GoldRich PLANNERS & SURVEYORS LTD.

金 潤 規 劃 測 量 師 行 有 限 公 司

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Your Ref.: A/NE-SSH/156   Our Ref.: P23055A/TL24314   19 June 2024

The Secretary   By Post and E-mail
Town Planning Board   tpbpd@pland.gov.hk
15/F., North Point Government Offices
333 Java Road, North Point, Hong Kong

Dear Sir,

Submission of Further Information

**Proposed Temporary Private Vehicle Park (Private Cars) for a Period of 3 Years in
"Village Type Development" Zone, Lot Nos. 543 (Part), 544 (Part), 546 (Part),
547 (Part), 548 (Part), 549, 550 (Part), 551 (Part), 552 RP (Part), 553, 603 S.A RP,
605 (Part), 606 RP, 607 (Part), 608 (Part), 609 RP and 610 RP (Part) in D.D. 218
and Adjoining Government Land, Ma Kwu Lam Village, Sai Kung North, New Territories**

We would like to submit further information to respond to the comments from Drainage
Services Department dated 31.5.2024.

Yours faithfully,
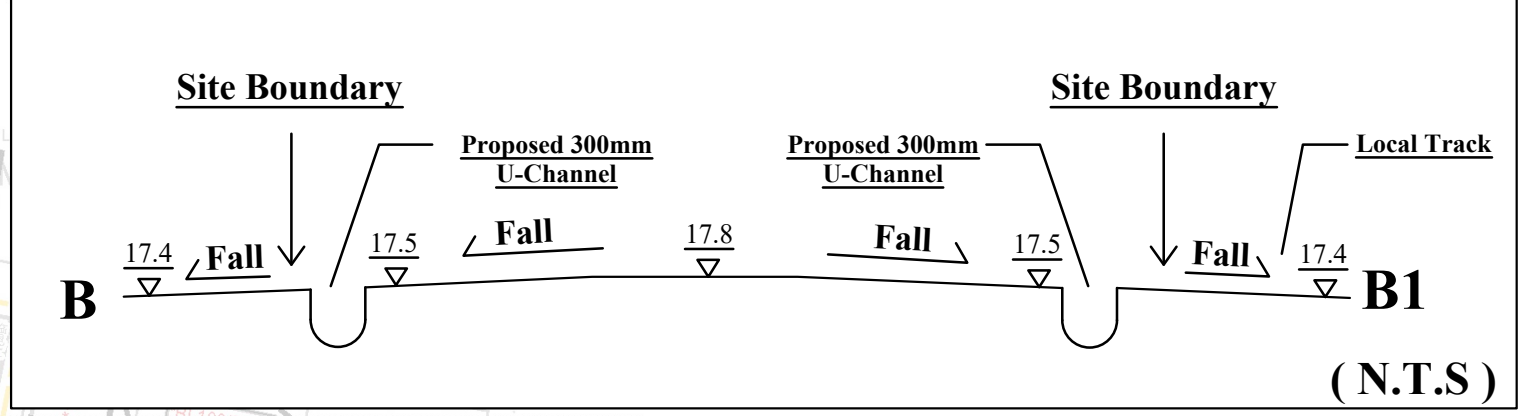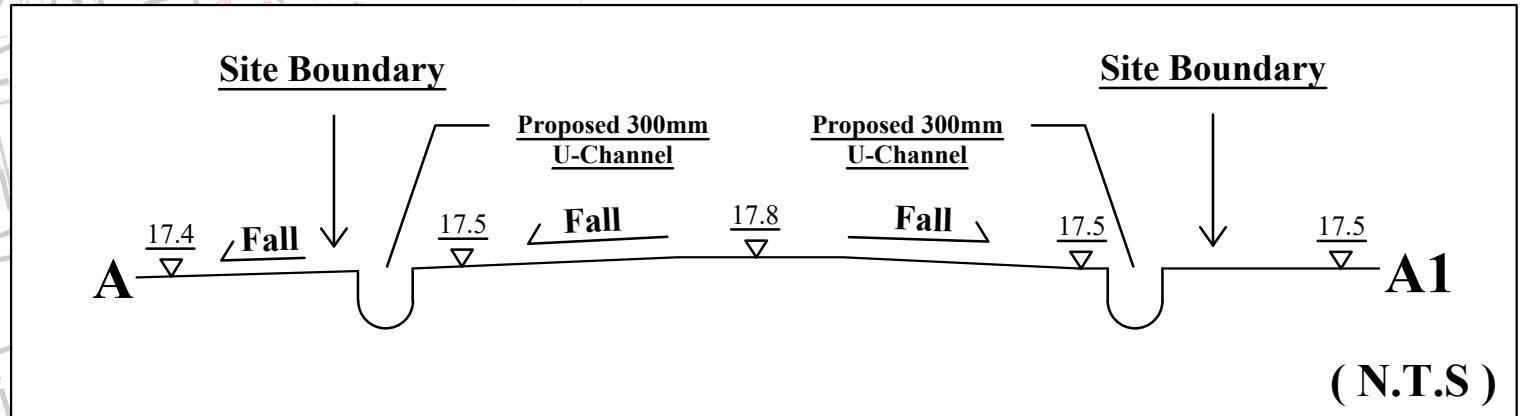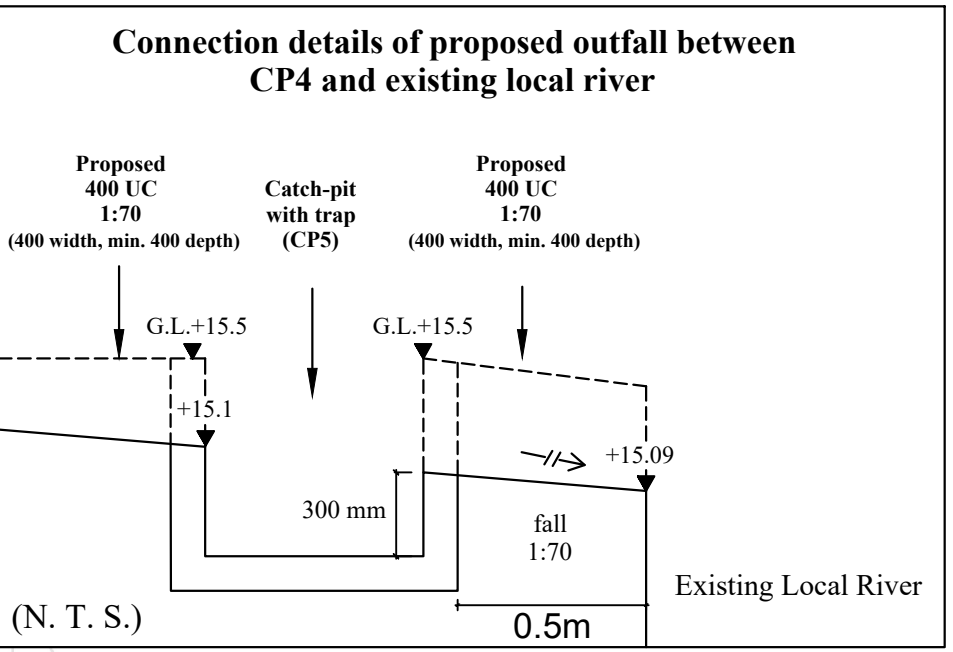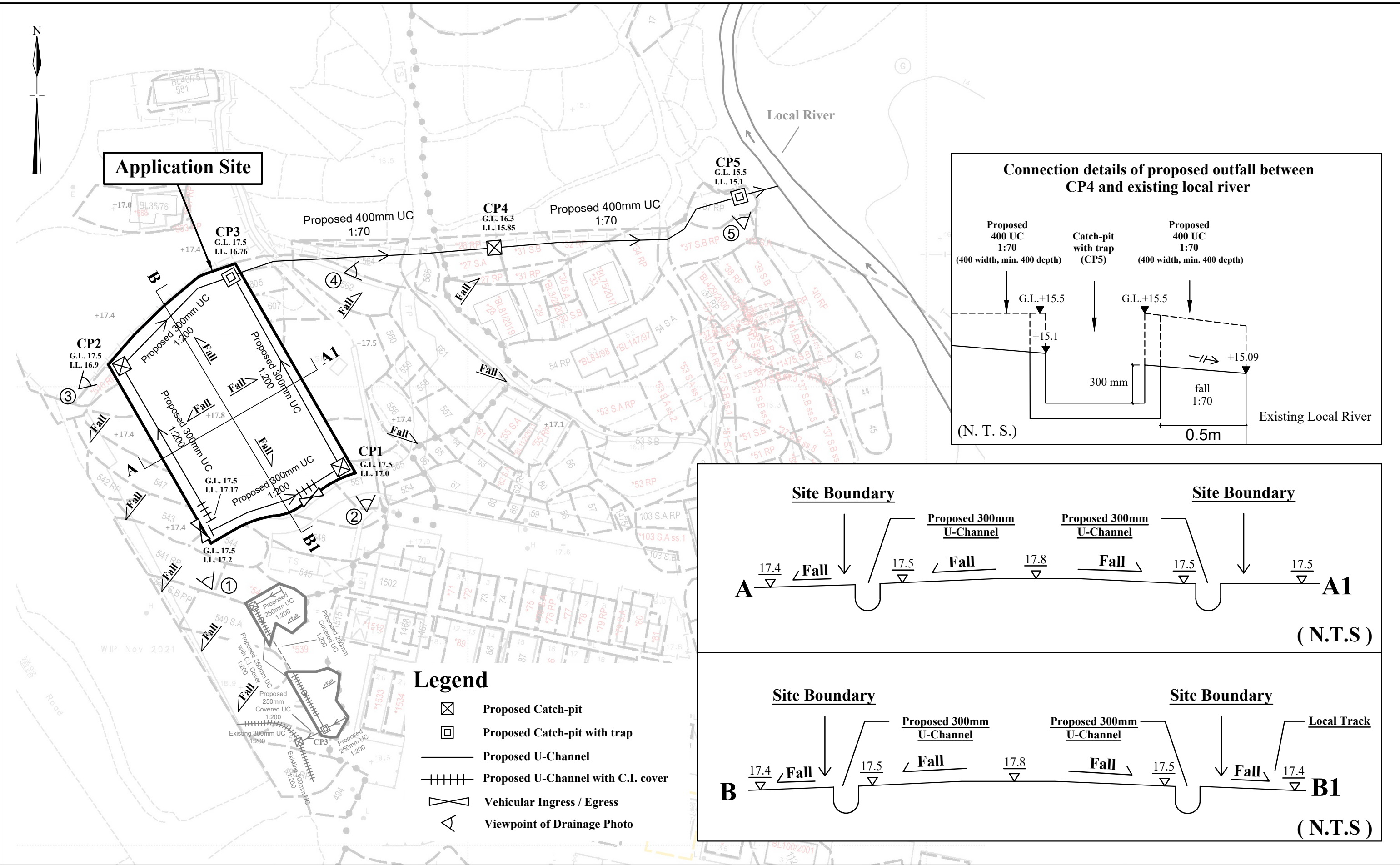For and on behalf of
Goldrich Planners & Surveyors Ltd.

Francis Lau

Encl.

<u>Further Information (4) for Planning Application Nos. A/NE-SSH/156</u>
Response-to-Comment

Comments from Drainage Services Department received on 31.5.2024

Contact person: Mr. Justin LAU (Tel.: 2300 1545)

I.	Comment	Response
(a)	Supporting calculations to demonstrate that the proposed drainage system and the existing downstream drain/channel has adequate capacity to convey the runoff to be discharged arising from the proposed development. (Checking for the proposed 450mm UC for SSH_156.)	Please refer to attached drainage calculations for details.
(b)	Please justify your proposed catchment area. (Please provide support evidence for all directions of the sites)	Catchment area is updated. Ground levels of surrounding area are indicated on Plan 7.2.
(c)	The drainage flow path from the development to the public drainage system / streamcourse / sea / any recognized drainage facilities should be provided in association with supporting site photos for the captioned submission. (photos for the locations of proposed 450UC and outfall for SSH_156).	Please refer to the attached site photos showing the drainage flow path and the local river.
(d)	The lot owners/developers are required to rectify/modify the drainage systems if they are found to be inadequate or ineffective during operation. The lot owners/developers shall also be liable for and shall indemnify Government against claims and demands arising out of damage or nuisance caused by failure of the systems.	Noted.
(e)	The lot owners/developers shall resolve any conflict/disagreement with relevant lot owner(s) and seek LandsD's permission for laying new drains/channels and /or modifying/upgrading existing ones in other private lots or on Government land (where required) outside the application site(s).	Noted.

N

Application Site

CP3
G.L. 17.5
I.L. 16.76

Proposed 400mm UC 1:70

CP4
G.L. 16.3
I.L. 15.85

Proposed 400mm UC 1:70

CP5
G.L. 15.5
I.L. 15.1

Local River

⑤

④

Fall

CP2
G.L. 17.5
I.L. 16.9

③

Fall

B

Proposed 300mm UC 1:200

Proposed 300mm UC 1:200

Proposed 300mm UC 1:200

Fall

Fall

Fall

Fall

+17.4
+17.5
+17.4
+17.8
+17.4

A1

A

CP1
G.L. 17.5
I.L. 17.0

B1
G.L. 17.5
I.L. 17.2

Proposed 300mm UC 1:200

②

Fall

①

Fall

Proposed 250mm UC 1:200
Proposed 250mm Covered UC 1:200
Proposed 250mm UC with C.I. Cover 1:200
Proposed 250mm Covered UC 1:200
Existing 300mm UC 1:200
CP3
Proposed 250mm UC 1:200
Existing 300mm UC 1:200

Connection details of proposed outfall between CP4 and existing local river

Proposed 400 UC 1:70 (400 width, min. 400 depth)

Catch-pit with trap (CP5)

Proposed 400 UC 1:70 (400 width, min. 400 depth)

G.L.+15.5
G.L.+15.5
+15.1
+15.09
300 mm
fall 1:70
Existing Local River
(N. T. S.)
0.5m

Legend

⊠ Proposed Catch-pit
▢ Proposed Catch-pit with trap
— Proposed U-Channel
+++ Proposed U-Channel with C.I. cover
⋈ Vehicular Ingress / Egress
◁ Viewpoint of Drainage Photo

Site Boundary

Proposed 300mm U-Channel
Proposed 300mm U-Channel

A 17.4 Fall 17.5 Fall 17.8 Fall 17.5 17.5 A1

Site Boundary

(N.T.S)

Site Boundary

Proposed 300mm U-Channel
Proposed 300mm U-Channel
Local Track

B 17.4 Fall 17.5 Fall 17.8 Fall 17.5 Fall 17.4 B1

Site Boundary

(N.T.S)

1:750 (A3)

May 2024

Drainage Proposal

Lots 543(part), 544(part), 546(part), 547(part), 548(part), 549,550(part), 551(part),
552 RP(part), 553, 603 SA RP, 605(part), 606 RP, 607(part), 608(part),
609 RP and 610 RP(part) in D.D.218 and adjoining government land
Ma Kwu Lam, Sai Kung North, N.T

Goldrich Planners & Surveyors Ltd.

Plan 6.1a
(P 23055A)

Catchment Area A
Concrete Paving : 850m²

A

Catchment Area C
Concrete Paving : 118m²
Flat grass land : 2,043m²
Total Area: 2,161m²

C

Existing Fence Wall

B

Catchment Area B
Concrete Paving : 929m²

Existing Planter

Fall (multiple)

+17.4 +17.5 +17.0 +17.8 +16.3 +16.8 +17.1

AREA OF CATCHMENT
(N.T.S)

Note:
According to Technical Note to prepare a Drainage Submission by D.S.D.of November 2001 (p.6),
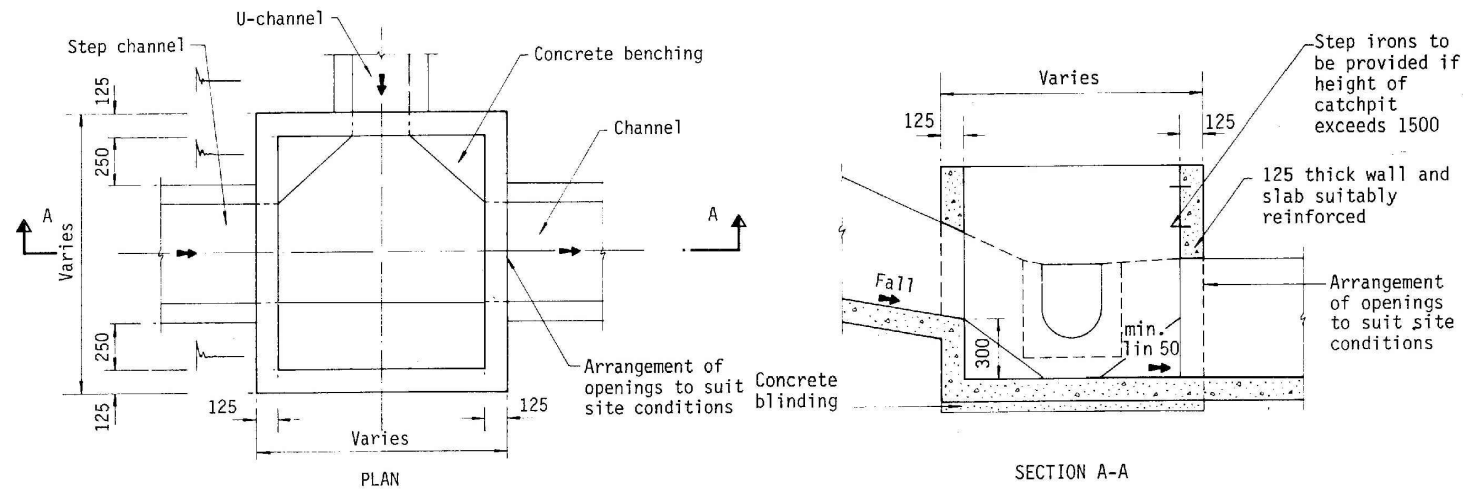450mm U-channel is acceptable for area below 4,000m².

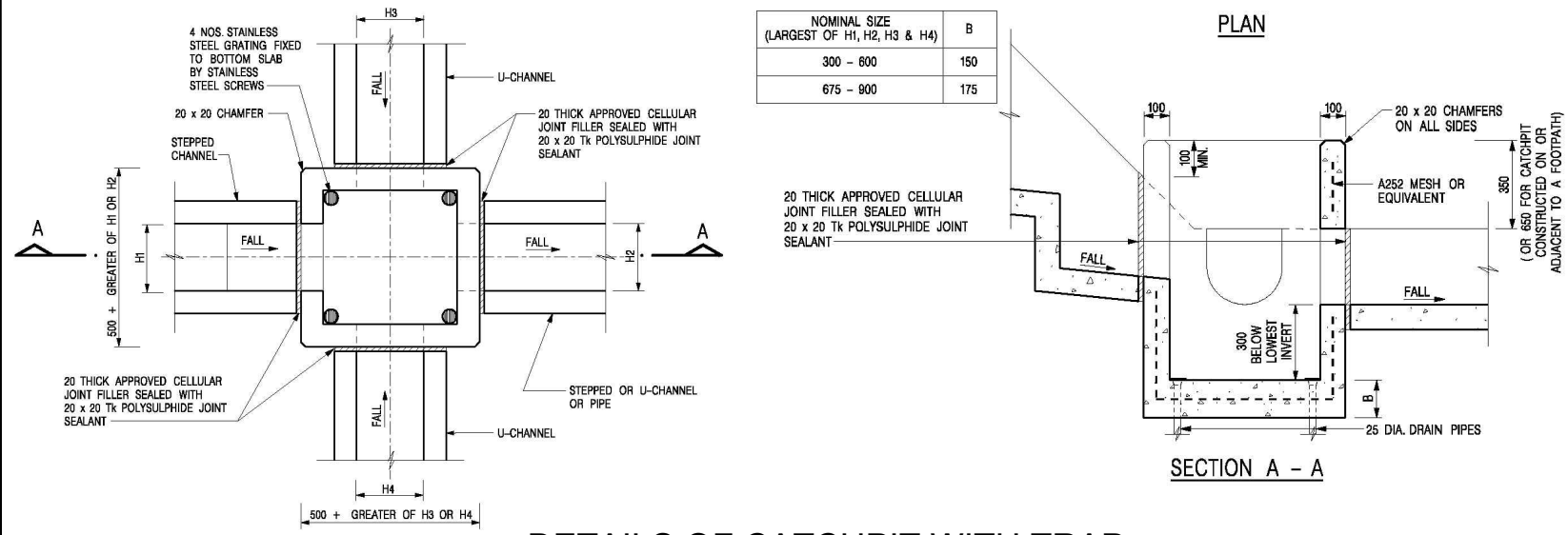| 1:500 (A3)	**Drainage Proposal**	Goldrich Planners & Surveyors Ltd.
March 2024	Lots 543(part), 544(part), 546(part), 547(part), 548(part), 549,550(part), 551(part), 552 RP(part), 553, 603 SA RP, 605(part), 606 RP, 607(part), 608(part), 609 RP and 610 RP(part) in D.D.218 and adjoining government land Ma Kwu Lam, Sai Kung North, N.T	**Plan 6.2a** (P 23055A)

N

TYPICAL DETAILS OF CATCHPIT

PLAN

- Step channel
- U-channel
- Concrete benching
- Channel
- Arrangement of openings to suit site conditions
- Concrete blinding

125 / 250 / 250 / 125
125 / Varies / 125

SECTION A-A

- Step irons to be provided if height of catchpit exceeds 1500
- 125 thick wall and slab suitably reinforced
- Arrangement of openings to suit site conditions
- Fall
- min. 1 in 50
- 300

Varies
125 / 125

DETAILS OF CATCHPIT WITH TRAP
(REFER TO CEDD'S STANDARD DWG. C2406/1)

- 4 NOS. STAINLESS STEEL GRATING FIXED TO BOTTOM SLAB BY STAINLESS STEEL SCREWS
- 20 x 20 CHAMFER
- STEPPED CHANNEL
- 20 THICK APPROVED CELLULAR JOINT FILLER SEALED WITH 20 x 20 Tk POLYSULPHIDE JOINT SEALANT
- U-CHANNEL
- STEPPED OR U-CHANNEL OR PIPE

FALL / FALL / FALL / FALL
H1 / H / H2
500 + GREATER OF H1 OR H2
500 + GREATER OF H3 OR H4

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

PLAN

SECTION A – A

- 20 THICK APPROVED CELLULAR JOINT FILLER SEALED WITH 20 x 20 Tk POLYSULPHIDE JOINT SEALANT
- 20 x 20 CHAMFERS ON ALL SIDES
- A252 MESH OR EQUIVALENT
- (OR 650 FOR CATCHPIT CONSTRUCTED ON OR ADJACENT TO A FOOTPATH)
- 350
- 100 MIN
- FALL / FALL
- 300 BELOW LOWEST INVERT
- 25 DIA. DRAIN PIPES
- B
- 100 / 100

TYPICAL DETAILS OF U CHANNEL

- This dimension varies to suit fall on channel
- 1 : 20
- min. H/2
- H/2
- Design depth
- H
- b
- t / H / t

TYPICAL SECTION OF U-CHANNEL WITH COVER (N.T.S.)

- REBATE TO SUIT GRATING THICKNESS
- CAST IRON CRATING
- 20
- 50 / 50
- CHANNEL WIDTH
- 150
- 150 / H / 150

CAST IRON CRATING (HEAVY DUTY)

- WIDTH H+90
- 75 % WIDTH
- 25 / 25
- 300

1:500 (A3)

March 2024

Drainage Proposal

Lots 543(part), 544(part), 546(part), 547(part), 548(part), 549,550(part), 551(part),
552 RP(part), 553, 603 SA RP, 605(part), 606 RP, 607(part), 608(part),
609 RP and 610 RP(part) in D.D.218 and adjoining government land
Ma Kwu Lam, Sai Kung North, N.T
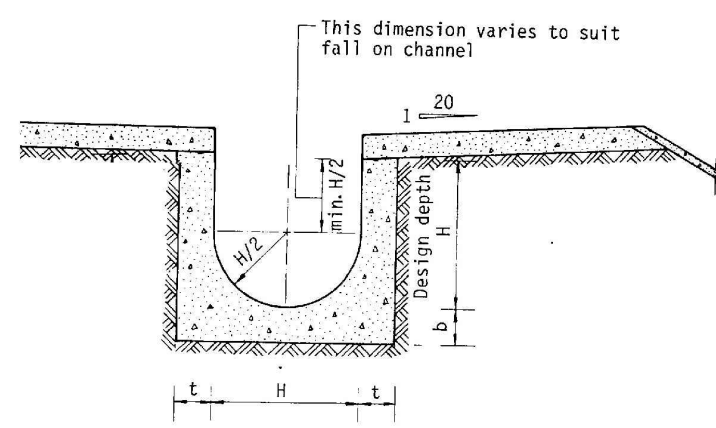
Goldrich Planners & Surveyors Ltd.
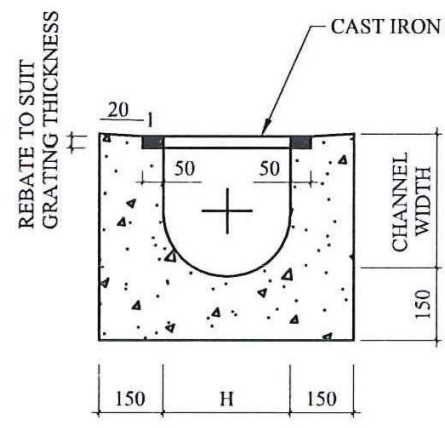
Plan 6.3 (P 23055A)

Viewpoint 1

Viewpoint 2
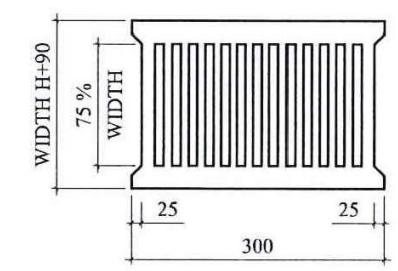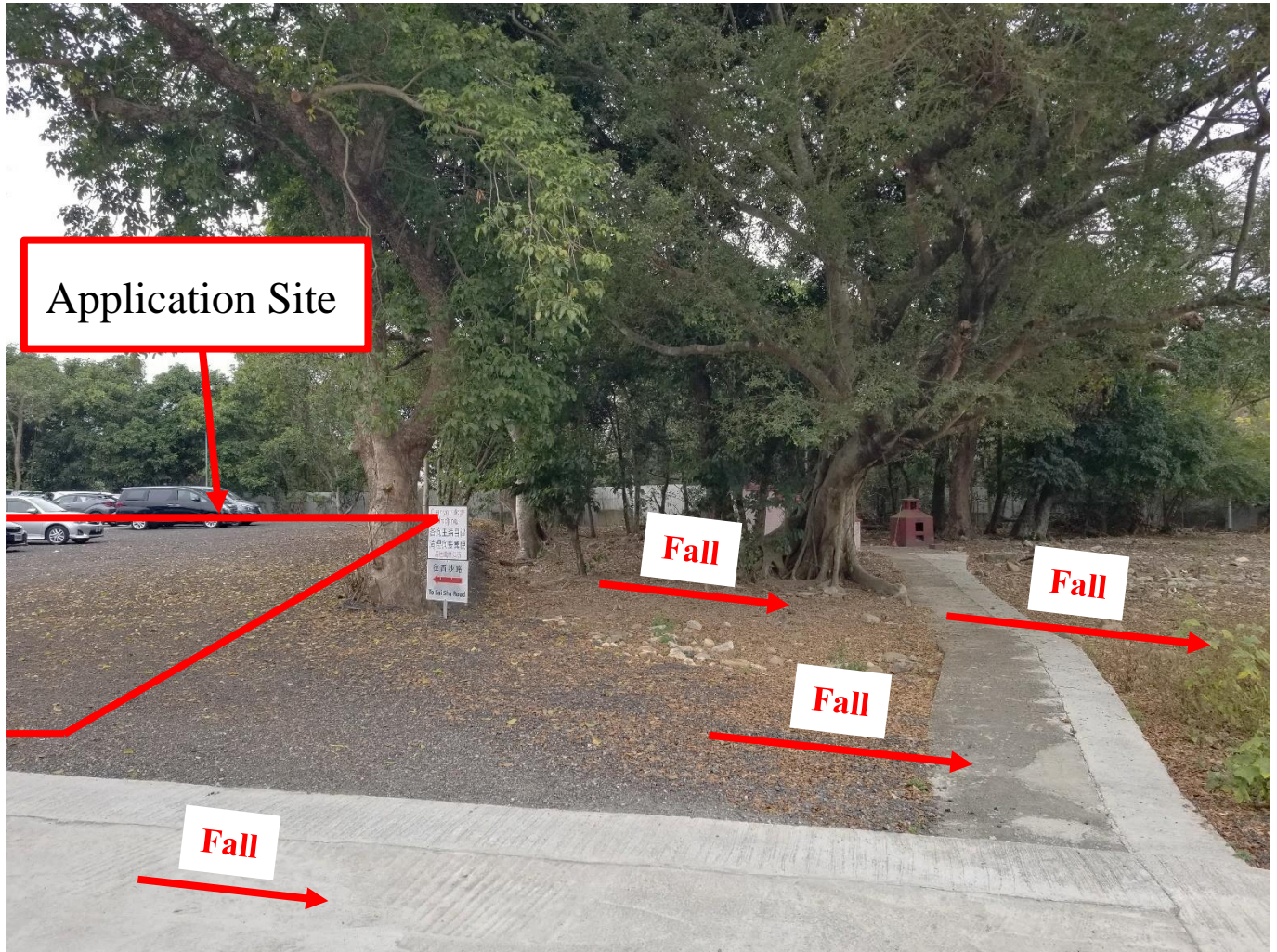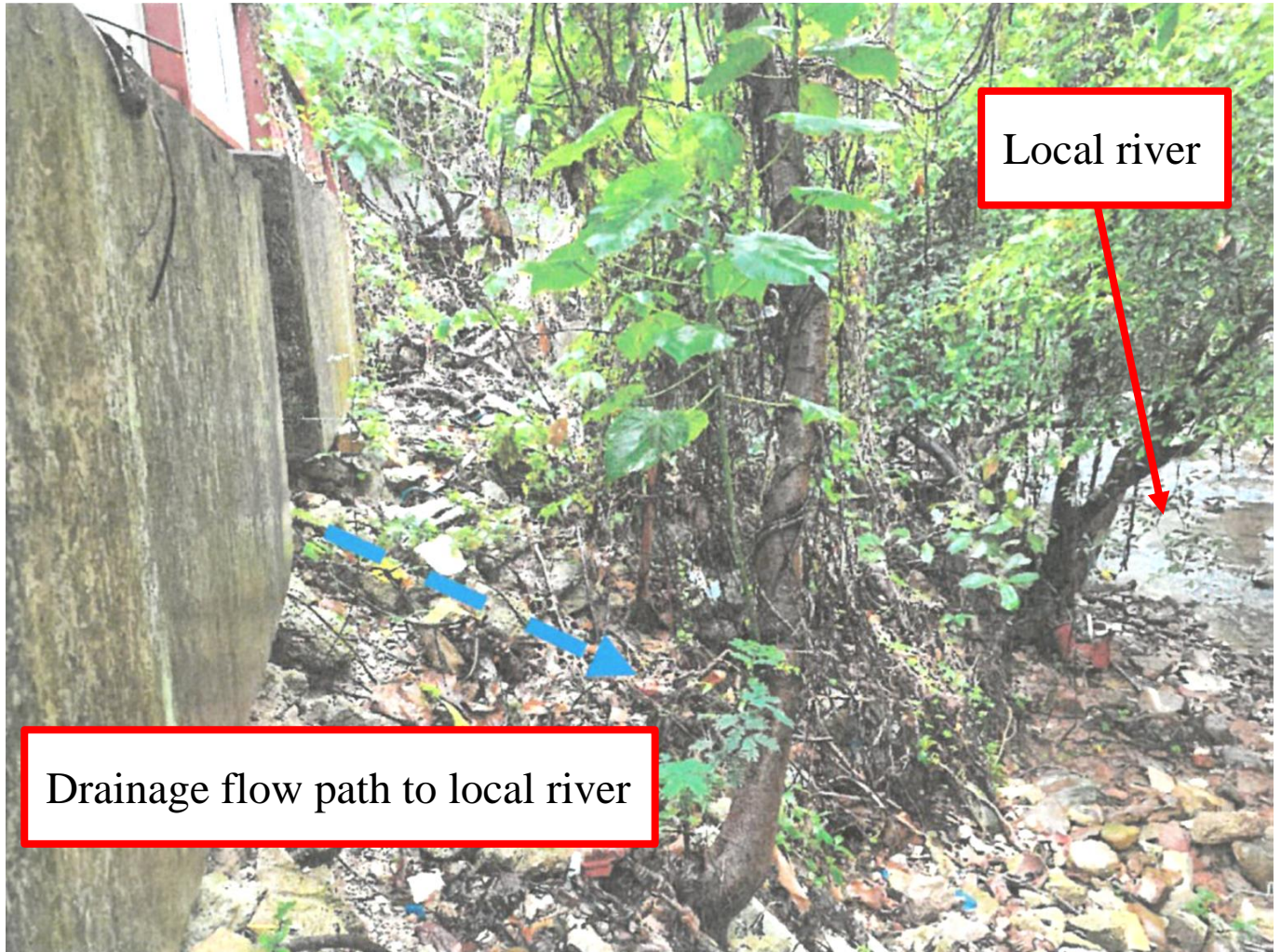
Viewpoint 3

Drainage flow path to local river

Viewpoint 4

Drainage flow path to local river

Viewpoint 5

Local river

Drainage flow path to local river

		Ref.

1 For Catchment Area A

Area, A = 850 m^2
Average slope, H = 0.1 m per 100m
Distance on the line of natural flow, L = 21 m

Time of concentraction, t_o = $0.14465 L / (H^{0.2}A^{0.1})$ = $0.14465 (21) / (0.1^{0.2}*850^{0.1})$ SDM 7.5.2 (d)
= 2.5 min

2 For Proposed U-Channel in catchment area A

	From	To
Ground level (mPD)	17.50	17.50
Invert level (mPD)	17.17	16.76

Width of u-channel, w = 300 mm
Length of u-channel, L_c = 81 m
Depth of vertical part of u-channel, d = 590 mm
Gradient of u-channel, S_f = 17.17-16.76)/81 = 0.005

Cross-Section Area, a = $0.5 \pi r^2 + w \, d$ = 0.5 x 3.14 x 150^2 + 300 x 590
= 0.212 m^2
Wetted Perimeter, p = $\pi r + 2 d$ = 3.14 x 150 + 2 x 590
= 1.651 m
Hydralic radius, R = a / p SDM 8.2.1
= 0.129 m

3 Use Manning Equation for estimating velocity of stormwater

Take n = 0.016   for concrete lined channels:-   SDM Table 13
Allowable velocity, v = $R^{1/6} \times (RS_f)^{1/2}/n$ = (0.129)^1/6 x (0.129 x 0.005)^1/2 / 0.016   SDM Table 12
= 1.13 m/s
Time of flow, t_f = 1.2 min

4 Use "Rational Method" for calculation of design flow

Design intensity, i = $a / (t_o + t_f + b)^c$ SDM 4.3.2
= 505.5 / (2.5+1.2+3.29)^0.35 for return period T = 50 years   SDM Table 3(a)
= 254

Type of surface	Runoff Coefficient C	Catchment Area A (m^2)	C x A	
Flat Glassland(heavy soil)	0.25	0.0	0.0	SDM 7.5.2 (b)
Concrete Paving	0.95	850.0	807.5	
		SUM =	807.5	

Upstream flow, Q_u = 0 m^3/s

Design flow, Q_d = $0.278 i \Sigma C_j A_j + Q_u$ where A_j is in km^2 SDM 7.5.2 (a)
= 0.278 x 254 x 807.5 / 1000000 + 0
= 0.057 m^3/s

Allowable flow, Q_a = $a \times v$
= 0.212 x 1.13
= 0.239 m^3/s

> Q_d (O.K.)

Reference was made to Stormwater Drainage Manual (SDM) by DSD

Scale: NA	**Drainage Calculation**	Goldrich Planners & Surveyors Ltd.
June 2024	Lots 543(part), 544(part), 546(part), 547(part), 548(part), 549,550(part), 551(part), 552 RP(part), 553, 603 SA RP, 605(part), 606 RP, 607(part), 608(part), 609 RP and 610 RP(part) in D.D.218 and adjoining government land, Ma Kwu Lam, Sai Kung North, N.T	Page 1 (P23055A)

				Ref.

1 For Catchment Area B and C

$$\text{Area, } A = 929 \text{ m}^2$$
$$\text{Average slope, } H = 0.1 \text{ m per 100m}$$
$$\text{Distance on the line of natural flow, } L = 21 \text{ m}$$

$$\text{Time of concentraction, } t_o = 0.14465L / (H^{0.2}A^{0.1}) = 0.14465 (21) / (0.1^{0.2} * 929^{0.1})$$
$$= 2.4 \text{ min}$$

2 For Proposed U-Channel in catchment area B and C

	From	To
Ground level (mPD)	17.50	17.50
Invert level (mPD)	17.20	16.76

$$\text{Width of u-channel, } w = 300 \text{ mm}$$
$$\text{Length of u-channel, } L_c = 88.2 \text{ m}$$
$$\text{Depth of vertical part of u-channel, } d = 591 \text{ mm}$$
$$\text{Gradient of u-channel, } S_f = .2\text{-}16.759)/88.2 = 0.005$$

$$\text{Cross-Section Area, } a = 0.5\,\pi r^2 + w\,d = 0.5 \times 3.14 \times 150^2 + 300 \times 591$$
$$= 0.213 \text{ m}^2$$
$$\text{Wetted Perimeter, } p = \pi\,r + 2\,d = 3.14 \times 150 + 2 \times 591$$
$$= 1.653 \text{ m}$$
$$\text{Hydralic radius, } R = a/p$$
$$= 0.129 \text{ m}$$

3 Use Manning Equation for estimating velocity of stormwater

$$\text{Take } n = 0.016 \quad \text{for concrete lined channels:-}$$
$$\text{Allowable velocity, } v = R^{1/6} \times (RS_f)^{1/2}/n = (0.129)^{1/6} \times (0.129 \times 0.005)^{1/2} / 0.016$$
$$= 1.13 \text{ m/s}$$
$$\text{Time of flow, } t_f = 1.3 \text{ min}$$

4 Use "Rational Method" for calculation of design flow

$$\text{Design intensity, } i = a / (t_o + t_f + b)^c$$
$$= 505.5 / (2.4 + 1.3 + 3.29)^{0.35} \text{ for return period } T = 50 \text{ years}$$
$$= 253$$

Type of surface	Runoff Coefficient C	Catchment Area A (m²)	C x A
Flat Glassland(heavy soil)	0.25	0.0	0.0
Concrete Paving	0.95	929.0	882.6
		SUM =	882.6

$$\text{Upstream flow, } Q_u = 0 \text{ m}^3/\text{s}$$

$$\text{Design flow, } Q_d = 0.278i\,\Sigma\,C_j A_j + Q_u \quad \text{where } A_j \text{ is in km}^2$$
$$= 0.278 \times 253 \times 882.55 / 1000000 + 0$$
$$= 0.062 \text{ m}^3/\text{s}$$

$$\text{Allowable flow, } Q_a = a \times v$$
$$= 0.213 \times 1.13$$
$$= 0.239 \text{ m}^3/\text{s}$$

$$> Q_d \text{ (O.K.)}$$

Reference was made to Stormwater Drainage Manual (SDM) by DSD

Scale: NA	**Drainage Calculation**	Goldrich Planners & Surveyors Ltd.
June 2024	Lots 543(part), 544(part), 546(part), 547(part), 548(part), 549,550(part), 551(part), 552 RP(part), 553, 603 SA RP, 605(part), 606 RP, 607(part), 608(part), 609 RP and 610 RP(part) in D.D.218 and adjoining government land, Ma Kwu Lam, Sai Kung North, N.T	Page 2 (P23055A)

				Ref.

1 For Catchment Area D

Area, A = 2161 m^2

Average slope, H = 2.08 m per 100m

Distance on the line of natural flow, L = 24 m

Time of concentration, t_o = $0.14465L / (H^{0.2}A^{0.1})$ = $0.14465 (24) / (2.08{\wedge}0.2*2161{\wedge}0.1)$ SDM 7.5.2 (d)

= 1.4 min

2 For Proposed U-Channel in catchment area D

	From	To
Ground level (mPD)	17.50	15.50
Invert level (mPD)	16.76	15.10

Width of u-channel, w = 400 mm

Length of u-channel, L_c = 116.5 m

Depth of vertical part of u-channel, d = 200 mm

Gradient of u-channel, S_f = (16.76-15.1)/116.5 = 0.014

Cross-Section Area, a = $0.5\,\pi r^2 + w\,d$ = 0.5 x 3.14 x 200^2 + 400 x 200

= 0.143 m^2

Wetted Perimeter, p = $\pi\,r + 2\,d$ = 3.14 x 200 + 2 x 200

= 1.028 m

Hydralic radius, R = a / p SDM 8.2.1

= 0.139 m

3 Use Manning Equation for estimating velocity of stormwater

Take n = 0.016   for concrete lined channels:-   SDM Table 13

Allowable velocity, v = $R^{1/6} \times (RS_f)^{1/2}/n$ = (0.139)^1/6 x (0.139 x 0.014)^1/2 / 0.016   SDM Table 12

= 2.00 m/s

Time of flow, t_f = 1.0 min

4 Use "Rational Method" for calculation of design flow

Design intensity, i = $a / (t_o + t_f + b)^c$ SDM 4.3.2

= 505.5 / (1.4+1+3.29)^0.355   for return period T = 50 years   SDM Table 3(a)

= 273

Type of surface	Runoff Coefficient C	Catchment Area A (m^2)	C x A	SDM 7.5.2 (b)
Flat Glassland(heavy soil)	0.25	2043.0	510.8	
Concrete Paving	0.95	118.0	112.1	
		SUM =	622.9	

Upstream flow, Q_u = 0.119 m^3/s

Design flow, Q_d = $0.278i\,\Sigma\,C_jA_j + Q_u$ where A_j is in km^2 SDM 7.5.2 (a)

= 0.278 x 273 x 622.85 / 1000000 + 0.119

= 0.166 m^3/s

Allowable flow, Q_a = $a \times v$

= 0.143 x 2

= 0.286 m^3/s

$> Q_d$ (O.K.)

Reference was made to Stormwater Drainage Manual (SDM) by DSD

Scale: NA	**Drainage Calculation**	Goldrich Planners & Surveyors Ltd.
June 2024	Lots 543(part), 544(part), 546(part), 547(part), 548(part), 549,550(part), 551(part), 552 RP(part), 553, 603 SA RP, 605(part), 606 RP, 607(part), 608(part), 609 RP and 610 RP(part) in D.D.218 and adjoining government land, Ma Kwu Lam, Sai Kung North, N.T	Page 3 (P23055A)

	Ref.

1 For Channel Section S1

$$\text{Area, } A = 0 \text{ m}^2$$
$$\text{Average slope, } H = 0.1 \text{ m per 100m}$$
$$\text{Distance on the line of natural flow, } L = 0 \text{ m}$$

$$\text{Time of concentration, } t_o = 0.14465L / (H^{0.2}A^{0.1}) = 0.14465 (0) / (0.1\text{^}0.2*0\text{^}0.1)$$
$$= 0.0 \text{ min}$$

SDM 7.5.2 (d)

2 For Proposed U-Channel Section S1

	From	To
Ground level (mPD)	15.50	15.50
Invert level (mPD)	15.10	15.09

$$\text{Width of u-channel, } w = 400 \text{ mm}$$
$$\text{Length of u-channel, } L_c = 0.5 \text{ m}$$
$$\text{Depth of vertical part of u-channel, } d = 207 \text{ mm}$$
$$\text{Gradient of u-channel, } S_f = 15.1-15.093)/0.5 = 0.014$$

$$\text{Cross-Section Area, } a = 0.5 \, \pi \, r^2 + w \, d = 0.5 \times 3.14 \times 200\text{^}2 + 400 \times 207$$
$$= 0.146 \text{ m}^2$$
$$\text{Wetted Perimeter, } p = \pi \, r + 2 \, d = 3.14 \times 200 + 2 \times 207$$
$$= 1.042 \text{ m}$$
$$\text{Hydralic radius, } R = a / p$$
$$= 0.140 \text{ m}$$

SDM 8.2.1

3 Use Manning Equation for estimating velocity of stormwater

$$\text{Take } n = 0.016 \quad \text{for concrete lined channels:-}$$
$$\text{Allowable velocity, } v = R^{1/6} \times (RS_f)^{1/2}/n = (0.14)\text{^}1/6 \times (0.14 \times 0.014)\text{^}1/2 / 0.016$$
$$= 1.99 \text{ m/s}$$
$$\text{Time of flow, } t_f = 0.00 \text{ min}$$

SDM Table 13
SDM Table 12

4 Use "Rational Method" for calculation of design flow

$$\text{Design intensity, } i = a / (t_o + t_f + b)^c$$
$$= 505.5 / (0+0+3.29)\text{^}0.355 \quad \text{for return period T = 50 years}$$
$$= 331$$

SDM 4.3.2
SDM Table 3(a)

Type of surface	Runoff Coefficient C	Catchment Area A (m²)	C x A
Flat Glassland(heavy soil)	0.25	0.0	0.0
Concrete Paving	0.95	0.0	0.0
		SUM =	0.0

SDM 7.5.2 (b)

$$\text{Upstream flow, } Q_u = 0.166 \text{ m}^3/\text{s}$$

$$\text{Design flow, } Q_d = 0.278i \, \Sigma \, C_j A_j + Q_u \quad \text{where } A_j \text{ is in km}^2$$
$$= 0.278 \times 331 \times 0 / 1000000 + 0.166$$
$$= 0.166 \text{ m}^3/\text{s}$$

SDM 7.5.2 (a)

$$\text{Allowable flow, } Q_a = a \times v$$
$$= 0.146 \times 1.99$$
$$= 0.290 \text{ m}^3/\text{s}$$

$$> Q_d \text{ (O.K.)}$$

Reference was made to Stormwater Drainage Manual (SDM) by DSD

Scale: NA	**Drainage Calculation**	Goldrich Planners & Surveyors Ltd.
June 2024	Lots 543(part), 544(part), 546(part), 547(part), 548(part), 549,550(part), 551(part), 552 RP(part), 553, 603 SA RP, 605(part), 606 RP, 607(part), 608(part), 609 RP and 610 RP(part) in D.D.218 and adjoining government land, Ma Kwu Lam, Sai Kung North, N.T	Page 4 (P23055A)