

規 劃 署

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By Post and Email

5 June 2025

Toco Planning Consultants Ltd.

(Attn.: Ted Chan)

Dear Sir/Madam,

Proposed Temporary Warehouse (Timber and Other Associated Materials) for a Period of 3 Years and Associated Filling of Land in “Agriculture” Zone, Lot 129 S.A (Part) in D.D. 86 and Various Lots in D.D. 90 and Adjoining Government Land, Lin Ma Hang Road, Sha Ling (Compliance with Approval Condition (d) for Planning Application No. A/NE-MKT/35)

I refer to your submission received by this Office on 20.3.2025 and our interim reply dated 30.4.2025 for compliance with approval condition (d) in relation to the submission of a revised drainage impact assessment to the satisfaction of the Director of Drainage Services or of the Town Planning Board.

The Chief Engineer/Mainland North, Drainage Services Department (Contact person: Mr. WANG Xing, Samuel; Tel. No.: 2300 1135) has been consulted and considered that approval condition (d) has been complied with. Her advisory comments are attached at **Appendix I**.

Should you have any queries related to planning matters, please contact Ms. Cheryl TSANG of this Office at 2158 6229.

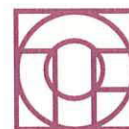
Yours faithfully,


(Rico TSANG)
for Director of Planning



規劃署35周年
Planning Department 35th Anniversary

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Planning a Future of Boundless Opportunities



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

Tel: [REDACTED]
Fax: [REDACTED]
E-mail: [REDACTED]
Website: <http://www.tocoplanning.com>

Your Ref.: TPB/A/NE-MKT/35

Attn.: Ms. Leticia LEUNG

Dear Madam,

14 January, 2025

**Section 16 Planning Application for Proposed Temporary Rural Workshop
(Timber Yard and Sawmill) for a Period of 3 Years at Various Lots in D.D. 86 and
D.D. 90 and Adjoining Government Land, Lin Ma Hang Road, Sha Ling**

We refer to the comments from the Drainage Services Department (DSD) in response to approval condition (d) in relation to the submission of a revised drainage impact assessment under the captioned planning application via the letter from Sha Tin, Tai Po & North District Planning Office dated 11.11.2024.

Please find attached 3 copies each of the Response-to-Comments table and revised Drainage Impact Assessment for your attention and circulation to DSD.

Yours faithfully,

Toco Planning Consultants Ltd.

Ted Chan
Managing Director



cc Client
DPO/STN (Attn. Ms. TSANG Tsz Man, Cheryl)

1. RESPONSES TO DEPARTMENTAL COMMENTS

1.1 Responses to Comments from Drainage Services Department (Contact person: Mr. Samuel Wang Tel: 2300 1135)

Item	Departmental Comments	The Applicant's Responses
DSD(1)	(a) only replacement pages were provided. Please submit full document with track changes in next submission for holistic review;	Noted, please see the attached full updated DIA Report.
DSD(2)	(b) our previous comment 1 has not been addressed. Please provide drainage plan with design details of the proposed drainage facilities. Please also indicate the discharge path to the downstream streamcourse;	Drainage Plans for both main Site Areas have been included in the updated DIA Report, together with supporting calculations.
DSD(3)	(c) the proposed discharge to the eastern site portion were noted to be significantly increased. Yet, no hydraulic checking was presented. Notwithstanding the approval given to the eastern site portion in 2022, the change in site drainage was considered substantial, and a review of the relevant system with the latest design standard is considered essential;	This is not an accurate summary of the situation. As stated in Para. 5.2.3 of the DIA Report, on-Site storage is to be provided for flows in excess of the existing peak runoff, i.e. the peak runoff from the Site will remain as before the development of the Site (N.B. as noted in the DIA Report, in the absence of historic flooding records in the vicinity of the Site, the local drainage channels are assumed to be adequate for the previous runoff from the (undeveloped) Site). The increased flows quoted in the DIA Report (text and Appendix D) are <u>theoretical</u> discharges from the Site without the proposed mitigation measures (i.e. storage). These calculations are necessary to establish the volume(s) or storage required. Further notes have been added to the text and

Item	Departmental Comments	The Applicant's Responses
		Appendix D to clarify this point. The as-constructed drainage details for the Site have been checked against the latest design standards and have been found to be generally adequate. However, some upgrading works will be required in one section of the Site, as set out in the DIA Report.
DSD(4)	(d) existing photos of the eastern site portion was not provided. With drainage review for the eastern site portion, please also provide as-built photos to confirm the as-built drawing were appropriately reflecting the actual situation;	Photographs of the As-constructed drainage facilities in the Eastern Site portion (Sites A&B) have been added to Appendix C of the DIA Report.
DSD(5)	(e) overland flow from external catchment 3 & 4 were considered in the assessment. Please clarify if boundary wall/ fencing would be erected and design for uninterrupted overland flow path from the external catchment area; and	There will be boundary fencing, although the arrangement of the fencing will allow runoff to discharge from adjacent catchments (EXT-C3 and EXT-C4) into the Site and into the Site drainage systems.
DSD(6)	(f) the "Future Situation Section" of calculation in Appendix D refers (Pages 30 & 31 of the drainage impact assessment (DIA)). Please elaborate why different sets of parameters were	The calculations presented are intended to illustrate slightly different factors. For the discharge from Sites A and B towards the Western Streamcourse (Page 30 of the DIA), the intention is to demonstrate that

Item	Departmental Comments	The Applicant's Responses
	to be calculated for the same area (9,020m² for West and 32,247m² for East) and advice the relevant justification for the application for the figures presented in the main text.	the theoretical increase in discharge from the Site, in comparison with the overall catchment discharge, would be insignificant, although the discharge is actually to be limited to no more than existing, i.e. it is a simple comparative calculation. For the discharges from Sites C, D and E towards the Eastern Streamcourse (Page 31 of the DIA), The intention is to demonstrate that there is adequate available capacity in the Eastern streamcourse to allow a small increase in discharge from the Site and it is therefore necessary to calculate the actual overall discharge to the streamcourse from the Site and other upstream catchment areas.

Hong Kong & Kowloon Timber Merchants Association

Proposed Temporary Rural Workshop (Timber Yard and Sawmill) in Various Lots in D.D. 86, D.D. 90 and Adjoining Government Land, Lin Ma Hang Road, San Uk Ling, Ma Kam To

Drainage Impact Assessment

Project Profile Report

January 2025

Drainage Impact Assessment Report prepared by:



Ir Colin C MOREBY BEng, CEng, MICE, MHKIE, RPE(Civil)

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Figure 7 - Western Site (Sites C, D & E) Drainage Plan

Figure 8 - Western Site (Sites C, D & E) Storage and Site Outlet

1 Introduction

1.1 Background

- 1.1.1 This Drainage Impact Assessment (DIA) has been prepared to discharge Town Planning Approval Condition (c) for the Site, in accordance with Town Planning Board (TPB) letter ref. TPB/A/NE-MKT/17 dated 14 May 2021.
- 1.1.2 The Site is to be developed to provide simple workshop facilities for a period of 3 years.
- 1.1.3 This Report assesses the drainage impacts in the vicinity of the Site as a result of the proposed development, with discussion of proposed mitigation measures.
- 1.1.4 This Project Profile Report has been prepared in accordance with the requirements of the DIA process for private sector projects set out under Drainage Services Department's (DSD's) Technical Advice Note No. 1 (Appendix I).
- 1.1.5 A DIA for the Project was previously accepted without comment in May 2022 and the eastern portion of the overall Site has been substantially completed in accordance with that DIA. **The completed works in that Site have been checked against the current design standards, with upgrading works proposed as necessary.** However, due to changes to the Project Programme and the Site Boundary in the western portion of the Site, the DIA has been updated. **It is noted that the essential principles of this updated DIA are the same as the previously accepted DIA.**

1.2 Information Available for the Study

- 1.2.1 Reference has been made to Drainage Services Departments DSD's Stormwater Drainage Manual (SDM), 5th Edition, including Corrigendum No. 1/2024, and public drainage information presented on Land's Department's GeoInfo Map website.
- 1.2.2 A local topographic survey has also been carried out for the Project, although the survey coverage is not extensive beyond the Site Boundaries.

2 Project Outline

2.1 Project Title

- 2.1.1 The project title is “Proposed Rural Workshop (Timber Yard and Sawmill) for a period of 3 years in “Agriculture” Zone, Lot 129 (Part) in D.D. 86, Lots 607, 608, 609, 610 S.B RP (Part), 613 (Part), 627 (Part), 632 S.A RP, 633 S.A RP (Part), 635 S.A, 635 S.B, 635 S.C, 635 S.D, 637, 638 (Part) and 642 S.A RP (Part) in D.D. 90 and Adjoining Government Land, Lin Ma Hang Road, San Uk Ling, Ma Kam To”. The location of the Site is shown on **Figure 1**.

2.2 Proponent

- 2.2.1 The proponent of the project is Hong Kong and Kowloon Timber Merchants Association.

2.3 Contact Person

- 2.3.1 For issues relating to this DIA Study, please contact Ir Colin Moreby of AIM Group Limited at 2572 6533.

2.4 Nature and Description of the Project

- 2.4.1 The proposed development consists of various covered workshop buildings, with access roads and parking/turning areas. There will also be some buffer planting areas. The Master Layout Plan for the proposed development is included in **Appendix A**. The TPB Approval is for a period of 3 years, so all facilities will be generally temporary in nature. As noted above, drainage works at the Site have been substantially completed in accordance with the previous DIA (see As-constructed details in **Appendix B**). It should be noted that some of the As-constructed details in Site C are likely to be modified as part of later expansion works.
- 2.4.2 The overall Application Site is split into two portions, with (adjoining) Sites A and B located to the south of Lin Ma Hang Road and Sites C, D and E to the north of the road. Sites A and B cover a combined area of approximately 9,020m², while Sites C, D and E cover an area of approximately 11,494m².

2.5 Planning Application and Lease Modification

2.5.1 This DIA – Project Profile has been prepared to discharge Planning Condition (c) of the TPB Approval Letter.

2.5.2 No Lease Modification is required for the proposed Project.

2.6 Location and Zoning

2.6.1 The Application Site is located to the south and north of Lin Ma Hang Road, a short distance to the northeast of San Uk Ling.

2.6.2 The Site is zoned as “Agriculture”.

3 Planning and Implementation Programme

3.1 Planning and Implementation

3.1.1 The proposed redevelopment will be planned and implemented under the supervision of appropriately qualified and experienced professionals. The construction of any works for the proposed redevelopment will be carried out by a suitable Contractor.

3.2 Project Timetable

3.2.1 The Redevelopment is expected to be complete by mid-2024.

3.3 Interface with Other Projects

3.3.1 There is no foreseeable direct interaction with other development projects in the area, which should be considered at this time.

4 Existing Drainage

4.1 Existing Drainage Routes and Conditions

4.1.1 The two main Site areas are both partially filled and paved, with the land falling generally from northeast to southwest across the Sites. The existing land in Site E generally falls from northwest to southeast. There were no existing formal drainage systems at the Sites, apart from small

simple unlined open channels, with runoff mostly passing overland to adjacent areas and nearby Streamcourses to the south and east of the Sites. There is another existing open channel to the north of Sites A & B, which cuts off runoff from areas to the north of the Sites. This channel passes under Lin Ma Hang Road and continues towards the north along the eastern boundary of Site E. The existing local drainage regimes are indicated on **Figure 2**.

- 4.1.2 As mentioned above, Site drainage facilities in Sites A and B have been constructed in accordance with the previous (2022) DIA.
- 4.1.3 To the south of Sites A & B there is an existing natural open channel (streamcourse) running generally from southeast to northwest before discharging to the Shenzhen River close to the Man Kam To Border Crossing. In the vicinity of the Site, the streamcourse is mostly unlined, but fairly straight and with the sides formed by the access road to Muk Wu Village and the supporting wall at the Site Boundary (i.e. the walls are concrete, but the base is soil/silt). It serves an upstream catchment, as shown on **Figure 3**.
- 4.1.4 The existing Site contains some buildings and some areas of paving and hardstanding (compacted broken asphalt). There are also some flat areas of vegetation. Photographs of the existing Site are included in **Appendix C** (N.B. it should be noted that some parts of the existing Site are currently overgrown and access is limited).
- 4.1.5 There are no flooding blackspots in the vicinity of the Site and informal discussions with local residents and landowners suggest that there is no history of flooding in the area.
- 4.1.6 There are no known Ecologically Important Streams/Rivers in the area.

5 Drainage Impact Assessment

5.1 Drainage Impact Assessment

General

- 5.1.1 The proposed development at the Site will involve paving of the ground surface and the construction of temporary workshop structures, with most of the Site being roofed over. As such, there will be an increase in paving, with a resultant increase in runoff. These increases have been quantified, with mitigation measures proposed to offset the increases, as discussed below.
- 5.1.2 The Site Areas will be provided with peripheral channels throughout, to collect any runoff from outside the Site (e.g. from Lot No. 630RP) and to prevent runoff from the Site towards adjacent areas. As such, the adjacent areas will not be adversely affected by the proposed development.

Assessment Criteria

- 5.1.3 As the catchment areas are all fairly small, the Rational Method (as set out in Section 7.5.2 of the SDM) has been used for the calculation of runoff.
- 5.1.4 The existing Site contains some buildings and temporary structures, as well as some fully paved (concrete) areas and a runoff coefficient, C , of 0.95 has been adopted for these areas. There are also areas of (compacted broken asphalt) hardstanding for which a runoff coefficient of 0.75 has been adopted. A runoff coefficient of 0.20 has been adopted for the remaining vegetated/farmland areas.
- 5.1.5 The proposed development will introduce additional paving and covered workshop structures ($C = 1.00$ has been adopted for these). There will also be some flat buffer landscaping ($C = 0.20$).
- 5.1.6 The overall upstream catchments mostly comprise steep vegetated hillsides with a runoff coefficient of 0.35 assumed. The amount of paving is hard to determine accurately, so an area equivalent to 2.5% of the overall catchment area has been assumed ($C = 0.90$), except where actual measurement (from maps) is feasible.
- 5.1.7 The 1 in 10-year scenario has been considered, as runoff from the Site will only affect minor local village areas and nearby (largely unused)

farmland. Furthermore, the approved usage at the Site is only for a period of 3 years, so a higher return period is not considered justified.

- 5.1.8 Allowances for increased rainfall intensity up to mid-21st Century and beyond have not been considered, as the TPB Approval is only for a period of 3 years.
- 5.1.9 The proposed mitigation measures involve the provision of temporary storage and it is therefore necessary to consider runoff hydrographs. Runoff hydrographs have been developed for each Site Area based on the 1 in 10-year design rainfall profile for North District set out in Table 5d of the SDM (the values from Corrigendum No. 1/2024 have been used), with assessments of 10-minute, 30-minute and 1-hour storm durations. A 90-minute storm has also been considered for the Western Site (Sites C, D and E) for reference.

5.2 Drainage Impact

- 5.2.1 The existing and future runoff flows from the overall Sites and overall catchments are presented in **Appendix D**, together with plans/sketches showing the various paved areas adopted for the calculations. As the two main portions of the overall Application Site are physically independent, the drainage impacts will be discussed separately.

Eastern Portion (Sites A and B)

- 5.2.2 The discharge from Sites A & B will increase from approximately 0.218m³/s to theoretically 0.467m³/s as a result of the proposed development (N.B. without the proposed mitigation measures (storage) described below). However, in terms of the overall catchment served by the main streamcourse, the overall runoff from the Site will increase from 0.280m³/s to 0.315m³/s (partly as a result of diversion of the runoff from Sites C and D, as discussed below), an increase of only 0.5% of the overall catchment runoff (7.010m³/s). Such an increase is well within the accuracy of runoff calculations and is therefore insignificant.
- 5.2.3 Although the overall increased runoff will not significantly change the flow from the overall catchment, there will be more significant relative increases at the local level. Given the absence of flooding records in the area, it can be reasonably assumed that the existing (original) peak flows can be accommodated within the existing drainage system(s) and it is therefore proposed to provide storage for flows in excess of the existing peak runoff. The storage volumes required are presented in **Appendix E**, including runoff hydrographs for each of the standard storm durations for each portion of the Site. The required storage volumes for the 30-minute

and 1-hour storm durations are the same and have been adopted as the minimum storage volumes to be provided, i.e. 107.2m³ for Sites A & B. However, as the storage volumes will be provided by multiple standard-sized prefabricated tanks, the actual volumes to be provided will be greater than the minimum volumes required. For Sites A & B, the actual volume will be 3 x 55m³ = 165m³.

5.2.4 The south-eastern corner of the Site is close to the existing streamcourse and, to avoid any future conflict, all main building structures in this area will be set back a minimum of 3m from the bank of the stream.

5.2.5 The construction works in the eastern portion of the Site, including the Site drainage facilities, have been completed (see photographs in **Appendix C**). The as-constructed details for the Eastern Portion have been checked against the latest design standards, as set out in **Appendix I**. The peripheral channels are generally adequate for the expected runoff, with the exception of a section along the (south-) western boundary of the Site (from Catchpits J to F2). It is proposed to upgrade this section, by either adding an additional uPVC pipe or by widening the as-constructed channel, with the final arrangement to be determined on-Site, to suit Site conditions. Both options have been assessed in **Appendix I** and are indicated on **Figure 6**.

5.2.6 The final discharge from the Eastern Portion of the Site is via a 400mm x 400mm open channel (see **Figure 6**).

Western Portion (Sites C, D and E)

5.2.7 Following discussions with Highways Department, the option of discharging from the Site to the road drainage in Lin Ma Hang Road and hence to the main streamcourse to the south of the Site is considered not feasible. It will therefore be necessary to discharge all runoff from the western portion of the Site (Sites C, D and E) to the existing streamcourse to the east of the Site, running partially below the recently constructed access road to Muk Wu Village. The upstream catchment area for this stream is shown on **Figure 4**.

5.2.8 As a result of the diversion of flows from Sites C and D towards the east and increased paving at the Site, the theoretical peak discharge from the Site towards the east would increase from 0.078m³/s to 0.630m³/s. As for the eastern portion of the Site, it is proposed to provide storage facilities (buried tanks) to temporarily store excess runoff from the Site, to reduce the peak discharge. The existing eastern streamcourse, located immediately adjacent to the Western Site, comprises a significant channel (approximately 1.4m wide x 1.1m deep) and capacity calculations (see **Appendix F**) indicate that it could accommodate some

increased runoff from the Site. However, due to limited physical survey data and to keep the assessment conservative, it is proposed to limit the future runoff from the Site to a nominal 0.25m³/s (see also 5.2.9 below). This figure has been used for the hydrographs for the Western Site in **Appendix E**, and the resultant temporary storage volume of approximately 213m³. It is noted that the required storage volumes for the 60-minute and 90-minute rainfall events are the same, so this has been adopted for this DIA and no further assessment of longer-duration rainfall is required. The storage will be provided as two lines of buried interconnected 1.5m diameter standard prefabricated tanks. The outlet to the stream adjacent to the Site will be by gravity via controllable valves.

- 5.2.9 At the Site boundary, the stream comprises a substantial well-defined channel, with the western side formed by concrete blocks supporting the Site boundary and the eastern side formed by the structure of the access road (see **Appendix C**). The drainage crossing beneath Lin Ma Hang Road appears to be quite restricted in size/capacity (see **Appendix C**), which will limit the flow from upstream catchment areas and this supports the concept that the channel downstream of the road crossing is not overloaded and can accept additional flows from the Site.

General Issues

- 5.2.10 It is proposed to provide the storage in the form of buried plastic tanks (as indicated in **Appendix G** – actual dimensions to be confirmed), with small pumps also provided to gradually empty the tanks over an extended period (say, an hour or two). For the Eastern Site, inflow to the tanks would be controlled by simple overflow weirs (as illustrated in **Figure 5** and with calculations included in **Appendix H**). For the Western Portion, inflow to the storage will be by gravity, with flows passing from one tank to the next via 300mm connecting pipes. Discharge from the tanks will be by gravity, controlled by (adjustable) valves. General arrangements are shown on **Figure 8**.
- 5.2.11 Peripheral channels and on-Site underground pipe drainage systems to suit the MLP will be provided to collect all runoff from the Site and all runoff entering the Site from other adjacent catchments (N.B. temporary and permanent hoarding will be constructed so as to not obstruct any overland or stream runoff from adjacent areas). It is proposed that prefabricated units (as shown in **Appendix G**) will be used to simplify construction and maintain standards. The Site Catchment Areas for the western Site are included in **Appendix I**, with the Site Drainage Plan shown in **Figure 7**. General arrangements of the storage and Site Outlet are shown on **Figure 8**. A Drainage Schedule showing the required and

proposed gradients of the peripheral channels and internal pipes is included in **Appendix I**.

5.2.12 Silt/sand traps will be provided **as part of the Site Drainage system(s)**.

5.2.13 The Project Proponent will be responsible for the construction, operation and maintenance of all drainage facilities for the Project.

6 Conclusions

- 6.1.1 There will be increases in the volumes of runoff from the Site as a result of the Proposed Redevelopment.
- 6.1.2 Runoff from Sites A and B will discharge to an existing streamcourse to the south of the Site. Runoff from Sites C, D and E will discharge to an existing channel to the east of the Site.
- 6.1.3 Peripheral channels, etc. will be provided to collect any flow entering the Site from external areas and to prevent discharge from the Site to adjacent areas. Underground pipes will also be provided to collect internal runoff from most Site areas.
- 6.1.4 The drainage facilities for the Eastern Portion (Sites A and B) have been completed on-Site. However, some local upgrading will be required to cater for the latest design standards.
- 6.1.5 The drainage facilities for the Western Portion (Sites C, D & E) will be constructed to cater for the latest design standards.
- 6.1.6 Temporary storage of runoff will be provided for flows in excess of the acceptable peak flows. The actual storage to be provided will be greater than the minimum volumes calculated.
- 6.1.7 Construction, operation and maintenance of all new drainage facilities will be undertaken by the Project Proponent.
- 6.1.8 There will be no unacceptable increases to the risks of flooding at the Site or in surrounding areas and no unacceptable adverse drainage impacts.

Appendix A

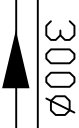
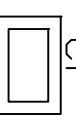
Master Layout Plan

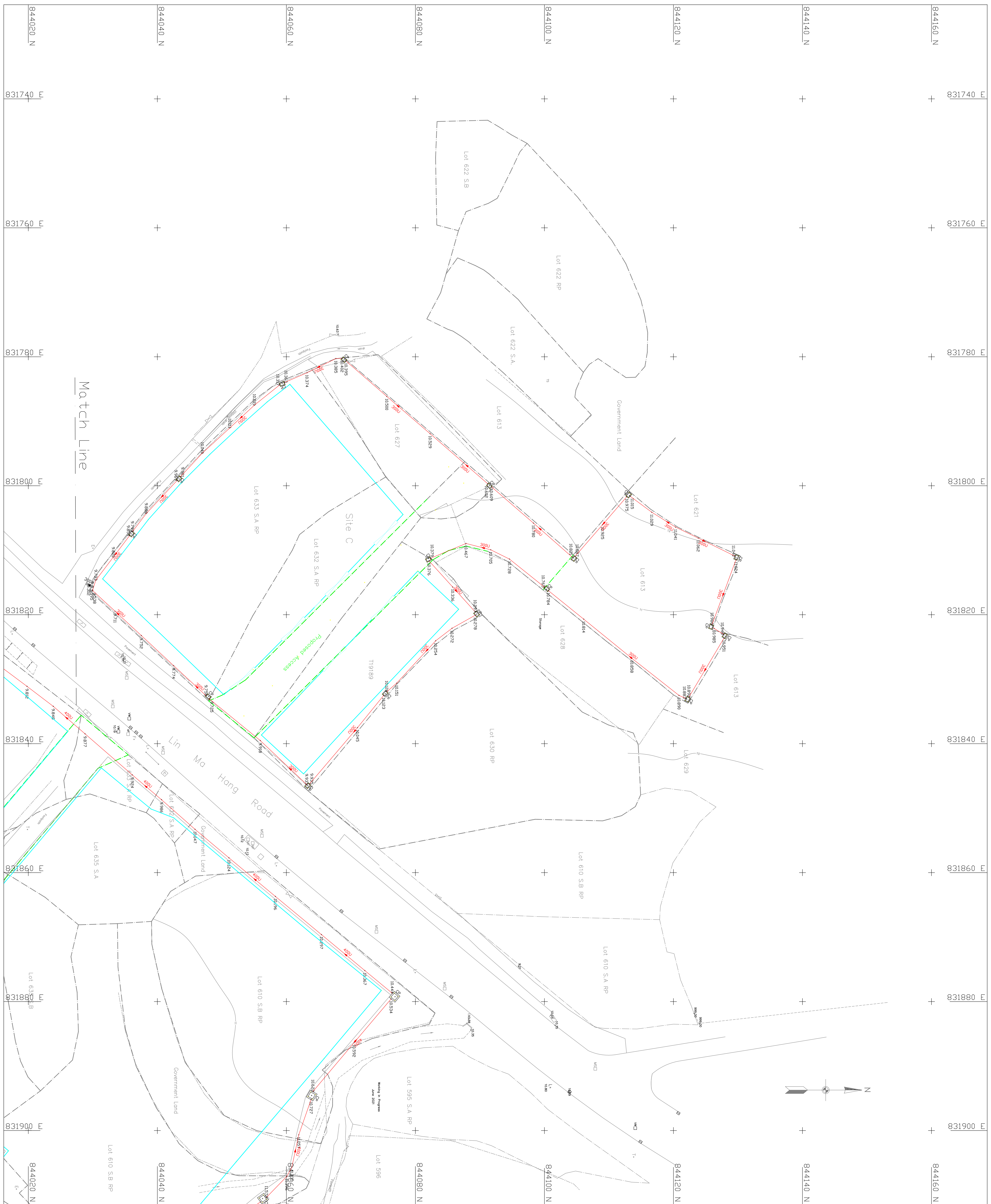
Appendix B

As-constructed Drainage

- Notes :
- Co-ordinates are relative to Hong Kong Metric Grid (1980)
 - All Levels are in Metres relative to Principal Datum (P.D.)
 - Elevation of kerb are referred to bottom of kerb
 - Dimensions are in Metres unless otherwise shown

Legends:

- As-built Drain Pipe
- As-built U-Channel
- As-built Invert Level
- As-built Catchpit
- As-built Ground Level

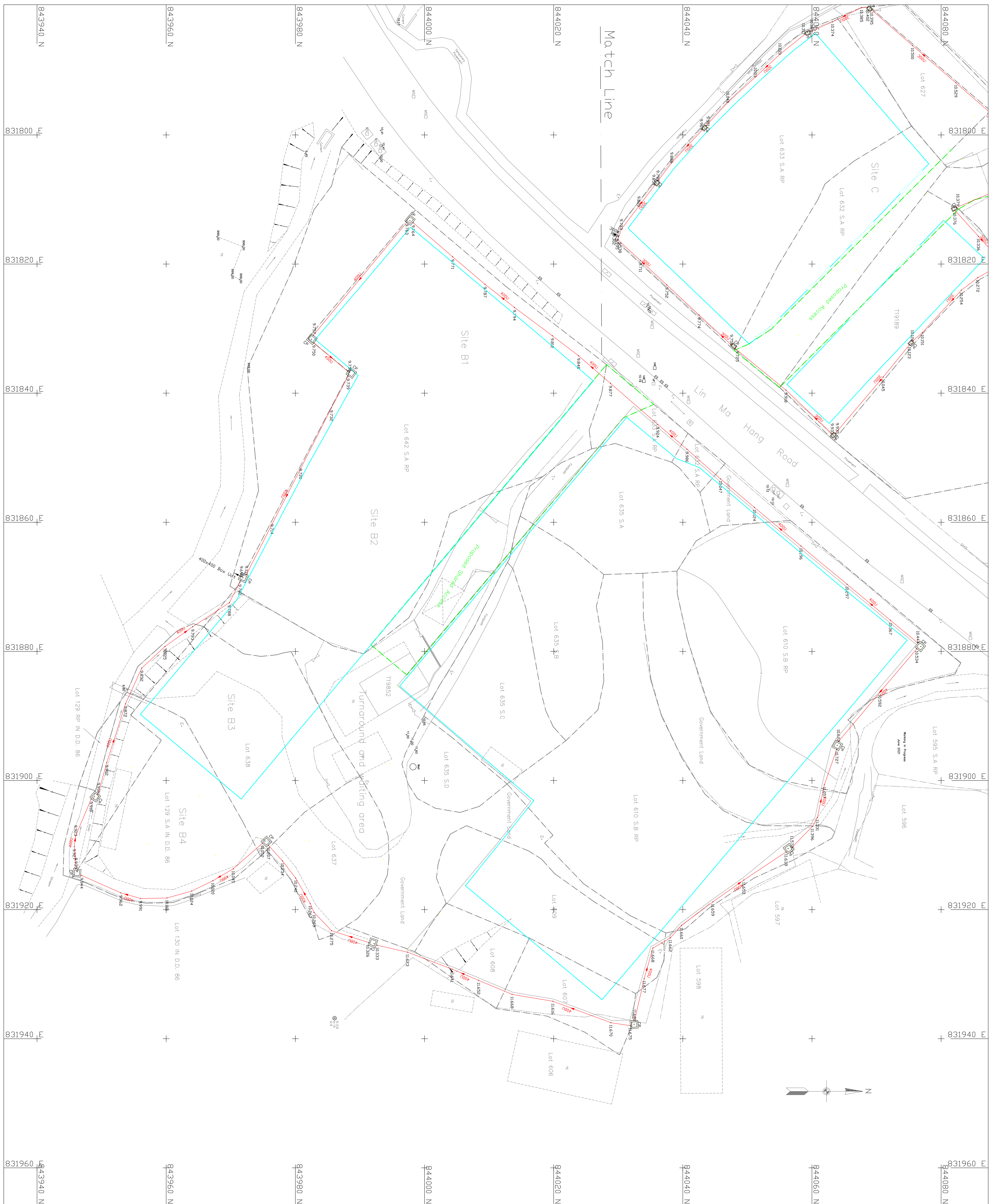


DRAWING TITLE :

As-Built Survey Record Drainage System
At Lin Ma Hang Road
DD90 Temporary Rural Workshop

Scale
@A0 1:200
Sheet 1 of 2

Date of Survey:
June 2023



- Notes :
1. Co-ordinates are relative to Hong Kong Metric Grid (1980)
 2. All Levels are in Metres relative to Principal Datum (P.D.)
 3. Elevation of kerb are referred to bottom of kerb
 4. Dimensions are in Metres unless otherwise shown

Legends:

- | | |
|---|-----------------------|
|  | As-built Drain Pipe |
|  | As-built U-Channel |
|  | As-built Invert Level |
|  | As-built Catchpit |
|  | As-built Ground Level |

DRAWING TITLE :

As-Built Survey Record Drainage System
At Lin Ma Hang Road
DD90 Temporary Rural Workshop

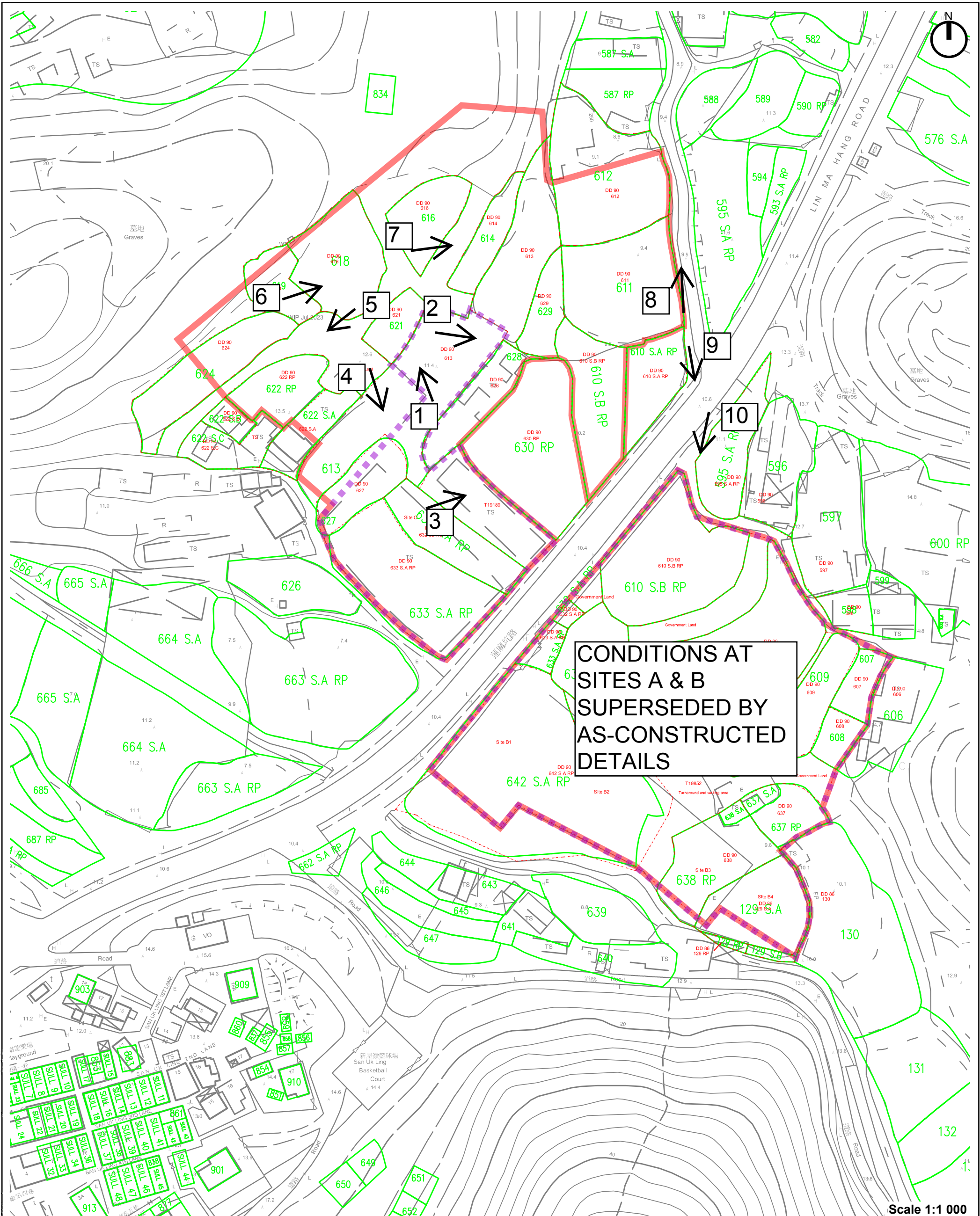
Sheet 2 of 2

Date of Survey:

June 2023

Appendix C

Site Photographs



Application Site Boundary

Planning Approval Boundary

Lot Boundary Based on Lot Index Plan

Lot Boundary Based on Surveying

←

1

Plate Number and Direction (Indicative only)

C192 – Proposed Rural Workshop (Timber Yard and Sawmill) for a period of 3 years in Various Lots in D.D. 90 and Adjoining Government Land, Lin Ma Hang Road, San Uk Ling, Ma Kam To

Appendix C –Site Photographs (Dated June 2021, March 2022 and December 2023)

See Plan for Locations. Original Site conditions for Sites A and B have been superseded by the As-constructed details (workshops and drainage facilities) and relevant (original) photographs have therefore been omitted from this DIA.



Plate 1 – Small External Catchment (North of Site C)



Plate 2 – Original ground sloping away from Site C



Plate 3 – Existing/original ground sloping away from Site C



Plate 4 – Existing Site C (December 2023)



Plate 5 – Site D



Plate 6 – Sites D and E



Plate 7 – Site E



Plate 8 – Existing Eastern Streamcourse

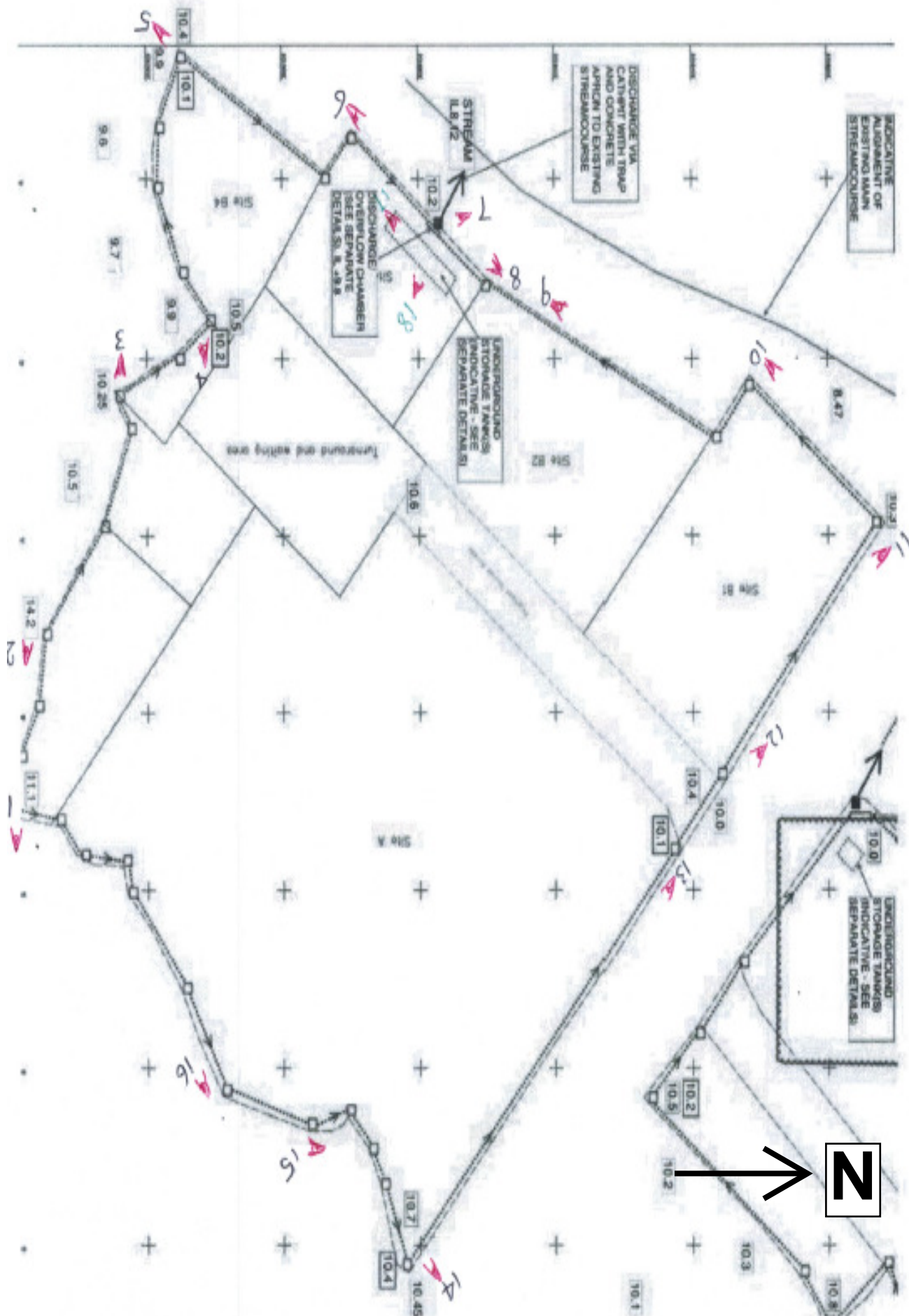


Plate 9 – Drainage Crossing Beneath Lin Ma Hang Road (view from the North)



Plate 10 – Catchpit at Southern Side of Lin Ma Hang Road

SITES A & B - PHOTOGRAPHS OF AS- CONSTRUCTED DRAINAGE FACILITIES



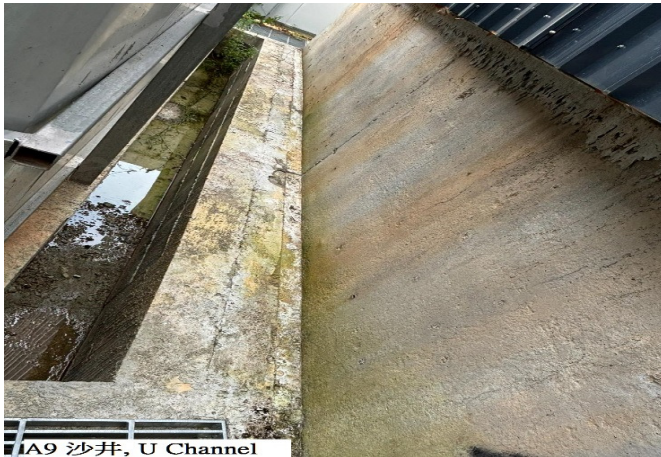




A7 地下雨水缸入水口特寫



A8 地下雨水缸泵水出口



A9 沙井, U Channel



A10 沙井, U Channel



A11 沙井, U Channel



A12 門口沙井, U Channel



A13 U Channel



A14 沙井, U Channel



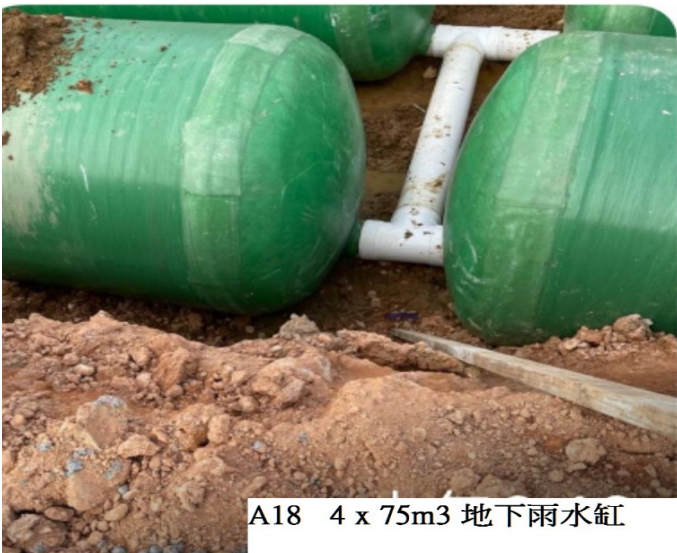
A15 沙井, U Channel



A16 沙井, U Channel



A17 4 x 75m3 地下雨水缸



A18 4 x 75m3 地下雨水缸



A19 地下雨水缸浮球水泵

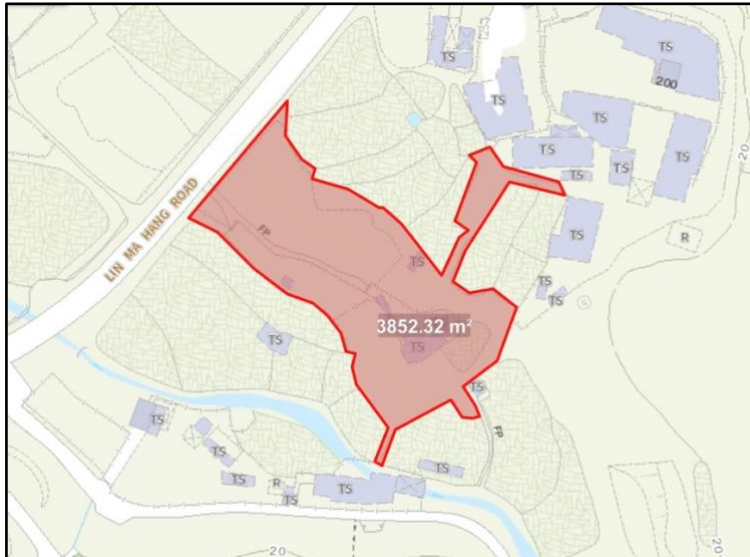
Appendix D

Runoff Calculations

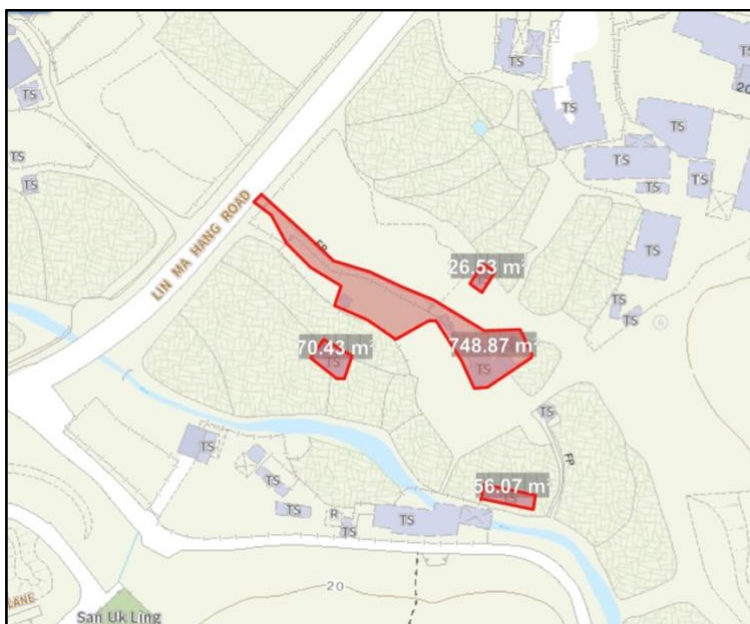
**Proposed Temporary Warehouse (Storage of Timber and other Associated Materials),
Lin Ma Hang Road
Original Paved Areas Adopted for Runoff Calculations**

Refer to Master Layout Plan (Appendix A) for overall Site Areas.

Sites A and B



Sites A and B: Overall Area of Structures and Hardstanding = 3852.32m²



Sites A and B: Areas of Structures and Hard Paving = 748.87+26.53+70.43+56.07 = 901.72m²
= say, **902m²**

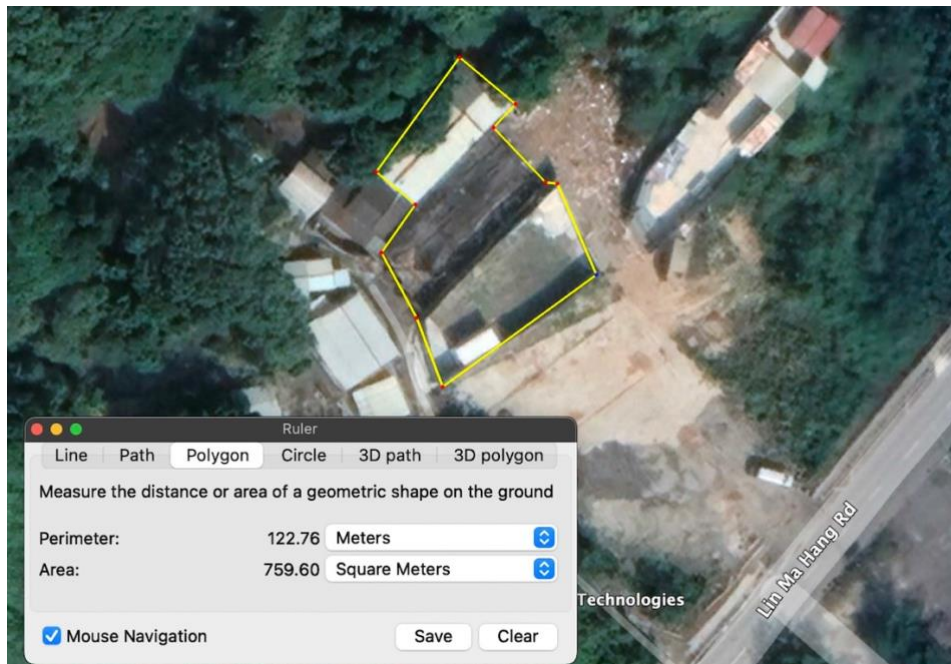
Sites A and B: Area of Hardstanding = 3,852.32 – 901.72 = 2,950.60m² = say, **2,951m²**

Sites A and B: Non-paved Area = 9,020 (overall Area) – 2,950.60 – 901.72 = 5,167.68m² =
say, **5,168m²**

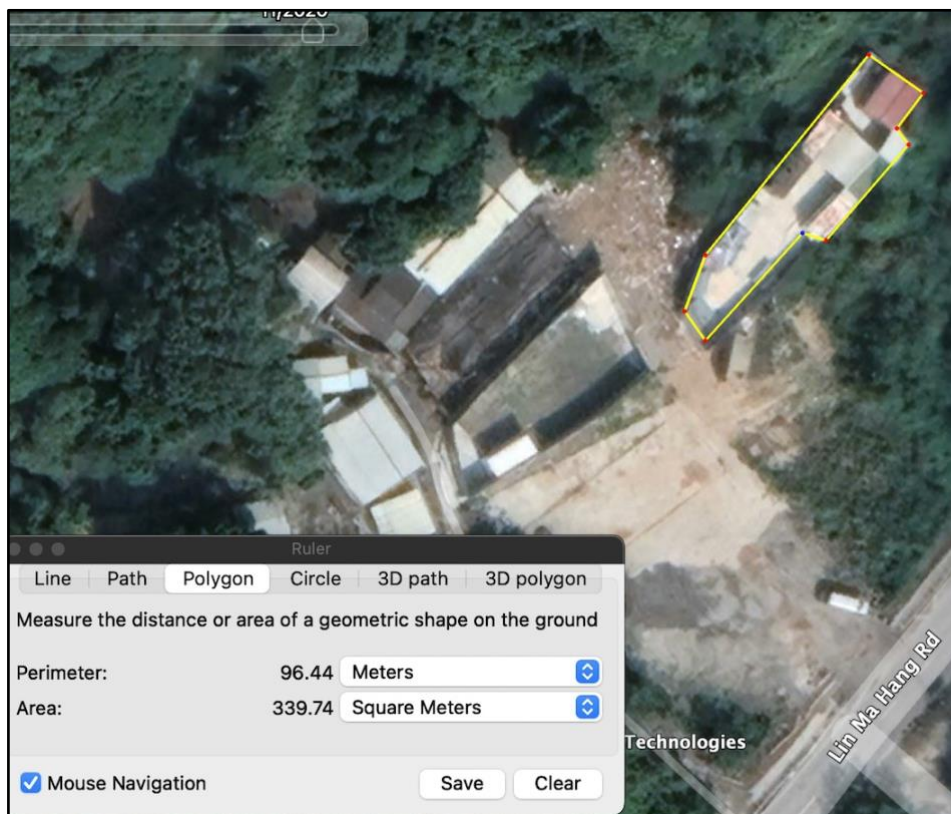
Sites C, D and E

See attached **Western Site Original Catchment Areas** plan.

Original Area to Western Streamcourse = Catchments 1 + 3 = 6,400 + 1,809 = **8,209m²**

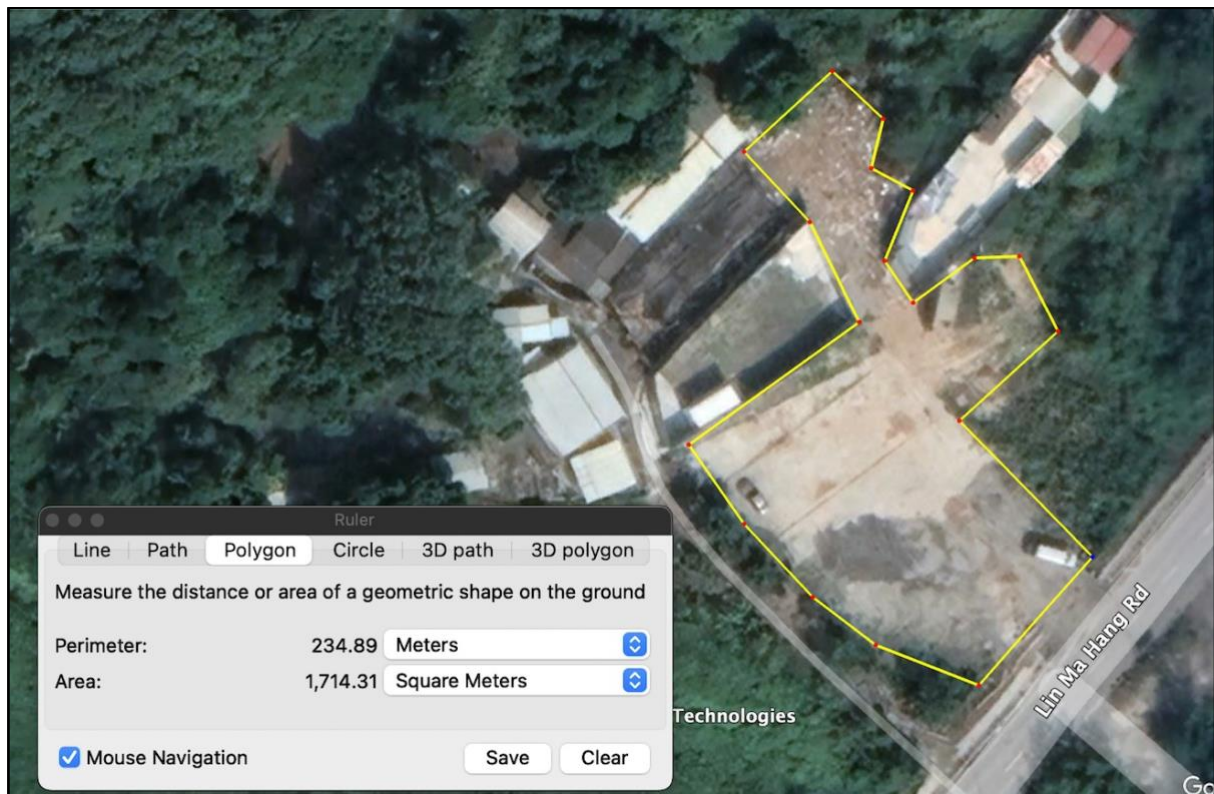


Western Site: Original Structure 1 = 760m²



Western Site: Original Structure 2 = 340m²

Western Site: Original Structures = $760 + 340 = 1,100\text{m}^2$



Western Site: Original Hardstanding = $1,714\text{m}^2$

Western Site Original Vegetated Areas (Unpaved) = $8,209 - 1,100 - 1714 = 5,395\text{m}^2$

Areas Draining to Eastern Streamcourse

Overall Eastern Upstream Catchment Area (see DIA Figure 4) = $17,015\text{m}^2$



Eastern Upstream Catchment Overall Paving = $4,685.03\text{m}^2$

Area of Structures and Hard Paving, say = $4,685 \times 80\%$ (nominal allowance) = $3,748\text{m}^2$

Vegetated Area (Hill Slopes) = $17,015 - 3,748 = \mathbf{13,267m^2}$

Downstream Areas draining to Eastern Streamcourse = Catchments 2 + 4 + Lot 630RP
= $5,093 + 840 + 1,090 = \mathbf{7,023m^2}$

No structures or hard paving in the catchment.

Assume 5% of Catchment Area is hardstanding = $7,023 \times 5\% = \mathbf{351m^2}$

Vegetated Areas (Flat) = $7,023 - 351 = \mathbf{6,672m^2}$

Total Catchment to Eastern Streamcourse = $17,015 + 7,023 = \mathbf{24,038m^2}$

Total Structures/Paving to Eastern Streamcourse = $3,748 + 0 = \mathbf{3,748m^2}$

Total Hardstanding to Eastern Streamcourse = $0 + 351 = \mathbf{351m^2}$

Total Flat Vegetated Areas = $0 + 6,672 = \mathbf{6,672m^2}$

Total Vegetated Slopes to Eastern Streamcourse = $13,267 + 0 = \mathbf{13,267m^2}$

C192 - Hong Kong & Kowloon Timber Merchants Association Yard at Lin Ma Hang Road
Overall Catchment Areas and Run-off towards Western (Main) Streamcourse (1 in 10 Year)

Refer:

DSD Stormwater Drainage Manual (SDM), including SDM Corrigendum No. 1/2024

Notes:

The existing Site comprises some small buildings, temporary structures & hard paving (concrete); C = 0.95, some hardstanding (broken asphalt); C = 0.7, and some areas of flat vegetation, C = 0.2

The existing areas of paving, etc. are estimated from survey plans, Google Earth and other Site records

The future Site will comprise buildings, flat paving and access roads, etc.; C = 1.0. Also, some landscape buffer zones, C = 0.25

The overall catchment mostly comprises steep naturally vegetated hillsides; C = 0.35

The Site is at Lin Ma Hang Road - North District

The catchments are fairly small, so Rational Method is appropriate.

Runoff from Sites C & D are to be diverted towards the East after the proposed development

a, b and c from the DSD Stormwater Manual (Table 3d - North Dist

Intensity = $a/(t_c+b)^c$

	a	b	c
1 in 10 year	454.9	3.44	0.412

Catchment	Area	Levels (mPD)		Fall	Overland, L	Channel, L	Fall, H	Overland t _c	Velocity (Channel)	Flow Time (Channel)	Total t _c [*]	Intensity	Runoff Coefficient	Run-off
	(m ²)	Upstream	Downstream	(m)	(m)	(m)	(m/100m)	(min)	(m/s)	(min)	(min)	(mm/h)		(m ³ /s)
Existing (Original) Situation for Streamcourse to the West														
The Site														

*Assumed t_c for Future Situation

C192 - Hong Kong & Kowloon Timber Merchants Association Yard at Lin Ma Hang Road
Overall Catchment Areas and Run-off towards Eastern Streamcourse (1 in 10 Year)

Refer:

DSD Stormwater Drainage Manual (SDM), including SDM Corrigendum No. 1/2024

Notes:

The existing (original) Site comprises mostly areas of flat vegetation, with some mild slopes, $C = 0.2$

The existing areas of paving, etc. are estimated from survey plans and other Site records

The future Site will comprise buildings, flat paving and access roads, etc.; $C = 1.0$. Also, some landscape buffer zones, $C = 0.25$

The overall upstream catchment mostly comprises steep naturally vegetated hillsides; $C = 0.35$

The Site is at Lin Ma Hang Road - North District

The catchments are fairly small, so Rational Method is appropriate.

Runoff from Sites C & D are to be diverted towards the East after the proposed development

$$\text{Intensity} = a/(t_c + b)^c$$

a, b and c from the DSD Stormwater Manual (Table 3d - North Dist

1 in 10 year a b c
 454.9 3.44 0.412

Catchment	Area (m ²)	Levels (mPD)		Fall (m)	Overland, L (m)	Channel, L (m)	Fall, H (m/100m)	Overland t _c (min)	Velocity (Channel) (m/s)	Flow Time (Channel) (min)	Total t _c [*] (min)	Intensity (mm/h)	Runoff Coefficient	Run-off (m ³ /s)
Existing (Original) Situation for Streamcourse to the East		Upstream	Downstream											
Overall Catchment														
Upstream Catchment	17,015	75.0	10	65.0	254	-	25.6	7.3	-	-	7.3	171		
Structures/Temporary Structures & Hard Paving (Paved)	3,748												0.95	0.170
Vegetated Hills (Unpaved)	13,267												0.35	0.221
Total														0.391
Site E (Catchments 2 and 4, plus 630RP)	7,023	22	11.4	10.6	160	-	6.6	6.5	-	-	6.5	176		
Temporary Structures & Hard Paving (Paved)	0												0.95	0.000
Hardstanding (Paved)	351												0.75	0.013
Vegetated Areas (Unpaved)	6,672												0.20	0.065
Total														0.078
Total to Eastern Stream														
Overall Discharge to Eastern Stream from Upstream Catchment and the Site														
Total Area	24,038											171		
Structures/Temporary Structures & Hard Paving (Paved)	3,748												0.95	0.170
Hardstanding (Paved)	351												0.75	0.013
Vegetated Areas (Unpaved)	6,672												0.20	0.064
Vegetated Hills (Unpaved)	13,267												0.35	0.221
Total														0.467
Future Situation (Without Mitigation Measures)														
Overall Catchment														
Upstream Catchment	17,015	75.0	10	65	254	-	25.6	7.3	-	-	7.3	171		
Structures/Temporary Structures & Hard Paving (Paved)	3,748												0.95	0.170
Vegetated Areas (Unpaved)	13,267												0.35	0.221
Total														0.391
The Site (Sites C, D & E plus local external Catchments 3 & 4)	15,232										6.0	180		
Buildings and Paving (Paved)	11,389												1.00	0.571
Buffer Zone (Unpaved)	104												0.20	0.001
Upstream Catchments (3 & 4)	2,649												0.35	0.046
Lot 630RP	1,090												0.20	0.011
Total														0.630
Total to Eastern Stream														
Overall Discharge to Eastern Stream from Upstream Catchment and the Site														
Total Area	32,247											171		
Site Structures & Hard Paving (Paved)	11,389												1.00	0.543
Upstream Temporary Structures (Paved)	3,748												0.95	0.170
Vegetated Hills (Unpaved)	15,916												0.35	0.265
Total														0.978

*Assumed t_c for Future Situation

Appendix E

Hydrograph and Storage Calculations

C192 - Hong Kong & Kowloon Timber Merchants Association Yard at Lin Ma Hang Road
Hydrographs and Storage - Sites A & B
10-Minute Duration

Hydrographs and Storage Volumes based on full hydrographs using (1 in 10-year) storm profiles from the DSD SDM Corrigendum 1/2024
(Refer to SDM Corrigendum 1/2024, Table 5d - Storm Profile for North District and Figure 6)

Assume Site Areas are equally divided over the time of Concentration, i.e. $t_c = 5$ minutes, so 20% of the Site over each minute

	(m^2)	C Value	Average C
Site Area	9,020		0.987
Paved	8,868	1.00	
Unpaved	152	0.20	

Case 1 - 10-minute duration, 1 in 10-year

Time	Rainfall Intensity	Area A, $m^2 =$ C =	Area 1 1804 0.987 Runoff (m^3/s)	Area 2 1804 0.987 Runoff (m^3/s)	Area 3 1804 0.987 Runoff (m^3/s)	Area 4 1804 0.987 Runoff (m^3/s)	Area 5 1804 0.987 Runoff (m^3/s)	Overall Runoff Hydrograph (m^3/s)	Original Peak Discharge (m^3/s)	Excess Discharge (m^3/s)	Excess Volume in Time Period (m^3)
(min)	(mm/hr)		(m^3/s)	(m^3/s)	(m^3/s)	(m^3/s)	(m^3/s)	(m^3/s)	(m^3/s)	(m^3/s)	(m^3)
0	0		0.000	0.000	0.000	0.000	0.000	0.000	0.218	0.000	0.0
0.5	108		0.053	0.000	0.000	0.000	0.000	0.053	0.218	0.000	0.0
1	119		0.059	0.000	0.000	0.000	0.000	0.059	0.218	0.000	0.0
1.5	119		0.059	0.053	0.000	0.000	0.000	0.112	0.218	0.000	0.0
2	133		0.066	0.059	0.000	0.000	0.000	0.125	0.218	0.000	0.0
2.5	133		0.066	0.059	0.053	0.000	0.000	0.178	0.218	0.000	0.0
3	156		0.077	0.066	0.059	0.000	0.000	0.202	0.218	0.000	0.0
3.5	156		0.077	0.066	0.059	0.053	0.000	0.255	0.218	0.037	1.1
4	194		0.096	0.077	0.066	0.059	0.000	0.298	0.218	0.080	2.4
4.5	194		0.096	0.077	0.066	0.059	0.053	0.351	0.218	0.133	4.0
5	246		0.122	0.096	0.077	0.066	0.059	0.420	0.218	0.201	6.0
5.5	246		0.122	0.096	0.077	0.066	0.059	0.420	0.218	0.201	6.0
6	194		0.096	0.122	0.096	0.077	0.066	0.457	0.218	0.238	7.1
6.5	194		0.096	0.122	0.096	0.077	0.066	0.457	0.218	0.238	7.1
7	156		0.077	0.096	0.122	0.096	0.077	0.468	0.218	0.250	7.5
7.5	156		0.077	0.096	0.122	0.096	0.077	0.468	0.218	0.250	7.5
8	133		0.066	0.077	0.096	0.122	0.096	0.457	0.218	0.238	7.1
8.5	133		0.066	0.077	0.096	0.122	0.096	0.457	0.218	0.238	7.1
9	119		0.059	0.066	0.077	0.096	0.122	0.420	0.218	0.201	6.0
9.5	119		0.059	0.066	0.077	0.096	0.122	0.420	0.218	0.201	6.0
10	108		0.053	0.059	0.066	0.077	0.096	0.351	0.218	0.133	4.0
10.5	0		0.000	0.059	0.066	0.077	0.096	0.298	0.218	0.080	2.4
11	0		0.000	0.053	0.059	0.066	0.077	0.255	0.218	0.037	1.1
11.5	0		0.000	0.000	0.059	0.066	0.077	0.202	0.218	0.000	0.0
12	0		0.000	0.000	0.053	0.059	0.066	0.178	0.218	0.000	0.0
12.5	0		0.000	0.000	0.000	0.059	0.066	0.125	0.218	0.000	0.0
13	0		0.000	0.000	0.000	0.053	0.059	0.112	0.218	0.000	0.0
13.5	0		0.000	0.000	0.000	0.000	0.059	0.059	0.218	0.000	0.0
14	0		0.000	0.000	0.000	0.000	0.053	0.053	0.218	0.000	0.0
14.5	0		0.000	0.000	0.000	0.000	0.000	0.000	0.218	0.000	0.0
15	0		0.000	0.000	0.000	0.000	0.000	0.000	0.218	0.000	0.0

Total Excess Volume for Storage = 82.7 m^3

C192 - Hong Kong & Kowloon Timber Merchants Association Yard at Lin Ma Hang Road
Hydrographs and Storage - Sites A & B
30-Minute Duration

Hydrographs and Storage Volumes based on full hydrographs using (1 in 10-year) storm profiles from the DSD SDM Corrigendum 1/2024
(Refer to SDM Corrigendum 1/2024, Table 5d - Storm Profile for North District and Figure 6)

Assume Site Areas are equally divided over the time of Concentration, i.e. $t_c = 5$ minutes, so 20% of the Site over each minute

	(m ²)	C Value	Average C
Site Area	9,020		0.987
Paved	8,868	1.00	
Unpaved	152	0.20	

Case 2 - 30-minute duration, 1 in 10-year

Time	Rainfall Intensity	Area m ² = C =	Area 1 1804 0.987 Runoff	Area 2 1804 0.987 Runoff	Area 3 1804 0.987 Runoff	Area 4 1804 0.987 Runoff	Area 5 1804 0.987 Runoff	Overall Runoff Hydrograph	Original Peak Discharge	Excess Discharge	Excess Volume in Time Period
(min)	(mm/hr)		(m ³ /s)	(m ³ /s)	(m ³ /s)	(m ³ /s)	(m ³ /s)	(m ³ /s)	(m ³ /s)	(m ³ /s)	(m ³)
0	0		0.000	0.000	0.000	0.000	0.000	0.000	0.218	0.000	0.0
0.5	68		0.034	0.000	0.000	0.000	0.000	0.034	0.218	0.000	0.0
1	70		0.035	0.000	0.000	0.000	0.000	0.035	0.218	0.000	0.0
1.5	70		0.035	0.034	0.000	0.000	0.000	0.068	0.218	0.000	0.0
2	72		0.036	0.035	0.000	0.000	0.000	0.070	0.218	0.000	0.0
2.5	72		0.036	0.035	0.034	0.000	0.000	0.104	0.218	0.000	0.0
3	74		0.037	0.036	0.035	0.000	0.000	0.107	0.218	0.000	0.0
3.5	74		0.037	0.036	0.035	0.034	0.000	0.141	0.218	0.000	0.0
4	77		0.038	0.037	0.036	0.035	0.000	0.145	0.218	0.000	0.0
4.5	77		0.038	0.037	0.036	0.035	0.034	0.179	0.218	0.000	0.0
5	80		0.040	0.038	0.037	0.036	0.035	0.185	0.218	0.000	0.0
5.5	80		0.040	0.038	0.037	0.036	0.035	0.185	0.218	0.000	0.0
6	84		0.042	0.040	0.038	0.037	0.036	0.191	0.218	0.000	0.0
6.5	84		0.042	0.040	0.038	0.037	0.036	0.191	0.218	0.000	0.0
7	89		0.044	0.042	0.040	0.038	0.037	0.200	0.218	0.000	0.0
7.5	89		0.044	0.042	0.040	0.038	0.037	0.200	0.218	0.000	0.0
8	94		0.047	0.044	0.042	0.040	0.038	0.210	0.218	0.000	0.0
8.5	94		0.047	0.044	0.042	0.040	0.038	0.210	0.218	0.000	0.0
9	100		0.049	0.047	0.044	0.042	0.040	0.221	0.218	0.003	0.1
9.5	100		0.049	0.047	0.044	0.042	0.040	0.221	0.218	0.003	0.1
10	108		0.053	0.049	0.047	0.044	0.042	0.235	0.218	0.017	0.5
10.5	108		0.053	0.049	0.047	0.044	0.042	0.235	0.218	0.017	0.5
11	119		0.059	0.053	0.049	0.047	0.044	0.252	0.218	0.034	1.0
11.5	119		0.059	0.053	0.049	0.047	0.044	0.252	0.218	0.034	1.0
12	133		0.066	0.059	0.053	0.049	0.047	0.274	0.218	0.056	1.7
12.5	133		0.066	0.059	0.053	0.049	0.047	0.274	0.218	0.056	1.7
13	156		0.077	0.066	0.059	0.053	0.049	0.305	0.218	0.086	2.6
13.5	156		0.077	0.066	0.059	0.053	0.049	0.305	0.218	0.086	2.6
14	194		0.096	0.077	0.066	0.059	0.053	0.351	0.218	0.133	4.0
14.5	194		0.096	0.077	0.066	0.059	0.053	0.351	0.218	0.133	4.0
15	246		0.122	0.096	0.077	0.066	0.059	0.420	0.218	0.201	6.0
15.5	246		0.122	0.096	0.077	0.066	0.059	0.420	0.218	0.201	6.0
16	194		0.096	0.122	0.096	0.077	0.066	0.457	0.218	0.238	7.1
16.5	194		0.096	0.122	0.096	0.077	0.066	0.457	0.218	0.238	7.1
17	156		0.077	0.096	0.122	0.096	0.077	0.468	0.218	0.250	7.5
17.5	156		0.077	0.096	0.122	0.096	0.077	0.468	0.218	0.250	7.5
18	133		0.066	0.077	0.096	0.122	0.096	0.457	0.218	0.238	7.1
18.5	133		0.066	0.077	0.096	0.122	0.096	0.457	0.218	0.238	7.1
19	119		0.059	0.066	0.077	0.096	0.122	0.420	0.218	0.201	6.0
19.5	119		0.059	0.066	0.077	0.096	0.122	0.420	0.218	0.201	6.0
20	108		0.053	0.059	0.066	0.077	0.096	0.351	0.218	0.133	4.0
20.5	108		0.053	0.059	0.066	0.077	0.096	0.351	0.218	0.133	4.0
21	100		0.049	0.053	0.059	0.066	0.077	0.305	0.218	0.086	2.6
21.5	100		0.049	0.053	0.059	0.066	0.077	0.305	0.218	0.086	2.6
22	94		0.047	0.049	0.053	0.059	0.066	0.274	0.218	0.056	1.7
22.5	94		0.047	0.049	0.053	0.059	0.066	0.274	0.218	0.056	1.7
23	89		0.044	0.047	0.049	0.053	0.059	0.252	0.218	0.034	1.0
23.5	89		0.044	0.047	0.049	0.053	0.059	0.252	0.218	0.034	1.0
24	84		0.042	0.044	0.047	0.049	0.053	0.235	0.218	0.017	0.5
24.5	84		0.042	0.044	0.047	0.049	0.053	0.235	0.218	0.017	0.5
25	80		0.040	0.042	0.044	0.047	0.049	0.221	0.218	0.003	0.1
25.5	80		0.040	0.042	0.044	0.047	0.049	0.221	0.218	0.003	0.1
26	77		0.038	0.040	0.042	0.044	0.047	0.210	0.218	0.000	0.0
26.5	77		0.038	0.040	0.042	0.044	0.047	0.210	0.218	0.000	0.0
27	74		0.037	0.038	0.040	0.042	0.044	0.200	0.218	0.000	0.0
27.5	74		0.037	0.038	0.040	0.042	0.044	0.200	0.218	0.000	0.0
28	72		0.036	0.037	0.038	0.040	0.042	0.191	0.218	0.000	0.0
28.5	72		0.036	0.037	0.038	0.040	0.042	0.191	0.218	0.000	0.0
29	70		0.035	0.036	0.037	0.038	0.040	0.185	0.218	0.000	0.0
29.5	70		0.035	0.036	0.037	0.038	0.040	0.185	0.218	0.000	0.0
30	68		0.034	0.035	0.036	0.037	0.038	0.179	0.218	0.000	0.0
30.5	0		0.000	0.035	0.036	0.037	0.038	0.145	0.218	0.000	0.0
31	0		0.000	0.034	0.035	0.036	0.037	0.141	0.218	0.000	0.0
31.5	0		0.000	0.000	0.035	0.036	0.037	0.107	0.218	0.000	0.0
32	0		0.000	0.000	0.034	0.035	0.036	0.104	0.218	0.000	0.0
32.5	0		0.000	0.000	0.000	0.035	0.036	0.070	0.218	0.000	0.0
33	0		0.000	0.000	0.000	0.034	0.035	0.068	0.218	0.000	0.0
33.5	0		0.000	0.000	0.000	0.000	0.035	0.035	0.218	0.000	0.0
34	0		0.000	0.000	0.000	0.000	0.034	0.034	0.218	0.000	0.0
34.5	0		0.000	0.000	0.000	0.000	0.000	0.000	0.218	0.000	0.0
35	0		0.000	0.000	0.000	0.000	0.000	0.000	0.218	0.000	0.0

Total Excess Volume for Storage = 107.2 m³

C192 - Hong Kong & Kowloon Timber Merchants Association Yard at Lin Ma Hang Road
Hydrographs and Storage - Sites A & B
60-Minute Duration

Hydrographs and Storage Volumes based on full hydrographs using (1 in 10-year) storm profiles from the DSD SDM Corrigendum 1/2024
(Refer to SDM Corrigendum 1/2024, Table 5d - Storm Profile for North District and Figure 6)

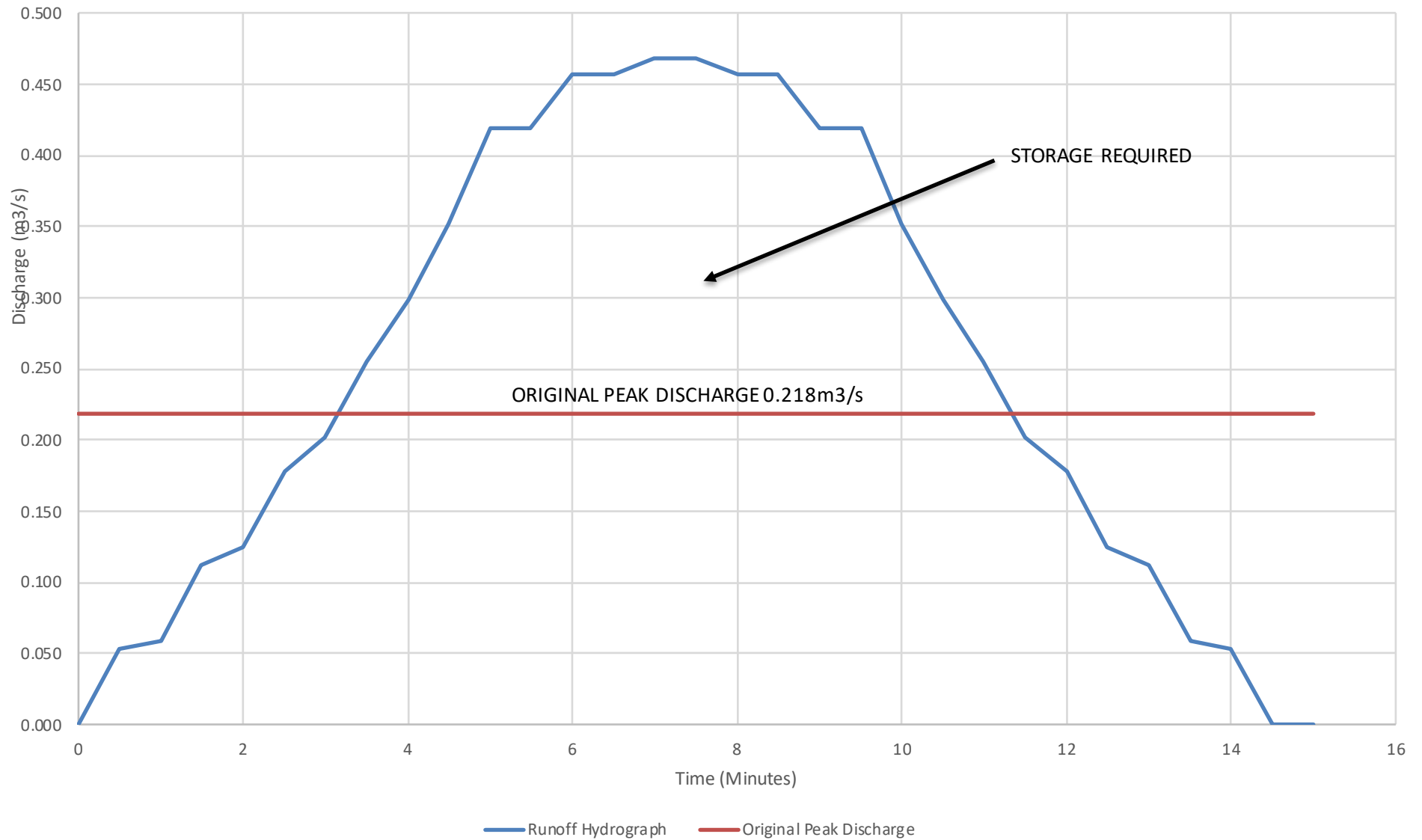
Assume Site Areas are equally divided over the time of Concentration, i.e. $t_c = 5$ minutes, so 20% of the Site over each minute

	(m ²)	C Value	Average C
Site Area	9,020		0.987
Paved	8,868	1.00	
Unpaved	152	0.20	

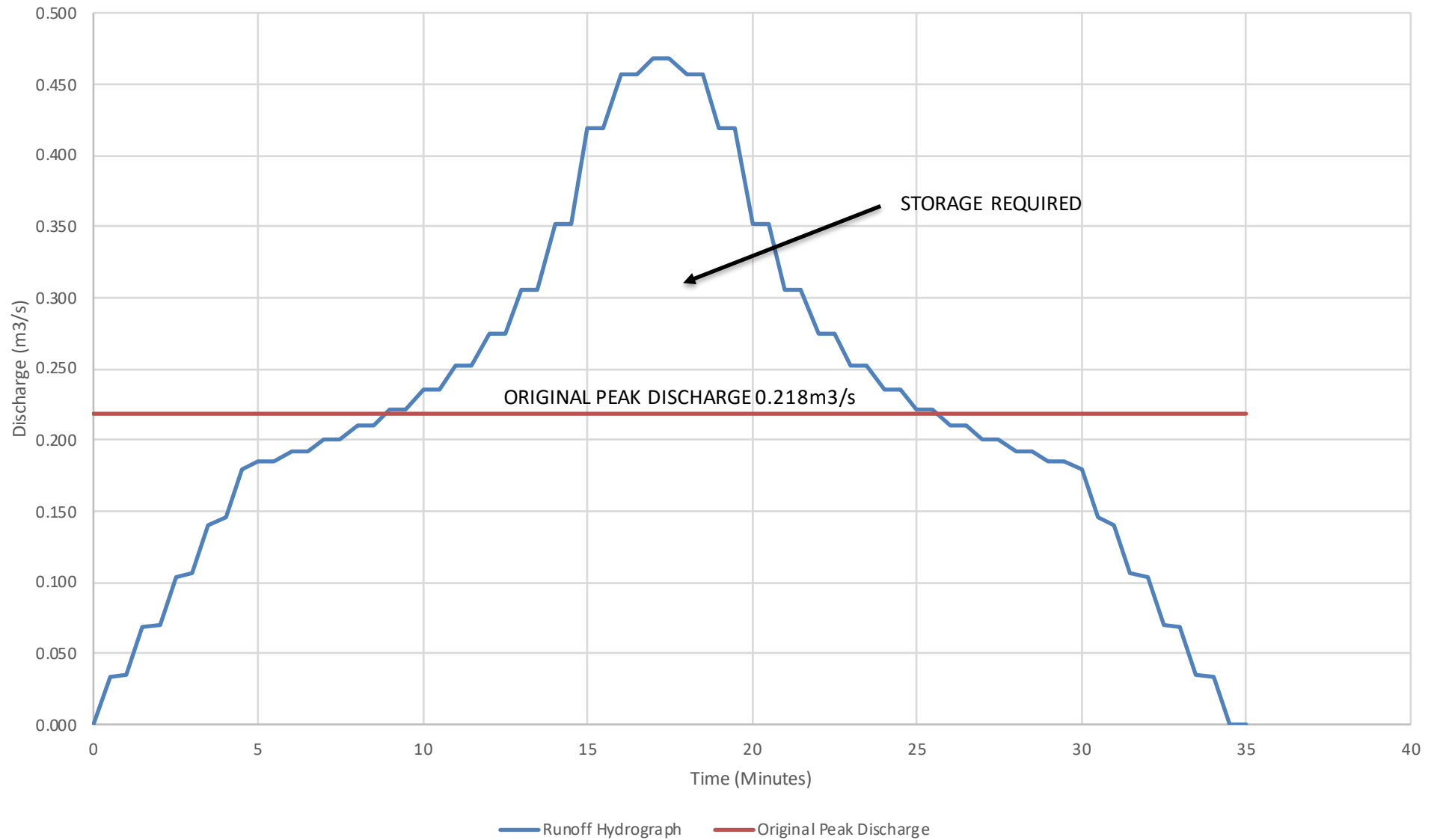
Case 3 - 60-minute duration, 1 in 10-year

Time	Rainfall Intensity	Area m ² = C =	Area 1 1804 0.987 Runoff (m ³ /s)	Area 2 1804 0.987 Runoff (m ³ /s)	Area 3 1804 0.987 Runoff (m ³ /s)	Area 4 1804 0.987 Runoff (m ³ /s)	Area 5 1804 0.987 Runoff (m ³ /s)	Overall Runoff Hydrograph (m ³ /s)	Original Peak Discharge (m ³ /s)	Excess Discharge (m ³ /s)	Excess Volume in Time Period (m ³)
(min)	(mm/hr)										
0	0		0.000	0.000	0.000	0.000	0.000	0.000	0.218	0.000	0.0
0.5	50		0.025	0.000	0.000	0.000	0.000	0.025	0.218	0.000	0.0
1	51		0.025	0.000	0.000	0.000	0.000	0.025	0.218	0.000	0.0
1.5	51		0.025	0.025	0.000	0.000	0.000	0.050	0.218	0.000	0.0
2	52		0.026	0.025	0.000	0.000	0.000	0.051	0.218	0.000	0.0
2.5	52		0.026	0.025	0.025	0.000	0.000	0.076	0.218	0.000	0.0
3	53		0.026	0.026	0.025	0.000	0.000	0.077	0.218	0.000	0.0
3.5	53		0.026	0.026	0.025	0.025	0.000	0.102	0.218	0.000	0.0
4	53		0.026	0.026	0.026	0.025	0.000	0.103	0.218	0.000	0.0
4.5	53		0.026	0.026	0.026	0.025	0.025	0.128	0.218	0.000	0.0
5	54		0.027	0.026	0.026	0.025	0.025	0.134	0.218	0.000	0.0
5.5	54		0.027	0.026	0.026	0.026	0.025	0.130	0.218	0.000	0.0
6	55		0.027	0.027	0.026	0.026	0.026	0.132	0.218	0.000	0.0
6.5	55		0.027	0.027	0.026	0.026	0.026	0.132	0.218	0.000	0.0
7	56		0.028	0.027	0.027	0.026	0.026	0.134	0.218	0.000	0.0
7.5	56		0.028	0.027	0.027	0.026	0.026	0.134	0.218	0.000	0.0
8	57		0.028	0.028	0.027	0.027	0.026	0.136	0.218	0.000	0.0
8.5	57		0.028	0.028	0.027	0.027	0.026	0.136	0.218	0.000	0.0
9	58		0.029	0.028	0.028	0.027	0.027	0.139	0.218	0.000	0.0
9.5	58		0.029	0.028	0.028	0.027	0.027	0.139	0.218	0.000	0.0
10	60		0.030	0.029	0.028	0.028	0.027	0.141	0.218	0.000	0.0
10.5	60		0.030	0.029	0.028	0.028	0.027	0.141	0.218	0.000	0.0
11	61		0.030	0.030	0.029	0.028	0.028	0.144	0.218	0.000	0.0
11.5	61		0.030	0.030	0.029	0.028	0.028	0.144	0.218	0.000	0.0
12	62		0.031	0.030	0.030	0.029	0.028	0.147	0.218	0.000	0.0
12.5	62		0.031	0.030	0.030	0.029	0.028	0.147	0.218	0.000	0.0
13	63		0.032	0.031	0.030	0.030	0.029	0.151	0.218	0.000	0.0
13.5	64		0.032	0.031	0.030	0.030	0.029	0.151	0.218	0.000	0.0
14	66		0.033	0.032	0.031	0.030	0.030	0.155	0.218	0.000	0.0
14.5	66		0.033	0.032	0.031	0.030	0.030	0.155	0.218	0.000	0.0
15	68		0.034	0.033	0.032	0.031	0.030	0.159	0.218	0.000	0.0
15.5	68		0.034	0.033	0.032	0.031	0.030	0.159	0.218	0.000	0.0
16	70		0.035	0.034	0.033	0.032	0.031	0.163	0.218	0.000	0.0
16.5	70		0.035	0.034	0.033	0.032	0.031	0.163	0.218	0.000	0.0
17	72		0.036	0.035	0.034	0.033	0.032	0.168	0.218	0.000	0.0
17.5	72		0.036	0.035	0.034	0.033	0.032	0.168	0.218	0.000	0.0
18	74		0.037	0.036	0.035	0.034	0.033	0.173	0.218	0.000	0.0
18.5	74		0.037	0.036	0.035	0.034	0.033	0.173	0.218	0.000	0.0
19	77		0.038	0.037	0.036	0.035	0.034	0.179	0.218	0.000	0.0
19.5	77		0.038	0.037	0.036	0.035	0.034	0.179	0.218	0.000	0.0
20	80		0.040	0.038	0.037	0.036	0.035	0.185	0.218	0.000	0.0
20.5	80		0.040	0.038	0.037	0.036	0.035	0.185	0.218	0.000	0.0
21	84		0.042	0.040	0.038	0.037	0.036	0.191	0.218	0.000	0.0
21.5	84		0.042	0.040	0.038	0.037	0.036	0.191	0.218	0.000	0.0
22	89		0.044	0.042	0.040	0.038	0.037	0.200	0.218	0.000	0.0
22.5	89		0.044	0.042	0.040	0.038	0.037	0.200	0.218	0.000	0.0
23	94		0.047	0.044	0.042	0.040	0.038	0.210	0.218	0.000	0.0
23.5	94		0.047	0.044	0.042	0.040	0.038	0.210	0.218	0.000	0.0
24	100		0.049	0.047	0.044	0.042	0.040	0.221	0.218	0.003	0.1
24.5	100		0.049	0.047	0.044	0.042	0.040	0.221	0.218	0.003	0.1
25	108		0.053	0.049	0.047	0.044	0.042	0.235	0.218	0.017	0.5
25.5	108		0.053	0.049	0.047	0.044	0.042	0.235	0.218	0.017	0.5
26	119		0.059	0.053	0.049	0.047	0.044	0.252	0.218	0.034	1.0
26.5	119		0.059	0.053	0.049	0.047	0.044	0.252	0.218	0.034	1.0
27	133		0.066	0.059	0.053	0.049	0.047	0.274	0.218	0.056	1.7
27.5	133		0.066	0.059	0.053	0.049	0.047	0.274	0.218	0.056	1.7
28	156		0.077	0.066	0.059	0.053	0.049	0.305	0.218	0.086	2.6
28.5	156		0.077	0.066	0.059	0.053	0.049	0.305	0.218	0.086	2.6
29	194		0.096	0.077	0.066	0.059	0.053	0.351	0.218	0.133	4.0
29.5	194		0.096	0.077	0.066	0.059	0.053	0.351	0.218	0.133	4.0
30	246		0.122	0.096	0.077	0.066	0.059	0.420	0.218	0.201	6.0
30.5	246		0.122	0.096	0.077	0.066	0.059	0.420	0.218	0.201	6.0
31	194		0.096	0.122	0.096	0.077	0.066	0.457	0.218	0.238	7.1
31.5	194		0.096	0.122	0.096	0.077	0.066	0.457	0.218	0.238	7.1
32	156		0.077	0.096	0.122	0.096	0.077	0.468	0.218	0.250	7.5
32.5	156		0.077	0.096	0.122	0.096	0.077	0.468	0.218	0.250	7.5
33	133		0.066	0.077	0.096	0.122	0.096	0.457	0.218	0.238	7.1
33.5	133		0.066	0.077	0.096	0.122	0.096	0.457	0.218	0.238	7.1
34	119		0.059	0.066	0.077	0.096	0.122	0.420	0.218	0.201	6.0
34.5	119		0.059	0.066	0.077	0.096	0.122	0.420	0.218	0.201	6.0
35	108		0.053	0.059	0.066	0.077	0.096	0.351	0.218	0.133	4.0
35.5	108		0.053	0.059	0.066	0.077	0.096	0.351	0.218	0.133	4.0
36	100		0.049	0.053	0.059	0.066	0.077	0.305	0.218	0.086	2.6
36.5	100		0.049	0.053	0.059	0.066	0.077	0.305	0.218	0.086	2.6
37	94		0.047	0.049	0.053	0.059	0.066	0.274	0.218	0.056	1.7
37.5	94		0.047	0.049	0.053	0.059	0.066	0.274	0.218	0.056	1.7
38	89		0.044	0.047	0.049	0.053	0.059	0.252	0.218	0.034	1.0
38.5	89		0.044	0.047	0.049	0.053	0.059	0.252	0.218	0.034	1.0
39	84		0.042	0.044	0.047	0.049	0.053	0.235	0.218	0.017	0.5
39.5	84		0.042	0.044	0.047	0.049	0.053	0.235	0.218	0.017	0.5
40	80		0.040	0.042	0.044	0.047	0.049	0.221	0.218	0.003	0.1
40.5	80		0.040	0.042	0.044	0.047	0.049	0.221	0.218	0.003	0.1
41	77		0.038	0.040	0.042	0.044	0.047	0.210	0.218	0.000	0.0
41.5	77		0.038	0.040	0.042	0.044	0.047	0.210	0.218	0.000	0.0
42	74		0.037	0.038	0.040	0.042	0.044	0.200	0.218	0.000	0.0
42.5	74		0.037	0.038	0.040	0.042	0.044	0.200	0.218	0.000	0.0
43	72		0.036	0.037	0.038	0.040	0.042	0.191	0.218	0.000	0.0
43.5	72		0.036	0.037	0.038	0.040	0.042	0.191	0.218	0.000	0.0
44	70		0.035	0.036	0.037	0.038	0.040	0.185	0.218	0.000	0.0
44.5	70		0.035	0.036	0.037	0.038	0.040	0.185	0.218	0.000	0.0
45	68		0.034	0.035	0.036	0.037	0.038	0.179	0.218	0.000	0.0
45.5	68		0.034	0.035	0.036	0.037	0.038	0.179	0.218	0.000	0.0
46	66		0.033	0.034	0.035	0.036	0.037	0.173	0.218	0.000	0.0
46.5	66		0.033	0.034	0.035	0.036	0.037	0.173	0.218	0.000	0.0
47	64		0.032	0.033	0.034	0.035	0.036	0.168	0.218	0.000	0.0
47.5	64		0.032	0.033	0.034	0.035	0.036	0.168	0.218	0.000	0.0
48	62		0.031	0.032	0.033	0.034	0.035	0.163	0.218	0.000	0.0
48.5	62		0.031	0.032	0.033	0.034	0.035	0.163	0.218	0.000	0.0
49	61		0.030	0.031	0.032	0.033	0.034	0.159	0.218	0.000	0.0

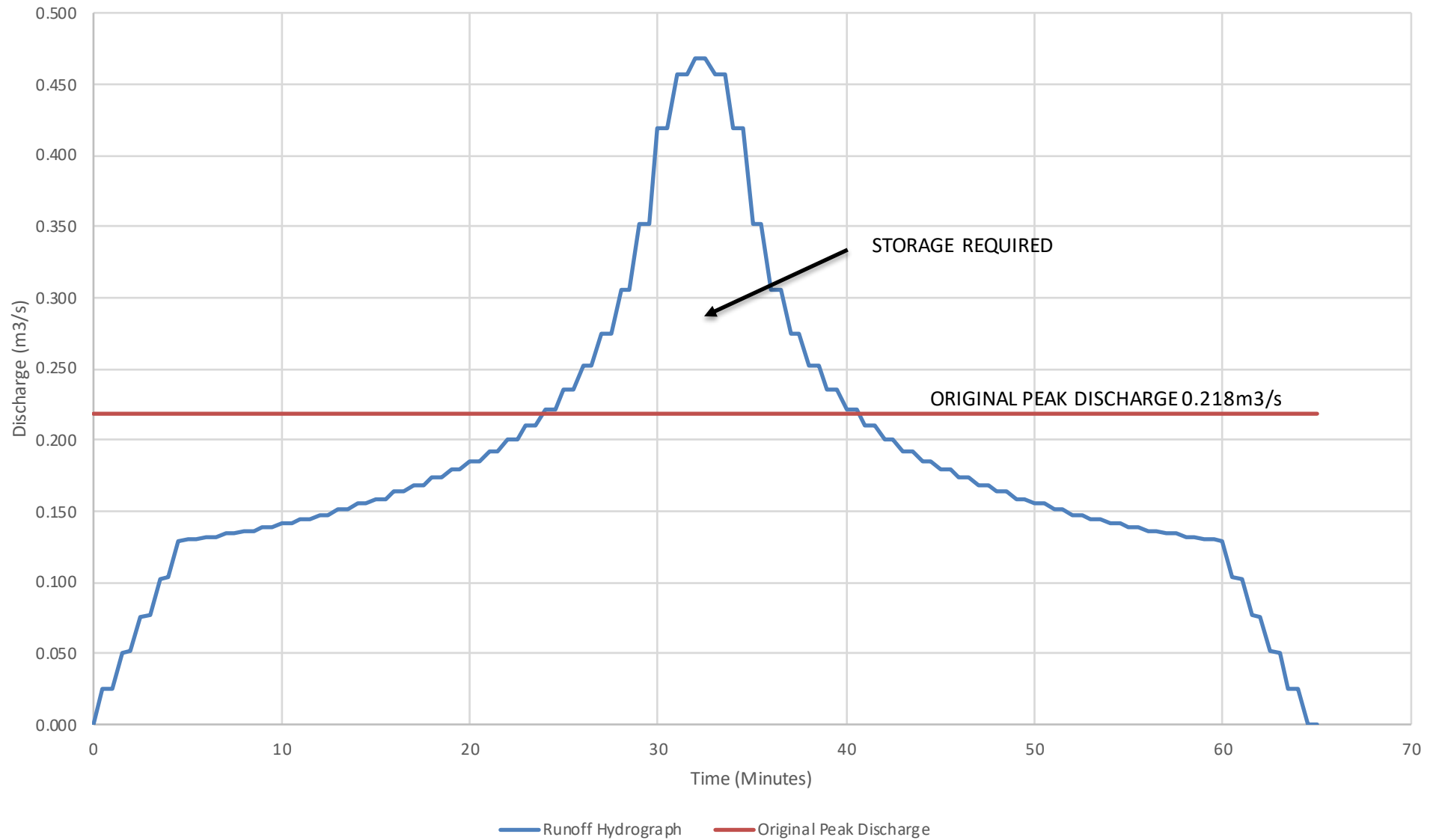
Sites A & B 10-Minute Runoff Hydrograph



Sites A & B 30-Minute Runoff Hydrograph



Sites A & B 60-Minute Runoff Hydrograph



C192 - Hong Kong & Kowloon Timber Merchants Association Yard at Lin Ma Hang Road
Hydrographs and Storage - Sites C, D and E
10-Minute Duration

Hydrographs and Storage Volumes based on full hydrographs using (1 in 10-year) storm profiles from the DSD SDM Corrigendum 1/2024
(Refer to SDM Corrigendum 1/2024, Table 5d - Storm Profile for North District and Figure 6)

Assume Site Areas are equally divided over the time of Concentration, i.e. t_c = 6 minutes, so 1/6 of the Site over each minute

	(m ²)	C Value	Average C
Site Area	15,232		0.810
Paved	11,389	1.00	
Buffer Zone	104	0.20	
Local Catchments	2,649	0.35	

Case 1 - 10-minute duration, 1 in 10-year

Time	Rainfall Intensity	Area m ² = C =	Area 1 2538.7 0.810 Runoff	Area 2 2538.7 0.810 Runoff	Area 3 2538.7 0.810 Runoff	Area 4 2538.7 0.810 Runoff	Area 5 2538.7 0.810 Runoff	Area 6 2538.7 0.810 Runoff	Overall Runoff Hydrograph	Proposed Peak Discharge	Excess Discharge	Excess Volume in Time Period
(min)	(mm/hr)		(m ³ /s)	(m ³ /s)	(m ³ /s)	(m ³ /s)	(m ³ /s)	(m ³ /s)	(m ³ /s)	(m ³ /s)	(m ³ /s)	(m ³)
0	0		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.0
0.5	100		0.057	0.000	0.000	0.000	0.000	0.000	0.057	0.250	0.000	0.0
1	108		0.062	0.000	0.000	0.000	0.000	0.000	0.062	0.250	0.000	0.0
1.5	108		0.062	0.057	0.000	0.000	0.000	0.000	0.119	0.250	0.000	0.0
2	119		0.068	0.062	0.000	0.000	0.000	0.000	0.130	0.250	0.000	0.0
2.5	119		0.068	0.062	0.057	0.000	0.000	0.000	0.187	0.250	0.000	0.0
3	133		0.076	0.068	0.062	0.000	0.000	0.000	0.206	0.250	0.000	0.0
3.5	133		0.076	0.068	0.062	0.057	0.000	0.000	0.263	0.250	0.013	0.4
4	156		0.089	0.076	0.068	0.062	0.000	0.000	0.295	0.250	0.045	1.3
4.5	156		0.089	0.076	0.068	0.062	0.057	0.000	0.352	0.250	0.102	3.1
5	194		0.111	0.089	0.076	0.068	0.062	0.000	0.406	0.250	0.156	4.7
5.5	194		0.111	0.089	0.076	0.068	0.062	0.057	0.463	0.250	0.213	6.4
6	246		0.141	0.111	0.089	0.076	0.068	0.062	0.546	0.250	0.296	8.9
6.5	246		0.141	0.111	0.089	0.076	0.068	0.062	0.546	0.250	0.296	8.9
7	194		0.111	0.141	0.111	0.089	0.076	0.068	0.596	0.250	0.346	10.4
7.5	194		0.111	0.141	0.111	0.089	0.076	0.068	0.596	0.250	0.346	10.4
8	156		0.089	0.111	0.141	0.111	0.089	0.076	0.617	0.250	0.367	11.0
8.5	156		0.089	0.111	0.141	0.111	0.089	0.076	0.617	0.250	0.367	11.0
9	133		0.076	0.089	0.111	0.141	0.111	0.089	0.617	0.250	0.367	11.0
9.5	133		0.076	0.089	0.111	0.141	0.111	0.089	0.617	0.250	0.367	11.0
10	119		0.068	0.076	0.089	0.111	0.141	0.111	0.596	0.250	0.346	10.4
10.5	119		0.068	0.076	0.089	0.111	0.141	0.111	0.596	0.250	0.346	10.4
11	108		0.062	0.068	0.076	0.089	0.111	0.141	0.546	0.250	0.296	8.9
11.5	108		0.062	0.068	0.076	0.089	0.111	0.141	0.546	0.250	0.296	8.9
12	100		0.057	0.062	0.068	0.076	0.089	0.111	0.463	0.250	0.213	6.4
12.5	0		0.000	0.062	0.068	0.076	0.089	0.111	0.406	0.250	0.156	4.7
13	0		0.000	0.057	0.062	0.068	0.076	0.089	0.352	0.250	0.102	3.1
13.5	0		0.000	0.000	0.062	0.068	0.076	0.089	0.295	0.250	0.045	1.3
14	0		0.000	0.000	0.057	0.062	0.068	0.076	0.263	0.250	0.013	0.4
14.5	0		0.000	0.000	0.000	0.062	0.068	0.076	0.206	0.250	0.000	0.0
15	0		0.000	0.000	0.000	0.057	0.062	0.068	0.119	0.250	0.000	0.0
15.5	0		0.000	0.000	0.000	0.000	0.062	0.068	0.062	0.250	0.000	0.0
16	0		0.000	0.000	0.000	0.000	0.057	0.062	0.057	0.250	0.000	0.0
16.5	0		0.000	0.000	0.000	0.000	0.000	0.062	0.000	0.250	0.000	0.0
17	0		0.000	0.000	0.000	0.000	0.000	0.057	0.000	0.250	0.000	0.0
17.5	0		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.0
18	0		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.0

Total Excess Volume for Storage = 152.8 m³

C192 - Hong Kong & Kowloon Timber Merchants Association Yard at Lin Ma Hang Road

Hydrographs and Storage - Sites C, D and E

30-Minute Duration

Hydrographs and Storage Volumes based on full hydrographs using (1 in 10-year) storm profiles from the DSD SDM Corrigendum 1/2024
(Refer to SDM Corrigendum 1/2024, Table 5d - Storm Profile for North District and Figure 6)

Assume Site Areas are equally divided over the time of Concentration, i.e. t_c = 6 minutes, so 1/6 of the Site over each minute

	(m ²)	C Value	Average C
Site Area	15,232		0.810
Paved	11,389	1.00	
Unpaved	104	0.20	
Local Catchments	2,649	0.35	

Case 2 - 30-minute duration, 1 in 10-year

Time	Rainfall Intensity	Area m ² = C =	Area 1 2538.7 0.810 Runoff (m ³ /s)	Area 2 2538.7 0.810 Runoff (m ³ /s)	Area 3 2538.7 0.810 Runoff (m ³ /s)	Area 4 2538.7 0.810 Runoff (m ³ /s)	Area 5 2538.7 0.810 Runoff (m ³ /s)	Area 6 2538.7 0.810 Runoff (m ³ /s)	Overall Runoff Hydrograph (m ³ /s)	Original Peak Discharge (m ³ /s)	Excess Discharge (m ³ /s)	Excess Volume in Time Period (m ³)
(min)	(mm/hr)											
0	0		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.0
0.5	68		0.039	0.000	0.000	0.000	0.000	0.000	0.039	0.250	0.000	0.0
1	70		0.040	0.000	0.000	0.000	0.000	0.000	0.040	0.250	0.000	0.0
1.5	70		0.040	0.039	0.000	0.000	0.000	0.000	0.079	0.250	0.000	0.0
2	72		0.041	0.040	0.000	0.000	0.000	0.000	0.081	0.250	0.000	0.0
2.5	72		0.041	0.040	0.039	0.000	0.000	0.000	0.120	0.250	0.000	0.0
3	74		0.042	0.041	0.040	0.000	0.000	0.000	0.123	0.250	0.000	0.0
3.5	74		0.042	0.041	0.040	0.039	0.000	0.000	0.162	0.250	0.000	0.0
4	77		0.044	0.042	0.041	0.040	0.000	0.000	0.167	0.250	0.000	0.0
4.5	77		0.044	0.042	0.041	0.040	0.039	0.000	0.206	0.250	0.000	0.0
5	80		0.046	0.044	0.042	0.041	0.040	0.000	0.213	0.250	0.000	0.0
5.5	80		0.046	0.044	0.042	0.041	0.040	0.039	0.252	0.250	0.002	0.1
6	84		0.048	0.046	0.044	0.042	0.041	0.040	0.261	0.250	0.011	0.3
6.5	84		0.048	0.046	0.044	0.042	0.041	0.040	0.261	0.250	0.011	0.3
7	89		0.051	0.048	0.046	0.044	0.042	0.041	0.272	0.250	0.022	0.7
7.5	89		0.051	0.048	0.046	0.044	0.042	0.041	0.272	0.250	0.022	0.7
8	94		0.054	0.051	0.048	0.046	0.044	0.042	0.285	0.250	0.035	1.0
8.5	94		0.054	0.051	0.048	0.046	0.044	0.042	0.285	0.250	0.035	1.0
9	100		0.057	0.054	0.051	0.048	0.046	0.044	0.300	0.250	0.050	1.5
9.5	100		0.057	0.054	0.051	0.048	0.046	0.044	0.300	0.250	0.050	1.5
10	108		0.062	0.057	0.054	0.051	0.048	0.046	0.317	0.250	0.067	2.0
10.5	108		0.062	0.057	0.054	0.051	0.048	0.046	0.317	0.250	0.067	2.0
11	119		0.068	0.062	0.057	0.054	0.051	0.048	0.340	0.250	0.090	2.7
11.5	119		0.068	0.062	0.057	0.054	0.051	0.048	0.340	0.250	0.090	2.7
12	133		0.076	0.068	0.062	0.057	0.054	0.051	0.368	0.250	0.118	3.5
12.5	133		0.076	0.068	0.062	0.057	0.054	0.051	0.368	0.250	0.118	3.5
13	156		0.089	0.076	0.068	0.062	0.057	0.054	0.406	0.250	0.156	4.7
13.5	156		0.089	0.076	0.068	0.062	0.057	0.054	0.406	0.250	0.156	4.7
14	194		0.111	0.089	0.076	0.068	0.062	0.057	0.463	0.250	0.213	6.4
14.5	194		0.111	0.089	0.076	0.068	0.062	0.057	0.463	0.250	0.213	6.4
15	246		0.141	0.111	0.089	0.076	0.068	0.062	0.546	0.250	0.296	8.9
15.5	246		0.141	0.111	0.089	0.076	0.068	0.062	0.546	0.250	0.296	8.9
16	194		0.111	0.141	0.111	0.089	0.076	0.068	0.596	0.250	0.346	10.4
16.5	194		0.111	0.141	0.111	0.089	0.076	0.068	0.596	0.250	0.346	10.4
17	156		0.089	0.111	0.141	0.111	0.089	0.076	0.617	0.250	0.367	11.0
17.5	156		0.089	0.111	0.141	0.111	0.089	0.076	0.617	0.250	0.367	11.0
18	133		0.076	0.089	0.111	0.141	0.111	0.089	0.617	0.250	0.367	11.0
18.5	133		0.076	0.089	0.111	0.141	0.111	0.089	0.617	0.250	0.367	11.0
19	119		0.068	0.076	0.089	0.111	0.141	0.111	0.596	0.250	0.346	10.4
19.5	119		0.068	0.076	0.089	0.111	0.141	0.111	0.596	0.250	0.346	10.4
20	108		0.062	0.068	0.076	0.089	0.111	0.141	0.546	0.250	0.296	8.9
20.5	108		0.062	0.068	0.076	0.089	0.111	0.141	0.546	0.250	0.296	8.9
21	100		0.057	0.062	0.068	0.076	0.089	0.111	0.463	0.250	0.213	6.4
21.5	100		0.057	0.062	0.068	0.076	0.089	0.111	0.463	0.250	0.213	6.4
22	94		0.054	0.057	0.062	0.068	0.076	0.089	0.406	0.250	0.156	4.7
22.5	94		0.054	0.057	0.062	0.068	0.076	0.089	0.406	0.250	0.156	4.7
23	89		0.051	0.054	0.057	0.062	0.068	0.076	0.368	0.250	0.118	3.5
23.5	89		0.051	0.054	0.057	0.062	0.068	0.076	0.368	0.250	0.118	3.5
24	84		0.048	0.051	0.054	0.057	0.062	0.068	0.340	0.250	0.090	2.7
24.5	84		0.048	0.051	0.054	0.057	0.062	0.068	0.340	0.250	0.090	2.7
25	80		0.046	0.048	0.051	0.054	0.057	0.062	0.317	0.250	0.067	2.0
25.5	80		0.046	0.048	0.051	0.054	0.057	0.062	0.317	0.250	0.067	2.0
26	77		0.044	0.046	0.048	0.051	0.054	0.057	0.300	0.250	0.050	1.5
26.5	77		0.044	0.046	0.048	0.051	0.054	0.057	0.300	0.250	0.050	1.5
27	74		0.042	0.044	0.046	0.048	0.051	0.054	0.285	0.250	0.035	1.0
27.5	74		0.042	0.044	0.046	0.048	0.051	0.054	0.285	0.250	0.035	1.0
28	72		0.041	0.042	0.044	0.046	0.048	0.051	0.272	0.250	0.022	0.7
28.5	72		0.041	0.042	0.044	0.046	0.048	0.051	0.272	0.250	0.022	0.7
29	70		0.040	0.041	0.042	0.044	0.046	0.048	0.261	0.250	0.011	0.3
29.5	70		0.040	0.041	0.042	0.044	0.046	0.048	0.261	0.250	0.011	0.3
30	68		0.039	0.040	0.041	0.042	0.044	0.046	0.252	0.250	0.002	0.1
30.5	0		0.000	0.040	0.041	0.042	0.044	0.046	0.213	0.250	0.000	0.0
31	0		0.000	0.039	0.040	0.041	0.042	0.044	0.206	0.250	0.000	0.0
31.5	0		0.000	0.000	0.040	0.041	0.042	0.044	0.167	0.250	0.000	0.0
32	0		0.000	0.000	0.039	0.040	0.041	0.042	0.162	0.250	0.000	0.0
32.5	0		0.000	0.000	0.000	0.040	0.041	0.042	0.123	0.250	0.000	0.0
33	0		0.000	0.000	0.000	0.039	0.040	0.041	0.120	0.250	0.000	0.0
33.5	0		0.000	0.000	0.000	0.000	0.040	0.041	0.081	0.250	0.000	0.0
34	0		0.000	0.000	0.000	0.000	0.039	0.040	0.079	0.250	0.000	0.0
34.5	0		0.000	0.000	0.000	0.000	0.000	0.040	0.040	0.250	0.000	0.0
35	0		0.000	0.000	0.000	0.000	0.000	0.039	0.039	0.250	0.000	0.0
35.5	0		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.0
36	0		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.0

Total Excess Volume for Storage = 212.5 m³

C192 - Hong Kong & Kowloon Timber Merchants Association Yard at Lin Ma Hang Road
Hydrographs and Storage - Sites C, D and E
60-Minute Duration

Hydrographs and Storage Volumes based on full hydrographs using (1 in 10-year) storm profiles from the DSD SDM Compendium 1/2024
(Refer to SDM Compendium 1/2024, Table 5d - Storm Profile for North District and Figure 6)

Assume Site Areas are equally divided over the time of Concentration, i.e. $t_c = 6$ minutes, so 1/6 of the Site over each minute

	(m^2)	C Value	Average C
Site Area	15,232		0.810
Paved	11,389	1.00	
Unpaved	104	0.20	
Local Catchm	2,649	0.35	

Case 3 - 60-minute duration, 1 in 10-year

Time	Rainfall Intensity	Area m^2 = C ×	Area 1 2538.7 0.810	Area 2 2538.7 0.810	Area 3 2538.7 0.810	Area 4 2538.7 0.810	Area 5 2538.7 0.810	Area 6 2538.7 0.810	Overall Hydrograph	Original Peak Discharge	Excess Discharge	Excess Volume in Time Period
(min)	(mm/hr)		Runoff (m^3/s)	Runoff (m^3/s)	Runoff (m^3/s)	Runoff (m^3/s)	Runoff (m^3/s)	Runoff (m^3/s)	(m^3/s)	(m^3/s)	(m^3/s)	(m^3)
0	0		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.0
0.5	50		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.0
1	51		0.029	0.000	0.000	0.000	0.000	0.000	0.029	0.250	0.000	0.0
1.5	51		0.029	0.029	0.000	0.000	0.000	0.000	0.058	0.250	0.000	0.0
2	52		0.030	0.029	0.000	0.000	0.000	0.000	0.059	0.250	0.000	0.0
2.5	52		0.030	0.029	0.000	0.000	0.000	0.000	0.087	0.250	0.000	0.0
3	53		0.030	0.030	0.029	0.000	0.000	0.000	0.089	0.250	0.000	0.0
3.5	53		0.030	0.030	0.029	0.029	0.000	0.000	0.118	0.250	0.000	0.0
4	53		0.030	0.030	0.030	0.029	0.000	0.000	0.119	0.250	0.000	0.0
4.5	53		0.030	0.030	0.030	0.029	0.000	0.000	0.148	0.250	0.000	0.0
5	54		0.031	0.030	0.030	0.030	0.029	0.000	0.150	0.250	0.000	0.0
5.5	54		0.031	0.030	0.030	0.030	0.029	0.029	0.179	0.250	0.000	0.0
6	55		0.031	0.031	0.030	0.030	0.030	0.029	0.182	0.250	0.000	0.0
6.5	56		0.031	0.031	0.030	0.030	0.030	0.029	0.182	0.250	0.000	0.0
7	56		0.032	0.031	0.031	0.030	0.030	0.030	0.185	0.250	0.000	0.0
7.5	56		0.032	0.031	0.031	0.030	0.030	0.030	0.185	0.250	0.000	0.0
8	57		0.033	0.032	0.031	0.031	0.030	0.030	0.187	0.250	0.000	0.0
8.5	57		0.033	0.032	0.031	0.031	0.030	0.030	0.187	0.250	0.000	0.0
9	58		0.033	0.033	0.032	0.031	0.031	0.030	0.190	0.250	0.000	0.0
9.5	58		0.033	0.033	0.032	0.031	0.031	0.030	0.190	0.250	0.000	0.0
10	60		0.034	0.033	0.033	0.032	0.031	0.031	0.194	0.250	0.000	0.0
10.5	60		0.034	0.033	0.033	0.032	0.031	0.031	0.194	0.250	0.000	0.0
11	61		0.035	0.034	0.033	0.033	0.032	0.031	0.198	0.250	0.000	0.0
11.5	61		0.035	0.034	0.033	0.033	0.032	0.031	0.198	0.250	0.000	0.0
12	62		0.035	0.035	0.034	0.033	0.033	0.032	0.202	0.250	0.000	0.0
12.5	62		0.035	0.035	0.034	0.033	0.033	0.032	0.202	0.250	0.000	0.0
13	64		0.037	0.035	0.035	0.034	0.033	0.033	0.207	0.250	0.000	0.0
13.5	64		0.037	0.035	0.035	0.034	0.033	0.033	0.207	0.250	0.000	0.0
14	66		0.038	0.037	0.035	0.035	0.034	0.033	0.212	0.250	0.000	0.0
14.5	66		0.038	0.037	0.035	0.035	0.034	0.033	0.212	0.250	0.000	0.0
15	68		0.039	0.038	0.037	0.035	0.035	0.034	0.218	0.250	0.000	0.0
15.5	68		0.039	0.038	0.037	0.035	0.035	0.034	0.218	0.250	0.000	0.0
16	70		0.040	0.039	0.038	0.037	0.035	0.035	0.224	0.250	0.000	0.0
16.5	70		0.040	0.039	0.038	0.037	0.035	0.035	0.224	0.250	0.000	0.0
17	72		0.041	0.040	0.039	0.038	0.037	0.035	0.230	0.250	0.000	0.0
17.5	72		0.041	0.040	0.039	0.038	0.037	0.035	0.230	0.250	0.000	0.0
18	74		0.042	0.041	0.040	0.039	0.038	0.037	0.237	0.250	0.000	0.0
18.5	74		0.042	0.041	0.040	0.039	0.038	0.037	0.237	0.250	0.000	0.0
19	77		0.044	0.042	0.041	0.040	0.039	0.038	0.244	0.250	0.000	0.0
19.5	77		0.044	0.042	0.041	0.040	0.039	0.038	0.244	0.250	0.000	0.0
20	80		0.046	0.044	0.042	0.041	0.040	0.039	0.252	0.250	0.002	0.1
20.5	80		0.046	0.044	0.042	0.041	0.040	0.039	0.252	0.250	0.002	0.1
21	84		0.048	0.046	0.044	0.042	0.041	0.040	0.261	0.250	0.011	0.3
21.5	84		0.048	0.046	0.044	0.042	0.041	0.040	0.261	0.250	0.011	0.3
22	89		0.051	0.048	0.046	0.044	0.042	0.041	0.272	0.250	0.022	0.7
22.5	89		0.051	0.048	0.046	0.044	0.042	0.041	0.272	0.250	0.022	0.7
23	94		0.054	0.051	0.048	0.046	0.044	0.042	0.285	0.250	0.035	1.0
23.5	94		0.054	0.051	0.048	0.046	0.044	0.042	0.285	0.250	0.035	1.0
24	100		0.057	0.054	0.048	0.046	0.044	0.042	0.300	0.250	0.050	1.5
24.5	100		0.057	0.054	0.048	0.046	0.044	0.042	0.300	0.250	0.050	1.5
25	108		0.062	0.057	0.054	0.051	0.048	0.046	0.317	0.250	0.067	2.0
25.5	108		0.062	0.057	0.054	0.051	0.048	0.046	0.317	0.250	0.067	2.0
26	119		0.068	0.062	0.057	0.054	0.051	0.048	0.340	0.250	0.090	2.7
26.5	119		0.068	0.062	0.057	0.054	0.051	0.048	0.340	0.250	0.090	2.7
27	133		0.076	0.068	0.062	0.057	0.054	0.051	0.368	0.250	0.118	3.5
27.5	133		0.076	0.068	0.062	0.057	0.054	0.051	0.368	0.250	0.118	3.5
28	156		0.089	0.076	0.068	0.062	0.057	0.054	0.406	0.250	0.156	4.7
28.5	156		0.089	0.076	0.068	0.062	0.057	0.054	0.406	0.250	0.156	4.7
29	194		0.111	0.089	0.076	0.068	0.062	0.057	0.463	0.250	0.213	6.4
29.5	194		0.111	0.089	0.076	0.068	0.062	0.057	0.463	0.250	0.213	6.4
30	246		0.141	0.111	0.089	0.076	0.068	0.062	0.546	0.250	0.296	8.9
30.5	246		0.141	0.111	0.089	0.076	0.068	0.062	0.546	0.250	0.296	8.9
31	194		0.111	0.141	0.111	0.089	0.076	0.068	0.596	0.250	0.346	10.4
31.5	194		0.111	0.141	0.111	0.089	0.076	0.068	0.596	0.250	0.346	10.4
32	156		0.089	0.111	0.141	0.111	0.089	0.076	0.617	0.250	0.367	11.0
32.5	156		0.089	0.111	0.141	0.111	0.089	0.076	0.617	0.250	0.367	11.0
33	133		0.076	0.089	0.111	0.141	0.111	0.089	0.617	0.250	0.367	11.0
33.5	133		0.076	0.089	0.111	0.141	0.111	0.089	0.617	0.250	0.367	11.0
34	119		0.068	0.076	0.089	0.111	0.141	0.111	0.596	0.250	0.346	10.4
34.5	119		0.068	0.076	0.089	0.111	0.141	0.111	0.596	0.250	0.346	10.4
35	108		0.062	0.068	0.076	0.089	0.111	0.141	0.546	0.250	0.296	8.9
35.5	108		0.062	0.068	0.076	0.089	0.111	0.141	0.546	0.250	0.296	8.9
36	100		0.057	0.062	0.068	0.076	0.089	0.111	0.463	0.250	0.213	6.4
36.5	100		0.057	0.062	0.068	0.076	0.089	0.111	0.463	0.250	0.213	6.4
37	94		0.054	0.057	0.062	0.068	0.076	0.089	0.406	0.250	0.156	4.7
37.5	94		0.054	0.057	0.062	0.068	0.076	0.089	0.406	0.250	0.156	4.7
38	89		0.051	0.054	0.057	0.062	0.068	0.076	0.368	0.250	0.118	3.5
38.5	89		0.051	0.054	0.057	0.062	0.068	0.076	0.368	0.250	0.118	3.5
39	84		0.048	0.051	0.054	0.057	0.062	0.068	0.340	0.250	0.090	2.7
39.5	84		0.048	0.051	0.054	0.057	0.062	0.068	0.340	0.250	0.090	2.7
40	80		0.046	0.048	0.051	0.054	0.057	0.062	0.317	0.250	0.067	2.0
40.5	80		0.046	0.048	0.051	0.054	0.057	0.062	0.317	0.250	0.067	2.0
41	77		0.044	0.046	0.048	0.051	0.054	0.057	0.300	0.250	0.050	1.5
41.5	77		0.044	0.046	0.048	0.051	0.054	0.057	0.300	0.250	0.050	1.5
42	74		0.042	0.044	0.046	0.048	0.051	0.054	0.285	0.250	0.035	1.0
42.5	74		0.042	0.044	0.046	0.048	0.051	0.054	0.285	0.250	0.035	1.0
43	72		0.041	0.042	0.044	0.046	0.048	0.051	0.272	0.250	0.022	0.7
43.5	72		0.041	0.042	0.044	0.046	0.048	0.051	0.272	0.250	0.022	0.7
44	70		0.040	0.041	0.042	0.044	0.046	0.048	0.261	0.250	0.011	0.3
44.5	70		0.040	0.041	0.042	0.044	0.046	0.048	0.261	0.250	0.011	0.3
45	68		0.039	0.040	0.							

C192 - Hong Kong & Kowloon Timber Merchants Association Yard at Lin Ma Hang Road
Hydrographs and Storage - Sites C, D and E
30 Minute Duration

Hydrographs and Storage Volumes based on full hydrographs using (1 in 10-year) storm profiles from the OED SCM Compendium 1/2024
(Refer to SCM Compendium 1/2024, Table 60 - Storm Profile for North District and Figure 6)

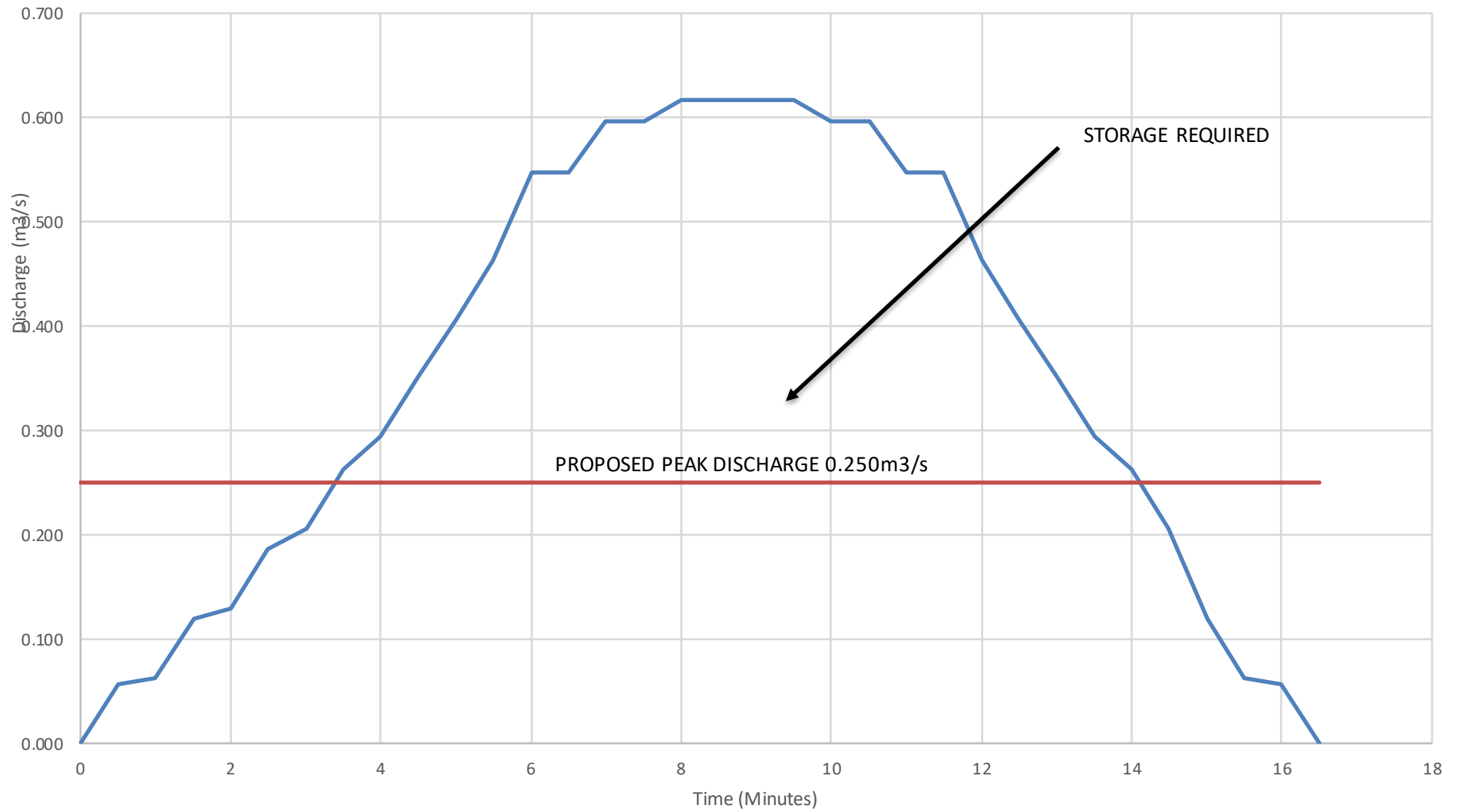
Assume Site Areas are equally divided over the time of Concentration, i.e. $t_c = 6$ minutes, so 1/6 of the Site over each minute

Site	C Value	Average C
Site Area	15,232	0.810
Paved	11,389	1.00
Unpaved	104	0.20
Local Catchment	2,649	0.35

Table 3 - 30 minute Duration, 1 in 10 year

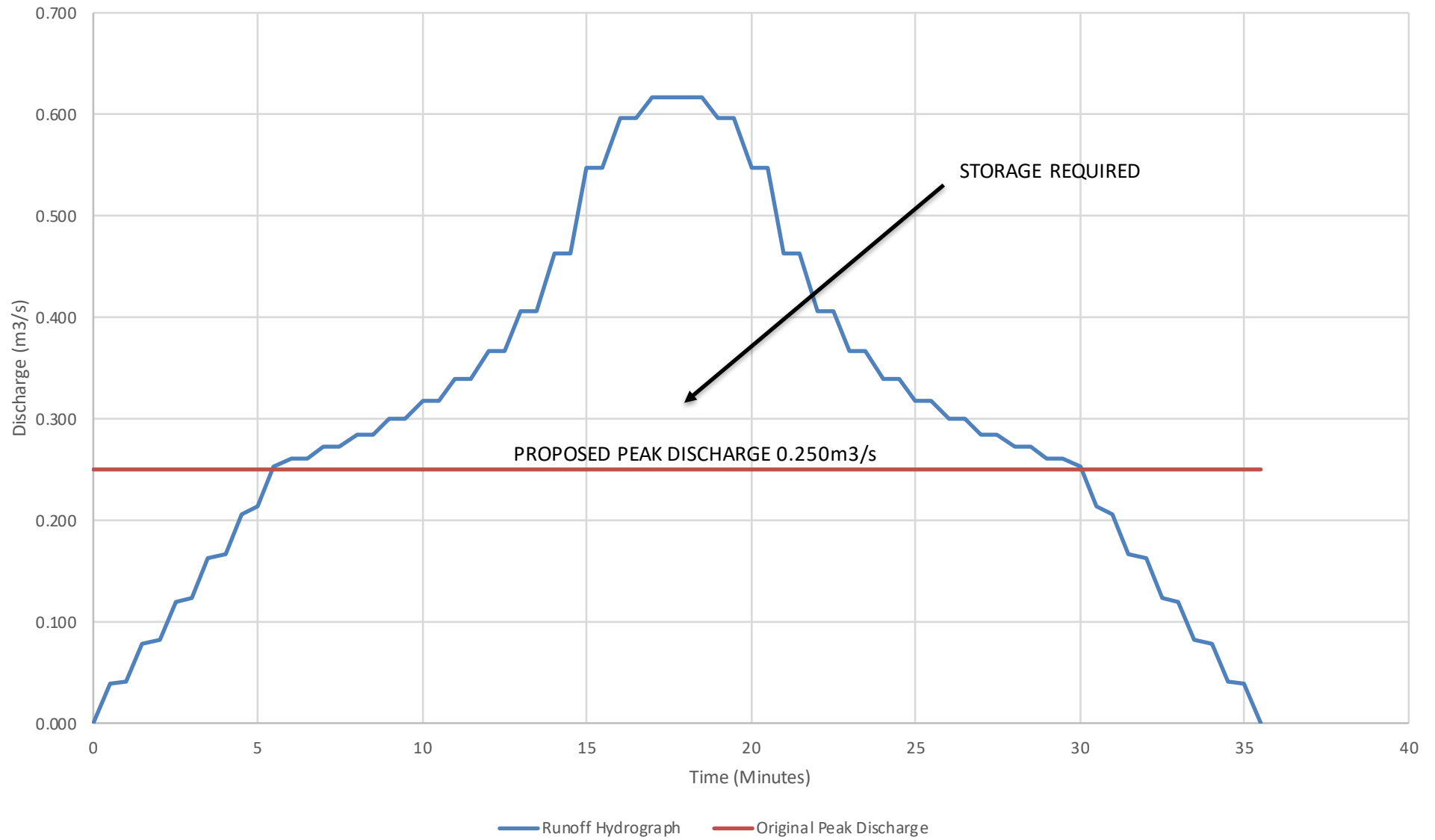
Time	Rainfall Intensity	Area = C =	Area 1 2538.7 0.810 Runoff	Area 2 2538.7 0.810 Runoff	Area 3 2538.7 0.810 Runoff	Area 4 2538.7 0.810 Runoff	Area 5 2538.7 0.810 Runoff	Area 6 2538.7 0.810 Runoff	Overall Hydrograph	Original Peak Discharge	Excess Discharge	Excess Volume in Time Period
(min)	(mm/hr)		(m³/s)	(m³/s)	(m³/s)	(m³/s)	(m³/s)	(m³/s)	(m³/s)	(m³/s)	(m³/s)	(m³)
0	0	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.00
0.5	42	0	0.024	0.000	0.000	0.000	0.000	0.000	0.024	0.250	0.00	0.0
1	43	0	0.025	0.000	0.000	0.000	0.000	0.000	0.025	0.250	0.00	0.0
1.5	43	0	0.025	0.024	0.000	0.000	0.000	0.000	0.049	0.250	0.00	0.0
2	43	0	0.025	0.025	0.000	0.000	0.000	0.000	0.049	0.250	0.00	0.0
2.5	43	0	0.025	0.025	0.024	0.000	0.000	0.000	0.073	0.250	0.00	0.0
3	44	0	0.025	0.025	0.025	0.000	0.000	0.000	0.098	0.250	0.00	0.0
3.5	44	0	0.025	0.025	0.025	0.024	0.000	0.000	0.123	0.250	0.00	0.0
4	44	0	0.025	0.025	0.025	0.025	0.000	0.000	0.099	0.250	0.00	0.0
4.5	44	0	0.025	0.025	0.025	0.025	0.024	0.000	0.123	0.250	0.00	0.0
5	44	0	0.025	0.025	0.025	0.025	0.025	0.000	0.125	0.250	0.00	0.0
5.5	44	0	0.025	0.025	0.025	0.025	0.025	0.024	0.149	0.250	0.00	0.0
6	45	0	0.026	0.025	0.025	0.025	0.025	0.025	0.150	0.250	0.00	0.0
6.5	45	0	0.026	0.025	0.025	0.025	0.025	0.025	0.150	0.250	0.00	0.0
7	45	0	0.026	0.026	0.025	0.025	0.025	0.025	0.151	0.250	0.00	0.0
7.5	45	0	0.026	0.026	0.026	0.025	0.025	0.025	0.151	0.250	0.00	0.0
8	46	0	0.026	0.026	0.026	0.026	0.025	0.025	0.153	0.250	0.00	0.0
8.5	46	0	0.026	0.026	0.026	0.026	0.025	0.025	0.153	0.250	0.00	0.0
9	46	0	0.026	0.026	0.026	0.026	0.025	0.025	0.154	0.250	0.00	0.0
9.5	46	0	0.026	0.026	0.026	0.026	0.025	0.025	0.154	0.250	0.00	0.0
10	47	0	0.027	0.026	0.026	0.026	0.026	0.025	0.156	0.250	0.00	0.0
10.5	47	0	0.027	0.026	0.026	0.026	0.026	0.025	0.156	0.250	0.00	0.0
11	48	0	0.027	0.027	0.026	0.026	0.026	0.026	0.158	0.250	0.00	0.0
11.5	48	0	0.027	0.027	0.026	0.026	0.026	0.026	0.158	0.250	0.00	0.0
12	48	0	0.027	0.027	0.027	0.026	0.026	0.026	0.160	0.250	0.00	0.0
12.5	48	0	0.027	0.027	0.027	0.026	0.026	0.026	0.160	0.250	0.00	0.0
13	49	0	0.028	0.027	0.027	0.027	0.026	0.026	0.162	0.250	0.00	0.0
13.5	49	0	0.028	0.027	0.027	0.027	0.026	0.026	0.162	0.250	0.00	0.0
14	50	0	0.029	0.028	0.027	0.027	0.027	0.026	0.163	0.250	0.00	0.0
14.5	50	0	0.029	0.028	0.027	0.027	0.027	0.026	0.165	0.250	0.00	0.0
15	50	0	0.029	0.028	0.028	0.027	0.027	0.027	0.167	0.250	0.00	0.0
15.5	50	0	0.029	0.028	0.028	0.027	0.027	0.027	0.167	0.250	0.00	0.0
16	51	0	0.029	0.029	0.028	0.028	0.027	0.027	0.169	0.250	0.00	0.0
16.5	51	0	0.029	0.029	0.029	0.028	0.027	0.027	0.169	0.250	0.00	0.0
17	52	0	0.030	0.029	0.029	0.029	0.028	0.027	0.171	0.250	0.00	0.0
17.5	52	0	0.030	0.029	0.029	0.029	0.028	0.027	0.171	0.250	0.00	0.0
18	53	0	0.030	0.030	0.029	0.029	0.029	0.028	0.174	0.250	0.00	0.0
18.5	53	0	0.030	0.030	0.029	0.029	0.029	0.028	0.174	0.250	0.00	0.0
19	53	0	0.030	0.030	0.030	0.029	0.029	0.029	0.177	0.250	0.00	0.0
19.5	53	0	0.030	0.030	0.030	0.029	0.029	0.029	0.177	0.250	0.00	0.0
20	54	0	0.031	0.030	0.030	0.030	0.029	0.029	0.179	0.250	0.00	0.0
20.5	54	0	0.031	0.030	0.030	0.030	0.029	0.029	0.179	0.250	0.00	0.0
21	55	0	0.031	0.031	0.030	0.030	0.029	0.029	0.182	0.250	0.00	0.0
21.5	55	0	0.031	0.031	0.031	0.030	0.030	0.030	0.185	0.250	0.00	0.0
22	56	0	0.032	0.031	0.031	0.030	0.030	0.030	0.185	0.250	0.00	0.0
22.5	56	0	0.032	0.031	0.031	0.030	0.030	0.030	0.185	0.250	0.00	0.0
23	57	0	0.033	0.032	0.031	0.031	0.030	0.030	0.187	0.250	0.00	0.0
23.5	57	0	0.033	0.032	0.031	0.031	0.030	0.030	0.187	0.250	0.00	0.0
24	58	0	0.033	0.033	0.032	0.031	0.031	0.030	0.190	0.250	0.00	0.0
24.5	58	0	0.033	0.033	0.032	0.031	0.031	0.030	0.190	0.250	0.00	0.0
25	60	0	0.034	0.033	0.033	0.032	0.031	0.031	0.194	0.250	0.00	0.0
25.5	60	0	0.034	0.033	0.033	0.032	0.031	0.031	0.194	0.250	0.00	0.0
26	61	0	0.035	0.034	0.033	0.033	0.032	0.031	0.198	0.250	0.00	0.0
26.5	61	0	0.035	0.034	0.033	0.033	0.032	0.031	0.198	0.250	0.00	0.0
27	62	0	0.035	0.035	0.034	0.033	0.033	0.032	0.202	0.250	0.00	0.0
27.5	62	0	0.035	0.035	0.034	0.033	0.033	0.032	0.202	0.250	0.00	0.0
28	64	0	0.037	0.035	0.035	0.034	0.033	0.033	0.207	0.250	0.00	0.0
28.5	64	0	0.037	0.035	0.035	0.034	0.033	0.033	0.207	0.250	0.00	0.0
29	66	0	0.038	0.037	0.036	0.036	0.034	0.033	0.212	0.250	0.00	0.0
29.5	66	0	0.038	0.037	0.036	0.036	0.034	0.033	0.212	0.250	0.00	0.0
30	68	0	0.039	0.038	0.037	0.037	0.036	0.034	0.218	0.250	0.00	0.0
30.5	68	0	0.039	0.038	0.037	0.036	0.035	0.034	0.218	0.250	0.00	0.0
31	70	0	0.040	0.039	0.038	0.037	0.036	0.035	0.224	0.250	0.00	0.0
31.5	70	0	0.040	0.039	0.038	0.037	0.036	0.035	0.224	0.250	0.00	0.0
32	72	0	0.041	0.040	0.039	0.038	0.037	0.035	0.230	0.250	0.00	0.0
32.5	72	0	0.041	0.040	0.039	0.038	0.037	0.035	0.230	0.250	0.00	0.0
33	74	0	0.042	0.041	0.040	0.039	0.038	0.037	0.237	0.250	0.00	0.0
33.5	74	0	0.042	0.041	0.040	0.039	0.038	0.037	0.237	0.250	0.00	0.0
34	77	0	0.044	0.042	0.041	0.040	0.039	0.038	0.244	0.250	0.00	0.0
34.5	77	0	0.044	0.042	0.041	0.040	0.039	0.038	0.244	0.250	0.00	0.0
35	80	0	0.046	0.044	0.042	0.041	0.040	0.039	0.252	0.250	0.002	0.1
35.5	80	0	0.046	0.044	0.042	0.041	0.040	0.039	0.252	0.250	0.002	0.1
36	84	0	0.048	0.046	0.044	0.042	0.041	0.040	0.261	0.250	0.011	0.3
36.5	84	0	0.048	0.046	0.044	0.042	0.041	0.040	0.261	0.250	0.011	0.3
37	89	0	0.051	0.048	0.046	0.044	0.042	0.041	0.272	0.250	0.022	0.7
37.5	89	0	0.051	0.048	0.046	0.044	0.042	0.041	0.272	0.250	0.022	0.7
38	94	0	0.054	0.051	0.048	0.046	0.044	0.042	0.286	0.250	0.035	1.0
38.5	94	0	0.054	0.051	0.048	0.046	0.044	0.042	0.286	0.250	0.035	1.0
39	100	0	0.057	0.054	0.051	0.048	0.046	0.044	0.300	0.250	0.050	1.5
39.5	100	0	0.057	0.054	0.051	0.048	0.046	0.044	0.300	0.250	0.050	1.5
40	106	0	0.062	0.057	0.054	0.051	0.048	0.046	0.317	0.250	0.067	2.0
40.5	106	0	0.062	0.057	0.054	0.051	0.048	0.046	0.317	0.250	0.067	2.0
41	110	0	0.066	0.062	0.057	0.054	0.051	0.048	0.340	0.250	0.090	2.7
41.5	110	0	0.066	0.062	0.057	0.054	0.051	0.048	0.340	0.250	0.090	2.7
42	123	0	0.076	0.068	0.062	0.057	0.054	0.051	0.368	0.250	0.118	3.5
42.5	123	0	0.076	0.068	0.062	0.057	0.054	0.051	0.368	0.250	0.118	3.5
43	126	0	0.078	0.068	0.062	0.057	0.054	0.051	0.368	0.250	0.118	3.5
43.5	126	0	0.078	0.068	0.062	0.057	0.054	0.051	0.368	0.250	0.118	3.5
44	144	0	0.111	0.089	0.076	0.068	0.062	0.057	0.463	0.250	0.213	6.4
44.5	144	0	0.111	0.089	0.076	0.068	0.062	0.057	0.463	0.250	0.213	6.4
45	146	0	0.141	0.111	0.089	0.076	0.068	0.062	0.546	0.250	0.296	8.9
45.5	146	0	0.141	0.111	0.089	0.076	0.068	0.062	0.546	0.250	0.296	8.9
46	194	0	0.111	0.141	0.111	0.089	0					

Sites C, D & E 10-Minute Runoff Hydrograph

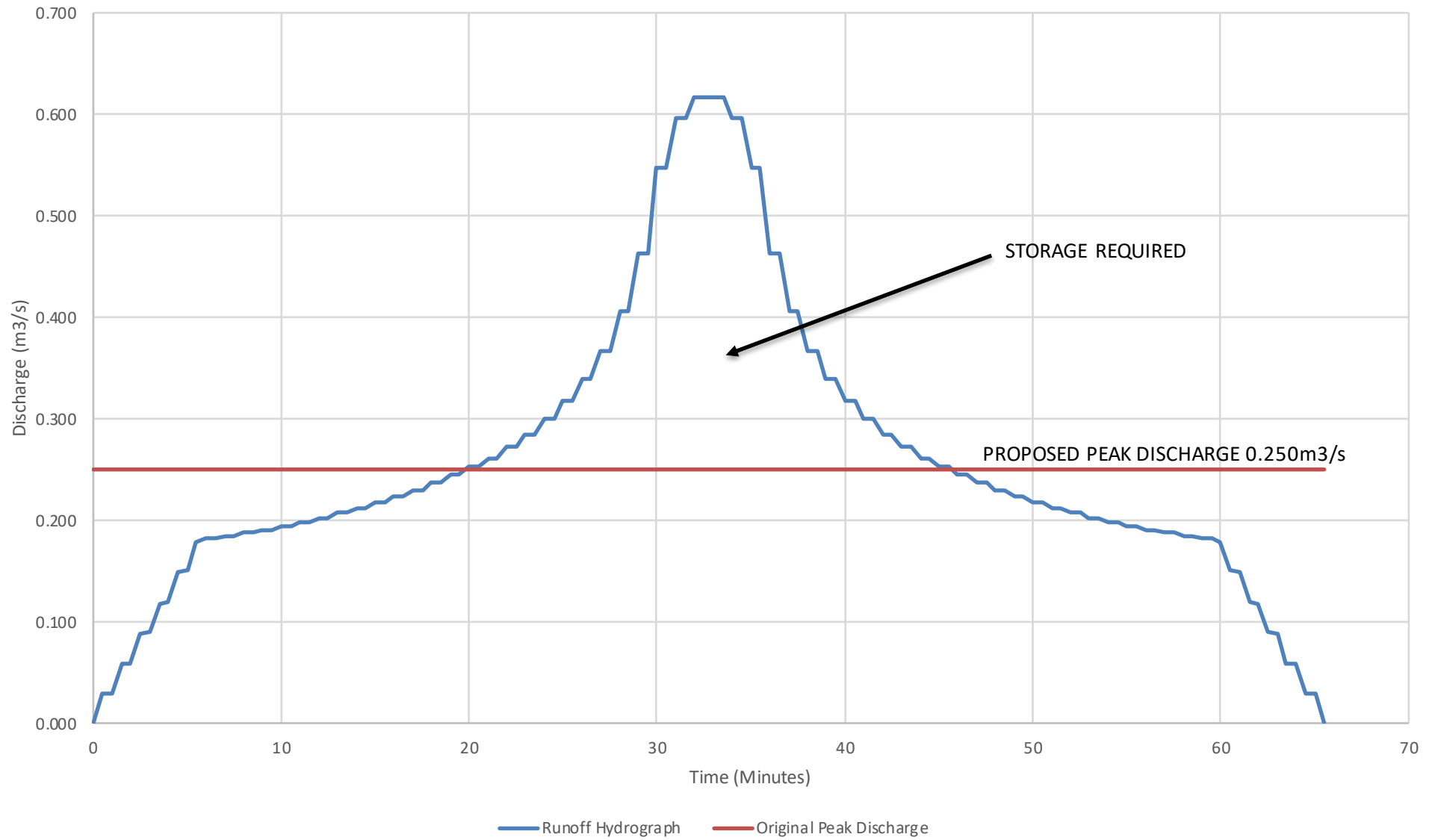


Runoff Hydrograph Original Peak Discharge

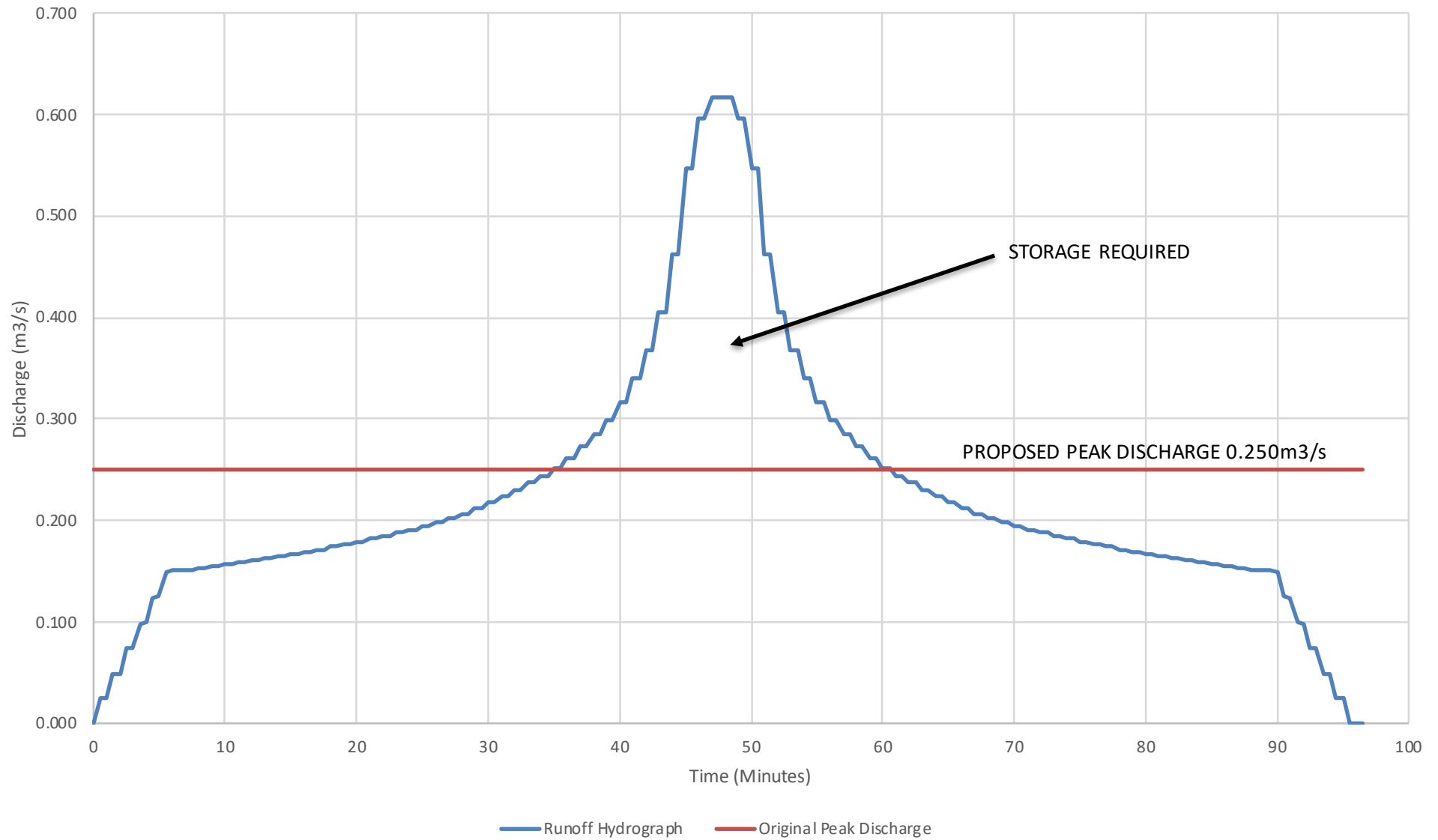
Sites C, D & E 30-Minute Runoff Hydrograph



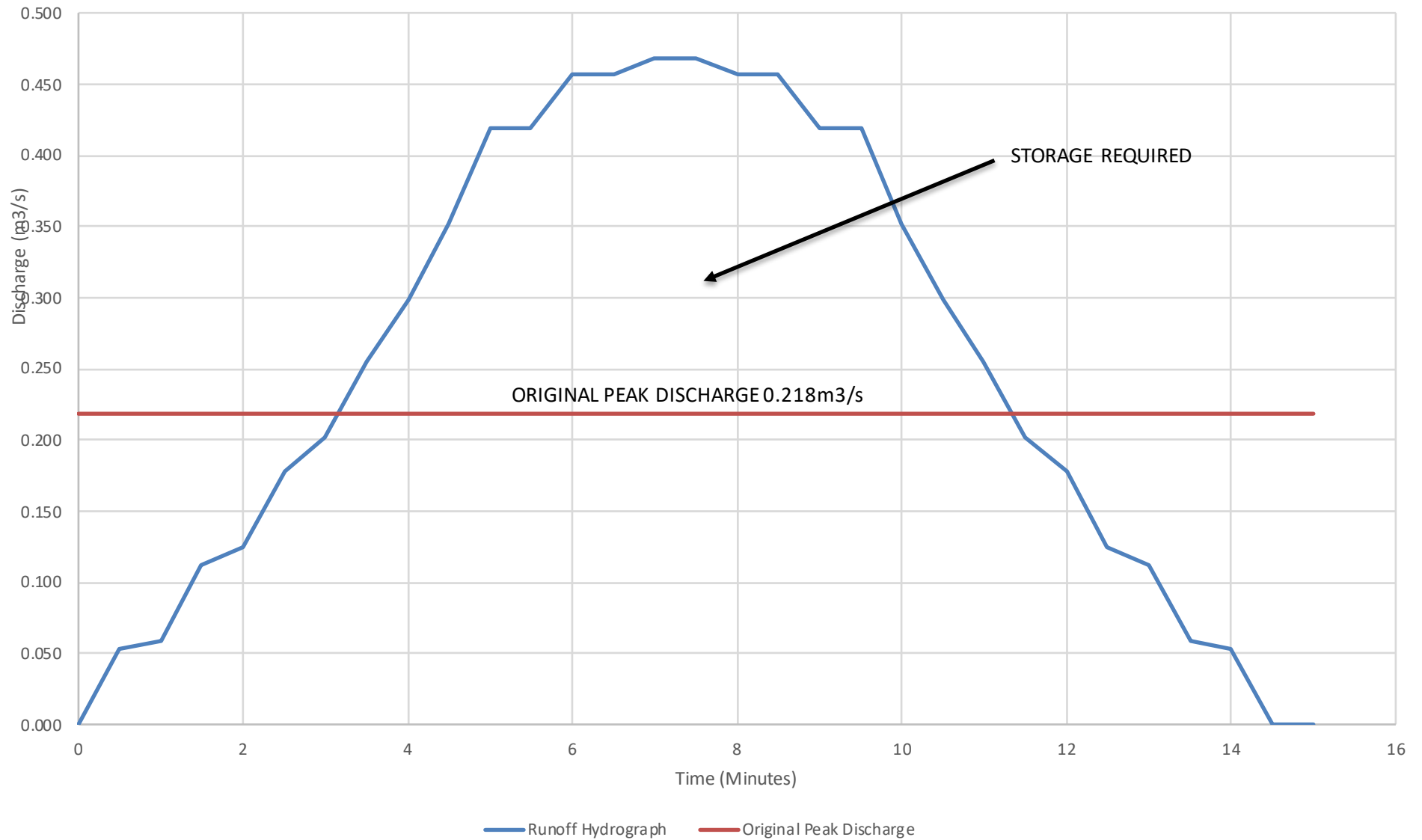
Sites C, D & E 60-Minute Runoff Hydrograph



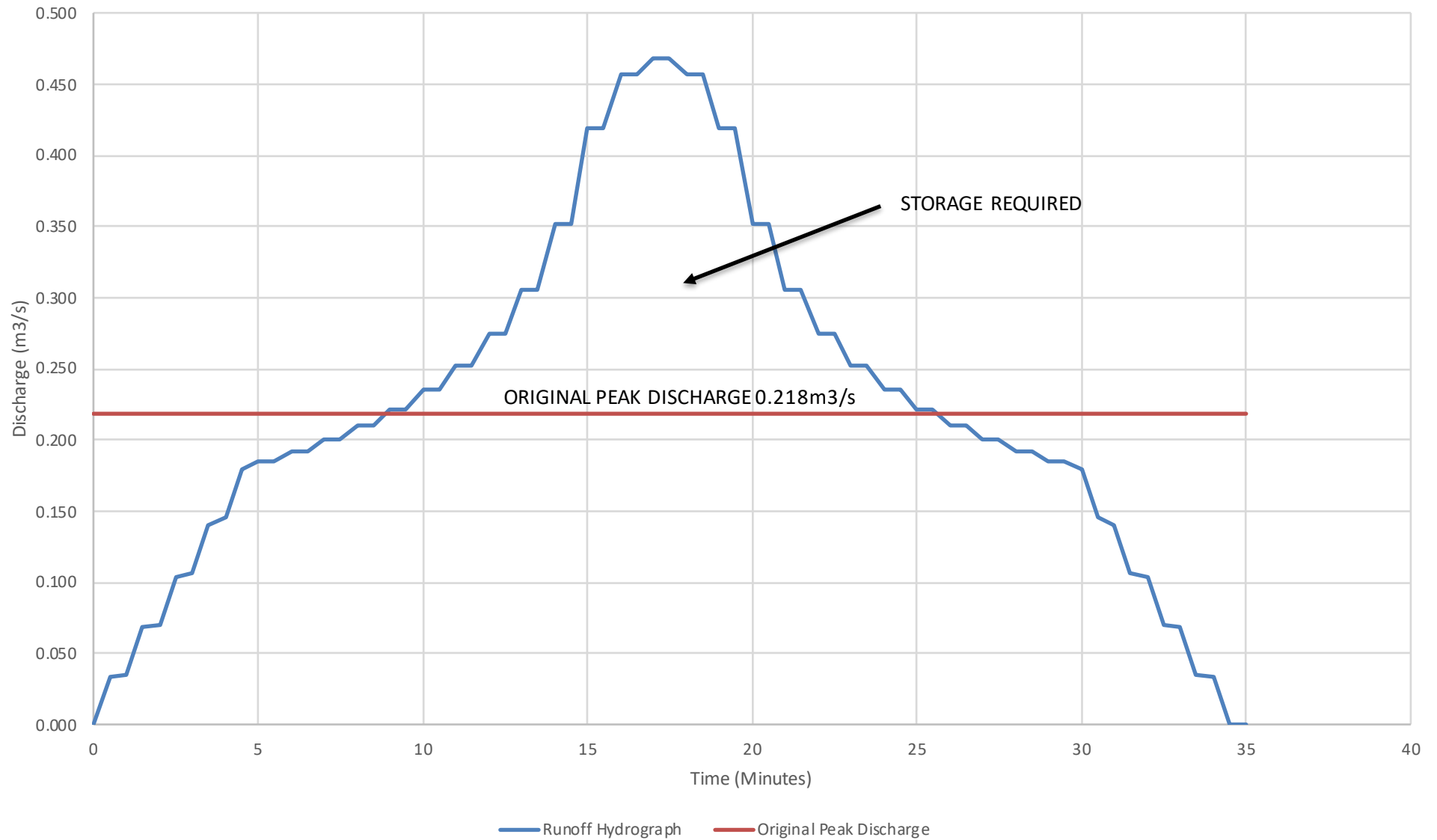
Sites C, D & E 90-Minute Runoff Hydrograph



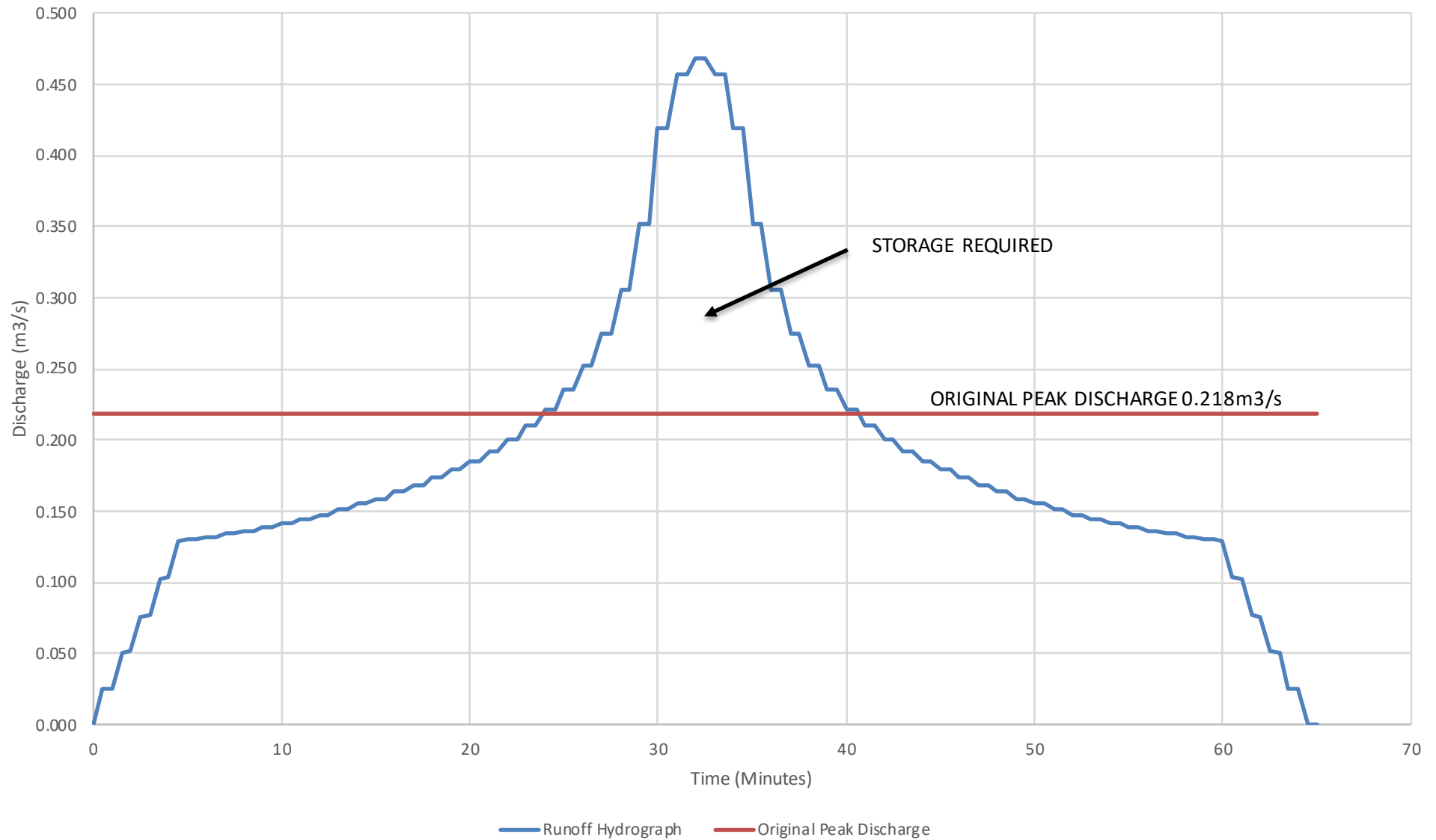
Sites A & B 10-Minute Runoff Hydrograph



Sites A & B 30-Minute Runoff Hydrograph



Sites A & B 60-Minute Runoff Hydrograph



C192 - Hong Kong & Kowloon Timber Merchants Association Yard at Lin Ma Hang Road
Hydrographs and Storage - Sites C, D and E
10-Minute Duration

Hydrographs and Storage Volumes based on full hydrographs using (1 in 10-year) storm profiles from the DSD SDM Corrigendum 1/2024
(Refer to SDM Corrigendum 1/2024, Table 5d - Storm Profile for North District and Figure 6)

Assume Site Areas are equally divided over the time of Concentration, i.e. t_c = 6 minutes, so 1/6 of the Site over each minute

	(m ²)	C Value	Average C
Site Area	15,232		0.810
Paved	11,389	1.00	
Buffer Zone	104	0.20	
Local Catchments	2,649	0.35	

Case 1 - 10-minute duration, 1 in 10-year

Time	Rainfall Intensity	Area m ² = C =	Area 1 2538.7 0.810 Runoff	Area 2 2538.7 0.810 Runoff	Area 3 2538.7 0.810 Runoff	Area 4 2538.7 0.810 Runoff	Area 5 2538.7 0.810 Runoff	Area 6 2538.7 0.810 Runoff	Overall Runoff Hydrograph	Proposed Peak Discharge	Excess Discharge	Excess Volume in Time Period
(min)	(mm/hr)		(m ³ /s)	(m ³ /s)	(m ³ /s)	(m ³ /s)	(m ³ /s)	(m ³ /s)	(m ³ /s)	(m ³ /s)	(m ³ /s)	(m ³)
0	0		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.0
0.5	100		0.057	0.000	0.000	0.000	0.000	0.000	0.057	0.250	0.000	0.0
1	108		0.062	0.000	0.000	0.000	0.000	0.000	0.062	0.250	0.000	0.0
1.5	108		0.062	0.057	0.000	0.000	0.000	0.000	0.119	0.250	0.000	0.0
2	119		0.068	0.062	0.000	0.000	0.000	0.000	0.130	0.250	0.000	0.0
2.5	119		0.068	0.062	0.057	0.000	0.000	0.000	0.187	0.250	0.000	0.0
3	133		0.076	0.068	0.062	0.000	0.000	0.000	0.206	0.250	0.000	0.0
3.5	133		0.076	0.068	0.062	0.057	0.000	0.000	0.263	0.250	0.013	0.4
4	156		0.089	0.076	0.068	0.062	0.000	0.000	0.295	0.250	0.045	1.3
4.5	156		0.089	0.076	0.068	0.062	0.057	0.000	0.352	0.250	0.102	3.1
5	194		0.111	0.089	0.076	0.068	0.062	0.000	0.406	0.250	0.156	4.7
5.5	194		0.111	0.089	0.076	0.068	0.062	0.057	0.463	0.250	0.213	6.4
6	246		0.141	0.111	0.089	0.076	0.068	0.062	0.546	0.250	0.296	8.9
6.5	246		0.141	0.111	0.089	0.076	0.068	0.062	0.546	0.250	0.296	8.9
7	194		0.111	0.141	0.111	0.089	0.076	0.068	0.596	0.250	0.346	10.4
7.5	194		0.111	0.141	0.111	0.089	0.076	0.068	0.596	0.250	0.346	10.4
8	156		0.089	0.111	0.141	0.111	0.089	0.076	0.617	0.250	0.367	11.0
8.5	156		0.089	0.111	0.141	0.111	0.089	0.076	0.617	0.250	0.367	11.0
9	133		0.076	0.089	0.111	0.141	0.111	0.089	0.617	0.250	0.367	11.0
9.5	133		0.076	0.089	0.111	0.141	0.111	0.089	0.617	0.250	0.367	11.0
10	119		0.068	0.076	0.089	0.111	0.141	0.111	0.596	0.250	0.346	10.4
10.5	119		0.068	0.076	0.089	0.111	0.141	0.111	0.596	0.250	0.346	10.4
11	108		0.062	0.068	0.076	0.089	0.111	0.141	0.546	0.250	0.296	8.9
11.5	108		0.062	0.068	0.076	0.089	0.111	0.141	0.546	0.250	0.296	8.9
12	100		0.057	0.062	0.068	0.076	0.089	0.111	0.463	0.250	0.213	6.4
12.5	0		0.000	0.062	0.068	0.076	0.089	0.111	0.406	0.250	0.156	4.7
13	0		0.000	0.057	0.062	0.068	0.076	0.089	0.352	0.250	0.102	3.1
13.5	0		0.000	0.000	0.062	0.068	0.076	0.089	0.295	0.250	0.045	1.3
14	0		0.000	0.000	0.057	0.062	0.068	0.076	0.263	0.250	0.013	0.4
14.5	0		0.000	0.000	0.000	0.062	0.068	0.076	0.206	0.250	0.000	0.0
15	0		0.000	0.000	0.000	0.057	0.062	0.068	0.119	0.250	0.000	0.0
15.5	0		0.000	0.000	0.000	0.000	0.062	0.068	0.062	0.250	0.000	0.0
16	0		0.000	0.000	0.000	0.000	0.057	0.062	0.057	0.250	0.000	0.0
16.5	0		0.000	0.000	0.000	0.000	0.000	0.062	0.000	0.250	0.000	0.0
17	0		0.000	0.000	0.000	0.000	0.000	0.057	0.000	0.250	0.000	0.0
17.5	0		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.0
18	0		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.0

Total Excess Volume for Storage = 152.8 m³

C192 - Hong Kong & Kowloon Timber Merchants Association Yard at Lin Ma Hang Road

Hydrographs and Storage - Sites C, D and E

30-Minute Duration

Hydrographs and Storage Volumes based on full hydrographs using (1 in 10-year) storm profiles from the DSD SDM Corrigendum 1/2024
(Refer to SDM Corrigendum 1/2024, Table 5d - Storm Profile for North District and Figure 6)

Assume Site Areas are equally divided over the time of Concentration, i.e. t_c = 6 minutes, so 1/6 of the Site over each minute

	(m ²)	C Value	Average C
Site Area	15,232		0.810
Paved	11,389	1.00	
Unpaved	104	0.20	
Local Catchments	2,649	0.35	

Case 2 - 30-minute duration, 1 in 10-year

Time	Rainfall Intensity	Area m ² = C =	Area 1 2538.7 0.810 Runoff (m ³ /s)	Area 2 2538.7 0.810 Runoff (m ³ /s)	Area 3 2538.7 0.810 Runoff (m ³ /s)	Area 4 2538.7 0.810 Runoff (m ³ /s)	Area 5 2538.7 0.810 Runoff (m ³ /s)	Area 6 2538.7 0.810 Runoff (m ³ /s)	Overall Runoff Hydrograph (m ³ /s)	Original Peak Discharge (m ³ /s)	Excess Discharge (m ³ /s)	Excess Volume in Time Period (m ³)
(min)	(mm/hr)											
0	0		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.0
0.5	68		0.039	0.000	0.000	0.000	0.000	0.000	0.039	0.250	0.000	0.0
1	70		0.040	0.000	0.000	0.000	0.000	0.000	0.040	0.250	0.000	0.0
1.5	70		0.040	0.039	0.000	0.000	0.000	0.000	0.079	0.250	0.000	0.0
2	72		0.041	0.040	0.000	0.000	0.000	0.000	0.081	0.250	0.000	0.0
2.5	72		0.041	0.040	0.039	0.000	0.000	0.000	0.120	0.250	0.000	0.0
3	74		0.042	0.041	0.040	0.000	0.000	0.000	0.123	0.250	0.000	0.0
3.5	74		0.042	0.041	0.040	0.039	0.000	0.000	0.162	0.250	0.000	0.0
4	77		0.044	0.042	0.041	0.040	0.000	0.000	0.167	0.250	0.000	0.0
4.5	77		0.044	0.042	0.041	0.040	0.039	0.000	0.206	0.250	0.000	0.0
5	80		0.046	0.044	0.042	0.041	0.040	0.000	0.213	0.250	0.000	0.0
5.5	80		0.046	0.044	0.042	0.041	0.040	0.039	0.252	0.250	0.002	0.1
6	84		0.048	0.046	0.044	0.042	0.041	0.040	0.261	0.250	0.011	0.3
6.5	84		0.048	0.046	0.044	0.042	0.041	0.040	0.261	0.250	0.011	0.3
7	89		0.051	0.048	0.046	0.044	0.042	0.041	0.272	0.250	0.022	0.7
7.5	89		0.051	0.048	0.046	0.044	0.042	0.041	0.272	0.250	0.022	0.7
8	94		0.054	0.051	0.048	0.046	0.044	0.042	0.285	0.250	0.035	1.0
8.5	94		0.054	0.051	0.048	0.046	0.044	0.042	0.285	0.250	0.035	1.0
9	100		0.057	0.054	0.051	0.048	0.046	0.044	0.300	0.250	0.050	1.5
9.5	100		0.057	0.054	0.051	0.048	0.046	0.044	0.300	0.250	0.050	1.5
10	108		0.062	0.057	0.054	0.051	0.048	0.046	0.317	0.250	0.067	2.0
10.5	108		0.062	0.057	0.054	0.051	0.048	0.046	0.317	0.250	0.067	2.0
11	119		0.068	0.062	0.057	0.054	0.051	0.048	0.340	0.250	0.090	2.7
11.5	119		0.068	0.062	0.057	0.054	0.051	0.048	0.340	0.250	0.090	2.7
12	133		0.076	0.068	0.062	0.057	0.054	0.051	0.368	0.250	0.118	3.5
12.5	133		0.076	0.068	0.062	0.057	0.054	0.051	0.368	0.250	0.118	3.5
13	156		0.089	0.076	0.068	0.062	0.057	0.054	0.406	0.250	0.156	4.7
13.5	156		0.089	0.076	0.068	0.062	0.057	0.054	0.406	0.250	0.156	4.7
14	194		0.111	0.089	0.076	0.068	0.062	0.057	0.463	0.250	0.213	6.4
14.5	194		0.111	0.089	0.076	0.068	0.062	0.057	0.463	0.250	0.213	6.4
15	246		0.141	0.111	0.089	0.076	0.068	0.062	0.546	0.250	0.296	8.9
15.5	246		0.141	0.111	0.089	0.076	0.068	0.062	0.546	0.250	0.296	8.9
16	194		0.111	0.141	0.111	0.089	0.076	0.068	0.596	0.250	0.346	10.4
16.5	194		0.111	0.141	0.111	0.089	0.076	0.068	0.596	0.250	0.346	10.4
17	156		0.089	0.111	0.141	0.111	0.089	0.076	0.617	0.250	0.367	11.0
17.5	156		0.089	0.111	0.141	0.111	0.089	0.076	0.617	0.250	0.367	11.0
18	133		0.076	0.089	0.111	0.141	0.111	0.089	0.617	0.250	0.367	11.0
18.5	133		0.076	0.089	0.111	0.141	0.111	0.089	0.617	0.250	0.367	11.0
19	119		0.068	0.076	0.089	0.111	0.141	0.111	0.596	0.250	0.346	10.4
19.5	119		0.068	0.076	0.089	0.111	0.141	0.111	0.596	0.250	0.346	10.4
20	108		0.062	0.068	0.076	0.089	0.111	0.141	0.546	0.250	0.296	8.9
20.5	108		0.062	0.068	0.076	0.089	0.111	0.141	0.546	0.250	0.296	8.9
21	100		0.057	0.062	0.068	0.076	0.089	0.111	0.463	0.250	0.213	6.4
21.5	100		0.057	0.062	0.068	0.076	0.089	0.111	0.463	0.250	0.213	6.4
22	94		0.054	0.057	0.062	0.068	0.076	0.089	0.406	0.250	0.156	4.7
22.5	94		0.054	0.057	0.062	0.068	0.076	0.089	0.406	0.250	0.156	4.7
23	89		0.051	0.054	0.057	0.062	0.068	0.076	0.368	0.250	0.118	3.5
23.5	89		0.051	0.054	0.057	0.062	0.068	0.076	0.368	0.250	0.118	3.5
24	84		0.048	0.051	0.054	0.057	0.062	0.068	0.340	0.250	0.090	2.7
24.5	84		0.048	0.051	0.054	0.057	0.062	0.068	0.340	0.250	0.090	2.7
25	80		0.046	0.048	0.051	0.054	0.057	0.062	0.317	0.250	0.067	2.0
25.5	80		0.046	0.048	0.051	0.054	0.057	0.062	0.317	0.250	0.067	2.0
26	77		0.044	0.046	0.048	0.051	0.054	0.057	0.300	0.250	0.050	1.5
26.5	77		0.044	0.046	0.048	0.051	0.054	0.057	0.300	0.250	0.050	1.5
27	74		0.042	0.044	0.046	0.048	0.051	0.054	0.285	0.250	0.035	1.0
27.5	74		0.042	0.044	0.046	0.048	0.051	0.054	0.285	0.250	0.035	1.0
28	72		0.041	0.042	0.044	0.046	0.048	0.051	0.272	0.250	0.022	0.7
28.5	72		0.041	0.042	0.044	0.046	0.048	0.051	0.272	0.250	0.022	0.7
29	70		0.040	0.041	0.042	0.044	0.046	0.048	0.261	0.250	0.011	0.3
29.5	70		0.040	0.041	0.042	0.044	0.046	0.048	0.261	0.250	0.011	0.3
30	68		0.039	0.040	0.041	0.042	0.044	0.046	0.252	0.250	0.002	0.1
30.5	0		0.000	0.040	0.041	0.042	0.044	0.046	0.213	0.250	0.000	0.0
31	0		0.000	0.039	0.040	0.041	0.042	0.044	0.206	0.250	0.000	0.0
31.5	0		0.000	0.000	0.040	0.041	0.042	0.044	0.167	0.250	0.000	0.0
32	0		0.000	0.000	0.039	0.040	0.041	0.042	0.162	0.250	0.000	0.0
32.5	0		0.000	0.000	0.000	0.040	0.041	0.042	0.123	0.250	0.000	0.0
33	0		0.000	0.000	0.000	0.039	0.040	0.041	0.120	0.250	0.000	0.0
33.5	0		0.000	0.000	0.000	0.000	0.040	0.041	0.081	0.250	0.000	0.0
34	0		0.000	0.000	0.000	0.000	0.039	0.040	0.079	0.250	0.000	0.0
34.5	0		0.000	0.000	0.000	0.000	0.000	0.040	0.040	0.250	0.000	0.0
35	0		0.000	0.000	0.000	0.000	0.000	0.039	0.039	0.250	0.000	0.0
35.5	0		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.0
36	0		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.0

Total Excess Volume for Storage = 212.5 m³

C192 - Hong Kong & Kowloon Timber Merchants Association Yard at Lin Ma Hang Road
Hydrographs and Storage - Sites C, D and E
60-Minute Duration

Hydrographs and Storage Volumes based on full hydrographs using (1 in 10-year) storm profiles from the DSD SDM Compendium 1/2024
(Refer to SDM Compendium 1/2024, Table 5d - Storm Profile for North District and Figure 6)

Assume Site Areas are equally divided over the time of Concentration, i.e. $t_c = 6$ minutes, so 1/6 of the Site over each minute

	(m ²)	C Value	Average C
Site Area	15,232		0.810
Paved	11,389	1.00	
Unpaved	104	0.20	
Local Catchm	2,649	0.35	

Case 3 - 60-minute duration, 1 in 10-year

Time	Rainfall Intensity	Area m ² = C ×	Area 1 2538.7 0.810	Area 2 2538.7 0.810	Area 3 2538.7 0.810	Area 4 2538.7 0.810	Area 5 2538.7 0.810	Area 6 2538.7 0.810	Overall Runoff Hydrograph	Original Peak Discharge	Excess Discharge	Excess Volume in Time Period
(min)	(mm/hr)		Runoff (m ³ /s)	Runoff (m ³ /s)	Runoff (m ³ /s)	Runoff (m ³ /s)	Runoff (m ³ /s)	Runoff (m ³ /s)	(m ³ /s)	(m ³ /s)	(m ³ /s)	(m ³)
0	0		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.0
0.5	50		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.0
1	51		0.029	0.000	0.000	0.000	0.000	0.000	0.029	0.250	0.000	0.0
1.5	51		0.029	0.029	0.000	0.000	0.000	0.000	0.058	0.250	0.000	0.0
2	52		0.030	0.029	0.000	0.000	0.000	0.000	0.059	0.250	0.000	0.0
2.5	52		0.030	0.029	0.000	0.000	0.000	0.000	0.087	0.250	0.000	0.0
3	53		0.030	0.030	0.029	0.000	0.000	0.000	0.089	0.250	0.000	0.0
3.5	53		0.030	0.030	0.029	0.029	0.000	0.000	0.118	0.250	0.000	0.0
4	53		0.030	0.030	0.030	0.029	0.000	0.000	0.119	0.250	0.000	0.0
4.5	53		0.030	0.030	0.030	0.029	0.000	0.000	0.148	0.250	0.000	0.0
5	54		0.031	0.030	0.030	0.030	0.029	0.000	0.150	0.250	0.000	0.0
5.5	54		0.031	0.030	0.030	0.030	0.029	0.029	0.179	0.250	0.000	0.0
6	55		0.031	0.031	0.030	0.030	0.030	0.029	0.182	0.250	0.000	0.0
6.5	56		0.031	0.031	0.030	0.030	0.030	0.029	0.182	0.250	0.000	0.0
7	56		0.032	0.031	0.031	0.030	0.030	0.030	0.185	0.250	0.000	0.0
7.5	56		0.032	0.031	0.031	0.030	0.030	0.030	0.185	0.250	0.000	0.0
8	57		0.033	0.032	0.031	0.031	0.030	0.030	0.187	0.250	0.000	0.0
8.5	57		0.033	0.032	0.031	0.031	0.030	0.030	0.187	0.250	0.000	0.0
9	58		0.033	0.033	0.032	0.031	0.031	0.030	0.190	0.250	0.000	0.0
9.5	58		0.033	0.033	0.032	0.031	0.031	0.030	0.190	0.250	0.000	0.0
10	60		0.034	0.033	0.033	0.032	0.031	0.031	0.194	0.250	0.000	0.0
10.5	60		0.034	0.033	0.033	0.032	0.031	0.031	0.194	0.250	0.000	0.0
11	61		0.035	0.034	0.033	0.033	0.032	0.031	0.198	0.250	0.000	0.0
11.5	61		0.035	0.034	0.033	0.033	0.032	0.031	0.198	0.250	0.000	0.0
12	62		0.035	0.035	0.034	0.033	0.033	0.032	0.202	0.250	0.000	0.0
12.5	62		0.035	0.035	0.034	0.033	0.033	0.032	0.202	0.250	0.000	0.0
13	64		0.037	0.035	0.035	0.034	0.033	0.033	0.207	0.250	0.000	0.0
13.5	64		0.037	0.035	0.035	0.034	0.033	0.033	0.207	0.250	0.000	0.0
14	66		0.038	0.037	0.035	0.035	0.034	0.033	0.212	0.250	0.000	0.0
14.5	66		0.038	0.037	0.035	0.035	0.034	0.033	0.212	0.250	0.000	0.0
15	68		0.039	0.038	0.037	0.035	0.035	0.034	0.218	0.250	0.000	0.0
15.5	68		0.039	0.038	0.037	0.035	0.035	0.034	0.218	0.250	0.000	0.0
16	70		0.040	0.039	0.038	0.037	0.035	0.035	0.224	0.250	0.000	0.0
16.5	70		0.040	0.039	0.038	0.037	0.035	0.035	0.224	0.250	0.000	0.0
17	72		0.041	0.040	0.039	0.038	0.037	0.035	0.230	0.250	0.000	0.0
17.5	72		0.041	0.040	0.039	0.038	0.037	0.035	0.230	0.250	0.000	0.0
18	74		0.042	0.041	0.040	0.039	0.038	0.037	0.237	0.250	0.000	0.0
18.5	74		0.042	0.041	0.039	0.040	0.038	0.037	0.237	0.250	0.000	0.0
19	77		0.044	0.042	0.041	0.040	0.039	0.038	0.244	0.250	0.000	0.0
19.5	77		0.044	0.042	0.041	0.040	0.039	0.038	0.244	0.250	0.000	0.0
20	80		0.046	0.044	0.042	0.041	0.040	0.039	0.252	0.250	0.000	0.0
20.5	80		0.046	0.044	0.042	0.041	0.040	0.039	0.252	0.250	0.002	0.1
21	84		0.048	0.046	0.044	0.042	0.041	0.040	0.261	0.250	0.011	0.3
21.5	84		0.048	0.046	0.044	0.042	0.041	0.040	0.261	0.250	0.011	0.3
22	89		0.051	0.048	0.046	0.044	0.042	0.041	0.272	0.250	0.022	0.7
22.5	89		0.051	0.048	0.046	0.044	0.042	0.041	0.272	0.250	0.022	0.7
23	94		0.054	0.051	0.048	0.046	0.044	0.042	0.285	0.250	0.035	1.0
23.5	94		0.054	0.051	0.048	0.046	0.044	0.042	0.285	0.250	0.035	1.0
24	100		0.057	0.054	0.048	0.046	0.044	0.042	0.300	0.250	0.050	1.5
24.5	100		0.057	0.054	0.048	0.046	0.044	0.042	0.300	0.250	0.050	1.5
25	108		0.062	0.057	0.054	0.051	0.048	0.046	0.317	0.250	0.067	2.0
25.5	108		0.062	0.057	0.054	0.051	0.048	0.046	0.317	0.250	0.067	2.0
26	119		0.068	0.062	0.057	0.054	0.051	0.048	0.340	0.250	0.090	2.7
26.5	119		0.068	0.062	0.057	0.054	0.051	0.048	0.340	0.250	0.090	2.7
27	133		0.076	0.068	0.062	0.057	0.054	0.051	0.368	0.250	0.118	3.5
27.5	133		0.076	0.068	0.062	0.057	0.054	0.051	0.368	0.250	0.118	3.5
28	156		0.089	0.076	0.068	0.062	0.057	0.054	0.406	0.250	0.156	4.7
28.5	156		0.089	0.076	0.068	0.062	0.057	0.054	0.406	0.250	0.156	4.7
29	194		0.111	0.089	0.076	0.068	0.062	0.057	0.463	0.250	0.213	6.4
29.5	194		0.111	0.089	0.076	0.068	0.062	0.057	0.463	0.250	0.213	6.4
30	246		0.141	0.111	0.089	0.076	0.068	0.062	0.546	0.250	0.296	8.9
30.5	246		0.141	0.111	0.089	0.076	0.068	0.062	0.546	0.250	0.296	8.9
31	194		0.111	0.141	0.111	0.089	0.076	0.068	0.596	0.250	0.346	10.4
31.5	194		0.111	0.141	0.111	0.089	0.076	0.068	0.596	0.250	0.346	10.4
32	156		0.089	0.111	0.141	0.111	0.089	0.076	0.617	0.250	0.367	11.0
32.5	156		0.089	0.111	0.141	0.111	0.089	0.076	0.617	0.250	0.367	11.0
33	133		0.076	0.089	0.111	0.141	0.111	0.089	0.617	0.250	0.367	11.0
33.5	133		0.076	0.089	0.111	0.141	0.111	0.089	0.617	0.250	0.367	11.0
34	119		0.068	0.076	0.089	0.111	0.141	0.111	0.596	0.250	0.346	10.4
34.5	119		0.068	0.076	0.089	0.111	0.141	0.111	0.596	0.250	0.346	10.4
35	108		0.062	0.068	0.076	0.089	0.111	0.141	0.546	0.250	0.296	8.9
35.5	108		0.062	0.068	0.076	0.089	0.111	0.141	0.546	0.250	0.296	8.9
36	100		0.057	0.062	0.068	0.076	0.089	0.111	0.463	0.250	0.213	6.4
36.5	100		0.057	0.062	0.068	0.076	0.089	0.111	0.463	0.250	0.213	6.4
37	94		0.054	0.057	0.062	0.068	0.076	0.089	0.406	0.250	0.156	4.7
37.5	94		0.054	0.057	0.062	0.068	0.076	0.089	0.406	0.250	0.156	4.7
38	89		0.051	0.054	0.057	0.062	0.068	0.076	0.368	0.250	0.118	3.5
38.5	89		0.051	0.054	0.057	0.062	0.068	0.076	0.368	0.250	0.118	3.5
39	84		0.048	0.051	0.054	0.057	0.062	0.068	0.340	0.250	0.090	2.7
39.5	84		0.048	0.051	0.054	0.057	0.062	0.068	0.340	0.250	0.090	2.7
40	80		0.046	0.048	0.051	0.054	0.057	0.062	0.317	0.250	0.067	2.0
40.5	80		0.046	0.048	0.051	0.054	0.057	0.062	0.317	0.250	0.067	2.0
41	77		0.044	0.046	0.048	0.051	0.054	0.057	0.300	0.250	0.050	1.5
41.5	77		0.044	0.046	0.048	0.051	0.054	0.057	0.300	0.250	0.050	1.5
42	74		0.042	0.044	0.046	0.048	0.051	0.054	0.285	0.250	0.035	1.0
42.5	74		0.042	0.044	0.046	0.048	0.051	0.054	0.285	0.250	0.035	1.0
43	72		0.041	0.042	0.044	0.046	0.048	0.051	0.272	0.250	0.022	0.7
43.5	72		0.041	0.042	0.044	0.046	0.048	0.051	0.272	0.250	0.022	0.7
44	70		0.040	0.041	0.042	0.044	0.046	0.048	0.261	0.250	0.011	0.3
44.5	70		0.040	0.041	0.042	0.044	0.046	0.048	0.261	0.250	0.011	0.3
45	68		0.039	0.040	0.041	0.042	0.044	0.046	0.0			

C192 - Hong Kong & Kowloon Timber Merchants Association Yard at Lin Ma Hang Road
Hydrographs and Storage - Sites C, D and E
20 Minute Duration

Hydrographs and Storage Volumes based on full hydrographs using (1 in 10-year) storm profiles from the OED SCM Compendium 1/2024
(Refer to SCM Compendium 1/2024, Table 60 - Storm Profile for North District and Figure 6)

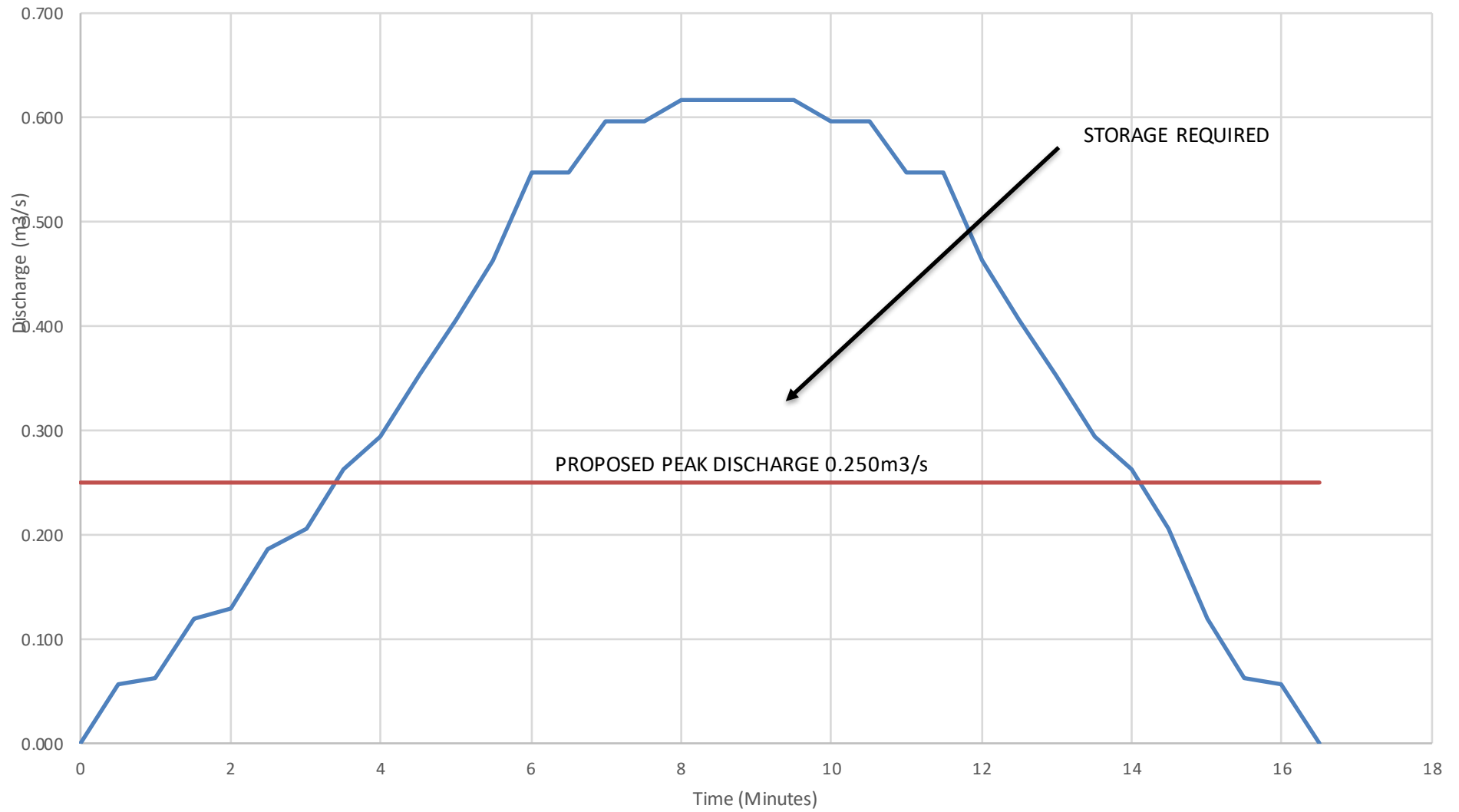
Assume Site Areas are equally divided over the time of Concentration, i.e. $t_c = 6$ minutes, so 1/6 of the Site over each minute

Site	C Value	Average C
Site Area	15,232	0.810
Paved	11,389	1.00
Unpaved	104	0.20
Local Catchment	2,649	0.35

Table 3 - 20-minute Duration, 1 in 10-year

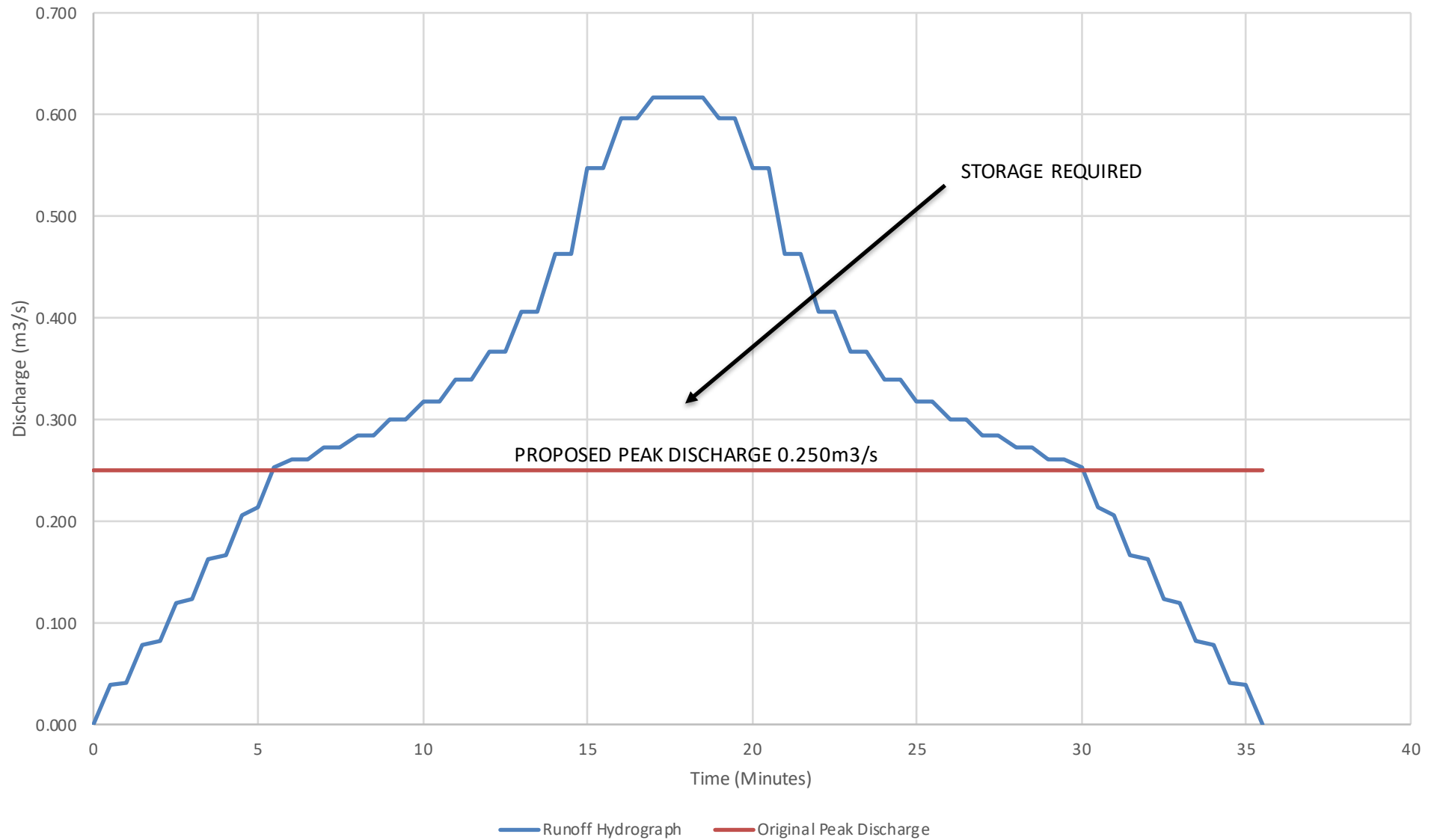
Time	Rainfall Intensity	Area = C ×	Area 1 2538.7 0.810	Area 2 2538.7 0.810	Area 3 2538.7 0.810	Area 4 2538.7 0.810	Area 5 2538.7 0.810	Area 6 2538.7 0.810	Overall Hydrograph	Original Peak Discharge	Excess Discharge	Excess Volume in Time Period
(min)	(mm/hr)		(m³/s)	(m³/s)	(m³/s)	(m³/s)	(m³/s)	(m³/s)	(m³/s)	(m³/s)	(m³/s)	(m³)
0	0		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.00
0.5	42		0.024	0.000	0.000	0.000	0.000	0.000	0.024	0.250	0.00	0.0
1	43		0.025	0.000	0.000	0.000	0.000	0.000	0.025	0.250	0.00	0.0
1.5	43		0.025	0.024	0.000	0.000	0.000	0.000	0.049	0.250	0.00	0.0
2	43		0.025	0.025	0.000	0.000	0.000	0.000	0.049	0.250	0.00	0.0
2.5	43		0.025	0.025	0.024	0.000	0.000	0.000	0.073	0.250	0.00	0.0
3	44		0.025	0.025	0.025	0.000	0.000	0.000	0.074	0.250	0.00	0.0
3.5	44		0.025	0.025	0.025	0.024	0.000	0.000	0.098	0.250	0.00	0.0
4	44		0.025	0.025	0.025	0.025	0.000	0.000	0.099	0.250	0.00	0.0
4.5	44		0.025	0.025	0.025	0.025	0.024	0.000	0.123	0.250	0.00	0.0
5	44		0.025	0.025	0.025	0.025	0.025	0.000	0.125	0.250	0.00	0.0
5.5	44		0.025	0.025	0.025	0.025	0.025	0.024	0.149	0.250	0.00	0.0
6	45		0.026	0.025	0.025	0.025	0.025	0.025	0.150	0.250	0.00	0.0
6.5	45		0.026	0.025	0.025	0.025	0.025	0.025	0.151	0.250	0.00	0.0
7	45		0.026	0.026	0.025	0.025	0.025	0.025	0.151	0.250	0.00	0.0
7.5	45		0.026	0.026	0.025	0.025	0.025	0.025	0.151	0.250	0.00	0.0
8	46		0.026	0.026	0.026	0.025	0.025	0.025	0.153	0.250	0.00	0.0
8.5	46		0.026	0.026	0.026	0.025	0.025	0.025	0.153	0.250	0.00	0.0
9	46		0.026	0.026	0.026	0.026	0.025	0.025	0.154	0.250	0.00	0.0
9.5	46		0.026	0.026	0.026	0.026	0.026	0.025	0.154	0.250	0.00	0.0
10	47		0.027	0.026	0.026	0.026	0.026	0.025	0.156	0.250	0.00	0.0
10.5	47		0.027	0.026	0.026	0.026	0.026	0.025	0.156	0.250	0.00	0.0
11	48		0.027	0.027	0.026	0.026	0.026	0.026	0.158	0.250	0.00	0.0
11.5	48		0.027	0.027	0.026	0.026	0.026	0.026	0.158	0.250	0.00	0.0
12	48		0.027	0.027	0.027	0.026	0.026	0.026	0.160	0.250	0.00	0.0
12.5	48		0.027	0.027	0.027	0.026	0.026	0.026	0.160	0.250	0.00	0.0
13	49		0.028	0.027	0.027	0.027	0.026	0.026	0.162	0.250	0.00	0.0
13.5	49		0.028	0.027	0.027	0.027	0.026	0.026	0.162	0.250	0.00	0.0
14	50		0.029	0.028	0.027	0.027	0.027	0.026	0.163	0.250	0.00	0.0
14.5	50		0.029	0.028	0.027	0.027	0.027	0.026	0.165	0.250	0.00	0.0
15	50		0.029	0.028	0.028	0.027	0.027	0.027	0.167	0.250	0.00	0.0
15.5	50		0.029	0.028	0.028	0.027	0.027	0.027	0.167	0.250	0.00	0.0
16	51		0.029	0.029	0.028	0.028	0.027	0.027	0.169	0.250	0.00	0.0
16.5	51		0.029	0.029	0.029	0.028	0.027	0.027	0.169	0.250	0.00	0.0
17	52		0.030	0.029	0.029	0.029	0.028	0.027	0.171	0.250	0.00	0.0
17.5	52		0.030	0.029	0.029	0.029	0.028	0.027	0.171	0.250	0.00	0.0
18	53		0.030	0.030	0.029	0.029	0.029	0.028	0.174	0.250	0.00	0.0
18.5	53		0.030	0.030	0.029	0.029	0.029	0.028	0.174	0.250	0.00	0.0
19	53		0.030	0.030	0.030	0.029	0.029	0.029	0.177	0.250	0.00	0.0
19.5	53		0.030	0.030	0.030	0.029	0.029	0.029	0.177	0.250	0.00	0.0
20	54		0.031	0.030	0.030	0.030	0.029	0.029	0.179	0.250	0.00	0.0
20.5	54		0.031	0.030	0.030	0.030	0.029	0.029	0.179	0.250	0.00	0.0
21	55		0.031	0.031	0.030	0.030	0.030	0.029	0.182	0.250	0.00	0.0
21.5	55		0.031	0.031	0.030	0.030	0.030	0.029	0.182	0.250	0.00	0.0
22	56		0.032	0.031	0.031	0.030	0.030	0.030	0.185	0.250	0.00	0.0
22.5	56		0.032	0.031	0.031	0.030	0.030	0.030	0.185	0.250	0.00	0.0
23	57		0.033	0.032	0.031	0.031	0.030	0.030	0.187	0.250	0.00	0.0
23.5	57		0.033	0.032	0.031	0.031	0.030	0.030	0.187	0.250	0.00	0.0
24	58		0.033	0.033	0.032	0.031	0.031	0.030	0.190	0.250	0.00	0.0
24.5	58		0.033	0.033	0.032	0.031	0.031	0.030	0.190	0.250	0.00	0.0
25	60		0.034	0.033	0.033	0.032	0.031	0.031	0.194	0.250	0.00	0.0
25.5	60		0.034	0.033	0.033	0.032	0.031	0.031	0.194	0.250	0.00	0.0
26	61		0.035	0.034	0.033	0.033	0.032	0.031	0.198	0.250	0.00	0.0
26.5	61		0.035	0.034	0.033	0.033	0.032	0.031	0.198	0.250	0.00	0.0
27	62		0.035	0.035	0.034	0.033	0.033	0.032	0.202	0.250	0.00	0.0
27.5	62		0.035	0.035	0.034	0.033	0.033	0.032	0.202	0.250	0.00	0.0
28	64		0.037	0.035	0.035	0.034	0.033	0.033	0.207	0.250	0.00	0.0
28.5	64		0.037	0.035	0.035	0.034	0.033	0.033	0.207	0.250	0.00	0.0
29	66		0.038	0.037	0.036	0.036	0.034	0.033	0.212	0.250	0.00	0.0
29.5	66		0.038	0.037	0.036	0.036	0.034	0.033	0.212	0.250	0.00	0.0
30	68		0.039	0.038	0.037	0.037	0.035	0.034	0.218	0.250	0.00	0.0
30.5	68		0.039	0.038	0.037	0.036	0.035	0.034	0.218	0.250	0.00	0.0
31	70		0.040	0.039	0.038	0.037	0.036	0.035	0.224	0.250	0.00	0.0
31.5	70		0.040	0.039	0.038	0.037	0.036	0.035	0.224	0.250	0.00	0.0
32	72		0.041	0.040	0.039	0.038	0.037	0.036	0.230	0.250	0.00	0.0
32.5	72		0.041	0.040	0.039	0.038	0.037	0.036	0.230	0.250	0.00	0.0
33	74		0.042	0.041	0.040	0.039	0.038	0.037	0.237	0.250	0.00	0.0
33.5	74		0.042	0.041	0.040	0.039	0.038	0.037	0.237	0.250	0.00	0.0
34	77		0.044	0.042	0.041	0.040	0.039	0.038	0.244	0.250	0.00	0.0
34.5	77		0.044	0.042	0.041	0.040	0.039	0.038	0.244	0.250	0.00	0.0
35	80		0.046	0.044	0.042	0.041	0.040	0.039	0.252	0.250	0.002	0.1
35.5	80		0.046	0.044	0.042	0.041	0.040	0.039	0.252	0.250	0.002	0.1
36	84		0.048	0.044	0.044	0.042	0.041	0.040	0.261	0.250	0.011	0.3
36.5	84		0.048	0.044	0.044	0.042	0.041	0.040	0.261	0.250	0.011	0.3
37	89		0.051	0.048	0.046	0.044	0.042	0.041	0.272	0.250	0.022	0.7
37.5	89		0.051	0.048	0.046	0.044	0.042	0.041	0.272	0.250	0.022	0.7
38	94		0.054	0.051	0.048	0.046	0.044	0.042	0.286	0.250	0.035	1.0
38.5	94		0.054	0.051	0.048	0.046	0.044	0.042	0.286	0.250	0.035	1.0
39	100		0.057	0.054	0.051	0.048	0.046	0.044	0.300	0.250	0.050	1.5
39.5	100		0.057	0.054	0.051	0.048	0.046	0.044	0.300	0.250	0.050	1.5
40	106		0.062	0.057	0.054	0.051	0.048	0.046	0.317	0.250	0.067	2.0
40.5	106		0.062	0.057	0.054	0.051	0.048	0.046	0.317	0.250	0.067	2.0
41	110		0.066	0.062	0.057	0.054	0.051	0.048	0.340	0.250	0.090	2.7
41.5	110		0.066	0.062	0.057	0.054	0.051	0.048	0.340	0.250	0.090	2.7
42	123		0.076	0.068	0.062	0.057	0.054	0.051	0.368	0.250	0.118	3.5
42.5	123		0.076	0.068	0.062	0.057	0.054	0.051	0.368	0.250	0.118	3.5
43	126		0.078	0.068	0.062	0.057	0.054	0.051	0.368	0.250	0.118	3.5
43.5	126		0.078	0.068	0.062	0.057	0.054	0.051	0.368	0.250	0.118	3.5
44	144		0.111	0.089	0.076	0.068	0.062	0.057	0.463	0.250	0.213	6.4
44.5	144		0.111	0.089	0.076	0.068	0.062	0.057	0.463	0.250	0.213	6.4
45	146		0.141	0.111	0.089	0.076	0.068	0.062	0.546	0.250	0.296	8.9
45.5	146		0.141	0.111	0.089	0.076	0.068	0.062	0.546	0.250	0.296	8.9
46	146		0.111	0.141	0.111	0.089	0.076	0.068	0.596	0.250	0.346	10.0
46.5	146		0.111	0.141	0.111	0.089	0.076	0.068	0.596	0.250	0.346	10.0
47	156											

Sites C, D & E 10-Minute Runoff Hydrograph

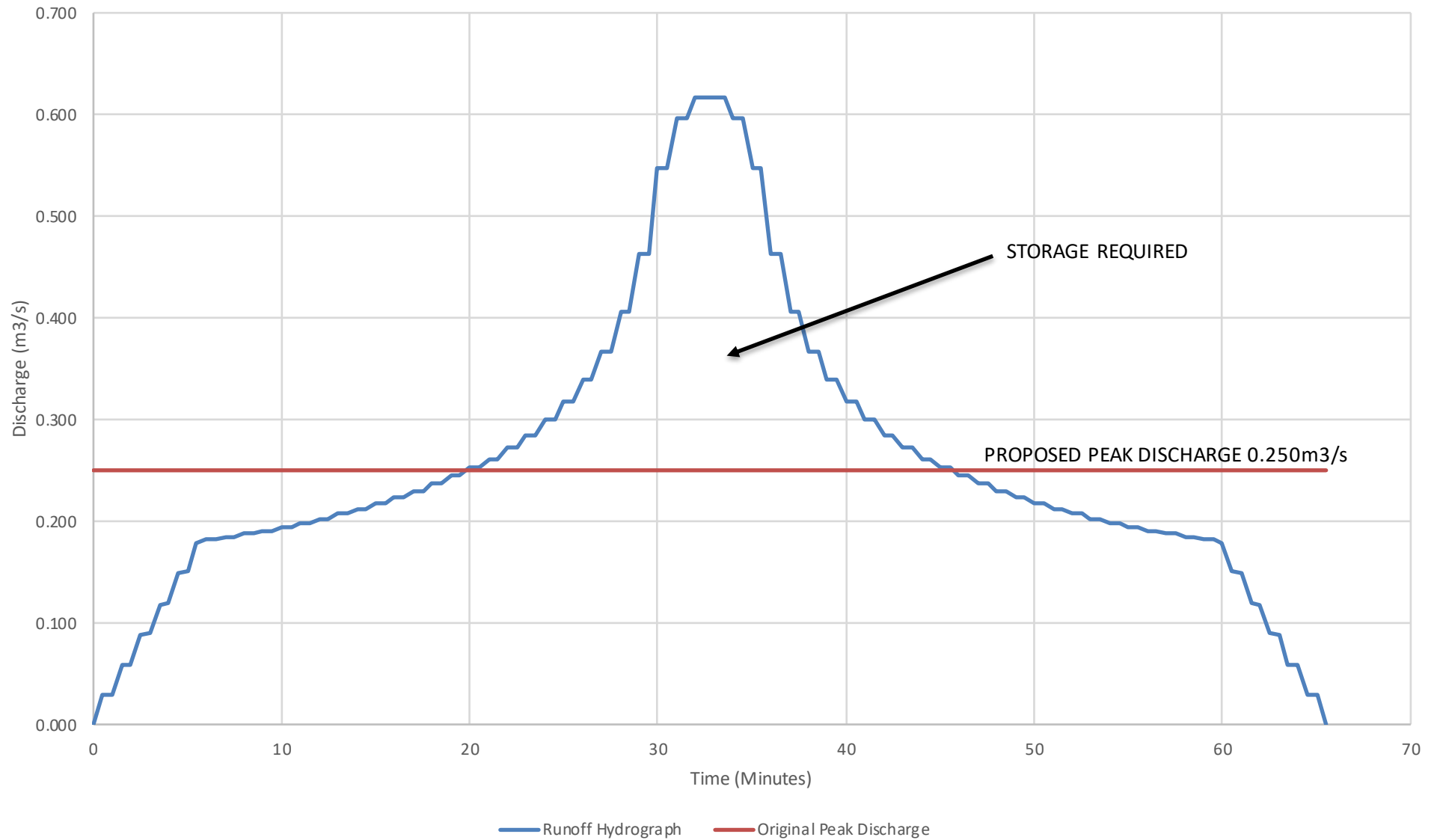


Runoff Hydrograph Original Peak Discharge

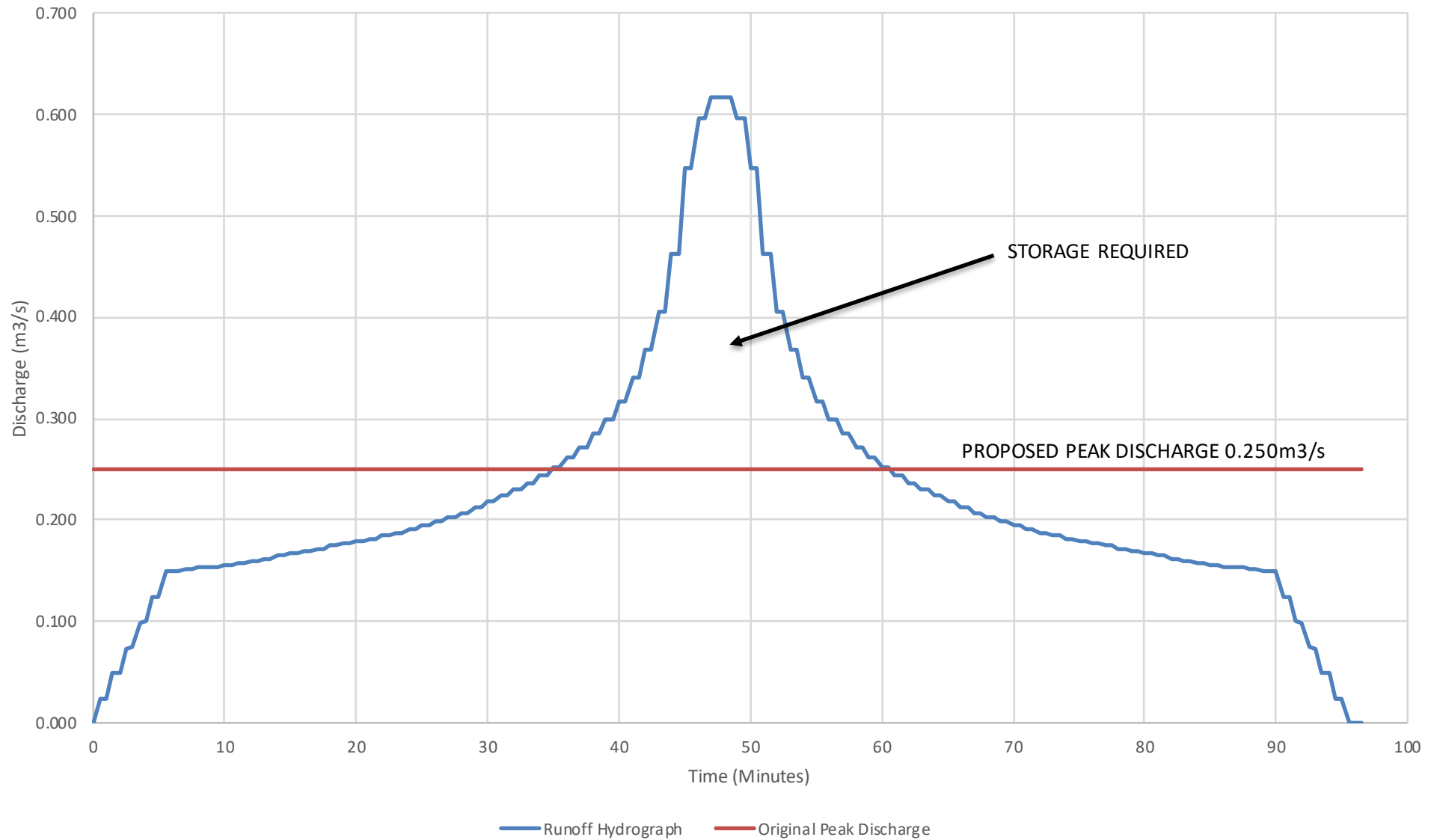
Sites C, D & E 30-Minute Runoff Hydrograph



Sites C, D & E 60-Minute Runoff Hydrograph



Sites C, D & E 60-Minute Runoff Hydrograph



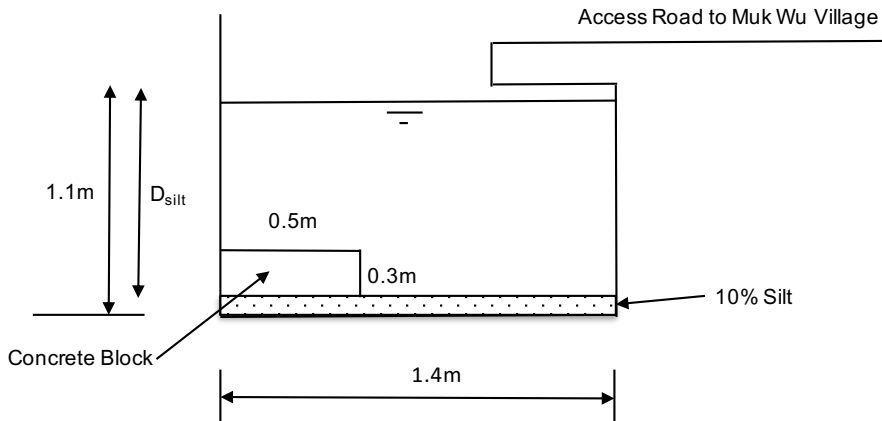
Appendix F

Stream Hydraulics

C192 Hong Kong & Kowloon Timber Merchants Association Timber Yard at Lin Ma Hang Road
Existing East Channel
Capacity Check

Assume:

1. Stream channel is rectangular, but with regular concrete blocks restricting the flow
2. Stream channel is also partly covered by access road to Muk Wu Village.
3. Dimensions from Initial Site Inspection (22/12/2023). Check worst location
4. Channel is existing concrete sides, with silt/soil base. Assume concrete lined channel, bad condition ($n = 0.018$)
5. Check capacity with 300mm freeboard



Gradient

Upstream IL =	N/A	mPD
Downstream IL =	N/A	mPD
Fall =	-	m
Distance between ILs =		m
Overall channel gradient = 1/	1000	0.001 ASSUMED
Concrete Lined Channel, (bad condition); say, Manning's n =		0.018 (DSD SDM Table 13)

With (300mm) Freeboard Allowance

$$\begin{aligned}
 B &= 1.40 \text{ m} \\
 D &= 1.10 - 0.30 = 0.80 \text{ m} \\
 D_{\text{silt}} &= D \times 0.9 = 0.72 \text{ m (allowing for 10\% silt)}
 \end{aligned}$$

$$\text{Top Width} = 1.40 \text{ m}$$

$$\begin{aligned}
 A \text{ (m}^2\text{)} &= 1.40 \times 0.72 = 1.01 \text{ m}^2 \\
 \text{less block} &= 0.50 \times 0.30 = (0.15) \text{ m}^2 \\
 &= 0.86 \text{ m}^2
 \end{aligned}$$

$$\begin{aligned}
 P \text{ (m)} &= 1.40 \text{ m (base)} \\
 &= 1.44 \text{ m (side walls)} \\
 &= 2.84 \text{ m}
 \end{aligned}$$

$$R \text{ (m)} = A/P = 0.35 \text{ m}$$

$$Q \text{ (m}^3\text{/s)} = Av = A \times R^{2/3} \times S^{1/2} / n = 0.88 \text{ m}^3\text{/s}$$

$$v = 1.03 \text{ m/s}$$

$$\text{Available Capacity (with Freeboard)} = 0.88 \text{ m}^3\text{/s}$$

$$\text{Runoff from Upstream Catchment (see Runoff Calculations)} = 0.39 \text{ m}^3\text{/s}$$

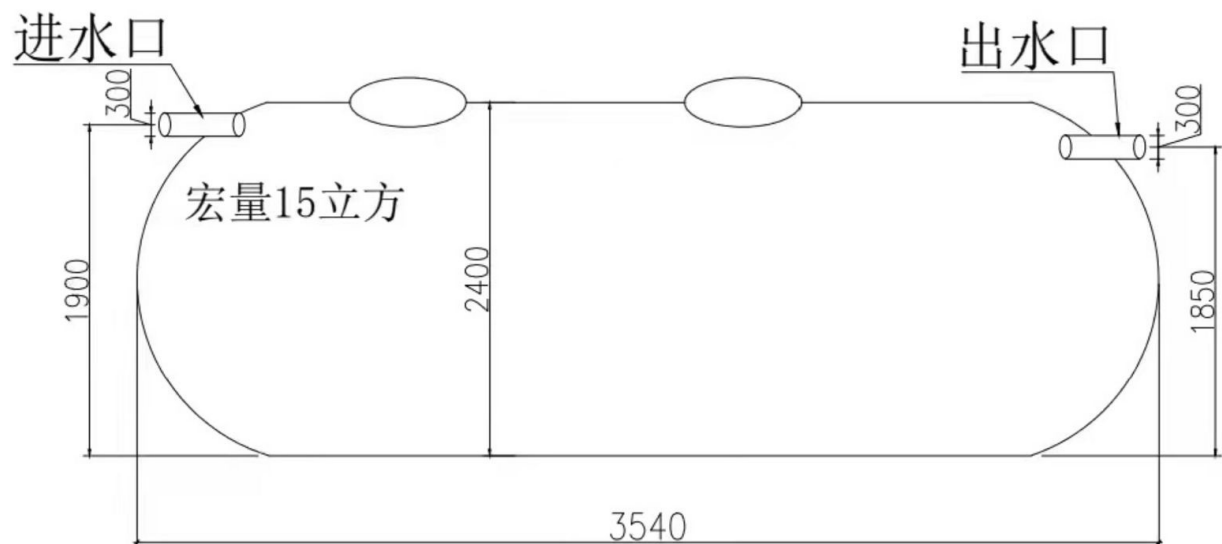
$$\text{Apparent Spare Capacity} = 0.49 \text{ m}^3\text{/s} (>> \text{Proposed discharge from Site} = 0.25 \text{ m}^3\text{/s})$$

Appendix G

Prefabricated Drainage Units

Water tank information

Typical details of temporary storage tanks. Actual sizes to suit Site conditions and transportation limitations.



**C192 Hong Kong & Kowloon Timber Merchants Association
Timber Yard and Sawmill at Lin Ma Hang Road
Prefabricated Drainage Units**

It is proposed to generally use prefabricated units for the drainage facilities at the new Timber Yard and Sawmill. This will facilitate construction and help to ensure the quality of the final facilities. Typical images are shown below (subject to confirmation during construction).

Drainage Channels



Catchpits (Indicative only)

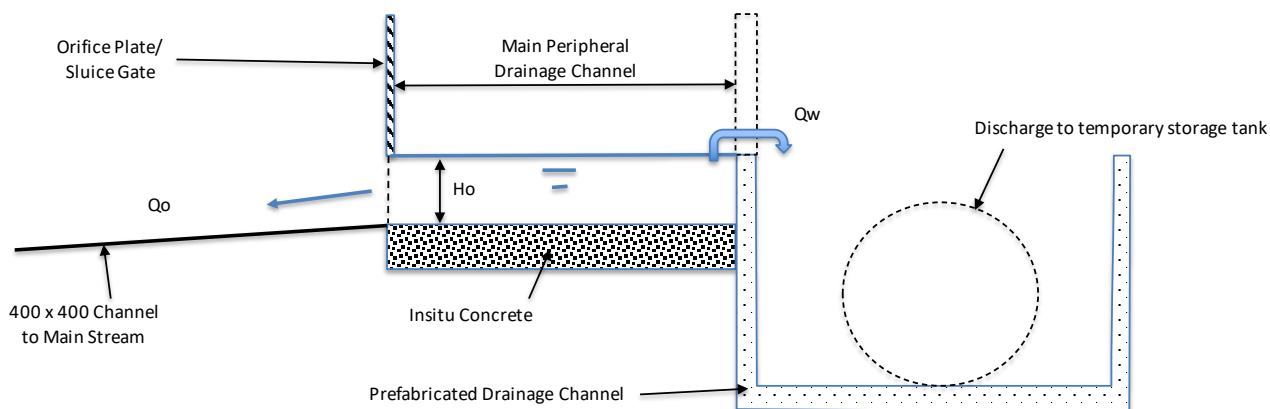


Appendix H

Overflow Weir Calculations

C192 - Hong Kong & Kowloon Timber Merchants Association Yard at Lin Ma Hang Road
Orifice/Sluice Discharges
Check Discharges at Sites A & B (Eastern Portion)

1. Assume orifice/sluice gate discharge for low flows
2. Weir overflow for excess flows
3. Discharge through Orifice/Sluice will increase as water level rises.



CROSS-SECTION THROUGH DISCHARGE/OVERFLOW CHAMBER

Sites A/B

Flows

Existing/Proposed Discharge = 0.218 m³/s (Existing runoff from Sites A&B)

Future Flow = 0.467 m³/s

Discharge Through Orifice/Sluice

Orifice Height, H_o = 0.110 m

Orifice Width = 1.0 m

Orifice/Sluice Discharge, $Q_o = C_d \times A \times (2gH)^{0.5}$

Assume C_d = 0.6

Area, A = 0.11 m²

Discharge, Q_o = 0.097 m³/s (< Existing Peak Discharge)

(N.B. Maximum discharges before water level rises above the top of the orifice/sluice and over the weir)

Weir Length, B = 3.0 m

Peak Excess Flow = 0.370 m³/s (to pass over weir)

Overflow to Weir

Weir Discharge, $Q_w = C_w \times B \times H^{1.5}$

$H_w = (Q_w / (C_w \times B))^{0.67}$

Assume C_w = 1.5

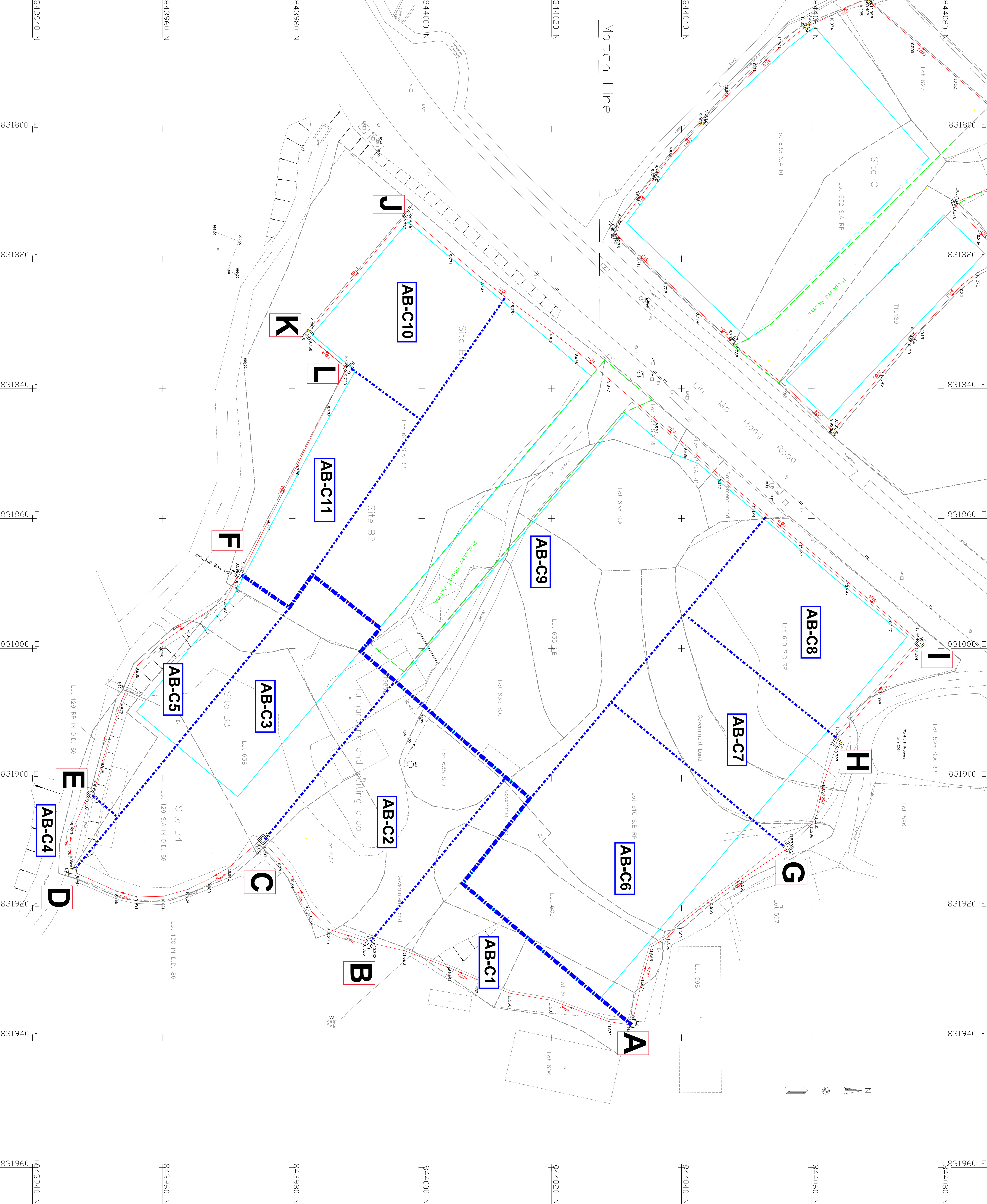
Head over Wier, H_w = 0.188 m

Peak Orifice Discharge, Q_o = 0.159 m³/s (<= Existing Peak Discharge)

Note: These are conservative assessments, as the water levels are based on the assumption that all excess flows pass over the weir.

Appendix I

Drainage Schedules



- Notes :
- Co-ordinates are relative to Hong Kong Metric Grid (1980)
 - All Levels are in Metres relative to Principal Datum (P.D.)
 - Elevation of kerb are referred to bottom of kerb
 - Dimensions are in Metres unless otherwise shown

Legends:

- As-built Drain Pipe
- As-built U-Channel
- As-built Invert Level
- As-built Catchpit
- As-built Ground Level

AB-C1 CATCHMENT AREA

CATCHMENT BOUNDARY

NOTE:
CATCHMENTS EXTEND TO
SITE BOUNDARIES

A CATCHPIT REFERENCE

DRAWING TITLE :
**SITES A&B CATCHMENT
AREAS AND CATCHPIT
REFERENCES**

Scale
@A0 1:200

Date of Survey:
June 2023

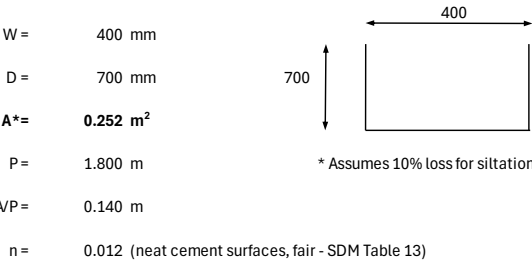
C192 - Hong Kong & Kowloon Timber Merchants Association Tard at Lin Ma Hang Road
Sites A & B - Catchment Areas

Catchment	Area (m ²)	Cumulative (m ²)
<u>Southern Boundary</u>		
	246	
	178	
AB-C1	424	424
	798	
AB-C2	798	1222
	230	
	423	
	232	
	133	
AB-C3	1018	2240
	30	
AB-C4	30	2270
	117	
	315	
AB-C5	433	2703
Overall	2703	
<u>Northern Boundary</u>		
	39	
	1089	
	87	
AB-C6	1216	1216
	544	
	84	
AB-C7	629	1844
	544	
	37	
AB-C8	582	2426
	1616	
	443	
	867	
AB-C9	2926	5352
	537	
AB-C10	537	5889
	428	
AB-C11	428	6317
Overall	6317	
TOTAL	9020	

C192 - Hong Kong & Kowloon Timber Merchants Association Yard at Lin Ma Hang Road
Sites A & B - As-constructed Channel Capacities with Mitigation Measures
Mitigation Option 1 - Additional Pipe from Catchpit J to Catchpit F2

Refer:
Topographic Survey of As-constructed drainage facilities
Measured (12/24) Channel depths
Measured Channel lengths

Standard 400W x 300D channel units are to be used throughout, but with additional 400mm depth of Site Formation and Ground Slabs (**Overall 700D**)
Use Manning's Equation



(R^{2/3})/n = 22.322

Total Site Runoff 0.467 m³/s

Total Site Area 9,020 m²

V = S^{0.5} R^{2/3}/n Q = VA

Average Unit Runoff: 0.000052 m³/s/m²

Catchpit	Invert Level (mPD)	Length (m)	Gradient (s)	Velocity (m/s)	Capacity (m ³ /s)	Catchments Served	Cumulative Area (m ²)	Runoff (m ³ /s)	Channel Adequate (Y/N)	Remarks
Eastern Boundary										
A ₁	11.675									
		40.88	0.0328	4.04	1.02	AB-C1	424	0.022	Y	
B	10.333									
	10.326	21.90	0.0054	1.65	0.41	AB-C1, C2	1222	0.063	Y	
C	10.207									
	10.052	30.86	0.0035	1.32	0.33	AB-C1, C2, C3	2240	0.116	Y	
D	9.944									
	9.935	11.68	0.0015	0.85	0.21	AB-C1, C2, C3, C4	2270	0.118	Y	
E	9.918									
	9.916	43.8	0.0035	1.32	0.33	AB-C1, C2, C3, C4, C5	2703	0.140	Y	
F ₁	9.762									
Western and Northern Boundaries										
A ₂	11.680									
		37.23	0.0011	0.74	0.19	AB-C6	1216	0.063	Y	
G	11.639									
	11.572	16.69	0.0506	5.02	1.27	AB-C6, C7	1844	0.095	Y	
H	10.727									
	10.622	18.25	0.0048	1.55	0.39	AB-C6, C7, C8	2426	0.126	Y	
I	10.534									
	10.444	102.20	0.0067	1.82	0.46	AB-C6, C7, C8, C9	5352	0.277	Y	
J	9.764									
	9.763	23.30	0.0005	0.49	0.12	AB-C6, C7, C8, C9, C10	5889	0.305	N	Additional Capacity Required
K	9.752									
	9.750	8.03	0.0014	0.83	0.21	AB-C6, C7, C8, C9, C10	5889	0.305	N	Additional Capacity Required
L	9.739									
	9.739	35.04	0.0008	0.63	0.16	AB-C6, C7, C8, C9, C10, C11	6317	0.327	N	Additional Capacity Required
F ₂	9.711									
Additional Pipe (450mm Dia. uPVC - see attached calculations):										
J	9.913									
		62.05	0.0033	1.27	0.20					
F ₂	9.711									
Overall Capacities (Existing Channel + New Pipe):										
J-K					0.32			0.305	Y	Existing Channel + New Pipe
K-L					0.41			0.305	Y	Existing Channel + New Pipe
L-F ₂					0.36			0.327	Y	Existing Channel + New Pipe

C192 - Hong Kong & Kowloon Timber Merchants Association Yard at Lin Ma Hang Road
Proposed Drainage Capacity
Mitigation Option 1 - New Pipe for Sites A & B - Catchpit J to Catchpit F2

Colebrook-white Equation in SI units, simplified for solution for D

(From "Tables for the Hydraulic Design of Pipes, Sewers & Channels" HR Wallingford)

$$\frac{Q}{\sqrt{S} D^{2.5}} = -6.555 \log \left\{ \frac{0.576 S^{0.2} K_s}{Q^{0.4}} + \frac{2.566 \times 10^{-6}}{Q^{0.6} S^{0.2}} \right\}$$

Term 4
Term 1
Term 2

Assume uPVC pipes, normal condition

D =	0.450 m	450 mm
U/S IL (@ J) =	9.913 mPD	(150mm above channel IL)
D/S IL (@F ₂) =	9.711 mPD	
Fall =	0.202 m	
Length, L =	62.05 m	
S (1 in)	307	0.0033
Ks	0.06 mm	0.00006 m

Term 1	2.00153E-05
Term 2	1.98207E-05
Term 3	28.84019524

Term 4	28.84018943
--------	-------------

Diff 0 Should be zero for solution

Capacity, Q **0.224 m³/s**

With 10% flow area allowance for sedimentation, assume 10% reduction in capacity:

Capacity, Q_{silt} = **0.201 m³/s**

A = 0.16 m²

v = Q/A = 1.41 m/s

C192 - Hong Kong & Kowloon Timber Merchants Association Tard at Lin Ma Hang Road
Sites A & B - As-constructed Channel Capacities with Mitigation Measures
Mitigation Option 2 - Enlarged Channel Section from Catchpit J to Catchpit F2

Refer:

Topographic Survey of As-constructed drainage facilities

Measured (12/24) Channel depths

Measured Channel lengths

Total Site Runoff

0.467 m³/s

Total Site Area

9,020 m²

Average Unit Runoff:

0.000052 m³/s/m²

Standard 400W x 300D channel units are to be used throughout, but with additional 400mm depth of Site Formation and Ground Slabs (**Overall 700D**)

Use Manning's Equation:

W = 400 mm

D = 700 mm

A* = 0.252 m²

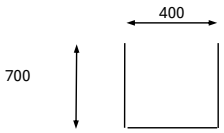
P = 1.800 m

R = A/P = 0.140 m

n = 0.012 (neat cement surfaces, fair - SDM Table 13)

(R^{2/3})/n = 22.322

* Assumes 10% loss for siltation



Enlarged Section from Catchpit J to F2:

W = 800 mm

D = 700 mm

A* = 0.504 m²

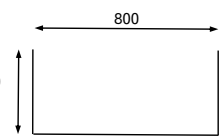
P = 2.200 m

R = A/P = 0.229 m

n = 0.012 (neat cement surfaces, fair - SDM Table 13)

(R^{2/3})/n = 31.047

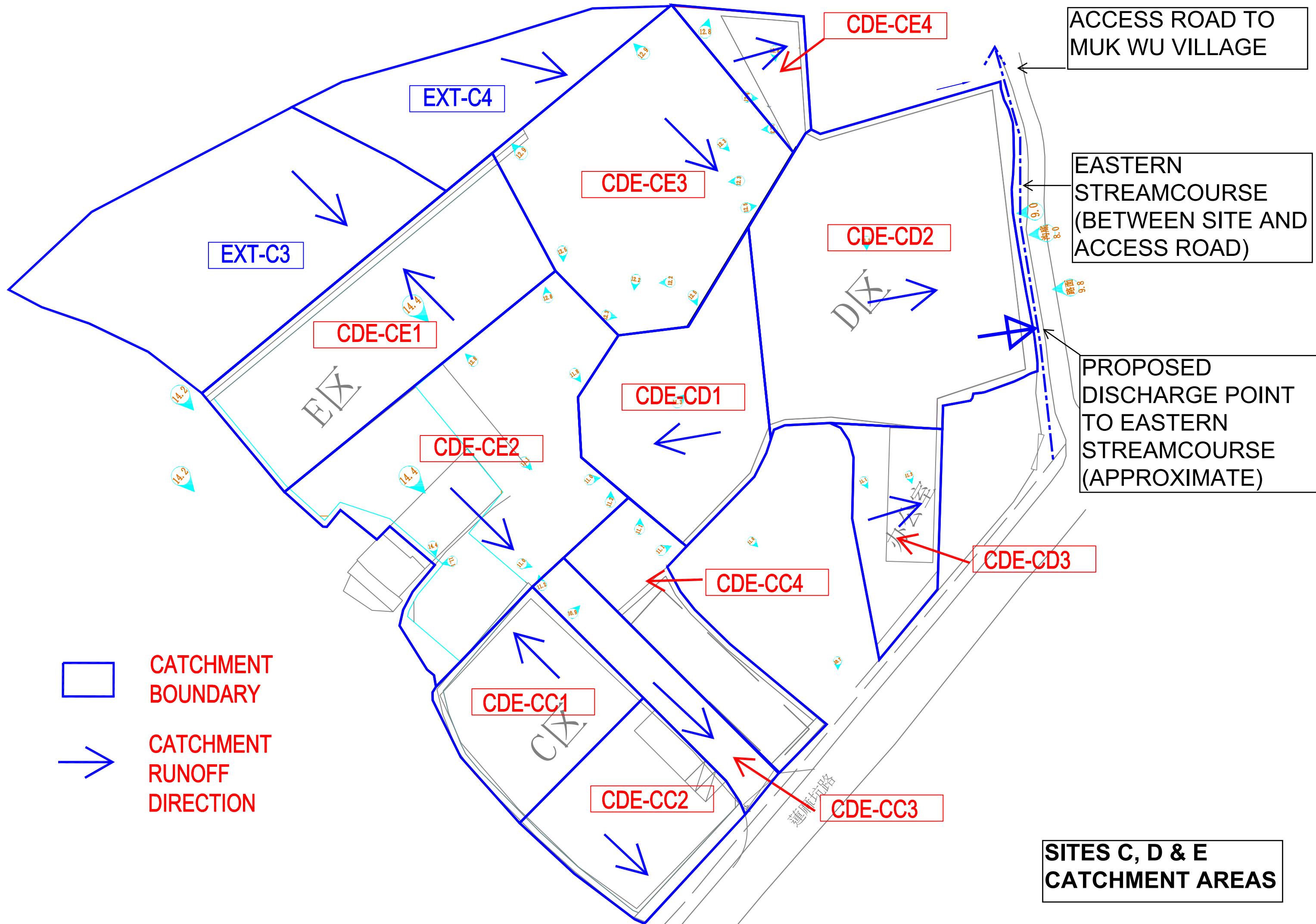
* Assumes 10% loss for siltation



$V = S^{0.5} R^{2/3} / n$

$Q = VA$

Catchpit	Invert Level (mPD)	Length (m)	Gradient (s)	Velocity (m/s)	Capacity (m ³ /s)	Catchments Served	Cumulative Area (m ²)	Runoff (m ³ /s)	Channel Adequate (Y/N)	Remarks
<i>Eastern Boundary</i>										
A ₁	11.675									
B	10.333	40.88	0.0328	4.04	1.02	AB-C1	424	0.022	Y	
	10.326									
C	10.207	21.90	0.0054	1.65	0.41	AB-C1, C2	1222	0.063	Y	
	10.052									
D	9.944	30.66	0.0035	1.32	0.33	AB-C1, C2, C3	2240	0.116	Y	
	9.935									
E	9.918									
	9.916									
F ₁	9.762	43.8	0.0035	1.32	0.33	AB-C1, C2, C3, C4, C5	2703	0.140	Y	
<i>Western and Northern Boundaries</i>										
A ₅	11.680									
G	11.639	37.23	0.0011	0.74	0.19	AB-C6	1216	0.063	Y	
	11.572									
H	10.727	16.69	0.0506	5.02	1.27	AB-C6, C7	1844	0.095	Y	
	10.622									
I	10.534	18.25	0.0048	1.55	0.39	AB-C6, C7, C8	2426	0.126	Y	
	10.444									
J	9.764	102.20	0.0067	1.82	0.46	AB-C6, C7, C8, C9	5352	0.277	Y	
	9.763									
K	9.752	23.30	0.0005	0.67	0.34	AB-C6, C7, C8, C9, C10	5889	0.305	Y	Enlarged Section
	9.750									
L	9.739	8.03	0.0014	1.15	0.58	AB-C6, C7, C8, C9, C10	5889	0.305	Y	Enlarged Section
	9.739									
F ₂	9.711	35.04	0.0008	0.88	0.44	AB-C6, C7, C8, C9, C10, C11	6317	0.327	Y	Enlarged Section



C192 - Hong Kong & Kowloon Timber Merchants Association Yard at Lin Ma Hang Road
Sites CDE Catchment Areas

Catchment	Catchment Area (m ²)	Remarks
<u>External Areas</u>		
EXT-C3	1809	
EXT-C4	840	
Lot 630RP	1090	
<u>Site Areas</u>		
CDE-CC1	762	
CDE-CC2	776	
CDE-CC3	387	
CDE-CC4	605	
CDE-CD1	1005	
CDE-CD2	2266	
CDE-CD3	480	
CDE-CE1	1377	
CDE-CE2	1876	
CDE-CE3	1666	
CDE-CE4	295	
CDE Total	11494	Site Areas Only
Site Area	11494	Formal Submission Area

C192 - Hong Kong & Kowloon Timber Merchants Association Yard at Lin Ma Hang Road
Drainage Schedule - Sites C, D & E

Refer to Site Catchment Plan (Appendix I), Overall Runoff Calculations and Standard Channel/Pipe Capacity Calculations.
 See Drainage Plan for Catchpit/Manhole reference numbers

For simplicity, adopt standard runoff across entire main Site areas:

Total Site Runoff (CDE) 0.572 m³/s
 Total Site Area (CDE) 11,494 m²
 Average Unit Runoff (CDE): 0.000050 m³/s/m²

Total External Runoff (EXT-C3 & C4) 0.046 m³/s

Total External Area (EXT-C3 & C4) 2,649 m²

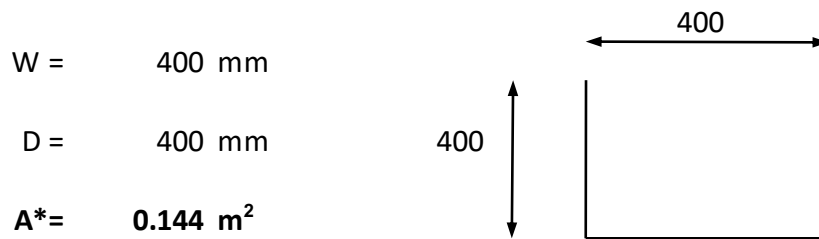
Average Unit Runoff: 0.000017 m³/s/m²

Catchpit	Invert Level (mPD)	Length (m)	Gradient (s)	Velocity (m/s)	Capacity (m ³ /s)	Catchments Served	Cumulative Area (m ²)	Runoff (m ³ /s)	Channel Adequate (Y/N)	Remarks
Northern/Eastern Catchments										
S1	TBC	TBC				CDE-CE1 EXT-C3	1377 1809	0.069 0.031		
S2	TBC	TBC	0.005	1.42	0.20			0.100	Y	400W x 400D Channel
Y1	TBC	TBC	0.003	1.25	0.14	CDE-CE1, EXT-C3		0.100	Y	400 DIA. uPVC Pipe
Y2	TBC	TBC	0.003	1.25	0.14	CDE-CE1, EXT-C3		0.100	Y	400 DIA. uPVC Pipe To Storage
S2	TBC	TBC	0.005	1.42	0.20	EXT-C4	840	0.015	Y	400W x 400D Channel
S3	TBC	TBC				EXT-C4 CDE-CE4 (50%)	147	0.015 0.007		
S4	TBC	TBC	0.005	1.42	0.20			0.022	Y	400W x 400D Channel
						EXT-C4, CDE-CE4 (50%) CDE-CE4 (50%)	147	0.022 0.007		
S5	TBC	TBC	0.005	1.42	0.20			0.029	Y	400W x 400D Channel
S6	TBC	TBC	0.005	1.42	0.20	EXT-C4, CDE-CE4		0.029	Y	400W x 400D Channel
						EXT-C4, CDE-CE4 CDE-CD2 (50%)	1133	0.029 0.056		
S7	TBC	TBC	0.005	1.42	0.20			0.086	Y	400W x 400D Channel To Storage
S7	TBC	TBC	0.005	1.42	0.20	CDE-CD2 (50%)	1133	0.056	Y	400W x 400D Channel To Storage
S8	TBC	TBC								
Y3	TBC	TBC	0.003	1.42	0.14	CDE-CE3	1666	0.083	Y	400 DIA. uPVC Pipe
Y2	TBC	TBC								To Storage
Western/Southern Catchments										
S1	TBC	TBC								
S22	TBC	TBC	0.005	1.42	0.20	Minor Local Runoff Only			Y	400W x 400D Channel
S21	TBC	TBC	0.005	1.42	0.20	Minor Local Runoff Only			Y	400W x 400D Channel
S20	TBC	TBC	0.005	1.42	0.20	Minor Local Runoff Only			Y	400W x 400D Channel
S19	TBC	TBC	0.005	1.42	0.20	Minor Local Runoff Only			Y	400W x 400D Channel
S18	TBC	TBC	0.005	1.42	0.20	Minor Local Runoff Only			Y	400W x 400D Channel
S17	TBC	TBC	0.005	1.42	0.20	Minor Local Runoff Only			Y	400W x 400D Channel
						CDE-CC2 CDE-CC3	776 387			
			0.005	1.42	0.20		1163	0.058	Y	400W x 400D Channel
S16	TBC	TBC	0.005	1.42	0.20	CDE-CC2, CDE-CC3	1163	0.058	Y	400W x 400D Channel
S15	TBC	TBC				CDE-CC2, CDE-CC3 CDE-CC4	1163 605			
			0.005	1.42	0.20		1767	0.088	Y	400W x 400D Channel To Storage
S14	TBC	TBC								
Y4	TBC	TBC				CDE-CC1 CDE-CE2	762 1876			
			0.003	1.25	0.14		2638	0.131	Y	400 DIA. uPVC Pipe To Storage
Y5	TBC	TBC								
S11	TBC	TBC	0.005	1.42	0.20	Lot 630RP	1090	0.011	Y	400W x 400D Channel
S12	TBC	TBC								To Storage
S12	TBC	TBC	0.005	1.42	0.20	Lot 630RP (20%)	218	0.002	Y	400W x 400D Channel
S13	TBC	TBC	0.005	1.42	0.20	Lot 630RP (20%)	218	0.002	Y	400W x 400D Channel
S14	TBC	TBC								To Storage
S11	TBC	TBC	0.005	1.42	0.20	CDE-CD3 (20%)	96	0.005	Y	400W x 400D Channel
S10	TBC	TBC	0.005	1.42	0.20	CDE-CD3	480	0.024	Y	400W x 400D Channel
S9	TBC	TBC								To Storage
S9	TBC	TBC	0.005	1.42	0.20	Minor Local Runoff Only			Y	400W x 400D Channel
S8	TBC	TBC								To Storage
N/A						CDE-CD1	1005	0.050	Y	Roof Drainage direct to storage.

TBC: To Be Confirmed. Exact levels and lengths to be confirmed on-Site during construction. Drainage facilities to follow the parameters set out in this schedule.

C192 - Hong Kong & Kowloon Timber Merchants Association Yard at Lin Ma Hang Road
Sites CDE - Standard Channel Capacities

Standard 400W x 400D channel units (@ 0.5% gradient) are proposed throughout
 Use Manning's Equation:



$$W = 400 \text{ mm}$$

$$D = 400 \text{ mm}$$

$$A^* = 0.144 \text{ m}^2$$

$$P = 1.200 \text{ m}$$

* Assumes 10% loss for siltation

$$R = A/P = 0.120 \text{ m}$$

$$n = 0.012 \text{ (neat cement surfaces, fair - SDM Table 13)}$$

$$(R^{2/3})/n = 20.131$$

$$S = 0.005$$

$$V = S^{0.5} R^{2/3} / n \quad Q = VA$$

$$\text{Velocity, } V = 1.42 \text{ m/s}$$

$$\text{Capacity, } Q = 0.205 \text{ m}^3/\text{s}$$

C192 - Hong Kong & Kowloon Timber Merchants Association Yard at Lin Ma Hang Road
Proposed Drainage Capacity
Pipes for Sites C, D & E

Colebrook-white Equation in SI units, simplified for solution for D

(From "Tables for the Hydraulic Design of Pipes, Sewers & Channels" HR Wallingford)

$$\frac{Q}{\sqrt{S} D^{2.5}} = -6.555 \log \left\{ \frac{0.576 S^{0.2} K_s}{Q^{0.4}} + \frac{2.566 \times 10^{-6}}{Q^{0.6} S^{0.2}} \right\}$$

Term 4 Term 1 Term 2 Term 3

Assume uPVC pipes, normal condition

D =	0.400 m	400 mm
S (1 in)	333	0.0030
Ks	0.06 mm	0.00006 m

Term 1	2.26768E-05
Term 2	2.4888E-05
Term 3	28.33539742

Term 4	28.33559293
--------	-------------

Diff 0 Should be zero for solution

Capacity, Q 0.157 m³/s

With 10% flow area allowance for sedimentation, assume 10% reduction in capacity:

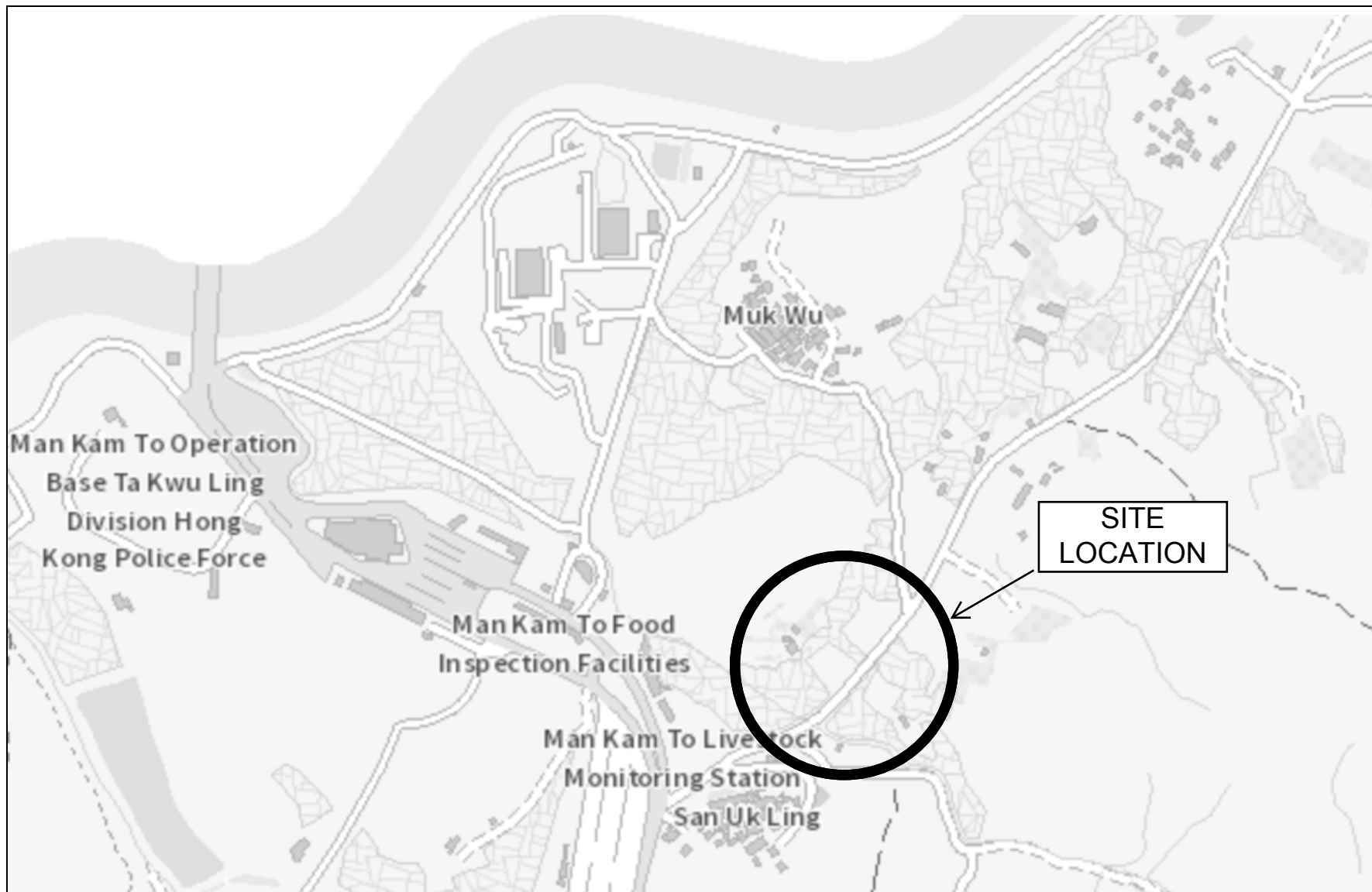
Capacity, Q_{silt} = 0.141 m³/s

A = 0.13 m²

v = Q/A = 1.25 m/s

Appendix J

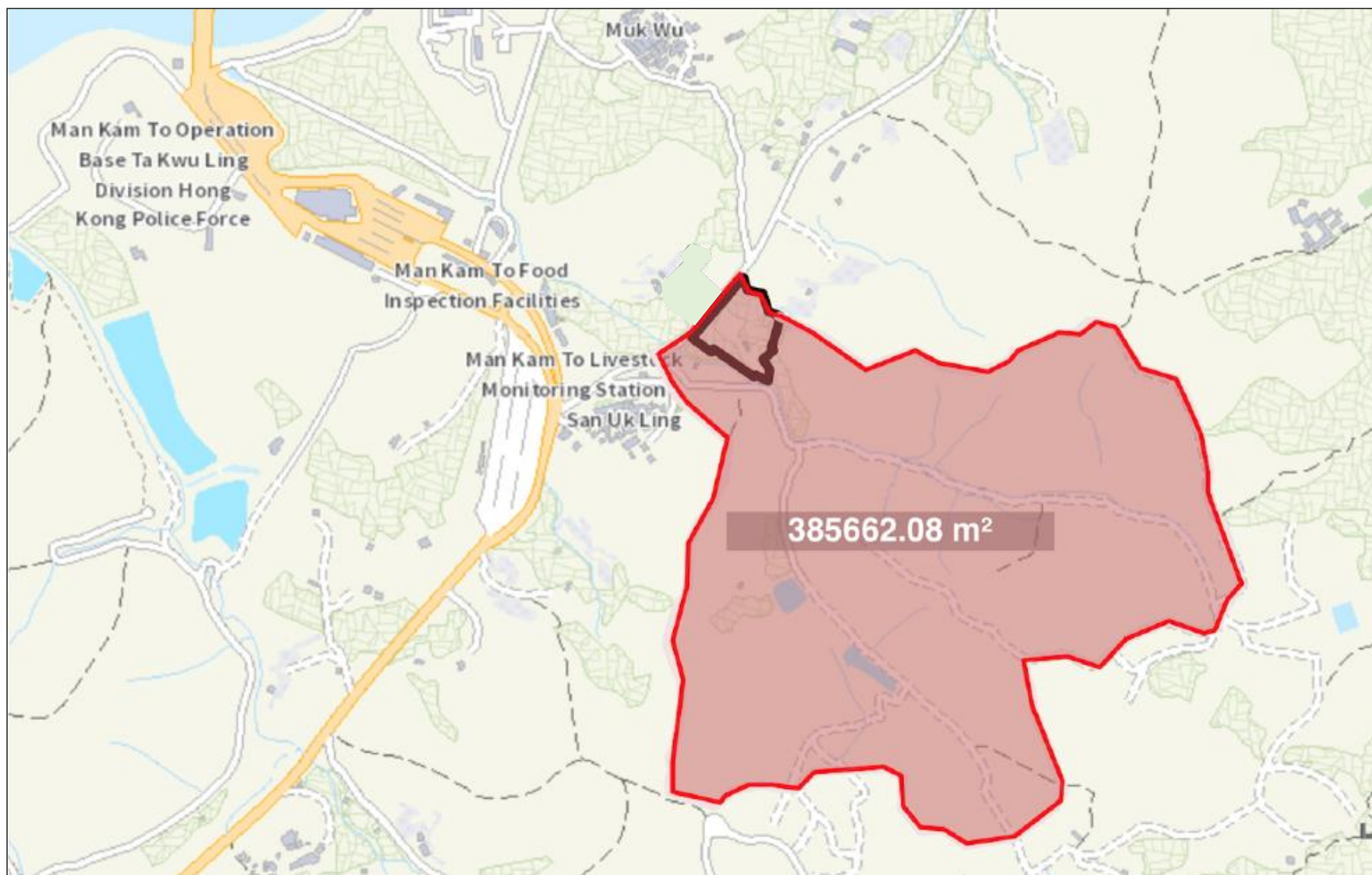
Figures



Proposed Rural Workshop (Timber Yard and Sawmill) at Various Lots
in D.D.86, D.D. 90 and Adjoining Government Land, Lin Ma Hang
Road, San Uk Ling, Ma Kam To

Site Location Plan

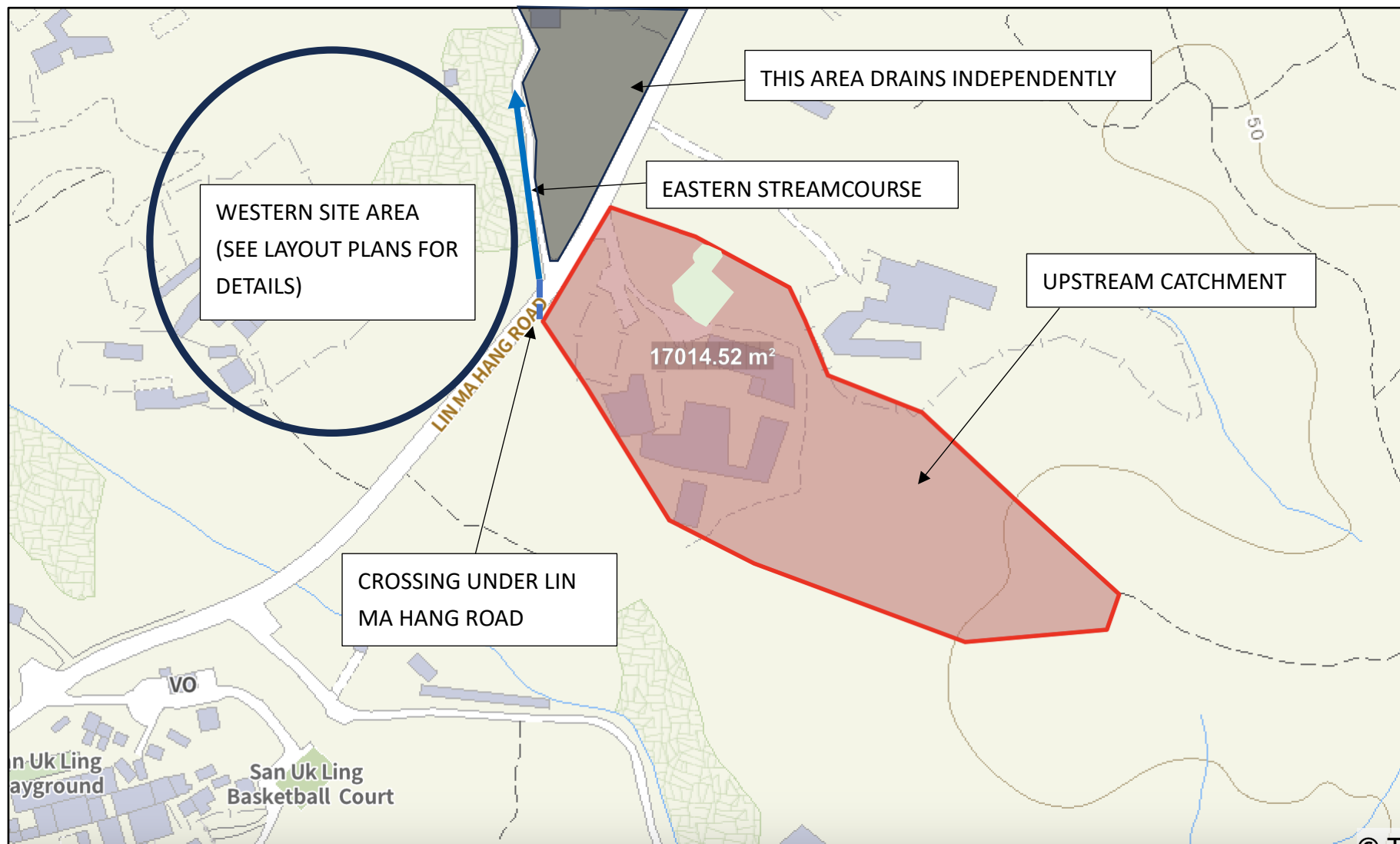
Figure 1



**Proposed Rural Workshop (Timber Yard and Sawmill) at Various Lots
in D.D.86, D.D. 90 and Adjoining Government Land,
Lin Ma Hang Road, San Uk Ling, Ma Kam To**

Overall Catchment Area (Eastern Site)

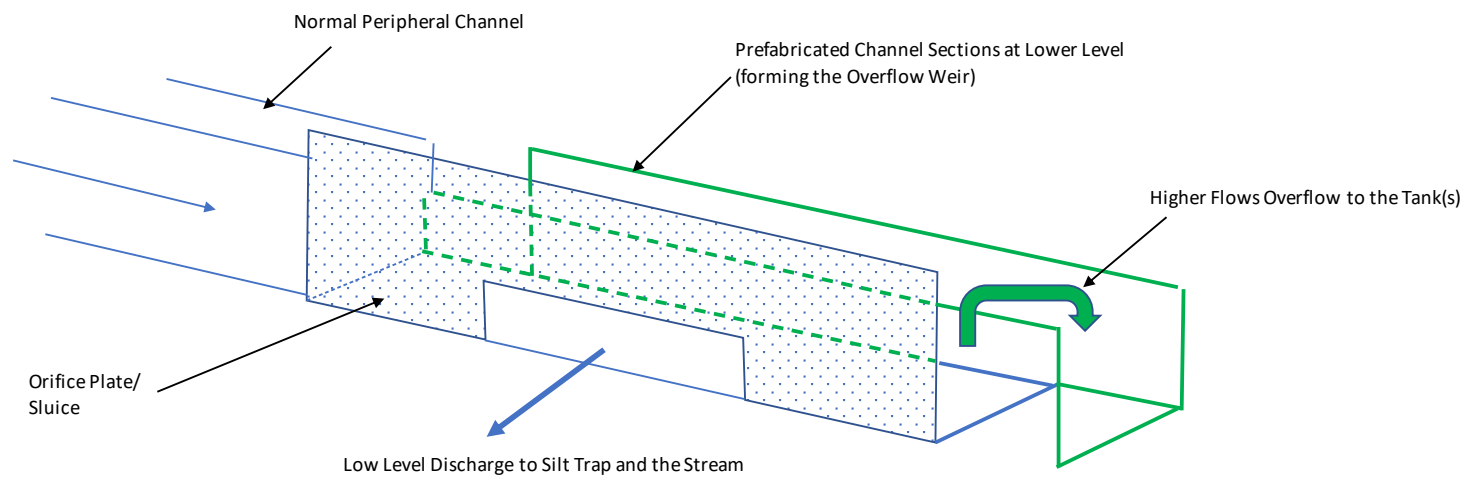
Figure 3



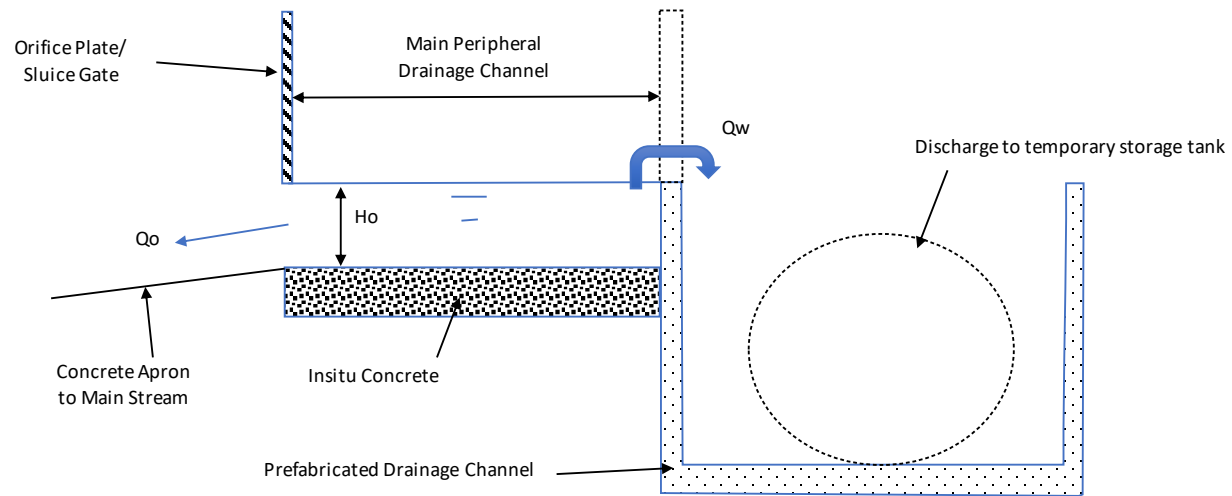
**Proposed Rural Workshop (Timber Yard and Sawmill) at Various Lots
in D.D.86, D.D. 90 and Adjoining Government Land,
Lin Ma Hang Road, San Uk Ling, Ma Kam To**

Upstream Catchment Area (Western Site)

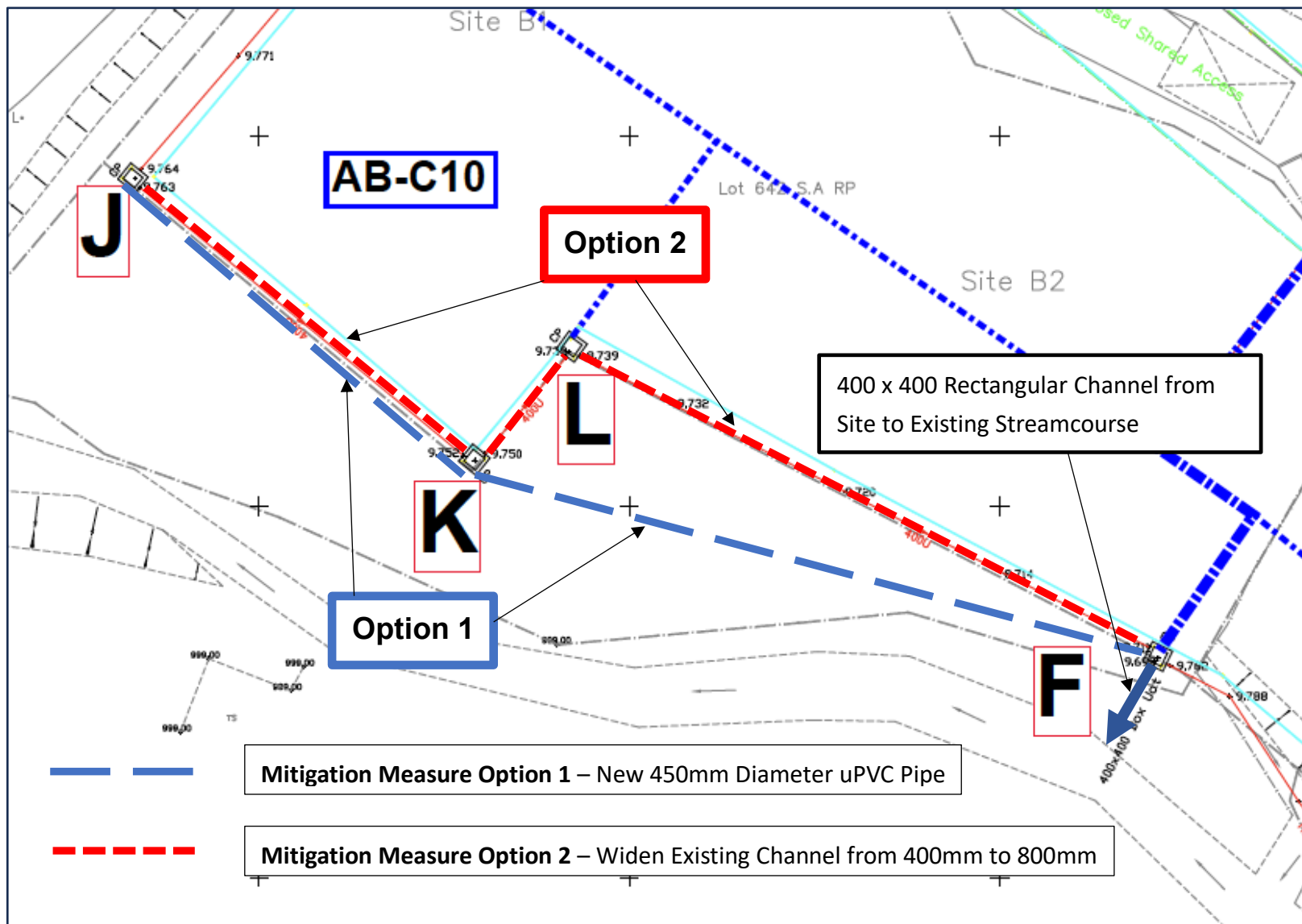
Figure 4



SCHEMATIC DIAGRAMME OF DISCHARGE/OVERFLOW ARRANGEMENT



CROSS-SECTION THROUGH DISCHARGE/OVERFLOW CHAMBER



Proposed Rural Workshop (Timber Yard and Sawmill) at Various Lots
in D.D.86, D.D. 90 and Adjoining Government Land,
Lin Ma Hang Road, San Uk Ling, Ma Kam To

Eastern Site (Sites A&B) Mitigation Measures and Site Outlet

Figure 6

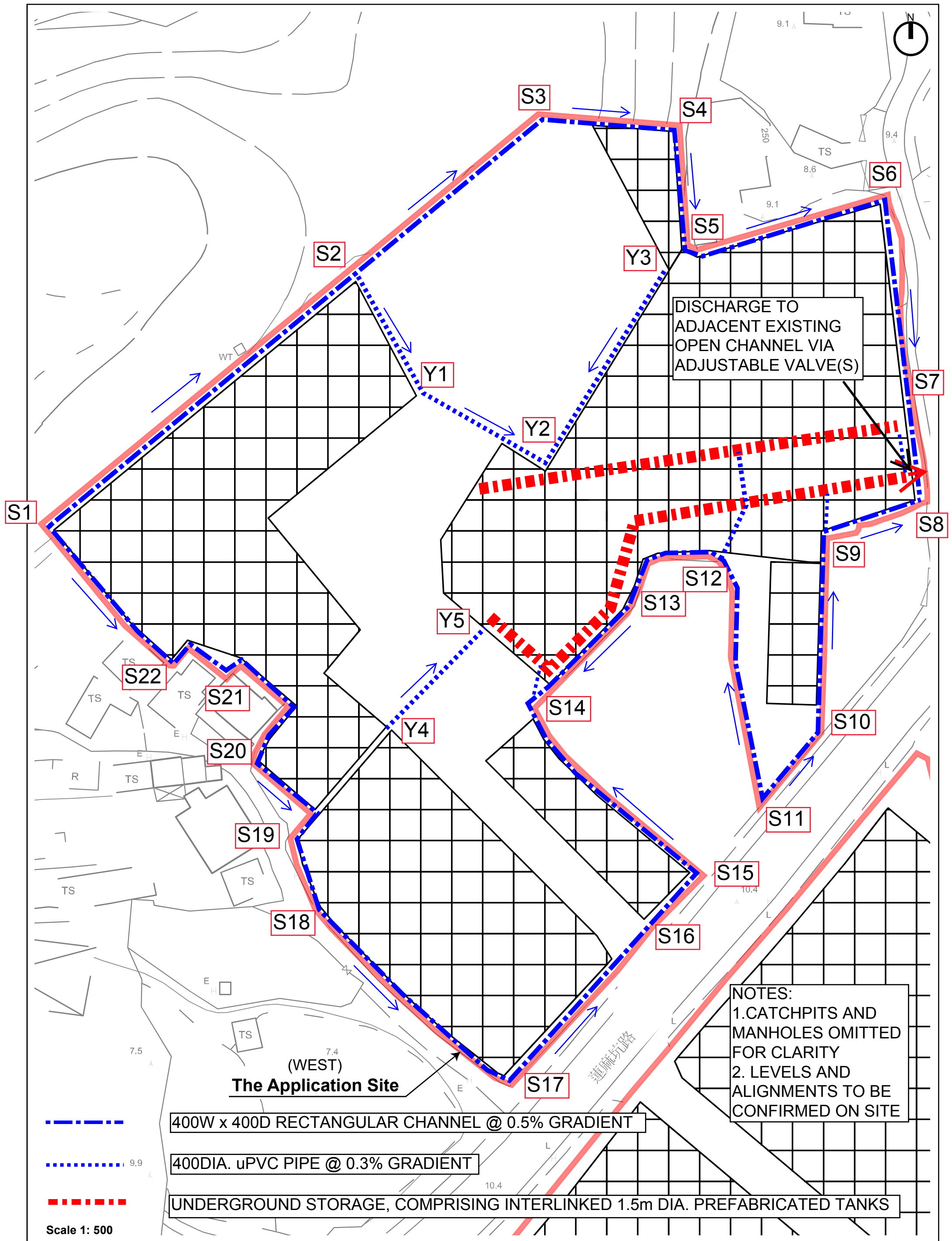
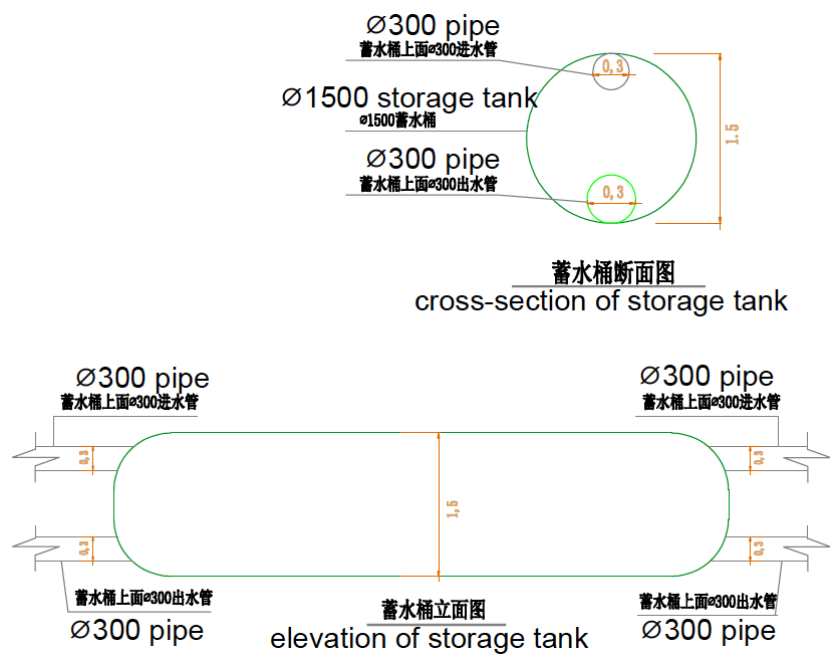
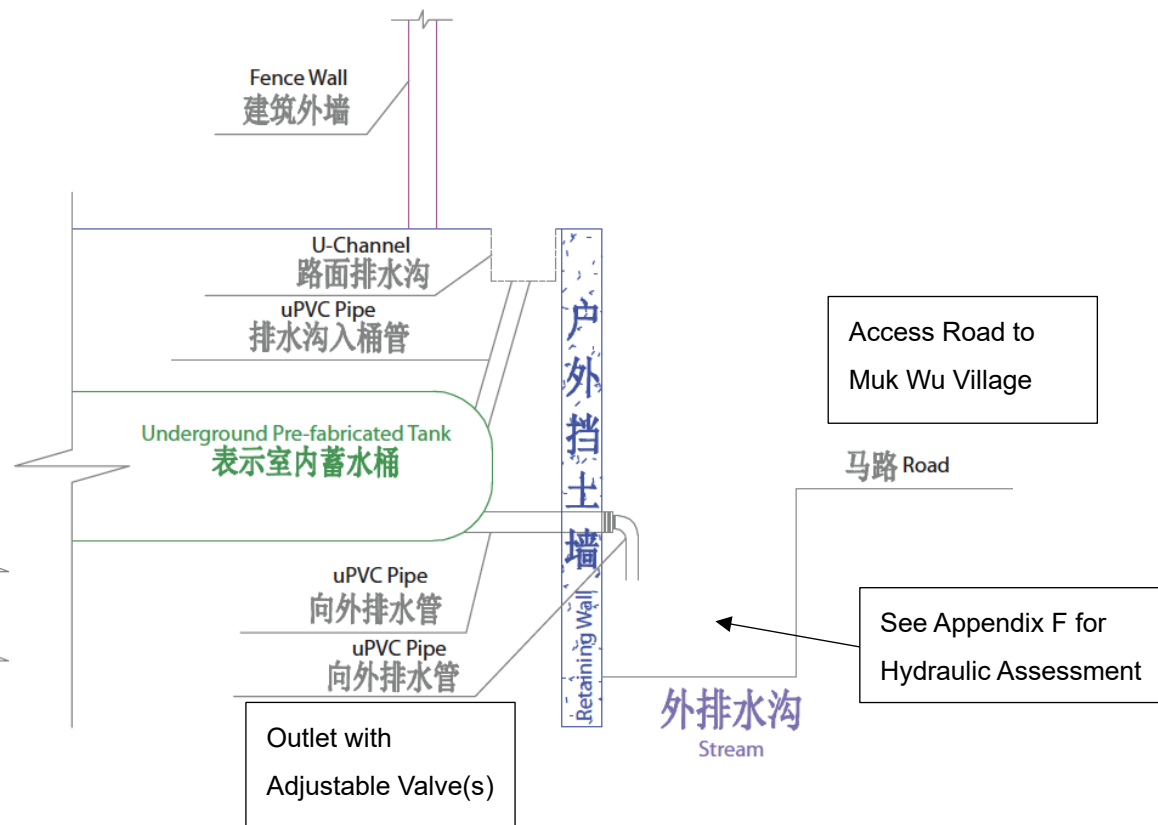


Figure 7



General Arrangement of Storage Tanks



Site Outlet Arrangement

Proposed Rural Workshop (Timber Yard and Sawmill) at Various Lots in D.D.86, D.D. 90 and Adjoining Government Land, Lin Ma Hang Road, San Uk Ling, Ma Kam To	Western Site (Sites C, D & E) Storage and Site Outlet
	Figure 8



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

Tel: [REDACTED]
Fax: [REDACTED]
E-mail: [REDACTED]
Website: <http://www.tocoplanning.com>

Your Ref.: TPB/A/NE-MKT/35

Attn.: Ms. Leticia LEUNG

Dear Madam,

20 March, 2025

**Section 16 Planning Application for Proposed Temporary Rural Workshop
(Timber Yard and Sawmill) for a Period of 3 Years at Various Lots in D.D. 86 and
D.D. 90 and Adjoining Government Land, Lin Ma Hang Road, Sha Ling**

We refer to the comments from the Drainage Services Department (DSD) in response to approval condition (d) in relation to the submission of a revised drainage impact assessment under the captioned planning application via the letter from Sha Tin, Tai Po & North District Planning Office dated 5.3.2024.

Please find attached 3 copies each of the Response-to-Comments table and revised Drainage Impact Assessment for your attention and circulation to DSD.

Yours faithfully,

Toco Planning Consultants Ltd.

Ted Chan
Managing Director



cc Client
DPO/STN (Attn. Ms. TSANG Tsz Man, Cheryl)

Responses to Comments from Drainage Services Department (DSD) (Contact person: Mr. Samuel Xing Wang - Tel : 23001135)

Item	Departmental Comments	The Applicant's Responses
DSD(1)	It is noted that the required storage for Catchments C, D and E were calculated. However, for easy reference, please also state clearly how much storage is being provided accordingly.	Noted. The actual storage to be provided is approximately 250m ³ .
DSD(2)	Para. 5.2.8: Please further elaborate on the operation mechanism of the controllable valves, especially during the rainstorm event.	The storage tanks will discharge by gravity via an outlet valve(s), which will be normally set to discharge the assumed maximum 0.25m ³ /s under peak flow conditions. However, the valve(s) will have the capability of being manually adjusted, so the setting(s) can be modified to suit operational conditions, if necessary.
DSD(3)	Plate 10 of Appendix C: It is observed that a metal plate is found at the labeled flow path. Please advise if any modification to the condition would be made or otherwise the relevant hydraulic impact was considered.	Plate 10 simply shows a piece of wood at ground level and we are not aware of any metal plate at this location or at the road crossing drain. However, in any case, any restriction upstream of the Ling Ma Hang Road crossing would simply limit the flow arriving in the channel at the downstream side of the road, so would not adversely affect the flows and assumptions adopted for the calculations and DIA.

規 劃 署

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香港新界沙田上禾輦路一號
沙田政府合署
十三樓 1301-1314 室



Planning Department

Sha Tin, Tai Po & North
District Planning Office
Rooms 1301-1314, 13/F,
Shatin Government Offices,
1 Sheung Wo Che Road, Sha Tin,
N.T., Hong Kong

來函檔號 Your Reference
本署檔號 Our Reference () in TPB/A/NE-MKT/35
電話號碼 Tel. No. : 2158 6220
傳真機號碼 Fax No. : 2691 2806

By Email

Toco Planning Consultants Ltd.

17 April 2026

(Attn.: Ted Chan)

Dear Sir/Madam,

Proposed Temporary Warehouse (Timber and Other Associated Materials) for a Period of 3 Years and Associated Filling of Land in "Agriculture" Zone, Lot 129 S.A (Part) in D.D. 86 and Various Lots in D.D. 90 and Adjoining Government Land, Lin Ma Hang Road, Sha Ling (Compliance with Approval Condition (e) for Planning Application No. A/NE-MKT/35)

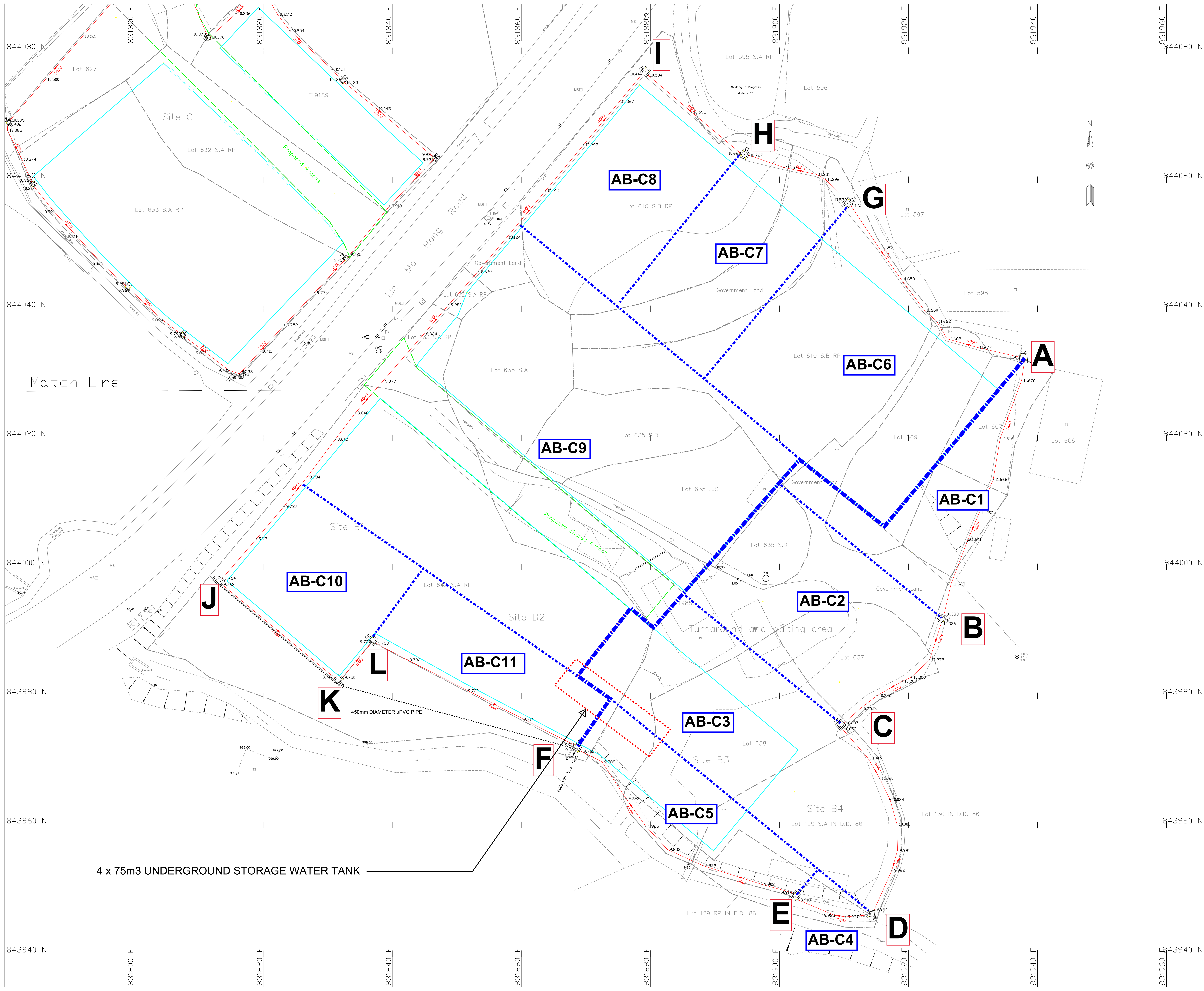
I refer to your submission dated 20.3.2026 and your supplementary information dated 9.4.2026, 10.4.2026 and 15.4.2026 for compliance with approval condition (e) in relation to the provision of flood mitigation measures and any other stormwater drainage facilities in the accepted drainage impact assessment to the satisfaction of the Director of Drainage Services or of the Town Planning Board under the captioned planning application.

The Chief Engineer/Mainland North, Drainage Services Department (Contact person: Mr. Renol TAN; Tel. No.: 3965 8925) has been consulted and considered that approval condition (e) has been complied with.

Should you have any queries related to planning matters, please contact Ms. Cheryl TSANG of this Office at 2158 6229.

Yours faithfully,

(Rico TSANG)
for Director of Planning



Notes :

1. Co-ordinates are relative to Hong Kong Metric Grid (1980)
2. All Levels are in Metres relative to Principal Datum (P.D.)
3. Elevation of kerb are referred to bottom of kerb
4. Dimensions are in Metres unless otherwise shown

Legends:

	As-built Drain Pipe
	As-built U-Channel
	As-built Invert Level
	As-built Catchpit
	As-built Ground Level

AB-C1 CATCHMENT AREA

CATCHMENT BOUNDARY

A CATCHPIT REFERENCE

NOTE:
CATCHMENTS EXTEND TO
SITE BOUNDARIES

DRAWING TITLE :

**SITES A&B CATCHMENT
AREAS AND CATCHPIT
REFERENCES**

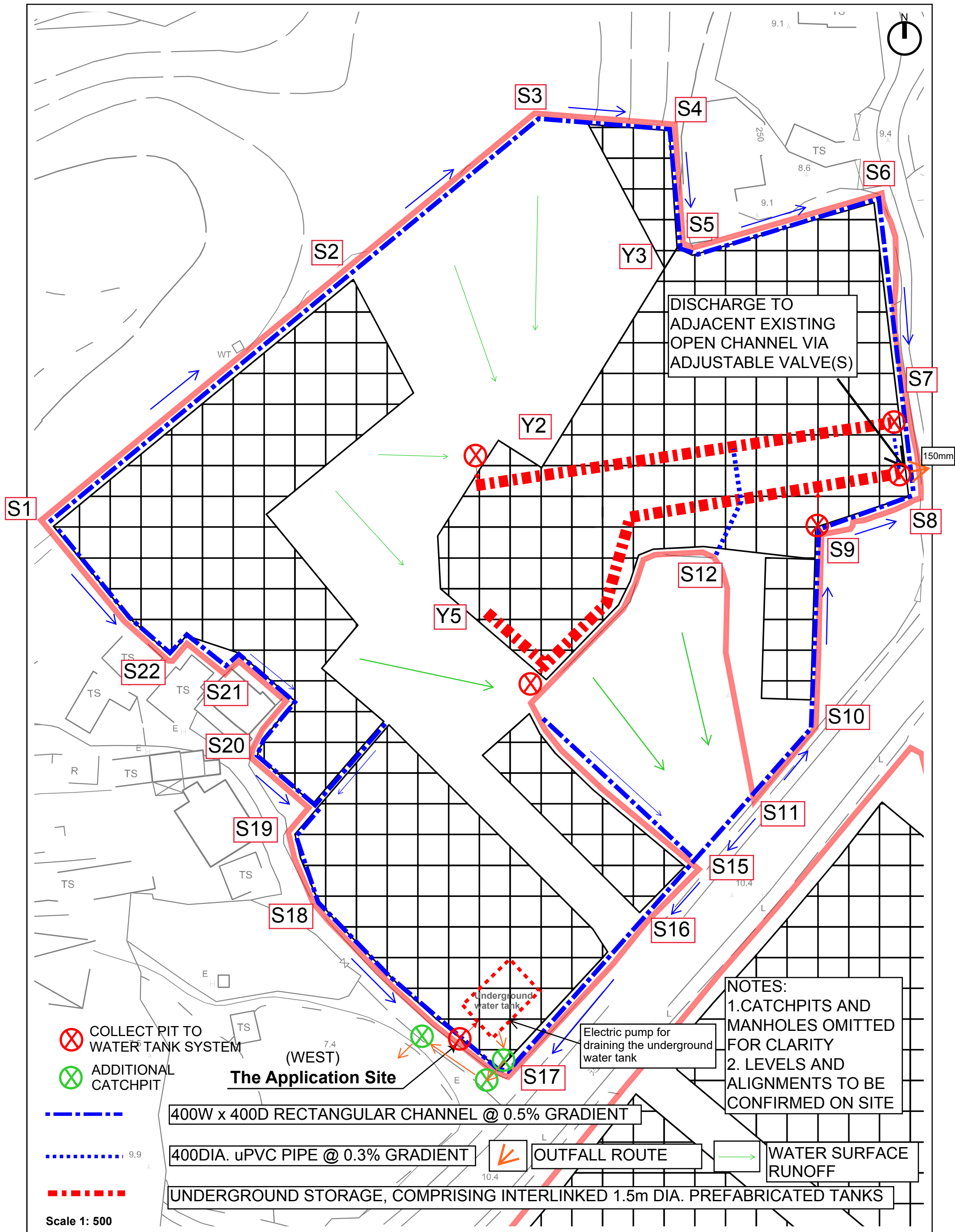
Scale

@A0 1:200

Date of Survey:

June 2023

**EASTERN SITE (SITES A & B)
AS BUILT DRAINAGE PLAN**



**WESTERN SITE (SITES C, D & E)
AS BUILT DRAINAGE PLAN**

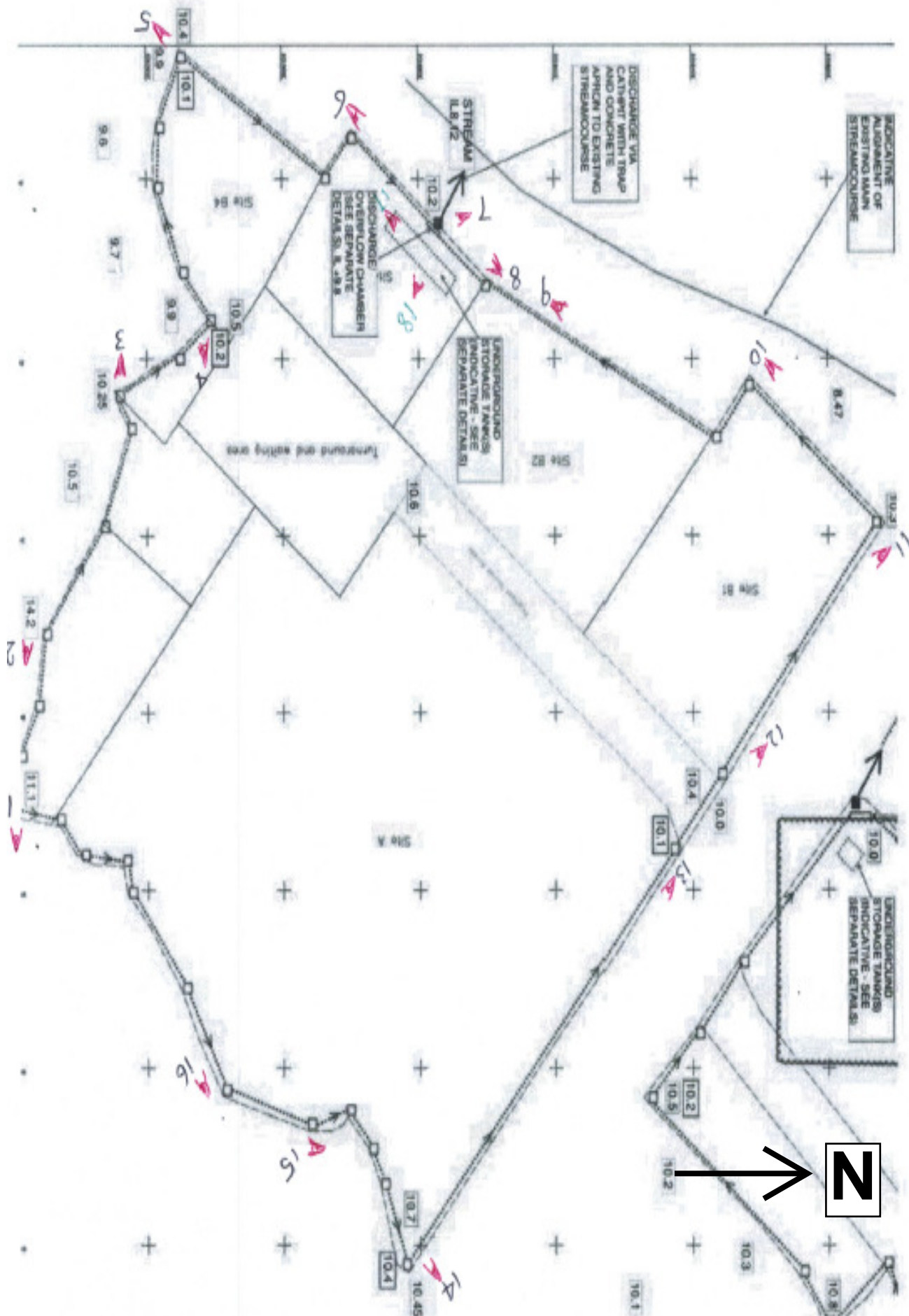
Figure 7

Responses to Comments from Drainage Services Department (DSD) (Contact person: Mr. Samuel Wang - Tel : 396508925)

Item	Departmental Comments	The Applicant's Responses
DSD(1)	The location of underground water tanks at western side is different from the recommendation in approved Drainage Impact Assessment (DIA), please substantiate that the volume and effectiveness are equivalent to the original design.	According to the Applicant, the as-built underground water tanks currently provide a total storage capacity of 414 m³, which exceeds the recommendation set out in the approved DIA. This demonstrates an effectiveness that is equivalent to, or even superior to, the original design intent. Site CDE 區 (Western Site) 地下儲水缸 D 區 Ø1500 142m 251m² 進水位 Ø300 Y2 Y5 S7 S8 出水位 Ø0-100 S7 S8 Ø2400 x 12 x 3 163 m² 進水位 Ø300 自然泥入 S17 出水位 Ø50 水渠抽出 S17
DSD(2)	According to the DIA, storage water tanks are required at eastern side (Site A&B) while missing in as-built drawing, please clarify whether it was constructed and in operation.	The location of the underground storage water tanks has been indicated on the updated as-built drawing attached. The Applicant confirms it is constructed and in operation.

Item	Departmental Comments	The Applicant's Responses
DSD(3)	According to the DIA, upgrading works to the as-construction details for the eastern portion is required. Please clarify whether the upgrading works has been completed. 5.2.5 The construction works in the eastern portion of the Site, including the Site drainage facilities, have been completed (see photographs in Appendix C). The as-constructed details for the Eastern Portion have been checked against the latest design standards, as set out in Appendix I. The peripheral channels are generally adequate for the expected runoff, with the exception of a section along the (south-) western boundary of the Site (from Catchpits J to F2). It is proposed to upgrade this section, by either adding an additional uPVC pipe or by widening the as-constructed channel, with the final arrangement to be determined on-Site, to suit Site conditions. Both options have been assessed in Appendix I and are indicated on Figure 6.	According to the Applicant, an additional uPVC pipe has been constructed from Catchpits J to F2. Such detail has been indicated on the updated as-built drawing attached.
DSD(4)	Please provide the emergency contact of the operator for the underground water tank system.	The emergency contact is Mr. Joe Ng – telephone no. is 9172 6390.
DSD(5)	Vegetation and debris were observed during the site inspection at the drainage system, please be reminded to carry out regular clearance works.	Noted.

SITES A & B - PHOTOGRAPHS OF AS- CONSTRUCTED DRAINAGE FACILITIES



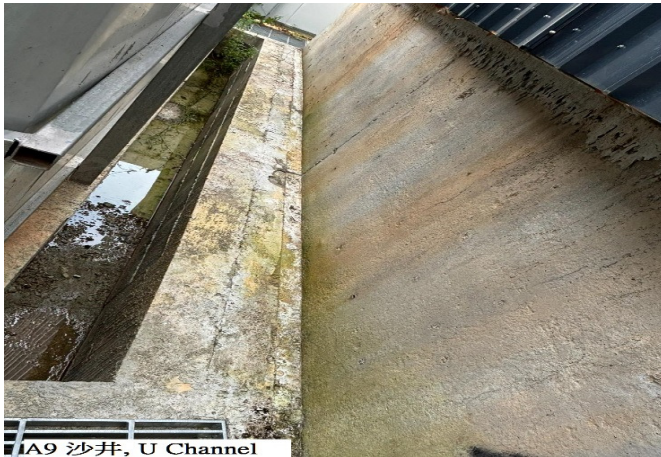




A7 地下雨水缸入水口特寫



A8 地下雨水缸泵水出口



A9 沙井, U Channel



A10 沙井, U Channel



A11 沙井, U Channel



A12 門口沙井, U Channel



A13 U Channel



A14 沙井, U Channel



A15 沙井, U Channel



A16 沙井, U Channel



A17 4 x 75m3 地下雨水缸

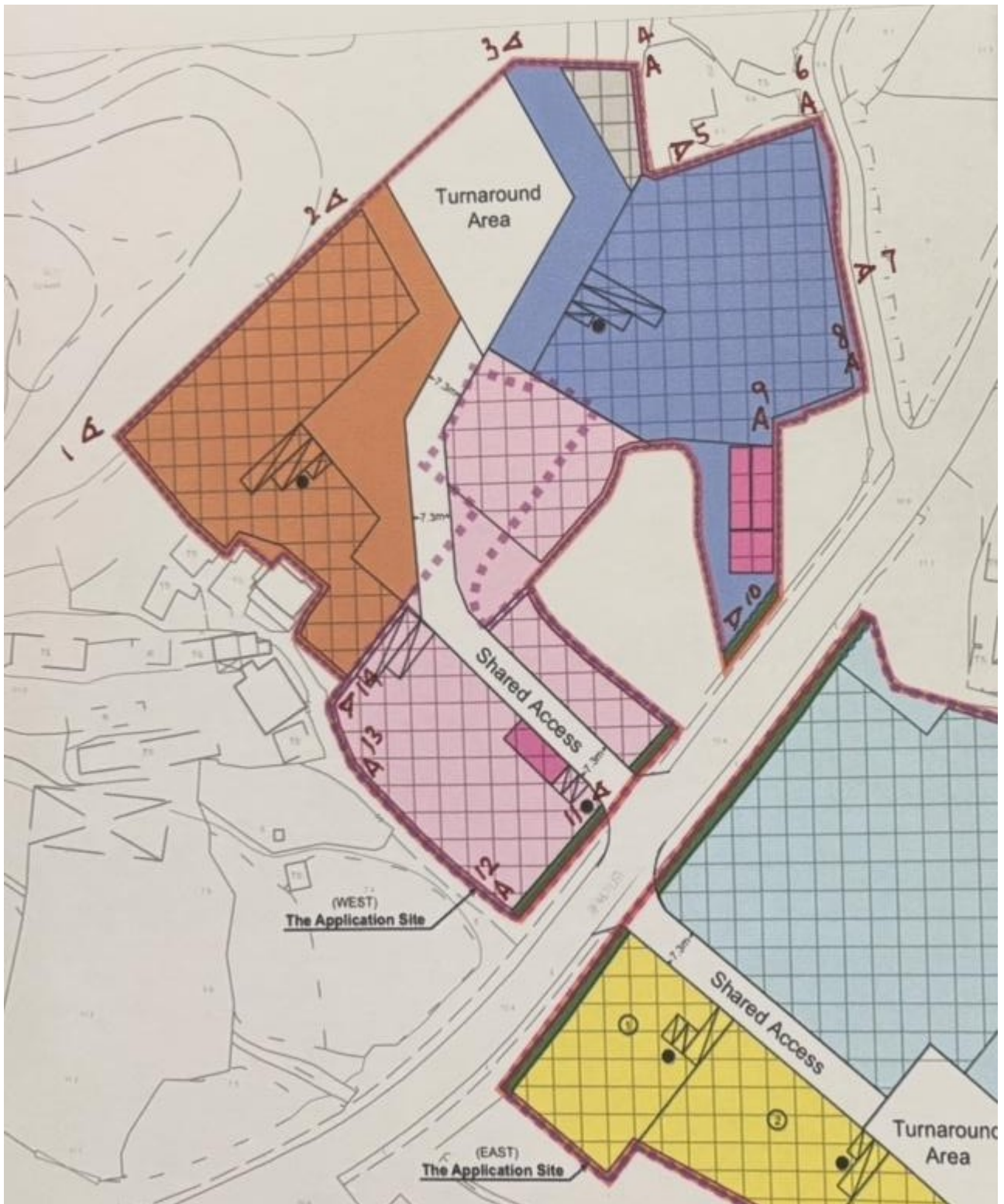


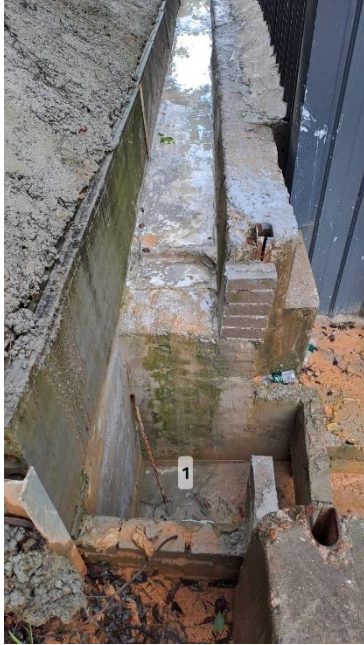
A18 4 x 75m3 地下雨水缸



A19 地下雨水缸浮球水泵

SITES C,D & E - PHOTOGRAPHS OF AS-CONSTRUCTED DRAINAGE FACILITIES





1



2



3



4



5



6



7



8



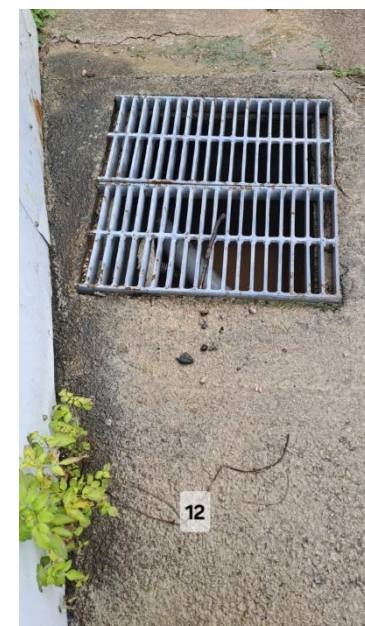
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