Annex H

Sewerage Impact Assessment

ARUP

S.12A Application for Amendment to the Approved Kam Tin South Outline Zoning Plan No. S/YL-KTS/15, to rezone the Application Site from "Comprehensive Development Area" to "Residential (Group A)" at Lot 2160 RP (Part) in D.D. 106, and Adjoining Government Land, Kam Sheung Road, Kam Tin, Yuen Long

Sewerage Impact Assessment

Issue 2 | September 2026

This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 309160

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1. Introduction

1.1 Project Background

1.1.1.1 This Sewerage Impact Assessment (SIA) was prepared in support of the Planning Application under Section 12A of the Town Planning Ordinance (Cap. 131) for the Amendment of Plan for Proposed Residential Development at Lot 2160 RP (Part) in D.D. 106, and Adjoining Government Land, Kam Sheung Road, Kam Tin, Yuen Long, New Territories (the Kam Sheung Road Site / the Application Site).

1.1.1.2 The Applicant proposes amendment to the Approved Kam Tin South Outline Zoning Plan (OZP) No. S/YL-KTS/15, i.e. to rezone the Application Site from "Comprehensive Development Area" ("CDA") zone to "Residential (Group A)" ("R(A)"), with a maximum PR of 3, a maximum BH of 69mPD (including roof-top structures) to facilitate the proposed residential development at the Application Site.

1.1.1.3 The Application Site, with an area of about 7,166m^2, is located to the northwest of Tung Wui Road and to the west of the Kam Wui Road. Currently, the Application Site is occupied by a temporary transitional housing development, referred to as "The NAScenT".

1.1.1.4 Considering the irregular configuration of the application site boundary, it is proposed to rationalise the boundary of the rezoning area for the purpose of conducting sensitivity test in technical assessments. This approach aims to assess the technical impacts associated with the potential rezoning area, while ensuring design and development flexibility for future considerations.

1.2 Proposed Development

1.2.1.1 The Application Site is located in Kam Tin, bounded by Tung Wui Road to the southeast and Kam Tin River to the north. The Application Site is proposed with residential development and clubhouse. Due to the irregular boundaries of site, a sensitivity test area has been designated to facilitate a more comprehensive assessment. The site boundaries of the Application Site, along with the sensitivity test area, are shown in **Appendix A**.

1.2.1.2 The total site area is approximately 7,166 m^2 and the design parameters are summarised in **Table 1.1** below.

Table 1.1 Key Development Parameters of Application Site

Development Parameters	Indicative Scheme
Site Location	Lot 2160 RP (Part) in D.D. 106, and Adjoining Government Land, Kam Sheung Road, Kam Tin, Yuen Long
Application Site Area	About 7,166 m^2
Total Plot Ratio (PR) • Domestic PR	3.0 • 3.0
• Total Gross Floor Area (GFA) • Domestic GFA • Non-Domestic GFA – Sewage Treatment Plant (1)	About 21,498 m^2 • About 21,498 m^2 • About 400 m^2
Residential Clubhouse (About)	750 m^2

No. of Residential Towers	2	
No. of Residential Units	416	
Anticipated Population	Domestic: Clubhouse [(2)]:	1,207 25

Remarks:
(1) The GFA for proposed sewage treatment plant is exempted from GFA calculation.
(2) Community, Social & Personal Services = 3.3 employee per 100m^2 of GFA based on PlanD's Commercial and Industrial Floor Space Utilization Survey "CIFSUS" Table 8.

1.2.1.3 Concerning the irregular configuration of the Application Site boundary, a more rationalised boundary is assumed for possible rezoning by incorporating an adjoining area (i.e. outside the Application Site). The additional area is assessed to ensure that there would still be no adverse technical impact (cumulative) to the infrastructural capacity of the area when the rationalised boundary will be adopted for rezoning. The sensitivity test assumes that the additional area would be developed as a similar residential use with a total plot ratio of not more than 3 as the proposed development. Under this assumption for a sensitivity test scenario, please refer to the layout plan for additional area under the rationalised boundary in **Appendix B1**, and the key development parameters of this sensitivity test area in **Appendix B2** for reference.

1.2.1.4 To facilitate a more comprehensive assessment for the Application Site and Sensitivity Test Scenarios, the site boundaries of the Application Site, along with the sensitivity test area, are shown in **Appendix C**.

1.3 Purpose of this Report

1.3.1.1 The aim of this Sewerage Impact Assessment (SIA) Study is to review and update the sewerage network arising from proposed development to assess the impact of the Proposed Development to the existing sewerage network and to propose mitigation measures (if required).

1.3.1.2 The scope of the Project comprises a development site in Kam Tin. SIA Report shall be prepared, which should:

(a) fully satisfy the requirements of this Scope in respect of the prediction and assessment of impacts, the identification of sewerage impact mitigation measures and the associated residual impacts;

(b) provide assessment and evaluation of the sewerage impact and cumulative effects arising from the Project sufficient to identify those issues of key concern during the construction and operation of the Project;

(c) define measurable sewerage parameters and features likely to be affected by the Project;

(d) recommend optimum sewerage scheme for the Project;

(e) prescribe the specification for detailed design, construction and operation requirements of the recommended sewerage scheme;

(f) provide the assessment findings, conclusions, recommendations and a mechanism for implementation; and

(g) include any revisions or supplements to the above as might be required by the EPD and DSD.

1.3.1.3 The SIA Report for shall be submitted for approval by EPD and DSD on the methodologies, findings, proposals, recommendations and conclusions of the SIA.

1.3.1.4 This Sewerage Impact Assessment Report is structured as follows:

Section 1 – **Introduction**, introduces the Project Background, Objectives and Scope of the Project.

Section 2 – **Methodology and Design Criteria,** presents the Methodology and Design Criteria.

Section 3 – **Sewerage Impact Assessment**, presents the Sewerage Impact Assessment.

Section 4 – **Construction, Operation and Maintenance of New Sewerage Facilities**, presents Construction, Operation and Maintenance of New Sewerage Facilities.

Section 5 – **Conclusion,** summarises the Conclusions.

2. Methodology and Design Criteria

2.1 Methodology

2.1.1.1 The following methodology is adopted in carrying out the SIA:

- Identify the scope, parameters and programme of the development;
- Estimate the sewage flow generation of the development;
- Identify the existing and planned sewerage systems within and near the proposed development boundary;
- Examine the impact arising from new sewage generation from the proposed development on the existing sewerage network; and
- Identify new and upgrading sewerage works to support the proposed development.

2.1.1.2 The SIA has been carried out in accordance with the following guidelines set out in EPD Report No. EPD/TP1/05 Guidelines for Estimating Sewage Flows (GESF) for Sewerage Infrastructure Planning Version 1.0 and DSD's Sewerage Manual.

2.2 Parameters and Assumptions

2.2.1.1 The key parameters used for flow estimation in this SIA are unit flow factor, the population/ employee density and flow from plumbing and drainage.

Unit Flow Factor – Domestic Flows

2.2.1.2 The Unit flow factors (UFF) for domestic sewage flow due to residential population of the proposed development and the existing sewerage catchment are shown in **Table 2.1** based on the Table T-1 of GESF.

Table 2.1 Unit Flow Factor for Domestic Flows

Residential Type	Unit Flow Factor (m^3/person/day)[1]
Private R4	0.37

Unit Flow Factor – Commercial Flows

2.2.1.3 The UFFs for commercial sewage flows due to employed population of the proposed development and the existing sewerage catchment are shown in **Table 2.2** based on the Table T-2 of GESF.

2.2.1.4 The total unit flow generated from an employee in a particular trade is the sum of the UFF of the employee and the UFF of commercial activities of a particular trade under consideration.

Table 2.2 Unit Flow Factor for Commercial Flows

Commercial Type	UFF (m^3/employee/day)
Commercial Employee	0.080
Commercial Activities	
(a) Specific trades:	
J11 – Community, Social & Personal Services	0.200

Peaking Factors

2.2.1.5 The peaking factors to cater for seasonal/diurnal flow variations, and infiltration and inflow due to storm events are referenced to EPD's GESF and shown in **Table 2.3**.

Table 2.3 Peaking Factors for Various Population Ranges

Population Range	Peaking Factor (Including Stormwater Allowance) for Facility with Existing Upstream Sewerage	Peaking Factor (Excluding Stormwater Allowance) for Facility with New Upstream Sewerage
Sewers		
< 1,000	8	6
1,000 – 5,000	6	5
5,000 – 10,000	5	4
10,000 – 50,000	4	3
> 50,000	Max ($7.3/N^{0.15}$, 2.4) [1]	Max ($6/N^{0.175}$, 1.6) [1]
Sewage Treatment Works, Preliminary Treatment Works and Pumping Stations		
< 10,000	4	3
10,000 – 25,000	3.5	2.5
25,000 – 50,000	3	2
> 50,000	Max ($3.9/N^{0.065}$, 2.4) [1]	Max ($2.6/N^{0.065}$, 1.6) [1]
Note: [1] N = Contributing population in thousands		

Population Density

2.2.1.6 A person per flat (PPF) ratio of 2.9 is adopted with reference to the average domestic household size of the Tertiary Planning Unit 531 as reported in the 2021 Population Census published by the Census and Statistics Department.

2.2.1.7 The employment population density has been referenced to Table 8 of PlanD's Commercial and Industrial Floor Space Utilization Survey "CIFSUS":

- Community, Social & Personal Services: Assume 3.3 employee per $100m^2$ of GFA

Hydraulic Analysis

2.2.1.8 Colebrook-White equation is applied for pipe hydraulic analysis. The material adopted for proposed pipes is HDPE; a roughness coefficient of 0.15 mm has been adopted.

2.2.1.9 For small diameter sewers of diameter less than 300mm, the flow velocity of at least 0.7m/s shall occur daily, or that a gradient of at least 1:DN (i.e. Nominal diameter of the sewer in mm) is provided, provided that a flow of 2 times of Average Dry Weather Flow (ADWF) is assumed to occur at least once daily. For larger diameter sewers of diameter up to 900mm, a self-cleansing velocity of 1.0m/s in full pipe condition shall be achieved. The maximum flow velocity at peak flow shall be 3m/s.

3. Sewerage Impact Assessment

3.1 Existing and Planned Sewerage Infrastructure

Existing Sewerage System

3.1.1.1 According to the existing DSD record plan of public sewerage system in Kam Tin area, there are no existing public sewerage networks along Tung Wui Road for collection of sewage from the Application Site.

3.1.1.2 There is an existing Kam Tin Sewage Pumping Station (KTSPS) located in the vicinity of Kam Tin Road/Kam Tin Bypass Interchange which is around 1 km away from the Application Site B. KTSPS is currently pumping sewage 3.3 km northward to Nam Sang Wai Sewage Pumping Station; and ultimately being conveyed by 2.2 km westwards to Yuen Long Sewage Treatment Works (YLSTW), which has a design capacity of 70,000 m^3/day.

3.1.1.3 With reference to the SIA Report for Lot No. 1040 in D.D. 103 West Rail Kam Sheung Road Package 1 Property Development, July 2021, the designed capacity of KTSPS was about 17,133 m^3/day respectively.

Planned Sewerage System

3.1.1.4 With reference to Attachment VIII of RNTPC Paper No. 8/17, there are new public sewers planned for construction along Tung Wui Road, Kam Po Road, and Kam Ho Road for conveying sewage to KTSPS under CE34/2014 (CE). The proposed alignment will overlap with existing manholes and sewers (FSH1001861 to FSH1001865) along Kam Tai Road and will connect to manhole FSH1001865, which is further connected to Kam Tin SPS via a DN1200 sewer under Kam Tin River. The sizes and locations of planned sewers conveying sewage to KTSPS are shown in **Appendix B Drawing No. C/SIA/002 – C/SIA/003**.

3.2 Assessment for Proposed Development at the Application Site

3.2.1 Sewage Generation from the Proposed Development

3.2.1.1 The sewage flow generated from the proposed development is about 453.2 m3/day (ADWF), while the peak flow is 26.2 L/s (peak factor = 5, without additional flow from swimming pool backwashes). The detailed calculations for sewage flow estimation are included in **Appendix C** and summarised in **Table 3.1**.

Table 3.1 Sewage Flow Estimation for Application Site

Proposed Development	**Estimated ADWF (m^3/day) (2)**
Residential	446.2
Clubhouse	7.0
Peak Catchment Inflow Factor	1.0(3)
Total ADWF	**453.2**
Contributing population	1,679
Peaking Factor (1)	5
Peak Flow (L/s)	**26.2**
Additional Flow from Swimming Pool Backwashes (L/s) (4)	0.14

Remarks:
(1) Peaking Factor =3 for contributing population = 1,000 – 5,000 based on EPD's GESF Table T-5.

(2) Numbers are rounded to 1 decimal place
(3) Peak Catchment Inflow Factor = 1.0 for Yuen Long based on EDP's GESF Table T-4.
(4) Swimming pool backwashes will be carried out during non-peak hours.

3.2.2 Proposed Sewerage System for the Proposed Development

3.2.2.1 To accommodate the sewage generated from the Application Site, it is proposed to construct a new on-site sewage treatment plant (STP) within the development area and discharged to Kam Tin River. There is no existing public sewerage system in the vicinity of the Application Site. In addition, with reference to the SIA Report for Lot No. 1040 in D.D. 103 West Rail Kam Sheung Road Package 1 Property Development, July 2021, the utilisation of the planned sewerage system has already exceeded 80% of its design capacity. As such, the planned sewerage system does not have sufficient capacity to accommodate the additional sewage flow from the proposed development, and connection to a public sewerage system is not considered feasible. Therefore, a dedicated STP will be constructed to collect and treat sewage generated from the Application Site prior to discharge.

3.2.2.2 The proposed STP will have a design capacity of 460 m^3/day and will locate in the northern side of the Application Site as shown in **Appendix A**. Membrane Bioreactor (MBR) technology will be adopted for the proposed STP for meeting EPD's effluent discharge standard. The proposed STP will provide tertiary effluent standard as shown in **Table 3.2**. The sludge from the proposed STP as a by-product from the MBR treatment process will be removed by licensed sludge collection vehicles. A discharge license under WPCO will be obtained for operation of the STP. The proposed STP would serve as an interim arrangement, and connection to the public sewer would be carried out once the public sewerage facilities become available.

Table 3.2 Tertiary Effluent Standards for the Proposed STP

Parameter	Unit	Tertiary Effluent Standards (Upper Limit)
BOD	mg/L	10
TSS	mg/L	10
TN	mg/L	20
TP	mg/L	2
Ammonia-N	mg/L	5
E. coli	Count/100mL	100

3.2.2.1 Dual power supply will be provided for the STP to prevent power failure. Duty and standby pumps will be installed to ensure continuous operation during pump failure or maintenance. The pumps can also recycle treated effluent to maintain operation during low inflow. The risk of both measures failing at the same time is low. Therefore, the proposed emergency measures are considered adequate for the temporary STP.

3.2.2.2 In addition, an emergency storage tank (about 115 m^3, equivalent to 6 hours of ADWF) will be provided to store excess sewage during plant failure or maintenance. If required, tanker services will be arranged to remove excess sewage. The emergency response plan will be further developed at the detailed design stage.

3.2.3 Potential Sewerage Impact for the Proposed Development

3.2.3.1 As there is no existing public sewerage system in the vicinity of the Application Site and the sewage generated from the Application Site will not be discharged to the planned sewerage system, all sewage generated from the Application Site is proposed to be collected, treated and discharged via the proposed on-site STP to Kam Tin River. Therefore, no adverse impact on the existing or planned public sewerage systems is anticipated.

3.3 Sensitivity Test on Sewage Generation from Additional Area under the Rationalised Boundary

3.3.1.1 A sensitivity test has been conducted for the additional areas outside the Application Site within a rationalised boundary of a potential rezoning area, based on the approach and assumptions outlined in **Sections 1.1.1.4** and **1.2.1.2**. Assuming that the additional area would be developed for a similar residential use with a total PR of not more than 3, consistent with the proposed development, an estimation of sewage generation for demonstration purpose is provided in Appendix E.

4. Construction, Operation and Maintenance of New Sewerage Facilities

4.1.1.1 The proposed on-site STP and associated sewerage works within the Application Site will serve as an interim sewerage arrangement and will be constructed, operated and maintained by the project proponent. The development will be connected to the public sewerage system once public sewerage facilities become available.

5. Conclusion

5.1.1.1 A Sewerage Impact Assessment has been carried out for the proposed development in Kam Tin, Yuen Long.

5.1.1.2 Sewage generated from the Application Site is estimated at 453.2 m^3/day or a peak flow of 26.2 L/s (Peaking factor = 5, without additional flow from swimming pool backwashes). As there is no existing public sewerage system in the vicinity and the planned sewerage system does not have sufficient capacity to accommodate the additional flow from the proposed development, a new on-site STP with a design capacity of 460 m^3/day is proposed to treat all sewage generated from the Application Site.

5.1.1.3 To conclude, the sewage generated from the Application Site will be treated at the proposed on-site STP. Therefore, the development will not have adverse impacts the existing sewerage system, and no sewer upgrading works are required. The proposed on-site STP will be constructed, operated and maintained by the project proponent. The proposed STP would serve as an interim arrangement, and connection to the public sewer would be carried out once the public sewerage facilities become available.

Appendix A

Master Layout Plan of Indicative Scheme in Application Site

WIP Apr 2003

WIP Apr 2003

TS

TS

Genuine Court

Goodview Court

Open Storage

KAM TIN RIVER

Outfall

TUNG WUI ROAD

SEWAGE TREATMENT PLANT

APPLICATION SITE

EVA

BLOCK 2
17 Storeys

BLOCK 1
17 Storeys

SWIMMING POOL

KAM SHEUNG ROAD STATION PACKAGE 2 SITE

PUBLIC HOUSING SITE
- KAM SHEUNG ROAD SITE 4a
(under construction)

NOTES:

DO NOT SCALE DRAWINGS.

LAYOUT LEGEND:

APPLICATION SITE

NO	DATE	DESCRIPTION

ARCHITECT

STUDIO | RCA

[redacted]

STUDIO | RAYMOND CHAU | ARCHITECTURE | LIMITED

PROJECT NAME

PROPOSED RESIDENTIAL DEVELOPMENT AT LOT 2160 R.P. (PART) IN D.D. 106 AND ADJOINING GOVERNMENT LAND, KAM SHEUNG ROAD, KAM TIN, YUEN LONG, NEW TERRITORIES

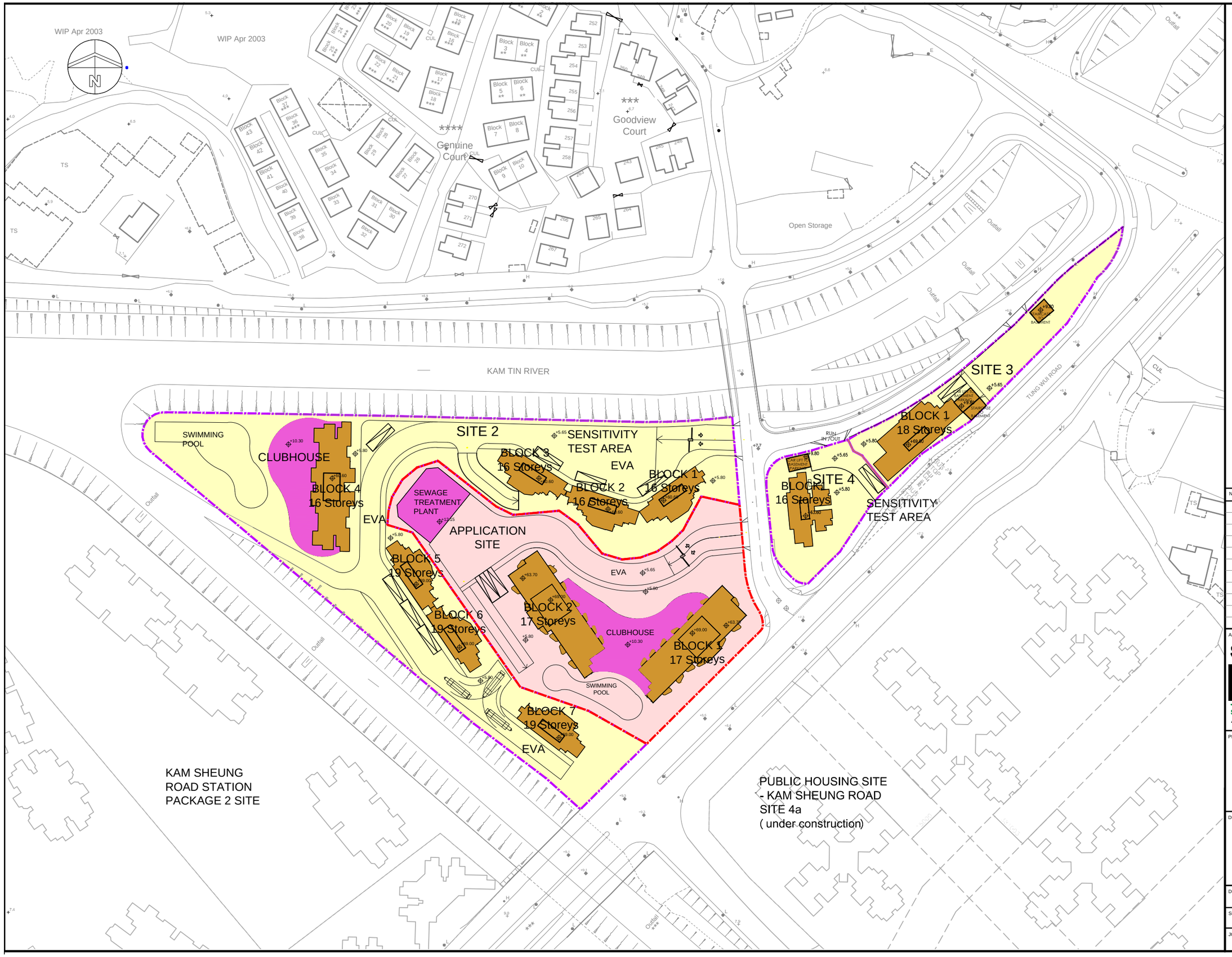
DRAWING TITLE

MASTER LAYOUT PLAN

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SCALE: 1:1250	DATE: 2026.10.09
JOB No.: 2526	DRAWING No.: A-03

Appendix B1

Master Layout Plan for Additional Area under the Rationalised Boundary (for Sensitivity Test Purpose)(for Reference)



NOTES:

DO NOT SCALE DRAWINGS.

LAYOUT LEGEND:

- APPLICATION SITE
- PROPOSED RATIONALIZED BOUNDARY FOR REZONING AREA (FOR SENSITIVITY TEST PURPOSE ONLY)

NO	DATE	DESCRIPTION

ARCHITECT

STUDIO | RCA

[redacted]

STUDIO | RAYMOND CHAU | ARCHITECTURE | LIMITED

PROJECT NAME

PROPOSED RESIDENTIAL DEVELOPMENT AT LOT 2160 R.P. (PART) IN D.D. 106 AND ADJOINING GOVERNMENT LAND, KAM SHEUNG ROAD, KAM TIN, YUEN LONG, NEW TERRITORIES

DRAWING TITLE

MASTER LAYOUT PLAN

DRAWN BY: CC	CHECKED BY: RC
SCALE: 1:1250	DATE: 2026.10.09
JOB No.: 2526	DRAWING No.: A-03A

Appendix B2

Key Development Parameters of Sensitivity Test Area (for Reference)

Key Development Parameters of Sensitivity Test Areas in Kam Sheung Road Site

Sensitivity Test Area 2

Development Parameters	Indicative Scheme
Application Site	About 11,610 m^2
Total Plot Ratio (PR) • Domestic PR	3.0 • 3.0
Total Gross Floor Area (GFA) (About) • Domestic GFA	34,829 m^2 • 34,829 m^2
Building Height (Not more than)	60.6 mPD – 69.0 mPD
No. of Residential Blocks	7
No. of Storeys	16 – 19
No. of Residential Units	744
Average Flat Size	About 46.81 m^2
Anticipated Population [1]	About 2,158
Residential Clubhouse	About 900 m^2

[1] A person per flat (PPF) ratio of 2.9 is adopted with reference to the average domestic household size of the Tertiary Planning Unit 531 as reported in the 2021 Population Census published by the Census and Statistics Department.

Sensitivity Test Area 3

Development Parameters	Indicative Scheme
Application Site	About 1,738 m^2
Total Plot Ratio (PR) • Domestic PR	3.0 • 3.0
Total Gross Floor Area (About) • Domestic GFA	5,217 m^2 • 5,217 m^2
Building Height (Not more than)	65.65 mPD
No. of Residential Blocks	1
No. of Storeys	18
No. of Residential Units	102
Average Flat Size	About 51.14 m^2
Anticipated Population [1]	About 296
Residential Clubhouse	-

[2] A person per flat (PPF) ratio of 2.9 is adopted with reference to the average domestic household size of the Tertiary Planning Unit 531 as reported in the 2021 Population Census published by the Census and Statistics Department.

Kam Tin 2 Sites S12A Applications (Kam Sheung Road) – Development Parameters

Sensitivity Test Area 4

Development Parameters	Indicative Scheme
Application Site	About 1,447 m^2
Total Plot Ratio (PR) • Domestic PR	3.0 • 3.0
Total Gross Floor Area (About) • Domestic GFA	4,341 m^2 • 4,341 m^2
Building Height (Not more than)	59.55 mPD
No. of Residential Blocks	1
No. of Storeys	16
No. of Residential Units	60
Average Flat Size	About 72.35 m^2
Anticipated Population [1]	About 174
Residential Clubhouse	-

[3] A person per flat (PPF) ratio of 2.9 is adopted with reference to the average domestic household size of the Tertiary Planning Unit 531 as reported in the 2021 Population Census published by the Census and Statistics Department.

Appendix C

Drawings

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N

824000 E
824200 E
824400 E
824600 E
824800 E
833400 N
833200 N
833000 N
832800 N

EXISTING 1200 DIA.
SEWAGE PIPE

KAM TIN SEWAGE
PUMPING STATION

FSH1001866

MH24
MH23
MH22
MH21
MH20
MH19
MH18
MH17
MH16
MH15
MH14

1200
800
2400
2x600
2x300
2x325
750
450
350

KAM TIN ROAD
KAM SHEUNG ROAD
MTR (TUEN MA LINE)
TSING LONG HIGHWAY
KAM TIN RIVER
KAM TIN

KAM SHEUNG ROAD SITE

SENSITIVITY
TEST AREA

MTR KAM TIN
BUILDING

KAM SHEUNG ROAD
STATION DEVELOPMENT

MH8
MH9
MH9c
MH10
MH11

MATCH LINE
FOR CONTINUATION
SEE DWG C/SIA/003

LEGEND

- PROPOSED DEVELOPMENT
- SENSITIVITY TEST AREA
- PROPOSED SEWER PIPELINE AND MANHOLE (TO BE CONSTRUCTED BY CE34/2014(CE)
- PROPOSED SEWER PIPELINE AND MANHOLEK (INVERT LEVELS SUBJECT TO DETAILED DESIGN)

Rev	Description	By	Date
A	FIRST ISSUE	JP	11/25

Consultant

ARUP

Project Title

S.12A Application for Amendment to the Approved Kam Tin South Outline Zoning Plan No. S/YL-KTS/15, to rezone the Application Site from "Comprehensive Development Area" to "Residential (Group A)" at Lot 2160 RP (Part) in D.D. 106, and Adjoining Government Land, Kam Sheung Road, Kam Tin, Yuen Long

Drawing title

PLANNED SEWERAGE NETWORK
(KAM SHEUNG ROAD SITE)
(SHEET 1)

Drawing no.	Rev.
309160/C/SIA/002	A

Drawn	Date	Checked	Approved
RY	11/25	JW	KK

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N

824400 E | 824600 E | 824800 E | 825000 E | 825200 E

832800 N | 832600 N | 832400 N

KAM TIN RIVER

MTR KAM TIN BUILDING

FOR CONTINUATION SEE DWG C/SIA/002

MATCH LINE

SENSITIVITY TEST AREA

KAM SHEUNG ROAD SITE

TUNG WUI ROAD

KAM SHEUNG ROAD STATION DEVELOPMENT

TSING LONG HIGHWAY

PUBLIC HOUSING SITE 4a

PUBLIC HOUSING SITE 1

PUBLIC HOUSING SITE 6

G/IC FACILITY BOUNDARY

G/IC FACILITY BOUNDARY

G/IC FACILITY BOUNDARY

MTR (TUEN MA LINE)

MH17 — 800 — MH16 — 800 — MH15 — 800 — MH14 — 800 — MH13 — 800 — MH12 — 800 — MH11 — 450 — MH12d — 450 — MH12c — 450 — MH12b — 450 — MH12a

MH10 — 750 — MH9 — 350 — MH9c — 350 — MH9b — 350 — MH9a

MH8 — 350 — MH7 — 2x300 — MH6 — 350 — MH5 — 350 — MH4 — 350 — MH3 — 350 — MH2 — 350 — MH1

2x525

LEGEND

- PROPOSED DEVELOPMENT
- SENSITIVITY TEST AREA
- PROPOSED SEWER PIPELINE AND MANHOLE (TO BE CONSTRUCTED BY CE34/2014(CE))
- PROPOSED SEWER PIPELINE AND MANHOLEK (INVERT LEVELS SUBJECT TO DETAILED DESIGN)

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A	FIRST ISSUE	JP	11/25

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ARUP

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Drawing title

PLANNED SEWERAGE NETWORK (KAM SHEUNG ROAD SITE) (SHEET 2)

Drawing no.	Rev.
309160/C/SIA/003	A

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RY	11/25	JW	KK

Scale	Status
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Appendix D

Sewage Generation from Proposed Development at the Application Site

ARUP

Job No.	Sheet No.	Rev.
309160	1	2

Job Title: S.12A Application for Amendment to the Approved Kam Tin South Outline Zoning Plan No. S/YL-KTS/15, to rezone the Application Site from "Comprehensive Development Area" to "Residential (Group A)" at Lot 2160 RP (Part) in D.D. 106, and Adjoining Government Land, Kam Sheung Road, Kam Tin, Yuen Long

Made by MP Date 09/2026 Chd.

Calculation: **Estimation of Sewage Discharge from Proposed Development**

Kam Sheung Road Site		
Residential		
Domestic GFA	21,498	m^2
Number of Units	416	
Size of Unit (1)	2.9	Persons/unit
Per Capita Flow (2) - R4	0.37	m^3/day/person
Total Population	1,206	Persons
Estimated Dry Weather Flow	**446.2**	m^3/day
Residential Clubhouse		
GFA	750.00	m^2
Employee per GFA (in 100 m^2)(3)	3.3	Persons/GFA
Employee Population	25	Persons
Per Capita Flow(4) - J11	0.28	m^3/day/person
Estimated Dry Weather Flow	**7.0**	m^3/day
Swimming Pool		
Pool 1 Assume: - Pool size = 420m^2 with 1.5m water depth. - Pool volume = 420 x 1.5 = 630 m^3. - Turnover rate = 4 hours. - Filter loading rate = 20 m^3/m^2/hr. - Filter area required = 630 / 4 / 20 = 7.875 m^2. - Backwash flow rate = 30 m^3/m^2/hr. - Backwash duration = 3 min/day - Backwash flow = 7.875 x 30 x 3 / 60 = 11.8 m^3/day = 0.1367 L/s	**0.14**	L/s
Total Estimate Dry Weather Flow	**453.2**	m^3/day
Catchment Inflow Factor (5) - Yuen Long	1.00	
Total Estimated Dry Weather Flow (including catchment inflo	**453.2**	m^3/day
Contributing Population	1,679	
Peaking Factor (6)	5	
Total Estimated Peak Flow	**26.2**	**L/s**
Additional Flow from Swimming Pools Backwashes	**0.1**	**L/s**

1. A person per flat (PPF) ratio of 2.9 is adopted
2. Unit flow factor per resident = 0.37 m^3/day for domestic housing population R4 based on EPD's GESF Table T-1.
3. Community, Social & Personal Services = 3.3 employee per 100m^2 of GFA based on PlanD's Commercial and Industrial Floor Space Utilization Survey "CIFSUS" Table 8.
4. Unit Flow Factor per employee = 0.28 m^3/day (0.08m3/day for Commercial Employee + 0.20m^3/day for J11 specific trades for community, social and personal services based on EPD's GESF Table T-2.
5. Catchment Inflow Factor = 1.0, for Yuen Long District based on EPD's GESF Table T-4
6. Peaking Factor = 5, for contributing population 1,000 - 5,000 (excluding stormwater allowance) based on EPD's GESF Table T-5.

Appendix E

Sewage Generation from the Sensitivity Test Area (for Reference)

ARUP

Job No.	Sheet No.	Rev.
309160	1	

Job Title: S.12A Application for Amendment to the Approved Kam Tin South Outline Zoning Plan No. S/YL-KTS/15, to rezone the Application Site from "Comprehensive Development Area" to "Residential (Group A)" at Lot 2160 RP (Part) in D.D. 106, and Adjoining Government Land, Kam Sheung Road, Kam Tin, Yuen Long

Made by MP Date 07/2026 Chd.

Calculation: **Estimation of Sewage Discharge from Sensitivity Test Areas**

Sensivtivity Test Area 2		
Residential		
Domestic GFA	34,829	m^2
Number of Units	744	
Size of Unit (1)	2.9	Persons/unit
Per Capita Flow (2) - R4	0.37	m^3/day/person
Total Population	2,158	Persons
Estimated Dry Weather Flow	**798.5**	m^3/day
Clubhouse		
GFA	900	m^2
Employee per GFA (in 100 m^2)(3)	3.3	Persons/GFA
Employee Population	30	Persons
Per Capita Flow(4) - J11	0.28	m^3/day/person
Estimated Dry Weather Flow	**8.4**	m^3/day
Swimming Pool		
Pool 1 Assume: - Pool size = 566m^2 with 1.5m water depth. - Pool volume = 566 x 1.5 = 849 m^3. - Turnover rate = 4 hours. - Filter loading rate = 20 m^3/m^2/hr. - Filter area required = 849 / 4 / 20 = 10.61 m^2. - Backwash flow rate = 30 m^3/m^2/hr. - Backwash duration = 3 min/day - Backwash flow = 10.61 x 30 x 3 / 60 = 15.92 m^3/day = 0.184 L/s	**0.2**	L/s
Total Estimate Dry Weather Flow	**806.9**	m^3/day
Catchment Inflow Factor (5) - Yuen Long	1.00	
Total Estimated Dry Weather Flow (including catchment inflow fact	**806.9**	m^3/day
Contributing Population	2,988	
Peaking Factor (6)	5	
Total Estimated Peak Flow	**46.7**	**L/s**
Additional Flow from Swimming Pools Backwashes	**0.2**	**L/s**

1. A person per flat (PPF) ratio of 2.9 is adopted
2. Unit flow factor per resident = 0.37 m3/day for domestic housing population R4 based on EPD's GESF Table T-1.
3. Community, Social & Personal Services = 3.3 employee per 100m^2 of GFA based on PlanD's Commercial and Industrial Floor Space Utilization Survey "CIFSUS" Table 8.
4. Unit Flow Factor per employee = 0.28 m3/day (0.08m3/day for Commercial Employee + 0.20m3/day for J11 specific trades for community, social and personal services based on EPD's GESF Table T-2.
5. Catchment Inflow Factor = 1.0, for Yuen Long District based on EPD's GESF Table T-4
6. Peaking Factor = 5, for contributing population 1,000 - 5,000 (excluding stormwater allowance) based on EPD's GESF Table T-5.

Sensivtivity Test Area 3		
Residential		
Domestic GFA	5,217	m^2
Number of Units	102	
Size of Unit (1)	2.9	Persons/unit
Per Capita Flow (2) - R4	0.37	m^3/day/person
Total Population	296	Persons
Estimated Dry Weather Flow	**109.5**	m^3/day
Total Estimate Dry Weather Flow	**109.5**	m^3/day
Catchment Inflow Factor (3) - Yuen Long	1.00	
Total Estimated Dry Weather Flow (including catchment inflow fact	**109.5**	m^3/day
Contributing Population	406	
Peaking Factor (4)	6	
Total Estimated Peak Flow	**7.6**	**L/s**
Additional Flow from Swimming Pools Backwashes	**0.0**	**L/s**

1. A person per flat (PPF) ratio of 2.9 is adopted
2. Unit flow factor per resident = 0.37 m3/day for domestic housing population R4 based on EPD's GESF Table T-1.
3. Catchment Inflow Factor = 1.0, for Yuen Long District based on EPD's GESF Table T-4
4. Peaking Factor = 5, for contributing population 1,000 - 5,000 (excluding stormwater allowance) based on EPD's GESF Table T-5.

Sensivtivity Test Area 4		
Residential		
Domestic GFA	4,341	m^2
Number of Units	60	
Size of Unit (1)	2.9	Persons/unit
Per Capita Flow (2) - R4	0.37	m^3/day/person
Total Population	174	Persons
Estimated Dry Weather Flow	**64.4**	m^3/day
Total Estimate Dry Weather Flow	**64.4**	m^3/day
Catchment Inflow Factor (3) - Yuen Long	1.00	
Total Estimated Dry Weather Flow (including catchment inflow fact	**64.4**	m^3/day
Contributing Population	238	
Peaking Factor (4)	6	
Total Estimated Peak Flow	**4.5**	**L/s**
Additional Flow from Swimming Pools Backwashes	**0.0**	**L/s**

1. A person per flat (PPF) ratio of 2.9 is adopted
2. Unit flow factor per resident = 0.37 m3/day for domestic housing population R4 based on EPD's GESF Table T-1.
3. Catchment Inflow Factor = 1.0, for Yuen Long District based on EPD's GESF Table T-4
4. Peaking Factor = 5, for contributing population 1,000 - 5,000 (excluding stormwater allowance) based on EPD's GESF Table T-5.