

SECTION 12A PLANNING APPLICATION

TO REZONE THE APPLICATION SITE FROM “RESIDENTIAL (GROUP C)” AND “RESIDENTIAL (GROUP D)” TO “GOVERNMENT, INSTITUTION OR COMMUNITY (2) AT LOT 827 RP IN D.D. 130 AND ADJOINING GOVERNMENT LAND, LAM TEI, TUEN MUN, NEW TERRITORIES

Sewerage Impact Assessment

April 2026

Applicant: Cyber Epoch Holdings Limited, Glory Day Development Limited
Prepared By: DeSPACE (International) Limited

1. Introduction

The Applicant, **CYBER EPOCH HOLDINGS LIMITED** and **GLORY DAY DEVELOPMENT LIMITED**, proposes to rezone the application site from “Residential (Group C)” (“R(C)”) and “Residential (Group D)” (“R(D)”) to Government, Institution or Community (2)” (“G/IC (2)”) at Lot 827 RP in D.D.130, Lam Tei, Tuen Mun, New Territories (hereinafter referred to as “the Site”) for permitted social welfare facility (Residential Care Home for Persons with Disabilities) (RCHD).

The aim of this **Sewerage Impact Assessment** is to review the capacity of the existing sewerage network resulting from the proposed composite development.

2. Sewerage Disposal Network

According to the drainage record plans obtained from the Government, the sewage from the Site is expected to be conveyed to the nearest public manhole FMH1015065 and flow underneath the Fuk Hang Tsuen Road to the north direction (**See Figure 1**).

3. Assessment Criteria

This assessment has been prepared in accordance with the guidelines and reference as follows:

- A Technical Paper of Environmental Protection Department’s (EPD’s) Guidelines for Estimating Sewage Flows for Sewerage Infrastructure Planning, Version 1.0 (GESF): - It outlines the methodology and provides guidance for estimating sewage flows in sewerage infrastructure planning. Sewage flow parameters and peaking factors are adopted.
- Commercial and Industrial Floor Space Utilization Survey (CIFSUS) conducted by the Planning Department during November 2004 to March 2005: - It is referred to determine the worker density for different economic activities and planned usage type.
- Sewerage Manual (SM) published by the Drainage Services Department (DSD) in May 2013: - It offers guidance on the planning, design, construction, operation and maintenance of public gravity sewerage system in Hong Kong.
- Relevant Drainage Record Plans obtained from the Drainage Service Department: - It shows the details of existing sewerage record.

4. Assessment of Sewerage Impact

For the purpose of this Sewerage Impact Assessment, a total number of 320 residents and 60 staff for the proposed RCHD development have been assumed to be occupied within the proposed composite development. The wastewater generated will be contributed by the residents and employees. For conservative purpose, the sewerage flow from the upstream of FMH1015065 (marked as Catchment A) has been assumed full bored (100% capacity of the segment).

Table: Sewage Flow Estimate

	No. of persons	Unit Flow Factor (m ³ /person/day)	Estimated Dry Weather Flow	Catchment Inflow Factor ^[1]	Flow Rate (m ³ /day)	Contributing Population ^[2]	Peaking Factor ^[3]	Peak Flow (L/s)
RCHD Residents	280	0.19 ^[4]	53.2	1.1	85.36	316.15	6	6.52
RCHD employees	60	0.28 ^[5]	16.8					

Remarks:

[1] Catchment Inflow Factor=1.1 (Tuen Mun) is based on EPD's GESF Table T-4.

[2] It is based on the equation from GESF: Contributing Population = $\frac{\text{Calculated total average flow}}{0.27}$

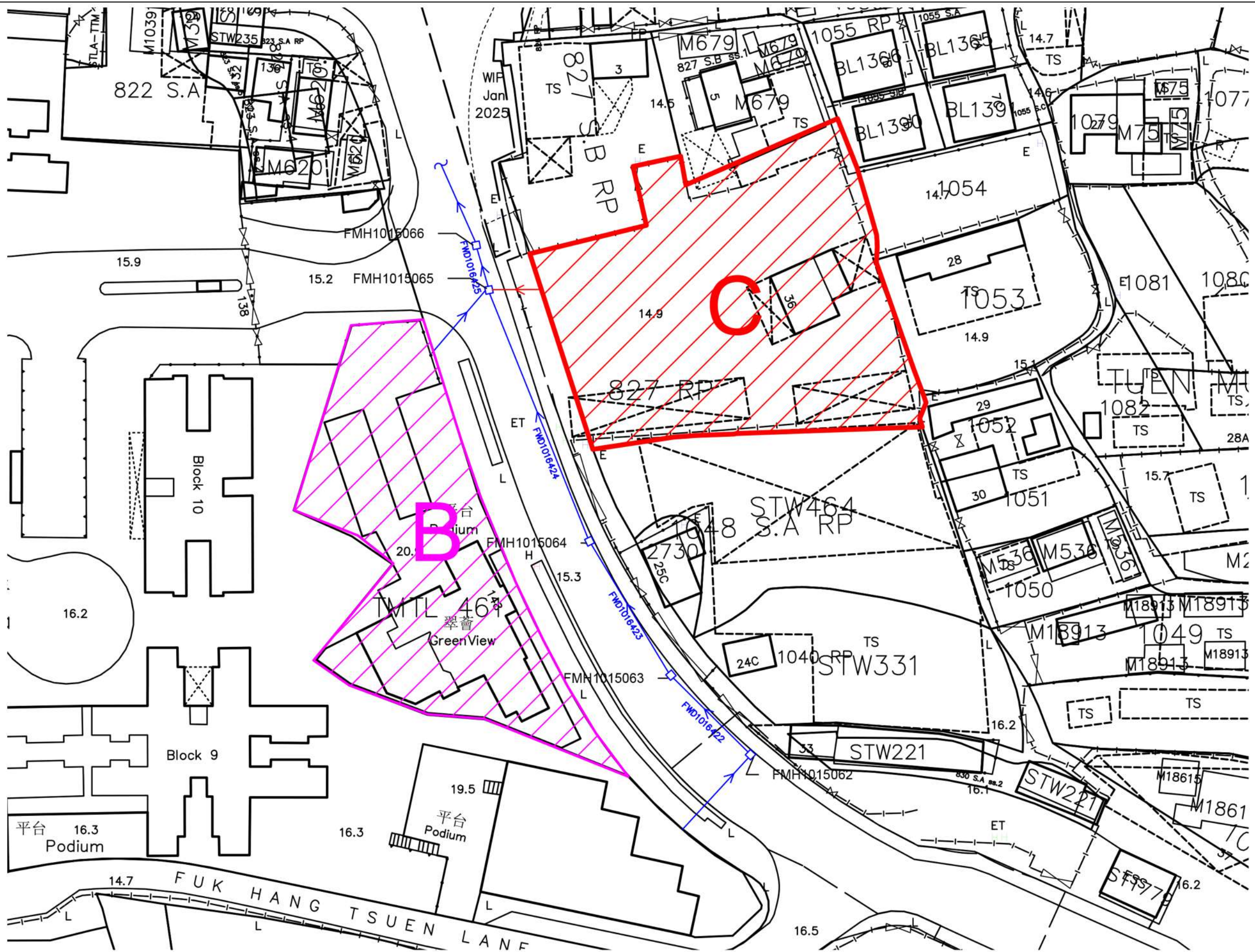
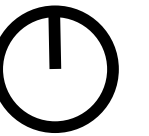
[3] Peaking Factor= 8 for population <1,000 (including stormwater allowance) as per EPD's GESF Table T-5

[4] Unit flow factor = 0.19 (Institutional and special class) is based on EPD's GESF Table T-1

[5] Unit flow factor = 0.28 (Commercial Employee + J11) is based on EPD's GESF Table T-2






5. Overall Sewer Capacity

The estimated cumulative peak discharge of all downstream sewerage generated from the proposed development with the concerned catchments account for no more than 50% of the hydraulic capacity of the concerned sewer (from manholes FMH1015065 to FMH1015066). No exceedance of hydraulic capacity for all cumulative peak discharge is anticipated. Detailed calculations of sewage generation and hydraulic capacity are provided in **Appendix 1**. All existing sewers have sufficient capacity and no upgrading is required to serve the proposed composite development.



DRAWING TITLE:
Sewerage Network Plan

DRAWING NUMBER:
Figure 1

LEGEND:	
	Site Boundary
	Catchment Area
	Existing Sewerage Manhole
	Existing Sewerage Pipe
	Proposed Sewerage Pipe

SCALE:
1:460

DATE:
April 2026

PREPARED BY:



DeSPACE (International) Limited

Appendix 1

Detailed Calculations Of Sewage Generation And Hydraulic Capacity

Table 1 Calculation for Sewage Generation Rate of the Proposed Development

1. RCHD	
Nos. of Beds	320 the upper-end provision in the proposal
Nos. of Staff	60 As advised by the Applicant
Unit Flow Factor for the Residents	0.19 m ³ /day/person - from GESF(Table T-1) - UFF for Domestic Flows (Institutional and special class)
Unit Flow Factor for staff	0.28 m ³ /day/person - from GESF(Table T-2) - UFF for Commercial Flows and Student Flows (Commercial Employee and J11 Community, Social & Personal Services)
Estimated Dry Weather Flow	77.60 m ³ /day
Total Flow from Proposed Development	
Catchment Inflow Factor	1.1 Catchment Inflow Factor = 1.10 (Tuen Mun) from EPD's GESF Table T-4
Flow Rate	85.36 m ³ /day
Contributing Population	316.15 0.27 from EPD's GESF
Peaking Factor	6 Peaking Factor=6 for population 1000 - 5000 (including stormwater allowance) from EPD's GESF Table T-5
Peak Flow	6.52 L/s

Table 2 Calculation for Sewage Generation

Existing Development

GreenView 2/F-11/F Residential Flats		
B	Total number of units	32 units
	Average Domestic Household Size	2.6
	Total number of residents	83
	Unit Flow Factor	0.27 m ³ /person/day
	Estimated Dry Weather Flow	22.46 m ³ /day
		from Centaline Property Hong Kong from 2026 Population Census from GESF(Table T-1) - UFF for Domestic Flow (Private R2) under Datum (2002)

Table 3 Total Estimated Peak Flow

Segment	Included Catchment	Total Estimated Dry Weather Flow (m ³ /day)	Catchment Inflow Factor ^[1]	Cumulative Average Dry Weather Flow (m ³ /day)	Contributing Population ^[2]	Peaking Factor ^[3]	Total Estimated Peak Flow (m ³ /day)	Total Estimated Peak Flow (L/s)
S1, S2 and S3	A	1580.33	1.1	1738.37	6438.40	5	8691.84	100.60
S4	A + B + C	1680.40	1.1	1848.44	6846.07	5	9242.19	106.97

Remarks:

^[1] Catchment Inflow Factor = 1.10 (Tuen Mun) based on EPD's GESF Table T-4

^[2] Based on the equation from GESF:
$$\text{Contributing Population} = \frac{\text{Calculated total average flow (m}^3\text{/day)}}{0.27 \text{ (m}^3\text{/person/day)}}$$

^[3] Peaking Factor= 6 for population 1,000-5,000 and 5 for population 5,000-10,000 (including stormwater allowance) base on EPD's GESF Table T-5

Table 4 Sewer Capacity Check

Segment	Pipe Name	Manhole Reference		Pipe Diameter (m)	Pipe Length (m)	Invert Level (mPD)		g (m/s ²)	k _s (m)	s	v (m ² /s)	V (m/s)	Sectional Area (m ²)	Q (m ³ /s)	Sewer Capacity (L/s)	Estimated Sewage Flow (L/s)	% of Peak Flow to Sewer Capacity
		Upstream	Downstream			Upstream	Downstream										
S1	FWD1016422	FMH1015062	FMH1015063	0.3	15.8	13.59	13.46	9.81	0.0006	0.0082	0.00000114	1.4232	0.071	0.101	100.60	100.60	100.00%
S2	FWD1016423	FMH1015063	FMH1015064	0.3	21.5	13.46	13.27	9.81	0.0006	0.0088	0.00000114	1.4755	0.071	0.104	104.30	100.60	96.45%
S3	FWD1016424	FMH1015064	FMH1015065	0.4	37	13.27	12.89	9.81	0.0006	0.0103	0.00000114	1.9112	0.126	0.240	240.17	100.60	41.89%
S4	FWD1016425	FMH1015065	FMH1015066	0.3	6.2	12.89	12.83	9.81	0.0006	0.0097	0.00000114	1.5447	0.141	0.218	218.38	106.97	48.98%

Remarks:

(1) g=gravitational acceleration; k_s=equivalent pipeline roughness; s=hydraulic gradient; v=kinematic viscosity of fluid; V=mean velocity

(2) A sewer connection is proposed from the Application Site to the existing sewerage network. The details of the proposed sewer are provided below:

Pipe Name	Manhole Reference		Pipe Diameter (m)	Pipe Length (m)	Invert Level (mPD)		g (m/s ²)	k _s (m)	s	v (m ² /s)	V (m/s)	Sectional Area (m ²)	Q (m ³ /s)	Sewer Capacity (L/s)	Estimated Sewage Flow (L/s)	% of Peak Flow to Sewer Capacity
	Upstream	Downstream			Upstream	Downstream										
Proposed Sewerage Pipe	Proposed Development	FMH1015065	0.3	6.5	13.5	12.89	9.81	0.0006	0.0938	0.00000114	4.8413	0.071	0.342	342.21	6.52	1.91%

(3) The value of k_s = 0.6mm (for velocities approximately greater than 1.2m/s) is adopted for the calculation of slimed clayware sewer, poor condition (based on Table 5: Recommended Roughness Values in Sewerage Manual)

(4) The mean velocity is calculated using the Colebrook-White Equation:

$$V = \frac{1.49 R^{2/3}}{k_s} \left[\frac{1}{1 + \frac{1.49 R^{2/3}}{k_s}} \right]$$

(5) For conservative purpose, the sewerage flow from the upstream of FMH4020964 has been assumed full bored (100% capacity of the segment).