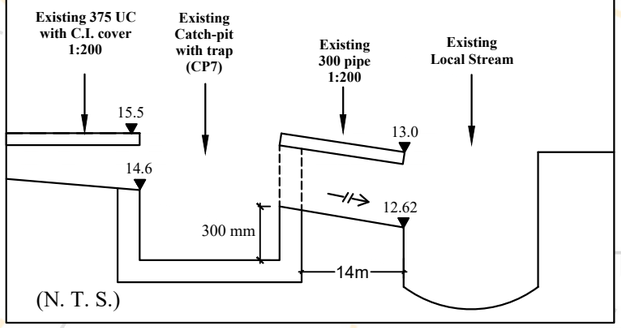
N

Connection details of proposed outfall between CP7 and existing public stream



Fall

New CP1
G.L 15.6
I.L 14.89

Proposed 375 UC with C.I. cover 1:200

Proposed 375 UC with C.I. cover 1:200
G.L 15.6
I.L 15.01

G.L 15.6
I.L 15.23

Ex. CP3
G.L 15.6
I.L 14.83

Existing 375 UC with C.I. cover 1:200

New CP4
G.L 15.6
I.L 14.83

Existing 375 UC with C.I. cover 1:200

Existing 375 UC with C.I. cover 1:200

Ex. CP2
G.L 15.65
I.L 14.98

Proposed 375 UC with C.I. cover 1:200

Existing 375 UCwith C.I. cover 1:200

Proposed 375 UC with C.I. cover 1:200

Existing 375 UC with C.I. cover 1:200

Proposed 375 UC with C.I. cover 1:200

New CP5
G.L 15.6
I.L 14.94

Ex. CP6
G.L 15.6
I.L 14.77

Ex. CP7
G.L 15.5
I.L 14.6

Existing 300 Pipe 1:200

To existing public stream

Existing Public stream

Existing Public stream

Application Site

A

A1

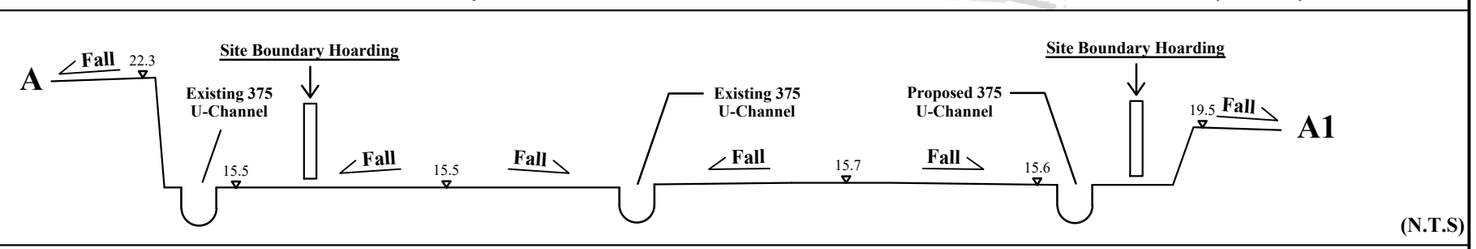
B

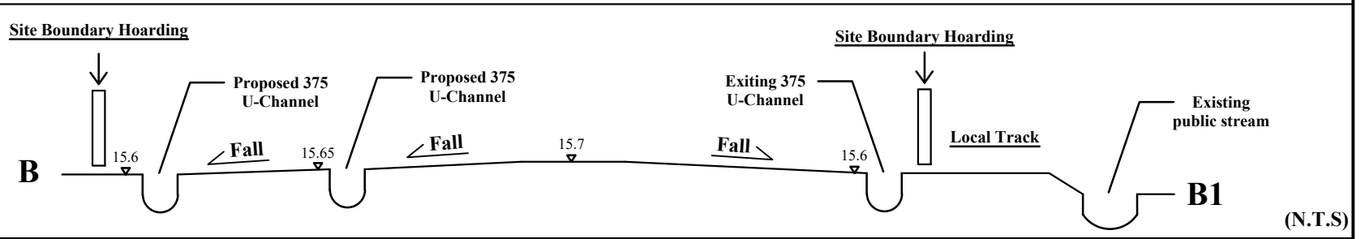
B1

Site Area(about) : 2,260m²

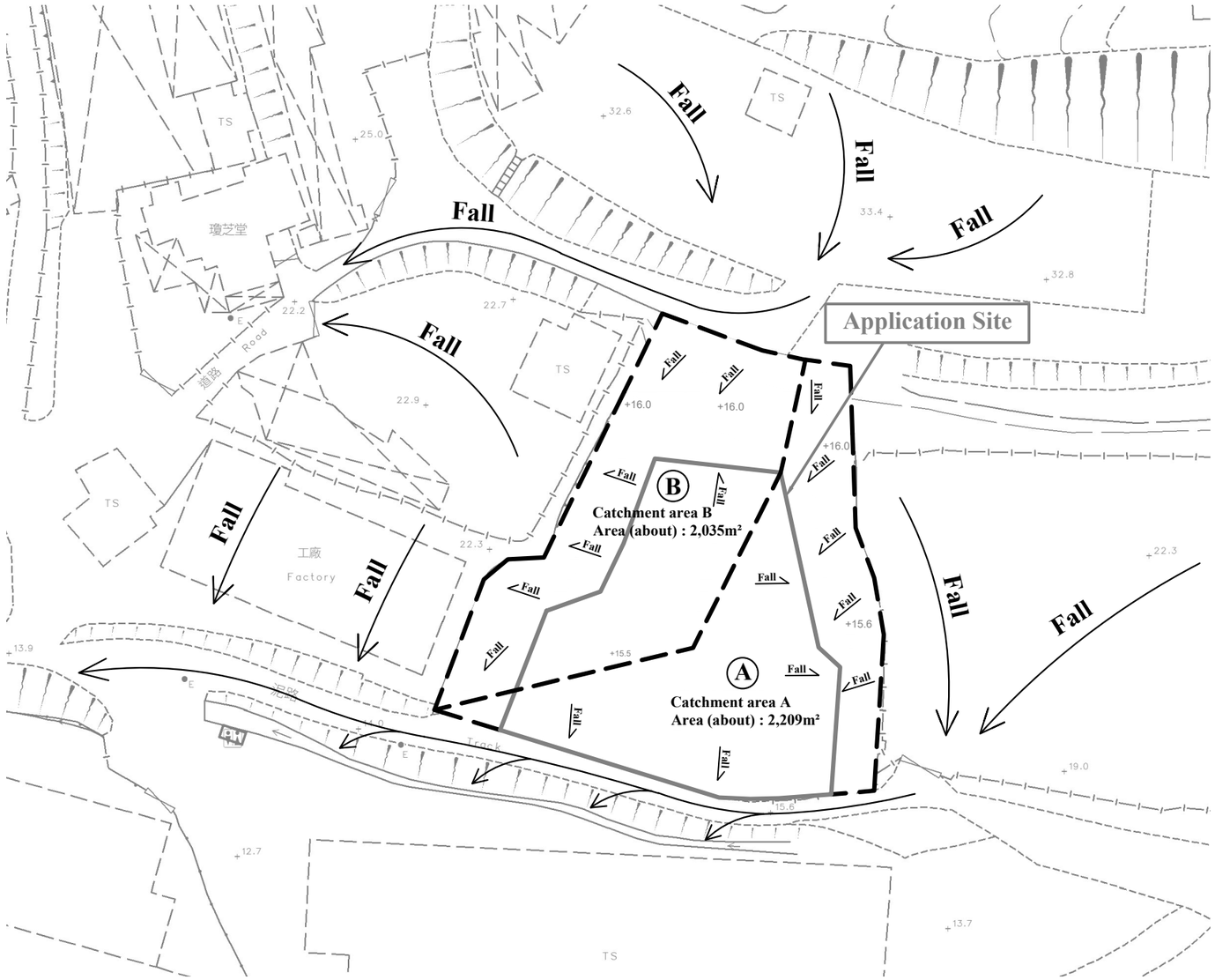
Legend

- Catch-pit
- Catch-pit with trap
- Proposed U-Channel with C.I. cover
- Covered Pipe
- Vehicular Ingress / Egress
- Viewpoint of drainage photo

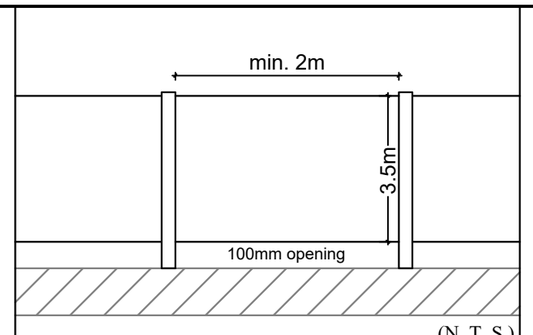




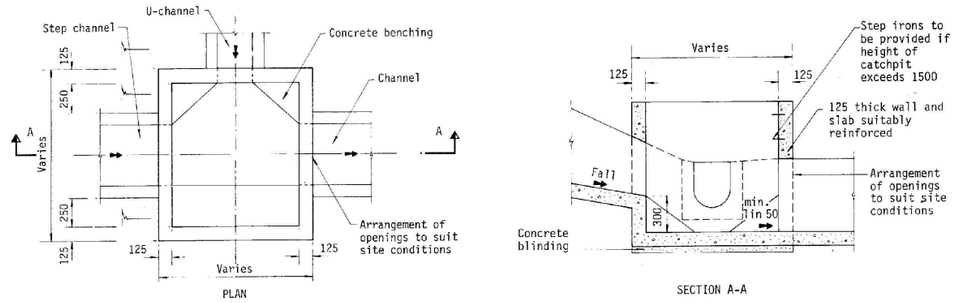
1:500 (A3)	**Drainage Proposal** Lots 1672(Part), 1673(Part), 1675(Part), 1676(Part), 1677(Part) and 1678(Part) in DD.129 Yuen Long, New Territories	Goldrich Planners & Surveyors Ltd.
February 2025		Plan 3.1a (P 24026)



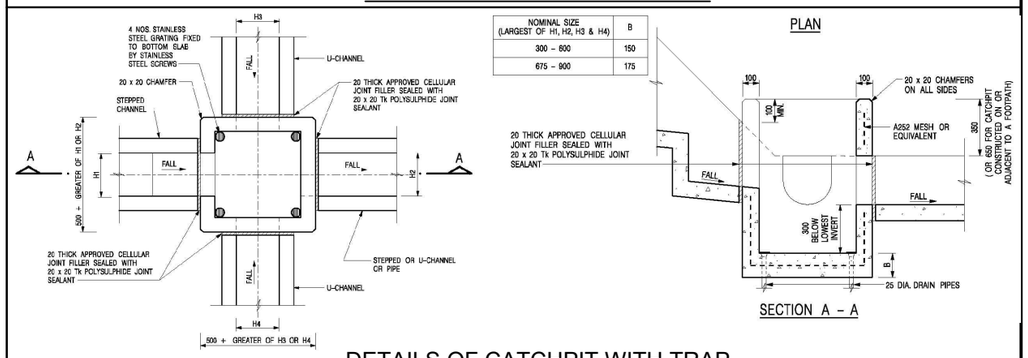
AREA OF CATCHMENT
(N.T.S)



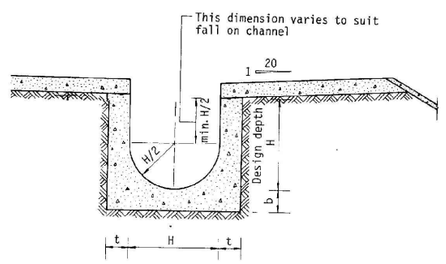
Details of hoarding with 100mm opening



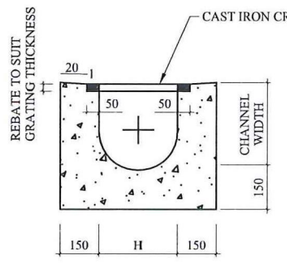
TYPICAL DETAILS OF CATCHPIT



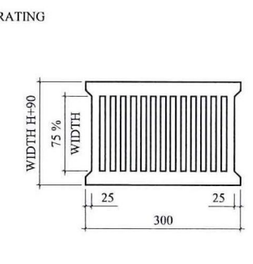
DETAILS OF CATCHPIT WITH TRAP
(REFER TO CEDD'S STANDARD DWG. C2406/1)



TYPICAL DETAILS OF U CHANNEL

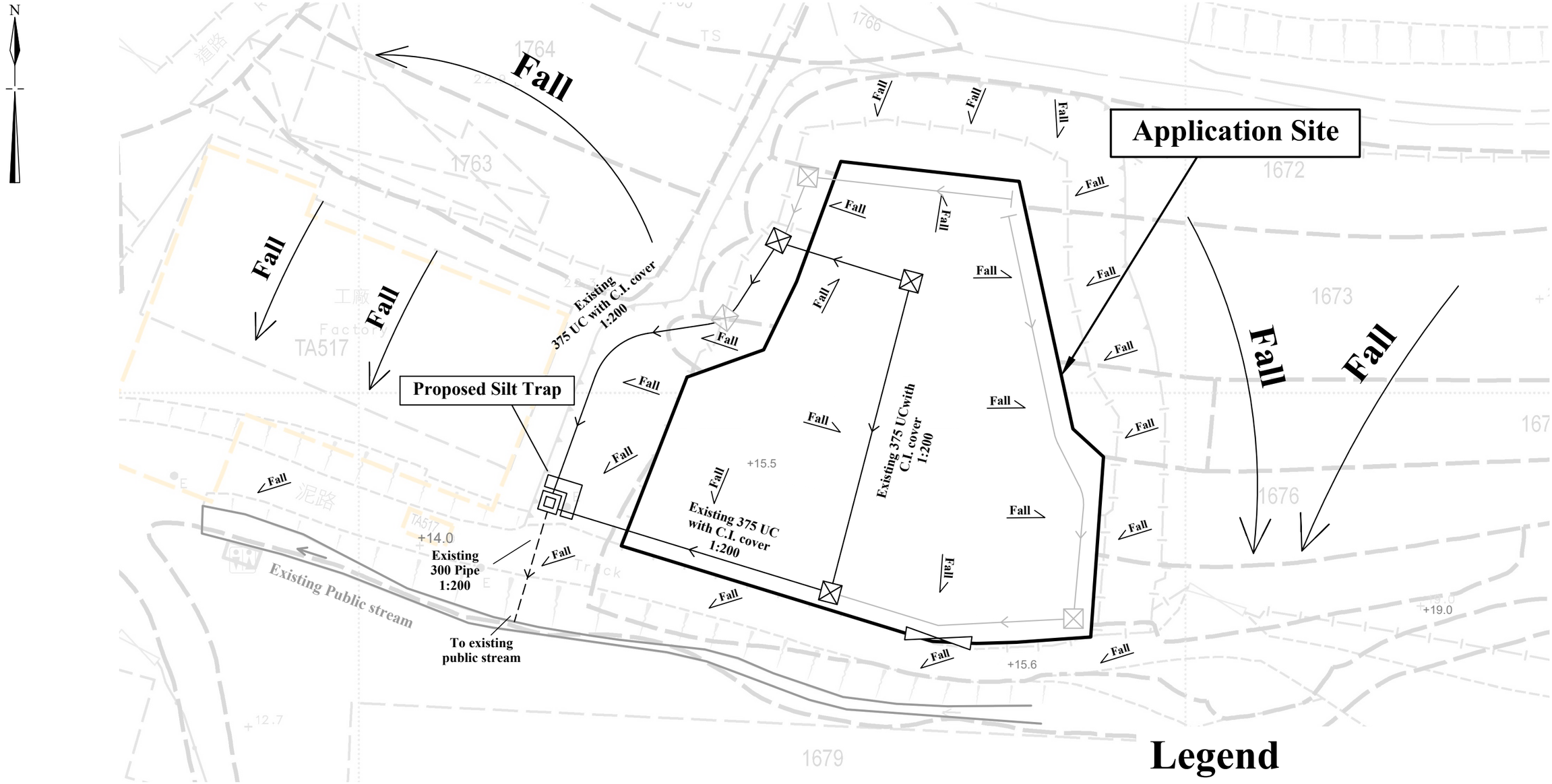


TYPICAL SECTION OF U-CHANNEL WITH COVER
(N.T.S.)



CAST IRON CRATING
(HEAVY DUTY)

N.T.S	**Drainage Proposal** **Lots 1672(Part), 1673(Part), 1675(Part), 1676(Part), 1677(Part) and 1678(Part) in DD.129 Yuen Long, New Territories**	**Goldrich Planners & Surveyors Ltd.**
February 2025		**Plan 3.2a (P 24026)**



Legend

- Catch-pit
- Catch-pit with trap
- Existing Drainage System
- Proposed Drainage System

Flood Mitigation Measures

Note:

1. Silt traps will be provide before excavation works and hard paving works
2. Debris / Mud on site will be collected and regularly disposed
3. Debris / Mud in silt traps will be collect and regularly disposed

1:500 (A3)	**Drainage Proposal - Flood Mitigation Measures** Lots 1672(Part), 1673(Part), 1675(Part), 1676(Part), 1677(Part) and 1678(Part) in DD.129 Yuen Long, New Territories	Goldrich Planners & Surveyors Ltd.
February 2025		Plan 3.3 (P 24026)

Viewpoint 1

Viewpoint 2

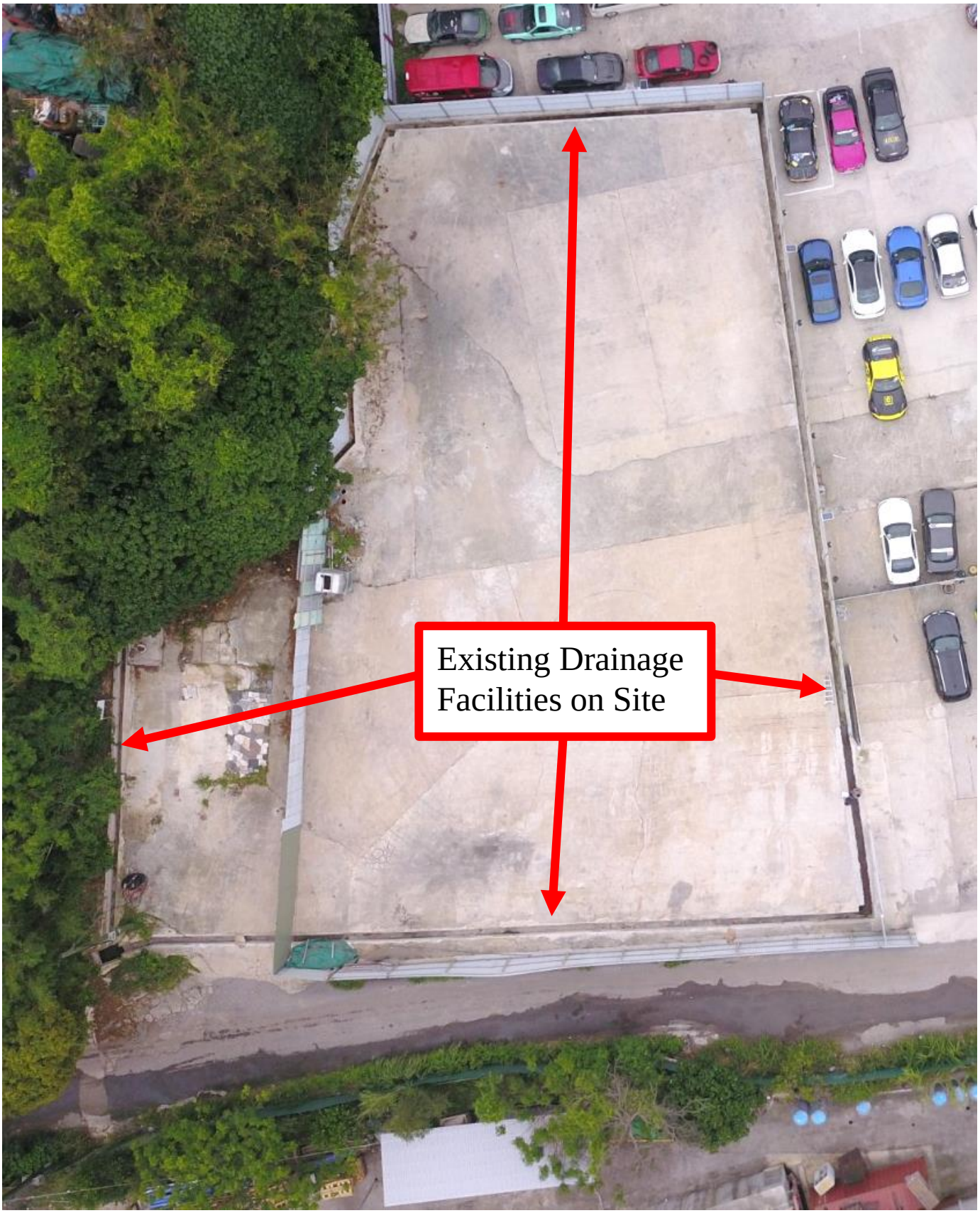
Viewpoint 3

Viewpoint 4

Viewpoint 5

Viewpoint 6

Aerial Photograph showing the existing drainage facilities on site



1 For Catchment Area A

Ref.

Area, A = **2209** m^2
Average slope, H = 0.1 m per 100m
Distance on the line of natural flow, L = **35** m

Time of concentraction, t_o = $0.14465L / (H^{0.2}A^{0.1})$ = 0.14465 (35) / (0.1^0.2*2209^0.1) — SDM 7.5.2 (d)
= 3.7 min

2 For U-Channel of Catchment Area A

	From	To
Ground level (mPD)	**15.60**	**15.50**
Invert level (mPD)	**15.23**	**14.60**

Width of u-channel, w = **375** mm
Length of u-channel, L_c = **125** m
Depth of vertical part of u-channel, d = 712.5 mm
Gradient of u-channel, S_f = (15.23-14.6)/125 = 0.0050

Cross-Section Area, a = $0.5 \pi r^2 + w d$ = 0.5 x 3.14 x 187.5^2 + 375 x 712.5
= 0.322 m^2
Wetted Perimeter, p = $\pi r + 2 d$ = 3.14 x 187.5 + 2 x 712.5
= 2.014 m
Hydralic radius, R = a / p — SDM 8.2.1
= 0.160 m

3 Use Manning Equation for estimating velocity of stormwater

Take n = 0.016 for concrete lined channels:- — SDM Table 13
Allowable velocity, v = $R^{1/6} x (RS_f)^{1/2}/n$ = (0.16)^1/6 x (0.16 x 0.005)^1/2 / 0.016 — SDM Table 12
= 1.31 m/s
Time of flow, t_f = 1.6 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 / (3.7+1.6+3.29)^0.35 for return period T = 50 years — Corrigendum 1/2024
= 236 — SDM Table 3a

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	**2209.0**	2098.6
		SUM =	2098.6

— SDM 7.5.2 (b)

Upstream flow, Q_u = **0** m^3/s

Design flow, Q_d = $0.278i \Sigma C_j A_j$ x 1.16 + Q_u where A_j is in km^2 — SDM 7.5.2 (a)
= 0.278 x 236 x 2098.55 / 1000000 + 0
= 0.137 m^3/s

Allowable flow, Q_a = a x v
= 0.322 x 1.31
= 0.422 m^3/s

> Q_d (O.K.)

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

Scale: NA	**Hydraulic Calculation**	Goldrich Planners & Surveyors Ltd.
February 2025	Lots 1672(Part), 1673(Part), 1675(Part), 1676(Part), 1677(Part) and 1678(Part) in DD.129 Yuen Long, New Territories	Page 1 (P24026)

1 For Catchment Area B

Ref.

Area, A = **2035** m^2
Average slope, H = 0.1 m per 100m
Distance on the line of natural flow, L = **25** m

Time of concentraction, t_o = $0.14465L / (H^{0.2}A^{0.1})$ = 0.14465 (25) / (0.1^0.2*2035^0.1) — SDM 7.5.2 (d)
= 2.7 min

2 For U-Channel of Catchment Area B

	From	To
Ground level (mPD)	**15.60**	**15.50**
Invert level (mPD)	**15.01**	**14.60**

Width of u-channel, w = **375** mm
Length of u-channel, L_c = **82** m
Depth of vertical part of u-channel, d = 712.5 mm
Gradient of u-channel, S_f = (15.01-14.6)/82 = 0.0050

Cross-Section Area, a = $0.5 \pi r^2 + w d$ = 0.5 x 3.14 x 187.5^2 + 375 x 712.5
= 0.322 m^2
Wetted Perimeter, p = $\pi r + 2 d$ = 3.14 x 187.5 + 2 x 712.5
= 2.014 m
Hydralic radius, R = a / p — SDM 8.2.1
= 0.160 m

3 Use Manning Equation for estimating velocity of stormwater

Take n = 0.016 for concrete lined channels:- — SDM Table 13
Allowable velocity, v = $R^{1/6} x (RS_f)^{1/2}/n$ = (0.16)^1/6 x (0.16 x 0.005)^1/2 / 0.016 — SDM Table 12
= 1.30 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 / (2.7+1+3.29)^0.355 for return period T = 50 years — Corrigendum 1/2024
= 253 — SDM Table 3a

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	**2035.0**	1933.3
		SUM =	1933.3

SDM 7.5.2 (b)

Upstream flow, Q_u = **0** m^3/s

Design flow, Q_d = $0.278i \Sigma C_jA_j$ x 1.16 + Q_u where A_j is in km^2 — SDM 7.5.2 (a)
= 0.278 x 253 x 1933.25 / 1000000 + 0
= 0.136 m^3/s

Allowable flow, Q_a = a x v
= 0.322 x 1.3
= 0.420 m^3/s

> Q_d (O.K.)

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

1 For Catchment Area of Underground Pipe after Existing CP7

Ref.

Area, A = **0** m^2
Average slope, H = **0.1** m per 100m
Distance on the line of natural flow, L = **0** m

Time of concentraction, t_o = $0.14465L / (H^{0.2}A^{0.1})$ = 0.14465 (0) / (0.1^0.2*0^0.1) — SDM 7.5.2 (d)
= 0.0 min

2 For Underground Pipe after Existing CP7

Size(Diameter) w = **300** mm
Length of Pipe = **14** m
Design the pipe to 9/10 full bore capactity, then
Area of ventilated portion = 0.1 of pipe area
$½ r^2 \theta - ½ r^2 \sin(\theta)$ = $0.1 \pi r^2$
$\theta - \sin(\theta)$ = 0.2 π
θ = 1.63 rad = 93.4^O (By trial and error)

Area A = $0.9 \pi r^2$
= 0.9 x 3.14 x 300^2 — SDM 8.2.1
= 0.254 m^2

Wetted Perimeter P = $2 \pi r - r \theta$ = 1396 mm
Hydralic radius R = A/P
182.2 mm

3 Use Manning Equation for estimating velocity of stormwater

Fall S = 1: **7.4**
Take n = 0.016 for concrete lined channels:- — SDM Table 13
Allowable velocity, v = $R^{1/6} x (RS_f)^{1/2}/n$ = (182.2)^1/6 * (182.2/7.4)^1/2 / 0.016 — SDM Table 12
= 8.57 m/s
Time of flow, t_f = 0.03 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 / (2.9+0.03+3.29)^0.355 for return period T = 50 years — Corrigendum 1/2024
= 330 — SDM Table 3a

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	**0.0**	0.0
Macadam Roadways	0.425	**0.0**	0.0
Wooded Areas	0.105	**0.0**	0.0
		SUM =	0.0

— SDM 7.5.2 (b)

Upstream flow, Q_u = **0.273** m^3/s

Design flow, Q_d = $0.278i \Sigma C_j A_j + Q_u$ where A_j is in km^2 — SDM 7.5.2 (a)
= 0.278 x 330 x 0 / 1000000 + 0.273
= 0.273 m^3/s

Allowable flow, Q_a = a x v
= 0.3974 x 1.35
= 2.181 m^3/s

> Q_d (O.K.)

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