

Our Ref. : DD 128 Lot 521 & VL
Your Ref. : TPB/A/YL-HTF/1208

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

By E-mail

18 March 2026

Dear Sir,

Supplementary Information

**Proposed Temporary Open Storage of Construction Materials and Machinery
with Ancillary Facilities and Associated Filling of Land for a Period of 3 Years in "Agriculture" Zone,
Lots 521 (Part), 536 (Part), 537 (Part), 538 (Part), 539 (Part), 540, 541, 542, 543, 544, 545 (Part),
547 (Part), 548, 549, 551, 552, 553, 554, 555 (Part) and House Lot Blocks (Part) in D.D. 128
and Adjoining Government Land, Pak Nai, Yuen Long, New Territories**

(S.16 Planning Application No. A/YL-KTN/1208)

We write to submit supplementary information with the following documents in support of the captioned application:

1. Revised page of the Planning Statement (**Annex 1**); and
2. Drainage Impact Assessment (**Annex 2**).

Should you require more information regarding the application, please contact our Mr. Danny NG at [REDACTED] or the undersigned at your convenience. Thank you for your kind attention.

Yours faithfully,

For and on behalf of
R-riches Planning Limited



Christian CHIM
Town Planner

cc DPO/TMYLW, PlanD

(Attn.: Mr. Kanic KWOK

email: kckwok@pland.gov.hk)

Annex 1

Revised pages of the Planning Statement



1. INTRODUCTION

Background

- 1.1 **R-riches Planning Limited** has been commissioned by **Sum Wui Investment Limited**¹ (the applicant) to make submission on their behalf to the Board under S.16 of the Ordinance in respect to *Lots 521 (Part), 536 (Part), 537 (Part), 538 (Part), 539 (Part), 540, 541, 542, 543, 544, 545 (Part), 547 (Part), 548, 549, 551, 552, 553, 554, 555 (Part) and House Lot Blocks (Part) in D.D. 128 and adjoining GL, Pak Nai, Yuen Long, New Territories (Plans 1 to 3).*
- 1.2 The applicant intends to use the Site for ‘**Proposed Temporary Open Storage of Construction Materials and Machinery with Ancillary Facilities and Associated Filling of Land for a Period of 3 Years**’. The Site falls within an area zoned “AGR” on the Approved Ha Tsuen Fringe OZP No. S/YL-HTF/12 (**Plan 2**). According to the Notes of the OZP, the applied use is neither Columns 1 nor 2 use within the “AGR” zone; temporary use or development of any land or building not exceeding a period of 3 years requires permission from the Board. Notwithstanding that the use or development is not provided for in terms of the OZP, the Board may grant permission, with or without conditions, for a maximum period of 3 years.
- 1.3 In support of the proposal, a set of indicative development plans/drawings (**Plans 1 to 11**) and supplementary information (**Appendices I and II**), as well as relevant assessment report, including the Traffic Impact Assessment (TIA) (**Appendix III**), are provided with this Planning Statement. Other assessments will be submitted, if required, at a later stage for the consideration of relevant government bureaux/departments and members of the Board.

¹ **Sum Wui Investment Limited** 深滙投資有限公司, the applicant, is authorised by **K.Y.H. Steel Company Limited** 金源行鐵倉有限公司, the affected business operators of *Original Premises A*; and **Skyview Development Limited** 天匯發展有限公司, the affected business operators of *Original Premises B*, to facilitate the relocation of their respective Original Premises. The Memoranda of Understanding signed by the applicant with each of the affected business operators, as well as details of the affected business operators are provided at **Appendix I**.

Filling of Land at the Site

- 5.3 The Site is currently covered with asphalt (about 15,320 m²), concrete (about 610 m²), and soil (about 7,383 m²). The existing site levels range from +8.1 mPD to +10.4 mPD. The applicant intends to regularise the existing filling at the Site (**Plan 10**).
- 5.4 Further to the existing filling to be regularised, the entire Site is proposed to be filled with asphalt (about 15,320 m²), concrete (about 610 m²), and soil (about 7,383 m²) of not more than 1.2 m in depth for area for open storage operations, vehicle parking and L/UL spaces, site formation of structures, and circulation area. The proposed site levels after filling of land will range between +9.3 mPD and +11.6 mPD (**Plan 10**). The filling of land is considered required and has been kept to a minimum to meet the operational need. The applicant will reinstate the Site to an amenity area upon expiry of the planning permission.
- 5.5 The Site is located within the Ngau Ham Sha Site of Archaeological Interest (SAI). Subject to final approval of the Drainage Authority, peripheral drainage u-channels within the layer of filling materials will be proposed along the site boundary to collect the run-off to minimise the adverse drainage impact to the surrounding area. Given that the scale of works and no excavation is required for the proposed drainage work is minimal, the potential adverse impact to the SAI is not anticipated.

Operation Mode

- 5.6 The Site will be used as open storage of construction materials and machinery. The area designated for open storage operation is 15,216 m² (about), which accounts for about 65% of the Site (**Plan 9**). The construction materials (e.g. steel beam, bricks, scaffold etc.) and machinery (e.g. mobile cranes etc.) will be openly stored at the designated area with stacking height of not more than 3 m. Depending on their nature, some construction materials which are prone to rain/water damage will be stored indoor within the proposed enclosed structures. The operation hours of the proposed development are Monday to Saturday from 09:00 to 19:00. There is no operation on Sunday and public holidays. No dangerous goods will be allowed to be stored within the Site.
- 5.7 It is estimated that the Site would be able to accommodate about 5 nos. of staff. The site office is intended to provide indoor workspace for administrative staff to support the daily operation of the Site. As no shopfront is proposed at the Site, visitor is not anticipated.

Minimal Traffic Impact

- 5.8 The Site is accessible from Kai Pak Ling Road via Deep Bay Road and a local access (**Plan 1**). A 10 m-wide (about) vehicular ingress/egress is proposed at the northern tip of the Site. A total of 8 parking and L/UL spaces will be provided at the Site (**Plan 9**). Details of the parking and L/UL provision are shown at **Table 4** below.

Annex 2
Drainage Impact Assessment



Sum Wui Investment Limited

Proposed Temporary Open Storage of Construction Materials and Machinery with Ancillary Facilities and Associated Filling of Land for a Period of 3 Years, Various Lots in D.D. 128 and Adjoining Government Land, Pak Nai, Yuen Long, New Territories

Drainage Impact Assessment



Document No. W1086/01

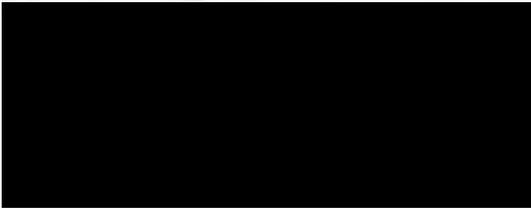
Issue 1

February 2026

W1086/01
Issue 1
February 2026

Proposed Temporary Open Storage of Construction Materials and Machinery with Ancillary Facilities and Associated Filling of Land for a Period of 3 Years, Various Lots in D.D. 128 and Adjoining Government Land, Pak Nai, Yuen Long, New Territories

Drainage Impact Assessment

	
Position:	<u>Project Manager</u>
Date:	<u>27 February 2026</u>

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Proposed Temporary Open Storage of Construction Materials and Machinery with Ancillary Facilities and Associated Filling of Land for a Period of 3 Years, Various Lots in D.D. 128 and Adjoining Government Land, Pak Nai, Yuen Long, New Territories

Drainage Impact Assessment

Issue	Prepared by	Reviewed by	Date
1	BH	SC	27 Feb 2026

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Abbreviations

- D.D. Demarcation District
- DSD Drainage Services Department
- SDM Stormwater Drainage Manual



1.0 Introduction

- 1.1 This submission presents the drainage impact assessment of the Proposed Temporary Open Storage of Construction Materials and Machinery with Ancillary Facilities and Associated Filling of Land for a Period of 3 Years, Various Lots in D.D. 128 and Adjoining Government Land, Pak Nai, Yuen Long, New Territories (“Site”)
- 1.2 The site covers an area of approximately 23,313 m² and is currently comprised of grassland, as well as hard-paved surfaces in both concrete and asphalt. The proposed development involves filling the site with soil and asphalt surfaces up to a maximum depth of 1.2 m. The proposed land filling plan are shown in **Appendix D**. The development plan includes the 2 temporary structures for site office, storage and washrooms with total gross floor area (GFA) of about 120 m². The general layout plan and cross sections of the Site are shown on the Drawing Nos. **W1086/101** and **W1086/102** enclosed in **Appendix A**.
- 1.3 Due to the concerns of possible drainage impact arising from the change of uses, Mannings (Asia) Consultants Limited (MACL) was appointed by the Sum Wui Investment Limited to undertake a Drainage Impact Assessment (DIA) to demonstrate the acceptability of drainage impact upon the surrounding environment.



2.0 Design Methodology and Assumptions

Design Code

2.1 The below design codes are to be followed for this design assessment:

- Stormwater Drainage Manual (DSD) - Fifth Edition, January 2018;
- Stormwater Drainage Manual (DSD) - Corrigendum No. 1/2022;
- Stormwater Drainage Manual (DSD) - Corrigendum No. 1/2024;
- Stormwater Drainage Manual (DSD) - Corrigendum No. 2/2024;
- BS 5911 Code of Practice for Precast Concrete Pipe Design
- DSD Standard Drawings

Design Parameters

2.2 Design Parameters

a) Runoff Coefficient

Table 2-1 Runoff Coefficients

Surface Characteristic	Runoff Coefficient, C
Hard paving with asphalt	0.95
Hard paving with concrete	0.95
Structure Roofing Area	1.00
Grassland (heavy soil Flat), unpaved area	0.25

Note: Roughness Coefficient for pipe flow $k_s = 3$

b) Minimum Pipeline Cover and Manhole Spacing Requirements

Table 2-2 Minimum Pipeline Cover and Manhole Spacing Requirements

Minimum pipeline cover	
In Roads	0.9 m
In footways and verges	0.45 m
Manhole spacing requirements	
D < 675 mm	80 m
675 < D < 1050	100 m
D > 1050	120 m

c) Bedding factors

- Granular bedding : 1.9
- Plain concrete bedding : 2.6
- Reinforced concrete bedding with allowance for minimum steel area : 3.4
- Concrete Surround : 4.5



d) Design Flow Velocity

- Minimum : 1 m/s
- Maximum : 3 m/s (desirable)
- : 6 m/s (absolute)

Return Period

2.3 A return period of 1 in 50 years is adopted under this assessment.

Analysis Method

2.4 Description of Analysis Method

a) Rational method is to be adopted for calculation of the peak runoff. The formula is extracted from Section 7.5.2(a) of Stormwater Drainage Manual (SDM) which is to estimate the stormwater runoff as shown below:

$$Q_p = 0.278 CiA$$

- Where
- Q_p = peak runoff in m^3/s
 - C = runoff coefficient (dimensionless)
 - i = rainfall intensity in mm/hr
 - A = catchment area in km^2

b) 10% reduction of the flow area is allowed taken into account of the decomposition of siltation as per DSD's SDM 2018.

c) The time of concentration for determining the duration of the design storm is considered by the time of entry and the time of flow. (for conservative design 5 mins is used for design checking)

$$t_c = t_o + t_f \quad t_f = L/V$$

- where
- t_o =inlet time (time taken for flow from the remotest point to reach the most upstream point of the urban drainage system)
 - t_f = flow time
 - L = Length of drain
 - V = flow velocity

e) The time of entry or time of flow in the hinterland is calculated using the Bransby William's Equation. (for conservative design 15 mins is used for design checking)

$$t_e = \frac{0.14465 L}{A^{0.1} H^{0.2}}$$

- Where
- t_e = time of concentration (min)
 - L = catchment length (m)
 - A = catchment area (m^2)



H = average catchment slope (m/100m)

- f) The rainfall intensity is extracted from the Section 4.3.2 of SDM which is to estimate the Intensity-Duration –Frequency (IDF) Relationship.

$$i = a / (t_d + b)^c$$

Where
 i = extreme mean intensity in mm/hr
 t_d = duration in minutes (t_d < 240)
 a, b, c = storm constants given in table 3 of SDM as below

Table 2-3 Storm Constant of SDM – Corrigendum No.1/2024
(HKO Headquarters)

Return Period T (years)	50
a	505.5
b	3.29
c	0.355

- g) Colebrook-White Equation is used in hydraulic design for pipe flow.

$$V = -\sqrt{(32gRs)} \log \left(\frac{k_s}{14.8R} + \frac{1.255v}{R\sqrt{(32gRs)}} \right)$$

Where:

V = mean velocity (m/s)
 g = gravitational acceleration (m/s²)
 R = hydraulic radius (m)
 D = pipe diameter (m)
 k_s = equivalent sand roughness (m)
 v = kinematic viscosity of fluid (m²/s)
 s = frictional slope (energy gradient due to frictional loss)



3.0 Current Flooding Susceptibility and Proposed Drainage

Current Site Condition and Flooding Susceptibility

- 3.1 The topography of the Site is generally with a steep gradient and currently situated with levels from +8.1mPD to +10.4PD. In general, the direction of existing surface runoff flows from south to north. Since the proposed ground levels of the Site are generally higher than the existing surrounding area, flooding susceptibility of the Site is considered as low.
- 3.2 Catchment plan before development is shown in **Drawing No. W1086/104** in **Appendix A**.

Proposed Development

- 3.3 2 temporary structures for site office, storage and washrooms are proposed for the site as stated in Para. 1.2. After completion of the project, the finished ground level of the Site will be raised from approximately +9.3mPD to +11.6mPD. The majority of the site will be paved with asphalt and soil. A layout plan of the proposed development is shown on **Drawing No. W1086/101** in **Appendix A**.

Proposed Drainage

- 3.4 According to the site survey and observations, the current site does not have existing drainage system to collect the runoff but have a natural stream nearby the site. As illustrated in **Drawing No. W1086/104** in **Appendix A**, a portion of the runoff from the surrounding area will flow through the site and into the existing natural stream.
- 3.5 As illustrated in **Drawing No. W1086/104** in **Appendix A**, a portion of the runoff from the surrounding area will flow through the site and into the existing Stream. The site formation level will be raised but not more than 1.2m, exceeding the existing level of surrounding site are. As such, U-channels ranging from 300mm to 450mm will be provided along the perimeter of the site to collect the runoff inside and in the vicinity of the site. These channels will capture runoff from Catchment Area A-B, while the paved areas and unpaved areas within the site (i.e., Catchment Areas 1 - 23) will also be directed into the U-channels. The collected runoff will be conveyed via the proposed 375mm and 600mm pipes to the existing stream through Outlets 1 and 2 respectively.
- 3.6 The drainage layout plan and detailed drainage are shown in **Drawing Nos. W1086/103** and **W1086/106** in **Appendix A**. Calculation of the proposed drainage are presented in Section 4 and enclosed in **Appendix B**.
- 3.7 The proposed U-channels and drainage pipes are designed to have sufficient capacities for the estimated runoff from the paved, unpaved and roofing area in the Site. Details of the calculation are enclosed in **Appendix B**.
- 3.8 Based on our observation, The condition of the existing stream at outlet 2 is bad. Therefore, the existing stream is proposed to be upgraded by a 200mm thick concrete slab. The typical details of the updated stream are shown in the **Drawing Nos. W1086/103** in **Appendix A**. The flow area of the upgraded stream shall not be smaller than the original flow area and



the gradient of the stream shall remain unchanged after the upgrade. Therefore, no adverse impact is anticipated.

Changes in Land Use and Planned Drainage Works in Adjacent Area

3.9 There is no changes of land use and planned drainage works in adjacent area of the site.



4.0 Changes to the Drainage Characteristics and Potential Drainage Impact

Changes in Land Use and Surface Runoff Characteristics

4.1 The site currently covered in grassland about 7,383 m², hard-paved with asphalt about 15,320 m² and hard-paved with concrete about 610 m². After completion of the project, These areas will be retained without change. Runoff coefficients are shown in Table 2-1 under Para. 2.2.

Changes to Surface Runoff Hydrographs

4.2 There is no major change in land surface except the two temporary structures which surface changes from asphalt to roof. The change to surface runoff is considered to be negligible due to small area of the two temporary structures. Thus, the impact on surface runoff hydrographs is also considered negligible.

Changes in Flood Storage

4.3 According to the site survey and observation, there is no flood storage was found near the Site

Changes in Timing of Peak runoff

4.4 The ground surface of the site after development and proposed U-channel’s gradient are generally steep than ground surface gradient before development, thus the time of concentration for the runoff is anticipated shorter than before development.

4.5 The changes in the time of concentration for the existing stream before and after development are summarized in the table below. Further calculations and methodology can be found in **Appendix B**.

Table 4-1 Changes in Time of Concentration

	Time of concentration (min)	
	Before Development	After Development
Outlet 1	23.74	23.33
Outlet 2	26.20	26.17

Hydraulic Bankfull Capacity of the Proposed Drainage System

4.6 The proposed drainage system mentioned in Para. 3.4 to Para 3.6 are designed to have sufficient capacity to cater the flow into the Site. Detailed calculation is attached in **Appendix B**.

4.7 The design runoff, capacity and utilization of the U-channels are summarized in below table.



Table 4-2 Design Runoff, Capacity and Utilization of the Proposed U - Channels to Outlet 1

Proposed U-Channel	Design Runoff (m ³ /s)	Capacity (m ³ /s)	Utilization
UC 1 (300UC)	0.060	0.079	75.6%
UC 2 (300UC)	0.139	0.715	19.4%
UC 3 (300UC)	0.168	0.500	33.6%
UC 4 (300UC)	0.019	0.152	12.4%

Table 4-3 Design Runoff, Capacity and Utilization of the Proposed U - Channels to Outlet 2

Proposed U-Channel	Design Runoff (m ³ /s)	Capacity (m ³ /s)	Utilization
UC 5 (300UC)	0.095	0.143	66.3%
UC 6 (300UC)	0.187	0.683	27.3%
UC 7 (300UC)	0.412	0.608	67.8%
UC 8 (450UC)	0.637	0.1481	43.0%
UC 9 (450UC)	0.738	0.884	83.5%
UC 10 (300UC)	0.070	0.172	40.9%
UC 11 (300UC)	0.088	0.413	21.4%
UC 12 (300UC)	0.088	0.328	27.0%
UC 13 (300UC)	0.106	0.499	21.2%
UC 14 (300UC)	0.106	0.422	25.0%

4.8 The design runoff, capacity and utilization of the proposed pipes are summarized in below table.

Table 4-4 Design Runoff, Capacity and Utilization of the Proposed Pipes to Outlet 1

Proposed Pipe	Design Runoff (m ³ /s)	Capacity (m ³ /s)	Utilization
CP3 to Existing Stream (375 Dia.)	0.165	0.551	29.9%

Table 4-5 Design Runoff, Capacity and Utilization of the Proposed Pipes to Outlet 2

Proposed Pipe	Design Runoff (m ³ /s)	Capacity (m ³ /s)	Utilization
CP12 to Existing Stream (600 Dia.)	0.649	0.786	82.5%

Changes in Peak Runoff Before and After Development at Outlet

4.9 Below table shows the comparison of the changes of the peak runoff of the Outlet 1 and Outlet 2 before and after the development. Detailed calculation is attached in **Appendix B**.

Table 4-6 Changes in Peak Runoff Before and After Development at Outlet 1 and 2.

	Before Development	After Development
	Peak Runoff (m ³ /s)	Peak Runoff (m ³ /s)
Outlet 1	0.16	0.16
Outlet 2	0.69	0.69



Potential Drainage Impact to Existing Stream

- 4.10 The proposed drainage systems are designed to discharge into the existing stream, as mentioned in Section 3.4. It is anticipated that the flow to the outlet will not increase, indicating that no significant drainage impact is expected when comparing conditions before and after the development. The changes in estimated runoff under before and after development conditions are summarized in Table 4-6.

Temporary Drainage during Construction

- 4.11 According to the site survey and observation, there is no existing drainage system within the Site. Therefore, no existing drainage system would be affected during the construction. Temporary drainage within the site is considered not necessary.
- 4.12 For the upgrading work for the existing stream at outlet 2 outside the site, temporary drainage (i.e. a 800mm x 800mm ditch) is proposed as shown in **Drawing No. W1086/103** in **Appendix A**. Hydraulic checking of the temporary ditch is included in **Appendix E**.

Details of Works to Existing Drainage System

- 4.13 Proposed drainage systems are connecting to existing stream as shown in **Drawing No. W1086/103** in **Appendix A**.

Potential Drainage Impacts to Other Land Users

- 4.14 All runoff in the Site will be collected and drain to existing stream as stated in Para. 3.4, no drainage impact to other land users is anticipated.



5.0 Drainage Impact Mitigation Measures

- 5.1 As discussed in Para. 4.11, no existing drainage system would be affected and no drainage impact to other land users is anticipated. Therefore, Mitigation measures is considered not necessary.
- 5.2 The Contractor should monitor during the construction to ensure that there is no adverse drainage impact to the nearby drainage systems and adjacent land users.



6.0 Monitoring Requirements

Monitoring During Construction

- 6.1 Monitoring of the drainage system is required during construction to ensure that there are no adverse impacts which may result in flooding or deterioration in the water quality.
- 6.2 Monitoring shall include:
- any siltation or blockages in channels, slit traps or sediment basins;
 - checking the drainage is performing in accordance with the design;
 - checking for damage; and
 - visual inspection of any high sediment levels
- 6.3 The detailed requirements of drainage monitoring should be as shown in the following table:

Table 6.1 – Detailed Requirements for Drainage Monitoring

Type / location of monitoring	Minimum Frequency	Action by
Prepare method statements	Before the start of any works that could impact on drainage	Contractor
Inspect existing drainage systems and all construction drainage systems for blockages or breakages	Daily, Weekly, Before every rainstorm warning	Contractor
	After every rainstorm	Contractor
Inspect sedimentation basins and silt traps	Daily, Weekly, Before every rainstorm warning	Contractor
	After every rainstorm	Contractor



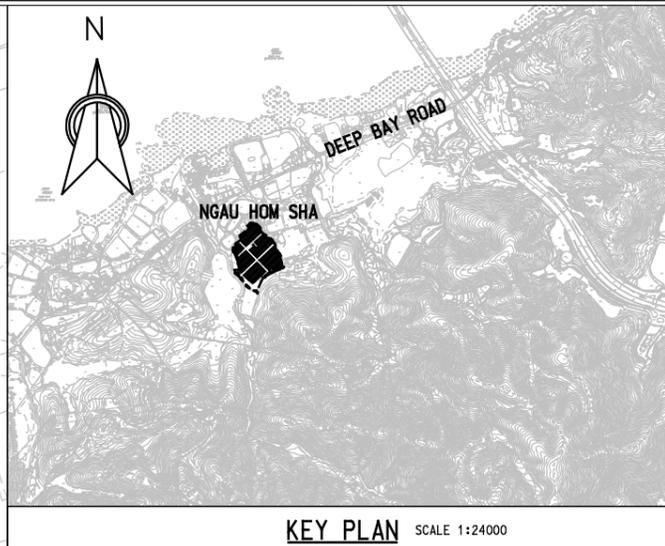
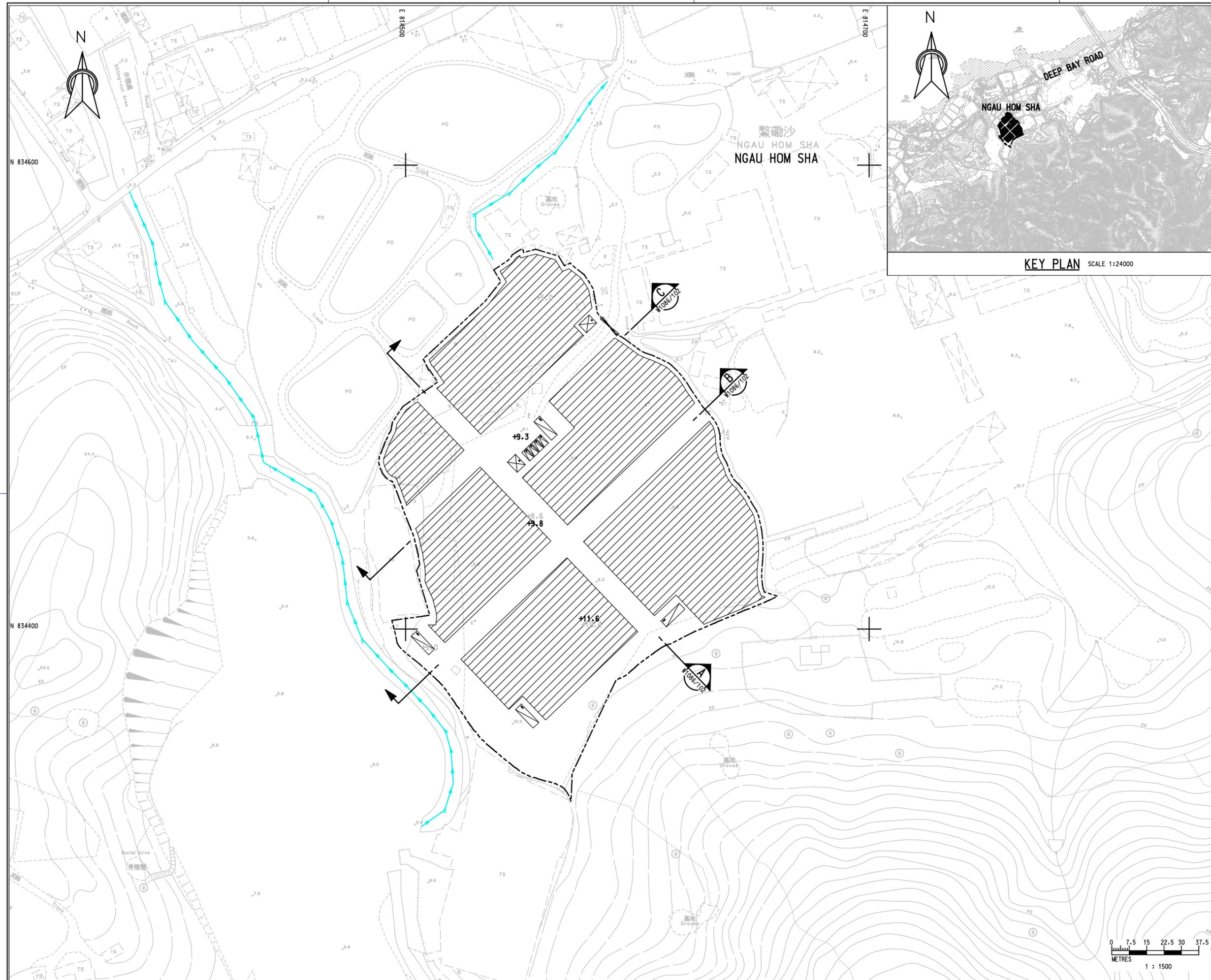
7.0 Conclusion

- 7.1 A Drainage Impact Assessment has been conducted for the proposed land use changes of the application site. The existing stream has been checked for the updated runoff from the catchment area and based on our assessment, no significant drainage impact is expected when comparing conditions before and after the development.



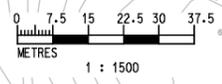
Appendix A

Drawings

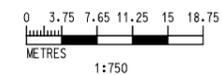
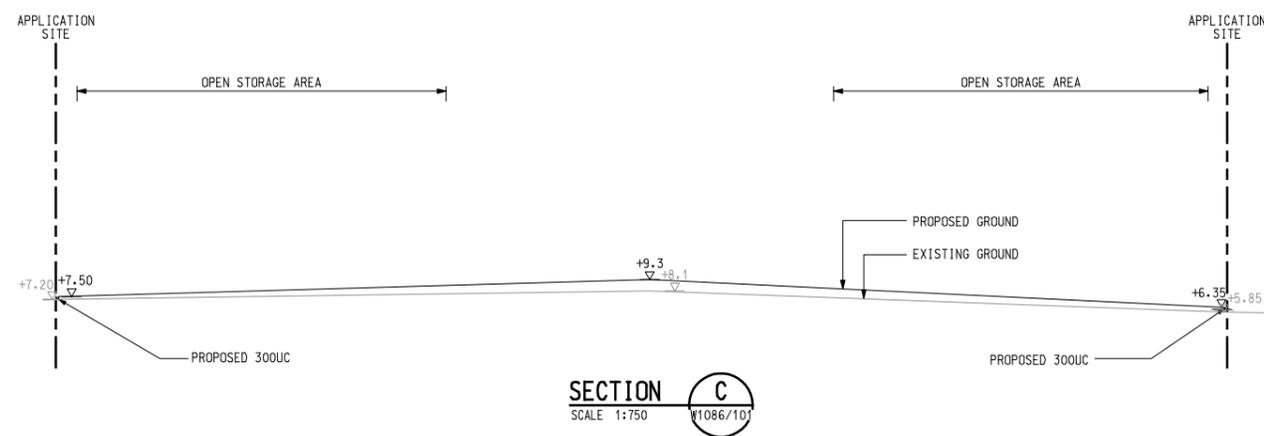
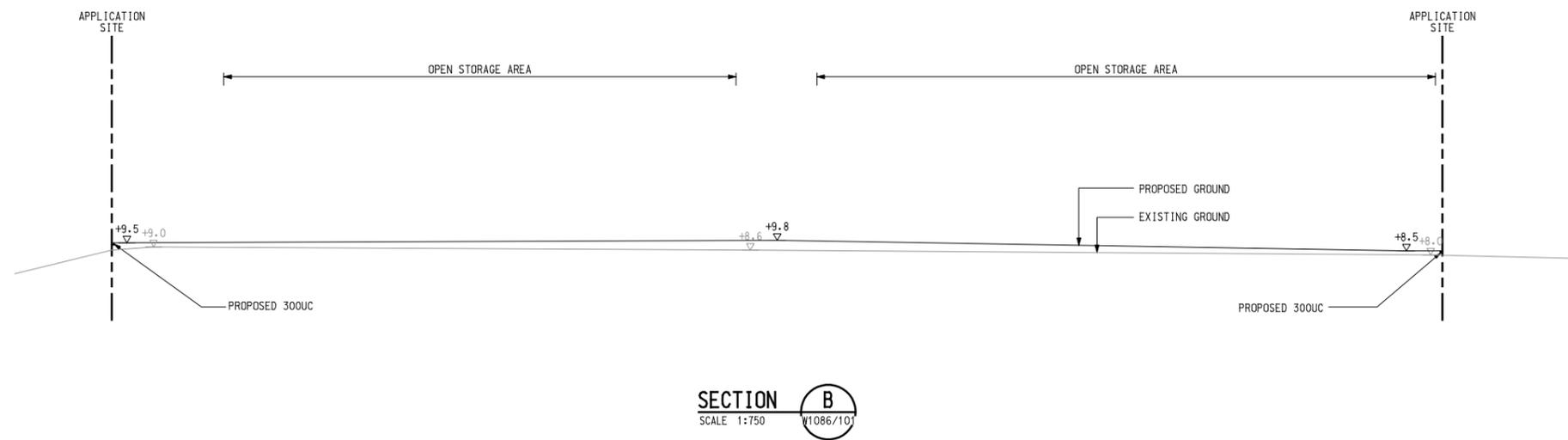
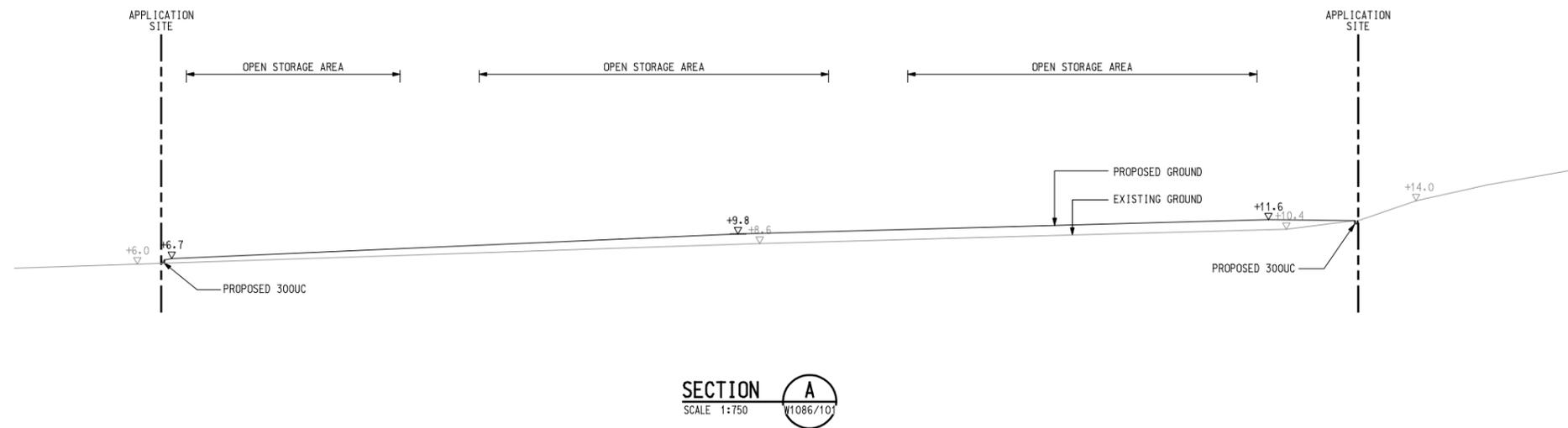


- NOTES :**
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
 2. ALL LEVELS ARE IN mPD METRE ABOVE HONG KONG PRINCIPAL DATUM.
- LEGEND:**
- APPLICATION SITE
 - STRUCTURE
 - OPEN STORAGE AREA
 - PARKING SPACE (PRIVATE CAR)
 - L/LU SPACE (HEAVY GOODS VEHICLE)
 - INGRESS/EGRESS
 - +7.0 PROPOSED LEVEL
 - +3.9 EXISTING LEVEL
 - EXISTING STREAM

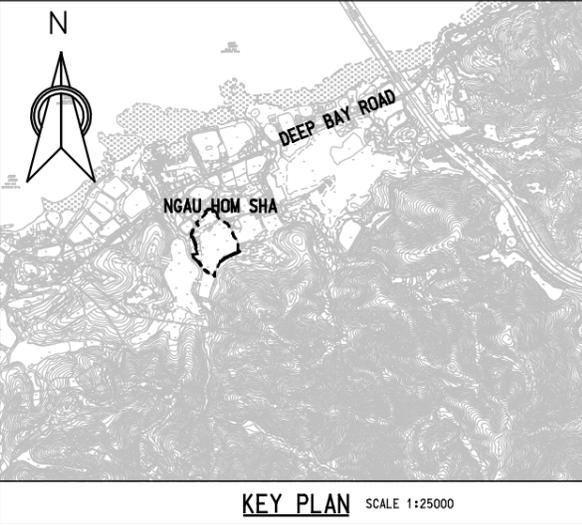
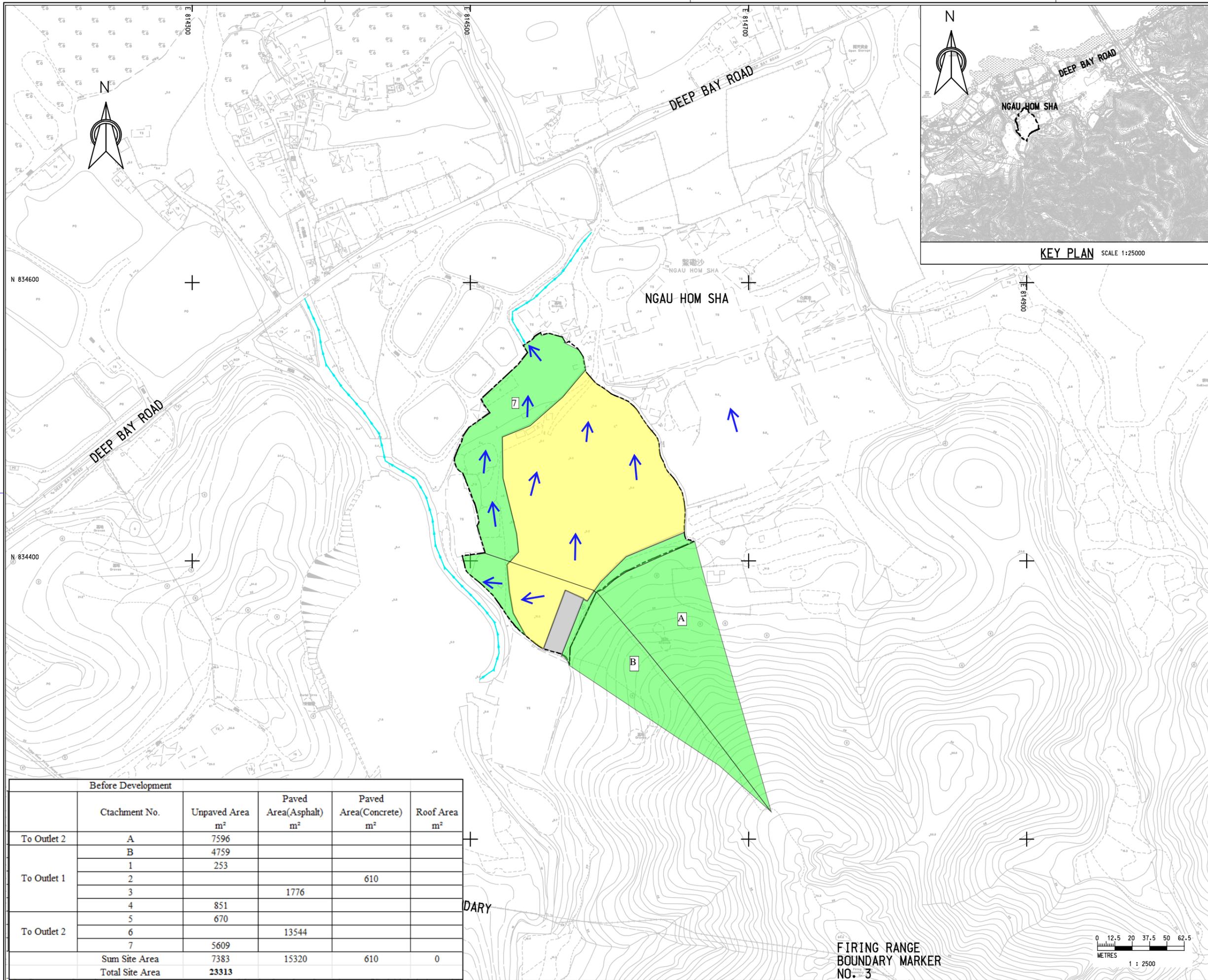
Rev.	Description of Revision	Date	Ckd.
Client			
SUM WUI INVESTMENT LIMITED			
Consultants			
Scale 1m A3 AS SHOWN		Date NOV 2025	
Designed EM	Drawn KAM	Checked BLE	
Design Team Leader SC		Date NOV 2025	
Approved KTC		Date NOV 2025	
Project			
PROPOSED TEMPORARY OPEN STORAGE OF CONSTRUCTION MATERIALS AND MACHINERY WITH ANCILLARY FACILITIES AND ASSOCIATED FILLING OF LAND FOR A PERIOD OF 3 YEARS, VARIOUS LOTS IN D.D. 128 AND ADJOINING GOVERNMENT LAND, PAK NAI, YUEN LONG, NEW TERRITORIES			
Title			
GENERAL LAYOUT PLAN			
Drawing No. W1086/101		Stage D	Rev. -



- NOTES :**
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
 2. ALL LEVELS ARE IN MPD METRE ABOVE HONG KONG PRINCIPAL DATUM.



Rev.	Description of Revision	Date	Ckd.
Client			
SUM WUI INVESTMENT LIMITED			
Consultants			
			
Scale In A3 AS SHOWN		Date NOV 2025	
Designed EM	Drawn KAM	Checked BLE	
Design Team Leader SC		Date NOV 2025	
Approved KTC		Date NOV 2025	
Project			
PROPOSED TEMPORARY OPEN STORAGE OF CONSTRUCTION MATERIALS AND MACHINERY WITH ANCILLARY FACILITIES AND ASSOCIATED FILLING OF LAND FOR A PERIOD OF 3 YEARS, VARIOUS LOTS IN D.D. 128 AND ADJOINING GOVERNMENT LAND, PAK NAI, YUEN LONG, NEW TERRITORIES			
Title			
CROSS SECTION			
Drawing No. W1086/102		Stage D	Rev. -

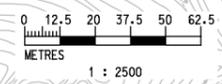


- NOTES :**
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
 2. ALL LEVELS ARE IN mPD METRE ABOVE HONG KONG PRINCIPAL DATUM.

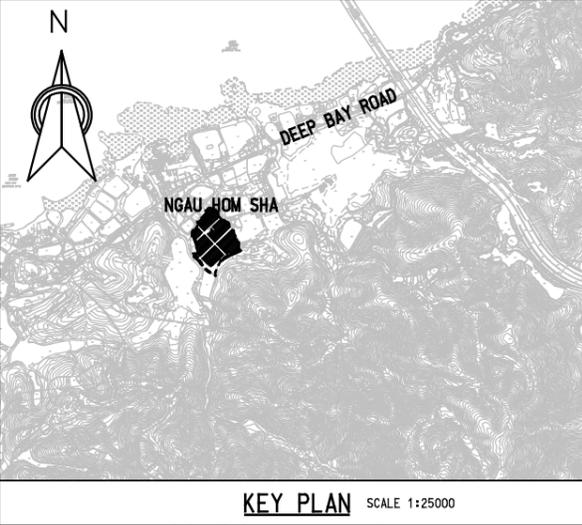
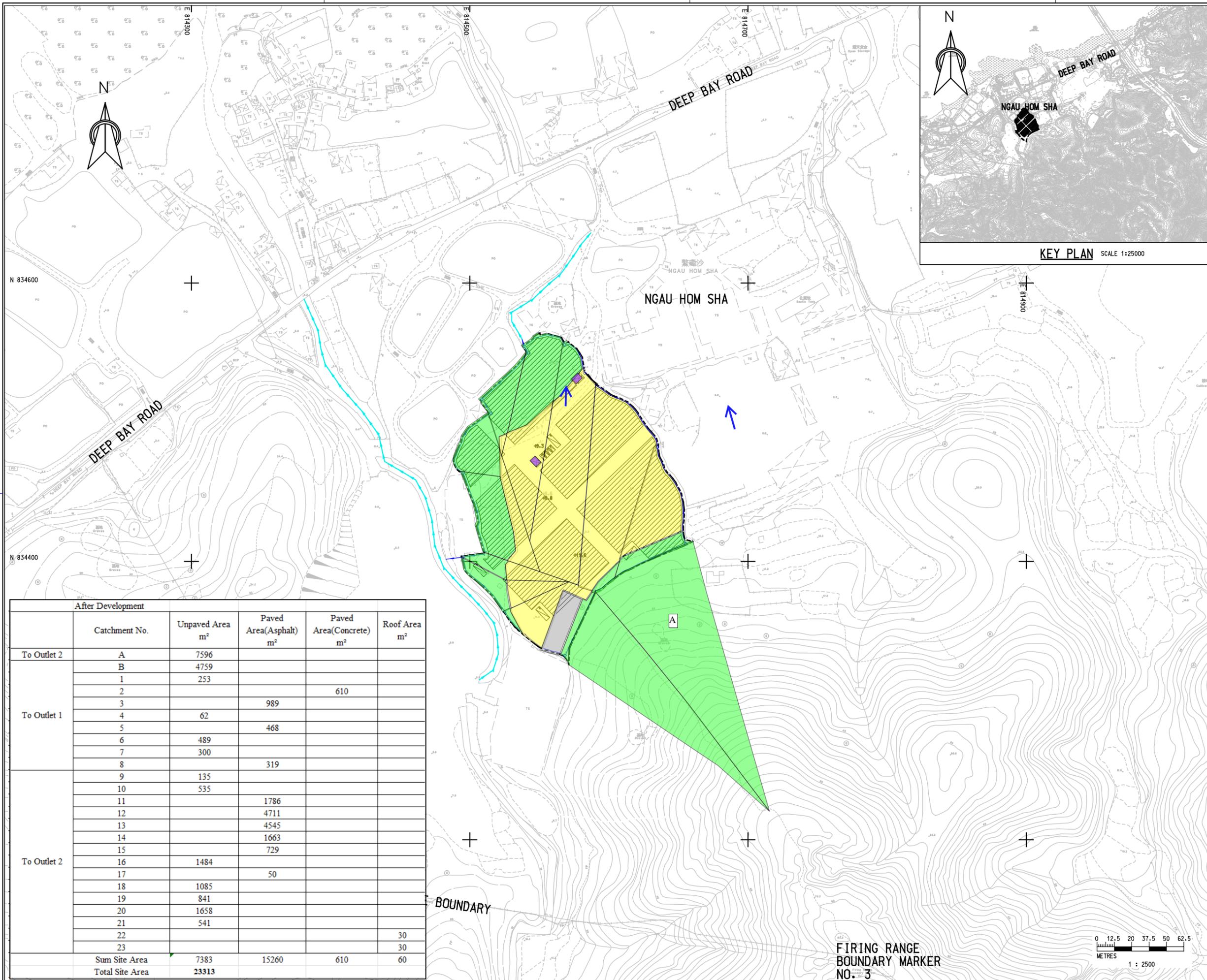
- LEGEND:**
- APPLICATION SITE
 - EXISTING STREAM
 - RUNOFF DIRECTION

Before Development					
	Catchment No.	Unpaved Area m ²	Paved Area(Asphalt) m ²	Paved Area(Concrete) m ²	Roof Area m ²
To Outlet 2	A	7596			
	B	4759			
To Outlet 1	1	253			
	2			610	
	3		1776		
	4	851			
To Outlet 2	5	670			
	6		13544		
	7	5609			
	Sum Site Area	7383	15320	610	0
	Total Site Area	23313			

Rev.	Description of Revision	Date	Ckd.
Client			
SUM WUI INVESTMENT LIMITED			
Consultants			
Scale 1:n A3 AS SHOWN		Date NOV 2025	
Designed EM	Drawn KAM	Checked BLE	
Design Team Leader SC		Date NOV 2025	
Approved KTC		Date NOV 2025	
Project			
PROPOSED TEMPORARY OPEN STORAGE OF CONSTRUCTION MATERIALS AND MACHINERY WITH ANCILLARY FACILITIES AND ASSOCIATED FILLING OF LAND FOR A PERIOD OF 3 YEARS, VARIOUS LOTS IN D.D. 128 AND ADJOINING GOVERNMENT LAND, PAK NAI, YUEN LONG, NEW TERRITORIES			
Title			
CATCHMENT PLAN - BEFORE DEVELOPMENT			
Drawing No. W1086/104		Stage D	Rev. -



FIRING RANGE BOUNDARY MARKER NO. 3

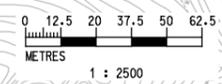


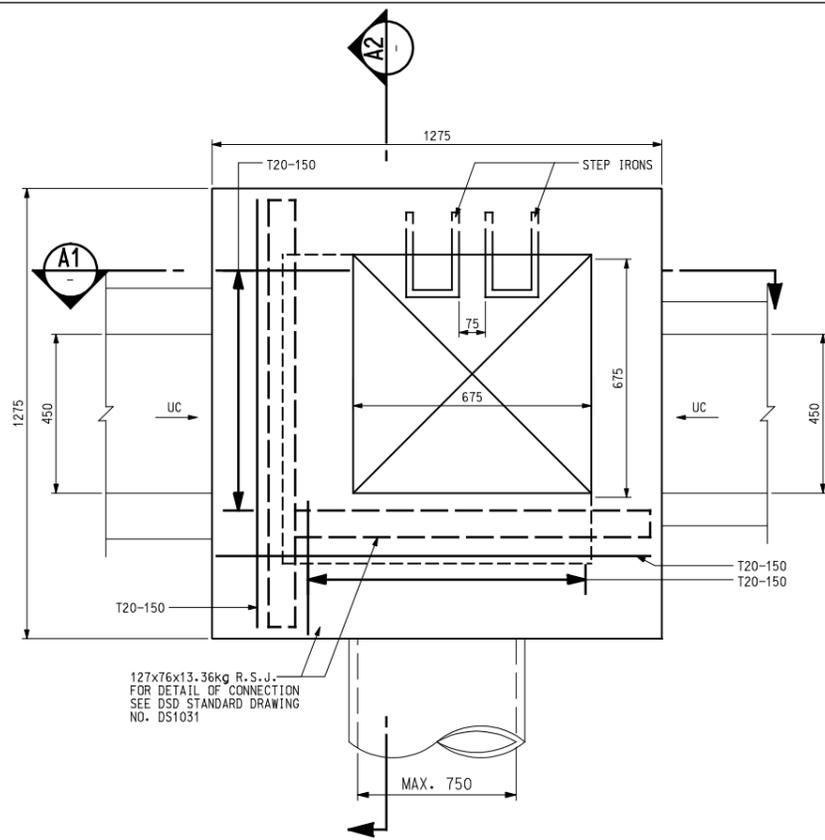
- NOTES :**
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
 2. ALL LEVELS ARE IN MPD METRE ABOVE HONG KONG PRINCIPAL DATUM.

- LEGEND:**
- APPLICATION SITE
 - ▭ STRUCTURE
 - ▨ OPEN STORAGE AREA
 - ▩ PARKING SPACE(PRIVATE CAR)
 - ▩ L/LU SPACE(HEAVY GOODS VEHICLE)
 - ⊗ INGRESS/EGRESS
 - PROPOSED U-CHANNEL
 - - - PROPOSED PIPE
 - PROPOSED CATCHPIT
 - EXISTING STREAM
 - +7.0 PROPOSED LEVEL
 - +3.9 EXISTING LEVEL
 - CONCRETE AREA

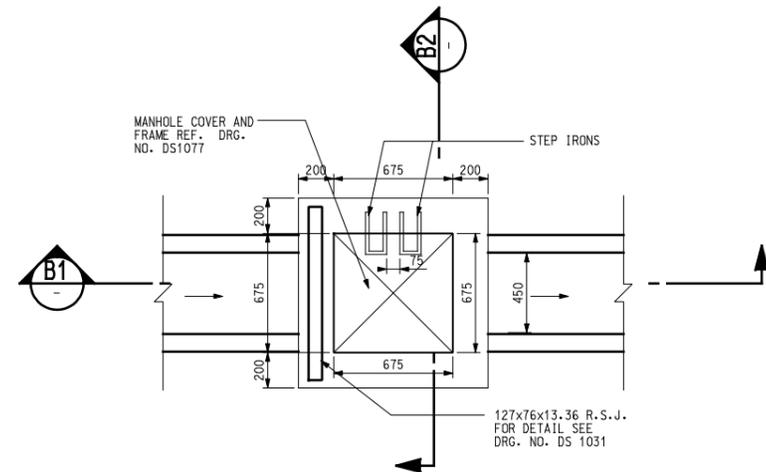
After Development					
	Catchment No.	Unpaved Area m ²	Paved Area(Asphalt) m ²	Paved Area(Concrete) m ²	Roof Area m ²
To Outlet 2	A	7596			
	B	4759			
To Outlet 1	1	253			
	2			610	
	3		989		
	4	62			
	5		468		
	6	489			
	7	300			
	8		319		
To Outlet 2	9	135			
	10	535			
	11		1786		
	12		4711		
	13		4545		
	14		1663		
	15		729		
	16	1484			
	17		50		
	18	1085			
	19	841			
	20	1658			
	21	541			
	22				30
	23				30
	Sum Site Area	7383	15260	610	
	Total Site Area	23313			

Rev.	Description of Revision	Date	Ckd.
Client			
SUM WUI INVESTMENT LIMITED			
Consultants			
MANNINGS (Asia) Consultants Limited			
Scale 1/A3 AS SHOWN		Date NOV 2025	
Designed EM	Drawn KAM	Checked BLE	
Design Team Leader SC		Date NOV 2025	
Approved KTC	Date NOV 2025		
Project			
PROPOSED TEMPORARY OPEN STORAGE OF CONSTRUCTION MATERIALS AND MACHINERY WITH ANCILLARY FACILITIES AND ASSOCIATED FILLING OF LAND FOR A PERIOD OF 3 YEARS, VARIOUS LOTS IN D.D. 128 AND ADJOINING GOVERNMENT LAND, PAK NAI, YUEN LONG, NEW TERRITORIES			
Title			
CATCHMENT PLAN - AFTER DEVELOPMENT			
Drawing No. W1086/105	Stage D	Rev. -	

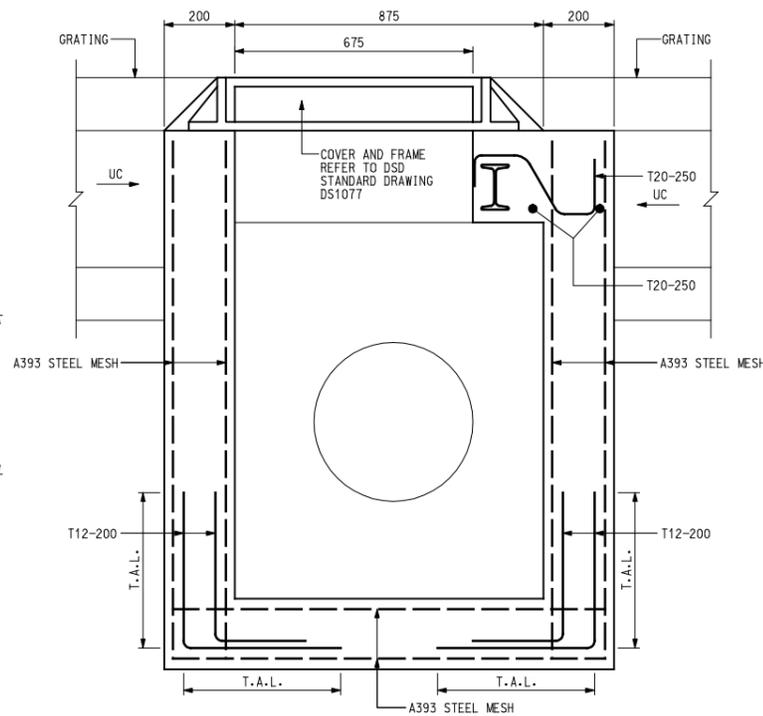




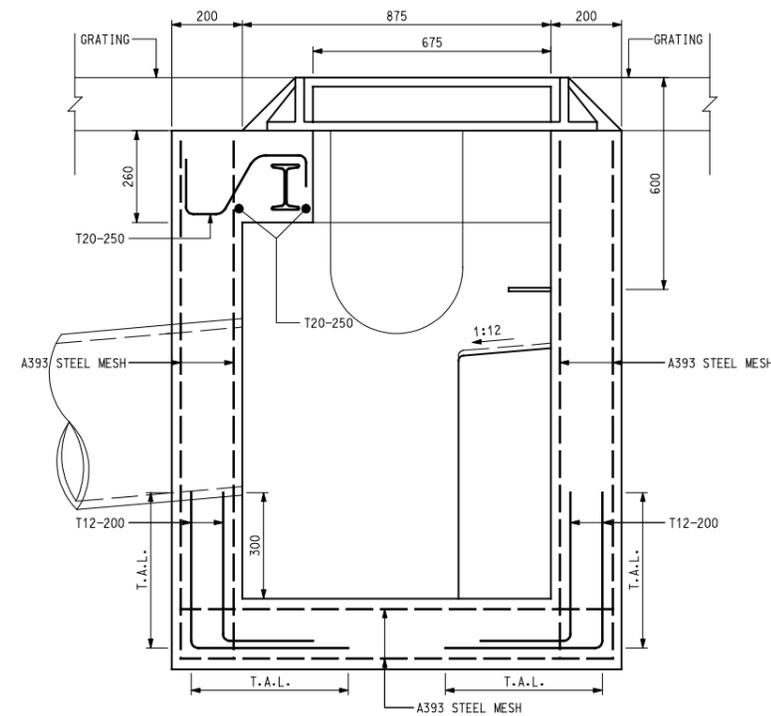
TYPICAL DETAILS OF CATCHPIT TYPE A
SCALE 1:20



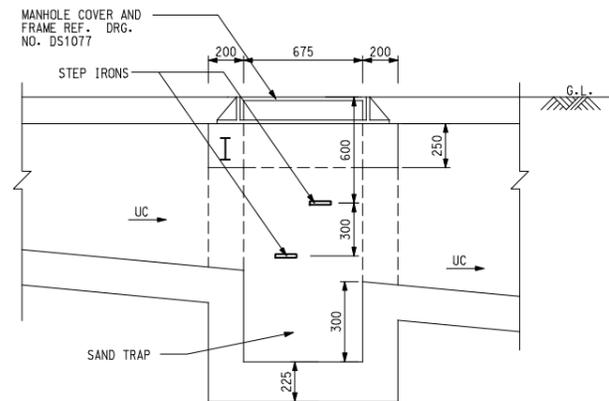
TYPICAL DETAILS OF CATCHPIT TYPE B
SCALE 1:40



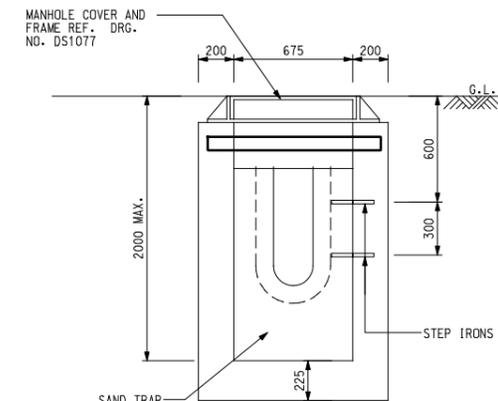
SECTION A1
SCALE 1:20



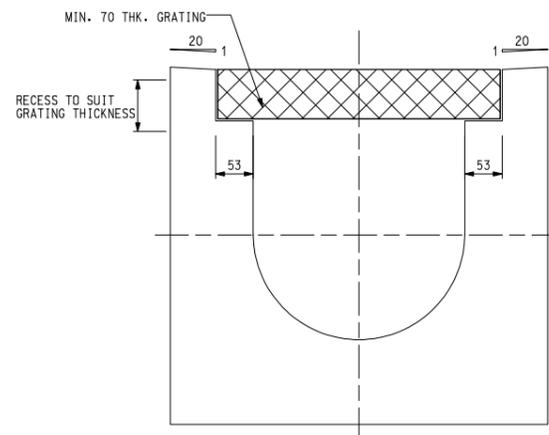
SECTION A2
SCALE 1:20



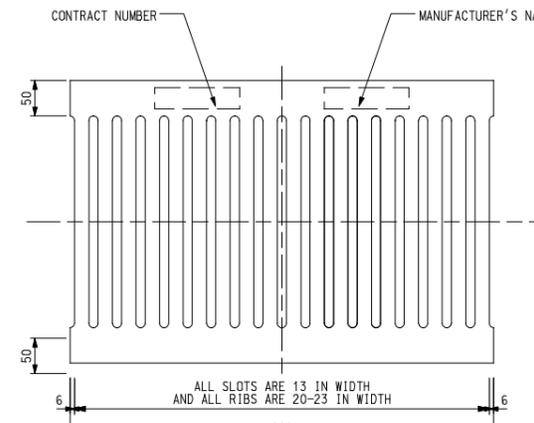
SECTION B1
SCALE 1:40



SECTION B2
SCALE 1:40



TYPICAL CROSS SECTION OF CHANNEL
SCALE 1:10



TYPICAL GRATING
SCALE 1:10



- NOTES :**
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
 - ALL LEVELS ARE IN mPD METRE ABOVE HONG KONG PRINCIPAL DATUM.

Rev.	Description of Revision	Date	Ckd.
Client			
SUM WUI INVESTMENT LIMITED			
Consultants			
MANNINGS (Asia) Consultants Limited			
Scale 1 in A3 AS SHOWN		Date NOV 2025	
Designed EM	Drawn KAM	Checked BLE	Date
Design Team Leader SC		Date NOV 2025	
Approved KTC	Date		Date NOV 2025
Project			
PROPOSED TEMPORARY OPEN STORAGE OF CONSTRUCTION MATERIALS AND MACHINERY WITH ANCILLARY FACILITIES AND ASSOCIATED FILLING OF LAND FOR A PERIOD OF 3 YEARS, VARIOUS LOTS IN D.D. 128 AND ADJOINING GOVERNMENT LAND, PAK NAI, YUEN LONG, NEW TERRITORIES			
Title			
TYPICAL DETAILS OF DRAINAGE			
Drawing No. W1086/106		Stage D	Rev. -



Appendix B

Design Calculations

Total Flow Checking

Mannings (Asia) Consultants Ltd.										Job No. W1086		Rev.	
										Member / Location			
Calculation Sheet Job Title: Proposed Temporary Open Storage of Construction Materials and Machinery with Ancillary Facilities and Associated Filling of Land for A Period of 3 Years, Various Lots in D.D. 128 and Adjoining Government Land, Pak Nai, Yuen Long, New Territories													
The drainage design is referring to DSD's SDM 2018 & Corrigendum No. 1/2022 and Corrigendum No. 1/2024 I in 50 year design return period is taken. Rational method is used for calculation of the peak runoff. The formula is extracted from Section 7.5.2 (a) of SDM. $Q_p = 0.278 C i A$ Where Q_p = peak runoff in m^3/s I = rainfall intensity in mm/hr A = catchment area in m^2										Made By			
Outlet 1 Runoff Estimation (Before Development)													
Location	Catchment Area (m^2) Inclement	Catchment Area (m^2) Accumulated	Longest flow path (m)	Gradient (m per 100m)	t_o (min) = $0.14465L / (H^{0.2} A^{0.1})$	Length of Channel (m)	$t_r = L/v$ (min)	$t_c = t_o + t_r$ (min)	Runoff coeff.	Total Catch. Area (m^2)	50 year Intensity (mm/hr)	50 year design runoff = $0.278CiA$ (m^3/s)	Total Flow ¹ (m^3/s)
Outside the site	0	4759	288	0.190	23.74	0	0.00	23.74	0.25	4759	156.82	0.05	0.16
Inside the site (Asphalt)	0	1776							0.95	1776		0.07	
Inside the site (Soil)	0	1104							0.25	1104		0.01	
Inside the site (Concrete)	0	610							0.95	610		0.03	
Inside the site (Roof)	0	0							1.00	0		0.00	
Outlet 1 Runoff Estimation (After Development)													
Outside the site	0	4759	175	0.022	22.10	150	1.23	23.33	0.25	4759	157.68	0.05	0.16
Inside the site (Asphalt)	0	1776							0.95	1776		0.07	
Inside the site (Soil)	0	1104							0.25	1104		0.01	
Inside the site (Concrete)	0	610							0.95	610		0.03	
Inside the site (Roof)	0	0							1.00	0		0.00	
Outlet 2 Runoff Estimation (Before Development)													
Location	Catchment Area (m^2) Inclement	Catchment Area (m^2) Accumulated	Longest flow path (m)	Gradient (m per 100m)	t_o (min) = $0.14465L / (H^{0.2} A^{0.1})$	Length of Channel (m)	$t_r = L/v$ (min)	$t_c = t_o + t_r$ (min)	Runoff coeff.	Total Catch. Area (m^2)	50 year Intensity (mm/hr)	50 year design runoff = $0.278CiA$ (m^3/s)	Total Flow ¹ (m^3/s)
Outside the site	0	7596	350	0.163	26.20	0	0.00	26.20	0.25	7596	152.06	0.08	0.69
Inside the site (Asphalt)	0	13544							0.95	13544		0.54	
Inside the site (Soil)	0	6279							0.25	6279		0.07	
Inside the site (Concrete)	0	0							0.95	0		0.00	
Inside the site (Roof)	0	0							1.00	0		0.00	
Outlet 2 Runoff Estimation (After Development)													
Outside the site	0	7596	205	0.015	24.68	265	1.49	26.17	0.25	7596	152.11	0.08	0.69
Inside the site (Asphalt)	0	13484							0.95	13484		0.54	
Inside the site (Soil)	0	6279							0.25	6279		0.07	
Inside the site (Concrete)	0	0							0.95	0		0.00	
Inside the site (Roof)	0	60							1.00	60		0.00	
Conclusion: Therefore, no adverse drainage impact to the existing stream after development.													

Proposed U-Channel Checking

Capacity Check - U-Channel After Development

Proposed U-Channel (To Outlet 1)

U/S ID	D/S ID	Catchment No.	Incr. Area (m ²)				Accum. Area (m ²)				U Channel							Rainfall				Manning's Equation					
			unpaved	Asphalt	Concrete	Roof	unpaved	Paved	Concrete	Roof	U/S Ground Level	D/S Ground Level	U/S I.L.	D/S I.L.	Drop Level	Size	Length	Gradient	Manning's n	Time of Concentration, t _c	Intensity	Runoff	Wetted Area	Hydraulic Radius	Velocity	Capacity	Runoff/Capacity
			0.25	0.95	0.95	1.00	0.25	0.95	0.95	1.00	(mPD)	(mPD)	(mPD)	(mPD)	(m)	(mm)	(m)	(1 in)		(min)	(mm/hr)	(l/s)	(m ²)	(m)	(m/s)	(l/s)	(%)
Start 1a	CP1	B	4759	0	0	0	4759	0	0	0	12.78	12.80	12.56	12.10	0.200	300	50	109	0.014	15.00	180	60	0.0563	0.0922	1.40	79	75.6%
CP1	CP2	B,1,2,3	253	989	610	0	5012	989	610	0	12.80	10.50	11.90	9.80	0.050	300	54	26	0.014	15.00	180	139	0.2003	0.1275	3.57	715	19.4%
CP2	CP3	B,1,2,3,4,5,6	551	468	0	0	5563	1457	610	0	10.50	9.50	9.75	8.80	0.050	300	50	53	0.014	15.00	180	168	0.2003	0.1275	2.49	500	33.6%
Start 1b	CP3	7,8	300	319	0	0	300	319	0	0	9.50	9.50	9.28	8.76	0.050	300	16	31	0.014	15.00	180	19	0.0578	0.0931	2.63	152	12.4%

Proposed U-Channel (To Outlet 2)

U/S ID	D/S ID	Catchment No.	Incr. Area (m ²)				Accum. Area (m ²)				U Channel							Rainfall				Manning's Equation					
			unpaved	Asphalt	Concrete	Roof	unpaved	Paved	Concrete	Roof	U/S Ground Level	D/S Ground Level	U/S I.L.	D/S I.L.	Drop Level	Size	Length	Gradient	Manning's n	Time of Concentration, t _c	Intensity	Runoff	Wetted Area	Hydraulic Radius	Velocity	Capacity	Runoff/Capacity
			0.25	0.95	0.95	1.00	0.25	0.95	0.95	1.00	(mPD)	(mPD)	(mPD)	(mPD)	(m)	(mm)	(m)	(1 in)		(min)	(mm/hr)	(l/s)	(m ²)	(m)	(m/s)	(l/s)	(%)
Start 2a	CP4	A	7596	0	0	0	7596	0	0	0	12.78	11.10	12.56	10.40	0.010	300	71	33	0.014	15.00	180	95	0.0563	0.0922	2.54	143	66.3%
CP4	CP5	A,10,11	535	1786	0	0	8131	1786	0	0	11.10	8.50	10.39	7.80	0.010	300	73	28	0.014	15.00	180	187	0.2003	0.1275	3.41	683	27.3%
CP5	CP6	A,9,10,11,12	135	4711	0	0	8266	6497	0	0	8.50	6.35	7.79	5.65	0.150	300	76	36	0.014	15.00	180	412	0.2003	0.1275	3.04	608	67.8%
CP6	CP7	A,9,10,11,12,13,21,23	541	4545	0	30	8807	11042	0	30	6.35	5.50	5.50	4.65	0.010	450	27	32	0.014	15.00	180	637	0.3608	0.1844	4.11	1481	43.0%
CP7	CP12	A,9,10,11,12,13,14,20,21,23	1658	1663	0	30	10465	12705	0	60	5.50	5.50	4.64	4.28	0.000	450	33	92	0.014	15.00	180	738	0.3653	0.1848	2.42	884	83.5%

Proposed U-Channel (To Outlet 2)

U/S ID	D/S ID	Catchment No.	Incr. Area (m ²)				Accum. Area (m ²)				U Channel							Rainfall				Manning's Equation					
			unpaved	Asphalt	Concrete	Roof	unpaved	Paved	Concrete	Roof	U/S Ground Level	D/S Ground Level	U/S I.L.	D/S I.L.	Drop Level	Size	Length	Gradient	Manning's n	Time of Concentration, t _c	Intensity	Runoff	Wetted Area	Hydraulic Radius	Velocity	Capacity	Runoff/Capacity
			0.25	0.95	0.95	1.00	0.25	0.95	0.95	1.00	(mPD)	(mPD)	(mPD)	(mPD)	(m)	(mm)	(m)	(1 in)		(min)	(mm/hr)	(l/s)	(m ²)	(m)	(m/s)	(l/s)	(%)
Start 2b	CP8	15,16	1484	729	0	0	1484	729	0	0	9.50	7.50	9.28	6.80	0.300	300	60	24	0.014	5.00	239	70	0.0578	0.0931	2.98	172	40.9%
CP8	CP9	15,16,18	1085	0	0	0	2569	729	0	0	7.50	6.50	6.50	5.80	0.010	300	54	77	0.014	5.00	239	88	0.2003	0.1275	2.06	413	21.4%
CP9	CP10	15,16,18	0	0	0	0	2569	729	0	0	6.50	6.40	5.79	5.70	0.010	300	11	122	0.014	5.00	239	88	0.2003	0.1275	1.64	328	27.0%
CP10	CP11	15,16,17,18,19	841	50	0	0	3410	779	0	0	6.40	5.50	5.69	4.80	0.100	300	47	53	0.014	5.00	239	106	0.2003	0.1275	2.49	499	21.2%
CP11	CP12	15,16,17,18,19	0	0	0	0	3410	779	0	0	5.50	5.50	4.70	4.65	0.000	300	5	100	0.014	5.00	239	106	0.2303	0.1300	1.83	422	25.0%

Remarks:

*For the flow velocity exceeds 3 m/s but remains well below the absolute maximum velocity of 6 m/s.

*Additionally, according to Section 8.3.4 of the Geotechnical Code of Practice (GCO, 1984), the use of Manning's formula is recommended for site formation, with a maximum permissible velocity set at 4 m/s (refer to TGN43). Therefore, the U-channel velocity is considered acceptable and desirable.

Conclusion: Therefore, no adverse drainage impact to the existing stream after development.

Proposed Pipe Checking

Capacity Check - Pipes After Development

Proposed Pipe Checking (Outlet 1)

From Catchpit/Manhole	To Catchpit/Manhole	Sub-Catchment	Unpaved Catchment Area (m ²)	Asphalt Catchment Area (m ²)	Concrete Catchment Area (m ²)	Roof Catchment Area (m ²)	t _c (min)	Intensity (mm/hr)	Peak Flow m ³ /s	Pipe Length (m)	U/S Ground Level (mPD)	D/S Ground Level (mPD)	Upstream Invert Level (m PD)	Downstream Invert Level (m PD)	Diameter (mm)	Gradient (1 in)	Total Catchment Area (m ²)	Velocity (m/s)	Capacity (m ³ /s)	Pipe Capacity Check (Flow / Capacity)
CP3	Existing Stream	-	5863	1776	610	0	15	180.2	0.165	12.00	9.5	6.08	8.23	6.80	375	8	5863.00	4.986	0.551	29.9%

Proposed Pipe Checking (Outlet 2)

From Catchpit/Manhole	To Catchpit/Manhole	Sub-Catchment	Unpaved Catchment Area (m ²)	Asphalt Catchment Area (m ²)	Concrete Catchment Area (m ²)	Roof Catchment Area (m ²)	t _c (min)	Intensity (mm/hr)	Peak Flow m ³ /s	Pipe Length (m)	U/S Ground Level (mPD)	D/S Ground Level (mPD)	Upstream Invert Level (m PD)	Downstream Invert Level (m PD)	Diameter (mm)	Gradient (1 in)	Total Catchment Area (m ²)	Velocity (m/s)	Capacity (m ³ /s)	Pipe Capacity Check (Flow / Capacity)
CP12	Existing Stream	-	13875	13484	0	60	15	180.2	0.649	5.00	5.5	5.5	4.28	4.18	600	50	13935.00	2.781	0.786	82.5%

Rain Storm Return Period = 50year	
a	505.500
b	3.290
c	0.355
Rainfall Intensity i=a/(t ₀ +b) ^c	

Parameters:

Roughness K _s (Conc. Pipe) =	3	mm
Kinematic Viscosity (ν) =	1.14E-06	m ² /s
Unpaved Area Runoff Coefficient =	0.25	
Asphalt Area Runoff Coefficient =	0.70	
Concrete Area Runoff Coefficient =	0.95	
Roof Area Runoff Coefficient =	1.00	

(Refer to Fluid Mechanics)

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

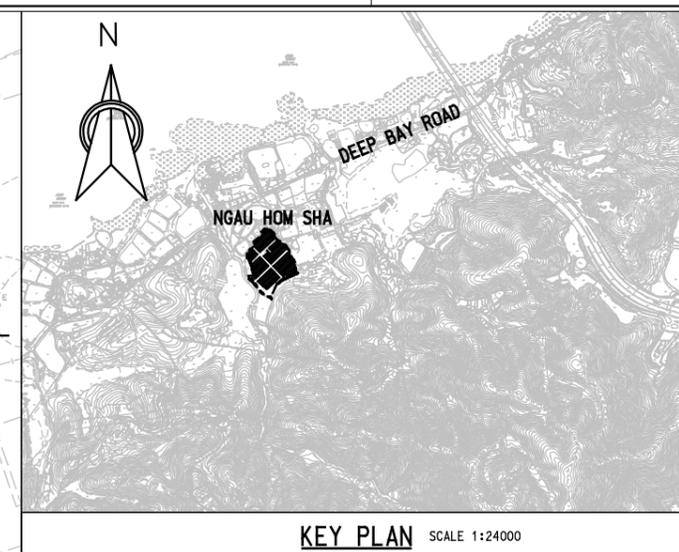
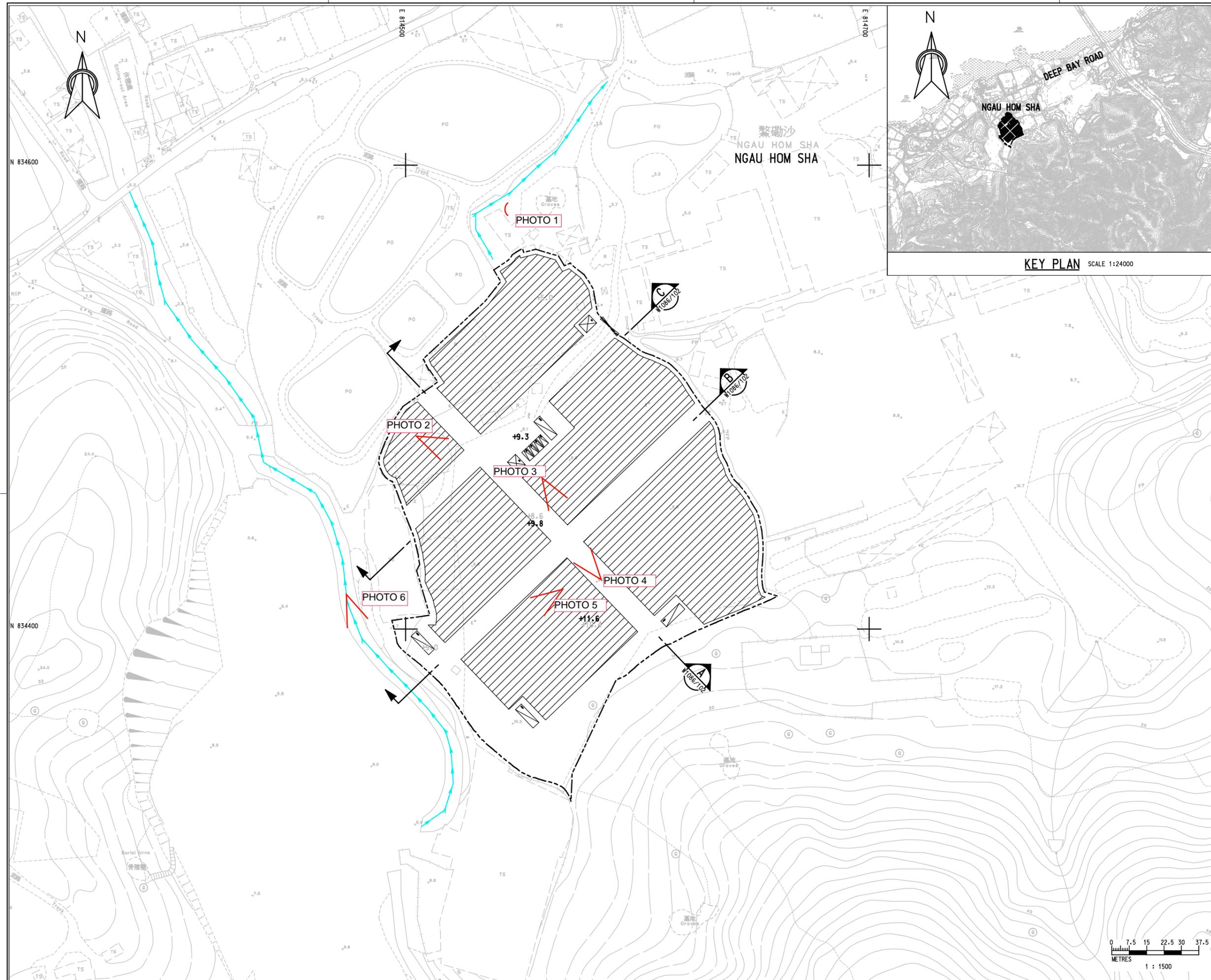
Where:

- ν =Kinematic viscosity (kg/ms)
- R =Hydraulic Diameter (m)
- K_s =Surface Roughness (m)
- V =Kinematic viscosity (kg/ms)
- S_f =Slope of Hydraulic Gradient
- g =Gravity (m/s²)



Appendix C

Site Photos



- NOTES :**
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
 2. ALL LEVELS ARE IN mPD METRE ABOVE HONG KONG PRINCIPAL DATUM.
- LEGEND:**
- APPLICATION SITE
 - STRUCTURE
 - OPEN STORAGE AREA
 - PARKING SPACE (PRIVATE CAR)
 - L/LU SPACE (HEAVY GOODS VEHICLE)
 - INGRESS/EGRESS
 - +7.0 PROPOSED LEVEL
 - +3.9 EXISTING LEVEL
 - EXISTING STREAM

Rev.	Description of Revision	Date	Ckd.
Client			
SUM WUI INVESTMENT LIMITED			
Consultants			
Scale 1m A3 AS SHOWN		Date NOV 2025	
Designed EM	Drawn KAM	Checked BLE	
Design Team Leader SC		Date NOV 2025	
Approved KTC		Date NOV 2025	
Project			
PROPOSED TEMPORARY OPEN STORAGE OF CONSTRUCTION MATERIALS AND MACHINERY WITH ANCILLARY FACILITIES AND ASSOCIATED FILLING OF LAND FOR A PERIOD OF 3 YEARS, VARIOUS LOTS IN D.D. 128 AND ADJOINING GOVERNMENT LAND, PAK NAI, YUEN LONG, NEW TERRITORIES			
Title			
SITE PHOTO			
Drawing No. W1086/107		Stage D	Rev. -

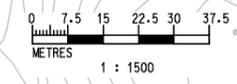


Photo 1:



Photo 2:



Photo 3:



Photo 4:



Photo 5:



Photo 6:



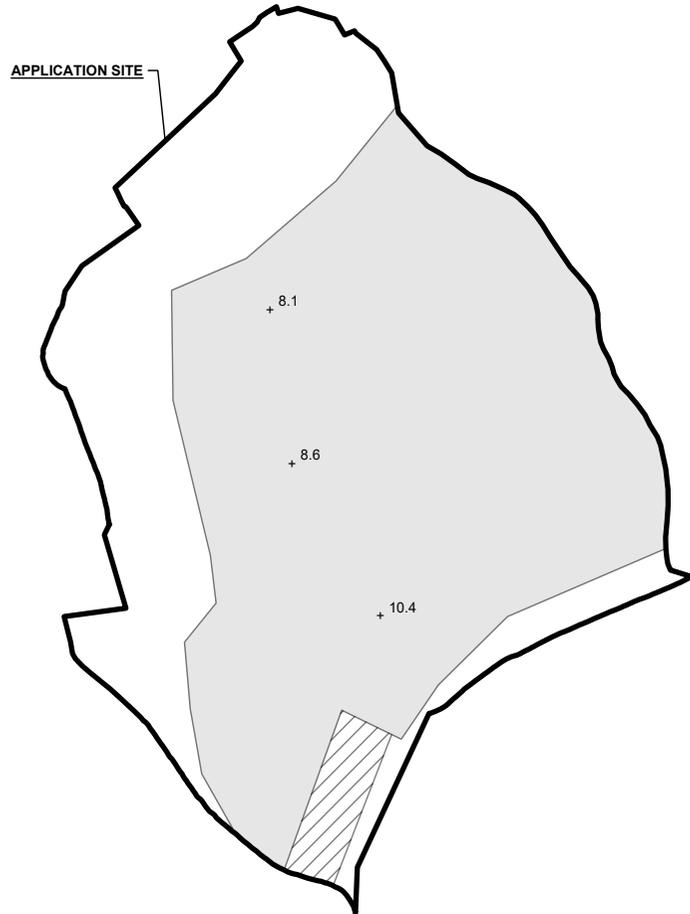


Appendix D

Proposed Land Filling Plan

EXISTING CONDITION OF THE APPLICATION SITE

APPLICATION SITE AREA	: 23,313 m ²	(ABOUT)
EXISTING SITE LEVELS	: +8.1 mPD TO +10.4 mPD	(ABOUT)
AREA COVERED BY CONCRETE/STRUCTURE	: 610 m ²	(ABOUT)
AREA COVERED BY ASPHALT	: 15,320 m ²	(ABOUT)
AREA COVERED BY SOIL	: 7,383 m ²	(ABOUT)



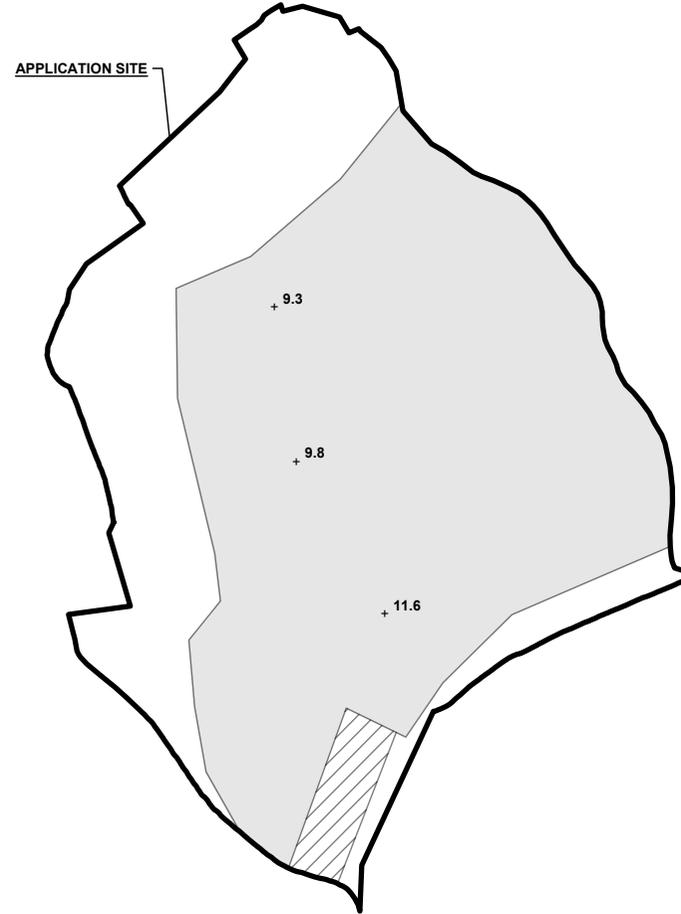
LEGEND

- APPLICATION SITE
- CONCRETE AREA
- ASPHALT AREA
- SOIL AREA
- + 8.1 EXISTING SITE LEVEL

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

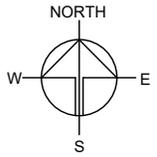
EXISTING FILLING OF LAND AREA

APPLICATION SITE AREA	: 23,313 m ²	(ABOUT)
FILLING OF LAND AREA	: 23,313 m ²	(ABOUT)
- CONCRETE/STRUCTURE	: 610 m ²	(ABOUT)
- ASPHALT	: 15,320 m ²	(ABOUT)
- SOIL	: 7,383 m ²	(ABOUT)
DEPTH OF LAND FILLING	: NOT MORE THAN 1.2 m	
SITE LEVELS	: +9.3 mPD TO +11.6 mPD	(ABOUT)
MATERIAL OF LAND FILLING USE	: CONCRETE/STRUCTURE, ASPHALT AND SOIL	
	: PARKING AND LOADING / UNLOADING SPACE, SITE FORMATION OF STRUCTURE AND OPEN STORAGE AREA AND CIRCULATION SPACE	



LEGEND

- APPLICATION SITE
- CONCRETE AREA
- ASPHALT AREA
- SOIL AREA
- + 9.3 PROPOSED SITE LEVEL



PLANNING CONSULTANT



PROJECT

PROPOSED TEMPORARY OPEN STORAGE OF CONSTRUCTION MATERIALS AND MACHINERY WITH ANCILLARY FACILITIES AND ASSOCIATED FILLING OF LAND FOR A PERIOD OF 3 YEARS

SITE LOCATION

VARIOUS LOTS IN D.D. 128 AND ADJOINING GOVERNMENT LAND, PAK NAI, YUEN LONG, NEW TERRITORIES

SCALE

1 : 2000 @ A4

DRAWN BY	DATE
MN	25.2.2026

REVISED BY	DATE

APPROVED BY	DATE

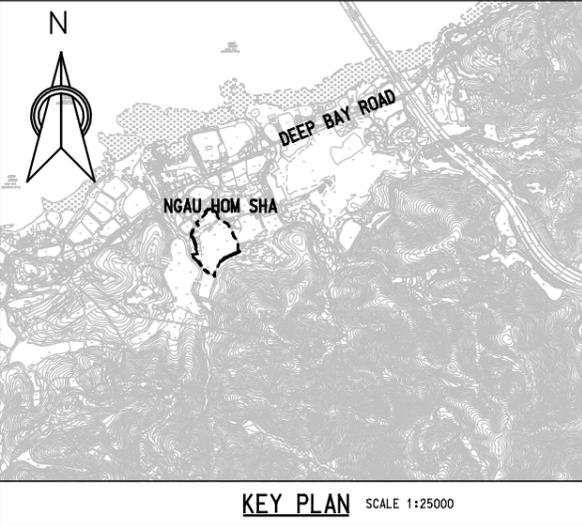
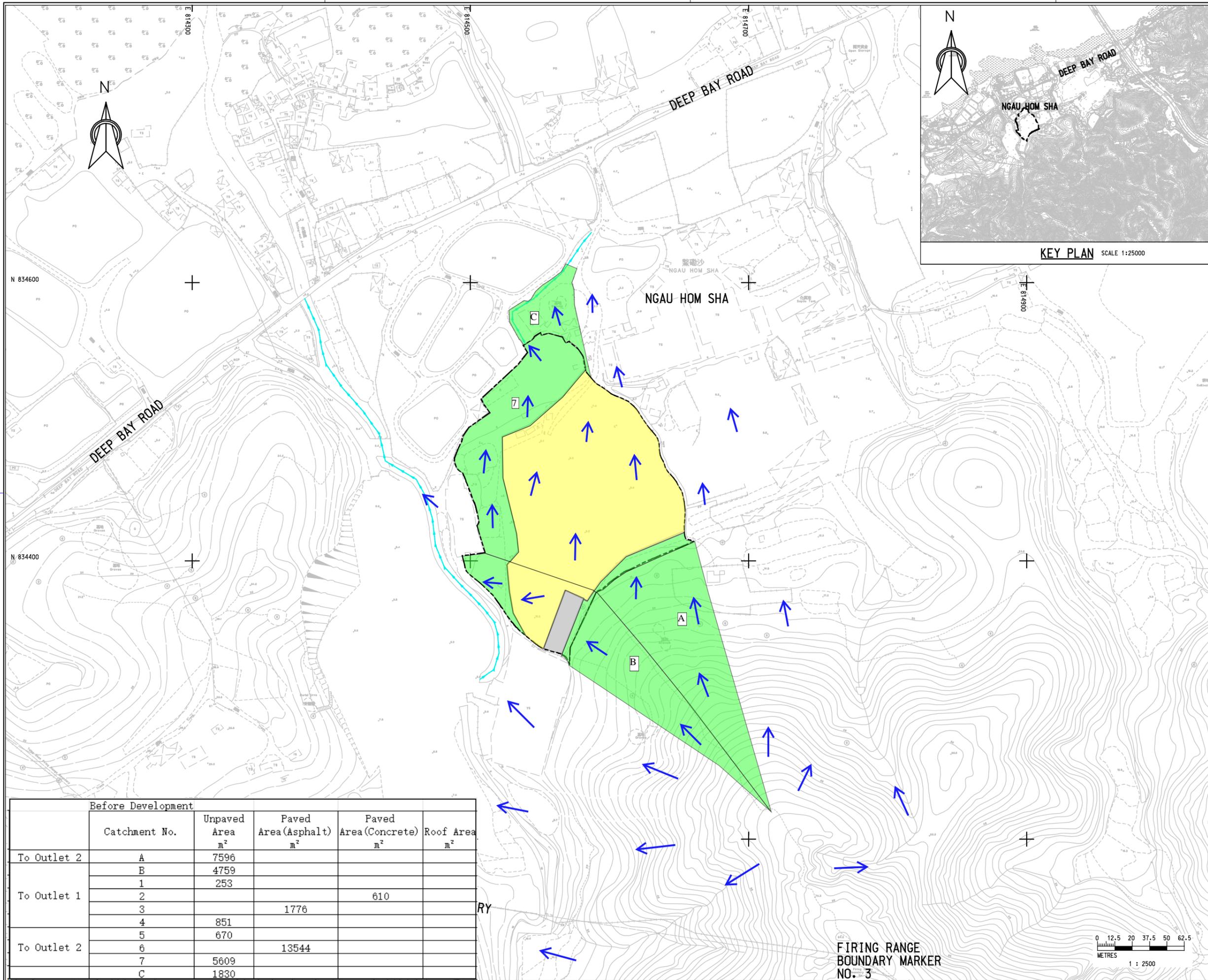
DWG. TITLE
FILLING OF LAND

DWG NO. PLAN 10	VER. 001
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Appendix E

Hydraulic Checking for Temporary Drainage



- NOTES :**
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
 2. ALL LEVELS ARE IN mPD METRE ABOVE HONG KONG PRINCIPAL DATUM.

- LEGEND:**
- APPLICATION SITE
 - EXISTING STREAM
 - RUNOFF DIRECTION

Before Development					
	Catchment No.	Unpaved Area m ²	Paved Area (Asphalt) m ²	Paved Area (Concrete) m ²	Roof Area m ²
To Outlet 2	A	7596			
	B	4759			
To Outlet 1	1	253			
	2		1776	610	
	3	851			
To Outlet 2	4	670			
	5		13544		
	6	5609			
	7	1830			
	C				

Rev.	Description of Revision	Date	Ckd.
Client			
SUM WUI INVESTMENT LIMITED			
Consultants			
Scale 1:2500 AS SHOWN		Date NOV 2025	
Designed EM	Drawn KAM	Checked BLE	
Design Team Leader SC		Date NOV 2025	
Approved KTC		Date NOV 2025	
Project			
PROPOSED TEMPORARY OPEN STORAGE OF CONSTRUCTION MATERIALS AND MACHINERY WITH ANCILLARY FACILITIES AND ASSOCIATED FILLING OF LAND FOR A PERIOD OF 3 YEARS, VARIOUS LOTS IN D.D. 128 AND ADJOINING GOVERNMENT LAND, PAK NAI, YUEN LONG, NEW TERRITORIES			
Title			
CATCHMENT PLAN - TEMPORARY DRAINAGE PLAN			
Drawing No. W1086/108		Stage D	Rev. -



Mannings (Asia) Consultants Ltd.		Job No.	W1086	Rev.
Calculation Sheet		Member / Location		
Job Title: Proposed Temporary Open Storage of Construction Materials and Machinery with Ancillary Facilities and Associated Filling of Land for A Period of 3 Years, Various Lots in D.D. 128 and Adjoining Government Land, Pak Nai, Yuen Long, New Territories		Drg. Ref.		
		Made By		

The drainage design is referring to DSD's SDM 2018 & Corrigendum No. 1/2022 and Corrigendum No. 1/2024
 1 in 50 year design return period is taken.

Rational method is used for calculation of the peak runoff. The formula is extracted from Section 7.5.2 (a) of SDM.
 $Q_p = 0.278 C_i A$
 Where Q_p = peak runoff in m^3/s
 I = rainfall intensity in mm/hr
 A = catchment area in m^2

Outlet 2 Runoff Estimation

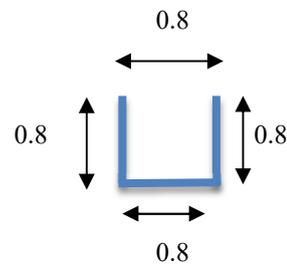
Location	Catchment Area (m^2) Inclement	Catchment Area (m^2) Accumulated	Longest flow path (m)	Gradient (m per 100m)	t_o (min) = $0.14465L / (H^{0.2}A^{0.1})$	Length of Channel (m)	$t_r = L/v$ (min)	$t_c = t_o + t_r$ (min)	Runoff coeff.	Total Catch. Area (m^2)	50 year Intensity (mm/hr)	50 year design runoff = $0.278C_iA$ (m^3/s)	Total Flow ¹ (m^3/s)
Outside the site	0	9426	350	0.163	26.03	0	0.00	26.03	0.25	9426	152.37	0.10	0.71
Inside the site (Asphalt)	0	13544							0.95	13544		0.55	
Inside the site (Soil)	0	6279							0.25	6279		0.07	
Inside the site (Concrete)	0	0							0.95	0		0.00	
Inside the site (Roof)	0	0							1.00	0		0.00	

Mannings (Asia) Consultants Ltd.	Job No.	W1086	Sheet No.	Rev.
Calculation Sheet	Member / Location			
Job Title: Proposed Temporary Open Storage of Construction Materials and Machinery with Ancillary Facilities and Associated Filling of Land for A Period of 3 Years, Various Lots in D.D. 128 and Adjoining Government Land, Pak Nai, Yuen Long, New Territories	Drg. Ref.			
	Made By	Date		

Checking of Capacity

Input Data

Ditch width (Bottom)	=	0.8	m
Ditch width (top)	=	0.8	m
Ditch height (Right)	=	0.8	m
Ditch height (Left)	=	0.8	m
Max. Design flow	=	0.71	m ³ /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)	=	0.64 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)	=	2.40 m
r	=	0.27	m	

Slope

s = 0.01 m/m

Manning coefficient of roughness

n = 0.018

Therefore,

Q	=	1.042 m ³ /s	> Design flow, OK!
V	=	1.628	m/s