

Total: 45 pages

Date: 30 December 2025

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.

Our response to the comments of the Transport Department is shown below:

Transport Department's comments	Applicant's response
(a) Would you please ask the applicant's to indicate the vehicular run-in/out and dimension of it on its layout plan for my further consideration.	Noted. Please see attached Figure 4.

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

Yours faithfully,



Patrick Tsui

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

3封郵件

## [Departmental comme...]

I refer to the captioned application No. A/YL-TYST/1334.

As discussed, please find the following comments from DSD on your submitted Drainage Impact Assessment for your reference:

Appendix D

- Peripheral surface channels shall 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. 1338, 1343, 1344, 1351, 1356 S.B, 1358 RP &1360). **Peripheral channels have been provided.**
- Please indicate the gradient and invert level of the outlet pipe at Stream 1 & 2. Please also indicate the invert level of the stream bed level at the discharge point and provide details/section of the discharge pipe to the stream. **It is indicated in Drawing D01 and D05**
- Please provide details/section of the proposed 2.5m(W)x1m(D) open channel with cover, also indicating the adjoining stream bed levels. **Details are presented in Drawing D05**
- Please provide details/section of the proposed open-bottom type fence wall, and also indicate the extent of fence wall to be erected on plan. **It is presented in the Drawings.**
- The invert level of CP6 (+10.53mPD) should not be higher than the invert level of upstream CP5 (+10.45mPD), please review. **It is revised accordingly.**
- Standard details should be provided to indicate the sectional details of the proposed u-channel and the catchpit/sand trap. **Standard details are provided.**
- Please advise if any site formation/levelling works to be carried out under this application. Cross sections showing the existing and proposed ground levels of the captioned site with respect to the adjacent areas should be given. **No site formation/levelling works to be carried out.**
- Cross sections are provided in Drawing D04**
- The existing stream 1 and stream 2, to which the applicant proposed to discharge the stormwater from the subject site was not maintained by this office. The applicant(s) shall resolve any conflict/disagreement arisen for discharging the runoff from the application site(s) to the proposed discharge point(s). In the case that it is a local village drains, DO/YL should be consulted. Moreover, the applicant(s) should ensure that this drainage system and the existing downstream drains/channelsstreams have adequate capacity to convey the additional runoff from the application site(s). Regular maintenance should be carried out by the applicant(s) to avoid blockage of the system. **Noted.**
- The development should neither obstruct overland flow and nor adversely affect existing natural streams, village drains, ditches and the adjacent areas, etc. **Noted.**
- The applicant should resolve any conflict/disagreement with relevant lot owner(s) and seek permission from DLO/YL 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.**
- DSD shall not maintain all such drains and manholes proposed to be laid within private lots. **Noted.**
- Since the application site is close to the existing stream, there should be adequate measures provided at the resources of the applicant to avoid the site from being eroded and flooded and to ensure capacity of watercourse and flooding susceptibility of the adjoining areas would not be adversely affected by the proposed development. Please advise the measures to be provided for review. **It is presented in the report.**
- The applicant should be reminded to minimize the possible adverse environmental impacts on the existing watercourse in his design and during construction. **Noted.**
- The applicant should demonstrate with hydraulic calculation that the existing Stream 1 & 2 have sufficient capacity to cater for any additional flow generated from the application site. The dimension of the narrowest/shallowest (critical) section(s) of the existing stream should be surveyed and indicated. **Critical sections are presented.**
- Please clarify why Lot Nos. 1356 S.B, 1357, 1359 & 1360 which are within your application site as shown in Appendices A & B are excluded from the catchment area plan. **These catchment areas have been considered.**

Appendices E - G

- Please review the H value which should be the average slope (m per 100m), measured along the line of natural flow, from the summit of the catchment to the point under consideration (i.e.  $\delta h / L \times 100$ ), instead of 1. **Revised accordingly.**
- Please review if the existing nullah beside Lam Tai East Road should be considered as a main rural catchment drainage channel and adopt 50 years design return period. **Revised accordingly.**

Regards,

Edwin YEUNG

Tuen Mun & Yuen Long West District Planning Office  
Planning Department

Tel.: 2158 6296

Fax.: 2489 9711



查看更多

## 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: Dec 2025

## Contents

### 1. INTRODUCTION

- 1.1 Project Background
- 1.2 Objectives of the Report
- 1.3 Structure of the Report

### 2. PROJECT DESCRIPTION

- 2.1 Site Location
- 2.2 Existing Condition

### 3. DRAINAGE IMPACT ASSESSMENT

- 3.1 Introduction
- 3.2 Methodology
- 3.3 Design Assumption and Parameters
- 3.4 Existing Drainage System
- 3.5 Proposed Drainage System
- 3.6 Drainage Impact Assessment

### 4. CONCLUSION

Appendix A – LOCATION PLAN

Appendix B – SITE PLAN

Appendix C – LOCATIONS AND PHOTOS OF EXISTING STREAM 1 AND STREAM, 2

Appendix D – DRAINGAE PROPOSAL

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

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

Appendix G – CALCULATION OF EXISTIGN NULLAH

## 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  $1.14 \times 10^{-6}$  m<sup>2</sup>/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 (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)

Other recommendation:

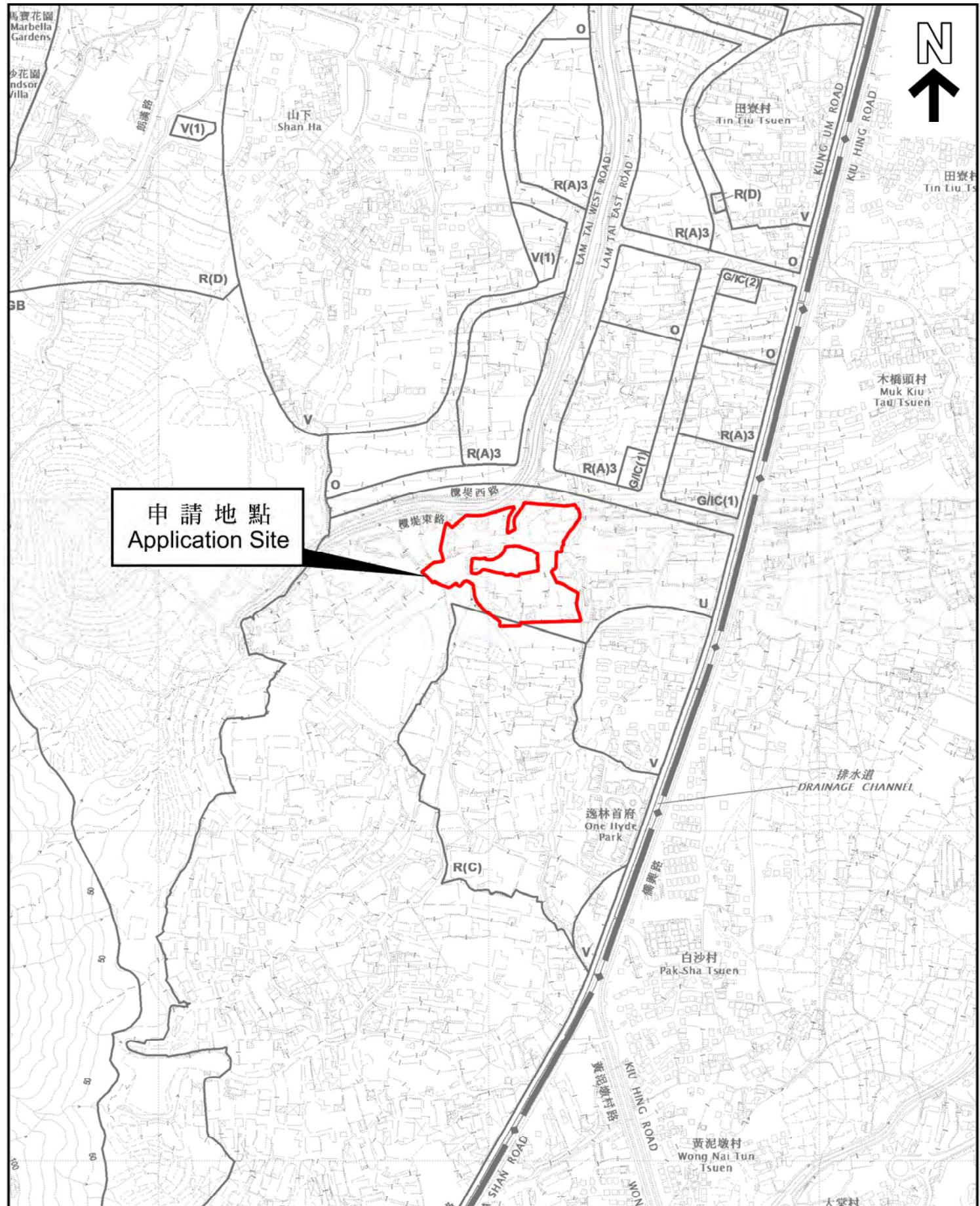
It is recommended that the hoarding, if any, should be open-bottom type to allow the designed drains to collect the overland flow.

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.
- 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

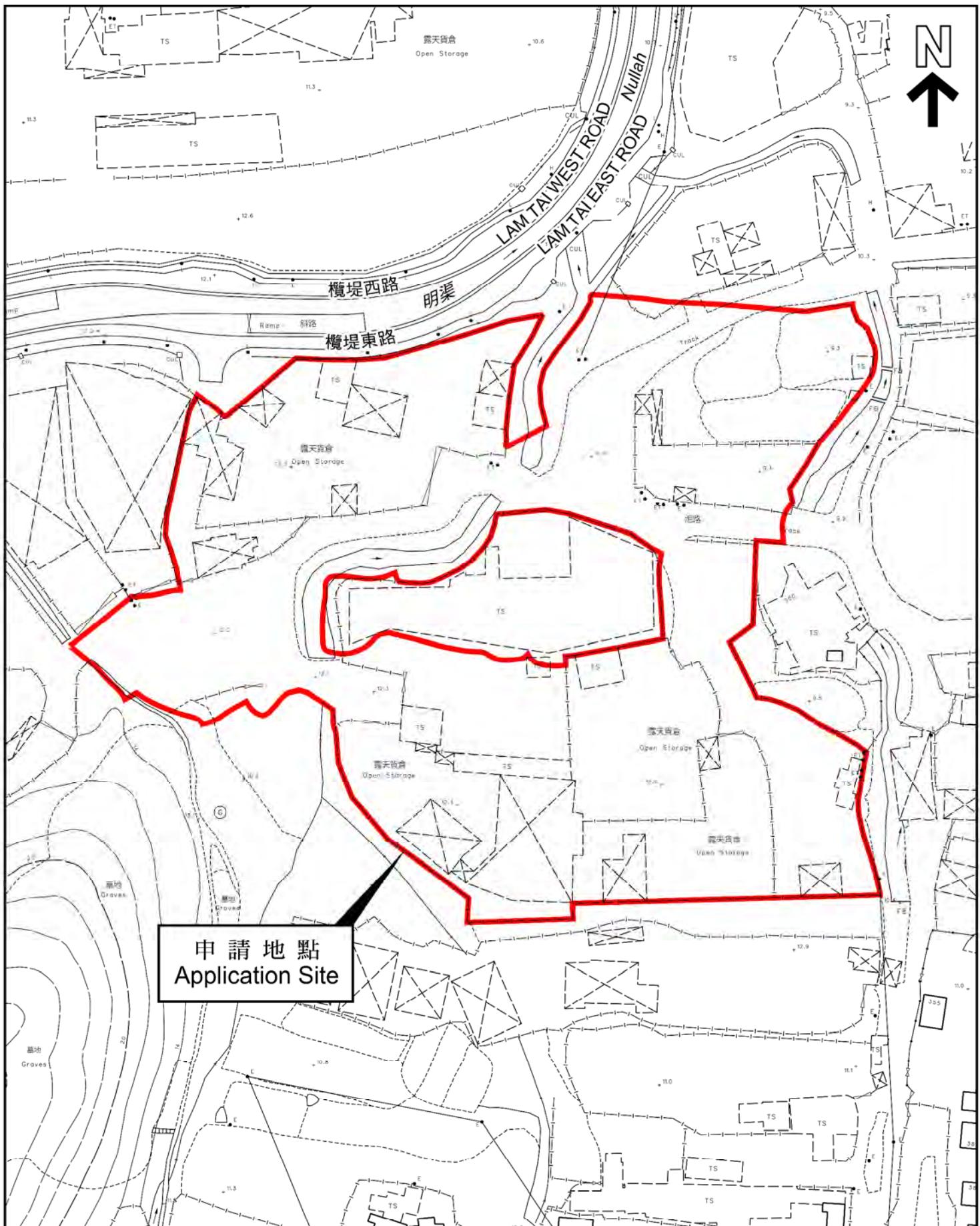
申請地點界線只作識別用  
APPLICATION SITE BOUNDARY  
FOR IDENTIFICATION PURPOSE ONLY

參考編號  
REFERENCE No.

A/YL-TYST/1334

SCALE 1:7500 比例尺  
METRES 100 0 100 200 300 METRES

## Appendix B – SITE PLAN

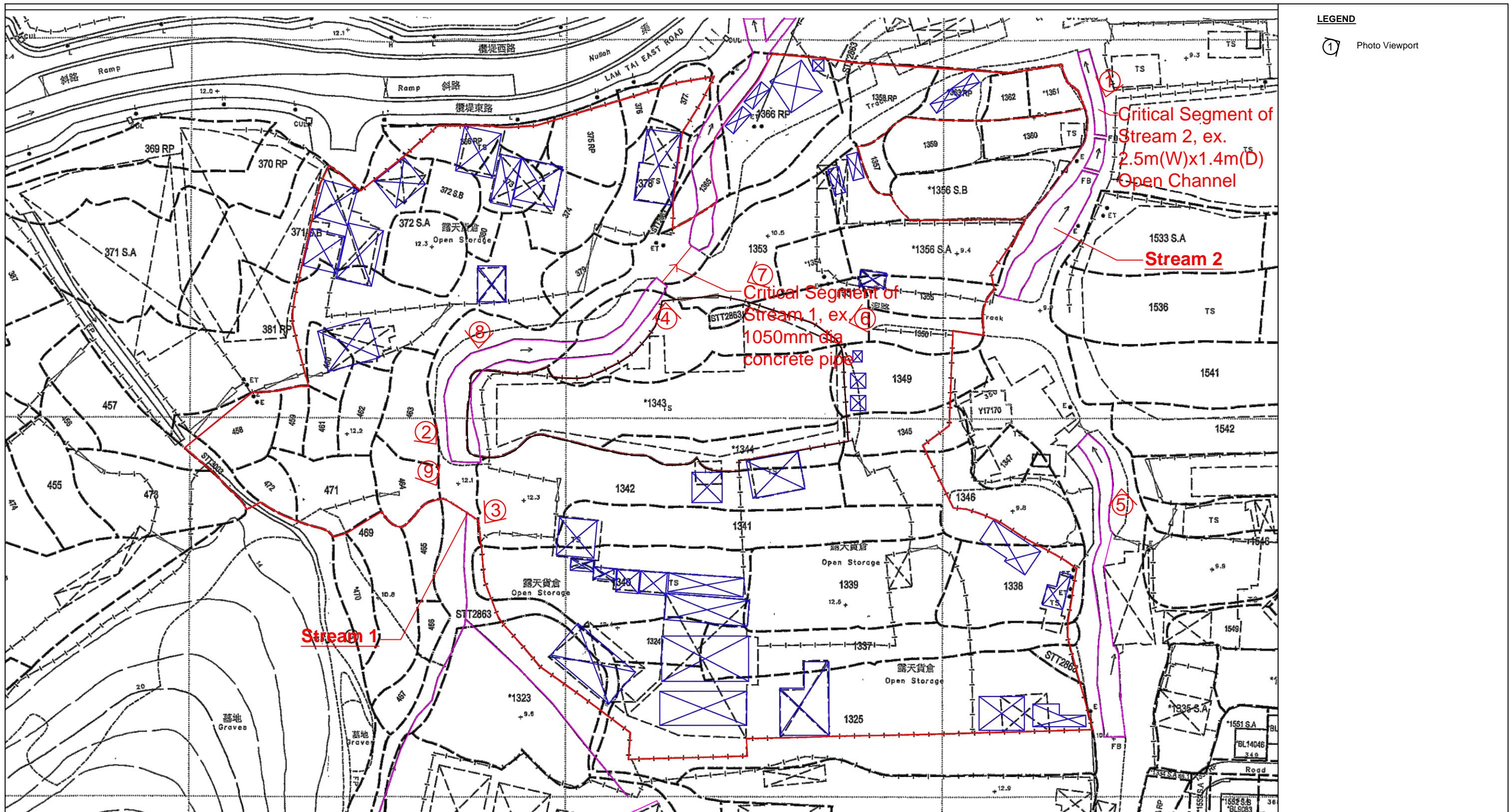


本摘要圖於2025年9月16日擬備，  
所根據的資料為測量圖編號  
6-NW-19A及C  
EXTRACT PLAN PREPARED ON 16.9.2025  
BASED ON SURVEY SHEETS No.  
6-NW-19A&C

### 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**



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

Date:  
23-12-2025

Check by:  
DM

Drawing No:  
P01

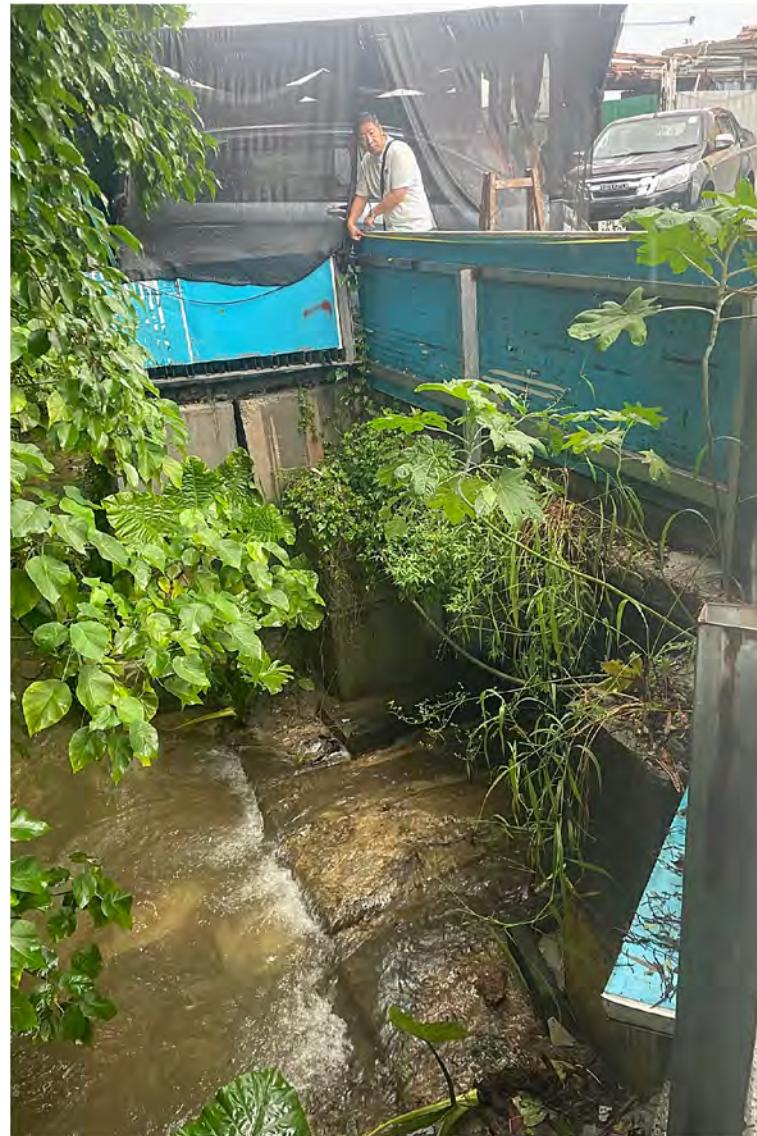
CHING WAN ENGINEERING CONSULTANT COMPANY

正宏工程顧問公司

**Photo 1**



**Photo 2**



**Photo 3**



**Photo 4**



**Photo 5**



**Photo 6**



**Photo 7**



**Photo 8**



**Photo 9**



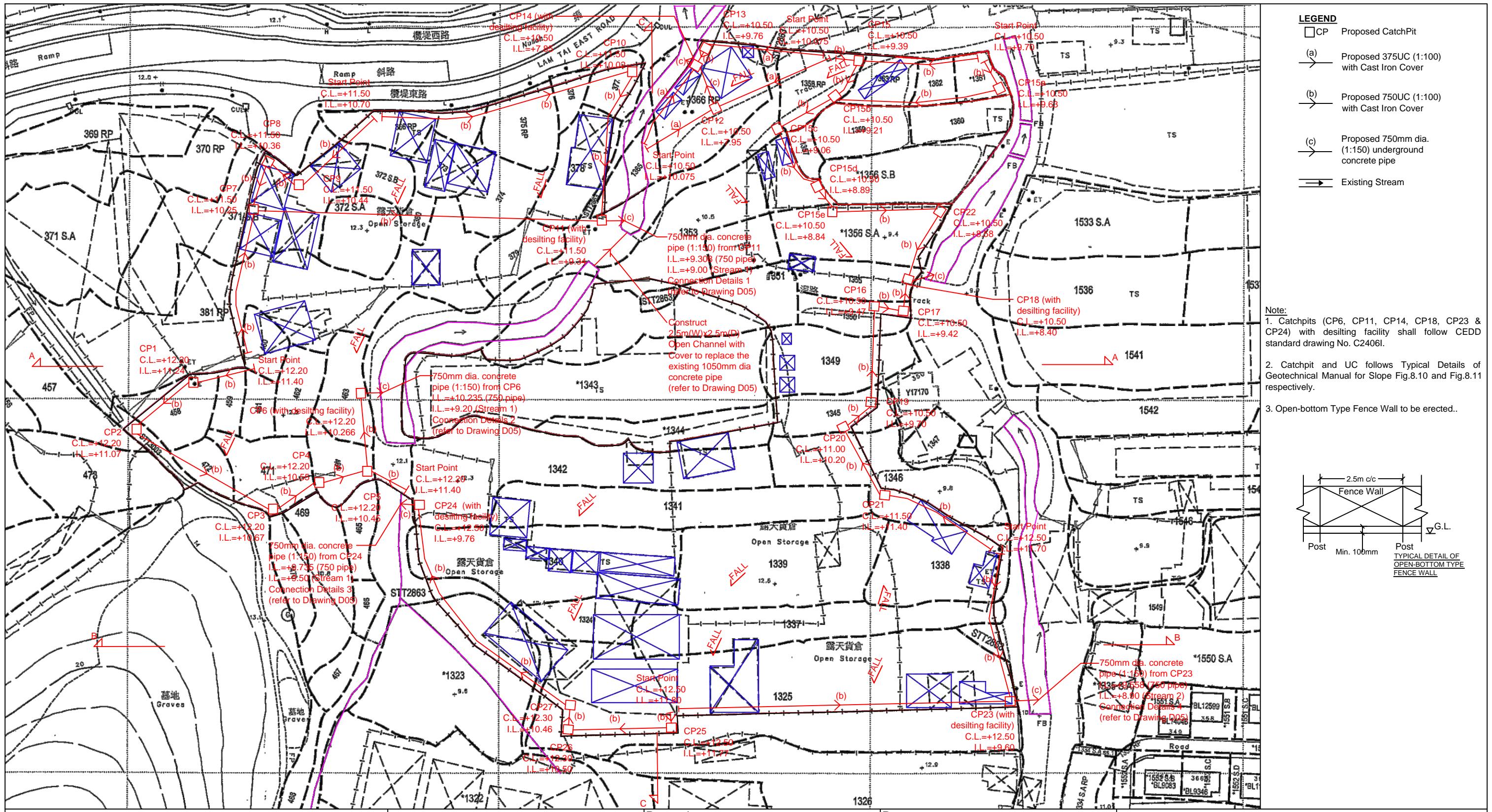
**Photo 1a**



**Photo 1b**



## Appendix D – DRAINGAE PROPOSAL



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

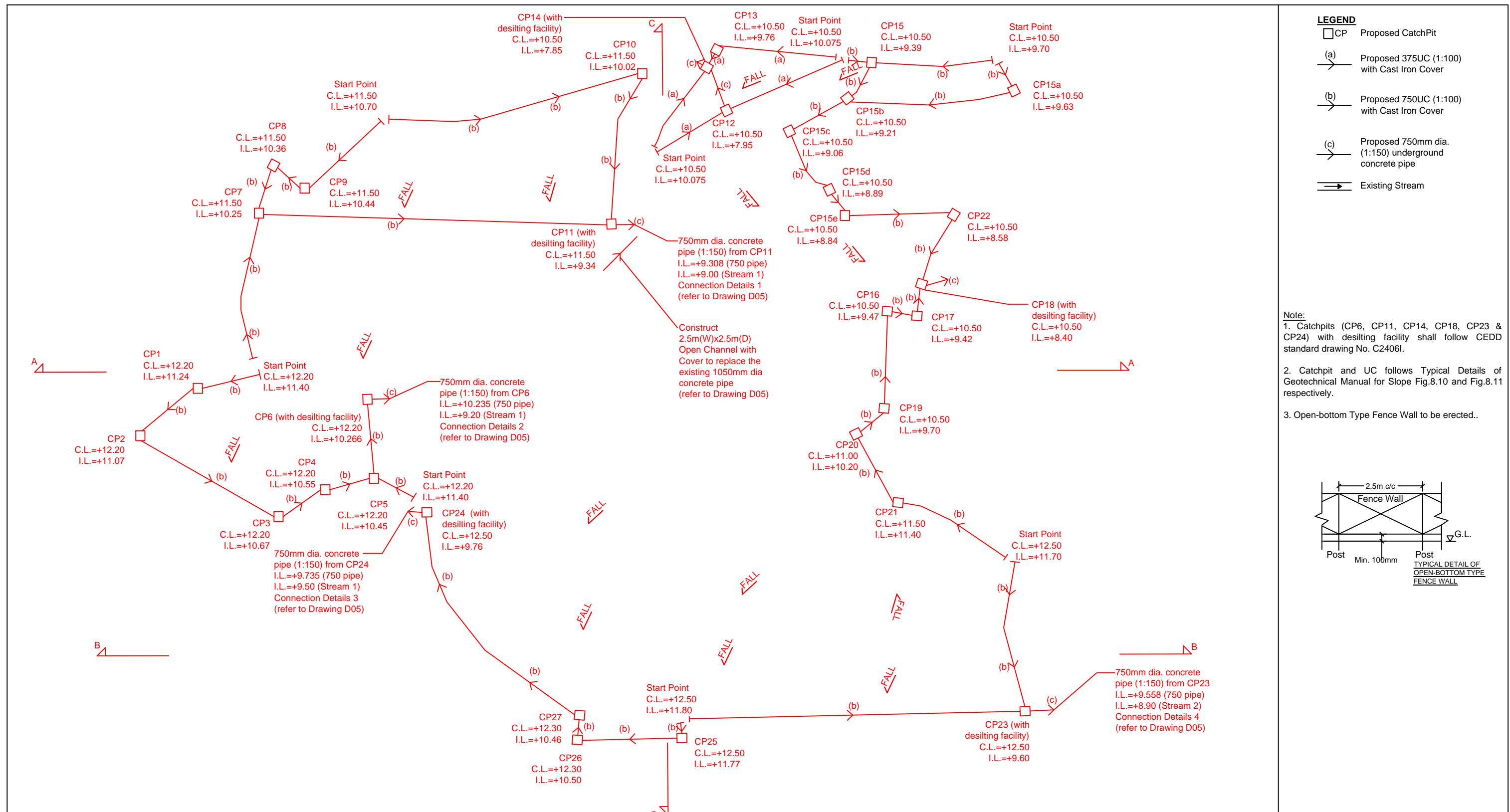
Drawn by:  
DM

Date:  
23-12-2025

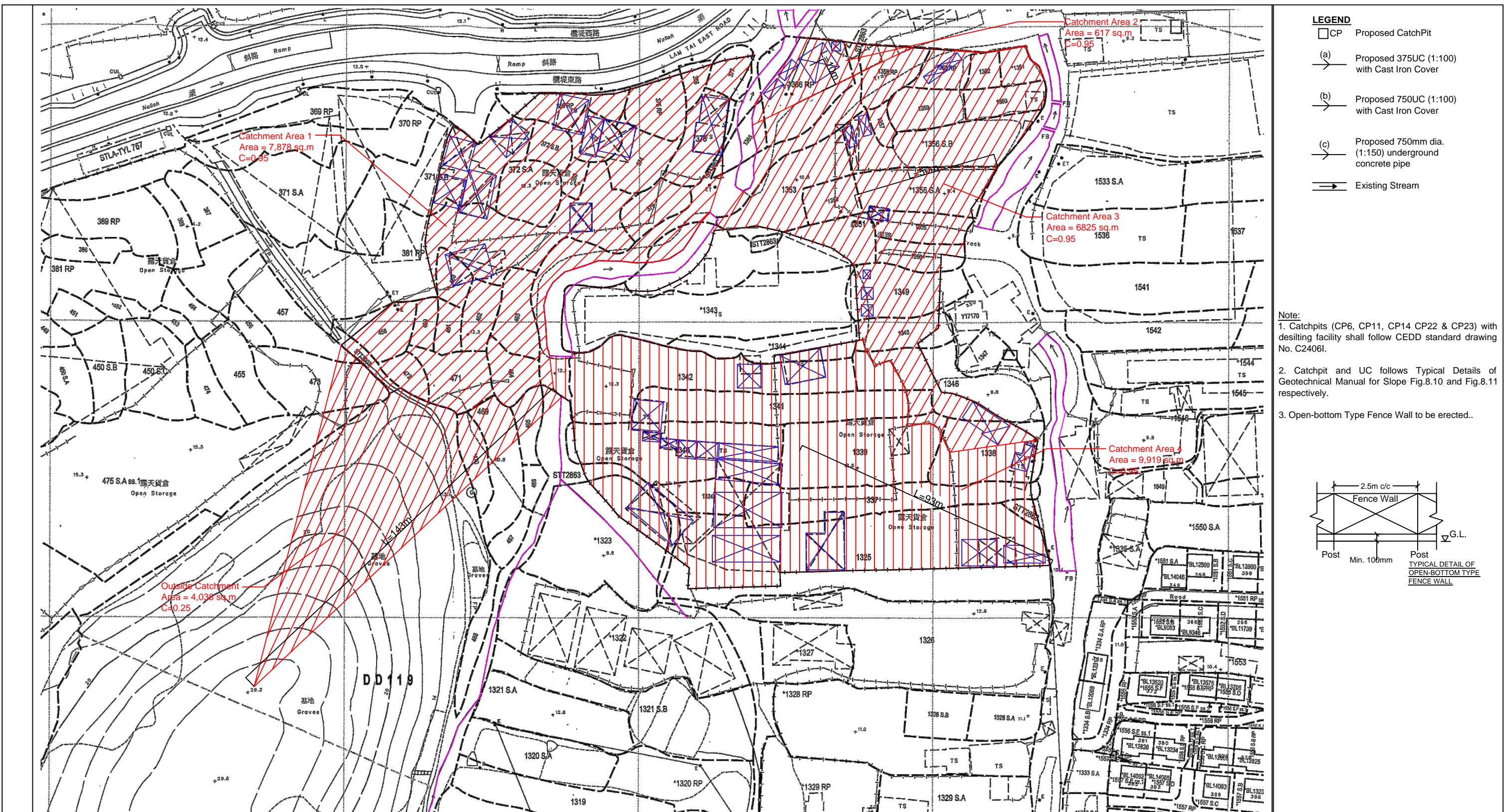
Check by:  
DM

Drawing No:  
D01

正宏工程顧問公司  
CHING WAN ENGINEERING CONSULTANT COMPANY



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	23-12-2025	正宏工程顧問公司 CHING WAN ENGINEERING CONSULTANT COMPANY
	Check by: DM	Drawing No: D02		



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

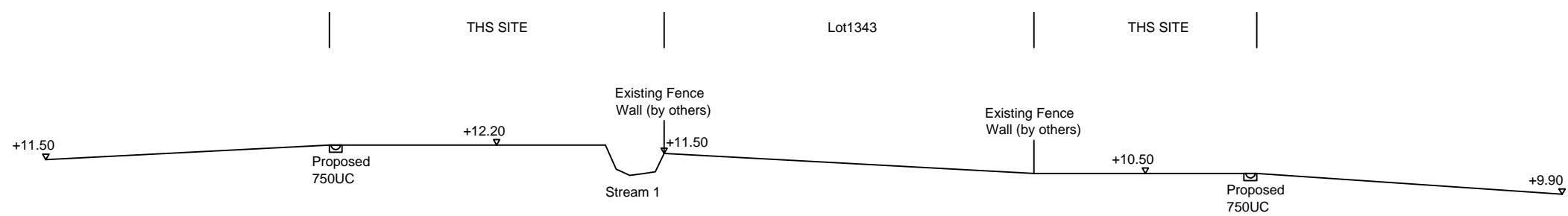
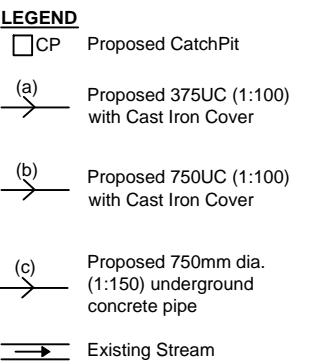
Drawn by:  
DM

Check by:  
DM

Date:  
23-12-2025

Drawing No:  
D03

正宏工程顧問公司  
CHING WAN ENGINEERING CONSULTANT COMPANY

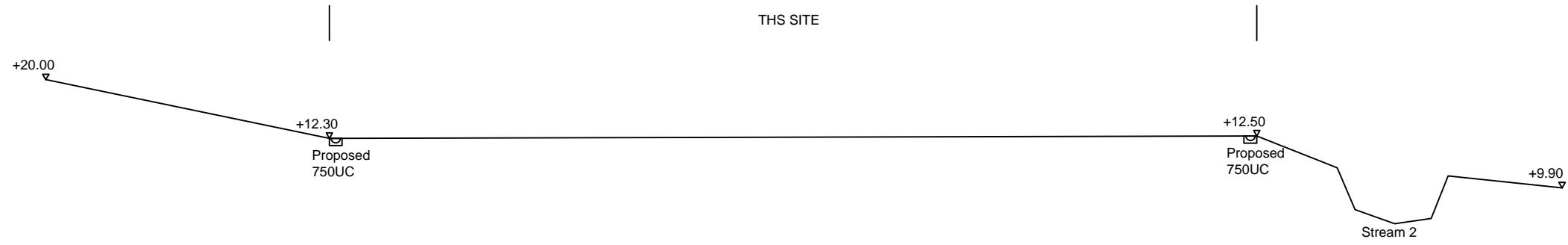
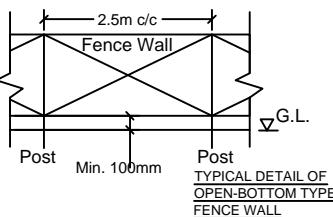


SECTION A-A

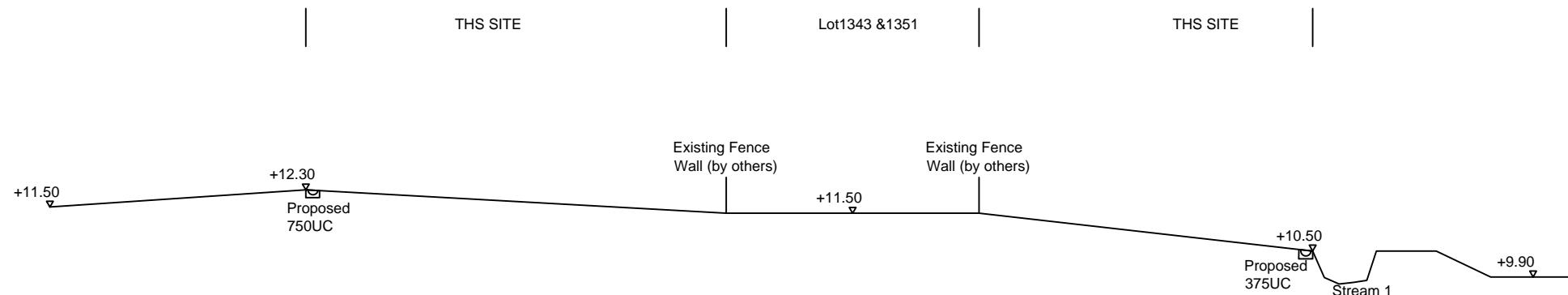
**Note:**  
 1. Catchpits (CP6, CP11, CP14, CP18, CP23 & CP24) with desilting facility shall follow CEDD standard drawing No. C24061.

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..



SECTION B-B



SECTION C-C

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

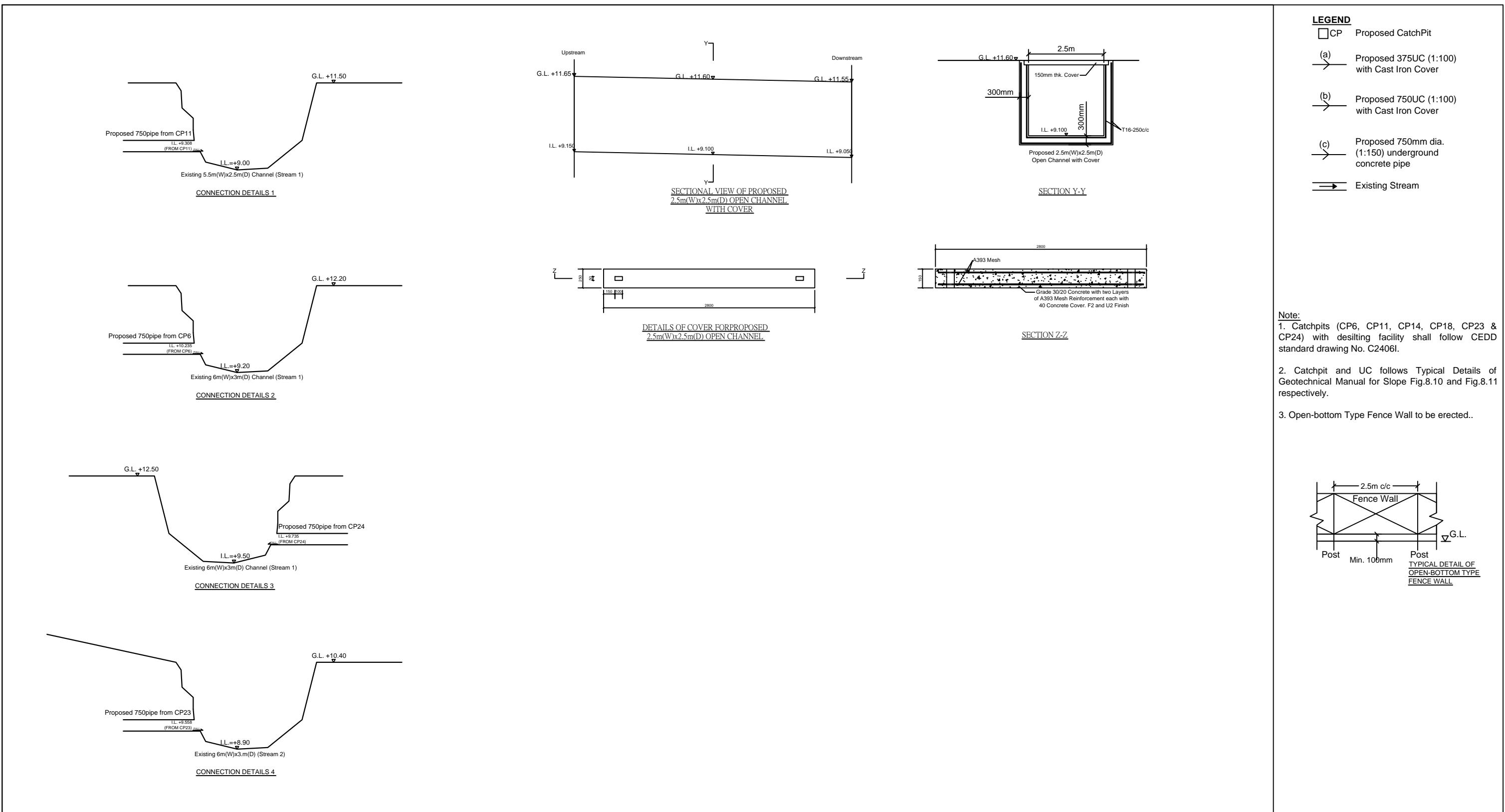
Drawn by:  
 DM

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 DM

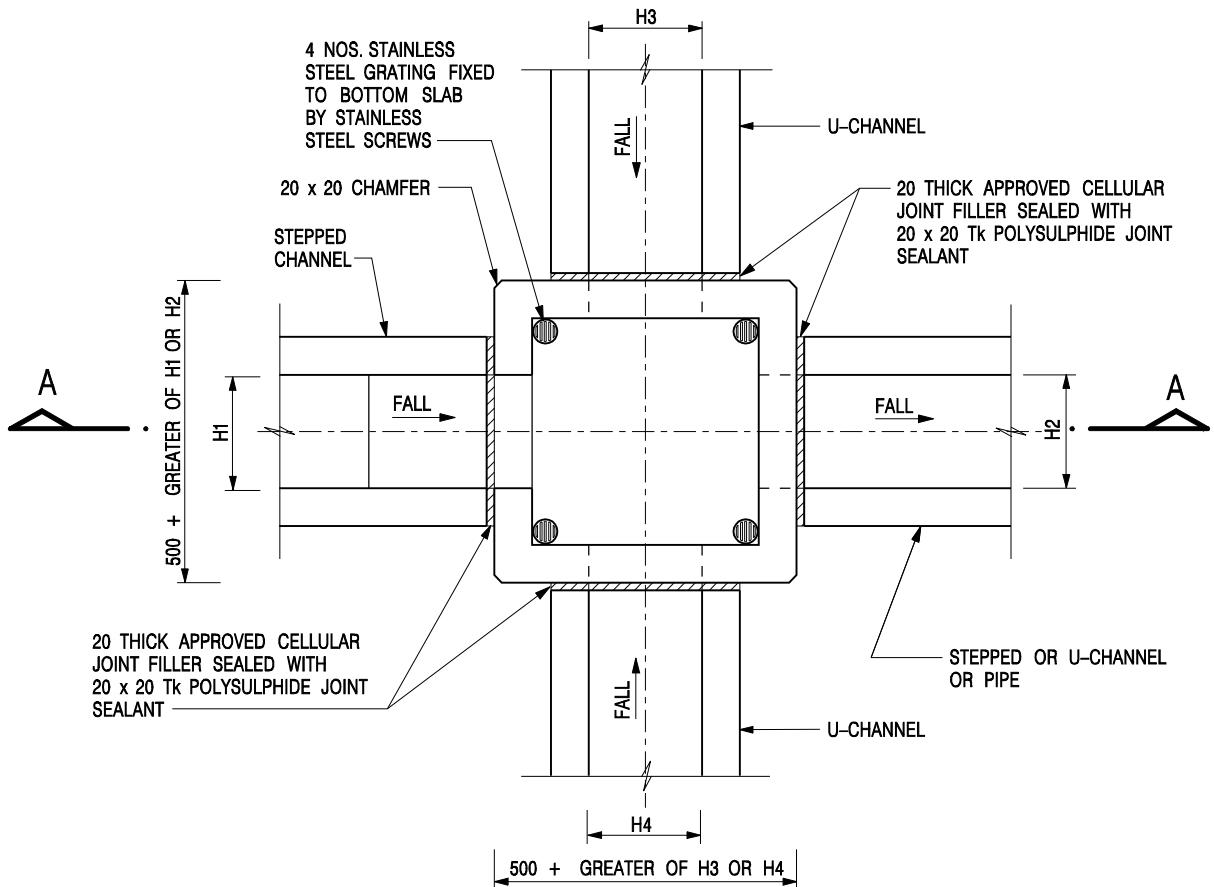
Date:  
 23-12-2025

Drawing No:  
 D04

正宏工程顧問公司  
 CHING WAN ENGINEERING CONSULTANT COMPANY

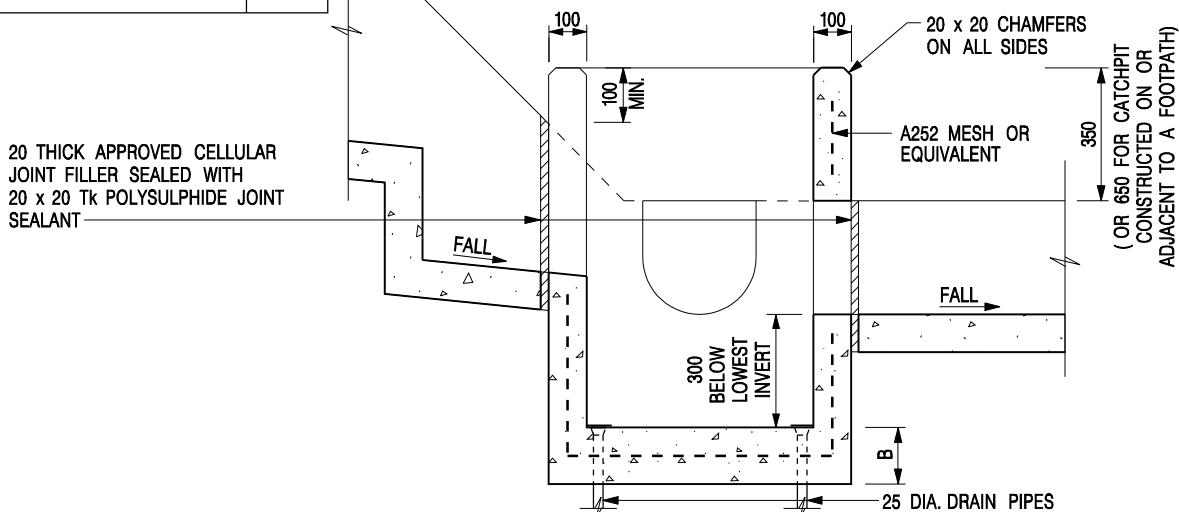


<p>Project: Temporary Open Storage of Construction Machinery and Materials, Recycling Materials and Used Electrical Appliances with Ancillary Workshop for a Period of 3 Years at Various Lots in D.D. 119 and Adjoining Government Land, Tong Yan San Tsuen, Yuen Long, New Territories (Application No.:A/YL-TYST/1334)</p>	<p>Title: Drainage Proposal - Details</p>	Drawn by: DM	Date: 23-12-2025	<p>正宏工程顧問公司 CHING WAN ENGINEERING CONSULTANT COMPANY</p>
		Check by: DM	Drawing No: D04	



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

PLAN



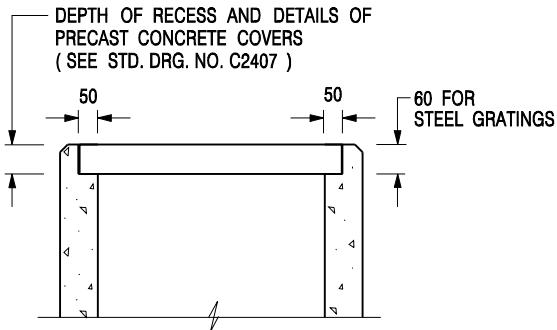
SECTION A - A

NOTES:

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

CATCHPIT WITH TRAP  
(SHEET 1 OF 2)

-	FORMER DRG. NO. C2406J.	Original Signed	03.2015
REF.	REVISION	SIGNATURE	DATE
 <b>CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT</b>			
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

DATE JAN 1991

DRAWING NO.

C2406 /2A

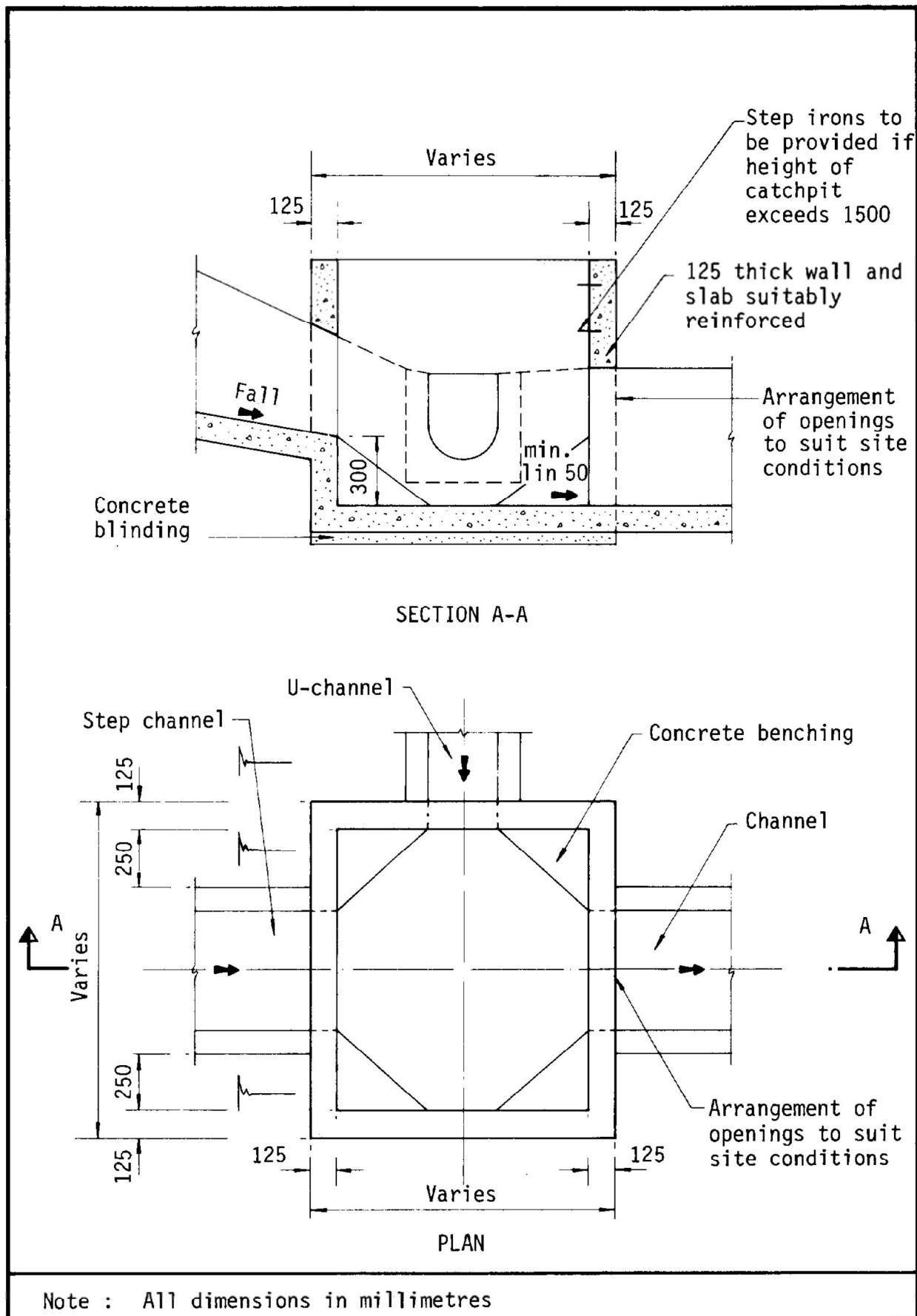
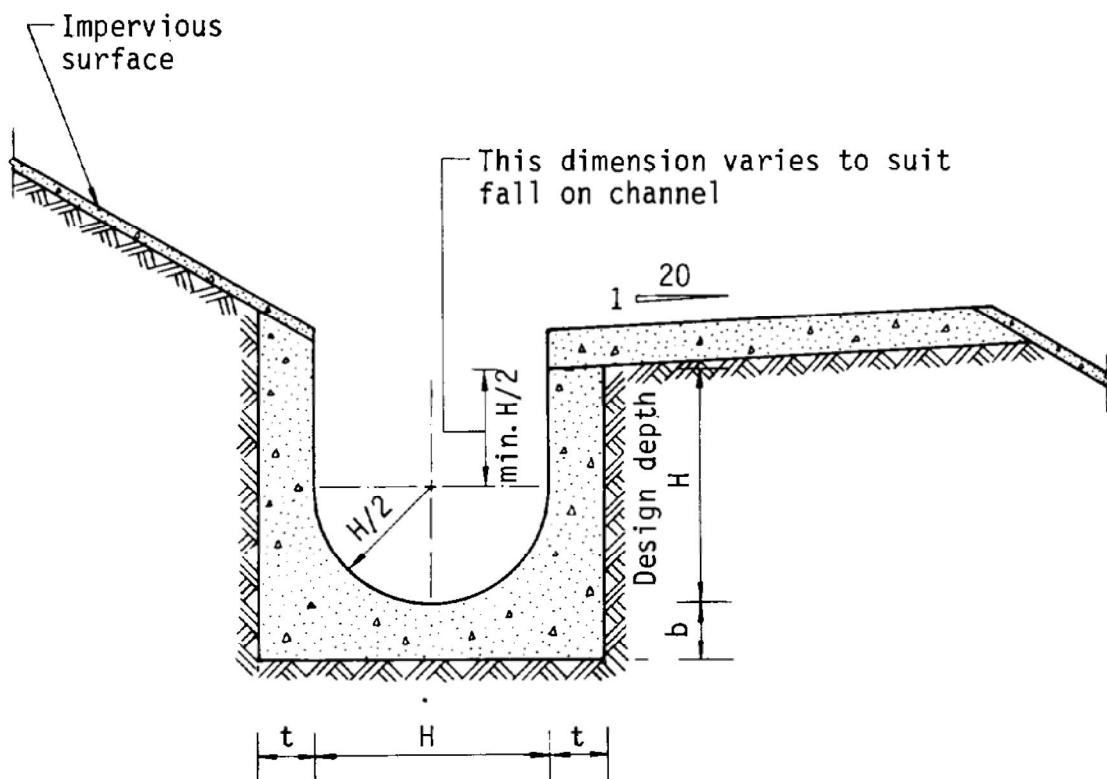


Figure 8.10 - Typical Details of Catchpits



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**

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

$$\begin{aligned} A &= 7878+4038 & m^2 \\ &= 11916 & \\ &= 0.011916 & km^2 \end{aligned}$$

$$\begin{aligned} t &= 0.14465 L/H^{0.2} A^{0.1} & \text{(where } H=(29.3-12.2)*100/143 \text{)} \\ &= 0.14465*143/11.96^{0.2}*11916^{0.1} & = 11.96 \\ &= 4.926 & \text{min} \end{aligned}$$

$$\begin{aligned} i &= 1.111*a/(t+b)^c & \text{(50 yrs return period, Table 3a, Corrigendum 2024,} \\ &= 1.111*505.5/(4.926+3.29)^{0.355} & \text{SDM) and (11.1% increase due to climate change)} \\ &= 265.9 & \text{mm/hr} \end{aligned}$$

$$\begin{aligned} \text{Therefore, } Q &= 0.278*0.25*265.9*0.004038+0.278*0.95*265.9*0.007878 \\ &= 0.6279 & m^3/sec \\ &= \mathbf{37672} & \text{lit/min} \end{aligned}$$

**Provide 750UC (1:100) is OK**

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

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

$$\begin{aligned} A &= 617 & m^2 \\ &= 0.000617 & km^2 \end{aligned}$$

$$\begin{aligned} t &= 0.14465 L/H^{0.2} A^{0.1} & \text{(Conservatively take } H=1 \text{)} \\ &= 0.14465*10/1^{0.2}*617^{0.1} \\ &= 0.761 & \text{min} \end{aligned}$$

$$\begin{aligned} i &= 1.111*a/(t+b)^c & \text{(50 yrs return period, Table 3a, Corrigendum 2024,} \\ &= 1.111*505.5/(0.761+3.29)^{0.355} & \text{SDM) and (11.1% increase due to climate change)} \\ &= 341.8 & \text{mm/hr} \end{aligned}$$

$$\begin{aligned} \text{Therefore, } Q &= 0.278*0.95*341.8*0.000617 \\ &= 0.0557 & m^3/sec \\ &= \mathbf{3342} & \text{lit/min} \end{aligned}$$

**Provide 375UC (1:100) is OK**

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

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

$$\begin{aligned} A &= 6825 & m^2 \\ &= 0.006825 & km^2 \end{aligned}$$

$$\begin{aligned} t &= 0.14465 L/H^{0.2} A^{0.1} & \text{(Conservatively take } H=1 \text{)} \\ &= 0.14465*50/1^{0.2}*68285^{0.1} \\ &= 2.991 & \text{min} \end{aligned}$$

$$\begin{aligned} i &= 1.111*a/(t+b)^c & \text{(50 yrs return period, Table 3a, Corrigendum 2024,} \\ &= 1.111*505.5/(2.991+3.29)^{0.355} & \text{SDM) and (11.1% increase due to climate change)} \\ &= 292.5 & \text{mm/hr} \end{aligned}$$

$$\begin{aligned} \text{Therefore, } Q &= 0.278*0.95*292.5*0.006825 \\ &= 0.5272 & m^3/sec \\ &= \mathbf{31633} & \text{lit/min} \end{aligned}$$

**Provide 750UC (1:100) is OK**

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

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

$$\begin{aligned} A &= 9919 & m^2 \\ &= 0.009919 & km^2 \end{aligned}$$

$$\begin{aligned} t &= 0.14465 L/H^{0.2} A^{0.1} & \text{(Conservatively take } H=1 \text{)} \\ &= 0.14465*93/1^{0.2}*9919^{0.1} \\ &= 5.360 & \text{min} \end{aligned}$$

$$\begin{aligned} i &= 1.111*a/(t+b)^c & \text{(50 yrs return period, Table 3a, Corrigendum 2024,} \\ &= 1.111*505.5/(5.360+3.29)^{0.355} & \text{SDM) and (11.1% increase due to climate change)} \\ &= 261.1 & \text{mm/hr} \end{aligned}$$

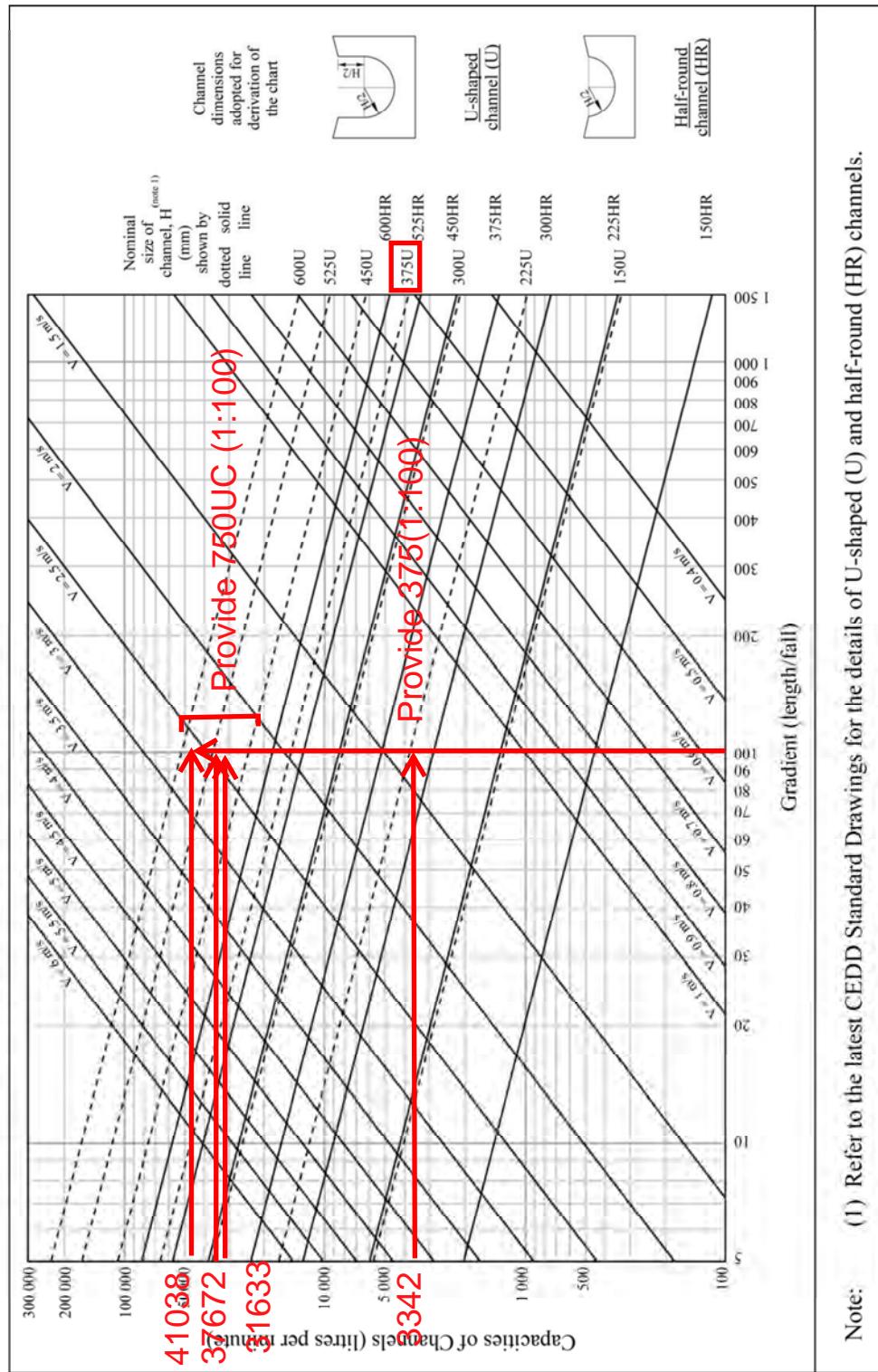
$$\begin{aligned} \text{Therefore, } Q &= 0.278*0.95*261.1*0.011462 \\ &= 0.6840 & m^3/sec \\ &= \mathbf{41038} & \text{lit/min} \end{aligned}$$

**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

Issue No.: 1 | Revision: - | Date: 05.06.2014 | Page: 3 of 3

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

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

where :

V	=	mean velocity (m/s)
g	=	9.81 m/s <sup>2</sup> gravitational acceleration (m/s <sup>2</sup> )
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 m <sup>2</sup> /s kinematic viscosity of fluid (m <sup>2</sup> /s)
s	=	0.006667 hydraulic gradient

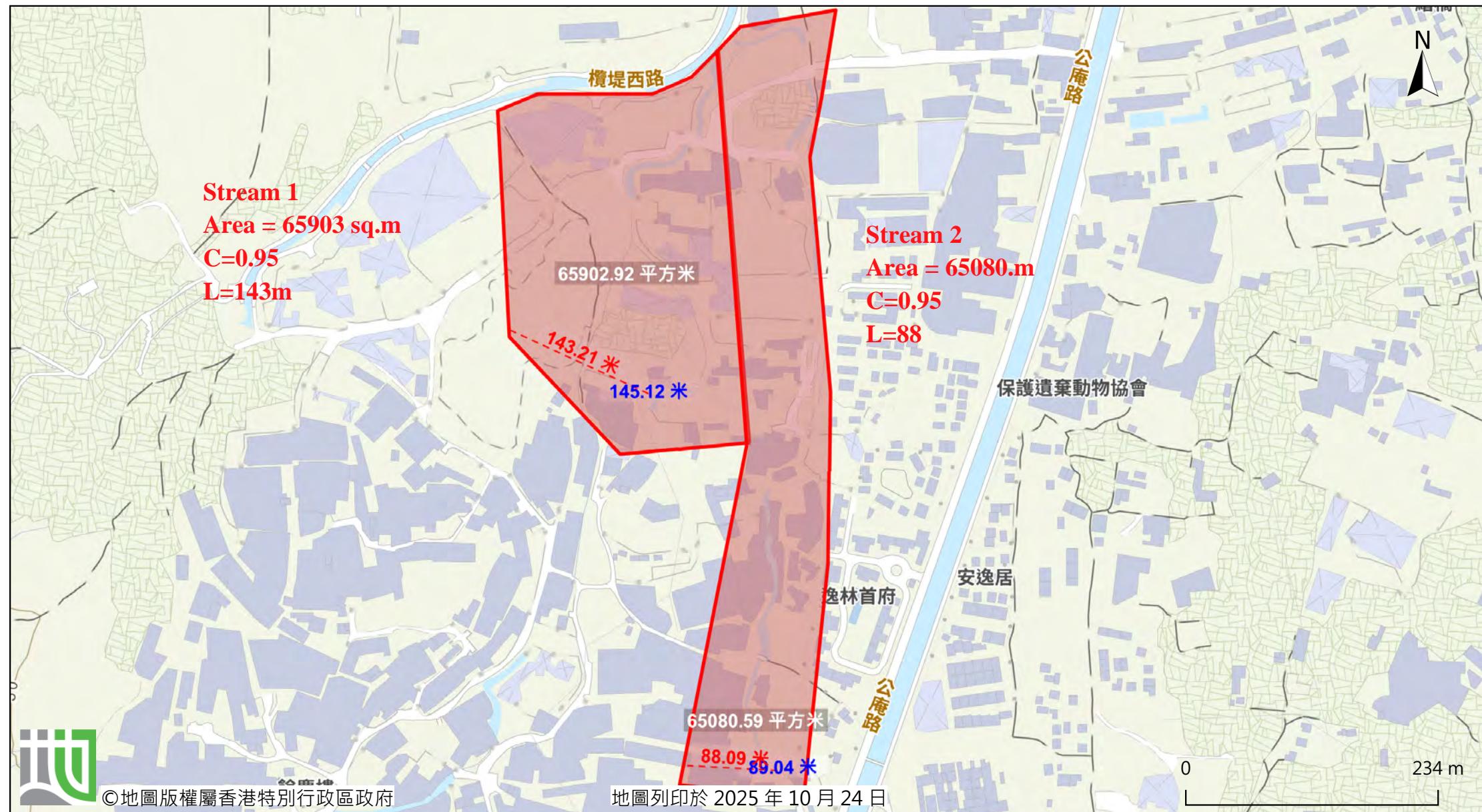
Therefore, design V of pipe capacity = 2.6177 m/s

$$\begin{aligned} Q &= 0.8VA && (0.8 \text{ factor for sedimentation}) \\ &= 0.925 \text{ m}^3/\text{s} \\ &= 55511 \text{ lit/min} \\ &> 41038 \text{ lit/min} && \text{Ok} \end{aligned}$$

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



Catchment Area Plan for Ex. Stream 1 and Stream 2



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Check 1050mm dia. Pipes by Colebrook-White Equation

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

where :

$V$  = mean velocity (m/s)  
 $g$  = 9.81 m/s<sup>2</sup> gravitational acceleration (m/s<sup>2</sup>)  
 $D$  = 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 m<sup>2</sup>/s kinematic viscosity of fluid (m<sup>2</sup>/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 m<sup>3</sup>/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	=	65081	$m^2$	(C= 0.95 ), L=	88 m

**Calculation of Design Runoff of the Proposed Development.**

**For checking Existing Stream 1,**

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

$$\begin{aligned} A &= 65903 & m^2 \\ &= 65903 \\ &= 0.065903 & km^2 \end{aligned}$$

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

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

$$\begin{aligned} \text{Therefore, } Q &= 0.278 * 0.95 * 247.0 * 0.065903 \\ &= 4.2996 & m^3/sec \\ &= \underline{\underline{257975}} & lit/min \end{aligned}$$

**For checking Existing Stream 2,**

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

$$\begin{aligned} A &= 65081 & m^2 \\ &= 0.065081 & km^2 \end{aligned}$$

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

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

$$\begin{aligned} \text{Therefore, } Q &= 0.278 * 0.95 * 274.8 * 0.065081 \\ &= 4.7225 & m^3/sec \\ &= \underline{\underline{283352}} & lit/min \end{aligned}$$

**Providing 1050mm dia. concrete pipe is NOT ok**

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

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

$$\begin{aligned} \text{where } R &= A/(W+2D) & W= & 2.5 \text{ m} \\ &= 0.4225 & m & D= & 2.3 \text{ m} & (200mm freeboard considered) \\ & & & A= & 3 \text{ m}^2 \end{aligned}$$

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

$$S_f = 0.02$$

$$\begin{aligned} \text{Therefore, } V &= 0.4225^{2/3} * 0.02^{0.5} / 0.030 \\ &= 2.654 & m/sec \end{aligned}$$

$$\begin{aligned} \text{Maximum Capacity (Q}_{\max}\text{)} &= V * A \\ &= 7.96325 & m^3/sec \\ &= 477795 & lit/min \\ &> 283352 & lit/min \end{aligned}$$

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

**It is OK for Stream 2**

## Appendix G – CALCULATION OF EXISTIGN NULLAH



Catchment Area Plan for existing nullah in Lam Tai East Road



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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	$m^2$	

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

$$\begin{aligned} A &= 1720000 & m^2 \\ &= 1.72 & km^2 \end{aligned}$$

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

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

$$\begin{aligned} \text{Therefore, } Q &= 0.278 * 0.95 * 340.1 * 1.155578 + 0.278 * 0.25 * 340.1 * 0.564422 \\ &= 117.1479 & m^3/sec \\ &= 7028877 & lit/min \end{aligned}$$

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

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

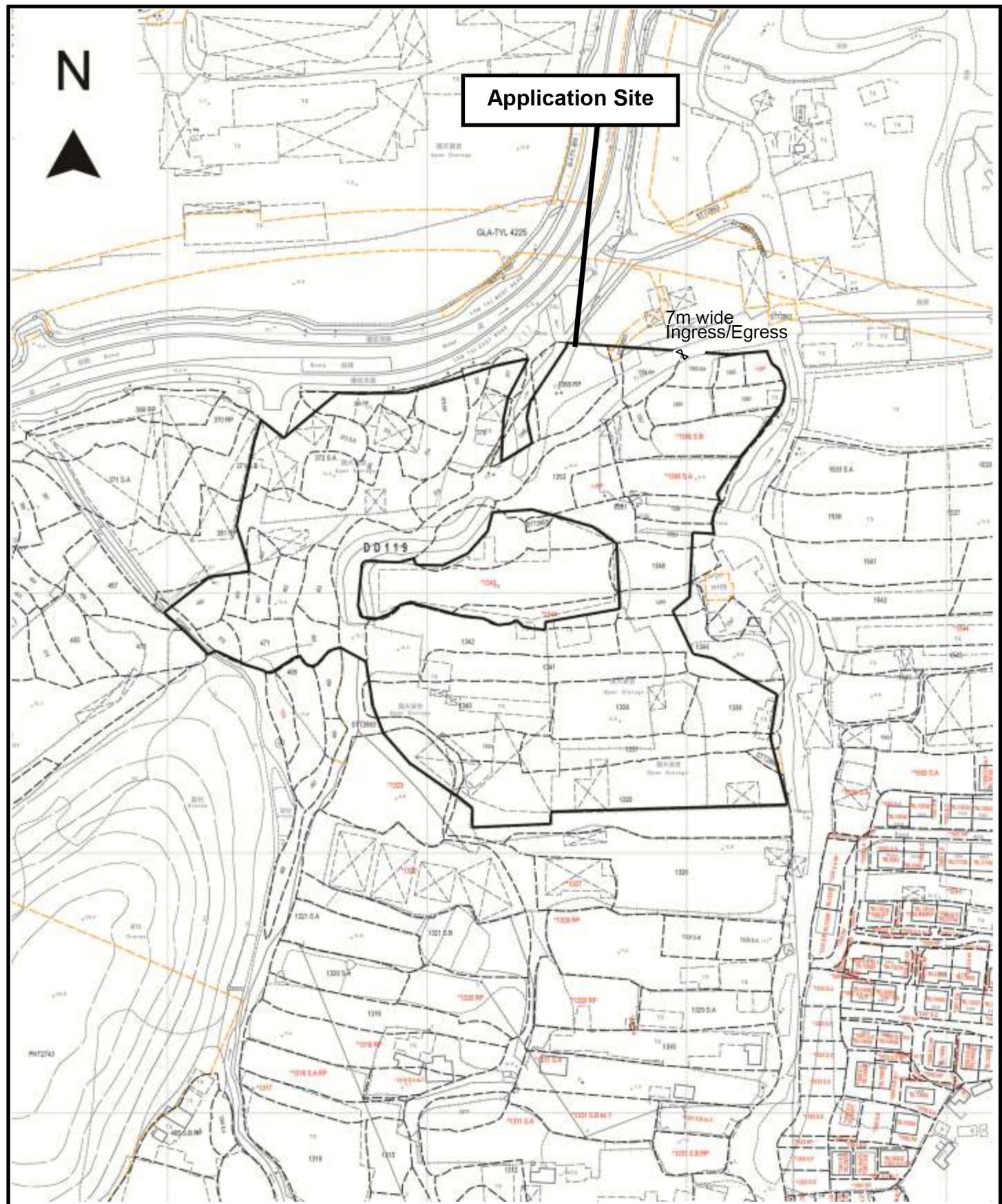
$$\text{where } R = W * D / (2D + W) \quad W = 5 \text{ m} \\ = 1.4583 \quad m \quad D = 3.5 \text{ m}$$

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

$$S_f = 0.01$$

$$\begin{aligned} \text{Therefore, } V &= 1.4583^{2/3} * 0.01^{0.5} / 0.012 \\ &= 10.7166 & m/sec \end{aligned}$$

$$\begin{aligned} \text{Maximum Capacity (Q}_{\max} \text{)} &= V * A \\ &= V * W * (D - 0.2) \\ &= 176.8237 & m^3/sec \\ &= 10609424 & lit/min \\ &> 7028877 & lit/min \quad \text{OK} \end{aligned}$$



Project 項目名稱:

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 & Adjoining Government Land, Yuen Long, N.T.

Drawing Title 圖目:

Proposed Run-in/Out

Remarks 備註:

Drawing No. 圖號:

Figure 4

Scale 比例:

1:2000