Our Ref: 33120

LOT NO. 63, 296 (PART), 331 RP (PART) &

393 RP (PART) IN DD185, SHEUNG WO CHE NO. 198

SAI LAM TEMPLE, SHATIN, NEW TERRITORIES

GEOTECHNICAL PLANNING REVIEW REPORT

Prepared by

Henry Chan
Registered Geotechnical Engineer
RGE 12/05

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APPENDICES

1. INTRODUCTION

The Site is at Lot No. 63, 296 (part), 331 RP (part) and 393 S.B RP (part) in DD185, Sheung Wo Che No. 198, Sai Lam Temple, Shatin, N.T.. A Section 12A Application was made by Toco Planning Consultants Ltd to apply for regularization of the existing columbarium at the Site. An application to Town Planning Board is thus necessary. Under Town Planning Ordinance (CAP. 131), the applicant should submit a Geotechnical Planning Review Report (GPRR) with the planning application.

This is the Geotechnical Planning Review Report (GPRR) for the Site.

2. SITE DESCRIPTION

2.1 GENERAL

The Site is currently occupied by existing building blocks A to H. General views of the existing conditions of the Site are attached in Appendix A for easy reference, together with a Site Location Plan.

2.2 SUBJECT SITE GEOLOGY

To reveal the geological information for the Site, the following information was reviewed and attached:

- 1:20,0000 – scale geological map;
- Geotechnical Area Studies Programme (GASP);
- Enhanced Natural Terrain Landslide Inventory (ENTLI);
- Existing Borehole Records

2.2.1 Geological Map

Based on the 1:20,000 scale Hong Kong Geological Survey Map for Shatin (Sheet No.: 5 HKGS – 2008 Edition), the Site is inferred to be underlain by debris flow deposits in Superficial Deposit.

2.2.2 Geotechnical Area Studies Programme (GASP)

According to Geotechnical Area Studies Programme (GASP), Geotechnical Land Use Map Central New Territories GASP/20/II/1(2nd Ed), the Site is classified as Class II with Moderate Geotechnical limitations. The Physical Constraints Map North New Territories Map No. GASP/20/II/6 (2nd Ed) indicate the Site generally has no physical constraints. Generalised Limitations and Engineering Appraisal Map No. GASP/20/II/15 (2nd Ed) indicate the Site has no major concern.

Extracts of relevant GASP Maps are shown in **Appendix B** respectively.

2.2.3 Natural Terrain Hazards

There was no landslide records within the Site or its adjacent areas. Layout Plan from CEDD attached in Appendix C for reference.

2.2.4 Previous Ground Investigation Records

No near ground investigation records could be found.

2.3 ADJOINING STRUCTURES

The nearby structures are squatters of Pai Tau Hang located north of the site. As the Site does not require any site formation, ELS and foundation works as such, these low rise structures will not affect adversely or be affected by Sai Lam Temple.

There are no other development nearby.

2.4 ADJOINING GEOTECHNICAL FEATURES

There are altogether 10 numbers of registered geotechnical features maintain by the lot owners. A summary of table is listed below.

Feature		Responsibilities lot / boundary	Remarks
1.	7SE-A/CR289(1)	DD185 Lot 393 SBRP	Stage 2 Report
2.	7SE-A/CR303(1)	DD185 Lot 393 SBRP	Stage 2 Report
3.	7SE-A/R217 (1)	DD185 Lot 393 SBRP	GCME 9070/83
4.	7SW-B/CR362(1)	DD185 Lot 296	BD:14/06/2019

5.	7SW-B/R102	DD185 Lot 296	Stage 2 Report
6.	7SW-B/R96	DD185 Lot 296	-
7.	7SE -A/FR197	DD185 Lot 331RP	BD:11/06/2018
8.	7SE-A/R102	DD185 Lot 331RP	LPM S2R 36/2000
9.	7SE-A/R205	DD185 Lot 331RP	-
10.	7SW-B/CR764(2)	DD185 Lot 331RP	-

All relevant registered slope information are attached in Appendix C. Relevant part prints of Stage 2 Report are attached in Appendix D.

Based on current desk study's findings, all the above 10 Features maintained by the Lot Owners has no record of Engineer Inspection been carried out. There are relevant documents to some Features that Stage Studies and LPM Studies have been carried out under Government contract, the current status of such Features understudy have not been fully established at this stage. Hence, further studies to these Features including further ground investigation works to established each individual Factor of Safety is upto current Government safety standard is required. and shall be conducted in the implementation stage after planning approval of section 16 planning application is obtained. Based on GI findings, all slope stabilities shall be established and if found necessary to upgrade the Features up to current standard. All the above geotechnical works are required to be submitted to Buildings Department for approval.

3. PROPOSED WORKS FOR SITE

All existing structures on the Site do not require any further construction works. Hence, no site formation nor foundation work would be required.

4. EFFECT ON ADJACENT GROUND

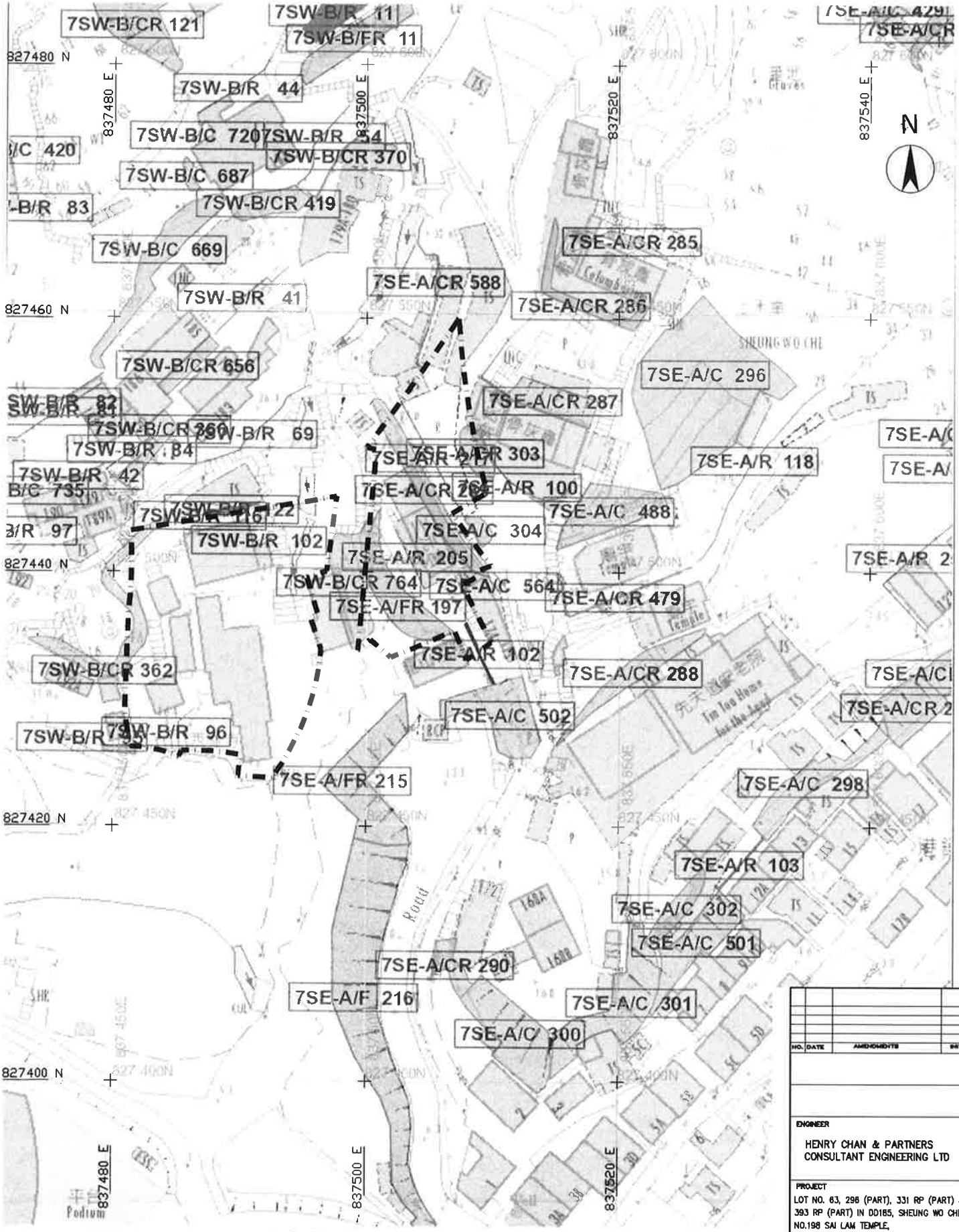
The Site will required detail checking to all relevant Registered Slope Features to ensure each individual stability. Upgrade these as found necessary to ensure these Features will not affect or be affected by the existing building Blocks A to G.

5. CONCLUSIONS AND RECOMMENDATIONS

No further geotechnical works we envisaged to the existing building blocks. However, there are although 10 Registered Features responsible by Sai Lam Temple. Further studies to these Features are required, if found necessary to carry out slope upgrading works. All proposed works shall be submitted to Buildings Department for approval.

APPENDIX A

SITE LOCATION PLAN AND GENERAL VIEWS



LOCATION LAYOUT PLAN

Legend :

SITE BOUNDARY

NO.	DATE	AMENDMENTS	INT.

ENGINEER

HENRY CHAN & PARTNERS
CONSULTANT ENGINEERING LTD

PROJECT

LOT NO. 63, 296 (PART), 331 RP (PART) & 393 RP (PART) IN DD185, SHEUNG WO CHE NO.198 SAI LAM TEMPLE, SHATIN, NEW TERRITORIES

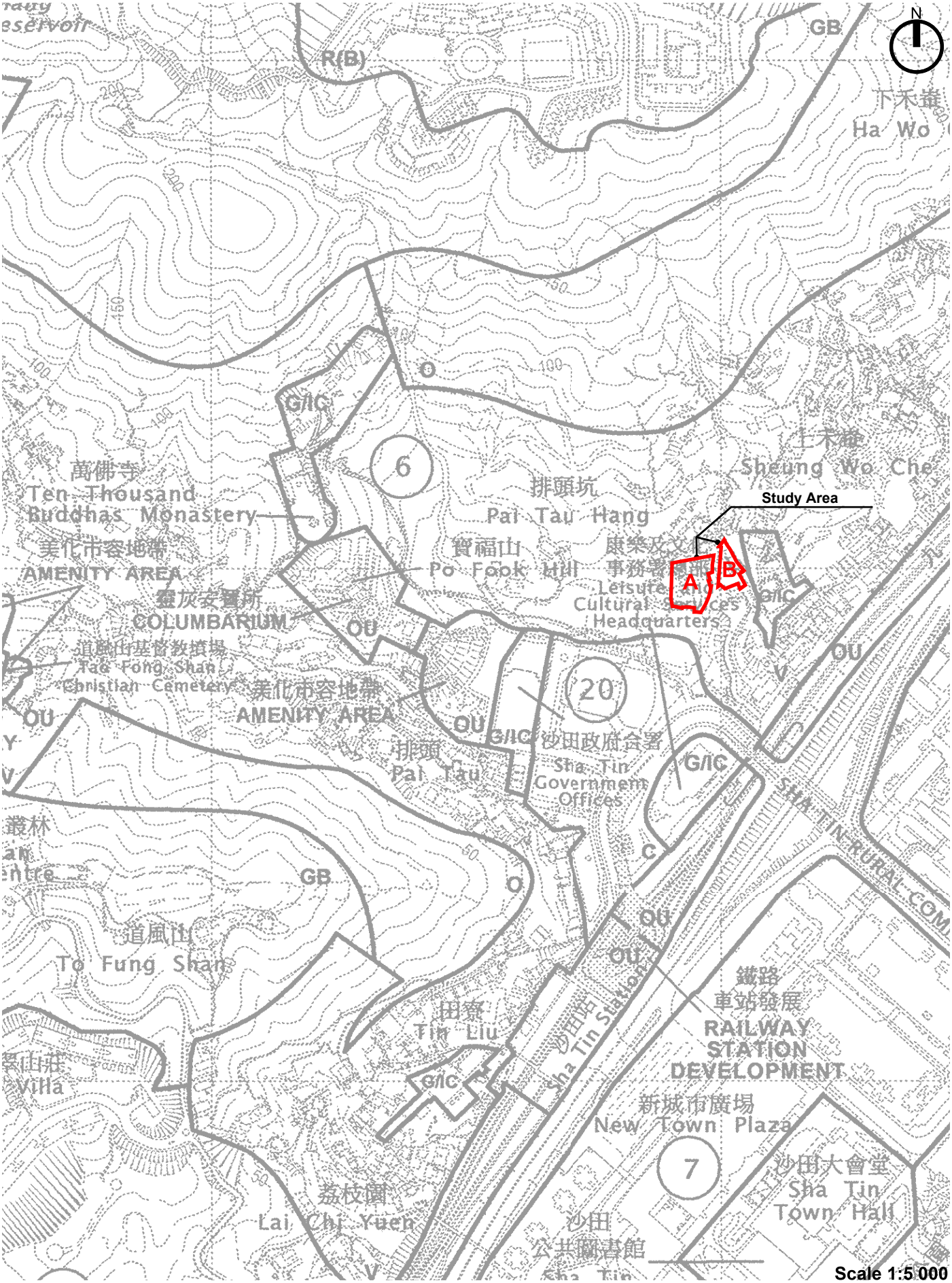
DWG. TITLE

LOCATION LAYOUT PLAN

SCALE	1 : 400	CHECKED	
DATE	OCT.2020	APPROVED	

DWG. NO.

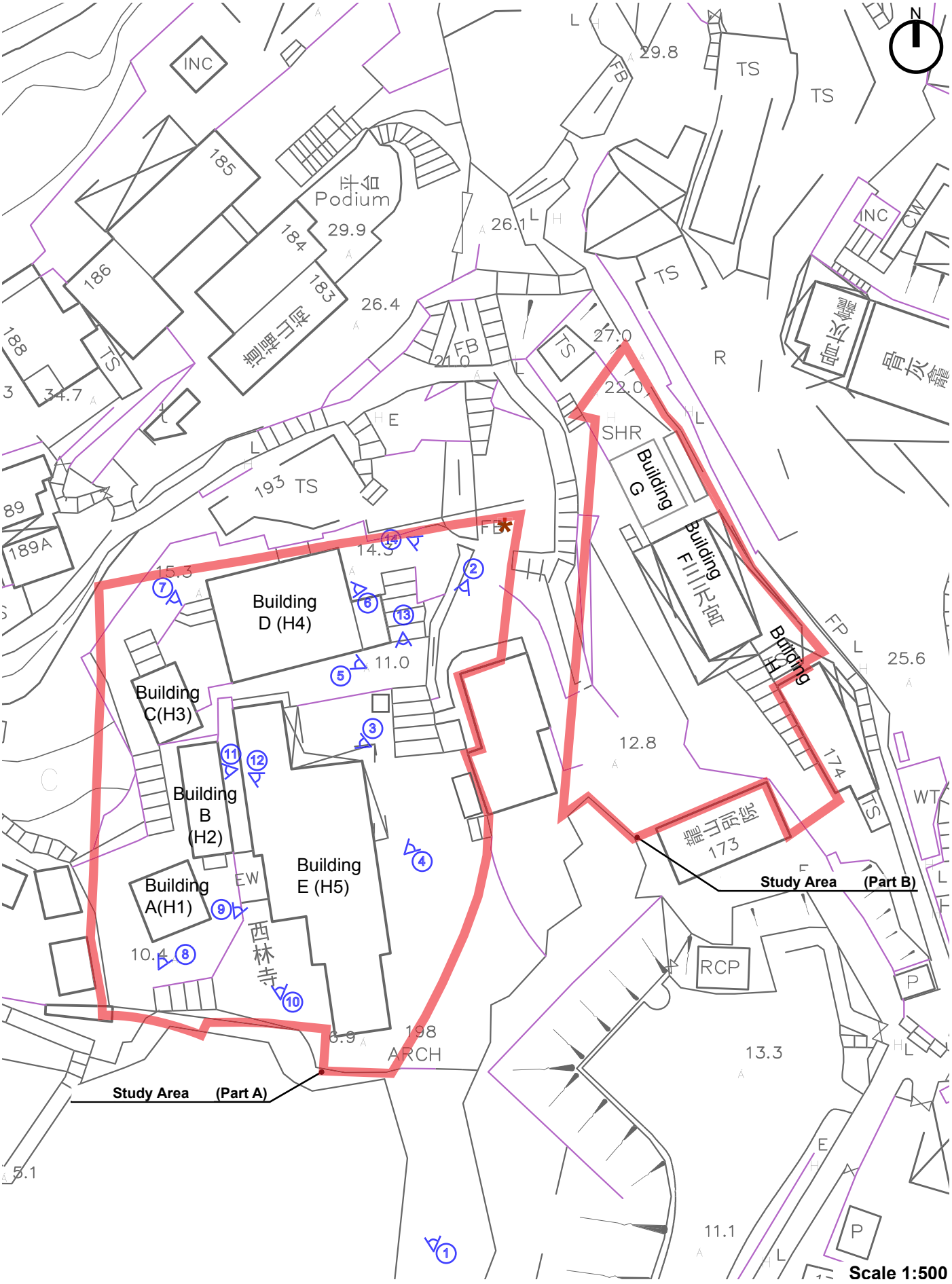
33120/001



TOCO

Plan A: Zoning and Location Plan

Extract of Draft Sha Tin Outline Zoning Plan No. S/ST/35



TOCO

Plan B: Site Plan

Photo 1: Main Erance of Sai Lam Temple

Photo 2: Building E

Photo 3: Building D and E

Photo 4: View of Site B from Site A

Photo 5: Building D (G/F & 1/F)

Photo 6: Building D (1/F & 2/F)

Photo 7: Building C

Photo 8: Building A (Worshipping Area)

TOCO

Site Photos (1): Site Condition

(View Points Shown on Plan B)

Photo 9: Building B and E

Photo 10: Back of Building B, C and E

Photo 11: Worshipping Area in Building B

Photo 12: Worship Hall of Building E

Photo 13: Gathering Area and Pedestrian Access

Photo 14: Sam Yuen Kung Temple

Photo 15: Bus Terminus near the Site

Photo 16: Sha Tin Railway Station near the Site

TOCO

Site Photos (2): Site and Adjacent Land Uses

(View Points Shown on Plan B)


Building E: Management Office at G/F

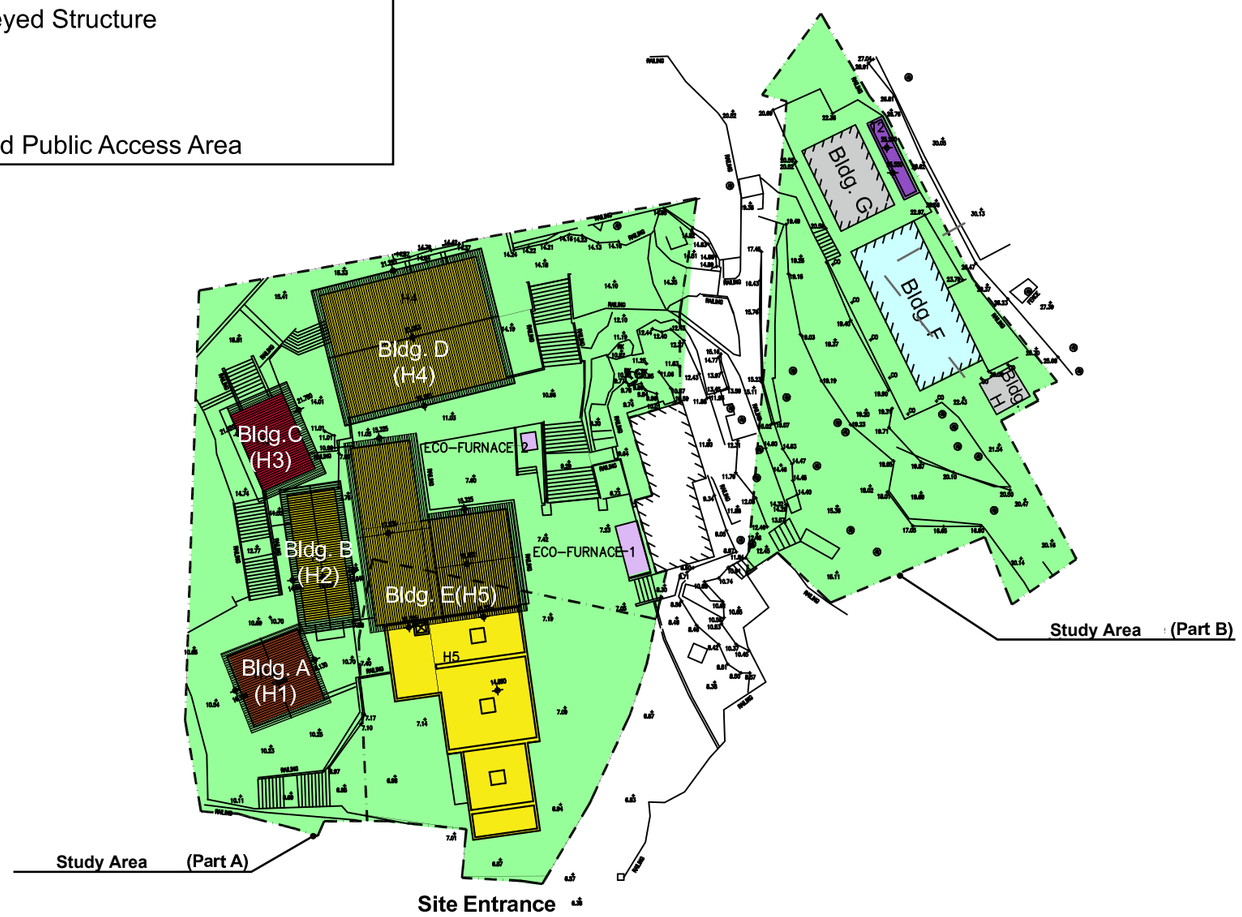

Building E: Shop & Gathering area at G/F


Building E: Columbarium at G/F


Building E: Columbarium at 1/F

Legend

- Temple
- Religious Institution/ Columbarium/ Office/ Shop
- Columbarium
- Religious Building
- Existing Surveyed Structure
- Toilet
- Eco-Furnace
- Landscape and Public Access Area



Scale 1:500


Building C: Columbarium

Building D: Columbarium & Worshipping area at G/F


Building D: Columbarium at 1/F


Building D: Worship Hall at 2/F


Building E: Worship hall at 1/F


Building A: Religious Building


Building A: Worship hall


Building B: Worshipping Area at G/F


Building B & E: Columbarium


Building F: Sam Yuen Kung Temple

TOCO

Plan G: Master Layout Plan

APPENDIX B

GEOLOGICAL MAP AND GASP

HONG KONG GEOLOGICAL SURVEY
香港地質調查

SHA TIN 沙田
Sheet 7 編號

SOLID AND SUPERFICIAL GEOLOGY 基岩和表土地質圖

Series HGM20 組別

Scale 1:20 000 比例

SUPERFICIAL DEPOSITS 地表沉積

	GENETIC CLASSIFICATION 成因類型		主要物質成份 PRINCIPAL MATERIALS
第四系 QUATERNARY — 全新統 HOLOCENE	Fill; sanitary fill (Qfs) 填土		填泥和廢物 Natural earth and waste
	Marine sand 海相砂	Qms	含貝殼砂 Sand, shelly
	Marine mud 海相泥	Qmm	含貝殼粘土 / 粉砂 Clay/silt, shelly
	Estuarine mud and sand 河口灣泥砂	Qams	粘土 / 粉砂和砂 Clay/silt and sand
	Alluvium 冲積物	Qa	分選性頗好至中等的粘土、粉砂、砂和礫石 Clay/silt, sand and gravel; well-sorted to semi-sorted
更新-全新統 PLEISTOCENE AND HOLOCENE	Debris flow deposits 坡積、泥積物	Qd	未分選的砂、礫至漂礫，基質爲粘土 / 粉砂 Unsorted sand, gravel, cobbles and boulders; clay/silt matrix
	Talus (rockfall) deposits 岩屑(岩崩)堆積物	Qt	具較少細粒基質的礫石至漂礫 Gravel, cobbles and boulders; sparse finer-grained matrix
	Mixed debris flow and talus deposits 坡積、崩積物	Qdt	Qd 和 Qt 的混合物 Mixed Qd and Qt
	Slide deposits 滑坡堆積物	Qdl	基岩和坏土物質 Materials of the regolith and bedrock

SOLID GEOLOGY 基岩地質

SEDIMENTARY AND VOLCANIC ROCKS 沉積岩和火山岩

	NAMED ROCK DIVISIONS 地層單位名稱		主要岩石類型 / 特徵 PRINCIPAL ROCK TYPES/CHARACTERS
中生界 MESOZOIC — 上侏羅統 UPPER JURASSIC — 吉水灣群 REPULSE BAY VOLCANIC GROUP	Tai Mo Shan Formation, undivided 大帽山組(未分)	JTM	黑雲母晶屑凝灰岩 Crystal tuff, with biotite
	Ap Lei Chau Formation, undivided 鴨脷洲組(未分)	JAC	具火焰構造的玻屑凝灰岩 Vitric tuff, with fiamme
	Shing Mun Formation, undivided 城門組(未分)	JSM	晶岩屑凝灰岩、凝灰角礫岩和層凝灰岩 Crystal and lithic tuff, tuff-breccia and tuffite
	Yim Tin Tsai Formation, undivided 鹽田仔組(未分)	JYT	角閃石晶屑凝灰岩 Crystal tuff, with hornblende
		t	未分凝灰岩和層凝灰岩 Undifferentiated tuff and tuffite
		bt	含火山塊凝灰岩和層凝灰岩 Block-bearing tuff and tuffite
		a	安山質熔岩 Andesite lava
		s	砂岩 Sandstone
		st	粉砂岩和泥岩 Siltstone and mudstone
		br	沉積角礫岩 Sedimentary breccia
下侏羅統 LOWER JURASSIC	Tolo Channel Formation 赤門海峽組	JTC	泥岩和粉砂岩 Mudstone and siltstone
古生界 PALAEOZOIC — 二疊系 PERMIAN	Tolo Harbour Formation, undivided 大埔海組(未分)	PTH	泥岩、粉砂岩和砂岩 Mudstone, siltstone and sandstone
		s	砂岩 Sandstone
泥盆系 DEVONIAN	Bluff Head Formation 青竹角咀組	DBH	砂岩和粉砂岩 Sandstone and siltstone

MAJOR INTRUSIVE IGNEOUS ROCKS 主要侵入火成岩

中生代 MESOZOIC — 侏羅-白堊紀 JURASSIC-CRETACEOUS	Inequigranular texture 不等粒結構	gf	細粒花崗岩，<2毫米 Fine-grained granite, <2mm
		gm	中粒花崗岩，2-6毫米 Medium-grained granite, 2-6mm
		gc	粗粒花崗岩，>6毫米 Coarse-grained granite, >6mm
		qm	石英二長岩 Quartz monzonite
		gd	花崗閃長岩 Granodiorite

MINOR INTRUSIVE IGNEOUS ROCKS 次要侵入火成岩（脉岩）

TERTIARY 第三紀		b	輝綠岩 Basalt
中生代 MESOZOIC — 侏羅-白堊紀 JURASSIC-CRETACEOUS		rq	石英斑岩 Quartzphyric rhyolite
		rf	長石斑岩 Feldsparphyric rhyolite
		lq	石英二長斑岩 Quartz latite

METAMORPHIC ROCKS 變質岩

	Thermally altered rock 受侵入花崗岩體的熱力變質岩石	h	角岩 Hornfels

中生界 MESOZOIC
上侏羅統 UPPER JURASSIC
下侏羅統 LOWER JURASSIC
落水灣群 REPULSE BAY VOLCANIC GP

Yim Tin Tsai Formation, undivided 鹽田仔組（未分）
JYT 角閃石晶屑凝灰岩 Crystal tuff, with hornblende

t 未分層凝灰岩和層凝灰岩 Undifforentiated tuff and tuffite
bt 含火山角礫凝灰岩和層凝灰岩 Block-bearing tuff and tuffite
安山質熔岩 Andesite lava
s 砂岩 Sandstone
si 粉砂岩和泥岩 Siltstone and mudstone
br 沉積角礫岩 Sedimentary breccia

Tolo Channel Formation subdivided 吐門海峽組（未分）
JTC 泥岩和粉砂岩 Mudstone and siltstone

古生界 PALAEOZOIC
二疊系 PERMIAN
泥盆系 DEVONIAN

Tolo Harbour Formation, undivided 大埔海組（未分）
PTH 泥岩、粉砂岩和砂岩 Mudstone, siltstone and sandstone
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Bluff Head Formation 青竹角咀組
DBH 砂岩和粉砂岩 Sandstone and siltstone

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侏羅-白堊紀 JURASSIC-CRETACEOUS

Inequigranular texture 不等粒結構

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gm 中粒花崗岩，2-6毫米 Medium-grained granite, 2-6mm
gc 粗粒花崗岩，>6毫米 Coarse-grained granite, >6mm
mzq 石英二長岩 Quartz monzonite
gdi 花崗閃長岩 Granodiorite

MINOR INTRUSIVE IGNEOUS ROCKS 次要侵入火成岩（脉岩）

TERTIARY 第三紀

b 輝綠岩 Basalt

中生代 MESOZOIC
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METAMORPHIC ROCKS 變質岩

Thermally altered rock around granitic intrusions 圍繞花崗岩體的熱力變質岩石

m hm 角頁岩 Hornfels

at 蝕變凝灰岩和沉積岩 Altered tuff and sedimentary rock

White wave ornament indicates water cover 白色波紋表示受水遮蓋

GEOLOGICAL LINES 地質界綫

Geological boundary, superficial deposit 地表沉積地質界綫
Fill boundary 填土界綫
Geological boundary, solid rock 基岩地質界綫
Fault (crossmark indicates downthrow side) 斷裂（短劃指向下降盤）
Mineral vein 礦脉
Photogeological lineament 航攝地質綫性影像

Broken lines on map face denote uncertainty * 圖內虛綫表示推測界綫

STRUCTURAL SYMBOLS 構造符號

	水平 Horizontal	傾斜 Inclined	垂直 Vertical	倒轉 Overturned	
Bedding	+	20	+	86	層理
Flow fabric	+	40			流動組構
Intrusive contact		22			侵入接觸
Metamorphic foliation		40			變質葉理
Jointing		60	+		節理
Slickenside		20			擦痕
Anticline (minor)		86			背斜（小型）
Syncline (minor)		78			向斜（小型）

All dips and plunges measured in degrees from horizontal 所有傾角和傾伏角的角度均從水平位置起計

MINERAL, FOSSIL AND MISCELLANEOUS SYMBOLS 礦產、化石和其他符號

W 礦產

古生界 PALAEOZOIC

二疊紀 PERMIAN

undivided — 未劃分 — PTH — Sandstone 砂岩

泥盆紀 DEVONIAN

Bluff Head Formation — 鼻竹角組 — DBH — Sandstone and siltstone 砂岩和粉砂岩

MAJOR INTRUSIVE IGNEOUS ROCKS 主要侵入火成岩

中生代 MESOZOIC

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Inequigranular texture 不等粒結構

- gf — 細粒花崗岩，<2 毫米 — Fine-grained granite, <2mm
- gm — 中粒花崗岩，2-6 毫米 — Medium-grained granite, 2-6mm
- gc — 粗粒花崗岩，>6 毫米 — Coarse-grained granite, >6mm
- hq — 石英二長岩 — Quartz monzonite
- gd — 花崗閃長岩 — Granodiorite

MINOR INTRUSIVE IGNEOUS ROCKS 次要侵入火成岩（脈岩）

TERTIARY 第三紀

- 玄武岩 — Basalt

中生代 MESOZOIC

侏羅-白堊紀 JURASSIC-CRETACEOUS

- rq — 石英斑岩 — Quartzphyric rhyolite
- rf — 長石斑岩 — Feldsparphyric rhyolite
- lq — 石英二長斑岩 — Quartz latite

METAMORPHIC ROCKS 變質岩

Thermally altered rock around granitic intrusions — 圍繞花崗岩體的熱力變質岩石

- m — 角岩 — Hornfels
- at — 蝕變凝灰岩和沉積岩 — Altered tuff and sedimentary rock

White wave ornament indicates water cover 白色波紋表示受水域

GEOLOGICAL LINES 地質界綫

- Geological boundary, superficial deposit — 地表沉積地質界綫
- Fill boundary — 填土界綫
- Geological boundary, solid rock — 基岩地質界綫
- Fault (crossmark indicates downthrow side) — 斷層（短劃指向下降盤）
- Mineral vein — 礦脈
- Photogeological lineament — 航攝地質綫性影像

Broken lines on map face denote uncertainty 圖內虛綫表示推測界綫

STRUCTURAL SYMBOLS 構造符號

	水平 Horizontal	傾斜 Inclined	垂直 Vertical	倒轉 Overturned	
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Flow fabric	+	40			流動組構
Intrusive contact		22			侵入接觸
Metamorphic foliation		40			變質葉理
Jointing		60	•		節理
Slickenside		20			擦痕
Anticline (minor)		65			背斜（小型）
Syncline (minor)		75			向斜（小型）

All dips and plunges measured in degrees from horizontal 所有傾角和傾伏角的角度均從水平位置起計

MINERAL, FOSSIL AND MISCELLANEOUS SYMBOLS 礦產，化石和其他符號

- Mineral occurrence — •W — 礦產

Fluorite	F	螢石	Magnetite	Fe	磁鐵礦
Galena	Pb	方鉛礦	Wolframite	W	鎢鐵礦
Molybdenite	Mo	輝鉬礦			
Quartz	q	石英			

- Mine shaft, abandoned — 廢棄礦山豎井
- Mine adit, abandoned — 廢棄礦山平峒
- Fossil locality — 化石產地
- Landslide backscar; scarp of terraced Quaternary deposits — 滑坡壁；第四系沉積的階地陡崖

KWAI CHUNG SUITE

LAMMA [illegible]

Fine-grained granite, <2mm

Medium-grained granite, 2-6 mm

Quartzphyric rhyolite

Geological survey by **R. Addison** (British Geological Survey) in 1983-1984 under a consultancy agreement between the Government of Hong Kong and the Natural Environment Research Council, United Kingdom.
Offshore geology by **R. J. Purser** (Geotechnical Control Office).
Base map and cartography by Survey and Mapping Office, Buildings and Lands Department, Hong Kong.
Published by the Geotechnical Control Office, Civil Engineering Services Department, Hong Kong.

根據1983-1984年香港政府與英國自然環境研究院顧問協議由英國地質調查局 R. 阿迪生負責地質調查。
離岸地質由土力工程處 R. J. 珀澤負責。
地形底圖及製圖由香港屋宇地政署測繪處負責。
香港土木工程署土力工程處出版。

Item No. 2803

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Sheet 7 編號

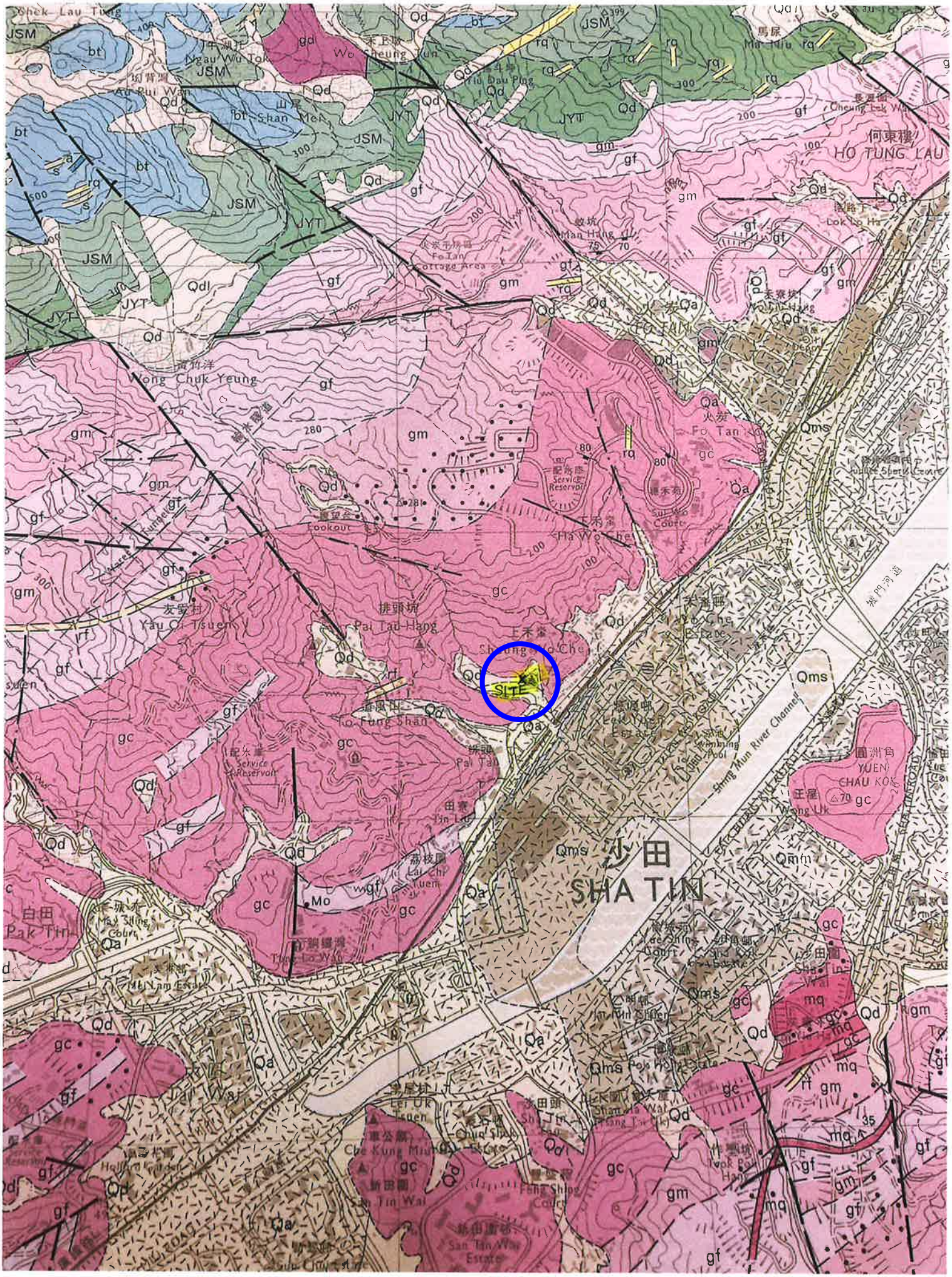
F

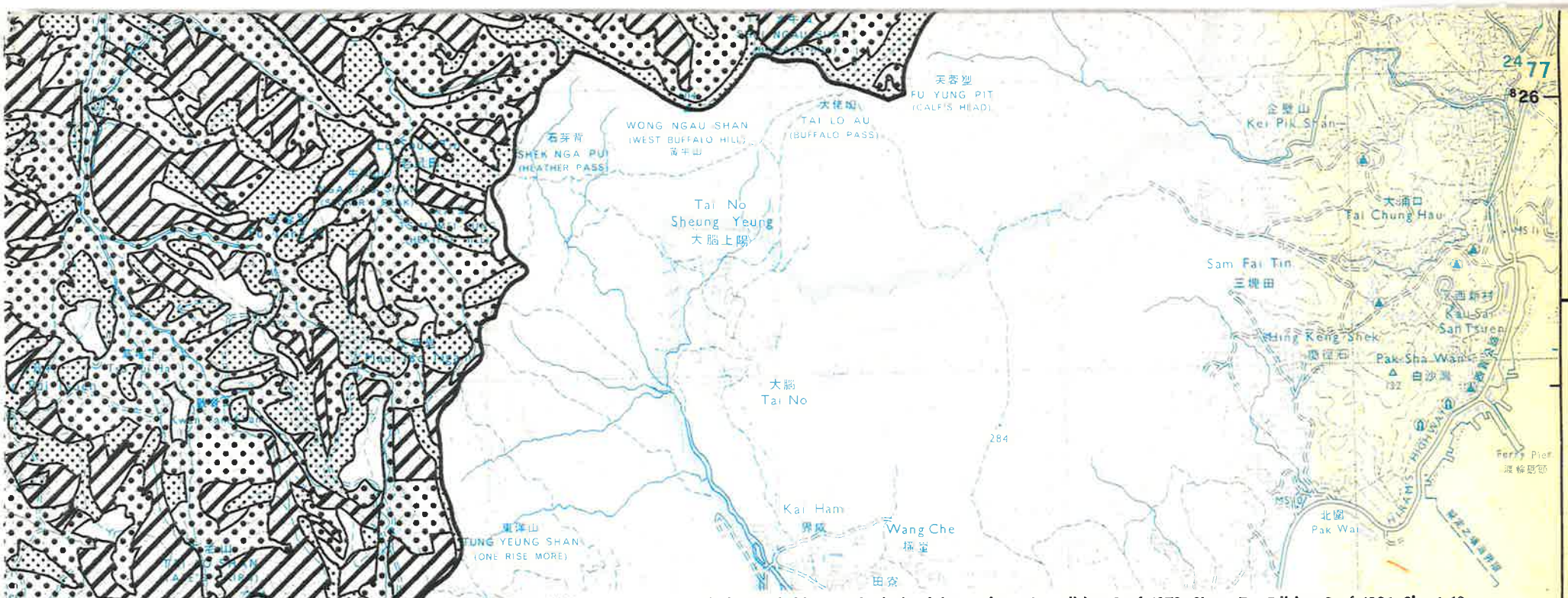
#45000E #28000N

馬鞍山
Ma On Shan

800

600


SITE
SHA TIN
HO TUNG LAU
Fo Tan
Pai Tau Hang
Yau Oi Tsuen
Wong Chuk Yeung
Lo Fung Shan
Pak Tin
Sha Tin Wai
Shing Mun River Channel
YUEN CHAU KOK
JSM
JYT
Qd
Qa
Qms
Qmm
gf
gc
gm
bt
rq
mq



Note : The topographic base of this map is derived from Sheet 6 - Edition 2 of 1979, Sheet 7 - Edition 3 of 1981, Sheet 10 - Edition 2 of 1980 and Sheet 11 - Edition 2 of 1979 of the HM20C Series produced by the Survey and Mapping Office of the Buildings and Lands Department, Hong Kong.

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 GLUM system

Waterbodies (streams, man-made channels, storage dams)

Ponds

Littoral zone (generally subject to tidal action)

24 77 Universal Transverse Mercator (UTM) Grid Reference

8 30 Hong Kong Metric Grid Reference

ON : USERS

The Geotechnical Land Use Map (GLUM) should be used only to the general level of geotechnical limitation of the terrain for planning purposes. It is produced at a scale of 1:20 000 and should ed to evaluate parcels of land smaller than 3 ha in size.

This Map must never be interpreted, reproduced or enlarged arger than 1:20 000 (i.e. scales of 1:10 000, 1:5 000 or larger). heed this warning may result in serious misinterpretation of the data.

Please consult the Central New Territories Geotechnical Area rogramme Report (GASP II) which discusses in detail the purpose, n and limitations of this Map.

RITORIES

Title:	GEOTECHNICAL LAND USE MAP — CENTRAL NEW TERRITORIES
Compiled: R. Purser/A. Hansen	Drawn: S. W. Lam
Scale: 1 : 20 000	Date: Original January, 1984 2nd Edition July, 1987
Map Ref. No: GASP / 20 / II / 1 2nd Edition	Sheet:

Published by the Geotechnical Control Office, Civil Engineering Services Department, Hong Kong.

E F G

834 207 836 210 838

下碗窰
Ha Wun Yiu

上碗窰
Sheung Wun Yiu

荔枝山
Lai Chi Shan

新屋下
San Uk Ha

上黃竹坳
Sheung Wong Yi Au

荔枝坑
Lai Chi Hang

挖泥區
Borrow Area

Tai Po Kau San Wai 大埔滘新圍

Tai Po Kau Lo Wai 大埔滘老圍

MS42

Tsung Tsai Yuen
松仔園

Fire break 隔火帶

Management

Water Tunnel

大埔滘自然保護區
TAI POKAU NATURE RESERVE

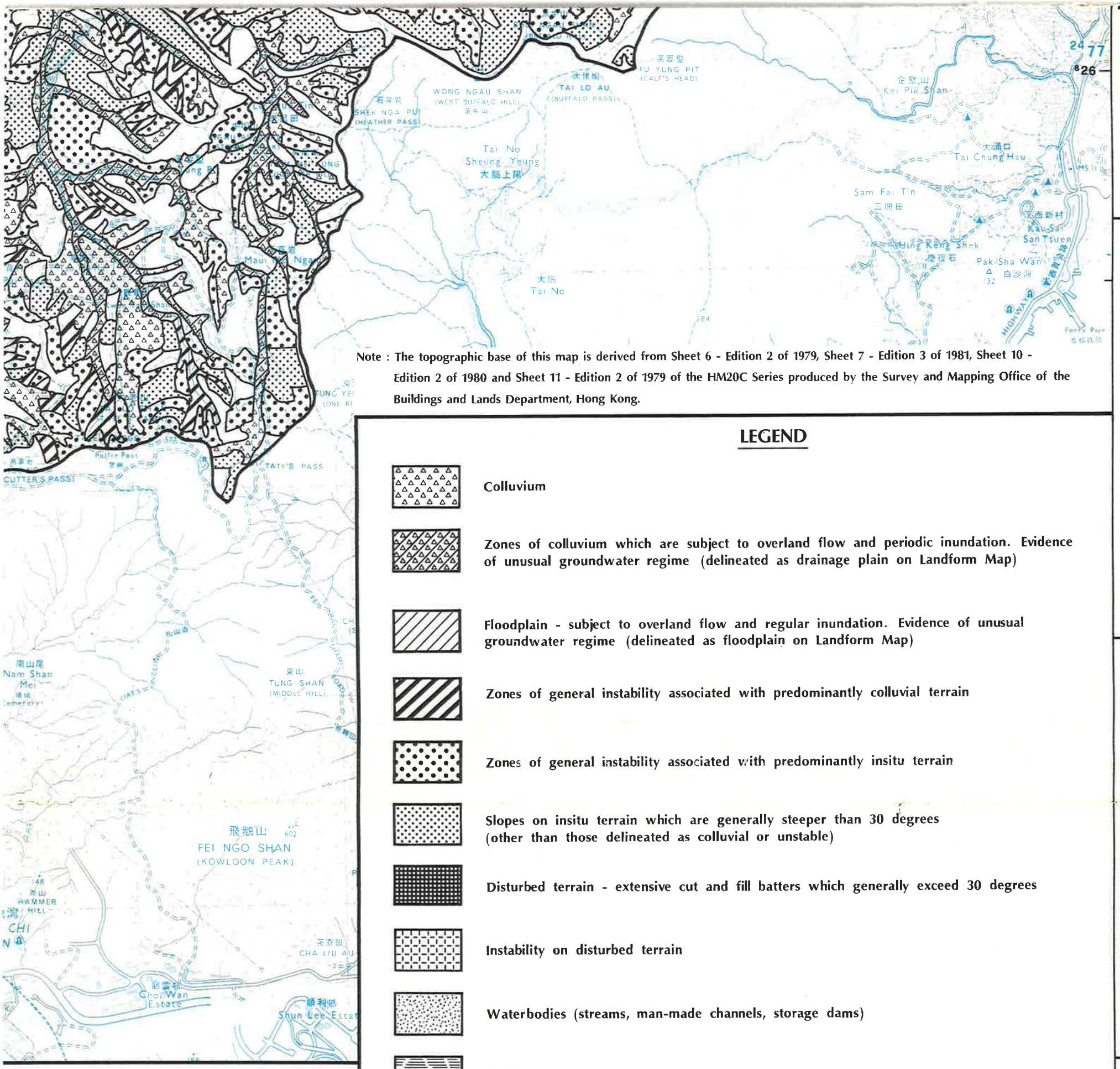
Construction Project

Shing Mun River Channel

Shing Mun River

沙田
SHA TIN

下城門水塘
LOWER SHING MUN RESERVOIR



Note : The topographic base of this map is derived from Sheet 6 - Edition 2 of 1979, Sheet 7 - Edition 3 of 1981, Sheet 10 - Edition 2 of 1980 and Sheet 11 - Edition 2 of 1979 of the HM20C Series produced by the Survey and Mapping Office of the Buildings and Lands Department, Hong Kong.

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 degrees (other than those delineated as colluvial or unstable)
- Disturbed terrain - extensive cut and fill batters which generally exceed 30 degrees
- 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)
- 2477 Universal Transverse Mercator (UTM) Grid Reference
- 830 Hong Kong Metric Grid Reference

GERS

The Physical Constraints Map (PCM) should be used only as a general nature of terrain-related constraints for regional planning produced at a scale of 1:20 000 and should not be used to of land smaller than 3 ha in size.

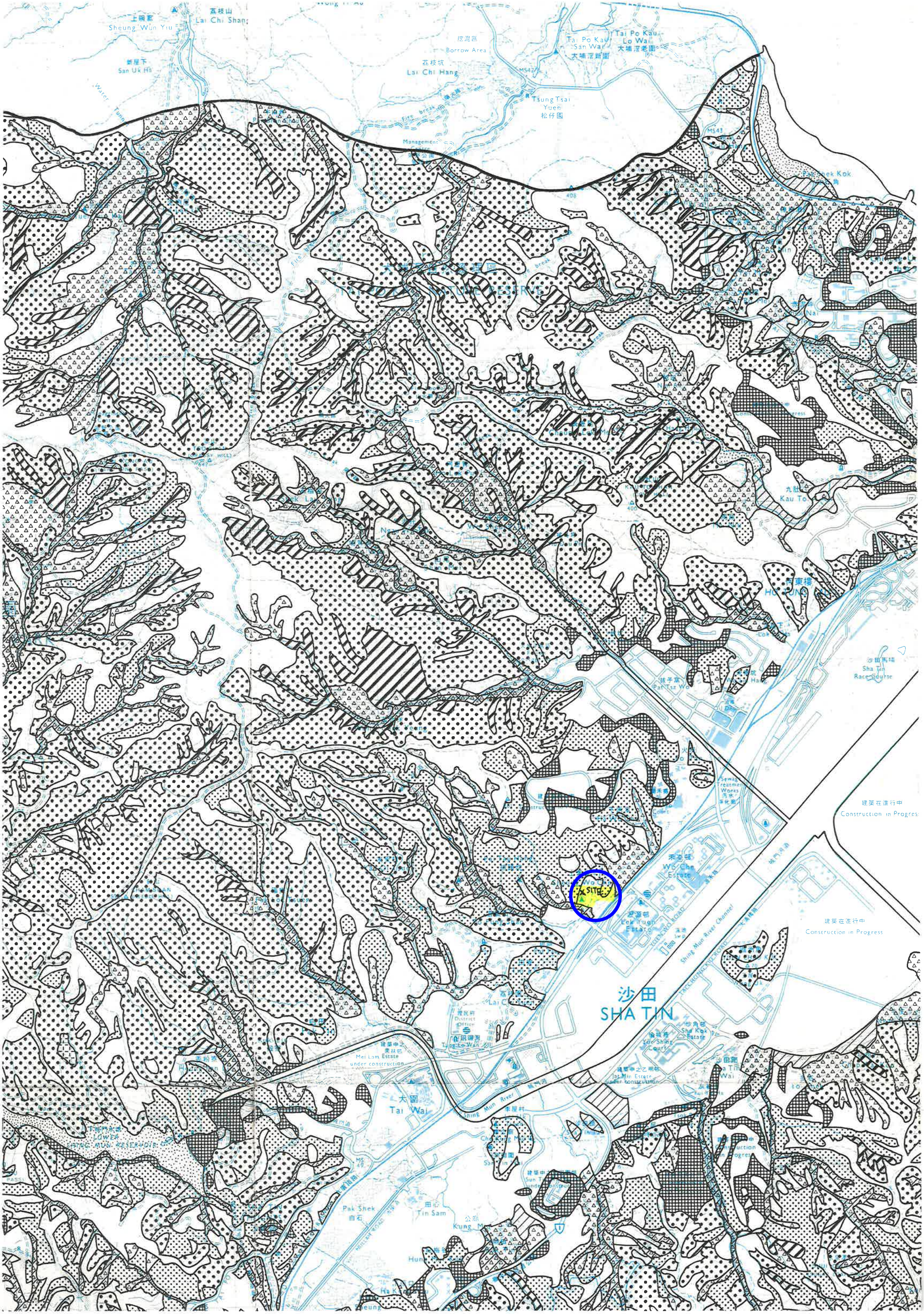
This Map must never be interpreted, reproduced or enlarged than 1:20 000 (i.e. scales of 1:10 000, 1:5 000 or larger). this warning may result in serious misinterpretation of the data.

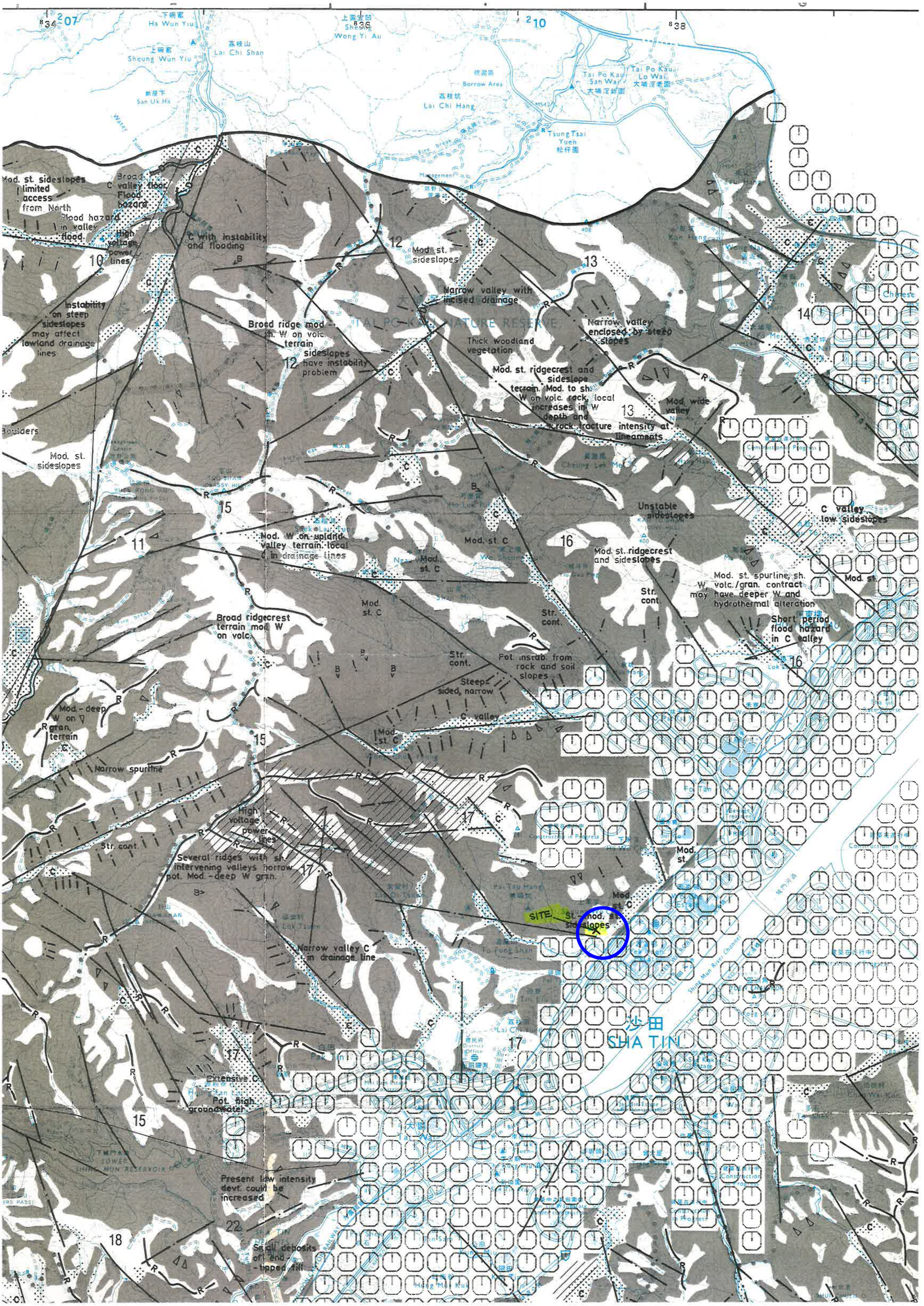
Please consult the Central New Territories Geotechnical Area time Report (GASP II) which discusses in detail the purpose of this Map.

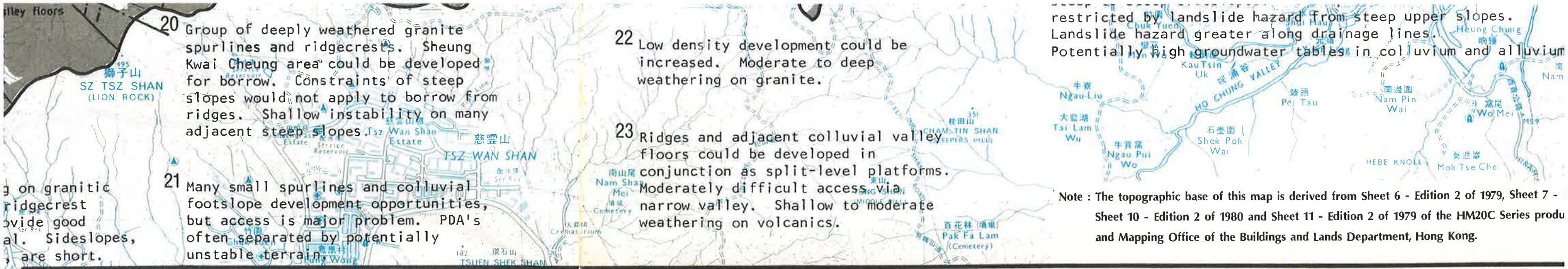
TORIES

Title:	PHYSICAL CONSTRAINTS MAP - CENTRAL NEW TERRITORIES
Compiled: A. Hansen / R. J. Purser	Drawn: S. W. Lam
Scale: 1 : 20 000	Date: Original January, 1984 2nd Edition July , 1987
Map Ref. No: GASP / 20 / II / 6 2nd Edition	Sheet:

Published by the Geotechnical Control Office, Civil Engineering Services Department, Hong Kong.


荔枝山
Lai Chi Shan
上禾輋
Sheung Wun Yiu
新屋下
San Uk Ha
Water Tunnel
挖泥區
Borrow Area
荔枝坑
Lai Chi Hang
Tai Po Kau San Wai
大埔滘新圍
Tai Po Kau Lo Wai
大埔滘老圍
MS42
Tsung Tsai Yuen
松仔園
Fire break
Management Centre
MS43
Pak Lek Kok
Tai Po Kau Nature Reserve
Nai
Kau To
九肚
何東樓
HO TUNG LOU
Sha Tin Race Course
Pan Tsz Wo
Sewage Treatment Works
污水處理廠
建築在進行中
Construction in Progress
SITE
Wo Che Estate
Lek Yuen Estate
Lek Yuen Court
Shing Mun River Channel
FAIR HOUSING ROAD
沙田
SHA TIN
Lai Chi Kok Estate
Shek Kok Estate
Yue Shing Court
Tsang Tai Uk
Mei Lam Estate under construction
Tai Wai
Shing Mun River
LOWER SHING MUN RESERVOIR
Pak Shek
白石
Tin Sam
田心
Kung Mo
公廟
Hun
Ha Kwong
Sheung


Mod. st. sideslopes limited access from North
Broad valley floor Flood hazard
C with instability and flooding
Flood hazard in valley flood.
High voltage power lines
Mod. st. sideslopes
Narrow valley with incised drainage
Broad ridge mod sh. W on volc. terrain
sideslopes have instability problem
Thick woodland vegetation
Narrow valley enclosed by steep slopes
Mod. st. ridgecrest and sideslope terrain. Mod. to sh. W on volc. rock, local increases in W depth and rock fracture intensity at lineaments
Mod. wide valley
Boulders
Mod. st. sideslopes
Unstable sideslopes
C valley low sideslopes
Mod. W on upland valley terrain, local in drainage lines
Mod. st. C
Mod. st. ridgecrest and sideslopes
Mod. st. spurline, sh. W, volc./gran. contract may have deeper W and hydrothermal alteration
Mod. st.
Str. cont.
Short period flood hazard in C valley
Broad ridgecrest terrain mod W on volc.
Pot. instab. from rock and soil slopes
Steep-sided, narrow C valley
Mod. - deep W on gran. terrain
Narrow spurline
High voltage power lines
Str. cont.
Several ridges with sh. intervening valleys narrow pot. Mod. - deep W gran.
Mod. st. C
SITE
St. - mod. sideslopes
Narrow valley C in drainage line
沙田
SHA TIN
Extensive C
Pot. high groundwater
Present low intensity devt. could be increased
Small deposits of end - tipped fill
TAI PO KAU NATURE RESERVE
Tai Po Kau San Wai
Tai Po Kau Lo Wai
Tsung Tsai Yuen
Lai Chi Shan
Lai Chi Hang
Borrow Area
Sheung Wun Yiu
Ha Wun Yiu
Wong Yi Au
San Uk Ha
Shing Mun River Channel
Construction in Progress
10
11
12
13
14
15
16
17
18
22



Note : The topographic base of this map is derived from Sheet 6 - Edition 2 of 1979, Sheet 7 - Sheet 10 - Edition 2 of 1980 and Sheet 11 - Edition 2 of 1979 of the HM20C Series produ and Mapping Office of the Buildings and Lands Department, Hong Kong.

LEGEND

DEVELOPMENT PLANNING ZONES :

- Zone of potential for development (assessed in geotechnical terms)
- Zone of local geotechnical constraints (identified on PCM) within general PDA
- Zone of constraints for development (assessed principally in geotechnical terms)
- Zone of existing development, (based on principal use of GEOTECS 2 hectares unit)
- Country Park boundary
- Catchwater
- High voltage power lines

NOTE

- Numerals on map refer to relevant general planning/engineering notes
- 24 77 Universal Transverse Mercator (UTM) Grid Reference
- 8 30 Hong Kong Metric Grid Reference

FEATURES OF ENGINEERING SIGNIFICANCE :

- Geological photolineament
- R Ridgeline
- D Di Drainage, incised drainage
- C Colluvium (also in 'zone of local constraints', and PCM)
- Str. Structure
- W Weathering
- B Boulders
- Steeper slopes influencing area (orientation of symbols indicates downslope direction)
- Instability influencing area
- Potential for borrow or extensive cut and fill : opportunity to create site formation in 'constrained' area, or larger site formation in 'potential' area

NOTE

i) Features are generally indicated only where of significance to identified potential development areas

ii) For explanation of significance of identified features, see Report Appendix A , Table A6, and Section 4.2

iii) Geological boundaries and photolineaments are shown in full on the EGM. Those lineaments indicated represent the surface expression of obvious structural discontinuities which affect the PDA's

Abbreviations :

cont.	control
devt.	develo
gran.	granite
instab.	instabi
mod.	moder
pot.	potenti
sed.	sedime
sh.	shallov
st.	steep
volc.	volcan

RING APPRAISAL MAP
ORIES

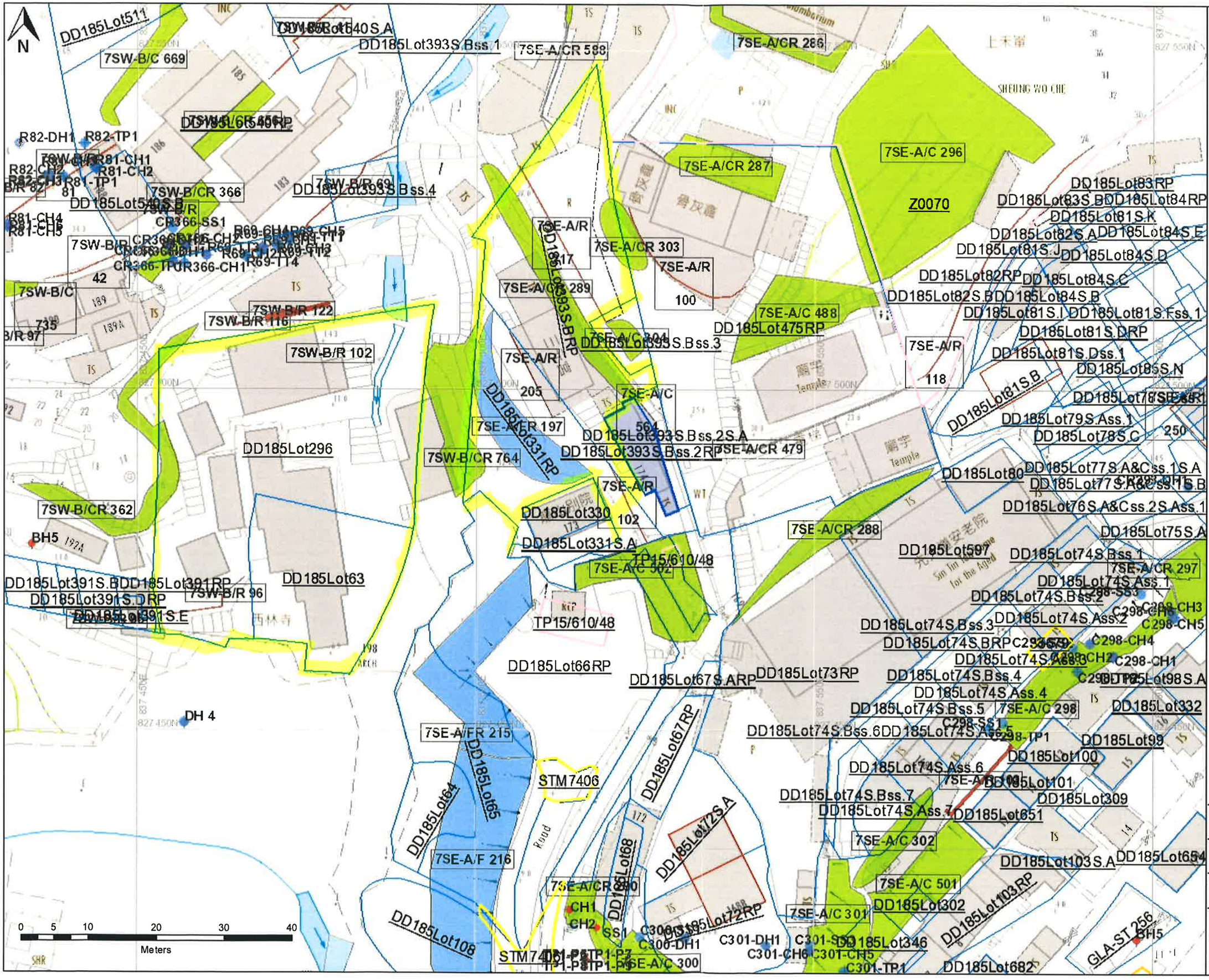
Title:	GENERALISED LIMITATIONS AND ENGINEERING APPRAIS CENTRAL NEW TERRITORIES
Compiled: A. Hansen	Drawn: S. B. Ho / S.
Scale: 1:20 000	Date: Original May, 1 2nd Edition Ju
Map Ref. No: GASP/20/11/15 2nd Edition	Sheet:

F G H I J

Published by the Geotechnical Control Office, Civil Engineering Services Depa

APPENDIX C

SLOPE INFORMATION SYSTEM (SIS) RECORDS


N
DD185Lot511
7SW-B/C 669
DD185Lot540 S.A
DD185Lot393 S.Bss.1
7SE-A/CR 588
7SE-A/CR 286
SHEUNG WO CHE
7SW-B/CR 456RP
DD185Lot540RP
R82-DH1
R82-TP1
R82-CH1
R82-CH2
R82-CH3
R81-CH1
R81-CH2
R81-TP1
81
7SW-B/CR 366
DD185Lot540 S.B
7SW-B/R 69
DD185Lot393 S.Bss.4
7SW-B/R CR366-SS1
R81-CH4
R81-CH5
R69-CH4
R69-CH5
R69-TT1
R69-CH3
R69-CH2
R69-TT2
R69-TT4
CR366-TP
CR366-CH1
7SW-B/R 42
7SW-B/C 735
7SW-B/R 97
7SW-B/R 122
7SW-B/R 116
7SW-B/R 102
7SE-A/CR 289
7SE-A/CR 303
7SE-A/R 100
7SE-A/C 488
DD185Lot475RP
DD185Lot393 S.Bss.3
7SE-A/C 304
7SE-A/R 205
7SE-A/R 118
7SE-A/C 564
7SE-A/CR 197
DD185Lot331RP
DD185Lot393 S.Bss.2 S.A
DD185Lot393 S.Bss.2RP
7SE-A/CR 479
7SW-B/CR 764
DD185Lot296
7SE-A/R 102
7SW-B/CR 362
BH5
DD185Lot391 S.BDD185Lot391RP
DD185Lot391 S.DRP
DD185Lot391 S.E
DD185Lot63
7SW-B/R 96
DD185Lot330
DD185Lot331 S.A
TP15/610/48
7SE-A/C 302
TP15/610/48
DD185Lot66RP
DD185Lot67 S.ARP
DD185Lot73RP
DH 4
7SE-A/F 215
DD185Lot64
DD185Lot65
DD185Lot67RP
STM7406
7SE-A/F 216
DD185Lot68
DD185Lot72 S.A
DD185Lot72RP
7SE-A/CR 300
DD185Lot108
CH1
CH2
SS1
C300-SS1
C300-DH1
C301-DH1
C301-SS1
C301-CH6
C301-CH5
C301-TP1
7SE-A/C 301
DD185Lot346
DD185Lot682
7SE-A/C 501
DD185Lot302
DD185Lot103RP
DD185Lot103 S.A
DD185Lot654
GLA-ST 256
BH5
7SE-A/CR 288
DD185Lot597
DD185Lot74S Bss 1
7SE-A/CR 297
DD185Lot74S Ass.1
C298-SS1
C298-CH3
C298-CH5
C298-CH4
C298-CH2
C298-CH1
DD185Lot74S.Ass.2
DD185Lot74S.Bss.3
DD185Lot74S.BRP
DD185Lot74S.Ass.3
DD185Lot74S.Bss.4
DD185Lot74S Ass.4
DD185Lot74S.Bss.5
7SE-A/C 298
C298-SS1
C298-IP1
DD185Lot74S.Bss.6
DD185Lot74S.Ass.5
DD185Lot74S.Ass.6
7SE-A/C 303
DD185Lot74S.Bss.7
DD185Lot74S.Ass.7
7SE-A/C 302
DD185Lot98 S.A
DD185Lot332
DD185Lot99
DD185Lot100
DD185Lot101
DD185Lot309
DD185Lot651
7SE-A/C 296
Z0070
7SE-A/CR 287
DD185Lot83RP
DD185Lot83 S.BDD185Lot84RP
DD185Lot81 S.K
DD185Lot82 S.A
DD185Lot84 S.E
DD185Lot81 S.J
DD185Lot84 S.D
DD185Lot82RP
DD185Lot84 S.C
DD185Lot82 S.BDD185Lot84 S.B
DD185Lot81 S.I
DD185Lot81 S.Fss.1
DD185Lot81 S.DRP
DD185Lot81 S.Dss.1
DD185Lot81 S.N
DD185Lot81 S.B
DD185Lot79 S.Ass.1
DD185Lot78 S.C
250
DD185Lot80
DD185Lot77 S.A&Css.1 S.A
DD185Lot77 S.A&Css.1 S.B
DD185Lot76 S.A&Css.2 S.Ass.1
DD185Lot75 S.A
0 5 10 20 30 40
Meters
GI with AGS
GI Location
Drillholes
Slope striping
Cone Penetration Test
GCO Probe
Grab Samples
Impression Packer Test
Trial pit
PR
Rock joint survey
Trial trench
Historical Landslide Catchment (2016)
Hillside Pocket
Mitigated Hillside (MH) Features
Man-made Features
Cut slopes
Disturbed terrain
Fill slopes
NT defence measures
NT stabilisation measures
Retaining walls
GI
Slope Features
Division
Scale 1:500
Date 27/10/2020
GEOTECHNICAL ENGINEERING OFFICE
CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT
CEDD

Slope Maintenance Responsibility Report (DD185 393 B,RP DEMARCATION DISTRICT 185 LOT)	ESTATE MANAGEMENT SECTION LANDS DEPARTMENT

List of Slope Maintenance Responsibility Area(s)

1	**7SE-A/C304**		**Sub-Division**	Not Applicable
	Location	WITHIN DD185 LOT 393BRP		
	Responsible Lot/Party	DD185 LOT 393BRP	**Maintenance Agent**	Not Applicable
	Remarks	Slope information being reviewed.		
2	**7SE-A/CR289**		**Sub-Division**	1
	Location	Partly within DD185 Lots 393 S.B RP and 393 S.B ss2 and partly within Government land		
	Responsible Lot/Party	DD185 LOT393 S.B RP	**Maintenance Agent**	Not Applicable
	Remarks	Slope information being reviewed.		
3	**7SE-A/CR303**		**Sub-Division**	1
	Location	Within DD185 LOT 393 S.B RP and DD185 LOT 475 RP		
	Responsible Lot/Party	DD185 LOT 393 S.B RP	**Maintenance Agent**	Not Applicable
	Remarks	Not Applicable		
4	**7SE-A/R217**		**Sub-Division**	1
	Location	Within DD185 LOT 393 S.B RP and DD185 LOT 393 S.B ss.3		
	Responsible Lot/Party	DD185 LOT 393 S.B RP	**Maintenance Agent**	Not Applicable
	Remarks	Not Applicable		

- End of Report -

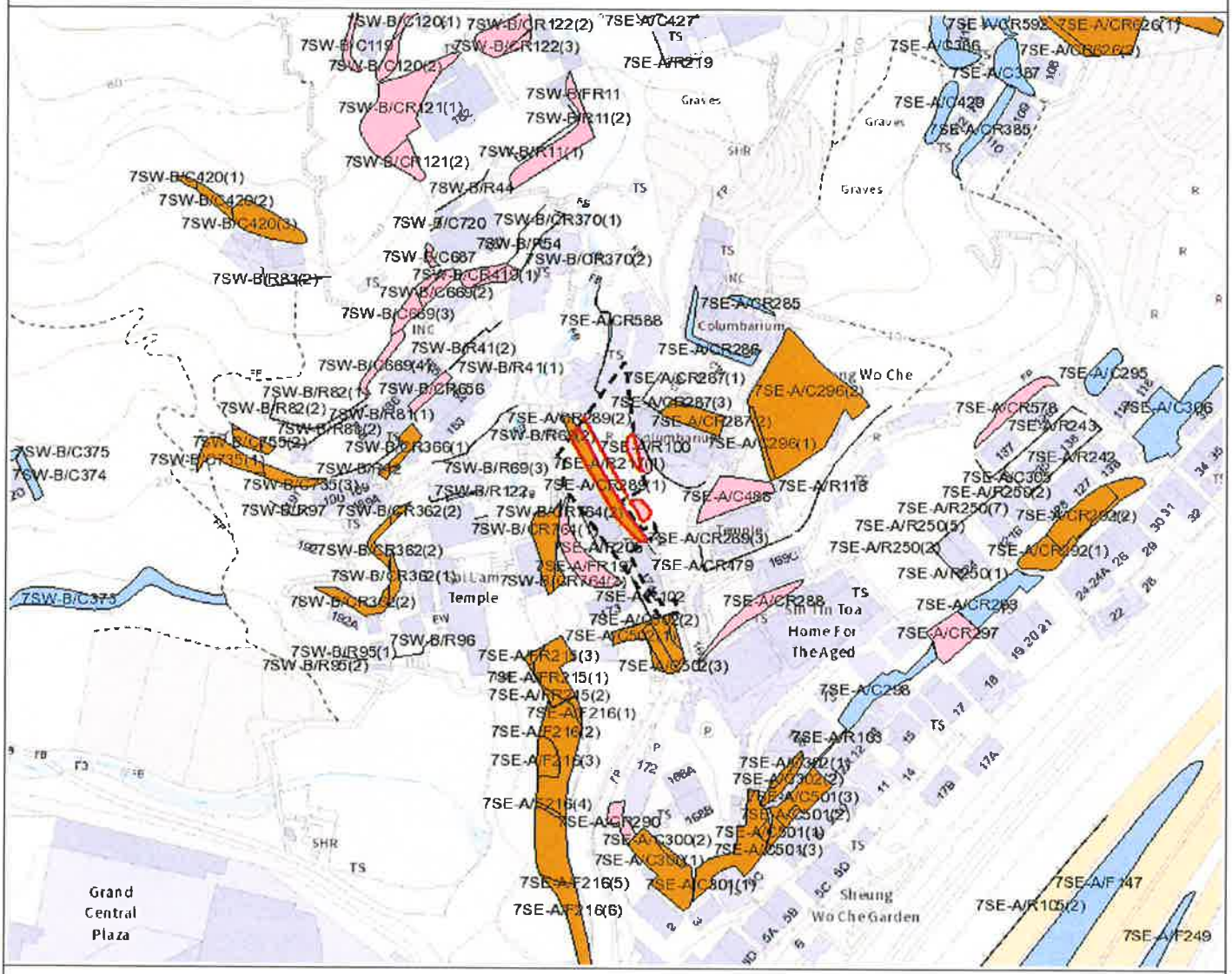
Notes:

(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.

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: 27/10/2020

Slope Maintenance Responsibility Report (DD185 Lot 296)	ESTATE MANAGEMENT SECTION LANDS DEPARTMENT

List of Slope Maintenance Responsibility Area(s)

1	**7SW-B/CR362**		**Sub-Division**	1
	Location	Partly within DD185 LOT 296 and partly on unallocated Government land		
	Responsible Lot/Party	DD185 LOT 296	**Maintenance Agent**	Not Applicable
	Remarks	Not Applicable		
2	**7SW-B/R102**		**Sub-Division**	Not Applicable
	Location	WITHIN STTL249 & ADJOINING GOVERNMENT LAND SUPPORTING THE LOT		
	Responsible Lot/Party	DD185 LOT296	**Maintenance Agent**	Not Applicable
	Remarks	Not Applicable		
3	**7SW-B/R96**		**Sub-Division**	Not Applicable
	Location	WITHIN SOUTH PORTION OF DD185 LOT296		
	Responsible Lot/Party	DD185 LOT296	**Maintenance Agent**	Not Applicable
	Remarks	Not Applicable		

- End of Report -

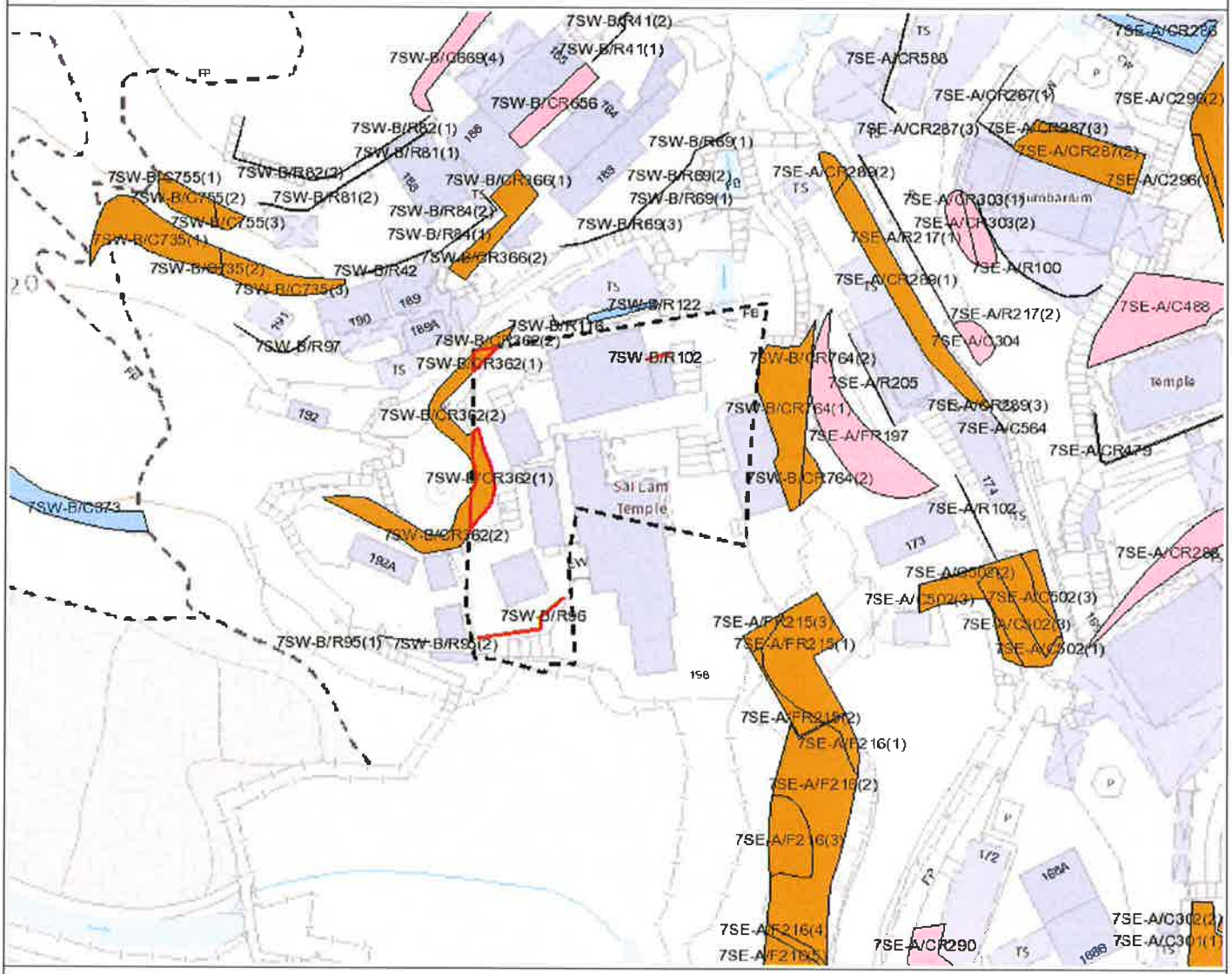
Notes:

(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.

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: 27/10/2020

Slope Maintenance Responsibility Report (DD185 Lot 331)	ESTATE MANAGEMENT SECTION LANDS DEPARTMENT

List of Slope Maintenance Responsibility Area(s)

1	**7SE-A/C502**		**Sub-Division**	2
	Location	Partly within DD185 LOT66 RP and LOT331 RP and partly on unallocated Government land		
	Responsible Lot/Party	DD185 LOT331 RP	**Maintenance Agent**	Not Applicable
	Remarks	Not Applicable		
2	**7SE-A/FR197**		**Sub-Division**	Not Applicable
	Location	WITHIN DD185 LOT331RP		
	Responsible Lot/Party	DD185 LOT331RP	**Maintenance Agent**	Not Applicable
	Remarks	Not Applicable		
3	**7SE-A/R102**		**Sub-Division**	Not Applicable
	Location	WITHIN DD185 LOT331RP SE OF THE LOT		
	Responsible Lot/Party	DD185 Lot331RP	**Maintenance Agent**	Not Applicable
	Remarks	Not Applicable		
4	**7SE-A/R205**		**Sub-Division**	Not Applicable
	Location	WITHIN DD185 LOT331RP		
	Responsible Lot/Party	DD185 Lot331RP	**Maintenance Agent**	Not Applicable
	Remarks	Not Applicable		
5	**7SW-B/CR764**		**Sub-Division**	2
	Location	MAINLY ON UNALLOCATED GOVERNMENT LAND AND WITH A SMALL PORTION WITHIN DD185 LOT 331RP		
	Responsible Lot/Party	DD185 LOT 331RP	**Maintenance Agent**	Not Applicable
	Remarks	Not Applicable		

- End of Report -

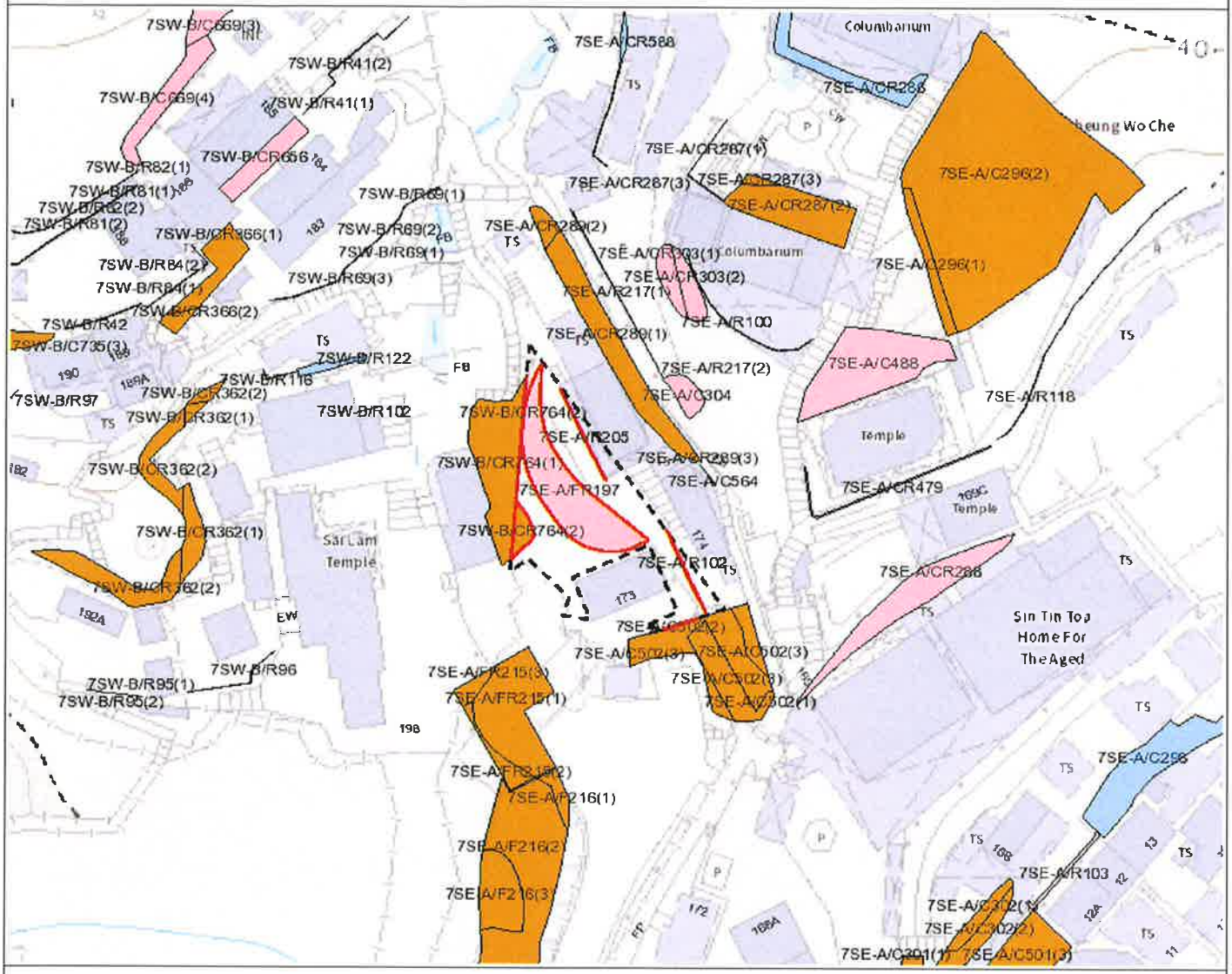
Notes:

(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.

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: 27/10/2020

BASIC INFORMATION

Location:	East Side of Sam Yuen Kwon Temple, Sheung Wo Che, Shatin
Registration Date:	25-02-1998
Ranking Score (NPRS):	0 (EI)
Date of Construction/ Modification:	Pre-1977
Data Source:	Project Office
Approximate Coordinates:	Easting : 837505 Northing : 827525

CONSEQUENCE-TO-LIFE CATEGORY

Facility at Crest:	Road/footpath with low traffic density
Distance of Facility from Crest (m):	0
Facility at Toe:	Temple
Distance of Facility from Toe (m):	0
Consequence-to-life Category:	1
Remarks:	N/A

SLOPE PART

(4) Max. Height (m): 4.7 Length (m): 43 Average Angle (deg): 65

WALL PART

(4) Max. Height (m): 4.7 Length (m): 3 Face Angle (deg): 70

MAINTENANCE RESPONSIBILITY

(1) Sub Div.: 1 Mixed Feature Party: DD185 LOT393 S.B RP Agent: N/A Land Cat.: 1 Reason Code: 1 MR Endorsement Date: 25-07-2017
(2) Sub Div.: 2 Mixed Feature Party: Lands D Agent: Lands D Land Cat.: 5b(vi) Reason Code: 62 MR Endorsement Date: 25-07-2017
(3) Sub Div.: 3 Mixed Feature Party: DD185 LOT393 S.B ss.2 Agent: N/A Land Cat.: 1 Reason Code: 1 MR Endorsement Date: 25-07-2017

DETAILS OF SLOPE / RETAINING WALL

Date of Inspection: 14-12-2012
Data Source: Project Office
Slope Part Drainage: (1) Position: Downpipe Size(mm): 100
(2) Position: Toe Size(mm): 225

Wall Part Drainage: N/A

SLOPE PART

Slope Part (1)
Surface Protection (%): Bare: 0 Vegetated: 0 Chunam: 0 Shotcrete: 100 Other Cover: 0
Material Description: Material type: Soil Geology: N/A
Berm: No. of Berms: N/A Min. Berm Width (m): N/A
Weepholes: Size (mm): 50 Spacing (m): 1.5

WALL PART

Wall Part (1)
Type of Wall: Wall Material: Concrete Wall Location: Retaining wall with level platform
Berm: No. of Berms: N/A Min. Berm Width (m): N/A
Weepholes: Size (mm): 75 Spacing (m): 1.5

SERVICES

(1) Utilities Type: Sewer/Drain Size(mm): 100 Location: On slope Remark: N/A
(2) Utilities Type: Water Main Size(mm): 50 Location: On slope Remark: N/A
(3) Utilities Type: Water Main Size(mm): 50 Location: Crest Remark: N/A

CHECKING STATUS INFORMATION

Tagmark: SCS_11212 Part: 1 Checking Status: Feature modified/upgraded to current standard
Tagmark: SCS_15900 Part: 0 Checking Status: Feature modified/upgraded to current standard

BACKGROUND INFORMATION

GIU Cell Ref.:	7SE11A1
Map Sheet Reference (1:1000):	7SE-11A
Aerial Photos:	10825 (1995), 10826 (1995)
Nearest Rainguage Station (Station Number):	Shun Wo House, Wo Che Estate(N02)
Data Collected On:	14-12-2012
Date of Construction, Subsequent Modification and Demolition:	Modification: Constructed Before: 1963 After: N/A Modification: Modified Before: 1973 After: 1964
Related Reports/Files or Documents:	N/A
Remarks:	N/A
Follow Up Actions:	N/A

DH-Order (To Be Confirmed with Buildings Department):
Date of Recommendation to BD: 29/03/2001 File Reference: DH/0046/01/NT
Date Served by BD: 30/09/2002 Notice No.: DH080/NT/02/C
Date of Recommendation to BD: 29/03/2001 File Reference: DH/0046/01/NT
Date Served by BD: 30/09/2002 Notice No.: DH081/NT/02/C
Date of Recommendation to BD: 29/03/2001 File Reference: DH/0046/01/NT
Date Served by BD: 30/09/2002 Notice No.: DH080/NT/02/C

Advisory Letter (To Be Confirmed with Buildings Department): None

LPMIS: Agreement No.: CE79/97 Report No.: S2R 82/2000

ENHANCED MAINTENANCE INFORMATION

From Maintenance Department: (Last Updated Date: 15/09/2020)
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: 22-09-2011

STAGE 1 STUDY REPORT

Inspected On: 04-03-1997
Weather: Mainly Fine
District: ME

Section No: 1-1
Height(m): H1 : 4 , H2 : 0
Type of Toe Facility: Temple

Distance from Toe(m): 0
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: N/A

Distance from Toe(m): 0
Type of Crest Facility: N/A

Distance from Crest(m): 0
Consequence Category: 1
Engineering Judgement: P

Sign of Seepage:	Slope : No signs of seepage Wall : N/A
Criterion A satisfied:	N
Sign of Distress:	Slope : Minor (near crest, mid-portion, at toe) Wall : N/A
Criterion D satisfied:	N
Non-routine maintenance required:	N
Note:	N/A
Masonry wall/Masonry facing:	Y
Note:	Random rubble with pointing.
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

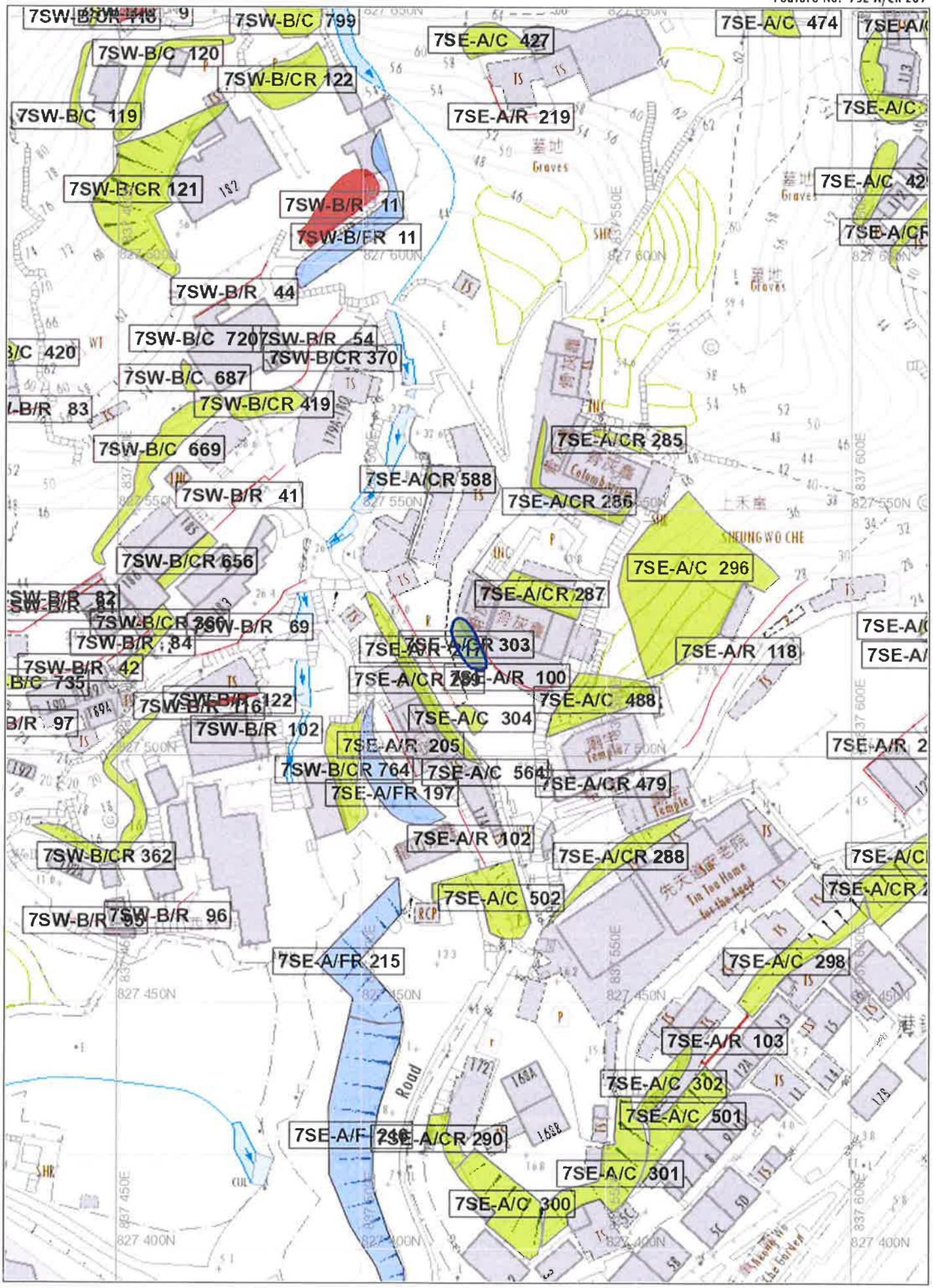
eLPMIS

LPM/LPMit Details Report
- LPM Study Feature No.: 7SE-A/C 289
- Location: East side of Sam Yuen Kwon Temple, Sgeung Wo Che, Shatin
- District Council: Sha Tin
- Maintenance Responsibility (At the Time of Selection): Private
- Responsible Party for Maintenance of Government Portion: N/A
- Private Lot No.: DD185LOT393B

LPM/LPMit Study
- Agreement No.: CE79/97
- Study Type: Stage 2 Study
- Consultant: C M Wong & Associates Ltd.
- GEO Managing Section / Engineer: SS / SS1
- Study Status: Study completed
- Design Approach: Otherwise
- Option Assessment Accepted: N/A
- Study Report No.: S2R 82/2000
- Programme / Actual Commencement: 01-06-1998
- Programme / Actual Completion: 30-11-2000
- Report Recommendation (For Stage 2 Study): DH Order
- District Check Status: Exempted from checking
- Checking Certificate No.: N/A
- GEO Engineer's Remarks: #

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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7SW-B/R 84
7SE-A/R 303
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7SW-B/R 42
7SE-A/R 100
7SE-A/C 488
7SW-B/R 122
7SW-B/R 116
7SE-A/C 304
7SW-B/R 102
7SE-A/R 205
7SW-B/CR 764
7SE-A/C 564
7SE-A/CR 479
7SE-A/FR 197
7SE-A/R 102
7SW-B/CR 362
7SE-A/CR 288
7SE-A/C 502
7SW-B/R 96
7SE-A/FR 215
7SE-A/C 298
7SE-A/R 103
7SE-A/C 302
7SE-A/C 501
7SE-A/CR 290
7SE-A/C 301
7SE-A/C 300
Road
Graves
SHEUNG WO CHE

BASIC INFORMATION

Location:	Sheung Wo Che Village, Shatin, N. T. - Lot 393 s.B in DD185
Registration Date:	25-02-1998
Ranking Score (NPRS):	0 (Notional)
Date of Construction/ Modification:	Pre-1977
Data Source:	AP
Approximate Coordinates:	Easting : 837520 Northing : 827523

CONSEQUENCE-TO-LIFE CATEGORY

Facility at Crest:	Monastery
Distance of Facility from Crest (m):	0.9
Facility at Toe:	Cottage, licensed and squatter area
Distance of Facility from Toe (m):	0.1
Consequence-to-life Category:	1
Remarks:	N/A

SLOPE PART

(1) Max. Height (m): 3 Length (m): 21.6 Average Angle (deg): 40

WALL PART

(1) Max. Height (m): 3.2 Length (m): 21.6 Face Angle (deg): 89

MAINTENANCE RESPONSIBILITY

(1) Sub Div.: 1 Private Feature Party: DD185 LOT 393 S.B RP Agent: N/A Land Cat.: 1 Reason Code: 1 MR Endorsement Date: 03-01-2019
(2) Sub Div.: 2 Private Feature Party: DD185 LOT 475 RP Agent: N/A Land Cat.: 1 Reason Code: 1 MR Endorsement Date: 03-01-2019

DETAILS OF SLOPE / RETAINING WALL

Date of Inspection: 30-04-2010
Data Source: AP
Slope Part Drainage: (1) Position: Toe Size(mm): 225

Wall Part Drainage: (1) Position: Crest Size(mm): 225
(2) Position: Downpipe Size(mm): 225
(3) Position: Toe Size(mm): 225

SLOPE PART

Slope Part (1)
Surface Protection (%): Bare: 0 Vegetated: 100 Chunam: 0 Shotcrete: 0 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): N/A Spacing (m): N/A

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

N/A

CHECKING STATUS INFORMATION

Tagmark: SCS_11211 Part: 1 Checking Status: Feature modified/upgraded to current standard
Tagmark: SCS_2040 Part: 1 Checking Status: Feature modified/upgraded to current standard

BACKGROUND INFORMATION

GIU Cell Ref.:	7SE11A1
Map Sheet Reference (1:1000):	7SE-11A
Aerial Photos:	CN10825 (1995), CN10826 (1995)
Nearest Rainguage Station (Station Number):	Shun Wo House, Wo Che Estate(N02)
Data Collected On:	30-04-2010
Date of Construction, Subsequent Modification and Demolition:	Modification: Constructed Before: 1973 After: 1964
Related Reports/Files or Documents:	N/A
Remarks:	N/A
Follow Up Actions:	N/A

DH-Order (To Be Confirmed with Buildings Department):

Date of Recommendation to BD: 29/03/2001 File Reference: DH/0045/01/NT
Date Served by BD: 30/09/2002 Notice No.: DH084/NT/02/C
Date of Recommendation to BD: 29/03/2001 File Reference: DH/0045/01/NT
Date Served by BD: 30/09/2002 Notice No.: DH83/NT/02/C
Date of Recommendation to BD: 29/03/2001 File Reference: DH/0045/01/NT
Date Served by BD: 30/09/2002 Notice No.: DH084/NT/02/C
Date of Recommendation to BD: 29/03/2001 File Reference: DH/0046/01/NT
Date Served by BD: 30/09/2002 Notice No.: DH081/NT/02/C
Date of Recommendation to BD: 29/03/2001 File Reference: DH/0046/01/NT
Date Served by BD: 30/09/2002 Notice No.: DH080/NT/02/C
Date of Recommendation to BD: 29/03/2001 File Reference: DH/0046/01/NT
Date Served by BD: 30/09/2002 Notice No.: DH081/NT/02/C

Advisory Letter (To Be Confirmed with Buildings Department): None

LPMIS: Agreement No.: CE79/97 Report No.: S2R82/2000

ENHANCED MAINTENANCE INFORMATION

From Maintenance Department: (Last Updated Date: 15/09/2020)

STAGE 1 STUDY REPORT

Inspected On: 05-03-1997
Weather: Mainly Fine
District: ME

Section No: 1-1
Height(m): H1 : 3 , H2 : 0
Type of Toe Facility: Cottage, licensed and squatter area

Distance from Toe(m): 0.1
Type of Crest Facility: Monastery

Distance from Crest(m): 0.9
Consequence Category: 1
Engineering Judgement: U

Section No: 2-2
Type of Toe Facility: N/A

Distance from Toe(m): 0
Type of Crest Facility: N/A

Distance from Crest(m): 0
Consequence Category: 1
Engineering Judgement: U

Sign of Seepage:	Slope : No signs of seepage Wall : N/A
Criterion A satisfied:	N
Sign of Distress:	Slope : N/A Wall : N/A
Criterion D satisfied:	N
Non-routine maintenance required:	N
Note:	N/A
Masonry wall/Masonry facing:	N
Note:	N/A
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:	N
Action By:	N/A

OTHER EXTERNAL ACTION

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

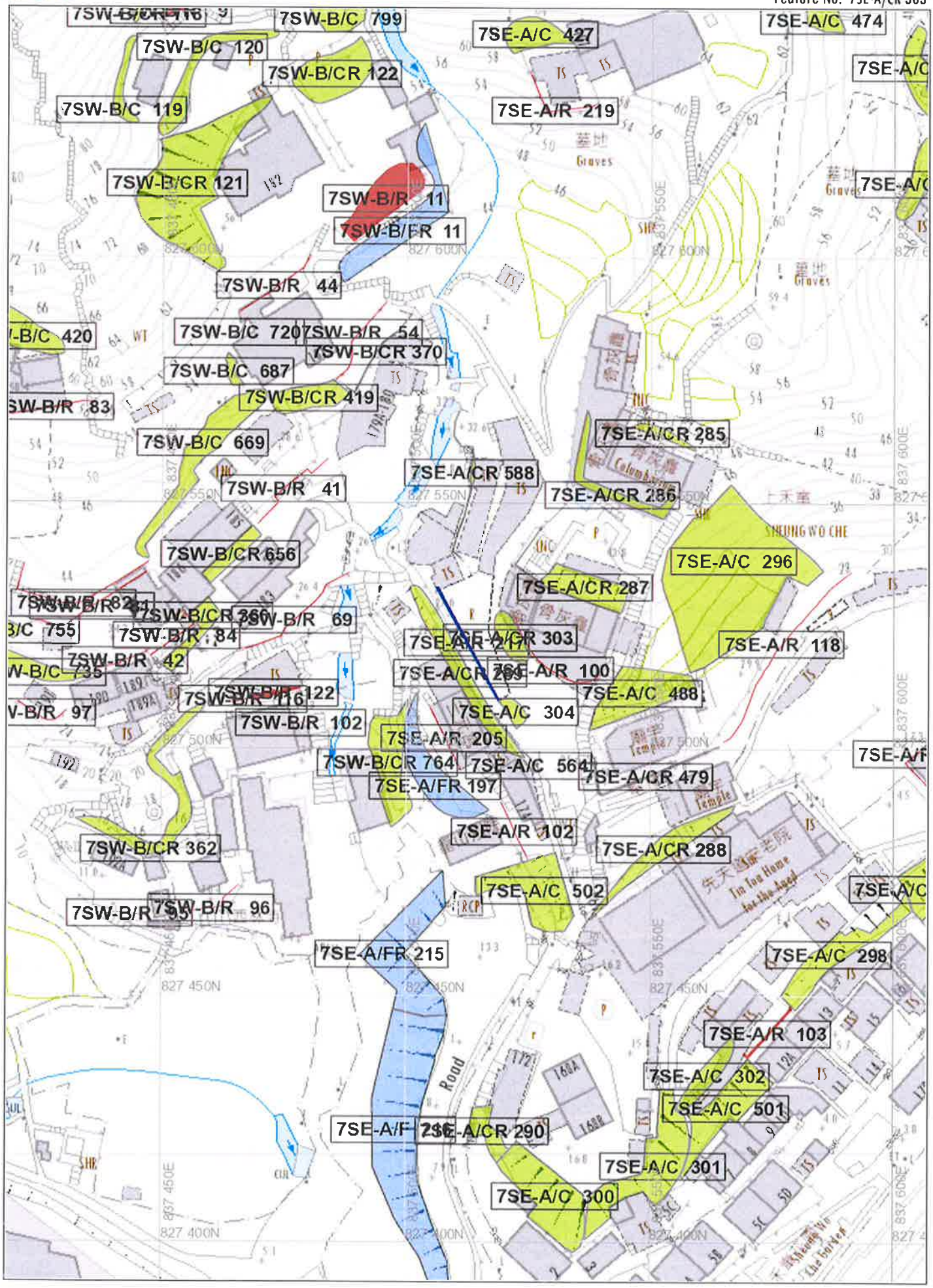
eLPMIS

LPM/LPMit Details Report
- LPM Study Feature No.: 7SE-A/CR 303
- Location: No.169 Sheung Wo Che Tsuen. (inside home for the aged)
- District Council: Sha Tin
- Maintenance Responsibility (At the Time of Selection): Private
- Responsible Party for Maintenance of Government Portion: N/A
- Private Lot No.: DD185LOT475RP

LPM/LPMit Study
- Agreement No.: CE79/97
- Study Type: Stage 2 Study
- Consultant: C M Wong & Associates Ltd.
- GEO Managing Section / Engineer: SS / SS1
- Study Status: Study completed
- Design Approach: Otherwise
- Option Assessment Accepted: N/A
- Study Report No.: S2R82/2000
- Programme / Actual Commencement: 01-06-1998
- Programme / Actual Completion: 30-11-2000
- Report Recommendation (For Stage 2 Study): DH Order
- District Check Status: Exempted from checking
- Checking Certificate No.: N/A
- GEO Engineer's Remarks: #

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-A/R 205
7SE-A/C 564
7SE-A/CR 479
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7SE-A/R 102
7SE-A/CR 288
7SE-A/C 502
7SE-A/FR 215
7SE-A/C 298
7SE-A/R 103
7SE-A/C 302
7SE-A/C 501
7SE-A/CR 290
7SE-A/C 301
7SE-A/C 300
7SE-A/C 474
Graves
Columbarium
SHEUNG WO CHE
Temple
Tin Tau Home for the Aged
Road

BASIC INFORMATION

Location:	EAST OF NO. 175, SHEUNG WO CHE VILLAGE, SHATIN, N.T.
Registration Date:	06-05-2003
Ranking Score (NPRS):	0 (LPMit)
Date of Construction/ Modification:	Pre-1977
Data Source:	LPM
Approximate Coordinates:	Easting : 837513 Northing : 827520

CONSEQUENCE-TO-LIFE CATEGORY

Facility at Crest:	Horticulture garden
Distance of Facility from Crest (m):	0
Facility at Toe:	Licensed and squatter area
Distance of Facility from Toe (m):	1.3
Consequence-to-life Category:	1
Remarks:	N/A

SLOPE PART

N/A

WALL PART

(3) Max. Height (m): 3.9 Length (m): 28 Face Angle (deg): 85

MAINTENANCE RESPONSIBILITY

(1) Sub Div.: 1 Private Feature Party: DD185 LOT 393 S.B RP Agent: N/A Land Cat.: 1 Reason Code: 1 MR Endorsement Date: 22-01-2019
(2) Sub Div.: 2 Private Feature Party: DD185 LOT 393 S.B ss.3 Agent: N/A Land Cat.: 1 Reason Code: 1 MR Endorsement Date: 22-01-2019

DETAILS OF SLOPE / RETAINING WALL

Date of Inspection: 16-04-2012
Data Source: LPM
Slope Part Drainage: N/A

Wall Part Drainage: N/A

SLOPE PART

N/A

WALL PART

Wall Part (1)
Type of Wall: Wall Material: Concrete 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

N/A

CHECKING STATUS INFORMATION

N/A

BACKGROUND INFORMATION

GIU Cell Ref.:	7SE11A1
Map Sheet Reference (1:1000):	7SE-11A
Aerial Photos:	19893-4 (1977),
Nearest Rainguage Station (Station Number):	Shun Wo House, Wo Che Estate(N02)
Data Collected On:	16-04-2012
Date of Construction, Subsequent Modification and Demolition:	Modification: Constructed Before: 1977 After: 0
Related Reports/Files or Documents:	File/Report: DLC/BC Ref. No.: GCME 9070/83 File/Report: DLC/BC Ref. No.: GCME 9070/83
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: 15/09/2020)

STAGE 1 STUDY REPORT

Inspected On: 11-10-2002
Weather: Mainly Fine
District: ME

Section No: 1-1
Height(m): H1 : 3 , H2 : 3
Type of Toe Facility: Licensed and squatter area

Distance from Toe(m): 1.3
Type of Crest Facility: Horticulture garden

Distance from Crest(m): 0
Consequence Category: 1
Engineering Judgement: HP

Section No: 2-2
Type of Toe Facility:

Distance from Toe(m):
Type of Crest Facility:

Distance from Crest(m):
Consequence Category: 1
Engineering Judgement: HP

Sign of Seepage:	Slope : N/A Wall : Signs of seepage
Criterion A satisfied:	N
Sign of Distress:	Slope : N/A Wall : Minimal(near crest, mid-portion)
Criterion D satisfied:	N
Non-routine maintenance required:	N
Note:	N/A
Masonry wall/Masonry facing:	Y
Note:	RANDOM RUBBLE WITH POINTING
Consequence category (for critical section):	1
Observations:	N/A
Emergency Action Required:	N
Action By:	N/A

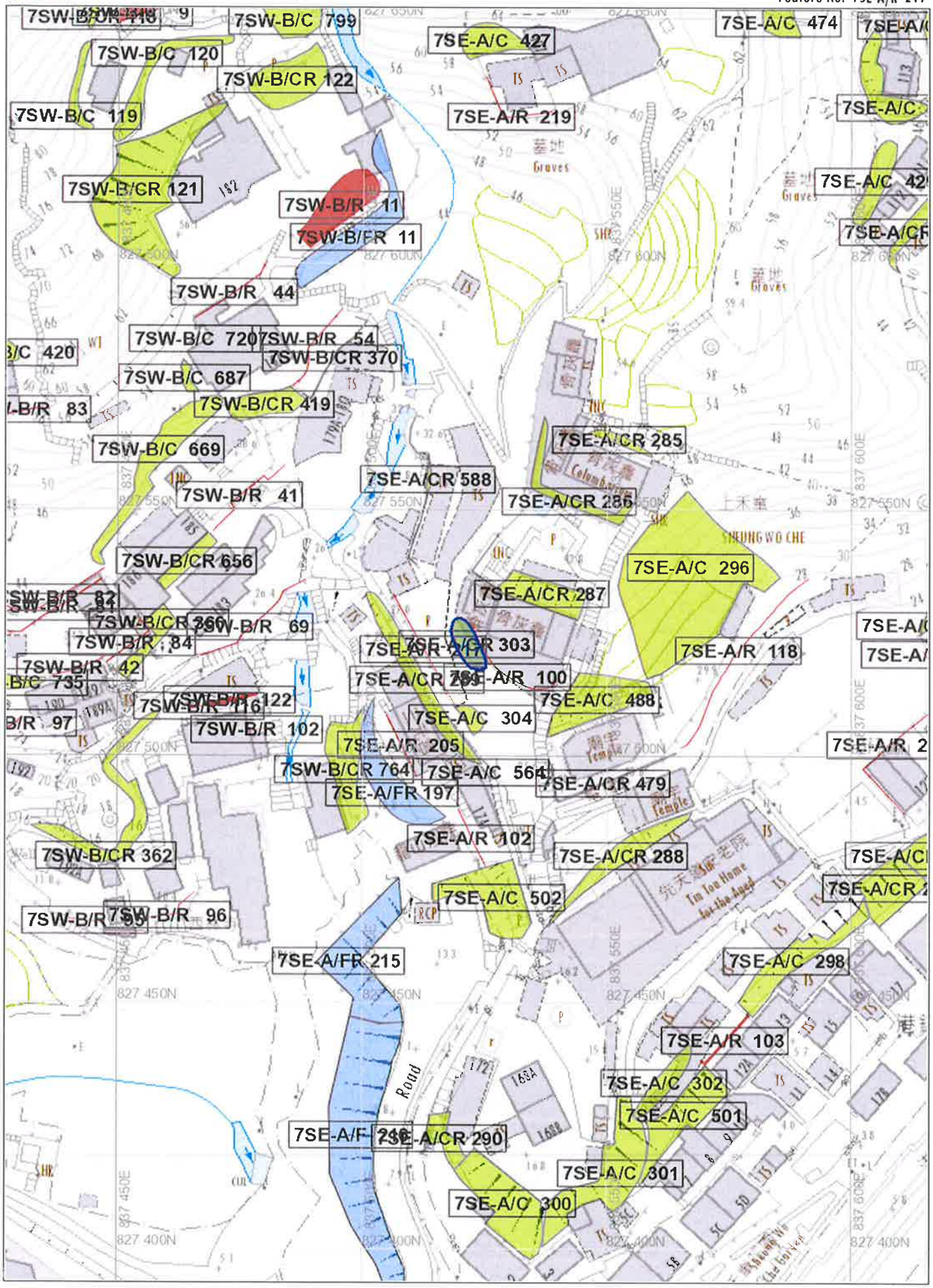
ACTION TO INITIATE PREVENTIVE WORKS

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

OTHER EXTERNAL ACTION

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

PHOTO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7SW-B/R 54
7SW-B/CR 370
7SW-B/C 687
7SW-B/CR 419
7SW-B/C 669
7SE-A/CR 285
7SE-A/CR 588
7SW-B/R 41
7SE-A/CR 286
7SW-B/CR 656
7SE-A/C 296
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7SW-B/R 102
7SE-A/C 304
7SE-A/R 205
7SW-B/CR 764
7SE-A/C 564
7SE-A/CR 479
7SE-A/FR 197
7SE-A/R 102
7SW-B/CR 362
7SE-A/CR 288
7SE-A/C 502
7SW-B/R 96
7SE-A/FR 215
7SE-A/C 298
7SE-A/R 103
7SE-A/C 302
7SE-A/C 501
7SE-A/CR 290
7SE-A/C 301
7SE-A/C 300
Road
Graves
SHEUNG WO CHE
Temple
Tin Ioe Home for the Aged

BASIC INFORMATION

Location:	WEST OF NO. 194 PAI TAU TSUEN, SHATIN, N.T.
Registration Date:	06-05-2003
Ranking Score (NPRS):	14 (LPMit)
Date of Construction/ Modification:	Pre-1977
Data Source:	LPM
Approximate Coordinates:	Easting : 837463 Northing : 827470

CONSEQUENCE-TO-LIFE CATEGORY

Facility at Crest:	Temple
Distance of Facility from Crest (m):	2.5
Facility at Toe:	Temple
Distance of Facility from Toe (m):	2.5
Consequence-to-life Category:	1
Remarks:	N/A

SLOPE PART

N/A

WALL PART

(1) Max. Height (m): 3.2 Length (m): 20 Face Angle (deg): 85

MAINTENANCE RESPONSIBILITY

(1) Sub Div.: 0 Private Feature Party: DD185 LOT296 Agent: N/A Land Cat.: 1 Reason Code: 1 MR Endorsement Date: 01-09-2004

DETAILS OF SLOPE / RETAINING WALL

Date of Inspection: 16-04-2012
Data Source: LPM
Slope Part Drainage: N/A

Wall Part Drainage: N/A

SLOPE PART

N/A

WALL PART

Wall Part (1)
Type of Wall: Wall Material: Masonry 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

N/A

CHECKING STATUS INFORMATION

Tagmark: SCS_7638 Part: 0 Checking Status: Others (See remarks)

BACKGROUND INFORMATION

GIU Cell Ref.: 7SW15B3
Map Sheet Reference (1:1000): 7SW-15B
Aerial Photos: 19893-4 (1977),

Nearest Rainguage Station (Station Number): Shun Wo House, Wo Che Estate(N02)

Data Collected On: 16-04-2012
Date of Construction, Subsequent Modification and Demolition: Modification: Constructed Before: 1977 After: 0

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: None

ENHANCED MAINTENANCE INFORMATION

From Maintenance Department: (Last Updated Date: 15/09/2020)

STAGE 1 STUDY REPORT

Inspected On: 11-10-2002
Weather: Mainly Fine
District: MW

Section No: 1-1
Height(m): H1 : 3 , H2 : 3
Type of Toe Facility: Temple

Distance from Toe(m): 2.5
Type of Crest Facility: Temple

Distance from Crest(m): 2.5
Consequence Category: 1
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: 1
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(near crest, mid-portion)
Criterion D satisfied:	N
Non-routine maintenance required:	N
Note:	N/A
Masonry wall/Masonry facing:	Y
Note:	DRESSED BLOCK WITH POINTING
Consequence category (for critical section):	1
Observations:	N/A
Emergency Action Required:	N
Action By:	N/A

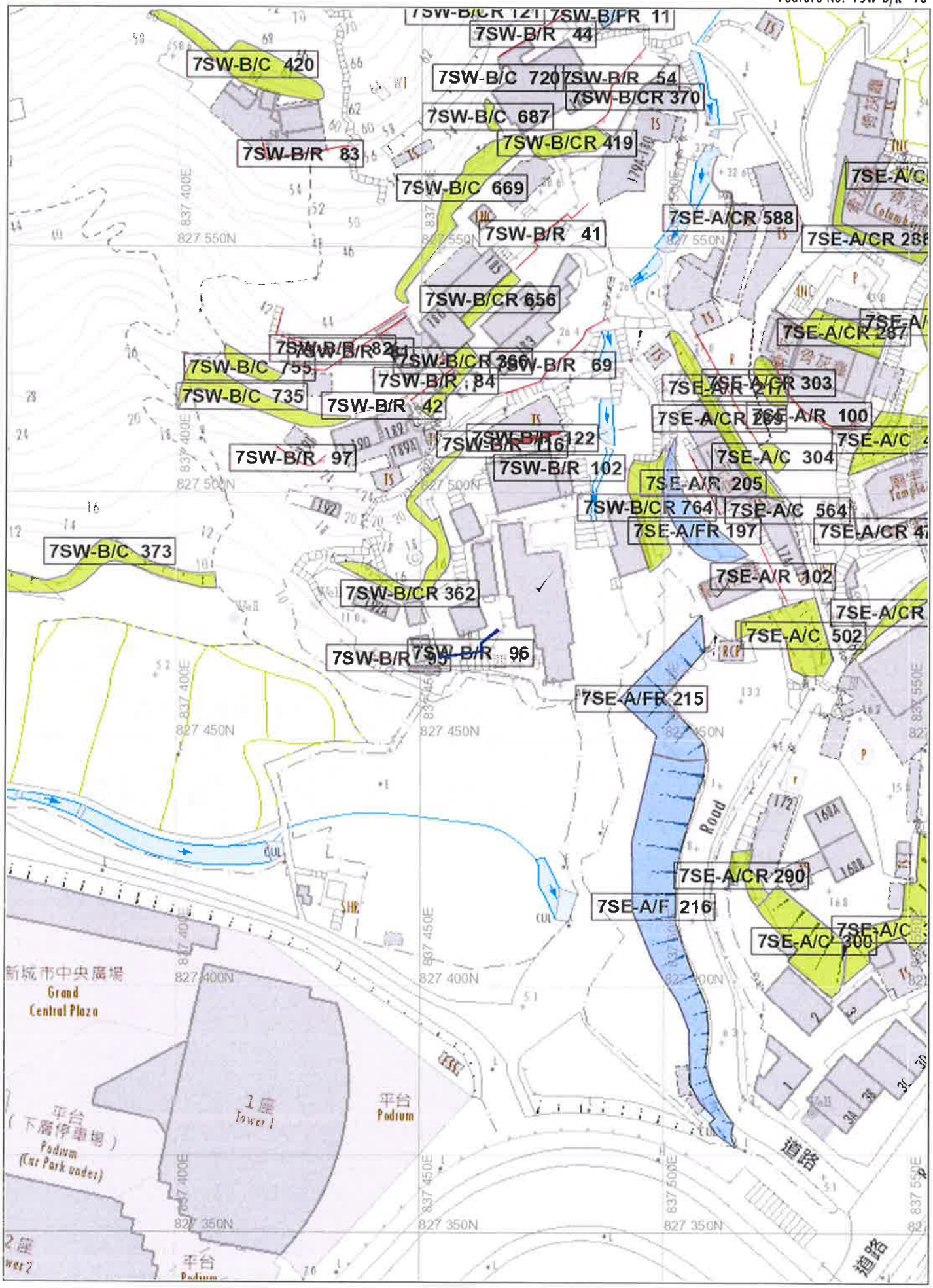
ACTION TO INITIATE PREVENTIVE WORKS

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

OTHER EXTERNAL ACTION

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

PHOTO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7SW-B/CR 370
7SW-B/C 687
7SW-B/CR 419
7SW-B/R 83
7SW-B/C 669
7SE-A/CR 588
7SW-B/R 41
7SW-B/CR 656
7SE-A/CR 287
7SW-B/C 755
7SW-B/CR 366
7SW-B/R 69
7SW-B/R 84
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7SW-B/R 42
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7SW-B/R 122
7SW-B/R 116
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7SE-A/C 304
7SW-B/R 102
7SE-A/R 205
7SW-B/CR 764
7SE-A/C 564
7SE-A/FR 197
7SW-B/C 373
7SE-A/R 102
7SW-B/CR 362
7SE-A/C 502
7SW-B/R 96
7SE-A/FR 215
7SE-A/CR 290
7SE-A/F 216
7SE-A/C 300
Road
Grand Central Plaza
Podium
Tower 1
Podium
Podium (Car Park under)
Tower 2
Podium
827 550N
827 500N
827 450N
827 400N
827 350N
837 400E
837 450E
837 500E
837 550E

BASIC INFORMATION

Location:	Sheung Wo Che Village, Sha Tin.
Registration Date:	19-11-1997
Ranking Score (NPRS):	327 (EI)
Date of Construction/ Modification:	Pre-1977
Data Source:	LPM
Approximate Coordinates:	Easting : 837452 Northing : 827483

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):	1
Consequence-to-life Category:	1
Remarks:	N/A

SLOPE PART

(2) Max. Height (m): 3.5 Length (m): 15 Average Angle (deg): 55

WALL PART

(2) Max. Height (m): 3.5 Length (m): 15 Face Angle (deg): 90

MAINTENANCE RESPONSIBILITY

(1) Sub Div.: 1 Mixed Feature Party: DD185 LOT 296 Agent: N/A Land Cat.: 1 Reason Code: 1 MR Endorsement Date: 15-08-2018
(2) Sub Div.: 2 Mixed Feature Party: Lands D Agent: Lands D Land Cat.: 5b(vi) Reason Code: 62 MR Endorsement Date: 15-08-2018

DETAILS OF SLOPE / RETAINING WALL

Date of Inspection: 21-12-2016
Data Source: LPM
Slope Part Drainage: (1) Position: Toe Size(mm): 300

Wall Part Drainage: N/A

SLOPE PART

Slope Part (1)
Surface Protection (%): Bare: 0 Vegetated: 100 Chunam: 0 Shotcrete: 0 Other Cover: 0
Material Description: Material type: Soil Geology: N/A
Berm: No. of Berms: N/A Min. Berm Width (m): N/A
Weepholes: Size (mm): N/A Spacing (m): N/A

WALL PART

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): N/A Spacing (m): N/A

SERVICES

(1) Utilities Type: Water Main Size(mm): 30 Location: On slope Remark: N/A

CHECKING STATUS INFORMATION

Tagmark: SCS_7637 Part: 0 Checking Status: Others (See remarks)
Tagmark: SCS_17201 Part: 0 Checking Status: Feature to be upgraded by prescriptive measures and GEO Checking being waived

BACKGROUND INFORMATION

GIU Cell Ref.:	7SW15B3
Map Sheet Reference (1:1000):	7SW-15B
Aerial Photos:	Y12441-2 (1964),
Nearest Rainguage Station (Station Number):	Shun Wo House, Wo Che Estate(N02)
Data Collected On:	21-12-2016
Date of Construction, Subsequent Modification and Demolition:	Modification: Constructed Before: 1963 After: 1949
Related Reports/Files or Documents:	File/Report: Development Ref. No.: GCMd 2/B3/68 File/Report: Development Ref. No.: GCMd 2/B3/68
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): Date of Recommendation to BD: N/A File Reference: N/A
Date Served by BD: 14/06/2019

LPMIS: None

ENHANCED MAINTENANCE INFORMATION

From Maintenance Department: (Last Updated Date: 15/09/2020)

STAGE 1 STUDY REPORT

Inspected On: 17-03-1997
Weather: Some Rain
District: ME

Section No: 1-1
Height(m): H1 : 4 , H2 : 0
Type of Toe Facility: Cottage, licensed and squatter area

Distance from Toe(m): 1
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: N/A

Distance from Toe(m): 0
Type of Crest Facility: N/A

Distance from Crest(m): 0
Consequence Category: 1
Engineering Judgement: P

Sign of Seepage:	Slope : No signs of seepage Wall : N/A
Criterion A satisfied:	N
Sign of Distress:	Slope : Reasonable (near crest, mid-portion, at toe) Wall : N/A
Criterion D satisfied:	N
Non-routine maintenance required:	N
Note:	N/A
Masonry wall/Masonry facing:	N
Note:	N/A
Consequence category (for critical section):	1
Observations:	N/A
Emergency Action Required:	N
Action By:	N/A

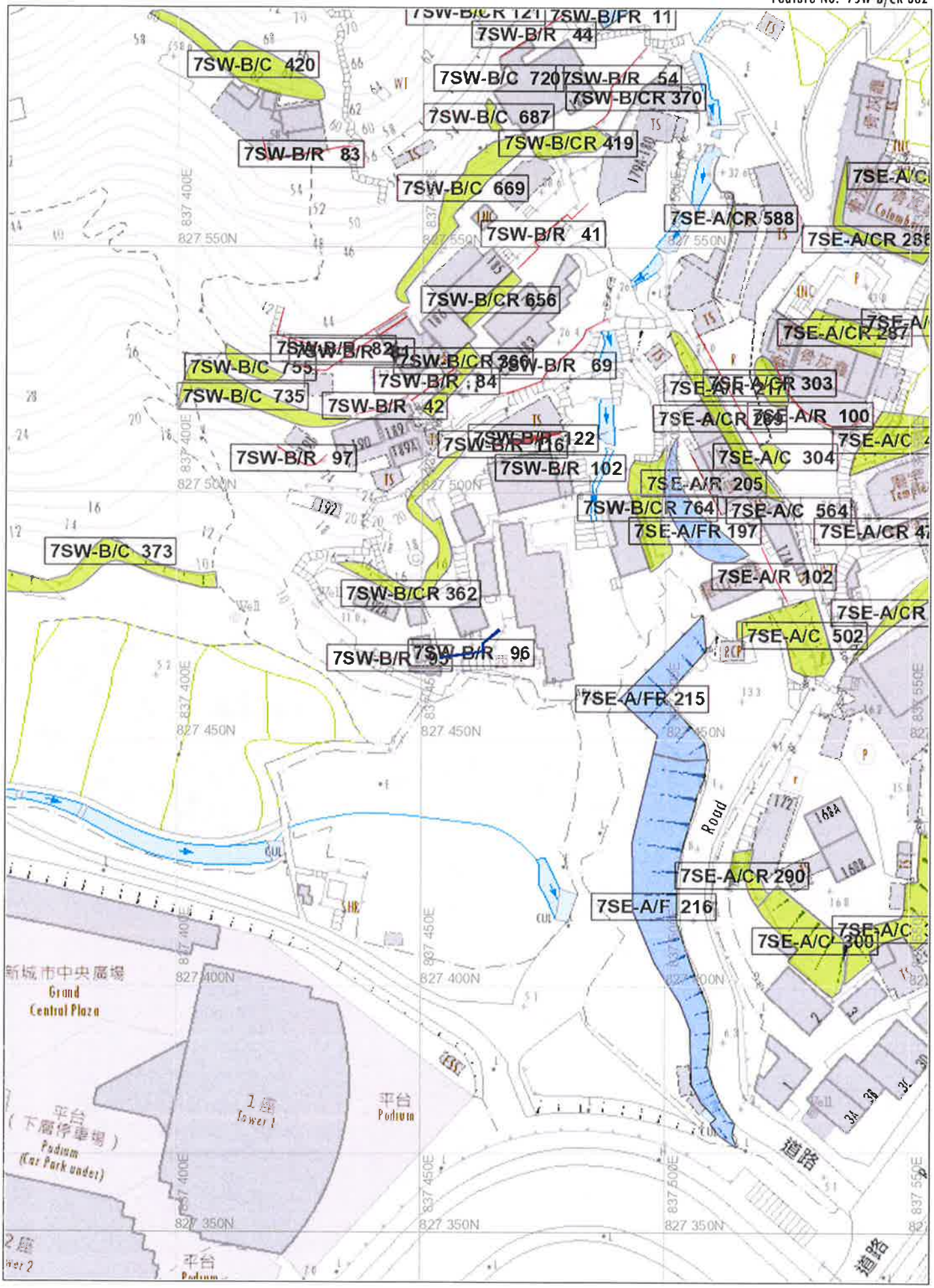
ACTION TO INITIATE PREVENTIVE WORKS

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

PHOTO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7SW-B/C 720
7SW-B/R 54
7SW-B/CR 370
7SW-B/C 687
7SW-B/CR 419
7SW-B/R 83
7SW-B/C 669
7SE-A/CR 588
7SW-B/R 41
7SW-B/CR 656
7SE-A/CR 287
7SW-B/C 755
7SW-B/CR 366
7SW-B/R 69
7SW-B/R 84
7SE-A/CR 303
7SW-B/C 735
7SW-B/R 42
7SE-A/R 100
7SW-B/R 97
7SW-B/R 116
7SE-A/C 304
7SW-B/R 102
7SE-A/R 205
7SW-B/CR 764
7SE-A/C 564
7SE-A/FR 197
7SW-B/C 373
7SE-A/R 102
7SW-B/CR 362
7SE-A/C 502
7SW-B/R 96
7SE-A/FR 215
7SE-A/CR 290
7SE-A/F 216
7SE-A/C 300
Road
Grand Central Plaza
Podium
Podium (Car Park under)
Tower 1
Tower 2
道路

BASIC INFORMATION

Location:	18M, NORTH OF NO.194, SHEUNG WO CHE TSUEN, SHATIN
Registration Date:	03-06-2003
Ranking Score (NPRS):	5 (LPMit)
Date of Construction/ Modification:	Pre-1977
Data Source:	Agreement CE 60/2002 (GE)
Approximate Coordinates:	Easting : 837489 Northing : 827505

CONSEQUENCE-TO-LIFE CATEGORY

Facility at Crest:	Densely-used open area/facilities
Distance of Facility from Crest (m):	0
Facility at Toe:	Temple
Distance of Facility from Toe (m):	0
Consequence-to-life Category:	1
Remarks:	N/A

SLOPE PART

N/A

WALL PART

(3) Max. Height (m): 3 Length (m): 4 Face Angle (deg): 90

MAINTENANCE RESPONSIBILITY

(1) Sub Div.: 0 Private Feature Party: DD185 LOT296 Agent: N/A Land Cat.: 1 Reason Code: 1 MR Endorsement Date: 14-10-2003

DETAILS OF SLOPE / RETAINING WALL

Date of Inspection: 19-11-2002
Data Source: Agreement CE 60/2002 (GE)
Slope Part Drainage: N/A

Wall Part Drainage: N/A

SLOPE PART

N/A

WALL PART

Wall Part (1)
Type of Wall: Wall Material: Concrete 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): 0 Location: On crest Remark: Size cannot be determined
(2) Utilities Type: Water Main Size(mm): 20 Location: On crest Remark: N/A

CHECKING STATUS INFORMATION

Tagmark: SCS_7639 Part: 0 Checking Status: Others (See remarks)

BACKGROUND INFORMATION

GIU Cell Ref.:	7SW15B3
Map Sheet Reference (1:1000):	7SW-15B
Aerial Photos:	Y12441-2 (1964),
Nearest Rainguage Station (Station Number):	Shun Wo House, Wo Che Estate(N02)
Data Collected On:	19-11-2002
Date of Construction, Subsequent Modification and Demolition:	Modification: Constructed Before: 1964 After: 0
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: None

ENHANCED MAINTENANCE INFORMATION

From Maintenance Department: (Last Updated Date: 15/09/2020)

STAGE 1 STUDY REPORT

Inspected On: 19-11-2002
Weather: Mainly Fine
District: MW

Section No: 1-1
Height(m): H1 : 3 , H2 : 3
Type of Toe Facility: Temple

Distance from Toe(m): 0
Type of Crest Facility: Densely-used open area/facilities

Distance from Crest(m): 0
Consequence Category: 1
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: 1
Engineering Judgement: P

Sign of Seepage:	Slope : N/A Wall : Signs of seepage
Criterion A satisfied:	N
Sign of Distress:	Slope : N/A Wall : N/A
Criterion D satisfied:	N
Non-routine maintenance required:	N
Note:	N/A
Masonry wall/Masonry facing:	N
Note:	N/A
Consequence category (for critical section):	1
Observations:	N/A
Emergency Action Required:	N
Action By:	N/A

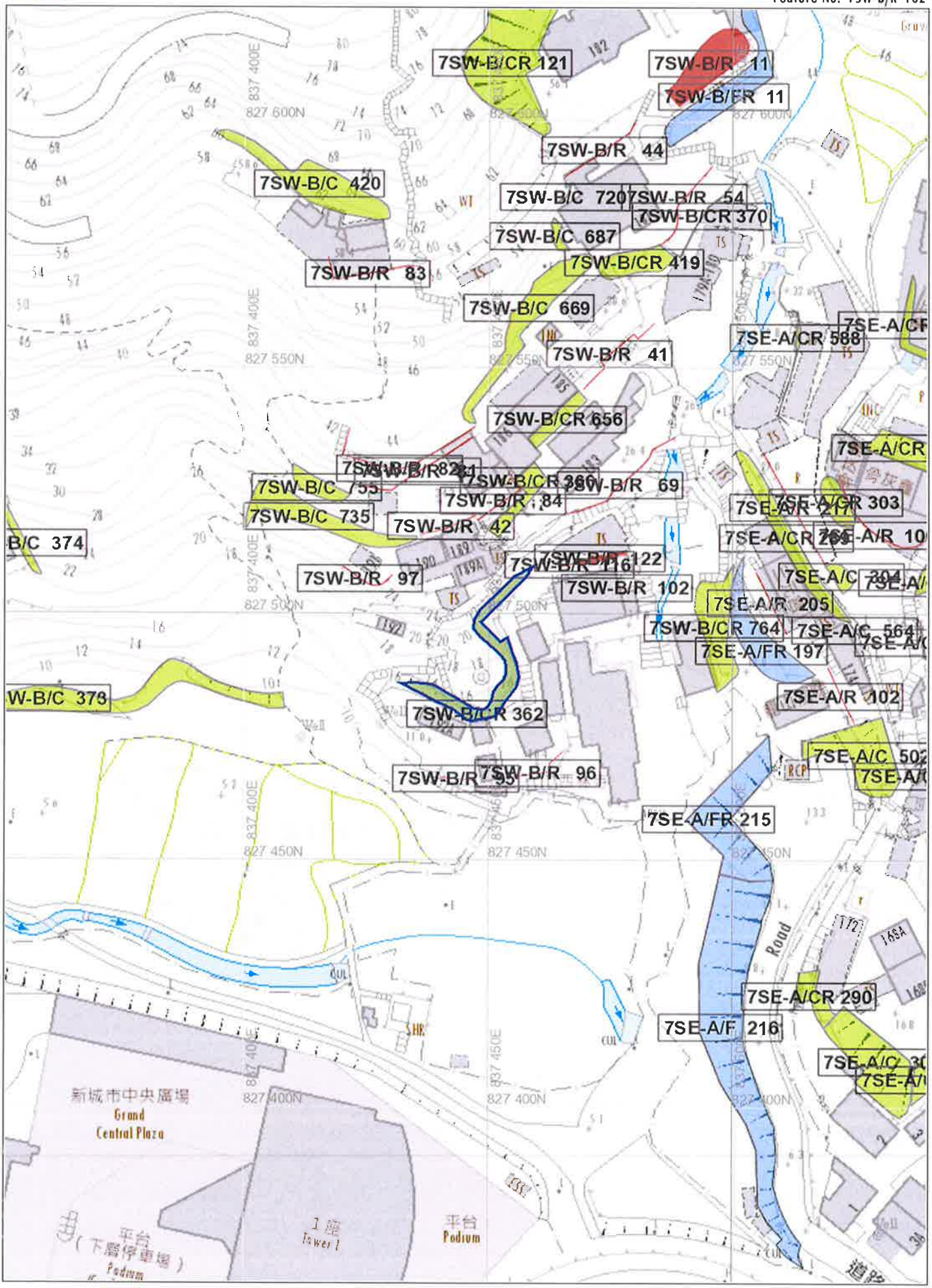
ACTION TO INITIATE PREVENTIVE WORKS

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

OTHER EXTERNAL ACTION

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

PHOTO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7SW-B/R 11
7SW-B/FR 11
7SW-B/R 44
7SW-B/C 420
7SW-B/C 720
7SW-B/R 54
7SW-B/CR 370
7SW-B/C 687
7SW-B/CR 419
7SW-B/R 83
7SW-B/C 669
7SE-A/CR 588
7SW-B/R 41
7SW-B/CR 656
7SE-A/CR
7SW-B/R 69
7SW-B/C 755
7SW-B/R 84
7SE-A/CR 303
7SW-B/C 735
7SW-B/R 42
7SE-A/CR 217
B/C 374
7SW-B/R 122
7SW-B/R 116
7SW-B/R 97
7SW-B/R 102
7SE-A/R 205
7SW-B/CR 764
7SE-A/C 564
7SE-A/FR 197
W-B/C 378
7SE-A/R 102
7SW-B/CR 362
7SW-B/R 96
7SW-B/R 55
7SE-A/FR 215
7SE-A/CR 290
7SE-A/F 216
827 600N
827 550N
827 500N
827 450N
827 400N
837 400E
837 450E
新城市中央廣場
Grand
Central Plaza
平台
Podium
Tower 1
Road

BASIC INFORMATION

Location:	North-west of House No. 174, Sheung Wo Che, Shatin
Registration Date:	13-12-1999
Ranking Score (NPRS):	1 (LPMit)
Date of Construction/ Modification:	Pre-1977
Data Source:	LPM
Approximate Coordinates:	Easting : 837508 Northing : 827501

CONSEQUENCE-TO-LIFE CATEGORY

Facility at Crest:	Temple
Distance of Facility from Crest (m):	1.5
Facility at Toe:	Road/footpath with very low traffic density
Distance of Facility from Toe (m):	0
Consequence-to-life Category:	1
Remarks:	N/A

SLOPE PART

N/A

WALL PART

(3) Max. Height (m): 3.2 Length (m): 14 Face Angle (deg): 86

MAINTENANCE RESPONSIBILITY

(1) Sub Div.: 0 Private Feature Party: DD185 Lot331RP Agent: N/A Land Cat.: 1 Reason Code: 1 MR Endorsement Date: 07-03-2000

DETAILS OF SLOPE / RETAINING WALL

Date of Inspection: 16-04-2012
Data Source: LPM
Slope Part Drainage: N/A

Wall Part Drainage: N/A

SLOPE PART

N/A

WALL PART

Wall Part (1)
Type of Wall: Wall Material: Random rubble 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

N/A

CHECKING STATUS INFORMATION

N/A

BACKGROUND INFORMATION

GIU Cell Ref.:	7SE11A1
Map Sheet Reference (1:1000):	7SE-11A
Aerial Photos:	N/A
Nearest Rainguage Station (Station Number):	Shun Wo House, Wo Che Estate(N02)
Data Collected On:	16-04-2012
Date of Construction, Subsequent Modification and Demolition:	N/A
Related Reports/Files or Documents:	N/A
Remarks:	N/A
Follow Up Actions:	N/A

DH-Order (To Be Confirmed with Buildings Department): None

Advisory Letter (To Be Confirmed with Buildings Department): None

LPMIS: None

ENHANCED MAINTENANCE INFORMATION

From Maintenance Department: (Last Updated Date: 15/09/2020)

STAGE 1 STUDY REPORT

Inspected On: 19-01-2000
Weather: Mainly Fine
District: ME

Section No: 1-1
Height(m): H1 : 3 , H2 : 3
Type of Toe Facility: Road/footpath with very low traffic density

Distance from Toe(m): 0
Type of Crest Facility: Temple

Distance from Crest(m): 1.5
Consequence Category: 1
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: 1
Engineering Judgement: P

Sign of Seepage:	Slope : N/A Wall : No sign of seepage
Criterion A satisfied:	N
Sign of Distress:	Slope : N/A Wall : Moderate(mid-portion, at toe)
Criterion D satisfied:	N
Non-routine maintenance required:	N
Note:	N/A
Masonry wall/Masonry facing:	Y
Note:	Random rubbles at upper portor of wall (1.9m) shorcrete at bottom (1.3m)
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:	Government

OTHER EXTERNAL ACTION

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

PHOTO

7SE-A/R 205 **19 Jan 2000**

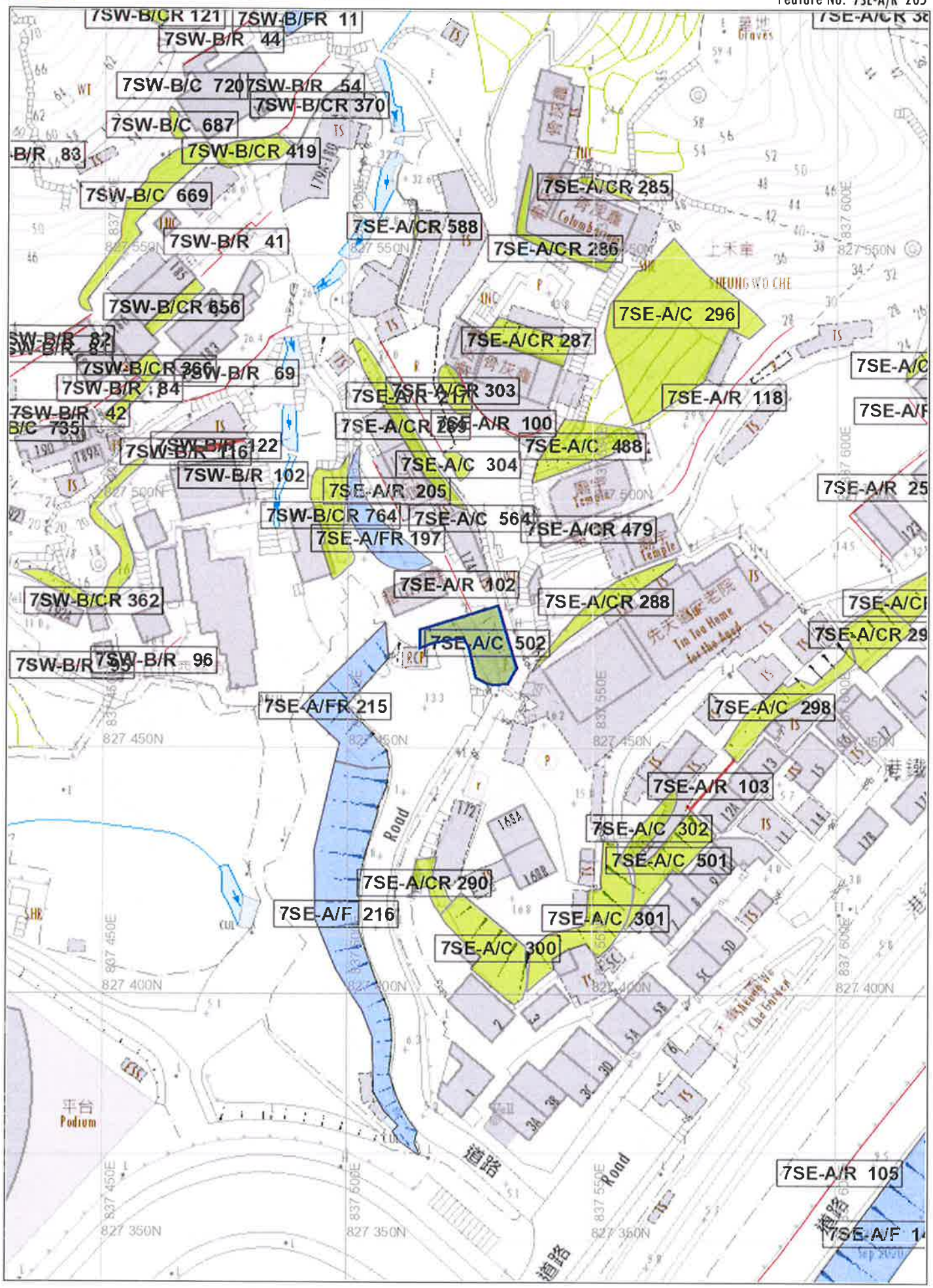
Photo 1 : General View

7SE-A/R 205 **19 Jan 2000**

Photo 2 : General View

7SE-A/R 205 **19 Jan 2000**

Photo 3 : Close Up


7SW-B/CR 121
7SW-B/FR 11
7SW-B/R 44
7SW-B/C 720
7SW-B/R 54
7SW-B/CR 370
7SW-B/C 687
7SW-B/CR 419
7SW-B/C 669
7SE-A/CR 285
7SE-A/CR 588
7SW-B/R 41
7SE-A/CR 286
7SW-B/CR 656
7SE-A/C 296
7SE-A/CR 287
7SW-B/R 69
7SE-A/R 303
7SE-A/R 118
7SW-B/R 84
7SW-B/R 42
7SE-A/CR 269
7SE-A/R 100
7SW-B/R 116
7SE-A/C 488
7SE-A/C 304
7SW-B/R 102
7SE-A/R 205
7SE-A/R 25
7SW-B/CR 764
7SE-A/C 564
7SE-A/CR 479
7SE-A/FR 197
7SE-A/R 102
7SW-B/CR 362
7SE-A/CR 288
7SE-A/C 502
7SW-B/R 96
7SE-A/FR 215
7SE-A/C 298
7SE-A/R 103
7SE-A/C 302
7SE-A/C 501
7SE-A/CR 290
7SE-A/F 216
7SE-A/C 301
7SE-A/C 300
7SE-A/R 105
Road
Podium
Graves
Columbarium
SHEUNG WO CHE
Temple
Tin Ieu Home for the Aged
827 550N
827 500N
827 450N
827 400N
827 350N
837 550E
837 600E
837 450E

BASIC INFORMATION

Location:	North of House No. 173, Sheung Wo Che Village, Shatin
Registration Date:	13-12-1999
Ranking Score (NPRS):	0 (Notional)
Date of Construction/ Modification:	Pre-1977
Data Source:	LPM
Approximate Coordinates:	Easting : 837506 Northing : 827492

CONSEQUENCE-TO-LIFE CATEGORY

Facility at Crest:	Road/footpath with low traffic density
Distance of Facility from Crest (m):	0
Facility at Toe:	Cottage
Distance of Facility from Toe (m):	6
Consequence-to-life Category:	1
Remarks:	N/A

SLOPE PART

(4) Max. Height (m): 3.2 Length (m): 30 Average Angle (deg): 40

WALL PART

(4) Max. Height (m): 1.3 Length (m): 15 Face Angle (deg): 90

MAINTENANCE RESPONSIBILITY

(1) Sub Div.: 0 Private Feature Party: DD185 LOT331RP Agent: N/A Land Cat.: 1 Reason Code: 1 MR Endorsement Date: 26-08-2010

DETAILS OF SLOPE / RETAINING WALL

Date of Inspection: 05-06-2018
Data Source: LPM
Slope Part Drainage: N/A

Wall Part Drainage: (1) Position: Toe Size(mm): 320

SLOPE PART

Slope Part (1)
Surface Protection (%): Bare: 0 Vegetated: 0 Chunam: 100 Shotcrete: 0 Other Cover: 0
Material Description: Material type: Soil Geology: N/A
Berm: No. of Berms: N/A Min. Berm Width (m): N/A
Weepholes: Size (mm): 80 Spacing (m): 0

WALL PART

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

SERVICES

N/A

CHECKING STATUS INFORMATION

N/A

BACKGROUND INFORMATION

GIU Cell Ref.:	7SE11A1
Map Sheet Reference (1:1000):	7SE-11A
Aerial Photos:	N/A
Nearest Rainguage Station (Station Number):	Shun Wo House, Wo Che Estate(N02)
Data Collected On:	05-06-2018
Date of Construction, Subsequent Modification and Demolition:	N/A
Related Reports/Files or Documents:	N/A
Remarks:	N/A
Follow Up Actions:	N/A

DH-Order (To Be Confirmed with Buildings Department): None

Advisory Letter (To Be Confirmed with Buildings Department): Date of Recommendation to BD: N/A File Reference: N/A
Date Served by BD: 11/06/2018

LPMIS: Agreement No.: CE48/2006 Report No.: S2R004/2010

ENHANCED MAINTENANCE INFORMATION

From Maintenance Department: (Last Updated Date: 15/09/2020)
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: 19-02-2011

STAGE 1 STUDY REPORT

Inspected On:
Weather:
District: ME

Section No: 1-1
Height(m):
Type of Toe Facility: Cottage

Distance from Toe(m): 6
Type of Crest Facility: Road/footpath with low traffic density

Distance from Crest(m): 0
Consequence Category:
Engineering Judgement:

Section No: 2-2
Type of Toe Facility:

Distance from Toe(m):
Type of Crest Facility:

Distance from Crest(m):
Consequence Category:
Engineering Judgement:

Sign of Seepage:

Criterion A satisfied:

Sign of Distress:

Criterion D satisfied:

Non-routine maintenance required:

Note:

Masonry wall/Masonry facing:

Note:

Consequence category (for critical section):

Observations: N/A

Emergency Action Required:

Action By: N/A

ACTION TO INITIATE PREVENTIVE WORKS

Criterion A/Criterion D: N/A

Action By: N/A

Further Study:

Action By: N/A

OTHER EXTERNAL ACTION

Check / repair Services:

Action By: N/A

Non-routine Maintenance:

Action By: N/A

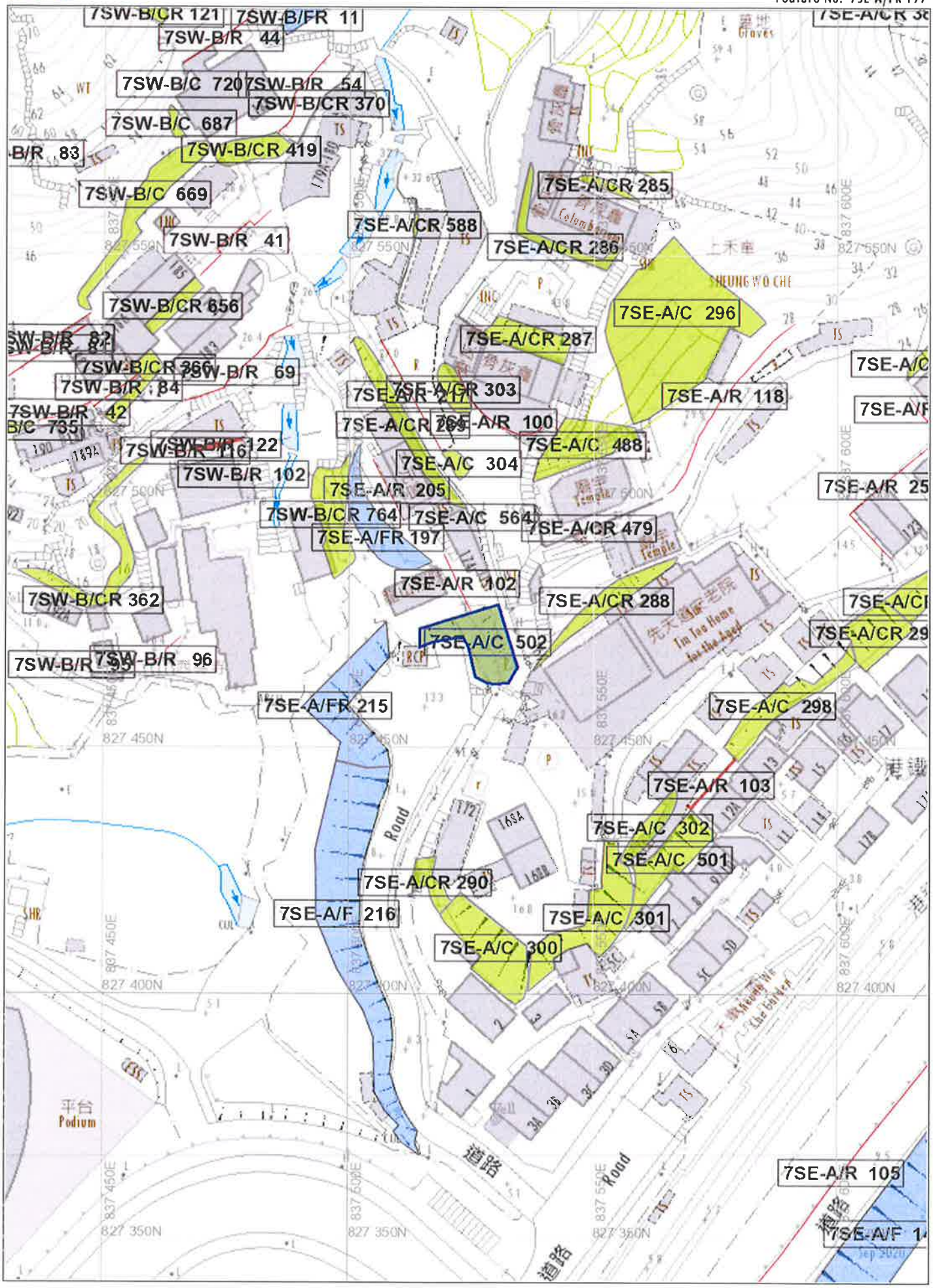
eLPMIS

LPM/LPMit Details Report
- LPM Study Feature No.: 7SE-A/F 197
- Location: NORTH-WEST OF HOUSE NO. 173, SHEUNG WO CHE, SHATIN
- District Council: Sha Tin
- Maintenance Responsibility (At the Time of Selection): Private
- Responsible Party for Maintenance of Government Portion: N/A
- Private Lot No.: DD185 LOT331RP

LPM/LPMit Study
- Agreement No.: CE48/2006
- Study Type: Stage 2 Study
- Consultant: Halcrow China Ltd.
- GEO Managing Section / Engineer: SS / SS2
- Study Status: Study completed
- Design Approach: N/A
- Option Assessment Accepted: N/A
- Study Report No.: S2R004/2010
- Programme / Actual Commencement: 20-08-2009
- Programme / Actual Completion: 30-06-2010
- Report Recommendation (For Stage 2 Study): Advisory Letter
- District Check Status: Exempted from checking
- Checking Certificate No.: N/A
- GEO Engineer's Remarks: T3AL issued on 11/6/2018.

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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7SW-B/FR 11
7SW-B/R 44
7SW-B/C 720
7SW-B/R 54
7SW-B/CR 370
7SW-B/C 687
7SW-B/CR 419
7SW-B/C 669
7SE-A/CR 285
7SE-A/CR 588
7SW-B/R 41
7SE-A/CR 286
7SW-B/CR 656
7SE-A/C 296
7SE-A/CR 287
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7SE-A/R 205
7SE-A/R 25
7SW-B/CR 764
7SE-A/C 564
7SE-A/CR 479
7SE-A/FR 197
7SE-A/R 102
7SW-B/CR 362
7SE-A/CR 288
7SE-A/C 502
7SW-B/R 96
7SE-A/FR 215
7SE-A/C 298
7SE-A/R 103
7SE-A/C 302
7SE-A/C 501
7SE-A/CR 290
7SE-A/F 216
7SE-A/C 301
7SE-A/C 300
7SE-A/R 105
Road
Podium
827 450N
827 400N
827 350N

BASIC INFORMATION

Location:	NO.173 SHEUNG WO CHE, SHATIN
Registration Date:	25-02-1998
Ranking Score (NPRS):	0 (Notional)
Date of Construction/ Modification:	Pre-1977
Data Source:	SIRST
Approximate Coordinates:	Easting : 837522 Northing : 827483

CONSEQUENCE-TO-LIFE CATEGORY

Facility at Crest:	Cottage, licensed and squatter area
Distance of Facility from Crest (m):	2
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

N/A

WALL PART

(5) Max. Height (m): 6 Length (m): 12 Face Angle (deg): 85

MAINTENANCE RESPONSIBILITY

(1) Sub Div.: 0 Private Feature Party: DD185 Lot331RP Agent: N/A Land Cat.: 1 Reason Code: 1 MR Endorsement Date: 04-05-1999

DETAILS OF SLOPE / RETAINING WALL

Date of Inspection: 04-03-1997
Data Source: SIRST
Slope Part Drainage: N/A

Wall Part Drainage: N/A

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

N/A

CHECKING STATUS INFORMATION

Tagmark: SCS_2035 Part: 0 Checking Status: Feature to be modified/upgraded to current standard

BACKGROUND INFORMATION

GIU Cell Ref.:	7SE11A1
Map Sheet Reference (1:1000):	7SE-11A
Aerial Photos:	CN10825 (1995), CN10826 (1995)
Nearest Rainguage Station (Station Number):	Shun Wo House, Wo Che Estate(N02)
Data Collected On:	04-03-1997
Date of Construction, Subsequent Modification and Demolition:	N/A
Related Reports/Files or Documents:	N/A
Remarks:	N/A
Follow Up Actions:	N/A

DH-Order (To Be Confirmed with Buildings Department): Date of Recommendation to BD: 28/06/2000 File Reference: DH/0063/00/NT
Date Served by BD: 01/12/2000 Notice No.: DH57/NT/00/C

Advisory Letter (To Be Confirmed with Buildings Department): None

LPMIS: Agreement No.: CE79/97 Report No.: S2R36/2000

ENHANCED MAINTENANCE INFORMATION

From Maintenance Department: (Last Updated Date: 15/09/2020)

STAGE 1 STUDY REPORT

Inspected On: 04-03-1997
Weather: Mainly Fine
District: ME

Section No: 1-1
Height(m): H1 : 4 , H2 : 4
Type of Toe Facility: Cottage, licensed and squatter area

Distance from Toe(m): 2
Type of Crest Facility: Cottage, licensed and squatter area

Distance from Crest(m): 2
Consequence Category: 1
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: 1
Engineering Judgement: P

Sign of Seepage:	Slope : N/A Wall : No sign of seepage
Criterion A satisfied:	N
Sign of Distress:	Slope : N/A Wall : Minimal(near crest, mid-portion)
Criterion D satisfied:	N
Non-routine maintenance required:	N
Note:	N/A
Masonry wall/Masonry facing:	Y
Note:	Random rubble with pointing.
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

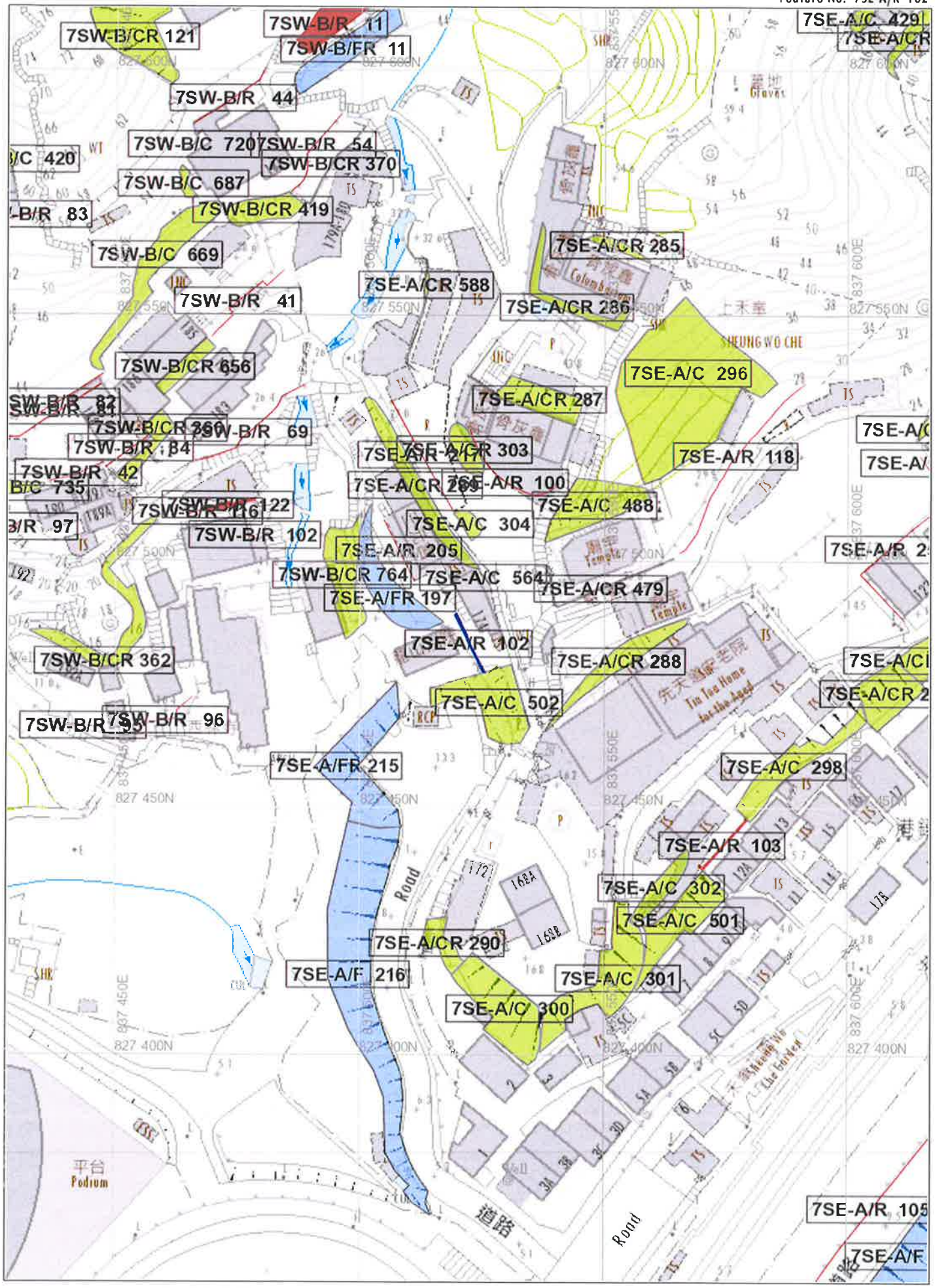
eLPMIS

LPM/LPMit Details Report
- LPM Study Feature No.: 7SE-A/R 102
- Location: No.173 Sheung Wo Che, Shatin
- District Council: Sha Tin
- Maintenance Responsibility (At the Time of Selection): Private
- Responsible Party for Maintenance of Government Portion: N/A
- Private Lot No.: DD185LOT331RP

LPM/LPMit Study
- Agreement No.: CE79/97
- Study Type: Stage 2 Study
- Consultant: C M Wong & Associates Ltd.
- GEO Managing Section / Engineer: SS / SSI
- Study Status: Study completed
- Design Approach: N/A
- Option Assessment Accepted: N/A
- Study Report No.: S2R36/2000
- Programme / Actual Commencement: 01-06-1998
- Programme / Actual Completion: 30-11-2000
- Report Recommendation (For Stage 2 Study): DH Order
- District Check Status: N/A
- Checking Certificate No.: N/A
- GEO Engineer's Remarks: #

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


7SW-B/CR 121
7SW-B/R 11
7SW-B/FR 11
7SW-B/R 44
7SW-B/C 720
7SW-B/R 54
7SW-B/CR 370
7SW-B/C 687
7SW-B/CR 419
7SW-B/C 669
7SW-B/R 41
7SW-B/CR 656
7SW-B/R 69
7SW-B/R 84
7SW-B/R 42
7SW-B/R 122
7SW-B/R 102
7SW-B/CR 764
7SW-B/CR 362
7SW-B/R 96
7SE-A/C 429
7SE-A/CR
7SE-A/CR 285
7SE-A/CR 588
7SE-A/CR 286
7SE-A/C 296
7SE-A/CR 287
7SE-A/CR 303
7SE-A/R 118
7SE-A/R 100
7SE-A/C 488
7SE-A/C 304
7SE-A/R 205
7SE-A/C 564
7SE-A/CR 479
7SE-A/FR 197
7SE-A/R 102
7SE-A/CR 288
7SE-A/C 502
7SE-A/FR 215
7SE-A/C 298
7SE-A/R 103
7SE-A/C 302
7SE-A/C 501
7SE-A/CR 290
7SE-A/F 216
7SE-A/C 301
7SE-A/C 300
7SE-A/R 105
7SE-A/F
SHEUNG WO CHE
Tin Tsz Home for the Aged
Road
Podium
827 450N
827 400N
837 550E
837 600E

BASIC INFORMATION

Location:	Northwest of House No. 173, Sheung Wo Che, Sha Tin
Registration Date:	07-12-2011
Ranking Score (NPRS):	8 (EI)
Date of Construction/ Modification:	Post-1977
Data Source:	EI(Lands D)
Approximate Coordinates:	Easting : 837497 Northing : 827497

CONSEQUENCE-TO-LIFE CATEGORY

Facility at Crest:	Temple
Distance of Facility from Crest (m):	6
Facility at Toe:	Cottage, licensed and squatter area
Distance of Facility from Toe (m):	0
Consequence-to-life Category:	1
Remarks:	N/A

SLOPE PART

(1) Max. Height (m): 10 Length (m): 25 Average Angle (deg): 60

WALL PART

(1) Max. Height (m): 3 Length (m): 12 Face Angle (deg): 85

MAINTENANCE RESPONSIBILITY

(1) Sub Div.: 1 Mixed Feature Party: Lands D Agent: Lands D Land Cat.: 5b(vi) Reason Code: 62 MR Endorsement Date: 07-11-2012
(2) Sub Div.: 2 Mixed Feature Party: DD185 LOT 331RP Agent: N/A Land Cat.: 1 Reason Code: 1 MR Endorsement Date: 07-11-2012

DETAILS OF SLOPE / RETAINING WALL

Date of Inspection: 28-11-2018
Data Source: EI(Lands D)
Slope Part Drainage: (1) Position: Berm Size(mm): 300

Wall Part Drainage: (1) Position: Crest Size(mm): 300

SLOPE PART

Slope Part (1)
Surface Protection (%): Bare: 0 Vegetated: 0 Chunam: 0 Shotcrete: 0 Other Cover: 100
Material Description: Material type: Soil Geology: N/A
Berm: No. of Berms: 1 Min. Berm Width (m): 1
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

N/A

CHECKING STATUS INFORMATION

N/A

BACKGROUND INFORMATION

GIU Cell Ref.:	N/A
Map Sheet Reference (1:1000):	N/A
Aerial Photos:	N/A
Nearest Rainguage Station (Station Number):	()
Data Collected On:	28-11-2018
Date of Construction, Subsequent Modification and Demolition:	N/A
Related Reports/Files or Documents:	N/A
Remarks:	N/A
Follow Up Actions:	N/A

DH-Order (To Be Confirmed with Buildings Department): None

Advisory Letter (To Be Confirmed with Buildings Department): None

LPMIS: None

ENHANCED MAINTENANCE INFORMATION

From Maintenance Department: (Last Updated Date: 15/09/2020)

STAGE 1 STUDY REPORT

Inspected On:
Weather:
District: N/A

Section No: 1-1
Height(m):
Type of Toe Facility: Cottage, licensed and squatter area

Distance from Toe(m): 0
Type of Crest Facility: Temple

Distance from Crest(m): 6
Consequence Category:
Engineering Judgement:

Section No: 2-2
Type of Toe Facility:

Distance from Toe(m):
Type of Crest Facility:

Distance from Crest(m):
Consequence Category:
Engineering Judgement:

Sign of Seepage:	
Criterion A satisfied:	
Sign of Distress:	
Criterion D satisfied:	
Non-routine maintenance required:	
Note:	
Masonry wall/Masonry facing:	
Note:	
Consequence category (for critical section):	
Observations:	N/A
Emergency Action Required:	
Action By:	N/A

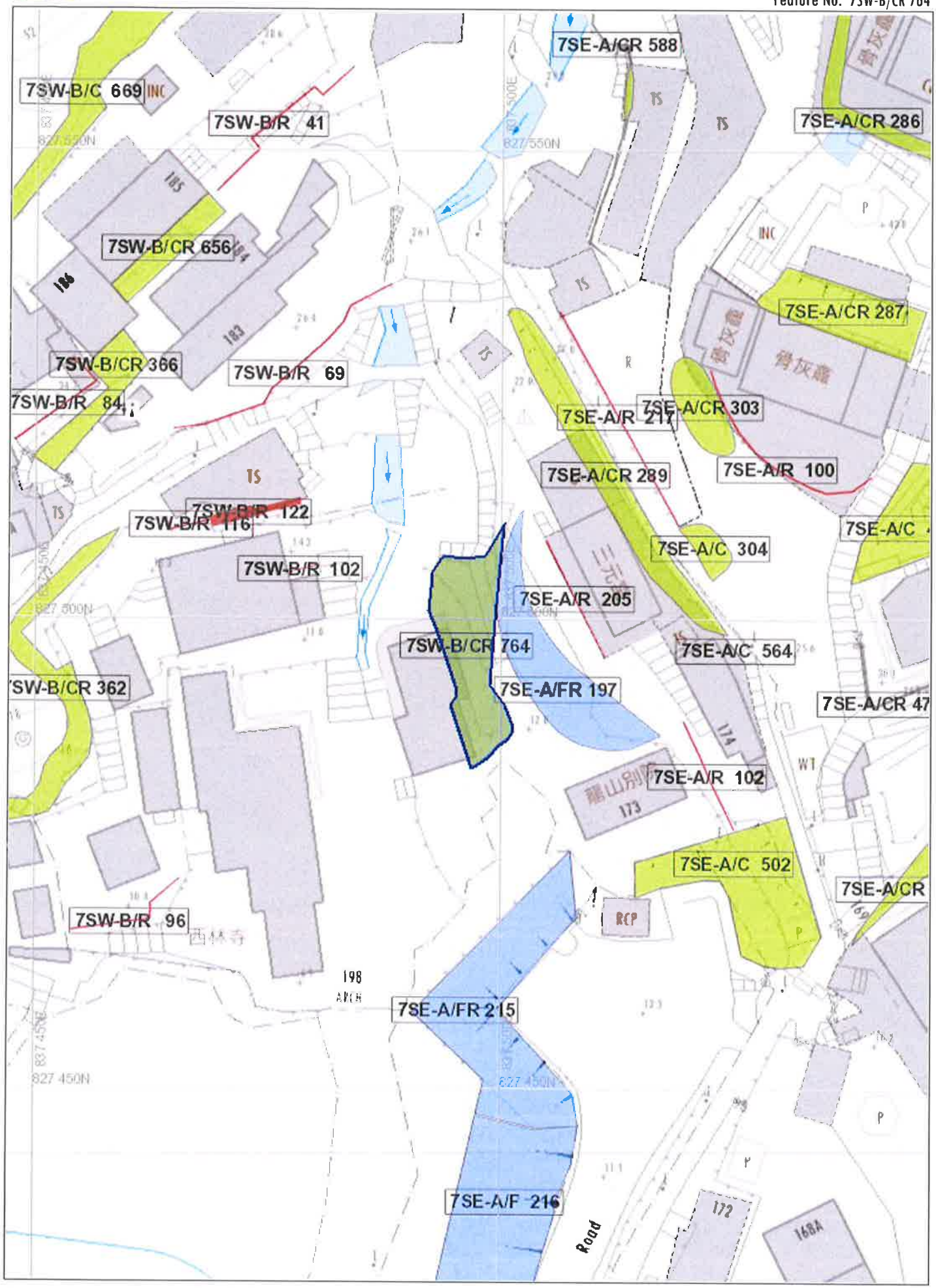
ACTION TO INITIATE PREVENTIVE WORKS

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

OTHER EXTERNAL ACTION

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

PHOTO


7SE-A/CR 588
7SW-B/C 669
7SW-B/R 41
7SE-A/CR 286
7SW-B/CR 656
7SE-A/CR 287
7SW-B/CR 366
7SW-B/R 69
7SW-B/R 84
7SE-A/R 217
7SE-A/CR 303
7SE-A/CR 289
7SE-A/R 100
7SW-B/R 122
7SW-B/R 116
7SE-A/C 304
7SW-B/R 102
7SE-A/R 205
7SW-B/CR 764
7SE-A/C 564
7SW-B/CR 362
7SE-A/FR 197
7SE-A/CR 47
7SE-A/R 102
7SE-A/C 502
7SE-A/CR
7SW-B/R 96
7SE-A/FR 215
7SE-A/F 216
Road

APPENDIX D

STAGE 2 REPORTS

Stage 2 Study Report

S2R 24/2011

Feature No. 7SE-A/C304
Lot No. DD185 Lot393B,RP
North of House No. 174
Sheung Wo Che Tsuen
Sha Tin

Halcrow China Ltd.

February 2014
Slope Safety Division

Foreword

Lot No. DD185 Lot393B,RP

This report presents the findings of a safety screening study carried out on Feature No. **7SE-A/C304** located to the north of House No. 174, Sheung Wo Che Tsuen, Sha Tin. Based on the relevant Systematic Identification of Maintenance Responsibility of Slopes in the Territory (SIMAR) report, the owners of DD185 Lot393B,RP are responsible for the maintenance and repair of the feature.

Apart from the subject feature, there are four other features, namely Feature Nos. 7SE-A/CR289, 7SE-A/CR303, 7SE-A/R217 and 7SW-B/R69 also located partly or wholly within DD185 Lot393B,RP. Based on the relevant SIMAR Reports, the lot owners are also responsible for the maintenance of these features within their lot.

The following table summarizes the maintenance responsibilities of the features:

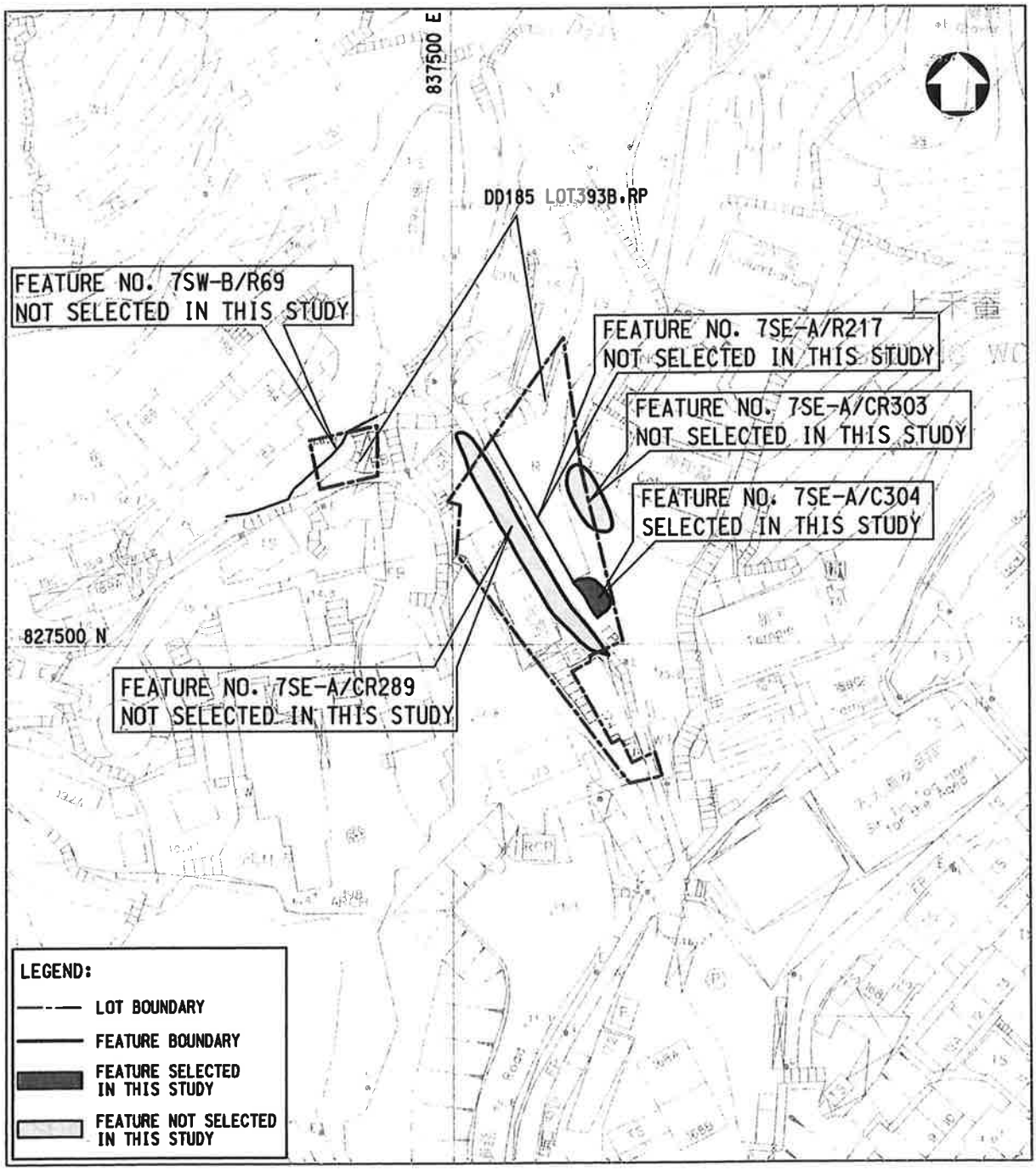
Feature No.	Included in this Safety Screening Study	Sub-Division No. Stated in SIMAR Report	Maintenance Responsibility	Reasons for not Selecting for Study
7SE-A/C304	Yes	-	DD185 Lot393B,RP	-
7SE-A/CR289	No	1	*DD185 Lot393B	C
		2	Lands Department	
7SE-A/CR303	No	1	*DD185 Lot393B	C
		2	DD185 Lot475RP	
7SE-A/R217	No	-	*DD185 Lot393B	C
7SW-B/R69	No	1	DD185 Lot540RP	C
		2	*DD185 Lot393B	
		3	Lands Department	

* DD185 lot393B will soon be changed to DD185 lot393B,RP by Lands Department

Screen-out Code:

C Checked and upgraded with robust technology

A location plan of the features is shown below:



This Study was undertaken by Halcrow China Ltd. (HCL) for the Geotechnical Engineering Office (GEO), Civil Engineering and Development Department under Agreement No. CE 59/2009 (GE). The scope of the Study includes desk study, site inspection, aerial photograph interpretation and stability analysis. No ground investigation work was undertaken for the Study.

FEATURE STUDIED IN THIS REPORT

Feature No. **7SE-A/C304** has been assessed based on the guidelines given in the relevant Works/Development Bureau Technical Circulars, GEO Circulars and other technical publications. The results of stability analysis indicate the feature satisfies the requirements for the service of a Dangerous Hillside (DH) Order under Criterion F of GEO Circular No. 24. It is therefore recommended that a DH Order be served on the owners of DD185 Lot393B,RP with respect to this feature.

FEATURES NOT STUDIED IN THIS REPORT

Feature No. 7SE-A/CR289 was studied by C M Wong & Associates Ltd under Agreement No. CE 79/97. According to the Stage 2 Study Report (S2R 82/2000), a DH Order was recommended for the feature. The DH Order (DH080/NT/02/C) was served to the lot owners in 2002 with respect to the private portion of the feature and this Order was discharged in August 2010.

Feature No. 7SE-A/CR303 was studied by C M Wong & Associates Ltd under Agreement No. CE 79/97. According to the Stage 2 Study Report (S2R 82/2000), a DH Order was recommended for this feature. The DH Order (DH081/NT/02/C) was served to the lot owners with respect to Sub-division No. 1 of the feature in 2002 and this Order was discharged in August 2010. Another DH Order (DH084/NT/02/C) was served to the lot owners with respect to Sub-division No. 2 of the feature in 2002 and this Order was discharged in October 2004.

Feature No. 7SW-B/R69 was studied by Halcrow Asia Partnership Ltd under Agreement No. CE 77/97. According to the Stage 2 Study Report (S2R 18/99), a DH Order was recommended for this feature. The DH Order (DH082/NT/02C) was served to the lot owners in 2002 with respect to Sub-division No. 2 of the feature and this Order was discharged in August 2010.

Sub-division No. 1 of Feature No. 7SW-B/R69 was studied by Halcrow China Ltd under Agreement No. CE 48/2006. According to the Stage 2 Study Report (S2R 17/2010), a DH Order was recommended. The DH Order (DH0019/NT/11/C) was served to the lot owners in 2011 and this order was discharged in March 2013.

A Stage 3 Study had been carried out for Sub-division No. 3 of Feature No. 7SW-B/R69 in 2008 under Agreement No. CE 23/2003.

Feature 7SE-A/R217 had been upgraded in 2010. The design was checked and accepted by GEO in 2009 under BD file No. DH 46/01/NT.

Signed .....

A T Watkins
Project Director
Halcrow China Ltd.

Contents

List of Tables

1. Introduction

1.1 Background

This report presents a Stage 2 Study on Feature No. **7SE-A/C304** located to the north of House No. 174, Sheung Wo Che Tsuen, Sha Tin. The feature lies wholly within Lot No. DD185 Lot393B,RP.

This study does not include the stability checking of Feature Nos. 7SE-A/CR289, 7SE-A/C R303, 7SW-B/R69 and 7SE-A/R217, which also lie partly or wholly within Lot No. DD185 Lot393B,RP. Stage 2 Studies have been carried out for Feature Nos. 7SE-A/CR289, 7SE-A/CR303 and 7SW-B/R69. Feature No. 7SE-A/R217 was upgraded in 2010 and the design was checked and accepted by GEO.

The location of the study feature in Hong Kong Grid Reference is listed as follows:

Table 1.1 Location of Feature

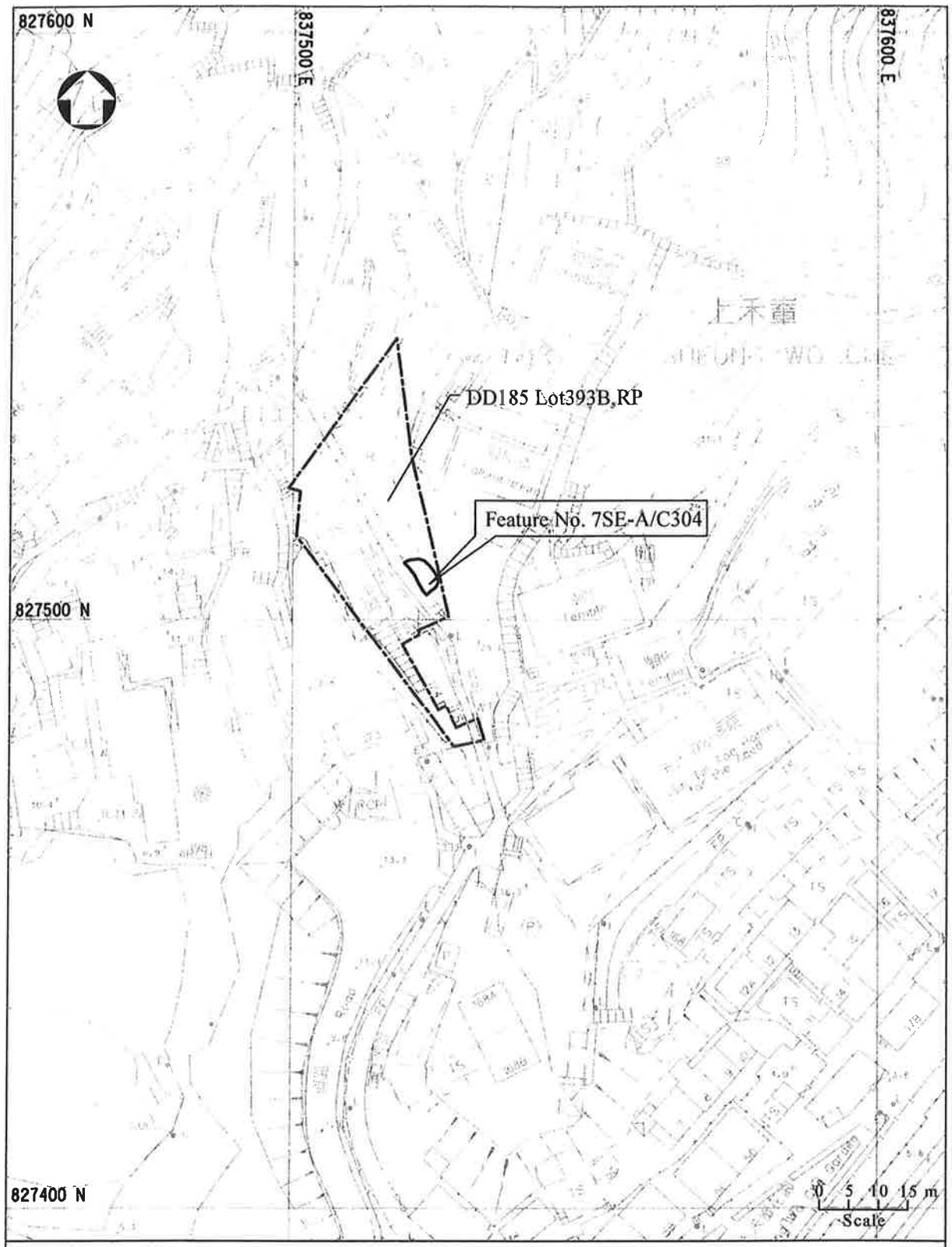
Feature No.	Hong Kong Metric Grid Co-ordinates
7SE-A/C304	837 523E, 827 507N

The boundary of the study feature has been determined from the Slope Information System (SIS) plan obtained from the Geotechnical Engineering Office (GEO), the Systematic Identification of Maintenance Responsibility (SIMAR) Report from the Lands Department and observations made during site inspection.

This Stage 2 Study commenced in April 2011. The scope of the study includes desk study, site inspection, aerial photograph interpretation (API) and stability analysis. No ground investigation (GI) was carried out for this study.

1.2 Site Description

Feature No. **7SE-A/C304** is a 7.5m long soil cut slope with maximum height of about 5.6m and it is generally facing northeast. An undeveloped greenbelt is located at the crest of the feature whereas a footpath and a temple were located at the toe of the feature. The detailed description of the feature is shown in Section 2.2 of this report. The location of the study feature is shown in Figure 1.1.



Legend : ——— Feature Boundary —·— Lot Boundary

Note : Base map is extracted from survey sheet No. 7SE-11A and 7SW-15B, Scale 1:1000.

Figure 1.1 General Location Plan

1.3 Maintenance Responsibility

The maintenance responsibility of the study feature, according to the relevant Systematic Identification of Maintenance Responsibility of Slopes in the Territory (SIMAR) report (Appendix A), is listed as follows:

Table 1.2 Maintenance Responsibility of Feature

Feature No.	Maintenance Responsibility
7SE-A/C304	DD185 Lot393B,RP

2 Geotechnical Investigation

2.1 Background/Desk Study

2.1.1 Aerial Photograph Interpretation (API)

Aerial photographs taken between 1949 and 2006 are examined. According to the API report (Appendix B), the study feature was formed before 1949 in association with the construction of a footpath at its toe. No evidence of past instability relevant to the study feature was identified from the API. No evidence of the presence of boulders or natural drainage lines affecting the feature could be identified.

2.1.2 Geotechnical Engineering Office (GEO) / District Lands Office (DLO)

Phase 2 Systematic Inspection of Features in the Territory (SIFT) Study was carried out on the feature by the SIFT Consultant for the GEO in September 1996 (Appendix C). The report indicates that the feature (SIFT No. 7SE-11A/S90) was formed before 1963.

The SIS data sheet,SIS plan and Stage 1 Study Report for the study feature obtained from GEO are enclosed in Appendix D.

A geotechnical assessment report prepared by Meinhardt Mouchel Ltd in September 2005 for the nearby Feature No. 7SE-A/C289 was located in file No. GCME 3/5/DH46/01/NT. The report contains relevant ground investigation (GI) records and design of stabilization works for Feature No. 7SE-A/C289. The locations of the feature and relevant GI stations are shown in Figure 2.1. According to the report, the design shear strength parameters for fill, colluvium and completely decomposed granite (CDG) were c' = 0kPa & ϕ' = 30°, c' = 0kPa & ϕ' = 35° and c' = 5kPa & ϕ' = 35°respectively.

There were no construction details, formation history or background details of the study feature could be located in DLO.

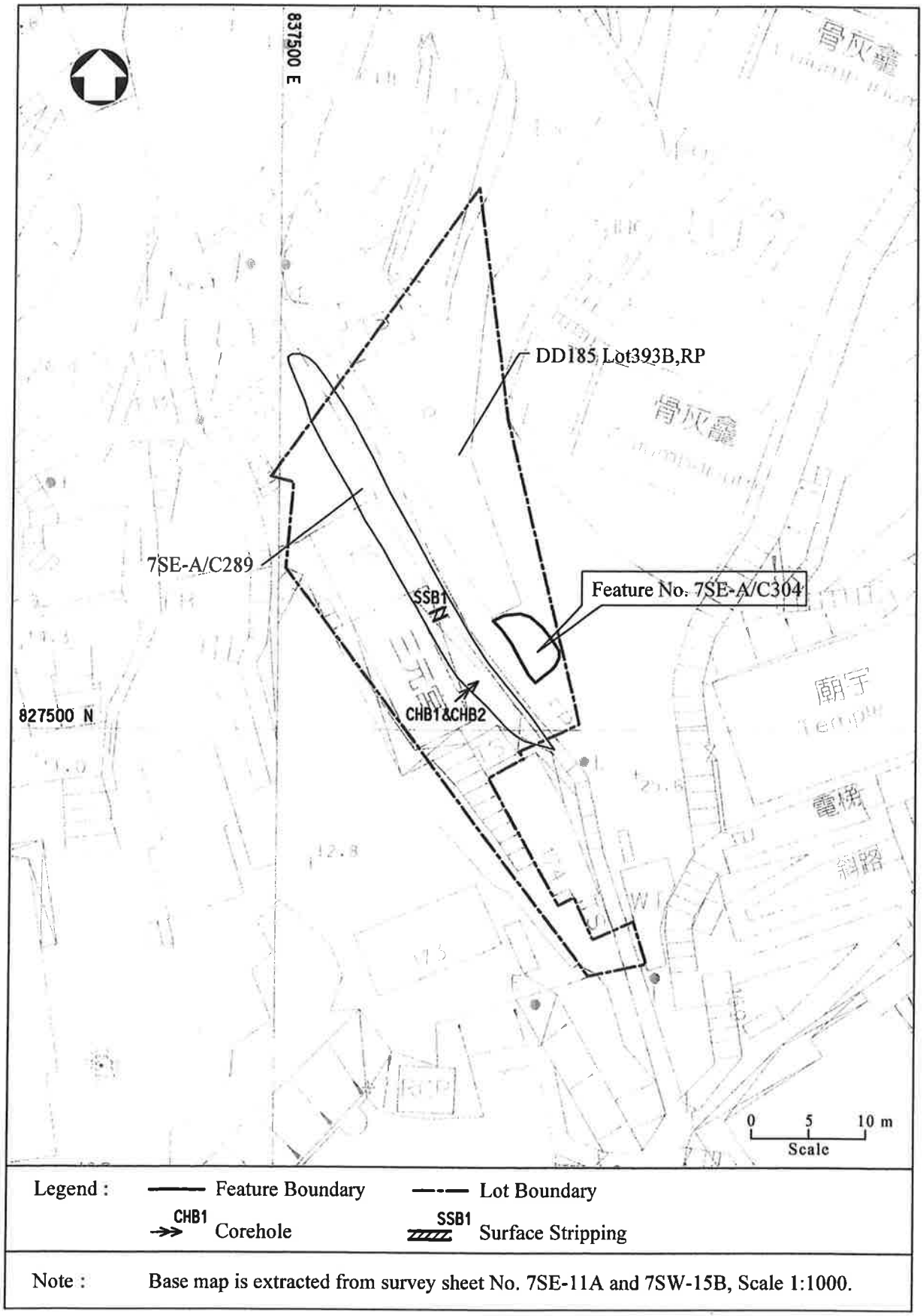


Figure 2.1 Location Plan of Nearby Ground Investigations & Feature No. 7SE-A/C289

2.1.3 Buildings Department (BD)

There is no BD file relevant to the study feature could be located in BD.

2.1.4 Existing Services

Drainage Services Department (DSD) and Water Supplies Department (WSD) were requested to provide information on existing utilities/services located within or in the vicinity of the feature. With reference to the WSD plan (Appendix E), there are fresh water mains located in the vicinity of the feature. With reference to the DSD plan (Appendix E), there are no records of storm water drains or foul sewers located within or in the vicinity of the feature.

2.1.5 Geological Survey

Based on the 1:20 000 Geological Map of Hong Kong Sheet No. 7 published by The Hong Kong Government (Appendix F), the area concerned is mainly underlain by coarse-grained granite (gc).

2.1.6 Past Instability

No record of past instability related to the study feature was identified from the available documents or files maintained by BD/GEO.

2.2 Visual Inspection

Visual inspections on the study feature were carried out in April 2011 and July 2013 respectively. At the time of inspections, the feature was a 7.5m long soil cut slope and it was generally facing southwest (Plates 1 & 2). The maximum height of the feature was about 5.6m and the slope angle varied from about 35 $^{\circ}$ to 53°. The slope surface was covered with erosion control mat at the northern portion whereas the southern portion was bare.

The area behind the crest of the study feature was an undeveloped greenbelt whereas a footpath and a temple were located at the toe of the feature. No signs of distress and seepage were observed during the site inspections.

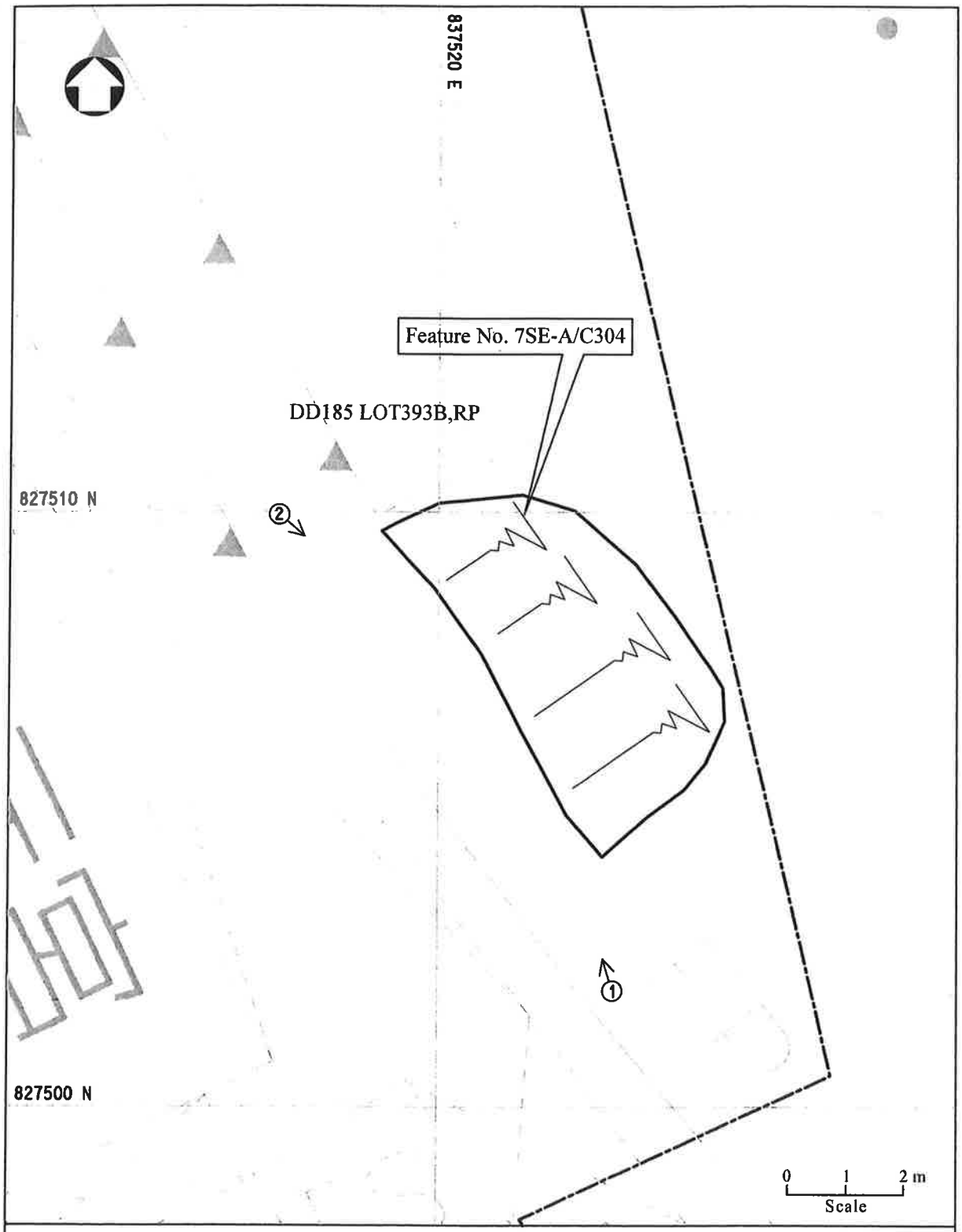


Figure 2.2 Site Observation Plan

3 Geotechnical Assessment

3.1 Topography

The study feature was formed by cutting to accommodate the footpath at its toe. The critical section (Section 1-1) of the study feature was determined based on the feature height, gradient and consequence of failure. The location of this section is shown in Figure 3.1.

3.2 Geology and Geological Model

According to the site observation, the feature was mainly composed of colluvium. The surround GI records as mentioned in Section 2.1.2 also confirm the study area comprises colluvium. Hence, the study feature was assumed to be composed of colluvium only. The inferred geological profile for Section 1-1 is shown in Figure 3.2.

3.3 Groundwater Conditions

No groundwater monitoring records exist for the study feature and no signs of seepage were observed on site. However, the groundwater table for Sections 1-1 was assumed at one-third of the slope height to account for 1 in 10 year return period of rainfall.

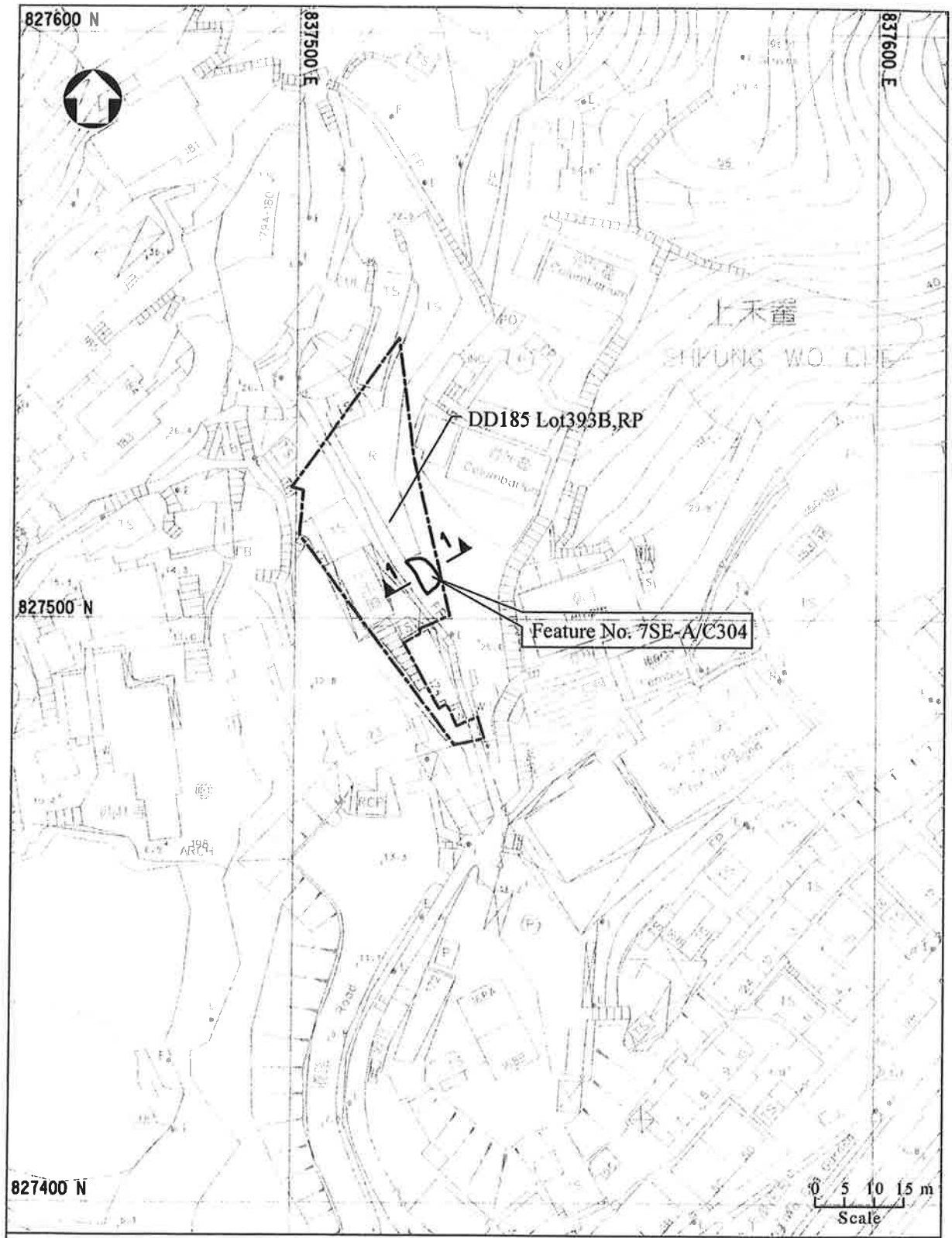


Figure 3.1 Location Plan of Section

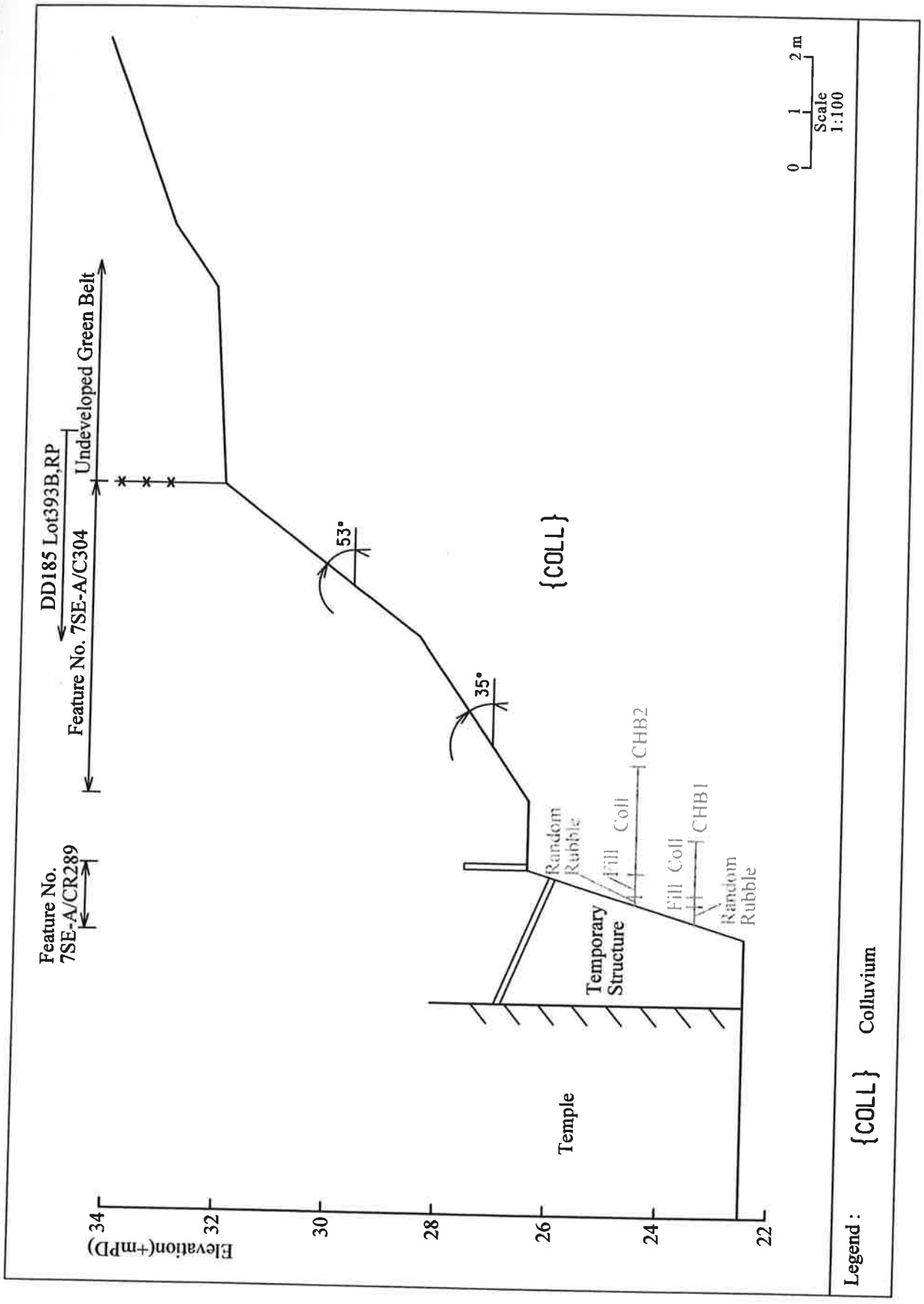


Figure 3.2 Geological Profile of Section 1-1

3.4 Parameters for Analysis

In the absence of relevant soil laboratory test data for the study feature, the shear strength parameters of c' = 0 kPa and ϕ' = 35° for colluvium, which were adopted for the design of slope upgrading works of the nearby Feature No. 7SE-A/C289 prepared by Meinhardt Mouchel Ltd in September 2005, were adopted for this study. A summary of soil parameters adopted for stability analysis of the study feature is tabulated below:

Table 3.1 Adopted Shear Strength Parameters

Soil Material	Shear Strength Parameters		Bulk Unit Weight
	c' (kPa)	ϕ' (°)	γ (kN/m^3)
Colluvium	0	35	19

3.5 Stability Analysis

Slope stability analysis was carried out for the Section 1-1 based on the inferred geological model, groundwater condition and shear strength parameters as discussed in Sections 3.2 to 3.4. The Morgenstern-Price Method in SLOPE/W Version 6.2 (BD reference No. G0138) was used for the stability analysis. The calculated Factor of Safety (FOS) are tabulated below:

Table 3.2 Calculated FOS for Feature No. 7SE-A/C304

Section	Slip Surface No.	FOS
1-1	1	**0.697**
	2	**0.805**
	3	**1.026**

The results of stability analysis are presented in Figure 3.3 and the computer outputs of the stability analysis are enclosed in Appendix G.

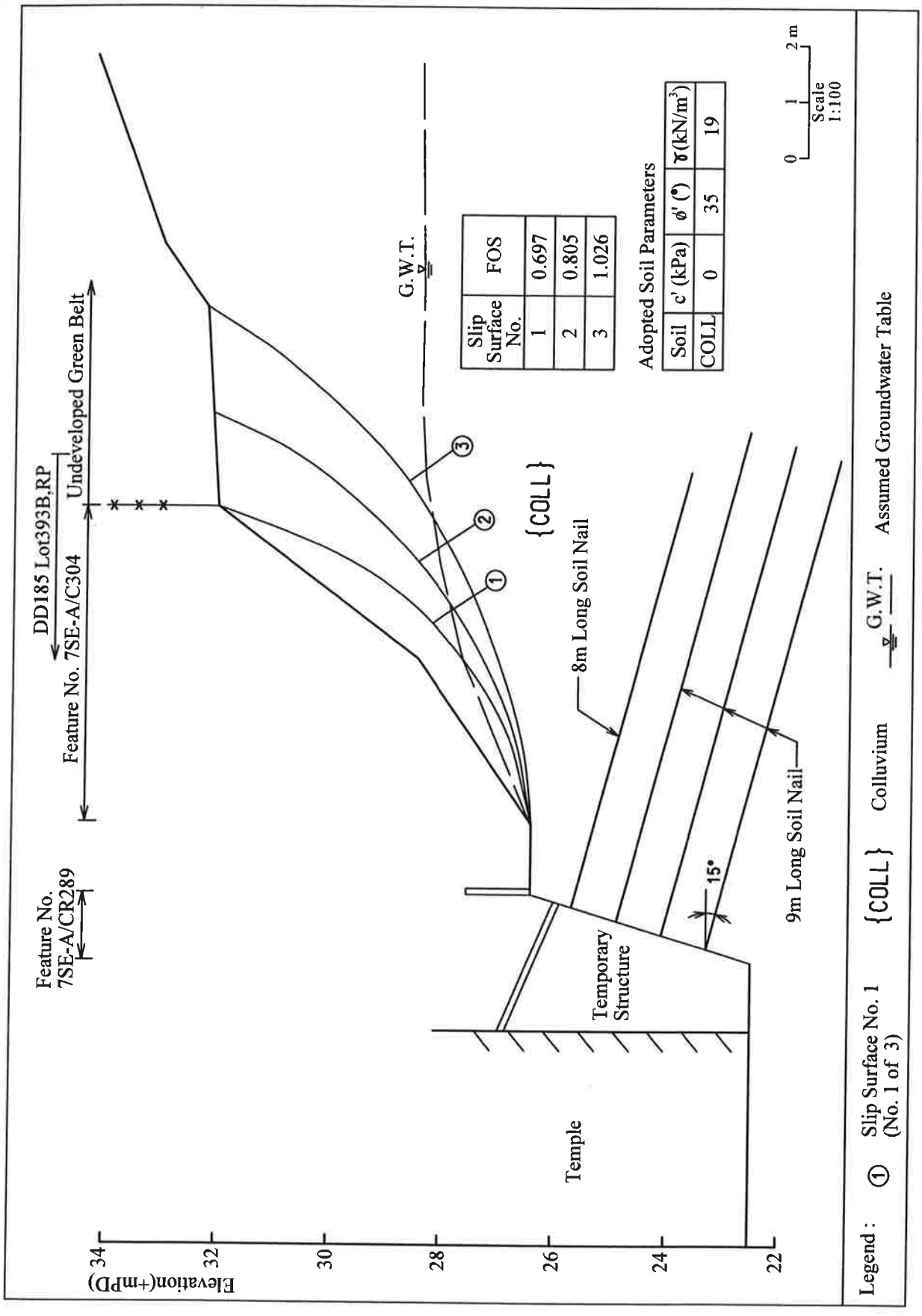


Figure 3.3 Stability Analysis of Section 1-1

3.6 Consequence-to-life

The consequence-to-life in the event of failure has been assessed in accordance with Table 3 of WBTC No. 13/99 and GEO Technical Guidance Note No. 15. The feature has been assessed as Category 1 as failure of the feature would affect the temple at the toe of the feature.

4 Discussion of Calculated Factors of Safety

In accordance with Criterion F as stated in GEO circular No. 24, the FOS calculated from a stability assessment without site-specific GI for slope having significant consequence-to-life in the event of failure shall not be less than 1.20.

The results of the slope stability analyses for Section 1-1 indicate that the minimum FOS are less than the required value of 1.20 for the set of soil parameters considered.

5 Conclusion and Recommendations

Feature No. **7SE-A/C304** satisfies the requirements for the service of a Dangerous Hillside (DH) Order under Criterion F of GEO Circular No. 24. It is therefore recommended that a DH Order be served on the owners of DD185 Lot393B,RP with respect to the feature.

The extent of the feature subject to DH Order is coloured pink in Figure 5.1

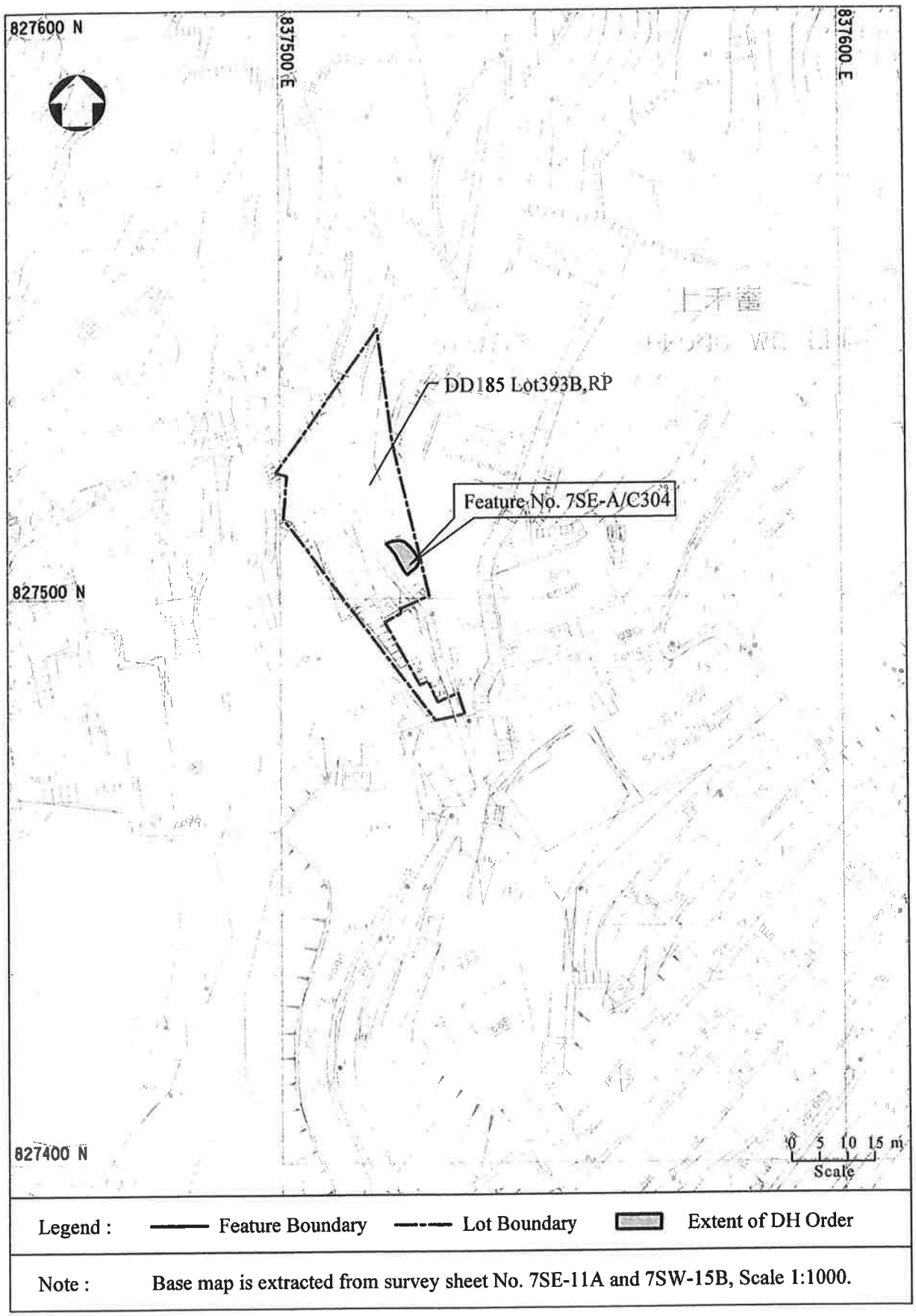


Figure 5.1 Action to be Taken

Appendix H

Stage 2 Study/LPM Checklist

SS-F-02 **Sample Stage 2 Study General Checklist**

Project Engineer :	S T Tsui	Section :	1-1
Prepared by :	William Tse	Date :	MAY 2011

		Yes	No
(A)	**Maintenance Responsibility (MR)**		
(a)	There is doubt that sub-lots have not been identified by SIMAR If yes, check land status at Lands Dept/Land Registry & draw GEO, CES/EM, Lands D attention to the issue	☐	☑
(b)	Doubt over SIMAR findings. (please specify) _____ If yes, draw GEO, CES/EM, Lands D attention to the issue	☐	☑
(c)	It appears that the government portion of the feature was formed by the lot owners based on API/site setting but without documentary evidence If yes, draw GEO and maintenance department's attention to the issue	☐	☑
(d)	Urgent repair / maintenance works were carried out by government authority on private MR feature If yes, clarification should be made in Stage 2 Study Report (S2R)	☐	☑
(B)	**Discrepancy between GEO's records/actual condition**		
(a)	Feature boundary	☐	☑
(b)	Feature type	☐	☑
(c)	Geometry	☐	☑
(d)	Affected facilities	☐	☑
(e)	Others (please specify) _____ if yes to any items above, address in S2R & notify relevant division of GEO	☐	☑
(C)	**Desk Study**		
	Record, files & previous studies related to adjacent features/lots checked & reviewed	☑	☐
(D)	**Stability Assessment**		
(a)	Any site-specific GI data including laboratory testing results If no, soil strength parameters for sensitivity analyses should be determined by an experienced engineer based on site-specific assessment. Critical review/discussion on sensitivity analyses results should be performed by the experienced engineer	☐	☑

Stage 2 / LPM General Checklist (Sheet 1 of 2)	Feature No. 7SE-A/C 304 Location : NORTH OF HOUSE No. 174 SHEUNG WO CHE TSUEN STA TIN

Project Engineer :	S.T Tsui	Section :	1-1
Prepared by :	William Tse	Date :	MAY 2011

		Yes	No
(b)	Extraordinarily high groundwater table is adopted based on water stain or signs of dampness observed If yes, the adopted groundwater table should be reviewed by an experienced engineer	☐	☑
(c)	Any natural drainage line above the feature If yes, consider the effect of the drainage line on groundwater table	☐	☑
(d)	Any recorded/unrecorded water carrying services located within the vicinity of the feature If yes, address the effect of potential leakage & state whether leakage investigation is required in the S2R	☐	☑
(e)	If all existing beneficial factors, such as passive resistance wall friction & existing structural restraint etc., have been duly considered	☐	☑
(f)	Have adjoining features been considered jointly as an integrated approach in the stability assessment	☐	☑
(g)	The study feature consists of Fill slope element If yes, address liquefaction potential in the S2R	☐	☑
(h)	Justification of geological model including geological profile, soil parameters, groundwater table and surcharge etc. adopted for stability assessment is included in the S2R	☑	☐
(i)	The feature is a mixed MR feature If yes, stability of each MR portion should be assessed. Local stability of each MR portion should also be checked if the MR are sub-divided vertically	☐	☑
(E)	**DHO Recommendation**		
(a)	Have the scale of consequence been duly considered prior to finalization Stage 2 Study recommendation	☑	☐
(b)	DHO recommendation based on criterion F of GEO Circular No. 24 & min. FOS ranging from 1.1 to 1.2 If yes, review of the DHO recommendation by an experienced engineer before issue of the S2R	☐	☑

GEO

STAGE 2 STUDY REPORT

S2R36/2000

FEATURE NO.
7SE-A/R102
LOT NO. DD 185 LOT 331RP
173 SHEUNG WO CHE VILLAGE

C M WONG & ASSOCIATES LTD.

May 2000
Advisory Division GEO

CONTENTS

1. INTRODUCTION

1.1 Background

This report presents the findings of the Stage 2 Study on Feature No. **7SE-A/R102** which is located within the lot of DD185 Lot 331 RP at No. 173 Sheung Wo Che Village, Shatin, New Territories. This report does not include studies on Feature Nos. 7SE-A/R205 and 7SE-A/F197, which also lie inside DD185 Lot 331 RP but do not satisfy Geotechnical Engineering Office's (GEO) selection criteria for study.

The Hong Kong Metric Grid Coordinates of the Feature are (827483N, 837522E). The location of the Feature is shown on the location plan in Figure 1. The boundary of the Feature is based on the Slope Information System (SIS) plan retrieved from Geotechnical Engineering Office.

Geotechnical Engineering Office had conducted a Stage 1 Study on the Feature in 1997. The Stage 1 Study Report recommended "further study" for the Feature. Extracts of Stage 1 Study Report are attached in Appendix A.

The Stage 2 Study commenced in September 1999 with the objective of assessing the stability status of the Feature and determining whether a detailed investigation is required. Work carried out included desk study, site inspection, aerial photograph interpretation and preliminary stability analysis.

1.2 Site Description

The location plan, sketch plan, developed elevation and relevant section are shown in Figures 1 to 4.

The Feature comprises a pointed random rubble wall and two recent masonry walls which are constructed in stepped form running in southeast to northwest direction at the eastern part of DD185 Lot 331 RP in Sheung Wo Che Village, Shatin, The lot is now occupied by a 2-storey building. The building stands about 2 m away from the toe of the Feature.

The lower random rubble wall (from point 'A' to point 'D' in Figure 2) is approximately 10 m long, about 2.1 m maximum high and has a slanted face with an inclination of 85 degrees to horizontal. The northern portion of the rubble wall is under the shelter of a corrugated sheet canopy and is rendered with plaster. Above the northern portion of the rubble wall are two recent masonry walls with height varying from0.78 m to 1.70 m. The total height of the Feature is maximum about 4.6 m. There are no weepholes on these walls. Behind the crest of the upper masonry wall is a concrete paved platform. A single-storey building is situated at a horizontal distance of at least 2.5 m from the crest of the upper masonry wall. Above the southern portion of the lower rubble wall is a slope ascending at gradient between 20 and 70 degrees to the horizontal. The lower part of the slope is rendered with chunam plaster whilst the upper part is covered by debris. The northern end of the Feature joins with a 70 degrees cut slope with concrete cover. Rock outcrops are exposed at the cut slope.

1.3 Maintenance Responsibility

According to the District Survey Office Land Status Plan enclosed in Appendix B, the Feature lies within DD185 Lot 331 RP.

The Systematic Identification of Maintenance Responsibility for Slopes and Retaining Walls (SIMAR) report confirms that the maintenance responsibility for the Feature rests wholly with the owners of DD185 Lot 331 RP. The SIMAR report is included in Appendix C.

2. GEOTECHNICAL INVESTIGATION

2.1 Background/Desk Study

2.1.1 Aerial Photograph Interpretation

An aerial photograph interpretation was carried out to investigate the history of the Feature as part of this study. Aerial photographs from the Geotechnical Engineering Office were inspected. A list of aerial photographs inspected and the corresponding interpretation are presented in Appendix D.

The available aerial photographs indicate that the Feature was formed between 1964 and 1973. Since then no apparent signs of previous instability or modification of the Feature were identified from the aerial photographs examined. No evidence of obvious presence of colluvium was observed from the available aerial photographs.

2.1.2 Geotechnical Engineering Office

File searching at Geotechnical Engineering Office (GEO) located the Phase 2 Systematic Identificaiton of Features in the Territory (SIFT) Report and the Stage 1 Study Report for the Feature by the Planning Division of GEO in March 1997. The former reported minor cracking and spalling of some pointings whilst the latter recommended "further study" for the Feature.

A search of the Geotechnical Information Unit (GIU) records was undertaken. There was no available ground investigation information relevant to the Feature. Report on site inspection and thickness gauging of retaining wall undertaken under GEO Agreement CE77/97 was inspected. The report indicated that the Feature at the critical section had a calculated slenderness ratio greater than 5. The Feature was classified in minimal deformation condition.

A search of the GEO District records was undertaken. No reports of previous failure or instability were found at the GEO. GEO had not recommended issue of any Dangerous Hillside (DH) Orders or Advisory Letters for the Feature in the past.

GEO records relating to the Feature are included in Appendix E.

2.1.3 Buildings Department

There is no factual information about the Feature lodged in Buildings Department (BD) (See Appendix F). Neither DH Order nor Advisory Letter relevant to the Feature had been issued in the past.

2.1.4 Utilities Companies

Water Supplies Department (WSD) and Drainage Services Department (DSD) have been consulted for details of their installations in the vicinity of the Feature. Plan provided by WSD indicates that there is a 50 mm diameter galvanized water pipe running along the footpath at about 4 m behind the Feature. The drainage record drawings of the area had been inspected in the office of DSD. There is no stormwater drain or sanitary sewer in the vicinity of the Feature.

A copy of available utility record is enclosed in Appendix G.

2.1.5 Geological Survey

The Hong Kong Geological Map Sheet 7, Solid and Superficial Geology of Sha Tin, Series HGM 20 at scale of 1:20000 indicates that the site of the Feature is underlain by major intrusive igneous rock of coarse-grained granite with inequigranular texture. Superficial or near surface deposits are not indicated but variable thickness of weathered rock is likely.

2.2 Visual Inspection

Site inspection of the Feature was undertaken in September 1999. Observations made are set out below. Salient features noted are shown on the sketch plan in Figure 2 and developed elevation in Figure 3. Photographic records are depicted in Plates 1 to 4.

The Feature comprises a pointed rubble wall and two recent masonry walls, and has a total height of maximum about 4.6 m. These three walls are constructed in "steps". The lower portion of the Feature is a pointed random rubble wall of some 10 m in length, maximum about 2.1 m in height and with a face angle of 85 degrees to horizontal. Part of the wall face is plastered. There are no weepholes on the wall. The wall was dry at the time of inspection. Two 38 mm diameter water pipes are mounted horizontally on the southern wall face. Two brick columns are leaning against the Feature and supporting the corrugated sheet canopy. Based on site reconnaissance, the wall showed no visible sign of forward movement or bulging except several minor cracks at the plastering. Hence the wall is considered in minimal distress and deformation condition. According to Table 3 of GEO Circular No. 6/96, the rubble wall is classified in wall condition "Class A".

The two recent masonry walls above the rubble wall appeared in poor to fair condition. Some pointings had been deteriorated and missing. The height of recent masonry walls are between 0.78 m and 1.7 m. One of the rubble blocks of the upper masonry wall supporting the concrete paved platform had dislodged and fallen down. Minor ground settlement was observed at the concrete paved platform behind the crest of the upper recent masonry wall. The concrete pavement had cracked and the ground underneath was seen separating from the slab for a maximum depth of about 25 mm. According to Table 3 of GEO Circular No. 6/96, the wall condition class for the upper recent masonry wall is classified as "Class C". With minimal distress, the lower recent masonry wall is classified in wall condition "Class A".

The cut slope adjacent to the northern end of the Feature ascends at a steep gradient of 70 degrees to the horizontal and is concrete covered without incorporation of weepholes. Rock outcrops are exposed on the slope surface at localities. The slope was dry at the time of site inspection. The slope above the southern portion of the rubble wall is accumulated with debris at the upper part and the lower part with inclination of 70 degrees to the horizontal is rendered with chunam surfacing. This slope section also had no seepage at the time of site inspection.

3. GEOTECHNICAL ASSESSMENT

3.1 Topography

The general layout of the Feature is shown in Figure 1. The critical section 1-1 was selected for preliminary stability analysis. The critical section is chosen for the portion of the Feature where the retained height is the greatest. The location of this section is indicated in Figure 2. The surveyed section prepared by Henry Chan Surveyors Ltd. is included in Appendix H.

3.2 Geology and Geometry

Specific site investigation information and construction records of the Feature were not available. Based on the available geological map, the ground at the assessed section is estimated to consist mainly of completely decomposed granite.

No weepholes are present on the walls. Four holes for the insertion of previous building struts were found on the lower rubble wall and they were probed to maximum depth of about 0.42 m. This matches closely with the probing result of 0.40 m from the thickness gauging report undertaken as Part 1 of this Agreement. When looking inside the hole, a masonry stone was found behind the plastering. As measured on site, the plastering on the wall is about 75 mm thick. The thickness of the wall itself is

therefore estimated to be about 0.35 m. Field measurement of the exposed wall section from the hole where a masonry block had dislodged revealed similar wall thickness of about 0.35 m for the upper recent masonry wall. As the intermediate wall is not provided with weepholes, the wall thickness is assumed to be 0.35 m similar to other two walls.

The geometrical model adopted for stability assessment of the Feature at Section 1-1 is depicted in Figure 4. The 75 mm plastering to the lower rubble wall is not considered as part of the wall feature and is not shown in Figure 4 for clarify.

3.3 Groundwater Condition

No site-specific groundwater monitoring records were available for the Feature. The wall faces were dry at the time of inspection in September 1999, indicating that the groundwater table prevailed below the base of the Feature. This Feature is situated topographically away from areas of possible groundwater convergence. There is no evidence of groundwater table higher than one-third of the retained height of the Feature. Therefore only dry condition is considered in the stability assessment.

3.4 Parameter for Analysis

As observed on site, the completely decomposed granite exposed on adjacent slope is predominantly loose to medium dense silty sand. In the absence of laboratory test data specific for the Feature, the shear strength parameters of completed decomposed granite assumed for stability analysis are listed in Table 1, which correspond to the lower range of shear strength parameters for completely decomposed granite given in Table 8 Geoguide 1.

Table 1 Parameters Assumed for Stability Analysis

Material	Bulk Density	Shear Strength Parameters	
	γ	c'	ϕ'
Completely Decomposed Granite	19	5	35

γ = Bulk density (kN/cu.m)

c' = Apparent cohesion (kPa)

ϕ' = Apparent angle of shearing resistance (degrees)

3.5 Preliminary Wall Stability Assessment

The stability of the Feature is evaluated based on the empirical stability assessment approach in accordance with GEO Circular No. 6/96, in which the wall stability condition is related to the wall slenderness ratio and visual appraisal of the wall condition in respect of wall deformation and evidence of distress. The slenderness ratio of the wall is defined as the ratio of the effective wall height to the base width of the wall.

The calculated slenderness ratio for the three retaining walls of the Feature are given in Table 2, and the slenderness ratio calculations are included in Appendix I. The wall stability class corresponding to the calculated slenderness ratio is presented in Table 2 and is ranked according to Table 2 of GEO Circular No. 6/96. The wall condition class for the Feature is discussed in Section 2.2. The overall stability condition of the Feature is then determined according to Table 1 of the same GEO Circular.

Table 2 Summary of Wall Stability Analysis (Empirical Assessment)

Wall Section	Slenderness Ratio	Wall Stability Class	Wall Condition Class	Overall Stability Class
Lower Wall	11.4	D	A	4
Intermediate Wall	6.8	D	A	4
Upper Wall	3.0	B	C	3

In view of the nature of closely-spaced walls retaining terraced ground, a qualitative assessment of the overall stability of the Feature is also made in accordance with GEO Circular No. 6/96. Roof and pedestrian load of 5 kN/sq.m as well as building surcharge of 10 kN/sq.m per storey are applied wherever appropriate. The critical section is analysed for the soil parameters given in Table 1 and for dry condition as discussed in Section 3.3. The factor of safety (FOS) against potential slip is calculated based on Janbu's rigorous method with variably inclined intersliced forces for non-circular slip surface using Buildings Department's approved computer program "SLOPE" developed by OASYS Ltd. (BD Ref. G0043). The minimum FOS calculated is 0.89. Corresponding stability calculations are included in Appendix J.

4. DISCUSSION

It is considered that the consequence of failure would fall into consequence-to-life Category 1 as defined in WBTC No. 13/99. This is based on the judgement that the occupied residential building located at the distance of 2 m from the toe of the Feature would be adversely affected if failure occurs.

With overall stability of 'Class 4' from Table 1 of GEO Circular No. 6/96, the stability of the Feature is considered inadequate and below current geotechnical standard based on Table 5 of the same Circular. As demonstrated in the appended stability calculations, the Feature is found to have a factor of safety below unity against overall stability failure. Besides, weepholes are not provided which could adversely affect the stability of the Feature especially when surface run-off water during rainstorm percolates through the cracks along the concrete paved platform into the ground behind the Feature. The upper recent masonry wall shows sign of severe distress in form of dislocation of masonry block and settlement of crest platform, and is liable to become dangerous. Thus the service of a Dangerous Hillside (DH) Order is required under Criterion C of GEO Circular No. 4/97.

5. CONCLUSIONS AND RECOMMENDATIONS

From the available information, inspection and preliminary analysis, both the pointed random rubble wall and the two recent masonry walls of the Feature No. 7SE-A/R102 lying within DD185 Lot 331RP possesses factors of safety below the trigger level for the service of a Dangerous Hillside (DH) Order. It is therefore recommended that a Dangerous Hillside Order, in accordance with Section 27A of the Buildings Ordinance and under Criterion C of GEO Circular No. 4/97, be served on lot owners of DD185 Lot 331 RP.

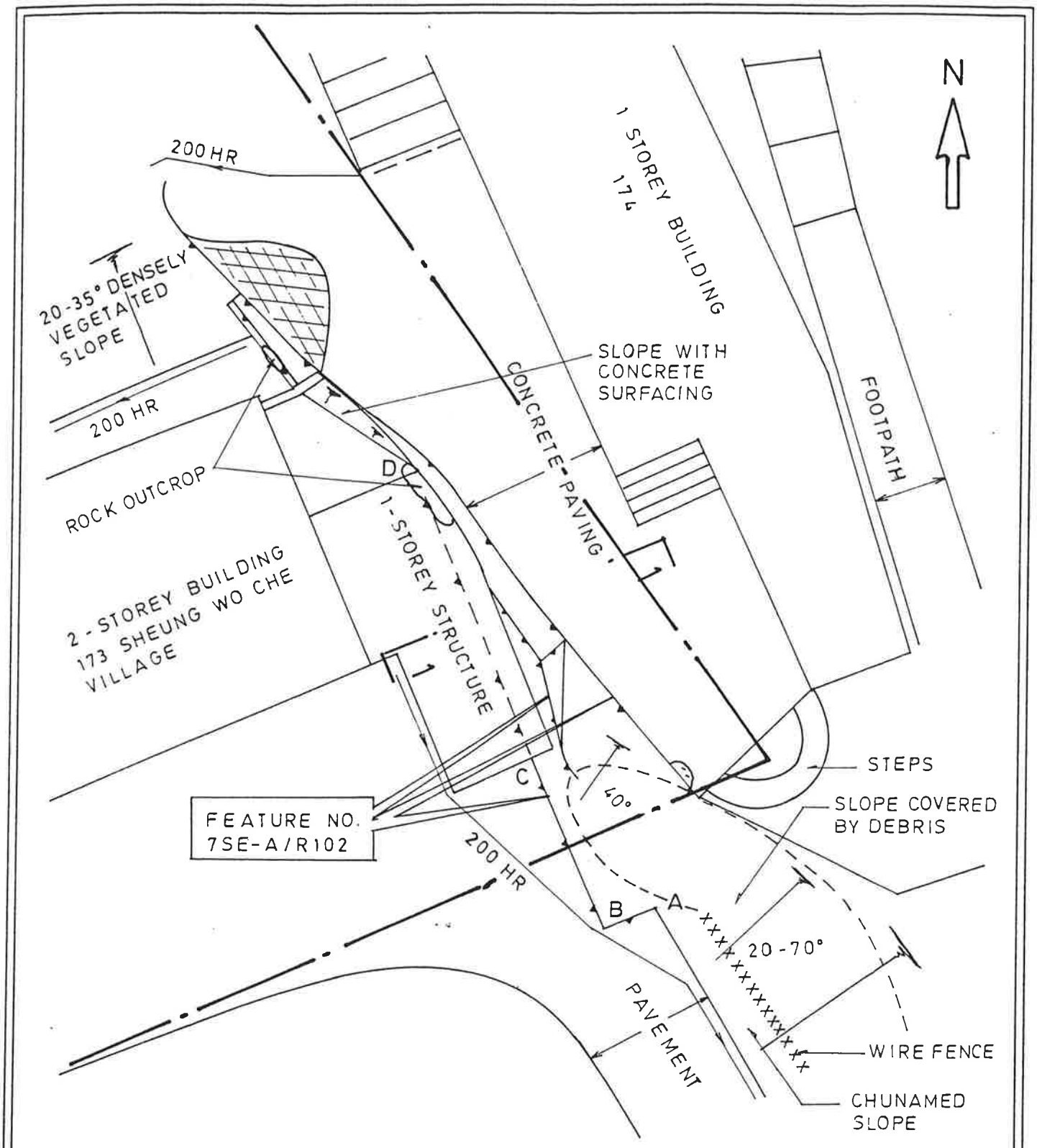
6. REFERENCES

6.1 Technical References

GEO (1997), GEO Circular No. 4/97. Dangerous Hillside Orders and Advisory Letters and Advisory Letters.

GEO (1996), GEO Circular No. 6/96. Guidelines for Assessment of Old Masonry Retaining Walls in Detailed Studies and for Action to be Taken on Private Walls.

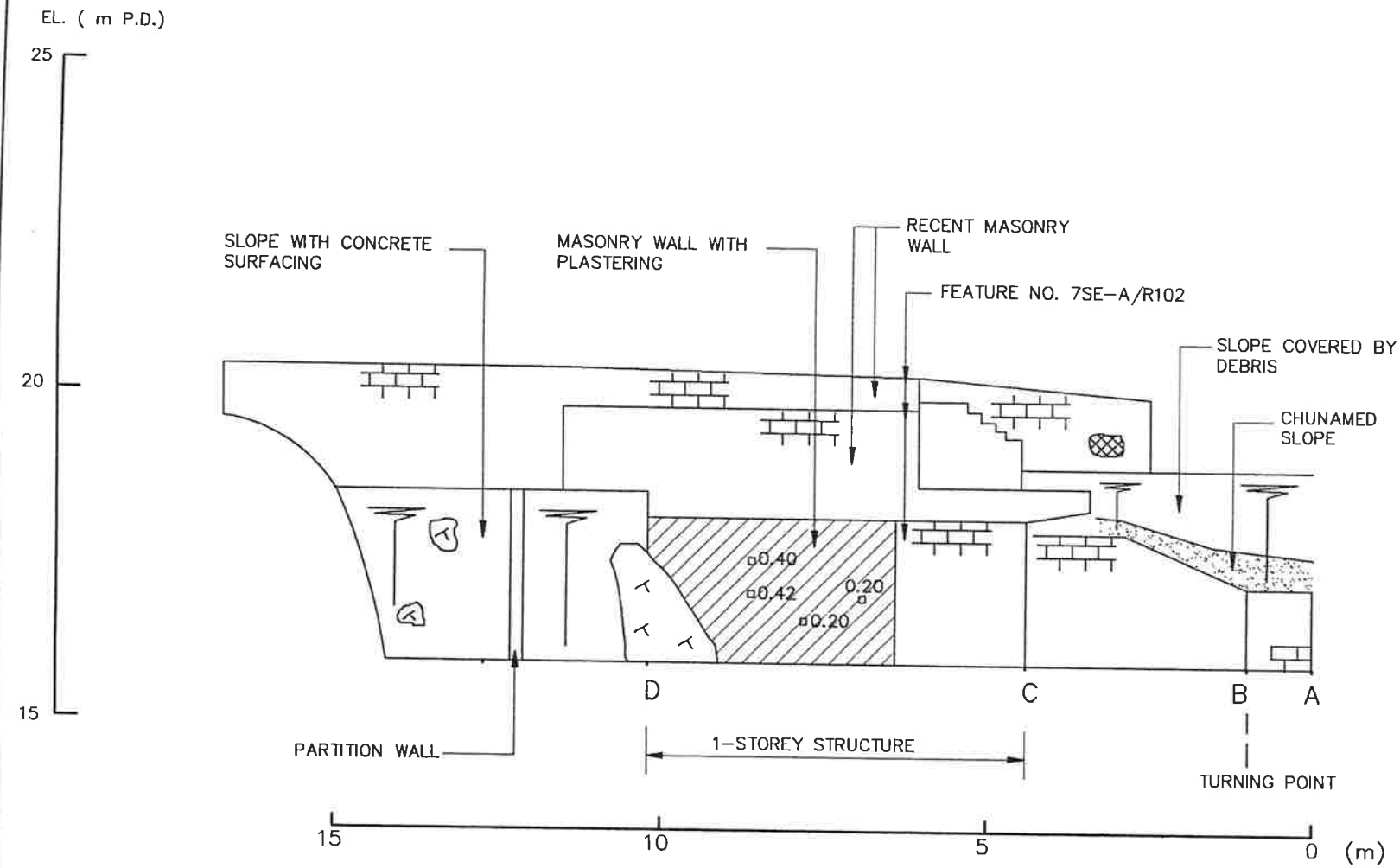
GEO (1993), Geoguide 1, Guide to Retaining Wall Design (2nd Edition).



SKETCH PLAN
FEATURE NO. 7SE-A/R102

DD 185 LOT 331 RP
173 SHEUNG WO CHE VILLAGE
SHATIN, N.T.

FIGURE 2



DEVELOPED ELEVATION

1 : 100

FEATURE NO. 7SE-A/R102
173 SHEUNG WO CHE VILLAGE, SHATIN, N.T.

LEGEND FOR WEEPHOLES: –

o 1.30 ← DEPTH IN METER
B.S. ← CONDITION

S = STAINED
B = BLOCKED
W = MINOR SEEPAGE
WO= MODERATE SEEPAGE
WH= HEAVY SEEPAGE
C = CRACKS
R = TREE ROOTS

LEGEND: –

- MASONRY WALL
- LOCATION OF RUBBLE FALLEN
- ROCK OUTCROP
- SLOPE
- 100 mm SQ. HOLE

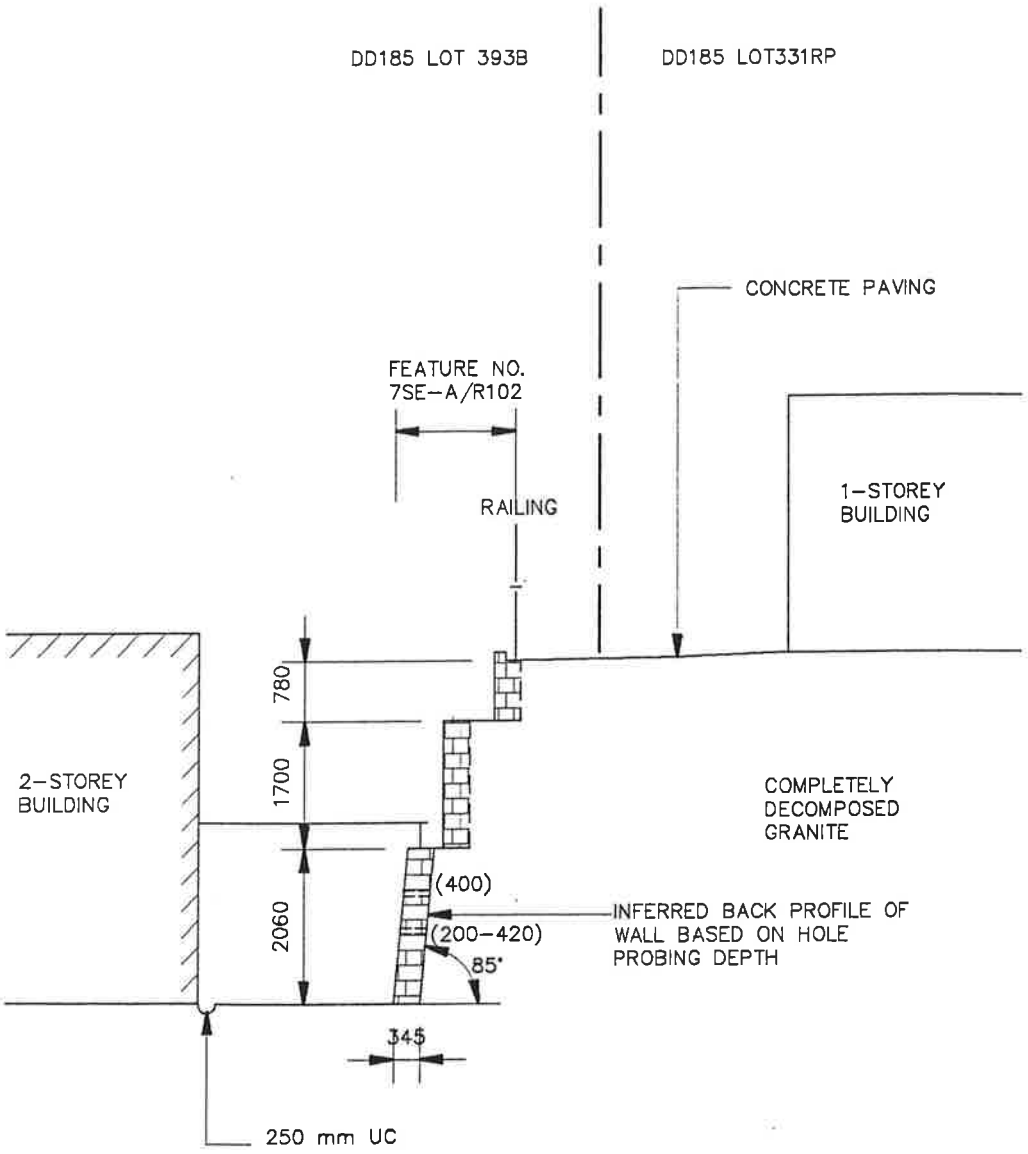
REMARKS ON WALL: –

1. MASONRY CONDITIONS POOR TO FAIR
2. SIGNS OF DISTRESS MODERATE

OTHER REMARKS: –

NO WEEPHOLES ON WALL FACE

FIGURE 3



SECTION 1-1

LEGEND

MASONRY WALL

=== RANGE OF HOLE DEPTH PROBED

SCALE 1 : 100

GEOMETRICAL MODEL FOR RETAINING WALL FEATURE NO. 7SE-A/R102	DD185 LOT 331RP 173 SHEUNG WO CHE VILLAGE, SHATIN, N.T.	FIGURE 4

STAGE 2 STUDY REPORT

S2R82/2000

FEATURE NOS.
7SE-A/C289, CR303 & R100
LOT NOS. DD185 LOT 393B & LOT 475RP
169, 174 & 175 SHEUNG WO CHE VILLAGE

C M WONG & ASSOCIATES LTD.

This report has been prepared by MAA Engineering Consultants (H.K.) Ltd, being a sub-consultant to C M Wong & Associates Ltd for the sole and specific use of the Government of the Hong Kong Special Administrative Region. Any other persons who use any information in it do so at their own risk.

November 2000
Advisory Division GEO

9-5-01

MAA Report No. 97LPM/1100/AH/EC/Lot 393B/VA

1. INTRODUCTION

1.1 Background

This report presents the findings of the Stage 2 Study on Feature Nos. **7SE-A/C289**, **7SE-A/CR303** and **7SE-A/R100** within DD185 Lot 393B (also known as Lot 393s.B) and DD185 Lot 475RP at Nos. 169, 174 & 175 Sheung Wo Che Village, Shatin, New Territories. This report does not include studies on Feature Nos. 7SE-A/C304, 7SW-B/R69 (Portion), 7SE-A/C488, 7SE-A/C296 (Portion), 7SE-A/C287 (Portion) and 7SE-A/CR479 (Portion), which also lie within DD185 Lot 393B and DD185 Lot 475RP, as they have not been assigned a high priority ranking for safety screening action at this stage.

The location of these features are shown on the location plan in Figure 1. The Feature boundaries are based on Slope Information System (SIS) plan retrieved from Geotechnical Engineering Office (GEO) and site reconnaissance. The Hong Kong Metric Grid Co-ordinates of the study features are listed as below.

Feature No.	Hong Kong Metric Grid Co-ordinates
7SE-A/C289	827514N, 837510E
7SE-A/CR303	827524N, 837519E
7SE-A/R100	827518N, 837529E

Geotechnical Engineering Office had conducted a Stage 1 Study on the study features in March 1997. The Stage 1 Study Reports recommended further study for the Feature Nos. **7SE-A/C289** and **7SE-A/R100** and engineer inspection for the Feature No. **7SE-A/CR303**. Extracts of the Stage 1 Study Reports are enclosed in Appendix A.

The Stage 2 Study commenced in September 1999 with the objective of assessing the stability status of the Features and determining whether a detailed investigation is required. Works carried out included desk study, site inspection, aerial photograph interpretation and preliminary stability analysis.

1.2 Site Description

The location plan, sketch plans, relevant sections and developed elevation for Feature Nos. **7SE-A/C289**, **7SE-A/CR303** and **7SE-A/R100** are depicted in Figures 1 to 6.

DD 185 Lot 393B are Lot 475RP are situated at the southeast side of To Fung Shan in Shatin and can be reached via footpaths branched off from Tai Po Road. The lots had been formed into a series of small stepped terraces for village houses, a temple and a home for the Aged. The difference in elevations between these terraces are bridged by either retaining structures or slopes.

- Feature No. **7SE-A/C289** - is a soil cut slope situated at the central part of DD185 Lot 393B and behind Nos. 174-175 Sheung Wo Che Village. The slope is approximately 42 m long and maximum about 5.9 m high, and trends in northwest direction. The slope angle is generally between 70 and 84 degrees to the horizontal. The slope is covered by pitching stones at the southern portion and chunam plaster at the northern portion without incorporation of any weepholes. Behind the crest of the cut slope is a 1.6 m wide concrete paved footpath, the northern part of which is supported by masonry wall of maximum about 1.7 m in height. A 300 mm wide flat channel is laid at the toe of the masonry wall. Standing above the other side of the footpath are a masonry wall of maximum about 2.6 m in height and a vegetated slope ascending at 35 to 70 degrees to the horizontal. A small platform extends beyond the masonry wall. In front of the Feature are two platforms presently occupied by village houses and Sam Yuen Kwon

Temple. Three blocks of single-storey houses and a corrugated sheet canopy are constructed immediately in front of the Feature. The temple is positioned at a horizontal distance of about 1 to 3 m from the toe of the Feature.

- Feature No. **7SE-A/CR303** - is a soil cut slope above a rubble wall abutting the eastern lot boundary of DD185 Lot 393B and below a masonry wall with Feature No. **7SE-A/R100** which supports the terrace for two single-storey houses in the adjoining lot of DD185 Lot 475RP. Part of the Feature lies within DD185 Lot 475RP. The horizontal extent of the Feature is about 10 m. The slope portion of the Feature has a maximum height of about 3.8 m, average gradient of about 35 degrees to the horizontal and is heavily vegetated. Signs of previous dwellings were noticed, as household debris, concrete fragments and broken tree branches were found dumping all over the slope surface. Behind the crest of the Feature is a berm of about 1.2 m in width. At the toe of the Feature is a masonry wall of maximum about 1.8 m in height. A single-storey house is constructed immediately in front of the Feature.

- Feature No. **7SE-A/R100** – is a pointed squared rubble wall with a total length of approximately 41 m, maximum height of about 3m, face angle of 88 degrees to horizontal, and supports the building platform of DD185 Lot 475RP on the west side. The Feature is predominantly L-shaped on plan, and trends in southeast direction and turns to the northeast direction at the southeastern corner of the Feature. The wall stands immediately on top of Feature No. **7SE-A/CR303**. The ground behind the crest of the Feature is concrete paved. A single storey house is positioned at a horizontal distance of 0.7 m from the crest of the Feature. A 250 mm half-round channel is laid along the wall crest at the southern part of the Feature. The northern end of the Feature joins with a dry packed random rubble wall of Feature No. 7SE-A/C287.

1.3 Maintenance Responsibility

According to the District Survey Office Land Status Plan enclosed in Appendix B, the Feature No. **7SE-A/C289** lies inside the private lot of DD185 Lot 393s.B except that a small portion is situated within Government land. On the other hand, the Feature No. **7SE-A/CR303** lies partly within the private lot of DD185 Lot 393s.B and partly within the private lot of DD185 Lot 475RP. Feature No. **7SE-A/R100** lies wholly within the private lot of DD185 Lot 475RP.

The Systematic Identification of Maintenance Responsibility for Slopes and Retaining Walls (SIMAR) reports confirm that the Feature No. **7SE-A/C289** is under the maintenance responsibility of the owners of DD185 Lot 393B. The maintenance responsibility for Feature No. **7SE-A/CR303** rests with the owners of DD185 Lot 393B and DD185 Lot 475RP for the portion of the Feature lying within their lot boundaries. Feature No. **7SE-A/R100** is under the maintenance responsibility of the owners of DD185 Lot 475RP. The SIMAR Reports are reproduced in Appendix C.

2. GEOTECHNICAL INVESTIGATION

2.1 Background/Desk Study

2.1.1 Aerial Photograph Interpretation (API)

Aerial photograph interpretation was carried out to investigate the history of the Features as part of this study. Aerial photographs from Geotechnical Engineering Office were inspected. A list of aerial photographs consulted and the corresponding interpretation are presented in Appendix D.

The available aerial photographs indicate that Feature No. **7SE-A/C289** had been constructed prior to 1963 and Feature No. **7SE-A/CR303** was formed in 1964. Feature No. **7SE-A/R100** and a house on crest of wall had been constructed prior to 1956. Feature No. **7SE-A/CR303** was then covered by dense vegetation. No apparent signs of changes can be identified from available aerial photograph for Feature Nos. **7SE-A/CR303** and **7SE-A/R100**. The house at No. 175 Sheung Wo Che Village near the northern end of the Feature No. **7SE-A/C289** was constructed in 1973. There was no apparent sign of past instability found from the aerial photographs examined. There is no evidence of thick colluvium observed on the aerial photographs. A streamcourse runs across DD185 Lot 393B to the northwest of Feature No. **7SE-A/C289**.

2.1.2 Geotechnical Engineering Office

File searching at Geotechnical Engineering Office (GEO) located Phase 2 Systematic Identification of Features in the Territory (SIFT) Reports for Feature Nos. **7SE-A/C289**, **7SE-A/CR303** and **7SE-A/R100**. Stage 1 Study Reports for these study features conducted by the Planning Division of GEO in 1997 were also found, which recommended "Engineer Inspection for Maintenance" as well as "Further Study" for the Features.

A search of Geotechnical Information Unit (GIU) records was undertaken. No ground investigation information relevant to the Features was found.

A search of GEO District records was undertaken. No reports of previous failure or instability were found at the GEO. GEO had not recommended issue of any Dangerous Hillside (DH) Order or Advisory Letter for the Features in the past.

2.1.3 Buildings Department

No relevant information on the construction details and history of the Features was available from the Buildings Department (Appendix F). Neither DH Order nor Advisory Letter relevant to the Features had been issued in the past.

2.1.4 Utilities Companies

Water Supplies Department (WSD) and Drainage Services Department (DSD) have been consulted for details of their installations in the vicinity of the Features. Plan provided by WSD indicates a 50 mm diameter galvanized water main running along the footpath above Feature No. **7SE-A/C289** as well as along the crest of Feature No. **7SE-A/CR303**. There is no public stormwater drain or sanitary sewer in the vicinity of the study features according to the records of DSD. Copies of the utilities records are enclosed in Appendix G.

2.1.5 Geological Survey

The Hong Kong Geological Map Sheet 7, Solid and Superficial Geology of Shatin, Series HGM20 at a scale of 1:20000 indicates that the sites of the Features are underlain by major intrusive igneous rock of coarse-grained granite with inequigranular texture. Superficial or near surface deposits are not indicated but variable thickness of weathered rock is likely.

2.2 Visual Inspection

Site inspections for the Features were carried out in September 1999 and August 2000. Observations made are outlined below. Salient features noted are shown on Sketch Plan in Figure 2. Views of the Features are shown on Plates 1 to 9.

- **FEATURE NO. 7SE-A/C289**

The Feature is a soil cut slope with a total length of some 42 m and slope height increasing from about 3.5 m at the southern part to maximum about 5.9 m at the northern part. The slope angle is generally between 70 and 84 degrees to the horizontal and locally 45 degrees for a small top 2 m portion at the northern part of the slope. The slope is rendered with masonry facing at the southern part and chunam plaster at the northern part. The former appeared in fairly good condition without dislocation of rubble blocks or much mortar missing, whilst the latter had patches of recent repair with cement mortar at localities. No weephole was evident at the slope. The slope was dry without apparent signs of seepage at the time of inspections. A 300 mm wide surface channel is laid at the crest of northern part of the slope. Behind the crest of the cut slope is a footpath, the northern part of which is on top of a masonry wall with maximum height of 1.7 m. Based on site observation, the masonry wall was in fairly good condition without apparent sign of distress in the form of severe cracking and significant bulging. According to Table 3 of GEO Circular No. 6/96, the condition class of the wall is classified as "Class A". The footpath is provided with a concrete pavement. A 50 mm diameter watermain runs along the footpath and showed no sign of leakage at the time of site inspections. Above the footpath are a platform on top of a maximum 2.6 m high masonry wall and a vegetated slope of 35 to 70 degrees to the horizontal. Immediately in front of the Feature are three blocks of single-storey houses and a corrugated sheet canopy, sheltering about three-quarters of the cut slope. An approximately 2.1 m long, 1.4 m wide and 0.8 m thick buttress wall made up of random rubble blocks and bricks is constructed leaning against the cut slope near the northern end of the Feature.

- **FEATURE NO. 7SE-A/CR303**

The Feature comprises a heavily vegetated slope and a rubble toe wall situated directly below a masonry wall registered as Feature No. **7SE-A/R100**. The slope has a maximum height of about 3.8 m and an average inclination of 35 degrees to the horizontal. Signs of previous dwellings were noted on the slope surface. In fact, some of the village houses below and in vicinity of the Feature had been demolished and the vacant space has been used for general storage by nearby residences. The slope is supported by a masonry wall of maximum about 1.8 m in height. A masonry block of the wall had been dislocated, which revealed that the masonry wall near the southern end of the Feature is about 300 mm thick. According to Table 3 of GEO Circular No. 6/96, the condition class of the wall is classified as "Class B". The platform in front of the Feature is supported by a masonry wall of about 2.6 m high on the west side. There is a 1.2 m wide berm behind the slope crest. At the time of inspections, the surface channel along the berm was completely blocked. The berm was slightly wet as a result of minor seepage from weepholes of the masonry wall with Feature No. **7SE-A/R100** above the berm. Tension crack as well as ground subsidence were not found. Behind the masonry wall with Feature No. **7SE-A/R100** are two blocks of one-storey houses. The slope is covered by vegetation and other household debris, and showed no sign of surface erosion.

- **FEATURE NO. 7SE-A/R100**

The Feature is a pointed square rubble wall situated above Feature No. **7SE-A/CR303**. The wall has a total length of some 41 m, maximum height of about 3 m and a sub-vertical face with inclination of 88 degrees to horizontal. The granite blocks are typically 450 mm by 300 mm in size. The wall is provided with a 240 mm thick concrete horizontal beam at the mid-height of the wall and a 200 mm thick concrete capping beam. An approximately 1.1 m high concrete parapet wall is built on top of the

Feature. One row of weepholes made of 75 mm diameter ceramic pipes are installed into the wall at horizontal spacing varied from1.5 m to 2.0 m center-to-centre. Minor seepage was visible from one weephole and also from joints between the rubble blocks and the horizontal concrete beam at the central part of the wall at the time of inspection in August 2000. Weepholes were probed to depth between 0.5 m and 1.16 m. The results of weephole probing survey are presented in Figure 3. An elevated platform protrudes from the northern part of the wall. Part of concrete at the underside of the elevated platform has spalled exposing the steel reinforcements. A sub-vertical crack with crack width of maximum 15 mm extends to about 1 m above the toe of the wall underneath the elevated platform. Vegetations including trees grow and protrude from joints between rubble blocks at three locations. Behind the crest of the wall is a concrete paved platform. A single-storey house is situated at a horizontal distance of 0.7 m from the crest of the wall. A 250 mm half-round surface channel is constructed and a 25 mm diameter water pipe is laid along the crest of the southern part of the wall. A 160 mm diameter PVC downpipe is mounted on the wall face near the southern end of the wall.

Based on site observation, the Feature appeared in fair condition without apparent signs of distress in the form of significant bulging or forward movement. Pointings remain intact and dislocation of masonry block is not evident. There was no ground subsidence or tension crack behind the wall. The sub-vertical crack at the wall face is thought attributable to differential settlement of the wall. Hence the wall is considered in moderate deformation condition. According to Table 3 of GEO Circular No. 6/96, the condition class of the wall falls into 'Class B'.

3. GEOTECHNICAL ASSESSMENT

3.1 Feature No. 7SE-A/C289

3.1.1 Topography

The general layout of the Feature is shown in Figure 1. The Feature is a soil cut slope with maximum inclination of 84 degrees to horizontal and height varying from 3.5 to 5.9 m. A footpath is located along the crest of the slope. One critical section (Section 1-1) was selected for preliminary stability assessment with respect to the tallest slope height and steepest slope gradient of the Feature. The location of the section is indicated in Figure 2. The surveyed section prepared by Henry Chan Surveyors Ltd. is included in Appendix H.

3.1.2 Geology and Geometry

Specific site investigation information and construction records of the Feature were not available. Based on site reconnaissance and available geological map of Hong Kong, the ground at the assessed section is estimated to consist of completely decomposed granite.

The geological model adopted for stability assessment of the Feature is depicted in Figure 4.

3.1.3 Groundwater

No site specific groundwater monitoring record was available for the Feature. At the time of site inspection in September 1999, the slope surface was dry indicating that the water table prevailed below the slope toe. There is no evidence of water table rising above the slope toe. There is a 50 mm diameter watermain along the footpath behind the crest of the slope. For analytical purpose, other than considering the dry condition, an assumed groundwater table at one-third height of the Feature to cater for the worst credible groundwater condition with respect to possible leakage of the

watermain and a ten-year return period rainfall event is also taken into account in the stability assessment.

3.1.4 Parameter for Analysis

In the absence of specific ground investigation and laboratory test data for the Feature, a range of soil parameters assumed for the stability analysis are listed in Table 1. Two sets of shear strength parameters are adopted for completely decomposed granite (CDG) and they represent the lower and intermediate range of the strength parameters for the same soil type quoted in Table 8 of the Geoguide 1.

Table 1 Parameters Assumed for Stability Analysis of Feature No. **7SE-A/C289**

Material	Bulk Density γ	Shear Strength Parameters			
		Set 1		Set 2	
		c'	ϕ'	c'	ϕ'
Completely Decomposed Granite	19	5	35	10	40

γ = Bulk density (kN/cu.m)

c' = Apparent cohesion (kPa)

ϕ' = Apparent angle of shearing resistance (degrees)

Set 1 = Lower range of the strength parameters for CDG given in Table 8 of Geoguide 1

Set 2 = Intermediate range of the strength parameters for CDG given in Table 8 of Geoguide 1

3.1.5 Preliminary Stability Analysis

The stability of soil slope is assessed for two different sets of soil parameters given in Table 1 and two different groundwater conditions as discussed in Section 3.1.3. The pedestrian surcharge behind the crest of the slope is taken to be 5 kPa. The factor of safety of (FOS) against potential slip is calculated based on Janbu's rigorous method with variably inclined intersliced forces for non-circular slip surface using Buildings Department approved computer program "SLOPE" developed by OASYS Ltd. The results of the stability analysis are summarized in Table 2 and illustrated in Figure 7. The corresponding stability calculations are included in Appendix I.

Table 2 Summary of Stability Analysis of Feature No. **7SE-A/C289**

Section	Strength Parameters	Calculated Factor of Safety	
		Dry	Assumed GWL
1 –1	c' = 5 kPa, ϕ' = 35°	0.72	0.71
	c' = 10 kPa, ϕ' = 40°	1.08	1.07

GWL : Groundwater level

3.2 Feature No. **7SE-A/CR303**

3.2.1 Topography

The general layout of the Feature is shown in Figure 1. As the Feature lies partly within DD185 Lot 393B and partly within DD185 Lot 475RP, two sections with

respect to the steepest overall gradient in each lot were identified during the site inspection. The section lines are indicated in Figure 2. The surveyed sections prepared by Henry Chan Surveyors Ltd. are included in Appendix H.

3.2.2 Geology and Geometry

The Feature is assumed to have similar geological setting as Feature No. **7SE-A/C289**, consisting of completely decomposed granite. The geological model adopted for stability assessment of the Feature is depicted in Figures 5 and 6.

3.2.3 Groundwater

No site specific groundwater monitoring record was available for the Feature. At the time of site inspections in September 1999 and August 2000, the slope face was dry and no seepage stains were noticed at the masonry wall below the slope. The Feature is situated topographically away from areas of possible groundwater convergence. Nevertheless, the vegetated slope surface is prone to infiltration. Therefore other than considering the dry condition, an assumed groundwater table at one-third of the total height of the Feature to cater for the worst credible groundwater condition with respect to a ten-year return period rainfall event is also taken into account in the stability assessment.

3.2.4 Parameters for Analysis

In the absence of specific ground investigation and laboratory test data for the Feature, two sets of shear strength parameters corresponding to the lower and intermediate range of parameters suggested in Table 8 of Geoguide 1 are assumed for completely decomposed granite for stability assessment and are given in Table 3. The shear strength parameters for fill behind the Feature No. **7SE-A/R100** is based on the generated parameters stated in GEO Circular No. 6/96.

Table 3 Parameters Assumed for Stability Analysis of Feature No. **7SE-A/CR303**

Material	Bulk Density γ	Shear Strength Parameters			
		Set 1		Set 2	
		c'	ϕ'	c'	ϕ'
Fill	19	0	35	-	-
Completely Decomposed Granite	19	5	35	10	40

γ = Bulk density (kN/cu.m)

c' = Apparent cohesion (kPa)

ϕ' = Apparent angle of shearing resistance (degrees)

Set 1 = Lower range of the strength parameters for CDG given in Table 8 of Geoguide 1

Set 2 = Intermediate range of the strength parameters for CDG given in Table 8 Geoguide 1

3.2.5 Preliminary Stability Analysis

The stability of slope is assessed for two different sets of soil parameters as given in Table 3 and two different groundwater conditions as discussed in Section 3.2.3. The pedestrian surcharge of 5 kPa and building surcharge of 10 kPa per storey behind the crest of the slope are considered and applied where appropriate. The factor of safety against potential slip is calculated based on Janbu's rigorous method with

variably inclined intersliced forces for non-circular slip surface using Buildings Department approved computer program "SLOPE" developed by OASYS Ltd. The overall stability through the masonry wall at the toe of the slope is also checked. The results of the stability analysis are summarized in Table 4 and illustrated in Figures 8 and 9. The corresponding stability calculations are included in Appendix I.

Table 4 Summary of Stability Analysis for Feature No. **7SE-A/CR303**

Section	Strength Parameters	Calculated Factor of Safety	
		Dry	Assumed GWL
2 – 2	c' = 5 kPa, ϕ' = 35°	1.19	1.17
	c' = 10 kPa, ϕ' = 40°	1.60	1.57
3 – 3	c' = 5 kPa, ϕ' = 35°	1.08	1.08
	c' = 10 kPa, ϕ' = 40°	1.44	1.44

GWL : Groundwater level

3.3 Feature No. 7SE-A/R100

3.3.1 Topography

The general layout of the Feature is shown in Figure 1. The Feature is a pointed squared rubble wall with slanted face of 88 degrees to horizontal and maximum height of about 3 m. One critical section (Section 2-2) was selected for preliminary stability assessment with respect to the tallest retaining height of the Feature. The location of the section is indicated in Figure 2. The surveyed section prepared by Henry Chan Surveyors Ltd. is included in Appendix H.

3.3.2 Geology and Geometry

Specific site investigation and construction records of the Feature were not available. The thickness of the wall is estimated based on field measurement of weephole depths. The weepholes are of ceramic type and are installed at the concrete horizontal beam or between rubble blocks. It is believed that these weepholes were laid at the same time as the masonry wall was built. The depths of weepholes are thus considered to be reasonable representative of the wall thickness. The maximum probing depth of the lowest weephole is used to interpret the wall thickness. It is estimated that the Feature has wall base width of 1.02 m. The inferred layout of the Feature based on topographic survey and weephole probing results is depicted in Figures 5 and 6.

It is assumed that open excavation with temporary cut of 60 degrees to horizontal was adopted for the wall construction which was later backfilled forming a fill wedge behind the Feature. Based on available geological map, the ground behind the fill wedge is estimated to be completely decomposed granite.

3.3.3 Groundwater

No site specific groundwater monitoring record was available for the Feature. At the time of site inspection in August 2000, minor seepage was observed from a weephole and also the adjacent wall face. Besides, seepage stains were noticed below most of the weepholes. Two groundwater conditions are therefore considered in the stability assessment. Other than considering groundwater level at one-third retaining height of wall, an assumed groundwater table at the point of seepage to cater for the worst credible groundwater condition is also taken into account in the stability assessment.

With FOS greater than 1.25 against sliding but smaller than 1.50 against overturning under the assumed worst credible groundwater condition, the wall stability class can be classified as 'Class B' according to Table 2 of GEO Circular No. 6/96. Wall condition is ranked 'Class B' as discussed in Section 2.2. The overall stability condition of the Feature falls into 'Class 3' according to Table 1 of the same circular.

An overall stability analysis has also been undertaken. Two groundwater conditions and two different sets of CDG parameters as previously discussed in Sections 3.2.3 and 3.2.4 are considered in the stability analysis. The slope stability analysis is made based on the Janbu's method with variably inclined intersliced forces for non-circular slip surfaces with respect to various assumed geotechnical parameters and groundwater conditions. The factor of safety (FOS) against potential slip is calculated using Buildings Department approved computer program "SLOPE" developed by OASYS Ltd. The results of the stability analyses are summarized in Table 7 and the sections marked with the critical slip surfaces are depicted in Figures 8 and 9. Associated stability calculations are included in Appendix I. The Feature is found to have a factor of safety of 1.08 even under dry condition when using lower range of shear strength parameters of CDG for analysis.

Table 7 Summary of Overall Stability Analysis for Feature No. **7SE-A/R100**

Section	Strength Parameter of CDG	Calculated Factor of Safety	
		Dry	Assumed GWL
2 – 2	c = 5 kPa, ϕ = 35°	1.21	1.17
	c = 10 kPa, ϕ = 40°	1.60	1.57
3 – 3	c = 5 kPa, ϕ = 35°	1.08	1.08
	c = 10 kPa, ϕ = 40°	1.44	1.44

CDG: Completely Decomposed Granite

GWL: Groundwater Level

4. DISCUSSION

- **Feature No. 7SE-A/C289**

  It is considered that the consequence of failure of the Feature would fall into consequence-to-life Category 1 as defined in the Works Bureau Technical Circular (WBTC) No. 13/99. This is based on the judgement that the village houses and temple in front of the Feature would be adversely affected if failure occurs. According to GEO Circular No. 4/97, a minimum factor of safety of 1.2 is required for a slope against slip failure when no site-specific ground investigation has been undertaken.

  The results of stability analyses indicate that the Feature has factor of safety (FOS) of less than unity against potential slip when adopting lower range of shear strength parameters of completely decomposed granite. The Feature achieves higher FOS of 1.08 when considering intermediate range of shear strength parameters of completely decomposed granite. As observed on the bare soil surface in the vicinity of the Feature, the completely decomposed granite consist mainly of silty sand in loose to medium dense state. It is therefore considered appropriate to adopt lower range of shear strength parameters in Table 8 of Geoguide 1 as generalized shear strength parameters for completely decomposed granite. Accordingly, the Feature is considered not meeting the current design standard. The service of a Dangerous Hillside (DH) Order is required under Criterion F of GEO Circular No. 4/97.

- **Feature No. 7SE-A/CR303**

  It is considered that the consequence of failure of this Feature would fall into consequence-to-life Category 1 in accordance with WTBC No. 13/99. This is based on the judgement that the occupied building locating above the Feature would be adversely affected if failure occurs. GEO Circular No. 4/97 requires a minimum factor of safety (FOS) of 1.2 for a slope against potential slip calculated from a stability assessment based on generalised or typical parameters without site-specific ground investigation.

  As demonstrated in the appended stability calculation, the Feature is found to possess a factor of safety of 1.08 when adopting lower range of shear strength parameters for completely decomposed granite in the stability assessment. Sign of distress in form of dislodging of masonry block was noted. Accordingly, the Feature is considered not meeting the current design standard. The service of a Dangerous Hillside (DH) Order is required under Criterion F of GEO Circular No. 4/97.

- **Feature No. 7SE-A/R100**

  It is considered that the consequence of failure of this Feature would fall into consequence-to-life Category 1 in accordance with WTBC No. 13/99. This is based on the judgement that the occupied house immediately behind the Feature would be adversely affected if failure occurs.

  With overall stability condition of 'Class 3' from Table 1 of GEO Circular No. 6/96, the stability of the Feature No. **7SE-A/R100** is considered inadequate and below current geotechnical standards based on Table 5 of the same circular. Besides, the Feature is found to possess a factor of safety less than the threshold value of 1.2 against overall stability when analysed for the assumed worst credible groundwater condition and using lower range of shear strength parameters of completely decomposed granite, which are considered appropriate based on the loose to medium dense state of soil exposed on the adjacent slope surface. Thus the service of a Dangerous Hillside (DH) Order is required under Criterion C and F of GEO Circular No. 4/97.

5. CONCLUSIONS AND RECOMMENDATIONS

- **Feature No. 7SE-A/C289**

  From the available information, inspection and preliminary analysis, the Feature possesses factor of safety below the trigger level for the service of a Dangerous Hillside (DH) Order. It is recommended that a Dangerous Hillside Order, in accordance with Section 27A of the Buildings Ordinance and under Criterion F of GEO Circular No. 4/97, be served to the owners of DD185 Lot 393B.

- **Feature No. 7SE-A/CR303**

  From the available information, inspection and preliminary analysis, the Feature possesses factor of safety below the trigger level for the service of a Dangerous Hillside (DH) Order. It is recommended that a Dangerous Hillside Order, in accordance with Section 27A of the Buildings Ordinance and under Criterion F of GEO Circular No. 4/97, be served to the owners of DD185 Lot 393B and DD185 Lot 475RP for the portion of the Feature within their lot.

- **Feature No. 7SE-A/R100**

  From the available information, inspection and preliminary analysis, the Feature possesses factor of safety below the trigger level for the service of a Dangerous Hillside (DH) Order. It is recommended that a Dangerous Hillside Order, in accordance with section 27A of the Buildings Ordinance and under Criterion C and F of GEO Circular No. 4/97, be served to the owners of DD185 Lot 475RP.

6. REFERENCES

6.1 Technical References

GEO (1998), Geoguide 5, Guide to Slope Maintenance (2nd Edition).

GEO (1997), GEO Circular No. 4/97. Dangerous Hillside Orders and Advisory Letters and Advisory Letters.

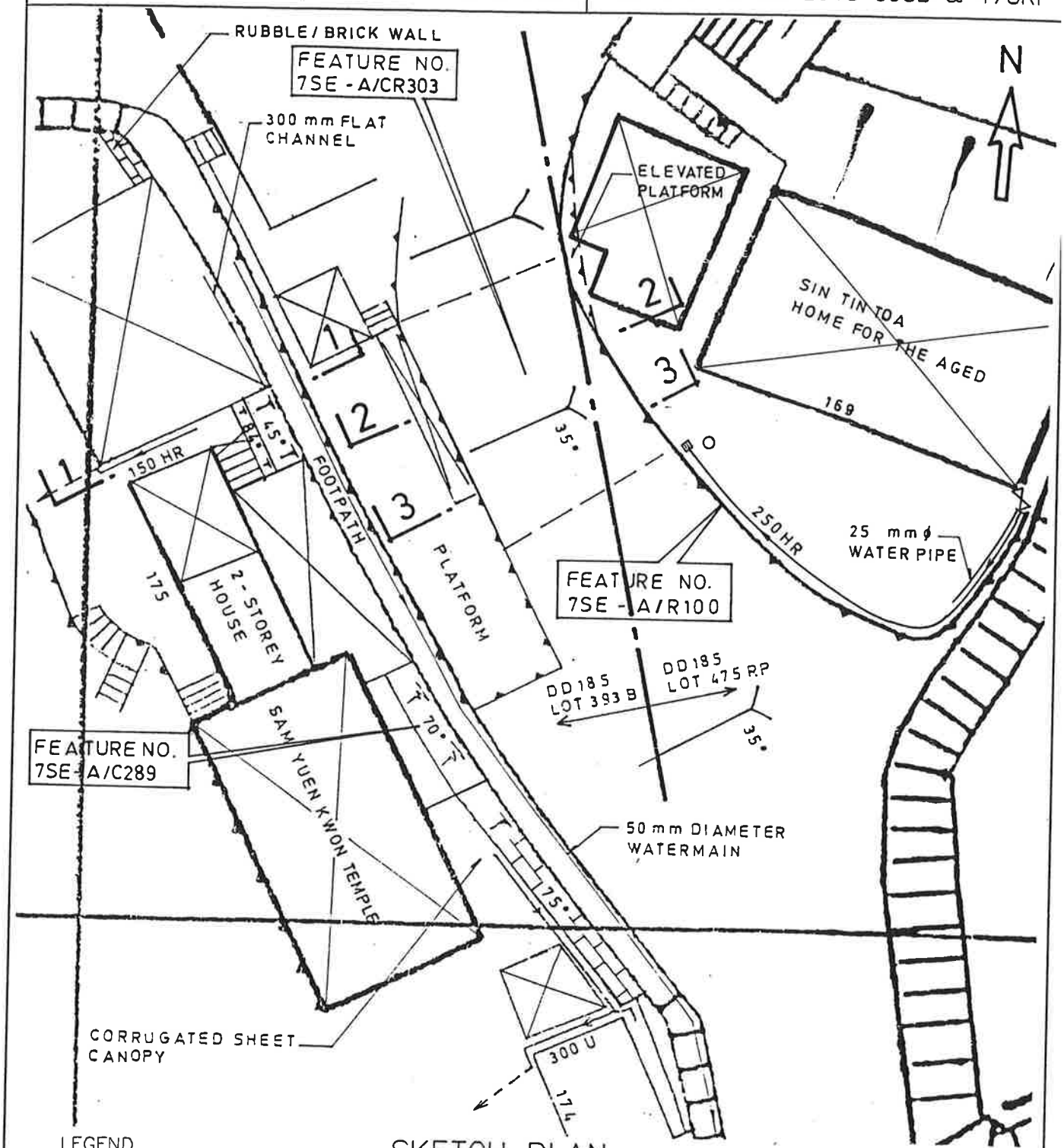
GEO (1996), GEO Circular No. 6/96, Guidelines for Assessment of Old Masonry Retaining Walls in Detailed Studies and for Action to be Taken on Private Walls

GEO (1993), Geoguide 1, Guide to Retaining Wall Design (2nd Edition).

Works Bureau Technical Circular No. 13/99, Geotechnical Manual for Slopes - Guidance on Interpretation and Updating.

LOCATION NO. 169, 174 & 175 SHEUNG WO CHE VILLAGE, SHATIN, N.T.

FEATURE NOS. 7SE-A/C289, CR303 & R100 | LOT NO. DD185 LOTS 393B & 475RP

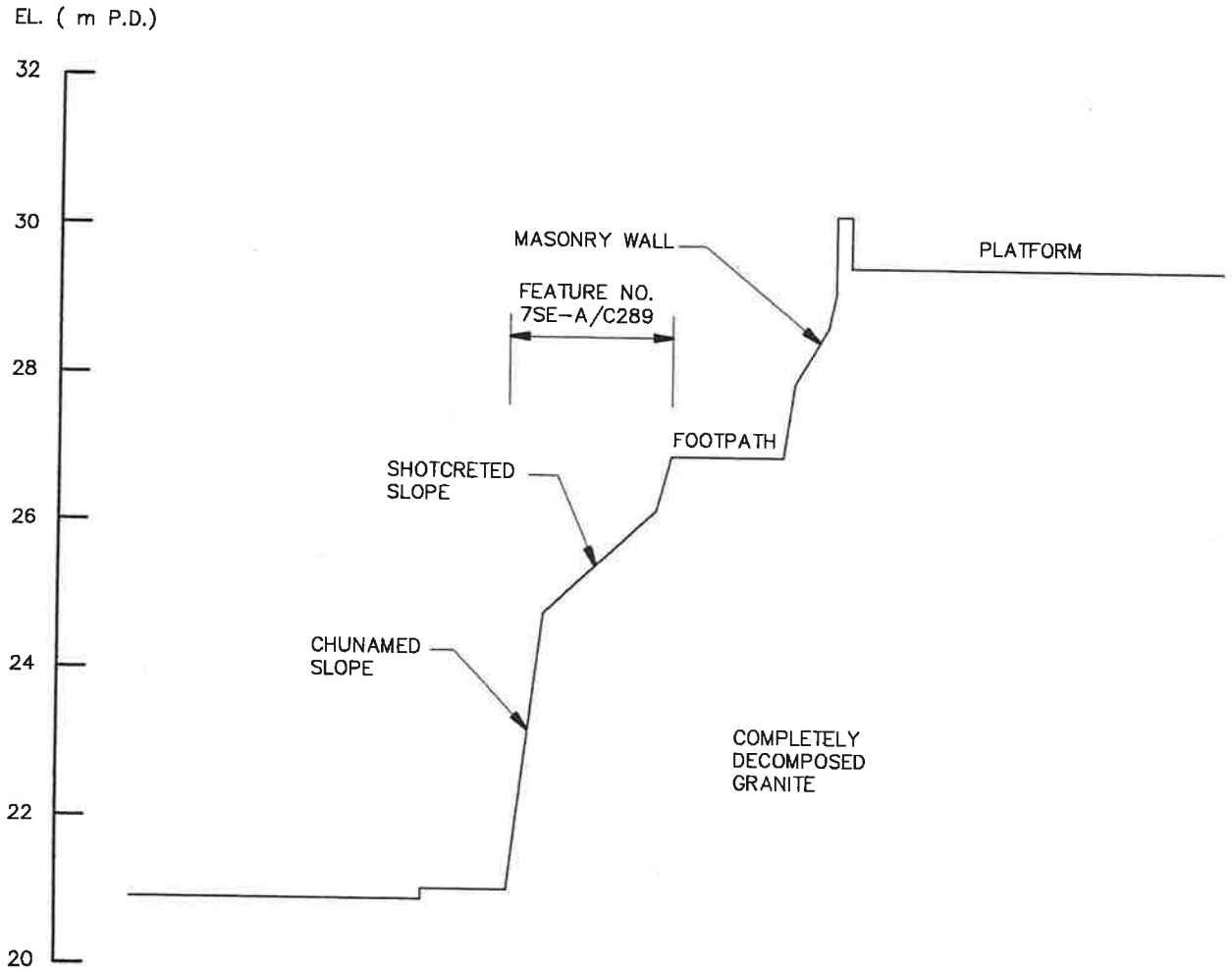


SKETCH PLAN

LEGEND

- LOT BOUNDARY
- 300U — 300 U-CHANNEL
- 150HR — 150 HALF-ROUND CHANNEL
- MASONRY RETAINING WALL
- 1-STOREY HOUSE
- SECTION MARK
- 75° — 75° CHUNAMED SLOPE
- 35° — 35° VEGETATED SLOPE
- STONE-PITCHING SLOPE
- MANHOLE

Civil Engineering Department Geotechnical Engineering Office	Agreement No. CE79/97 Thickness Gauging of Retaining Walls and Follow-up Investigation (Stage 2 Studies)	Drawn TW / Checked EC Scale 1:250 / Date AUG. 2000 Drg No. / Figure No. 2
Survey sheet reference nos. 7SE-11A & 15B		MAA ENGINEERING CONSULTANTS (H.K.) LIMITED



GEOLOGICAL MODEL AT SECTION 1-1

Civil Engineering Department Geotechnical Engineering Office	Agreement No. CE79/97 Thickness Gauging of Retaining Walls and Follow-up Investigation (Stage 2 Studies)	FEATURE NO. 7SE-A/C289	
		Drawn TW	Checked EC
Survey sheet reference nos. 7SE-11A & 15B		Scale 1:100	Date AUG. 2000
		Drg No.	Figure No. 4

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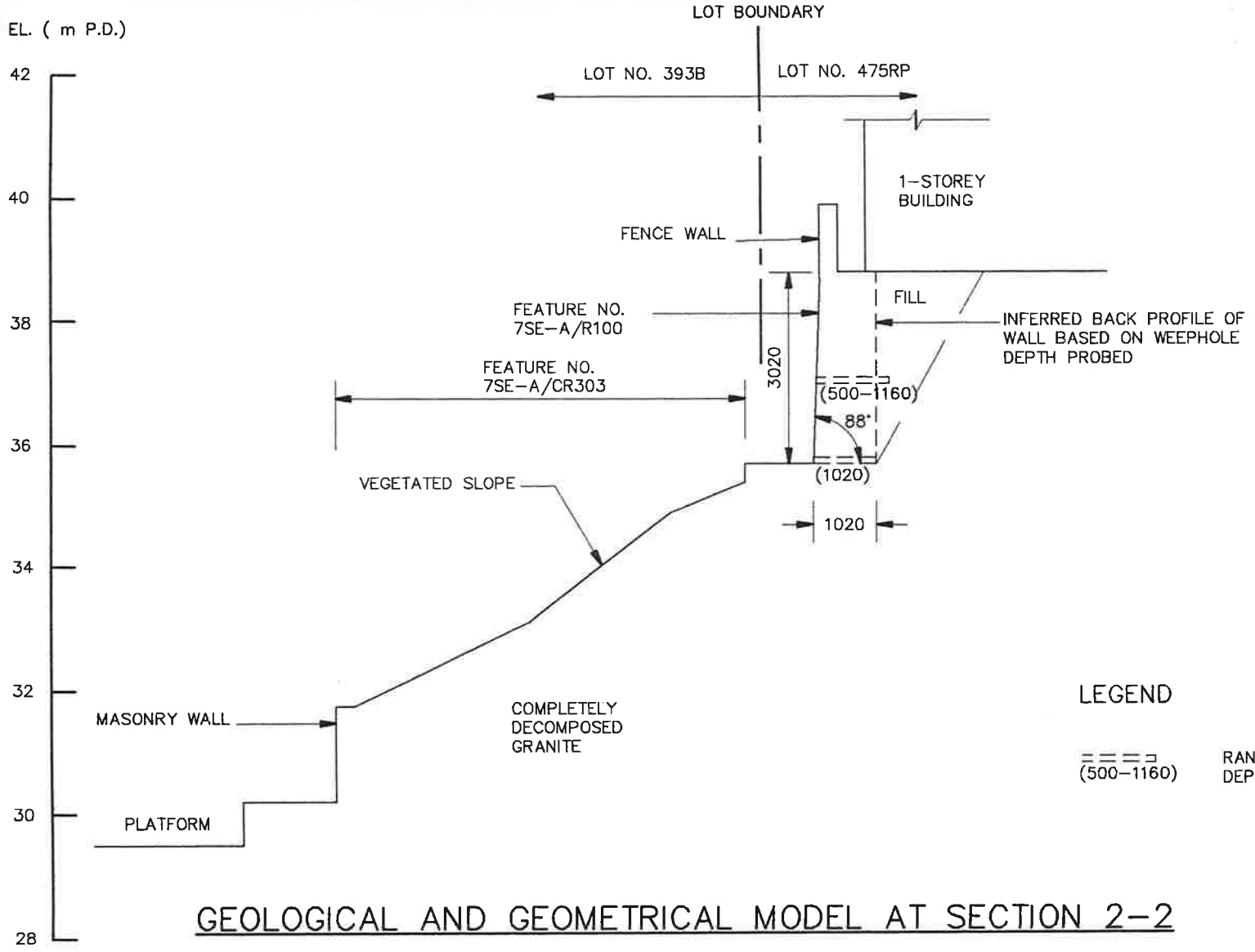
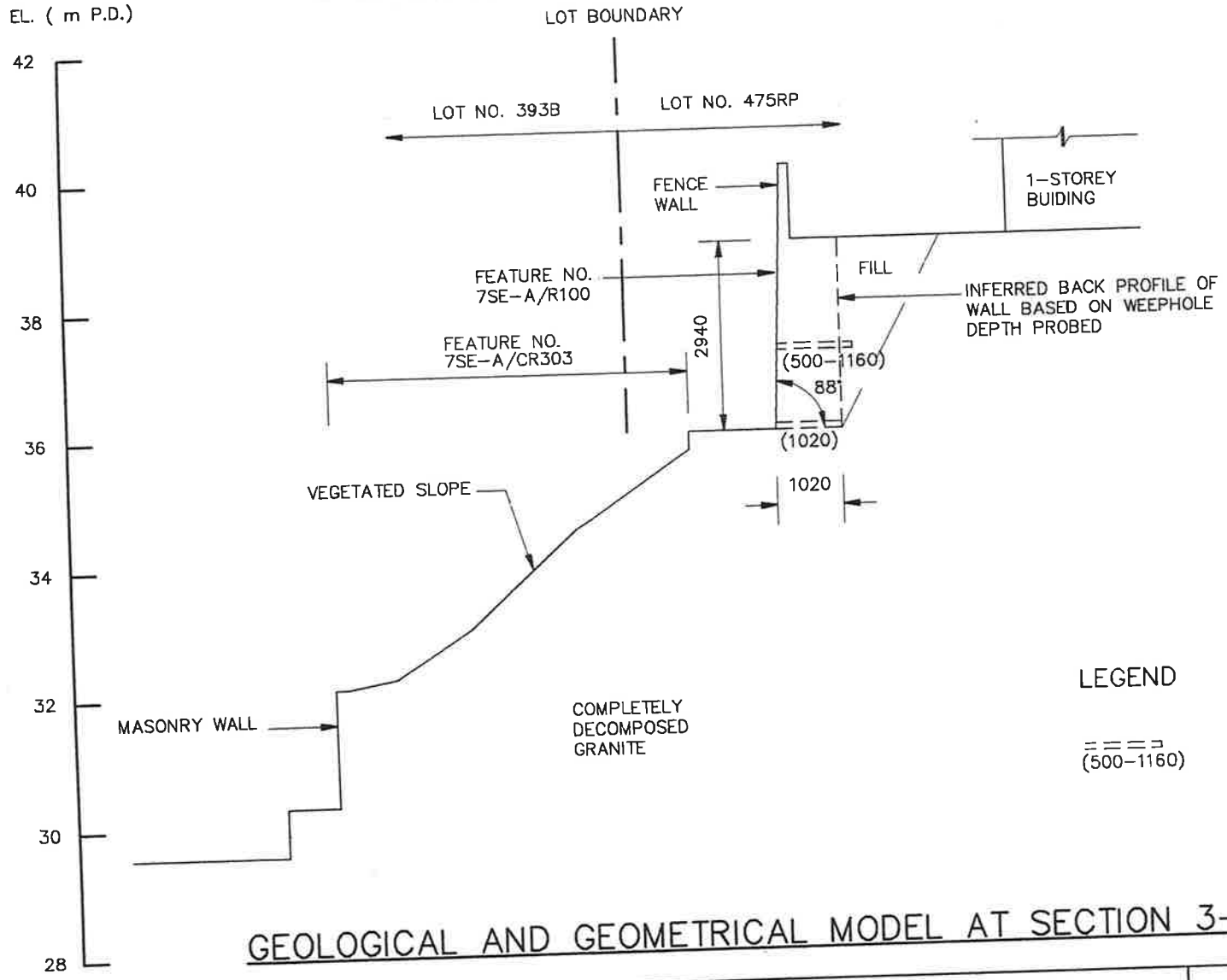


GEOLOGICAL AND GEOMETRICAL MODEL AT SECTION 2-2

Civil Engineering Department Geotechnical Engineering Office	Agreement No. CE79/97 Thickness Gauging of Retaining Walls and Follow-up Investigation (Stage 2 Studies)	FEATURE NO. 7SE-A/CR303 & R100	
		Drawn TW	Checked EC
		Scale 1:100	Date AUG. 2000
Survey sheet reference nos. 7SE-11A & 15B		Drg No.	Figure No. 5

MAA ENGINEERING CONSULTANTS (H.K.) LIMITED

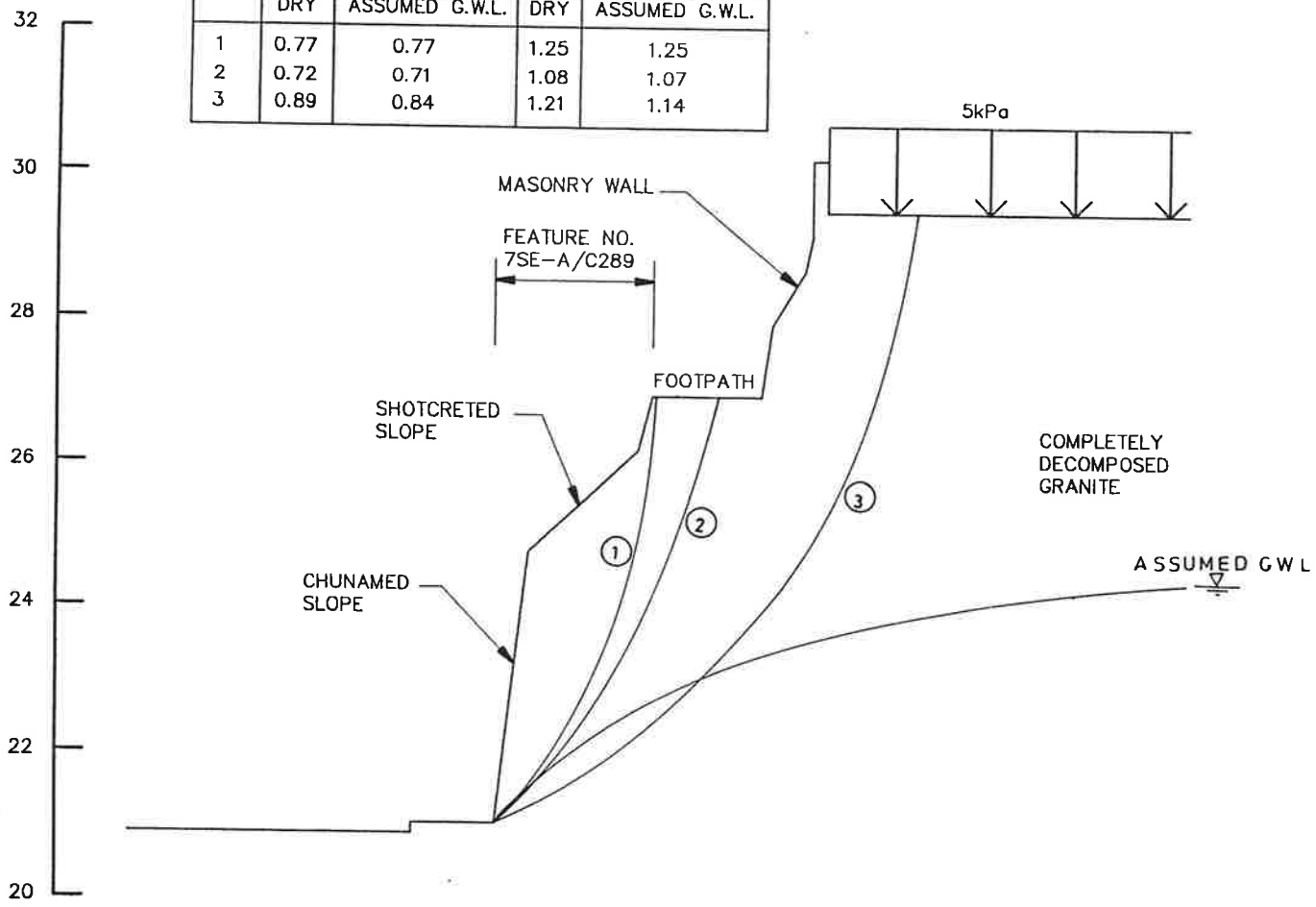


GEOLOGICAL AND GEOMETRICAL MODEL AT SECTION 3–3

Civil Engineering Department Geotechnical Engineering Office	Agreement No. CE79/97 Thickness Gauging of Retaining Walls and Follow–up Investigation (Stage 2 Studies)	FEATURE NO. 7SE–A/CR303 & R100	MAA ENGINEERING CONSULTANTS (H.K.) LIMIT
		Drawn TW / Checked EC	
		Scale 1:100 / Date AUG. 2000	
Survey sheet reference nos. 7SE–11A & 15B		Drg No. / Figure No. 6	

SUMMARY OF STABILITY ANALYSIS

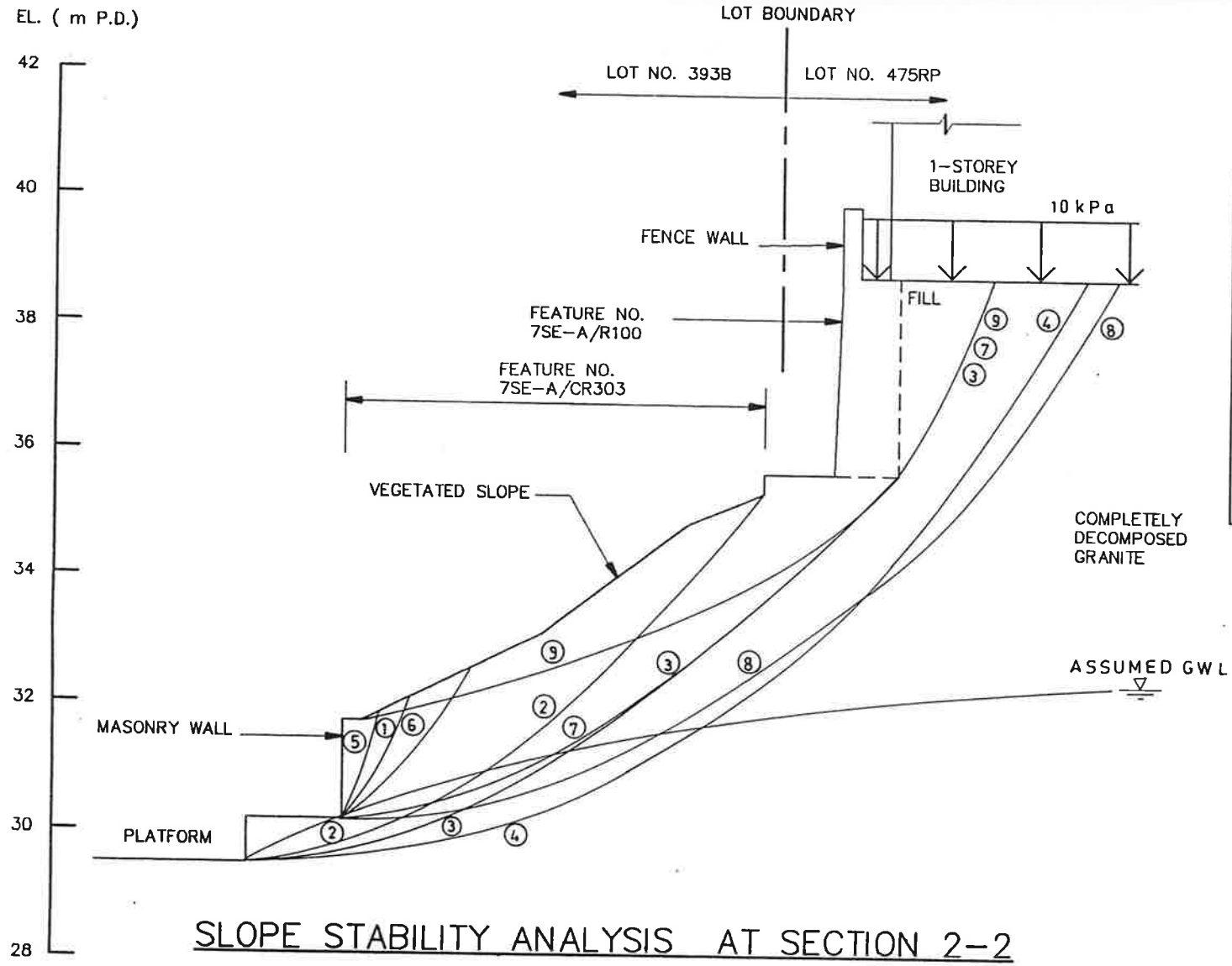
SLIP	CALCULATED FACTOR OF SAFETY			
	c'=5kPa φ'=35°		c'=10kPa φ'=40°	
	DRY	ASSUMED G.W.L.	DRY	ASSUMED G.W.L.
1	0.77	0.77	1.25	1.25
2	0.72	0.71	1.08	1.07
3	0.89	0.84	1.21	1.14



SLOPE STABILITY ANALYSIS AT SECTION 1-1

Civil Engineering Department Geotechnical Engineering Office	Agreement No. CE79/97 Thickness Gauging of Retaining Walls and Follow-up Investigation (Stage 2 Studies)	FEATURE NO. 7SE-A/C289	
		Drawn TW	Checked EC
		Scale 1:100	Date AUG. 2000
Survey sheet reference nos. 7SE-11A & 15B		Drg No.	Figure No. 7

MAA ENGINEERING CONSULTANTS (H.K.) LIMITED



SUMMARY OF STABILITY ANALYSIS

SLIP	CALCULATED FACTOR OF SAFETY			
	c'=5kPa φ'=35°		c'=10kPa φ'=40°	
	DRY	ASSUMED G.W.L.	DRY	ASSUMED G.W.L.
1	1.19	1.19	2.01	2.01
2	1.59	1.52	2.25	2.16
3	1.21	1.17	1.61	1.57
4	1.32	1.25	1.75	1.67
5	1.26	1.26	2.28	2.28
6	1.32	1.32	2.13	2.13
7	1.21	1.20	1.60	1.60
8	1.33	1.31	1.76	1.73
9	1.25	1.25	1.72	1.72

SLOPE STABILITY ANALYSIS AT SECTION 2-2

Civil Engineering Department
Geotechnical Engineering Office

Survey sheet reference nos. 7SE-11A & 15B

Agreement No. CE79/97
Thickness Gauging of Retaining Walls and Follow-up Investigation (Stage 2 Studies)

FEATURE NO. 7SE-A/CR303 & R100

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Scale 1:100	Date AUG. 2000
Drg No.	Figure No. 8

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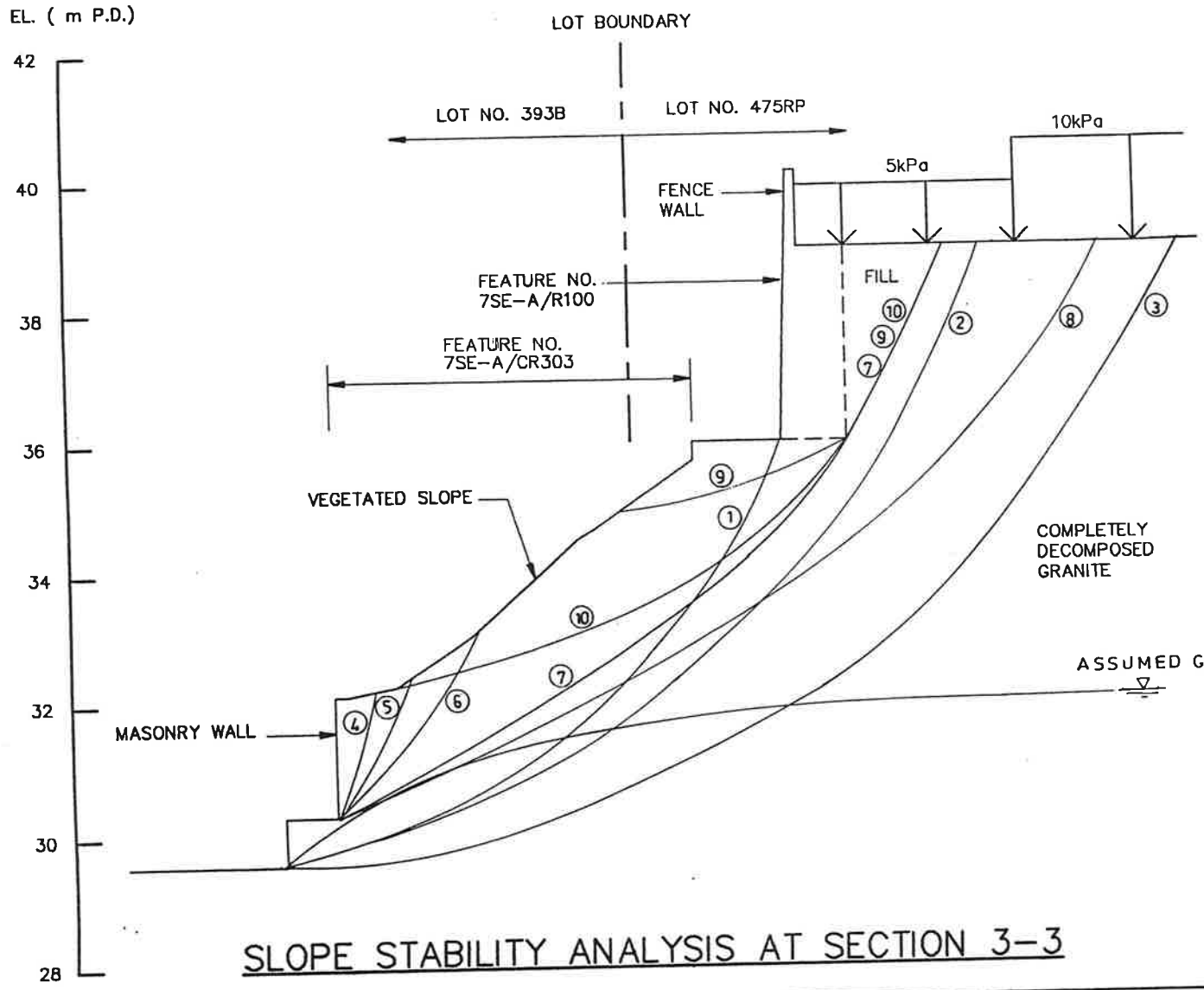

SUMMARY OF STABILITY ANALYSIS

SLIP	CALCULATED FACTOR OF SAFETY			
	c'=5kPa φ'=35°		c'=10kPa φ'=40°	
	DRY	ASSUMED G.W.L.	DRY	ASSUMED G.W.L.
1	1.39	1.33	1.90	1.83
2	1.20	1.16	1.60	1.55
3	1.41	1.33	1.82	1.73
4	1.52	1.52	2.90	2.90
5	1.11	1.11	1.94	1.94
6	1.23	1.23	2.00	2.00
7	1.08	1.08	1.44	1.44
8	1.29	1.29	1.70	1.70
9	1.40	1.40	1.82	1.82
10	1.22	1.22	1.67	1.67

SLOPE STABILITY ANALYSIS AT SECTION 3-3

Civil Engineering Department
Geotechnical Engineering Office

Survey sheet reference nos. 7SE-11A & 15B

Agreement No. CE79/97
Thickness Gauging of Retaining Walls
and
Follow-up Investigation
(Stage 2 Studies)

FEATURE NO. 7SE-A/CR303 & R100

Drawn TW	Checked EC
Scale 1:100	Date AUG. 2000
Drg No.	Figure No. 9

MAA ENGINEERING CONSULTANTS (H.K.) LIMITED