Appendix I

Water Supply Impact Assessment

Section 16 Planning Application for Proposed Residential Development with Minor Relaxation of Plot Ratio Restriction at Lots 1027, 1029, 1030, 1034A, 1034B, 1039 (Part), 1040, 1042 RP, 1043 RP, 1044 RP (Part), 1045, 1047, 2233 (Part), 2251 S.A RP, 2256 RP, 2315 (Part) and 2316 RP (Part) in D.D. 92 and Adjoining Government Land (New Lot to be known as Lot 2644 in D.D. 92), Kwu Tung South, Sheung Shui, New Territories

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Report on
Water Supply Impact Assessment

Binnies Hong Kong Limited
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September 2025

Table of Contents

LIST OF TABLES

LIST OF FIGURES

LIST OF ANNEXES

1. INTRODUCTION

1.1 Binnies Hong Kong Limited (Binnies) has been commissioned to carry out water supply impact assessment in support of a planning application for proposed residential development with minor relaxation of plot ratio restriction on the Approved Kwu Tung South Outline Zoning Plan (OZP) No. A/NE-KTS/22 at various lots in D.D. 92 and Adjoining Government Land (New Lot to be known as Lot 2644 in D.D. 92), (hereafter referred to as the "Application Site") under Section 16 (S16) of the Town Planning Ordinance (the Ordinance) (CAP. 131). The Application Site is now zoned "Comprehensive Development Area (3)" ("CDA(3)").

1.2 The Application Site is bounded by Kwu Tung Road to the north, Hang Tau Road to the east, and Sheung Yue River as well as existing meander and some existing planting area to the west. Access to the Application Site is via Hang Tau Road (***KT3/WSIA/001***). The Application Site covers an area of approximately 2 ha.

1.3 The Applicant had previously obtained rezoning agreement from the Board (under application No. Y/NE-KTS/15) for proposed residential development on 28 October 2022 (the Approved Scheme). To realise residential development at the subject "CDA(3)" zone, the Applicant now submits a refined scheme for the Board's consideration under S16 of the Ordinance.

1.4 The Proposed Development consists of 1,062 units, club house and car parking facilities with a maximum plot ratio of 2.012. A summary of key information of the Proposed Development is shown below in ***Table 1.1***.

Table 1.1 - Development Schedule

	Proposed Development
Site Area	About 19,591 m^2
Plot Ratio	Not more than 2.012
Total Gross Floor Area (GFA)	Not more than 39,400 m^2
No. of Residential Units	1,062

1.5 This report presents the findings of a water supply impact assessment to support the Proposed Development at the Application Site. The objectives of this water supply assessment are to:

- estimate the increased water demands arising from the Proposed Development within the Application Site;
- review the existing and planned water supply systems and assess the impact on the capacities of these systems due to the above increase in water demands; and
- recommend the water supply strategy.

2. EXISTING WATER SUPPLY SYSTEM

2.1 A schematic layout of the existing water supply system in vicinity of the Application Site is shown on ***Figure KT3/WSIA/002***. Fresh water supply to Kwu Tung is provided by Sheung Shui Treatment Works. The treated water is conveyed by pipelines to the fresh water service reservoirs at Table Hill, Tong Hang and Ping Che as well.

2.2 The Application Site is located within the supply zone of the Kwu Tung Fresh Water Service Reservoir (KTFWSR). However, as advised by Water Supplies Department (WSD), the KTFWSR is fully loaded at present. It is understood that the construction of Tong Hang No. 3 Fresh Water Service Reservoir (TH3FWSR) has been completed 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, is completed. Freshwater supply to TH3FWSR will be provided by Tai Po Water Treatment Works and the storage capacity of TH3FWSR is about 55,000 m^3. We understand that Kwu Tung North Fresh Water Service Reservoir (KTNFWSR) will serve KTN NDA which ensures the KTFWSR to have adequate capacity to cater for Proposed Development.

2.3 A 200 mm distribution main from KTFWSR was laid under Hang Tau Road. However, no salt water supply system is presently available and Temporary Mains Water for Flushing (TMF) has been adopted for the area.

3. WATER DEMANDS FOR THE PROPOSED DEVELOPMENT

3.1 The fresh and flushing water demands generated from the domestic users and service trades in the Proposed Development are estimated based on WSD Departmental Instruction 1309. For planning purpose, R2 residential type has been used for the estimation as shown in **Table 3.1**. The Proposed Development is scheduled for completion by 2032.

Table 3.1 - Water Demands for the Proposed Development

	Design Population	Supply	Unit Demand (m^3/h/d)		Total Demand (m^3/day)
			Domestic	Service Trade	
Residential (R2)	2,868	Fresh Water	0.30	0.04	1024.12*
		Flushing Water	0.104	-	298.27
				Total	**1322.39**

* A water demand of 49 m^3/day is assumed for use in the irrigation system.

3.2 The water demands for the Proposed Development is about 3.6% of the storage capacity of KTFWSR. With the completion of TH3FWSR and KTNFWSR in taking up part of the supply zone in KTFWSR, it is considered that the KTFWSR will have adequate capacity to cater for Proposed Development at the Application Site. Existing pumping and trunk transfer facilities are also considered to be adequate to meet the new demand.

3.3 Advised by WSD, there is a 200 mm diameter main along Hang Tau Road, which is adjacent to the eastern boundary of the Proposed Development. The total peak water demands from the Proposed Development would utilize about 67.6% of the pipe capacity of the 200 mm diameter main. Details of capacity calculation of the 200mm main is shown in **Annex B**.

4. PROPOSED WATER SUPPLY STRATEGY FOR THE PROPOSED DEVELOPMENT

4.1 The proposed option to provide water supply to the Proposed Development is shown on ***Figure KT3/WSIA/002***.

4.2 An existing 200 mm diameter distribution main is running along Hang Tau Road. To provide water supply to the Proposed Development, a new 150 mm diameter watermain for fresh water supply and a new 100 mm diameter TMF for flushing water are required to be branched off from the existing 200 mm diameter watermain. Fresh water supply will thus be readily available. Based on the fresh water demand, the velocity for the new 150 mm diameter watermain and the new 100 mm TMF are 2.01 m/s and 0.88 m/s respectively. Thus, the proposed watermain for fresh water supply would operate within the adequate working range between 0.9 m/s and 3.0 m/s. The velocity for the new 100 mm TMF is lower than 0.9 m/s, however, as for the workability, 100 mm TMF is considered preferable. Detailed calculations are shown in ***Annex C***.

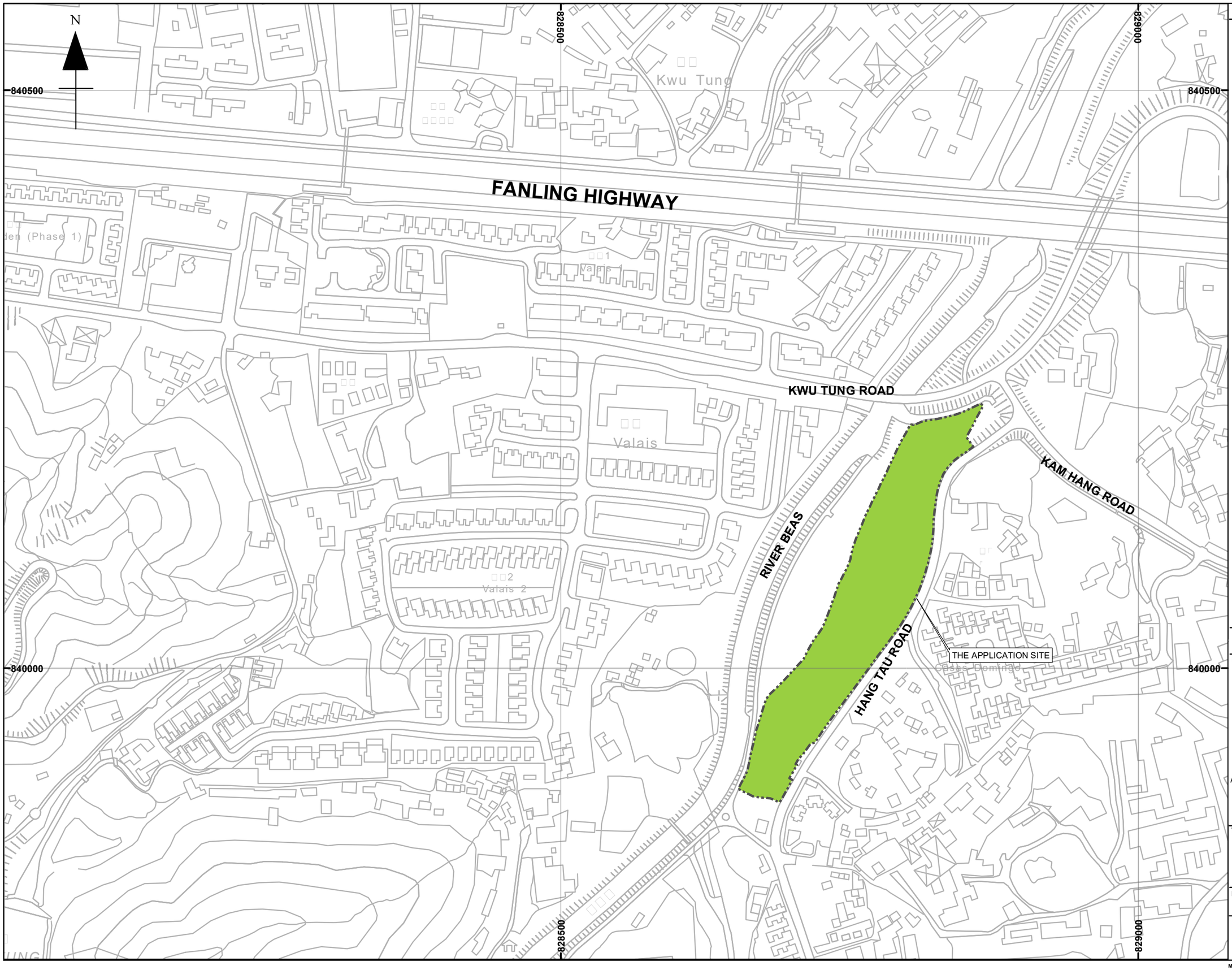
4.3 Since the Application Site is located at low elevation, no additional pumping facilities will be required for the water supply to the Proposed Development. However, internal water supply system in within the Application Site will be required. There should be separate water supply system for potable and flushing water supply.

5. CONCLUSION

5.1 The Proposed Development is located within the supply zone of KTFWSR. The water demands for the Proposed Development are only about 3.6% of the storage capacity of KTFWSR. It is known that KTFWSR is fully loaded at present. However, with the completion of TH3FWSR, part of water supply from KTFWSR will be taken up and the KTFWSR will have adequate capacity to cater for the Proposed Development. Therefore, the Proposed Development is technically feasible from water supply point of view.

END OF TEXT

FIGURES



Legend

The Application Site

Initial Data	Checked Data
Kathy	KKL

Project

Section 16 Planning Application for Proposed Residential Development with Minor Relaxation of Plot Ratio Restriction at Lots 1027, 1029, 1030, 1034A, 1034B, 1039 (Part), 1040, 1042 RP, 1043 RP, 1044 RP(Part), 1045, 1047, 2233 (Part), 2251 S.A RP,2256 RP, 2315 (Part) and 2316 RP (Part) in D.D. 92 and Adjoining Government Land (New Lot to be known as Lot 2644 in D.D. 92), Kwu Tung South, Sheung Shui, New Territories

Title

Location Plan

Figure No.	Scale
KT3/WSIA/001	1:3,000 @ A3

binnies

Plot date: 2021-07-08

Mxd: B:\Project\380153\Kwu Tung Site 3\MXD\H1_PR2.0_202107.mxd

828 000 E

829 000 E

841 000 N

840 000 N

N

EXISTING 700mm DISTRIBUTION MAIN FROM SHEUNG SHUI TREATMENT WORKS

EXISTING 700mm DISTRIBUTION MAIN WITH 1200 STEEL SLEEVE

EXISTING 600mm DISTRIBUTION MAIN FROM KWU TUNG FRESH WATER SERVICE RESERVOIR

KWU TUNG FRESH WATER SERVICE RESERVOIR

PROPOSED 150mm MAIN BRANCH OFF FROM EXISTING 200mm MAIN

THE APPLICATION SITE

LEGEND:

- THE APPLICATION SITE
- EXISTING 700mm DISTRIBUTION MAIN
- EXISTING 600mm DISTRIBUTION MAIN
- EXISTING 200mm DISTRIBUTION MAIN
- PROPOSED 150mm MAIN

	Designed	Checked
Initial	ZL	NS
Date	02/14	02/14

Project title

SECTION 16 PLANNING APPLICATION FOR PROPOSED HOUSES AT LOTS 1027, 1029, 1030, 1034 S.A, 1034 S.B, 1039 (PART), 1040, 1042 RP, 1043 RP, 1044 RP (PART), 1045, 1047, 2233 (PART), 2251 S.A RP, 2256 RP, 2315 (PART) AND 2316 RP (PART) IN D.D. 92 AND ADJOINING GOVERNMENT LAND (NEW LOT TO BE KNOWN AS LOT 2644 IN D.D. 92), KWU TUNG SOUTH, SHEUNG SHUI, THE NEW TERRITORIES

Drawing title

SCHEMATIC LAYOUT OF PROPOSED WATER SUPPLY SYSTEM

Figure no. KT3/WSIA/002

Revision -

Scale A1 1 : 5000

BINNIES HONG KONG LIMITED
賓尼斯工程顧問有限公司

Plot Date = 2025/5/21

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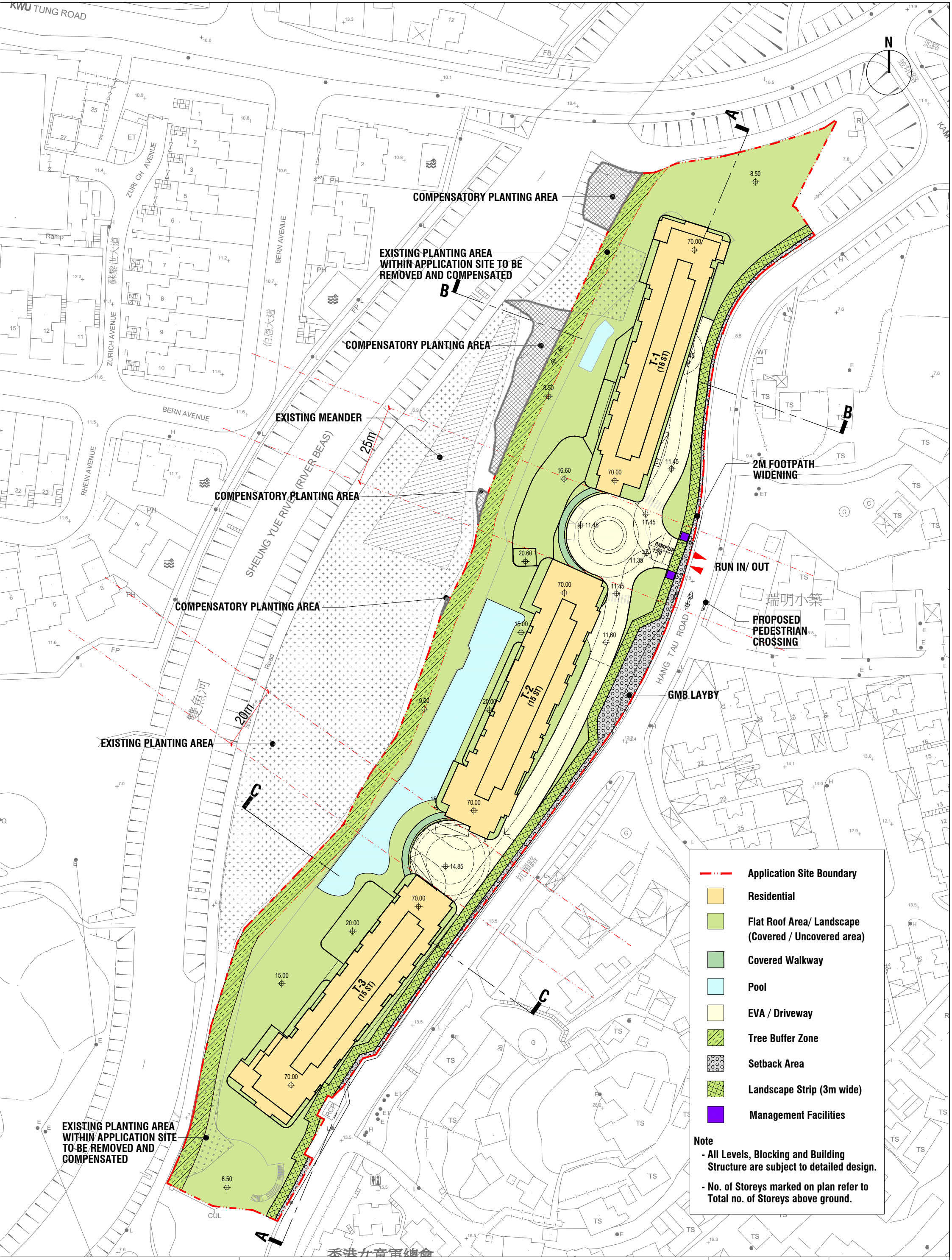
ANNEX A

MASTER LAYOUT PLAN



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Title

Indicative Master Layout Plan

Rev.	Date
	28 AUG 2025
Scale	Figure
1:1000 [A3]	

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Title

Indicative Basement Layout Plan

Rev.	Date
	27 AUG 2025
Scale	Figure
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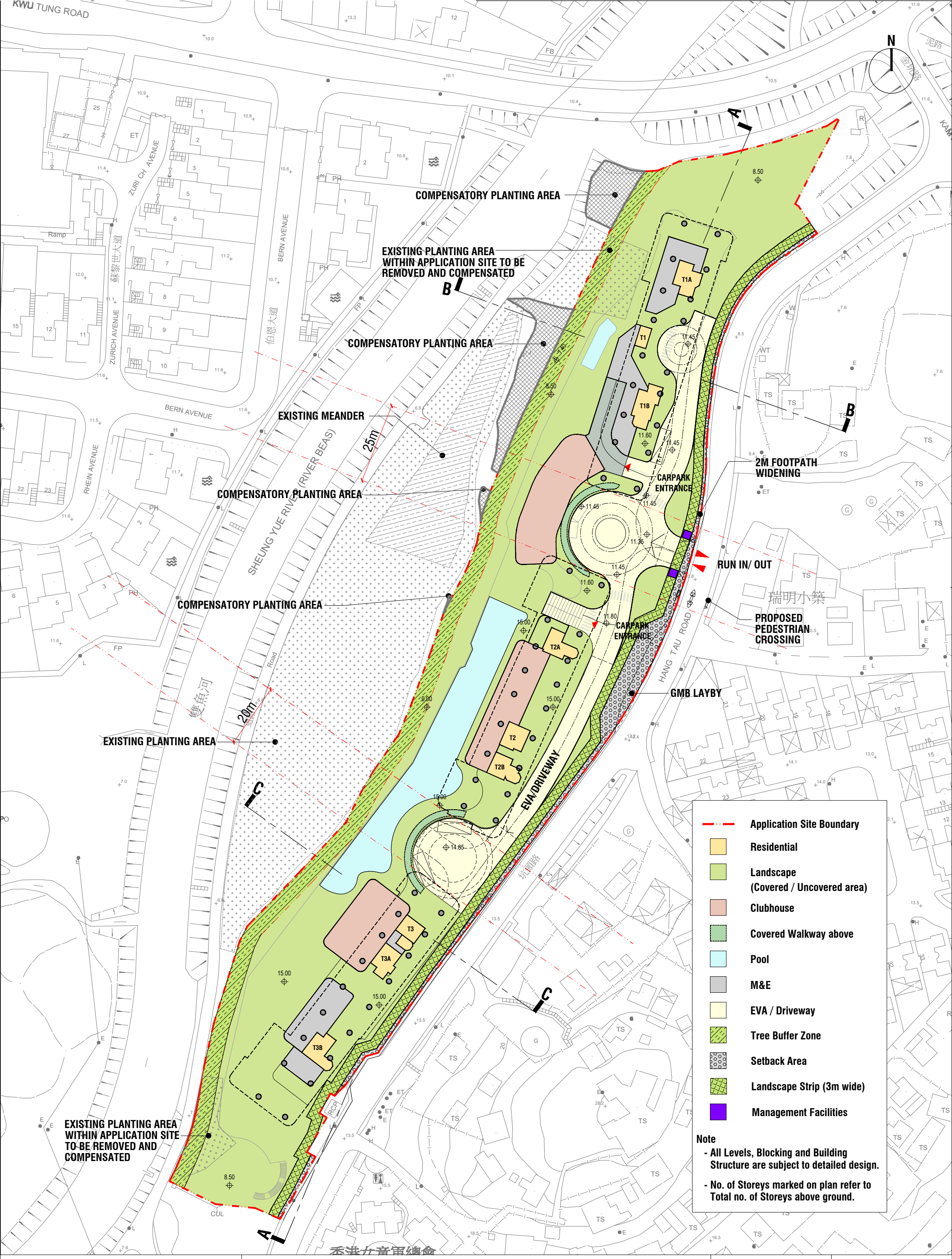

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Title

Indicative Ground Floor Layout Plan

Rev.	Date
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Scale	Figure
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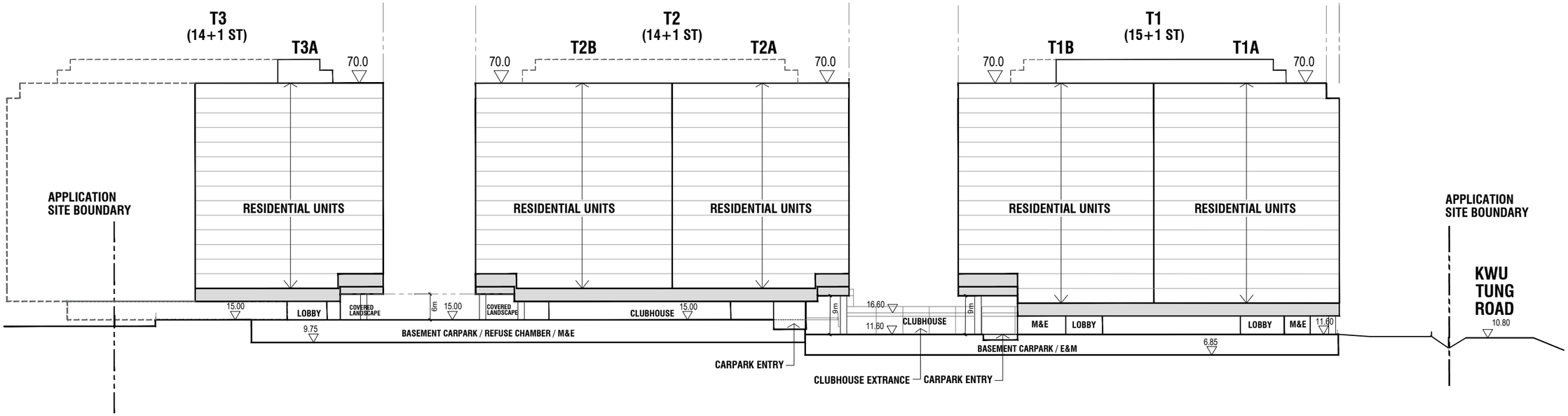
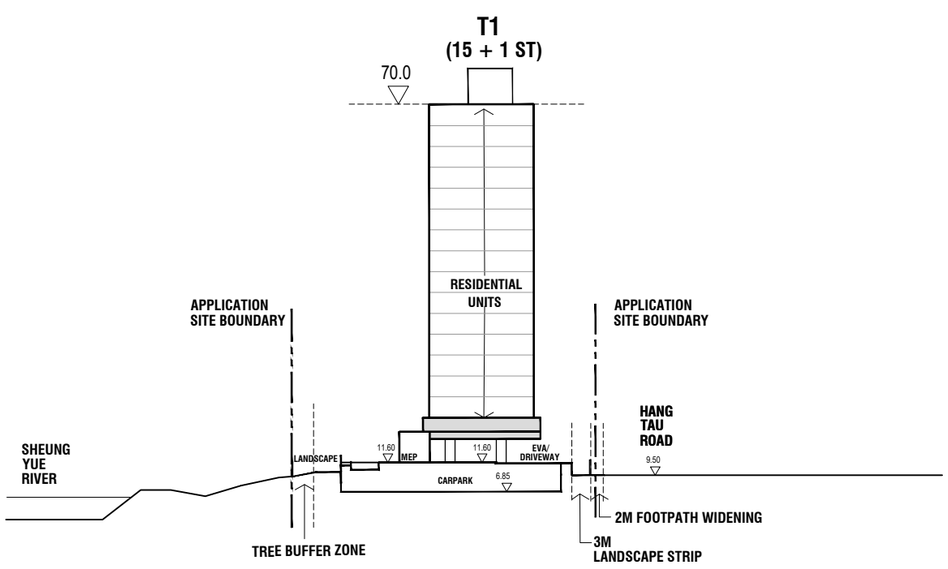
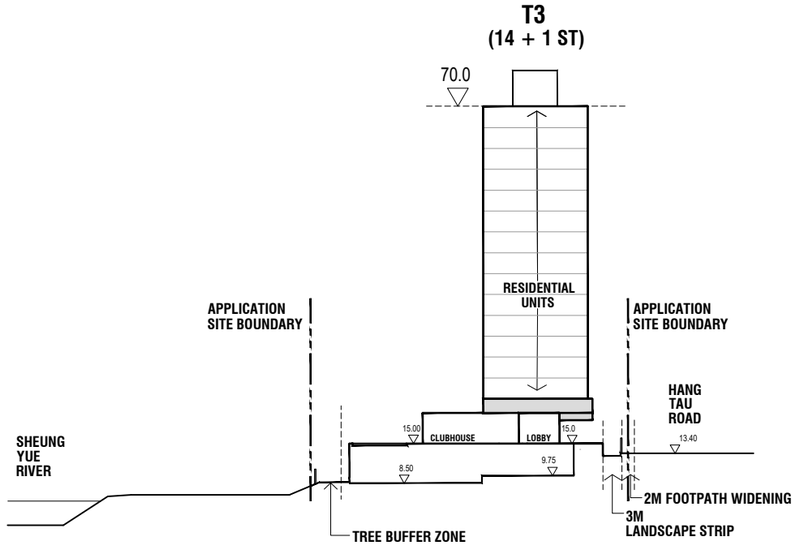


SECTION A-A



SECTION B-B



SECTION C-C

Note

- **All Levels, Blocking and Building Structure are subject to detailed design.**
- **No. of Storeys marked on plan refer to Total no. of Storeys above ground.**

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Title

Indicative Sections

Rev.	Date
	28 JULY 2025
Scale	Figure
1:1000 [A3]	A-4

ANNEX B

HYDRAULIC CAPACITY OF EXISTING WATER MAIN

Binnies Hong Kong Limited

Project Section 16 Planning Application for Proposed Residential Development at Lots 1027, 1029, 1030, 1034A, 1034B, 1039 (Part), 1040, 1042 RP, 1043 RP, 1044 RP (Part), 1045, 1047, 2233 (Part), 2251 S.A RP, 2256 RP, 2315 (Part) and 2316 RP (Part) in D.D. 92 and Adjoining Government Land (New Lot to be known as Lot 2644 in D.D. 92), Kwu Tung South, Sheung Shui, New Territories

Subject Annex B Hydraulic Capacity of Existing 200mm Fresh Water Main

Design Assumptions

Assume Velocity, *Va*	=	2	m/s

Pipe Capacity

Diameter, *D*	=	200	mm
Area, *A*	=	0.03	m^2
Flow, *Q*	=	*Va x A*	
	=	0.0628	m^3/s
	=	5,429	m^3/d

Water Demand

Fresh Water

Mean Daily Demand, *MDDf*	=	1024.1	m^3/d
Peaking Factor	=	3	
Peak Flow, *Pff*	=	3072.36	m^3/d

Salt Water

Mean Daily Demand, *MDDs*	=	298.3	m^3/d
Peaking Factor	=	2	
Peak Flow, *Pfs*	=	596.54	m^3/d

Total Water Demand on Pipe, *Demd*	=	*Pff + Pfs*	
	=	3668.90	m^3/d
Utilization of Pipe Capacity	=	*Demd / Q*	
	=	67.6%	

ANNEX C

HYDRAULIC CAPACITY OF PROPOSED WATER MAIN

Binnies Hong Kong Limited

Project Section 16 Planning Application for Proposed Residential Development at Lots 1027, 1029, 1030, 1034A, 1034B, 1039 (Part), 1040, 1042 RP, 1043 RP, 1044 RP (Part), 1045, 1047, 2233 (Part), 2251 S.A RP, 2256 RP, 2315 (Part) and 2316 RP (Part) in D.D. 92 and Adjoining Government Land (New Lot to be known as Lot 2644 in D.D. 92), Kwu Tung South, Sheung Shui, New Territories

Subject Annex C Hydraulic Capacity of Proposed Fresh and Salt Water Mains

Hydraulic Capacity of Proposed 150mm Fresh Water Main

Water Demand

Mean Daily Demand, *MDDf*		=	1024.12	m^3/d	
Peaking Factor		=	3		
Peak Flow, *Pff*		=	3072.36	m^3/d	
		=	0.04	m^3/s	
Flow in Pipe					
Diameter, *D*		=	150	mm	
Area, *A*		=	0.02	m^2	
Velocity, *Vf*		=	*Pff / A*		
		=	2.01	m/s	
	Vf	>	0.9	m/s	
	Vf	<	3.0	m/s	**OK**

Hydraulic Capacity of Proposed 100mm Salt Water Main

Water Demand

Mean Daily Demand, *MDDs*		=	298.27	m^3/d	
Peaking Factor		=	2		
Peak Flow, *Pfs*		=	596.54	m^3/d	
		=	0.007	m^3/s	
Flow in Pipe					
Diameter, *D*		=	100	mm	
Area, *A*		=	0.01	m^2	
Velocity, *Vs*		=	*Pfs / A*		
		=	0.88	m/s	
	Vs	<	0.9	m/s	
	Vs	>	3.0	m/s	**NOT OK**

(Remark: Although the velocity of proposed 100mm salt water main is lower than 0.9 m/s, it is considered preferable.)