

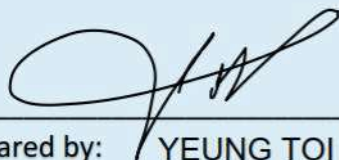
Annex 1
Drainage Impact Assessment



Proposed Temporary Place of Recreation, Sports or Culture (Horse Riding Centre and Barbecue Site) and Holiday Camp with Ancillary Facilities for a Period of 3 Years in “Agriculture” Zone and Associated Filling of Land, Various Lot in D.D. 76 and Adjoining Government Land, Hok Tau, Fanling, New Territories

Drainage Impact Assessment

February 2025



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Marvellous Construction & Design Company Limited



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1 Introduction

1.1 Background

- 1.1.1 The applicant seeks planning permission from the Town Planning Board (the Board) to use Various Lot in D.D. 76 and Adjoining Government Land (GL), Hok Tau, Fanling, New Territories (the Site) for 'Proposed Temporary Place of Recreation, Sports or Culture (Horse Riding Centre and Barbecue Site) and Holiday Camp with Ancillary Facilities for a Period of 3 Years and Associated Filling of Land'.
- 1.1.2 This report aims to support the development in drainage aspect.

1.2 Application Site

- 1.2.1 The application site is situated beside Hok Tau Road. It has an area of approx. 19,227 m². The site location is shown in **Figure 1**.
- 1.2.2 The existing site is partially hard paved with level various from approx. +24.5mPD to + 28.5mPD.
- 1.2.3 There is an existing stream at the south of the application site. The width of the stream varies from approx. 5.4m to 9m. The stream pass through the site from south to north and eventually discharge to Tan Shan River at the north. **Figure 2** shown the existing stream and existing drainage system of the area.

2 Development Proposal

2.1 The Proposed Development

2.1.1 The total site area is approximately 19,227 m². The Proposed Site would be used for recreation, sports and cultural activities. Part of the site would be paved with concrete not more than 0.2m for site formation of structures and circulation space. The existing pavement area and proposed catchment plan are shown in **Figure 4-1** and **Figure 4-2** respectively.

2.1.2 After the proposed development the paved area would be reduced from 5,896 m² to 5095 m².

	Before Development	After Development
Total Site Area (m ²)	19,227	19,227
Paved Area (m ²)	5,896	5,095

Table 1 – Site Development Area

3 Assessment Criteria

3.1.1 The Recommended Design Return Period based on Flood Level from SDM (Table 10) is adopted for this report. The recommendation is summarized in **Table 2** below.

Description	Design Return Periods
Intensively Used Agricultural Land	2 – 5 Years
Village Drainage Including Internal Drainage System under a polder Scheme	10 Years
Main Rural Catchment Drainage Channels	50 Years
Urban Drainage Trunk System	200 Years
Urban Drainage Branch System	50 Years

Table 2– Design Return Periods under SDM

3.1.2 The application site is proposed for a period of 3 years in which it is within village area. The proposed drainage system intended to collect runoff from internal site and external catchment. 1 in 10 years return period is adopted for the drainage design.

3.1.3 Stormwater drainage design will be carried out in accordance with the criteria set out in the Stormwater Drainage Manual published by DSD. The proposed design criteria to be adopted for design of this stormwater drainage system and factors which have been considered are summarised below.

1. Intensity-Duration-Frequency Relationship – The Recommended Intensity-Duration-Frequency relationship is used to estimate the intensity of rainfall. It can be expressed by the following algebraic equation.

$$i = \frac{a}{(t_d + b)^c}$$

The site is located within the North District Zone. Therefore, for 10 years return period, the following values are adopted.

a	=	454.9
b	=	3.44
c	=	0.412

2. The peak runoff is calculated by the Rational Method
i.e. $Q_p = 0.278CiA$

where	Q_p	=	peak runoff in m^3/s
	C	=	runoff coefficient (dimensionless)
	i	=	rainfall intensity in mm/hr
	A	=	catchment area in km^2

3. The run-off coefficient (C) of surface runoff are taken as follows:

1. Paved Area: $C = 0.95$
2. Unpaved Area: $C = 0.35$

4. Manning's Equation is used for calculation of velocity of flow inside the channels:

$$\text{Manning's Equation: } v = \frac{R^{2/3}}{n} R^{1/2} S_f^{1/2}$$

Where,

V = velocity of the pipe flow (m/s)

S_f = hydraulic gradient

n = manning's coefficient

R = hydraulic radius (m)

5. Colebrook-White Equation is used for calculation of velocity of flow inside the pipes:

$$\text{Colebrook-White Equation: } \frac{v}{\nu} = -\sqrt{32gRS} \log \log \left(\frac{k_s}{14.8R} + \frac{1.255\nu}{R\sqrt{32gRS}} \right)$$

where,

V	=	velocity of the pipe flow (m/s)
S _f	=	hydraulic gradient
k _f	=	roughness value (m)
ν	=	kinematics viscosity of fluid
D	=	pipe diameter (m)
R	=	hydraulic radius (m)

4 Proposed Drainage System

4.1. Proposed Channels

- 4.1.1 As the paved area is reduced from 5,896 m² to 5,095 m² after the development, there is no additional runoff due to the proposed development.
- 4.1.2 Proposed channels are designed for collection of runoff for internal and external catchment. They are proposed to connect to existing stream adjacent to the application site.
- 4.1.3 The design calculations of proposed UChannel are shown in **Appendix A**.
- 4.1.4 The alignment, size, gradient and details of the proposed drains are shown in **Figure 3**. The catchment plan is shown in **Figure 4-1** and **Figure 4-2**.
- 4.1.5 Reference Drawings are shown in **Appendix C** for reference.

5 Conclusion

- 5.1.1 Drainage review has been conducted for the Proposed Development. U Channels are proposed to collect the runoff from the catchments. As the paved area is reduced after the development, there is no additional runoff due to the proposed development.
- 5.1.2 With implementation of the above drainage system, the no unacceptable drainage impact is anticipated.

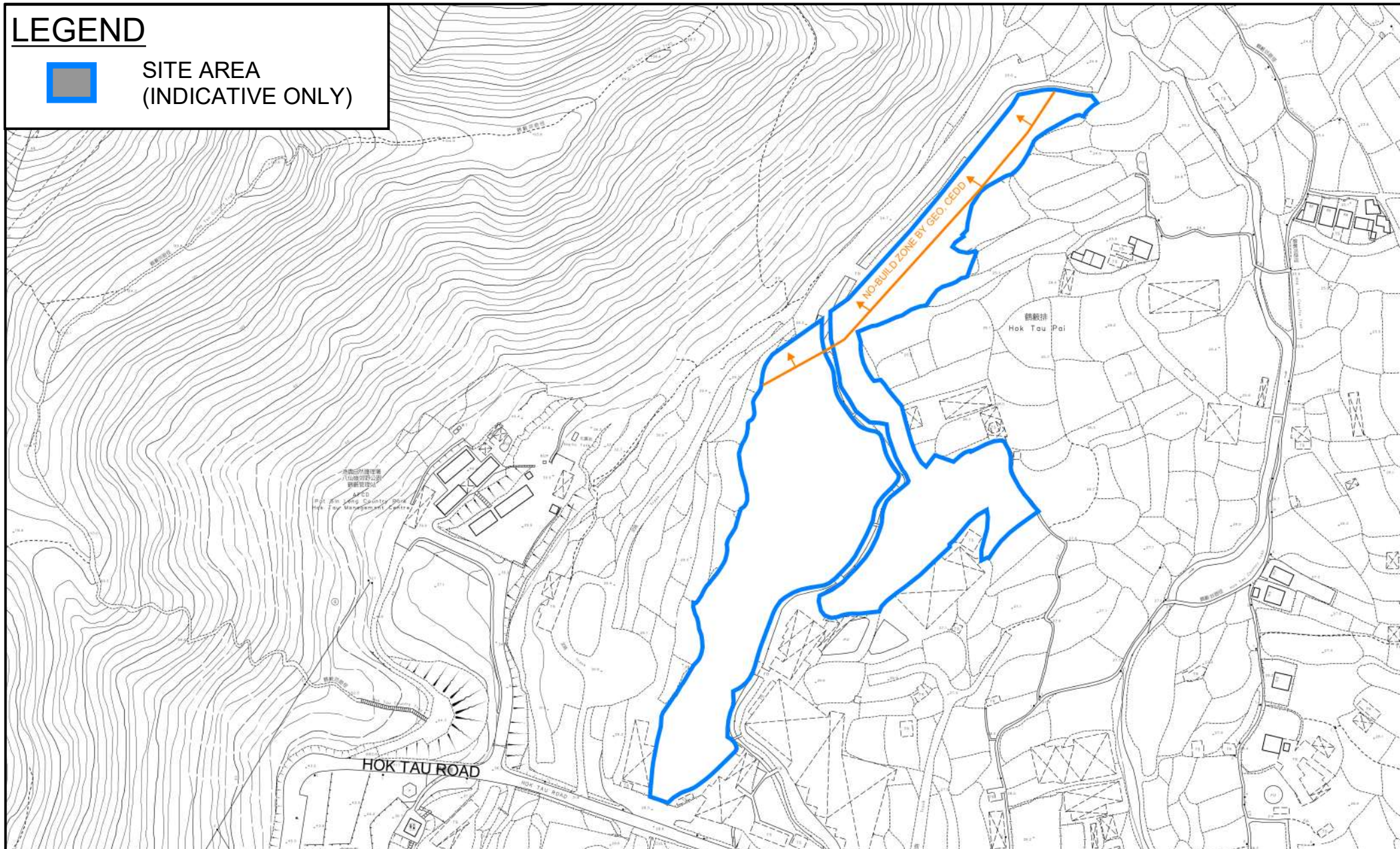
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FIGURES

LEGEND



**SITE AREA
(INDICATIVE ONLY)**



PROJECT:

Proposed Temporary Place of Recreation, Sports or Culture (Horse Riding Centre and Barbecue Site) and Holiday Camp with Ancillary Facilities for a Period of 3 Years in "Agriculture" Zone and Associated Filling of Land

TITLE

SITE LOCATION PLAN

FIGURE NUMBER

FIGURE 1

LOCATION:

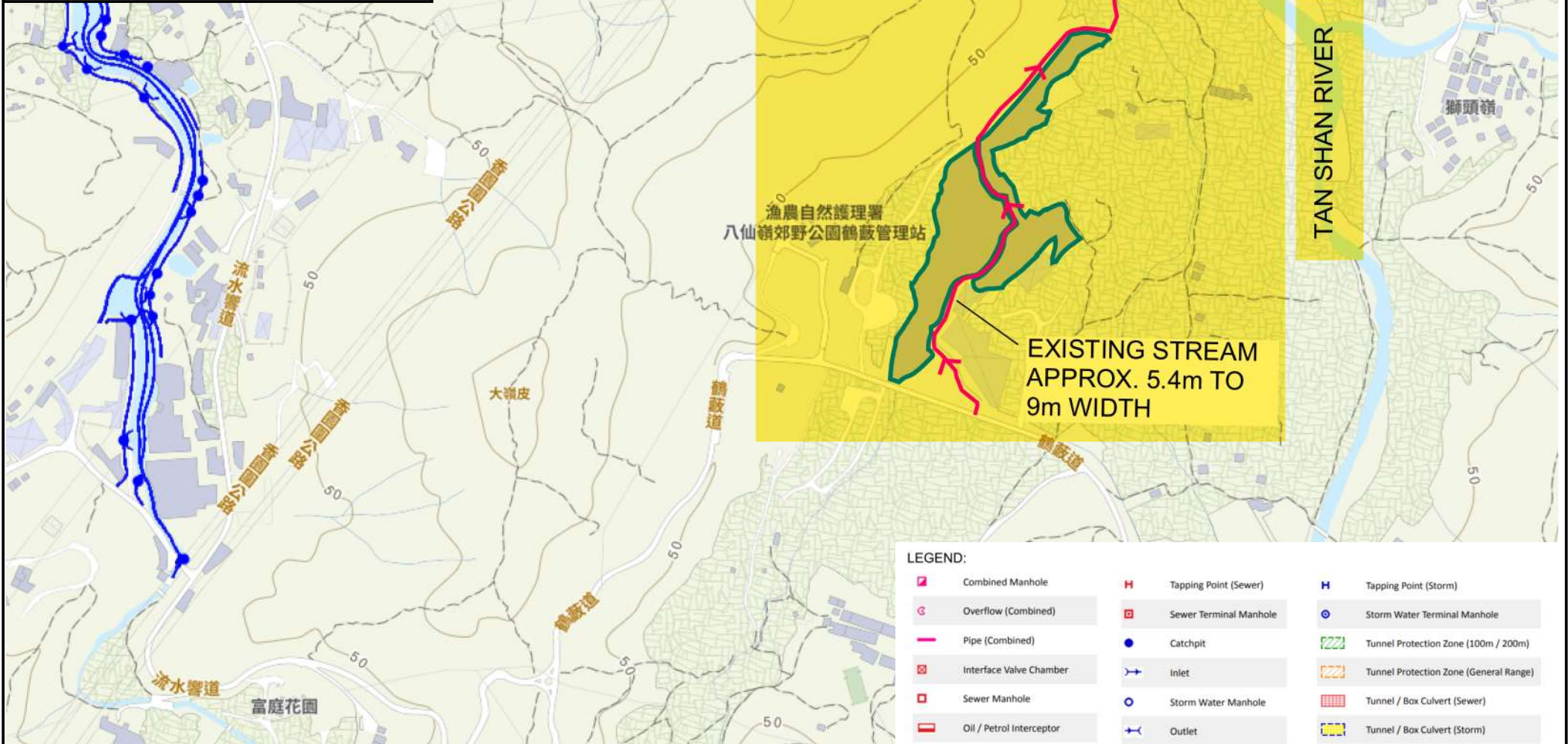
Various Lot in D.D. 76 and Adjoining Government Land, Hok Tau, Fanling, New Territories

























VER	DESCRIPTION	DATE

LEGEND

 SITE AREA
(INDICATIVE ONLY)



LEGEND:

- | | | |
|--|--|--|
|  Combined Manhole |  Tapping Point (Sewer) |  Tapping Point (Storm) |
|  Overflow (Combined) |  Sewer Terminal Manhole |  Storm Water Terminal Manhole |
|  Pipe (Combined) |  Catchpit |  Tunnel Protection Zone (100m / 200m) |
|  Interface Valve Chamber |  Inlet |  Tunnel Protection Zone (General Range) |
|  Sewer Manhole |  Storm Water Manhole |  Tunnel / Box Culvert (Sewer) |
|  Oil / Petrol Interceptor |  Outlet |  Tunnel / Box Culvert (Storm) |
|  Overflow (Sewer) |  Pipe (Storm) | |
|  Pipe (Sewer) |  Sand Trap | |

PROJECT:

Proposed Temporary Place of Recreation, Sports or Culture (Horse Riding Centre and Barbecue Site) and Holiday Camp with Ancillary Facilities for a Period of 3 Years in "Agriculture" Zone and Associated Filling of Land

TITLE

EXISTING DRAINAGE PLAN

FIGURE NUMBER

FIGURE 2






LOCATION:

Various Lot in D.D. 76 and Adjoining Government Land, Hok Tau, Fanling, New Territories



VER	DESCRIPTION	DATE

LEGEND

-  SITE AREA (INDICATIVE ONLY)
-  EXISTING STREAM
-  PROPOSED CHANNEL
-  PROPOSED CATCHPIT
-  PROPOSED CATCHPIT W/TRAP

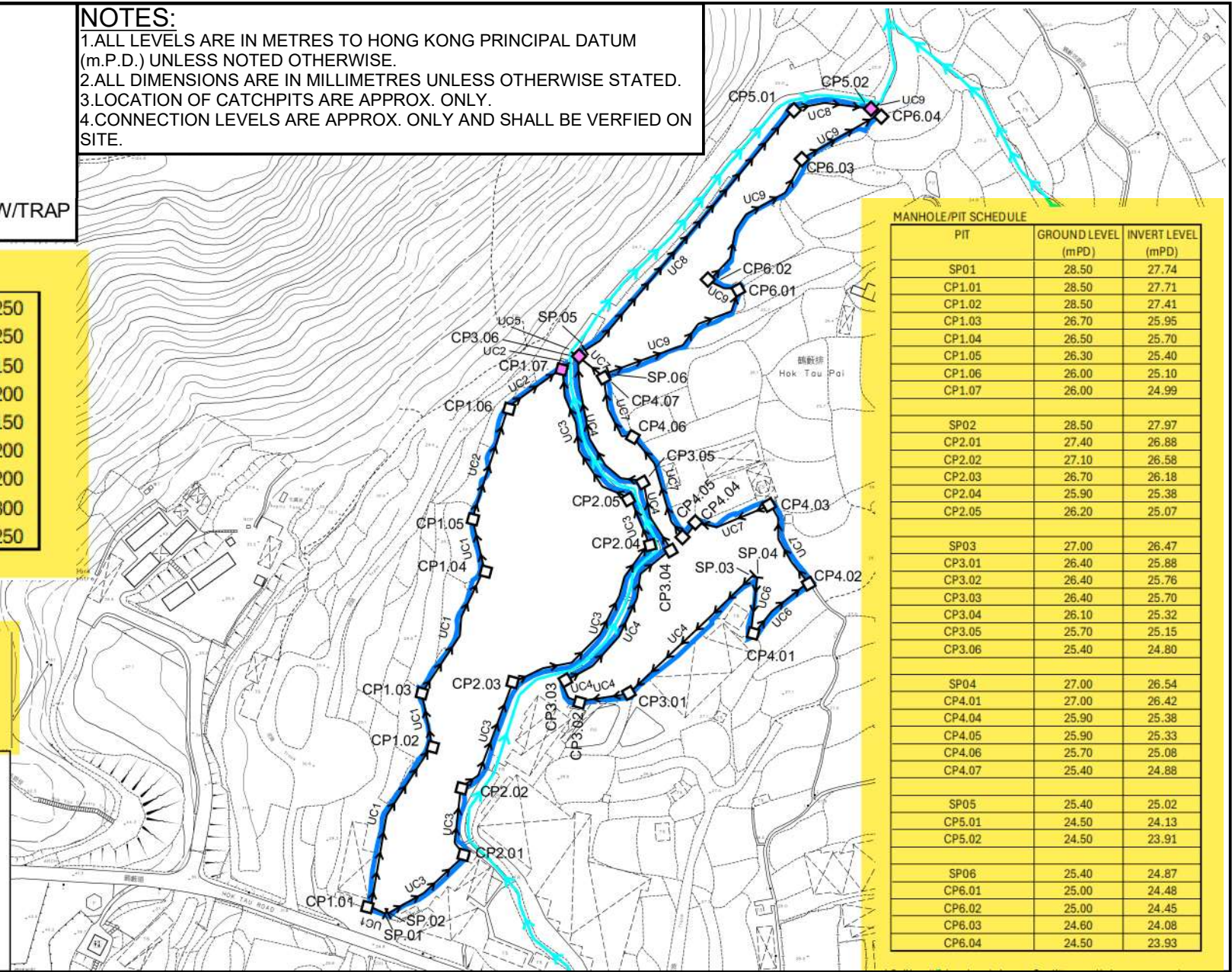
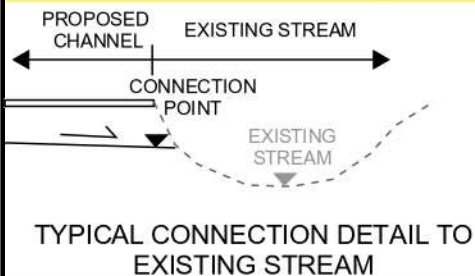
NOTES:

1. ALL LEVELS ARE IN METRES TO HONG KONG PRINCIPAL DATUM (m.P.D.) UNLESS NOTED OTHERWISE.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
3. LOCATION OF CATCHPITS ARE APPROX. ONLY.
4. CONNECTION LEVELS ARE APPROX. ONLY AND SHALL BE VERIFIED ON SITE.

PROPOSED CHANNEL

- Proposed Channel UC1, 750 mm, 1 in 250
- Proposed Channel UC2, 900 mm, 1 in 250
- Proposed Channel UC3, 525 mm, 1 in 150
- Proposed Channel UC4, 525 mm, 1 in 200
- Proposed Channel UC5, 600 mm, 1 in 150
- Proposed Channel UC6, 450 mm, 1 in 200
- Proposed Channel UC7, 525 mm, 1 in 200
- Proposed Channel UC8, 375 mm, 1 in 300
- Proposed Channel UC9, 525 mm, 1 in 250

USPIT	Invert Level of Existing Stream	Invert Level of Connection Point
CP1.07	24.7	24.98
CP3.06	24.7	24.79
CP5.02	23.5	23.90



PROJECT:

Proposed Temporary Place of Recreation, Sports or Culture (Horse Riding Centre and Barbecue Site) and Holiday Camp with Ancillary Facilities for a Period of 3 Years in "Agriculture" Zone and Associated Filling of Land

LOCATION:

Various Lot in D.D. 76 and Adjoining Government Land, Hok Tau, Fanling, New Territories

TITLE

PROPOSED DRAINAGE SYSTEM

FIGURE NUMBER

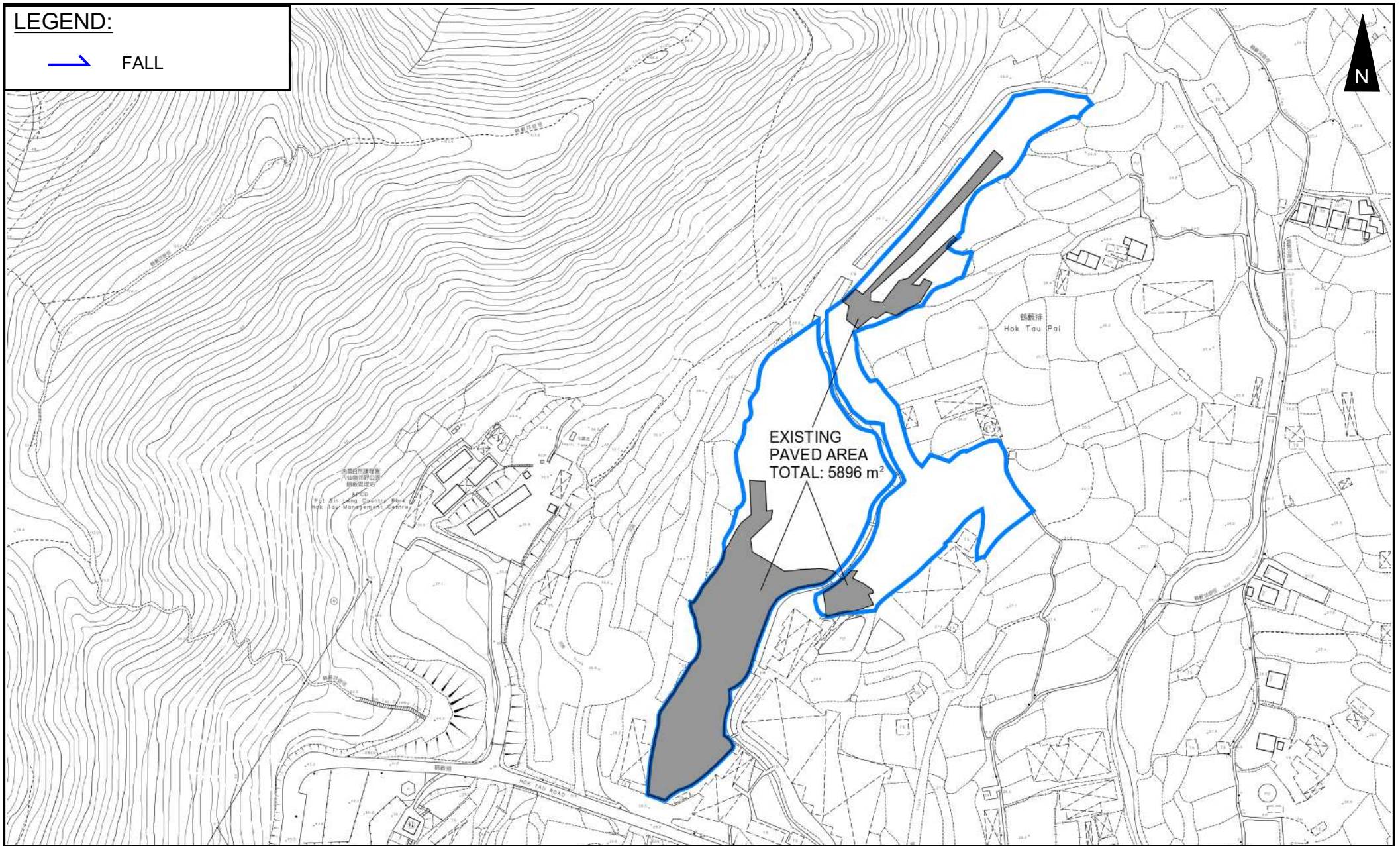
FIGURE 3



VER	DESCRIPTION	DATE

LEGEND:

→ FALL



PROJECT:

Proposed Temporary Place of Recreation, Sports or Culture (Horse Riding Centre and Barbecue Site) and Holiday Camp with Ancillary Facilities for a Period of 3 Years in "Agriculture" Zone and Associated Filling of Land

TITLE

EXISTING PAVEMENT PLAN

FIGURE NUMBER

FIGURE 4-1




LOCATION:

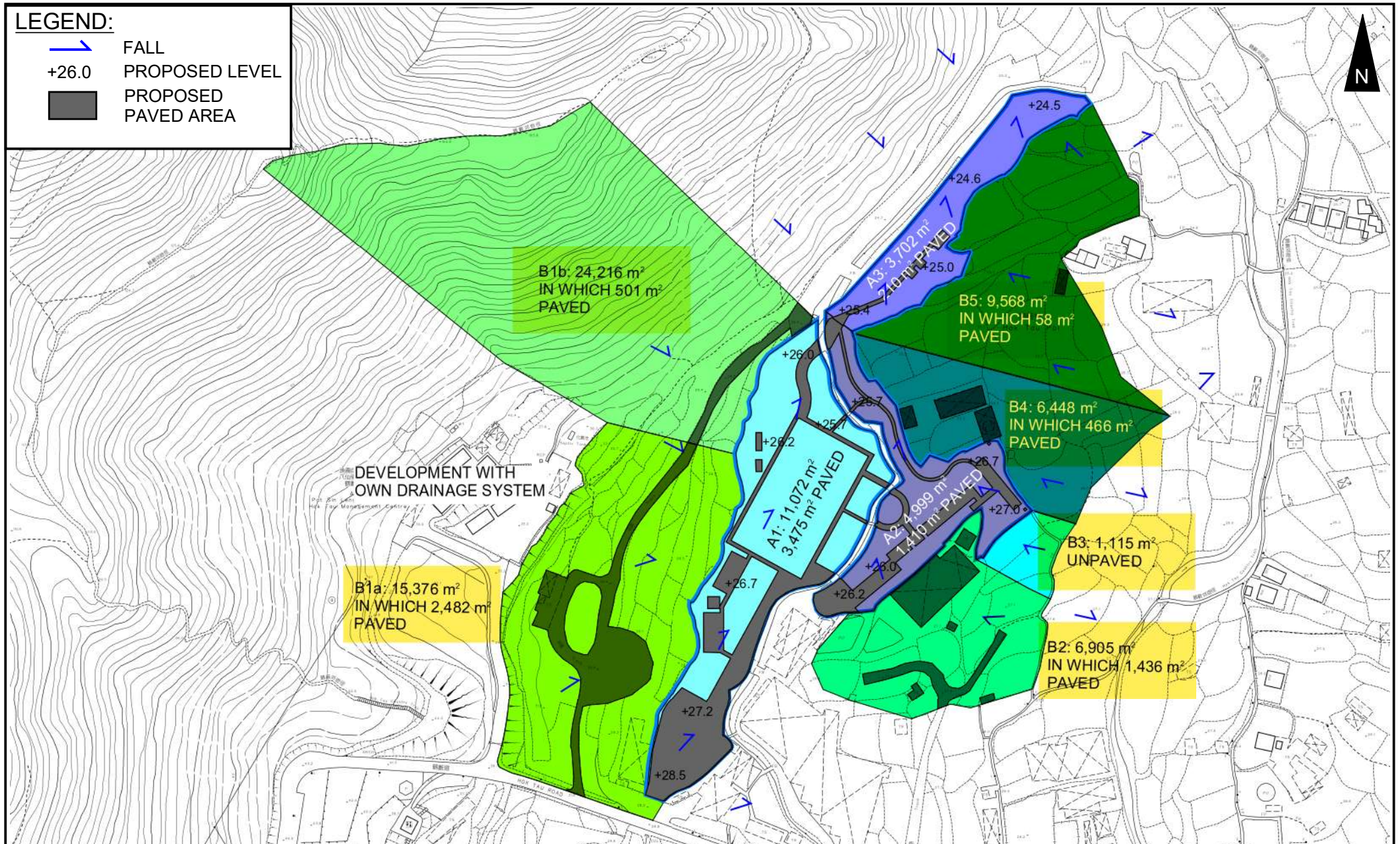
Various Lot in D.D. 76 and Adjoining Government Land, Hok Tau, Fanling, New Territories



VER	DESCRIPTION	DATE

LEGEND:

-  FALL
-  +26.0 PROPOSED LEVEL
-  PROPOSED PAVED AREA



PROJECT:

Proposed Temporary Place of Recreation, Sports or Culture (Horse Riding Centre and Barbecue Site) and Holiday Camp with Ancillary Facilities for a Period of 3 Years in "Agriculture" Zone and Associated Filling of Land

TITLE
CATCHMENT PLAN

FIGURE NUMBER
FIGURE 4-2


LOCATION:

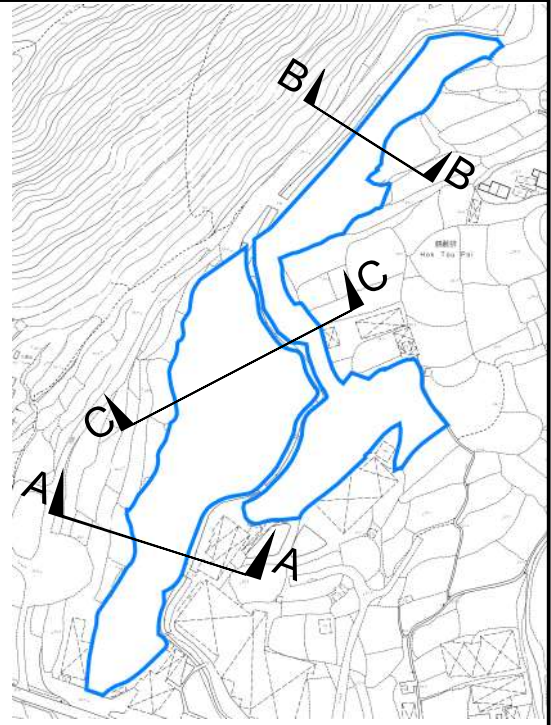
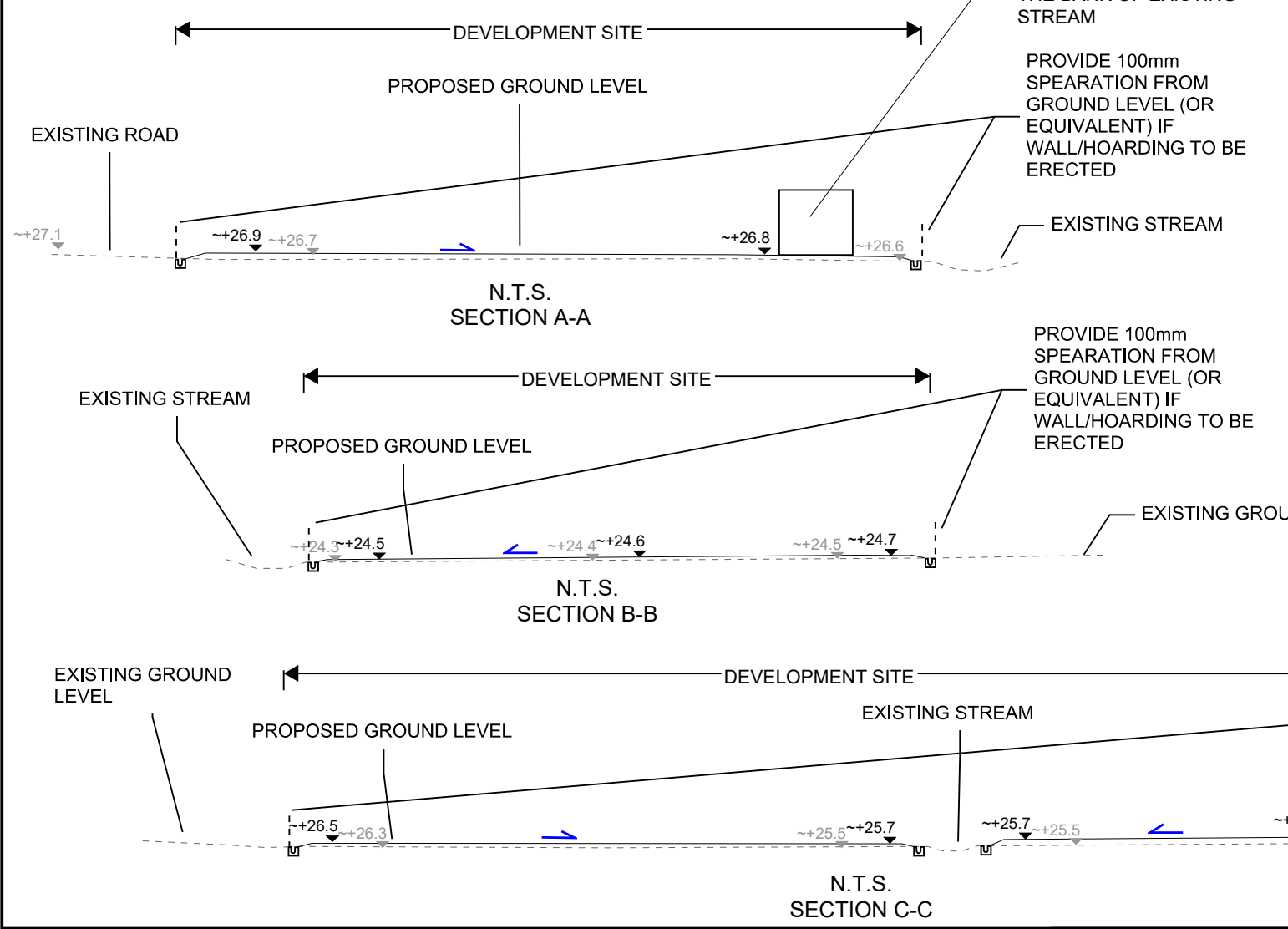
Various Lot in D.D. 76 and Adjoining Government Land, Hok Tau, Fanling, New Territories



VER	DESCRIPTION	DATE

LEGEND

 SITE AREA (INDICATIVE ONLY)



PROJECT:
 Proposed Temporary Place of Recreation, Sports or Culture (Horse Riding Centre and Barbecue Site) and Holiday Camp with Ancillary Facilities for a Period of 3 Years in "Agriculture" Zone and Associated Filling of Land

TITLE SECTION

FIGURE NUMBER
 FIGURE 5

LOCATION:
 Various Lot in D.D. 76 and Adjoining Government Land, Hok Tau, Fanling, New Territories



VER	DESCRIPTION	DATE

APPENDIX

Appendix A: Design Calculation

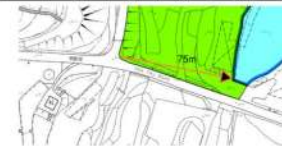
Zone	North District	Return Period	1 in 10 years
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n	0.014
Ks	0.15
Viscosity	0.00001

Storm Constant	North District a	454.9
	North District b	3.44
	North District c	0.412

Time of Concentration Checking

Catchment	Flow Distance	Highest Level	Lowest Level	Gradient (per 100m)	To (mm)	To *
(m ²)	(m)	(mPD)	(mPD)	= (H1-H2)/L x 100	= 0.1486(L) ^{0.78} x S ^{0.047}	(min)
A	L	H1	H2			To + B
15376	75	36.7	28.5	10.933	2.8	2.6



Catchment Area Table (Area in m²)

Catchment	A1	A2	A3	B1a	B1b	B2	B3	B4	B5	Total Site Area (After Development)	Total Site Area (Before Development)
Total Area	11071	4966	3703	15376	24738	6405	1115	6448	9060	19772	19772
Hard Paved Area	3475	1410	210	2402	303	1438	0	989	55	5950	5950
Unpaved Area	7596	3556	3592	12974	24735	5,067	1,115	5,459	8505	13822	13822
Driv. Area	6980	2598	1622	6,971	8778	3,278	0	2,588	385.6	19772	19857.6

Runoff Type	Hard Paved	Unpaved
Runoff Coefficient	0.85	0.35

Calculation Table of Drainage System

US MH/PT	DS MH/PT	US GL	DS GL	Size mm	Gradient 1in	Type	USIL	DSL	US MH/PT TYPE	Length m	V m/s	Capacity m ³ /s	Catchment ID1	Catchment ID2	Catchment ID3	Catchment ID4	Catchment ID5	Development Area m ²	ToC min	Intensity mm/hr	Total Discharge m ³ /h	Utilization	Remark
SP01	CP1.01	28.50	28.50	750	250	UC	27.74	27.71	SP	6.8	1.84	0.91	A1	B1a				1230.65	2.60	217	0.77	83.6%	
CP1.01	CP1.02	28.50	28.50	750	250	UC	27.71	27.41	CP	76.85	1.84	0.93	A1	B1a				1230.65	2.60	217	0.77	83.6%	
CP1.02	CP1.03	28.50	28.70	750	250	UC	27.41	25.95	CP	23.54	1.84	0.91	A1	B1a				1230.65	2.60	217	0.77	83.6%	
CP1.03	CP1.04	28.70	28.50	750	250	UC	28.95	25.70	CP	61.37	1.84	0.93	A1	B1a				1230.65	2.60	217	0.77	83.6%	
CP1.04	CP1.05	28.50	28.30	750	250	UC	28.70	25.50	CP	22.61	1.84	0.91	A1	B1a				1230.65	2.60	217	0.77	83.6%	
CP1.05	CP1.06	28.30	28.00	900	250	UC	28.40	25.10	CP	51.08	2.08	1.50	A1	B1a	B1b			2106.83	2.60	217	1.30	86.6%	
CP1.06	CP1.07	28.00	28.00	900	250	UC	28.10	24.99	CP	28.15	2.08	1.50	A1	B1a	B1b			2106.83	2.60	217	1.30	86.6%	
CP1.07	EXISTING STREAM	28.00	28.00	900	250	UC	24.99	24.99	CP	2	2.08	1.50	A1	B1a	B1b			2106.83	2.60	217	1.30	86.6%	
SP02	CP2.01	27.40	27.40	325	150	UC	27.97	26.88	SP	120.23	1.88	0.46	A1					1959.85	2.60	217	0.36	77.9%	
CP2.01	CP2.02	27.40	27.10	325	150	UC	26.88	26.99	CP	2.92	1.88	0.46	A1					1959.85	2.60	217	0.36	77.9%	
CP2.02	CP2.03	27.10	26.70	325	150	UC	26.58	26.18	CP	13.83	1.88	0.46	A1					1959.85	2.60	217	0.36	77.9%	
CP2.03	CP2.04	26.70	26.90	325	150	UC	26.18	26.38	CP	78.13	1.88	0.46	A1					1959.85	2.60	217	0.36	77.9%	
CP2.04	CP2.05	26.90	26.20	325	150	UC	25.38	25.07	CP	46.64	1.88	0.46	A1					1959.85	2.60	217	0.36	77.9%	
CP2.05	CP1.07	26.20	26.00	325	150	UC	26.07	25.02	CP	6.86	1.88	0.46	A1					1959.85	2.60	217	0.36	77.9%	
SP03	CP3.01	26.40	26.40	325	200	UC	26.47	25.88	SP	71.52	1.62	0.40	A2	B2				1874.00	2.60	217	0.35	88.6%	
CP3.01	CP3.02	26.40	26.40	325	200	UC	26.88	26.76	CP	22.15	1.62	0.40	A2	B2				1874.00	2.60	217	0.35	88.6%	
CP3.02	CP3.03	26.40	26.40	325	200	UC	26.76	26.70	CP	12.13	1.62	0.40	A2	B2				1874.00	2.60	217	0.35	88.6%	
CP3.03	CP3.04	26.40	26.20	325	200	UC	26.70	25.32	CP	76.98	1.62	0.40	A2	B2				1874.00	2.60	217	0.35	88.6%	
CP3.04	CP3.05	26.10	25.70	325	200	UC	25.32	25.15	CP	32.81	1.62	0.40	A2	B2				1874.00	2.60	217	0.35	88.6%	
CP3.05	CP3.06	25.70	25.40	325	200	UC	25.15	24.81	CP	68.37	1.62	0.40	A2	B2				1874.00	2.60	217	0.35	88.6%	
CP3.06	EXISTING STREAM	25.40	25.40	300	150	UC	24.80	24.79	CP	2	2.00	0.96	A2	B2	B3	B4		1800.65	2.60	217	0.93	90.5%	
SP04	CP4.01	27.00	27.00	450	200	UC	26.54	26.42	SP	24.65	1.47	0.26	A2	B3				1981.50	2.60	217	0.18	80.0%	
CP4.01	CP4.02	27.00	27.00	450	200	UC	26.47	26.26	CP	31.78	1.47	0.26	A2	B3				1981.50	2.60	217	0.18	80.0%	
CP4.02	CP4.03	27.00	26.70	325	200	UC	26.26	26.06	CP	38.73	1.62	0.40	A2	B3	B4			1522.30	2.60	217	0.33	83.3%	
CP4.03	CP4.04	26.70	25.90	325	200	UC	26.06	25.38	CP	35.21	1.62	0.40	A2	B3	B4			1522.30	2.60	217	0.33	83.3%	
CP4.04	CP4.05	25.90	25.90	325	200	UC	25.38	25.33	CP	6.19	1.62	0.40	A2	B3	B4			1522.30	2.60	217	0.33	83.3%	
CP4.05	CP4.06	25.90	25.70	325	200	UC	25.33	25.08	CP	51.23	1.62	0.40	A2	B3	B4			1522.30	2.60	217	0.33	83.3%	
CP4.06	CP4.07	25.70	25.40	325	200	UC	25.08	24.88	CP	31.77	1.62	0.40	A2	B3	B4			1522.30	2.60	217	0.33	83.3%	
CP4.07	CP3.06	25.40	25.40	325	200	UC	24.88	24.81	CP	13.91	1.62	0.40	A2	B3	B4			1522.30	2.60	217	0.33	83.3%	
SP05	CP5.01	24.50	24.50	375	300	UC	25.02	24.11	SP	139.23	1.06	0.13	A3					1411.70	2.60	217	0.09	64.4%	
CP5.01	CP5.02	24.50	24.50	375	300	UC	24.11	24.61	CP	33.98	1.06	0.13	A3					1411.70	2.60	217	0.09	64.4%	
CP5.02	EXISTING STREAM	24.50	24.50	325	250	UC	23.91	23.90	CP	3	1.45	0.38	A3					4803.30	2.60	217	0.29	81.1%	
SP06	CP6.01	25.40	25.00	325	250	UC	24.97	24.48	SP	71.95	1.45	0.36	A3	B5				4803.30	2.60	217	0.29	81.1%	
CP6.01	CP6.02	25.00	25.00	325	250	UC	24.48	24.45	CP	74	1.45	0.36	A3	B5				4803.30	2.60	217	0.29	81.1%	
CP6.02	CP6.03	25.00	24.60	325	250	UC	24.45	24.08	CP	71.25	1.45	0.36	A3	B5				4803.30	2.60	217	0.29	81.1%	
CP6.03	CP6.04	24.60	24.50	325	250	UC	24.08	23.93	CP	37.32	1.45	0.36	A3	B5				4803.30	2.60	217	0.29	81.1%	
CP6.04	CP5.02	24.50	24.50	325	250	UC	23.93	23.91	CP	3.5	1.45	0.36	A3	B5				4803.30	2.60	217	0.29	81.1%	

ESP Street Pipe

Capacity Checking of Existing Stream

H1	1
H1	2
H2	1
H2	2

Assumed Water Depth	Freeboard	Base Width	Width of Water Surface	Flow Area	Wetted Perimeter (critical)	Hydraulic Radius	Manning's Roughness	Gradient	Velocity	Capacity
m	m	m	m	m ²	m	m		1in	m/s	m ³ /s
1.10	0.20	0.50	4.90	3.97	5.42	0.55	0.035	151.7	1.55	4.61

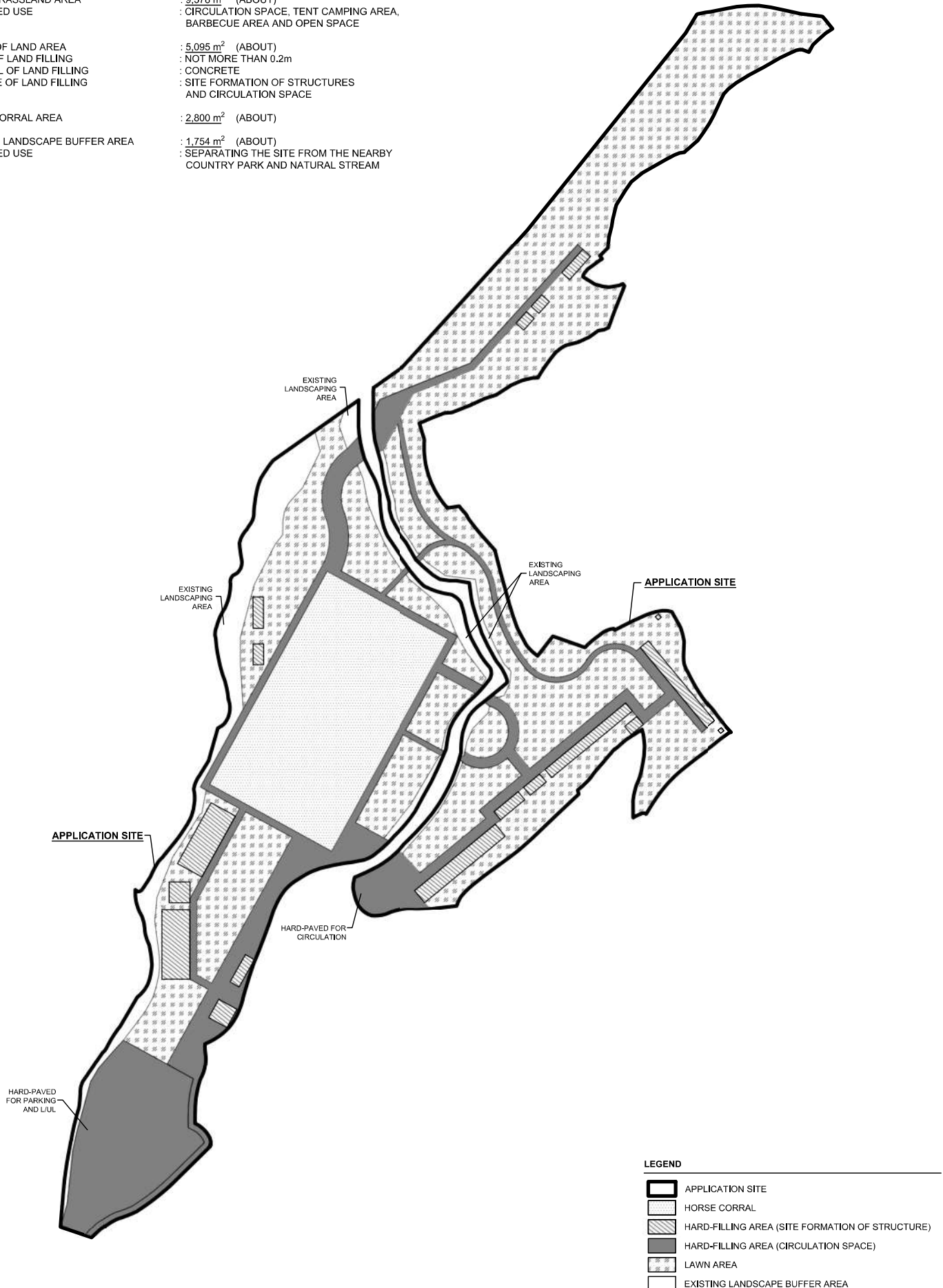
Total Flow from The Application Site = 2.12 m³/s
 Utilization Rate = 46.0%
 Total flow from Application Site only occupy 46% of the existing stream.

Please kindly note the pavement ratio would be reduced after the development. No drainage impact due to the development is anticipated.

APPENDIX B - PROPOSED SITE LAYOUT PLAN

PAVED RATIO OF THE APPLICATION SITE

APPLICATION SITE AREA	: 19,227 m ² (ABOUT)
LAWN / GRASSLAND AREA	: 9,578 m ² (ABOUT)
PROPOSED USE	: CIRCULATION SPACE, TENT CAMPING AREA, BARBECUE AREA AND OPEN SPACE
FILLING OF LAND AREA	: 5,095 m ² (ABOUT)
DEPTH OF LAND FILLING	: NOT MORE THAN 0.2m
MATERIAL OF LAND FILLING	: CONCRETE
PURPOSE OF LAND FILLING	: SITE FORMATION OF STRUCTURES AND CIRCULATION SPACE
HORSE CORRAL AREA	: 2,800 m ² (ABOUT)
EXISTING LANDSCAPE BUFFER AREA	: 1,754 m ² (ABOUT)
PROPOSED USE	: SEPARATING THE SITE FROM THE NEARBY COUNTRY PARK AND NATURAL STREAM

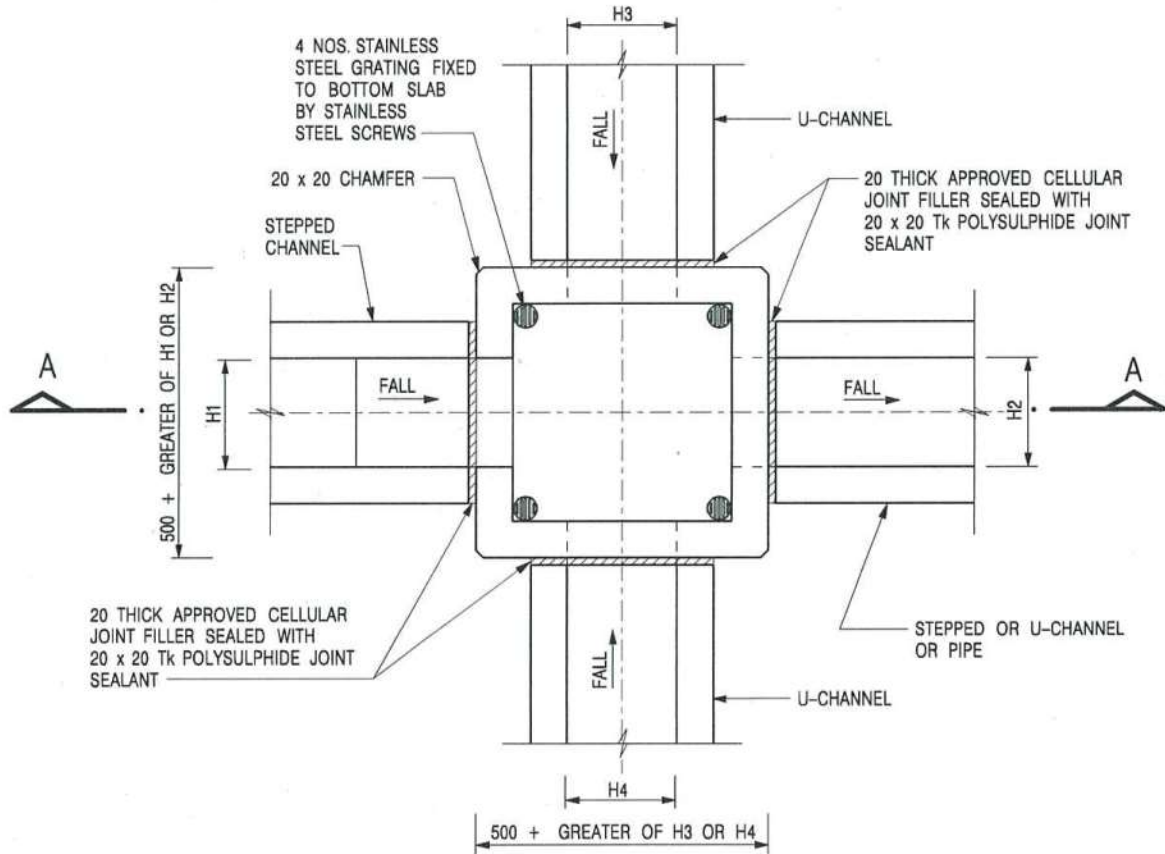


LEGEND

	APPLICATION SITE
	HORSE CORRAL
	HARD-FILLING AREA (SITE FORMATION OF STRUCTURE)
	HARD-FILLING AREA (CIRCULATION SPACE)
	LAWN AREA
	EXISTING LANDSCAPE BUFFER AREA

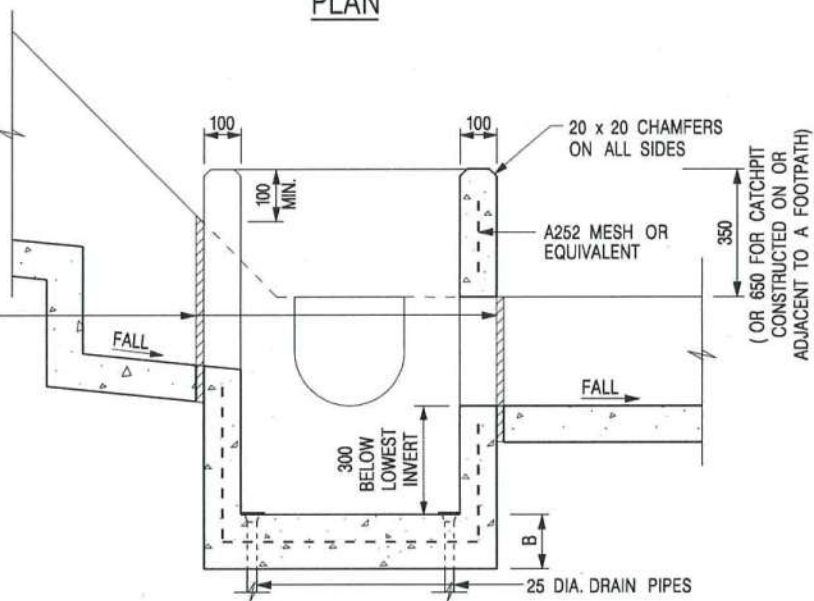
PLANNING CONSULTANT 	PROJECT PROPOSED TEMPORARY PLACE OF RECREATION, SPORTS OR CULTURE (HORSE RIDING CENTRE AND BARBECUE SITE) AND HOLIDAY CAMP WITH ANCILLARY FACILITIES FOR A PERIOD OF 3 YEARS AND ASSOCIATED FILLING OF LAND	ADDRESS VARIOUS LOTS IN D.D. 76 AND ADJOINING GOVERNMENT LAND, HOK TAU, FANLING, NEW TERRITORIES	SCALE 1 : 1500 @ A4		TITLE FILLING OF LAND	
			DRAWN BY MN	DATE 31.7.2024	DWS NO. PLAN 6	VER. 001
			REVISED BY	DATE		

Appendix C - Reference Drawings



NOMINAL SIZE (LARGEST OF H1, H2, H3 & H4)	B
300 - 600	150
675 - 900	175

20 THICK APPROVED CELLULAR JOINT FILLER SEALED WITH 20 x 20 Tk POLYSULPHIDE JOINT SEALANT



SECTION A - A

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. REFER TO SHEET 2 FOR OTHER NOTES.

-	FORMER DRG. NO. C2406J.	Original Signed	03.2015
REF.	REVISION	SIGNATURE	DATE

CATCHPIT WITH TRAP
(SHEET 1 OF 2)



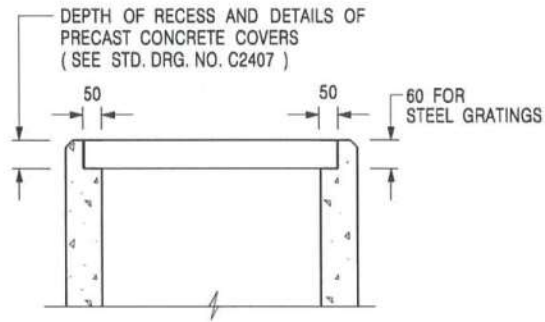
CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

SCALE 1 : 20

DRAWING NO.

DATE JAN 1991

C2406 /1



**ALTERNATIVE TOP SECTION
FOR PRECAST CONCRETE COVERS / GRATINGS**

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. ALL CONCRETE SHALL BE GRADE 20 /20.
3. CONCRETE SURFACE FINISH SHALL BE CLASS U2 OR F2 AS APPROPRIATE.
4. FOR DETAILS OF JOINT, REFER TO STD. DRG. NO. C2413.
5. CONCRETE TO BE COLOURED AS SPECIFIED.
6. UNLESS REQUESTED BY THE MAINTENANCE PARTY AND AS DIRECTED BY THE ENGINEER, CATCHPIT WITH TRAP IS NORMALLY NOT PREFERRED DUE TO PONDING PROBLEM.
7. UPON THE REQUEST FROM MAINTENANCE PARTY, DRAIN PIPES AT CATCHPIT BASE CAN BE USED BUT THIS IS FOR CATCHPITS LOCATED AT SLOPE TOE ONLY AND AS DIRECTED BY THE ENGINEER.
8. FOR CATCHPITS CONSTRUCTED ON OR ADJACENT TO A FOOTPATH, STEEL GRATINGS (SEE DETAIL 'A' ON STD. DRG. NO. C2405 /2) OR CONCRETE COVERS (SEE STD. DRG. NO. C2407) SHALL BE PROVIDED AS DIRECTED BY THE ENGINEER.
9. IF INSTRUCTED BY THE ENGINEER, HANDRAILING (SEE DETAIL 'J' ON STD. DRG. NO. C2405 /5; EXCEPT ON THE UPSLOPE SIDE) IN LIEU OF STEEL GRATINGS OR CONCRETE COVERS CAN BE ACCEPTED AS AN ALTERNATIVE SAFETY MEASURE FOR CATCHPITS NOT ON A FOOTPATH NOR ADJACENT TO IT. TOP OF THE HANDRAILING SHALL BE 1 000 mm MIN. MEASURED FROM THE ADJACENT GROUND LEVEL.
10. MINIMUM INTERNAL CATCHPIT WIDTH SHALL BE 1 000 mm FOR CATCHPITS WITH A HEIGHT EXCEEDING 1 000 mm MEASURED FROM THE INVERT LEVEL TO THE ADJACENT GROUND LEVEL. AND, STEP IRONS (SEE DSD STD. DRG. NO. DS1043) AT 300 c/c STAGGERED SHALL BE PROVIDED. THICKNESS OF CATCHPIT WALL FOR INSTALLATION OF STEP IRONS SHALL BE INCREASED TO 150 mm.
11. FOR RETROFITTING AN EXISTING CATCHPIT WITH STEEL GRATING, SEE DETAIL 'G' ON STD. DRG. NO. C2405 /4.
12. SUBJECT TO THE APPROVAL OF THE ENGINEER, OTHER MATERIALS CAN ALSO BE USED AS COVERS / GRATINGS.

A	MINOR AMENDMENT.	Original Signed	04.2016
-	FORMER DRG. NO. C2406J.	Original Signed	03.2015
REF.	REVISION	SIGNATURE	DATE

**CATCHPIT WITH TRAP
(SHEET 2 OF 2)**



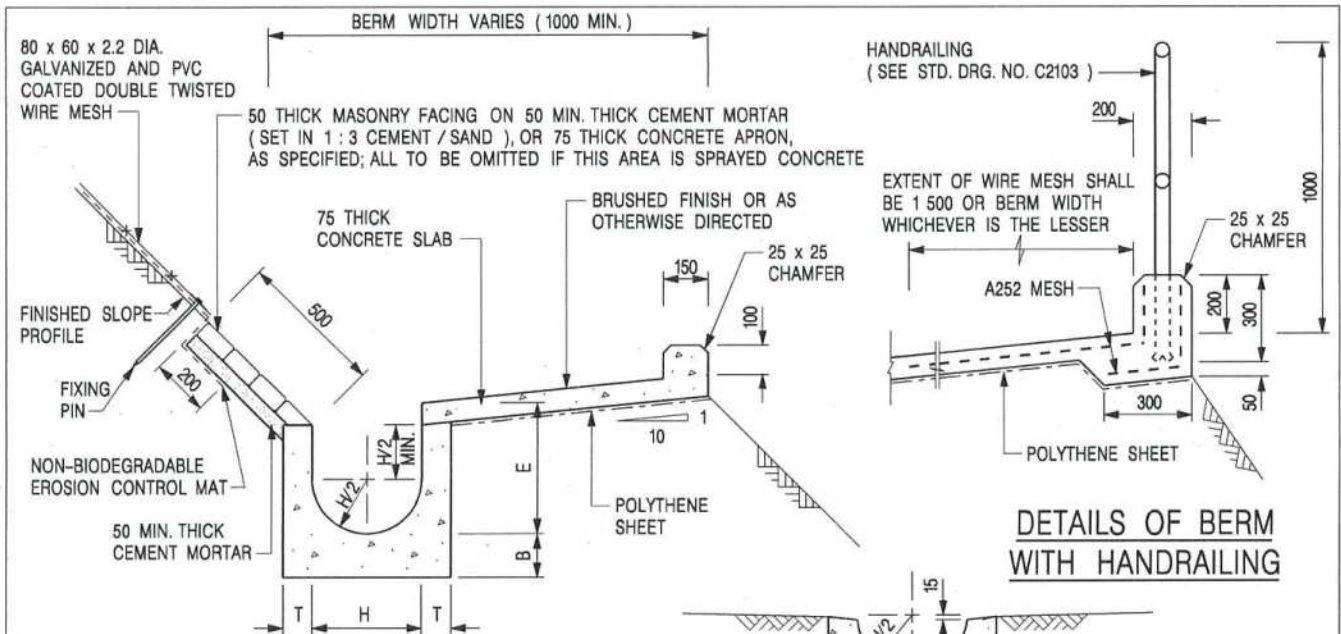
**CIVIL ENGINEERING AND
DEVELOPMENT DEPARTMENT**

SCALE 1 : 20

DRAWING NO.

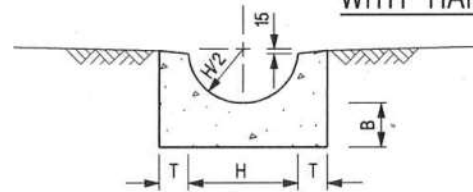
DATE JAN 1991

C2406 /2A

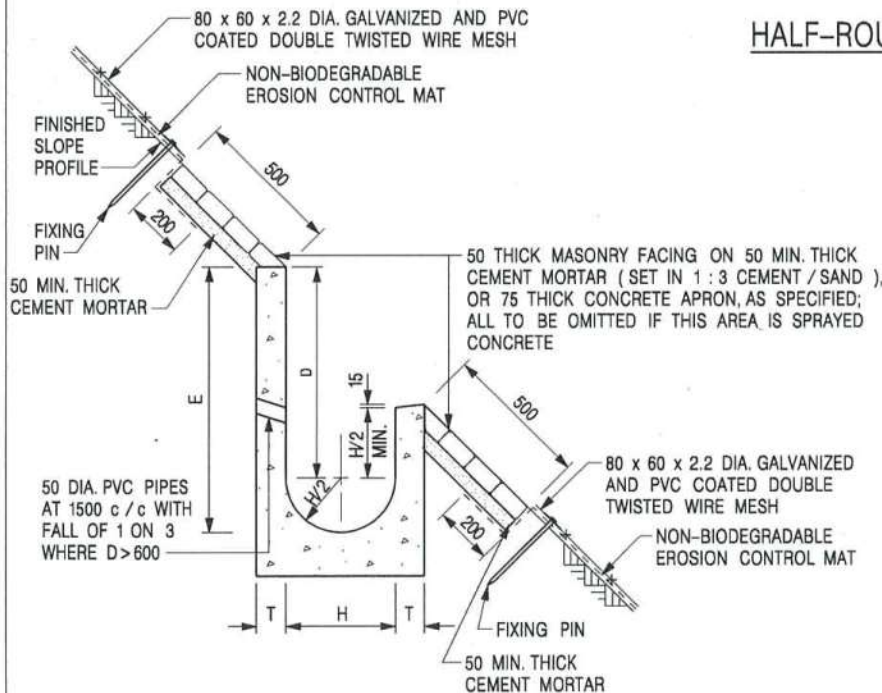


DETAILS OF BERM WITH HANDRAILING

U-CHANNELS CONSTRUCTED ON BERM



HALF-ROUND CHANNEL



U-CHANNELS NOT CONSTRUCTED ON BERM

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. ALL CONCRETE TO BE GRADE 20 / 20.
3. CONCRETE SURFACE FINISH SHALL BE CLASS U2, F2 OR BRUSHED FINISH AS DIRECTED.
4. SPACING OF EXPANSION JOINT IN CHANNELS, BERM SLABS AND APRONS TO BE 10 METRES MAXIMUM, SEE STD. DRG. NO. C2413 FOR DETAILS.
5. JOINTS FOR CHANNELS, BERM SLABS, APRONS AND WALLS, ETC. TO BE ON THE SAME ALIGNMENT.
6. FOR DIMENSIONS T, H, & B, SEE TABLE BELOW.
7. BIODEGRADABLE EROSION CONTROL MAT IF REQUIRED, SEE STD. DRG. NO. C2511/E.
8. CONCRETE TO BE COLOURED AS SPECIFIED.
9. CONCRETE U-CHANNEL CAN BE CAST IN-SITU OR PRECAST CONCRETE SUBJECT TO THE ENGINEER'S AGREEMENT ON THE DETAILS.
10. DETAILS OF EROSION CONTROL MAT AND WESH MESH ON BERM. (SEE STD DRG. NO. C2511/E)

NOMINAL SIZE H	T	B	REINFORCEMENT
300	80	100	A252 MESH PLACED CENTRALLY AND T=100 WHEN E > 650
375 - 600	100	150	
675 - 900	125	175	A252 MESH PLACED CENTRALLY

REF.	REVISION	SIGNATURE	DATE
I	MINOR AMENDMENT.	Original Signed	07.2018
H	THICKNESS OF MASONRY FACING AMENDED.	Original Signed	01.2005
G	MINOR AMENDMENT.	Original Signed	01.2004
F	GENERAL REVISION.	Original Signed	12.2002
E	DRAWING TITLE AMENDED.	Original Signed	11.2001
D	MINOR AMENDMENT.	Original Signed	08.2001
C	150 x 100 UPSTAND ADDED AT BERM.	Original Signed	6.99
B	MINOR AMENDMENTS.	Original Signed	3.94

DETAILS OF HALF-ROUND AND U-CHANNELS (TYPE A - WITH MASONRY APRON)



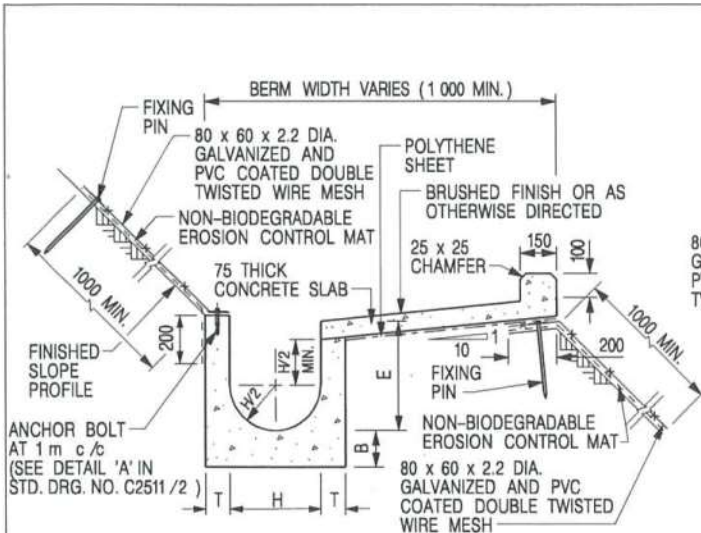
CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

SCALE 1 : 25

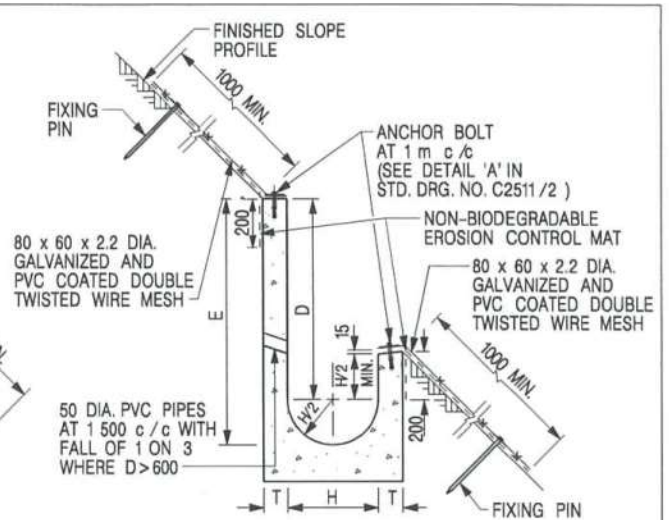
DRAWING NO.

DATE JAN 1991

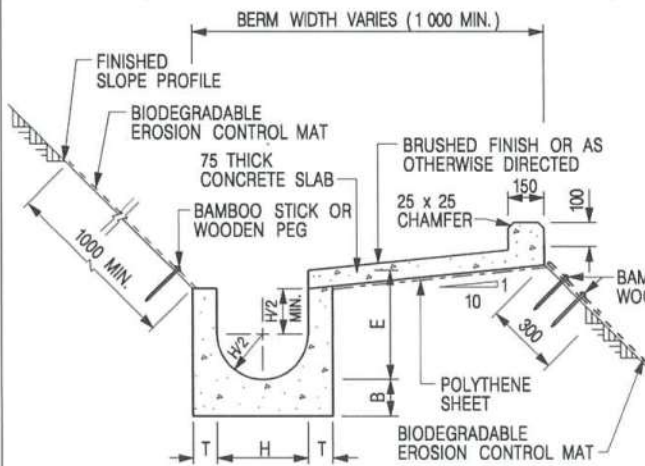
C24091



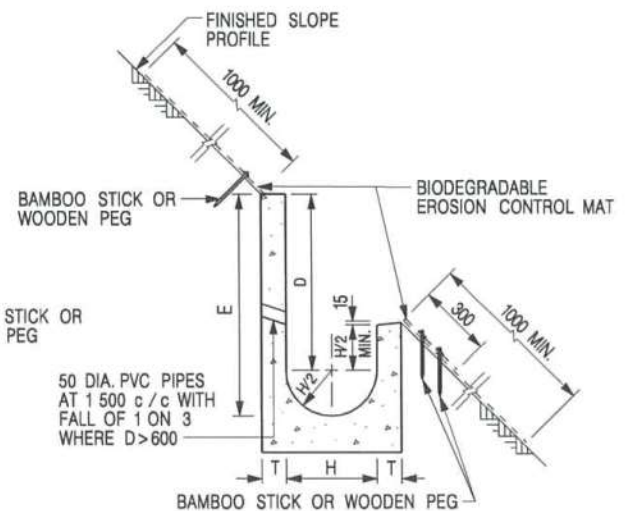
U-CHANNELS CONSTRUCTED ON BERM WITH NON-BIODEGRADABLE EROSION CONTROL MAT



U-CHANNELS NOT CONSTRUCTED ON BERM WITH NON-BIODEGRADABLE EROSION CONTROL MAT



U-CHANNELS CONSTRUCTED ON BERM WITH BIODEGRADABLE EROSION CONTROL MAT



U-CHANNELS NOT CONSTRUCTED ON BERM WITH BIODEGRADABLE EROSION CONTROL MAT

NOTES:

- ALL DIMENSIONS ARE IN MILLIMETRES.
- ALL CONCRETE TO BE GRADE 20 /20.
- CONCRETE SURFACE FINISH SHALL BE CLASS U2, F2 OR BRUSHED FINISH AS DIRECTED.
- SPACING OF EXPANSION JOINT IN CHANNELS, BERM SLABS AND APRONS TO BE 10 METRES MAXIMUM, SEE STD. DRG. NO. C2413 FOR DETAILS.
- JOINTS FOR CHANNELS, BERM SLABS, APRONS AND WALLS, ETC. TO BE ON THE SAME ALIGNMENT.
- FOR DIMENSIONS T, H, & B, SEE TABLE BELOW.
- FOR TYPICAL FIXING PIN DETAILS, SEE STD. DRG. NO. C2511/2.
- MINIMUM SIZE OF 25 x 50 x 300mm SHALL BE PROVIDED FOR WOODEN PEG.
- MINIMUM SIZE OF 10mm DIAMETER WITH 200mm LONG SHALL BE PROVIDED FOR BAMBOO STICK.
- THE FIXING DETAILS OF NON-BIODEGRADABLE AND BIODEGRADABLE EROSION CONTROL MATS ON EXISTING BERM SHALL REFER TO STD. DRG. NO. C2511/1.

NOMINAL SIZE H	T	B	REINFORCEMENT
300	80	100	A252 MESH PLACED CENTRALLY AND T=100 WHEN E > 650
375 - 600	100	150	
675 - 900	125	175	A252 MESH PLACED CENTRALLY

REF.	REVISION	SIGNATURE	DATE
I	MINOR AMENDMENT.	Original Signed	07.2018
H	FIXING DETAILS OF BIODEGRADABLE EROSION CONTROL MAT ADDED.	Original Signed	12.2017
G	DIMENSION TABLE AMENDED.	Original Signed	01.2005
F	MINOR AMENDMENT.	Original Signed	01.2004
E	GENERAL REVISION.	Original Signed	12.2002
D	MINOR AMENDMENT.	Original Signed	08.2001
C	150 x 100 UPSTAND ADDED AT BERM.	Original Signed	6.99
B	MINOR AMENDMENT.	Original Signed	3.94
A	MINOR AMENDMENT.	Original Signed	10.92

DETAILS OF HALF-ROUND AND U-CHANNELS (TYPE B - WITH EROSION CONTROL MAT APRON)



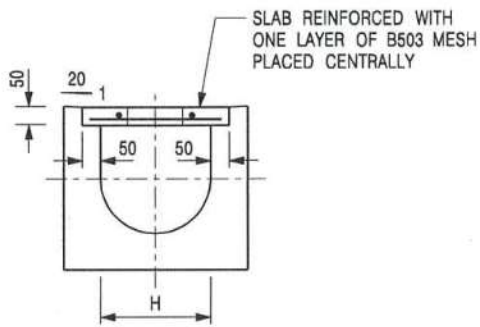
CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

SCALE DIAGRAMMATIC

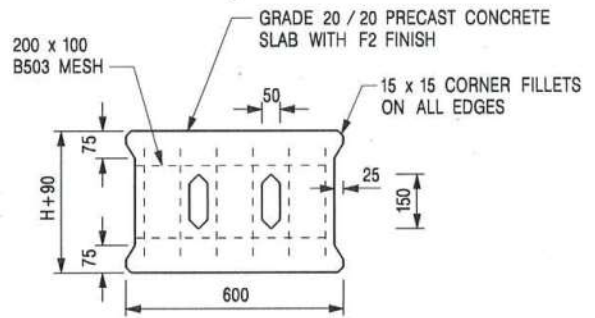
DRAWING NO.

DATE JAN 1991

C24101



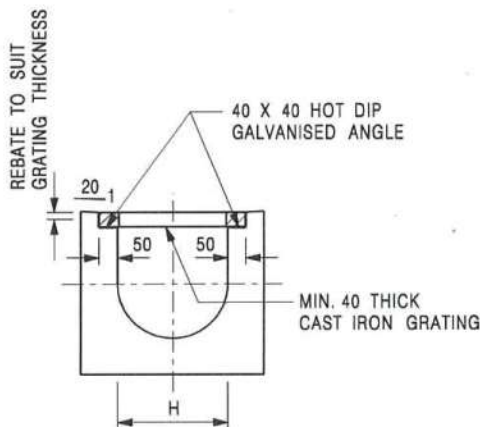
TYPICAL SECTION



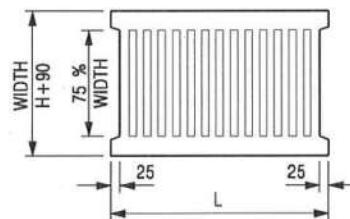
PLAN OF SLAB

U-CHANNELS WITH PRECAST CONCRETE SLABS

(UP TO H OF 525)



TYPICAL SECTION



L = 600mm FOR H ≤ 375mm
L = 400mm FOR H > 375mm

CAST IRON GRATING

(DIMENSIONS ARE FOR GUIDANCE ONLY, CONTRACTOR MAY SUBMIT EQUIVALENT TYPE)

U-CHANNEL WITH CAST IRON GRATING

(UP TO H OF 525)

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. H=NOMINAL CHANNEL SIZE.
3. ALL CAST IRON FOR GRATINGS SHALL BE GRADE EN-GJL-150 COMPLYING WITH BS EN 1561.
4. FOR COVERED CHANNELS TO BE HANDED OVER TO HIGHWAYS DEPARTMENT FOR MAINTENANCE, THE GRATING DETAILS SHALL FOLLOW THOSE AS SHOWN ON HyD STD. DRG. NO. H3156.

REF.	REVISION	SIGNATURE	DATE
E	NOTES 3 & 4 AMENDED.	Original Signed	12.2014
D	NOTE 4 ADDED.	Original Signed	06.2008
C	MINOR AMENDMENT. NOTE 3 ADDED.	Original Signed	12.2005
B	NAME OF DEPARTMENT AMENDED.	Original Signed	01.2005
A	CAST IRON GRATING AMENDED.	Original Signed	12.2002

**COVER SLAB AND CAST IRON
GRATING FOR CHANNELS**



**CIVIL ENGINEERING AND
DEVELOPMENT DEPARTMENT**

SCALE 1 : 20

DRAWING NO.

DATE JAN 1991

C2412E



PHOTO 1



PHOTO 4

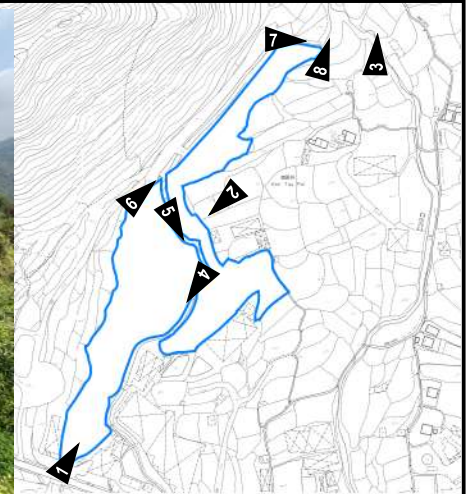


PHOTO 2

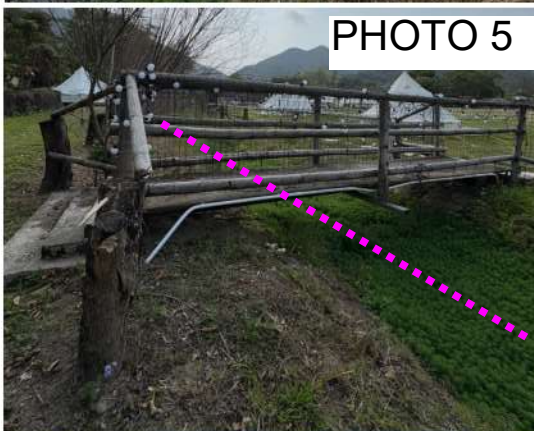


PHOTO 5



EXISTING STREAM TO TAN SHAN RIVER

PHOTO 3



PHOTO 6



PHOTO 7

PROJECT:

Proposed Temporary Place of Recreation, Sports or Culture (Horse Riding Centre and Barbecue Site) and Holiday Camp with Ancillary Facilities for a Period of 3 Years in "Agriculture" Zone and Associated Filling of Land

LOCATION:

Various Lot in D.D. 76 and Adjoining Government Land, Hok Tau, Fanling, New Territories

SITE PHOTOS

APPENDIX D



VER	DESCRIPTION	DATE