Appendix 9

WATER SUPPLY IMPACT ASSSESSMENT

URBAN GREEN

Proposed Amendment to the Approved Sha Tin Outline Zoning Plan No. S/ST/40 from “Industrial (1)” zone to “Residential (Group A)10” zone at Nos.8-14 Siu Lek Yuen Road, Sha Tin, New Territories (STTL Nos.196 and 276)

Water Supply Impact Assessment Report

Reference: P161-WSIA-I1
Date: August 2026
Confidential

URBAN GREEN

Proposed Amendment to the Approved Sha Tin Outline Zoning Plan No. S/ST/40 from "Industrial (1)" zone to "Residential (Group A)10" zone at Nos.8-14 Siu Lek Yuen Road, Sha Tin, New Territories (STTL Nos.196 and 276)

Water Supply Impact Assessment Report

Checked and Approved by:

Joan Choi
Director

Reference: P161-WSIA-I1

Date: 25 August 2026

Issue	Status	Prepared By	Date	Checked by	Date	Approved By	Date
1	-	Elvis Liu	25-Aug-26	Emily Tang	25-Aug-26	Joan Choi	25-Aug-26

[redacted]

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1 Introduction

1.1 Background

Urban Green Consultants Limited (UGC) has been appointed to prepare a Water Supply Impact Assessment (WSIA) to support the Section 12A ("S12A") Planning Application / Rezoning Request ("RR") to amend the Approved Sha Tin Outline Zoning Plan No. S/ST/40 (the Approved OZP) gazetted on 17 July 2026 at Nos.8-14 Siu Lek Yuen Road, Sha Tin, New Territories (the "Site"/ "Rezoning Site") (Sha Tin Town Lot ("STTL") Nos.196 and 276).

The Rezoning Site has an area of approx. 7,668m^2 and is currently zoned Industrial (1)" ("I(1)") on the Approved OZP. There are no development restrictions on plot ratio ("PR"), building height ("BH"), gross floor area ("GFA") or site coverage ("SC") stipulated on "I(I)" zone. 'Flat' is neither a Column 1 nor Column 2 use under the "I(1)" zone. This RR seeks to rezone the Site from "I(1)" zone to "Residential (Group A)10" ("R(A)10") zone subject to a PR restriction of 6 and BH restriction of 127mPD, as stipulated on the Plan, to facilitate the comprehensive redevelopment of two(2) existing Industrial Buildings ("IBs") into a private residential development with commercial uses ("Proposed Redevelopment"). An Indicative Development Scheme (Appendix 1 of the Planning Statement refers) is prepared to demonstrate the feasibility of the proposed zoning and to illustrate the proposed zoning parameters.

1.2 Objective of the WSIA

The objective of this WSIA is to assess the potential impacts on water supply system caused by the Proposed Redevelopment.

1.3 Report Structure

The remaining chapters of this report are shown below:

Chapter 2 – Site Context

Chapter 3 – Waterworks Impact Assessment

Chapter 4 – Conclusion

2 Site Context

2.1 Site Location and Its Environs

The Rezoning Site is located on Siu Lek Yuen Road within Sha Tin District, to the southeast of Shing Mun River. In the immediate surroundings are Sha Tin Industrial Centre Block A and B to the west, Siu Lek Yuen Road Playground to the north, the PCCW Yuen Chau Kok Telephone Exchange and Planned Student Hostel to the east, and the KMB Sha Tin Depot to the south. Figure 2.1 shows the Site location and its environs.

2.2 Proposed Redevelopment Scheme

The Proposed Redevelopment comprises of two 32-storey residential towers above a 2-storey Podium (including carpark, retail shops and an eating place), and a 1-storey clubhouse and podium garden, at a proposed BH of 127mPD and with a PR of 6. The Proposed Redevelopment will provide a total of 928 residential flats, with a total gross floor area of 46,008 m^2.

The year of occupancy of the Proposed Redevelopment is expected to be Year 2033.

2.3 Existing Water Mains

As advised by Water Supplies Department (WSD), the area of the Proposed Redevelopment will be served by To Shek Fresh Water Service Reservoir (To Shek F.W. S/R) and Sha Tin Salt Water Booster Pumping Station (Sha Tin S.W. Booster P/S). The capacity of To Shek F.W. S/R and Sha Tin S.W. Booster P/S are 38,830 m^3 and 37.78 MLD respectively.

Based on the main records provided by WSD, there is a fresh water main and a salt water main, with 300mm and 150mm diameter respectively, at the north of the Rezoning Site along Siu Lek Yuen Road. The locations of the existing fresh water mains and salt water mains are shown in Figure 2.2 and Figure 2.3.

3 Waterworks Impact Assessment

3.1 Assumptions and Methodology

The fresh and flushing water demands of the Proposed Redevelopment can be calculated based on relevant design parameters as well as the unit demand assumed in accordance with WSD's *Departmental Instruction* (DI) *1309*, *Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning* (GESF), and relevant reference reports. By comparing the estimated water demand with the capacity of To Shek F.W. S/R and Sha Tin S.W. Booster P/S, the impact of water supply due to the Proposed Redevelopment can be assessed.

3.2 Population

The Proposed Redevelopment includes residential flats, an eating place, retail shops and clubhouse. The estimated population of the Proposed Redevelopment is summarised in Table 3.1 below:

Table 3.1 Estimated Population of the Proposed Redevelopment

Type of Population	Number of Persons	Remark
Residents	2,506	Refer to Table 130-06806: Average household size and median monthly household income of households in Shatin district by District Council district.
Employees	7	Commercial Employees + J10 Restaurants & Hotels in Table T-2 of GESF
Employees	113	Commercial Employee + J11 - Community, Social & Personal Services in Table T-2 of GESF

3.3 Water Supply Unit Demand

The unit demands of fresh water and flushing water for the Proposed Redevelopment with reference to DI 1309 and GESF are extracted and summarized in Table 3.2.

Table 3.2 Fresh and Flushing Water Unit Demand

Development Use	Category	Unit Demand	
		Fresh Water	Flushing Water
	Domestic		
Residential - Private	Residential R2 - All areas	300 litres/head/day	110 litres/head/day
	Service Trades New Towns - Sha Tin	45 litres/head/day	
	Non-domestic		
Clubhouse	Community, Social & Personal Services	280 litres/head/day	110 litres/head/day
Eating Place	Restaurants & Hotels	1,580 litres/head/day	110 litres/head/day
Retail Shops	Community, Social & Personal Services	280 litres/head/day	110 litres/head/day

3.4 Results and Discussion

The total estimated daily fresh water and salt water demand of the Proposed Redevelopment is 907 m^3/day and 289 m^3/day respectively. Appendix B shows the detailed calculation. Estimation of the water demand is shown in Table 3.3.

Table 3.3 Fresh Water and Flush Water Demand for the Proposed Redevelopment

Type of Population	Number of Persons	Unit Demand (m^3/person/day)			Fresh Water Demand (m^3/day)	Flush Water Demand (m^3/day)
		Fresh Water	Flush Water	Service Trade		
Residents	2,506	0.300	0.110	0.045	864.4	275.6
Eating Place	7	1.580	0.110	-	10.5	0.7
Clubhouse and Retail Shops	113	0.280	0.110	-	31.8	12.5
Total					**907**	**289**

As shown in Table 3.4, the total fresh water demand from the Proposed Redevelopment will take up 2.5% of the capacity of To Shek F.W. S/R. While Table 3.5 shows that the total flush water demand from the Proposed Redevelopment will only take up 0.8% of the capacity of Sha Tin S.W. Booster P/S.

Table 3.4 Estimation of Fresh Water Demand

Total Fresh Water Demand from the Rezoning Site (m^3/day)	907
Capacity of To Shek F.W. S/R (m^3)	36,380
Total Fresh Water Demand / Total Capacity of To Shek F.W. S/R	**2.5%**

Table 3.5 Estimation of Salt Water Demand

Total Salt Water Demand from the Rezoning Site (m^3/day)	289
Capacity of Sha Tin S.W. Booster P/S (m^3)	37,780
Total Salt Water Demand / Total Capacity of Sha Tin S.W. Booster P/S	**0.8%**

As advised by WSD, the current Sha Tin Salt Water Booster Pumping Station for providing salt water supply to the development would have no spare capacity. Monitoring of the water demand in the supply zone would continue and possible improvement works would be explored as and when necessary. If necessary, an additional pumping system will be installed at Sha Tin S.W. Booster P/S with capacity of at least 578 m^3/day. The calculations are detailed in Appendix E. There will be a need to liaise with WSD to check whether additional pumping system serving the required capacity can be installed at the existing Sha Tin S.W Booster P/S. These measures will need to be constructed and in operation in prior to date of population intake at the Proposed Redevelopment.

According to the record plans provided by WSD, an existing fresh water main of 300mm diameter along Siu Lek Yuen Road has been found linked with the Rezoning Site by five fresh water mains, with three fresh water mains of 80mm diameter, one fresh water main of 100mm diameter and one fresh water main of 150mm diameter.

The peak demand for fresh water of the Proposed Redevelopment has exceeded the 150mm fresh water main capacity, while it only uses around 34% of the 300mm fresh water main capacity along Siu Lek Yuen Road. Therefore, a 200mm fresh water main is proposed to connect the Rezoning Site with the 300mm fresh water main along Siu Lek Yuen Road. The proposed connection to the existing fresh water main is shown in Figure 3.1.

Referring to the record plans given by WSD, the existing salt water main also locates along Siu Lek Yuen Road, with a diameter of 150mm. It was linked with the Rezoning Site by one existing salt water main of 100mm diameter.

The existing 100mm salt water main is unable to cater with the peak demand for flush water of the Proposed Redevelopment. But as it flows out to the 150mm diameter salt water main along Siu Lek Yuen Road, it would only use approximately 45% of its capacity. Therefore, a 150mm salt water main is proposed to connect the Rezoning Site with the 150mm salt water main along Siu Lek Yuen Road. The proposed connection to the existing salt water main is presented in Figure 3.2.

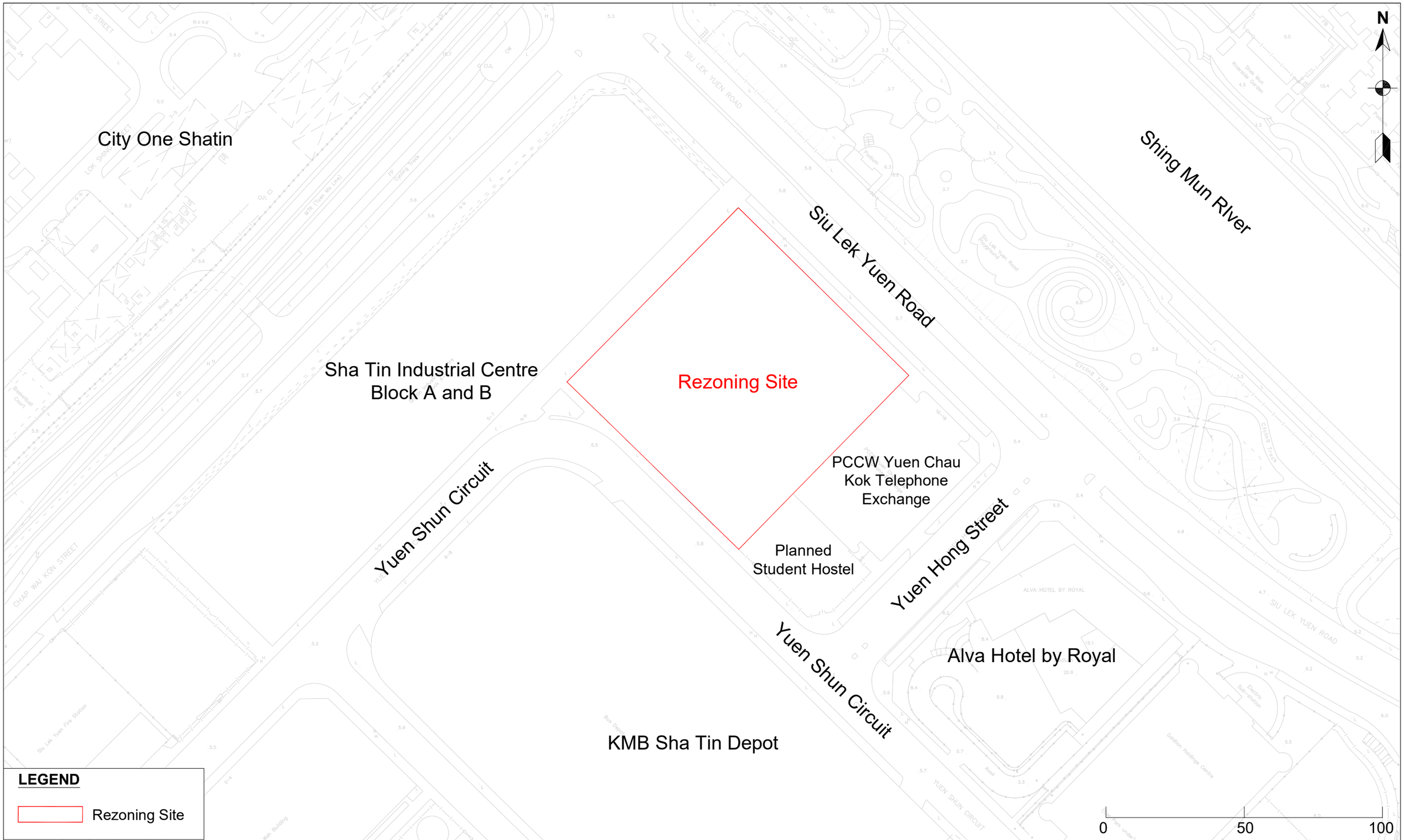
Detailed calculation of existing mains capacity has been presented in Appendix C. While detailed calculation of the proposed mains capacity has been presented in Appendix D.

Upon detailed design stage, the Applicant will appoint engineer and contractor to design and to construct the proposed water mains. The detailed arrangement of the proposed water mains and main connections will be further investigated at the detailed design. Detailed information of the proposed water mains will be prepared and submitted to WSD during the detailed design stage.

4 Conclusion

This Water Supply Impact Assessment (WSIA) Report is prepared to evaluate the potential impact from the Proposed Redevelopment on the existing water supply system. Given that the service reservoir capacity is sufficient to cater for the water demand from the Proposed Redevelopment and possible improvement works for Sha Tin Salt Water Booster Pumping Station would be explored as and when necessary, no significant adverse impact on the existing water supply system is anticipated due to the Proposed Redevelopment.

Figures



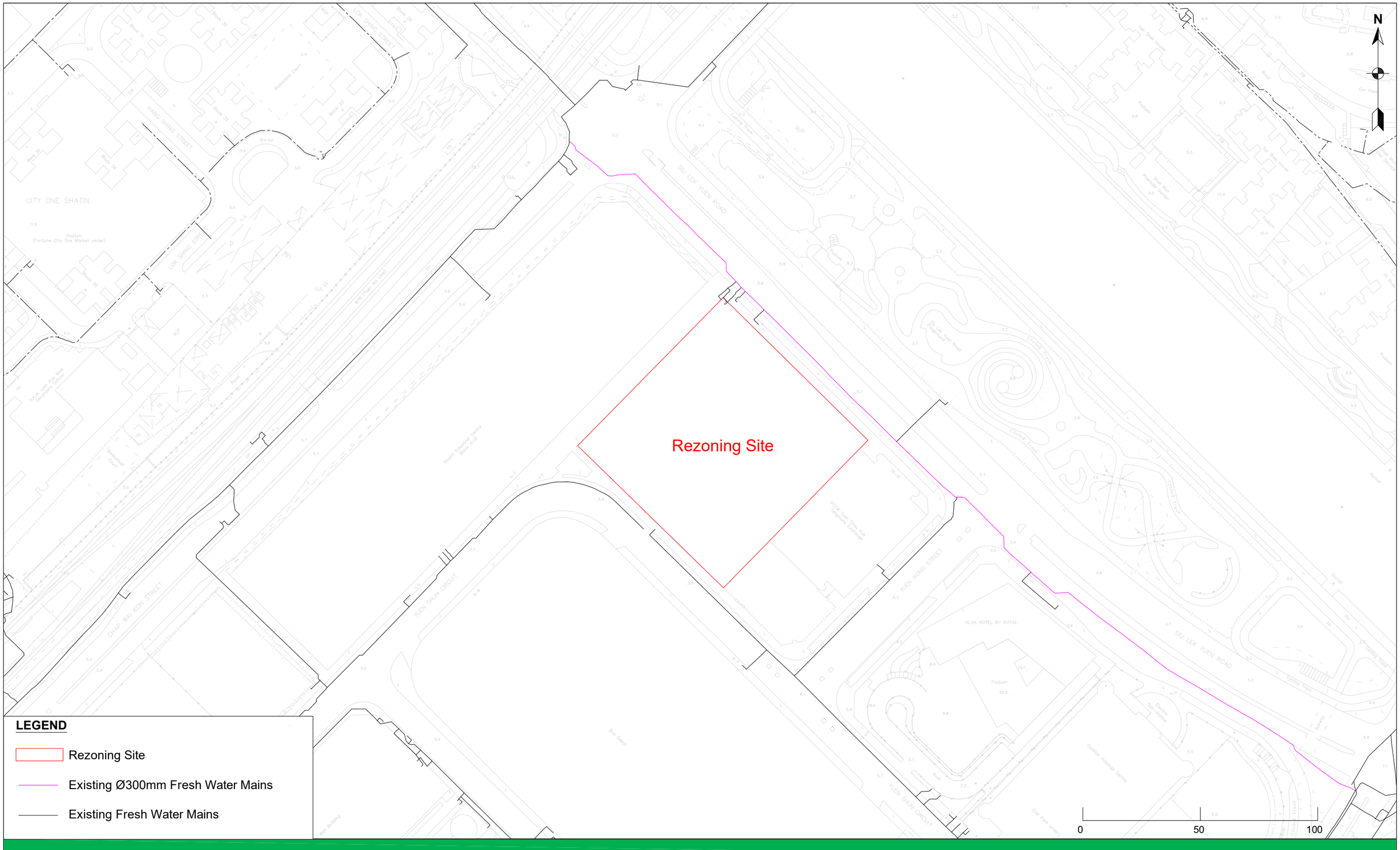
Proposed Amendment to the Approved Sha Tin Outline Zoning Plan No. S/ST/40 from "Industrial (1)" zone to "Residential (Group A)10" zone at Nos.8-14 Siu Lek Yuen Road, Sha Tin, New Territories (STTL Nos.196 and 276)

Site Location and its Environs

Figure 2.1

Rev.1

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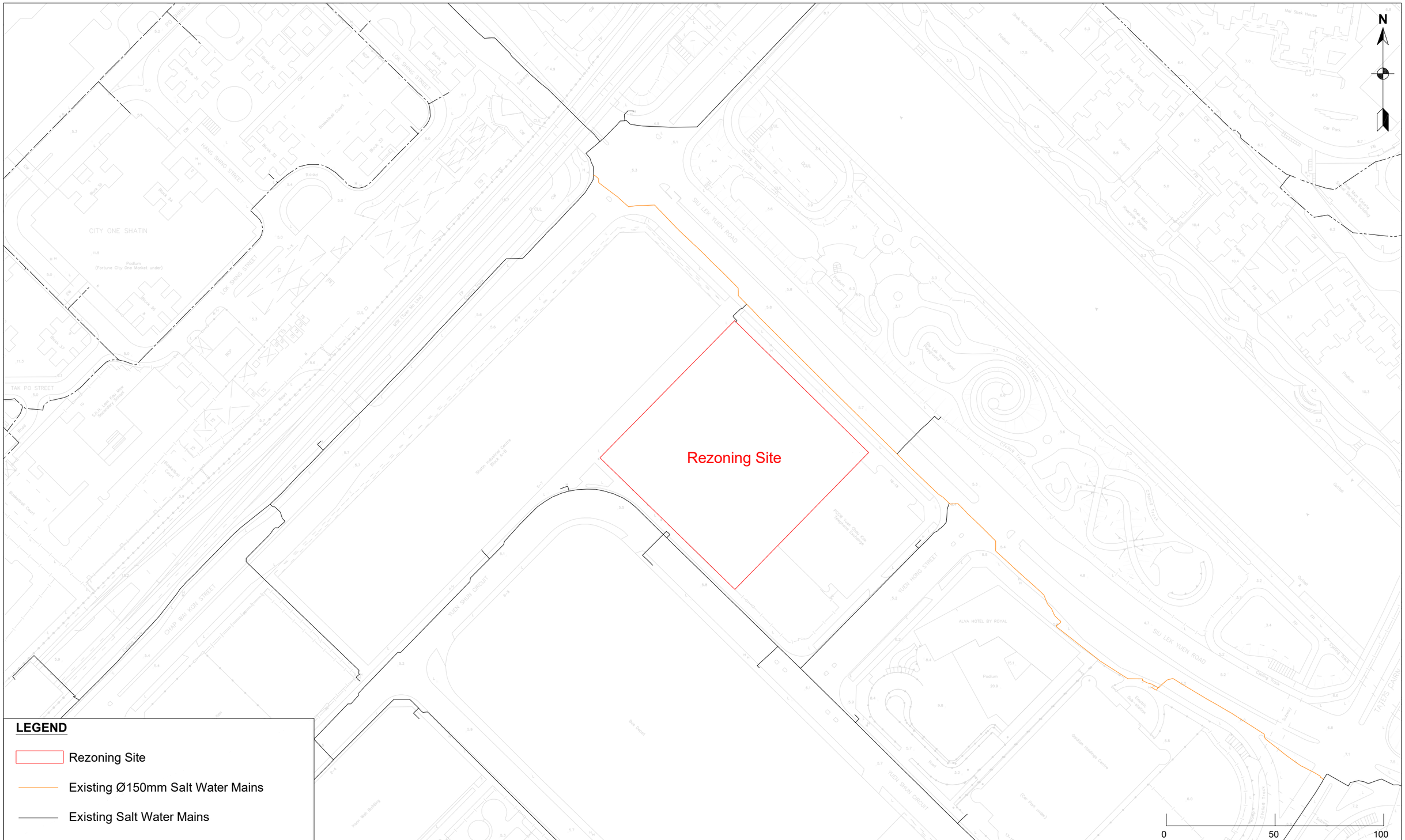
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Existing Fresh Water Mains

Figure 2.2

Rev. 0



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Proposed Amendment to the Approved Sha Tin Outline Zoning Plan No. S/ST/40 from "Industrial (1)" zone to "Residential (Group A)10" zone at Nos.8-14 Siu Lek Yuen Road, Sha Tin, New Territories (STTL Nos.196 and 276)

Existing Salt Water Mains

Figure 2.3

Rev. 0



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Proposed Amendment to the Approved Sha Tin Outline Zoning Plan No. S/ST/40 from "Industrial (1)" zone to "Residential (Group A)10" zone at Nos.8-14 Siu Lek Yuen Road, Sha Tin, New Territories (STTL Nos.196 and 276)

Proposed Connections to Existing Fresh Water Mains

Figure 3.1

Rev. 0



URBAN GREEN

Proposed Amendment to the Approved Sha Tin Outline Zoning Plan No. S/ST/40 from "Industrial (1)" zone to "Residential (Group A)10" zone at Nos.8-14 Siu Lek Yuen Road, Sha Tin, New Territories (STTL Nos.196 and 276)

Proposed Connections to Existing Salt Water Mains

Figure 3.2

Rev. 0

Appendix A

Information of Existing Service Reservoir and Pumping Station from WSD

floorplans@minilines.com.au

From: HW CHAN/WSD <hw_chan@wsd.gov.hk>
Sent: Tuesday, 9 September 2025 10:32 am
To: Emily Tang
Subject: Re: Request for Water Main Records
Attachments: FW.pdf; SW.pdf; SK3988C.pdf; SW-PS.pdf; FW-SR.pdf

Dear Emily,

I refer to your email below regarding the captioned subject.

I return herewith one copy of our plans with the existing water mains and waterworks installations indicated. You are requested to note that the alignment of the water mains shown is indicative only and although it is our intention to provide you with the most up-to-date information, we cannot guarantee that all recently laid water mains have been incorporated in our central records and hence in the returned the plans. A copy of "Mains Records Sign Conventions and Designations" (SK3988C) is also attached for your reference.
[See attachment "SW.pdf"][See attachment "SK3988C.pdf"][See attachment "FW.pdf"]

Please be informed that the fresh water supply for the proposed development will be sourced from To Shek Fresh Water Service Reservoir which has the storage capacity of 36,830 cubic metres, while the salt water supply for the salt water supply for the proposed development will be sourced from Sha Tin Salt Water Booster Pumping Station which has the design station capacity of 37.78 MLD. The location plans of the relevant service reservoirs and pumping station are attached below for your informatin.
[See attachment "SW-PS.pdf"][See attachment "FW-SR.pdf"]

Regards,
Wing CHAN
E/NTE(D1), WSD
Tel: 2152 5605

周年
th Anniversary
東江水供港
Dongjiang Water Supply to Hong Kong

From: Emily Tang [redacted]
Sent: Friday, August 29, 2025 10:01 AM
To: HW CHAN/WSD <hw_chan@wsd.gov.hk>
Subject: Request for Water Main Records

Dear Ms. Chan,

We are the environmental consultant on behalf of our client to conduct a Water Supply Impact Assessment for the proposed development at City One, Sha Tin as shown in the attached figure.

In order to facilitate the study, it would be appreciated if you could provide us the following information:

1. Fresh and salt water mains record plans (CAD and PDF format) in the vicinity of the project area; and
2. Location, total capacity and used capacity of related reservoir(s) for fresh water supply; and
3. Location, total capacity and used capacity related pumping station for salt water supply.

Best regards,
Emily Tang

Urban Green Consultants Limited

[redacted]

SIGN CONVENTIONS

TYPE / LEGEND

MAINS

- FRESH / SALT WATER MAINS
- RAW / UNTREATED WATER MAINS / CONDUIT
- WASHOUT PIPE / OVERFLOW PIPE
- SLUDGE PIPE
- TREATED EFFLUENT MAINS
- WATER MAINS REQUIRE REGULAR FLUSHING
- PIPE LAID IN SLEEVE
- PIPE LAID IN TROUGH
- PIPE LAID INSIDE TUNNEL
- BEING LAID MAINS
- WATER TUNNEL
- PROPOSED MAINS
- PRIVATE MAINS (SEE NOTE 2)
- MAINS OF OTHER DEPARTMENTS (SEE NOTE 3)

FIRE SERVICE

- PEDESTAL FIRE HYDRANT — PH
- GROUND FIRE HYDRANT — GH
- HEAVY DRAW-OFF FIRE HYDRANT — HD
- SWAN NECK FIRE HYDRANT — SN
- TWIN OUTLET SWAN NECK FIRE HYDRANT — SN

VALVE

- VALVE (SEE ABBREVIATIONS)
- NORMALLY CLOSED VALVE
- FLAP VALVE — FV
- FLOW REGULATING VALVE — FRV
- NON RETURN / REFLUX VALVE — NRV
- PRESSURE CONTROL / REDUCING / RELIEF VALVE — PRV

AIR VALVE

- AIR VALVE (SEE ABBREVIATIONS)
- AIR VALVE ON INSPECTION TEE (SEE ABBREVIATIONS)

METER

- METER (SEE ABBREVIATIONS)
- VENTURI TUBE — VEN
- CRITICAL PRESSURE POINT — PP

OTHERS

- CHANGE IN PIPE
- BLANK FLANGE / END CAP
- EXTENTS SHOWING FEATURES OF WATER MAINS
- INSPECTION TEE (SEE ABBREVIATIONS)
- PIPES CONNECTED
- STANDPIPE — STP
- STRAINER — STR
- CATHODIC PROTECTION INSTALLATION (SEE ABBREVIATIONS)
- LEAK NOISE CORRELATION POINT — LNC
- LEAKAGE COLLECTION CHAMBER — LCC
- FLOW MEASUREMENT CHAMBER — FMC
- INSPECTION MANHOLE — IMH
- MULTI - PURPOSE INSERTION CHAMBER — MIC
- ESSENTIAL VALVE REFERENCE NUMBER (ALPHABET SEE ABBREVIATIONS) — C 888888
- PIPES CROSS OVER

DESIGNATIONS

450ACRB12XX(YYY)

- 450 — DIAMETER OF MAINS
- A — REHABILITATED METHOD (SEE ABBREVIATIONS)
- CR — MAINS TYPE (SEE ABBREVIATIONS)
- B — PIPE MATERIAL (SEE ABBREVIATIONS)
- 12 — COMPLETION YEAR OF MAINS
- XX — ADDITIONAL PIPE INFORMATION (SEE ABBREVIATIONS)

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NOTES

1. WSD MAINS INCLUDE:
   (a) MAINS LAID AND MAINTAINED BY WSD.
   (b) MAINS LAID BY OTHER DEPARTMENTS OR PRIVATE PARTIES BUT MAINTAINED BY WSD AT WSD'S COST.
2. PRIVATE MAINS INCLUDE MAINS IN PRIVATE ROADS, PRIVATE HOUSING ESTATES, ETC. NOT MAINTAINED BY WSD.
3. MAINS OF OTHER DEPARTMENTS INCLUDE MAINS LAID BY OTHER GOVERNMENT DEPARTMENTS NOT MAINTAINED BY WSD.

ABBREVIATIONS

PIPE MATERIAL

AC	ASBESTOS CEMENT
CI	CAST IRON
CONC	CONCRETE
COPP	COPPER ALLOY
DI	DUCTILE IRON
GI	GALVANIZED IRON
GIL	LINED GALVANIZED IRON
GMS	GALVANIZED MILD STEEL
GRP	GLASS FIBRE REINFORCED PLASTIC
MDPE	MEDIUM DENSITY POLYETHYLENE
MS	MILD STEEL
PE	POLYETHYLENE
S	STEEL
SS	STAINLESS STEEL
UPVC	UNPLASTICISED POLYVINYL CHLORIDE

REHABILITATION METHOD

RA	CURED IN PLACE PIPE
RB	CLOSED FIT (FOLD AND FORM SYSTEM)
RD	SLIP LINING / SLIP INSERTION
RE	CLOSE FIT (SWAGELINING SYSTEM)
RF	FIBRE REINFORCED PLASTIC SYSTEM
RG	INTERNAL LINING REPAIRED
RH	EXTERNAL COATING REPAIRED
RK	COMBINATION OF INTERNAL LINING REPAIRED AND EXTERNAL COATING REPAIRED
RL	PIPE BURSTING
RM	EXTERNAL FIBRE REINFORCED PLASTIC (FRP) SYSTEM
RN	JOINT SEALANT WORKS
RP	PRIMUS LINE
RS	SPRAY POLYURETHANE SYSTEM

MAINS TYPE

F	FIRE SERVICE MAINS
OF	OVERFLOW PIPE
WO	WASHOUT PIPE

INSPECTION TEE

IT	INSPECTION TEE
MIT	MULTI - PURPOSE INSPECTION TEE

ADDITIONAL PIPE INFORMATION

(400)	OUTSIDE DIAMETER OF THE INSERTED PE PIPE FOR SPECIFIED REHABILITATED MAINS
(CPS10)	CATHODIC PROTECTION SYSTEM NO. 10
(DRY)	DRY MAINS
(E)	MAINS LAID UNDER ENTRUSTMENT WORKS
(EXPOSED)	EXPOSED PIPE
(IRRIGATION)	IRRIGATION PIPE
(L)	MAINS WITH LEAKAGE COLLECTION SYSTEM
(PC)	PENDING COMMISSIONED MAINS
(SCM100)	SHALLOW COVERED MAINS NO. 100
(SUBMARINE)	SUBMARINE PIPE
(TE)	TREATED EFFLUENT MAINS
(TMF)	TEMPORARY MAINS FOR FLUSHING
(W20163)	DRAWING REFERENCE
(WSD 437/....)	WSD FILE REFERENCE

METER

EMFM	ELECTROMAGNETIC FLOWMETER
FM	FLOWMETER
WDM	WASTE DETECTION METER
DM	DISTRICT METER

VALVE

BV	BUTTERFLY VALVE
GV	GATE VALVE
SC	STOP COCK
SV	SLUICE VALVE
V	GENERIC VALVE
WOV	WASHOUT VALVE

AIR VALVE

AV	GENERIC AIR VALVE
SAV	SINGLE AIR VALVE
DAV	DOUBLE AIR VALVE
MDAV	MULTI - PURPOSE DOUBLE AIR VALVE
ATV	GENERIC AIR VALVE ON INSPECTION TEE
STV	SINGLE AIR VALVE ON INSPECTION TEE
DTV	DOUBLE AIR VALVE ON INSPECTION TEE

ALPHABET OF ESSENTIAL VALVE REFERENCE NUMBER

FRESH WATER NETWORK SYSTEM

B	CONTROL VALVES OF DIRECT TEEING OFF TO SUPPLY FROM FRESH WATER TRUNK MAINS
C	CUT- LINE VALVES
D	ALL OTHER ESSENTIAL VALVES
M	DISTRICT BOUNDARY VALVES FOR DISTRICT METERING AREAS AND PRESSURE MANAGEMENT AREAS
S	SCOUR VALVES
T	TRUNK MAIN VALVES INCLUDING THOSE AT TEES
V	VALVES UNDER CHINA WATER SCHEME, HIGH ISLAND WATER SCHEME AND PLOVER COVE WATER SCHEME

SALT WATER NETWORK SYSTEM

X	ESSENTIAL VALVES

CATHODIC PROTECTION INSTALLATION

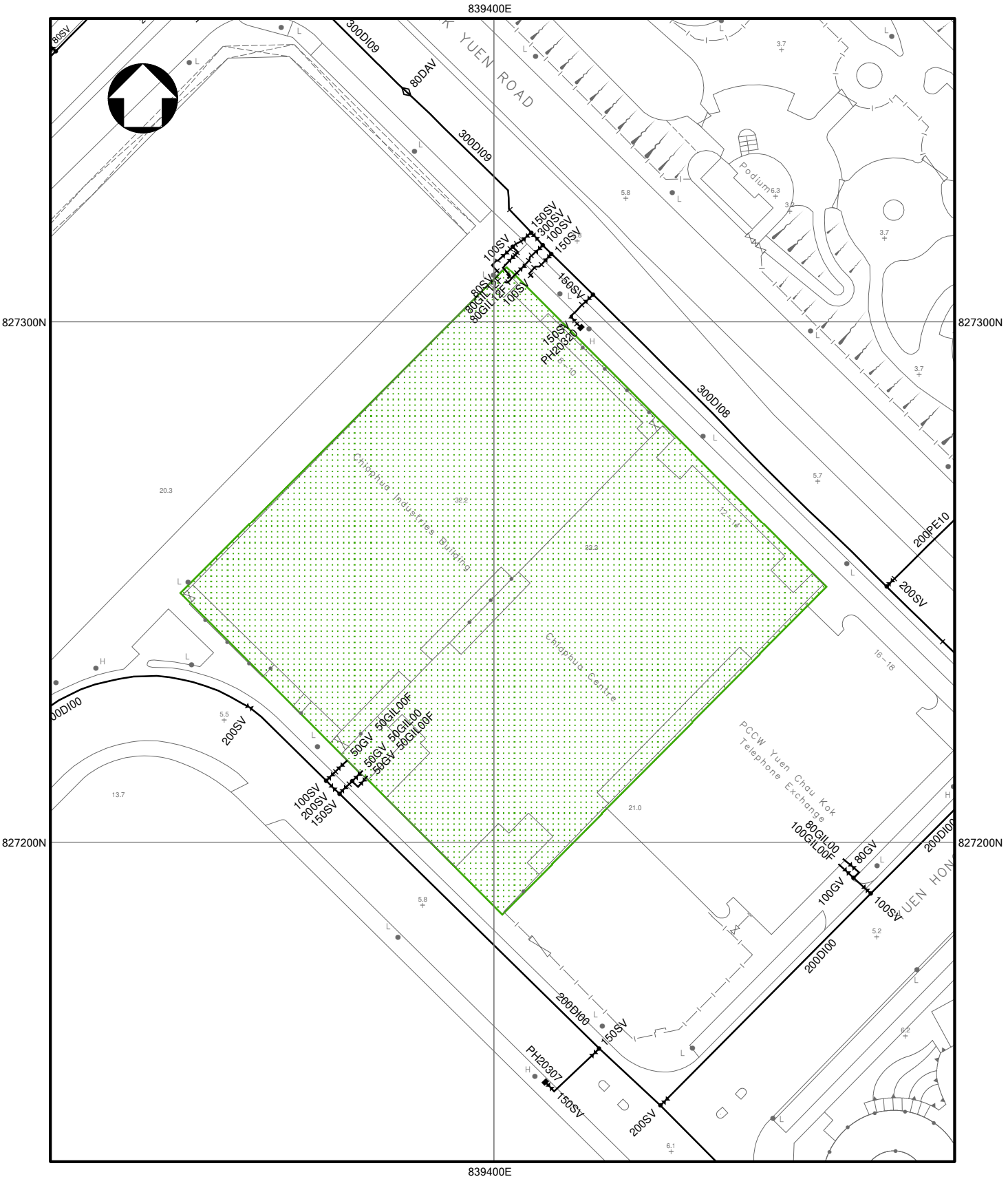
TS1	TEST STATION NO.1
HA2(1)	HORIZONTAL ANODE NO. 2 (1 GROUP OF ANODE)
VA3(2)	VERTICAL ANODE NO. 3 (2 GROUPS OF ANODE)

編號 no.	日期 date	摘 要 description	簽署 initial
C	6/12/19	GENERAL REVISION	SE/PGIS
B	11/02/11	GENERAL REVISION	(Signed) L.H. LAM SE/Dev(SD)
A	16/06/05	GENERAL REVISION	(Signed) K.T. CHAN SE/AM
修訂 REVISION			

圖則名稱 drawing title	簽署 initial	日期 date	圖則編號 drawing no. / 比例 scale
MAINS RECORDS SIGN CONVENTIONS AND DESIGNATIONS	繪製 drawn N.I. CHEUNG	03/03/98	**SK 3988C** / NOT APPLICABLE
	核對 checked		
	加簽 endorsed		
	核准 approved (Signed) C.C. CHAN CE/RA	12/03/98	水務署 Water Supplies Department

A4 210 X 297

CAD REF. SK3988C.DWG
PLOTTING SCALE 1 : 1



NOTES:

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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 PROPOSED WATER MAINS IN THE VICINITY OF THE SITE.
6. NO EXISTING WSD CABLE IN THE VICNITY OF THE SITE.
7. NO PROPOSED WSD CABLE IN THE VICNITY OF THE SITE.
8. THE SITE IS NOT WITHIN WSD GATHERING GROUNDS.
9. NO WSD LAND ALLOCATION / WWR WITHIN THE SITE AREA.
10. NO WSD SLOPES ARE AFFECTED IN THE VICINITY OF THE SITE.
11. ASBESTOS CEMENT / UNKNOWN MATERIALS MAINS WAS FOUND IN THE VICINITY OF THE SITE.
12. NO CATHODIC PROTECTION MAINS ON THE VICINITY OF THE SITE.

SUBJECT SITE

PART COPY OF FRESH WATER MAINS RECORD PLAN(S)

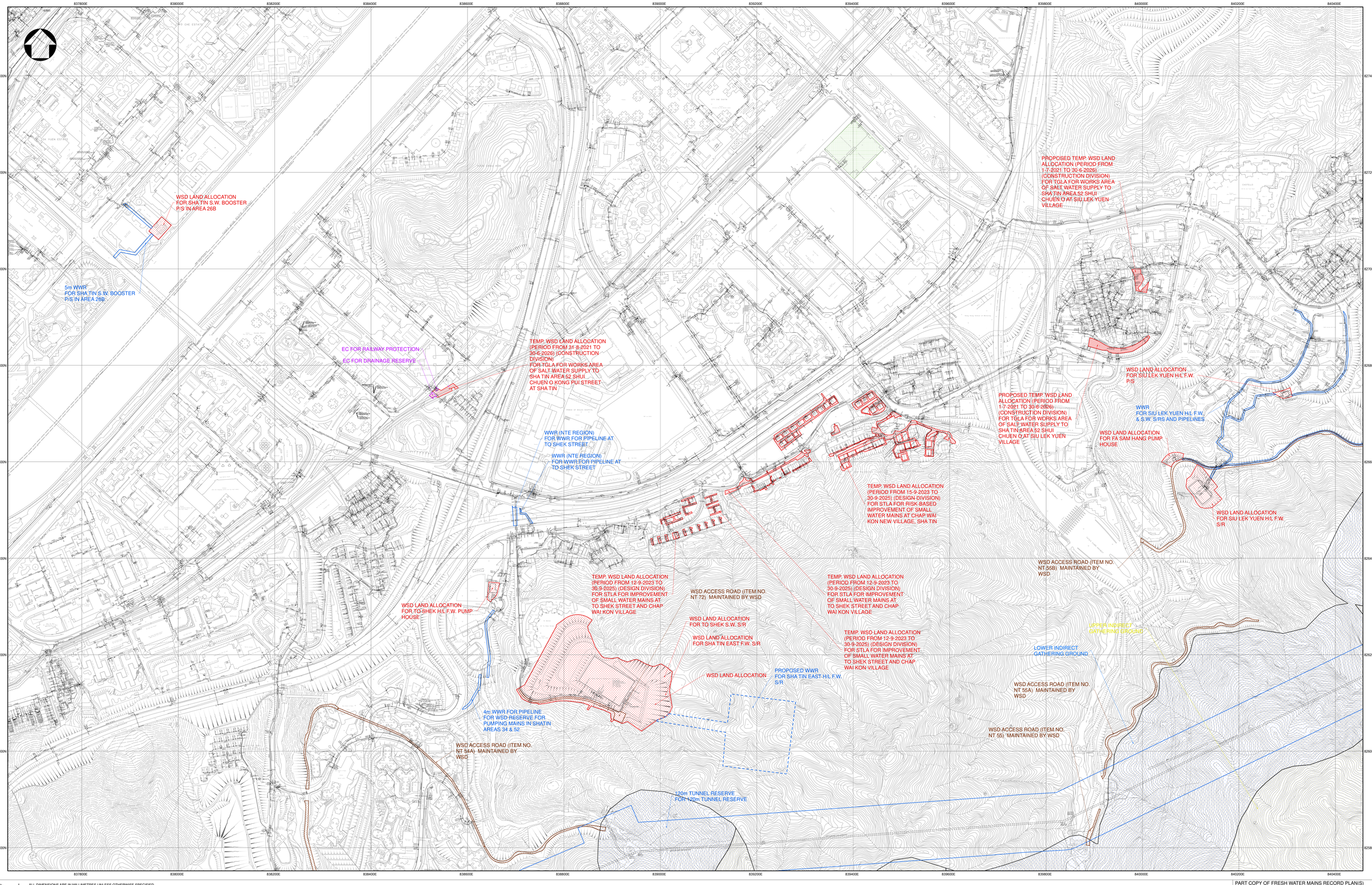
W67880/7-SE-12A

FILE REF: Project Site

REF. CODE: 35W25M	SHEET 1 OF 1	SCALE 1:1000

水 務 署
Water Supplies Department

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4. FOR MAINS RECORDS SIGN CONVENTIONS AND DESIGNATIONS SEE SKETCH NO. 3988.
5. THE SITE IS NOT WITHIN WSD GATHERING GROUNDS.
6. ASBESTOS CEMENT / UNKNOWN MATERIALS MAINS WAS FOUND IN THE VICINITY OF THE SITE.
7. 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)

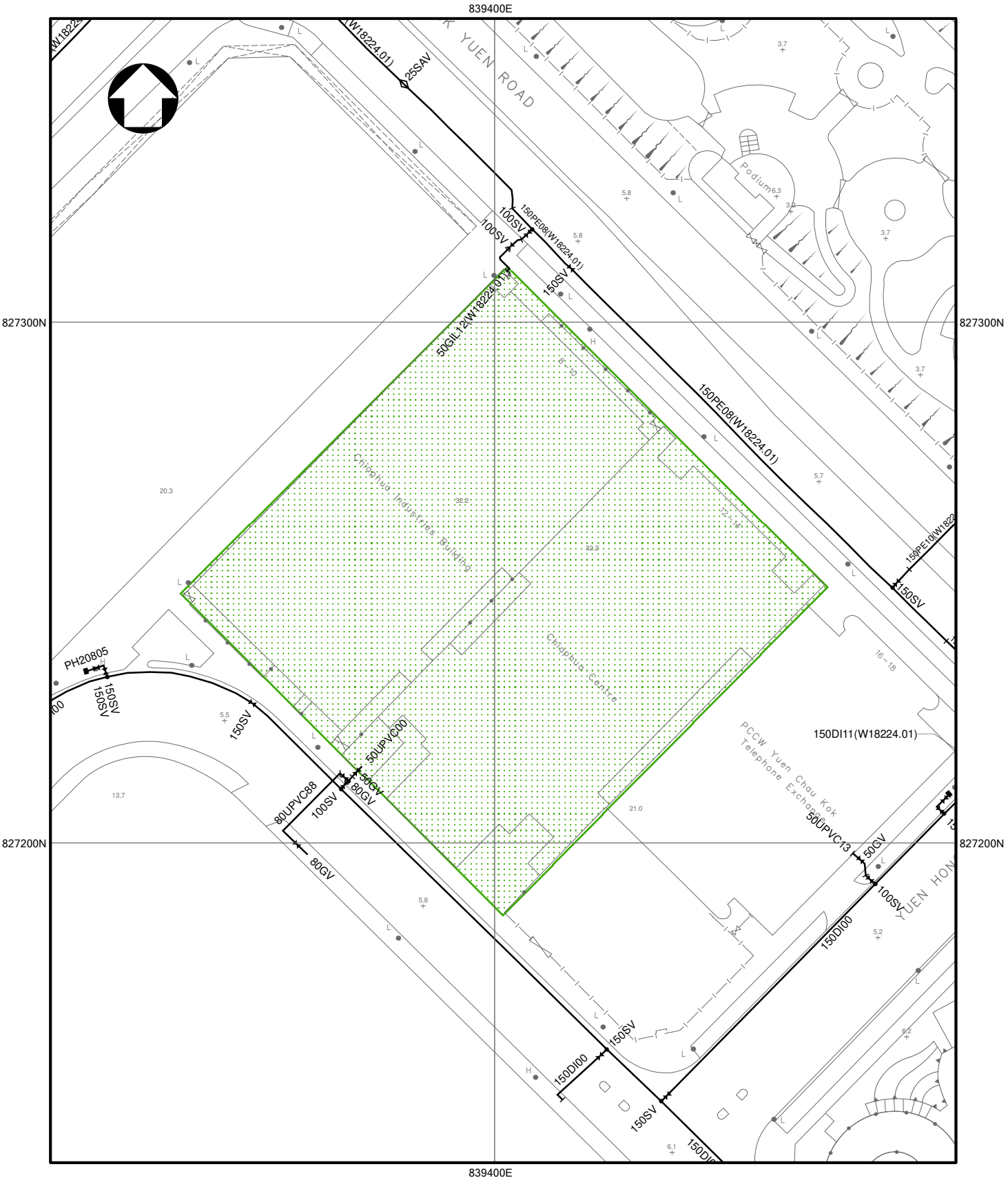
W67880/7-SE-11A, 11B, 11C, 11D, 12A, 12B, 12C, 12D, 16A, 16B, 16C, 16D, 17A, 17B, 17C & 17D

FILE REF: Subject Site

REF. CODE: 36W25M	SHEET 1 OF 1	SCALE 1:2500

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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 PROPOSED WATER MAINS IN THE VICINITY OF THE SITE.
6. NO EXISTING WSD CABLE IN THE VICNITY OF THE SITE.
7. NO PROPOSED WSD CABLE IN THE VICNITY OF THE SITE.
8. THE SITE IS NOT WITHIN WSD GATHERING GROUNDS.
9. NO WSD LAND ALLOCATION / WWR WITHIN THE SITE AREA.
10. NO WSD SLOPES ARE AFFECTED IN THE VICINITY OF THE SITE.
11. ASBESTOS CEMENT / UNKNOWN MATERIALS MAINS WAS FOUND IN THE VICINITY OF THE SITE.
12. NO CATHODIC PROTECTION MAINS ON THE VICINITY OF THE SITE.

SUBJECT SITE

PART COPY OF SALT WATER MAINS RECORD PLAN(S)

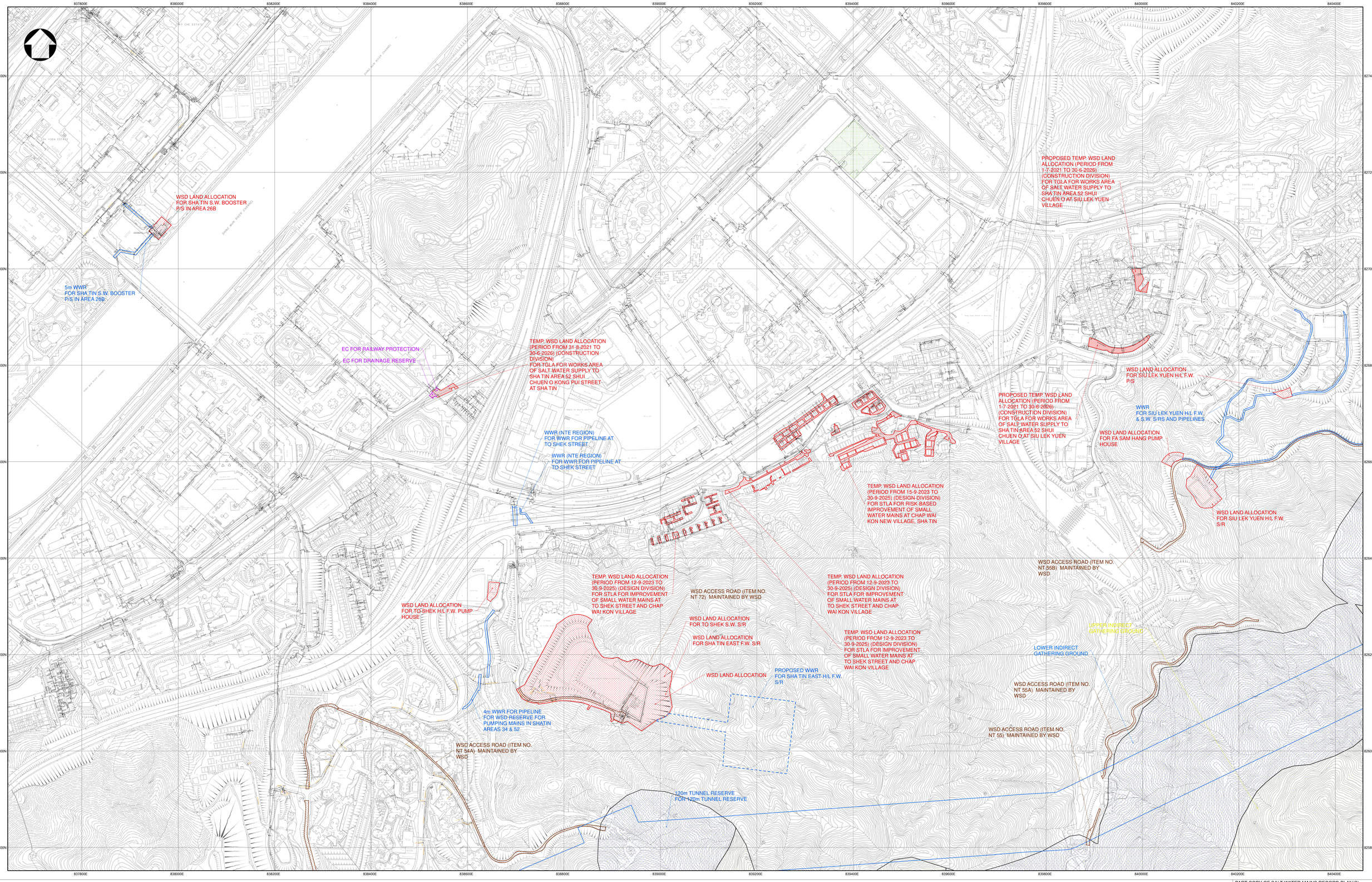
W67881/7-SE-12A

FILE REF: Project Site

REF. CODE: 35W25M	SHEET 1 OF 1	SCALE 1:1000

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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. THE SITE IS NOT WITHIN WSD GATHERING GROUNDS.
6. ASBESTOS CEMENT / UNKNOWN MATERIALS MAINS WAS FOUND IN THE VICINITY OF THE SITE.
7. 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)

W67881/7-SE-11A, 11B, 11C, 11D, 12A, 12B, 12C, 12D, 16A, 16B, 16C, 16D, 17A, 17B, 17C & 17D

FILE REF: Subject Site

REF. CODE: 36W25M	SHEET 1 OF 1	SCALE 1:2500

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Appendix B

Calculation of Water Demand

Redevelopment of Chiaphua Industrial Building

Water Supply Impact Assessment
Calculation for Fresh and Flush Water Demand

1	**Fresh Water Demand of the Proposed Redevelopment**			**Remark**
1a	**Demand from residents**			
	Total number of residential units	928	units	Provided by Project Proponent.
	Average domestic household size	2.7	people	Refer to Table 130-06806 : Average household size and median monthly household income of households in Shatin district by District Council district.
	Total number of residents	2506	people	
	Unit demand for domestic (fresh water)	0.300	m^3/person/day	Refer to Unit Demand "Residential - R2" of Table 1 in Design Criteria of D.I. No. 1309, WSD
	Unit demand for service trades	0.045	m^3/person/day	Refer to Unit Demand "New Towns - Shatin" of Table 2 in Design Criteria of D.I. No. 1309, WSD
	Total unit demand	0.345	m^3/person/day	
	Estimated daily fresh water demand	864.43	m^3/day	
1b	**Demand from Non-Domestic Area (Retail and Clubhouse)**			
	Gross Floor Area	3438	m^2	Provided by Project Proponent.
	Worker density	3.3	people/100 m^2 GFA	Refer to worker density for Community, Social & Personal Services in Table 8 of CIFSUS[(b)].
	Estimated number of staff	113	people	
	Unit demand (fresh water)	0.28	m^3/person/day	Refer to the planning unit flow for Commercial Employee + J11 - Community, Social & Personal Services in Table T-2 of GESF[(a)].
	Estimated daily fresh water demand	31.77	m^3/day	
1c	**Demand from Non-Domestic Area (Kitchen)**			
	Gross Floor Area	130	m^2	Provided by Project Proponent.
	Worker density	5.1	people/100 m^2 GFA	Refer to worker density for Restaurant in Table 8 of CIFSUS[(b)].
	Estimated number of staff	7	people	
	Unit demand (fresh water)	1.58	m^3/person/day	Refer to the planning unit flow for Commercial Employees + J10 Restaurants & Hotels in Table T-2 of GESF[(a)].
	Estimated daily fresh water demand	10.48	m^3/day	
	Total estimated daily fresh water demand	**907**	**m^3/day**	

2	**Flush Water Demand of the Proposed Redevelopment**			**Remark**
2a	**Demand from residents**			
	Total number of residential units	928	units	Provided by Project Proponent.
	Average domestic household size	2.7	people	Refer to Table 130-06806 : Average household size and median monthly household income of households in Shatin district by District Council district.
	Total number of residents	2506	people	
	Unit demand for domestic (flushing water)	0.110	m^3/person/day	Advised by WSD.
	Estimated daily flush water demand	275.62	m^3/day	
2b	**Demand from Non-Domestic Area (Retail and Clubhouse)**			
	Gross Floor Area	3438	m^2	Provided by Project Proponent.
	Worker density	3.3	people/100 m^2 GFA	Refer to worker density for Community, Social & Personal Services in Table 8 of CIFSUS[(b)].
	Estimated number of staff	113	people	
	Unit demand (flushing water)	0.110	m^3/person/day	Advised by WSD.
	Estimated daily flush water demand	12.48	m^3/day	
2c	**Demand from Non-Domestic Area (Kitchen)**			
	Gross Floor Area	130	m^2	Provided by Project Proponent.
	Worker density	5.1	people/100 m^2 GFA	Refer to worker density for Restaurant in Table 8 of CIFSUS[(b)].
	Estimated number of staff	7	people	
	Unit demand (fresh water)	0.110	m^3/person/day	Advised by WSD.
	Estimated daily flush water demand	0.73	m^3/day	
	Total estimated daily flush water demand	**289**	**m^3/day**	

Notes:

(a) GESF – "Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning" published by Environmental Protection Department (EPD) in 2005.

(b) CIFSUS - Commercial and Industrial Floor Space Utilization Survey conducted by the Planning Department during November 2004 to March 2005.

Appendix C

Calculation of Existing Mains Capacity

Capacity of the Existing Fresh Water Mains with 150mm and 300 diameter

Diameter	Internal Diameter	Cross-section Area	Assumed Velocity	Pipe Capacity	Water Demand of the Proposed Redevelopment	Peak Factor	Peak Demand	Utilization of Pipe Capacity	Sufficient Capacity?
m	m	m^2	m/s	m^3/d	m^3/d		m^3/d	%	Y/N
0.150	0.138	0.015	1.0	1292.3	907	3	2720	210.5%	N
0.300	0.282	0.062	1.5	8094.6	907	3	2720	33.6%	Y

Capacity of Existing Flush Water Mains with 100mm and 150mm diameter

Diameter	Internal Diameter	Cross-section Area	Assumed Velocity	Pipe Capacity	Water Demand of C2B	Peak Factor	Peak Demand	Utilization of Pipe Capacity	Sufficient Capacity?
m	m	m^2	m/s	m^3/d	m^3/d		m^3/d	%	Y/N
0.100	0.095	0.007	1.0	612.4	289	2	578	94.3%	N
0.150	0.138	0.015	1.0	1292.3	289	2	578	44.7%	Y

Equation Used:

$$Q = V \times A$$

Where

Q = Capacity, m^3/d

V = Velocity, m/s

A = Cross-section Area, m^2

Appendix D

Calculation of Proposed Water Mains

Capacity of the Proposed Fresh Water Mains with 200mm diameter

Diameter	Internal Diameter	Cross-section Area	Assumed Velocity	Pipe Capacity	Water Demand of the Proposed Redevelopment	Peak Factor	Peak Demand	Utilization of Pipe Capacity	Sufficient Capacity?
m	m	m^2	m/s	m^3/d	m^3/d		m^3/d	%	Y/N
0.200	0.189	0.028	1.5	3636.0	907	3	2720	74.8%	Y

Capacity of the Proposed Flush Water Mains with 150mm diameter

Diameter	Internal Diameter	Cross-section Area	Assumed Velocity	Pipe Capacity	Water Demand of the Proposed Redevelopment	Peak Factor	Peak Demand	Utilization of Pipe Capacity	Sufficient Capacity?
m	m	m^2	m/s	m^3/d	m^3/d		m^3/d	%	Y/N
0.150	0.138	0.015	1.0	1292.3	289	2	578	44.7%	Y

Equation Used:

$$V = \frac{Q}{A}$$

Where

V = Velocity, m/s

Q = Water Demand, m^3/d

A = Cross-section Area, m^2

Appendix E

Calculation of Proposed Salt Water Pump Capacity

Capacity of the Proposed Salt Water Pump

Mean Daily Demand (MDD) of the Site	289 m^3/day
Peaking factor	2
Actual required capacity [1]	**578 m^3/day**

Note

[1] Actual required capacity = MDD*peaking factor