

Water Supplies Department
46/F, Immigration Tower
7 Gloucester Road
Wan Chai, Hong Kong

**Agreement No. CE 55/2006 (EP) Inter-
reservoirs Transfer Scheme (IRTS) -
Water Tunnel between Kowloon
Byewash Reservoir & Lower Shing Mun
Reservoir - Environmental Impact
Assessment - Investigation**

**Environmental Impact Assessment
Report (Final)
(Volume 2 of 2)**

Report No.: 240564/02/E

February 09

in association with

**ADI Limited
Archaeological Assessments**

Mott MacDonald Hong Kong Ltd
7/F, West Wing Office Building
New World Centre
20 Salisbury Road
Tsim Sha Tsui, Kowloon
Hong Kong
Tel: 2828 5757
Fax: 2827 1823

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- LEGEND:**
- IRTS
 - EIA STUDY AREA
 - KAM SHAN COUNTRY PARK BOUNDARY



PROJECT ALIGNMENT

500m

Rev	Date	Drawn/Description	Ch'kd/App'd

Client

THE GOVERNMENT OF THE HONG KONG
SPECIAL ADMINISTRATIVE REGION
WATER SUPPLIES DEPARTMENT

**Mott
MacDonald**

Mott MacDonald Hong Kong Ltd
7th Floor
West Wing Office Building
New World Centre
20 Salisbury Road
Tsim Sha Tsui, Kowloon
Hong Kong
Tel: 2828 5757
Fax: 2827 1823
Web: www.mottmac.com.hk

Project

Agreement No. CE55/2006(EP)
Inter-reservoirs Transfer Scheme (IRTS)
Water Tunnel between Kowloon Byewash
Reservoir and Lower Shing Mun Reservoir
Environmental Impact Assessment
Investigation

Title

THE PROPOSED INTER-RESERVOIRS
TRANSFER SCHEME (IRTS)

Designed	HN/PW	Eng.Chk.	PW
Drawn	VN	Coordination	PW
Dwg.Chk.	HN	Approved	AFK

Scale

1:10000@A1

Project 240564

Status INF

Drawing No. FIGURE 1-1

ELEVATION (mPD)

300

200

100

ELEVATION (mPD)

300

200

100

CONTINUATION AT FIGURE NO. 1-3

CONTINUATION AT FIGURE NO. 1-3

KOWLOON BYEWASH RESERVOIR

CATCHWATER BETWEEN KOWLOON RECEPTION RESERVOIR & KOWLOON BYEWASH RESERVOIR

GOLDEN HILL (KAM SHAN)

+108.00mPD (AT DRIFICE IN INTAKE STRUCTURE)

PROPOSED TUNNEL (S=0.65%)

5m 1:0.0

CHAINAGE (m)	3036.6	3000	2900	2800	2700	2600	2500
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Mott MacDonald
 Mott MacDonald Hong Kong Ltd
 7th Floor
 West Wing Office Building
 New World Centre
 20 Salisbury Road
 Tsim Sha Tsui, Kowloon
 Hong Kong
 Tel: 2828 5757
 Fax: 2827 1823
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Project
 Agreement No. CE55/2006(EP)
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 Water Tunnel between Kowloon Byewash Reservoir and Lower Shing Mun Reservoir
 Environmental Impact Assessment Investigation

Title
CROSS-SECTIONS OF THE PROJECT
 (SHEET 1 OF 5)

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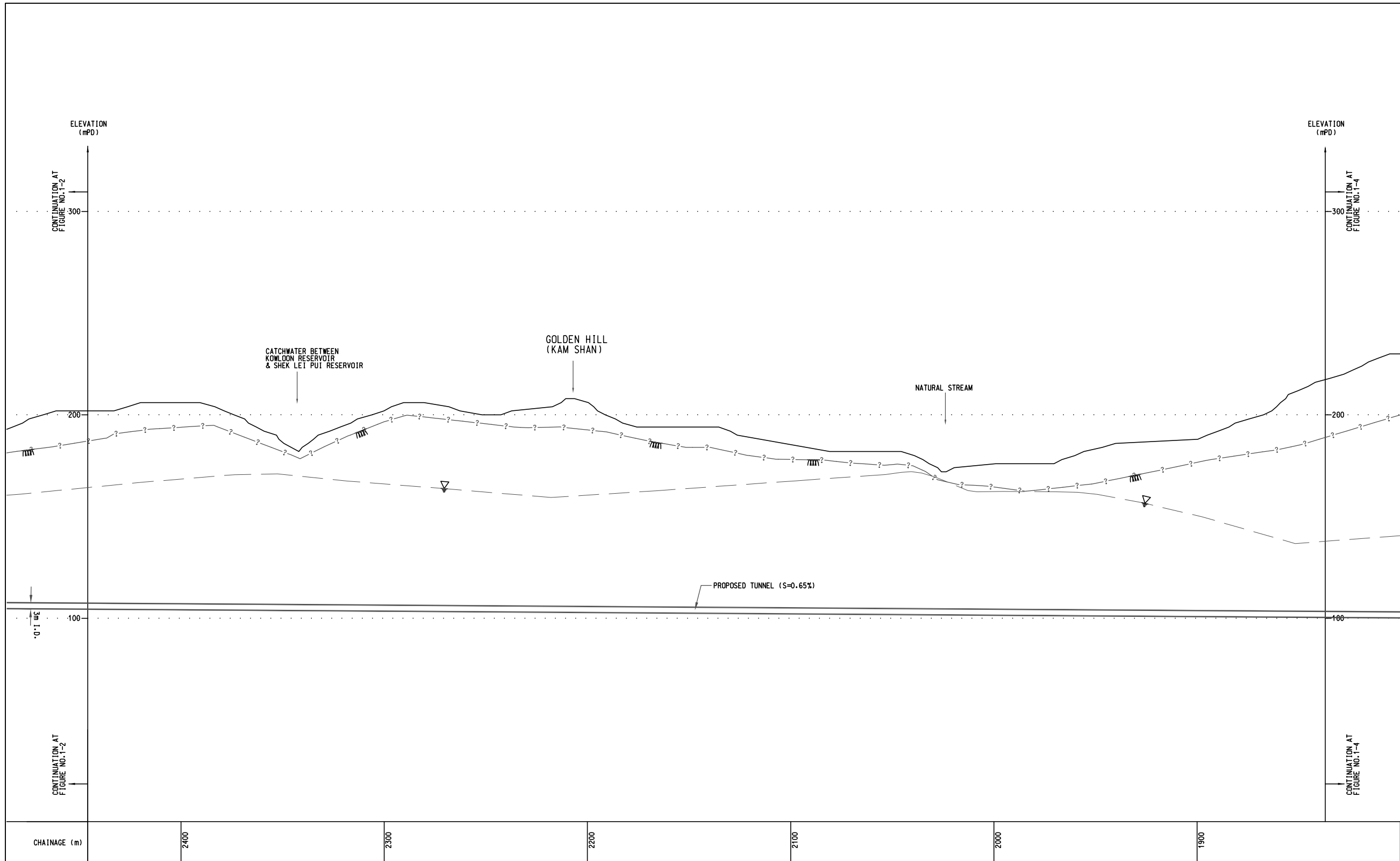
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Drawing No.	FIGURE 1-2				Rev	

J:\240564\REPORT\ENV\ENV\REPORT-081125\FIGURE-1-2.dwg / 15/07/2009 16:35 / pw-16169

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Mott MacDonald
 Mott MacDonald Hong Kong Ltd
 7th Floor
 West Wing Office Building
 New World Centre
 20 Salisbury Road
 Tsim Sha Tsui, Kowloon
 Hong Kong
 Tel: 2828 5757
 Fax: 2827 1823
 Web: www.mottmac.com.hk

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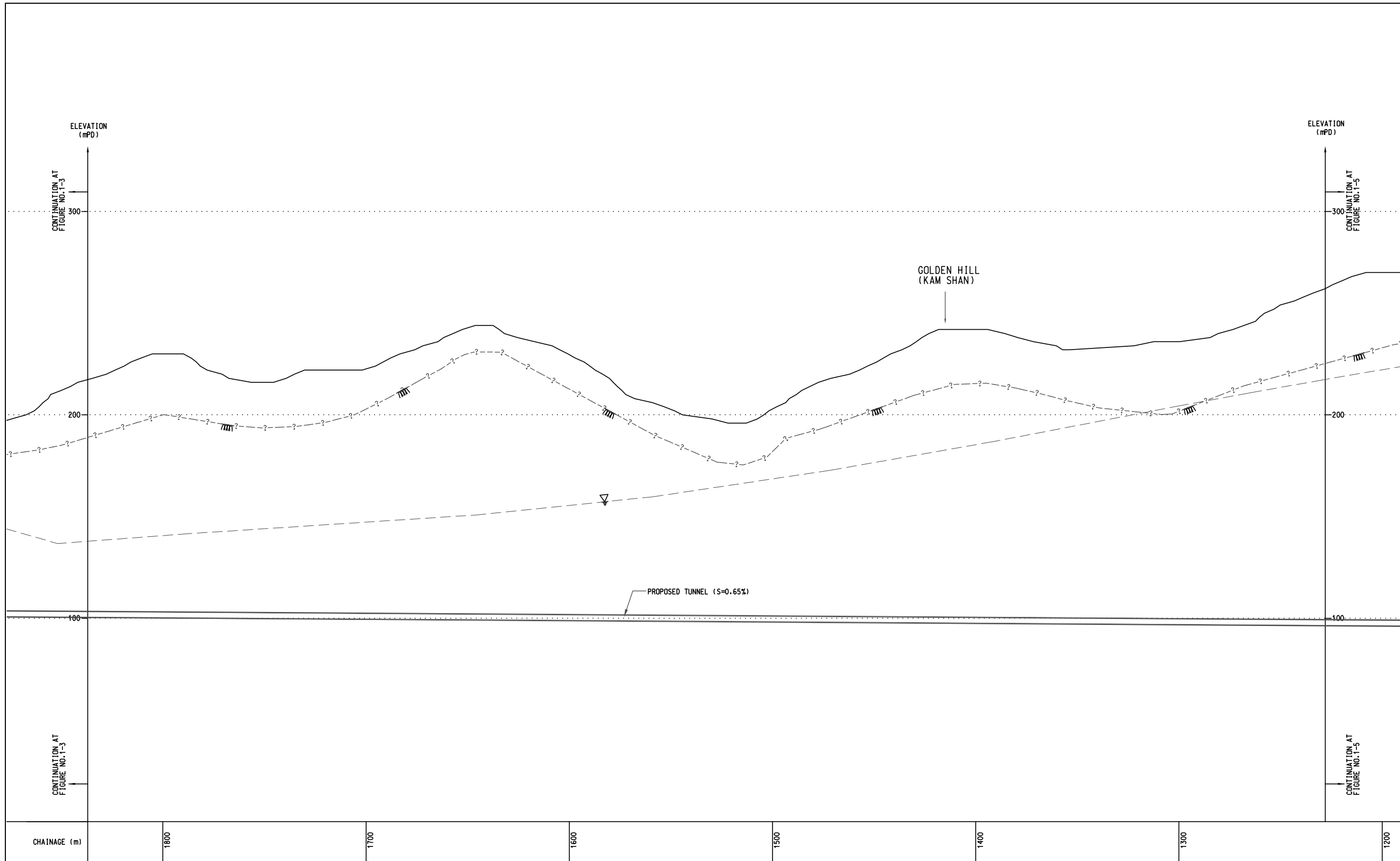
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FIGURE 1-3	

J:\240564\REPORT\ENV\ENV\REPORT-081125\FIGURE-1-3.dwg / 15/07/2009 16:38 / pw-16169

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 Mott MacDonald Hong Kong Ltd
 7th Floor
 West Wing Office Building
 New World Centre
 20 Salisbury Road
 Tsim Sha Tsui, Kowloon
 Hong Kong
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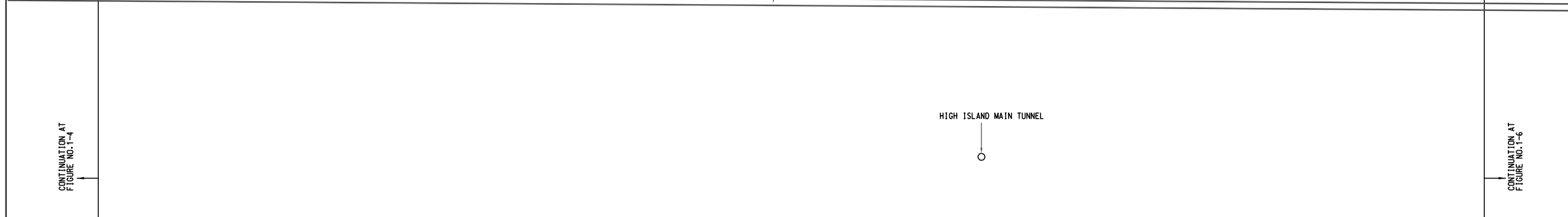
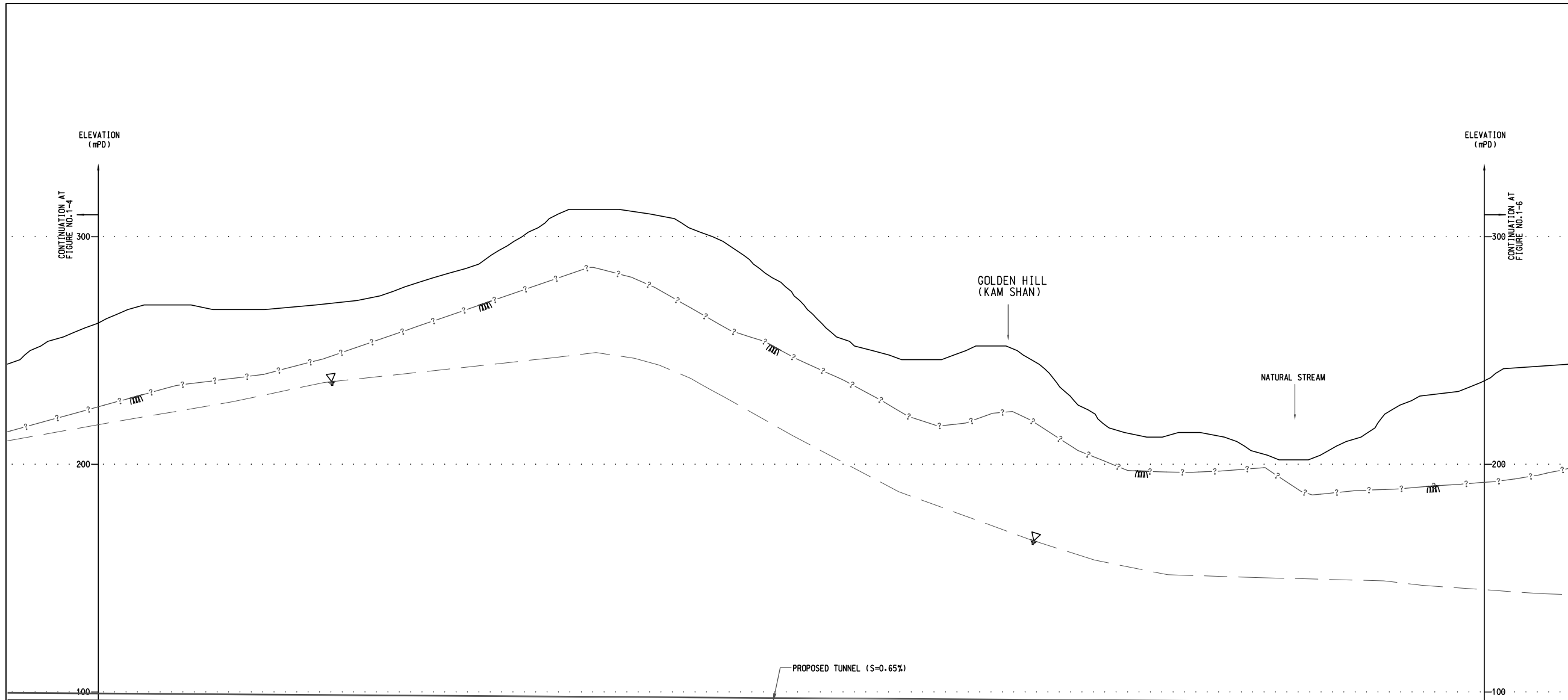
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FIGURE 1-4	

J:\WORK\REPORT\ENV\ENV\REPORT-08115\FIGURE-1-4.dwg / 15/07/2009 16:41 / jhm2619

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Mott MacDonald
 Mott MacDonald Hong Kong Ltd
 7th Floor
 West Wing Office Building
 New World Centre
 20 Salisbury Road
 Tsim Sha Tsui, Kowloon
 Hong Kong
 Tel: 2828 5757
 Fax: 2827 1823
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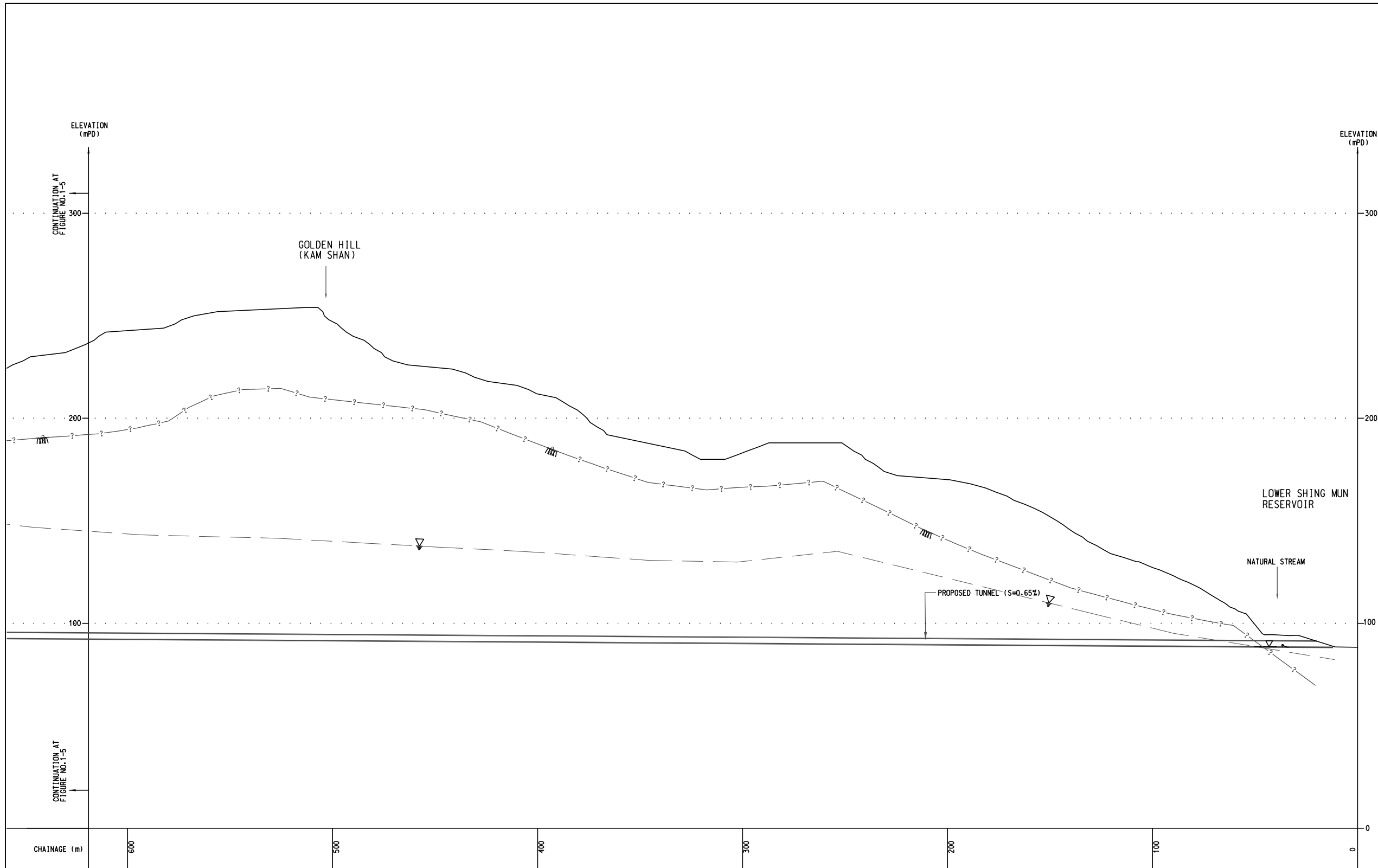
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FIGURE 1-5



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 7th Floor
 West Wing Office Building
 New World Centre
 20 Salisbury Road
 Tsim Sha Tsui, Kowloon
 Hong Kong
 Tel: 2828 5757
 Fax: 2827 1823
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CROSS-SECTIONS OF THE PROJECT
 (SHEET 5 OF 5)

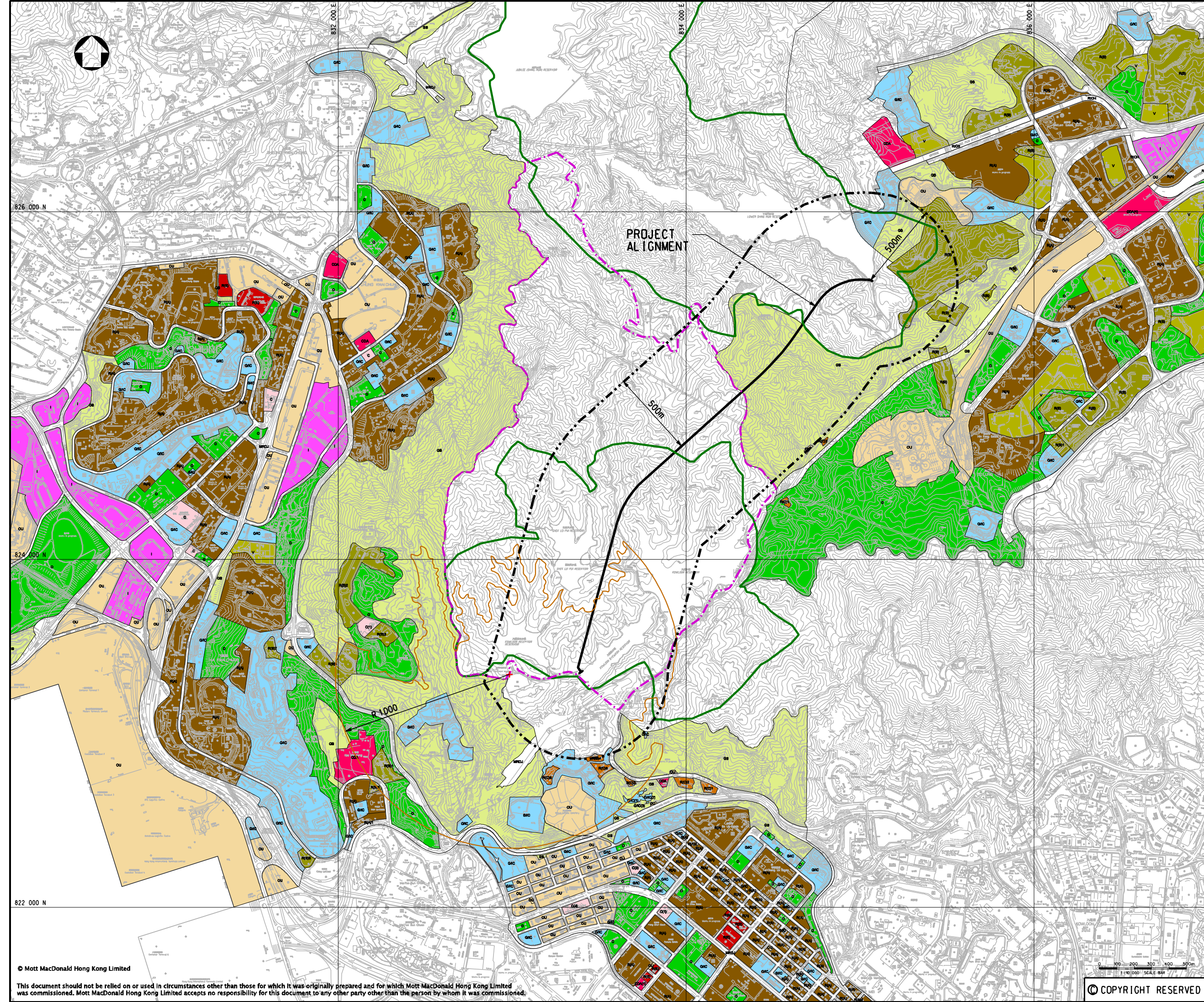
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- LEGEND:**
- KAM SHAN COUNTRY PARK BOUNDARY
 - SHEK LEI PU WATER TREATMENT WORK CONSULTATION ZONE
 - LOWER DIRECT WATER GATHERING GROUND
 - STUDY AREA
- | | | |
|---|------|----------------------------------|
| | C | COMMERCIAL |
| | CDA | COMPREHENSIVE DEVELOPMENT AREA |
| | G/IC | GOVERNMENT/INSTITUTION/COMMUNITY |
| | GB | GREEN BELT |
| | I | INDUSTRIAL |
| | O | OPEN SPACE |
| | OU | OTHER SPECIFIED USES |
| | RIA | RESIDENTIAL (GROUP A) |
| | RIB | RESIDENTIAL (GROUP B) |
| | RIC | RESIDENTIAL (GROUP C) |
| | RIE | RESIDENTIAL (GROUP E) |
| | V | VILLAGE TYPE DEVELOPMENT |

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WATER SUPPLIES DEPARTMENT

Mott MacDonald

Mott MacDonald Hong Kong Ltd
7th Floor
West Wing Office Building
New World Centre
20 Salisbury Road
Tsim Sha Tsui, Kowloon
Hong Kong
Tel: 2828 5757
Fax: 2827 1823
Web: www.mottmac.com.hk

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Inter-reservoirs Transfer Scheme (IRTS)
Water Tunnel between Kowloon Byewash
Reservoir and Lower Shing Mun Reservoir
Environmental Impact Assessment
Investigation

Title

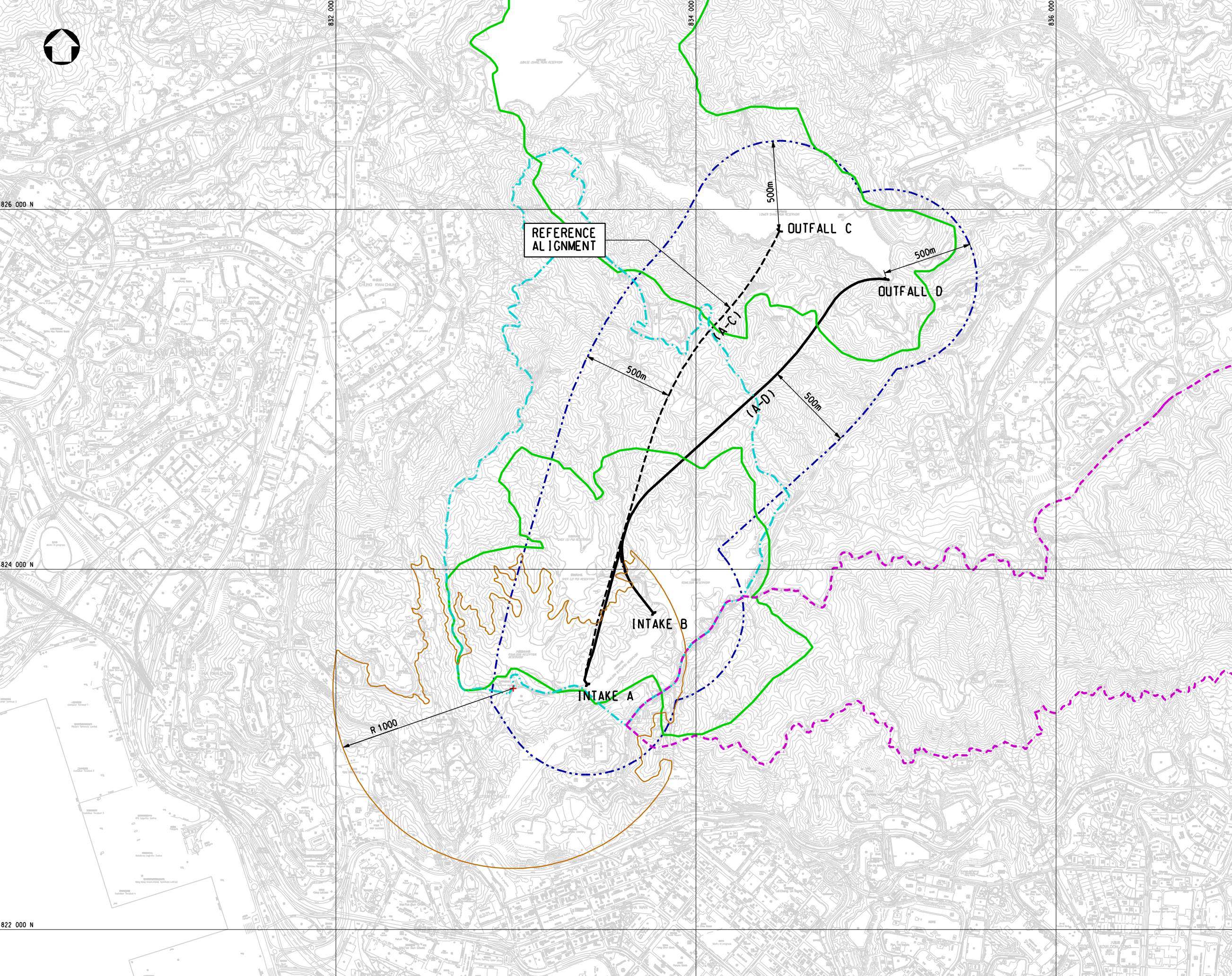
THE PROJECT ALIGNMENT
AND ENVIRONMENTAL CONSTRAINTS

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Dwg.Chk.	HN	Approved	AFK

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1:10000@A1	240564	INF
Drawing No.	CAD File	Rev
	\\1240564\REPORT\ENV\EA.REPORT1-08126\FIGURE-2-1.DGN	



- LEGEND:**
- - - - KAM SHAN COUNTRY PARK BOUNDARY
 - - - - SHEK LEI PUI WATER TREATMENT WORK CONSULTATION ZONE
 - - - - STUDY AREA
 - - - - LION ROCK COUNTRY PARK BOUNDARY
 - - - - LOWER DIRECT WATER GATHERING GROUND



P2	NOV 08	MING	MINOR AMENDMENT	FY	AFK
P1	MAR 08	VN	FIRST ISSUE	RL	AFK
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m Mott MacDonald
 Mott MacDonald Hong Kong Ltd
 7th Floor
 West Wing Office Building
 New World Centre
 20 Salisbury Road
 Tsim Sha Tsui, Kowloon
 Hong Kong
 Tel: 2828 5757
 Fax: 2827 1823
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 Water Tunnel between Kowloon Byewash
 Reservoir and Lower Shing Mun Reservoir
 Environmental Impact Assessment
 Investigation

Title
 REFERENCE AND ALTERNATIVE TUNNEL
 ALIGNMENT AND PORTALS

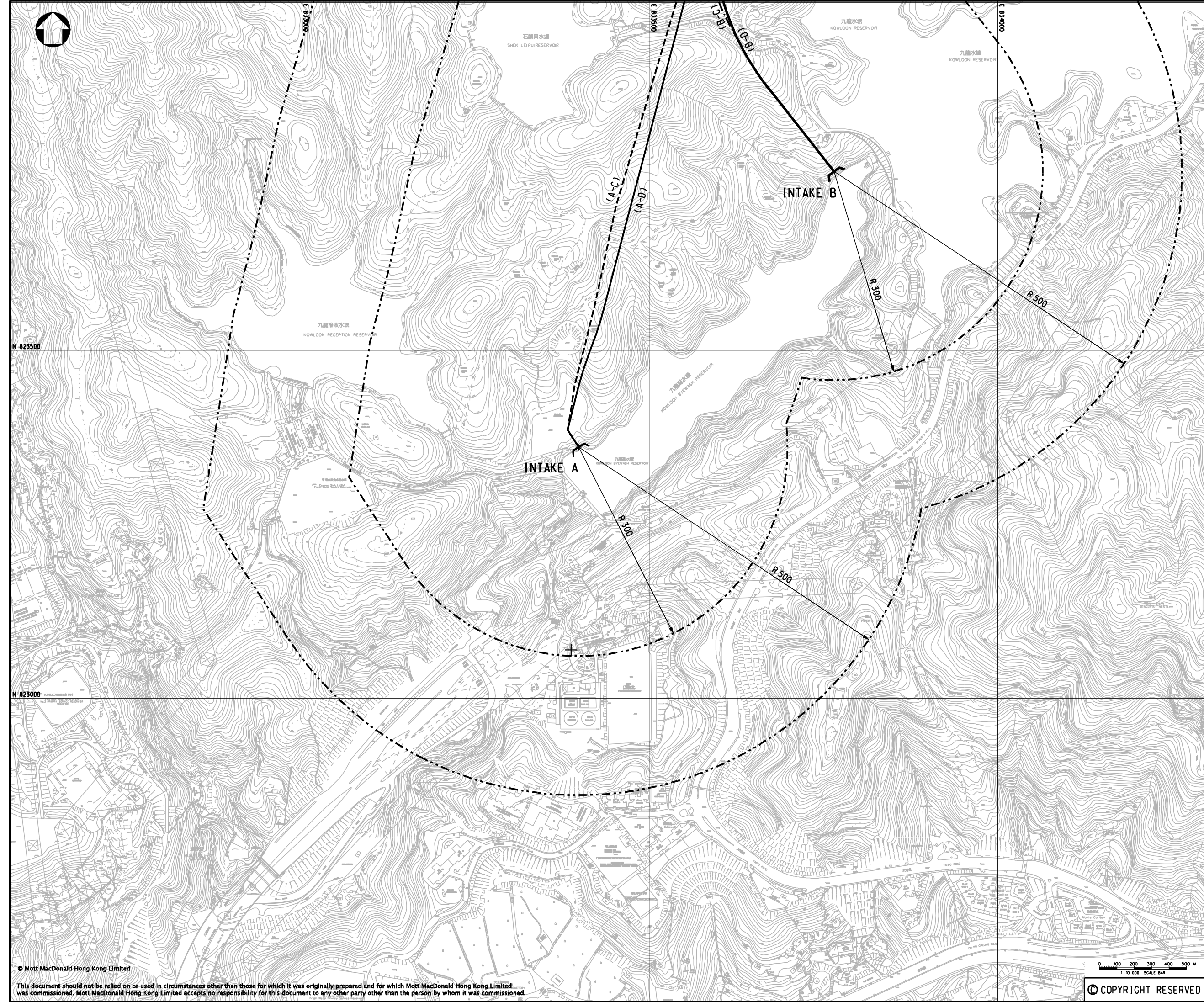
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	\\1240564\REPORT\ENV\ENVIA.REPORT1-08126\FIGURE-2-2.dgn	

Drawing No. **FIGURE 2-2** P2




- LEGEND:**
- STUDY AREA BOUNDARY
 - - - (A-C) A-C ALIGNMENT
 - - - (A-D) A-D ALIGNMENT
 - - - (B-C) B-C ALIGNMENT
 - - - (B-D) B-D ALIGNMENT



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 **Mott MacDonald**

Mott MacDonald Hong Kong Ltd
7th Floor
West Wing Office Building
New World Centre
20 Salisbury Road
Tsim Sha Tsui, Kowloon
Hong Kong
Tel: 2828 5757
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Environmental Impact Assessment
Investigation

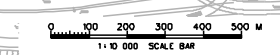
Title

REFERENCE AND ALTERNATURE
LOCATION OF INTAKES

Designed	HN/PW	Eng.Chk.	RL
Drawn	VN	Coordination	
Dwg.Chk.	HN	Approved	

Scale	Project	Status
1:10000@A1	240564	INF
	CAD File	
	\\240564\REPORT\ENV\EA\REPORT-08126\FIGURE-2-3.dgn	

Drawing No. **FIGURE 2-3**

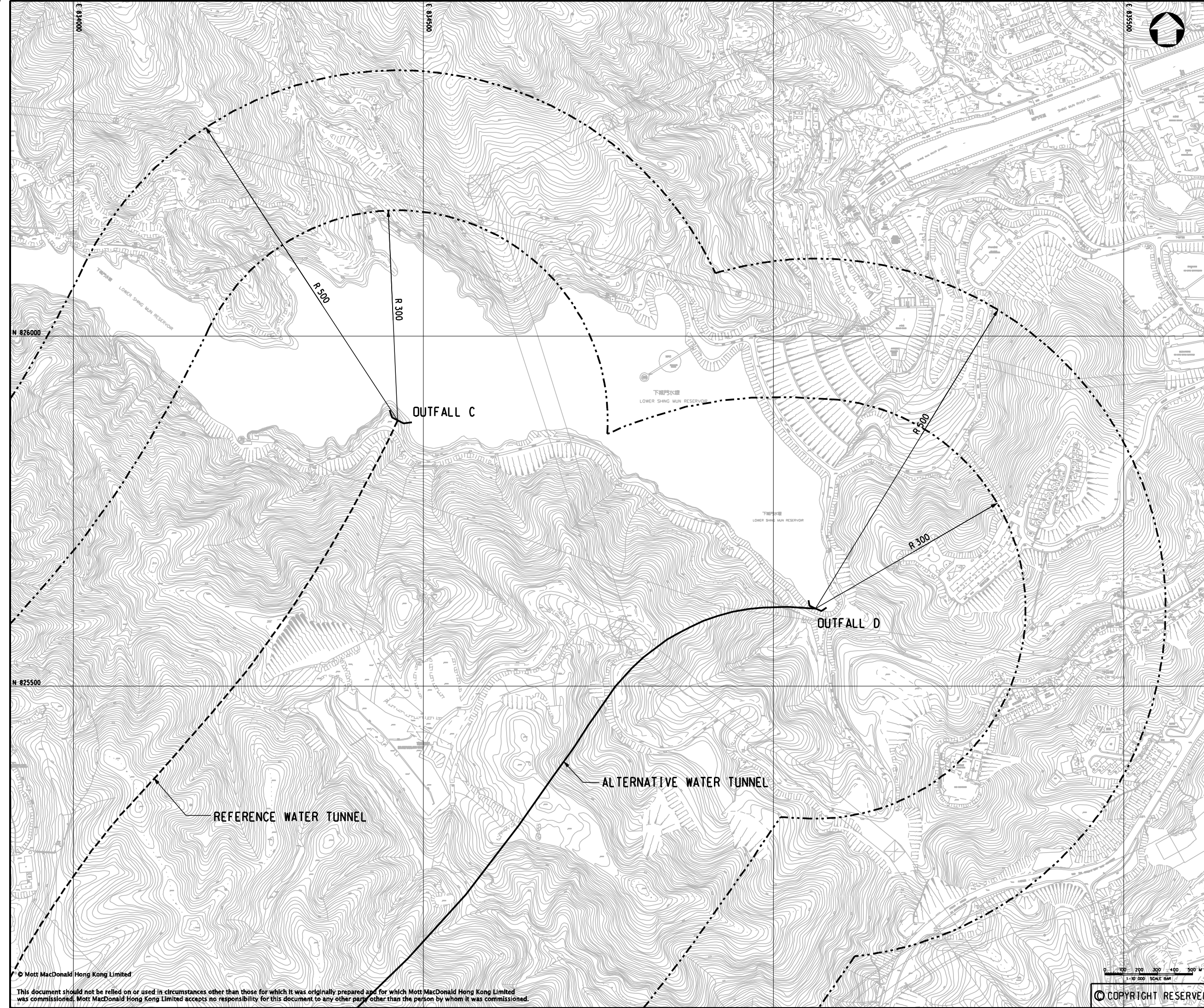


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LEGEND:

-----	STUDY AREA BOUNDARY
- - - - -	REFERENCE ALIGNMENT
—————	ALTERNATIVE ALIGNMENT

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 **Mott MacDonald**

Mott MacDonald Hong Kong Ltd
7th Floor
West Wing Office Building
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Investigation

Title

REFERENCE AND ALTERNATIVE
LOCATIONS OF OUTFALLS

Designed	HN/PW	Eng.Chk.	RL
Drawn	VN	Coordination	
Dwg.Chk.	HN	Approved	

Scale	Project	Status
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	CAD File	
	\\240564\report1\env\elo_report1-0802\Figure 2-4.dgn	

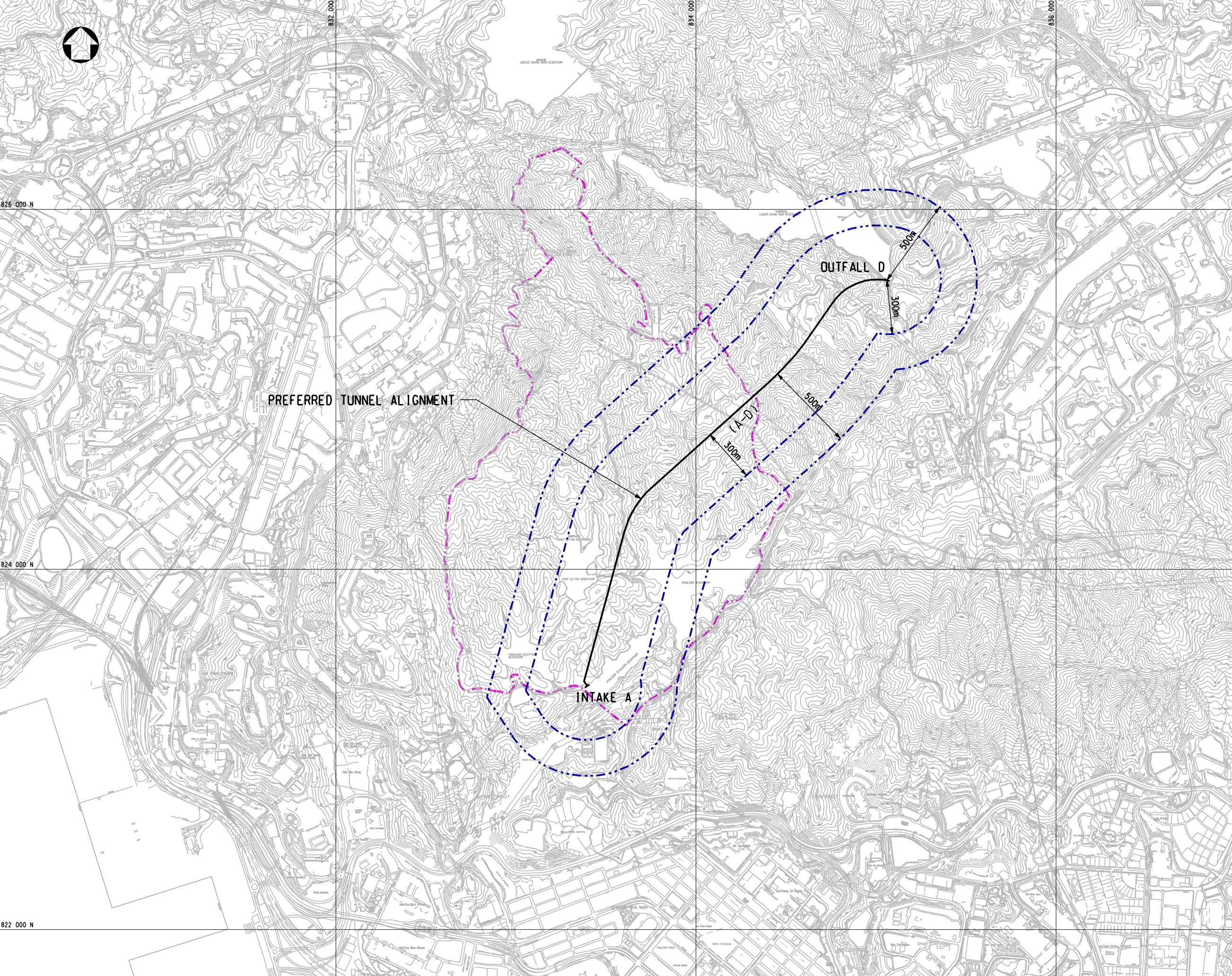
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LEGEND:
 - - - - - KAM SHAN COUNTRY PARK BOUNDARY
 - - - - - STUDY AREA



826 000 N
824 000 N
822 000 N

832 000 E
834 000 E
836 000 E


PREFERRED TUNNEL ALIGNMENT

OUTFALL D

INTAKE A

Rev	Date	Drawn/Description	Ch'kd/App'd

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 Mott MacDonald Hong Kong Ltd
 7th Floor
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THE PREFERRED SCHEME

Designed	HN/PW	Eng.Chk.	PW
Drawn	VN	Coordination	PW
Dwg.Chk.	HN	Approved	AFK

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1:10000@A1	240564	INF
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	\\1240564\REPORT\ENV\EIA\REPORT1-08126\FIGURE-2-5.dgn	

Drawing No. **FIGURE 2-5**

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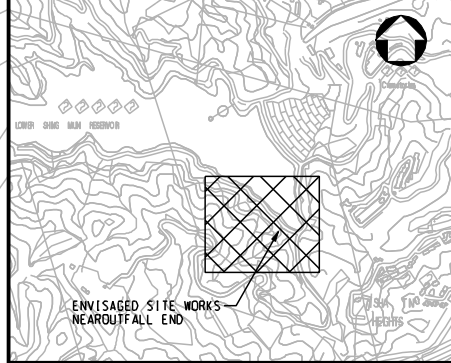
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下城門水塘
LOWER SHING MUN RESERVOIR

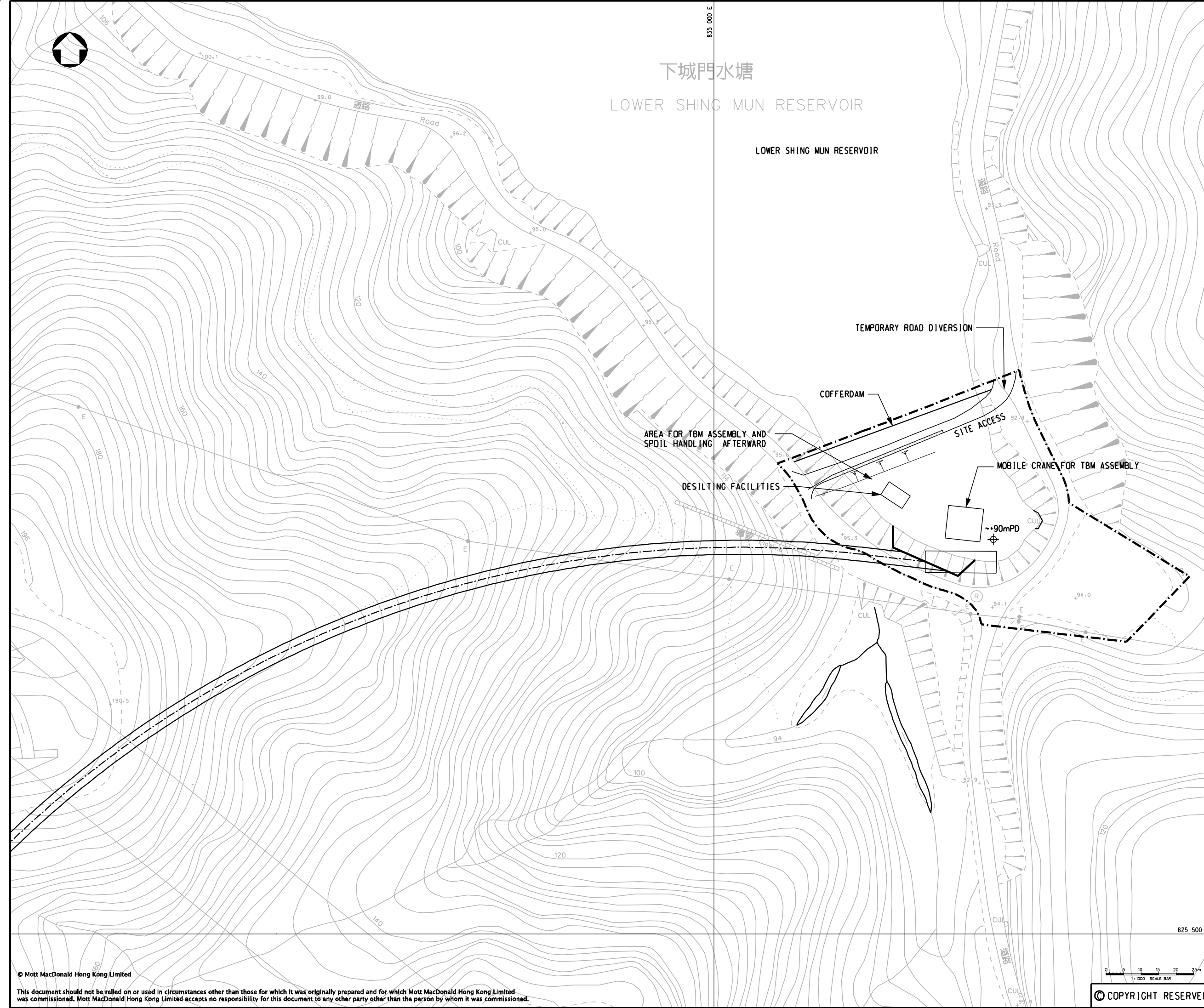
LOWER SHING MUN RESERVOIR




KEY PLAN

NOTE:
DESIGN DETAILS OF THE COFFERDAM WILL BE DETERMINED BY THE CONTRACTOR.

LEGEND:
- - - - - WORKSITE AREA



P1	NOV 08	MING	FIRST ISSUE	CWK	AFK
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**m Mott
MacDonald**
Mott MacDonald Hong Kong Ltd
7th Floor
West Wing Office Building
New World Centre
20 Salisbury Road
Tsim Sha Tsui, Kowloon
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Title
**ENVISAGED SITE WORKS
NEAR OUTFALL END**

Designed	CWK	Eng.Chk.	CWK
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Dwg.Chk.	CWK	Approved	AFK

Scale	Project	Status
1:1000	240564	INF
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FIGURE 2-6	J:\240564\REPORT\ENV\EMIA_REPORT1-08126\FIGURE-2-6.dgn	P1

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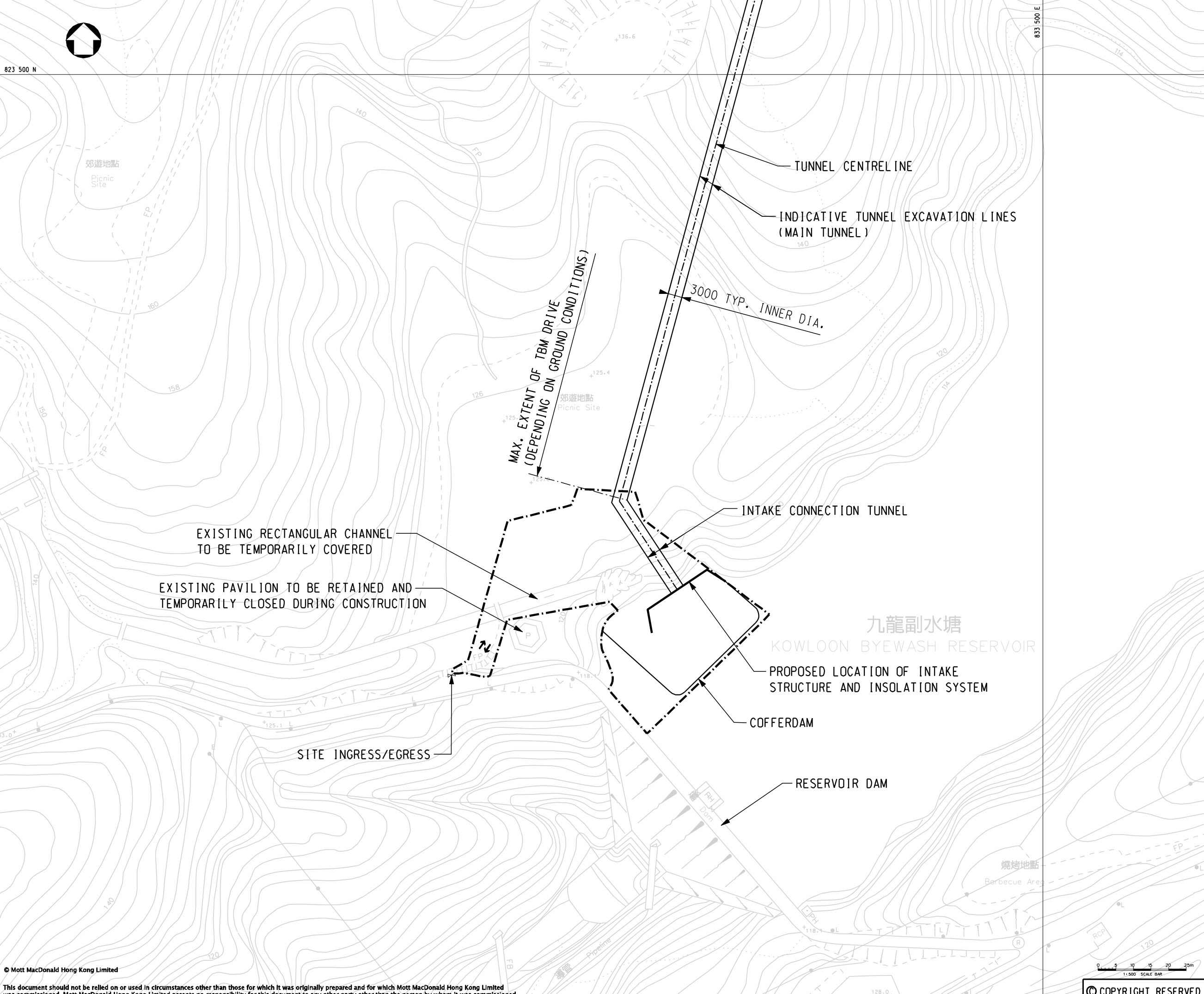


NOTE:
DESIGN DETAILS OF THE COFFERDAM WILL BE DETERMINED BY THE CONTRACTOR.

LEGEND:
- - - - - WORKSITE AREA

823 500 N

833 500 E



EXISTING RECTANGULAR CHANNEL TO BE TEMPORARILY COVERED

EXISTING PAVILION TO BE RETAINED AND TEMPORARILY CLOSED DURING CONSTRUCTION

SITE INGRESS/EGRESS

MAX. EXTENT OF TBM DRIVE (DEPENDING ON GROUND CONDITIONS)

TUNNEL CENTRELINE

INDICATIVE TUNNEL EXCAVATION LINES (MAIN TUNNEL)

3000 TYP. INNER DIA.

INTAKE CONNECTION TUNNEL

九龍副水塘
KOWLOON BYEWASH RESERVOIR

PROPOSED LOCATION OF INTAKE STRUCTURE AND INSULATION SYSTEM

COFFERDAM

RESERVOIR DAM

P1	NOV 08	MING	FIRST ISSUE	CWK	AFK
Rev	Date	Drawn	Description	Ch'kd/App'd	

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Mott MacDonald
Mott MacDonald Hong Kong Ltd
7th Floor
West Wing Office Building
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Tsim Sha Tsui, Kowloon
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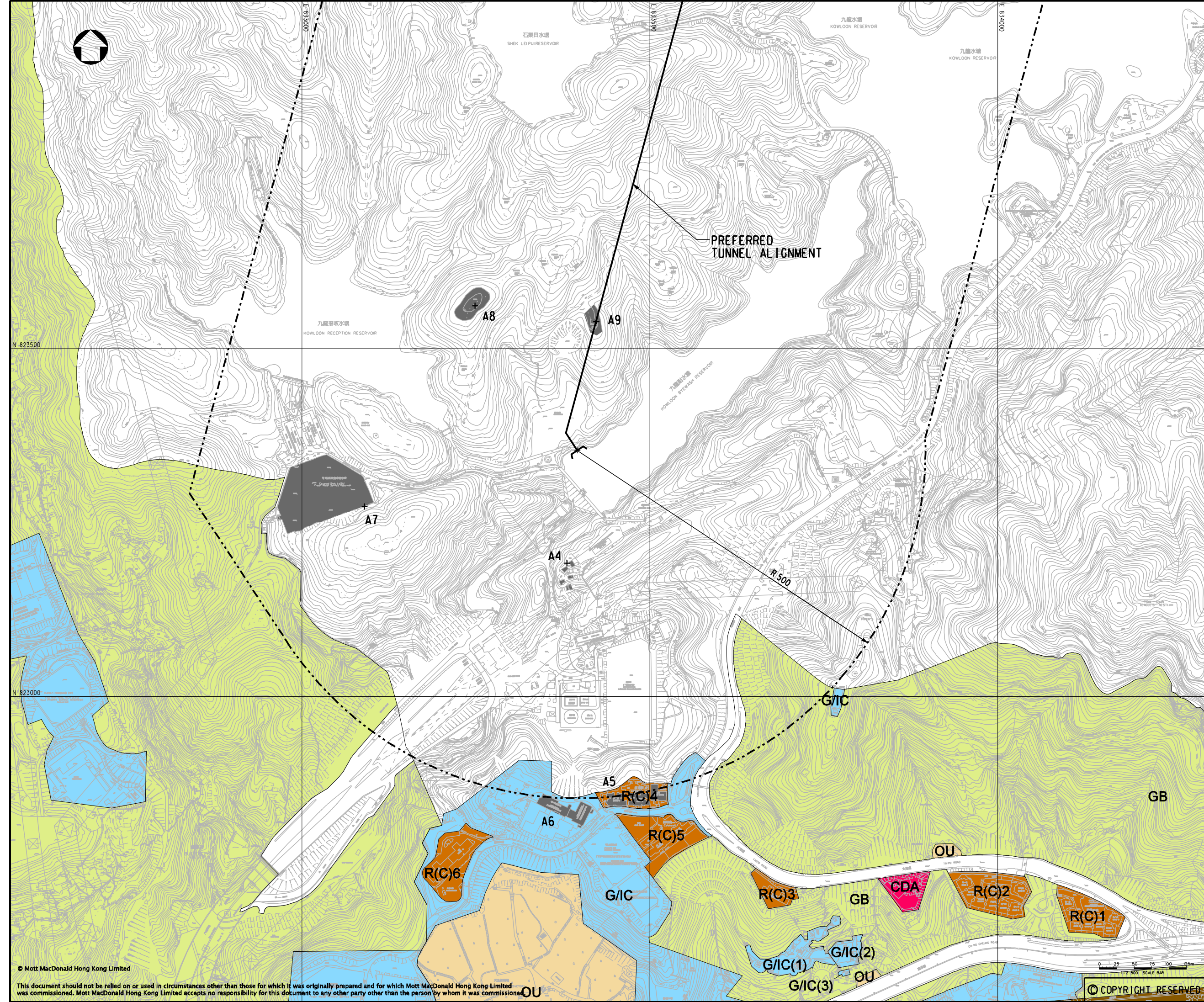
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Water Tunnel between Kowloon Byewash Reservoir and Lower Shing Mun Reservoir
Environmental Impact Assessment Investigation

Title
ENVISAGED SITE WORKS
NEAR INTAKE END

Designed	CWK	Eng.Chk.	CWK
Drawn	MING	Coordination	CWK
Dwg.Chk.	CWK	Approved	AFK

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240564
Status
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Drawing No.
FIGURE 2-7
Rev
P1



LEGEND:

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- PREFERRED TUNNEL ALIGNMENT
- + ATR SENSITIVE RECEIVER
- C COMMERCIAL
- CDA COMPREHENSIVE DEVELOPMENT AREA
- G/IC GOVERNMENT/INSTITUTION/COMMUNITY
- GB GREEN BELT
- I INDUSTRIAL
- O OPEN SPACE
- OU OTHER SPECIFIED USES
- R(A) RESIDENTIAL (GROUP A)
- R(B) RESIDENTIAL (GROUP B)
- R(C) RESIDENTIAL (GROUP C)
- R(E) RESIDENTIAL (GROUP E)
- V VILLAGE TYPE DEVELOPMENT

P2	NOV 08	MING	SENSITIVE RECEIVER REVISED	CWK	AFK
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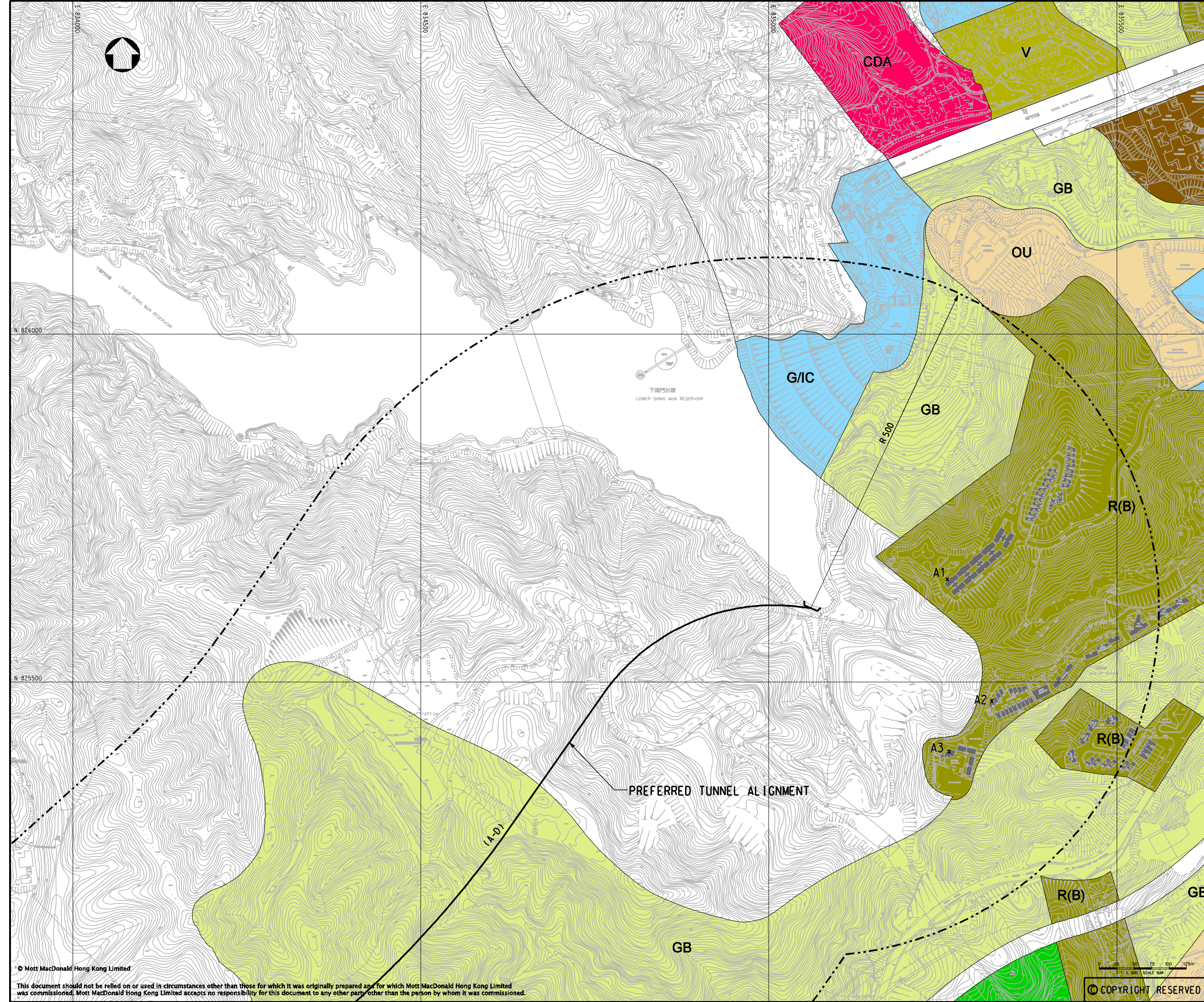
Title
 THE STUDY AREA AND
 IDENTIFIED ASRS (INTAKE END)

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Drawn	VN	Coordination	AFK
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	\\240564\report\1\env\elo_report-1-0802\Figure-3-Lgn		
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FIGURE 3-1



LEGEND:

- STUDY AREA BOUNDARY
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- + ATR SENSITIVE RECEIVER
- C COMMERCIAL
- CDA COMPREHENSIVE DEVELOPMENT AREA
- G/IC GOVERNMENT/INSTITUTION/COMMUNITY
- GB GREEN BELT
- I INDUSTRIAL
- O OPEN SPACE
- OU OTHER SPECIFIED USES
- R(A) RESIDENTIAL (GROUP A)
- R(B) RESIDENTIAL (GROUP B)
- R(C) RESIDENTIAL (GROUP C)
- R(E) RESIDENTIAL (GROUP E)
- V VILLAGE TYPE DEVELOPMENT

P2	NOV 08	MING	SENSITIVE RECEIVER REVISED	CWK	AFK
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 New World Centre
 20 Salisbury Road
 Tsim Sha Tsui, Kowloon
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Title
 THE STUDY AREA AND
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Dwg.Chk.	HN	Approved	AFK


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	\\240564\report\env\elo_report-08026\FIGURE-3-2.dgn	P2



LEGEND:

- STUDY AREA BOUNDARY
- PREFERRED TUNNEL ALIGNMENT
- + NOISE SENSITIVE RECEIVER
- C COMMERCIAL
- CDA COMPREHENSIVE DEVELOPMENT AREA
- G/IC GOVERNMENT/INSTITUTION/COMMUNITY
- GB GREEN BELT
- I INDUSTRIAL
- O OPEN SPACE
- OU OTHER SPECIFIED USES
- RIA1 RESIDENTIAL (GROUP A)
- RIA2 RESIDENTIAL (GROUP B)
- RIA3 RESIDENTIAL (GROUP C)
- RIA4 RESIDENTIAL (GROUP E)
- V VILLAGE TYPE DEVELOPMENT

P2	NOV 08	MING	SENSITIVE RECEIVER REVISED	CWK	AFK
P1	MAR 08	VN	FIRST ISSUE	PW	AFK
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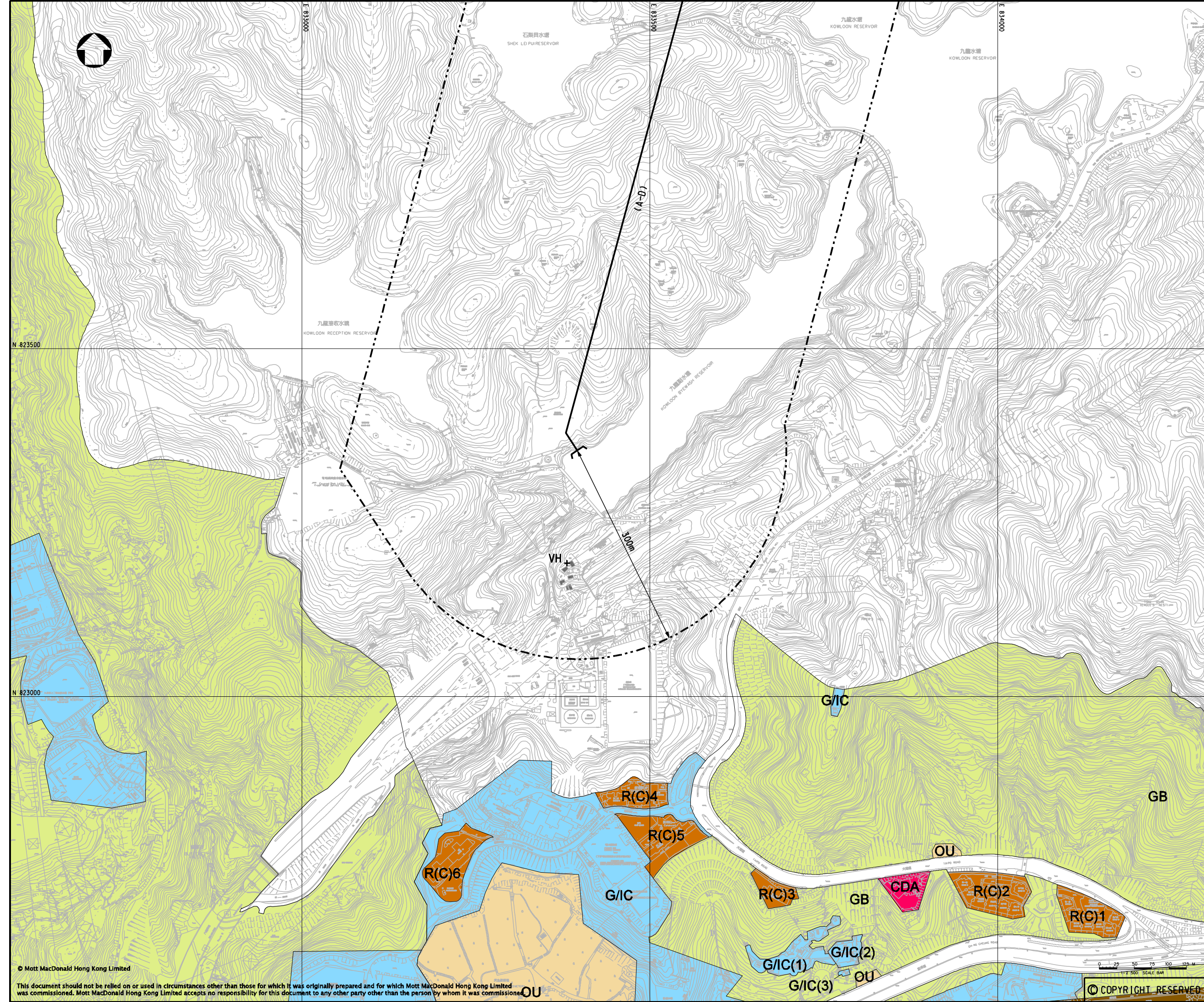
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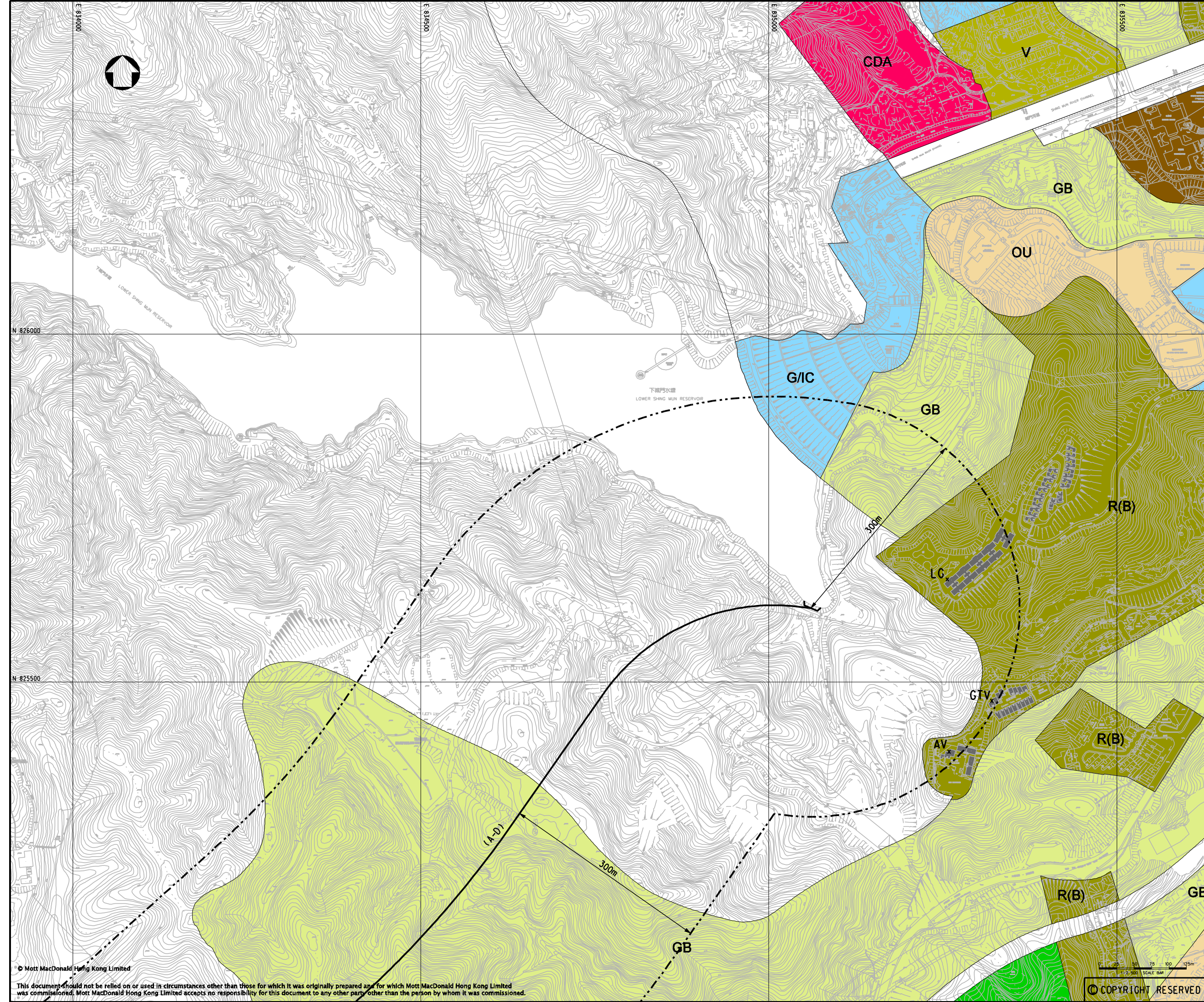
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 THE STUDY AREA AND
 REPRESENTATIVE NSRs (INTAKE END)

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Dwg.Chk.	HN	Approved	AFK

Scale	Project	Status
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	\\240564\report\env\elo_report-0802\Figure-4-Lgn	P2

Drawing No. **FIGURE 4-1**






LEGEND:

- STUDY AREA BOUNDARY
- PREFERRED TUNNEL ALIGNMENT
- + NOISE SENSITIVE RECEIVER
- C COMMERCIAL
- CDA COMPREHENSIVE DEVELOPMENT AREA
- G/IC GOVERNMENT/INSTITUTION/COMMUNITY
- GB GREEN BELT
- I INDUSTRIAL
- O OPEN SPACE
- OU OTHER SPECIFIED USES
- R(A) RESIDENTIAL (GROUP A)
- R(B) RESIDENTIAL (GROUP B)
- R(C) RESIDENTIAL (GROUP C)
- R(E) RESIDENTIAL (GROUP E)
- V VILLAGE TYPE DEVELOPMENT

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 West Wing Office Building
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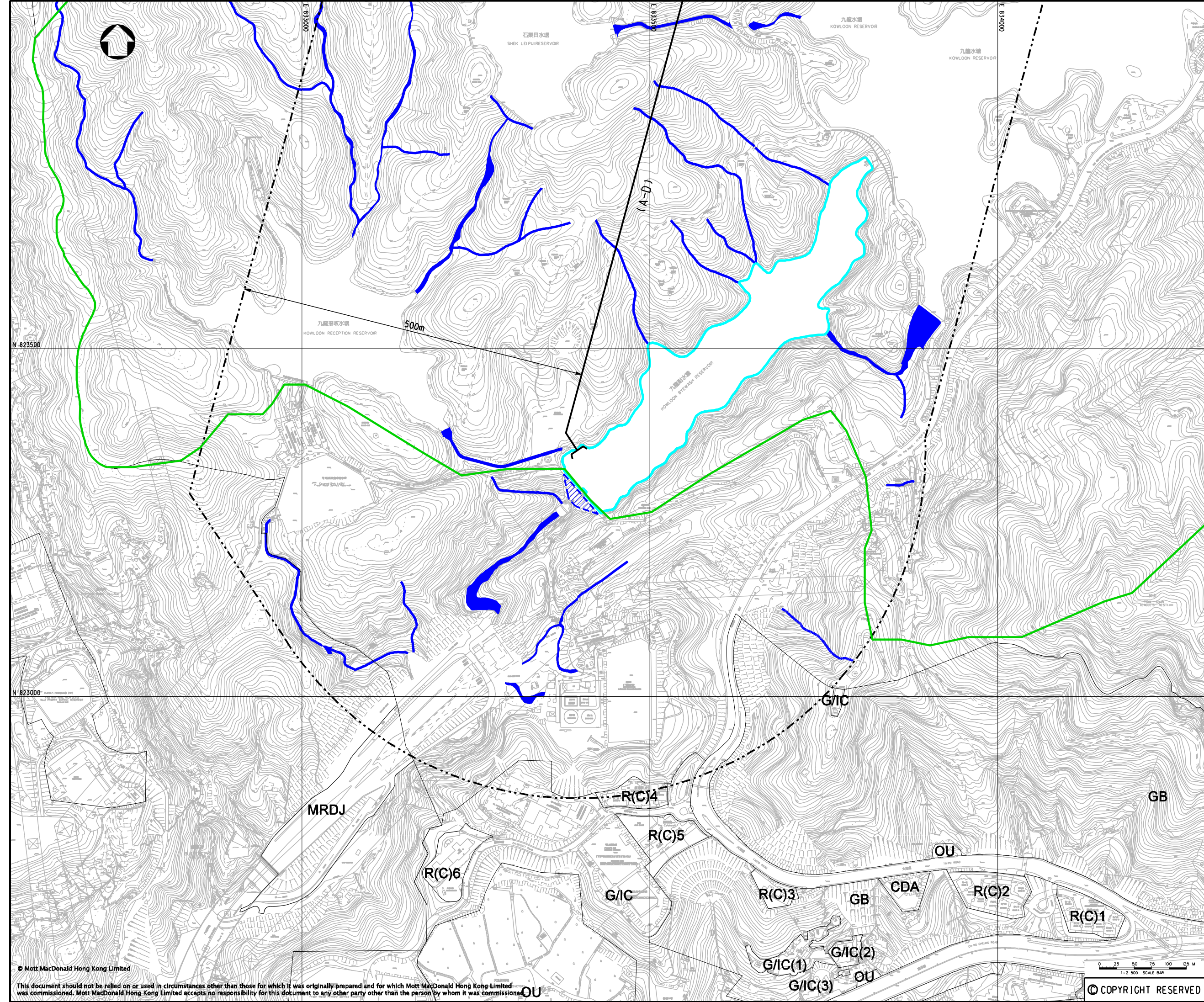
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Title
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- STUDY AREA BOUNDARY
 - (A-D) ALTERNATIVE ALIGNMENT
 - WATERCOURSE
 - RECEIVERS WATER BODY
 - OUTFALL
 - LOWER DIRECT WATER GATHERING GROUND

Rev	Date	Drawn/Description	Ch'kd/App'd

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Hong Kong
Tel: 2828 5757
Fax: 2827 1823
Web: www.mottmac.com.hk

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Environmental Impact Assessment
Investigation

Title

THE STUDY AREA AND WATER SENSITIVE
RECEIVERS (INTAKE END)

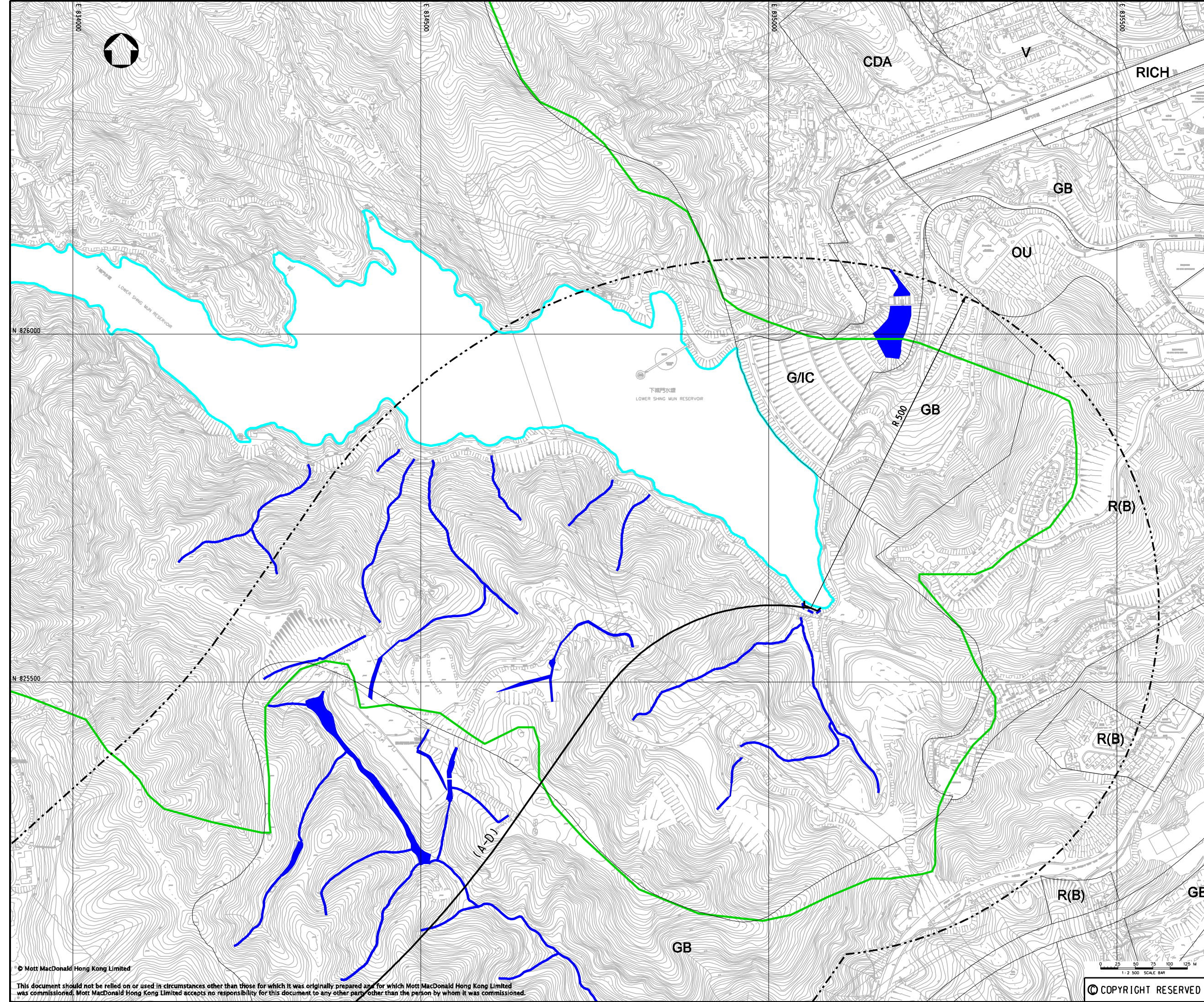
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Drawing No. **FIGURE 5-1**

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 - WATERCOURSE
 - RECEIVERS WATER BODY
 - - - CULVERT
 - LOWER DIRECT WATER GATHERING GROUND

Rev	Date	Drawn/Description	Ch'kd/App'd

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 20 Salisbury Road
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 Fax: 2827 1823
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Title
 THE STUDY AREA AND WATER SENSITIVE
 RECEIVERS (OUTFALL END)

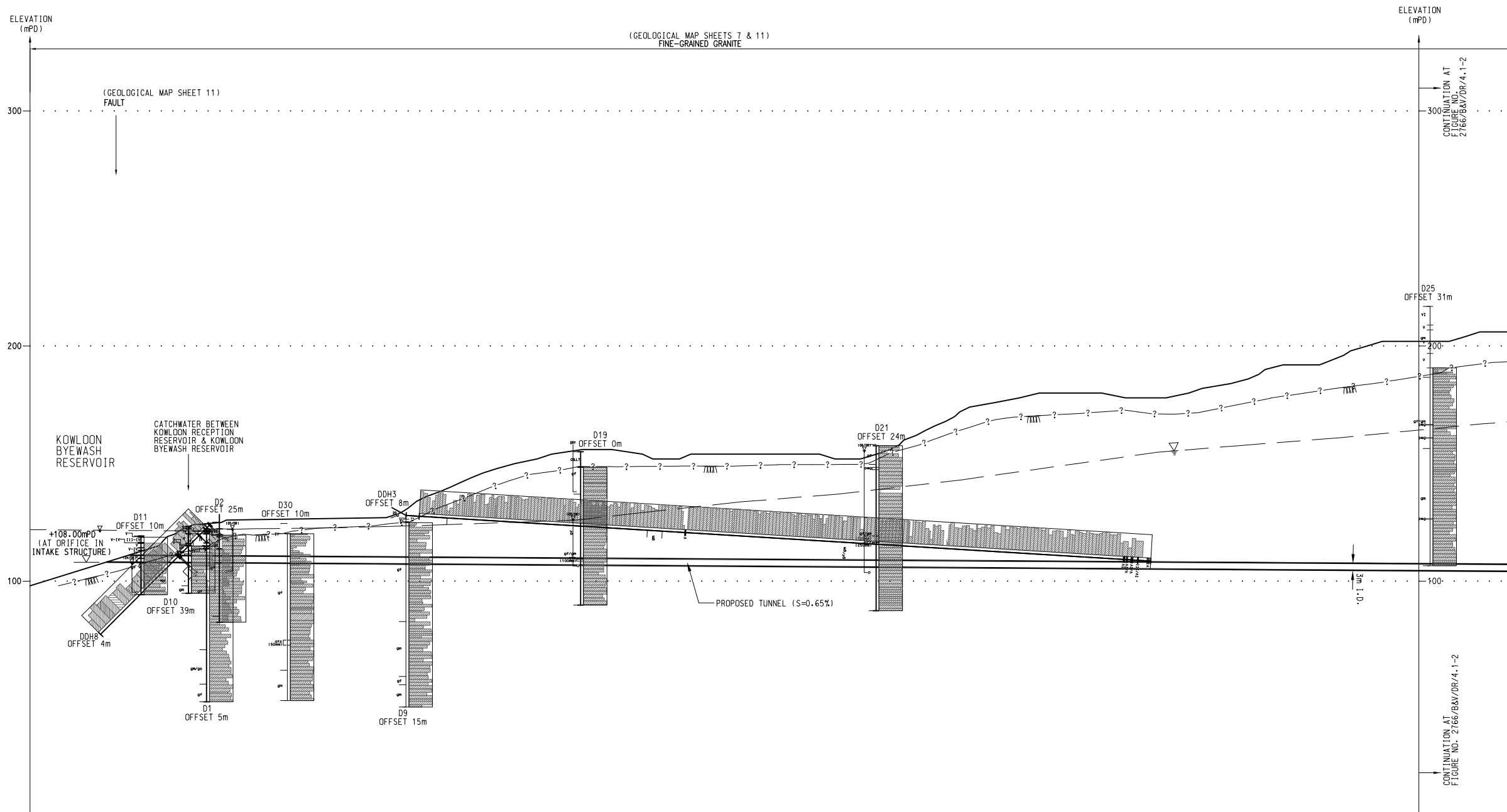
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Dwg.Chk.	HN	Approved	

Scale	Project	Status
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Drawing No. **FIGURE 5-2**

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CHAINAGE (m)	3036.6	3000	2900	2800	2700	2600	2500	
ROCK COVER(m)			20	<40	<60		<80	
NGI Q(ROCK) VALUES(MEAN)		0.27-2.67 (0.94)	0.78-14.67 (5.51)	0.08-4.17 (1.37)	0.77-6.25 (2.31)	1.30-12.00 (3.45)	3.92-16.67 (8.05)	1.39-4.17 (3.03)
PERMEABILITY, OBTAINED FROM IN-SITU WATER ABSORPTION TESTS, K(MEAN) (x10 ⁻⁷ m/s)		4.14	59.70	2.18	5.38	9.00	1.05	0.06

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7th Floor
West Wing Office Building
New World Centre
20 Salisbury Road
Tsim Sha Tsui, Kowloon
Hong Kong
Tel 2828 5757
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Web www.mottmac.com.hk

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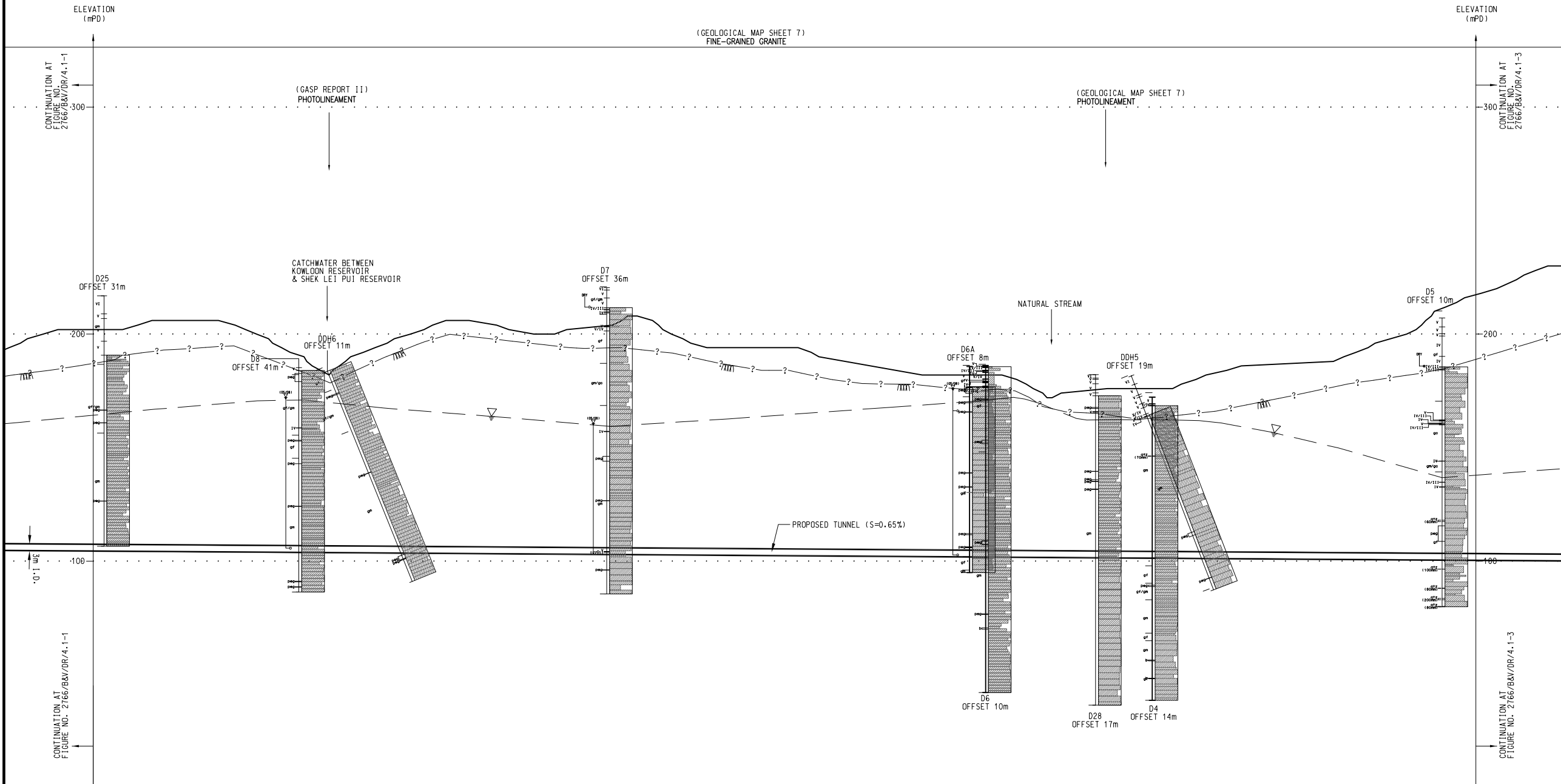
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LONGITUDINAL GEOLOGICAL PROFILE FOR PROPOSED WATER TRANSFER TUNNEL

(SHEET 1 OF 5)

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		CAD File	
Drawing No.	FIGURE 5-3a	Status	INF
		Rev	P1

(GEOLOGICAL MAP SHEET 7)
FINE-GRAINED GRANITE



CHAINAGE (m)	2400	2300	2200	2100	2000	1900	1800
ROCK COVER(m)	<100	<80	<100	<80	<60	<80	<100
NGI Q(ROCK) VALVUS(MEAN)	1.39-4.17 (3.03)	1.95-3.67 (3.03)	3.12-5.50 (4.58)	2.53-16.67 (9.44)	2.39-4.17 (3.61) 6.42-16.67 (11.53)	2.53-4.17 (3.71) 3.33-16.67 (5.50)	1.21-4.17 (2.81) 0.09-6.35 (3.68)
PERMEABILITY, OBTAINED FROM IN-SITU WATER ABSORPTION TESTS, K(MEAN) (x10 ⁻⁷ m/s)	6.33	0.13	2.63	1.64	0.41 3.62	0.63 0.07	1.40 11.70

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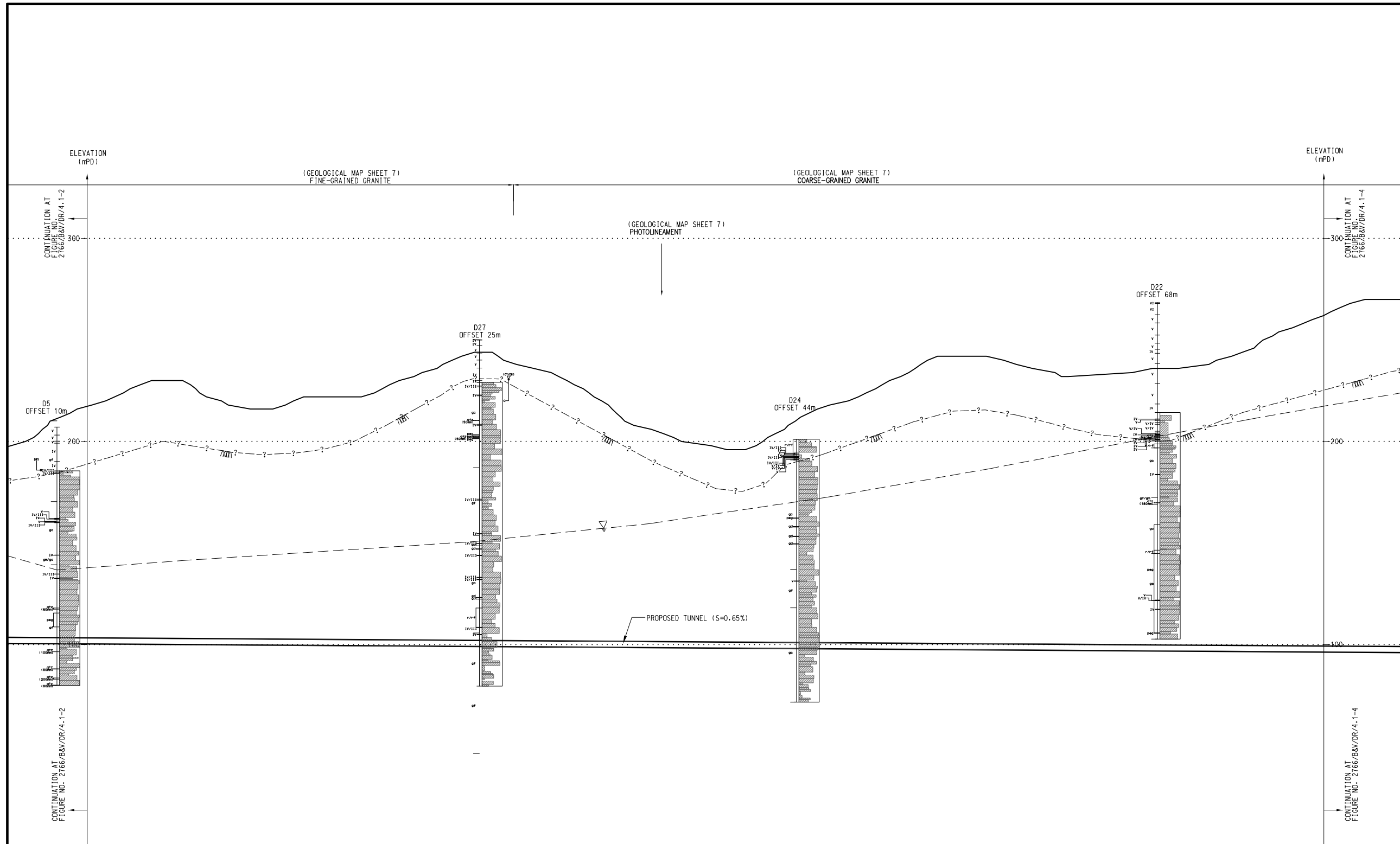
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Title
 LONGITUDINAL GEOLOGICAL PROFILE FOR
 PROPOSED WATER TRANSFER TUNNEL
 (SHEET 2 OF 5)

Designed	BV	Eng.Chk	FY
Drawn	MING	Coordination	FY
Dwg.Chk	FY	Approved	AFK
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		CAD File	
Drawing No.	FIGURE 5-3b	Status	INF
		Rev	P1



CHAINAGE (m)	1800	1700	1600	1500	1400	1300	1200
ROCK COVER(m)	<100	<120	<140	<120	<100	<80	<100
NGI Q(ROCK) VALUES(MEAN)			0.46-4.68 (2.51)				2.17-12.38 (5.76)
PERMEABILITY, OBTAINED FROM IN-SITU WATER ABSORPTION TESTS, K(MEAN) (x10 ⁻⁷ m/s)			9.45				5.95
							2.90

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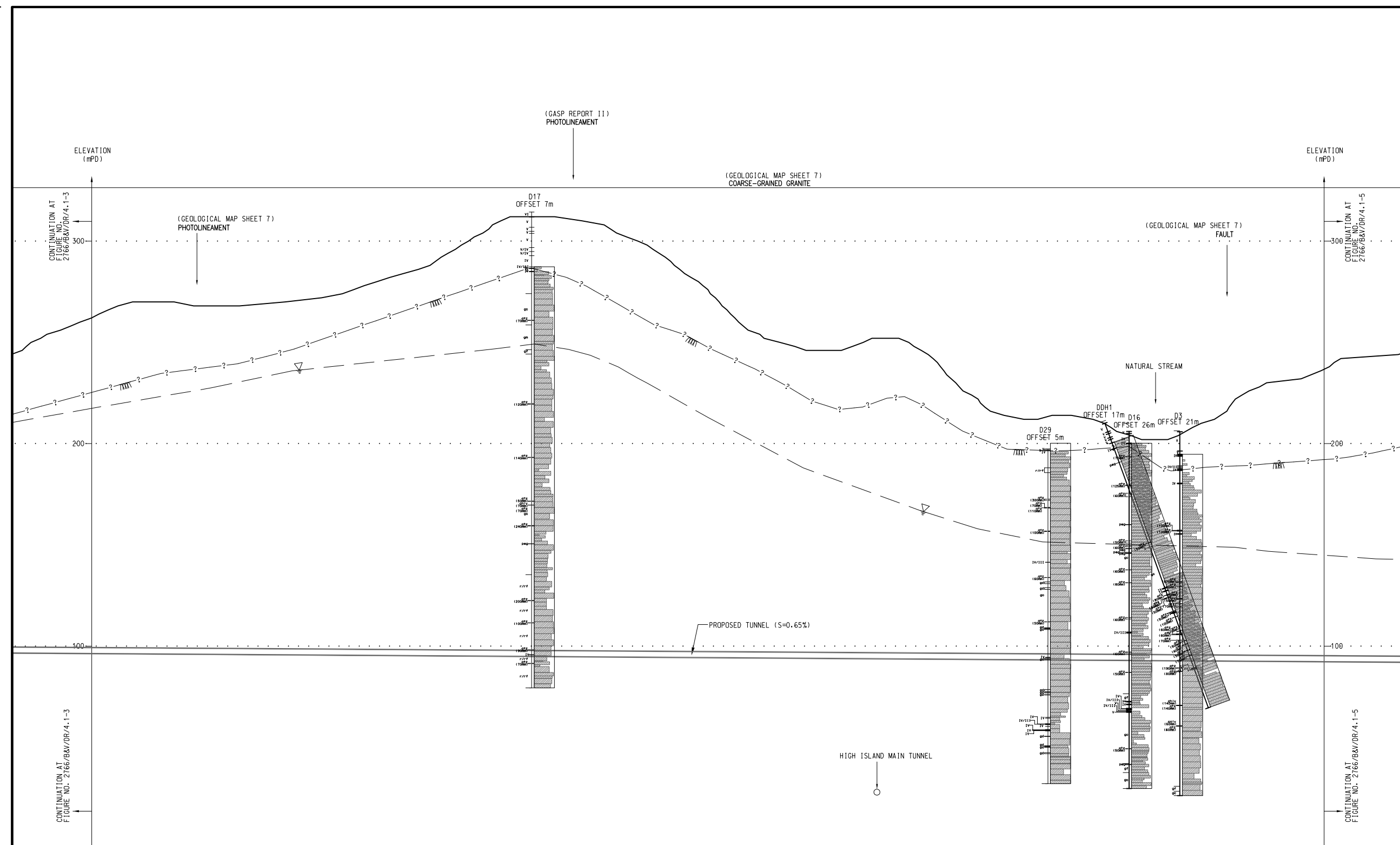
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Title
 LONGITUDINAL GEOLOGICAL PROFILE FOR PROPOSED WATER TRANSFER TUNNEL
 (SHEET 3 OF 5)

Designed	BV	Eng. Chk.	FY
Drawn	MING	Coordination	FY
Dwg. Chk.	FY	Approved	AFK
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		CAD File	
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			P1



CHAINAGE (m)	1200	1100	1000	900	800	700	600						
ROCK COVER(m)	<140	<160	<180	<200	<220	<200	<180	<160	<140	<120	<100		
NGI Q(ROCK) VALUES(MEAN)					1.75-12.13 (7.83)					1.84-4.13 (3.85)	0.61-2.75 (1.61)	0.55-3.92 (1.67)	2.60-4.13 (3.81)
PERMEABILITY, OBTAINED FROM IN-SITU WATER ABSORPTION TESTS, K(MEAN) (x10 ⁻⁷ m/s)					7.41					3.77	2.41	3.62	2.50

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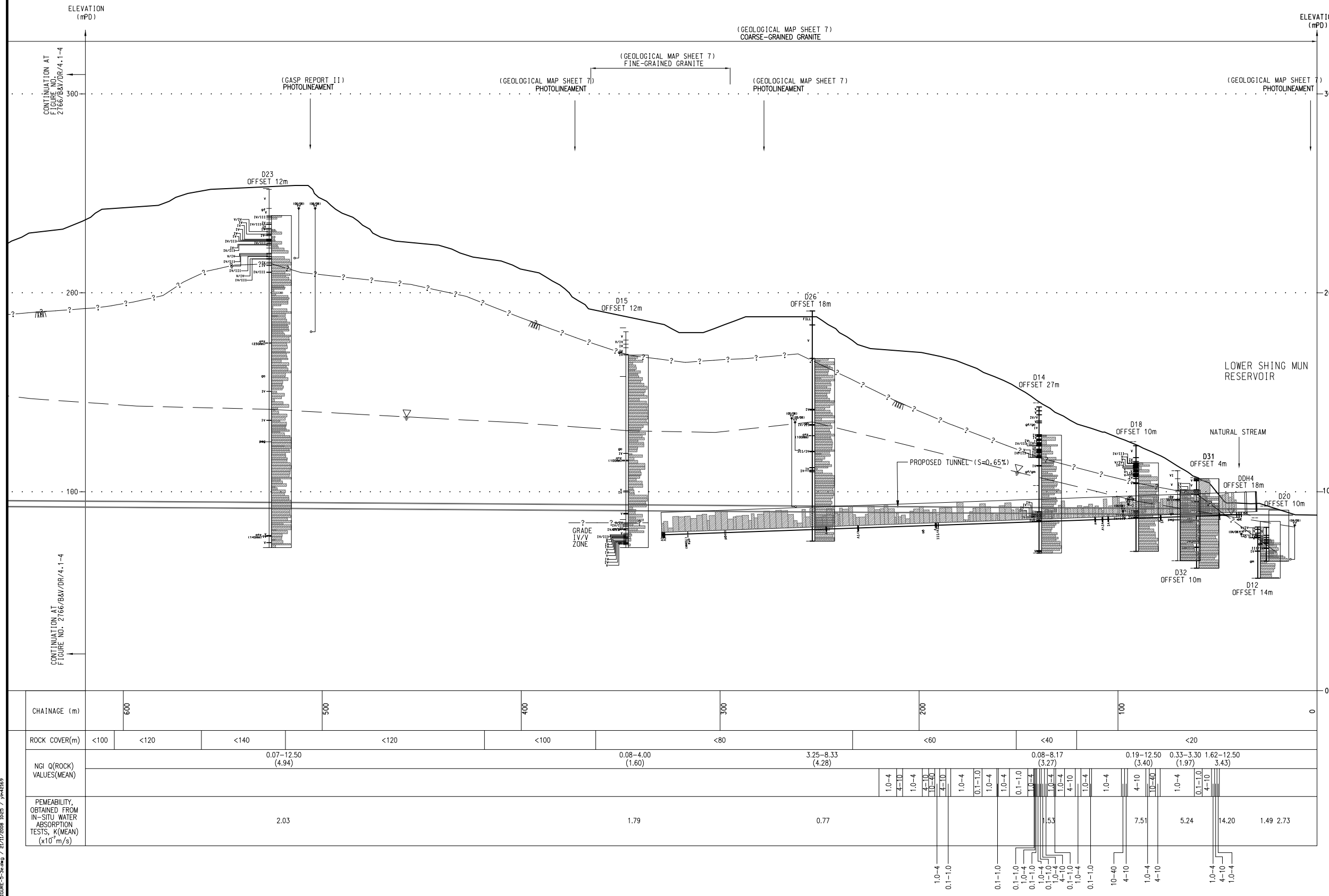
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Title
 LONGITUDINAL GEOLOGICAL PROFILE FOR
 PROPOSED WATER TRANSFER TUNNEL
 (SHEET 4 OF 5)

Designed	BV	Eng.Chk	FY
Drawn	MING	Coordination	FY
Dwg.Chk	FY	Approved	AFK
Scale	1:2000@A3	Project	240564
		CAD File	
Drawing No.	FIGURE 5-3d		Rev
			P1



CHAINAGE (m)	600	500	400	300	200	100	0
ROCK COVER(m)	<100	<120	<140	<120	<100	<80	<60
NGI Q(ROCK) VALUES(MEAN)	0.07-12.50 (4.94)		0.08-4.00 (1.60)		3.25-8.33 (4.28)		0.08-8.17 (3.27)
PERMEABILITY, OBTAINED FROM IN-SITU WATER ABSORPTION TESTS, K(MEAN) (x10 ⁻⁸ m/s)	2.03		1.79		0.77		1.53

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Title
LONGITUDINAL GEOLOGICAL PROFILE FOR PROPOSED WATER TRANSFER TUNNEL
 (SHEET 5 OF 5)

Designed	BV	Eng.Chk	FY
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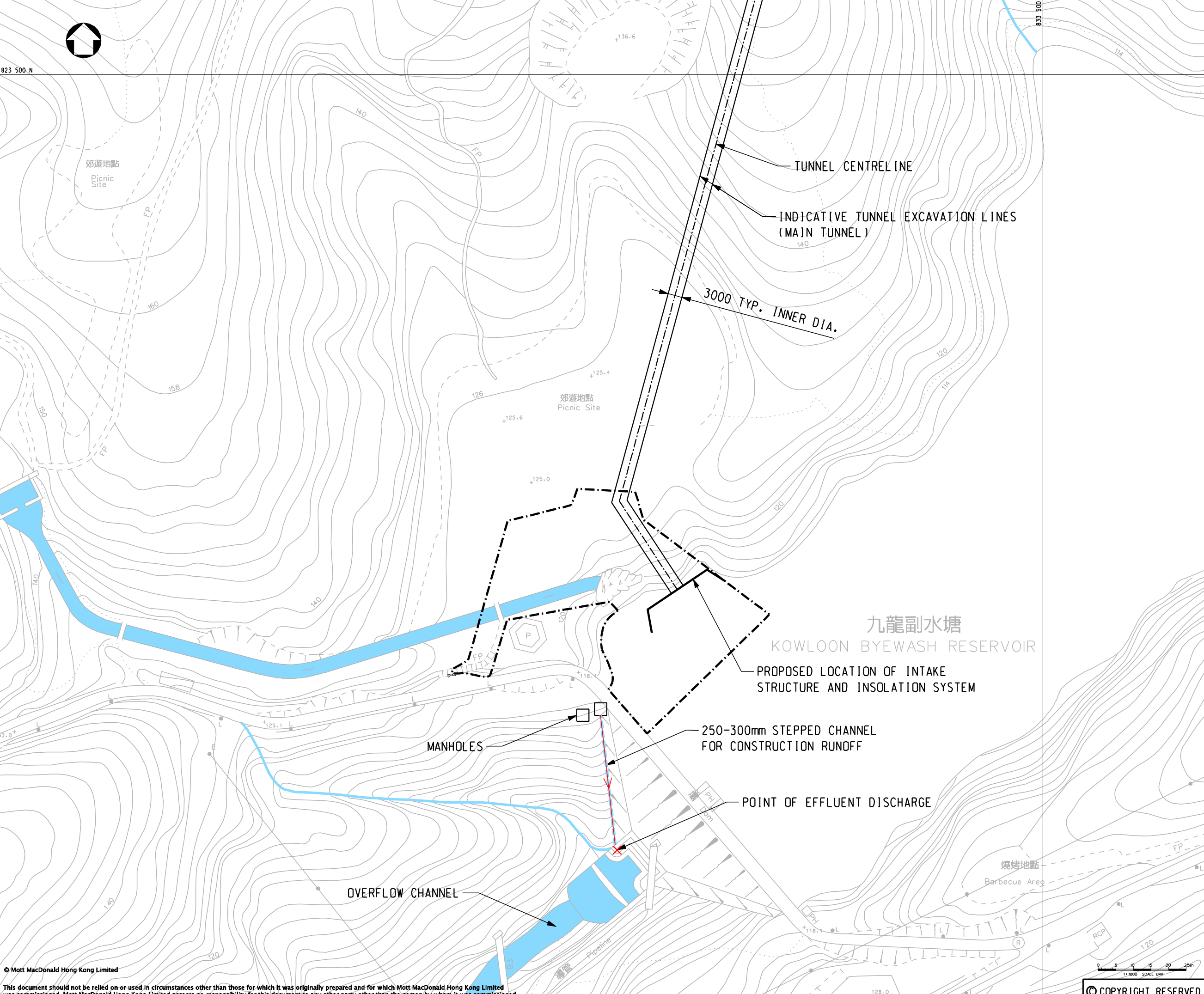
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- LEGEND:**
- WORKSITE AREA
 - WATERCOURSE
 - FLOW PATH OF TREATED EFFLUENT

823 500 N

833 500 E



TUNNEL CENTRELINE
INDICATIVE TUNNEL EXCAVATION LINES (MAIN TUNNEL)

3000 TYP. INNER DIA.

九龍副水塘
KOWLOON BYEWASH RESERVOIR

PROPOSED LOCATION OF INTAKE STRUCTURE AND INSULATION SYSTEM

MANHOLES

250-300mm STEPPED CHANNEL FOR CONSTRUCTION RUNOFF

POINT OF EFFLUENT DISCHARGE

OVERFLOW CHANNEL

P1	NOV 08	MING	FIRST ISSUE	FY	AFK
Rev	Date	Drawn	Description		Ch'kd/App'd

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Mott MacDonald
Mott MacDonald Hong Kong Ltd
7th Floor
West Wing Office Building
New World Centre
20 Salisbury Road
Tsim Sha Tsui, Kowloon
Hong Kong
Tel: 2828 5757
Fax: 2827 1823
Web: www.mottmac.com.hk

Project
Agreement No. CE55/2006(EP)
Inter-reservoirs Transfer Scheme (IRTS)
Water Tunnel between Kowloon Byewash Reservoir and Lower Shing Mun Reservoir
Environmental Impact Assessment Investigation

Title
LOCATION OF DISCHARGE AT INTAKE END

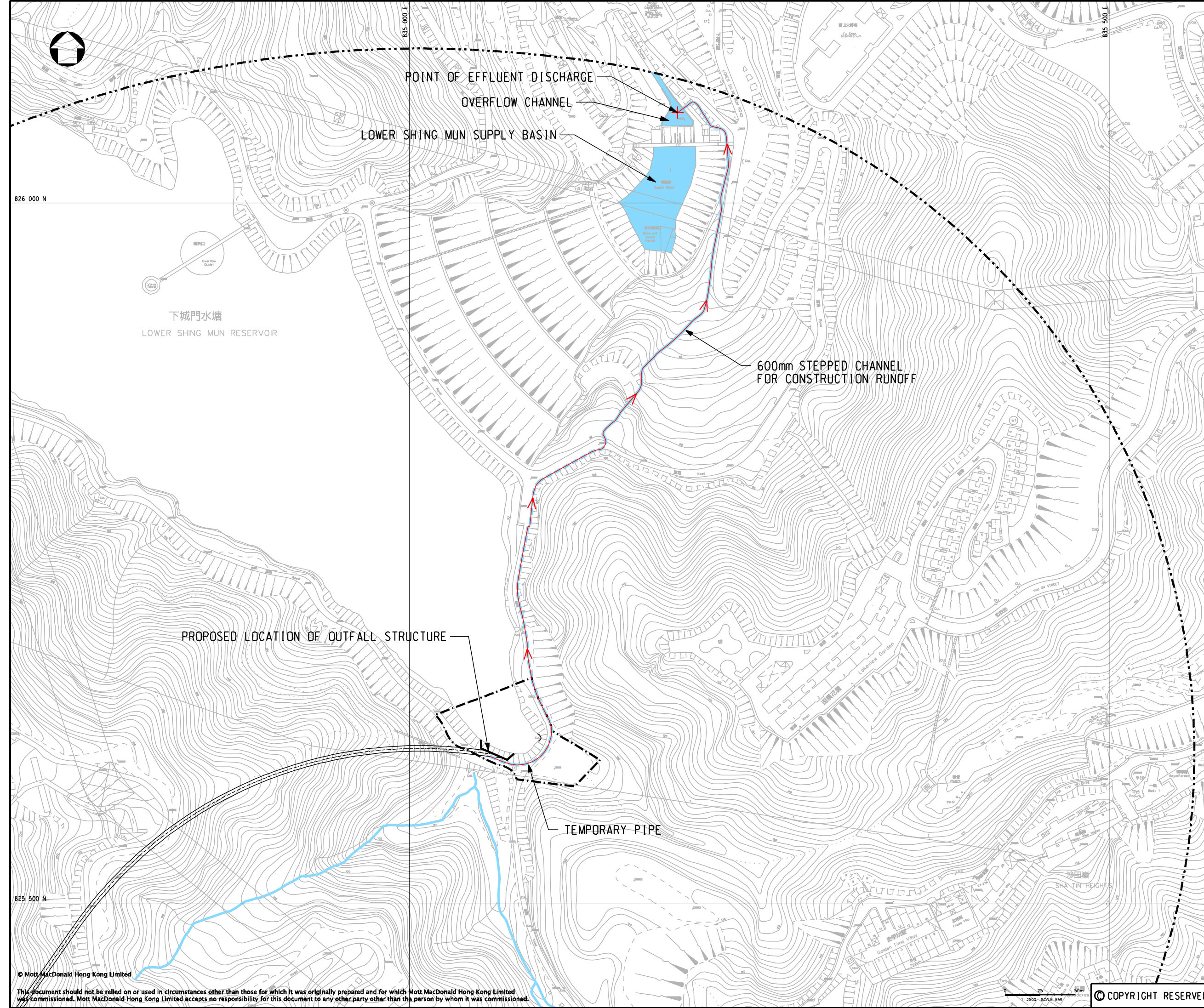
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Drawn	MING	Coordination	FY	
Dwg.Chk.	FY	Approved	AFK	

Scale	Project	Status
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Drawing No. FIGURE 5-4 Rev P1

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- LEGEND:**
- STUDY AREA BOUNDARY
 - - - WORKSITE AREA
 - WATERCOURSE
 - - - TEMPORARY PIPE
 - FLOW PATH OF TREATED EFFLUENT

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Water Tunnel between Kowloon Byewash
Reservoir and Lower Shing Mun Reservoir
Environmental Impact Assessment
Investigation

Title

LOCATION OF DISCHARGE
AT OUTFALL END

Designed	FY	Eng.Chk.	FY
Drawn	MING	Coordination	FY
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Scale	Project	Status
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Drawing No.	CAD File	Rev
	\\240564\report1\env\elo_report1-08\FIGURE-5-5.dgn	P1




- LEGEND:**
- SHEK LEI PUI WATER TREATMENT WORK CONSULTATION ZONE
 - - - SHEK LEI PUI WATER TREATMENT WORK BOUNDARY



Rev	Date	Drawn/Description	Ch'kd/App'd

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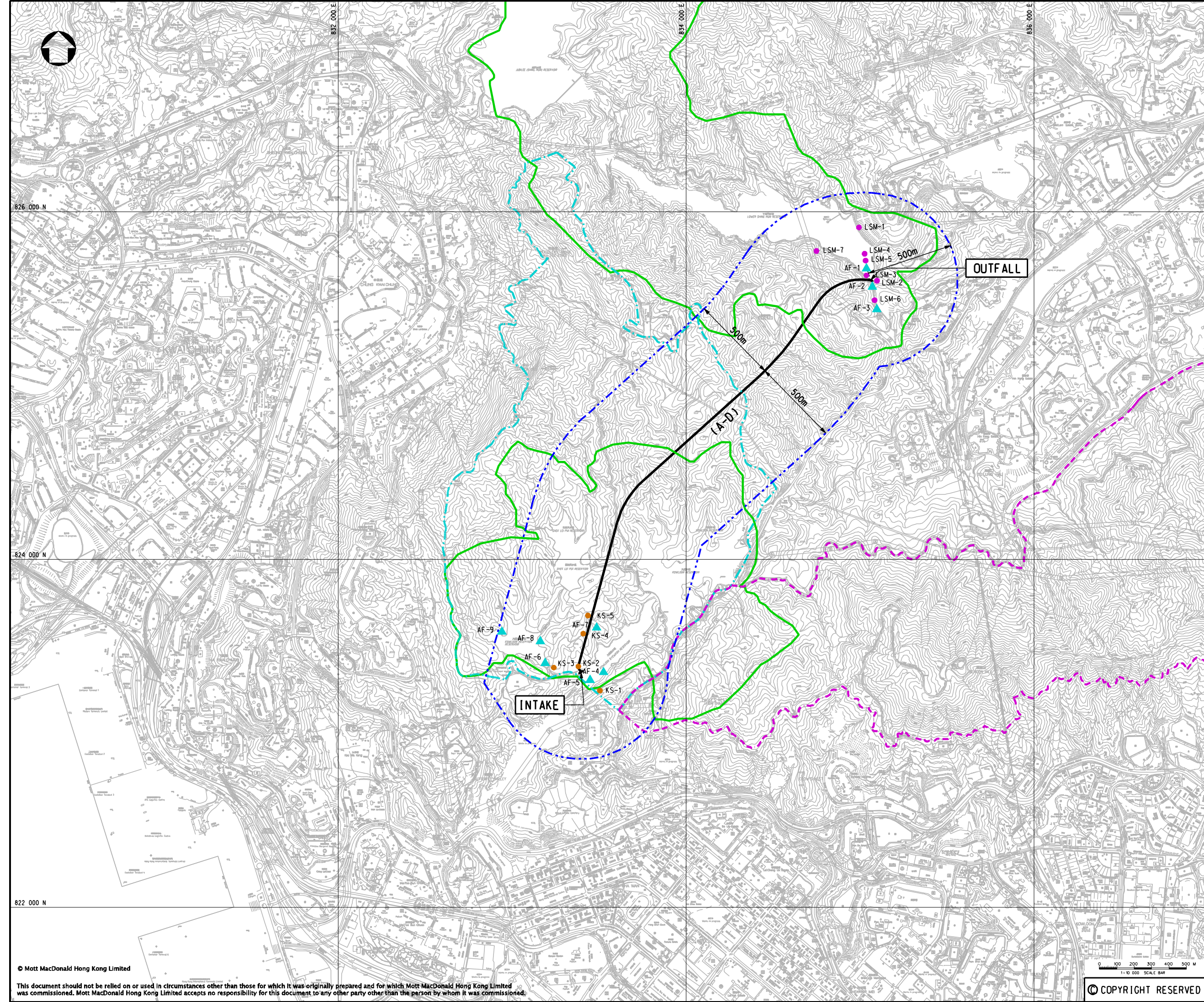
Project
Agreement No. CE55/2006(EP)
Inter-reservoirs Transfer Scheme (IRTS)
Water Tunnel between Kowloon Byewash Reservoir and Lower Shing Mun Reservoir
Environmental Impact Assessment Investigation

Title
THE PREFERRED SCHEME

Designed	HN/PW	Eng.Chk.	RL
Drawn	VN	Coordination	
Dwg.Chk.	HN	Approved	

Scale	Project	Status
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	CAD File	
	\\1240564\REPORT\ENV\EIA\REPORT1-08126\FIGURE-7-1.dgn	

Drawing No. **FIGURE 7-1**



- LEGEND:**
- - - STUDY AREA BOUNDARY
 - (A-D) — TUNNEL ALIGNMENT
 - - - KAM SHAN COUNTRY PARK BOUNDARY
 - - - LION ROCK COUNTRY PARK BOUNDARY
 - LOWER WATER GATHERING GROUND
 - LSM-1 FAUNA POINT COUNT SURVEY LOCATION AT LOWER SHING MUN
 - KS-1 FAUNA POINT COUNT SURVEY LOCATION AT KAM SHAN
 - ▲ AF-1 AQUATIC FAUNA SURVEY LOCATION

Rev	Date	Drawn/Description	Ch'kd/App'd

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7th Floor
West Wing Office Building
New World Centre
20 Salisbury Road
Tsim Sha Tsui, Kowloon
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Tel: 2828 5757
Fax: 2827 1823
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Title

ECOLOGICAL SURVEY LOCATIONS AND STUDY BOUNDARY

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Drawn	VN	Coordination	
Dwg.Chk.	HN	Approved	

Scale	Project	Status
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Drawing No.	CAD File	Rev
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FIGURE 8-1

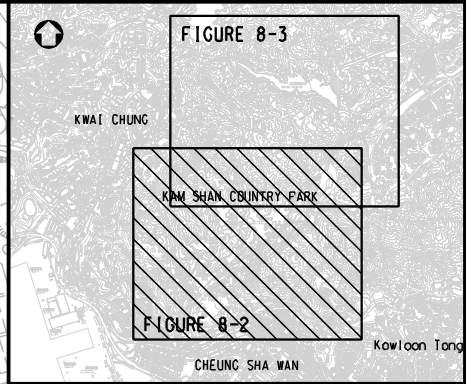
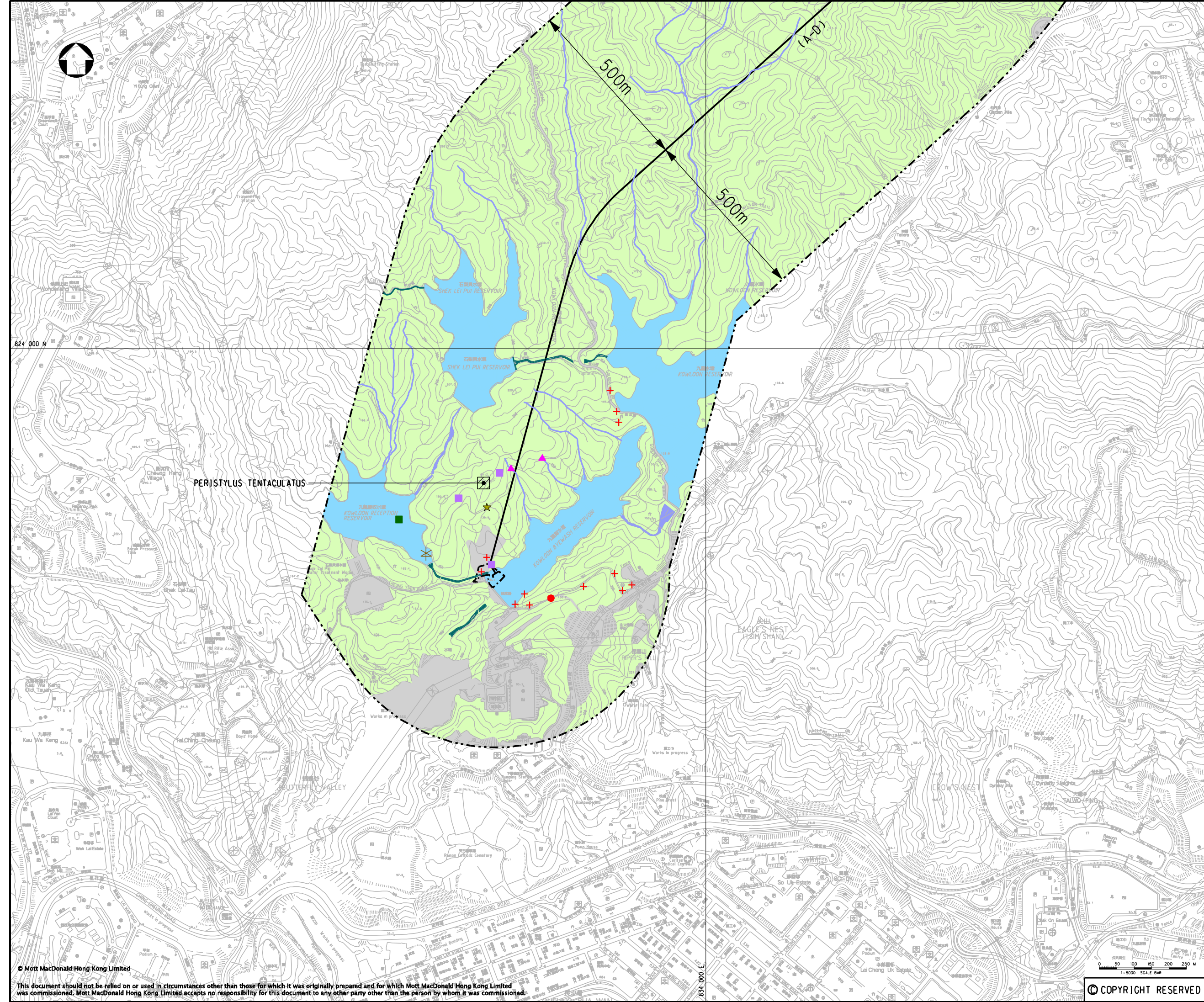


FIGURE 8-3
Kwai Chung
KAM SHAN COUNTRY PARK
FIGURE 8-2
Cheung Sha Wan
Kowloon Tong

KEY PLAN

NOTES:

1. POSITION OF ADULIARIA SINENSIS, ARTOCARPUS HYPARGYREUS, CIBOTIUM BAROMETZ, IXONANTHES RETICULATA AND PAVETTA HONGKONGENSIS ARE NOT SHOWN ON THE MAP AS THESE SPECIES ARE COMMON AND HAVE WIDESPREAD LOCALITIES THROUGHOUT THE STUDY AREA.
2. POSITION OF INTERMEDIATE HORSESHOE BAT, PALLA'S SOUJIREL, SMALL-TOOTHED FERRET BADGER, MASKED PALM CIVET, SMALL INDIAN CIVET, LEOPARD CAT, LONGTAILED MACAOUE, WATER MONITOR AND BEALE'S TERRAPIN ARE NOT SHOWN ON THE MAP AS THESE SPECIES WERE RECORDED BY PREVIOUS STUDIES WITHOUT INDICATION OF THE EXACT LOCATIONS OF SIGHTING.

- LEGEND:**
- STUDY AREA BOUNDARY
 - (A-D) TUNNEL ALIGNMENT
 - WORKSITE AREA
 - Secondary Woodland / Plantation
 - Developed Area / Bare Ground
 - Locations of Flora Species of Conservation Concern
 - Stream
 - Drainage Channel
 - Reservoir
 - Scat of East Asian Porcupine
 - Rufous-capped Babbler
 - Black Kite
 - Rhesus Macaque (this species is widely distributed in Kam Shan Country Park)
 - Common Teal
 - Lesser Spiny Frog
 - Rose Bitterling

P2	NOV 08	MING	WORKSITE AREA REVISED	PW	AFK
P1	FEB 08	MING	FIRST ISSUE	PW	AFK
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 Mott MacDonald Hong Kong Ltd
 7th Floor
 West Wing Office Building
 New World Centre
 20 Salisbury Road
 Tsim Sha Tsui, Kowloon
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 Tel: 2828 5757
 Fax: 2827 1823
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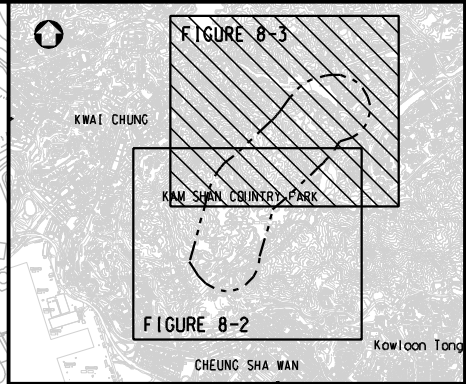
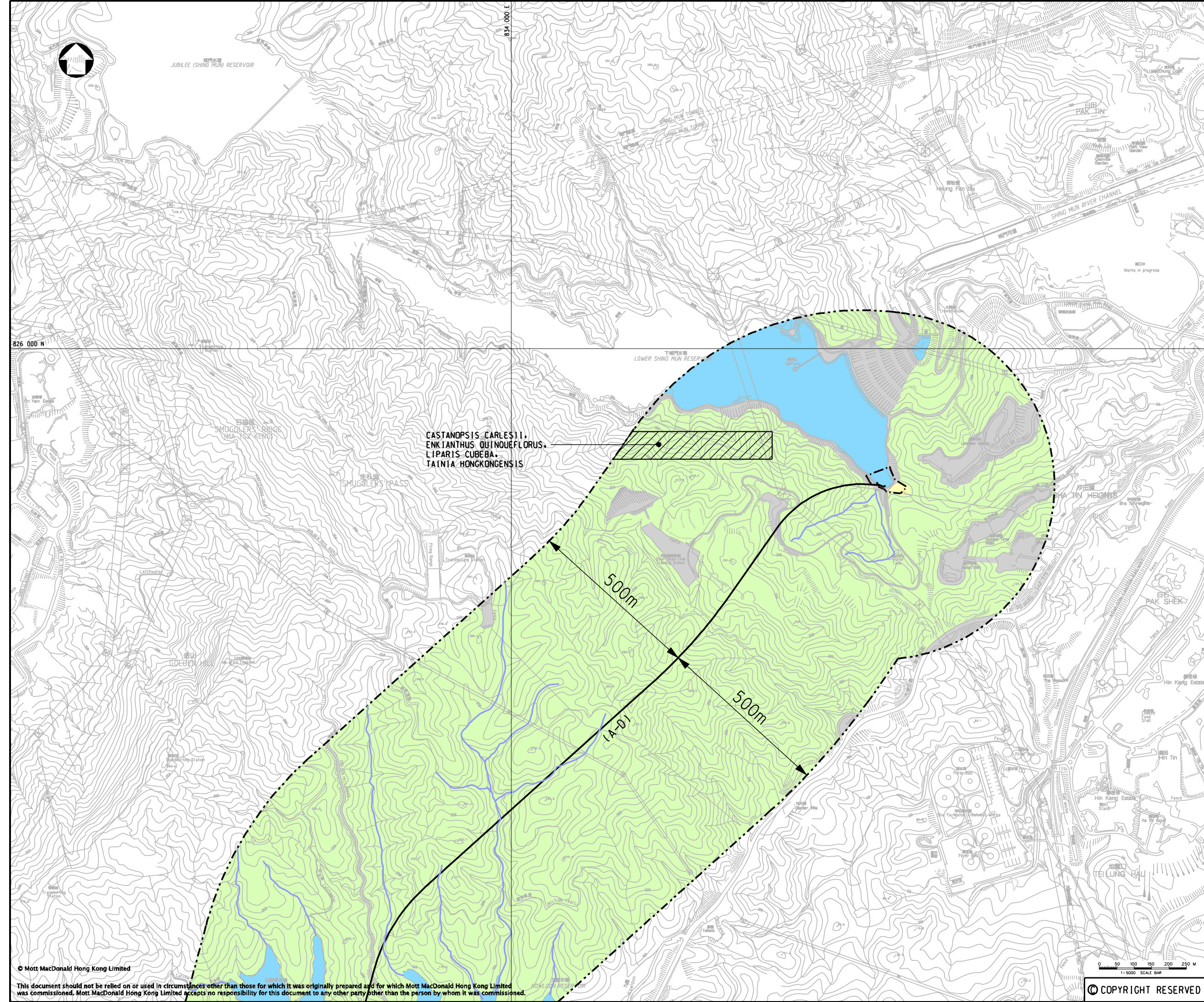
Project
 Agreement No. CE55/2006(EP)
 Inter-reservoirs Transfer Scheme (IRTS)
 Water Tunnel between Kowloon Byewash Reservoir and Lower Shing Mun Reservoir
 Environmental Impact Assessment Investigation

Title
 HABITAT MAP AND LOCATIONS OF SPECIES OF CONSERVATION INTEREST RECORDED WITHIN THE STUDY AREA (INTAKE END) DURING THE RECENT FIELD SURVEYS (SEPTEMBER 2007 - FEBRUARY 2008)

Designed	PW	Eng.Chk.	PW
Drawn	MING	Coordination	PW
Dwg.Chk.	PW	Approved	AFK

Scale	Project	Status
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	CAD File	Rev
	\\240564\REPORT\ENV\IA\REPORT-08126\FIGURE-8-2.dgn	

Drawing No. **FIGURE 8-2** P2



KEY PLAN

NOTES:

1. POSITION OF AQUILARIA SINENSIS, ARTOCARPUS HYPARGYREUS, CIBOTIUM BARMETZ, IXIDANTHES RETICULATA AND PAVETTA HONGKONGENSIS ARE NOT SHOWN ON THE MAP AS THESE SPECIES ARE COMMON AND HAVE WIDESPREAD LOCALITIES THROUGHOUT THE STUDY AREA.
2. POSITION OF WILD CARP IS NOT SHOWN ON THE MAP AS THIS SPECIES WAS RECORDED BY PREVIOUS STUDIES WITHOUT INDICATION OF THE EXACT LOCATIONS OF SIGHTING.

LEGEND:

- STUDY AREA BOUNDARY
- (A-D) TUNNEL ALIGNMENT
- WORKSITE AREA
- GRASSLAND
- SECONDARY WOODLAND / PLANTATION
- STREAM
- DRAINAGE CHANNEL
- RESERVOIR
- DEVELOPED AREA / BARE GROUND
- LOCATIONS OF FLORA SPECIES OF CONSERVATION CONCERN

P2	NOV 08	MING	WORKSITE AREA REVISED	PW	AFK
P1	FEB 08	MING	FIRST ISSUE	PW	AFK
Rev	Date	Drawn	Description		Ch'kd/App'd

CASTANOPSIS CARLESII,
ENKIANTHUS QUINQUEFLORUS,
LIPARIS CUBEBA,
TAINIA HONGKONGENSIS

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Mott MacDonald

Mott MacDonald Hong Kong Ltd
7th Floor
West Wing Office Building
New World Centre
20 Salisbury Road
Tsim Sha Tsui, Kowloon
Hong Kong
Tel: 2828 5757
Fax: 2827 1823
Web: www.mottmac.com.hk

Project

Agreement No. CE55/2006(EP)
Inter-reservoirs Transfer Scheme (IRTS)
Water Tunnel between Kowloon Byewash
Reservoir and Lower Shing Mun Reservoir
Environmental Impact Assessment
Investigation

Title

HABITAT MAP AND LOCATIONS OF SPECIES
OF CONSERVATION INTEREST RECORDED
WITHIN THE STUDY AREA (OUTFALL END)
DURING THE RECENT FIELD SURVEYS
(SEPTEMBER 2007 - FEBRUARY 2008)

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Drawn	MING	Coordination	PW
Dwg.Chk.	PW	Approved	AFK

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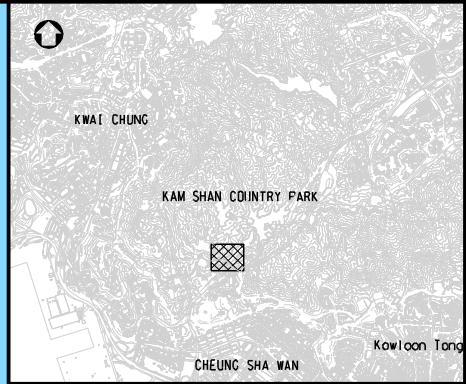
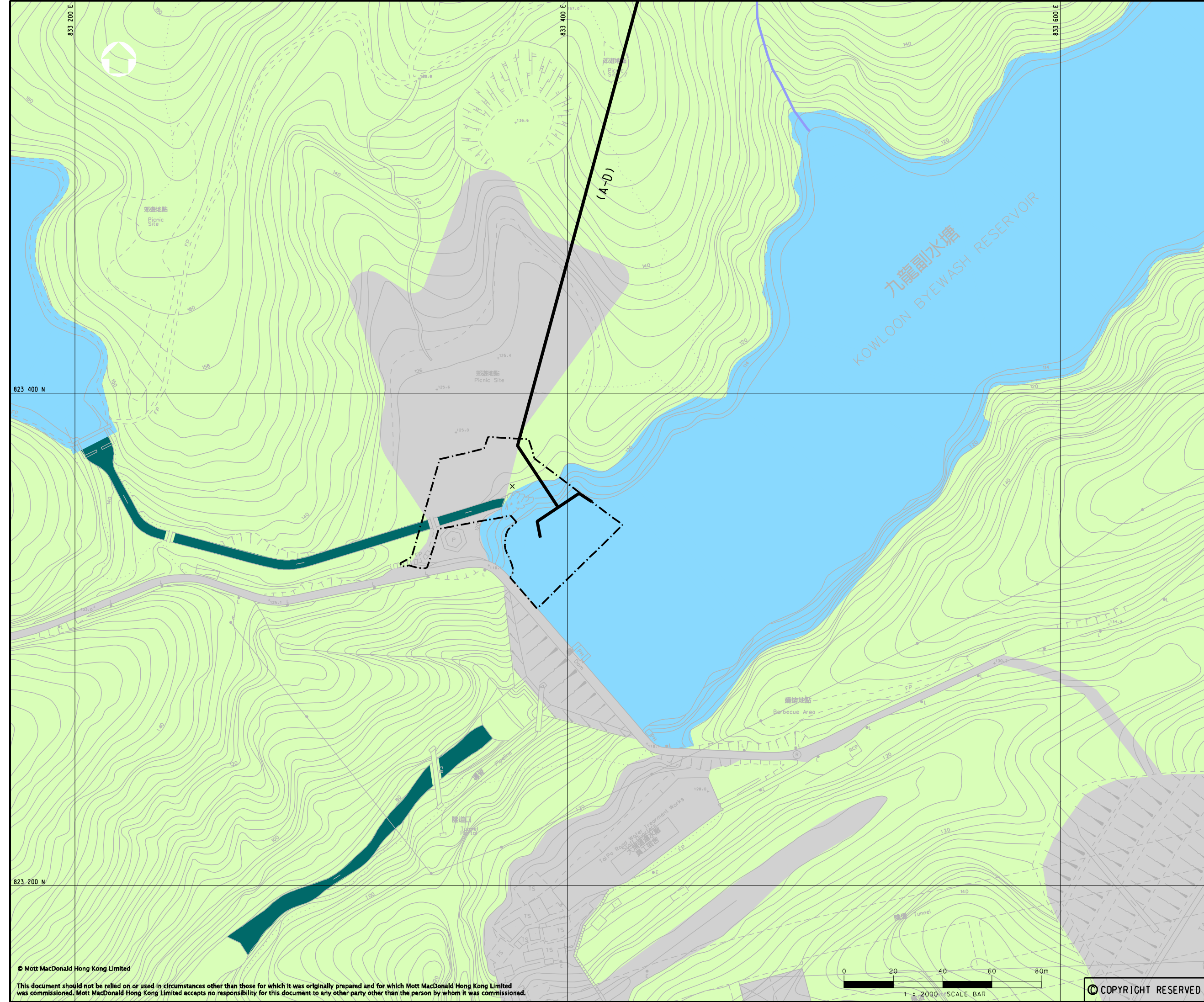
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Drawing No. FIGURE 8-3

Rev



KEY PLAN

LEGEND:

- STUDY AREA BOUNDARY
- TA-D TUNNEL ALIGNMENT
- WORKSITE AREA
- SECONDARY WOODLAND / PLANTATION
- STREAM
- DRAINAGE CHANNEL
- RESERVOIR
- DEVELOPED AREA / BARE GROUND
- × ARTOCARPUS HYPARGYREUS

P2	NOV 08	MING	WORKSITE AREA REVISED	PW	AFK
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West Wing Office Building
New World Centre
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Hong Kong
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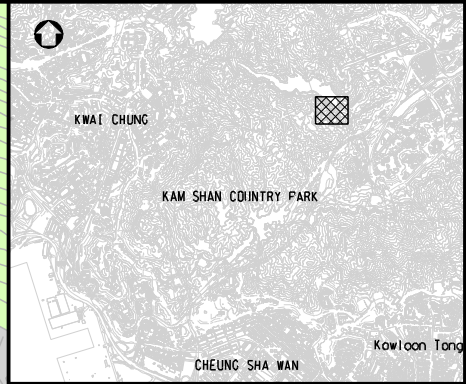
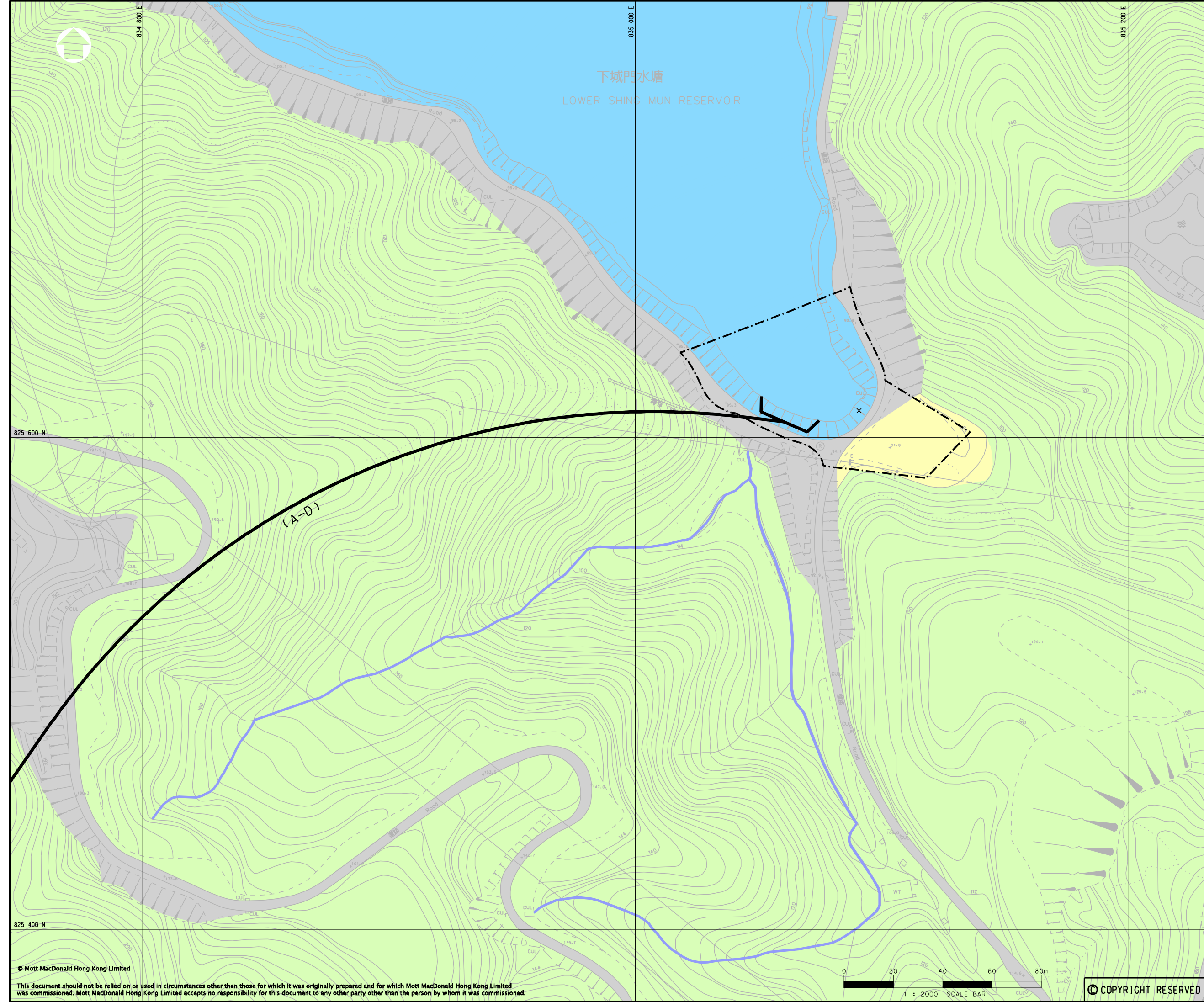
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Inter-reservoirs Transfer Scheme (IRTS)
Water Tunnel between Kowloon Byewash
Reservoir and Lower Shing Mun Reservoir
Environmental Impact Assessment
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Title

HABITATS AROUND THE PROPOSED INTAKE
AT KOWLOON BYEWASH RESERVOIR


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Dwg.Chk.	PW	Approved	AFK
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Drawing No.		Status	INF
		Rev	P2



KEY PLAN

- LEGEND:**
- STUDY AREA BOUNDARY
 - 1A-D1 TUNNEL ALIGNMENT
 - - - WORKSITE AREA
 - GRASSLAND
 - SECONDARY WOODLAND / PLANTATION
 - STREAM
 - RESERVOIR
 - DEVELOPED AREA / BARE GROUND
 - x PAVETTA HONGKONGENSIS

P2	NOV 08	MING	WORKSITE AREA REVISED	PW	AFK
P1	FEB 08	MING	FIRST ISSUE	PW	AFK
Rev	Date	Drawn	Description	Ch'kd/App'd	

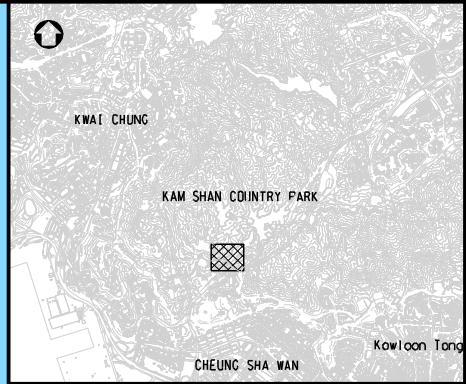
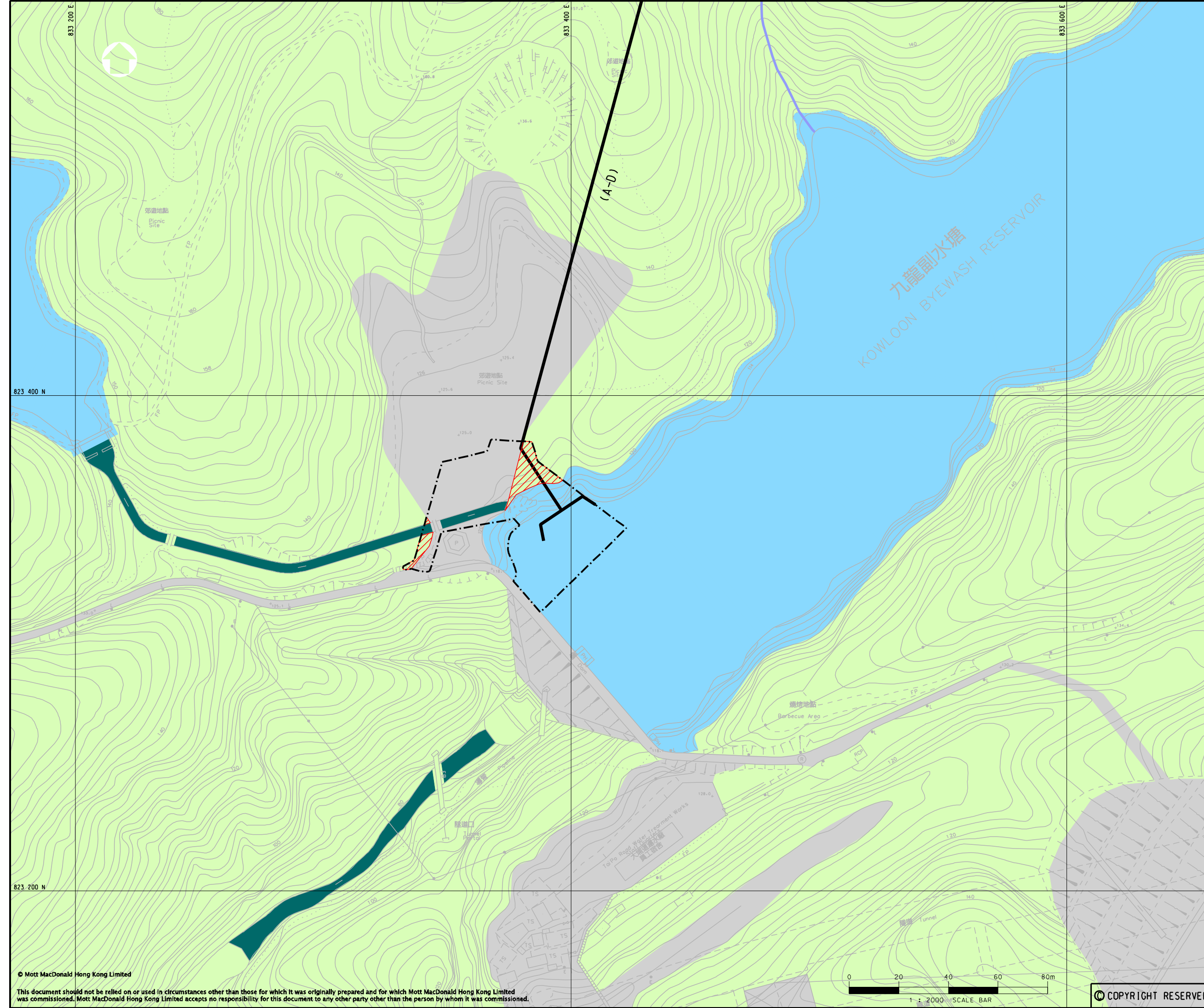
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 7th Floor
 West Wing Office Building
 New World Centre
 20 Salisbury Road
 Tsim Sha Tsui, Kowloon
 Hong Kong
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 Environmental Impact Assessment
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Title
 HABITATS AROUND THE PROPOSED OUTFALL
 AT LOWER SHING MUN RESERVOIR

Designed	PW	Eng.Chk.	PW
Drawn	MING	Coordination	PW
Dwg.Chk.	PW	Approved	AFK
Scale	Project	Status	
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Drawing No.	CAD File	Rev	
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KEY PLAN

- LEGEND:**
- STUDY AREA BOUNDARY
 - TA-D TUNNEL ALIGNMENT
 - WORKSITE AREA
 - SECONDARY WOODLAND / PLANTATION
 - STREAM
 - DRAINAGE CHANNEL
 - RESERVOIR
 - DEVELOPED AREA / BARE GROUND
 - AREA PROPOSED FOR HABITAT RESTORATION TO COMPENSATE POTENTIAL HABITAT LOSS

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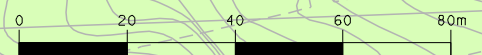
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Title
 PROPOSED AREA
 FOR HABITAT RESTORATION
 AT KOWLOON BYEWASH RESERVOIR

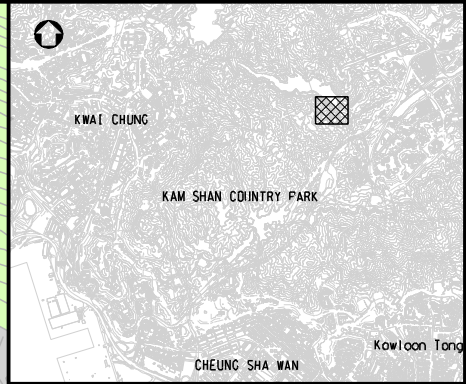
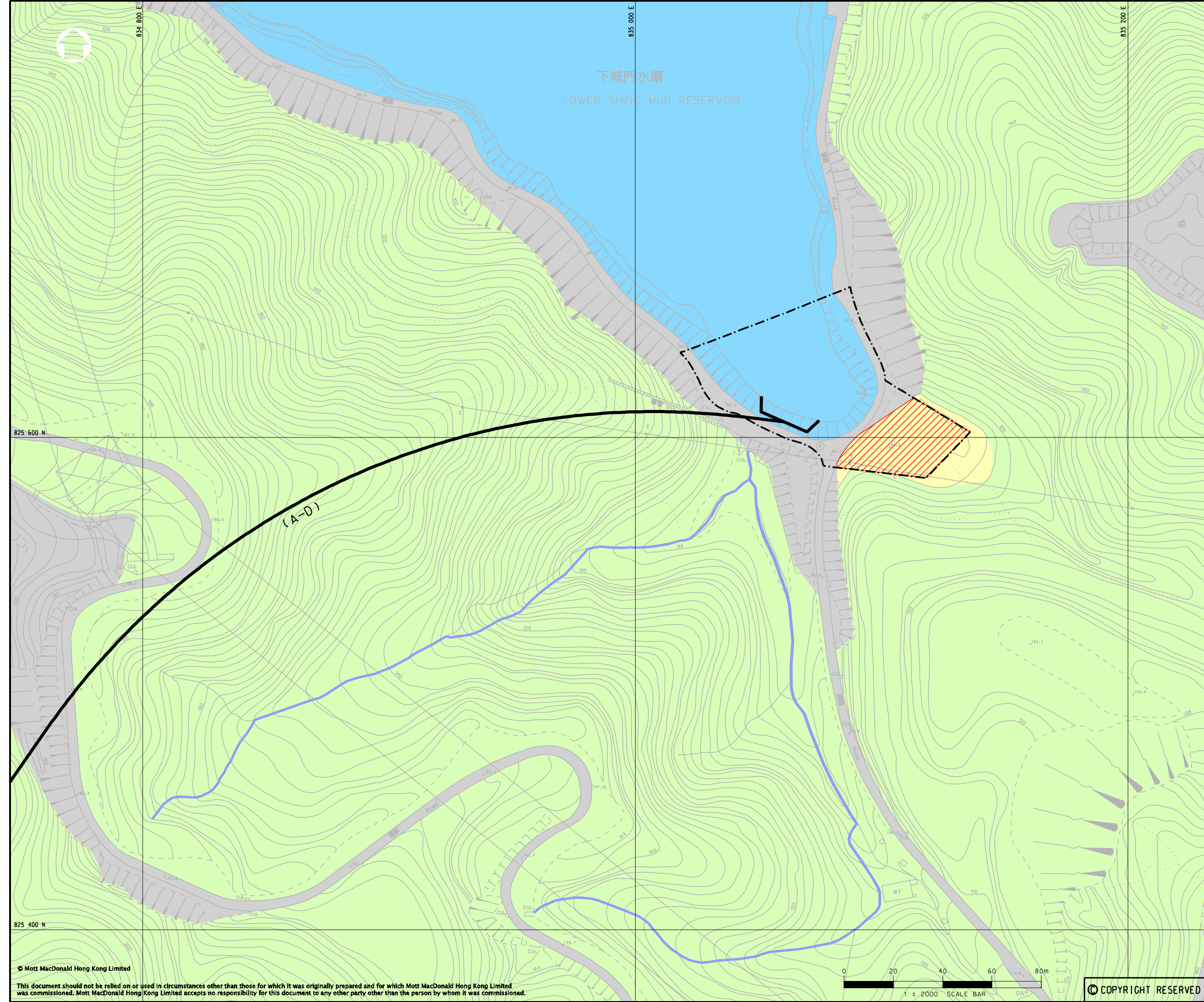
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Dwg.Chk.	PW	Approved	AFK

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FIGURE 8-6



KEY PLAN

LEGEND:

- STUDY AREA BOUNDARY
- 1A-D1 TUNNEL ALIGNMENT
- WORKSITE AREA
- GRASSLAND
- SECONDARY WOODLAND / PLANTATION
- STREAM
- RESERVOIR
- DEVELOPED AREA / BARE GROUND
- AREA PROPOSED FOR HABITAT RESTORATION TO COMPENSATE POTENTIAL HABITAT LOSS

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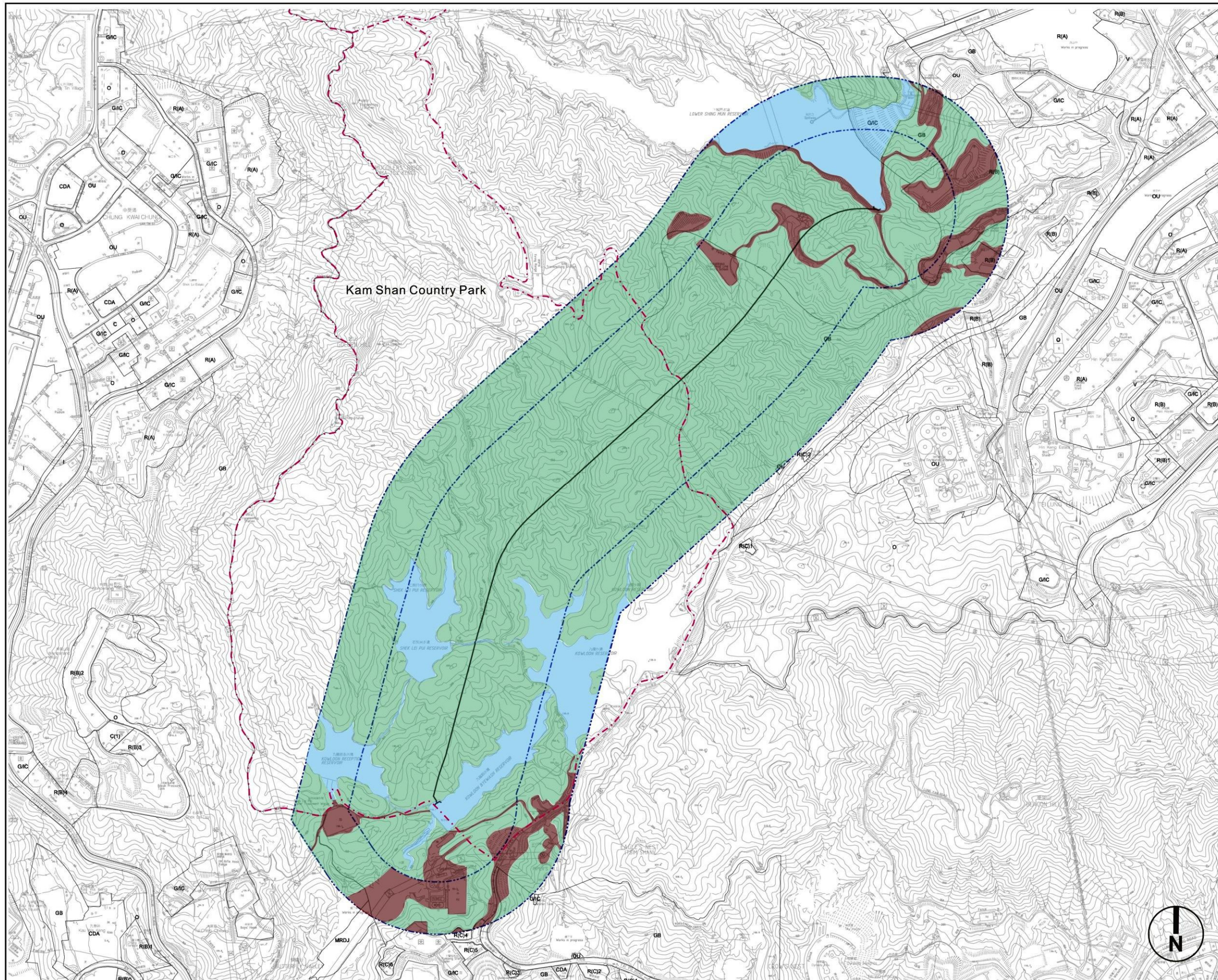
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Title
PROPOSED AREA
FOR HABITAT RESTORATION
AT LOWER SHING MUN RESERVOIR





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Dwg.Chk.	PW	Approved	AFK

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Figure No. FIGURE 8-7



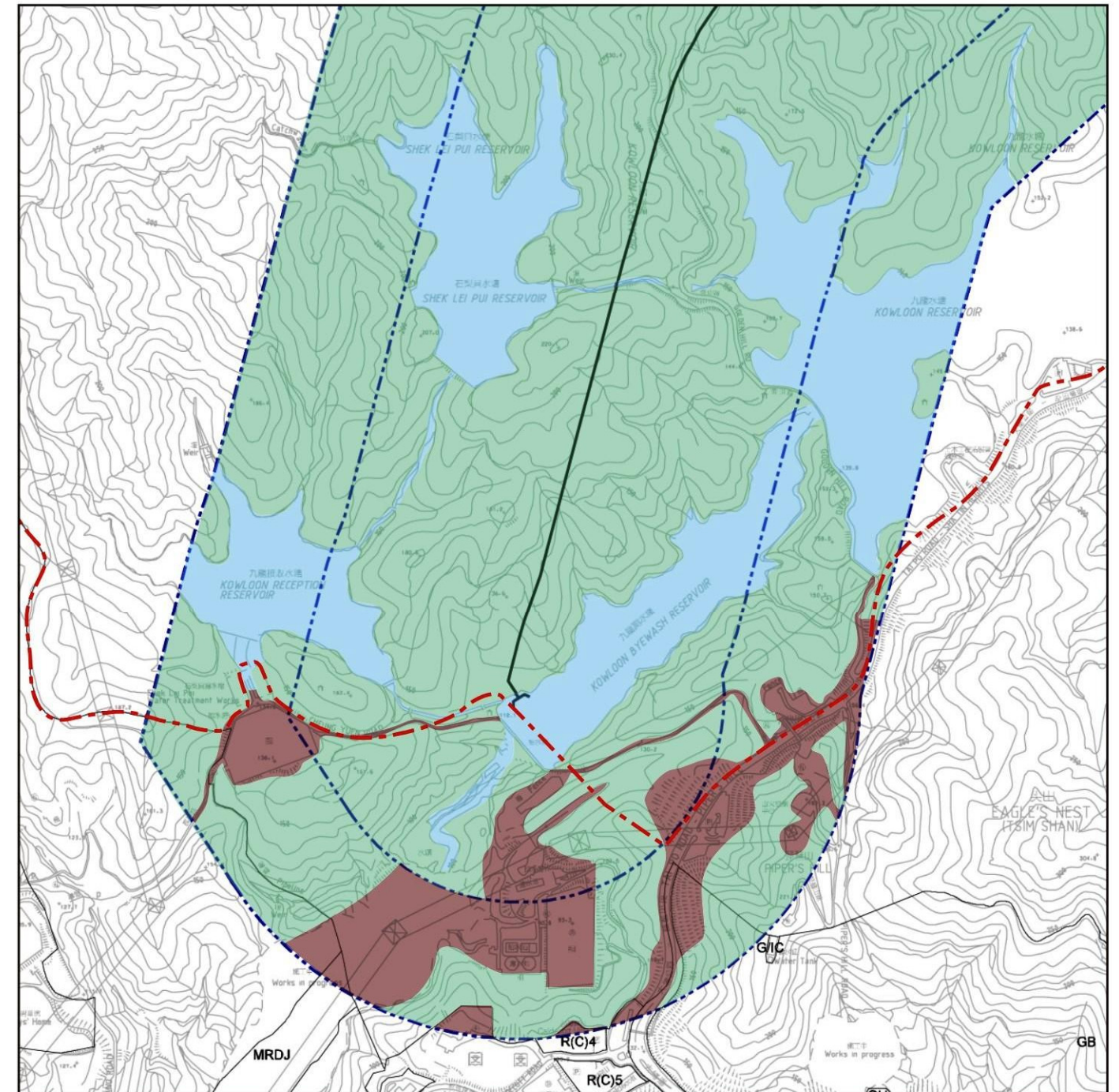
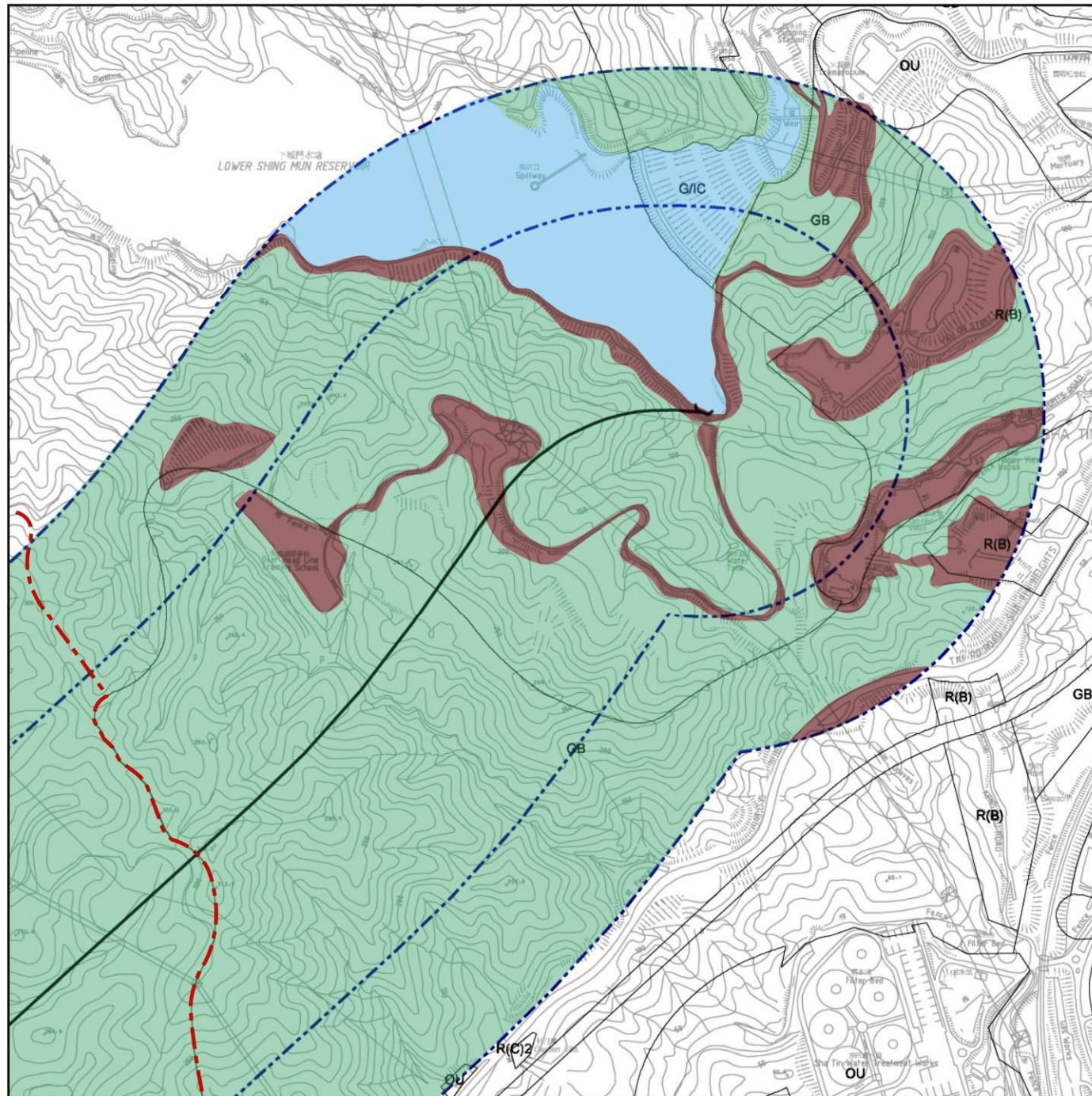
Legend

-  Study Area
-  Kam Shan Country Park Boundary
-  Proposed Alignment of Water Tunnel
-  Proposed Intake / Outfall Location

Landscape Resources

-  LR1 Mixed Woodland
-  LR2 Modified Water Course
-  LR3 Developed Area

Note: For the purposes of this assessment the Study Area Boundary is 500m from the proposed scheme



Legend

-  Study Area
-  Kam Shan Country Park Boundary
-  Proposed Alignment of Water Tunnel
-  Proposed Intake / Outfall Location

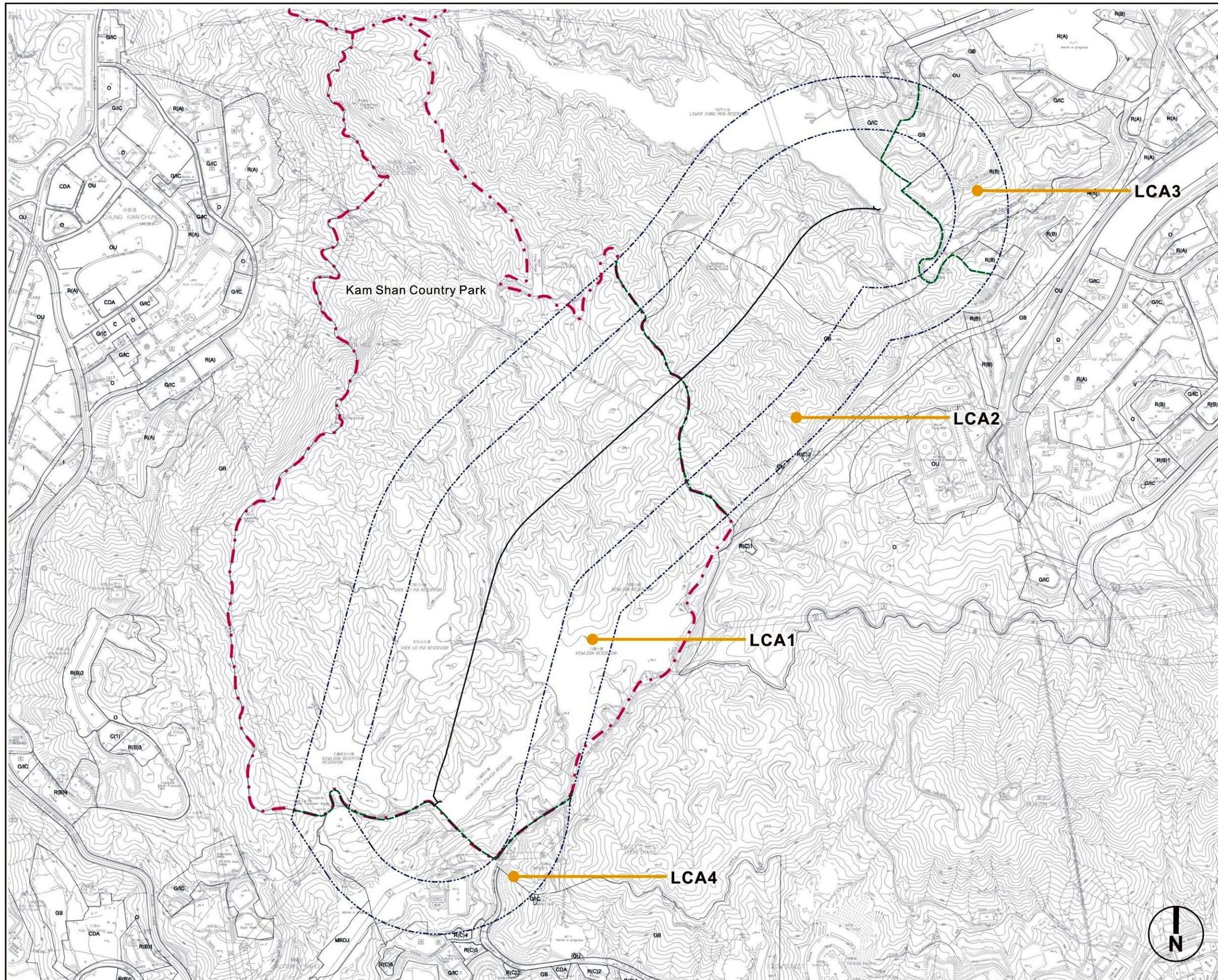
Landscape Resources

-  LR1 Mixed Woodland
-  LR2 Modified Water Course
-  LR3 Developed Area






Note:

For the purposes of this assessment the Study Area Boundary is 500m from the proposed scheme





Legend

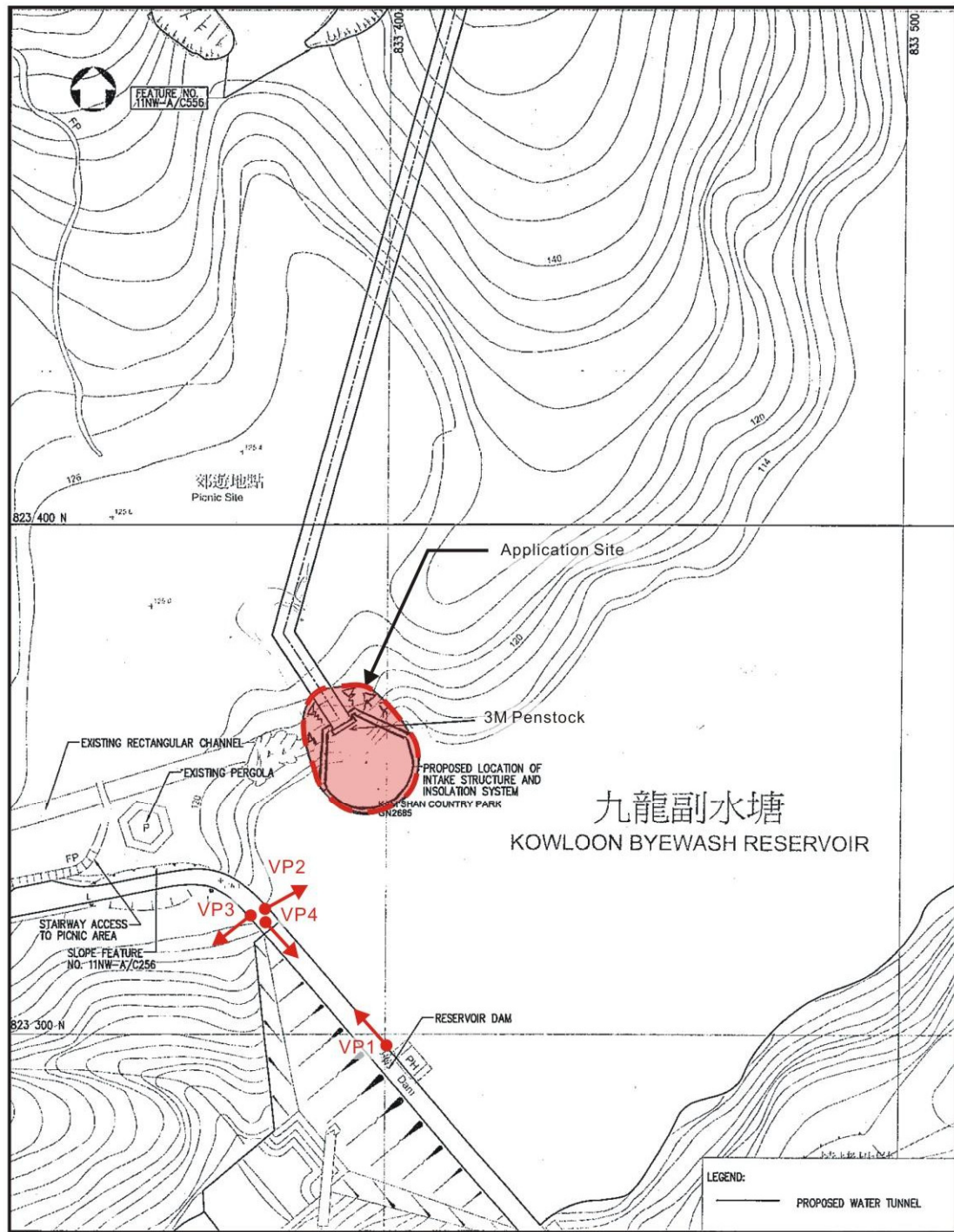
-  Study Area
-  Kam Shan Country Park Boundary
-  LCA Boundary
-  Proposed Alignment of Water Tunnel
-  Proposed Intake / Outfall Location

Landscape Character Area

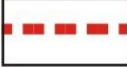



- LCA1: Kowloon Reservoir Group LCA
- LCA2: Lower Shing Mun Reservoir LCA
- LCA3: Sha Tin Height Urban Fringe LCA
- LCA4: Cheung Sha Wan Urban Fringe LCA

Note: For the purposes of this assessment, the Study Area Boundary is 500m from the proposed scheme





Legend

-  Application Site Boundary
-  Proposed Intake Structure
-  Alignment of Proposed Water Tunnel
-  Viewpoints



Viewpoint 1



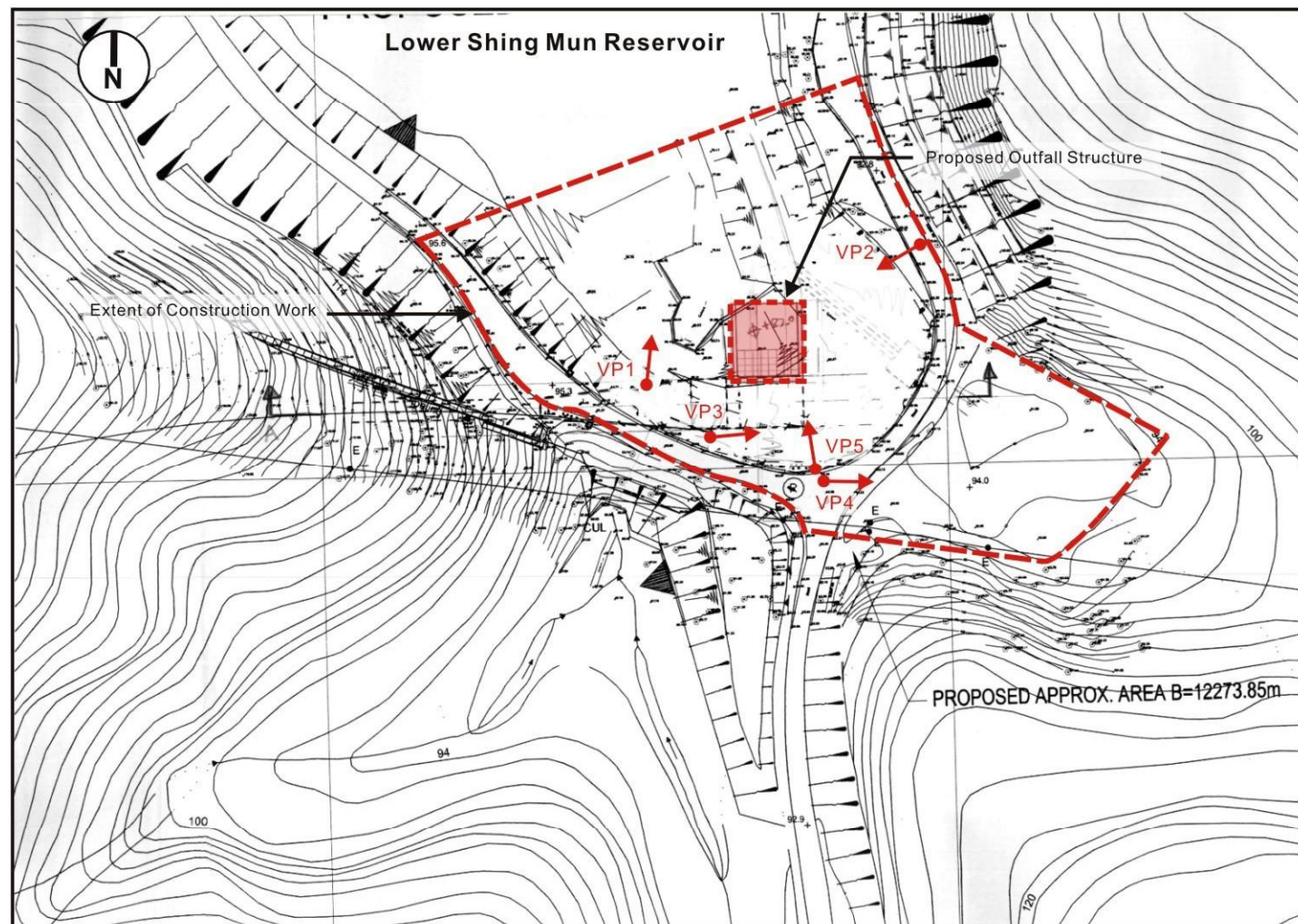
Viewpoint 2



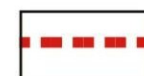


Viewpoint 3

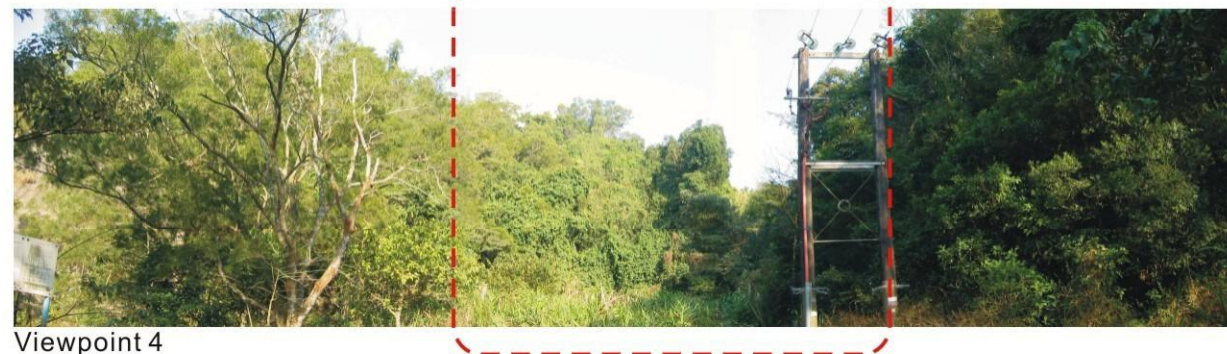


Viewpoint 4



Legend

-  Application Site Boundary
-  Proposed Outfall Structure
-  Viewpoints



Viewpoint 1



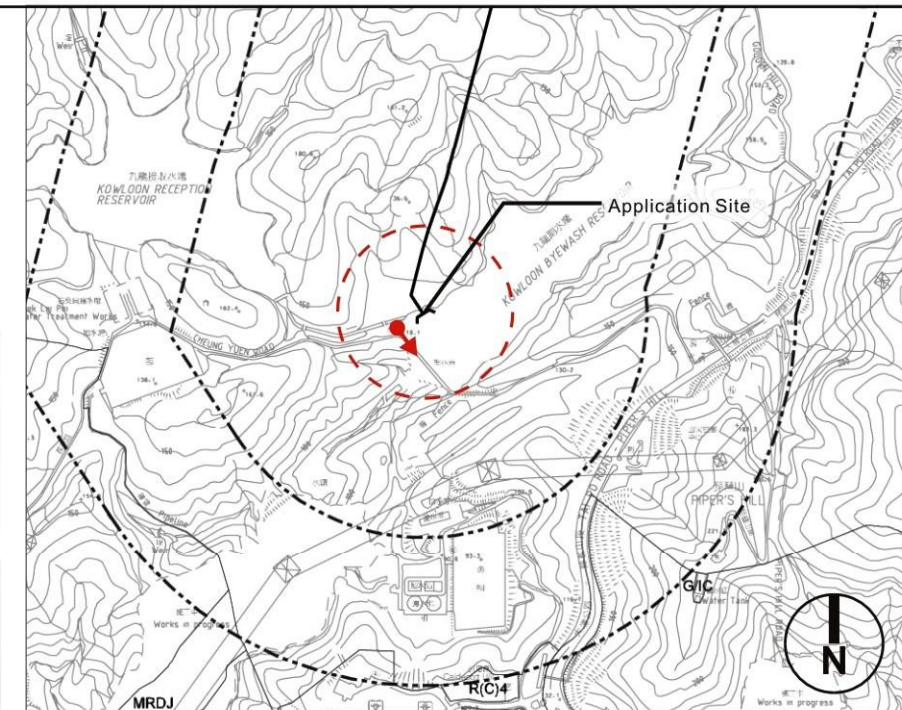
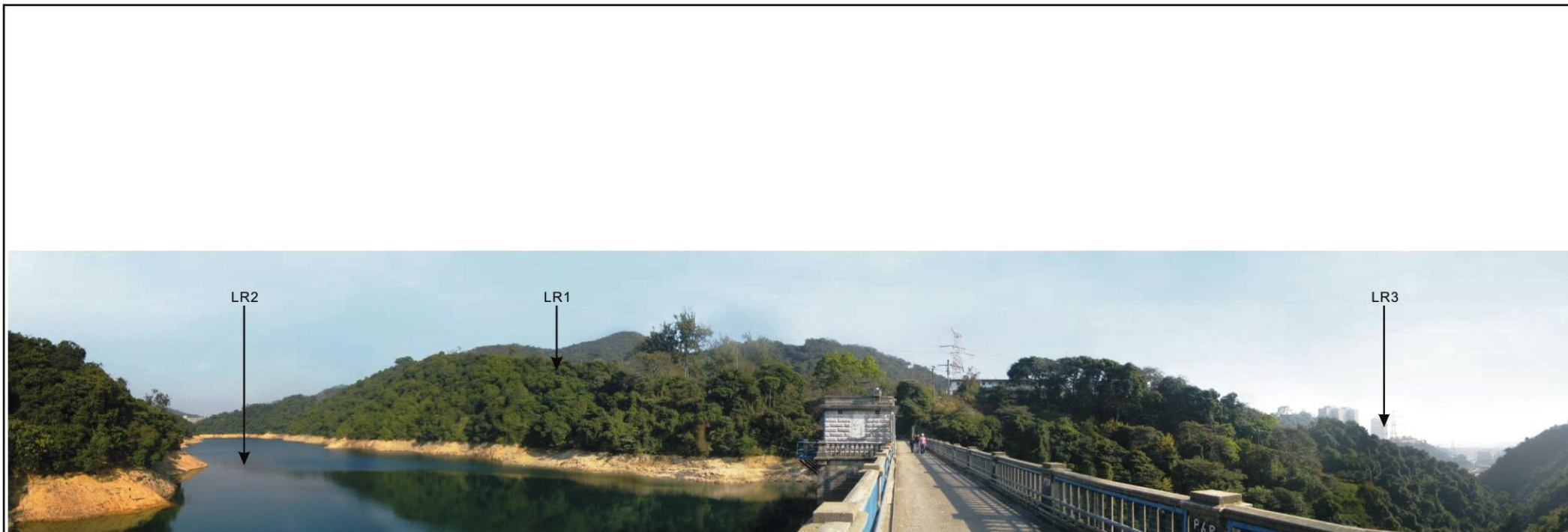
Viewpoint 2



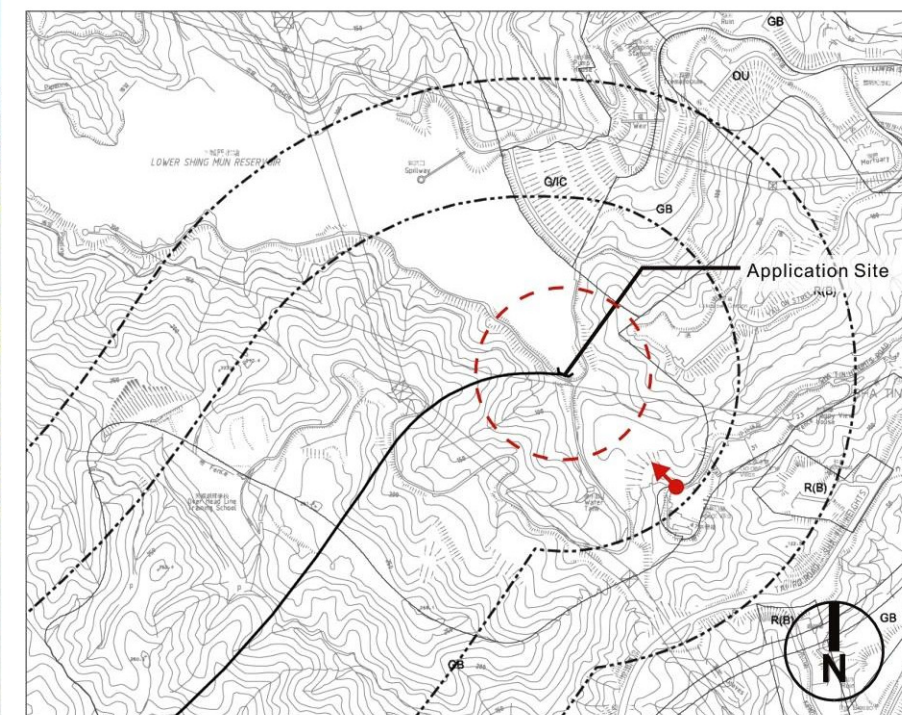
Viewpoint 3



Viewpoint 5



Location Plan



Location Plan

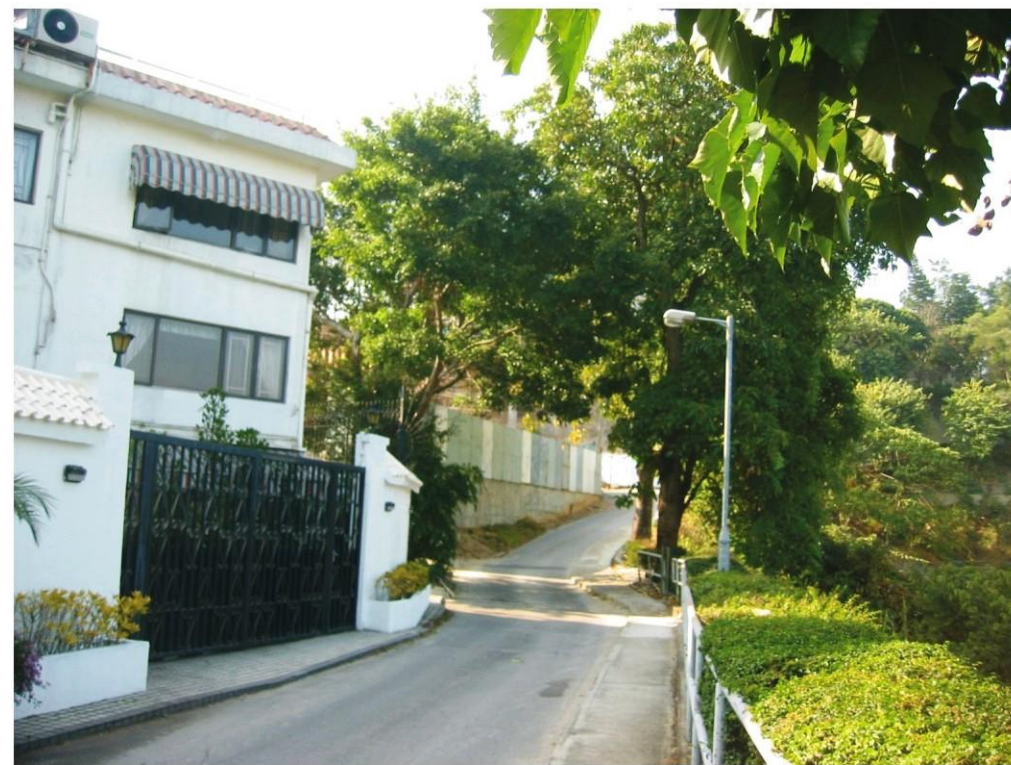
LR1: Mixed Woodland
 LR2: Modified Water Course
 LR3: Developed Area



LCA1



LCA2

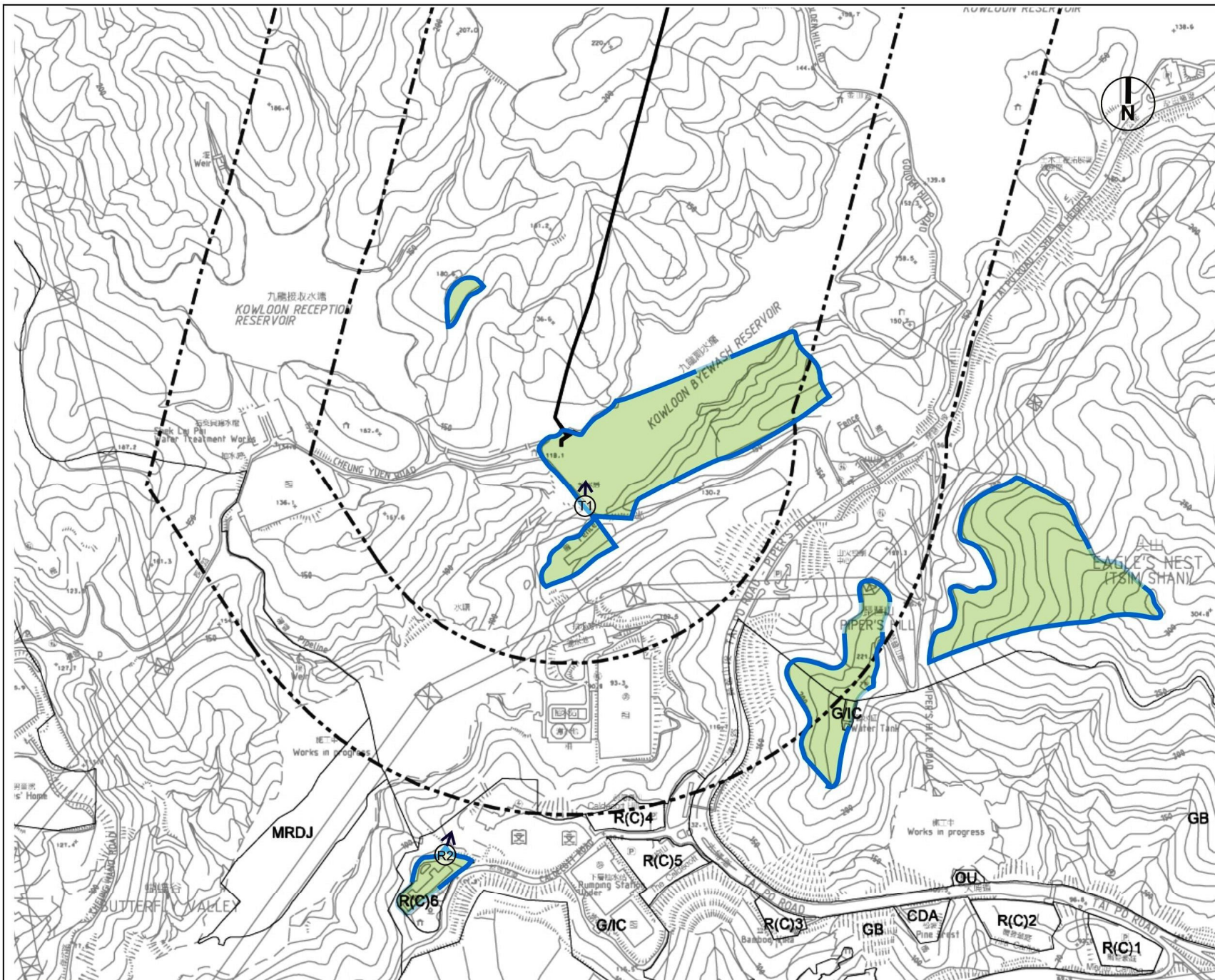


LCA3






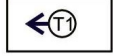


LCA4

- LCA1: Kowloon Reservoir Group LCA
- LCA2: Lower Shing Mun Reservoir LCA
- LCA3: Sha Tin Height Urban Fringe LCA
- LCA4: Cheung Sha Wan Urban Fringe LCA



Legend

-  Study Area
-  Alignment of Proposed Water Tunnel
-  Proposed Intake Structure
-  Visual Envelope
-  ZVI from which it is estimated that all proposed water intake structures and associated engineering works may be visible
-  Visually Sensitive Receiver (VSR) and angle of main views

Note: Many of the potential views are screened by intervening landform and vegetation

Title: Visual Envelope and Zone of Visual Influence(Southern Portal)

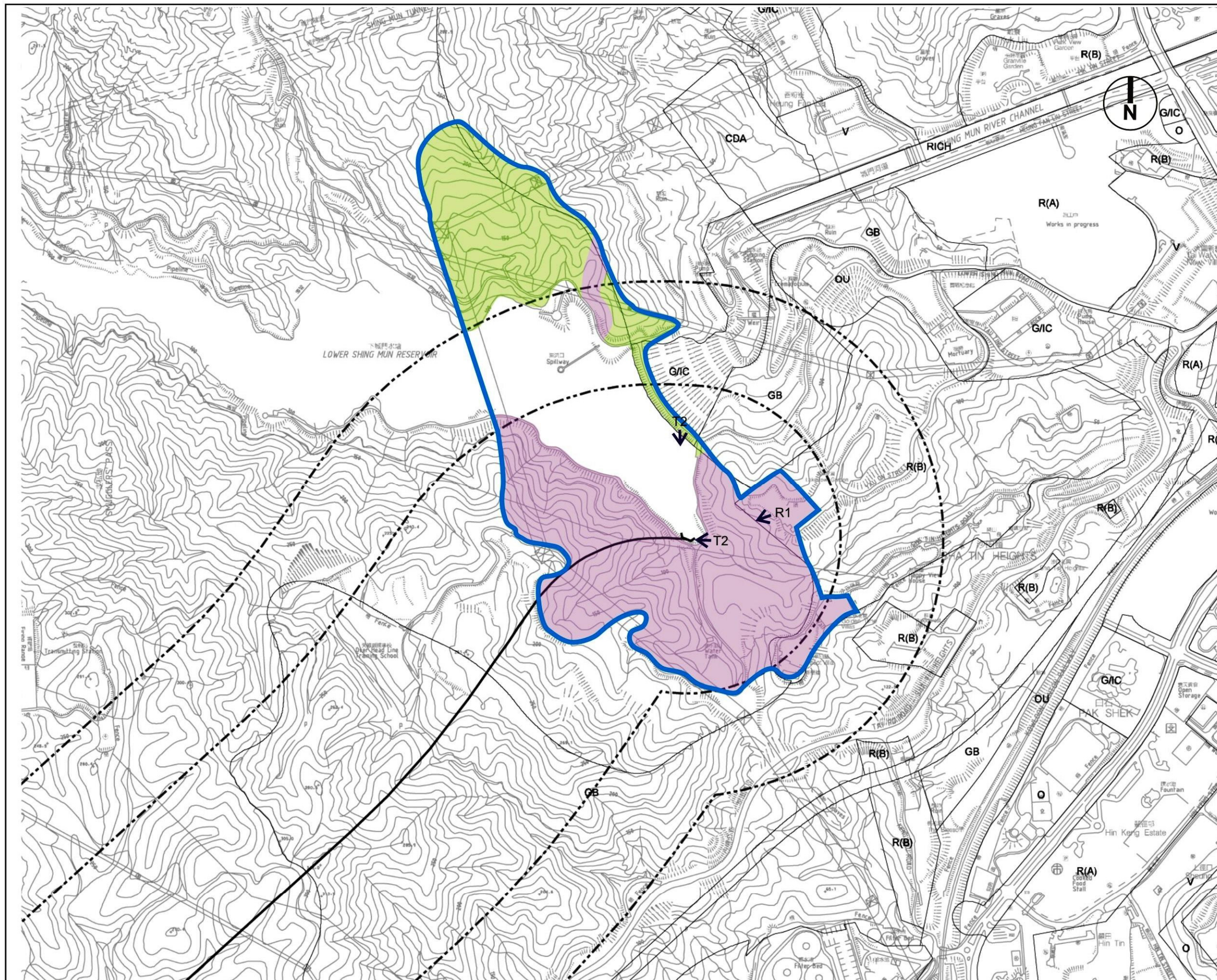
Project: Agreement No. CE55/2006(EP) Inter-reservoirs Transfer Scheme (IRTS) Water Tunnel between Kowloon Byewash Reservoir and Lower Shing Mun Reservoir Environment Impact Assessment Investigation

Mott MacDonald Hong Kong Limited








Scale: As shown Figure 9.4a



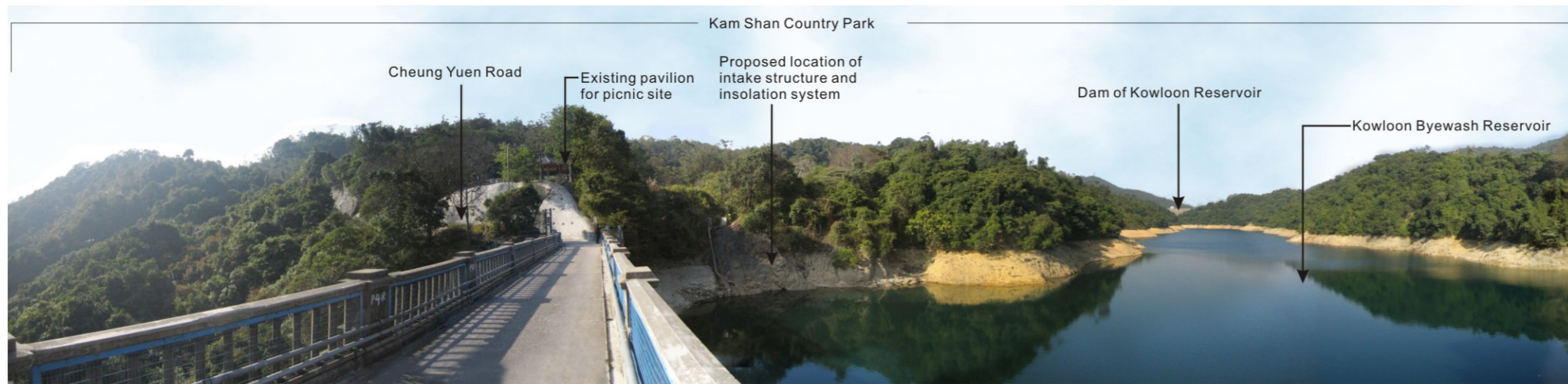
ADI LIMITED
INTERNATIONAL SERVICES IN ENVIRONMENTAL MANAGEMENT, PLANNING, URBAN DESIGN AND LANDSCAPE ARCHITECTURE
11/F BANGKOK BANK BUILDING, 19 BONHOM STRAND WEST HONG KONG
TELEPHONE 2131 8630 FACSIMILE 2131 8609
雅博奧國際設計有限公司
香港中環皇后大道中19號香港銀行大廈11樓
電話: (八五二) 2131 8630 傳真: (八五二) 2131 8609



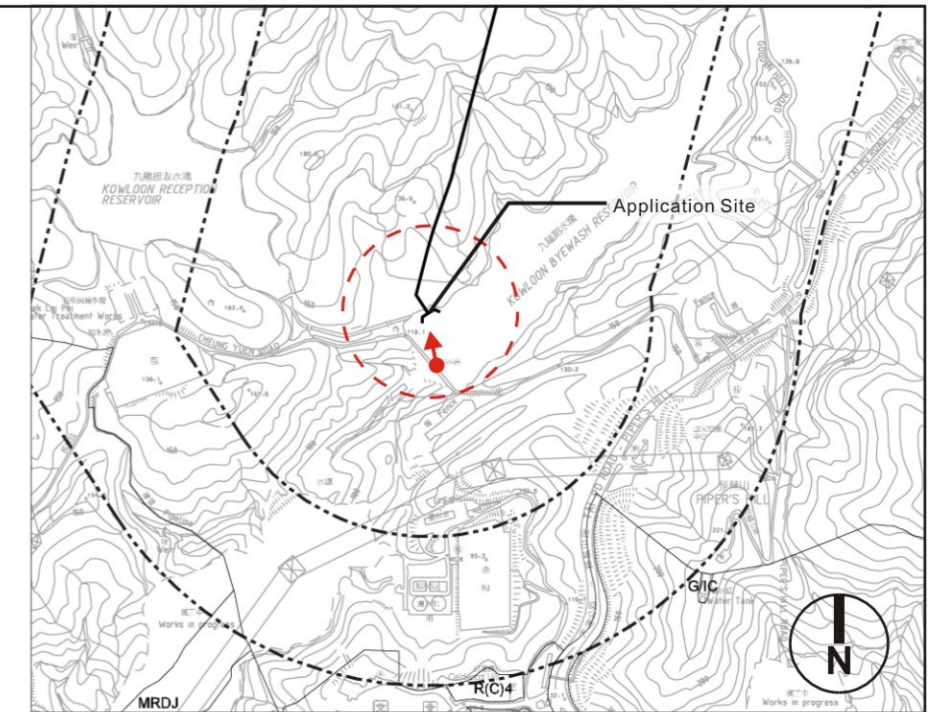
Legend

-  Study Area
-  Alignment of Proposed Water Tunnel
-  Proposed Outfall Structure
-  Visual Envelope
-  ZVI from which it is estimated that all proposed water outfall structures and associated engineering works may be visible
-  As above but views are likely to be obscured by existing vegetation and topography
-  Visually Sensitive Receiver (VSR) and angle of main views

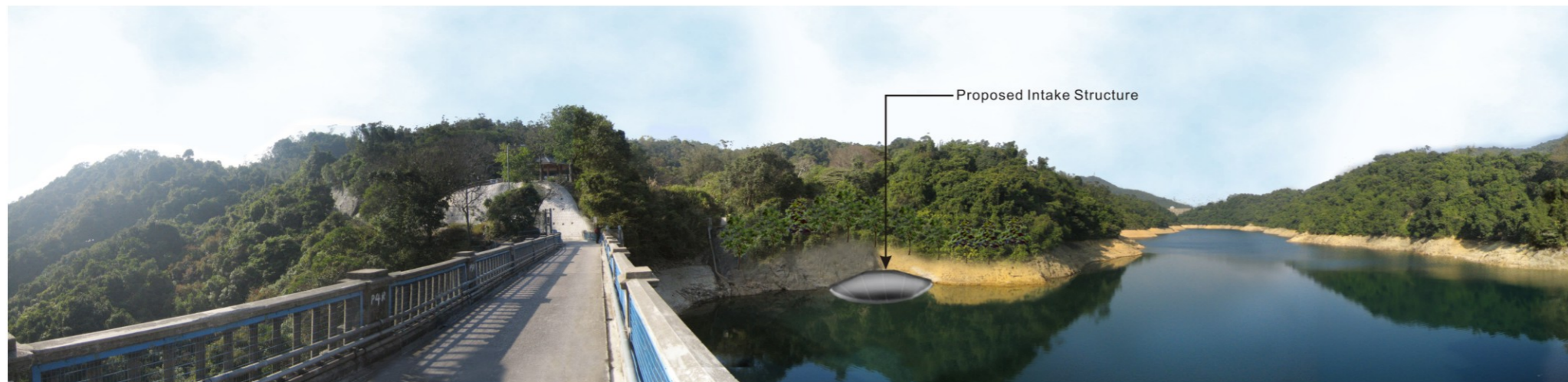




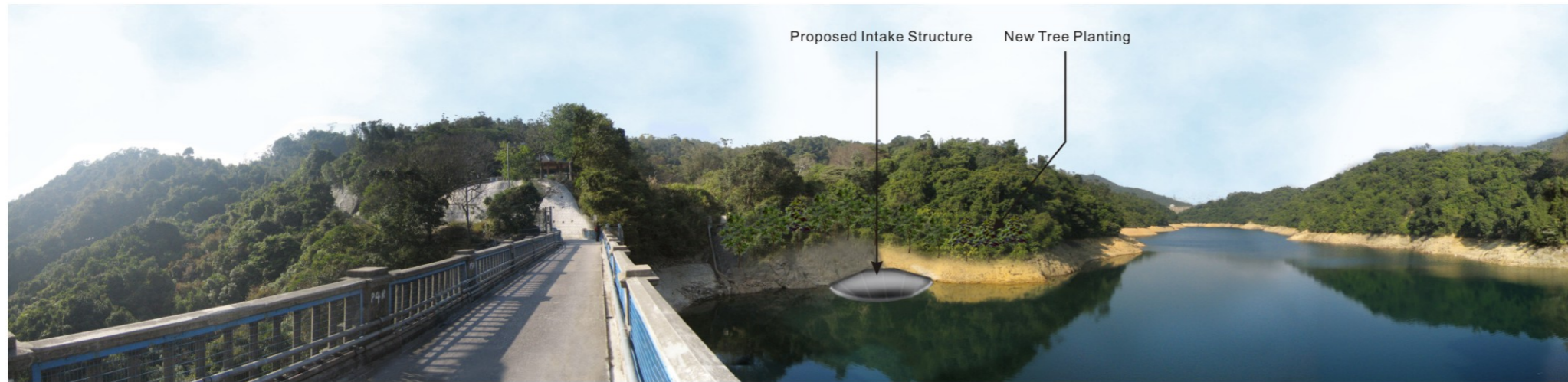
VSR T1
Trail walkers and visitors of Kam Shan Country Park across the dam of Kowloon Byewash Reservoir (facing north)
(Existing Situation)



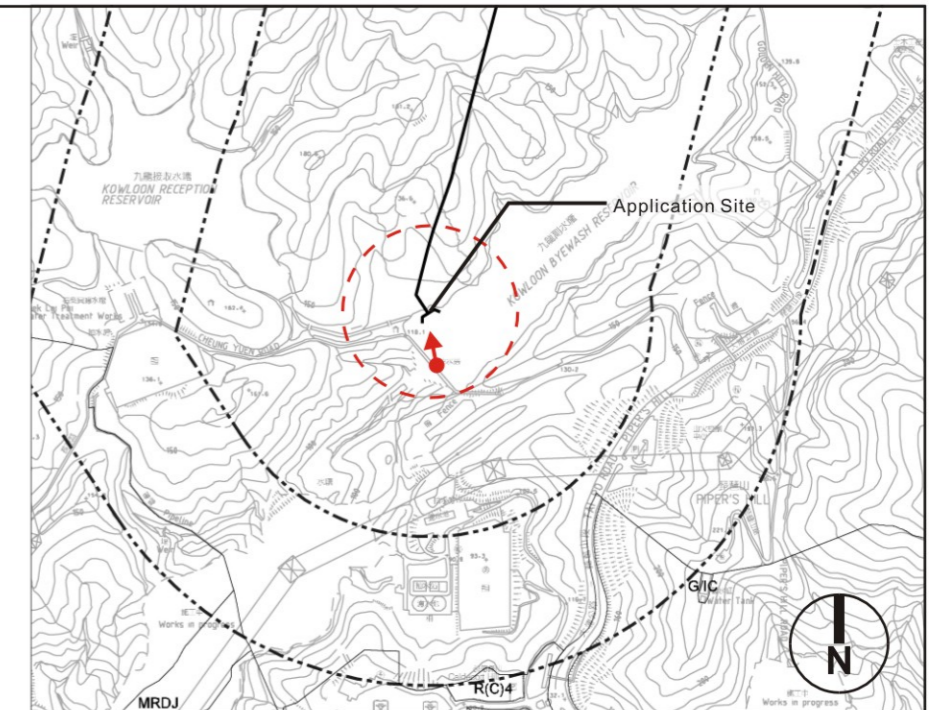
Location Plan



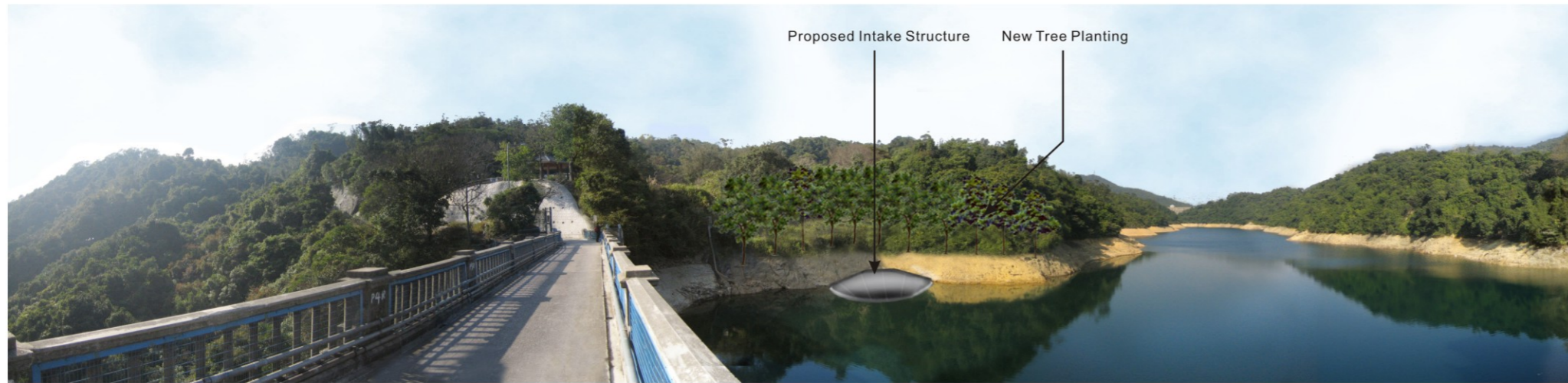
VSR T1
Trail walkers and visitors of Kam Shan Country Park across the dam of Kowloon Byewash Reservoir (facing north)
(Following Construction)



Operation Phase - Day 1
with mitigation measures newly implemented



Location Plan



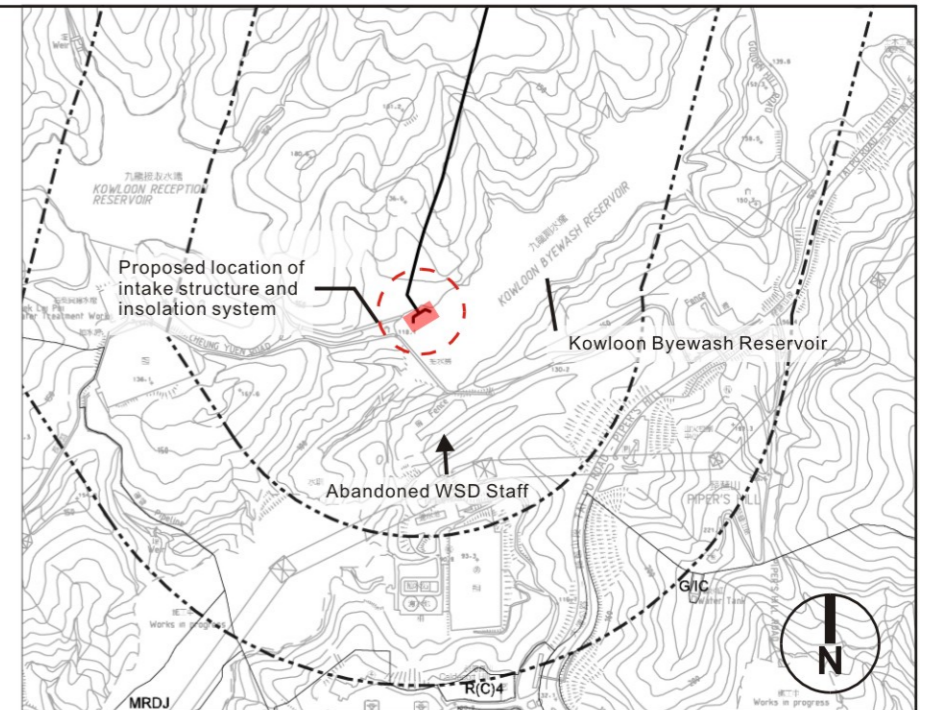
Operation Phase - Year 10
with mitigation measures fully established



View from Abandoned WSD Staff Quarters
(Existing Situation)



View from Abandoned WSD Staff Quarters
(Following Construction)



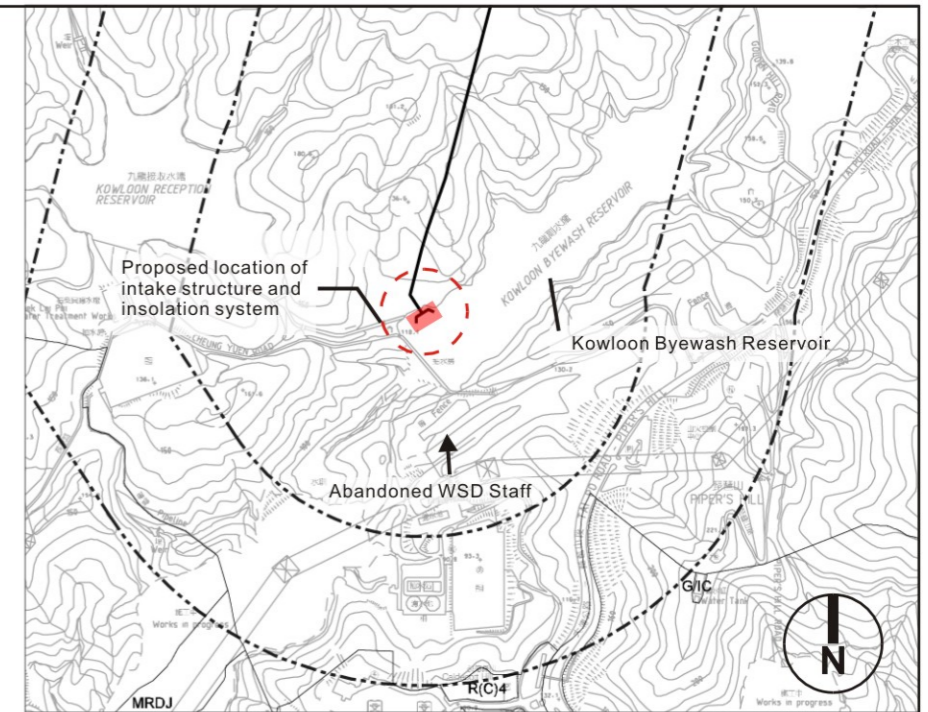
Location Plan



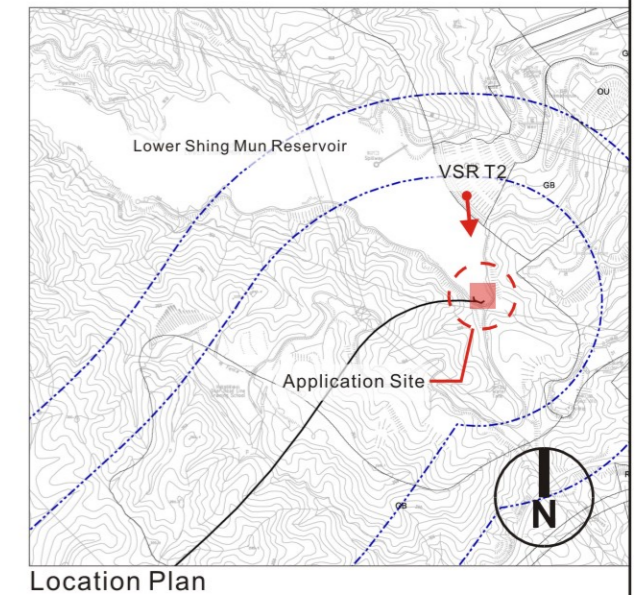
Operation Phase - Day 1
with mitigation measures newly implemented



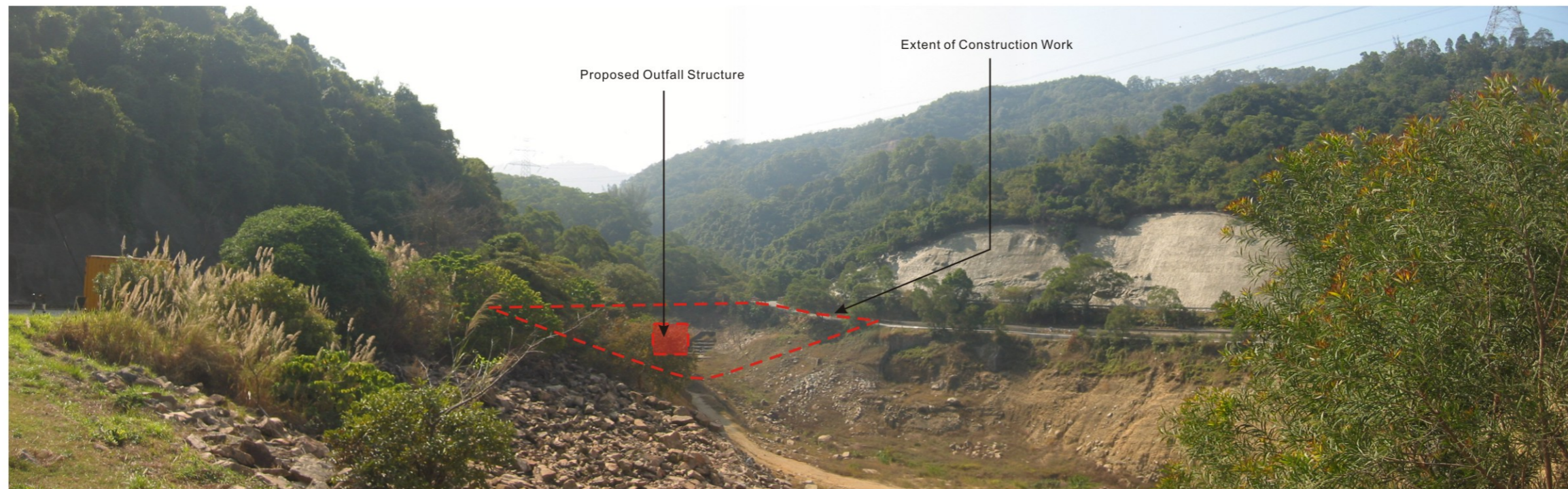
Operation Phase - Year 10
with mitigation measures fully established



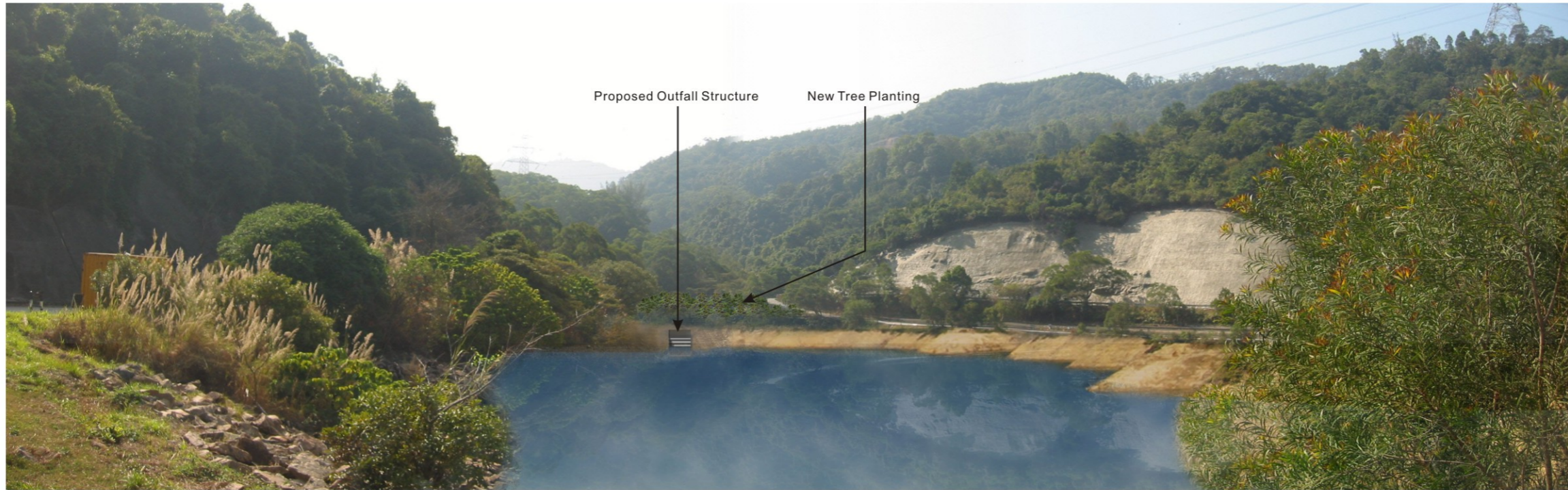
Location Plan



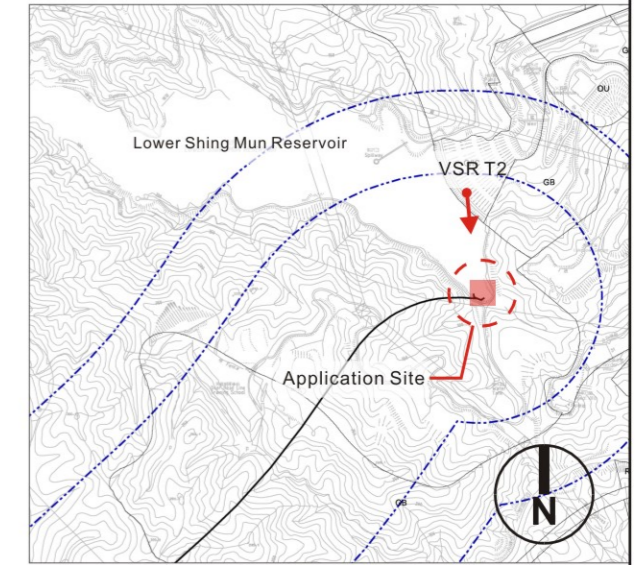
VSR T2
Trail hikers and visitors of Lower Shing Mun Reservoir across the dam (Facing South)
(Existing Situation)



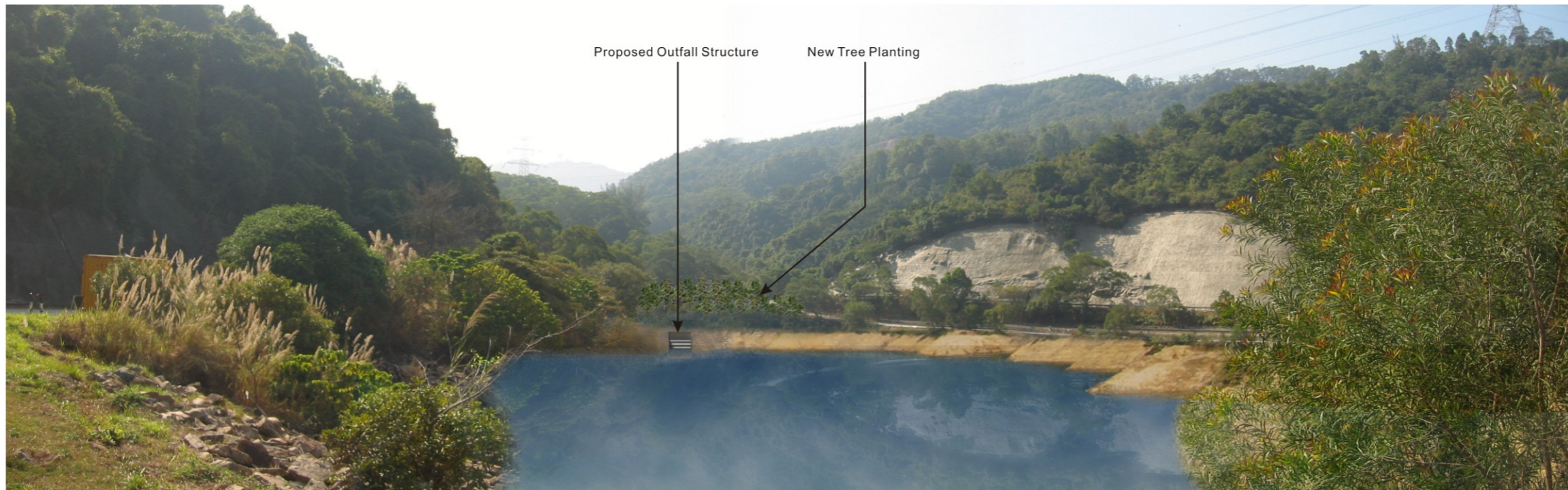
VSR T2
Trail hikers and visitors of Lower Shing Mun Reservoir across the dam (Facing South)
(Following Construction)



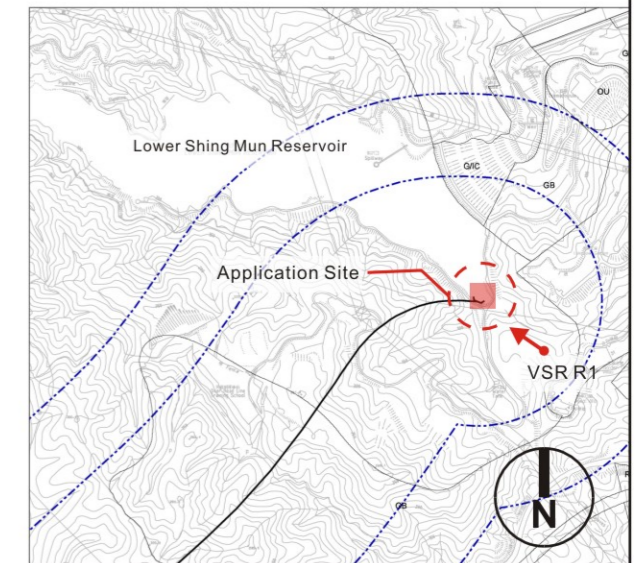
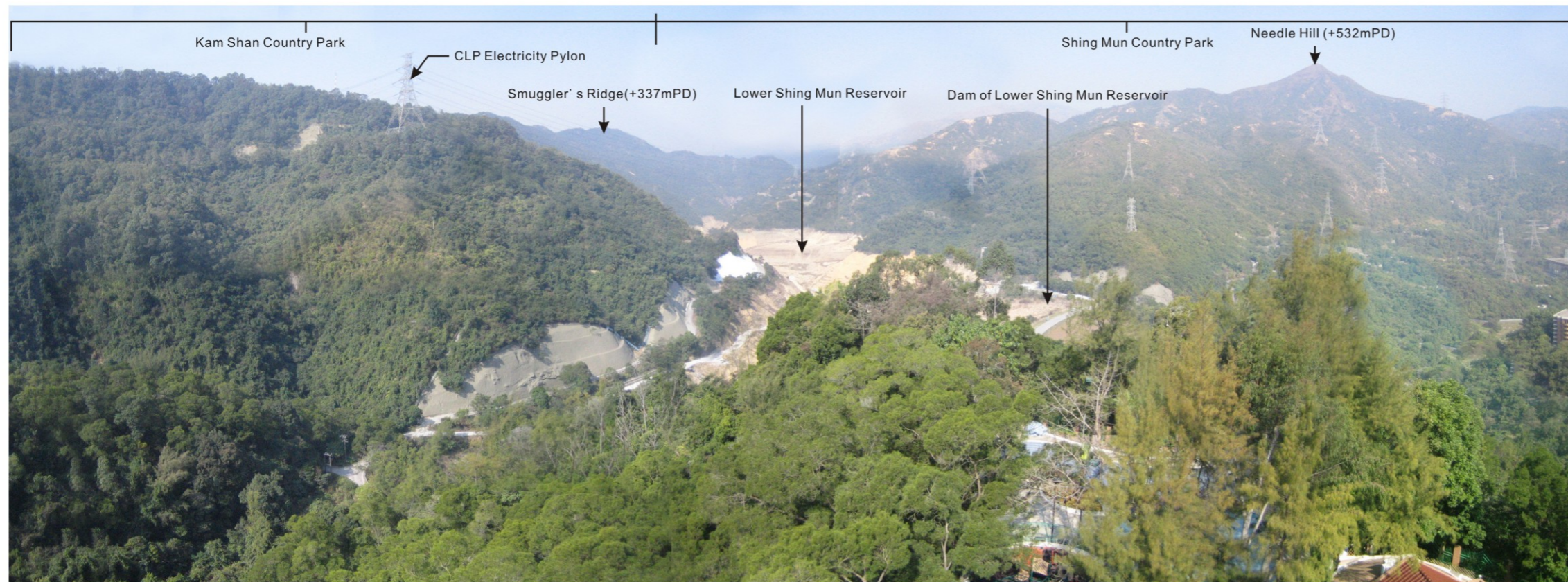
Operation Phase Day 1
With mitigation measures newly implemented



Location Plan



Operation Phase Year 10
With mitigation measures fully established



Location Plan

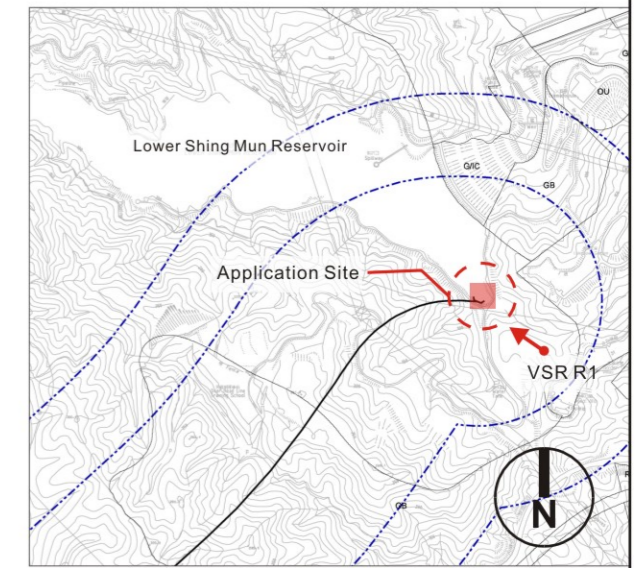
VSR R1
Residents of Lakeview Garden (Facing Northwest)
(Existing Situation)



VSR R1
Residents of Lakeview Garden (Facing Northwest)
(Following Construction)



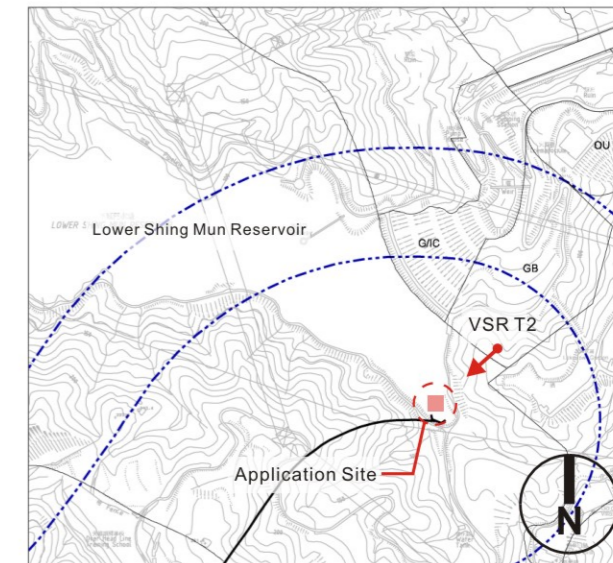
Operation Phase Day 1
With mitigation measures newly implemented



Location Plan

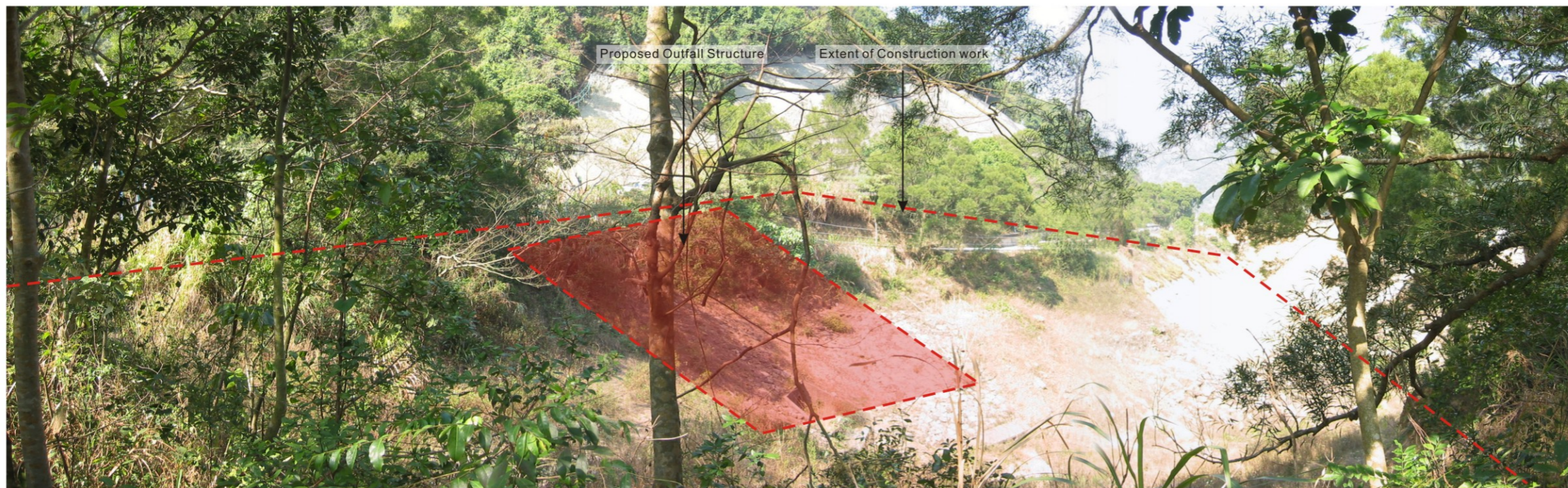


Operation Phase Year 10
With mitigation measures fully established

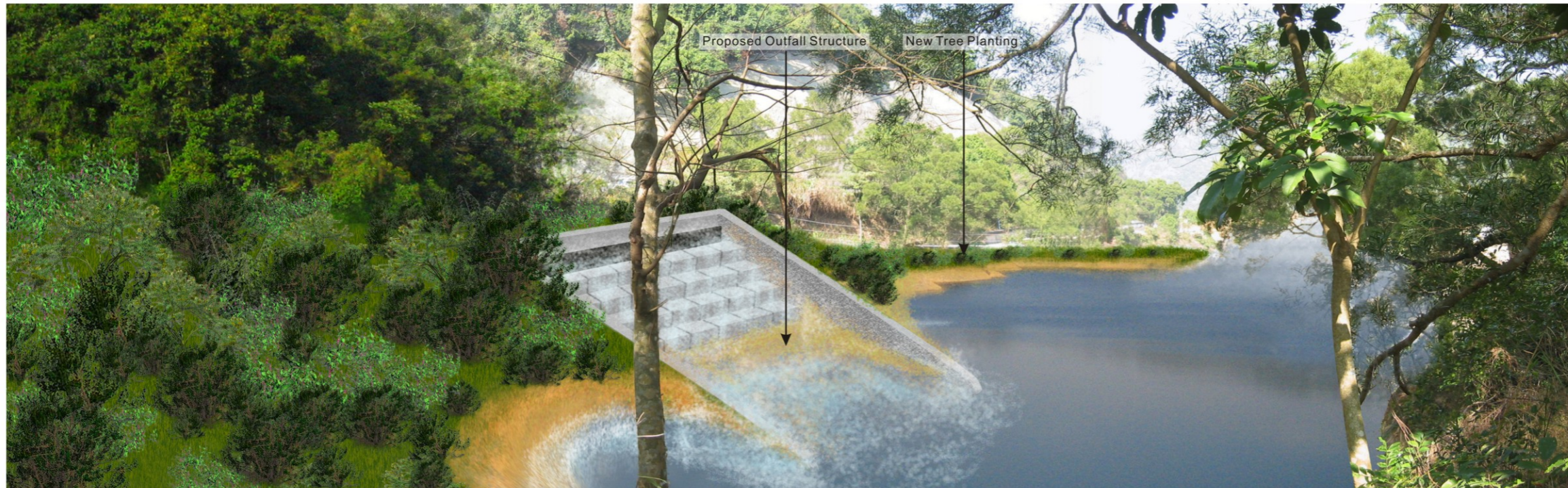


Location Plan

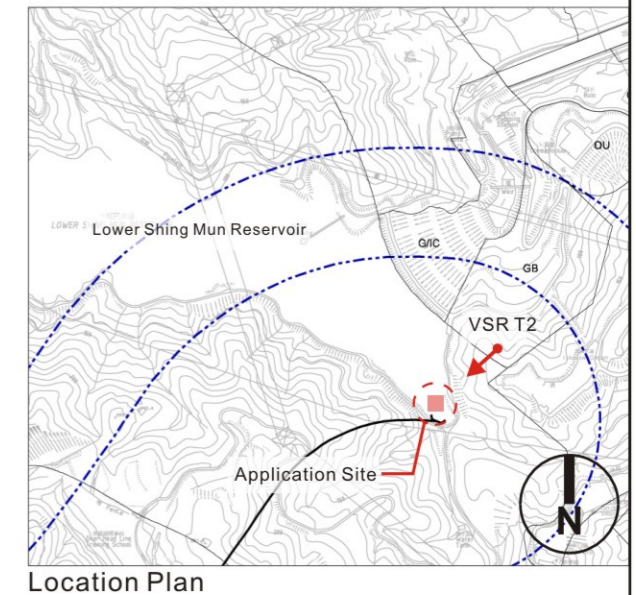
VSR T2
Trail hikers and visitors of Lower Shing Mun Reservoir across the dam (Facing South)
(Existing Situation)



VSR T2
Trail hikers and visitors of Lower Shing Mun Reservoir across the dam (Facing South)
(Following Construction)



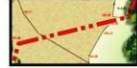





Operation Phase Day 1
With mitigation measures newly implemented



Operation Phase Year 10
With mitigation measures fully established

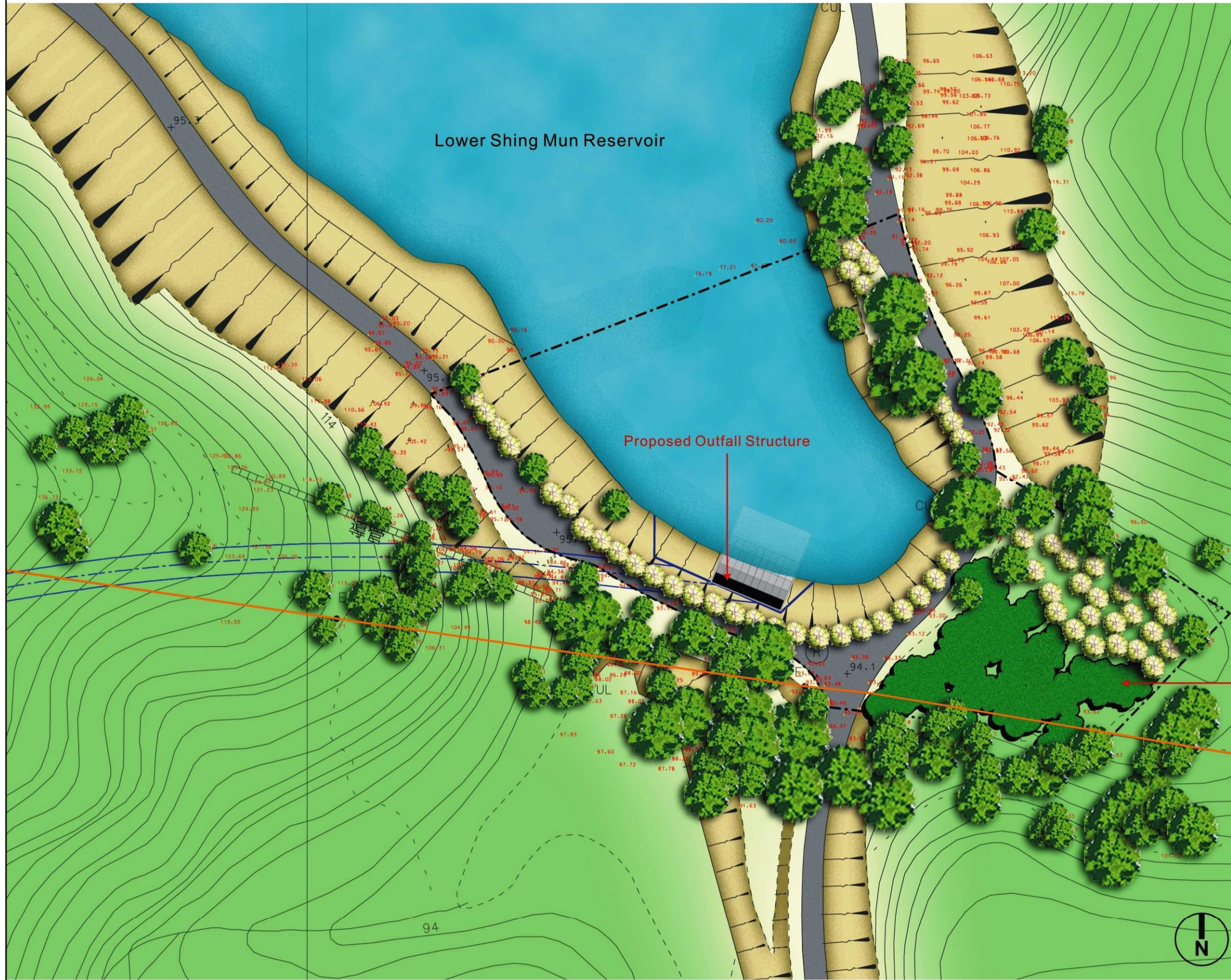


Legend

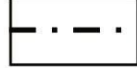





-  Site Boundary
-  Retained Trees (LMM2)
-  Compensatory Planting (LMM3)
-  Proposed Shrub Planting (LMM8)
-  Footpath
-  Existing Open Channel

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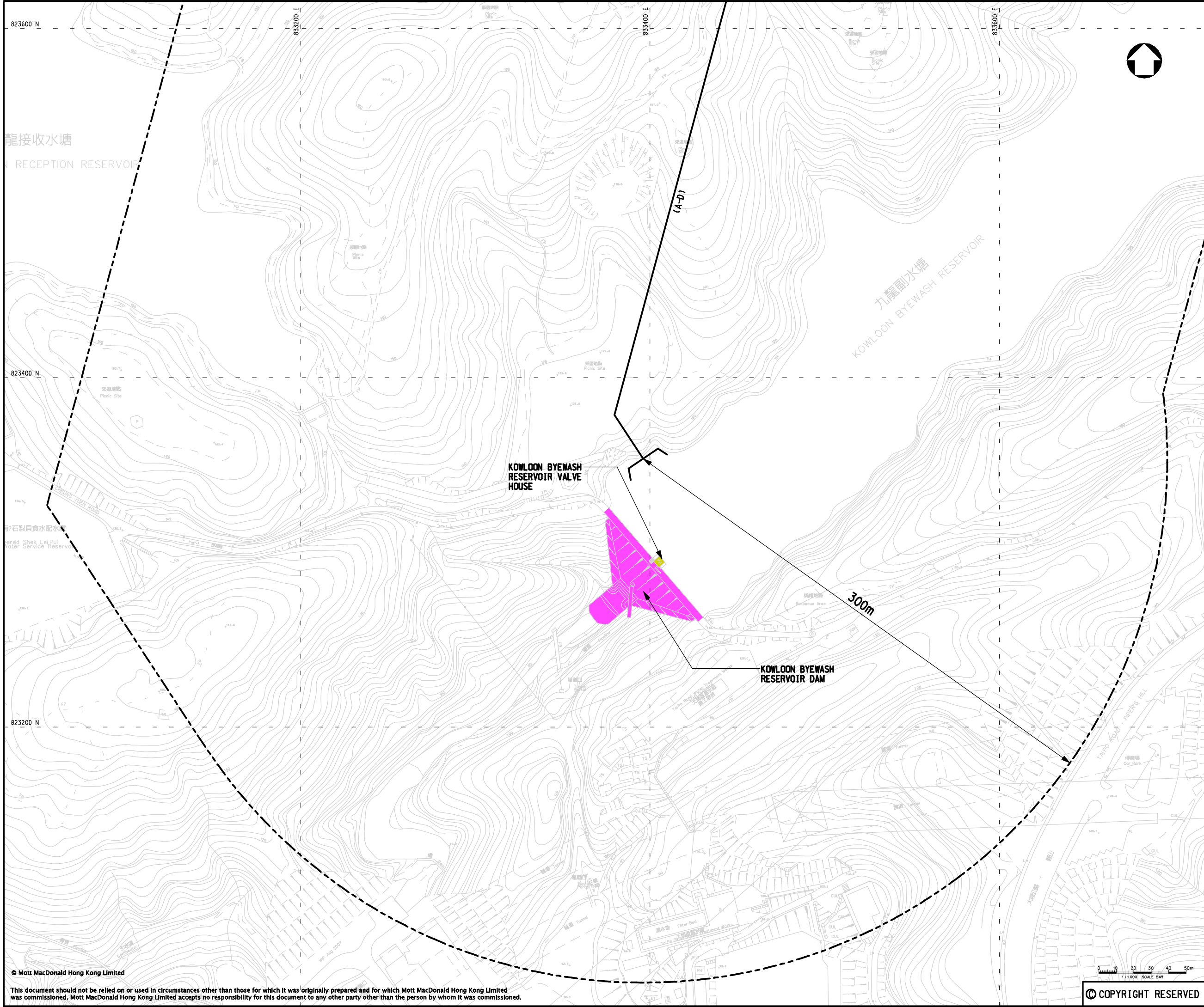
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Legend

-  Site Boundary
-  Retained Trees (LMM2)
-  Compensatory Planting (LMM3)
-  Shrubs Planting (LMM8)
-  Power Line
-  Reservoir Maintenance Access Road

Proposed Shrubs and Grass Planting to Restore Site Following Completion of Construction Works




LEGEND:

	STUDY AREA BOUNDARY
	PREFERRED TUNNEL ALIGNMENT
	DAM
	VALVE HOUSE

P2	NOV 08	MING	DRAWING TITLE REVISED	PW	AFK
P1	MAR 08	VN	DRAFT	PW	AFK
Rev	Date	Drawn	Description	Ch'kd	App'd

Client



THE GOVERNMENT OF THE HONG KONG
SPECIAL ADMINISTRATIVE REGION
WATER SUPPLIES DEPARTMENT

m Mott MacDonald

Mott MacDonald Hong Kong Ltd
7th Floor
West Wing Office Building
New World Centre
20 Salisbury Road
Tsim Sha Tsui, Kowloon
Hong Kong
Tel: 2828 5757
Fax: 2827 1823
Web: www.motmac.com.hk

Project
Agreement No. CE55/2006(EP)
Inter-reservoirs Transfer Scheme (IRTS)
Water Tunnel between Kowloon Byewash
Reservoir and Lower Shing Mun Reservoir
Environmental Impact Assessment
Investigation

Title
LOCATIONS OF THE KOWLOON BYEWASH
RESERVOIR DAM AND VALVE HOUSE NEAR
THE INTAKE

Designed	HN/PW	Eng.Chk.	AFK
Drawn	VN	Coordination	AFK
Dwg.Chk.	PW	Approved	AFK
Scale	1:1000@A1	Project	240564
		Status	INF
		CAD File	J:\240564\REPORT\ENV\EIAL\REPORT-09126\FIGURE-10-L.dgn
Drawing No.	FIGURE 10-1	Rev	P2

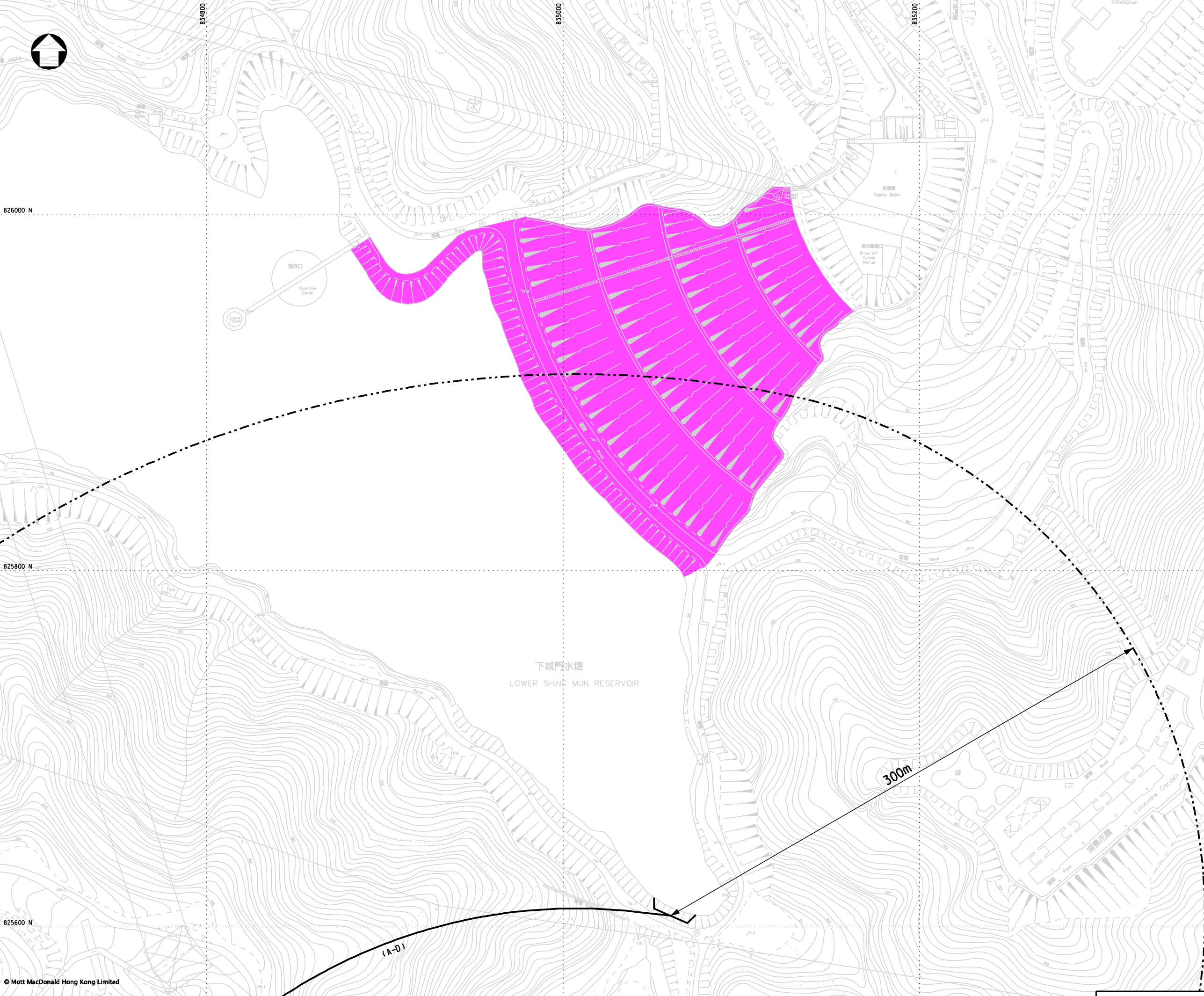
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LEGEND:

	STUDY AREA BOUNDARY
	PREFERRED TUNNEL ALIGNMENT
	DAM



P2	NOV 08	MING	MINDR AMENDMENT	PW	AFK
P1	MAR 08	MING	DRAFT	PW	AFK
Rev	Date	Drawn	Description	Ch'kd/App'd	

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THE GOVERNMENT OF THE HONG KONG
SPECIAL ADMINISTRATIVE REGION
WATER SUPPLIES DEPARTMENT

Mott MacDonald

Mott MacDonald Hong Kong Ltd
7th Floor
West Wing Office Building
New World Centre
20 Salisbury Road
Tsim Sha Tsui, Kowloon
Hong Kong
Tel: 2828 5757
Fax: 2827 1823
Web: www.mottmac.com.hk

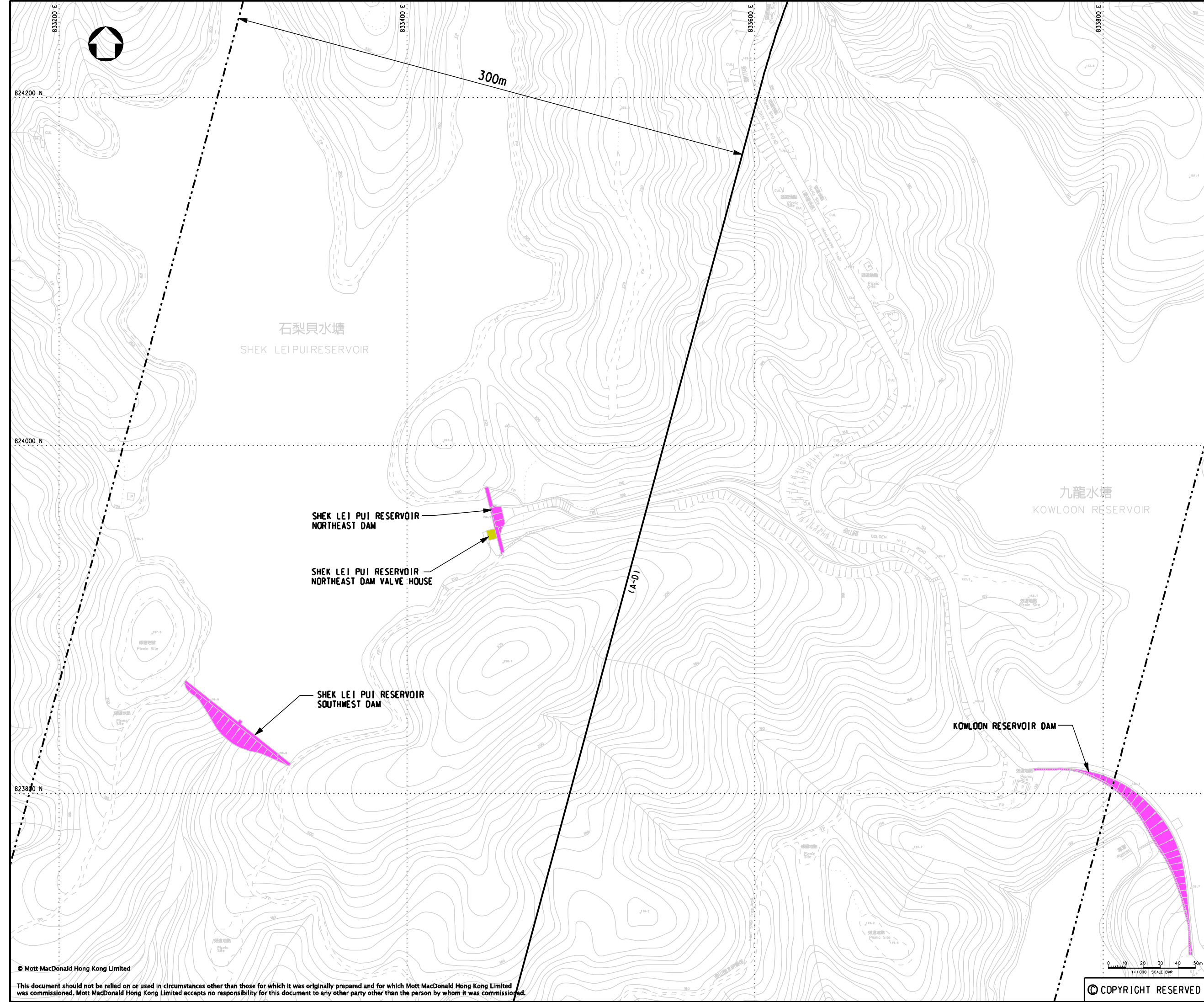
Project

Agreement No. CE55/2006(EP)
Inter-reservoirs Transfer Scheme (IRTS)
Water Tunnel between Kowloon Byewash
Reservoir and Lower Shing Mun Reservoir
Environmental Impact Assessment
Investigation

Title

LOCATION OF LOWER SHING MUN
RESERVOIR DAM IN THE VICINITY
OF THE OUTFALL

Designed	PW	Eng.Chk.	AFK
Drawn	MING	Coordination	AFK
Dwg.Chk.	PW	Approved	AFK
Scale	Project	Status	
1:1000@A1	240564	INF	
Drawing No.	CAD File	Rev	
	1\240564\report1\env\elo_report1-0802\Figure-10-2.dgn		



LEGEND:

	STUDY AREA BOUNDARY
	PREFERRED TUNNEL ALIGNMENT
	DAM
	VALVE HOUSE

石梨貝水塘
SHEK LEI PUI RESERVOIR

九龍水塘
KOWLOON RESERVOIR

SHEK LEI PUI RESERVOIR
NORTHEAST DAM

SHEK LEI PUI RESERVOIR
NORTHEAST DAM VALVE HOUSE

SHEK LEI PUI RESERVOIR
SOUTHWEST DAM

KOWLOON RESERVOIR DAM

(A-0)

300m

P1	NOV 08	MING	FIRST ISSUE	PW	AFK
Rev	Date	Drawn	Description	Ch'kd	App'd

Client
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 WATER SUPPLIES DEPARTMENT

Mott MacDonald
 Mott MacDonald Hong Kong Ltd
 7th Floor
 West Wing Office Building
 New World Centre
 20 Salisbury Road
 Tsim Sha Tsui, Kowloon
 Hong Kong
 Tel: 2828 5757
 Fax: 2827 1823
 Web: www.mottmac.com.hk

Project
 Agreement No. CE55/2006(EP)
 Inter-reservoirs Transfer Scheme (IRTS)
 Water Tunnel between Kowloon Byewash
 Reservoir and Lower Shing Mun Reservoir
 Environmental Impact Assessment
 Investigation

Title
 LOCATION OF SHEK LEI PUI RESERVOIR
 DAMS AND VALVE HOUSE AND KOWLOON
 RESERVOIR DAM IN THE VICINITY OF
 TUNNEL ALIGNMENT

Designed	PW	Eng.Chk.	AFK
Drawn	MING	Coordination	AFK
Dwg.Chk.	PW	Approved	AFK

Scale	Project	Status
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	CAD File	
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Drawing No. **FIGURE 10-3** Rev