

Your Ref.: A/NE-SSH/156

Our Ref.: P23055A/TL24464

3 September 2024

The Secretary
Town Planning Board
15/F., North Point Government Offices
333 Java Road, North Point, Hong Kong

By Post and E-mail
tpbpd@pland.gov.hk

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 a set of updated drainage proposal for the captioned application.

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



Francis Lau

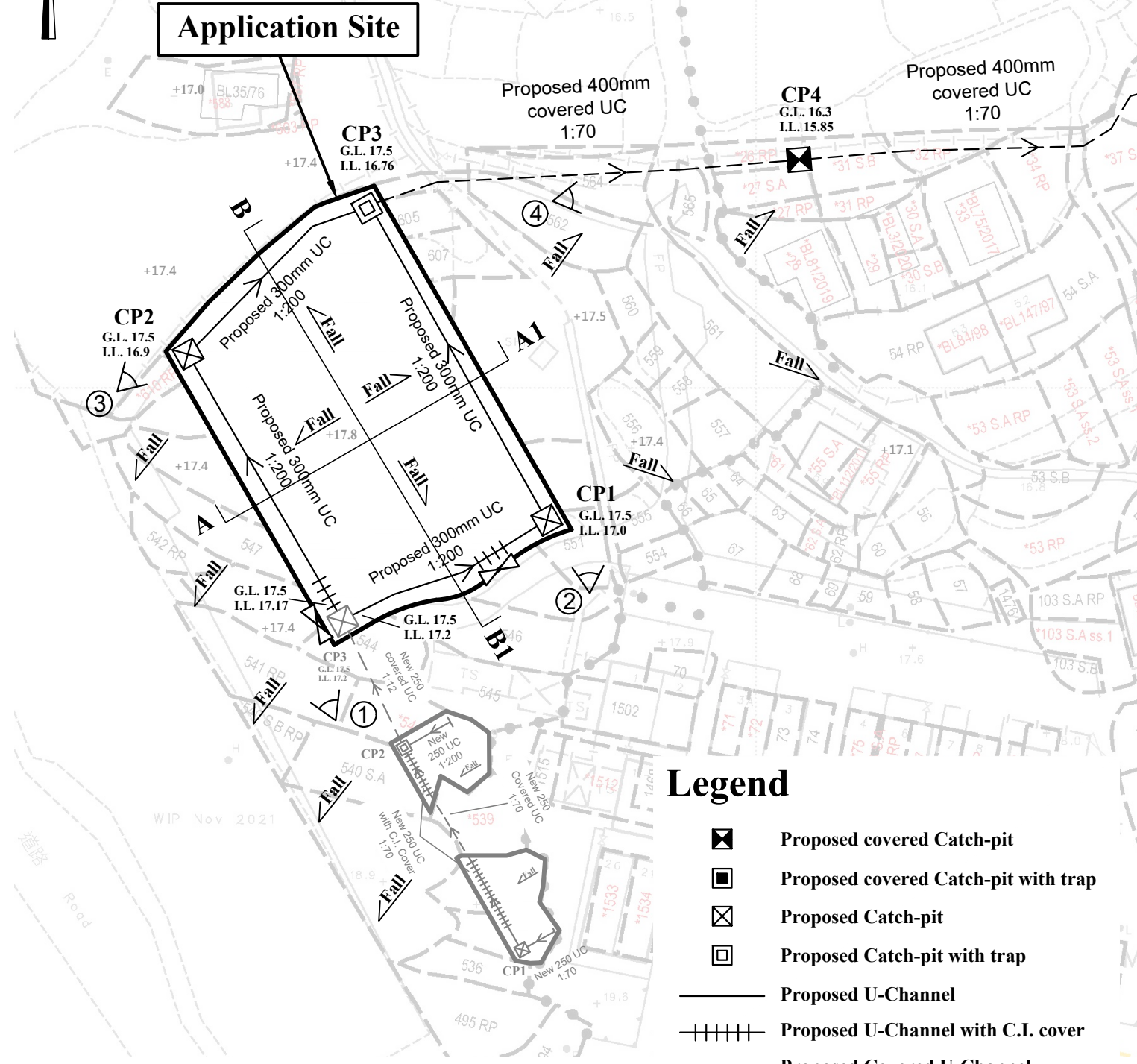
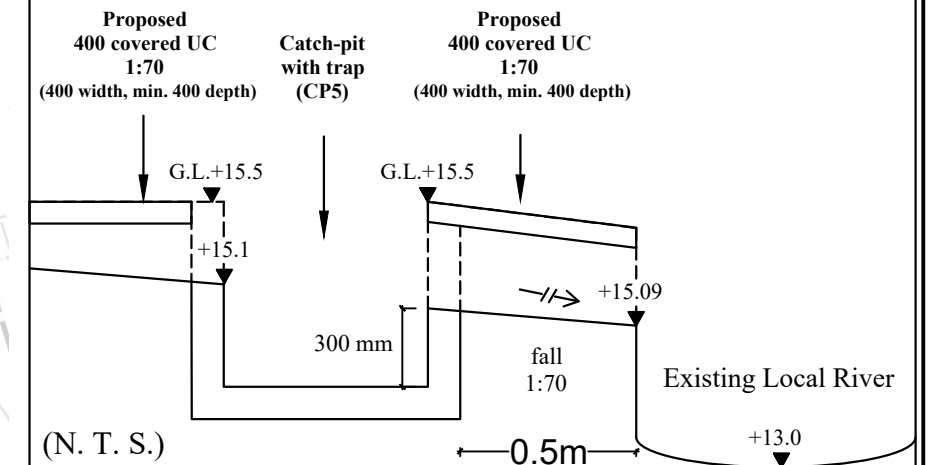
Encl.



Catchpit Schedule

Catchpit No.	G.L.	I.L.
Starting CP (CP3 of A/NE-SSH/155)	17.5	17.2 (outfall to the east) 17.17 (outfall to the north)
CP1	17.5	17.0
CP2	17.5	16.9
CP3	17.5	16.76
CP4	16.3	15.85
CP5	15.5	15.1

Connection details of proposed outfall between CP5 and existing local river

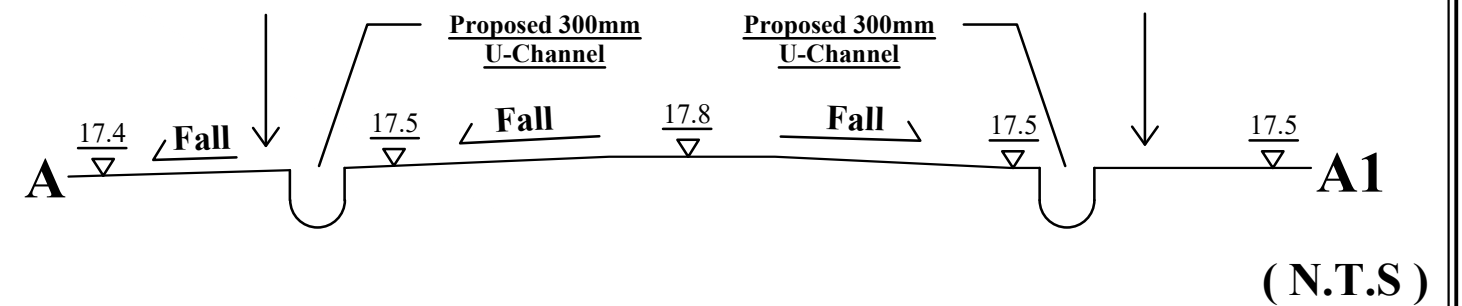


Legend

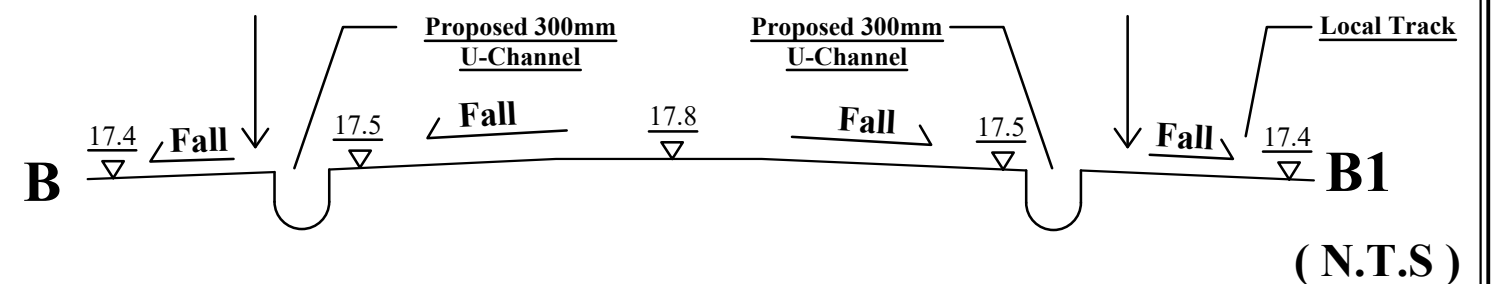
- Proposed covered Catch-pit
- Proposed covered Catch-pit with trap
- Proposed Catch-pit
- Proposed Catch-pit with trap
- Proposed U-Channel
- Proposed U-Channel with C.I. cover
- Proposed Covered U-Channel
- Vehicular Ingress / Egress
- Viewpoint of Drainage Photo

Note:
1. Proposed drainage facilities outside application site will be constructed and maintained by the applicant and lot owner(s)

Site Boundary



Site Boundary



1:750 (A3)

August 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 6.1d
(P 23055A)



Catchment Area A
Concrete Paving : 850m²

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

Catchment Area B
Concrete Paving : 929m²

Existing Planter

Existing Fence Wall

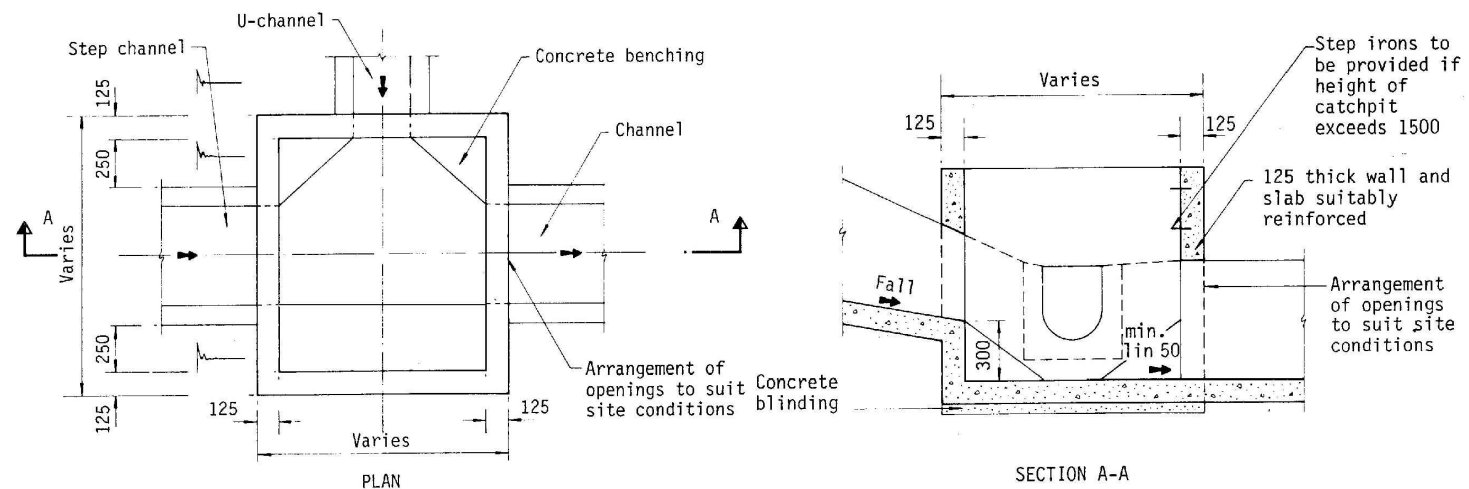
AREA OF CATCHMENT
(N.T.S)

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.

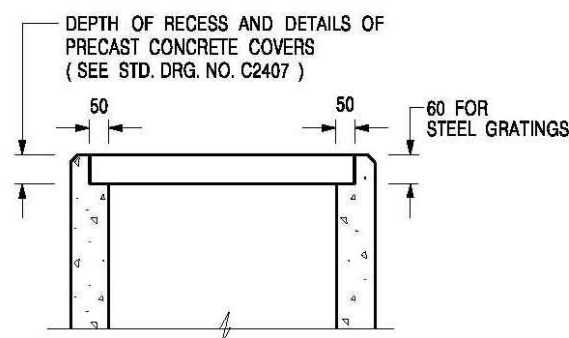
1:500 (A3)
March 2024

<h2 style="margin: 0;">Drainage Proposal</h2> <p style="margin: 0;">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</p>
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<p style="margin: 0;">Goldrich Planners & Surveyors Ltd.</p>
<p style="margin: 0;">Plan 6.2a (P 23055A)</p>

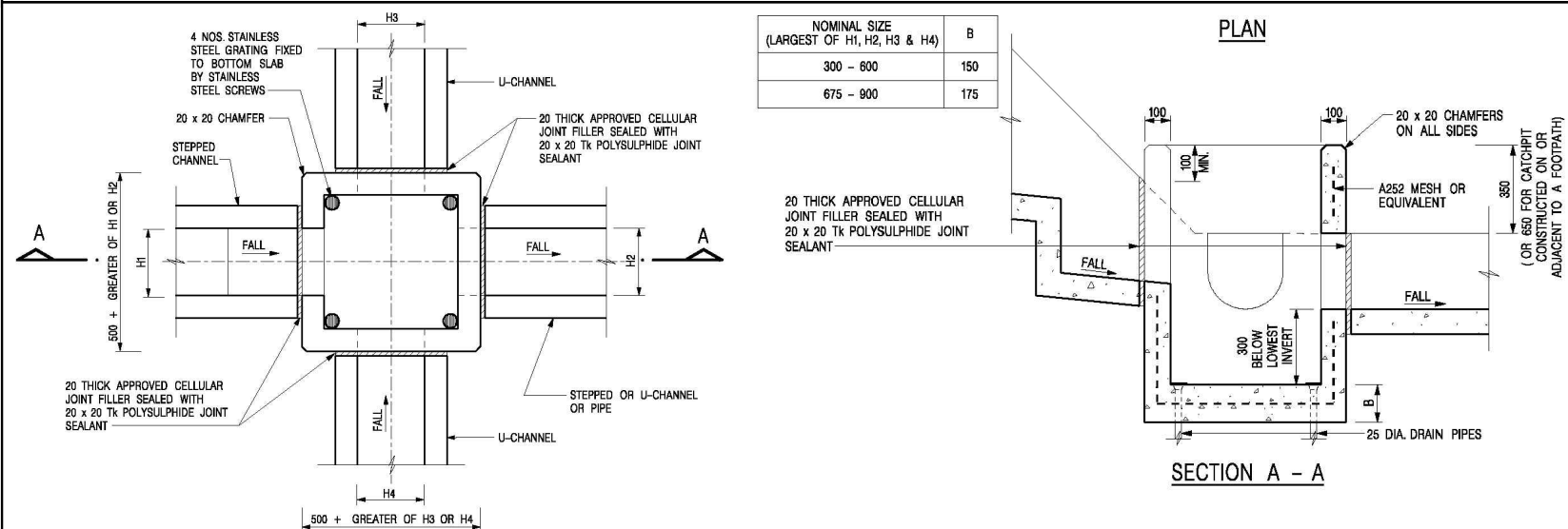


TYPICAL DETAILS OF CATCHPIT

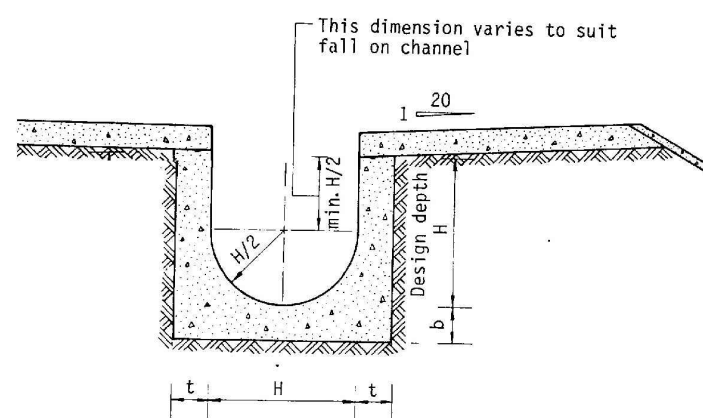


ALTERNATIVE TOP SECTION FOR PRECAST CONCRETE COVERS / GRATINGS

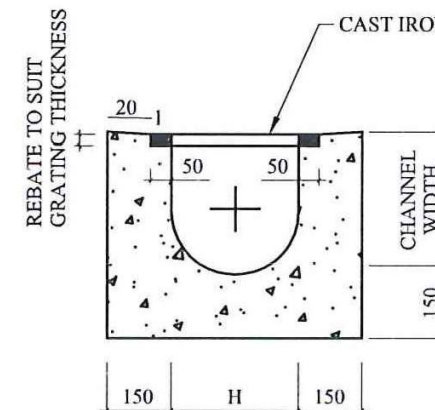
(REFER TO CEDD'S STANDARD DWG. C2405/1 & C2406/2A)



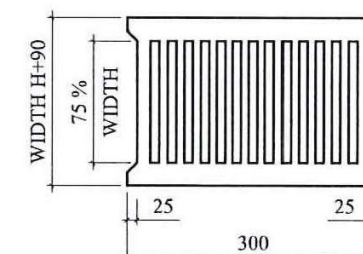
DETAILS OF CATCHPIT WITH TRAP (REFER TO CEDD'S STANDARD DWG. C2406/1)



TYPICAL DETAILS OF U CHANNEL



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



CAST IRON CRATING (HEAVY DUTY)

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

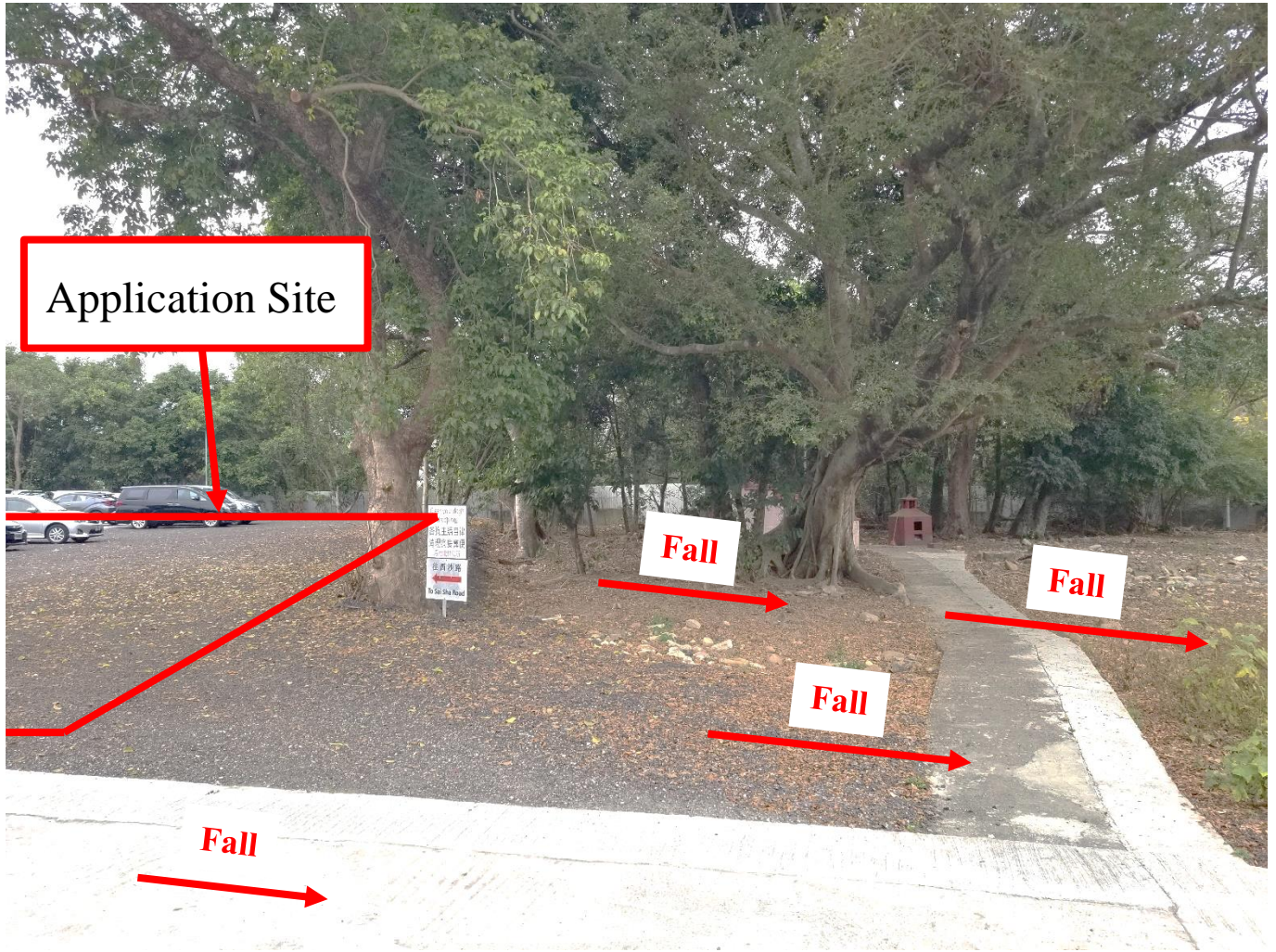
Goldrich Planners & Surveyors Ltd.

Plan 6.3 (P 23055A)

Viewpoint 1



Viewpoint 2



Viewpoint 3

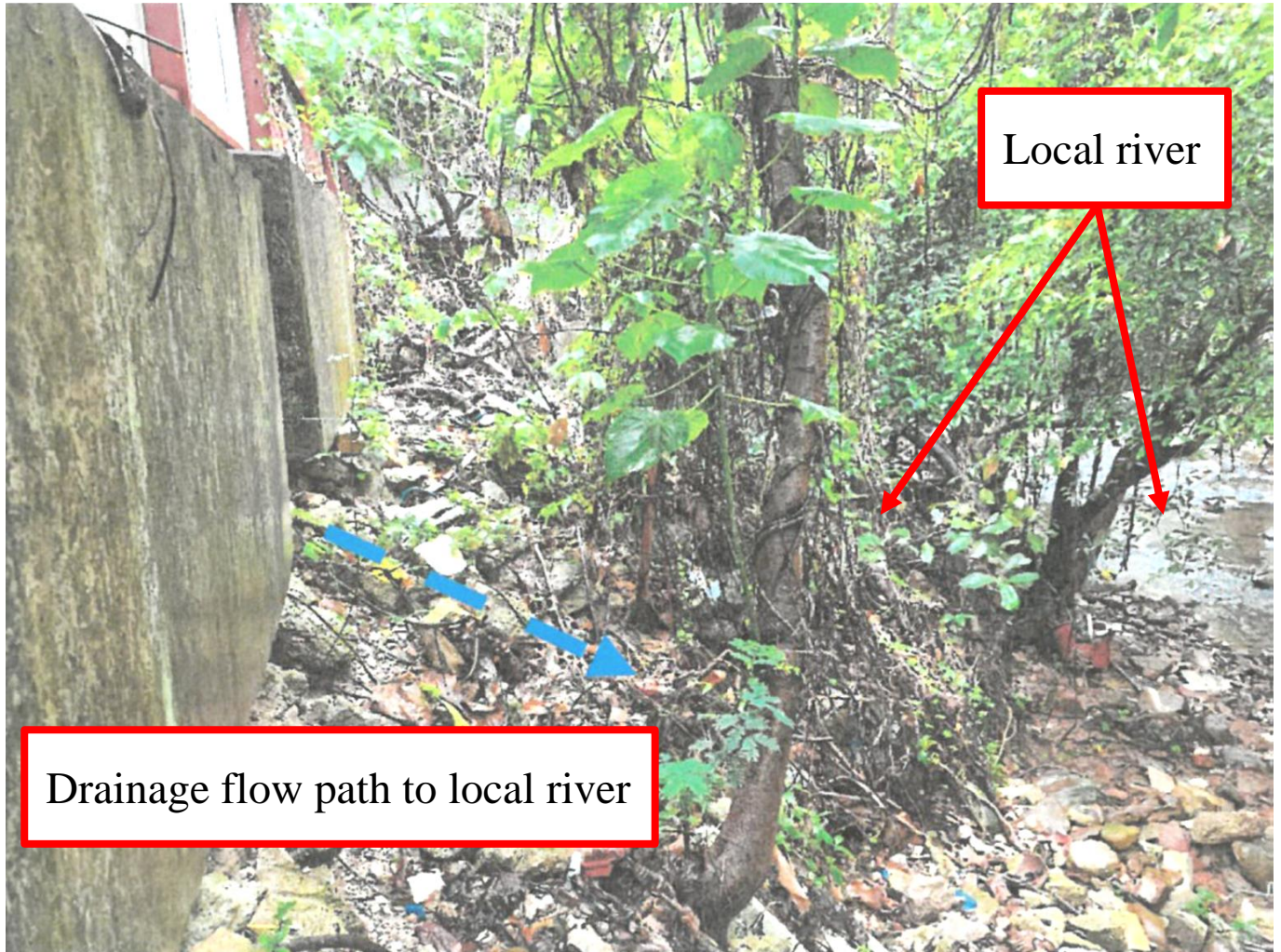


Drainage flow path to local river

Viewpoint 4



Viewpoint 5



Viewpoint 6



1 For Catchment Area A

Area, A = 850 m²
 Average slope, H = 0.1 m per 100m
 Distance on the line of natural flow, L = 21 m

Time of concentration, $t_c = 0.14465L / (H^{0.2}A^{0.1}) = 0.14465 (21) / (0.1^{0.2} \times 850^{0.1})$
 = 2.5 min

Ref.

SDM 7.5.2 (d)

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 = $0.5 \pi r^2 + w d = 0.5 \times 3.14 \times 150^2 + 300 \times 590$
 = 0.212 m²
 Wetted Perimeter, p = $\pi r + 2 d = 3.14 \times 150 + 2 \times 590$
 = 1.651 m
 Hydraulic radius, R = a / p
 = 0.129 m

SDM 8.2.1

3 Use Manning Equation for estimating velocity of stormwater

Take n = 0.016 for concrete lined channels:-
 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 m/s
 Time of flow, t_f = 1.2 min

SDM Table 13

SDM Table 12

4 Use "Rational Method" for calculation of design flow

Design intensity, i = $a / (t_c + t_f + b)^c$
 = $505.5 / (2.5 + 1.2 + 3.29)^{0.35}$ for return period T = 50 years
 = 254

SDM 4.3.2

SDM Table 3(a)

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

SDM 7.5.2 (b)

Upstream flow, Q_u = 0.031 m³/s

Design flow, Q_d = $0.278i \sum C_j A_j + Q_u$ where A_j is in km²
 = $0.278 \times 254 \times 807.5 / 1000000 + 0.031$
 = 0.088 m³/s

SDM 7.5.2 (a)

Allowable flow, Q_a = a x v
 = 0.212 x 1.13
 = 0.239 m³/s

> Q_d (O.K.)

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

Scale: NA

Drainage Calculation

Goldrich Planners &
 Surveyors Ltd.

August 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

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1 For Catchment Area B and C

Area, A = 929 m²
 Average slope, H = 0.1 m per 100m
 Distance on the line of natural flow, L = 21 m

Time of concentration, $t_0 = 0.14465L / (H^{0.2}A^{0.1}) = 0.14465 (21) / (0.1^{0.2} \times 929^{0.1})$
 = 2.4 min

Ref.

SDM 7.5.2 (d)

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

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

Cross-Section Area, a = $0.5 \pi r^2 + w d = 0.5 \times 3.14 \times 150^2 + 300 \times 591$
 = 0.213 m²
 Wetted Perimeter, p = $\pi r + 2 d = 3.14 \times 150 + 2 \times 591$
 = 1.653 m
 Hydraulic radius, R = a / p
 = 0.129 m

SDM 8.2.1

3 Use Manning Equation for estimating velocity of stormwater

Take n = 0.016 for concrete lined channels:-
 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 m/s
 Time of flow, t_f = 1.3 min

SDM Table 13
SDM Table 12

4 Use "Rational Method" for calculation of design flow

Design intensity, i = $a / (t_0 + t_f + b)^c$
 = $505.5 / (2.4 + 1.3 + 3.29)^{0.35}$ for return period T = 50 years
 = 253

SDM 4.3.2
SDM Table 3(a)

Type of surface	Runoff Coefficient C	Catchment Area A (m ²)	C x A
Flat Glassland(heavy soil)	0.25	0.0	0.0
Concrete Paving	0.95	929.0	882.6
SUM =			882.6

SDM 7.5.2 (b)

Upstream flow, Q_u = 0 m³/s

Design flow, Q_d = $0.278i \sum C_p A_j + Q_u$ where A_j is in km²
 = $0.278 \times 253 \times 882.55 / 1000000 + 0$
 = 0.062 m³/s

SDM 7.5.2 (a)

Allowable flow, Q_a = a x v
 = 0.213×1.13
 = 0.239 m³/s

> Q_d (O.K.)

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

1 For Catchment Area D

Area, A = 2161 m²
 Average slope, H = 2.08 m per 100m
 Distance on the line of natural flow, L = 24 m

Time of concentration, $t_c = 0.14465L / (H^{0.2}A^{0.1}) = 0.14465 (24) / (2.08^{0.2} \times 2161^{0.1})$
 = 1.4 min

Ref.

SDM 7.5.2 (d)

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 = $0.5 \pi r^2 + w d = 0.5 \times 3.14 \times 200^2 + 400 \times 200$
 = 0.143 m²
 Wetted Perimeter, p = $\pi r + 2 d = 3.14 \times 200 + 2 \times 200$
 = 1.028 m
 Hydraulic radius, R = a / p
 = 0.139 m

SDM 8.2.1

3 Use Manning Equation for estimating velocity of stormwater

Take n = 0.016 for concrete lined channels:-
 Allowable velocity, v = $R^{1/6} \times (RS_f)^{1/2} / n = (0.139)^{1/6} \times (0.139 \times 0.014)^{1/2} / 0.016$
 = 2.00 m/s
 Time of flow, t_f = 1.0 min

SDM Table 13
 SDM Table 12

4 Use "Rational Method" for calculation of design flow

Design intensity, i = $a / (t_c + t_f + b)^c$
 = $505.5 / (1.4 + 1 + 3.29)^{0.355}$ for return period T = 50 years
 = 273

SDM 4.3.2
 SDM Table 3(a)

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

SDM 7.5.2 (b)

Upstream flow, Q_u = 0.15 m³/s

Design flow, Q_d = $0.278i \sum C_f A_j + Q_u$ where A_j is in km²
 = $0.278 \times 273 \times 622.85 / 1000000 + 0.15$
 = 0.197 m³/s

SDM 7.5.2 (a)

Allowable flow, Q_a = a x v
 = 0.143 x 2
 = 0.286 m³/s

> Q_d (O.K.)

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

Scale: NA

Drainage Calculation

Goldrich Planners &
 Surveyors Ltd.

August 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
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1 For Channel Section S1

Area, A = 0 m²
 Average slope, H = 0.1 m per 100m
 Distance on the line of natural flow, L = 0 m

Time of concentration, $t_0 = 0.14465L / (H^{0.2}A^{0.1}) = 0.14465 (0) / (0.1^{0.2} \times 0^{0.1})$
 = 0.0 min

Ref.

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

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

Cross-Section Area, $a = 0.5 \pi r^2 + w d = 0.5 \times 3.14 \times 200^2 + 400 \times 207$
 = 0.146 m²
 Wetted Perimeter, $p = \pi r + 2 d = 3.14 \times 200 + 2 \times 207$
 = 1.042 m
 Hydraulic radius, $R = a / p = 0.140$ m

SDM 8.2.1

3 Use Manning Equation for estimating velocity of stormwater

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

SDM Table 13
 SDM Table 12

4 Use "Rational Method" for calculation of design flow

Design intensity, $i = a / (t_0 + t_f + b)^c$
 = $505.5 / (0 + 0 + 3.29)^{0.355}$ for return period T = 50 years
 = 331

SDM 4.3.2
 SDM Table 3(a)

Type of surface	Runoff Coefficient C	Catchment Area A (m ²)	C x A
Flat Grassland (heavy soil)	0.25	0.0	0.0
Concrete Paving	0.95	0.0	0.0
			SUM = 0.0

SDM 7.5.2 (b)

Upstream flow, $Q_u = 0.197$ m³/s

Design flow, $Q_d = 0.278i \sum C_j A_j + Q_u$ where A_j is in km²
 = $0.278 \times 331 \times 0 / 1000000 + 0.197$
 = 0.197 m³/s

SDM 7.5.2 (a)

Allowable flow, $Q_a = a \times v$
 = 0.146×1.99
 = 0.290 m³/s

> Q_d (O.K.)

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