Total: 46 pages

Date: 30 January 2026

TPB Ref.: A/YL-TYST/1334

By Email

Town Planning Board
15/F, North Point Government Offices
333, Java Road
North Point
Hong Kong
(Attn: The Secretary)

Dear Sir,

Temporary Open Storage of Construction Machinery and Construction Materials, Recycling Materials and Used Electrical Appliances with Ancillary Workshop for a Period of 3 Years at Lots 366 RP (Part), 371 S.B (Part), 372 S.A, 372 S.B, 373, 374, 375 RP (Part), 376 (Part), 377 (Part), 378 (Part), 379, 380, 381 RP (Part), 458 (Part), 459, 460, 461, 462, 463, 464, 471, 472, 1323 (Part), 1324, 1325 (Part), 1337 (Part), 1338 (Part), 1339, 1340 (Part), 1341, 1342, 1344 (Part), 1345 (Part), 1346 (Part), 1349 (Part), 1350 (Part), 1351 (Part), 1353 (Part), 1354, 1355 (Part), 1356 S.A (Part), 1356 S.B, 1357, 1358 RP, 1359, 1360, 1361, 1362, 1363 RP, 1365 (Part), 1366 RP (Part) in D.D.119 & Adjoining Government Land, Yuen Long, N.T.

Our response to the comments of the CE/MN, DSD is found in the attachment.

Should you have any enquiries, please feel free to contact our Mr. Patrick Tsui at [redacted] at your convenience.

Yours faithfully,

Patrick Tsui

c.c. Tuen Mun and Yuen Long West District Planning Office (Attn: Mr. Jethro FUNG) – By Email

[Departmental Comments]
Re: A/YL-TYST/1334 FI
(3)- Comment from DSD

Dear Patrick,

I refer to the captioned application No. A/YL-TYST/1334. Please find the following departmental comments for your further action:

(i) **Chief Engineer/Mainland North, Drainage Services Department (Contact: TY LOU, E/YL1, MND, DSD) (Tel: 3965 8929)**

- Peripheral surface channels have yet to be provided along the site boundary of the lower sides to collect the surface runoff accrued on the application site and to intercept the overland flow from the adjacent lands (e.g. near Lot Nos. 1343, 1344, 1351 & 1358 RP), please review and/or clarify. **This area has its own stormwater collection system and its level is higher than the application site, refer to photo 10-12.**
- Please advise the levels of Stream 1 & 2, and advise whether the discharge will be affected by tidal level and backwater. **The levels of Streams 1 & 2 is presented in Appendix C**
- Please advise any measures to prevent erosion of riverbed/embankment from the discharge of the proposed 750mm dia. concrete pipe. **Flap valve is proposed**
- Details of the proposed 750mm dia. concrete pipe at CP14 and CP18 to the existing stream are missing, please review and also update Drawing No. D05. **These connection details are presented in Drawing D05**
- Please review if the number of drawing title "Drainage Proposal - Details" should be D05.
- The hydraulic capacity of the critical section of Stream 2 (i.e. [illegible] x 1.4m as indicated in Drawing No. [illegible]) has yet to be checked in Appendix F, please review.

pipe at CP14 and CP18 to the existing stream are missing, please review and also update Drawing No. D05.

- Please review if the number of drawing title "Drainage Proposal - Details" should be D05. Typo, revised accordingly.
- The hydraulic capacity of the critical section of Stream 2 (i.e. 2.5m x 1.4m as indicated in Drawing No. P01) has yet to be checked in Appendix F, please review. It is provided.
- The design of the proposed 2.5m x 2.5m open channel with cover should be checked and submitted to relevant authority/department for comment/approval on structure, geotechnical and other aspects as applicable. Noted.

If you would like to respond to the comments above as part of the application submission, please submit further information to the Secretary, Town Planning Board as soon as possible. To facilitate the processing of the application, please also copy your further information to this Office for further consideration. In submitting any further information to the Town Planning Board, you may refer to the Town Planning Board Guidelines (TPB PG-No. 32B) on Submission of Further Information in relation to Applications for Amendment of Plan, Planning Permission and Review for details.

Alternatively, you can request the TPB to defer the consideration of the application in order to allow more time to prepare the further information. For details, please refer to the TPB Guidelines No. 33B on Deferment of Decision on Representations, Comments, Further Representations and Applications.

Thanks and regards,

Jethro FUNG
Tuen Mun & Yuen Long West District Planning Office
Planning Department
Tel.: 2150 6588
Fax.: 2489 9711

DRAINAGE IMPACT ASSESSMENT

Proposed Temporary Open Storage of Construction Machinery and Materials, Recycling Materials and Used Electrical Appliances with Ancillary Workshop for a Period of 3 Years at Various Lots in D.D. 119 and Adjoining Government Land, Tong Yan San Tsuen, Yuen Long, New Territories

DATE: JAN 2026

Contents

1. Introduction

1.1 Project Background

Ching Wan Engineering Consultants Company was appointed by the client of the captioned site to conduct a drainage impact assessment (DIA) for a Proposed Temporary Open Storage of Construction Machinery and Materials, Recycling Materials and Used Electrical Appliances with Ancillary Workshop for a Period of 3 Years at Various Lots in D.D. 119 and Adjoining Government Land, Tong Yan San Tsuen, Yuen Long, New Territories (Location Plan is shown in Appendix A).

The proposed use is under S.16 planning application with case no. A/YL-TYST/1334. This DIA report is prepared in support of the planning application.

This DIA is to assess the likely impacts of the proposed development on the existing drainage system, form the drainage connection point and recommend the necessary improvement/upgrading works.

1.2 Objectives of the Report

The report is to present the Drainage Impact Assessment (DIA) due to the proposed warehouse development. It includes formulation of proposed storm drain systems and mitigation measures with the aim to minimize the impacts to the existing drainage system, minimizing flood risk within and around the site.

The objectives of this report are set out as follows:

- To assess the existing flooding susceptibility;
- To assess the flooding susceptibility of the proposed development;
- To assess the likely impacts of the proposed development on the existing drainage system upon completion;
- To carry out schematic design of the drainage system arising from the proposed development including carrying out all necessary hydraulic analysis to substantiate the proposed scheme;
- To formulate drainage connection point and details for the proposed development to illustrate the hydraulic feasibility of the proposed connection point; and
- To formulate and recommend suitable mitigation measures including

necessary improvement/upgrading works to existing drainage system for the proposed development.

1.3 Structure of the Report

The structure of this report is as follows:

Section 1 – Introduces the background of the study, as well as the purpose of this report

Section 2 – Presents the key data of the proposed development on which the impact assessment is based.

Section 3 – Assess the impacts on the existing and designed storm drain systems due to the development and formulate corresponding mitigation measures.

Section 4 – Conclusion

2. PROJECT DESCRIPTION

2.1 Site Location

The project site is located right in the south of Lam Tai East Road. Vehicles shall enter the site via Kung Um Road. Location Plan is shown in Appendix A.

2.2 Existing Condition

The site is currently with warehouse structure and open storage area. The Site Plan is presented in Appendix B.

Lam Tai East road is right in the northern side of the site. There is an existing nullah in the further north. This existing nullah is the final discharge point of the runoff generated from the proposed development.

In the east, south and west of the site, there are other warehouses, natural vegetation, burial grounds and graves

There is an existing natural stream as named stream 1 passing through the site from south to north, and another natural stream as named stream 2 right in the east of the site. These two natural streams finally discharge to the existing nullah in the north of Lam Tai East Road.

3 DRAINAGE IMPACT ASSESSMENT

3.1 Introduction

Site inspection was carried out and the existing drainage facility inside and in the vicinity of the site was recorded. Desk study was carried out to identify the final discharge point.

3.2 Methodology

The following approach is adopted in carrying out the DIA.

- Identify the scope of development
- Identify the existing drainage systems within the site.
- Design a drainage system for the proposed development.
- Examine the potential impacts arising from the development on the drainage condition upon completion; and
- Recommend mitigation of the potential impacts including improvement or upgrading of exiting drainage system.

3.3 Design Assumption and Parameters

The following is referred in the DIA:

i. Stormwater Drainage Manual (SDM) for Planning, Design and Management (2018)
ii. SDM Corrigendum No. 1/2022: Rainfall increase due to climate change
iii. SDM Corrigendum No. 1/2024 for updated storm constants.
iv. Catchment area is defined based on the topographical information is DLO's geoinfo map.

The following rainfall runoff parameters are adopted in this study

- Runoff coefficients C=0.95 for paved and rood surfaces
- Runoff coefficient C=0.25 for permeable surface
- Storm constant a=505.5, b=3.29 and c=0.355 for 50 years return period is adopted (Table 3a, Corrigendum No.1/2024).

Manning equation is applied for existing natural streams and nullah hydraulic analysis. The roughness coefficient for Manning equation is 0.030 for existing natural streams, 0.012 for existing nullah

200mm sediment thickness is adopted for the calculation of maximum capacity of open channel and nullah.

Colebrook-White Equation is applied for existing 1050mm dia. concrete pipe in stream 1 hydraulic analysis. The kinematic viscosity of fluid and hydraulic pipeline roughness is $1.14*10^{-6}$ m^2/s and 0.00015 m respectively.

3.4 Existing Drainage System

The critical segment of existing stream 1 is the 1050mm dia. concrete pipe as shown in photo 4 (Appendix C shows the locations and photos of the existing streams). The critical segment of existing stream 2 is a rectangle open channel with dimensions 2.5m(W)x2.5m(D) as shown in photo 1. These two existing streams finally discharge to the existing nullah in the north of the site.

3.5 Proposed Drainage System

A 375UC/750UC is proposed peripherally around the site to prevent runoff escaped from the site. Four discharge points (750mm dia. concrete pipe) are designed to discharge the runoff from the site to the existing stream 1, And two discharge points (750mm dia. concrete pipe) are designed to discharge the runoff from the site to the existing stream 2. Flap Valve should be installed in each discharge point to prevent erosion and water back flow. (Appendix D shows the Drainage Proposal of the site)

3.6 Drainage impact Assessment

The proposed 375UC/750UC/750 concrete pipe is checked. It is capable to collect the runoff generated from the site. No flooding risk. (Appendix E shows the detailed calculation).

The existing stream 1 and stream 2 is checked. For existing stream 1, it is recommended to construct a 2.5m(W)x2.5m(D) Open Channel to replace the existing 1050mm dia. concrete pipe. For existing Stream 2, it is capable to collect the runoff generated from the site. No flooding risk. (Appendix F shows the detailed calculation).

The existing nullah is checked. It is capable to collect the runoff generated from the site. No flooding risk. (Appendix G shows the detailed calculation)

The lowest level of existing stream 1 and 2 is +7.50mPD. It is significantly higher than the Maximum Mean Higher High Water Level, i.e. +2.32mPD

(Table 9 of SDM 2015)

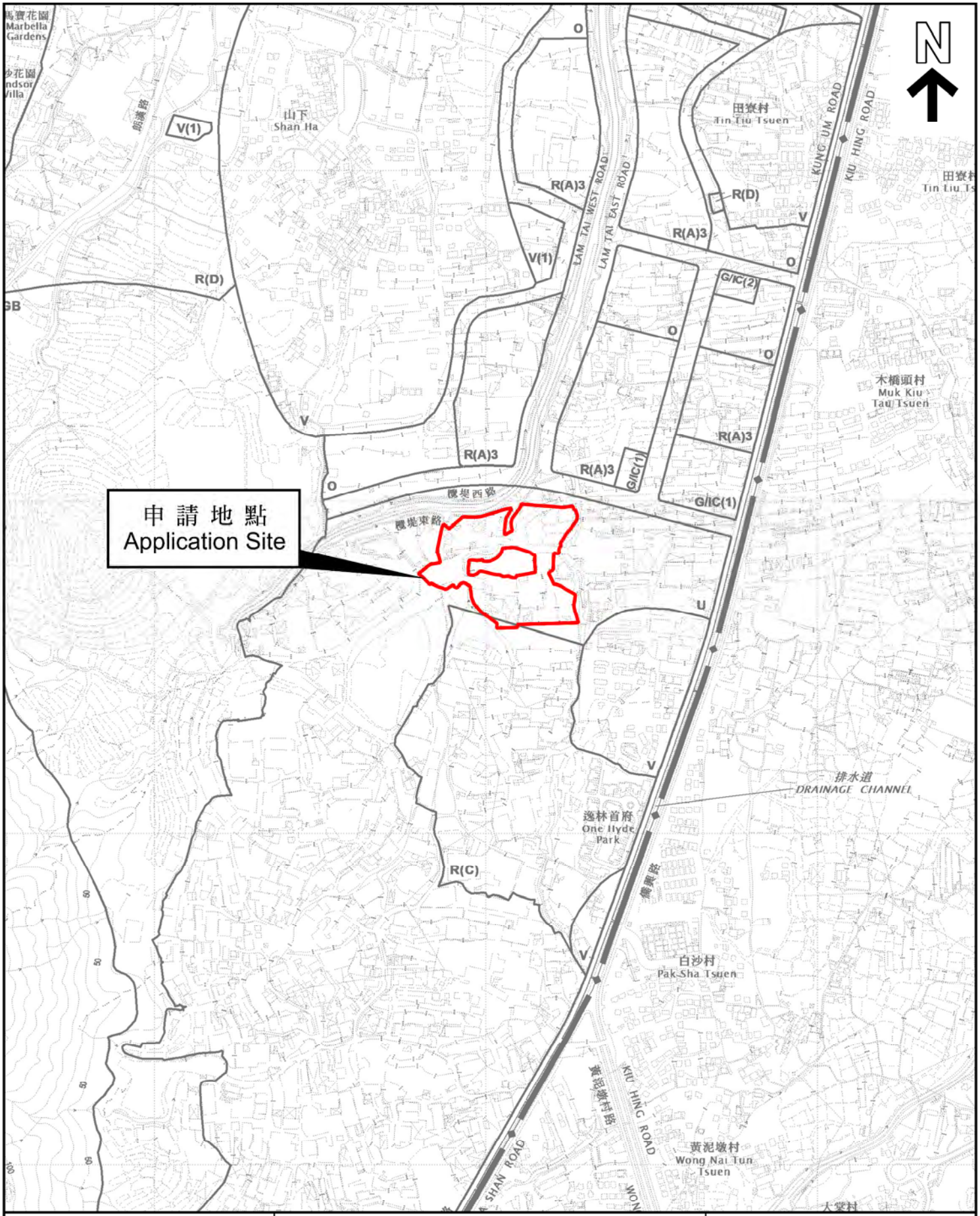
Other recommendation:
It is recommended that the hoarding, if any, should be open-bottom type to allow the designed drains to collect the overland flow.

It is also recommended to remove the vegetation and debris in the existing open channel to utilize the capacity,

4. Conclusion

- A warehouse development is proposed in the site.
- Proposed 375UC/750UC/750concrete pipe is capable to collect the design runoff. Flap Valve should be installed in each discharge point to prevent erosion and water back flow.
- Existing Stream 1, construct a 2.5m(W)x2.5m(D)open channel to replace the existing 1050mm dia. concrete pipe.
- Existing Stream 2, it is capable to collect the runoff generated from the site. No flooding risk.
- All drains are finally discharged the existing nullah in Lam Tai East Road. The existing nullah is capable to collect the design runoff.
- Hoarding, if any, is recommended to be open-bottom type to collect the overland flow.
- It is also recommended to remove the vegetation and debris in the existing open channel to utilize the capacity,
- With the designed drains and recommendations, the proposed development would not cause any flooding to any existing/proposed drains.

Appendix A – LOCATION PLAN



本摘要圖於2025年9月16日擬備，
所根據的資料為於2021年8月10日
核准的分區計劃大綱圖編號 S/YL-TYST/14
EXTRACT PLAN PREPARED ON 16.9.2025
BASED ON OUTLINE ZONING PLAN No.
S/YL-TYST/14 APPROVED ON 10.8.2021

位置圖 LOCATION PLAN

SCALE 1 : 7 500 比例尺

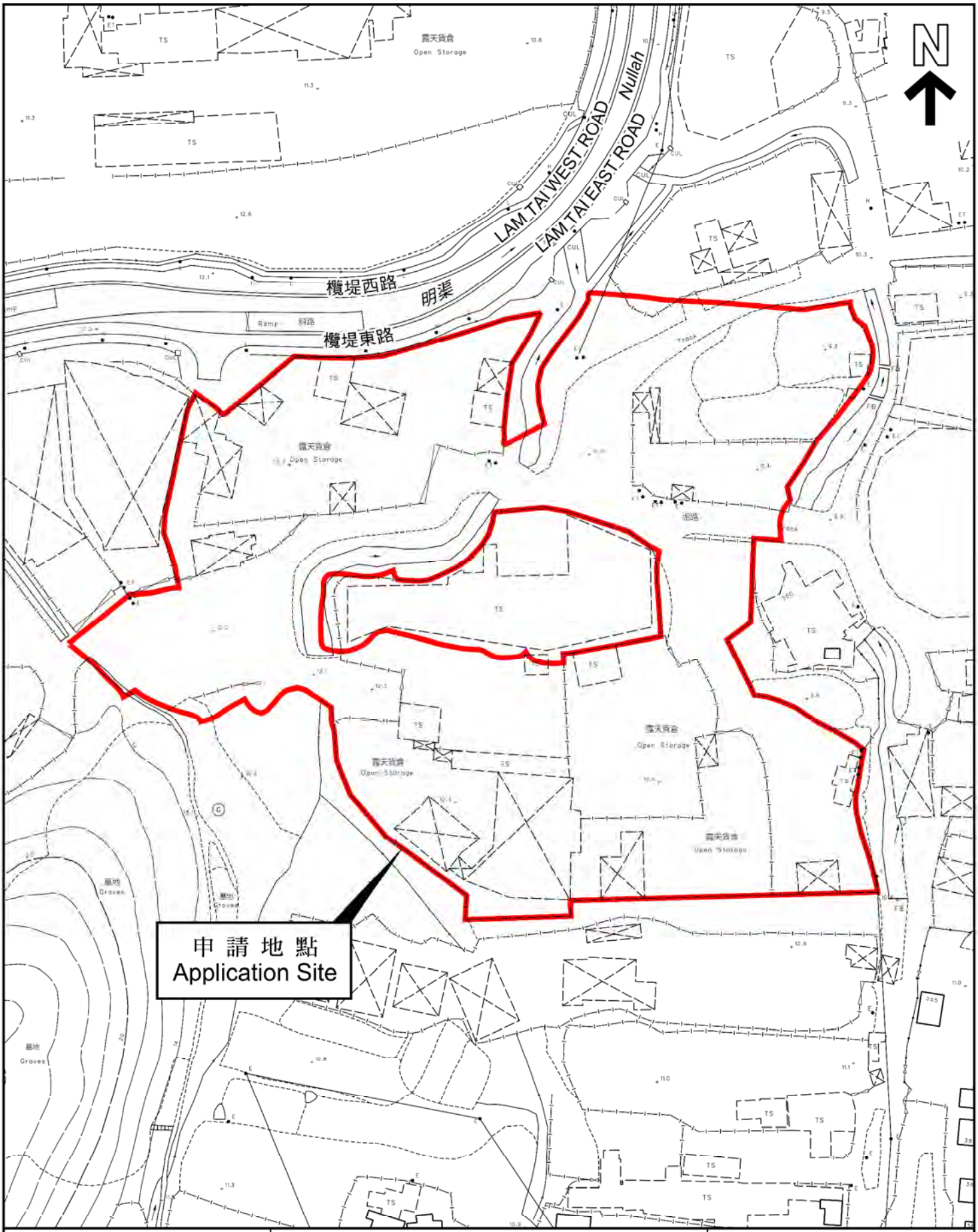
米 METRES 100 0 100 200 300 米 METRES

申請地點界線只作識別用
APPLICATION SITE BOUNDARY
FOR IDENTIFICATION PURPOSE ONLY

參考編號
REFERENCE No.

A/YL-TYST/1334

Appendix B – SITE PLAN



本摘要圖於2025年9月16日擬備，
所根據的資料為測量圖編號
6-NW-19A及C
EXTRACT PLAN PREPARED ON 16.9.2025
BASED ON SURVEY SHEETS No.
6-NW-19A&C

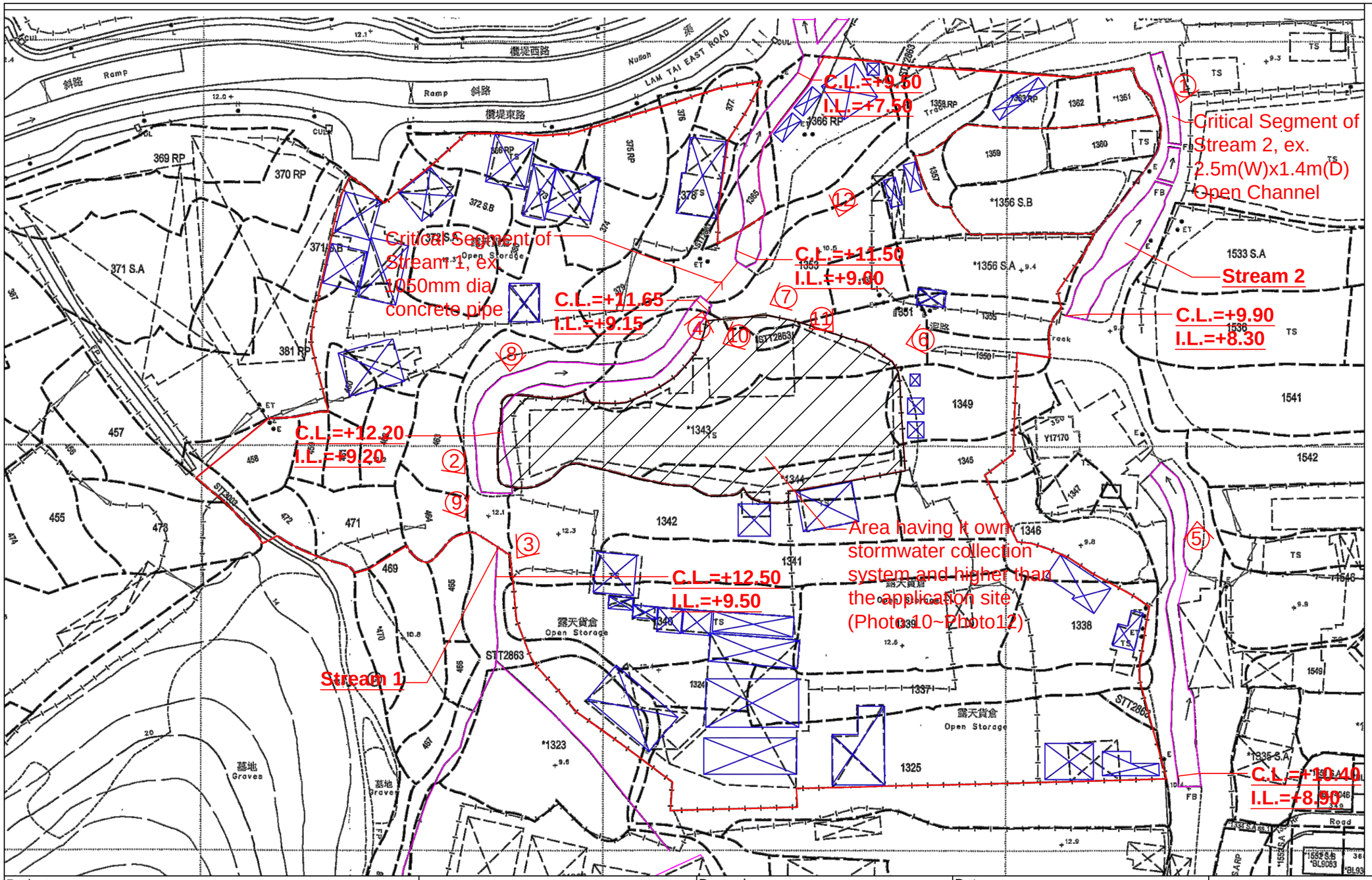
平面圖 SITE PLAN

申請地點界線只作識別用
APPLICATION SITE BOUNDARY
FOR IDENTIFICATION PURPOSE ONLY

參考編號
REFERENCE No.
A/YL-TYST/1334

Appendix C – LOCATIONS AND PHOTOS OF EXISTING STREAM 1

AND STREAM, 2



LEGEND

① Photo Viewport

Project: **Temporary Open Storage of Construction Machinery and Materials, Recycling Materials and Used Electrical Appliances with Ancillary Workshop for a Period of 3 Years at Various Lots in D.D. 119 and Adjoining Government Land, Tong Yan San Tsuen, Yuen Long, New Territories** **(Application No.:A/YL-TYST/1334)**	Title: DIA - Locations and Photos of Existing Stream 1 and Stream 2	Drawn by: DM Check by: DM	Date: 30–1–2026 Drawing No: P01

正宏工程顧問公司

CHING WAN ENGINEERING CONSULTANT COMPANY

Photo 1

Photo 2

Photo 3

Photo 4

Photo 5

Photo 6

Photo 7

Photo 8

Photo 9

Photo 10

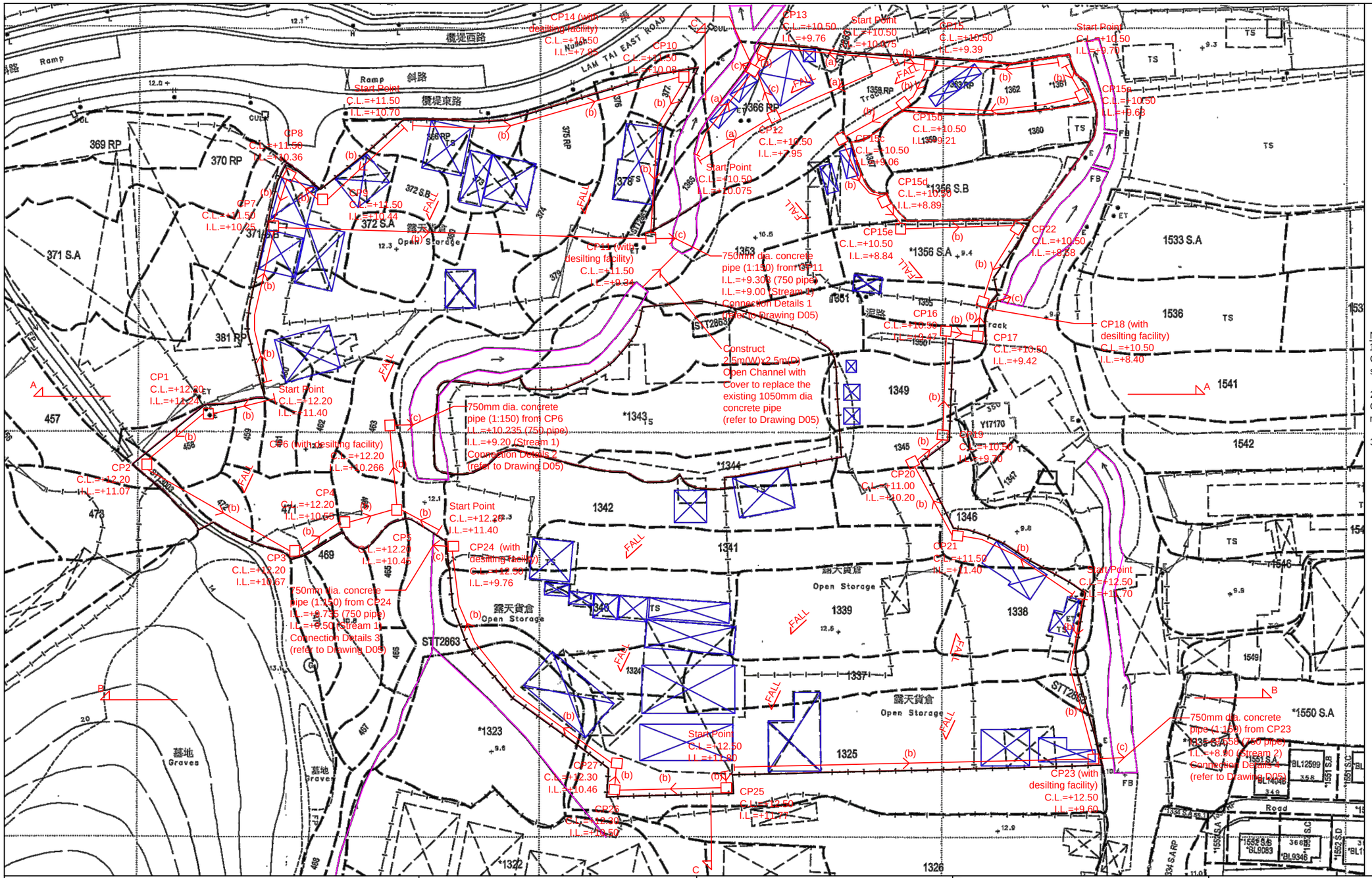
Photo 11

Photo 12

Photo 1a

Photo 1b

Appendix D – DRAINGAE PROPOSAL



LEGEND

- CP — Proposed CatchPit
- (a) — Proposed 375UC (1:100) with Cast Iron Cover
- (b) — Proposed 750UC (1:100) with Cast Iron Cover
- (c) — Proposed 750mm dia. (1:150) underground concrete pipe
- Existing Stream

Note:

1. Catchpits (CP6, CP11, CP14, CP18, CP23 & CP24) with desilting facility shall follow CEDD standard drawing No. C2406I.
2. Catchpit and UC follows Typical Details of Geotechnical Manual for Slope Fig.8.10 and Fig.8.11 respectively.
3. Open-bottom Type Fence Wall to be erected..

Project: **Temporary Open Storage of Construction Machinery and Materials, Recycling Materials and Used Electrical Appliances with Ancillary Workshop for a Period of 3 Years at Various Lots in D.D. 119 and Adjoining Government Land, Tong Yan San Tsuen, Yuen Long, New Territories** **(Application No.:A/YL-TYST/1334)**	Title: Drainage Proposal - LAYOUT	Drawn by: DM Check by: DM	Date: 30-1-2026 Drawing No: D01

正宏工程顧問公司

CHING WAN ENGINEERING CONSULTANT COMPANY

CP14 (with desilting facility)
C.L.=+10.50
I.L.=+7.85

CP10
C.L.=+11.50
I.L.=+10.02

CP13
C.L.=+10.50
I.L.=+9.76

Start Point
C.L.=+10.50
I.L.=+10.075

CP15
C.L.=+10.50
I.L.=+9.39

Start Point
C.L.=+10.50
I.L.=+9.70

CP15a
C.L.=+10.50
I.L.=+9.63

CP15b
C.L.=+10.50
I.L.=+9.21

CP15c
C.L.=+10.50
I.L.=+9.06

CP15d
C.L.=+10.50
I.L.=+8.89

CP15e
C.L.=+10.50
I.L.=+8.84

CP22
C.L.=+10.50
I.L.=+8.58

CP12
C.L.=+10.50
I.L.=+7.95

Start Point
C.L.=+10.50
I.L.=+10.075

Start Point
C.L.=+11.50
I.L.=+10.70

CP8
C.L.=+11.50
I.L.=+10.36

CP7
C.L.=+11.50
I.L.=+10.25

CP9
C.L.=+11.50
I.L.=+10.44

CP11 (with desilting facility)
C.L.=+11.50
I.L.=+9.34

750mm dia. concrete pipe (1:150) from CP11
I.L.=+9.308 (750 pipe)
I.L.=+9.00 (Stream 1)
Connection Details 1
(refer to Drawing D05)

Construct 2.5m(W)x2.5m(D) Open Channel with Cover to replace the existing 1050mm dia concrete pipe
(refer to Drawing D05)

CP16
C.L.=+10.50
I.L.=+9.47

CP17
C.L.=+10.50
I.L.=+9.42

CP18 (with desilting facility)
C.L.=+10.50
I.L.=+8.40

CP19
C.L.=+10.50
I.L.=+9.70

CP20
C.L.=+11.00
I.L.=+10.20

CP21
C.L.=+11.50
I.L.=+11.40

Start Point
C.L.=+12.50
I.L.=+11.70

CP1
C.L.=+12.20
I.L.=+11.24

Start Point
C.L.=+12.20
I.L.=+11.40

CP2
C.L.=+12.20
I.L.=+11.07

CP6 (with desilting facility)
C.L.=+12.20
I.L.=+10.266

750mm dia. concrete pipe (1:150) from CP6
I.L.=+10.235 (750 pipe)
I.L.=+9.20 (Stream 1)
Connection Details 2
(refer to Drawing D05)

CP4
C.L.=+12.20
I.L.=+10.55

Start Point
C.L.=+12.20
I.L.=+11.40

CP5
C.L.=+12.20
I.L.=+10.45

CP3
C.L.=+12.20
I.L.=+10.67

CP24 (with desilting facility)
C.L.=+12.50
I.L.=+9.76

750mm dia. concrete pipe (1:150) from CP24
I.L.=+9.735 (750 pipe)
I.L.=+9.50 (Stream 1)
Connection Details 3
(refer to Drawing D05)

Start Point
C.L.=+12.50
I.L.=+11.80

CP27
C.L.=+12.30
I.L.=+10.46

CP26
C.L.=+12.30
I.L.=+10.50

CP25
C.L.=+12.50
I.L.=+11.77

CP23 (with desilting facility)
C.L.=+12.50
I.L.=+9.60

750mm dia. concrete pipe (1:150) from CP23
I.L.=+9.558 (750 pipe)
I.L.=+8.90 (Stream 2)
Connection Details 4
(refer to Drawing D05)

FALL

A

B

C

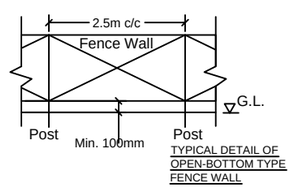
LEGEND

- CP — Proposed CatchPit
- (a) — Proposed 375UC (1:100) with Cast Iron Cover
- (b) — Proposed 750UC (1:100) with Cast Iron Cover
- (c) — Proposed 750mm dia. (1:150) underground concrete pipe
- Existing Stream

Note:
1. Catchpits (CP6, CP11, CP14, CP18, CP23 & CP24) with desilting facility shall follow CEDD standard drawing No. C2406I.

2. Catchpit and UC follows Typical Details of Geotechnical Manual for Slope Fig.8.10 and Fig.8.11 respectively.

3. Open-bottom Type Fence Wall to be erected..



TYPICAL DETAIL OF OPEN-BOTTOM TYPE FENCE WALL

Project:
Temporary Open Storage of Construction Machinery and Materials, Recycling Materials and Used Electrical Appliances with Ancillary Workshop for a Period of 3 Years at Various Lots in D.D. 119 and Adjoining Government Land, Tong Yan San Tsuen, Yuen Long, New Territories

(Application No.:A/YL-TYST/1334)

Drainage Proposal - LAYOUT (without base map)

DM

Check by: DM

30-1-2026

Drawing No: D02

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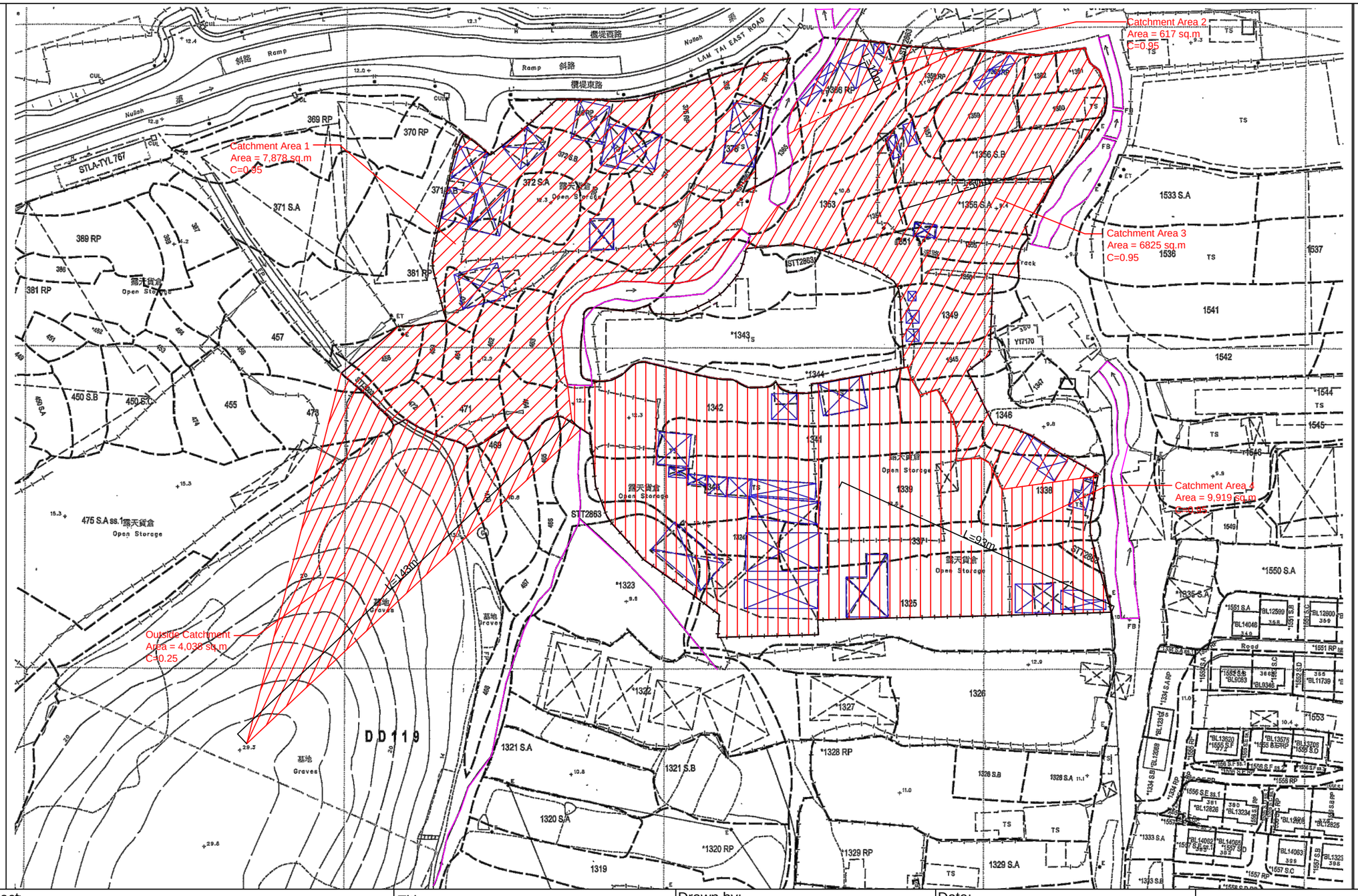
CHING WAN ENGINEERING CONSULTANT COMPANY



LEGEND

- CP — Proposed CatchPit
- (a) — Proposed 375UC (1:100) with Cast Iron Cover
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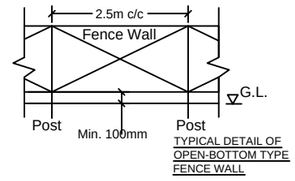
- (c) — Proposed 750mm dia. (1:150) underground concrete pipe
- Existing Stream

Note:

1. Catchpits (CP6, CP11, CP14 CP22 & CP23) with desilting facility shall follow CEDD standard drawing No. C2406I.

2. Catchpit and UC follows Typical Details of Geotechnical Manual for Slope Fig.8.10 and Fig.8.11 respectively.

3. Open-bottom Type Fence Wall to be erected..

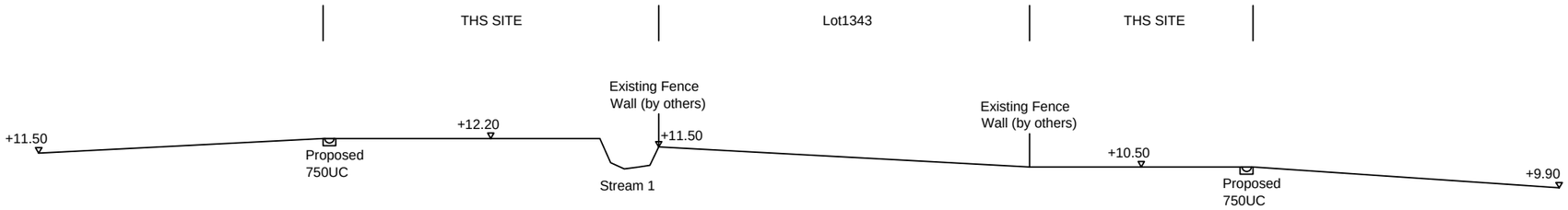


TYPICAL DETAIL OF OPEN-BOTTOM TYPE FENCE WALL

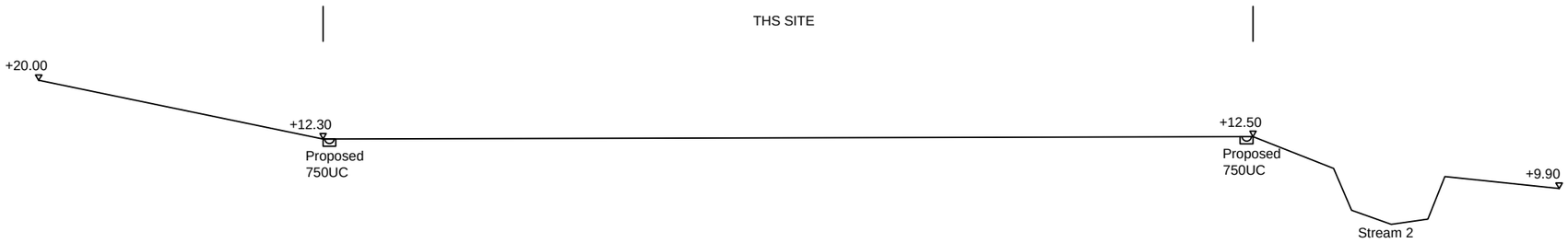
Project: **Temporary Open Storage of Construction Machinery and Materials, Recycling Materials and Used Electrical Appliances with Ancillary Workshop for a Period of 3 Years at Various Lots in D.D. 119 and Adjoining Government Land, Tong Yan San Tsuen, Yuen Long, New Territories** **(Application No.:A/YL-TYST/1334)**	Title: Drainage Proposal - Catchment Area Plan	Drawn by: DM Check by: DM	Date: 30–1–2026 Drawing No: D03

正宏工程顧問公司

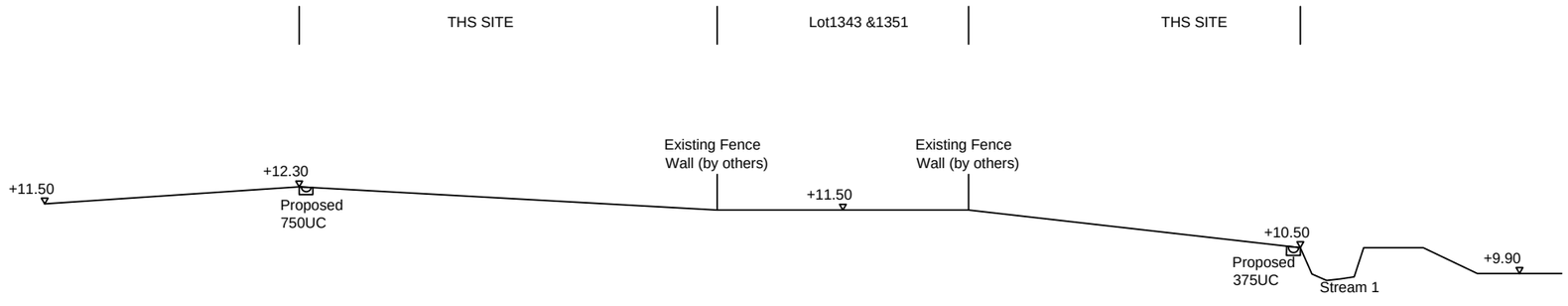
CHING WAN ENGINEERING CONSULTANT COMPANY



SECTION A-A



SECTION B-B



SECTION C-C

LEGEND

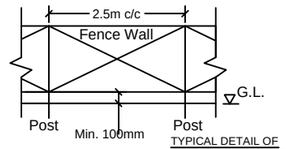
- CP — Proposed CatchPit
- (a) — Proposed 375UC (1:100) with Cast Iron Cover
- (b) — Proposed 750UC (1:100) with Cast Iron Cover
- (c) — Proposed 750mm dia. (1:150) underground concrete pipe
- Existing Stream

Note:

1. Catchpits (CP6, CP11, CP14, CP18, CP23 & CP24) with desilting facility shall follow CEDD standard drawing No. C2406I.

2. Catchpit and UC follows Typical Details of Geotechnical Manual for Slope Fig.8.10 and Fig.8.11 respectively.

3. Open-bottom Type Fence Wall to be erected..

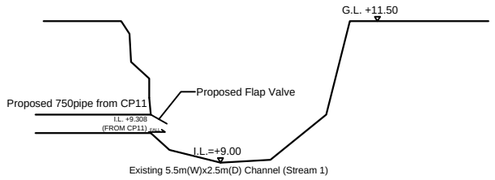


TYPICAL DETAIL OF OPEN-BOTTOM TYPE FENCE WALL

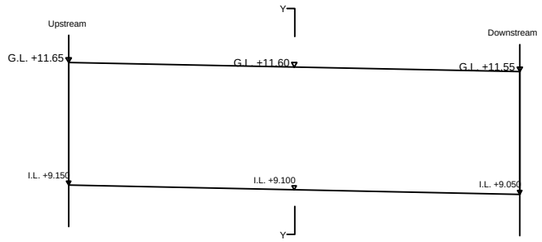
Project: **Temporary Open Storage of Construction Machinery and Materials, Recycling Materials and Used Electrical Appliances with Ancillary Workshop for a Period of 3 Years at Various Lots in D.D. 119 and Adjoining Government Land, Tong Yan San Tsuen, Yuen Long, New Territories** **(Application No.:A/YL-TYST/1334)**	Title: Drainage Proposal - SECTIONS	Drawn by: DM Check by: DM	Date: 30-1-2026 Drawing No: D04

正宏工程顧問公司

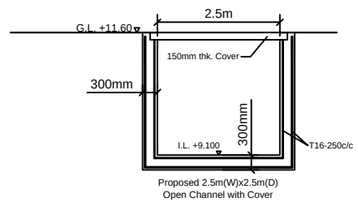
CHING WAN ENGINEERING CONSULTANT COMPANY



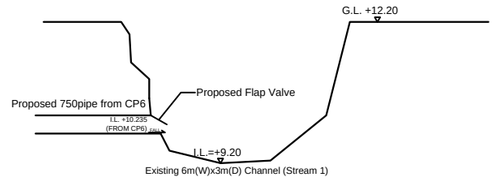
CONNECTION DETAILS 1



SECTIONAL VIEW OF PROPOSED 2.5m(W)x2.5m(D) OPEN CHANNEL WITH COVER

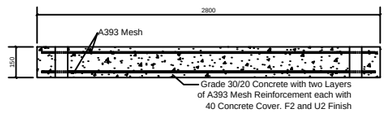


SECTION Y-Y

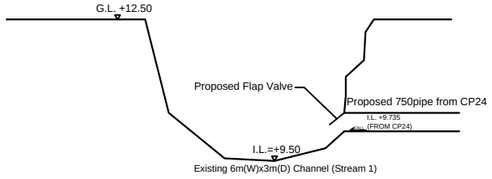


CONNECTION DETAILS 2

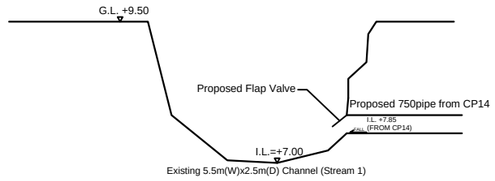
DETAILS OF COVER FORPROPOSED 2.5m(W)x2.5m(D) OPEN CHANNEL



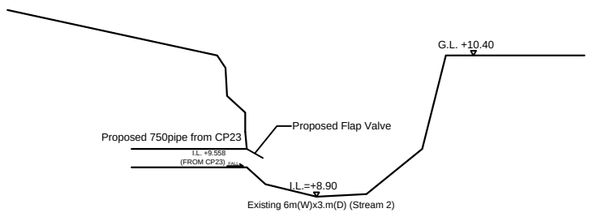
SECTION Z-Z



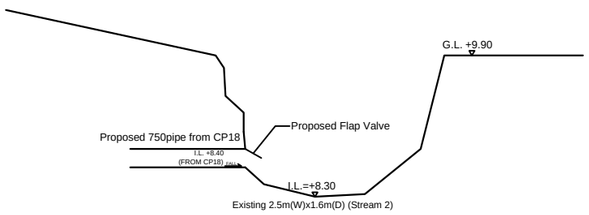
CONNECTION DETAILS 3



CONNECTION DETAILS 1



CONNECTION DETAILS 4



CONNECTION DETAILS 4

LEGEND

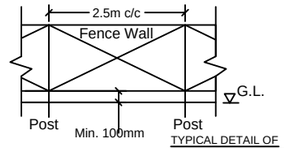
CP	Proposed CatchPit
(a)	Proposed 375UC (1:100) with Cast Iron Cover
(b)	Proposed 750UC (1:100) with Cast Iron Cover
(c)	Proposed 750mm dia. (1:150) underground concrete pipe
	Existing Stream

Note:

1. Catchpits (CP6, CP11, CP14, CP18, CP23 & CP24) with desilting facility shall follow CEDD standard drawing No. C2406I.

2. Catchpit and UC follows Typical Details of Geotechnical Manual for Slope Fig.8.10 and Fig.8.11 respectively.

3. Open-bottom Type Fence Wall to be erected..



TYPICAL DETAIL OF OPEN-BOTTOM TYPE FENCE WALL

Project:
Temporary Open Storage of Construction Machinery and Materials, Recycling Materials and Used Electrical Appliances with Ancillary Workshop for a Period of 3 Years at Various Lots in D.D. 119 and Adjoining Government Land, Tong Yan San Tsuen, Yuen Long, New Territories

(Application No.:A/YL-TYST/1334)

Title: Drainage Proposal - Details

Drawn by: DM

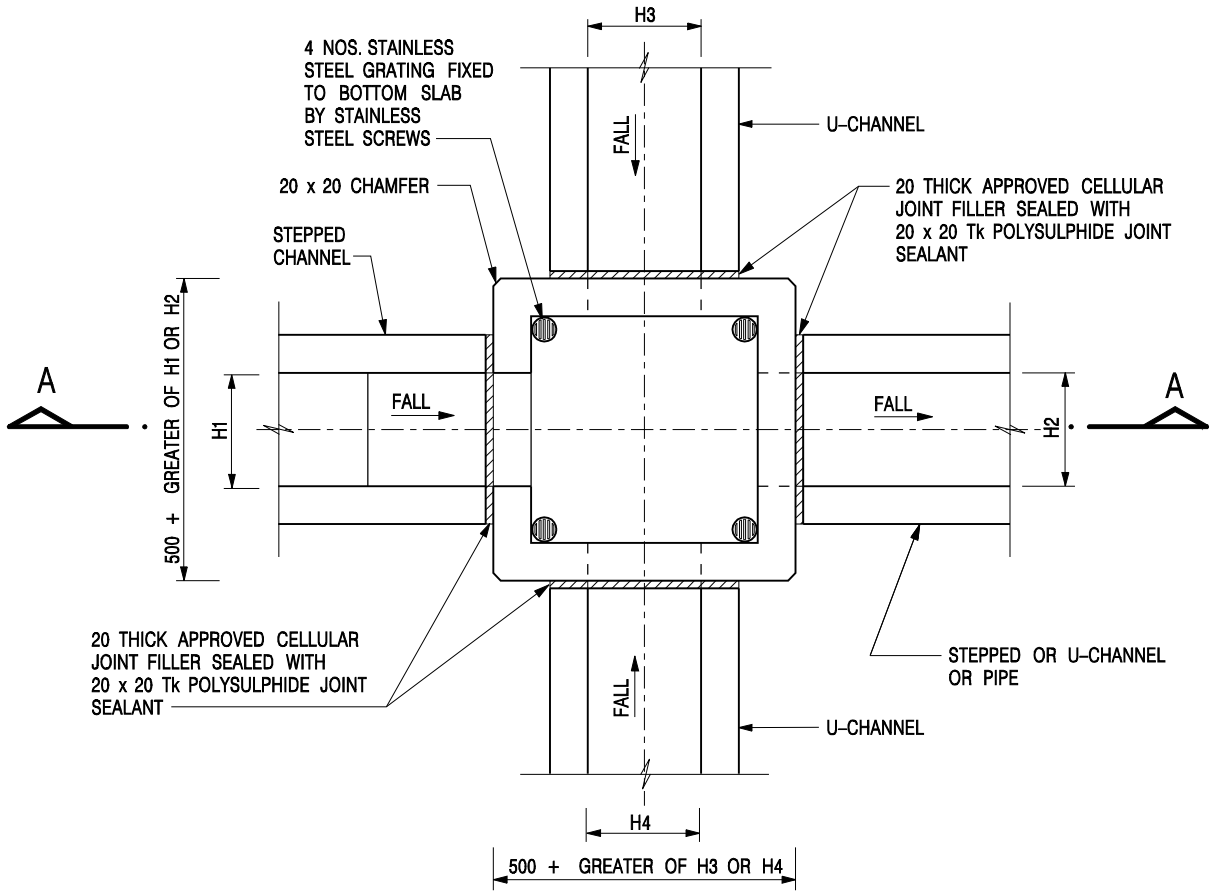
Check by: DM

Date: 30-1-2026

Drawing No: D05

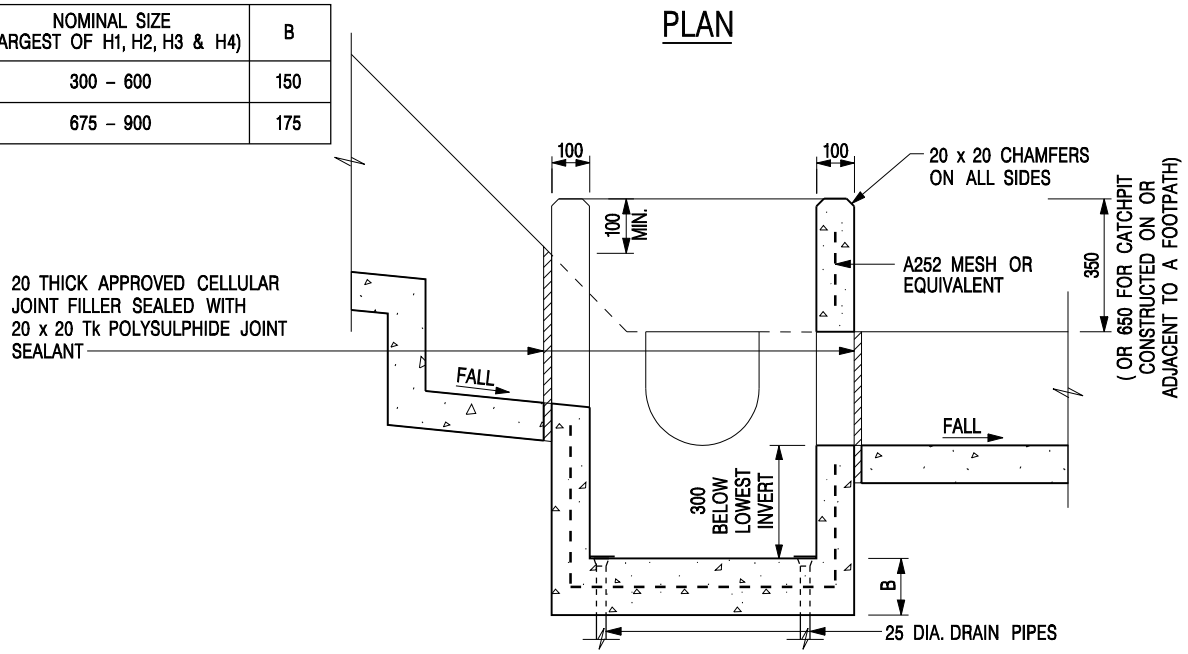
正宏工程顧問公司

CHING WAN ENGINEERING CONSULTANT COMPANY



PLAN

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



SECTION A – A

NOTES:

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

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

CATCHPIT WITH TRAP

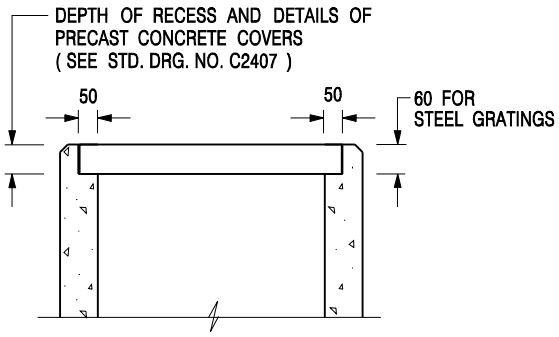
(SHEET 1 OF 2)

CEDD CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

SCALE 1 : 20

DATE JAN 1991

DRAWING NO. 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.

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

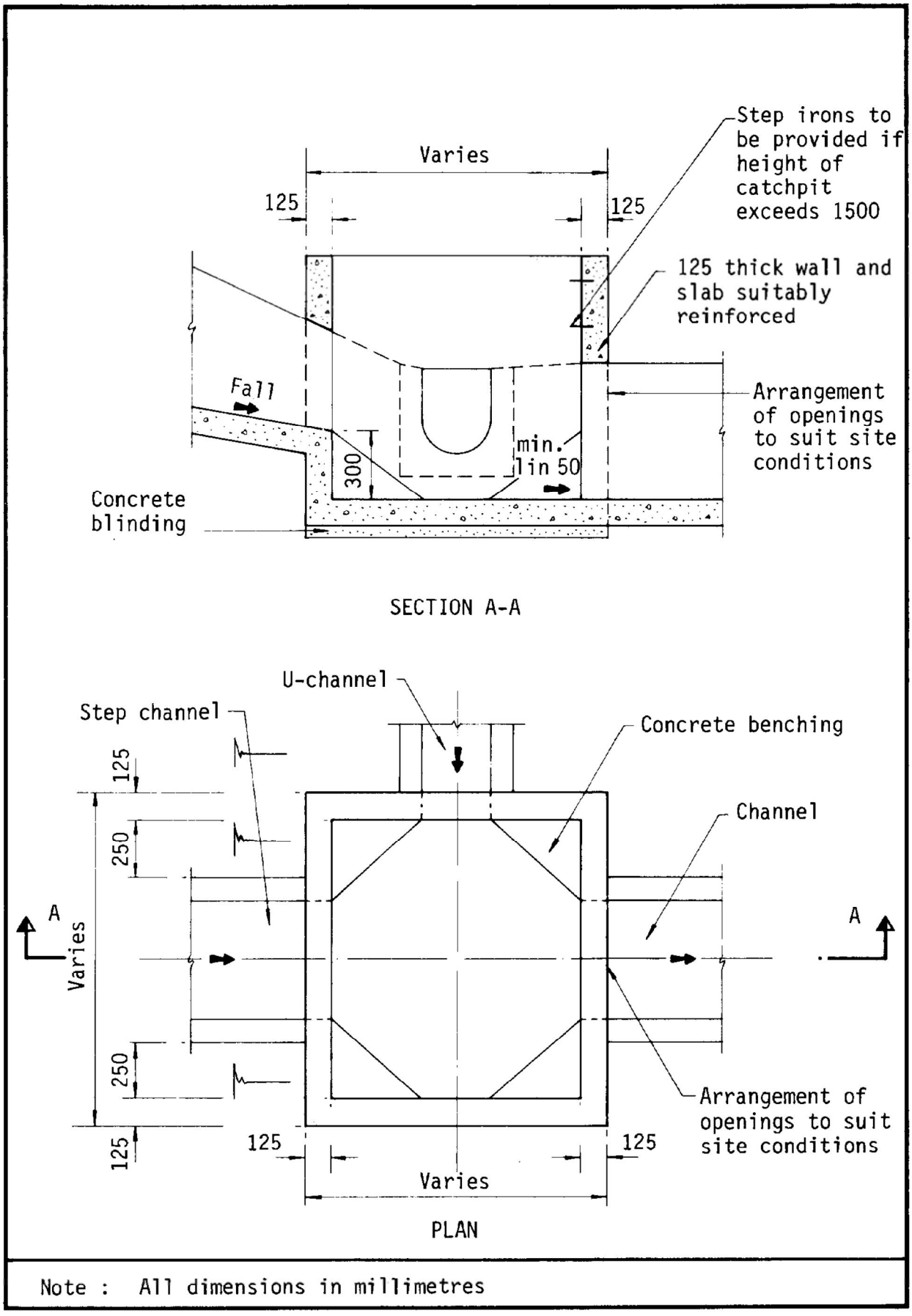
CATCHPIT WITH TRAP
(SHEET 2 OF 2)

CEDD CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

SCALE 1 : 20

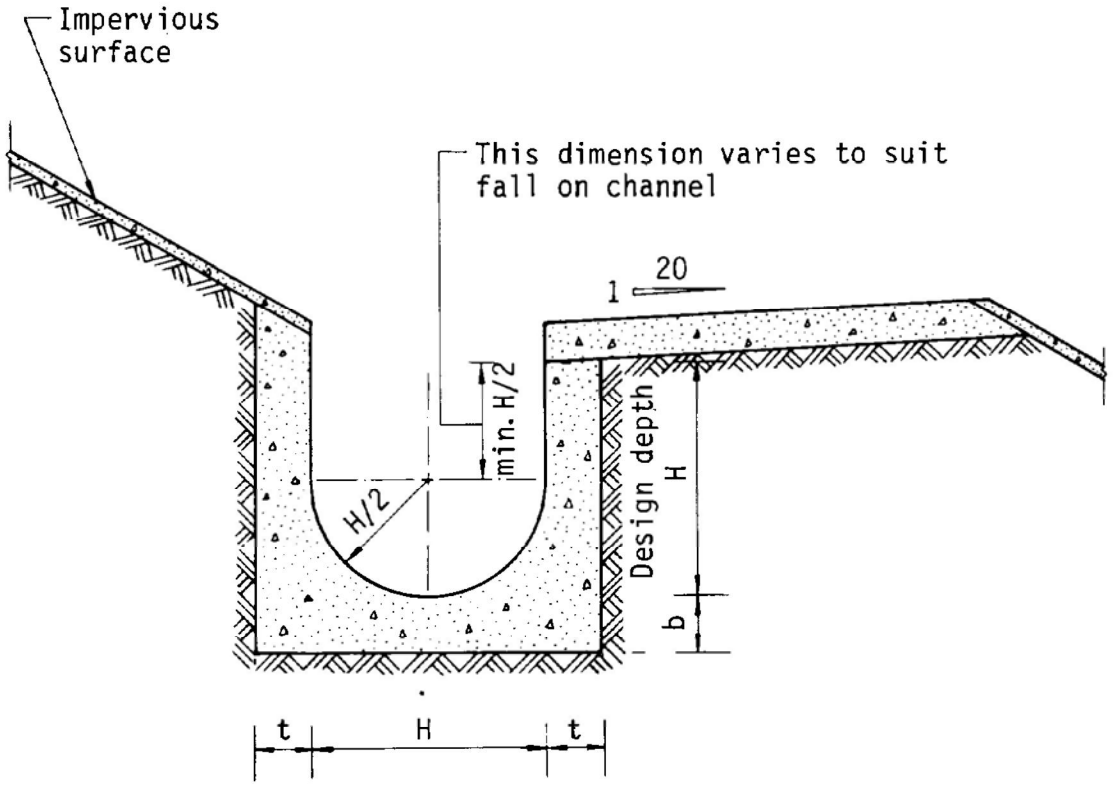
DATE JAN 1991

DRAWING NO. C2406 /2A



Note : All dimensions in millimetres

Figure 8.10 - Typical Details of Catchpits



Dimensions of U - channel

Nominal size of channel H (mm)	Thickness t (mm)	Thickness b (mm)
225 to 600	150	150
675 to 1200	175	225

Figure 8.11 - Typical U-channel Details

Appendix E – CALCULATION OF PROPOSED 375UC/750UC/750

CONCRETE PIPE

Catchment Area 1, Area	=	7878	m^2	(C= 0.95)
Catchment Area 2, Area	=	617	m^2	(C= 0.95)
Catchment Area 3, Area	=	6825	m^2	(C= 0.95)
Catchment Area 4, Area	=	9919	m^2	(C= 0.95)
Outside Catchment Area 1, Area	=	4038	m^2	(C= 0.25)

Calculation of Design Runoff of the Proposed Development,

For the design of drains inside catchment area 1, Catchment Area 1 + outside catchment area

$\Sigma Q = \Sigma 0.278\ C\ i\ A$

$A = 7878+4038 = 11916 = 0.011916\ km^2$

$t = 0.14465\ L/\ H^{0.2}A^{0.1}$ (where H=(29.3-12.2)*100/143 = 11.96 m)

$= 0.14465*143/11.96^{0.2}*11916^{0.1} = 4.926$ min

$i = 1.111*a/(t+b)^c$ (50 yrs return period, Table 3a, Corrigendum 2024, SDM) and (11.1% increase due to climate change)

$= 1.111*505.5/(4.926+3.29)^{0.355} = 265.9$ mm/hr

Therefore, $Q = 0.278*0.25*265.9*0.004038+0.278*0.95*265.9*0.007878$

$= 0.6279\ m^3/sec = \underline{37672}$ lit/min

Provide 750UC (1:100) is OK

For the design of drains inside catchment area 2, Catchment Area 2

$\Sigma Q = \Sigma 0.278\ C\ i\ A$

$A = 617 = 0.000617\ km^2$

$t = 0.14465\ L/\ H^{0.2}A^{0.1}$ (Conservatively take H=1)

$= 0.14465*10/1^{0.2}*617^{0.1} = 0.761$ min

$i = 1.111*a/(t+b)^c$ (50 yrs return period, Table 3a, Corrigendum 2024, SDM) and (11.1% increase due to climate change)

$= 1.111*505.5/(0.761+3.29)^{0.355} = 341.8$ mm/hr

Therefore, $Q = 0.278*0.95*341.8*0.000617$

$= 0.0557\ m^3/sec = \underline{3342}$ lit/min

Provide 375UC (1:100) is OK

For the design of drains inside catchment area 3, Catchment Area 3

$\Sigma Q = \Sigma 0.278\ C\ i\ A$

$A = 6825 = 0.006825\ km^2$

$t = 0.14465\ L/\ H^{0.2}A^{0.1}$ (Conservatively take H=1)

$= 0.14465*50/1^{0.2}*68285^{0.1} = 2.991$ min

$i = 1.111*a/(t+b)^c$ (50 yrs return period, Table 3a, Corrigendum 2024, SDM) and (11.1% increase due to climate change)

$= 1.111*505.5/(2.991+3.29)^{0.355} = 292.5$ mm/hr

Therefore, $Q = 0.278*0.95*292.5*0.006825$

$= 0.5272\ m^3/sec = \underline{31633}$ lit/min

Provide 750UC (1:100) is OK

For the design of drains inside catchment area 4, Catchment Area 4

$\Sigma Q = \Sigma 0.278\ C\ i\ A$

$A = 9919 = 0.009919\ km^2$

$t = 0.14465\ L/\ H^{0.2}A^{0.1}$ (Conservatively take H=1)

$= 0.14465*93/1^{0.2}*9919^{0.1} = 5.360$ min

$i = 1.111*a/(t+b)^c$ (50 yrs return period, Table 3a, Corrigendum 2024, SDM) and (11.1% increase due to climate change)

$= 1.111*505.5/(5.36+3.29)^{0.355} = 261.1$ mm/hr

Therefore, $Q = 0.278*0.95*261.1*0.011462$

$= 0.6840\ m^3/sec = \underline{41038}$ lit/min

Provide 750UC (1:100) is OK

GEO Technical Guidance Note No. 43 (TGN 43)
Guidelines on Hydraulic Design of U-shaped and Half-round Channels on Slopes

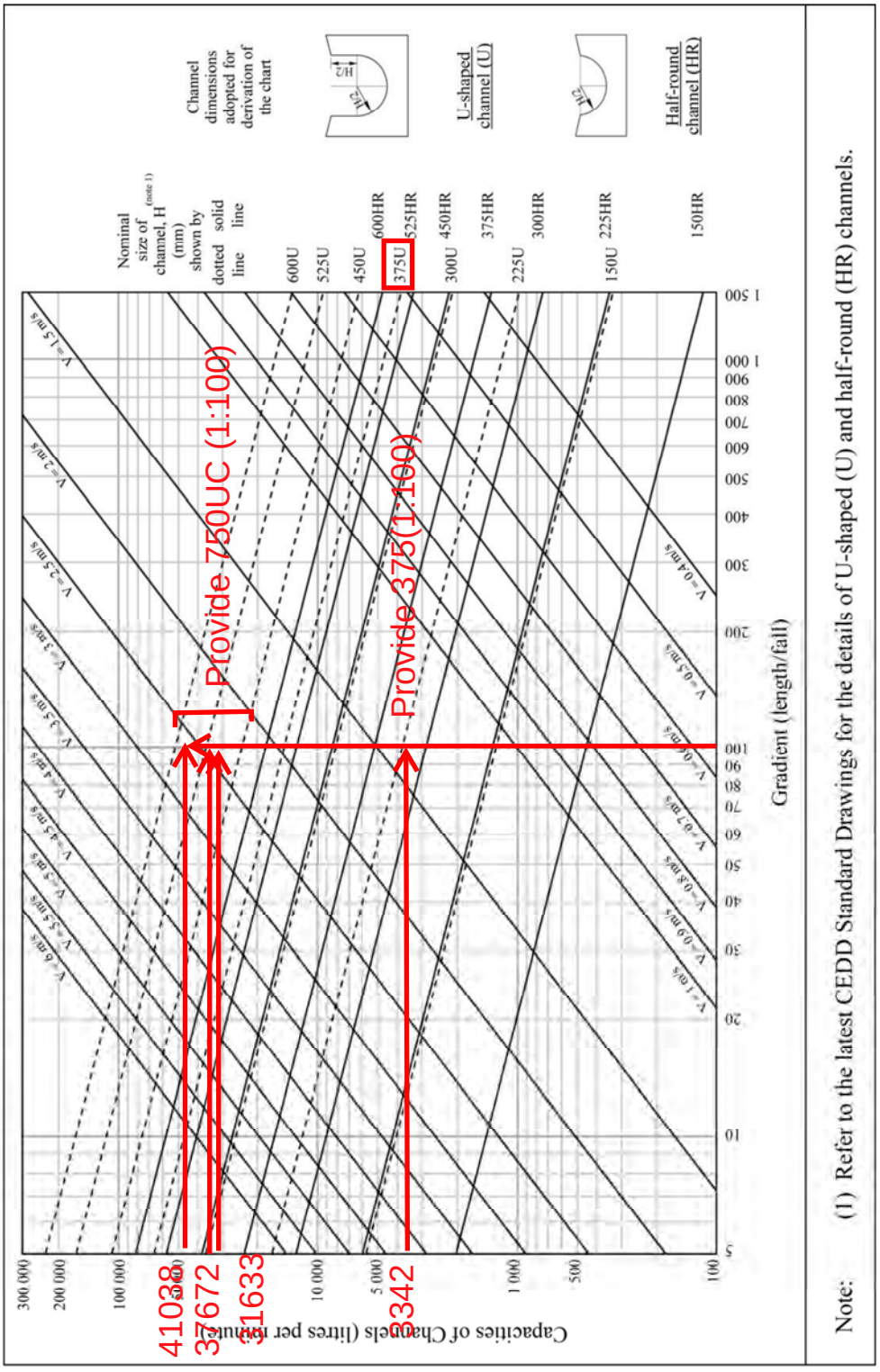


Figure 1 - Chart for the rapid design of U-shaped and half-round channels up to 600 mm

Check 750mm dia. Pipes by Colebrook-White Equation

$$V = -\sqrt{(8gDs)}\log\left(\frac{ks}{3.7D} + \frac{2.51v}{D\sqrt{(2gDs)}}\right)$$

where :

V	=			mean velocity (m/s)	
g	=	9.81	m/s2	gravitational acceleration (m/s2)	
D	=	0.75	m	internal pipe diameter (m)	
ks	=	0.00015	m	hydraulic pipeline roughness (m)	(Table14, from DSD SDM 2018, concrete pipe)
v	=	1.14E-06	m2/s	kinematic viscosity of fluid (m2/s)	
s	=	0.006667		hydraulic gradient	

Therefore, design V of pipe capacity = 2.6177 m/s

Q= 0.8VA (0.8 factor for sedimentation)

= 0.925 m3/s

= 55511 lit/min

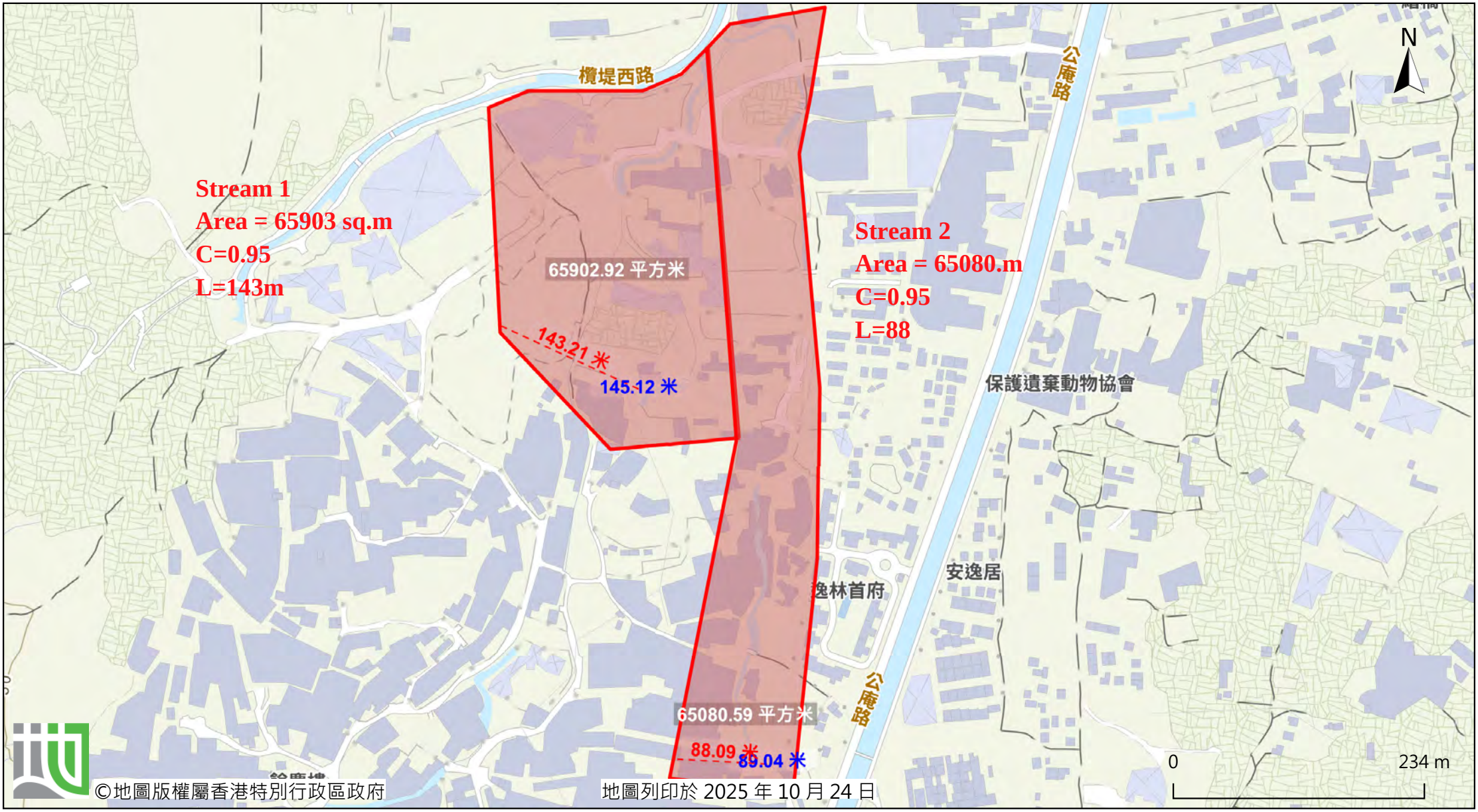
> 41038 lit/min Ok

Appendix F – CALCULATION OF EXISTING STREAM 1 AND STREAM, 2

GEOINFO MAP
地理資訊地圖

前往地圖: https://www.map.gov.hk/gm/geo:22.4243,114.0197?z=4514

Catchment Area Plan for Ex. Stream 1 and Stream 2



由「地理資訊地圖」網站提供: https://www.map.gov.hk

Check 1050mm dia. Pipes by Colebrook-White Equation

$$V = -\sqrt{(8gDs)}\log\left(\frac{ks}{3.7D} + \frac{2.51v}{D\sqrt{(2gDs)}}\right)$$

where :

V	=			mean velocity (m/s)	
g	=	9.81	m/s2	gravitational acceleration (m/s2)	
D	=	1.05	m	internal pipe diameter (m)	
ks	=	0.00015	m	hydraulic pipeline roughness (m)	(Table14, from DSD SDM 2018, concrete pipe)
v	=	1.14E-06	m2/s	kinematic viscosity of fluid (m2/s)	
s	=	0.01		hydraulic gradient	

Therefore, design V of pipe capacity = 3.9493 m/s

Q= 0.8VA			(0.8 factor for sedimentation)
= 2.736	m3/s		
= 164144	lit/min		
< 257975	lit/min	NOT OK	

Catchment Area 1, Area = 65903 m^2 (C= 0.95), L= 143 m
Catchment Area 2, Area = 65080 m^2 (C= 0.95), L= 88 m

Calculation of Design Runoff of the Proposed Development,
For checking Existing Stream 1,

$\Sigma Q = \Sigma 0.278\ C\ i\ A$

A = 65903 m^2
= 65903
= 0.065903 km^2

t = $0.14465\ L/\ H^{0.2}A^{0.1}$
= $0.14465*143/1^{0.2}*65903^{0.1}$
= 6.820 min

i = $1.111*a/(t+b)^c$ (50 yrs return period, Table 3a, Corrigendum 2024, SDM) and (11.1% increase due to climate change)
= $1.111*505.5/(6.820+3.29)^{0.355}$
= 247.0 mm/hr

Therefore, Q = 0.278*0.95*247.0*0.065903
= 4.2996 m^3/sec
= **257975** lit/min

For checking Existing Stream 2,

$\Sigma Q = \Sigma 0.278\ C\ i\ A$

A = 65080 m^2
= 0.06508 km^2

t = $0.14465\ L/\ H^{0.2}A^{0.1}$
= $0.14465*88/1^{0.2}*65081^{0.1}$
= 4.202 min

i = $1.111*a/(t+b)^c$ (50 yrs return period, Table 3a, Corrigendum 2024, SDM) and (11.1% increase due to climate change)
= $1.111*505.5/(4.202+3.29)^{0.355}$
= 274.8 mm/hr

Therefore, Q = 0.278*0.95*274.8*0.065081
= 4.7225 m^3/sec
= **283348** lit/min

Providing 1050mm dia. concrete pipe is NOT ok

Calculation Maximum Capacity of Existing 2500mm(W)x2500mm(D) Open Channel

Manning Equation V = $R^{2/3}*S_r^{0.5}/n$

where R = A/(W+2D) W= 2.5 m
= 0.8099 m D= 2.3 m (200mm freeboard considered)
A= 5.75 m2

n = 0.03 $s/m^{1/3}$ (Talbe 13 of Stormwater Drainage Manual)

S_f = 0.02

Therefore, V = $0.4225^{/3}*0.02^{0.5}/0.030$
= 4.096 m/sec

Maximum Capacity (Q_{max}) = V*A
= 23.55056 m^3/sec
= 1413034 lit/min
> 257975 lit/min

For Stream 1, it is recommended to construct a 2500mm(W)x2500mm(D) Open Channel to replace the existing 1050mm dia. concrete pipe

Calculation Maximum Capacity of Existing Stream 2 2500mm(W)x1400mm(D) Open Channel

Manning Equation V = $R^{2/3}*S_r^{0.5}/n$

where R = A/(W+2D) W= 2.5 m
= 0.6122 m D= 1.2 m (200mm freeboard considered)
A= 3 m2

n = 0.04 $s/m^{1/3}$ (Talbe 13 of Stormwater Drainage Manual)

S_f = 0.02

Therefore, V = $0.4225^{/3}*0.02^{0.5}/0.030$
= 2.549 m/sec

Maximum Capacity (Q_{max}) = V*A
= 7.64762 m^3/sec
= 458857 lit/min
> 283348 lit/min

It is OK for Stream 2

Appendix G – CALCULATION OF EXISTIGN NULLAH

GEOINFO MAP
地理資訊地圖

前往地圖: https://www.map.gov.hk/gm/geo:22.4275,114.0168?z=18056

Catchment Area Plan for existing nullah in Lam Tai East Road

由「地理資訊地圖」網站提供: https://www.map.gov.hk

Calculation of Design Runoff for the Nullah beside Lam Tai East Road,

Catchment Area 1, Area	=	1155578	m^2	(C=	0.95	)
Catchment Area 2, Area	=	564422	m^2	(C=	0.25	)
Total Area	=	1720000	m^2			

$\Sigma Q = \Sigma 0.278\ C\ i\ A$

$A = 1720000\ m^2 = 1.72\ km^2$

$t = 0.14465\ L/\ H^{0.2}A^{0.1}$
$= 0.14465*50/1^{0.2}*1720000^{0.1}$
$= 1.721$ min

$i = 1.16*a/(t+b)^c$ (100 yrs return period, Table 3a, Corrigendum 2024, SDM) and (16% increase due to climate change)
$= 1.16*508.6/(1.721+3.38)0.338$
$= 340.1$ mm/hr

Therefore, $Q = 0.278*0.95*340.1*1.155578+0.278*0.25*340.1*0.564422$
$= 117.1479\ m^3/sec$
$= 7028877$ lit/min

Calculation Maximum Capacity of the Nullah beside Lam Tai East Road,

Manning Equation $V = R^{2/3}*S_f^{0.5}/n$

where $R = W*D/(2D+W) = 1.4583$ m (W= 5 m, D= 3.5 m)

$n = 0.012\ s/m^{1/3}$ (Talbe 13 of Stormwater Drainage Manual)

$S_f = 0.01$

Therefore, $V = 1.4583^{2/3}*0.01^{0.5}/0.012$
$= 10.7166$ m/sec

Maximum Capacity (Q_{max}) $= V*A$
$= V*W*(D-0.2)$
$= 176.8237\ m^3/sec$
$= 10609424$ lit/min
> 7028877 lit/min OK