

Appendix 5

Sewerage Impact Assessment

Prepared by

Ramboll Hong Kong Limited

**PROPOSED 'FLAT' (IN-SITU CONVERSION) IN
"COMMERCIAL (7)" ZONE, NO. 18 SALISBURY ROAD,
TSIM SHA TSUI, KOWLOON (KOWLOON INLAND LOT NO. 9844 (PART))**

SEWERAGE IMPACT ASSESSMENT

Date **October 2025**

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Signed

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Signed

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1. INTRODUCTION

1.1 Background

- 1.1.1 The Victoria Dockside (VD) development is located at No.18 Salisbury Road, Tsim Sha Tsui, Kowloon, as shown in **Figure 1**. It is currently zoned "Commercial (7)" ["C(7)"] under the Approved Tsim Sha Tsui Outline Zoning Plan No. S/K1/30, and is within Kowloon Inland Lot No. 9844. The VD development comprises, *inter alia*, (i) K11 MUSEA, a retail mall integrating premier art, design and leisure experiences, (ii) Grade A office space (K11 ATELIER), (iii) Rosewood Hotel Hong Kong, (iv) hotel-like serviced apartment Rosewood Residences; and (v) another hotel-like serviced apartment K11 ARTUS.
- 1.1.2 The Applicant, Hong Kong Island Development Limited, is now seeking approval from the Town Planning Board under section 16 of the Town Planning Ordinance for the Proposed 'Flat' (In-situ Conversion) at K11 ARTUS ("the Application Premises"). The Proposal involves the in-situ conversion of existing hotel-like serviced apartments at K11 ARTUS into a maximum of 205 nos. of units for greater spectrum of uses in the complex with the intention to reinforce the sense of place, neighbourhood and vibrancy.
- 1.1.3 Ramboll Hong Kong Limited is commissioned to prepare this Sewerage Impact Assessment (SIA) based on the in-situ conversion proposal. This SIA report has been prepared with respect to the proposed scheme to assess the likely sewerage flows arising from the proposed conversion, and recommend measures and upgrading proposal where necessary.
- 1.1.4 The design of the proposed conversion scheme and other technical information on the proposed in-situ conversion are provided by the project proponent.

1.2 Project Location

- 1.2.1 The Victoria Dockside development (including the Application Premises) is located in urbanised area in Tsim Sha Tsui. It is surrounded by MTR East Tsim Sha Tsui Station to the north and Hong Kong Museum of Art and Hong Kong Space Museum to the east and Victoria Harbour to the south and east.

1.3 Existing Condition

- 1.3.1 The existing hotel-like serviced apartment at K11 ARTUS (the Application Premises) provides suite type guest rooms (i.e. with toilet, pantry, living room area) comprising studios, 1-bedroom, 2-bedroom, 3-bedroom residence and penthouses. The provision is analogous to residential units. There are altogether 287 number of rooms. The rooms occupy 8/F to 21/F of the lower block of Victoria Dockside (14 storeys in total), while there is a lounge which occupies a portion of 11/F.

1.4 Proposed In-situ Conversion

- 1.4.1 It is proposed to convert the existing rooms at K11 ARTUS to residential uses with no change to overall structure. The lounge at 11/F and the retail use underneath K11 ARTUS (i.e. 7/F and below) would remain unchanged (lounge as ancillary clubhouse).
- 1.4.2 Some of the existing rooms will be combined for conversion to residential units. There will be a total of about 205 number of residential units after the in-situ conversion.
- 1.4.3 The tentative completion year is 2029.

2. SEWERAGE IMPACT ASSESSMENT

2.1 Scope of Work

- 2.1.1 The aim of this study is to assess whether the existing sewerage facilities serving the Victoria Dockside development are sufficient to cope with the sewage flow from the proposed in-situ conversion at K11 ARTUS and, if appropriate, to identify necessary improvement works and/or alternative disposal options.

2.2 Existing Sewerage System

- 2.2.1 Reference has been made to DSD Drainage Record Plans, which cover the Victoria Dockside development and its vicinity. **Figure 2** shows the existing sewerage arrangement.
- 2.2.2 According to the submission of proposed locations of terminal manholes and drainage connections by PBA in 2014 (**Appendix 2**), there are four terminal manholes (F-01 to F-04) collecting wastewater discharge from the entire VD development, including the retail development (including F&B) at the podium (K11 MUSEA), serviced apartment development at the lower block atop the retail development (K11 ARTUS), the high-rise block with the office use (K11 ATELIER) plus Rosewood Residences & Rosewood Hotel Hong Kong providing serviced apartment and guest rooms respectively.
- 2.2.3 The four terminal manholes are located on the northern side of the VD development and near the public sewer along Salisbury Road. Terminal manholes F-01 to F-04 are located in the order from west to east (please refer to **Figure 2**).
- 2.2.4 Discharges from retail and F&B are distributed to all four terminal manholes, whereas F-02 also receives discharge from K11 ARTUS. F-04 also receives discharge from the high-rise block accommodating the office (K11 ATELIER), serviced apartment (Rosewood Residences) and hotel guest rooms (Rosewood Hotel Hong Kong).
- 2.2.5 Under the current proposal, only K11 ARTUS would be affected while other existing uses of the entire VD development will be as status quo. In other words, discharge to **terminal manholes other than F-02 will not be affected**. The assessment under this SIA therefore focuses on the change of sewage flow with respect to F-02 only.
- 2.2.6 Specifically, wastewater discharge from the existing K11 ARTUS is discharged to the terminal manhole (F-02), and then flows to manhole no. FMH4052950 (S1) which connects to a pipe with 300mm diameter. This pipe is enlarged downstream to 1200mm diameter.
- 2.2.7 Referring to the submission of proposed locations of terminal manholes and drainage connections by PBA in 2014, F-02 collects flow from the entire K11 ARTUS (as hotel-like serviced apartment) with 287 rooms, clubhouse of about 760m², retail area of shopping mall of about 20,000m² and F&B area of shopping mall of about 1,000m².
- 2.2.8 The rooms of the existing hotel-like serviced apartment at K11 ARTUS will be converted to residential use. Clubhouse, retail and F&B area of the existing shopping mall would be maintained.

2.3 Assessment Criteria and Methodology

- 2.3.1 Environmental Protection Department's (EPD's) Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning, Version 1 (GESF) has been referred to for the purposes of estimating the quantity of the sewage generated from the proposed conversion and the existing catchment area. Sewage flow parameters and peaking factors in this document have been adopted for this SIA.

2.3.2 Based on the building types in the area, the following unit flow factors are used in the SIA calculation:

- Residents: 0.27 m³/person/day (R2)
- F&B and Hotel Staff: 1.58 m³/day (J10 – Restaurant & Hotels)
- Retail Staff: 0.28 m³/day (J4 – Wholesale & Retail)
- Clubhouse Staff: 0.28 m³/day (J11 – Community, Social & Personal Services)

2.3.3 Catchment Inflow Factor (P_{CIF}) of Central Kowloon (1.00) has been applied in the assessment.

2.4 Wastewater generated by the Existing Premises and Proposed Conversion

2.4.1 The existing premises in relation to F-02 includes 287 hotel-like serviced apartment rooms at K11 ARTUS, 760m² of clubhouse, 1,000m² of commercial area (F&B) and 20,000m² of commercial area (retail).

2.4.2 Sewage flow from the existing development is primarily contributed by the residents of rooms in the serviced apartment, with additional flow from the employees of the serviced apartment, clubhouse, retail and F&B area of shopping mall. Please refer to **Table 2.1** for all the existing sewage flow to F-02 according to the submission of proposed locations of terminal manholes and drainage connections by PBA in 2014.

Table 2.1 Existing Sewage Flow Relating to Terminal Manhole F-02

Use	Parameter	ADWF (m ³ /day)
Hotel-like Serviced Apartment	287 units 3.1 person per flat ⁽¹⁾ UFF = 0.27 m ³ /day/person (R2)	240.2
Clubhouse/ Lounge	GFA 760 m ² Staff density = 1 in 30.3m ² UFF = 0.28 m ³ /day/person	7.0
Commercial Area (F&B)	GFA 1000 m ² Staff density = 1 in 19.6m ² UFF = 1.58 m ³ /day/person	80.6
Commercial Area (Retail)	GFA 20000 m ² Staff density = 1 in 28.6m ² UFF = 0.28 m ³ /day/person	195.8
	TOTAL	523.7
	Peak Flow (L/s)	36.4
	Peak Flow with Swimming Pool (L/s)	40.9

Note:

(1) Kowloon Station residential cluster (in TPUs 251 and 256), also with mainly apartment type developments and waterfront setting, is similar to the Application Premises. Therefore, an average household size of 3.1 of TPUs 251 and 256 is referenced in this SIA.

2.4.3 For the proposed conversion scenario, there will be about 205 number of residential units by conversion of the existing serviced apartment rooms.

- 2.4.4 Sewage flows arising from the proposed conversion will be primarily contributed by the residents, while the flow from clubhouse, retail and F&B area of shopping mall remains unchanged. The swimming pool provision will not be altered too.

Table 2.2 Future Sewage Flow arising from the Upon Proposed In-situ Conversion

Use	Parameter	ADWF (m ³ /day)
Residential Flat	About 205 units 3.1 person per flat UFF = 0.27 m ³ /day/person (R2)	171.6
Ancillary Clubhouse	GFA 760 m ² Staff density = 1 in 30.3m ² UFF = 0.28 m ³ /day/person	7.0
Commercial Area (F&B)	GFA 1000 m ² Staff density = 1 in 19.6m ² UFF = 1.58 m ³ /day/person	80.6
Commercial Area (Retail)	GFA 20000 m ² Staff density = 1 in 28.6m ² UFF = 0.28 m ³ /day/person	195.8
	TOTAL	455.0
	Peak Flow (L/s)	31.6
	Peak Flow with Swimming Pool (L/s)	36.2

Note:

- (1) Kowloon Station residential cluster (in TPUs 251 and 256), with mainly apartment type developments and waterfront setting, is similar with the Application Premises. Therefore, average household size of 3.1 of TPUs 251 and 256 is referenced on this SIA.

- 2.4.5 The discharge connection is proposed to be the same as the existing condition without alteration.

- 2.4.6 The estimated discharge from the proposed in-situ conversion is shown in **Appendix 1**.

2.5 Assessment of Sewerage Impact

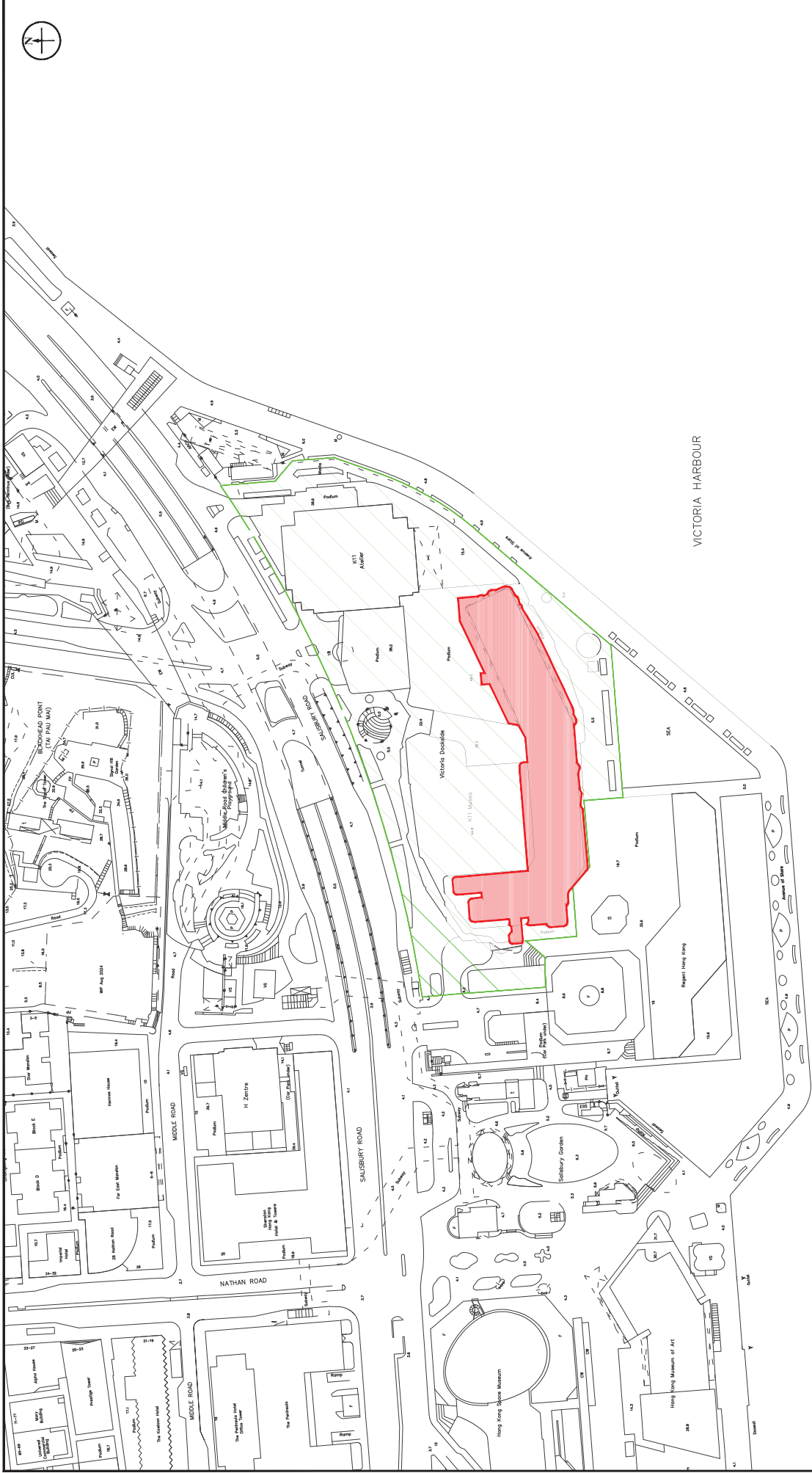
- 2.5.1 When compared with the existing scenario, there will be a decrease of discharge (equivalent to 68.7m³/day) after the in-situ conversion, mainly due to reduction of number of units at K11 ARTUS.

- 2.5.2 As the future sewage generation will be decreased due to the reduced number of units, it is anticipated that the public sewerage system would have adequate capacity to cater the in-situ conversion. Therefore, no adverse sewerage impact is anticipated from the proposed in-situ conversion.

3. CONCLUSION

- 3.1.1 Part of the provision of hotel-like serviced apartments at the Victoria Dockside development in Tsim Sha Tsui is proposed to be converted to residential use. The Application Premises include the whole K11 ARTUS.
- 3.1.2 Based on the sewerage impact assessment results, it is demonstrated that the sewage discharge after the in-situ conversion will be lower than before mainly because of a reduction of number of units at K11 ARTUS. Given that there is no change of the discharge connection, there will not be any worsened sewerage impact.
- 3.1.3 No adverse sewerage impact is anticipated.

Figure



Legend

K11 ARTUS (Application Premises)

Victoria Dockside

RAMBOLL
Drawn by: MW
Checked by: CC
Rev.: 1.0
Date: Jan 2025

Figure: 1
Title: Location of the Application Premises and Its Environs
Project: Proposed 'Flat' (In-situ Conversion) in "Commercial (7)" Zone, No. 18 Salisbury Road, Tsim Sha Tsui, Kowloon(Kowloon Inland Lot No. 9844 (part))

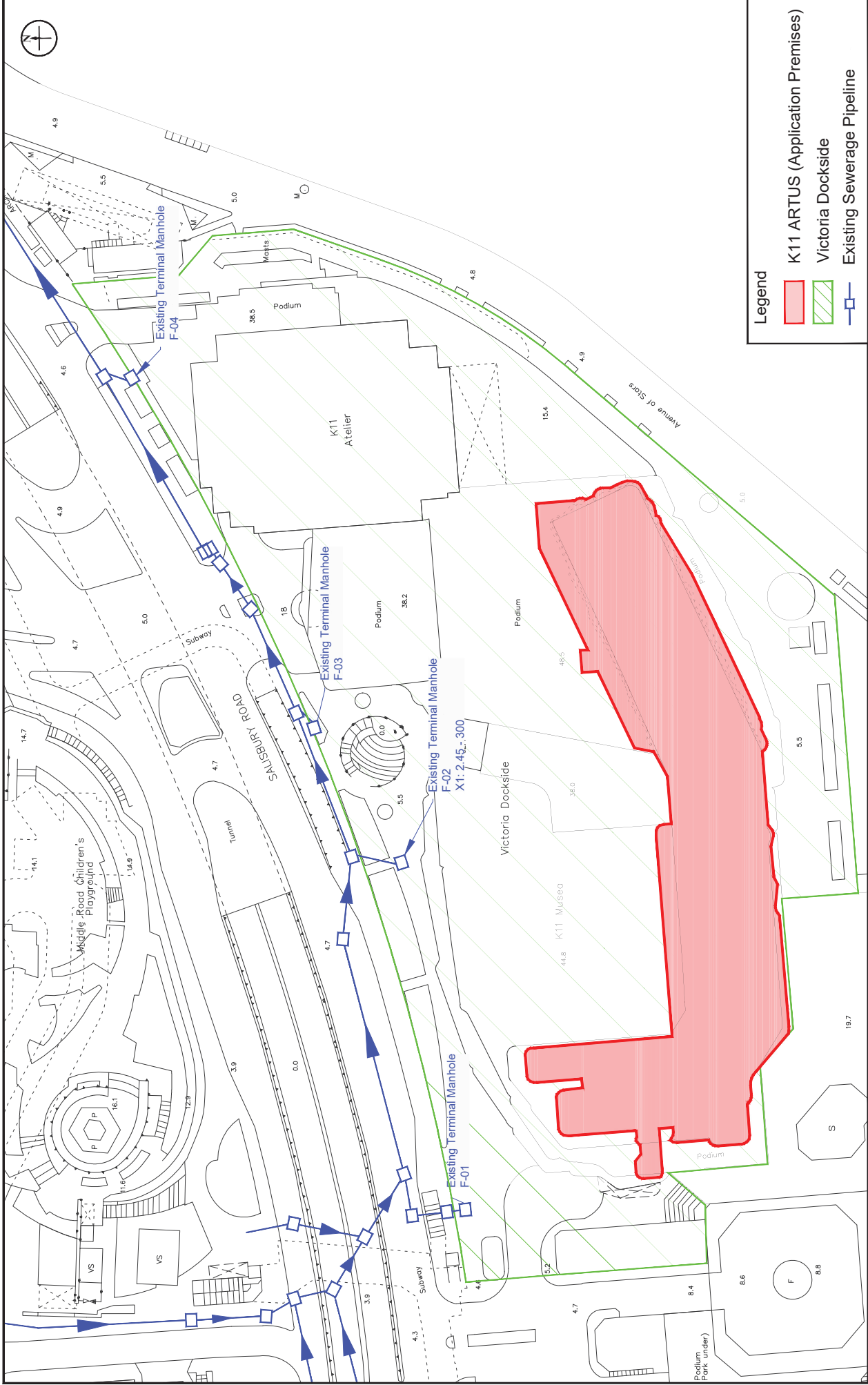


Figure: 2	
Title: Existing Sewerage System in Vicinity of the Application Premises	
Project: Proposed 'Flat' (In-situ Conversion) in "Commercial (7)" Zone, No. 18 Salisbury Road, Tsim Sha Tsui, Kowloon(Kowloon Inland Lot No. 9844 (part))	
Legend	RAMBOLL
K11 ARTUS (Application Premises)	Drawn by: MW
Victoria Dockside	Checked by: CC
Existing Sewerage Pipeline	Rev.: 1.1
	Date: Jul 2025

Appendix 1 Detailed Sewerage Impact Assessment Calculations

Table 1a Calculation for Sewage Generation Rate of the Existing Premises relating to Terminal Manhole F-02

F-02 Discharge	
1. Service Apartment	
Total number of guest room	= 287 units
Total number of residents	= 890 people -- (assumed as 3.1 person per flat ⁽¹⁾)
Design flow	= 0.27 m ³ /person/day -- (Private R2 in Table T-1 of GESF)
Sewage Generation rate	= 240.2 m³/day
2. Clubhouse	
Assumed Area	= 760 m ²
Assumed floor area per employee	= 30.3 m ² per worker -- (refer to Table 8 of CIFSUS - Community, Social & Personal Services)
Total number of employees	= 25 employees
Design flow for commercial activities	= 0.28 m ³ /employees/day -- (refer to Table T-2 of GESF - J11)
Sewage Generation rate	= 7.0 m³/day
3. Commercial Area (F&B)	
Assumed Area	= 1000 m ²
Assumed floor area per employee	= 19.6 m ² per worker -- (refer to Table 8 of CIFSUS - Restaurants)
Total number of employees	= 51 employees
Design flow for commercial activities	= 1.58 m ³ /employees/day -- (refer to Table T-2 of GESF - J10)
Sewage Generation rate	= 80.6 m³/day
4. Commercial Area (Retail)	
Assumed Area	= 20000 m ²
Assumed floor area per employee	= 28.6 m ² per worker -- (refer to Table 8 of CIFSUS - Retail Trade)
Total number of employees	= 699 employees
Design flow for commercial activities	= 0.28 m ³ /employees/day -- (refer to Table T-2 of GESF - J4)
Sewage Generation rate	= 195.8 m³/day
5. Swimming Pool	
Assumed Area of Swimming Pool	= 137 m ²
Average Depth of Water	= 1.2 m
Volume of Swimming Pool (Ordinary Assumption)	= 164.4 m ³
Turnover Rate	= 6 hr
Required Surface Loading Rate of Filter	= 27 m ³ /m ² /hr
Filter Areas required	= 1.0 m ²
Adopted Surface Loading Rate of Filter	= 50 m ³ /m ² /hr
Adopted Filter Area	= 0.5 m ²
Backwash Duration	= 3 min/d
Backwash flow rate	= 30 m ³ /m ² /hr
Average Daily Flow Rate for Swimming Pool Backwashing	= 0.8 m ³ /day
Flowrate for Swimming Pool Backwashing in 3 mins	= 4.6 litre/sec
Total Flow from Existing Development (F-02)	
Flow Rate (without Catchment Inflow Factor)	= 523.7 m ³ /day
Catchment Inflow Factor	= 1.0 Catchment Inflow Factor for Central Kowloon in Table T-4 of GEFS
Flow Rate (with Catchment Inflow Factor)	= 523.7 m³/day
Contributing Population	= 1939 people
Peaking factor	= 6 Refer to Table T-5 of GESF for population 1,000 - 5,000 incl. stormwater allowance
Peak Flow	= 36.4 litre/sec
Peak Flow with Swimming Pool	= 40.9 litre/sec

Remark:

(1). Kowloon Station residential cluster (in TPUs 251 and 256), also with mainly apartment type developments and waterfront setting, is similar to the Application Premises. Therefore, an average household size of 3.1 of TPUs 251 and 256 is referenced on this SIA.

Table 1b Calculation for Sewage Generation Rate upon the Proposed In-situ Conversion

1. Residential Tower	
Total number of residential units	= 205 units
Total number of residents	= 636 people -- (assumed as 3.1 person per flat ⁽¹⁾)
Design flow	= 0.27 m ³ /person/day -- (Private R2 in Table T-1 of GESF)
Sewage Generation rate	= 171.6 m ³ /day
2. Clubhouse	
Assumed Area	= 760 m ²
Assumed floor area per employee	= 30.3 m ² per worker -- (refer to Table 8 of CIFSUS - Community, Social & Personal Services)
Total number of employees	= 25 employees
Design flow for commercial activities	= 0.28 m ³ /employees/day -- (refer to Table T-2 of GESF - J11)
Sewage Generation rate	= 7.0 m ³ /day
3. Commercial Area (F&B)	
Assumed Area	= 1000 m ²
Assumed floor area per employee	= 19.6 m ² per worker -- (refer to Table 8 of CIFSUS - Restaurants)
Total number of employees	= 51 employees
Design flow for commercial activities	= 1.58 m ³ /employees/day -- (refer to Table T-2 of GESF - J10)
Sewage Generation rate	= 80.6 m ³ /day
4. Commercial Area (Retail)	
Assumed Area	= 20000 m ²
Assumed floor area per employee	= 28.6 m ² per worker -- (refer to Table 8 of CIFSUS - Retail Trade)
Total number of employees	= 699 employees
Design flow for commercial activities	= 0.28 m ³ /employees/day -- (refer to Table T-2 of GESF - J4)
Sewage Generation rate	= 195.8 m ³ /day
5. Swimming Pool	
Assumed Area of Swimming Pool	= 137 m ²
Average Depth of Water	= 1.2 m (ordinary assumption)
Volume of Swimming Pool (Ordinary Assumption)	= 164 m ³
Turnover Rate	= 6 hr
Required Surface Loading Rate of Filter	= 27 m ³ /m ² /hr
Filter Areas required	= 1.0 m ²
Adopted Surface Loading Rate of Filter	= 50 m ³ /m ² /hr
Adopted Filter Area	= 0.5 m ²
Backwash Duration	= 7 min/d
Backwash flow rate	= 30 m ³ /m ² /hr
Design flow for Swimming Pool Backwashing	= 1.9 m ³ /day
Design flow for Swimming Pool Backwashing	= 4.6 litre/sec
Total Flow from Proposed Development	
Flow Rate (without Catchment Inflow Factor)	= 455.0 m ³ /day
Catchment Inflow Factor	= 1.0 Catchment Inflow Factor for Central Kowloon in Table T-4 of GEFS
Flow Rate (with Catchment Inflow Factor)	= 455.0 m ³ /day
Contributing Population	= 1685 people
Peaking factor	= 6 Refer to Table T-5 of GESF for population 1,000 - 5,000 incl. stormwater allowance
Peak Flow	= 31.6 litre/sec
Peak Flow with Swimming Pool	= 36.2 litre/sec

Remark:

(1). Kowloon Station residential cluster (in TPUs 251 and 256), also with mainly apartment type developments and waterfront setting, is similar to the Application Premises. Therefore, an average household size of 3.1 of TPUs 251 and 256 is referenced on this SIA.

Appendix 2 Existing Drainage Plan

