Appendix H

Sewerage 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
Sewerage Impact Assessment

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September 2025

Table of Contents

LIST OF TABLES

LIST OF FIGURES

ANNEX

1. INTRODUCTION

1.1 Binnies Hong Kong Limited (Binnies) has been commissioned to carry out sewerage 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/SIA/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 Information

	Proposed Development
Site Area	About 19,591 m^2
Plot Ratio	Not more than 2.012
Total Domestic Gross Floor Area (GFA)	Not more than 39,400 m^2
No. of Residential Units	1,062
Anticipated Population[1]	2,868

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

- examine the existing and planned sewerage facilities in the region;
- estimate the sewage flows to be generated from the Proposed Development; and
- formulate and evaluate options for sewage treatment and disposal for the Proposed Development.

1.6 The tentative completion year of the project is 2032.

[1] The anticipated population is based on an assumption of 2.7 occupants per unit.

2. EXISTING AND PLANNED SEWERAGE FACILITIES IN THE AREA

Existing Sewerage Facilities in the Area

2.1 The Application Site is presently unsewered. An existing 500 mm diameter public sewer was laid along Kwu Tung Road to the north of the Application Site, which subsequently discharges to a manhole of a branch sewer of the Western Trunk Sewer (WTS) at Kam Tsin Road adjacent to De La Salle Secondary School (***Figure KT3/SIA/002***).

2.2 The WTS lies beneath Castle Peak Road Kwu Tung Section, which runs along the northern side of Fanling Highway between Kwu Tung and Shek Wu Hui. This network connects to Shek Wu Hui Sewage Treatment Works (STW) located at the northern part of Shek Wu Hui.

2.3 The Shek Wu Hui STW provides primary and secondary treatments with effluent discharged to the Indus River and then via Shenzhen River to Deep Bay. The capacity of the STW has been upgraded from 60,000 m^3/d (ADWF) to 80,000 m^3/d (ADWF) in 2002, providing secondary treatment serving Sheung Shui and Fanling districts.

2.4 To cope with the other growth of the NENT and expansion of sewage catchment, upgrading works of Shek Wu Hui STW from 93,000 m^3/d to 105,000 m^3/d has commenced in 2015 and completed in 2019.

Other Planned Sewerage Facilities in the Area

2.5 A planning study for North East New Territories (NENT) had been carried out by Government's consultants. According to the finding of the Planning and Development Study on NENT, a comprehensive network of sewerage has been proposed for the Kwu Tung North New Development Area and adjoining areas. Sewage will be collected by gravity sewers and discharged via a pumping station near the trained River Beas to Shek Wu Hui STW.

2.6 Upgrading of Shek Wu Hui STW under the Main Work Stage 1 under Shek Wu Hui Effluent Polishing Plant (SWHEPP) improvement scheme has commenced in September 2019 to further upgrade the capacity to 140,000 m3/d. The Remaining Stages of the improvement scheme will eventually upgrade the capacity to 190,000 m3/d with a targeted completion in 2034.

3. ESTIMATED SEWAGE TO BE GENERATED FROM THE PROPOSED DEVELOPMENT

3.1 The Master Layout Plan of the Proposed Development is shown in ***Annex A***. The volume of sewage that will be generated by the Proposed Development is approximately 792.0 m^3/d upon full occupation. Detailed calculation of design flow of swimming pool is shown in ***Annex C***. The design assumptions are presented below in ***Table 3.1***.

Table 3.1 Estimated Sewage Flow from the Proposed Development

GFA	- Domestic - Clubhouse - Swimming pool	39,400 m^2 1,773 m^2 1,197 m^2
	- No. of Units	1,062
Design Population / Employee	- Domestic, R2 - Clubhouse[2]	2,868 persons 60 employees
Global unit flow factor[3]	- Domestic, R2 - Clubhouse, J11	0.27 m^3/d per person 0.28 m^3/d per employee
Predicted ADWF	- Domestic, R2 - Clubhouse	774.4 m^3/d 16.8 m^3/d
Total Predicted ADWF		792.0 m^3/d
Other Sewage Flow	Sewage generated from backwashing of swimming pool (Peak Flow)*	8.3 L/s

* Backwashing of swimming pool would be conducted in sequential portions of the filters.

3.2 The sewage will be of domestic nature; no industrial wastewater will be generated.

[2] A density of 3.3 employees per 100m^2 GFA (private commercial community, social & personal services) is adopted in accordance with "Commercial and Industrial Floor Space Utilization Survey" conducted by PlanD in 2004/05.

[3] Refer to Guidelines for Estimating Sewage Flows (GESF) published by EPD in March 2005.

4. PROPOSED SEWERAGE STRATEGY FOR THE PROPOSED DEVELOPMENT

4.1 The Proposed Development lies within the catchment of Shek Wu Hui STW and is in the vicinity of the WTS branch sewer along Fanling Highway. The estimated sewage to be generated from the Proposed Development is approximately 792.0 m^3/d. This is equivalent to about 0.75% of the design capacity (105,000 m^3/d) of the Shek Wu Hui STW after the upgrading works at 2019. It is noted a S16 planning application (A/KTN/54) for minor relaxation of maximum plot ratio and/ or building height for several sites in the Kwu Tung North NDA and Fanling North NDA has been approved by Town Planning Board. According to Sewerage Impact Assessment Review for the S16 planning application (A/KTN/54), the treatment capacities of Shek Wu Hui STW are expected to be upgraded to 140,000 m^3/d in 2025. As the Proposed Development will utilize 0.57% of the expected design capacity of Shek Wu Hui STW in 2025, it is expected the remaining spare capacity could cater for the sewage generated by Proposed Development.

4.2 The WTS comprising pipes of diameters ranging from 600 mm to 1800 mm was commissioned in 2002 to serve the Kwu Tung area and other communities in the vicinity, including communal sewers serving the sewered area at Hang Tau and Kam Tsin.

4.3 An existing 500 mm diameter public sewer was laid along Kwu Tung Road to the north of the Application Site. The layout of the public sewer is shown on ***Figure KT3/SIA/002 and 004 to 010***. The sewage will be discharged to Shek Wu Hui STW via Tsung Pak Long Sewage Pumping Station (SPS) for disposal to River Indus and in turn to Deep Bay.

Proposed Sewage Disposal Scheme

4.4 It is proposed that the sewage generated from the Proposed Development will be discharged to the existing 500mm diameter sewer at the north of the Application Site for disposal at Shek Wu Hui STW via Tsung Pak Long SPS.

4.5 To convey the sewage generated by Proposed Development to the existing sewer near the junction of Kam Hang Road and Kwu Tung Road, a new gravity sewer is proposed connecting from the north of the Application Site to the existing sewer at manhole FMH1030367. The proposed sewer will be constructed along Kam Hang Road and Kwu Tung Road and its length is about 100m. The layout of the proposed sewage disposal scheme is shown on ***Figure KT3/SIA/003*****.**

4.6 The estimated sewage generated from the Proposed Development is 792.0 m^3/d. The estimation of sewage flow generated by existing/planned developments is shown on ***Table 4.1***. The detailed estimation of sewage flow generated by Catchment 6 and 7 is shown in ***Annex D***. The capacity calculations for the existing sewers, which include estimated sewage generated of existing/planned developments, starting from the discharge point to Tsung Pak Long SPS are provided in ***Annex B.*** A detailed sewerage map is provided in ***Figure KT3/SIA/004 to 010***.

4.7 The calculation for the backwash sewage generated by the swimming pool of the Proposed Development is shown in ***Annex C***.

4.8 Based on the calculations shown in ***Annex B***, all the downstream existing sewers that would operate below its capacity under condition with the proposed development. Referring to ***Figure KT3/SIA/003*****,** sewer pipe upgrading works by others have been proposed.

Table 4.1 Estimation of Sewage Flow Generated by Existing/Planned Developments

Existing/ Planned Development	*Eden Place*	*Residential Development (Valais I and II) at Kwu Tung South*(1)	*Proposed Development at the Application Site (Residential)*	*KTS CDA(2) (Application No. Y/NE-KTS/14)*	*KTS CDA(1)*(2) *(Application No. A/NE-KTS/506)*	*Residential Development at Hang Tau Tai Po (Application No. A/NE-KTS/13)*	*Village areas at north of Kam Hang Road at Kam Tsin*	*Areas adjacent to existing sewerage network near Kam Tsin Village*	*Yin Kong Village and nearby areas*	*CDA Site in Kwu Tung North (Application No. Y/KTN/2)*	*Golf Parkview*	*Oi Yuen (Application No. Y/FSS/15)*	*Proposed Houses (Application No.: A/NE-KTS/460)*	*Residential Development (Application No. A/NE-KTS/466)*	*Beas River Equestrian Centre*	*CE52/2017 Tai Tau Leng Public Housing*
Catchment No.	1	2	3	B	F	C	5	6	7	E	8	A	9	10	11	12
Site Area (m^2)	56,313	156,170	19,591	31,050	37,560	18,723	-	Please refer to **Annex D**.	Please refer to **Annex D**.	15,409	-	31,623	-	5,627	-	-
Plot Ratio	-	0.4	2.012	3.0	3.059	1.23	-			-	-	3.0	-	0.48	-	-
Development GFA (m^2)	-	62,468	39,400	92,208	114,880	26,170	-			29,789	-	89,583	-	2,700	-	-
Average Flat Size (m^2)	-	189.3	-	-	43.52	-	-			-	-	-	-	-	-	-
Number of Units	9	330	1062	1,427	2,589	320	-			527	-	676	-	19	-	-
Average PPF	2.8	-	2.7	-	2.7	-	-			-	-	-	-	-	-	-
Design Population	25	1042	2,868	-	6,991	-	115			-	125	-	-	-	-	-
Global unit flow factor (m^3/d)	0.37	0.37	0.27	-	0.27	-	0.37			-	0.37	-	-	-	-	-
Clubhouse/restaurant, etc (m^3/d)	-	-	16.8	-	128.6	-	-			-	-	-	-	-	-	-
Predicted ADWF (m^3/d)	9.25	385.5	792.0	1,153.0	2,166.35	343.0(4)	42.6	1,605.08(6)	99.91(6)	492.0(4)	46.3	798.8(4)	2.2(4)	49.0(4)	272(4)	3,057.0(4)
Swimming Pool Backwash Flowrate (m^3/d)	-	-	21.6 (8.3L/s)(3)	-	31.5 (8.3L/s) (3)	-	-	-	-	-	-	-	-	-	-	-
Manhole to be connected	FMH10 30348	FMH10 30358	FMH10 30366	FMH10 30367	FMH10 30384	FMH1029683		FMH10 21544	FMH1021543		FMH1023220		FMH10 29682	FMH10 29681	FMH10 28616	FMH10 23220

Note:

(1) Data for Development 1 (i.e. Valais) as in A/NE-KTS/228 approved on Jul 7, 2006.

(2) Data for Planned Development KTS CDA(1) is based on the assumption of plot ratio 3.059.

(3) Peak flow (no peaking factor required) generated from backwashing of swimming pool.

(4) Data for Planned Development as enclosed by EPD on Jul 16, 2021.

*(5) Detailed estimation of sewage is shown in **Annex D**.*

4.9 Information from DSD indicates the design capacity of Tsung Pak Long SPS is 21,070m^3/d. According to the approved SIA Report from the proposed residential development (TPB Application No. Y/NE-KTS/14) prepared by Ramboll Hong Kong Limited, it is envisaged there will be additional planned developments in Tsung Pak Long and Hang Tau. Detailed checking on the capacity of Tsung Pak Long SPS due to the planned development is shown in ***Annex E***.

4.10 Based on the calculation in Annex E, including the Proposed Development, the total sewage conveyed to TPLSPS is estimated to be 17,825.4 m3/d (Equivalent to 84.6% utilization of TPLSPS). However, in view that the TPLSPS can cater the ADWF from all planned development with only 84.6% utilization, and considering there is some attenuation capacity of the inlet chamber / wet well, as well as the fact many of the planned developments have not been realized, TPLSPS should have enough capacity to cater the peak flow at the time of population intake of the Proposed Development. Thus, it is considered TPLSPS has sufficient capacity to cater for the Proposed Development.

4.11 Liaison with relevant project teams will be carried out in the detailed design stage upon approval of the subject application in order to confirm the responsibly/details/programme of the proposed upgrading works, if deemed necessary.

5. EVALUATION OF THE STRATEGY AND RECOMMENDATIONS FOR THE PROPOSED DEVELOPMENT

Regional sewerage strategy

5.1 The Proposed Development lies within the catchment of Shek Wu Hui STW. The proposed sewage disposal strategy is to discharge sewage directly via a sewer to Shek Wu Hui STW.

Land matters

5.2 The proposed disposal scheme involves construction of short section of pipes to connect to the existing sewer adjacent to the Application Site at Fanling Highway. The full section of the connection sewer will run along Government land. No private lot would be required.

Environmental impact

5.3 The proposed disposal scheme involves discharge to Shek Wu Hui STW via gravity sewers, no adverse environmental impact is anticipated.

Construction

5.4 The proposed disposal scheme, construction of the section of gravity sewer from the Application Site to connect with the existing public sewer would mainly involve commonly used technology such as cut and cover excavation techniques. There is no technical constraint for construction.

6. CONCLUSION

6.1 The Proposed Development lies within the catchment of Shek Wu Hui STW and is in the vicinity of the WTS branch sewer near Kam Tsin. The estimated sewage to be generated from the Proposed Development is approximately 792.0 m^3/d.

6.2 Based on available information, the upgraded capacity of Shek Wu Hui STW is expected to be commissioned before or by the time of population intake of the Proposed Development. It is considered viable to provide a connection sewer by the project proponent to discharge sewage from the Proposed Development to the existing public sewer along Hang Tau Road and Kam Hang Road from Application Site.

6.3 Based on the calculation, all the downstream existing sewers would operate below capacity. It was also found that the Tsung Pak Long SPS could cater the ADWF from all proposed and planned developments with 84.6% utilization. It is considered that the SPS would have enough capacity to cater the peak flow due to the attenuation capacity of the inlet chamber / wet well. The proposed development is technically feasible from sewerage impact point of view.

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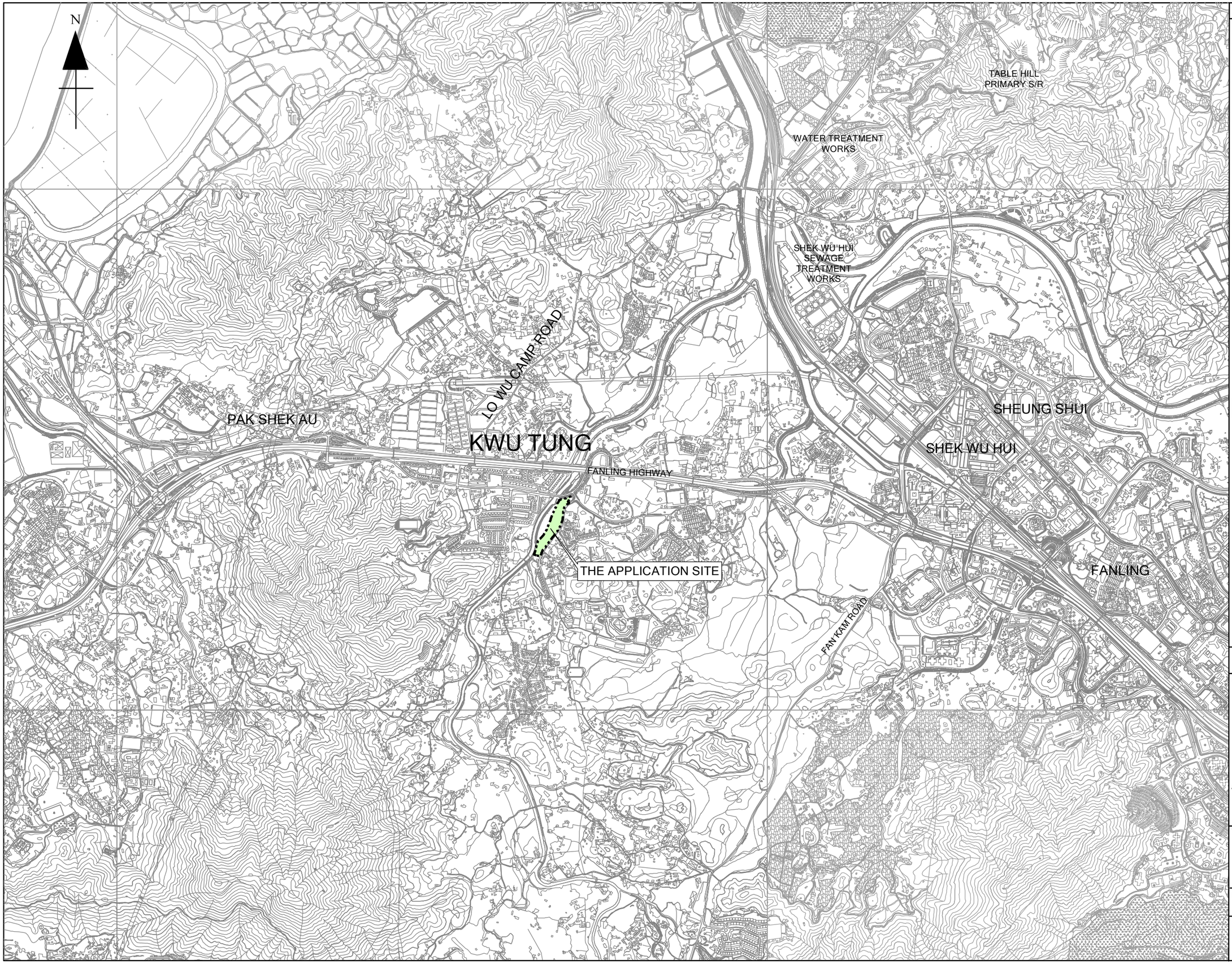
FIGURES



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
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Plot date: 2021-07-08

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829000

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EXISTING WESTERN TRUNK SEWER (WTS)

TSUNG PAK LONG SPS

FANLING HIGHWAY

2xØ225MM SEWER WITH CONCRETE SURROUND

KWU TUNG ROAD

KAM HANG ROAD

KAM TSIN ROAD

HANG TAU ROAD

THE APPLICATION SITE

Legend

- The Application Site
- Existing Sewer Manhole
- Existing Sewer
- Existing Rising Main

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

Existing Public Sewerage System

Figure No.	Scale
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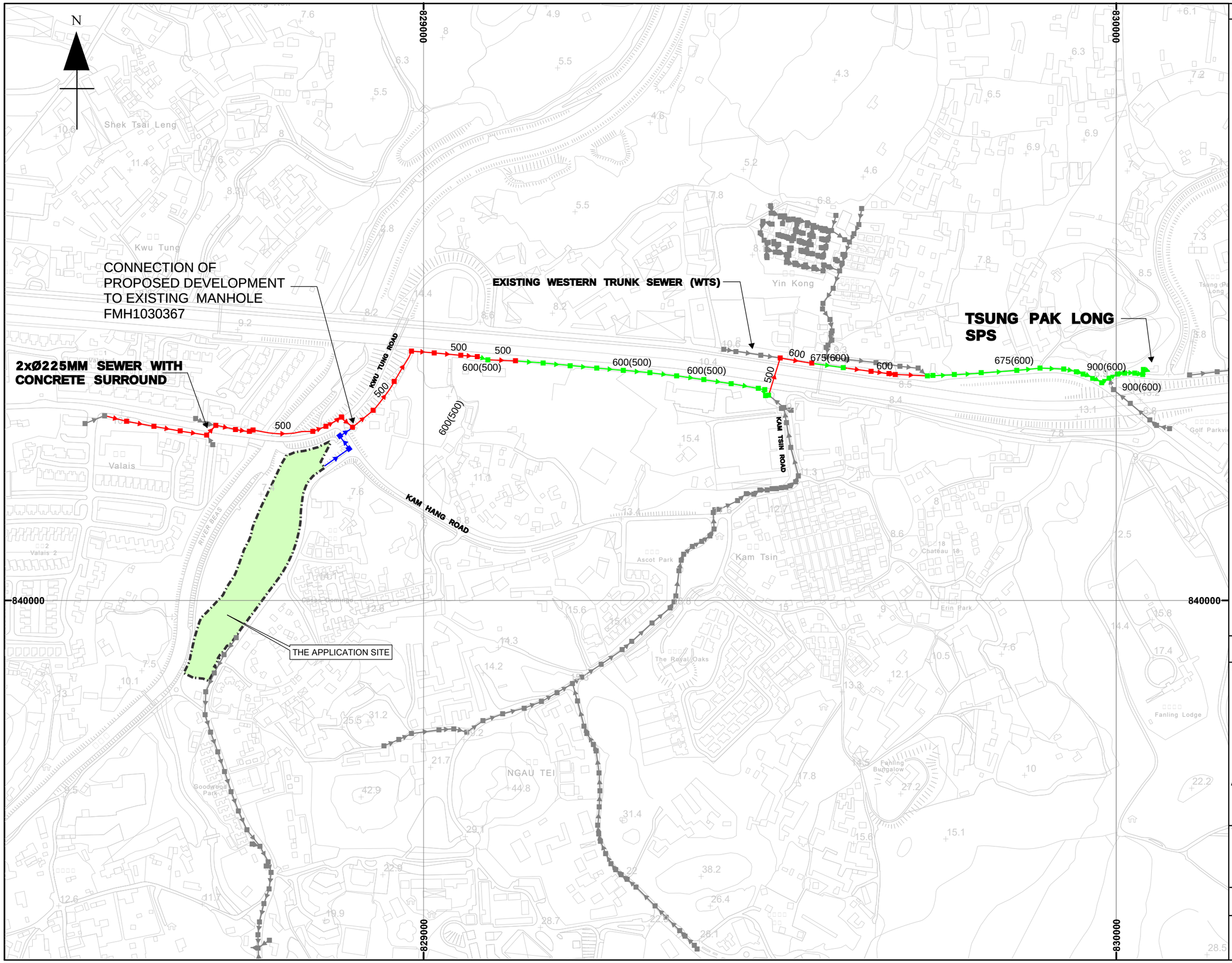

Legend

- The Application Site
- Existing Rising Main
- Existing Sewer
- Existing Sewer
- Proposed Sewer By Developer
- Proposed Sewer Upgrading By Others
- Proposed Manhole By Developer

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

Proposed Sewerage Disposal Scheme

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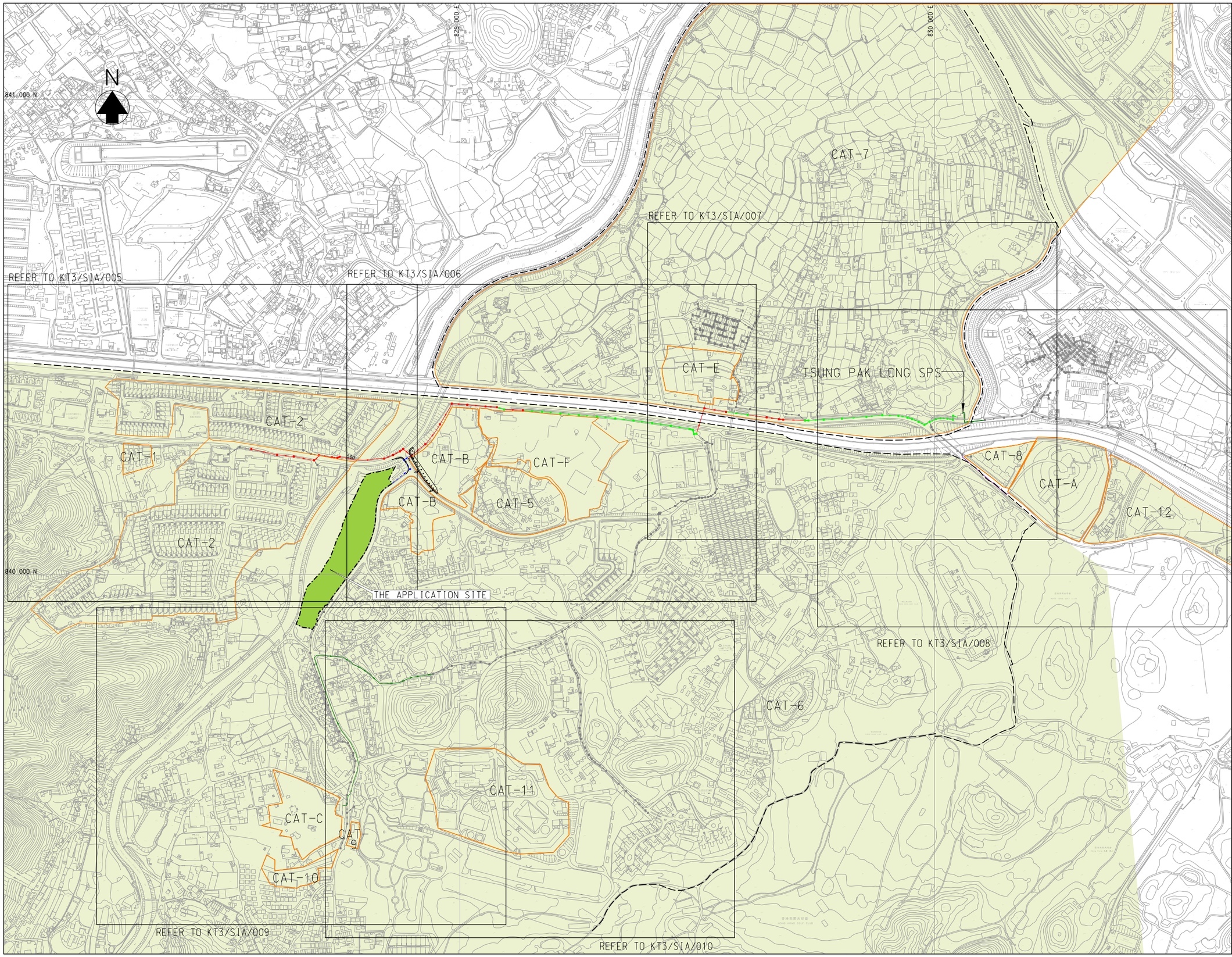

LEGEND:

- THE APPLICATION SITE
- CAT-# CATCHMENT
- BOUNDARY OF TPU
- EXISTING SEWER
- EXISTING RELEVANT SEWER
- PROPOSED SEWERUPGRADING BY DEVELOPER
- PROPOSED SEWER BY DEVELOPER
- EXISTING RISING MAIN
- POSSIBLE/POSSIBLE CONNECTION SEWER
- PROPOSED SEWER UPGRADED BY OTHERS
- PLANNED WORKS BY OTHERS

	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

DETAILED SEWERAGE MAP KEY PLAN

Figure no.	Revision
KT3/SIA/004	-

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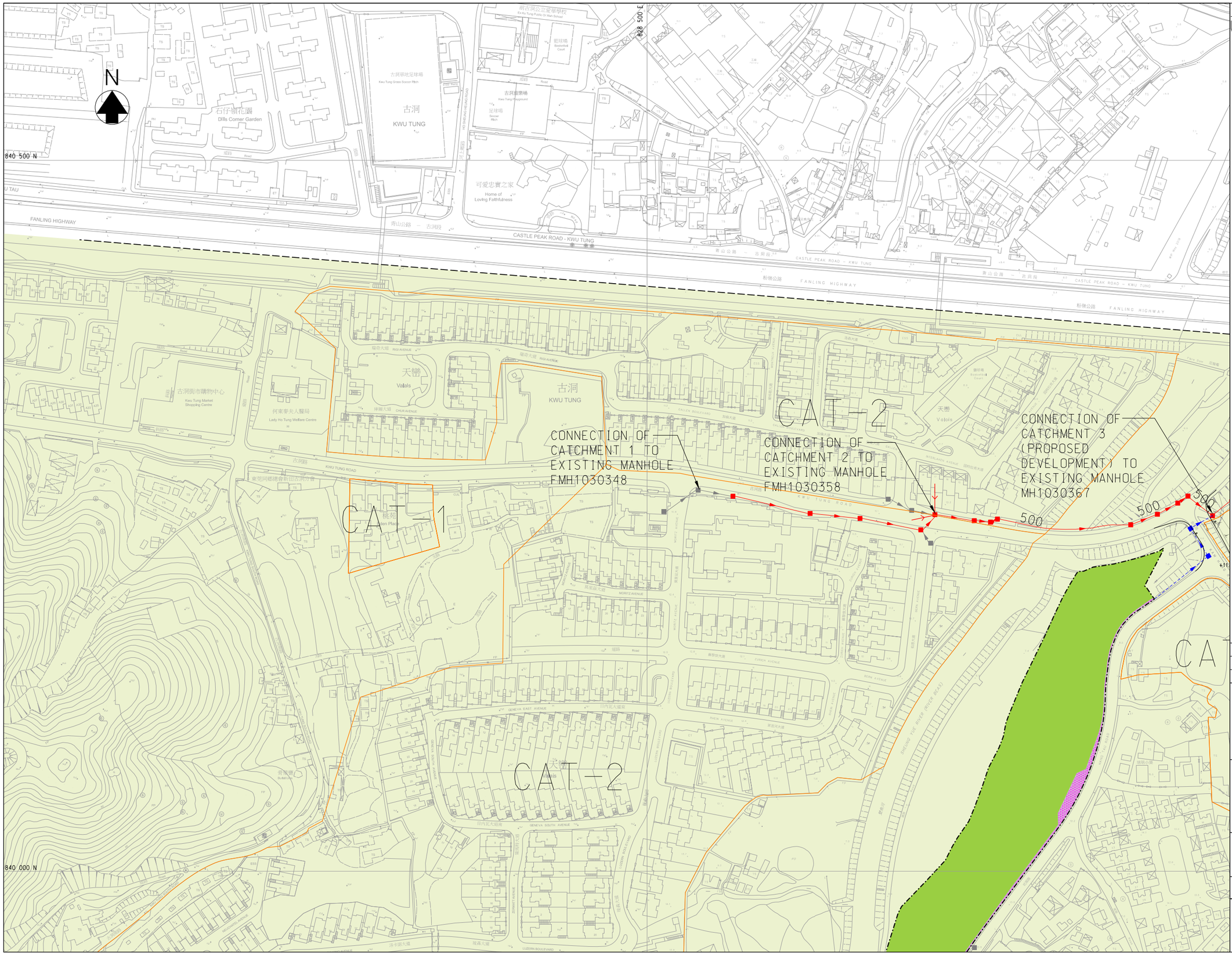

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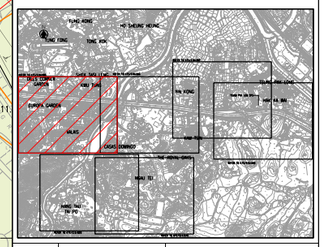
- BOUNDARY OF TPU
- EXISTING SEWER
- EXISTING RELEVANT SEWER
- INFLOW POINT
- PLANNED WORKS BY OTHERS
- PLANNED ROAD WIDENING WORKS BY DEVELOPER



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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

DETAILED SEWERAGE MAP (SHEET 1 TO 6)

Figure no.	Revision
KT3/SIA/005	-

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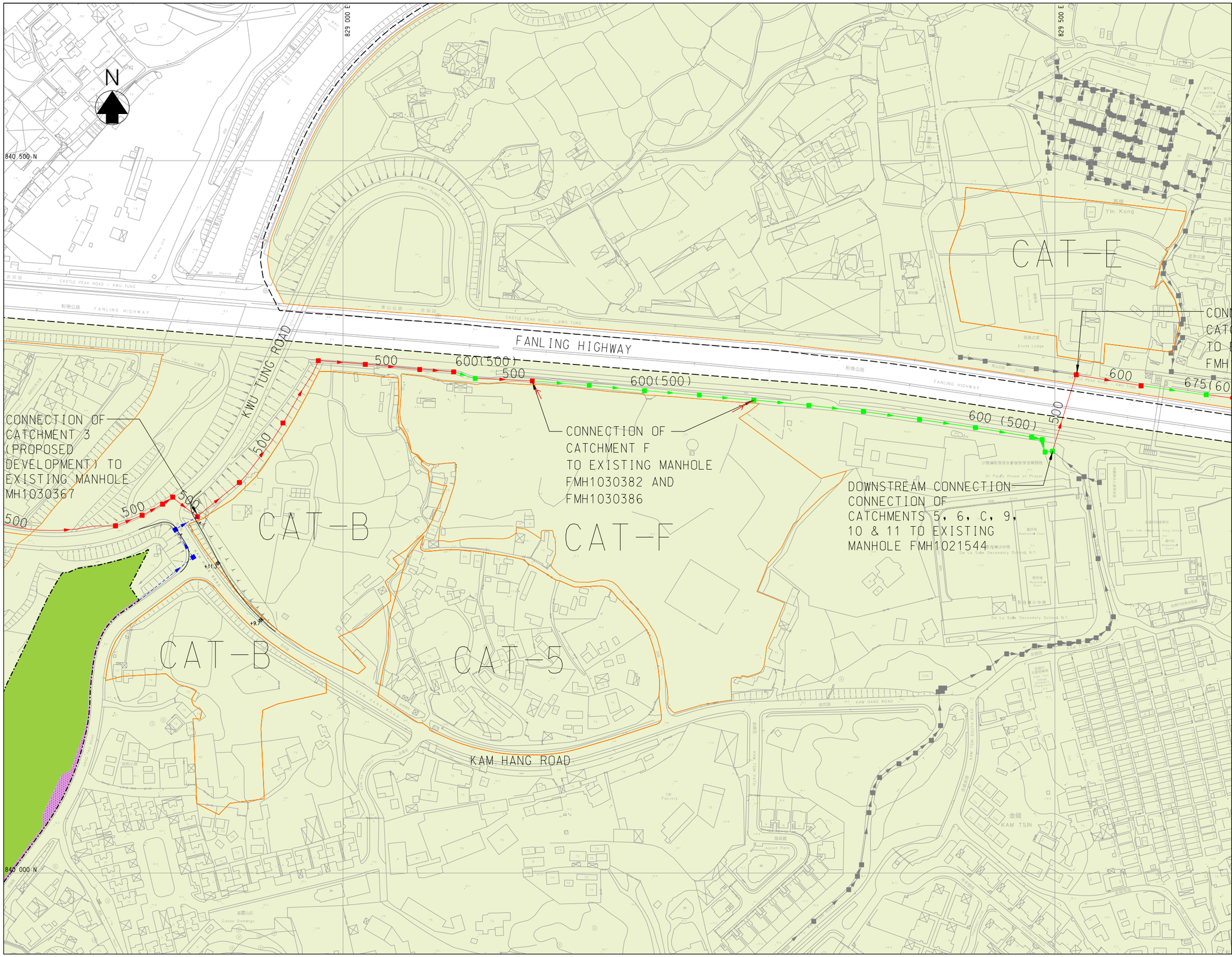

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- EXISTING SEWER
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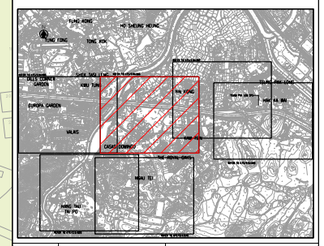
- PROPOSED SEWER BY DEVELOPER
- EXISTING RISING MAIN
- POSSIBLE/POSSIBLE CONNECTION SEWER
- PROPOSED SEWER UPGRADED BY OTHERS
- INFLOW POINT
- PLANNED WORKS BY OTHERS
- PLANNED ROAD WIDENING WORKS BY DEVELOPER
- PROPOSED MANHOLE



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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
DETAILED SEWERAGE MAP (SHEET 2 TO 6)

Figure no.	Revision
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binnies
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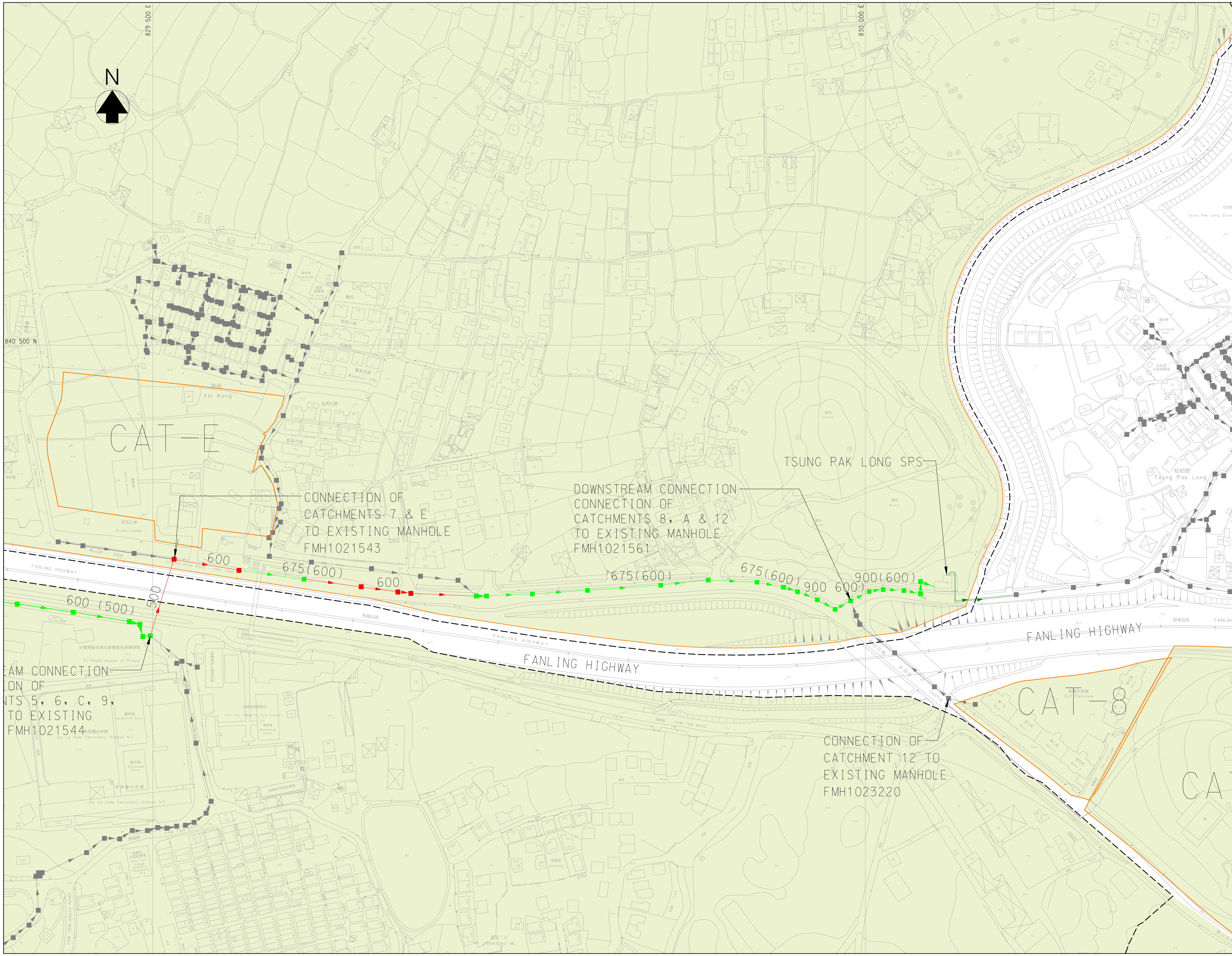

LEGEND:

- CAT-# — CATCHMENT
- BOUNDARY OF TPU
- EXISTING SEWER
- EXISTING RELEVANT SEWER
- PROPOSED SEWERUPGRADING BY DEVELOPER
- PROPOSED SEWER BY DEVELOPER
- POSSIBLE/POSSIBLE CONNECTION SEWER
- PROPOSED SEWER UPGRADED BY OTHERS
- INFLOW POINT

	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

DETAILED SEWERAGE MAP (SHEET 3 TO 6)

Figure no. KT3/SIA/007

Revision -

Scale A1 1 : 2500

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賓尼斯工程顧問有限公司

Plot Date = 2025/5/26

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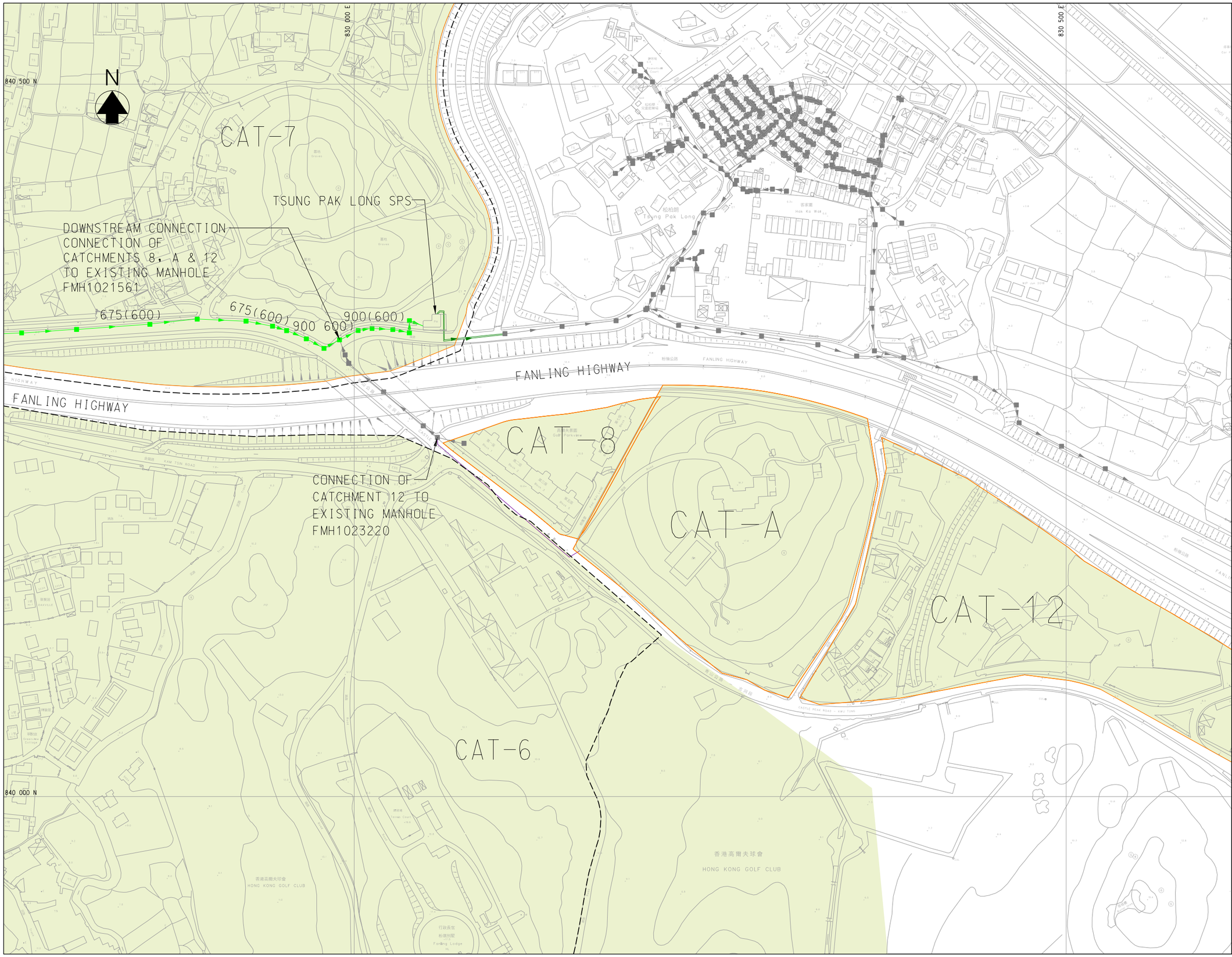
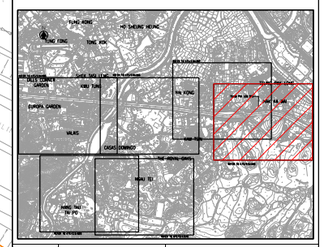


LEGEND:

- CAT-# — CATCHMENT
- BOUNDARY OF TPU
- EXISTING SEWER
- EXISTING RELEVANT SEWER
- PROPOSED SEWERUPGRADING BY DEVELOPER
- PROPOSED SEWER BY DEVELOPER
- POSSIBLE/POSSIBLE CONNECTION SEWER
- PROPOSED SEWER UPGRADED BY OTHERS
- INFLOW POINT



	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

DETAILED SEWERAGE MAP
(SHEET 4 TO 6)

Figure no.	Revision
KT3/SIA/008	-

Scale
A1 1 : 2500

BINNIES HONG KONG LIMITED
賓尼斯工程顧問有限公司

Plot Date = 2025/5/26

CAD Filename = Y:\Daily Work\20250521D\DGN\KT3-SIA-008.dgn

N

828 500 E

829 000 E

839 500 N

SHEUNG YUE RIVER (RIVER BEAS)

雙魚河

CAT-C

CAT-9

CAT-10

CA

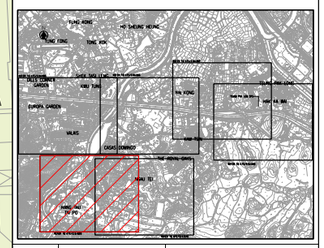
CONNECTION OF CATCHMENT C TO EXISTING MANHOLE FMH1029683

CONNECTION OF CATCHMENT 9 TO EXISTING MANHOLE FMH1029682

CONNECTION OF CATCHMENT 10 TO EXISTING MANHOLE FMH1029681

LEGEND:

- CAT-# — CATCHMENT
- EXISTING SEWER
- EXISTING RISING MAIN
- PLANNED ROAD WIDENING WORKS BY DEVELOPER



	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

DETAILED SEWERAGE MAP (SHEET 5 TO 6)

Figure no.	Revision
KT3/SIA/009	-

Scale

A1 1 : 2500

BINNIES HONG KONG LIMITED
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Plot Date = 2025/5/26

CAD Filename = Y:\Daily Work\20250521D\DGN\KT3-SIA-009.dgn

N

829 000 E

829 500 E

839 500 N

牛地
NGAU TEI

CAT-11

CAT-9

CONNECTION OF CATCHMENT 11 TO EXISTING MANHOLE FMH1028616

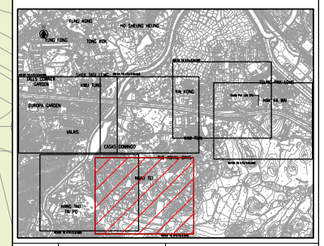
CONNECTION OF CATCHMENT C TO EXISTING MANHOLE FMH1029683

CONNECTION OF CATCHMENT 9 TO EXISTING MANHOLE FMH1029682

CONNECTION OF CATCHMENT 10 TO EXISTING MANHOLE FMH1029681

LEGEND:

- CAT-# CATCHMENT
- EXISTING SEWER
- EXISTING RISING 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
DETAILED SEWERAGE MAP (SHEET 6 TO 6)

Figure no.	Revision
KT3/SIA/010	-

Scale
A1 1 : 2500

BINNIES HONG KONG LIMITED
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Plot Date = 2025/5/26

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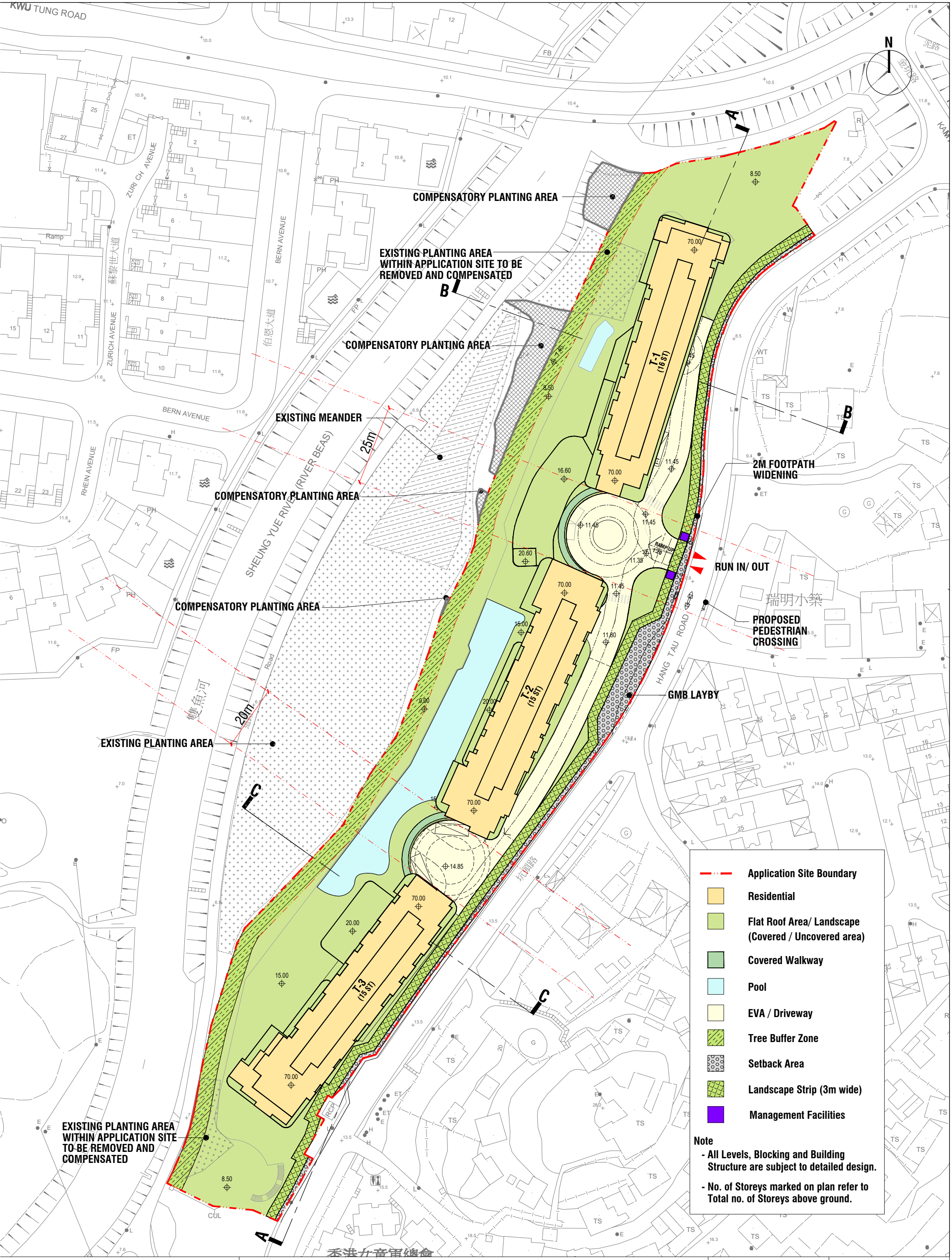
Annex A

Master Layout Plan



SUN HUNG KAI
ARCHITECTS AND ENGINEERS LIMITED
SUN HUNG KAI CENTRE, WANCHAI, HONGKONG
TEL. 28278111 FAX. 28272884

Title

Indicative Master Layout Plan

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

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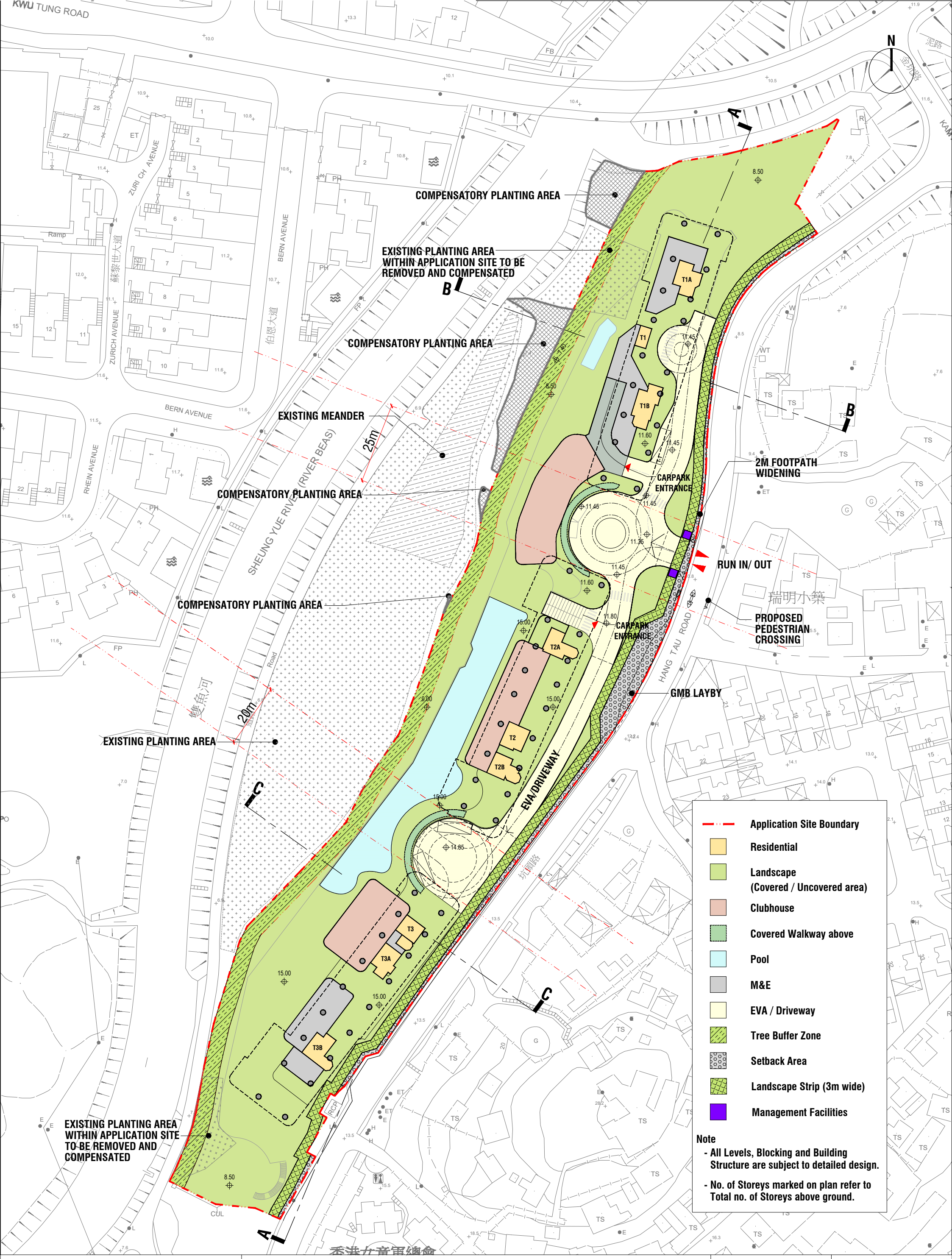
Title

Indicative Basement Layout Plan

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



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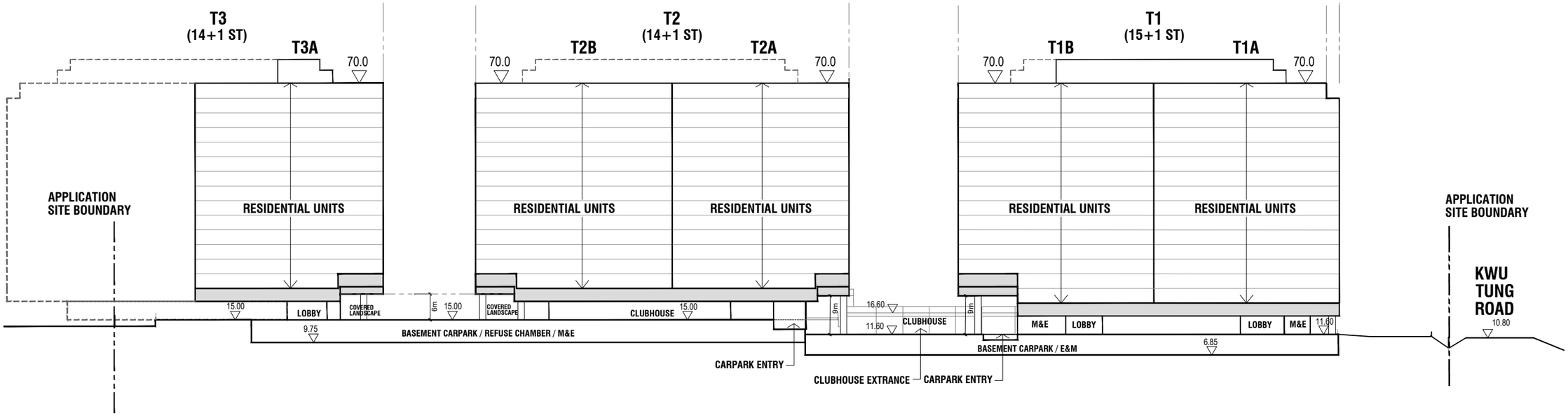
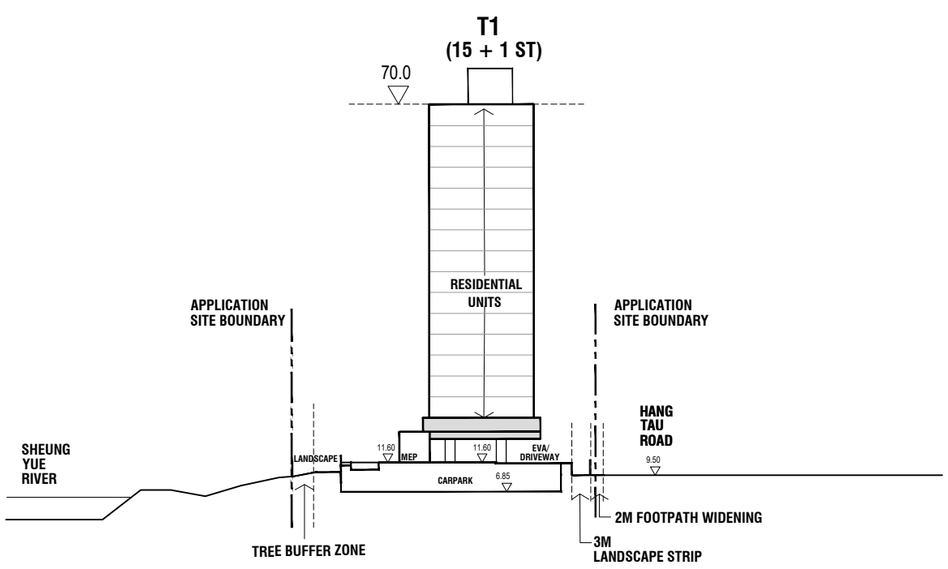
Title

Indicative Ground Floor Layout Plan

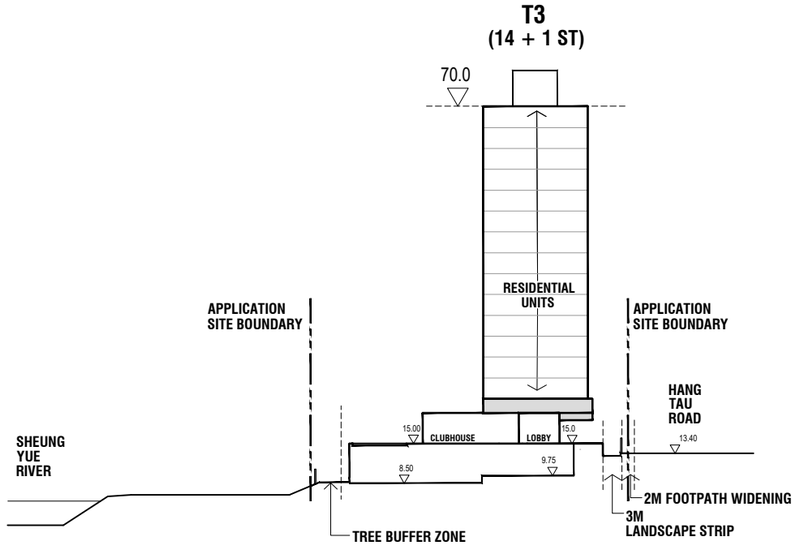
Rev.	Date
	28 AUG 2025
Scale	Figure
1:1000 [A3]	



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

Design Checking of Existing Sewer at Proposed Sewage Disposal Scheme

Annex B - Hydraulic Capacity Check of Existing Sewerage Pipe (With Existing Development Only)

Notes:
1) Colebrook-White's equation is adopted for full-bore pipe velocity calculation.
2) The existing pipes are Vitrified Clayware with a normal condition of slimed sewers. Roughness is assumed to be 1.5mm.

Pipe	Feature Number	Diameter (mm)	Upstream Invert Level (mPD)	Downstream Invert Level (mPD)	Pipe Length (m)	Gradient (1 in)	Roughness (mm)	No. of Pipes	Catchment No.	ADWF (m^3/s)	Contributing Population	Peak Factor	Design Peak Flowrate (m^3/s)	Full Bore Velocity (m/s)	Full Bore Capacity (m^3/s)	Utilization (%)
FMH1030348 to FMH1030349	FWD1035235	500	9.82	9.74	31.073	388	1.50	1	1	0.0001	34	8	0.001	0.977	0.192	0.4%
FMH1030349 to FMH1030350	FWD1035236	500	9.73	9.65	38.527	482	1.50	1	1	0.0001	34	8	0.001	0.877	0.172	0.5%
FMH1030350 to FMH1030353	FWD1035239	500	9.64	9.56	36.929	462	1.50	1	1	0.0001	34	8	0.001	0.896	0.176	0.5%
FMH1030353 to FMH1030355	FWD1035241	500	9.55	9.48	36.643	523	1.50	1	1	0.0001	34	8	0.001	0.841	0.165	0.5%
FMH1030355 to FMH1030358	FMD1001500	225	9.47	9.37	20.261	203	1.50	2	1	0.0001	34	8	0.001	0.805	0.064	1.3%
FMH1030358 to FMH1030359	FWD1035246	500	9.36	9.28	27.515	344	1.50	1	1, 2	0.0046	1,462	6	0.027	1.039	0.204	13.4%
FMH1030359 to FMH1030360	FWD1035247	500	9.27	9.24	18.546	618	1.50	1	1, 2	0.0046	1,462	6	0.027	0.774	0.152	18.1%
FMH1030360 to FMH1030361	FWD1035248	500	9.23	9.22	3.922	392	1.50	1	1, 2	0.0046	1,462	6	0.027	0.973	0.191	14.4%
FMH1030361 to FMH1030362	FWD1035250	500	9.21	9.02	85.318	449	1.50	1	1, 2	0.0046	1,462	6	0.027	0.908	0.178	15.4%
FMH1030362 to FMH1030363	FWD1035252	500	9.01	8.98	18.564	619	1.50	1	1, 2	0.0046	1,462	6	0.027	0.773	0.152	18.1%
FMH1030363 to FMH1030364	FWD1035253	500	8.97	8.94	14.778	493	1.50	1	1, 2	0.0046	1,462	6	0.027	0.867	0.170	16.1%
FMH1030364 to FMH1030366	FWD1035255	500	8.93	8.93	6.916	-	1.50	1	1, 2	0.0046	-	-	-	-	-	-
FMH1030366 to FMH1030367	FWD1035254	500	8.92	8.91	20.534	2053	1.50	1	1, 2	0.0046	1,462	6	0.027	0.422	0.083	33.1%
FMH1030367 to FMH1030369	FWD1035256	500	8.90	8.82	36.527	457	1.50	1	1, 2	0.0046	1,462	6	0.027	0.901	0.177	15.5%
FMH1030369 to FMH1030371	FWD1035257	500	8.81	8.71	50.279	503	1.50	1	1, 2	0.0046	1,462	6	0.027	0.858	0.169	16.3%
FMH1030371 to FMH1030373	FWD1035260	500	8.70	8.60	48.777	488	1.50	1	1, 2	0.0046	1,462	6	0.027	0.871	0.171	16.0%
FMH1030373 to FMH1030374	FWD1035261	500	8.59	8.53	31.310	522	1.50	1	1, 2	0.0046	1,462	6	0.027	0.842	0.165	16.6%
FMH1030374 to FMH1030375	FWD1035262	500	8.52	8.44	37.021	463	1.50	1	1, 2	0.0046	1,462	6	0.027	0.895	0.176	15.6%
FMH1030375 to FMH1030380	FWD1035280	500	8.43	8.37	22.322	372	1.50	1	1, 2	0.0046	1,462	6	0.027	0.999	0.196	14.0%
FMH1030380 to FMH1030381	FWD1035281	500	8.36	8.34	14.130	707	1.50	1	1, 2	0.0046	1,462	6	0.027	0.723	0.142	19.3%
FMH1030381 to FMH1030382	FWD1035282	500	8.33	8.26	38.068	544	1.50	1	1, 2	0.0046	1,462	6	0.027	0.825	0.162	16.9%
FMH1030382 to FMH1030383	FWD1035283	500	8.25	8.18	38.457	549	1.50	1	1, 2	0.0046	1,462	6	0.027	0.821	0.161	17.0%
FMH1030383 to FMH1030384	FWD1035284	500	8.17	8.09	37.336	467	1.50	1	1, 2	0.0046	1,462	6	0.027	0.891	0.175	15.7%
FMH1030384 to FMH1030385	FWD1035285	500	8.08	8.01	37.173	531	1.50	1	1, 2	0.0046	1,462	6	0.027	0.835	0.164	16.7%
FMH1030385 to FMH1030386	FWD1035286	500	8.00	7.92	37.690	471	1.50	1	1, 2	0.0046	1,462	6	0.027	0.887	0.174	15.7%
FMH1030386 to FMH1030387	FWD1035287	500	7.91	7.84	37.538	536	1.50	1	1, 2	0.0046	1,462	6	0.027	0.831	0.163	16.8%
FMH1030387 to FMH1030388	FWD1035288	500	7.83	7.76	37.842	541	1.50	1	1, 2	0.0046	1,462	6	0.027	0.828	0.162	16.9%
FMH1030388 to FMH1030389	FWD1035289	500	7.75	7.67	38.940	487	1.50	1	1, 2	0.0046	1,462	6	0.027	0.872	0.171	16.0%
FMH1030389 to FMH1030390	FWD1035290	500	7.66	7.58	38.925	487	1.50	1	1, 2	0.0046	1,462	6	0.027	0.873	0.171	16.0%
FMH1030390 to FMH1030391	FWD1035291	500	7.57	7.49	38.958	487	1.50	1	1, 2	0.0046	1,462	6	0.027	0.872	0.171	16.0%
FMH1030391 to FMH1030392	FWD1035292	500	7.48	7.48	6.302	-	1.50	1	1, 2	0.0046	-	-	-	-	-	-
FMH1030392 to FMH1030393	FWD1035293	500	7.47	7.46	7.846	785	1.50	1	1, 2	0.0046	1,462	6	0.027	0.686	0.135	20.4%
FMH1030393 to FMH1021544	FWD1035294	500	7.45	7.44	4.123	412	1.50	1	1, 2	0.0046	1,462	6	0.027	0.948	0.186	14.7%
FMH1021544 to FMH1021543	FWD1022560	500	7.44	6.86	54.856	95	1.50	1	1, 2, 5, 6	0.0236	7,565	5	0.118	1.986	0.390	30.3%
FMH1021543 to FMH1021545	FWD1022564	600	6.41	6.06	45.093	129	1.50	1	1, 2, 5, 6, 7	0.0248	7,935	5	0.124	1.911	0.540	22.9%
FMH1021545 to FMH1021546	FWD1022565	600	5.96	5.87	44.902	499	1.50	1	1, 2, 5, 6, 7	0.0248	7,935	5	0.124	0.969	0.274	45.3%
FMH1021546 to FMH1021547	FWD1022566	600	5.85	5.67	39.000	217	1.50	1	1, 2, 5, 6, 7	0.0248	7,935	5	0.124	1.473	0.416	29.8%
FMH1021547 to FMH1021548	FWD1022567	600	5.67	5.02	24.832	38	1.50	1	1, 2, 5, 6, 7	0.0248	7,935	5	0.124	3.514	0.994	12.5%
FMH1021548 to FMH1021549	FWD1022568	600	5.00	4.83	8.088	48	1.50	1	1, 2, 5, 6, 7	0.0248	7,935	5	0.124	3.149	0.890	13.9%
FMH1021549 to FMH1021550	FWD1022569	600	4.83	4.48	44.891	128	1.50	1	1, 2, 5, 6, 7	0.0248	7,935	5	0.124	1.916	0.542	22.9%
FMH1021550 to FMH1021551	FWD1022570	600	0.00	4.48	5.633	-	1.50	1	1, 2, 5, 6, 7	0.0248	-	-	-	-	-	-
FMH1021551 to FMH1021552	FWD1022571	600	4.47	4.37	31.087	311	1.50	1	1, 2, 5, 6, 7	0.0248	7,935	5	0.124	1.229	0.347	35.7%
FMH1021552 to FMH1021553	FWD1022572	600	4.35	4.24	37.583	342	1.50	1	1, 2, 5, 6, 7	0.0248	7,935	5	0.124	1.172	0.331	37.4%
FMH1021553 to FMH1021554	FWD1022573	600	4.23	4.06	50.307	296	1.50	1	1, 2, 5, 6, 7	0.0248	7,935	5	0.124	1.259	0.356	34.8%
FMH1021554 to FMH1021555	FWD1022574	600	4.06	3.93	32.485	250	1.50	1	1, 2, 5, 6, 7	0.0248	7,935	5	0.124	1.371	0.388	32.0%
FMH1021555 to FMH1021556	FWD1022575	600	3.93	3.84	32.982	366	1.50	1	1, 2, 5, 6, 7	0.0248	7,935	5	0.124	1.131	0.320	38.8%
FMH1021556 to FMH1021557	FWD1022576	600	3.84	3.78	17.605	293	1.50	1	1, 2, 5, 6, 7	0.0248	7,935	5	0.124	1.265	0.358	34.7%
FMH1021557 to FMH1021558	FWD1022577	600	3.78	3.75	9.245	308	1.50	1	1, 2, 5, 6, 7	0.0248	7,935	5	0.124	1.234	0.349	35.5%
FMH1021558 to FMH1021559	FWD1022578	600	3.74	3.68	13.719	229	1.50	1	1, 2, 5, 6, 7	0.0248	7,935	5	0.124	1.433	0.405	30.6%
FMH1021559 to FMH1021560	FWD1022579	600	3.68	3.65	12.954	432	1.50	1	1, 2, 5, 6, 7	0.0248	7,935	5	0.124	1.042	0.295	42.1%
FMH1021560 to FMH1021561	FWD1022580	600	3.65	3.63	11.251	563	1.50	1	1, 2, 5, 6, 7	0.0248	7,935	5	0.124	0.912	0.258	48.1%
FMH1021561 to FMH1021562	FWD1022581	600	3.63	3.60	13.323	444	1.50	1	1, 2, 5, 6, 7, 8	0.0253	8,106	5	0.127	1.027	0.290	43.6%
FMH1021562 to FMH1021563	FWD1022583	600	3.60	3.60	8.798	-	1.50	1	1, 2, 5, 6, 7, 8	0.0253	8,106	5	0.127	-	-	-
FMH1021563 to FMH1021564	FWD1022584	600	3.60	3.53	13.370	191	1.50	1	1, 2, 5, 6, 7, 8	0.0253	8,106	5	0.127	1.569	0.444	28.6%
FMH1021564 to FMH1021565	FWD1022585	600	3.53	3.48	10.724	214	1.50	1	1, 2, 5, 6, 7, 8	0.0253	8,106	5	0.127	1.480	0.418	30.3%
FMH1021565 to FMH1021566	FWD1022587	600	3.47	3.46	7.247	725	1.50	1	1, 2, 5, 6, 7, 8	0.0253	8,106	5	0.127	0.803	0.227	55.8%
FMH1021566 to XPS1000860	FWD1022588	600	3.45	-	9.858	-	1.50	1	1, 2, 5, 6, 7, 8	0.0253	-	-	-	-	-	-

Annex B - Hydraulic Capacity Check of Existing Sewerage Pipe at Existing Condition (With Existing Development and Proposed Development Only)

Notes:
1) Colebrook-White's equation is adopted for full-bore pipe velocity calculation.
2) Catchment No. F1 and F2 denoted as the two proposed sewage discharge points in the Proposed Development respectively.
3) The existing pipes are Vitrified Clayware with a normal condition of slimed sewers. Roughness is assumed to be 1.5mm.

Pipe	Feature Number	Diameter (mm)	Upstream Invert Level (mPD)	Downstream Invert Level (mPD)	Pipe Length (m)	Gradient (1 in)	Roughness (mm)	No. of Pipes	Catchment No.	ADWF (m^3/s)	Contributing Population	Peak Factor	Design Peak Flowrate (m^3/s)	Full Bore Velocity (m/s)	Full Bore Capacity (m^3/s)	Utilization (%)
FMH1030348 to FMH1030349	FWD1035235	500	9.82	9.74	31.073	388	1.50	1	1	0.0001	34	8	0.001	0.977	0.192	0.4%
FMH1030349 to FMH1030350	FWD1035236	500	9.73	9.65	38.527	482	1.50	1	1	0.0001	34	8	0.001	0.877	0.172	0.5%
FMH1030350 to FMH1030353	FWD1035239	500	9.64	9.56	36.929	462	1.50	1	1	0.0001	34	8	0.001	0.896	0.176	0.5%
FMH1030353 to FMH1030355	FWD1035241	500	9.55	9.48	36.643	523	1.50	1	1	0.0001	34	8	0.001	0.841	0.165	0.5%
FMH1030355 to FMH1030358	FMD1001500	225	9.47	9.37	20.261	203	1.50	2	1	0.0001	34	8	0.001	0.805	0.064	1.3%
FMH1030358 to FMH1030359	FWD1035246	500	9.36	9.28	27.515	344	1.50	1	1, 2	0.0046	1,462	6	0.027	1.039	0.204	13.4%
FMH1030359 to FMH1030360	FWD1035247	500	9.27	9.24	18.546	618	1.50	1	1, 2	0.0046	1,462	6	0.027	0.774	0.152	18.1%
FMH1030360 to FMH1030361	FWD1035248	500	9.23	9.22	3.922	392	1.50	1	1, 2	0.0046	1,462	6	0.027	0.973	0.191	14.4%
FMH1030361 to FMH1030362	FWD1035250	500	9.21	9.02	85.318	449	1.50	1	1, 2	0.0046	1,462	6	0.027	0.908	0.178	15.4%
FMH1030362 to FMH1030363	FWD1035252	500	9.01	8.98	18.564	619	1.50	1	1, 2	0.0046	1,462	6	0.027	0.773	0.152	18.1%
FMH1030363 to FMH1030364	FWD1035253	500	8.97	8.94	14.778	493	1.50	1	1, 2	0.0046	1,462	6	0.027	0.867	0.170	16.1%
FMH1030364 to FMH1030366	FWD1035255	500	8.93	8.93	6.916	-	1.50	1	1, 2	0.0046	-	-	-	-	-	-
FMH1030366 to FMH1030367	FWD1035254	500	8.92	8.91	20.534	2053	1.50	1	1, 2	0.0046	1,462	6	0.027	0.422	0.083	33.1%
FMH1030367 to FMH1030369	FWD1035256	500	8.90	8.82	36.527	457	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.901	0.177	51.3%
FMH1030369 to FMH1030371	FWD1035257	500	8.81	8.71	50.279	503	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.858	0.169	53.8%
FMH1030371 to FMH1030373	FWD1035260	500	8.70	8.60	48.777	488	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.871	0.171	53.0%
FMH1030373 to FMH1030374	FWD1035261	500	8.59	8.53	31.310	522	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.842	0.165	54.8%
FMH1030374 to FMH1030375	FWD1035262	500	8.52	8.44	37.021	463	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.895	0.176	51.6%
FMH1030375 to FMH1030380	FWD1035280	500	8.43	8.37	22.322	372	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.999	0.196	46.3%
FMH1030380 to FMH1030381	FWD1035281	500	8.36	8.34	14.130	707	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.723	0.142	63.9%
FMH1030381 to FMH1030382	FWD1035282	500	8.33	8.26	38.068	544	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.825	0.162	56.0%
FMH1030382 to FMH1030383	FWD1035283	500	8.25	8.18	38.457	549	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.821	0.161	56.3%
FMH1030383 to FMH1030384	FWD1035284	500	8.17	8.09	37.336	467	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.891	0.175	51.9%
FMH1030384 to FMH1030385	FWD1035285	500	8.08	8.01	37.173	531	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.835	0.164	55.3%
FMH1030385 to FMH1030386	FWD1035286	500	8.00	7.92	37.690	471	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.887	0.174	52.1%
FMH1030386 to FMH1030387	FWD1035287	500	7.91	7.84	37.538	536	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.831	0.163	55.6%
FMH1030387 to FMH1030388	FWD1035288	500	7.83	7.76	37.842	541	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.828	0.162	55.8%
FMH1030388 to FMH1030389	FWD1035289	500	7.75	7.67	38.940	487	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.872	0.171	53.0%
FMH1030389 to FMH1030390	FWD1035290	500	7.66	7.58	38.925	487	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.873	0.171	52.9%
FMH1030390 to FMH1030391	FWD1035291	500	7.57	7.49	38.958	487	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.872	0.171	53.0%
FMH1030391 to FMH1030392	FWD1035292	500	7.48	7.48	6.302	-	1.50	1	1, 2, 3	0.0137	-	-	-	-	-	-
FMH1030392 to FMH1030393	FWD1035293	500	7.47	7.46	7.846	785	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.686	0.135	67.3%
FMH1030393 to FMH1021544	FWD1035294	500	7.45	7.44	4.123	412	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.948	0.186	48.7%
FMH1021544 to FMH1021543	FWD1022560	500	7.44	6.86	54.856	95	1.50	1	1, 2, 3, 5, 6	0.0328	10,498	4	0.140	1.986	0.390	35.8%
FMH1021543 to FMH1021545	FWD1022564	600	6.41	6.06	45.093	129	1.50	1	1, 2, 3, 5, 6, 7	0.0340	10,868	4	0.144	1.911	0.540	26.7%
FMH1021545 to FMH1021546	FWD1022565	600	5.96	5.87	44.902	499	1.50	1	1, 2, 3, 5, 6, 7	0.0340	10,868	4	0.144	0.969	0.274	52.6%
FMH1021546 to FMH1021547	FWD1022566	600	5.85	5.67	39.000	217	1.50	1	1, 2, 3, 5, 6, 7	0.0340	10,868	4	0.144	1.473	0.416	34.6%
FMH1021547 to FMH1021548	FWD1022567	600	5.67	5.02	24.832	38	1.50	1	1, 2, 3, 5, 6, 7	0.0340	10,868	4	0.144	3.514	0.994	14.5%
FMH1021548 to FMH1021549	FWD1022568	600	5.00	4.83	8.088	48	1.50	1	1, 2, 3, 5, 6, 7	0.0340	10,868	4	0.144	3.149	0.890	16.2%
FMH1021549 to FMH1021550	FWD1022569	600	4.83	4.48	44.891	128	1.50	1	1, 2, 3, 5, 6, 7	0.0340	10,868	4	0.144	1.916	0.542	26.6%
FMH1021550 to FMH1021551	FWD1022570	600	0.00	4.48	5.633	-	1.50	1	1, 2, 3, 5, 6, 7	0.0340	-	-	-	-	-	-
FMH1021551 to FMH1021552	FWD1022571	600	4.47	4.37	31.087	311	1.50	1	1, 2, 3, 5, 6, 7	0.0340	10,868	4	0.144	1.229	0.347	41.5%
FMH1021552 to FMH1021553	FWD1022572	600	4.35	4.24	37.583	342	1.50	1	1, 2, 3, 5, 6, 7	0.0340	10,868	4	0.144	1.172	0.331	43.5%
FMH1021553 to FMH1021554	FWD1022573	600	4.23	4.06	50.307	296	1.50	1	1, 2, 3, 5, 6, 7	0.0340	10,868	4	0.144	1.259	0.356	40.5%
FMH1021554 to FMH1021555	FWD1022574	600	4.06	3.93	32.485	250	1.50	1	1, 2, 3, 5, 6, 7	0.0340	10,868	4	0.144	1.371	0.388	37.2%
FMH1021555 to FMH1021556	FWD1022575	600	3.93	3.84	32.982	366	1.50	1	1, 2, 3, 5, 6, 7	0.0340	10,868	4	0.144	1.131	0.320	45.1%
FMH1021556 to FMH1021557	FWD1022576	600	3.84	3.78	17.605	293	1.50	1	1, 2, 3, 5, 6, 7	0.0340	10,868	4	0.144	1.265	0.358	40.3%
FMH1021557 to FMH1021558	FWD1022577	600	3.78	3.75	9.245	308	1.50	1	1, 2, 3, 5, 6, 7	0.0340	10,868	4	0.144	1.234	0.349	41.3%
FMH1021558 to FMH1021559	FWD1022578	600	3.74	3.68	13.719	229	1.50	1	1, 2, 3, 5, 6, 7	0.0340	10,868	4	0.144	1.433	0.405	35.6%
FMH1021559 to FMH1021560	FWD1022579	600	3.68	3.65	12.954	432	1.50	1	1, 2, 3, 5, 6, 7	0.0340	10,868	4	0.144	1.042	0.295	48.9%
FMH1021560 to FMH1021561	FWD1022580	600	3.65	3.63	11.251	563	1.50	1	1, 2, 3, 5, 6, 7	0.0340	10,868	4	0.144	0.912	0.258	55.9%
FMH1021561 to FMH1021562	FWD1022581	600	3.63	3.60	13.323	444	1.50	1	1, 2, 3, 5, 6, 7, 8	0.0345	11,040	4	0.146	1.027	0.290	50.4%
FMH1021562 to FMH1021563	FWD1022583	600	3.60	3.60	8.798	-	1.50	1	1, 2, 3, 5, 6, 7, 8	0.0345	-	-	-	-	-	-
FMH1021563 to FMH1021564	FWD1022584	600	3.60	3.53	13.370	191	1.50	1	1, 2, 3, 5, 6, 7, 8	0.0345	11,040	4	0.146	1.569	0.444	33.0%
FMH1021564 to FMH1021565	FWD1022585	600	3.53	3.48	10.724	214	1.50	1	1, 2, 3, 5, 6, 7, 8	0.0345	11,040	4	0.146	1.480	0.418	35.0%
FMH1021565 to FMH1021566	FWD1022587	600	3.47	3.46	7.247	725	1.50	1	1, 2, 3, 5, 6, 7, 8	0.0345	11,040	4	0.146	0.803	0.227	64.4%
FMH1021566 to XPS1000860	FWD1022588	600	3.45	-	9.858	-	1.50	1	1, 2, 3, 5, 6, 7, 8	0.0345	-	-	-	-	-	-

Annex B - Hydraulic Capacity Check of Existing Sewerage Pipe at Proposed Disposal Scheme (With Existing Development and Proposed Development Only)

Note:
1) Colebrook-White's equation is adopted for full-bore pipe velocity calculation.
2) Catchment No. F1 and F2 denoted as the two proposed sewage discharge points in Kwu Tung Site 4 respectively.
3) The existing pipes are Vitrified Clayware with a normal condition of slimed sewers. Roughness is assumed to be 1.5mm.

Pipe	Feature Number	Diameter (mm)	Upstream Invert Level (mPD)	Downstream Invert Level (mPD)	Pipe Length (m)	Gradient (1 in)	Roughness (mm)	No. of Pipes	Catchment No.	ADWF (m^3/s)	Contributing Population	Peak Factor	Design Peak Flowrate (m^3/s)	Full Bore Velocity (m/s)	Full Bore Capacity (m^3/s)	Utilization (%)
FMH1030348 to FMH1030349	FWD1035235	500	9.82	9.74	31.073	388	1.50	1	1	0.0001	34	8	0.001	0.977	0.192	0.4%
FMH1030349 to FMH1030350	FWD1035236	500	9.73	9.65	38.527	482	1.50	1	1	0.0001	34	8	0.001	0.877	0.172	0.5%
FMH1030350 to FMH1030353	FWD1035239	500	9.64	9.56	36.929	462	1.50	1	1	0.0001	34	8	0.001	0.896	0.176	0.5%
FMH1030353 to FMH1030355	FWD1035241	500	9.55	9.48	36.643	523	1.50	1	1	0.0001	34	8	0.001	0.841	0.165	0.5%
FMH1030355 to FMH1030358	FMD1001500	225	9.47	9.37	20.261	203	1.50	2	1	0.0001	34	8	0.001	0.805	0.064	1.3%
FMH1030358 to FMH1030359	FWD1035246	500	9.36	9.28	27.515	344	1.50	1	1, 2	0.0046	1,462	6	0.027	1.039	0.204	13.4%
FMH1030359 to FMH1030360	FWD1035247	500	9.27	9.24	18.546	618	1.50	1	1, 2	0.0046	1,462	6	0.027	0.774	0.152	18.1%
FMH1030360 to FMH1030361	FWD1035248	500	9.23	9.22	3.922	392	1.50	1	1, 2	0.0046	1,462	6	0.027	0.973	0.191	14.4%
FMH1030361 to FMH1030362	FWD1035250	500	9.21	9.02	85.318	449	1.50	1	1, 2	0.0046	1,462	6	0.027	0.908	0.178	15.4%
FMH1030362 to FMH1030363	FWD1035252	500	9.01	8.98	18.564	619	1.50	1	1, 2	0.0046	1,462	6	0.027	0.773	0.152	18.1%
FMH1030363 to FMH1030364	FWD1035253	500	8.97	8.94	14.778	493	1.50	1	1, 2	0.0046	1,462	6	0.027	0.867	0.170	16.1%
FMH1030364 to FMH1030366	FWD1035255	500	8.93	8.93	6.916	-	1.50	1	1, 2	0.0046	-	-	-	-	-	-
FMH1030366 to FMH1030367	FWD1035254	500	8.92	8.91	20.534	2053	1.50	1	1, 2	0.0046	1,462	6	0.027	0.422	0.083	33.1%
FMH1030367 to FMH1030369	FWD1035256	500	8.90	8.82	36.527	457	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.901	0.177	51.3%
FMH1030369 to FMH1030371	FWD1035257	500	8.81	8.71	50.279	503	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.858	0.169	53.8%
FMH1030371 to FMH1030373	FWD1035260	500	8.70	8.60	48.777	488	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.871	0.171	53.0%
FMH1030373 to FMH1030374	FWD1035261	500	8.59	8.53	31.310	522	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.842	0.165	54.8%
FMH1030374 to FMH1030375	FWD1035262	500	8.52	8.44	37.021	463	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.895	0.176	51.6%
FMH1030375 to FMH1030380	FWD1035280	500	8.43	8.37	22.322	372	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.999	0.196	46.3%
FMH1030380 to FMH1030381	FWD1035281	500	8.36	8.34	14.130	707	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.723	0.142	63.9%
FMH1030381 to FMH1030382	FWD1035282	500	8.33	8.26	38.068	544	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.825	0.162	56.0%
FMH1030382 to FMH1030383	FWD1035283	500	8.25	8.18	38.457	549	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.821	0.161	56.3%
FMH1030383 to FMH1030384	FWD1035284	500	8.17	8.09	37.336	467	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.891	0.175	51.9%
FMH1030384 to FMH1030385	FWD1035285	500	8.08	8.01	37.173	531	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.835	0.164	55.3%
FMH1030385 to FMH1030386	FWD1035286	500	8.00	7.92	37.690	471	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.887	0.174	52.1%
FMH1030386 to FMH1030387	FWD1035287	500	7.91	7.84	37.538	536	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.831	0.163	55.6%
FMH1030387 to FMH1030388	FWD1035288	500	7.83	7.76	37.842	541	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.828	0.162	55.8%
FMH1030388 to FMH1030389	FWD1035289	500	7.75	7.67	38.940	487	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.872	0.171	53.0%
FMH1030389 to FMH1030390	FWD1035290	500	7.66	7.58	38.925	487	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.873	0.171	52.9%
FMH1030390 to FMH1030391	FWD1035291	500	7.57	7.49	38.958	487	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.872	0.171	53.0%
FMH1030391 to FMH1030392	FWD1035292	500	7.48	7.48	6.302	-	1.50	1	1, 2, 3	0.0137	-	-	-	-	-	-
FMH1030392 to FMH1030393	FWD1035293	500	7.47	7.46	7.846	785	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.686	0.135	67.3%
FMH1030393 to FMH1021544	FWD1035294	500	7.45	7.44	4.123	412	1.50	1	1, 2, 3	0.0137	4,396	6	0.091	0.948	0.186	48.7%
FMH1021544 to FMH1021543	FWD1022560	500	7.44	6.86	54.856	95	1.50	1	1, 2, 3, 5, 6	0.0328	10,498	4	0.140	1.986	0.390	35.8%
FMH1021543 to FMH1021545	FWD1022564	600	6.41	6.06	45.093	129	1.50	1	1, 2, 3, 5, 6, 7	0.0340	10,868	4	0.144	1.911	0.540	26.7%
FMH1021545 to FMH1021546	FWD1022565	600	5.96	5.87	44.902	499	1.50	1	1, 2, 3, 5, 6, 7	0.0340	10,868	4	0.144	0.969	0.274	52.6%
FMH1021546 to FMH1021547	FWD1022566	600	5.85	5.67	39.000	217	1.50	1	1, 2, 3, 5, 6, 7	0.0340	10,868	4	0.144	1.473	0.416	34.6%
FMH1021547 to FMH1021548	FWD1022567	600	5.67	5.02	24.832	38	1.50	1	1, 2, 3, 5, 6, 7	0.0340	10,868	4	0.144	3.514	0.994	14.5%
FMH1021548 to FMH1021549	FWD1022568	600	5.00	4.83	8.088	48	1.50	1	1, 2, 3, 5, 6, 7	0.0340	10,868	4	0.144	3.149	0.890	16.2%
FMH1021549 to FMH1021550	FWD1022569	600	4.83	4.48	44.891	128	1.50	1	1, 2, 3, 5, 6, 7	0.0340	10,868	4	0.144	1.916	0.542	26.6%
FMH1021550 to FMH1021551	FWD1022570	600	0.00	4.48	5.633	-	1.50	1	1, 2, 3, 5, 6, 7	0.0340	-	-	-	-	-	-
FMH1021551 to FMH1021552	FWD1022571	600	4.47	4.37	31.087	311	1.50	1	1, 2, 3, 5, 6, 7	0.0340	10,868	4	0.144	1.229	0.347	41.5%
FMH1021552 to FMH1021553	FWD1022572	600	4.35	4.24	37.583	342	1.50	1	1, 2, 3, 5, 6, 7	0.0340	10,868	4	0.144	1.172	0.331	43.5%
FMH1021553 to FMH1021554	FWD1022573	600	4.23	4.06	50.307	296	1.50	1	1, 2, 3, 5, 6, 7	0.0340	10,868	4	0.144	1.259	0.356	40.5%
FMH1021554 to FMH1021555	FWD1022574	600	4.06	3.93	32.485	250	1.50	1	1, 2, 3, 5, 6, 7	0.0340	10,868	4	0.144	1.371	0.388	37.2%
FMH1021555 to FMH1021556	FWD1022575	600	3.93	3.84	32.982	366	1.50	1	1, 2, 3, 5, 6, 7	0.0340	10,868	4	0.144	1.131	0.320	45.1%
FMH1021556 to FMH1021557	FWD1022576	600	3.84	3.78	17.605	293	1.50	1	1, 2, 3, 5, 6, 7	0.0340	10,868	4	0.144	1.265	0.358	40.3%
FMH1021557 to FMH1021558	FWD1022577	600	3.78	3.75	9.245	308	1.50	1	1, 2, 3, 5, 6, 7	0.0340	10,868	4	0.144	1.234	0.349	41.3%
FMH1021558 to FMH1021559	FWD1022578	600	3.74	3.68	13.719	229	1.50	1	1, 2, 3, 5, 6, 7	0.0340	10,868	4	0.144	1.433	0.405	35.6%
FMH1021559 to FMH1021560	FWD1022579	600	3.68	3.65	12.954	432	1.50	1	1, 2, 3, 5, 6, 7	0.0340	10,868	4	0.144	1.042	0.295	48.9%
FMH1021560 to FMH1021561	FWD1022580	600	3.65	3.63	11.251	563	1.50	1	1, 2, 3, 5, 6, 7	0.0340	10,868	4	0.144	0.912	0.258	55.9%
FMH1021561 to FMH1021562	FWD1022581	600	3.63	3.60	13.323	444	1.50	1	1, 2, 3, 5, 6, 7, 8	0.0345	11,040	4	0.146	1.027	0.290	50.4%
FMH1021562 to FMH1021563	FWD1022583	600	3.60	3.60	8.798	-	1.50	1	1, 2, 3, 5, 6, 7, 8	0.0345	-	-	-	-	-	-
FMH1021563 to FMH1021564	FWD1022584	600	3.60	3.53	13.370	191	1.50	1	1, 2, 3, 5, 6, 7, 8	0.0345	11,040	4	0.146	1.569	0.444	33.0%
FMH1021564 to FMH1021565	FWD1022585	600	3.53	3.48	10.724	214	1.50	1	1, 2, 3, 5, 6, 7, 8	0.0345	11,040	4	0.146	1.480	0.418	35.0%
FMH1021565 to FMH1021566	FWD1022587	600	3.47	3.46	7.247	725	1.50	1	1, 2, 3, 5, 6, 7, 8	0.0345	11,040	4	0.146	0.803	0.227	64.4%
FMH1021566 to XPS1000860	FWD1022588	600	3.45	-	9.858	-	1.50	1	1, 2, 3, 5, 6, 7, 8	0.0345	-	-	-	-	-	-

Annex B - Hydraulic Capacity Check of Existing Sewerage Pipe at Existing Condition (With Existing Development, Planned Development and Proposed Development)

Notes:
1) Colebrook-White's equation is adopted for full-bore pipe velocity calculation.
2) Catchment No. F1 and F2 denoted as the two proposed sewage discharge points in Kwu Tung Site 4 respectively.
3) The existing pipes are Vitrified Clayware with a normal condition of slimed sewers. Roughness is assumed to be 1.5mm.

Pipe	Feature Number	Diameter (mm)	Upstream Invert Level (mPD)	Downstream Invert Level (mPD)	Pipe Length (m)	Gradient (1 in)	Roughness (mm)	No. of Pipes	Catchment No.	ADWF (m^3/s)	Contributing Population	Peak Factor	Design Peak Flowrate (m^3/s)	Full Bore Velocity (m/s)	Full Bore Capacity (m^3/s)	Utilization (%)
FMH1030348 to FMH1030349	FWD1035235	500	9.82	9.74	31.073	388	1.50	1	1	0.0001	34	8	0.001	0.977	0.192	0.4%
FMH1030349 to FMH1030350	FWD1035236	500	9.73	9.65	38.527	482	1.50	1	1	0.0001	34	8	0.001	0.877	0.172	0.5%
FMH1030350 to FMH1030353	FWD1035239	500	9.64	9.56	36.929	462	1.50	1	1	0.0001	34	8	0.001	0.896	0.176	0.5%
FMH1030353 to FMH1030355	FWD1035241	500	9.55	9.48	36.643	523	1.50	1	1	0.0001	34	8	0.001	0.841	0.165	0.5%
FMH1030355 to FMH1030358	FMD1001500	225	9.47	9.37	20.261	203	1.50	2	1	0.0001	34	8	0.001	0.805	0.064	1.3%
FMH1030358 to FMH1030359	FWD1035246	500	9.36	9.28	27.515	344	1.50	1	1, 2	0.0046	1,462	6	0.027	1.039	0.204	13.4%
FMH1030359 to FMH1030360	FWD1035247	500	9.27	9.24	18.546	618	1.50	1	1, 2	0.0046	1,462	6	0.027	0.774	0.152	18.1%
FMH1030360 to FMH1030361	FWD1035248	500	9.23	9.22	3.922	392	1.50	1	1, 2	0.0046	1,462	6	0.027	0.973	0.191	14.4%
FMH1030361 to FMH1030362	FWD1035250	500	9.21	9.02	85.318	449	1.50	1	1, 2	0.0046	1,462	6	0.027	0.908	0.178	15.4%
FMH1030362 to FMH1030363	FWD1035252	500	9.01	8.98	18.564	619	1.50	1	1, 2	0.0046	1,462	6	0.027	0.773	0.152	18.1%
FMH1030363 to FMH1030364	FWD1035253	500	8.97	8.94	14.778	493	1.50	1	1, 2	0.0046	1,462	6	0.027	0.867	0.170	16.1%
FMH1030364 to FMH1030366	FWD1035255	500	8.93	8.93	6.916	-	1.50	1	1, 2	0.0046	-	-	-	-	-	-
FMH1030366 to FMH1030367	FWD1035254	500	8.92	8.91	20.534	2053	1.50	1	1, 2	0.0046	1,462	6	0.027	0.422	0.083	33.1%
FMH1030367 to FMH1030369	FWD1035256	500	8.90	8.82	36.527	457	1.50	1	1, 2, B, 3	0.0271	8,666	5	0.144	0.901	0.177	81.2%
FMH1030369 to FMH1030371	FWD1035257	500	8.81	8.71	50.279	503	1.50	1	1, 2, B, 3	0.0271	8,666	5	0.144	0.858	0.169	85.3%
FMH1030371 to FMH1030373	FWD1035260	500	8.70	8.60	48.777	488	1.50	1	1, 2, B, 3	0.0271	8,666	5	0.144	0.871	0.171	84.0%
FMH1030373 to FMH1030374	FWD1035261	500	8.59	8.53	31.310	522	1.50	1	1, 2, B, 3	0.0271	8,666	5	0.144	0.842	0.165	86.9%
FMH1030374 to FMH1030375	FWD1035262	500	8.52	8.44	37.021	463	1.50	1	1, 2, B, 3	0.0271	8,666	5	0.144	0.895	0.176	81.8%
FMH1030375 to FMH1030380	FWD1035280	500	8.43	8.37	22.322	372	1.50	1	1, 2, B, 3	0.0271	8,666	5	0.144	0.999	0.196	73.3%
FMH1030380 to FMH1030381	FWD1035281	500	8.36	8.34	14.130	707	1.50	1	1, 2, B, 3	0.0271	8,666	5	0.144	0.723	0.142	101.2%
FMH1030381 to FMH1030382	FWD1035282	500	8.33	8.26	38.068	544	1.50	1	1, 2, B, 3	0.0271	8,666	5	0.144	0.825	0.162	88.7%
FMH1030382 to FMH1030383	FWD1035283	500	8.25	8.18	38.457	549	1.50	1	1, 2, F1, B, 3	0.0363	11,629	4	0.154	0.821	0.161	95.3%
FMH1030383 to FMH1030384	FWD1035284	500	8.17	8.09	37.336	467	1.50	1	1, 2, F1, B, 3	0.0363	11,629	4	0.154	0.891	0.175	87.8%
FMH1030384 to FMH1030385	FWD1035285	500	8.08	8.01	37.173	531	1.50	1	1, 2, F1, B, 3	0.0363	11,629	4	0.154	0.835	0.164	93.7%
FMH1030385 to FMH1030386	FWD1035286	500	8.00	7.92	37.690	471	1.50	1	1, 2, F1, B, 3	0.0363	11,629	4	0.154	0.887	0.174	88.2%
FMH1030386 to FMH1030387	FWD1035287	500	7.91	7.84	37.538	536	1.50	1	1, 2, F1, F2, B, 3	0.0522	16,690	4	0.225	0.831	0.163	138.0%
FMH1030387 to FMH1030388	FWD1035288	500	7.83	7.76	37.842	541	1.50	1	1, 2, F1, F2, B, 3	0.0522	16,690	4	0.225	0.828	0.162	138.6%
FMH1030388 to FMH1030389	FWD1035289	500	7.75	7.67	38.940	487	1.50	1	1, 2, F1, F2, B, 3	0.0522	16,690	4	0.225	0.872	0.171	131.5%
FMH1030389 to FMH1030390	FWD1035290	500	7.66	7.58	38.925	487	1.50	1	1, 2, F1, F2, B, 3	0.0522	16,690	4	0.225	0.873	0.171	131.5%
FMH1030390 to FMH1030391	FWD1035291	500	7.57	7.49	38.958	487	1.50	1	1, 2, F1, F2, B, 3	0.0522	16,690	4	0.225	0.872	0.171	131.5%
FMH1030391 to FMH1030392	FWD1035292	500	7.48	7.48	6.302	-	1.50	1	1, 2, F1, F2, B, 3	0.0522	-	-	-	-	-	-
FMH1030392 to FMH1030393	FWD1035293	500	7.47	7.46	7.846	785	1.50	1	1, 2, F1, F2, B, 3	0.0522	16,690	4	0.225	0.686	0.135	167.2%
FMH1030393 to FMH1021544	FWD1035294	500	7.45	7.44	4.123	412	1.50	1	1, 2, F1, F2, B, 3	0.0522	16,690	4	0.225	0.948	0.186	120.9%
FMH1021544 to FMH1021543	FWD1022560	500	7.44	6.86	54.856	95	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 9, 10, 11	0.0789	25,260	4	0.332	1.986	0.390	85.2%
FMH1021543 to FMH1021545	FWD1022564	600	6.41	6.06	45.093	129	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 9, 10, 11	0.0858	27,452	4	0.360	1.911	0.540	66.6%
FMH1021545 to FMH1021546	FWD1022565	600	5.96	5.87	44.902	499	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 9, 10, 11	0.0858	27,452	4	0.360	0.969	0.274	131.3%
FMH1021546 to FMH1021547	FWD1022566	600	5.85	5.67	39.000	217	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 9, 10, 11	0.0858	27,452	4	0.360	1.473	0.416	86.4%
FMH1021547 to FMH1021548	FWD1022567	600	5.67	5.02	24.832	38	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 9, 10, 11	0.0858	27,452	4	0.360	3.514	0.994	36.2%
FMH1021548 to FMH1021549	FWD1022568	600	5.00	4.83	8.088	48	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 9, 10, 11	0.0858	27,452	4	0.360	3.149	0.890	40.4%
FMH1021549 to FMH1021550	FWD1022569	600	4.83	4.48	44.891	128	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 9, 10, 11	0.0858	27,452	4	0.360	1.916	0.542	66.4%
FMH1021550 to FMH1021551	FWD1022570	600	0.00	4.48	5.633	-	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 9, 10, 11	0.0858	-	-	-	-	-	-
FMH1021551 to FMH1021552	FWD1022571	600	4.47	4.37	31.087	311	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 9, 10, 11	0.0858	27,452	4	0.360	1.229	0.347	103.6%
FMH1021552 to FMH1021553	FWD1022572	600	4.35	4.24	37.583	342	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 9, 10, 11	0.0858	27,452	4	0.360	1.172	0.331	108.6%
FMH1021553 to FMH1021554	FWD1022573	600	4.23	4.06	50.307	296	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 9, 10, 11	0.0858	27,452	4	0.360	1.259	0.356	101.0%
FMH1021554 to FMH1021555	FWD1022574	600	4.06	3.93	32.485	250	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 9, 10, 11	0.0858	27,452	4	0.360	1.371	0.388	92.8%
FMH1021555 to FMH1021556	FWD1022575	600	3.93	3.84	32.982	366	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 9, 10, 11	0.0858	27,452	4	0.360	1.131	0.320	112.5%
FMH1021556 to FMH1021557	FWD1022576	600	3.84	3.78	17.605	293	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 9, 10, 11	0.0858	27,452	4	0.360	1.265	0.358	100.6%
FMH1021557 to FMH1021558	FWD1022577	600	3.78	3.75	9.245	308	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 9, 10, 11	0.0858	27,452	4	0.360	1.234	0.349	103.1%
FMH1021558 to FMH1021559	FWD1022578	600	3.74	3.68	13.719	229	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 9, 10, 11	0.0858	27,452	4	0.360	1.433	0.405	88.8%
FMH1021559 to FMH1021560	FWD1022579	600	3.68	3.65	12.954	432	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 9, 10, 11	0.0858	27,452	4	0.360	1.042	0.295	122.2%
FMH1021560 to FMH1021561	FWD1022580	600	3.65	3.63	11.251	563	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 9, 10, 11	0.0858	27,452	4	0.360	0.912	0.258	139.5%
FMH1021561 to FMH1021562	FWD1022581	600	3.63	3.60	13.323	444	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 8, A, 9, 10, 11, 12	0.1310	41,904	4	0.540	1.027	0.290	186.1%
FMH1021562 to FMH1021563	FWD1022583	600	3.60	3.60	8.798	-	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 8, A, 9, 10, 11, 12	0.1310	41,904	4	0.540	-	-	-
FMH1021563 to FMH1021564	FWD1022584	600	3.60	3.53	13.370	191	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 8, A, 9, 10, 11, 12	0.1310	41,904	4	0.540	1.569	0.444	121.8%
FMH1021564 to FMH1021565	FWD1022585	600	3.53	3.48	10.724	214	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 8, A, 9, 10, 11, 12	0.1310	41,904	4	0.540	1.480	0.418	129.1%
FMH1021565 to FMH1021566	FWD1022587	600	3.47	3.46	7.247	725	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 8, A, 9, 10, 11, 12	0.1310	41,904	4	0.540	0.803	0.227	238.1%
FMH1021566 to XPS1000860	FWD1022588	600	3.45	-	9.858	-	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 8, A, 9, 10, 11, 12	0.1310	-	-	-	-	-	-

Annex B - Hydraulic Capacity Check of Existing Sewerage Pipe at Proposed Disposal Scheme (With Existing Development, Planned Development and Proposed Development)

Note:
1) Colebrook-White's equation is adopted for full-bore pipe velocity calculation.
2) Proposed upgrading pipes by others are highlighted in green colour.
3) Catchment No. F1 and F2 denoted as the two proposed sewage discharge points in Kwu Tung Site 4 respectively.
4) The existing pipes are Vitrified Clayware with a normal condition of slimed sewers. Roughness is assumed to be 1.5mm.

Pipe	Feature Number	Diameter (mm)	Upstream Invert Level (mPD)	Downstream Invert Level (mPD)	Pipe Length (m)	Gradient (1 in)	Roughness (mm)	No. of Pipes	Catchment No.	ADWF (m^3/s)	Contributing Population	Peak Factor	Design Peak Flowrate (m^3/s)	Full Bore Velocity (m/s)	Full Bore Capacity (m^3/s)	Utilization (%)
FMH1030348 to FMH1030349	FWD1035235	500	9.82	9.74	31.073	388	1.50	1	1	0.0001	34	8	0.001	0.977	0.192	0.4%
FMH1030349 to FMH1030350	FWD1035236	500	9.73	9.65	38.527	482	1.50	1	1	0.0001	34	8	0.001	0.877	0.172	0.5%
FMH1030350 to FMH1030353	FWD1035239	500	9.64	9.56	36.929	462	1.50	1	1	0.0001	34	8	0.001	0.896	0.176	0.5%
FMH1030353 to FMH1030355	FWD1035241	500	9.55	9.48	36.643	523	1.50	1	1	0.0001	34	8	0.001	0.841	0.165	0.5%
FMH1030355 to FMH1030358	FMD1001500	225	9.47	9.37	20.261	203	1.50	2	1	0.0001	34	8	0.001	0.805	0.064	1.3%
FMH1030358 to FMH1030359	FWD1035246	500	9.36	9.28	27.515	344	1.50	1	1, 2	0.0046	1,462	6	0.027	1.039	0.204	13.4%
FMH1030359 to FMH1030360	FWD1035247	500	9.27	9.24	18.546	618	1.50	1	1, 2	0.0046	1,462	6	0.027	0.774	0.152	18.1%
FMH1030360 to FMH1030361	FWD1035248	500	9.23	9.22	3.922	392	1.50	1	1, 2	0.0046	1,462	6	0.027	0.973	0.191	14.4%
FMH1030361 to FMH1030362	FWD1035250	500	9.21	9.02	85.318	449	1.50	1	1, 2	0.0046	1,462	6	0.027	0.908	0.178	15.4%
FMH1030362 to FMH1030363	FWD1035252	500	9.01	8.98	18.564	619	1.50	1	1, 2	0.0046	1,462	6	0.027	0.773	0.152	18.1%
FMH1030363 to FMH1030364	FWD1035253	500	8.97	8.94	14.778	493	1.50	1	1, 2	0.0046	1,462	6	0.027	0.867	0.170	16.1%
FMH1030364 to FMH1030366	FWD1035255	500	8.93	8.93	6.916	-	1.50	1	1, 2	0.0046	-	-	-	-	-	-
FMH1030366 to FMH1030367	FWD1035254	500	8.92	8.91	20.534	2053	0.60	1	1, 2	0.0046	1,462	6	0.027	0.470	0.092	29.7%
FMH1030367 to FMH1030369	FWD1035256	500	8.90	8.82	36.527	457	1.50	1	1, 2, B, 3	0.0271	8,666	5	0.144	0.901	0.177	81.2%
FMH1030369 to FMH1030371	FWD1035257	500	8.81	8.71	50.279	503	1.50	1	1, 2, B, 3	0.0271	8,666	5	0.144	0.858	0.169	85.3%
FMH1030371 to FMH1030373	FWD1035260	500	8.70	8.60	48.777	488	1.50	1	1, 2, B, 3	0.0271	8,666	5	0.144	0.871	0.171	84.0%
FMH1030373 to FMH1030374	FWD1035261	500	8.59	8.53	31.310	522	1.50	1	1, 2, B, 3	0.0271	8,666	5	0.144	0.842	0.165	86.9%
FMH1030374 to FMH1030375	FWD1035262	500	8.52	8.44	37.021	463	1.50	1	1, 2, B, 3	0.0271	8,666	5	0.144	0.895	0.176	81.8%
FMH1030375 to FMH1030380	FWD1035280	500	8.43	8.37	22.322	372	1.50	1	1, 2, B, 3	0.0271	8,666	5	0.144	0.999	0.196	73.3%
FMH1030380 to FMH1030381	FWD1035281	600 (500)	8.36	8.34	14.130	707	1.50	1	1, 2, B, 3	0.0271	8,666	5	0.144	0.813	0.230	62.5%
FMH1030381 to FMH1030382	FWD1035282	500	8.33	8.26	38.068	544	1.50	1	1, 2, B, 3	0.0271	8,666	5	0.144	0.825	0.162	88.7%
FMH1030382 to FMH1030383	FWD1035283	600 (500)	8.25	8.18	38.457	549	1.50	1	1, 2, F1, B, 3	0.0363	11,629	4	0.154	0.923	0.261	58.9%
FMH1030383 to FMH1030384	FWD1035284	600 (500)	8.17	8.09	37.336	467	1.50	1	1, 2, F1, B, 3	0.0363	11,629	4	0.154	1.002	0.283	54.3%
FMH1030384 to FMH1030385	FWD1035285	600 (500)	8.08	8.01	37.173	531	1.50	1	1, 2, F1, B, 3	0.0363	11,629	4	0.154	0.939	0.265	57.9%
FMH1030385 to FMH1030386	FWD1035286	600 (500)	8.00	7.92	37.690	471	1.50	1	1, 2, F1, B, 3	0.0363	11,629	4	0.154	0.997	0.282	54.5%
FMH1030386 to FMH1030387	FWD1035287	600 (500)	7.91	7.84	37.538	536	1.50	1	1, 2, F1, F2, B, 3	0.0522	16,690	4	0.225	0.934	0.264	85.3%
FMH1030387 to FMH1030388	FWD1035288	600 (500)	7.83	7.76	37.842	541	1.50	1	1, 2, F1, F2, B, 3	0.0522	16,690	4	0.225	0.930	0.263	85.6%
FMH1030388 to FMH1030389	FWD1035289	600 (500)	7.75	7.67	38.940	487	1.50	1	1, 2, F1, F2, B, 3	0.0522	16,690	4	0.225	0.981	0.277	81.2%
FMH1030389 to FMH1030390	FWD1035290	600 (500)	7.66	7.58	38.925	487	1.50	1	1, 2, F1, F2, B, 3	0.0522	16,690	4	0.225	0.981	0.277	81.2%
FMH1030390 to FMH1030391	FWD1035291	600 (500)	7.57	7.49	38.958	487	1.50	1	1, 2, F1, F2, B, 3	0.0522	16,690	4	0.225	0.981	0.277	81.2%
FMH1030391 to FMH1030392	FWD1035292	600 (500)	7.48	7.48	6.302	-	1.50	1	1, 2, F1, F2, B, 3	0.0522	-	-	-	-	-	-
FMH1030392 to FMH1030393	FWD1035293	675 (500)	7.47	7.46	7.846	785	1.50	1	1, 2, F1, F2, B, 3	0.0522	16,690	4	0.225	0.832	0.298	75.7%
FMH1030393 to FMH1021544	FWD1035294	600 (500)	7.45	7.44	4.123	412	1.50	1	1, 2, F1, F2, B, 3	0.0522	16,690	4	0.225	1.066	0.301	74.7%
FMH1021544 to FMH1021543	FWD1022560	500	7.44	6.86	54.856	95	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 9, 10, 11	0.0789	25,260	4	0.332	1.986	0.390	85.2%
FMH1021543 to FMH1021545	FWD1022564	600	6.41	6.06	45.093	129	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 9, 10, 11	0.0858	27,452	4	0.360	1.911	0.540	66.6%
FMH1021545 to FMH1021546	FWD1022565	700 (600)	5.96	5.87	44.902	499	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 9, 10, 11	0.0858	27,452	4	0.360	1.069	0.411	87.5%
FMH1021546 to FMH1021547	FWD1022566	600	5.85	5.67	39.000	217	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 9, 10, 11	0.0858	27,452	4	0.360	1.473	0.416	86.4%
FMH1021547 to FMH1021548	FWD1022567	600	5.67	5.02	24.832	38	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 9, 10, 11	0.0858	27,452	4	0.360	3.514	0.994	36.2%
FMH1021548 to FMH1021549	FWD1022568	600	5.00	4.83	8.088	48	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 9, 10, 11	0.0858	27,452	4	0.360	3.149	0.890	40.4%
FMH1021549 to FMH1021550	FWD1022569	600	4.83	4.48	44.891	128	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 9, 10, 11	0.0858	27,452	4	0.360	1.916	0.542	66.4%
FMH1021550 to FMH1021551	FWD1022570	675 (600)	0.00	4.48	5.633	-	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 9, 10, 11	0.0858	-	-	-	-	-	-
FMH1021551 to FMH1021552	FWD1022571	675 (600)	4.47	4.37	31.087	311	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 9, 10, 11	0.0858	27,452	4	0.360	1.325	0.474	75.9%
FMH1021552 to FMH1021553	FWD1022572	675 (600)	4.35	4.24	37.583	342	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 9, 10, 11	0.0858	27,452	4	0.360	1.263	0.452	79.6%
FMH1021553 to FMH1021554	FWD1022573	675 (600)	4.23	4.06	50.307	296	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 9, 10, 11	0.0858	27,452	4	0.360	1.358	0.486	74.0%
FMH1021554 to FMH1021555	FWD1022574	675 (600)	4.06	3.93	32.485	250	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 9, 10, 11	0.0858	27,452	4	0.360	1.478	0.529	68.0%
FMH1021555 to FMH1021556	FWD1022575	675 (600)	3.93	3.84	32.982	366	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 9, 10, 11	0.0858	27,452	4	0.360	1.219	0.436	82.4%
FMH1021556 to FMH1021557	FWD1022576	675 (600)	3.84	3.78	17.605	293	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 9, 10, 11	0.0858	27,452	4	0.360	1.363	0.488	73.7%
FMH1021557 to FMH1021558	FWD1022577	675 (600)	3.78	3.75	9.245	308	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 9, 10, 11	0.0858	27,452	4	0.360	1.330	0.476	75.6%
FMH1021558 to FMH1021559	FWD1022578	675 (600)	3.74	3.68	13.719	229	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 9, 10, 11	0.0858	27,452	4	0.360	1.545	0.553	65.1%
FMH1021559 to FMH1021560	FWD1022579	900 (600)	3.68	3.65	12.954	432	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 9, 10, 11	0.0858	27,452	4	0.360	1.348	0.858	41.9%
FMH1021560 to FMH1021561	FWD1022580	900 (600)	3.65	3.63	11.251	563	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 9, 10, 11	0.0858	27,452	4	0.360	1.180	0.751	47.9%
FMH1021561 to FMH1021562	FWD1022581	900 (600)	3.63	3.60	13.323	444	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 8, A, 9, 10, 11, 12	0.1310	41,904	4	0.540	1.329	0.846	63.9%
FMH1021562 to FMH1021563	FWD1022583	900 (600)	3.60	3.60	8.798	-	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 8, A, 9, 10, 11, 12	0.1310	-	-	-	-	-	-
FMH1021563 to FMH1021564	FWD1022584	900 (600)	3.60	3.53	13.370	191	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 8, A, 9, 10, 11, 12	0.1310	41,904	4	0.540	2.030	1.291	41.9%
FMH1021564 to FMH1021565	FWD1022585	900 (600)	3.53	3.48	10.724	214	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 8, A, 9, 10, 11, 12	0.1310	41,904	4	0.540	1.915	1.218	44.4%
FMH1021565 to FMH1021566	FWD1022587	900 (600)	3.48	3.46	7.247	362	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 8, A, 9, 10, 11, 12	0.1310	41,904	4	0.540	1.472	0.937	57.7%
FMH1021566 to XPS1000860	FWD1022588	900 (600)	3.45	-	9.858	-	1.50	1	1, 2, F1, F2, B, 3, C, 5, 6, 7, E, 8, A, 9, 10, 11, 12	0.1310	-	-	-	-	-	-

Annex C

Backwash Calculation

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 Backwash Calculation

Design Assumption

1. The backwash is assumed to be performed on a daily basis.
2. The backwash is assumed to be performed with 1 metre square area each time. Therefore, multiple iterations are required to backwash the entire filter.

Estimated Sewage generated by swimming pool

Plan Area of Swimming Pool, A	=	1197	m^2	
Average Depth of Pool, D	=	1.5	m	
Volume of Water in Swimming Pool, V	=	A x D		
	=	1795.50	m^3	
Turnover Period, T	=	6	hour	
Surface Loading Rate of Filter, R_f	=	20.0	$m^3/m^2/hr$	
Filter Area Required	=	$V \div T \div R_f$		
	=	14.96	m^2	
Proposed backwash are conducted in 15 sequential portions.				
Area of filter per sequential portion, A_F	=	1.00	m^2	
	<	1.00	m^2	**OK**

Volume generated by backwash for each sequential portion

Backwash Duration, T_b	=	3	min	
Backwash Flow Rate, Q	=	30.0	$m^3/m^2/hr$	
Total Volume generated by Backwashing of Swimming Pool, V_b	=	$Q \times A_F \times T_b$ x 1hr / 60min		
	=	1.50	m^3	
Discharge Volume for Each Sequential Portion, V_d	=	1.50	m^3	
Discharge Duration for each iteration, T_d	=	3	min	
Discharge rate	=	$V_d \div T_d$		
	=	1.5 ÷ 3min		
	=	0.50	m^3/min	
	=	0.008	m^3/s	
	=	8.3	L/s	
Total backwash duration	=	15 x 3 mins		
	=	45	mins	

Remark:
6 hours of turnover period is adopted in accordance with the Clause 9 of Chapter 132CA Swimming Pools Regulation for a typical open air swimming pool.

Annex D

Detailed Estimation of Sewerage of Catchments 6 and 7

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 D Estimated Sewerage generated by Catchment 6

Design Assumptions

1. Unit flow factor is adopted in accordance with *Guideline Guidelines for Estimating Sewage Flows (GESF)* published by EPD in March 2005.
2. Average Household Size of 2.7 is adopted.

Estimated Sewage genereated by Kam Tsin Village

	Average Dry Weather Flow, ADWF	=	**1147.00**	m^3/d
		=	0.0133	m^3/s

Provided by EPD in according to the latest village sewerage study under CE58/2020 (DS).

Estimated Sewage generated by The Royal Oaks

	Total number of Residential units	=	44	blocks
	Total number of residents	=	119	persons
GESF Table T-1	Unit Flow Factor	=	0.37	m^3/d per person
	Average Dry Weather Flow, ADWF	=	**43.96**	m^3/d
		=	0.0005	m^3/s

Number of residential units is extracted from: http://hk.centadata.com/basicinfo.aspx?type=2&code=GEPPWPPEPS&ref=CD2_Detail

Estimated Sewage generated by Ascot Park

	Total number of Residential units	=	19	blocks
	Total number of residents	=	51	persons
GESF Table T-1	Unit Flow Factor	=	0.37	m^3/d per person
	Average Dry Weather Flow, AD\	=	**18.98**	m^3/d
		=	0.0002	m^3/s

Number of residential units is extracted from: http://hk.centadata.com/basicinfo.aspx?type=2&code=GEPPWPPHPS&ref=CD2_Detail

Estimated Sewage generated by St. Andrews Place

	Total number of Residential units	=	26	blocks
	Total number of residents	=	70	persons
GESF Table T-1	Unit Flow Factor	=	0.37	m^3/d per person
	Average Dry Weather Flow, ADWF	=	**25.97**	m^3/d
		=	0.0003	m^3/s

Number of residential units is extracted from: http://hk.centadata.com/basicinfo.aspx?type=2&code=GEPPWPPEPA&ref=CD2_Detail

Estimated Sewage generated by Goodwood Park

	Total number of Residential units	=	13	blocks
	Total number of residents	=	35	persons
GESF Table T-1	Unit Flow Factor	=	0.37	m^3/d per person
	Average Dry Weather Flow, ADWF	=	**12.99**	m^3/d
		=	0.0002	m^3/s

Number of residential units is extracted from: http://hk.centadata.com/basicinfo.aspx?type=2&code=GEPPWPPVPS&ref=CD2_Detail

Estimated Sewage generated by La Regent Park

	Total number of Residential units	=	42	blocks
	Total number of residents	=	113	persons
GESF Table T-1	Unit Flow Factor	=	0.37	m^3/d per person
	Average Dry Weather Flow, ADWF	=	**41.96**	m^3/d
		=	0.0005	m^3/s

Number of residential units is counted from GeoInfo Map.

Estimated Sewage generated by Casas Domingo

	Total number of Residential units	=	44	blocks
	Total number of residents	=	119	persons
GESF Table T-1	Unit Flow Factor	=	0.37	m^3/d per person
	Average Dry Weather Flow, ADWF	=	**43.96**	m^3/d
		=	0.0005	m^3/s

Number of residential units is extracted from: http://hk.centadata.com/basicinfo.aspx?type=2&code=BDBBBPEXPA&ref=CD2_Detail

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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

Subject Annex G4 Estimated Sewerage generated by Catchment 6

Design Assumptions

1. Unit flow factor is adopted in accordance with *Guideline Guidelines for Estimating Sewage Flows (GESF)* published by EPD in March 2005.
2. Average Household Size of 2.7 is adopted.

Estimated Sewage genereated by Beas River Country Park

	Total number of employees	=	100	persons
GESF Table T-2	Unit Flow Factor	=	1.58	m^3/d per person
	Average Dry Weather Flow, ADWF	=	**158.00**	m^3/d
		=	0.0018	m^3/s

Estimated Sewage genereated by De La Salle Secondary School

	Total number of students	=	625	persons
GESF Table T-2	Unit Flow Factor	=	0.04	m^3/d per person
	Total number of staffs	=	86	persons
GESF Table T-2	Unit Flow Factor	=	0.2800	m^3/d per person
	Average Dry Weather Flow, ADWF	=	**49.08**	m^3/d
		=	0.0006	m^3/s

Number of students and staffs is extracted from: http://www.delasalle.edu.hk/CustomPage/62/2016-2017%20%E5%AD%B8%E6%A0%A1%E5%A0%B1%E5%91%8A.pdf

Estimated Sewage genereated by Kam Tsin Village Ho Tung School

	Total number of students	=	548	persons
GESF Table T-2	Unit Flow Factor	=	0.04	m^3/d per person
	Total number of staffs	=	44	persons
GESF Table T-2	Unit Flow Factor	=	0.2800	m^3/d per person
	Average Dry Weather Flow, ADWF	=	**34.24**	m^3/d
		=	0.0004	m^3/s

Number of students and staffs is extracted from: https://www.chsc.hk/psp2018/sch_detail.php?lang_id=1&sch_id=198&return_page=sch_list.php%3Flang_id%3D1%26search_mode%3D%26frmMode%3Dpagebreak%26sch_name%3

Estimated Sewage genereated by Kam Tsin Village Ho Tung Kindergarten

	Total number of students	=	105	persons
GESF Table T-2	Unit Flow Factor	=	0.04	m^3/d per person
	Total number of staffs	=	11	persons
GESF Table T-2	Unit Flow Factor	=	0.28	m^3/d per person
	Average Dry Weather Flow, ADWF	=	**7.28**	m^3/d
		=	0.0001	m^3/s

Number of students and staffs is extracted from:https://kgp2018.azurewebsites.net/edb/schoolinfo.php?schid=6270&lang=tc&district=&category=&voucher=&schoolname=Kam+Tsin+Village+Ho+Tung+Kindergarten+)

Estimated Sewage genereated by St. Paul's House of Prayer

	Total number of residents	=	51	persons
GESF Table T-1	Unit Flow Factor	=	0.37	m^3/d per person
	Assumed number of staffs	=	10	persons
GESF Table T-2	Unit Flow Factor	=	0.28	m^3/d per person
	Average Dry Weather Flow, ADWF	=	**21.67**	m^3/d
		=	0.0003	m^3/s

Number of students and staffs is extracted from: http://www.srspc.org.hk/tc/retreat_house.php

Sub-total for Catchment 6

	Average Dry Weather Flow, ADWF	=	1605.08	m^3/d

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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

Subject Annex G4 Estimated Sewerage generated by Catchment 7

Design Assumptions

1. Unit flow factor is adopted in accordance with *Guideline Guidelines for Estimating Sewage Flows (GESF)* published by EPD in March 2005.
2. Average Household Size of 2.7 is adopted.
3. Assumed floor area per employee is adopted in accordance with *Commercial and Industrial Floor Space Utilization Survey (CIFSUS)* .

Estimated Sewage genereated by Storage Area located to the West and East of Yin Kong Road

	Assumed Storage Area	=	8537	m^2
CIFSUS Table 8	Assumed floor area per employee	=	250.00	m^2/d per person
	Total number of employees	=	34	persons
GESF Table T-2	Unit Flow Factor	=	0.18	m^3/d per person
	Average Dry Weather Flow, ADWF	=	**6.12**	m^3/d
		=	0.0001	m^3/s

Estimated Sewage generated by Yin Kong First Lane, Crouching Drogan Villa, Wisemen Villa and nearby Residential Blocks

	Total number of Residential units	=	88	blocks
	Total number of residents	=	238	persons
GESF Table T-1	Unit Flow Factor	=	0.37	m^3/d per person
	Average Dry Weather Flow, ADWF	=	**87.91**	m^3/d
		=	0.0010	m^3/s

Estimated Sewage genereated by Yin Kong Playground, Basketball Court and Yin Kong Tsuen Recreation Centre

	Assumed Recreation Activity Areas	=	629	m^2
CIFSUS Table 8	Assumed floor area per employee	=	30.00	m^2/d per person
	Total number of employees	=	21	persons
GESF Table T-2	Unit Flow Factor	=	0.28	m^3/d per person
	Average Dry Weather Flow, ADWF	=	**5.88**	m^3/d
		=	0.0001	m^3/s

Estimated Sewage genereated by Yin Kong Public Toilet

It is assumed that the Yin Kong Public Toilet will mainly serve for the Yin Kong Playground, Basketball Court and Yin Kong Tsuen Recreation Centre.

Therefore, the estimated sewage generated by Yin Kong Public Toilet has been taken into account in above already.

Sub-total for Catchment 7

	Average Dry Weather Flow, ADWF	=	99.91	m^3/d

Annex E

Capacity Checking of Tsung Pak Long Sewage Pumping Station

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 E Capacity Checking of Tsung Pak Long Sewage Pumping Station

Information of Tsung Pak Long Sewage Pumping Station (TPL SPS)

	Design Capacity of TPL SPS, *Fcap*	=	21070.0	m^3/d	

Existing Situation (From Historial Flow Records)

	Peak Daily Flow (2018)	=	8700	m^3/d	
	Peak Daily Flow (2019)	=	5275	m^3/d	
	Peak Daily Flow adopted, *Fpeak*	=	8700	m^3/d	

Planned Developments

			ADWF		
From EPD	Beas River Equestrian Centre	=	272.0	m^3/d	
From EPD	CE52/2017 Tai Tau Leng Public Housing	=	3057.0	m^3/d	
From EPD	A/NE-KTS/460	=	2.2	m^3/d	
From EPD	A/NE-KTS/466	=	49.0	m^3/d	
From EPD	Y/NE-KTS/13	=	343.0	m^3/d	
From Binnies-SIA	A/NE-KTS/506	=	2166.4	m^3/d	
From EPD	Y/NE-KTS/14	=	1153.0	m^3/d	
From EPD	Y/KTN/2	=	492.0	m^3/d	
From EPD	Y/FSS/15	=	798.8	m^3/d	
	Sub-total, *Fplanned*	=	8333.4	m^3/d	

Capacity Checking of TPL SPS

	Total Planned Flow to TPL SPS, *Fcur*	=	*Fpeak + Fplanned*		
		=	17033.4	m^3/d	
	Proposed Development, *Fpro*	=	792.0	m^3/d	
	Total Flow to TPL SPS, *Ftotal*	=	*Fcur + Fpro*		
		=	**17825.4**	m^3/d	
		<	*Fcap*		**OK**
			84.6%	usage	

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 E Capacity Checking of Tsung Pak Long Sewage Pumping Station

	Information of Tsung Pak Long Sewage Pumping Station (TPL SPS)				
	Installed Pump Rate, *Fcap*	=	220.0	L/s	
	Existing Situation (From Historial Flow Records)				
	Peak Daily Flow (2018)	=	8700	m^3/d	
	Peak Daily Flow (2019)	=	5275	m^3/d	
	Peak Daily Flow adopted, *Fpeak* 1	=	8700	m^3/d	
	Planned Developments		ADWF		
From EPD	Beas River Equestrian Centre	=	272.0	m^3/d	
From EPD	CE52/2017 Tai Tau Leng Public Housing	=	3057.0	m^3/d	
From EPD	A/NE-KTS/460	=	2.2	m^3/d	
From EPD	A/NE-KTS/466	=	49.0	m^3/d	
From EPD	Y/NE-KTS/13	=	343.0	m^3/d	
From Binnies-SIA	A/NE-KTS/506	=	2166.4	m^3/d	
From EPD	Y/NE-KTS/14	=	1153.0	m^3/d	
From EPD	Y/KTN/2	=	492.0	m^3/d	
From EPD	Y/FSS/15	=	798.8	m^3/d	
	Sub-total, *Fplanned*	=	8333.4	m^3/d	
	Capacity Checking of TPL SPS				
	ADWF of Proposed Development, *Fpro*	=	792.0	m^3/d	
	Total Planned Flow to TPL SPS, *Fcur*	=	*Fpro* + *Fplanned*		
		=	9125.4	m^3/d	
	Contributing Population	=	33798		
	Peak Factor	=	3.0		
	Backwash (peak) from Swimming Pool of Proposed Development, *Fs*	=	21.6	m^3/d	
	Peak Planned Flow to TPL SPS, *Fpeak2*	=	*Fcur* *Peak Factor+*Fs*		
		=	27397.8	m^3/d	
	Total Peak Flow to TPL SPS, *Ppeak*	=	*Fpeak1* + *Fpeak2*		
		=	36097.8	m^3/d	
		=	**417.8**	L/s	
		>	*Fcap*		**NOT OK**
			189.9%	usage	