Section 12A Application for Proposed Rezoning from “Commercial”, “Open Space” and an area shown as 'Road' to “Residential (Group A)13” and Amend the Notes of the Zone Applicable to the Site for Proposed Flat, Shop and Services, Eating Place and Social Welfare Facility (Child Care Centre) Uses at 16 Po Tai Street, Ma On Shan

Sewerage Impact Assessment Report

Rev 2| 29 October 2026

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 304537

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1. Introduction

1.1 Project Background

1.1.1 This Sewerage Impact Assessment ("SIA"), appended to the Supporting Planning Statement, is prepared in support of the Planning Application under Section 12A Application for Proposed Rezoning from "Commercial", "Open Space" and an area shown as 'Road' to "Residential (Group A)13" and Amend the Notes of the Zone Applicable to the Site for Proposed Flat, Shop and Services, Eating Place and Social Welfare Facility (Child Care Centre) Uses at 16 Po Tai Street, Ma On Shan ("the Application Site").

1.2 Proposed Redevelopment

1.2.1 The Proposed Redevelopment is located at an existing building site at 16 Po Tai Street which is surrounded by developed blocks of Oceanaire, Ocean View, La Costa and road named Sai Sha Road. **Appendix A- Figure A** shows the location of the redevelopment site (the Site).

1.2.2 The Application Site is proposed to be redeveloped to two 21-storey residential blocks on top of a 5-storey commercial podium, which comprises of residential area from 6F to 29F, retail zone with GF/1F/2F, Child Care Centre at 2F, residential facilities and communal sky garden at 5F, carpark at basement from B1F and aboveground at 3F.

1.2.3 The total site area is approximately 5,090 m^2 and the design parameters are shown in **Table 1.1** below.

Table 1.1 Redevelopment Parameters

Redevelopment Parameters	Proposed Redevelopment Indicators
Area	5,090 m^2
Estimated GFA for residential area	25,450 m^2
No. of flats	540
Estimated GFA for commercial	5327.09 m^2
Estimated F&B in proposed commercial	3,794.19 m^2
Estimated Child Care Centre	1,007.82 m^2

1.3 Purpose of this Report

1.3.1 The aim of this Sewerage Impact Assessment (SIA) Study is to review and update the sewerage network arising from proposed redevelopment to assess the impact of the Proposed Redevelopment to the existing sewerage network and to propose mitigation measures (if required).

1.3.2 The scope of the Project comprises Composite Redevelopment Proposal for the proposed redevelopment.

1.3.3 SIA Report shall be prepared, which should:

(a) fully satisfy the requirements of this Scope in respect of the prediction and assessment of impacts, the identification of sewerage impact mitigation measures and the associated residual impacts;

(b) provide assessment and evaluation of the sewerage impact and cumulative effects arising from the Project sufficient to identify those issues of key concern during the construction and operation of the proposed redevelopment;

(c) define measurable sewerage parameters and features likely to be affected by the proposed redevelopment;

(d) recommend optimum sewerage scheme for the proposed redevelopment;

(e) prescribe the specification for detailed design, construction and operation requirements of the recommended sewerage scheme;

(f) provide the assessment findings, conclusions, recommendations and a mechanism for implementation; and

(g) include any revisions or supplements to the above as might be required by the EPD and DSD.

1.3.4 The SIA Report for shall be submitted for approval by EPD and DSD on the methodologies, findings, proposals, recommendations and conclusions of the SIA.

1.3.5 This Sewerage Impact Assessment Report is structured as follows:

Section 1 – **Introduction**, introduces the Project Background, Objectives and Scope of the Project.

Section 2 – **Methodology and Design Criteria,** presents the Methodology and Design Criteria.

Section 3 – **Sewerage Impact Assessment**, presents the Sewerage Impact Assessment.

Section 4 – **Construction, Operation and Maintenance of New Sewerage Facilities**, presents Construction, Operation and Maintenance of New Sewerage Facilities.

Section 5 – **Conclusion,** summarises the Conclusions.

2. Methodology and Design Criteria

2.1 Methodology

2.1.1 The following methodology is adopted in carrying out the SIA:

- Identify the scope, parameters and programme of the Proposed Redevelopment;
- Estimate the sewage flow generation of the Proposed Redevelopment;
- Identify the existing and planned sewerage systems within and near the Proposed Redevelopment boundary;
- Examine the impact arising from new sewage generation from the proposed redevelopment on the existing sewerage network; and
- Identify new and upgrading sewerage works to support the proposed redevelopment.

2.1.2 The SIA has been carried out in accordance with the following guidelines set out in EPD Report No. EPD/TP1/05 Guidelines for Estimating Sewage Flows (GESF) for Sewerage Infrastructure Planning Version 1.0 and DSD's Sewerage Manual.

2.2 Parameters and Assumptions

2.2.1.1 The key parameters used for flow estimation in this SIA are unit flow factor, the population/ employee density and flow from plumbing and drainage.

Unit Flow Factor – Domestic Flows

2.2.2 The Unit flow factors (UFF) for domestic sewage flow due to residential population of the proposed redevelopment and the existing sewerage catchment are shown in **Table 2.1** based on the **Table T-1** of GESF.

Table 2.1 Unit Flow Factor for Domestic Flows

Residential Type	Unit Flow Factor (m^3/person/day)[1]
Private R2	0.27

Unit Flow Factor – Commercial Flows

2.2.3 The UFFs for commercial sewage flows due to employed population of the proposed redevelopment and the existing sewerage catchment are shown in **Table 2.2** based on the **Table T-2 of GESF.**

2.2.4 The total unit flow generated from an employee in a particular trade is the sum of the UFF of the employee and the UFF of commercial activities of a particular trade under consideration.

Table 2.2 Unit Flow Factor for Commercial Flows

Commercial Type	UFF (m^3/employee/day)
Commercial Employee	0.080
Commercial Activities	
(a) Specific trades:	

Commercial Type	UFF (m^3/employee/day)
J10 – Restaurants & Hotels	1.58
J11 – Community, Social & Personal Services	0.28
J4 — Wholesale & Retail（shops）	0.28

Peaking Factors

2.2.5 The peaking factors to cater for seasonal/diurnal flow variations, and infiltration and inflow due to storm events are referenced to EPD's GESF and shown in **Table 2.3.**

Table 2.3 – Peaking Factors for Various Population Ranges

Population Range	Peaking Factor (Including Stormwater Allowance) for Facility with Existing Upstream Sewerage	Peaking Factor (Excluding Stormwater Allowance) for Facility with Existing Upstream Sewerage
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) [1]	Max ($6/N^{0.175}$, 1.6) [1]
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) [1]	Max ($2.6/N^{0.065}$, 1.6) [1]
Note: [1] N = Contributing population in thousands		

2.2.6 With consideration of the reduced hydraulic performance due to the deterioration of sewer pipes with time, peaking factors (including stormwater allowance) is adopted in this Study.

Population Density

2.2.7 A person per flat (PPF) ratio of 2.7 is adopted.

2.2.8 The employment population density has been referenced to Table 8 of PlanD's Commercial and Industrial Floor Space Utilization Survey "CIFSUS":

- Community, Social & Personal Services: Assume 3.3 employee per 100 m^2 of GFA
- Food and Beverage: Assume 5.1 employee per 100 m^2 of GFA
- Rental: Assume 3.5 employee per 100 m^2 of GFA

Hydraulic Analysis

2.2.9 Colebrook-White equation is applied for pipe hydraulic analysis. The design roughness coefficients (Ks) for existing pipeline system are assumed to be 3.0 mm in accordance with DSD's SDM (Slimed sewer slimed to about half depth; velocity when flowing half full approximately 0.75 m/s, clayware, under poor condition). The material adopted for proposed pipes is HDPE; a conservative roughness coefficient of 1.5 mm has been adopted in consideration of its reduced hydraulic performance in future due to degradation of material.

2.2.10 For small diameter sewers of diameter less than 300 mm, the flow velocity of at least 0.7m/s shall occur daily, or that a gradient of at least 1:DN (i.e. Nominal diameter of the sewer in mm) is provided, provided that a flow of 2 times of Average Dry Weather Flow (ADWF) is assumed to occur at least once daily. For larger diameter sewers of diameter up to 900 mm, a self-cleansing velocity of 1.0 m/s in full pipe condition shall be achieved. The maximum flow velocity at peak flow shall be 3 m/s.

3. Sewerage Impact Assessment

3.1 Existing and Planned Sewerage Infrastructure

Existing Sewerage System

Appendix C- Figure B shows the existing sewerage networks in the vicinity of the site. The existing site is currently discharging sewage to public sewer on Po Tai Street, then running along Po Tai Street to Ning Tai Road with pipe size from DN 225 to DN375. This section of sewer also receive sewage from Oceanaire and upstream sewer on Ning Tai Street. This public sewer finally connects to a trunk sewer DN 600 running east along Hang Fai Street.



Figure 3.1 Existing Site

Planned Sewerage System

No planned sewerage system is anticipated in the area.

Planned/ Interface Redevelopment in the Vicinity

A Section 16 application (Application No. A/MOS/129) for a temporary public vehicle park for a period of eight years was submitted and approved in October 2024. The location is directly south of the Site and east of La Costa. It is understood that there is no sewage generation for this redevelopment.

3.2 Sewage Generation from the Catchment of Existing Development

3.2.1 The sewage flow generated within the existing catchment of the proposed redevelopment (directly upstream and downstream of proposed redevelopment) is assessed to be 2,009.2 m^3/day (ADWF)[(2)], while the peak flow is 116.27 L/s (peak factor = 5 [(1)]). The detailed calculations for sewage flow estimation are included in **Appendix B** and summarised in **Table 3.1**.

Table 3.1 Sewage Flow Estimation for the Existing Redevelopment

Existing Redevelopment	**Estimated ADWF with Catchment Inflow Factor[(2)] (m^3/day) [(3)]**
Ocean View (Residential)	664.1
Ocean View (Club House)	2.4
Oceanaire (Residential)	833.2
Oceanaire (Club House)	4.8
La Costa (Residential)	502.2
La Costa (Club House)	2.4

Remarks:

(1) Peaking Factor =5 for contributing population >1000 and <5000 based on EPD's GESF Table T-5.

(2) The Catchment Inflow Factor for Sha Tin is 1.15, based on GESF Table T-4.

(3) Numbers are rounded to 1 decimal place.

3.3 Sewage Generation from the Proposed Redevelopment

3.3.1 The sewage flow generated from the proposed redevelopment of We Go Mall is about 811.1 m^3/day (ADWF with catchment inflow factor 1.15 applied), while the peak flow is 56.3 L/s (peak factor = 6). The detailed calculations for sewage flow estimation are included in **Appendix B** and summarised in **Table 3.2.**

Table 3.2 Sewage Flow Estimation for the Proposed Redevelopment

Proposed Redevelopment	***Parameters***
Residential	
Unit Flow Factor(m^3/person/day)	0.27
Commercial	
F&B GFA(m^2)	3,794.19
Estimated population of F&B staff	194
F&B (staff/100m^2)	5.1
Unit Flow Factor(m3/person/day)	1.58
Wholesale& retails(shops) GFA(m^2)	5,327.09
Estimated population of wholesale & retails(shops) staff	186
Wholesale& retails (staff/100 m^2)	3.5
Unit Flow Factor(m^3/person/day)	0.28

Proposed Redevelopment	*Parameters*
Children care centre	
Estimated population of children care staff	33
Workers per GFA (in 100 m^2)	3.3
Unit Flow Factor(m^3/person/day)	0.28
Catchment Inflow Factor – Sha Tin	1.15
Total ADWF (m^3/day)	**875.1**
Sewerage from residential (m^3/day)	**452.7**
Sewerage from shops & services	**422.3**
Design Peak Flow (L/s)	**60.8**

Remarks:
(1) Peaking Factor =6 for contributing population = 1,000 – 5,000 based on EPD's GESF Table T-5.
(2) Numbers are rounded to 1 decimal place

3.4 Assessment for Existing Sewer

3.4.1 The existing sewer on Po Tai Street has been assessed. The existing sewer capacity performance is found exceeding the pipe capacity with the proposed redevelopment scheme. The existing sewer from **FMH4041620 to FMH4039089** has been assessed in the following **Table 3.3** and shown in **Appendix B Table-A.**

Table 3.3a Capacity Assessment for downstream capacity from the Proposed Redevelopment

Upstream MH	Downstream MH	Sewer size (mm)	Upstream Invert Level (mPD)	Downstream Invert Level (mPD)	Flow /Capacity
FMH4041620	FMH4041621	225	4.02	3.31	166%
FMH4041621	FMH4041622	225	3.31	2.85	189%
FMH4041622	FMH4041627	375	2.60	2.34	116%
FMH4041627	FMH4039089	375	2.33	1.88	108%

Table 3.3b Capacity Assessment for discharge pipe from the Proposed Redevelopment

Upstream (MH)	Downstream (MH)	Sewer size (mm)	Upstream Invert Level (mPD)	Downstream Invert Level (mPD)	% of Max. Peak flow to sewer capacity
Proposed foul discharge connection for the Proposed Redevelopment	FMH4041620	225	4.02	3.31	153%

3.4.2 As shown in the table above, the subject section of public sewer is also collecting potion of sewage from Oceanaire. In view of this section of sewer overloads the existing sewer capacity, alternative sewage disposal methodology is discussed in **Section 3.5** below. Upgrading of existing sewer on Po Tai Street is not recommended due to impact to the existing sewers in operation and traffic impact. Thus, provision of a new sewer is recommended.

3.5 Proposed Redevelopment Sewerage System

Sewerage Connection Proposal

3.5.1 To accommodate the sewage generation from Proposed Redevelopment, a new 315 mm dia. HDPE sewer (approximately 170m) is proposed laying along the footpath/ cycle track along Sai Sha Road. The proposed sewers are shown in **Table 3.4 & 3.5**, from the proposed terminal manhole (TMH) to the existing manhole ID (FMH4039091). Proposed connection drawing is in **Appendix B**. The capacity performance of the existing public sewers is shown in **Appendix B-Table T2.**

Table 3.4 Proposed Sewage pipe connection from Terminal Manhole to Existing Sewerage Network

Location	Upstream MH	Downstream MH	Sewer size (mm)	Upstream Invert Level (mPD)	Downstream Invert Level (mPD)	Flow /Capacity
Proposed Redevelopment	TMH	FMH4039091	315	4.02	1.62	51%

Table 3.5 Sewers Capacity Check (catchment includes: La Costa, Ocean View, Oceanaire)

Upstream (MH)	Downstream (MH)	Sewer size (mm)	Upstream Invert Level (mPD)	Downstream Invert Level (mPD)	% of Max. Peak flow to sewer capacity
FMH4039089	FMH4039090	600	1.88	1.75	47%
FMH4039090	FMH4039091	600	1.75	1.62	48%

Sewerage Impact to Downstream Sewers

3.5.2 Hydraulic capacity check has been undertaken for the downstream sewerage system and results are presented in **Table 3.6.** The assessed sewers have sufficient capacity to convey the sewage flows under proposed conditions; the maximum utilisation rate is below 55%. No sewers require upgrading works due to the proposed redevelopment and the proposed redevelopment has no impact to the existing downstream sewer network. The capacity performance of the existing public sewers is shown in **Appendix B-Table T2.**

Table 3.6 Sewers Capacity Check (catchment includes: La Costa, Ocean View, Oceanaire, proposed redevelopment)

Upstream (MH)	Downstream (MH)	Sewer size (mm)	Upstream Invert Level (mPD)	Downstream Invert Level (mPD)	% of Max. Peak flow to sewer capacity
FMH4039091	FMH4039092	600	1.62	1.49	56%
FMH4039092	FMH4039093	600	1.49	1.34	54%

4. Construction, Operation and Maintenance of New Sewerage Facilities

4.1.1 The proposed sewerage works within the redevelopment boundary including the construction of new sewers connection and the proposed terminal manhole (TMH) will be constructed, operated and maintained by the future management agent.

4.1.2 The proposed sewerage connection mentioned in **Section 3.5** will be undertaken by the project proponent. The portion of sewers downstream of terminal manhole to existing public sewer will be handed over to DSD upon completion of construction works for future maintenance as part of the public network.

5. Conclusion

5.1.1 Sewage generated from within the existing catchment of the proposed redevelopment is ADWF =2,009.2 m^3/day or peak flow = 116.3 L/s (peaking factor = 5)) whilst sewage from the Proposed Redevelopment is ADWF = 875.1 m^3/day or peak flow = 60.8 L/s (peaking factor = 6)). Capacity of existing public sewer DN 600 adjacent to the proposed redevelopment has been checked and the existing public sewer is still capable to discharge sewer from the proposed redevelopment to downstream trunk sewer.

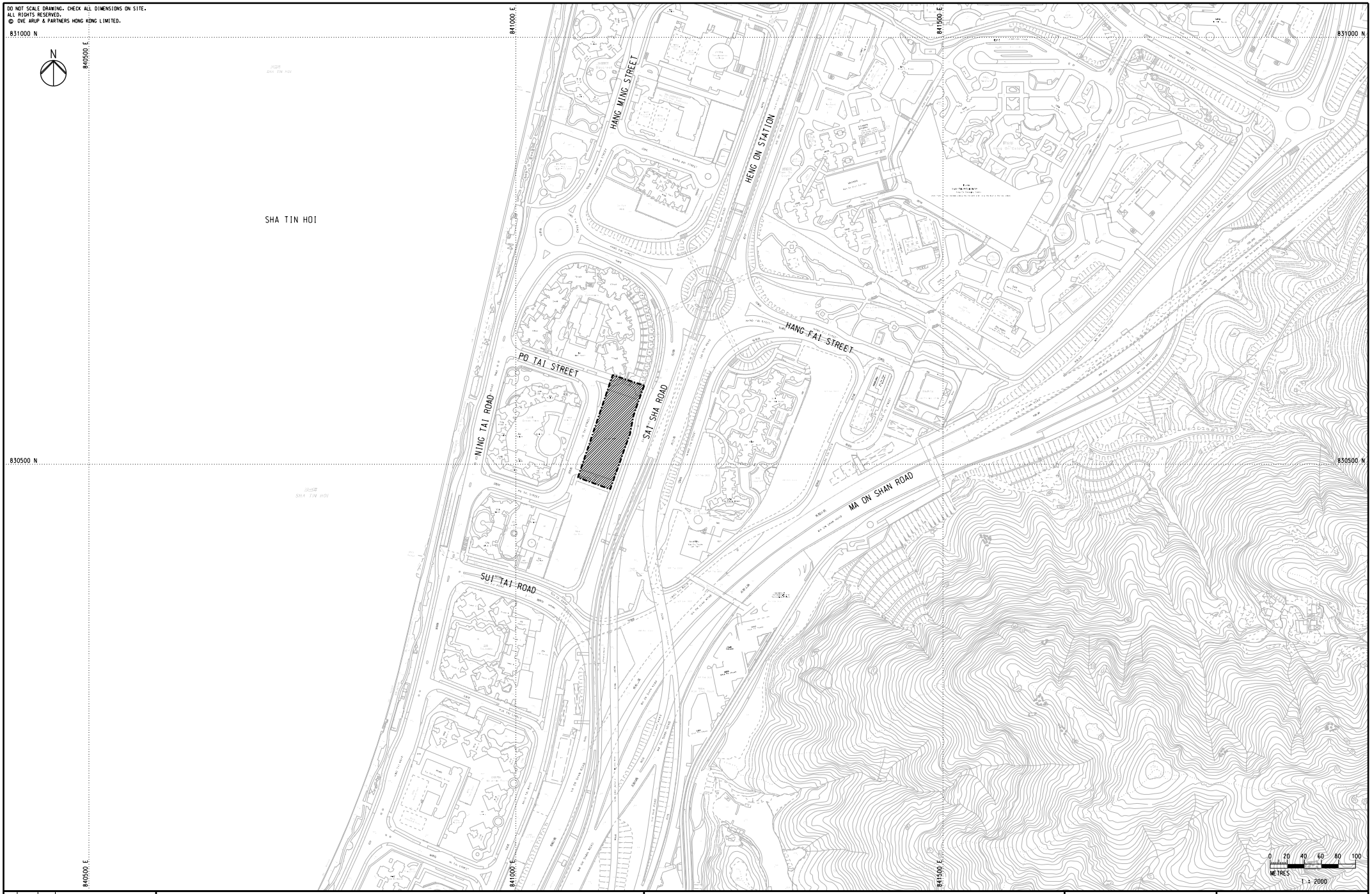
5.1.2 The terminal foul water manhole of proposed redevelopment is proposed to be located at the north east corner of the site. Sewer from the proposed redevelopment discharge via a proposed DN 315 to existing manhole FMH4039091 (calculation refer to Appendix B- Table- T2).

5.1.3 To discharge sewage generated from the proposed location, a new sewerage main is proposed along footpath/ cycle path along Sai Sha Road at east of the Proposed Redevelopment. Sewage from the Proposed Redevelopment will be discharged through a 315 mm dia. sewer from a new terminal manhole (i.e. TMH) into the existing sewerage network.

5.1.4 The Ma On Shan Sewage Pumping Station and Sha Tin Sewage Treatment Works are deemed to be designed to cater for the regional sewage generation, thus it is not anticipated for any adverse impact to MOSSPS and STSTW due to the insignificant increase in sewage generation from the proposed redevelopment.

Appendix A

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Mark	Date	By	Rev.
A	01/25	CS	FIRST ISSUE

LEGEND

PROPOSED DEVELOPMENT

Job Title

Section 12A Application for Proposed Rezoning from “Commercial”, “Open Space” and an area shown as 'Road' to “Residential (Group A)13” and Amend the Notes of the Zone Applicable to the Site for Proposed Flat, Shop and Services, Eating Place and Social Welfare Facility (Child Care Centre) Uses at 16 Po Tai Street, Ma On Shan

Drawing Title

MASTER LOCATION PLAN

Drawing Status

SUBMISSION

ARUP

Scale	1:2000 @ A1				
Drn. RY	Date 01/25	Chd. JW	Passed KK		
Job No. 304537	Drawing No. C/001	Rev. B			

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Appendix B

Sewage Generation Estimation

Table T1-Estimation of Sewerage Flow for Proposed Redevelopment

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

General Assumptions

1. Residents per unit and workers per GFA refer to CIFSUS report
2. floor usage of proposed development refer to information collected from Proposed Redevelopment Schematic Design for S12a composite development proposal Paliburg Dev. Consultants Limited 14 Aug 2024
3. floor usage of existing buildings refer to information collected from website including news, real estate webpage and google map

Sewer estimation for existing 225D to 375D sewer running at open space in between proposed redevelopment and existing development at 8 · 1 · 18 PO TAI Street.

Area Type and Existing Building	Sewer Type	Catchment No.	GFA (m^2)	unit/flat	Workers per GFA (in 100 m^2)or population/flat	Number of Population/ Employees	Global Unit flow factor (m3/day/person)	Catchment Inflow Factor	Average Dry Weather Flow (m^3/day)	Total ADWF (m^3/s)	Flow (L/s)	Additional Peak Flow (L/s)	specific assumptions and remarks
La Costa	Residential (R2)	A3(Existing)		599	2.7	1,617	0.27	1.15	502.2	504.6	5.8	2.5	Private residential-There area 599 nos. of units in LA COSTA and assuming population/unit=2.7 , hense total residents population = 1677; Date of occupation from Feb 2004
	swimming pool												2.5 Liter/second is reference to similar scale of existing residential buiding with swimming pool and 2.1 cum/day is for recreation (club house,etc.)
	club house							1.15	2.4		0.03		
Ocean View	Residential (R2)	A2(Existing)		911	2.7	2,460	0.27	1.15	664.1	666.5	7.7	2.5	Private residential-There area 911 nos. of units in oceanaire and assuming population/unit=2.7 , hense total residents population = 2551; Date of occupation from Aug 2003
	swimming pool												2.5 Liter/second is reference to similar scale of existing residential buiding with swimming pool and 2.1 cum/day is for recreation (club house,etc.)
	club house							1.15	2.4		0.03		
Oceanaire	Residential (R2)	A1 (existing)		1143	2.7	3,086	0.27	1.15	833.2	838.1	9.6	5.0	Private residential-There area 1143 nos. of units in oceanaire and assuming population/unit=2.7 , hence total residents population = 3200; Date of occupation from March 2011
	swimming pool												5 Liter/second is reference to similar scale of existing residential buiding with swimming pool and 4.2 cum/day is recreation(club house,etc.)
	club house							1.15	4.8		0.06		

Sewer estimation for the proposed redevelopment at 16 Po Tai Street

The Proposed Redevelopment at 16 Po Tai Street	Residential (R2)	N1 (proposed)	25450	540	2.7	1,458	0.27	1.15	452.7	875.1	5.2	0.0	GFA for Residentail is 25450.00 sqm with 540 unit(Oct 2026 revision) in total (R2)
	Commercial (Restaurant) J10		3794.19		5.1	194	1.58		351.6		4.1		Workers per GFA refer to the trade of "Restaurant" in Figure 8: Worker Density by Economic Activity and Planned Usage Type as 5.1 workers/100m2.
	Commercial (Shops) J4		5327		3.5	186	0.28		60.0		0.7		Workers per GFA refer to the trade of "wholesale" and Retals in accordance to CIFSUS by taken 3.5 workers/100m2.
	Child care centre(insitutional and special class)		1007.82		3.3	33	0.28		10.7		0.1		The sewer type is assumed as community,social&personal services in Figure 8: Worker Density by Economic Activity and Planned Usage Type

Table-A Existing Sewer Capacity Performance Check -according to 484units

Notes:
(1) Calculate by Colebrook-White Equation

$$V = -\sqrt{(8gDS)}\log\left(\frac{ks}{3.7D} + \frac{2.51v}{D\sqrt{(2gDS)}}\right)$$

where ks is equivalent roughness with value equals 3mm for existing sewers
v is kinematic viscosity of fluid = 1.14 x 10-6 m2/s and g is the gravity = 9.81m/s2
V is the velocity, D is the diameter of the sewer and S is the gradient of the sewer.

Abbreviation:

UP_MAN	Upstream Manhole	CON_POP	Contributing Population	DN_GL	Downstream Ground Level	DN_INV	Downstream Invert Level
DN_MAN	Downstream Manhole	DIA	Diameter	UP_INV	Upstream Invert Level	VEL	Velocity
ADWF	Average Dry Weather Flow	LEN	Length	CAP	Capacity		
ACC_ADWF	Accumulated Average Dry Weather Flow	UP_GL	Upstream Ground Level	F/C	Peak Flow/Capacity		

Manhole						Pipe												
UP_MAN No.	DN_MAN No.	Accumulative Flow (L/s)	CON_POP	PEAKING FACTOR	Peak Flow (L/s)	DIA (D) (mm)	LEN (m)	UP_GL (mPD)	DN_GL (mPD)	UP_INV (mPD)	DN_INV (mPD)	Gradient (S)	VEL (m/s)	CAP (L/s)	Additional Peak Flow (L/s)	F/C (%)	Adequate Capacity?	Catchment Involved
Capacity check for existing 225D to 375D sewer running at open space in between proposed redevelopment and existing development at 8,1,18 PO TAI STREET																		
FMH4041620	FMH4041621	10.2	3,259	6	61.10	225	74.6	6.27	5.39	4.02	3.31	105	1.00	39.71	5.00	166%	NO	Oceanaire outfall 1+N1
FMH4041621	FMH4041622	10.2	3,259	6	61.10	225	62.0	5.39	6.22	3.31	2.85	135	0.88	35.04	5.00	189%	NO	Oceanaire outfall 1+N1
FMH4041622	FMH4041627	23.7	7,596	5	118.69	375	54.0	6.22	6.58	2.60	2.34	208	1.00	110.47	10.00	116%	NO	Oceanaire outfall 1 + N1+Ocean view+ La costa
FMH4041627	FMH4039089	33.4	10,682	4	133.53	375	65.0	6.58	6.50	2.33	1.88	144	1.20	132.53	10.00	108%	NO	Oceanaire outfall 1 + N1+Ocean view+ La costa+ Oceaniarie outfall 2
Capacity estimation for 225D sewer connecting recommended outlet manhole and existing manhole FMH4041620																		
Proposed Foul Water outfall Manhole the proposed redevelopment	FMH4041620	10.1	3,241	6	60.8	225	74.6	6.27	5.39	4.02	3.31	105	1.00	39.70	0.00	153%	NO	N1

Table T2 - Capacity Performance of Existing Sewers & Propose a new 315mm sewer with length of 170m

Notes:
(1) Calculate by Colebrook-White Equation

$$V = -\sqrt{(8gDS)}\log\left(\frac{ks}{3.7D} + \frac{2.51v}{D\sqrt{(2gDS)}}\right)$$

where ks is equivalent roughness with value equals 3mm for existing sewers
v is kinematic viscosity of fluid = 1.14 x 10-6 m2/s and g is the gravity = 9.81m/s2
V is the velocity, D is the diameter of the sewer and S is the gradient of the sewer.

Abbreviation:

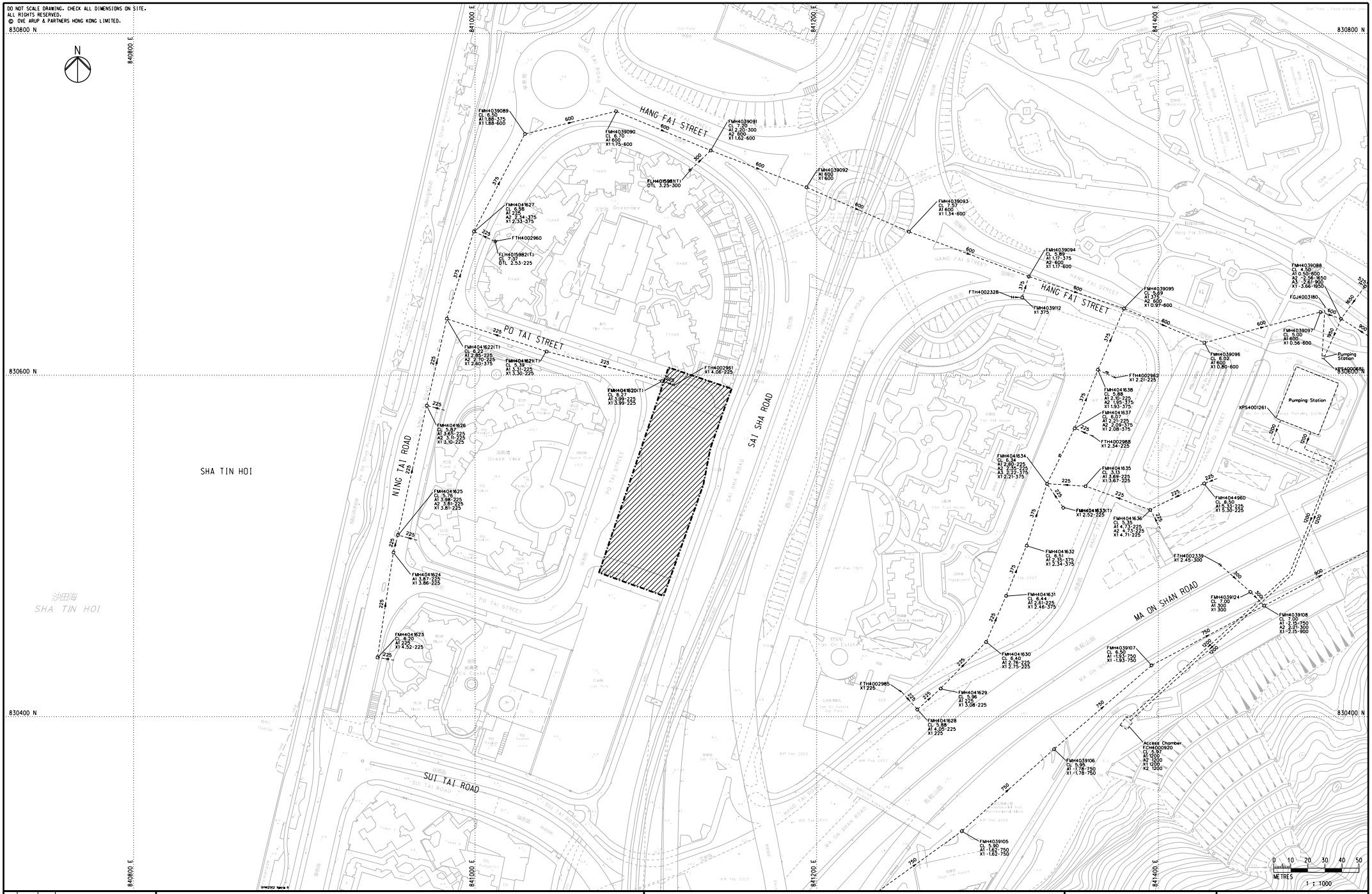
UP_MAN	Upstream Manhole	CON_POP	Contributing Population	DN_GL	Downstream Ground Level	DN_INV	Downstream Invert Level
DN_MAN	Downstream Manhole	DIA	Diameter	UP_INV	Upstream Invert Level	VEL	Velocity
ADWF	Average Dry Weather Flow	LEN	Length	CAP	Capacity		
ACC_ADWF	Accumulated Average Dry Weather Flow	UP_GL	Upstream Ground Level	F/C	Peak Flow/Capacity		

Manhole						Pipe												
UP_MAN No.	DN_MAN No.	Accumulative Flow (L/s)	CON_POP	PEAKING FACTOR	Peak Flow (L/s)	DIA (D) (mm)	LEN (m)	UP_GL (mPD)	DN_GL (mPD)	UP_INV (mPD)	DN_INV (mPD)	Gradient (S)	VEL (m/s)	CAP (L/s)	Additional Peak Flow (L/s)	F/C (%)	Adequate Capacity?	Catchment Involved
Capacity check for existing 600D sewer running at open space in between proposed redevelopment and existing development at HANG FAI STREET																		
FMH4039089	FMH4039090	23.3	7,441	5	116.3	600	54.7	6.50	6.70	1.88	1.75	421	0.96	270.53	10.00	47%	YES	La Costa+Ocean view+ Oceanaire
FMH4039090	FMH4039091	23.3	7,441	5	116.3	600	59.0	6.70	7.20	1.75	1.62	454	0.92	260.45	10.00	48%	YES	La Costa+Ocean view+ Oceanaire
FMH4039091	FMH4039092	33.4	10,682	4	133.5	600	60.0	7.20	7.47	1.62	1.49	462	0.91	258.27	10.00	56%	YES	La Costa+Ocean view+ Oceanaire+N1
FMH4039092	FMH4039093	33.4	10,682	4	133.5	600	66.0	7.47	7.57	1.49	1.34	440	0.94	264.53	10.00	54%	YES	La Costa+Ocean view+ Oceanaire+N1
Capacity estimation for 315D sewer connecting recommended outlet manhole and existing manhole FMH4039091																		
Proposed Foul Water outfall Manhole the proposed redevelopment	FMH4039091	10.1	3,241	6	60.8	315	170.0	6.27	7.20	4.02	1.62	71	1.53	118.98	0.00	51%	YES	N1

Appendix C

Existing and Proposed Sewerage Network

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LEGEND

PROPOSED DEVELOPMENT

EXISTING SEWER AND MANHOLE

Work	Date	By	Rev.
A	01/25	CS	FIRST ISSUE

Job Title

Section 12A Application for Proposed Rezoning from "Commercial", "Open Space" and an area shown as 'Road' to "Residential (Group A)13" and Amend the Notes of the Zone Applicable to the Site for Proposed Flat, Shop and Services, Eating Place and Social Welfare Facility (Child Care Centre) Uses at 16 Po Tai Street, Ma On Shan

Drawing Title

EXISTING SEWERAGE NETWORK

Drawing Status

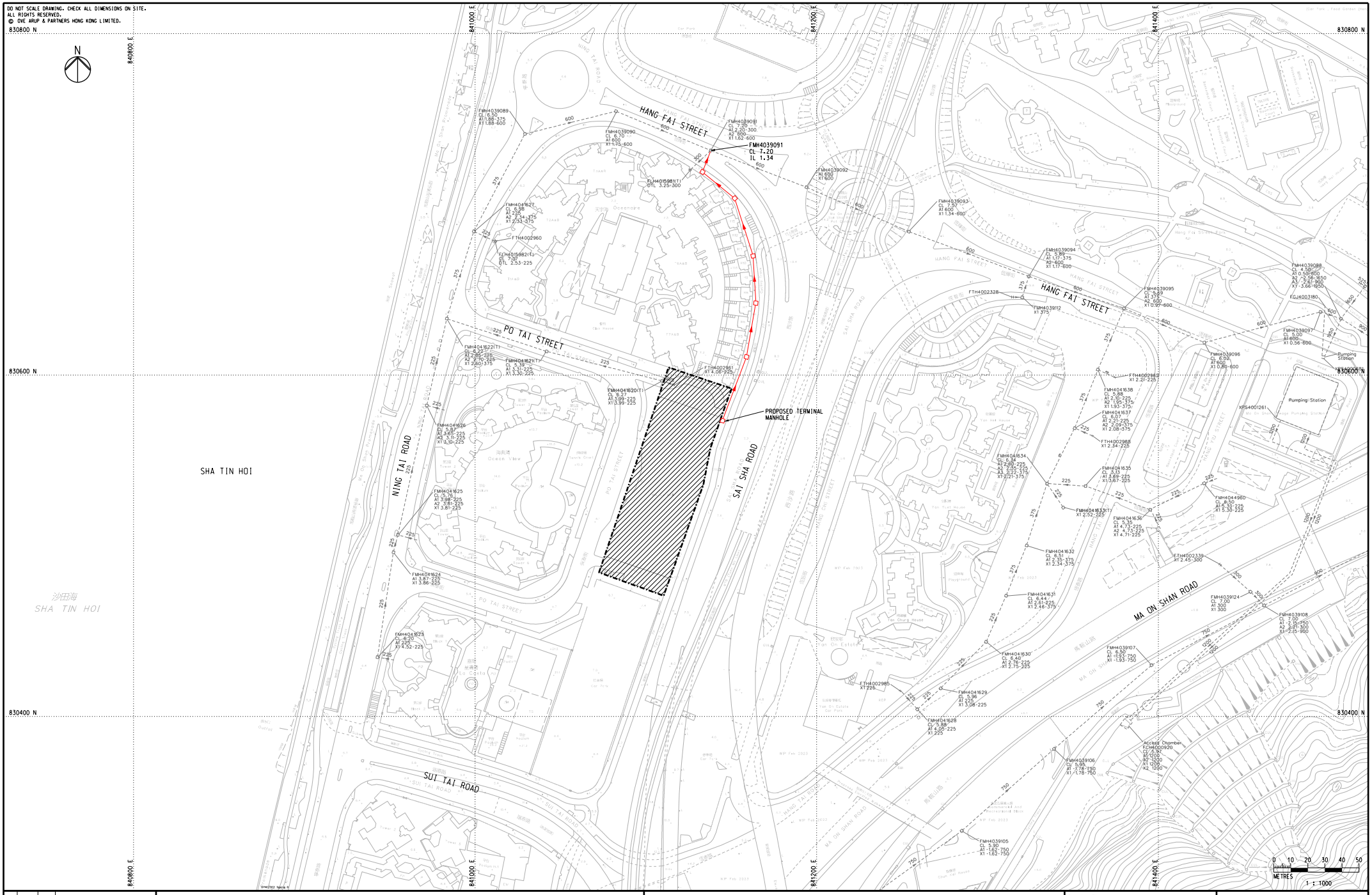
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Job No.	304537	Drawing No.	C/SIA/001
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LEGEND

- PROPOSED DEVELOPMENT
- EXISTING SEWER AND MANHOLE
- PROPOSED SEWER AND MANHOLE

Mark	Date	By	Rev.
A	01/25	CS	FIRST ISSUE

Job Title

Section 12A Application for Proposed Rezoning from "Commercial", "Open Space" and an area shown as 'Road' to "Residential (Group A)13" and Amend the Notes of the Zone Applicable to the Site for Proposed Flat, Shop and Services, Eating Place and Social Welfare Facility (Child Care Centre) Uses at 16 Po Tai Street, Ma On Shan

Drawing Title

PROPOSED SEWERAGE NETWORK

Drawing Status

SUBMISSION

ARUP

Scale	1:1000 @ A1				
Drn.	RY	Date	01/25	Chd. JW	Passed KK
Job No.	304537	Drawing No.	C/SIA/002	Rev.	B

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