ARUP

Appendix C

Geotechnical Planning Review Report

Geotechnical Planning Review Report for Proposed Minor Relaxation of Building Height Restriction for Permitted House Development in "Residential (Group C) 2" Zone at Lot No. 214 & the Extension thereto in D.D. 219 and Adjoining Government Land, Tin Shek Road, Sai Kung, New Territories

November 2024

Contents Amendment Record

This report has been issued and amended as follows:

Issue	Revision	Description	Date	Prepared by
1	0	First issue	November 2024	IC

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FIGURES

APPENDICES

1. INTRODUCTION

A redevelopment of a new 2 storey house plus 1 storey of basement carpark is proposed within Lot No. 214 in D.D. 219 & Extension Thereto and adjoining Government land where an existing building is located (The Site). In support of a S16 planning application for minor relaxation of Building Height restriction for permitted house development, this Geotechnical Planning Review Report (GPRR) is submitted to form part of the submission. Amax Architects and Surveyors Limited has been appointed to be the Consultant responsible for this study and submission. This report contained the desk study summarizing the available information on geological and ground condition. It is anticipated that a detailed design of the development will be submitted to Building Department for approval after the GPRR is accepted by various government departments.

The geotechnical planning review is generally carried out according to the document "GEO Advice Note for Planning Applications under Town Planning Ordinance (Cap.131)".

2. EXISTING INFORMATION

2.1 THE SITE TOPOGRAPHY AND SURROUNDING FACILITIES

The Site is currently occupied by a building structures which would be demolished. The photographs of the Site are presented in ***Appendix 1*** for information.

The Site is polygonal in shape and comprised of flat grounds at 2 levels of +85.5mPD and +82.9mPD which are demarcated by existing walls within the Site. The total site area is about 681.4m^2.

Unregistered walls could be observed retaining the western boundary of the Site and the adjacent Tin Shek Road respectively. A sloping ground facing East is observed adjacent to the unregistered walls within the Site. Opposite to the unregistered walls at another side of Tin Shek Road there is a registered retaining wall with No. 7SE-D/R46 which is about 5m away from the Site area. At the northern boundary, the Site is bounded by Tin Shek Road. The eastern and southern boundaries of the Site are bounded by an unregistered slope below 3m high. A registered slope with No. 7SE-D/CR150 which is about 3m from the Site area is observed bounding along the toe of the unregistered slope. The superstructure and the foundation of the existing building would be demolished and cleared out for the subject re-development. The footprint of the proposed main building is approximately 17m long and 8m wide on plan.

Figures 1.1 and 1.2 and ***1.3*** show the location, lot boundary and an aerial view of the Site respectively.

Figures 2.1 shows the topographic survey plan of the Site and ***Figures 2.2***, shows the topographic survey plan with the base map 7-SE-25A.

2.2 EXISTING SLOPE/RETAINING WALL FEATURES

According to Slope Information System (SIS) of Geotechnical Engineering Office (GEO) as presented in ***Appendix 3***, details man-made slopes which would be affected by the re-development works are as follows:

The feature 7SE-D/CR150 is comprised of a soil/rock cut slope and a toe retaining wall. It contains 6 sub-divisions according to land status. The cut slope portion is 6m high at maximum. The average angle of the cut slope is 50 degrees while the 3.5m tall wall is with a face angle of 90 degrees. Both of the cut slope and retaining wall are around 110 long. It is facing towards south-eastern direction. The crest facility of the slope is a road/footpath with low traffic density while the toe facilities is cottage therefore the Consequence-to-life category is 1. A Stage 2 Study (S2R155/2004) report was compiled by C M Wong & Associates Limited in January 2005. No Dangerous Hillside (DH) Order to the private lot owners were required but only a Type 3 Advisory Letter were recommended to one of the owners.

The feature 7SE-D/R46 is a masonry retaining wall which is 4.2m high and 32m long with face angle of 85 degrees. It is supporting the platform surrounding the residential building of Fung Ming Villa which is at the crest area of the wall before 1977. The crest facility is a densely-used sitting out area while the toe facility is the Tin Shek Road with

very low traffic density. Therefore, the Consequence-to-life category is 2. It contains 2 sub-divisions according to land status.

The existing unregistered slope adjacent to the eastern and southern boundary of the Site is at maximum 1.8m high and 45m long with face angle of 27 degrees sloping down towards South-east. It is covered with vegetation surface. The toe found the feature 7SE-D/CR150 while the crest found the Site. No adverse deteriorating of the slope was observed during site inspection.

The existing unregistered retaining wall along the western and northern boundary has the maximum retained height of 2.6m and length of 40m approximately. Its face angle is 90 degrees facing towards East. A 1.4m high fence wall is protruding from the top of the unregistered wall. The crest facility of the wall is the Tin Shek Road and the toe facility of the wall is the Site. No adverse deteriorating of the wall was observed during site inspection.

2.3 GEOLOGY

According to a geological map in Geotechnical Area Studies Program (GASP) – Report 9 "East New Territories" published by Geotechnical Control Office in 1988, the site is underlain by COARSE TUFF. No geological faults is identified at the site. The geological map is reproduced in ***Figure 3.***

2.4 NATURAL TERRAIN LANDSLIDE INVENTORY

According to the Natural Terrain Landslide Inventory (NTIL) shown in Geotechnical Engineering Office's (GEO) online system Ginfo, five relict landslides were first observed in 1963 within a circular area with radius about 200m from the Site. A graphical NTLI-Landslide Record is shown in ***Figure 4***.

2.5 HISTORICAL LANDSLIDE CATCHMENT INVENTORY

According to the Historical Landslide Catchment Inventory (HLCI) shown in Geotechnical Engineering Office's online system Ginfo, the catchment No. 7SE-D/DF9 with a plan area of 111745m^2 fell within a circular area with radius about 200m from the Site. Six numbers of relict ENTIL records were located within the catchment. A graphical HLCI-Landslide Record is shown in ***Figure 8***.

2.6 BOULDER INVENTORY

According to the GEO's Quantitative Risk Assessment (QRA) of Boulder Fall Hazards No. S7_U, no boulder fall records are found in the study area. The corresponding extract of information is shown in ***Figure 5***.

2.7 GASP REPORT

The GASP – Report 9 contained a layout namely Geotechnical Land Use Map (GLUM)

which indicated the Site belongs to Class II. Any development fall into this Class will possibly require average intensity of site investigation works and normal engineering cost of development. Another map namely Physical Constraints Map indicated that the Site did not have no geological constraints. The extracts of the portions of the two maps are included in ***Figures 6 & 7***.

All of the above existing information are based on some observation from site inspections, the plans from the GASP report in year 1988, historical records and current slope information from GEO's Ginfo. The engineering findings and assessment concluded and included this report forming the desk study basis of the geotechnical suitability for the redevelopment would be subject to future detailed design stage.

3. PROPOSED DEVELOPMENT

The proposed re-development will include a 2-storeys house with a basement, provision of staircases, minor flattening of the sloping ground within the site to form the podium, after the demolition of the existing building.

The proposed building will contain floors from B/F to R/F. Staircases and rooms would be constructed at the G/F and 1/F floor of the building. Flushing and sprinkler water tanks would be provided at the R/F floor. Car-parking area would be provided at the B/F. The floor levels of B/F, G/F, 1/F and R/F would be +82.35mPD, +85.65mPD, +89.65mPD and +93.65mPD respectively.

With reference to the Conceptual Drawing of the Proposed Development, ***Appendix 2*** shows the footprint of the proposed re-development.

4. GEOTECHNICAL CONSIDERATION

4.1 GENERAL

The following geotechnical works related to the proposed re-development would be required:

a) Ground Investigation Works
b) Existing Slopes and Retaining Walls
c) Foundation and Sub-structures Works
d) Excavation and Lateral Support Works

4.2 GROUND INVESTIGATION WORKS

There is no borehole information available from the Geotechnical Information Unit (GIU) of the Civil Engineering Development Department (CEDD) for the Site area.

To identify the geology of the Site and retrieve the geological information for this development, site-specific ground investigation (GI) works were carried out and completed in July/August 2024. The ground investigation works included 3 boreholes with field tests, groundwater monitoring and soil/rock sampling and 7 trial pits at the boundary of the Site to expose widely the ground conditions at shallow depth from ground surface.

The ground materials samples obtained from the site-specific GI could be used to assess a set of engineering design parameters of each type of soils and bedrock, and to determine the groundwater table based on the groundwater monitoring for the engineering design of the foundation and excavation and lateral support (ELS) works.

A ground slab of around 200mm thick covers the most of the ground surface of the Site. The boreholes logs indicate the Site is underlain by Fill, subsurface Concrete materials, Colluvium then decomposed Tuff. The bedrock head levels vary from about 12m to 16m deep from the existing ground level.

Based on the results of existing site investigation data, the geology of the Site comprises of the following major geological strata:

(a) Fill
A layer of fill was encountered below 200mm thick ground slab in most of the ground investigation stations. Thickness generally varies from 0.3m (TP3, TP6) to maximum 3m (BH3P). The fill is described as silt/sand/gravel/cobble/concrete with gravel/cobble sized concrete/rock fragments/rootlets/brick fragments.

(b) Colluvium
A layer of colluvium is encountered below the Fill layer. The thickness of the colluvium is around 6m. The colluvium is described as silt/gravel/cobble/boulder with rock fragments/rootlets.

(c) Completely Decomposed Tuff (CDT)
CDT is extremely weak, pinkish brown/brownish grey, completely decomposed Tuff (Stiff to very stiff, sandy silt with gravel sized rock fragments / Very dense, sandy gravel sized rock fragments).

(d) Highly Decomposed Tuff (HDT)

HDT is weak to moderately weak, greyish brown and grey, highly decomposed coarse as Tuff with very closely and closely spaced, rough undulating and planar, narrow, iron stained joints.

(e) Moderately Decomposed Tuff (MDT)

MDT is strong/moderately strong, brownish grey/grey/greyish brown, spotted with black and white, moderately/slightly decomposed coarse as Tuff with very closely/closely/medium/locally medium spaced, rough undulating and planar, narrow/very narrow/extremely narrow, iron/chlorite stained joints.

(f) Slightly Decomposed Tuff (SDT)

SDT is strong, brownish grey/grey/dark grey/spotted with black and white, slightly decomposed coarse ash Tuff, with closely/medium/widely/very widely spaced, rough undulating and planar, very narrow/extremely narrow, iron/chlorite stained joints.

According to the groundwater monitoring records from 12-08-2024 to 09-09-2024 as a part of the site-specific ground investigation, it could be observed that the highest groundwater level was +81.70mPD (around 3.8m below existing ground level) and the lowest groundwater level was +76.78mPD (around 8.7m below existing ground level). The design groundwater levels and any necessary pumping tests would be investigated from further groundwater monitoring results in the detailed design stage.

A copy of the ground investigation fieldworks report for this Development is enclosed in ***Appendix 4***.

4.3 EXISTING SLOPES AND RETAINING WALLS

a.) Unregistered Slope Adjacent to the Southern and Eastern Boundaries of the Site and Existing Feature 7SE-D/CR150

Since the earth excavation works within the Site would be carried out at the crest of the unregistered slope which is at the crest of the existing feature 7SE-D/CR150, overburden loads on the descending sloping grounds of the slopes would be reduced. This would have a beneficial effect on the stability of the sloping grounds. As the loads on the sides of the pipe pile walls of the proposed ELS works would be different, unbalanced stress would result. The resultant unbalanced forces could have a detrimental effect on the sloping grounds. Besides, loads from the permanent foundation within the Site would be founded as deep as possible to ensure no additional loads exerted on the sloping grounds. The details of ensuring no adverse loadings and effects on the sloping grounds would be catered for during the detailed design stages.

b.) Existing Retaining Wall 7SE-D/R46

The proposed ELS works at the Site includes excavation of earth to form space for the construction of the permanent foundation works. The retaining wall 7SE-D/R46 is at 5m from the Site and thus fall into the influence zone of settlement due to the earth excavation works. The wall thus would experience ground settlements due to the pipe pile wall deflection and groundwater drawdown. The settlement would be controlled to 25mm at maximum and the effects of settlements on the retaining wall would be maintained at minimal. Regarding the loads from the permanent foundation within the Site, they would be founded as deep as possible to minimize the effects to the existing retaining wall including the sub-surface portion of the wall. The details of controlling

and minimize the effects on the wall would be catered for during the detailed design stages.

4.4 FOUNDATION AND SUB-STRUCTURES WORKS

The proposed development includes a low-rise building with main loading on its proposed foundation from the superstructure weight, pressure from the groundwater and wind, the lateral earth pressures and the other vertical loads during the service period of the building. Thus, shallow foundation system are appropriate for the facilities. In the followings, the feasibility of some common foundation systems in Hong Kong for this project are discussed.

a. Bored Piles

Bored piling is the common foundation type suitable all types of buildings. The only drawback is its high construction cost.

b. Driven H-piles

According to the Code of Practice for Foundation 2017, the minimum pile length of pile foundation is l0m. As unveiled from the site-specific ground investigation, the bedrock would be around 12m below existing ground level, the bouldery colluvium layer above the bedrock would require pre-boring before driving the H-piles into the ground and hard driving operation would be anticipated. The environmental nuisance caused by the driving action would be a major problem to the existing facilities and residential building surrounding the Site. It will render driven H-piles is not a suitable option for the project.

c. Mini-piles

Mini-piles socketed in Grade Ill or better rock are considered to be a feasible foundation option since vertical and raking mini-piles can be used together to provide a foundation system that can resist vertical loads and lateral loads.

A mini-pile has a lower design capacity than that of a socketed H-pile therefore mini-pile is suitable for the low-rise building in the project if the rockhead level is deep and the soil stratum is weak.

d. Rock socketed H-piles

Rock socketed H-piles embedded in Grade III or better rock are considered to be a feasible foundation option if the rockhead is not shallow. The rock socketed H-piles can be designed to resist the vertical loads and lateral loads acting on the pile foundations.

Predrilling will be carried out to confirm the rockhead level and adequacy of the founding materials. The locations of the predrill holes will be carefully planned such that all proposed socketed H-piles will be located within a distance of 5m maximum from a completed borehole or a predrill hole.

e. Shallow Foundation

Shallow foundation founding on competent soil stratum is considered to be

feasible foundation system for the development. As the proposed facilities will be short or shallow, and the site area is not congested with proposed facilities therefore the sufficient subsurface space could be allowed, wide shallow foundations can be used to achieve a feasible foundation solution to the project. Nonetheless, the competence of the soil stratums should be verified by plate load tests. If sufficient bearing capacity could not be attained, ground improvement for the incompetent soil stratum or other feasible types of foundation system should be sought.

Based on the above discussions, it is considered that shallow foundation founding on competent soil or mini-pile socketed in rock will be feasible foundation options for the proposed development.

The sub-structure works is mainly the construction of basement. The basement walls and the ground floor slabs would be constructed after the completion of the excavation and lateral support works as mentioned below and the completion foundation works for a proposed bottom-up construction sequence.

4.5 EXCAVATION AND LATERAL SUPPORT WORKS

Based on the planning submission, works of ELS to provide space for the construction of the sub-structures construction, including foundation and basement, and removal of existing sub-structure would thus be required. The loadings on the ELS system included the lateral earth pressures, groundwater pressure, surcharge and loadings from subsurface structures surrounding the Site. Proposed pipe pile walls as temporary supports against the mentioned loads are the most suitable as the ELS works of the Site. They are preferred because they are viable to be constructed to penetrate hard underground materials within the Site. The pipe pile walls would be either cantilevered with socketed into rock or braced with temporary shorings depending on the calculation in the later detailed design stage. The pipe pile walls would be installed to avoid damaging existing structures especially for those underground. Demolition of the temporary shoring should be carried out at the end of the ELS stage if shorings are required. Grout curtain would be provided to provide a cut-off effect to the groundwater seepage through the steel walls into the Site. As dewatering would be necessary within the Site, the curtain also extend the seepage path underneath the toe of the pile walls to limit excessive groundwater drawdown outside the Site and piping within the site due to the dewatering. The performance of the dewatering would be evaluated by pumping tests if required.

Pipe pile wall retaining the ground with cantilever actions without strutting system as the ELS works option was preferred to provide a non-congested excavation underground.

5. CONCLUSIONS

A geotechnical planning review of the Site for proposed development is concluded as below:

The 2-storeys house with a storey basement carpark would cater shallow earth excavation works feasible at the Site, thus providing a simple scheme of embedded cantilevered wall for the proposed ELS, sub-structures and shallow foundation works.

Therefore, any adverse effects on the existing utilities, buildings and structures adjacent to the Site from all of the proposed ELS, sub-structures works and foundation works for this redevelopment would be reduced as much as possible. Conversely, all the effects of surrounding facilities on the proposed works within the Site would be taken into account in the design of works.

Condition surveys would be carried out before the start of the works and geotechnical and structural monitoring stations would be installed for quantifying the effects of the works on the monitored facilities.

The detailed site-specific ground investigation works that had been carried out and laboratory tests to be carried out will determine the geological information and groundwater of the Site and the design parameters for the proposed ELS, foundation and the sub-structures works of this re-development in detailed design stage.

Moreover, the detailed design of the ELS, foundation and sub-structures works should be submitted accordingly to the Building Authority for approval in next stage.

In conclusion, it is considered that the proposed development at the Site based on the S16 planning application is geotechnically feasible with the schemes opting for pipe piles as the main proposed ELS, sub-structures works and shallow foundation as the proposed foundation works.

6. CONCLUSIONS

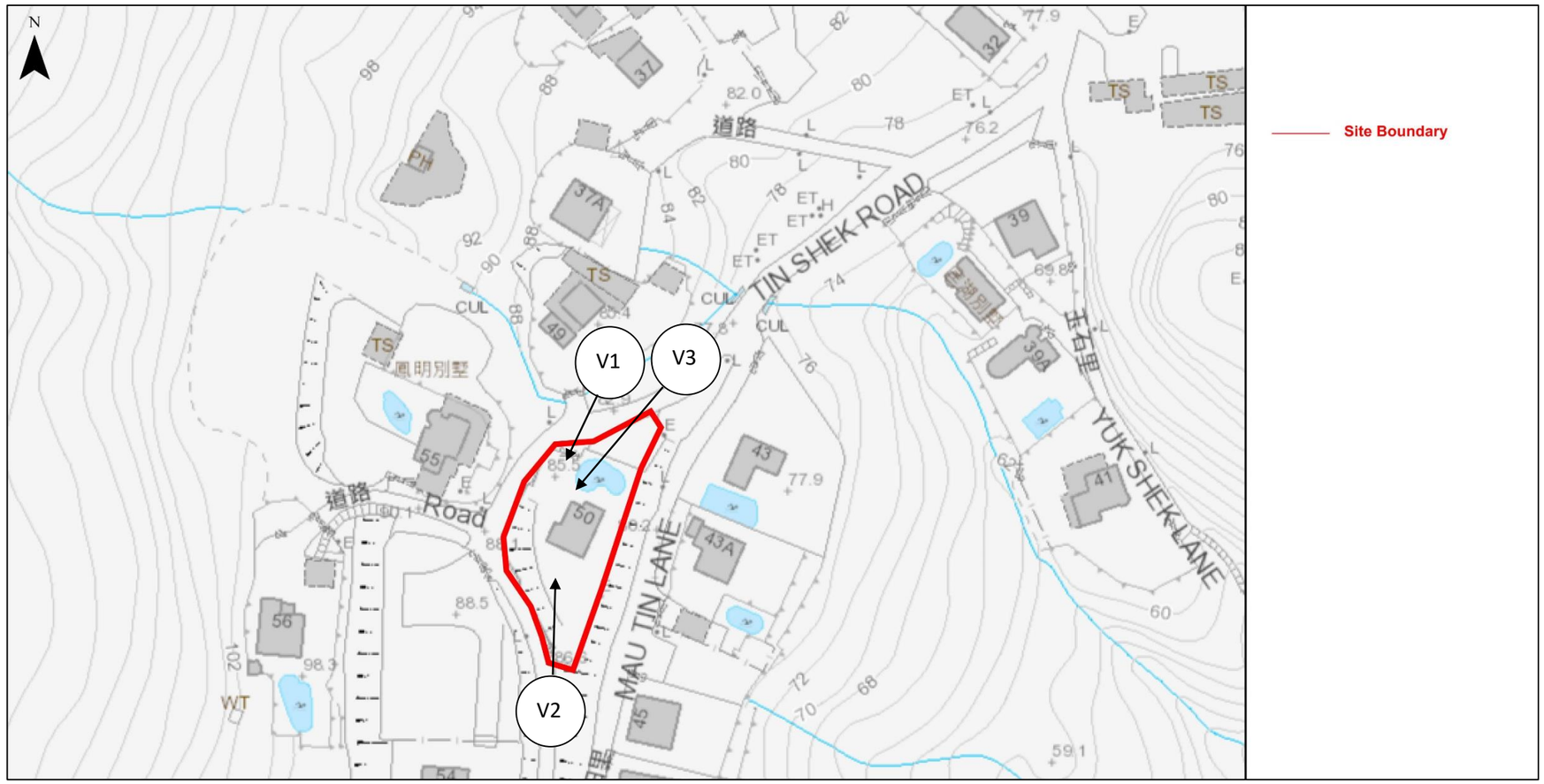
GCO (1988) – Geotechnical Area Studies Programme, East New Territories, GASP Report IX, Geotehnical Control Office, Civil Engineering Services Department.

GEO (2024) – Natural Terrain Landslide Inventory, Slope Information System, Geotechnical Engineering Office, Civil Engineering and Development Department.

GEO (2024) – QRA of Boulder Fall Hazard, Slope Information System, Geotechnical Engineering Office, Civil Engineering and Development Department.

Appendix 1

Site Photographic Records



Location Plan of Photos

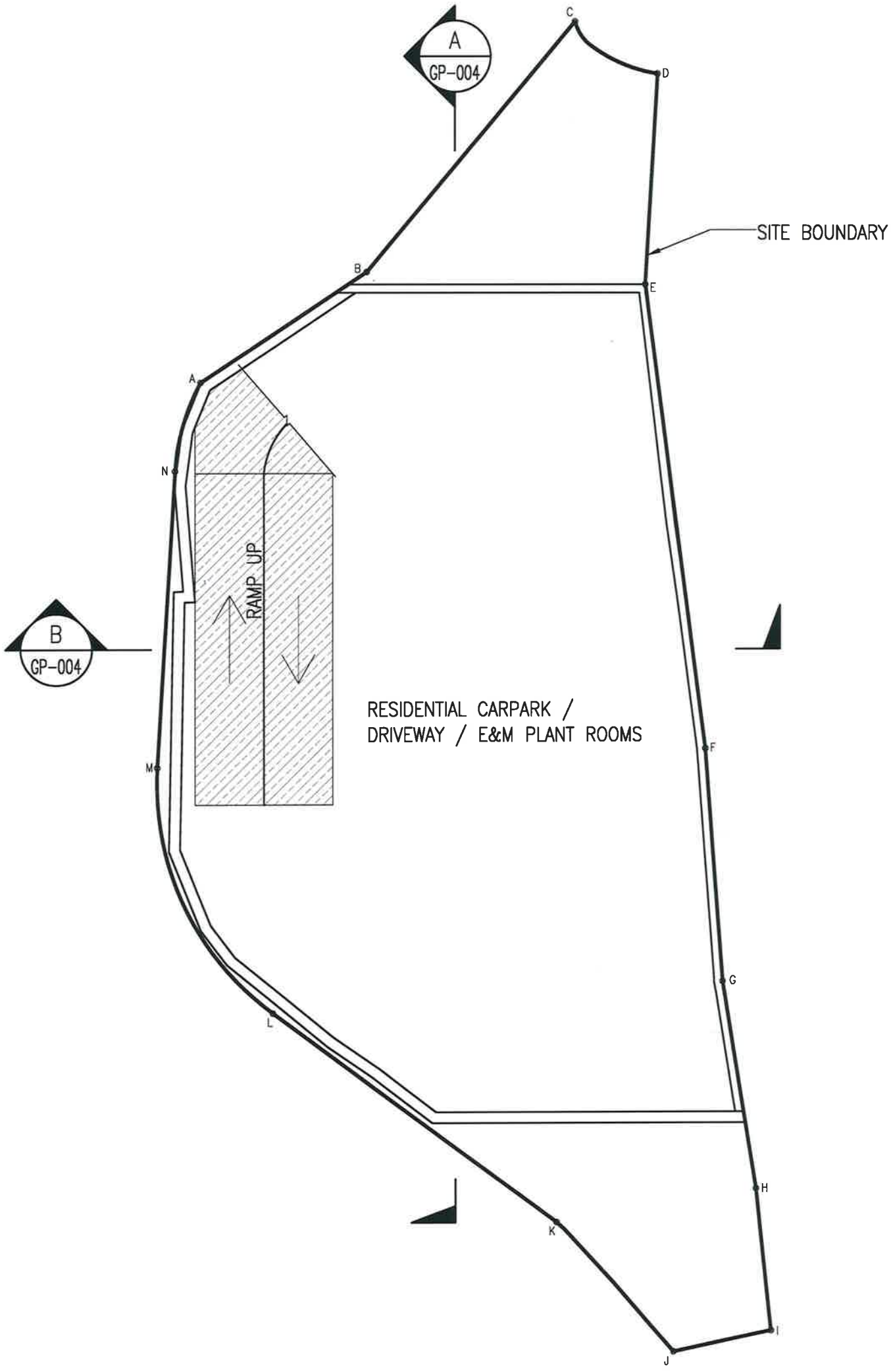
Photo V1 – General View of the Entrance to the Existing Building

Photo V2 – General View of Central Portion of the Existing Building

Photo V3 – General View of Northern Portion of the Existing Building

Appendix 2

Conceptual Drawings of the Proposed Re-development

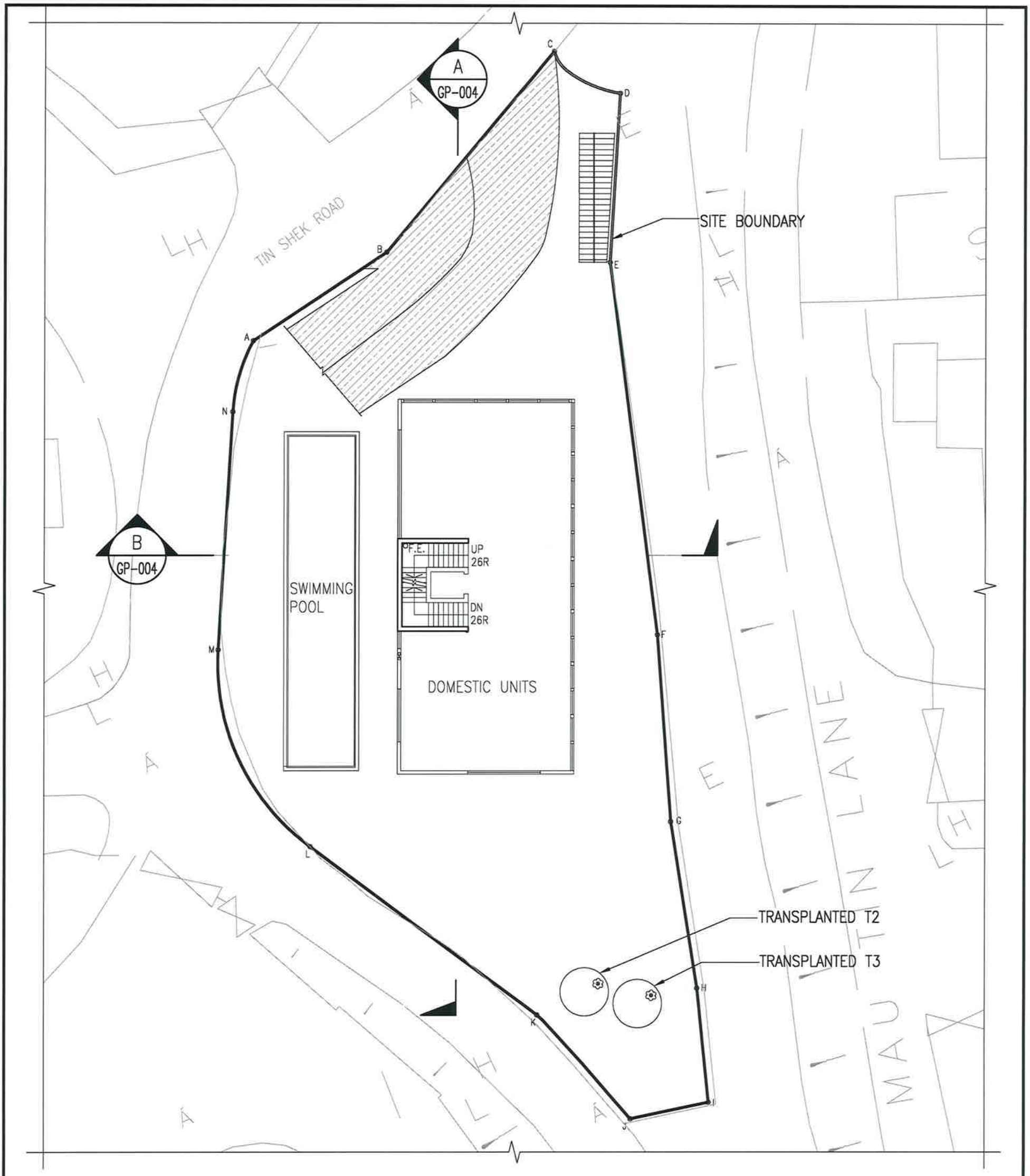


BASEMENT FLOOR PLAN

SCALE = 1:250

Drawing Title: BASEMENT FLOOR PLAN	Project: PROPOSED DOMESTIC BLDG. IN LOT NO. 214 IN D.D. 219 & THE EXTENSION THERETO.	Figure no.: GP-001	
	創建坊建築測量及顧問有限公司 AMAX ARCHITECTS AND SURVEYORS LIMITED UNIT 12, 9/F, YUEN FAT INDUSTRIAL BUILDING, 25 WANG CHIU ROAD, KOWLOON BAY. TEL: 3702 1188 FAX: 3702 1181	Prepared: AF	Checked: JW
	IP FOOK CHUEN THOMAS AUTHORIZED PERSON (ARCHITECT)	Date: NOV. 2024	Scale: 1:250

A4 297x210



GROUND FLOOR PLAN

SCALE = 1:250

LEGEND:

CAR RAMP/TWO-WAY DRIVEWAY (MIN. 5000 WIDTH)

Drawing Title: GROUND FLOOR PLAN	Project: PROPOSED DOMESTIC BLDG. IN LOT NO. 214 IN D.D. 219 & THE EXTENSION THERETO.	Figure no.: GP-002	
	創建坊建築測量及顧問有限公司 AMAX ARCHITECTS AND SURVEYORS LIMITED UNIT 12, 9/F, YUEN FAT INDUSTRIAL BUILDING, 25 WANG CHIU ROAD, KOWLOON BAY. TEL: 3702 1188 FAX: 3702 1181	Prepared: AF	Checked: JW
	IP FOOK CHUEN THOMAS AUTHORIZED PERSON (ARCHITECT)	Date: NOV. 2024	Scale: 1:250

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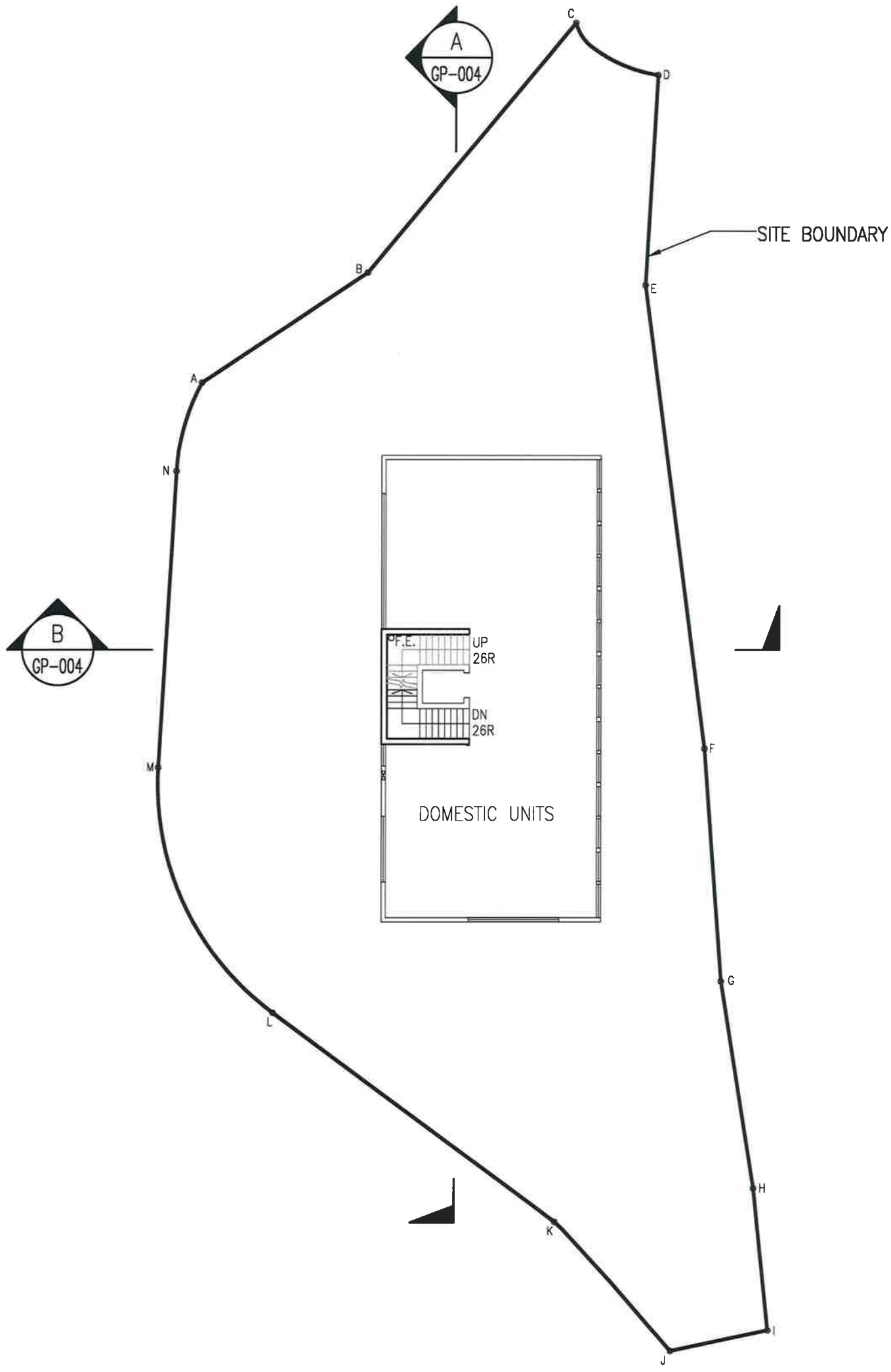

FIRST FLOOR PLAN

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Drawing Title: FIRST FLOOR PLAN	Project: PROPOSED DOMESTIC BLDG. IN LOT NO. 214 IN D.D. 219 & THE EXTENSION THERETO.	Figure no.: GP–003	
	創建坊建築測量及顧問有限公司 AMAX ARCHITECTS AND SURVEYORS LIMITED UNIT 12, 9/F, YUEN FAT INDUSTRIAL BUILDING, 25 WANG CHIU ROAD, KOWLOON BAY. TEL: 3702 1188 FAX: 3702 1181	IP FOOK CHUEN THOMAS AUTHORIZED PERSON (ARCHITECT)	Prepared: AF / Checked: JW Date: NOV. 2024 / Scale: 1:250

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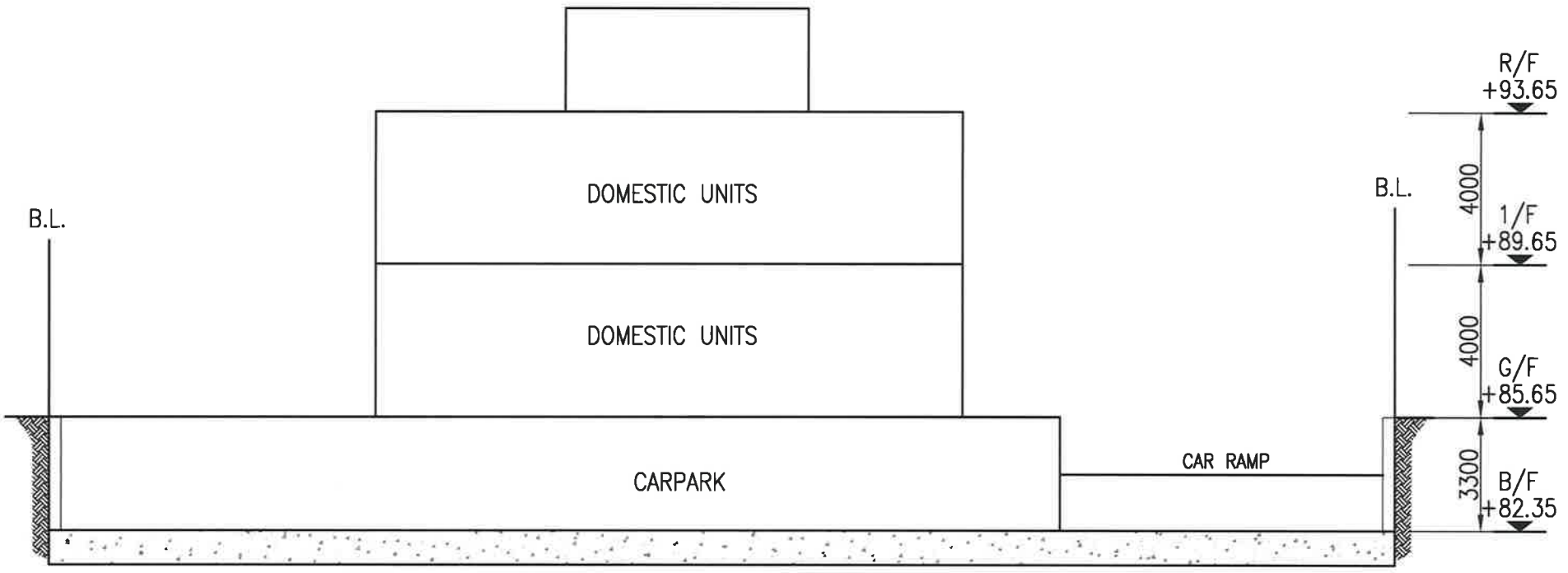

SECTION A–A

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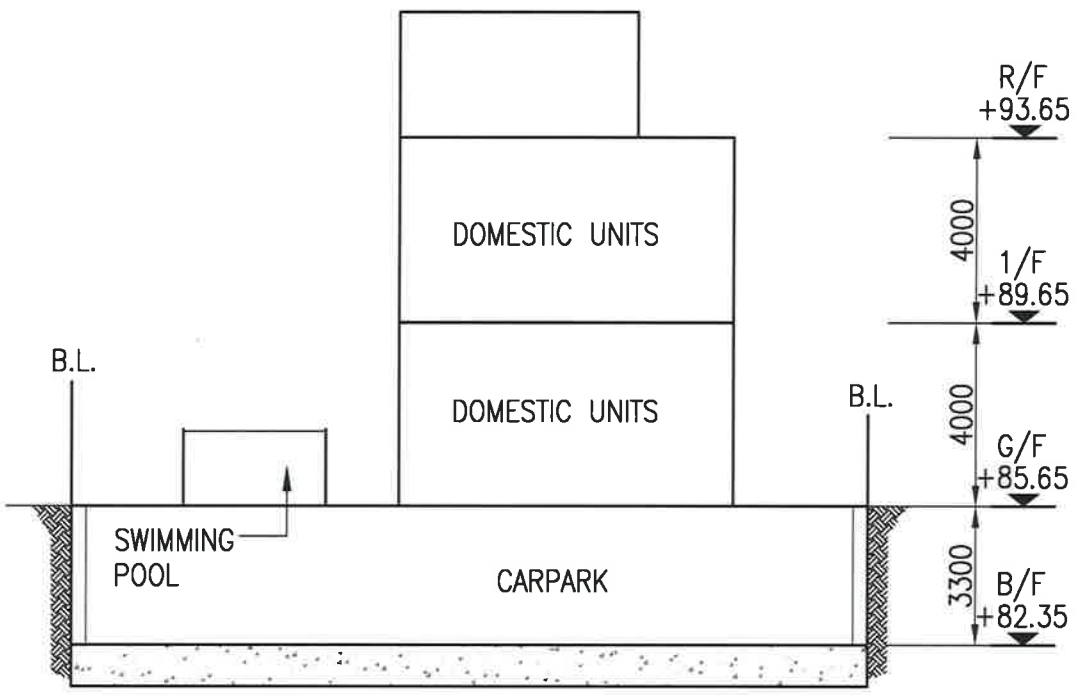

SECTION B–B

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Appendix 3

Location Plan and Slope Maintenance Responsibility Records

7SE-D/CR150

BASIC INFORMATION

Location:	Along Mau Tin Lane, Hing Keng Shek Village, Sai Kung
Registration Date:	19-12-1997
Ranking Score (NPRS):	45 (LPMit)
Date of Formation:	pre-1977
Date of Construction/ Modification:	29-03-2006
Data Source:	Project Office
Approximate Coordinates:	Easting : 843746 Northing : 824970

CONSEQUENCE-TO-LIFE CATEGORY

Facility at Crest:	Road/footpath with low traffic density
Distance of Facility from Crest (m):	0
Facility at Toe:	Cottage, licensed and squatter area
Distance of Facility from Toe (m):	2
Consequence-to-life Category:	1
Remarks:	N/A

SLOPE PART

(1) Max. Height (m): 6 Length (m): 110 Average Angle (deg): 50

WALL PART

(1) Max. Height (m): 3.5 Length (m): 110 Face Angle (deg): 90

MAINTENANCE RESPONSIBILITY

(1) Sub Div.: 1 Mixed Feature Party: DD219 LOT 214 &Ext Thereto Agent: N/A Land Cat.: 5a Reason Code: 43 MR Endorsement Date: 04-01-2021
(2) Sub Div.: 2 Mixed Feature Party: DD219 LOT 221 Agent: N/A Land Cat.: 5a Reason Code: 43 MR Endorsement Date: 04-01-2021
(3) Sub Div.: 3 Mixed Feature Party: Lands D Agent: Lands D Land Cat.: 5b(vi) Reason Code: 62 MR Endorsement Date: 04-01-2021
(4) Sub Div.: 4 Mixed Feature Party: STTSX1945 Agent: N/A Land Cat.: 1,5a Reason Code: 3 MR Endorsement Date: 04-01-2021
(5) Sub Div.: 4 Mixed Feature Party: DD210 LOT 536 Agent: N/A Land Cat.: 1,5a Reason Code: 43 MR Endorsement Date: 04-01-2021
(6) Sub Div.: 5 Mixed Feature Party: DD210 LOT 536 Agent: N/A Land Cat.: 1 Reason Code: 1 MR Endorsement Date: 04-01-2021
(7) Sub Div.: 6 Mixed Feature Party: DD210 LOT 524 Agent: N/A Land Cat.: 1,5a Reason Code: 1,43 MR Endorsement Date: 04-01-2021

DETAILS OF SLOPE / RETAINING WALL

Date of Inspection:	16-01-2020
Data Source:	Project Office
Slope Part Drainage:	(1) Position: On slope Size(mm): 225
Wall Part Drainage:	(1) Position: Crest Size(mm): 225

SLOPE PART

Slope Part (1)
Surface Protection (%): Bare: 0 Vegetated: 60 Chunam: 30 Shotcrete: 10 Other Cover: 0
Material Description: Material type: Soil & Rock Geology: N/A
Berm: No. of Berms: N/A Min. Berm Width (m): N/A
Weepholes: Size (mm): 75 Spacing (m): 1.5

WALL PART

Wall Part (1)
Type of Wall: Wall Material: Concrete Wall Location: Wall at toe
Berm: No. of Berms: N/A Min. Berm Width (m): N/A
Weepholes: Size (mm): 75 Spacing (m): 1.5

SERVICES

(1) Utilities Type: Water Main Size(mm): 80 Location: On crest Remark: N/A
(2) Utilities Type: Water Main Size(mm): 80 Location: On slope Remark: N/A

CHECKING STATUS INFORMATION

N/A

BACKGROUND INFORMATION

GIU Cell Ref.:	7SE25A4
Map Sheet Reference (1:1000):	7SE-25A
Aerial Photos:	CN10978 (1995), CN10979 (1995)
Nearest Rainguage Station (Station Number):	Pak Kong Tsui Hang Special Area Management Centre(N50)
Data Collected On:	16-01-2020
Date of Construction, Subsequent Modification and Demolition:	Modification: Constructed Before: 1974 After: 1974
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

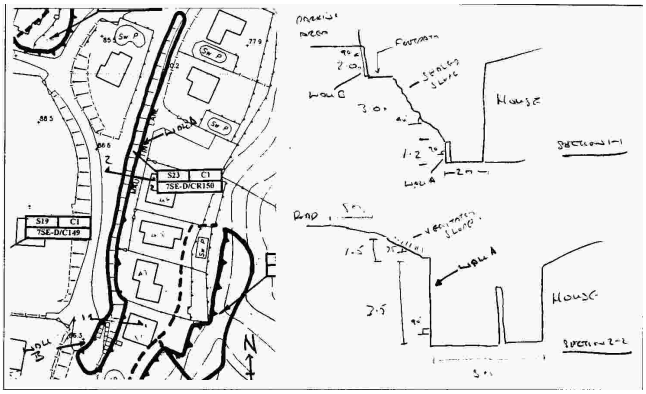
LPMIS: Agreement No.: CE13/2002 Report No.: S2R155/2004

ENHANCED MAINTENANCE INFORMATION

From Maintenance Department: (Last Updated Date: 01/08/2024)
Upgraded by:
Prescriptive Design Using GEO Report No. 56: N/A
Non-prescriptive Design Including Conventional Design: N/A
Improved by:
Type 1 / Type 2 Prescriptive Measures: Yes
Type 3 Prescriptive Measures (not up to upgrading standard): Yes
Actual Completion Date: 18-07-2006

STAGE 1 STUDY REPORT

Inspected On: 12-03-1997
Weather: Mainly Fine
District: ME



Section No: 1-1
Height(m): H1 : 6 , H2 : 2
Type of Toe Facility: Cottage, licensed and squatter area
Distance from Toe(m): 2
Type of Crest Facility: Road/footpath with low traffic density
Distance from Crest(m): 0
Consequence Category: 1
Engineering Judgement: P
Section No: 2-2
Type of Toe Facility: Residential
Distance from Toe(m): 5
Type of Crest Facility: Road with very low traffic
Distance from Crest(m): 5
Consequence Category: 1
Engineering Judgement: P
Sign of Seepage: Slope : Signs of seepage
Wall : Signs of seepage
Criterion A satisfied: N

Sign of Distress:	Slope : Reasonable (near crest, mid-portion) Wall : N/A
Criterion D satisfied:	N
Non-routine maintenance required:	N
Note:	N/A
Masonry wall/Masonry facing:	Y
Note:	Wall B-part squares rubble.
Consequence category (for critical section):	1
Observations:	N/A
Emergency Action Required:	N
Action By:	N/A

ACTION TO INITIATE PREVENTIVE WORKS

Criterion A/Criterion D:	N/A
Action By:	N/A
Further Study:	Y
Action By:	Mixed

OTHER EXTERNAL ACTION

Check / repair Services:	N
Action By:	N/A
Non-routine Maintenance:	N
Action By:	N/A

eLPMIS

LPM/LPMit Details Report

LPM Study Feature No.:	7SE-D/CR 150
Location:	ALONG MAU TIN LANE, TIN KENG SHEK VILLAGE, SAI KUNG
District Council:	Sai Kung
Maintenance Responsibility (At the Time of Selection):	Mixed
Responsible Party for Maintenance of Government Portion:	Lands D
Private Lot No.:	DD219 Lot 214 and Ext, DD210 Lot536,DD210 Lot 524, STTSX2270

LPM/LPMit Study

Agreement No.:	CE13/2002
Study Type:	Stage 2 Study
Consultant:	C M Wong & Associates Ltd.
GEO Managing Section / Engineer:	SS / SS2
Study Status:	Study completed

Design Approach:	N/A
Option Assessment Accepted:	N/A
Study Report No.:	S2R155/2004
Programme / Actual Commencement:	07-03-2003
Programme / Actual Completion:	06-02-2005
Report Recommendation (For Stage 2 Study):	Advisory Letter
District Check Status:	Checked
Checking Certificate No.:	N/A
GEO Engineer's Remarks:	Advisory Letter for private portion. Further study for Government portion, however, the CNPCS score for the feature does not qualify for action under LPM Programme and it is returned to maintenance Department for follow-up action.

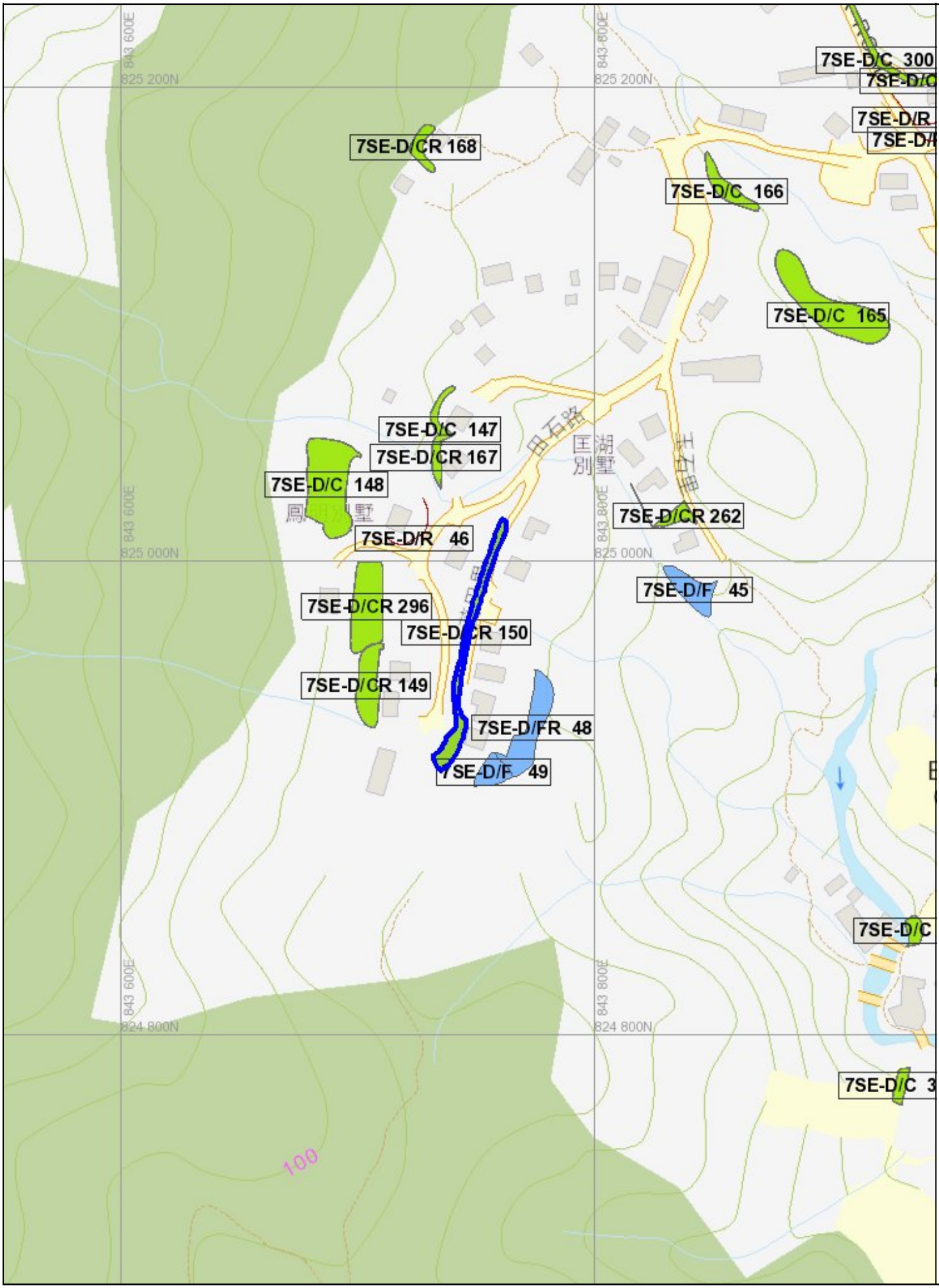
LPM/LPMit Works

Works Contract No.:	N/A
GEO Managing Section / Engineer:	N/A / N/A
Contractor:	N/A
Progress Status:	N/A
Reason of Study Termination / Works Deletion (If Necessary):	N/A
Forecast Commencement Date:	N/A
Forecast Completion Date:	N/A
Completion Cert. Issued:	N/A
Site Handed Over to Maintenance Department on:	N/A
Estimated Cost for Upgrading (HK$M):	N/A
Maintenance Manual No.:	N/A
Actual Works:	N/A
No. of Tree Felled:	N/A
No. of Tree Planted (Incl. Transplant):	N/A
% Bare of Slope Surfacing:	N/A
% Vegetated of Slope Surfacing:	N/A
% Shotcrete of Slope Surfacing:	N/A
Other Hard Surface of Slope Surfacing:	N/A

PHOTO



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7SE-D/C 165
7SE-D/C 147
7SE-D/CR 167
7SE-D/C 148
7SE-D/CR 262
7SE-D/R 46
7SE-D/F 45
7SE-D/CR 296
7SE-D/CR 150
7SE-D/CR 149
7SE-D/FR 48
7SE-D/F 49
7SE-D/C
7SE-D/C 3
843 600E
825 200N
843 800E
825 000N
824 800N
100

Slope Maintenance Responsibility Report (7SE-D/CR150)	**ESTATE MANAGEMENT SECTION** **LANDS DEPARTMENT**

List of Slope Maintenance Responsibility Area(s)

1	**7SE-D/CR150**		**Sub-Division**	1
	Location	Partly on DD210 LOT 524 and DD210 LOT 536, partly on STTSX1945 and partly on adjoining unallocated Government land		
	Responsible Lot/Party	DD219 LOT 214 &Ext Thereto	**Maintenance Agent**	Not Applicable
	Remarks	Not Applicable		
2	**7SE-D/CR150**		**Sub-Division**	2
	Location	Partly on DD210 LOT 524 and DD210 LOT 536, partly on STTSX1945 and partly on adjoining unallocated Government land		
	Responsible Lot/Party	DD219 LOT 221	**Maintenance Agent**	Not Applicable
	Remarks	Not Applicable		
3	**7SE-D/CR150**		**Sub-Division**	3
	Location	Partly on DD210 LOT 524 and DD210 LOT 536, partly on STTSX1945 and partly on adjoining unallocated Government land		
	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.		
4	**7SE-D/CR150**		**Sub-Division**	4
	Location	Partly on DD210 LOT 524 and DD210 LOT 536, partly on STTSX1945 and partly on adjoining unallocated Government land		
	Responsible Lot/Party	STTSX1945	**Maintenance Agent**	Not Applicable
	Remarks	Not Applicable		
5	**7SE-D/CR150**		**Sub-Division**	4
	Location	Partly on DD210 LOT 524 and DD210 LOT 536, partly on STTSX1945 and partly on adjoining unallocated Government land		
	Responsible Lot/Party	DD210 LOT 536	**Maintenance Agent**	Not Applicable
	Remarks	Not Applicable		
6	**7SE-D/CR150**		**Sub-Division**	5
	Location	Partly on DD210 LOT 524 and DD210 LOT 536, partly on STTSX1945 and partly on adjoining unallocated Government land		
	Responsible Lot/Party	DD210 LOT 536	**Maintenance Agent**	Not Applicable
	Remarks	Not Applicable		

7	**7SE-D/CR150**		**Sub-Division**	6
	Location	Partly on DD210 LOT 524 and DD210 LOT 536, partly on STTSX1945 and partly on adjoining unallocated Government land		
	Responsible Lot/Party	DD210 LOT 524	**Maintenance Agent**	Not Applicable
	Remarks	Not Applicable		

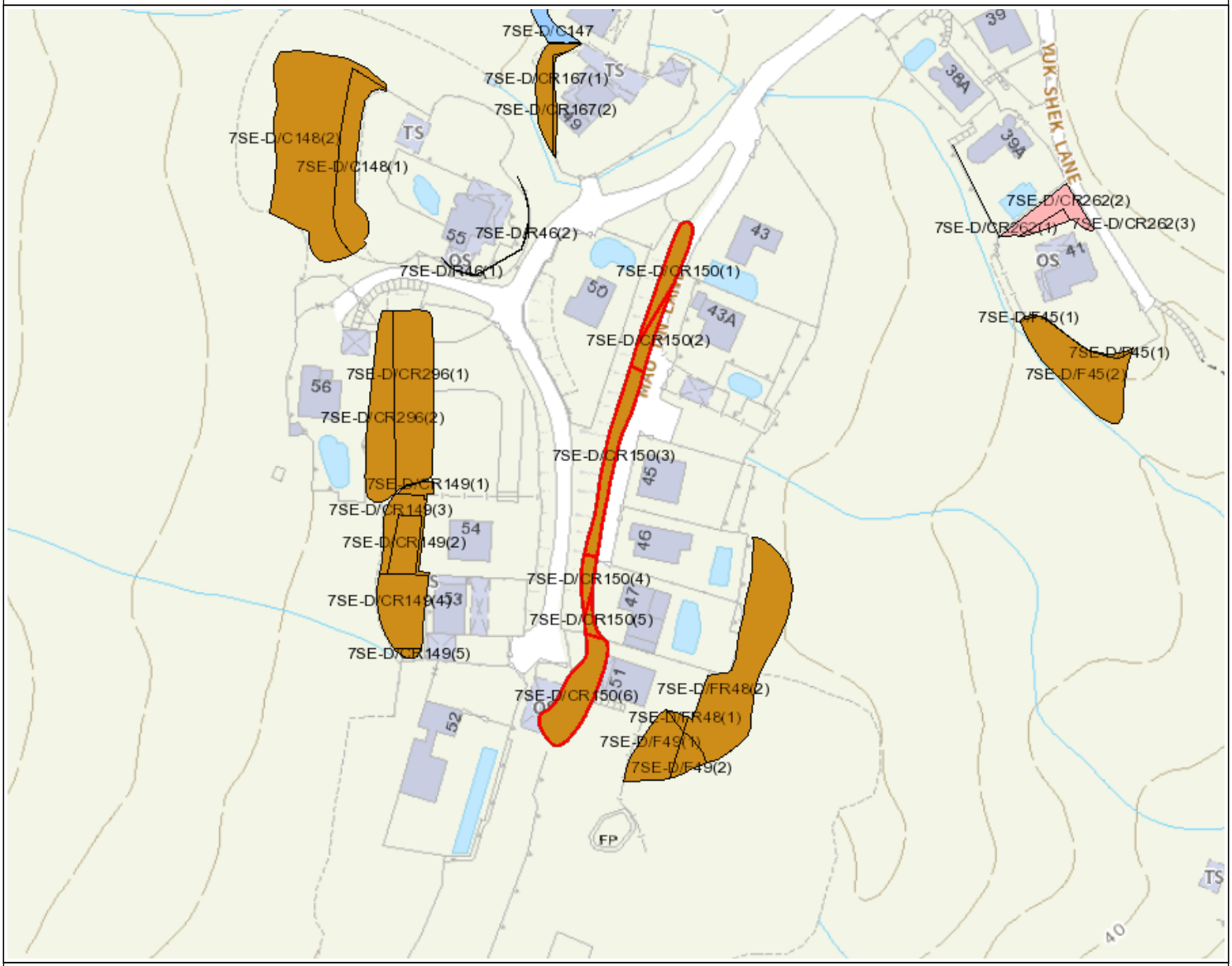
- End of Report -

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.

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: 29/10/2024

7SE-D/R46

BASIC INFORMATION

Location:	NO.55 TIN SHEK ROAD, HING KENG SHEK VILLAGE, SAI KUNG
Registration Date:	19-12-1997
Ranking Score (NPRS):	2 (Notional)
Date of Formation:	pre-1977
Date of Construction/ Modification:	
Data Source:	SIRST
Approximate Coordinates:	Easting : 843725 Northing : 825010

CONSEQUENCE-TO-LIFE CATEGORY

Facility at Crest:	Densely-used sitting out area
Distance of Facility from Crest (m):	0
Facility at Toe:	Road/footpath with very low traffic density
Distance of Facility from Toe (m):	0.5
Consequence-to-life Category:	2
Remarks:	N/A

SLOPE PART

N/A

WALL PART

(1) Max. Height (m): 4.2 Length (m): 32 Face Angle (deg): 85

MAINTENANCE RESPONSIBILITY

(1) Sub Div.: 1 Private Feature Party: DD219 Lot230 Agent: N/A Land Cat.: 1,5a,7 Reason Code: 1 MR Endorsement Date: 04-08-1998
(2) Sub Div.: 2 Private Feature Party: STTSX1079 Agent: N/A Land Cat.: 1,5a,7 Reason Code: 49 MR Endorsement Date: 04-08-1998

DETAILS OF SLOPE / RETAINING WALL

Date of Inspection:	12-03-1997
Data Source:	SIRST
Slope Part Drainage:	N/A
Wall Part Drainage:	(1) Position: Toe Size(mm): 225

SLOPE PART

N/A

WALL PART

Wall Part (1)
Type of Wall: Wall Material: Others Wall Location: Retaining wall with level platform
Berm: No. of Berms: N/A Min. Berm Width (m): N/A
Weepholes: Size (mm): N/A Spacing (m): N/A

SERVICES

(1) Utilities Type: Electricity Size(mm): 20 Location: On crest Remark: N/A
(2) Utilities Type: Electricity Size(mm): 0 Location: On slope Remark: Size cannot be determined
(3) Utilities Type: Sewer/Drain Size(mm): 90 Location: On slope Remark: N/A
(4) Utilities Type: Water Main Size(mm): 30 Location: On crest Remark: N/A
(5) Utilities Type: Water Main Size(mm): 40 Location: On slope Remark: N/A

CHECKING STATUS INFORMATION

N/A

BACKGROUND INFORMATION

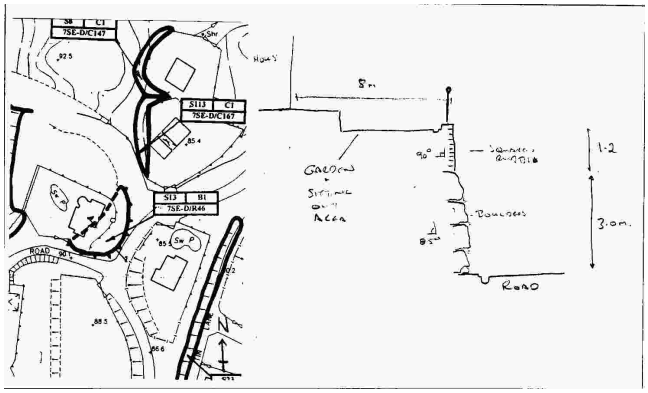
GIU Cell Ref.:	7SE25A1
Map Sheet Reference (1:1000):	7SE-25A
Aerial Photos:	CN10978 (1995), CN10979 (1995)
Nearest Rainguage Station (Station Number):	Pak Kong Tsui Hang Special Area Management Centre(N50)
Data Collected On:	12-03-1997
Date of Construction, Subsequent Modification and Demolition:	Modification: Constructed Before: 1978 After: N/A
Related Reports/Files or Documents:	File/Report: LA Ref. No.: GCME5/3/8 pt6 File/Report: LA Ref. No.: GCME5/3/8 pt6
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
LPMIS:	None

ENHANCED MAINTENANCE INFORMATION

From Maintenance Department: (Last Updated Date: 01/08/2024)

STAGE 1 STUDY REPORT

Inspected On:	12-03-1997
Weather:	Mainly Fine
District:	ME



Section No:	1-1
Height(m):	H1 : 4 , H2 : 4
Type of Toe Facility:	Road/footpath with very low traffic density
Distance from Toe(m):	0.5
Type of Crest Facility:	Densely-used sitting out area
Distance from Crest(m):	0
Consequence Category:	2
Engineering Judgement:	P
Section No:	2-2
Type of Toe Facility:	
Distance from Toe(m):	
Type of Crest Facility:	
Distance from Crest(m):	
Consequence Category:	2
Engineering Judgement:	P
Sign of Seepage:	Slope : N/A Wall : Signs of seepage
Criterion A satisfied:	N
Sign of Distress:	Slope : N/A Wall : Minimal(mid-portion, at toe)
Criterion D satisfied:	N
Non-routine maintenance required:	N
Note:	N/A
Masonry wall/Masonry facing:	Y
Note:	Squared rubble and boulders.
Consequence category (for critical section):	2
Observations:	N/A

Emergency Action Required:	N
Action By:	N/A

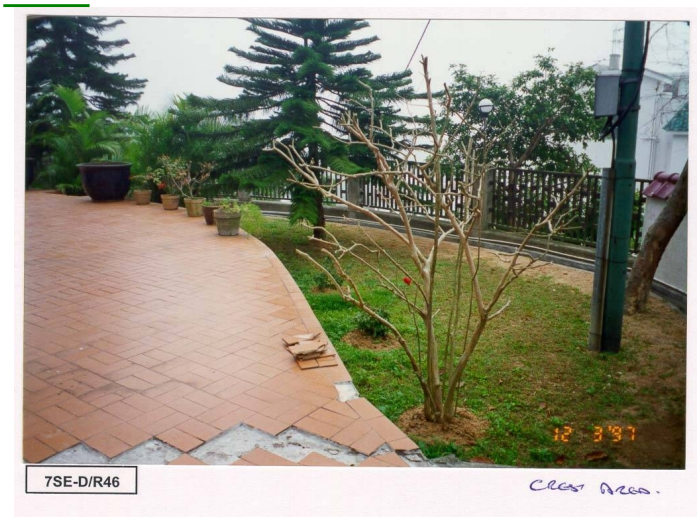
ACTION TO INITIATE PREVENTIVE WORKS

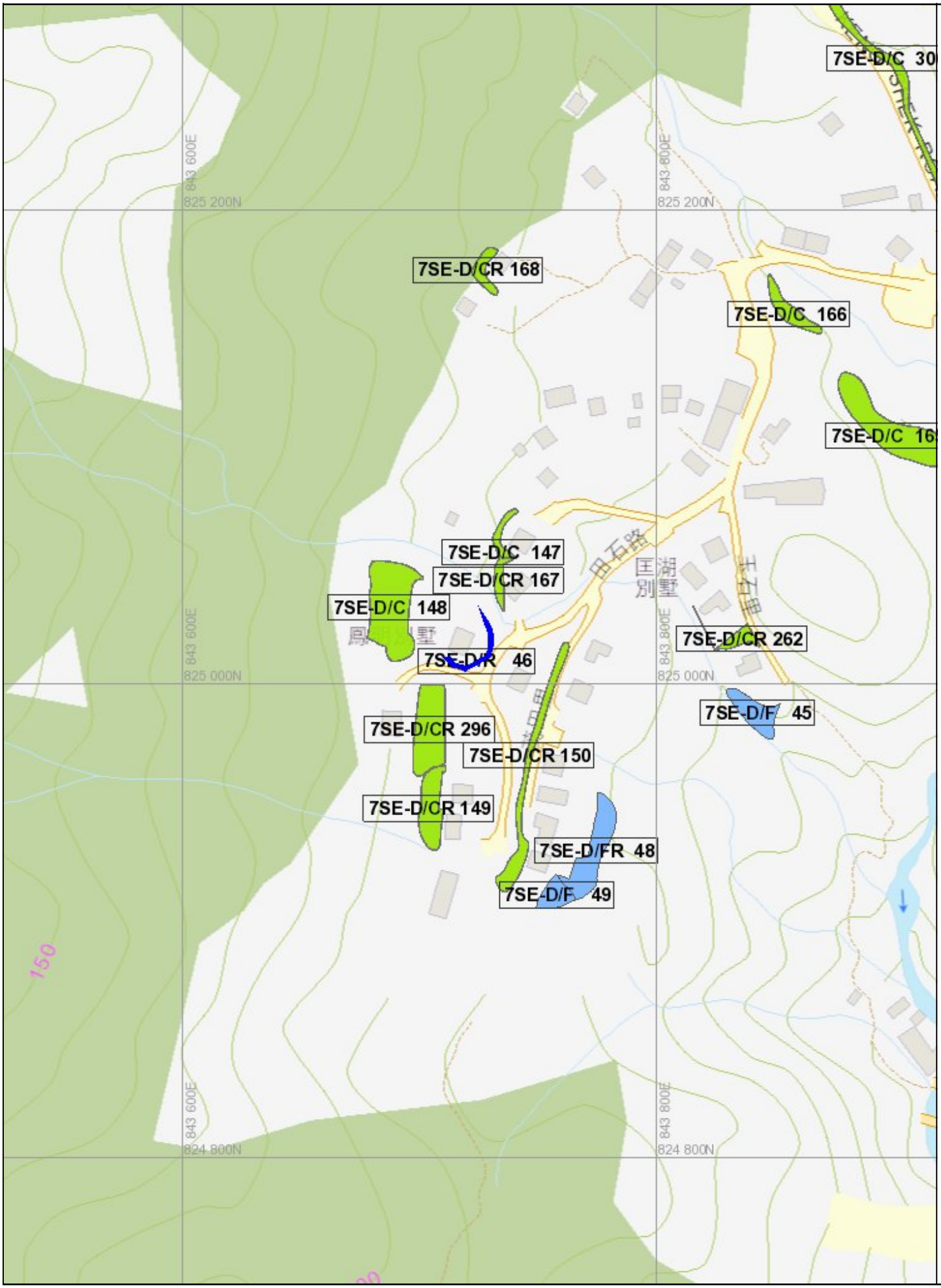
Criterion A/Criterion D:	N/A
Action By:	N/A
Further Study:	Y
Action By:	Mixed

OTHER EXTERNAL ACTION

Check / repair Services:	N
Action By:	N/A
Non-routine Maintenance:	N
Action By:	N/A

PHOTO

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7SE-D/C 166
7SE-D/C 16
7SE-D/C 147
7SE-D/CR 167
7SE-D/C 148
7SE-D/R 46
7SE-D/CR 262
7SE-D/F 45
7SE-D/CR 296
7SE-D/CR 150
7SE-D/CR 149
7SE-D/FR 48
7SE-D/F 49
843 600E
825 200N
843 800E
825 200N
843 600E
825 000N
843 800E
825 000N
843 600E
824 800N
843 800E
824 800N
150

Slope Maintenance Responsibility Report (7SE-D/R46)	ESTATE MANAGEMENT SECTION LANDS DEPARTMENT

List of Slope Maintenance Responsibility Area(s)

1	**7SE-D/R46**		**Sub-Division**	1
	Location	PARTLY IN GL & PARTLY IN STTSX1079 E OF DD219 LOT230		
	Responsible Lot/Party	DD219 Lot230	**Maintenance Agent**	Not Applicable
	Remarks	Slope information being reviewed.		

2	**7SE-D/R46**		**Sub-Division**	2
	Location	PARTLY IN GL & PARTLY IN STTSX1079 E OF DD219 LOT230		
	Responsible Lot/Party	STTSX1079	**Maintenance Agent**	Not Applicable
	Remarks	Slope information being reviewed.		

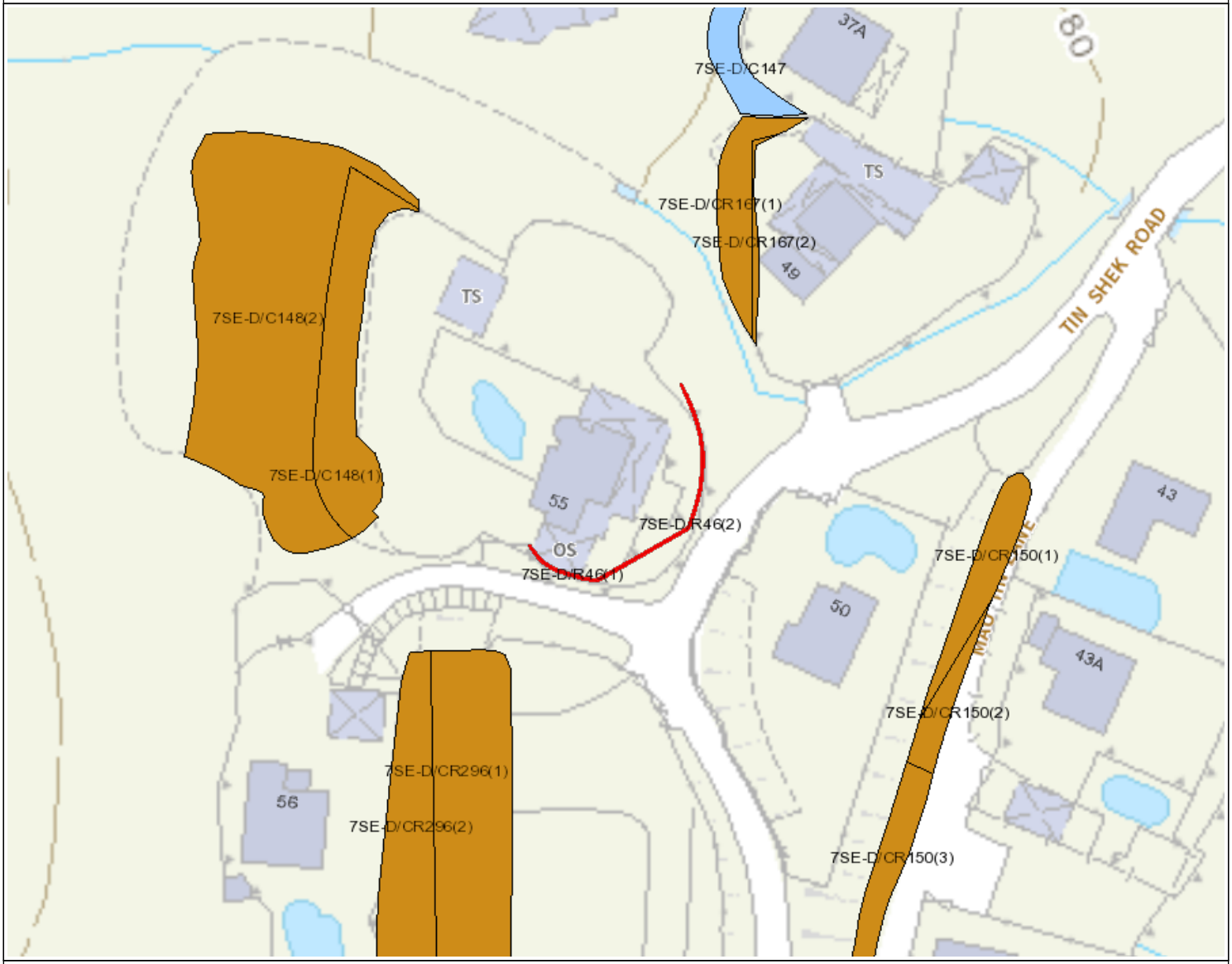
- End of Report -

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.

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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Printed on: 29/10/2024

Appendix 4

Report of Site-specific Ground Investigation

WINFIELD ENGINEERING COMPANY

GROUND INVESTIGATION
FIELD WORK REPORT

Drillhole Nos. : BH1(P) to BH3(P)

Trial Pit Nos. : TP1 To TP7

G.I. Works for
Lot No. 301 in D.D. 219,
Hing Keng Shek,
Sai Kung, N.T.

WINFIELD ENGINEERING COMPANY

Ground Investigation Works for

Lot No. 301 in D.D. 219, Hing Keng Shek,

Sai Kung, N.T.

Ground Investigation Report

CONTENT

FIGURES

TABLES

APPENDICES

1. Introduction

Winfield Engineering Company was appointed to carry out the Ground Investigation Works for Lot No. 301 in D.D. 219, Hing Keng Shek, Sai Kung, N.T.

The scopes of works include three vertical drillholes (BH1(P) to BH3(P)) and seven trial pits (TP1 to TP7), carry out standard penetration tests and obtain rock samples and undisturded soil samples.

The ground investigation in the designated area was generally implemented in accordance with Geoguide 2: (GCO 2017): 'Guide to Site Investigation', BS1377: (BSI 1990): 'Method of test for Soils for civil engineering purposes' and the Specification for this Contract. References to other standards and publications are given in the individual sections of the report corresponding to the relevant works conducted.

This report details a brief description of the site and the procedures adopted together with the findings of the fieldwork. The fieldwork was carried out between 23rd July 2024 and 31st August 2024.

2. General Site Description

The site is located at Lot No. 301 in D.D. 219, Hing Keng Shek, Sai Kung, N.T. and at Hong Kong 1980 Grid co-ordinates E843730 and E843755, N824980 and N825020.

The position of the S.I. station is indicated on the Ground Investigation Plan in Figure 1.

Co-ordinates and levels of the S.I. station are shown in Table 1

3. Geology

Geology is with reference to the 1:20,000 scaled geological map of the area published by the Geotechnical Control Office (Sheet 8: Sai Kung Peninsula HGM20 Series: Edition 1 – 1989).

According to the investigation work, the geological strata encountered in this investigation can be summarized as follows:

- **Fill**
- **Colluvium**
- **Completely decomposed TUFF**
- **Highly decomposed TUFF**
- **Moderately decomposed TUFF or better grade TUFF**

4. Field Work

4.1 Drillholes & Trial Pits

Three vertical drillholes (BH1(P) to BH3(P)) were carried out by using conventional of hydraulic feed type rotary drilling rig which equipped with diamond and tungsten carbide bits, using water flushing medium in drilling progress.

Rotary coring with 84mm diameter (T2-101) and 61mm (TNW) double tube core barrel were used to retrieve core of rocks.

The drillholes records are shown in Appendix A.

Photographs were taken for all rotary cored materials at core boxes of drillhole, the photographs were shown in Appendix B.

Seven trial pits (TP1 to TP7) were excavated by hand tools to various depths as instructed by the Engineer on site. The trial pit was backfilled with compacted excavated materials.

The trial pit records are shown in Appendix C.

Photographs were taken of materials for trial pits, the photographs are shown in Appendix D.

4.2 Field Test

Standard Penetration Tests (SPT) were carried out in all drillholes. The tests were carried out in accordance with BS1377 (1990: Part 9) 'Methods of Test for Soils for Civil Engineering Proposes', with modifications as suggested in Geoguide 2. The SPT results are recorded in the drillhole records in Appendix A.

4.3 Field Installation

Piezometers and standpipes were installed in all drillholes (BH1(P) to BH3(P)). Response test were carried out in standpipes and piezometers to check the functioning of them. The details of installation of piezometer/standpipe and the response test result are shown in Appendix E.

4.4 Groundwater monitoring

Monitoring of groundwater levels were recorded after installation. The records are shown in Appendix F.

4.5 Sample Description

Soil and rock descriptions are in accordance with the general principles given in Geoguide 3 – Guide to Rock and Soil Descriptions (GEO, 2017). The classification and definitions of the use on the exploratory station records are attached in Appendix G and Appendix H.

5. References

Map HGM20(1989), Sheet 8 , Edition I, Sai Kung Peninsula : Solid and Superficial Geology (1:20,000 Scale)

GEO (2000). Geological Map of Hong Kong, Series HGM 100, Hong Kong Geological Survey, Geotechnical Engineering Office, Hong Kong. (1:100,000)

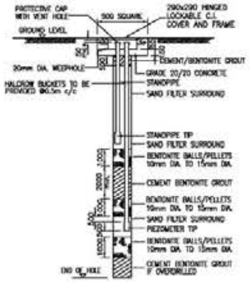
GEO (2017). Guide to Site Investigation (Geoguide 2). Geotechnical Engineering Office, Hong Kong.

GEO (2017). Guide to Rock and Soil Descriptions (Geoguide 3). Geotechnical Engineering Office, Hong Kong.

Figure 1

S.I. Station Location Plan

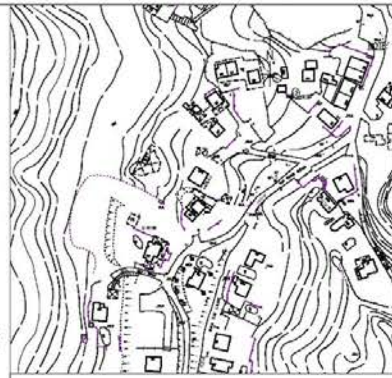
PROPOSED GI LAYOUT PLAN N.T.S.



DETAILS OF STANDPIPE/PIEZOMETER

(N.T.S.)

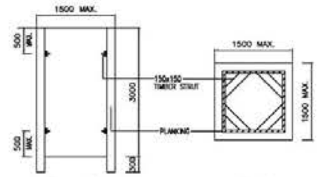
NOTES: HARCROW BUCKET SHALL BE INSTALLED AT 500mm INTERVAL THROUGHOUT THE WHOLE DEPTH OF PIEZOMETERS.



BLOCK PLAN 1 : 1000

HOLES NO.	NORTHING	EASTING
TP1	TO BE CONFIRMED	TO BE CONFIRMED
TP2	TO BE CONFIRMED	TO BE CONFIRMED
TP3	TO BE CONFIRMED	TO BE CONFIRMED
TP4	TO BE CONFIRMED	TO BE CONFIRMED
TP5	TO BE CONFIRMED	TO BE CONFIRMED
TP6	TO BE CONFIRMED	TO BE CONFIRMED
TP7	TO BE CONFIRMED	TO BE CONFIRMED
BH1	TO BE CONFIRMED	TO BE CONFIRMED
BH2	TO BE CONFIRMED	TO BE CONFIRMED

COORDINATE FOR REFERENCE ONLY



TYPICAL DETAIL FOR TEMPORARY SUPPORT FOR EXCAVATION PIT

LEGEND :

BH1(P) PROPOSED BOREHOLES WITH PIEZOMETER

TP1 TRIAL PITS

GENERAL NOTES

1. ALL LEVELS ARE IN METRES ABOVE P.D.
2. PRIOR TO THE COMMENCEMENT OF THE ANY WORK, THE CONTRACTOR SHALL CONTACT ALL UTILITY UNDERTAKINGS FOR RECORDS REGARDING THE PRESENCE OF THEIR SERVICES WITHIN AND/OR IN THE VICINITY OF THE SITE.
3. ALL SETTING OUT COORDINATES, DIMENSIONS AND LEVELS SHALL BE VERIFIED BY THE CONTRACTOR ON SITE, ANY DISCREPANCY SHALL BE REPORTED TO THE ENGINEER. THE CONTRACTOR SHALL MAINTAIN THE STABILITY OF THE WORKS AT ALL TIMES DURING THE COURSE OF THE INVESTIGATION.
4. UNLESS OTHERWISE SPECIFIED ON THE DRAWING, ALL WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE GENERAL SPECIFICATION OF CIVIL ENGINEERING WORKS, 1993 (GOVERNMENT OF THE HONG KONG SAR)
5. ON COMPLETION OF THE PROPOSED WORKS, THE CONTRACTOR SHALL AT HIS OWN EXPENSE REINSTATE ALL AREAS, TO REPAIR ANY DAMAGE CAUSED WITHOUT DELAY, TO CLEAN AND TO TIDY THE SITE TO THE SATISFACTION OF THE ENGINEER.

GROUND INVESTIGATION WORKS

1. GROUND INVESTIGATION WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH GEOGUIDE 2 (GUIDE TO SITE INVESTIGATION) AND GEOGUIDE 3 (GUIDE TO ROCK AND SOIL DESCRIPTION) ISSUED BY GEO & PNAP 161.
2. INSPECTION PIT SHALL BE COMPLETED BEFORE COMMENCEMENT OF THE BORE HOLES.
3. BOREHOLES SHALL BE DRILLED DOWN TO 10m INTO GRADE III OR BETTER WITH TOTAL CORE RECOVERY GREATER THAN 85%.
4. MAZIER SAMPLES FOR DECOMPOSED ROCK AND PISTON SAMPLES FOR CLAY MATERIALS SHALL BE TAKEN IN ALL BOREHOLES AND AT EACH CHANGE IN STRATUM AT 2.0m INTERVALS, COMMENCING 2.5m BELOW GROUND LEVEL WHERE MAZIER SAMPLES CANNOT BE OBTAINED, BULK DISTRUBED SAMPLES SHOULD BE TAKEN INSTEAD. AT 2.0m INTERVALS AND AT EACH SHOULD BE TAKEN INSTEAD.
5. STANDARD PENETRATION TESTS (SPT) SHALL BE PERFORMED IN ALL BOREHOLES COMMENCING AT 1.5M, AND THEN AT 2.0m INTERVALS AND AT EACH CHANGE IN STRATUM AFTER MAZIER/PISTON SAMPLING.

STANDPIPE/PIEZOMETERS INSTALLATION AND MONITORING

1. THE CONTRACTOR SHALL INSTALL STANDPIPE/PIEZOMETERS IN ACCORDANCE WITH GEOGUIDE 2. THE PIPE SHALL BE OF RIGID P.V.C. TUBING NOT LESS THAN 19mm BORE WITH A WALL THICKNESS NOT LESS THAN 3mm.
2. THE TUBE SHALL BE CONNECTED AT ITS LOWER END BY A SUITABLE P.V.C. FITTING TO A PIEZOMETER TIP. THE PIEZOMETER TIP SHALL HAVE A PERMEABILITY IN THE ORDER OF 5x10-4m/sec. THE UPPER END OF THE TUBE SHALL BE SET IN CONCRETE AND FITTED WITH A REMOVABLE RUBBER CAP.
3. THE SAND FILTER IN THE SURROUNDINGS OF THE POROUS ELEMENT SHALL BE CLEAN SAND FALLING BETWEEN THE LIMITS OF GRADING 1200 AND 210 MICRONS AND THE VOLUME OF THE SAND FILTER TO BE PLACED SHALL BE RECORDED.
4. IN PLACING THE SAND THE CONTRACTOR SHALL ENSURE THAT NO SAND ADHERES TO THE SOIL IN THE SIDES OF AN UNLINED HOLE. WHERE THERE IS WATER IN A HOLE THE CONTRACTOR SHALL ALLOW SUFFICIENT TIME FOR ALL THE SAND TO SETTLE AND MEASUREMENTS OF THE UPPER SURFACE OF THE SAND SHALL BE TAKEN FROM TIME TO TIME.
5. THE CONTRACTOR SHALL PROVIDE FULL TIME SUPERVISION DURING THE INSTALLATION OF PIEZOMETERS.
6. THE CONTRACTOR SHALL CARRY OUT GROUND WATER MONITORING DAILY FOR 14 DAYS FOLLOWING PIEZOMETERS INSTALLATION AND WEEKLY THEREAFTER FOR 3 VISITS. THE CONTRACTOR SHALL SUBMIT THE MONITORING RECORDS TO THE ENGINEER WITHIN ONE WORKING DAY OF MONITORING.
7. HALCROW BUCKETS SHALL BE INSTALLED IN ALL PIEZOMETERS IN ACCORDANCE WITH GEOGUIDE 2.

METHODS OF DRILLING

1. THE ENGINEER OR ENGINEER'S REPRESENTATIVE SHALL BE INFORMED IMMEDIATELY PRIOR TO THE COMMENCEMENT OF ANY DRILLING.
2. HOLES SHALL BE SUNK BY ROTARY METHODS IN FILLED AND COMMON GROUND. ROTARY CORING WILL BE USED IN ROCK OR IN COMMON GROUND WITH SPT 'N' VALUE EXCEEDING 200. DRILLING RIGS FOR ROCK SHALL BE THE HYDRAULIC FEED TYPE CAPABLE IN DRIVING A ROTARY TOOL TIPPED WITH DIAMONDS OR TUNGSTEN CARBIDE.
3. THE METHOD AND EQUIPMENT TO BE USED AND THE DIAMETER OF THE HOLE SHALL BE SUCH THAT:-
   (a) COMMON GROUND CAN BE PENETRATED TO DEPTHS OF AT LEAST 40 METRES, WITH 140mm (O.D.) DIA. CASING.
   (b) THE HOLE DOES NOT DEVIATE FROM THE VERTICAL BY MORE THAN 1%.
   (c) THE SOILS ENCOUNTERED AND THE LEVELS AT WHICH CHANGES IN STRATA OCCUR CAN BE ACCURATELY IDENTIFIED.
   (d) REPRESENTATIVE DISTURBED AND UNDISTRUBED SAMPLES CAN BE RECOVERED FROM ANY DEPTH IN THE HOLE.
   (e) IN-SITU TESTS CAN BE CARRIED OUT AND FIELD INSTRUMENTATION (I.E. PIEZOMETER) INSTALLED AT DEPTH IN THE HOLE.
4. THE CASING SHALL BE ADVANCED CONCURRENTLY WITH THE REMOVAL OF MATERIAL IN SUCH A MANNER THAT LOSS OF GROUND IS AVOIDED.
5. THE METHOD OF ROTARY CORING AND EQUIPMENT USED SHALL BE SUCH THAT:-
   (a) DRILLING IN ROCK IN 'X' SIZE CAN BE CARRIED OUT TO A DEPTH OF 45 METRES.
   (b) DRILLING IN ROCK IN 'N' SIZE CAN BE CARRIED OUT TO A DEPTH OF 75 METRES.
6. EQUIPMENT TO BE ADOPTED FOR CORE RECOVERY SHALL BE SUBJECT TO THE ENGINEER OR THE ENGINEER'S REPRESENTATIVE APPROVAL AND SHALL EITHER BE:
   (a) DOUBLE TUBE BALL BEARING SWIVEL TYPE CORE BARREL WITH CORE LIFTER LOCATION IN THE LOWER END OF THE INNERMOST TUBING, OR
   (b) TRIPLE TUBE SWIVEL TYPE CORE BARREL WITH CORE LIFTER.
7. CORING RUNS SHALL BE LIMITED TO A MAXIMUM LENGTH OF 1.5m WHEN LESS THAN 95% OF THE CORE IS RECOVERED FROM A RUN, THE LENGTH OF THE FOLLOWING RUN SHALL BE REDUCED BY 50% UNLESS OTHERWISE DIRECTED BY THE ENGINEER OR THE ENGINEER'S REPRESENTATIVE.

DRILLING RECORDS

THE INFORMATION REQUIRED ON THE DAILY RECORDS AND FINAL LOGS IS LISTED BELOW:

(a) CONTRACTOR'S NAME, CONTRACT NUMBER, SITE NAME AND HOLE NUMBER.
(b) RIG TYPE, RIG NUMBER, OPERATOR, HOURS WORKED AND METHOD OF BORING.
(c) DATE OF OPERATION AND WEATHER CONDITIONS.
(d) GROUND LEVEL OF HOLE, AND REDUCED LEVEL OF SAMPLES, IN-SITU TEST AND FIELD INSTALLATIONS.
(e) DETAILS OF ALL SAMPLES, IN-SITU TESTS AND FIELD INSTALLATIONS.
(f) DETAILS OF CASING AND LENGTH OF CASING.
(g) WATER LEVELS AT START OF WORK, END OF WORK AND RECOMMENCEMENT.
(h) FIELD DESCRIPTION OF EACH STRATUM ENCOUNTERED INCLUDING COLOUR CODING USING MANSELL SOIL COLOUR CHART.
(i) WATER RETURN.
(j) DETAILS OF ANY DELAY.
(k) COORDINATES OF HOLE POSITION RELATED TO THE HONG KONG METRIC GRID.
(l) REDUCED LEVEL AT BOREHOLE LOCATION.
(m) INCLINATION AND ORIENTATION OF HOLE.
(n) R.Q.D., FRACTURE INDEX, CORE RECOVERY AND GRADE. THE LEGEND AND CLASSIFICATION SHALL BE IN ACCORDANCE WITH GEOGUIDE 3, "GUIDE TO ROCK AND SOIL DESCRIPTIONS".

BACKFILLING OF BOREHOLES

BOREHOLES WITH NO INSTRUMENTATION SHALL BE FILLED WITH CEMENT GROUT. THE CASING SHALL BE GRADUALLY WITHDRAWN AND THE GROUT SHALL BE KEPT ABOVE THE BOTTOM OF THE CASING DURING WITHDRAWAL. ANY SUBSEQUENT DEPRESSION OF THE SURFACE SHALL BE FILLED AND COMPACTED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER. THE HOLE POSITION SHALL BE CLEARLY MARKED WITH A METAL MARKER AND FLAG OR A CONCRETE BLOCK WITH THE HOLE NUMBER INDICATED IN RED PAINT.

LABORATORY TESTING

1. SAMPLES FOR LABORATORY TESTS SHALL BE TRANSPORTED BY THE CONTRACTOR TO A HOKLAS ACCREDITED TESTING LABORATORY FOR TESTING.
2. A PROGRAM OF LABORATORY TESTS SHALL BE CARRIED OUT USING CURRENT STANDARDS ON SELECTED UNDISTRUBED SAMPLES, INCLUDING
   a) CLASSIFICATION TEST
   b) CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST WITH PORE PRESSURE MEASUREMENT / UNCONSOLIDATED UNDRAINED TEST
   c) PARTICLE SIZE DISTRIBUTION - SIEVE AND HYDROMETER.
   d) BULK DENSITY
   e) MOISTURE CONTENT BY OVEN DRYING AT 45°C ± 5°C
   f) ATTERBERG LIMITS
   g) SPECIFIC GRAVITY
   h) ODOMETER TEST
   i) CHEMICAL TEST
   j) PROCTOR TEST

METHODS OF TRIAL PITS

1. TRIAL PITS SHALL BE 1.5M x 1.5M x 3M ON PLAN AND EXCAVATED VERTICALLY BY HAND OR MECHANICAL METHODS TO THE EXISTING FOOTINGS OR PILE CAP OF ADJACENT STRUCTURES/ OR AS SPECIFIED BY THE ENGINEER. THE FOUNDATION LEVEL AND THE SHAPE OF THE FOOTINGS OR PILE CAP SHALL BE DEPICTED IN THE TRIAL PIT RECORD.ALL TRIAL PITS, WHEN DEEPER THAN 1.2M AT THEIR DEEPEST POINT OR WHEN SUSCEPTIBLE TO SPALLING OF THE SEDIMENTS, SHALL BE ADEQUATELY SHORED AT ALL TIMES TO COMPLY WITH THE CONSTRUCTION SITES (SAFETY) REGULATIONS USING A METHOD APPROVED BY THE ENGINEER, AND IN SUCH A MANNER THAT THE STRATA EXPOSED SHALL BE CLEARLY VISIBLE THROUGHOUT THE HEIGHT OF EACH FACE. HARDWOODS SHALL NOT BE USED FOR SHORING PURPOSES.
2. MATERIALS EXCAVATED FROM TRIAL PITS SHALL BE CAREFULLY STOCKPILED AWAY FROM THE EXCAVATIONS. ALL EXCAVATED MATERIALS SHALL BE PROTECTED FROM WEATHER.
3. AN UNDISTURBED SOIL SAMPLES EXCEPT FILL SHALL BE TAKEN AT THE BOTTOM OF ALL TRIAL PITS, AT EACH CHANGE IN STRATUM AND AT 1M INTERVALS IN THE SAME STRATUM.
4. GROUND WATER LEVEL SHALL BE RECORDED AT THE BEGINNING OF EACH SHIFT.
4. LARGE DISTURBED SAMPLE AT DEPTH OF IN-SITU DENSITY TESTS FOR FILL SHOULD BE OBTAINED OF AS INSTRUCTED BY ENGINEER ON SITE.

TRIAL PITS RECORDS

THE INFORMATION REQUIRED ON THE DAILY RECORDS AND FINAL TRIAL PIT LOGS IS LISTED BELOW:

(a) SITE
(b) CONTACT NAME AND NUMBER
(c) NUMBER OF TRIAL PIT
(d) LEVEL OF THE DATUM MARK RELATIVE TO PRINCIPAL DATUM
(e) DATES DURING WHICH TRIAL PIT WAS FORMED
(f) TOTALS DEPTH OF TRIAL PIT BELOW THE DATUM MARK
(g) DIMENSIONED PLAN OF TRIAL PIT AND ORIENTATION
(h) DETAILS OF SHORING
(i) WATER LEVELS WITH DETAILS OF FLUCTUATION AND LOCATION OF SEEPAGE, ALL WITH RESPECT TO THE DATUM MARK
(j) DEPTH BELOW DATUM MARK OF ALL SAMPLES AND THE POSITION OF EACH IN PLAN
(k) SKETCH AND DETAILED DESCRIPTION OF MATERIAL TYPE ENCOUNTERED IN EACH FACE
(l) STABILITY CONDITIONS DURING EXCAVATION.

BACKFILLING OF TRIAL PITS

UPON THE ENGINEER'S INSTRUCTION, THE CONTRACTOR SHALL BACKFILL THE TRIAL PITS WITH FILLING MATERIAL AND COMPACT IN LAYERS NOT EXCEEDING 300MM THICK TO THE DEGREE OF COMPACTION NOT LESS THAN 95%. FILLING MATERIAL SHALL BE FREE FROM TOP-SOIL, SLURRY, PERISHABLE MATERIALS, ORGANIC MATTER AND OTHER DETERIORATED SUBSTANCES. FILLING MATERIAL SHALL CONTAIN NO MATERIAL EXCEEDING 150mm IN SIZE. IT MAY CONTAIN UP TO 25% ROCK DISTRIBUTED EVENLY THROUGHOUT THE WHOLE MASS OF THE MATERIAL.

B.D. REF. NO.
F.S.D. REF. NO.
NOTE:

DATE	REV.	REMARK	BY	CHK.
05/07/2024		FIRST SUBMISSION	CHU	IAN

CLIENT

ARCHITECT

SIGNATURE

PROJECT
BLDG. IN LOT NO. 301 IN D.D. 219

TITLE
SITE INVESTIGATION PLAN

PROJECT NO.	DWG. NO.		REV. NO.
-	202407-GI-01		-
DRAWN	CHECK	SCALE	DATE
CHU	IAN	AS SHOWN	05/07/2024

Table 1

S.I. Station Co-ordinates & Ground Level

Winfield Engineering Company

SURVEY RECORD

Project : **Lot No. 301 in D.D. 219, Hing Keng Shek, Sai Kung, N.T.**

S.I. Station	Co-ordinates		Ground Level (mPD)	Remarks
	Easting	Northing		
BH1(P)	843743.26	825008.17	+85.58	
BH2(P)	843738.36	824997.16	+85.67	
BH3(P)	843748.26	825000.15	+85.72	
TP1	843738.47	825013.27	+85.42	
TP2	843750.35	825005.08	+85.71	
TP3	843735.19	824997.06	+85.68	
TP4	843746.37	824996.28	+85.74	
TP5	843741.22	824983.53	+85.68	
TP6	843738.05	824990.11	+85.70	
TP7	843738.35	825010.07	+85.52	

Appendix A

Drillhole Records

WINFIELD ENGINEERING COMPANY

DRILLHOLE RECORD

CONTRACT NO.: _____
HOLE NO.: BH1(P)
SHEET: 1 OF 3
DATE: 29/7/24 TO 10/8/24

PROJECT : Lot No. 301 in D.D. 219, Hing Keng Shek, Sai Kung, N.T.

METHOD : ROTARY	CO-ORDINATES E 843743.26 N 825008.17	ROCK COREBIT : T2-101/TNW
MACHINE & NO. : TOHO		HOLE DIA. : HX/NX
FLUSHING MEDIUM : WATER	ORIENTATION : VERTICAL	GROUND LEVEL : +85.58 mPD.

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	R. Q. D.	Fracture Index	Tests	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Zone	Description
29/7	Hx								A 0.50	+85.58	0.00				Light greyish brown, slightly clayey silty fine to coarse SAND with gravel sized rock fragments. (FILL)
				38					B 1.00 T2-101 1.65	+84.58 +83.93	1.00 1.65				Brownish grey, angular COBBLE sized rock fragments. (COLLUVIUM)
									1.85	+83.73	1.85				No recovery (inferred as COLLUVIUM)
				69					T2-101 2.43	+83.15	2.43				Brownish grey, angular BOULDER sized rock fragments. (COOUVIUM)
				0					2.50 1 2.85	+82.73	2.85				Brownish grey, sandy GRAVEL and COBBLE sized rock fragments. (COLLUVIUM)
				49					T2-101 4.18	+81.40	4.18				Greyish brown and grey, angular COBBLE sized rock fragments. (COLLUVIUM)
				0					4.50 2 4.80	+80.68	4.90				Brownish grey, sandy GRAVEL and COBBLE sized rock fragments. (COLLUVIUM)
				92					4.90 TNW 5.50	+80.08	5.50				Grey, angular BOULDER and COBBLE sized rock fragments. (COLLUVIUM)
								50/0.03 200/0.05	6.00 3 6.08						Very dense, sandy GRAVEL and COBBLE sized rock fragments. (COLLUVIUM)
	6.70 Hx								6.70	+78.88	6.70		IV		Moderately weak, greyish brown, highly decomposed coarse ash TUFF with very closely and closely spaced, rough undulating and planar, narrow, iron stained joints.
				90	70	0	>20		TNW 7.20	+78.38	7.20		III		
				95	89	89			TNW 8.20						Strong, brownish grey and grey, slightly decomposed coarse ash TUFF with closely and medium spaced, rough undulating and planar, very narrow to extremely narrow, iron stained joints, dipping at 0°-10°, 20°-30°, 40°-50° & subvertical.
				97	94	83	4.8		TNW 9.70	+75.88	9.70				From 9.70m to 9.92m, moderately decomposed TUFF.
				95	89	80	>20 5.9		TNW	+75.66	9.92 10		III II		

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water sample
- Water table
- Standard penetration test
- Permeability test
- Piezometer tip
- Standpipe

LOGGED Poon Leung
DATE 30/8/24
CHECKED W.P. Chun
DATE 31/8/24

REMARKS

1. Inspection pit was excavated to 1.00m.
2. Standpipe was installed at 8.00m.
3. Piezometer was installed at 11.20m.

WINFIELD ENGINEERING COMPANY

DRILLHOLE RECORD

CONTRACT NO.: _____
HOLE NO.: BH1(P)
SHEET : 2 OF 3
DATE : 29/7/24 TO 10/8/24

PROJECT : Lot No. 301 in D.D. 219, Hing Keng Shek, Sai Kung, N.T.

METHOD : ROTARY	CO-ORDINATES E 843743.26 N 825008.17	ROCK COREBIT : T2-101/TNW
MACHINE & NO. : TOHO		HOLE DIA. : HX/NX
FLUSHING MEDIUM : WATER	ORIENTATION : VERTICAL	GROUND LEVEL : +85.58 mPD.

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	R. Q. D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Zone	Description
													10				
				95	89	80	5.9			TNW		+74.98	10.60		II		As sheet 1 of 3
							>20					+74.73	10.85		III		From 10.60m to 10.85m, moderately decomposed TUFF.
							9.1				11.20				II		
				82	76	0	>20			TNW		+74.18	11.40		III		From 11.40m to 11.70m, highly decomposed TUFF.
											11.70	+73.88	11.70		II		
				98	95	81	6.7			TNW							
							>20				12.60	+72.98	12.60		III		Moderately strong, greyish brown and grey, moderately decomposed coarse ash TUFF with closely spaced, rough undulating and planar, very narrow to extremely narrow, iron stained joints, dipping at 0°-10°, 20°-30°, 40°-50°, 60°-70° & subvertical.
				98	88	39	11.8			TNW							
											13.40						
				100	97	59	6.5			TNW							
											14.85						
				96	91	63				TNW							
											15.88						
				100	95	69	>20			TNW							
											16.70	+68.98	16.60		II		Strong, grey to dark grey, slightly decomposed coarse ash TUFF with closely and medium spaced, rough undulating and planar, very narrow to extremely narrow, iron and chlorite stained joints, dipping at 0°-10°, 30°-40° & 50°-60°.
				97	94	85	12.5			TNW							
											17.70						
				92	88	88	9.7			TNW							
											19.10	+66.48	19.10		III		From 19.10m to 19.40m, moderately decomposed TUFF.
				90	77	64	>20			TNW		+66.18	19.40		II		
							6.2										
													20				

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water sample
- Water table
- Standard penetration test
- Permeability test
- Piezometer tip
- Standpipe

LOGGED Poon Leung
DATE 30/8/24
CHECKED W.P. Chun
DATE 31/8/24

REMARKS

WINFIELD ENGINEERING COMPANY

DRILLHOLE RECORD

CONTRACT NO.: _____
HOLE NO.: BH1(P)
SHEET : 3 OF 3
DATE : 29/7/24 TO 10/8/24

PROJECT : Lot No. 301 in D.D. 219, Hing Keng Shek, Sai Kung, N.T.

METHOD : ROTARY	CO-ORDINATES E 843743.26 N 825008.17	ROCK COREBIT : T2-101/TNW
MACHINE & NO. : TOHO		HOLE DIA. : HX/NX
FLUSHING MEDIUM : WATER	ORIENTATION : VERTICAL	GROUND LEVEL : +85.58 mPD.

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	R. Q. D.	Fracture Index	Tests	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Zone	Description
				90	77	64	6.2				20		II		As sheet 2 of 3
									TNW 20.50	+65.08	20.50				
				90	62	26	>20		TNW				III		Moderately strong, brownish grey and grey, moderately decomposed coarse ash TUFF with very closely and closely spaced, rough undulating and planar, narrow to very narrow, iron stained joints, dipping at 0°-10°, 30°-40°, 50°-60° & 70°-80°.
10/8							12.5		21.70	+63.88	21.70				
															End of hole at 21.70m.

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water sample
- Water table
- Standard penetration test
- Permeability test
- Piezometer tip
- Standpipe

LOGGED Poon Leung
DATE 30/8/24
CHECKED W.P. Chun
DATE 31/8/24

REMARKS

WINFIELD ENGINEERING COMPANY

DRILLHOLE RECORD

CONTRACT NO.: _____
HOLE NO.: BH2(P)
SHEET: 1 OF 3
DATE: 23/8/24 TO 31/8/24

PROJECT : Lot No. 301 in D.D. 219, Hing Keng Shek, Sai Kung, N.T.

METHOD : ROTARY	CO-ORDINATES E 843738.36 N 824997.16	ROCK COREBIT : T2-101/TNW
MACHINE & NO. : TOHO		HOLE DIA. : HX/NX
FLUSHING MEDIUM : WATER	ORIENTATION : VERTICAL	GROUND LEVEL : +85.67 mPD.

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	R. Q. D.	Fracture Index	Tests	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Zone	Description
23/8	Hx								A 0.50	+85.67	0.00				Light greyish brown, silty fine to coarse SAND with gravel sized rock fragments. (FILL)
									B 0.85	+84.82	0.85				Grey and greyish brown, angular and subangular COBBLE sized rock fragments. (COLLUVIUM)
				56					T2-101 1.30						
				57					TNW 2.80						
				45					TNW 3.90	+81.77	3.90				
				0					4.10						Brownish grey, COBBLE sized rock fragments. (COLLUVIUM)
									1 4.30	+81.17	4.50				
										+80.85	4.82				Grey and greyish brown, angular and subangular COBBLE sized rock fragments. (COLLUVIUM)
								50/0.02 200/0.01	2 5.03						Very dense, brownish grey, sandy GRAVEL sized rock fragments. (COLLUVIUM)
									6.00	+79.67	6.00		V		Extremely weak, pinkish brown, completely decomposed TUFF. (Stiff to very stiff, sandy SILT with gravel sized rock fragments.)
				85					3						
									4 7.10						
								5,7,9, 10,11,14 N=44	5 6 7.55						
									8.00						
				85					7						
									8 9.10						
								6,8,10, 12,16,19 N=57	9 10 9.55						
	Hx										10				

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water sample
- Water table
- Standard penetration test
- Permeability test
- Piezometer tip
- Standpipe

LOGGED Poon Leung
DATE 30/8/24
CHECKED W.P. Chun
DATE 31/8/24

REMARKS

1. Inspection pit was excavated to 0.85m.
2. Standpipe was installed at 10.00m.
3. Piezometer was installed at 15.40m.

WINFIELD ENGINEERING COMPANY

DRILLHOLE RECORD

CONTRACT NO.: _____
HOLE NO.: BH2(P)
SHEET : 2 OF 3
DATE : 23/8/24 TO 31/8/24

PROJECT : Lot No. 301 in D.D. 219, Hing Keng Shek, Sai Kung, N.T.

METHOD : ROTARY	CO-ORDINATES E 843738.36 N 824997.16	ROCK COREBIT : T2-101/TNW
MACHINE & NO. : TOHO		HOLE DIA. : HX/NX
FLUSHING MEDIUM : WATER	ORIENTATION : VERTICAL	GROUND LEVEL : +85.67 mPD.

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	R. Q. D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Zone	Description
	Hx			85					11		10.00		10		V		As sheet 1 of 3
	11.30 Hx							50/0.06 200/0.06	12 13		11.10 11.22	+74.57 +74.37	11.10 11.30		V IV		Extremely weak, brownish grey, completely decomposed TUFF. (Very dense, sandy GRAVEL sized rock fragments.)
				62	45	0	NI			TNW	11.30 12.80						Moderately weak, greyish brown and grey, highly decomposed coarse ash TUFF with very closely spaced, rough undulating and planar, narrow, ion stained joints.
				80	76	69	4.6			TNW	14.00	+72.57	13.10		II		Strong, grey, spotted with black and white, slightly decomposed coarse ash TUFF with closely and medium spaced, rough undulating and planar, very narrow to extremely narrow, iron stained joints, dipping at 0°-10° & 20°-30°.
				71	60	42	NI			TNW	15.20	+71.27	14.40		IV		Moderately weak, greyish brown and grey, highly decomposed coarse ash TUFF with very closely spaced, rough undulating and planar, narrow, iron stained joints.
				65	43	19				TNW	15.90	+71.27	15.75		III		Moderately strong, grey, spotted with black and white, slightly decomposed coarse ash TUFF with closely and medium spaced, rough undulating and planar, very narrow to extremely narrow, iron and chlorite stained joints, dipping at 0°-10°, 20°-30° & 40°-50°.
				95	89	85				TNW	16.70						
				100	87	60	9.0			TNW	17.45						
				95	89	60				TNW	18.00						
				98	94	88	4.8			TNW	18.78	+67.37 +66.95	18.30 18.72		II		From 18.30m to 18.72m, slightly decomposed TUFF.
				98	87	44	16.1			TNW	19.65				III		
				100	90	52	8.6			TNW			20				

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water sample
- Water table
- Standard penetration test
- Permeability test
- Piezometer tip
- Standpipe

LOGGED Poon Leung
DATE 30/8/24
CHECKED W.P. Chun
DATE 31/8/24

REMARKS

WINFIELD ENGINEERING COMPANY

DRILLHOLE RECORD

CONTRACT NO.: _____
HOLE NO.: BH2(P)
SHEET : 3 OF 3
DATE : 23/8/24 TO 31/8/24

PROJECT : Lot No. 301 in D.D. 219, Hing Keng Shek, Sai Kung, N.T.

METHOD : ROTARY	CO-ORDINATES E 843738.36 N 824997.16	ROCK COREBIT : T2-101/TNW
MACHINE & NO. : TOHO		HOLE DIA. : HX/NX
FLUSHING MEDIUM : WATER	ORIENTATION : VERTICAL	GROUND LEVEL : +85.67 mPD.

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	R. Q. D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Zone	Description
				100	90	52	8.6			TNW	20.10		20		III		As sheet 2 of 3
				94	84	52	>20			TNW		+64.92	20.75		II		From 20.75m to 21.32m, slightly decomposed TUFF.
							7.0				21.10	+64.35	21.32		III		
				95	86	44	>20			TNW							
							12.8				22.45	+63.19	22.48		II		From 22.48m to 22.88m, slightly decomposed TUFF.
				95	80	80	4.0			TNW		+62.79	22.88		III		
							>20				23.03						
				98	90	50	14.5			TNW		+62.02	23.65		II		From 23.65m to 24.16m, slightly decomposed TUFF.
							3.9				24.00	+61.51	24.16		III		
				98	90	55	10.9			TNW							
												+60.87	24.80		II		Strong, grey to dark grey, slightly decomposed coarse ash TUFF with closely to medium spaced, rough planar, very narrow to extremely narrow, iron stained joints, dipping at 0°-10°.
				100	100	100	3.3			TNW	25.00						
31/8											26.00	+59.67	26.00				
																	End of hole at 26.00m.

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water sample
- Water table
- Standard penetration test
- Permeability test
- Piezometer tip
- Standpipe

LOGGED Poon Leung
DATE 30/8/24
CHECKED W.P. Chun
DATE 31/8/24

REMARKS

WINFIELD ENGINEERING COMPANY

DRILLHOLE RECORD

CONTRACT NO.: _____
HOLE NO.: BH3(P)
SHEET : 1 OF 3
DATE : 14/8/24 TO 21/8/24

PROJECT : Lot No. 301 in D.D. 219, Hing Keng Shek, Sai Kung, N.T.

METHOD : ROTARY	CO-ORDINATES E 843748.28 N 825000.15	ROCK COREBIT : T2-101/TNW
MACHINE & NO. : TOHO		HOLE DIA. : HX/NX
FLUSHING MEDIUM : WATER	ORIENTATION : VERTICAL	GROUND LEVEL : +85.72 mPD.

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	R. Q. D.	Fracture Index	Tests	Samples No. Type Depth	Reduced Level	Depth (m)	Legend	Grade	Zone	Description
14/8	HX								A 0.50 B 1.00 C 1.50	+85.72	0.00				Greyish brown, silty fine to coarse SAND with gravel sized rock fragments.
				25					2.00 T2-101	+83.72	2.00				Grey, angular COBBLE sized rock fragments. (FILL)
				40					3.00 TNW	+82.72	3.00				Concrete
				36					3.50 TNW	+82.22	3.50				Greyish brown, angular COBBLE sized rock fragments. (COLLUVIUM)
								50/0.04 200/0.06	4.25 1 5.10 5.20	+81.47	4.25				Very dense, greyish brown, sandy GRAVEL sized rock fragments. (COLLIVIUM)
				43					5.90 TNW	+79.82	5.90				Light greyish brown, angular COBBLE and BOULDER sized rock fragments. (COLLUVIUM)
				50					6.90 TNW						
				0					7.90 2 8.40	+77.82 +77.32	7.90 8.40				Brownish grey, sandy GRAVEL and COBBLE sized rock fragments. (COLLUVIUM)
				58	52	30	9.1 NI		TNW	+76.77	8.95		III IV		Moderately strong, greyish brown and grey, moderately decomposed coarse ash TUFF with closely and very closely spaced, rough undulating and planar, narrow to very narrow, iron stained joints, dipping at 0°-10°, 20°-30°, 40°-50° & subvertical.
	Hx			67	60	37	7.7		9.70 TNW	+76.02	9.70 10		III		From 8.95m to 9.70m, highly decomposed TUFF.

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water sample
- Water table
- Standard penetration test
- Permeability test
- Piezometer tip
- Standpipe

LOGGED Poon Leung
DATE 30/8/24
CHECKED W.P. Chun
DATE 31/8/24

REMARKS

1. Inspection pit was excavated to 1.50m.
2. Standpipe was installed at 10.00m.
3. Piezometer was installed at 11.50m.

WINFIELD ENGINEERING COMPANY

DRILLHOLE RECORD

CONTRACT NO.: _____
HOLE NO.: BH3(P)
SHEET : 2 OF 3
DATE : 14/8/24 TO 21/8/24

PROJECT : Lot No. 301 in D.D. 219, Hing Keng Shek, Sai Kung, N.T.

METHOD : ROTARY	CO-ORDINATES E 843748.28 N 825000.15	ROCK COREBIT : T2-101/TNW
MACHINE & NO. : TOHO		HOLE DIA. : HX/NX
FLUSHING MEDIUM : WATER	ORIENTATION : VERTICAL	GROUND LEVEL : +85.72 mPD.

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	R. Q. D.	Fracture Index	Tests	Samples No.	Type	Depth	Reduced Level	Depth (m)	Legend	Grade	Zone	Description
	Hx						7.7					+75.37	10.35		III		As sheet 1 of 3
				67	60	37	NI			TNW	11.20				IV		Weak to moderately weak, greyish brown and grey, highly decomposed coarse ash TUFF with very closely and closely spaced, rough undulating and planar, narrow, iron stained joints.
				23	18	0				TNW	12.00	+73.72	12.00				
	12.00 Hx			95	88	48	10.0			TNW	13.00				III		Moderately strong, greyish brown and grey, moderately decomposed coarse ash TUFF with closely and locally medium spaced, rough undulating and planar, very narrow, iron stained joints, dipping at 0°-10°, 30°-40°, 50°-60° & 70°-80°.
				95	83	76	>20 7.5			TNW	14.10	+72.42	13.30		II		Strong, brownish grey and grey, slightly decomposed coarse ash TUFF with closely and medium to widely, locally widely to very widely spaced, rough undulating and planar, very narrow to extremely narrow, iron and chlorite stained joints, dipping at 0°-10°, 20°-30°, 40°-50° & occasional subvertical.
				97	97	97				TNW	15.15						
				100	100	100	1.9			TNW	16.20						
				96	96	96				TNW	17.35						
				100	100	93				TNW	18.05	+67.87 +67.67	17.85 18.05		III		From 17.85m to 18.05m, moderately decomposed TUFF.
				96	96	96	15.0 2.4			TNW	18.85				II		
				100	97	62	10.9			TNW	19.85	+66.40 +66.17	19.32 19.55		III II		From 19.32m to 19.55m, moderately decomposed TUFF.
				100	100	85	5.4			TNW			20				

- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water sample
- Water table
- Standard penetration test
- Permeability test
- Piezometer tip
- Standpipe

LOGGED Poon Leung
DATE 30/8/24
CHECKED W.P. Chun
DATE 31/8/24

REMARKS

WINFIELD ENGINEERING COMPANY

DRILLHOLE RECORD

CONTRACT NO.: _____
HOLE NO.: BH3(P)
SHEET : 3 OF 3
DATE : 14/8/24 TO 21/8/24

PROJECT : Lot No. 301 in D.D. 219, Hing Keng Shek, Sai Kung, N.T.

METHOD : ROTARY	CO-ORDINATES E 843748.28 N 825000.15	ROCK COREBIT : T2-101/TNW
MACHINE & NO. : TOHO		HOLE DIA. : HX/NX
FLUSHING MEDIUM : WATER	ORIENTATION : VERTICAL	GROUND LEVEL : +85.72 mPD.

Drilling Progress	Casing Depth/Size	Water Level/Time	Water Recovery %	Total Core Recovery %	Solid Core Recovery %	R. Q. D.	Fracture Index	Tests	Samples No.	Samples Type	Samples Depth	Reduced Level	Depth (m)	Legend	Grade	Zone	Description
				100	100	85	5.4			TNW	20.85		20		II		As sheet 2 of 3
				100	96	77				TNW		+64.17	21.55				From 21.55m to 21.85m, moderately decomposed TUFF.
21/8											22.08	+63.87 +63.64	21.85 22.08		III II		End of hole at 22.08m.

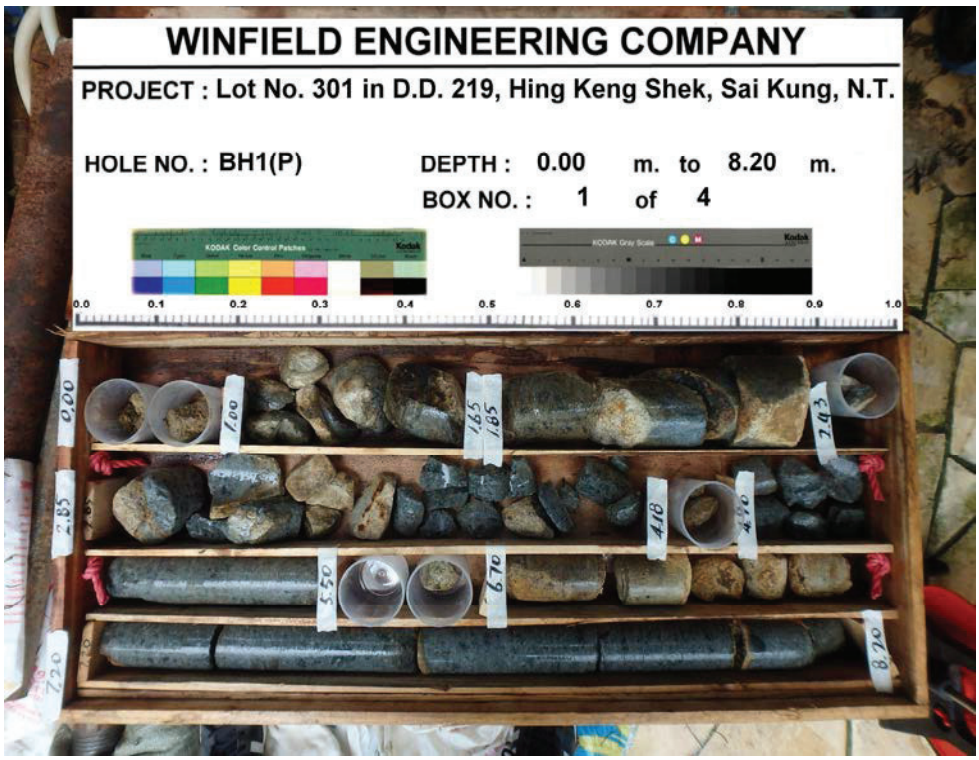
- Small disturbed sample
- Large disturbed sample
- SPT liner sample
- U76 undisturbed sample
- U100 undisturbed sample
- Mazier sample
- P/S Piston sample
- Water sample
- Water table
- Standard penetration test
- Permeability test
- Piezometer tip
- Standpipe

LOGGED Poon Leung
DATE 30/8/24
CHECKED W.P. Chun
DATE 31/8/24

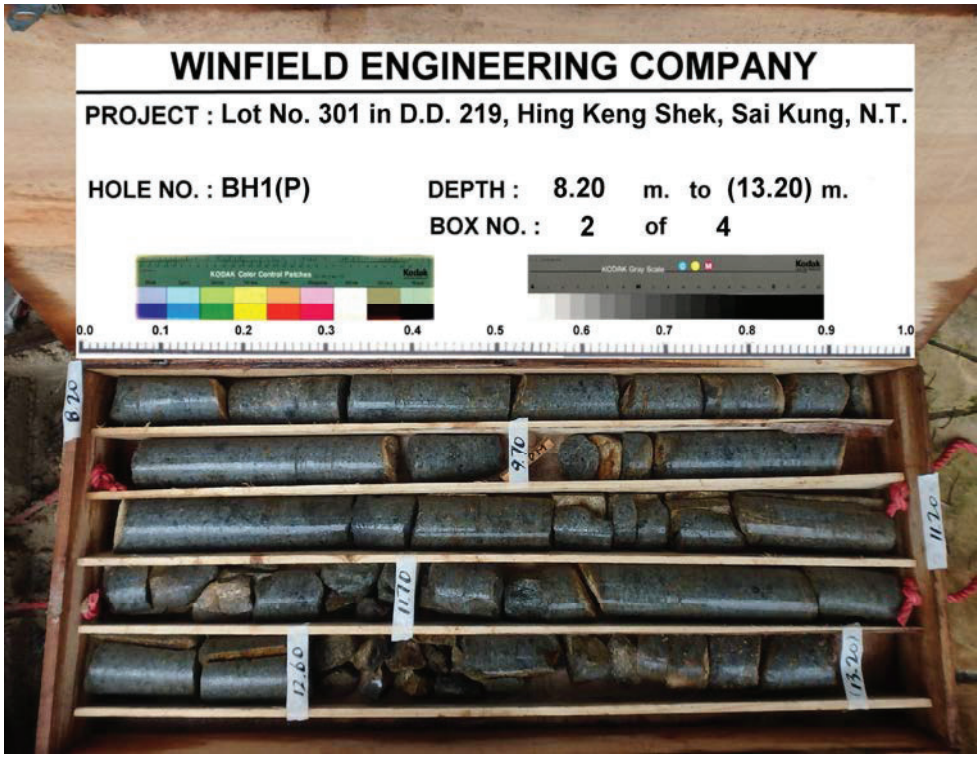
REMARKS

Appendix B

Drillhole Photographs

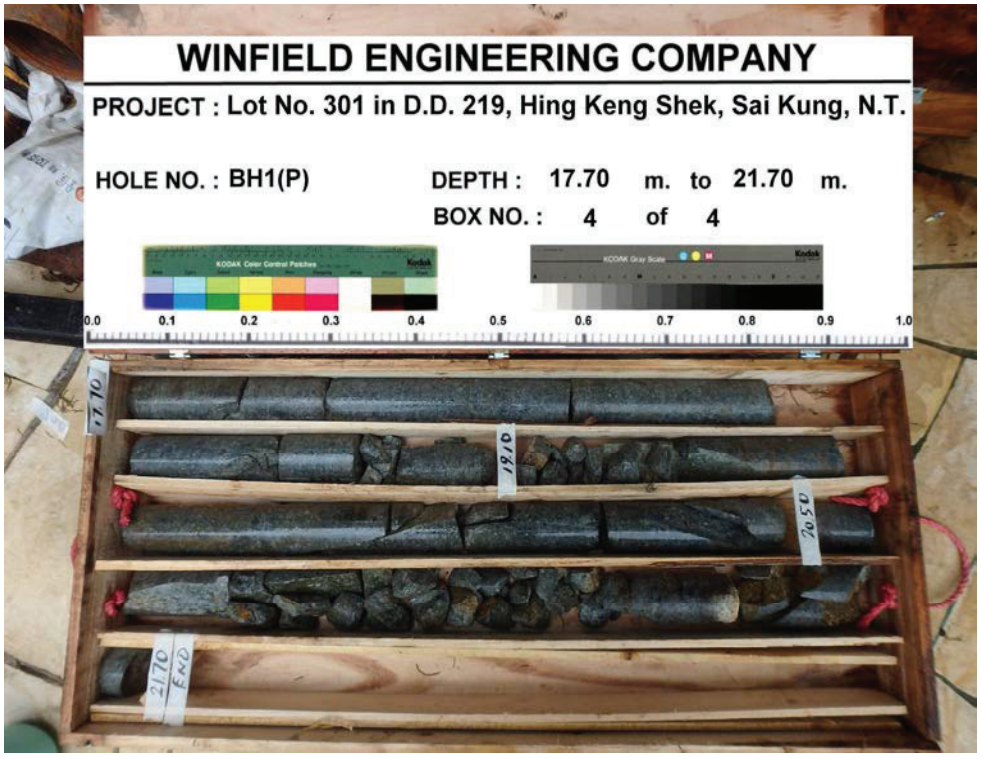


DRILLHOLE NO. ABH1(P) BOX 1 FO 4

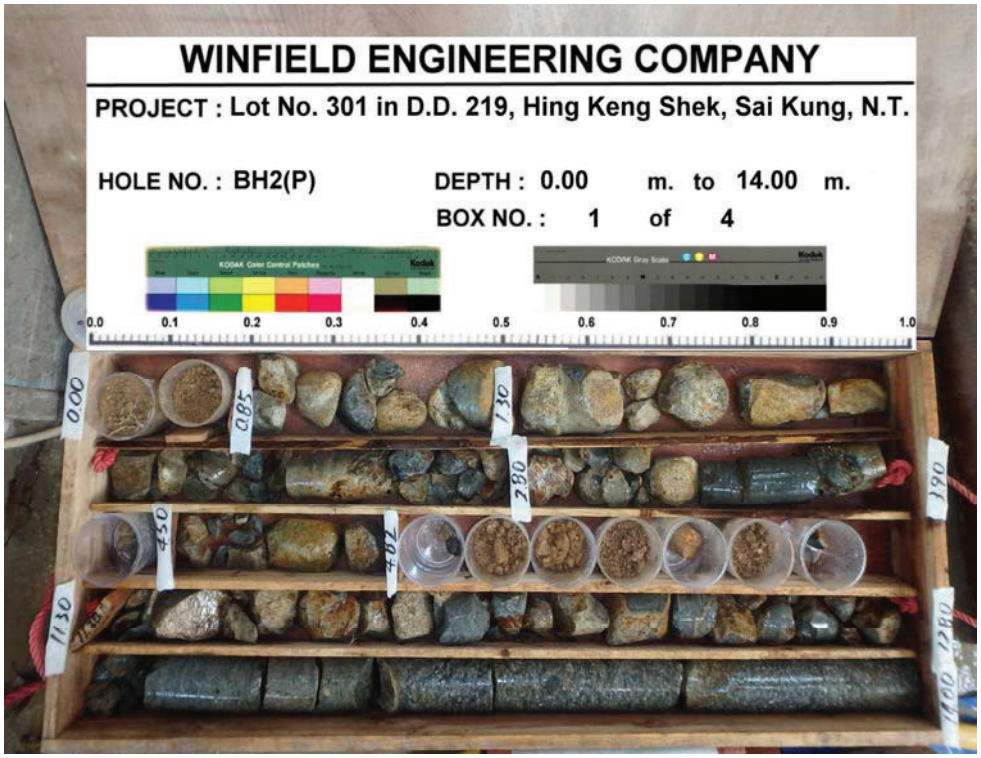


DRILLHOLE NO. ABH1(P) BOX 2 OF 4

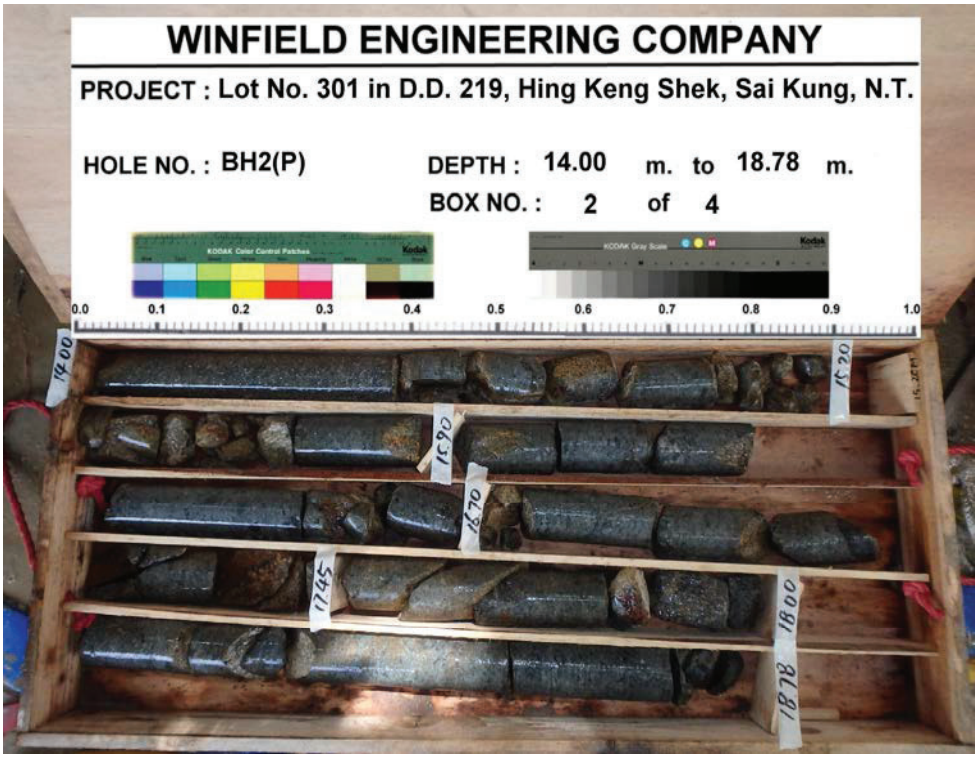
DRILLHOLE NO. ABH1(P) BOX 3 FO 4



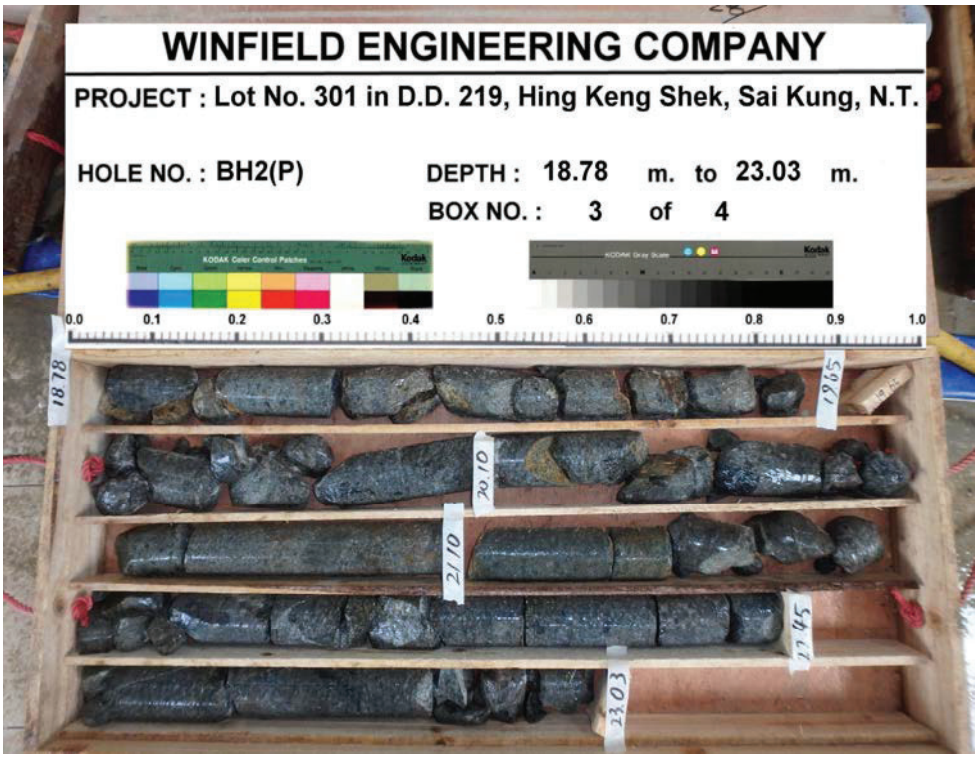
DRILLHOLE NO. ABH1(P) BOX 4 OF 4



DRILLHOLE NO. ABH2(P) BOX 1 FO 4

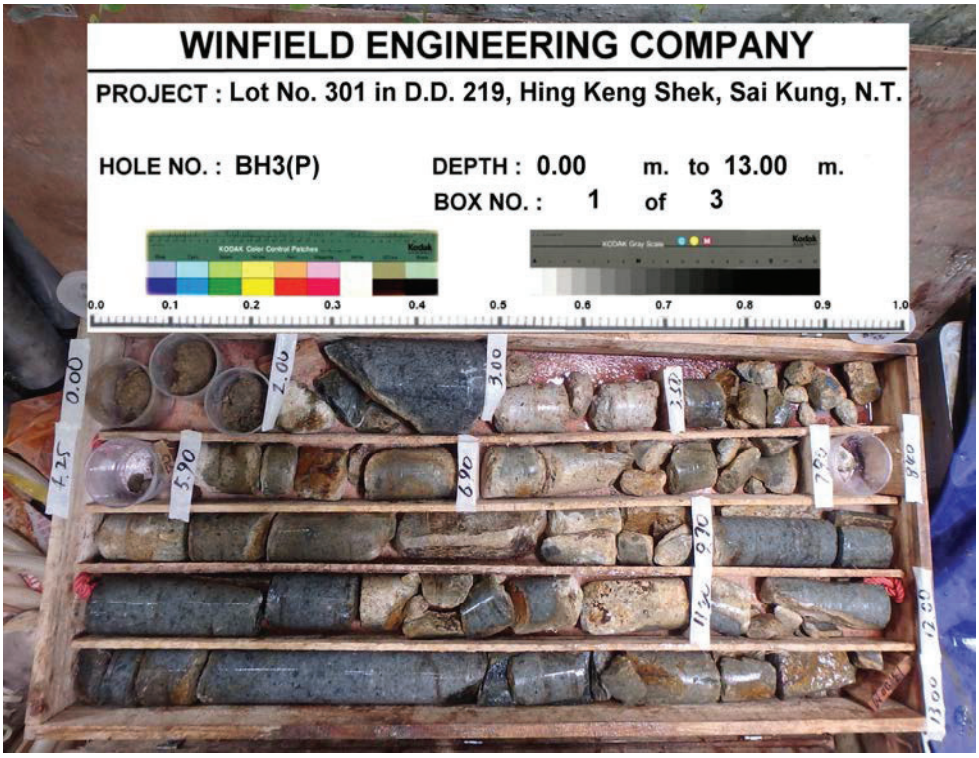


DRILLHOLE NO. ABH2(P) BOX 2 OF 4

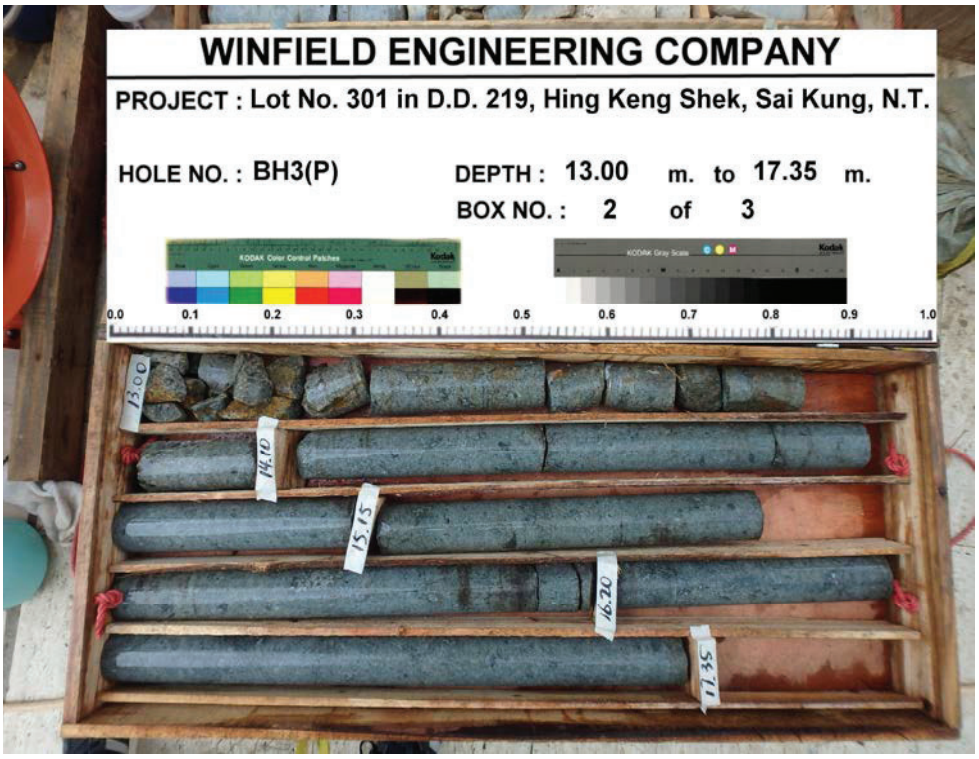


DRILLHOLE NO. ABH2(P) BOX 3 FO 4

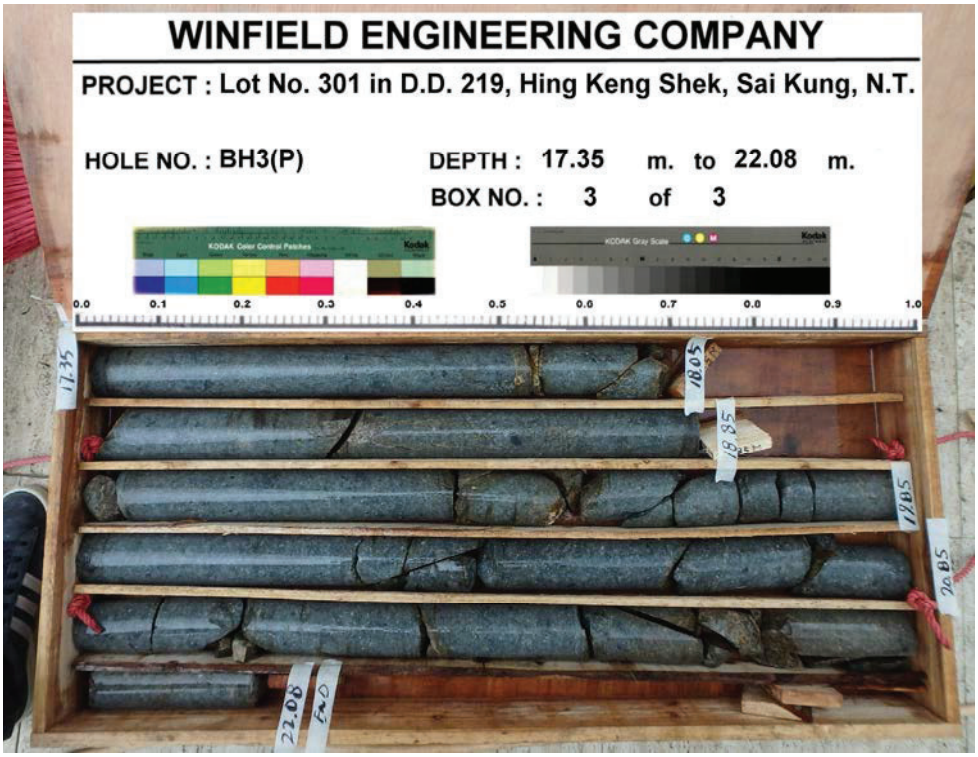
DRILLHOLE NO. ABH2(P) BOX 4 OF 4



DRILLHOLE NO. ABH3(P) BOX 1 FO 3



DRILLHOLE NO. ABH3(P) BOX 2 OF 3



DRILLHOLE NO. ABH3(P) BOX 3 FO 3

Appendix C

Trial Pit Records

WINFIELD ENGINEERING COMPANY

Location: Lot No. 301 in D.D. 219, Hing Keng Shek, Sau Kung, N.T.

Trial Pit No.: TP1

Sheet 1 **of** 1

Logged by: Poon Leung
Date: 27-7-2024

Excavation method: Hand Dug
Coordinates: E 843738.47 N 825013.27

Excavated: 23-7-2024
Backfill: 29-7-2024

Samples & Test	Depth (m)	Face A: width: 1.50 m	Face B: width: 1.50 m	Face C: width: 1.50 m	Face D: width: 1.50 m
U76	0.00	Datum line +85.42 mPD			
	0.50				
	1.00	End of Pit at 0.80m.			
	1.50				
	2.00				
	2.50				
	3.00				
	3.50				
	4.00				
	4.50				
	5.00				

Remarks:

Legend	Description	Grade
	Concrete slab	
	Firm to stiff, yellowish brown, sandy SILT with gravel and cobble sized rock fragments. (COLLUVIUM)	
	Light greyish and yellowish brown, angular and subangular BOULDER and COBBLE sized rock fragments. (COLLUVIUM)	

Plan (not to scale)

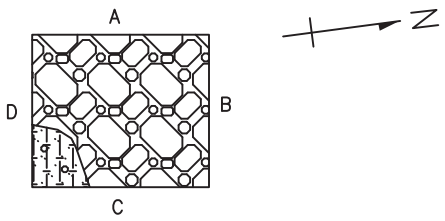


Plate bearing test	Small disturbed sample
Insitu density test	Large disturbed sample
Moisture content test	Water sample
Photograph	Seepage
Undisturbed sample hor.	Bulk sample
Undisturbed sample ver.	Block sample

WINFIELD ENGINEERING COMPANY

Location: Lot No. 301 in D.D. 219, Hing Keng Shek, Sai Kung, N.T.	**Trial Pit No.:** TP2	**Sheet** 1 **of** 1
Logged by: Poon Leung	**Excavation method:** Hand Dug	**Excavated:** 24-7-2024
Date: 27-7-2024	**Coordinates:** E 843750.35 N 825005.08	**Backfill:** 29-7-2024

Samples & Test	Depth (m)	Face A: width: 1.50 m	Face B: width: 1.50 m	Face C: width: 1.50 m	Face D: width: 1.50 m
U76	0.00	Datum line +85.71 mPD			
	0.50	BOULDER BOULDER	BOULDER		BOULDER
	1.00	End of Pit at 1.00m.	1.00m		1.00m
	1.50				
	2.00				
	2.50				
	3.00				
	3.50				
	4.00				
	4.50				
	5.00				

Remarks:

Legend	Description	Grade
	Surface channel	
	Concrete slab	
	Concrete	
1	Loose to medium dense, grey and greyish brown, sandy GRAVEL and COBBLE sized concrete and rock fragments. (FILL)	
2	Medium dense, light greyish brown, slightly silty fine to coarse SAND with gravel sized rock fragments. (FILL)	

Plan (not to scale)

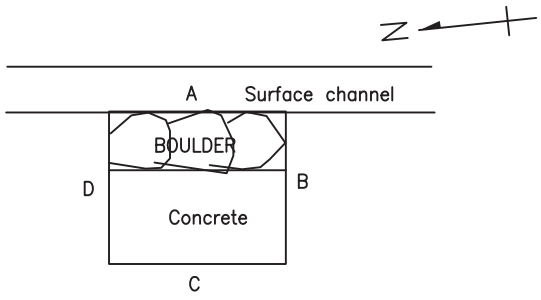


Plate bearing test	Small disturbed sample
Insitu density test	Large disturbed sample
Moisture content test	Water sample
Photograph	Seepage
Undisturbed sample hor.	Bulk sample
Undisturbed sample ver.	Block sample

WINFIELD ENGINEERING COMPANY

Location: Lot No. 301 in D.D. 219, Hing Keng Shek, Sai Kung, N.T.	**Trial Pit No.:** TP3	**Sheet** 1 **of** 1
Logged by: Poon Leung	**Excavation method:** Hand Dug	**Excavated:** 21-8-2024
Date: 23-8-2024	**Coordinates:** E 843735.19 N 824997.06	**Backfill:** 2-9-2024

Samples & Test	Depth (m)	Face A: width: 1.50 m	Face B: width: 1.50 m	Face C: width: 1.50 m	Face D: width: 1.50 m
U76	0.00	Datum line +85.68 mPD			
	0.50	End of Pit at 0.50m.			
	1.00				
	1.50				
	2.00				
	2.50				
	3.00				
	3.50				
	4.00				
	4.50				
	5.00				

Remarks:

Legend	Description	Grade
	Concrete slab	
	Medium dense, reddish pink, slightly clayey silty fine to medium SAND with gravel and occasional cobble sized rock fragments and rootlets. (FILL)	
	Light greyish brown and pink, angular and subangular BOULDER and COBBLE sized rock fragments. (COLLUVIUM)	

Plan (not to scale)

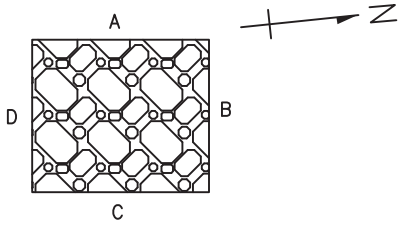


Plate bearing test	Small disturbed sample
Insitu density test	Large disturbed sample
Moisture content test	Water sample
Photograph	Seepage
Undisturbed sample hor.	Bulk sample
Undisturbed sample ver.	Block sample

WINFIELD ENGINEERING COMPANY

Location: Lot No. 301 in D.D. 219, Hing Keng Shek, Sai Kung, N.T.

Trial Pit No.: TP4

Sheet 1 **of** 1

Logged by: Poon Leung
Date: 27-7-2024

Excavation method: Hand Dug
Coordinates: E 843746.37 N 824996.28

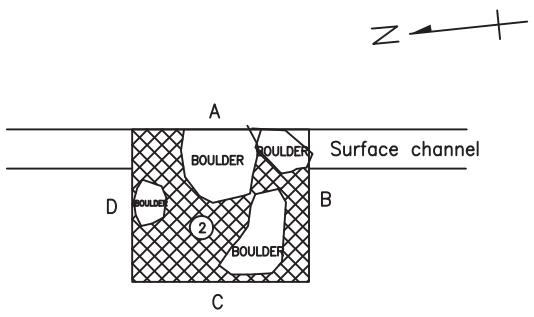
Excavated: 24-7-2024
Backfill: 29-7-2024

Samples & Test	Depth (m)	Face A: width: 1.50 m	Face B: width: 2.00 m	Face C: width: 1.50 m	Face D: width: 2.00 m
U76	0.00	Datum line +85.74 mPD	0.35m		0.35m
	0.50	BOULDER	① ②	① ②	② ③
	1.00	BOULDER		BOULDER	
	1.10	End of Pit at 1.10m.			
	1.50				
	2.00				
	2.50				
	3.00				
	3.50				
	4.00				
	4.50				
	5.00				

Remarks:

Legend	Description	Grade
	Surface channel	
	Concrete slab	
	Concrete	
①	Medium dense, grey, sandy GRAVEL and COBBLE sized rock and concrete fragments. (FILL)	
②	Medium dense, yellowish brown, slightly clayey silty fine to coarse SAND with gravel sized rock fragments. (FILL)	
③	Loose to medium dense, light greyish brown, sandy GRAVEL and COBBLE sized rock fragments. (FILL)	

Plan (not to scale)



⊥ Plate bearing test	● Small disturbed sample
⊔ Insitu density test	◆ Large disturbed sample
m Moisture content test	▼ Water sample
Photograph	Seepage
Undisturbed sample hor.	Bulk sample
Undisturbed sample ver.	Block sample

WINFIELD ENGINEERING COMPANY

Location: Lot No. 301 in D.D. 219, Hing Keng Shek, Sai Kung, N.T.	**Trial Pit No.:** TP5	**Sheet** 1 **of** 1

Logged by: Poon Leung **Excavation method:** Hand Dug **Excavated:** 21-8-2024
Date: 23-8-2024 **Coordinates:** E 843741.22 N 824983.53 **Backfill:** 2-9-2024

Samples & Test	Depth (m)	Face A: width: 1.50 m	Face B: width: 1.50 m	Face C: width: 1.50 m	Face D: width: 1.50 m
U76	0.00	Datum line +85.68 mPD			
	0.50	BOULDER	BOULDER	BOULDER	BOULDER
	1.00	End of Pit at 0.80m.			
	1.50				
	2.00				
	2.50				
	3.00				
	3.50				
	4.00				
	4.50				
	5.00				

Remarks:

Legend	Description	Grade
①	Medium dense, light greyish brown, slightly clayey silty fine to medium SAND with gravel sized rock fragments and rootlets. (FILL)	
②	Firm, yellowish brown and pink, slightly clayey sandy SILT with gravel sized rock fragments. (FILL)	
③	Loose to medium dense, brownish grey, slightly silty sandy GRAVEL and COBBLE sized rock and brick fragments. (FILL)	
	Firm, yellowish brown and pink, slightly clayey sandy SILT with gravel sized rock fragments and rootlets. (COLLUVIUM)	

Plan (not to scale)

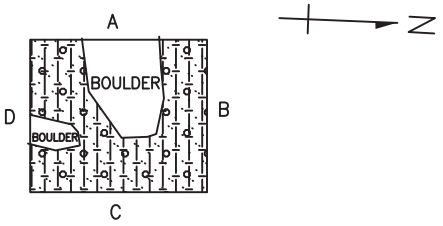


Plate bearing test	Small disturbed sample
Insitu density test	Large disturbed sample
Moisture content test	Water sample
Photograph	Seepage
Undisturbed sample hor.	Bulk sample
Undisturbed sample ver.	Block sample

WINFIELD ENGINEERING COMPANY

Location: Lot No. 301 in D.D. 219, Hing Keng Shek, Sai Kung, N.T.	**Trial Pit No.:** TP6	**Sheet** 1 **of** 1

Logged by: Poon Leung **Excavation method:** Hand Dug **Excavated:** 21-8-2024
Date: 23-8-2024 **Coordinates:** E 843738.05 N 824990.11 **Backfill:** 2-9-2024

Samples & Test	Depth (m)	Face A: width: 1.50 m	Face B: width: 1.50 m	Face C: width: 1.50 m	Face D: width: 1.50 m
U76	0.00	Datum line +85.70 mPD			
	0.50				
	1.00	End of Pit at 0.70m.			
	1.50				
	2.00				
	2.50				
	3.00				
	3.50				
	4.00				
	4.50				
	5.00				

Remarks:

Legend	Description	Grade
	Concrete slab	
	Medium dense, reddish brown and pink, silty fine to coarse SAND with gravel and occasional cobble sized rock fragments and rootlets. (FILL)	
	Firm, reddish brown and pink, slightly clayey sandy SILT with gravel sized rock fragments. (COLLUVIUM)	
	Light greyish brown and pink, angular BOULDER sized rock fragments. (COLLUVIUM)	

Plan (not to scale)

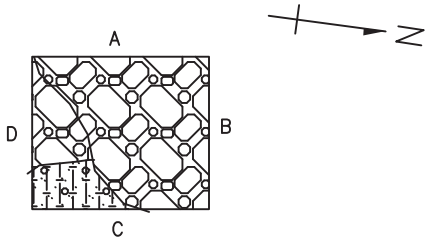


Plate bearing test	Small disturbed sample
Insitu density test	Large disturbed sample
Moisture content test	Water sample
Photograph	Seepage
Undisturbed sample hor.	Bulk sample
Undisturbed sample ver.	Block sample

WINFIELD ENGINEERING COMPANY

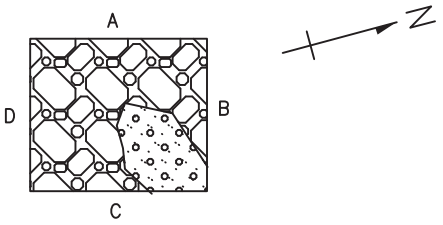
Location: Lot No. 301 in D.D. 219, Hing Keng Shek, Sai Kung, N.T.	**Trial Pit No.:** TP7	**Sheet** 1 **of** 1
Logged by: Poon Leung **Date:** 27-7-2024	**Excavation method:** Hand Dug **Coordinates:** E 843738.35 N 825010.07	**Excavated:** 23-7-2024 **Backfill:** 29-7-2024

Samples & Test	Depth (m)	Face A: width: 1.50 m	Face B: width: 1.50 m	Face C: width: 1.50 m	Face D: width: 1.50 m
U76	0.00	Datum line +85.52 mPD			
	0.50				
	1.00	End of Pit at 1.00m.	ø6.4mm G.I. pipe		
	1.50				
	2.00				
	2.50				
	3.00				
	3.50				
	4.00				
	4.50				
	5.00				

Remarks:

Legend	Description	Grade
	Concrete slab	
	Medium dense to dense, yellowish brown and pink, slightly silty, sandy GRAVEL and COBLE sized rock fragments. (COLLUVIUM)	
	Light greyish and yellowish brown, angular and subangular BOULDER and COBBLE sized rock fragments. (COLLUVIUM)	

Plan (not to scale)



⊥ Plate bearing test	● Small disturbed sample
⊔ Insitu density test	◆ Large disturbed sample
m Moisture content test	▼ Water sample
Photograph	Seepage
Undisturbed sample hor.	Bulk sample
Undisturbed sample ver.	Block sample

Appendix D

Trial Pit Photographs

TRIAL PIT NO. TP1 FACE A

TRIAL PIT NO. TP1 FACE B

TRIAL PIT NO. TP1 FACE C

TRIAL PIT NO. TP1 FACE D

TRIAL PIT NO. TP1 FACE BOTTOM

TRIAL PIT NO. TP2 FACE A

TRIAL PIT NO. TP2 FACE B

TRIAL PIT NO. TP2 FACE C

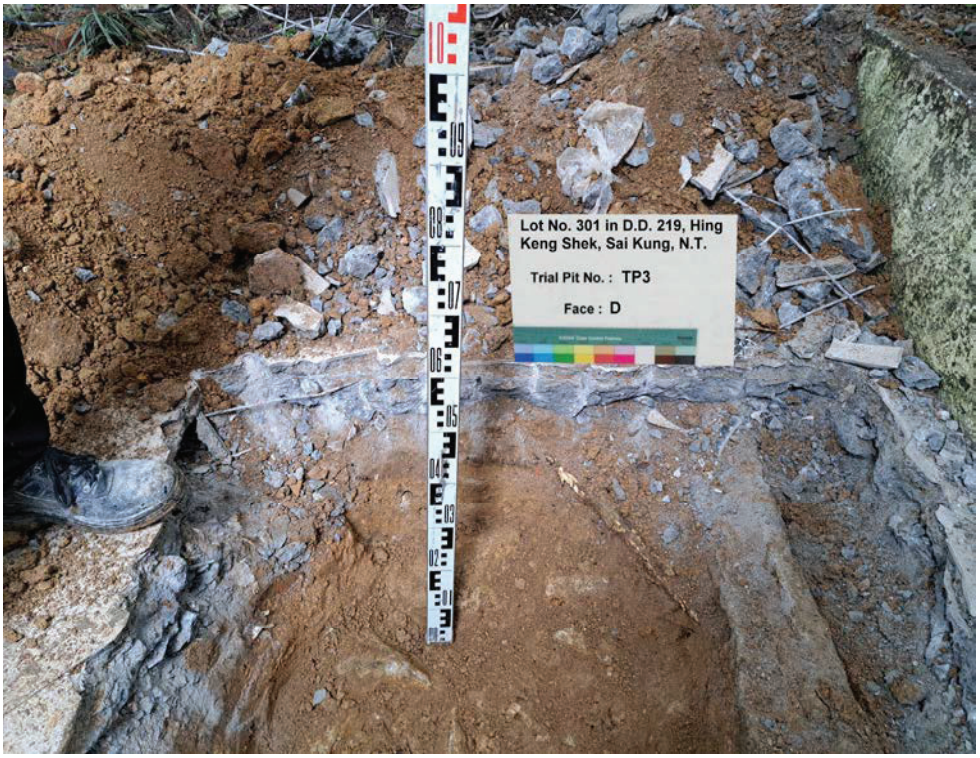
TRIAL PIT NO. TP2 FACE D

TRIAL PIT NO. TP2 FACE BOTTOM

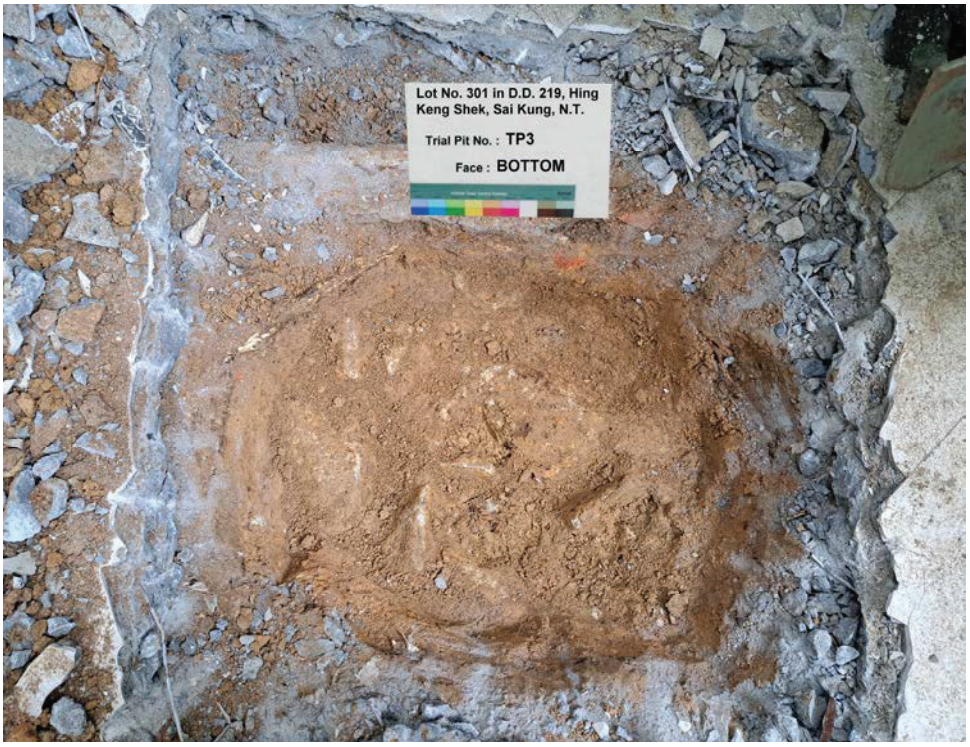
TRIAL PIT NO. TP3 FACE A

TRIAL PIT NO. TP3 FACE B

TRIAL PIT NO. TP3 FACE C



TRIAL PIT NO. TP3 FACE D



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TRIAL PIT NO. TP4 FACE A

TRIAL PIT NO. TP4 FACE B

TRIAL PIT NO. TP4 FACE C

TRIAL PIT NO. TP4 FACE D

TRIAL PIT NO. TP4 FACE BOTTOM

TRIAL PIT NO. TP5 FACE A

TRIAL PIT NO. TP5 FACE B

TRIAL PIT NO. TP5 FACE C

TRIAL PIT NO. TP5 FACE D

TRIAL PIT NO. TP5 FACE BOTTOM

TRIAL PIT NO. TP6 FACE A

TRIAL PIT NO. TP6 FACE B

TRIAL PIT NO. TP6 FACE C

TRIAL PIT NO. TP6 FACE D

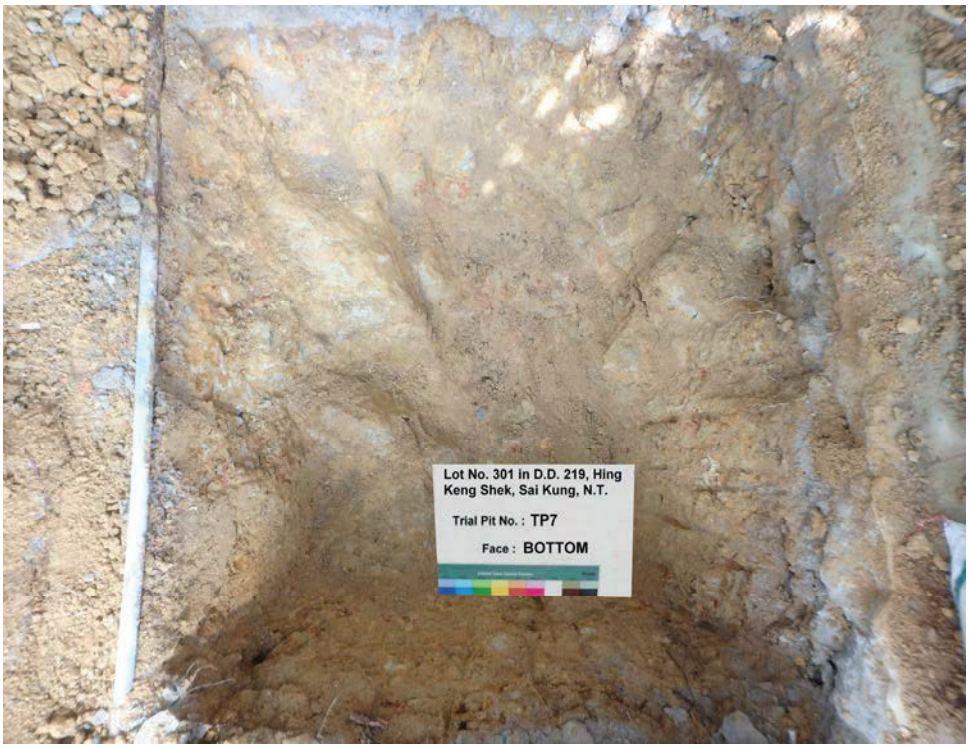
TRIAL PIT NO. TP6 FACE BOTTOM

TRIAL PIT NO. TP7 FACE A

TRIAL PIT NO. TP7 FACE B

TRIAL PIT NO. TP7 FACE C

TRIAL PIT NO. TP7 FACE D



TRIAL PIT NO. TP7 FACE BOTTOM

Appendix E

Installation Details of Piezometer/Standpipe

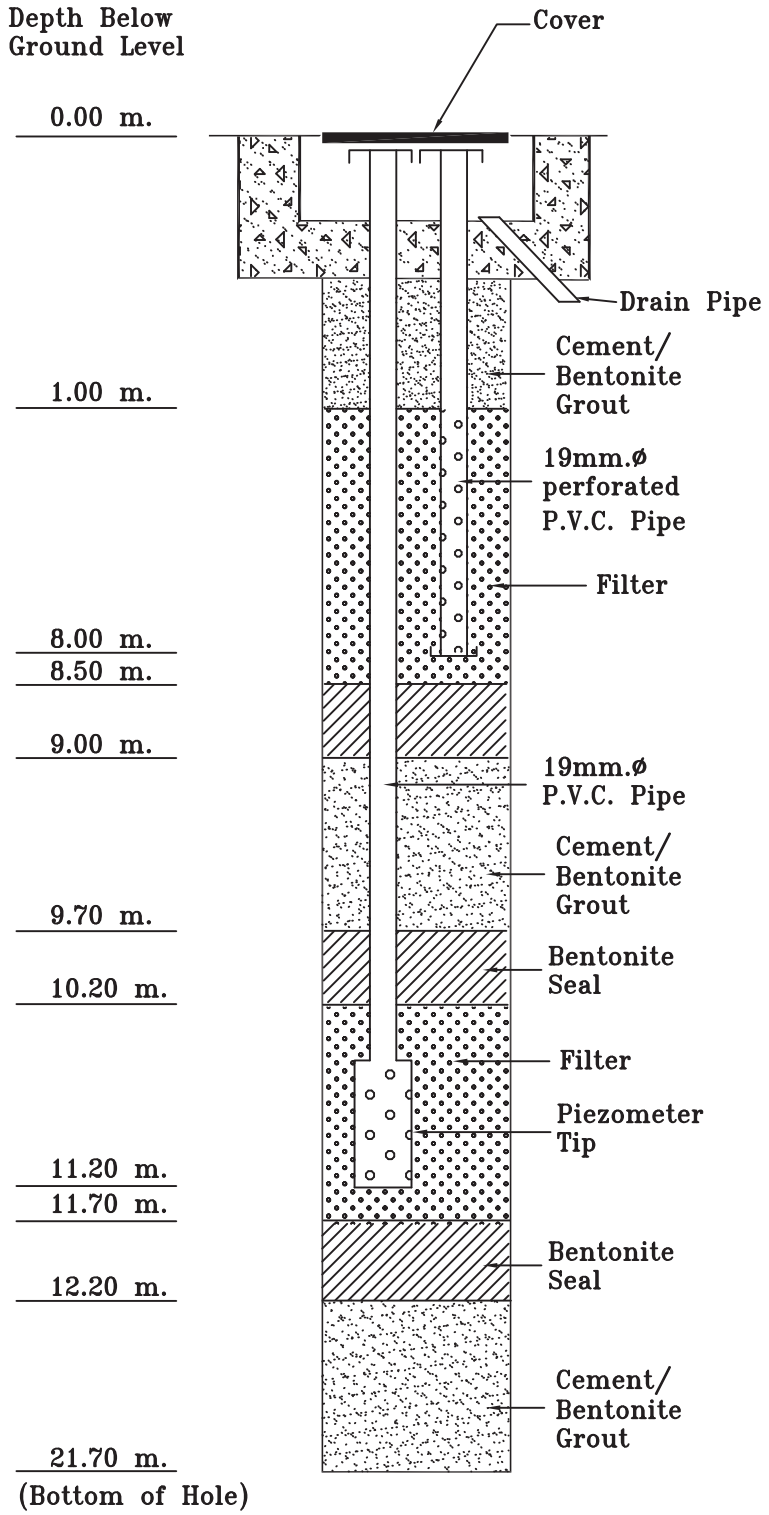
& Response Test Records

PIEZOMETER/STANDPIPE DETAIL AND RESPONSE TEST RECORD SHEET

Project : Lot No. 301 in D.D. 219, Hing Keng Shek, Sai Kung, N.T.

Drillhole No. BH1(P)	Date of Test : 12-8-2024
Ground Level : +85.58 mPD.	Initial Water Level : 3.88 m. (Piezometer)
Depth of Piezometer : 11.20 m.	Initial Water Level : 3.92 m. (Standpipe)
Depth of Standpipe : 8.00 m.	Tested By : Ma

Time Elapsed (minutes)	Depth of Water From Top of Pipe (m.)	
	Piezometer	Standpipe
0.00	0.00	0.00
0.25	0.32	0.62
0.50	0.55	1.18
0.75	0.81	1.68
1.00	0.98	2.05
2.00	1.41	3.25
3.00	1.73	3.92
4.00	2.02	
5.00	2.33	
6.00	2.58	
7.00	2.79	
8.00	3.05	
9.00	3.33	
10.00	3.52	
15.00	3.88	



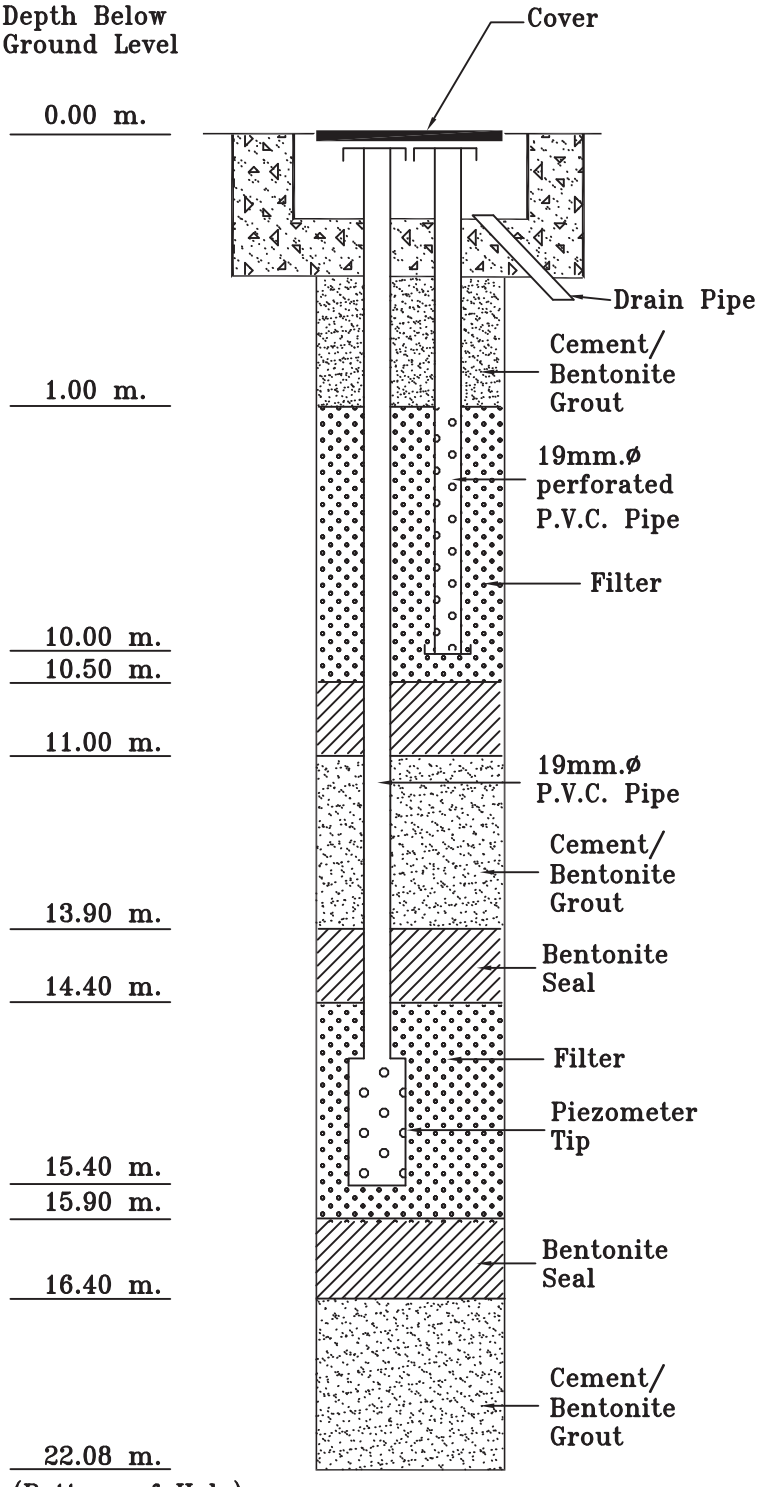
REMARKS :

PIEZOMETER/STANDPIPE DETAIL AND RESPONSE TEST RECORD SHEET

Project : Lot No. 301 in D.D. 219, Hing Keng Shek, Sai Kung, N.T.

Drillhole No. BH2(P)	Date of Test : 2-9-2024
Ground Level : +85.67 mPD.	Initial Water Level : 8.58 m. (Piezometer)
Depth of Piezometer : 15.40 m.	Initial Water Level : 8.53 m. (Standpipe)
Depth of Standpipe : 10.00 m.	Tested By : Ma

Time Elapsed (minutes)	Depth of Water From Top of Pipe (m.)	
	Piezometer	Standpipe
0.00	0.00	0.00
0.25	0.31	0.69
0.50	0.57	1.22
0.75	0.79	1.78
1.00	1.05	2.26
2.00	1.87	3.33
3.00	2.46	4.02
4.00	3.00	4.87
5.00	3.48	5.36
6.00	3.91	5.87
7.00	4.30	6.26
8.00	4.73	6.68
9.00	4.98	7.01
10.00	5.19	7.38
15.00	5.98	8.14
20.00	6.71	8.53
25.00	7.44	
30.00	8.02	
45.00	8.58	



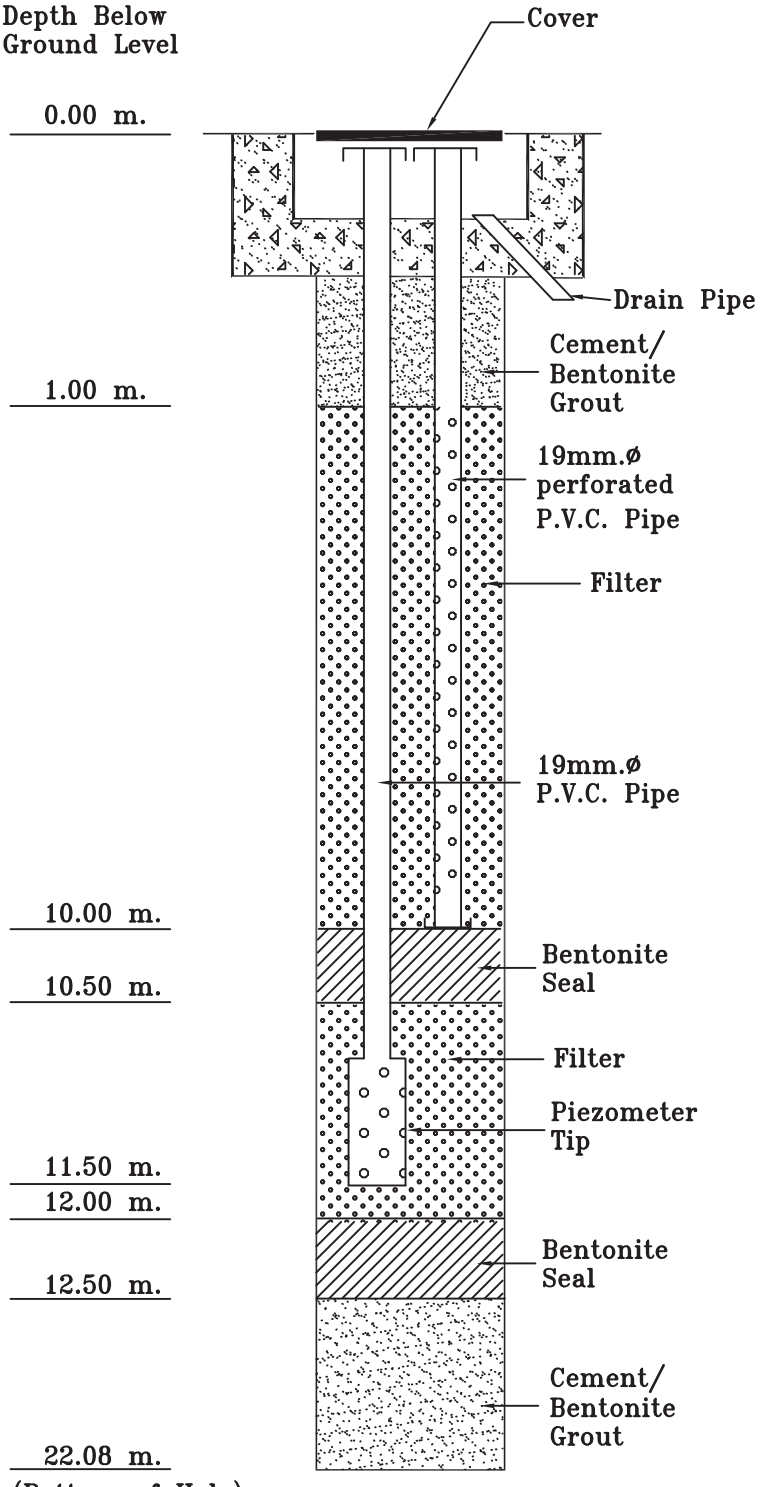
REMARKS :

PIEZOMETER/STANDPIPE DETAIL AND RESPONSE TEST RECORD SHEET

Project : Lot No. 301 in D.D. 219, Hing Keng Shek, Sai Kung, N.T.

Drillhole No. BH3(P)	Date of Test : 22-8-2024
Ground Level : +85.72 mPD.	Initial Water Level : 8.90 m. (Piezometer)
Depth of Piezometer : 11.50 m.	Initial Water Level : 8.88 m. (Standpipe)
Depth of Standpipe : 10.00 m.	Tested By : Ma

Time Elapsed (minutes)	Depth of Water From Top of Pipe (m.)	
	Piezometer	Standpipe
0.00	0.00	0.00
0.25	0.29	0.58
0.50	0.58	0.92
0.75	0.72	1.47
1.00	0.93	1.86
2.00	1.75	3.01
3.00	2.60	3.92
4.00	3.42	4.79
5.00	4.03	5.55
6.00	4.68	6.28
7.00	5.17	6.89
8.00	5.55	7.50
9.00	5.90	8.12
10.00	6.28	8.61
15.00	7.34	8.88
20.00	7.82	
25.00	8.34	
30.00	8.70	
45.00	8.90	



REMARKS :

Appendix F

Groundwater Monitoring Records

RECORD OF WATER LEVEL READING

Project : Lot No. 301 in D.D. 219, Hing Keng Shek, Sai Kung, N.T.

Drillhole No.	BH1(P)				BH2(P)				BH3(P)			
Date of Installation	10-8-2024				31-8-2024				21-8-2024			
Ground Level (mPD)	+85.58				+85.67				+85.72			
Type of Installation	Standpipe		Piezometer		Standpipe		Piezometer		Standpipe		Piezometer	
Installation Depth (m)	8.00		11.20		10.00		15.40		10.00		11.50	
Date	Water Level Below G.L.	Elevation of Water Level	Water Level Below G.L.	Elevation of Water Level	Water Level Below G.L.	Elevation of Water Level	Water Level Below G.L.	Elevation of Water Level	Water Level Below G.L.	Elevation of Water Level	Water Level Below G.L.	Elevation of Water Level
12-8-2024	3.92	+81.66	3.88	+81.70	-	-	-	-	-	-	-	-
13-8-2024	3.98	+81.60	3.95	+81.63	-	-	-	-	-	-	-	-
14-8-2024	4.00	+81.58	3.99	+81.59	-	-	-	-	-	-	-	-
15-8-2024	4.02	+81.56	4.00	+81.58	-	-	-	-	-	-	-	-
16-8-2024	4.04	+81.54	4.02	+81.56	-	-	-	-	-	-	-	-
17-8-2024	4.03	+81.55	4.00	+81.58	-	-	-	-	-	-	-	-
19-8-2024	4.01	+81.57	3.97	+81.61	-	-	-	-	-	-	-	-
20-8-2024	4.00	+81.58	3.95	+81.63	-	-	-	-	-	-	-	-
21-8-2024	4.00	+81.58	3.97	+81.61	-	-	-	-	-	-	-	-
22-8-2024	3.99	+81.59	3.98	+81.60	-	-	-	-	8.88	+76.84	8.90	+76.82
23-8-2024	3.98	+81.60	3.97	+81.61	-	-	-	-	8.89	+76.83	8.91	+76.81
24-8-2024	4.03	+81.55	4.01	+81.57	-	-	-	-	8.90	+76.82	8.94	+76.78
26-8-2024	4.03	+81.55	4.02	+81.56	-	-	-	-	8.91	+76.81	8.93	+76.79
27-8-2024	4.02	+81.56	4.00	+81.58	-	-	-	-	8.91	+76.81	8.92	+76.80
28-8-2024	4.00	+81.58	3.97	+81.61	-	-	-	-	8.89	+76.83	8.90	+76.82
29-8-2024	3.98	+81.60	3.95	+81.63	-	-	-	-	8.87	+76.85	8.89	+76.83
30-8-2024	4.00	+81.58	3.98	+81.60	-	-	-	-	8.88	+76.84	8.87	+76.85
31-8-2024	3.99	+81.59	3.96	+81.62	-	-	-	-	8.88	+76.84	8.89	+76.83
2-9-2024	4.03	+81.55	4.02	+81.56	8.53	+77.14	8.58	+77.09	8.90	+76.82	8.91	+76.81
3-9-2024	4.05	+81.53	4.03	+81.55	8.55	+77.12	8.59	+77.08	8.92	+76.80	8.93	+76.79
4-9-2024	4.03	+81.55	4.00	+81.58	8.57	+77.10	8.60	+77.07	8.91	+76.81	8.90	+76.82
5-9-2024	4.02	+81.56	4.01	+81.57	8.56	+77.11	8.60	+77.07	8.90	+76.82	8.88	+76.84
6-9-2024	3.98	+81.60	3.95	+81.63	8.55	+77.12	8.57	+77.10	8.86	+76.86	8.87	+76.85
7-9-2024	3.99	+81.59	3.92	+81.66	8.51	+77.16	8.53	+77.14	8.83	+76.89	8.85	+76.87
9-9-2024	4.00	+81.58	3.96	+81.62	8.54	+77.13	8.56	+77.11	8.87	+76.85	8.89	+76.83

Appendix G

Checklists for Soil and Rock Description

SOIL DESCRIPTION

For the preparation of drillhole logs, the soil description may report the following information as appropriate in the order indicated:

Soil Strength (Compactness & consistency)

Colour

Weathering

Soil Name

Other qualifying remarks

Additional Geological Information

The following descriptions were achieved from **GUIDE TO ROCK AND SOIL DESCRIPTIONS (GEOGUIDE 3)**

I) Soil Strength (Compactness & Consistency)

Soil Type	Term	Identification
Very Coarse	Loose	By Inspection of voids & particle packing in the field (from trial pits only)
(COBBLES & BOULDERS)	Dense	
	Very loose	SPT 'N' value 0-4
	Loose	SPT 4-10; can be excavated with spade;
Coarse (SANDS &	Medium dense	SPT 10-30
GRAVELS)	Dense	SPT 30-50; requires pick for excavation;
	Very dense	SPT > 50
	Very soft	Undrained shear strength (USS) < 20kPa; exudes between fingers when squeezed in hand.
	Soft	USS 20-40 kPa; moulded by light finger pressure.
Fine (CLAYS & SILTS)	Firm	USS 40-75 kPa; can be moulded by strong finger pressure.
	Stiff	USS 75-150 kPa; cannot be moulded by finger, can be indented by thumb.
	Very stiff or hard	USS > 150 kPa; can be indented by thumbnail.

Terms applicable only to TRANSPORTED SOILS. For soils derived from insitu rock weathering, record actual values of quantitative tests as part of the description, where appropriate.

II) Colour

Parameter	Terms
Value	Light Dark
Chroma	Pinkish, Reddish. Yellowish, Orangish, Brownish, Greenish, Bluish, Purplish, Greyish
Hue	Pink, Red. Yellow. Orange. Brown, Green, Blue, Purple, White, Grey, Black.

For uniform colour distribution. choose a hue. supplemented by a value and / or chroma if necessary.
For non-uniform distribution. repeat this procedure using one of the following descriptors: spotted, mottled, dappled, streaked, striped (e.g. light yellowish brown mottled with red)
State whether sample was wet or dry when described.

III) Weathering

Soils Derived from In-situ Weathering of Rocks

There are two main types: saprolites (rock texture/structure retained) and residual soils (rock texture/structure completely destroyed).

Describe state of weathering in accordance with item 4 for rock description (see Rock Description).

Sedimentary (Transported) Soils

Coarse soils: Describe overall discolouration of soil and degree of decomposition of gravel and larger particles. Also note any signs of disintegration of large particles where apparent.

IV) Soil Name

A) Basic Soil Types

Soil Type	Particle Sizes (mm)		Identification
BOULDERS	-	> 200	Only seen complete in pits or exposures. Often difficult to recover from boreholes
COBBLES	-	60–200	
GRAVELS	Coarse	20–60	Easily visible to naked eye; particle shape and grading can be described. Well-graded: wide range of grain sizes. Poorly graded: not well-graded (split further into uniform or gap-graded).
	Medium	6–20	
	Fine	2–6	
SANDS	Coarse	0.6–2	Visible to naked eye: very little or no cohesion: grading can be described. Maybe well graded or poorly-graded (uniform or gap-graded) as for gravel.
	Medium	0.2–0.5	
	Fine	0.06–0.2	
SILTS	Coarse	0.02–0.06	Only coarse silt barely visible to naked eye: exhibits little plasticity and marked dilatancy: slightly granular or silky to the touch. Disintegrates in water, lumps dry quickly possesses cohesion but can be powdered easily between fingers.
	Medium	0.006–0.02	
	Fine	0.002–0.006	
CLAYS	-	< 0.002	Dry lumps can be broken by hand but not powdered between fingers. Disintegrates in water more slowly than silts: smooth to the touch: exhibits plasticity but no dilatancy: sticks to the fingers and dries slowly: shrinks appreciably on drying, usually showing cracks. These properties more noticeable with increasing plasticity.
ORGANIC CLAYS, SILTS OR SANDS	-	Varies	Contains much organic vegetable matter. Often has a noticeable smell and changes colour on oxidation.
PEATS	-	Varies	Predominantly plant remains: usually dark brown or black in colour, often with distinctive smell: low bulk density.

B) Composite Soil Types (Mixtures of Basic Types)

Principal Soil Type	Terminology Sequence	Term for Secondary Constituent		% of Secondary Constituent
Very Coarse (BOULDERS & COBBLES) (> 50% of soil > 60mm)	Secondary Constituents (finer material) ▲ After principal	With occasional		< 5
		With some		5-20
		With much		20-50
Coarse (GRAVELS & SANDS)	Secondary constituents before principal (excluding gravel, cobbles & boulders) ✚	Slight	(silty, clayey or silty/clayey)	❁ < 5
		-	(silty, clayey or silty/clayey)	❁ 5-15
		Very	(silty, clayey or silty/clayey) AND/OR	❁ 15-35
		Slightly	(sandy)	❁ < 5
		-	(sandy)	❁ 5-20
		Very	(sandy)	❁ 20-50
Fine (SILTS & CLAYS) (< 35% silt & clay sizes)	Secondary constituents before principal (excluding gravel, cobbles & boulders) ▲	Slightly	(sandy) ❁	< 35
		-	(sandy) ❁	35-65

✚ Full name of finer material should be given.

▲ Secondary soil type as appropriate; use 'silty/clayey' when a distinction cannot be made between the two.

❁ If cobbles or boulders are also present in a coarse or fine soil, this can be indicated by using one of the following terms relating to the very coarse fraction after the principal: 'with occasional' (<5), 'with many' (20-50), where figures in brackets are % very coarse material expressed as a fraction of the whole soil.

For fine soils, plasticity terms should also be described where possible, viz.: 'non-plastic' (generally silts), 'intermediate plasticity' (lean clays), 'high plasticity' (fat clays).

V) Other Qualifying Remarks (If requested)

Here any additional relevant information may be added

e.g. (a) Particle shape & Composition

(b) Structure

(c) Discontinuities

Notes: For full description of soils derived from insitu rock weathering:

(a) Saprolites (rock texture/structure retained) – described as rocks, supplemented by soil strength (but not relative density) and soil name terms in brackets.

(b) Residual Soils (rock texture/structure completely destroyed) – describe as soils, supplemented by name of parent rock where apparent from field evidence.

VI) Additional Geological Information

Record geological name, which indicates geological origin or soil type (e.g. Alluvium, Debris Flow Deposit, Marine Deposit etc.). Refer to HKGS maps & memoirs for further information.

ROCK DESCRIPTION

For the preparation of drillhole logs the rock description may report the following information as appropriate in the order indicated:

Strength

Colour

Material Weathering/Alteration

Grain Size

Rock Name

Discontinuities

Additional Geological Information

Other qualifying remarks

The following descriptions were achieved from **GUIDE TO ROCK AND SOIL DESCRIPTIONS (GEOGUIDE 3)**

I) Strength

Term	Identification
Extremely weak	Easily crumbled by hand: indented deeply by thumbnail.
Very weak	Crumbled with difficulty: scratched easily by thumbnail: peeled by pocketknife.
Weak	Broken into pieces by hand: scratched by thumbnail: peeled by pocketknife: deep indentations (to 5mm) by point of geological pick: hand-held specimen easily broken by single light hammer blow.
Moderately weak	Broken with difficulty in two hands: scratched with difficulty by thumbnail: difficult to peel but easily scratched by pocketknife: shallow indentations easily made by point of pick: hand-held specimen usually broken by single light hammer blow.
Moderately strong	Scratched by pocketknife: shallow indentations made by firm blow with point of pick: hand-held specimen usually broken by single firm hammer blow.
Strong	Firm blows with point of pick cause only superficial surface damage: hand-held specimen requires more than one firm hammer blow to break.
Very strong	Many hammer blows required to break specimen.
Extremely strong	Specimen only chipped by hammer blows.

II) Colour

Parameter	Terms
Value	Light, Dark
Chroma	Pinkish, Reddish, Yellowish, Orangish, Brownish, Greenish, Bluish, Purplish, Greyish
Hue	Pink, Red, Yellow, Orange, Brown, Green, Blue, Purple, White, Grey, Black.

For uniform colour distribution, choose a hue supplemented by a value and / or chroma if necessary.

For non-uniform distribution, repeat this procedure using one of the following descriptors: spotted, mottled, dappled, streaked and striped (e.g. light pinkish grey spotted with black).

III) Grain Size

Term	Size of Component Particles	Equivalent Soil Grade
Fine grained	2-60 microns (grains larger than 10 microns visible using X10 hand lens)	Silt
Medium grained	60 microns–2 mm (just visible to naked eyes)	Sand size
Coarse grained	2-60 mm	Gravel size

IV) Material Weathering / Alteration

Decomposition Term	Grade Symbol	Typical Characteristics
Residual Soil	VI	Original rock textures completely destroyed; can be crumbled by hand and finger pressure into constituent grains.
Completely Decomposed	V	Original rock texture preserved; can be crumbled by hand & finger pressure into constituent grains; easily indented by point of geological pick; slakes in water; completely discoloured compared with fresh rock.
Highly Decomposed	IV	Can be broken by hand into smaller pieces; makes a dull sound when struck by hammer; not easily indented by point of pick; does not slake in water; completely discoloured compared with fresh rock.
Moderately Decomposed	III	Cannot usually be broken by hand; easily broken by hammer; makes a dull or slight ringing sound when struck by hammer; completely stained throughout.
Slightly Decomposed	II	Not broken easily by hammer; makes a ringing sound when struck by hammer; fresh rock colours generally retained but stained neat joint surfaces.
Fresh Rock	I	Not broken easily by hammer; makes a ringing sound when struck by hammer; no visible signs of decomposition (i.e. no discolouration).

This classification is applicable to igneous and volcanic rocks and other rocks of equivalent strength in fresh state.

Disintegration
Describe small-scale cracking and fracturing caused by mechanical weathering, where apparent.

Alteration
Describe state of alteration (e.g. mineralised, kaolinised) where apparent.

V) Rock Name (Including Grain Size)

Igneous	Coarse - (6–20mm), Medium - (2–6mm) & Fine - (0.06–2mm) grained GRANITE, GRANODIORITE, Very Fine - grained (< 0.06mm) RHYOLITE, BASALT. (Common types only, see GEOGUIDE 3 for others).
Pyroclastic	PYROCLASTIC BRECCIA (> 60mm), Lapilli TUFF (2–60mm), Coarse ash TUFF (0.06–2mm), Fine ash TUFF (< 0.06mm).
Metamorphic	Foliated – SCHIST (> 0.06mm), PHYLLITE (> 0.06mm), Non – foliated –MARBLE, QUARTZITE and FAULT BRECCIA.
Sedimentary	CONGLOMERATE, BRECCIA (>2mm), SANDSTONE (0.06–2mm), MUDSTONE (< 0.06mm) = SILTSTONE (0.002–0.06mm) + CLAYSTONE (< 0.002mm). (Common types only).

If rock name cannot be identified, describe grain size quantitatively, including textural term where appropriate.

VI) Discontinuities Spacing

Term	Spacing
Extremely widely spaced	> 6m
Very widely spaced	2–6mm
Widely spaced	0.6–2mm
Medium spaced	200–600mm
Closely spaced	60–200mm
Very closely spaced	20–60mm
Extremely closely spaced	< 20mm

Aperture Size

Wide (>200mm), Moderately wide (60–200mm), Moderately narrow (20–60mm), Narrow (6–20mm), Very narrow (2–6mm), Extremely narrow (>0–2mm), Tight (zero).

Infilling (Nature)

Clean	Surface staining	Decomposed/Disintegrated rock	Quartz
Non-cohesive soil	Cohesive soil	Calcite	Manganese
Kaolin	Other (Specify)		

Give full description of infill materials/minerals where appropriate.

Fracture State

In drillhole cores, measure the following:

1) TOTAL CORE RECOVERY (TCR)	Defined as summed length of all pieces of recovered core expressed as a percentage of length drilled (core run). When the core is highly fragmented, the length of such core is estimated by assembling the fragments and estimating the length of core that the fragments appear to represent.
2) SOLID CORE RECOVERY (SCR)	Defined as the length of material, which is recovered as solid core pieces at full diameter expressed as a percentage of the length of core (drill) run.

3) ROCK QUALITY DESIGNATION (RQD)	Defined as the length of solid core recovered in lengths greater than 100mm expressed as a percentage of the length of core (drill) run. Measurements are made along the core axis and core pieces must possess a full diameter to be included in the RQD value.
4) FRACTURED INDEX (FI)	Defined as the number of fractures per metre run, measured over any length of reasonably uniform character, which is not necessarily the core run length. If there is a marked change in fracture frequently during a run the fracture index should be calculated for each part of the run separately. Where core is too highly fractured for fracture index to be measured the term N.I. meaning NOT INTACT is inserted. NR – NO RECOVERY NA – NOT APPLICABLE

NOTE : Artificial fractures caused by core handling or by the drilling process are ignored when measuring the above values.

VII) Additional Geological Information

Record geological formation name if known. Avoid conjecture. Refer to HKGS maps & memoirs for further information.

VIII) Other Qualifying Remarks

At the end of the description comments can be made on the nature of joints and discontinuities, mineralisation and other factors that may be engineering or descriptive importance.

Examples:

Very strong, light greyish pink, slightly decomposed fine-grained GRANITE, with closely to medium spaced, iron stained joints dipping at subhorizontal to 10°, 40° and 85°. (One subvertical joint)

Extremely weak, light yellowish brown spotted with grey, dark brown and white, completely decomposed, medium-grained GRANITE, with occasional relict joints. (Slightly silty/clayey, fine SAND with some subangular fine to coarse gravel).

Appendix H

Legend for use on Exploratory Station Records

Legend Code (field GEOL LEG)

AGGLOM	Agglomerate
ASPHALT	Asphalt
BASALT	Basalt
BIOCLAST	Shells
BLANK	Material not recovered
BLDR	Boulders
BLDRCBBL	Boulders and Cobbles
BRECCIA	Sedimentary Breccia
CBBL	Cobbles
CLAY	Clay
CLAYSTON	Claystone
CONCRETE	Concrete
CONGLOM	Conglomerate
DOLOMITE	Dolomitic Limestone
FILL	Artificial Fill
FISSIN	Fissure Infill
GABBRO	Gabbro, Lamprophyre
GNEISS	Gneiss
GRACBBZS	Silty Sandy GRAVEL and COBBLES
GRANITE	Granite
GRAV	Gravel
GRAVCBBL	Gravel and Cobbles
LST	Limestone
LSTSLT	Interbedded Limestone and Siltstone
MARBLE	Marble
METACON	Metamorphic Rock - contact
METAREG	Metamorphic Rock - regional
MUDSTONE	Mudstone
ORGANICS	Organic, Peat
PEGMTITE	Pegmatite
PHYLLITE	Phyllite, Mylonite
QUARTZIT	Quartzite
RHYOLITE	Rhyolites
SAND	Sand
SANDSTON	Sandstone
SCHIST	Schist
SHALE	Shale
SILT	Silt
SILTSTON	Siltstone
SYENITE	Granodiorite, Syenite, Monzonite
TRACHYTE	Trachyte
TUFF	Coarse Ash Tuff, Lapilli Tuff
TUFFFINE	Fine Ash Tuff

Notes :

In common ground the following codes are added to the main descriptor in the order stated below to denote secondary constituents :

(i) C - Clay
(ii) Z - Silt
(iii) S - Sand
(iv) G - Gravel
(v) K - Cobbles
(vi) O - Organic
(vii) B - Shells

e.g. a silty CLAY with occasional shells and organic material is coded as CLAYZOB

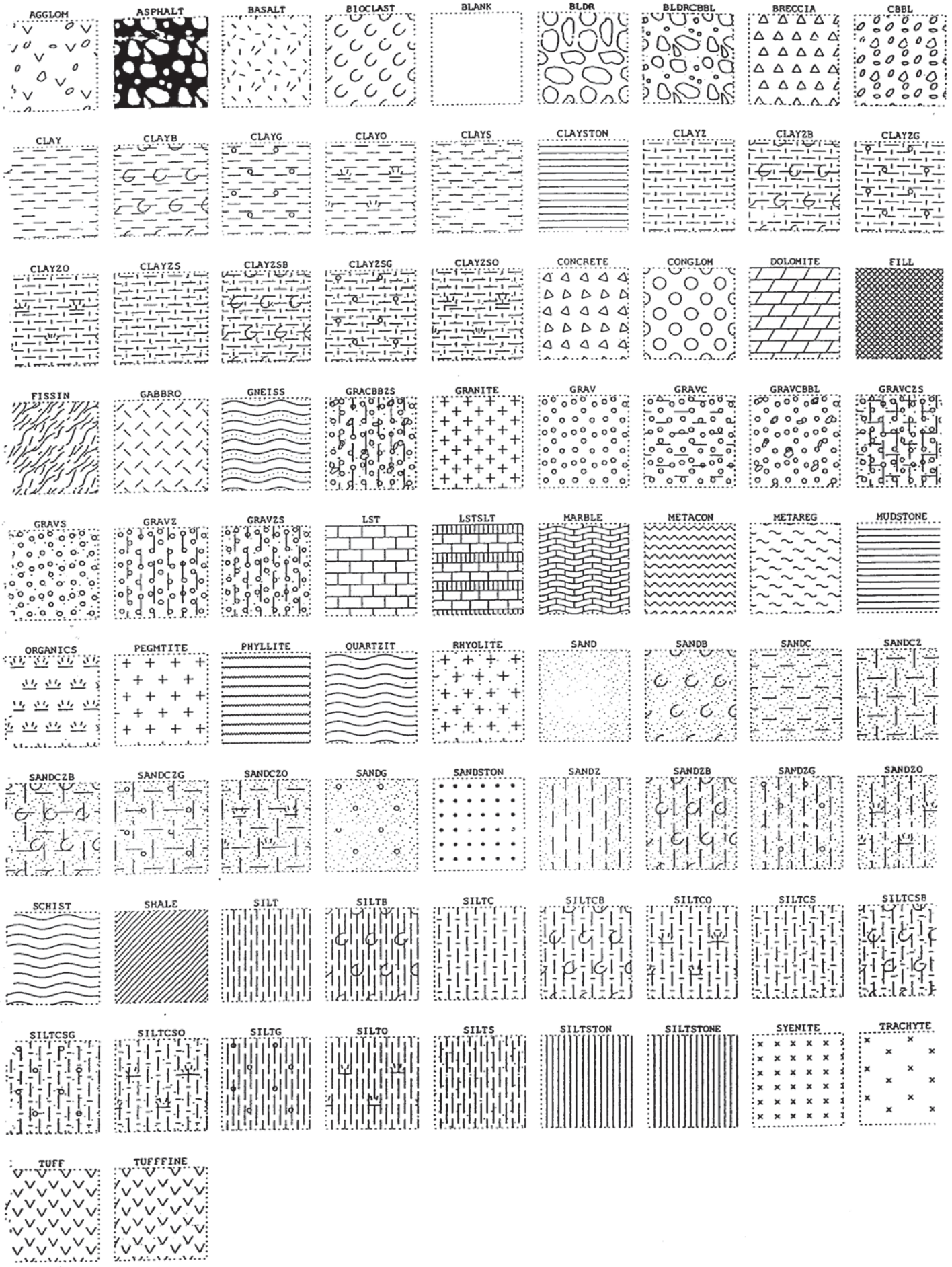
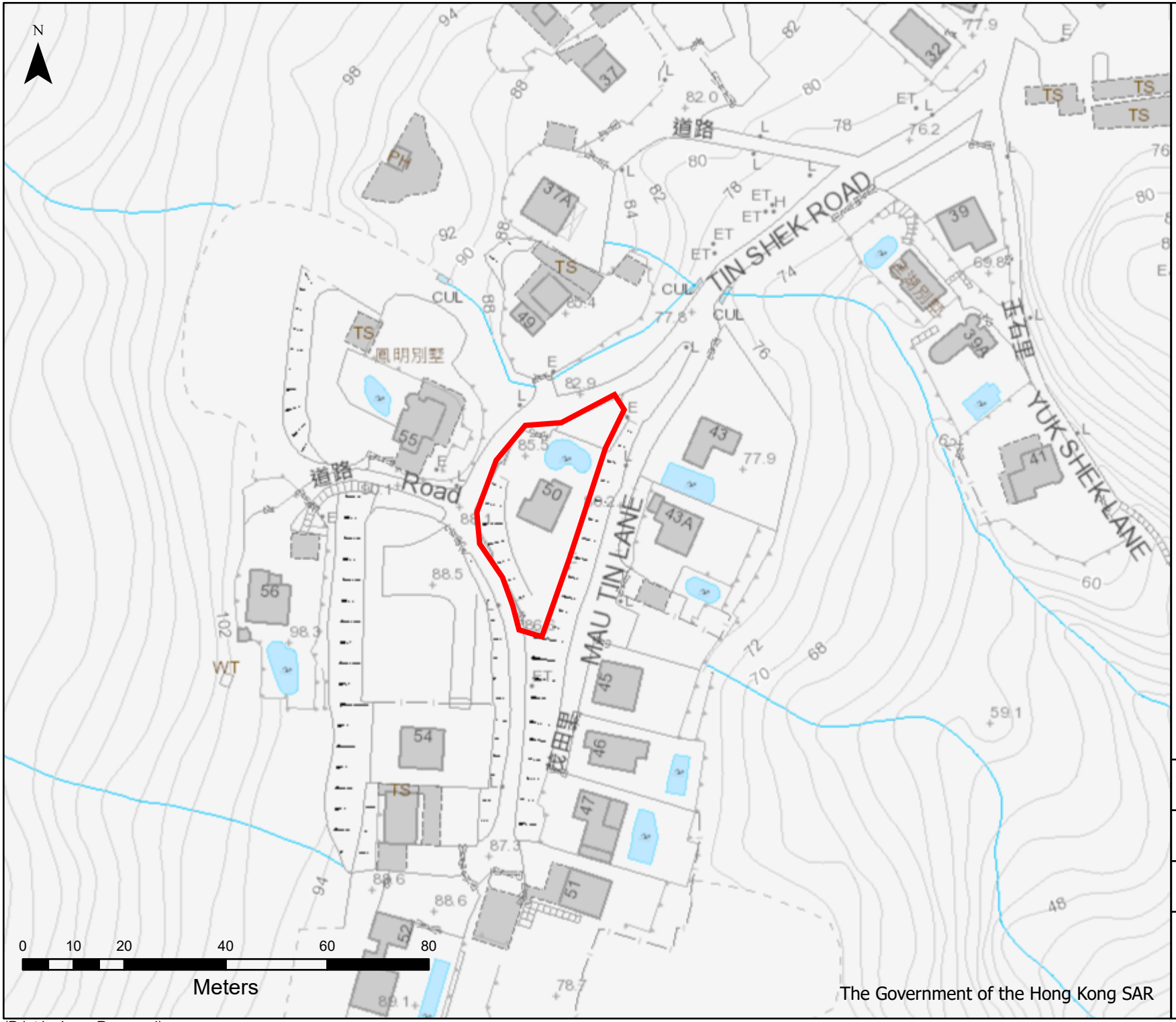

AGGLOM
ASPHALT
BASALT
BIOCLAST
BLANK
BLDR
BLDRCBBL
BRECCIA
CBBL
CLAY
CLAYB
CLAYG
CLAYO
CLAYS
CLAYSTON
CLAYZ
CLAYZB
CLAYZG
CLAYZO
CLAYZS
CLAYZSB
CLAYZSG
CLAYZSO
CONCRETE
CONGLOM
DOLOMITE
FILL
FISSIN
GABBRO
GNEISS
GRACBBZS
GRANITE
GRAV
GRAVC
GRAVCBBL
GRAVCZS
GRAVS
GRAVZ
GRAVZS
LST
LSTSLT
MARBLE
METACON
METAREG
MUDSTONE
ORGANICS
PEGMTITE
PHYLLITE
QUARTZIT
RHYOLITE
SAND
SANDB
SANDC
SANDCZ
SANDCZB
SANDCZG
SANDCZO
SANDG
SANDSTON
SANDZ
SANDZB
SANDZG
SANDZO
SCHIST
SHALE
SILT
SILTB
SILTC
SILTCB
SILTCO
SILTCS
SILTCSB
SILTCSG
SILTCSO
SILTG
SILTO
SILTS
SILTSTON
SILTSTONE
SYENITE
TRACHYTE
TUFF
TUFFFINE

Figure 1.1

Location Plan of the Site


SITE
石芽山
SHEK NGA SHAN
水牛山
BUFFALO HILL
打爛埕凹
BUFFALO PASS
(TA SHE YAU AU)
芙蓉別
FU YUNG PIT
黃牛山
WEST BUFFALO HILL
石芽背
SHEK NGA PUI
尖尾峰
TSIM MEI FUNG
Tai No Sheung Yeung
Tai No
Wong Chuk Shan
Uk Cheung
Pak Kong
Wu Lei Tau
HONG KONG GOLF & TENNIS ACADEMY
Kei Pik Shan
Tai Chung Hau
The Giverny
Sam Fai Tin
Hing Keng Shek
Habitat
Ruby Chalet
Kau Sai San Tsuen
Pak Sha Wan
Sea Activity Centre
西貢
SAI KUNG
Pak Wai
Marina Cove
Greenview Villas
Luk Mei Tsuen
Kai Ham
Tin Liu
Wang Che
Venice Villa
Ho Chung
Club Marina Cove
MACLEHOSE TRAIL
HIRAM'S HIGHWAY



Division

Scale 1:1000

Date 2/10/2024

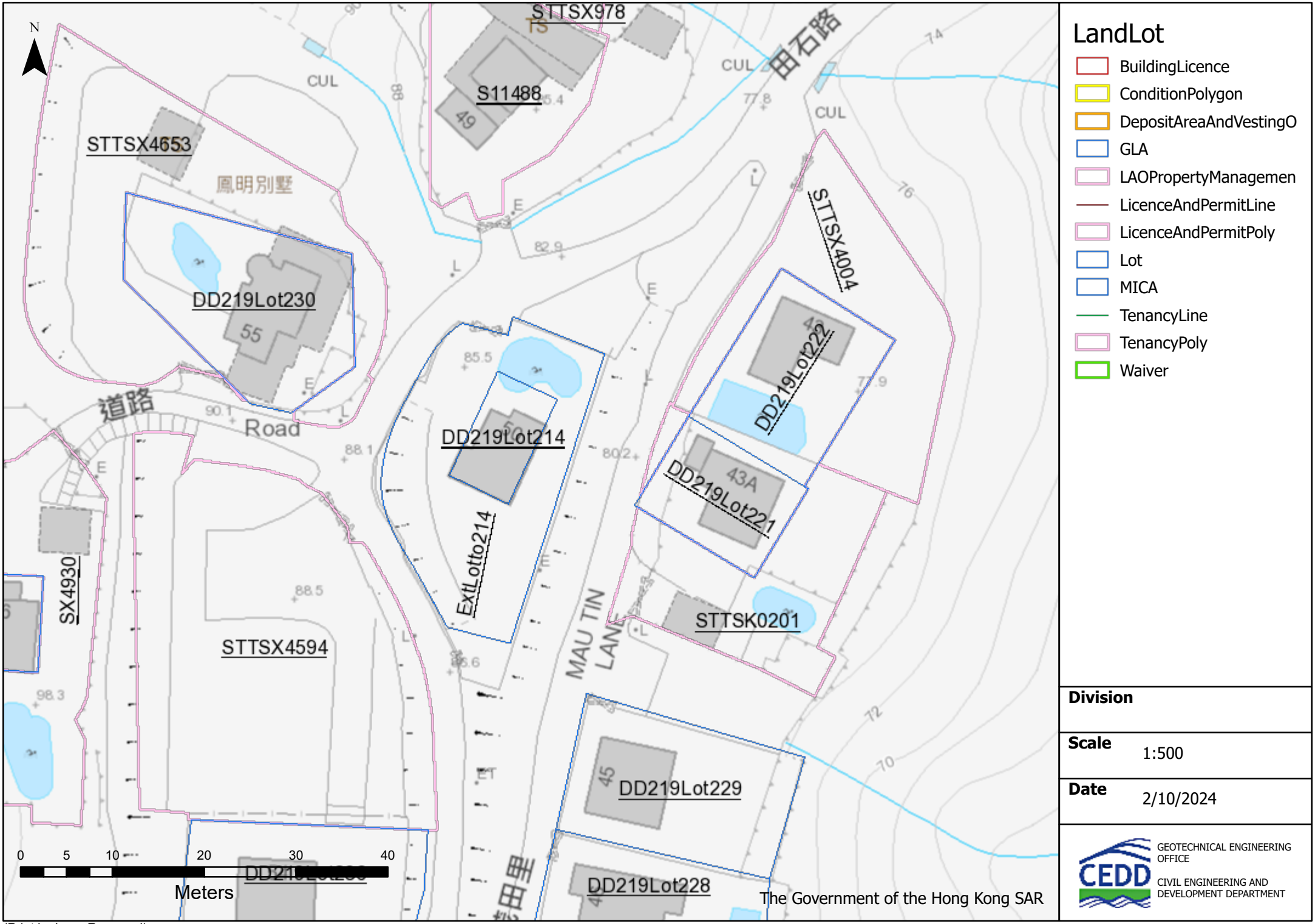
GEOTECHNICAL ENGINEERING OFFICE

CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

(Print by Lam, Raymond)

Figure 1.2

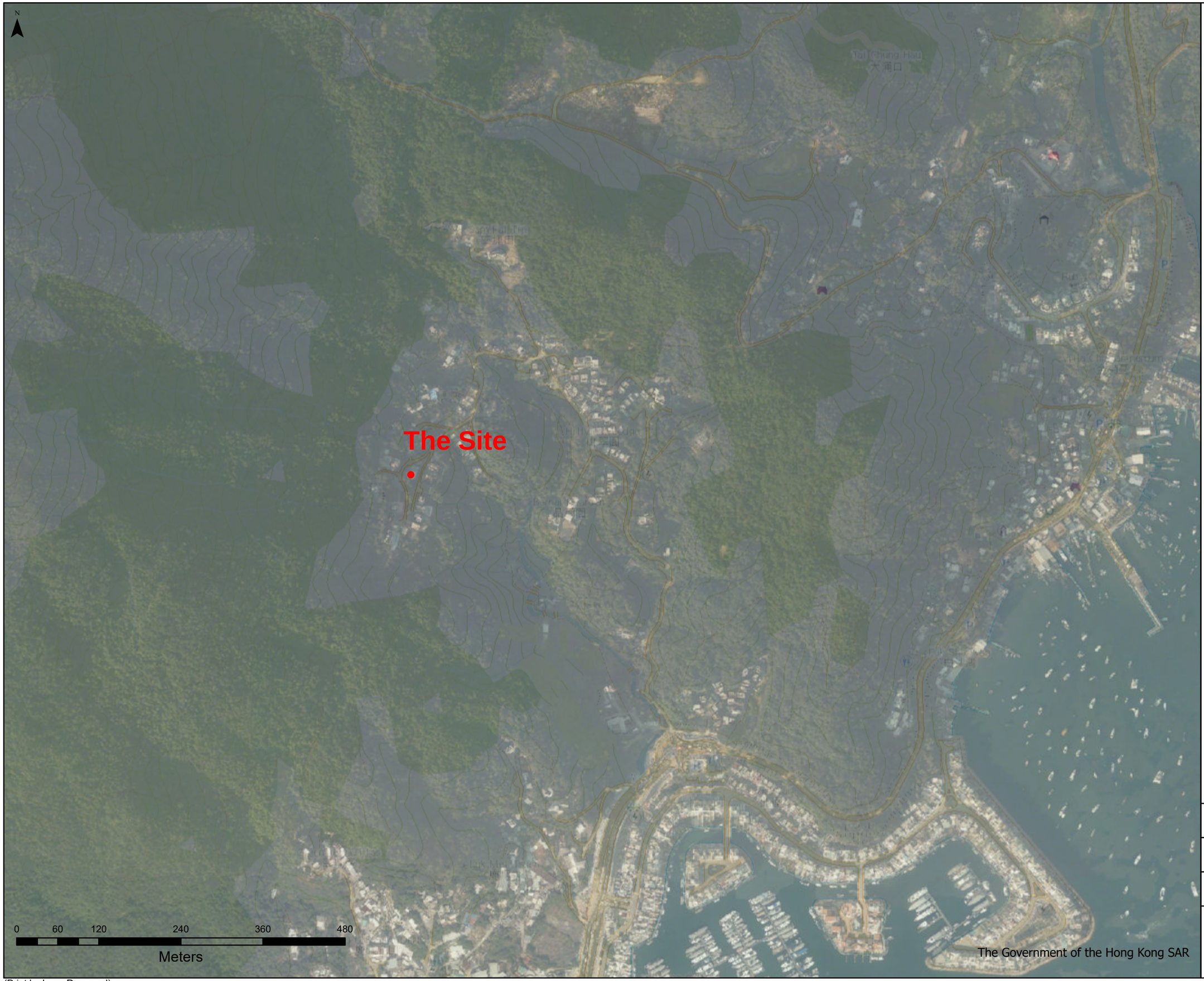
Lot Boundary Plan of the Site



(Print by Lam, Raymond)

Figure 1.3

Aerial View of the Site



BlankOrtho

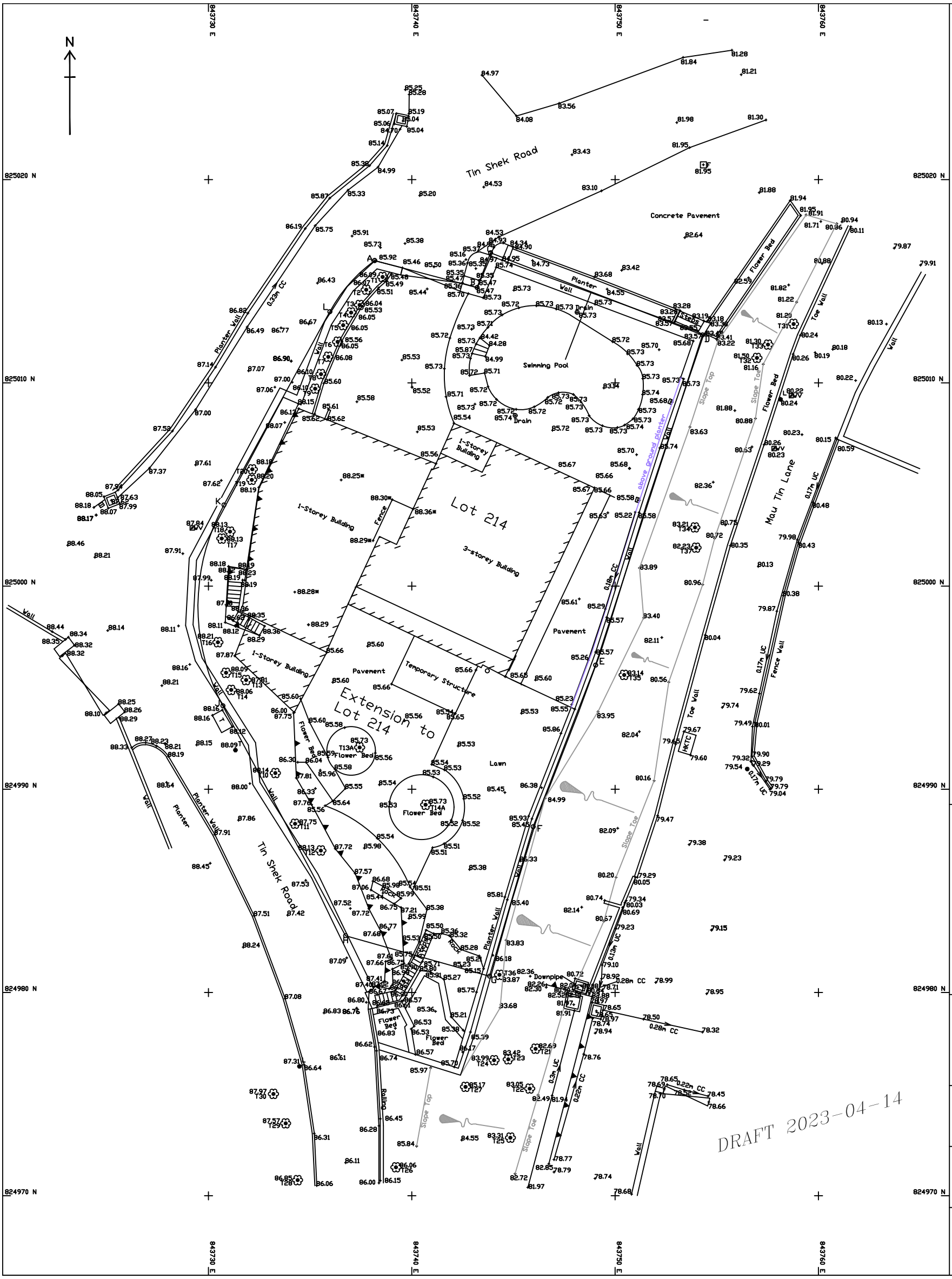
Division	
Scale	1:5000
Date	2/10/2024

GEOTECHNICAL ENGINEERING OFFICE
CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

(Print by Lam, Raymond)

Figure 2.1

Topographic Survey Plan



Notes:

1. All levels are in metres above HK Principal Datum
2. Grid lines are in H.K. Metric Grid 1980.
3. Elevations of kerb are referred to the bottom of ke

Legend:

- F — Foul Water Manhole
- 0.30m CC / 45.20 — Covered Channel and Invert Level
- 0.30m UC / 45.20 — U-Channel and Invert Level
- Gully
- Catch Pit
- WV — Valve Water
- T — Telecom Manhole
- Slope
- T1 — Tree & Tree Number
- L — Lamp Post
- T — Telephone Pole / Manhole
- Gate
- Fence & Railing
- Retaining Wall
- lot Boundary Line

Tree Table

Tree No.	Girth (m)	Height (m)	Spread (m)
T1	0.72	6	5
T2	0.43	6	4
T3	0.41	6	3
T4	0.42	5	2
T5	0.67	6	4
T6	0.46	6	4
T7	0.61	5	3
T8	0.56	6	4
T9	0.53	6	4
T10	0.72	8	6
T11	0.70	3	2
T12	0.44	5	4
T13	0.83	5	4
T14	0.40	5	3
T13A	1.53	7	5
T14A	1.22	8	6
T15	0.74	5	4
T16	1.09	9	6
T17	0.51	5	3
T18	0.40	4	3
T19	0.30	4	2
T20	0.30	4	2
T21	0.40	6	5
T22	0.83	7	6
T23	1.02	9	6
T24	1.03	9	6
T25	0.79	7	5
T26	0.70	7	5
T27	1.32	9	7
T28	0.37	3	2
T29	0.57	4	3
T30	0.53	5	2
T31	0.35	4	1
T32	0.52	5	2
T33	0.33	4	1
T34	0.62	5	3
T35	0.46	5	4
T36	0.58	4	5
T37	0.64	6	4

Extension to Lot No. 214

Boundary Dimensions (Area = [558.1-97.5] sqm)

From	To	Bearing	Dist. (m)	Pt.	N	E
A	B	104°44'40"	5.210	A	825 016.016	843 738.168
B	C	21°13'30"	1.834	B	825 014.690	843 743.206
C	D	111°13'30"	11.186	C	825 016.400	843 743.870
D	E	197°56'40"	17.070	D	825 012.350	843 754.297
E	F	201°08'00"	8.523	E	824 996.110	843 749.038
F	G	196°16'10"	7.667	F	824 988.160	843 745.965
G	H	285°45'10"	7.354	G	824 980.800	843 745.817
H	J	331°54'50"	12.817	H	824 982.797	843 736.739
J	K	Ch. 00°18'10"	9.884	J	824 994.105	843 730.705
K	L	28°41'40"	10.838	K	825 003.989	843 730.757
L	A	Ch. 41°10'30"	3.349	L	825 013.495	843 735.963

Arc	Arc. Len.	Incl. Angle	Radius	N (Centre)	E
J-K	10.301	56°46'50"	10.394	824 998.998	843 739.875
L-A	3.376	24°58'00"	7.748	825 009.775	843 742.759

Lot No. 214

Boundary Dimensions (Area = 97.5 sqm)

From	To	Bearing	Dist. (m)	Pt.	N	E
M	N	115°20'10"	7.620	M	825 010.658	843 742.300
N	P	205°20'10"	12.802	N	825 007.397	843 749.187
P	Q	295°20'10"	7.620	P	824 995.826	843 743.709
Q	M	25°20'10"	12.802	Q	824 999.087	843 736.822

Drawing title

Topographical Survey Plan o
No. 214 and the Extension
Thereto in D.D. 219, No. 50
Tin Shek Road, Sai Kung

Drawing no.	Date	Scale
HC-15840/01	13/04/2023	1 : 100 (A1)
	Checked by	Drawn by
	H. So	H.Y. Poon

Surveyor

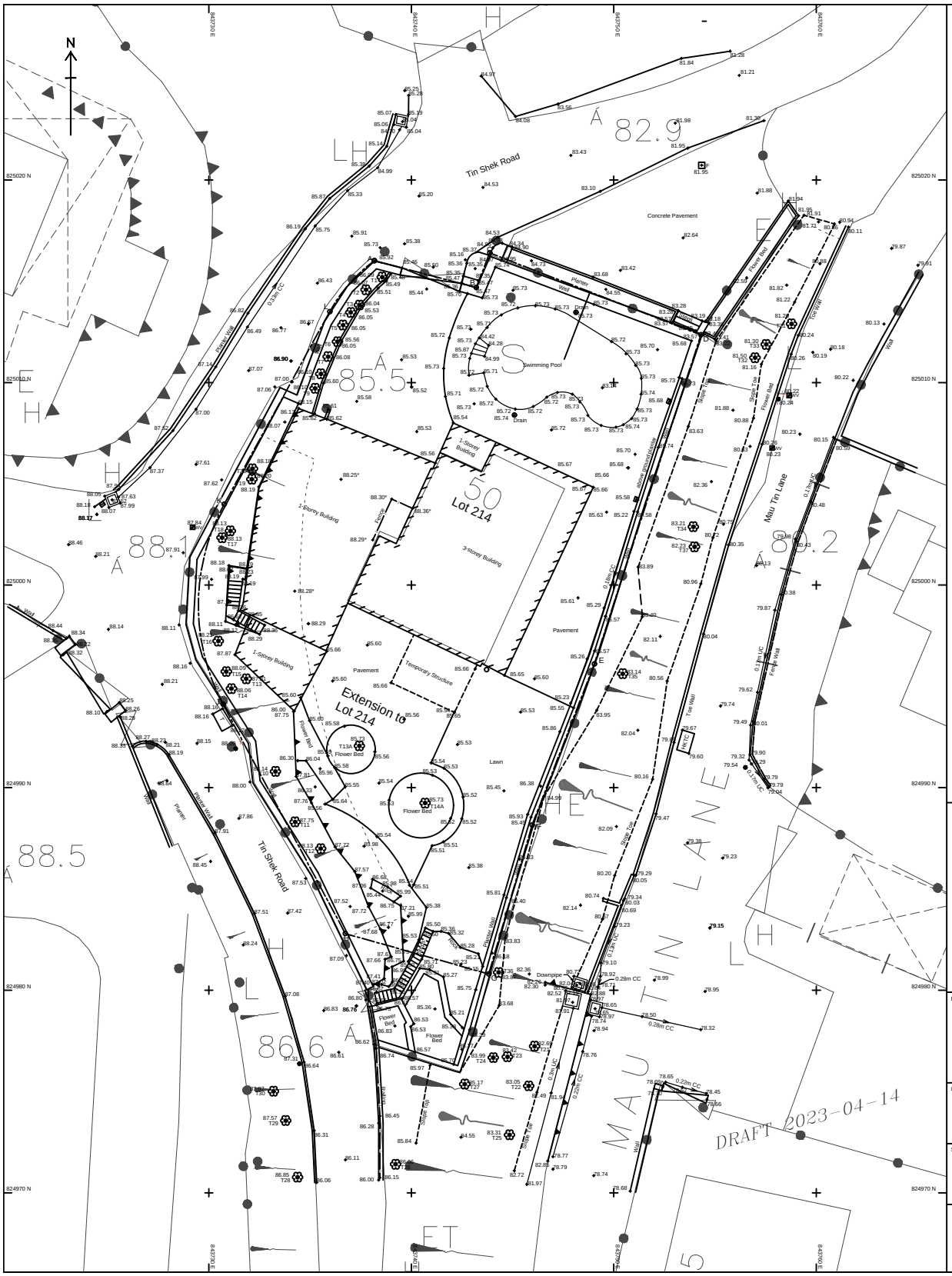
HENRY CHAN SURVEYORS LTD.
Authorized Land & Hydrographic Survey

Shop 7, Mei Hing Mansion, Tel : 2638-1313 Fax : 2638-1328
1-17 Yan Hing Street, Tai Po, N.T. E-mail : hcsurvey@netvigator.com

Henry H K Chan
BSc FHKIS RPSL(SD)
Authorised Land Surveyor

Figure 2.2

Topographic Survey Plan in Map



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Legend:

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- 0.30m UC 85.20 — U-Channel and Invert Level
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- Telecom Manhole
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G	H	285°45'10"	7.354	G	824	980.800	843 743.817
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J	K	Ch. 00°18'10"	9.884	J	824	994.105	843 730.705
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L	A	Ch. 41°10'30"	3.349	L	825	013.495	843 735.963

Arc	Arc. Len.	Incl. Angle	Radius		N (Centre)	E
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Q	M	25°20'10"	12.802	Q	824 999.087	843 736.822

Drawing title

Topographical Survey Plan of No. 214 and the Extension Thereto in D.D. 219, No. 50 Tin Shek Road, Sai Kung

Drawing no.	Date	Scale
HC-15840/01	13/04/2023	1 : 100 (A1)
	Checked by: H. So	Drawn by: H.Y. Poon

Surveyor
HENRY CHAN SURVEYORS LTD.
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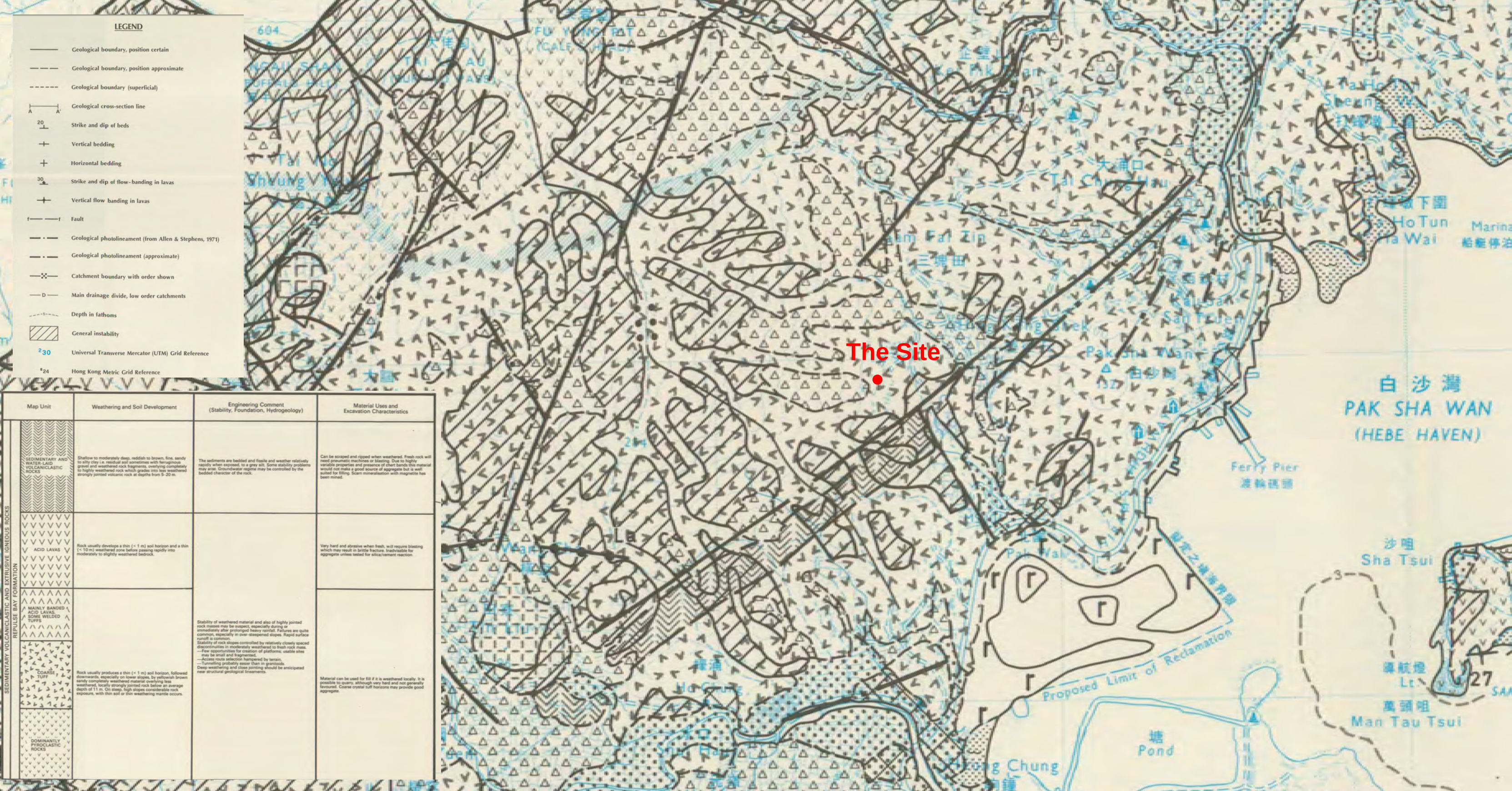
Tel : 2638-1313 Fax : 2638-1328
e-mail : hcsurvey@netvigator.com

Henry H K Chan
BSc FHKIS RPS(LSD)
Authorized Land Surveyor

Figure 3

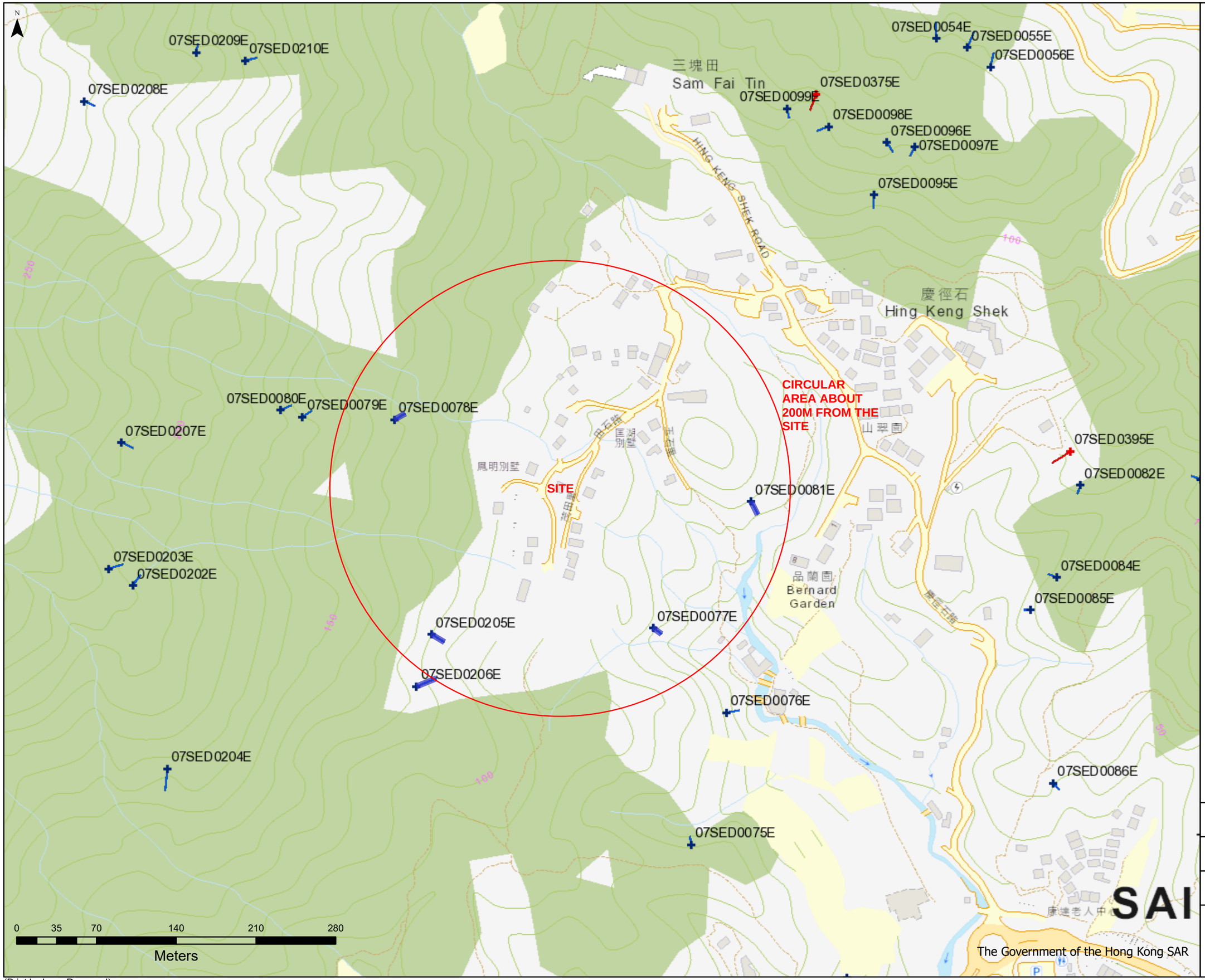
Extract of GASP Report Map – Geological Map



Map Unit			Weathering and Soil Development	Engineering Comment (Stability, Foundation, Hydrogeology)	Material Uses and Excavation Characteristics
SEDIMENTARY VOLCANICLASTIC AND EXTRUSIVE IGNEOUS ROCKS	REPULSE BAY FORMATION	SEDIMENTARY AND WATER-LAID VOLCANICLASTIC ROCKS	Shallow to moderately deep, reddish to brown, fine, sandy to silty clay i.e. residual soil sometimes with ferruginous gravel and weathered rock fragments, overlying completely to highly weathered rock which grades into less weathered strongly jointed volcanic rock at depths from 5–20 m.	The sediments are bedded and fissile and weather relatively rapidly when exposed, to a grey silt. Some stability problems may arise. Groundwater regime may be controlled by the bedded character of the rock.	Can be scraped and ripped when weathered. Fresh rock will need pneumatic machines or blasting. Due to highly variable properties and presence of chert bands this material would not make a good source of aggregate but is well suited for filling. Scarn mineralisation with magnetite has been mined.
		ACID LAVAS	Rock usually develops a thin (< 1 m) soil horizon and a thin (< 10 m) weathered zone before passing rapidly into moderately to slightly weathered bedrock.	Stability of weathered material and also of highly jointed rock masses may be suspect, especially during or immediately after prolonged heavy rainfall. Failures are quite common, especially in over-steepened slopes. Rapid surface runoff is common. Stability of rock slopes controlled by relatively closely spaced discontinuities in moderately weathered to fresh rock mass. —Few opportunities for creation of platforms; usable sites may be small and fragmented. —Access route selection hampered by terrain. —Tunnelling probably easier than in granitoids. Deep weathering and close jointing should be anticipated near structural geological lineaments.	Very hard and abrasive when fresh, will require blasting which may result in brittle fracture. Inadvisable for aggregate unless tested for silica/cement reaction.
		MAINLY BANDED ACID LAVAS, SOME WELDED TUFFS	Rock usually produces a thin (< 1 m) soil horizon, followed downwards, especially on lower slopes, by yellowish brown sandy completely weathered material overlying less weathered, locally strongly jointed rock below an average depth of 11 m. On steep, high slopes considerable rock exposure, with thin soil or thin weathering mantle occurs.		Material can be used for fill if it is weathered locally. It is possible to quarry, although very hard and not generally favoured. Coarse crystal tuff horizons may provide good aggregate.
		COARSE TUFF			
		DOMINANTLY PYROCLASTIC ROCKS			

Figure 4

ENTLI – Landslide Record



(Print by Lam, Raymond)

Figure 5

Area of QRA of Boulder Fall Hazards No. S7_U

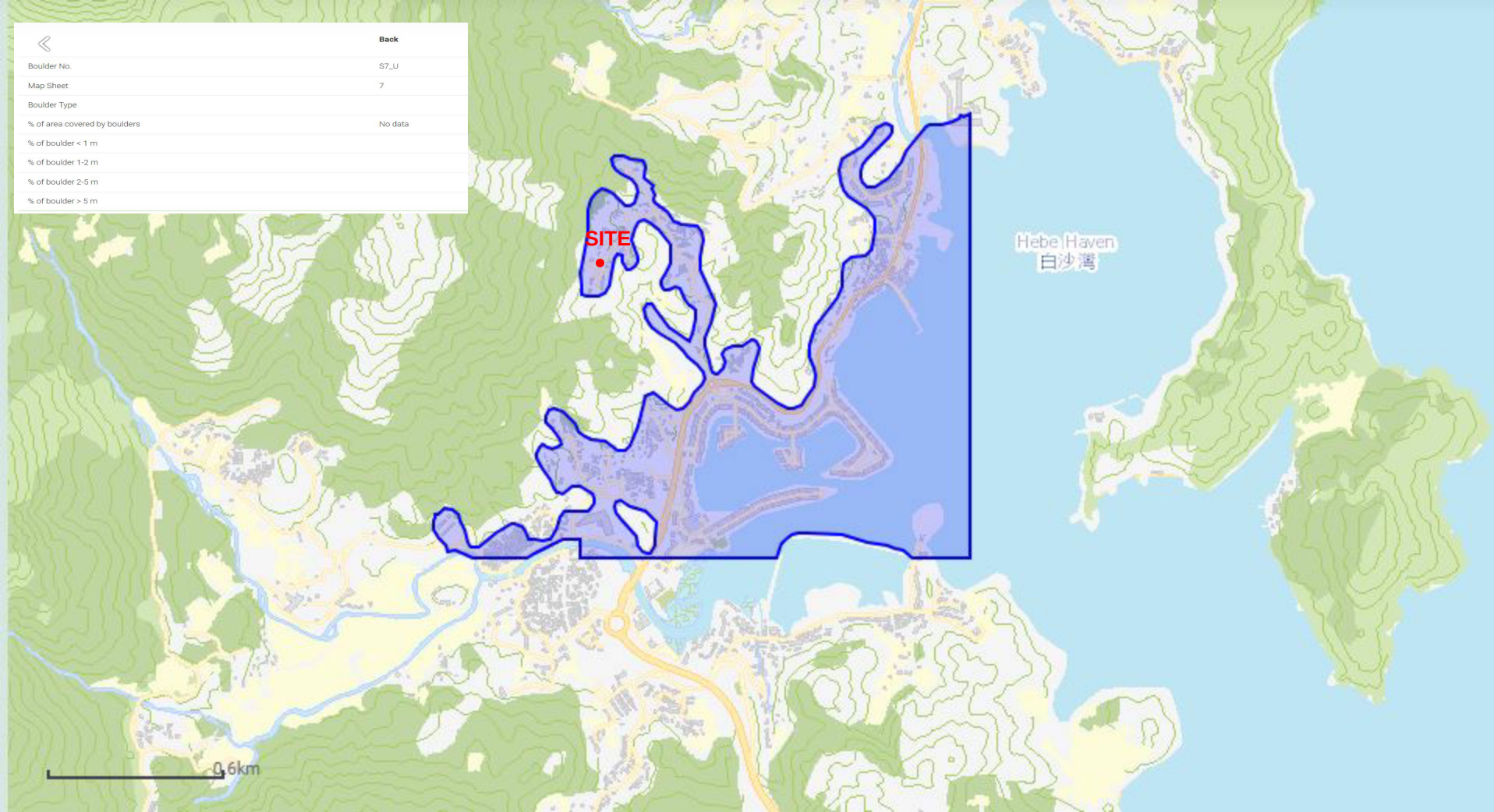
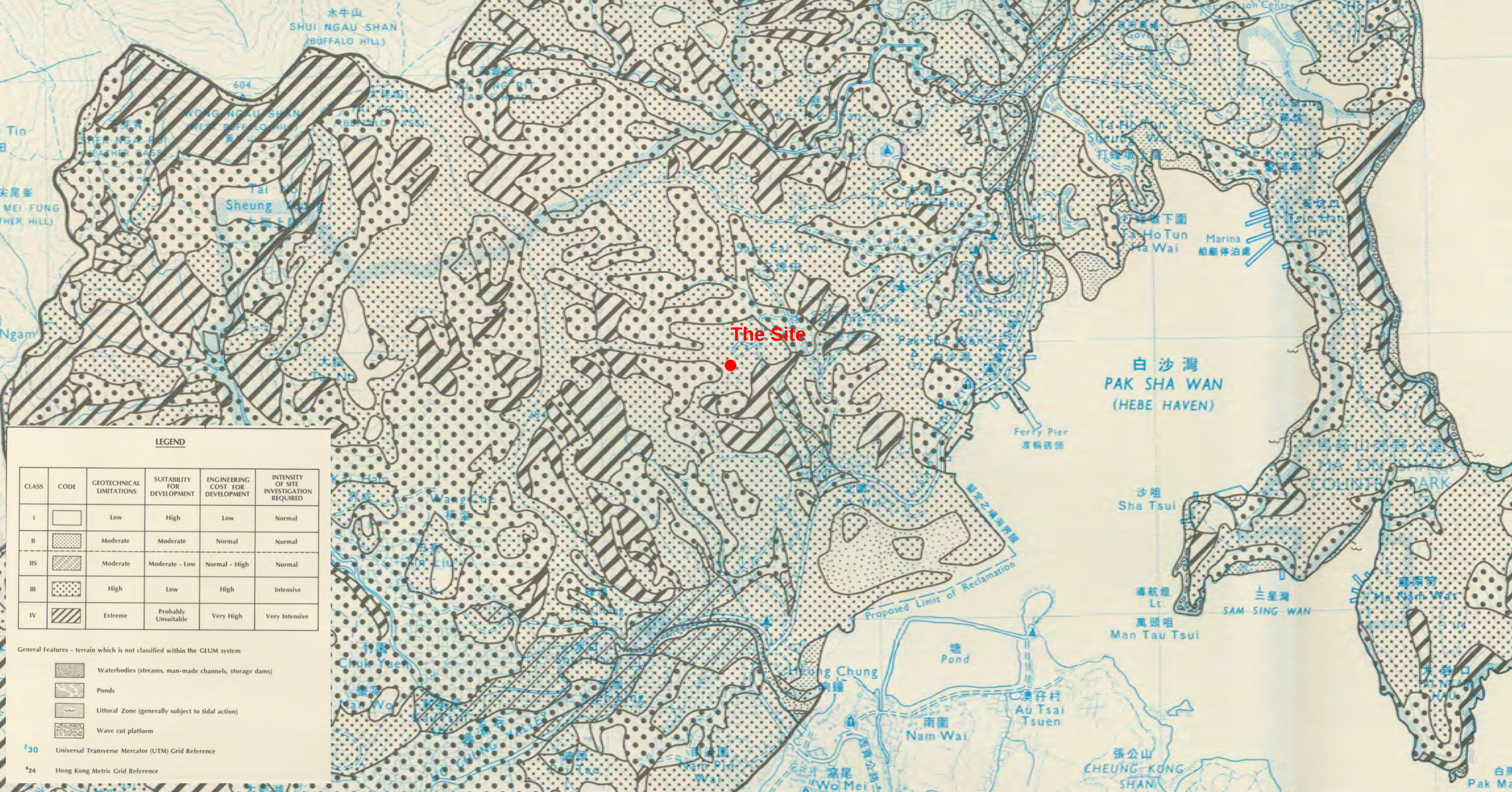

Back
Boulder No. S7_U
Map Sheet 7
Boulder Type
% of area covered by boulders No data
% of boulder < 1 m
% of boulder 1-2 m
% of boulder 2-5 m
% of boulder > 5 m
SITE
Hebe Haven
白沙灣
0 6km

Figure 6

Extract of GASP Report Map –
Geotechnical Land Use Map



The Site
白沙灣
PAK SHA WAN
(HEBE HAVEN)
SHUI NGAU SHAN
(BUFFALO HILL)
Sheung
Ferry Pier
Marina
Sha Tsui
Man Tau Tsui
SAM SING WAN
Pond
Au Tsai
Tsuen
Nam Wai
Heung Chung
CHEUNG KUNG
SHAN
Proposed Limit of Reclamation
LEGEND
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
General Features - terrain which is not classified within the GLUM system
Waterbodies (streams, man-made channels, storage dams)
Ponds
Littoral Zone (generally subject to tidal action)
Wave cut platform
230 Universal Transverse Mercator (UTM) Grid Reference
824 Hong Kong Metric Grid Reference

Figure 7

Extract of GASP Report Map – Physical Constraints Map

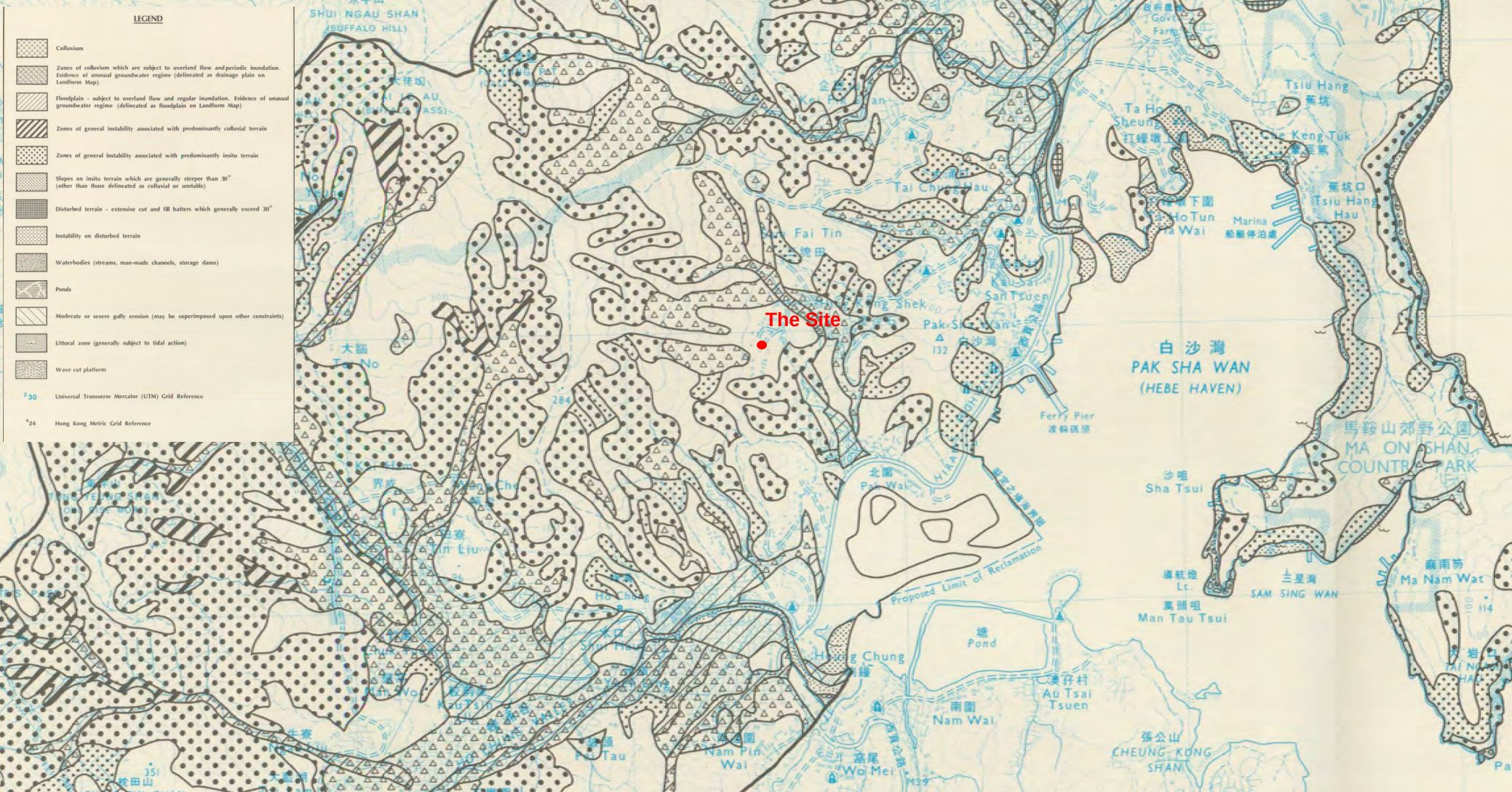
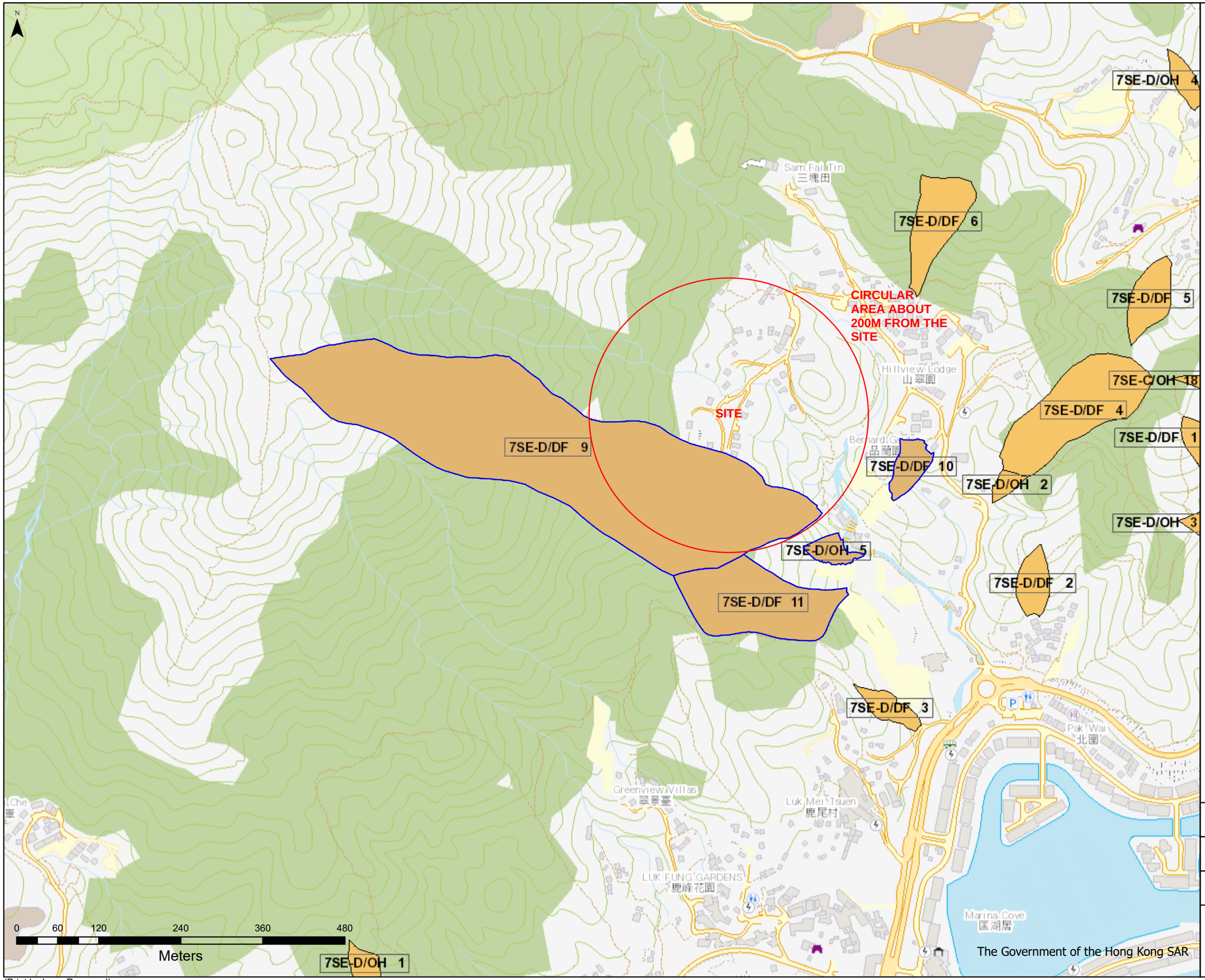

LEGEND
Colluvium
Zones of colluvium which are subject to overland flow and periodic inundation. Evidence of unusual groundwater regime (delineated as drainage plain on Landform Map).
Floodplain - subject to overland flow and regular inundation. Evidence of unusual groundwater regime (delineated as floodplain 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)
Wave cut platform
2 30 Universal Transverse Mercator (UTM) Grid Reference
8 24 Hong Kong Metric Grid Reference
The Site
SHUI NGAU SHAN (BUFFALO HILL)
Tsiu Hang 蕉坑
Keng Tuk
Tsiu Hang Hau
Marina
Tai Fai Tin
San Tsuen
Pak Sha Wan
白沙灣
PAK SHA WAN
(HEBE HAVEN)
Ferry Pier
馬鞍山郊野公園
MA ON SHAN COUNTRY PARK
Sha Tsui
沙咀
Pak Wai
北圍
Proposed Limit of Reclamation
Pond
Hang Chung
Au Tsai Tsuen
澳仔村
Nam Wai
南圍
Nam Pin Wai
Wo Mei
CHEUNG KONG SHAN
張公山
Man Tau Tsui
萬頭咀
SAM SING WAN
三星灣
Ma Nam Wat
麻南笏

Figure 8

Record from Historical Landslide Catchment Inventory



(Print by Lam, Raymond)