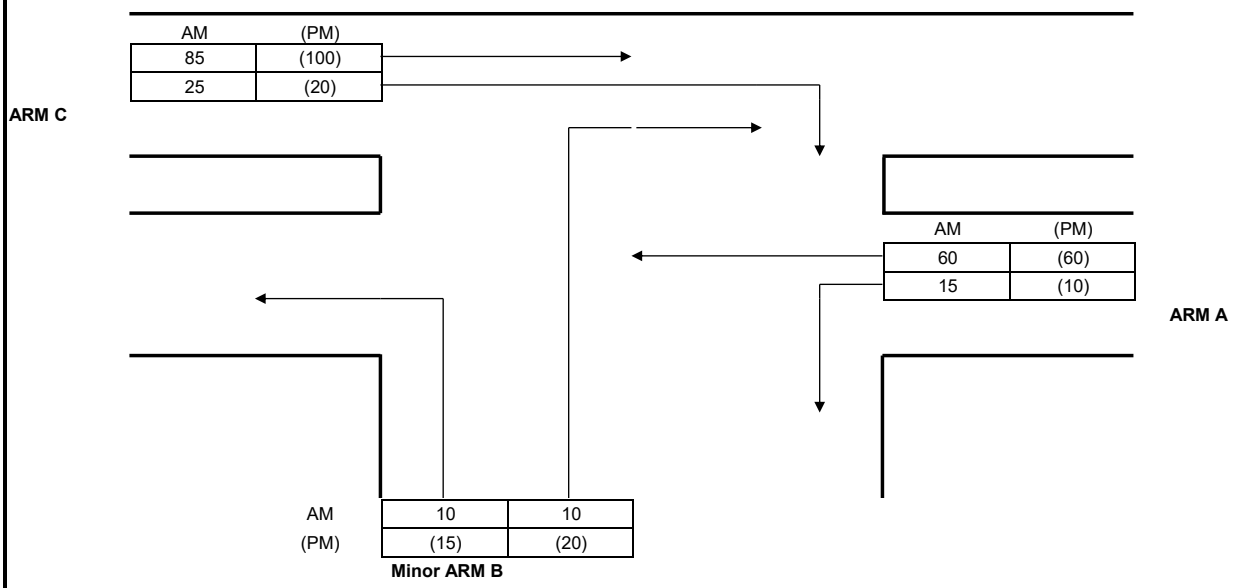
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	Date: Oct-25	Checked by:

Simplified Priority Junction Capacity Calculation

Job Title:	Residential in Southern District				
Junction:	Shouson Hill Road East / Deep Water Bay Road (J2)			Ref. No.:	J2 (2025 obs)
Scheme:	2025 Observed			Ref. No.:	
Year:	2025	Job No.:	CHK50850710	Rev.:	-
ARM A:	Deep Water Bay Road (WB)				
ARM B:	Deep Water Bay Road (NB)				
ARM C:	Shouson Hill Road East (EB)				



GEOMETRY

Major road width	W	6.63	Lane widths	w(b-a)	1.29
Central Reserve width	Wcr	0.00		w(b-c)	1.29
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.60
Visibilities	Vr(b-a)	80	Calculated	D	0.72
	Vl(b-a)	75		E	0.75
	Vr(b-c)	80		F	0.92
	Vr(c-b)	40		Y	0.77

ANALYSIS

		Factor	AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		85	100
	q(c-b)		25	20
	q(a-b)		15	10
	q(a-c)		60	60
	q(b-a)		10	20
	q(b-c)		10	15
	f		0.50	0.43
CAPACITIES	Q(b-a)	1	418	418
	Q(b-c)	1	545	545
	Q(c-b)	1	669	670
	Q(b-ac)	1	473	465
RFC's	b-a		0.024	0.048
	b-c		0.018	0.028
	c-b		0.037	0.030
	b-ac		0.042	0.075
Worst RFC			**0.042**	**0.075**

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)

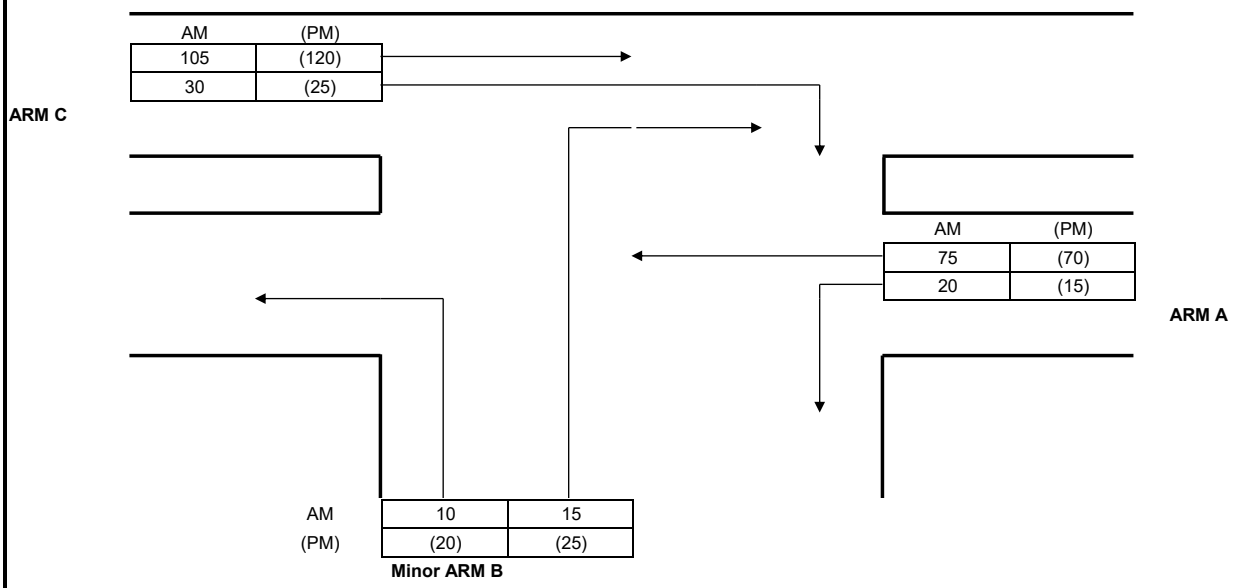
T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	Date: Oct-25	Checked by:

Simplified Priority Junction Capacity Calculation

Job Title:	Residential in Southern District				
Junction:	Shouson Hill Road East / Deep Water Bay Road (J2)			Ref. No.:	J2 (2032 ref)
Scheme:	2032 Reference			Ref. No.:	
Year:	2025	Job No.:	CHK50850710	Rev.:	-
ARM A:	Deep Water Bay Road (WB)				
ARM B:	Deep Water Bay Road (NB)				
ARM C:	Shouson Hill Road East (EB)				



GEOMETRY

Major road width	W	6.63	Lane widths	w(b-a)	1.29
Central Reserve width	Wcr	0.00		w(b-c)	1.29
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.60
Visibilities	Vr(b-a)	80	Calculated	D	0.72
	Vl(b-a)	75		E	0.75
	Vr(b-c)	80		F	0.92
	Vr(c-b)	40		Y	0.77

ANALYSIS

		Factor	AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		105	120
	q(c-b)		30	25
	q(a-b)		20	15
	q(a-c)		75	70
	q(b-a)		15	25
	q(b-c)		10	20
	f		0.40	0.44
CAPACITIES	Q(b-a)	1	411	412
	Q(b-c)	1	541	543
	Q(c-b)	1	663	666
	Q(b-ac)	1	455	461
RFC's	b-a		0.036	0.061
	b-c		0.018	0.037
	c-b		0.045	0.038
	b-ac		0.055	0.098
Worst RFC			**0.055**	**0.098**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

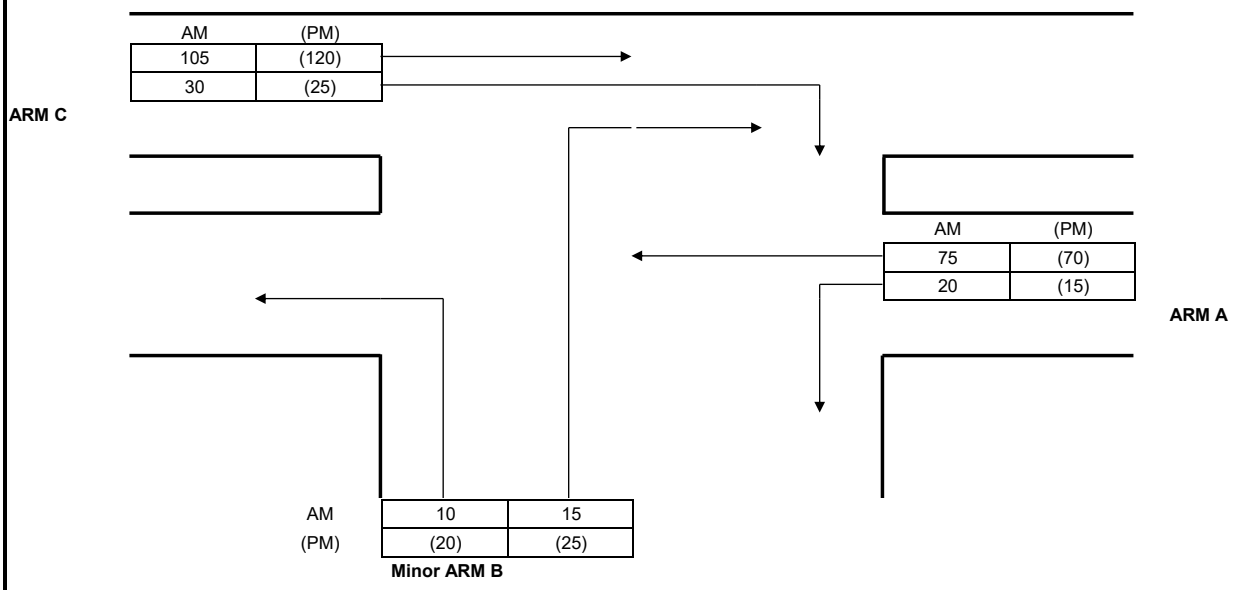
T.P.D.M.V.2.4
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Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	Date: Oct-25	Checked by:

Simplified Priority Junction Capacity Calculation

Job Title:	Residential in Southern District				
Junction:	Shouson Hill Road East / Deep Water Bay Road (J2)			Ref. No.:	J2 (2032 des)
Scheme:	2032 Design			Ref. No.:	
Year:	2025	Job No.:	CHK50850710	Rev.:	-
ARM A:	Deep Water Bay Road (WB)				
ARM B:	Deep Water Bay Road (NB)				
ARM C:	Shouson Hill Road East (EB)				



GEOMETRY

Major road width	W	6.63	Lane widths	w(b-a)	1.29
Central Reserve width	Wcr	0.00		w(b-c)	1.29
2 Lane Minor Arm (Y/N)		N		w(c-b)	3.60
Visibilities	Vr(b-a)	80	Calculated	D	0.72
	Vl(b-a)	75		E	0.75
	Vr(b-c)	80		F	0.92
	Vr(c-b)	40		Y	0.77

ANALYSIS

		Factor	AM PEAK	(PM) PEAK
TRAFFIC FLOWS	q(c-a)		105	120
	q(c-b)		30	25
	q(a-b)		20	15
	q(a-c)		75	70
	q(b-a)		15	25
	q(b-c)		10	20
	f		0.40	0.44
CAPACITIES	Q(b-a)	1	411	412
	Q(b-c)	1	541	543
	Q(c-b)	1	663	666
	Q(b-ac)	1	455	461
RFC's	b-a		0.036	0.061
	b-c		0.018	0.037
	c-b		0.045	0.038
	b-ac		0.055	0.098
Worst RFC			**0.055**	**0.098**

Where Vl and Vr are visibility distances to the left or right of the respective streams

D = (1+0.094(w(b-a)-3.65))(1+0.0009(Vr(b-a)-120))(1+0.0006(Vl(b-a)-150))

E = (1+0.094(w(b-c)-3.65))(1+0.0009(Vr(b-c)-120))

F = (1+0.094(w(c-b)-3.65))(1+0.0009(Vr(c-b)-120))

Y = 1-0.0345W

f = proportion of minor traffic turning left

Q (b-ac) = Q(b-c)*Q(b-a)/(1-f)*Q(b-c)+f*Q(b-a)

T.P.D.M.V.2.4
Appendix 1

Capacity of combined streams
- in accordance with TPDM V2.4

Calculated by:	Date: Oct-25	Checked by:

Appendix 4

Visual Impact Assessment

APPROVED SHOUSON HILL & REPULSE BAY
OUTLINE ZONING PLAN NO. S/H17/13

Proposed Minor Relaxation of Site Coverage Restriction for Permitted House Development in "Residential (Group C) 3" Zone, No. 66 Deep Water Bay Road, Shouson Hill, Hong Kong

VISUAL IMPACT ASSESSMENT

September 2025

Applicant:
Blue Water Group Management Limited

Prepared by:
KTA Planning Limited

PLANNING LIMITED
規劃顧問有限公司

S3068a_VIA_V03

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Approved Shouson Hill and Repulse Bay OZP No. S/H17/13

Proposed Minor Relaxation of Site Coverage Restriction for Permitted House Development in "Residential (Group C) 3" Zone, No. 66 Deep Water Bay Road, Shouson Hill, Hong Kong

Visual Impact Assessment

1. INTRODUCTION

1.1 Purpose

1.1.1 This Visual Impact Assessment ("VIA") report is prepared on behalf of Blue Water Group Management Limited ("the Applicant") in support of a S16 Planning Application for the proposed minor relaxation of Site Coverage Restriction ("SCR") from 25% to not more than 37% for permitted house development at No. 66 Deep Water Bay Road, Hong Kong ("the Site") (**Figure 1.1** refers). The Site is currently zoned "Residential (Group C) 3" on the Approved Shouson Hill and Repulse Bay Outline Zoning Plan ("Approved OZP") No. S/H17/13.

1.1.2 This VIA evaluates, in accordance with the "*Town Planning Board Guidelines on Submission of Visual Impact Assessment for Planning Applications to TPB*" ("TPB PG-No. 41"), the anticipated visual impact of the Proposed Development on public viewers relevant to the Site and concludes with recommendation on mitigation measures if necessary.

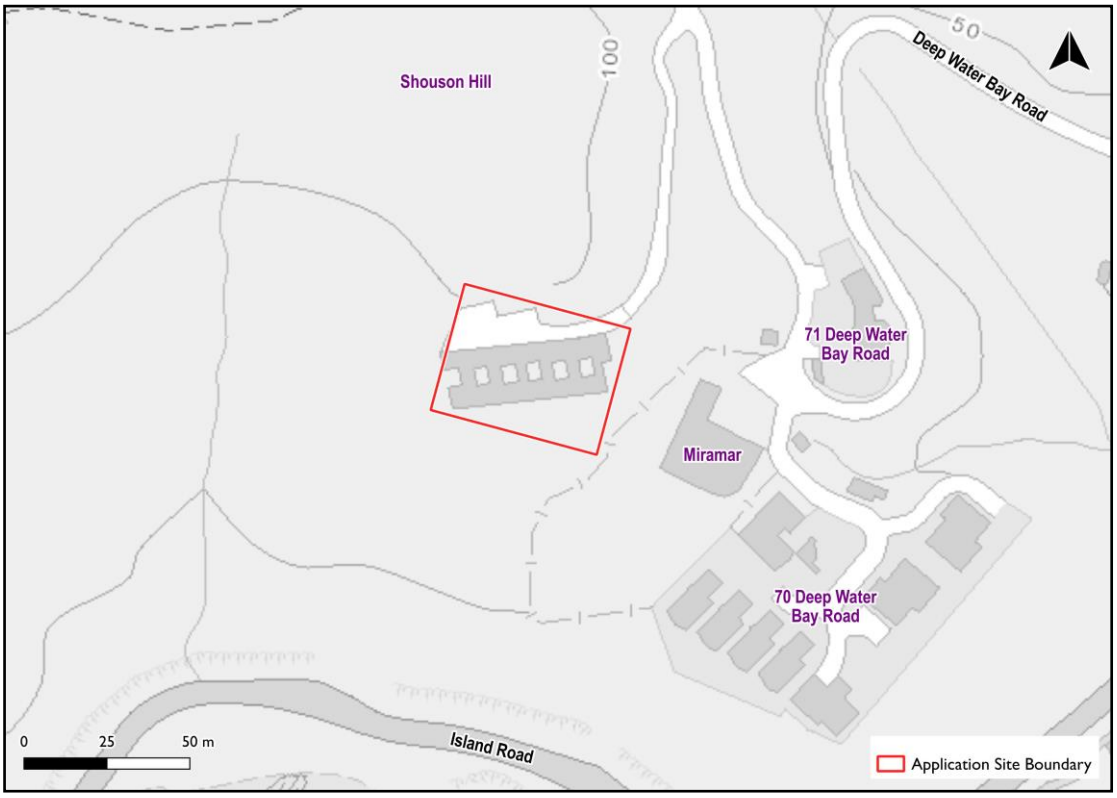


Figure 1.1 Site Location Plan

1.2 Report Structure

1.2.1 Following this introductory section, the methodology adopted in this assessment will be set out in Section 2. The baseline review of the assessment area is included in Section 3. Section 4 includes the Proposed Development Scheme and discussion on the design considerations. Visual envelope, visually sensitive receivers and their representative viewpoints will be identified and analyzed in Section 5, followed by assessment of the visual impacts, if any in Section 6. Section 7 concludes this VIA.

2. METHODOLOGY

2.1 Visual Impact Assessment Approach

2.1.1 This VIA aims at evaluating the potential visual impact of the Proposed Development with the minor relaxation of SCR from 25% to not more than 37% by evaluating the visual impact of Proposed Development with maximum site coverage of 37% on public viewers / sensitive viewers as compared with the existing houses with site coverage of about 25%.

2.1.2 According to TPB PG-No. 41, the overall visual impact shall be assessed based on i) the sensitivity of the key public viewers; ii) visual resources and visual amenities likely to be affected; iii) the magnitude, extent and duration of impact and any resultant improvement or degradation in the visual quality and character of the surrounding area; and iv) the planning intention and known planned developments of the area. Visual Impacts could be either beneficial or adverse.

2.1.3 Visual sensitivity of public viewers / sensitive viewers is determined taking into account the activity of the sensitive viewers, the duration and distance over which the Proposed Development would remain visible, and the public perception of the value attached to the view being assessed. Visual sensitivity is qualitatively graded from high to low.

2.1.4 Visual changes could be positive or negative and they are not necessarily mutually exclusive. In considering the effect of visual changes, it covers the following four aspects:

- the total effect on the **Visual Composition** of the surrounding context;
- the degree of **Visual Obstruction** to key public viewing points;
- the visual **Effect on Public Viewer** / **Sensitive Viewer**; and
- the **Effect on Visual Resources**.

2.1.5 The magnitude of visual changes will be qualitatively graded as Substantial, Moderate, Slight or Negligible.

2.1.6 The VIA will be undertaken in the following steps:

- A baseline review will be conducted to capture the existing visual elements in the surroundings and the planning context of the Site.

- The Indicative Development Scheme for the Site will be briefly presented.

- The Visual Envelope ("VE") will be determined based on the size and distance of the Proposed Development and appropriate public viewpoints ("VPs") to represent the view from public viewers will be identified.

- Each VP and potential visual impacts of the Indicative Development Scheme on the public viewers will be analysed based on the photomontages prepared from

the selected VPs.

- The overall visual impact will be assessed and conclusion on no significant adverse visual impact due to the Proposed Development will be made.

3. BASELINE REVIEW

3.1 Site Location and Existing Condition

3.1.1 The Site is located at No. 66 Deep Water Bay Road, Shouson Hill, Hong Kong. Positioned at the southeastern slope of Shouson Hill, the Site is currently occupied by 6 nos. of 4-storey houses with carports completed in 1990. The existing buildings and main entrance are situated at level of about 91mPD, while the swimming pool and outdoor garden are located on the lower platform level at about 85mPD. The total area of the Site is about 2,043.869 sq.m. Vehicular access is via the existing right-of-way off Deep Water Bay Road.



Figure 3.1 Aerial Photo of the Site and Surrounding Context

3.2 Existing Visual Elements in the Surrounding Context

3.2.1 The visual outlook of an area is shaped by a combined composition of all the visual elements which come into sight of the viewers. The Site is situated in a rural setting characterised by low-rise residential developments and vegetations. Key visual elements in the surrounding context of the Site are included in **Figure 3.2** and summarized below:

- Deep Water Bay is a key natural visual resource in the Southern District that offers visual openness and the view of the South China Sea. It is located to the south of the Site.

- To the immediate north and northwest of the Site is Shouson Hill with the top level of about +148.1mPD. The lush greenery at the knoll serves as a green backdrop which is considered as key visual resources in the surrounding area;

- To the further north and west of the Site beyond Shouson Hill is a low-rise development cluster with various houses developments including 3 Shouson Hill Road (i.e. about +28.1mPD to +28.9mPD) and Bello Horizonte (i.e. about +114.5mPD to +115.7mPD). With the variation in building height and sufficient building separation, these low-rise developments would not break the visual harmony and create obstruction to the surrounding areas;

- Ocean Park and the Hong Kong Country Club formed a low-rise recreational cluster in the Wong Chuk Hang area. The characteristic of the low-rise recreational facilities maintains the visual openness of the area.

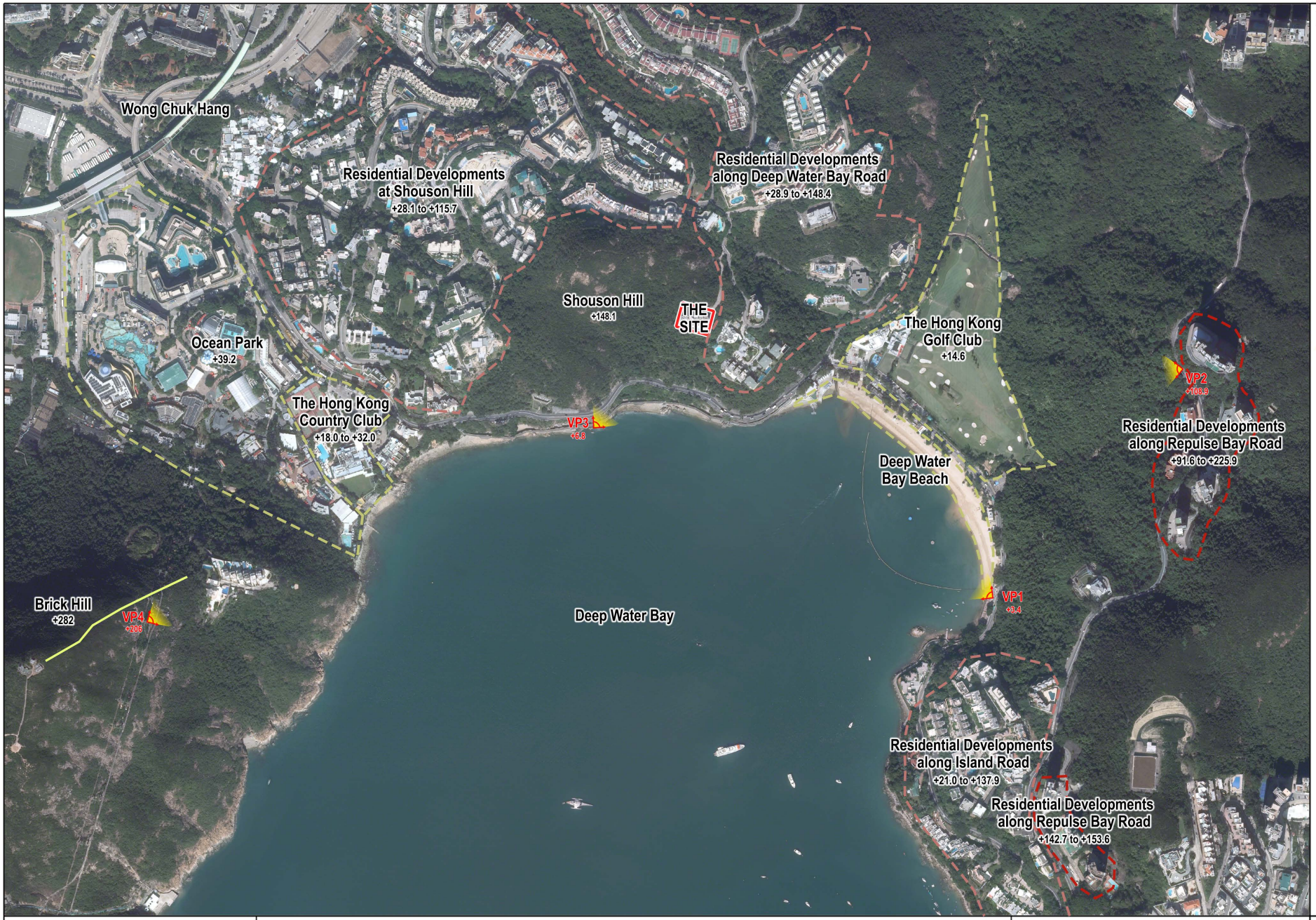
- Brick Hill is situated to the southwest of the Site. The mountain backdrop and the lush greenery at the slope of Brick Hill serve as visual relief for the viewers. Similar to Deep Water Bay, it is also considered as the key visual resources in the area.

- To the east and southeast of the Site are some low-rise residential developments along Deep Water Bay Road including Miramar (i.e. about +72.4mPD), 70 & 72 Deep Water Bay Road (i.e. about +59.8mPD to +63.8mPD) and 71 Deep Water Bay Road (i.e. about +81.2mPD). They form a low-rise development cluster along Deep Water Bay Road;

- The Hong Kong Golf Club is situated to the east of the Site beneath the Shouson Hill. It comprises a clubhouse building and a 9-hole golf course. The golf course with ample greenery provides visual openness and visual relief to the Deep Water Bay Area.

- To the further east beyond Hong Kong Golf Club are the cluster of mid-rise residential developments along Repulse Bay Road. While the area is dominated by low-rise developments, the incompatible building height of these residential developments may affect the visual openness of the area and create visual obstruction to the greenery.

3.2.2 The existing visual quality of the Application Site can be regarded as good in general The Site is located in a rural setting characterized by a mix of low-rise residential developments and greenery. Existing trees at Shouson Hill, Brick Hill, The Hong Kong Golf Club and the Deep Water Bay provide visual relief to the area.



Legend

- Application Site Boundary
- VP1 Deep Water Bay Beach Barbecue Area
- VP2 Bus Stop near Monte Verde, Repulse Bay Road
- VP3 Mills and Chung Path
- VP4 Cable Car at Ocean Park
- +00.00 Existing Levels (about)
- VP Viewing Points

Visual Element/ Resources/Detractors

- Ridgeline
- Recreational Use
- Low-rise Residential Development
- Mid-rise Residential Development

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Key Visual Elements

Proposed Minor Relaxation of Site Coverage Restriction for Permitted House Redevelopment in "Residential (Group C) 3" and "Green Belt" Zones, No. 66 Deep Water Bay Road, Shouson Hill, Hong Kong

Visual Impact Assessment

Figure 3.2

Scale: 1:16,000

Date: 22 September 2025

3.3 Statutory Zoning Context

3.3.1 The Site is mainly zoned "Residential (Group C) 3" (i.e. about 1971.615 sq.m., 96.5%) on the Approved Shouson Hill & Repulse Bay Outline Zoning Plan ("Approved OZP") No. S/H17/13, while a minor portion of the Site at the south is zoned "Green Belt" (i.e. about 72.254 sq.m., 3.5%) due to discrepancies between the lot and zoning boundaries on the Approved OZP. (**Figures 3.3 and 3.4** refer).

3.3.2 According to the Statutory Notes of the Approved OZP, the "R(C)" zone is "*intended primarily for low-rise, low-density residential developments where commercial uses serving the residential neighbourhood may be permitted on application to the Town Planning Board*". 'House' is column 1 use which is always permitted.

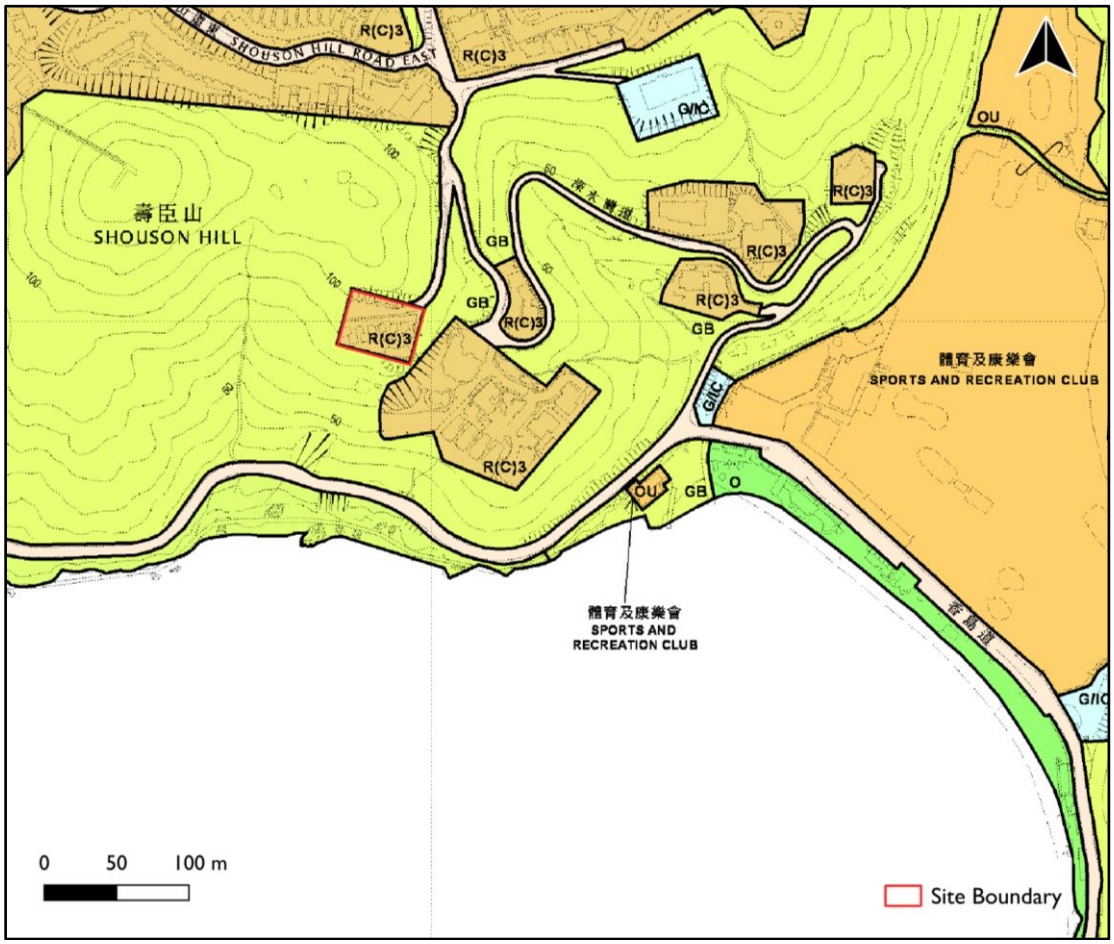


Figure 3.3 Zoning Context Plan (Extracted from Approved Shouson Hill & Repulse Bay OZP No. S/H17/13)



Figure 3.4 Discrepancy of Site Boundary and "R(C)3" Zoning Boundary (Extracted from Approved Shouson Hill & Repulse Bay OZP No. S/H17/13)

3.3.3 Under the "Remarks" section of the Statutory Notes, it is stated that development falling within the "R(C)3" sub-area of the "R(C)" zone is subjected to a maximum 3 storeys in addition to 1 storey of carports or the height of existing building, whichever is the greater. The "R(C)" zone also stipulates the maximum plot ratio and site coverage restrictions in accordance with the number of storeys used for domestic purposes as follows.

Table 3.1 Maximum Plot Ratio and Site Coverage

Height-No. of Storeys Used for Domestic Purposes	Maximum Plot Ratio	Maximum Site Coverage (%)
3	**0.75**	**25**

3.3.4 It is also stated that "*based on the individual merits of a development or redevelopment proposal, minor relaxation of the plot ratio, site coverage and building height restrictions may be considered by the Town Planning Board ("TPB") on application under section 16 of the Town Planning Ordinance*".

4. THE PROPOSED DEVELOPMENT

4.1 The Indicative Development Scheme

4.1.1 The Proposed Development includes two 3-storey houses on top of 1-storey of basement carports. Based on a plot ratio of about 0.75 and a site area of about 2,043.869 sq.m, a total gross floor area (GFA) of about 1,532.902 sq.m. To overcome the site coverage restriction under the "R(C)3" zone which dictates 25% for a 3-storey domestic building, a minor relaxation of site coverage restriction from 25% to not more than 37% is sought. It is anticipated that the Proposed Development would be completed by 2029. **Table 4.1** summarizes the key development data of the Proposed Development.

Table 4.1 Key Development Parameters

Key Parameters	
Site Area	About 2,043.869m^2
Total Plot Ratio	About 0.75
Total GFA	About 1532.902m^2
No. of House	2
No. of Storey	3 storeys in addition to 1 storey of carports
Building Height (Main Roof)	About 104.5mPD
Site Coverage	Not more than 37%

4.2 Key Design Considerations

4.2.1 In formulating the Indicative Development Scheme, the schematic design has taken into account the various site constraints as well as design considerations in order to ensure that the Scheme is designed to create a high-quality development in harmony with surrounding environment. The Proposed Development adopts a number of sensitive design measures to respond positively to the surrounding low-density residential neighbourhood as follows

Responding to the Existing Topography and Slopes

4.2.2 The architectural design of the Proposed Development is intricately aligned with the Site's natural topography and slopes. The building form and height have been calibrated to harmonize with the existing southward sloping of Shouson Hill. This not only ensures that the Proposed Development is visually integrated with its surroundings but also enhances the overall aesthetic coherence of the neighborhood. A stepping height profile descending from Shouson Hill towards Deep Water Bay will be maintained upon redevelopment (**Figures 4.1a** and **4.1b** refer). The design respects the undulations of the terrain, allowing the structure to nestle within the landscape while maintaining compatibility with adjacent developments



Figure 4.1a Existing Building in the Site and Topographical and Physical Setting in the Vicinity



Figure 4.1b Responsive Development Profile with the Existing Topographical and Physical Setting in the Vicinity

Adoption of Sensible Building Height

4.2.3 The Proposed Development is designed with a building height of about +104.5mPD, which is similar to that of the existing buildings (i.e. about +103.055mPD) (**Figures 4.1a and 4.1b** refer). This careful consideration of building height promotes visual continuity and spatial harmony within the area. By responding to the topographical features, the design achieves a balance that respects both the skyline and the human scale, ensuring compatibility with surrounding developments (**Figure 4.2** refers). The

sensible building height profile would align with the ridgeline of Shouson Hill behind and blend in more harmoniously with the surrounding neighbourhood. This approach mitigates any potential disruption to the ambient character of the locality while reinforcing a sense of place.



Figure 4.2 Sensible Building Height Responding to the Existing Topographical Features of Shouson Hill

Innovative Building Design

4.2.4 In contrast with the traditional rectangular and rigid building form, the Proposed Development features a terraced architectural style. This innovative design includes outdoor terraces at multiple levels, i.e. ground level, 1/F and 2/F, which fosters a seamless indoor-outdoor connection. Particularly along the facade facing Deep Water Bay, these terraces serve as inviting spaces for social interaction and relaxation. This thoughtful design would create visual relief and enhance the architectural interest of the structure. It will not only enrich the user experience but also contributes positively to the overall visual landscape (**Figure 4.3** refers).

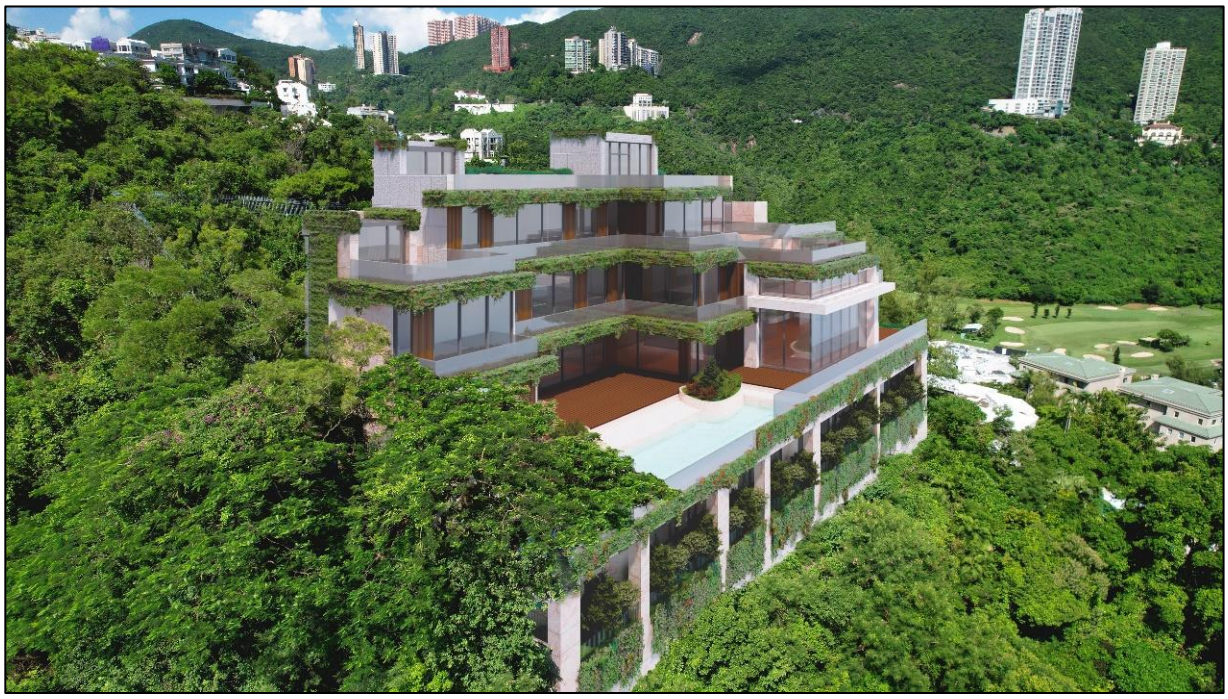


Figure 4.3 Terraced Design adopted at the Proposed Development

Adaptive Building Footprint Design

4.2.5 Terraced designed resulting from building setbacks of various facades has been incorporated in the Proposed Development. The larger footprint at G/F has allowed a gradual descending of footprint at 1/F and 2/F with site coverage of about 29% and 15% respectively (**Figures 4.4a** to **4.4c** refer). . The increased design flexibility enabled by the proposed minor relaxation of site coverage restriction allows varied building profiles and incorporation of terraces for greenery opportunities while reducing the building bulk when viewed from various key sensitive viewpoints.

Optimised Floor-to-Floor Height

4.2.6 The Proposed Development incorporates optimized floor-to-floor height to enhance spatial quality and functionality. With a height of approximately 4.5m per floor, the design not only ensures adequate headroom and flexibility for residential use, but also maximise natural sunlight penetration deeper into the interior spaces. Such design could enhance the overall comfort and foster a healthier, safer, and more energy-efficient living environment.

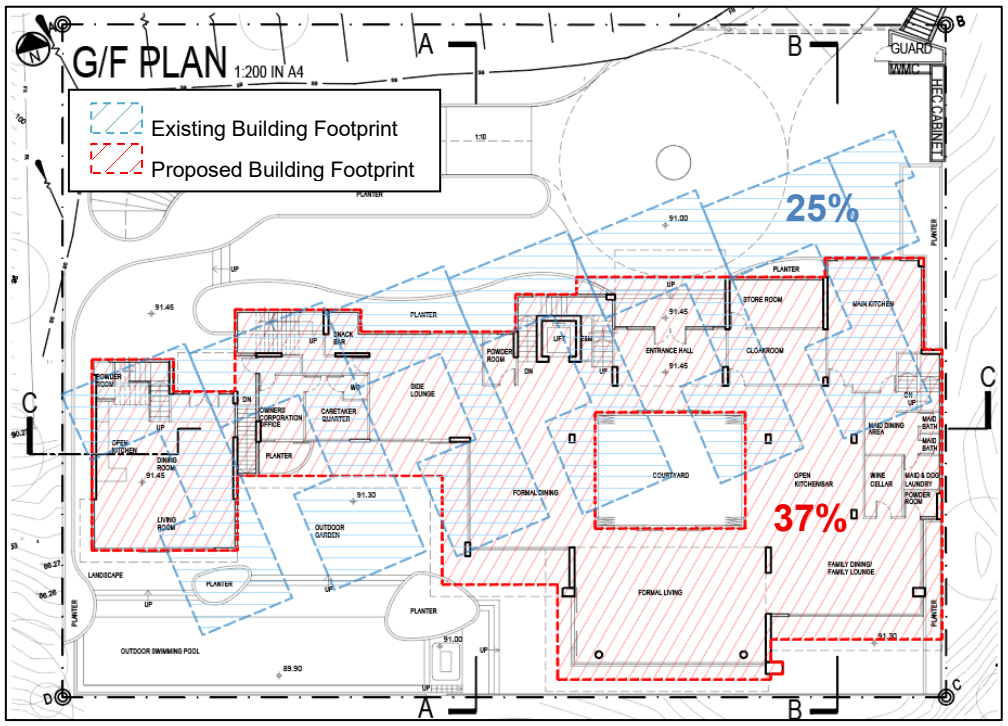


Figure 3.4a Site Coverage Comparison on G/F

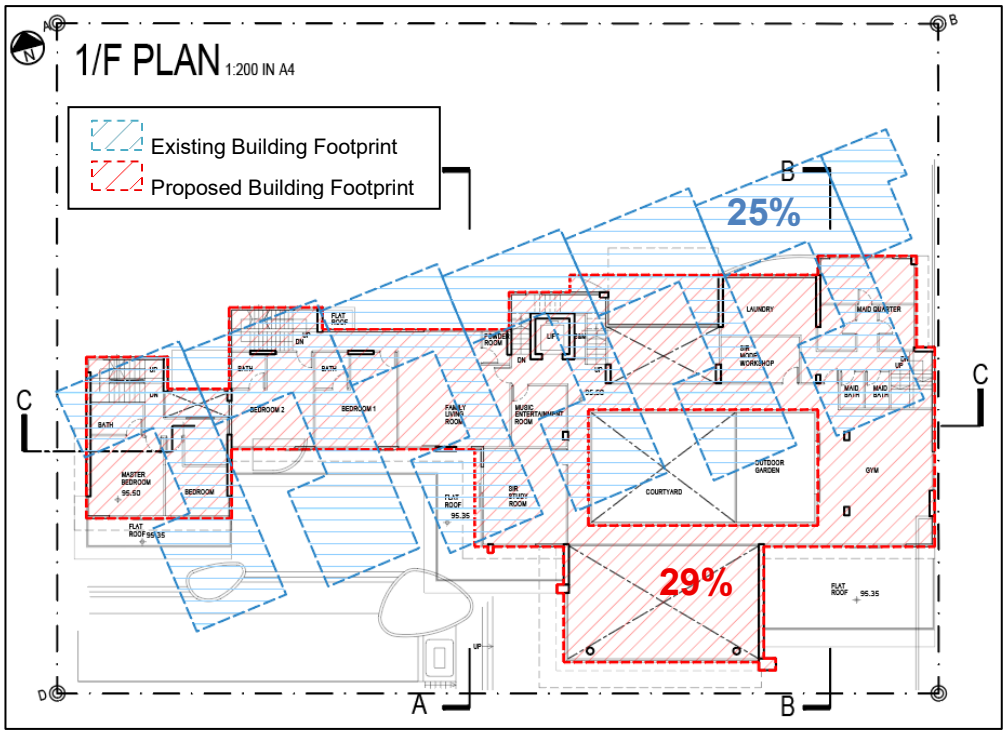


Figure 3.4b Site Coverage Comparison on 1/F

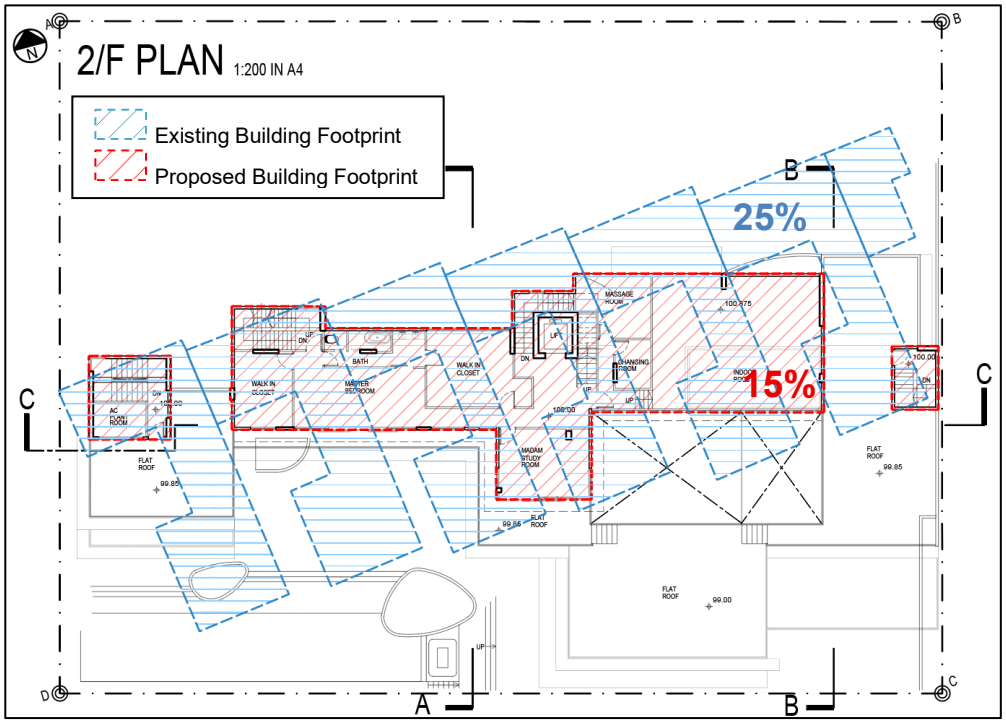


Figure 3.4b Site Coverage Comparison on 1/F

Greenery Coverage

4.2.7 Not less than 20% greenery coverage of site area will be provided at the Proposed Development, including external landscape area, courtyard and greenery buffer along the southeastern and southwestern boundaries of the Site. By integrating ample landscape treatment, the Proposed Development enhances its aesthetic appeal while promoting sense of visual integration with the surrounding vegetated environment.

Special Landscape Treatment

4.2.8 To minimize the visual bulk of the Proposed Development as far as practicable, a special landscape treatment is devised in particular for the façade of the underground carports. The basement level is purposely setback for the provision of approximately 2m wide planting strip. This design effectively breaks the massing of the building and reduces the visual impact of the basement carport. Additionally, the extensive landscape treatment including edge plantings and vertical green walls would function as a green buffer that softens the transition between the built environment and natural surroundings. This landscaping design not only soften the concrete edges but also contributes to the overall environmental quality, promoting a more pleasant and visually appealing atmosphere (**Figure 4.5** refers).

4.2.9 Edge planting and vertical greening are integrated to enhance the transition between the Proposed Development and its surroundings. Planters with native shrubs and trailing plants are incorporated along balcony edges on G/F, 1/F, 2/F, and R/F, while vertical greening on the southeastern facade minimizes perceived building bulk and reinforces Shouson Hill's rural character. This multi-level greening approach mitigates potential visual impacts, ensuring a seamless integration with adjacent vegetated areas and the existing building structure.

Neighbourhood Compatibility

4.2.10 The existing low-density residential neighborhood and overall amenities of Shouson Hill will be maintained and enhanced in the context of this Planning Application. The use of timber materials on the outdoor terraces and extensive greenery would blend the Proposed Development with the existing natural environment. Taking into account the surrounding low-rise house developments along the Deep Water Bay Road, it is considered highly compatible with both the tranquil residential area and the natural setting.



Figure 4.5 Special Landscape Treatment at Basement Façade

5 IDENTIFICATION OF SENSITIVE VIEWERS AND SELECTION OF VIEWPOINTS

5.1 Identifying Visual Envelope and Sensitive Viewers

5.1.1 The Visual Envelope ("VE") or the zone of visual influence of the Proposed Development is determined by the existing topography and building in the vicinity of the Site. As prescribed in the Town Planning Board Guideline No. 41, size of Proposed Development, the distance of the development and its potential visibility from selected viewing points, and the actual site and surrounding topographical conditions are considered as the key factor on determining VE. Some of the views to the Proposed Development are substantially blocked by the mountainous topography including Shouson Hill, Brick Hill and Violet Hill.

5.1.2 Furthermore, as prescribed in the TPB PG-NO. 41, the viewers will tend to see the building as part of a group rather than as a single building when the viewing distance equals to three times the height of the building from the Site (i.e. the 3H zone). Therefore, 3H zone could also be used as a reference in determining the assessment area. Since the actual maximum building height of the Proposed Development will be 18m, the assessment area covers a radial area of about 54m from the façade of the Proposed Development.

5.1.3 The VE covers the area where direct sight towards the Proposed Development is presented in **Figure 5.1**. Since protecting private view is not the purview of the TPB, this VIA focuses primarily on public sensitive viewers only and private sensitive viewers, such as residents of private development and users of developments with restricted/exclusive accesses will not be identified.

5.2 Selection of Viewpoints

5.2.1 Representative VPs within the VE were selected for assessing the visual impact to the sensitive viewers. Selected VPs shall cover public views from easily accessible and popular area from different directions. With reference to para. 4.5 of TPB PG-No. 41, when selecting VPs for the subject application, priority shall be given to major public open space, public focal points, open spaces, existing/future pedestrian node, key pedestrian/vehicular corridor, and existing major vistas will be considered as major visual sensitive viewpoints.

5.2.2 In this VIA, a total of four VPs are selected for further assessment on the visual impact of the Proposed Development, which are summarized in **Table 5.1** and shown in **Figure 5.1**. The VPs included both close-up and distant views which cover the views from different directions.

Table 5.1 Selected Visually Sensitive Viewpoints

Viewpoint No.	Description
VP1	Deep Water Bay Beach Barbecue Area
VP2	Bus Stop near Monte Verde, Repulse Bay Road
VP3	Mills and Chung Path
VP4	Cable Car at Ocean Park

VP1 – Deep Water Bay Beach Barbecue Area

5.2.3 Deep Water Bay Beach is one of the major beaches in the Southern District. It is a popular spot for leisure and recreational activities during the weekends and holidays. This VP is taken at the barbecue area of Deep Water Bay Beach to the southeast of the Site with a distance of about 614m. With the level at about +3.4mPD, this VP captures the view of the Deep Water Bay Beach, Shouson Hill and the open sky view. It is selected as a distant viewpoint to assess the possible impact of the sensitive viewers i.e. visitors at the barbecue spot as well as the beach engaging in passive and active recreational activities.

VP2 – Bus Stop near Monte Verde, Repulse Bay Road

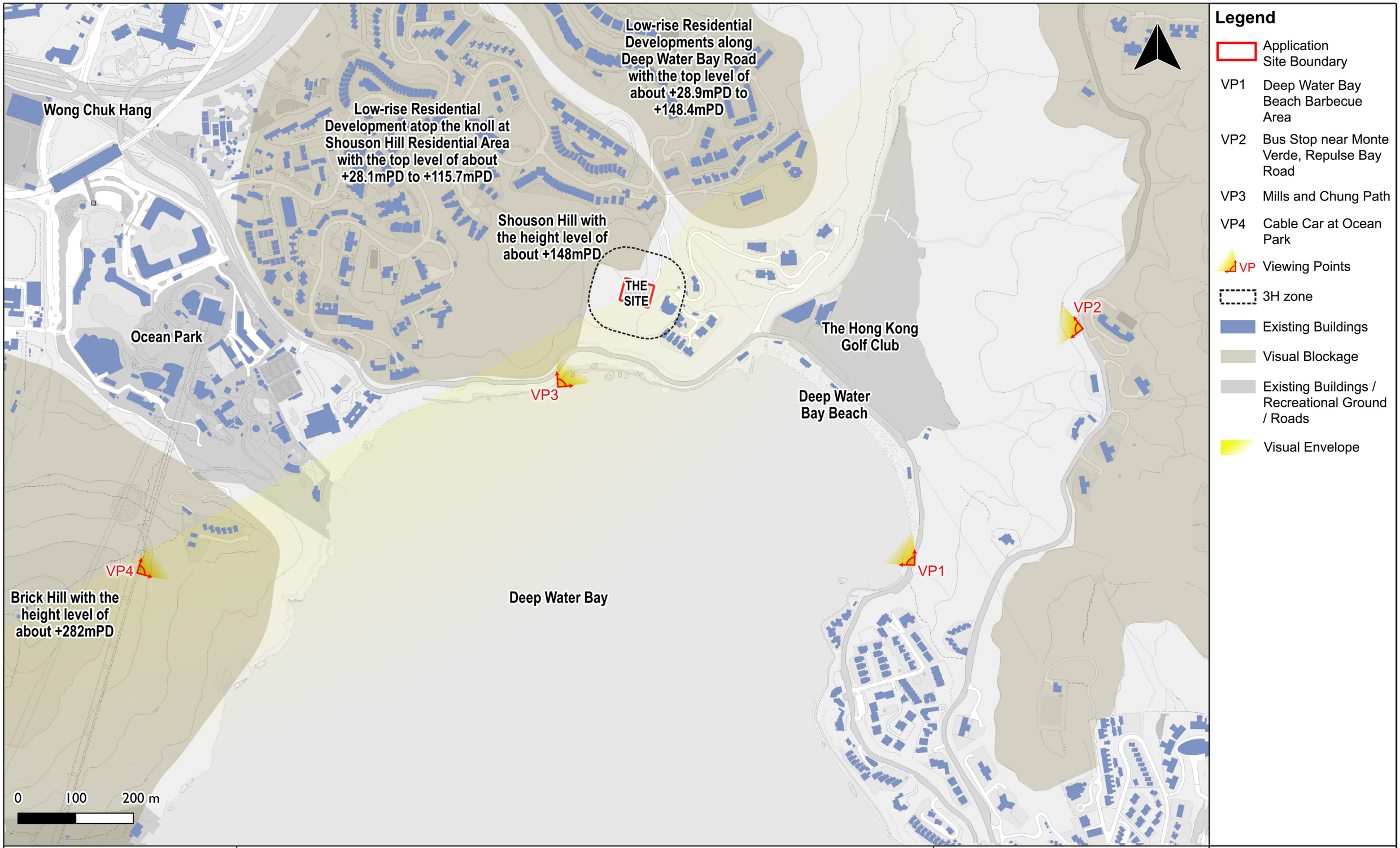
5.2.4 VP2 is taken at the Bus Stop at the Repulse Bay Road across from the entrance of Monte Verde with a distance of about 752m to the east of the Site. At the level of +108.9mPD, the VP capture the open view of the Deep Water Bay and Shouson Hill, as well as the open sky view. The sensitive receivers of this VP would be passengers waiting for bus service as well as pedestrians walking along the footpath of Repulse Bay Road.

VP3 – Mills and Chung Path

5.2.5 Mills and Chung Path is a coastal boardwalk situated under Island Road of Deep Water Bay. It offers a gorgeous view of the Deep Water Bay, Brick Hill and South China Sea. The VP is taken at the boardwalk to the southwest of the Site with a distance of about 200m. At the level of about +6.8mPD, the VP captures the view of the Site and the lush greenery at the slope, as well as the open sky view. This VP is selected to assess the impact of the sensitive viewers i.e. visitor walking or jogging along the boardwalk.

VP4 – Cable Car at Ocean Park

5.2.6 Ocean Park is the largest theme park in Hong Kong with various attractions including roller coasters, animal exhibits and aquariums. It consists of two main attraction areas (i.e. the Waterfront and the Summit) which is separated by Brick Hill. The cable car system is the main transportation within the theme park. This VP is taken at the cable car route to the southwest of the Site with a distance of about 958m. At a level of about +206mPD, the VP captures the view of Shouson Hill, Deep Water Bay, Violet Hill and the open sky view. As Ocean Park is a popular destination for both locals and tourists, sensitive viewers of this VP are the visitors of the theme park enjoying the scenic view during their ride in the cable cars.



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Visual Enevelope and Location of Viewpoints

Proposed Minor Relaxation of Site Coverage Restriction for Permitted House Redevelopment in "Residential (Group C) 3" and "Green Belt" Zones, No. 66 Deep Water Bay Road, Shouson Hill, Hong Kong

Visual Impact Assessment

Figure 5.1

Scale: 1:16,000

Date: 22 September 2025

Table 5.1 Identified Visually Sensitive Viewpoints with Preliminary Analysis

Viewpoints (VPs)	Distance/ Direction	Height in mPD (Approx.)	Nature of VP	Popularity by Public	Visual Sensitivity[1]	Visual Quality[2]
VP1: Deep Water Bay Beach Barbecue Area	Approx. 614m/ Southeast	+3.4mPD	Passive Recreation	Frequent (at weekends and public holidays)	High	Good
VP2: Bus Stop near Monte Verde, Repulse Bay Road	Approx. 752m/ East	+108.9mPD	Transient	Transient	Medium	Good
VP3: Mills and Chung Path	Approx. 200m/ Southwest	+6.8mPD	Active / Passive Recreation	Transient	Medium	Fair
VP4: Cable Car at Ocean Park	Approx. 958m/ Southwest	+206mPD	Transient	Frequent	High	Good

[1] Visual sensitivity is determined by the types of activities sensitive viewers are engaging in and the duration and distance over which the proposed development would remain visible. For example, people engaging in active recreational activities such as playing basketball or football at the VP are less sensitive to visual change than passive recreational activities.

[2] Visual quality is assessed based on the openness and permeability of the view as well as the visibility of visual resources including prominent ridgelines, the harbour, natural coastlines, open sea horizon, skyline, scenic areas, valued landscape, special landmark, heritage features to be preserved.

6 ASSESSMENT OF VISUAL IMPACTS

6.1 General

6.1.1 The primary objective of this VIA is for evaluating the visual impact of the proposed minor relaxation of site coverage restriction ("SCR") from 25% to not more than 37% for the Permitted House Development. The assessment will focus on evaluating the potential visual impact of the Proposed Development as compared with the existing buildings at the Site. The relevant assessments in relation to visual composition, visual obstruction, effects on public views and effects on visual resources are focused on the changes to be brought about by the proposed minor relaxation of the SCR of the Site.

6.2 VP1 – Deep Water Bay Beach Barbecue Area

Visual Composition

6.2.1 VP1 is a mid-range viewpoint taken at the Deep Water Bay Beach Barbecue area with the distance of about 614m to the southeast of the Site. It captures a panoramic view of Deep Water Bay and the beach in the foreground. Some low-rise residential developments along Deep Water Bay Road and Shouson Hill are captured in the middle ground while high-rise developments at Wong Chuk Hang, ridgeline of the mountains in Hong Kong Island and the open sky view are captured in the backdrop. Upon completion, the Proposed Development will replace the existing buildings at the Site. Despite the minor relaxation of the SCR will lead to the alteration of building disposition and mass. The Proposed Development will be congruous to the surrounding settings in terms of development scale and building form.

Visual Obstruction

6.2.2 As illustrated in **Figure 6.1**, the existing houses are standing at a prominent location underneath Shouson Hill. Upon redevelopment, the Proposed Development will maintain the visual openness by the incorporation of terraced design with variations in building height made possible by the relaxation of SCR to not more than 37%. With a compatible building height to the surrounding settings, the Proposed Development will not affect the visual openness especially towards the ridgeline of Shouson Hill with an interesting built form.

Effect on Public Viewers

6.2.3 As mentioned in paragraph 6.2.1, this VP is taken at the barbecue area of Deep Water Bay Beach which is a popular recreation outlet during weekends and holidays. This VP also represented the view from the Deep Water Bay Beach. Therefore, the selected sensitive viewers of this viewpoint will be visitors engaging in both active and passive recreational activities at the beach, and the barbecue spots. As the sensitive viewers might spend considerable time engaging in passive recreational activities while enjoying the scenic view of Deep Water Bay, their visual sensitivity will be high. Upon redevelopment, the Proposed Development will replace the existing buildings at

the Site. With the incorporation of carefully thought-out building height and disposition, it will blend in well with other residential developments along Deep Water Bay Road and continue to respond positively to the ridgeline of Shouson Hill after the minor relaxation of SCR. Given its visual compatibility to surrounding context and will not create any obstruction to the existing greenery, the magnitude of visual change experienced by public viewers due to minor relaxation of SCR is considered negligible.

Effect of Visual Resources

6.2.4 The key visual resources at this VP are the Deep Water Bay at the foreground, vegetations at the slope of Shouson Hill at the middle ground, mountainous view of Hong Kong Island as well as the open sky view at the background. Upon completion, the Proposed Development will not affect the view towards most of the key visual resources. With the provision of greenery of not less than 20% and landscape treatment along southwestern boundary, the change of the visual impact due to the Proposed Development is considered negligible.

6.2.5 It is anticipated that the overall visual impact rating for the VP1 is negligible.



Existing Condition



Proposed Development



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Viewpoint 1 – Deep Water Bay Beach Barbecue Area

Proposed Minor Relaxation of Site Coverage Restriction for Permitted House Redevelopment in "Residential (Group C) 3" Zone, No. 66 Deep Water Bay Road, Shouson Hill, Hong Kong

Figure 6.1

Visual Impact Assessment

Date: 18 September 2025

6.3 VP2 – Bus Stop near Monte Verde, Repulse Bay Road

Visual Composition

6.3.1 This VP is a distant viewpoint taken at the bus stop across from Monte Verde at Repulse Bay Road to the east of the Site with a distance of about 752m. With a level of about +108.9mPD, this VP captures the view of Deep Water Bay, Shouson Hill, the Site and the residential developments in the vicinity including 70 and 72 Deep Water Bay Road, Miramar and 71 Deep Water Bay Road in the foreground. Greenery at Brick Hill, high-rise developments at Wong Chuk Hang, and the mountains of Hong Kong Island as well as the open sky view formed the background. Compare to the existing buildings at the Site, the incorporation of terraced design in Proposed Development will maintain the visual composition by respecting the topographical setting of Shouson Hill. The proposed building height and form are compatible with the existing residential developments in the area. It is anticipated that the Proposed Development will continue to form part of the residential cluster in the foreground. Therefore, it is considered not incongruous with the surroundings when viewing from this VP.

Visual Obstruction

6.3.2 From **Figure 6.2**, the prominent visual resources in this VP are the open view to the Deep Water Bay and lush greenery at Shouson Hill in the foreground, as well as the Brick Hill and mountains in Hong Kong Island at the backdrop. Due to the rectangular box shape design in the existing building at the Site, a slight loss of visual access towards existing greenery at Shouson Hill is resulted. Upon redevelopment, the Proposed Development with the incorporation of terraced design and carefully thought-out building height and form will maintain visual openness and create visual access towards the greenery behind the Site. Meanwhile, the visual access towards Deep Water Bay and greenery at Brick Hill, as well as the ridgeline of mountains at the backdrop and the open sky view will not be affected after minor relaxation of SCR. Therefore, it is anticipated that the visual obstruction caused by the Proposed Development is considered negligible.

Effect on Public Viewers

6.3.3 The sensitive viewers of this VP will mainly be pedestrians walking along the footpath and passengers waiting for bus services along Repulse Bay Road. Although the nature of the sensitive viewers is transient, it is anticipated that sensitive viewers will enjoy the open view of Deep Water Bay while waiting for the bus service. Therefore, their visual sensitivity is medium. Compared to the existing rigid and dull building blocks at the Site, the Proposed Development will enhance the view by introducing terraced building design with compatible building height. The provision of landscape treatment including edge planting at the eastern elevation and newly planted tree at the rear of the Site, as well as the existing tree outside Site Boundary to the immediate east of the Site will further soften the visual bulk of the Proposed Development. Hence,

the magnitude of visual change by public viewers due to minor relaxation of SCR is considered negligible.

Effect of Visual Resources

6.3.4 The view towards Deep Water Bay, open sky view and greenery setting at the mountains in both foreground and background are the visual resources of this VP. As compared to the existing view, Proposed Development will not affect the visual resources identified in this VP. In fact, the proposed landscape treatments including edge planting at the eastern elevation and newly planted tree at the rear of the Site, as well as the existing greenery to the immediate east of the Site will integrate the Proposed Development with the existing rural setting. No discernible change in magnitude of the visual impact due to the Proposed Development is anticipated.

6.3.5 Therefore, it is anticipated that the overall visual impact rating for the VP2 is negligible.



Existing Condition



Proposed Development



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Viewpoint 2 – Bus Stop at Monte Verde, Repulse Bay Road

Proposed Minor Relaxation of Site Coverage Restriction for Permitted House Redevelopment in "Residential (Group C) 3" Zone, No. 66 Deep Water Bay Road, Shouson Hill, Hong Kong

Figure 6.2

Visual Impact Assessment

Date: 18 September 2025

6.4 VP3 – Mills and Chung Path

Visual Composition

6.4.1 Mills and Chung Path is a coastal boardwalk underneath Island Road which offers a gorgeous view of the Deep Water Bay, Brick Hill and South China Sea. VP3 is a close-up viewpoint at Mills and Chung Path to the southwest of the Site with a distance of about 200m. Situated at a level of about +6.8mPD, this VP captures the retaining wall below Island Road in the foreground. The southeastern elevation of the Site and lush greenery at the slope are captured in the middle ground. 70 and 72 Deep Water Bay Road and the open sky view formed the backdrop of this VP. Only the upper portion of the Proposed Development will be visible from this VP while the lower portion is shielded off by the existing vegetations at the slope. With the incorporation of terraced design and the shifting in building orientation, less structures will be visible as compared with the existing development at the viewpoint. Apart from the reduced visual mass of building at the Site upon redevelopment, no alteration, adjustment or change on visual composition is resulted. Therefore, the anticipated impact on the visual composition from this viewpoint is considered negligible.

Visual Obstruction

6.4.2 According to **Figure 6.3**, the prominent visual resources in this VP are the lush greenery at the slope to the south and southwest of the Site, and the open sky view. The visual access towards the lush vegetations at the slope will not be altered. The proposed terraced design and carefully thought-out building height contributed to the minor reduction of visual mass and building bulk when viewing from this viewpoint. Thus, the Proposed Development with minor relaxation of SCR will maintain the visual openness of this VP and will not incur any visual obstruction to the key visual resources as compared with the existing buildings at the Site.

Effect on Public Viewers

6.4.3 The sensitive viewers, who are mainly pedestrians and joggers engaging in active and passive recreational activities along Mills and Chung Path. They will likely enjoy a panoramic view towards Deep Water Bay and South China Sea, rather than looking up towards the Site. Hence, their visual sensitivity will be medium. The Proposed Development will replace the view of existing building at the Site with the staggered design. Although the site coverage of the Proposed Development will be increased, it will not affect the view towards the greenery at the slope. It is anticipated that the Proposed Development with smaller visual mass will blend in with the surrounding greenery setting. Thus, the magnitude of visual change experienced by public viewers due to the minor relaxation of SCR is considered negligible.

Effect of Visual Resources

6.4.4 With the incorporation of terraced design and carefully thought-out building disposition, the Proposed Development with the relaxation of SCR will maintain visual access towards the open sky. Meanwhile, other visual resources including lush greenery at the slope and the remaining open sky view will not be affected. The visual condition, quality and character will not be degraded by the Proposed Development.

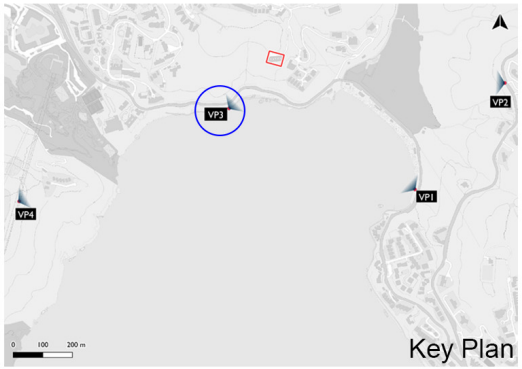
6.4.5 Therefore, it is anticipated that the overall visual impact rating for the VP3 is negligible.



Existing Condition



Proposed Development



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Viewpoint 3 – Mills and Chung Path

Proposed Minor Relaxation of Site Coverage Restriction for Permitted House Redevelopment in "Residential (Group C) 3" Zone, No. 66 Deep Water Bay Road, Shouson Hill, Hong Kong

Figure 6.3

Visual Impact Assessment

Date: 18 September 2025

6.5 VP4 – Cable Car at Ocean Park

Visual Composition

6.5.1 This VP is taken from the cable car at Ocean Park between two main attraction areas (i.e. the Waterfront and the Summit) with a distance of about 958m to the southwest of the Site. At a level of about +206mPD, VP4 captures an open view of Deep Water Bay, Shouson Hill and the low-rise residential cluster at the foreground. Mountains including Jardine's Lookout, Mount Parker and Violet Hill, mid-rise residential developments along Repulse Bay Road, as well as the open sky view are captured at the backdrop. The Proposed Development will be a new visual feature to replace existing buildings at the Site. Nonetheless, various design considerations have been adopted in the Proposed Development with the intention to maintain the compatibility when viewing from this VP. The carefully thought-out building height and disposition would respect the topographical setting of Shouson Hill and existing low-rise residential developments in the area. The Proposed Development will continue to form part of the development clusters along Deep Water Bay Road and blend in well with the surrounding settings.

Visual Obstruction

6.5.2 As illustrated in **Figure 6.4**, the view towards Deep Water Bay in the foreground, mountain backdrop and the open sky view are identified as the prominent visual resources in this VP. The visual access towards the existing greenery will be similar with alteration of building mass upon the minor relaxation of SCR. It is anticipated that the visual openness of this VP will not be degraded with the adoption of terraced design.

Effect on Public Viewers

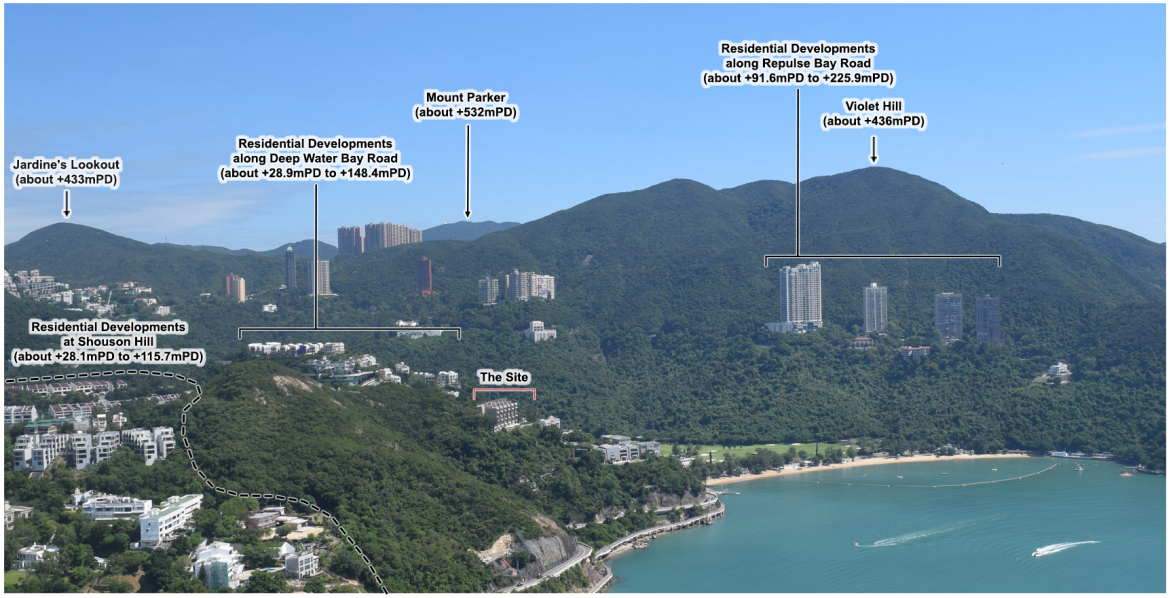
6.5.3 The cable car system is one of the most iconic attractions in Ocean Park with high popularity. The sensitive viewers of this VP would be the visitors of Ocean Park travelling between the attraction areas. They will enjoy the scenic view of Deep Water Bay and mountainous view of southeastern Hong Kong Island from the VP. Thus, the visual sensitivity of the sensitive viewers will be considered as high. With the proposed carefully thought-out building form as well as the compatible building height responding positively to the topographical and physical setting, the Proposed Development will blend in well with the existing residential cluster along Deep Water Bay Road and the greenery setting. Hence, it is anticipated that the magnitude of visual change experienced by public viewers due to the minor relaxation of SCR is considered negligible.

Effect on Visual Resources

6.5.4 The Proposed Development with the relaxation of SCR will maintain similar the view towards the greenery backdrop upon relaxation of SCR. The access to other key

visual resources including the view of Deep Water Bay, mountain backdrop at southeastern Hong Kong Islands and the open sky view will not be affected. With the adoption of various design measures including terraced building disposition, compatible building height in respect to the topographical and physical settings, the Proposed Development would contribute to a harmonised view when viewing from the VP. Therefore, the visual condition, quality and character will not be altered by the Proposed Development.

6.5.5 Therefore, it is anticipated that the overall visual impact rating for the VP4 is negligible.



Existing Condition



Proposed Development



KTA PLANNING LIMITED 規劃顧問有限公司	Viewpoint 4 – Cable Car at Ocean Park	Proposed Minor Relaxation of Site Coverage Restriction for Permitted House Redevelopment in "Residential (Group C) 3" Zone, No. 66 Deep Water Bay Road, Shouson Hill, Hong Kong	Figure 6.4
		Visual Impact Assessment	Date: 18 September 2025

7. CONCLUSION

7.1.1 Based on the analysis on evaluating the potential visual impact of the Proposed Development as compared with the existing condition in terms of Visual Composition, Visual Obstruction, Effect on Public Views and Effect on Visual Resources, **Table 7.1** below presents the overall visual impact caused by the Proposed Development with the minor relaxation of SCR from 25% to not more than 37% to the identified to the sensitive viewers represented in each VP.

Table 7.1 Summary of Assessment of Visual Impact at the Viewpoints

Viewpoint	Location	Visual Sensitivity	Magnitude of Visual Change	Visual Impact due to Proposed Development
VP1	Deep Water Bay Beach Barbecue Area	High	Negligible	Negligible
VP2	Bus Stop near Monte Verde, Repulse Bay Road	Medium	Negligible	Negligible
VP3	Mills and Chung Path	Medium	Negligible	Negligible
VP4	Cable Car at Ocean Park	High	Negligible	Negligible

7.1.2 VP1 and VP2 provide the mid-range view towards the Proposed Development from the east direction. Upon minor relaxation of SCR from 25% to not more than 37%, the Proposed Development will replace existing buildings at the Site. With the proposed terraced design and carefully thought-out building form and disposition, the Proposed Development will be visually compatible with the surrounding settings while maintain visual openness from these two viewpoints. Nevertheless, the proposed building height has paid respect on the topographical settings of the area and continue to blend in well with the existing low-rise residential cluster. Therefore, the visual impact anticipated from VP1 and VP2 are negligible.

7.1.3 VP3 illustrates a close-up view towards the Proposed Development from the southwestern direction. As illustrated in **Figure 6.3**, the lower portion of the Proposed Development will be concealed behind the lush greenery at the slope after minor relaxation of SCR. The proposed terraced design and carefully thought-out building height contributed to the reduction of visual mass when viewing from this viewpoint. The staggered design at the Proposed Development would break down the building bulk, which allows additional visual access to the open sky view. This will maintain the visual openness of the Site from this VP and provide visual access to the key visual resource. Hence, the visual impact by the Proposed Development from this VP will be negligible after the minor relaxation of SCR.

7.1.4 VP4 illustrated a distant view to the Proposed Development from the southwestern direction. With the incorporation of carefully thought-out building height, form and disposition, the Proposed Development would respond to the topographical setting of

Shouson Hill and existing residential developments in the area. It will continue to form part of the development clusters along Deep Water Bay Road and blend in well with the surrounding settings. Although the building structure would be slightly extended towards the east due to the minor relaxation of SCR, the adoption of terraced design and staggered building mass has replaced the rectangular and rigid buildings on-site which would contribute to a more harmonised view when compared to the existing buildings. Thus, the visual impact associated with the Proposed Development will be negligible.

7.1.5 In view of the above, it is considered that the Proposed Development would be congruous to the surrounding character and intensity of the adjacent developments upon the minor relaxation of SCR. The overall visual impact rating for all viewpoints will be ranging from negligible to enhanced. Therefore, the Proposed Development with the minor relaxation of site coverage restriction from 25% to not more than 37% is considered no significant adverse impact in the visual context.

Appendix 5

Environmental Assessment

Section 16 Application for 66 Deep Water Bay Road

Environmental Assessment Report

Blue Water Group Management Limited

Revision: 2

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1 Introduction

1.1 Background

1.1.1 The Site is located at No. 66 Deep Water Bay Road, Shouson Hill, Hong Kong where it is zoned as "R(C)3" in accordance with the approved Shouson Hill & Repulse Bay Outline Zoning Plan No. S/H17/13. The Client intends to redevelop the Site into 2 semi-detached houses and increase the maximum permitted site coverage from 25% to 37% at No. 66 Deep Water Bay Road. Due to the proposed increase in the permitted site coverage, a Section 16 Planning Application will therefore be required.

1.1.2 Aurecon Hong Kong Limited has been commissioned to conduct an Environmental Assessment Report for assessing the air quality, noise, water quality and waste management upon the proposed redevelopment to demonstrate the environmental acceptability for fulfilling the planning application requirement.

1.2 Objectives of the Environmental Assessment

1.2.1 The objective of this Report aims to identify key environmental issues associated with the proposed redevelopment for any potential impacts identified. The Environmental Assessment Report will be prepared to address the environmental aspects arising from construction and operation of the proposed redevelopment.

1.3 Report Structure

1.3.1 The remaining chapters of this report are shown below:

Chapter 2 – Site Context

Chapter 3 – Air Quality Impact

Chapter 4 – Noise Impact

Chapter 5 – Water Quality Impact

Chapter 6 – Waste Management

Chapter 7 – Land Contamination

Chapter 8 - Conclusion

2 Site Context

2.1 Site Location and Its Environments

2.1.1 The proposed redevelopment is located at 66 Deep Water Bay Road. (**Figure 2.1**). It is located within residential area at Shouson Hill facing Deep Water Bay. The site area is about 2,043m^2 and has a private driveway of approximately 90m connecting to Deep Water Bay Road. The existing site consists of 6 low-rise residential houses with 4-storeys.

2.2 Proposed Development Scheme

2.2.1 The existing site currently comprises 6 semi-detached houses with 4-storeys each. The proposed redevelopment will involve demolishing of the existing houses and redevelop into a 3-storeys building for residential purpose in addition to 1 storey of basement. The project comprises living room, bedrooms, carports, outdoor swimming pool, and outdoor landscape features, etc. The building height is about 104.5mPD. The development schedule is listed in **Table 2.1**. The master layout plan is provided in **Figure 2.2**. The tentative construction programme is provided in **Appendix 2.1**. According to the programme, the tentative completion of works will be September 2028.

Table 2.1 Development Schedule of the Proposed Redevelopment

Floor	Uses
Basement	Carports, pump rooms, switch room, water tanks
G/F	Dining room, living room, outdoor swimming pool
1/F	Bedrooms, study rooms, gym room
2/F	Bedrooms, study rooms

3 Air Quality Impact

3.1 Introduction

3.1.1 This section addresses the potential air quality impacts arising from the proposed development during construction and operational phases. Appropriate mitigation measures are proposed to alleviate the potential air quality impact, if necessary.

3.2 Environmental Legislation, Standards and Guidelines

3.2.1 The relevant legislation, standards and guidelines are referenced to the present preliminary environmental review of air quality impacts include:

- Air Pollution Control (Amendment) Ordinance (APCO) (Cap. 311);
- Air Pollution Control (Construction Dust) Regulation (Cap.311R);
- Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation; and
- Hong Kong Planning Standards and Guidelines (HKPSG)

3.2.2 Chapter 9 of the "Hong Kong Planning Standards and Guidelines" (HKPSG) stipulates the Hong Kong Air Quality Objectives (AQOs) issued under the Air Pollution Control Ordinance (APCO). The updated AQOs came into force on 11 April 2025 and the relevant criteria for the assessment are tabulated in **Table 3.1**.

Table 3.1 Hong Kong Air Quality Objectives

Pollutant	Pollutant Concentration at Averaging Time, µg/m^3					
	10min	1-hour	8-hour	24-hour	1 year	Peak Season#
Carbon Monoxide	--	30,000 (i)	10,000 (i)	4,000 (i)	--	--
Nitrogen Dioxide	--	200 (ii)	--	120 (iv)	40	--
Sulphur Dioxide	500 (iii)	--	--	40 (iii)	--	--
Respirable Suspended Particulates (PM_{10})	--	--	--	75 (iv)	30	--
Fine Suspended Particulates ($PM_{2.5}$)	--	--	--	37.5 (ii)	15	--
Ozone	--	--	160 (iv)	--	--	100
Lead	--	--	--	--	0.5	

Note:
(i) No exceedance allowed
(ii) Not to be exceeded more than 18 times
(iii) Not to be exceeded more than 3 times
(iv) Not to be exceeded more than 9 times
New Parameters added in the Amendment Bill. The calculation of the new parameter peak season ozone should refer to the Amendment Bill.

3.3 Impact Review – Construction Phase

3.3.1 Based on the proposed layout plan, the proposed development will involve building construction works. The potential major air quality impact during construction is fugitive dust generated from demolition, excavation, foundation and superstructure works. The Contractor shall implement dust control measures in accordance with the requirements of the Air Pollution Control (Construction Dust) Regulation. The requirement of the regulation has been summarised as below.

Mitigation Measures

3.3.2 Typical relevant dust control measures include:

- Water spraying on any dusty materials before loading and unloading; stockpile of dusty materials; area where demolition work is carried out; area where excavation or earth moving activities are carried out; and any unpaved haul road;
- Provide hoarding of not less than 2.4 m high from ground level along the site boundary;
- Provide effective dust screens, sheeting or netting to enclose any scaffolding built around the perimeter of a building;
- Cover or shelter any stockpile of dusty materials;
- Provide vehicle washing facilities at all site exits to wash away any dusty materials from vehicle body and wheels before they leave the site and the vehicle washing facilities shall be paved; and
- Cover any dusty load on vehicles before they leave the site.

3.3.3 In addition to the dust reduction measures stipulated in the regulation, good site practices shall be incorporated and undertaken by the contractor to further minimize the fugitive dust generation, including the following:

- Avoid storage of dusty materials, including stockpiles and bags of cement, within the project site as far as possible;
- Minimize the drop height during loading and unloading; and
- Avoid the handling of dusty materials at open area.

3.3.4 With strict implementation of control measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practice listed in the above, no adverse construction dust impact is anticipated.

3.4 Impact Review – Operational Phase

3.4.1 The proposed redevelopment consisting residential uses is an air sensitive use but not an air polluting source in accordance with HKPSG. In addition, no additional air polluting source is expected to be induced by the project. To this end, the air quality impacts on the identified ASRs within the study area will be comparable to the existing conditions after the commencement of the Project and no adverse air quality impact due to the proposed development is expected to occur during the operational phase.

Vehicular Emission

3.4.2 Table 3.1 in Chapter 9 of HKPSG stipulates the required buffer distance between the Air Sensitive Receivers (ASRs) and the surrounding roads. Applicable buffer distance requirements are summarised in **Table 3.2** below. **Figure 3.1** is provided to show the buffer distance from the Site Boundary to the roads.

Table 3.2 Required Buffer Distance between the Surrounding Roads and the Air Sensitive Receivers of the Proposed Development.

Road	Type of Road (i)	Required Buffer Distance (m)	Shortest Distance between the road and Site Boundary (m)
Deep Water Bay Road	Local Distributor	>5m	49m
Island Road	Primary Distributor	>20m	90m

Note:
(i) The types of roads were referred to the annual traffic census 2023 issued by Transport Department (TD).

3.4.3 Based on the location of the site, the buffer distance requirements between Deep Water Bay Road and the Site has been fulfilled, adverse traffic emission impact from the Deep Water Bay Road to the air sensitive uses within the site are not expected.

Chimney Emission

3.4.4 Site survey was conducted on 20 March 2025 to identify any existing chimney located within 200m study area of the proposed development. Based on the observation in site surveys, no chimneys were found within 200m study area from the proposed development. Therefore, it is anticipated no adverse air quality impact arising from the chimney emission upon the proposed development.

4 Noise Impact

4.1 Introduction

4.1.1 This section identifies and evaluates the potentials nose impact likely to arise during the construction and operations phases of the proposed development. Practical mitigation measures are proposed to reduce environmental impacts to acceptable level, if necessary.

4.2 Environmental Legislation, Standards and Guidelines

4.2.1 The Noise Control Ordinance (NCO) provides the statutory framework for noise control. Assessment procedures and standards relevant to the Project are set out in the Technical Memoranda (TM) and guidelines listed below:

- Chapter 9 “Environment” of the Hong Kong Planning Standards and Guidelines (HKSPG);
- Practice Note for Professional Persons No. ProPECC PN No.1/24 "Noise from Construction Activities - Non-Statutory Controls";
- Practice Note for Professional Persons No. ProPECC PN No.4/23 "Planning and Designing Noise Sensitive Developments";
- Noise Control Ordinance (NCO) (Cap.400);
- Technical Memorandum on Noise from Construction Work other than Percussive Piling (GW-TM);
- Technical Memorandum on Noise from Construction Work in Designated Areas (DA-TM); and
- Technical Memorandum for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Sites (IND-TM).

4.3 Assessment Locations

4.3.1 The Study Area for noise impact assessment includes all area within 300m from the Project boundary. Representative Noise Sensitive Receivers (NSRs) located in the closest proximity to the Site Boundary of the proposed redevelopment are identified and detailed in **Table 4.1**. The locations of the NSRs are provided in **Figure 4.1**.

Table 4.1 Representative Noise Sensitive Receivers

NSRs	Uses	Description	Distance to the Site (m)
N1	Residential	71 Deep Water Bay Road	68
N2	Residential	72 Deep Water Bay Road, House 2	92
N3	Residential	68 Deep Water Bay Road	29

4.3.2 The selection of noise assessment locations for N1 and N2 would be based on openable window at the top floor which is considered at the closest distance to the site with direct line of sight. For N3, as observed during site visit and desktop study, there is no direct line of sight to the site for the openable window at N3. The noise assessment location is selected at the closet distance to the Site with openable window.

4.4 Background Environment

4.4.1 Background noise measurement was carried out to obtain the prevailing noise condition at the vicinity of the Site. As the NSRs at the residential premises are inaccessible due to security reason, the noise measurement was conducted at a suitable representative location within the Site. The measurement result is shown in **Table 4.2**.

Table 4.2 Background Noise Levels

Measurement Date	Measurement Time	Measured Noise Level, Leq (30min)	Observed Noise Source(s)
20 March 2025	16:30-17:00	51.2	Occasional PA announcement from Deep Water Bay Beach and fixed plant noise from The Hong Kong Golf Club
	19:00-19:30	42.9	No noise source is observed at the background
	23:00-23:30	40.0	No noise source is observed at the background

Note: Free-field noise measurement was conducted. Façade correction of +3dB(A) has been added to the measurement results.

4.5 Impact Review – Construction Phase

General Construction Noise Impact

4.5.1 The proposed redevelopment will involve building site formation, demolition, ground investigation, excavation, non-percussive piling using mini-piling and raft footing and superstructure construction. The major potential noise sources associated with the proposed construction activities include the use of Powered Mechanical Equipment (PMEs) for the above construction works. No percussive piling will be adopted for this proposed redevelopment.

4.5.2 The typical PMEs to be used for the construction work activities include drilling rigs, grout mixer, concrete truck, bar bending machine, vibrator, mobile crane, cutter, generator, air compressor, water pump, dump truck, concrete lorry mixer and excavator etc. These types of PMEs are for reference only and to be confirmed by the contractors in view of the actual construction conditions and programmes. The Contractor is responsible for selecting quiet PMEs to achieve noise reductions from the adopted working methodologies.

4.5.3 It is anticipated that the construction works will be conducted during the daytime only, i.e. the non-restricted hours between 07:00 and 19:00 hours on any day except Sunday and general holiday. However, when any construction works involving PME is required to be carried out during the restricted hours (19:00 – 07:00 hours of the next day on any day and anytime during Sunday or general holiday), a Construction Noise Permit (CNP) shall be obtained under the NCO.

4.5.4 The proposed redevelopment is located within Designated Area as defined under the Noise Control (Construction Work Designated Areas) Notice. During the restricted hours in Designated Areas, the use of specified PMEs (for example, hand-held breakers and dump truck) and/or the carrying out of the prescribed construction activities (for example, erection or dismantling of formwork and hammering) is subject to more stringent control. The same system of CNP for controlling of PMEs is used.

4.5.5 For control of non-restricted hours construction noise, the contractor should implement noise abatement measures as recommended in the ProPECC PN 1/24 to minimize the construction noise during the daytime. The recommended daytime construction noise level at the façade of sensitive receivers during the period between 07:00 and 19:00 hours (except Sundays and general holiday) shall be met as far as practicable and are provided in **Table 4.3**.

Table 4.3 Noise Standards for Daytime Construction Activities

Noise Sensitive Uses	Leq (30 mins), dB(A)
Dwelling	75

4.5.6 Considering the proposed redevelopment with limited impacts to surrounding NSRs due to its scale and project nature, the construction noise impact is anticipated to be minimal with the implementation of appropriate noise control measures as recommended below:

Mitigation Measures

4.5.7 The mitigation measures as per the requirements stated in PN1/24 “Noise from Construction Activities – Non-statutory Controls” should be adopted to minimise the potential noise impacts. These include:

- Scheduling of work - This includes avoiding simultaneous operation of noisy equipment; retaining existing features that can act as a noise barrier until the last phase. Such screening can reduce noise levels by 15 dB(A) or more.
- Siting of facilities - Noisy equipment, such as emergency generators and water pumps, should always be sited as far as possible from noise sensitive receivers. Consideration should also be given to using structures such as temporary stockpiles and site buildings as noise barriers.
- Selection of quiet equipment - This is one of the most effective measures and is increasingly practicable because of the availability of quiet equipment. For example, the use of hydraulic concrete cutters and crushers in demolition work, instead of excavator-mounted percussive breakers, can achieve a noise reduction of up to 20 dB(A) and totally remove the annoying impulsive nature of the latter. Similarly, the use of a hydraulic rock drill with a sound power level not exceeding 110 dB(A) can reduce noise by 18 dB(A) when compared with a conventional crawler mounted pneumatic rock drill. The contractors are allowed to use other type of quiet PME, which can reduce the total sound power levels to meet their needs.
- Use of temporary acoustic barriers and enclosures – Provide acoustic barriers around construction site boundaries can effectively protect nearby residential uses. In addition, acoustic enclosures can be provided at static noise PME such as air compressors and generators.

Good Site Practice

4.5.8 Good practice, arrangement or techniques on the construction sites can provide considerable noise reductions, examples of these site practices include:

- Well-maintained and regularly-serviced plant should be used during the works;
- Plant operating on intermittent basis should be turned off or throttled down when not in active use; and
- Silencers or mufflers for plant should be used where possible and maintained adequately throughout the works;

4.5.9 With the implementation of mitigation measures discussed above, the construction noise impact will be minimized.

4.6 Impact Review – Operational Phase

Fixed Plant Noise Impact Assessment

4.6.1 During the operational stage of the proposed development, potential fixed noise sources include water pumps used for irrigation, flushing, swimming pool filtration, portable water and fire safety. These fixed noise sources would be located inside the plant rooms and fully enclosed by building structures. Potential breakout noise impact on the surroundings should be minimal. However, potential fixed noise impact would be anticipated from the louvers and should be assessed to ensure the compliance of the HKPSG and Noise Control Ordinance ("NCO"). **Figure 4.2** indicates the tentative locations of the plantrooms and the locations of the louvers. The catalogues of potential model of the louvers and their sound power levels are provided in **Appendix 4.1**.

4.6.2 Fixed noise sources impacting on existing uses are regulated under the NCO, which requires that impacts shall comply with the Acceptable Noise Levels ("ANL") laid down in Table 2 of the Technical Memorandum for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Sites ("IND-TM").

4.6.3 In setting the ANL, reference has been made to the Area Sensitive Rating ("ASR") in Table 1 of IND-TM (reproduced in Table 2.1) reflecting the nature of area where noise sensitive receivers are situated.

Table 4.4 Area Sensitivity Ratings (ASRs)

Type of Area Containing NSR	Degree to which NSR is affected by Influencing Factor (IF)		
	Not Affected	Indirectly Affected	Directly Affected
Rural area, including country parks or village type developments	A	B	B
Low density residential area consisting of low-rise or isolated high-rise developments	A	B	C
Urban area	B	C	C
Area other than those above	B	B	C

4.6.4 As the site location is mainly bounded by Deep Water Bay Road and also Island Road and Shouson Hill Road are located within 500m assessment area. According to "Annual Traffic Census" issued by Transportation Department (TD) from Year 2023, Deep Water Bay Road, Island Road and Shouson Hill Road are not considered as Influencing Factor (IF) in accordance with the IND-TM. The site is also not located within 100m of "Industrial" or "Industrial Estate" zones.

4.6.5 Given the type of area for the Site is classified as "Low density residential area consisting of low-rise or isolated high-rise developments" and it is not affected by the IF, according to **Table 4.4**, the area sensitivity rating is defined as "A".

4.6.6 The appropriate ANLs for NSRs around have been determined as shaded in **Table 4.5**.

Table 4.5 Acceptable Noise Levels (ANLs)

Time Period	Acceptable Noise Level, Leq 30 mins, dB(A)		
	Area Sensitivity Rating "A"	Area Sensitivity Rating "B"	Area Sensitivity Rating "C"
Day-time (0700 – 1900 hours)	60	65	70
Evening (1900 - 2300 hours)			
Night-time (2300-0700 hours)	50	55	60

4.6.7 According to HKPSG, for noise criteria involving planned fixed noise sources, the level of the intruding noise at the façade of the nearest existing sensitive use should be at least 5 dB(A) below the appropriate ANL shown in as shown in **Table 4.5**, in the case of the background being 5 dB(A) lower than the ANL, should not be higher than the background.

4.6.8 Noise measurement has been conducted to measure the background noise level at the vicinity of existing NSRs. According to the measured results as shown in **Table 4.2**, the measured background noise levels are below ANL-5 (55dB(A) during daytime and evening time, 45dB(A) during night-time period). Hence, the measured background noise levels would be adopted as the noise criteria. The summary of noise criteria for the proposed development is established in **Table 4.6**. The background noise measurement results and details of noise criteria adopted for the fixed plant noise assessment is provided in **Appendix 4.2**.

Table 4.6 Noise Criteria adopted for fixed plant noise impact assessment

Time Period	Noise criteria (Background free field noise level, Leq 30 mins, dB(A))
Day-time (0700 – 1900 hours)	46
Evening (1900 - 2300 hours)	46
Night-time (2300-0700 hours)	43

4.6.9 The fixed plant noise assessment has been conducted, and the detailed calculation is provided in **Appendix 4.2**. According to the predicted results, the fixed plant noise impacts to the nearest NSRs are well within the established noise criteria for daytime, evening time and night-time period. **Table 4.6** has summarised the noise impacts of the NSRs which comply with the noise criteria, hence, no noise mitigation would be necessary.

Table 4.6 Summary of Unmitigated Impacts on Existing NSRs

NSRs	Description	Daytime/ Evening Period, Leq (30min), dB(A) Noise criteria = 46 dB(A)	Night-time Period, Leq (30 min), dB(A) Noise criteria = 43 dB(A)
N1	71 Deep Water Bay Road	39	39
N2	72 Deep Water Bay Road, House 2	38	38
N3	68 Deep Water Bay Road	40	40

5 Water Quality Impact

5.1 Introduction

5.1.1 This section discusses the potentials water impact likely arising during the construction and operations phases of the proposed development. Practical mitigation measures are proposed to reduce environmental impacts to acceptable level, if necessary.

5.2 Environmental Legislation, Standards and Guidelines

5.2.1 The relevant legislation and associated guidance applicable to this EA for the assessment of water quality impacts include:

- Water Pollution Control Ordinance (WPCO) (Cap. 358)
- Water Pollution Control (General) Regulations
- Water Pollution Control (Sewerage) Regulation
- Technical Memorandum on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (TM-DSS)
- Chapter 9 “Environment” of the Hong Kong Planning Standards and Guidelines (HKSPG)
- Professional Persons Environmental Consultative Committee Practice Note 2/24 Construction Site Drainage (ProPECC PN 2/24)
- Professional Persons Environmental Consultative Committee Practice Note 1/23 Drainage Plans subject to Comment by the Environmental Protection Department (ProPECC PN 1/23)

5.3 Impact Review – Construction Phase

5.3.1 The proposed development will involve foundation works and building construction. As land-based construction activities with limited extent of excavation works is expected to be undertaken, potential water quality impact during construction phase would be mainly related to the surface runoff from handling of construction materials, foundation works, excavation and superstructure works, accidental chemical spill and sewerage from workforce.

5.3.2 The key water quality issues associated with the construction activities include surface runoff generated from general cleaning, wheel washing and water spraying for dust suppression. These types of wastewater would contain high concentrations of Suspended Solids (SS). In addition, stormwater runoff during rainy seasons might be generated from Shouson Hill into the site. Release of uncontrolled construction site runoff would increase the SS level and turbidity in the nearby water environment. Proper control of the stormwater runoff is necessary to prevent uncontrolled construction site runoff washed down into the surrounding water sensitive receivers.

5.3.3 The effects on water quality from general construction activities are likely to be minimal, provided that site drainage would be well maintained, and good construction practices would be implemented in accordance with ProPECC PN No. 2/24 for proper management of construction site drainage. A discharge license will be obtained according to the WPCO requirements before any wastewater discharge from the site to storm drains or foul sewers. All site discharges will be pre-treated as necessary, in accordance with the WPCO, the conditions of the WPCO discharge license and the relevant standards listed in the TM-DSS.

5.3.4 Accidental spillage of chemicals and sewerage from workface in the works areas may also contaminate the surface soils. The contaminated soil particles may be washed away by construction site runoff. These wastewaters should not be directly discharged to nearby drainage systems otherwise they would cause significant impacts on water quality.

Mitigation Measures

5.3.5 Good site practices would be essential to control construction site runoff and accidental chemical spill. Below are the major good site practices according to Professional Persons Environmental Consultative Committee Practice Note 2/24 Construction Site Drainage (ProPECC PN 2/24). With the implementation of these mitigation measures, adverse water quality impacts are not expected to arise from the construction works of the Project.

- At the start of site establishment, perimeter cut-off drains to direct off-site water around the site should be constructed with internal drainage works and erosion and sedimentation control facilities implemented. Channels (both temporary and permanent drainage pipes and culverts), earth bunds or sand bag barriers should be provided on site to direct stormwater to silt removal facilities. The design of the temporary on-site drainage system will be undertaken by the contractor prior to the commencement of construction.

- The dikes or embankments for flood protection should be implemented around the boundaries of earthwork areas. Temporary ditches should be provided to facilitate the runoff discharge into storm drains, through a silt/sediment trap. The silt/sediment traps should be incorporated in the permanent drainage channels to enhance deposition rates.

- The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 2/24. The detailed design of the sand/silt traps should be undertaken by the contractor prior to the commencement of construction.

- Construction works should be programmed to minimize surface excavation works during the rainy seasons (April to September). All exposed earth areas should be completed and vegetated as soon as possible after earthworks have been completed. If excavation of soil cannot be avoided during the rainy season, or at any time of year when rainstorms are likely, exposed slope surfaces should be covered by tarpaulin or other means. Temporary access roads should be protected by crushed stone or gravel, as excavation proceeds. Intercepting channels should be provided (e.g. along the crest/edge of excavation) to prevent storm runoff from washing across exposed soil surfaces. Arrangements should always be in place to ensure that adequate surface protection measures can be safely carried out well before the arrival of a rainstorm.

- All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rainstorms. Deposited silt and grit should be removed regularly and disposed of by spreading evenly over stable, vegetated areas.

- Measures should be taken to minimise the ingress of site drainage into excavations. If the excavation in wet periods is necessary, it should be dug and backfilled in short sections wherever practicable. Water pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities.

- All open stockpiles of construction materials (for example, aggregates, sand and fill material) should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.

- Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers.

- Precautions be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecasted, and actions to be taken during or after rainstorms are summarized in Appendix A2 of ProPECC PN 2/24. Particular attention should be paid to the control of silty surface runoff during storm events.

- All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and sited wheel washing facilities should be provided at every construction site exit where practicable. Wash-water should have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel-wash bay to the public road should be paved with sufficient backfall toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains.

- Oil interceptors should be provided in the drainage system downstream of any oil/fuel pollution sources. The oil interceptors should be emptied and cleaned regularly to prevent the release of oil and grease into the storm water drainage system after accidental spillage. A bypass should be provided for the oil interceptors to prevent flushing during heavy rain.

- Construction solid waste, debris and rubbish on site should be collected, handled and disposed of properly to avoid water quality impacts.

- Groundwater pumped out of wells etc. for the lowering of ground water level in basement or foundation construction should be discharged into storm drains after the removal of silt in silt removal facilities.

- Water used in ground boring and drilling for site investigation or rock/soil anchoring should as far as practicable be recirculated after sedimentation. When there is a need for final disposal, the wastewater should be discharged into storm drains via silt removal facilities.

5.3.6 The closest public toilet from the proposed redevelopment is located at Deep Water Bay Beach Public Toilet for the workers to use. Nevertheless, chemical mobile toilets shall be provided for the workers during construction stage as a backup facility. Regular desludging shall be carried out to maintain proper hygiene of the toilets.

5.4 Impact Review – Operational Phase

5.4.1 The ProPECC PN 1/23, Drainage Plans subject to Comments by Environmental Protection Department, provides guidelines and practices for handling, treatment and disposal of various effluent discharges to stormwater drains and foul sewers. The design of site drainage and disposal of site effluents generated within the proposed development area should follow the relevant guidelines and practices as given in the ProPECC PN 1/23.

5.4.2 According to the Sewerage Impact Assessment (SIA) which is provided separately in this Section 16 Planning Application Submission, the possible impacts on the local sewerage network due to the operation of the proposed development has been evaluated. The wastewater generated from the operation of the proposed development will be conveyed to the downstream from the government manhole “FMH7017092” and other government sewer along Deep Water Bay Road to the Golf Club Sewage Pumping Station inside the Golf Club Carpark. The assessment findings demonstrated and confirmed that there should be sufficient capacity for the public sewer to handle the change of sewage generation due to the proposed uses. Therefore, adverse impact on water quality during the operation phase of the Project is not anticipated.

5.4.3 For the operation of swimming pool, since the site is not situated in Water Gathering Ground, the swimming pool main drain and pool make-up tank drain will be connected to storm water drains of the site and conveyed to the nearest stream course along the existing storm water channel outside the site as stated in the Drainage Impact Assessment (DIA) report. Filtration plant backwash will be discharged to foul sewers of the site and conveyed to the government manhole “FMH7017092” along the existing sewer as stated in SIA report.

5.4.4 During operation phase, surface runoff is also considered as a potential source of water quality impact due to the additional paved areas created by the proposed development. However, as the surface runoff would be collected and discharged to adequate drainage system, minimal impact is anticipated.

6 Waste Management

6.1 Introduction

6.1.1 This section identifies the types of wastes that are likely to be generated during the construction of the proposed development and evaluates the associated waste management implication that may result from these wastes types.

6.2 Environmental Legislation, Standards and Guidelines

6.2.1 The relevant legislation and associated guidance applicable to this PER for the review of waste management implications include:

- Waste Disposal Ordinance (WDO) (Cap. 354);
- Waste Disposal (Chemical Waste) (General) Regulation;
- Waste Disposal (Charges for Disposal of Construction Waste) Regulation;
- Public Health and Municipal Services Ordinance (Cap. 132) – Public Cleansing and Prevention of Nuisances Regulation; and
- Land (Miscellaneous Provisions) Ordinance (Cap. 28).
- Development Bureau Technical Circular (Works) No. 6/2010, Trip Ticket System for Disposal of Construction & Demolition Materials ("DEVB TC(W) No. 6/2010");
- Building Department Practice Note for Registered Contractors ("PNRC 17"), Control of Environmental Nuisance from Construction Sites;
- Environmental, Transport and Works Bureau (ETWB) Technical Circular (Works) No. 22/2003A, Additional Measures to improve Site Cleanliness and Control Mosquito Breeding on Construction Sites;
- Building Department's Practice Notes for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers No. ADV-19 Construction and Demolition Waste
- ETWB TCW No. 6/2002A, Enhanced Specification for Site Cleanliness and Tidiness;
- Code of Practice of the Packaging, Labelling and Storage of Chemical Waste, EPD (2022);
- A Guide to the Chemical Waste Control Scheme, EPD (2022)

6.3 Impact Review – Construction Phase

6.3.1 The proposed development is located in an private low density residential area and will involve demolition works of existing structure, foundation and building construction. These activities are expected to generate a variety of wastes which can be divided into categories based on their composition and ultimate method of disposal. The identified waste types include:

- Construction and demolition (C&D) materials;
- Chemical wastes
- General refuse.

6.3.2 The nature of each type of waste arising and an evaluation of the potential implications associated with these wastes are provided below.

Construction and Demolition (C&D) Materials

6.3.3 Majority of C&D materials generated during construction stage would be at the demolition stage. All demolished C&D materials generated shall be sorted into inert and non-inert C&D materials. The inert portion of C&D materials generated will comprise broken concrete, tiles and soft organic material while non-inert portion will comprise glass, metals, plastic pipes, and wooden material.

6.3.4 Where practicable, Contractor shall be encouraged to minimize the C&D material volumes requiring off-site transport/ disposal. Disposal outlets such as public fill reception facilities shall be identified for inert materials if no on-site reuse opportunities exist. Non-inert C&D materials should be reused or recycled as far as possible, any recyclable materials (e.g. metal or paper packing) will be segregated and collected by recycling contractor. The remaining non-inert C&D material will be disposed of in landfill site. Landfill disposal should be considered as the last resort for waste handling. The estimated quantity of C&D material generated from the construction of the Project has been presented in **Table 6.1**.

6.3.5 The estimated quantities of inert and non-inert C&D materials to be generated during construction phase are summarized in **Table 6.1**. The estimation of the quantity of inert C&D material is based on building record plans while the non-inert C&D material is based on the site visit and layout plan on the number of fixed equipment such as toilet bowl, washing basins, windows and wooden furniture.

Table 6.1 Estimated Quantity of C&D Materials Generated during Construction Phase

Inert C&D Materials (m^3)	Non-Inert C&D Materials (m^3)
4600	60

Chemical Waste

6.3.6 Chemicals are expected to be used during the construction activities for the Project. These may include surplus adhesives, spent paints, petroleum products, spent lubrication oil, grease and mineral oil, spent acid and alkaline solutions/solvent and other chemicals. Accidental spillage of chemicals in the works areas may contaminate the surface and sub-surface soils.

6.3.7 The volume of chemical waste that will be generated will depend on the total number of plants and vehicles, and how much maintenance is actually required to be carried out on site by the contractor. It is anticipated that the total quantity of chemical waste produced will be limited to only a few cubic meters per month.

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

General Refuse

6.3.9 The workforce would generate refuse comprising food scraps, paper waste, empty containers, etc. Such refuse will be properly stored in a designated area prior to collection and disposal. Disposal of refuse at site other than approved waste transfer or disposal facilities is prohibited. Effective collection of the on-site wastes will prevent waste materials being blown around by wind, or creating an odour nuisance or pest and vermin problems. Waste storage areas will be well maintained and cleaned regularly. The waste should be disposed of at designated landfill site (i.e., West New Territories Landfill (WENT)).

6.3.10 To minimize the disposal quantities of general refuse, recycle bins for different types of recyclable should be provided together with general refuse bins. Arrangements should be made with the recycling contractor to collect the recycled material regularly. The Contractor shall provide briefing for workers regarding avoiding, reducing, reusing and recycling of general refuse during induction training.

6.3.11 It has been assumed that a maximum of 15 workers will work simultaneously at the Project site during construction phase of the proposed Project. Quantity of general refuse to be generated per day is therefore estimated to be 9.8 kg (assuming a waste generation rate of 0.65 kg per person per day). With the implementation of good waste management practices at the Site, adverse environmental impacts are not expected to arise from the storage, handling and transportation of workforce wastes.

Mitigation Measures

6.3.12 In line with the Hong Kong Government's position on waste minimisation, the practice of avoiding and minimising waste generation and waste recycling should be adopted as far as practicable throughout the construction phase. With implementation of below recommended mitigation measures, no adverse waste management impact is anticipated to occur.

- Waste management shall be controlled through contractual requirements as well as through statutory requirements.
- The contractor should reuse as much of the inert C&D materials as possible on–site. Inert and non-inert C&D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal.
- Being a part of the Environmental Management Plan ("EMP"), a Waste Management Plan ("WMP") should be developed by the Contractor and to be submitted to Architect/Engineer for approval before the commencement of any construction works base on the requirement of Building Department's Practice Notes for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers No. ADV-19 Construction and Demolition Waste. The objectives of the WMP will be to identify any potential environmental impacts from the generation of waste at the Site; to recommend appropriate waste handling, collection, sorting, disposal and recycling measures in accordance with requirements of the current regulations; and to categorise and permit segregation of C&D materials where practicable (i.e. inert C&D materials/non-inert C&D materials) for treatment and disposal considerations i.e. reuse/recycling/ public fill/landfill.
- The contractors should adopt good housekeeping practices with reference to the WMP such as waste segregation prior to disposal. Besides the provision of stockpiling and segregating areas at site, effective collection of site wastes is required to prevent waste materials being blown around by wind, flushed or leached into nearby waters, or creating odour nuisance or pest and vermin problems. Waste storage areas should be well maintained and cleaned regularly.
- Mitigation measures listed in Practice Note for Registered Contractors No. 17 Control of Environmental Nuisance from Construction Sites shall be adopted. The C&D materials shall be delivered to the appropriate designated outlets by dump trucks fitted with covered box type dump bed to minimize potential nuisance during transportation of waste. Refuse pending removal should be stored in receptacles provided with close fitting covers to avoid waste materials be flushed or leached under inclement weather conditions such as heavy rainfall.
- A trip-ticket system should be established in accordance with the Waste Disposal (Charges for Disposal of Construction Waste) Regulation to monitor the disposal of public fill and solid wastes at public filling facilities and landfills, and to control fly-tipping. A trip-ticket system should be included as one of the contractual requirements for the contractor to strictly implement.
- Whenever there are excess recyclable construction materials, including bricks, plastics and metals, reuse and recycling should be carried out as far as practicable to minimise the amount of waste disposal. Other inert non-recyclable materials such as concrete, asphalt, etc. should be treated as public fill. Surplus non-inert C&D materials and non-recyclable wastes should be disposed at designated landfill site.
- For general refuse, provisions of recycle bins for different types of recyclable waste should be provided together with a general refuse bin to separate from C&D materials. Arrangements

should be made with the recycling companies to collect the recycle waste. A reputable waste collector should be employed by the construction contractor to remove general refuse from the Site, separately from C&D materials. Preferably an enclosed and covered area should be provided to reduce the occurrence of “wind-blown” materials.

- Contractors should register as Chemical Waste Producer if any chemical waste is generated during construction phase of the Project. A licensed collector shall be employed to handle and dispose of the chemical wastes, if any. In addition, any chemical waste generated should be handled in accordance with EPD’s Code of Practice on the Packaging, Labelling and Storage Chemical Waste.

6.4 Impact Review – Operational Phase

6.4.1 During operational phase, general refuse anticipated from the proposed development include daily activities of residents, staff and visitors. Waste would include general food waste and other recyclable including paper, glass and metal containers, etc. According to the EPD’s "Monitoring of Solid Waste in Hong Kong – Waste Statistics for 2023", the five-year average (2019 to 2023) per capita general refuse disposal rate is 1.48kg/person/day. All general refuse should be recycled wherever possible, and landfill disposal should only be adopted as a last resort. The recyclables will be properly sorted and stored within the Site for further collection. For food waste, the implementation of appropriate recycling measures will be considered during the operational phase, subject to further detailed feasibility study.

6.4.2 General refuse generated during the operational stage will be collected at the refuse collection point provided within the Site for further collection. The waste management practice will comply with the statutory requirements.

6.4.3 With the implementation of good waste management practices at the Site, the environmental impacts caused by storage, handling, transport and disposal of general refuse are expected to be minimal.

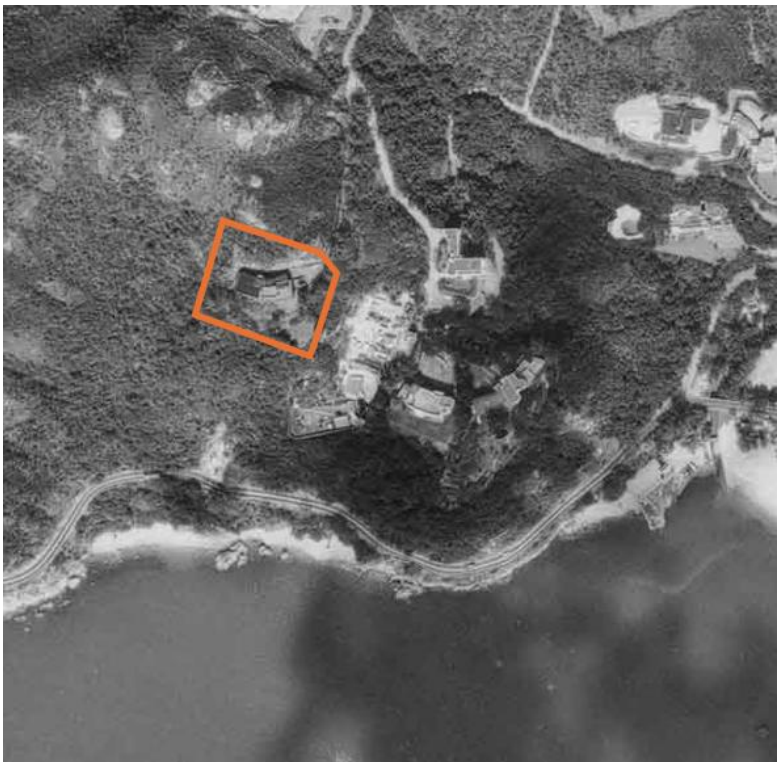
7 Land Contamination

7.1 Introduction

7.1.1 The Site is located at Shouson Hill facing Deep Water Bay and has been used for residential purposes since 1963. Therefore, no potential land contamination issues are anticipated due to the existing and historical land uses. Selected historical aerial photographs between Year 1963 and Year 2020 are shown in **Table 7.1**.

Table 7.1 Selected Historical Aerial Photographs (between Year 1963 and Year 2020)

Year (Arieal Photo ID)	Photo
1963 (1963_6737)	

1976 (1976_16180)	
1987 (1987_A10400)	

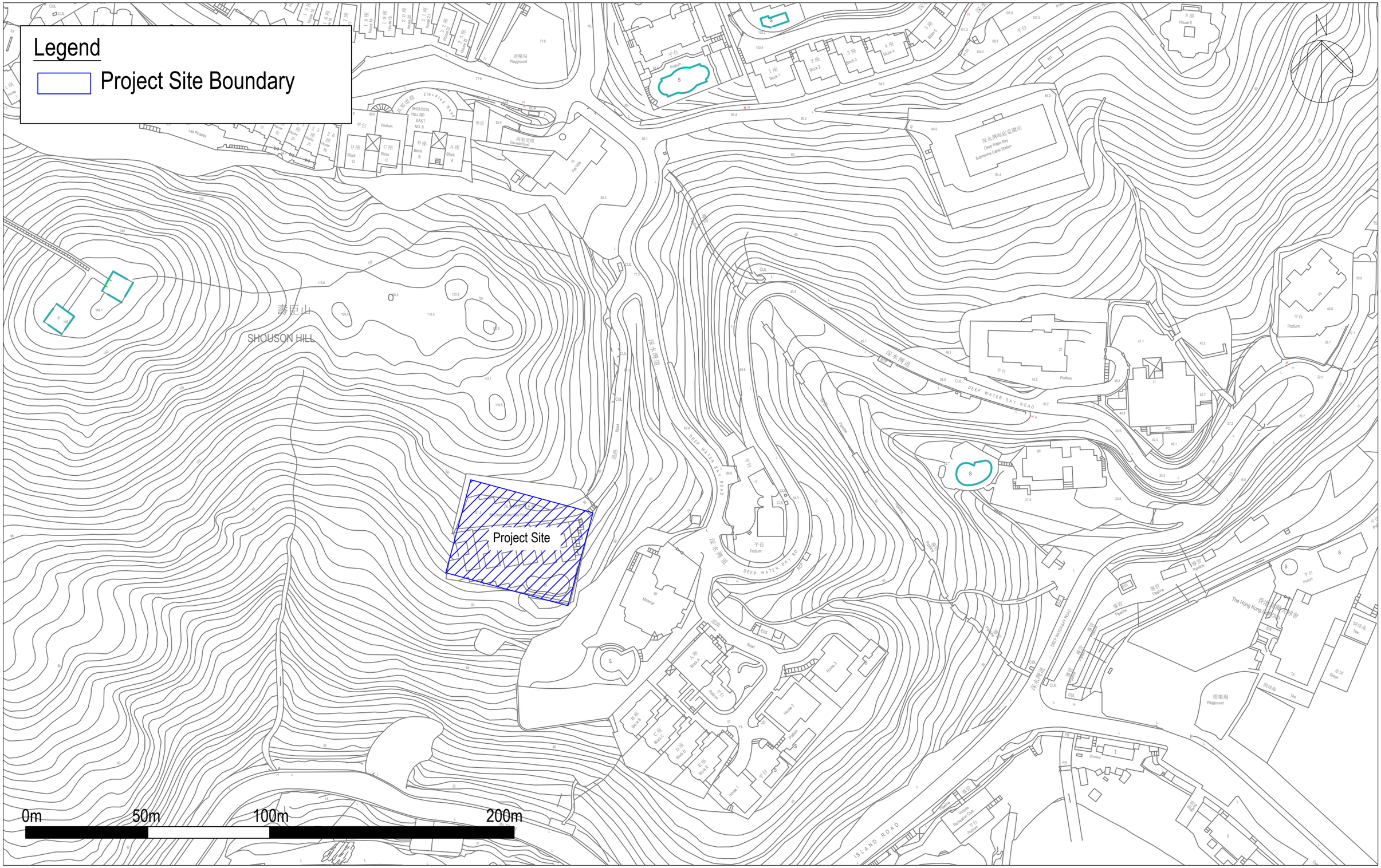
1999 (1999_CN22937)	
2010 (2010_CS30873)	

2020 (2020_E101238C)	

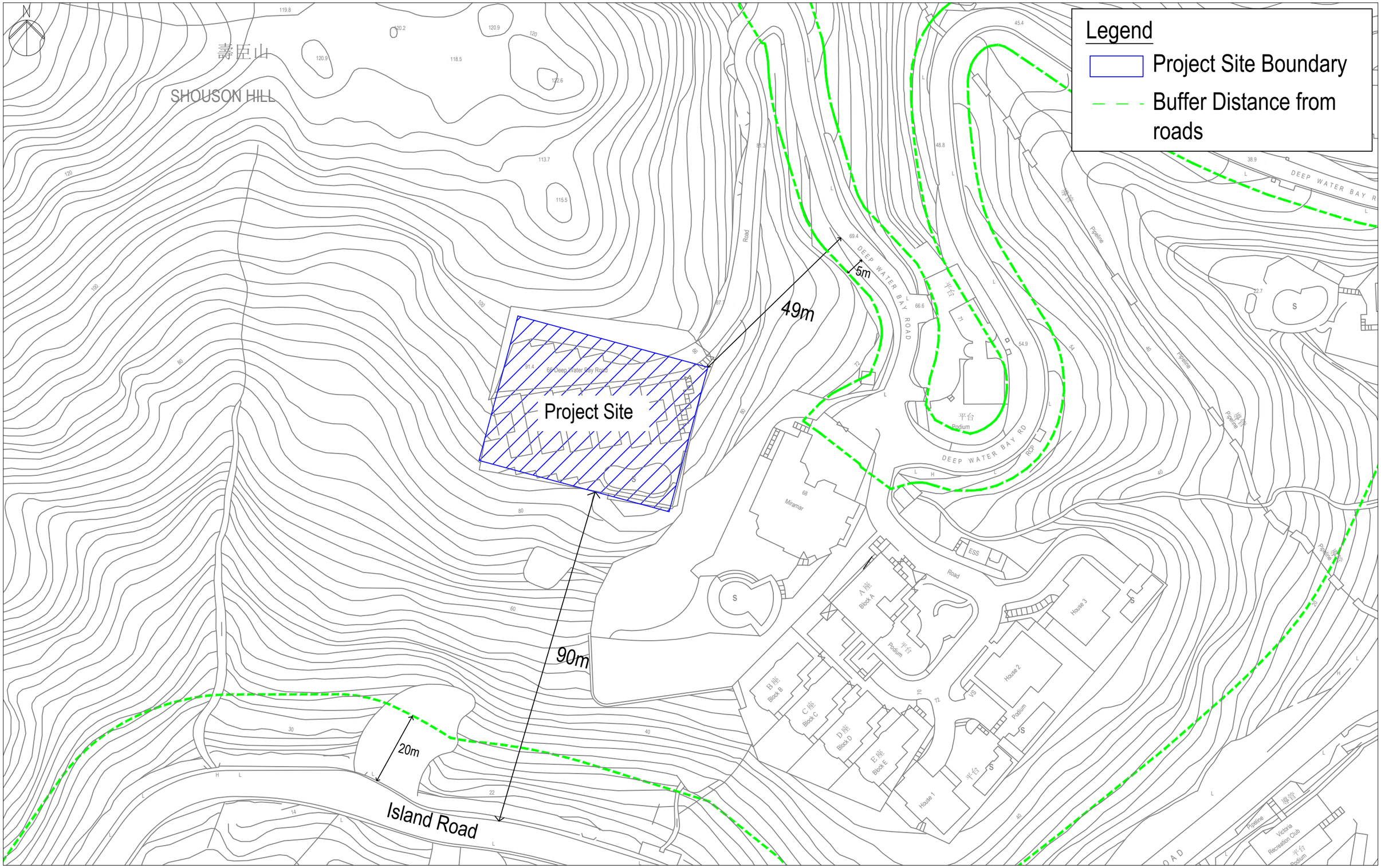
8 Conclusion

8.1.1 The potential environmental impacts during the construction and operation phase of proposed development have been identified and evaluated in this Environmental Assessment Report. The EA report concludes that the construction and operation of the proposed development would be environmentally acceptable and in compliance with the environmental legislation and standards. With the implementation of the recommended environmental mitigation measures, no adverse environment impact from the proposed development is anticipated.

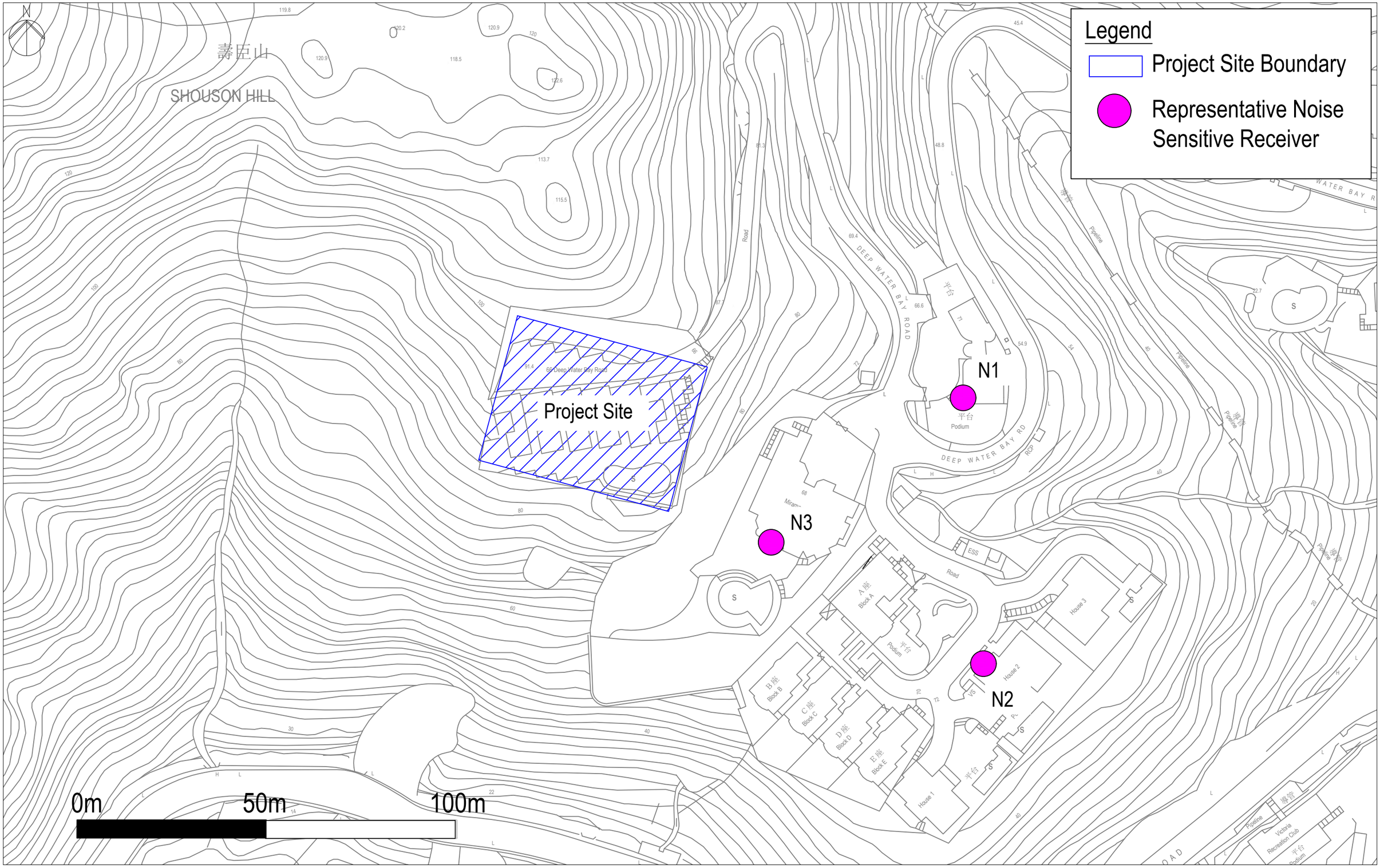
FIGURES



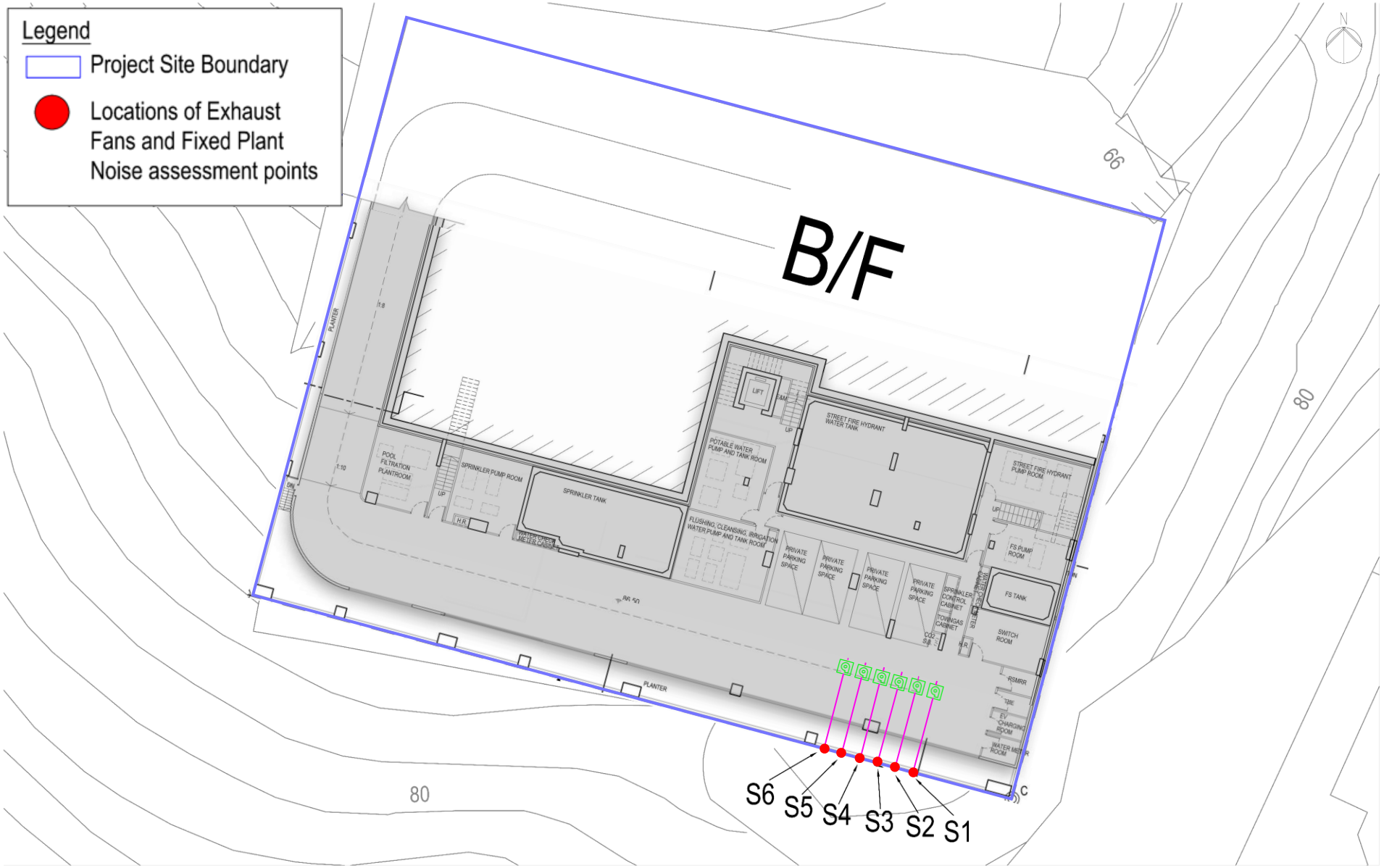
Aurecon Hong Kong Limited	PROPOSED REDEVELOPMENT AT 66 DEEP WATER BAY ROAD Site Location and its surrounding Environ	Figure 2.1



Aurecon Hong Kong Limited	PROPOSED REDEVELOPMENT AT 66 DEEP WATER BAY ROAD Buffer Distance from Project Site Boundary to Roads	Figure 3.1



Aurecon Hong Kong Limited	PROPOSED REDEVELOPMENT AT 66 DEEP WATER BAY ROAD Locations of Representative Noise Sensitive Receivers	Figure 4.1



aurecon Aurecon Hong Kong Limited	PROPOSED REDEVELOPMENT AT 66 DEEP WATER BAY ROAD Plantroom layout and the locations of fixed plants noise assessment	Figure 4.2

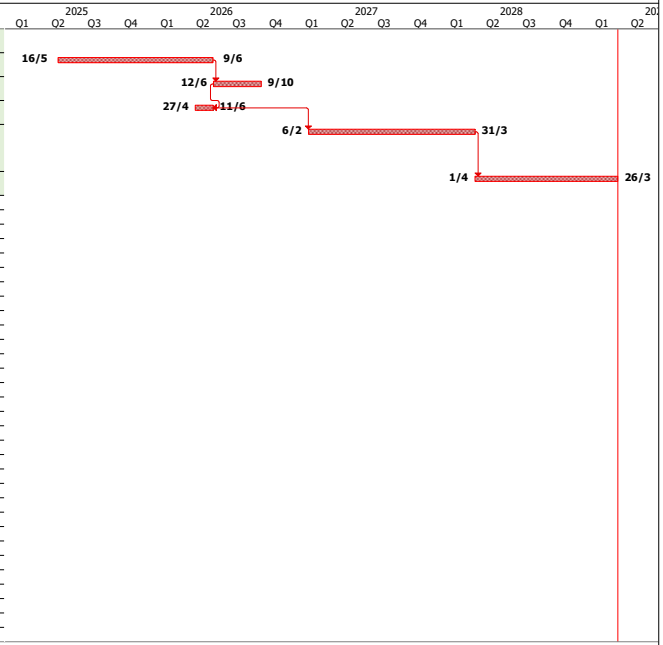
APPENDIX 2.1

Tentative Construction Programme

Tentative Construction Programme

Wed 25/6/25

ID	Task Name	Duration	Start	Finish
1	**Tentative Construction Programme**			
2	Tendering Period for consultant and contractor	390 days	Fri 16/5/25	Tue 9/6/26
3	Hoarding and Demolition Work	120 days	Fri 12/6/26	Fri 9/10/26
4	Ground Investigation Work	45 days	Mon 27/4/26	Thu 11/6/26
5	Excavation and lateral Support (ELS), Site Formation and Foundation Work	420 days	Sat 6/2/27	Fri 31/3/28
6	Pile Cap and Superstructure Work	360 days	Sat 1/4/28	Mon 26/3/29

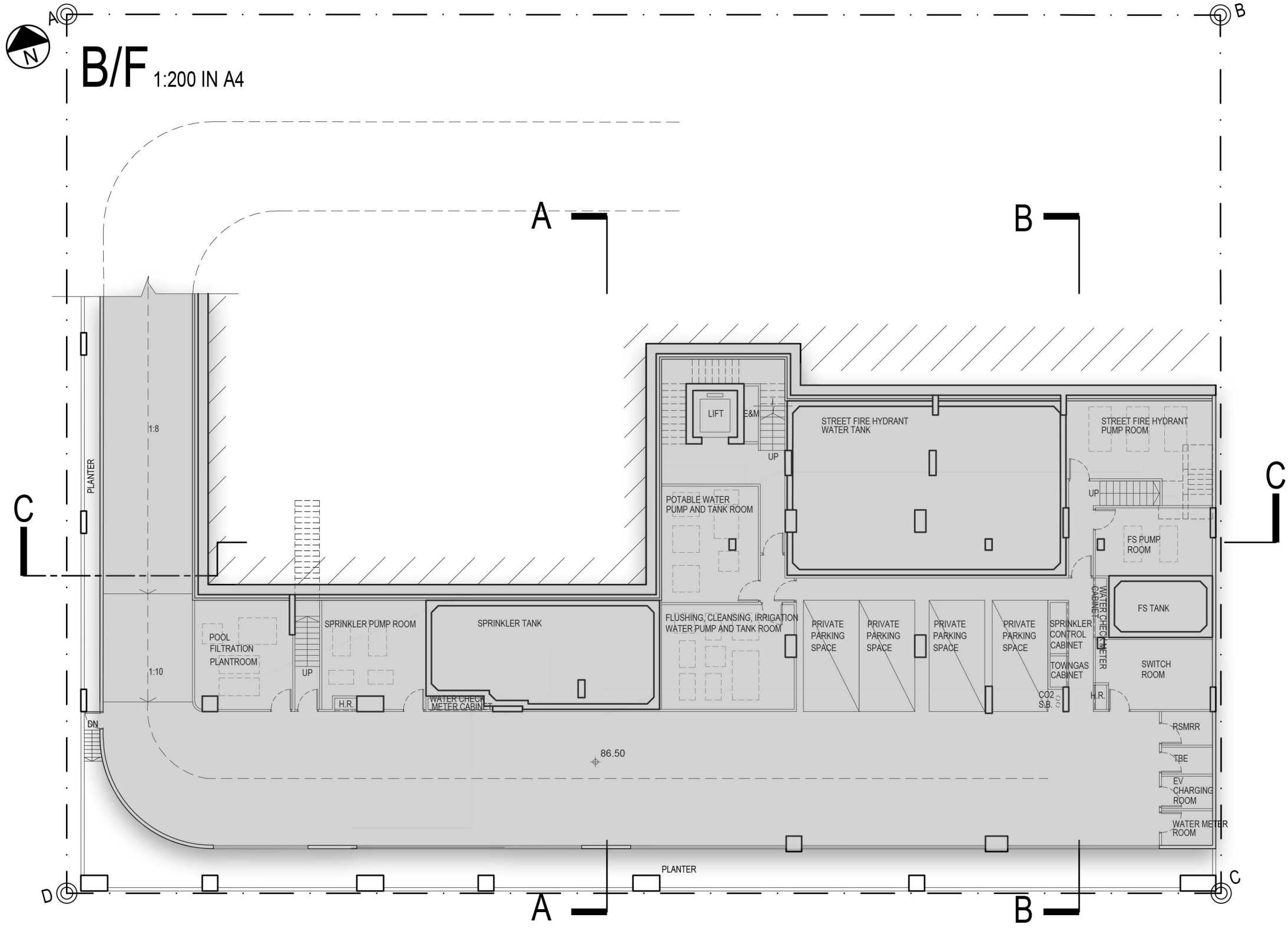


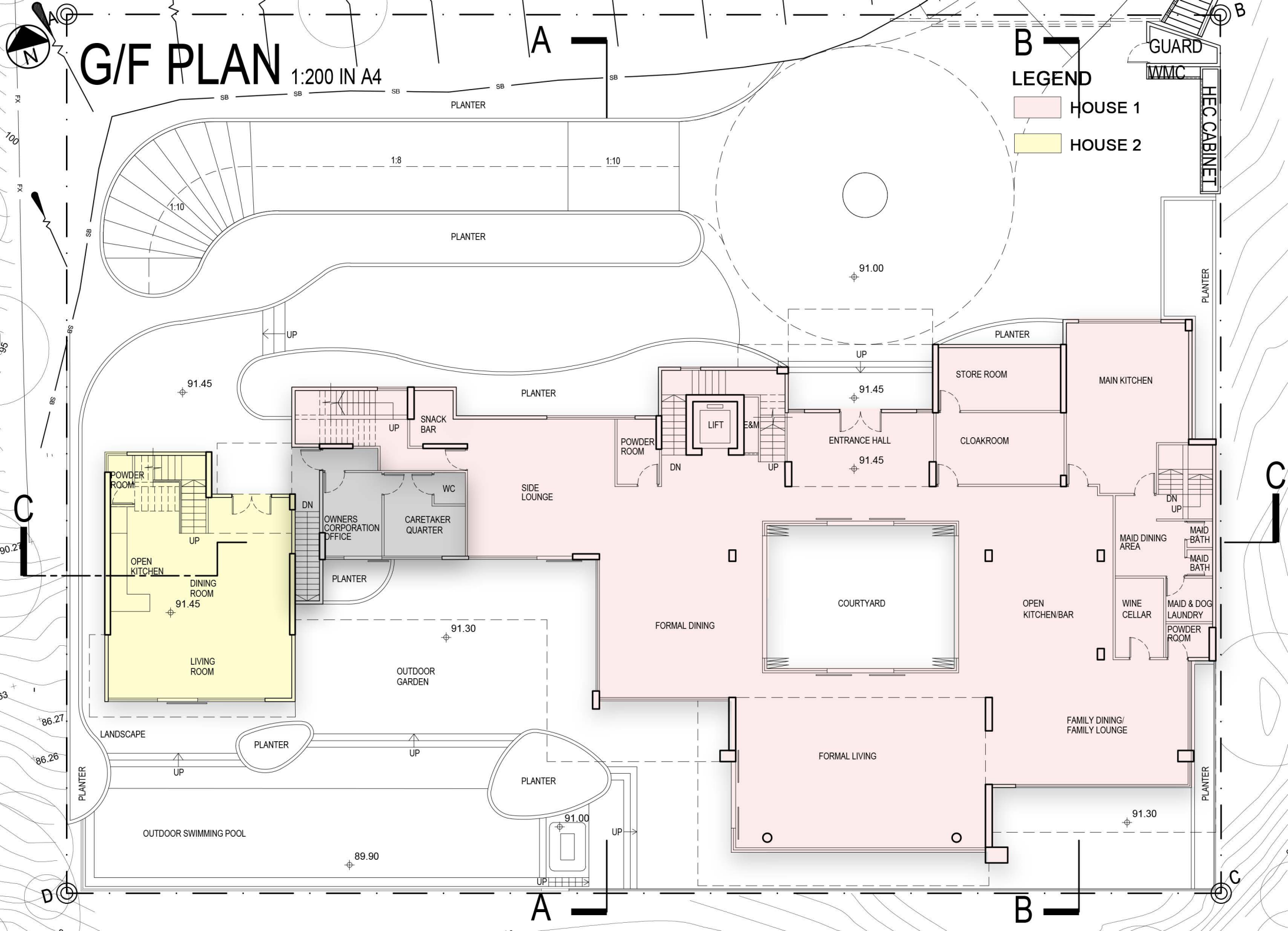
Legend | Summary | Critical date | Path Predecessor Summary Task | Late

APPENDIX 2.2

Master Layout Plan

B/F 1:200 IN A4


A
B
C
D
N
LIFT
E&M
UP
STREET FIRE HYDRANT WATER TANK
STREET FIRE HYDRANT PUMP ROOM
POTABLE WATER PUMP AND TANK ROOM
FS PUMP ROOM
FS TANK
WATER CHECK METER CABINET
SWITCH ROOM
1:8
PLANTER
POOL FILTRATION PLANTROOM
1:10
SPRINKLER PUMP ROOM
SPRINKLER TANK
H.R.
WATER CHECK METER CABINET
FLUSHING, CLEANSING, IRRIGATION WATER PUMP AND TANK ROOM
PRIVATE PARKING SPACE
PRIVATE PARKING SPACE
PRIVATE PARKING SPACE
PRIVATE PARKING SPACE
SPRINKLER CONTROL CABINET
TOWNGAS CABINET
CO2 S.B.
H.R.
DN
86.50
RSMRR
TBE
EV CHARGING ROOM
WATER METER ROOM
PLANTER


G/F PLAN 1:200 IN A4
LEGEND
HOUSE 1
HOUSE 2
GUARD
WMC
HEC CABINET
PLANTER
1:8
1:10
1:10
91.00
91.45
91.45
91.45
91.30
91.30
91.00
89.90
86.27
86.26
SNACK BAR
LIFT
E&M
POWDER ROOM
ENTRANCE HALL
CLOAKROOM
STORE ROOM
MAIN KITCHEN
SIDE LOUNGE
POWDER ROOM
WC
OWNERS CORPORATION OFFICE
CARETAKER QUARTER
OPEN KITCHEN
DINING ROOM
LIVING ROOM
COURTYARD
FORMAL DINING
OPEN KITCHEN/BAR
MAID DINING AREA
MAID BATH
MAID BATH
WINE CELLAR
MAID & DOG LAUNDRY
POWDER ROOM
FAMILY DINING/ FAMILY LOUNGE
FORMAL LIVING
OUTDOOR GARDEN
LANDSCAPE
OUTDOOR SWIMMING POOL
UP
DN
SB
FX
A
B
C
D

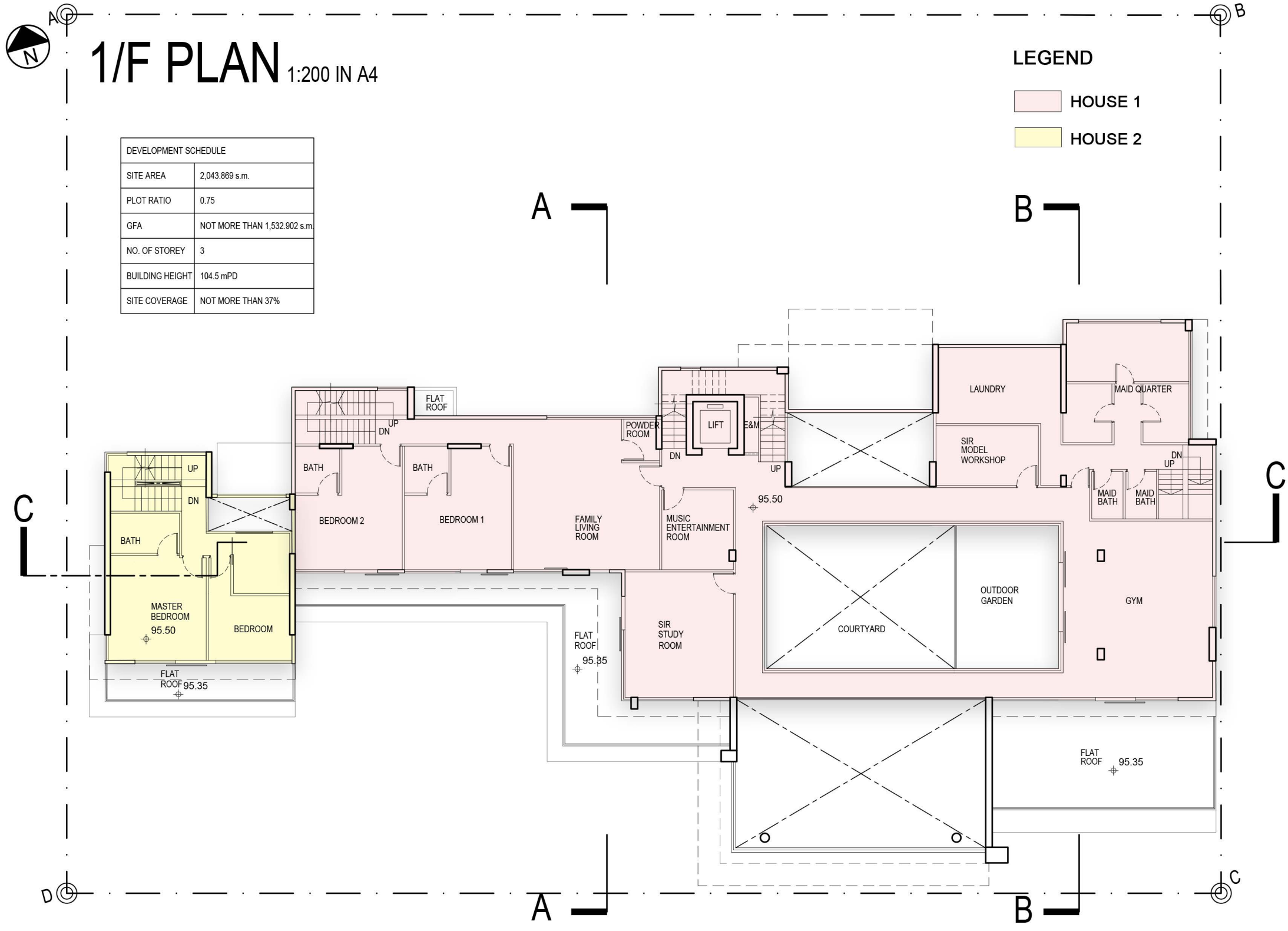
1/F PLAN 1:200 IN A4

DEVELOPMENT SCHEDULE	
SITE AREA	2,043.869 s.m.
PLOT RATIO	0.75
GFA	NOT MORE THAN 1,532.902 s.m.
NO. OF STOREY	3
BUILDING HEIGHT	104.5 mPD
SITE COVERAGE	NOT MORE THAN 37%

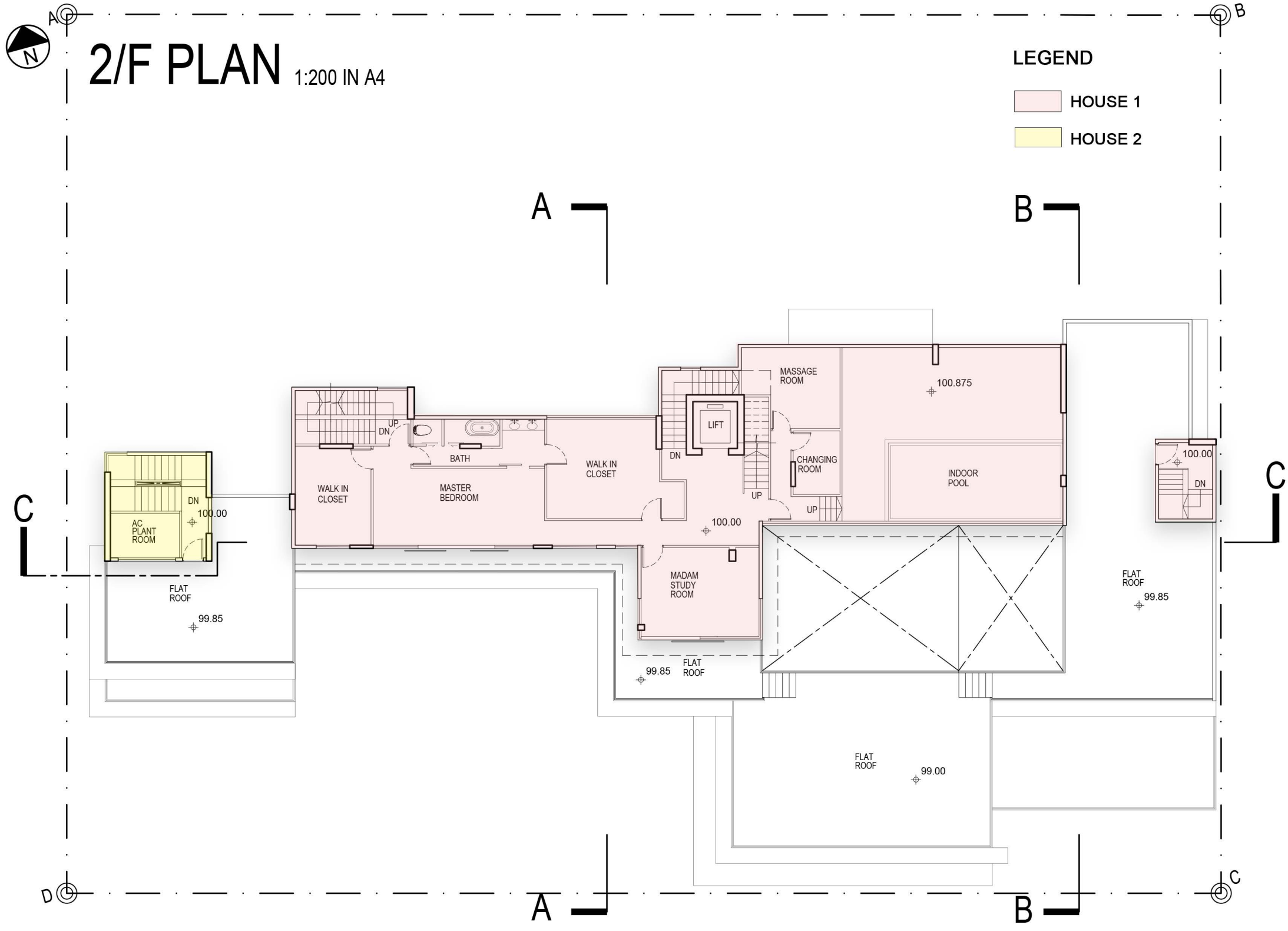
LEGEND

HOUSE 1

HOUSE 2



2/F PLAN 1:200 IN A4

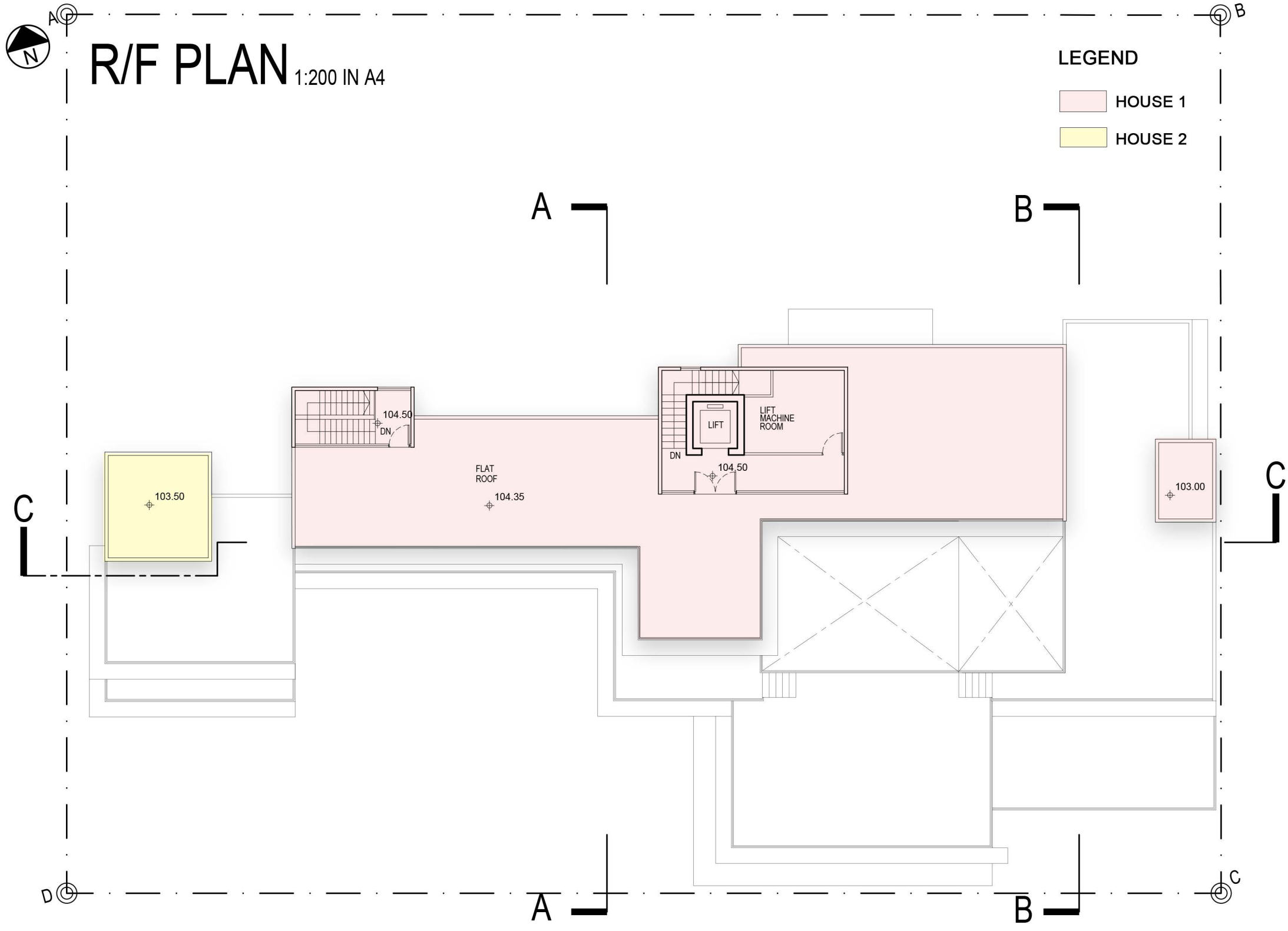


R/F PLAN 1:200 IN A4

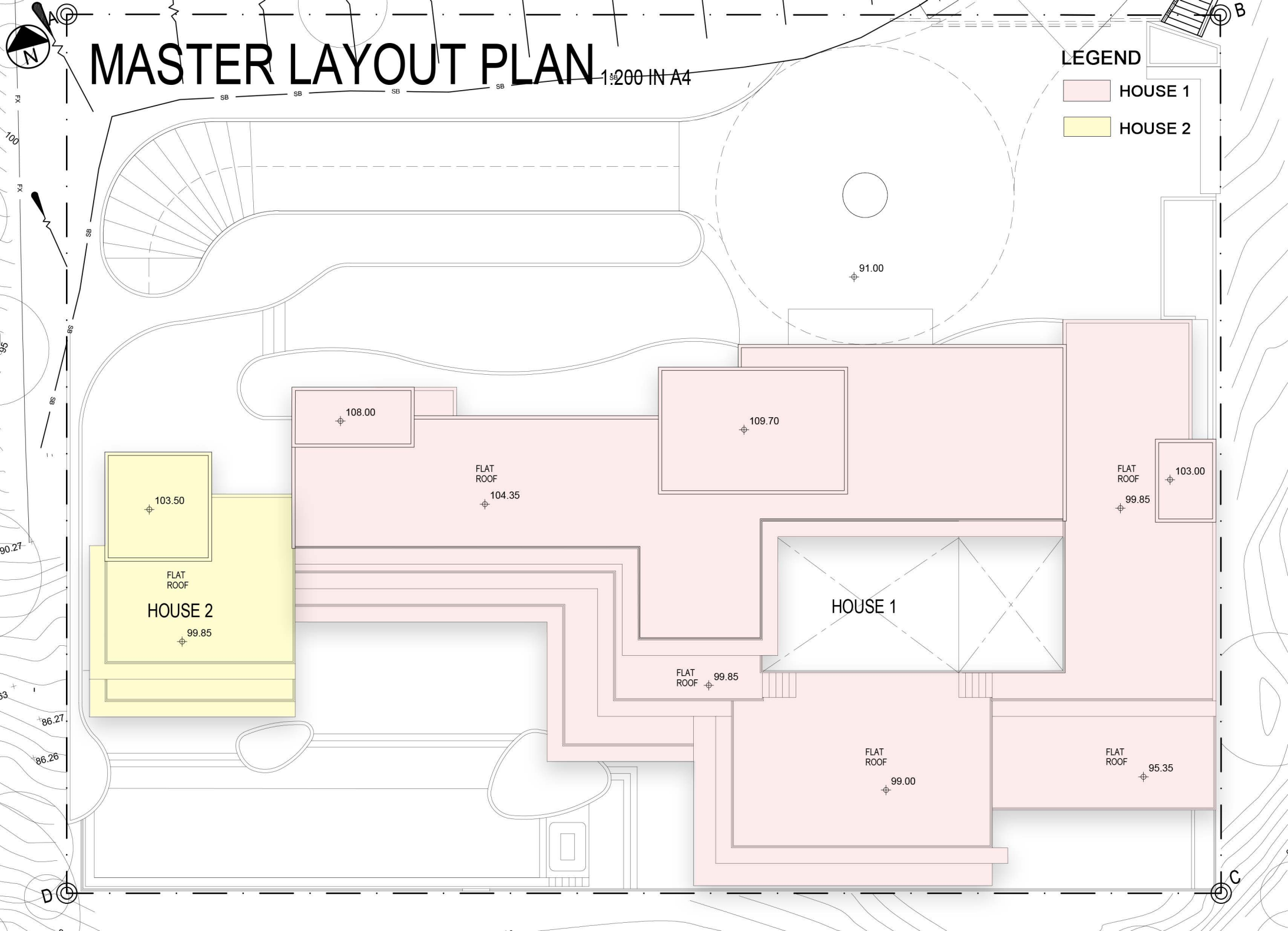
LEGEND

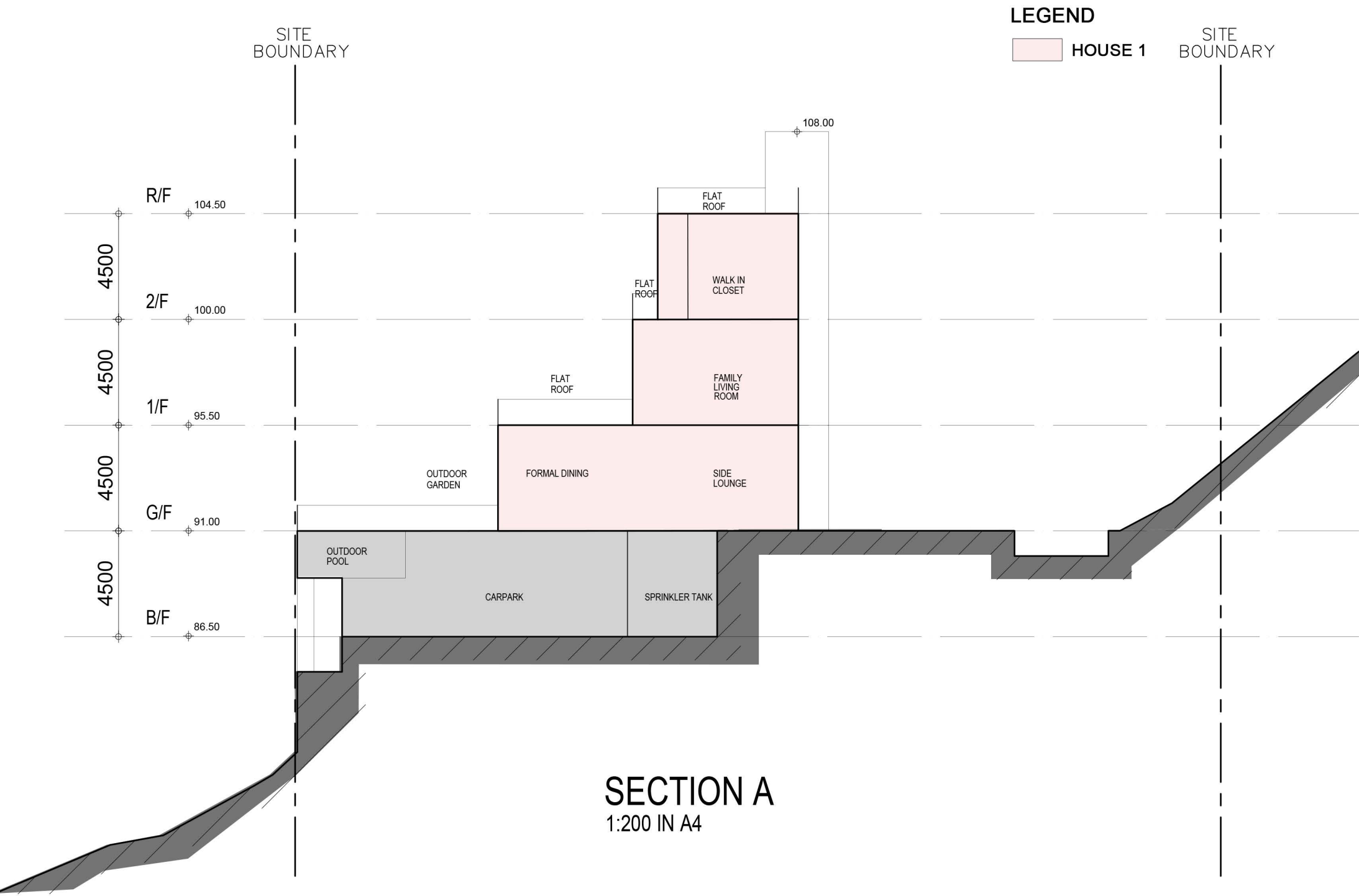
HOUSE 1

HOUSE 2



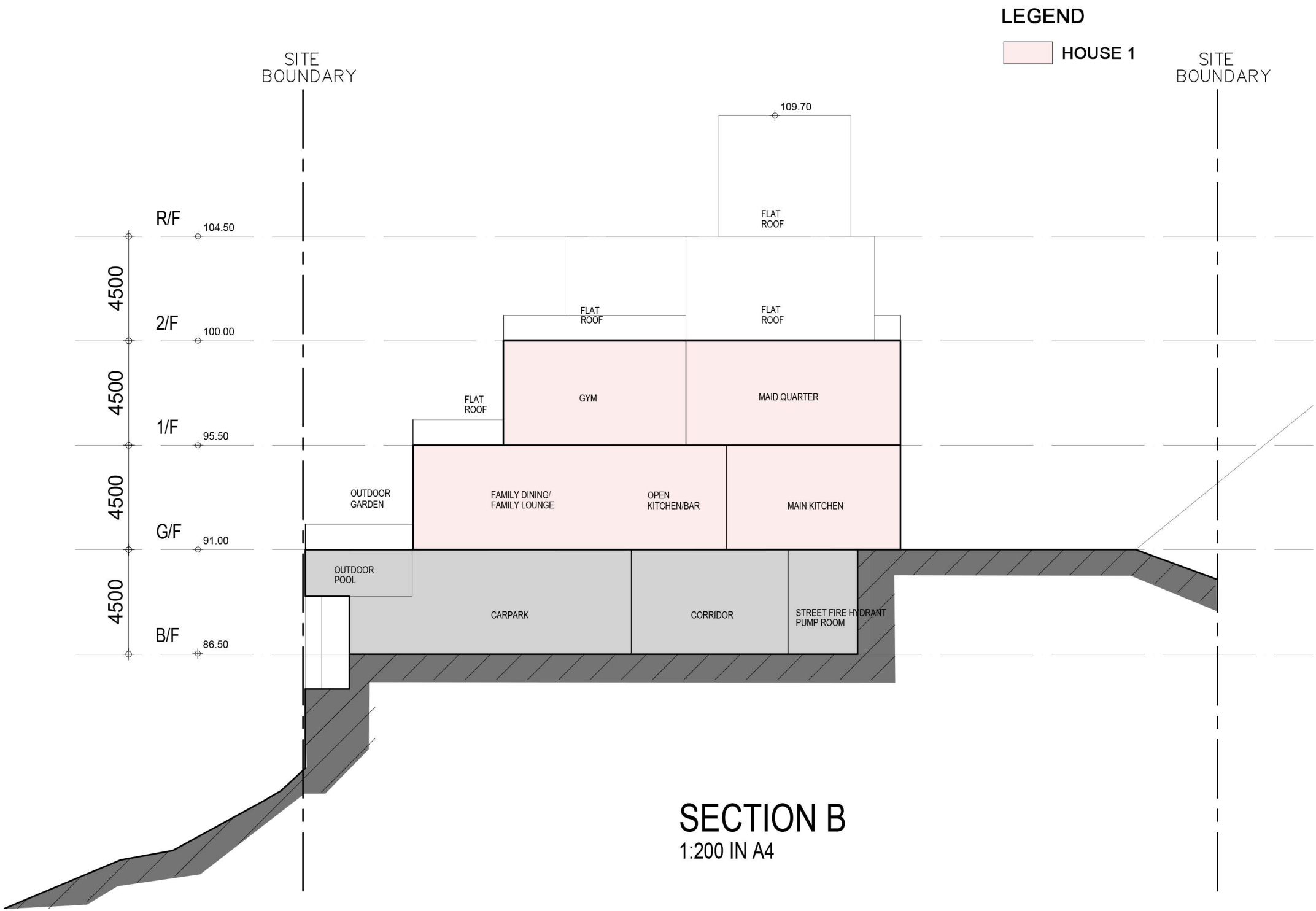
MASTER LAYOUT PLAN 1:200 IN A4





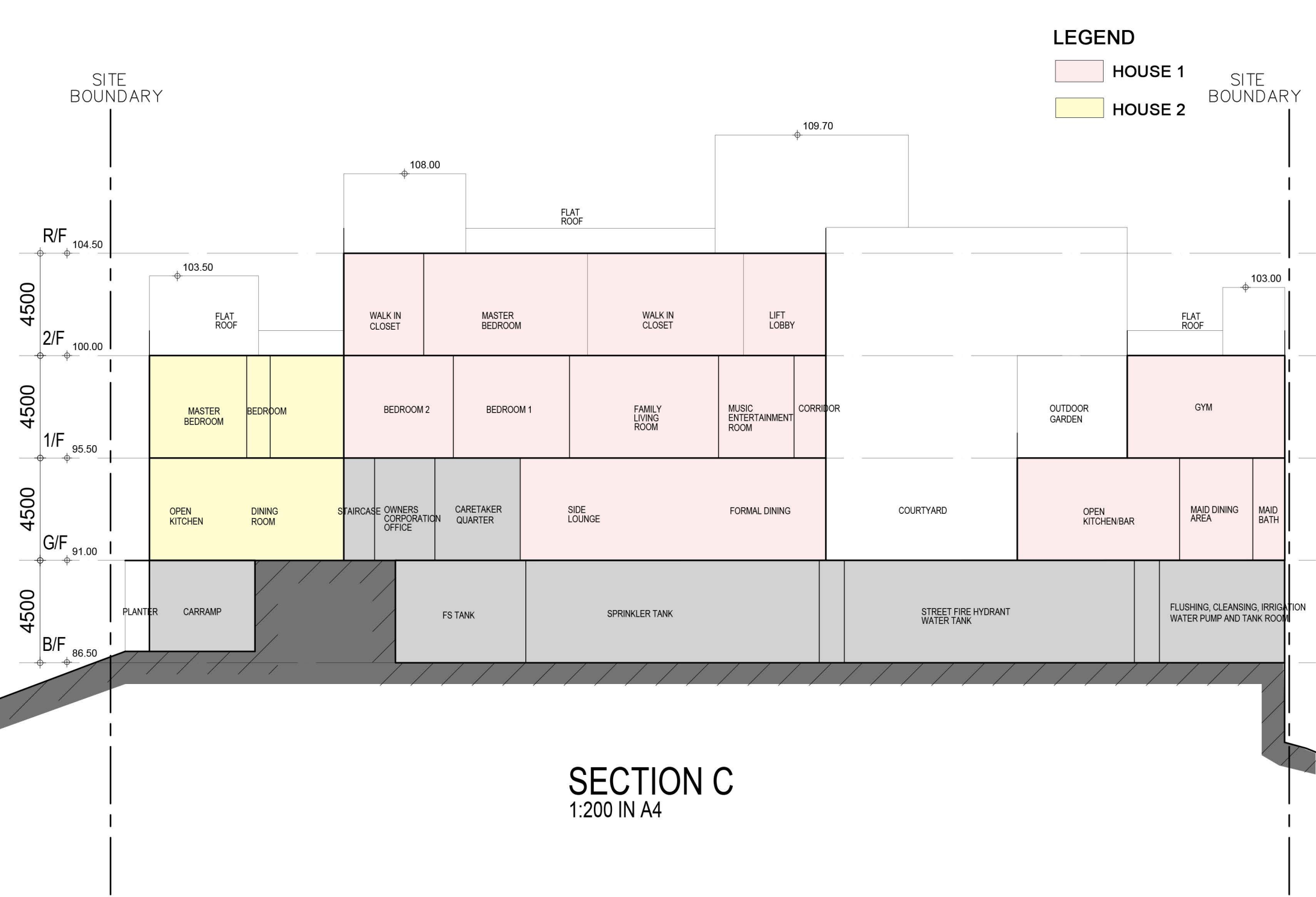
SECTION A

1:200 IN A4



SECTION B

1:200 IN A4



SECTION C

1:200 IN A4

APPENDIX 4.1

Catalogues for Proposed Fixed Plants

KRÜGER

IN LINE FAN

CSD Series

(Enclosed type motor)

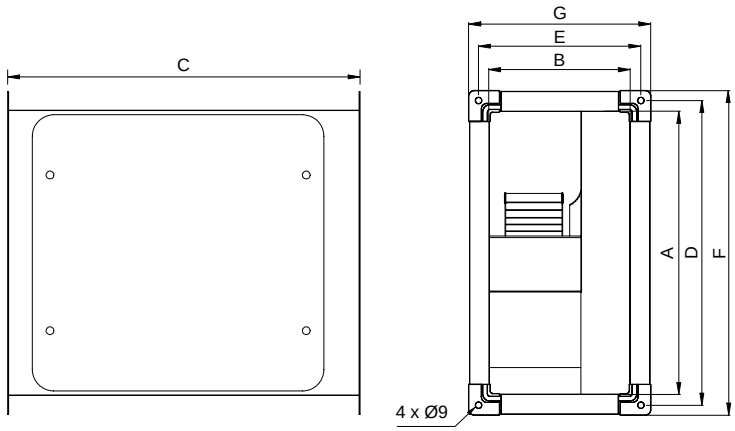


In-Line Fan – **CSD Series** (Enclosed type motor)

- *Cabinet is manufactured in galvanised sheet steel.*
- *Access door fitted as standard.*
- *Removable access door for easy accessibility to motor and fan.*
- *Flanged inlet and outlet for easy ductwork connection.*
- *Easy installation*
- *Low noise level.*
- *Ease of maintenance*
- *Thermally protected motor.*

Kruger Ventilation Industries certifies that the **CSD series** shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA publication 211 and comply with the requirements of the AMCA Certified Ratings Program.

Dimensions



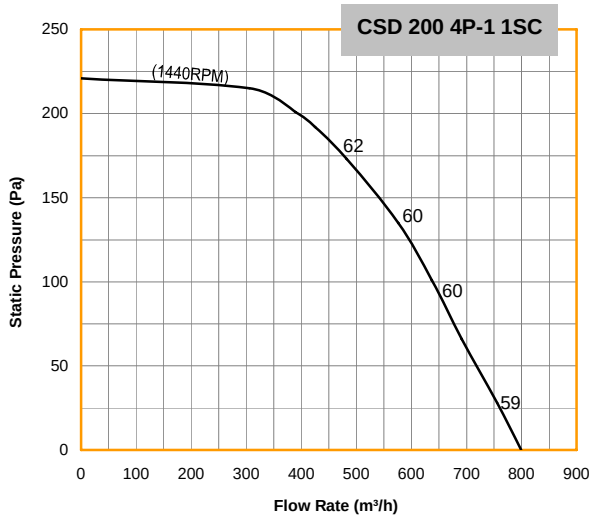
Model	A	B	C	D	E	F	G	Wt (Kg)
CSD 200	400	200	500	428	228	456	256	15
CSD 225	500	250	542	528	278	556	306	19
CSD 250	500	300	562	528	328	556	356	22
CSD 280	600	300	682	628	328	656	356	30
CSD 315	600	350	717	628	378	656	406	42
CSD 355	800	400	800	828	428	856	456	45
CSD 400	800	500	882	828	528	856	556	55

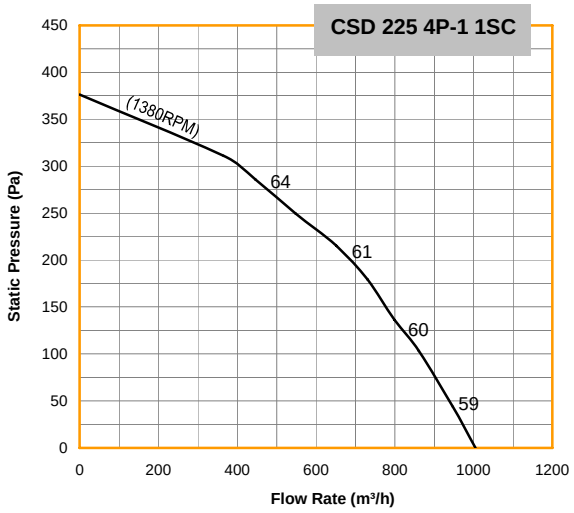
All dimensions in mm.

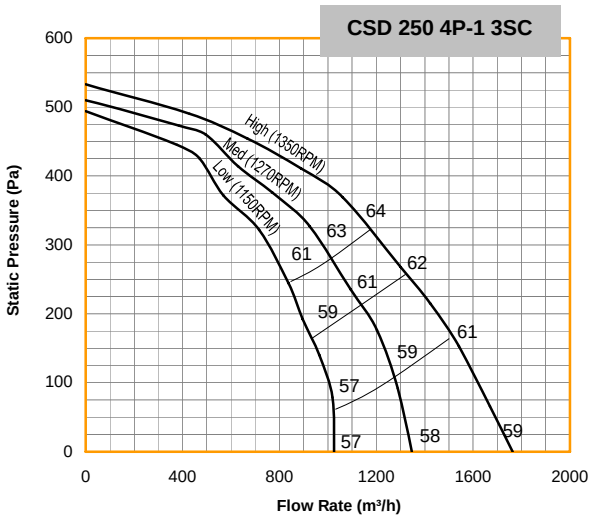
Technical Data

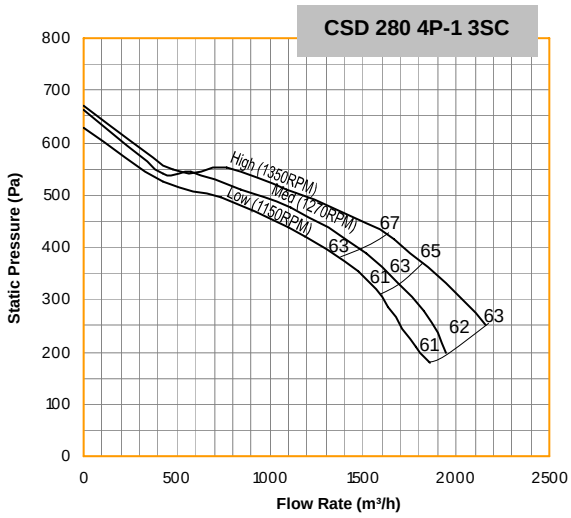
Model	Max Q m³/h	Power W	Motor Prot.	Phase	Hz	Max. Amp	Voltage	uF/V	Ins. Cl	dB (A) at 3m	RPM
CSD 200 4P-1 1SC	800	165	IP44	1	50	0.9	220-240	10/450	F	52	1440
CSD 225 4P-1 1SC	1005	245	IP44	1	50	1.4	220-240	7.5/450	F	54	1380
CSD 250 4P-1 3SC	1765	350	IP44	1	50	2.8/2.2/1.6	220-240	12.5/450	F	54	1350/1270/1150
CSD 280 4P-1 3SC	2160	550	IP44	1	50	3.6/3.1/2.9	220-240	12.5/450	F	57	1350/1270/1150
CSD 315 6P-1 3SC	2630	709	IP44	1	50	3.5/2.5/1.9	220-240	12.5/450	F	56	940/830/750
CSD 355 6P-3 1SC	4970	1100	IP54	3	50	3.1	400	-	F	58	950
CSD 400 6P-3 1SC	6840	1500	IP54	3	50	5.0	400	-	F	59	960

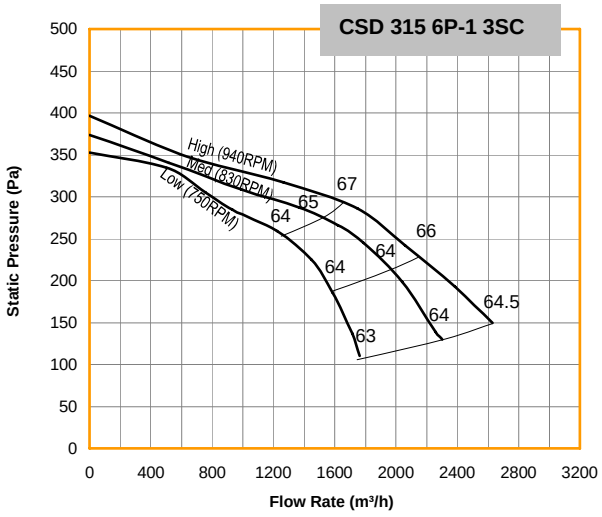
- *Speed (RPM) shown is nominal. Performance is based on actual speed of test. Performance ratings do not include the effects of appurtenances (accessories).*

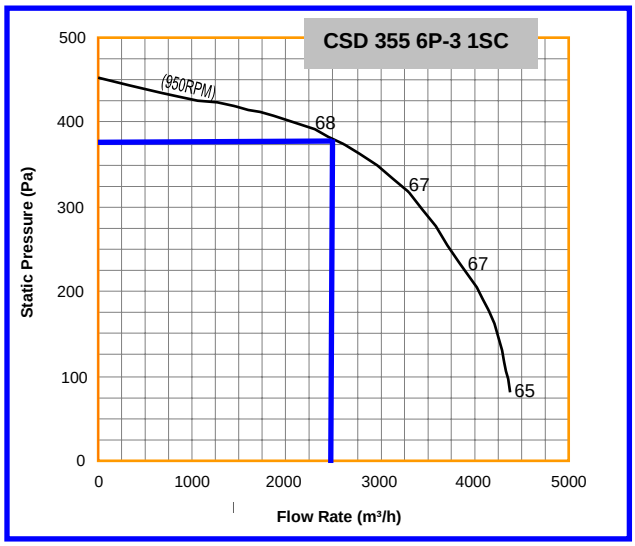




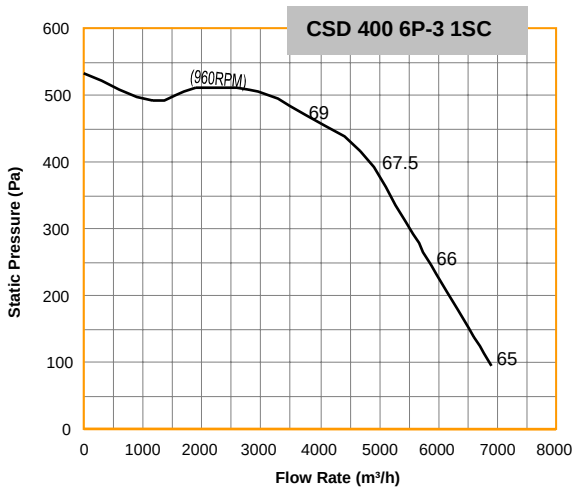








- *Speed (RPM) shown is nominal. Performance is based on actual speed of test. Performance ratings do not include the effects of appurtenances (accessories).*
- *Sound pressure level Lp(A) at 1m free field.*
- *The AMCA Certified Ratings Seal applies to air performance only.*



- *Speed (RPM) shown is nominal. Performance is based on actual speed of test. Performance ratings do not include the effects of appurtenances (accessories).*
- *Sound pressure level Lp(A) at 1m free field.*
- *The AMCA Certified Ratings Seal applies to air performance only.*

APPENDIX 4.2

Detailed Noise Calculations of Fixed Plants Noise Assessment

Summary of Noise Sensitive Receivers

NSR Label	Descriptions	Nature of Use	Statutory Plan No.	Current zoning	Existing/ Planned Uses	Location		Local Ground, (mPD)	Selected Floor	Floor Level, (mPD)	Assessment Point, z, (mPD)	ASR	Daytime (Background free field noise level)			Evening (Background free field noise level)			Night-time (Background free field noise level)			Noise Criteria (ANL-5), L_{eq} (30 min)	
						x	y						Date	Time	Measured Levels	Date	Time	Measured Levels	Date	Time	Measured Levels	Daytime & Evening Time	Nighttime (2300-0700)
						Easting	Northing																
N1	71 Deep Water Bay Road	Residential	Approved Shouson Hill and Repulse Bay Outline Zoning Plan No. S/H17/13	R(C)	Existing	837063	812000	66.6	3	73.6	74.8	A	20-Mar-25	16:30-17:00	51.2	20-Mar-25	19:00-19:30	42.9	20-Mar-25	23:00-23:30	40.0	**46**	**43**
N2	72 Deep Water Bay Road House 2	Residential	Approved Shouson Hill and Repulse Bay Outline Zoning Plan No. S/H17/13	R(C)	Existing	837068	811930	54.9	3	61.9	63.1	A	20-Mar-25	16:30-17:00	51.2	20-Mar-25	19:00-19:30	42.9	20-Mar-25	23:00-23:30	40.0	**46**	**43**
N3	68 Deep Water Bay Road	Residential	Approved Shouson Hill and Repulse Bay Outline Zoning Plan No. S/H17/13	R(C)	Existing	837012	811962	60.0	2.0	63.5	64.7	A	20-Mar-25	16:30-17:00	51.2	20-Mar-25	19:00-19:30	42.9	20-Mar-25	23:00-23:30	40.0	**46**	**43**

Summary of Noise Inventory

Noise Source ID	Description of Noise Sources	SPL at 3m discharge [(i)]	Maximum SWL, dB(A), L_{eq} (30 min) [(ii)]		Location			Directivity Factor (Q)	No. of Plant	% on-time within 30min (Daytime Peak)	% on-time within 30min (Night-time Peak) [(iii)]
			Daytime & Evening Time (0700-2300)	Nighttime (2300-0700)	X	Y	Z, mPD				
S1	Louver 1	58	76	76	836979	811972	90.0	2	1	100.0%	100.0%
S2	Louver 2	58	76	76	836977	811972	90.0	2	1	100.0%	100.0%
S3	Louver 3	58	76	76	836976	811972	90.0	2	1	100.0%	100.0%
S4	Louver 4	58	76	76	836975	811973	90.0	2	1	100.0%	100.0%
S5	Louver 5	58	76	76	836974	811973	90.0	2	1	100.0%	100.0%
S6	Louver 6	58	76	76	836973	811973	90.0	2	1	100.0%	100.0%

Note:

(i) The sound pressure level of the louver is made reference to the catalogue provided in Appendix 4.1.

(ii) The calculation of SWL = Sound Pressure Level of the Louver + (20 x Log(3)+8)

(iii) Assumed 100% operation during night-time as worst case senario.

Prediction of Unmitigated Fixed Noise Source Impact on Existing NSRs

NSR Labels	Descriptions	Nature of Use	Existing/ Planned Uses	Location			ASR	Noise Criteria (ANL-5), L_{eq} (30		Noise Source ID	Description of Noise Sources	SWL, dB(A), L_{eq} (30 min)		Location			Directivity Factor (Q)	No. of Plant	% on-time within 30min (Daytime Peak)	% on-time within 30min (Night-time Peak)	Slant Distance to NSR, d (m)	Correction for, dB(A)								Noise Impact at NSR, dB(A)	
				X	Y	Z, mPD		Daytime & Evening Time (0700-2300)	Nighttime (2300-0700)			Daytime & Evening Time (0700-2300)	Nighttime (2300-0700)	X	Y	Z, mPD						Distance	No.	% on time (Daytime)	% on time (Night-time)	Screening by Features	Barrier Effects	Tonality	Facade	Daytime & Evening Period	Night-time
N1	71 Deep Water Bay Road	Residential	Existing	837063	812000	74.8	A	46	43	S1	Louver 1	76	76	836979	811972	90.0	2	1	100.0%	100.0%	90	-47.1	0	0	0	0	0	0	3	31.4	31.4
										S2	Louver 2	76	76	836977	811972	90.0	2	1	100.0%	100.0%	91	-47.2	0	0	0	0	0	0	3	31.3	31.3
										S3	Louver 3	76	76	836976	811972	90.0	2	1	100.0%	100.0%	92	-47.2	0	0	0	0	0	0	3	31.3	31.3
										S4	Louver 4	76	76	836975	811973	90.0	2	1	100.0%	100.0%	93	-47.3	0	0	0	0	0	0	3	31.2	31.2
										S5	Louver 5	76	76	836974	811973	90.0	2	1	100.0%	100.0%	94	-47.4	0	0	0	0	0	0	3	31.1	31.1
										S6	Louver 6	76	76	836973	811973	90.0	2	1	100.0%	100.0%	95	-47.5	0	0	0	0	0	0	3	31.0	31.0
																													Total =	39	39

NSR Labels	Descriptions	Nature of Use	Existing/ Planned Uses	Location			ASR	Noise Criteria (ANL-5), L_{eq} (30		Noise Source ID	Description of Noise Sources	SWL, dB(A), L_{eq} (30 min)		Location			Directivity Factor (Q)	No. of Plant	% on-time within 30min (Daytime Peak)	% on-time within 30min (Night-time Peak)	Slant Distance to NSR, d (m)	Correction for, dB(A)								Noise Impact at NSR, dB(A)	
				X	Y	Z, mPD		Daytime & Evening Time (0700-2300)	Nighttime (2300-0700)			Daytime & Evening Time (0700-2300)	Nighttime (2300-0700)	X	Y	Z, mPD						Distance	No.	% on time (Daytime)	% on time (Night-time)	Screening by Features	Barrier Effects [1]	Tonality	Facade	Daytime & Evening Period	Night-time
N2	72 Deep Water Bay Road House 2	Residential	Existing	837068	811930	63.1	A	46	43	S1	Louver 1	76	76	836979	811972	90.0	2	1	100.0%	100.0%	102	-48.2	0	0	0	0	0	0	3	30.3	30.3
										S2	Louver 2	76	76	836977	811972	90.0	2	1	100.0%	100.0%	103	-48.3	0	0	0	0	0	0	3	30.2	30.2
										S3	Louver 3	76	76	836976	811972	90.0	2	1	100.0%	100.0%	105	-48.4	0	0	0	0	0	0	3	30.1	30.1
										S4	Louver 4	76	76	836975	811973	90.0	2	1	100.0%	100.0%	106	-48.5	0	0	0	0	0	0	3	30.0	30.0
										S5	Louver 5	76	76	836974	811973	90.0	2	1	100.0%	100.0%	107	-48.6	0	0	0	0	0	0	3	29.9	29.9
										S6	Louver 6	76	76	836973	811973	90.0	2	1	100.0%	100.0%	108	-48.7	0	0	0	0	0	0	3	29.8	29.8
																													Total =	38	38

NSR Labels	Descriptions	Nature of Use	Existing/ Planned Uses	Location			ASR	Noise Criteria (ANL-5), L_{eq} (30		Noise Source ID	Description of Noise Sources	SWL, dB(A), L_{eq} (30 min)		Location			Directivity Factor (Q)	No. of Plant	% on-time within 30min (Daytime Peak)	% on-time within 30min (Night-time Peak)	Slant Distance to NSR, d (m)	Correction for, dB(A)								Noise Impact at NSR, dB(A)	
				X	Y	Z, mPD		Daytime & Evening Time (0700-2300)	Nighttime (2300-0700)			Daytime & Evening Time (0700-2300)	Nighttime (2300-0700)	X	Y	Z, mPD						Distance	No.	% on time (Daytime)	% on time (Night-time)	Screening by Features [(i)]	Barrier Effects	Tonality	Facade	Daytime & Evening Period	Night-time
N3	68 Deep Water Bay Road	Residential	Existing	837012	811962	64.7	A	46	43	S1	Louver 1	76	76	836979	811972	90.0	2	1	100.0%	100.0%	43	-40.7	0	0	0	-5	0	0	3	32.8	32.8
										S2	Louver 2	76	76	836977	811972	90.0	2	1	100.0%	100.0%	44	-40.9	0	0	0	-5	0	0	3	32.6	32.6
										S3	Louver 3	76	76	836976	811972	90.0	2	1	100.0%	100.0%	45	-41.1	0	0	0	-5	0	0	3	32.4	32.4
										S4	Louver 4	76	76	836975	811973	90.0	2	1	100.0%	100.0%	46	-41.2	0	0	0	-5	0	0	3	32.3	32.3
										S5	Louver 5	76	76	836974	811973	90.0	2	1	100.0%	100.0%	47	-41.4	0	0	0	-5	0	0	3	32.1	32.1
										S6	Louver 6	76	76	836973	811973	90.0	2	1	100.0%	100.0%	48	-41.6	0	0	0	-5	0	0	3	31.9	31.9
																													Total =	40	40

Note:

(i) There is no direct line of sight between the noise sources and the receiver at N3. A correction of -5dB(A) is adopted for Screening by Features.
Corrections of tonality, intermittency or impulsiveness have not been considered in proposed fixed noise source as there are no detailed information and noise specification for these planned noise sources.
However, if the noise exhibits any of these characteristics during the operation of the plant, the maximum allowable SWLs should be reduced in accordance with the recommendation given in Section 3.3 of the IND-TM.

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Appendix 6

Sewerage Impact Assessment

Proposed Residential Re-development

at

No. 66 Deep Water Bay Road

Hong Kong

R.B.L. 573

Sewerage

Impact Assessment Report

Kwong Wah Consultants Ltd.

Issue & Revision Record Sheet

Client Name	:	BLUE WATER GROUP MANAGEMENT LIMITED
Project Title	:	Proposed Residential Re-development at No. 66 Deep Water Bay Road, R.B.L. 573
Report Title	:	Sewerage Impact Assessment Report
Report Revision Number	:	Rev.1
Date	:	25 June 2025

Rev	Date	Originator	Checker	Approver	Description
0	16 April 25	N. Chow	W. Mak	W. Mak	1st Issue
1	25 June 25	N. Chow	W. Mak	W. Mak	1st Issue

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Tsimshatsui
Hong Kong

Tel 2356 0918
Fax 2581 2113

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2. Objective 4

3. Methodology 4

4. Existing Sewerage System 5

5. Sewerage Impact Assessment 5

6. Hydraulic Calculation for the Existing dia.150mm Sewer 11

7. Conclusion 11

Appendix

I. Site Location Plan

II. BD's Drainage Record Plan

III. DSD's Record Plan

IV. BD's GBP Record Plan

V. Proposed Re-development Plan

VI. Assessment of Existing Sewer Capacity (Hydraulic Calculation)

1) Introduction

1.1 The subject site at no. 66 Deep Water Bay Road was proposed to re-develop into 2 nos. 3-storey residential houses with 1-storey basement for common plantrooms and car parking facility. The total site area was 2,043.869m^2. **(refer Appendix I - Site Location Plan)**

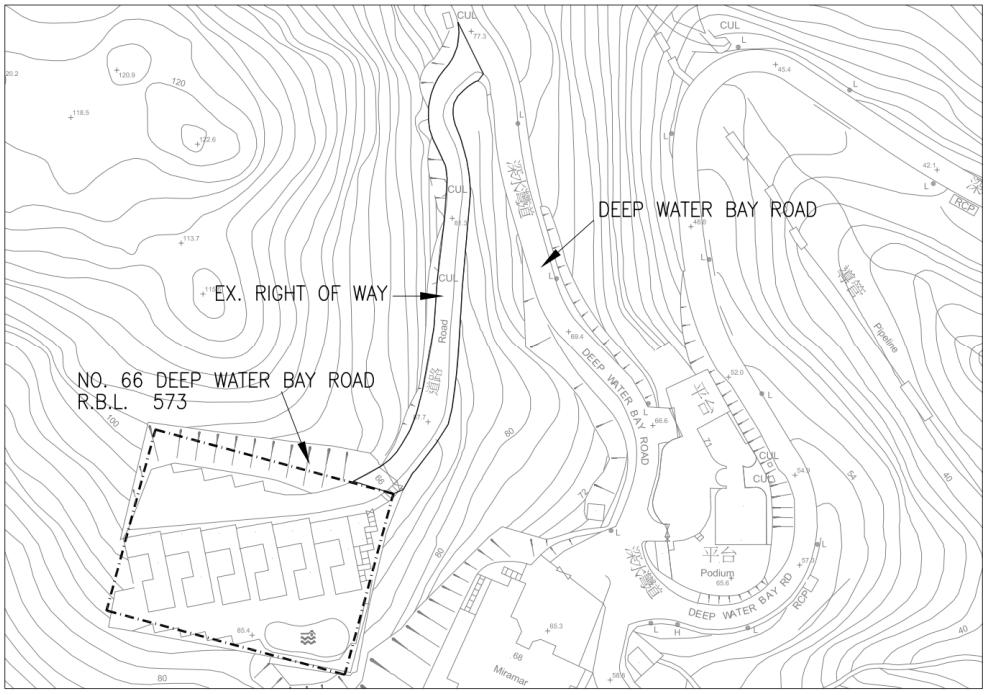


Fig. 1 – Site Location Plan

2) Objective

2.1 This assessment is to evaluate the potential impact on the existing sewerage facility that may arise from the proposed re-development, and investigate the adequacy of the capacity of the existing sewer connecting the site.

3) Methodology

3.1 The sewage flow generated from the proposed development was estimated in accordance with the Environmental Protection Department's Report No. EPD/TP 1/05 – "Guideline for Estimating Sewage Flows for Sewage Infrastructure Planning" (GESF).

3) Methodology (Cont'd)

3.2 Sewage flows generated from the proposed development was assessed to identify any sewers with inadequate capacity. The parameter and design assumption used in the assessment would be presented in the corresponding section.

3.3 The flow capacity of the sewage pipe would be assessed by Colebrook-White Equation and Ks of 3mm was adopted.

4) Existing Sewerage system

4.1 There are 6 nos. of 4-storey detached single family houses, 1 watchman quarter and 1 swimming pool in the existing development.

4.2 The subject site was provided with permanent sewerage facilities to government sewer. According to drainage record plan from Building Department **(Appendix II – BD's Drainage Record Plan)** and the site survey result, there was an existing 150mm diameter underground sewage pipe and manholes running from the No. 66 Deep Water Bay Road (ie. The Site) to the Government sewer connection point FTH7000464 and FMH 7017092 along with the access road to the site (ie. Right of Way) **(Appendix III – DSD's Record Plan)**. That existing DN150 sewer was serving No. 66 Deep Water Road exclusively.

4.3 The permanent sewerage facilities on the access road to government sewer was built in year 1998 under A&A works (BD's ref. no. 4/3018/87).

5) Sewerage Impact Assessment

5.1 Flow Discharge in Ex. Dia.150 Sewer from the Site along Access Road

According to the GBP Record Plan **(Appendix IV – GBP Record Plan)**, accommodations and estimated occupancy in each house was summarized below:

Floor	Accommodation	Estimated Occupancy (persons)
Level 3	Bedroom (Left)	2
	Bedroom (Right)	2
Level 2	Master Bedroom	2
Level 1	Servant	2
	Total of Each House:	8
	Total of 6 Houses:	8 x 6 = 48

Occupancy of Watctman Quarter 1

Total Population of the Development 49 person

The design parameters for the Sewage Flow

Usage	Unit	Flow Parameter (m^3/ day)
Residential (R3)	Person	0.37

Peaking factor to be applied in the pipe capacity assessment would be 8 (for population 1,000 – 5,000) with inclusion of stormwater allowance.

The average flow calculation for the residential:

Total Population = 49 person

Average Flow: $= \frac{49 \times 0.37 \times 1000}{24 \times 3600}$

= 0.210 L/s

5) Sewerage Impact Assessment (Cont'd)

5.1 Flow Discharge in Ex. Dia.150 Sewer from the Site along Access Road (Cont'd)

The average flow calculation for the Pool Filtration System backwash:

Pool Area	=	106.72 m^2
Pool Water Depth	=	1.75 m (average)
Pool Capacity	=	186.76 m^3
Turn-over Rate	=	6 hours
Flowrate	=	8.65 L/s

According to Section 5.1, CoP of The Management and Treatment of Swimming Pool Water (August 2019) - Pool Water Treatment Advisory Group (PWTAG), flow velocity of filter medium shall be at 10-25 m/h.

Selection of Sand Filter:

Required Filter Area	=	8.65 x 1000 / (25 / 3600)
	=	1.2456 m^2
No. of Sand Filter	=	2 no.
Req. Area of each Filter	=	0.6228 m^2
Diameter of each Filter	=	900 mm
Area of each Filter	=	$(0.9/2)^2$ x 3.14
	=	0.6359 m^2 (> 0.6228m^2 , OK)

Calculation of Backwash:

Assumed the backwash operation of each Sand Filter to be carried out sequentially.

According to Section 5.4 of the CoP, backwash velocity on filter medium shall be 30m/h.

Backwash Flowrate	=	(0.6359 x 30 / 3600) x 1000
	=	5.30 L/s

Total Flow from the Existing Development:

	Average Flow (L/s)	Peaking Factor	Peak Flowrate (L/s)
Residential	0.21	8*	1.68
Pool System Backwash			5.30
		Total:	6.98

** For population < 1,000 persons, including stormwater allowance*

5) Sewerage Impact Assessment (Cont'd)

5.2 Future Flow Discharge in Ex. Dia.150 Sewer for the Proposed Re-development

According to the proposed Re-development Plan **(Appendix V – Proposed Re-development Plan)**, accommodations and estimated occupancy in the houses was summarized below:

Floor	Accommodation	Estimated Occupancy (persons)
House 1		
2/F	Master Bedroom	2
1/F	Bedroom 1	2
	Bedroom 2	2
	Staff/ Back of House	8
House 2		
1/F	Master Bedroom	2
Common Area		
G/F	Caretake Quarter	2
	Total of 6 Houses:	18

Total Population of the Re-Development **18 person**

The average flow calculation for the residential (Re-development):

Total Population = 18 person

Average Flow: $= \frac{18 \times 0.37 \times 1000}{24 \times 3600}$

= 0.077 L/s

The average flow calculation for the Pool Filtration System backwash:

Pool Area = 88.8 m^2

Pool Water Depth = 1.5 m (average)

Pool Capacity = 133.2 m^3

Turn-over Rate = 6 hours

Flowrate = 6.17 L/s

5) Sewerage Impact Assessment (Cont'd)

5.2 Future Flow Discharge in Ex. Dia.150 Sewer for the Proposed Re-development (Cont'd)

According to Section 5.1, CoP of The Management and Treatment of Swimming Pool Water (August 2019) - Pool Water Treatment Advisory Group (PWTAG), flow velocity of filter medium shall be at 10-25 m/h.

Selection of Sand Filter:

Required Filter Area = 6.17 x 1000 / (25 / 3600)
= 0.8885 m^2

No. of Sand Filter = 2 no.

Req. Area of each Filter = 0.4442 m^2

Diameter of each Filter = 900 mm

rea of each Filter = $(0.9/2)^2$ x 3.14
= 0.6359 m^2 (> 0.4442 m^2 , OK)

Calculation of Backwash:

Assumed the backwash operation of each Sand Filter to be carried out sequentially.

According to Section 5.4 of the CoP, backwash velocity on filter medium shall be 30m/h.

Backwash Flowrate = (0.6359 x 30 / 3600) x 1000
= 5.30 L/s

Total Flow from the Proposed Re-Development:

	Average Flow (L/s)	Peaking Factor	Peak Flowrate (L/s)
Residential	0.077	8*	0.616
Pool System Backwash			5.30
		Total:	5.916

** For population < 1,000 persons, including stormwater allowance*

5) Sewerage Impact Assessment (Cont'd)

5.3 Comparison of Sewerage Discharge Flowrate

The sewerage discharge flowrate from the site before and after the re-development are summarized below:

	Existing	Proposed Re-development
Residential	1.68 L/s	0.616 L/s
Pool System Backwash	5.30 L/s	5.30 L/s
Total	6.98 L/s	5.916 L/s
% difference	-	- 15.2 %

Although the development scale of the proposed re-development is similar the existing, the population will be substantially reduced because only two buildings are to be developed. The size of the swimming pool will also be reduced by 8.3%.

Based on the estimation, the overall sewerage discharge from the site after the proposed re-development will be reduced by 15.2%. The existing sewerage facilities will not be adversely affected.

6) Hydraulic Calculation for the Existing Dia. 150mm Sewer

Assessment of the discharge capacity of the existing dia.150mm sewer along the access road against the Existing Condition and Future Condition after Re-development was attached in **Appendix VI.**

The hydraulic calculation suggested that the existing dia. 150mm Sewer has sufficient capacity to handle the sewerage discharge from the site before and after the re-development.

7) Conclusion

7.1 The proposed re-development will have reduced population and the size of swimming pool. The overall sewerage discharge from the site after the re-development will be reduced by 15.2%.

7.2 The existing permanent sewerage facilities, comprising dia.150mm underground vitrified clay pipe and manholes, to the government sewer at Deep Water Bay Road has sufficient handling capacity for the sewerage discharge from the site before and after the re-development.

7.3 Based on the above, it was concluded that the proposed re-development will have no adverse effect to the sewerage facility at the vicinity.

End of Report

Appendix I - Site Location Plan

DEEP WATER BAY ROAD

EX. RIGHT OF WAY

NO. 66 DEEP WATER BAY ROAD
R.B.L. 573

SITE LOCATION PLAN
SCALE 1:500@A3

Appendix II - BD's Drainage Record Plan

EX. GOV. MANHOLE
FMH7017092

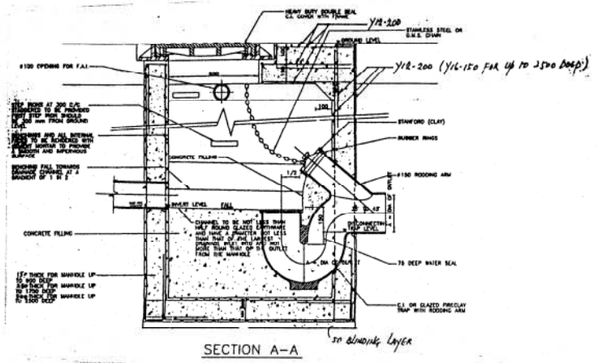
EX. GOV.
CONNECTION POINT
FTH7000464

ACCESS ROAD
(RIGHT OF WAT)

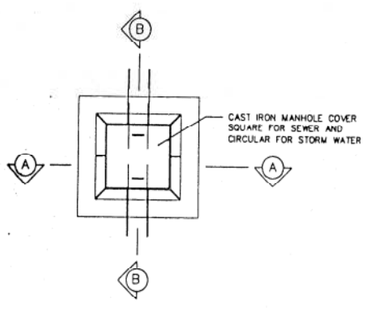
LOT BOUNDARY
66 Deep Water Bay Road)

EX. SEWERAGE
FACILITIES
(DIA. 150 V.C. PIPE)

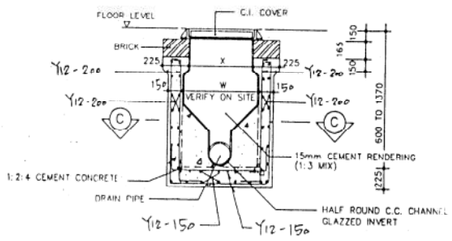
SCALE = 1:200



SECTION A–A



PLAN



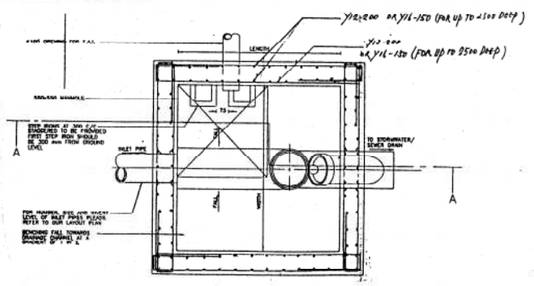
SECTION A–A

LEGEND :

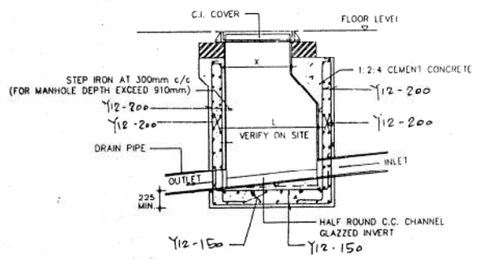
- SUBMERSIBLE PUMP
- GATG VALVE
- CHECK VALVE
- D.I. — DUCTILE IRON PIPE AND FITTING TO BS4772 CLASS K9 COLD BITUMEN COATED EXTERNALLY AND INTERNALLY TO BS 3416 TYPE (LB) WITH TYTON OR FLANGE JOINT.
- V.P. — VENT PIPE - GALVANISED PIPE AND FITTING TO BS1387, CLASS B
- VITRIFIED CLAY PIPE TO GOVERNMENT STANDARD (UNDERGROUND PIPE BEYOND LAST MANHOLE)
- ASMH □ PROPOSED ADDITIONAL SOIL & WASTE MANHOLE

NOTE :

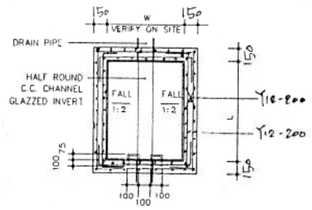
1. CLEANING EYES SHALL BE PROVIDED TO ALL JUNCTIONS & BENDS OF PIPES EXCEPT VENT PIPE
2. CONCRETE TO BE GRADE 25/20 MIX. EXCEPT OTHERWISE STATED.
3. MINIMUM COVER TO ALL STEEL : a) WALL = 60 (CONTACT WITH EARTH)
   = 40 (EXPOSED TO WEATHERING)
   b) TOP SLAB = 40
   c) BASE SLAB = 60
4. LAP LENGTH OF STEEL - TENSION LAP SHALL BE 46 D (D- DIAMETER OF BAR)
5. CHARACTERISTIC STRENGTH OF MATERIALS (STEEL COMPLYING TO CS2:1995)
   a) MILD STEEL REINFORCEMENT (NOTATION - R) – 250 mPa
   b) HIGH YIELD STEEL REINFORCEMENT (NOTATION - Y) – DIA. 6mm ~ 16mm – 460 mPa



TERMINAL MANHOLE PLAN
(PIPE SIZE UP TO 300mm)



SECTION B–B
STANDARD MANHOLE



SECTIONAL PLAN C–C

(DEPTH UP TO 1370mm)

STANDARD MANHOLE

NOTE : X=475mm FOR DEPTH OF MANHOLE UNDER 900mm (SEWER AND STORM WATER)
X=525mm FOR DEPTH OF MANHOLE 900mm OR OVER 900 (SEWER ONLY)
X=575mm FOR DEPTH OF MANHOLE 900mm OR OVER 900 (STROM WATER ONLY)
L=1500mm & W=1350mm FOR NOS. OF DRAIN PIPE RUN TO M.H. IS > 3
L=1050mm & W=800mm FOR NOS. OF DRAIN PIPE RUN TO M.H. IS < 3

B D D REF NO. 4/3018/87

SUBMISSION	DATE
1	29-4-97
2	4-9-97
3	27-3-98

Plan Approved
CHEUNG Kwok-man
Chief Building Surveyor
for BUILDING AUTHORITY
23 APR 1998

L. Y. WONG · ARCHITECT
M. ARCH RIBA HKIA AP RAIA

REV.	DATE	DESCRIPTION
B	20/3/98	AMENDED FOR SITE CONSTRAINTS
A	2/9/97	REVISED AS PER BD'S COMMENT DATED 22/8/97

REVISION

ALL MEASUREMENT MUST BE CHECKED AT THE SITE DO NOT SCALE DRAWINGS FIGURED DIMENSIONS TO BE OBSERVED READ THIS DRAWING IN CONNECTION WITH GENERAL ARCHITECTURAL PLANS AND OTHER RELATED DOCUMENTS -- THE ARCHITECT TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCY FOUND THEREIN. ALL COPY RIGHT TO BE RESERVED BY THE ARCHITECT

ARCHITECT
L Y WONG ASSOCIATES LTD
ARCHITECTS INTERIOR DESIGNERS
PROJECT MANAGEMANT CONSULTANTS
ROOM 1722, 17/F., LEIGHTON CENTRE,
77 LEIGHTON ROAD, CAUSEWAY BAY, H.K.
Tel: 2890 1505 Fax: 2577 5942

E & M CONSULTANT
滙智機電工程師
TALENT MECHANICAL & ELECTRICAL ENGINEERS
UNIT 1901-2, 19/F, EASTERN COMMERCIAL CENTRE,
393 - 407 HENNESSY ROAD, WANCHAI, HONG KONG.
Tel: 2838 9133 Fax: (852) 2836 0750

PROJECT

PROPOSED ALTERATION WORKS ON SOIL & WASTE DRAINAGE FOR RESIDENTIAL HOUSES AT 66 DEEP WATER BAY ROAD R.B.L. 573

TITLE

S & W LAYOUT FOR ACCESS ROAD AND MANHOLE DETAILS

SCALE	NIL	JOB NO.	9605
DATE	APRIL,1997	DRAWING NO.	REV.
DESIGNED BY	K.C.HO	DR-02	B
CHECKED BY	K.D.CHU		

Appendix III – DSD's Record Plan

DATE: 12/2/2025

PART OF DRAINAGE RECORD PLAN (1-SW-250-3)

SCALE 1:500

Drainage Services Department
Hong Kong & Islands

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FOR INFORMATION ONLY

EX. GOVERNMENT MANHOLE
FMH-7017092

Access Road

Road

道路

Pipeline

導管

深水灣道

深水灣道66號

66 Deep Water Bay Road

DEEP WATER BAY ROAD

N

837000E

837100E

837125E

812100

812000

Appendix IV – BD's GBP Record Plan

BUILDINGS & LANDS DEPARTMENT

B.D.D. (B/S) 2/3018/8

F.S.D. REF. NO.

NOTES

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WATCHMAN QUARTER ROOF PLAN

LEVEL 87.000 FLOOR PLAN

HOUSES LAYOUT PLAN

UNDER DECK SEWAGE TREATMENT PLANT / CENTRAL A/C PLANT ROOM LAYOUT PLAN

AMENDMENT

G. DELETE ENTRACE GATE, CHANGE PLANTER PATTERN. 30 APRIL 1990
REVISED R.C. WATER TANK FOR WATCHMAN QUARTER
F 30 DEC. '89
E 14 JUNE 89
D. 15. APRIL 89.

B. HUNG & ASSOCIATES
ARCHITECTS ENGINEERS
建洪基相師城
RM. 203 LUCKY BUILDING
39-41 WELLINGTON STREET HONGKONG
PHONE 5-265027
FACSIMILE 5-8450161

17 MAY 1990

Approved
D.M. CONNELL
PRO BUILDING AUTHORITY
15 JUN 1990

BENJAMIN T. HUNG
B. ARCH. (NSW) A.R.A.I.A. A.R.I.B.A.

PROJECT
HOUSES AT RBL NO. 573 DEEP WATER BAY ROAD HONG KONG.

DWG. TITLE
HOUSES LAYOUT PLAN

JOB NO. 131
DATE 10_3_89
SCALE 1:100
DRAWN YKC
DWG. NO. 1 G

BUILDINGS & LANDS DEPARTMENT
B.C.D.(B) 2/3018/87
B.S.D. REF. NO.

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PART PLAN FOR BLOCK 'A', 'B' AND 'C' ONLY

PART PLAN FOR BLOCK 'A', 'B' AND 'C' ONLY

SECTION G_G
PLAN REF. DWG. NO. 1

DETAIL B 1:20

SECTION H_H

DETAIL A 1:20

ELEVATION OF WATCHMAN QUARTER

SECTION D_D

SECTION E_E

SWIMMING POOL FLOOR PLAN
FINISH LEVEL
STRUC. LEVEL

CAR PARK FLOOR PLAN

LEVEL 1 FLOOR PLAN

LEVEL 2 FLOOR PLAN

LEVEL 3 FLOOR PLAN AND LOW LEVEL FLAT ROOF

UPPER ROOF PLAN

AMENDMENT

1. REVISED PLANTER AT OPEN COURT & SHOWER TRAY AT M.B.R. 30 APR'91 (30)
REVISED FAMILY RM. & M.B.M., B.M. FOR
H. 30 DEC. 89 BLOCK A, B & C.
G 10. OCT 89.
F. 24. AUG. 89

B. HUNG & ASSOCIATES
ARCHITECTS
ENGINEERS
建洪
基恒
師城
RM. 203 LUCKY BUILDING
39-41 WELLINGTON STREET HONGKONG
PHONE 5-269027
FACSIMILE 5-8450161

17 MAY 1990

BENJAMIN T. HUNG
B ARCH (NSW) A.R.A.I.A. A.R.I.B.A.

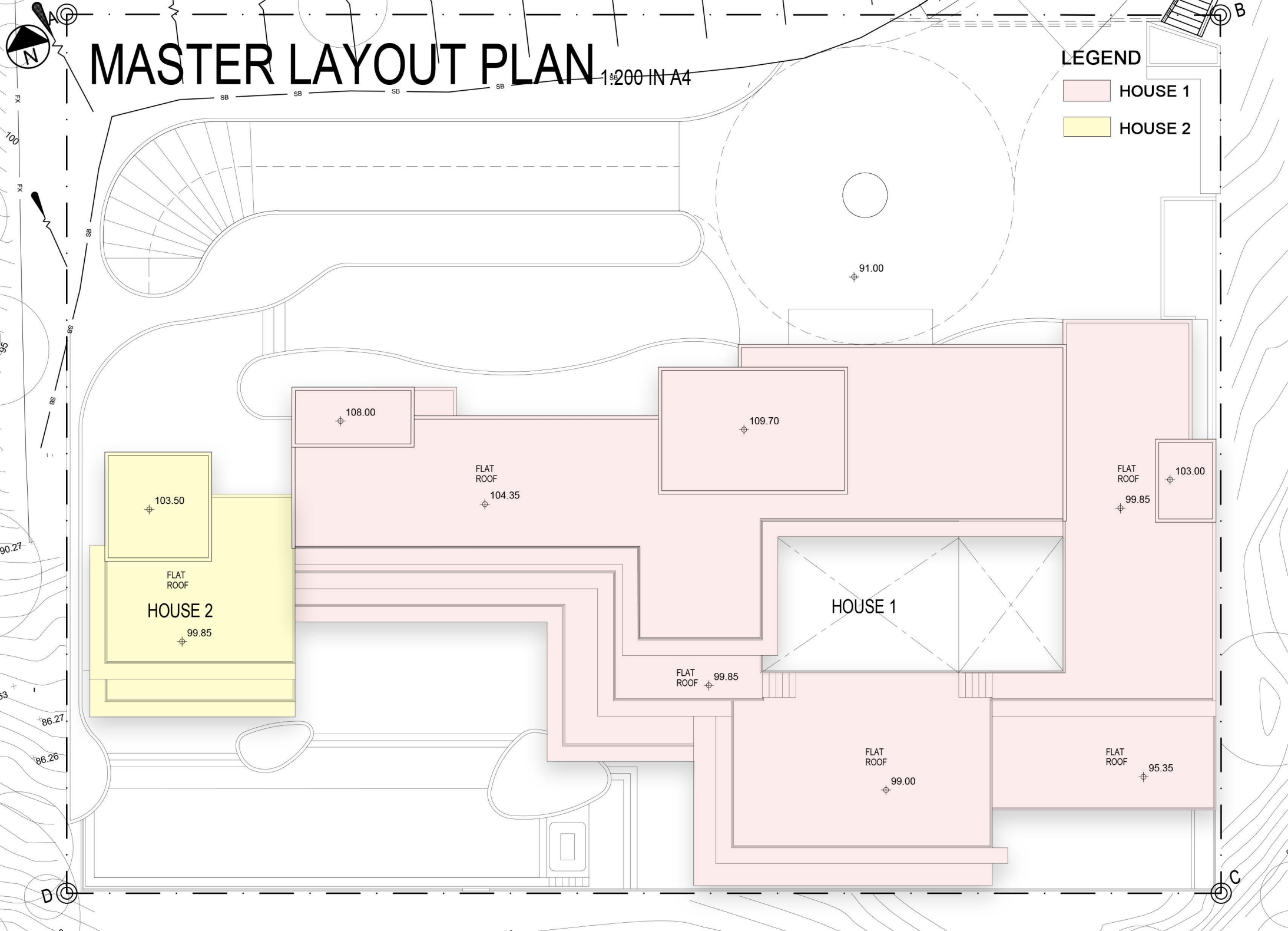
PROJECT
HOUSES AT RBL NO. 573
DEEP WATER BAY RD.
HONG KONG

DWG. TITLE
PLANS (TYPICAL BUILDING)

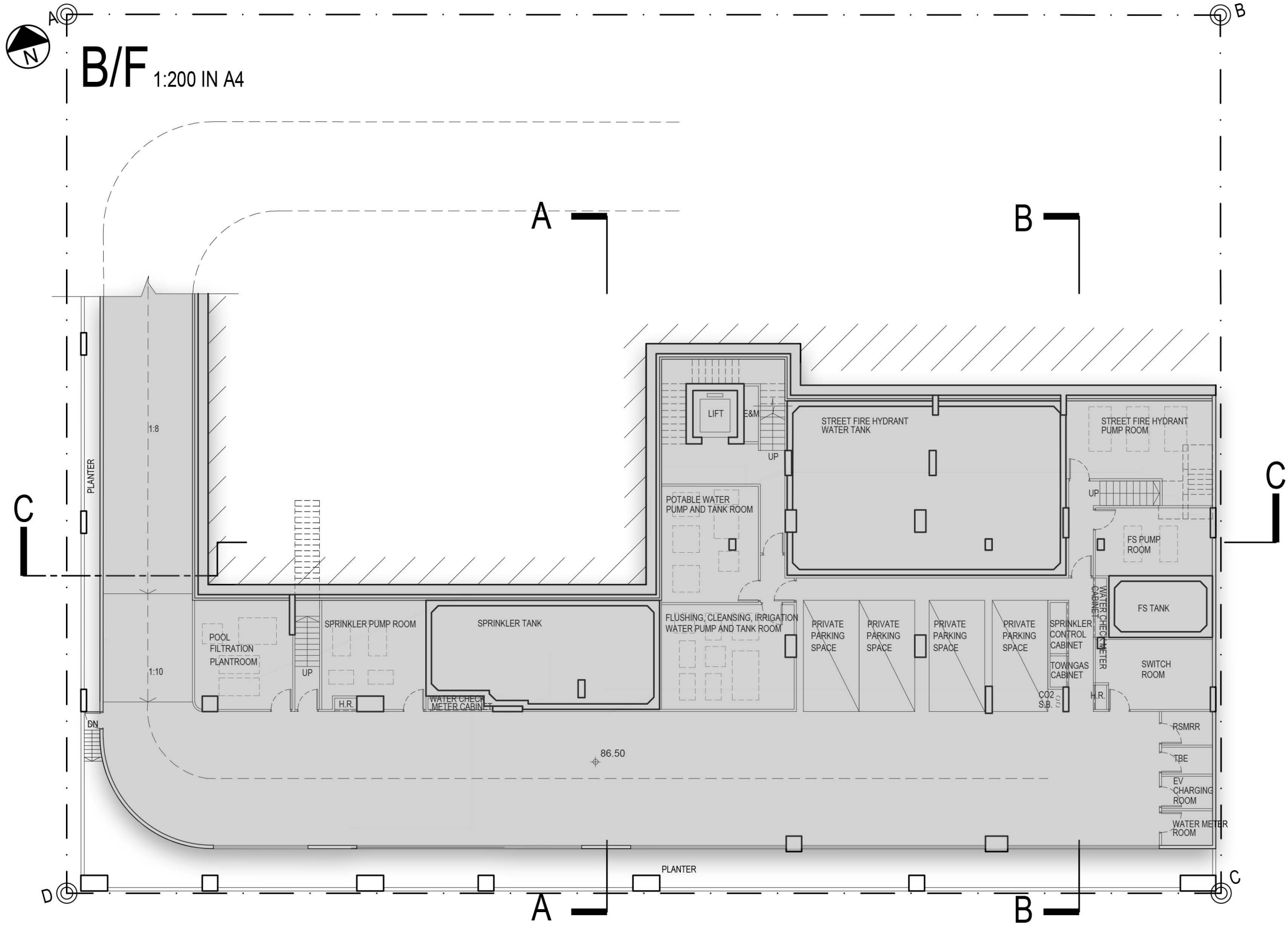
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DATE 12.9.87	
SCALE 1:100	
DRAWN YKC	

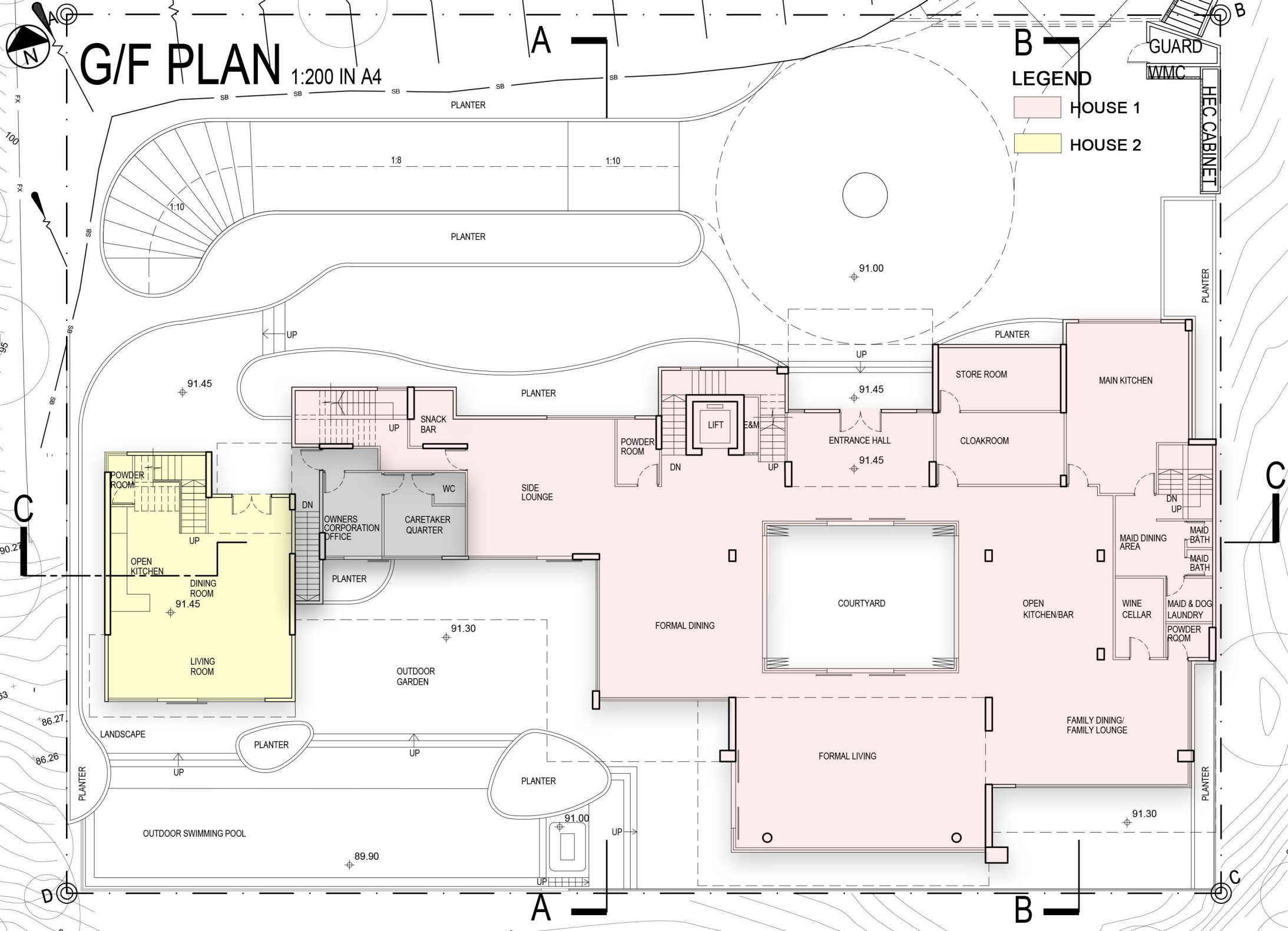
Appendix V – Proposed Re-development Plan

MASTER LAYOUT PLAN 1:200 IN A4



B/F 1:200 IN A4


A
B
C
D
N
LIFT
E&M
UP
STREET FIRE HYDRANT WATER TANK
STREET FIRE HYDRANT PUMP ROOM
POTABLE WATER PUMP AND TANK ROOM
FS PUMP ROOM
FS TANK
WATER CHECK METER CABINET
SWITCH ROOM
1:8
PLANTER
POOL FILTRATION PLANTROOM
1:10
SPRINKLER PUMP ROOM
SPRINKLER TANK
H.R.
WATER CHECK METER CABINET
FLUSHING, CLEANSING, IRRIGATION WATER PUMP AND TANK ROOM
PRIVATE PARKING SPACE
PRIVATE PARKING SPACE
PRIVATE PARKING SPACE
PRIVATE PARKING SPACE
SPRINKLER CONTROL CABINET
TOWNGAS CABINET
CO2 S.B.
H.R.
DN
86.50
RSMRR
TBE
EV CHARGING ROOM
WATER METER ROOM
PLANTER


G/F PLAN 1:200 IN A4
LEGEND
HOUSE 1
HOUSE 2
GUARD
WMC
HEC CABINET
PLANTER
1:8
1:10
1:10
91.00
91.45
91.45
91.45
91.30
91.30
91.00
89.90
86.27
86.26
SNACK BAR
LIFT
E&M
POWDER ROOM
ENTRANCE HALL
CLOAKROOM
STORE ROOM
MAIN KITCHEN
SIDE LOUNGE
POWDER ROOM
WC
OWNERS CORPORATION OFFICE
CARETAKER QUARTER
OPEN KITCHEN
DINING ROOM
LIVING ROOM
COURTYARD
FORMAL DINING
OPEN KITCHEN/BAR
MAID DINING AREA
MAID BATH
MAID BATH
WINE CELLAR
MAID & DOG LAUNDRY
POWDER ROOM
FAMILY DINING/ FAMILY LOUNGE
FORMAL LIVING
OUTDOOR GARDEN
LANDSCAPE
OUTDOOR SWIMMING POOL
UP
DN
SB
FX
A
B
C
D

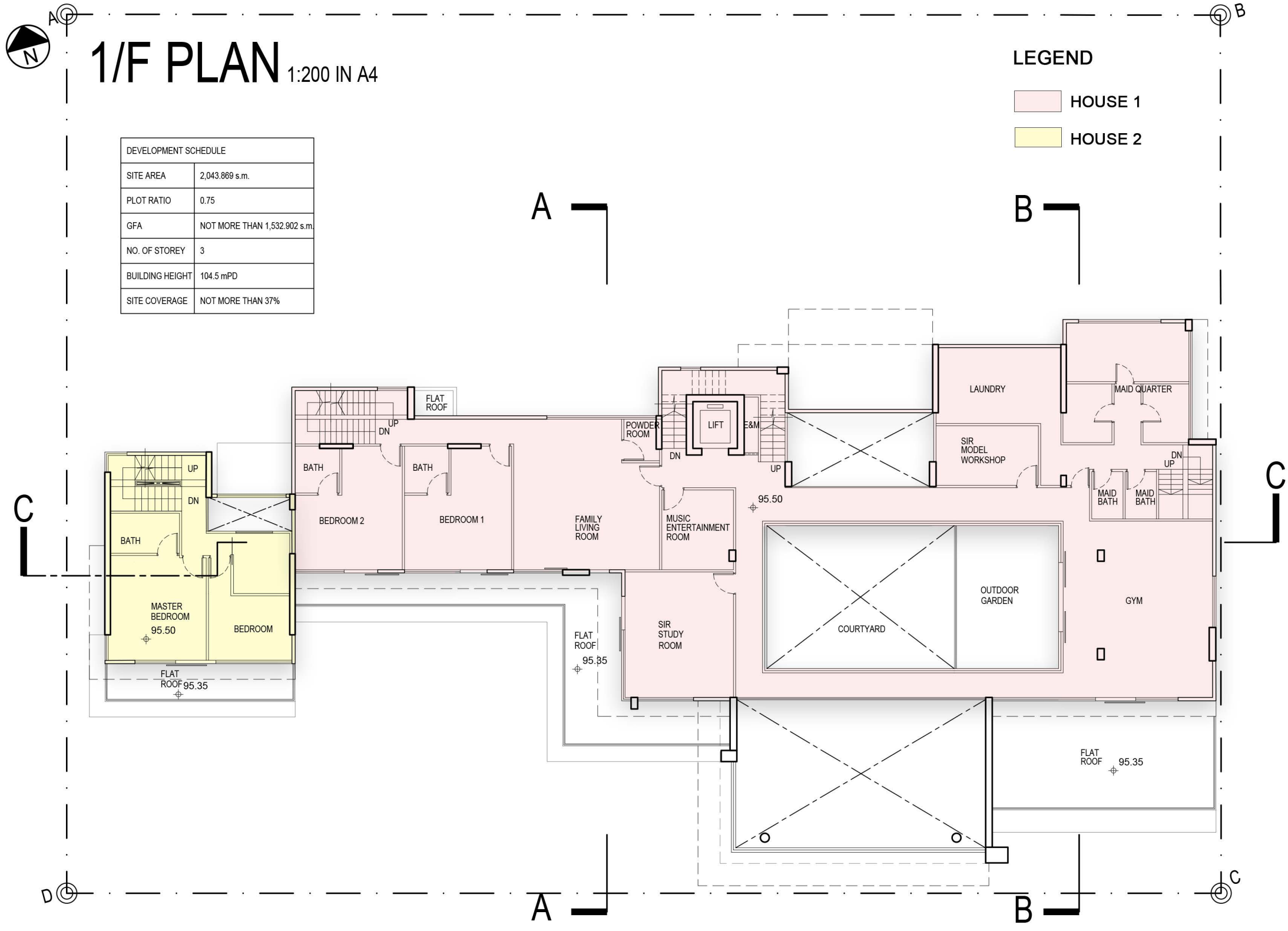
1/F PLAN 1:200 IN A4

DEVELOPMENT SCHEDULE	
SITE AREA	2,043.869 s.m.
PLOT RATIO	0.75
GFA	NOT MORE THAN 1,532.902 s.m.
NO. OF STOREY	3
BUILDING HEIGHT	104.5 mPD
SITE COVERAGE	NOT MORE THAN 37%

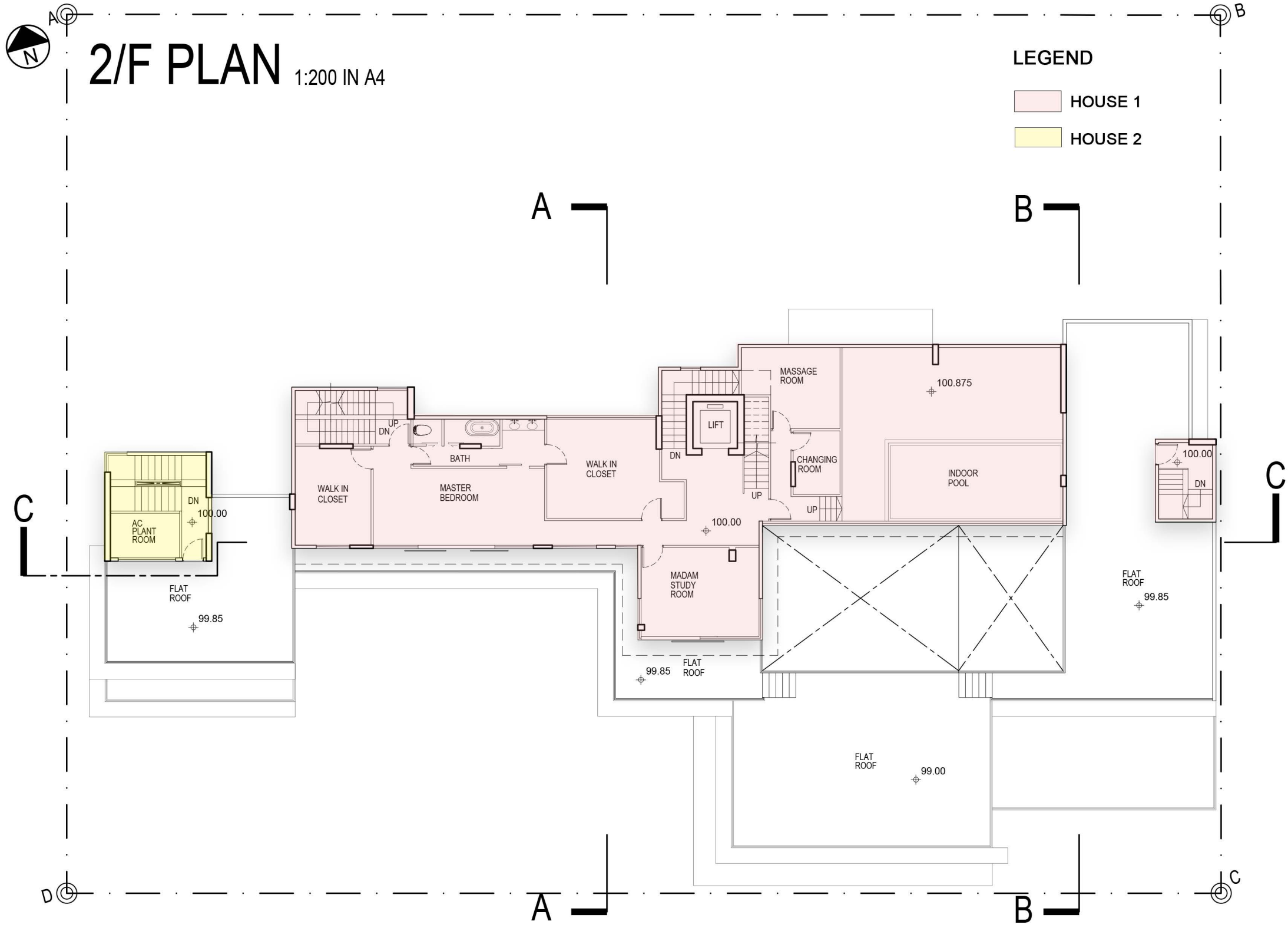
LEGEND

HOUSE 1

HOUSE 2



2/F PLAN 1:200 IN A4

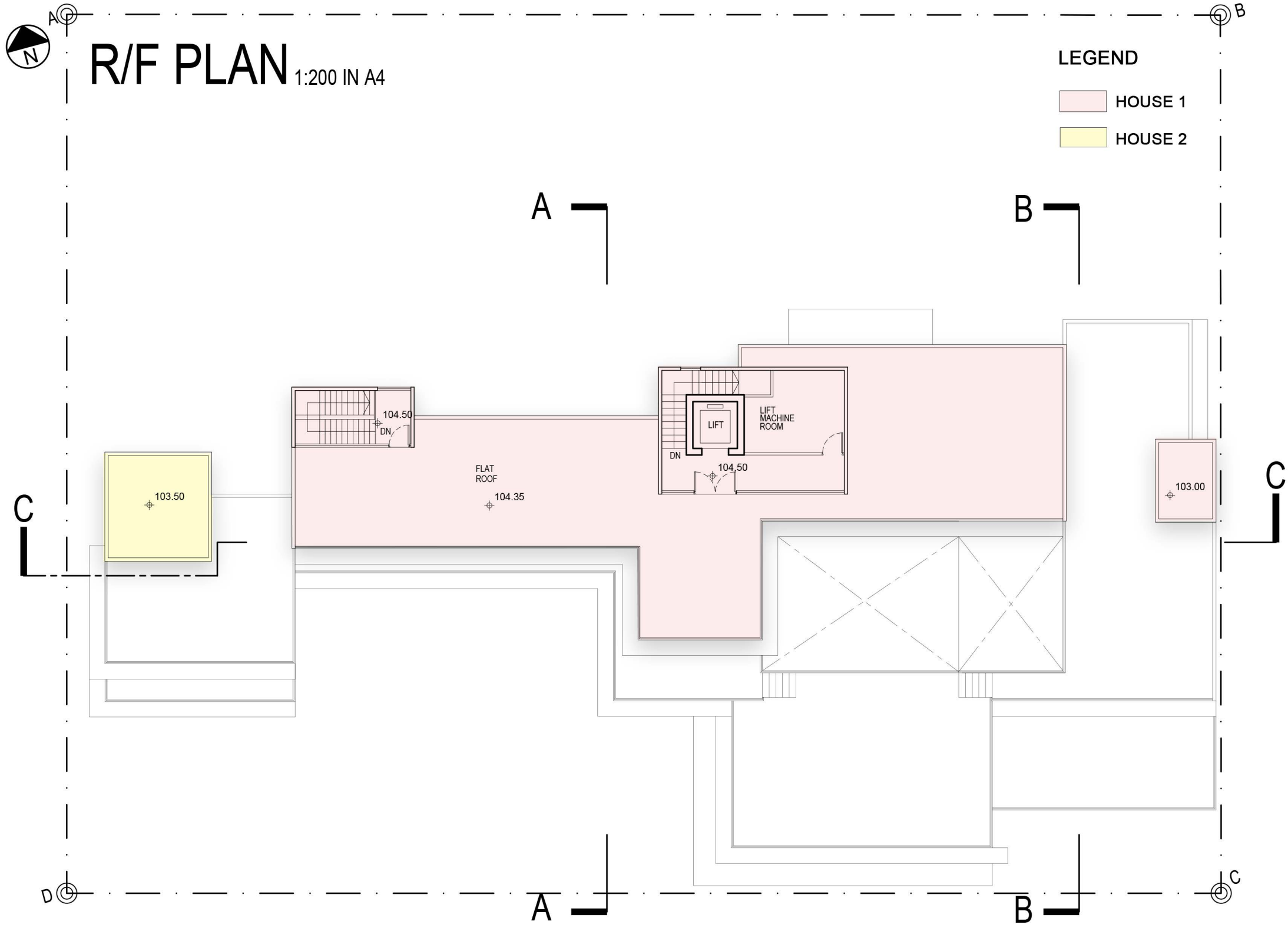


R/F PLAN 1:200 IN A4

LEGEND

HOUSE 1

HOUSE 2



Appendix VI – Assessment of Existing Sewer Capacity (Hydraulic Calculation)

Proposed Residential Re Development at 66 Deep Water Bay Road, R.B.L. 573

Assessment of Sewer Capacity against Existing Condition

CW Equation Parameters:

k	=	3	mm
g	=	9.81	m/s^2
v	=	1.00E-06	m^2/s
		0.014	

Sewer		Trunk/ Branch	Dia. of Pipe (mm)	Pipe Length (m)	US GL (mpD)	DS GL (mpD)	US IL (mpD)	DS IL (mpD)	US Cover Depth (mpD)	DS Cover Depth (mpD)	Gradient	Full bore Velocity (m/s)	Full bore Capacity (m^3/s)	Base Flow* (m^3/s)	Total Design Flow (m^3/s)	Full-bore Capacity > Estimated Comulative Flow	% of Full-bore Capacity	Remarks
From	To																	
ASMH-1	ASMH-2	Trunk	150	19.1	90.8	87.3	89.75	86.5	0.9	0.65	0.1702	3.21	0.057		0.006980	Yes	12.3%	Existing V.C. Pipe
ASMH-2	ASMH-3	Trunk	150	26.2	87.3	83.15	86.5	82.35	0.65	0.65	0.1584	3.09	0.055		0.006980	Yes	12.8%	Existing V.C. Pipe
ASHM-3	ASMH-4	Trunk	150	26.1	83.15	79.65	82.35	78.85	0.65	0.65	0.1341	2.85	0.050		0.006980	Yes	13.9%	Existing V.C. Pipe
ASHM-4	ASMH-5	Trunk	150	11.5	79.65	78.82	78.85	78.020	0.65	0.65	0.0722	2.09	0.037		0.006980	Yes	18.9%	Existing V.C. Pipe
ASHM-5	ASMH-6	Trunk	150	8.3	78.82	77.94	78.02	77.14	0.65	0.65	0.1060	2.53	0.045		0.006980	Yes	15.6%	Existing V.C. Pipe
ASHM-6	FTH7000464	Trunk	150	9.1	77.94	77.11	77.14	75.38	0.65	1.58	0.1934	3.42	0.060		0.006980	Yes	11.6%	Existing V.C. Pipe
FTH7000464	FMH7017092	Trunk	200	5.142	77.11	76.93	75.38	73.74	1.53	2.99	0.3189	5.35	0.168		0.006980	Yes	4.2%	Existing V.C. Pipe

Note: *Total Flow for ASMH-1 refers to the Calculation of Peak Flow from the Site (6.98 L/s)

$$V = -2\sqrt{2g \cdot D \cdot S_f} \cdot log\left(\frac{k_s}{3{,}70 \cdot D} + \frac{2{,}51 \cdot \upsilon}{D\sqrt{2g \cdot D \cdot S_f}}\right)$$

with $S_f = \frac{h_f}{L}$

V =	mean velocity	[m/s]
D =	Hydraulic Diameter	[m]
k_s =	surface roughness	[m]
υ =	Kinematic viscosity water, 20°C= $1{,}00 \cdot 10^{-6}$	[kg/ms]
S_f =	slope of hydraulic gradient	[-]
h_f =	frictional head loss	[m]
L =	Length between the Head Loss	[m]
g =	earths gravity	[m/s^2]

Proposed Residential Re Development at 66 Deep Water Bay Road, R.B.L. 573
Assessment of Sewer Capacity against Future Condition after Re-development

CW Equation Parameters:	k	=	3	mm
	g	=	9.81	m/s^2
	v	=	1.00E-06	m^2/s
			0.014	

Sewer		Trunk/ Branch	Dia. of Pipe (mm)	Pipe Length (m)	US GL (mpD)	DS GL (mpD)	US IL (mpD)	DS IL (mpD)	US Cover Depth (mpD)	DS Cover Depth (mpD)	Gradient	Full bore Velocity (m/s)	Full bore Capacity (m^3/s)	Base Flow* (m^3/s)	Total Design Flow (m^3/s)	Full-bore Capacity > Estimated Comulative Flow	% of Full-bore Capacity	Remarks
From	To																	
ASMH-1	ASMH-2	Trunk	150	19.1	90.8	87.3	89.75	86.5	0.9	0.65	0.1702	3.21	0.057		0.005916	Yes	10.4%	Existing V.C. Pipe
ASMH-2	ASMH-3	Trunk	150	26.2	87.3	83.15	86.5	82.35	0.65	0.65	0.1584	3.09	0.055		0.005916	Yes	10.8%	Existing V.C. Pipe
ASHM-3	ASMH-4	Trunk	150	26.1	83.15	79.65	82.35	78.85	0.65	0.65	0.1341	2.85	0.050		0.005916	Yes	11.8%	Existing V.C. Pipe
ASHM-4	ASMH-5	Trunk	150	11.5	79.65	78.82	78.85	78.020	0.65	0.65	0.0722	2.09	0.037		0.005916	Yes	16.0%	Existing V.C. Pipe
ASHM-5	ASMH-6	Trunk	150	8.3	78.82	77.94	78.02	77.14	0.65	0.65	0.1060	2.53	0.045		0.005916	Yes	13.2%	Existing V.C. Pipe
ASHM-6	FTH7000464	Trunk	150	9.1	77.94	77.11	77.14	75.38	0.65	1.58	0.1934	3.42	0.060		0.005916	Yes	9.8%	Existing V.C. Pipe
FTH7000464	FMH7017092	Trunk	200	5.142	77.11	76.93	75.38	73.74	1.53	2.99	0.3189	5.35	0.168		0.005916	Yes	3.5%	Existing V.C. Pipe

Note: *Total Flow for ASMH-1 refers to the Calculation of Peak Flow from the Site (5.916 L/s)

$$V = -2\sqrt{2g \cdot D \cdot S_f} \cdot log\left(\frac{k_s}{3{,}70 \cdot D} + \frac{2{,}51 \cdot \upsilon}{D\sqrt{2g \cdot D \cdot S_f}}\right)$$

with $S_f = \frac{h_f}{L}$

V =	mean velocity	[m/s]
D =	Hydraulic Diameter	[m]
k_S =	surface roughness	[m]
υ =	Kinematic viscosity water, 20°C= $1{,}00 \cdot 10^{-6}$	[kg/ms]
S_f =	slope of hydraulic gradient	[-]
h_f =	frictional head loss	[m]
L =	Length between the Head Loss	[m]
g =	earths gravity	[m/s^2]

Appendix 7

Drainage Impact Assessment

Proposed Residential Re-development

at

No. 66 Deep Water Bay Road

Hong Kong

R.B.L. 573

Drainage

Impact Assessment Report

Kwong Wah Consultants Ltd.

Issue & Revision Record Sheet

Client Name	:	BLUE WATER GROUP MANAGEMENT LIMITED
Project Title	:	Proposed Residential Re-development at No. 66 Deep Water Bay Road, R.B.L. 573
Report Title	:	Drainage Impact Assessment Report
Report Revision Number	:	Rev.0
Date	:	24 April 2025

Rev	Date	Originator	Checker	Approver	Description
0	24 April 25	N. Chow	W. Mak	W. Mak	1st Issue

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3. Methodology 4

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. Project Outline 5

6. Existing Watercourse and Drainage Route 5

7. Proposed Drainage System 8

8. Conclusion 11

Appendix

I. Site Location Plan

II. BD's Drainage Record Plan

III. DSD's Record Plan

IV. BD's GBP Record Plan

V. Proposed Re-development Plan

VI. Assessment of Existing Sewer Capacity (Hydraulic Calculation)

1) Introduction

1.1 The subject site at No. 66 Deep Water Bay Road is proposed for re-development into two (2) residential houses with a one-storey basement accommodating common plant rooms and car parking facilities. The total site area is 2,043.869 m² **(refer to Appendix I – Site Location Plan).**

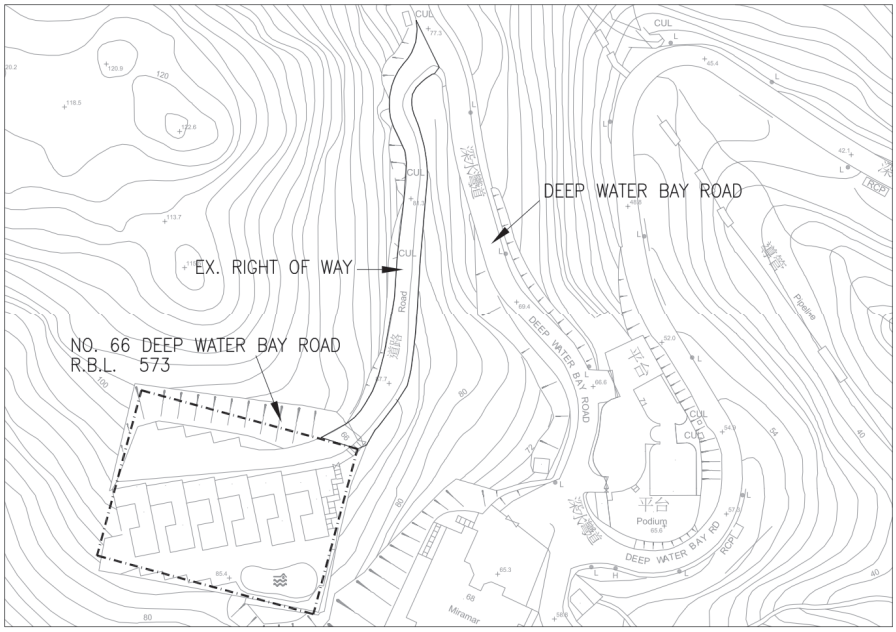


Fig. 1 – Site Location Plan

2) Objective

2.1 This report assesses the potential impact on existing drainage infrastructure and evaluates changes in stormwater runoff resulting from the proposed re-development.

3) Methodology

3.1 The assessment follows the DSD Stormwater Drainage Manual (DSD SDM).

3.2 Stormwater runoff calculations are based on the latest hydrological data from Corrigendum No. 1/2022.

3.3 Open channel flow rates are evaluated using Manning's Equation.

4) Information Available for Study

4.1 Drainage Record Plans from the Building Department

4.2 DSD's Drainage Record Plans

4.3 Topographical and Boundary Survey conducted by a licensed land surveyor

5) Project Outline

5.1 The redevelopment proposes two (2) low-rise single-family houses (maximum three storeys) on the existing site.

5.2 The site area remains unchanged at 2,043.869 m².

5.3 A new basement level will be constructed for car parking and E&M plant rooms.

5.4 The site slopes north to south, with an access road (Right of Way) on the eastern side connecting to Deep Water Bay Road. The surrounding area consists of natural terrain.

6) Existing Watercourses and Drainage Route

6.1 6.1 Public Drainage Infrastructure

6.1.1 No public drainage facilities are located within the immediate vicinity or downstream of the site.

6.2 Catchment & Flow Path Overview

6.2.1 Existing catchments and flow paths are illustrated in Appendix II.

6) Existing Watercourses and Drainage Route (Cont'd)

6.3 Drainage Flow Path for Northern Slope

6.3.1 Runoff from Catchment A is intercepted by an existing 500mm (W) U-channel outside the lot boundary. Stormwater is conveyed via a slope channel and surface channel to a sand trap near Deep Water Bay Road (~100m away). From there, it discharges into Government Manhole **SMH7089970**, connecting to cross-road drain **SGJ7049268**, and ultimately into a natural stream course.

6.3.2 Below the U-channel, runoff from **Catchment B** flows into the site.

6.4 Drainage Flow Path for the Site

6.4.1 Within the lot boundary, runoff from **Catchment B** merges with **Catchment C** and is intercepted by an existing 250mm (W) U-channel, discharging into **Building Drainage System 1**.

6.4.2 **Building Drainage System 1** consists of underground pipes and manholes along the driveway (**Catchment D**). After passing through Grease Trap 2 and a terminal manhole, drainage discharges into the access road's underground system, eventually reaching the sand trap at the road junction.

6.4.3 A small eastern portion (**Catchment E**) is a natural slope with no drainage infrastructure. Runoff flows directly onto government slope and adjacent private land (RBL667 & Ext., No. 68 Deep Water Bay Road).

6.4.4 The remaining site area (**Catchment F**) discharges via **Building Drainage System 2** into a **600mm (W) government U-channel** at the southwest corner. This U-channel extends approx. 7m before terminating at **Catchpit with trap "CP-01"**, which discharges into a natural stream course.

6) Existing Watercourses and Drainage Route (Cont'd)

6.5 Evaluation of Runoff Collection

6.5.1 Per DSD SDM Table 10, a 50-year return period and rainfall intensity of 218 mm/hr are adopted for design.

6.5.2 Runoff calculations are summarized below (see **Appendix III** for details).

Catchment Ref:	Location	Area (m2)	Surface Condition	Catchment Coefficient	Rainfall Intensity (mm/hr)	Rainfall Inc. Factor (End of 21 Cen)	Flowrate (L/s)	Discharge Point
A	Northern Slope	682.80	Steep Slope (Heavy Soil)	0.35	218	16.0%	16.8	Access Road (East)
B	Northern Slope	120.86	Steep Slope (Heavy Soil)	0.35			3.0	
C	Site (North Portion) Slope	176.77	Steep Slope (Heavy Soil)	0.35			4.3	
D	Site (North Portion) Driveway	524.28	Concrete	0.85			31.3	
E	Site (East Portion) Slope	36.44	Steep Slope (Heavy Soil)	0.35			0.9	Slope (East), and downstream RBL 667 & Ext.
F	Site (South Portion) Building	1287.85	Concrete	0.85			76.9	Ex. 600mm U-channel (Southwest)
		18.53	Steep Slope (Heavy Soil)	0.35			0.5	

6.6 Identified Drainage Issues

6.6.1 The existing drainage system presents the following concerns:

i. Discharge is dispersed across three routes (access road, government slope, and southwest U-channel), complicating maintenance.
ii. No drainage infrastructure for Catchment E, leading to uncontrolled runoff onto adjacent properties.

6.6 Problems of Existing Drainage Route

6.6.1 The following problems had been identified from the existing Drainage Route of the site:

i. Run-off from the site was discharged via 3 routes: Access Road (East), Government Slope (East) and Slope U-Channel (Southern West), which was not favorable for management and maintenance.

ii. No drainage facility was provided for Catchment E. Run-off was discharged directly to government slope and affecting RBL 667 & Ext.

7) Proposed Drainage System

7.1 General Retention of Northern Slope

7.1.1 The northern slope will remain largely unchanged.

7.2 Unified Discharge Point

7.2.1 A reconstructed internal drainage system will consolidate all site runoff into a single discharge point at the southwest corner (600mm U-channel).

7.2.2 Catchment B (northern slope) and Catchment G (site runoff) will be diverted to this outlet.

7.3 Disconnection from Access Road Drainage

7.3.1 The existing underground pipe connection to the access road will be removed, eliminating off-site discharge to the east.

7.4 Podium Development for Catchment E

7.4.1 The natural slope in Catchment E will be replaced with a podium structure incorporating proper drainage, preventing runoff onto government and private land.

7) Proposed Drainage System (Cont'd)

7.5 Post-Redevelopment Runoff Assessment

7.5.1 The future drainage flow path is illustrated in Appendix IV.

7.5.2 Total discharge into the 600mm U-channel will increase from 77.4 L/s to 107.4 L/s.

7.5.3 The revised drainage pattern is illustrated below and attached in **Appendix V**.

Catchment Ref:	Location	Area (m2)	Surface Condition	Catchment Coefficient	Rainfall Intensity (mm/hr)	Rainfall Inc. Factor (End of 21 Cen)	Flowrate (L/s)	Discharge Point
A	Northern Slope (Government)	682.80	Steep Slope (Heavy Soil)	0.35	218	16.0%	16.8	Access Road (East)
B	Northern Slope (Government)	120.86	Steep Slope (Heavy Soil)	0.35			3.0	Ex. 600mm U-channel on Slope (Southwest)
G	Site (After Re-development)	2,043.87						
	Greenery	284.62	Flat, Soil	0.2			4.0	
		130.29	Steep Slope (Heavy Soil)	0.35			3.2	
	Concrete	1,628.96	Concrete	0.85			97.3	

Drainage Discharge Point	Existing (L/s)	After Re-development (L/s)
Access Road (East)	38.6	0
Government Slope (East) & downstream RBL 667	0.9	0
Ex. 600mm U-channel on slope (Southern West)	77.4	107.4

7.6 Capacity Assessment of 600mm U-Channel

7.6.1 Using Manning's Equation, the channel's capacity is evaluated as follows:

Runoff collected by 600mm U-Channel:

	Area (m^2)	Surface Condition	Catchment Coefficient	Flowrate (L/s)
Site	2,043.87			107.4
Upstream Slope	264.41	Steep Slope	0.35	6.5
			Total	113.9

Flow velocity, $V = \frac{1}{U} \times R^{2/3} \times S^{1/2}$

Where U = Roughness coefficient of pipe
(for concrete lined channel in fair condition, U = 0.016)
R = Hydraulic Radius
S = Gradient of fall

Gradient Fall:
S = Upstream I.L – Downstream I.L. / Length
= (80.21 – 79.25) / 7.37m (as surveyed)
= 0.13

Assuming 1/2 bore flow of 600mm channel,
R = 0.25 D
V = $\frac{1}{0.016} \times (0.25 \times 0.6)^{2/3} (0.13)^{1/2}$
= 6.36 m/s

Handling capacity
Q = AV
= $(3.14 \times 0.3^2 / 2) \times (6.36)$
= $0.8989\ m^3/s$
= 898.9 l/s
> 113.9 l/s (12.7%, acceptable)

8) Conclusion

8.1 The proposed redevelopment improves drainage efficiency by consolidating runoff into a single discharge point.

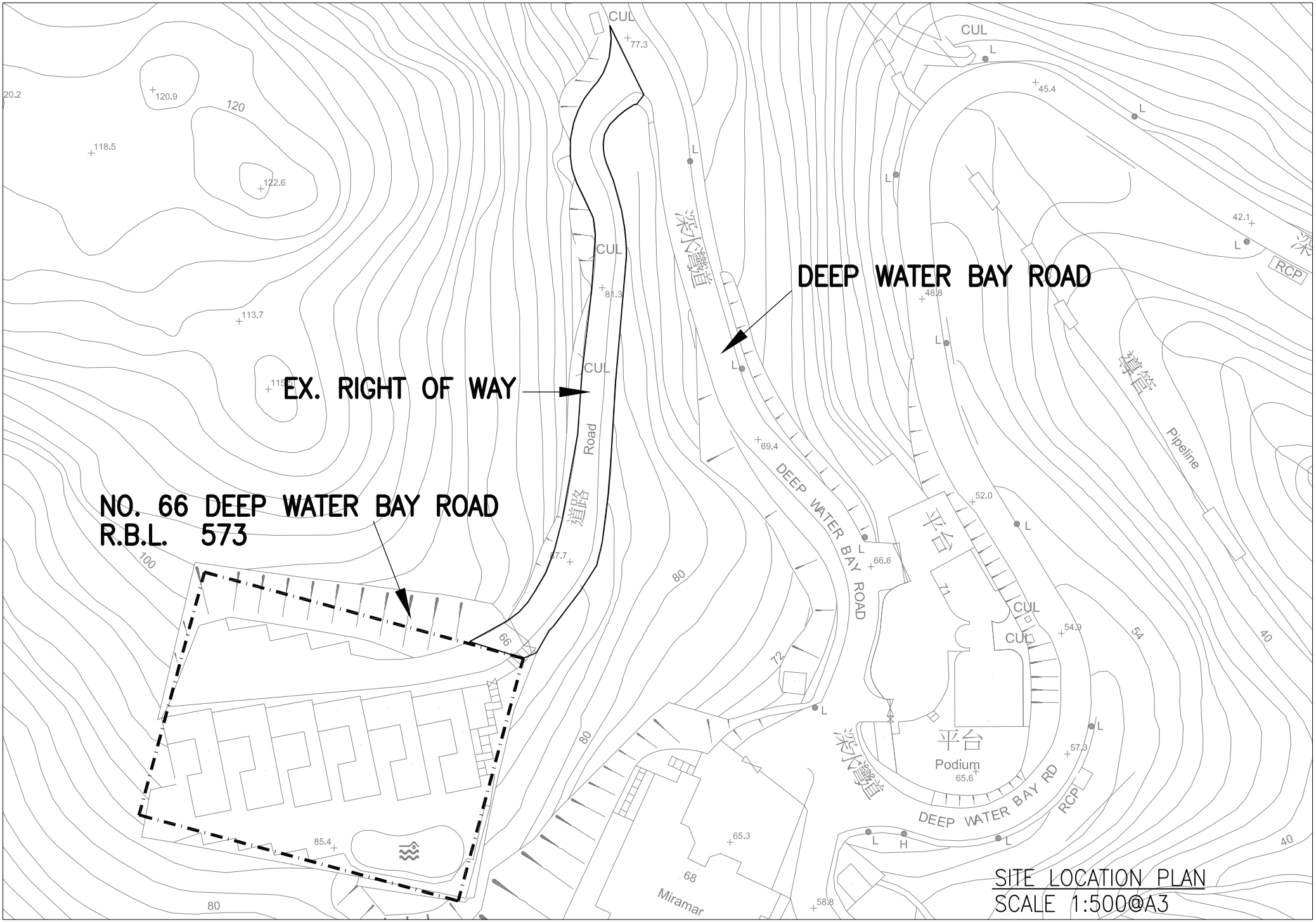
8.2 No uncontrolled runoff will flow onto government slopes or adjacent property (RBL667 & Ext.).

8.3 The existing 600mm U-channel has sufficient capacity (12.7% utilization) to accommodate increased flows.

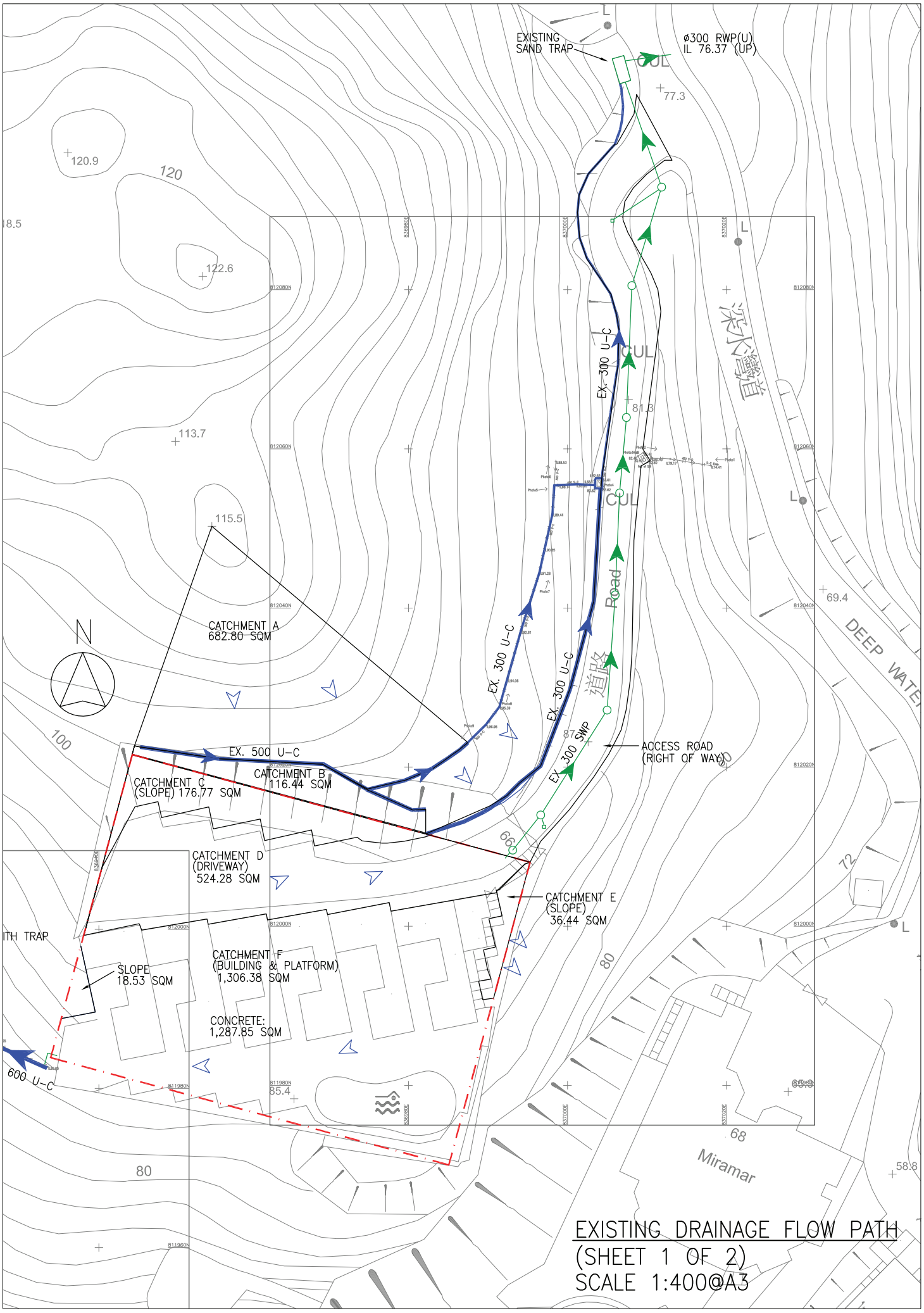
8.4 No adverse impacts on existing drainage infrastructure are anticipated.

End of Report

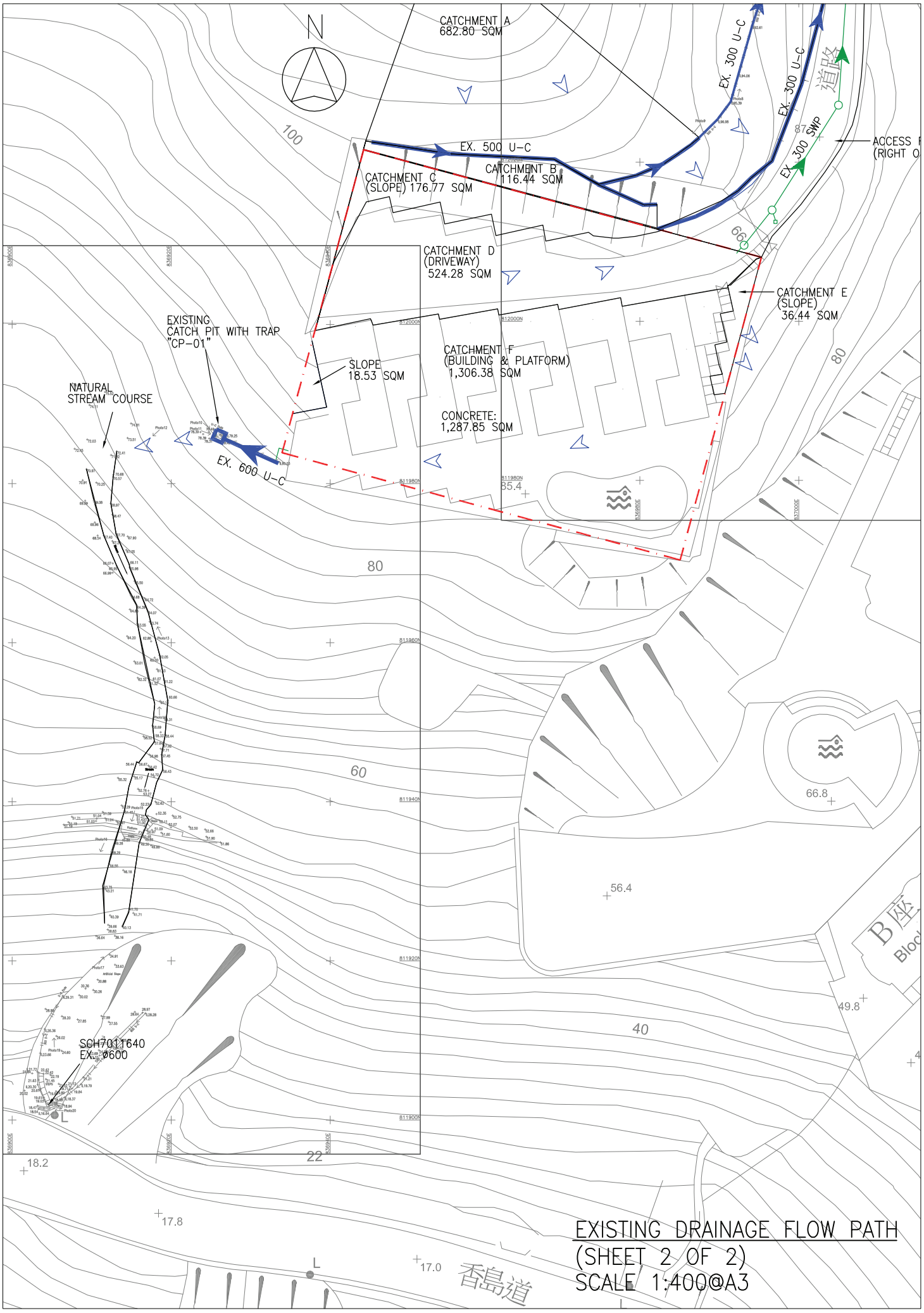
Appendix I - Site Location Plan


DEEP WATER BAY ROAD
EX. RIGHT OF WAY
NO. 66 DEEP WATER BAY ROAD
R.B.L. 573
Road
道路
DEEP WATER BAY ROAD
深灣道
導管
Pipeline
平台
Podium
65.6
DEEP WATER BAY RD
RCP
Miramar
CUL
SITE LOCATION PLAN
SCALE 1:500@A3

Appendix II – Existing Drainage Flow Path



EXISTING DRAINAGE FLOW PATH
(SHEET 1 OF 2)
SCALE 1:400@A3



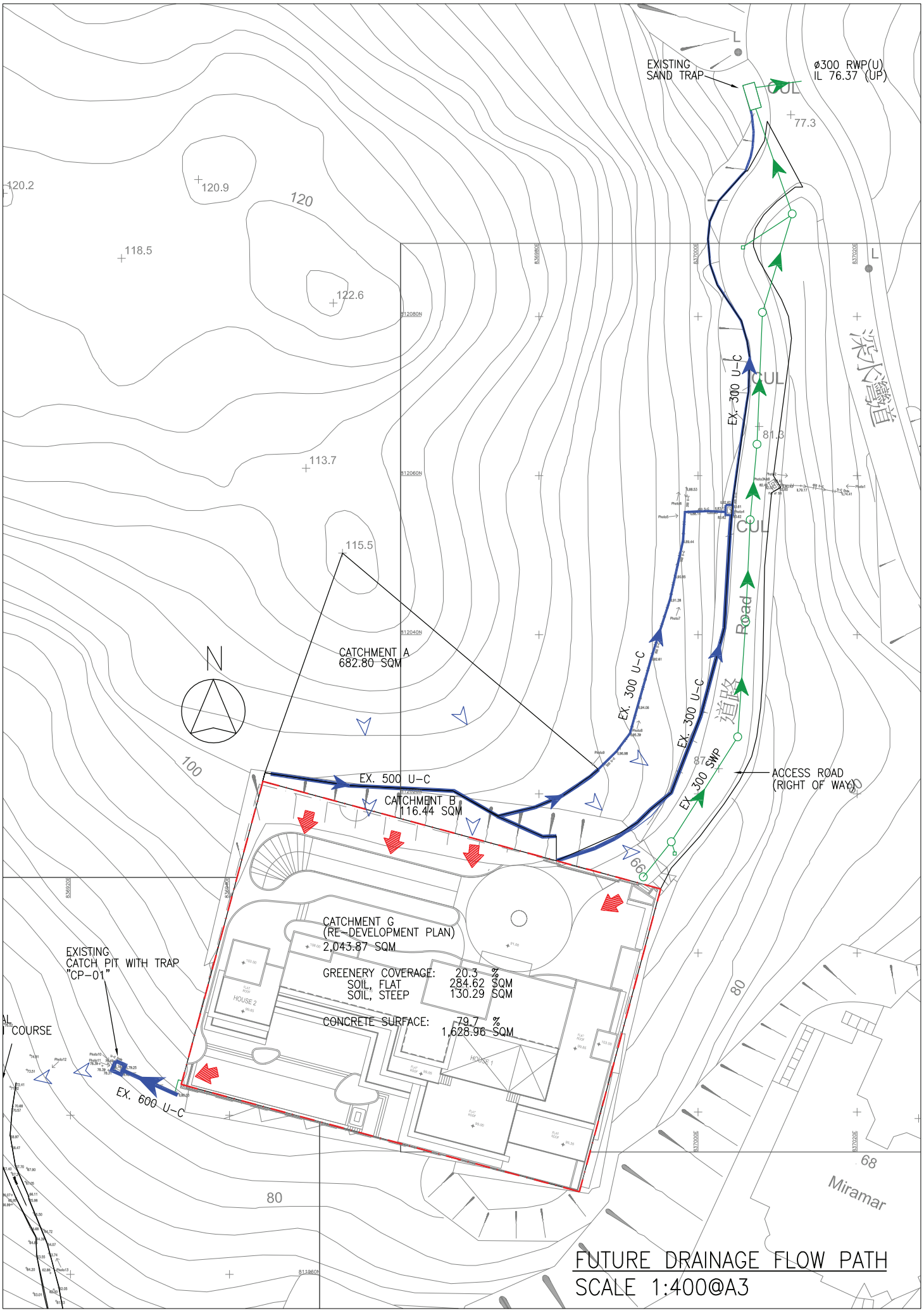
EXISTING DRAINAGE FLOW PATH
(SHEET 2 OF 2)
SCALE 1:400@A3

Appendix III – Evaluation of Runoff from Catchments (Existing)

Proposed Residential Re-development at 66 Deep Water Bay Road, Hong Kong
Evaluation of Runoff from Catchments (Existing)

Catchment Ref:	Location	Area (m2)	Surface Condition	Catchment Coefficient	Rainfall Intensity (mm/hr)	Rainfall Inc. Factor (End of 21 Cen)	Flowrate (L/s)	Discharge Point
A	Northern Slope	682.80	Steep Slope (Heavy Soil)	0.35	218	16.0%	16.8	Access Road (East)
B	Northern Slope	120.86	Steep Slope (Heavy Soil)	0.35			3.0	
C	Site (North Portion) Slope	176.77	Steep Slope (Heavy Soil)	0.35			4.3	
D	Site (North Portion) Driveway	524.28	Concrete	0.85			31.3	
E	Site (East Portion) Slope	36.44	Steep Slope (Heavy Soil)	0.35			0.9	Slope (East), and downstream RBL 667 & Ext.
F	Site (South Portion) Building	1287.85	Concrete	0.85			76.9	Ex. 600mm U-channel (Southwest)
		18.53	Steep Slope (Heavy Soil)	0.35			0.5	

Appendix IV – Future Drainage Flow Path



FUTURE DRAINAGE FLOW PATH

SCALE 1:400@A3

Appendix V – P Evaluation of Runoff from Catchments (Future)

Proposed Residential Re-development at 66 Deep Water Bay Road, Hong Kong
Evaluation of Runoff from Catchments (Post-redevelopment)

Catchment Ref:	Location	Area (m2)	Surface Condition	Catchment Coefficient	Rainfall Intensity (mm/hr)	Rainfall Inc. Factor (End of 21 Cen)	Flowrate (L/s)	Discharge Point
A	Northern Slope (Government)	682.80	Steep Slope (Heavy Soil)	0.35	218	16.0%	16.8	Access Road (East)
B	Northern Slope (Government)	120.86	Steep Slope (Heavy Soil)	0.35			3.0	Ex. 600mm U-channel on Slope (Southwest)
G	Site (After Re-development)	2,043.87						
	Greenery	284.62	Flat, Soil	0.2			4.0	
		130.29	Steep Slope (Heavy Soil)	0.35			3.2	
	Concrete	1,628.96	Concrete	0.85			97.3	

Appendix 8

Geotechnical Planning Review Report

Document Verification

Job title	SECTION 16 PLANNING APPLICATION FOR THE PROPOSED RESIDENTIAL DEVELOPMENT AT NO. 66 DEEP WATER BAY ROAD, SHOUSON HILL, HONG KONG	Job number DWB66
Document title	GEOTECHNICAL PLANNING REVIEW REPORT	File reference DWB66/GPRR-01
Document ref		

Revision	Date		Prepared by	Checked by	Approved by
0	April 2025	Name	Jacky Ip	Thomas Chui	Thomas Chui
		Signature			
		Filename			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
		Filename			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
		Filename			
			Prepared by	Checked by	Approved by
		Name			
		Signature			

AP	RSE	RGE
Name: Date:	Name: Date:	Name: Date:

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3	Desk Study	3
4	Impacts of proposed works on existing Geotechnical Features	6
5	Conclusion	8

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Figure 7 : Schematic section A-A

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Figure 9 : Schematic section C-C

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Appendix B : SIMAR and SIS records for existing features, and extract of previous GEO studies

Appendix C : Buildings Department Record

Appendix D : Available Ground Investigation Records

1. Background

C M Wong & Associates Ltd. Was appointed to carry out Geotechnical Planning Review Report (GPRR) for Section 16 Planning Application for the proposed Residential Development at No. 66 Deep Water Bay Road, Shouson Hill, Hong Kong

This GPRR is carried out based on desk study and review of available documentary information and proposed development plan. The geology and site conditions are described. Potential geotechnical constraints are identified in this assessment.

2. The Site and the Existing Geotechnical Features

The site is located at no. 66 Deep Water Bay Road, Shouson Hill. The site is connected to Deep Water Bay road via an access road from the north-east corner of the site. Site photos taken in February 2025 are presented in Appendix A (see Photos 1 to 3). The site location plan is provided in figure no. 1.

According to the available SIS records obtained from Geotechnical Engineering Office (GEO), there are 4 existing geotechnical features located in the vicinity of the site. Existing geotechnical feature no. 11SW-D/C1854 is partly lies within the northwestern of the Site. The existing geotechnical feature no. 11SW-D/C1853 is outside lot and located to the west of the existing access road between Deep Water Bay Road and the subject site. Geotechnical feature nos. 15NW-B/C399 and 11SW-D/CR1868 are located immediately outside and about 5m from the southeastern of the site boundary, respectively. The feature location plan is provided in figure no. 2.

3. Desk Study

Desk study has been carried out to search and review the existing building records, previous ground investigation data and geotechnical study reports kept by the Geotechnical Information Unit (GIU) of Geotechnical Engineering Office (GEO) and the Buildings Department (BD).

3.1 Geological Maps.

The geology of the Study Area is shown on the Hong Kong Geological Survey (HKGS) Map Sheet 11 & 15, 1:20,000 - scale HGM20 series. The local geology of the Study Area is presented in Figure 3 and described below.

The geological maps indicated that majority of area is underlain by “Eutaxitic, crystal-bearing fine ash vitric tuff” (Kra_e) of Ap Lei Chau Formation, Repulse Bay Volcanic Group. With a narrow strip along the northern boundary of the site is underlain by “Undivided, mainly crystal-bearing fine ash vitric tuff” (Kra_fvt) of Ap Lei Chau Formation, Repulse Bay Volcanic Group. No fault or photo lineament has been recorded within or in the vicinity of the site.

3.2 Enhanced Natural Terrain Landslide Inventory

In 1995, the GEO compiled the Natural Terrain Landslide Inventory (NTLI) from an interpretation of high - altitude (8,000ft and above) aerial photographs dated from 1945 to 1994 (King, 1999). In 2007, the GEO produced an Enhanced Natural Terrain Landslide Inventory (ENTLI) using low-altitude (8,000ft and below) aerial photographs to update the NTLI.

In accordance with GEO Report No. 138 (GEO, 2016), landslides are classed as either “Relict” or “Recent”, depending on their appearance in aerial photographs. “Relict” landslides are defined as those where the main scarp is well-defined but vegetation has re-established on the scar on the earliest set of available aerial photographs. “Recent” landslides are defined as having occurred within the timespan of the aerial photograph coverage. These are typically identified as having a light tone on the aerial photographs and are bare of vegetation.

The ENTLI has recorded none relict / recent landslides within and in the vicinity of the Site.

3.3 Large Landslide Inventory

The Large Landslide Inventory was compiled by Scott Wilson Ltd. under Agreement No. CE39/98 “Specialist API Services for the Natural Terrain Landslide Study” (1999a and 1999b). According to the Large Landslide Inventory, there are no features recorded within and in the vicinity of the Site.

3.4 Reported Landslide Incidents

There were two previous incidents located about the location of feature 11SW-D/C1853 before site formation for the access road for the previous development of the site.

Incident no. 33/11SW-D recorded in a landslide on 17 June 1983. The landslide located the access road to the site about 60m from the northern boundary. The inspection was carried out on 12 July 1983. The description of failure was “Shallow soil slip due to poor drainage”. The depth of failure was 1.5m and for a breath of 5.5m. The debris was removed prior to inspection.

Incident no. 34/11SW-D recorded in a landslide on 17 June 1983. The landslide located the access road to the site about 70m from the northern boundary. The inspection was carried out on 12 July 1983. The description of failure was also “Shallow soil slip due to poor drainage”. The depth of failure was 1.5m and for a breath of 2.5m. The debris was removed prior to inspection.

The incident reports were provided in appendix B.

3.5 Natural Terrain Hazard studies

A Stage 2 (H) report no. S2(H)R 20/2013 was prepared by Fugro (Hong Kong) Limited in August 2013 to a study area 11SW-D/SA12 – Shouson Hill, Hong Kong Island (East). The study area included the natural slope to the north of the subject site and named as Study Area NHC1 and no potential hazard is identified to the natural slope above the subject site. A Stage 3 (H) report no. S3(H)R 019/2013 was prepared by Fugro (Hong Kong) Limited in January 2014 to the same study area as the aforementioned stage 2 (H) report to design of the necessary mitigation works. And no proposed mitigation works required for the natural slope above the subject site. Extract of the Stage 2 (H) and Stage 3 (H) report is provided in appendix B.

The subject site is located below natural terrain and meets the alert criteria for a Natural Terrain Hazard Study (NTHS). A NTHS will be carried out in detail design stage, the study will carry out a review including but not limited to a desk study, detailed aerial photograph interpretation and site reconnaissance to ascertain that the findings of the previous study are still valid and applicable to the proposed development. Mitigation measures such as flexible barrier may be proposed if found necessary after the study.

3.6 Bulidings Department (BD) Records.

BD reference 3/3018/87 contains the footings plan for the existing buildings at no. 66 Deep Water Bay Road. The buildings were supported by strip footings with 1m thick and they were founded on Grade III or better rock with bearing capacity of 3000kPa.

BD reference 6/3018/87 contains the site formation plans for the existing development and the access road to the site. The sections in the site formation plans indicated the northern portion of the site was formed by cutting into rock. Extract of the BD record is provided in appendix C.

3.7 GIU records

GIU reference no. 15555 contains GI record for Borehole BH2 to BH10 carried out for the existing development of subject site. A summary of finding of these existing boreholes is as follows:

Borehole Identification	Sub-soil Profile			
	Fill (mPD)	CDG (mPD)	C to HDG (mPD)	Grade III Rock (mPD)
BH-2	+83.11 to +82.44 (concrete & brick)	-	+82.44 to +78.66	+78.66 (Cat 1(c) Rock Head)
BH-3	+84.66 to +83.69	+83.69 to 81.10	-	+81.10 (Cat 1(c) Rock Head)
BH-4	+91.08 to +91.08	-	-	+90.08 (Cat 1(c) Rock Head)
BH-5	-	-	-	+101.20 (Cat 1(c) Rock Head)
BH-6	+92.38 to +91.78	-	-	+91.78 (Cat 1(c) Rock Head)
BH-7	+106.20 to +106.00	-	+106.00 to +104.20	+104.20 (Cat 1(c) Rock Head)
BH-8	+93.07 to +92.72	-	-	+92.72 (Cat 1(c) Rock Head)
BH-9	+85.38 to +85.08	-	+85.08 to +78.38	+78.38 (Cat 1(c) Rock Head)

BH-10	-	+71.48 to 68.58	-	+68.58 (Cat 1(c) Rock Head)

The existing GI location plan is provided in figure 4. And borehole logs for these existing drillholes are provided in Appendix D.

4. Impacts of proposed works on existing Geotechnical Features

Feature no. 11SW-D/C1854

Feature no. 11SW-D/C1854 is located at the northern side of the site. Sub-division no. 2 of the feature lie within the site while sub-division no. 1 of the feature is immediately outside the site. According to the SIS record, the slope has a maximum height about 10m with 65m long measured along its toe, and the average slope gradient is about 70 degrees to the horizontal. BD record indicated the feature was formed during site formation of the existing development of the site.

Feature no. 15NW-B/C399

Feature no. 15NW-B/C399 is located immediate outside the south-eastern boundary. According to the SIS record, the slope has a maximum height about 4m with 25m long measured along its toe, and the average slope gradient is about 40 degrees to the horizontal.

Feature no. 15NW-B/C1853

Feature no. 15NW-B/C1853 is located about 5m to the north of the northern lot boundary and it is at the west of the access road leading to Deep Water Bay road. According to the SIS record, the slope has a maximum height about 20m with 88m long measured along its toe, and the average slope gradient is about 41 degrees to the horizontal.

Feature no. 11SW-D/CR1868

Feature no. 11SW-D/CR1868 is located about 5m away from the south-eastern site boundary. According to the SIS record, the slope portion has a maximum height about 9.4m with 121m long measured along its toe, and the average slope gradient is about 64 degrees to the horizontal. And the wall portion has a maximum height of about 1.8m with a length of about 7.6m.

Impacts of proposed works on existing Geotechnical Features

The proposed development consists of construction for two 3-storey houses with a basement. The schematic geotechnical works for the proposed development are discussed below (Figure no. 5 to 9):-

The schematic geotechnical works consists of foundation works with mini-piles and raft footings, ELS with temporary rock/soil cut slope and pipe pile wall, and construction of retaining wall. Detail site formation proposal shall be submitted to Buildings Department for approval.

Since Feature no. 11SW-D/C1854 is partly located within the application site, the stability on the geotechnical feature shall be assessed in detail under a separate submission. Site formation works / slope upgrading works such as installation of rock dowel/soil nails works will be proposed in the site formation design / slope upgrading design submission if the stability of such geotechnical feature cannot fulfil the current engineering standards.

Feature no. 15NW-B/C399 is located immediate outside the south-eastern boundary. The proposed works in the development will be designed such that the effect to this feature will be insignificant.

Since Feature no. 11SW-D/C1853 is located outside lot, adjoining to the access road. The feature is formed under the site formation work of the access road during the previous development of the subject site. The maintenance responsible of the feature lies with the subject lot. The stability on this geotechnical feature shall be assessed in detail under a separate submission. Site formation works / slope upgrading works such as installation of rock dowel/soil nails works will be proposed in the site formation design / slope upgrading design submission if the stability of such geotechnical feature cannot fulfil the current engineering standards.

Since Feature no. 11SW-D/CR1868 is located outside the subject site and located about 5m to the south-eastern boundary of the site. The feature is located within lot RBL 667 &Ext. and the maintenance responsibility lies with lot RBL 667 &Ext. There is no checking record for this feature. The proposed works in the development will be designed such that the effect to this feature will be insignificant.

Temporary working platform may be required to facility the foundation work and ELS construction works. The design of the temporary working platform (if any) will be such that the effect to the slopes in the vicinity of the site will be insignificant.

5. Conclusion

Based on the above discussion, it can be concluded that the proposed residential development is considered to be feasible from geotechnical point of view. The existing feature within site shall be upgraded to the current engineering standards if the stability of such geotechnical features are found below standards. For features located outside the site, the proposed works in the development will be designed such that the effect to outside site features will be insignificant.

It is essential to search and review the background information of existing building, geotechnical feature and underground services within and in the vicinity of the site. Site investigation is proposed to reveal/confirm the subsoils and the ground regime within and in the vicinity of the site as well as to determine the engineering properties of subsoils and rock. The ground investigation field works should be preceded under supervision of suitably qualified engineers and technically competent persons conforming the requirements specified in the “Code of Practice for Site Supervision 2009” published by the BD.

For safety and cost effective, the foundation design and slope/retaining wall stability assessment and excavation planning as well as the design of geotechnical structure should be based on geological horizons inferred from the ground investigation results, groundwater table interpreted from the piezometer / standpipe monitoring records and geotechnical parameters determined and adopted by field and laboratory testing.

The subject site is located below steep natural terrain and meets the alert criteria for a Natural Terrain Hazard Study (NTHS). A NTHS will be carried out in detail design stage.

A comprehensive precautionary monitoring program including settlement markers, tiling, vibration check points as well as groundwater observation wells shall be implemented to ensure demolition of foundation of existing buildings and substructure construction being carried out safety and soundly.

FIGURES

Figure 1



Legend:

The Application Site

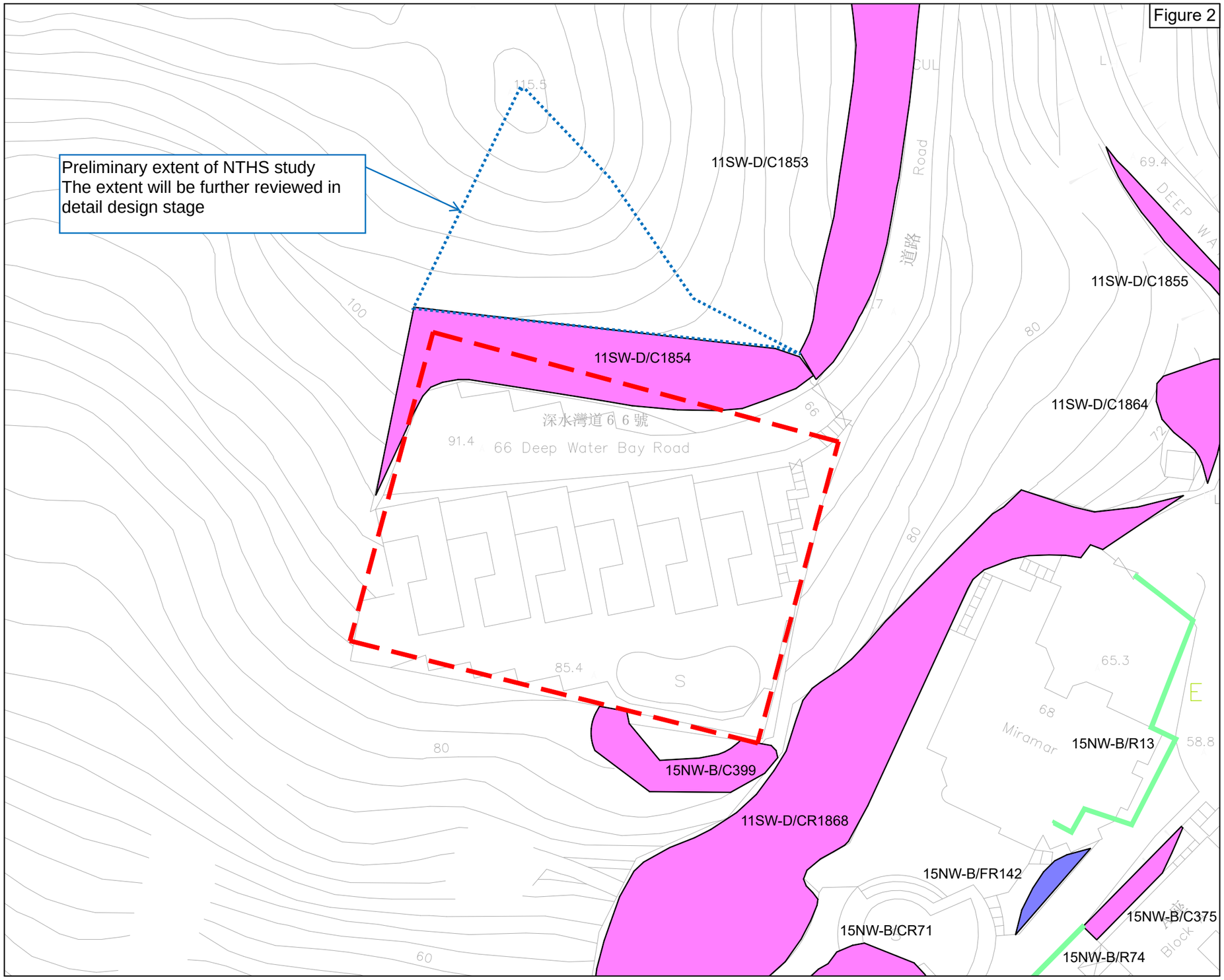
PROJECT

SECTION 16 PLANNING APPLICATION FOR THE PROPOSED RESIDENTIAL DEVELOPMENT AT NO. 66 DEEP WATER BAY ROAD, SHOUSON HILL, HONG KONG

DRG. TITLE		DRG. NO	
SITE LOCATION PLAN		FIG-01	
SCALE	1:5000 IN A3	DATE	MAY 2025

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E-mail: cmwal@cmwal.com

Figure 2



Legend:

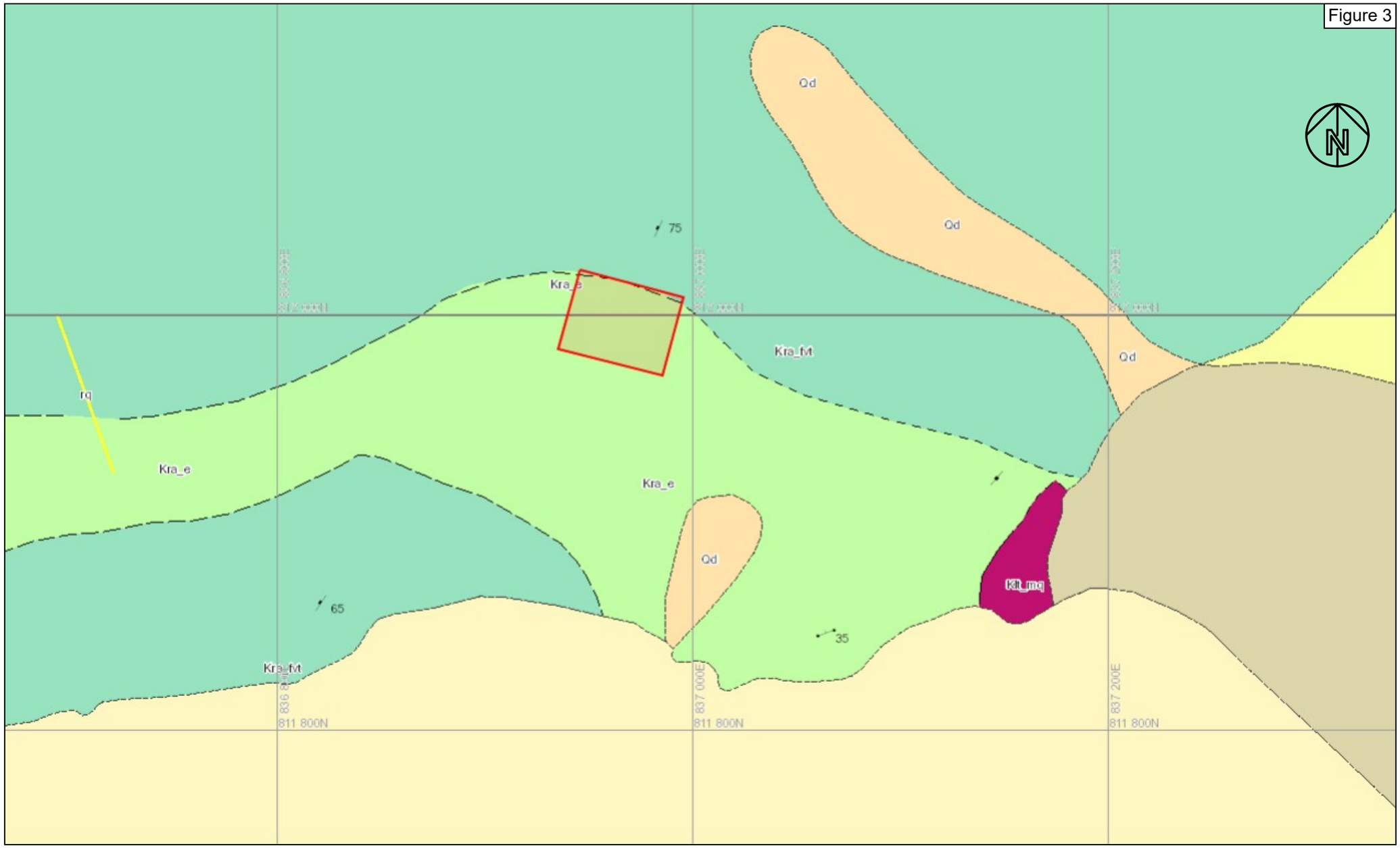
- The Application Site
- Existing Geological Feature
  - Fill Slope
  - Cut Slope
  - Retaining Wall

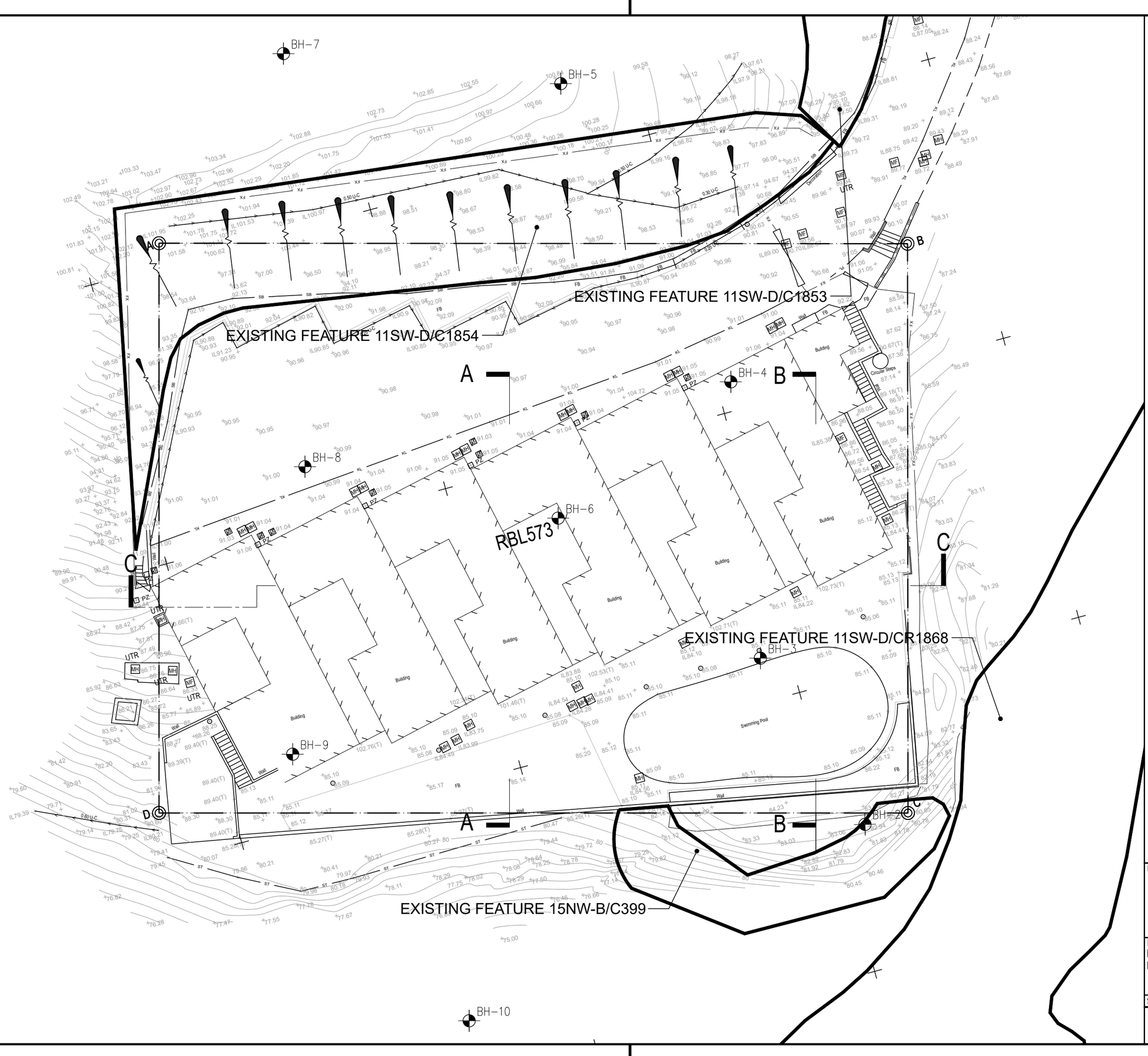
PROJECT
SECTION 16 PLANNING APPLICATION FOR THE PROPOSED RESIDENTIAL DEVELOPMENT AT NO. 66 DEEP WATER BAY ROAD, SHOUSON HILL, HONG KONG

DRG. TITLE	DRG. NO
FEATURES LOCATION PLAN	FIG-02
SCALE: 1:500 IN A3	DATE: MAY 2025

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Figure 3


Qd
Qd
Qd
75
Kra_e
Kra_fvt
Kra_fvt
Kra_fvt



Legend:

- THE APPLICATION SITE
- BH-2 EXISTING BOREHOLE GIU REPORT NO. 15554

PROJECT
SECTION 16 PLANNING APPLICATION FOR THE PROPOSED RESIDENTIAL DEVELOPMENT AT NO. 66 DEEP WATER BAY ROAD, SHOUSON HILL, HONG KONG

DRG. TITLE	DRG. NO
EXISTING BOREHOLE LOCATION PLAN	FIG-04
SCALE: 1:250 IN A3	DATE: MAY 2025

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Legend:

- THE APPLICATION SITE
- PRELIMINARY CONTOUR LEVEL OF CATEGORY 1(C) ROCK
- PROPOSED FOOTING
- PROPOSED PILE CAP
- PROPOSED TIE BEAM
- PROPOSED MINI PILE

NOTE:
THE FOUDNATION/SITE FORMATION/ELS WORKS SHOWN ARE PRELIMINARY, SUBJECT TO GI RESULTS AND DETAIL DESIGN.

PROJECT
SECTION 16 PLANNING APPLICATION FOR THE PROPOSED RESIDENTIAL DEVELOPMENT AT NO. 66 DEEP WATER BAY ROAD, SHOUSON HILL, HONG KONG

DRG. TITLE	DRG. NO
PRELIMINARY FOUNDATION PLAN AND PRELIMINARY ROCKHEAD CONTOUR	FIG-05
SCALE 1:200 IN A3	DATE MAY 2025

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PROPOSED PIPE PILE / SHEET PILE WALL

TEMPORARY MAX 70° ROCK CUT SLOPE (SUBJECT TO DETAIL DESIGN)

PROPOSED PIPE PILE / SHEET PILE WALL

A

B

C

D

NOTE:
THE FOUDNATION/SITE FORMATION/ELS WORKS SHOWN ARE PRELIMINARY, SUBJECT TO GI RESULTS AND DETAIL DESIGN.

Legend:

- THE APPLICATION SITE
- TEMPORARY MAX. 70° ROCK CUT SLOPE WITH ROCK DOWEL IF NECESSARY
- PROPOSED FOOTING
- PROPOSED PILE CAP
- PROPOSED TIE BEAM
- PROPOSED MINI PILE
- PROPOSED PIPE PILE WALL/ SHEET PILE WALL FOR ELS

PROJECT
SECTION 16 PLANNING APPLICATION FOR THE PROPOSED RESIDENTIAL DEVELOPMENT AT NO. 66 DEEP WATER BAY ROAD, SHOUSON HILL, HONG KONG

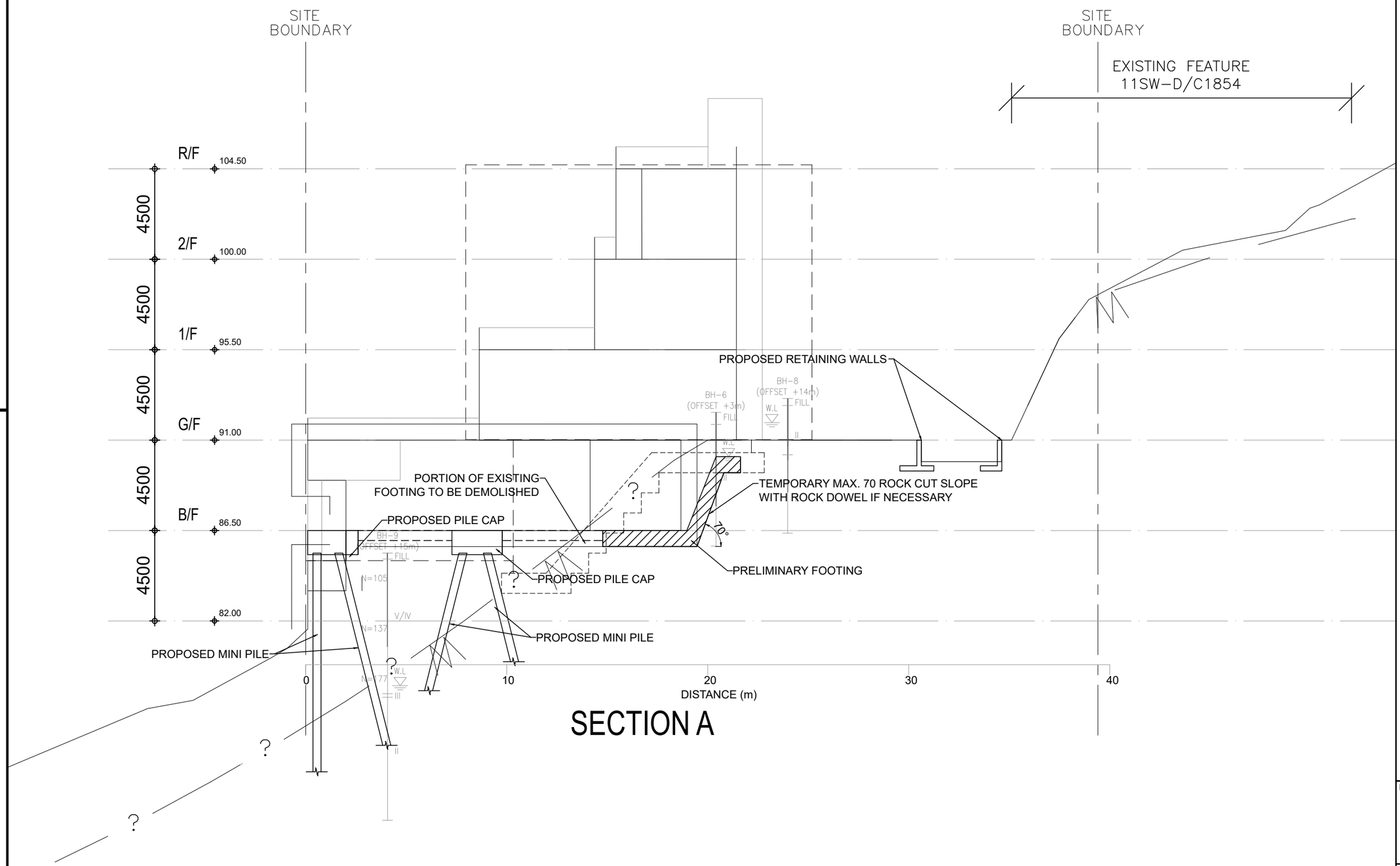
DRG. TITLE
PRELIMINARY ELS PLAN

DRG. NO
FIG-06

SCALE 1:200 IN A3

DATE MAY 2025

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SECTION A

Legend:

- SITE BOUNDARY
- PRELIMINARY CONTOUR LEVEL OF CATEGORY 1(C) ROCK
- PROPOSED FOOTING
- PROPOSED PILE CAP
- PROPOSED TIE BEAM
- PROPOSED SCREEN WALL

NOTE:
THE FOUDNATION/SITE FORMATION/ELS WORKS SHOWN ARE PRELIMINARY, SUBJECT TO GI RESULTS AND DETAIL DESIGN.

PROJECT
SECTION 16 PLANNING APPLICATION FOR THE PROPOSED RESIDENTIAL DEVELOPMENT AT NO. 66 DEEP WATER BAY ROAD, SHOUSON HILL, HONG KONG

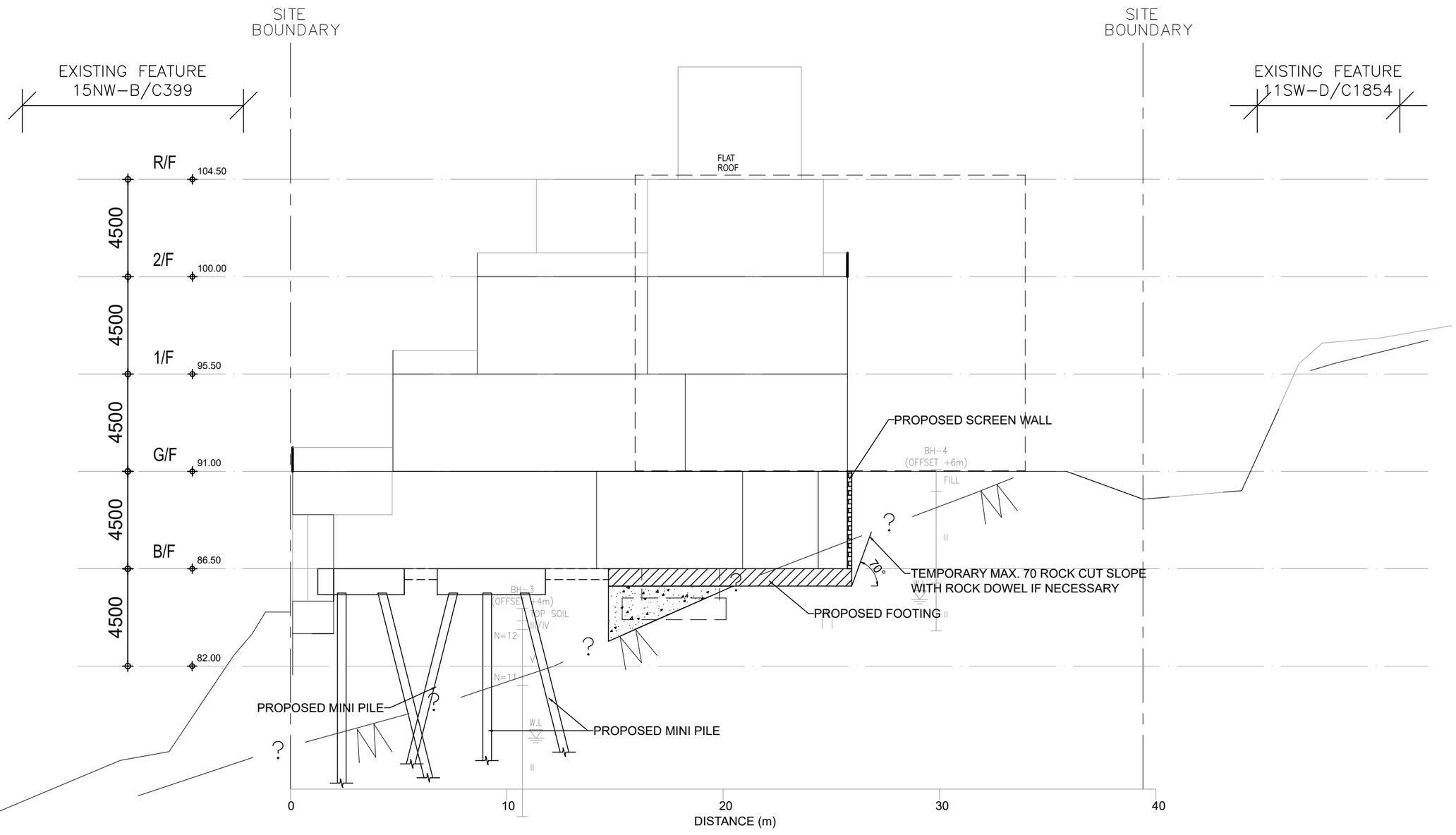
DRG. TITLE
SCHEMATIC SECTION A-A

DRG. NO
FIG-07

SCALE 1:200 IN A3

DATE MAY 2025

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SECTION B

Legend:

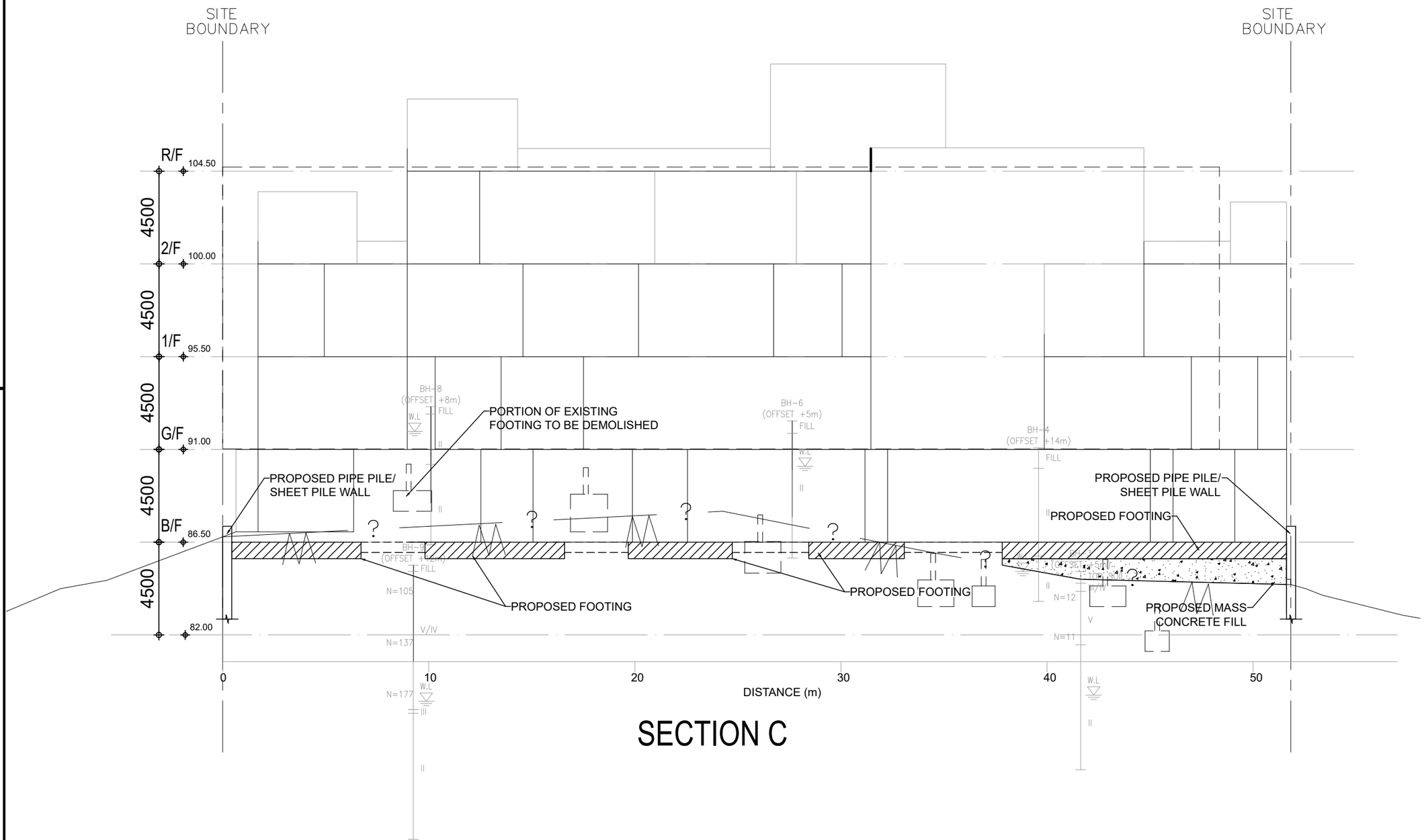
- SITE BOUNDARY
- PRELIMINARY ROCKHEAD PROFILE
- PROPOSED FOOTING
- PROPOSED PILE CAP
- PROPOSED TIE BEAM
- PROPOSED SCREEN WALL

NOTE:
THE FOUDNATION/SITE FORMATION/ELS WORKS SHOWN ARE PRELIMINARY, SUBJECT TO GI RESULTS AND DETAIL DESIGN.

PROJECT
SECTION 16 PLANNING APPLICATION FOR THE PROPOSED RESIDENTIAL DEVELOPMENT AT NO. 66 DEEP WATER BAY ROAD, SHOUSON HILL, HONG KONG

DRG. TITLE	DRG. NO
SCHEMATIC SECTION B-B	FIG-08
SCALE: 1:200 IN A3	DATE: MAY 2025

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SECTION C

Legend:

- SITE BOUNDARY
- PRELIMINARY CONTOUR LEVEL OF CATEGORY 1(C) ROCK
- PROPOSED FOOTING
- PROPOSED PILE CAP
- PROPOSED TIE BEAM
- PROPOSED MASS CONCRETE FILL

NOTE:
THE FOUDNATION/SITE FORMATION/ELS WORKS SHOWN ARE PRELIMINARY, SUBJECT TO GI RESULTS AND DETAIL DESIGN.

PROJECT
SECTION 16 PLANNING APPLICATION FOR THE PROPOSED RESIDENTIAL DEVELOPMENT AT NO. 66 DEEP WATER BAY ROAD, SHOUSON HILL, HONG KONG

DRG. TITLE
SCHEMATIC SECTION C–C

DRG. NO
FIG–09

SCALE 1:200 IN A3

DATE MAY 2025

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Appendix A :
Site Photographs

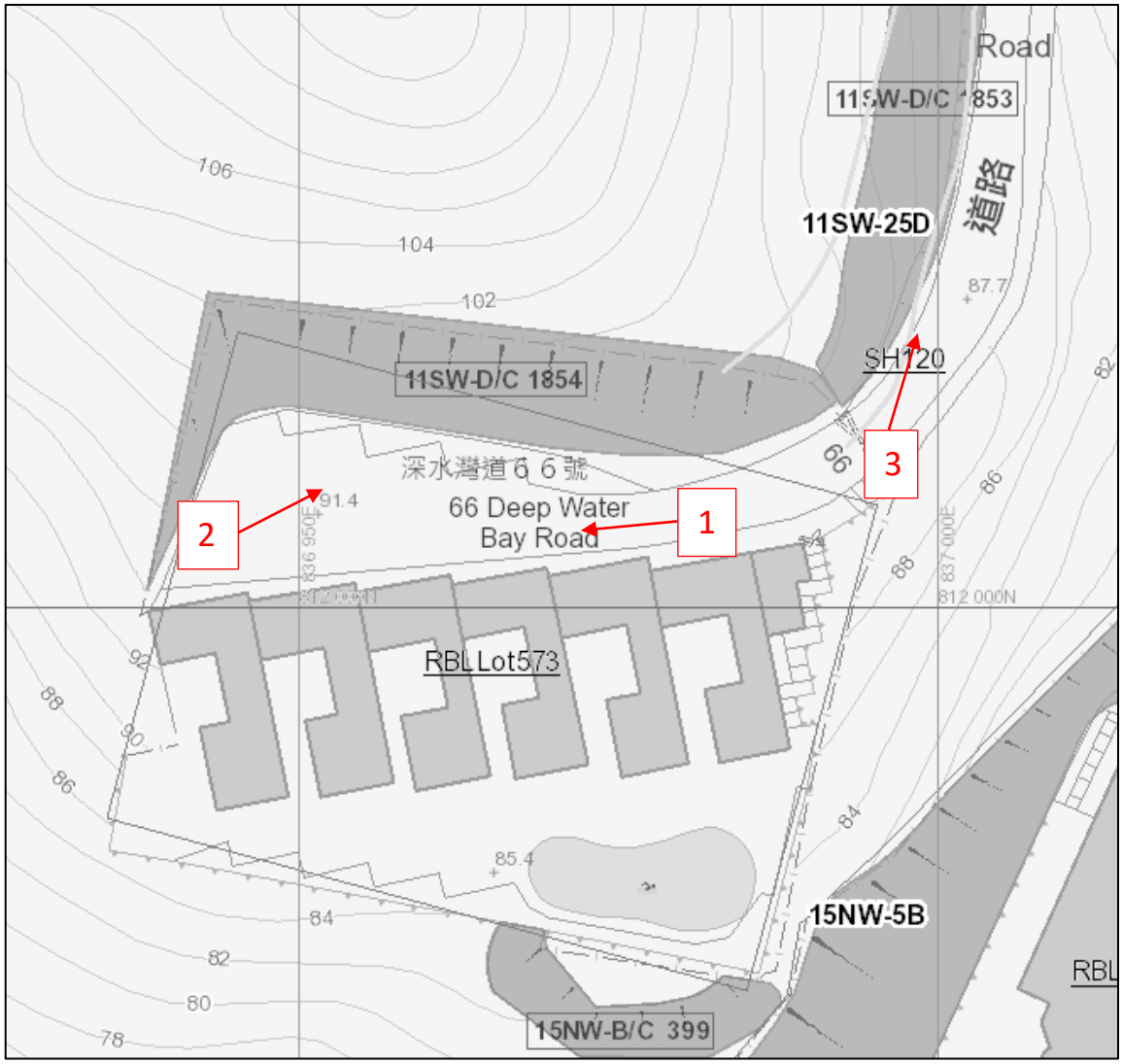


Photo Location Plan

Legend:

1 Photo location and direction



Photo 1: General View of site



Photo 2: General view of Feature 11SW-D/C1854



Photo 3: General view of the access road

Appendix B :
SIMAR and SIS records for existing features, and extract of previous GEO studies

Slope Maintenance Responsibility Report (11SW-D/C1853)	**ESTATE MANAGEMENT SECTION** **LANDS DEPARTMENT**

List of Slope Maintenance Responsibility Area(s)

1	**11SW-D/C1853**		**Sub-Division**	Not Applicable
	Location	Slope falls in Government land, adjoining access road to RBL573 near spot level 81.3		
	Responsible Lot/Party	RBL 573	**Maintenance Agent**	Not Applicable
	Remarks	Not Applicable		

- End of Report -

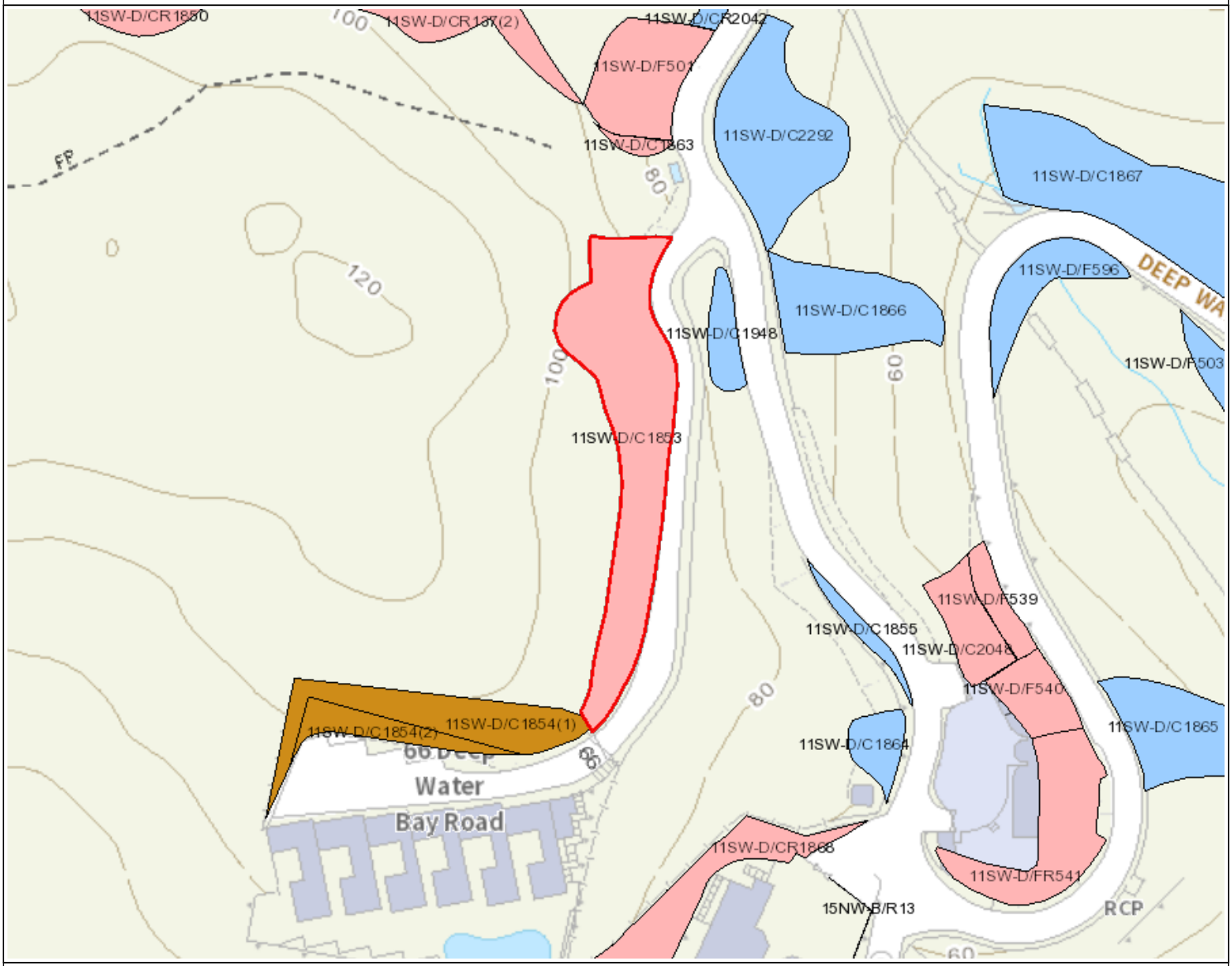
Notes:

(i) The location plan in Annex is for identification purposes of slope(s) only.

(ii) The slope(s) as listed in the Slope Maintenance Responsibility Report may not be shown on the location plan in Annex.

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Location Plan



Legend

- Slope Area(s)
- Search Location
- Slope(s) Maintained by Government
- Slope(s) Maintained by Private Party/Parties
- Slope(s) Maintained by Government and Private Party/Parties

ESTATE MANAGEMENT SECTION
LANDS DEPARTMENT

This Plan is **NOT TO SCALE** and intended for **IDENTIFICATION** only. All information shown on this plan **MUST** be verified by field survey.

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BASIC INFORMATION

Location:	ACCESS ROAD TO NO. 66 DEEP WATER BAY ROAD.
Registration Date:	16-03-1998
Ranking Score (NPRS):	0 (LPMit)
Date of Formation:	post-1977
Date of Construction/ Modification:	N/A
Data Source:	SIRST
Approximate Coordinates:	Easting : 837001 Northing : 812055

CONSEQUENCE-TO-LIFE CATEGORY

Facility at Crest:	Undeveloped green belt
Distance of Facility from Crest (m):	0
Facility at Toe:	Road/footpath with low traffic density
Distance of Facility from Toe (m):	0
Consequence-to-life Category:	3
Remarks:	N/A

SLOPE PART

(1) Max. Height (m): 20 Length (m): 88 Average Angle (deg): 41

WALL PART

N/A

MAINTENANCE RESPONSIBILITY

(1) Sub Div.: 0 Maintenance Type: Private Party: RBL 573 Agent: N/A Land Cat.: 5a Reason Code: 44 MR Endorsement Date: 04-08-1998

DETAILS OF SLOPE / RETAINING WALL

Date of Inspection:	22-10-1996
Data Source:	SIRST
Slope Part Drainage:	(1) Position: Stepped Size(mm): 251
Wall Part Drainage:	N/A

SLOPE PART

Slope Part (1)
Surface Protection (%): Bare: 50 Vegetated: 40 Chunam: 10 Shotcrete: 0 Other Cover: 0
Material Description: Material type: Rock Geology: N/A
Berm: No. of Berms: N/A Min. Berm Width (m): N/A
Weepholes: Size (mm): 40 Spacing (m): 1.2

WALL PART

N/A

SERVICES

N/A

CHECKING STATUS INFORMATION

N/A

BACKGROUND INFORMATION

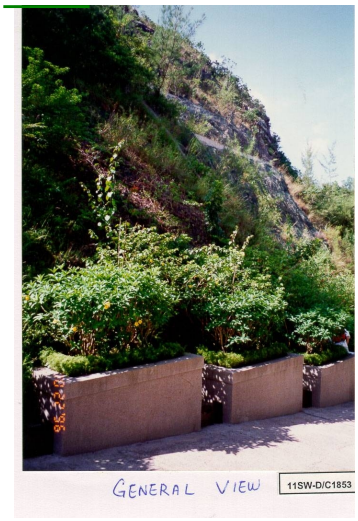
GIU Cell Ref.:	11SW25D8
Map Sheet Reference (1:1000):	11SW-25D
Aerial Photos:	A14542 (1988), A14543 (1988)
Nearest Rainguage Station (Station Number):	Gramtham Hospital, Wong Chuk Hang Road(H24)
Data Collected On:	22-10-1996
Date of Construction, Subsequent Modification and Demolition:	Modification: Constructed Before: 1988 After: 1986
Related Reports/Files or Documents:	File/Report: DLC/BC Ref. No.: SHX 120 File/Report: DLC/BC Ref. No.: SHX 120 File/Report: Development Ref. No.: 3747/46/100B File/Report: Development Ref. No.: 3747/46/100B
Remarks:	No file no in incident card, Incident no. 33/11SW-D.
Follow Up Actions:	N/A
DH-Order (To Be Confirmed with Buildings Department):	None
Advisory Letter (To Be Confirmed with Buildings Department):	None

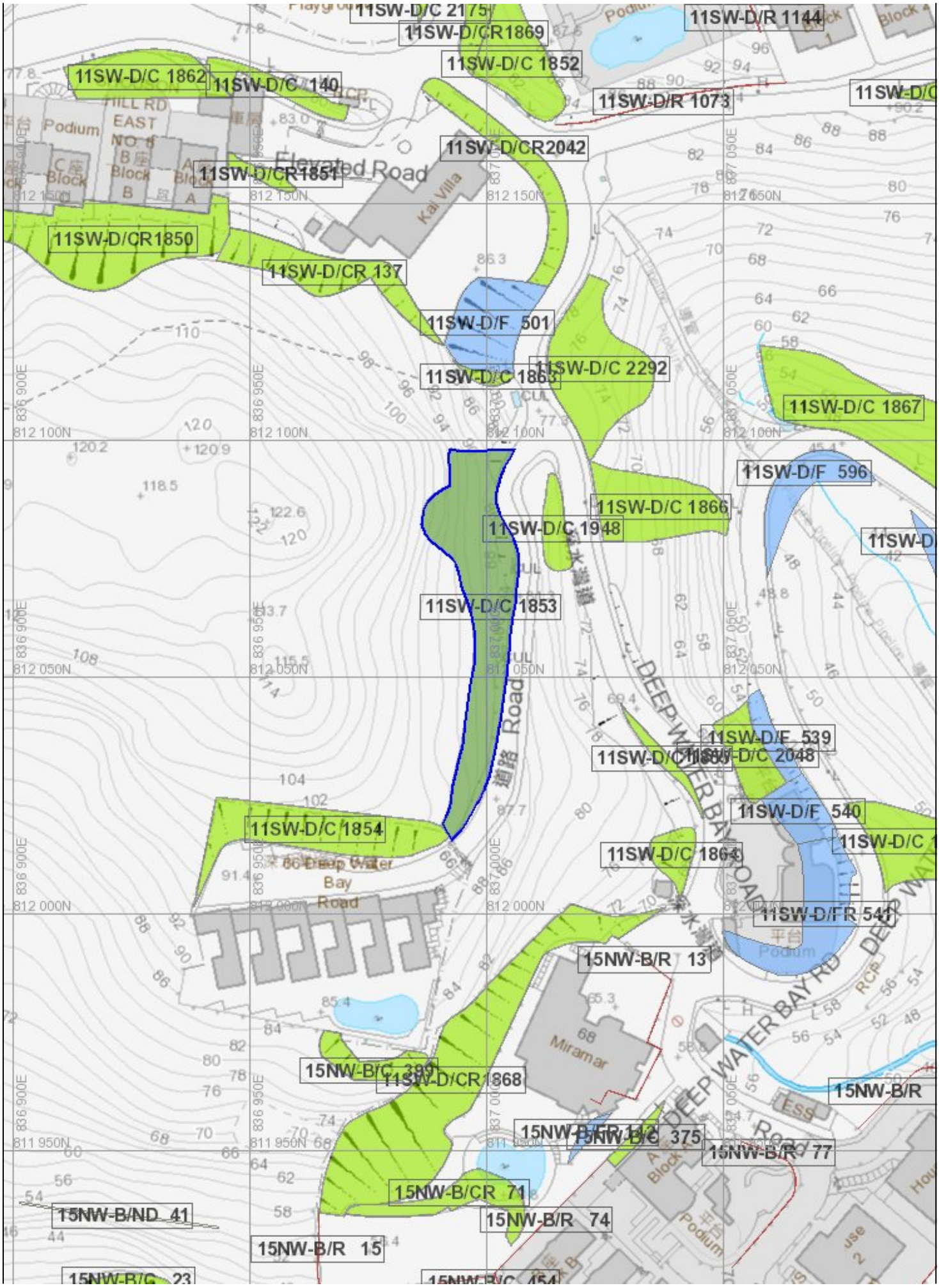
ENHANCED MAINTENANCE INFORMATION

From Maintenance Department: (Last Updated Date: 19/02/2025)

eLPMIS

PHOTO




11SW-D/C 2175
11SW-D/CR1869
11SW-D/R 1144
11SW-D/C 1852
11SW-D/C 1862
11SW-D/C 140
11SW-D/R 1073
11SW-D/CR2042
11SW-D/CR1851
11SW-D/CR1850
11SW-D/CR 137
11SW-D/F 501
11SW-D/C 1863
11SW-D/C 2292
11SW-D/C 1867
11SW-D/F 596
11SW-D/C 1866
11SW-D/C 1948
11SW-D/C 1853
11SW-D/F 539
11SW-D/C 2048
11SW-D/F 540
11SW-D/C 1854
11SW-D/C 1864
11SW-D/FR 541
15NW-B/R 13
15NW-B/C 399
11SW-D/CR 1868
15NW-B/R
15NW-B/C 375
15NW-B/R 77
15NW-B/CR 71
15NW-B/ND 41
15NW-B/R 74
15NW-B/R 15
Elevated Road
Kai Villa
Podium
Block
Deep Water Bay Road
DEEP WATER BAY ROAD
Miramar

Slope Maintenance Responsibility Report (15NW-B/C399)	**ESTATE MANAGEMENT SECTION** **LANDS DEPARTMENT**

List of Slope Maintenance Responsibility Area(s)

1	**15NW-B/C399**		**Sub-Division**	Not Applicable
	Location	ON GOVERNMENT LAND TO THE SOUTH OF RBL573		
	Responsible Lot/Party	Lands Department	**Maintenance Agent**	Lands Department
	Remarks	For enquiries about the maintenance of this slope / sub-division of the slope, please contact the Maintenance Agent directly.		

- End of Report -

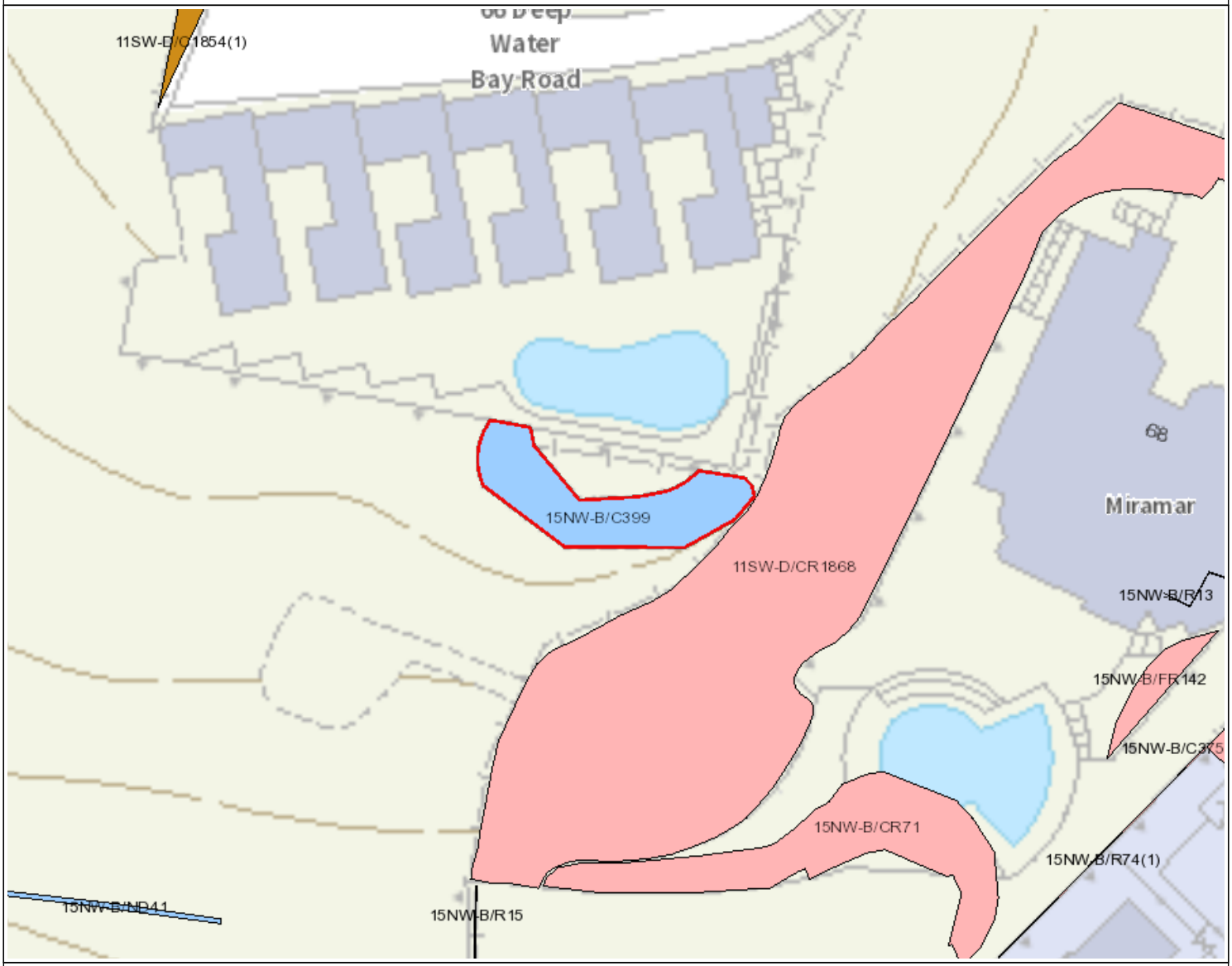
Notes:

(i) The location plan in Annex is for identification purposes of slope(s) only.

(ii) The slope(s) as listed in the Slope Maintenance Responsibility Report may not be shown on the location plan in Annex.

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Location Plan



Legend

- Slope Area(s)
- Search Location
- Slope(s) Maintained by Government
- Slope(s) Maintained by Private Party/Parties
- Slope(s) Maintained by Government and Private Party/Parties

ESTATE MANAGEMENT SECTION
LANDS DEPARTMENT

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BASIC INFORMATION

Location:	South of the Swimming Pool of 66 Deep Water Bay Rd.
Registration Date:	22-10-2003
Ranking Score (NPRS):	0 (EI)
Date of Formation:	post-1977
Date of Construction/ Modification:	N/A
Data Source:	Basic data interpreted from API techniques
Approximate Coordinates:	Easting : 836975 Northing : 811967

CONSEQUENCE-TO-LIFE CATEGORY

Facility at Crest:	Densely-used open area/facilities
Distance of Facility from Crest (m):	2
Facility at Toe:	Undeveloped green belt
Distance of Facility from Toe (m):	2
Consequence-to-life Category:	2
Remarks:	N/A

SLOPE PART

(1) Max. Height (m): 4 Length (m): 25 Average Angle (deg): 40

WALL PART

N/A

MAINTENANCE RESPONSIBILITY

(1) Sub Div.: 0 Maintenance Type: Government Party: Lands D Agent: Lands D Land Cat.: 5b(vi) Reason Code: 62 MR Endorsement Date: 25-11-2004

DETAILS OF SLOPE / RETAINING WALL

Date of Inspection:	05-12-2003
Data Source:	Basic data interpreted from API techniques
Slope Part Drainage:	N/A
Wall Part Drainage:	N/A

SLOPE PART

Slope Part (1)
Surface Protection (%): Bare: 0 Vegetated: 0 Chunam: 0 Shotcrete: 0 Other Cover: 100
Material Description: Material type: N/A Geology: N/A
Berm: No. of Berms: N/A Min. Berm Width (m): N/A
Weepholes: Size (mm): N/A Spacing (m): N/A

WALL PART

N/A

SERVICES

N/A

CHECKING STATUS INFORMATION

N/A

BACKGROUND INFORMATION

GIU Cell Ref.:	N/A
Map Sheet Reference (1:1000):	15NW- 5B
Aerial Photos:	N/A
Nearest Rainguage Station (Station Number):	N/A(N/A)
Data Collected On:	05-12-2003
Date of Construction, Subsequent Modification and Demolition:	N/A
Related Reports/Files or Documents:	N/A
Remarks:	N/A
Follow Up Actions:	N/A
DH-Order (To Be Confirmed with Buildings Department):	None
Advisory Letter (To Be Confirmed with Buildings Department):	None

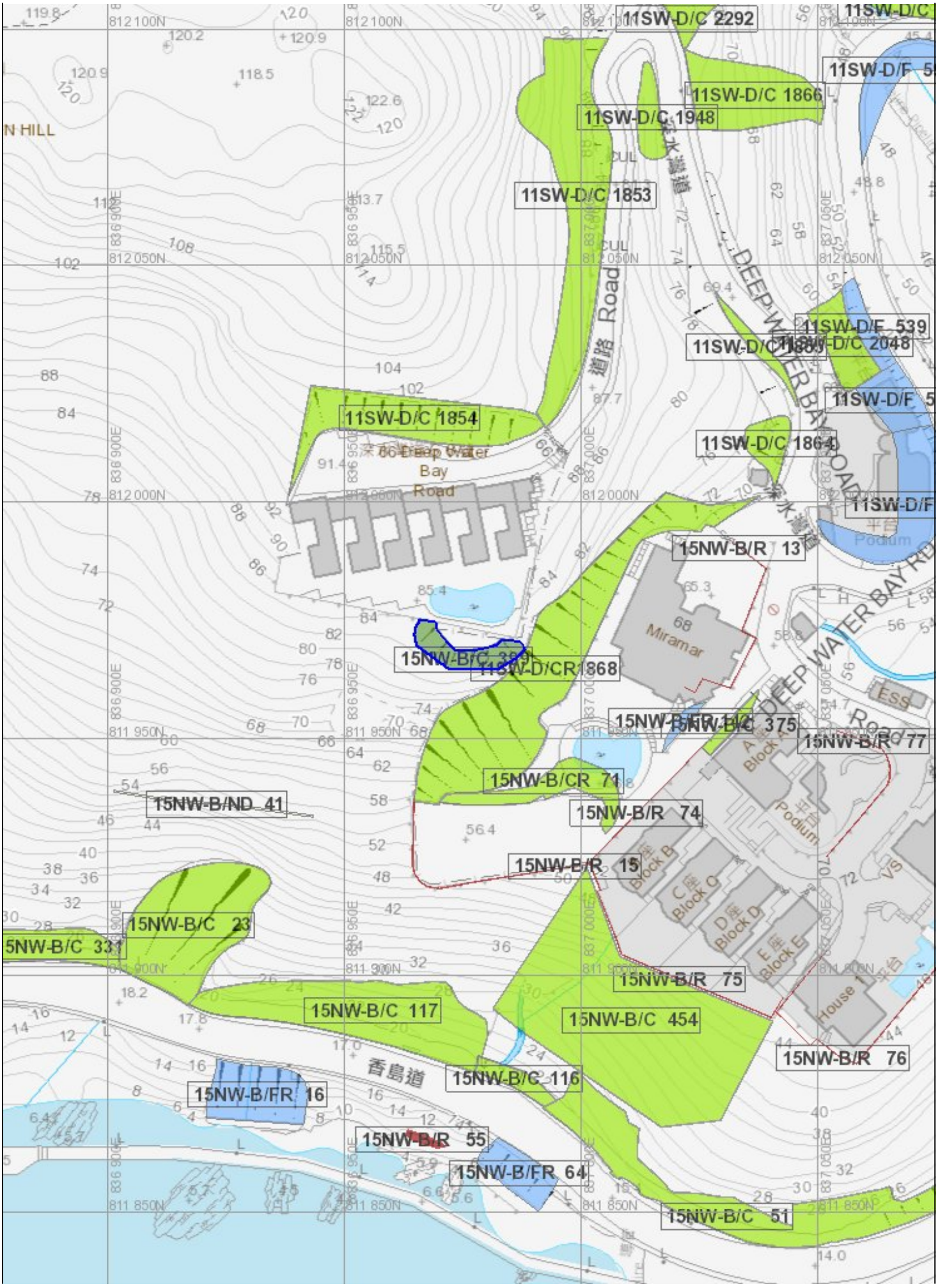
ENHANCED MAINTENANCE INFORMATION

From Maintenance Department: (Last Updated Date: 19/02/2025)

eLPMIS

PHOTO

N/A


11SW-D/C 2292
11SW-D/C 1866
11SW-D/C 1948
11SW-D/C 1853
11SW-D/C 1854
11SW-D/C 1864
11SW-D/C 2048
11SW-D/F 539
15NW-B/R 13
15NW-B/C 389
11SW-D/CR 1868
15NW-B/C 375
15NW-B/R 77
15NW-B/CR 71
15NW-B/ND 41
15NW-B/R 74
15NW-B/R 15
15NW-B/C 23
15NW-B/C 331
15NW-B/R 75
15NW-B/C 117
15NW-B/C 454
15NW-B/R 76
15NW-B/C 116
15NW-B/FR 16
15NW-B/R 55
15NW-B/FR 64
15NW-B/C 51
DEEP WATER BAY ROAD
Deep Water Bay Road
香島道
道路 Road
Miramar
Podium
Block A
Block B
Block C
Block D
Block E
House 1
ESS
VS

Slope Maintenance Responsibility Report (11SW-D/C1854)	**ESTATE MANAGEMENT SECTION** **LANDS DEPARTMENT**

List of Slope Maintenance Responsibility Area(s)

1	**11SW-D/C1854**		**Sub-Division**	1
	Location	Within and to thte north of RBL 573		
	Responsible Lot/Party	Lands Department	**Maintenance Agent**	Lands Department
	Remarks	For enquiries about the maintenance of this slope / sub-division of the slope, please contact the Maintenance Agent directly.		

2	**11SW-D/C1854**		**Sub-Division**	2
	Location	Within and to thte north of RBL 573		
	Responsible Lot/Party	RBL 573	**Maintenance Agent**	Not Applicable
	Remarks	Not Applicable		

- End of Report -

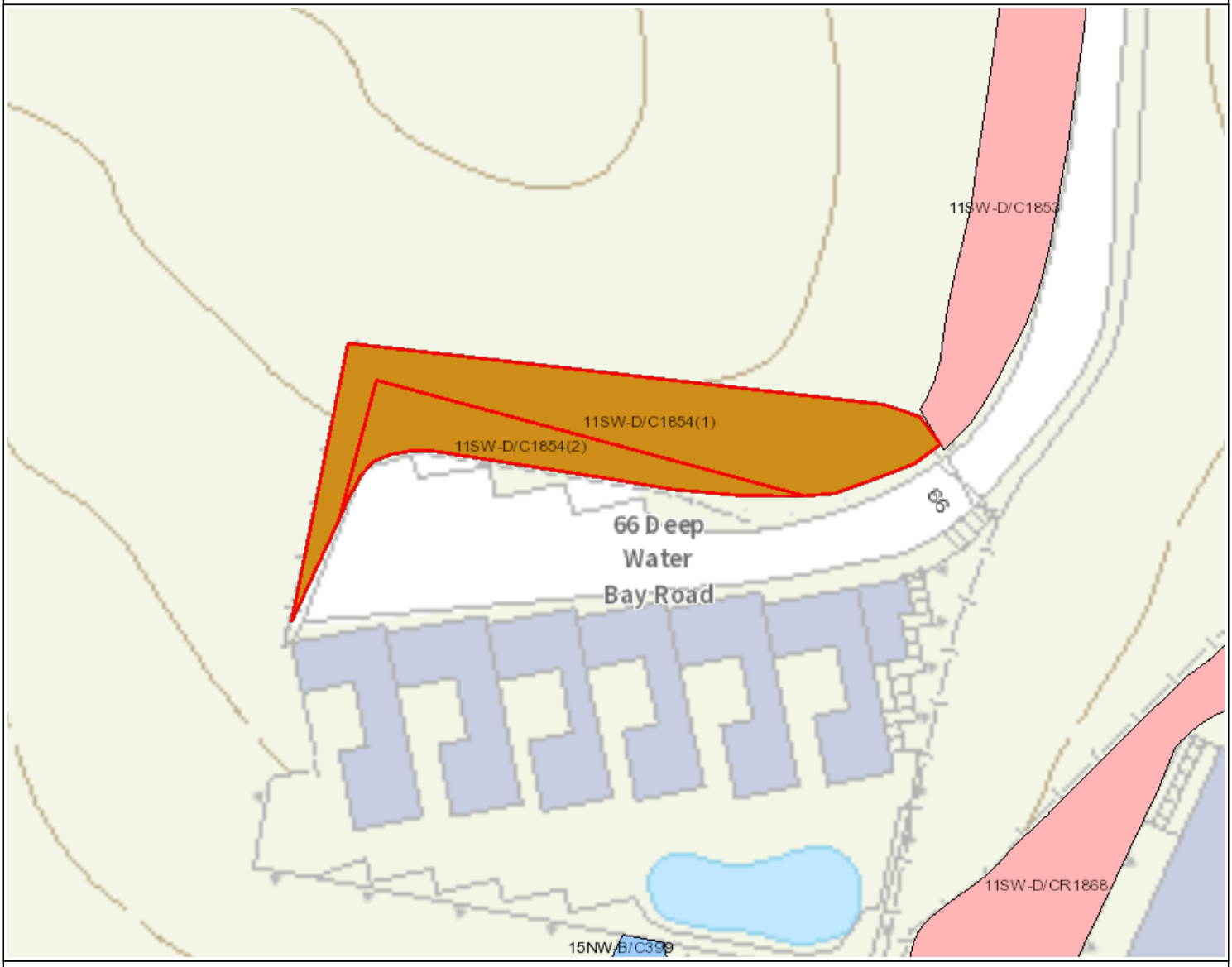
Notes:

(i) The location plan in Annex is for identification purposes of slope(s) only.

(ii) The slope(s) as listed in the Slope Maintenance Responsibility Report may not be shown on the location plan in Annex.

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Location Plan



Legend

- Slope Area(s)
- Search Location
- Slope(s) Maintained by Government
- Slope(s) Maintained by Private Party/Parties
- Slope(s) Maintained by Government and Private Party/Parties

ESTATE MANAGEMENT SECTION
LANDS DEPARTMENT

This Plan is **NOT TO SCALE** and intended for **IDENTIFICATION** only. All information shown on this plan **MUST** be verified by field survey.

Printed on: 25/02/2025

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BASIC INFORMATION

Location:	66 Deep Water Bay Road, Hong Kong
Registration Date:	16-03-1998
Ranking Score (NPRS):	9 (LPMit)
Date of Formation:	post-1977
Date of Construction/ Modification:	N/A
Data Source:	Project Office
Approximate Coordinates:	Easting : 836967 Northing : 812013

CONSEQUENCE-TO-LIFE CATEGORY

Facility at Crest:	Undeveloped green belt
Distance of Facility from Crest (m):	0
Facility at Toe:	Open car park
Distance of Facility from Toe (m):	0
Consequence-to-life Category:	2
Remarks:	N/A

SLOPE PART

(1) Max. Height (m): 10 Length (m): 65 Average Angle (deg): 70

WALL PART

N/A

MAINTENANCE RESPONSIBILITY

(1) Sub Div.: 1 Maintenance Type: Mixed Party: Lands D Agent: Lands D Land Cat.: 1,5a,5b(vi),7 Reason Code: 62 MR Endorsement Date: 02-11-1999
(2) Sub Div.: 2 Maintenance Type: Mixed Party: RBL 573 Agent: N/A Land Cat.: 1,5a,5b(vi),7 Reason Code: 1,44,46 MR Endorsement Date: 02-11-1999

DETAILS OF SLOPE / RETAINING WALL

Date of Inspection:	16-11-2018
Data Source:	Project Office
Slope Part Drainage:	(1) Position: Crest Size(mm): 300 (2) Position: Toe Size(mm): 275
Wall Part Drainage:	(1) Position: Crest Size(mm): 225

SLOPE PART

Slope Part (1)
Surface Protection (%): Bare: 100 Vegetated: 0 Chunam: 0 Shotcrete: 0 Other Cover: 0
Material Description: Material type: Rock Geology: N/A
Berm: No. of Berms: N/A Min. Berm Width (m): N/A
Weepholes: Size (mm): N/A Spacing (m): N/A

WALL PART

N/A

SERVICES

N/A

CHECKING STATUS INFORMATION

Tagmark: 9259_1_1 Part: 1 Checking Status: No checking records Checking Certificate No.: N/A

BACKGROUND INFORMATION

GIU Cell Ref.:	11SW25D7
Map Sheet Reference (1:1000):	11SW-25D
Aerial Photos:	A14542 (1988), A14543 (1988)
Nearest Rainguage Station (Station Number):	Gramtham Hospital, Wong Chuk Hang Road(H24)
Data Collected On:	16-11-2018
Date of Construction, Subsequent Modification and Demolition:	Modification: Constructed Before: N/A After: 1988
Related Reports/Files or Documents:	File/Report: DLC/BC Ref. No.: RBL 573 File/Report: DLC/BC Ref. No.: RBL 573 File/Report: Development Ref. No.: GCI 3/4/20/5/82, File/Report: Development Ref. No.: GCI 3/4/20/5/82, File/Report: Development Ref. No.: GCI 3/4/30/8/87 File/Report: Development Ref. No.: GCI 3/4/30/8/87
Remarks:	N/A
Follow Up Actions:	N/A
DH-Order (To Be Confirmed with Buildings Department):	None
Advisory Letter (To Be Confirmed with Buildings Department):	None

ENHANCED MAINTENANCE INFORMATION

From Maintenance Department: (Last Updated Date: 19/02/2025)

eLPMIS

PHOTO

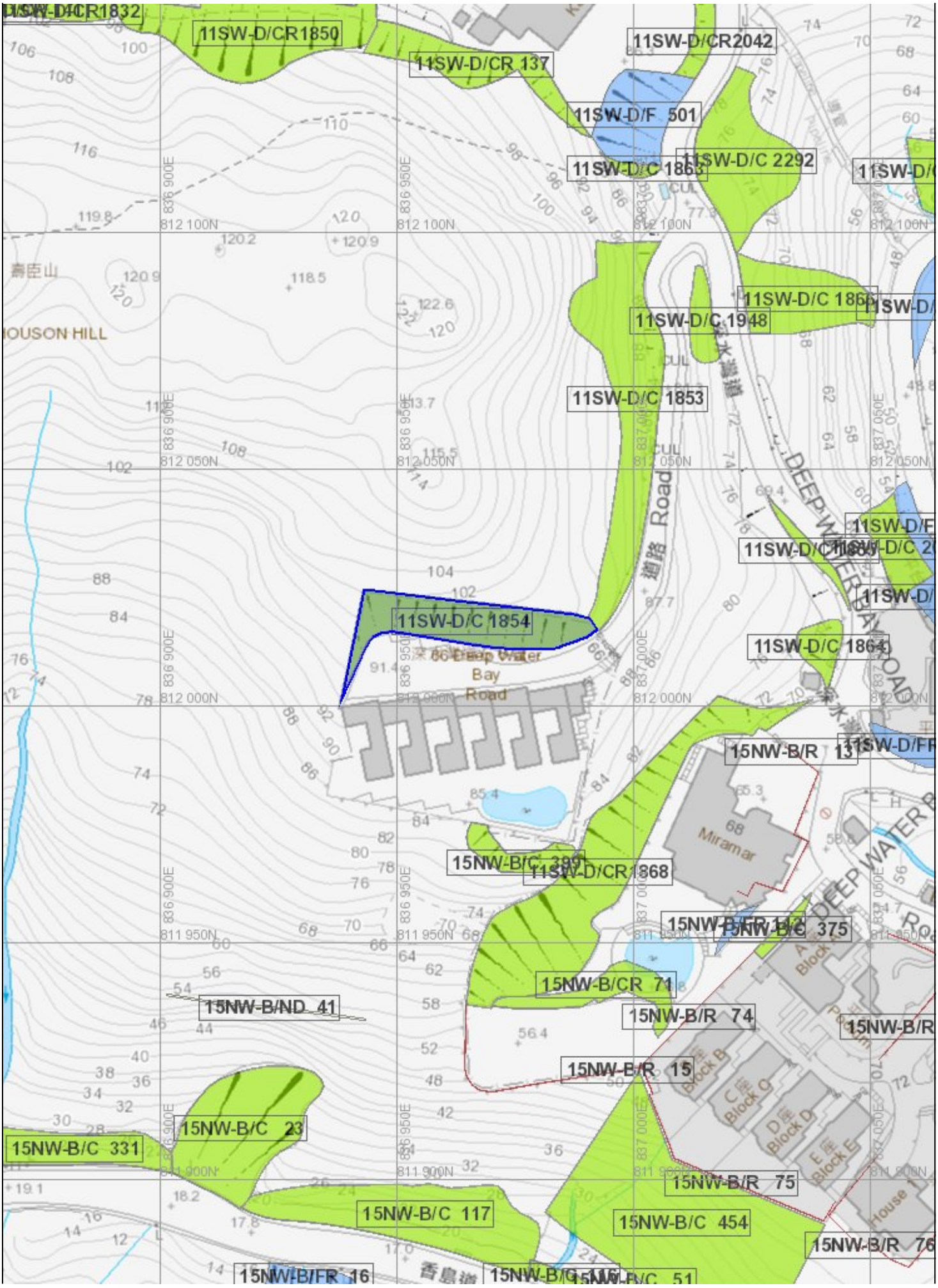


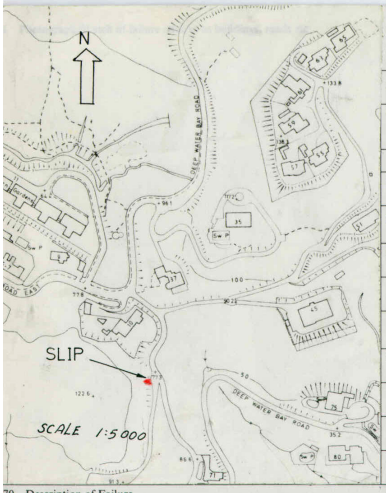









11SW-D/CR1832
11SW-D/CR1850
11SW-D/CR2042
11SW-D/CR 137
11SW-D/F 501
11SW-D/C 1863
11SW-D/C 2292
11SW-D/C 1866
11SW-D/C 1948
11SW-D/C 1853
11SW-D/C 1854
11SW-D/C 1864
15NW-B/R 13
15NW-B/C 397
11SW-D/CR 1868
15NW-B/C 375
15NW-B/CR 71
15NW-B/ND 41
15NW-B/R 74
15NW-B/R 15
15NW-B/C 23
15NW-B/C 331
15NW-B/R 75
15NW-B/C 117
15NW-B/C 454
15NW-B/R 76
15NW-B/FR 16
15NW-B/C 51
HOUSON HILL
Deep Water Bay Road
DEEPWATER ROAD
Miramar
Block A
Block B
Block C
Block D
Block E
House 1



2 Inspected by: W.K.LAI						3 Failure Number: 34/11 SW-D		
4 Ownership: Private						5 Lot No.: RBL 573		
6 Location: Access road to 66 Deep Water Bay Rd.						7 Active Construction Site. ~~Yes~~/No		
Date and Time						10 File No.		
8 Failure: 17·6·83			9 Inspected: 10 30 / 12·7·83					
Retaining Wall	Natural	Cut	Fill	Chunam/ Concrete	Grass	Trees/ Bushes	Stone Pitching	
11	12 ✓	13	14	20	21 ✓	22	23	
Possible Cause				Rainfall in preceding				
Ground Water	Infiltration	Pipe Failure	Excavation	15 days	1 day	1 hour		
30	31. ✓	32	33	40 17	41 255	42		
Material					60 Remaining Danger			
D.V.	D.G.	Soil	Rock	Colluvium	Continuing Erosion			
50 ✓	51	52 ✓	53	54				
70 Description of Failure: Shallow soil slip due to poor drainage.				71 Joint controlled	80 Back Analysis Yes/No			

GIU coll: 11-SW-2(D)-A-11

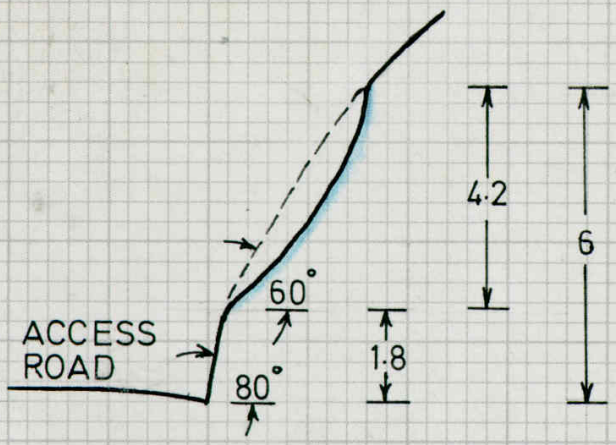


Detail of Failure	105 C.S.	106 I.S.	107 Vol. Slip	108 Vol. Debris	109 $\bar{\tau}$.	110 $\bar{\sigma}$

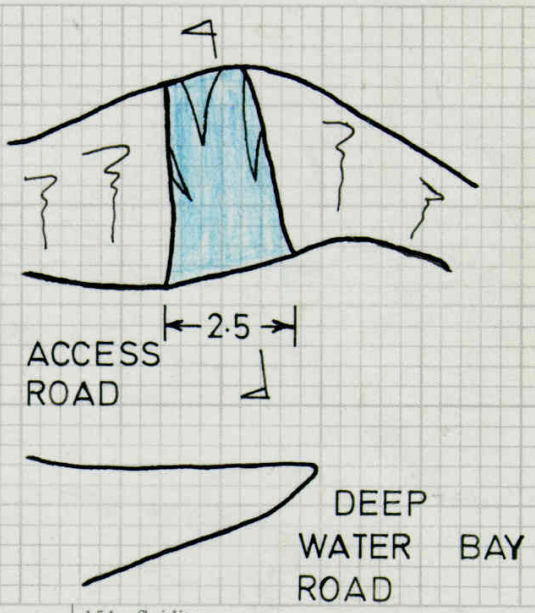
90 Cut height: 6	91 breadth: 2·5	92 angle: 60°	93 depth: 1·5	94 scarp distance: 0
95 failure height: 4·2	96 toe height: 1·8	101 debris breadth:	102 debris angle:	103 debris max. thickness:
				104 debris length:

Section 1 : 200

Refer to "Notes on Completion of Landslide Card"

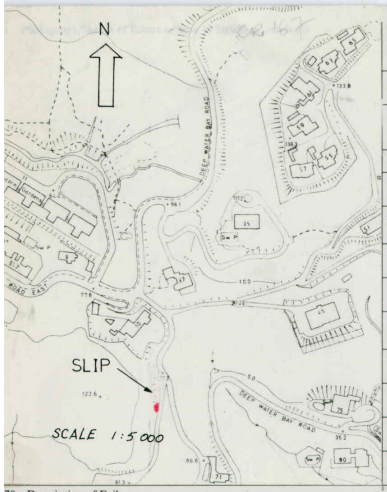


Plan 1 : 200



N.B.—GCO Survey section will undertake survey of important failures

water conditions (show on drawing) PWD BOO 114	water seeping from				154 fluidity of debris
	drain	main	debris	scarp (give depth BGL)	Debris removed prior to inspection.
	150	151	152	153	1981



2 Inspected by	W. K. LAI
3 Failure Number	33/11 SW-D
4 Ownership	Private
5 Lot No.	RBL 573
6 Location	Access to 66 Deep Water Bay Rd.
7 Active Construction Site.	Yes/No
8 Failure:	17·6·83
9 Inspected:	10 30 / 12·7·83
10 File No.	

Retaining Wall	Natural	Cut	Fill	Chunam/ ~~Concrete~~	Grass	Trees/ Bushes	Stone Pitching
11	12	13 ✓	14	20 ✓	21	22	23

Possible Cause				Rainfall in preceding		
Ground Water	Infiltration	Channel Failure	Excavation	15 days	1 day	1 hour
30	31 ✓	32 ✓	33	40 17	41 255	42

Material					60 Remaining Danger
D.V.	D.G.	Soil	Rock	Colluvium	Continuing Erosion
50 ✓	51	52 ✓	53	54	

70 Description of Failure: Shallow soil slip due to poor drainage.

71 Joint controlled

80 Back Analysis Yes/No

GIU roll: 11-SW-25D-R-11



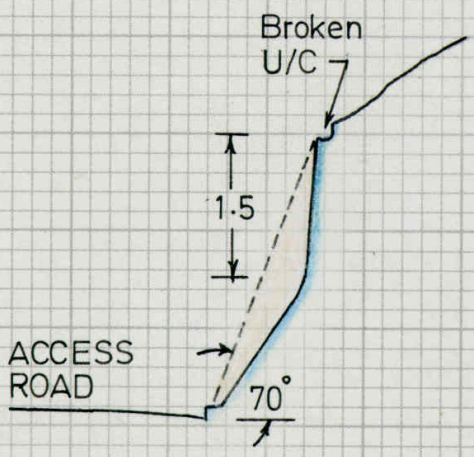
Detail of Failure	105 C.S.	106 I.S.	107 Vol. Slip	108 Vol. Debris	109 $\bar{\tau}$.	110 $\bar{\sigma}$

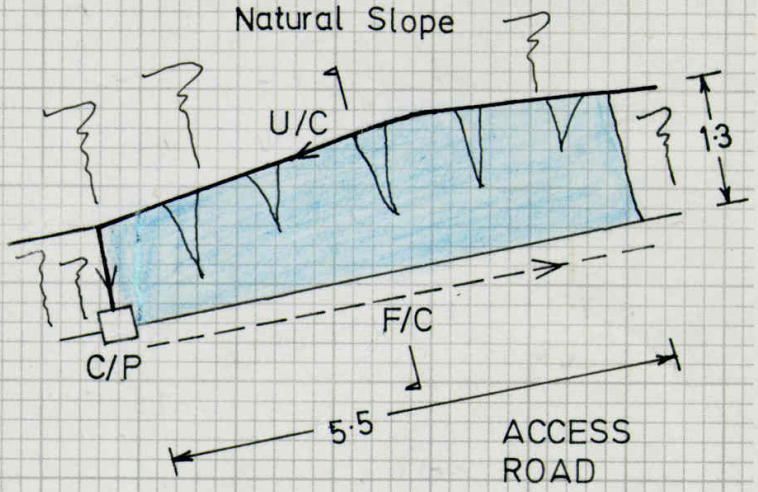
90 Cut height: 3	91 breadth: 5.5	92 angle: 70°	93 depth: 1.5	94 scarp distance: 0

95 failure height: 3	96 toe height: 0	101 debris breadth:	102 debris angle:	103 debris max. thickness:	104 debris length:

Section 1:100 | Plan 1:100

Refer to "Notes on Completion of Landslide Card"





N.B.—GCO Survey section will undertake survey of important failures

water conditions (show on drawing) PWD BOO 114	water seeping from			
	drain	main	debris	scarp (give depth BGL)
	150	151	152	153

154 fluidity of debris: Debris removed prior to inspection.

1981

Stage 2(H) Report S2(H)R 20/2013

STUDY AREA NO. 11SW-D/SA12
Shouson Hill,
Hong Kong Island (East)

Fugro (Hong Kong) Limited

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Landslip Preventive Measure Division 3
Geotechnical Engineering Office
Civil Engineering and Development Department

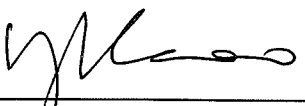
August 2013

FOREWORD

This report presents the findings and recommendations of a Natural Terrain Hazard Study (NTHS) for the Study Area 11SW-D/SA12 - Shouson Hill, Hong Kong Island (East). The purposes of this study are to evaluate the hazards arising from the natural terrain and make recommendations for mitigation works.

Originally, the NTHS was carried out based on the Design Event Approach with reference to GEO Report No. 138, including detailed desk study, aerial photograph interpretation, detailed engineering geological field mapping, dynamic debris mobility analysis, natural terrain hazard assessment, design event determination and the formulation of hazard mitigation strategies. Subsequently it has been revised to incorporate the interim guidelines of the Enhanced Approach to NTHS distributed by GEO in mid April. The work was undertaken and compiled by Fugro (Hong Kong) Ltd. on behalf of the Geotechnical Engineering Office (GEO) of the Civil Engineering and Development Department (CEDD), under Agreement No. CE 16/2011 (GE) - Landslip Prevention and Mitigation Works, Package B, Investigation, Design, and Construction.

The findings of the NTHS show that natural terrain hazards including open hillslope landslides and boulder fall have the potential to affect facilities at the toe of the Study Area. Hazard mitigation works were recommended for 7 of the 8 hillside catchments within the Study Area and following assessment using the Enhanced Approach the extent of mitigation has been significantly reduced. The remaining catchment is within a private lot.

Signed 

Y C Koo
Director
Fugro (Hong Kong) Limited

Date 30 August 2013

Agreement No. CE 16/2011(GE)
LPMitP, 2011, Package B, Landslip Prevention and Mitigation Works, Hong Kong Island (East) - Investigation, Design and Construction

1 Introduction

1.1 General

Fugro (Hong Kong) Limited (FHK) was appointed by the Geotechnical Engineering Office (GEO) of the Civil Engineering and Development Department (CEDD) under Agreement No. CE 16/2011 (GE) to undertake a Stage 2 (H) Study for the Study Area 11SW-D/SA12 - Shouson Hill, Hong Kong Island (which consists of 8 hillside catchments).

This report covers the Stage 2 (H) Study for Study Area 11SW-D/SA12 - Shouson Hill, Hong Kong Island.

1.2 Scope

Originally the scope of the Study was defined in Clause 6.2 (iii) of the Brief of Agreement CE16/2011 (GE) and was a Natural Terrain Hazard Study (NTHS) following the Design Event Approach (Ng et. al., 2003), and design option assessment of mitigation measures and schematic design option of the recommended mitigation measures. In accordance with the brief a Working Paper on Desk Study (DSWP), formed a Natural Terrain Hazard Review (NTHR) as defined in Ng et al. (2003) was submitted on 17 July 2012 (Fugro, 2012).

A NTHS consists of two components, a Natural Terrain Hazard Review (NTHR) and a Natural Terrain Hazard Assessment (NTHA) (Ng et al., 2003). The NTHA includes detailed field mapping and ground investigation to evaluate and, where necessary, revise the preliminary models and develop a site specific hazard model for design purposes. This report contains the results of the NTHS including field mapping and on-going site-specific, project ground investigation.

In April 2013, the GEO issued interim guidelines for the Enhanced Approach to the Design Event Approach.

Using the Enhanced Approach, design options for mitigation are assessed and schematic designs of the options are included to mitigate the identified hazards. Three options of mitigation have been chosen. Option 1 involves the installation of soil nails to stabilize potential landslide sources. Option 2 involve the construction of check dams/ rigid barriers. Option 3 involves the installation of flexible barriers. In-situ stabilization measures and rock fall barriers will be installed to mitigate against potential rock and boulder fall in all three options.

1.3 Methodology

The DSWP summarised the key desk study information and used aerial photograph interpretation (API) and site reconnaissance to generate a conceptual engineering geological

model, based on which the ground investigation (GI) was designed. This also formed the basis of the initial assessment of the landslide design event and mitigation strategy.

The conceptual engineering geological model was evaluated and revised following the initial phase of engineering geological mapping. The results of the field mapping allowed an initial hazard model to be developed. The hazard model formed the basis for the debris mobility assessment and preliminary mitigation design.

The Enhanced Approach for dealing with natural terrain under LPMitP was adopted as far as possible in this study. This approach enhances the application of the React-To-Known-Hazard principle and a Credible Design Event (CE) replaces the previous system which used a Conservative Event and a Worst Credible Event Scenarios.

2 Description of the Site

2.1 General

Study Area **11SW-D/SA12 – Shouson Hill** is located in the southwestern part of Hong Kong Island just to the north of Deep Water Bay and is essentially natural terrain. The Study Area is a horse-shoe shaped area and about 3.6 ha in size. It encompasses the steep hillsides to the north, northwest, west, southwest, east and southeast of the east-west trending ridgeline which forms the summit of Shouson Hill (**Figure 1**).

The area has been divided into 8 Natural Hillside Catchments (NHC1-8).

a) NHC 1 – An area of southeast facing terrain bounded by the eastern north-south trending ridgeline section of Shouson Hill ranging from 122 mPD to 116 mPD elevation and descending to about 70 mPD on Deep Water Bay Road. The area is about 0.64 ha in size. The development of the Miramar and Deep Water Bay Road are the main facilities-at-risk. The catchment is designated as 11SW-D/OH44a;

b) NHC 2 – An area of northerly facing moderately steep hillside sloping from the east-west trending ridgeline at an elevation of about 120 mPD to Kai Villa and Blocks A & B of 8 Shouson Hill Rd East. The area is about approximately 0.43 ha in size. The catchment is designated as 11SW-D/OH44b;

c) NHC 3 – This is a relatively small area (about 0.16 ha) of north facing terrain down slope from the east–west striking ridgeline (120 mPD) to the platform (90 mPD) for Blocks C & D of 8 Shouson Hill Rd East and Houses 25 & 26 of Las Pinadas. The catchment is designated as 11SW-D/OH44;

d) NHC 4 – This is northward sloping terrain about 125 m long down slope from the summit of Shouson Hill (148 mPD) to the platform of Las Pinadas at an elevation of about 94 mPD. The area is approximately 0.79 ha in size and extends around the northwest spurline up slope of the platform for Bello Horizonte (ground level of about 107 mPD). The catchment is designated as 11SW-D/OH45a;

e) NHC 5 – This is a small westward-facing catchment between the summit of Shouson Hill (148 mPD) and the swimming pool platform and Block 6 of the US Consulate Staff Quarters at about 102 mPD. The catchment is designated as 11SW-D/OH45;

f) NHC 6- This is a small area (0.1 ha) of westerly sloping essentially anthropogenic terrain at the western end of the Study Area. Part of the platform (101 mPD) for Blocks 2-5 of the US Consulate Staff Quarters forms the crest of the catchment and the platform for Pak Villa (73 mPD) lies down slope. The catchment is designated as 11SW-D/DF28a and is excluded from the NTHS;

g) NHC 7 – This is an area of about 0.44 ha of western facing catchment bounded by the summit of Shouson Hill at the crest (148 mPD) and part of the platform for the swimming pool, garage and shelter at Pak Villa and the public road at about 70 mPD. The catchment is designated as 11SW-D/DF28; and

h) NHC 8 – This is the largest of the NHCs occupying about 0.79 ha of southwesterly facing terrain. It also has the summit of Shouson Hill at the crest of the catchment (148 mPD) and at the base a public road (73 mPD) and the platform for Flamaglo at about 69 mPD. The catchment is designated as 11SW-D/DF28b.

The Study Area is dominated by the imposing rounded summit and ridge/spurlines of Shouson Hill and relatively steep slopes falling to cut/fill slopes and platforms, from an elevation of about 148 mPD to about 68 mPD. There is evidence of considerable old military and other anthropogenic activity which has disturbed the terrain especially around the summit and western slopes. Much of the general Study Area is quite steeply sloping and is covered by dense, almost impenetrable vegetation. Some areas of steep rock face and outcrop also occur. The Working Paper initially identified about 28 ephemeral drainage lines, however, subsequent detailed field work and integrated API indicates that only 2 could be considered as having potential for channelised debris flows and 5 considered as topographic depressions with potential for topographic depression failures.

2.2 Facilities

There are a numerous substantial residential buildings and cut and fill slope features near the toe of the Study Area. At the crest, there are old military ruins with an artillery ramp leading up to it from the toe of the western part of Study Area. The locations of registered slope features are shown on **Figure 5**.

3 Desk Study

3.1 Published Geology

The area of Shouson Hill is characterized by jointed fine ash, vitric tuffs of the Upper Jurassic Ap Lei Chau Formation (JAC). The regional geology, as shown on the 1:20 000 scale Geological Map Sheet 11-HGM 20, is reproduced in **Figure 2**. Generally, this unit is overlain by the coarse ash vitric tuffs of the Tai Mo Shan Formation (JTM) and underlain by the fine ash tuffs, breccia and tuffites of Shing Mun Formation (JSM). The published geological map shows a Quartzphyritic rhyolite dyke striking north-northwest in the southwest of the area. The general geology is also described by Sewell et al. (2000).

The regional Geotechnical Area Studies Programme Report for Hong Kong & Kowloon (GCO, 1987) also covers the area at a scale of 1:20 000. The Physical Constraints Map (PCM) identified the major constraints as steep in-situ terrain with general instability occurring on part of the northern side of Shouson Hill (Study Area) and zones of general instability associated with steeply sloping colluvium on the southern side (i.e., high and extreme geotechnical limitations, respectively).

3.2 Landslide Inventories

3.2.1 Enhanced Natural Terrain Landslide Inventory (ENTLI)

In 1995, GEO compiled the Natural Terrain Landslide Inventory (NTLI), from the interpretation of high-altitude aerial photographs dating from 1945 to 1994 (Evans *et al*, 1997; King, 1999). In 2004, GEO initiated an update of the NTLI using low-altitude (8,000 ft and below) aerial photographs and produced an Enhanced Natural Terrain Landslide Inventory (ENTLI). The ENTLI continues to be updated as new landslides occur.

According to the ENTLI database, four recent natural terrain landslide features 11SWD0661E, 11SWD0662E, 11SWD0692E and 11SWD0694E were recorded within the Study Area (MGS, 2007; updated by FSWJV in 2009) (**Figure 3** and **Table 1**). The recent failures were recorded in 1967, 1967, 1972 and 1972 respectively and were classified as open hillslope landslides. In addition, two relict landslide features 11SWD0005E and 11SWD0008E were identified using aerial photographs taken in 1963.

3.2.2 Large Landslide Inventory

The Large Landslide Inventory was compiled by Scott Wilson Ltd. under Agreement No. CE39/98 "Specialist API Services for the Natural Terrain Landslide Study" (1999a and 1999b). According to the Large Landslide Inventory, there are no features recorded within the Study Area.

3.2.3 Landslide Incidents

According to the GEO landslide database (as of 2010), there are numerous landslide incidents reported to GEO in the general area of Shouson Hill affecting a range of man-made features (**Figure 3** and **Table 2**) since records commenced in 1982. However, only three incidents (HK2006/9/712, 33/11SW-D and 34/11SW-D) occur in the Study Area, associated with man-made features 11SW-D/C1948 and 11SW-D/C1853 on Deep Water Bay Road. Two other incidents (HK1993/9/25 & HK2008/6/147) are also relatively small failures associated with cut slope feature no. 11SW-D/C669 below NHC 8 and the cut slope of feature no. 11SW-D/CR141 behind Las Pinadas below NHC 4, respectively.

3.3 Territory-wide QRA of Boulder Fall Hazards

A reconnaissance level (regional scale) boulder study formed part of a preliminary study for GEO under Stage 1 of the Phase III Study of the "Hong Kong Special Administrative Region-wide Quantitative Risk Assessment (QRA) of Boulder Fall Hazards" (MGS, 1999). This work produced a "boulder field inventory" based on API techniques. This inventory was prepared by Water Resources Consulting Services as sub-consultants to MGS. The inventory (Emery, 1998) contains 12,017 polygons showing individual boulder fields. Each polygon was classified in relation to four attributes:

a) percentage of the polygon area covered by boulders;

b) boulder type;

c) boulder size; and

d) boulder shape.

Seven QRA Boulder Inventory polygons intersect the Study Area (S11_28, S11_29, S11_31, S15_656, S15_657, S11_U and S15_U), and only 5 contain reference to boulders with the others relating to areas that already underwent urban development (**Figure 4** and **Table 3**).

Polygon S11_28 covers parts of the south-western section of the area in NHC 7 & 8, S15_655 parts of the adjoining Sheet 15; S11_31 adjoins the toe NHC 1 & 2. These polygons are classified as land surface obscured by vegetation.

Polygon S11_29 occupies much of the area and together with S15-657 (on Sheet 15) is classified as cliff or rock outcrop with 100% rounded boulders greater than 5 m in size. During field reconnaissance there was no evidence of large 5 m boulders or large detachable blocks of outcrop.

3.4 Associated Man-made Slopes

The locations of the existing registered slopes and retaining walls are listed in **Table 4** and are shown in **Figure 5**. Twenty registered features are located at the boundary of the Study Area, of which nine are cut slopes, three are fill slopes, one is retaining wall and seven are cut and retaining wall features. The engineered slopes are generally associated with construction of roads and site formation for residential buildings.

Stage 2 Studies have been completed for 11SW-D/C1863, 11SW-D/CR137, 11SW-D/CR141, 11SW-D/CR148, 11SW-D/CR1850 and 15NW-B/C197, and advisory letters were recommended for 11SW-D/CR141, 11SW-D/CR1850 and 15NW-B/C197 and Dangerous Hillside (DH) orders were recommended for 11SW-D/C1853 (mid-slope of NHC1), 11SW-D/CR137 (downslope of NHC2) and 11SW-D/CR141 (downslope of NHC4). Stage 2 Study for 11SW-D/CR1868 was terminated as the feature was found to be up to standard by previous study accepted by GEO or previously upgraded. No Stage 2 or Stage 3 Study was conducted for the remainder of the registered features.

The maintenance agents and responsibility parties for these registered slopes are also given in **Table 4**.

3.5 Previous Ground Investigation Data

Limited geotechnical ground investigation data is available within the Study Area (Figure 6). Ground investigation data is available for locations north, east and south-east of the Study Area dating from 1982. A summary of ground investigation records obtained from the Geotechnical Information Unit (GIU) library that are relevant to the Study Area is included in Table 5A for reports:

a) GIU Reports Ref. 4278 (1982), 15554 (1987), 18871 (1988), 19026 (1985), 24863 (1993), 24865 (1991) and 24868 (1991).

A single borehole is located within the north-western lower hillslopes of the Study Area (18871/DH7). Heavily to completely decomposed saprolite 7.3 m thick was recorded above rock head. The solid geology for this drillhole was classified as volcanic.

Two drillholes occur within the central northern lower hillslopes of the Study Area (18871/DH6 & DH13). Heavily to completely decomposed saprolite between 10 and 15.1 m thick were recorded. The solid geology for these drillholes is classified as volcanic.

Three boreholes occur near the eastern Study Area boundary (19026/BH1, BH2 & BH3). Fill between 0.1 and 1.9 m thick and saprolite between 2.5 and 5.4 m in thickness were recorded. The solid geology for these drillholes is classified as volcanic tuff.

Three drillholes occur near the south-eastern boundary of the Study Area (15554/BH1, BH5 & BH7). Saprolite between 2 and 2.3 m thick was recorded within GI stations 15554/BH1 & BH7. Rock head was encountered at the surface of 15554/BH5. The solid geology for these drillholes is classified as volcanic.

Groundwater data relevant to the Study Area was limited to a single GIU report (15554). A summary of the groundwater data from three boreholes located within the Study Area and seven near the south-eastern boundary is included in Table 5B. The depth of the measured groundwater head for three boreholes within the Study Area (15554/BH1, BH5 & BH7) ranged from 2.90 m to 3.78 m below ground level.

3.6 Geotechnical Area Studies

The Geotechnical Area Studies (GAS) Programme produced one report of relevance to the Study Area is GAS Programme Report I – Hong Kong and Kowloon (GASP I), a regional 1:20 000 scale study (GCO, 1987). The regional assessment presents information on the physical and resources of the area in the form of a systematic land inventory and relevant aspects are described below. Extracts of the Terrain Classification Map (TCM; **Figure 7A**), Physical Constraints Map (PCM; **Figure 7B**), Geotechnical Land Use Map (GLUM; **Figure 7C**) and Engineering Geology Map (EGM; **Figure 7D**) are presented. There is no 1:2 500 scale GAS District Report covering any part of the Study Area or nearby in the district.

As indicated in the TCM (GCO, 1987) (**Figure 7A**), the western and easternmost slopes of the Study Area are characterised by convex side slopes ranging from 15° to 30°. Most of the northern and western facing slopes in the central portion of the Study Area are convex to planar side slopes sloping at 30° to 40°. The slopes to the south of the Study Area are 15° to 30° sloping colluvial footslopes (drainage plains) with evidence of instability.

The PCM (GCO, 1987) (**Figure 7B**) highlights that the central slopes of the Study Area are predominantly insitu terrain, while the slopes near the eastern and western boundaries occur in areas without any major physical constraints. The southern slopes of Shouson Hill, in comparison are colluvial in nature with zones of run off concentration and general instability.

The GLUM (GCO, 1987) is relevant because it highlights in four classes (low-extreme) the degree of geotechnical limitations associated with the terrain and is based directly on the slope gradient, terrain, erosion and instability attributes recorded in the TCM. A summary of the TCM attributes are presented in **Table 6**. At the commencement of the GAS Programme, every TCM unit was rated from low to extreme geotechnical limitations (I-IV) in relation to their anticipated susceptibility to slope instability. This information is of benefit because the GLUM system was originally designed, in the parlance of 1979, as a Landslide Hazard or Landslide Susceptibility Map, and therefore provides some regional context. Neither of these terms was acceptable due to socio-economic concerns at the time.

The GLUM (**Figure 7C**) indicates that the eastern, south-eastern, and western portions of the Study Area are predominantly GLUM Class III terrain, which have high geotechnical limitations which equate to substantial hazards. The southern slopes to the south of Study Area are classified as GLUM Class IV, with extreme geotechnical limitations and quite major hazards.

The EGM (GCO, 1987); (**Figure 7D**) illustrates that the Study Area is predominantly pyroclastic in nature. The EGM is of historical interest, because although the colluvial mapping was specifically updated, the solid geology was wholly derived from Allen & Stephens (1971). This mapping was at 1:50 000 scale and is replaced by the current 1:20 000 scale regional geology map (HGM 20 Sheet 11) (GCO, 1986). The regional EGM's also were a benchmark in relating weathering, material characteristics and engineering comments to basic lithology in a regional context.

3.7 Site History

The site history dates from the earliest available aerial photography in 1949 and a summary of the observations is presented together, with the detailed API Report including 14 annotated aerial photograph plates and one oblique photograph in **Appendix A**.

Natural ephemeral drainage lines, intermittent bedrock, some precipitous rock faces, relatively thin recent and relict colluvium, recent/relict landslide features, and considerable evidence of old and recent anthropogenic activity are observed. Old anthropogenic features include military ruins from World War II and ruins from the 1880s. There is also evidence of old agricultural terracing and associated practices. Recent anthropogenic activity include the construction of cut and fill slopes in association with the construction of Shouson Hill Road, Shouson Hill Road East, and Deep Water Bay Road, and fill platforms in association with private developments west, north and east of the Study Area.

In 1949 much of the area around Shouson Hill had been developed and the current-day road system and many of the associated cut and fill slopes were in place. Evidence of old military and other anthropogenic activity is widespread in these photographs and clearly pre-date 1949. Numerous cut and fill platforms are associated with residential development of predominantly bungalow-style garden compounds. By 1963, some re-development is occurring on the lower terrain with site formation affecting existing cut and fill slopes with many new features being created. The natural terrain on Shouson Hill is relatively un-vegetated and considerable information relating to the geomorphology, geology and terrain conditions are observable.

In the 1967 aerial photographs, some instability is apparent on the western and northern facing slopes of the Study Area with at least 4 landslips indicated in **Figure 11,** of which the northern facing failure (L8) has been removed by site formation between 1973 and 1978. These events were probably associated with the intense rainstorm in June 1966. In 1972, at least two of five failures appear to be natural failures and appear to have been re-activated possibly with the mid year rainstorms of 1972 that resulted in the Po Shan and Sau Mau Ping landslide disasters.

Much of the instability associated with the general Shouson Hill area occurred on man-made features, with many landslip incidents reported. However, the failures on the natural terrain in the Study Area were generally prior to 1980. Since that time, and particularly over the last decade, the vegetation density has progressively increased in a dramatic manner across the area. Today, the vegetation is almost impenetrable except on areas of outcrop or exposed weathered saprolite.

During the late 1970s, 1980s and 1990s considerable re-development of the residential buildings occurred with larger multi-storied blocks, such as Las Pinadas and Flamaglo constructed.

3.8 Utilities Information

According to the following, there are no current or planned utilities in the Study Area: Drainage Services Department, Water Supplies Department, Transport Department, CLP Power/ Hong Kong Electric, Hong Kong & China Gas, PCCW-HKT Telephone Ltd, Wharf New T & T, Hong Kong Cable TV, Hutchison Global Communications Ltd, New World Telephone and Hong Kong Broadband Network.

3.9 Land Status

The Study Area is predominantly on unallocated government land (Figure 8). The southwestern and western catchments of the Study Area (NHC8, 7 & 6) are bound by cut slopes no. 15NW-B/C197, 11SW-D/C669, 11SW-D/CR148, 11SW-D/C869 of government and private responsibilities (**Table 4**). The whole of Catchment NHC6 is within the Private Lot/Sandwich Lots while Private Lot/Sandwich Lots are also present within the other two catchments.

The northwestern catchments of the Study Area (NHC5 & 4) are bound by cut and fill slopes no. 11SW-D/C860, 11SW-D/CR878, 11SW-D/CR141, 11SW-D/CR1832, 11SW-D/R429 and 11SW-D/F211 of government and private responsibilities. Private Lot/Sandwich Lots are also present within each of these catchments.

The north and northeastern catchments of the Study Area (NHC3 &NHC2) are bound by cut and fill slopes no. 11SW-D/C1863, 11SW-D/CR137, 11SW-D/CR1850, and 11SW-D/F501 of private responsibilities. Private Lot/Sandwich Lots are also present within each of these catchments. Catchment NCH2 also has areas of Overlapping Lot/ Stratum Lots and Licensed Areas. The DLO of Lands Department has confirmed that the lease modifications for RBL766SA and RBL245 SA SS.1 affecting the eastern section of Catchment NHC2 were withdrawn (**Appendix H**).

The southeastern catchment of the Study Area (NHC1) contains and is bound by cut slopes no. 11SW-D/C1948, 11SW-D/C1853, 11SW-D/C1854, 11SW-D/C1864, 11SW-D/C1868 and 15NW-B/C399 of government and private responsibilities. Private

Lot/Sandwich Lot, Overlapping Lot/Stratum lot and Licensed Area of land also occur within this catchment.

3.10 Aerial Photograph Interpretation

In 1949, the Study Area was covered by sparse vegetation and consisted of ridgelines, hillcrests, rock cliffs, and side slopes. The Study Area and its surroundings have been substantially disturbed by man with military fortifications at the crest and a series of cut slopes along the northern, western, and eastern toes, associated with the construction of private developments, Shouson Hill Road, Shouson Hill Road East and Deep Water Bay Road. Two relict landslides are apparent in the 1963 aerial photographs, one at the northern portion of NHC8 and one at midslope of NHC3. Four possible natural terrain landslides are apparent in the 1967 aerial photographs, and six in the 1972 aerial photographs. Additional possible natural terrain landslides were apparent within the vicinity of the Study Area in the 1984, 1985, 1986, 1995, and 2009 aerial photographs (Appendix A).

From the 1949 to 2000 aerial photographs, evidence of anthropogenic features such as military fortifications, paths and construction of private developments were apparent throughout and around the Study Area, which eventually became masked by increasingly dense vegetation.

3.11 Conceptual Model

The desk study indicated that the Study Area is underlain by fine ash vitric tuff with some quartzphyric rhyolite in the western catchments. The terrain is predominantly in-situ with recent colluvium along the drainage lines particularly in the western and southwestern catchments. Some evidence of relict colluvium exists along parts of the spurlines and upper slopes. Some surface erosion and slope wash is evident. There is also evidence of some landslide debris associated with the recent ENTLI features.

Thirteen recent landslides are observed by API in and around the Study Area, with some probably associated with anthropogenic activity and man-made slope failures. Two relict landslide depressions were recorded in the ENTLI. Based on the field mapping and the hillshade model generated from LIDAR data, it is evident that the terrain has been modified by old anthropogenic terracing as well as military-associated activities.

Based on the initial findings of the Desk Study Working Paper (Fugro, 2012) open hillslope landslides (OHL), channelized debris flows (CDF) and rock/ boulder fall were assessed as potential hazards that may affect the facilities. These hazards have been confirmed during the study with additional topographic depression failures (TDF). Preliminary landslide source volumes of 120 m^3 and 250 m^3 for OHL and CDF were proposed for the worst credible design event (WCE) and these have been reduced and refined to the Credible Event (CE) based on the enhanced approach for dealing with Natural Terrain under LPMitP and to the terrain conditions during the study, with verification by both detailed field mapping and project ground investigation. TDF was not yet introduced at the time of submission of the

working paper in which the preliminary landslide source volumes were stated and had been treated as CDFs.

4 Engineering Geological Assessment

4.1 General

The geomorphology was mapped based on the system of Savigear (1965) and GEO Technical Guidance Note No. 22 (GEO, 2004). Superficial geology and geomorphology were mapped based on aerial photograph interpretation (API), detailed field mapping, interpretation of LiDAR data, and consideration of previous and project ground investigation (GI) data.

Field reconnaissance was carried out in early May 2012, while detailed mapping was carried out from December 2013 to April 2013. The site conditions within the area were observed including slope gradients, superficial geology, possible landslide scars, hydrological conditions, and anthropogenic alteration. Pervasive man-made ground disturbance of the area was apparent.

The Study Area was densely vegetated making access to most of the site difficult. Temporary ladders and associated vegetation clearance during ground investigation provided access. (**Plates 1 to 5**). **Plate 14** shows a view across Island Road – Area C towards the summit of Shouson Hill.

Anthropogenic features were observed within the Study Area including possible old agricultural terraces, graves and rubble walls (**Plates 6 to 10**), hewn blocks, remnants of concrete structures, small boulders and concrete detritus (**Plates 11 to 13**), concrete U-shaped drainage channels, trenches (**Plates 15 & 16**) and registered slope features within the lower hillslope locations of the Study Area (**Plates 17 to 20**).

In particular, Catchment NHC 6 consists of essentially man-made cut and fill slopes (**Plate 5**), related to old and more recent site formation associated with the construction of cut and fill platforms above it.

Project Ground Investigation was carried out with the purpose of further developing and refining the engineering geological model (**Plates 21 to 23**). Rock outcrop mainly observed as rock cliffs were located near and on the hillcrests, and side slopes of the Study Area (**Plates 24 to 29)** found in NHCs 1, 2, 4, 5 and 7 with slope angles ranging from 35° to 60° (**Figure 10)**. Boulders found within the Study Area are generally less than 0.5 m and no more than 1 m. Further observations on solid geology can be found in **Section 4.2.2.**

Landslide scars (**Plates 30 & 32**) as well as colluvium of varying thicknesses, ranging from 0.5 m to 1.5 m (**Plates 31 to 34**) were observed.

The superficial geology and geomorphology map compiled from integrated API and detailed field mapping is shown in **Figure 10**. Detailed field mapping records and field traverses (with plate orientations) (**Figure C1**) are indicated in **Appendix C**.

Ephemeral drainage lines and topographic depressions were observed from API and detailed field mapping (**Figures 10** and **13**, **Plates 35** to **41)**. They are located on the northern and western portion (i.e. Hillside Catchments NHC 2, 3, 4, 5, 7 and 8) of the Study Area. The drainage lines were dry during field observations, partly due to mapping during the dry season, with cobbles and boulders of sizes 0.1 m to 0.3 m normally occurring within them. Further hydrogeology observations can be found in **Section 4.2.4.**

4.2 Engineering Geology

4.2.1 Project Ground Investigation

Site-specific, project ground investigation (GI) was planned after the initial engineering geological model was developed during desk study and API. This included a total of nine trial pits and six drillholes with piezometers. Contractors' GI logs were checked and revised as necessary, by the consultant's engineering geologists and revisions have been incorporated in the logs, reproduced in **Appendix B**. (Field Work Report (VIBRO, GE/2011/06)). Trial pits were sited to provide a maximum indication of superficial deposits. **Table 7A** summarises the GI findings and **Table 7B** summarises rock joint measurements (stereonet diagrams of the data in **Appendix C**).

The maximum depth of colluvium recorded was about 1.7 m (DH6) underlain by saprolite with recorded thicknesses ranging from 0.9 m to 14.07 m (DH4, where saprolite was encountered from 1 m below ground level till the end of the drillhole). No residual soil was encountered from GI. Colluvium was underlain by bedrock in TP5 and DH3. Rockhead was encountered in the drillholes between 2.3 m and 5.3 m below ground surface except DH4, DH5 and DH6 where no rockhead was encountered. The solid geology for the saprolite was classified as fine ash vitric tuff.

4.2.2 Solid Geology

According to the 1:20 000 geological map (**Figure 2**; GCO, 1986; HGMO, 2006), the Study Area is predominately composed of fine ash vitric tuff of the Ap Lei Chau Formation, undivided (JAC). A dyke of Quartzphyric Rhyolite is also trending northwest-southeast across the western part (in NHC 6, 7 and 8) of the Study Area.

Outcrop occurs on and near the ridgeline, and rock cliff and slopes are found in NHCs 1, 2, 4, 5 and 7 with slope angles ranging from 35° to 60° **(Plates 24 to 29**). They are generally of Grades III and higher, with the majority of the joints striking NW-SE and NE-SW. Basic rock mass information is contained in **Appendix F.**

4.2.3 Superficial Geology

Considering the results of superficial geology and geomorphology mapping based on integrated API (**Appendix A)**, field mapping **(Appendix C)** and LiDAR data, the Engineering Geological and Geomorphological Map is presented in **Figure 10**.

The superficial materials generally include concrete detritus, fill, recent and relict colluvium and residual soil/ saprolite. More specific descriptions follow:

Concrete Detritus

Concrete detritus is found in small pockets at the toe of Hillside Catchments NHC 5 and NHC 8, and at the crests of Hillside Catchments NHC 4, 5 and 7. The concrete relicts could be the remnants of the anthropogenic activities of the military site active dating back to the late 1800s. The blocks are generally angular and < 1 m in length. Furthermore an old concrete artillery ramp trending northwest-southeast and the ruins of two concrete military fortifications occur at the crest of Hillside Catchments NHC 4, 5, 7, and 8.

Fill

Fill generally occurs on the eastern part of the Study Area, specifically on the toe of Hillside Catchments NHC 1 and 2, where it ranges from 0.1 to 1.9 m thick as revealed by boreholes BH1 to BH3 from previous ground investigation (GIU Report No. 19026). Observations from the 1963 aerial photographs indicated that extensive activities of cutting, filling and formation of cut platforms are ongoing on the toe of Hillside Catchments NHC 1 and 2 and also extensively in 6 and 7. API evidence is compelling and information from previous ground investigation also indicates the existence of fill in these areas. A veneer of fill is likely located at the western summit in association with the old military features.

Colluvium

Colluvium, mostly thin, of recent age covers most parts of the Study Area. Colluvium of less than a metre thick is generally found on the open hill slopes; colluvium of less than 1.5 m thick is generally found in the northern part of the Study Area (i.e. in the swale terrain of Hillside Catchments NHC 2, 3 and 4); colluvium of up to 2 m thick is generally found in the western part of the Study Area (i.e. in the swale areas of Hillside Catchments NHC 5, 7 and 8). The colluvium is generally fine grained sandy, silty clay with some angular gravels and cobbles. There is also evidence of some relict colluvium mostly on the upper slopes and spurlines. Relict colluvium also occurs near the toe of NHC8.

Residual Soil/Saprolite

Residual soil/ saprolite are found predominantly on the open hill slopes and spurlines of Hillside Catchments NHC4, 3, 2 and NHC1. These materials are normally thin (< 0.5 m, for example TP5 has no saprolite over bedrock) over shallow rock on the spurlines and upper terrain. They appear to be thick on areas of deeper weathering on the summit located adjacent to rock outcrop, with TP3 revealing saprolite of 1.8 m near the summit.

4.2.4 Hydrogeology

Two ephemeral drainage lines and five topographic depressions were observed from API and detailed field mapping. They are located on the northern and western portion (i.e.

Hillside Catchments NHC 2, 3, 4, 5, 7 and 8) of the Study Area. The drainage lines were dry during field observations, partly due to mapping during the dry season.

Little evidence of groundwater or seepage was apparent, except associated with a basin-like area on the broad summit ridgeline which may act as a recharge area for the underlying rock units.

Figure 10 shows the two key ephemeral drainage lines and the five topographic depressions where topographic depression failures may occur. The criteria for entrainment are assessed based on the channelization ratios (depth/ width) of the channel and the size of the catchment area. It is found that sufficiently large channelization ratios (about 0.2 and above) exist in the drainage lines. The average channelization ratios for DL 7.1 and 8.2 are both 0.4.

Angular to subangular cobbles and sometimes boulders normally occur in the drainage lines, with sizes varying from 0.1 m to 0.3 m in diameter.

4.2.5 Anthropogenic Modification

Almost the entire Study Area has undergone some sort of anthropogenic modification, including slope cutting, artificial filling, constructing of concrete structures, terracing, trash disposal and shotcreting. Parts of the site were used by the military dating back to the late 1800s. The site was disturbed during World War II with substantial evidence of battle field conflict. Anthropogenic features such as two ruined military fortifications, trenches, an old artillery ramp trending northwest and a footpath/ trench trending east are in the Study Area.

4.3 Instability

The Landslide Inventory was compiled from API and, where possible, confirmed by fieldwork (**Figure 11, Table 8**). Two relict landslides occur within the Study Area and are recorded in the ENTLI. There were 13 recent landslides in the Study Area, of which 10 can be seen in 1967 and 1972 aerial photographs, and six are recorded in the ENTLI. Information on the 15 landslide features identified within an area of about 3.6 ha including and nearby the Study Area is included in the Landslide Inventory (**Table 8).** The Landslide Inventory also includes information on the hazard type, certainty of observations and possible association with anthropogenic activity. Many of the recent landslides identified have occurred in "quasi–natural" hillsides composed of residual soil, fill platforms and/or colluvium affected by old and recent anthropogenic activity.

Based on the available data, two relict ENTLI landslide features were identified within the Study Area. These occurred in the upper slopes of the Study Area, one facing north at the top of topographic depression in catchment NHC 3 and the other facing southwest on an open hillslope in catchment NHC8.

One relict landslide (L2) within catchment NHC 3 was confirmed in the field, with an estimated volume of 150 m^3 making it the largest relict landslide. Relict landslide L1 located on an open hill slope in the midslopes of catchment NHC8 had an estimated volume of 40 m^3.

The ENTLI recorded six recent landslides within the nearby terrain and a further 6 were identified during the Desk Study and further API. The largest of these was first evident in 1972 and had a source volume of about 100 m^3 (L3) and was located on the midslopes of a westerly oriented natural hill slope in catchment NHC7. The debris associated with L3 did not appear to runout to the cut slope at the toe of the hillside.

The next largest recent landslide was L5 (1967) located midslope in catchment NHC7, about 14 m southwest of L3, with an estimated source volume of 90 m^3. The debris of L5 deposited into the debris of L3 about 16 m below the headscar of L5. For all recents in **Table 8** (n=13) the average adopted source volume is 41±37m^3 with a median of 30 m^3 indicating a skewed population. This non-uniform distribution is probably due to the small sample size or could indicate differences in the magnitude and frequency of landslides, such that the order of magnitude difference in the largest source volume indicated an order of magnitude difference in frequency; however this is inconclusive.

The landslide source area dimensions (width and length) were identified from API and ground experience and where possible field mapping and then transferred to GIS. Depths range from 0.5 to 2.0 m based on field work and the results of the further API. Given the inaccuracies in the topographic base map for the area some features do not appear to be shown to map scale. The landslide source volumes were calculated using the approach recommended by Cruden and Varnes (1996), where a hemispherical failure surface is assumed (Landslide Volume = 1/6 (π) x Wr x Lr x Dr). The calculated volumes were compared to API estimated volumes which indicated reasonable agreement. Adopted volumes were rounded to the nearest 5 m^3 if <100 m^3 and to the nearest 10 m^3 if >100 m^3.

4.4 Engineering Geomorphology

Whilst the regional geomorphological information together with the available GASP data provides a broad framework to consider the Study Area in its regional context and allows some insight into of the evolution of terrain units. It is insufficient to enable the identification of more site specific geomorphological processes which influence landslide hazards at this time. Consequently, engineering geomorphological mapping was undertaken. The objective of the mapping is to identify associations between surface forms, near-surface materials and geomorphological processes. The terrain is subdivided into land units and smaller land elements (Cooke & Doornkamp, 1990). The units are primarily a function of the age of the landscape, whereas the land facets and elements more closely reflect differing geomorphological processes which shaped the large-scale surface form. This methodology follows the approach of TGN 22 (GEO, 2004) in that it utilizes a combination of morphological, morphographical, morphogenetic and morphochronological mapping.

4.4.1 Terrain Units

The Study Area has been classified into four primary terrain units (**Figure 12**) based on the interpretation of surface material, form and geomorphological process to develop a conceptual engineering geological/geomorphological model. The descriptions follow:

a) **Terrain Unit 1 (TU1)** predominantly consists of intermittent bedrock and saprolite on the ridgeline. Areas of shallow relict/ recent colluvium (< 1 m) along spurlines and ridgelines also occur. The central north-eastern and south-western ridgelines have gently sloping flanks, generally between 5° and 15° in gradient and planar-convex in form. Central north-western ridgelines hillcrests have quite steeply sloping flanks, generally steeper than 30° and planar convex in form. Some spurlines have similar characteristics;

b) **Terrain Unit 2 (TU2)** consists of extensive and numerous areas of steeply sloping rock cliff to gently sloping outcrop. Typical slopes are planar-convex in nature with slope gradients typically 30 to 40°;

c) **Terrain Unit 3 (TU3)** predominantly consists of side slopes which are generally characterised by thin colluvium (<1 m) and slopewash. The central north-eastern side slopes are generally between 5° and 15° in gradient and are planar-convex in form. The eastern and north-western side slopes are generally between 15° and 30° with some slopes steeper than 30°; and

d) **Terrain Unit 4 (TU4)** consists of colluvial swales. These areas are characterised by colluvium generally between 1.5 m and 2 m thick and sometimes landslide debris. This terrain unit is generally characterised by convex breaks-in-slope between 15° and 30° in gradient.

4.4.2 Geological Model

Structural geology poses a major control in determining the locations of exposed head scars of the recent landslides. Most of the major landslides L3, L4, L5 and L6 (**Figure 11**), both observed in API and field verified, are found in the western and southwestern hill slopes of the Study Area (catchments NHC5, NHC7 and NHC8). Exposed rock outcrop and boulders, which have the potential to impose rock fall and boulder fall hazards, are also found in these parts of the Study Area. This can be supported by the apparent strike of structural discontinuity (**Figure 10**), where majority of the joints indicate a northwest-southeast trending direction, with some northeast-southwest trending too. The intrusive rock quartzophyric rhyolite (rq) illustrated in the published regional geological map (scale 1:20,000) (**Figure 2**) also trends in a northwest-southeast direction.

Anthropogenic factor could also impose a control in determining the locations of the boulders found in NHC5 and 7 since the part of the Study Area over at the peak of catchments NHC4, NHC5 and NHC7 has been heavily modified dating back to the 1800s.

Geomorphologically, the slope lengths over at the western catchments of the Study Area are longer than those in the northern and eastern part of the Study Area. Therefore source volumes of potential landslides are greater in the western catchments than the rest of the catchments. Also, the terrains at the western part of the Study Area is more similar to the terrain south of the Study Area geomorphologically (i.e. long slope lengths with some incised channels) and thus their source volumes of a similar magnitude.

Evidence in the project ground investigation in NHCs 5, 7 and 8 (such as TP1, TP2, TP3, DH4, DH5 and DH6 logs) also indicate that the colluvium thickness are generally not greater than 2 m.

4.5 Immediate and Obvious Dangers

No immediate and obvious dangers were observed during the study, either in the field, API, or in desk study.

5 Hazard Assessment

5.1 "React-to-Known" Criteria

Each catchment was assessed as to whether they meet the criteria for React-to-Known-Hazard under the Enhanced Approach. In all catchments (except NHC6 which is excluded from the NTHS), although there are no immediate and obvious dangers observed, there exist evidence supporting the possibility that a dangerous situation could develop. Past persistent landslides and strong geological evidence are the dominant factors.

For Natural Hillside Catchment NHC1, there are no past persistent landslides or newly emerged hazardous situation. However, there is strong geological evidence indicating a dangerous situation could develop, where exposed jointed rock outcrop with daylighting joints near the crest of this catchment poses rock fall hazards (**Figure 10**).

For Natural Hillside Catchment NHC2, there are no past persistent landslides or newly emerged hazardous situation. However, there is strong geological evidence indicating a dangerous situation could develop, where jointed bedrock with daylighting joints near the crest poses rock fall hazards (**Figure 10**). There is also clear evidence from geomorphology which indicates a dangerous situation could develop. Topographic depression failures can be generated in this catchment with source volume of 70 m^3. Open hillslope landslides can also occur with source volume of 50 m^3 (**Figures 10** and **13**).

For Natural Hillside Catchment NHC3, there are no past persistent landslides or newly emerged hazardous situation. However, there is clear evidence from geomorphology which indicates a dangerous situation could develop, where topographic depression failures can be generated in this catchment with source volume of 70 m^3. Open hillslope landslides can also occur with source volume of 50 m^3 (**Figures 10** and **13**).

For Natural Hillside Catchment NHC4, there are no past persistent landslides or newly emerged hazardous situation. However, there is strong geological evidence indicating a

dangerous situation could develop, where jointed bedrock with daylighting joints found near the hillside of the north-facing slope poses rock fall hazards. Boulders, possibly related to past anthropogenic activities, found near the crest of NHC4 pose boulder fall hazards. There is also clear evidence from geomorphology which indicates a dangerous situation could develop, where topographic depression failures can be generated in this catchment with source volume of 70 m^3. Open hillslope landslides can also be generated in this catchment with source volume of 50 m^3 (**Figures 10** and **13**).

For Natural Hillside Catchment NHC5, there is no newly emerged hazardous situation. However, there are past persistent landslides and strong geological evidence indicating a dangerous situation could develop. There are two recent landslides (L4 and L6, of estimated landslide volume about 10 m^3 and 50 m^3) which are observed in 1967 and 1972 aerial photographs respectively (**Figure 11**). In the field, there is clear evidence from geomorphology that these two past landslides are located in terrain where topographic depression failures and open hillslope landslides are possible respectively (**Figure 13**). Topographic depression failures and open hillslope landslides can be generated in this catchment with source volumes of 100 m^3 and 50 m^3 respectively. Jointed bedrock with daylighting joints found along the hillside in this catchment poses rock fall hazards (**Figure 10**). Boulders found near the crest of NHC5, possibly related to past anthropogenic activities, also pose boulder fall hazards.

Natural Hillside Catchment NHC6 is entirely anthropogenic and is not included in the NTHS.

For Natural Hillside Catchment NHC7, there is no newly emerged hazardous situation. However, there are past persistent landslides and strong geological evidence indicating a dangerous situation could develop. There are two large recent landslides (L3 and L5, of estimated landslide volume about 100 m^3 and 90 m^3) which are observed in 1972 and 1967 aerial photographs respectively in this catchment (**Figure 11**). In the field, there is clear evidence from geomorphology that these landslides are located in terrain where channelized debris flows are possible (**Figure 13**). Channelised debris flows can be generated in this catchment with source volume of 100 m^3. Debris deposits are evident within the swale containing DL7.1. Open hillslope landslides can also occur with source volume of 50 m^3. Jointed bedrock with daylighting joints found along the hillside in this catchment rock fall hazards (**Figure 10**). Boulders, possibly related to past anthropogenic activities, are found near the crest of NHC7 and pose boulder fall hazards.

For Natural Hillside Catchment NHC8, there are no past persistent landslides or newly emerged hazardous situation. However, there is strong geological evidence indicating a dangerous situation could develop. There is clear evidence from geomorphology which indicates a dangerous situation could develop, where channelized debris flows and topographic depression failures can be generated in this catchment with source volume of 100 m^3. Open hillslope landslides can also occur with source volume of 50 m^3 (**Figures 10** and **13**). Debris deposits are evident within the swale containing DL8.2.

A summary of the discussed criteria for React-to-Known-Hazard under the Enhanced Approach is shown in **Table 9**.

5.2 Hazard Types

5.2.1 Open Hillslope Landslide

Open Hillslope Landslide (OHL) hazards are slope failures where the landslide debris remains wholly on the open hillside and is not channelised along a stream course. Based on the engineering geological and geomorphological mapping of the Study Area, it is considered that such hazard could affect down slope facilities. The type of potential OHL under consideration includes shallow translational slides, shallow slumps, shallow debris avalanche, and shallow debris spreads. Due to pervasive disturbance of parts of the Study Area as a former military site, some potential landslides may be considered within the framework of "disturbed hillside failures – Type A or B" (Ng et al, 2003). OHL hazards mainly originate from Hazard Zone 1 as shown in **Figure 13**.

5.2.2 Topographic Depression Failure

Topographic Depression Failure (TDF) hazards are slope failures where landslide debris are somewhat confined within a topographic depression but without significant channelisation effects. The entrainment potential of TDF is lower than that of CDF in general and largely dependent on the presence of entrainable materials within the topographic depression. Topographic depressions were identified in the northern and southwestern portions (Hillside Catchments NHC 2, 3, 4, 5 and 8) of the Study Area during field mapping and API. CDF hazards mainly originate from Hazard Zone 3 as shown in **Figure 13**.

The entrainment potential of TDF is lower than CDF in general, hence an entrainment depth of 0.1 m is adopted for TDFs in the Study Area.

5.2.3 Channelised Debris Flow

Channelised debris flows (CDF) occur when saturated landslide debris becomes confined within a steeply inclined, incised stream channel. These types of failures are typically extremely mobile and landslide volumes can exceed that of the source area due to entrainment of material within the stream bed and channel sides. Some channelized areas or incised ephemeral drainage lines were identified in the western portions (Hillside Catchments NHC 7 and 8) of the Study Area during field mapping and API. There is also evidence of previous CDFs in NHC 7. CDF hazards mainly originate from Hazard Zone 3 as shown in **Figure 13**. Therefore, it is considered that the susceptibility to such landslides is high.

The entrainment depth was determined based on GI and field mapping. It is bounded on the upper by GI colluvium depth ranging from 0.7m to 1.7m in NHCs 7 and 8, and on the lower by field observations of entrainable material within the drainage lines. Field estimates of entrainment depths range from 0.1m to 0.3m with an overall average of 0.2m. It is sufficient for our purposes to assume an erosion depth of 0.2m on average along all drainage lines.

5.2.4 Deep Seated Landslide

No obvious deep-seated landslide hazards were observed in the field nor was there obvious evidence of such hazards found within available desk study information.

5.2.5 Rock Fall

Significant steep rock cliffs, intermittent bedrock exposures, and other obvious, potential rock fall sources were identified over the crests and open hill slopes of Hillside Catchments NHC 1, 2, 4, 5 and 7. There is a potential rock fall hazard with a block size of up to 2 m in diameter in Hillside Catchment NHC 4 and a block size of up to 1 m in diameter in the other Hillside Catchments. Rock fall hazards mainly originate from Hazard Zones 4 and 5 as shown in **Figure 13**.

5.2.6 Boulder Fall

Boulder fall may occur when there are partially-completely exhumed or precariously perched boulders on slopes generally greater than 20° and may be triggered by rainfall and associated slope movements. Boulders, including exhumed corestones, were observed on Hillside catchments NHC 4, 5 and 7. The block sizes of the boulders are up to 1 m in diameter. Boulder fall hazard locations are shown in **Figure 13**.

5.2.7 Multiple Failures

More than one landslide may occur in a catchment during an intense rainstorm and these are termed “multiple failures.” In some cases, it may be possible to assess whether two or more landslides occurred in a catchment during the same storm, however there are limitations and conclusions are highly interpretive with respect to the timing of landslide initiation. No evidence of recent, multiple failures was identified in the same year. Relict failures cannot be assessed in this regard, since there is no aerial photograph record for the time period in which these may have occurred, apart from the baseline of 1963.

5.2.8 Hazards Arising from Man-Made Ground

Hazards arising from man-made ground were assessed with regards to the risk they pose to the existing developments. While no significant hazards were found in the other catchments, it is recommended to assess NHC6 separately as a disturbed terrain due to the heavy anthropogenic disturbances involved in the construction of the buildings above and below.

5.3 Enhanced Approach for Dealing with Natural Terrain under LPMitP

Based on the Enhanced Approach for Dealing with Natural Terrain under LPMitP, a "Credible Event" (CE) is adopted for all catchments except for NHC 6 (**Table 9**).

A Credible Event (CE) is one that occurs within a reasonable design period of about 50 to 100 years, and should be less in source volume than a "conservative event". It is primarily assessed from recent landslides and "drainage line" incision due to recurrent debris flows for OHL, TDF and CDF and strong geological evidence for boulder/ rock fall.

For comparison, a conservative event is defined in Ng et al, (2003) as "a reasonably safe but not overly cautious estimate of the hazard that may affect the site, with a notional return period in the order of 100 years, and is generally based on the largest historical landslide over the past 50 to 100 years in the catchment and its vicinity as appropriate."

A Worst Credible Event (WCE) is defined in Ng et al. (2003) as "a very conservative estimate, such that the occurrence of a more severe event is sufficiently unlikely. Its notional return period is in the order of 1,000 years, which indicates an order of magnitude difference compared with that of a 'conservative event'. It generally corresponds to the largest credible landslide based on interpretation of historical landslide date, geomorphological evidence in the catchment and its vicinity as appropriate, and any other relevant evidence from similar terrain in Hong Kong."

5.4 Design Event Source Volumes

The stability of materials on the hillsides within the area is influenced by the geology, geomorphology, landslide history, and anthropogenic modification. Analysis of these factors along with the relevant desk study data allowed for a preliminary, conservative assessment of natural and quasi-natural terrain hazards in the Study Area. **Figure 13** shows the locations of the categorised hazards and associated Credible Event (CE) source volumes. The hazards presented by potential instability of the slopes include open hillslope landslides (OHL) topographic depression failure (TDF), channelised debris flow (CDF) and rock boulder fall hazard.

The largest (recent) landslide depression has an adopted volume of about 100 m^3. A CE source volume of 100 m^3 is adopted for modelling in Hazard Zone 3 (swales in Catchments 5, 7 & 8). A CE source volume of 70 m^3 is adopted for modelling in Hazard Zone 2 (swales in Catchments 2, 3 & 4) while 50 m^3 is adopted for modelling in Hazard Zone 1.

5.5 Design Event Modelling

Debris mobility modelling to evaluate landslide run out was undertaken using DAN-W, developed by O. Hungr Geotechnical Research Inc. to model the post-failure motion of rapid landslides. Twelve landslide scenarios were modelled in total, with four Open Hillslope Landslide (OHL), five Topographic Depression Failure (TDF) and three Channelised Debris

Flow (CDF) scenarios (**Appendix D**). Credible Event (CE) scenarios were simulated for each hazard zone. Hazard Zone 1 had a 50 m^3 source volume, Hazard Zone 2 had a 70 m^3 source volume and Hazard Zone 3 had a 100 m^3 source volume.

The results of the analysis indicate that anticipated debris velocities at the observation point (Location of Proposed Mitigation Works) vary from 0 m/s (where the modelled debris flow does not reach the observation point) to about 12 m/s. A more detailed summary of the results is located in **Appendix D** and **Table D1**.

5.6 Hazard Model

The stability of materials on the hill slopes within the Study Area is influenced by the geology, geomorphology, landslide susceptibility, and anthropogenic modification. Assessment of the engineering geology and geomorphology of the area allowed for the development of a detailed observational model of the Study Area. An assessment of natural, quasi-natural and anthropogenic terrain hazards is provided with hazard zonation and associated hazard types and magnitudes presented in **Figure 13**.

Hazard Zone 1 (HZ1) consists of much of the western, northern, and eastern side slopes of Study Area. It is composed of colluvium (<1 m) and is a potential open hillslope landslide (OHL) source area. Two recent landslide features were recorded in HZ1.

Hazard Zone 2 (HZ2) is present in topographic depressions in catchments NHC2, NHC3 and NHC4 on the northern portion of the Study Area. HZ2 is composed of colluvium (<1.5 m) and has potential topographic depression failure (TDF) hazards occurring in catchments with pronounced topographic depressions but without a well-defined drainage channel. One relict and one recent landslide feature are recorded in HZ2.

Hazard Zone 3 (HZ3) is present on the midslopes of the western portion of the Study Area and consisting of colluvial swales (<2 m). The zone is drained by incised channels DL7.1 and DL8.2. HZ3 has potential topographic depression failure (TDF) and channelized debris flow (CDF) hazards. One relict and three recent landslide features are recorded in HZ3.

Hazard Zone 4 (HZ4) consists of potential rock fall hazards. It is present along the upper side slope of the western portion and eastern, upper side slope portions of the Study Area, where cliffs and bedrock occur. The rock fall volume is up to a block size of 1 m in diameter for this hazard zone.

Hazard Zone 5 (HZ5) consists of potential rock fall hazards from the toe to crest of the northern portion of the Study Area where cliffs and bedrock occurs. The rock fall volume is up to a block size of 2 m in diameter for this hazard zone.

There is potential for boulder fall hazards to occur in the western portion of catchments NHC4, NHC5 and NHC7. Boulders of not more than 1m in diameter occur near the crests of these catchments.

No obvious deep-seated landslide hazards were observed in the field, nor was there any obvious evidence of such hazards found within available desk study information.

5.7 Risk

Considering the presence of recent landslides in the Study Area, hazard modelling results, desk study and field mapping, there is a potential risk of future landslides. Mitigation structures will reduce landslide risk to facilities below the Study Area.

5.8 Limitations

The hazard model and associated assessment of relative risk has been primarily developed from API, field mapping, which were enhanced by use of LiDAR data. Project ground investigation (GI) reduced uncertainties in the Engineering Geology Geomorphology (EGG) and hazard models.

6 Mitigation Strategy

6.1 Hazards to be Mitigated

CDF, OHL and TDF hazards have the potential to affect facilities at the toe of the Study Area (refer to **Figure 13)**.

Typically one of two approaches can be taken for the mitigation of the hazards, with the selection of the preferred approach largely dependent on the magnitude of the hazard, the landslide velocity and the extent of the affected area. These options include:

a) Stabilization at Source – in-situ stabilization of the potential landslide source areas through the installation of soil nails or similar measures; and

b) Debris Containment– depending on the magnitude of the particular landslide event, debris can be prevented from impacting facilities to be protected through provision of flexible barriers / rigid concrete barriers.

Rock and boulder falls have the potential to affect some of the facilities at the toe of catchments NHC 1, 2, 4, 5, and 7. Rock fall mitigation approaches typically include one or a combination of the following:

a) Stabilization at Source – in-situ stabilization of the potential rock fall source areas through the installation of rock bolts or similar measures; and

b) Flexible barriers – depending on the magnitude of the particular rock fall event, rock blocks can be prevented from impacting facilities to be protected through provision of flexible barriers.

6.2 Possible Hazard Mitigation Strategies

Brief details of three possible hazard mitigation schemes (**Figures 14A, 14B, 14C**) are summarized below. Further details of these schemes, including cost estimates and detailed reviews of the constructability and environmental impact and other factors are included in **Appendix E**. Mitigation works were only proposed on Government Lands only in order to avoid potential conflicts with Private Lots. The Design Event volumes to be mitigated are taken as the source plus entrainment volumes.

The facilities-at-risk mostly includes residential buildings, moderately used roads, and substantial structures including a garage. Thus, hazard mitigation works are required for the Study Area. The various mitigation options considered for the Study Area include:

Option	Mitigation works for OHL / TDF	Mitigation works for CDF	Mitigation works for RF
1	Soil Nails	Soil Nails	In-situ stabilization measures and rock fall barrier
2	Rigid Barrier	Rigid Barrier	
3	Flexible Barrier	Flexible Barrier	

Option 1 refers to the installation of soil nails in areas targeted to provide an adequate factor of safety against failure of the top 2m of the regolith with information on the soil and groundwater from current ground investigation works. In-situ stabilization measures and rock fall barrier are proposed to mitigate rock fall and boulder fall at NHC 1, 2, 4, 5, and 7.

Option 2 refers to the installation of rigid barriers along the toe of most catchments and in-situ stabilization measures and rock fall barriers at the southern end of NHC1 and central northern end of NHC4. The rigid barriers are designated to catch the landslide and rock fall debris with slight wing walls to retain and train debris.

Option 3 refers to the construction of flexible barriers and in-situ stabilization measures and rock fall barriers at the toe of most catchments to mitigate potential landslide and rock fall hazards.

The above mitigation options were discussed in the GEO Design Review Committee (DRC) meeting on 15 August 2013. During the meeting, the DRC endorsed Option 1 as the preferred option with in-situ stabilization measures to be constructed on the hillside slopes to mitigate rock fall and boulder fall hazards. To optimize the design, the flexible barrier was deleted.

6.3 Preliminary Landscape Design

To alleviate the visual impact due to the proposed hazard mitigation works, landscaping treatments are proposed for each of the mitigation schemes. Preliminary landscape design for each of the mitigation schemes are given in **Appendix E**.

7 Conclusions and Recommendations

A Natural Terrain Hazard Study (NTHS) using the Design Event approach was performed for the Study Area 11SW-D/SA12, at Shouson Hill (a total of eight hillside catchments). The hazard models for the assessment were developed based on the findings of detailed desk study, API integrated with geological and geomorphological field mapping, ground investigation findings, and a synthesis of the data and analysis into a detailed observational model that forms the basis of the hazard assessment.

The NTHS identified five hazard zones and related Design Event volumes. The hazards include Open Hillslope Landslide (OHL), Topographic Depression Failure (TDF), Channelised Debris Flow (CDF), Rock Fall and Boulder Fall. The hazard zones are: HZ1 (OHL) with a source volume of 50 m^3; HZ2 (TDF) with a source volume of 70 m^3 (and entrainment depth of 0.1 m); HZ3 (CDF/TDF) with a source volume of 100 m^3 (and entrainment depth of 0.2 m), and two Rock Fall HZ's of 1m diameter (HZ4) and 2m diameter (HZ5) as well as 3 Boulder Fall source areas of 1 m diameter boulders. All the estimated potential landslide source volumes were Credible Event (CE).

Considering the findings of the NTHS, hazard mitigation works are recommended for seven of the eight the hillside catchments to address the Credible Event (CE) magnitudes and hazard types.

8 References

Allen, P. M. & Stephens E. A. (1971). Report on the Geological Survey of Hong Kong. Hong Kong Government Press, 116p. (& 2 maps).

Cooke, R.U. & Doornkamp, J.C. (1990). Geomorphology in Environmental Management. A New Introduction. 2nd Edition, Oxford: Claren don Press.

Cruden, D.M. & Varnes, D.J. (1996). *Landslide Types and Processes. In: Turner, A.K., Schuster, R.L. (Eds.), Landslides Investigation and Mitigation*. Special Report 247, Transportation Research Board, National Research Council. National Academy Press, Washington, DC, pp. 36–75.

Emery, K. A. (1998). *Boulder Study of Hong Kong – Final Report*. Maunsell Geotechnical Services Ltd. Report to the Geotechnical Engineering Office, Hong Kong, 12 p.

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NHC1
NHC2
NHC3
NHC4
NHC5
NHC6
NHC7
NHC8

SHOUSON HILL

ISLAND ROAD

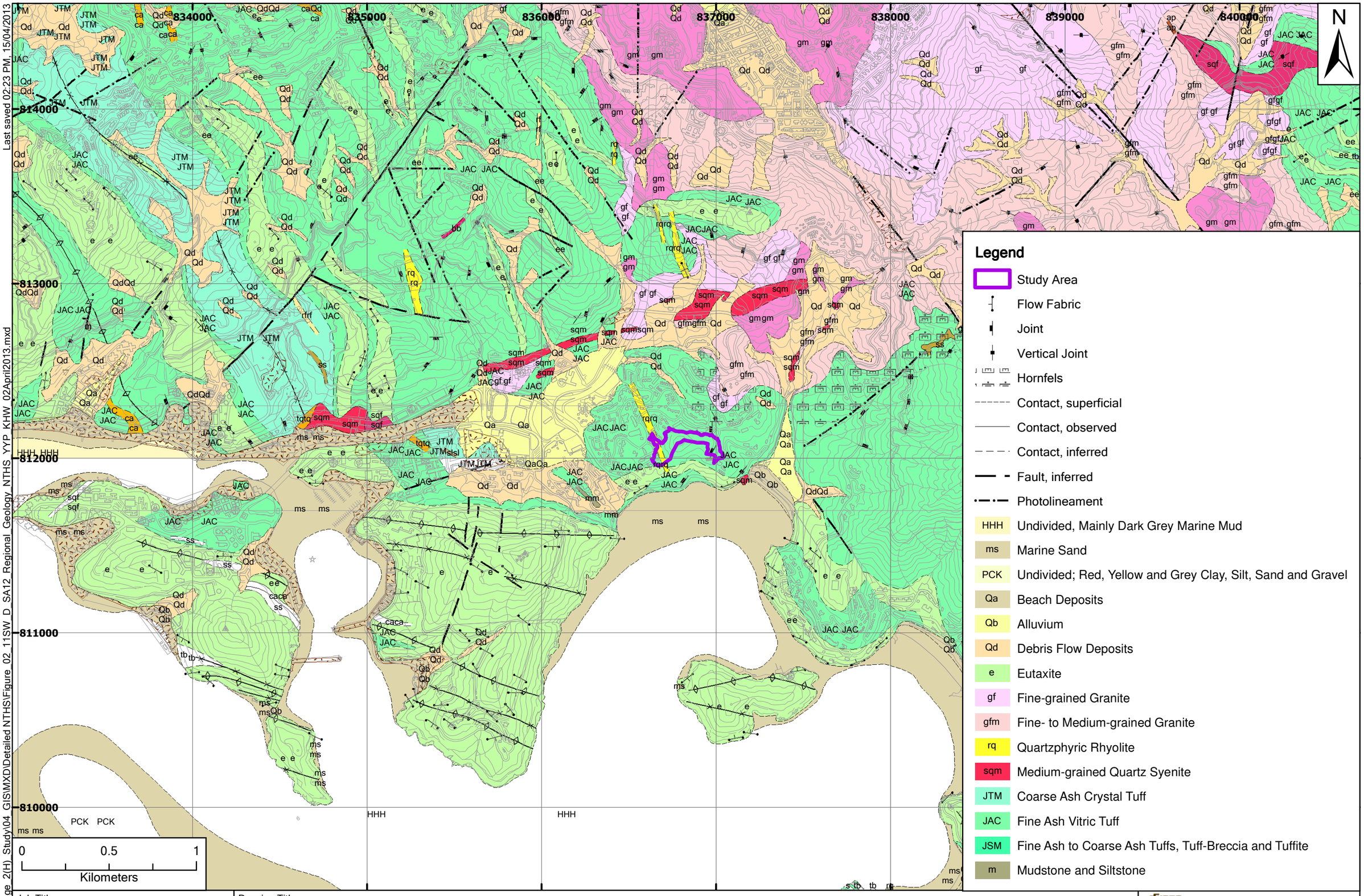
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Legend

- Study Area
- Hillside Catchments

Job Title Agreement No. CE 16/2011 (GE) Landslip Prevention and Mitigation Programme, 2011, Package B, Landslip Prevention and Mitigation Works, Hong Kong Island (East) - Investigation, Design and Construction	Drawing Title **Natural Terrain Hazard Study for Study Area 11SW-D/SA12 - Shouson Hill Study Area and Hillside Catchments (Natural Hillside Catchments 1-8)** Note: Topographic base map is 1:1,000 scale (2010), 2 m contour intervals; mapsheets 11SW: 25c and 25d, 15NW:5a and 5b, orthophoto (2009).	FUGRO (HONG KONG) LTD Scale: 1:2,000 Drawn by: YYP/KHW Date: 02/04/2013 Checked: KAS Approved: 02/04/2013 Job No. 110441 Figure No. 01	



Legend

- Study Area
- Flow Fabric
- Joint
- Vertical Joint
- Hornfels
- Contact, superficial
- Contact, observed
- Contact, inferred
- Fault, inferred
- Photolineament
- HHH — Undivided, Mainly Dark Grey Marine Mud
- ms — Marine Sand
- PCK — Undivided; Red, Yellow and Grey Clay, Silt, Sand and Gravel
- Qa — Beach Deposits
- Qb — Alluvium
- Qd — Debris Flow Deposits
- e — Eutaxite
- gf — Fine-grained Granite
- gfm — Fine- to Medium-grained Granite
- rq — Quartzphyric Rhyolite
- sqm — Medium-grained Quartz Syenite
- JTM — Coarse Ash Crystal Tuff
- JAC — Fine Ash Vitric Tuff
- JSM — Fine Ash to Coarse Ash Tuffs, Tuff-Breccia and Tuffite
- m — Mudstone and Siltstone

Job Title

Agreement No. CE 16/2011 (GE)

Landslip Prevention and Mitigation Programme, 2011, Package B,
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Drawing Title

Natural Terrain Hazard Study for Study Area 11SW-D/SA12 - Shouson Hill Regional Geology

Note: Notional & Extracted from 1:20,000 Scale Geological Mapsheet 11 - HGM20 and 15 - HGM20. Topographic base map is 1:20,000 scale (2002), 10 m contour intervals; mapsheets 11 and 15.

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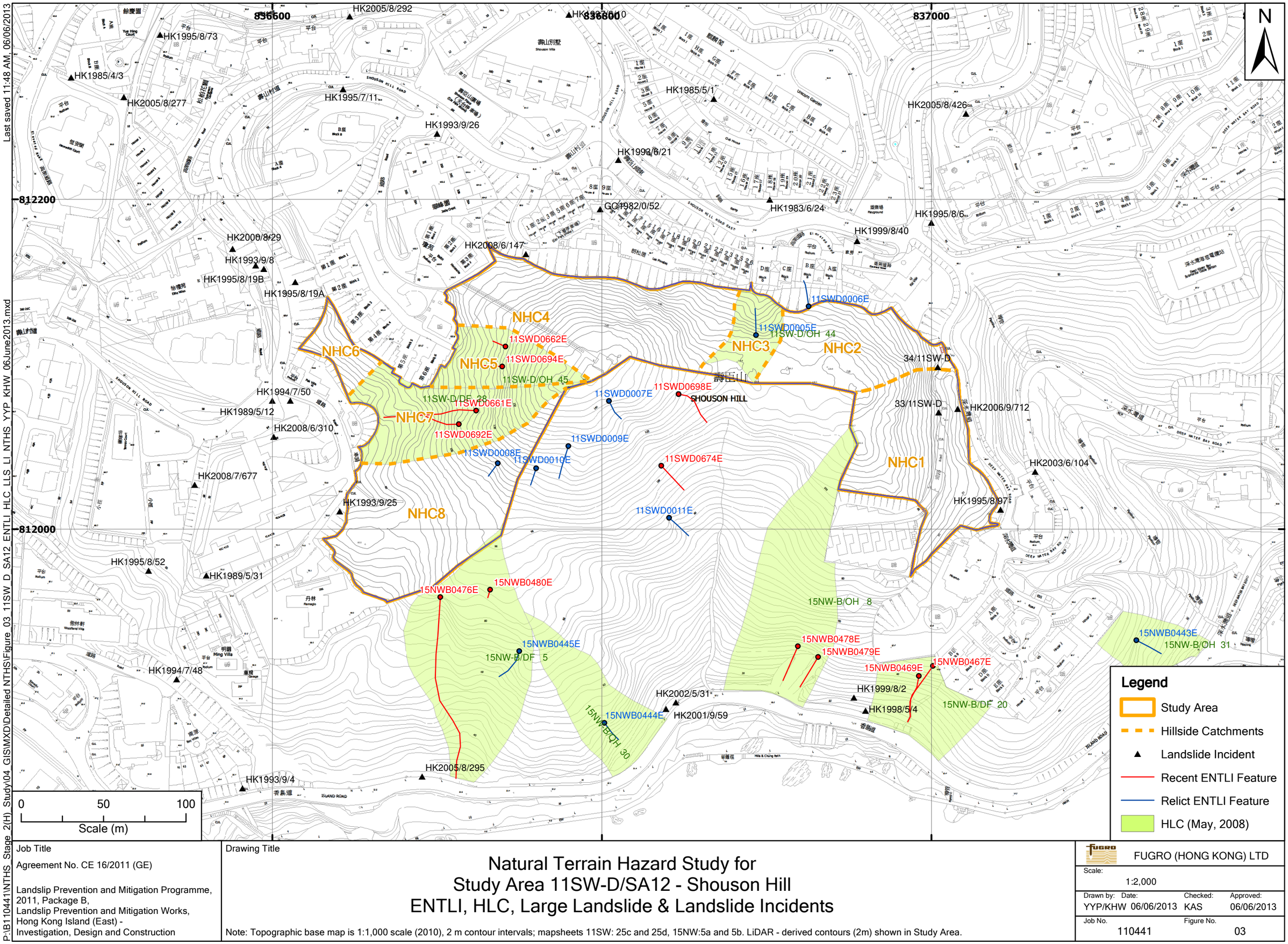
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Job Title	Drawing Title
Agreement No. CE 16/2011 (GE) Landslip Prevention and Mitigation Programme, 2011, Package B, Landslip Prevention and Mitigation Works, Hong Kong Island (East) - Investigation, Design and Construction	**Natural Terrain Hazard Study for Study Area 11SW-D/SA12 - Shouson Hill ENTLI, HLC, Large Landslide & Landslide Incidents**

Note: Topographic base map is 1:1,000 scale (2010), 2 m contour intervals; mapsheets 11SW: 25c and 25d, 15NW:5a and 5b. LiDAR - derived contours (2m) shown in Study Area.

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NHC1 NHC2 NHC3 NHC4 NHC5 NHC6 NHC7 NHC8

壽山 SHOUSON HILL

SHOUSON HILL ROAD

SHOUSON HILL ROAD EAST

DEEP WATER BAY ROAD

ISLAND ROAD

Mills & Chung Path

N

0 50 100
Scale (m)

Legend

- Study Area
- Hillside Catchments

Boundary Type

- No data
- Vegetaion cover or no boulder
- Class 1: corestone or tor
- Class 2: colluvial boulder field
- Class 3: cliff or rock outcrop
- Class 4: scree or talus deposit

Job Title

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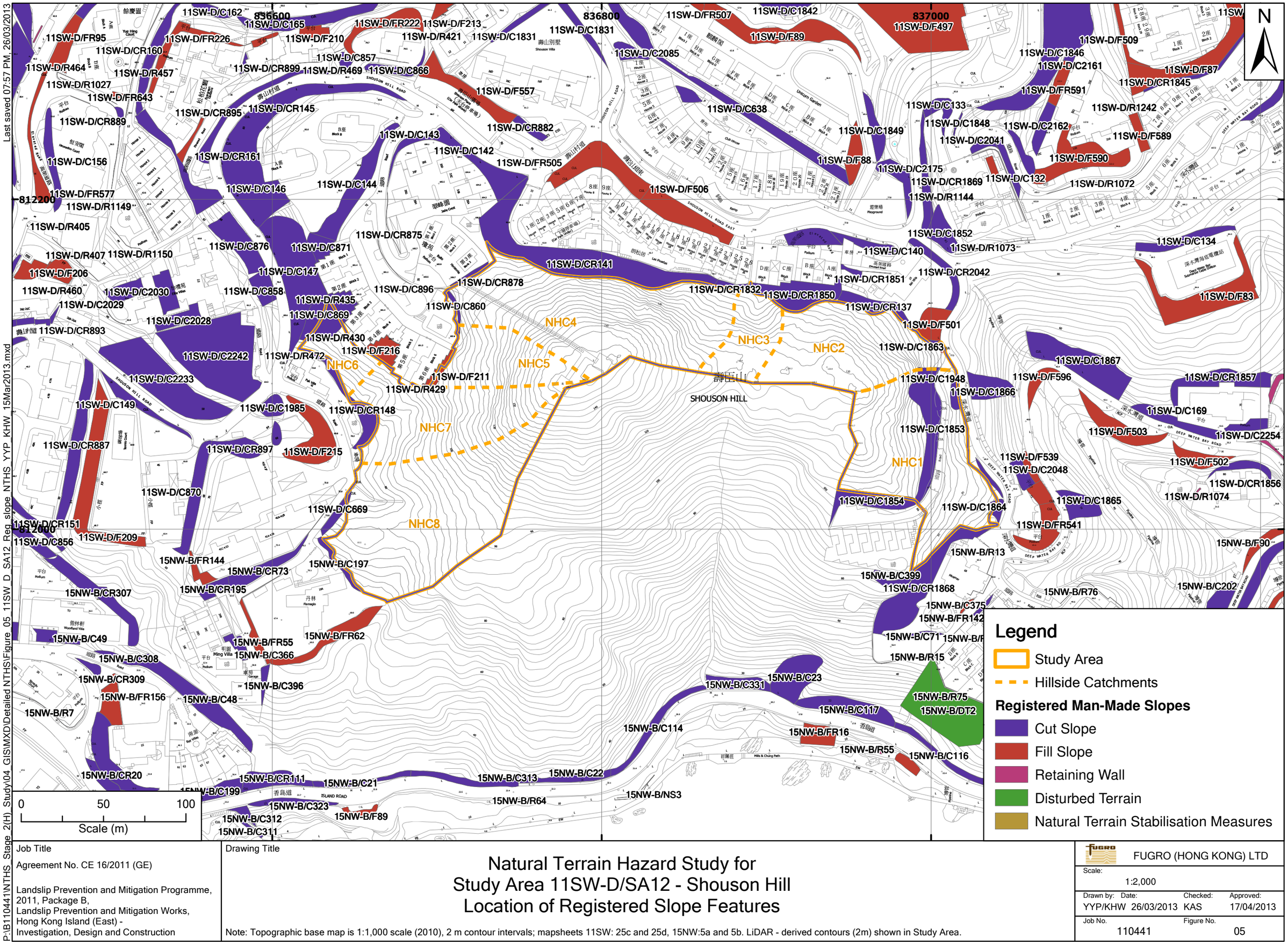
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Natural Terrain Hazard Study for Study Area 11SW-D/SA12 - Shouson Hill Boulder Inventory

Note: Topographic base map is 1:1,000 scale (2010), 2 m contour intervals; mapsheets 11SW: 25c and 25d, 15NW:5a and 5b.

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- Study Area
- Hillside Catchments

Registered Man-Made Slopes

- Cut Slope
- Fill Slope
- Retaining Wall
- Disturbed Terrain
- Natural Terrain Stabilisation Measures

Job Title

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Drawing Title

Natural Terrain Hazard Study for Study Area 11SW-D/SA12 - Shouson Hill Location of Registered Slope Features

Note: Topographic base map is 1:1,000 scale (2010), 2 m contour intervals; mapsheets 11SW: 25c and 25d, 15NW:5a and 5b. LiDAR - derived contours (2m) shown in Study Area.

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24865-B5
18871-DH8
18871-DH12
24865-B6
24863-CW21
24863-CW9
18871-DH7
18871-DH6
18871-DH13

NHC1
NHC2
NHC3
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NHC6
NHC7
NHC8

SHOUSON HILL

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19026-BH2
19026-BH3

15554-BH7
15554-BH5
15554-TP3
15554-BH4
15554-BH8
15554-TP4
15554-BH6
15554-BH1
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15554-BH10
4278-TP19

4278-TP16
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4278-TP14
4278-TP17A

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Scale (m)

Legend

- Study Area
- Hillside Catchments
- Selected Ground Investigation

Job Title

Agreement No. CE 16/2011 (GE)

Landslip Prevention and Mitigation Programme, 2011, Package B,
Landslip Prevention and Mitigation Works, Hong Kong Island (East) -
Investigation, Design and Construction

Drawing Title

Natural Terrain Hazard Study for Study Area 11SW-D/SA12 - Shouson Hill Previous Ground Investigation Stations

Note: Topographic base map is 1:1,000 scale (2010), 2 m contour intervals; mapsheets 11SW: 25c and 25d, 15NW:5a and 5b.

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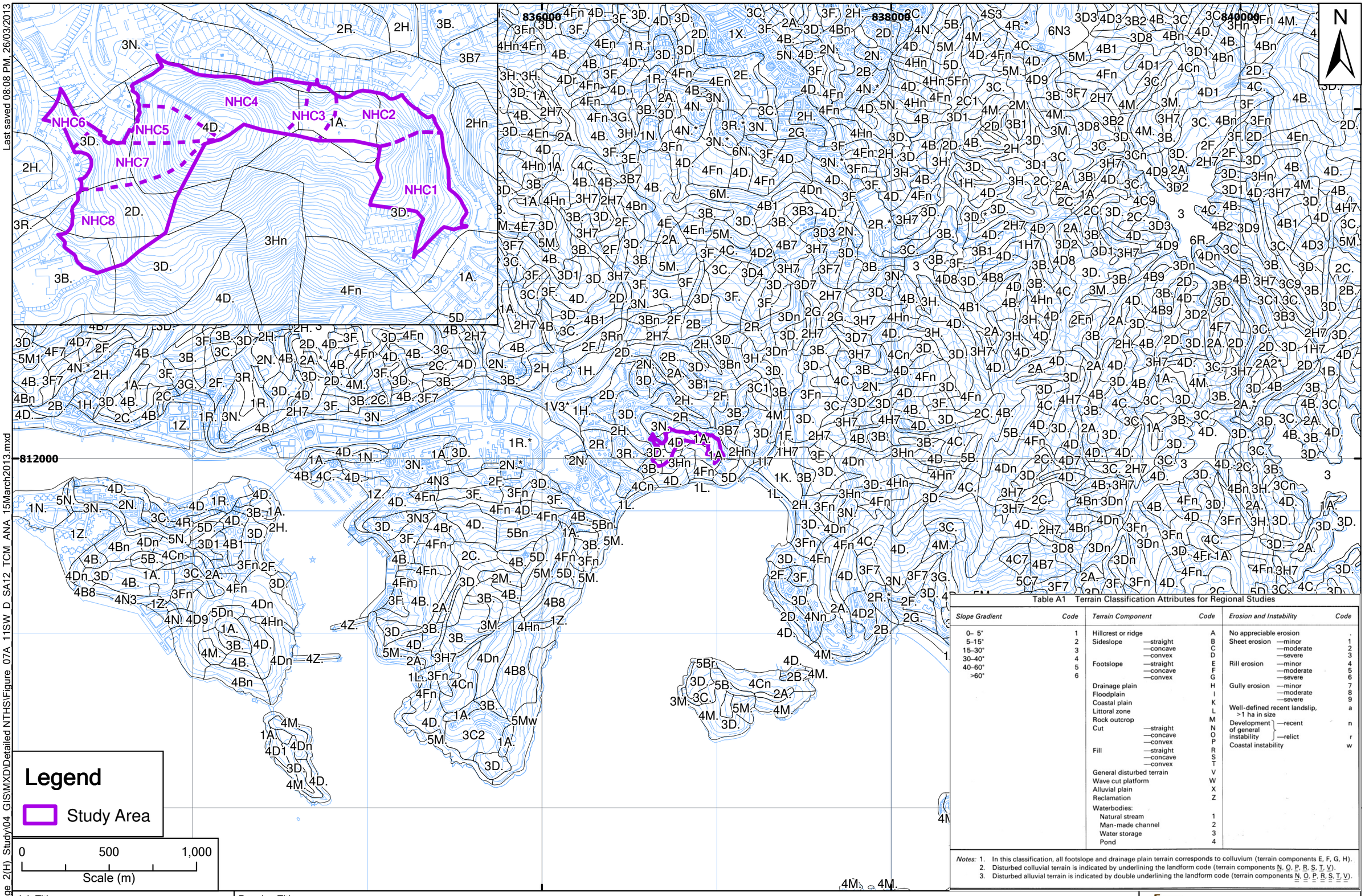


Table A1 Terrain Classification Attributes for Regional Studies

Slope Gradient	Code
0– 5°	1
5–15°	2
15–30°	3
30–40°	4
40–60°	5
>60°	6

Terrain Component		Code
Hillcrest or ridge		A
Sideslope	—straight	B
	—concave	C
	—convex	D
Footslope	—straight	E
	—concave	F
	—convex	G
Drainage plain		H
Floodplain		I
Coastal plain		K
Littoral zone		L
Rock outcrop		M
Cut	—straight	N
	—concave	O
	—convex	P
Fill	—straight	R
	—concave	S
	—convex	T
General disturbed terrain		V
Wave cut platform		W
Alluvial plain		X
Reclamation		Z
Waterbodies:		
Natural stream		1
Man-made channel		2
Water storage		3
Pond		4

Erosion and Instability		Code
No appreciable erosion		.
Sheet erosion	—minor	1
	—moderate	2
	—severe	3
Rill erosion	—minor	4
	—moderate	5
	—severe	6
Gully erosion	—minor	7
	—moderate	8
	—severe	9
Well-defined recent landslip, >1 ha in size		a
Development of general instability	—recent	n
	—relict	r
Coastal instability		w

Notes: 1. In this classification, all footslope and drainage plain terrain corresponds to colluvium (terrain components E, F, G, H).
2. Disturbed colluvial terrain is indicated by underlining the landform code (terrain components N, O, P, R, S, T, V).
3. Disturbed alluvial terrain is indicated by double underlining the landform code (terrain components N, O, P, R, S, T, V).

Job Title

Agreemnt No. CE 16/2011 (GE)

Landslip Prevention and Mitigation Programme, 2011, Package B,
Landslip Prevention and Mitigation Works, Hong Kong Island (East) -
Investigation, Design and Construction

Drawing Title

Natural Terrain Hazard Study for Study Area 11SW-D/SA12 - Shouson Hill Regional - Terrain Classification Map - GASP I

Note: Topographic base map is 1:20,000 scale (2002), 10 m contour intervals; mapsheets 11_2002.dgn and 15_2002.dgn. Inset 1:1,000 scale (2010), 2m contour intervals; mapsheets 11SW: 25c, 25d; 15NW: 5a, 5b.

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Scale: 1:20,000

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ANA	26/03/2013	KAS	02/04/2013

Job No. 110441 Figure No. 07A

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834000 836000 838000 840000

814000

812000

N

Legend

Study Area

0 500 1,000
Scale (m)

LEGEND

- Colluvium
- Zones of colluvium which are subject to overland flow and periodic inundation. Evidence of unusual groundwater regime (delineated as drainage plain on Landform Map)
- Floodplain - subject to overland flow and regular inundation. Evidence of unusual groundwater regime (delineated as floodplain on Landform Map)
- Zones of general instability associated with predominantly colluvial terrain
- Zones of general instability associated with predominantly insitu terrain
- Slopes on insitu terrain which are generally steeper than 30° (other than those delineated as colluvial or unstable)
- Disturbed terrain - extensive cut and fill batters which generally exceed 30°
- Instability on disturbed terrain
- Waterbodies (streams, man-made channels, storage dams)
- Ponds
- Moderate or severe gully erosion (may be superimposed upon other constraints).
- Littoral zone (generally subject to tidal action)

Job Title

Agreement No. CE 16/2011 (GE)

Landslip Prevention and Mitigation Programme, 2011, Package B,
Landslip Prevention and Mitigation Works, Hong Kong Island (East) -
Investigation, Design and Construction

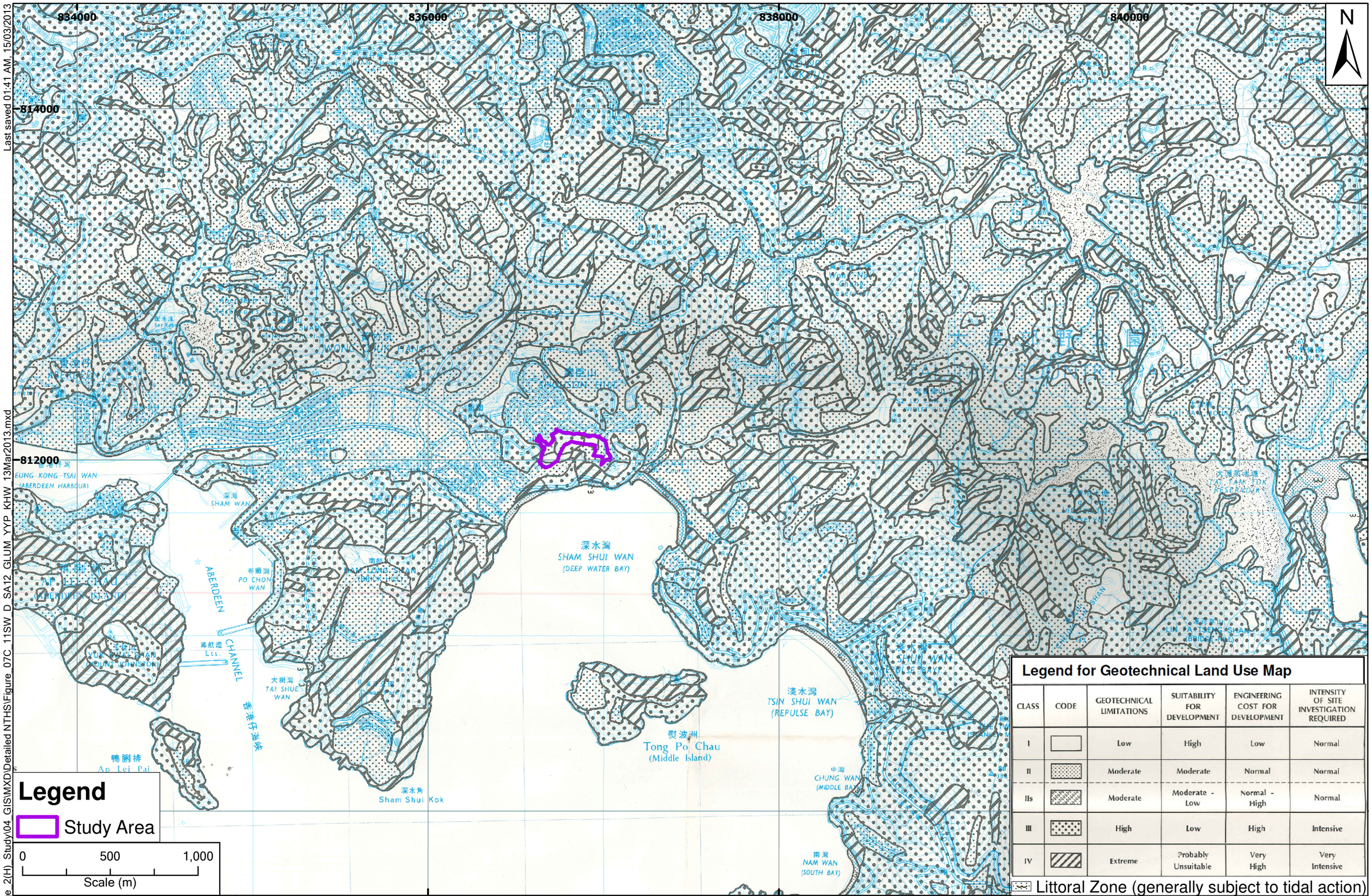
Drawing Title

Natural Terrain Hazard Study for Study Area 11SW-D/SA12 - Shouson Hill Regional - Physical Constraints Map - GASP I

Note: Topographic base map is 1:20,000 scale (2002), 10 m contour intervals; mapsheets 11_2002.dgn and 15_2002.dgn. Original map coordinate_system UGM georeferenced to Hong_Kong_1980_Grid.

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110441		07B	



Legend for Geotechnical Land Use Map

CLASS	CODE	GEOTECHNICAL LIMITATIONS	SUITABILITY FOR DEVELOPMENT	ENGINEERING COST FOR DEVELOPMENT	INTENSITY OF SITE INVESTIGATION REQUIRED
I		Low	High	Low	Normal
II		Moderate	Moderate	Normal	Normal
IIs		Moderate	Moderate - Low	Normal - High	Normal
III		High	Low	High	Intensive
IV		Extreme	Probably Unsuitable	Very High	Very Intensive

Littoral Zone (generally subject to tidal action)

Job Title

Agreement No. CE 16/2011 (GE)

Landslip Prevention and Mitigation Programme, 2011, Package B,
Landslip Prevention and Mitigation Works, Hong Kong Island (East) -
Investigation, Design and Construction

Drawing Title

Natural Terrain Hazard Study for Study Area 11SW-D/SA12 - Shouson Hill

Regional - Geotechnical Limitations associated with the Terrain (Geotechnical Land Use Map) - GASP I

Note: Topographic base map is 1:20,000 scale (2002), 10 m contour intervals; mapsheets 11_2002.dgn and 15_2002.dgn. Original map coordinate system UGM georeferenced to Hong_Kong_1980_Grid.

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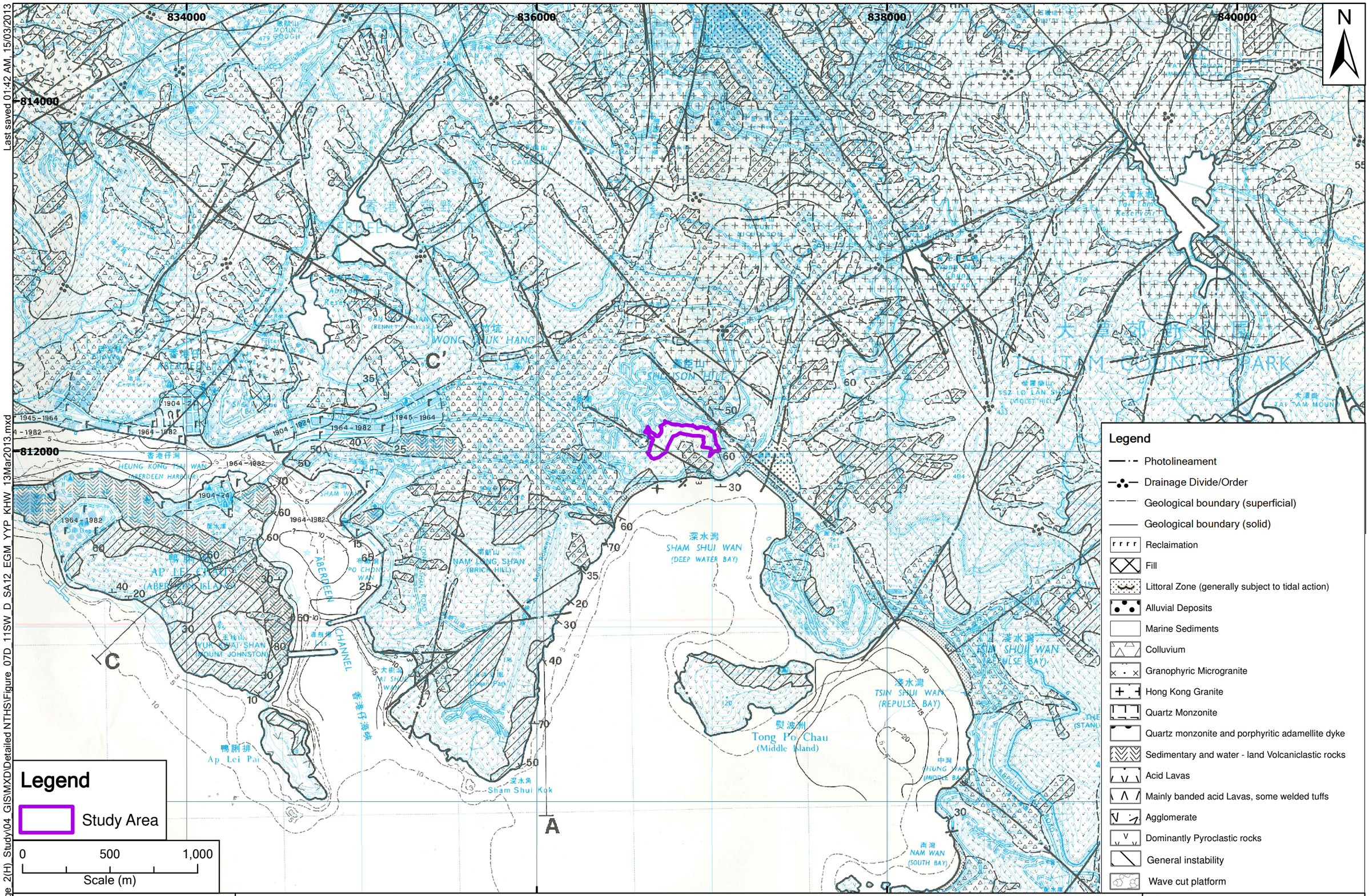
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Job No. 110441

Figure No. 07C

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Job Title Agreement No. CE 16/2011 (GE) Landslip Prevention and Mitigation Programme, 2011, Package B, Landslip Prevention and Mitigation Works, Hong Kong Island (East) - Investigation, Design and Construction	Drawing Title Natural Terrain Hazard Study for Study Area 11SW-D/SA12 - Shouson Hill Regional - Engineering Geology Map - GASP I Note: Topographic base map is 1:20,000 scale (2002), 10 m contour intervals; mapsheets 11_2002.dgn and 15_2005.dgn. Original map coordinate_system UGM georeferenced to Hong_Kong_1980_Grid.	FUGRO (HONG KONG) LTD Scale: 1:20,000 Drawn by: YYP/KHW Date: 15/03/2013 Checked: KAS Approved: 02/04/2013 Job No. 110441 Figure No. 07D

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836600 836800 837000 837200

812200 812000

NHC1 NHC2 NHC3 NHC4 NHC5 NHC6 NHC7 NHC8

SHOUSON HILL

N

0 50 100
Scale (m)

Legend

- Study Area
- Hillside Catchments

Land Status

- Lot/Sandwich Lot
- Modification of Lot
- Overlapping Modification of Lot
- Licence Area
- Overlapping Licence Area
- Vesting Order/Deposit Area
- Easement
- Engineering Reserves
- Permit Line (Utility)

Job Title

Agreement No. CE 16/2011 (GE)

Landslip Prevention and Mitigation Programme, 2011, Package B,
Landslip Prevention and Mitigation Works, Hong Kong Island (East) -
Investigation, Design and Construction

Drawing Title

Natural Terrain Hazard Study for Study Area 11SW-D/SA12 - Shouson Hill Land Status Plan

Note: Topographic base map is 1:1,000 scale (2010), 2 m contour intervals; mapsheets 11SW: 25c and 25d, 15NW:5a and 5b. LiDAR - derived contours (2m) shown in Study Area.

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110441		08	

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836800
837000
812200
812000

N

Type	Exploratory Station	Easting	Northing	Ground Level (mPD)
Drillhole	DH1	836968.97	812118.40	+99.89
Drillhole	DH2	836901.57	812124.68	+107.31
Drillhole	DH3	836809.52	812126.64	+134.58
Drillhole	DH4	836725.81	812106.19	+112.00
Drillhole	DH5	836695.31	812059.02	+92.11
Drillhole	DH6	836709.58	812026.72	+94.93
Trial Pit	TP1	836678.36	811993.97	+81.66
Trial Pit	TP2	836751.78	812078.64	+136.27
Trial Pit	TP3	836760.38	812099.97	+140.02
Trial Pit	TP4	836760.08	812129.59	+128.28
Trial Pit	TP5	836798.18	812124.04	+139.51
Trial Pit	TP6	836823.82	812130.86	+125.99
Trial Pit	TP7	836862.71	812122.16	+114.21
Trial Pit	TP8	836919.60	812118.62	+112.43
Trial Pit	TP9	836979.25	812066.65	+102.58

Legend

- Study Area
- Hillside Catchments

Project Ground Investigation

- Drill Hole
- Trial Pit

0 25 50
Scale (m)

Job Title

Agreement No. CE 16/2011 (GE)

Landslip Prevention and Mitigation Programme, 2011, Package B,
Landslip Prevention and Mitigation Works, Hong Kong Island (East) -
Investigation, Design and Construction

Drawing Title

Natural Terrain Hazard Study for Study Area 11SW-D/SA12 - Shouson Hill Project Ground Investigation Stations

Note: Topographic base map is 1:1,000 scale (2010), 2 m contour intervals; mapsheets 11SW: 25c and 25d, 15NW:5a and 5b. LiDAR - derived contours (2m) shown in Study Area

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KHW	28/05/2013	KAS	28/05/2013

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Figure No. 09

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836800

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11SW-D/C143 11SW-D/C142 11SW-D/FR505 11SW-D/FR505 11SW-D/C638 11SW-D/F88 11SW-D/C2175 11SW-D/F

11SW-D/C146 11SW-D/C144 11SW-D/CR1869 11SW-D/F506 11SW-D/C1862 11SW-D/C1852

11SW-D/CR875 11SW-D/C140 11SW-D/R1073

11SW-D/C871 11SW-D/CR141 11SW-D/CR2042

11SW-D/C896 11SW-D/CR878 11SW-D/CR1851

11SW-D/C147 11SW-D/CR1832 11SW-D/CR1850

11SW-D/R435 11SW-D/C860 11SW-D/CR137

11SW-D/C869 NHC4 TP4 TP6 DH3 TP5 TP7 DH2 TP8 DH1 11SW-D/F501

11SW-D/R430 NHC6 11SW-D/F216 DH4 NHC5 TP3 NHC3 NHC2 11SW-D/C1863 11SW-D/C1867

11SW-D/R472 11SW-D/F211 TP2 壽臣山 SHOUSON HILL

11SW-D/R429 11SW-D/C1948 11SW-D/C1866

11SW-D/C1985 11SW-D/CR148 NHC7 DL7-1 DH5 TP9

11SW-D/C2246 11SW-D/C1853

11SW-D/F215 DH6 NHC1 11SW-D/F539

DL8-2 11SW-D/C1855

11SW-D/C669 11SW-D/C1854 11SW-D/C1864

NHC8 TP1

15NW-B/CR73 15NW-B/R13

15NW-B/C197 15NW-B/C399 11SW-D/CR1868

15NW-B/FR55 15NW-B/FR142

15NW-B/C375

15NW-B/FR62 15NW-B/C71 15NW-B/R74

15NW-B/R15

15NW-B/DT2

NW-B/C23

N

0 25 50
Scale (m)

Apparent Strike of Structural Discontinuities

Legend

- Study Area
- Hillside Catchments
- Registered Slopes
- Ephemeral Stream

Geomorphology

- Concave Slope Break
- Convex Slope Break
- Cliff
- Spurline
- Landslide Headscar
- Old Terrace

Project Ground Investigation

- Drill Hole
- Trial Pit
- Grave Site
- Fill
- Shotcrete
- Anthropogenic Features
- Boulders
- Landslide Debris
- Colluvium (x<1m)
- Colluvium (x<1.5m)
- Colluvium (x<2m)
- Taluvium
- Bedrock
- Intermittent Bedrock
- Saprolite (x<2.5m)

Job Title

Agreement No. CE 16/2011 (GE)

Landslip Prevention and Mitigation Programme, 2011, Package B,
Landslip Prevention and Mitigation Works, Hong Kong Island (East) -
Investigation, Design and Construction

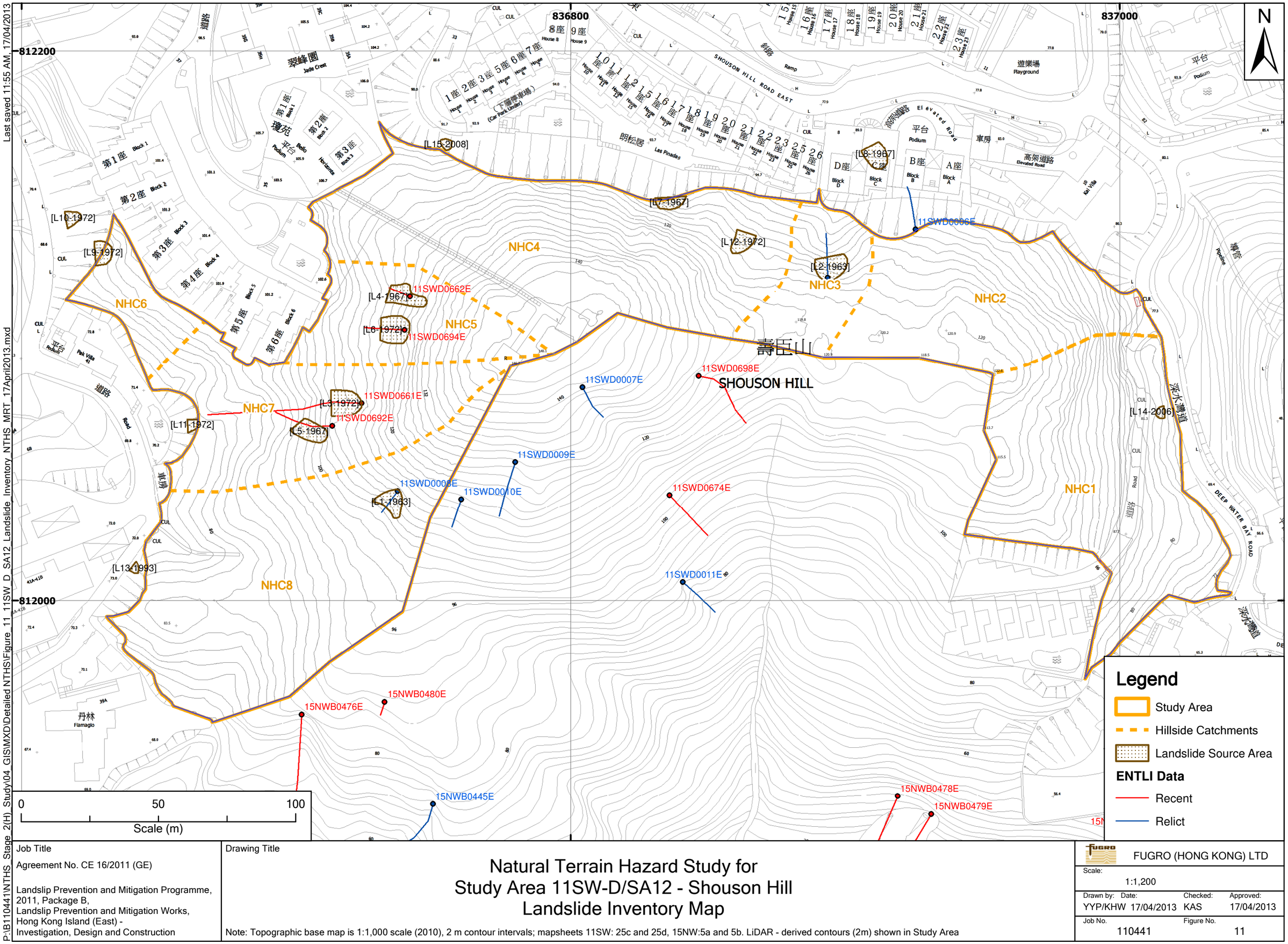
Drawing Title

Natural Terrain Hazard Study for Study Area 11SW-D/SA12 - Shouson Hill Engineering Geology & Geomorphology Map

Note: Topographic base map is 1:1,000 scale (2010), 2 m contour intervals; mapsheets 11SW: 25c and 25d, 15NW:5a and 5b. LiDAR - derived contours (2m) shown in Study Area.

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Legend

- Study Area
- Hillside Catchments
- Landslide Source Area

ENTLI Data

- Recent
- Relict

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Job Title

Agreement No. CE 16/2011 (GE)

Landslip Prevention and Mitigation Programme, 2011, Package B,
Landslip Prevention and Mitigation Works, Hong Kong Island (East) -
Investigation, Design and Construction

Drawing Title

Natural Terrain Hazard Study for Study Area 11SW-D/SA12 - Shouson Hill Landslide Inventory Map

Note: Topographic base map is 1:1,000 scale (2010), 2 m contour intervals; mapsheets 11SW: 25c and 25d, 15NW:5a and 5b. LiDAR - derived contours (2m) shown in Study Area

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YYP/KHW	17/04/2013	KAS	17/04/2013
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812200 836800 837000

812000

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NHC1
NHC2
NHC3
NHC4
NHC5
NHC6
NHC7
NHC8

壽臣山
SHOUSON HILL

Legend

- Study Area
- Hillside Catchments
- Terrain Unit 1 - Hillcrest & Ridgeline
- Terrain Unit 2 - Rock Cliff
- Terrain Unit 3 - Side Slope
- Terrain Unit 4 - Colluvial Swale

Geomorphology

- Concave Slope Break
- Convex Slope Break
- Cliff
- Spurline
- Landslide Headscar
- Old Terrace

0 25 50
Scale (m)

Job Title

Agreement No. CE 16/2011 (GE)

Landslip Prevention and Mitigation Programme, 2011, Package B,
Landslip Prevention and Mitigation Works, Hong Kong Island (East) -
Investigation, Design and Construction

Drawing Title

Natural Terrain Hazard Study for Study Area 11SW-D/SA12 - Shouson Hill Terrain Unit Map

Note: Topographic base map is 1:1,000 scale (2010), 2 m contour intervals; mapsheets 11SW: 25c and 25d, 15NW:5a and 5b. LiDAR - derived contours (2m) shown in Study Area.

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Job No. 110441 Figure No. 12

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Hazard Zone 1 - CE
OHL Source
Volume = 50m^3

Hazard Zone 5 - Rock Fall
Rock Fall Diameter = 2m

Hazard Zone 2 - CE
TDF Source
Volume = 70m^3

Hazard Zone 4 - Rock Fall
Rock Fall
Diameter = 1m

Hazard Zone 3 - CE
TDF/ CDF Source
Volume = 100m^3

NHC1 NHC2 NHC3 NHC4 NHC5 NHC6 NHC7 NHC8

OHL1 OHL2 OHL3 OHL4

TDF1 TDF2 TDF3 TDF5

CDF1 CDF2 CDF3

RF1 RF2 RF3 RF4 RF5 RF6 RF7 RF8 RF9 RF10

BF1 BF2 BF3

壽臣山 SHOUSON HILL

Legend

- Study Area
- Hillside Catchments

Hazard Zones
- Hazard Zone 1 (OHL)
- Hazard Zone 2 (TDF)
- Hazard Zone 3 (TDF/ CDF)
- Hazard Zone 4 (RF)
- Hazard Zone 5 (RF)

Facilities at Risk
- 1(a), Building
- 2(a), Building
- 2(b), Service reservoir,
- 3, Densely-used open space
- 4, Road,
- Unidentified

Rock Fall (1m or 2m in diameter)
- Potential Rock Fall Source Area
- Rock Fall Run-out Path

Boulder Fall (1m in diameter)
- Potential Boulder Fall Source Area
- Boulder Fall Run-out Path

Landslide (CDF/ TDF/ OHL)
- Source Area
- Section Line
- Travel Path/ Debris Width

0 25 50
Scale (m)

Job Title

Agreement No. CE 16/2011 (GE)

Landslip Prevention and Mitigation Programme, 2011, Package B,
Landslip Prevention and Mitigation Works, Hong Kong Island (East) -
Investigation, Design and Construction

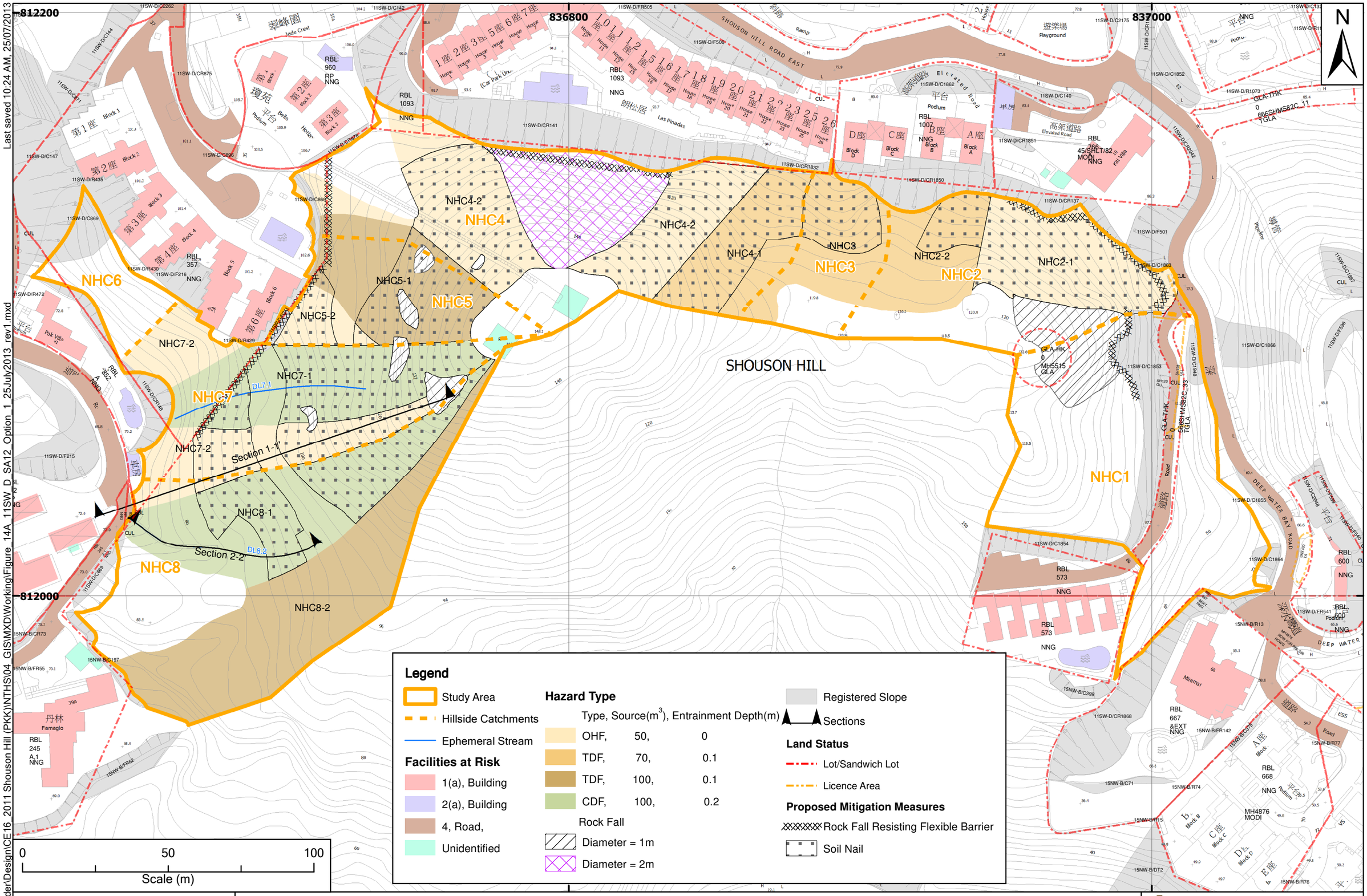
Drawing Title

Natural Terrain Hazard Study for Study Area 11SW-D/SA12 - Shouson Hill Hazard Zones and Facilities-at-Risk

Note: Topographic base map is 1:1,000 scale (2010), 2 m contour intervals; mapsheets 11SW: 25c and 25d, 15NW:5a and 5b. LiDAR - derived contours (2m) shown in Study Area.

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Job Title Agreement No. CE 16/2011 (GE) Landslip Prevention and Mitigation Programme, 2011, Package B, Landslip Prevention and Mitigation Works, Hong Kong Island (East) - Investigation, Design and Construction	Drawing Title Study Area 11SW-D/SA12 Shouson Hill Preliminary Mitigation Design Option 1 Note: Topographic base map is 1:1,000 scale (2010), 2 m contour intervals; mapsheets 11SW: 25c and 25d, 15NW:5a and 5b.

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836800

812200

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N

SHOUSON HILL ROAD EAST

SHOUSON HILL

NHC1

NHC2

NHC2-1

NHC2-2

NHC3

NHC4

NHC4-1

NHC4-2

NHC5

NHC5-1

NHC5-2

NHC6

NHC7

NHC7-1

NHC7-2

NHC8

NHC8-1

NHC8-2

DL7-1

DL8-2

Section 1-1'

Section 2-2'

翠峰園 Jade Crest

慧苑 Bello

遊樂場 Playground

高架道路 Elevated Road

平台 Podium

車房

1座 2座 3座 5座 6座 7座

10座 11座 12座 15座 16座 17座 19座 20座 21座 22座 23座 25座 26座

D座 C座 B座 A座

第1座 第2座 第3座 第4座 第6座

(下層停車場)

朗松居 Las Pinadas

Pak Villa

丹林 Flamagic

Miramar

GLA-THK 0 666SHMS82C_11 TGLA

GLA-THK 0 666SHMS82C_33 TGLA

GLA-HK 0 MH5515 GLA

45°HLT/82 MODI

MH4876 MODI

0 50 100

Scale (m)

Legend

- Study Area
- Hillside Catchments
- Ephemeral Stream

Facilities at Risk

- 1(a), Building
- 2(a), Building
- 4, Road,
- Unidentified

Hazard Type

Type, Source(m^3), Entrainment Depth (m)

OHF,	50,	0
TDF,	70,	0.1
TDF,	100,	0.1
CDF,	100,	0.2

Rock Fall

- Diameter = 1m
- Diameter = 2m

- Registered Slope
- Sections

Land Status

- Lot/Sandwich Lot
- Licence Area

Proposed Mitigation Measures

- Rock Fall Resisting Flexible Barrier
- Rigid Barrier

Job Title

Agreement No. CE 16/2011 (GE)

Landslip Prevention and Mitigation Programme, 2011, Package B,
Landslip Prevention and Mitigation Works, Hong Kong Island (East) -
Investigation, Design and Construction

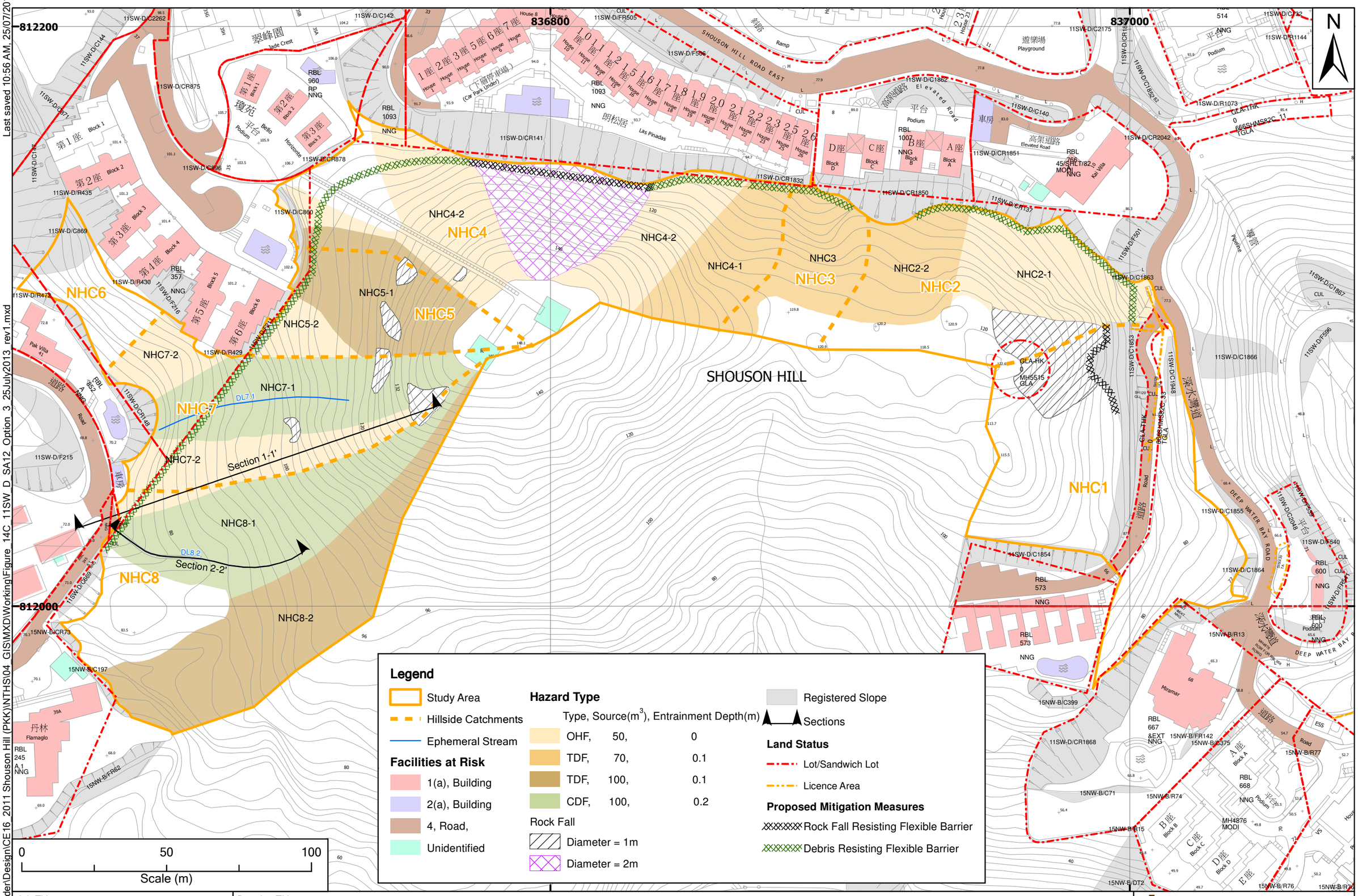
Drawing Title

Study Area 11SW-D/SA12
Shouson Hill
Preliminary Mitigation Design Option 2

Note: Topographic base map is 1:1,000 scale (2010), 2 m contour intervals; mapsheets 11SW: 25c and 25d, 15NW:5a and 5b.

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Job Title Agreement No. CE 16/2011 (GE) Landslip Prevention and Mitigation Programme, 2011, Package B, Landslip Prevention and Mitigation Works, Hong Kong Island (East) - Investigation, Design and Construction	Drawing Title Study Area 11SW-D/SA12 Shouson Hill Preliminary Mitigation Design Option 3 Note: Topographic base map is 1:1,000 scale (2010), 2 m contour intervals; mapsheets 11SW: 25c and 25d, 15NW:5a and 5b.

FUGRO (HONG KONG) LTD

Scale:			
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Stage 3(H) Study Report S3(H)R 019/ 2013

STUDY AREA NO. 11SW-D/SA12
(HILLSIDE CATCHMENT NOS. 11SW-D/OH44a, 11SW-D/OH44b, 11SW-D/OH44, 11SW-D/OH45a, 11SW-D/OH45, 11SW-D/DF28a, 11SW-D/DF28, 11SW-D/DF28b)
SHOUSON HILL, HONG KONG ISLAND (EAST)

Fugro (Hong Kong) Limited

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January 2014
LPM Division 3
Geotechnical Engineering Office
Civil Engineering and Development Department

Foreword

This report presents the design of the proposed natural terrain hazard (NTH) mitigation works for Study Area No. 11SW-D/SA12, which is a natural hillside at Shouson Hill, Hong Kong Island (East).

The desk study, aerial photograph interpretation, site inspection, ground investigation supervision, stability analysis, design of NTH mitigation works and compilation of this report were carried out by Fugro (Hong Kong) Limited (FHK) on behalf of the Geotechnical Engineering Office, Civil Engineering and Development Department under Agreement No. CE 16/2011 (GE) - Landslip Prevention and Mitigation Programme, 2011, Package B, Landslip Prevention and Mitigation Works, Hong Kong Island (East) - Investigation, Design, and Construction.

Based on the findings of S2(H) Study under the same Agreement, it was concluded that mitigation works should be carried out to mitigate the landslide risk of the area. Following the recommendation of the S2(H) Study, a design of the necessary mitigation works was carried out by FHK and is presented in this report.

Proposed mitigation works comprising the installation of soil nails and in-situ rock / boulder stabilization measures at the study area. No new maintenance access and landscape measures are required for the mitigation works.

Y C Koo
Project Director

1 Introduction

Fugro (Hong Kong) Limited (FHK) was appointed by the Geotechnical Engineering Office (GEO) of the Civil Engineering and Development Department (CEDD) under Agreement No. CE 16/2011 (GE) to undertake a Natural Terrain Hazard Study (NTHS) for the Study Area 11SW-D/SA12 – Shouson Hill, Hong Kong Island.

A Stage 2(H) Report (S2(H)R 20/2013) was prepared in June 2013, which presented the findings of a review of the potential hazards arising from natural terrain areas within this Study Area. The location and extent of the Study Area are presented in Figure 1.1.

The S2(H) Study was carried out based on Design Event Approach and Enhanced Approach to examine the natural terrain landslide hazard affecting the existing developments and to formulate suitable hazard mitigation strategy to mitigate the risks. The S2(H) Report provided background information including: desk study, aerial photograph interpretation and engineering geological mapping, and findings of site-specific ground investigation (GI). The S2(H) Study was discussed at the Geotechnical Checking Panel Meeting No. 6/2013 on 19 April 2013 and the findings and recommendations were endorsed in principle. A revised S2(H) report incorporating the Enhanced Approach in GEO Technical Guidance Note No. 36 (TGN 36) was submitted to the Checking Panel on 27 June 2013 and was endorsed by the panel on 16 August 2013. An abridged version of S2(H) Report was submitted to the GEO in July 2013 for selection of a preferred construction scheme of NTH mitigation works for the Study Area. The abridged version of S2(H) Report was endorsed by the Design Review Committee on 15 August 2013.

This report presents the design of the proposed NTH mitigation works for the Study Area based on the results of desk study, topographical survey, GI fieldwork and laboratory testing.

2 Description of the Study Area

2.1 General Description

Study Area 11SW-D/SA12 is located in the southwestern part of Hong Kong Island just to the north of Deep Water Bay and is essentially natural terrain. It encompasses the steep hillsides to the north, northwest, west, southwest, east and southeast of the east-west trending ridgeline which forms the summit of Shouson Hill. The Study Area is a horse-shoe shaped area of about 3.6 ha in size (Figure 2.1). The Study Area comprises the following eight Natural Hillside Catchments (NHC):

(i) NHC1: NHC No. 11SW-D/OH44a,
(ii) NHC2: NHC No. 11SW-D/OH44b,
(iii) NHC3: NHC No. 11SW-D/OH44,
(iv) NHC4: NHC No. 11SW-D/OH45a,
(v) NHC5: NHC No. 11SW-D/OH45,
(vi) NHC6: NHC No. 11SW-D/DF28a,
(vii) NHC7: NHC No. 11SW-D/DF28, and
(viii) NHC8: NHC No. 11SW-D/DF28b.

General views of the Study Area are shown in Figures 2.2 to 2.5 and vantage points of the photos are shown in Figure 2.1.

2.2 Land Status and Land Use

The Study Area is predominantly on unallocated government land. The southwestern and western catchments of the Study Area (NHC8, 7 & 6) are bound by cut slope nos. 15NW-B/C197, 11SW-D/C669, 11SW-D/CR148 and 11SW-D/C869 of government and private responsibilities. The whole of NHC6 is within the Private Lot while Private Lots are also present within the other two catchments. Below toe of NHC8, 7 & 6 and behind crest of NHC6 are residential buildings.

The northwestern catchments of the Study Area (NHC5 & 4) are bound by cut and fill slope nos. 11SW-D/C860, 11SW-D/CR878, 11SW-D/CR141, 11SW-D/CR1832, 11SW-D/R429 and 11SW-D/F211 of government and private responsibilities. Private Lot/Sandwich Lots are also present within each of these catchments. Below toe of NHC5 & 4 are residential buildings.

The northern and northeastern catchments of the Study Area (NHC3 & 2) are bound by cut and fill slope nos. 11SW-D/C1863, 11SW-D/CR137, 11SW-D/CR1850, and 11SW-D/F501 of private responsibilities. Private Lot/Sandwich Lots are also present within each of these catchments. Below toe of NHC3 & 2 are residential buildings.

The southeastern catchment of the Study Area (NHC1) contains and is bound by cut slope nos. 11SW-D/C1948, 11SW-D/C1853, 11SW-D/C1854, 11SW-D/C1864, 11SW-D/C1868 and 15NW-B/C399 of government and private responsibilities. There are private lots and licensed lands within this catchment. Below toe of NHC1 is Deep Water Bay Road.

3 Geology

All available published geological information for the site has been reviewed in the desk study, including the relevant 1:20,000-scale geological map (Sheets 11 and 15 HGM20, GEO, 1992) & 1:100,000-scale map sheets published by the Hong Kong Geological Survey (Sewell et al, 2000), as well as the accompanying geological memoirs, the relevant reports and maps prepared for the Geotechnical Area Studies Programme (GASP, GCO, 1988) and Boulder Field Inventory. A Regional Geology of the Study Area is shown in Figure 3.1.

According to the 1:20,000-scale geological map, the Study Area is predominately composed of fine ash vitric tuff of the Ap Lei Chau Formation, undivided (JAC). A dyke of Quartzphyric Rhyolite is also trending northwest-southeast across the western part (in NHC 6, 7 and 8) of the Study Area. Outcrop occurs on and near the ridgeline, and rock cliff and slopes are found in NHCs 1, 2, 4, 5 and 7 with slope angles ranging from 35° to 60°. They are generally of Grades III and better, with the majority of the joints striking NW-SE and NE-SW.

To acquire site specific geological information for the NTH Study and design of necessary mitigation works, ground investigation (GI) works were carried out at selected locations to acquire basic geological information on this Study Area.

4 Ground Investigation Works

4.1 Previous Ground Investigation Information

Limited existing geotechnical ground investigation data is available within the Study Area. Ground investigation data is available for locations north, east and south-east of the Study Area dating from 1982.

The locations of the previous GI works are shown in Figure 4.1 and the results are summarized in Appendix A.

4.2 Site-Specific Ground Investigation

A site-specific GI fieldwork was carried out between January 2013 and April 2013 by Vibro (H.K.) Ltd. under Contract No. GE/2011/06 and comprised six drillholes (DH1 to DH6) and nine trial pits (TP1 to TP9).

Locations of the GI stations are also shown in Figure 4.1. Results of the GI are summarised in Appendix A. One set of the final GI reports was filed in the GIU of CEDD.

4.3 Geological Condition

Based on the available GI information, the maximum depth of colluvium was about 1.7 m (DH6) underlain by saprolite with thickness ranging from 0.9 m to 14.07 m (DH4, where saprolite was encountered from 1 m below ground level till the end of the drillhole). No residual soil was encountered in all GI stations. Colluvium was underlain by bedrock in TP5 and DH3. Rockhead was encountered in the drillholes between 2.3 m and 5.3 m below ground surface except DH4, DH5 and DH6 where no rockhead was encountered down to a depth of 15 m. The solid geology for the saprolite was classified as fine ash vitric tuff. Evidence in the project ground investigation in NHCs 5, 7 and 8 (such as TP1, TP2, TP3, DH4, DH5 and DH6 logs) also indicate that colluvium is generally less than 2 m in thickness. Sub-surface materials found in the GI are summarised below:

Colluvium (COLL) Firm, light brown, sandy SILT with some angilar to sub-angular fine to medium gravel sized highly decomposed and moderately decomposed rock fragments.

Completely Decomposed Tuff (CDT) Extremely weak, light grey, completely decomposed fine ash vitric TUFF (Slightly sandy SILT with occasional subangular fine gravel).

Highly Decomposed Tuff (HDT) Very weak to weak, light grey, dappled light brown and brown, highly decomposed fine ash vitric TUFF (Slightly sandy silty angular COBBLES with some angular to subangular fine to coarse gravel).

Moderately Decomposed Tuff (MDT) Moderately strong, locally strong, grey, dappled light grey and light brown, moderately decomposed fine ash vitric TUFF.

Based on the desk study information and previous / current GI, the Study Area mainly comprises a layer of colluvium (COLL) with thickness up to 2 m and overlying completely to highly decomposed Tuff (C/HDT) and then bedrock. The rockhead level within the Study Area varies from 140mPD near crest of NHC4, where exposed rock face can be noted, to about 3m and 5m below toe of NHCs 2 and 8 respectively. The inferred geological profiles of eleven design sections of the Study Area are shown in Figures 4.2 to 4.12.

4.4 Groundwater Condition

Based on site inspections to the Study Area carried out in the wet season of 2013, there was no seepage observed at the accessible locations of the Study Area including the main drainage lines of the Study Area. The groundwater level monitoring records taken between March 2013 and April 2013 indicated that the Study Area is generally under dry condition.

To cater for potential rise of groundwater levels during heavy rainfalls, a groundwater table at about 2 m above the bedrock and a perched water table at about 1m above the base of colluvium were adopted in the design of mitigation measures.

The adopted design groundwater tables for a 10-year return period rainfall at the design sections are also shown in Figures 4.2 and 4.12. A summary of the groundwater level monitoring records is provided in Appendix B.

5 Laboratory Testing

To determine the shear strength parameters of various soil materials encountered in the Study Area for the design of mitigation measures, laboratory tests were carried out on selected soil samples collected in the GI works. Following laboratory tests had been undertaken for the soil samples:

(i) Multi-stage Consolidated Undrained Triaxial Compression Tests;

(ii) Atterberg Limits Determination;

(iii) Particle Size Distribution Analysis; and

(iv) Moisture Content Determination.

The laboratory tests were carried out by Gammon Construction Limited under Contract No. GE/2013/09. The laboratory test results are summarized in Appendix A. A copy of the final laboratory testing report on the Study Area was filed in GIU of CEDD.

6 Parameters for Analysis

The shear strength parameters of COLL and C/HDT were derived from plotting of the p'-q data of the triaxial compression test results. The adopted parameters are summarized in the table below and the p'-q plots are presented in Appendix C.

Material Type	Effective Cohesion c' (kPa)	Effective Friction Angle, ϕ' (°)	Bulk Unit Weight γ (kN/m^3)
COLL	1	36	19
C/HDT	5	36	19

7 Enhanced Approach for Dealing with Natural Terrain under LPMitP

The Design Event Approach outlined in GEO Report No. 138 and the Enhanced Approach for Dealing with Natural Terrain Studies outlined in TGN 36 were adopted for the S2(H) Study. The potential natural terrain hazards affecting the facilities below the hillsides as identified during the Study are shown on the Hazard Map in Figure 7.1.

The Design Event requirements for the catchments have been assessed in accordance with TGN 36. The S2(H) Study identified five hazard types and related Design Event volumes. The hazards include Open Hillslope Landslide (OHL), Topographic Depression Failure (TDF), Channelised Debris Flow (CDF), Rock Fall (RF) and Boulder Fall (BF). All the estimated potential landslide source volumes were Design Event.

As mentioned in section 2.2, Natural Hillside Catchment NHC6 is within Private Lot No. RBL 357. No works will be proposed inside the lot and hence NHC6 is excluded from the S2(H) Study and this study report. Each catchment was assessed as to whether they meet the criteria for React-to-Known-Hazard under the Enhanced Approach. In all catchments (except NHC6), although there are no immediate and obvious dangers observed, there exist evidence supporting the possibility that a dangerous situation could develop. Past persistent landslides and strong geological evidence are the dominant factors. A summary of the discussed criteria for React-to-Known-Hazard under the Enhanced Approach is shown in the following table.

Natural Hillside Catchment	Criteria for React-to-Known-Hazard under Enhanced Approach			React-to-Known Hazard	Design Event
	Past Persistent Landslides	Strong Geological Evidence	Newly Emerged Hazardous Situation		
NHC1	No	Yes	No	Yes	RF
NHC2	No	Yes	No	Yes	TDF/OHL/RF
NHC3	No	Yes	No	Yes	OHL/TDF
NHC4	No	Yes	No	Yes	OHL/TDF/RF/BF
NHC5	Yes	Yes	No	Yes	OHL/TDF/RF/BF
NHC7	Yes	Yes	No	Yes	CDF/OHL/RF/BF
NHC8	No	Yes	No	Yes	OHL/TDF/CDF

Based on the findings of the S2(H) Study, the estimated design event volumes for OHL, TDF, CDF and RF/BF for each hillside catchment are summarized in the following table and shown in Figure 7.1:

NHC No.	Drainage Line No.	Potential Hazard Type	Design Event Magnitude (m^3)		
			Source	Entrainment	Total
NHC1	-	RF	1m dia.		
NHC2	-	TDF	70	10	80
		OHL	50	-	50
		RF	1m dia.		
NHC3	-	TDF	70	20	90
		OHL	50	-	50
NHC4	-	TDF	70	35	105
		OHL	50	-	50
		RF/BF	2m dia		
NHC5	-	TDF	100	40	140
		OHL	50	-	50
		RF/BF	1m dia		
NHC7	DL7.1	CDF	100	95	195
		OHL	50	-	50
		RF/BF	1m dia		
NHC8	DL8.2	CDF	100	50	150
		TDF	100	5	105
		OHL	50	-	50

The results of the debris mobility assessment and rock/boulder fall analysis indicate the debris from OHL, TDF and CDF and the modeled boulders within the catchments could present risk to the existing facilities (i.e. Buildings and Roads) below the hillslopes. The debris mobility analysis results at the toe of the study area are summarized in the following table and shown in Figure 7.2:

NHC No.	Sub-catchment	Potential Hazard Type	Final Calculated Design Event Volume (m^3)	Debris Impact Velocity at Observation Point (m/s)	
				Proposed Mitigation Site	Facility at Risk
NHC2	NHC2-1	OHL	50	9.0*	9.0*
	NHC2-2	TDF	28	3.7	5.0
NHC3	-	TDF	68	7.5	7.0
NHC4	NHC4-1	TDF	105	8.6	7.0
	NHC4-2	OHL	50	12.0	15.9
NHC5	NHC5-1	TDF	137	9.0	6.5
	NHC5-2	OHL	36	9.0*	6.9
NHC7	NHC7-1	CDF	192	10.0	9.3
	NHC7-2	OHL	-	-	-
NHC8	NHC8-1	CDF	39	4.0	3.2
	NHC8-2	TDF	0	0	0

* Velocity capped at 9 m/s (see TGN 34)

8 Design Option Assessment

An abridged version of Stage 2(H) Report summarizes the key aspects of the Stage 2(H) Report and contains relevant information for evaluating the three proposed options of natural terrain hazard mitigation scheme was submitted for endorsement of the Design Review Committee. Following three design options of the mitigation works were proposed in the Stage 2(H) Report:

Scheme 1 - installation of soil nails in areas targeted to provide an adequate factor of safety against failure of the top 2m of the regolith based on information on the soil and groundwater acquired from recent GI work. In-situ stabilization measures and rock fall fences are proposed to mitigate rock fall and boulder fall at NHCs 1, 2, 4, 5, and 7.;

Scheme 2 - installation of rigid barriers along the toe of most catchments and in-situ stabilization measures and rock fall fences at the southern end of NHC1 and central northern end of NHC4. The rigid barriers are designated to catch the landslide and rock fall debris with wing walls at its two sides to retain and train debris; and

Scheme 3 - construction of flexible barriers and in-situ stabilization measures and rock fall fences at the toe of most catchments to mitigate potential landslide and rock fall hazards.

A GEO Design Review Committee (DRC) Meeting was held on 15 August 2013 to discuss the preferred scheme of mitigation works for the Study Area. Having evaluated the pros and cons of the proposed schemes, including construction problems, environmental impact, cost, construction programme, etc, DRC agreed that the Scheme 1 should be adopted as the preferred option. However, DRC enquired about the necessity of the provision of

flexible barriers along the toe of the hillside, as soil nailing and in-situ stabilization had already proposed to stabilize the landslide source areas and boulder/ rock fall hazard respectively. After discussion, FHK agreed to delete the flexible barriers and optimized the soil nailing and in-situ rock/boulder stabilization measures in the detailed design.

A copy of the extracts of the Abridged Version of Stage 2(H) Report and the minutes of the DRC meeting on 15 August 2013 are given in Appendix D.

9 NTH Mitigation Measures Design

The following NTH mitigation works are recommended:

(i) Provision of soil nails installation to the natural hillside catchment NHC 2, 3, 4 ,5, 7 and 8; and

(ii) In-situ stabilization measures including rock dowel, concrete buttress and wire mesh are proposed to mitigate rock fall and boulder fall at NHC 1, 2, 4, 5, and 7.

The layout and details of the proposed mitigation works are shown in Figures 9.1 to 9.11 and Drawing Nos. NTHM1230/HC01/03 to NTHM1230/HC01/06.

9.1 Design of Soil Nail

Soil nails installation was proposed to the natural hillside catchment NHC 2, 3, 4, 5, 7 and 8 which are all affecting residential buildings at toe of the Study Area (i.e. Group 1 facility). According to TGN No. 37 where soil nailing is adopted as the mitigation scheme for an OH catchment, an analytical approach should be adopted for the design of soil nails to provide an adequate factor of safety against failure of the top 2m of the regolith, in accordance with the design standards given in the Geotechnical Manual for Slopes (GEO, 1984). As defined in Figure 7.1, all catchments are originally OHL scenarios before it becomes a TDF or CDF hazard and therefore we considered that the requirement of providing adequate factor of safety against failure of the top 2m of the regolith for soil nail design should be applied to all catchments of the Study Area.

It is considered that the residential buildings at the toe of these sub-catchments would be affected by the hazard. Based on Works Bureau Technical Circular No. 13/99 (WB, 1999) and GEO Technical Guidance Note (TGN) No. 15 (GEO, 2007), the consequence-to-life and economic consequence categories of these sub-catchments should be classified as category "1" and category "A" according to Tables 3 and 4 of Appendix A of the Circular respectively. Thus, a minimum factor of safety (FOS) of 1.4 under a 10-year return period rainfall is recommended for the proposed mitigation works at the sub-catchments.

The stability analysis for representative sections at these sub-catchments with soil nails was carried out using computer program SLOPE/W, Version 2007 with the inferred geological model, the assumed groundwater condition and the adopted shear strength parameters as discussed in Sections 4.3 and 4.4. The Morgenstern-Price Method was adopted

to determine the minimum FOS. Calculations of the stability analyses of these sub-catchment with soil nails as mitigation works and designs of soil nails are summarised in the table below and given in Appendix E.

Sub-catchment	Section	Calculated Minimum FOS for a 10-Year Return Period Rainfall	Required FOS
NHC2-1	1-1	1.43	1.4
NHC2-2	2-2	1.44	
NHC3	3-3	1.43	
NHC4-1	4-4	1.42	
NHC4-2	5-5	1.43	
	6-6	1.43	
NHC5-1	7-7	1.45	
NHC5-2	8-8	1.43	
NHC7-1	9-9	1.44	
NHC7-2	10-10	1.42	
NHC8-1	11-11	1.42	

In view of that the Study Area itself is a natural hillside with no high groundwater table noted, the soil at the site would be classified as non-aggressive with guidance given in Section 5.5 of Geoguide 7(GEO, 2008). Based on Table 5.1 of Geoguide 7 (GEO, 2008), Class 2 corrosion protection measures including hot-dip galvanizing and 2mm sacrificial thickness on the radius will be provided to steel reinforcement of soil nails proposed for this Study Area.

9.2 Rock/Boulder Stabilisation Measures

Rock fall / boulder fall hazards were identified in Stage 2(H) Report in the Study Area as presented in Section 7 of this report. In-situ stabilisation measures including dentitions, concrete buttresses, dowelling or removal would be adopted to treat all localised potential unstable boulders and potentially unstable rock blocks that identified in Stage 2(H) Report and as identified on site during the construction of mitigation works at the Study Area by provision of inspection scaffolding. Rock mesh will also be provided to all rock face of the Study Area after stabilisation works.

9.3 Existing Upgraded Man-made Features within Study Area

Twenty registered features are located at the boundary of the Study Area, of which nine are cut slopes, three are fill slopes, one is retaining wall and seven are cut and retaining wall features. The engineered slopes are generally associated with construction of roads and site formation for residential buildings. The locations of the existing registered slopes and

retaining walls in the vicinity of the Study Area are shown in Figure 2.1. Five of them have been checked under previous LPM Stage 2 or Stage 3 studies.

Stage 2 Studies have been completed for 11SW-D/C1863, 11SW-D/CR137, 11SW-D/CR141, 11SW-D/CR148, 11SW-D/CR1850 and 15NW-B/C197, and advisory letters were recommended for 11SW-D/CR141, 11SW-D/CR1850 and 15NW-B/C197 and Dangerous Hillside (DH) orders were recommended for 11SW-D/C1853 (mid-slope of NHC1), 11SW-D/CR137 (downslope of NHC2) and 11SW-D/CR141 (downslope of NHC4). Stage 2 Study for 11SW-D/CR1868 was terminated as the feature was found to be up to standard by previous study accepted by GEO or previously upgraded. No Stage 2 or Stage 3 Study was conducted for the remainder of the registered features.

Installation of soil nail is proposed for the Study Area and hence no additional loading will be added to the existing slopes and retaining walls below the study area. Stability check for existing man-made slopes below the Study Area is considered not necessary.

10 Surface Drainage Measures and Future Maintenance

Since nail heads of proposed soil nails at the Study Area will be recessed and the final slope surface will be reinstated with vegetation, no future maintenance works and drainage channel are considered necessary. No maintenance access and drainage channels shall be proposed to the Study Area.

11 Landscape Design

To enhance the greenery of the Study Area, following landscape works would be carried out as part of the mitigation works:

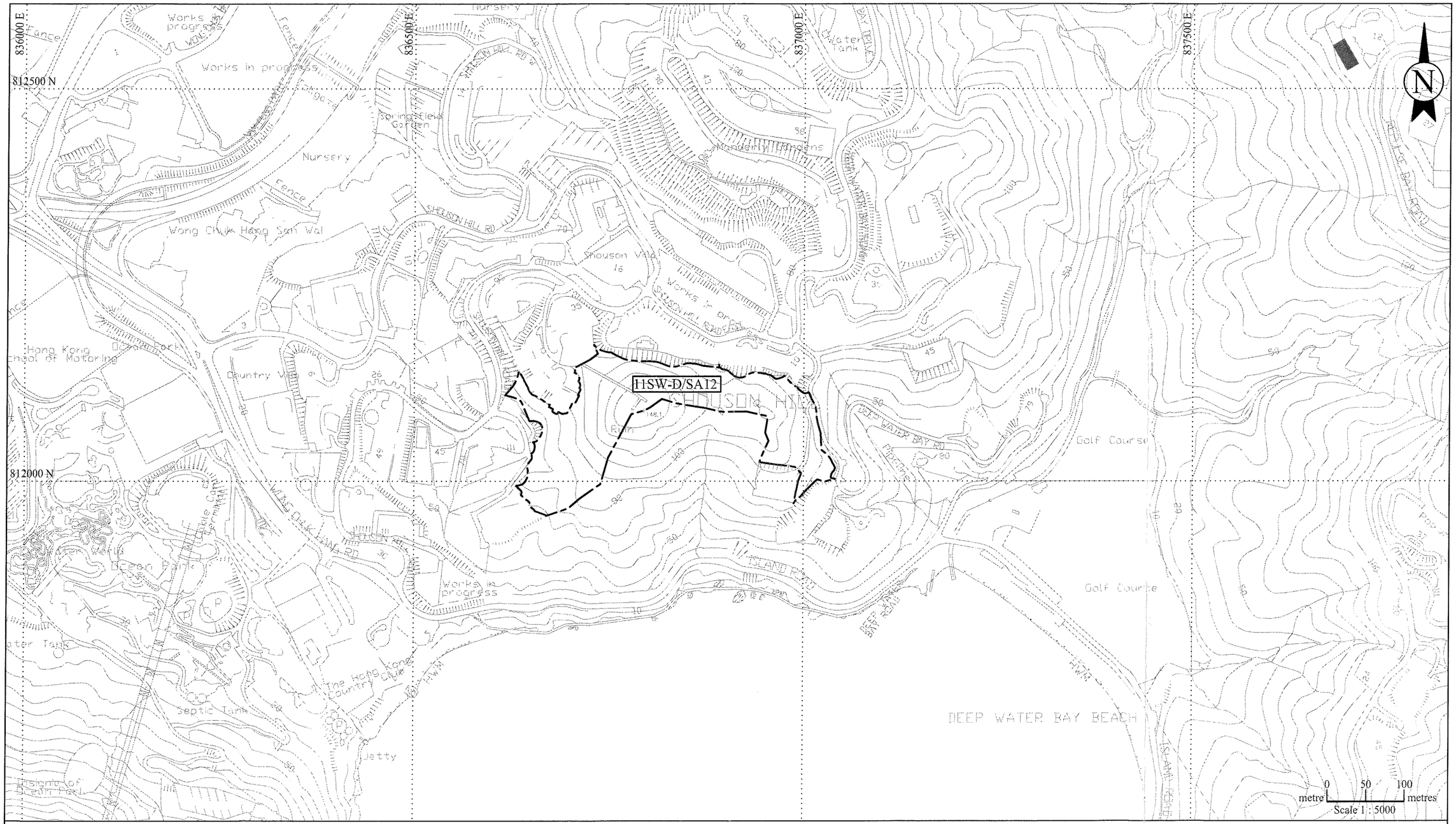
(i) Existing mature trees shall be preserved.

(ii) Hydroseeding with/without biodegradable erosion control mat will be provided to the soil nailed slope surface.

12 Conclusions and Recommendations

Based on the findings of the Stage 2(H) Report carried out for the hillside catchments at Shouson Hill by FHK under Agreement CE 16/2011(GE), it was concluded that suitable mitigation works should be carried out to mitigate the landslide risk associated with the Study Area.

The proposed construction scheme of the mitigation works comprises mainly the provision of soil nails installation and in-situ rock/boulder stabilisation measures. Maintenance access and drainage channel are considered not required for the Study Area. Vegetation cover will be provided to the final surface of the Study Area.

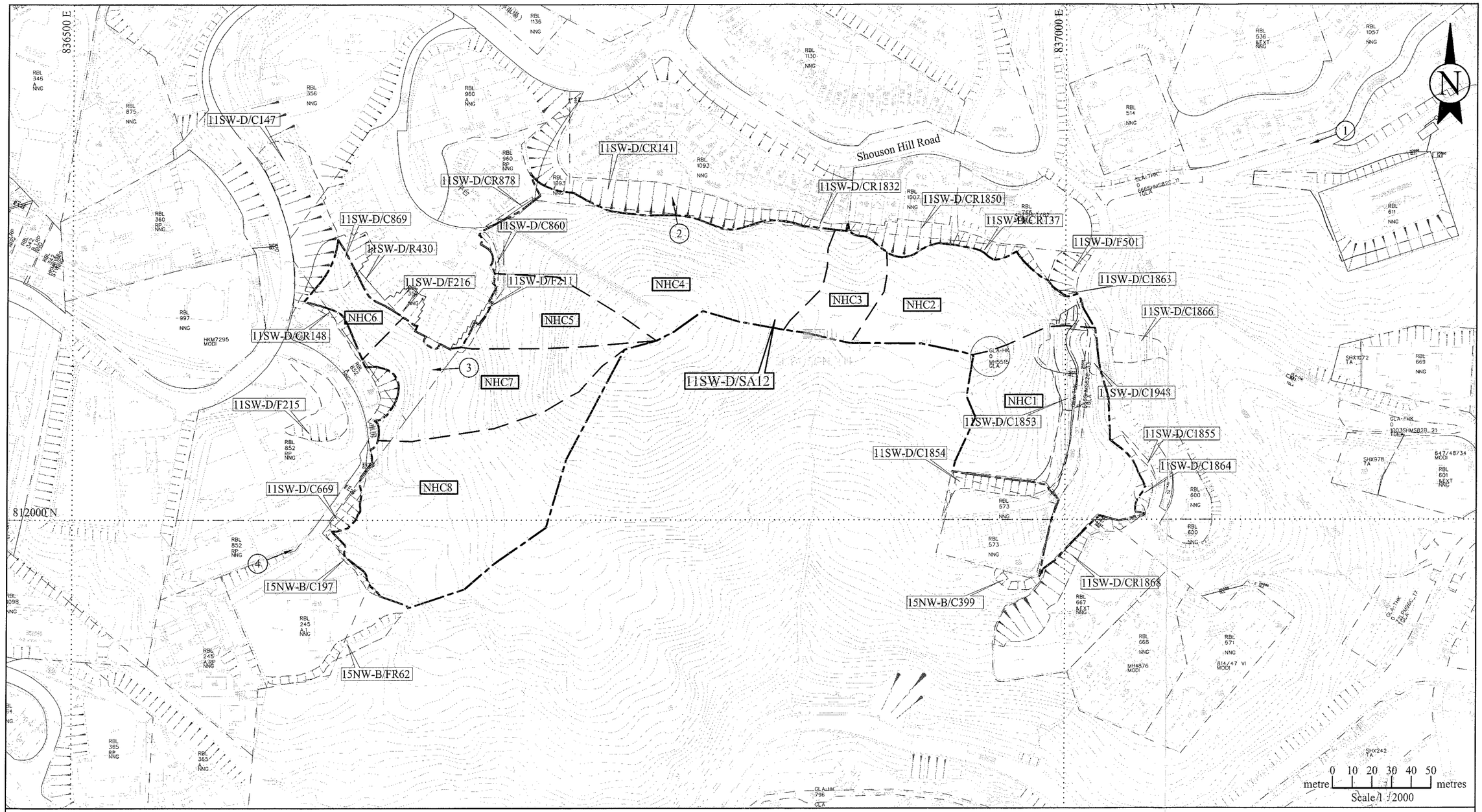


Legend :

——— — ——— Boundary of study area

Notes : (1) Base map is extracted from Survey sheet No. 11SW-D, 11SE-C, 15NW-B & 15NE-A.

Figure 1.1 Location Plan



Legend :

- Boundary of study area
- Feature boundary (SIS)
- Lot boundary
- Licence boundary
- Hillside catchment boundary
- NHC1 Hillside catchment area
- (1) Vantage point and direction

Notes : (1) Base map is extracted from Survey sheet No. 11SW-25C, 25D, 15NW-5A & 5B .

Figure 2.1 Site Plan

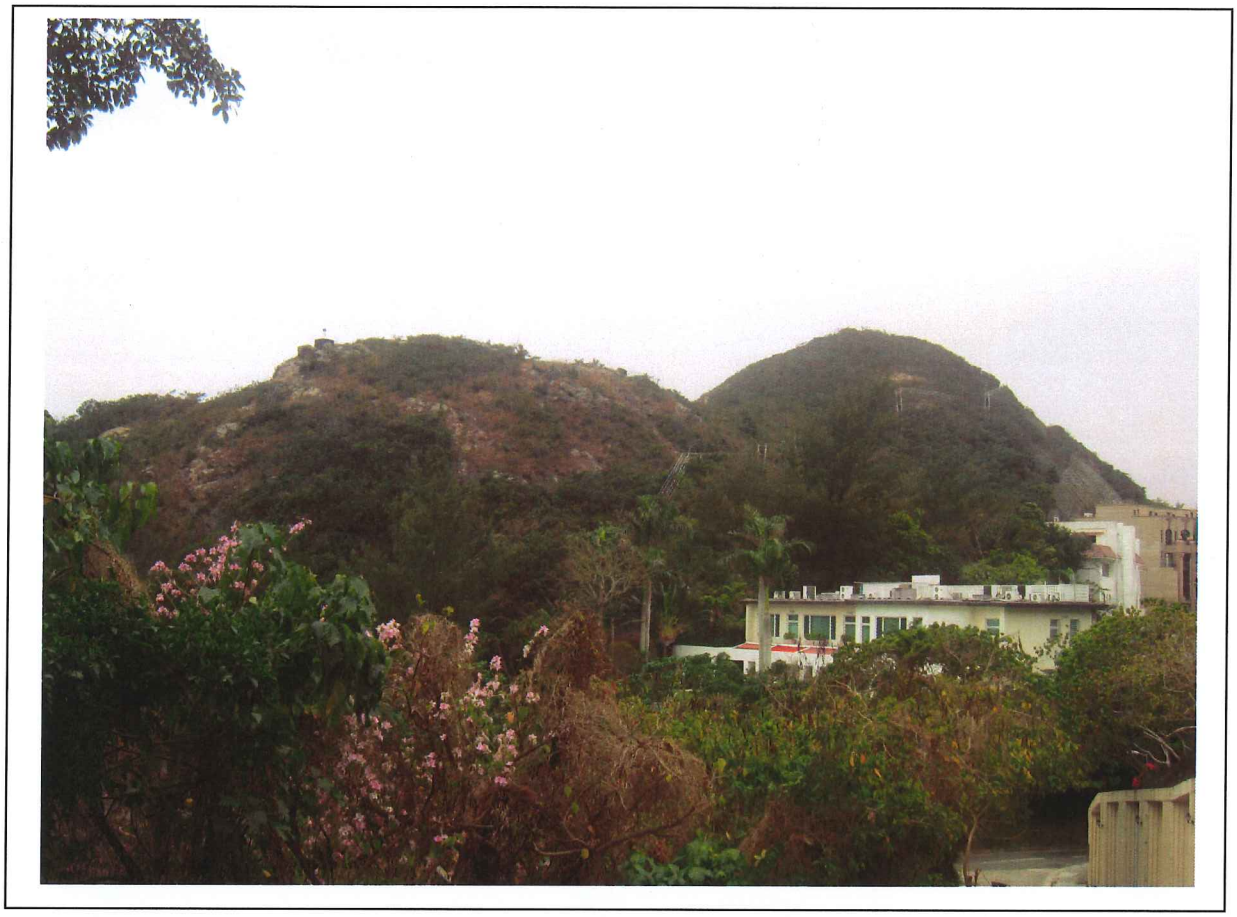


Figure 2.2 Plate 1 - General View of the Study Area (Catchment NHC1 to 4) (19 March 2013)



Figure 2.3 Plate 2 - View from NHC 4 towards Its Toe (19 March 2013)

GENERAL NOTES

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS, STANDARD DRAWINGS, THE SPECIFICATIONS AND INSTRUCTIONS ISSUED BY THE ENGINEER.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
3. ALL LEVELS ARE IN METRES ABOVE PRINCIPAL DATUM (mPD) UNLESS OTHERWISE STATED.
4. ALL MEASUREMENT MUST BE CHECKED ON SITE. DO NOT SCALE FROM THE DRAWINGS.
5. THE CONTRACTOR SHALL REPAIR, MAINTAIN AND REINSTATE ON COMPLETION OF WORKS ALL EXISTING SURFACING COVER, SURFACE DRAINAGE DUCTS, CHANNELS, FENCE, FOOTPATHS, CONCRETE STEPS AND OTHER AFFECTED FACILITIES UNLESS OTHERWISE SPECIFIED ON THE DRAWINGS OR INSTRUCTED BY THE ENGINEER.
6. ANY PROPERTIES, SUCH AS EXISTING FENCING AND PAVEMENT, NEEDED TO BE REMOVED OR RELOCATED FOR CARRYING OUT OF THE WORKS SHALL BE REINSTATED TO THEIR ORIGINAL CONDITIONS, UNLESS OTHERWISE SPECIFIED.
7. STOCKPILING OF MATERIALS OR EQUIPMENT ON THE SLOPE FACE OR CREST IS NOT PERMITTED UNLESS APPROVED BY THE ENGINEER IN WRITING.
8. THE NOTES ON THIS DRAWING ARE THE GENERAL REQUIREMENTS UNLESS OTHERWISE SPECIFIED OR INSTRUCTED BY THE ENGINEER.
9. ANY SOFT SPOTS SHALL BE REMOVED AND ANY VOIDS SHALL BE BACKFILLED WITH CONCRETE OF GRADE 20/20 OR WITH COMPACTED SOIL–CEMENT FILL AS PER GS CLAUSE 7.116 OR WITH COMPACTED SPECIAL FILL AS DIRECTED BY THE ENGINEER.
10. AS INSTRUCTED BY THE ENGINEER, WARNING SIGNS IN ACCORDANCE WITH GEO STANDARD DRAWING NO. R1077 SHALL BE INSTALLED AT LOCATIONS TO BE DETERMINED BY THE ENGINEER ON SITE.

UTILITIES, FENCE/HOARDING AND BOUNDARY OF WORKS SITE :

1. THE PLAN OF UTILITIES HAS BEEN PREPARED FROM INFORMATION PROVIDED BY UTILITIES/SERVICES PROVIDERS. NEITHER THE EMPLOYER NOR HIS AGENTS OR REPRESENTATIVES ACCEPT ANY RESPONSIBILITY WHATSOEVER FOR THE ACCURACY OR SUFFICIENCY OF THE INFORMATION AND THE CONTRACTOR SHALL MAKE SUCH INQUIRIES AND INVESTIGATIONS AS ARE REQUIRED FOR HIS OWN USE PRIOR TO COMMENCEMENT OF THE WORKS.
2. PRIOR TO COMMENCEMENT OF THE WORKS, THE CONTRACTOR SHALL CONFIRM THE EXACT LOCATIONS OF THE EXISTING UTILITIES AFFECTING OR BEING AFFECTED BY THE WORKS USING INSPECTION PITS OR OTHER MEANS AS RECOMMENDED BY THE RELEVANT UTILITY/ SERVICES PROVIDERS.
3. THE CONTRACTOR SHALL EXERCISE EXTREME CARE NOT TO DAMAGE ANY EXISTING UTILITIES OR SERVICES WITHIN OR IN THE VICINITY OF THE SITE AND SHALL PROVIDE NECESSARY PROTECTION AND SUPPORT TO THE EXISTING UTILITIES OR SERVICES IN ACCORDANCE WITH THE REQUIREMENTS OF THE RELEVANT UTILITY/ SERVICE PROVIDERS DURING THE EXECUTION OF THE WORKS. SHOULD ANY DAMAGE OCCUR TO THE UTILITIES/ SERVICE DUE TO THE CONTRACTOR'S WORKS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY INCURRED COST RESULTING FROM THE DAMAGE.
4. THE AFFECTED UTILITIES SERVICES (e.g. WATER PIPES AND ELECTRICITY CABLES), IF NECESSARY, SHALL BE TEMPORARILY DIVERTED PRIOR TO COMMENCEMENT OF THE WORKS.
5. THE EXACT BOUNDARY OF THE WORKS SITE AS SHOWN ON THE DRAWING SHALL BE SUBJECT TO THE CONFIRMATION OF THE ENGINEER ON SITE AND/OR PERMISSION FROM THE RELEVANT AUTHORITIES.
6. THE CONTRACTOR SHALL SET OUT THE ALIGNMENT OF PROPOSED HOARDING/FENCE/RAILING ON SITE BASED ON THE INFORMATION PROVIDED. THEIR ALIGNMENT, LAYOUT AND SUPPORT STRUCTURES SHALL BE MODIFIED TO SUIT THE ACTUAL SITE CONDITIONS SUBJECT TO THE AGREEMENT OF THE ENGINEER.
7. ANY WORK TO BE CARRIED OUT WITHIN A RADIUS OF 9m OF A POWER LINE, THE "POWER COMPANY" SHALL BE INFORMED PRIOR TO COMMENCEMENT OF THE WORKS AND THE PROPOSED ACTIVITIES MUST FOLLOW ALL SAFETY PRECAUTIONS IN ACCORDANCE WITH THE CODE OF PRACTICE ON WORKING NEAR ELECTRICITY SUPPLY LINES PREPARED BY EMSD OR OTHER REQUIREMENTS IMPOSED BY THE "POWER COMPANY".
8. AS A GENERAL GUIDE, THE FOLLOWING MINIMUM CLEARANCE SHALL BE OBSERVED AND ADOPTED :
   OVERHEAD HT SUPPLY LINE 6m
   UNDERGROUND HT CABLE (UP TO 66kV) 1m
9. IT IS IMPERATIVE THAT THE RISK OF DAMAGE TO ELECTRICITY SHALL BE ELIMINATED, i.e. AVOID LIFTING OF ELECTRICITY CABLE OR USE METALLIC BOOM AND TOOLS SUCH AS EXCAVATORS OR SOIL NAIL MACHINES NEAR HT POWER LINES.
10. THE CONTRACTOR SHALL PROPOSE A SAFETY SYSTEM OF WORK IN AGREEMENT WITH THE POWER COMPANY AND THE ENGINEER BEFORE COMMENCEMENT OF WORKS.

ROCK SLOPE AND BOULDERS TREATMENT/ STABILIZATION WORKS :

1. ROCK SLOPE AND BOULDERS TREATMENT/STABILIZATION WORKS INCLUDING SCALING OF ROCK BLOCKS, REMOVAL OF BOULDERS, INSTALLATION OF ROCK DOWELS/BOLTS, CONSTRUCTION OF RELIEF DRAINS AND RAKING DRAINS, CONCRETE BUTTRESSES, SPRAYED CONCRETE, DENTITION AND WIRE MESH PROTECTION SHALL BE CARRIED OUT AS DIRECTED BY THE ENGINEER ON SITE AND IN ACCORDANCE WITH CEDD STANDARD DRAWINGS C2201C, C2202C, C2203/1G, C2204E, C2205D, C2403E AND C2404D.
2. BEFORE CONSTRUCTION, THE POSITIONS OF ROCK SLOPE AND BOULDERS TREATMENT/STABILIZATION WORKS SHALL BE MARKED ON THE SLOPE SURFACE FOR THE ENGINEER'S VERIFICATION AND CONFIRMATION.
3. PRIOR TO BREAKING UP AND REMOVAL OF POTENTIALLY UNSTABLE ROCK FRAGMENTS/PROTRUDING BOULDERS, PROTECTIVE MEASURES SHALL BE PROVIDED TO PREVENT ROCK FRAGMENTS/BOULDERS FROM ROLLING OR SLIDING OUT OF CONTROL.
4. ALL EXCAVATION IN ROCK SHALL USING NON–EXPLOSIVE BREAKING AGENT AND PERCUSSIVE EQUIPMENT SHALL NOT BE USED.
5. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL A METHOD STATEMENT FOR BREAKING UP AND REMOVAL/TRANSPORTATION OF THE ROCK FRAGMENTS/BOULDERS AT LEAST ONE WEEK PRIOR TO COMMENCEMENT OF WORKS.
6. ALL ROCK DOWELS SHOULD BE INSTALLED NORMAL TO THE POTENTIAL SLIDING PLANE UNLESS SPECIFIED OTHERWISE ON DRAWING OR DIRECTED BY THE ENGINEER ON SITE.
7. ROCK DOWELS SHALL BE 25 mm IN DIAMETER UNLESS OTHERWISE STATED.
8. THE CONTRACTOR SHALL SUBMIT DETAILS OF ROCK DOWEL INSTALLATION INCLUDING METHOD OF GROUTING TO THE ENGINEER FOR APPROVAL AT LEAST ONE WEEK PRIOR TO THE COMMENCEMENT OF WORKS.
9. AT THE TIME OF INSTALLATION, THE STEEL BARS SHALL BE CLEANED AND FREE FROM PITTING, NICKS OR OTHER PHYSICAL DAMAGE, PAINT, GREASE, OIL, SPILT CONCRETE OR GROUT, ADHERING EARTH OR LOOSE RUST, RUST SCALE, LOOSE MILL SCALE AND OTHER DELETERIOUS MATTER.
10. ROCK DOWEL HOLES SHALL BE PROTECTED AGAINST THE ENTRY OF FOREIGN MATTER AFTER DRILLING AND SHALL BE CLEANED OF DRILLING CUT, ETC. USING COMPRESSED AIR BEFORE THE STEEL BAR IS INSERTED.
11. DETAILS OF CONCRETE BUTTRESS SHALL BE IN ACCORDANCE WITH CEDD STANDARD DRAWING NO. C2203/1G.
12. LOCALISED ROCK SCALING OF THE SLOPE SHALL BE UNDERTAKEN TO SUIT THE ALIGNMENT OF THE MASS CONCRETE BUTTRESS AND SHALL BE DIRECTED BY THE ENGINEER ON SITE.
13. THE FOUNDATION FOR THE MASS CONCRETE BUTTRESS SHALL BE EXCAVATED TO A MINIMUM DEPTH OF 300mm IN ROCK OR AS DIRECTED BY THE ENGINEER ON SITE.
14. PRIOR TO CONCRETING, THE ROCK SURFACES SHALL BE CLEANED TO REMOVE MOSS, VEGETATION AND ALL OTHER LOOSE OR DELETERIOUS MATERIALS.
15. PRIOR TO PLACEMENT OF CONCRETE, APPROVAL FROM THE ENGINEER SHALL BE OBTAINED.
16. WIRE MESH SHALL BE PROVIDED TO ALL EXPOSED ROCK SLOPE SURFACE AFTER TREATMENT/STABILIZATION WORKS AS CEDD STANDARD DRAWINGS NO. C2203/1G.

REMOVAL OF EXISTING LOOSE FILL

1. VEGETATION AND TOP SOIL SHALL BE REMOVED TO IDENTIFY THE EXACT EXTENT OF FILL AREA.
2. TRIAL PITS SHALL BE EXCAVATED TO LOCATE THE THICKNESS AS DIRECTED BY THE ENGINEER ON SITE.

SURFACE PROTECTION COVER

1. THE EXACT EXTENT OF SLOPE SURFACE FINISHING SHALL BE CONFIRMED BY THE ENGINEER ON SITE.
2. FOR SOIL SLOPE SURFACES TO BE HYDROSEEDED SHALL BE CARRIED OUT IN ACCORDANCE WITH THE SPECIFICATIONS OR AS INSTRUCTED BY THE ENGINEER ON SITE. THE FIXING DETAILS OF EROSION CONTROL MAT AND WIRE MESH, IF ANY, SHALL BE IN ACCORDANCE WITH CEDD STANDARD DRAWINGS NOS. C2511/1C & C2511/2E.
3. SOIL NAIL HEADS WITHIN THE HYDROSEEDING AREA SHALL BE CONSTRUCTED IN ACCORDANCE WITH CEDD STANDARD DRAWING NO. C2106/4A & C2106/5A.
4. ALL PLANTING MIX SHALL BE PLANTED IN STAGGERED PATTERN.

SOIL NAILING WORKS :

1. DIPPING DIRECTION OF SOIL NAILS SHALL BE NORMAL TO THE TOE LINE OF THE SLOPE UNLESS OTHERWISE STATED IN THE DRAWING OR INSTRUCTED BY THE ENGINEER.
2. SOIL NAIL SETTING OUT DATA IS TENTATIVE ONLY. BEFORE SOIL NAIL DRILLING, THE POSITION OF EACH SOIL NAIL SHALL BE MARKED ON THE SLOPE SURFACE FOR THE ENGINEER'S VERIFICATION.
3. LOCATIONS OF SOIL NAILS SHOWN ON THE PLAN ARE INDICATIVE ONLY. EXACT LOCATIONS SHALL BE ADJUSTED TO ACHIEVE A STAGGERED PATTERN WITH RESPECT TO THE ADJOINING ROWS OF SOIL NAILS OR OTHERWISE INSTRUCTED BY THE ENGINEER.
4. DETAILS OF SOIL NAILS AND SOIL NAIL HEADS SHALL BE IN ACCORDANCE WITH CEDD STANDARD DRAWINGS C2106/1I, C2106/2F, C2106/3F, C2106/4A, C2106/5A AND SKETCHES R1043/3B. UNLESS OTHERWISE SPECIFIED IN THE DRAWING OR DIRECTED BY THE ENGINEER.
5. FOR HYDROSEEDING COVER SLOPE, NAIL HEADS SHALL BE RECESSED INTO THE FINAL SLOPE SURFACE TO ALLOW THE INSTALLATION OF SOIL MIX INFILL ON TOP OF THE SOIL NAIL HEADS IN ACCORDANCE WITH THE RELEVANT DRAWING OR TO FLUSH WITH THE WALL FACE.
6. LOCATIONS OF TRIAL NAILS FOR PULL–OUT TEST, IF SO REQUIRED, ARE TENTATIVE ONLY. THE ACTUAL LOCATION OF TRIAL NAILS SHALL BE CONFIRMED BY THE ENGINEER ON SITE.
7. THE BOND LENGTH OF TRIAL NAILS, WHERE ORDERED, SHALL BE 2m UNLESS OTHERWISE SPECIFIED IN THE DRAWINGS OR DIRECTED BY THE ENGINEER.
8. POSITION OF SOIL NAILS SHALL BE ADJUSTED WHERE NECESSARY ON SITE TO AVOID DAMAGE TO EXISTING TREES INCLUDING BRANCHES AND ROOTS OR OTHER UNDERGROUND FACILITIES.
9. SOIL NAILS SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAILS GIVEN IN THE "SOIL NAIL SCHEDULE" OF RELEVANT DRAWINGS UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER.
10. GROUT FOR ALL SOIL NAILS SHALL BE GRADE 30MPa CEMENT GROUT AT 28 DAYS.
11. WITHIN THE IMMEDIATE VICINITY OF BEDROCK OUTCROPS THE NEED FOR SOIL NAIL SHALL BE CONFIRMED BY THE ENGINEER ON SITE.
12. DOUBLE CORROSION PROTECTION, IF SO REQUIRED, SHALL BE PROVIDED TO THOSE SOIL NAILS AND IN ACCORDANCE WITH GEO STANDARD DRAWING NO. R1043/3B.
13. THE CONTRACTOR SHALL PROVIDE RECORDS OF DRILLING FOR ALL TRIAL NAILS AND WORKING SOIL NAILS/ROCK DOWELS, WHERE APPLICABLE.
14. DRILLING RECORDS SHALL INCLUDE THE LOCATION PLAN, LEVELS AND NUMBER OF DRILLHOLES, TIME AND DATE OF DRILLING, WEATHER, OBSERVATION DURING DRILLING, DRILLING RATE IN METRE PER MINUTE AND DESCRIPTION OF THE DRILLED MATERIALS BASED ON THE FLUSHED OUT MATERIALS COLLECTED DURING DRILLING FOR EVERY METRE OF DRILLING OF THE HOLE. WHEN INSTRUCTED, THE FLUSHED OUT MATERIALS SHALL BE COLLECTED IN PLASTIC BAGS WITH LABELS SHOWING THE DATE, DEPTH AND NUMBER OF HOLE OF DRILLING AND KEPT ON SITE IN A PROPER MANNER FOR THE ENGINEER'S EXAMINATION. DRILLING RECORDS SHALL BE PREPARED AND SUBMITTED TO THE ENGINEER WITHIN 24 HOURS AFTER COMPLETION OF DRILLING OF THE HOLES. THE CONTENTS OF THE DRILLING RECORDS SHALL BE PRESENTED IN POINT FORM, GRAPHICAL AND TABLE FORM AS AGREED BY THE ENGINEER.
15. CONCRETE FOR SOIL NAIL HEADS SHALL BE GRADE 30/20 OR SPRAYED CONCRETE, AGREED BY THE ENGINEER, WITH A MINIMUM COMPRESSIVE STRENGTH OF CONCRETE CORES, CONVERTED TO ESTIMATED EQUIVALENT CUBE STRENGTH OF 30 MPa AT 28 DAYS IN ACCORDANCE WITH BS 6089.

THE PROTECTION OF EARTHWORKS AGAINST HEAVY RAINFALL

1. SURFACE WATER FLOWING INTO THE SITE SHALL BE INTERCEPTED AND CONDUITED FROM THE SITE TO AN AGREED DISCHARGE POINT. AT EACH INTERSECTION AND ABRUPT CHANGE IN DIRECTION OF SURFACE DRAINAGE CHANNELS, AN ACCESSIBLE CATCHPIT SHALL BE PROVIDED. ALL DRAINAGE WORKS SHALL BE KEPT CLEAR OF DEBRIS.
2. WHERE PARTIALLY COMPLETED DRAINAGE WORKS DISCHARGE WITHIN THE SITE, A TEMPORARY CONDUIT SHALL BE PROVIDED TO AN ACCEPTABLE DISCHARGE POINT.
3. EARTHWORKS TO FORM THE FINAL FACE SHALL BE FOLLOWED IMMEDIATELY WITH SURFACE PROTECTION AND DRAINAGE WORKS.
4. WHERE TEMPORARY BARE EARTH SLOPE FACES ARE UNAVOIDABLE, THEY SHALL BE PROTECTED WITH SHEETING WELL–SECURED AGAINST WIND. WHERE SLOPE FACES ARE TO BE TEMPORARILY EXPOSED FOR MORE THAN TWO WEEKS, SUITABLE SURFACE PROTECTION WORKS SHALL BE PROVIDED AND AGREED WITH THE ENGINEER.

PROTECTION AND PRESERVATION OF EXISTING VEGETATION/LANDSCAPE WORKS

1. NO TREES SHALL BE FELLED WITHOUT THE APPROVAL OF THE ENGINEER IN WRITING.
2. ADEQUATE TEMPORARY WORKS SHALL BE PROVIDED TO SUPPORT AND PROTECT EXISTING TREES FROM BEING DAMAGED BY THE SLOPE WORKS IN ACCORDANCE WITH THE SPECIFICATIONS UNLESS OTHERWISE SPECIFIED.
3. WHERE EXISTING SLOPE SURFACE COVER TO BE REMOVED, CARE SHALL BE TAKEN NOT TO DISTURB TREE ROOTS IMMEDIATELY UNDERLYING THE SLOPE SURFACE.
4. AS AGREED OR DIRECTED BY THE ENGINEER, POSITION OF SOIL NAILS, ALIGNMENT OF HOARDING, FENCING, NEW CHANNELS AND MAINTENANCE STAIRWAY/WALKWAY SHALL BE ADJUSTED ON SITE TO AVOID CAUSING DAMAGE TO EXISTING TREES.
5. THE CONTRACTOR SHALL RECORD THE LOCATIONS OF INSPECT, RECORD AND TAKE PHOTOS OF THE CONDITIONS OF THE EXISTING TREES WITHIN THE WORKS SITE. AS DIRECTED BY THE ENGINEER, A REPORT ON THE CONDITIONS OF THE EXISTING TREES, INCLUDING COLOR PHOTOS, PLAN OF LOCATIONS AND BRIEF DESCRIPTIONS OF ANY DEFECTS OR DAMAGE OF TREES OBSERVED SHALL BE SUBMITTED TO THE ENGINEER FOR RECORD AT LEAST 2 WEEKS PRIOR TO COMMENCEMENT OF THE WORKS.
6. THE METALLIC PARTS (SUCH AS HANDRAILING, STEPS AND LOCKABLE GATE) OF THE MAINTENANCE WALKWAY, STEEL AND CONCRETE STAIRCASE SHALL BE PAINTED IN ACCORDANCE WITH SYSTEM D OF GS CLAUSE 18.63. AND THE FINISHING COAT OF THE PAINT SHALL BE 'ANTIQUE' BS 5252F COLOR CODE 10B25, UNLESS SPECIFIED OTHERWISE ON DRAWING.
7. THE FINISHED EXPOSED SOIL SLOPE SURFACE SHALL BE HYDROSEEDED WITH NON–BIODEGRADABLE EROSION CONTROL MAT OR AS DIRECTED BY THE ENGINEER. IF REQUIRED, SHALL BE PROVIDED IN ACCORDANCE WITH CEDD STANDARD DRAWINGS C2511/1C AND C2511/2E OR C2106/4A AND C2106/5A AS APPROPRIATE.

WORKING WITHIN STREAM COURSE

1. A RISK ASSESSMENT SHALL BE CARRIED OUT BY THE CONTRACTOR AND SUBMIT TO THE ENGINEER ON SITE FOR AGREEMENT PRIOR TO COMMENCEMENT OF WORKS WITHIN THE EXISTING STREAM COURSES.
2. THE TIMING OF AND PRECAUTIONARY MEASURES FOR ANY WORKS CARRIED OUT WITHIN THE EXISTING STREAM COURSE(S) SHOULD BE TAKEN INTO THE OUTCOME OF RISK ASSESSMENT.

no.	date	description	designed	checked

	name	date
designed	[illegible]	1/2014
drawn	[illegible]	JAN 2014
checked	[illegible]	Jan 2014

approved

PROJECT DIRECTOR, FUGRO (HONG KONG) LIMITED

project no.
110441 / HC01

agreement no.
CE 16/2011 (GE)

contract
CONTRACT NO. GE/2012/30
LANDSLIP PREVENTION AND MITIGATION PROGRAMME, 2011, PACKAGE B, LANDSLIP PREVENTION AND MITIGATION WORKS IN HONG KONG ISLAND (EAST)

feature no. & location
11SW-D/SA12
SHOUSON HILL

drawing title
GENERAL NOTES FOR MITIGATION WORKS

drawing no.	revision	scale
NTHS1230/HC01/GE/01	-	AS SHOWN

consulting engineer
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CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT HONG KONG

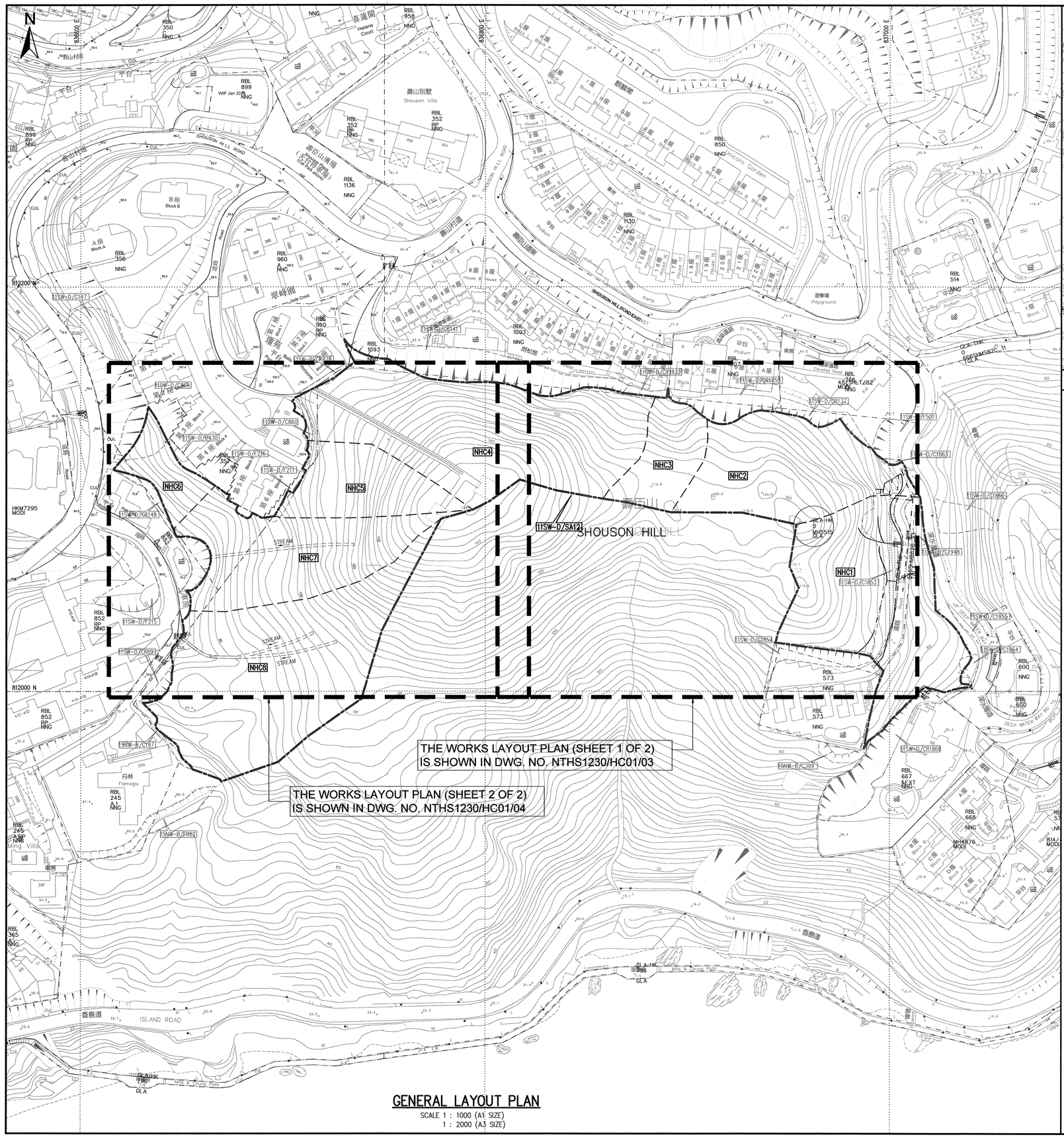
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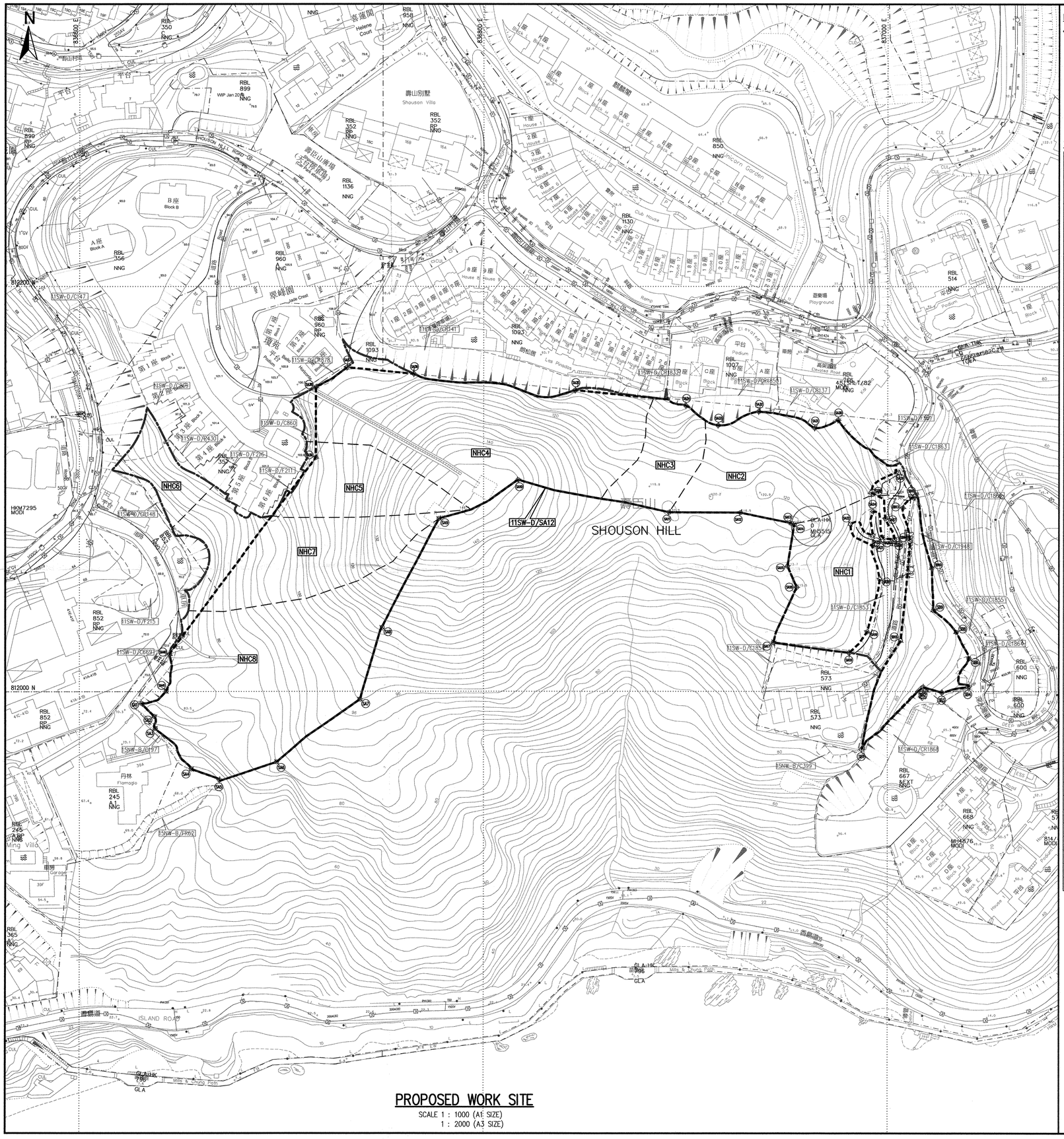
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Status : P03

PLOTTED BY : leeym, 24 Jan 2014 - 12:03pm

ORIGINAL PAPER SIZE - A1


N
835800 E
836900 E
837000 E
812200 N
812000 N
SHOUSON HILL ROAD
SHOUSON HILL ROAD EAST
SHOUSON HILL
ISLAND ROAD
壽山別墅
Shouson Villa
Helena Court
Jade Crest
Jade Court
Jade Road
Flamingo Villa
Ming Villa
Playground
Club House
Podium
Elevated Road
Ramp
STREAM
Mitre & Drying Path
Footpath
Footbridge
Kiosk
Pavilion
Garage
Block A
Block B
Block C
Block D
Block E
House 1
House 2
House 3
House 4
House 5
House 6
House 7
House 8
House 9
House 10
House 11
House 12
House 13
House 14
House 15
House 16
House 17
House 18
House 19
House 20
House



PROPOSED WORK SITE

SCALE 1 : 1000 (A1 SIZE)
1 : 2000 (A3 SIZE)

LEGEND:

- BOUNDARY OF STUDY AREA
- NCH1 — HILLSIDE CATCHMENT NO.
- LOT BOUNDARY
- LICENCE BOUNDARY
- REGISTERED MAN-MADE FEATURE BOUNDARY (SIS)
- EXISTING TREE
- APPROX. LOCATION OF STORM WATER MAIN
- APPROX. LOCATION OF SEWER
- APPROX. LOCATION OF SALT WATER MAINS
- APPROX. LOCATION OF FRESH WATER MAINS
- THE WORKS SITE

SETTING OUT INFORMATION FOR THE SITE

REFERENCE POINT	EASTING	NORTHING
SA1	836630.8	811994.3
SA2	836637.0	811988.0
SA3	836637.5	811981.9
SA4	836655.3	811961.7
SA5	836669.3	811956.3
SA6	836697.5	811965.2
SA7	836738.7	811996.2
SA8	836749.8	812031.5
SA9	836778.0	812085.4
SA10	836817.1	812104.7
SA11	836891.8	812088.5
SA12	836927.1	812088.3
SA13	836952.4	812083.0
SA14	836953.7	812082.1
SA15	836950.3	812061.9
SA16	836954.9	812051.3
SA17	836943.4	812024.1
SA18	836981.0	812019.2
SA19	836990.0	812029.4
SA20	836996.2	812055.4
SA21	836992.8	812071.9
SA22	836981.7	812082.7
SA23	836992.8	812077.0
SA24	836992.9	812089.1
SA25	836997.3	812076.0
SA26	837003.6	812075.1
SA27	836998.9	812085.5
SA28	836991.8	812098.4
SA29	837004.3	812108.6
SA30	836975.5	812134.4
SA31	836963.9	812130.4
SA32	836936.1	812138.7
SA33	836916.1	812131.8
SA34	836900.1	812141.6
SA35	836845.4	812149.2
SA36	836765.6	812157.2
SA37	836732.3	812160.5
SA38	836716.9	812150.7
SA39	836716.9	812115.9
SA40	836644.7	812018.5
SA41	836643.0	812000.3
SB1	836987.3	811971.6
SB2	837017.8	812002.1
SB3	837027.0	811999.5
SB4	837039.9	812002.3
SB6	837040.4	812016.4
SB8	837034.1	812029.3
SB9	837022.7	812040.1
SB10	837022.0	812061.1
SB12	837013.0	812095.8
SB13	837007.6	812090.9
SB14	837011.1	812074.1
SB15	837006.5	812025.1

HOARDING/FENCE DETAILS

REFERENCE POINT	HOARDING / FENCE TYPE
ALONG SA5 TO SA4 TO SA1 AND SA41 TO SA40 TO SA19	HOARDING TYPE C (STD. DRG. C1012A AND SKETCHES R1053C)

NOTE :

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS, STANDARD DRAWINGS, THE SPECIFICATIONS AND INSTRUCTIONS ISSUED BY THE ENGINEER.
2. ALL LEVELS ARE IN METRES ABOVE P.D..
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
4. THE EXACT LOCATION OF THE PROPOSED WORKS SHALL BE CONFIRMED ON SITE BY THE ENGINEER.
5. PRECAUTIONARY MEASURES SHALL BE TAKEN TO PROTECT ADJOINING FACILITIES FROM BEING AFFECTED BY THE WORKS.
6. ALL THE EXISTING SURFACE DRAINAGE SYSTEM OR UNDERGROUND UTILITIES WITHIN THE WORKS AREA/ SITE SHALL BE DIVERTED OR PROTECTED PRIOR TO THE EXECUTION OF THE PROPOSED WORKS TO AVOID ANY DAMAGE.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND EXECUTION OF ALL TEMPORARY WORKS
8. NO TREES SHALL BE FELLED WITHOUT APPROVAL IN WRITING BY THE ENGINEER.

no.	date	description	designed	checked

	name	date
designed	[illegible]	1/2014
drawn	[illegible]	JAN 2014
checked	[illegible]	Jan 2014
approved	[illegible]	

PROJECT DIRECTOR, FUGRO (HONG KONG) LIMITED

project no.
110441 / HC01

agreement no.
CE 16/2011 (GE)

contract
CONTRACT NO. GE/2012/30
LANDSLIP PREVENTION AND MITIGATION PROGRAMME, 2011, PACKAGE B, LANDSLIP PREVENTION AND MITIGATION WORKS IN HONG KONG ISLAND (EAST)

feature no. & location
11SW-D/SA12
SHOUSON HILL

drawing title
PROPOSED WORK SITE

drawing no.	revision	scale
NTHS1230/HC01/02	-	AS SHOWN

consulting engineer
FUGRO (HONG KONG) LIMITED

office
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CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT HONG KONG

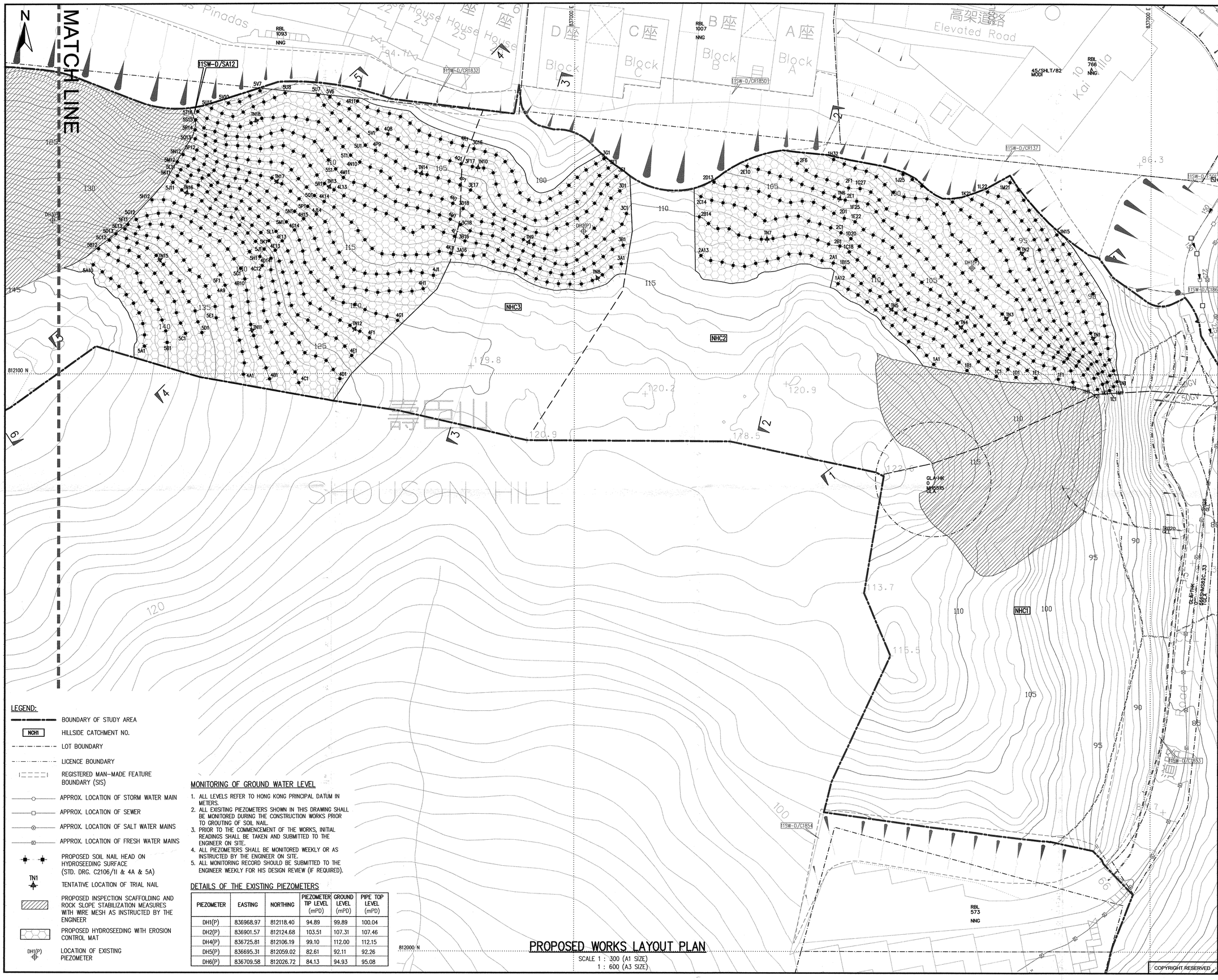
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Status : P02

PLOTTED BY : leeon, 24 Jan 2014 - 12:07pm

ORIGINAL PAPER SIZE : A1



NOTE :

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS, STANDARD DRAWINGS, THE SPECIFICATIONS AND INSTRUCTIONS ISSUED BY THE ENGINEER.
2. ALL LEVELS ARE IN METRES ABOVE P.D..
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
4. THE EXACT LOCATION OF THE PROPOSED WORKS SHALL BE CONFIRMED ON SITE BY THE ENGINEER.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND EXECUTION OF ALL TEMPORARY WORKS.
6. PRECAUTIONARY MEASURES SHALL BE TAKEN TO PROTECT ADJOINING FACILITIES FROM BEING AFFECTED BY THE WORKS.
7. ALL THE EXISTING SURFACE DRAINAGE SYSTEM OR UNDERGROUND UTILITIES WITHIN THE WORKS AREA/ SITE SHALL BE DIVERTED OR PROTECTED PRIOR TO THE EXECUTION OF THE PROPOSED WORKS TO AVOID ANY DAMAGE.
8. FOR SLOPE AREA WITH PROPOSED SOIL NAIL, CONTRACTOR SHALL CARRY OUT A DETAILED BOULDER SURVEY AND THE REPORT SHALL BE SUBMITTED TO THE ENGINEER BEFORE COMMENCEMENT OF SOIL NAIL WORKS. FOR SLOPE AREA WITHOUT ANY PROPOSED WORKS, CONTRACTOR MAY NEED TO PROVIDE ACCESS TO ANY BOULDERS AS OBSERVED ON THE SLOPE AND PROVIDE STABILIZATION WORKS.
9. ALL SOIL NAILED SLOPE SURFACE SHALL BE PROTECTED BY BIODEGRADABLE EROSION CONTROL MAT.
10. FOR SLOPE AREA WITHOUT ANY PROPOSED WORKS, EXISTING VEGETATION SHALL BE RETAINED AS FAR AS POSSIBLE.

LEGEND:

- BOUNDARY OF STUDY AREA
- NCH1 — HILLSIDE CATCHMENT NO.
- LOT BOUNDARY
- LICENCE BOUNDARY
- REGISTERED MAN-MADE FEATURE BOUNDARY (SIS)
- APPROX. LOCATION OF STORM WATER MAIN
- APPROX. LOCATION OF SEWER
- APPROX. LOCATION OF SALT WATER MAINS
- APPROX. LOCATION OF FRESH WATER MAINS
- PROPOSED SOIL NAIL HEAD ON HYDROSEEDING SURFACE (STD. DRG. C2106/11 & 4A & 5A)
- TN1 — TENTATIVE LOCATION OF TRIAL NAIL
- PROPOSED INSPECTION SCAFFOLDING AND ROCK SLOPE STABILIZATION MEASURES WITH WIRE MESH AS INSTRUCTED BY THE ENGINEER
- PROPOSED HYDROSEEDING WITH EROSION CONTROL MAT
- DH1(P) — LOCATION OF EXISTING PIEZOMETER

MONITORING OF GROUND WATER LEVEL

1. ALL LEVELS REFER TO HONG KONG PRINCIPAL DATUM IN METERS.
2. ALL EXISITING PIEZOMETERS SHOWN IN THIS DRAWING SHALL BE MONITORED DURING THE CONSTRUCTION WORKS PRIOR TO GROUTING OF SOIL NAIL.
3. PRIOR TO THE COMMENCEMENT OF THE WORKS, INITIAL READINGS SHALL BE TAKEN AND SUBMITTED TO THE ENGINEER ON SITE.
4. ALL PIEZOMETERS SHALL BE MONITORED WEEKLY OR AS INSTRUCTED BY THE ENGINEER ON SITE.
5. ALL MONITORING RECORD SHOULD BE SUBMITTED TO THE ENGINEER WEEKLY FOR HIS DESIGN REVIEW (IF REQUIRED).

DETAILS OF THE EXISTING PIEZOMETERS

PIEZOMETER	EASTING	NORTHING	PIEZOMETER TIP LEVEL (mPD)	GROUND LEVEL (mPD)	PIPE TOP LEVEL (mPD)
DH1(P)	836968.97	812118.40	94.89	99.89	100.04
DH2(P)	836901.57	812124.68	103.51	107.31	107.46
DH4(P)	836725.81	812106.19	99.10	112.00	112.15
DH5(P)	836695.31	812059.02	82.61	92.11	92.26
DH6(P)	836709.58	812026.72	84.13	94.93	95.08

PROPOSED WORKS LAYOUT PLAN

SCALE 1 : 300 (A1 SIZE)
1 : 600 (A3 SIZE)

no.	date	description	designed	checked

	name	date
designed	[illegible]	1/2014
drawn	[illegible]	JAN-2014
checked	[illegible]	Jan 2014
approved	[illegible] PROJECT DIRECTOR, FUGRO (HONG KONG) LIMITED	

project no. 110441 / HC01

agreement no. CE 16/2011 (GE)

contract
CONTRACT NO. GE/2012/30
LANDSLIP PREVENTION AND MITIGATION PROGRAMME, 2011, PACKAGE B, LANDSLIP PREVENTION AND MITIGATION WORKS IN HONG KONG ISLAND (EAST)

feature no. & location
11SW-D/SA12
SHOUSON HILL

drawing title
PROPOSED WORKS LAYOUT ON HILLSIDE CATCHMENT
(SHEET 1 OF 2)

drawing no.	revision	scale
NTHS1230/HC01/03	-	AS SHOWN

consulting engineer
FUGRO (HONG KONG) LIMITED

office
LANDSLIP PREVENTIVE MEASURES DIVISION 3 GEOTECHNICAL ENGINEERING OFFICE

CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT HONG KONG

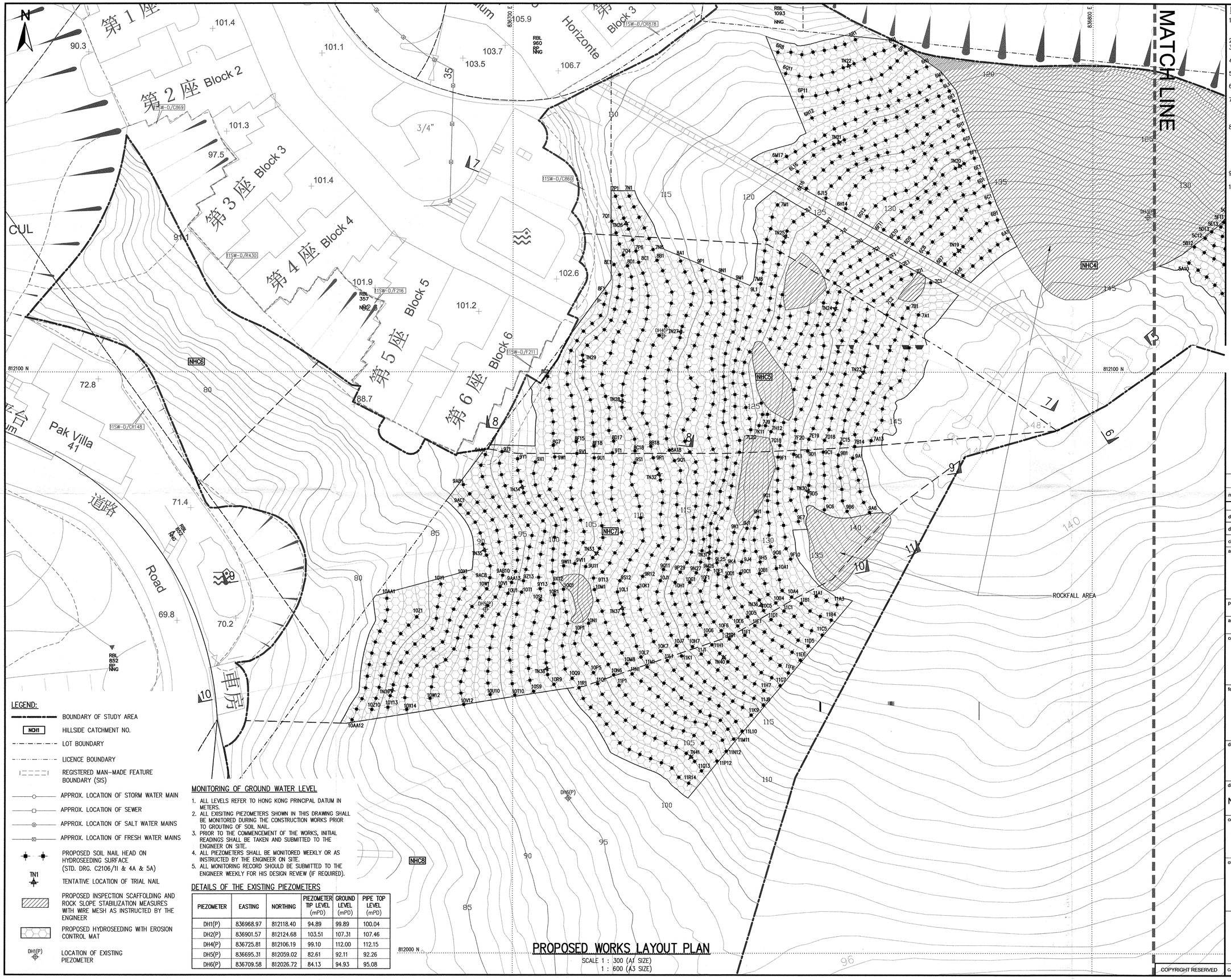
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Status : P11

PLOTTED BY : leonm, 24 Jan 2014 - 12:06pm

ORIGINAL PAPER SIZE : A1



NOTE :

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS, STANDARD DRAWINGS, THE SPECIFICATIONS AND INSTRUCTIONS ISSUED BY THE ENGINEER.
2. ALL LEVELS ARE IN METRES ABOVE P.D..
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
4. THE EXACT LOCATION OF THE PROPOSED WORKS SHALL BE CONFIRMED ON SITE BY THE ENGINEER.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND EXECUTION OF ALL TEMPORARY WORKS.
6. PRECAUTIONARY MEASURES SHALL BE TAKEN TO PROTECT ADJOINING FACILITIES FROM BEING AFFECTED BY THE WORKS.
7. ALL THE EXISTING SURFACE DRAINAGE SYSTEM OR UNDERGROUND UTILITIES WITHIN THE WORKS AREA/ SITE SHALL BE DIVERTED OR PROTECTED PRIOR TO THE EXECUTION OF THE PROPOSED WORKS TO AVOID ANY DAMAGE.
8. FOR SLOPE AREA WITH PROPOSED SOIL NAIL, CONTRACTOR SHALL CARRY OUT A DETAILED BOULDER SURVEY AND THE REPORT SHALL BE SUBMITTED TO THE ENGINEER BEFORE COMMENCEMENT OF SOIL NAIL WORKS. FOR SLOPE AREA WITHOUT ANY PROPOSED WORKS, CONTRACTOR MAY NEED TO PROVIDE ACCESS TO ANY BOULDERS AS OBSERVED ON THE SLOPE AND PROVIDE STABILIZATION WORKS.
9. ALL SOIL NAILED SLOPE SURFACE SHALL BE PROTECTED BY BIODEGRADABLE EROSION CONTROL MAT.
10. FOR SLOPE AREA WITHOUT ANY PROPOSED WORKS, EXISTING VEGETATION SHALL BE RETAINED AS FAR AS POSSIBLE.

LEGEND:

- BOUNDARY OF STUDY AREA
- NCH1 — HILLSIDE CATCHMENT NO.
- LOT BOUNDARY
- LICENCE BOUNDARY
- REGISTERED MAN-MADE FEATURE BOUNDARY (SIS)
- APPROX. LOCATION OF STORM WATER MAIN
- APPROX. LOCATION OF SEWER
- APPROX. LOCATION OF SALT WATER MAINS
- APPROX. LOCATION OF FRESH WATER MAINS
- PROPOSED SOIL NAIL HEAD ON HYDROSEEDING SURFACE (STD. DRG. C2106/11 & 4A & 5A)
- TN1 — TENTATIVE LOCATION OF TRIAL NAIL
- PROPOSED INSPECTION SCAFFOLDING AND ROCK SLOPE STABILIZATION MEASURES WITH WIRE MESH AS INSTRUCTED BY THE ENGINEER
- PROPOSED HYDROSEEDING WITH EROSION CONTROL MAT
- DH1(P) — LOCATION OF EXISTING PIEZOMETER

MONITORING OF GROUND WATER LEVEL

1. ALL LEVELS REFER TO HONG KONG PRINCIPAL DATUM IN METERS.
2. ALL EXISTING PIEZOMETERS SHOWN IN THIS DRAWING SHALL BE MONITORED DURING THE CONSTRUCTION WORKS PRIOR TO GROUTING OF SOIL NAIL.
3. PRIOR TO THE COMMENCEMENT OF THE WORKS, INITIAL READINGS SHALL BE TAKEN AND SUBMITTED TO THE ENGINEER ON SITE.
4. ALL PIEZOMETERS SHALL BE MONITORED WEEKLY OR AS INSTRUCTED BY THE ENGINEER ON SITE.
5. ALL MONITORING RECORD SHOULD BE SUBMITTED TO THE ENGINEER WEEKLY FOR HIS DESIGN REVIEW (IF REQUIRED).

DETAILS OF THE EXISTING PIEZOMETERS

PIEZOMETER	EASTING	NORTHING	PIEZOMETER TIP LEVEL (mPD)	GROUND LEVEL (mPD)	PIPE TOP LEVEL (mPD)
DH1(P)	836968.97	812118.40	94.89	99.89	100.04
DH2(P)	836901.57	812124.68	103.51	107.31	107.46
DH4(P)	836725.81	812106.19	99.10	112.00	112.15
DH5(P)	836695.31	812059.02	82.61	92.11	92.26
DH6(P)	836709.58	812026.72	84.13	94.93	95.08

PROPOSED WORKS LAYOUT PLAN

SCALE 1 : 300 (A1 SIZE)
1 : 600 (A3 SIZE)

no.	date	description	designed	checked
		name		date
designed		Ken		1/2014
drawn		Hans Ch		Jan-2014
checked		KMS		Jan 2014
approved				

PROJECT DIRECTOR / FUGRO (HONG KONG) LIMITED

project no.
110441 / HC01

agreement no.
CE 16/2011 (GE)

contract
CONTRACT NO. GE/2012/30
LANDSLIP PREVENTION AND MITIGATION PROGRAMME, 2011, PACKAGE B, LANDSLIP PREVENTION AND MITIGATION WORKS IN HONG KONG ISLAND (EAST)

feature no. & location
11SW-D/SA12
SHOUSON HILL

drawing title
PROPOSED WORKS LAYOUT ON HILLSIDE CATCHMENT
(SHEET 2 OF 2)

drawing no.	revision	scale
NTHS1230/HC01/04	-	AS SHOWN

consulting engineer
FUGRO (HONG KONG) LIMITED

office
LANDSLIP PREVENTIVE MEASURES DIVISION 3 GEOTECHNICAL ENGINEERING OFFICE

CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT HONG KONG

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Status : P08

PLOTTED BY : hconn, 24 Jan 2014 - 12:05pm

ORIGINAL PAPER SIZE : A1

SOIL NAIL SCHEDULE

SOIL NAIL NO.	NAILS DIAMETER (mm)	TENTATIVE LEVEL (mPD)	TENTATIVE NOS. OF NAILS	TENTATIVE LENGTH OF NAILS (m)	DIPPING ANGLE (DEGREES)	DIPPING DIRECTION (DEGREES)	HORIZONTAL SPACING (m)	DRILLHOLE DIAMETER (mm)	SIZE OF SOIL NAIL HEAD (mm x mm)
1A1–1A12	25	114	12	7	20		2	100	800 x 800
1B1–1B15	25	112	15	7	20		2	100	800 x 800
1C1–1C18	25	110	18	7	20		2	100	600 x 600
1D1–1D20	25	108	20	7	20		2	100	600 x 600
1E1–1E22	25	106	22	7	20		2	100	600 x 600
1F1–1F25	25	104	25	6	20		2	100	600 x 600
1G1–1G27	25	102	27	6	20		2	100	600 x 600
1H1–1H32	25	100	32	6	20		2	100	600 x 600
1J1–1J25	25	98	25	6	20		2	100	600 x 600
1K1–1K21	25	96	21	6	20		2	100	600 x 600
1L1–1L22	25	94	22	6	20		2	100	600 x 600
1M1–1M21	25	92	21	6	20		2	100	600 x 600
1N1–1N15	25	90	15	6	20		2	100	600 x 600
2A1–2A13	25	112	13	6	20		2	100	600 x 600
2B1–2B14	25	110	14	6	20		2	100	600 x 600
2C1–2C14	25	108	14	6	20		2	100	600 x 600
2D1–2D13	25	106	13	6	20		2	100	600 x 600
2E1–2E10	25	104	10	6	20		2	100	600 x 600
2F1–2F6	25	102	6	6	20		2	100	600 x 600
3A1–3A16	25	114	16	7	20		2	100	600 x 600
3B1–3B16	25	112	16	6	20		2	100	600 x 600
3C1–3C18	25	110	18	6	20		2	100	600 x 600
3D1–3D18	25	108	18	6	20		2	100	600 x 600
3E1–3E17	25	106	17	6	20		2	100	600 x 600
3F1–3F17	25	104	17	6	20		2	100	600 x 600
3G1–3G16	25	102	16	6	20		2	100	800 x 800
4A1–4A9	25	132	9	6	20		2	100	600 x 600
4B1–4B10	25	130	10	6	20		2	100	600 x 600
4C1–4C12	25	128	12	6	20		2	100	600 x 600
4D1–4D14	25	126	14	7	20		2	100	600 x 600
4E1–4E13	25	124	13	7	20		2	100	600 x 600
4F1–4F13	25	122	13	7	20		2	100	600 x 600
4G1–4G14	25	120	14	6	20		2	100	600 x 600
4H1–4H15	25	118	15	6	20		2	100	600 x 600
4J1–4J14	25	116	14	6	20		2	100	600 x 600
4K1–4K14	25	114	14	6	20		2	100	600 x 600
4L1–4L13	25	112	13	6	20		2	100	600 x 600
4M1–4M11	25	110	11	6	20		2	100	600 x 600
4N1–4N10	25	108	10	6	20		2	100	600 x 600
4P1–4P9	25	106	9	6	20		2	100	600 x 600
4Q1–4Q8	25	104	8	6	20		2	100	600 x 600
4R1–4R11	25	102	11	6	20		2	100	600 x 600
5A1–5A10	25	142	10	6	20		2	100	600 x 600
5B1–5B12	25	140	12	6	20		2	100	600 x 600
5C1–5C12	25	138	12	6	20		2	100	600 x 600
5D1–5D13	25	136	13	6	20		2	100	600 x 600
5E1–5E13	25	134	13	6	20		2	100	600 x 600
5F1–5F11	25	132	11	6	20	NORMAL TO SLOPE FACE	2	100	600 x 600
5G1–5G12	25	130	12	8	20		2	100	600 x 600
5H1–5H12	25	128	12	8	20		2	100	600 x 600
5J1–5J11	25	126	11	8	20		2	100	600 x 600
5K1–5K11	25	124	11	7	20		2	100	600 x 600
5L1–5L11	25	122	11	7	20		2	100	600 x 600
5M1–5M12	25	120	12	6	20		2	100	600 x 600
5N1–5N12	25	118	12	6	20		2	100	600 x 600
5P1–5P12	25	116	12	6	20		2	100	600 x 600
5Q1–5Q13	25	114	13	6	20		2	100	600 x 600
5R1–5R14	25	112	14	6	20		2	100	600 x 600
5S1–5S15	25	110	15	6	20		2	100	600 x 600
5T1–5T16	25	108	16	6	20		2	100	600 x 600
5U1–5U15	25	106	15	6	20		2	100	600 x 600
5V1–5V10	25	104	10	6	20		2	100	600 x 600
6A1–6A6	25	141	6	6	20		2	100	600 x 600
6B1–6B7	25	139	7	6	20		2	100	600 x 600
6C1–6C8	25	137	8	7	20		2	100	600 x 600
6D1–6D9	25	135	9	7	20		2	100	600 x 600
6E1–6E10	25	133	10	7	20		2	100	600 x 600
6F1–6F11	25	131	11	6	20		2	100	600 x 600
6G1–6G12	25	129	12	6	20		2	100	600 x 600
6H1–6H14	25	127	14	6	20		2	100	600 x 600
6J1–6J15	25	125	15	6	20		2	100	600 x 600
6K1–6K16	25	123	16	6	20		2	100	600 x 600
6L1–6L16	25	121	16	6	20		2	100	600 x 600
6M1–6M17	25	119	17	6	20		2	100	600 x 600
6N1–6N12	25	117	12	4	20		2	100	600 x 600
6P1–6P11	25	115	11	4	20		2	100	400 x 400
6Q1–6Q11	25	113	11	4	20		2	100	400 x 400
6R1–6R8	25	111	8	4	20		2	100	400 x 400
7A1–7A13	25	144	13	6	20		2	100	600 x 600
7B1–7B14	25	142	14	6	20		2	100	600 x 600
7C1–7C15	25	140	15	6	20		2	100	600 x 600
7D1–7D18	25	138	18	7	20		2	100	600 x 600
7E1–7E19	25	136	19	7	20		2	100	600 x 600
7F1–7F20	25	134	20	7	20		2	100	600 x 600
7G1–7G18	25	132	18	7	20		2	100	600 x 600
7H1–7H12	25	130	12	7	20		2	100	600 x 600
7J1–7J9	25	128	9	7	20		2	100	600 x 600
7K1–7K11	25	126	11	7	20		2	100	600 x 600
7L1–7L20	25	124	20	7	20		2	100	600 x 600
7M1–7M8	25	122	8	7	20		2	100	600 x 600
7N1–7N6	25	112	6	4	20		2	100	400 x 400
7P1–7P6	25	110	6	4	20		2	100	400 x 400
7Q1–7Q4	25	108	4	4	20		2	100	400 x 400
8A1–8A18	25	114	18	6	20		2	100	600 x 600
8B1–8B18	25	112	18	6	20		2	100	600 x 600
8C1–8C18	25	110	18	4	20		2	100	600 x 600
8D1–8D17	25	108	17	4	20		2	100	600 x 600
8E1–8E18	25	106	18	4	20		2	100	600 x 600
8F1–8F15	25	104	15	4	20		2	100	600 x 600
8G1–8G7	25	102	7	4	20		2	100	600 x 600

SOIL NAIL SCHEDULE

SOIL NAIL NO.	NAILS DIAMETER (mm)	TENTATIVE LEVEL (mPD)	TENTATIVE NOS. OF NAILS	TENTATIVE LENGTH OF NAILS (m)	DIPPING ANGLE (DEGREES)	DIPPING DIRECTION (DEGREES)	HORIZONTAL SPACING (m)	DRILLHOLE DIAMETER (mm)	SIZE OF SOIL NAIL HEAD (mm x mm)
9A1–9A6	25	142	6	6	20		2	100	600 x 600
9B1–9B6	25	138	6	6	20		2	100	600 x 600
9C1–9C6	25	140	6	7	20		2	100	600 x 600
9D1–9D5	25	136	5	7	20		2	100	600 x 600
9E1–9E7	25	134	7	7	20		2	100	600 x 600
9F1–9F10	25	132	10	7	20		2	100	600 x 600
9G1–9G6	25	130	6	7	20		2	100	600 x 600
9H1–9H5	25	128	5	7	20		2	100	600 x 600
9J1–9J4	25	126	4	7	20		2	100	600 x 600
9K1–9K4	25	124	4	7	20		2	100	600 x 600
9L1–9L25	25	122	25	7	20		2	100	600 x 600
9M1–9M26	25	120	26	7	20		2	100	600 x 600
9N1–9N27	25	118	27	7	20		2	100	600 x 600
9P1–9P29	25	116	29	6	20		2	100	600 x 600
9Q1–9Q11	25	114	11	6	20		2	100	600 x 600
9R1–9R12	25	112	12	6	20		2	100	600 x 600
9S1–9S12	25	110	12	6	20		2	100	600 x 600
9T1–9T13	25	108	13	6	20		2	100	600 x 600
9U1–9U11	25	106	11	6	20		2	100	600 x 600
9V1–9V11	25	104	11	6	20		2	100	600 x 600
9W1–9W11	25	102	11	7	20		2	100	600 x 600
9X1–9X12	25	100	12	7	20		2	100	600 x 600
9Y1–9Y13	25	98	13	7	20		2	100	600 x 600
9Z1–9Z13	25	96	13	7	20		2	100	600 x 600
9AA1–9AA13	25	94	13	7	20		2	100	600 x 600
9AB1–9AB10	25	92	10	7	20		2	100	600 x 600
9AC1–9AC8	25	90	8	7	20		2	100	600 x 600
10A1–10A4	25	130	4	7	20		2	100	600 x 600
10B1–10B4	25	128	4	7	20		2	100	600 x 600
10C1–10C5	25	126	5	7	20		2	100	600 x 600
10D1–10D5	25	124	5	7	20		2	100	600 x 600
10E1–10E6	25	122	6	7	20		2	100	600 x 600
10F1–10F6	25	120	6	7	20		2	100	600 x 600
10G1–10G6	25	118	6	7	20	NORMAL TO SLOPE FACE	2	100	600 x 600
10H1–10H7	25	116	7	7	20		2	100	600 x 600
10J1–10J7	25	114	7	7	20		2	100	600 x 600
10K1–10K7	25	112	7	7	20		2	100	600 x 600
10L1–10L7	25	110	7	7	20		2	100	600 x 600
10M1–10M8	25	108	8	7	20		2	100	600 x 600
10N1–10N6	25	106	6	7	20		2	100	600 x 600
10P1–10P5	25	104	5	7	20		2	100	600 x 600
10Q1–10Q9	25	102	9	6	20		2	100	600 x 600
10R1–10R9	25	100	9	6	20		2	100	600 x 600
10S1–10S9	25	98	9	5	20		2	100	600 x 600
10T1–10T10	25	96	10	5	20		2	100	600 x 600
10U1–10U10	25	94	10	5	20		2	100	600 x 600
10V1–10V12	25	92	12	5	20		2	100	600 x 600
10W1–10W12	25	90	12	5	20		2	100	600 x 600
10X1–10X14	25	88	14	7	20		2	100	600 x 600
10Y1–10Y13	25	86	13	7	20		2	100	600 x 600
10Z1–10Z10	25	84	10	7	20		2	100	600 x 600
10AA1–10AA12	25	82	12	7	20		2	100	600 x 600
11A1–11A3	25	132	3	8	20		2	100	800 x 800
11B1–11B4	25	130	4	8	20		2	100	800 x 800
11C1–11C5	25	128	5	8	20		2	100	800 x 800
11D1–11D5	25	126	5	8	20		2	100	800 x 800
11E1–11E6	25	124	6	8	20		2	100	800 x 800
11F1–11F6	25	122	6	8	20		2	100	800 x 800
11G1–11G7	25	120	7	8	20		2	100	800 x 800
11H1–11H7	25	118	7	7	20		2	100	600 x 600
11J1–11J8	25	116	8	7	20		2	100	600 x 600
11K1–11K9	25	114	9	7	20		2	100	600 x 600
11L1–11L10	25	112	10	6	20		2	100	600 x 600
11M1–11M11	25	110	11	6	20		2	100	600 x 600
11N1–11N12	25	108	12	6	20		2	100	600 x 600
11P1–11P12	25	106	12	6	20		2	100	600 x 600
11Q1–11Q13	25	104	13	6	20		2	100	600 x 600
11R1–11R14	25	102	14	6	20		2	100	600 x 600

SETTING OUT INFORMATION FOR SOIL NAILS

REFERENCE NO.	EASTING	NORTHING
1A1	836962.4	812101.7
1B1	836968.1	812100.6
1C1	836973.2	812099.6
1D1	836976.6	812099.5
1E1	836980.0	812099.4
1F1	836983.9	812099.1
1G1	836986.5	812098.6
1H1	836989.1	812098.1
1J1	836990.8	812097.4
1K1	836991.7	812098.3
1L1	836992.9	812097.3
1M1	836993.6	812097.9
1N1	836994.2	812098.8
2A1	836944.9	812119.2
2B1	836946.1	812122.1
2C1	836946.3	812124.4
2D1	836946.8	812127.0
2E1	836947.0	812130.1
2F1	836947.6	812132.2
3A1	836908.1	812119.0
3B1	836908.4	812122.2
3C1	836909.0	812127.7
3D1	836907.8	812131.7
3E1	836907.2	812134.1
3F1	836905.8	812135.6
3G1	836905.1	812137.2
4A1	836842.6	812099.9
4B1	836847.1	812099.1
4C1	836852.2	812098.4
4D1	836859.4	812099.1
4E1	836861.4	812103.1
4F1	836864.5	812106.1
4G1	836869.4	812109.1
4H1	836873.8	812114.7
4J1	836875.6	812117.0
4K1	836878.5	812120.8
4L1	836879.2	812123.8
4M1	836878.5	812126.7
4N1	836878.9	812129.5
4P1	836880.2	812132.6
4Q1	836880.3	812136.3
4R1	836880.6	812139.4
5A1	836825.5	812104.8
5B1	836829.4	812105.4
5C1	836832.6	812106.9
5D1	836835.4	812107.1
5E1	836837.9	812109.6
5F1	836838.6	812117.1
5G1	836842.1	812118.2
5H1	836845.4	812120.3
5J1	836846.2	812121.5
5K1	836847.0	812123.0
5L1	836848.2	812124.6
5M1	836850.0	812126.3
5N1	836851.5	812128.1
5P1	836853.7	812128.9
5Q1	836854.9	812130.8
5R1	836856.6	812132.9
5S1	836858.6	812135.4
5T1	836861.2	812137.8
5U1	836863.7	812139.5
5V1	836865.8	812142.2
5U8	836849.8	812148.4
5V7	836845.5	812148.8

SETTING OUT INFORMATION FOR SOIL NAILS

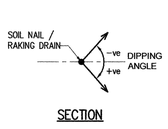
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6A1	836785.3	812123.0
6B1	836783.5	812126.2
6C1	836782.2	812129.1
6D1	836781.2	812131.9
6E1	836780.4	812134.1
6F1	836779.5	812136.7
6G1	836778.5	812139.1
6H1	836777.6	812141.5
6J1	836776.7	812144.0
6K1	836775.9	812146.6
6L1	836775.2	812148.3
6M1	836773.8	812150.2
6N1	836771.3	812152.6
6P1	836767.7	812155.0
6Q1	836765.8	812156.2
6R1	836759.0	812157.3
7A1	836769.9	812109.9
7B1	836768.1	812111.1
7C1	836772.1	812115.4
7D1	836768.8	812116.8
7E1	836766.9	812118.2
7F1	836764.6	812119.4
7G1	836761.5	812120.3
7H1	836758.6	812121.5
7J1	836755.9	812123.2
7K1	836753.7	812125.0
7L1	836750.0	812127.1
7M1	836745.6	812128.7
7N1	836720.0	812130.1
7P1	836717.7	812130.1
7Q1	836717.0	812125.9
8A1	836728.9	812119.0
8B1	836724.8	812119.2
8C1	836721.7	812118.8
8D1	836719.7	812118.2
8E1	836717.4	812118.4
8F1	836716.0	812113.5
8G1	836706.0	812099.2
9A1	836758.6	812085.2
9B1	836756.2	812085.7
9C1	836753.6	812086.2
9D1	836750.9	812086.4
9E1	836748.5	812085.8
9F1	836745.8	812085.4
9G1	836744.0	812077.8
9H1	836742.3	812074.9
9J1	836740.4	812073.0
9K1	836738.2	812072.3
9L1	836742.3	812113.3
9M1	836738.8	812114.7
9N1	836736.1	812115.9
9P1	836732.6	812117.5
9Q1	836727.9	812084.7
9R1	836724.2	812085.2
9S1	836721.0	812084.4
9T1	836717.2	812086.0
9U1	836714.0	812085.2
9V1	836711.0	812085.9
9W1	836707.2	812085.3
9X1	836703.9	812084.5
9Y1	836700.8	812085.0
9Z1	836698.1	812086.3
9AA1	836695.3	812085.7
9AB1	836691.5	812080.6
9AC1	836690.9	812077.1

SETTING OUT INFORMATION FOR SOIL NAILS

REFERENCE NO.	EASTING	NORTHING
10A1	836745.5	812066.1
10B1	836742.6	812065.2
10C1	836739.3	812065.3
10D1	836736.9	812064.7
10E1	836735.5	812065.1
10F1	836733.1	812064.0
10G1	836730.5	812063.7
10H1	836728.0	812063.7
10J1	836725.4	812064.0
10K1	836721.6	812062.9
10L1	836718.0	812062.1
10M1	836714.1	812062.5
10N1	836713.1	812056.6
10P1	836711.0	812055.1
10Q1	836708.7	812062.5
10R1	836707.2	812061.5
10S1	836704.7	812060.6
10T1	836701.5	812062.0
10U1	836699.2	812061.8
10V1	836697.8	812063.0
10W1	836695.5	812062.6
10X1	836691.6	812064.5
10Y1	836687.6	812063.4
10Z1	836683.5	812057.7
10AA1	836678.3	812060.9
11A1	836752.4	812061.3
11B1	836749.8	812060.1
11C1	836746.8	812058.7
11D1	836744.6	812057.3
11E1	836741.8	812056.3
11F1	836740.1	812054.6
11G1	836737.4	812054.0
11H1	836734.4	812053.0
11J1	836732.5	812051.4
11K1	836729.1	812051.0
11L1	836726.6	812050.3
11M1	836723.2	812049.2
11N1	836720.6	812048.0
11P1	836718.3	812046.0
11Q1	836714.7	812046.3
11R1	836711.5	812045.6

PULL-OUT TEST SCHEDULE FOR TRIAL NAILS

TRIAL NAIL NO.	EASTING	NORTHING	NAILS DIAMETER (mm)	LENGTH L (m)	GROUT LENGTH Lg (m)	DIPPING ANGLE (DEGREES)	DIPPING DIRECTION (DEGREES)	DRILLHOLE DIAMETER (mm)	TEST LOAD (kN)			
									To	To1	To2	Tp
TN1	836990.0	812106.2	32	6	2	20		100	14	14	21	333
TN2	836977.6	812120.9	32	6	2	20		100	15	15	23	333
TN3	836974.9	812109.6	32	6	2	20		100	14	14	21	333
TN4	836967.1	812108.1	32	7	2	20		100	16	31	47	333
TN5	836955.1	812111.2	32	7	2	20		100	15	15	22	333
TN6	836946.0	812130.4	32	6	2	20		100	11	11	16	333
TN7	836933.5	812123.3	32	6	2	20		100	11	11	16	333
TN8	836904.0	812116.6	32	7	2	20		100	16	34	51	333
TN9	836892.1	812122.8	32	6	2	20		100	16	44	66	333
TN10	836883.3	812135.7	32	6	2	20		100	16	28	43	333
TN11	836844.1	812107.5	32	6	2	20		100	11	11	17	333
TN12	836861.9	812107.7	32	7	2	20		100	13	13	19	333
TN13	836857.5	812132.4	32	6	2	20		100	11	11	17	333
TN14	836873.5	812134.7	32	6	2	20		100	11	11	17	333
TN15	836828.2	812119.7	32	6	2	20		100	12	12	18	333
TN16	836832.8	812131.4	32	8	2	20		100	16	20	30	333
TN17	836848.3	812133.3	32	6	2	20		100	12	12	19	333
TN18	836844.8	812143.7	32	6	2	20		100	11	11	17	333
TN19	836776.6	812120.7	32	6	2	20		100	10	10	16	333
TN20	836776.4	812136.4	32	6	2	20		100	12	12	17	333
TN21	836755.5	812140.2	32	6	2	20	NORMAL TO SLOPE FACE	100	11	11	16	333
TN22	836757.1	812154.5	32	4	2	20		100	6	6	10	333
TN23	836760.4	812100.0	32	6	2	20		100	13	13	20	333
TN24	836755.6	812110.9	32	7	2	20		100	14	14	22	333
TN25	836747.0	812123.3	32	7	2	20		100	15	15	22	333
TN26	836719.5	812125.5	32	4	2	20		100	11	10	16	333
TN27	836728.9	812106.9	32	6	2	20		100	12	12	17	333
TN28	836718.8	812094.9	32	4	2	20		100	11	11	17	333
TN29	836712.0	812101.9	32	4	2	20		100	8	8	13	333
TN30	836750.9	812079.5	32	7	2	20		100	13	13	19	333
TN31	836733.9	812068.9	32	7	2	20		100	16	17	26	333
TN32	836725.2	812082.3	32	6	2	20		100	12	12	18	333
TN33	836714.4	812068.7	32	6	2	20		100	11	11	17	333
TN34	836701.6	812080.1	32	7	2	20		100	12	12	19	333
TN35	836695.1	812069.3	32	7	2	20		100	15	15	22	333
TN36	836742.9	812059.7	32	7	2	20		100	15	15	23	333
TN37	836718.9	812059.2	32	7	2	20		100	14	14	20	333
TN38	836705.9	812048.8	32	6	2	20		100	14	14	21	333
TN39	836679.2	812045.2	32	7	2	20		100	15	15	22	333
TN40	836736.4	812050.8	32	7	2	20		100	14	14	21	333
TN41	836730.7	812033.8	32	6	2	20		100	13	13	19	333



SECTION



PLAN

NOTE :

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS, STANDARD DRAWINGS, THE SPECIFICATIONS AND INSTRUCTIONS ISSUED BY THE ENGINEER.
2. ALL LEVELS ARE IN METRES ABOVE P.D..
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
4. THE EXACT LOCATION OF THE PROPOSED WORKS SHALL BE CONFIRMED ON SITE BY THE ENGINEER.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND EXECUTION OF ALL TEMPORARY WORKS.
6. PRECAUTIONARY MEASURES SHALL BE TAKEN TO PROTECT ADJOINING FACILITIES FROM BEING AFFECTED BY THE WORKS.

no.	date	description	designed	checked
		name	date	
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drawn		Hon Ci	Jan 2014	
checked		AKTS	Jan 2014	

approved

PROJECT DIRECTOR, FUGRO (HONG KONG) LIMITED

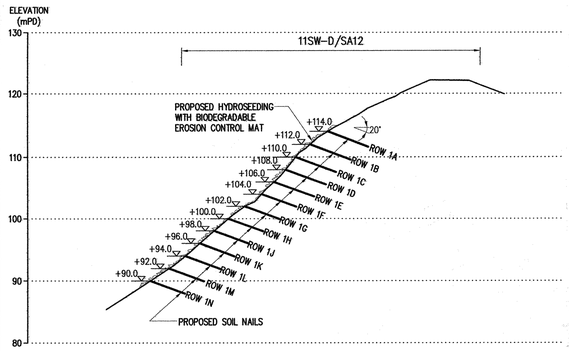
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110441 / HC01

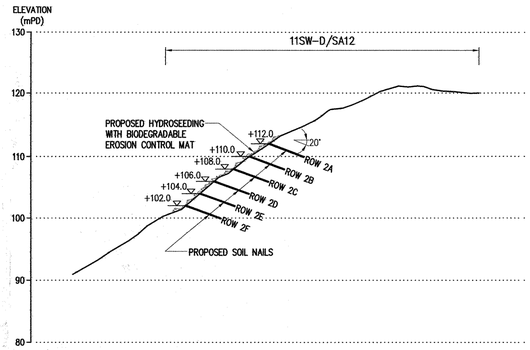
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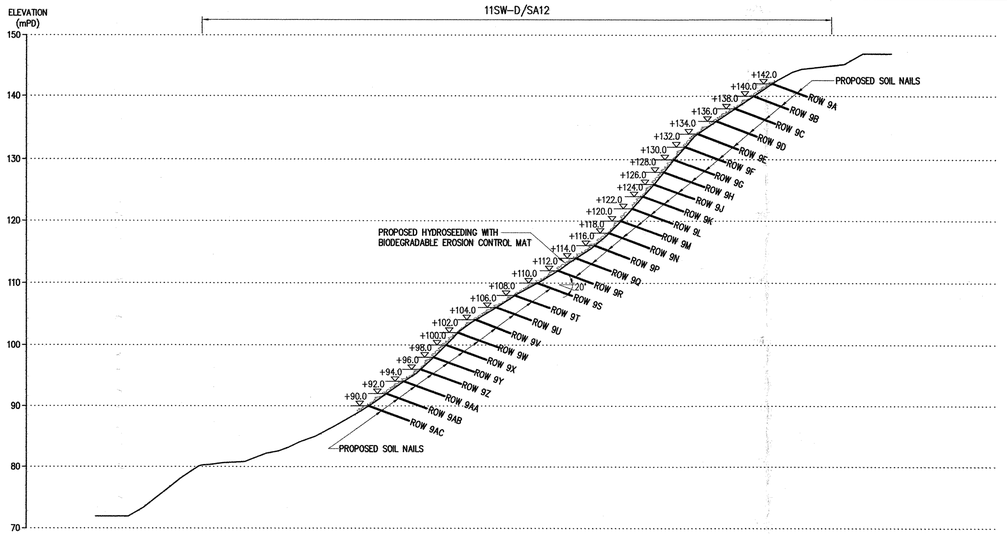
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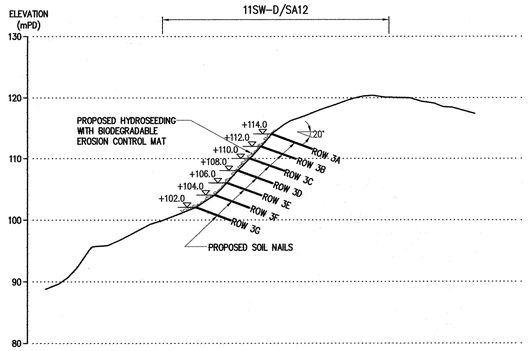
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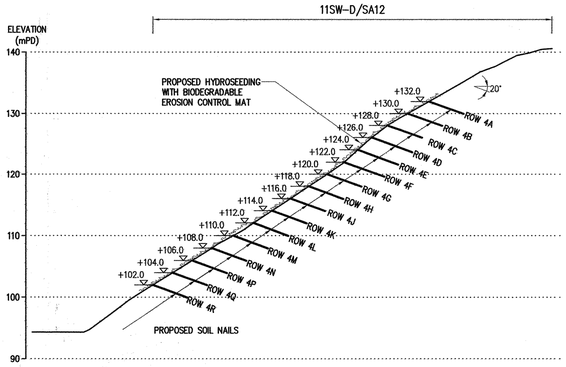
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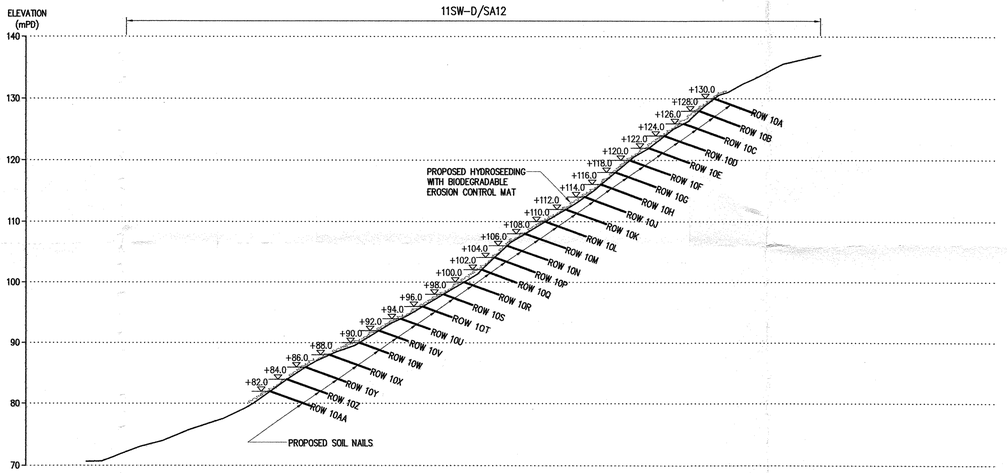
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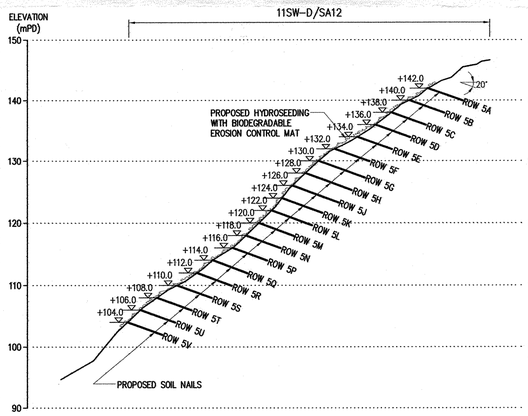
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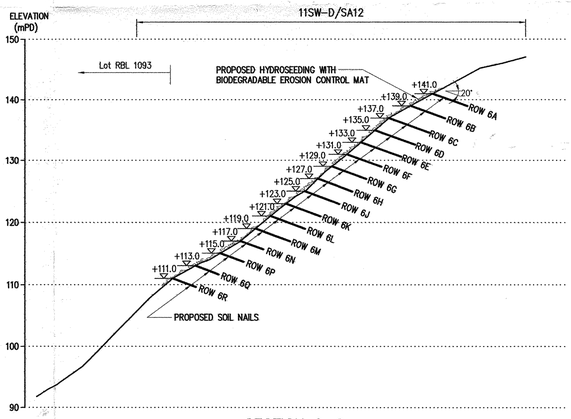
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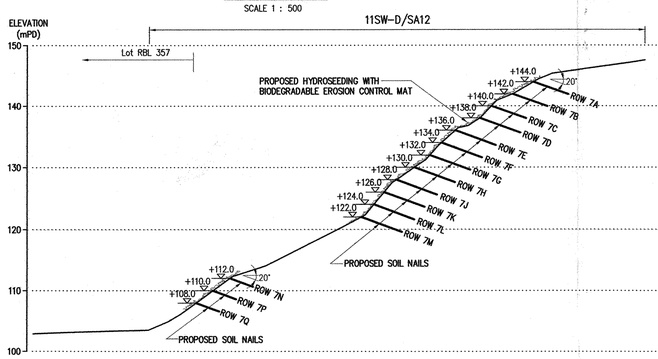
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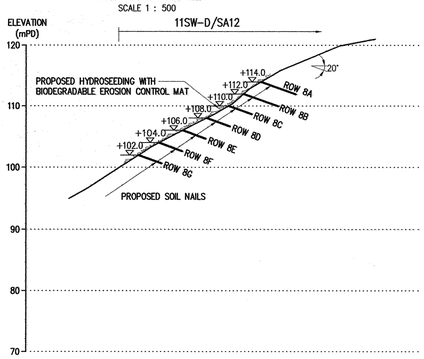
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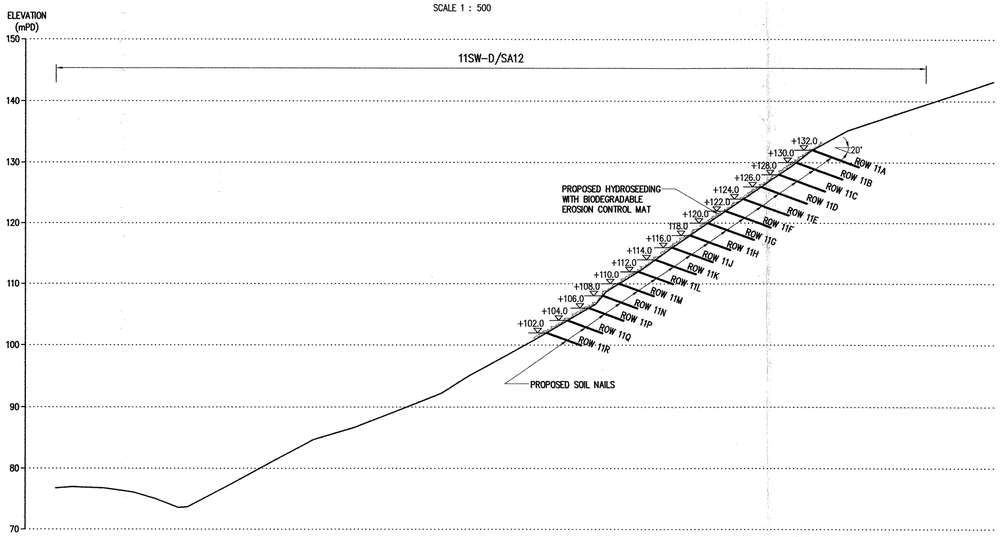
SECTION 6–6
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SECTION 7–7
SCALE 1 : 500



SECTION 8–8
SCALE 1 : 500



SECTION 11–11
SCALE 1 : 500

NOTE :

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS, STANDARD DRAWINGS, SKETCHES, THE SPECIFICATIONS AND INSTRUCTIONS ISSUED BY THE ENGINEER.
2. ALL LEVELS ARE IN METRES ABOVE P.D..
3. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.

no.	date	description	designed	checked

	name	date
designed	[illegible]	1/2014
drawn	[illegible]	JAN-2014
checked	[illegible]	Jan 2014
approved	[signature]	

PROJECT DIRECTOR, FUGRO (HONG KONG) LIMITED

project no.
110441 / HC01

agreement no.
CE 16/2011 (GE)

contract
CONTRACT NO. GE/2012/30
LANDSLIP PREVENTION AND MITIGATION PROGRAMME, 2011, PACKAGE B, LANDSLIP PREVENTION AND MITIGATION WORKS IN HONG KONG ISLAND (EAST)

feature no. & location
11SW-D/SA12
SHOUSON HILL

drawing title
SECTIONS

drawing no.	revision	scale
NTHS1230/HC01/06	-	AS SHOWN

consulting engineer
FUGRO (HONG KONG) LIMITED

office
LANDSLIP PREVENTIVE MEASURES DIVISION 3 GEOTECHNICAL ENGINEERING OFFICE

CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT HONG KONG

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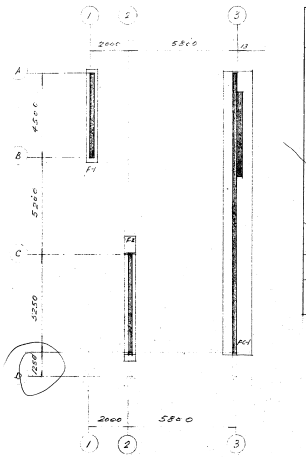
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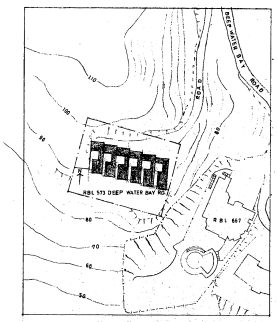
ORIGINAL PAPER SIZE - A1

PLOTTED BY : leonc, 24-Jan-2014 - 12:04pm

Appendix C :
Buildings Department Record



FOOTING PLAN (Block F)
1:100
(TYPICAL EXCEPT F-3 OF BLOCK A)



BLOCK PLAN 1:1000

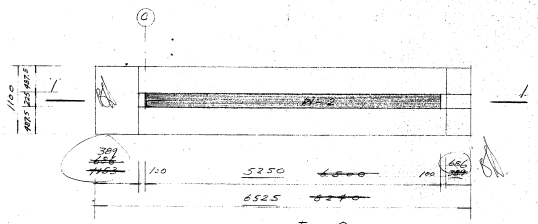
LOADING SCHEDULE

WALL MARK	WALL SIZE	DEAD LOAD		TOTAL LOAD		WIND LOAD			WIND LOAD		
		N_D KN	M_D KNm	N_{D+L} KN	M_{D+L} KNm	H_{W+-} KN	N_{W+-} KN	M_{W+-} KNm	H_W KN	N_W KN	M_W KNm
W-1	225×4500	~~1330.14~~	~~-57~~	~~1459.98~~	~~-56~~	104.58	± 202.74	7.138	58.31	—	977
W-2	225×~~3250~~	~~167.70~~	~~-9~~	~~1985.37~~	~~+283~~	188.69	± 736.19	± 953	113.16	—	1562
W-3	225×~~14950~~	~~2986.52~~	~~331~~	~~3716.17~~	~~+3527~~	289.27	± 1408.73	± 1874	237.89	—	3797

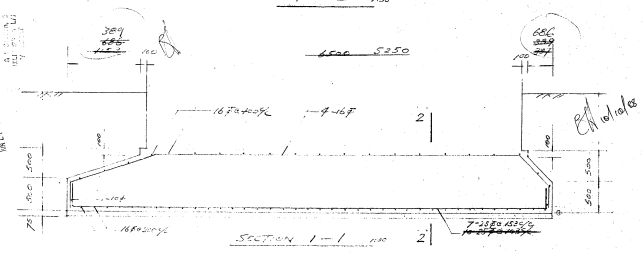
WALL MARK	WALL SIZE	D+L+W		D+L+W		2/3 D+W			2/3 D+W		
		N_{D+L+W-} KN	M_{D+L+W-} KNm	N_{D+L+W+} KN	M_{D+L+W+} KNm	H_{W--} KN	$N_{2/3D+W-}$ KN	$M_{2/3D+W-}$ KNm	H_W KN	$N_{2/3D+W+}$ KN	$M_{2/3D+W+}$ KNm
W-1	225×4500	~~1807.23~~	~~181~~	~~1613.98~~	~~+131~~	104.58	~~87.58~~	~~+100~~	58.31	~~325.51~~	~~+535~~
W-2	225×~~3250~~	~~1565.42~~	~~+378~~	~~1806.32~~	~~+1085~~	188.69	~~358.26~~	~~-536~~	113.16	~~1112.93~~	~~+1558~~
W-3	225×~~14950~~	~~3319.98~~	~~+1851~~	~~4216.17~~	~~+3527~~	289.27	~~1385.42~~	~~+1918~~	237.89	~~3498.22~~	~~+3844~~

WALL MARK	DEAD LOAD		TOTAL LOAD		WIND LOAD			WIND LOAD		
	N_D KN	M_D KNm	N_{D+L} KN	M_{D+L} KNm	H_{W+-} KN	N_{W+-} KN	M_{W+-} KNm	H_W KN	N_W KN	M_W KNm
W-3 + W-1	~~5806.86~~	SEE CALCULATION	~~5459.84~~	SEE CALCULATION	393.86	± 766.19	SEE CALCULATION	288.15	—	4274

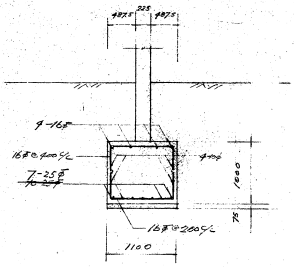
WALL MARK	D+L+W		D+L+W		2/3 D+W			2/3 D+W		
	N_{D+L+W-} KN	M_{D+L+W-} KNm	N_{D+L+W+} KN	M_{D+L+W+} KNm	H_{W--} KN	$N_{2/3D+W-}$ KN	$M_{2/3D+W-}$ KNm	H_W KN	$N_{2/3D+W+}$ KN	$M_{2/3D+W+}$ KNm
W-3 + W-1	~~3131.53~~	SEE CALCULATION	~~3836.66~~	SEE CALCULATION	393.86	~~3576.76~~	SEE CALCULATION	288.15	~~3331.97~~	SEE CALCULATION



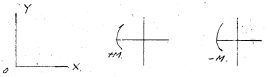
F-2 1:30

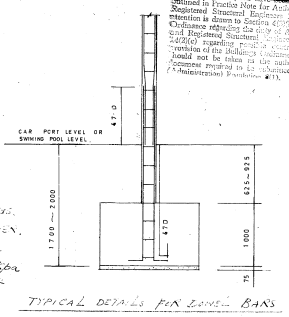


SECTION 1-1 1:30



SECTION 2-2 1:30





TYPICAL DETAILS FOR LOVEL BARS

NOTES:
1. CONC. MIX:
1:2:4 A (GRADE IIA) TO BE USED FOR FOOTINGS.
S MASS CONCRETE FILL AND FOR BLINDING LAYER.
2. COVER TO STEEL: 75 MIN
3. SAFE BEARING CAPACITY ON ROCK: 3000 Kpa
(CORE RECOVERY MORE THAN 50% GRADE III OR BETTER,
ROCK WITH NO ADVERSE JOINT)
4. THE STABILITY OF THE EXISTING SLOPES DOWNHILL OF THE FOOTINGS SHALL BE INVESTIGATED SO AS TO ENSURE THAT THE STABILITY OF THE FOOTINGS WILL NOT BE IMPAIRED. A GEOTECHNICAL REPORT SHALL BE SUBMITTED TO BLD BEFORE THE COMMENCEMENT OF THE SUPERSTRUCTURE.

Approved
LEUNG Kwok-lun
for BUILDING AUTHORITY
14 OCT 1988

NOTE: As outlined in Practice Note for Authorized Persons and Registered Structural Engineers 11(1)(b), particular attention is drawn to Section 41(3)(b) of the Buildings Ordinance regarding the duty of Authorized Persons and Registered Structural Engineers and to Section 24(2)(c) regarding [illegible] Contravention of the Buildings Ordinance. This approval should not be taken to [illegible] compliance with any requirement relating to [illegible] under the Building (Administration) Regulations etc.

B.O.D. REF. NO. 3/30/0987
F.S.D. REF. NO.

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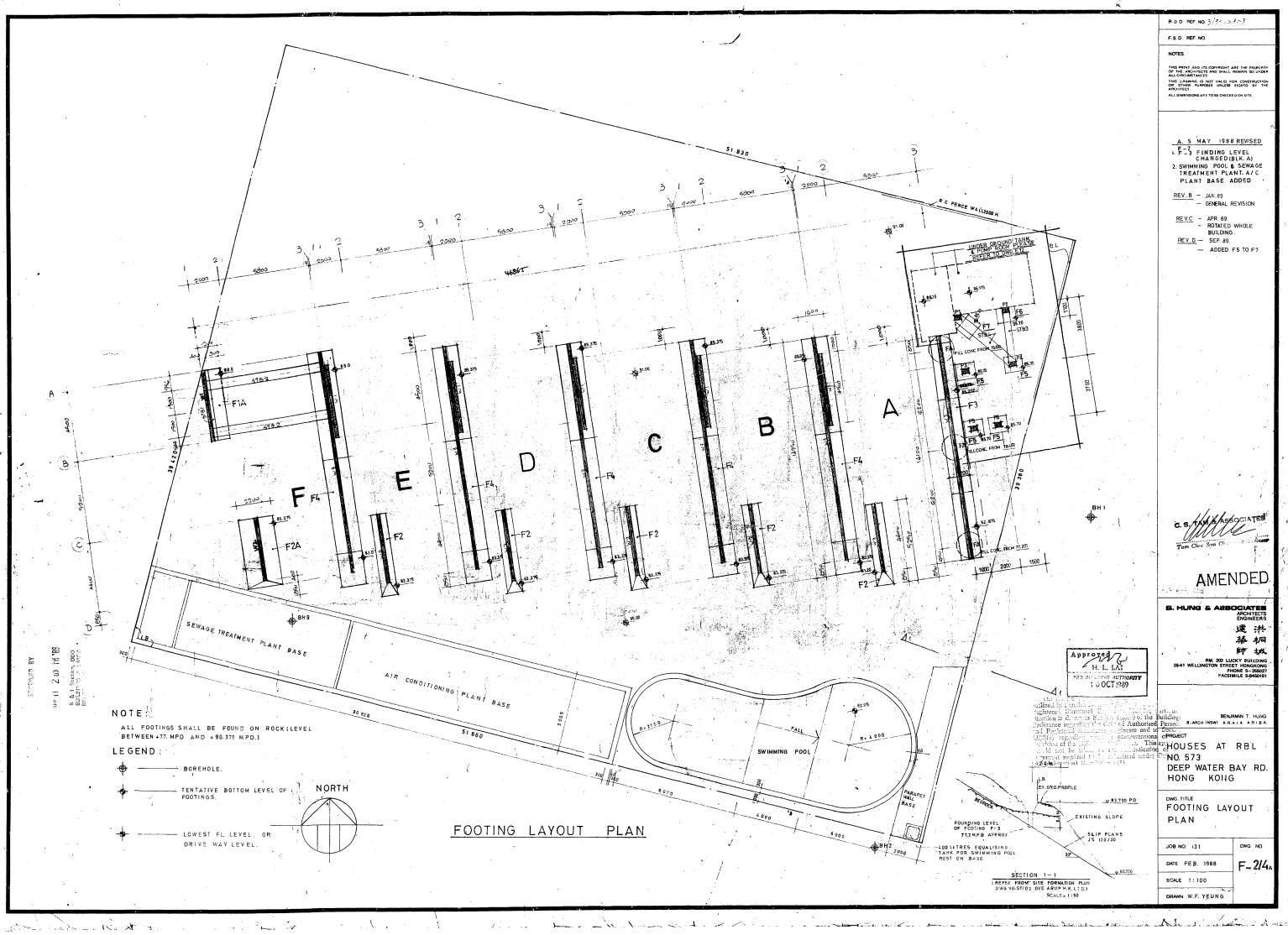
A. REVISED 15-6-1988
1. LOADING SCHEDULE
2. F-2 : REMP.

B. HUNG & ASSOCIATES
ARCHITECTS
ENGINEERS
建洪
基相
師事
RM. 203 LUCKY BUILDING
39-45 WELLINGTON STREET HONGKONG
PHONE 5-266027
FACSIMILE 5-8407181
BENJAMIN T. HUNG
B. ARCH. HKPolyU A.R.A.I.A. A.H.K.I.A.

PROJECT
HOUSES AT R.B.L. NO. 573 DEEP WATER BAY RD. HONG KONG

DWG. TITLE
LOADING SCHEDULE
FOOTING PLAN & DETAILS OF F-2

JOB NO. 131
DWG. NO. F-1/14A
DATE FEB 1988
SCALE 1: 30
DRAWN W.F. YEUNG



NOTE :

ALL FOOTINGS SHALL BE FOUND ON ROCK (LEVEL BETWEEN +77. MPD AND +80.375 M.P.D.)

LEGEND :

- BOREHOLE.
- TENTATIVE BOTTOM LEVEL OF FOOTINGS.
- LOWEST FL. LEVEL OR DRIVE WAY LEVEL.

FOOTING LAYOUT PLAN

SECTION 1-1
(REFER FROM SITE FORMATION PLAN DWG NO. ST/02 OVE ARUP H.K. LTD.)
SCALE : 1:50

Approved
H. L. LAI
FOR BUILDING AUTHORITY
1 OCT 1989

P.O.D. REF NO. 5/F-3 F-7

F.S.D. REF NO.

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A. 9 MAY 1988 REVISED
L F-3 FINDING LEVEL CHANGED (BLK. A)
2. SWIMMING POOL & SEWAGE TREATMENT PLANT, A/C PLANT BASE ADDED

REV. B — JAN. 89
— GENERAL REVISION

REV. C — APR. 89
— ROTATED WHOLE BUILDING.

REV. D — SEP. 89
— ADDED F5 TO F7

C. S. HUNG & ASSOCIATES
Tam Chee Sum Ch...

AMENDED

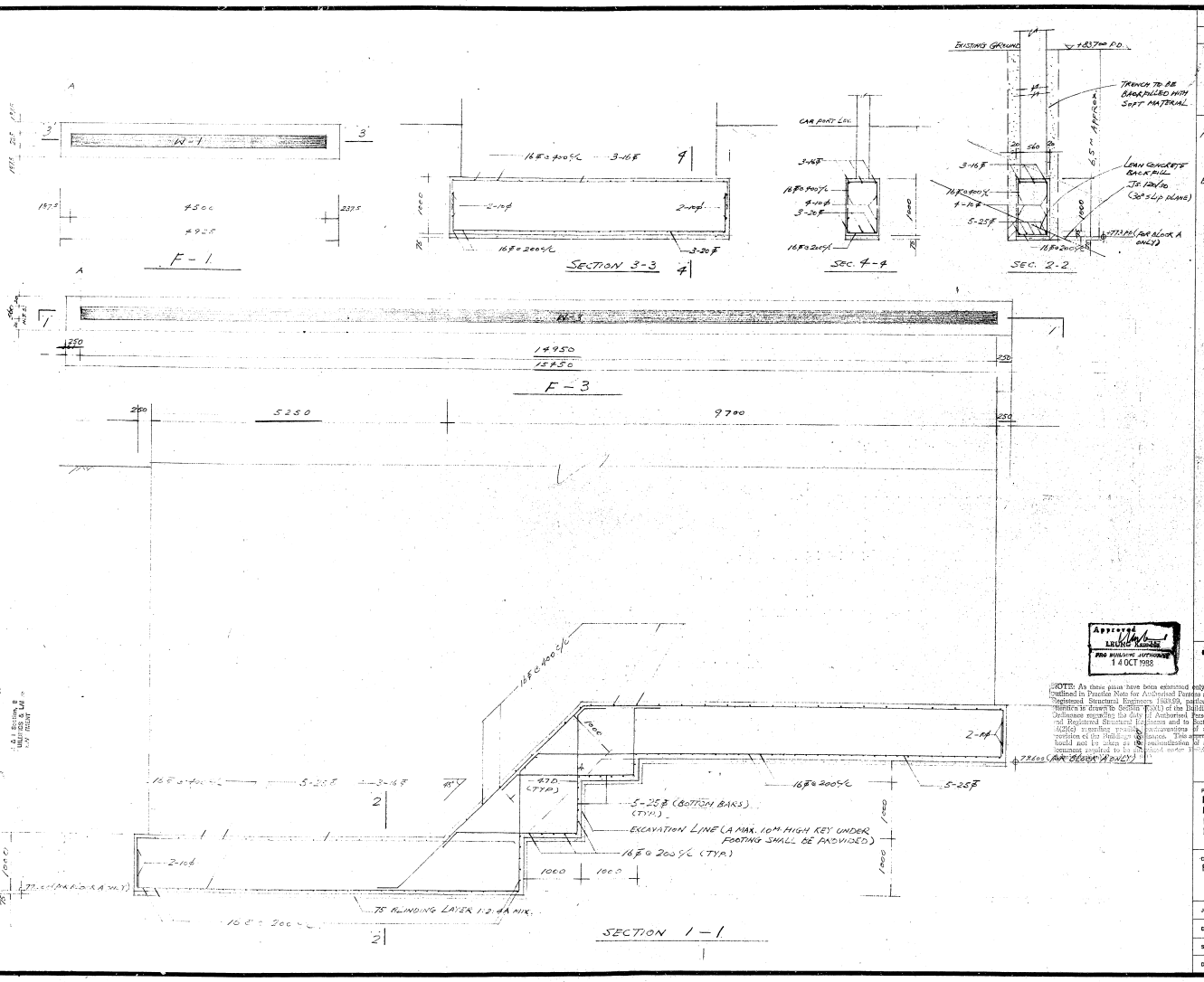
S. HUNG & ASSOCIATES
ARCHITECTS
ENGINEERS
RM. 302 LUCKY BUILDING
39-41 WELLINGTON STREET HONGKONG
PHONE 5-255027
FACSIMILE 5-8450101

BENJAMIN T. HUNG
B. ARCH (HKU) A.R.A.I.A. A.R.I.B.A.

PROJECT
HOUSES AT R.B.L. NO. 573 DEEP WATER BAY RD. HONG KONG

DWG TITLE
FOOTING LAYOUT PLAN

JOB NO. 131	DWG. NO. F-2/4A
DATE FEB. 1988	
SCALE 1:100	
DRAWN W.F. YEUNG	



B.D.D. REF. NO.

F.S.D. REF. NO.

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A. 5 MAY 1988 REVISED, & F-3 FIGURES LEGEND CHANGED.

B. 15 JUNE 1988 REVISED F-3 DIMENSION SHORTEN.

Approved
LEUNG Kai-kee
for BUILDING AUTHORITY
14 OCT 1988

NOTE: As these plans have been examined only as outlined in Practice Note for Authorized Persons and Registered Structural Engineers 1988/89, particular attention is drawn to Section 72(1) of the Buildings Ordinance regarding the duty of Authorized Persons and Registered Structural Engineers and to Section 4(2)(c) regarding possible contraventions of any provision of the Buildings Ordinance. This approval should not be taken as an indemnification of any omissions required to be detailed under Building

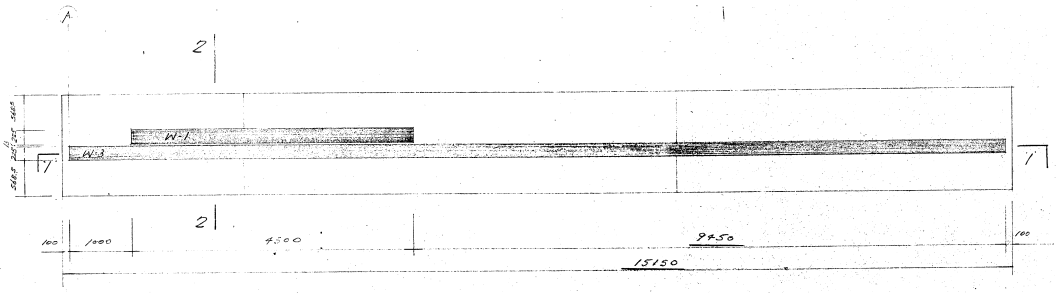
B. HUNG & ASSOCIATES
ARCHITECTS
ENGINEERS
建洪師
RM. 203 LUCKY BUILDING
39-41 WELLINGTON STREET HONGKONG
PHONE 5-286031
FACSIMILE 5-8460187

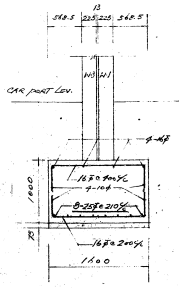
BENJAMIN T. HUNG
B. ARCH. (HONG) A.R.A.I.A. A.R.I.B.A.

PROJECT
HOUSES AT R.B.L. NO. 573
DEEP WATER BAY RD.
HONG KONG

DWG. TITLE
FOOTING F-1 F-3 DETAILS

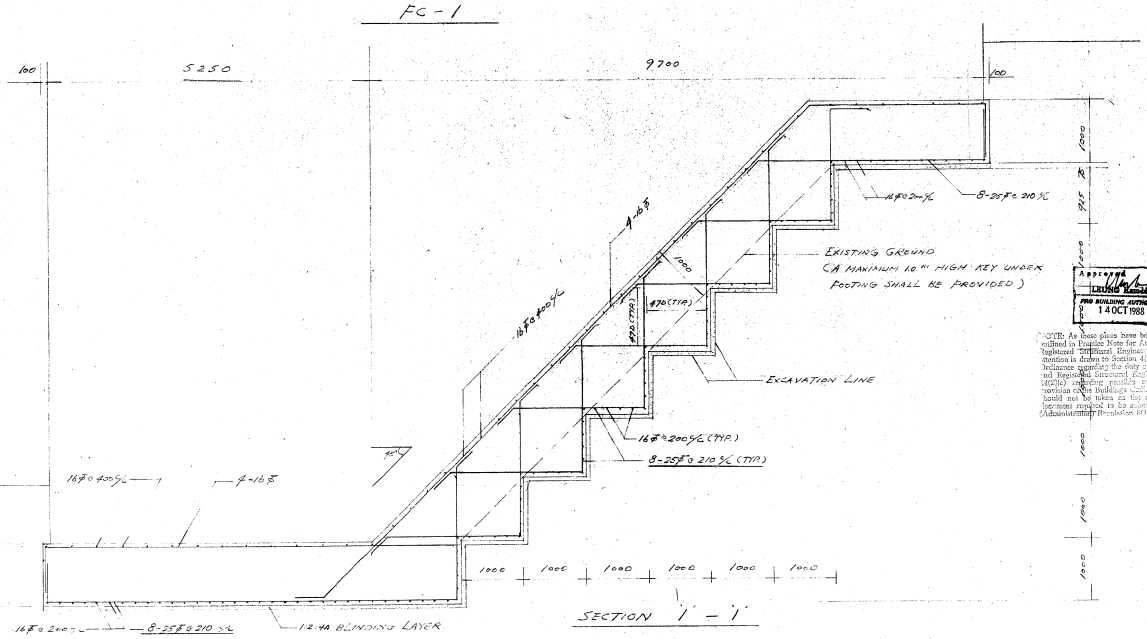
JOB NO. 131	DWG. NO. F-3/4 A B
DATE FEB 1988	
SCALE 1:30	
DRAWN W. F. YEUNG	





SEC. 2-2

FC-1



SECTION 1'-1'

RECEIVED BY
Buildings Department
Sep 11 10:52 AM '88
(A) Gen'l Bldg Plans
FW Room

Approved
LEUNG Chi-kin
for BUILDING AUTHORITY
14 OCT 1988

NOTE: As these plans have been examined only as outlined in Practice Note for Authorized Persons and Registered Structural Engineers 1982/59, particular attention is drawn to Section 4(a)(b) of the Building Ordinance regarding the duty of Authorized Persons and Registered Structural Engineers and to 4(2)(c) and (4)(b) regarding possible contraventions of various of the Building Ordinance. This approval should not be taken as the relaxation of any requirement required to be complied under the Building (Administration) Regulation 4(1).

J.D.D. REF. NO.

F.S.D. REF. NO.

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A REVISED 15-6-1988
1. FC-1 DIMENSIONS SHORTEN.

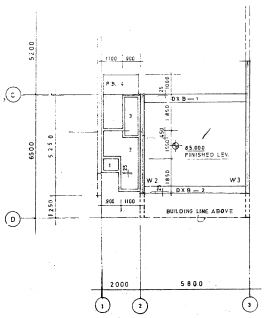
S. HUNG & ASSOCIATES
ARCHITECTS
ENGINEERS
建洪
顧問
師行
RM. 303 LUCKY BUILDING
39-41 WELLINGTON STREET, C.D.
TEL: 5-260302
FACSIMILE 5-8459181

BENJAMIN T. HUNG
B. ARCH. (NSW) A.R.A.I.A. A.R.I.B.A.

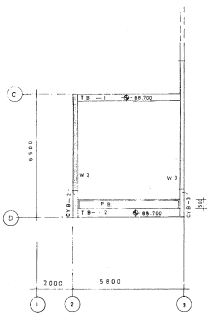
PROJECT
HOUSES AT R.B.L.
NO. 573
DEEP WATER BAY RD.
HONG KONG

DWG. TITLE
FOOTING FC-1
DETAILS

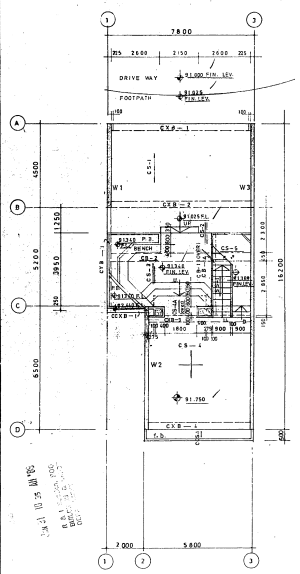
JOB NO. 131
DWG. NO. F-4/4A
DATE FEB 1988
SCALE 1:30
DRAWN W.F. YEUNG



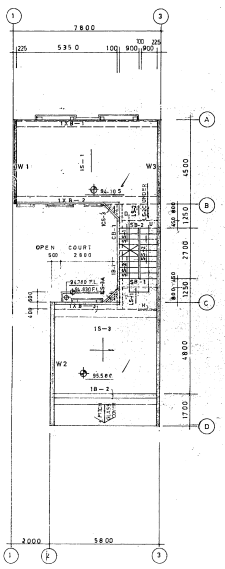
SWIMMING POOL FL. PLAN
BLOCK B



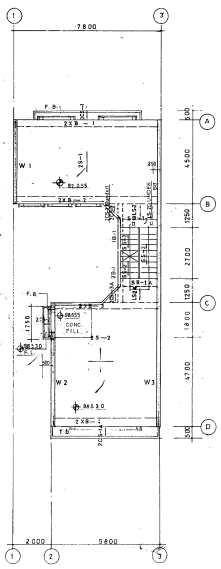
TIE BEAM PLAN



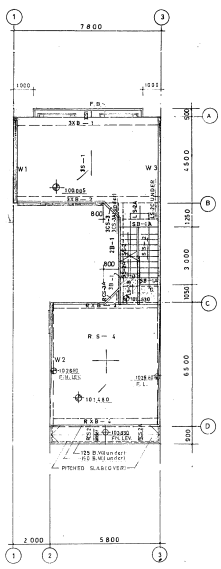
CAR PARK FLOOR PLAN



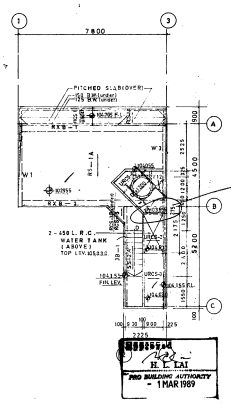
LEVEL 1 FLOOR PLAN



LEVEL 2 FLOOR PLAN



LEVEL 3 FLOOR PLAN



UPPER ROOF PLAN

S.D.D. REF NO.

F.S.D. REF NO.

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A. REVISED 15 JUNE 1988.
1. URCS-1 ~ URCS-3. SS-2A ADD.
2. URS-1 ~ URS-10 P-1 P-2 TO BE OMITTED.
3. 2-450 L. INSTEAD OF 1-900L WATER TANK.
4. 1 X B-3 CXB-3 LOCATION CHANGED.
5. CS 3~CS 5 LEV. CHANGED.

B. REVISED 11 JAN 1989
1. ALL FLOOR LEVEL DECREASED BY 1M.
2. IS-2 TO BE OMITTED.

B. HUNG & ASSOCIATES
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RM. 203 LUCKY BUILDING
39-41 WELLINGTON STREET HONGKONG
TEL. 5-260027-8 5-222288

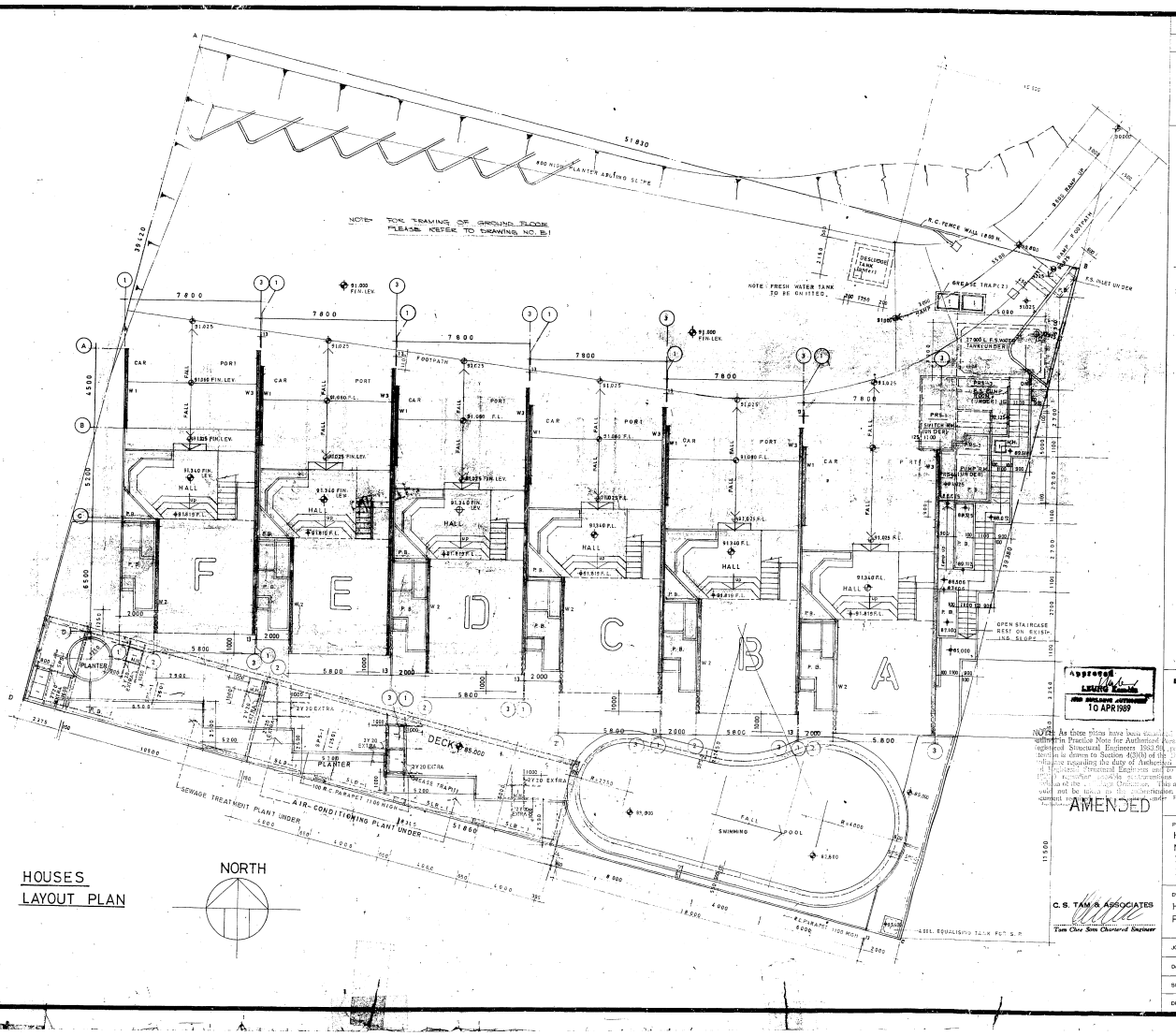
BENJAMIN T. HUNG
B.ARCH (HSU) A.R.A.I.A. A.R.I.B.A. R.I.T.A.

PROJECT
HOUSES AT RBL
NO. 573
DEEP WATER BAY RD
HONG KONG

DWG. TITLE
FRAMING PLAN

JOB NO. 131
DATE MAY 87
SCALE 1:100
DRAWN W.F. YEUNG

DWG. NO.
S-1 A B



B.D.D. REF NO.

F.S.D. REF NO.

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2 MAY 1988 REVISED A
1. DECK PLAN ADD.
2. SWIMMING POOL DIMENSION CHANGED.
3. DESLUDGING PIT ADD.
4. 27 M WATER TANK ADD
5. PUMP ROOM ADD.

2 JUNE 1988 REVISED B
1. EQUALISING TANK ADD.

15 DEC. 1988 REVISED C
1. GREASE TRAPS (1),(2) LOCATION.

11 JAN. 1989 REVISED D
1. OPEN STAIRS.
2. FOOT PATH & DRIVE WAY LEV.
3. FLOORS LEV.
4. PLANTER BOX
5. DESLUDGE TANK
6. FRESH WATER TANK OMITTED.

Approved
Building Authority
10 APR 1989

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39-41, WELLINGTON STREET, HONG KONG
PHONE 5-255017
FACSIMILE 5-8450167

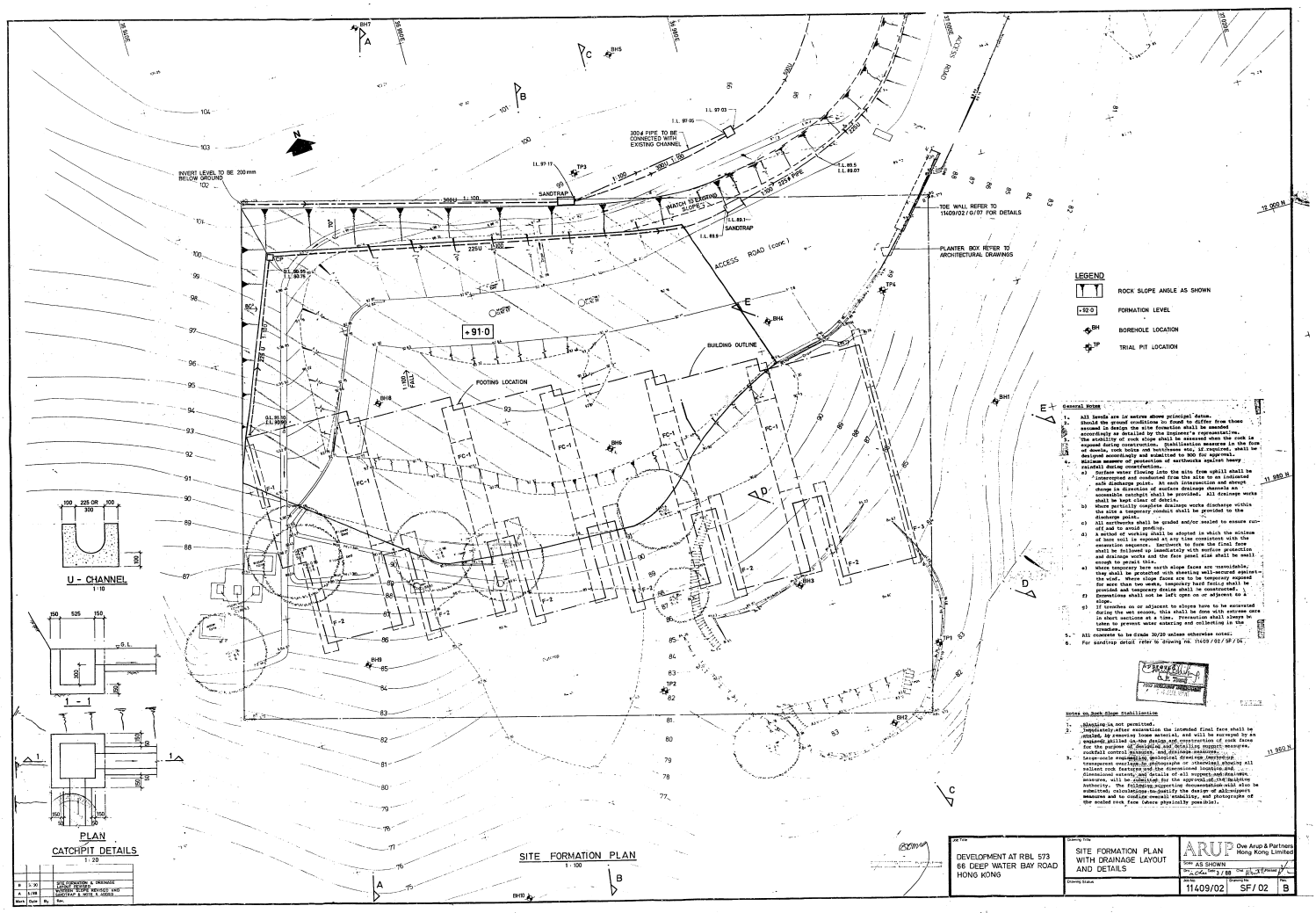
BENJAMIN T. HUNG
B. ARCH. HKIAT. A.R.A.I.A. AR.I.B.A.

C.S. TAM & ASSOCIATES
Tam Chee Sum Chartered Engineer

PROJECT
HOUSES AT RBL NO.573
DEEP WATER BAY RD.
HONG KONG

DWG. TITLE
HOUSES LAYOUT PLAN

JOB NO. 131	DWG. NO. S-3
DATE FEB. 1988	
SCALE 1:100	
DRAWN W.F. YEUNG	



U - CHANNEL
1:10

PLAN
CATCHPIT DETAILS
1:20

SITE FORMATION PLAN
1:100

General Notes

1. All levels are in metres above principal datum.
2. Should the ground conditions be found to differ from those assumed in design the site formation shall be amended accordingly as detailed by the Engineer's representative.
3. The stability of rock slope shall be assessed when the rock is exposed during construction. Stabilisation measures in the form of dowels, rock bolts and bentbreams etc. if required, shall be designed accordingly and submitted to BDD for approval.
4. Minimum measure of protection of earthworks against heavy rainfall shall be as follows:
   a) Surface water flowing into the site from uphill shall be intercepted and conducted from the site to an indicated safe discharge point. At each intersection and abrupt change in direction of surface drainage channels an accessible catchpit shall be provided. All drainage works shall be kept clear of debris.
   b) Where partially complete drainage works discharge within the site a temporary conduit shall be provided to the discharge point.
   c) All earthworks shall be graded and/or sealed to ensure run-off does not enter the works.
   d) A period of work shall be adopted in which the minimum of bare soil is exposed at any time consistent with the excavation sequence. Earthwork to form the final face shall be followed up immediately with surface protection and drainage works and the face panel size shall be small enough to permit this.
   e) Where temporary bare earth slope faces are unavoidable, they shall be protected with steeting well-secured against the wind. Where slope faces are to be temporarily exposed for more than two weeks, alternatively they may be protected with a temporary cover of grass to be constructed. Excavations shall not be left open on or adjacent to a slope.
   f) If trenches on or adjacent to slopes have to be excavated during the wet season, this shall be done with extreme care in short sections at a time. Precaution shall always be taken to prevent water entering and collecting in the trenches.
5. All concrete to be Grade 30/20 unless otherwise noted.
6. For sandtrap detail refer to drawing no. 11409/02/SF/04.

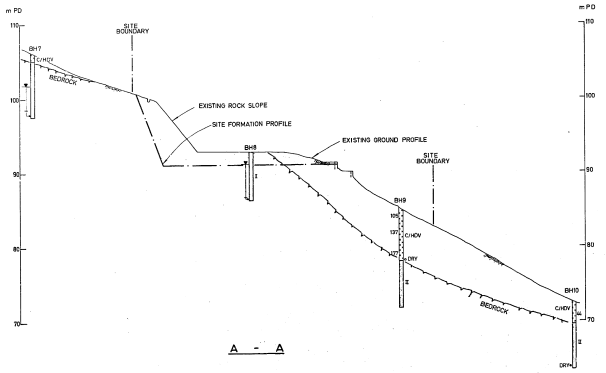
Notes on Rock Slope Stabilisation

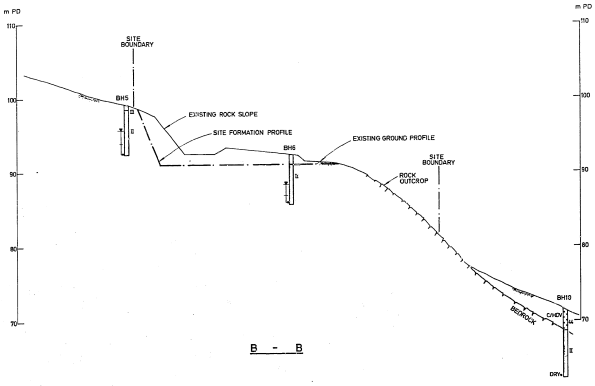
1. Blasting is not permitted.
2. Immediately after excavation the intended final face shall be scaled, by removing loose material, and will be surveyed by an engineer skilled in the design and construction of rock faces for the purpose of designing and detailing support measures, rockfall control measures, and drainage measures.
3. Large-scale engineering geological drawings (surface/sub-transparent overlays to photographs or rectified) showing all salient rock features and the discontinuous jointing and weathering patterns shall be prepared. All support measures, all to be submitted for the approval of the Building Authority. The following supporting documentation will also be submitted; calculations to justify the design of all support measures and to confirm overall stability, and photographs of the scaled rock faces where physically possible.

No.	Date	By	Rev.
B	1:50		SITE FORMATION & DRAINAGE LAYOUT REVISED
A	1:100		SANDTRAP & NOTE 6 ADDED

Job Title	DEVELOPMENT AT RBL 573 68 DEEP WATER BAY ROAD HONG KONG
Drawing Title	SITE FORMATION PLAN WITH DRAINAGE LAYOUT AND DETAILS
Drawing Status	
Scale	AS SHOWN
Date	3/08
Job No.	11409/02
Drawing No.	SF/02
Rev.	B

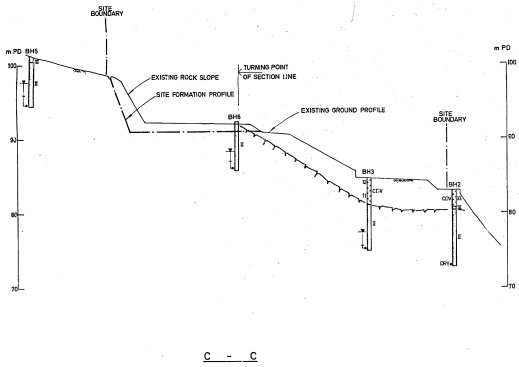
ARUP Ove Arup & Partners Hong Kong Limited

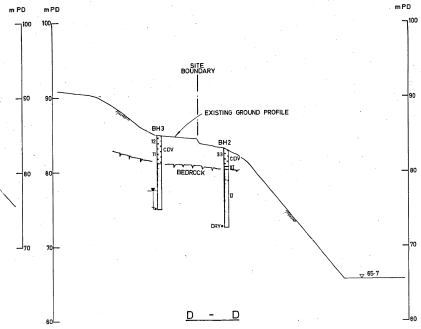


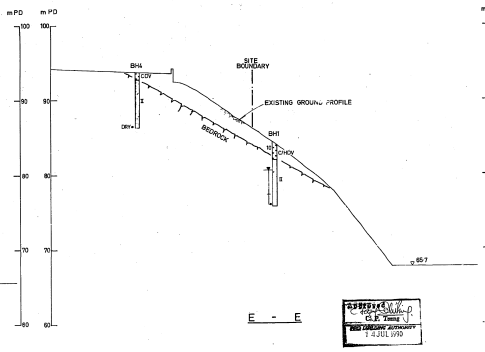


LEGEND

- PIEZOMETER TIP LEVEL
- STANDPIPE BOTTOM LEVEL
- VARIATION IN WATER LEVELS MEASURED IN STANDPIPE (NOV. 87 TO MAR. 88)
- 105 S.P.T. 'N' VALUE
- C/HDV COMPLETELY OR HIGHLY DECOMPOSED VOLCANIC
- M/DDV MODERATELY OR SLIGHTLY DECOMPOSED VOLCANIC







Approved
C.K. Yeung
for DIRECTOR OF LANDS
14 JUL 1990

Mark	Date	By	Rev.
A	5/90		FORMATION LEVEL REVISED

DEVELOPMENT AT RBL 573
66 DEEP WATER BAY ROAD
HONG KONG

Drawing Title: SECTIONS

Drawing Status:

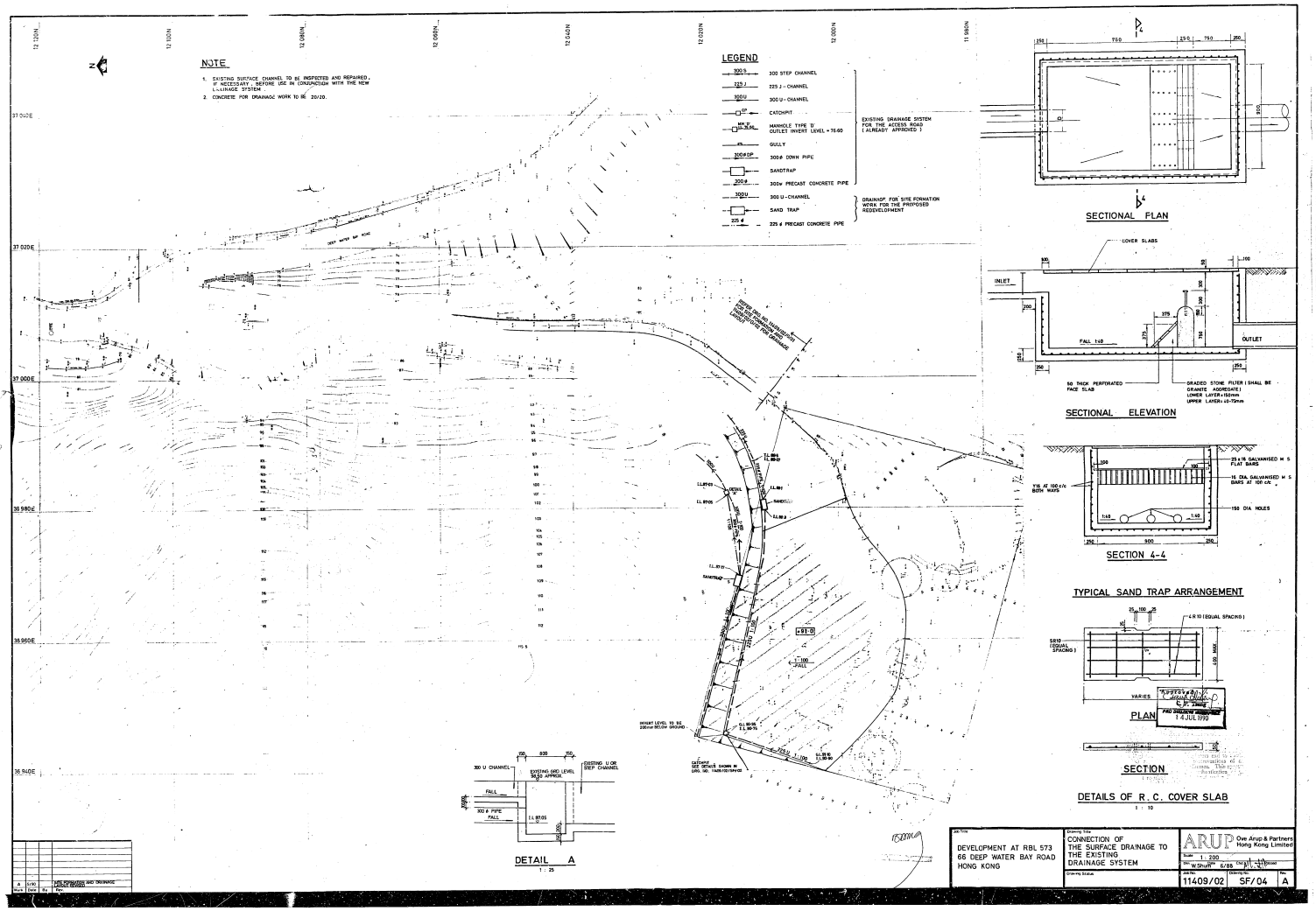
ARUP Ove Arup & Partners Hong Kong Limited

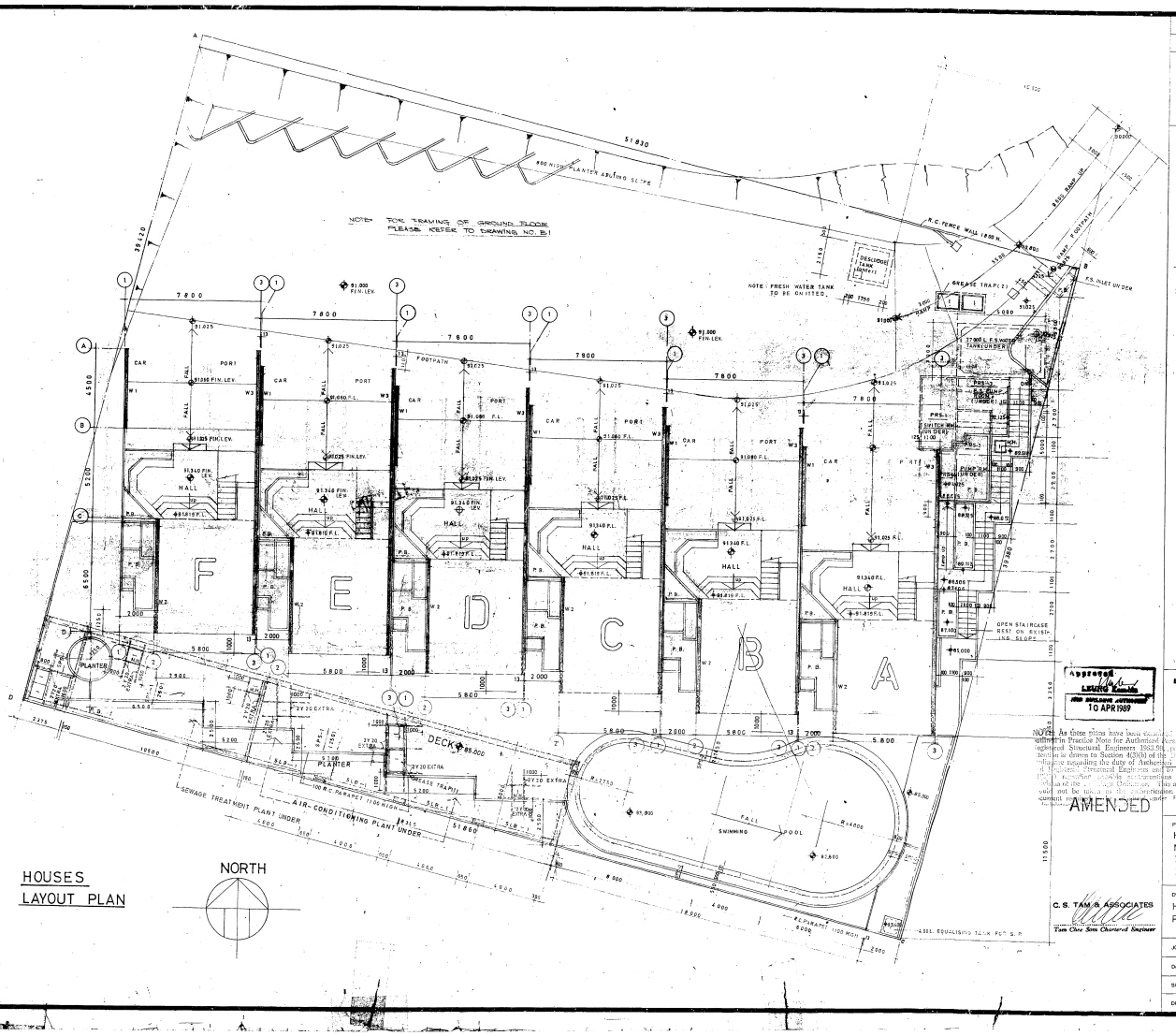
Scale: 1 : 200
Drn: A.CAN Date: 3/88 Chkd: H.K. Revised:

Job No. 11409/02

Drawing No. SF/03

Rev. A


NOTE
1. EXISTING SURFACE CHANNEL TO BE INSPECTED AND REPAIRED, IF NECESSARY, BEFORE USE IN CONJUNCTION WITH THE NEW DRAINAGE SYSTEM.
2. CONCRETE FOR DRAINAGE WORK TO BE 20/20.
LEGEND
300 S 300 STEP CHANNEL
225 J 225 J - CHANNEL
300 U 300 U - CHANNEL
CATCHPIT
MH 'D' MANHOLE TYPE 'D' OUTLET INVERT LEVEL = 76.60
G/L GULLY
300ø DP 300ø DOWN PIPE
SANDTRAP
200ø 300ø PRECAST CONCRETE PIPE
EXISTING DRAINAGE SYSTEM FOR THE ACCESS ROAD (ALREADY APPROVED)
300U 300 U-CHANNEL
SAND TRAP
225 ø 225 ø PRECAST CONCRETE PIPE
DRAINAGE FOR SITE FORMATION WORKS FOR THE PROPOSED REDEVELOPMENT
DEEP WATER BAY ROAD
CURB
EXISTING DRAINAGE SYSTEM TO BE REMOVED AND REPLACED BY NEW DRAINAGE SYSTEM
INVERT LEVEL TO BE 200mm BELOW GROUND
CATCHPIT SEE DETAILS SHOWN ON DRG. NO. 11409/02/SF/04
DETAIL A
1 : 25
SECTIONAL PLAN
COVER SLABS
INLET
OUTLET
FALL 1:40
50 THICK PERFORATED FACE SLAB
DRADED STONE FILTER (SHALL BE GRANITE AGGREGATE) LOWER LAYER = 150mm UPPER LAYER = 10-15mm
SECTIONAL ELEVATION
25 x 16 GALVANISED M S FLAT BARS
16 DIA. GALVANISED M S BARS AT 100 C/C
150 DIA HOLES
SECTION 4-4
TYPICAL SAND TRAP ARRANGEMENT
4 R 10 (EQUAL SPACING)
5R10 (EQUAL SPACING)
VARIES
PLAN
SECTION
DETAILS OF R.C. COVER SLAB
1 : 10
DEVELOPMENT AT RBL 573
66 DEEP WATER BAY ROAD
HONG KONG
CONNECTION OF THE SURFACE DRAINAGE TO THE EXISTING DRAINAGE SYSTEM
ARUP
Ove Arup & Partners Hong Kong Limited
1 : 200
W.Chan
6/85
11409/02
SF/04
A



B.D.D. REF NO.

F.S.D. REF NO.

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2 MAY 1988 REVISED A
1. DECK PLAN ADD.
2. SWIMMING POOL DIMENSION CHANGED.
3. DESLUDGING PIT ADD.
4. 27 M WATER TANK ADD
5. PUMP ROOM ADD.

2 JUNE 1988 REVISED B
1. EQUALISING TANK ADD.

15 DEC. 1988 REVISED C
1. GREASE TRAPS (1),(2) LOCATION.

11 JAN. 1989 REVISED D
1. OPEN STAIRS.
2. FOOT PATH & DRIVE WAY LEV.
3. FLOORS LEV.
4. PLANTER BOX
5. DESLUDGE TANK
6. FRESH WATER TANK OMITTED.

Approved
Building Authority
10 APR 1989

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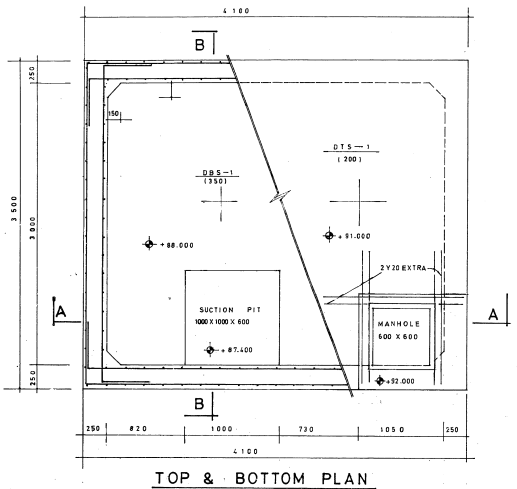
BENJAMIN T. HUNG
B. ARCH. HKIAT. A.R.A.I.A. AR.I.B.A.

C.S. TAM & ASSOCIATES
Tam Chee Sum Chartered Engineer

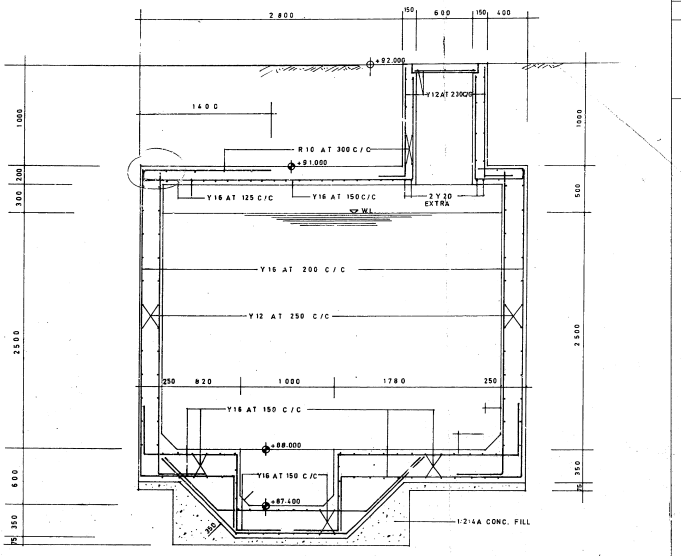
PROJECT
HOUSES AT RBL NO.573
DEEP WATER BAY RD.
HONG KONG

DWG. TITLE
HOUSES LAYOUT PLAN

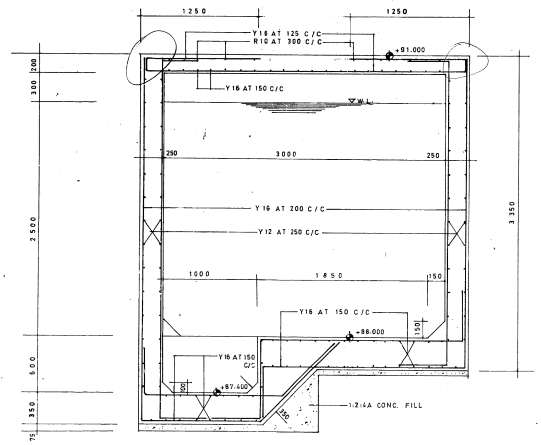
JOB NO. 131	DWG. NO. S-3
DATE FEB. 1988	
SCALE 1:100	
DRAWN W.F. YEUNG	



TOP & BOTTOM PLAN
27³ M WATER TANK
SCALE= 1:20

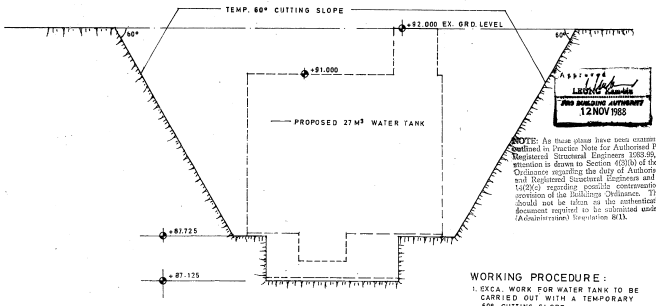


SECTION A — A
SCALE= 1:20



SECTION B — B
SCALE= 1:20

NOTE :
1. CONCRETE MIX FOR WATER TANK TO BE 1:1:2A (GRADE 1A).
2. COVER TO MAIN REINFORCEMENT — 50 MM.



SHORING DETAILS
SCALE= 1:40

WORKING PROCEDURE :
1. EXCA. WORK FOR WATER TANK TO BE CARRIED OUT WITH A TEMPORARY 60° CUTTING SLOPE.
2. WHEN EXCA. TO THE REQUIRED LEVEL CONSTRUCT THE WATER TANK IMMEDIATELY.
3. ANY BACK FILLING TO BE COMPACTED TO 95% COMPACTION.
4. AN EXPERIENCED PERSON WILL BE ON SITE TO SUPERVISE THE CONSTRUCTION OF WATER TANK.

B.C.C. REF. NO. 3/30/1887

F.S.D. REF. NO.

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Approved
LEUNG Kam-lin
for BUILDING AUTHORITY
12 NOV 1988

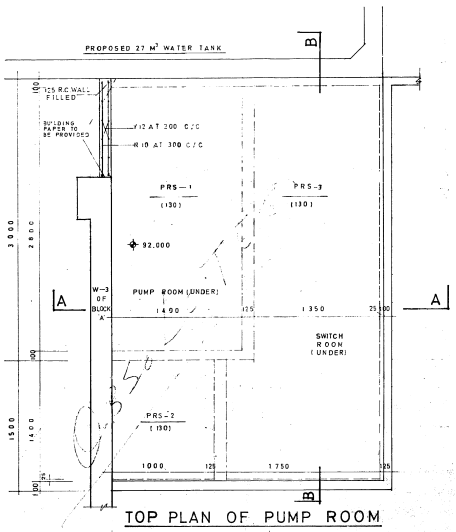
NOTE: As these plans have been examined only as outlined in Practice Note for Authorised Persons and Registered Structural Engineers 1983-89, attention is drawn to Section 6(3)(b) of the Building Ordinance regarding the duty of Authorised Persons and Registered Structural Engineers and to Section 1a(2)(e) regarding possible contraventions of any provision of the Buildings Ordinance. This approval should not be taken as the authentication of any document required to be submitted under Building (Administration) Regulation 8(1).

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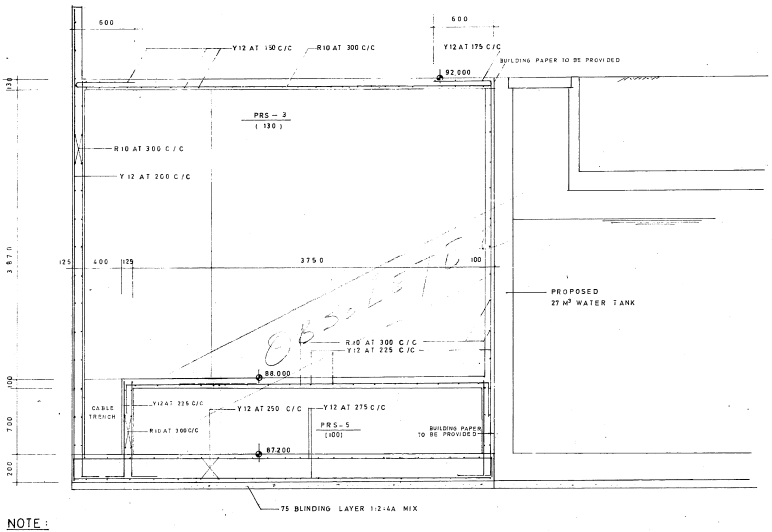
PROJECT
HOUSES AT RBL NO.573
DEEP WATER BAY RD.
HONG KONG

DWG. TITLE
27³M WATER TANK & SHORING DETAILS

JOB NO. 131	DWG. NO. S 13
DATE MAR. 1988	
SCALE 1:20 1:40	
DRAWN W.F. YEUNG	



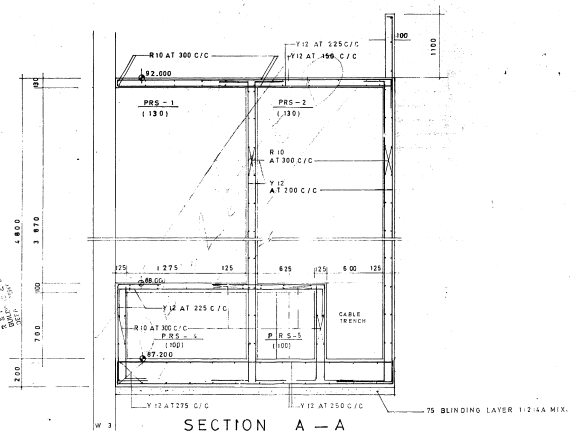
TOP PLAN OF PUMP ROOM



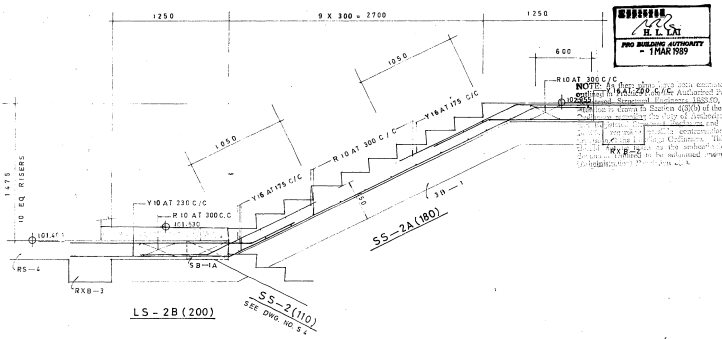
NOTE :

CONCRETE MIX FOR PUMP ROOM TO BE 1:2:4A

SECTION B — B



SECTION A — A



DETAILS OF STAIRS
(NEW DETAILS)

B.D.D. REF NO.

F.S.D. REF NO. 4

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A. REVISED 27-5-88
NEW STAIRS DETAILS ADD
B. REVISED 11-1-89
LEVEL CHANGED.

H.K.I.A.T.
BUILDING AUTHORITY
- 1 MAR 1989

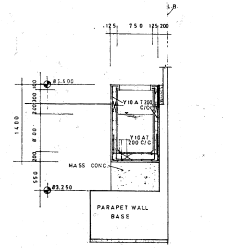
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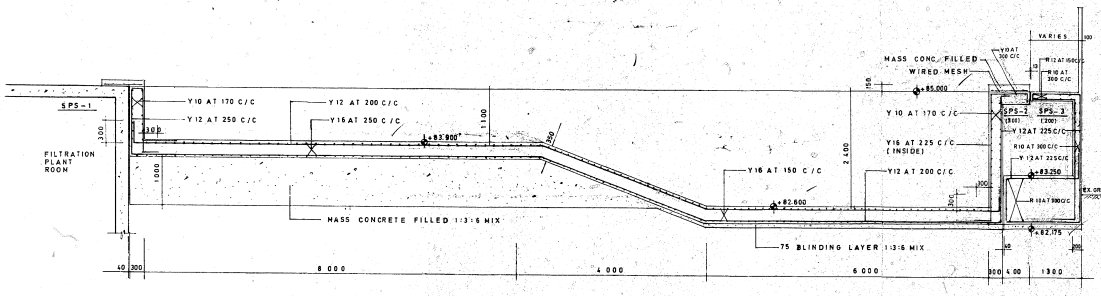
PROJECT
HOUSES AT RBL. NO. 573
DEEP WATER BAY RD.
HONG KONG

DWG. TITLE
PUMP ROOM PLAN & DETAILS

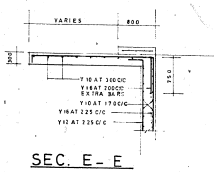
JOB NO. 131
DWG. NO. S14 A B
DATE APR. 1988
SCALE 1:20
DRAWN W.F. YEUNG



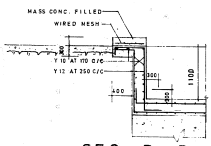
SECTION C - C
(DETAILS OF EQUALISING TANK)



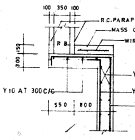
SECTION A - A
SCALE 1:40



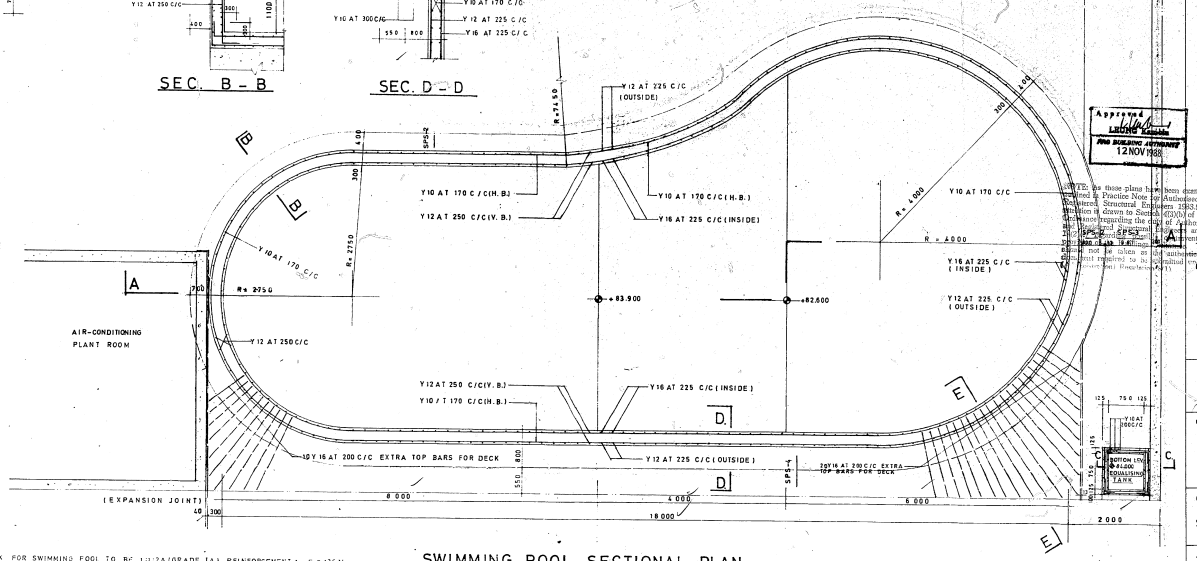
SEC. E - E



SEC. B - B



SEC. D - D



SWIMMING POOL SECTIONAL PLAN
SCALE 1:40

NOTES:

1. CONCRETE MIX FOR SWIMMING POOL TO BE 1:1:2A (GRADE 1A). REINFORCEMENT : f_y = 136 Mpa.
2. COVER TO STEEL : 50 mm FOR POOL ALL & BASE
   15 mm FOR POOL DECK
3. ALLOWABLE SOIL BEARING CAPACITY UNDER THE SWIMMING POOL —— 109 KN/m².

B.D.D. REF. NO. 3/3418/87

F.S.D. REF. NO.

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A. Rowson 15-6-1989
1. Equalising Tank Add.

Approved
Lands Department
and Building Authority
12 NOV 1988

NOTE: As these plans have been examined only to ensure compliance with Practice Notes for Authorised Persons and Registered Structural Engineers 1983-89, particular attention is drawn to Section 40(2A) of the Buildings Ordinance requiring the duty of Authorised Persons and Registered Structural Engineers to carry out and to Section 40(2B) requiring the duty of Authorised Persons to ensure compliance with the conditions of any consent. This approval does not include any approval or consent required by the Buildings Ordinance or any other Ordinance. Plans not to be taken as the authentication of any consent required by the Buildings Ordinance or any other Ordinance.

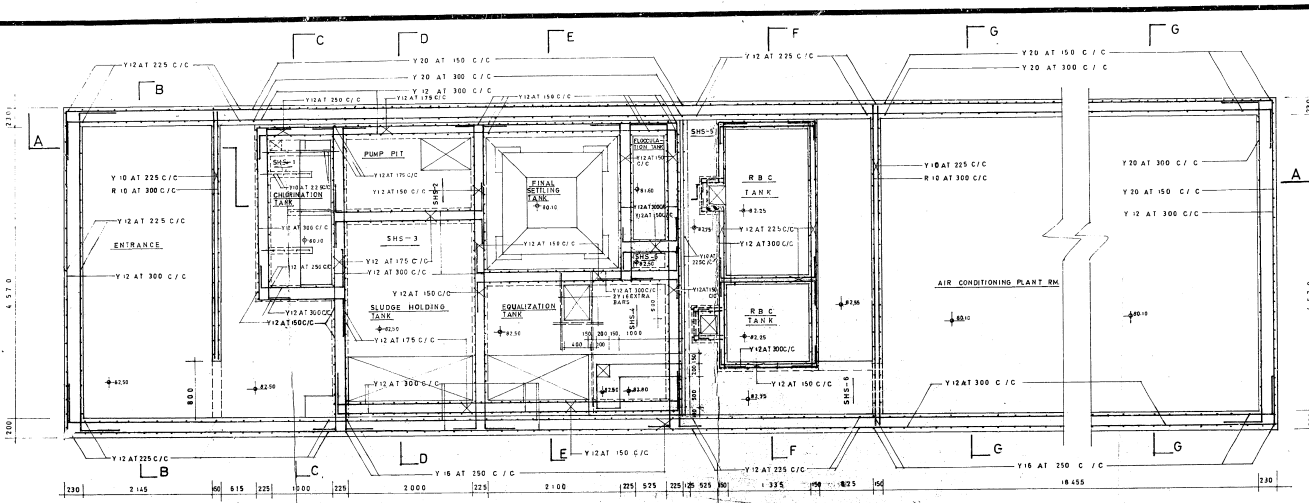
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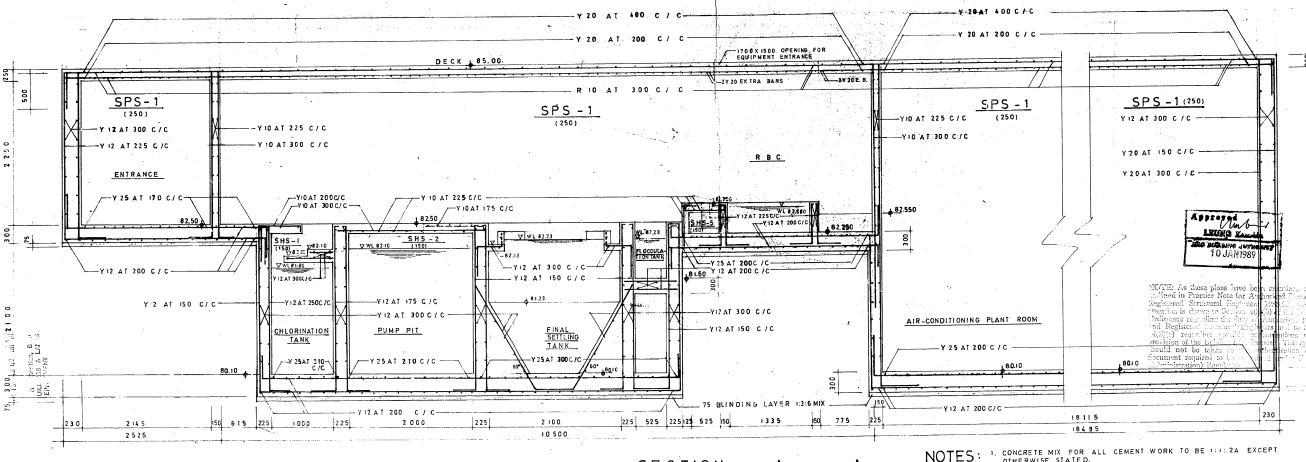
PROJECT
HOUSES AT RBL NO. 573
DEEP WATER BAY RD.
HONG KONG

DWG. TITLE
SWIMMING POOL

JOB NO. 131	DWG. NO.
DATE APR. 1988	S 15A
SCALE 1:40	
DRAWN W.F.YEUNG	



SEWAGE TREATMENT PLANT AND AIR CONDITIONING PLANT ROOM SECTIONAL PLAN



SECTION A - A

NOTES:
1. CONCRETE MIX FOR ALL CEMENT WORK TO BE 1:1:2A EXCEPT OTHERWISE STATED.
2. COVER TO MAIN REINFORCEMENT : 50 mm FOR TANKS & WALLS
   25 mm FOR DECK SLAB
3. SAFE BEARING CAPACITY ON SOIL : 600 KN/m²

B.D.D. REF. NO. 3/3618/87

F.S.D. REF. NO.

NOTES

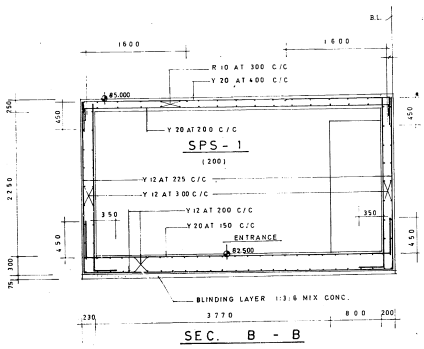
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BENJAMIN T. HUNG
B. ARCH. (NSW) A.R.A.I.A. AR.I.B.A. P.R.I.A.

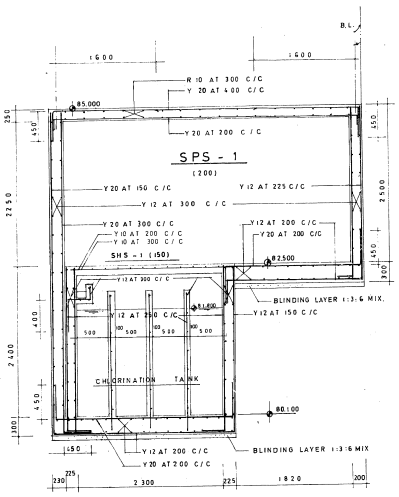
PROJECT
HOUSE AT RBL NO. 573
DEEP WATER BAY ROAD
HONG KONG

DWG. TITLE
DETAILS OF SEWAGE TREATMENT PLANT AND AIR CONDITIONING PLANT

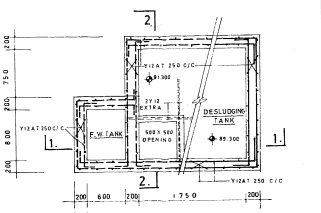
JOB NO. 131	DWG. NO.
DATE AUG 1988	S16
SCALE 1:30	
DRAWN W.F. YEUNG	



SEC. B - B

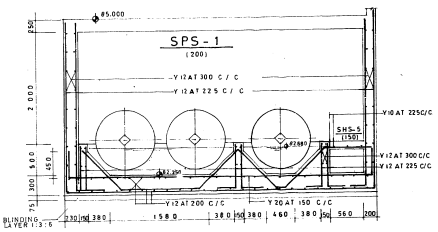


SEC. C - C

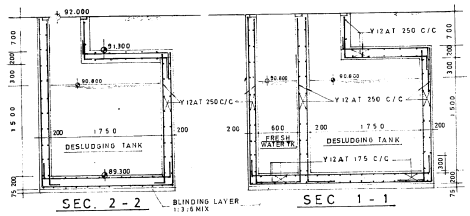


TOP & BOTTOM PLAN OF DESLUDGING TANK

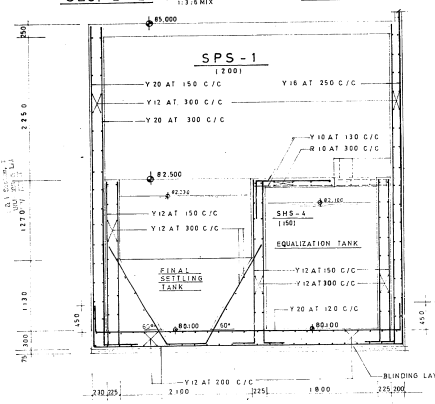
CONCRETE MIX TO BE 1:1:2A



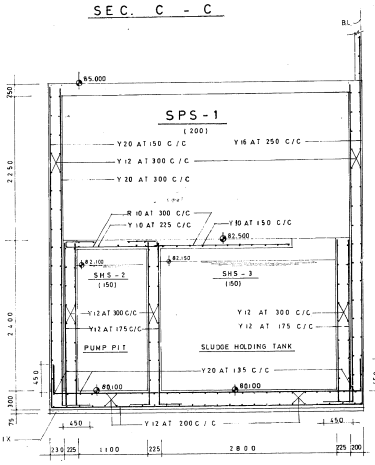
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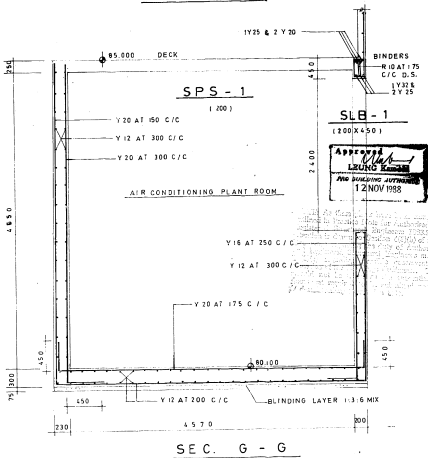
SEC. 2 - 2 SEC 1 - 1



SEC. E - E



SEC. D - D



SEC. G - G

B.D.C. REF NO. 3/3/1/87

F.S.D. REF NO.

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Approved
LEUNG Chi-wai
for Building Authority
12 NOV 1988

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BENJAMIN T. HUNG
B. ARCH. HKSIR. A.R.A.I.A. A.R.I.B.A.

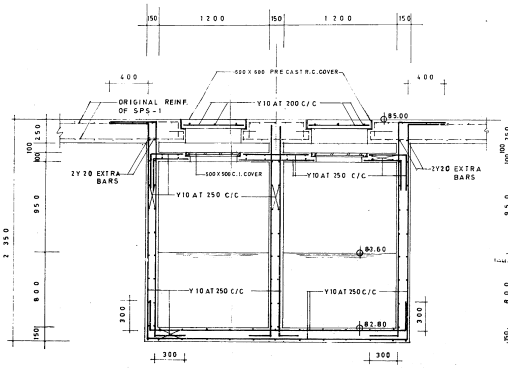
PROJECT

HOUSES AT RBL NO. 573 DEEP WATER BAY RD. HONG KONG

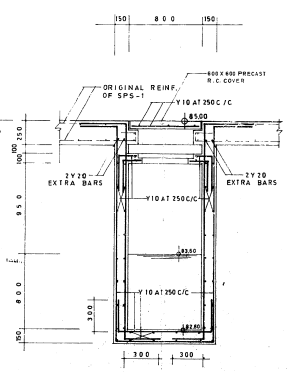
DWG TITLE

DETAILS OF SEWAGE TREATMENT PLANT & A/C PLANT. DETAILS OF DESLUDGING TANK

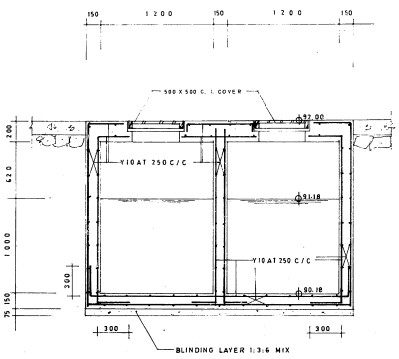
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DATE AUG. 1988	
SCALE 1 : 30	
DRAWN W.F.YEUNG	



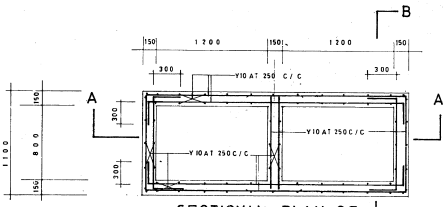
SECTION A - A



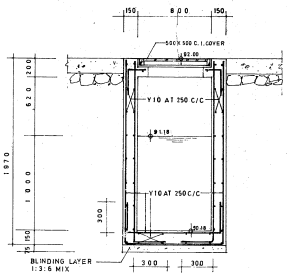
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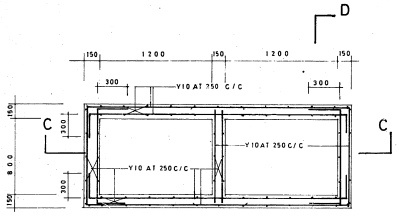
SECTION C - C



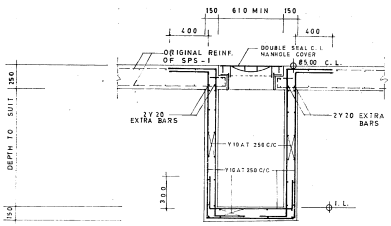
SECTIONAL PLAN OF GREASE TRAP (1)



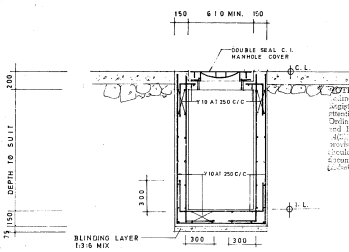
SECTION D-D



SECTIONAL PLAN OF GREASE TRAP (2)



TYPICAL DETAILS OF MANHOLE HANGED UNDER DECK



TYPICAL DETAILS OF MANHOLE

NOTES :

1. CONCRETE MIX FOR GREASE TRAPS AND MANHOLES TO BE USED 1:2:4 A, EXCEPT OTHERWISE STATED.
2. ALL REINFORCEMENTS TO BE HIGH TENSILE STEEL COMPLYING WITH B.S. 4449.
3. COVER TO MAIN REINF. TO BE 50 mm.
4. LOCATION OF GREASE TRAPS AND MANHOLES TO BE REFER TO DRAINAGE PLANS DWG. NOS. DR-1, DR-2, AND DR-6.

BDD REF NO. 3/3016/87

FSD REF NO.

NOTES

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ALL DIMENSIONS ARE TO BE CHECKED ON SITE

NEW DRAWING

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BENJAMIN T. HUNG
B. ARCH (HKU) A.R.I.A.A. A.R.I.B.A.

PROJECT
HOUSES AT RBL NO.573.66 DEEP WATER BAY RD.

DWG TITLE
STRUCTURAL DETAILS FOR GREASE TRAPS AND MAN-HOLES

JOB NO 731
DWG NO S 18
DATE NOV. 1988
SCALE 1:20
DRAWN W.F.YEUNG

Approved
Authorized Person
for BUILDING AUTHORITY
10 JAN 1989

NOTE: As these plans have been examined [illegible] required in Practice Note for Authorized Persons, Registered Structural Engineers 1988 (A) [illegible] attention is drawn to Section 40(2A) of the Buildings Ordinance regarding the duty of Authorized Persons and Registered Structural Engineers and to Section 40(2B) regarding the [illegible] conventions resolution of the Building Authority. This approval should not be taken as the authentication of any [illegible] document required [illegible]

Appendix D :
Available Ground Investigation Records

DRILLHOLE RECORD

JOB NO. 1007
HOLE NO. BH-2
SHEET 1 of 2
DATE from 21.11.87 to 23.11.87

PROJECT Deep Water Bay Road Development
R.B.L. No. 573, Hong Kong

METHOD Rotary

MACHINE & NO.

CO-ORDINATES
E 836982
N 811970

ROCK COREBIT T2, TNW

HOLE DIA. H 114mm

FLUSHING MEDIUM Water

ORIENTATION Vertical

GROUND LEVEL 83.11 mPD

Drilling Progress	Casing depth/size	Water level/ time/ date	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m.)	Legend	Grade	Zone	Description
21/11	H										0.00				Loose, dark brown, fine to coarse SAND
										82.63	0.48				(TOP SOIL)
				50	0				T2	82.44	0.67		III		GRAVEL sized fragment of moderately to highly decomposed volcanics
								N=33	1		1.00		IV		
													V		Dense, grey, silty fine SAND
											2.00				(Completely Decomposed VOLCANICS)
				0					2	80.91	2.20				
	2.60 H			40	0				T2		2.45		III/IV		GRAVEL sized fragment of moderately to highly decomposed volcanics
										80.51	2.60				
				95	77	53	6				3.00		II		Strong, grey, fine grained, Slightly Decomposed VOLCANICS
				78	56	56	4				3.76				
											4.00				
				0	0					78.91	4.20				
										78.66	4.45		IV		Weathered SEAM of highly decomposed volcanics (NO SAMPLE)
				100	100	76	4				5.00				
											5.24				
				100	100	95	3		TNW		6.00				
21/11		2.50m at 18:00									6.79				
23/11		3.00m at 8:00		96	96	67	5				7.00		II		Strong, grey, fine grained, Slightly Decomposed VOLCANICS, closely spaced joints with limonite stains and koaline infilling, dip 60°–70° and 20°–30°
				100	50	50	12				7.80				
											8.04				
				100	100	91	4								
											8.98				
				100	100	74	5								
23/11											10.00				

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water sample
- Water Level
- Standard penetration test
- Permeability test
- Piezometer tip
- In-situ vane shear test

LOGGED O.F.Fung
DATE 24.11.87
CHECKED
DATE 26.11.87

REMARKS
1. Installed a standpipe to depth 10.20m

Lam Geotechnics Limited

● Office: 2/F., 332 Lockhart Rd., Kai Kwong Comm. Bldg., Hong Kong. ● Laboratory: G/F., 218 Wan Chai Rd., Hong Kong.
● Telex: 61840 LGEOL HX ● Fax: 5-8932274 ● Tels: 5-8910563, 5-734365

DRILLHOLE RECORD

JOB NO. 1007
HOLE NO. BH-2
SHEET 2 of 2
DATE from 21.11.87 to 23.11.87

PROJECT Deep Water Bay Road Development
R.B.L. No. 573, Hong Kong

METHOD Rotary

MACHINE & NO.

FLUSHING MEDIUM Water

CO-ORDINATES
E 836982
N 811970 1KNW5B1

ROCK COREBIT T2, TNW

HOLE DIA. H 114mm

ORIENTATION Vertical

GROUND LEVEL 83.11 mPD

Drilling Progress	Casing depth/size	Water level/ time/ date	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m.)	Legend	Grade	Zone	Description
23/11		3.20m at 18:00		100	100	74	5		TNW	72.69	10.00	V	II		See sheet 1 of 2
23/11											10.42				End of investigation hole at 10.42m

11.00
12.00
13.00
14.00
15.00
16.00
17.00
18.00
19.00
20.00

kra
2

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water sample
- Water Level
- Standard penetration test
- Permeability test
- Piezometer tip
- In-situ vane shear test

LOGGED O.F.Fung
DATE 24.11.87
CHECKED
DATE 26.11.87

REMARKS

Lam Geotechnics Limited

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DRILLHOLE RECORD

JOB NO. 1007
HOLE NO. BH-3
SHEET 1 of 1
DATE from 19.11.87 to 20.11.87

PROJECT Deep Water Bay Road Development
R.B.L. No. 573, Hong Kong

METHOD Rotary

CO-ORDINATES
E 836978
N 811983

ROCK COREBIT T2, TNW

MACHINE & NO.

HOLE DIA. H 114mm

FLUSHING MEDIUM Water

ORIENTATION Vertical

GROUND LEVEL 84.66 mPD

Drilling Progress	Casing depth/size	Water level/ time/ date	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture index	Tests	Samples	Reduced Level	Depth (m.)	Legend	Grade	Zone	Description
19/11	H										0.00				Loose, dark brown, fine to coarse SAND (TOP SOIL)
				50	0				T2	84.09	0.57				GRAVEL sized fragment of moderately decompased volcanics with silty sand
								N=12	1	83.69	0.97				
				65							2.00		V		Medium dense, grey and yellowish brown, silty fine to medium SAND
									2		3.00				(Completely Decomposed VOLCANICS)
	3.56 H							N=11	3	81.10	3.56				
				100	78	54	6		T2		4.04				
		1.50m at 18:00		100	91	65	5				5.00				
19/11											5.43				
20/11		2.00m at 8:00		100	100	60	6				6.00				
									TNW		6.34		II		Strong, grey, fine grained, Slightly Decomposed VOLCANICS, closely spaced joints with limonite stains and kaoline infilling, dip 60°-70° and 20°-30°
				100	100	78	6				7.00				
											7.84				
				100	100	80	6				8.00				
											8.43				
		2.50m at 18:00		100	100	78	5				9.00				
20/11										75.04	9.62				End of investigation hole at 9.62m
											10.00				

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water sample
- Water Level
- Standard penetration test
- Permeability test
- Piezometer tip
- In-situ vane shear test

LOGGED O.F.Fung
DATE 23.11.87
CHECKED
DATE 25.11.87

REMARKS
1. Installed a standpipe to depth 9.30m

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- Tels: 5-8910563, 5-734365

DRILLHOLE RECORD

JOB NO. 1007
HOLE NO. BH-4
SHEET 1 of 1
DATE from 22.10.87 to 26.10.87

PROJECT Deep Water Bay Road Development
R.B.L. No. 573, Hong Kong

METHOD Rotary

MACHINE & NO.

FLUSHING MEDIUM Water

CO-ORDINATES
E 836981
N 812002 (11SW-2507)

ROCK COREBIT T2, TNW

HOLE DIA. H to N
114mm to 89mm

GROUND LEVEL 91.08 mPD

Drilling Progress	Casing depth/size	Water level/time/date	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m.)	Legend	Grade	Zone	Description
23/10	H			100	0				T2		0.00				GRAVEL and COBBLE sized fragment of concrete and brick
	1.10	nil at 18:00		92	0					90.08	0.50				
23/10	H										1.00				
24/10	N	nil at 8:00		97	85	0	*				1.10				Strong, light grey, fine grained, Slightly decomposed VOLCANICS, closely spaced joints with limonite stains, dip 20°–40° and 60°–70°
	2.25										2.00				
	N										2.25				
				100	80	49	5				3.00				
											3.20		II		
				100	81	40	5				4.00				
									TNW		4.35				
		3.50m at 18:00		100	100	44	8				5.00				
24/10										85.83	5.25				
26/10		4.05m at 8:00		100	100	63	8				6.00				Strong, grey, fine grained, Slightly Decomposed VOLCANICS, closely spaced joints with limonite stains, dips 60°, 70° and 20°–40°
											6.45		II		
				100	100	66	4				7.00				
26/10										83.63	7.45				End of investigation hole at 7.45m
											8.00				
											9.00				
											10.00				

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water sample
- Water Level
- Standard penetration test
- Permeability test
- Piezometer tip
- In-situ vane shear test

LOGGED O.F.Fung
DATE 27.10.87
CHECKED
DATE 28.10.87

REMARKS
1. Installed a standpipe at depth 7.30m
2. *: Cannot be determined

Lam Geotechnics Limited

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DRILLHOLE RECORD

JOB NO. 1007
HOLE NO. BH-5
SHEET 1 of 1
DATE from 12.11.87 to 20.11.87

PROJECT Deep Water Bay Road Development
R.B.L. No. 573, Hong Kong

METHOD Rotary
MACHINE & NO.
FLUSHING MEDIUM Water

CO-ORDINATES
E 836975
N 812025
11SW-D7

ROCK COREBIT T2, TNW
HOLE DIA.
GROUND LEVEL 101.20 mPD

Drilling Progress	Casing depth/size	Water level/ time/ date	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m.)	Legend	Grade	Zone	Description
17/11				90	0				T2	100.70	0.00		III		GRAVEL sized fragment of moderately decomposed volcanics
				100	72	34	*				0.50				
				98	87	58	7				1.00				
				100	100	84	5				1.80				
											2.00				
				100	96	67	9		TNW		3.00		II		Strong, grey, fine grained, Slightly Decomposed VOLCANICS, closely spaced joints with limonite stains, dip 20°–30° and 50°–60°
											3.20				
				100	100	75	7				4.00				
		1.70m at 18:00									4.55				
17/11				100	100	33	4				5.00				
18/11		2.00m at 8:00									5.40				
				100	100	70	7				5.70				
18/11										94.50	6.00				
											6.70				End of investigation hole at 6.70m
											7.00				
											8.00				
											9.00				
											10.00				

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water sample
- Water Level
- Standard penetration test
- Permeability test
- Piezometer tip
- In-situ vane shear test

LOGGED O.F.Fung
DATE 23.11.87
CHECKED
DATE 25.11.87

REMARKS
1. Installed a standpipe to depth 6.50m
2. *: Connot be determined

Lam Geotechnics Limited

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DRILLHOLE RECORD

JOB NO. 1007
HOLE NO. BH-6
SHEET 1 of 1
DATE from 30.10.87 to 6.11.87

PROJECT Deep Water Bay Road Development
R.B.L. No. 573, Hong Kong

METHOD Rotary

MACHINE & NO.

FLUSHING MEDIUM Water

CO-ORDINATES
E 836967
N 811996
1SNW SB1

ROCK COREBIT T2, TNW

HOLE DIA. H 114mm

ORIENTATION Vertical

GROUND LEVEL 92.38 mPD

Drilling Progress	Casing depth/size	Water level/ time/ date	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m.)	Legend	Grade	Zone	Description
30/10	H 0.60 H			83	0				T2	91.78	0.00				GRAVEL and COBBLE sized fragment of concrete
				100	100	100	5				0.60				
											1.00				
		1.20m at 18:00		100	100	77	6				1.80				
30/10										89.63	2.00				
31/10		1.40m at 8:00		100	100	86	5				2.75				
									TNW		3.00				Strong, grey, fine grained, Slightly Decomposed VOLCANIC, closely spaced joints with limonite stains, dips mainly 60°-70°, some 20°-30°
		1.30m at 18:00		100	100	93	4				3.70		II		
31/10		1.40m at 8:00									4.00				
2/11		1.20m at 18:00		100	100	100	4				4.70				
2/11											5.00				
3/11		1.50m at 8:00		100	100	100	5				5.43				
4/11		1.20m at 18:00		100	100	75	5				5.65				
											6.00				
4/11		1.70m at 8:00								85.73	6.65				End of investigation hole at 6.65m
		1.20m at 18:00									7.00				
											8.00				
											9.00				
											10.00				

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water sample
- Water Level
- Standard penetration test
- Permeability test
- Piezometer tip
- In-situ vane shear test

LOGGED O.F.Fung
DATE 7.11.87
CHECKED
DATE 9.11.87

REMARKS
1. Installed a standpipe at depth 6.40m

Lam Geotechnics Limited

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DRILLHOLE RECORD

JOB NO. 1007
HOLE NO. BH-7
SHEET 1 of 1
DATE from 19.11.87 to 23.11.87

PROJECT Deep Water Bay Road Development
R.B.L. No. 573, Hong Kong

METHOD Rotary
MACHINE & NO.
FLUSHING MEDIUM Water

CO-ORDINATES
E 836957
N 812032
11SW-K507

ROCK COREBIT T2, TNW
HOLE DIA. H 114mm
ORIENTATION Vertical
GROUND LEVEL 106.20 mPD

Drilling Progress	Casing depth/size	Water level/ time/ date	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture index	Tests	Samples	Reduced Level	Depth (m.)	Legend	Grade	Zone	Description
20/11	H									106.00	0.20				Loose, brown, fine to coarse SAND (TOP SOIL)
				83	0				T2	105.70	0.50		III / IV		GRAVEL sized fragment of moderately to highly decomposed volcanics
				100					1		1.00		V / IV		Very dense, whitish grey, silty fine SAND
	2.00 H							N=246	2	104.20	2.00				(Completely to Highly Decomposed VOLCANICS)
				87	0					103.80	2.40		III		GRAVEL sized fragment of moderately decomposed volcanics
20/11		1.50m at 18:00		100	50	0	12				2.80				
21/11		2.00m at 8:00		100	86	29	10				3.00				
				100	89	65	7				3.80				
				92	70	28	12		TNW		4.00				
				100	100	70	6				4.90		II		Strong, grey, fine grained, Slightly Decomposed VOLCANICS, closely spaced joints with limonite stains, dip 20°-30° and 60°-70°
				100	100	91	8				5.90				
											6.85				
		2.50m at 18:00		100	100	100	3				7.00				
21/11										97.75	7.75				
											8.00				
											8.45				End of investigation hole at 8.45m
											9.00				
											10.00				

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water sample
- Water Level
- Standard penetration test
- Permeability test
- Piezometer tip
- In-situ vane shear test

LOGGED O.F.Fung
DATE 24.11.87
CHECKED
DATE 26.11.87

REMARKS
1. Installed a standpipe to depth 8.20m

Lam Geotechnics Limited

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- Laboratory: G/F., 218 Wan Chai Rd., Hong Kong.
- Telex: 61840 LGEOL HX
- Fax: 5-8932274
- Tels: 5-8910563, 5-734365

DRILLHOLE RECORD

JOB NO. 1007
HOLE NO. BH-8
SHEET 1 of 1
DATE from 27.10.87 to 31.10.87

PROJECT Deep Water Bay Road Development
R.B.L. 573, Hong Kong

METHOD Rotary

MACHINE & NO.

FLUSHING MEDIUM Water

CO-ORDINATES
E 836951
N 812004

ROCK COREBIT T2, TNW

HOLE DIA. H 114mm

GROUND LEVEL 93.07 mPD

Drilling Progress	Casing depth/size	Water level/time/date	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m.)	Legend	Grade	Zone	Description
27/10	H 0.60 H			100	33				T2	92.92	0.15	△△△			CONCRETE SLAB
				100	0					92.72	0.30	○○○			GRAVEL sized fragment of concrete and brick
											0.35				
											0.60	V V			
				100	60	30	8				1.00	V V			Strong, light grey, fine grained, Slightly Decomposed VOLCANIC, closely spaced joints with limonite stains, dips mainly 60°–70°, occasionally 20°–30°
											1.70	V V	II		
		2.00m at 18:00		100	100	60	5				2.00	V V			
27/10										90.27	2.80	V V			
28/10		1.00m at 8:00		100	100	81	5		TNW		3.00	V V			Strong, grey, fine grained, Slightly Decomposed VOLCANIC, closely spaced joints with limonite stains, dips mainly 60°–70°, some 20°–30°
											4.00	V V			
		1.80m at 18:00		100	100	65	7				4.30	V V			
28/10											4.76	V V	II		
29/10		1.70m at 8:00		100	92	61	8				5.00	V V			
											6.00	V V			
		2.00m at 18:00		100	42	100	6					V V			
29/10										86.37	6.70				End of investigation hole at 6.70m
											7.00				
											8.00				
											9.00				
											10.00				

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water sample
- Water Level
- Standard penetration test
- Permeability test
- Piezometer tip
- In-situ vane shear test

LOGGED O.F.Fung
DATE 2.11.87
CHECKED
DATE 5.11.87

REMARKS
1. Installed a standpipe at depth 6.50m

Lam Geotechnics Limited

● Office: 2/F., 332 Lockhart Rd., Kai Kwong Comm. Bldg., Hong Kong. ● Laboratory: G/F., 218 Wan Chai Rd., Hong Kong.
● Telex: 61840 LGEOL HX ● Fax: 5-8932274 ● Tels: 5-8910563, 5-734365

DRILLHOLE RECORD

JOB NO. 1007
HOLE NO. BH-9
SHEET 1 of 2
DATE from 6.11.87 to 11.11.87

PROJECT Deep Water Bay Road Development
R.B.L. No. 573, Hong Kong

METHOD Rotary
MACHINE & NO.
FLUSHING MEDIUM Water

CO-ORDINATES
E 836945
N 811985
15NW SB1

ROCK COREBIT TNW
HOLE DIA. H 114mm
GROUND LEVEL 85.38 mPD

Drilling Progress	Casing depth/size	Water level/ time/ date	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture index	Tests	Samples	Reduced Level	Depth (m.)	Legend	Grade	Zone	Description
6/11	H									85.08	0.00				GRAVEL and COBBLE sized fragment (FILL)
				90					1		0.30				
		1.00m at 18:00									1.00				
6/11								N=105	2						
7/11		nil at 8:00									2.00				
											3.00				
				100					3				V / IV		Very dense, grey and yellow, silty fine SAND relic texture preserve
								N=137	4		4.00				(Completely to Highly Decomposed VOLCANICS)
											5.00				
				100					5						
	7.00 H							N=177	6						
		2.00m at 18:00		83	54	39	8			78.38	7.00				
7/11										78.20	7.18		III		Moderately strong, grey and yellowish brown, fine grained, Moderately Decomposed VOLCANICS with highly decomposed volcanics
8/11		2.50m at 8:00									7.65				
		2.00m at 18:00		100	100	92	2		TNW		8.00				
8/11											8.75		II		Strong, grey, fine grained, Slightly Decomposed VOLCANICS, closely spaced joints with limonite stains, dip 60°–70°, some 10°–30°
10/11		2.75m at 8:00		100	100	68	7				9.00				
				100	100	55	4				9.65				
10/11											10.00				

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water sample
- Water Level
- Standard penetration test
- Permeability test
- Piezometer tip
- In-situ vane shear test

LOGGED O.F.Fung
DATE 12.11.87
CHECKED
DATE 16.11.87

REMARKS
1. Installed a piezometer at depth 6.80m
2. *: Cannot be determined

Lam Geotechnics Limited

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• Telex: 61840 LGEOL HX • Fax: 5-8932274 • Tels: 5-8910563, 5-734365

DRILLHOLE RECORD

JOB NO. 1007
HOLE NO. BH-9
SHEET 2 of 2
DATE from 6.11.87 to 11.11.87

PROJECT Deep Water Bay Road Development
R.B.L. No. 573, Hong Kong

METHOD Rotary

MACHINE & NO.

CO-ORDINATES
E 836945
N 811985
1SNW5B1

ROCK COREBIT TNW

HOLE DIA. H 114mm

FLUSHING MEDIUM Water

ORIENTATION Vertical

GROUND LEVEL 85.38 mPD

Drilling Progress	Casing depth/size	Water level/ time/ date	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m.)	Legend	Grade	Zone	Description
10/11				100	100	55	4				10.00				
											11.05				Strong, grey, fine grained, Slightly Decomposed VOLCANICS, closely spaced joints with limonite stains, dip 60°–70°, some 10°–30°
		2.20m at 18:00		100	100	88	6		TNW				II		
10/11											11.85				
11/11		4.50m at 8:00		100	100	90	4				12.00				
											13.00				
11/11										72.08	13.30				End of investigation hole at 13.30m
											14.00				
											15.00				
											16.00				
											17.00				
											18.00				
											19.00				
											20.00				

kpl
vt

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water sample
- Water Level
- Standard penetration test
- Permeability test
- Piezometer tip
- In-situ vane shear test

LOGGED O.F.Fung
DATE 12.11.87
CHECKED
DATE 16.11.87

REMARKS

Lam Geotechnics Limited

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DRILLHOLE RECORD

JOB NO. 1007
HOLE NO. BH-10
SHEET 1 of 1
DATE from 19.11.87 to 23.11.87

PROJECT Deep Water Bay Road Development
R.B.L. No. 573, Hong Kong

METHOD Rotary
MACHINE & NO.
FLUSHING MEDIUM Water

CO-ORDINATES
E 836952
N 811964
15NW-B1

ROCK COREBIT TNW
HOLE DIA. H 114mm
GROUND LEVEL 71.48 mPD

Drilling Progress	Casing depth/size	Water level/ time/ date	Water Recovery %	Total core Recovery %	Solid core Recovery %	R.Q.D.	Fracture Index	Tests	Samples	Reduced Level	Depth (m.)	Legend	Grade	Zone	Description
19/11	H			100				N=44	1 D 2 D		0.00 1.00 2.00		V		Dense, yellowish brown and grey, silty fine SAND (Completely Decomposed VOLCANIC)
19/11	2.90 H	2.00m at 18:00		90					3 D	78.36	2.90				
20/11		2.00m at 8:00		100	93	22	5				4.00				
20/11		3.00m at 18:00		100	100	50	20				4.40 4.64				
21/11		3.00m at 8:00		100	78	80	3		TNW		5.00 5.95		II		Strong, grey, fine grained, Slightly Decomposed VOLCANIC, closely spaced joints with limonite stains, dip 20°-30° and 60°-70°
				100	100	90	5				7.00 7.40				
				100	100	90	4				8.00 8.50				
21/11		4.00m at 18:00		100	100	100	1			72.24	9.02				End of investigation hole at 9.02m
											10.00				

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water sample
- Water Level
- Standard penetration test
- Permeability test
- Piezometer tip
- In-situ vane shear test

LOGGED O.F.Fung
DATE 24.11.87
CHECKED
DATE 27.11.87

REMARKS

1. Installed a standpipe to depth 8.80m with filter aggregates from 2.90m to 9.02m

Lam Geotechnics Limited
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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	No. 66 Deep Water Bay Road, Shouson Hill, Hong Kong (Rural Building Lot No.573)
Site area 地盤面積	2043.869 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 Shouson Hill & Repulse Bay Outline Zoning Plan No. S/H17/13
Zoning 地帶	Residential (Group C) 3 ("R(C)3")
Applied use/ development 申請用途/發展	Proposed Minor Relaxation of Site Coverage Restriction for Permitted House Development

			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	1532.902 ☑ About 約 ☐ Not more than 不多於	0.75 ☑About 約 ☐Not more than 不多於
		Non-domestic 非住用	☐ About 約 ☐ Not more than 不多於	☐About 約 ☐Not more than 不多於
(ii)	No. of blocks 幢數	Domestic 住用	2 Houses	
		Non-domestic 非住用		
		Composite 綜合用途		

PLANNING LIMITED
規劃顧問有限公司

UNIT K, 16/F, MG TOWER
133 HOI BUN ROAD, KWUN TONG
KOWLOON, HONG KONG
九龍觀塘海濱道133號
萬兆豐中心16樓K室
[redacted]

Our Ref: S3068a/66DWBR/25/006Lg

28 November 2025

By Hand and Email

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

Dear Sir/Madam,

Proposed Minor Relaxation of Site Coverage Restriction
for Permitted House Development
in "Residential (Group C)3" Zone,
No. 66 Deep Water Bay Road, Shouson Hill, Hong Kong
- Section 16 Planning Application –
(Further Information No. 1)

Reference is made to the captioned S16 Planning Application which is scheduled for consideration by the by the Town Planning Board ("TPB") on 19 December 2025 and the comments received from various Government Departments via email from Hong Kong District Planning Office during period from 14 November to 24 November 2025.

To address comments from the relevant Government Departments, further information ("FI") has been prepared. This FI submission consists of:

Responses-to-Comments Table
Appendix 1 – Replacement Pages of Supporting Planning Statement
Appendix 2 – Updated Architectural Drawings
Appendix 3 – Replacement Pages of Traffic Assessment Report
Appendix 4 – Replacement Pages of Drainage Impact Assessment
Appendix 5 – Replacement Pages of Visual Impact Assessment
Appendix 6 – Replacement Pages of Environmental Assessment
Appendix 7 – Replacement Page of Application Form

Should you have any queries in relation to the attached, please do not hesitate to contact the undersigned at [redacted] or our Mr Wilson Man at [redacted].

Thank you for your kind attention.

Yours faithfully
For and on behalf of
KTA PLANNING LIMITED

Kitty Wong

Encl. Responses-to-Comments table with Appendices 1 to 7 (4 hardcopies)
cc. the Applicant & Team

KW/WM/vy

bsi ISO 9001 Quality Management Systems
FS 579819

Proposed Minor Relaxation of Site Coverage Restriction for Permitted House Development in "Residential (Group C) 3" and "Green Belt" Zones, No. 66 Deep Water Bay Road, Shouson Hill, Hong Kong

Comments forwarded from Hong Kong District Planning Office

Comments	Responses
Comments from Fire Services Department (Received on 14 November 2025) (Contact Person: Mr. QIU Yi, Tel.: 2733 5845)	
1. Please be informed that we have no specific comment on the proposal subject to fire service installations and water supplies for firefighting being provided to the satisfaction of the Director of Fire Services. Detailed fire safety requirements will be formulated upon receipt of the formal submission of general building plans. Furthermore, 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. Detailed fire safety requirements will be addressed in the Building Plan submission stage.
Comments from Civil Engineering and Development Department (Received on 14 November 2025) (Contact Person: Mr. Tsz Kei TSE ; Tel.: 2762 5384)	
1. It is noted that the applicant has committed in the Geotechnical Planning Review Report (Appendix 8) to undertake a natural terrain hazard study (NTHS) and to implement mitigation measures, if necessary, as part of the proposed development. Should the application be approved, an approval condition on the submission of a NTHS and implementation of the hazard mitigation measures recommended therein, as part of the development, is required.	Noted.
Comments from Hong Kong Police Force (Received on 14 November 2025) (Contact Person: Mr. Amos LAM; Tel.: 3660 1321)	
Our Police division have the following comments for your consideration: 1. During the work period, noise and nuisance caused to nearby residents should be minimized.	Noted.

Comments	Responses
2. All work must comply with the laws and regulations of the Hong Kong SAR.	Noted.
3. Ensure the safety of pedestrians at all times.	Noted.
4. Ensure that the work does not cause congestion or obstruction to traffic, including illegal parking at nearby site area.	Noted.
5. Maintain the security of the site area and prevent unauthorised access.	Noted.
Comments from Transport Department (Received on 14 November 2025) (Contact Person: Mr. Henry Chow; Tel.: 2829 5427)	
Please find below the comments on the Traffic Assessment Report from the traffic engineering viewpoint: 1. Please advise the date of the traffic survey as mentioned in paragraph 3.2.2 of the Traffic Assessment Report;	Please be advised that the traffic survey was conducted on 14 October 2025 which is a typical weekday (**Appendix 3** refers).
2. The planned development in the vicinity, including but not limited to No. 37 Shouson Hill Road and No. 39 Shouson Hill Road, should be included in your traffic assessment;	Please be advised that the planned developments in the vicinity which have been approved by Town Planning Board (TPB) and shown in Town Planning Board Statutory Planning Portal 3 (if any) are considered. For the mentioned two development sites at No. 37 Shouson Hill Road and No. 39 Shouson Hill Road, please be advised that the latest development schedules cannot be found in public domain. Nevertheless, these 2 development sites are located on Shouson Hill Road and they are closer to the junction of Wong Chung Hang Road / Shouson Hill Road as compared with the junction of Deep Water Bay Road / Island Road), majority of development traffic will be via Shouson Hill Road to Wong Chung Hang Road, thus negligible traffic will be via Deep Water Bay Road and Island Road to Wong Chung Hang Road. With consideration of the zoning of these two developments (i.e. R(C)3 zone, maximum 3 storeys in additional to 1 storey of carports is allowed with maximum plot ratio of 0.75 and maximum site coverage of 25%), it will not impose any adverse traffic impact on the concerned junctions and road links.
3. According to paragraph 4.3.1 of the Traffic Assessment Report, a traffic survey was conducted for four referenced developments on Repulse Bay Road and South Bay Road for deriving the trip generation/attraction rates for House 1, with flat size of approx. 1,370m2 GFA. Please provide the details of the survey such as survey date and period, survey methodology, occupancy of the development during survey, location of the development, etc. for reference.	Please be advised that manual classified count (MCC) surveys were conducted during AM Peak between 7:00am to 9:30am and PM Peak between 4:30pm to 7:00pm on 18 September 2025 which is a typical weekday. The surveys were conducted near the vehicular accesses of the residential houses.

Comments	Responses
4. According to Table 4.7, it is noted that the flat size of all the referenced developments (i.e. ranging from 900m2 to 1,120m2) are smaller than House 1. Besides, the surveyed trip generation/attraction rate of some of the referenced developments are zero. Please review and demonstrate that the surveyed trip generation/ attraction rate for these referenced developments could represent the traffic pattern of House 1;	Before conducting the trip generation surveys, we checked in Bravo to search the residential houses in Southern District with similar sizes and parking provision (i.e. 2 parking spaces per house) as House 1 while we noted these 4 residential houses with similar nature, their trip generation / attraction rate could represent the traffic pattern of House 1. Some larger residential houses were not chosen for trip generation survey due to their significantly large house size or different parking spaces provision, they could not represent the traffic pattern of House 1. It is noted that the surveyed trip generation / attraction rate of some of the reference development are zero. To be more conservative, zero trip will be replaced by 1 as shown in Tables 4.7 to 4.10. Among the results of the 4 surveyed Residential Houses A to D, the highest values of trip generation / attraction for Residential House B were adopted as the vehicular trips generations of the proposed development “House 1” as shown in Table 4.8 for conservative assessment purpose. Since the proposed residential redevelopment would have insignificant traffic impact on the concerned road links and junctions in the vicinity, the proposed residential redevelopment is still considered acceptable from traffic engineering point of view. The relevant amended pages in the Final Traffic Assessment Report have been updated and attached for TD’s consideration.
5. According to Drawing nos. SK1 and SK2, the width of some section of the internal road is 4m. Please review the proposed road width and demonstrate that vehicles could maneuver smoothly along the internal road; and	Please note that according to Drawing No. SK1 and SK2 in Annex A in the Final Traffic Assessment Report, the width of the vehicular ramp from G/F to Basement is 4m at straight section with further widening at bend. The width of the internal road at basement is 6m. In order to maintain a smooth manoeuvring of two-way traffic along the vehicular ramp, manual traffic control measures will be provided to control the overall traffic arrangement along the vehicular ramp. Access priority will be given to the incoming vehicle first and egress vehicle will have to wait at their own parking space at basement level until the vehicular ramp is clear. Security guards will assist and communicate through walkie-talkie / mobile phone to ensure only one vehicle will occupy the vehicular ramp at one time. As there are only 4 no. of parking spaces provided within the development, this manual traffic control measures can ensure a smooth manoeuvring of two-way traffic between G/F and Basement. Referring to SK3 to SK6 in Annex A, swept paths of private vehicles are conducted and illustrated that vehicles can manoeuvre smoothly along the internal road.

Comments	Responses
6. Please indicate the dimension of the proposed parking spaces in Drawing no. SK1.	The dimension of the proposed parking spaces is indicated in Drawing no. SK2 attached.
Comments from Drainage Services Department (Received on 14 November 2025) (Contact Person: Ms. Ray ZHOU; Tel.: 3101 2366)	
Please find our comments on DIA and SIA below: 1. Please adopt the rainfall parameters in corrigendum No. 1/2024 of SDM.	Please note that the Drainage Impact Assessment ("DIA") has been revised to incorporate the rainfall parameter in corrigendum No. 1/2024 SDM (**Appendix 4** refers). The previous results of the DIA (i.e. no adverse impacts on existing drainage infrastructure are anticipated) would remain unchanged.
2. The design allowance (12.1%) should be considered for end 21st Century Climate Change Scenario according to Corrigendum No. 1/2022 of SDM.	Please note that 16% rainfall increase factor has already been allowed in the runoff calculation in DIA report (Pages 7 and 9 of **Appendix 4** refer) according to corrigendum no. 1/2022 SDM. The previous results of the DIA (i.e. no adverse impacts on existing drainage infrastructure are anticipated) would remain unchanged.
Comments from Landscape Unit, Urban Design and Landscape Section, Planning Department (Received on 14 November 2025) (Contact Person: Mr. Chak Man NGAI; Tel.: 3565 3955)	
1. We have no adverse comments on the application from landscape planning perspective.	Noted.
<u>Advisory Comments</u> 2. It is noted that 5 dead trees within the Site are proposed to be felled. Part 9 of the application form, which indicated there is no tree felling, should be revised accordingly.	Noted and revised accordingly.
3. The applicant is reminded that approval of the application does not imply approval of the greenery coverage requirements under BD's PNAP APP-152 and/or under the lease. The greenery coverage calculation should be submitted separately to BD/LandsD for approval. Similarly for any proposed tree preservation/removal scheme, the applicant shall be reminded to approach relevant authority/government department(s) direct to obtain the necessary approval.	Noted.
Comments from Urban Design Unit, Urban Design and Landscape Section, Planning Department (Received on 14 November 2025) (Contact Person: Ms. Vanessa TSANG; Tel.: 3565 3942)	
1. Please find below our observations/comments from urban design and visual perspectives:	Noted.

Comments	Responses
The Site (about 2,043m^2) is located in Shouson Hill to the northwest of Deep Water Bay Beach. The surrounding area is characterised by 2 to 5-storey houses (about 59.8mPD to 115.7mPD) within the "R(C)3" zones. The proposed minor relaxation of site coverage does not involve additional BH beyond that permitted in the OZP. According to the Visual Impact Assessment (VIA), the visual impact of the proposed development is rated negligible as compared with the existing condition. The proposed development has incorporated terraced architectural style and adopted landscape treatment such as edge plantings and vertical green. The above design measures may promote visual interest and amenity. The VIA concludes that the proposed minor relaxation will not cause significant adverse impact in visual context. We have no objection to the conclusion.	
2. Please find below our observations/comments from urban design and visual perspectives: <u>VIA</u> (i) Figure 6.2 – The photo of the existing condition and photomontage for the proposed development appear to be zoom-in photos instead of actual views from Viewpoint 2.	Please note that Figure 6.2 has been updated which reflected the actual view from viewpoint 2 (**Appendix 5** refers).
(ii) Section 7 – Some texts in paras. 7.1.3 to 7.1.5 are inconsistent with that in Section 6, e.g. the rating of overall visual impact for all viewpoints is 'negligible', not 'negligible to enhanced'.	Noted and revised accordingly.
<u>Supporting Planning Statement (SPS)</u> (iii) Para. 4.3.1 – Ditto.	Noted and revised accordingly (**Appendix 1** refers).
<u>Architectural Drawings</u> (iv) The spot level of +104.35 of the flat roof shown in Master Layout Plan and R/F Plan is inconsistent with that shown in other drawings and the Building Height (Main Roof) mentioned in the VIA and SPS.	Please be clarified that there is a minor height difference of about 0.15m between the outdoor and indoor sections on the roof floor. As shown in the Section Plan and R/F plan, the higher spot level of about +104.5mPD instead of +104.35mPD has been adopted as the building height of roof floor for the Proposed Development (**Appendix 2** refers).
Comments from Planning Department (Received on 14 November 2025) (Contact Person: Mr. Jacky LEE; Tel.: 2231 4603)	
1. The supplementary planning statement (SPS) mentioned that the schematic design has taken into account the various site constraints (Para. 3.2.1 refers). Please provide more elaborations on the site	The Site is surrounded by low-density residential developments to its east and southeast with vegetated hillslopes of Shouson Hill forming a natural landscape backdrop at the inland side at the northwest and overlooking the seaward side of

Comments	Responses
constraints and how they affect the design (e.g. the need to relax site coverage).	Deep Water Bay to the south. It is prominently located at a higher level than other residential developments in the "(R(C)3" cluster hence it is visible from the surrounding area especially Deep Water Bay Beach and Repulse Bay Road. The prominent location of the Site with the backdrop of Shouson Hill has in fact been a major site constraint/consideration when formulating the architectural design for the Proposed Development which aims to respect the unique topographic setting. To achieve a development that respects and blends into its topographic context, a terraced massing profile has been adopted that follows the natural topography of Shouson Hill and progressively reduces in scale as it rises (i.e. from site coverage of about 37% to about 15%). Hence, minor relaxation of site coverage restriction to not more than 37% would be required in order to address the topographic constraint and avoid intrusion of the ridgeline. The amenity of the Proposed Development will be greatly enhanced as compared to the existing traditional rectangular and rigid building form upon redevelopment. In addition, the Proposed Development has been carefully designed to largely re-use the existing lower cut platform for the basement carport, requiring only minimal additional excavation and backfilling. Such design would significantly reduce any possible geotechnical, landscape and ecological impacts onto the surrounding hillside environment.
2. Please note we have the following observations on the architectural drawings in **Appendix 1**:	
(i) The GFA of House 1 is significantly greater that House 2 (i.e. almost 8.5 times). It is also observed that an "owners corporation office" and a "caretaker quarter" are proposed at G/F of House 1. Please provide justification for such design;	Please note that House 1 is proposed to serve as the owner's family residence, while the smaller House 2 is intended to serve as a guest house providing comfortable short-stay accommodation for visiting relatives and friends. Please also note that the owner's corporation office has been removed and the area would only be used as caretaker quarter (**Appendix 2** refers).
(ii) B/F layout: the location and position of the lift, E&M room and the surrounding staircases at B/F mismatch with the layout of other floors and section plans. Please check and rectify;	Noted. The B/F layout has been revised accordingly (**Appendix 2** refers).
(iii) following item (ii) above, you are also reminded to check whether further revisions on the plan "Percentage of area for car parking use" and relevant calculation be required. Please ensure that the predominant use of the carport level should be for car parking purpose	Noted. The plan on "Percentage of area for car parking use" and relevant calculation have been revised accordingly (**Appendix 2** refers).

Comments	Responses
with not less than 50% of the carport level areas dedicated for car parking use (including carpark associated uses such as driveways and ramps) as per Joint Practice Note No. 5 (JPN 5);	
House 1 (iv) please provide a top roof layout and indicate the top level of the lift and lift machine room for the House. With reference to Section B, it is noticed that the top roof level would range from 108mPD to 109.7mPD. Please review and ensure that all the roof-top structure and /or roof-top architectural features are in order. The criteria for rooftop structures for the purpose of administering building height restriction set out in JPN 5 should be observed;	Please note that the layout of the top roof has been supplemented on the R/F plan (**Appendix 2** refers). The top roof level would range from 107.5mPD to 109.7mPD. All rooftop structures would be not more than 3m, except the lift tower with not more than 5.2m above the main roof. The proposed top roof levels would fully comply with the administering building height restriction set out in JPN 5.
(v) it is noticed that part of House 1 (i.e. the area marked 'Formal Living' at G/F of the house) would have a floor-to-floor height of about 8m. Please provide a plan to demonstrate the section of that part of the House and provide justifications for the floor-to-floor height.	As shown in the updated section D at **Appendix 2**, there is a structural and E&M zone in the ceiling of the formal living room. The floor-to-floor height of the 'Formal Living' room at G/F is only 7m. The structural and E&M zone will be required for a deep beam that spans between the living room, and the ductwork for air conditioner uses under the beam, which would be covered by false ceiling. Hence, the proposed void at the Proposed Development complies with the maximum headroom of void (7m) for houses development stipulated in PNAP-APP2.
(vi) 2/F layout: please indicate the proposed use for the space adjacent to the "indoor pool";	Please note that the space adjacent to the "indoor pool" on 2/F layout plan is a "indoor pool facility area".
House 2 (vii) 1/F layout: please indicate the proposed use for the room inside the "bedroom" on the layout plan.	Please note that the room inside the "bedroom" on 1/F layout is a "store room".
3. The above observations are not exhaustive. Please make sure the drawings and photomontages in the SPS and appendices are consistent and reflect the latest design of the proposed development.	Noted.
4. In the TIA, the GFA for House 1 and 2 are about 1,370sq.m. and 162sq.m. respectively (in table 2.3), which are different from the GFA set out in table 4.8 (i.e. about 1,370sq.m. and 180sq.m). Grateful if you could clarify the GFA for House 1 and 2.	Noted. Please be clarified that the GFA for House 2 is about 162m^2 and Table 4.8 in the Traffic Impact Assessment has been revised accordingly (**Appendix 3** refers).

Comments	Responses
Comments from Lands Department (Received on 14 November 2025) (Contact Person: Ms. Irene LI; Tel.: 2835 1552)	
1. The subject site falls within RBL 573 ("the Lot"), which is held under Government Lease dated 16.4.1968 as varied by a Deed of Variation dated 9.5.1988, and is restricted for private residential purposes. The permitted maximum gross floor area and site coverage under lease are 1,532.89m^2 and 25% of the area of the Lot respectively. The proposed development with a site coverage of not more than 37% (i.e. exceeding 25%), a total GFA of 1,532.902m^2 (i.e. exceeding 1,532.89m^2) and a carport at basement not directly under the building(s) will be in breach of the lease restrictions.	Noted.
2. We reserve our comments on the detailed design of the proposed development as shown on the Architectural Drawings at Appendix 1, which will be considered during the building plan submission stage.	Noted.
3. Should the proposed application be approved by the Town Planning Board, the registered owner of the Lot is required to apply to LandsD for a lease modification for implementation of the proposal. Upon receipt of the formal application, LandsD would process such application in the capacity of a landlord and there is no guarantee that the application will be approved. If the application is approved, it will be subject to such terms and conditions, including payment of premium and administrative fee, as may be imposed by LandsD at its absolute discretion.	Noted.
Comments from Environmental Protection Department (Received on 14 November 2025) (Contact Person: Mr. Andy Ko; Tel.: 2835 1011)	
1. The Planning Statement comprises an Environmental Assessment (EA) and Sewerage Impact Assessment (SIA) to support the future planning application. Please find below our technical comments on the Planning Statement and EA for the applicant's follow up:	Noted.
Planning Statement 2. Please add a section in Section 4.6 or a paragraph under Section 4.6.6 of the Planning Statement to present the findings of Land Contamination Section (i.e. Section 7) of the EA.	Noted. Findings of land contamination section in Environmental Assessment has been incorporated in the Planning Statement (**Appendix 1** refers).
Environmental Assessment 3. Section 1.1.2 – Please mention the land contamination assessment in the section.	Section 1.1.2 has been updated (**Appendix 6** refers).

Comments	Responses
4. Section 4 – There are two Table 4.6, please revise.	Table 4.6 and Table 4.7 have been revised respectively (**Appendix 6** refers).
5. Section 6.4.3 – The term "minimal" is subjective and can be misleading. Please remove this term. Instead, the consultant may wish to specify whether any adverse environmental impact is anticipated.	Section 6.4.3 has been revised (**Appendix 6** refers).
6. Section 7.1 – It is suggested to include the latest aerial photographs for completeness.	Latest aerial photograph has been added (**Appendix 6** refers).
Comments from Building Department (Received on 24 November 2025) (Contact Person: Mr. CHEUNG Suet-ching; Tel.: 2626 1371)	
1. Please be advised that GFA of the proposed void in house with floor-to-floor height about 8m at "Formal Living" on G/F may not be exempted from GFA calculation under PNAP APP-2 (extracted as attached for reference). For other issues, our previous comments vide our memo dated 6 June 2025 are still valid.	As shown in the updated section D at **Appendix 2**, there is a structural and E&M zone in the ceiling of the formal living room. The floor-to-floor height of the 'Formal Living' room at G/F is only 7m. The structural and E&M zone will be required for a deep beam that spans between the living room, and the ductwork for air conditioner uses under the beam, which would be covered by false ceiling. Hence, the proposed void at the Proposed Development complies with the maximum headroom of void (7m) for houses development stipulated in PNAP-APP2.

Comments	Responses
1. Exemption Criteria for Exclusion of Voids in Duplex Domestic Flats and Houses from Gross Floor Area Calculations →	

	Duplex Flats	Houses
UFS[1] of premises	150 m^2 (min.)	250m^2 (min.)
% of void to UFS of premises	10% (max.)	5% (max.)
% of void to total domestic GFA	Only two levels of voids will be allowed for each residential tower block, subject to a maximum of 0.5%[2] of the total domestic GFA of the development.	N.A.
Headroom of void	6.5m (max.)	7.0m (max.)[3]
Location of void	Living/ dining room or entrance foyer	Living/ dining room or entrance foyer

(1) "UFS" means any floor space other than staircases, staircase halls, lift landings, the space used in providing water-closet fitments, urinals and lavatory basins and the space occupied by machinery for any lift, air-conditioning system or similar services.

(2) The "0.5% cap" will be applied with some flexibility for low-rise and low-density flat-type development which is similar to house-type development. Each case will be considered on individual merits.

(3) In case of sloping ceiling resulted from a pitch roof, the headroom should be measured to the mean level of the underside of the portion of ceiling that is above the void area.

2. Conditions of Exemption

(i) The Building Authority (BA) is satisfied that the void design is compatible with the type of residential development and that effective measures to prevent any possible abuse are provided, such as up-stand beam design, voids fronted by large glazing panels facing the exterior, no adjoining structural wall or beam, etc.

(ii) The development after excluding the area of voids from GFA calculation will not contravene the development restrictions relating to building height, GFA, etc. in the relevant statutory town plan and any specific provisions or restrictions in the lease conditions.

2. Detailed comments under the Building Ordinance will be provided upon building plan submission to the Buildings Department.	Noted.

Comments	Responses
Comments from Architectural Services Department (Received on 21 November 2025) (Contact Person: Mr. Sherman SUM; Tel.: 2582 5314)	
1. According to Figures 4.3 and 4.5 of the revised Visual Impact Assessment, it is noted that the proposed carports in basement of the development have a significant visual impact. The overall bulk of the proposed development appears large, as the extent of the carports extending beyond the ground floor footprint is not included in the site coverage calculation. The large flat roof provided on G/F above the carport serves as a usable flat roof accessible from G/F of the houses. Due to the significant visual impact on the neighbouring developments, it is suggested that the applicant should review the building design and supplement the relevant information, such as the extent of soil filling and the retaining structures, and seek comments from the relevant departments at an early stage. Furthermore, the proposed carports create a stilting effect, which is considered undesirable from visual impact point of view and may not be compatible with the surrounding setting, subject to PlanD's view.	***Incorporation of Landscaping Measures to reduce the Visual Bulk of the Basement Structure*** Please note that Figures 4.3 and 4.5 of the revised Visual Impact Assessment ("VIA") are aerial / close-up views to illustrate the incorporation of various design merits of the Proposed Development. As demonstrated in the photomontages from the various public viewpoints in the revised VIA, the basement carport will be partially screened off by the existing vegetation at the natural hillslope. The Applicant has also considered other options such as a carport without the 2m setback for planting strip; however, the visual impact would be far less favourable as the structure would appear rigid and monolithic without the softening effect of the continuous planting strip. With the proposed 2m setback of the basement façade to accommodate a continuous planting strip and the application of edge planting, the visual bulk of the basement structure will be greatly reduced. Together with the terraced massing profile (with progressive setback from the site boundary as it rises) responding the natural topography of Shouson Hill, the visual impact of the Proposed Development from the various public viewpoints is considered negligible. Urban Design and Landscape Section of Planning Department has indicated no comment to the Planning Application from urban design point of view. ***Site Coverage Calculation*** Regarding the calculation of site coverage, it should be noted that the proposed basement carport is not accountable in the site coverage calculation according to the Building (Planning) Regulations (Cap. 123F). The subject of this Planning Application (i.e. minor relaxation of site coverage restriction) is relating to the above-ground building footprint and relevant Government Departments have indicated no adverse comment on the site coverage calculation. **Minimal Excavation and Backfilling** The Proposed Development has been carefully designed to largely re-use the existing lower cut platform for the basement carport, requiring only minimal additional excavation and backfilling. Such design would reduce any possible geotechnical, landscape and ecological impacts onto the surrounding hillside environment. ***The Scale of the Basement Carport is Not Excessive*** As demonstrated in the carport calculation in **Appendix 2**, over 50% of the carport area is dedicated for carparking use in accordance with Joint Practice Note No.5. Hence, the scale of the basement is not excessive.

Comments	Responses
	Public Concerns on the Planning Application Can Be Duly Addressed Please note that only one public comment was received during the statutory public inspection period relating to the potential "wall effect" and disturbance to the low-density character of the area. Please note that the terracing / stepping design, progressive reduction of building footprint from 37% to 15%, and extensive multi-level greenery would duly address and alleviate these concerns, resulting in a development that is more harmonious with the surrounding topographical context than the existing rigid structures. In conclusion, the basement carport is sensitively integrated into the existing topography with extensive landscape screening and does not create an undesirable stilting effect. The photomontages submitted in the VIA also clearly illustrated that the overall visual impact on neighbouring developments and the surrounding low-density residential setting is minimal and no major public concerns have been raised during the public consultation period. The current Planning Application has also been circulated to relevant Government Departments, including Lands Department, Buildings Department, and Planning Department and no adverse comment has been received to date. Soil filling and design of retaining structure shall comply with relevant guidelines such as LAO Practice Notes No. 3/2020. Detailed information will be submitted during Building Plan stage.

Compiled by: KTA
Date: 28 November 2025

Appendix 1

Replacement Pages of Supporting Planning Statement

environmental quality and respect the existing character of the area.

4.3 The Proposed Development Will Bring About Enhancement to the Overall Aesthetic Coherence of the Area

4.3.1 The Visual Impact Assessment ("VIA") in **Appendix 4** analysed the visual appraisal of the Proposed Development with minor relaxation of site coverage in terms of visual composition, visual obstruction, effect on public views and effect on visual resources against existing condition. The photomontages revealed that the Proposed Development would result in negligible visual change from the chosen public viewpoints.

4.3.2 Compared with the existing rigid and bulky building blocks, the Proposed Development has adopted an interesting built form, creative articulation of building edges, variations in building height and façade setback. The larger footprint at G/F has allowed a gradual descending of footprint at 1/F and 2/F with site coverage of about 29% and 15% respectively. Varying levels of flat roof and stepped built form have been incorporated in the building design. The form and mass of the proposed building would create a more synergistic and visually permeable layout amidst the backdrop of Shouson Hill which would not affect the visual openness towards the visual resources. Ample greenery at multiple levels have been proposed to soften the building bulk and enhance the sense of visual integration, in particular the building edges fronting onto low-rise residential cluster at its southeast. With the introduction of special landscape treatment at the basement façade, the perceived building bulk could also be reduced. It is believed that the interesting and sensitive architectural design will bring enhancement to the overall aesthetic coherence of the area.

4.4 Continue to Meet the Prevailing Planning Intention of the "Residential (Group C)" Zone

4.4.1 The Proposed Development is in line with the statutory planning intention in respect of the "R(C)3" zone for low-rise, low-density residential development. "House" use is always permitted under "R(C)3" zoning. The proposed plot ratio of 0.75 and 3 domestic storeys with 1 storey of carports are conforming to the development parameters of the "R(C)3" zone.

4.4.2 It is stated in the "Remarks" section of the Statutory Notes that "*based on the individual merits of a development or redevelopment proposal, minor relaxation of the plot ratio, site coverage and building height restrictions may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance*". The proposed minor relaxation of site coverage restriction will enable the Proposed Development to accommodate the permissible PR in a larger floorplate and allow more design flexibility in the domestic block to soften the building bulk and to enable a development

the operational phase, the redevelopment with the same use is not expected to introduce additional air pollution sources, ensuring that air quality remains comparable to existing conditions. With the implementation of the recommended environmental mitigation measures, no adverse environment impact from the proposed development is anticipated.

Noise Aspects (Appendix 5 refers)

4.6.5 The noise impact assessment evaluates potential noise impacts during construction and operation. Construction activities will primarily use powered mechanical equipment. With noise mitigation measures implemented, including the use of temporary acoustic barriers, and avoiding simultaneous operation of noisy equipment, the potential impacts on nearby noise-sensitive receivers could be minimized. The operational phase will include fixed plant noise sources, which are expected to comply with acceptable noise levels. With the implementation of the recommended environmental mitigation measures, no adverse environment impact from the proposed development is anticipated.

Waste Management Aspect (Appendix 5 refers)

4.6.6 Review on the potential impact form waste management perspective has been conducted. During construction, the potential waste generated from the existing building has been categorized into construction and demolition materials, chemical waste, and general refuse. Management practices will focus on minimizing waste generation, encouraging recycling, and ensuring proper disposal methods. Moreover, a Waste Management Plan will be developed to outline handling procedures, aiming to mitigate environmental impacts associated with waste. With the implementation of the recommended environmental mitigation measures, no adverse environment impact from the proposed development is anticipated.

Water Quality Aspect (Appendix 5 refers)

4.6.7 The potential water quality impacts during construction phase will primarily arise from surface runoff and accidental chemical spills. To prevent contamination, good site practices should be implemented and complied with the Water Pollution Control Ordinance. During operation, the proposed development is expected to manage surface runoff effectively, ensuring compliance with local regulations and minimal adverse impacts on water quality. With the implementation of the recommended environmental mitigation measures, no adverse environment impact from the proposed development is anticipated.

Land Contamination Aspect (Appendix 5 refers)

4.6.8 The Site has been used for residential purposes since 1963. According to the historical aerial photographs between Year 1963 and Year 2020, no

potential land contamination issues are anticipated due to the existing and historical land uses.

Sewerage Aspect (Appendix 6 refers)

4.6.9 The potential sewerage impact arising from the Site has been quantitatively assessed by comparing the estimated sewage flow from the Proposed Development and the capacity of the existing sewerage system in the vicinity. While the Proposed Development will have reduced population and the size of swimming pool, the overall sewerage discharge from the site will be reduced by 15.2%. The existing permanent sewerage facilities, comprising underground vitrified clay pipe with 150mm diameter and manholes, the government sewer at Deep Water Bay Road has sufficient capacity for the sewerage discharge from the site. The SIA concludes that the Proposed Development would not have adverse impact to the sewerage facility at the vicinity.

Drainage Aspect (Appendix 7 refers)

4.6.10 The Drainage Impact Assessment has been conducted to assess the potential impact on existing drainage infrastructure and evaluates changes in stormwater runoff resulting from the Proposed Development. Compared with the existing condition of the Site, the Proposed Development improves drainage efficiency by consolidating runoff into a single discharge point at the southwestern corner of the Site. No uncontrolled runoff will flow onto government slopes or adjacent property. While the assessment illustrated that the utilization rate of the 600mm U-channel is only 12.7%, there is sufficient capacity to accommodate the increased flows and no adverse impacts are anticipated on the existing drainage infrastructure.

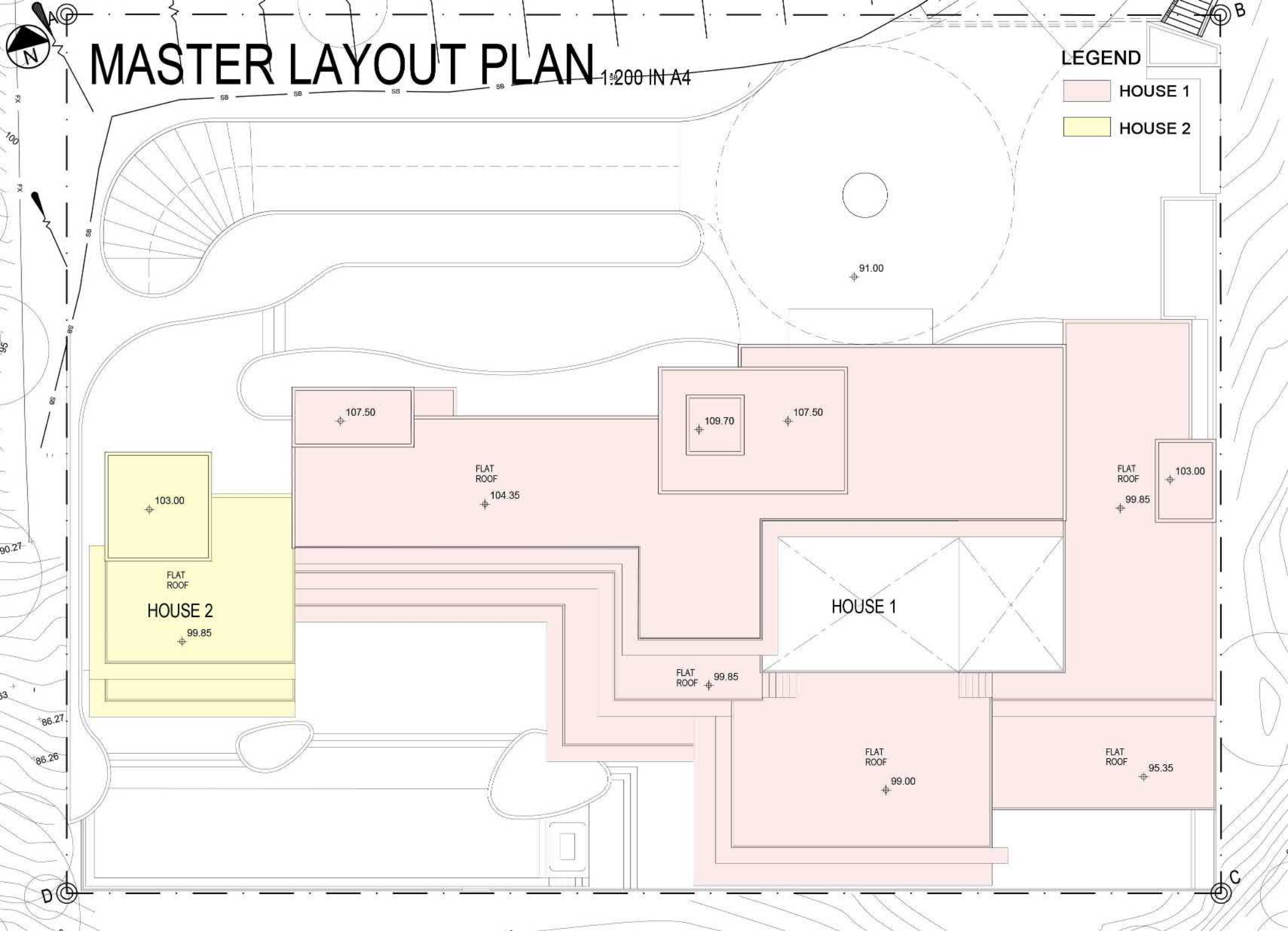
Geotechnical Aspect (Appendix 8 refers)

4.6.11 To assess the geology of the Site and identify potential geotechnical constraints, a Geotechnical Planning Review Report has been prepared. According to the Hong Kong Geological Survey Map Sheet, no fault or photo lineament has been recorded within or in the vicinity of the Site. Furthermore, various landslides inventories and studies recorded that none relict or recent landslides are observed within and in the surrounding of the Site. The schematic geotechnical works for the Proposed Development has also been included in the report to demonstrated that the Proposed Development is geotechnically viable. Any geotechnical features within the site will be upgraded to meet current engineering standards if required. A comprehensive site investigation is recommended to confirm subsurface conditions, which will inform the foundation design and excavation plans. A monitoring program will also be implemented to ensure safety during the demolition and construction phases.

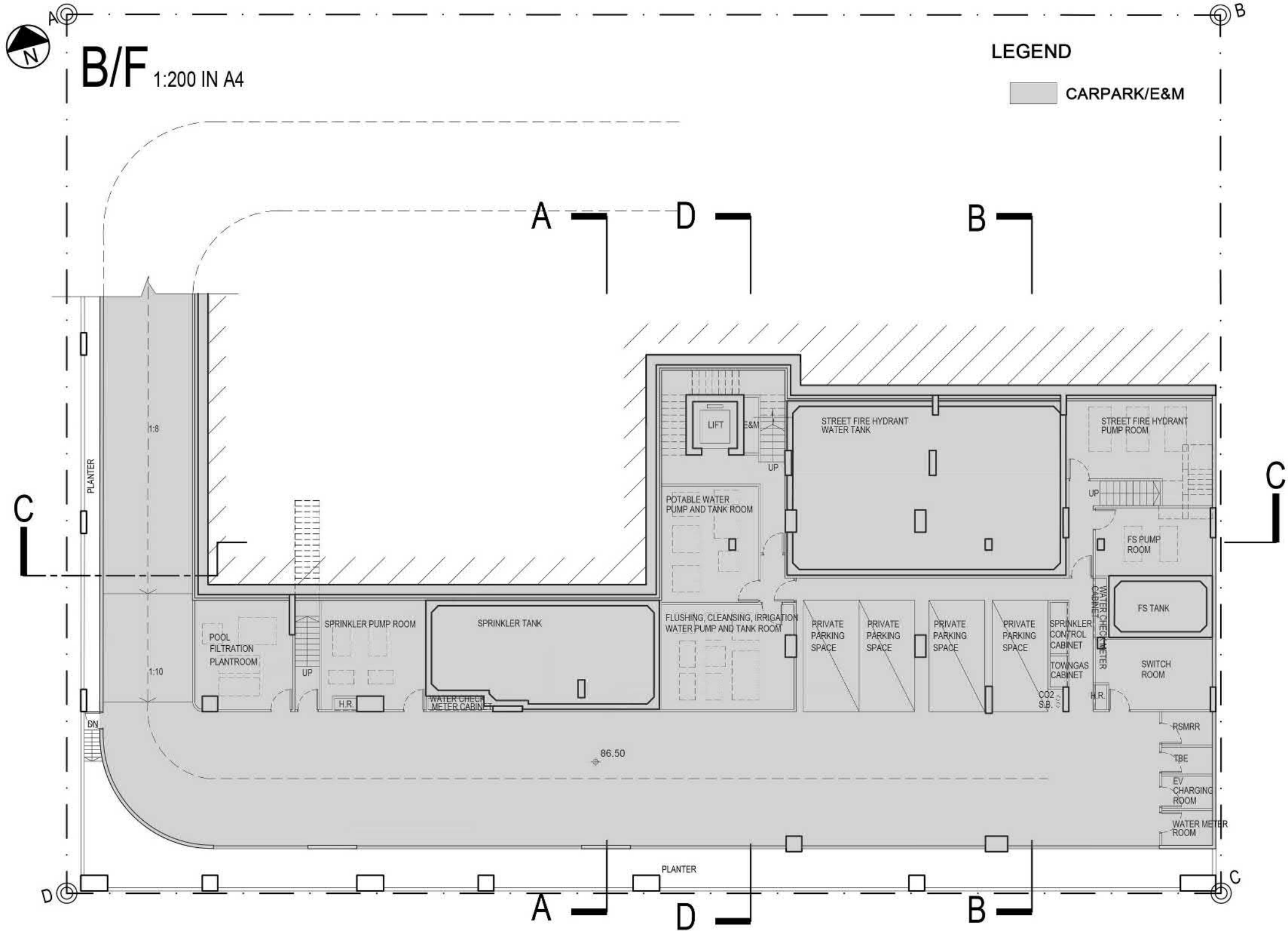
Appendix 2

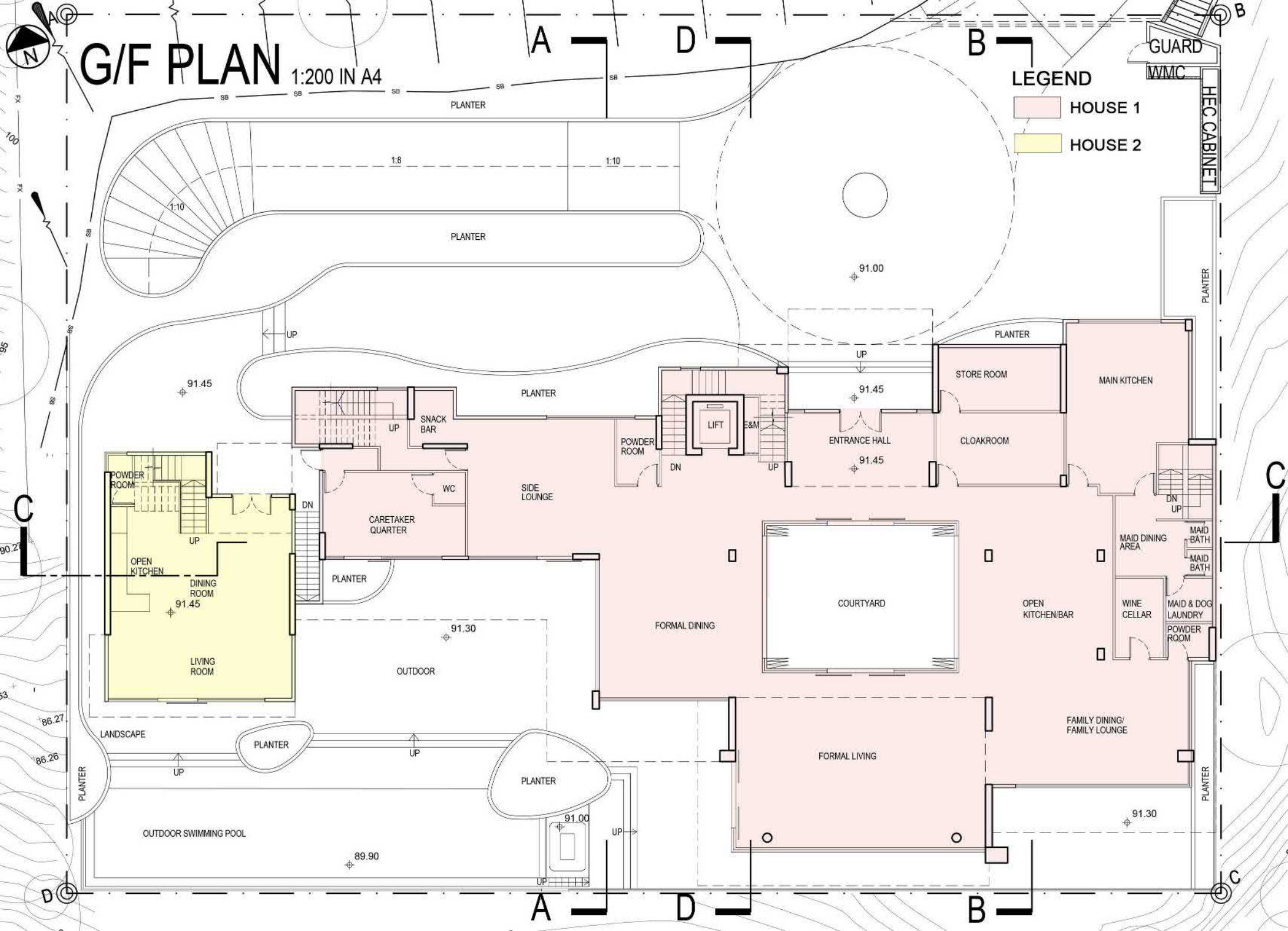
Updated Architectural Drawings

MASTER LAYOUT PLAN 1:200 IN A4



B/F 1:200 IN A4


LEGEND
CARPARK/E&M
A
B
C
D
1:8
1:10
PLANTER
LIFT
E&M
UP
STREET FIRE HYDRANT WATER TANK
STREET FIRE HYDRANT PUMP ROOM
POTABLE WATER PUMP AND TANK ROOM
FS PUMP ROOM
FS TANK
WATER CHECK METER CABINET
POOL FILTRATION PLANTROOM
SPRINKLER PUMP ROOM
SPRINKLER TANK
FLUSHING, CLEANSING, IRRIGATION WATER PUMP AND TANK ROOM
PRIVATE PARKING SPACE
SPRINKLER CONTROL CABINET
TOWNGAS CABINET
SWITCH ROOM
H.R.
CO2 S.B.
DN
86.50
RSMRR
TBE
EV CHARGING ROOM
WATER METER ROOM
PLANTER


G/F PLAN 1:200 IN A4
LEGEND
HOUSE 1
HOUSE 2
GUARD
WMC
HEC CABINET
PLANTER
1:8
1:10
1:10
91.00
91.45
91.45
91.45
91.30
91.30
91.00
89.90
86.27
86.26
UP
SNACK BAR
LIFT
E&M
POWDER ROOM
ENTRANCE HALL
CLOAKROOM
STORE ROOM
MAIN KITCHEN
SIDE LOUNGE
WC
CARETAKER QUARTER
POWDER ROOM
OPEN KITCHEN
DINING ROOM
LIVING ROOM
COURTYARD
FORMAL DINING
OPEN KITCHEN/BAR
MAID DINING AREA
MAID BATH
MAID BATH
WINE CELLAR
MAID & DOG LAUNDRY
POWDER ROOM
FAMILY DINING/ FAMILY LOUNGE
FORMAL LIVING
OUTDOOR
LANDSCAPE
OUTDOOR SWIMMING POOL
A
B
C
D

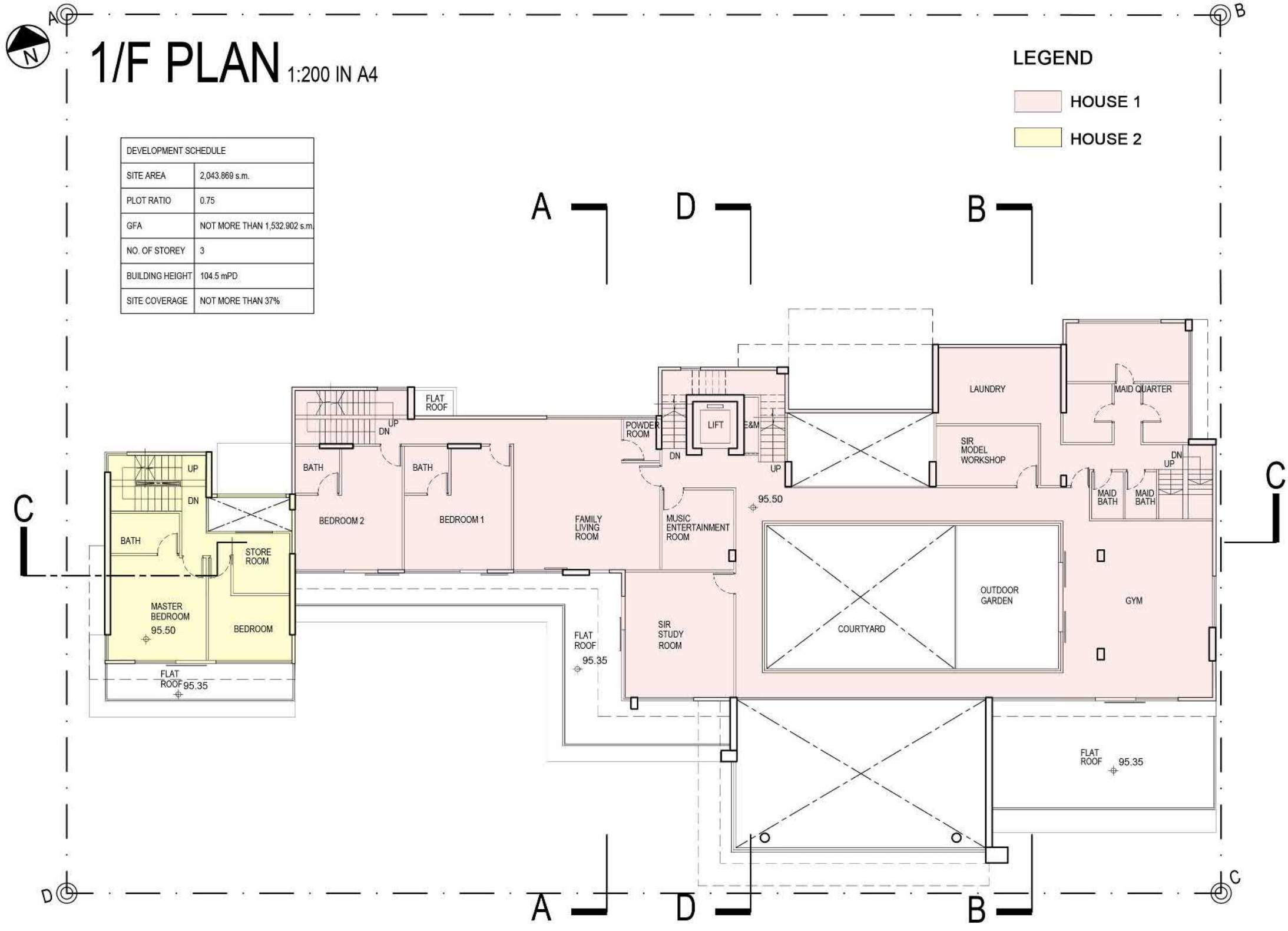
1/F PLAN 1:200 IN A4

DEVELOPMENT SCHEDULE	
SITE AREA	2,043.869 s.m.
PLOT RATIO	0.75
GFA	NOT MORE THAN 1,532.902 s.m.
NO. OF STOREY	3
BUILDING HEIGHT	104.5 mPD
SITE COVERAGE	NOT MORE THAN 37%

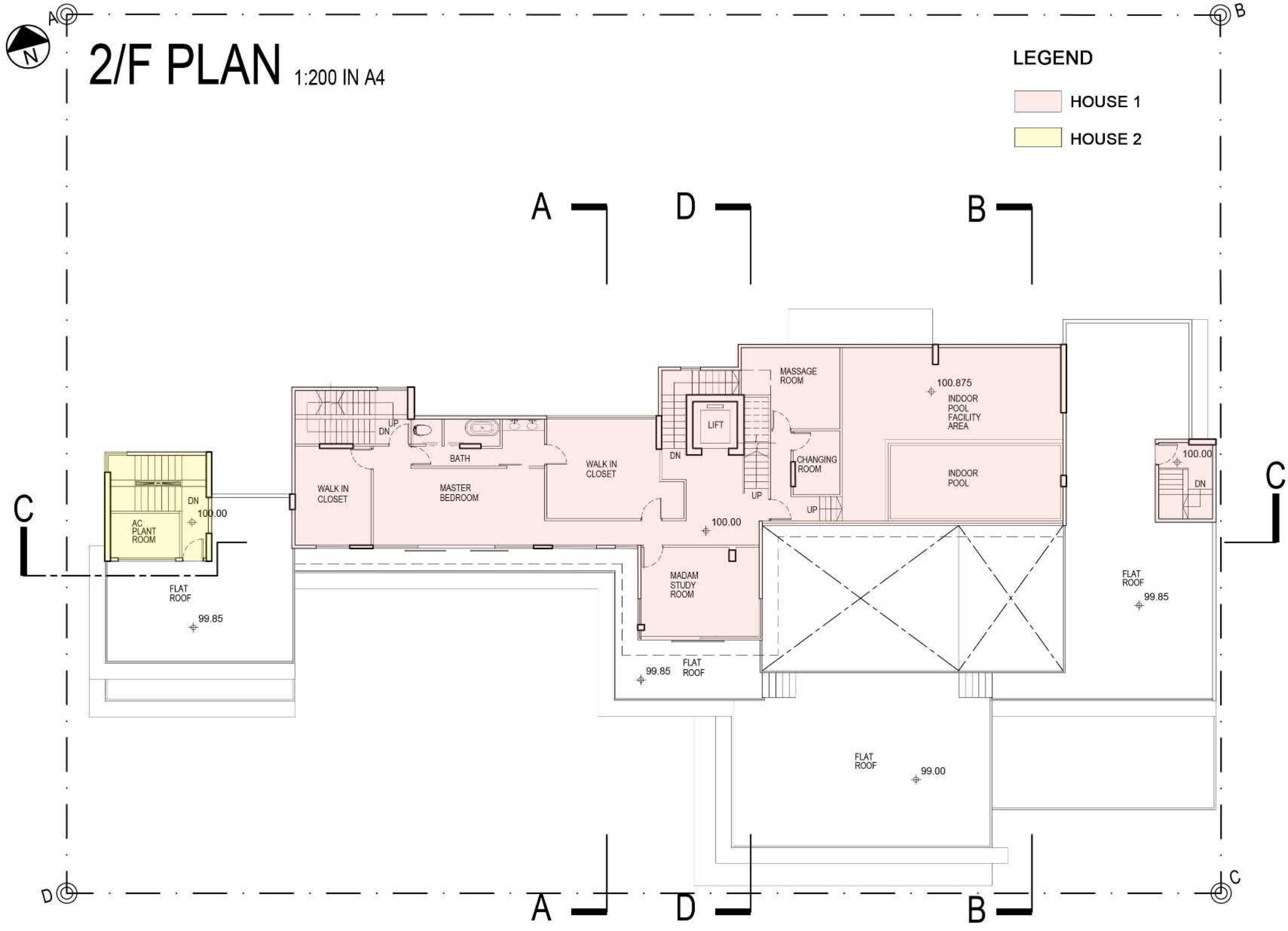
LEGEND

HOUSE 1

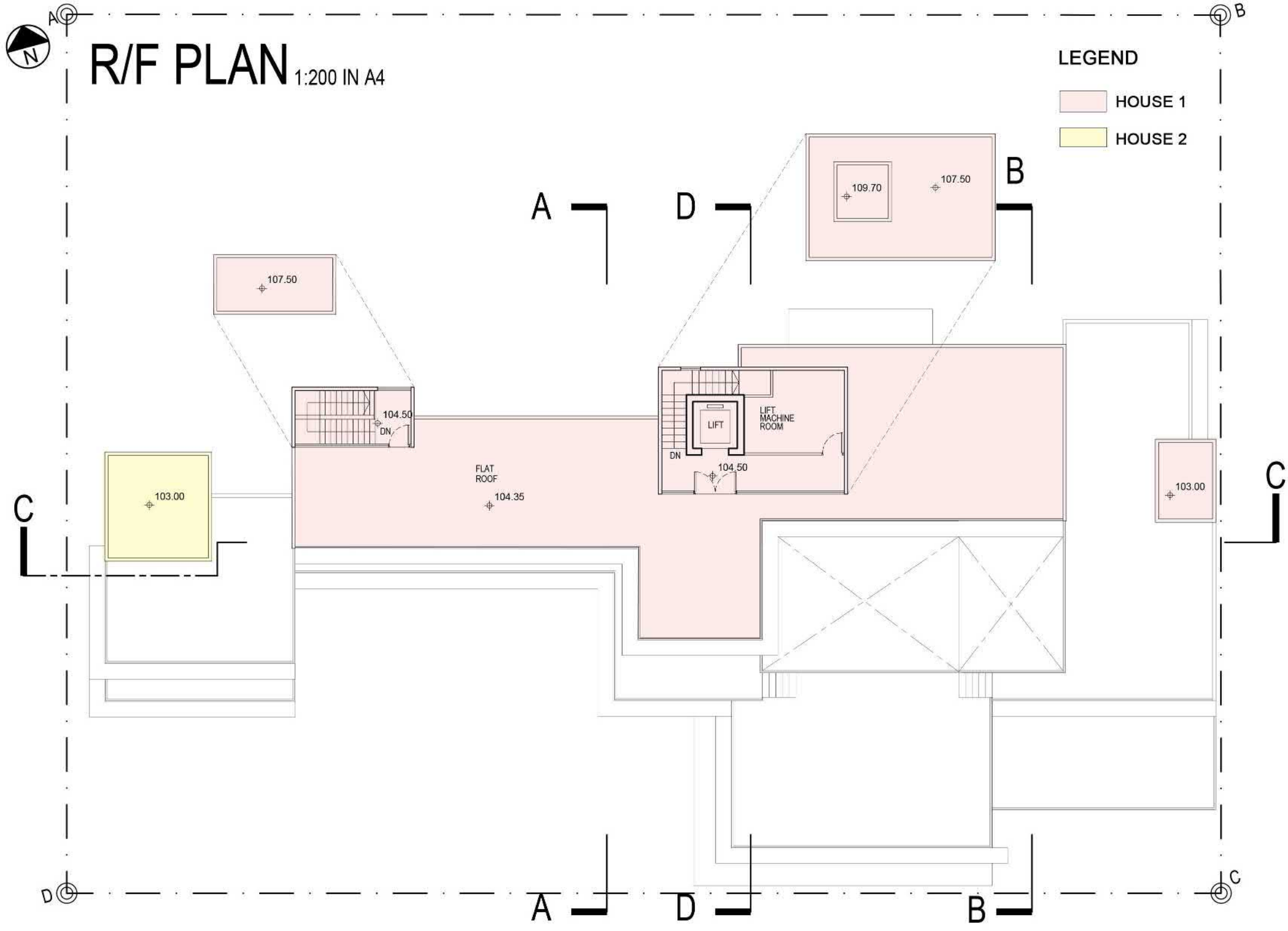
HOUSE 2

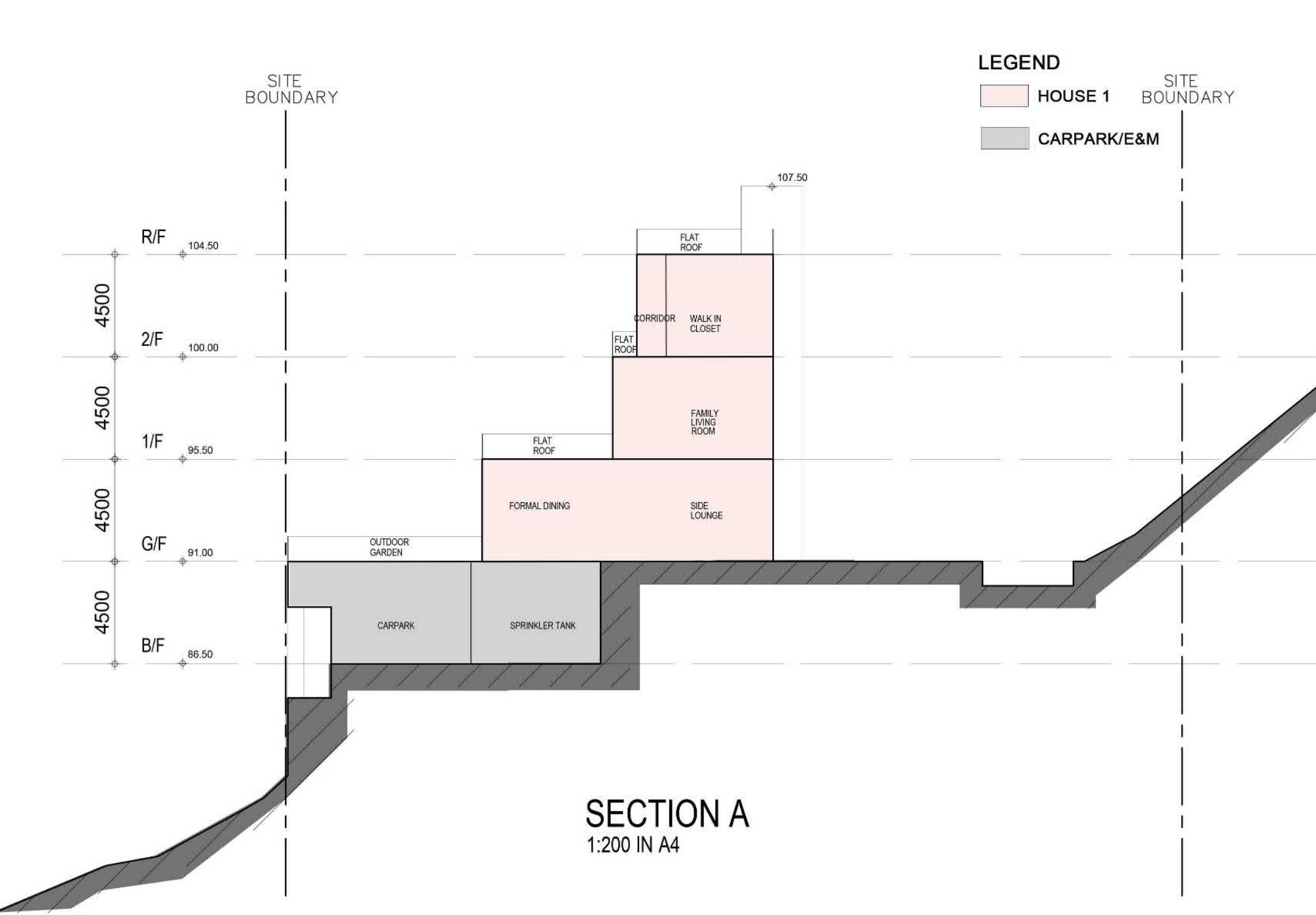


2/F PLAN 1:200 IN A4



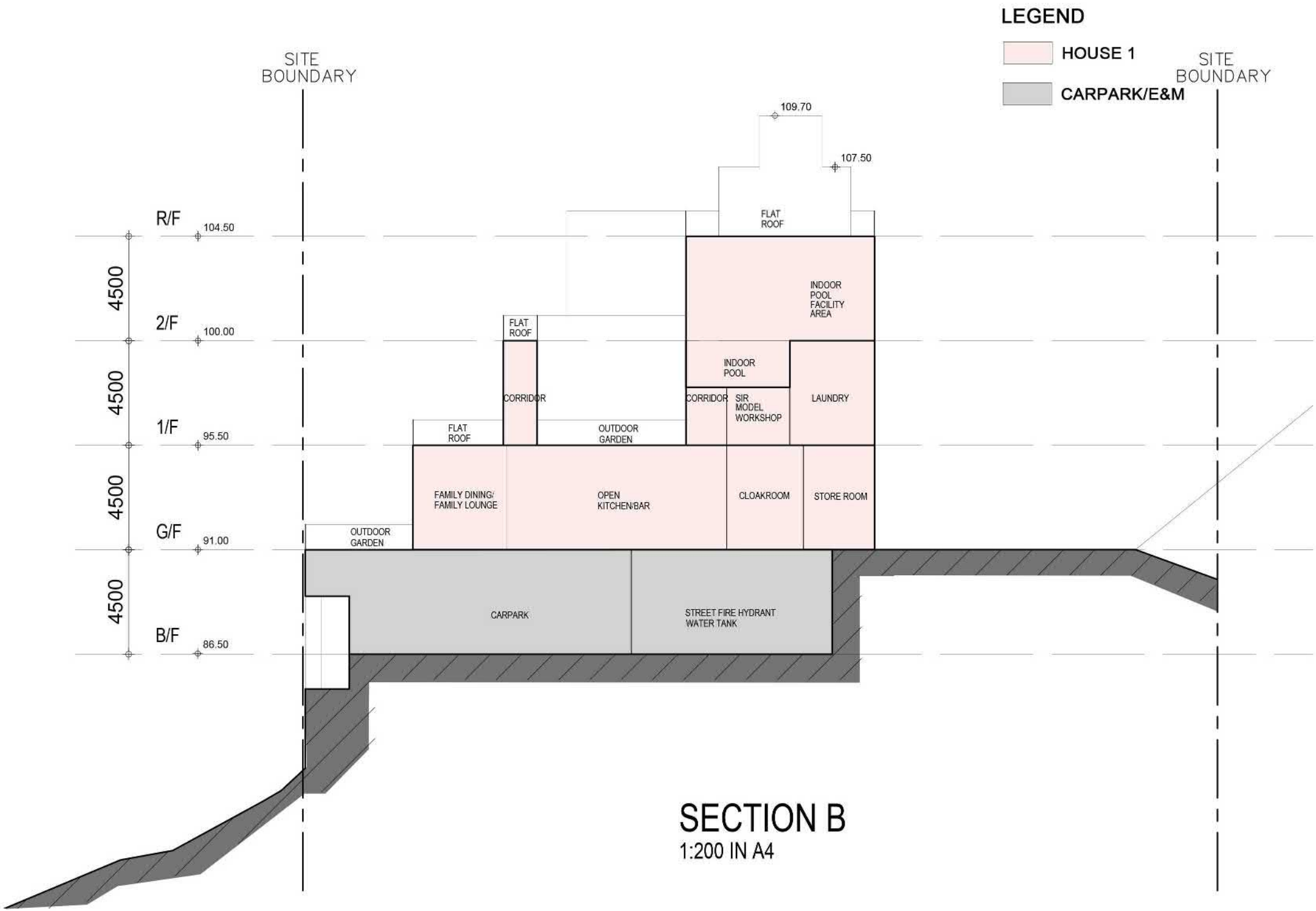
R/F PLAN 1:200 IN A4





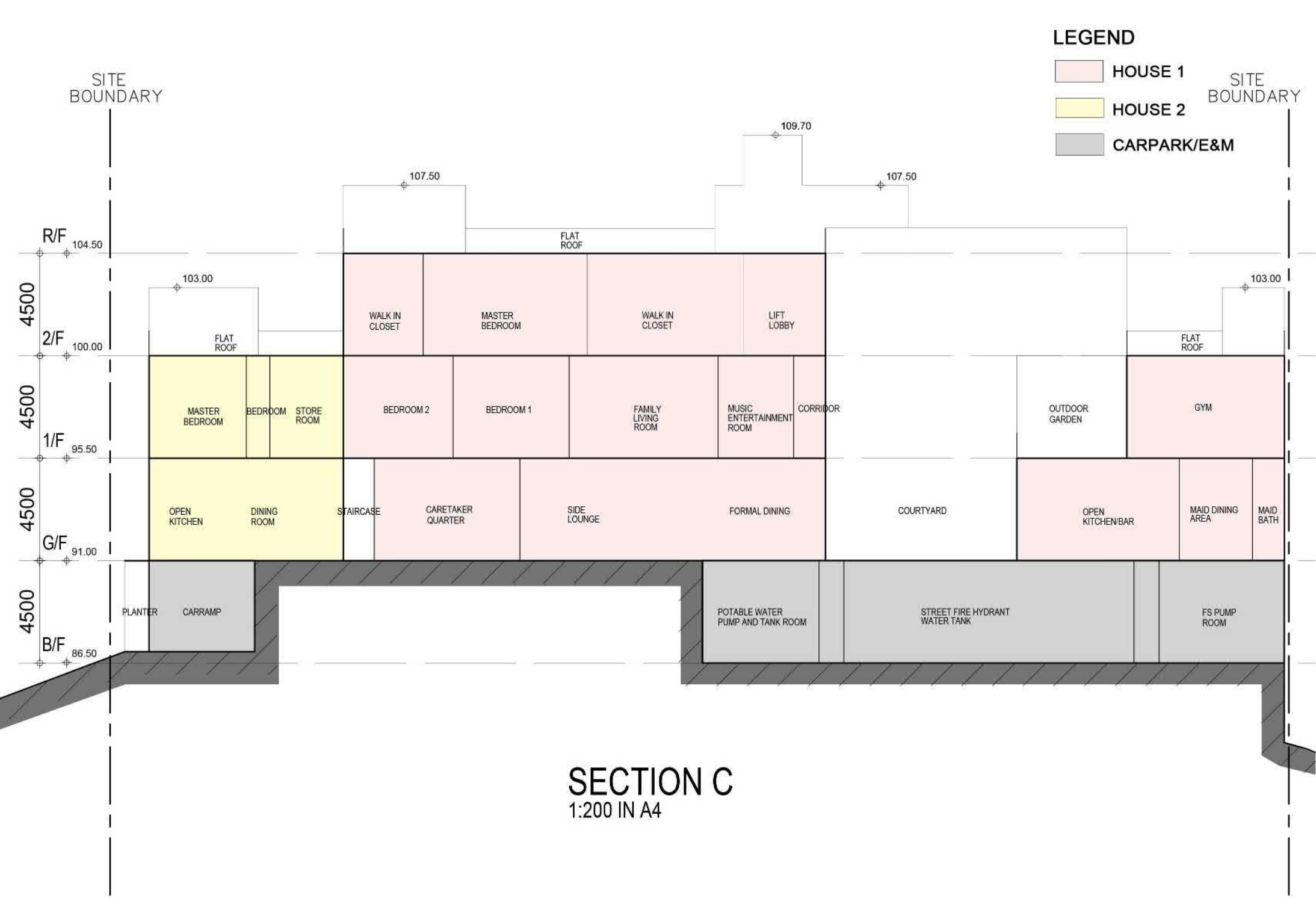
SECTION A

1:200 IN A4



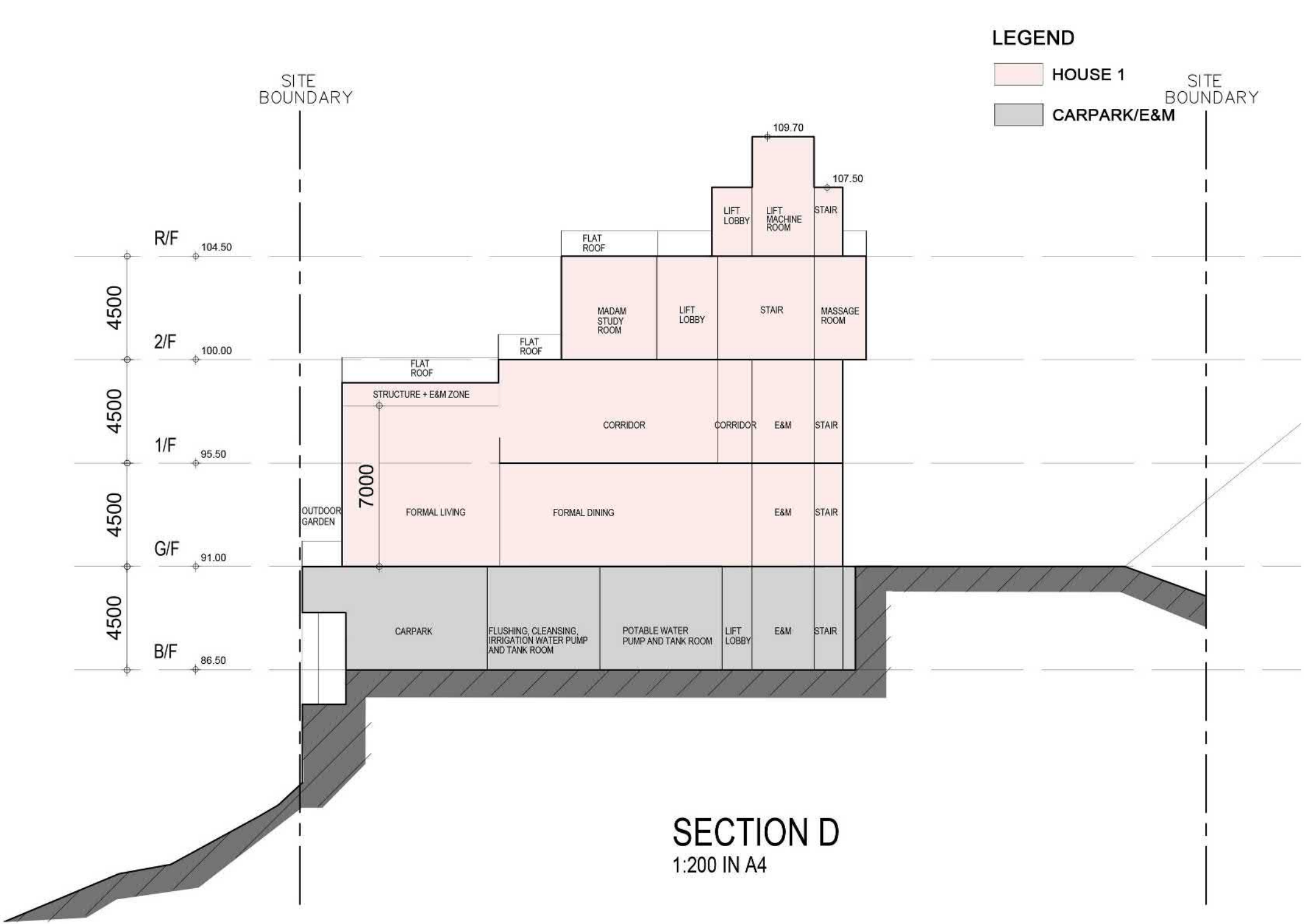
SECTION B

1:200 IN A4



SECTION C

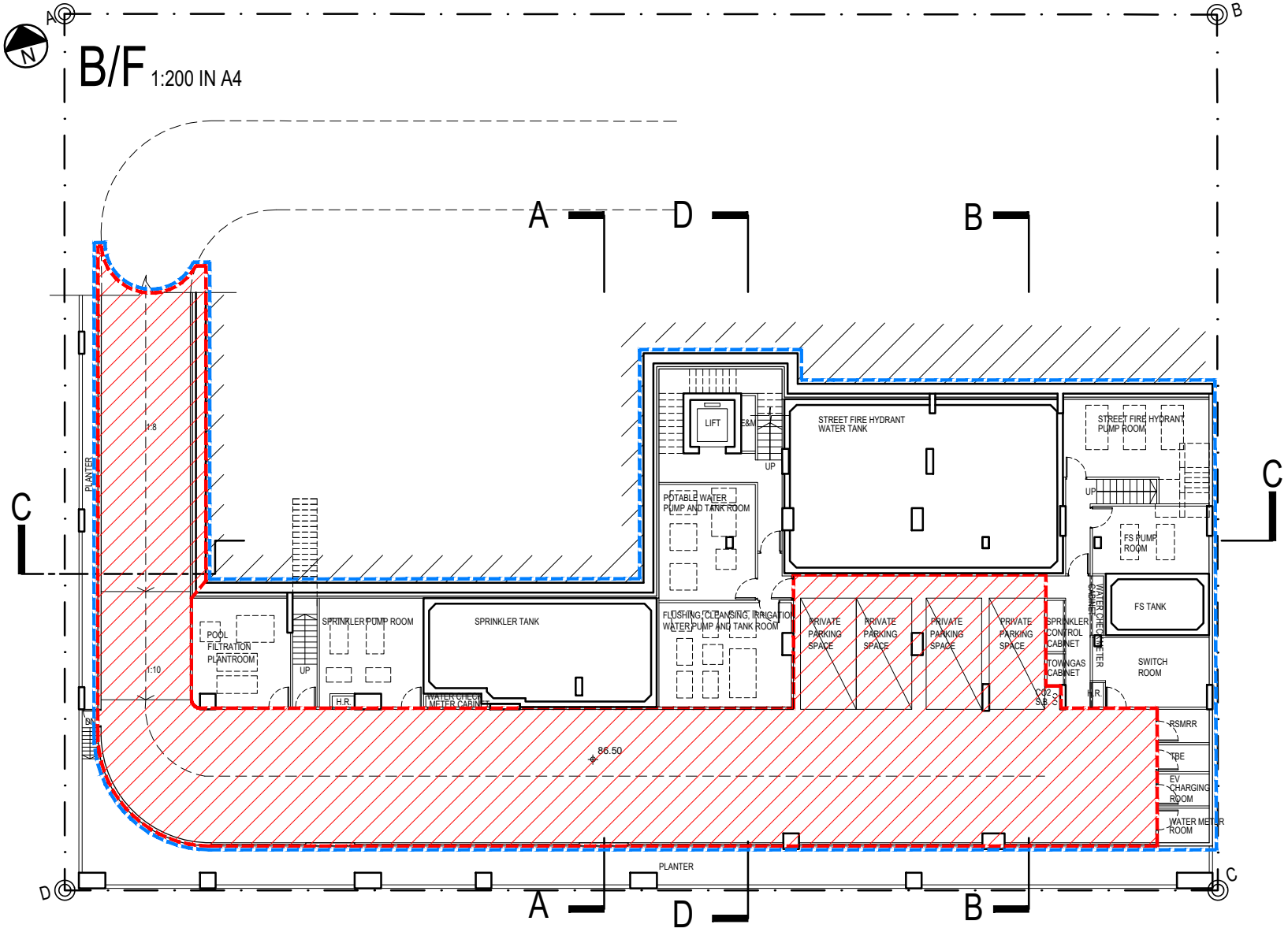
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SECTION D

1:200 IN A4

PERCENTAGE OF AREA FOR CAR PARKING USE



PERCENTAGE OF AREA FOR CAR PARKING USE:
AREA FOR CAR PARKING USE /AREA FOR CARPORT x 100
448.600 / 893.075 x 100 = 50.231 > 50% AREA OF CARPORT

AREA OF CAR PARKING USE
AREA OF CARPORT

Appendix 3

Replacement Pages of Traffic Assessment Report

4.3 Year 2032 Design Traffic Flows (With Proposed Residential Redevelopment)

Vehicular Trip Rates for the Proposed Residential Redevelopment

4.3.1 To estimate the traffic generation and attraction of the proposed residential redevelopment, reference has been made to the Transport Planning and Design Manual (TPDM) published by Transport Department. It is understood that there is no specific vehicular trip rate for house with flat size at around or over 1,000m^2 for House 1. Therefore, in-house traffic generation and attraction surveys were conducted on a typical weekday in September 2025 at 4 residential houses in Southern District with similar sizes and parking provision (i.e. 2 parking space per house) as House 1. The traffic generation and attraction survey results are summarised in **Table 4.7** below.

Table 4.7 Identified Traffic Generation and attraction surveys at 4 Residential Houses in Southern District with similar sizes as House 1

Development Type (1)		Vehicular Trips (pcu/hr)			
		AM Peak		PM Peak	
		Generation	Attraction	Generation	Attraction
Residential House A	Approx. 900 m^2 GFA	1	1(2)	1(2)	1
Residential House B	Approx. 1,000 m^2 GFA	2	1	1(2)	2
Residential House C	Approx 920 m^2 GFA	1(2)	1(2)	1(2)	1(2)
Residential House D	Approx 1,120 m^2 GFA	1	1	1(2)	1

Note:
(1) Residential House A, B and C are located along Repulse Bay Road while Residential House D is located at South Bay Road.
(2) To be more conservative, zero trip will be replaced by 1

4.3.2 As indicated in **Table 4.7**, it is summarised that Residential House B will generate the most traffic amongst the 4 identified residential houses, therefore the vehicular trips generated from Residential House B will be adopted as the vehicular trips generated from our proposed House 1.

4.3.3 The adopted vehicular trip rates and the traffic generation and attraction of the proposed residential redevelopment are listed in **Table 4.8** and **4.9** below.

Table 4.8 Adopted Vehicular Trip Rates for Proposed Residential Redevelopment

Development Type		Adopted Vehicular Trip Rates (pcu/hr/flat)			
		AM Peak		PM Peak	
		Generation	Attraction	Generation	Attraction
House 1	Approximately 1,370 m^2 GFA(1)	2	1	1	2
House 2	Approximately 162 m^2 GFA (2)(3)	0.3276	0.2407	0.2233	0.3097

Note:
(1) With reference to **Table 4.7,** adopted vehicular trips are based on our in-house traffic generation and attraction surveys conducted on a typical weekday in September 2025 at 4 residential houses in Southern District with similar sizes as House 1.
(2) With reference to **Table 2.3,** adopted trip rates based on Private Housing: Low Density/ R(C) with Average Flat Size of 180m^2

(3) Taking into consideration of the remoteness of the Subject Site and lack of public transport services in the vicinity, the upper limit trip rates is adopted for the Subject Site.

Table 4.9 Adopted Traffic Generation and attraction for Proposed Residential Redevelopment

Development		Vehicular Trip (pcu/hr)			
		AM Peak		PM Peak	
		Generation	Attraction	Generation	Attraction
Residential	House 1	2	1	1	2
	House 2	1	1	1	1

4.3.4 As indicated in **Table 4.9**, it is summarized that the proposed residential redevelopment will generate and attract a total of 5 pcus (2-way) during AM Peak and 5 pcus (2-way) during PM Peak respectively.

Comparison of Vehicular Traffic Generation and Attraction for the Subject Site under the Existing Condition and Proposed Residential Redevelopment

4.3.5 Based on the development parameter of the Subject Site given in **Table 2.1** and **2.3** and the vehicular traffic generation and attraction as shown in **Tables 4.6** and **4.9**, the net difference of vehicular traffic generation and attraction between the existing condition and the proposed residential redevelopment are presented in **Table 4.10**.

Table 4.10 Net Difference of Vehicular Trip Generation and Attraction for Subject Site under the Existing Condition and Proposed Residential Redevelopment

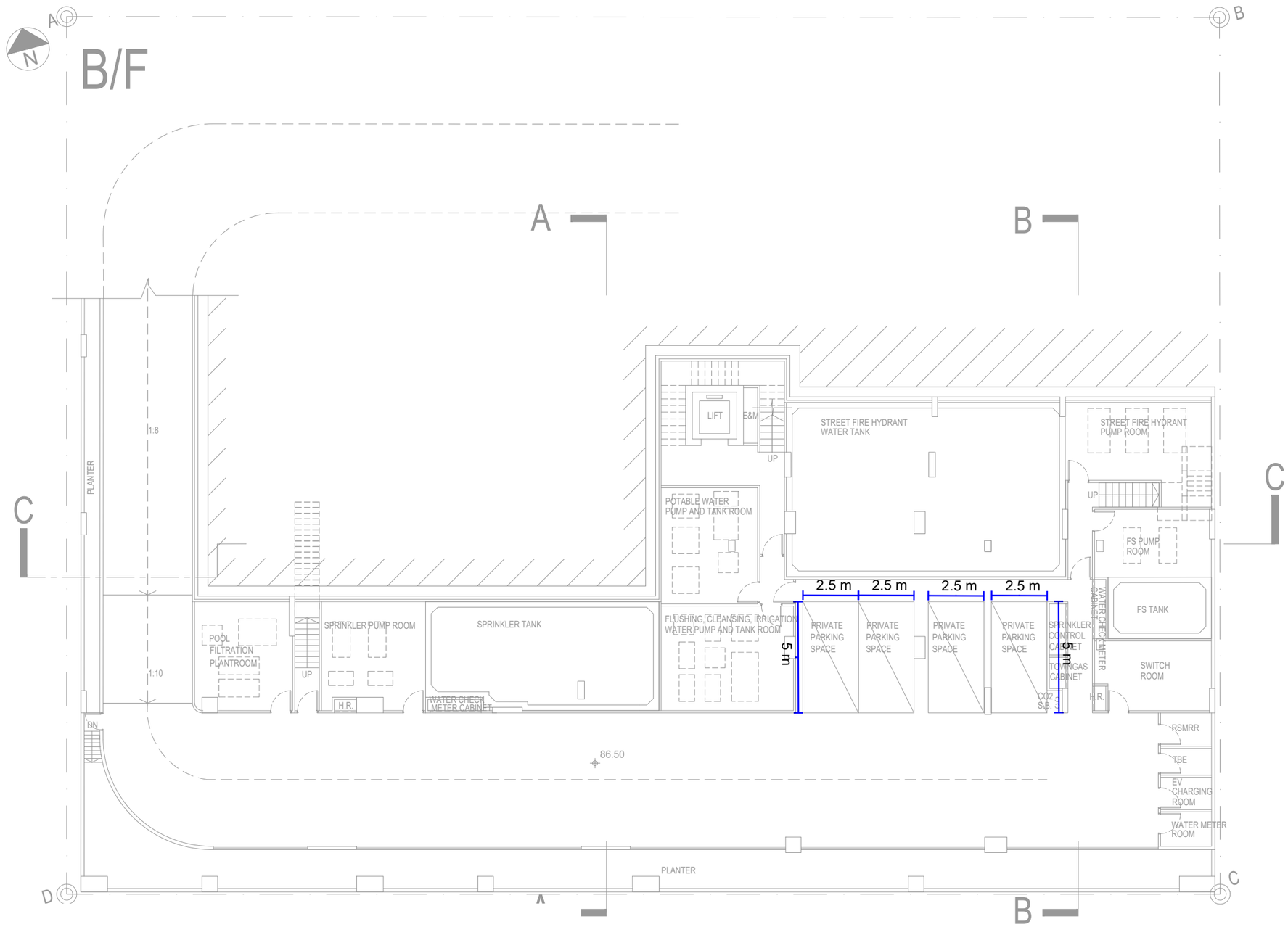
Development Type	GFA (1)	Vehicular Trip (pcu/hr)			
		AM Peak		PM Peak	
		Generation	Attraction	Generation	Attraction
Subject Site under Existing Condition [a]	1,532.902m^2	3	2	2	3
Proposed Residential Redevelopment [b]		3	2	2	3
Net Difference [b] – [a]		**0**	**0**	**0**	**0**

Note:
(1) Refer to **Table 2.1** and **2.3**, the maximum domestic GFA for Subject Site is 1,532.902m^2.

4.3.6 As shown in **Table 4.10**, it is revealed that there will be no additional vehicular traffic generation for the proposed residential redevelopment as compared with the existing condition during AM Peak and PM Peak.

Year 2032 Design Traffic Flows (With Proposed Residential Redevelopment)

4.3.7 The net difference of vehicular trip generation and attraction for the Subject Site under the condition and the proposed residential redevelopment as shown in **Table 4.10** above will be superimposed onto the year 2032 reference traffic flows as shown in **Drawing No. 4.1**. The 2032 design traffic flows are shown in **Drawing No. 4.2**



SK2

Basement Floor Layout Plan

1:200@A3

2025-10-17

Appendix 4

Replacement Pages of Drainage Impact Assessment

6) Existing Watercourses and Drainage Route (Cont'd)

6.5 Evaluation of Runoff Collection

6.5.1 Per DSD SDM Table 10, a 50-year return period and rainfall intensity of 218 mm/hr are adopted for design.

6.5.2 Runoff calculations are summarized below (see **Appendix III** for details).

Catchment Ref:	Location	Area (m2)	Surface Condition	Catchment Coefficient	Rainfall Intensity (mm/hr)	Rainfall Inc. Factor (End of 21 Cen)	Flowrate (L/s)	Discharge Point
A	Northern Slope	682.80	Steep Slope (Heavy Soil)	0.35	226	16.0%	17.4	Access Road (East)
B	Northern Slope	116.44	Steep Slope (Heavy Soil)	0.35			3.0	
C	Site (North Portion) Slope	176.77	Steep Slope (Heavy Soil)	0.35			4.5	
D	Site (North Portion) Driveway	524.28	Concrete	0.85			32.5	
E	Site (East Portion) Slope	36.44	Steep Slope (Heavy Soil)	0.35			0.9	Slope (East), and downstream RBL 667 & Ext.
F	Site (South Portion) Building	1287.85	Concrete	0.85			79.7	Ex. 600mm U-channel (Southwest)
		18.53	Steep Slope (Heavy Soil)	0.35			0.5	

**Rainfall intensity of 226mm/hr according to Table 2a, corrigendum no.1/2024, SDM*

#Rainfall increase factor of 16% according to Table 28, corrigendum no.1/2022, SDM

6.6 Identified Drainage Issues

6.6.1 The existing drainage system presents the following concerns:

i. Discharge is dispersed across three routes (access road, government slope, and southwest U-channel), complicating maintenance.
ii. No drainage infrastructure for Catchment E, leading to uncontrolled runoff onto adjacent properties.

7) Proposed Drainage System (Cont'd)

7.5 Post-Redevelopment Runoff Assessment

7.5.1 The future drainage flow path is illustrated in Appendix IV.

7.5.2 Total discharge into the 600mm U-channel will increase from 80.2 L/s to 121 L/s.

7.5.3 The revised drainage pattern is illustrated below and attached in **Appendix V**.

Catchment Ref:	Location	Area (m2)	Surface Condition	Catchment Coefficient	Rainfall Intensity (mm/hr)	Rainfall Inc. Factor (End of 21 Cen)	Flowrate (L/s)	Discharge Point
A	Northern Slope (Government)	682.80	Steep Slope (Heavy Soil)	0.35	226	16.0%	17.4	Access Road (East)
B	Northern Slope (Government)	116.44	Steep Slope (Heavy Soil)	0.35			3.0	Ex. 600mm U-channel on Slope (Southwest)
G	Site (After Re-development)	2,043.87						
	Greenery	284.62	Flat, Soil	0.2			4.1	
		130.29	Steep Slope (Heavy Soil)	0.35			3.3	
	Concrete	1,628.96	Concrete	0.85			100.8	

Drainage Discharge Point	Existing (L/s)	After Re-development (L/s)
Access Road (East)	39.9	0
Government Slope (East) & downstream RBL 667	0.9	0
Ex. 600mm U-channel on slope (Southern West)	80.2	111.3

7.6 Capacity Assessment of 600mm U-Channel

7.6.1 Using Manning's Equation, the channel's capacity is evaluated as follows:

Runoff collected by 600mm U-Channel:

	Area (m^2)	Surface Condition	Catchment Coefficient	Flowrate (L/s)
Upstream Slope	116.44	Steep Slope	0.35	3.0
Site	2,043.87			108.3
			Total	111.3

Flow velocity, $V = \frac{1}{U} \times R^{2/3} \times S^{1/2}$

Where U = Roughness coefficient of pipe
(for concrete lined channel in fair condition, U = 0.016)
R = Hydraulic Radius
S = Gradient of fall

Gradient Fall:
S = Upstream I.L – Downstream I.L. / Length
= (80.21 – 79.25) / 7.37m (as surveyed)
= 0.13

Assuming 1/2 bore flow of 600mm channel,
R = 0.25 D
V = $\frac{1}{0.016} \times (0.25 \times 0.6)^{2/3} (0.13)^{1/2}$
= 6.36 m/s

Handling capacity
Q = AV
= $(3.14 \times 0.3^2 / 2) \times (6.36)$
= 0.8989 m^3/s
= 898.9 l/s
> 111.3 l/s (12.4%, acceptable)

Appendix III – Evaluation of Runoff from Catchments (Existing)

Proposed Residential Re-development at 66 Deep Water Bay Road, Hong Kong
Evaluation of Runoff from Catchments (Existing)

Catchment Ref:	Location	Area (m2)	Surface Condition	Catchment Coefficient	Rainfall Intensity (mm/hr)	Rainfall Inc. Factor (End of 21 Cen)	Flowrate (L/s)	Discharge Point
A	Northern Slope	682.80	Steep Slope (Heavy Soil)	0.35	226	16.0%	17.4	Access Road (East)
B	Northern Slope	116.44	Steep Slope (Heavy Soil)	0.35			3.0	
C	Site (North Portion) Slope	176.77	Steep Slope (Heavy Soil)	0.35			4.5	
D	Site (North Portion) Driveway	524.28	Concrete	0.85			32.5	
E	Site (East Portion) Slope	36.44	Steep Slope (Heavy Soil)	0.35			0.9	Slope (East), and downstream RBL 667 & Ext.
F	Site (South Portion) Building	1287.85	Concrete	0.85			79.7	Ex. 600mm U-channel (Southwest)
		18.53	Steep Slope (Heavy Soil)	0.35			0.5	

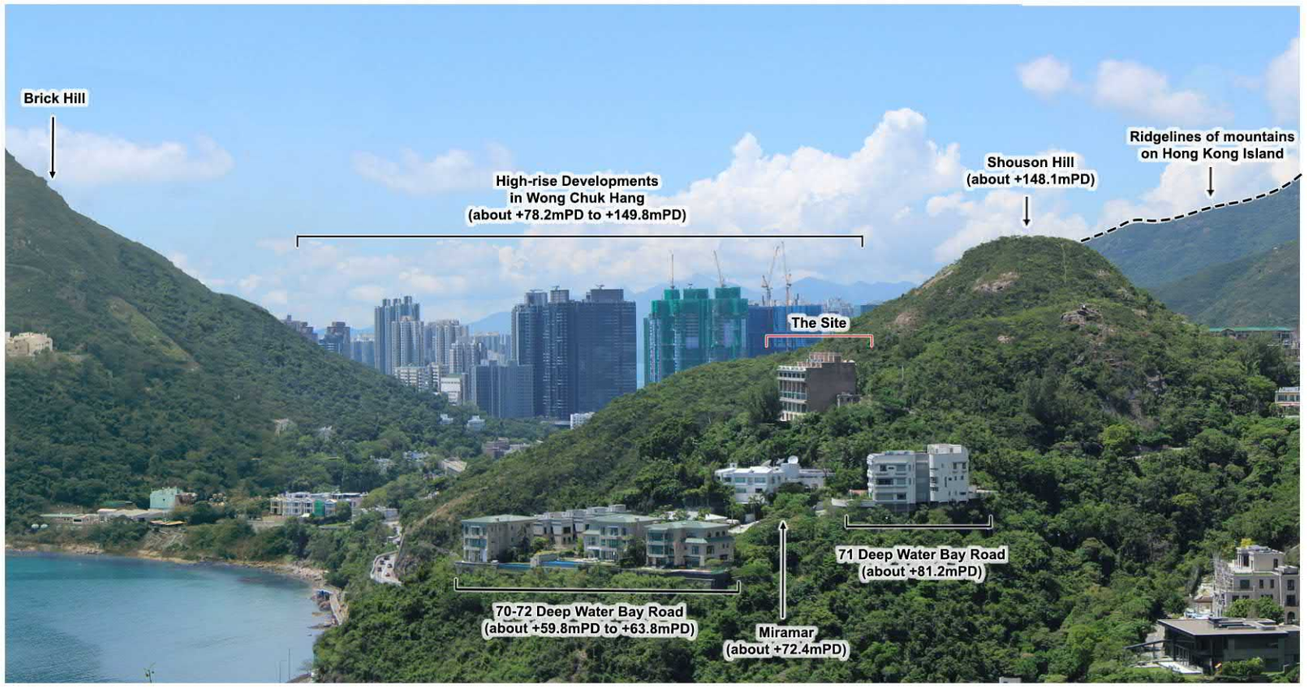
Appendix V – P Evaluation of Runoff from Catchments (Future)

Proposed Residential Re-development at 66 Deep Water Bay Road, Hong Kong
Evaluation of Runoff from Catchments (Post-redevelopment)

Catchment Ref:	Location	Area (m2)	Surface Condition	Catchment Coefficient	Rainfall Intensity (mm/hr)	Rainfall Inc. Factor (End of 21 Cen)	Flowrate (L/s)	Discharge Point
A	Northern Slope (Government)	682.80	Steep Slope (Heavy Soil)	0.35	226	16.0%	17.4	Access Road (East)
B	Northern Slope (Government)	116.44	Steep Slope (Heavy Soil)	0.35			3.0	Ex. 600mm U-channel on Slope (Southwest)
G	Site (After Re-development)	2,043.87						
	Greenery	284.62	Flat, Soil	0.2			4.1	
		130.29	Steep Slope (Heavy Soil)	0.35			3.3	
	Concrete	1,628.96	Concrete	0.85			100.8	

Appendix 5

Replacement Pages of Visual Impact Assessment



Existing Condition



Proposed Development



PLANNING LIMITED 規劃顧問有限公司	Viewpoint 2 – Bus Stop at Monte Verde, Repulse Bay Road	Proposed Minor Relaxation of Site Coverage Restriction for Permitted House Redevelopment in "Residential (Group C) 3" Zone, No. 66 Deep Water Bay Road, Shouson Hill, Hong Kong	Figure 6.2
		Visual Impact Assessment	Date: 19 November 2025

7. CONCLUSION

7.1.1 Based on the analysis on evaluating the potential visual impact of the Proposed Development as compared with the existing condition in terms of Visual Composition, Visual Obstruction, Effect on Public Views and Effect on Visual Resources, **Table 7.1** below presents the overall visual impact caused by the Proposed Development with the minor relaxation of SCR from 25% to not more than 37% to the identified to the sensitive viewers represented in each VP.

Table 7.1 Summary of Assessment of Visual Impact at the Viewpoints

Viewpoint	Location	Visual Sensitivity	Magnitude of Visual Change	Visual Impact due to Proposed Development
VP1	Deep Water Bay Beach Barbecue Area	High	Negligible	Negligible
VP2	Bus Stop near Monte Verde, Repulse Bay Road	Medium	Negligible	Negligible
VP3	Mills and Chung Path	Medium	Negligible	Negligible
VP4	Cable Car at Ocean Park	High	Negligible	Negligible

7.1.2 VP1 and VP2 provide the mid-range view towards the Proposed Development from the east direction. Upon minor relaxation of SCR from 25% to not more than 37%, the Proposed Development will replace existing buildings at the Site. With the proposed terraced design and carefully thought-out building form and disposition, the Proposed Development will be visually compatible with the surrounding settings while maintain visual openness from these two viewpoints. Nevertheless, the proposed building height has paid respect on the topographical settings of the area and continue to blend in well with the existing low-rise residential cluster. Therefore, the visual impact anticipated from VP1 and VP2 are negligible.

7.1.3 VP3 illustrates a close-up view towards the Proposed Development from the southwestern direction. As illustrated in **Figure 6.3**, the lower portion of the Proposed Development will be concealed behind the lush greenery at the slope after minor relaxation of SCR. The proposed terraced design and carefully thought-out building height contributed to the reduction of visual mass when viewing from this viewpoint. The staggered design at the Proposed Development would break down the building bulk, which allows additional visual access to the open sky view. This will maintain the visual openness of the Site from this VP and provide visual access to the key visual resource. Hence, the visual impact by the Proposed Development from this VP will be negligible after the minor relaxation of SCR.

7.1.4 VP4 illustrated a distant view to the Proposed Development from the southwestern direction. With the incorporation of carefully thought-out building height, form and disposition, the Proposed Development would respond to the topographical setting of

Shouson Hill and existing residential developments in the area. It will continue to form part of the development clusters along Deep Water Bay Road and blend in well with the surrounding settings. Although the building structure would be slightly extended towards the east due to the minor relaxation of SCR, the adoption of terraced design and staggered building mass has replaced the rectangular and rigid buildings on-site which would contribute to a more harmonised view when compared to the existing buildings. Thus, the visual impact associated with the Proposed Development will be negligible.

7.1.5 In view of the above, it is considered that the Proposed Development would be congruous to the surrounding character and intensity of the adjacent developments upon the minor relaxation of SCR. The overall visual impact rating for all viewpoints will be negligible. Therefore, the Proposed Development with the minor relaxation of site coverage restriction from 25% to not more than 37% is considered no significant adverse impact in the visual context.

Appendix 6

Replacement Pages of Environmental Assessment

1 Introduction

1.1 Background

1.1.1 The Site is located at No. 66 Deep Water Bay Road, Shouson Hill, Hong Kong where it is zoned as "R(C)3" in accordance with the approved Shouson Hill & Repulse Bay Outline Zoning Plan No. S/H17/13. The Client intends to redevelop the Site into 2 semi-detached houses and increase the maximum permitted site coverage from 25% to 37% at No. 66 Deep Water Bay Road. Due to the proposed increase in the permitted site coverage, a Section 16 Planning Application will therefore be required.

1.1.2 Aurecon Hong Kong Limited has been commissioned to conduct an Environmental Assessment Report for assessing the air quality, noise, water quality, waste management and land contamination upon the proposed redevelopment to demonstrate the environmental acceptability for fulfilling the planning application requirement.

1.2 Objectives of the Environmental Assessment

1.2.1 The objective of this Report aims to identify key environmental issues associated with the proposed redevelopment for any potential impacts identified. The Environmental Assessment Report will be prepared to address the environmental aspects arising from construction and operation of the proposed redevelopment.

1.3 Report Structure

1.3.1 The remaining chapters of this report are shown below:

Chapter 2 – Site Context

Chapter 3 – Air Quality Impact

Chapter 4 – Noise Impact

Chapter 5 – Water Quality Impact

Chapter 6 – Waste Management

Chapter 7 – Land Contamination

Chapter 8 - Conclusion

4.6.6 The appropriate ANLs for NSRs around have been determined as shaded in **Table 4.5**.

Table 4.5 Acceptable Noise Levels (ANLs)

Time Period	Acceptable Noise Level, Leq 30 mins, dB(A)		
	Area Sensitivity Rating "A"	Area Sensitivity Rating "B"	Area Sensitivity Rating "C"
Day-time (0700 – 1900 hours)	60	65	70
Evening (1900 - 2300 hours)			
Night-time (2300-0700 hours)	50	55	60

4.6.7 According to HKPSG, for noise criteria involving planned fixed noise sources, the level of the intruding noise at the façade of the nearest existing sensitive use should be at least 5 dB(A) below the appropriate ANL shown in as shown in **Table 4.5**, in the case of the background being 5 dB(A) lower than the ANL, should not be higher than the background.

4.6.8 Noise measurement has been conducted to measure the background noise level at the vicinity of existing NSRs. According to the measured results as shown in **Table 4.2**, the measured background noise levels are below ANL-5 (55dB(A) during daytime and evening time, 45dB(A) during night-time period). Hence, the measured background noise levels would be adopted as the noise criteria. The summary of noise criteria for the proposed development is established in **Table 4.6**. The background noise measurement results and details of noise criteria adopted for the fixed plant noise assessment is provided in **Appendix 4.2**.

Table 4.6 Noise Criteria adopted for fixed plant noise impact assessment

Time Period	Noise criteria (Background free field noise level, Leq 30 mins, dB(A))
Day-time (0700 – 1900 hours)	46
Evening (1900 - 2300 hours)	46
Night-time (2300-0700 hours)	43

4.6.9 The fixed plant noise assessment has been conducted, and the detailed calculation is provided in **Appendix 4.2**. According to the predicted results, the fixed plant noise impacts to the nearest NSRs are well within the established noise criteria for daytime, evening time and night-time period. **Table 4.6** has summarised the noise impacts of the NSRs which comply with the noise criteria, hence, no noise mitigation would be necessary.

Table 4.7 Summary of Unmitigated Impacts on Existing NSRs

NSRs	Description	Daytime/ Evening Period, Leq (30min), dB(A) Noise criteria = 46 dB(A)	Night-time Period, Leq (30 min), dB(A) Noise criteria = 43 dB(A)
N1	71 Deep Water Bay Road	39	39
N2	72 Deep Water Bay Road, House 2	38	38
N3	68 Deep Water Bay Road	40	40

5 Water Quality Impact

5.1 Introduction

5.1.1 This section discusses the potentials water impact likely arising during the construction and operations phases of the proposed development. Practical mitigation measures are proposed to reduce environmental impacts to acceptable level, if necessary.

5.2 Environmental Legislation, Standards and Guidelines

5.2.1 The relevant legislation and associated guidance applicable to this EA for the assessment of water quality impacts include:

- Water Pollution Control Ordinance (WPCO) (Cap. 358)
- Water Pollution Control (General) Regulations
- Water Pollution Control (Sewerage) Regulation
- Technical Memorandum on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (TM-DSS)
- Chapter 9 “Environment” of the Hong Kong Planning Standards and Guidelines (HKSPG)
- Professional Persons Environmental Consultative Committee Practice Note 2/24 Construction Site Drainage (ProPECC PN 2/24)
- Professional Persons Environmental Consultative Committee Practice Note 1/23 Drainage Plans subject to Comment by the Environmental Protection Department (ProPECC PN 1/23)

should be made with the recycling companies to collect the recycle waste. A reputable waste collector should be employed by the construction contractor to remove general refuse from the Site, separately from C&D materials. Preferably an enclosed and covered area should be provided to reduce the occurrence of “wind-blown” materials.

- Contractors should register as Chemical Waste Producer if any chemical waste is generated during construction phase of the Project. A licensed collector shall be employed to handle and dispose of the chemical wastes, if any. In addition, any chemical waste generated should be handled in accordance with EPD’s Code of Practice on the Packaging, Labelling and Storage Chemical Waste.

6.4 Impact Review – Operational Phase

6.4.1 During operational phase, general refuse anticipated from the proposed development include daily activities of residents, staff and visitors. Waste would include general food waste and other recyclable including paper, glass and metal containers, etc. According to the EPD’s "Monitoring of Solid Waste in Hong Kong – Waste Statistics for 2023", the five-year average (2019 to 2023) per capita general refuse disposal rate is 1.48kg/person/day. All general refuse should be recycled wherever possible, and landfill disposal should only be adopted as a last resort. The recyclables will be properly sorted and stored within the Site for further collection. For food waste, the implementation of appropriate recycling measures will be considered during the operational phase, subject to further detailed feasibility study.

6.4.2 General refuse generated during the operational stage will be collected at the refuse collection point provided within the Site for further collection. The waste management practice will comply with the statutory requirements.

6.4.3 With the implementation of good waste management practices at the Site, adverse environmental impacts caused by storage, handling, transport and disposal of general refuse are not anticipated.

2020 (2020_E101238C)	
2025 (2025_E256144C)	

Appendix 7

Replacement Page of Application Form

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 Please refer to the attached Supporting Planning Statement
	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…… sq.m 平方米 ☐About 約 Depth of excavation 挖土深度 ……m 米 ☐About 約
	No 否	☐

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

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

Please refer to the attached Supporting Planning Statement

PLANNING LIMITED
規劃顧問有限公司

UNIT K, 16/F, MG TOWER
133 HOI BUN ROAD, KWUN TONG
KOWLOON, HONG KONG
九龍觀塘海濱道133號
萬兆豐中心16樓K室
[redacted]

Our Ref: S3068a/66DWBR/25/007Lg

19 December 2025

By Email

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

Dear Sir/Madam,

Proposed Minor Relaxation of Site Coverage Restriction
for Permitted House Development
in "Residential (Group C)3" Zone,
No. 66 Deep Water Bay Road, Shouson Hill, Hong Kong
(Planning Application No. A/H17/144)
Further Information No. 2

Reference is made to the captioned S16 Planning Application which is scheduled for consideration by the Town Planning Board ("TPB") on 23 January 2026 and the comments received from various Government Departments via emails from Hong Kong District Planning Office during period from 12 to 17 December 2025.

To address comments from the relevant Government Departments, further information ("FI") has been prepared. This FI submission consists of:

Responses-to-Comments Table
Appendix 1 – Replacement Pages of Supporting Planning Statement
Appendix 2 – Updated Architectural Drawings
Appendix 3 – Replacement Pages of Drainage Impact Assessment
Appendix 4 – Replacement Pages of Environmental Assessment

Should you have any queries in relation to the attached, please do not hesitate to contact the undersigned at [redacted] or our Mr Wilson Man at [redacted].

Thank you for your kind attention.

Yours faithfully
For and on behalf of
KTA PLANNING LIMITED

Kitty Wong

Encl. Responses-to-Comments table with Appendices 1 to 4

cc. the Applicant & Team

KW/WM/vy

Proposed Minor Relaxation of Site Coverage Restriction for Permitted House Development in "Residential (Group C) 3" and "Green Belt" Zones, No. 66 Deep Water Bay Road, Shouson Hill, Hong Kong

Comments forwarded from Hong Kong District Planning Office

Comments	Responses
Comments from Landscape Unit, Urban Design and Landscape Section, Planning Department (Received on 12 December 2025) (Contact Person: Mr. Chak Man NGAI, Tel.: 3565 3955)	
1. We have no further comments on the F.I. and remain having no adverse comments on the application from landscape planning perspective. Our previous advisory comment item no. 3 dated 5.11.2025 is still applicable.	Noted.
Comments from Drainage Services Department (Received on 12 December 2025) (Contact Person: Mr. Ray ZHOU, Tel.: 3101 2366)	
1. Please note our comments for DIA as follows: According to Corrigendum No. 1/2022 of the Stormwater Drainage Manual, the increase in rainfall intensity under the end-of-21st-century scenario should be 12.1% + 16.0% = 28.1%. However, in the RtoC, the consultant has not addressed my previous comment — the climate change factor should be 28.1%, but only 16.0% was adopted.	Noted. A total of 28.1% allowance has been adopted in the revised report (**Appendix 3** refers).
Comments from Environmental Protection Department (Received on 12 December 2025) (Contact Person: Mr. Andy KO; Tel.: 2835 1011)	
Please find below our further comments on the Planning Statement and EA: 1. Planning Statement, Section 4.6.8 – Follow up on the previous comment, please revise "Year 2020" to "Year 2025" to reflect the latest aerial photo enclosed in the EA report.	Noted and revised accordingly (**Appendix 1** refers).
2. EA Report – As the aerial photos of Year 2025 is enclosed in the report, Section 7.1.1 and the title of table 7.1 should be updated accordingly. However, the corresponding page is not included in this submission. Please ensure the relevant sections are updated.	Noted and revised accordingly (**Appendix 4** refers).

Comments	Responses
Comments from Building Department (Received on 17 December 2025) (Contact Person: Mr. CHEUNG Hiu-wai; Tel.: 2626 1371)	
1. Please be advised that GFA of the void in house with revised floor to floor height about 7m for "Formal Living" on G/F of House 1 with an additional "structure + E&M zone" of about 1m high on top of the ceiling of the "Formal Living" may not be exempted from GFA calculation under PNAP App-2.	The floor-to-floor height of the Formal Living Room at G/F of House 1 has been adjusted to 7m in total, including the "structure and E&M zone"(**Appendix 2** refers).
2. For the provision of accessible carparking space, please be advised that barrier free access and facilities including accessible parking space should be provided in accordance with B(P)R 72 and the Design Manual: Barrier Free Access 2008 (2025 Edition).	Please note that 1 no. of accessible carparking space with barrier free access and facilities has been incorporated in the updated layout plan (**Appendix 2** refers).
3. Please be advised our previous comments vide our memo dated 20 November 2025 and e-mail dated 4 December 2025 are still valid.	Noted.
4. Detailed comments under the BO will be provided upon building plan submission to the Building Departments.	Noted.
Comments from Architectural Services Department (Received on 17 December 2025) (Contact Person: Mr. Sherman SUM; Tel.: 2582 5314)	
1. Based on the R-to-C table provided, it is noted that the façade of the basement carport is proposed to be set back by 2m, accommodating a continuous planting strip as the edge planter. This adjustment appears to reduce the visual bulk of the basement structure in the revised photomontage VP2. It is also noted that other departments including PlanD, BD and LandsD have no comments on the overall bulk of the proposed development, particularly the concerned area of the carports extending beyond the ground floor footprint. Furthermore, the applicant has confirmed that the issues of soil filling and the design of retaining structure (i.e. stilting issue) will comply with relevant guidelines including LandsD's Practice Notes for Design, Disposition and Height Clause under the Lease, and the applicant will submit the detail design of the proposed development to respective departments for approval. In this connection, we have no comment from architectural and visual impact point of view at this stage, subject to PlanD's view.	Noted.

Comments	Responses
Comments from Urban Design Unit, Urban Design & Landscape Section, Planning Department (Received on 17 December 2025) (Contact Person: Miss Vanessa TSANG; Tel.: 3565 3942)	
1. We have no comment on the 1st FI and our previous comment in para. 1(a) provided to your office dated 14.11.2025 shall remain valid.	Noted.
Comments from Transport Department (Received on 17 December 2025) (Contact Person: Mr. Vincent TAM; Tel.: 2829 5427)	
1. Our previous comments in memo ref. (00J40) in 010-160-544-HR-005 dated 7 November 2025 has been addressed in the revised TIA. We have no further comments on the revised TIA from the traffic engineering viewpoint.	Noted.
Comments from Lands Department (Received on 17 December 2025) (Contact Person: Ms. Irene LI; Tel.: 2835 1552)	
1. Please be advised that this office has no comments on the FI. Meanwhile, our previous comments, as stated in my memo dated 13.11.2025, remain valid.	Noted.
Comments from Fire Services Department (Received on 17 December 2025) (Contact Person: Mr. WONG Cheuk-kei; Tel.: 2733 7735)	
1. Please be informed that we have no specific comment on the proposal subject to fire service installations and water supplies for firefighting being provided to the satisfaction of the Director of Fire Services. Detailed fire safety requirements will be formulated upon receipt of the formal submission of general building plans. In case of any deficiencies for the provision of emergency vehicular access, enhanced fire safety requirements will be required on a case-by-case basis. These provisions may include a sprinkler system with fast response type sprinkler heads, pressurization of the staircase or natural venting of the staircase and an enhanced size of the water tank for the sprinkler system tank as well as the fire hydrant/hose reel system tank, etc.	Noted. Detailed fire safety requirements will be provided in the formal submission of general building plans.

Compiled by: KTA
Date: 19 December 2025

Appendix 1

Replacement Pages of Supporting Planning Statement

the operational phase, the redevelopment with the same use is not expected to introduce additional air pollution sources, ensuring that air quality remains comparable to existing conditions. With the implementation of the recommended environmental mitigation measures, no adverse environment impact from the proposed development is anticipated.

Noise Aspects (Appendix 5 refers)

4.6.5 The noise impact assessment evaluates potential noise impacts during construction and operation. Construction activities will primarily use powered mechanical equipment. With noise mitigation measures implemented, including the use of temporary acoustic barriers, and avoiding simultaneous operation of noisy equipment, the potential impacts on nearby noise-sensitive receivers could be minimized. The operational phase will include fixed plant noise sources, which are expected to comply with acceptable noise levels. With the implementation of the recommended environmental mitigation measures, no adverse environment impact from the proposed development is anticipated.

Waste Management Aspect (Appendix 5 refers)

4.6.6 Review on the potential impact form waste management perspective has been conducted. During construction, the potential waste generated from the existing building has been categorized into construction and demolition materials, chemical waste, and general refuse. Management practices will focus on minimizing waste generation, encouraging recycling, and ensuring proper disposal methods. Moreover, a Waste Management Plan will be developed to outline handling procedures, aiming to mitigate environmental impacts associated with waste. With the implementation of the recommended environmental mitigation measures, no adverse environment impact from the proposed development is anticipated.

Water Quality Aspect (Appendix 5 refers)

4.6.7 The potential water quality impacts during construction phase will primarily arise from surface runoff and accidental chemical spills. To prevent contamination, good site practices should be implemented and complied with the Water Pollution Control Ordinance. During operation, the proposed development is expected to manage surface runoff effectively, ensuring compliance with local regulations and minimal adverse impacts on water quality. With the implementation of the recommended environmental mitigation measures, no adverse environment impact from the proposed development is anticipated.

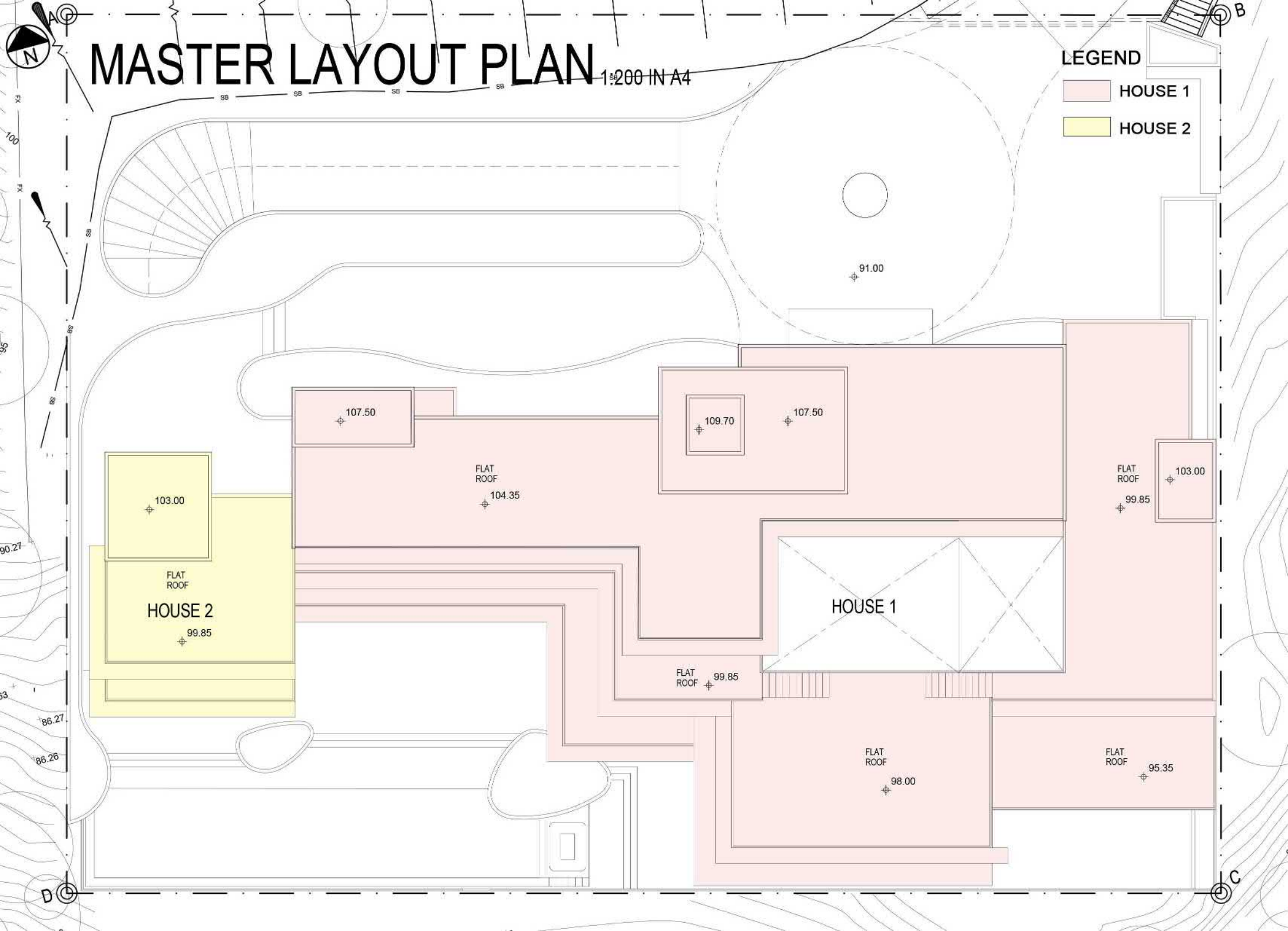
Land Contamination Aspect (Appendix 5 refers)

4.6.8 The Site has been used for residential purposes since 1963. According to the historical aerial photographs between Year 1963 and Year 2025, no

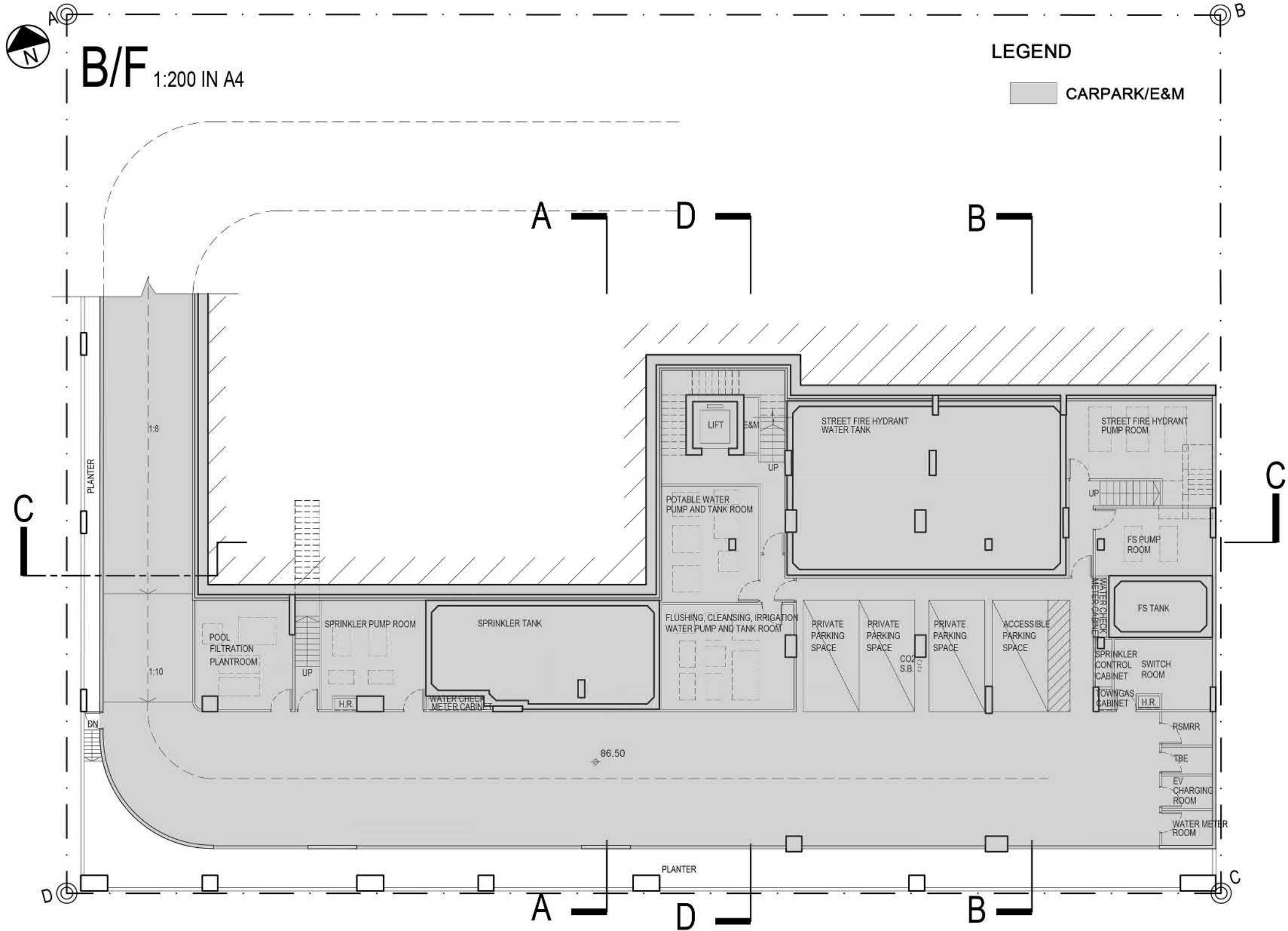
Appendix 2

Updated Architectural Drawings

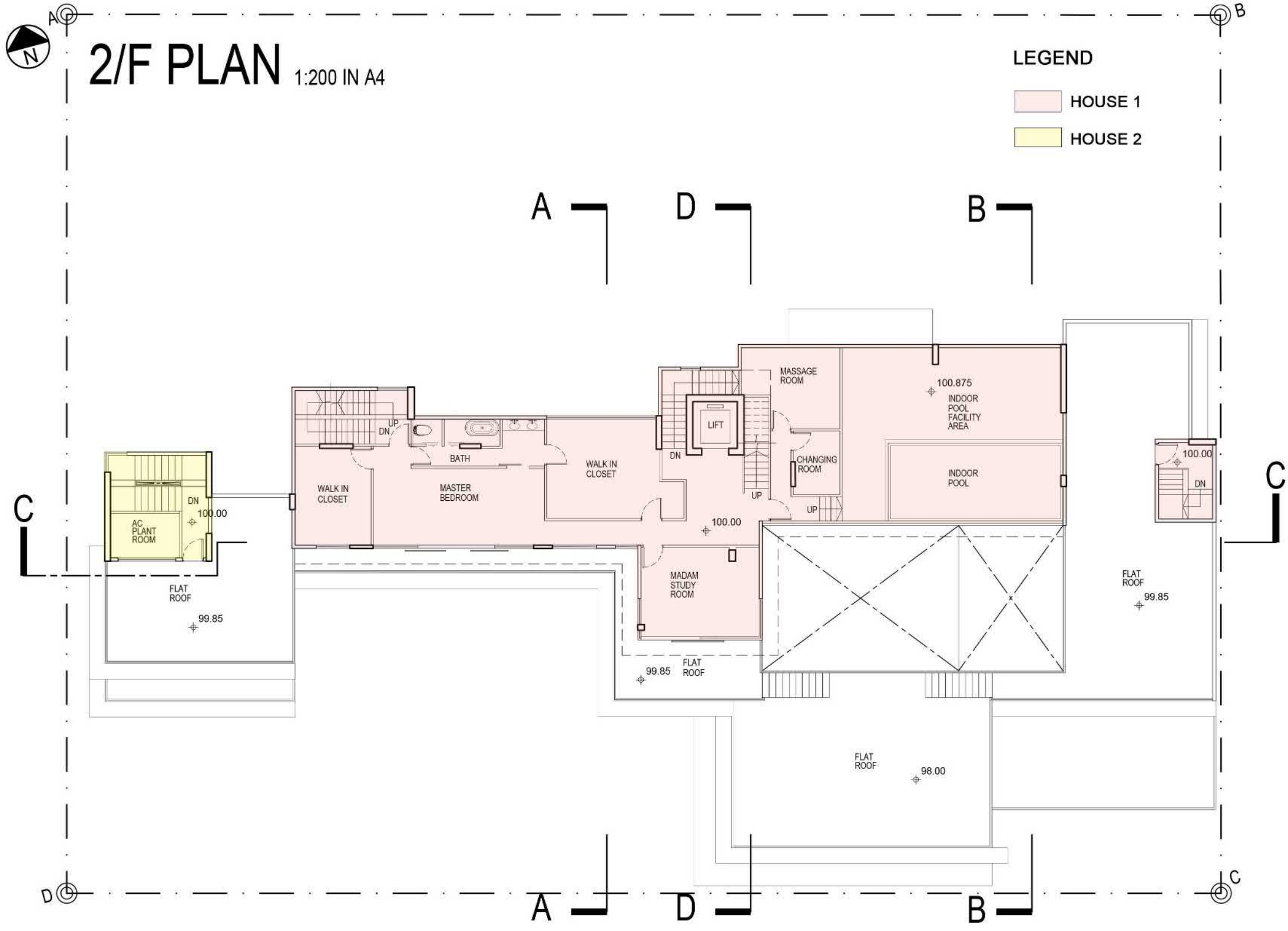
MASTER LAYOUT PLAN 1:200 IN A4

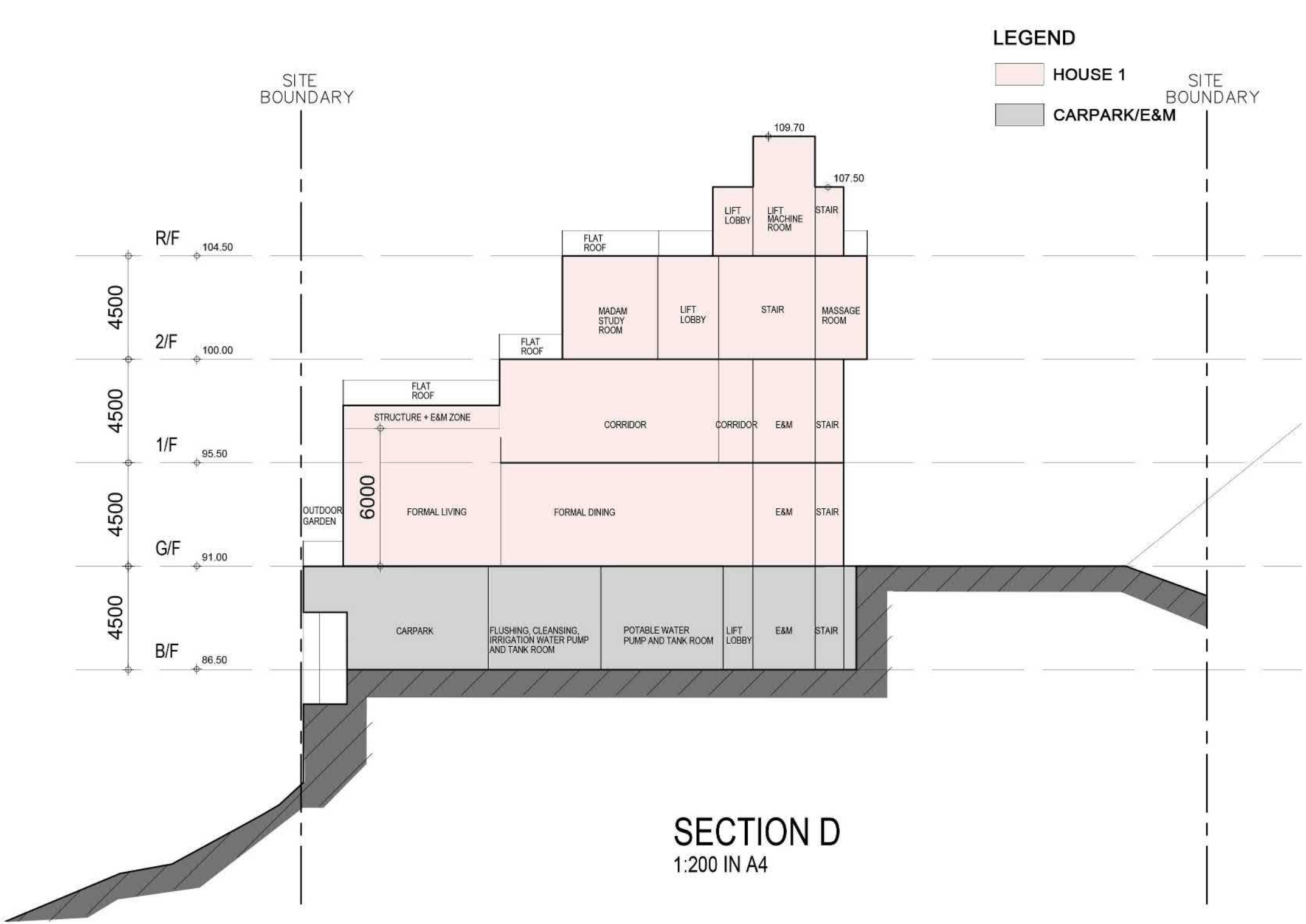


B/F 1:200 IN A4


LEGEND
CARPARK/E&M
A
B
C
D
1:8
1:10
PLANTER
LIFT
E&M
UP
STREET FIRE HYDRANT WATER TANK
STREET FIRE HYDRANT PUMP ROOM
POTABLE WATER PUMP AND TANK ROOM
FS PUMP ROOM
FS TANK
WATER CHECK METER CABINET
POOL FILTRATION PLANTROOM
SPRINKLER PUMP ROOM
SPRINKLER TANK
FLUSHING, CLEANSING, IRRIGATION WATER PUMP AND TANK ROOM
PRIVATE PARKING SPACE
PRIVATE PARKING SPACE
CO2 S.B.
PRIVATE PARKING SPACE
ACCESSIBLE PARKING SPACE
SPRINKLER CONTROL CABINET
SWITCH ROOM
TOWNGAS CABINET
H.R.
DN
86.50
RSMRR
TBE
EV CHARGING ROOM
WATER METER ROOM
PLANTER

2/F PLAN 1:200 IN A4





SECTION D

1:200 IN A4

Appendix 3

Replacement Pages of Drainage Impact Assessment

6) Existing Watercourses and Drainage Route (Cont'd)

6.5 Evaluation of Runoff Collection

6.5.1 Per DSD SDM Table 2a of Corrigendum 1-2024, a 50-year return period and rainfall intensity of 226 mm/hr are adopted for design.

6.5.2 Runoff calculations are summarized below (see **Appendix III** for details).

Catchment Ref:	Location	Area (m2)	Surface Condition	Catchment Coefficient	Rainfall Intensity (mm/hr)	Design Allowance (End of 21 Cen)	Rainfall Inc. Factor (End of 21 Cen)	Flowrate (L/s)	Discharge Point
A	Northern Slope	682.80	Steep Slope (Heavy Soil)	0.35	226	12.1%	16.0%	19.5	Access Road (East)
B	Northern Slope	116.44	Steep Slope (Heavy Soil)	0.35				3.3	
C	Site (North Portion) Slope	176.77	Steep Slope (Heavy Soil)	0.35				5.1	
D	Site (North Portion) Driveway	524.28	Concrete	0.85				36.4	
E	Site (East Portion) Slope	36.44	Steep Slope (Heavy Soil)	0.35				1.0	Slope (East), and downstream RBL 667 & Ext.
F	Site (South Portion) Building	1287.85	Concrete	0.85				89.4	Ex. 600mm U-channel (Southwest)
		18.53	Steep Slope (Heavy Soil)	0.35				0.5	

**Rainfall intensity of 226mm/hr according to Table 2a, corrigendum no.1/2024, SDM*

#Rainfall increase factor of 16% according to Table 28, corrigendum no.1/2022, SDM

^Design allowance of 12.1% according to Table 31, corrigendum no.1/2022, SDM

6.6 Identified Drainage Issues

6.6.1 The existing drainage system presents the following concerns:

i. Discharge is dispersed across three routes (access road, government slope, and southwest U-channel), complicating maintenance.
ii. No drainage infrastructure for Catchment E, leading to uncontrolled runoff onto adjacent properties.

7) Proposed Drainage System (Cont'd)

7.5 Post-Redevelopment Runoff Assessment

7.5.1 The future drainage flow path is illustrated in Appendix IV.

7.5.2 Total discharge into the 600mm U-channel will increase from 89.9 L/s to 124.7 L/s.

7.5.3 The revised drainage pattern is illustrated below and attached in **Appendix V**.

Catchment Ref:	Location	Area (m2)	Surface Condition	Catchment Coefficient	Rainfall Intensity (mm/hr)	Design Allowance (End of 21 Cen)	Rainfall Inc. Factor (End of 21 Cen)	Flowrate (L/s)	Discharge Point
A	Northern Slope (Government)	682.80	Steep Slope (Heavy Soil)	0.35	226	12.1%	16.0%	19.5	Access Road (East)
B	Northern Slope (Government)	116.44	Steep Slope (Heavy Soil)	0.35				3.3	Ex. 600mm U-channel on Slope (Southwest)
G	Site (After Re-development)	2,043.87						0.0	
	Greenery	284.62	Flat, Soil	0.2				4.6	
		130.29	Steep Slope (Heavy Soil)	0.35				3.7	
	Concrete	1,628.96	Concrete	0.85				113.0	

Drainage Discharge Point	Existing (L/s)	After Re-development (L/s)
Access Road (East)	44.8	0
Government Slope (East) & downstream RBL 667	1.0	0
Ex. 600mm U-channel on slope (Southern West)	89.9	124.7

7.6 Capacity Assessment of 600mm U-Channel

7.6.1 Using Manning's Equation, the channel's capacity is evaluated as follows:

Runoff collected by 600mm U-Channel:

	Area (m^2)	Surface Condition	Catchment Coefficient	Flowrate (L/s)
Upstream Slope	116.44	Steep Slope	0.35	3.3
Site	2,043.87			121.4
			Total	124.7

Flow velocity, $V = \frac{1}{U} \times R^{2/3} \times S^{1/2}$

Where U = Roughness coefficient of pipe
(for concrete lined channel in fair condition, U = 0.016)
R = Hydraulic Radius
S = Gradient of fall

Gradient Fall:
S = Upstream I.L – Downstream I.L. / Length
= (80.21 – 79.25) / 7.37m (as surveyed)
= 0.13

Assuming 1/2 bore flow of 600mm channel,
R = 0.25 D
V = $\frac{1}{0.016} \times (0.25 \times 0.6)^{2/3} (0.13)^{1/2}$
= 6.36 m/s

Handling capacity
Q = AV
= $(3.14 \times 0.3^2 / 2) \times (6.36)$
= 0.8989 m^3/s
= 898.9 l/s
> 124.7 l/s (13.9%, acceptable)

8) Conclusion

8.1 The proposed redevelopment improves drainage efficiency by consolidating runoff into a single discharge point.

8.2 No uncontrolled runoff will flow onto government slopes or adjacent property (RBL667 & Ext.).

8.3 The existing 600mm U-channel has sufficient capacity (13.9% utilization) to accommodate increased flows.

8.4 No adverse impacts on existing drainage infrastructure are anticipated.

End of Report

Appendix III – Evaluation of Runoff from Catchments (Existing)

Proposed Residential Re-development at 66 Deep Water Bay Road, Hong Kong
Evaluation of Runoff from Catchments (Existing)

Catchment Ref:	Location	Area (m2)	Surface Condition	Catchment Coefficient	Rainfall Intensity (mm/hr)	Design Allowance (End of 21 Cen)	Rainfall Inc. Factor (End of 21 Cen)	Flowrate (L/s)	Discharge Point
A	Northern Slope	682.80	Steep Slope (Heavy Soil)	0.35	226	12.1%	16.0%	19.5	Access Road (East)
B	Northern Slope	116.44	Steep Slope (Heavy Soil)	0.35				3.3	
C	Site (North Portion) Slope	176.77	Steep Slope (Heavy Soil)	0.35				5.1	
D	Site (North Portion) Driveway	524.28	Concrete	0.85				36.4	
E	Site (East Portion) Slope	36.44	Steep Slope (Heavy Soil)	0.35				1.0	Slope (East), and downstream RBL 667 & Ext.
F	Site (South Portion) Building	1287.85	Concrete	0.85				89.4	Ex. 600mm U-channel (Southwest)
		18.53	Steep Slope (Heavy Soil)	0.35				0.5	

Appendix V – P Evaluation of Runoff from Catchments (Future)

Proposed Residential Re-development at 66 Deep Water Bay Road, Hong Kong
Evaluation of Runoff from Catchments (Post-redevelopment)

Catchment Ref:	Location	Area (m2)	Surface Condition	Catchment Coefficient	Rainfall Intensity (mm/hr)	Rainfall Inc. Factor (End of 21 Cen)	Flowrate (L/s)	Discharge Point
A	Northern Slope (Government)	682.80	Steep Slope (Heavy Soil)	0.35	226	16.0%	17.4	Access Road (East)
B	Northern Slope (Government)	116.44	Steep Slope (Heavy Soil)	0.35			3.0	Ex. 600mm U-channel on Slope (Southwest)
G	Site (After Re-development)	2,043.87						
	Greenery	284.62	Flat, Soil	0.2			4.1	
		130.29	Steep Slope (Heavy Soil)	0.35			3.3	
	Concrete	1,628.96	Concrete	0.85			100.8	

Appendix 4

Replacement Pages of Environmental Assessment

7 Land Contamination

7.1 Introduction

7.1.1 The Site is located at Shouson Hill facing Deep Water Bay and has been used for residential purposes since 1963. Therefore, no potential land contamination issues are anticipated due to the existing and historical land uses. Selected historical aerial photographs between Year 1963 and Year 2025 are shown in **Table 7.1**.

Table 7.1 Selected Historical Aerial Photographs (between Year 1963 and Year 2025)

Year (Arieal Photo ID)	Photo
1963 (1963_6737)	

PLANNING LIMITED
規劃顧問有限公司

UNIT K, 16/F, NG TOWER
133 HOI BUN ROAD, KWUN TONG
KOWLOON, HONG KONG
九龍觀塘海濱道133號
萬兆豐中心16樓K室
[redacted]

Our Ref: S3068a/66DWBR/25/008Lg

22 December 2025

By Email

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

Dear Sir/Madam,

Proposed Minor Relaxation of Site Coverage Restriction
for Permitted House Development
in "Residential (Group C)3" Zone,
No. 66 Deep Water Bay Road, Shouson Hill, Hong Kong
(Planning Application No. A/H17/144)
Further Information No. 3

Reference is made to the captioned S16 Planning Application which is scheduled for consideration by the Town Planning Board ("TPB") on 23 January 2026 and Further Information ("FI") No.2 submitted to the TPB on 19 December 2025.

It is noted that the voids at the entrances of the two houses may not be exempted from GFA calculation. In addition, we would like to supplement an updated plan for the calculation of basement carpark, demonstrating that not less than 50% of the area at the carport level is dedicated for car parking use.

Should you have any queries in relation to the attached, please do not hesitate to contact the undersigned at [redacted] or our Mr Wilson Man at [redacted].

Thank you for your kind attention.

Yours faithfully
For and on behalf of
KTA PLANNING LIMITED

Kitty Wong

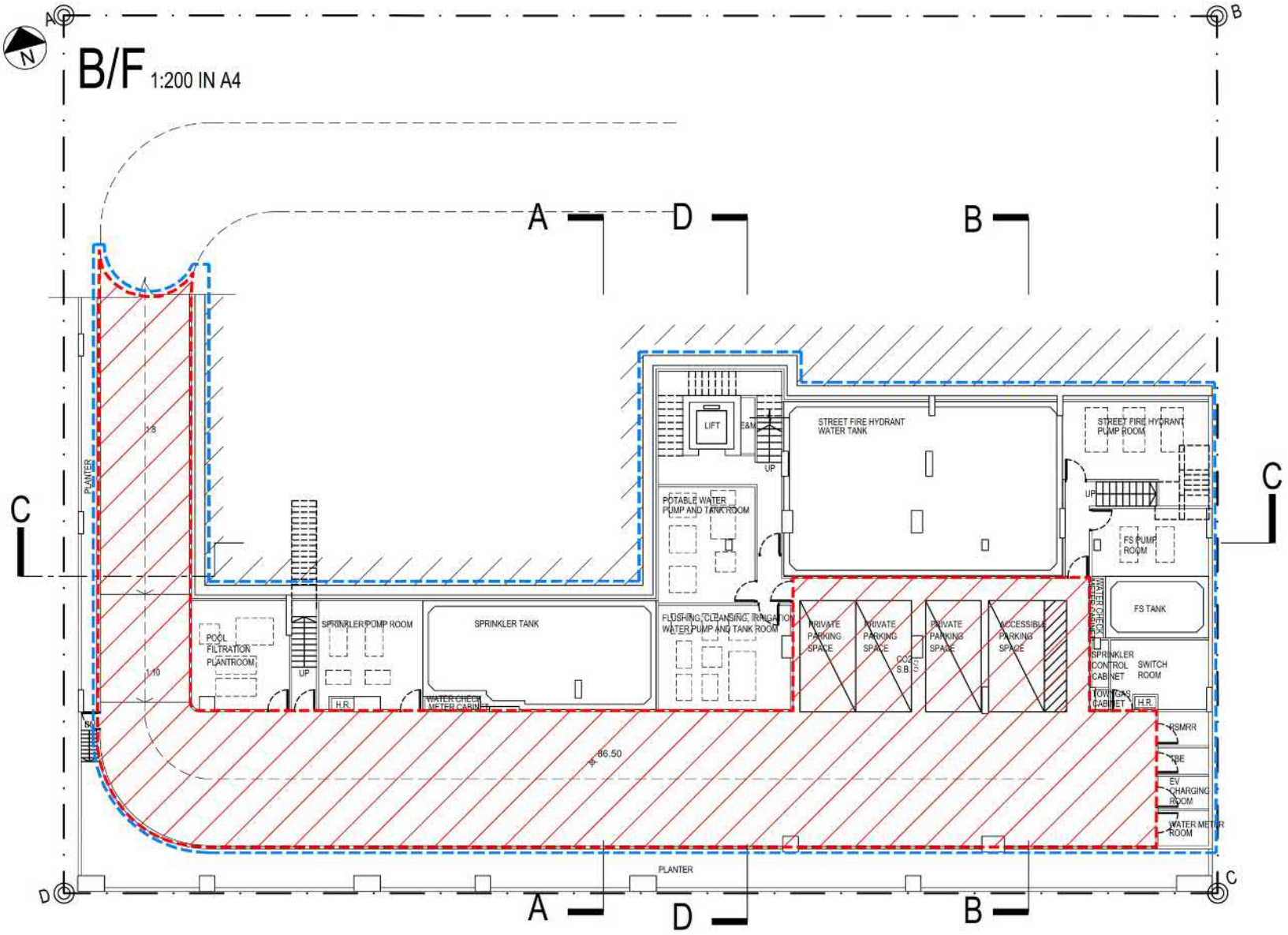
Encl. Updated Plan on the Area for Car Parking Use

cc. the Applicant & Team

KW/WM/vy

bsi ISO 9001 Quality Management Systems
FS 579819

PERCENTAGE OF AREA FOR CAR PARKING USE



PERCENTAGE OF AREA FOR CAR PARKING USE:
AREA FOR CAR PARKING USE /AREA FOR CARPORT x 100
448.970 / 893.075 x 100 = 50.272 > 50% AREA OF CARPORT

AREA OF CAR PARKING USE
AREA OF CARPORT

Appendix II of
MPC Paper No. A/H17/144

Similar Applications since 2000 for
Proposed Minor Relaxation of Site Coverage (SC) Restriction
within "Residential (Group C)" zone
on the Shouson Hill & Repulse Bay Outline Zoning Plan

Approved Applications

	Application No.	Location	Proposed Development	Date of Consideration and Decision	Approval Condition(s)
1	A/H17/69	35 Deep Water Bay Road	Relaxation of SC Restriction from 25% to 40%	27.10.2000 Approved with conditions	(1) & (2)
2	A/H17/70	89 Repulse Bay Road	Relaxation of SC Restriction from 25% to 40% and 35% for G/F and 1/F respectively	28.7.2000 Approved	N/A
3	A/H17/71	72 Deep Water Bay Road	Relaxation of SC Restriction from 25% to 48.9%	25.8.2000 Approved	N/A
4	A/H17/73	110 Repulse Bay Road	Relaxation of SC Restriction from 22.5% to 25%	22.9.2000 Approved with conditions	(3) & (4)
5	A/H17/75	16 Repulse Bay Road	Relaxation of SC Restriction from 25% to 27%	10.11.2000 Approved	N/A
6	A/H17/77	33-35 Island Road, Repulse Bay	Relaxation of SC Restriction from 25% to 29%	22.12.2000 Approved with condition	(3)
7	A/H17/78	110 Repulse Bay Road	Relaxation of SC Restriction from 22.5% to 35%	22.12.2000 Approved with conditions	(3) & (4)
8	A/H17/79	11 Shouson Hill Road West	Relaxation of SC Restriction from 25% to 30%	22.12.2000 Approved with condition	(3)

	Application No.	Location	Proposed Development	Date of Consideration and Decision	Approval Condition(s)
9	A/H17/87	89-91 Repulse Bay Road, Repulse Bay	Relaxation of SC Restriction from 25% to 40%	5.10.2001 Approved with conditions	(5) & (6)
10	A/H17/88	28 Repulse Bay Road	Relaxation of Domestic SC Restriction from 25% to 35%	21.9.2001 Approved with condition	(6)
11	A/H17/89	110 Repulse Bay Road	Relaxation of SC Restriction from 22.5% to 35%	5.10.2001 Approved with conditions	(7) & (8)
12	A/H17/99	40 Island Road	Minor Relaxation of SC Restriction from 25% to 27%	4.4.2003 Approved	N/A
13	A/H17/101	11&12 Headland Road, South Bay	Minor Relaxation of SC Restriction from 25% to 35%	25.6.2004 Approved with condition	(9)
14	A/H17/102	77 Deep Water Bay Road	Minor Relaxation of SC Restriction from 25% to 34%	15.8.2003 Approved with condition	(10)
15	A/H17/107	14 Headland Road	Minor Relaxation of SC Restriction from 25% to 39%	26.3.2004 Approved with condition	(6)
16	A/H17/108	20 Repulse Bay Road	Minor Relaxation of SC Restriction from 25% to 48%	30.4.2004 Approved with condition	(6)
17	A/H17/115	14 Headland Road	Minor Relaxation of SC Restriction from 25% to 35%	28.4.2006 Approved with condition	(6)
18	A/H17/116	11&12 Headland Road, South Bay	Minor Relaxation of SC Restriction from 25% to 35%	7.7.2006 Approved with conditions	(9), (11) & (12)
19	A/H17/117	38 Repulse Bay Road	Minor Relaxation of SC Restriction from 25% to 40%	14.9.2007 Approved with conditions	(7), (11) & (13)

	Application No.	Location	Proposed Development	Date of Consideration and Decision	Approval Condition(s)
20	A/H17/125	15 South Bay Road, Repulse Bay	Minor Relaxation of SC Restriction from 25% to 29%	5.8.2011 Approved with conditions	(6) & (11)
21	A/H17/126	15 South Bay Road, Repulse Bay	Minor Relaxation of SC Restriction from 25% to 29%	18.11.2011 Approved with conditions	(6) & (11)
22	A/H17/130	36 Repulse Bay Road	Minor Relaxation of SC Restriction from 25% to 29.83%	16.8.2013 Approved with condition	(11)
23	A/H17/132	7 Headland Road, South Bay	Minor Relaxation of SC Restriction from 25% to 27%	25.4.2014 Approved with conditions	(6) & (11)
24	A/H17/136	2 Headland Road, South Bay	Proposed Minor Relaxation of SC Restriction from 25% to 30%	3.2.2017 Approved with conditions	(6) & (14)
25	A/H17/140	39 South Bay Road, South Bay	Proposed Minor Relaxation of BH and SC Restriction from 22.5% to 28%	4.10.2019 Approved with condition	(15)
26	A/H17/141	92 Repulse Bay Road, Repulse Bay	Proposed Minor Relaxation of SC Restriction from 22.5% to 30%	28.1.2022 Approved with condition	(16)

Approval Conditions

(1) the submission of updated tree survey, tree felling, landscaping and stilt/cantilever structures screening proposals for the proposed development to the satisfaction of the Director of Planning (D of Plan) or of the Town Planning Board (the Board) prior to the commencement of the site formation works for the proposed redevelopment.

(2) the provision of car parking facilities, driveway and vehicular access arrangement to the satisfaction of the Commissioner for Transport (C for T) or of the Board.

(3) the submission of a tree preservation proposal and the provision and implementation of landscaping treatments to the satisfaction of the D of Plan or of the Board

(4) the submission of a Geotechnical Planning Review Report to the satisfaction of the Director of Civil Engineering or of the Board.

(5) the setting back of the cantilevered deck at the southern boundary of the site to the satisfaction of the D of Plan or of the Board.

(6) the submission and implementation of tree preservation and landscaping proposals to the satisfaction of

the D of Plan or of the Board.

(7) the submission and implementation of landscaping proposal to the satisfaction of the D of Plan or of the Board.

(8) the design of the proposed landscape deck at the western portion of the application site to be revised in order to reduce the visual impact of the stilt structure to the satisfaction of the D of Plan or of the Board.

(9) the submission and implementation of a tree preservation scheme, a landscape proposal and the submission of monthly monitoring reports during construction period to the satisfaction of the D of Plan or of the Board.

(10) the submission and implementation of tree felling and landscaping proposals prior to the commencement of works for the proposed residential development to the satisfaction of the D of Plan or of the Board.

(11) the provision of water supply for fire-fighting and fire services installations to the satisfaction of the Director of Fire Services (D of FS) or of the Board.

(12) the design and provision of the ingress/egress of the proposed development to the satisfaction of the C for T or of the Board.

(13) the submission and implementation of a building design proposal to further improve the design of the proposed development, particularly for the façade facing Repulse Bay Road, to the satisfaction of the D of Plan or of the Board.

(14) the provision of fire service installations for firefighting to the satisfaction of the D of FS or of the Board.

(15) the provision of vertical greening on the podium façade facing South Bay Road to the satisfaction of the D of Plan or of the Board.

(16) the submission and implementation of a diversion proposal to the sewer main at the site to the satisfaction of the Director of Drainage Services or of the Board.

□Urgent □Return receipt □Expand Group □Restricted □Prevent Copy

tpbpd/PLAND

寄件者: [redacted]
寄件日期: 2025年11月03日星期一 3:32
收件者: tpbpd/PLAND
主旨: A/H17/144 66 Deeo Water Bay Road

類別: Internet Email

A/H17/144

No. 66 Deep Water Bay Road, Shouson Hill, Hong Kong (Rural Building Lot No.573

Site area: About 2,043.869sq.m

Zoning: "Res (Group C) 3"

Applied development: MR of Site Coverage Restriction for Permitted House Use

Dear TPB Members,

Strong Objections, this is a substantial increase on the permitted SC.

In spite of the artfully angled images, it is clear that the podium would have a strong wall effect and the development would certainly have a strong negative impact on the panorama.

The SC restrictions were imposed in order to preserve t the area's low-rise, low-density character. Approval would set an undesirable precedent and effectively impact the current 'exclusive' nature of the district.

The application should be rejected.

Mary Mulvihill

Soq 1 2

□Urgent □Return receipt □Expand Group □Restricted □Prevent Copy

tpbpd/PLAND

寄件者: [redacted]
寄件日期: 2025年12月21日星期日 4:28
收件者: tpbpd/PLAND
主旨: Re: A/H17/144 66 Deep Water Bay Road

類別: Internet Email

Dear TPB Members,

The additional image provided in VIA is fantasy. That a larger and higher building, note that the lift shaft will add an additonal 5mts, would have less impact that the current building is risible.

Mary Mulivhill

From: [redacted]
To: tpbpd <tpbpd@pland.gov.hk>
Date: Monday, 3 November 2025 3:31 AM HKT
Subject: A/H17/144 66 Deeo Water Bay Road

A/H17/144

No. 66 Deep Water Bay Road, Shouson Hill, Hong Kong (Rural Building Lot No.573

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The application should be rejected.

Mary Mulvihill

Recommended Advisory Clauses

(a) to note the comments of the District Lands Office/Hong Kong West and South, Lands Department (LandsD) that

i. the registered owner of the Lot is required to apply for a lease modification for implementation of the proposed development. If the application for lease modification is approved by LandsD in the capacity of a landlord, it will be subject to such terms and conditions, including payment of premium and administrative fee, as may be imposed by LandsD at its absolute discretion; and

ii. comments on the detailed design of the proposed development are reserved, which will be given during the building plan submission stage;

(b) to note the comments of the Chief Town Planner/Urban Design and Landscape, Planning Department that the approval of the application does not imply approval of the greenery coverage requirements under Buildings Department (BD)'s Practice Notes for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers (PNAP) APP-152 and/or under the lease. The greenery coverage calculation should be submitted separately to BD/LandsD for approval. The applicant should also approach relevant department(s) direct to obtain the necessary approval for any proposed tree preservation/removal scheme;

(c) to note the comments of the Chief Building Surveyor/Hong Kong West, BD that

i. the proposed development should be in all aspects complied with the Buildings Ordinance (BO) and allied legislation thereunder. Attention should be particularly drawn to the requirements of PNAP APP-151 and APP-152 for granting Gross Floor Area concessions;

ii. the void in House 1 with a floor-to-floor height of about 6m for 'Formal Living' on G/F may be acceptable under PNAP APP-2 only if the 'structure and E&M zone' is not more than 1m in height;

iii. barrier free access and facilities including accessible parking space should be provided in accordance with Building (Planning) Regulations 72 and the Design Manual: Barrier Free Access 2008 (2025 Edition); and

iv. detailed comments on the proposal can only be given at building plan submission stage;

(d) to note the comments of Director of Fire Services that

i. detailed fire safety requirements will be formulated upon receipt of formal submission of general building plans;

ii. the emergency vehicular access (EVA) provision in the proposed development shall comply with the standard as stipulated in Section 6, Part D of the Code of Practice for Fire Safety in Buildings 2011, which is administered by the Building Authority; and

iii. in case of any deficiencies for the provision of EVA, enhanced fire safety requirements will be required on a case-by-case basis. These provisions may include a sprinkler system with fast response type sprinkler heads, pressurization of the staircase or natural venting of the staircase and an enhanced size of the water tank for the sprinkler system tank as well as the fire hydrant/hose reel system tank, etc.; and

(e) to note the comments of the Commissioner of Police that

i. during the works period, noise and nuisance caused to nearby residents should be minimised;

ii. all works must comply with the laws and regulations of the Hong Kong Special Administrative Region;

iii. the safety of pedestrians at all times should be ensured;

iv. the proposed development should not cause congestion or obstruction to traffic, including illegal parking in nearby areas; and

v. the security of the site should be maintained and unauthorised access should be prevented.