

Appendix D

Sewerage Impact Assessment

APPLICATION FOR PLANNING PERMISSION
UNDER SECTION 16 OF THE TOWN PLANNING
ORDINANCE (CAP. 131) FOR PROPOSED HOTEL
USE AND MINOR RELAXATION OF PLOT
RATIO RESTRICTION AT "OTHER SPECIFIED
USES" ANNOTATED "BUSINESS (1)" ZONE AT
NO. 646 - 648A CASTLE PEAK ROAD, CHEUNG
SHA WAN, KOWLOON

Sewerage Impact Assessment Report

Reference:

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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 315341

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1. Introduction

1.1 Project Background

- 1.1.1 Ove Arup & Partners HK Ltd. was commissioned to undertake a Sewerage Impact Assessment (SIA) to support their proposed redevelopment at No. 646-648A Castle Peak Road, Kowloon (“The Application Site”). The Application Site, falls within the “Other Specified Uses” annotated “Business (1)” (“OU(B)1”) Zone.
- 1.1.2 The proposed re-development aligns with the Government’s vision by revitalising an aged industrial building site under the extended IB Revitalisation Scheme 2.0, supporting tourism and talent/student attraction through new hotel accommodation with the flexibility to serve as student hostel, and facilitating the transformation of the Cheung Sha Wan Industrial/Business Area.
- 1.1.3 The parameters of the proposed redevelopment are summarized in the following table.

Description	A 30-storey hotel building with 299 hotel rooms
Location	646 - 648A Castle Peak Road, Kowloon (see Figure 1)
Land Use Zoning	“Other Specified Uses” annotated “Business (1)” zone
Site Area	Approx. 856 m ²
Proposed Total GFA	Approx. 12,525.14 m ² <i>(including a bonus PR of 0.25, equivalent to a GFA of about 210.26 m²)</i>



Figure 1 Site Location

1.2 Objective and Structure of the Report

1.2.1 The objective of this report is to provide an assessment of the sewerage impact of the proposed redevelopment with the provision of hotel at 646 - 648A Castle Peak Road, Cheung Sha Wan, Kowloon on the existing public sewerage system and to propose mitigation measures (if any).

1.2.2 The Report is structured as follows:-

- Section 1 introduces the Project background, objectives and structure of this SIA report;
- Section 2 presents the approach and methodology for the sewerage impact assessment;
- Section 3 presents the sewerage impact assessment and proposed sewerage works; and
- Section 4 presents the conclusion.

1.3 Reference Materials

1.3.1 In evaluating the sewerage impact arising from the proposed redevelopment, the following sources of information have been specifically referred to:

- (a) Environmental Protection Department (EPD) Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning No.: EPD/TP 1/05;
- (b) Commercial and Industrial Floor Space Utilization Survey published by Planning Department; and
- (c) Drainage Record obtained from GEOINFO MAP.

2. Approach and Methodology

2.1 Assessment Approach

- 2.1.1 This SIA has been carried out in accordance with the guidelines set out in Environmental Protection Department (EPD)'s Report No. EPD/TP 1/05 Guidelines for Estimating Sewage Flows (GESF) for Sewerage Infrastructure Planning Version 1.0 and DSD's Sewerage Manual.

2.2 Existing Sewerage System

- 2.2.1 Referring to the sewerage record, the sewage from the Application Site is discharged via manhole no. FMH4009923 by a Ø150 sewer connected to the existing Ø300 public sewers along Tai Nan West Street (as shown in **Appendix A**).
- 2.2.2 The existing upstream sewerage network mainly collects the sewage from 5 catchment area which mainly consists of the following usage area according to the OZP,
- a. Residential
 - b. Other Specified Uses
 - c. Commercial
 - d. Government, Institution or Community
- 2.2.3 The sewerage catchment plan of the abovementioned sewerage facilities is appended to **Appendix B**.

2.3 Population Estimation

Proposed Development

Proposed Hotel Development

- 2.3.1 For hotel development, the employee population is estimated according to the hotel GFA based on proposed hotel room number and size (hotel GFA = 299 room x 27m² per room) and the corresponding employment density of 3.2 nos employee per 100m². The proposed total staff population for the hotel is 258 people.

Existing Development

Residential Area

- 2.3.2 The residential population are determined by multiplying the number of flats by the average household size of 2.5, as reported in the 2021 Population Census (Sham Shui Po District).

Other Specified Uses Area

- 2.3.3 The population are calculated using the non-domestic Gross Floor Area (GFA) and employment density, measured as the number of workers per 100m² GFA. These values are taken from the Commercial and Industrial Floor Space Utilisation Survey by the Planning Department. For example, a factory building with a GFA of 4,000m² and an employment density of 5.5 people per 100m² would have an estimated population of $4,000 / 100 \times 5.5 = 220$ people.

Commercial Area

- 2.3.4 Similar approach with Other Specified Uses Area is adopted. The population are calculated using the Gross Floor Area (GFA) and employment density, measured as the number of workers per 100m² GFA. These values are taken from the Commercial and Industrial Floor Space Utilisation Survey by the Planning Department.

Government, Institution or Community

- 2.3.5 The population of the school, i.e. Five Districts Business Welfare Association School, are determined based on the information published in the school website.

2.4 Sewerage Flow Estimation

Unit Flow Factors

- 2.4.1 Unit flow factors (UFF) under EPD's Report No. EPD/TP 1/05 GESF for Sewerage Infrastructure Planning Version 1.0 are generally adopted for sewage flow estimation.

Table 2.1 Unit Flow Factors

Sewerage Catchment	Land Use and Category	Unit Flow Factor (m ³ /day)
Proposed Hotel	Commercial – J10 - Hotel	$0.08 + 1.5 = 1.58$
Existing Residential Area	Domestic – Private R2	0.27
Existing Other Specified Uses Area	Commercial – J6 - Finance, Insurance, Real Estate & Business Services	0.08
Existing Commercial Area	Commercial – J4 - Wholesale & Retail	$0.08 + 0.2 = 0.28$
	Commercial – J10 - Restaurant	$0.08 + 1.5 = 1.58$
Existing Government, Institution or Community	School Student	0.04
	Institutional	$0.08 + 0.2 = 0.28$

Catchment Inflow Factor

- 2.4.2 Catchment Inflow Factor cater for ingress of water to the sewerage system due to misconnection and pipe defects. According to Table T-4 in the GESF, a catchment flow factor of 1.3 is adopted which applicable for North West Kowloon Catchment.

Peaking Factors

- 2.4.3 Peaking factors cater for seasonal/diurnal fluctuation and normal amount of infiltration and inflow. The peaking factors adopted in this study are shown in the table below.

Table 2.2 Peaking Factors

Population Range	Peaking Factor (including stormwater allowance) for Facility with Existing Upstream Sewerage	Peaking Factor (excluding stormwater allowance) for Facility with New Upstream Sewerage
For 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)	Max (6/N ^{0.175} , 1.6)
For 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)	Max (2.6/N ^{0.065} , 1.6)
Notes:		
N = Contributing population in thousands.		
Contributing population = $\frac{\text{Calculated total average flow (m}^3\text{/day)}}{0.27 \text{ (m}^3\text{/person/day)}}$		

2.5 System Capacity

- 2.5.1 The capacity of the proposed and existing sewerage system is checked by using the continuity equation, assuming full-bore flow condition:

$$Q = VA$$

where, Q = peak runoff in m³/s
 V = cross-sectional mean velocity in m/s
 A = cross-sectional area of the pipe/channel in m²

- 2.5.2 The cross-section mean velocity, V , of drainage pipes is estimated using the Colebrook-white equation:

$$V = -\sqrt{32gRS_f} \log \left[\frac{k_s}{14.8R} + \frac{1.255\nu}{R\sqrt{32gRS_f}} \right]$$

where, V = cross-sectional mean velocity in m/s
 R = hydraulic radius in m
 S_f = friction gradient
 k_s = roughness
 ν = kinematic viscosity

- 2.5.3 The existing sewers is assumed to be slimed sewers, clayware and poor. Therefore, in accordance with DSD's Sewerage Manual Table 5, the roughness, k_s for the existing sewers is assumed to be 3 mm and 0.6 mm for velocity, when flowing half full, approximately 0.75 m/s and 1.2 m/s respectively.
- 2.5.4 On the other hand, the roughness, k_s for the proposed upgrading sewers is assumed to be 1.5 mm in accordance with DSD's Sewerage Manual Table 5, i.e., Sewers/ drains slimed to about half depth; velocity, when flowing half full, approximately 0.75 m/s, uPVC, poor.

3. Sewerage Impact Assessment

3.1 Proposed Sewerage Connection

- 3.1.1 To convey the sewage generated from the proposed hotel development, it is proposed to construct a new Ø300 sewer from the terminal manhole within the Application Site to existing sewer along Tai Nan West Street. Potential impact on the existing sewerage system is reviewed and assessed in the following sub-sections.

3.2 Sewage Flow Estimation

- 3.2.1 As shown in the sewerage record plan, the Application Site is at upstream of the existing sewerage network along the section of Tai Nan West Street south of Wing Hong Street, in a conservative manner, the additional flow from the proposed redevelopment is added to the most upstream manhole FMH4009923 for assessment of sewerage impact on downstream network from FMH4009923 to FMH4040663. The corresponding ADWF contributed by the proposed redevelopment of the Application Site and existing development to the downstream sewerage network are summarized in the following table, detailed calculation of sewage flow estimate for the sewerage catchment is appended to **Appendix C**.

Table 3.1 Sewage Flow Estimate from Sewerage Catchment

Sewerage Catchment	Average Dry Weather Flow (m ³ /day)	Assumed / Proposed Sewerage Connection Point
Previous Development (Fung Wah Factorial Building, demolished)	34.24	FMH4009923
Proposed Development	530.62	FMH4009923
Catchment A	2638.22	FMH4009860
Catchment B	748.58	FMH4009860
Catchment C	884.00	FMH4009860
Catchment D	527.98	FMH4009926
Catchment E	47.30	FMH4009932

3.3 Sewerage Impact on Existing Sewers

- 3.3.1 A desktop study using geometric parameters from the GEOINFO MAP identified a potential reverse flow in the sewer section between FMH4009932 and FMH4009860 based on invert levels. A manhole survey at these two manholes on 31 March 2026 to confirm the pipe gradient for pipe capacity assessment. The manhole survey record is appended in **Appendix E**.

- 3.3.2 The capacity of the existing downstream sewers from FMH4009923 to FMH4040663 is checked and summarised in the following table, the detailed calculations are appended in **Appendix F**.
- 3.3.3 From FMH4009924 to FMH4009925 and from FMH4009926 to FMH4009860, the existing sewers are identified as having insufficient capacity.
- 3.3.4 The freeboard for the subject sections was further checked and there is at least 1m freeboard at peak flow and, as well, no overflow at 1.15 times peak flow.

Table 3.2 Hydraulic Performance of Existing Sewerage System

Upstream Manhole	Downstream Manhole	Pipe Size (mm)	Accumulated Peak Flow (m ³ /s)	Pipe Capacity	Freeboard (m)	Freeboard at 1.15 Peak Flow (m)
FMH4009923	FMH4009924	300	0.0368	66%	1.95	1.71
FMH4009924	FMH4009925	300	0.0368	121%	1.84	1.62
FMH4009925	FMH4009926	300	0.0368	59%	1.87	1.67
FMH4009926	FMH4009932	300	0.0735	120%	1.74	1.57
FMH4009932	FMH4009860	300	0.0768	106%	1.75	1.66
FMH4009860	FMH400662	2 x 375	0.2489	36%	-	-
FMH400662	FMH4040663	675	0.2489	86%	-	-

3.4 Proposed Sewerage Improvement Scheme

- 3.4.1 According to the Sewerage Manual published by DSD, the sewer sections from FMH4009924 to FMH4009925 and from FMH4009926 to FMH4009860 are surcharged but with some freeboard. It is considered that the improvement proposal might not be accorded a high priority but to be carried out in conjunction with other upcoming works.
- 3.4.2 Notwithstanding the above observation, it is proposed to upgrade the sewer sections from FMH4009924 to FMH4009860, in order to provide adequate hydraulic capacity to facilitate the subject redevelopment. Details refer to **Appendix D**.
- 3.4.3 The sewer sections from the terminal manhole to FMH4009923 is proposed to be 300 mm diameter HDPE pipes, and the section from FMH4009924 to FMH4009860 will be upgraded to 350 mm diameter HDPE pipe. The hydraulic performance of the proposed upgraded sewerage system is summarized in the following table.

Table 3.3 Hydraulic Performance of Proposed Upgraded Sewerage System

Upstream Manhole	Downstream Manhole	Pipe Size (mm)	Accumulated Peak Flow (m³/s)	Pipe Capacity
Terminal Manhole	FMH4009923	300	0.0368	46%
FMH4009923	FMH4009924	300	0.0368	66%
FMH4009924	FMH4009925	300 -> 350	0.0368	72%
FMH4009925	FMH4009926	300 -> 350	0.0368	35%
FMH4009926	FMH4009932	300 -> 350	0.0735	72%
FMH4009932	FMH4009860	300 -> 350	0.0768	63%
FMH4009860	FMH400662	2 x 375	0.2489	36%
FMH400662	FMH4040663	675	0.2489	86%

4. Conclusion

- 4.1.1 The sewage flow from the proposed redevelopment is calculated to be 530.62 m³/day (ADWF).
- 4.1.2 It is observed that the existing public sewerage downstream of the Application Site comprises an existing Ø150 public gravity sewer and Ø300 public gravity sewer running along Tai Nan West Street to the South and the downstream existing public sewer of twin Ø375 and Ø675 running along Castle Peak Road to the west.
- 4.1.3 It is proposed to construct a Ø300 sewer for conveying the sewage from the Application Site to existing Ø300 sewer at FMH4009923 along Tai Nan West Street.
- 4.1.4 Two sections of Ø300 sewers from FMH4009924 to FMH4009925 and from FMH4009926 to FMH4009860 are found to have insufficient capacity but there is no overflow with adequate freeboard for the subject sections of pipes. The improvement proposal will not be accorded a high priority but should still be carried out when the opportunity arises, e.g. in conjunction with road works or nearby sewerage projects. Therefore, it is proposed to upgrade the sewer sections from FMH4009924 to FMH4009860, in order to provide adequate hydraulic capacity. Details of the improvement works would be coordinated with DSD in separate submission.
- 4.1.5 The development parameters of the Application Site are under development and subject to changes. Findings in this report shall be further reviewed and updated.

Appendix A

Sewerage Record

APPLICATION FOR PLANNING PERMISSION UNDER SECTION 16 OF THE
TOWN PLANNING ORDINANCE (CAP. 131) FOR PROPOSED HOTEL USE
AND MINOR RELAXATION OF PLOT RATIO RESTRICTION AT "OTHER
SPECIFIED USES" ANNOTATED "BUSINESS (1)" ZONE AT NO. 646 - 648A
CASTLE PEAK ROAD, CHEUNG SHA WAN, KOWLOON

Appendix B

Sewerage Catchment Plan

APPLICATION FOR PLANNING PERMISSION UNDER SECTION 16 OF THE TOWN PLANNING ORDINANCE (CAP. 131) FOR PROPOSED HOTEL USE AND MINOR RELAXATION OF PLOT RATIO RESTRICTION AT "OTHER SPECIFIED USES" ANNOTATED "BUSINESS (1)" ZONE AT NO. 646 - 648A CASTLE PEAK ROAD, CHEUNG SHA WAN, KOWLOON

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Appendix C

Sewage Flow Estimate of Sewerage Catchment

APPLICATION FOR PLANNING PERMISSION UNDER SECTION 16 OF THE
TOWN PLANNING ORDINANCE (CAP. 131) FOR PROPOSED HOTEL USE
AND MINOR RELAXATION OF PLOT RATIO RESTRICTION AT "OTHER
SPECIFIED USES" ANNOTATED "BUSINESS (1)" ZONE AT NO. 646 - 648A
CASTLE PEAK ROAD, CHEUNG SHA WAN, KOWLOON

TABLE B1

Estimation of Sewage Flows Estimation for Proposed and Existing Developments

(Based on EPD Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning)

Design Assumption:

Global Peaking Factor, P (Including Stormwater Allowance) as per Table T-5 Global Unit Flow Factors as per Tables T-2 and T-3

Catchment Inflow Factor for NW Kowloon (PCIF = 1.30) as per Table T-4

Development Schedule		
Sewage Flow Estimates	Estimation	Remark
Catchment Inflow Factor PCIF	1.3	
Proposed Development		
Commercial Hotel		
Non-domestic GFA (m ²)	8073	299 room x 27m ²
Worker Density (No. of Worker per 100m ²)	3.2	Hotels and Boarding House
No. of Employee	258	
Unit flow factor (m ³ /person/day)	1.58	J10 - Restaurants & Hotels
ADWF, (m ³ /day)	530.62	PCIF = 1.30 included
Upstream Catchment		
Catchment Inflow Factor PCIF	1.3	
Catchment A		
Cheung Fai Building 昌輝大廈		Connected to Manhole FMH4066942
No. of Flats	208	
Household Size	2.5	
Population	520	
Unit flow factor (m ³ /person/day)	0.27	Private R2
ADWF, (m ³ /day)	182.52	PCIF = 1.30 included
Five Districts Business Welfare Association School 五區工商總會學校		Connected to Manhole FMH4066942
No. of Student	425	School Website
No. of Staff	63	School Website
Unit flow factor for Student (m ³ /person/day)	0.04	School Student
Unit flow factor for Staff (m ³ /person/day)	0.08	Commercial Employee
ADWF, (m ³ /day)	28.65	PCIF = 1.30 included
Lai Bo Garden 麗寶花園		Connected to Manhole FMH4010138
No. of Flats	296	
Household Size	2.5	
Population	740	
Unit flow factor (m ³ /person/day)	0.27	Private R2
ADWF, (m ³ /day)	259.74	PCIF = 1.30 included
Beacon Lodge 豐盛居		Connected to Manhole FMH4010135
No. of Flats	166	
Household Size	2.5	
Population	415	
Unit flow factor (m ³ /person/day)	0.27	Private R2
ADWF, (m ³ /day)	145.67	PCIF = 1.30 included
Hong Fai Building 康輝大廈		Connected to Manhole FMH4010201
No. of Flats	392	
Household Size	2.5	
Population	980	
Unit flow factor (m ³ /person/day)	0.27	Private R2
ADWF, (m ³ /day)	343.98	PCIF = 1.30 included
Lai Kwan Court 麗群閣		Connected to Manhole FMH4010201
No. of Flats	96	
Household Size	2.5	
Population	240	
Unit flow factor (m ³ /person/day)	0.27	Private R2
ADWF, (m ³ /day)	84.24	PCIF = 1.30 included
Yee King Court 怡景閣		Connected to Manhole FMH4010201
No. of Flats	78	
Household Size	2.5	
Population	195	
Unit flow factor (m ³ /person/day)	0.27	Private R2
ADWF, (m ³ /day)	68.45	PCIF = 1.30 included

Chou Chong Commercial Building 秋創商業大廈		Connected to Manhole FMH4055704 Plan area x 9 storey Financial, Insurance, Real Estate & Business Services J6 - Financial, Insurance, Real Estate & Business PCIF = 1.30 included Connected to Manhole FMH4055705 500m2 x 4 storey Financial, Insurance, Real Estate & Business Services J10 Restaurants & Hotels PCIF = 1.30 included 270m2 x 22 storey Financial, Insurance, Real Estate & Business Services J6 - Financial, Insurance, Real Estate & Business PCIF = 1.30 included Connected to Manhole FMH4055705 Private R2 PCIF = 1.30 included Connected to Manhole FMH4010115 Private R2 PCIF = 1.30 included Connected to Manhole FMH4010115 Private R2 PCIF = 1.30 included Connected to Manhole FMH4010116 Private R2 PCIF = 1.30 included
Non-domestic GFA (m ²)	3672	
Worker Density (No. of Worker per 100m ²)	5.5	
No. of Employee	202	
Unit flow factor (m ³ /person/day)	0.08	
ADWF, (m ³ /day)	21.00	
Windland House 永倫大廈 (former Kincheng Commercial Centre)		
F&B Area (assume 4 storey)	2000	
Worker Density (No. of Worker per 100m ²)	5.1	
No. of Employee	102	
Unit flow factor (m ³ /person/day)	1.58	
ADWF, (m ³ /day)	209.51	
 Office Area (assume 22 storey)		
Worker Density (No. of Worker per 100m ²)	5.5	
No. of Employee	327	
Unit flow factor (m ³ /person/day)	0.08	
ADWF, (m ³ /day)	33.98	
Wing Ning Building 永寧大廈		
No. of Flats	300	
Household Size	2.5	
Population	750	
Unit flow factor (m3/person/day)	0.27	
ADWF, (m ³ /day)	263.25	
Cheong Lee Building 祥利大廈		
No. of Flats	60	
Household Size	2.5	
Population	150	
Unit flow factor (m3/person/day)	0.27	
ADWF, (m ³ /day)	52.65	
Green Court 青華閣		
No. of Flats	96	
Household Size	2.5	
Population	240	
Unit flow factor (m3/person/day)	0.27	
ADWF, (m ³ /day)	84.24	
Soyo Square 幸薈		
No. of Flats	96	
Household Size	2.5	
Population	240	
Unit flow factor (m3/person/day)	0.27	
ADWF, (m ³ /day)	84.24	
Golden Jade Heights 金碧閣		
No. of Flats	130	
Household Size	2.5	
Population	325	
Unit flow factor (m ³ /person/day)	0.27	
ADWF, (m ³ /day)	114.08	
Florence Plaza		
No. of Flats	198	
Household Size	2.5	
Population	495	
Unit flow factor (m ³ /person/day)	0.27	
ADWF, (m ³ /day)	173.75	
Mei Kei Mansion 美奇大廈		
No. of Flats	66	
Household Size	2.5	
Population	165	
Unit flow factor (m ³ /person/day)	0.27	
ADWF, (m ³ /day)	57.92	
Hoover Mansion 靚華大廈		
No. of Flats	44	
Household Size	2.5	
Population	110	
Unit flow factor (m ³ /person/day)	0.27	
ADWF, (m ³ /day)	41.70	

Fu Chau Building 富洲大廈		Connected to Manhole FMH4055151	
No. of Flats	48		
Household Size	2.5		
Population	120		
Unit flow factor (m ³ /person/day)	0.27	Private R2	
ADWF, (m ³ /day)	42.12	PCIF = 1.30 included	
Shiu Hang Building 紹恆大廈		Connected to Manhole FMH4059660	
No. of Flats	45		
Household Size	2.5		
Population	113		
Unit flow factor (m ³ /person/day)	0.27	Private R2	
ADWF, (m ³ /day)	39.49	PCIF = 1.30 included	
473 & 475 Un Chau Street		Connected to Manhole FMH4055154	
No. of Flats	6		
Household Size	2.5		
Population	15		
Unit flow factor (m ³ /person/day)	0.27	Private R2	
ADWF, (m ³ /day)	5.27	PCIF = 1.30 included	
Federal Plaza & Federal Mansion 聯邦閣		Connected to Manhole FMH4010114	
Non-domestic GFA	3210	Plan area x 3 storey	
Worker Density (No. of Worker per 100m ²)	3.5	Retail Trade	
No. of Employee	112		
Unit flow factor (m ³ /person/day)	0.28	J4 - Wholesale & Retail	
ADWF, (m ³ /day)	40.90	PCIF = 1.30 included	
No. of Flats	80		
Household Size	2.5		
Population	200		
Unit flow factor (m ³ /person/day)	0.27	Private R2	
ADWF, (m ³ /day)	70.20	PCIF = 1.30 included	
The Amused 喜遇		Connected to Manhole FMH4055151	
Non-domestic GFA	430	Restaurant	
Worker Density (No. of Worker per 100m ²)	5.1		
No. of Employee	22	J10 Restaurants & Hotels	
Unit flow factor (m ³ /person/day)	1.58	PCIF = 1.30 included	
ADWF, (m ³ /day)	45.04		
No. of Flats	136		
Household Size	2.5		
Population	340		
Unit flow factor (m ³ /person/day)	0.27	Private R2	
ADWF, (m ³ /day)	119.34	PCIF = 1.30 included	
Hung Shuk Chun Building 孔淑珍樓		Connected to Manhole FMH4055154	
No. of Flats	30		
Household Size	2.5		
Population	75		
Unit flow factor (m ³ /person/day)	0.27	Private R2	
ADWF, (m ³ /day)	26.33	PCIF = 1.30 included	
(Catchment A) Sub-Total ADWF, (m ³ /day)	2638.22		

Catchment C		
Lai Sun Commercial Centre 麗新商業中心 Office Area GFA (3 storey) Worker Density (No. of Worker per 100m ²) No. of Employee Unit flow factor (m ³ /person/day) ADWF, (m ³ /day)	9120 5.5 502 0.08 52.17	Connected to Manhole FMH4055144 Plan area 3040m2 x 3 storey Financial, Insurance, Real Estate & Business Services J6 - Financial, Insurance, Real Estate & Business PCIF = 1.30 included Plan area 3040m2 x 3 storey x 50% Retail J4 - Wholesale & Retail PCIF = 1.30 included Plan area 3040m2 x 3 storey x 50% Restaurant J10 - Restaurants & Hotels PCIF = 1.30 included
Retail GFA (50% of 3 storey) Worker Density (No. of Worker per 100m ²) No. of Employee Unit flow factor (m ³ /person/day) ADWF, (m ³ /day)	4560 3.50 160 0.28 58.09	
F&B GFA (50% of 3 storey) Worker Density (No. of Worker per 100m ²) No. of Employee Unit flow factor (m ³ /person/day) ADWF, (m ³ /day)	4560 5.1 233 1.58 477.68	
Hung Cheong Factory Building 鴻昌工廠大廈 Non-domestic GFA (m ²) Worker Density (No. of Worker per 100m ²) No. of Employee Unit flow factor (m ³ /person/day) ADWF, (m ³ /day)	16390 5.5 901 0.08 93.75	Connected to Manhole FMH4055143 plan area 1490m2 x 11storey Financial, Insurance, Real Estate & Business Services J6 - Financial, Insurance, Real Estate & Business PCIF = 1.30 included
Lai Cheong Factory Building 麗昌工廠大廈 Non-domestic GFA (m ²) Worker Density (No. of Worker per 100m ²) No. of Employee Unit flow factor (m ³ /person/day) ADWF, (m ³ /day)	21120 5.5 1162 0.08 120.81	Connected to Manhole FMH4055141 Plan area 2640m2 x 8 storey Financial, Insurance, Real Estate & Business Services J6 - Financial, Insurance, Real Estate & Business PCIF = 1.30 included
Kwong Tai Factory Building (Under redevelopment) Non-domestic GFA (m ²) Worker Density (No. of Worker per 100m ²) No. of Employee Unit flow factor (m ³ /person/day) ADWF, (m ³ /day)	13095 5.5 720 0.08 74.90	Connected to Manhole FMH4009856 Plan area 485m2 x 27storey Financial, Insurance, Real Estate & Business Services J6 - Financial, Insurance, Real Estate & Business PCIF = 1.30 included
Esso Castle Peak Road Non-domestic GFA (m ²) Worker Density (No. of Worker per 100m ²) No. of Employee Unit flow factor (m ³ /person/day) ADWF, (m ³ /day)	466 3.3 15 0.33 6.60	Connected to Manhole FMH4009849 Community, Social & Personal Services J2 - Electricity Gas & Water PCIF = 1.30 included
(Catchment C) Sub-Total ADWF, (m ³ /day)	884.00	

Catchment B		
China Shipbuilding Tower F&B Area GFA (m2) Worker Density (No. of Worker per 100m ²) No. of Employee Unit flow factor (m ³ /person/day) ADWF, (m ³ /day) Office Area GFA (m2) Worker Density (No. of Worker per 100m ²) No. of Employee Unit flow factor (m ³ /person/day) ADWF, (m ³ /day) High One 曉悅 No. of Flats Household Size Population Unit flow factor (m ³ /person/day) ADWF, (m ³ /day) Sea Panorama Court 君凱豪庭 No. of Flats Household Size Population Unit flow factor (m ³ /person/day) ADWF, (m ³ /day) Charming Garden 長盛豪苑 No. of Flats Household Size Population Unit flow factor (m ³ /person/day) ADWF, (m ³ /day) Amber Place No. of Flats Household Size Population Unit flow factor (m ³ /person/day) ADWF, (m ³ /day) 11-13 Cheung Wah Street No. of Flats Household Size Population Unit flow factor (m ³ /person/day) ADWF, (m ³ /day) (Catchment B) Sub-Total ADWF, (m ³ /day)	2920 5.1 149 1.58 305.88 18700 5.5 1029 0.08 106.96 187 2.5 468 0.27 164.09 20 2.5 54 0.27 18.95 112 2.5 280 0.27 98.28 42 2.5 105 0.27 36.86 20 2.5 50 0.27 17.55 748.58	Connected to Manhole FMH4009977 Plan area 1460m2 x 2 storey Restaurant J10 restaurant PCIF = 1.30 included Plan area 850m2 x 22 storey Financial, Insurance, Real Estate & Business Services J6 - Financial, Insurance, Real Estate & Business PCIF = 1.30 included Connected to Manhole FMH4054602 Private R2 PCIF = 1.30 included Connected to Manhole FMH4063054 Private R2 PCIF = 1.30 included Connected to Manhole FMH4010425 Private R2 PCIF = 1.30 included Connected to Manhole FMH4063054 Private R2 PCIF = 1.30 included Connected to Manhole FMH4063056 Private R2 PCIF = 1.30 included

Catchment D		
Excel Centre 卓匯中心		Connected to Manhole FMH4009926
Office Area GFA (m ²) (21 Storey)	8610	Floor area 410m ² x 21 storey
Worker Density (No. of Worker per 100m ²)	5.5	Financial, Insurance, Real Estate & Business Services
No. of Employee	474	
Unit flow factor (m ³ /person/day)	0.08	J6 - Financial, Insurance, Real Estate & Business
ADWF, (m ³ /day)	49.25	PCIF = 1.30 included
Kung Yuen Weaving Factory 公源商標織造廠		Connected to Manhole FMH4009926
Non-domestic GFA (m ²)	2660	Plan area 665m ² x 4 storey
Worker Density (No. of Worker per 100m ²)	5.5	Financial, Insurance, Real Estate & Business Services
No. of Employee	146	
Unit flow factor (m ³ /person/day)	0.08	J6 - Financial, Insurance, Real Estate & Business
ADWF, (m ³ /day)	15.22	PCIF = 1.30 included
Joy Fat Factory Building 再發工廠大廈		Connected to Manhole FMH4009926
Non-domestic GFA (m ²)	5840	Plan area 730m ² x 8 storey
Worker Density (No. of Worker per 100m ²)	5.5	Financial, Insurance, Real Estate & Business Services
No. of Employee	321	
Unit flow factor (m ³ /person/day)	0.08	J6 - Financial, Insurance, Real Estate & Business
ADWF, (m ³ /day)	33.40	PCIF = 1.30 included
Kowloon Plaza 九龍廣場		Connected to Manhole FMH4009926
Non-domestic GFA (m ²)	15200	Floor area 800m ² x 19 storey
Worker Density (No. of Worker per 100m ²)	5.5	Financial, Insurance, Real Estate & Business Services
No. of Employee	836	
Unit flow factor (m ³ /person/day)	0.08	J6 - Financial, Insurance, Real Estate & Business
ADWF, (m ³ /day)	86.94	PCIF = 1.30 included
Hong Kong Spinners Industrial Building Phase 5		Connected to Manhole FMH4009926
Non-domestic GFA (m ²)	13035	Floor area 1185m ² x 11 storey
Worker Density (No. of Worker per 100m ²)	5.5	Financial, Insurance, Real Estate & Business Services
No. of Employee	717	
Unit flow factor (m ³ /person/day)	0.08	J6 - Financial, Insurance, Real Estate & Business
ADWF, (m ³ /day)	74.56	PCIF = 1.30 included
Hong Kong Spinners Industrial Building Phase 6		Connected to Manhole FMH4009926
Non-domestic GFA (m ²)	18300	Floor area 1830m ² x 10 storey
Worker Density (No. of Worker per 100m ²)	5.5	Financial, Insurance, Real Estate & Business Services
No. of Employee	1007	
Unit flow factor (m ³ /person/day)	0.08	J6 - Financial, Insurance, Real Estate & Business
ADWF, (m ³ /day)	104.68	PCIF = 1.30 included
Clifford Centre 香港中心		Connected to Manhole FMH4009926
Non-domestic GFA (m ²)	11660	Floor area 530m ² x 22 storey
Worker Density (No. of Worker per 100m ²)	5.5	Financial, Insurance, Real Estate & Business Services
No. of Employee	641	
Unit flow factor (m ³ /person/day)	0.08	J6 - Financial, Insurance, Real Estate & Business
ADWF, (m ³ /day)	66.70	PCIF = 1.30 included
Laws Commercial Plaza		Connected to Manhole FMH4009926
Non-domestic GFA (m ²)	17000	Floor area 500 m ² x 34 storey
Worker Density (No. of Worker per 100m ²)	5.5	Financial, Insurance, Real Estate & Business Services
No. of Employee	935	
Unit flow factor (m ³ /person/day)	0.08	J6 - Financial, Insurance, Real Estate & Business
ADWF, (m ³ /day)	97.24	PCIF = 1.30 included
(Catchment D) Sub-Total ADWF, (m ³ /day)	527.98	

Catchment E		
China United Plaza		Connected to Manhole FMH4009932
Non-domestic GFA (m ²)	5750	Plan area 230m2 x 25 storey
Worker Density (No. of Worker per 100m2)	5.5	Financial, Insurance, Real Estate & Business Services
No. of Employee	316	
Unit flow factor (m ³ /person/day)	0.08	J6 - Financial, Insurance, Real Estate & Business
ADWF, (m ³ /day)	32.89	PCIF = 1.30 included
790-796 Cheung Sha Wan Road		Connected to Manhole FMH4009932
Non-domestic GFA (m ²)	2520	Plan area 420m2 x 6 storey
Worker Density (No. of Worker per 100m ²)	5.5	Financial, Insurance, Real Estate & Business Services
No. of Employee	139	
Unit flow factor (m ³ /person/day)	0.08	J6 - Financial, Insurance, Real Estate & Business
ADWF, (m ³ /day)	14.41	PCIF = 1.30 included
(Catchment E) Sub-Total ADWF, (m ³ /day)	47.30	
Summary of Existing Scenario		
Catchment A - Sub-Total ADWF, (m3/day)	2638.22	
Catchment B - Sub-Total ADWF, (m3/day)	748.58	
Catchment C - Sub-Total ADWF, (m3/day)	884.00	
Catchment D - Sub-Total ADWF, (m3/day)	527.98	
Catchment E - Sub-Total ADWF, (m3/day)	47.30	
Total ADWF, (m ³ /day)	4846.09	
Contributing Population	17948	
Global Peaking Factor	4	
Total Peak Flow (L/s)	224.36	
Proposed Scenario		
Total ADWF, (m ³ /day)	5376.71	
Contributing Population	19914	
Global Peaking Factor	4	
Total Peak Flow (L/s)	248.92	

Appendix D

Proposed Sewerage Layout Plan

APPLICATION FOR PLANNING PERMISSION UNDER SECTION 16 OF THE
TOWN PLANNING ORDINANCE (CAP. 131) FOR PROPOSED HOTEL USE
AND MINOR RELAXATION OF PLOT RATIO RESTRICTION AT "OTHER
SPECIFIED USES" ANNOTATED "BUSINESS (1)" ZONE AT NO. 646 - 648A
CASTLE PEAK ROAD, CHEUNG SHA WAN, KOWLOON

Proposed Sewerage Works



Appendix E

Manhole Survey Record

MANHOLE SURVEY FORM A

MANHOLE RECORD CARD

NODE REFERENCE F05

REF. FMH4009932

LOCATION
Tai Nan West Street

YEAR LAID
-
STATUS
PU
FUNCTION
F
NODE TYPE
M

COVER SHAPE
S
HINGED
N
LOCK
N
DUTY
H

SHAFT
SIDE ENTRY
-
REGULAT COURSES
-
DEPTH (mm)
400

CHAMBER SOFFIT
R
STEPS
4
LADDERS
-
LNDGS
-

SIZE (mm)

(diam)
580 X 580
550 X 550
1050 X 750

DATE 31-3-2026

TOXIC ATMOSPHERE

N/L

EVIDENCE OF VERMIN

N/L

CONSTRUCT CODE

N/L

DEPTH OF FLOW (mm)

10

DEPTH OF SILT (mm)

-

HEIGHT SURCH (mm)

10

COVER LEVEL (mPD)

+4.899

		UPSTREAM REFERENCE	PIPE SHAPE	PIPE SIZE (diam)	BACKDROP DLAM (mm)	PIPE MATERIAL	LINING	DEPTH OF COVER (m)	INVERT LEVEL (mPD)
INCOMING PIPES	A	GNA	C	Ø300		Lining		2.15	+2.749
	B	GNB	C	Ø225		Lining		2.02	+2.879
	C								
	D								
	E								
	F								
	G								
OUTGOING PIPES	X	GNX	C	Ø300		Lining		2.16	+2.739
	Y								

CONDITION (Y if attention required)

COVER

IRONS/LADDERS

SHAFT

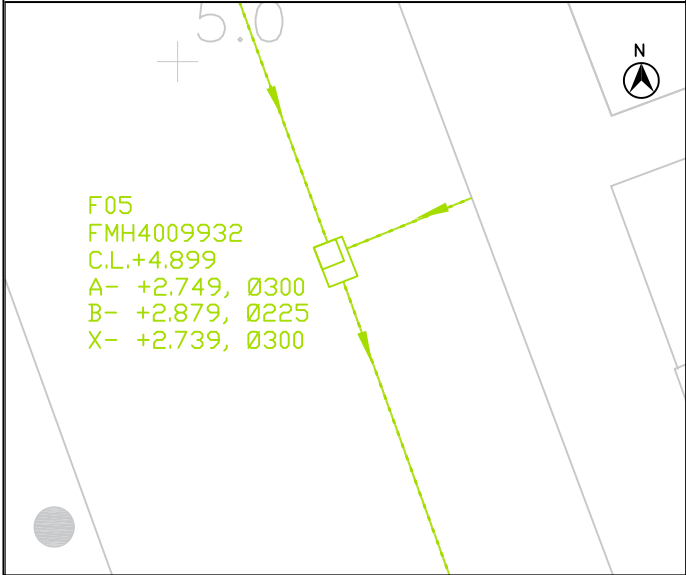
CHAMBER

BENCHING

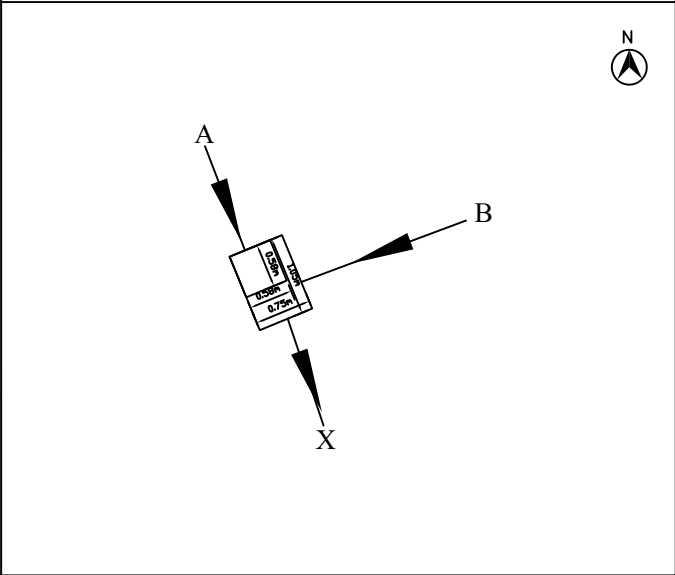
OTHER

REMARKS

Location Sketch



Plan of Manhole



MANHOLE SURVEY PHOTOGRAPHS



Location:

Tai Nan West Street

Manhole No:

FMH4009932(F05)

Description:

General Location

Photograph saved as .jpeg



Location:

Tai Nan West Street

Manhole No:

FMH4009932(F05)

Description:

Internal Condition

Photograph saved as .jpeg

MANHOLE SURVEY PHOTOGRAPHS



Location:

Tai Nan West Street

Manhole No:

FMH4009932(F05)

Description:

Internal Condition

Photograph saved as .jpeg



Location:

Tai Nan West Street

Manhole No:

FMH4009932(F05)

Description:

Internal Condition

Photograph saved as .jpeg

MANHOLE SURVEY FORM A

MANHOLE RECORD CARD

NODE REFERENCE F06

REF. FMH4009860

LOCATION Tai Nan West Street

YEAR LAID - STATUS PU FUNCTION F NODE TYPE M

COVER SHAPE S HINGED N LOCK N DUTY H

SHAFT SIDE ENTRY - REGULAT COURSES - DEPTH (mm) 1350

CHAMBER SOFFIT R STEPS - LADDERS - LNDGS -

DATE 31-3-2026

(diam) 580 X 580

550 X 550

UTS

TOXIC ATMOSPHERE N/L

EVIDENCE OF VERMIN N/L

CONSTRUCT CODE N/L

DEPTH OF FLOW (mm) - DEPTH OF SILT (mm) - HEIGHT SURCH (mm) -

COVER LEVEL (mPD) +4.893

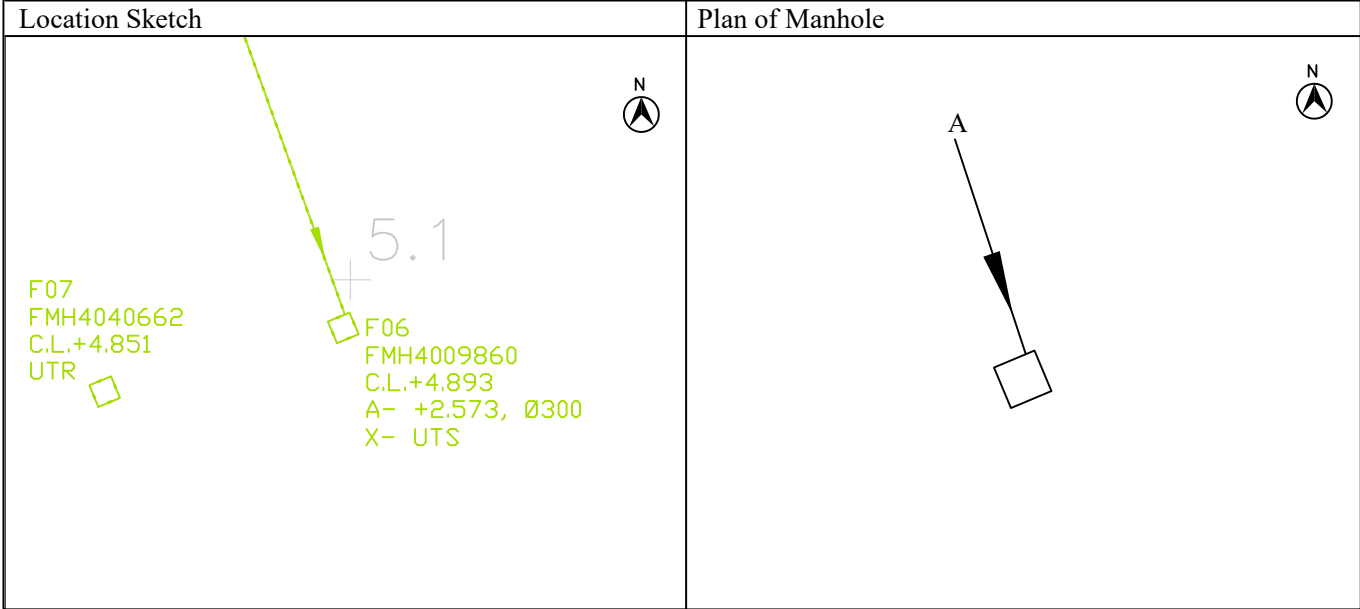
	UPSTREAM REFERENCE	PIPE SHAPE	PIPE SIZE (diam)	BACKDROP DLAM (mm)	PIPE MATERIAL	LINING	DEPTH OF COVER (m)	INVERT LEVEL (mPD)
A	GNA	C	Ø300		Lining		2.32	+2.573
B								
C								
D								
E								
F								
G								

	DOWNSTREAM REFERENCE	COND	CRITY					
X	GNX	C	UTS		UTS		UTS	UTS
Y								

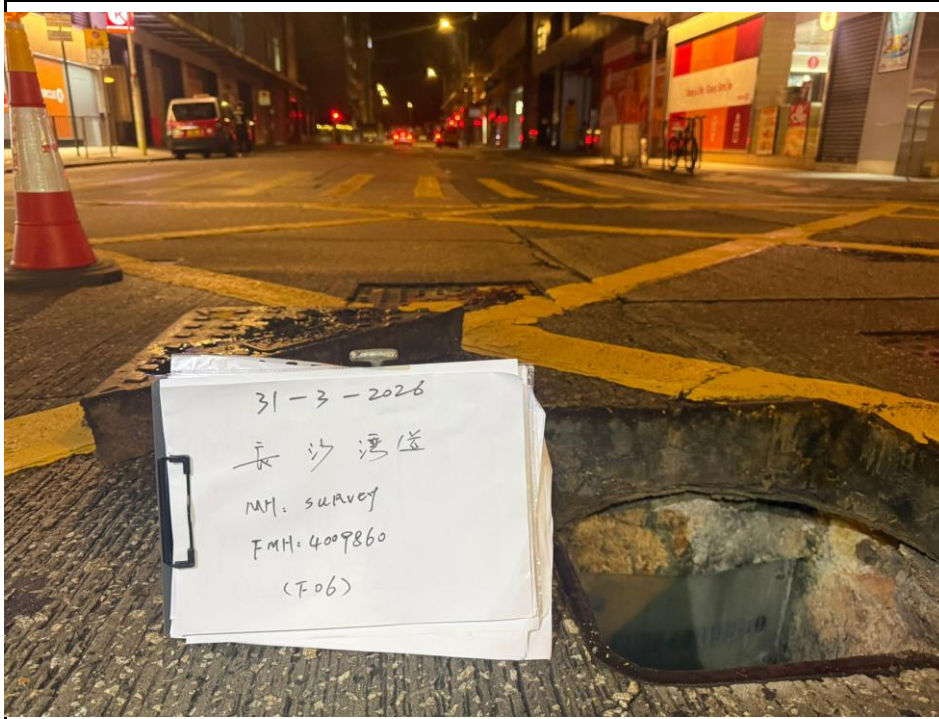
CONDITION (Y if attention required) COVER ☐ IRONS/LADDERS ☐ SHAFT ☐ CHAMBER ☐ BENCHING ☐ OTHER ☐

REMARKS

Due to the high water level inside the manhole, the outflow pipe could not be measured.



MANHOLE SURVEY PHOTOGRAPHS



Location:

Tai Nan West Street

Manhole No:

FMH4009860(F06)

Description:

General Location

Photograph saved as .jpeg



Location:

Tai Nan West Street

Manhole No:

FMH4009860(F06)

Description:

Internal Condition

Photograph saved as .jpeg

MANHOLE SURVEY PHOTOGRAPHS



Location:

Tai Nan West Street

Manhole No:

FMH4009860(F06)

Description:

Internal Condition

Photograph saved as .jpeg



Location:

Tai Nan West Street

Manhole No:

FMH4009860(F06)

Description:

Internal Condition

Photograph saved as .jpeg

Appendix F

Hydraulic Calculation

APPLICATION FOR PLANNING PERMISSION UNDER SECTION 16 OF THE
TOWN PLANNING ORDINANCE (CAP. 131) FOR PROPOSED HOTEL USE
AND MINOR RELAXATION OF PLOT RATIO RESTRICTION AT "OTHER
SPECIFIED USES" ANNOTATED "BUSINESS (1)" ZONE AT NO. 646 - 648A
CASTLE PEAK ROAD, CHEUNG SHA WAN, KOWLOON

ARUP	Job No.	Sheet No.	Rev.
		Appendix F	1
	Member/Location		
Job Title	APPLICATION FOR PLANNING PERMISSION UNDER SECTION 16 OF THE TOWN PLANNING ORDINANCE (CAP. 131) FOR PROPOSED HOTEL USE AND MINOR RELAXATION OF PLOT RATIO RESTRICTION AT "OTHER SPECIFIED USES" ANNOTATED "BUSINESS (1)" ZONE AT NO. 646 - 648A CASTLE PEAK ROAD, CHEUNG SHA WAN, KOWLOON		
Calculation	Checking of Existing Sewerage System with Proposed Development		
	Drg. Ref.	Date	Chd.
	Made by	June 2026	JW

Key Equations and Assumptions

Pipe Design Capacity $Q_p=VA$

Pipe Full-bore Velocity

$$V = -\sqrt{32gRS_f} \log \left[\frac{k_s}{14.8R} + \frac{1.255V}{R\sqrt{32gRS_f}} \right]$$

(By Colebrook-White Equation)

Roughness Coeff., $K_s = 3 \text{ mm}$ (for slimed VC pipe material, poor condition)

$K_s = 1.5 \text{ mm}$ (for slimed uPVC pipe material, poor condition)

Acceleration due to gravity, $g = 9.81 \text{ m/s}^2$

Kinematic Viscosity, $\nu = 0.000001 \text{ m}^2/\text{s}$

Key Notes

(*) Peaking factor is extracted from EPD's GESF Table T-5, under the scenario of "including stormwater allowance".

USMH	DSMH	USGL(mPD)	DSGL(mPD)	USIL(mPD)	DSIL(mPD)	US Cover (m)	DS Cover (m)	Length (m)	Gradient	Gradient (1 in)	Pipe size (mm)	Area (m ²)	sqrt(32gRs)	Perimeter (m)	R (m)	ks (mm)	Pipe Full-bore Velocity, V (m/s)	No. of pipe	Pipe Design Capacity, Q _p (m ³ /s)	Additional ADWF (m ³ /day)	Accumulated ADWF (m ³ /day)	Contributing Population	Peaking Factor (*)	Peak Flow (m ³ /s)	Capacity Check
Proposed Upgraded Sewerage System Checking (with Hotel development)																									
Terminal Manhole	FMH4009923	5.46	5.54	3.30	3.22	1.86	2.02	11.9	0.007	153	300	0.071	0.393	0.942	0.075	1.500	1.122	1	0.079	530.6	530.6	1965.3	6	0.0368	46%
FMH4009923	FMH4009924	5.54	5.39	3.18	3.13	2.06	1.96	12.2	0.004	244	300	0.071	0.311	0.942	0.075	3.000	0.795	1	0.056	0.0	530.6	1965.3	6	0.0368	66%
FMH4009924	FMH4009925	5.39	5.37	3.13	3.11	1.91	1.91	16.6	0.001	830	350	0.096	0.182	1.100	0.088	1.500	0.529	1	0.051	0.0	530.6	1965.3	6	0.0368	72%
FMH4009925	FMH4009926	5.37	5.13	3.11	2.86	1.91	1.92	48.9	0.005	196	350	0.096	0.375	1.100	0.088	1.500	1.095	1	0.105	0.0	530.6	1965.3	6	0.0368	35%
FMH4009926	FMH4009932	5.13	4.90	2.86	2.75	1.92	1.80	22.8	0.005	205	350	0.096	0.366	1.100	0.088	1.500	1.068	1	0.103	528.0	1058.6	3920.7	6	0.0735	72%
FMH4009932	FMH4009860	4.90	4.89	2.74	2.57	1.81	1.97	24.5	0.007	148	350	0.096	0.431	1.100	0.088	1.500	1.261	1	0.121	47.3	1105.9	4095.9	6	0.0768	63%
FMH4009860	FMH400662	4.89	4.85	1.77	1.45	2.75	3.03	6.8	0.047	21	375	0.110	1.177	1.178	0.094	3.000	3.134	2	0.692	4270.8	5376.7	19913.7	4	0.2489	36%
FMH400662	FMH4040663	4.85	4.85	1.45	1.44	2.73	2.74	6.9	0.001	690	675	0.358	0.277	2.121	0.169	3.000	0.807	1	0.289	0.0	5376.7	19913.7	4	0.2489	86%

ARUP		Job No.	Sheet No.	Rev.	
			Appendix F	1	
		Member/Location			
Job Title	APPLICATION FOR PLANNING PERMISSION UNDER SECTION 16 OF THE TOWN PLANNING ORDINANCE (CAP. 131) FOR PROPOSED HOTEL USE AND MINOR RELAXATION OF PLOT RATIO RESTRICTION AT "OTHER SPECIFIED USES" ANNOTATED "BUSINESS (1)" ZONE AT NO. 646 - 648A CASTLE PEAK ROAD, CHEUNG SHA WAN, KOWLOON		Drg. Ref.		
Calculation	Checking of Existing Sewerage System with Proposed Development		Made by	Date June 2026	Chd. JW

Key Equations and Assumptions

Pipe Design Capacity $Q_p=VA$

Pipe Full-bore Velocity

$$V = -\sqrt{32gRS_f} \log \left[\frac{k_s}{14.8R} + \frac{1.255V}{R\sqrt{32gRS_f}} \right]$$

(By Colebrook-White Equation)

Roughness Coeff., $K_s = 3 \text{ mm}$ (for slimed VC pipe material, poor condition)

$K_s = 1.5 \text{ mm}$ (for slimed uPVC pipe material, poor condition)

Acceleration due to gravity, $g = 9.81 \text{ m/s}^2$

Kinematic Viscosity, $\nu = 0.000001 \text{ m}^2/\text{s}$

Key Notes

(*) Peaking factor is extracted from EPD's GESF Table T-5, under the scenario of "including stormwater allowance").

USMH	DSMH	USGL(mPD)	DSGL(mPD)	USIL(mPD)	DSIL(mPD)	US Cover (m)	DS Cover (m)	Length (m)	Gradient	Gradient (1 in)	Pipe size (mm)	Area (m²)	sqrt(32gRs)	Perimeter (m)	R (m)	ks (mm)	Pipe Full-bore Velocity, V (m/s)	No. of pipe	Pipe Design Capacity, Q _p (m³/s)	Additional ADWF (m³/day)	Accumulated ADWF (m³/day)	Contributing Population	Peaking Factor (*)	Peak Flow (m³/s)	Capacity Check
Existing Sewerage System Checking (with proposed Hotel development)																									
FMH4009923	FMH4009924	5.54	5.39	3.18	3.13	2.06	1.96	12.2	0.004	244	300	0.071	0.311	0.942	0.075	3.000	0.795	1	0.056	530.6	530.6	1965.2	6	0.0368	66%
FMH4009924	FMH4009925	5.39	5.37	3.13	3.11	1.96	1.96	16.6	0.001	830	300	0.071	0.168	0.942	0.075	3.000	0.430	1	0.030	0.0	530.6	1965.2	6	0.0368	121%
FMH4009925	FMH4009926	5.37	5.13	3.11	2.86	1.96	1.97	48.9	0.005	196	300	0.071	0.347	0.942	0.075	3.000	0.888	1	0.063	0.0	530.6	1965.2	6	0.0368	59%
FMH4009926	FMH4009932	5.13	4.90	2.86	2.75	1.97	1.85	22.8	0.005	205	300	0.071	0.339	0.942	0.075	3.000	0.867	1	0.061	528.0	1058.6	3920.7	6	0.0735	120%
FMH4009932	FMH4009860	4.90	4.89	2.74	2.57	1.86	2.02	24.5	0.007	148	300	0.071	0.399	0.942	0.075	3.000	1.023	1	0.072	47.3	1105.9	4095.9	6	0.0768	106%
FMH4009860	FMH400662	4.89	4.85	1.77	1.45	2.75	3.03	6.8	0.047	21	375	0.110	1.177	1.178	0.094	3.000	3.134	2	0.692	4270.8	5376.7	19913.6	4	0.2489	36%
FMH400662	FMH4040663	4.85	4.85	1.45	1.44	2.73	2.74	6.9	0.001	690	675	0.358	0.277	2.121	0.169	3.000	0.807	1	0.289	0.0	5376.7	19913.6	4	0.2489	86%

