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Project No. : 2288



**WATER SUPPLY IMPACT
ASSESSMENT**

FOR

**SECTION 16 PLANNING
APPLICATION FOR PROPOSED
MINOR RELAXATION OF
DOMESTIC PLOT RATIO AND
BUILDING HEIGHT
RESTRICTIONS FOR THE URA KAI
TAK ROAD / SA PO ROAD
DEVELOPMENT SCHEME (KC-
015)**

Prepared by
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COMMERCIAL-IN-CONFIDENCE

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Document Verification



Project Title		SECTION 16 PLANNING APPLICATION FOR PROPOSED MINOR RELAXATION OF DOMESTIC PLOT RATIO AND BUILDING HEIGHT RESTRICTIONS FOR THE URA KAI TAK ROAD / SA PO ROAD DEVELOPMENT SCHEME (KC-015)			Project No. 2288
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Issue No.	Issue Date	Description	Prepared by	Checked by	Approved by
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Table of Contents

1. INTRODUCTION	5
1.1. Background	5
1.2. Objectives.....	5
1.3. Report Structure	6
2. THE CURRENT S16 PLANNING PROPOSAL.....	7
3. EXISTING AND PLANNED WATER SUPPLY CONDITIONS	9
3.1. Existing Water Supply Condition.....	9
3.2. Planned Water Supply Condition	9
4. METHOD OF ANALYSIS	10
4.1. Design Guidelines.....	10
4.2. Unit Demand	10
4.3. Peaking factors.....	11
4.4. Fire-fighting.....	11
4.5. Residual heads	11
4.6. Design Velocity.....	12
5. WATER SUPPLY IMPACT ASSESSMENT	13
5.1. Water Supply Impact under the Current S16 Proposal	13
5.2. Assessment of the Water Supply Impact.....	13
5.3. Liability	14
6. CONCLUSION.....	15

List of Tables

Table 2-1 Comparison of Indicative Development Parameters of the Approved DSP and the Current S16 Proposal.....	7
Table 4-1 Unit Daily demand Adopted in Water Supply Impact Assessment.....	10
Table 4-2 Fire-Fighting Requirements.....	11
Table 5-1 Water Demand of Current S16 Proposal	13
Table 5-2 Water Demand of Approved DSP.....	13
Table 5-3 Comparison of Water Demand under Approved DSP and Current S16 Proposal	14

List of Figure

Figure 2.1	Application Site Location & its Environs
Figure 3.1	Overview of Existing & Proposed Water Supply Main

List of Appendices

Appendix A	Notional Design
Appendix B	Water Supply Record plan
Appendix C	Water Demand Estimation
Appendix D	Hydraulic Review of Water Main

1. INTRODUCTION

1.1. Background

- 1.1.1. The Kai Tak Road / Sa Po Road Development Scheme (KC-015) (the Scheme), is located in Kowloon City and is bounded by Kai Tak Road, Prince Edward Road East, Sa Po Road, and Carpenter Road. The Development Scheme Plan was approved by Chief Executive in Council (CE in C) on 29 September 2020 (the Approved DSP).
- 1.1.2. With an aim to enhance development flexibility to meet market needs, adopt Modular Integrated Construction (MiC) method and aboveground carpark design in response to the recent Government initiatives, the URA intends to seek Town Planning Board (TPB)'s approval on minor relaxation of domestic plot ratio (DPR) restriction from 7.5 to 8.0 and building height restrictions (BHR) from 120mPD to 140mPD for the Application Site (i.e. the area zoned 'R(A)' of the Approved DSP) in accordance to Section 16 of the Town Planning Ordinance (S16 Planning Application).
- 1.1.3. This S16 Planning Application is a "non-scheme-based" submission. The notional design and indicative development parameters provided in the application are solely for illustration purpose and for conducting necessary technical assessments. Except for any planning condition(s) to be imposed, the design of the future development will not be bounded by the notional design submitted in the S16 Planning Application.
- 1.1.4. Allied Environmental Consultants ("AEC") has been appointed to conduct a Water Supply Impact Assessment ("WSIA") to support the subject S16 Planning Application.

1.2. Objectives

- 1.2.1. The WSIA is prepared to evaluate the adequacy of water supply to cater for the development of the Scheme under the subject S16 Planning Application within the service area supplied by the distribution network concerned. It examines the potential impact on the distribution network, including any constraints on operational and maintenance for the distribution system in the future.
- 1.2.2. The report outlines the assessment results of the potential water supply impacts caused by the S16 Planning Application. The main objectives of the study include the following:
- Review the existing supply condition of the Application Site;
 - Estimate the water demand under the proposal of the Approved DSP Scenario;
 - Estimate the water demand under the current S16 Proposal;

- Identify any potential impact on the current water supply system due to the additional water supply demand from the current S16 Proposal;
- Propose water supply mitigation measures where appropriate to mitigate the potential water supply impact.

1.3. Report Structure

1.3.1. The remaining chapters of this report are shown below:

Chapter 2 – The Current S16 Planning Proposal

Chapter 3 – Existing and Planned Water Supply Conditions

Chapter 4 – Method of Analysis

Chapter 5 – Water Supply Impact Assessment

Chapter 6 – Conclusion

2. THE CURRENT S16 PLANNING PROPOSAL

- 2.1.1. The Application Site, with an area of about 5,307 m², is broadly bounded by Carpenter Road to the north, Kai Tak Road to the west and Sa Po Road to the east. Please refer to *Figure 2.1* for the location plan.
- 2.1.2. The S16 Planning Application seeks TPB permission for (i) minor relaxation of maximum permissible DPR from 7.5 to 8.0 and (ii) minor relaxation of BHR from 120mPD to 140mPD to enhance development flexibility to meet market needs and at the same time facilitate design flexibility for adopting MiC and aboveground carpark design to the Scheme in response to the recent Government initiatives.
- 2.1.3. A comparison table for the indicative parameters based on the notional design for the Approved DSP and the current S16 proposal is provided in **Table 2-1** below.

Table 2-1 Comparison of Indicative Development Parameters of the Approved DSP and the Current S16 Proposal

Development Parameters	Approved DSP [A]	Current S16 Proposal [B]	Difference [B]-[A] (% change)
Site Area			
- Application Site Area (for PR Calculation) (m ²)	About 5,352	About 5,307 ⁽¹⁾	-45 (-0.8%)
Maximum PR ⁽³⁾			
- Total PR	9.0	9.0	No Change
- Domestic PR	7.5	8.0 ⁽²⁾	+0.5 (+6.7%)
Max GFA ⁽³⁾			
Total GFA (m ²)	About 48,168	About 47,763 ⁽¹⁾⁽²⁾	-405 (-0.8%)
Domestic GFA (m ²)	About 40,140	About 42,456 ⁽¹⁾⁽²⁾⁽³⁾	+2,316 (+5.8%)
Max. BH (mPD)	120	140	+20 (+16.7%)
GIC Facilities ⁽⁴⁾ (m²)	About 800	About 800	No Change
Sunken Plaza (m²)	About 1000	About 1000	No Change
Under Notional Design			
No. of Residential Towers	3 towers	2 towers	-1 (-33.3%)
No. of Storeys			
- Domestic	29 storeys	31 storeys	+2 (+6.9%)
- Clubhouse	1 storey	1 storey	No Change
- Podium	3 storeys	5 storeys	+2 (+66.7%)
- Basement	5 storeys	2 storeys	-3 (-60.0%)
Average Flat Size (m²)	About 42.8 ⁽⁵⁾	About 42.8	No Change ⁽⁵⁾
No. of Flats	About 938 ⁽⁵⁾⁽⁶⁾	About 992 ⁽⁶⁾	+54 (+5.8%) ⁽⁵⁾
Anticipated Population	About 2251 ⁽⁵⁾⁽⁷⁾	About 2480 ⁽⁸⁾	+229 (+10.2%) ⁽⁵⁾
Site Coverage ⁽⁹⁾	Domestic portion: Not more than 40%	Domestic portion: Not more than 40%	No change
	Non-domestic portion	Non-domestic	

Development Parameters	Approved DSP [A]	Current S16 Proposal [B]	Difference [B]-[A] (% change)
	below 15m: Not more than 100%	portion below 15m: Not more than 100%	
	Non-domestic portion above 15m: Not more than 65%	Non-domestic portion above 15m: Not more than 65%	

Remarks:

- (1) As per area zoned "R(A)" under the Approved DSP with minor adjustment of area to reflect the net site area under land grant, resulting to corresponding adjustment in GFA.
- (2) Excluding 10% of MiC floor area which could be disregarded from calculation of GFA and plot ratio as per Joint Practice Note No. 8.
- (3) The domestic and non-domestic PR/GFA are for illustrative purpose only. To allow flexibility and optimum use of development potential, development at the Application Site is subject to a maximum domestic PR and total PR. The actual domestic and non-domestic PRs and GFAs would be worked out at detailed design stage.
- (4) GIC to be exempted from GFA calculation under the Approved DSP.
- (5) For a like-to-like analysis, an average flat size of about 42.8 sq.m. under the Current S16 Planning Proposal has been applied to both the approved DSP and current S16 scenarios in the comparison table to show the net increase in the number of flats and population. For reference, the notional design for the Approved DSP for KC-015 approved by CE in C in Sep 2020 had adopted an average flat size of about 49.6 sq.m. with about 938 no. of flats and an estimated population of about 1940.
- (6) The actual no. of flats would be worked out at detailed design stage.
- (7) In lined with the notional design adopted for the Approved DSP, the estimated population is based on the average domestic household size of 2.4 persons in Lung Shing District Council Constituency Area under the Population By-census 2016.
- (8) Based on Population Census 2021, the average domestic household size in Lung Shing District Council Constituency Area is 2.5 persons.
- (9) Assumed in accordance with the First Schedule of Building (Planning) Regulation that for a Class C site with building height over 61m, the site coverage shall not exceed 40% for a domestic building or for the domestic part of a composite building, and shall not exceed 65% for a non-domestic building, or for the non-domestic part of a composite building. If the non-domestic podium does not exceed 15m in height, a site coverage of not more than 100% shall be permitted. The actual site coverage for the development at the Application Site will be determined at detailed design stage.

2.1.4. While the subject S16 Planning Application is a "non-scheme-based" submission, this WSIA is prepared based on the indicative development parameters for S16 Planning Application (i.e. Column (B)) in **Table 2-1** above and the notional design provided in **Appendix A**, for the purpose of conducting technical assessments. The tentative completion year for the Scheme will be 2030/2031.

3. EXISTING AND PLANNED WATER SUPPLY CONDITIONS

3.1. Existing Water Supply Condition

- 3.1.1. The Application Site is within the fresh water supply zone of Lok Fu Freshwater Service Reservoir (LFFWSR) and the salt water supply zone of Lok Fu Salt Water Service Reservoir (LFSWSR), located around 1 km away from the Application Site. The design storage capacity of LFFWSR and LFSWSR is 28,872 m³ and 8,597 m³ respectively.
- 3.1.2. Based on the water mains record plan provided by WSD, there is an existing DN300 fresh water distribution main running along Kai Tak Road at the west of the site and Carpenter Road at the north of the site. A DN150 fresh water distribution main branching off from the 300mm distribution main at west and northwest of the Application Site. Additionally, there is an existing DN200 and DN150 fresh water distribution main running along Sa Po Road to the south and the east of the Application Site respectively.
- 3.1.3. As for the salt water mains, there is an existing DN450 salt water distribution main running along Carpenter Road at the north of the Application Site. Additionally, there is a DN150 salt water distribution main running along Sa Po Road to the east and south of the Application Site. The existing water supply condition is shown in **Figure 3.1** and **Appendix B**.

3.2. Planned Water Supply Condition

- 3.2.1. The fresh water and flushing water lead-in are proposed at the east boundary of the Application Site, as shown in **Figure 3.1**. The proposed fresh and flushing water lead-in are branching off from the existing DN150 fresh water distribution main and DN150 salt water distribution main respectively, running along the Sa Po Road at the east of the site.

4. METHOD OF ANALYSIS

4.1. Design Guidelines

4.1.1. The following approach is adopted in carrying out this WSIA:

- a) Review interface projects which may have bearing on the development;
- b) Identify existing and planned water supply systems within the study area;
- c) Assess the existing water demand and the additional water demands for the current S16 Proposal;
- d) Propose the water supply scheme arising from the development including preparation of a hydraulic analysis;
- e) Examine the short- and long-term impacts on existing water mains and any interface projects;
- f) Recommend suitable mitigation measures and/or diversion schemes and arrangement to mitigate the permanent impacts on existing water supply system and minimize the disturbance to the normal operation of the system during construction stage.

4.1.2. The estimation of water demands for the Current S16 Proposal is primarily based on unit water demands as outlined in WSD Departmental Instruction (DI) No. 1309.

4.2. Unit Demand

4.2.1. Assumptions have been made for the unit daily demand (UDD) for each type of land use, for both freshwater and flush water. The UDD is used for estimating the total demand of the Current S16 Proposal and the required water supply capacity to support the development. The unit flow factors adopted for water demand estimation and calculation are summarized in **Table 4-1**.

Table 4-1 Unit Daily demand Adopted in Water Supply Impact Assessment

Development Type	Consumer Type	Freshwater UFF ^[1]	Flush Water UFF ^[1]
Residential	Residential R2 – All Area	0.210 m ³ /h/d	0.070 m ³ /h/d
Commercial (Assumed to be 100% restaurant for worst-case scenario)	Staff of Commercial	0.200 m ³ /h/d	0.070 m ³ /h/d
GIC Facilities	Staff of GIC facilities	0.100 m ³ /h/d	0.070 m ³ /h/d

Note:

[1] Referred to Table 1 & Table 2 of WSD DI. No. 1309

4.3. Peaking factors

4.3.1. The peaking demand factors below shall be adopted for design:

- Peak flow rate in freshwater distribution mains = 3 x mean daily demand
- Peak flow in flushing water distribution mains = 2 x mean daily demand
- Peak flow rate in freshwater trunks mains = 1.5 x mean daily demand
- Peak flow rate in flushing water trunks mains = 1.2 x mean daily demand

4.4. Fire-fighting

4.4.1. In addition to the aforementioned facilities of the Current S16 Proposal, water supply for fire-fighting service has been considered in this WSIA. The fire-fighting requirements for the Current S16 Proposal are based on the residential and industrial zone requirements outlined in WSD DI. No. 1309. The minimum freshwater supply required is 6,000 m³ per day, with a discharge pressure of 17m head. The fire hydrants should be of standard pattern with a minimum output pressure of not less than 25 psi. When multiple hydrants are operating simultaneously, the total output should be not less than 4,000 L/min and should last for 60 minutes. **Table 4-2** summarizes the fire-fighting requirements.

Table 4-2 Fire-Fighting Requirements

Requirements	Minimum Values
Minimum freshwater supply	6000 m ³ /day
Discharge pressure	17 m
Minimum output not less than 25 psi	Not less than 4,000 L/min to last for an hour

4.5. Residual heads

4.5.1. The minimum residual heads at extremity of the freshwater and flush water supply systems for the Current S16 Proposal are adopted as follow:

- Fresh Water: 30 m
- Flush Water: 15 m

4.6. Design Velocity

4.6.1. The desirable flow velocities for hydraulic checking are as follows:

Maximum velocity (under peak flow condition)

Freshwater mains:

>DN700	$\leq 3 \text{ m/s}$
DN700 – DN525	$\leq 2.5 \text{ m/s}$
DN450 – DN375	$\leq 2 \text{ m/s}$
DN300 – DN200	$\leq 1.5 \text{ m/s}$

Flush water mains:

>DN1000	$\leq 3 \text{ m/s}$
DN900 – DN800	$\leq 2.5 \text{ m/s}$
DN700 – DN300	$\leq 2 \text{ m/s}$
DN450 – DN300	$\leq 1.5 \text{ m/s}$

Minimum velocity (under peak flow condition)

Freshwater mains: $\geq 0.9 \text{ m/s}$

Flush water mains: $\geq 0.9 \text{ m/s}$

4.6.2. The pipeline shall have a minimum gradient of 1:400. Pipes shall be laid at a minimum separation of 300mm away from existing utilities and underground structures.

5. WATER SUPPLY IMPACT ASSESSMENT

5.1. Water Supply Impact under the Current S16 Proposal

- 5.1.1. With the current S16 Proposal, the estimated fresh water demand for the Application Site is approximately 577.70 m³/day. Meanwhile, the corresponding flushing water demand is approximately 194.46 m³/day.
- 5.1.2. The peaking factor adopted for the sizing of distribution main is 3 for freshwater and 2 for flushing water. According to the calculation, the required peak flow rate for the current S16 Proposal is 0.0201 m³/s for freshwater and 0.0045 m³/s for flushing water.
- 5.1.3. The detailed calculation of water demand estimation for current S16 Proposal is shown in **Table 5-1** and **Appendix C**.

Table 5-1 Water Demand of Current S16 Proposal

Water Usage	Fresh water Demand (m ³ /day)	Flushing Water Demand (m ³ /day)	Total Water Demand (m ³ /day)
Residential	520.80	173.60	694.40
Commercial + GIC facilities	56.90	20.86	77.76
Total	577.70	194.46	772.16

5.2. Assessment of the Water Supply Impact

- 5.2.1. Based on the water usage identified in the approved DSP, the estimated existing fresh water demand and flushing water demand is approximately 557.45 m³/day and 166.67 m³/day respectively. The peak flow rate for the approved DSP scheme is 0.0194 m³/s for freshwater and 0.0039 m³/s for flushing water. The detailed calculation of water demand estimation for approved DSP is shown in **Table 5-2** and **Appendix C**.

Table 5-2 Water Demand of Approved DSP

Water Usage	Fresh water Demand (m ³ /day)	Flushing Water Demand (m ³ /day)	Total Water Demand (m ³ /day)
Residential	472.75	136.08	608.83
Commercial + GIC facilities	84.70	30.59	115.29
Total	557.45	166.67	724.12

- 5.2.2. Based on the results of the calculation, the additional fresh water and flushing water demand after the current S16 Proposal is 0.25 m³/day (0.045%) and 27.79 m³/day (16.7%) respectively. The details are shown in **Table 5-3**.

Table 5-3 Comparison of Water Demand under Approved DSP and Current S16 Proposal

Water Demand	Approved DSP	Current S16 Proposal	Difference (% change)
Fresh Water Demand (m³/day)	557.45	557.70	+0.25 (+0.045%)
Flushing Water Demand (m³/day)	166.67	194.96	+27.79 (+16.7%)
Total Water Demand (m³/day)	659.61	772.16	+112.55 (+17.1%)

- 5.2.3. The design storage capacity of LFFWSR and LFSWSR are approximately 28,872 m³ and 8,597 m³ respectively. The estimated fresh water demand of the Current S16 Proposal is approximately 557.70 m³/day, which will utilize about 6.0% of the design storage capacity of LFFWSR. The estimated flushing water demand is approximately 194.96 m³/day, which will utilize about 4.5% of the design storage capacity of LFSWSR.
- 5.2.4. Besides, the estimated peak fresh water demand would be occupied approximately 75.7% of the flow capacity of the existing DN150 public fresh water distribution main. Meanwhile, the peak flushing water demand would utilize approximate 38.2% of the flow capacity of existing DN100 public salt water distribution main.
- 5.2.5. The detailed hydraulic calculation is shown in **Appendix D**.
- 5.2.6. The proposed fresh water (DN150) and flushing water (DN80) supplies for the Application Site will be connected via tee-off from the existing DN150 fresh water and DN100 salt water supply main along the Sa Po Road, with appropriate lead-in valve provided. The estimated peak fresh water and flushing water demand would utilize approximate 75.7% and 59.7% of the proposed fresh and salt water supply main respectively.

5.3. Liability

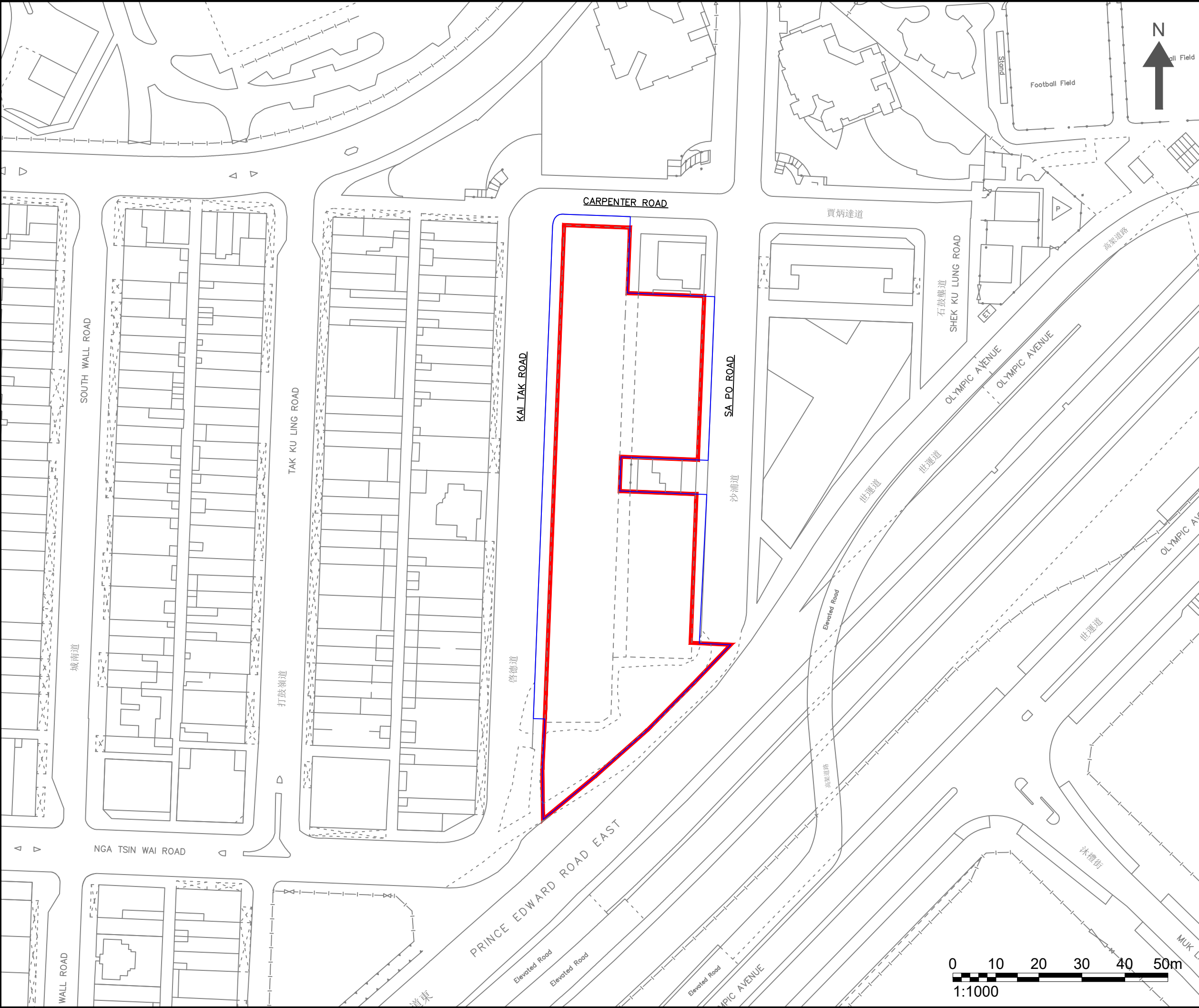
- 5.3.1. The Applicant shall be responsible for the construction works, including all internal water mains and water supply-in valves, regular inspection, and maintenance management of the water facilities strictly within the Application Site boundary.

6. CONCLUSION

- 6.1.1. The WSIA has been carried out to evaluate the potential impact on the existing water supply system, by comparing the additional water demand from the current S16 Proposal, comparing with the approved DSP. The Application Site falls within the fresh water supply zone of LFFWSR and the salt water supply zone of and LFSWSR. The Current S16 Proposal will be supplied by existing DN150 fresh water and DN100 salt water distribution mains located along Sa Po Road.
- 6.1.2. Based on the assessment, the total fresh water demand for the current S16 Proposal is estimated to be 577.70 m³/day, with corresponding peak flow rates of 0.0201 m³/s. The total flushing water demand is estimated to be 194.46 m³/day, with corresponding peak flow rates of 0.0045 m³/s.
- 6.1.3. The water demand from the Current S16 Proposal represents only a small proportion of the design storage capacities of the LFFWSR and LFSWSR, at approximately 6.0% and 4.5% respectively. In terms of distribution, the fresh water demand would utilise approximately 75.7% of the capacity of the existing DN150 fresh water mains, and approximately 59.7% of the capacity of the existing DN100 salt water mains.
- 6.1.4. Given that fresh water supply from LFFWSR and salt water supply from LFSWPS are enough to cater with the addition water demand due to Current S16 Proposal. It is concluded that no adverse impact on the local water supply network is anticipated, no mitigation measures are considered necessary.
- 6.1.5. Based on the above, it is concluded that the water supply impact arising from the Current S16 Proposal should be acceptable.

Figure 2.1

Project Site Location & Its Environs



- NOTES :
- APPLICATION SITE AREA (AREA ZONED "R(A)")
 - DSP BOUNDARY

Consultant



AEC

Allied Environmental Consultants Limited

Project No. : 2288

Drawing By : EW

Project :
SECTION 16 PLANNING APPLICATION OF
PROPOSED MINOR RELAXATION OF
DOMESTIC PLOT RATIO AND BUILDING
HEIGHT RESTRICTIONS FOR THE URA KAI
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SCHEME (KC-015)

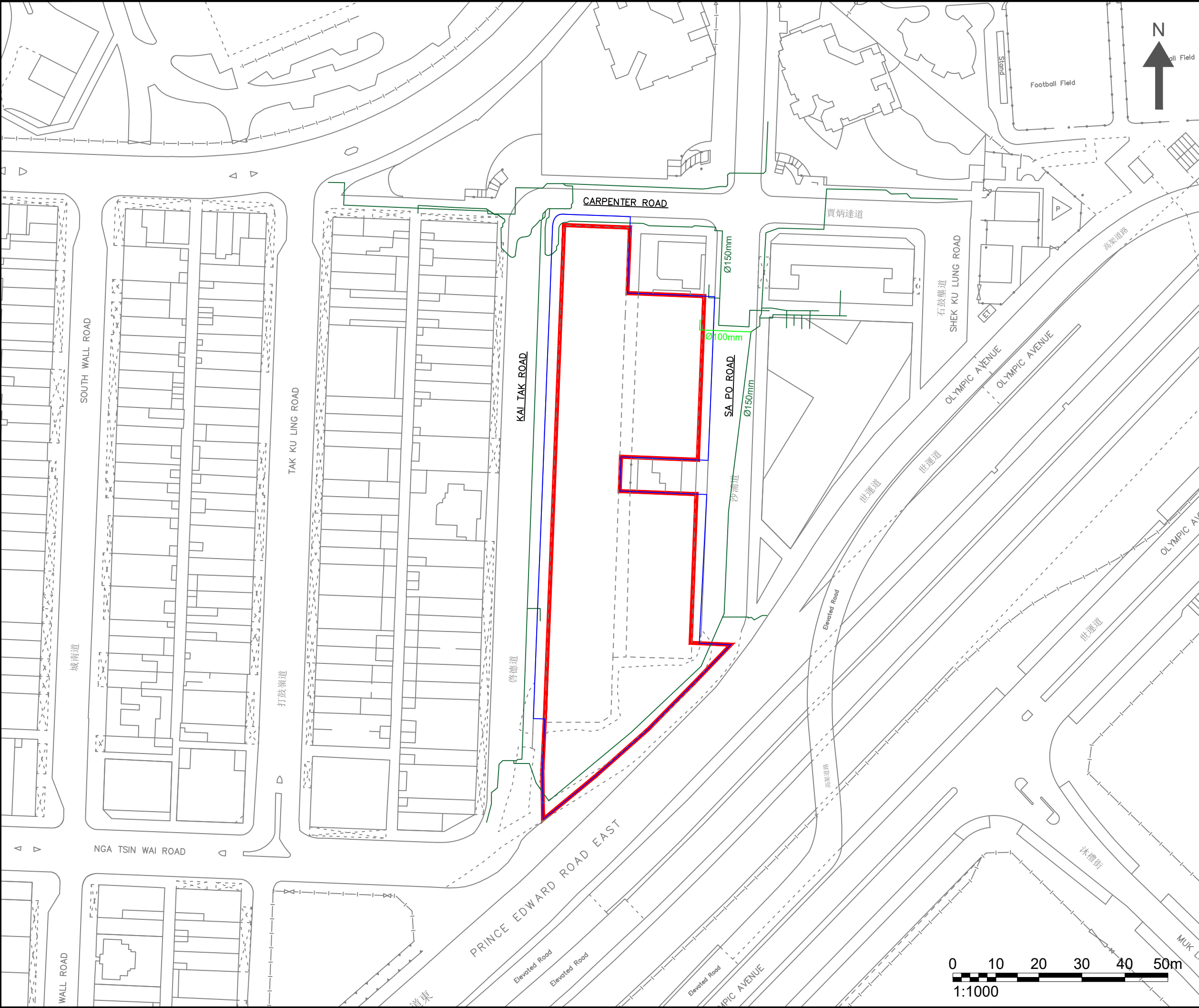
Drawing Title :
PROJECT SITE LOCATION AND ITS
ENVIRONS

Drawing No : FIGURE 2.1	Revision : 0
Scale : AS SHOWN	Date : APR 2026

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Figure 5.1

Overview of Existing & Proposed Water Supply Main



- NOTES :
- APPLICATION SITE AREA (AREA ZONED "R(A)")
 - DSP BOUNDARY
 - EXISTING FRESH WATER SUPPLY MAIN
 - PROPOSED FRESH WATER SUPPLY LEAD-IN

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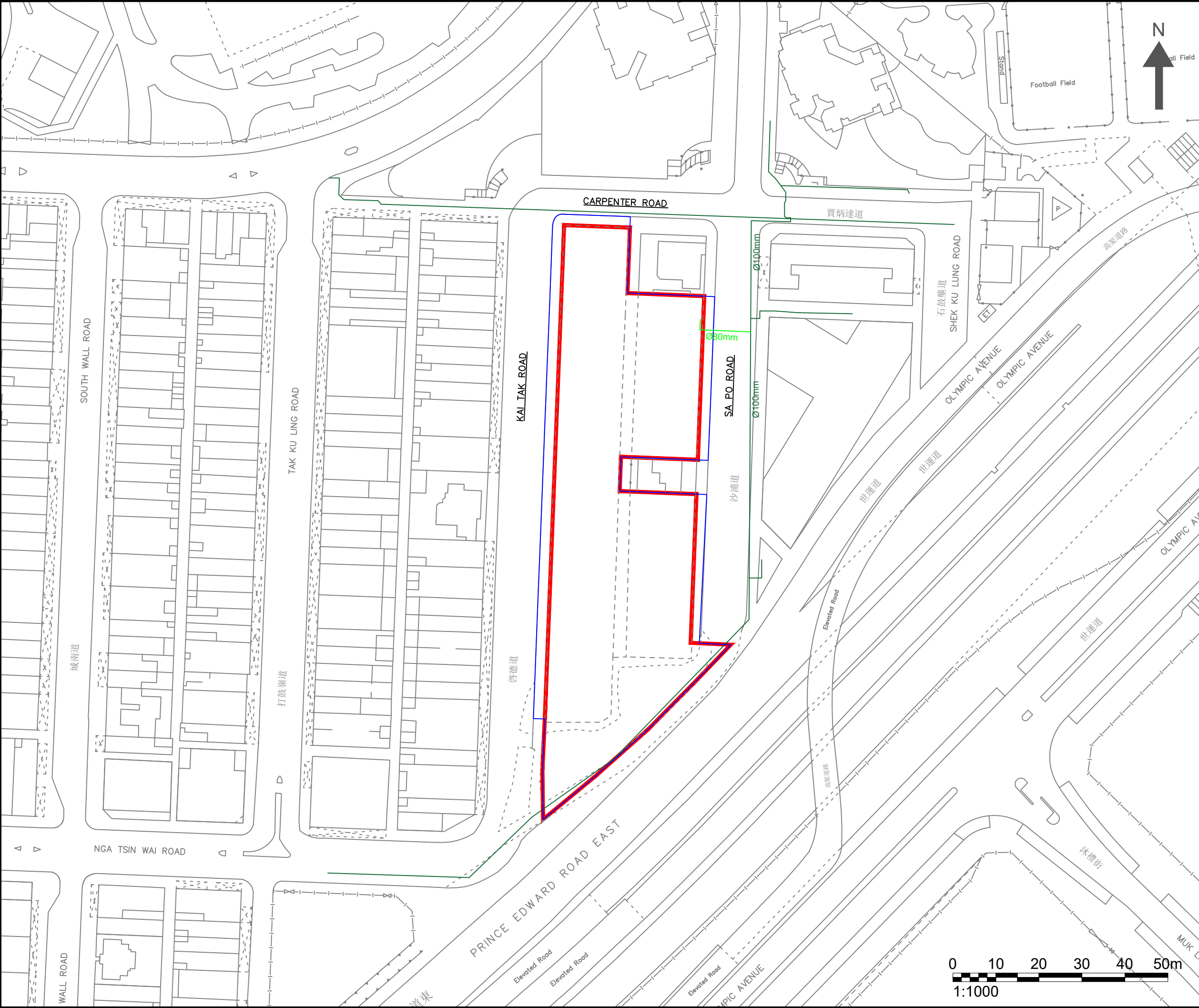
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Project : SECTION 16 PLANNING APPLICATION OF PROPOSED MINOR RELAXATION OF DOMESTIC PLOT RATIO AND BUILDING HEIGHT RESTRICTIONS FOR THE URA KAI TAK ROAD / SA PO ROAD DEVELOPMENT SCHEME (KC-015)

Drawing Title : OVERVIEW OF EXISTING AND PROPOSED WATER SUPPLY MAIN (FRESH WATER)

Drawing No : FIGURE 3.1a	Revision : 0
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- NOTES :
- APPLICATION SITE AREA (AREA ZONED "R(A)")
 - DSP BOUNDARY
 - EXISTING SALT WATER SUPPLY MAIN
 - PROPOSED SALT WATER SUPPLY LEAD-IN

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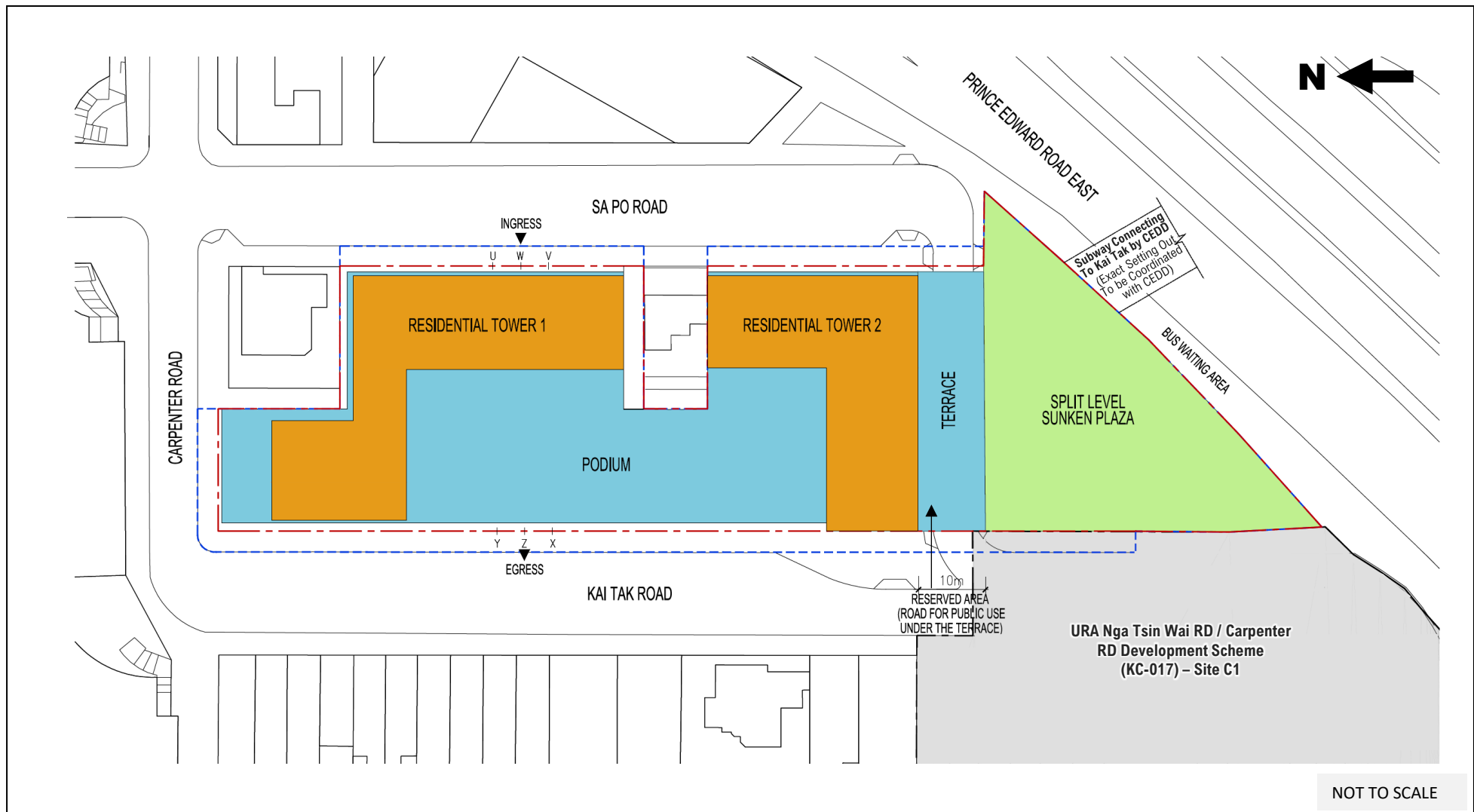
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Drawing Title : OVERVIEW OF EXISTING AND PROPOSED WATER SUPPLY MAIN (SALT WATER)	
Drawing No : FIGURE 3.1b	Revision : 0
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Appendix A

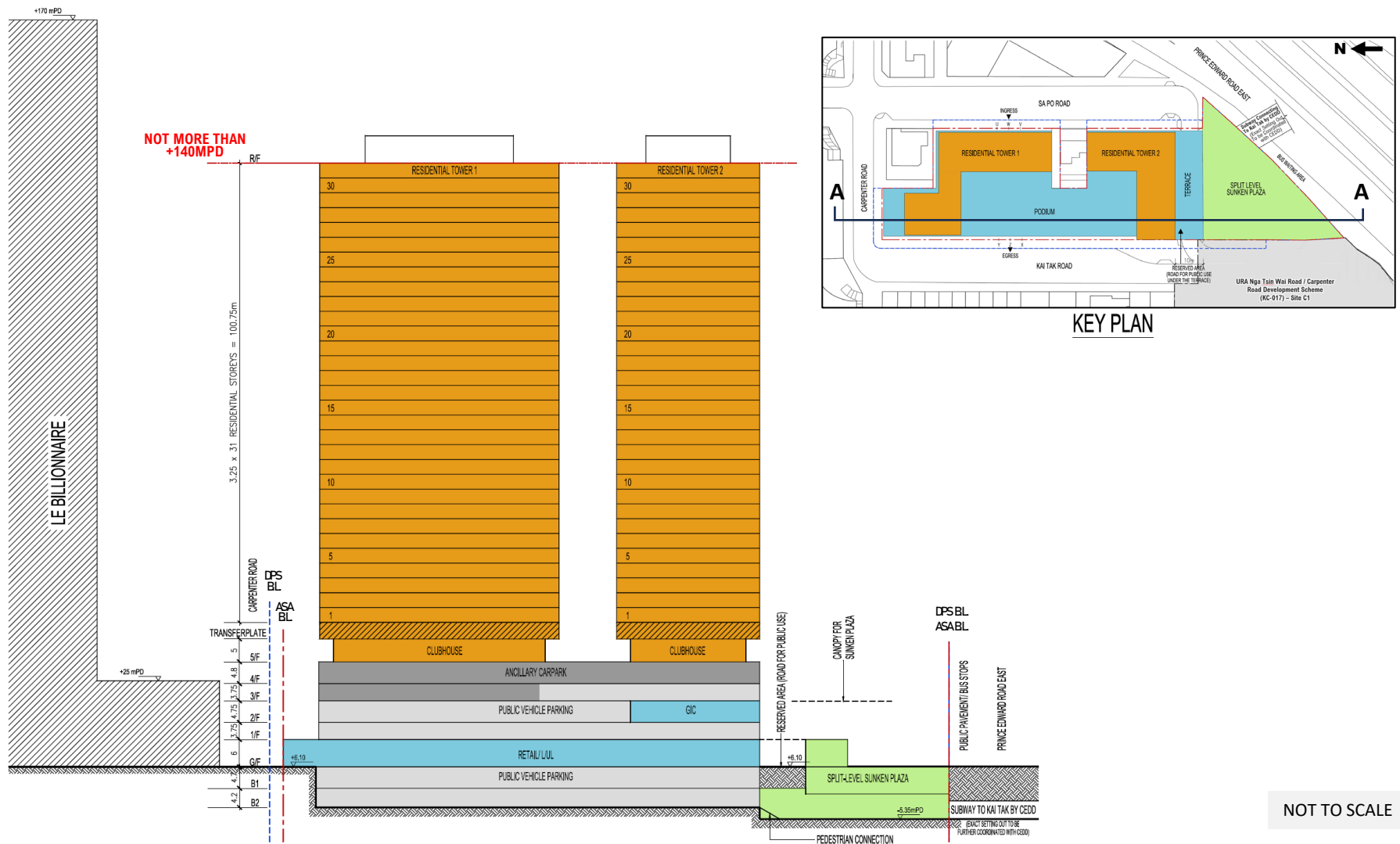
Notional Design



Remarks:
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- DSP Boundary
- Application Site Area (Area Zoned “R(A)”)

NOTIONAL BLOCK PLAN
URA KAI TAK ROAD / SA PO ROAD DEVELOPMENT SCHEME (KC-015)
VISUAL IMPACT ASSESSMENT



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- DSP Boundary
- Application Site Area (Area Zoned “R(A)”)

NOTIONAL SECTION PLAN

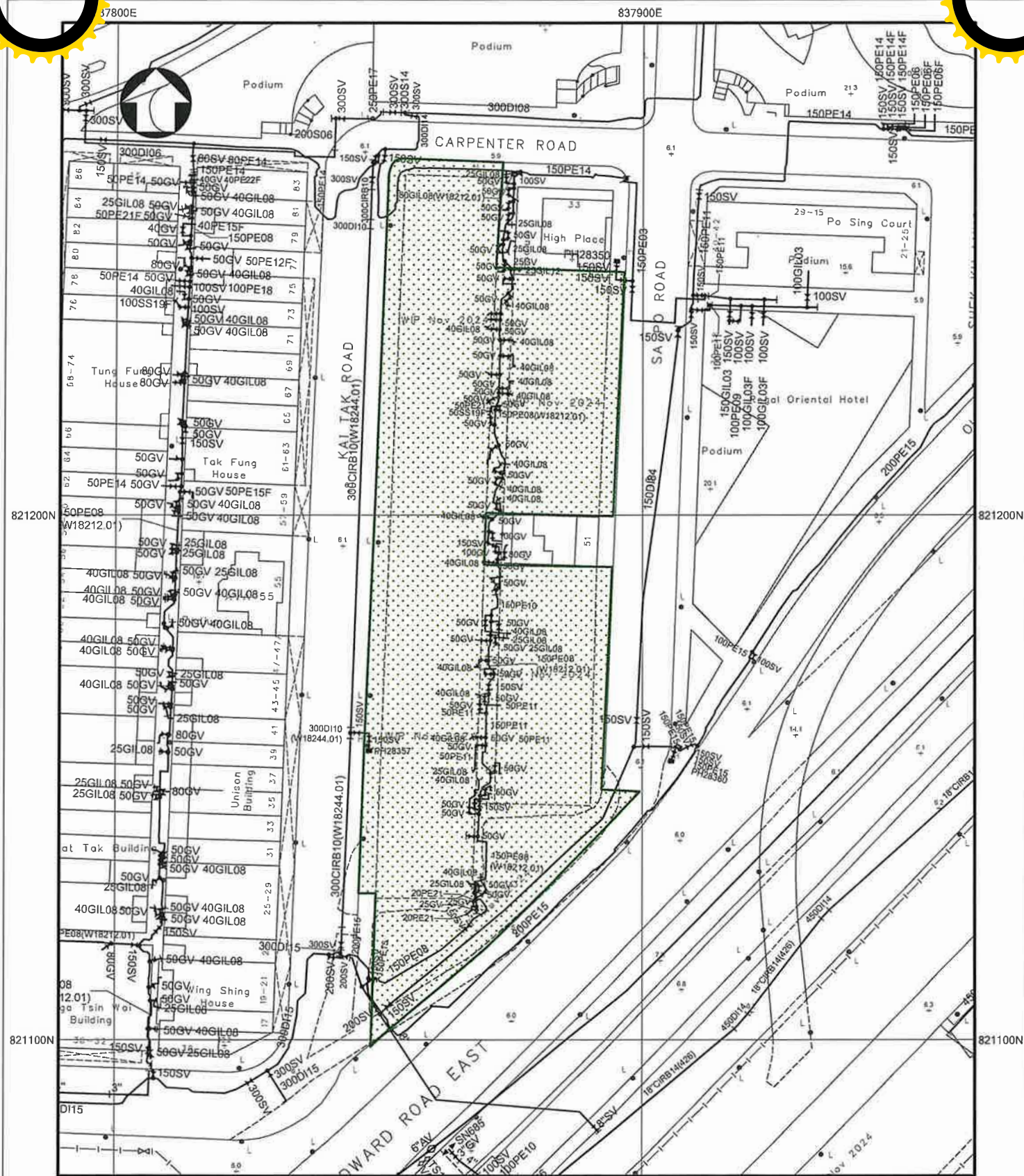
URA KAI TAK ROAD / SA PO ROAD DEVELOPMENT SCHEME (KC-015)

VISUAL IMPACT ASSESSMENT

Appendix B

Water Supply Record Plan

[illegible]



- NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
 2. ALL LEVELS ARE IN METRES ABOVE PRINCIPAL DATUM.
 3. INFORMATION ON ALIGNMENT OF MAINS IS OF INDICATIVE VALUE ONLY. WHERE POSITIONAL ACCURACY MAY BE OF IMPORTANCE, DETAILS SHOULD BE SITE CHECKED.
 4. FOR MAINS RECORDS SIGN CONVENTIONS AND DESIGNATIONS SEE SKETCH NO. 3988.
 5. NO EXISTING WSD CABLE IN THE VICINITY OF THE SITE.
 6. NO PROPOSED WSD CABLE IN THE VICINITY OF THE SITE.
 7. THE SITE IS NOT WITHIN WSD GATHERING GROUNDS.
 8. NO WSD LAND ALLOCATION / WWR WITHIN THE SITE AREA.
 9. NO WSD SLOPES ARE AFFECTED IN THE VICINITY OF THE SITE.
 10. ASBESTOS CEMENT / UNKNOWN MATERIALS MAINS WAS FOUND IN THE VICINITY OF THE SITE.
 11. FRESH / SALT WATER CATHODIC PROTECTION MAINS WAS FOUND IN THE VICINITY OF THE SITE.

SUBJECT SITE



PART COPY OF FRESH WATER MAINS RECORD PLAN(S)

W67880/11-NE-11A

FILE REF: (20) in WSD/K URA/1/66/2021 PT1

REF. CODE: 06W25M

SHEET 1 OF 1

SCALE 1:1000



水務署
Water Supplies Department

7800E

837900E



837800E

837900E

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
2. ALL LEVELS ARE IN METRES ABOVE PRINCIPAL DATUM.
3. INFORMATION ON ALIGNMENT OF MAINS IS OF INDICATIVE VALUE ONLY. WHERE POSITIONAL ACCURACY MAY BE OF IMPORTANCE, DETAILS SHOULD BE SITE CHECKED.
4. FOR MAINS RECORDS SIGN CONVENTIONS AND DESIGNATIONS SEE SKETCH NO. 3988.
5. NO EXISTING WSD CABLE IN THE VICINITY OF THE SITE.
6. NO PROPOSED WSD CABLE IN THE VICINITY OF THE SITE.
7. THE SITE IS NOT WITHIN WSD GATHERING GROUNDS.
8. NO WSD LAND ALLOCATION / WWR WITHIN THE SITE AREA.
9. NO WSD SLOPES ARE AFFECTED IN THE VICINITY OF THE SITE.
10. ASBESTOS CEMENT / UNKNOWN MATERIALS MAINS WAS FOUND IN THE VICINITY OF THE SITE.
11. FRESH / SALT WATER CATHODIC PROTECTION MAINS WAS FOUND IN THE VICINITY OF THE SITE.

SUBJECT SITE



PART COPY OF SALT WATER MAINS RECORD PLAN(S)

W67881/11-NE-11A

FILE REF: (20) in WSD/K URA/1/66/2021 PT1

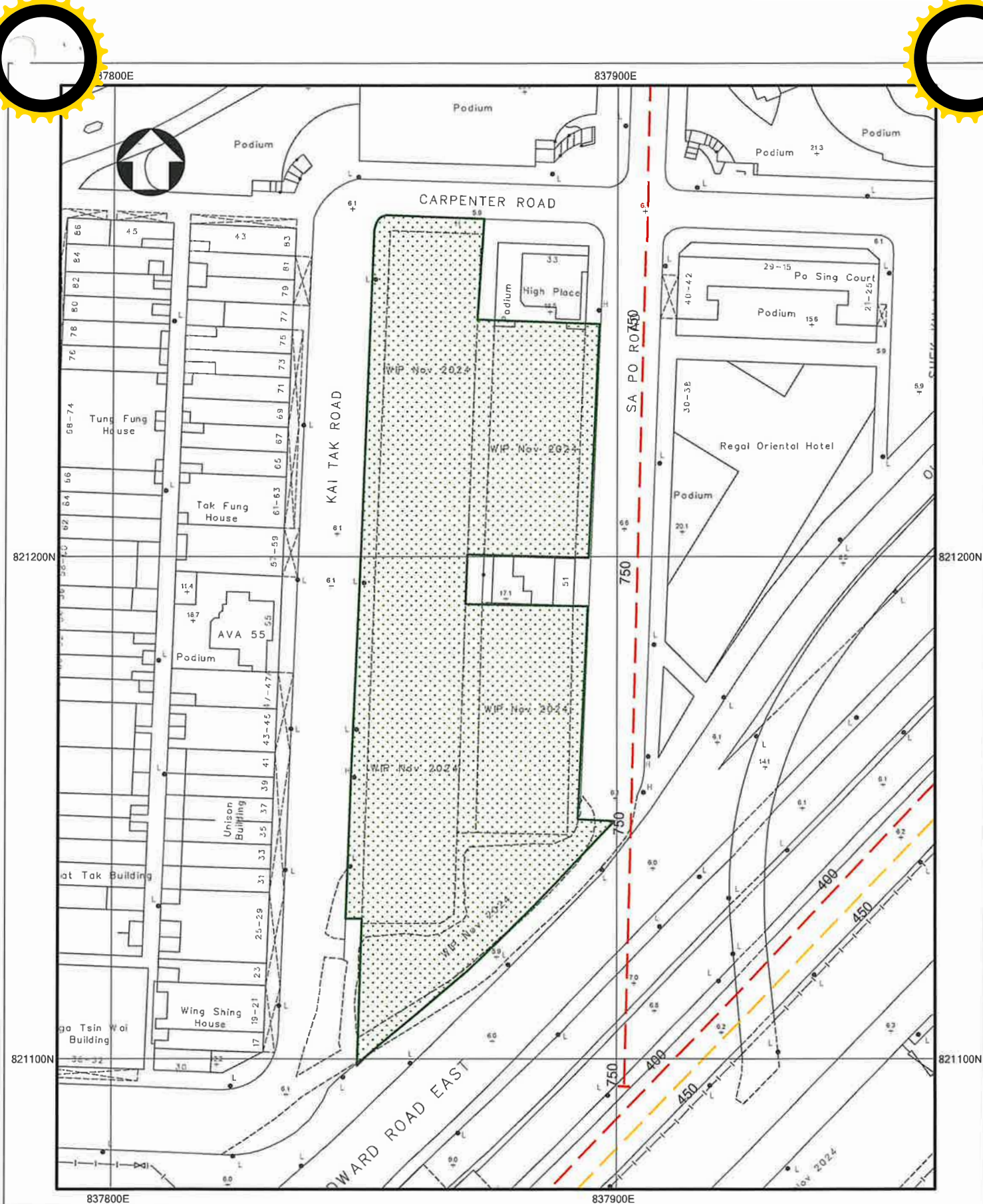
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SHEET 1 OF 1

SCALE 1:1000

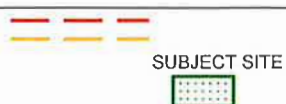


水務署
Water Supplies Department



NOTES:

1. PROPOSED FRESH WATER MAINS SHOWN THUS
2. PROPOSED SALT WATER MAINS SHOWN THUS
3. FOR PROPOSED WATER MAINS, PLEASE REFER TO PLANNING REPORT NO(S). 2/2011, 2/2013,



SUPPLEMENTARY INFORMATION OF PROPOSED WATER MAINS
PART COPY OF SURVEY SHEET NO(S).

11-NE-11A

FILE REF: (20) in WSD/K URA/1/66/2021 PT1

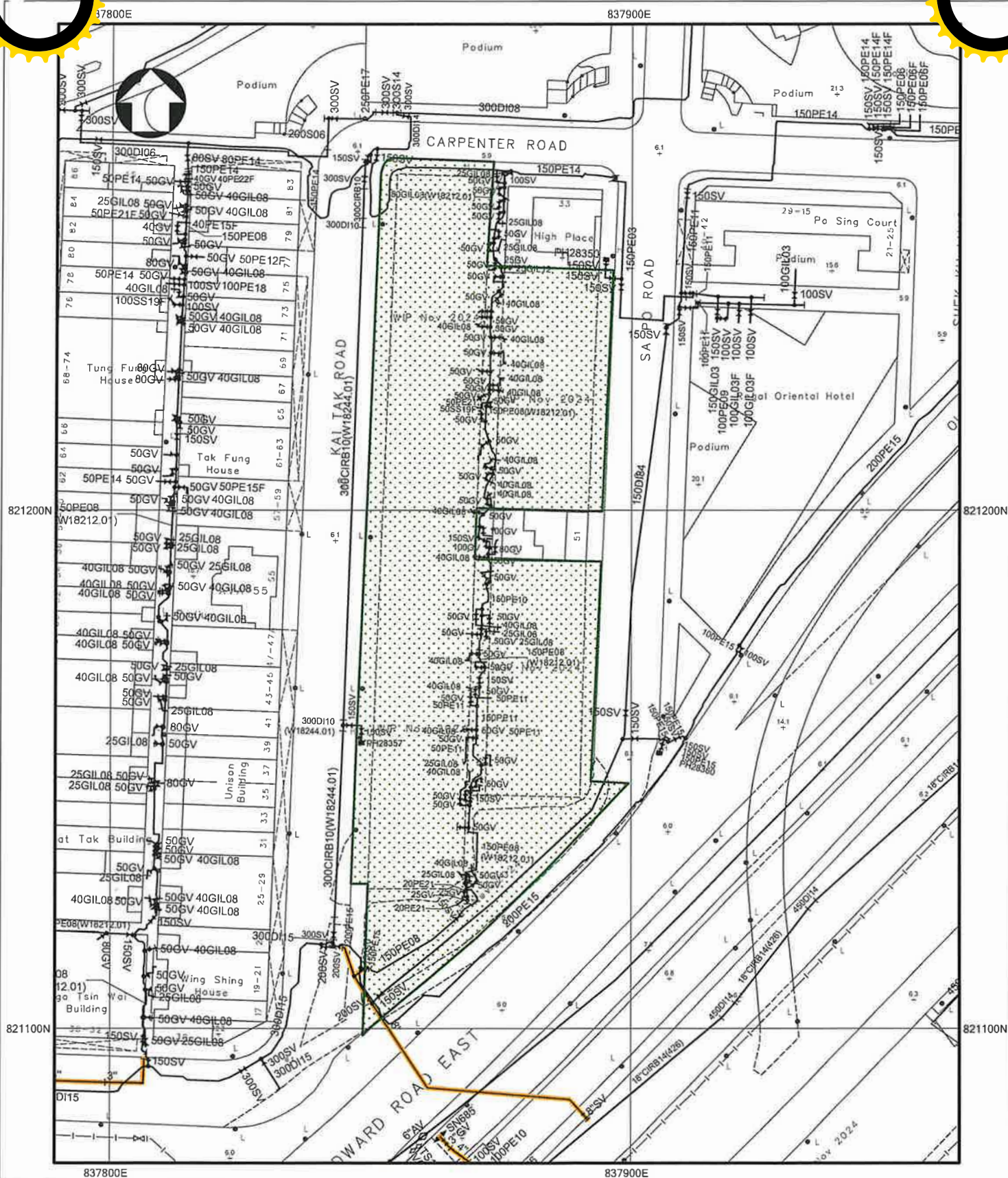
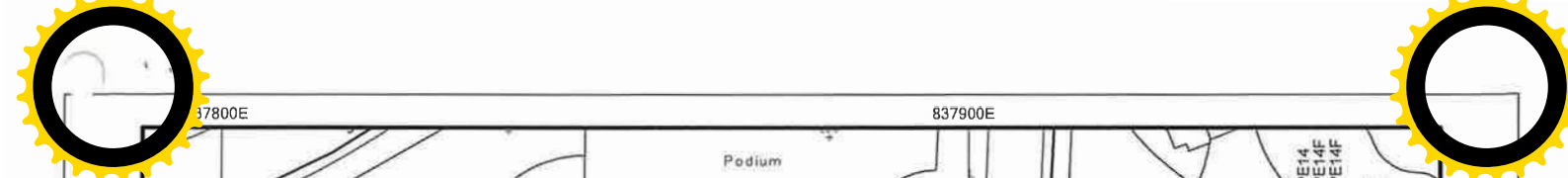
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SHEET 1 OF 1

SCALE 1:1000



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LEGEND:

- 1. FRESH WATER MAINS WITH AC MATERIAL
- 2. FRESH WATER MAINS WITH UNKNOWN MATERIAL



SUBJECT SITE



SUPPLEMENTARY INFORMATION OF
ASBESTOS CEMENT (AC) OR UNKNOWN WATER MAINS

IMPORTANT: Please note that existing asbestos cement (AC) or unknown water pipes are identified in the vicinity of your project/works area. It is very likely that the unknown water pipes are AC water pipes. You are strongly advised to make special provisions including monitoring measures as necessary to protect these water pipes that are vulnerable to damage. Should diversion/replacement of AC or unknown water pipes be found necessary to be carried out in conjunction with your proposed works after detailed investigations or studies, you should instruct your consultants and/or contractors (as the case may be) to take all necessary measures during design and/or construction stages (as the case may be) to comply with all prevailing statutory requirements for the safe handling, removal, transportation and disposal of AC pipes.

PART COPY OF FRESH WATER MAINS RECORD PLAN(S)

W67880/11-NE-11A

FILE REF: (20) in WSD/K URA/1/66/2021 PT1

SHEET 1 OF 1

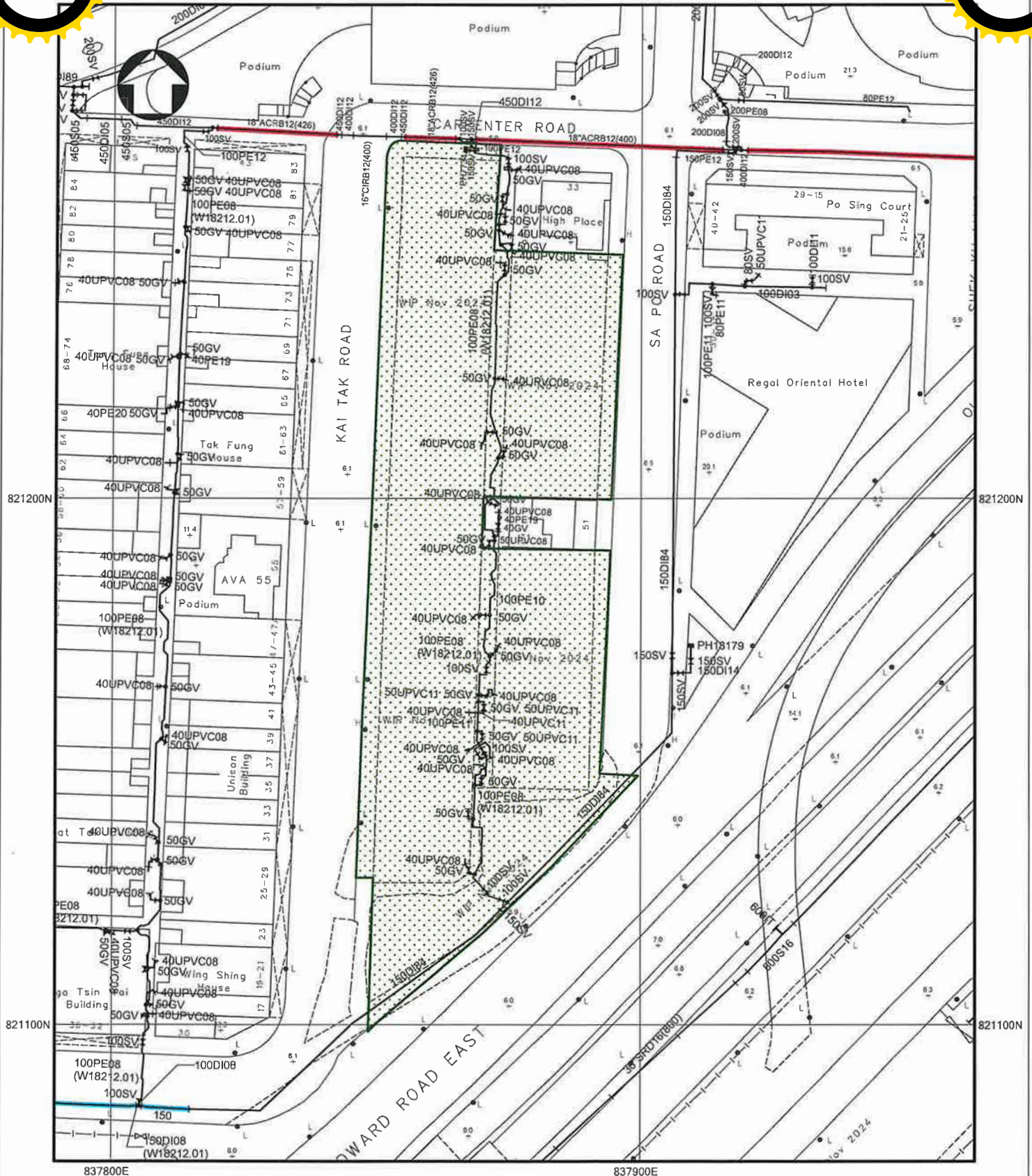
SCALE 1:1000



水務署
Water Supplies Department

87800E

837900E



837800E

837900E

LEGEND:

1. SALT WATER MAINS WITH AC MATERIAL
2. SALT WATER MAINS WITH UNKNOWN MATERIAL

**SUBJECT SITE**

**SUPPLEMENTARY INFORMATION OF
ASBESTOS CEMENT (AC) OR UNKNOWN WATER MAINS**

IMPORTANT: Please note that existing asbestos cement (AC) or unknown water pipes are identified in the vicinity of your project/works area. It is very likely that the unknown water pipes are AC water pipes. You are strongly advised to make special provisions including monitoring measures as necessary to protect these water pipes that are vulnerable to damage. Should diversion/replacement of AC or unknown water pipes be found necessary to be carried out in conjunction with your proposed works after detailed investigations or studies, you should instruct your consultants and/or contractors (as the case may be) to take all necessary measures during design and/or construction stages (as the case may be) to comply with all prevailing statutory requirements for the safe handling, removal, transportation and disposal of AC pipes.

PART COPY OF SALT WATER MAINS RECORD PLAN(S)

W67881/11-NE-11A

FILE REF: (20) in WSD/K URA/1/66/2021 PT1

SHEET 1 OF 1

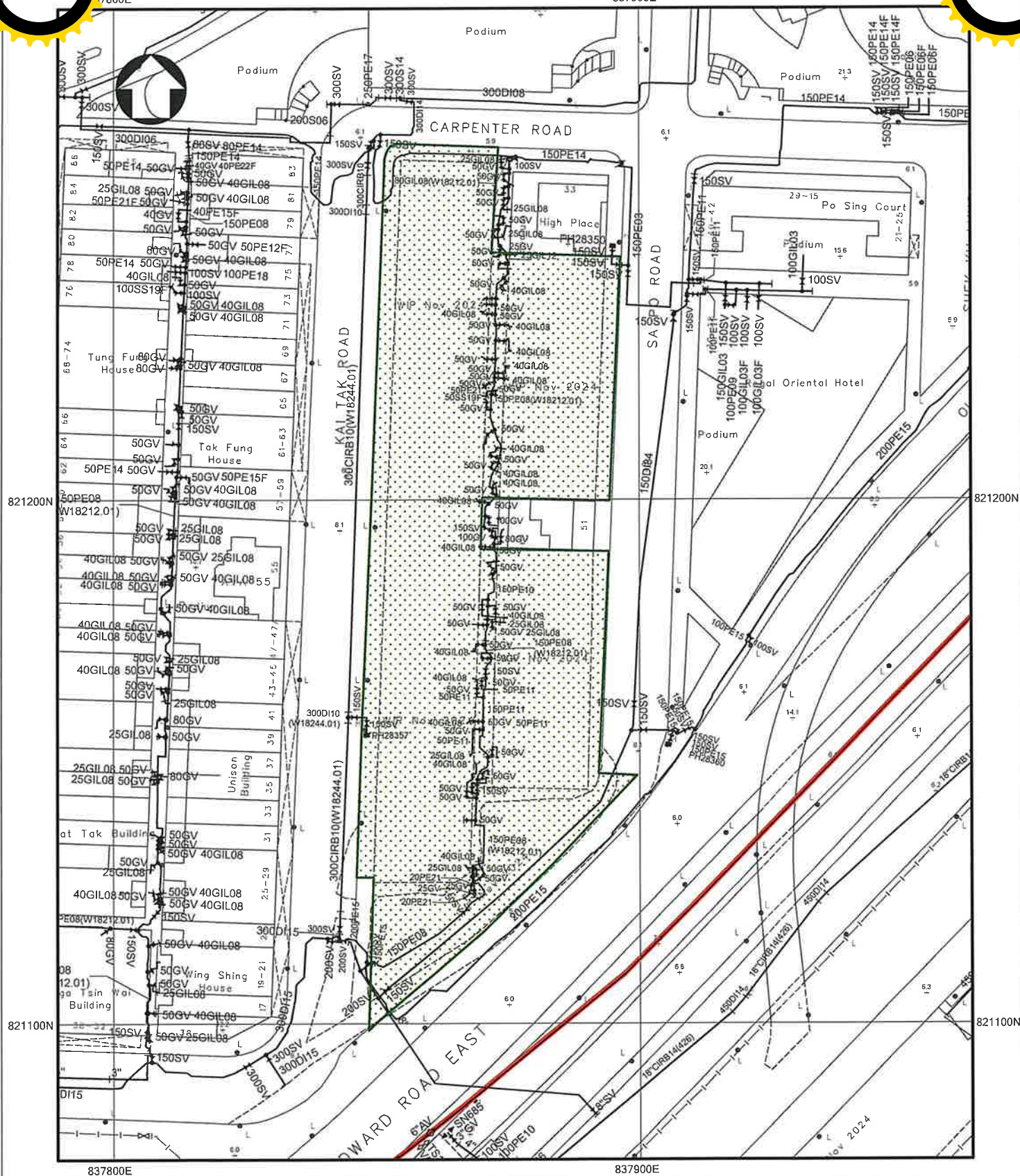
SCALE 1:1000



水務署
Water Supplies Department

7800E

837900E



837800E

837900E

LEGEND:

FRESH WATER MAINS UNDER CATHODIC PROTECTION SYSTEM

SUBJECT SITE

**SUPPLEMENTARY INFORMATION OF WATER MAINS
UNDER CATHODIC PROTECTION SYSTEM**

IMPORTANT: Please note that existing water mains under Cathodic Protection System (CPS) are identified in the vicinity of your project/works area. You are strongly advised to make special provisions including monitoring measures as necessary to protect these water pipes and the nearby CPS including Test Stations, Vertical Anodes and Horizontal Anodes.

PART COPY OF FRESH WATER MAINS RECORD PLAN(S)

W67880/11-NE-11A

FILE REF: (20) in WSD/K URA/1/66/2021 PT1

SHEET 1 OF 1

SCALE 1:1000



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Water Supplies Department

Appendix C

Water Demand Estimation

Water Demand Estimation of Proposed Development**Current S16 Proposal****Fresh Water**

Residential			
Total Unit No.	992	unit	Referred to current S16 scheme
Average Household	2.5		Refer to Average Domestic Household Size in Lung Shing District Council Constituency Area in 2021 Population Census
Total Number of Residents	2480	persons	
Fresh Water Unit Daily Demand	0.210	m ³ /person/day	Referred to WSD DI No.1309 Table 1 - Fresh Water for Residential R2 All Area
Average Fresh Water Demand	520.80	m³/day	

Commercial (Assumed 100% restaurant for worse-case)

Floor Area	5307.0	m ²	Referred to current S16 scheme
Worker Density	5.1	person/100m ²	Referred to the worker density of Restaurants (All Types) in Table 8 of CIFSUS
Total number of person	271	persons	
Fresh Water Unit Daily Demand	0.200	m ³ /person/day	Based on daily operation activities of restaurant (such as food preparing, dish washing, cooking, cleaning etc.) Assumed to be slightly less than residential.
Average Fresh Water Demand	54.20	m³/day	

GIC Facilities

Floor Area	800.0	m ²	Referred to current S16 scheme
Worker Density	3.3	person/100m ²	Referred to the worker density of Community, Social & Personal Services (All Types) in Table 8 of CIFSUS
Total number of person	27	persons	
Fresh Water Unit Daily Demand	0.100	m ³ /person/day	Assumed based on activities that consumed water (such as personal hygiene, facilities maintenance, cleaning etc.) The water demand is expected to be less than residential.
Average Fresh Water Demand	2.70	m³/day	

Total Fresh Water Demand	577.70	m³/day	
Peaking Factor	3.00		
Peak Flow Rate	0.0201	m³/s	

Flushing Water

Residential			
Total Unit No.	992	unit	Referred to current S16 scheme
Average Household	2.5		Refer to Average Domestic Household Size in Lung Shing District Council Constituency Area in 2021 Population Census
Total Number of Residents	2480	persons	
Flushing Water Unit Daily Demand	0.070	m ³ /person/day	Referred to WSD DI No.1309 Table 1 - Flushing Water for Residential R2 All Area
Average Flushing Water Demand	173.60	m³/day	

Commercial (Assumed 100% restaurant for worse-case)

Floor Area	5307.0	m ²	Referred to current S16 scheme
Worker Density	5.1	person/100m ²	Referred to the worker density of Restaurants (All Types) in Table 8 of CIFSUS
Total number of person	271	persons	
Flushing Water Unit Daily Demand	0.070	m ³ /person/day	Assumed to be same as residential
Average Flushing Water Demand	18.97	m³/day	

GIC Facilities

Floor Area	800.0	m ²	Referred to current S16 scheme
Worker Density	3.3	person/100m ²	Referred to the worker density of Community, Social & Personal Services (All Types) in Table 8 of CIFSUS
Total number of person	27	persons	
Flushing Water Unit Daily Demand	0.070	m ³ /person/day	Assumed to be same as residential
Average Flushing Water Demand	1.89	m³/day	

Total Flushing Water Demand	194.46	m³/day	
Peaking Factor	2.00		
Peak Flow Rate	0.0045	m³/s	

Water Demand Estimation of Proposed Development**Approved DSP****Fresh Water**

Residential			
Total Unit No.	938	unit	Referred to approved DSP
Average Household	2.4		Refer to Population By-census 2016, Average Domestic Household Size in Lung Shing District Council Constituency Area
Total Number of Residents	2251	persons	
Fresh Water Unit Daily Demand	0.210	m ³ /person/day	Referred to WSD DI No.1309 Table 1 - Fresh Water for Residential R2 All Area
Average Fresh Water Demand	472.75	m³/day	

Commercial (Assumed 100% restaurant for worse-case)

Floor Area	8028.0	m2	Referred to approved DSP
Worker Density	5.1	person/100m2	Referred to the worker density of Restaurants (All Types) in Table 8 of CIFSUS
Total number of person	410	persons	
Fresh Water Unit Daily Demand	0.200	m ³ /person/day	Based on daily operation activities of restaurant (such as food preparing, dish washing, cooking, cleaning etc.) Assumed to be slightly less than residential.
Average Fresh Water Demand	82.00	m³/day	

GIC Facilities

Floor Area	800.0	m2	Referred to approved DSP
Worker Density	3.3	person/100m2	Referred to the worker density of Community, Social & Personal Services (All Types) in Table 8 of CIFSUS
Total number of person	27	persons	
Fresh Water Unit Daily Demand	0.100	m ³ /person/day	Assumed based on activities that consumed water (such as personal hygiene, facilities maintenance, cleaning etc.) The water demand is expected to be less than residential.
Average Fresh Water Demand	2.70	m³/day	

Total Fresh Water Demand	557.45	m³/day
Peaking Factor	3.00	
Peak Flow Rate	0.0194	m³/s

Flushing Water

Residential			
Total Unit No.	810	unit	Referred to approved DSP
Average Household	2.4		Refer to Population By-census 2016, Average Domestic Household Size in Lung Shing District Council Constituency Area
Total Number of Residents	1944	persons	
Flushing Water Unit Daily Demand	0.070	m ³ /person/day	Referred to WSD DI No.1309 Table 1 - Flushing Water for Residential R2 All Area
Average Flushing Water Demand	136.08	m³/day	

Commercial (Assumed 100% restaurant for worse-case)

Floor Area	8028.0	m2	Referred to approved DSP
Worker Density	5.1	person/100m2	Referred to the worker density of Restaurants (All Types) in Table 8 of CIFSUS
Total number of person	410	persons	
Flushing Water Unit Daily Demand	0.070	m ³ /person/day	Assumed to be same as residential
Average Flushing Water Demand	28.70	m³/day	

GIC Facilities

Floor Area	800.0	m2	Referred to approved DSP
Worker Density	3.3	person/100m2	Referred to the worker density of Community, Social & Personal Services (All Types) in Table 8 of CIFSUS
Total number of person	27	persons	
Flushing Water Unit Daily Demand	0.070	m ³ /person/day	Assumed to be same as residential
Average Flushing Water Demand	1.89	m³/day	

Total Flushing Water Demand	166.67	m³/day
Peaking Factor	2.00	
Peak Flow Rate	0.0039	m³/s

Appendix D

Hydraulic Review of Water Main

Calculation of Flow Capacity of Proposed Development (Fresh Water)

Water Main	Internal Diameter (m) [a]	Cross-section Area (m ²)	Mean Velocity (m/s) [c]	Peak Flow rate of existing pipe (m ³ /s)	Total Fresh Water Demand m ³ /day	Peaking Factor	Total Water Demand	Peak Flow Rate	Percentage of Contribution by Development	Remark
	D	A	V				m ³ /day	m ³ /s		
Existing DN150 Fresh Water Main	0.150	0.018	1.50	0.027	577.7	3.0	1733.1	0.020	75.7%	Fresh Water Demand from Proposed Site
Proposed DN150 Fresh Water Main	0.150	0.018	1.50	0.027	577.7	3.0	1733.1	0.020	75.7%	Fresh Water Demand from Proposed Site

Calculation of Flow Capacity of Proposed Development (Flush Water)

Water Main	Internal Diameter (m) [a]	Cross-section Area (m ²)	Mean Velocity (m/s) [c]	Peak Flow rate of existing pipe (m ³ /s)	Total Flush Water Demand	Peaking Factor	Maximum Water Demand	Peak Flow Rate	Percentage of Contribution by Proposed Development	Remark
	D	A	V		m ³ /day		m ³ /day	m ³ /s		
Existing DN100 Salt Water Main	0.100	0.008	1.50	0.012	194.5	2.0	388.9	0.0045	38.2%	Flush Water Demand from Proposed Site
Proposed DN80 Salt Water Main	0.080	0.005	1.50	0.008	194.5	2.0	388.9	0.0045	59.7%	Flush Water Demand from Proposed Site

Calculation of Water Supply Capacity of Proposed Development

Reservoir / Pumping Station	Type	Water Demand	Peaking Factor	Maximum water Demand	Peak Flow Rate	Capacity	Percentage of Contribution by Development	Remark
		m ³ /day		m ³ /day	m ³ /s	m ³ /day		
Lok Fu Freshwater Service Reservoir	Fresh water	577.7	3.0	1733.1	0.0201	28872.0	6.0%	Fresh Water Demand from S16 Scheme
Lok Fu Salt Water Service Reservoir	Flushing water	194.5	2.0	388.9	0.0045	8597.0	4.5%	Flushing Water Demand from S16 Scheme