

# *Appendix 9*

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WATER SUPPLY IMPACT ASSESSMENT

Prepared by

**Ramboll Hong Kong Limited**

**PROPOSED SCHOOL AT VARIOUS LOTS IN D.D. 94, 98 & 100  
AND ADJOINING GOVERNMENT LAND, KWU TUNG SOUTH,  
NEW TERRITORIES**

**WATER SUPPLY IMPACT ASSESSMENT**

Date **March 2026**

Prepared by **Sally Chiu**  
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Signed   
\_\_\_\_\_

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**Senior Manager**

Signed   
\_\_\_\_\_

Project Reference **HENKTSISEI00**

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## 1. INTRODUCTION

### 1.1 Project Background

- 1.1.1 The applicants, Global King Investment Limited, Winpost (HK) Investment Limited and Rand Development Limited, seek to rezone the current "Agriculture" zoning with a minor portion of "Green Belt" of the Application Site as outlined in the approved Kwu Tung South Outline Zoning Plan No. S/NE-KTS/22.
- 1.1.2 The Water Supply Impact Assessment (WSIA) is prepared as a technical supporting document to estimate the water demand arising from the Proposed Development.

### 1.2 The Application Site and Its Environs

- 1.2.1 The Application Site is situated along the Sheung Yue River which separate the Application Site into 2 portions (West and East Portions). It is bounded by Sheung Shui Hang Tau Village Sitting Out Area No.2 to the North and Po Shu Garden to the East.
- 1.2.2 **Figure 1.1** shows the location of the Application Site and its environment.

### 1.3 Proposed Development

- 1.3.1 Under the current application, the Application Site is proposed for an International School development. Details of the proposed development schedule are summarised in **Table 1-1** below and the layout plan is shown in **Appendix 1.1**.

**Table 1-1 Development Schedule of the Proposed Development**

Portions Located	West	East
Site Area (m <sup>2</sup> )	~92,616	~35,616
Total GFA (m <sup>2</sup> )	~126,850	~44,150
No. of Blocks	18	6
No. of Classrooms	76	65
No. of Students	1,600	1,400
No. of Staff (Including Teaching and Non-Teaching)	338	295
No. of Student/ Staff who can Live in the Accommodation	2243	0
Completion Year	2036	

**Figure 1.1 Location of the Application Site and its Environs**

## 2. WATER SUPPLY IMPACT ASSESSMENT

### 2.1 Scope of Work

2.1.1 The aim of this study is to assess whether the capacity of the existing water supply facilities serving the Application Site is sufficient to cope with the water demands from the Proposed Development. Data and record plans from Water Supplies Department (WSD) were obtained to facilitate the WSIA.

### 2.2 Assessment Criteria and Methodology

2.2.1 The freshwater and the salt water of the Proposed Development is supplied by Kwu Tung Fresh Water Service Reservoir. Although the Kwu Tung Fresh Water Service Reservoir is fully loaded at present, it is understood that the Tong Hang No. 3 Fresh Water Service Reservoir (TH3FWSR) is under construction under Contract No. 3/WSD/18 for taking up part of the supply zone of KTFWSR. The infrastructure project under Public Works Project (PWP) No.: 9355WF, which includes the construction of TH3FWSR, shall be completed by fourth quarter of 2024. Freshwater supply to TH3FWSR will be provided by Tai Po Tau Treatment Works and the storage capacity of TH3FWSR is about 55,000 m<sup>3</sup>.

2.2.2 The capacity of Kwu Tung Reservoir is summarized in **Table 2-1**.

**Table 2-1 Capacity of Kwu Tung water service reservoirs**

	<b>Kwu Tung Fresh Water Service Reservoir</b>
Capacity (m <sup>3</sup> )	30,853

2.2.3 The existing fresh water supply network are provided in **Appendix 2.1**.

2.2.4 Reference has been made to the Water Supplies Department’s Departmental Instruction 1309 (WSD DI 1309), as well as Environmental Protection Department’s (EPD’s) Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning (GESF). In addition, Planning Department’s (PlanD) Commercial and Industrial Floor Space Utilization Survey (CIFUS) have also been used.

2.2.5 WSD DI 1309 sets out the design criteria for water supplies in Hong Kong and includes unit water demands for various classes of consumer. Apart from the above, EPD’s GESF includes unit sewage flow factors for various residential development.

2.2.6 For this WSIA, WSD’s data from DI 1309 has been referenced to provide unit water demands for the various population categories with the relevant EPD GESF unit sewage flow factors to determine overall unit water demand factors. PlanD’s CIFUS has been also referenced for calculation of the population density where necessary.

2.2.7 The unit water demand has been combined with the relevant development parameters to assess the future water demands, from which the potential impacts have been assessed. Calculations for the water demands of the Proposed Development are included in **Appendix 2.2**.

### 2.3 Assessment of Water Demand

2.3.1 The water demand from the West and East Portions of the Proposed Development have been assessed in **Table 2-2** and **Table 2-3** below and detailed calculation is shown in **Appendix 2.2**.

**Table 2-2 Water Demand from the Proposed Development (West Portion)**

	Daily Water Demand (without swimming pool)	Peaking Factor	Peak Water Demand (without swimming pool)	Peak Water Demand (with swimming pool)
	m <sup>3</sup> /day		m <sup>3</sup> /day	m <sup>3</sup> /day
Freshwater	2039.4	3	6118.2	7993.2
Flushing Water	303.2	2	606.4	606.4
<b>Total</b>				<b>8599.6 [1]</b>

[1] Assume both fresh water and flushing water are provided from Kwu Tung Water Service Reservoir

**Table 2-3 Water Demand from the Proposed Development (East Portion)**

	Daily Water Demand (without swimming pool)	Peaking Factor	Peak Water Demand (without swimming pool)	Peak Water Demand (with swimming pool)
	m <sup>3</sup> /day		m <sup>3</sup> /day	m <sup>3</sup> /day
Freshwater	837.4	3	2512.2	4387.2
Flushing Water	139.7	2	279.4	279.2
<b>Total</b>				<b>4666.6 [1]</b>

[1] Assume both fresh water and flushing water are provided from Kwu Tung Water Service Reservoir

- 2.3.2 According to **Table 2-2** and **Table 2-3**, the Proposed Development will be taking minor portions of the freshwater reservoirs capacities (i.e. 27.9% from West Portion and 15.1% from East Portion).
- 2.3.3 Given that the contribution is not significant, the Proposed Development would unlikely pose any adverse impact to existing service reservoir capacity.

## 2.4 Existing and Proposed Water Supply System

- 2.4.1 The existing water supply system is provided in **Appendix 2.1**.
- 2.4.2 5 x 80mm and 8 x 40mm freshwater mains are proposed to connect to the existing water mains 80GIL91 and 40GIL01 located at the West Portion and East Portion of the Proposed Development respectively for freshwater and flushing water supply. The alignment of the existing and proposed freshwater mains is shown in **Figure 2.1**.

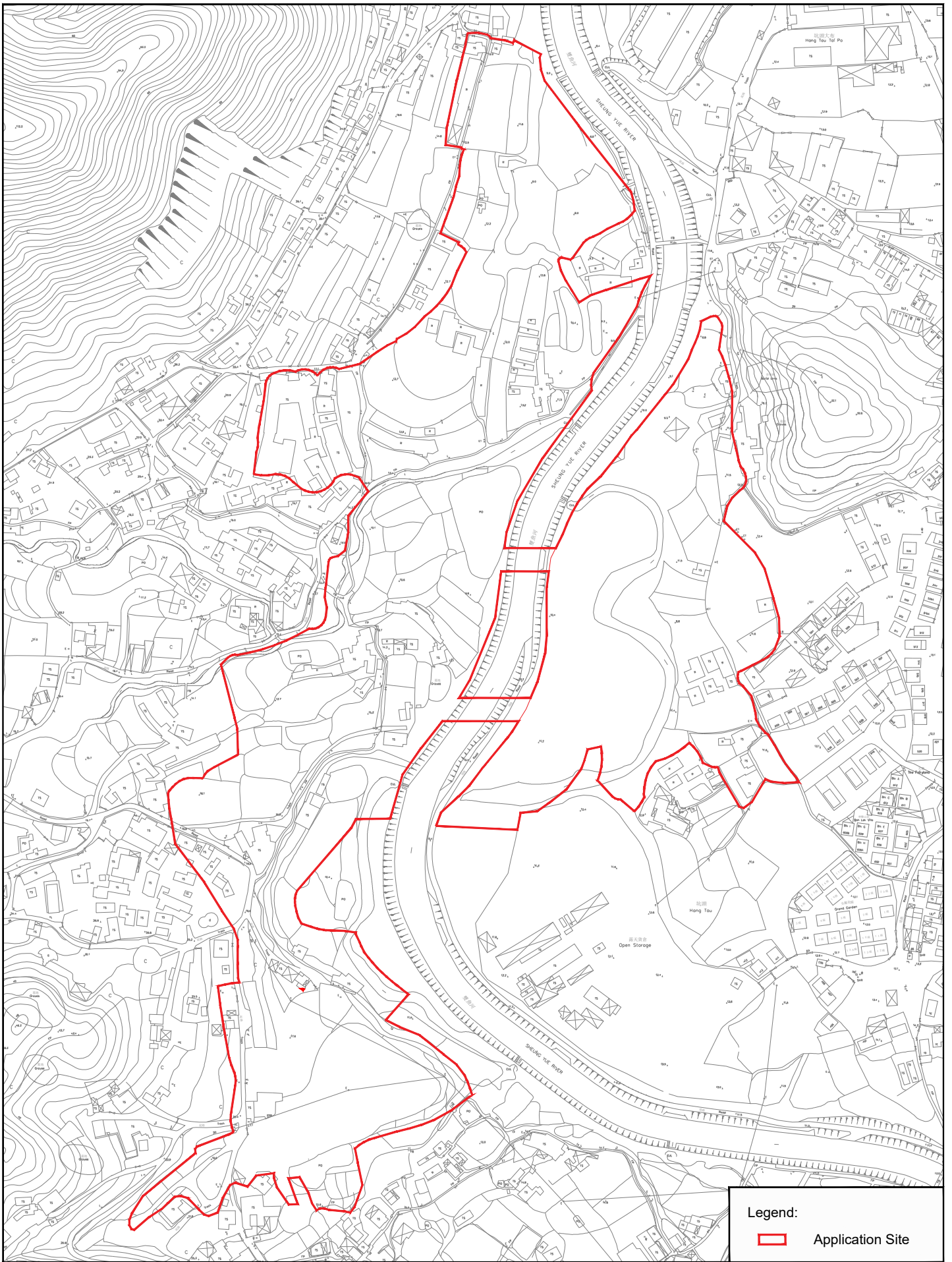
**2.5 Construction and Maintenance**

- 2.5.1 The Project Proponent will take up the design and construction cost for the future water main connection. The detailed design and assessment will be submitted for comments/ approval at detailed design stage.
- 2.5.2 The responsibility for operation and maintenance of the proposed waterworks will be discussed and agreed with WSD and relevant departments during detailed design stage.

### 3. CONCLUSION

- 3.1.1 The water supply impact assessment has been carried out for the Proposed Development. The assessment results show that the peak water demand from the West and East Portions of the Proposed Development are 8599.6 m<sup>3</sup>/day and 4666.6 m<sup>3</sup>/day which only accounts for the existing Kwu Tung Fresh Water Service Reservoirs of 27.9% and 15.1% respectively.
- 3.1.2 Given that the contribution is not significant, the Proposed Development would unlikely pose any adverse impact to existing freshwater supply system.

**Figures**



**Figure:** 1.1

**Title:** Location of the Application Site and its environs.

**Project:** Proposed School at Various Lots in D.D. 94, 98 & 100 and adjoining Government Land, Kwu Tung South, New Territories

Legend:

 Application Site

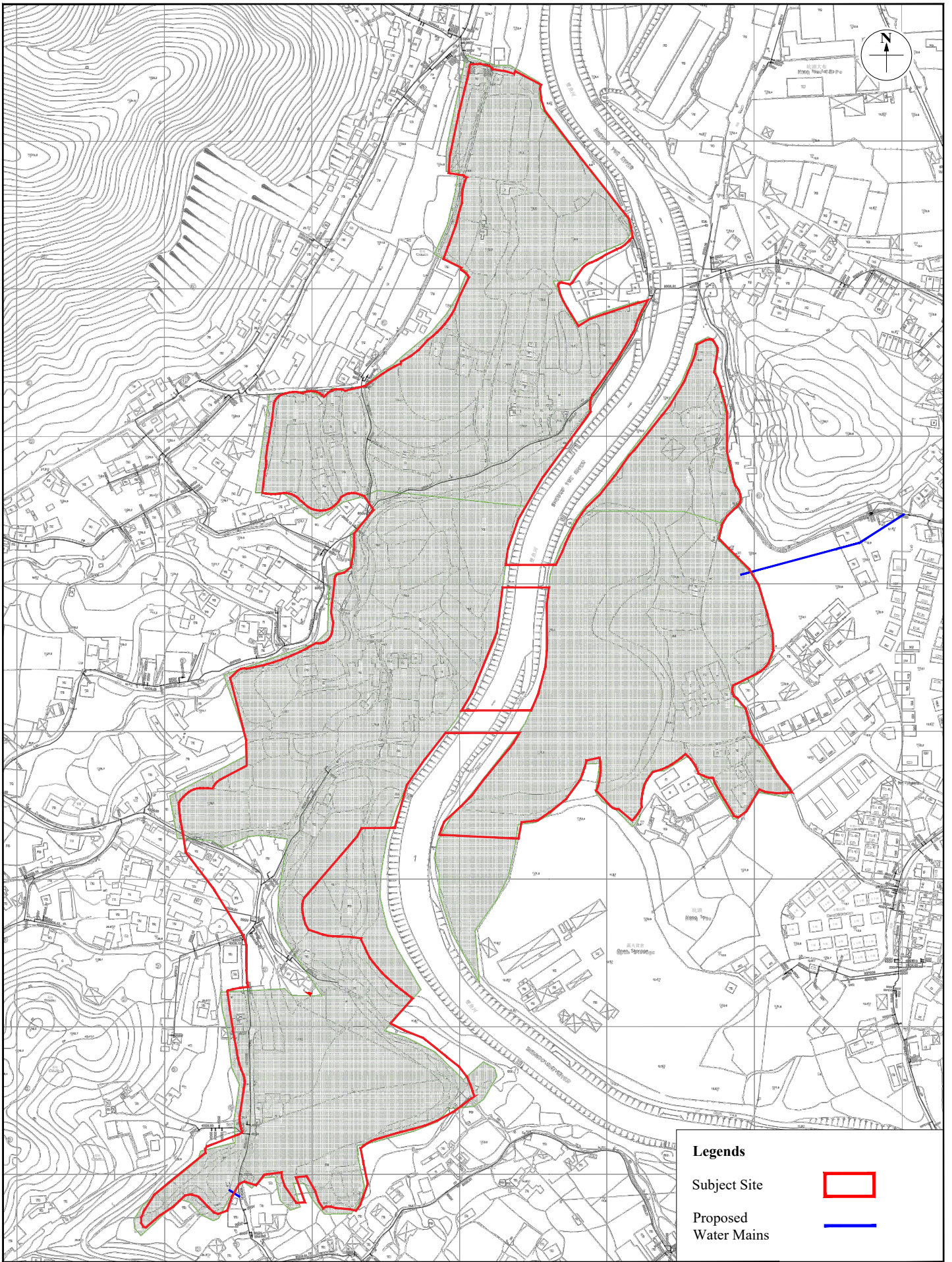


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Checked by: TC

Rev.: 1.1

Date: Jan 2026



**Legends**

Subject Site

Proposed Water Mains

**Figure:** 2.1a

**Title:** Existing and Proposed Fresh Water Supply System for Proposed Development (Overall)

**Project:** Proposed School at Various Lots in D.D.94, 98 & 100 and Adjoining Government Land, Kwu Tung South, New Territories

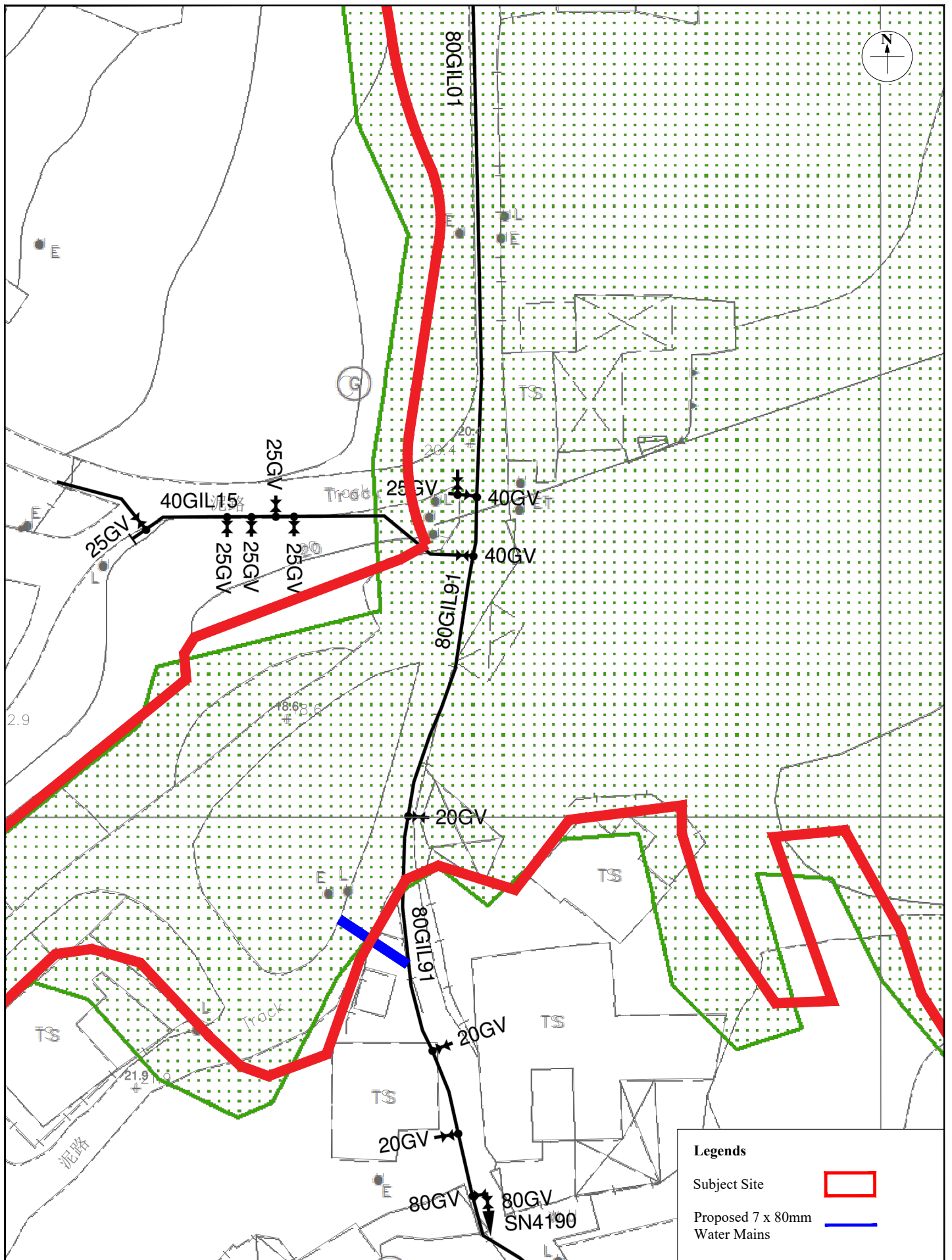


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**Figure:** 2.1b

**Title:** Existing and Proposed Fresh Water Supply System for Proposed Development (West)

**Project:** Proposed School at Various Lots in D.D.94, 98 & 100 and Adjoining Government Land, Kwu Tung South, New Territories

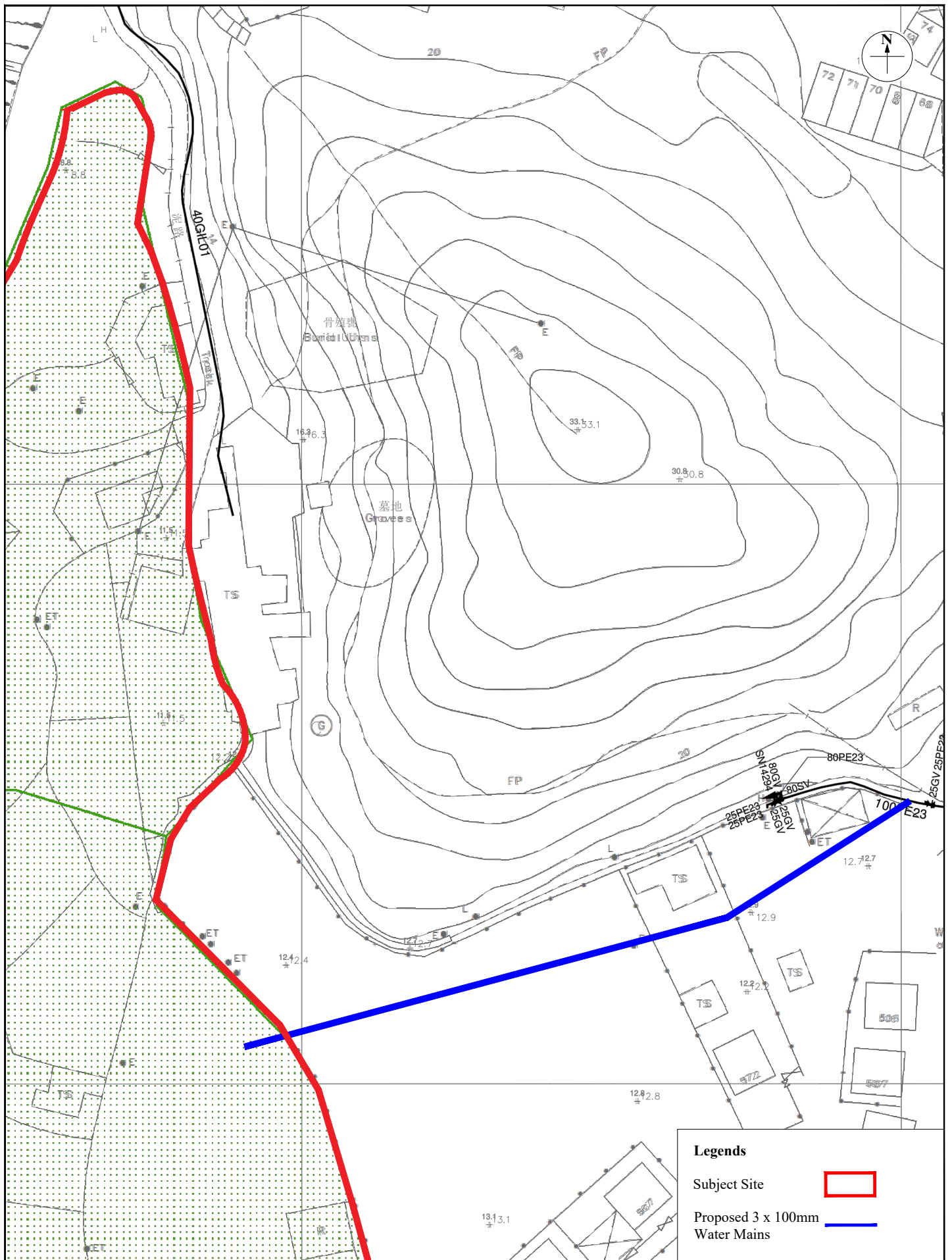


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**Figure:** 2.1c

**Title:** Existing and Proposed Fresh Water Supply System for Proposed Development (East)

**Project:** Proposed School at Various Lots in D.D.94, 98 & 100 and Adjoining Government Land, Kwu Tung South, New Territories



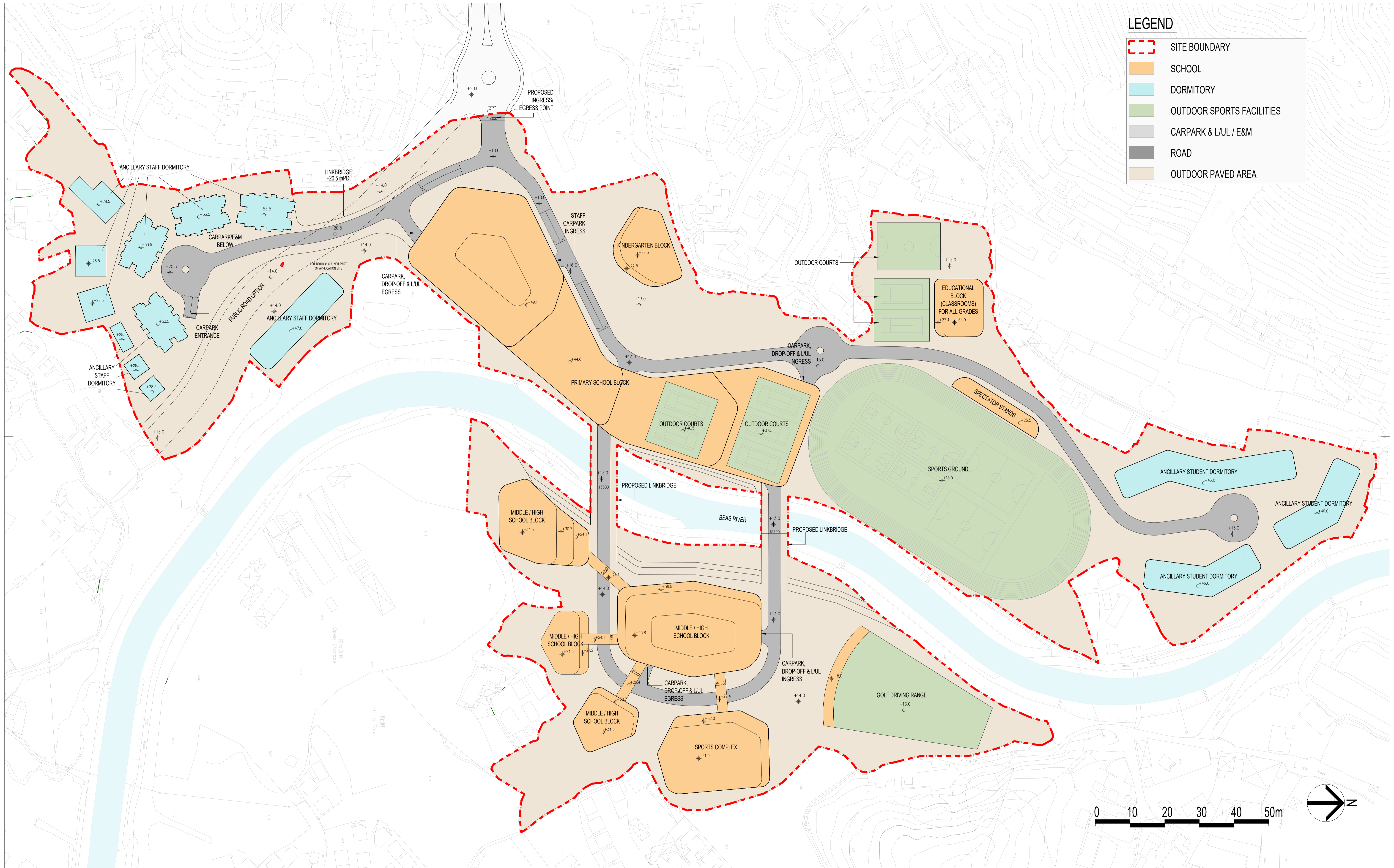
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Date: Sep 2025

**Appendix 1.1 Master Layout Plan**



LEGEND	
	SITE BOUNDARY
	SCHOOL
	DORMITORY
	OUTDOOR SPORTS FACILITIES
	CARPARK & L/UL / E&M
	ROAD
	OUTDOOR PAVED AREA



Rev.	Description	Drawn	Checked	Approved	Date
1	PLANNING SUBMISSION	I.H.K.O.	I.J.H.K.	I.J.H.Y.	19-2025
2	PLANNING SUBMISSION	I.H.K.O.	I.J.H.K.	I.J.H.Y.	11-2025

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Checked	JHK	Date	11-2025
Approved	JHY	Date	11-2025

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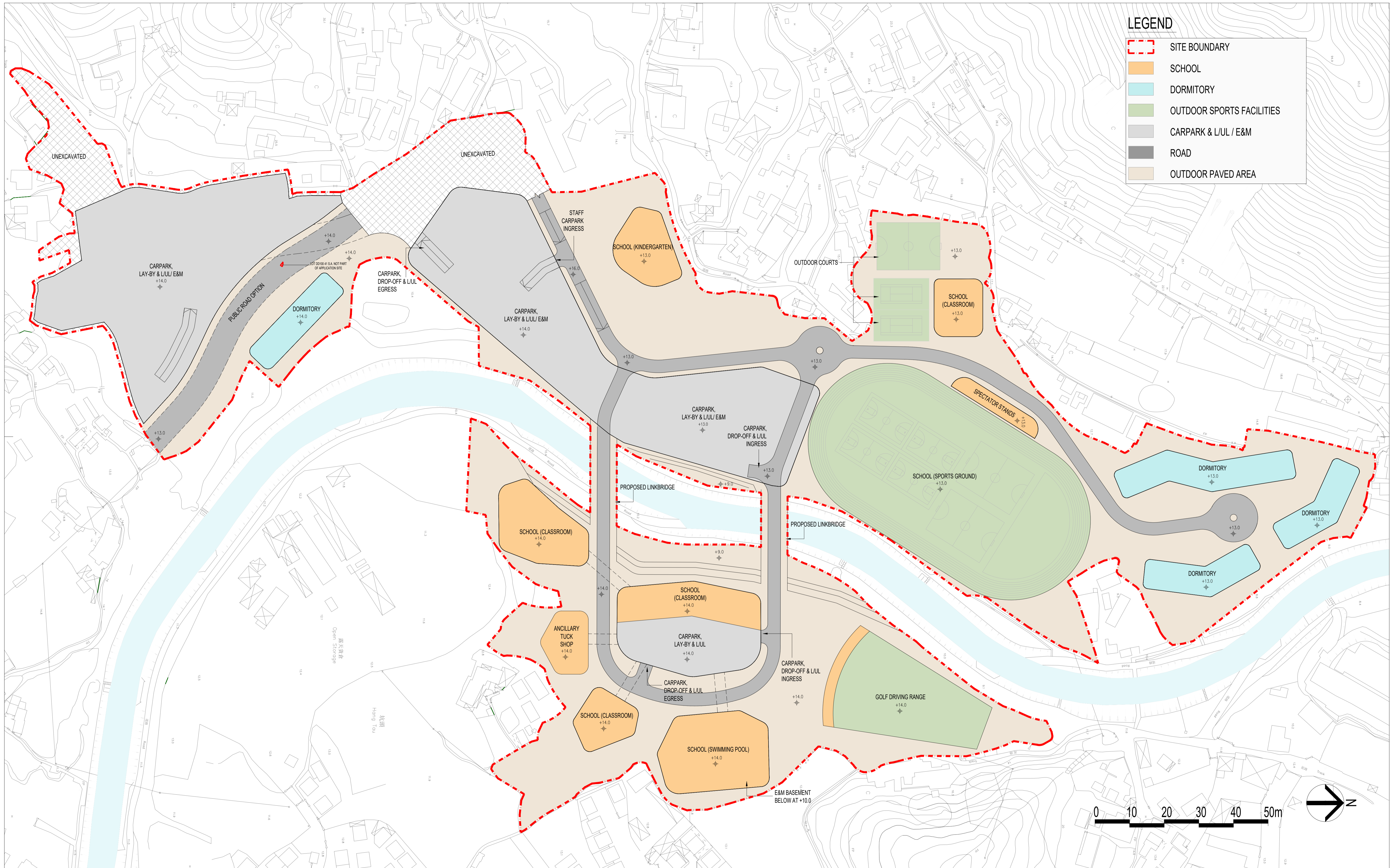
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Project Title  
**PROPOSED INTERNATIONAL SCHOOL DEVELOPMENT AT KWU TUNG SOUTH**

Drawing Title  
**FULL PHASE - MASTER LAYOUT PLAN**

Project No. **25018NT**  
 Scale **1:1000** Issue Date **NOV 2025**  
 Drawing No. **A/GBP\_01**

Drawing Purpose



Rev.	Description	Drawn	Checked	Approved	Date
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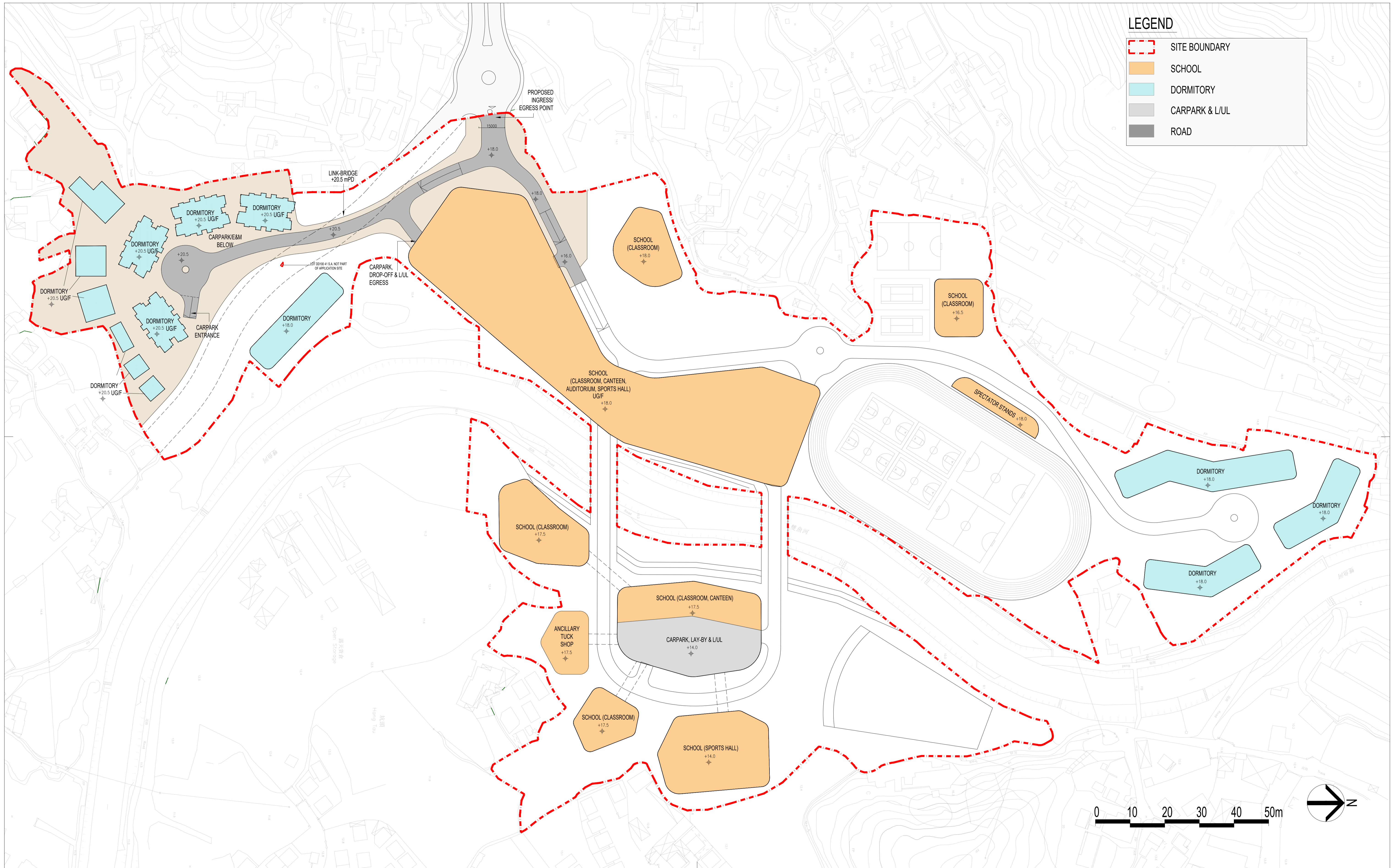


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Project Title	
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Drawing Title	FULL PHASE – GROUND FLOOR PLAN
Project No.	25018NT
Scale	1:1000
Issue Date	NOV 2025
Drawing No.	A/GBP_02

Drawing Purpose	
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LEGEND	
	SITE BOUNDARY
	SCHOOL
	DORMITORY
	CARPARK & L/LUL
	ROAD

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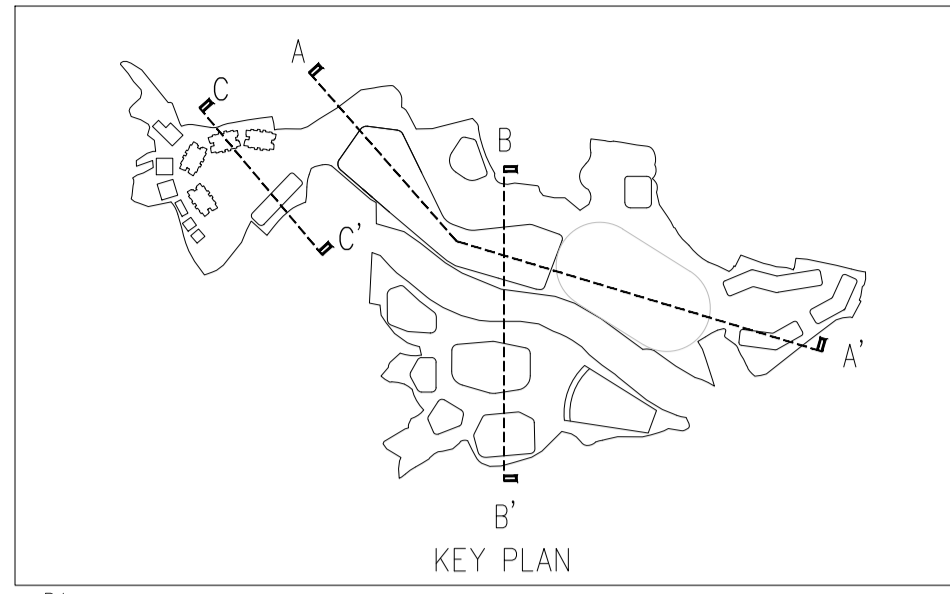
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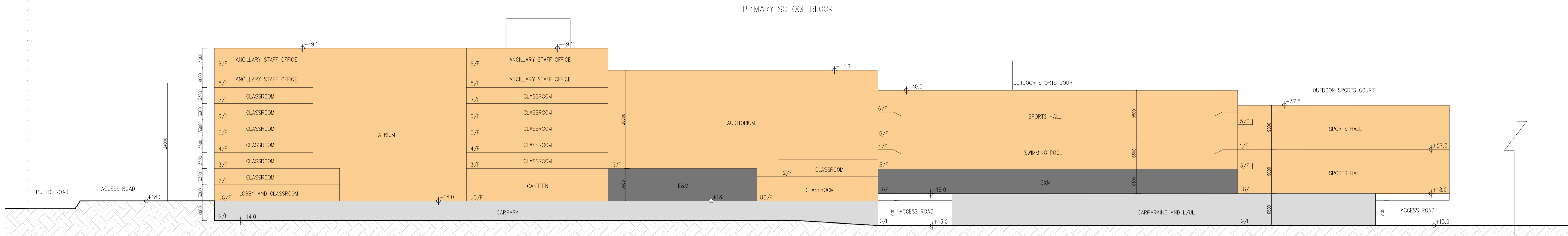
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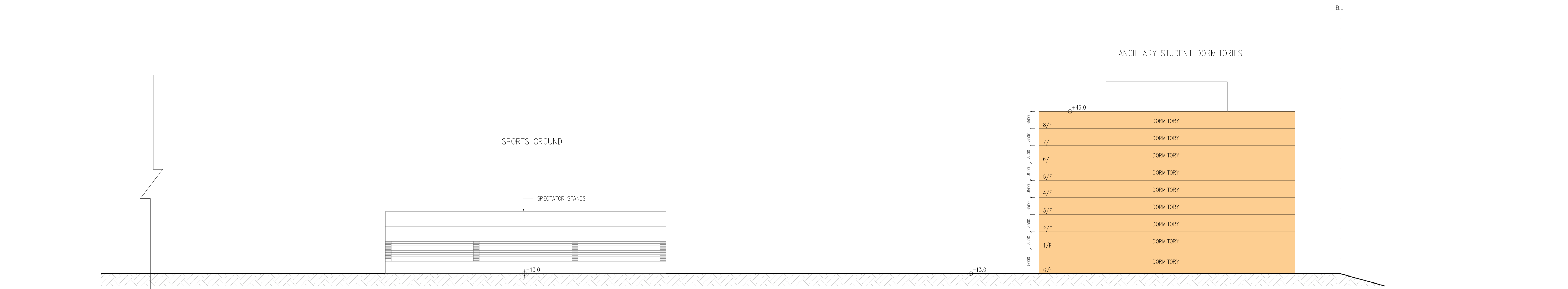


**LEGEND**

- SITE BOUNDARY
- SCHOOL
- DORMITORY
- OUTDOOR SPORTS FACILITIES
- CARPARK & L/U/L
- E&M



SECTION A-A'



SECTION A-A' cont.

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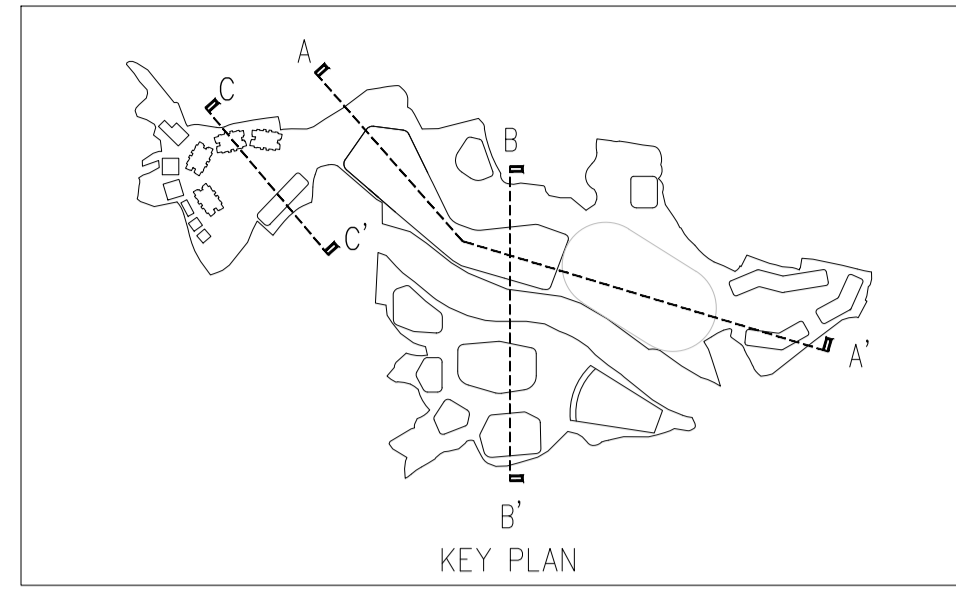
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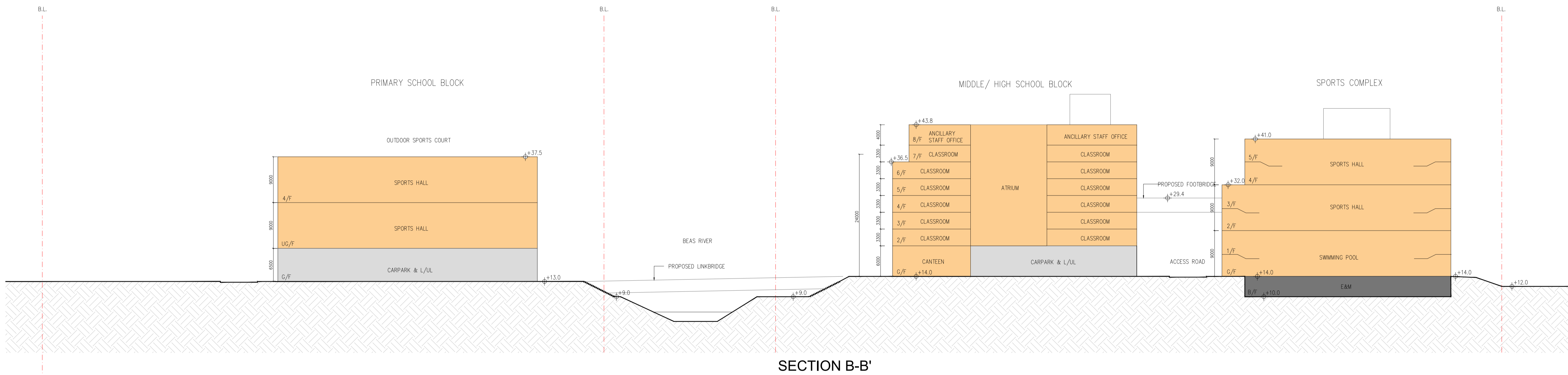
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Project Title		Drawing Purpose	
Drawing Title	SECTION A-A	Project No.	25018NT
Scale	1:400	Issue Date	NOV 2025
Drawing No.	A/GBP_05		



**LEGEND**

- SITE BOUNDARY
- SCHOOL
- DORMITORY
- OUTDOOR SPORTS FACILITIES
- CARPARK & L/UL
- E&M



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Project Title

Drawing Title  
**SECTION B-B**

Project No. **25018NT**

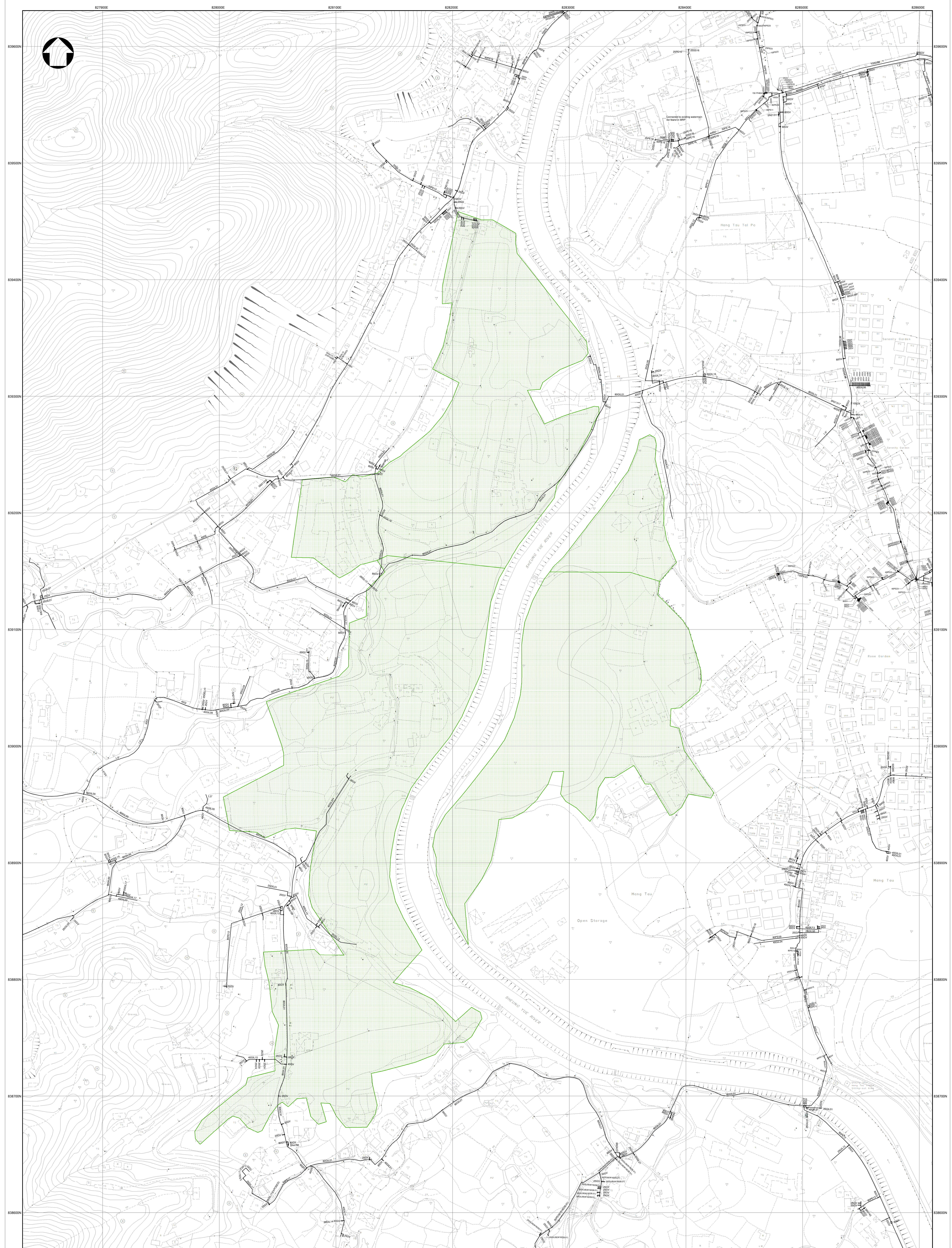
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Drawing Purpose



**Appendix 2.1    Records Obtained from Water Supplies Department**



- NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
  2. ALL LEVELS ARE IN METRES ABOVE MEAN SEA LEVEL.
  3. INFORMATION ON ADJUSTMENT OF DIMENSIONS OF PROPOSED VALUE ONLY. THESE DIMENSIONS, ACCURACY AND DATE OF SURVEY SHALL BE THE RESPONSIBILITY OF THE CLIENT.
  4. FOR MAINS RECORDS SIGN CONVENTIONS AND DESIGNATIONS SEE SHEET 1001.
  5. NO EXISTING UTILITIES SHOWN IN THE VICINITY OF THE SITE.
  6. NO PROPOSED UTILITIES SHOWN IN THE VICINITY OF THE SITE.
  7. NO PROPOSED UTILITIES SHOWN IN THE VICINITY OF THE SITE.
  8. THE SITE IS NOT TO BE USED FOR ANY OTHER PURPOSES.
  9. NO WOOD LAND ALLOTMENT / FARM WITHIN THE SITE AREA.
  10. THE SITE IS NOT TO BE USED FOR ANY OTHER PURPOSES.
  11. NO WOOD LAND ALLOTMENT / FARM WITHIN THE VICINITY OF THE SITE.
  12. ALL UTILITIES SHOWN ARE SUBJECT TO THE MAINS RECORDS IN THE VICINITY OF THE SITE.
  13. NO CANNON PROJECTION MAINS IN THE VICINITY OF THE SITE.

SUBJECT SITE

PART COPY OF FRESH WATER MAINS RECORD PLAN(S)

W879802-SE.9D, 10C, 14B, 14D, 15A & 15C

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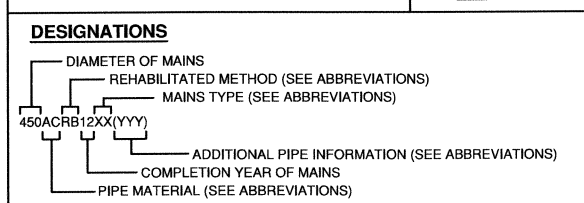
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SIGN CONVENTIONS	ABBREVIATIONS
------------------	---------------

MAINS	TYPE	LEGEND
<p><b>FRESH / SALT WATER MAINS</b>            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)</p> <p><b>FIRE SERVICE</b>            PEDESTAL FIRE HYDRANT            GROUND FIRE HYDRANT            HEAVY DRAW-OFF FIRE HYDRANT            SWAN NECK FIRE HYDRANT            TWIN OUTLET SWAN NECK FIRE HYDRANT</p> <p><b>VALVE</b>            VALVE (SEE ABBREVIATIONS)            NORMALLY CLOSED VALVE            FLAP VALVE            FLOW REGULATING VALVE            NON RETURN / REFLUX VALVE            PRESSURE CONTROL / REDUCING / RELIEF VALVE</p> <p><b>AIR VALVE</b>            AIR VALVE (SEE ABBREVIATIONS)            AIR VALVE ON INSPECTION TEE (SEE ABBREVIATIONS)</p> <p><b>METER</b>            METER (SEE ABBREVIATIONS)            VENTURI TUBE            CRITICAL PRESSURE POINT</p> <p><b>OTHERS</b>            CHANGE IN PIPE            BLANK FLANGE / END CAP            EXTENTS SHOWING FEATURES OF WATER MAINS            INSPECTION TEE (SEE ABBREVIATIONS)            PIPES CONNECTED            STANDPIPE            STRAINER            CATHODIC PROTECTION INSTALLATION (SEE ABBREVIATIONS)            LEAK NOISE CORRELATION POINT            LEAKAGE COLLECTION CHAMBER            FLOW MEASUREMENT CHAMBER            INSPECTION MANHOLE            MULTI - PURPOSE INSERTION CHAMBER            ESSENTIAL VALVE REFERENCE NUMBER (ALPHABET SEE ABBREVIATIONS)            PIPES CROSS OVER</p>		

PIPE MATERIAL	METER
<p>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</p> <p><b>REHABILITATION METHOD</b>            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</p> <p><b>MAINS TYPE</b>            F FIRE SERVICE MAINS            OF OVERFLOW PIPE            WO WASHOUT PIPE</p> <p><b>INSPECTION TEE</b>            IT INSPECTION TEE            MIT MULTI - PURPOSE INSPECTION TEE</p> <p><b>ADDITIONAL PIPE INFORMATION</b>            (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</p>	<p><b>METER</b>            EMFM ELECTROMAGNETIC FLOWMETER            FM FLOWMETER            WDM WASTE DETECTION METER            DM DISTRICT METER</p> <p><b>VALVE</b>            BV BUTTERFLY VALVE            GV GATE VALVE            SC STOP COCK            SV SLUICE VALVE            V GENERIC VALVE            WOV WASHOUT VALVE</p> <p><b>AIR VALVE</b>            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</p> <p><b>ALPHABET OF ESSENTIAL VALVE REFERENCE NUMBER</b>  <b>FRESH WATER NETWORK SYSTEM</b>            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</p> <p><b>SALT WATER NETWORK SYSTEM</b>            X ESSENTIAL VALVES</p> <p><b>CATHODIC PROTECTION INSTALLATION</b>            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)</p>



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**NOTES**

- WSD MAINS INCLUDE:
  - MAINS LAID AND MAINTAINED BY WSD.
  - MAINS LAID BY OTHER DEPARTMENTS OR PRIVATE PARTIES BUT MAINTAINED BY WSD AT WSD'S COST.
- PRIVATE MAINS INCLUDE MAINS IN PRIVATE ROADS, PRIVATE HOUSING ESTATES, ETC. NOT MAINTAINED BY WSD.
- MAINS OF OTHER DEPARTMENTS INCLUDE MAINS LAID BY OTHER GOVERNMENT DEPARTMENTS NOT MAINTAINED BY WSD.

C	6/12/19	GENERAL REVISION	
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
編號 no.	日期 date	摘要 description	簽署 initial
修訂 REVISION			

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

**Appendix 2.2 Detailed Water Supply Impact Assessment Calculations**

**Table 1a - Population Estimation for Proposed Development (Overall)**

<b>Table 4b- Mains Capacity Calculation for Proposed Development (East Portion)</b>	<b>Dormitory</b>			
	Total number of residents	=	2243	people
	<b>Total</b>	=	<b>2243</b>	<b>people</b>
<b>Non-Domestic (School)</b>	<b>1. International School</b>			
	Total number of Students	=	3000	people
	Total number of Teachers & Staff	=	633	people
	<b>Total</b>	=	<b>3633</b>	<b>people</b>
	<b>2. Canteen</b>			
	Total Area	=	4500	m <sup>2</sup>
	<b>3. Swimming Pool</b>			
	Volume	=	3750	m <sup>3</sup> (2 x 1250 m <sup>2</sup> x 1.5m depth)
	<b>4. Irrigation</b>			
	Area	=	25400	m <sup>3</sup> (Assume 20% of Site Area)

**Table 1b - Population Estimation for Proposed Development (West)**

<b>Table 4b- Mains Capacity Calculation for Proposed Development (East Portion)</b>	<b>Dormitory</b>			
	Total number of residents	=	2243	people
	<b>Total</b>	=	<b>2243</b>	<b>people</b>
<b>Non-Domestic (School)</b>	<b>1. International School</b>			
	Total number of Students	=	1600	people
	Total number of Teachers & Staff	=	338	people
	<b>Total</b>	=	<b>1938</b>	<b>people</b>
	<b>2. Canteen</b>			
	Total Area	=	1500	m <sup>2</sup>
	<b>3. Swimming Pool</b>			
	Volume	=	1875	m <sup>3</sup> (1250 m <sup>2</sup> x 1.5m depth)
	<b>4. Irrigation</b>			
	Area	=	18400	m <sup>3</sup> (Assume 20% of Site Area - West)

**Table 1c - Population Estimation for Proposed Development (East)**

<b>Table 4b- Mains Capacity Calculation for Proposed Development (East Portion)</b>	<b>Dormitory</b>			
	Total number of residents	=	0	people
	<b>Total</b>	=	<b>0</b>	<b>people</b>
<b>Non-Domestic (School)</b>	<b>1. International School</b>			
	Total number of Students	=	1400	people
	Total number of Teachers & Staff	=	295	people
	<b>Total</b>	=	<b>1695</b>	<b>people</b>
	<b>2. Canteen</b>			
	Total Area	=	3000	m <sup>2</sup>
	<b>3. Swimming Pool</b>			
	Volume	=	1875	m <sup>3</sup> (1250 m <sup>2</sup> x 1.5m depth)
	<b>4. Irrigation</b>			
	Area	=	10500	m <sup>3</sup> (Assume 20% of Site Area - East)

**Table 2a - Daily Water Demands Calculation for Proposed Development (Overall)**

Type	Population (head)	Freshwater		Flushing Water	
		Daily Unit Demand (m <sup>3</sup> /head/day)	Daily Demand (m <sup>3</sup> /day)	Daily Unit Demand (m <sup>3</sup> /head/day)	Daily Demand (m <sup>3</sup> /day)
Non-Domestic (Dormitory) [1]	2,243	0.300	672.90	0.070	157.01
Non-Domestic - International School	1695	0.025	42.38	0.07	118.65
Type	GFA (m <sup>2</sup> )	Freshwater		Flushing Water	
		Daily Unit Demand (m <sup>3</sup> /m <sup>2</sup> /day)	Daily Demand (m <sup>3</sup> /day)	Daily Unit Demand (m <sup>3</sup> /m <sup>2</sup> /day)	Daily Demand (m <sup>3</sup> /day)
Non-Domestic - Canteen	4,500	0.020	90.00	0.007	31.50
Non-Domestic - Swimming Pool [2]	-	-	3750	-	-
Non-Domestic - Irrigation	25400	0.070	1778	-	-
<b>Total for Proposed Development</b>			<b>6333.3</b>		<b>307.2</b>

[1] The residential R2 Type considers all students and staff living in the Dormitory

[2] Two 1250 m<sup>2</sup> x 1.5m depth of swimming pool are provided

**Table 2b - Daily Water Demands Calculation for Proposed Development (West Portion)**

Type	Population (head)	Freshwater		Flushing Water	
		Daily Unit Demand (m <sup>3</sup> /head/day)	Daily Demand (m <sup>3</sup> /day)	Daily Unit Demand (m <sup>3</sup> /head/day)	Daily Demand (m <sup>3</sup> /day)
Non-Domestic (Dormitory) [1]	2,243	0.300	672.90	0.070	157.01
Non-Domestic - International School	1938	0.025	48.45	0.07	135.66
Type	GFA (m <sup>2</sup> )	Freshwater		Flushing Water	
		Daily Unit Demand (m <sup>3</sup> /m <sup>2</sup> /day)	Daily Demand (m <sup>3</sup> /day)	Daily Unit Demand (m <sup>3</sup> /m <sup>2</sup> /day)	Daily Demand (m <sup>3</sup> /day)
Non-Domestic - Canteen	1,500	0.020	30.00	0.007	10.50
Non-Domestic - Swimming Pool	-	-	1875	-	-
Non-Domestic - Irrigation	18400	0.070	1288	-	-
<b>Total for Proposed Development</b>			<b>3914.4</b>		<b>303.2</b>

[1] The residential R2 Type considers all students and staff living in the Dormitory

**Table 2c - Daily Water Demands Calculation for Proposed Development (East Portion)**

Type	Population (head)	Freshwater		Flushing Water	
		Daily Unit Demand (m <sup>3</sup> /head/day)	Daily Demand (m <sup>3</sup> /day)	Daily Unit Demand (m <sup>3</sup> /head/day)	Daily Demand (m <sup>3</sup> /day)
Non-Domestic (Dormitory) [1]	0	0.300	0.00	0.070	0.00
Non-Domestic - International School	1695	0.025	42.38	0.07	118.65
Type	GFA (m <sup>2</sup> )	Freshwater		Flushing Water	
		Daily Unit Demand (m <sup>3</sup> /m <sup>2</sup> /day)	Daily Demand (m <sup>3</sup> /day)	Daily Unit Demand (m <sup>3</sup> /m <sup>2</sup> /day)	Daily Demand (m <sup>3</sup> /day)
Non-Domestic - Canteen	3,000	0.020	60.00	0.007	21.00
Non-Domestic - Swimming Pool	-	-	1875	-	-
Non-Domestic - Irrigation	10500	0.070	735	-	-
<b>Total for Proposed Development</b>			<b>2712.4</b>		<b>139.7</b>

[1] The residential R2 Type considers all students and staff living in the Dormitory

**Table 3a- Mains Capacity Calculation for Proposed Development (East Portion)**

Site Demand	Mean Daily Demand (without swimming pool)	Peak Factor	Peak Flow (without swimming pool)	Peak Flow (with swimming pool)
	m <sup>3</sup> /day	-	m <sup>3</sup> /day	m <sup>3</sup> /day
Fresh Water	2583.3	3	7749.9	11499.9
Flushing Water	307.2	2	614.4	614.4
Total* =				12114.3

\* Assume both fresh water and flushing water are provided from Kwu Tung Water Service Reservoir

**Table 3b- Mains Capacity Calculation for Proposed Development (West Portion)**

<b>Site Demand</b>	<b>Mean Daily Demand (without swimming pool)</b>	<b>Peak Factor</b>	<b>Peak Flow (without swimming pool)</b>	<b>Peak Flow (with swimming pool)</b>
	<b>m<sup>3</sup>/day</b>	<b>-</b>	<b>m<sup>3</sup>/day</b>	<b>m<sup>3</sup>/day</b>
Fresh Water	2039.4	3	6118.2	7993.2
Flushing Water	303.2	2	606.4	606.4
Total* =				8599.6

\* Assume both fresh water and flushing water are provided from Kwu Tung Water Service Reservoir

**Table 3c- Mains Capacity Calculation for Proposed Development (East Portion)**

Site Demand	Mean Daily Demand (without swimming pool)	Peak Factor	Peak Flow (without swimming pool)	Peak Flow (with swimming pool)
	m <sup>3</sup> /day	-	m <sup>3</sup> /day	m <sup>3</sup> /day
Fresh Water	837.4	3	2512.2	4387.2
Flushing Water	139.7	2	279.4	279.4
			Total* =	4666.6

\* Assume both fresh water and flushing water are provided from Kwu Tung Water Service Reservoir

**Table 4a- Mains Capacity Calculation for Proposed and Existing Development (West Portion)**

***(A) Proposed Main Capacity***

Pipe Designation	Diameter	Area	Peak Flow [1]	Velocity	Peak Flow within 0.9 to 3.0m/s ?
	mm	sqm	m3/day	m/s	
7 New Fresh Water Mains	80	0.005027	1228.5	2.8288	yes
1 Existing Fresh Water Main	80	0.005027	1228.5	2.8288	yes

[1] The total peak flow is 8599.6 m3/day. As 7 new fresh water mains are proposed, the peak flow for each water main =  $8599.6 / 7 = 1228.5$  m3/day.

**Table 4b- Mains Capacity Calculation for Proposed and Existing Development (East Portion)**

***(A) Proposed Main Capacity***

Pipe Designation	Diameter	Area	Peak Flow	Velocity	Peak Flow within 0.9 to 3.0m/s ?
	mm	sqm	m3/day	m/s	
3 New Fresh Water Mains	100	0.007854	1555.5	2.2923	yes
1 New Existing Water Main	100	0.007854	1555.5	2.2923	yes

[1] The total peak flow is 4666.6 m3/day. As 3 new fresh water mains are proposed, the peak flow for each water main =  $4666.6 / 3 = 1555.5$  m3/day.