Annex B

Sewerage Impact Assessment

(Town Planning Board's Reference No.: TPB/A/STT/26)

Section 16 Planning Application for Proposed Filling of Ponds for Permitted Innovation and Technology Hub (including Permitted Cargo Handling and Forwarding Facilities, Creative Industries, Eating Place, Flat (Staff Quarters only), Industrial Use, Information Technology and Telecommunications Industries, Office, Public Utility Installation, Research, Design and Development Centre, Shop and Services, Warehouse (excluding Dangerous Goods Godown)) at Lot 764 RP (Part) in D.D. 99, San Tin, Yuen Long, N.T.

(HT25108)

Sewerage Impact Assessment

January 2026

Prepared & Approved by:	LEE Kwok Cheung *MICE, MHKIE(Civil),* *RPE(CVL, ENV, GEL)(Registration No. RP0159301)* *Signature:*

何田顧問工程師有限公司
HO TIN & ASSOCIATES
CONSULTING ENGINEERS LIMITED
[redacted]

Table of Responses to Comments from Government Departments on Planning Application No. A/STT/26
(with respect to PlanD's messages of 15 January, 2026)

COMMENTS	RESPONSES
Drainage Services Department (CE/MN, DSD) (Contact: Ms. W. T. CHENG, tel. [redacted]	
SIA	
1. Please check with CEDD Agreement No. CE 20/2021 (CE)'s project team and extract the relevant pages showing what ADWF is reserved for the subject development site in the NDA's SIA. If excess is found, please carry out further assessment on the planned sewers and SPSs to demonstrate any mitigation works are needed, and provide the relevant details for review (if affirmative).	As advised by EPD, the proposed use, i.e. the subject proposed development, covered under the CEDD's Agreement No. CE 20/2021 First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation was estimated to generate sewage flow of less than 10,000 m^3/d. Now, the estimated sewage flow of the subject proposed development is about 8,372 m^3/d, i.e. <10,000 m^3/d and is therefore acceptable.
2. The SIA report needs to meet the satisfaction of SIG/EPD, the planning authority of sewerage infrastructure.	EPD's comments had been given and was catered in the updated SIA.
Director of Environmental Protection (Contact: Mr. Chris WONG, tel. [redacted])	
Sewerage Impact Assessment	
49. Based on the information in the SIA, the application site is located within the area of San Tin Technopole and it will generate sewage flow of ~28,000 m^3/d. However, according to the latest SIA under the CEDD's Agreement No. CE 20/2021 First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation, the proposed use covered under the study is estimated to generate sewage flow of less than 10,000 m^3/d. In view of substantial increase in the sewage flow estimate (in this SIA) for the same site and that the	The SIA has been updated and the latest sewage flow generated from the subject proposed development is less than 10,000 m^3/d, i.e. about 8,372 m^3/d.

COMMENTS	RESPONSES
capacity of San Tin Effluent Polishing Plant has been fully committed, the applicant should explore other feasible sewage disposal scheme(s) for handling the excessive sewage flow.	

CONTENT

FIGURES

List of Abbreviations

ADWF	Average Dry Weather Flow
C.I.	Cast Iron
EPD	Environmental Protection Department
GESF	EPD's Report No. EPD/TP 1/05 – 'Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning', Version 1.0
HTA	Ho Tin & Associates Consulting Engineers Limited
FMH / SM	Foul / Sewer Manhole
FTM / STM	Foul / Sewer Terminal Manhole
OZP	Outline Zoning Plan
PDWF	Peak Dry Weather Flow
SIA	Sewerage Impact Assessment
SM	Sewerage Manual Part 1 & 2 (DSD, 2013) and their corrigenda

1. Introduction

1.1. Ho Tin & Associates Consulting Engineers Limited was appointed by the Client to prepare this sewerage impact assessment (SIA) to support a Section 16 Planning Application for proposed filling of ponds for permitted innovation and technology hub (including permitted cargo handling and forwarding facilities, creative industries, eating place, flat (staff quarters only), industrial use, information technology and telecommunications industries, office, public utility installation, research, design and development centre, shop and services, warehouse (excluding dangerous goods godown)) ("the proposed development") at Lot 764 RP (Part) in D.D. 99, San Tin, Yuen Long, N.T. ("the Application Site").

1.2. This report presents the SIA for the proposed development under the subject planning application.

1.3. The objectives of this SIA are to:-

- indicate any changes/increase in the sewage flow due to the proposed development under application;
- assess any potential sewage impacts of the proposed development on existing sewerage facilities in the concerned area; and
- propose mitigation measures and sewerage improvement scheme, if necessary, to minimize any adverse sewerage impacts.

1.4. The scope of this SIA includes:-

- general site description of the Application Site;
- identification of existing sewerage facilities of the concerned area;
- estimation of sewage flow of the proposed development;
- SIA on the existing sewerage facilities due to the increase in sewage flow caused by the proposed development; and
- proposal of new sewerage facilities to cater for the proposed development if found necessary.

2. The Application Site and Proposed Development

2.1. The Application Site comprises of Lot 764 RP (Part) in D.D. 99, San Tin, Yuen Long, New Territories. It has an area of about 163,181m^2 and is located along the northwest side of San Tin Tsuen Road to the north of San Tin Highway. Majority of the Application Site is currently used as fish ponds with scattered residential dwellings, while the southwestern portion has been filled and used as storage/open storage yards, vehicle repair workshops, container vehicle park, and a logistics centre for over 20 years.

2.2. The Application Site is currently zoned "Other Specified Uses" annotated "Innovation and Technology" ("OU(I&T)") on the Approved San Tin Technopole Outline Zoning Plan (OZP) No. S/STT/2. The site location is shown in **Figure 1A**. It is proposed to develop the Application Site into a large-scale Innovation and Technology (I&T) hub, focusing on I&T development and low-altitude economy. The major development parameters and proposed GFA breakdown of the proposed development are summarized in Table 1.1 and 1.2 respectively in the following:

Table 1.1 Proposed Development Parameters

Parameter	**Details**
Site Area	About 163,181m^2
Plot Ratio (PR)	About 4.24
Total Gross Floor Area (GFA)	About 691,498m^2
Site Coverage	About 41%
No. of Blocks	14 comprising of: - Seven blocks of 12-storey I&T blocks - Three blocks of 19-storey commercial and staff quarters blocks - One block of 9-storey automatic parking system/ data centre - One block of 3-storey visitor & education centre - One block of 2-storey cooling centre - One block of 2-storey sub-station

Table 1.2 Proposed GFA Breakdown

Building	**Proposed Uses**	**GFA (approximate m^2)**	**Sub-total GFA (approximate m^2)**
I&T Blocks	Smart warehouse for storage of goods/ stocks, testing areas for modern logistics/ low-altitude economy operations	56,198	
	Industrial Floors	107,890	
	R&D Labs	200,068	
	R&D Offices	219,240	583,396

Building	**Proposed Uses**	**GFA (approximate m^2)**	**Sub-total GFA (approximate m^2)**
Commercial and Staff Quarter Blocks	Commercial Uses (including shops, supermarkets and restaurants, etc.)	13,410	
	Staff Quarters	59,544	72,954
Automatic Parking System/ Data Centre	Automatic Parking System	16,290	
	Data Centre	11,403	27,693
Visitor and Education Centre	Community, Social & Personal Services	2,121	2,121
Cooling Centre	Electricity Gas & Water	3,904	3,904
Substation	Electricity Gas & Water	1,430	1,430
		Grand Total GFA (approximate m^2) =	691,498

3. Existing Sewerage Conditions of the Subject Area

3.1. There is no existing public sewerage in the vicinity of the Application Site. The nearest existing public sewerage is that located near the section of San Tin Tsuen Road beside San Sham Road at about 500m to the northeast of the Application Site.

3.2. With reference to the EIA Report of the Agreement No. CE 20/2021 (CE) 'First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node - Investigation' (January 2024), the existing nearby Shek Wu Hui Sewage Treatment Works and Yuen Long Sewage Treatment Works would not have enough capacity to treat the estimated additional sewage discharge arising from the studied areas which include the Application Site.

4. Proposed Sewerage Works

4.1. It is mentioned in the Notes to the Approved San Tin Technopole Outline Zoning Plan No. S/STT/2 that an area, i.e. the Area 3 in the Plan, is reserved for provision of an

effluent polishing plant (EPP) and food waste pre-treatment facilities to handle the sewage and food waste generated from the area demarcated in the OZP No. S/STT/2. The planned EPP will be designed up to tertiary level treatment standard. Besides, there are three proposed sewage pumping stations in Areas 5, 12A and 18 for collecting sewage flows from the areas and pumping to the planned EPP for treatment (refer to **Figure 2**). With reference to the EIA Report of the Agreement No. CE 20/2021 (CE) 'First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node - Investigation' (January 2024), the planned EPP would have capacity of 125,000 m^3/day and was suggested to be in operation in two phases (the first phase capacity is 65,000 m^3/day in 2031 and the second phase capacity is 125,000 m^3/day in 2035).

4.2. With reference to the Agreement No. CE 20/2021 (CE) 'First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node - Investigation' (January 2024), the public road running along the southeast boundary of the Application Site and the public roads connecting with the planned EPP and sewage pumping station would be completed starting in 2031. Public sewerage serving the areas should also be completed under construction of the roads. Therefore, sewerage connection of private developments to the public sewerage shall be feasible upon completion of the nearby public roads. In order to tie in with the completion of the nearby public roads, EPP and the sewage pumping station, it is therefore proposed the proposed developments of the Application Site to be occupied not earlier that 2031, say, in 2033.

4.3. Sewage from the proposed buildings of the Application Site will be collected and carried down to the ground level via downpipes. Branch sewerage will be laid close to the blocks to receive sewage flows from the downpipes directly. The branch sewerage will then discharge into trunk sewerage which will run underneath the internal access roads and will connect to a proposed terminal sewerage manhole near the southern corner of the Application Site. Sewage pumping station(s) within the Application Site, if necessary, will be provided subject to detailed design at the later stage. It does not anticipate to have any technical difficulties in detailed design of the proposed sewerage system of the proposed development. A proposed sewerage management plan is shown in **Figure 3**.

4.4. The proposed terminal sewerage manhole of the Application Site will discharge the sewage into the public sewerage underneath the public road outside the boundary of the Application Site. The sewage will then from there be conveyed to the new sewage pumping station on the opposite side of San Tin Highway from which sewage will be pumped to the nearby planned EPP for appropriate treatment. An indicative sewage discharge route is shown in **Figure 4**.

5. Estimated Sewage Flows generated from the Application Site

5.1. Methodology and References

The sewerage impact assessment and sewage flow estimation are based on established guidelines and data sources, including:

- Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning (GESF), Environmental Protection Department (EPD);
- Hong Kong Planning Standards and Guidelines (HKPSG), Planning Department (PlanD);

Commercial / Institutional Type (Specific Trades)	**Unit Flow Factor (m^3/employee/day)** ***(including the 0.080 m^3/day of the UFF of employee)***	**Proposed Use in the Subject Application**
J2 - Electricity Gas & Water	0.330	• Cooling Centre • Substation
J3 - Transport, Storage & Communication	0.180	• Smart Warehouse (Storage of goods/stocks, Testing Areas for modern logistics/Low-altitude economy operations) • Industrial Floors (Operation and Testing Areas for modern logistics/Low-altitude economy operations) • Automatic Parking System • Data Centre
J6 - Finance, Insurance, Real Estate & Business Services	0.080	• R&D Offices
J10 - Restaurants & Hotels	1.580	• Commercial (including shops, supermarkets and restaurants, etc.) (to be conservative)

Commercial / Institutional Type (Specific Trades)	**Unit Flow Factor (m^3/employee/day) *(including the 0.080 m^3/day of the UFF of employee)***	**Proposed Use in the Subject Application**
J11 - Community, Social & Personal Services	0.280	• Visitor & Education Centre

- Sewerage Manual, Drainage Services Department (DSD);
- Commercial and Industrial Floor Space Utilization Survey (CIFSUS), (PlanD);
- Sewerage Record Plans based on GeoInfo Map (LandsD).

5.2. Unit Flow Factors (UFFs)

Unit flow factors (UFFs) are adopted from the GESF for domestic, commercial, institutional, and industrial activities, along with the CIFSUS for worker density estimation. The total unit flow generated from an employee in a particular trade is the sum of the unit flow factor of employee and the unit flow factor of commercial/industrial activities of a particular trade under consideration. (Notes of Table T-2 & T-3, GESF). The proposed different uses of the Application Site are categorized according to their types of generated flow with respect to the classification in the GESF in the following.

Table 5.2.1 Unit Flow Factor for Domestic Flows (referenced from the Table T-1 in GESF)

Residential Type	**Unit Flow Factor (m^3/person/day)**	**Proposed Use in the Subject Application**
Private R2	0.270	• Staff quarters

Table 5.2.2 Unit Flow Factor for Commercial and Institutional Flows (referenced from the Table T-2 in GESF)

Table 5.2.3 Unit Flow Factor for Industrial Flows (referenced from the Table T-3 in GESF)

Industrial Type	**Unit Flow Factor (m^3/person/day) *(including the 0.080 m^3/day of the UFF of employee)***	**Proposed Use in the Subject Application**
J1 Manufacturing – Territorial average	0.640	• R&D Labs

5.3. Catchment Inflow Factors (P_{CIF})

Catchment Inflow Factors (P_{CIF}) for the Yuen Long catchment is 1.00 (refer to Table T-4 in GESF).

5.4. Sewage Flow Estimation

According to section 11.3 of GESF, the peak flows can alternatively obtained by using the following formula:

Blocks	**Population Density per unit**	**Estimated population (= Nos. of Units x Population Density)**	**Adopted Assumption**
Staff Quarters	2.8	2,778	Assuming 60m^2 per unit
Blocks	**Worker Density Adopted {1} (workers per GFA (in 100m^2))**	**Estimated population (= GFA x Worker Density)**	**Adopted Planned Usage Types [Economic Activities]** See Note {1}
R&D Office	4.4	9,647	I/O Buildings [Business Services]
Commercial (including shops, supermarkets and restaurants, etc.)	6.0	805	I/O Buildings [Restaurants]
Automatic Parking System	5.7	929	I/O Buildings [Transport]
Data Centre	5.5	628	I/O Buildings [Communications]
Visitor & Education Centre	6.1	129	I/O Buildings [Community, Social & Personal Services]
Cooling Centre	3.4	133	All Types [All Economic Activities]

Substation	3.4	49	All Types [All Economic Activities]
Smart Warehouse	3.3	1,855	I/O Buildings [Manufacturing]
Industrial Floors	3.3	3,560	I/O Buildings [Manufacturing]
R&D Lab	3.3	6,602	I/O Buildings [Manufacturing]
Total		27,115	

$$Q_{PEAK} = Q_{AVERAGE} \times P$$

where Q_{PEAK} is the peak flow,
$Q_{AVERAGE}$ is the average dry weather flow, and
P is the peaking factor

The average dry weather flow (ADWF) is computed as follows:

$$ADWF = Population \times UFF$$

5.5. Estimation of Population

Worker density, measured as the average number of workers per 100m^2 of utilized GFA, was referenced from the CIFSUS (PlanD) to estimate the population of the proposed developments. The population estimation is summarised in Table 5.5 below:

Table 5.5 Estimation of Population

Note:

{1}: Table 8, CIFSUS (PlanD)

5.6. Estimation of total average dry weather flow

Using the calculated parameters from Tables 5.2.1, 5.2.2, 5.2.3 & 5.5, the ADWFs of corresponding activities and total ADWFs can be estimated for the proposed development. With reference to section 2.2 of GESF, the total average dry weather flow is given by:

$$Q_{AVERAGE} = (Q_{DOMESTIC} + Q_{COMMERCIAL} + Q_{INSTITUTIONAL} + Q_{INDUSTRIAL}) \times P_{CIF}$$

A summary of the ADWFs is stipulated in the below Table 5.6:

Table 5.6 Summary of ADWFs

Description	**Type**	**Estimated population**	**UFF (m^3/person/day)**	**ADWF (m^3/day)**
Domestic ($Q_{DOMESTIC}$)				
Staff Quarters	Private R2	2,778	0.270	750.06
Commercial and Institutional ($Q_{COMMERCIAL} + Q_{INSTITUTIONAL}$)				
Smart Warehouse (Storage of goods/stocks, Testing Areas for modern logistics/Low-altitude economy operations)	J3	1,855	0.180	333.90
Industrial Floors (Operation and Testing Areas for modern logistics/Low-altitude economy operations)	J3	3,560	0.180	640.80
R&D Offices	J6	9,647	0.080	771.76
Commercial (including shops, supermarkets and restaurants, etc.)	J10	806	1.580	1,273.48
Automatic Parking System	J3	929	0.180	167.22

Description	**Type**	**Estimated population**	**UFF (m^3/person/day)**	**ADWF (m^3/day)**
Data Centre	J3	628	0.180	113.04
Visitor & Education Centre	J11	129	0.280	36.12
Cooling Centre	J2	133	0.330	43.89
Substation	J2	49	0.330	16.17
Industrial ($Q_{INDUSTRIAL}$)				
R&D Labs	J1 (Manufacturing – Territorial average)	6,602	0.640	4,225.28
P_{CIF}				1.00
$Q_{AVERAGE}$				8,371.72 (about 13% and 7% of the capacity of the 1st phase, i.e. 65,000 m^3/day, and 2nd phase, i.e. 125,000 m^3/day, of the planned EPP respectively)

5.7. Peak flow estimation

With reference to section 12.1 of GESF, the contributing population is calculated as the total ADWF divided by 0.27 m³/person/day (unit contributing flow):

$$\text{Contributing Population} = \frac{\text{Calculated total average flow } (m^3/day)}{0.27\ (m^3/person/day)}$$

$$\text{Contributing Population} = \frac{8{,}371.72}{0.27} = 31{,}007 \text{ persons}$$

According to Table T-5 of GESF, the Peaking Factor P (excluding stormwater allowance) for facility with new upstream sewerage (for sewers) is:

$$P = \text{Max}\left(\frac{6}{N^{0.175}}, 1.6\right)$$

$$N = \frac{31{,}007}{1{,}000} = 31.01 \text{ thousands persons}$$

$$P = \text{Max}(3.29, 1.6) = 3.29$$

$$Q_{PEAK} = (8{,}371.72) * (3.29) = 27{,}542.96 \text{ m}^3/\text{day} = 318.78 \text{ l/s}$$

6. Potential Sewerage Impacts

6.1. The nearest proposed sewage pumping station of the subject proposed development is that located in the Area 5 on the opposite side of San Tin Highway. With reference to the CEDD Agreement No. CE 20/2021, 'First Phase Development of the New Territories North – San Tin / Lok Ma Chau Development Node – Investigation', the connecting road system which shall normally include public sewerage system in front of the subject site and the planned EPP and pumping station in the Area 5 would be completed by end 2031.

6.2. It is therefore considered that if the occupation of the subject proposed development is after 2031, say, 2033, its sewage discharge can be conveyed via the new public sewerage system to the new sewage pumping station and then to the new EPP for appropriate tertiary treatment. It would not cause any unacceptable adverse sewerage impacts upon the surroundings.

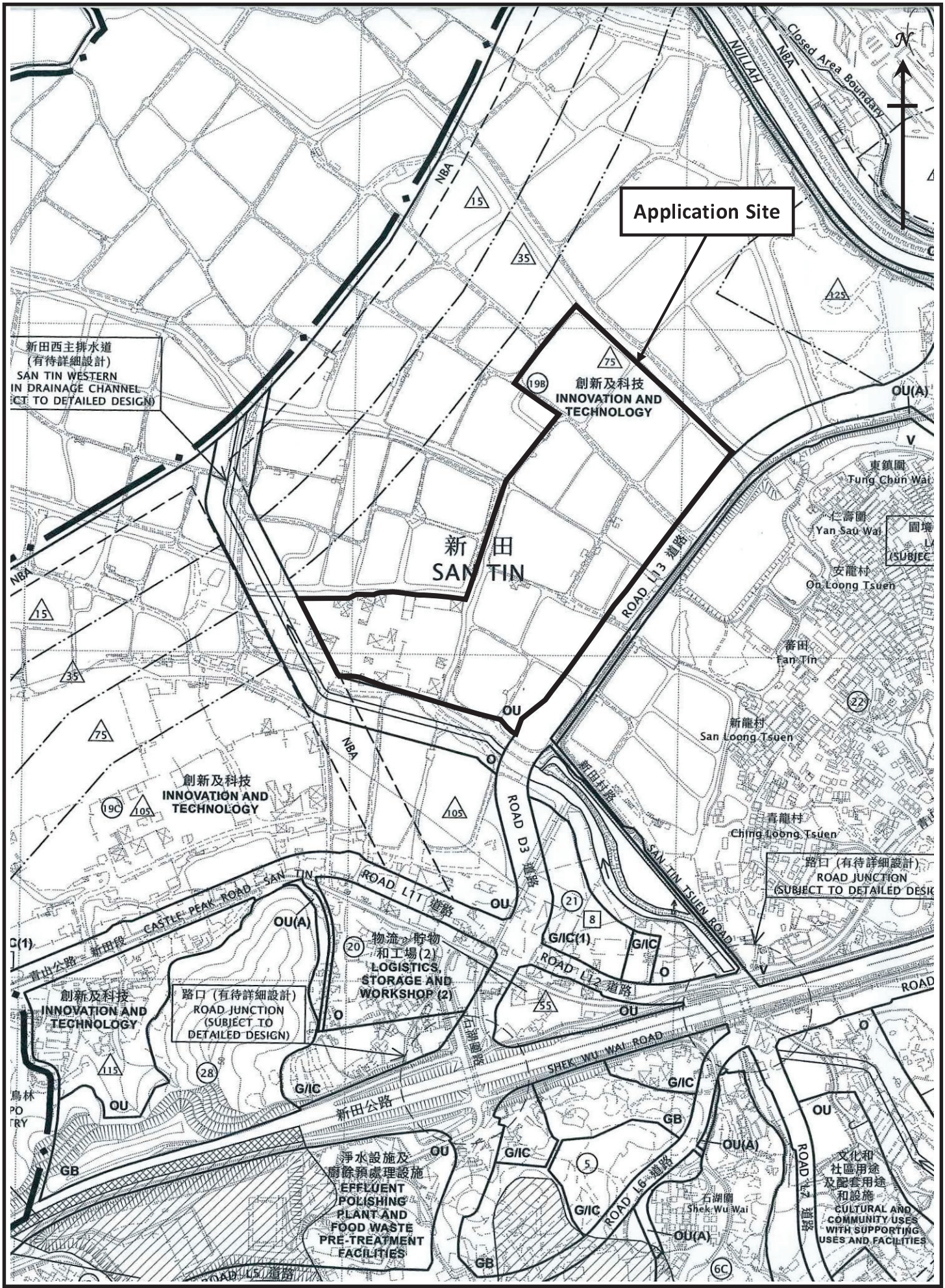
7. Conclusion and Recommendations

7.1. The peak sewage flow generated by the Application Site is estimated to be about 369.37 l/s. The average daily sewage flow generated by the Application Site is estimated to be about 8,371.72 m^3/day which is about 13% of the capacity of the first phase, i.e. 65,000 m^3/day, and 7% of the capacity of the second phase, i.e. 125,000m^3/day, of the planned EPP indicated in the Approved San Tin Technopole Outline Zoning Plan (OZP) No. S/STT/2.

7.2. In order not to cause any adverse sewerage impacts on the area, the occupation of the subject proposed development shall cope with the completion time of the new public sewerage system, sewage pumping station and EPP of the area which at present is targeted to be in 2033 the earliest.

7.3. Sewage generated from the subject proposed development will be collected and conveyed to the Government's new sewage pumping station and then to the new EPP which is purposedly built to cater for the sewage discharge generated from the area for appropriate tertiary treatment before discharged to nearby watercourse.

7.4. In conclusion, in accordance with the above mentioned arrangement, i.e. occupation of the subject proposed development after the actual commissioning date of new public sewerage system, new sewage pumping station and EPP of the area, the subject proposed development would not impose any unacceptable adverse sewerage impact upon the surroundings.



Location Plan
(Extract from Approved San Tin Technopole Outline Zoning Plan No. S/STT/2)

Figure 1A

1 : 7500

羅迅測計師行
Lawson David & Sung
SURVEYORS LIMITED
Property Consultants • Planning • Valuers • Auctioneers
Estate Agency Licence No. C-006328

REMARK:
THE BASE PLAN IS REPRODUCED FROM THE INFORMATION IN THE EXPLANATORY STATEMENT OF THE APPROVED SAN TIN TECHNOPOLE OZP NO. S/STT/2.

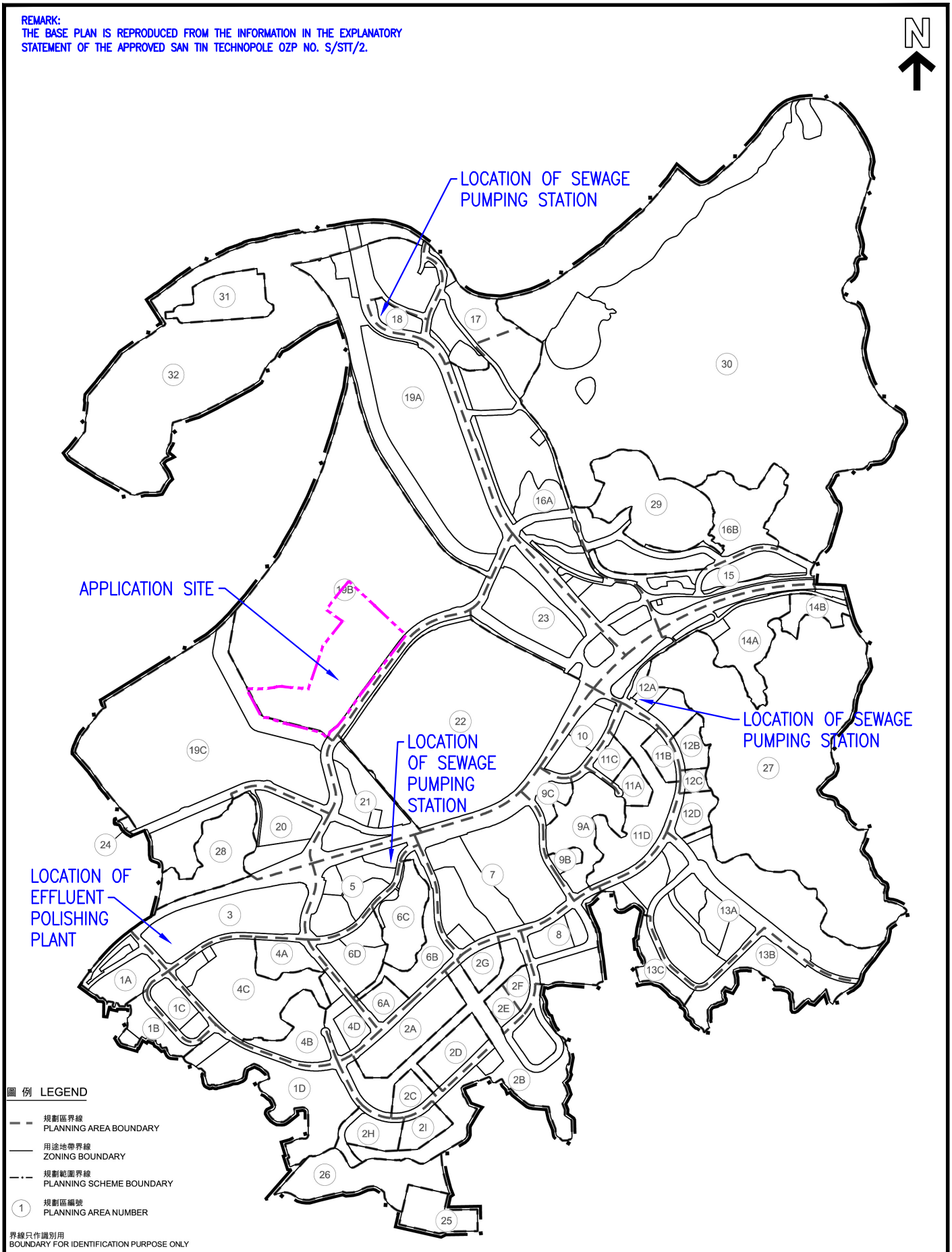


圖 例 LEGEND

- 規劃區界線 PLANNING AREA BOUNDARY
- 用途地帶界線 ZONING BOUNDARY
- 規劃範圍界線 PLANNING SCHEME BOUNDARY
- (1) 規劃區編號 PLANNING AREA NUMBER

界線只作識別用
BOUNDARY FOR IDENTIFICATION PURPOSE ONLY

PROJECT	何田顧問工程師有限公司 HO TIN & ASSOCIATES CONSULTING ENGINEERS LIMITED
TITLE INDICATIVE LOCATIONS OF THE PROPOSED SEWAGE POLISHING PLANT AND SEWAGE PUMPING STATION ON THE SAN TIN TECHNOPOLE OZP	SCALE
	DRAWING No. FIGURE 2

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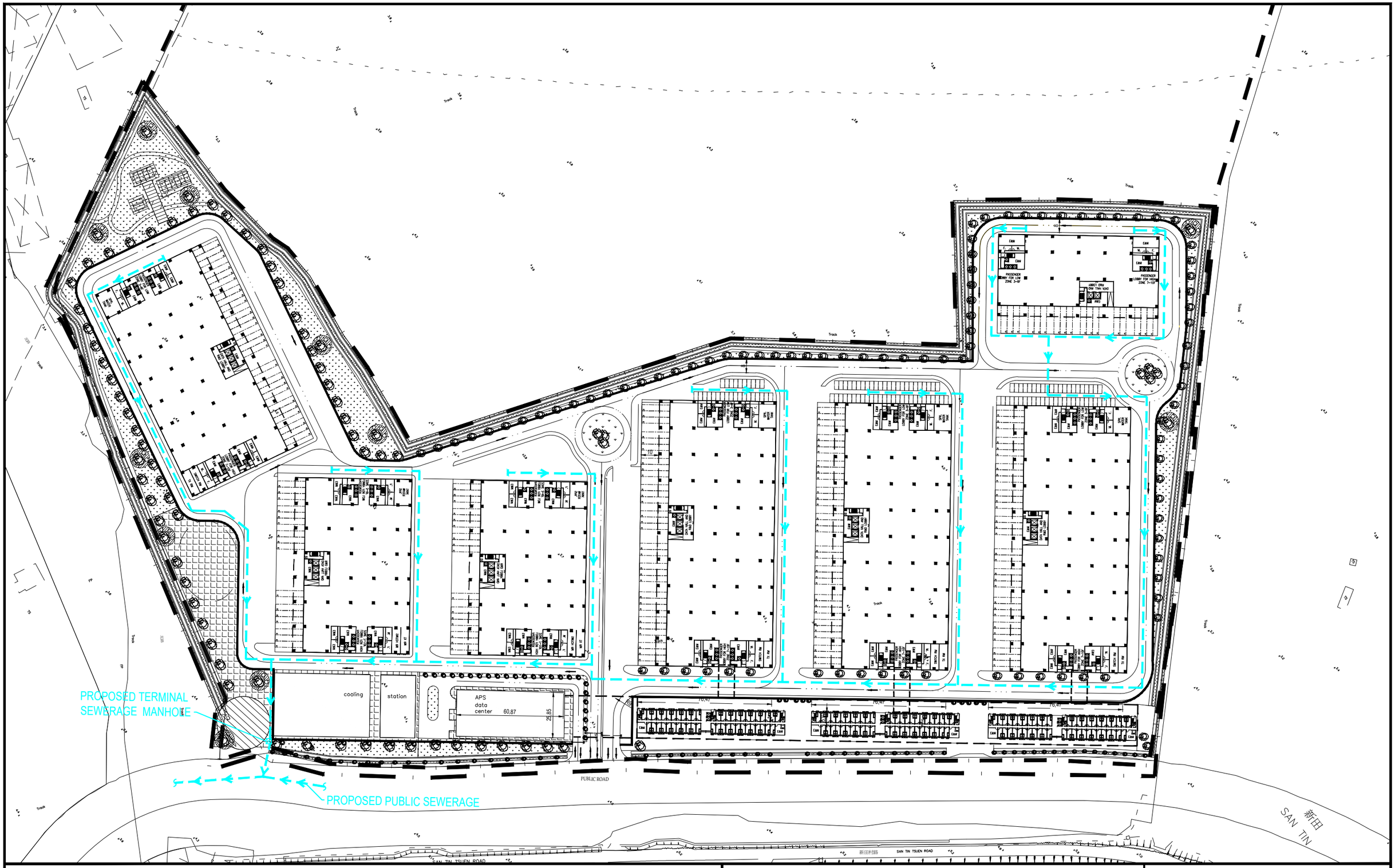

LEGEND:

PROPOSED SEWERAGE ROUTE COMPRISES OF SEWERAGE DRAIN PIPES, SEWERAGE MANHOLES AND SEWAGE PUMPING STATION IF NECESSARY (DETAILED DESIGN TO BE SUBMITTED AT THE LATER DETAILED DESIGN STAGE)

PROJECT

何田顧問工程師有限公司
HO TIN & ASSOCIATES
CONSULTING ENGINEERS LIMITED

TITLE

INDICATIVE SEWERAGE MANAGEMENT PLAN

SCALE 1 : 2000 @ A3

DRAWING No. FIGURE 3

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REMARK:
THE BASE PLAN IS REPRODUCED FROM THE INFORMATION IN THE EXPLANATORY STATEMENT OF THE APPROVED SAN TIN TECHNOPOLE OZP NO. S/STT/2.

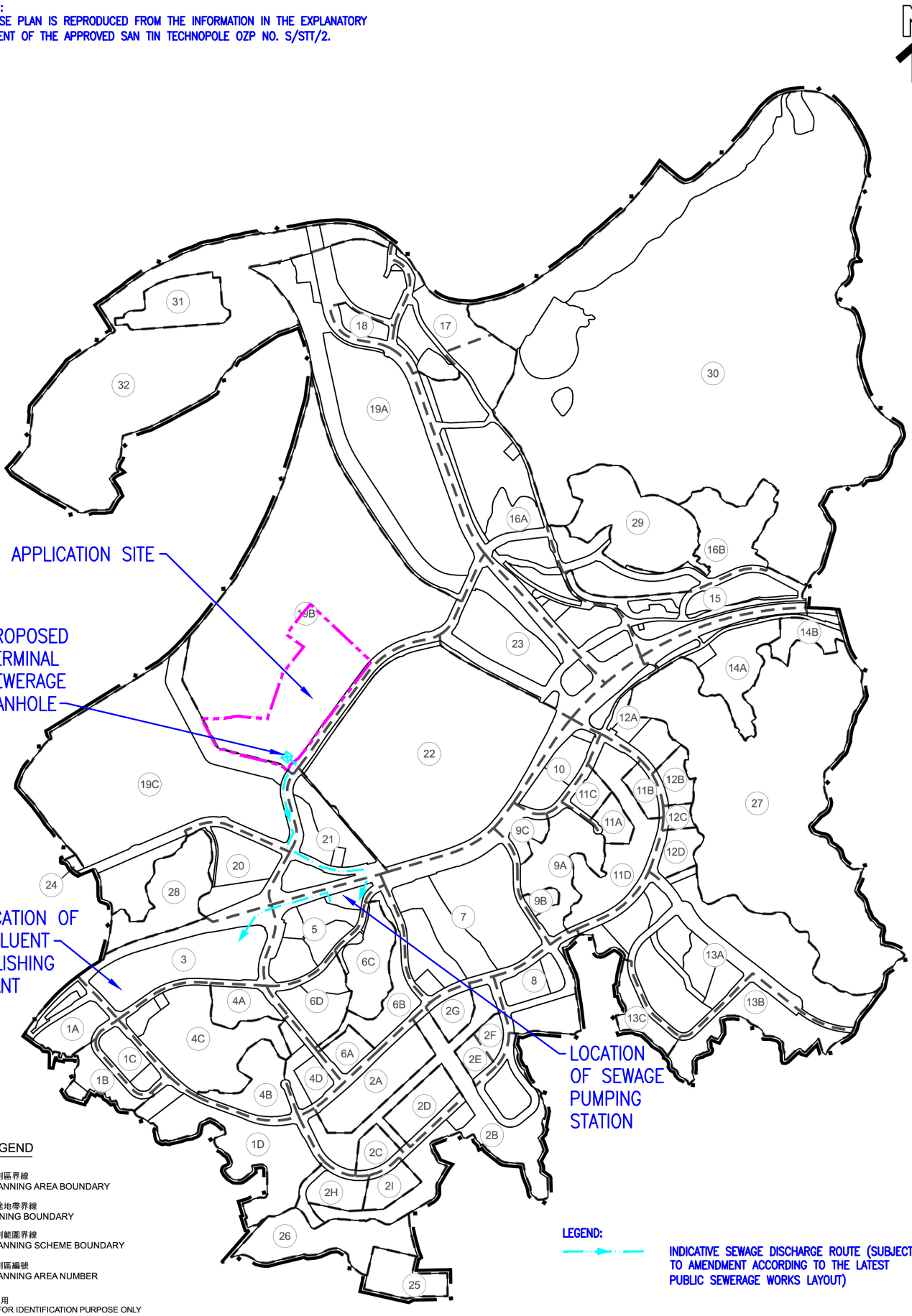

圖 例 LEGEND

- 規劃區界線 PLANNING AREA BOUNDARY
- 用途地帶界線 ZONING BOUNDARY
- 規劃範圍界線 PLANNING SCHEME BOUNDARY
- (1) 規劃區編號 PLANNING AREA NUMBER

界線只作識別用
BOUNDARY FOR IDENTIFICATION PURPOSE ONLY

LEGEND:
INDICATIVE SEWAGE DISCHARGE ROUTE (SUBJECT TO AMENDMENT ACCORDING TO THE LATEST PUBLIC SEWERAGE WORKS LAYOUT)

PROJECT	何田顧問工程師有限公司 HO TIN & ASSOCIATES CONSULTING ENGINEERS LIMITED	
TITLE: PROPOSED SEWAGE DISCHARGE ROUTE	SCALE	DRAWING No.: FIGURE 4

H:\25108_SanTin DD99\DRAWING\FIGURE 4_00.dwg, 16/10/2025 16:41:13