Appendix 5

Sewerage Impact Assessment

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DELIVERING THE FUTURE

PROPOSED FLAT WITH MINOR RELAXATION OF BUILDING HEIGHT RESTRICTION AT VARIOUS LOTS IN D.D. 3 TC AND ADJOINING GOVERNMENT LAND, TUNG CHUNG ROAD NORTH, TUNG CHUNG, LANTAU ISLAND

Sewerage Impact Assessment

JANUARY 2026

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PROPOSED FLAT WITH MINOR RELAXATION OF BUILDING HEIGHT RESTRICTION AT VARIOUS LOTS IN D.D. 3 TC AND ADJOINING GOVERNMENT LAND, TUNG CHUNG ROAD NORTH, TUNG CHUNG, LANTAU ISLAND

Sewerage Impact Assessment

Author	Various	
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Approver	TK Ting	
Report No	KEB002681/SIA/R00	
Date	JANUARY 2026	

CONTENTS

LIST OF APPENDICES

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1 INTRODUCTION

1.1 Background

1.1.1 Full Fame Development Limited (the "Applicant") intends to seek approval from the Town Planning Board ("TPB") under Section 16 of the Town Planning Ordinance for the Proposed Residential Development (Proposed Amendments to the Approved Development Scheme) with Minor Relaxation of Building Height Restriction at Lot Nos. 1766 RP, 1768 RP, 1770 RP, 1771 RP, 1774 RP, and Adjoining Government Land in D.D. 3 TC, Tung Chung Road North, Tung Chung ("the Site"). The Site falls primarily within an area zoned "Residential (Group B)3" ("R(B)3") zone, with a minor portion of it shown as "Road" on the Approved Tung Chung Town Centre Area Outline Zoning Plan ("the Approved OZP") No. S/I-TCTC/24.

1.1.2 Asia Infrastructure Solutions Limited was commissioned by the Applicant to undertake a Sewerage Impact Assessment (SIA) for the Proposed Residential Development and provide technical justifications in supporting the application from the sewerage point of view.

1.2 Objectives

1.2.1 This report outlines the existing sewerage system, proposed sewerage system for the proposed residential development and the planned public sewerage system being constructed by the Civil Engineering and Development Department (CEDD) under Contract No. NL/2020/05 Tung Chung New Town Extension – Site Formation and Infrastructure Works at Ma Wan Chung in the vicinity of the Site.

1.2.2 The objective of this Sewerage Impact Assessment (SIA) are as follows:

- Identify any potential sewerage impact arising from the Site;
- Assess the hydraulic performance of the proposed sewer connecting with the proposed foul terminal manhole and the planned public sewerage system being constructed by the CEDD in the vicinity of the Site; and
- Identify design requirements of the sewerage system of the proposed development.

1.3 Information Available for the Study

1.3.1 The following information was reviewed for the study:

- DSD Sewerage Manual (Part 1) – Key Planning Issues and Gravity Collection System (Third Edition, May 2013);
- Sewerage Manual (Part 1) - Corrigendum No. 1/2024
- EPD Technical Paper EPD/TP 1/05, Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning Version 1.0 (March 2005) (GESF);
- PlanD Study Document – Commercial and Industrial Floor Space Utilization Survey (CIFSUS);
- Planning Department (PlanD) Technical Document – Hong Kong Planning Standard and Guidelines, January 2024;

- Outline Zoning Plan No. S/I-TCTC/24;
- Tender Drawings of Contract No. NL/2020/05 and the design sewage flow of planned public sewerage system;
- WHO, Guidelines for Safe Recreational Water Environments – Vol 2 Swimming Pools and Similar Environments; and
- Cap. 123I Building (Standards of Sanitary Fitments, Plumbing, Drainage Works and Latrines) Regulation.

2 PROJECT OUTLINE

2.1 Project Background and Project Site

2.1.1 The Site is located at the northwest of the planned public housing development at Area 23 of Tung Chung.

2.1.2 The Site is also bounded by Tung Chung Road North to the east and an existing nullah connecting to Ma Wan Chung to the west.

2.1.3 The Site has an area of approximate 5,400m^2 comprising mainly paved areas and some landscaped areas.

2.1.4 The proposed development is mainly comprised of two 14-storey residential building towers, a 2-storey clubhouse with an indoor swimming pool atop 1 level of basement carpark and a 1-storey underground carpark. A master layout plan and a schematic section of the proposed residential development at Tung Chung Road North are contained in **Appendix A**.

3 EXISTING AND PLANNED SEWERAGE SYSTEMS

3.1 Existing Public Sewerage Infrastructure

3.1.1 After reviewing records of public sewerage system in Tung Chung Road North, it is revealed that the there is no public gravity sewerage network along Tung Chung Road North for receiving the sewage from the Site. Drainage Records Plans are contained in **Appendix B**.

3.2 Planned Public Sewerage Infrastructure

3.2.1 With reference to the tender drawings of Contract No. NL/2020/05 Tung Chung New Town Extension – Site Formation and Infrastructure Works at Ma Wan Chung, there are new public gravity sewers planned for construction along Tung Chung Road North for conveying sewage to Drainage Services Department (DSD) Chung Yan Road Sewage Pumping Station (CYRSPS). A sewerage connection to the planned public sewer manhole no. FMH-J07 is proposed for planned area no. Area 48.

3.2.2 With reference to Outline Zoning Plan No. S/I-TCTC/24, a residential (Group B) public housing development is proposed in the planned area no. Area 23 with 18169 m^2 in size, which is opposite to the proposed Site and bounded by Tung Chung Road North to the west. With reference to the tender drawings of Contract No. NL/2020/05, the sewage flow from the Area 23 will be discharged to the planned public sewer manhole no. FMH-J09.

3.2.3 The existing sewage rising mains along Tung Chung Road North and associated track conveying sewage from CYRSPS to the existing public sewer manhole no. FMH7043027 are planned to be diverted to match with the proposed widened road layout in the future.

3.2.4 After the construction of the planned sewerage system by CEDD, the sewage flow from the Site will be transferred to CYRSPS by new gravity sewerage pipelines along Tung Chung Road North, then it will be transferred to Tung Chung Sewage Pumping Station (TCSPS) via the diverted rising mains along

Tung Chung Road North and associated track and existing gravity sewerage pipelines along the track, Tat Tung Road, Mei Tung Street, Hing Tung Street, Fu Tung Street and Cheng Tung Road. It will be ultimately discharged to the Siu Ho Wan Sewage Treatment Works (SHWSTW) via existing rising mains along Cheng Tung Road.

3.3 Proposed Sewerage Connection for the Site

3.3.1 With reference to the **Appendix F** showing the proposed foul terminal manhole within the Site, a polyethylene (PE) pipe with 225mm inner diameter is proposed to connect with the proposed foul manhole within the Site and the planned public sewer manhole no. FMH-J07 at Tung Chung Road North.

3.3.2 Further liaison with the CEDD and DSD will be established, in order to confirm the design of the proposed sewerage connection works.

4 METHOD OF ANALYSIS

4.1 Method of Analysis for Estimation of Sewage Flow Rates

4.1.1 The design sewage flow rates are estimated in accordance with EPD Technical Paper EPD/TP 1/05, Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning Version 1.0 (March 2005) (GESF). The sewage flow rates estimation is contained in **Appendix C** of this report.

4.1.2 According to section 2.2 of the EPD GESF, the equation for average flow is as follows:

$$Q_{AVERAGE} = (Q_{DOMESTIC} + Q_{COMMERCIAL} + Q_{INSTITUTIONAL} + Q_{INDUSTRIAL}) \times P_{CIF}$$

Where

$Q_{DOMMESTIC}$	is the average dry weather domestic flow;
$Q_{COMMERCIAL}$	is the average dry weather commercial flow;
$Q_{INSTITUTIONAL}$	is the average dry weather institutional flow;
$Q_{INDUSTRIAL}$	is the average dry weather industrial flow; and
P_{CIF}	is the catchment inflow factor.

4.1.3 The catchment inflow factor takes into account the excessive inflow quantities that occurs in some catchments. They are catchment-dependent and applicable to major sewerage facilities of a catchment. The values are given in Table T-4 of the EPD GESF.

4.1.4 The average dry weather flows are calculated with the unit flow factor as follows:

Average Dry Weather Flow (ADWF) (m^3/day) =

Σ [Population (head) x unit flow factor (m^3/head/day)]

4.1.5 In the case of Commercial and Industrial Flows, the total unit flow generated from an employee in a particular trade is the sum of the unit flow factor of employee and the unit flow factor of a particular trade under consideration.

4.1.6 The peak flow is calculated with an appropriate peaking factor as follows:

Peak Flow (m^3/day) = ADWF (m^3/day) x Peaking Factor

Peaking factors are provided in Table T-5 of section 11.5 of the EPD GESF as a function of the contributing population. Peaking Factors excluding stormwater allowance were adopted for sewerage facilities receiving flow from new upstream

sewerage systems, which essentially have no misconnections and defects for infiltration.

4.1.7 For the purpose of determining the appropriate peaking factor, the contributing population is calculated using the expression presented in section 12.1 of EPD GESF as follows:

Contributing Population =

Calculated total average flow *(m^3/day)* / 0.27 *(m^3/person/day)*

4.2 Assumptions

4.2.1 All sewage flow rates were estimated with reference to the unit flow factors for domestic flows and unit flow factors of commercial flows and student flows given in Tables T-1 and T-2 of the EPD GESF respectively. Relevant peaking factors were adopted according to Table T-5 of the EPD GESF.

4.2.2 The unit flow factors adopted in estimating sewage flow for the proposed residential development are summarized in Table 1.

Type of Population	Total Unit Flow Factor (m^3/head/day)
Public Rental	0.19
Residential (R2)	0.27
Commercial, Social & Personal Services	0.08+0.20 = 0.28

Table 1- Unit Flow Factor

4.2.3 Development parameters given by the developer are adopted in this assessment after S16 are summarized in Table 2.

Development Parameters	
Site Area (m^2)	5400
Plot Ratio	2
Gross Floor Area – Towers (m^2)	10800
Gross Floor Area – Clubhouse (m^2)	540
No. of Units	290
Average Unit Size (m^2)	36.98
Estimated Population	812 (2.8 people per flat)
No. of Internal Parking Facilities	81

Table 2- Development Parameters

4.2.4 An additional 10% of average dry weather residential flow was taken into account the sewage flow generated by the proposed carpark.

4.2.5 The peaking factor adopted to estimate the peak flow was selected based on the contributing population of the sewage catchment areas under consideration.

4.2.6 The peaking factors excluding stormwater allowance were used since the sewerage facilities receiving flow from new upstream sewerage systems proposed under this project.

4.2.7 In accordance with the values given in Table T-4 of the EPD GESF, a catchment inflow factor (PCIF) of 1.0 was adopted in the calculation of the Average Dry Weather Flow.

4.2.8 For number of workers in the clubhouse, the value of worker density of 3.3 per Gross Floor Area (in 100 m^2) was adopted for all types community, social & personal services presented in Table 8 of the PlanD CIFSUS.

4.2.9 The sewage flow discharged from swimming pool filtration plant room was estimated using the data given in the Guidelines for Safe Recreational Water Environments (Volume 2) from the World Health Organization. Accordingly, the average backwash water volume is 2.5 m^3/m^2 of filter area. The filter area was estimated based on the design filter flow rate and turnover periods given in Table 5.1 and Box 5.1 of the guidelines respectively. Detailed calculation of the average volume of backwash water discharged to the building sewerage system and peak flow from backwash is contained in **Appendix C.**

4.2.10 Detailed calculation for the estimated population and sewage flow of the proposed residential development is contained in **Appendix C**.

4.2.11 To assess hydraulic impact of the proposed residential development on the planned public sewerage system, CEDD's design sewage flows for the planned public sewerage system under contract no. NL/2020/05 have been requested for.

4.2.12 A table summarizing catchment areas / existing sewers, CEDD's design sewage flows and receiving manholes is contained in **Appendix E**.

5 ASSESSMENT

5.1 Designed Sewage Flow – Proposed Development

5.1.1 The estimated peak flow generated by the estimated population for the proposed development is summarized on Table 3. Detailed calculation is contained in **Appendix D**.

Catchment ID	Contributing Population	ADWF (m^3/day)	Peaking Factor	Peak Flow (m^3/s)
T1 & T2	918	241.16	6	0.0168
Clubhouse		9.73	6	0.00068

Table 3- Estimated Peak Flow

5.1.2 The proposed sewer connecting with the proposed foul terminal manhole no. FTMH1 and the planned public sewer manhole no. FMH-J07 constructed by CEDD is checked to be hydraulic adequate by Colebrook-White equation. Detailed calculation is contained in **Appendix D**.

5.1.3 The proposed sewage flow for the Site under this S16 application is 250.89 m^3/day, which is larger than CEDD's design sewage flow of 166m^3/day for the Site (Area 48). An assessment on the pipelines connecting with planned public sewer manhole no. FMH-J07 and existing CYRSPS are conducted.

5.1.4 The hydraulic capacity of the planned public sewerage pipeline system being constructed by CEDD is checked to be hydraulic adequate by Colebrook-White equation. Detailed calculation is contained in **Appendix D**.

5.1.5 The current dry weather flow of the existing CYRSPS and TCSPS, and are 22,464 m^3/day and 52,992 m^3/day respectively, while the current treatment capacity of SHWSTW is approximately 70,000 m^3/day. Insignificant sewerage impact to the existing sewerage facilities is envisaged.

6 CONCLUSION & RECOMMENDATIONS

6.1 Conclusion

6.1.1 According to the Development Parameters for the proposed residential development provided by the developer, the estimated ADWF for the whole development site discharging to CYRSPS, TCSPS and SHWSTW is 250.89 m^3/day. No adverse impact to the existing sewerage facilities is envisaged.

6.1.2 The hydraulic capacity of the planned public sewerage pipeline system being constructed by CEDD is checked to be hydraulic adequate to convey both CEDD's design sewage flows and the increased sewage flow from the proposed residential development. No adverse impact on the sewerage system is expected.

6.2 Recommendations

6.2.1 Construction of a foul terminal manhole and a 225mm inner diameter PE connection pipe is recommended for conveyance of sewage discharged from the proposed residential development to the proposed public sewer along Tung Chung Road North. Hydraulic calculation of the proposed connection pipe is included in **Appendix D.**

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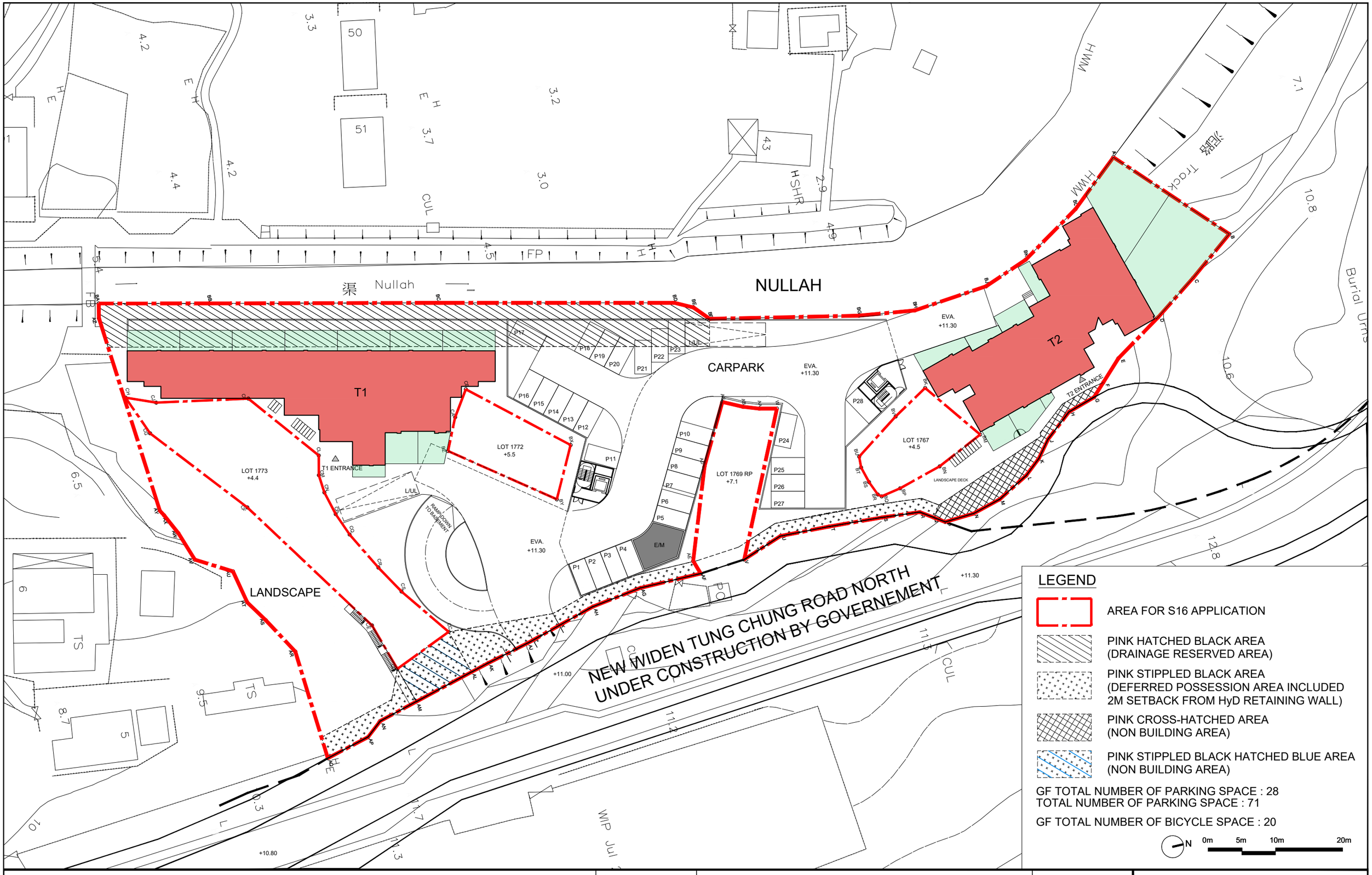
APPENDIX A

Proposed Development – Master Layout Plan



LEGEND

- AREA FOR S16 APPLICATION
- PINK HATCHED BLACK AREA (DRAINAGE RESERVED AREA)
- PINK STIPPLED BLACK AREA (DEFERRED POSSESSION AREA INCLUDED 2M SETBACK FROM HyD RETAINING WALL)
- PINK CROSS-HATCHED AREA (NON BUILDING AREA)
- PINK STIPPLED BLACK HATCHED BLUE AREA (NON BUILDING AREA)

GF TOTAL NUMBER OF PARKING SPACE : 28
TOTAL NUMBER OF PARKING SPACE : 71

GF TOTAL NUMBER OF BICYCLE SPACE : 20

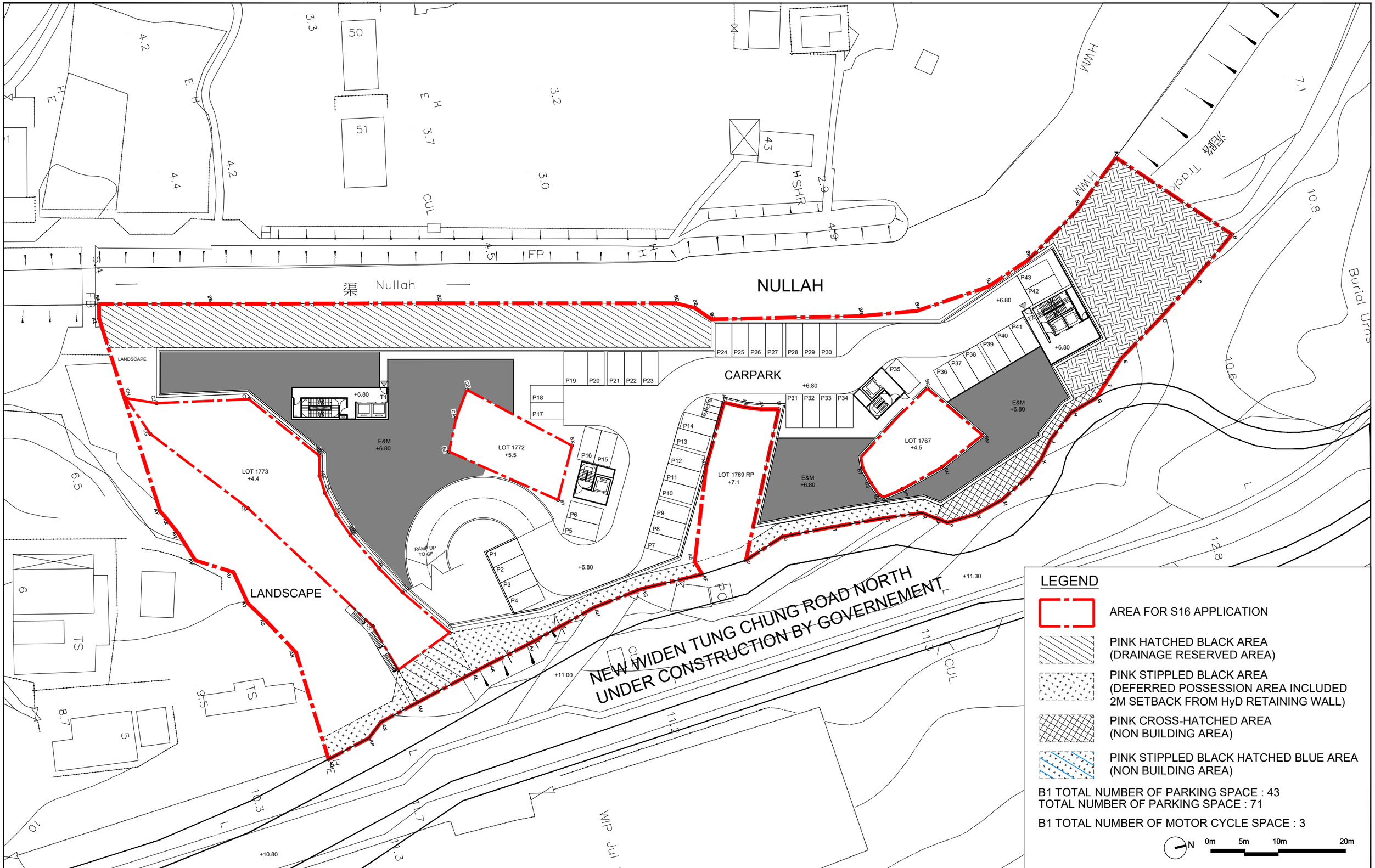
N 0m 5m 10m 20m

Drawing Title

GROUND FLOOR PLAN

Scale	Project	Job No.
1:500 (A3)	A-2517	A-2517
Date	PROPOSED FLAT WITH MINOR RELAXATION OF BUILDING HEIGHT RESTRICTION AT VARIOUS LOTS IN D.D. 3 TC AND ADJOINING GOVERNMENT LAND,TUNG CHUNG ROAD NORTH, TUNG CHUNG, LANTAU ISLAND	Dwg No.
30/1/2026		GP-01

ALKF+
ANDREW LEE KING FUN & ASSOCIATES ARCHITECTS LTD



Drawing Title

BASEMENT 1 FLOOR PLAN

Scale
1:500 (A3)

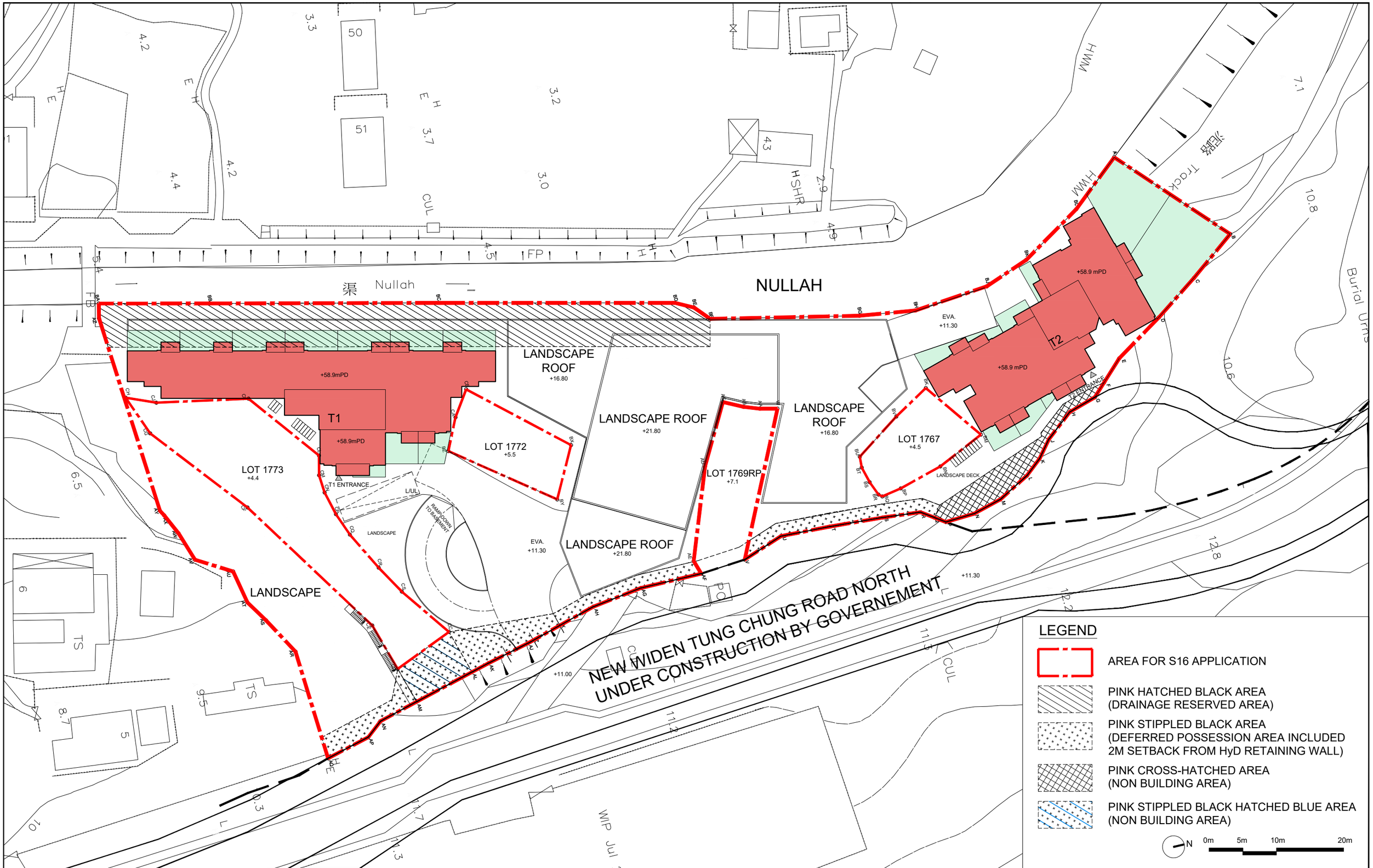
Date
30/1/2026

Project
A-2517
PROPOSED FLAT WITH MINOR RELAXATION OF BUILDING HEIGHT RESTRICTION AT VARIOUS LOTS IN D.D. 3 TC AND ADJOINING GOVERNMENT LAND,TUNG CHUNG ROAD NORTH, TUNG CHUNG, LANTAU ISLAND

Job No.
A-2517

Dwg No.
GP-02

ANDREW LEE KING FUN & ASSOCIATES ARCHITECTS LTD



LEGEND

- AREA FOR S16 APPLICATION
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- PINK STIPPLED BLACK AREA (DEFERRED POSSESSION AREA INCLUDED 2M SETBACK FROM HyD RETAINING WALL)
- PINK CROSS-HATCHED AREA (NON BUILDING AREA)
- PINK STIPPLED BLACK HATCHED BLUE AREA (NON BUILDING AREA)

N 0m 5m 10m 20m

Drawing Title

TYPICAL LAYOUT PLAN

Scale
1:500 (A3)

Date
24/2/2026

Project
A-2517
PROPOSED FLAT WITH MINOR RELAXATION OF BUILDING HEIGHT RESTRICTION AT VARIOUS LOTS IN D.D. 3 TC AND ADJOINING GOVERNMENT LAND,TUNG CHUNG ROAD NORTH, TUNG CHUNG, LANTAU ISLAND

Job No.
A-2517

Dwg No.
GP-03

ALKF+
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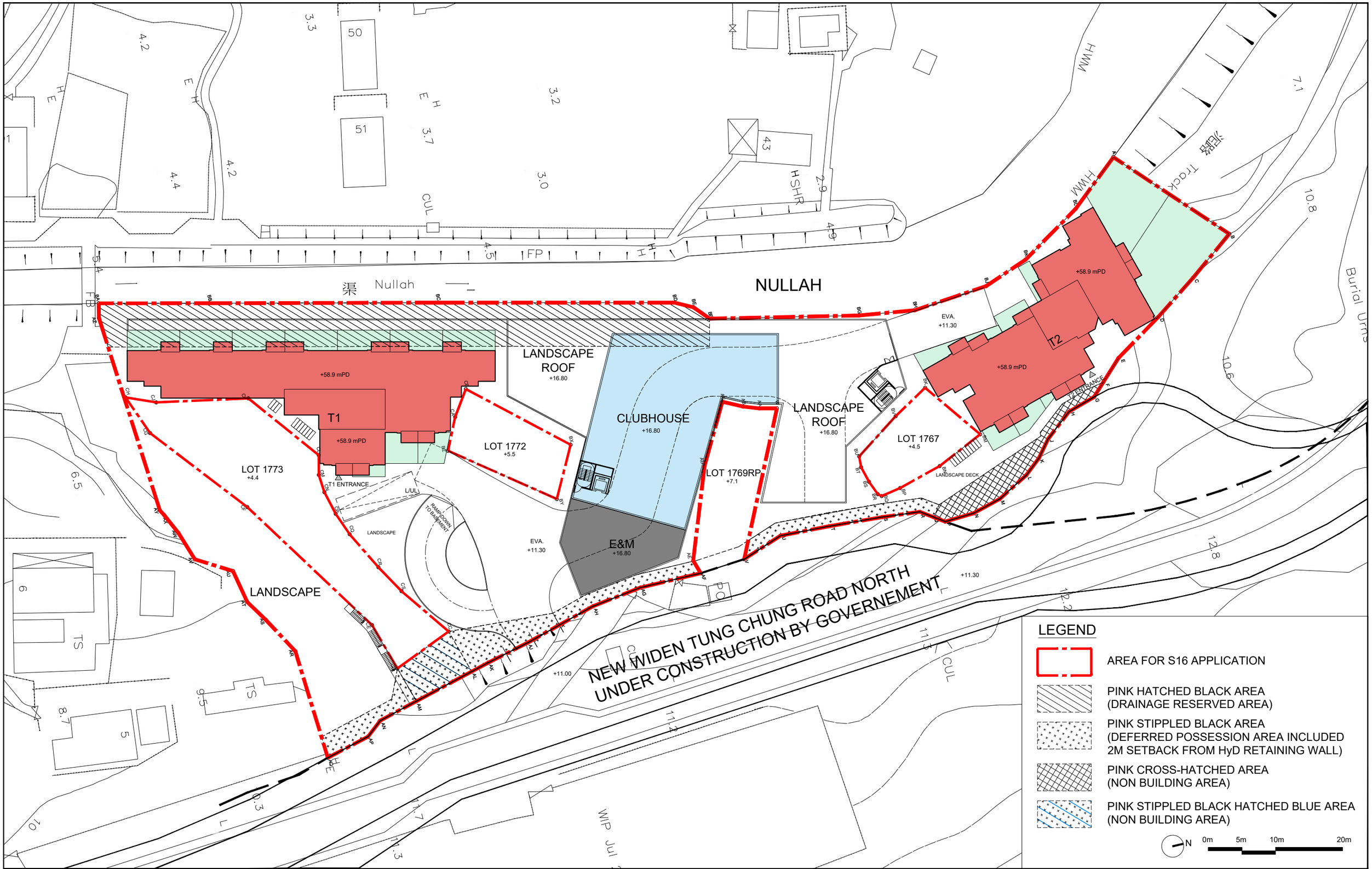

LEGEND

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- PINK CROSS-HATCHED AREA (NON BUILDING AREA)
- PINK STIPPLED BLACK HATCHED BLUE AREA (NON BUILDING AREA)

N 0m 5m 10m 20m

Drawing Title MASTER LAYOUT PLAN	Scale 1:500 (A3) Date 24/2/2026	Project A-2517 PROPOSED FLAT WITH MINOR RELAXATION OF BUILDING HEIGHT RESTRICTION AT VARIOUS LOTS IN D.D. 3 TC AND ADJOINING GOVERNMENT LAND,TUNG CHUNG ROAD NORTH, TUNG CHUNG, LANTAU ISLAND	Job No. A-2517 Dwg No. MLP-01

ALKF+
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APPENDIX B

Drainage Records

TUNG CHUNG BATTERY

東涌道北

TUNG CHUNG ROAD NORTH

HWM

CUL

RCP

FW7043027
CL 21.30
A1 21.225-500
A1 21.30-500

FCH7000660
CL 27.00
A1 24.47-700
A2 24.37-500
Discharge Manhole

7m DRAINAGE RESERVE

泥路

臺地
Graves

FVH7000522
IL 11.62
CL 16.38
Washout

IL 11.62

IL 17.01

FVH7000521
CL 13.50
Air Valve

IL 11.04

碼頭 Pier

Breakwater

防波堤

Jetty

渡頭

FB

馬灣涌
MA WAN CHUNG

浮動碼頭
Floating Pier

浮動渡頭
Floating Jetty

SHW

Shrine

SHR

Nullah

FP

TS

FVH7000520
CL 6.93
Washout

9-SE-8D-1

SCALE 1 : 500

Metres 10 0 20 40 60 80 100 Metres

Hong Kong and Islands Division
Drainage Services Department

Legend :

- Storm Water Manhole
- Storm Water Terminal Manhole
- Sewer Manhole
- Sewer Terminal Manhole
- Combined Manhole
- Catchpit
- Desilting Opening
- Inspection Opening
- Dry Weather Flow Interceptor
- Sand Trap
- Inlet
- Outlet
- Box Culvert (Storm/Sewer)
- Existing Pipe (Storm/Sewer/Combined)
- Existing Pipe (Storm/Sewer/Combined) (Planning / Identifying to be Abandoned)
- Proposed Pipe (Storm/Sewer)
- Works In Progress Pipe (Storm/Sewer)
- Abandoned Pipe
- Abandoned Pipe (Filled with Materials)
- Existing U Channel / Stepped Channel (Storm)
- Proposed U Channel / Stepped Channel (Storm)
- Works In Progress U Channel / Stepped Channel (Storm)
- Rising Main
- Vaccum Sewer
- Drainage Reserve
- Gully Sump / Gully
- Tapping Point (Storm/Sewer)
- Overflow (Sewer/Combined)
- Interface Valve Chamber
- Oil / Petrol Interceptor
- Valve
- Water Gauge
- Spot Level (Storm/Sewer)
- Existing Y-Junction (Storm/Sewer/Combined)
- Slope Sign Board
- Slope Number
- Slope Boundary
- Existing Submarine Outfall with Diffuser
- Proposed Submarine Outfall with Diffuser
- Works In Progress Submarine Outfall with Diffuser
- Harbour Area Treatment Scheme Sewage Tunnel Protection Area (100m width) (Please note that all proposed works within the HATS Sewage Tunnel Protection Area have to be complied with the requirements in the Environment, Transport and Works Bureau Technical Circular (Works) No.28/2003 or the Practice Note for Authorised Persons and Registered Structural Engineers No. 185 issued by the Building Department)
- Harbour Area Treatment Scheme Sewage Tunnel Outer Protection Area (200m width) (Please note that all proposed works within the HATS Sewage Tunnel Protection Area have to be complied with the requirements in the Environment, Transport and Works Bureau Technical Circular (Works) No.28/2003 or the Practice Note for Authorised Persons and Registered Structural Engineers No. 185 issued by the Building Department)

Notes :

1. All levels are in mPD.
2. All dimensions shown are in millimetres unless otherwise stated.
3. The information shown on the record drawings are subject to verification on site and no guarantee can be given that this is a complete record.
4. Abbreviations for Channels of width smaller or equal to 1200mm:
   - 900C - 900mm width Surface Channel
   - 900SC - 900mm width Stepped Channel
   - 900UC - 900mm width U Channel
   - 900DWFC - 900mm width Dry Weather Flow Channel
5. The Incoming Pipes are marked A1, A2, A3, ... counting clockwise from the first Outgoing Pipe X1. Outgoing Pipes are marked X1, X2, X3 ... counting clockwise from North.

   eg.

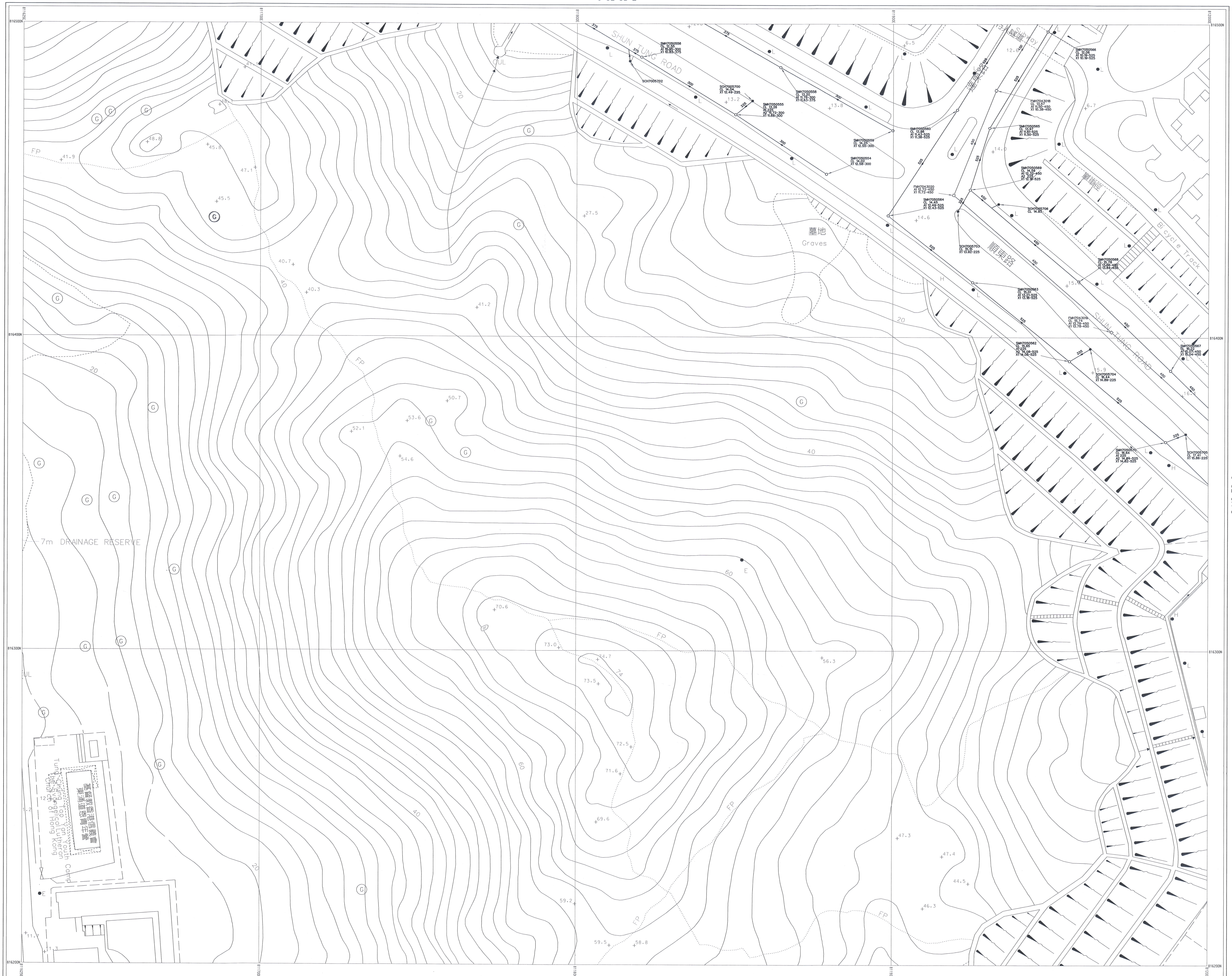
6. Piling foundations on culverts may be present but not shown for brevity. Please refer to the relevant as-built drawings on details of the pile foundation.
7. Drainage facilities maintained by other parties, if shown, are indicative only. It is no guarantee that these information are exact.

Drainage Record Sheet Number

9-SE-8B-3

Last Updating : 27-02-2006

Map data renewed on June 2009



Legend :

- Storm Water Manhole
- Storm Water Terminal Manhole
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- Oil / Petrol Interceptor
- Valve
- Water Gauge
- + / + Spot Level (Storm/Sewer)
- Existing Y-Junction (Storm/Sewer/Combined)
- Slope Sign Board
- 11SW-D/CR8888 Slope Number
- Slope Boundary
- 2100 SUBMARINE OUTFALL Existing Submarine Outfall with Diffuser
- 2100 SUBMARINE OUTFALL Proposed Submarine Outfall with Diffuser
- 2100 SUBMARINE OUTFALL Works In Progress Submarine Outfall with Diffuser
- SSDS(100) Harbour Area Treatment Scheme Sewage Tunnel Protection Area (100m width) (Please note that all proposed works within the HATS Sewage Tunnel Protection Area have to be complied with the requirements in the Environment, Transport and Works Bureau Technical Circular (Works) No.28/2003 or the Practice Note for Authorized Persons and Registered Structural Engineers No. 165 issued by the Building Department)
- SSDS(200) Harbour Area Treatment Scheme Sewage Tunnel Outer Protection Area (200m width) (Please note that all proposed works within the HATS Sewage Tunnel Protection Area have to be complied with the requirements in the Environment, Transport and Works Bureau Technical Circular (Works) No.28/2003 or the Practice Note for Authorized Persons and Registered Structural Engineers No. 165 issued by the Building Department)

SCALE 1 : 500

Metres 10 0 20 40 60 80 100 Metres

Hong Kong and Islands Division
Drainage Services Department

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   900DWFC = 900mm width Dry Weather Flow Channel
5. The Incoming Pipes are marked A1, A2, A3, ... counting clockwise from the first Outgoing Pipe X1. Outgoing Pipes are marked X1, X2, X3 ... counting clockwise from North.
   eg. SMH7000123 — Manhole number; CL 4.68 — Cover Level or Ground Level; A1 1.14-225 — 225mm dia. Incoming Pipe Invert Level; A2 1.29-375 — 375mm dia. Incoming Pipe Invert Level; X1 1.14-525 — 525mm dia. Outgoing Pipe Invert Level
6. Piling foundations on culverts may be present but not shown for brevity. Please refer to the relevant as-built drawings on details of the pile foundation.
7. Drainage facilities maintained by other parties, if shown, are indicative only. It is no guarantee that these information are exact.

Drainage Record Sheet Number

9-SE-8B-4

Last Updating : 27-02-2006

Map data renewed on June 2009

黃泥屋
WONG NAI UK

瑞逸樓
Sui Yat House

悅逸樓
Yuet Yat House

翠逸樓
Chui Yat House

信逸樓
Shun Yat House

謙逸樓
Him Yat House

逸東（二）邨
YAT TUNG (II) ESTATE

德逸樓
Tak Yat House

逸東（一）邨
YAT TUNG (I) ESTATE

寶逸樓
Po Yat House

逸東街

傑逸樓
Kit Yat House

奮逸樓
Fun Yat House

東涌天主教學校
Tung Chung Catholic School

籃球場
Basketball Court

三號停車場
Carpark No.3

(下層巴士總站)
(Bus Terminus under)

道路
Road

09-SE-08D-3

SCALE 1 : 500

Metres 10 0 20 40 60 80 100 Metres

Hong Kong and Islands Division
Drainage Services Department

DRAWING OFFICE COPY
HK & I DIVISION D.S.D.
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Drainage Record Sheet Number

9-SE-8D-1

Last Updating : 14/6/2016

Map data renewed on September 2015

JUL 2021

Legend :

- Storm Water Manhole
- Storm Water Terminal Manhole
- Storm Water Special Manhole
- Sewer Manhole
- Sewer Terminal Manhole
- Sewer Special Manhole
- Combined Manhole
- Catchpit
- Desilting Opening
- Inspection Opening
- Dry Weather Flow Interceptor
- Sand Trap
- Inlet
- Outlet
- Tunnel / Box Culvert (Storm/Sewer)
- Existing Pipe (Storm/Sewer/Combined)
- Existing Pipe (Storm/Sewer/Combined) (Planning / Identifying to be Abandoned)
- Proposed Pipe (Storm/Sewer)
- Works In Progress Pipe (Storm/Sewer)
- Not Yet Commissioned Pipe (Storm/Sewer)
- Abandoned Pipe
- Abandoned Pipe (Filled with Materials)
- Existing U Channel / Stepped Channel (Storm)
- Proposed U Channel / Stepped Channel (Storm)
- Works In Progress U Channel / Stepped Channel (Storm)
- Rising Main
- Vaccum Sewer
- Drainage Reserve
- Tunnel Protection Zone
- Gully Sump / Gully
- Topping Point (Storm/Sewer)
- Overflow (Sewer/Combined)
- Interface Valve Chamber
- Oil / Petrol Interceptor
- Valve
- Water Gauge
- Spot Level (Storm/Sewer)
- Existing Y-Junction (Storm/Sewer/Combined)
- Slope Sign Board
- Slope Number
- Slope Boundary
- Existing Submarine Outfall with Diffuser
- Proposed Submarine Outfall with Diffuser
- Works In Progress Submarine Outfall with Diffuser
- Harbour Area Treatment Scheme Sewage Tunnel Protection Area (100m width) (Please note that alignsewage works within the HATS Sewage Tunnel Protection Area have to be complied with the requirements in the Environment, Transport and Works Bureau Technical Circular (Works) No.28/2002 or the Practice Note for Authorised Persons, Registered Structural Engineers and Registered Geotechnical Engineers No. APP-82 issued by the Buildings Department)
- Harbour Area Treatment Scheme Sewage Tunnel Outer Protection Area (200m width) (Please note that alignsewage works within the HATS Sewage Tunnel Protection Area have to be complied with the requirements in the Environment, Transport and Works Bureau Technical Circular (Works) No.28/2002 or the Practice Note for Authorised Persons, Registered Structural Engineers and Registered Geotechnical Engineers No. APP-82 issued by the Buildings Department)

Notes :

1. All levels are given in metres principle datum.
2. All dimensions shown are in millimetres unless otherwise stated.
3. The information shown on the record drawings are subject to verification on site and no guarantee can be given that this is a complete record.
4. Abbreviations for Channels of width smaller or equal to 1200mm:
   900C = 900mm width Surface Channel
   900SC = 900mm width Stepped Channel
   900UC = 900mm width U Channel
   900DWFC = 900mm width Dry Weather Flow Channel
5. The Incoming Pipes are marked A1, A2, A3, ... counting clockwise from the first Outgoing Pipe X1. Outgoing Pipes are marked X1, X2, X3 ... counting clockwise from North.

   eg.
   - Manhole number
   - Cover Level or Ground Level
   - 225mm dia. Incoming Pipe Invert Level
   - 375mm dia. Incoming Pipe Invert Level
   - 525mm dia. Outgoing Pipe Invert Level
6. Piling foundations on culverts may be present but not shown for brevity. Please refer to the relevant as-built drawings on details of the pile foundation.
7. Drainage facilities maintained by other parties, if shown, are indicative only. It is no guarantee that these information are exact.

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APPENDIX C

Sewage Flow Estimation

asia infrastructure solutions a GISI Consulting Group company	**Project No.: KEB002681 - Proposed Residential Developmment at Tung Chung North Road (S16 Application)**
	Date: January 2026
	Designed By: Edric Julian
	Checked By: Victus Kwan
	Sewage Flow Estimation for Proposed Residential Development at Tung Chung North Road

Sewage Flow Estimation

		Commercial and Institutional Flow					**Domestic**						
Catchment ID	Building Type	Commerical Activity	Total Gross Floor Area (m^2)	Worker Density (person/100m^2)	Number of Employees	Unit flow factor (m^3/head/day)	Number of Flats	Persons per flat	Population (head)	Unit flow factor (m^3/head/day)	Average Dry Weather Commercial Flow (m^3/d)	Average Dry Weather Residential Flow (m^3/d)	Remarks
T1 & T2	Private R2	-	-	-	-	-	290	2.8	812	0.27	-	219.24	-
	Car Park	-	-	-	-	-	-	-	-	-	-	21.92	Assume ADWF of car park equals 10% of AWDF (residential sewage)
Clubhouse	Community, Social & Personal Services (J11)	Private Recreational Facilities	540.0	3.3	18	0.28	-	-	-	-	5.04	-	-
		Outdoor Swimming Pool	-	-	-	-					4.69		-
										Total	**250.89**		

Notes:

1) EPD's Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning" (GESF) is referenced for the adopted UFF.
2) Average persion per flats of 2.8 adopted for towers of residential development based on Recruitment Plan from the Developer.
3) Worker Density of 3.3 adopted for Clubhouse Employees with reference to CIFSUS Table 8.

asia infrastructure solutions a GISI Consulting Group company	**Project No.: EB002217 - Proposed Residential Developmment at Tung Chung North Road (S16 Application)**
	Date: September 2025
	Designed By: Edric Julian
	Checked By: Victus Kwan
	Sewage Flow Estimation for Proposed Residential Development at Tung Chung North Road

Pool Type: 20 m Long Outdoor Swimming Pool		
Surface Area	100.00	m^2
Depth	1.50	m
Volume	150.00	m^3
Turnover period	2	h
Circulation Rate	75.00	m^3/h
Cleaning Flow Rate	40	$m^3/m^2/h$
Filter Area	1.88	m^2
Average Backwash Water	2.5	m3/(m2 filter area)
Volume of Backwash Water Per Day	**4.69**	**m^3**
	4.69	**m^3**
Back Wash Duration	10.00	mins
Back Wash Flow Rate	7.81	L/s

APPENDIX D

Hydraulic Calculations – Connection Pipe & Planned Public Sewerage System

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a GISI Consulting Group company

Project No.: KEB002681 - Proposed Residential Developmment at Tung Chung North Road (S16 Application)
Date: January 2026
Designed By: Edric Julian
Checked By: Victus Kwan
Hydraulic Calculations - Connection Pipe & Planned Public Sewerage System

Table D.1) Adopted peaking factors

Peaking Factors, P	
Population Range	Peaking Factor excluding stormwater allowance
<1000	6
1000-5000	5
5000-10000	4
10000-50000	3
>50000	Max (6/N^0.175 , 1.6)

Design Parameters	
Kinematic Viscosity (m2/s)	1.00E-06
Pipe Roughness (Ks) (mm)	0.15

For the purpose of determining the appropriate peaking factor the contributing population is calculated using the expression presented in section 12.1 of EPD GESF as follows:
Contributing Population = Calculated total average flow (m^3/day) / 0.27 (m^3/person/day)

Table D.2) Design Peak Flows and Pipe Capacity Calculations

Links		Average Flows					Peak Flows		Hydraulics Check									
Upstream Node	Downstream Node	From buildings (m^3/day)	From branch pipe (m^3/day)	From US pipe (m^3/day)	Cummulative average flow (m^3/day)	Contributing Population	Peaking Factor	Peak design flow (m^3/s)	US IL (mPD)	DS IL (mPD)	Length (m)	Gradient (m/m)	Internal Diameter (mm)	Pipe Area (m2)	Full Bore Velocity (m/s)	Full Bore Pipe Capacity (m^3/s)	Pipe Capacity (%)	Discharge Check
Proposed Connection Pipes																		
FTMH1 (from development)	FMH-J07	250.89	-	-	250.89	930	6	0.017	9.26	9.22	9.8	0.004	200	0.031	0.891	0.028	62.2	OK
Planned Public Sewers																		
FMH-J07	FMH-J08	250.89	-	112.00	362.89	1,345	5	0.021	9.05	8.50	78.5	0.007	300	0.071	1.525	0.108	19.5	OK
FMH-J08	FMH-J09	-	-	362.89	362.89	1,345	5	0.021	8.50	8.21	35.4	0.008	300	0.071	1.652	0.117	18.0	OK
FMH-J09	FMH-J10	-	1620.00	362.89	1982.89	7,345	4	0.092	5.56	5.30	32.0	0.008	300	0.071	1.645	0.116	79.0	OK
FMH-J10	FMH-J11	-	-	1982.89	1982.89	7,345	4	0.092	4.73	4.45	18.1	0.015	300	0.071	2.286	0.162	56.8	OK
FMH-J11	FMH-L01	-	-	1982.89	1982.89	7,345	4	0.092	0.77	0.72	17.0	0.003	350	0.096	1.073	0.103	88.9	OK
FMH-L03	FMH-L02	-	3637.00	-	3637.00	13,471	3	0.126	1.92	1.85	39.6	0.002	700	0.385	1.276	0.491	25.7	OK
FMH-L02	FMH-L01	-	-	3637.00	3637.00	13,471	3	0.126	1.84	1.32	19.0	0.027	700	0.385	5.143	1.979	6.4	OK
FMH-L01	Existing CYRSPS	-	1796.00	3637.00	5433.00	20,123	3	0.189	0.72	0.70	13.9	0.001	700	0.385	1.147	0.441	42.7	OK

Design Sewage Flows under CEDD's Contract No. NL/2020/05.

Pipe Roughness:
HDPE pipes: 0.15mm (Slimed Sewers)

Planned Public Sewerage Network Hydraulic Checking Assumptions:
1. The planned and existing sewage flows conveyed by the planned public sewerage network are based on the values provided by CEDD's consultant of Contract No. NL/2020/05.
2. All invert levels and materials of the planned public sewerage network are based on the drawings provided by CEDD.
3. Since downstream invert level of planned sewer connecting with FMH-L02 and Existing CYRSPS is unknown in available CEDD's drawings, the value of downstream invert level of existing sewer no. FWD7054300 (750ø) to be abandoned under No. NL/2020/05 is estimated based on GEOINFO MAP information and adopted in this assessment, i.e. 0.03 (USIL) - 1/750 (Min. Gradient)* 11.5 (Length) = 0.015mPD.
4. As the proposed sewage flow from the site (Area 48) under S16 Application is larger than the CEDD's design sewage flow, i.e., 247.82m3/day > 107m3/day, pipe capacity assessment for the downstream pipelines connecting with FMH-J07 and Existing CYRSPS is conducted with consideration of both CEDD's planned sewage flows, existing sewage flows and proposed sewage flow from the site (Area 48).
5. The hydraulic capacity of assessed pipelines are considered as sufficient if the full-bore capacity calculated by Colebrook-White Equation is larger than the peak sewage flow.

In the hydraulic assessment Colebrook-White equation is used:

$$V = -\sqrt{(8gDs)}\log\left(\frac{ks}{3.7D} + \frac{2.5\,1v}{D\sqrt{(2gDs)}}\right)$$

where
V = mean velocity (m/s)
g = gravitational acceleration (m/s2)
R = hydraulic radius (m)
D = internal pipe diameter (m)
ks = hydraulic pipeline roughness (m)
v = kinematic viscosity of fluid (m2/s)
s = hydraulic gradient (energy loss per unit length due to friction)

APPENDIX E

Design Sewage Flows for Planned Public Sewerage System by CEDD

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a GISI Consulting Group company

Project No.: KEB002681 - Proposed Residential Developmment at Tung Chung North Road (S16 Application)

Date: January 2026

Designed By: Edric Julian

Checked By: Victus Kwan

Summary of CEDD's Design Sewage Flows for Planned Public Sewerage System

Catchment Area/ Existing Sewer	CEDD's Design Sewage Flow (m3/day) #	S16 Proposed Sewage Flow (m3/day)	Receiving Manhole	Receiving Manhole in the assessed pipelines	CEDD's Total Design Sewage Flow (m3/day)	S16 Total Proposed Sewage Flow (m3/day)
Area 29A	112	112	FMH-J01	FMH-J07	278	**362.89**
Area 48	166	**250.89**	FMH-J07			
Area 23	1620	1620	FMH-J09	FMH-J09	1620	1620
Area 41	500	500	FMH-K01	FMH-L01	1796	1796
Area 24A	1296	1296	FMH-K03			
ADWF from Yu Tong Road Sewers	3637	3637	FMH-L08	FMH-L03	3637	3637
					7331	7415.89

Notes:
Design Sewage Flow Data under CEDD's Contract No. NL/2020/05 obtained from CEDD and CEDD's consultant. (Updated as of 26/01/2026)

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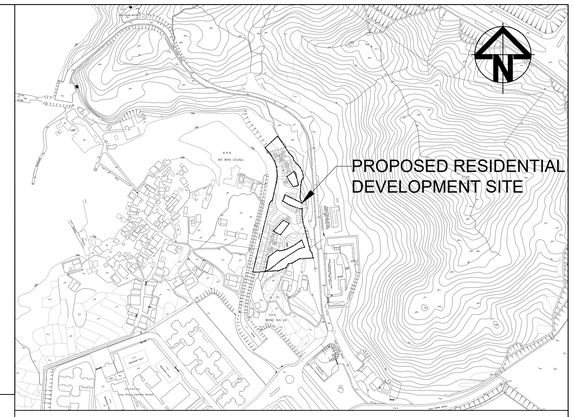
APPENDIX F

Proposed Sewerage Connection Layout Plan

LEGEND

- *AREA FOR S16 APPLICATION
- PROPOSED TERMINAL FOUL MANHOLE
- PROPOSED SEWER
- PLANNED PUBLIC SEWER MANHOLE (BY CEDD)
- PLANNED SEWER (BY CEDD)



LOCATION PLAN
SCALE 1 : 7500

LOT 1773
LOT 1772
LOT 1769
LOT 1767
LANDSCAPE
CARPARK
Nullah
TUNG CHUNG ROAD NORTH
225Ø
315Ø
355Ø
+11.0
FMH-J07 (BY CEDD)
IL +8.46
Tung Chung Youth Camp
The Evangelical Lutheran Church of Hong Kong

Rev	Description	Date
A	PRELIMINARY DESIGN	28/01/2026

50mm on Original

Client: FULL FRAME DEVELOPMENT LIMITED

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Scales	1 : 500 @ A3	Current Issue Signatures	
		Draw	EJ
Original Size	A3	Checker	VK
Height Datum	HKPD	Approver	TK
Grid		© Copyright reserved	
Filename	KEB002681-SIA-1001-2.DWG		

Project: Proposed Flat with Minor Relaxation of Building Height Restriction at Various Lots in D.D. 3 TC and Adjoining Government Land, Tung Chung Road North, Tung Chung, Lantau Island

Title: PROPOSED SEWERAGE LAYOUT PLAN

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Drawing No.: KEB002681/SIA/1001

Plot Date: 28/Jan/2026 6:48:41 pm File Location: P:\KEB002681 DIA & SIA TUNG CHUNG\F-REPORTS (WORKING)\SIA\DRAWINGS\KEB002681-SIA-1001-2.DWG

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