

Appendix V
Drainage Impact Assessment



Proposed Temporary Warehouse for Storage of Construction Materials and Construction Machinery, Parking of Special Purpose Vehicles and Rural Workshop with Ancillary Facilities for a Period of 3 Years and Associated Filling of Land, Filling of Pond and Excavation of Land

Various Lots in D.D. 125 And Adjoining Government Land, Ha Tsuen, Yuen Long, New Territories

Drainage Impact Assessment Report

Applicant
First Champion Limited

December 2024

Proposed Temporary Warehouse for Storage of Construction Materials and Machineries, Parking of Special Purpose Vehicles and Rural Workshop with Ancillary Facilities for a Period of 3 Years and Associated Filling of Land, Filling of Pond and Excavation of Land, Various Lots in D.D. 125 And Adjoining Government Land, Ha Tsuen, Yuen Long, New Territories

AMENDMENT RECORD

REVISION NO.	DESCRIPTION	PREPARED BY (Date)	REVIEWED BY (Date)	APPROVED BY (Date)
1.0	Final DIA	9/12/2024	10/12/2024	10/12/2024

CONTENT PAGE

1. PROJECT BACKGROUND	4
1.1 Introduction	4
1.2 Objective of the Assessment	4
2. SITE DESCRIPTION	5
2.1 Description of Existing Environment	5
2.2 Existing Baseline Conditions	5
2.3 Proposed Development Scheme	5
3. METHODOLOGY	6
3.1 Assessment Method	6
4. EXISTING DRAINAGE	8
4.1 Existing Drainage Routes and Arrangements	8
5. Drainage Impact Assessment (DIA)	8
5.1 Project Site	8
5.2 Proposed Drainage Arrangement	8
5.3 Assessment Assumptions	8
5.4 Drainage Impact Assessment	8
6. CONCLUSION	10

APPENDICES

Appendix A	Drawings
Appendix B	Runoff Calculations
Appendix C	Calculation of Drainage Capacity of U Channels and Discharge Pipe
Appendix D	Calculation of Water Tank Size
Appendix E	Standard Details of Drainage System
Appendix F	Photo Records of the Existing Water Course next to the Site

LIST OF TABLES

Table 1	Runoff Coefficients
Table 2	Storm Constants for Different Return Periods of HKO Headquarters

1 Project Background

1.1 Introduction

1.1.1 The Applicant intends to develop a temporary warehouse for storage of construction materials and construction machinery, parking of special purpose vehicle and rural workshop with ancillary facilities for a period of 3 years and associated filling of land and pond, and excavation of land at various lots in D.D. 125 and adjoining Government Land in Ha Tsuen, Yuen Long, New Territories.

1.1.2 According to the Approved Ha Tsuen Fringe Outline Zoning Plan (“OZP”) No. S/NE-HTF/12, the application site currently falls within “Green Belt” (“GB”) zone. A planning permission for the proposed temporary hobby farm, barbecue site and holiday camp, as well as the proposed filling of land, are required on application to the Town Planning Board (“TPB”) under Section 16 of the Town Planning Ordinance.

1.1.3 In order to assess possible drainage impact may be generated from the proposed development, a Drainage Impact Assessment (“DIA”) is conducted to support this Section 16 planning application.

1.1.4 A previous submission under our letter under application No. A/YL-HTF/1168 was submitted and no comment reply was received from DSD in June 2024. This revision is prepared mainly for the updated layout plan and revised landscape area. The changes in the proposed site condition would be further discussed in Section 5 in this report.

1.2 Objective of the Assessment

1.2.1 The objectives of this DIA are to assess the potential drainage impact that may be generated from the proposed development and recommend the mitigation measures, if necessary, to alleviate the impacts.

2 Site Description

2.1 Description of Existing Environment

2.1.1 The area of the application site is about 41,569m² and is located at Ha Tsuen, Yuen Long District. Existing site levels ranging from +17.9mPD to +29.1mPD.

2.2 Existing Baseline Conditions

2.2.1 According to the site inspection conducted in September 2023, the site is currently a vacant land overgrown with weeds and different tree groups. Moreover, several ditches/watercourses were found next to the Site, which are connected to surrounding catchments to South China Sea. The location of the Site is shown on Drawing No. PLAN 1 in **Appendix A**.

2.3 Proposed Development Scheme

2.3.1 The site is proposed to be a temporary warehouse for storage of construction materials and machineries, parking of special purpose vehicles and rural workshop with ancillary facilities for a period of 3 years and associated filling of pond/land and excavation of land. A proposed master layout plan with Drawing No. PLAN 11 is enclosed in **Appendix A**.

2.3.2 The following uses or facilities will be provided:

- Warehouse for Storage of Construction Materials;
- Warehouse for Storage of Construction Machineries;
- Special Purpose Vehicle Repair Workshop;
- Office

3 Methodology

3.1 Assessment Method

3.1.1 Rational Method is used to estimate the peak runoff from the catchment according to “Stormwater Drainage Manual – Planning, Design and Management” (SDM). The peak runoff is given by the following expression:

$$Q_p = 0.278 C i A$$

Where Q_p = peak runoff in m³/s
 C = runoff coefficient (dimensionless)
 i = rainfall intensity in mm/hr
 A = catchment area in km²

3.1.2 According to the Stormwater Drainage Manual, the runoff coefficient C is considered below:

Table 1: Runoff Coefficients

Surface Characteristics	Runoff Coefficient
Asphalt	0.70 - 0.95
Concrete	0.80 - 0.95
Brick	0.70 - 0.85
Grassland (Heavy Soil)	
Flat	0.13 - 0.25
Steep	0.25 - 0.35
Grassland (Sandy Soil)	
Flat	0.05 - 0.15
Steep	0.15 - 0.20

3.1.3 The rainfall intensity i is determined by using the Gumbel Solution:

$$i = a / (td + b)c$$

Where i = extreme mean intensity in mm/hr
 td = duration in minutes ($td \leq 240$)
 a, b, c = storm constants given in the table below

Table 2: Storm Constants for Different Return Periods of HKO Headquarters (based on Table 3a of SDM)

Return Period T(years)	2	5	10	20	50	100	200
a	499.8	480.2	471.9	463.6	451.3	440.8	429.5
b	4.26	3.36	3.02	2.76	2.46	2.26	2.05
c	0.494	0.429	0.397	0.369	0.337	0.316	0.295

3.1.4 The Brandsby William's Equation is used to determine the time of concentration etc.

$$t_o = 0.14465L / (H^{0.2}A^{0.1})$$

Where t_o = time of concentration of a natural catchment (min.);
 A = catchment area (m²);
 H = average slope (m per 100m), measured along the line of natural flow, from the summit of the catchment to the point under consideration;
 L = distance (on plan) measured on the line of natural flow between the summit and the point under consideration (m)

3.1.5 The Manning's Equation is used to determine the capacity of U-channel and Stream:

$$V = \frac{R^{\frac{1}{6}}}{n} \sqrt{Rs}$$

where V = mean velocity (m/s)
 R = hydraulic radius (m)
 n = Manning coefficient (s/m^{1/3})
 s = hydraulic gradient (energy loss per unit length due to friction)

3.1.6 The application site is proposed to be temporary open storage of construction materials, construction machineries and vehicles with ancillary facilities for a period of 3 years and associated filling of pond/land and excavation of land. Rainfall increase due to climate change is not adopted in the runoff assessment in **Appendix B**.

4 Existing Drainage

4.1 Existing Drainage Routes and Arrangements

- 4.1.1 The Site is located almost immediately adjacent to (to the north of) a substantial (in the order of 2m wide) natural streamcourse which serves a large upstream catchment, leading up to Yuen Tau Shan. The overall catchment is shown on Drawing No. DIA1 in **Appendix A**. The overall catchment measures approximately 41,569m².
- 4.1.2 Within the Site, there are no apparent main drainage systems, with runoff generally passing overland from South to North, towards the main natural streamcourse as indicated on Drawing No. DIA1 in **Appendix A**.
- 4.1.3 There are no flooding blackspots in the vicinity of the Site and there is no history of flooding in the area (apart from the natural pond within the Site).
- 4.1.4 There are no known Ecologically Important Streams/Rivers in the catchment in which the Site is located.

5 Drainage Impact Assessment (DIA)

5.1 Project Site

- 5.1.1 The site is proposed to be concrete paved. The proposed site levels are ranging from +22.0 mPD to +26.0 mPD. There would be additional concrete paving area compared to the existing situation, with a resultant increase in runoff. The increase is quantified and discussed in Section 5.4. The proposed site catchment is shown on Drawing No. DIA2 in **Appendix A**. Compared to the previous approved submission under application No. A/YL-HTF/1168, the application site area and site levels are remained unchanged. About 4,857 m² of the proposed site area is revised to landscaping area instead of paved area under this submission.
- 5.1.2 According to the topographical data and the existing drainage facilities on the surveys map obtained from Lands Department, there is an External Catchment located at the adjacent to the project site. The runoff from the External Catchment will flow from the Eastern and Southern Boundary of the Project Site, this extra runoff will potentially further drain into the proposed drainage system. As such, runoff arising from the External Catchment should be considered in this DIA using Rational Method.
- 5.1.3 Three main catchment areas were identified based on the proposed site layout plan including the local natural upstream catchment, external catchment adjacent to the proposed site and the proposed site itself. The runoffs are further collected into the existing public open rectangular channel next to the Site. The proposed site condition is shown on Drawing No. PLAN 11 and PLAN 15 in **Appendix A**.

5.2 Proposed Drainage Arrangement

5.2.1 The Site currently receives runoff from the External Catchment and this will continue after the proposed development as shown in Drawing No. DIA2. The runoff is expected to be widespread (rather than at discrete locations), U-channels will be proposed to collect the internal and external drainage. The flow capacities of the proposed U-channel are calculated using the Chart for the Rapid Design of Channels. Runoff from corresponding Site Catchments (calculated based on a return period of 50 years), the capacity estimation and checking for the proposed U-channels are included in **Appendix C**. The overall drainage is proposed to discharge into Existing 6m open rectangular channel. The exact arrangement(s) for the U channels will be determined during later stages of Project implementation.

5.3 Assessment Assumptions

5.3.1 Runoff coefficient of $C=0.25$ is adopted for the naturally vegetated hillsides and steep vegetated soil. For the Proposed Development, the whole site coverage will be paved with impervious concrete, runoff coefficient of $C = 0.95$ is adopted. However, the development is proposed to introduce a range of different materials for various parts of the Site and different runoff coefficients are adopted. As mentioned in Section 5.1.1, about 4,857 m² of the application site area is revised to be landscaping area. The runoff coefficient of landscaping area is generally adopted as $C = 0.25$, the proposed change would result less surface runoff comparing the previous proposal. To be conservative, the whole proposed site (B1) is kept assumed as paved land with impervious concrete (runoff coefficient of $C = 0.95$). Details of the runoff assessment, please refer to the calculation in **Appendix B**.

5.4 Drainage Impact Assessment

5.4.1 The Site currently receives runoff from the local upstream catchment and this will continue after the proposed development. The runoff is expected to be widespread (rather than at discrete locations), U-channels are proposed for both Existing Site Catchment and the External Catchment. For the drainage system, flow capacities of the proposed U-channel are calculated using the Chart for the Rapid Design of Channels. A proposed UC is designed to collect the runoff collected by the U channels and discharge to the existing open rectangular channel next to the site. The preliminary drainage layout and capacity checking of the internal UC are shown in **Drawing No. DIA3** in **Appendix A** and **Appendix C** based on the runoff assessment.

5.4.2 The 1 in 50-year peak discharge from the Site alone will increase from 0.439 to 1.561 m³/s, i.e. an increase of 1.122 m³/s. The existing and future runoff flows from the proposed site, external and overall catchment are presented in **Appendix B**. It is understood that the proposed development would cause additional flow to the public drainage system. The overall drainage flow is estimated to be 7.630 m³/s for 1 in 50-year peak discharge. To avoid adverse drainage impact on the existing natural stream, the capacity of Existing 6m open rectangular channel is calculated using Manning Equation, please refer to the calculation shown in **Appendix D**. The design capacity of the Existing 2.5m open rectangular Channel is found to be 24.456m³/s. Therefore, the existing drainage system is adequate to cater the additional flow from the proposed development.

6 CONCLUSION

- 6.1.1 The Project Proponent will be responsible for the construction and ongoing maintenance of the drainage facilities. The runoff to the existing natural stream during rainstorm would be discharged by means of 300mm, 900mm U-channels and 1200mm pipe connecting to existing 2.5m open rectangular channel.
- 6.1.2 The proposed development will result in slightly greater runoff than the existing Site comparing to the design capacity of the Existing 6m rectangular Channel. The incremental runoff before and after the development was estimated using the rational method. The existing 2.5m rectangular Channel is adequate to collect the incremental runoff during the heavy rainstorm. As a result, no adverse drainage impact to the existing drainage system is anticipated after the development of the Site with 50 year return period.
- 6.1.3 This DIA Report presents the initial findings regarding drainage impact and indicative drainage layout. A qualified engineer should be engaged by the Applicant of the Proposed Development to review and provide detailed designs for the internal Site drainage layout. A "Drainage Proposal" including detailed designs based on calculations and quantitative assessments shall be prepared by the qualified engineer and submitted to DSD, for their review and approval prior to the commencement of work.

R-riches Property Consultants Limited
December 2024

Appendix A

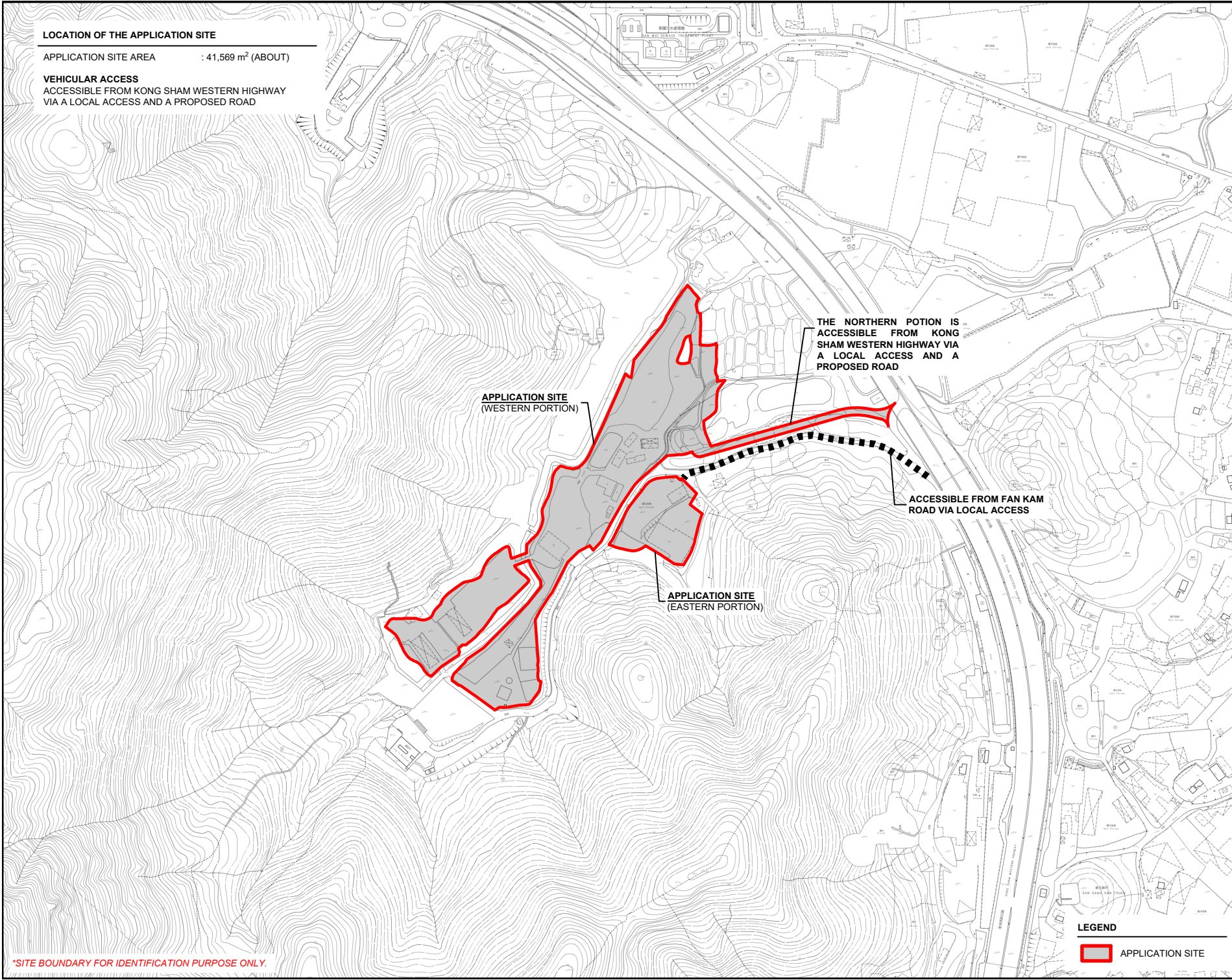
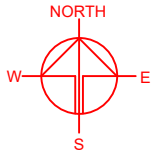
Drawings

LOCATION OF THE APPLICATION SITE

APPLICATION SITE AREA : 41,569 m² (ABOUT)

VEHICULAR ACCESS

ACCESSIBLE FROM KONG SHAM WESTERN HIGHWAY VIA A LOCAL ACCESS AND A PROPOSED ROAD



APPLICATION SITE
(WESTERN PORTION)

THE NORTHERN PORTION IS
ACCESSIBLE FROM KONG
SHAM WESTERN HIGHWAY VIA
A LOCAL ACCESS AND A
PROPOSED ROAD

APPLICATION SITE
(EASTERN PORTION)

ACCESSIBLE FROM FAN KAM
ROAD VIA LOCAL ACCESS

LEGEND

 APPLICATION SITE

*SITE BOUNDARY FOR IDENTIFICATION PURPOSE ONLY.

PLANNING CONSULTANT



PROJECT

PROPOSED TEMPORARY WAREHOUSE FOR STORAGE OF CONSTRUCTION MATERIALS AND CONSTRUCTION MACHINERY, PARKING OF SPECIAL PURPOSE VEHICLES AND RURAL WORKSHOP WITH ANCILLARY FACILITIES FOR A PERIOD OF 3 YEARS AND ASSOCIATED FILLING OF LAND, FILLING OF POND AND EXCAVATION OF LAND

SITE LOCATION

VARIOUS LOTS IN D.D. 125 AND ADJOINING GOVERNMENT LAND, HA TSUEN, YUEN LONG, NEW TERRITORIES

SCALE

1 : 5000 @ A4

DRAWN BY

MN

DATE

8.11.2024

REVISED BY

DATE

APPROVED BY

DATE

DWG. TITLE

LOCATION PLAN

DWG. NO.

PLAN 1

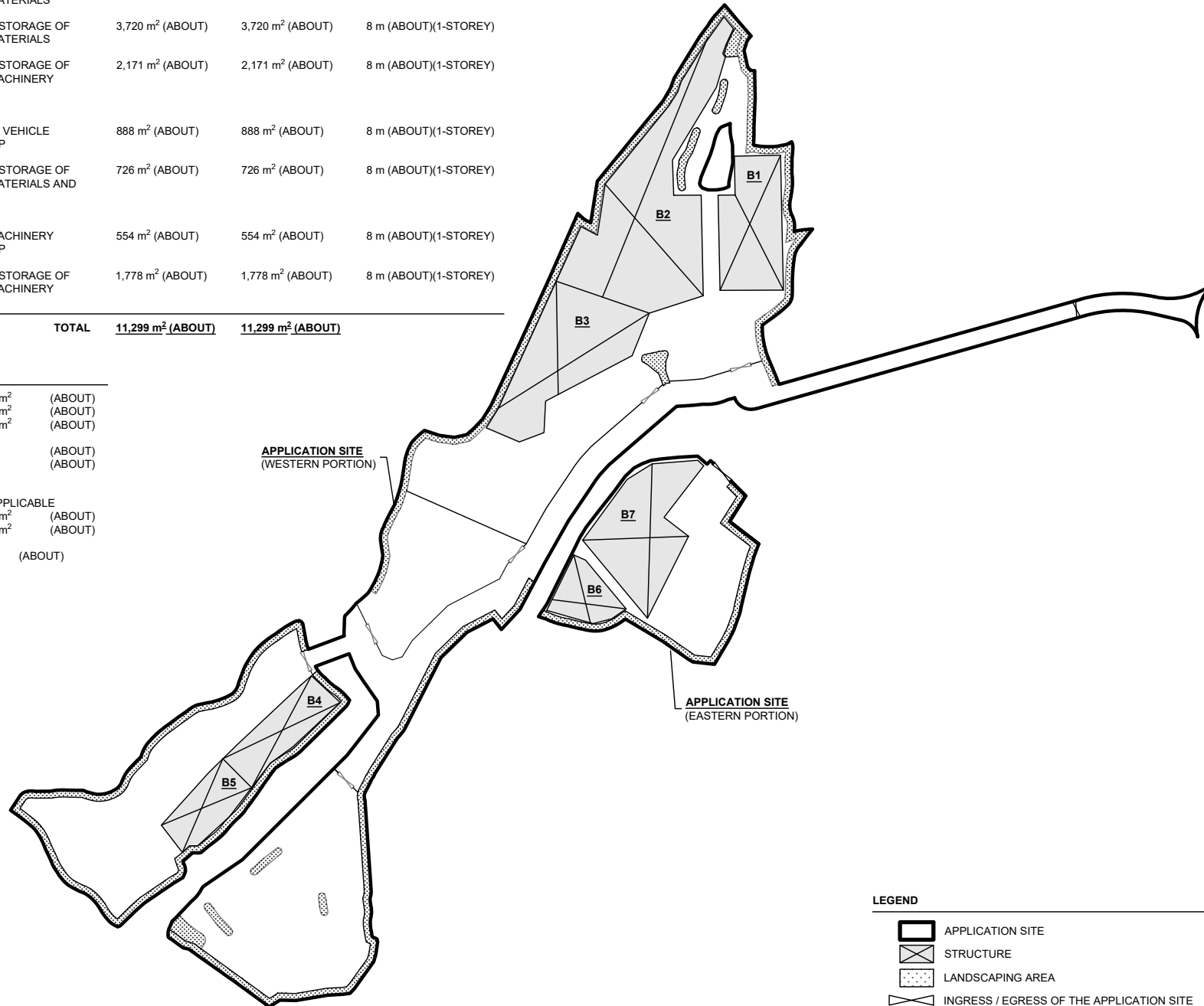
VER.

001

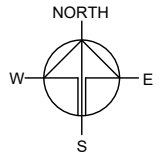
STRUCTURE	USE	COVERED AREA	GROSS FLOOR AREA	BUILDING HEIGHT
TENANT A				
B1	WAREHOUSE FOR STORAGE OF CONSTRUCTION MATERIALS	1,462 m ² (ABOUT)	1,462 m ² (ABOUT)	8 m (ABOUT)(1-STOREY)
B2	WAREHOUSE FOR STORAGE OF CONSTRUCTION MATERIALS	3,720 m ² (ABOUT)	3,720 m ² (ABOUT)	8 m (ABOUT)(1-STOREY)
B3	WAREHOUSE FOR STORAGE OF CONSTRUCTION MACHINERY AND OFFICE	2,171 m ² (ABOUT)	2,171 m ² (ABOUT)	8 m (ABOUT)(1-STOREY)
TENANT B				
B4	SPECIAL PURPOSE VEHICLE REPAIR WORKSHOP	888 m ² (ABOUT)	888 m ² (ABOUT)	8 m (ABOUT)(1-STOREY)
B5	WAREHOUSE FOR STORAGE OF CONSTRUCTION MATERIALS AND MACHINERY	726 m ² (ABOUT)	726 m ² (ABOUT)	8 m (ABOUT)(1-STOREY)
TENANT C				
B6	CONSTRUCTION MACHINERY REPAIR WORKSHOP	554 m ² (ABOUT)	554 m ² (ABOUT)	8 m (ABOUT)(1-STOREY)
B7	WAREHOUSE FOR STORAGE OF CONSTRUCTION MACHINERY AND OFFICE	1,778 m ² (ABOUT)	1,778 m ² (ABOUT)	8 m (ABOUT)(1-STOREY)
TOTAL		11,299 m² (ABOUT)	11,299 m² (ABOUT)	

DEVELOPMENT PARAMETERS

APPLICATION SITE AREA	: 41,569 m ²	(ABOUT)
COVERED AREA	: 11,299 m ²	(ABOUT)
UNCOVERED AREA	: 30,270 m ²	(ABOUT)
PLOT RATIO	: 0.27	(ABOUT)
SITE COVERAGE	: 27 %	(ABOUT)
NO. OF STRUCTURE	: 7	
DOMESTIC GFA	: NOT APPLICABLE	
NON-DOMESTIC GFA	: 11,299 m ²	(ABOUT)
TOTAL GFA	: 11,299 m ²	(ABOUT)
BUILDING HEIGHT	: 8 m	(ABOUT)
NO. OF STOREY	: 1	



*SITE BOUNDARY FOR IDENTIFICATION PURPOSE ONLY.



PLANNING CONSULTANT



PROJECT

PROPOSED TEMPORARY WAREHOUSE FOR CONSTRUCTION MATERIALS AND MACHINERY, PARKING OF SPECIAL PURPOSE VEHICLES AND RURAL WORKSHOP WITH ANCILLARY FACILITIES FOR A PERIOD OF 3 YEARS AND ASSOCIATED FILLING OF LAND AND POND AND EXCAVATION OF LAND

SITE LOCATION

VARIOUS LOTS IN D.D. 125 AND ADJOINING GOVERNMENT LAND, HA TSUEN, YUEN LONG, NEW TERRITORIES

SCALE

1 : 2500 @ A4

DRAWN BY: MN DATE: 8.11.2024

REVISED BY: DATE:

APPROVED BY: DATE:

DWG. TITLE
DETAILS OF STRUCTURES

DWG NO. PLAN 12 VER. 001

LEGEND

- APPLICATION SITE
- STRUCTURE
- LANDSCAPING AREA
- INGRESS / EGRESS OF THE APPLICATION SITE
- GATE OF EACH PREMISES

DEVELOPMENT PARAMETERS

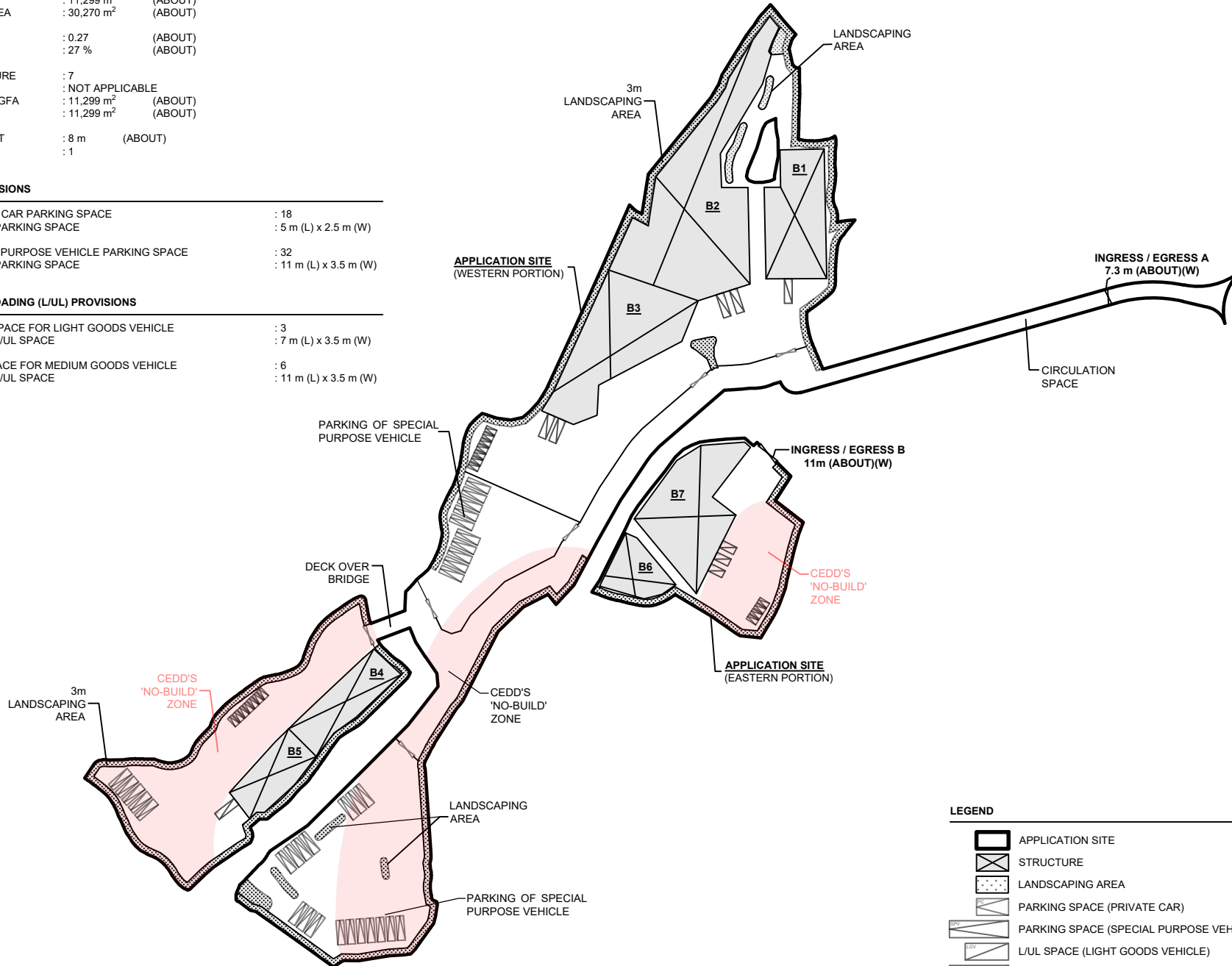
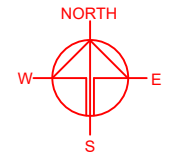
APPLICATION SITE AREA	: 41,569 m ²	(ABOUT)
COVERED AREA	: 11,299 m ²	(ABOUT)
UNCOVERED AREA	: 30,270 m ²	(ABOUT)
<hr/>		
PLOT RATIO	: 0.27	(ABOUT)
SITE COVERAGE	: 27 %	(ABOUT)
<hr/>		
NO. OF STRUCTURE	: 7	
DOMESTIC GFA	: NOT APPLICABLE	
NON-DOMESTIC GFA	: 11,299 m ²	(ABOUT)
TOTAL GFA	: 11,299 m ²	(ABOUT)
<hr/>		
BUILDING HEIGHT	: 8 m	(ABOUT)
NO. OF STOREY	: 1	

PARKING PROVISIONS

NO. OF PRIVATE CAR PARKING SPACE	: 18
DIMENSION OF PARKING SPACE	: 5 m (L) x 2.5 m (W)
<hr/>	
NO. OF SPECIAL PURPOSE VEHICLE PARKING SPACE	: 32
DIMENSION OF PARKING SPACE	: 11 m (L) x 3.5 m (W)

LOADING / UNLOADING (L/U) PROVISIONS

NO. OF L/U SPACE FOR LIGHT GOODS VEHICLE	: 3
DIMENSION OF L/U SPACE	: 7 m (L) x 3.5 m (W)
<hr/>	
NO. OF L/U SPACE FOR MEDIUM GOODS VEHICLE	: 6
DIMENSION OF L/U SPACE	: 11 m (L) x 3.5 m (W)



LEGEND

- APPLICATION SITE
- STRUCTURE
- LANDSCAPING AREA
- PARKING SPACE (PRIVATE CAR)
- PARKING SPACE (SPECIAL PURPOSE VEHICLE)
- L/U SPACE (LIGHT GOODS VEHICLE)
- L/U SPACE (MEDIUM GOODS VEHICLE)
- INGRESS / EGRESS OF THE APPLICATION SITE
- GATE OF EACH PREMISES

*SITE BOUNDARY FOR IDENTIFICATION PURPOSE ONLY.

PLANNING CONSULTANT



PROJECT
PROPOSED TEMPORARY WAREHOUSE FOR STORAGE OF CONSTRUCTION MATERIALS AND CONSTRUCTION MACHINERY, PARKING OF SPECIAL PURPOSE VEHICLES AND RURAL WORKSHOP WITH ANCILLARY FACILITIES FOR A PERIOD OF 3 YEARS AND ASSOCIATED FILLING OF LAND, FILLING OF POND AND EXCAVATION OF LAND

SITE LOCATION
VARIOUS LOTS IN D.D. 125 AND ADJOINING GOVERNMENT LAND, HA TSUEN, YUEN LONG, NEW TERRITORIES

SCALE
1 : 2500 @ A4

DRAWN BY	DATE
MN	8.11.2024
REVISED BY	DATE
APPROVED BY	DATE
DWG. TITLE	
LAYOUT PLAN	
DWG. NO.	VER.
PLAN 11	001

PROPOSED FILLING AND EXCAVATION OF LAND AND FILLING OF POND

APPLICATION SITE AREA : 41,569 m² (ABOUT)
 PROPOSED SITE LEVELS : +22.0 mPD - 26.0 mPD (ABOUT)

DETAILS OF FILLING OF LAND

FILLING OF LAND AREA : 22,068 m² (ABOUT)
 DEPTH OF FILLING : NOT MORE THAN 4.1 m
 MATERIAL OF FILLING : SOIL AND CONCRETE

DETAILS OF EXCAVATION OF LAND

EXCAVATION OF LAND AREA : 13,986 m² (ABOUT)
 DEPTH OF FILLING : NOT MORE THAN 3.1 m

DETAILS OF FILLING OF POND

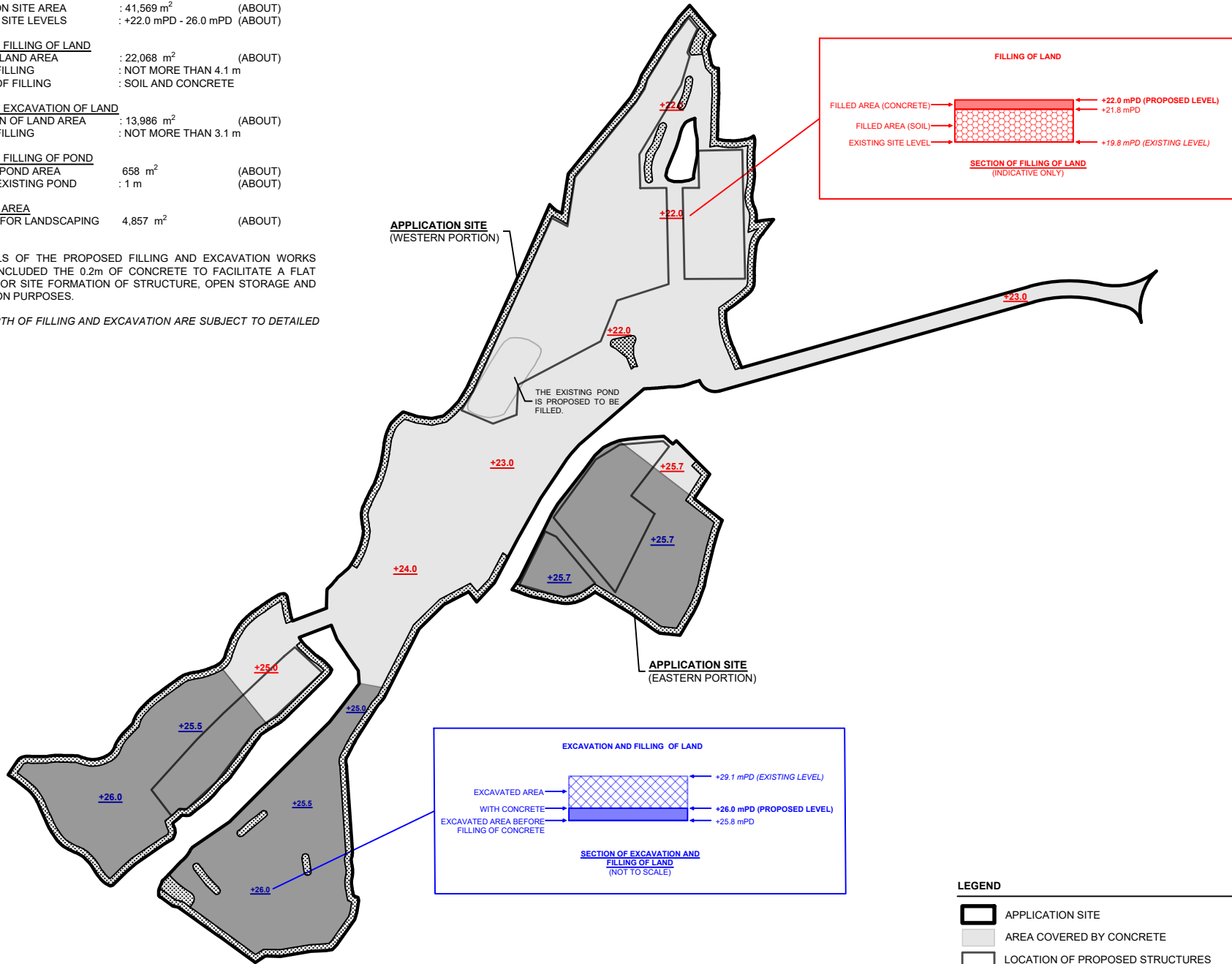
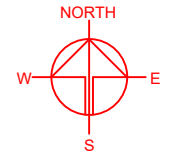
FILLING OF POND AREA : 658 m² (ABOUT)
 DEPTH OF EXISTING POND : 1 m (ABOUT)

REMAINING AREA

RESERVED FOR LANDSCAPING AREA : 4,857 m² (ABOUT)

SITE LEVELS OF THE PROPOSED FILLING AND EXCAVATION WORKS ALREADY INCLUDED THE 0.2m OF CONCRETE TO FACILITATE A FLAT SURFACE FOR SITE FORMATION OF STRUCTURE, OPEN STORAGE AND CIRCULATION PURPOSES.

EXACT DEPTH OF FILLING AND EXCAVATION ARE SUBJECT TO DETAILED SURVEY.



LEGEND

- APPLICATION SITE
- AREA COVERED BY CONCRETE
- LOCATION OF PROPOSED STRUCTURES
- LANDSCAPING AREA
- PROPOSED SITE LEVEL AFTER FILLING OF LAND
- PROPOSED SITE LEVEL AFTER EXCAVATION OF LAND

*SITE LEVELS ARE FOR REFERENCE ONLY.
 EXACT SITE LEVELS ARE SUBJECT TO DETAILED SURVEY.

PLANNING CONSULTANT



PROJECT

PROPOSED TEMPORARY WAREHOUSE FOR CONSTRUCTION MATERIALS AND MACHINERY, PARKING OF SPECIAL PURPOSE VEHICLES AND RURAL WORKSHOP WITH ANCILLARY FACILITIES FOR A PERIOD OF 3 YEARS AND ASSOCIATED FILLING OF LAND AND POND AND EXCAVATION OF LAND

SITE LOCATION

VARIOUS LOTS IN D.D. 125 AND ADJOINING GOVERNMENT LAND, HA TSUEN, YUEN LONG, NEW TERRITORIES

SCALE

1 : 2500 @ A4

DRAWN BY: MN DATE: 8.11.2024

REVISED BY: DATE:

APPROVED BY: DATE:

DWG. TITLE: PROPOSED SITE LEVELS


DWG NO.: PLAN 15 VER.: 001


LOCATION OF THE APPLICATION SITE


APPLICATION SITE AREA : 41,569 m² (ABOUT)


VEHICULAR ACCESS

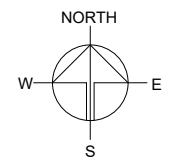
ACCESSIBLE FROM KONG SHAM WESTERN HIGHWAY
VIA A LOCAL ACCESS AND A PROPOSED ROAD

 **EXISTING SITE (A1)**
STEEP VEGETATED SOIL AREA : 41,569 m²

 **EXTERNAL CATCHMENT (C1)**
STEEP VEGETATED SOIL AREA : 62,251 m²

 **LOCAL UPSTREAM CATCHMENT (D1)**
STEEP NATURALLY VEGETATED HILLSIDES AREA : 808,377 m²

LEGEND
 APPLICATION SITE



PLANNING CONSULTANT

PROJECT PROPOSED WAREHOUSE AND MACHINERY, SPECIAL PURPOSE VEHICLES AND RURAL WORKSHOP WITH ANCILLARY FACILITIES FOR A PERIOD OF 3 YEARS AND ASSOCIATED FILLING OF LAND AND POND AND EXCAVATION OF LAND
TEMPORARY FOR CONSTRUCTION MATERIALS AND PARKING OF VEHICLES WITH WORKSHOP WITH ANCILLARY FACILITIES FOR A PERIOD OF 3 YEARS AND ASSOCIATED FILLING OF LAND AND POND AND EXCAVATION OF LAND

SITE LOCATION
 VARIOUS LOTS IN D.D. 125 AND ADJOINING GOVERNMENT LAND, HA TSUEN, YUEN LONG, NEW TERRITORIES

SCALE
1 : 9000 @ A4

DRAWN BY TL	DATE 7.12.2024
CHECKED BY	DATE
APPROVED BY	DATE

DWG. TITLE
CATCHMENT PLAN WITH EXISTING SITE

DWG. NO. DIA 1	VER. 001
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LOCATION OF THE APPLICATION SITE

APPLICATION SITE AREA : 41,569 m² (ABOUT)

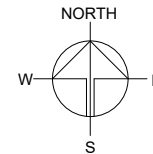
VEHICULAR ACCESS

ACCESSIBLE FROM KONG SHAM WESTERN HIGHWAY
VIA A LOCAL ACCESS AND A PROPOSED ROAD

PROPOSED SITE (B1)
CONCRETE PAVED (IMPERVIOUS)
AREA : 41,569 m²

EXTERNAL CATCHMENT (C1)
STEEP VEGETATED SOIL
AREA : 62,251 m²

LOCAL UPSTREAM CATCHMENT (D1)
STEEP NATURALLY VEGETATED HILLSIDES
AREA : 808,377 m²



PLANNING CONSULTANT

PROJECT PROPOSED WAREHOUSE AND MACHINERY, MATERIALS AND RURAL WORKSHOP WITH ANCILLARY FACILITIES FOR A PERIOD OF 3 YEARS AND ASSOCIATED FILLING OF LAND AND POND AND EXCAVATION OF LAND

TEMPORARY FOR CONSTRUCTION PURPOSES AND RURAL WORKSHOP WITH ANCILLARY FACILITIES FOR A PERIOD OF 3 YEARS AND ASSOCIATED FILLING OF LAND AND POND AND EXCAVATION OF LAND

SITE LOCATION

VARIOUS LOTS IN D.D. 125 AND ADJOINING GOVERNMENT LAND, HA TSUEN, YUEN LONG, NEW TERRITORIES

SCALE
1 : 9000 @ A4

DRAWN BY
TL

DATE
7.12.2024

CHECKED BY

DATE

APPROVED BY

DATE

LEGEND

APPLICATION SITE

DWG. TITLE
CATCHMENT PLAN (PROPOSED SITE)

DWG. NO.
DIA 2

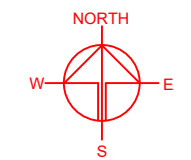
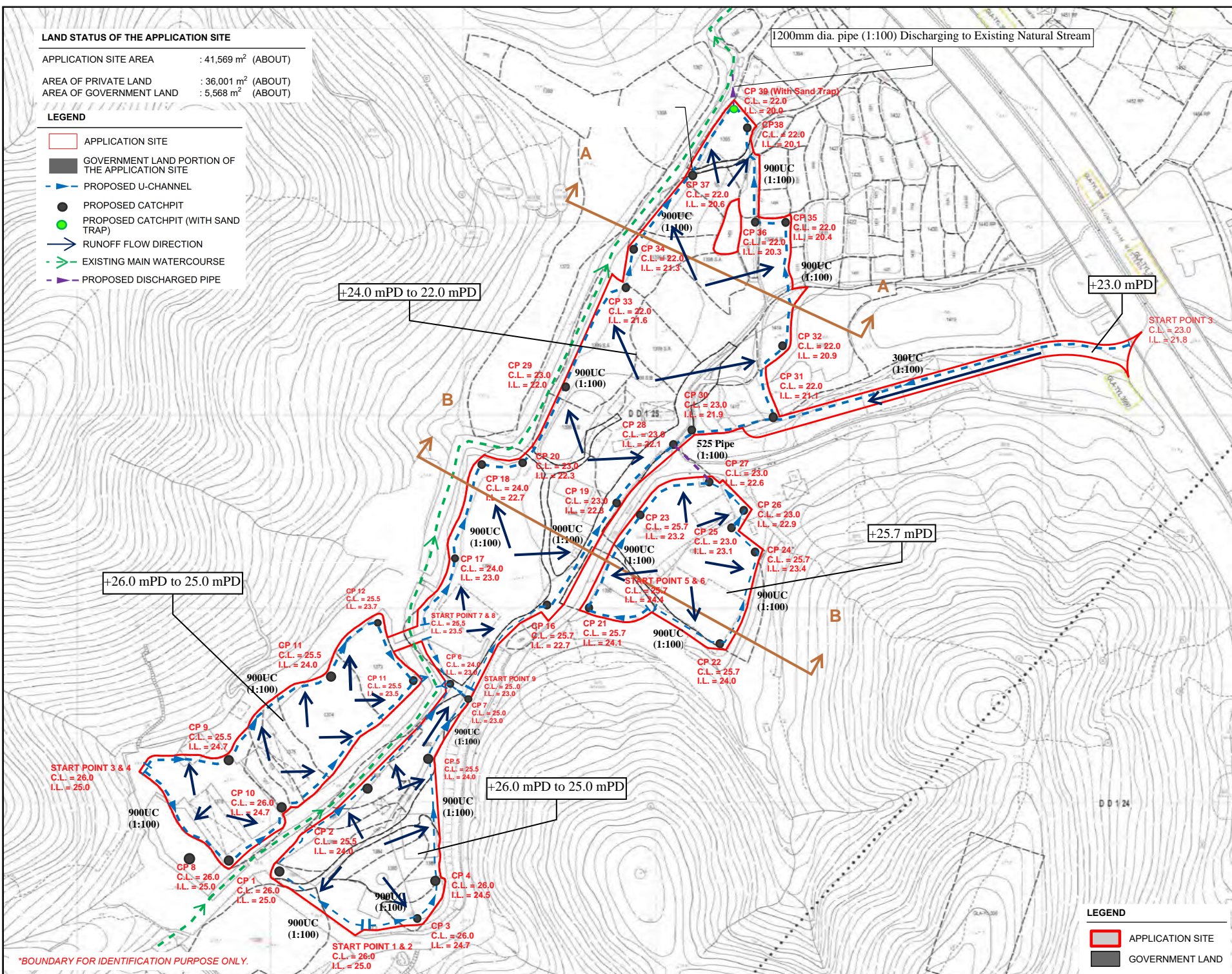
VER.
001

LAND STATUS OF THE APPLICATION SITE

APPLICATION SITE AREA : 41,569 m² (ABOUT)
 AREA OF PRIVATE LAND : 36,001 m² (ABOUT)
 AREA OF GOVERNMENT LAND : 5,568 m² (ABOUT)

LEGEND

- APPLICATION SITE
- GOVERNMENT LAND PORTION OF THE APPLICATION SITE
- PROPOSED U-CHANNEL
- PROPOSED CATCHPIT
- PROPOSED CATCHPIT (WITH SAND TRAP)
- RUNOFF FLOW DIRECTION
- EXISTING MAIN WATERCOURSE
- PROPOSED DISCHARGED PIPE



PLANNING CONSULTANT



PROJECT PROPOSED WAREHOUSE AND CONSTRUCTION MATERIALS AND MACHINERY, PARKING OF SPECIAL PURPOSE VEHICLES AND RURAL WORKSHOP WITH ANCILLARY FACILITIES FOR A PERIOD OF 3 YEARS AND ASSOCIATED FILLING OF LAND AND POND AND EXCAVATION OF LAND

TEMPORARY FOR CONSTRUCTION AND ADJOINING GOVERNMENT LAND, HA TSUEN, YUEN LONG, NEW TERRITORIES

SITE LOCATION
 VARIOUS LOTS IN D.D. 125 AND ADJOINING GOVERNMENT LAND, HA TSUEN, YUEN LONG, NEW TERRITORIES

SCALE
 1 : 2500 @ A4

DRAWN BY TL	DATE 9.12.2024
CHECKED BY	DATE
APPROVED BY	DATE

DWG. TITLE
 PRELIMINARY DRAINAGE LAYOUT

DWG NO. DIA 3	VER. 002
------------------	-------------

LEGEND

- APPLICATION SITE
- GOVERNMENT LAND

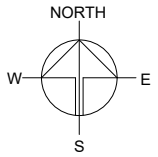
*BOUNDARY FOR IDENTIFICATION PURPOSE ONLY.

LOCATION OF THE APPLICATION SITE

APPLICATION SITE AREA : 41,569 m² (ABOUT)

VEHICULAR ACCESS

ACCESSIBLE FROM KONG SHAM WESTERN HIGHWAY
VIA A LOCAL ACCESS AND A PROPOSED ROAD



SITE CATCHMENT (C)
CONCRETE PAVED (IMPERVIOUS)
AREA : 10,328 m²

NATURAL CATCHMENT (D)
STEEP VEGETATED SOIL
AREA : 95,647 m²

NATURAL CATCHMENT (A)
STEEP VEGETATED SOIL
AREA : 37,644 m²

SITE CATCHMENT (D)
CONCRETE PAVED (IMPERVIOUS)
AREA : 18,324 m²

SITE CATCHMENT (A)
CONCRETE PAVED (IMPERVIOUS)
AREA : 7,038 m²

SITE CATCHMENT (B)
CONCRETE PAVED (IMPERVIOUS)
AREA : 6,040 m²

NATURAL CATCHMENT (B)
STEEP VEGETATED SOIL
AREA : 51,724 m²

LEGEND
APPLICATION SITE

PLANNING CONSULTANT

PROJECT PROPOSED WAREHOUSE AND MACHINERY, SPECIAL PURPOSE VEHICLES AND RURAL WORKSHOP WITH ANCILLARY FACILITIES FOR A PERIOD OF 3 YEARS AND ASSOCIATED FILLING OF LAND AND POND AND EXCAVATION OF LAND

TEMPORARY FOR CONSTRUCTION MATERIALS AND MACHINERY, PARKING OF SPECIAL PURPOSE VEHICLES AND RURAL WORKSHOP WITH ANCILLARY FACILITIES FOR A PERIOD OF 3 YEARS AND ASSOCIATED FILLING OF LAND AND POND AND EXCAVATION OF LAND

SITE LOCATION
VARIOUS LOTS IN D.D. 125 AND ADJOINING GOVERNMENT LAND, HA TSUEN, YUEN LONG, NEW TERRITORIES

SCALE
1 : 9000 @ A4

DRAWN BY TL DATE 09.12.2024

CHECKED BY DATE

APPROVED BY DATE

DWG. TITLE
CATCHMENT PLAN OF U CHANNELS

DWG NO.
DIA 4 (1/2)

VER.
001

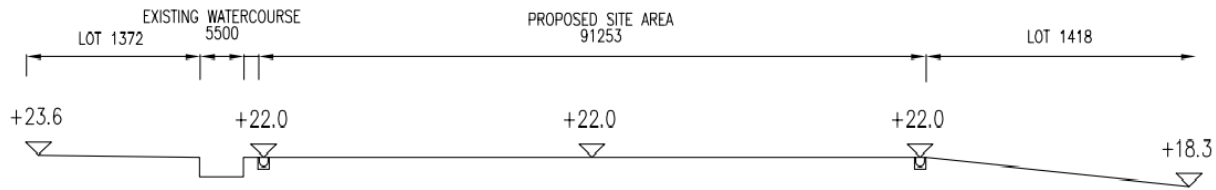
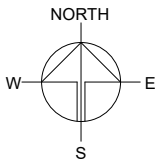
LOCATION OF THE APPLICATION SITE

APPLICATION SITE AREA : 41,569 m² (ABOUT)

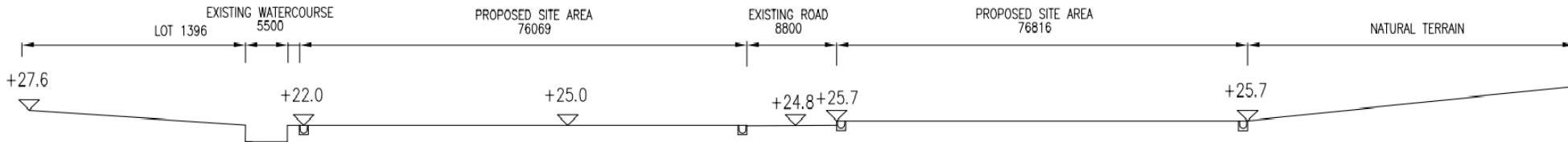
PROPOSED SITE LEVEL : +22mPD - +26mPD (ABOUT)

VEHICULAR ACCESS

ACCESSIBLE FROM KONG SHAM WESTERN HIGHWAY
VIA A LOCAL ACCESS AND A PROPOSED ROAD



SECTION A-A



SECTION B-B

PLANNING CONSULTANT

PROJECT
PROPOSED WAREHOUSE FOR CONSTRUCTION MATERIALS AND MACHINERY, PARKING OF SPECIAL PURPOSE VEHICLES AND RURAL WORKSHOP WITH ANCILLARY FACILITIES FOR A PERIOD OF 3 YEARS AND ASSOCIATED FILLING OF LAND AND POND AND EXCAVATION OF LAND

TEMPORARY FOR MATERIALS AND MACHINERY, PARKING OF SPECIAL PURPOSE VEHICLES AND RURAL WORKSHOP WITH ANCILLARY FACILITIES FOR A PERIOD OF 3 YEARS AND ASSOCIATED FILLING OF LAND AND POND AND EXCAVATION OF LAND

SITE LOCATION
VARIOUS LOTS IN D.D. 125 AND ADJOINING GOVERNMENT LAND, HA TSUEN, YUEN LONG, NEW TERRITORIES

SCALE

DRAWN BY	DATE
TL	22.03.2024

CHECKED BY	DATE

APPROVED BY	DATE

DWG. TITLE
CROSS SECTION

DWG NO.	VER.
DIA 4 (2/2)	001

Appendix B

Runoff Calculations

Runoff Estimation

Rational method is used for calculation of the peak runoff. The formula is extracted from Section 7.5.2 (a) of SDM. The parameters and assumptions refer to section 3.

The local upstream catchment comprises mainly naturally vegetated hillsides; $C = 0.25$

The existing site comprises mainly steep vegetated soil; $C = 0.25$

The Proposed Site comprise Heavy Goods Vehicle Parking Space and Container Vehicle Parking Space (Concrete Paved Area (Impervious); $C=0.95$

Area of the Development Site = 41,569 m²

Area of the local upstream catchment = 614983 m²

The Site is proposed to be "Proposed Temporary Open Storage of Construction Materials, Construction Machineries and Vehicles with Ancillary Facilities

for A Period of 3 Years and Associated Filling of Pond/Land and Excavation of Land",

so check the 1 in 50-year Scenario.

Existing Site Catchment (A1)

Catchment (m ²)	Flow Distance (m)	Highest (mPD)	Lowest (mPD)	Gradient (per 100m) = $(h_1-h_2)/L \times 100$	to (min) = $0.14465L / (H^{0.2}A^{0.1})$	tc = to + t _f (min)	Storm Constants	Runoff coeff.	Total Catch. Area (m ²)	50 year Intensity (mm/hr)	50 year design runoff = $0.278CiA$	50 year Total runoff (m ³ /s)	50 year Total runoff (L/min)
41569	535	29.7	17.9	2.21	22.81	22.81	HKO headquarters	0.25 0.95	41569 0	151.98 151.98	0.44 0.00	0.439	26345

Proposed Site Catchment (B1)

Catchment (m ²)	Flow Distance (m)	Highest (mPD)	Lowest (mPD)	Gradient (per 100m) = $(h_1-h_2)/L \times 100$	to (min) = $0.14465L / (H^{0.2}A^{0.1})$	tc = to + t _f (min)	Storm Constants	Runoff coeff.	Total Catch. Area (m ²)	50 year Intensity (mm/hr)	50 year design runoff = $0.278CiA$	50 year Total runoff (m ³ /s)	50 year Total runoff (L/min)
41569	535	26	22	0.75	28.32	28.32	HKO headquarters	0.25 0.95	0 41569	142.21 142.21	0.00 1.56	1.561	93674

External Catchment (C1)

Catchment (m ²)	Flow Distance (m)	Highest (mPD)	Lowest (mPD)	Gradient (per 100m) = $(h_1-h_2)/L \times 100$	to (min) = $0.14465L / (H^{0.2}A^{0.1})$	tc = to + t _f (min)	Storm Constants	Runoff coeff.	Total Catch. Area (m ²)	50 year Intensity (mm/hr)	50 year design runoff = $0.278CiA$	50 year Total runoff (m ³ /s)	50 year Total runoff (L/min)
61330	395	25	22	0.76	20.05	20.05	HKO headquarters	0.25 0.95	61330 0	158.03 158.03	0.67 0.00	0.674	40415

Existing Site Catchment (A1) + External Catchment (C1)

Catchment (m ²)	Flow Distance (m)	Highest (mPD)	Lowest (mPD)	Gradient (per 100m) = $(h_1-h_2)/L \times 100$	to (min) = $0.14465L / (H^{0.2}A^{0.1})$	tc = to + t _f (min)	Storm Constants	Runoff coeff.	Total Catch. Area (m ²)	50 year Intensity (mm/hr)	50 year design runoff = $0.278CiA$	50 year Total runoff (m ³ /s)	50 year Total runoff (L/min)
102899	535	26	22	0.75	25.86	25.86	HKO headquarters	0.25 0.95	102899 0	146.25 146.25	1.05 0.00	1.046	62754

Proposed Site Catchment (B1) + External Catchment (C1)

Catchment (m ²)	Flow Distance (m)	Highest (mPD)	Lowest (mPD)	Gradient (per 100m) = $(h_1-h_2)/L \times 100$	to (min) = $0.14465L / (H^{0.2}A^{0.1})$	tc = to + t _f (min)	Storm Constants	Runoff coeff.	Total Catch. Area (m ²)	50 year Intensity (mm/hr)	50 year design runoff = $0.278CiA$	50 year Total runoff (m ³ /s)	50 year Total runoff (L/min)
102899	535	26	22	0.75	25.86	25.86	HKO headquarters	0.25 0.95	61330 41569	146.25 146.25	0.62 1.61	2.229	133737

Existing Site Catchment (A1) + External Catchment (C1) + The Local Upstream Catchment (D1)

Catchment (m ²)	Flow Distance (m)	Highest (mPD)	Lowest (mPD)	Gradient (per 100m) = $(h_1-h_2)/L \times 100$	to (min) = $0.14465L / (H^{0.2}A^{0.1})$	tc = to + t _f (min)	Storm Constants	Runoff coeff.	Total Catch. Area (m ²)	50 year Intensity (mm/hr)	50 year design runoff = $0.278CiA$	50 year Total runoff (m ³ /s)	50 year Total runoff (L/min)
911276	1473	307.7	22	19.40	29.85	29.85	HKO headquarters	0.25 0.95	911276 0	139.89 139.89	8.86 0.00	8.860	531597

Proposed Site Catchment (B1) + External Catchment (C1) + The Local Upstream Catchment (D1)

Catchment (m ²)	Flow Distance (m)	Highest (mPD)	Lowest (mPD)	Gradient (per 100m) = $(h_1-h_2)/L \times 100$	to (min) = $0.14465L / (H^{0.2}A^{0.1})$	tc = to + t _f (min)	Storm Constants	Runoff coeff.	Total Catch. Area (m ²)	50 year Intensity (mm/hr)	50 year design runoff = $0.278CiA$	50 year Total runoff (m ³ /s)	50 year Total runoff (L/min)
911276	1473	307.7	22	19.40	29.85	29.85	HKO headquarters	0.25 0.95	864827 41569	139.89 139.89	8.41 1.54	9.944	596649

Appendix C

Calculation of Drainage Capacity of U Channels

Runoff Estimation of the U-channels

Rational method is used for calculation of the peak runoff. The formula is extracted from Section 7.5.2 (a) of SDM. The parameters and assumptions refer to section 3.

The local upstream catchment comprises mainly naturally vegetated hillsides; C = 0.25

The existing site comprises mainly steep vegetated soil; C = 0.25

The Proposed Site comprise Heavy Goods Vehicle Parking Space and Container Vehicle Parking Space (Concrete Paved Area (Impervious); C=0.95

The Site is proposed to be "Proposed Temporary Open Storage of Construction Materials, Construction Machineries and Vehicles with Ancillary Facilities for A Period of 3 Years and Associated Filling of Pond/Land and Excavation of Land", so check the 1 in 50-year Scenario.

Natural Catchment (A) + Site Catchment (A)

Catchment (m ²)	Flow Distance (m)	Highest (mPD)	Lowest (mPD)	Gradient (per 100m) = (h ₁ -h ₂)/L x 100	to (min) = 0.14465L / (H ^{0.2} A ^{0.1})	tc = to + t _r (min)	Storm Constants	Runoff coeff.	Total Catch. Area (m ²)	50 year Intensity (mm/hr)	50 year design runoff = 0.278CiA	50 year Total runoff (m ³ /s)	50 year Total runoff (L/min)
44682	412	25	23	0.49	23.60	23.60	HKO headquarters	0.25	37644	150.41	0.39	0.673	40384
								0.95	7038	150.41	0.28		

Natural Catchment (B) + Site Catchment (B)

Catchment (m ²)	Flow Distance (m)	Highest (mPD)	Lowest (mPD)	Gradient (per 100m) = (h ₁ -h ₂)/L x 100	to (min) = 0.14465L / (H ^{0.2} A ^{0.1})	tc = to + t _r (min)	Storm Constants	Runoff coeff.	Total Catch. Area (m ²)	50 year Intensity (mm/hr)	50 year design runoff = 0.278CiA	50 year Total runoff (m ³ /s)	50 year Total runoff (L/min)
57764	402	25	23	0.50	22.34	22.34	HKO headquarters	0.25	51724	152.95	0.55	0.794	47629
								0.95	6040	152.95	0.24		

Site Catchment (C)

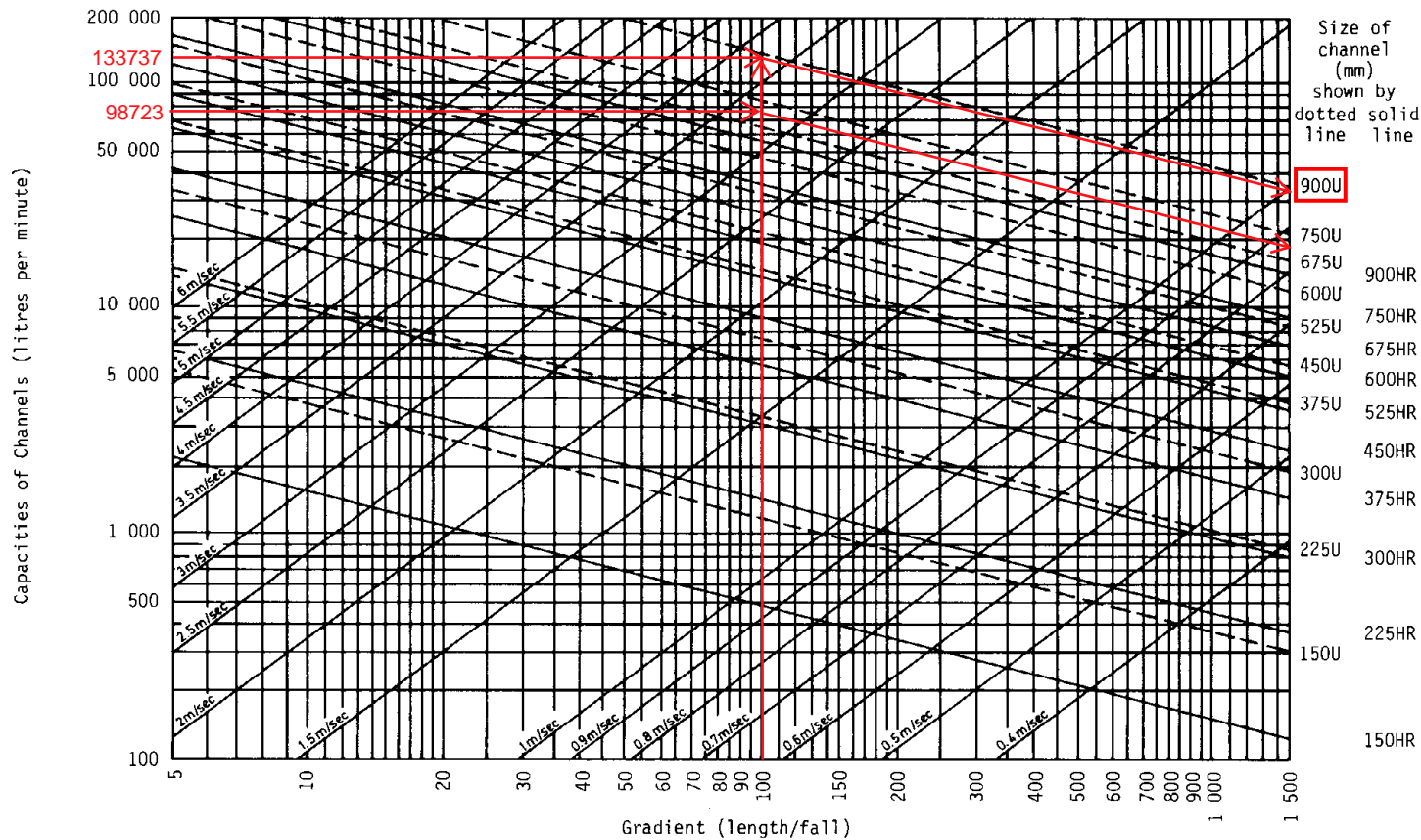
Catchment (m ²)	Flow Distance (m)	Highest (mPD)	Lowest (mPD)	Gradient (per 100m) = (h ₁ -h ₂)/L x 100	to (min) = 0.14465L / (H ^{0.2} A ^{0.1})	tc = to + t _r (min)	Storm Constants	Runoff coeff.	Total Catch. Area (m ²)	50 year Intensity (mm/hr)	50 year design runoff = 0.278CiA	50 year Total runoff (m ³ /s)	50 year Total runoff (L/min)
10328	334	23.5	20	1.05	18.99	18.99	HKO headquarters	0.25	0	160.60	0.00	0.438	26284
								0.95	10328	160.60	0.44		

Natural Catchment (D) + Site Catchment (D)

Catchment (m ²)	Flow Distance (m)	Highest (mPD)	Lowest (mPD)	Gradient (per 100m) = (h ₁ -h ₂)/L x 100	to (min) = 0.14465L / (H ^{0.2} A ^{0.1})	tc = to + t _r (min)	Storm Constants	Runoff coeff.	Total Catch. Area (m ²)	50 year Intensity (mm/hr)	50 year design runoff = 0.278CiA	50 year Total runoff (m ³ /s)	50 year Total runoff (L/min)
113971	544	23	20	0.55	27.67	27.67	HKO headquarters	0.25	95647	143.24	0.95	1.645	98723
								0.95	18324	143.24	0.69		

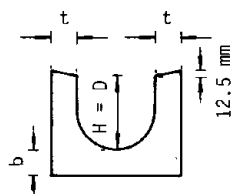
Referring to Drawing No. DIA3, 900UCs are adopted for the whole site,

The runoff generated from Natural Catchment (D) + Site Catchment (D) (Largest amount of runoff collected by the 900UC), 98723 (L/min) would be checked against the chart of rapid design of channels

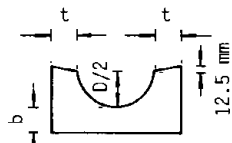


Size of channel (mm) shown by dotted solid line line

Channel dimensions



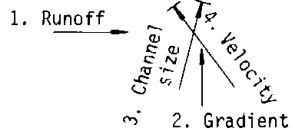
U-shaped channel (U)



Half-round channel (HR)

DESIGN METHOD USING CHART

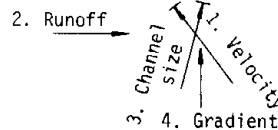
(a) Normal channel Solution



Example :

1. Enter Runoff = 4 000 litre/min.
2. Enter Gradient = 1 in 40
3. Read channel required = 225 U or 300HR
4. Read velocity = 2.2 m/sec. (<4 m/sec. ∴OK)

(b) Stepped channel Solution



Example :

1. Enter Velocity = 5 m/sec.
2. Enter Runoff = 20 000 litre/min.
3. Read required channel size = 300U
4. Read required gradient = 1 in 14

Figure 8.7 - Chart for the Rapid Design of Channels

Drainage Assessment for 1200mm Concrete Pipe discharging to Existing Open Rectangular Channel

50 year Runoff Generated from the Proposed Site and External Catchment (m ³ /s)	Length (m)	Nominal Diameter (mm)	No. of Pipe	Gradient, S _f		Velocity ⁷ (m/s)	50 year Runoff ¹ (m ³ /s)	Capacity (m ³ /s)	Utilization (%)	Pipe Capacity > Runoff ?
				(%)	1 in					
2.229	6	1200	1	1.0	66.7	3.363	2.229	3.423	65%	Yes

Mean Velocity is calculated by Colebrook- White equation

Where:

V =Mean Velocity (m/s)

R =Hydraulic Diameter (m)

Ks =Surface Roughness (m)

ν =Kinematic viscosity

(kg/ms)

S =Slope of Hydraulic

Gradient

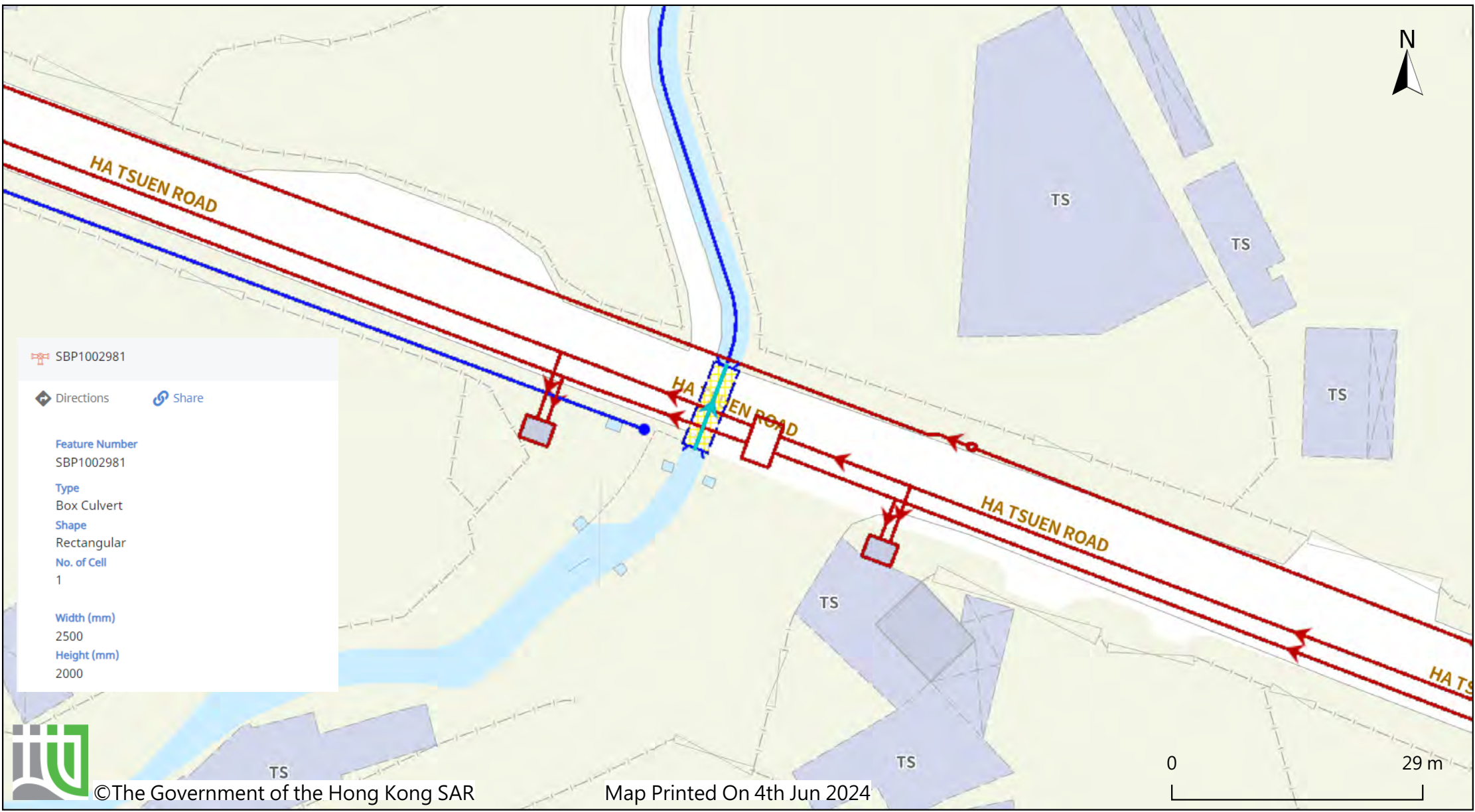
g =Gravity (m/s²)

$$\bar{V} = -\sqrt{32gRS_f} \log \left[\frac{k_s}{14.8R} + \frac{1.255\nu}{R\sqrt{32gRS_f}} \right]$$

The Roughness Coefficient Ks is assumed to be 1.5 for Concrete (Monolithic construction against rough forms)

Appendix D

Calculation of Existing Open Rectangular Channel



Calculation Sheet

Job Title: Proposed Temporary Warehouse for Storage of Construction Materials and Machineries,
 Parking of Special Purpose Vehicles and Rural Workshop with Ancillary Facilities
 for a Period of 3 Years and Associated Filling of Land, Filling of Pond and Excavation of Land
 Various Lots in D.D. 125 And Adjoining Government Land, Ha Tsuen, Yuen Long, New Territories

Date | 10/10/2023

Checking of Capacity of Existing Rectangular Channel

Input Data

Width of Existing Rectangular Channel = 2.5 m

Height of Existing Rectangular Channel = 2 m

Design Flow Generated from the Proposed Site = 9.942 m³/s



Flow capacity, Q

$$Q = \frac{A \times r^{2/3} \times s^{1/2}}{n}$$

where

A	=	cross sectional area of flow (m ²)	=	5	m ²
A'	=	Adjusted cross sectional area (SDM Section 9.3) with 10% reduction in flow area	=	5 x 0.9	= 4.5 m ²
r	=	hydraulic radius (m)			
s	=	slope of the water surface or the linear hydraulic head loss (m/m)			
n	=	Manning coefficient of roughness			

Hydraulic radius

r	=	$\frac{A'}{P}$		
P	=	wetted perimeter (m)	=	6.50 m
r	=	0.69 m		

Slope

s = 0.010 m/m (Gradient = 1:100)

Manning coefficient of roughness

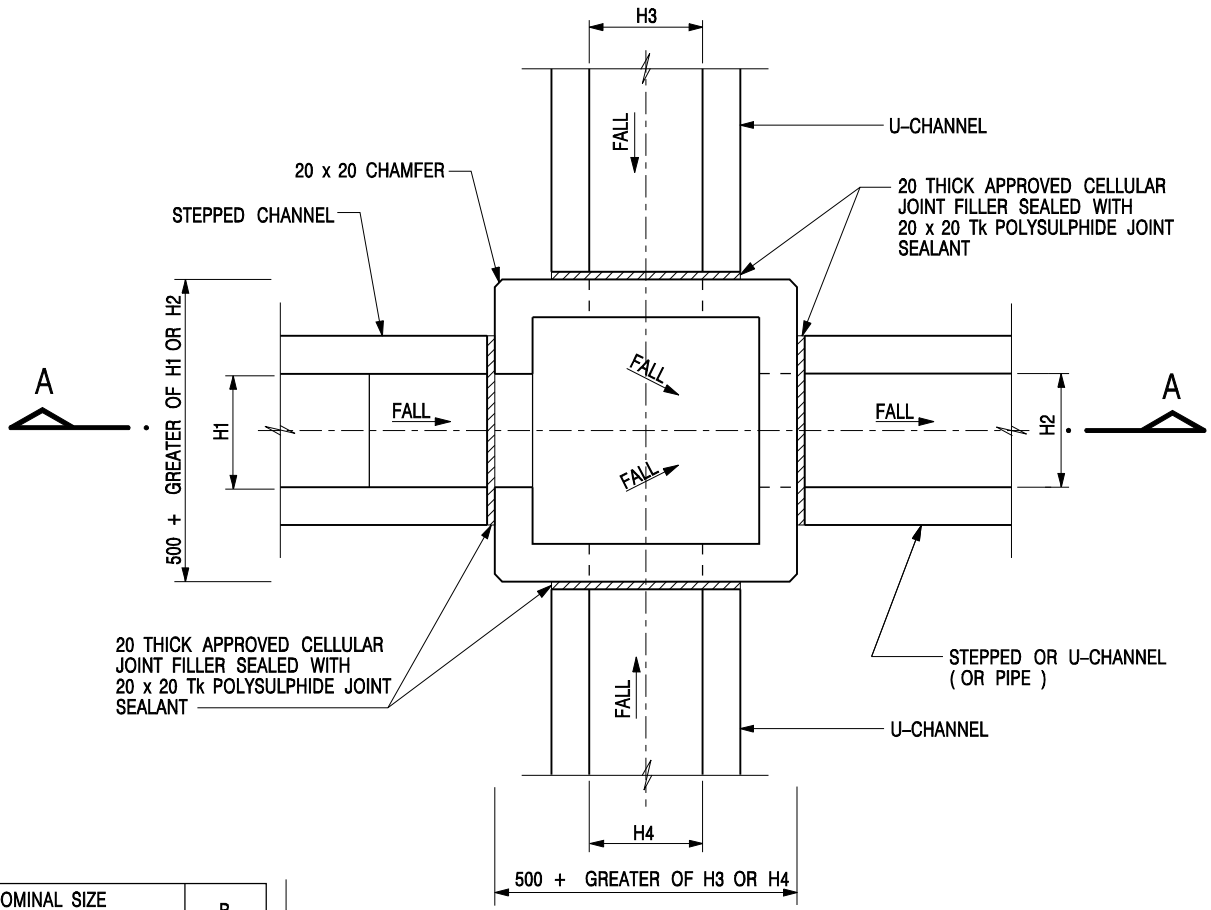
n = 0.016 Fair Condition for Concrete-lined channels

Therefore,

Q	=	24.4559 m ³ /s	> Design flow, OK!
Utilization	=	40.65%	
Freeboard	=	1.69 m	

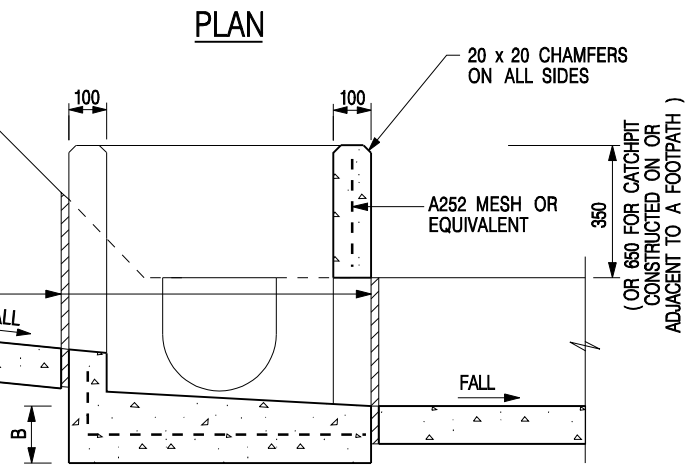
Appendix E

Standard Details

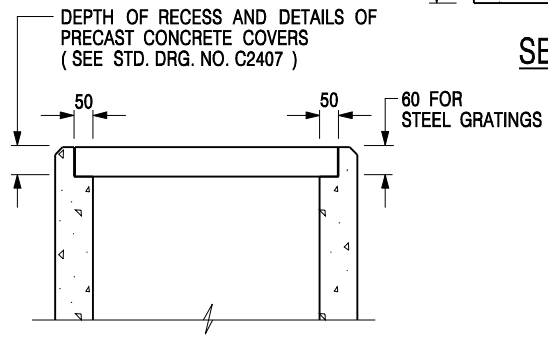


NOMINAL SIZE (LARGEST OF H1, H2, H3 & H4)	B
300 - 600	150
675 - 900	175

20 THICK APPROVED CELLULAR JOINT FILLER SEALED WITH 20 x 20 Tk POLYSULPHIDE JOINT SEALANT



SECTION A - A

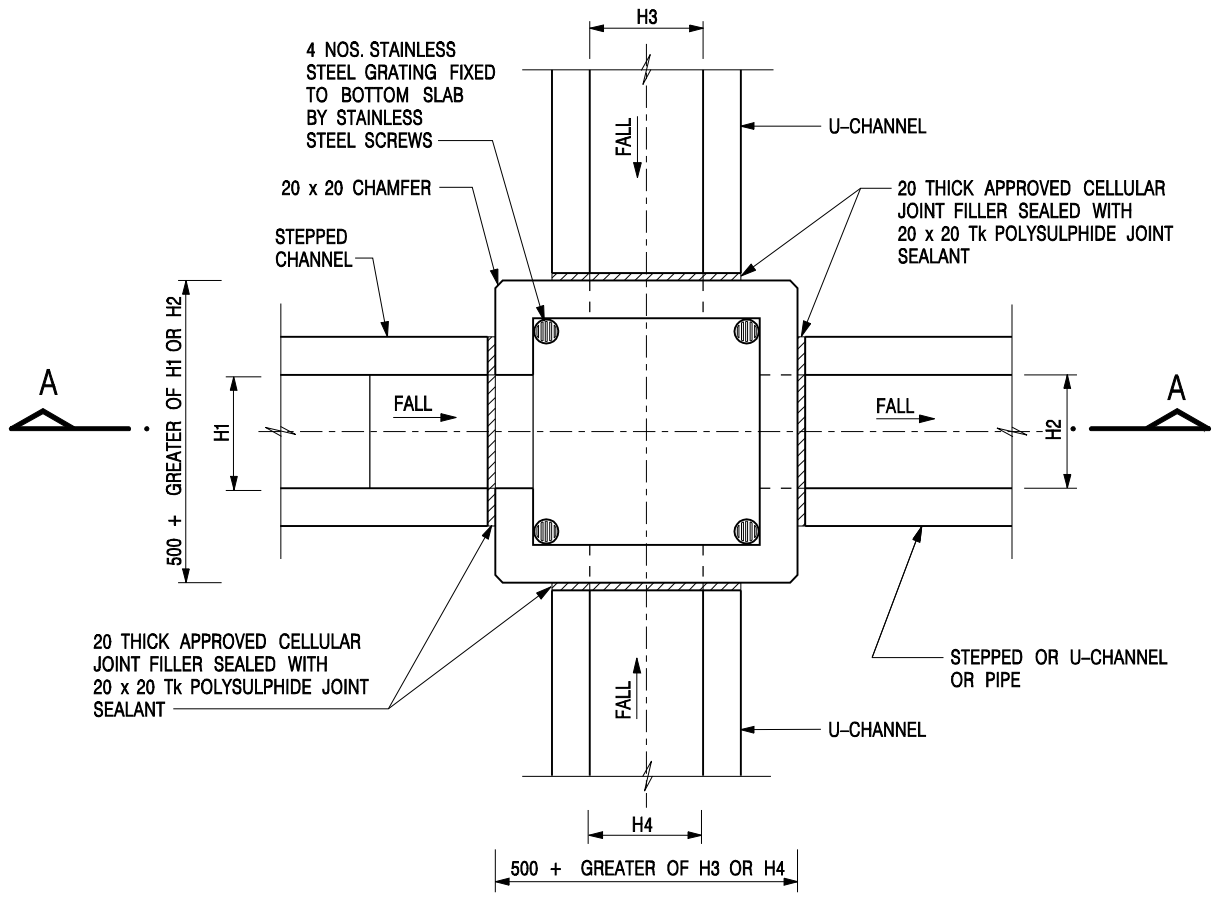


- NOTES:**
1. ALL DIMENSIONS ARE IN MILLIMETRES.
 2. REFER TO SHEET 5 FOR OTHER NOTES.

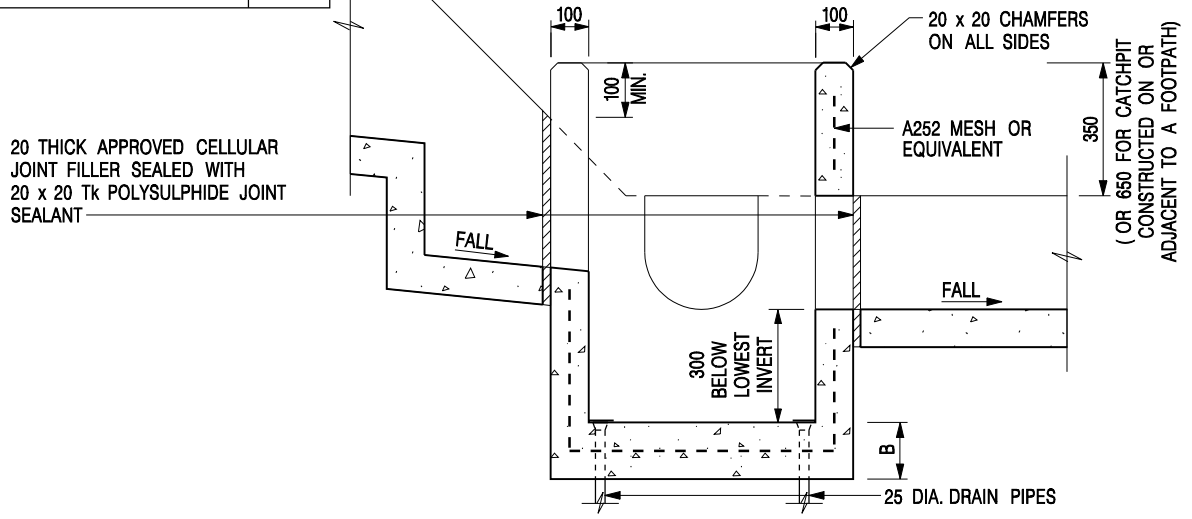
ALTERNATIVE TOP SECTION FOR PRECAST CONCRETE COVERS / GRATINGS

**STANDARD CATCHPIT DETAILS
(SHEET 1 OF 5)**

-	FORMER DRG. NO. C2405J.	Original Signed	03.2015
REF.	REVISION	SIGNATURE	DATE
CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT		SCALE 1 : 20	
		DATE JAN 1991	
		DRAWING NO. C2405 / 1	



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



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

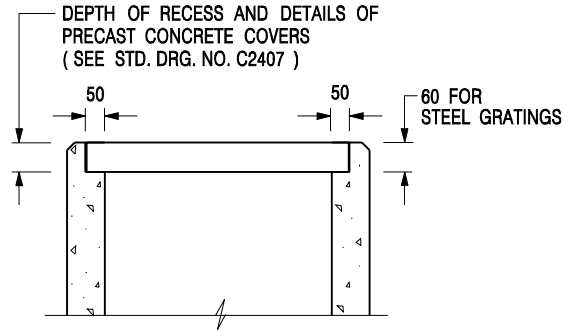
-	FORMER DRG. NO. C2406J.	Original Signed	03.2015
REF.	REVISION	SIGNATURE	DATE

CATCHPIT WITH TRAP
(SHEET 1 OF 2)

CEDD **CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT**

SCALE 1 : 20 **DRAWING NO.** C2406 /1

DATE JAN 1991




**ALTERNATIVE TOP SECTION
FOR PRECAST CONCRETE COVERS / GRATINGS**

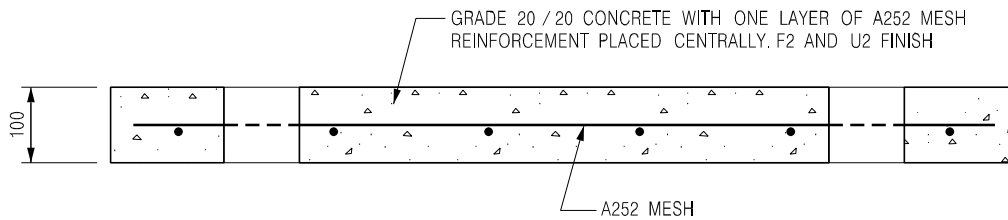
NOTES:

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.

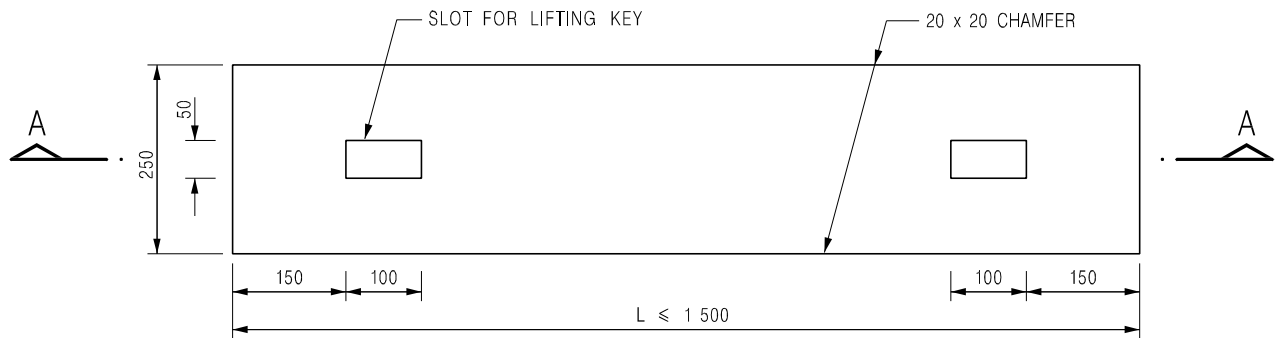
A	MINOR AMENDMENT.	Original Signed	04.2016
-	FORMER DRG. NO. C2406J.	Original Signed	03.2015
REF.	REVISION	SIGNATURE	DATE

**CATCHPIT WITH TRAP
(SHEET 2 OF 2)**

 CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT	
SCALE 1 : 20	DRAWING NO.
DATE JAN 1991	C2406 /2A

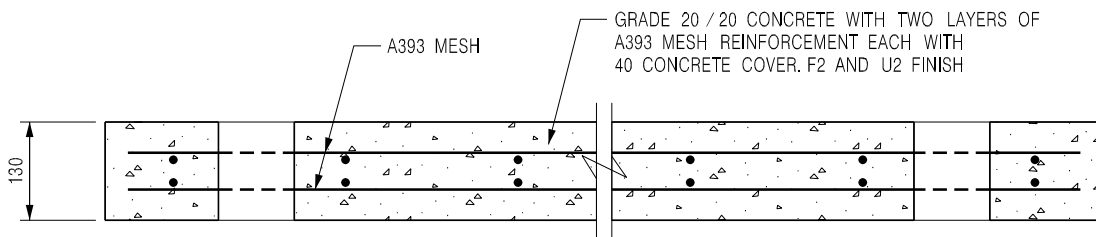


SECTION A - A

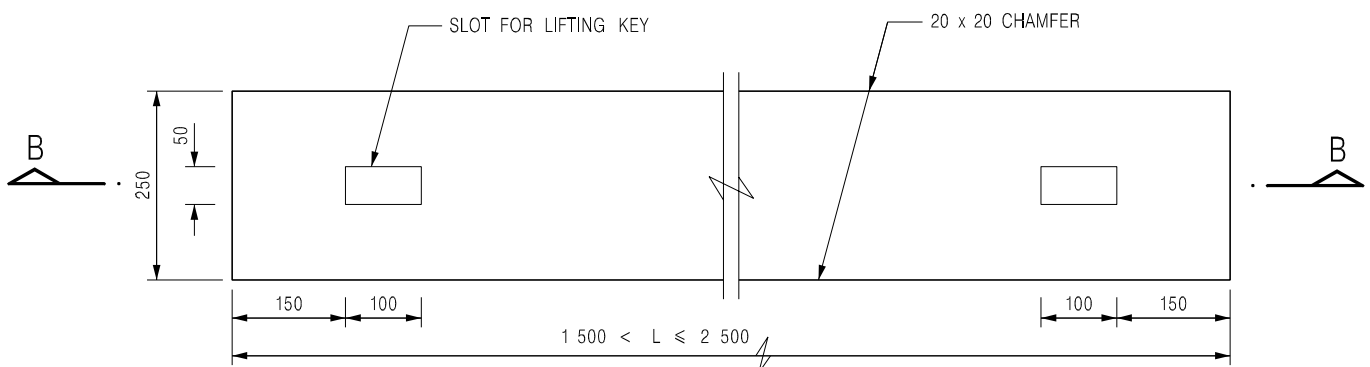


PLAN

TYPE 1 - FOR SPAN UP TO 1.5 m



SECTION B - B



PLAN

TYPE 2 - FOR SPANS 1.5 m TO 2.5 m

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. ALL EXTERNAL EDGES OF THE COVERS SHALL BE 20mm CHAMFERED.

B	NAME OF DEPARTMENT AMENDED.	Original Signed	01.2005
A	GENERAL REVISION	Original Signed	12.2002
REF.	REVISION	SIGNATURE	DATE

PRECAST CONCRETE COVERS
FOR CATCHPIT AND SAND TRAP



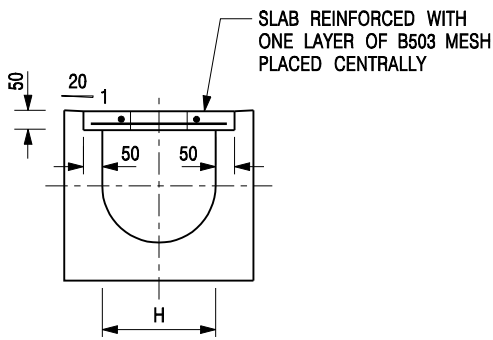
CIVIL ENGINEERING AND
DEVELOPMENT DEPARTMENT

SCALE 1 : 10

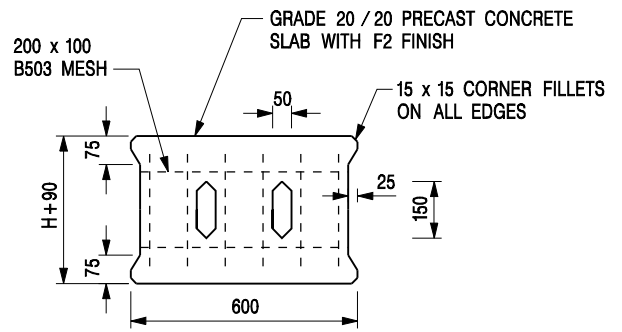
DATE JAN 1991

DRAWING NO.

C2407B



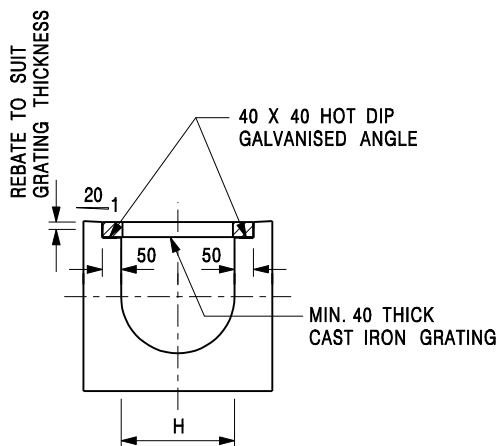
TYPICAL SECTION



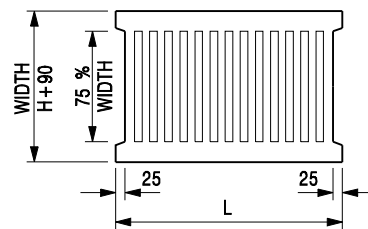
PLAN OF SLAB

U-CHANNELS WITH PRECAST CONCRETE SLABS

(UP TO H OF 525)



TYPICAL SECTION



L = 600mm FOR H ≤ 375mm
L = 400mm FOR H > 375mm

CAST IRON GRATING

(DIMENSIONS ARE FOR GUIDANCE ONLY, CONTRACTOR MAY SUBMIT EQUIVALENT TYPE)

U-CHANNEL WITH CAST IRON GRATING

(UP TO H OF 525)

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. H=NOMINAL CHANNEL SIZE.
3. ALL CAST IRON FOR GRATINGS SHALL BE GRADE EN-GJL-150 COMPLYING WITH BS EN 1561.
4. FOR COVERED CHANNELS TO BE HANDED OVER TO HIGHWAYS DEPARTMENT FOR MAINTENANCE, THE GRATING DETAILS SHALL FOLLOW THOSE AS SHOWN ON HyD STD. DRG. NO. H3156.

E	NOTES 3 & 4 AMENDED.	Original Signed	12.2014
D	NOTE 4 ADDED.	Original Signed	06.2008
C	MINOR AMENDMENT. NOTE 3 ADDED.	Original Signed	12.2005
B	NAME OF DEPARTMENT AMENDED.	Original Signed	01.2005
A	CAST IRON GRATING AMENDED.	Original Signed	12.2002
REF.	REVISION	SIGNATURE	DATE

COVER SLAB AND CAST IRON GRATING FOR CHANNELS



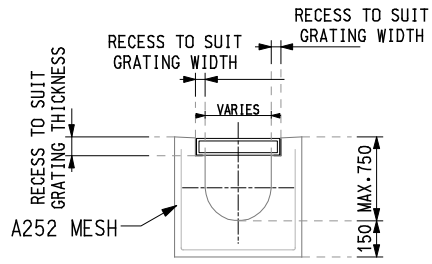
CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

SCALE 1 : 20

DRAWING NO.

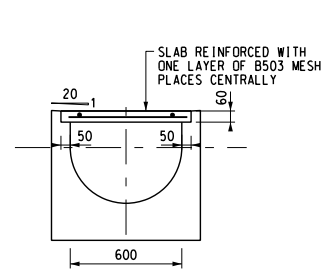
DATE JAN 1991

C2412E

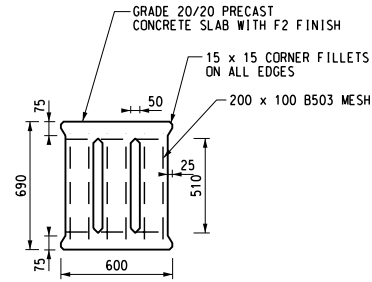


**TYPICAL CROSS SECTION OF
U-CHANNEL WITH COVER**

SCALE N.T.S.



TYPICAL SECTION



PLAN OF SLAB

U-CHANNELS WITH PRECAST CONCRETE SLABS

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED
2. DETAILS OF CATCHPIT REFER TO STANDARD DRAWING NO. C2405/1.
3. DETAILS OF CATCHPIT WITH TRAP STANDARD DRAWING NO. C2406/1.

PLANNING CONSULTANT

PROJECT
PROPOSED WAREHOUSE FOR CONSTRUCTION MATERIALS AND MACHINERY, PARKING OF SPECIAL PURPOSE VEHICLES AND RURAL WORKSHOP WITH ANCILLARY FACILITIES FOR A PERIOD OF 3 YEARS AND ASSOCIATED FILLING OF LAND AND POND AND EXCAVATION OF LAND

SITE LOCATION
 VARIOUS LOTS IN D.D. 125 AND ADJOINING GOVERNMENT LAND, HA TSUEN, YUEN LONG, NEW TERRITORIES

SCALE
 AS SHOWN

DRAWN BY	DATE
TL	9.10.2023

CHECKED BY	DATE

APPROVED BY	DATE

DWG. TITLE
 STANDARD DETAILS OF U-CHANNEL

DWG NO.	VER.
SD 1	001

Appendix F

Photo Records of the Existing Water Course
next to the Site

Photo Records of the Existing Water Course next to the Site

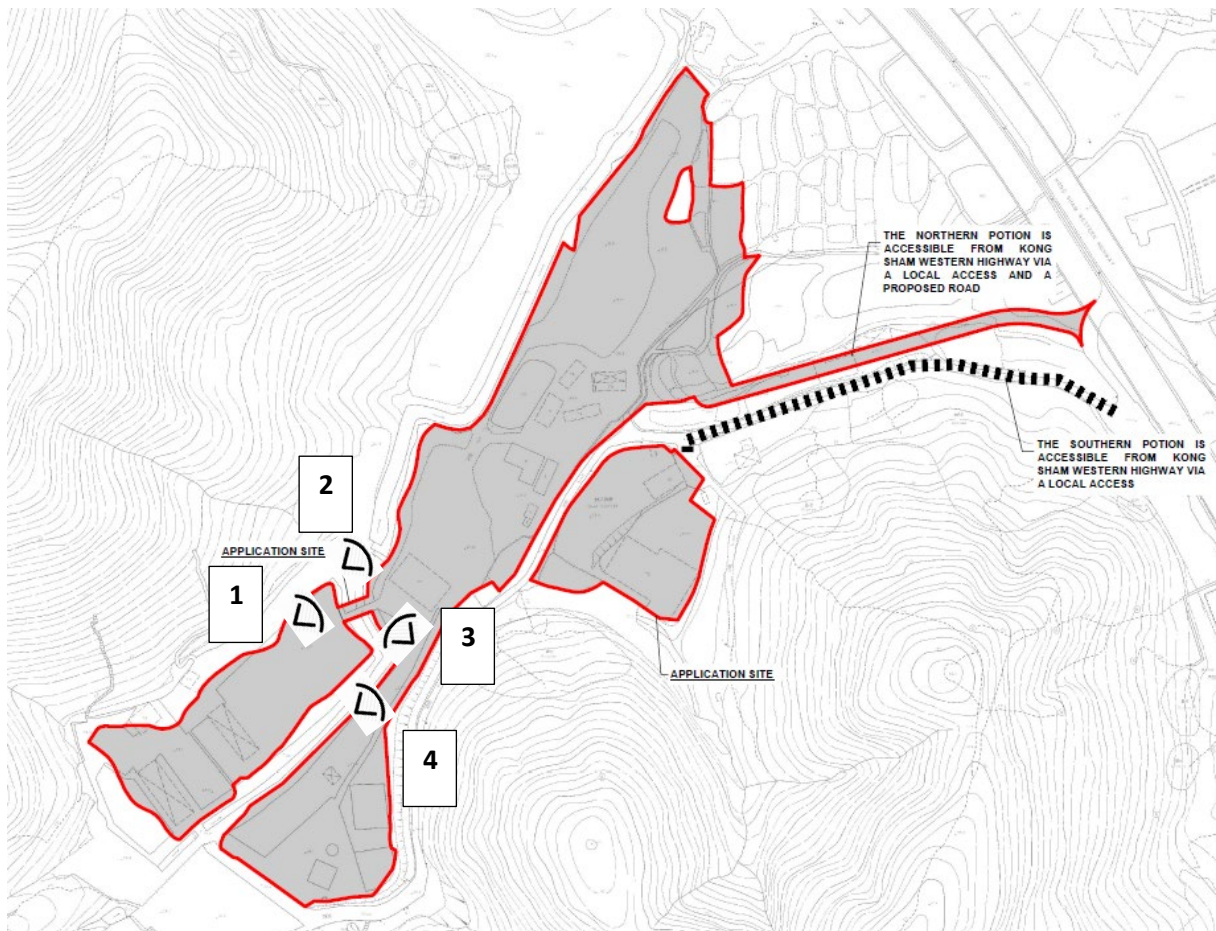


Photo Records of the Existing Water Course next to the Site



1



2



3



4