Appendix V

Sewerage Impact Assessment

Prepared for

Star Success International Limited

Prepared by

Ramboll Hong Kong Limited

REDEVELOPMENT OF LAI SUN YUEN LONG CENTRE AT NOS. 21-35 WANG YIP STREET EAST, YLTL 362

SEWERAGE IMPACT ASSESSMENT

Date	**April 2026**
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Project Reference	**GYULSYLCEI00**
Document No.	**R10093_v1.0.docx**

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1. INTRODUCTION

1.1 Background

1.1.1 A residential development (the Proposed Development) has been proposed by Star Success International Limited (the project proponent) at Nos. 21-35 Wang Yip Street East, YLTL 362 (the Application Site). A rezoning application (no. Y/YL/16) to rezone the application site from "Other Specified Uses" (BUSINESS) under Yuen Long Outline Zoning Plan (OZP) (No. S/YL/25) to "Residential (Group E)2" was submitted to the Town Planning Board (TPB) for consideration. An environmental assessment (EA) report was prepared by Ramboll Hong Kong Limited based on a development scheme (comprising 2 residential towers and a clubhouse-cum-shop building) as one of the technical supporting documents (hereafter referred as EA1). According to the letter (Ref.: TPB/Y/YL/16) from TPB dated 10 Sep 2021, the application has been agreed.

1.1.2 Subsequent to the approved EA1 report, the development scheme has been finetuned with local revision of internal layout, relaxation on building height and inclusion of indoor area for social welfare purpose below residential towers while building disposition and shape are similar to the previous scheme. Due to the changes in the latest development scheme, the EA report (hereafter referred as EA2) is updated accordingly and was considered acceptable according to letter (Ref.: TPB/A/YL/304) from TPB dated 12 Jan 2024.

1.1.3 Recently, the development scheme adopted has been further finetuned. While the block disposition, orientation, shape, etc. are generally the same as before, the detailed layout has been revised. In addition, more number of storeys is now introduced with increased building height, number of flat units, etc. The clubhouse block design is also finetuned. Based on the latest schedule, the tentative completion year would also be shifted.

1.1.4 Ramboll Hong Kong Limited is commissioned by the project proponent to conduct a Sewerage Impact Assessment (SIA) to support the planning application.

1.1.5 The design of master layout plan (MLP) and other technical information on the Proposed Development are provided by the Project Architect (DLN Architects Limited).

1.2 The Application Site and Its Environs

1.2.1 The Application Site is approximately 7,271m^2 and currently occupied by the Lai Sun Yuen Long Centre, which is an industrial building. Major carriageways surrounding the Application Site include Wang Yip Street East (west), Keung Yip Street (north), Po Yip Street (east), Long Yip Street & Yuen Long On Lok Road (south).

1.2.2 **Figure 1.1** shows the location of the Application Site and its environment.

1.3 The Proposed Development

1.3.1 The Proposed Development will consist of 2 residential towers, 3 storeys of clubhouse cum shop building, a non-residential G/IC facility and carpark.

1.3.2 There will be altogether 1,108 flats, clubhouse of 2,127m^2, commercial area of 1,600m^2 (800m^2 for retail and 800m^2 for F&B assumed), and G/IC of 422m^2. The G/IC is an office dedicated for a team of home care services for frail elderly persons.

1.3.3 The tentative occupation year is 2030.

1.3.4 The MLP, floor plans and sections of the Proposed Development are shown in **Appendix 1.1**.

2. SEWERAGE IMPACT ASSESSMENT

2.1 Scope of Work

2.1.1 The aim of this sewerage impact assessment (SIA) is to assess whether the capacity of the existing sewerage network serving the Application Site is sufficient to cope with the sewage flow from the proposed development. Drainage Record Plans from Drainage Services Department (DSD) were obtained for the purposes of this SIA.

2.1.2 In addition, the SIA Report (Report Ref.: R7298_V1.2 dated June 2020) for the proposed residential development at Yuen Long Town Lot 461 to discharge planning approval condition for the approved S16 application (No. A/YL/257) prepared by Ramboll Hong Kong Limited (SIA-R7298) has been referred to estimate cumulative sewerage impact.

2.2 Assessment Criteria and Methodology

2.2.1 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 development and the existing catchment area. Sewage flow parameters and global peaking factors in this document have been adopted for this SIA.

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

- Residents: 0.27 m^3/person/day (Private R2)
- Clubhouse Staff: 0.28 m^3/employee/day (J11 - Community, Social & Personal Services)
- Commercial Area (Retail) Employee: 0.28 m^3/employee/day (J4 - Wholesale & Retail)
- Commercial Area (F&B) Employee: 1.58 m^3/employee/day (J10 - Restaurants & Hotels)
- Social Services Staff: 0.28 m^3/employee/day (J11 – Community, Social and Personal Services)

2.2.3 The catchment inflow factor, PCIF of 1.00 (Yuen Long), is adopted in catchment calculations.

2.3 Existing and Future Sewerage System

2.3.1 According to the Drainage Record Plans obtained from DSD, there is a Ø750mm sewer running along Wang Yip Street East serving the Application Site. The existing sewers in the vicinity of the Application Site are shown in **Figure 2.1**.

2.3.2 The Ø750mm sewer flows from Wang Yip Street East south-westwards to Wang Yip Street South and collects sewage from upstream catchments (Catchment A) and downstream catchments (Catchment B & C). The concerned catchment areas are shown in **Figure 2.2**.

2.4 Wastewater Generated by the Proposed Development

2.4.1 The Application Site is previously occupied by an industrial building. The estimated wastewater discharge is about 181.7 m^3/day (i.e. peak flow 16.8 litre/sec) (see **Appendix 2.1**).

2.4.2 After redevelopment, wastewater will be primarily contributed by the residents, clubhouse staff and commercial area/social welfare facility employee.

2.4.3 Detailed calculation for the proposed development is given in **Table 2.1**Error! Reference source not found. below.

Table 2.1 Estimated Peak Flow

Development Parameters	Proposed Development					
	Residential Units	**Clubhouse**	**Commercial Area (Retail)**	**Commercial Area (F&B)**	**Social Welfare Facility**	**Swimming Pool**
Area (m^3)	-	2,127	800	800	422	-
Number of Residential Units	1108	-	-	-	-	-
Average Household Size	2.6(1)	-	-	-	-	-
Assumed Population	2,858	71	28	41	14	-
Design Flow (m^3/person/day)	0.27(2)	0.28(3)	0.28(4)	1.58(5)	0.28(6)	-
Flow Rate (m^3/day)	**777.9**	**19.9**	**7.8**	**64.5**	**3.9**	-
Flow Rate (L/S)	-	-	-	-	-	**16.0**
Total Flow Rate (m^3/day)	**874.0**					
Peak Flow (L/s)	**60.7**					
Peak Flow with backwash from swimming pool (L/s)	**76.7**					

Remarks:

(1) 2021 Population Census - Average Household Size of Yuen Long Tung Tau District

(2) Refer to Table T-1 of GESF - Private R2

(3) Refer to Table T-2 of GESF - J11

(4) Refer to Table T-2 of GESF – J4

(5) Refer to Table T-2 of GESF – J10

(6) Refer to Table T-2 of GESF – J11

2.5 Assessment of Sewerage Impact

2.5.1 The Application Site will be constructed to have a new Ø300mm sewer connecting from terminal manhole onsite to the existing public manhole S1 (manhole ref. no. FMH1008777) tentatively. As shown in **Figure 2.1**, the new manhole and sewer will be constructed to allow gravity flow. The invert levels of the sewers presented in **Figure 2.1** are preliminary and indicative only, further details of the alignment of the sewers will be provided in a later stage.

2.5.2 **Appendix 2.1** shows the detailed calculation on the estimated hydraulic capacity of the existing sewer sections and the calculation of the amount of the sewage entering each segment of the said sewer network.

2.5.3 Cumulative flow, including both upstream and downstream catchments (**Figure 2.2**) are assessed in the calculations. SIA-R7298 has been referred regarding the cumulative flow estimation.

2.6 Discussion

2.6.1 The potential sewerage impact due to the proposed development has been quantitatively addressed. Sewage generation rate from the proposed development is estimated to be 874.0 m^3/day (i.e. peak flow with backwash from swimming pool 76.7 litre/sec).

2.6.2 A proposed sewer T1-S1 will be constructed by the applicant to connect the proposed development to existing sewer system. After calculating the appropriate capacities as mentioned above, the estimated sewage flow from the Application Site has been compared with the capacity of the existing and proposed sewerage system to determine whether it has adequate spare capacity to accommodate the flow from the proposed development and existing catchment areas.

2.6.3 Table 4 of **Appendix 2.1** shows the sewage generation rate from the proposed development and surrounding catchment areas. The proposed and existing sewers are found to have adequate capacity.

2.6.4 Hence, no adverse sewerage impact is anticipated from the proposed development to the public sewerage network.

2.7 Conclusion

2.7.1 The potential sewerage impact has been quantitatively addressed. Based on the sewerage impact assessment results, it is found that the capacity of the existing and proposed sewerage system serving the area is sufficient to cater for the sewage generation from the proposed development and nearby catchment areas.

2.7.2 This SIA confirms the feasibility of the proposed development in terms of impacts to the public sewerage system.

3. OVERALL SUMMARY

3.1.1 A residential redevelopment is proposed at Nos. 21-35 Wang Yip Street East. The potential sewerage impacts have been evaluated.

3.1.2 Sewage generated from the Proposed Development will be discharged and connected to the existing manhole nos.: FMH1008777 (S1) via new Ø300mm sewerage pipeline.

3.1.3 Based on the sewerage impact assessment results, it is found that the capacity of the existing and proposed sewerage system serving the area would be sufficient to cater for sewage generated from the Proposed Development and cumulative impact by accounting nearby catchment areas.

3.1.4 With the proposed work in place, the hydraulic capacity will be adequate to receive cumulative sewage discharge. This assessment confirms the feasibility of the Proposed Development in terms of impact on the public drainage and sewerage system.

Figure

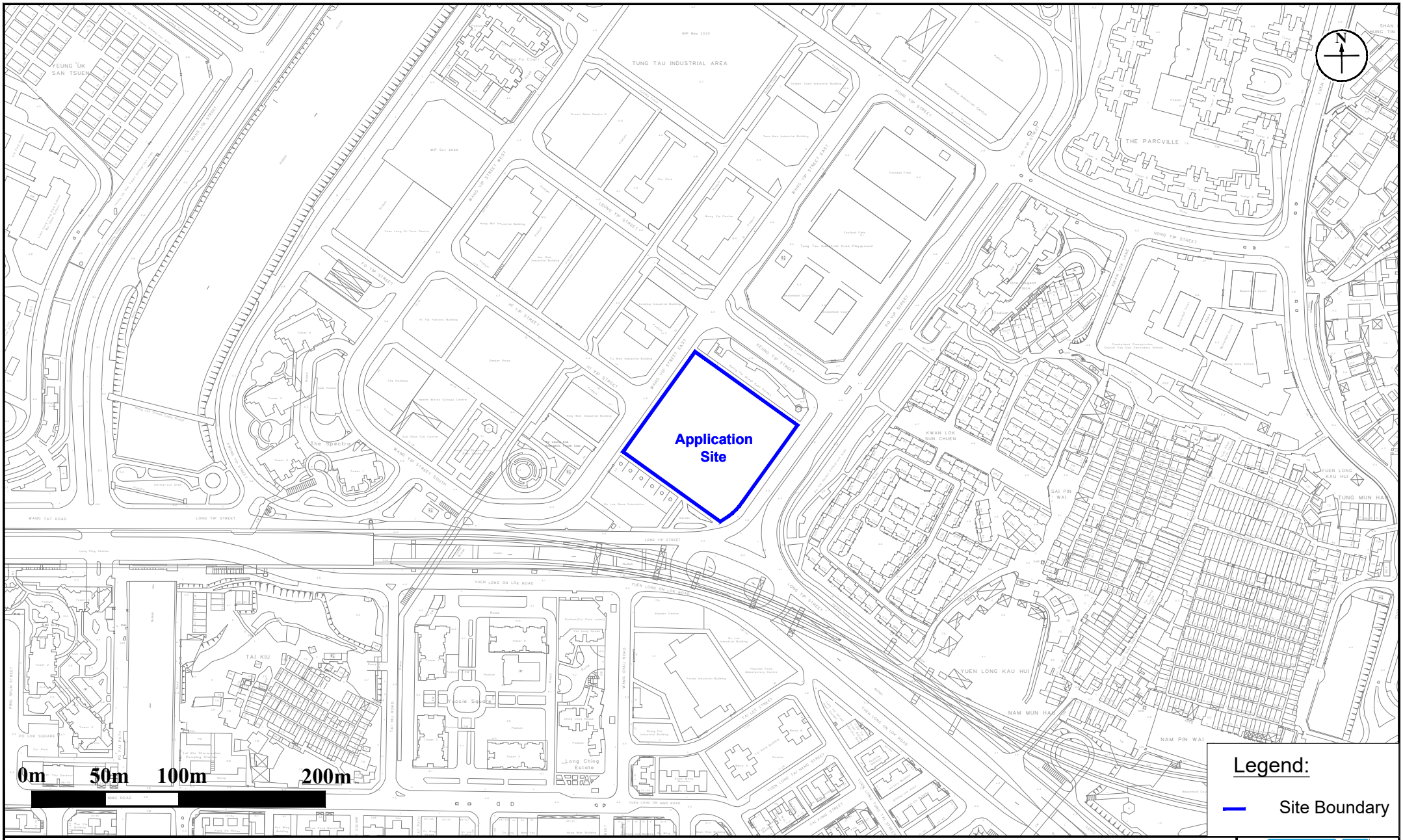

Figure: 1.1	RAMBOLL
Title: Location of the Application Site and Its Environs	Drawn by: CM Checked by: CC
Project: Redevelopment of Lai Sun Yuen Long Centre at Nos. 21-35 Wang Yip Street East, YLTL 362	Rev.: 2.0 Date: Mar 2023

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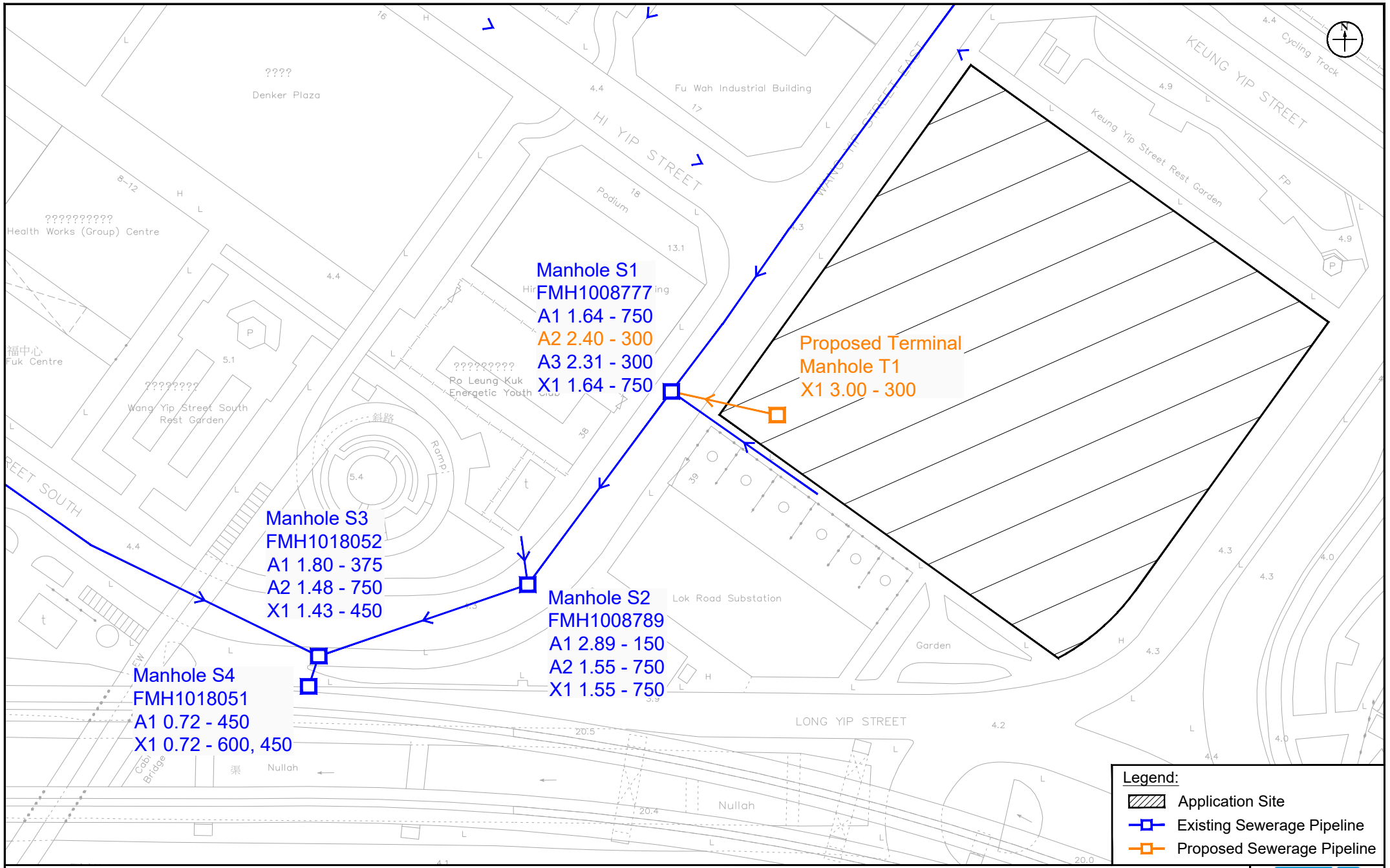

Figure: 2.1

Title: Existing and Proposed Sewerage System in the Vicinity of the Application Site

Project: Redevelopment of Lai Sun Yuen Long Centre at Nos. 21-35 Wang Yip Street East, YLTL 362

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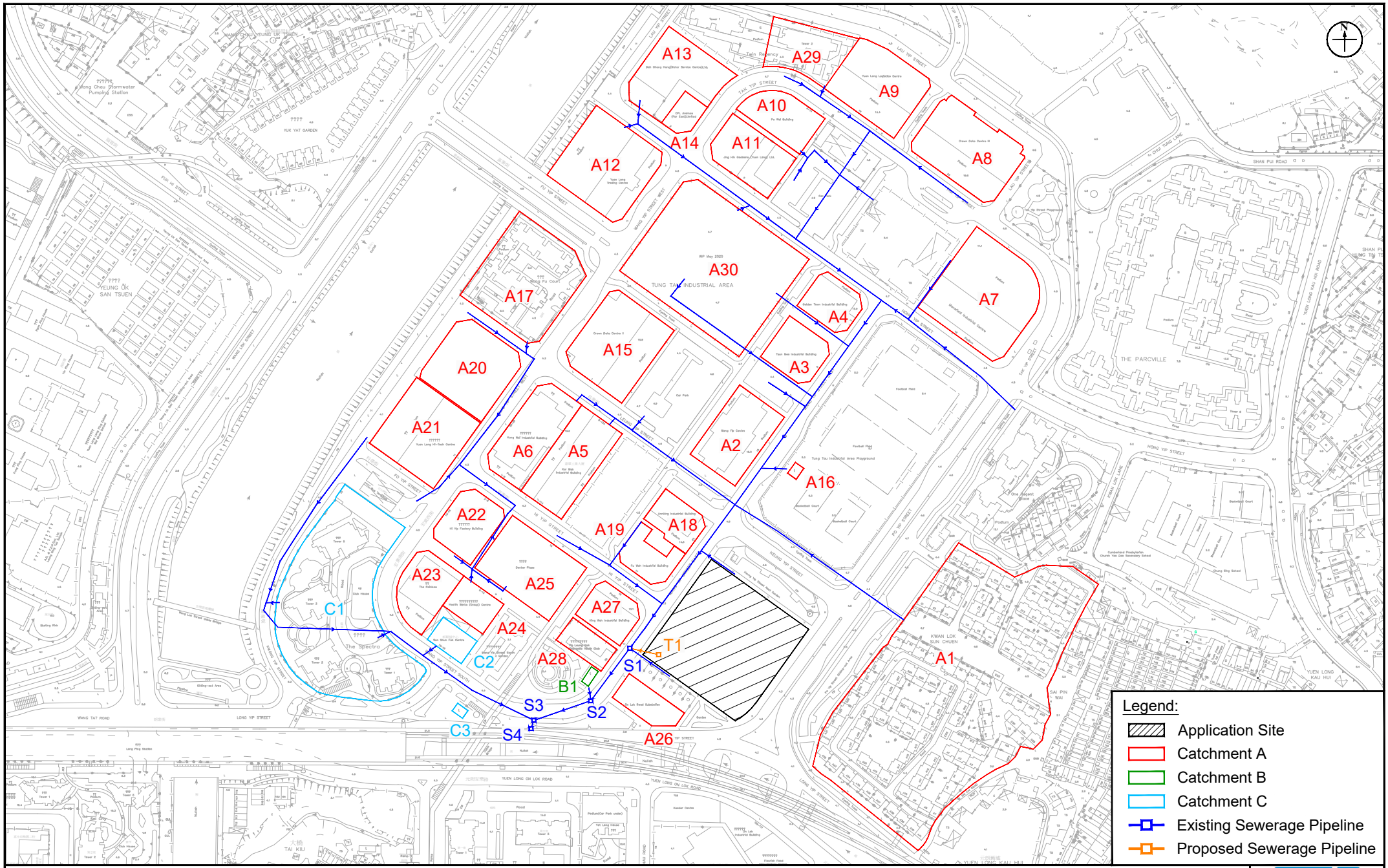

Figure: 2.2

Title: Existing Sewerage System and Catchment Area in the Vicinity of the Application Site

Project: Redevelopment of Lai Sun Yuen Long Centre at Nos. 21-35 Wang Yip Street East, YLTL 362

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Date:	Apr 2026

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Appendix 1.1 Master Layout Plan, Floor Plans and Sections of the Proposed Development

Appendix 2.1 Detailed Sewerage Impact Assessment Calculations

Table 1a Calculation for Sewage Generation Rate of the Existing Building at the Subject Site

1. Lai Sun Yeun Long Centre

1a. Assumed Area (Warehouse)	=	35739	m^2 (GFA)
1b. Assumed floor area per employee	=	250.0	m^2 per employee -- (refer to Table 8 of CIFSUS - Storage)
1c. Total number of employees	=	143	employees
1d. Design flow for commercial employee	=	0.18	m^3/person/day -- (refer to Table T-2 of GESF - J3)
1e. Sewage Generation rate	=	**25.7**	m^3/day
1f. Assumed Area (Manufacturing)	=	3249	m^2 (GFA)
1g. Assumed floor area per employee	=	43.5	m^2 per employee -- (refer to Table 8 of CIFSUS - Manufacturing)
1h. Total number of employees	=	75	employees
1i. Design flow for industrial employee	=	2.08	m^3/person/day -- (refer to Table T-3 of GESF - J1 Yuen Long)
1j. Sewage Generation rate	=	**156.0**	m^3/day
Total flow	=	181.7	m^3/day
Contributing Population	=	674	people
Peaking factor	=	8	Refer to Table T-5 of GESF for population 5,000-10,000 incl. stormwater allowance
Peak Flow	=	**16.8**	litre/sec

Table 1b Calculation for Sewage Generation Rate of the Proposed Development at the Subject Site

1. Residential Tower

1a. Total number of residential units	=	1108	units
1b. Total number of residents	=	2881	people -- (2021 Population Census: Yuen Long Tung Tau District Average Household Size of 2.6)
1c. Design flow	=	0.27	m^3/person/day -- (Private R2 in Table T-1 of GESF)
1d. Sewage Generation rate	=	**777.9**	m^3/day

2. Clubhouse

2a. Assumed Area	=	2127	m^2 (GFA)
2b. Assumed floor area per employee	=	30.3	m^2 per worker -- (refer to Table 8 of CIFSUS - Community, Social & Personal Services)
2c. Total number of employees	=	71	employees
2d. Design flow for commercial activities	=	0.28	m^3/employee/day -- (refer to Table T-2 of GESF - J11)
2e. Sewage Generation rate	=	**19.9**	m^3/day

3. Commercial Area (Retail)

3a. Assumed Area	=	800	m^2 (GFA)
3b. Assumed floor area per employee	=	28.6	m^2 per worker -- (refer to Table 8 of CIFSUS - Retail Trade)
3c. Total number of employees	=	28	employees
3d. Design flow for commercial activities	=	0.28	m^3/employee/day -- (refer to Table T-2 of GESF - J4)
3e. Sewage Generation rate	=	**7.8**	m^3/day

4. Commercial Area (F&B)

4a. Assumed Area	=	800	m^2 (GFA)
4b. Assumed floor area per employee	=	19.6	m^2 per worker -- (refer to Table 8 of CIFSUS - Restaurants)
4c. Total number of employees	=	41	employees
4d. Design flow for commercial activities	=	1.58	m^3/employee/day -- (refer to Table T-2 of GESF - J10)
4e. Sewage Generation rate	=	**64.5**	m^3/day

5. Social Welfare Facility

5a. Assumed Area	=	422	m^2 (GFA)
5b. Assumed floor area per employee	=	30.3	m^2 per worker -- (refer to Table 8 of CIFSUS - Community, Social & Personal Services)
5c. Total number of employees	=	14	employees
5d. Design flow for commercial activities	=	0.28	m^3/employee/day -- (refer to Table T-2 of GESF - J11)
5e. Sewage Generation rate	=	**3.9**	m^3/day

6. Swimming Pool

Assumed Area of Swimming Pool	=	462	m^2
Average Depth of Water	=	1.25	m (ordinary assumption)
Volume of Swimming Pool (Ordinary Assumption)	=	577.5	m^3
Turnover Rate	=	6	hr
Required Surface Loading Rate of Filter	=	96	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	=	1.9	m^2
Backwash Duration	=	7	min/d
Backwash flow rate	=	30	m^3/m^2/hr
Average Daily Flow Rate for Swimming Pool Backwashing	=	6.7	m^3/day
Flowrate for Swimming Pool Backwashing in 7 mins	=	**16.0**	litre/sec

Total Flow from Proposed Development

Flow Rate	=	874.0	m^3/day
Contributing Population	=	3238	people
Peaking factor	=	6	Refer to Table T-5 of GESF for population 1,000-5,000 incl. stormwater allowance
Peak Flow	=	**60.7**	litre/sec
Peak Flow with backwash from swimming pool	=	**76.7**	litre/sec

Table 2a Hydraulic Capacity of Existing Sewers at Wang Yip Street East, Yuen Long

Segment	Manhole Reference	Manhole Reference	Pipe Dia.	Pipe Length	Invert Level 1	Invert Level 2	g	k_s	s	v	V	Area	Q	Estimated Capacity
			mm	m	mPD	mPD	m/s^2	m		m^2/s	m/s	m^2	m^3/s	L/s
S1-S2	FMH1008777	FMH1008789	750	47.2	1.64	1.55	9.81	0.0050	0.002	0.000001	0.92	0.44	0.41	405
S2-S3	FMH1008789	FMH1018052	750	43.3	1.55	1.48	9.81	0.0053	0.002	0.000001	0.84	0.44	0.37	369
S3-S4	FMH1018052	FMH1018051	450	6.3	1.43	0.72	9.81	0.0006	0.112	0.000001	6.83	0.16	1.09	1086

Table 2b Hydraulic Capacity of Proposed Sewers at Wang Yip Street East, Yuen Long

Segment	Manhole Reference	Manhole Reference	Pipe Dia.	Pipe Length	Invert Level 1	Invert Level 2	g	k_s	s	v	V	Area	Q	Estimated Capacity
			mm	m	mPD	mPD	m/s^2	m		m^2/s	m/s	m^2	m^3/s	L/s
T1-S1	-	FMH1008777	300	21.3	3.00	2.40	9.81	0.0003	0.028	0.000001	2.88	0.07	0.20	204

Remarks: (1) g=gravitational acceleration; k_s=equivalent sand roughness; s=gradient; v=kinematic viscosity of water; V=mean velocity

(2) Table 2a: The value of k_s = 6mm and 3mm is used for the calculation of slimed concrete sewer, poor condition (based on Table 5: Recommended roughness values in Sewerage Manual)

(3) Table 2b: The value of k_s = 0.3mm is used for the calculation of slimed polyethelyene for the proposed sewers, poor condition (based on Table 5: Recommended roughness values in Sewerage Manual)

(4) The value of ks is interpolated for pipe velocities between 0.75 m/s and 1.2 m/s

(5) The value of velocity (V) is referred to the Tables for the hydraulic design of pipes, sewers and channels (8th edition)

(6) Equation used: $$V = -\sqrt{(8gDs)}\log\left(\frac{k_s}{3.7D} + \frac{2.51\nu}{D\sqrt{(2gDs)}}\right)$$

Table 3 Calculation for Sewage Generation Rate of the Existing Surrounding Building

Catchment A (S1)

1. Kwan Lok Sun Chuen

1a. Total number of units	=	350	units -- (2021 Population Census: Subunit 524/40)
1b. Total number of residents	=	980	people -- (2021 Population Census: Yuen Long DC Average Household Size of 2.8)
1c. Design flow	=	0.27	m^3/person/day -- (Private R2 in Table T-1 of GESF)
1d. Sewage Generation rate	=	**264.6**	m^3/day

2. Wang Yip Centre

2a. Assumed Area (Warehouse)	=	9855	m^2 (GFA)
2b. Assumed floor area per employee	=	250.0	m^2 per employee -- (refer to Table 8 of CIFSUS - Storage)
2c. Total number of employees	=	40	employees
2d. Design flow for commercial employee	=	0.18	m^3/person/day -- (refer to Table T-3 of GESF - J3)
2e. Sewage Generation rate	=	**7.2**	m^3/day
2f. Assumed Area (Manufacturing)	=	1408	m^2 (GFA)
2g. Assumed floor area per employee	=	43.5	m^2 per employee -- (refer to Table 8 of CIFSUS - Manufacturing)
2h. Total number of employees	=	33	employees
2i. Design flow for industrial employee	=	2.08	m^3/person/day -- (refer to Table T-3 of GESF - J1 Yuen Long)
2j. Sewage Generation rate	=	**68.6**	m^3/day

3. Tsun Mee Industrial Building

3a. Assumed Area	=	1019	m^2 (GFA)
3b. Assumed floor area per employee	=	250.0	m^2 per employee -- (refer to Table 8 of CIFSUS - Storage)
3c. Total number of employees	=	5	employees
3d. Design flow for commercial employee	=	0.18	m^3/person/day -- (refer to Table T-3 of GESF - J3)
3e. Sewage Generation rate	=	**0.9**	m^3/day

4. Golden Town Industrial Building

4a. Assumed Area	=	2927	m^2 (GFA)
4b. Assumed floor area per employee	=	43.5	m^2 per employee -- (refer to Table 8 of CIFSUS - Manufacturing)
4c. Total number of employees	=	68	employees
4d. Design flow for industrial employee	=	2.08	m^3/person/day -- (refer to Table T-3 of GESF - J1 Yuen Long)
4e. Sewage Generation rate	=	**141.4**	m^3/day

5. Kar Wah Industrial Building

5a. Assumed Area	=	13524	m^2 (GFA)
5b. Assumed floor area per employee	=	43.5	m^2 per employee -- (refer to Table 8 of CIFSUS - Manufacturing)
5c. Total number of employees	=	311	employees
5d. Design flow for industrial employee	=	2.08	m^3/person/day -- (refer to Table T-3 of GESF - J1 Yuen Long)
5e. Sewage Generation rate	=	**646.9**	m^3/day

6. Hung Wai Industrial Building

7a. Assumed Area	=	22963	m^2 (GFA)
6b. Assumed floor area per employee	=	250.0	m^2 per employee -- (refer to Table 8 of CIFSUS - Storage)
6c. Total number of employees	=	92	employees
6d. Design flow for commercial employee	=	0.18	m^3/person/day -- (refer to Table T-3 of GESF - J3)
6e. Sewage Generation rate	=	**16.6**	m^3/day
6f. Assumed Area (Manufacturing)	=	1640	m^2 (GFA)
6g. Assumed floor area per employee	=	43.5	m^2 per employee -- (refer to Table 8 of CIFSUS - Manufacturing)
6h. Total number of employees	=	38	employees
6i. Design flow for industrial employee	=	2.08	m^3/person/day -- (refer to Table T-3 of GESF - J1 Yuen Long)
6j. Sewage Generation rate	=	**79.0**	m^3/day

7. Mansfield Industrial Centre

7a. Assumed Area	=	12021	m^2 (GFA)
7b. Assumed floor area per employee	=	43.5	m^2 per employee -- (refer to Table 8 of CIFSUS - Manufacturing)
7c. Total number of employees	=	277	employees
7d. Design flow for industrial employee	=	2.08	m^3/person/day -- (refer to Table T-3 of GESF - J1 Yuen Long)
7e. Sewage Generation rate	=	**576.2**	m^3/day

8. Crown Data Centre III

8a. Assumed Area	=	30579	m^2 (GFA)
8b. Assumed floor area per employee	=	250.0	m^2 per employee -- (refer to Table 8 of CIFSUS - Storage)
8c. Total number of employees	=	123	employees
8d. Design flow for commercial employee	=	0.18	m^3/person/day -- (refer to Table T-3 of GESF - J3)
8e. Sewage Generation rate	=	**22.1**	m^3/day

9. Goodman Yuen Long Logistics Centre

9a. Assumed Area	=	30673	m^2 (GFA)
9b. Assumed floor area per employee	=	250.0	m^2 per employee -- (refer to Table 8 of CIFSUS - Storage)
9c. Total number of employees	=	123	employees
9d. Design flow for commercial employee	=	0.18	m^3/person/day -- (refer to Table T-3 of GESF - J3)
9e. Sewage Generation rate	=	**22.1**	m^3/day

10. Po Wai Building

10a. Assumed Area	=	6231	m^2 (GFA)
10b. Assumed floor area per employee	=	43.5	m^2 per employee -- (refer to Table 8 of CIFSUS - Manufacturing)
10c. Total number of employees	=	144	employees
10d. Design flow for industrial employee	=	2.08	m^3/person/day -- (refer to Table T-3 of GESF - J1 Yuen Long)
10e. Sewage Generation rate	=	**299.5**	m^3/day

11. Jing Hin Godowns (Yuen Long) Ltd.

11a. Assumed Area	=	5921	m^2 (GFA)
11b. Assumed floor area per employee	=	250.0	m^2 per employee -- (refer to Table 8 of CIFSUS - Storage)
11c. Total number of employees	=	24	employees
11d. Design flow for commercial employee	=	0.18	m^3/person/day -- (refer to Table T-3 of GESF - J3)
11e. Sewage Generation rate	=	**4.3**	m^3/day

Table 3 Calculation for Sewage Generation Rate of the Existing Surrounding Building

12. Yuen Long Trading Centre

12a. Assumed Area	=	19749	m^2 (GFA)
12b. Assumed floor area per employee	=	43.5	m^2 per employee -- (refer to Table 8 of CIFSUS - Manufacturing)
12c. Total number of employees	=	455	employees
12d. Design flow for industrial employee	=	2.08	m^3/person/day -- (refer to Table T-3 of GESF - J1 Yuen Long)
12e. Sewage Generation rate	=	**946.4**	m^3/day

13. Dah Chong Hong (Motor Service Centre) Ltd.

13a. Assumed Area	=	4013	m^2 (GFA)
13b. Assumed floor area per employee	=	43.5	m^2 per employee -- (refer to Table 8 of CIFSUS - Manufacturing)
13c. Total number of employees	=	93	employees
13d. Design flow for industrial employee	=	2.08	m^3/person/day -- (refer to Table T-3 of GESF - J1 Yuen Long)
13e. Sewage Generation rate	=	**193.4**	m^3/day

14. CPL Aromas (Far East) Limited

14a. Assumed Area	=	3828	m^2 (GFA)
14b. Assumed floor area per employee	=	18.2	m^2 per employee -- (refer to Table 8 of CIFSUS - Business Services)
14c. Total number of employees	=	211	employees
14d. Design flow for commercial employee	=	0.08	m^3/person/day -- (refer to Table T-3 of GESF - J5)
14e. Sewage Generation rate	=	**16.9**	m^3/day

15. Crown Data Centre II

15a. Assumed Area	=	30222	m^2 (GFA)
15b. Assumed floor area per employee	=	250.0	m^2 per employee -- (refer to Table 8 of CIFSUS - Storage)
15c. Total number of employees	=	121	employees
15d. Design flow for commercial employee	=	0.18	m^3/person/day -- (refer to Table T-3 of GESF - J3)
15e. Sewage Generation rate	=	**21.8**	m^3/day

16. Public Lavatory (Tung Tau Industrial Area Playground)

16a. Discharge Unit (DU) from WC (Qty * DU)	=	5.4	L/s
16b. Discharge Unit (DU) from Single Urinal with Cistern (Qty * DU)	=	0.8	L/s
16c. Discharge Unit (DU) from Basin (Qty * DU)	=	1.2	L/s
16d. Sum of DUs	=	7.4	L/s
16e. Wastewater Flow Rate ($K\sqrt{\sum DU}$)	=	**2.7**	L/s

Remarks
1. Calculation of Wastewater Flow Rate is followed Plumbing Engineering Services Design Guide (PESDG)
2. Discharge Unit (DU) of WC = 1.8 L/s; DU of Basin = 0.3 L/s; DU of Single Urinal with Cistern = 0.4L/s, extracted from Table 5 of PESDG.
3. Total number of WC = 1; total number of Single Urinal with Cistern = 3; Total number of Basin = 2.
4. Frequency of use, K = 1, extracted from Table 6 of PESDG.

17. Wang Fu Court

17a. Total number of units	=	229	units (http://www1.centadata.com/eptest.aspx?type=1&code=BEPPWKPSPK&info=basicinfo&code2=&page=0)
17b. Total number of residents	=	642	people -- (2021 Population Census: Yuen Long DC Average Household Size of 2.8)
17c. Design flow	=	0.27	m^3/person/day -- (Private R2 in Table T-1 of GESF)
17d. Sewage Generation rate	=	**173.3**	m^3/day

18. Annking Industrial Building

18a. Assumed Area (Warehouse)	=	625	m^2 (GFA)
18b. Assumed floor area per employee	=	250.0	m^2 per employee -- (refer to Table 8 of CIFSUS - Storage)
18c. Total number of employees	=	3	employees
18d. Design flow for commercial employee	=	0.18	m^3/person/day -- (refer to Table T-3 of GESF - J3)
18e. Sewage Generation rate	=	**0.5**	m^3/day
18f. Assumed Area (Manufacturing)	=	4798	m^2 (GFA)
18g. Assumed floor area per employee	=	43.5	m^2 per employee -- (refer to Table 8 of CIFSUS - Manufacturing)
18h. Total number of employees	=	111	employees
18i. Design flow for industrial employee	=	2.08	m^3/person/day -- (refer to Table T-3 of GESF - J1 Yuen Long)
18j. Sewage Generation rate	=	**230.9**	m^3/day

19. Fu Wah Industrial Building

19a. Assumed Area	=	5742	m^2 (GFA)
19b. Assumed floor area per employee	=	43.5	m^2 per employee -- (refer to Table 8 of CIFSUS - Manufacturing)
19c. Total number of employees	=	132	employees
19d. Design flow for industrial employee	=	2.08	m^3/person/day -- (refer to Table T-3 of GESF - J1 Yuen Long)
19e. Sewage Generation rate	=	**274.6**	m^3/day

20. Planned Residential Development at Yuen Long Town Lot 461 (A/YL/257)

Flow Rate	=	**279.1**	m^3/day (extracted from SIA-R7298)

21. Yuen Long Hi-Tech Centre

21a. Assumed Area (Warehouse)	=	22100	m^2 (GFA)
21b. Assumed floor area per employee	=	250.0	m^2 per employee -- (refer to Table 8 of CIFSUS - Storage)
21c. Total number of employees	=	89	employees
21d. Design flow for commercial employee	=	0.18	m^3/person/day -- (refer to Table T-3 of GESF - J3)
21e. Sewage Generation rate	=	**16.0**	m^3/day
21f. Assumed Area (Manufacturing)	=	2700	m^2 (GFA)
21g. Assumed floor area per employee	=	43.5	m^2 per employee -- (refer to Table 8 of CIFSUS - Manufacturing)
21h. Total number of employees	=	63	employees
21i. Design flow for industrial employee	=	2.08	m^3/person/day -- (refer to Table T-3 of GESF - J1 Yuen Long)
21j. Sewage Generation rate	=	**131.0**	m^3/day

22. Hi Yip Factory Building

22a. Assumed Area	=	5000	m^2 (GFA)
22b. Assumed floor area per employee	=	43.5	m^2 per employee -- (refer to Table 8 of CIFSUS - Manufacturing)
22c. Total number of employees	=	115	employees
22d. Design flow for industrial employee	=	2.08	m^3/person/day -- (refer to Table T-3 of GESF - J1 Yuen Long)
22e. Sewage Generation rate	=	**239.2**	m^3/day

Table 3 Calculation for Sewage Generation Rate of the Existing Surrounding Building

23. The Rainbow

23a. Assumed Office Area (2/F-10/F)	=	8567	m^2 (GFA)
23b. Assumed floor area per employee	=	18.2	m^2 per employee -- (refer to Table 8 of CIFSUS - Business)
23c. Total number of employees	=	471	employees
23d. Design flow for commercial employee	=	0.08	m^3/person/day -- (refer to Table T-3 of GESF - J6)
23e. Sewage Generation rate	=	**37.7**	m^3/day
23f. Assumed F&B Area (G/F & 1/F)	=	1500	m^2 (GFA)
23g. Assumed floor area per employee	=	19.6	m^2 per employee -- (refer to Table 8 of CIFSUS - Restaurants)
23h. Total number of employees	=	77	employees
23i. Design flow for commercial employee	=	1.58	m^3/person/day -- (refer to Table T-3 of GESF - J10)
23j. Sewage Generation rate	=	**121.7**	m^3/day

24. Health Works (Group) Centre

24a. Assumed Area	=	2140	m^2 (GFA)
24b. Assumed floor area per employee	=	43.5	m^2 per employee -- (refer to Table 8 of CIFSUS - Manufacturing)
24c. Total number of employees	=	50	employees
24d. Design flow for industrial employee	=	2.08	m^3/person/day -- (refer to Table T-3 of GESF - J1 Yuen Long)
24e. Sewage Generation rate	=	**104.0**	m^3/day

25. A/YL/253

25a. Assumed Office Area	=	5560	m^2 (GFA) (https://www.info.gov.hk/tpb/tc/plan_application/Attachment/20191022/s16fi_A_YL_253_3_gist.pdf)
25b. Assumed floor area per employee	=	18.2	m^2 per employee -- (refer to Table 8 of CIFSUS - Business)
25c. Total number of employees	=	306	employees
25d. Design flow for commercial employee	=	0.08	m^3/person/day -- (refer to Table T-3 of GESF - J6)
25e. Sewage Generation rate	=	**24.5**	m^3/day
2a. Assumed Area (Retail)	=	1977	m^2 (GFA) (https://www.info.gov.hk/tpb/tc/plan_application/Attachment/20191022/s16fi_A_YL_253_3_gist.pdf)
2b. Assumed floor area per employee	=	28.6	m^2 per employee -- (refer to Table 8 of CIFSUS - Retail Trade)
2c. Total number of employees	=	70	employees
2d. Design flow for commercial employee	=	0.28	m^3/person/day -- (refer to Table T-3 of GESF - J4)
2e. Sewage Generation rate	=	**19.6**	m^3/day

26. On Lok Road Substation

26a. Assumed Area	=	3867	m^2 (GFA)
26b. Assumed floor area per employee	=	30.3	m^2 per employee -- (refer to Table 8 of CIFSUS - Community, Social & Personal Services)
26c. Total number of employees	=	128	employees
26d. Design flow for commercial employee	=	0.33	m^3/person/day -- (refer to Table T-3 of GESF - J2)
26e. Sewage Generation rate	=	**42.2**	m^3/day

27. Hing Wah Industrial Building

27a. Assumed Area	=	6509	m^2 (GFA)
27b. Assumed floor area per employee	=	43.5	m^2 per employee -- (refer to Table 8 of CIFSUS - Manufacturing)
27c. Total number of employees	=	150	employees
27d. Design flow for industrial employee	=	2.08	m^3/person/day -- (refer to Table T-3 of GESF - J1 Yuen Long)
27e. Sewage Generation rate	=	**312.0**	m^3/day

28. Po Leung Kuk Energetic Youth Club

28a. Assumed Area	=	230	m^2 (GFA)
28b. Assumed floor area per employee	=	30.3	m^2 per employee -- (refer to Table 8 of CIFSUS - Community, Social & Personal Services)
28c. Total number of employees	=	8	employees
28d. Design flow for commercial employee	=	0.28	m^3/person/day -- (refer to Table T-3 of GESF - J11)
28e. Sewage Generation rate	=	**2.2**	m^3/day

29. Twin Regency Tower 2

29a. Total number of units	=	272	units (http://www1.centadata.com/eptest.aspx?type=2&code=BESPWPPXPK&info=basicinfo&code2=&page=0)
29b. Total number of residents	=	762	people -- (2021 Population Census: Yuen Long DC Average Household Size of 2.8)
29c. Design flow	=	0.27	m^3/person/day -- (Private R2 in Table T-1 of GESF)
29d. Sewage Generation rate	=	**205.7**	m^3/day

Note: According to Appendix 2.2, the development discharges in two ways; Tower 2 is connected to the existing sewer FWD1011904. Therefore, only Tower 2 is included in the catchment calculation.

30. One North

30a. Assumed Office Area (2/F-10/F)	=	41342	m^2 (GFA) (https://www.onenorth.com.hk/tc/)
30b. Assumed floor area per employee	=	18.2	m^2 per employee -- (refer to Table 8 of CIFSUS - Business)
30c. Total number of employees	=	2272	employees
30d. Design flow for commercial employee	=	0.08	m^3/person/day -- (refer to Table T-3 of GESF - J6)
30e. Sewage Generation rate	=	**181.8**	m^3/day
30a. Assumed Area (Retail)	=	10498	m^2 (GFA) (https://www.onenorth.com.hk/tc/)
30b. Assumed floor area per employee	=	28.6	m^2 per employee -- (refer to Table 8 of CIFSUS - Retail Trade)
30c. Total number of employees	=	368	employees
3d. Design flow for commercial employee	=	0.28	m^3/person/day -- (refer to Table T-3 of GESF - J4)
30e. Sewage Generation rate	=	**103.0**	m^3/day

Table 3 Calculation for Sewage Generation Rate of the Existing Surrounding Building

Catchment B (S2)

1. Public Lavatory (Wang Yip Street Public Toilet)

1a. Discharge Unit (DU) from WC (Qty * DU)	=	9	L/s
1b. Discharge Unit (DU) from Single Urinal with Cistern (Qty * DU)	=	1.6	L/s
1c. Discharge Unit (DU) from Basin (Qty * DU)	=	1.8	L/s
1d. Sum of DUs	=	12.4	L/s
1e. Wastewater Flow Rate ($K\sqrt{\sum DU}$)	=	**3.5**	L/s

Remarks

1. Calculation of Wastewater Flow Rate is followed Plumbing Engineering Services Design Guide (PESDG)

2. Discharge Unit (DU) of WC = 1.8 L/s; DU of Basin = 0.3 L/s; DU of Single Urinal with Cistern = 0.4L/s, extracted from Table 5 of PESDG.

3. Total number of WC = 1; total number of Single Urinal with Cistern = 3; Total number of Basin = 2.

4. Frequency of use, K = 1, extracted from Table 6 of PESDG.

Catchment C (S3)

1. The Spectra

1a. Total number of units	=	912	units (http://www1.centadata.com/eptest.aspx?type=2&code=BESPWPPEPK&info=basicinfo&code2=&page=0)
1b. Total number of residents	=	2554	people -- (2021 Population Census: Yuen Long DC Average Household Size of 2.8)
1c. Design flow	=	0.27	m^3/person/day -- (Private R2 in Table T-1 of GESF)
1d. Sewage Generation rate	=	**689.6**	m^3/day

Clubhouse

1a. Assumed Area	=	633	m^2
1b. Assumed floor area per employee	=	30.3	m^2 per employee -- (refer to Table 8 of CIFSUS - Community, Social & Personal Services)
1c. Total number of employees	=	21	employees
1d. Design flow for commercial employee	=	0.28	m^3/employee/day -- (refer to Table T-2 of GESF - J11)
1e. Sewage Generation rate	=	**5.8**	m^3/day

2. Sun Shun Fuk Centre

2a. Assumed Area (Retail)	=	594	m^2 (GFA)
2b. Assumed floor area per employee	=	28.6	m^2 per employee -- (refer to Table 8 of CIFSUS - Retail Trade)
2c. Total number of employees	=	21	employees
2d. Design flow for commercial employee	=	0.28	m^3/person/day -- (refer to Table T-3 of GESF - J4)
2e. Sewage Generation rate	=	**5.9**	m^3/day
2f. Assumed Area (Warehouse)	=	2376	m^2 (GFA)
2g. Assumed floor area per employee	=	250.0	m^2 per employee -- (refer to Table 8 of CIFSUS - Storage)
2h. Total number of employees	=	10	employees
2i. Design flow for commercial employee	=	0.18	m^3/person/day -- (refer to Table T-3 of GESF - J3)
2j. Sewage Generation rate	=	**1.8**	m^3/day

3. Public Lavatory (Wang Yip Street South Public Toilet)

3a. Discharge Unit (DU) from WC (Qty * DU)	=	5.4	L/s
3b. Discharge Unit (DU) from Single Urinal with Cistern (Qty * DU)	=	0.8	L/s
3c. Discharge Unit (DU) from Basin (Qty * DU)	=	1.2	L/s
3d. Sum of DUs	=	7.4	L/s
3e. Wastewater Flow Rate ($K\sqrt{\sum DU}$)	=	**2.7**	L/s

Remarks

1. Calculation of Wastewater Flow Rate is followed Plumbing Engineering Services Design Guide (PESDG)

2. Discharge Unit (DU) of WC = 1.8 L/s; DU of Basin = 0.3 L/s; DU of Single Urinal with Cistern = 0.4L/s, extracted from Table 5 of PESDG.

3. Total number of WC = 1; total number of Single Urinal with Cistern = 3; Total number of Basin = 2.

4. Frequency of use, K = 1, extracted from Table 6 of PESDG.

Sub-total

Total Flow at S1 (including Proposed Development)	**=**	**6701.2**	m^3/day
Total Flow at S2 (including Proposed Development)	**=**	**6701.2**	m^3/day
Total Flow at S3 (including Proposed Development)	**=**	**7404.3**	m^3/day

Table 4a Comparision of the Hydraulic Capacity of Existing Sewers for Sewerage generated from the Proposed Development and Surrounding Catchment Areas

Segment	Pipe Dia. (mm)	Pipe Length (m)	Gradient	Estimated Capacity (L/s)	ADWF (m^3/day)	Contributing Population	Peaking Factor	Swimming Pool/Public Toilet (L/s)	Peak Flow from the Proposed Development and Catchment Areas (L/s)	Contribution from the Proposed Development and the Surrounding Catchment Areas (%)	Status
S1-S2	750	47.2	0.002	405	6701.2	24820	4	18.8	329.0	81.2%	OK
S2-S3	750	43.3	0.002	369	6701.2	24820	4	22.3	332.5	90.0%	OK
S3-S4	450	6.3	0.112	1086	7404.3	27424	4	25.0	367.8	33.9%	OK

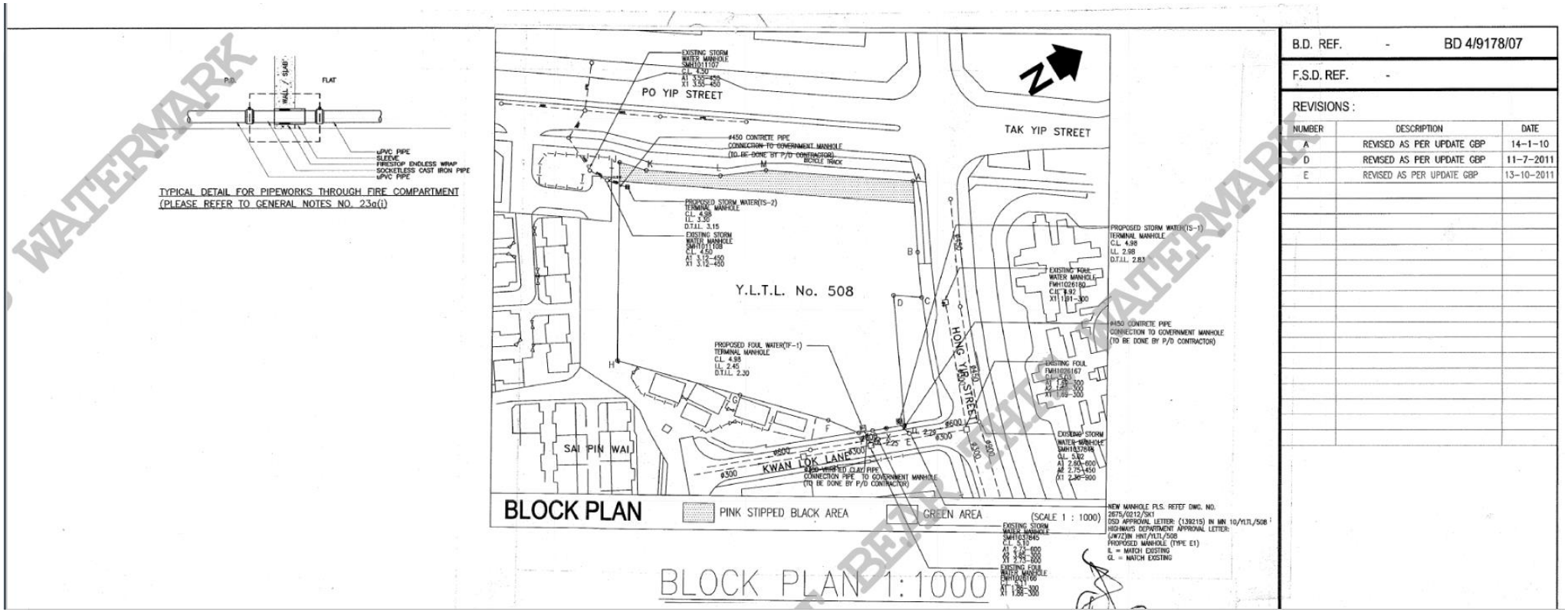
Table 4b Comparision of the Hydraulic Capacity of Proposed Sewers for Sewerage generated from the Proposed Development

Segment	Pipe Dia. (mm)	Pipe Length (m)	Gradient	Estimated Capacity (L/s)	ADWF (m^3/day)	Contributing Population	Peaking Factor	Swimming Pool/Public Toilet (L/s)	Peak Flow from the Proposed Development and Catchment Areas (L/s)	Contribution from the Proposed Development and the Surrounding Catchment Areas (%)	Status
T1-S1	300	21.3	0.028	204	874.0	3237	6	16.0	76.7	37.7%	OK

Remarks: (1) The value of peaking factor = 4 is used for population 10,000-50,000 incl. stormwater allowance (refers to Table T-5 of GESF)
(2) The value of peaking factor = 6 is used for population 1,000-5,000 incl. stormwater allowance (refers to Table T-5 of GESF)

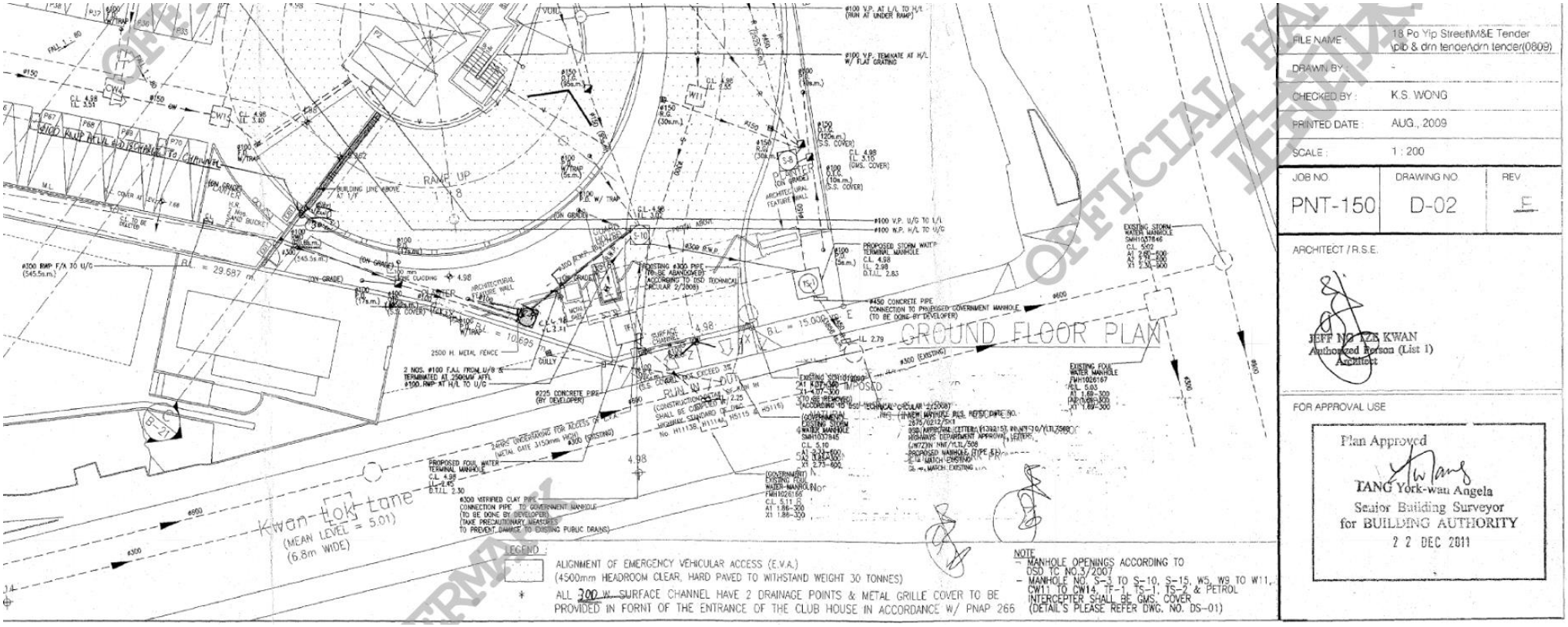
Appendix 2.2 Drainage Layout of One Regent Place and Twin Regency

One Regent Place



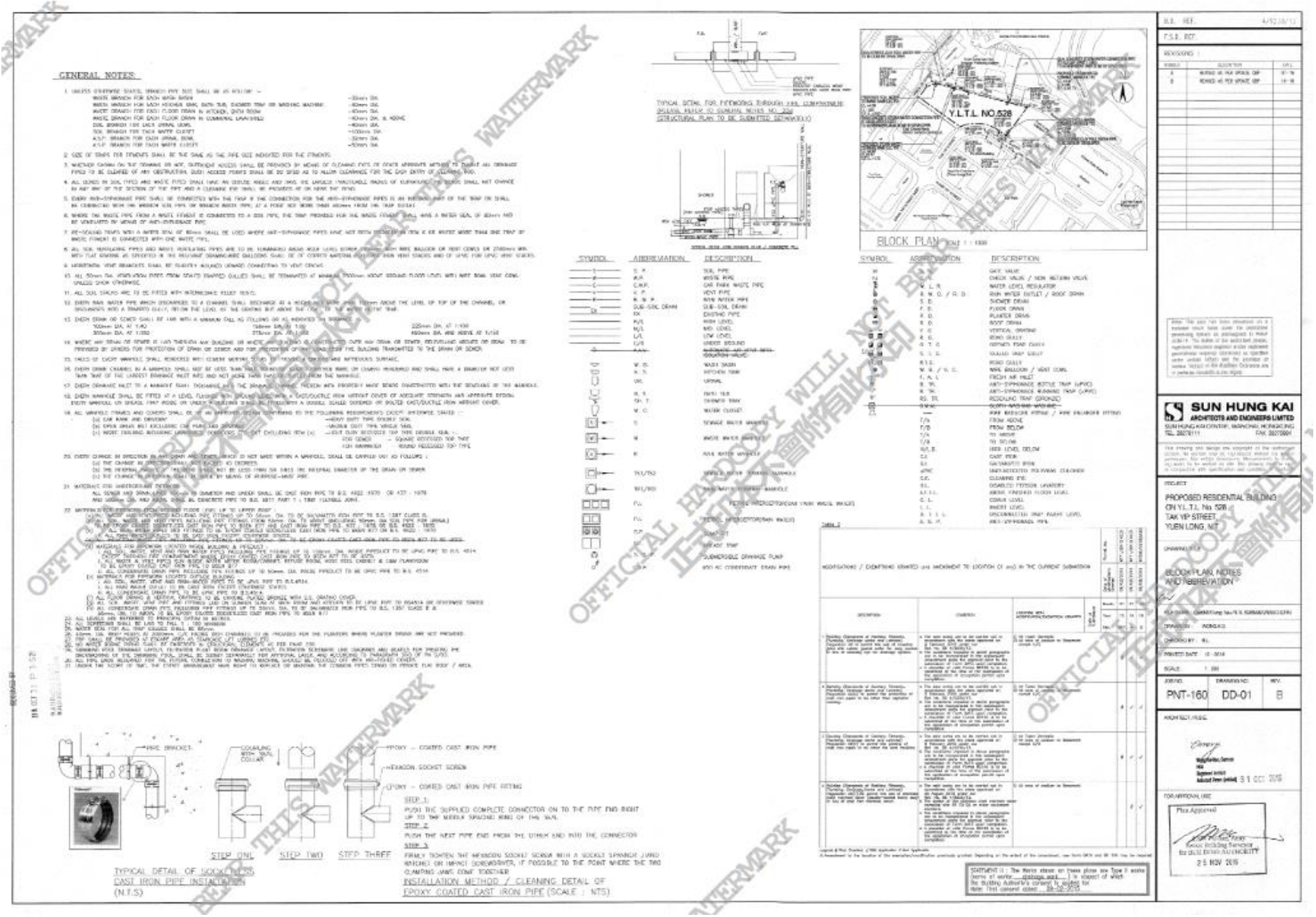
		Approved Plan	D-01	LOCATION PLAN NOTES LEGEND & ABBREVATIONS		10/11/2011	☐	☐

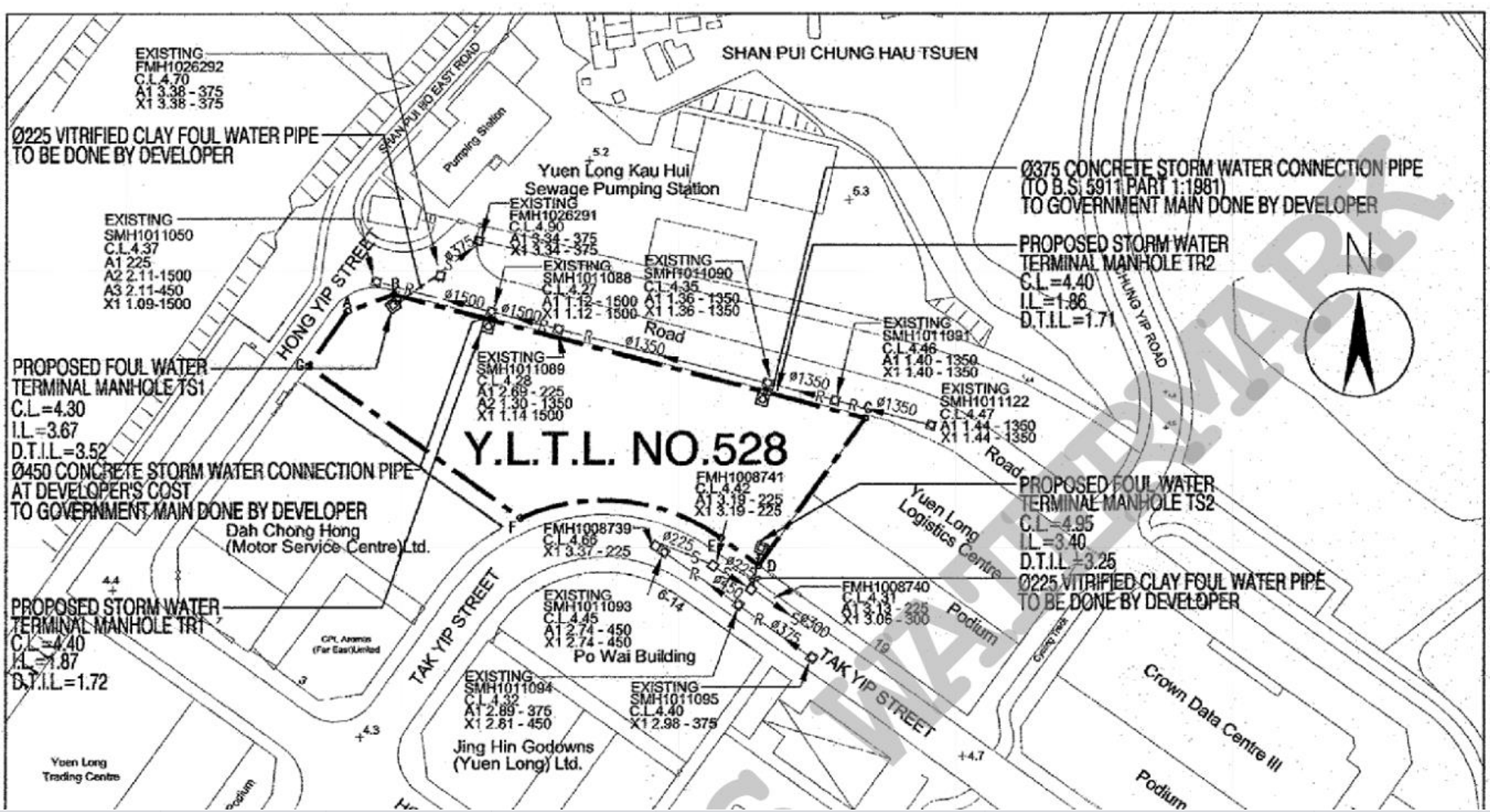
Based on the drainage plan for One Regent Place, the development's terminal manhole connects to the existing manhole FMH1026166. Therefore, the development is not included in the catchment calculation.



		Approved Plan	D-02	GROUND FLOOR PLAN (U/G DRAINAGE LAYOUT)		22/12/2011	☐	☐

Twin Regency





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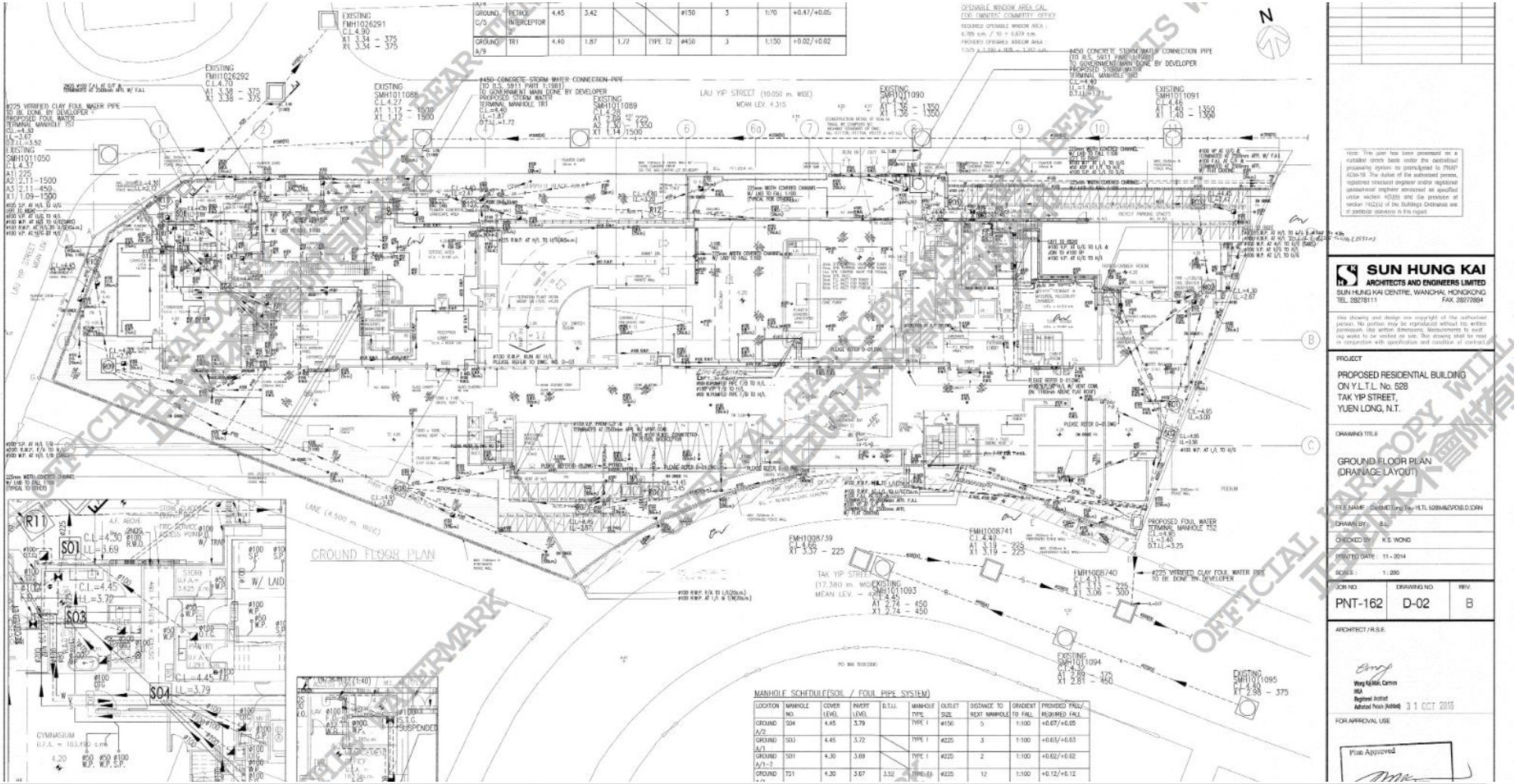
		Approved Plan	DD-01	BLOCK PLAN NOTES AND ABBREVIATION		25/11/2016	☐ ☐



		Approved Plan	D-02	GROUND FLOOR PLAN (DRAINAGE LAYOUT)		25/11/2016	☐ ☐