Lot 4822 in D.D. 104, Kam Pok Road and Adjoining Government Land, Mai Po, Yuen Long

Sewerage Impact Assessment

April 2026

Date	Revision	Prepared by	Checked by	Approved by
July 2025	0	Robben Cheung	Casey Man	T.C Lam
Oct 2025	1	Robben Cheung	Casey Man	T.C Lam
Dec 2025	2	Robben Cheung	Casey Man	T.C Lam
Mar 2026	3	Alex Lau	Casey Man	T.C. Lam
Apr 2026	4	Alex Lau	Casey Man	T.C. Lam

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Contents

LIST OF APPENDICES

1. INTRODUCTION

1.1. Meinhardt Infrastructure & Environment Limited (MIEL) has been commissioned to conduct this Sewerage Impact Assessment ("SIA") to demonstrate the proposed medium-rise residential development on the Application Site is technically feasible in the sewage disposal aspect.

1.2. The Application Site (hereinafter referred to as "the Site") is located east of Kam Pok Road near Fairview Park in Yuen Long. The Site location is shown in **Appendix A**.

1.3. The objectives of this SIA are:

- Identification of existing sewerage facilities serving the concerned area;
- Description of methodology adopted in this assessment;
- Estimation of sewage flow from the subject development;
- Assessment of sewerage impact on the existing or/and planned sewerage facilities due to the increased sewage flow from the subject development; and
- Recommendation of on-site sewerage facilities (on-site sewage pumping station) to cater for the development if found necessary.

2. GENERAL SITE DESCRIPTION

2.1. The Site is bounded by Fung Chuk Road, Ha Chuk Yuen Road, Kam Pok Road and Ha San Wai Road covering a total land area of about 37,870m^2. It is located in the vicinity of Fairview Park, Villa Camellia, Helene Terrace, 3-storey village dwellings in Ha San Wai and Yau Pok Road Light Public Housing.

2.2. The existing topography of the Site is sloping gently from the north towards the south with ground level varies from +7.0mPD to +4.3mPD approximately.

3. DEVELOPMENT PROPOSAL

3.1. The proposed development comprises five medium-rise residential buildings with a domestic plot ratio of 1.5, and one 2-storey facility compound containing one club house, one 6-classroom kindergarten and an elderly activity centre. The building heights of these 5 residential towers are 16 residential storeys high. The total domestic GFA is about 56,805m^2. Upon completion in 2031, the proposed development will provide a total of 1,303 private high-quality flats.

3.2. The proposed development also includes a two-storey facility compound comprising a clubhouse (of about 2,272 m^2 exempted GFA) which includes a restaurant, an indoor swimming pool and an outdoor swimming pool; one 6-classroom kindergarten (of about 380m^2 non-domestic GFA); One elderly activity centre with NOFA is about 303m^2.

3.3. The proposed master layout plan is shown in **Appendix A**.

4. EXISTING AND PLANNED SEWERAGE SYSTEM

Existing Sewerage System

4.1. Based on the sewerage records, there are no existing sewers in the vicinity of the Site. The closest existing sewerage facility is Nam Sang Wai Sewage Pumping Station (NSWSPS), which is located

west of Pok Wai South Road. The collected sewage in NSWSPS is eventually conveyed to existing Yuen Long Sewage Treatment Works (YLSTW).

4.2. The designed capacity and the current average daily flow in terms of ADWF (m^3/day) of NSWSPS are shown in **Table 1**.

Table 1 – Capacity of NSWSPS

Sewerage Facility	Design Capacity (m^3/day)	Current Average Daily Flow (m^3/day)	Spare Capacity (m^3/day)
NSWSPS	42,921	3,900	39,021

Planned Sewerage System

4.3. According to the approved EIA report for "Yuen Long Effluent Polishing Plant – Investigation, Design and Construction" (EIA-259/2018), DSD proposed to upgrade existing YLSTW to Yuen Long Effluent Polishing Plant (YLEPP) to enhance its capacity and treatment level. The upgrade works would be carried out in 2 stages. Under Stage 1, YLSTW will be upgraded to YLEPP with treatment capacity of 100,000m^3/day. The project completion date of YLEPP – Stage 1 is mid-2027, which will be completed before the completion of the proposed development at the Site in 2031. The following Stage 2 works being planned to increase YLEPP treatment capacity to 180,000m^3/day by 2030 tentatively.

4.4. According to the approved Planning Application No. Y/YL-NSW/7, there will be gravity sewers ranging from 351.35mm to 623.60mm diameter located along Pok Wai West Road and Pok Wai South Road connecting to NSWSPS. These sewers from manhole WKT009 to manhole WKT015 are planned to serve the potential development in the surrounded area. Apart from the abovementioned, 2 x 675mm gravity sewers are proposed under Approved Planning Application No. Y/YL-MP/10. The proposed completion years for Y/YL-NSW/7 and Y/YL-MP/10 are 2028 and 2031 respectively.

5. ASSESSMENT METHODOLOGY AND PARAMETERS

5.1. Capacity assessment of the sewers, pumping station and sewage treatment plant is being carried out to assess the adequacy of the capacity in the existing or/and planning sewerage system. The design parameters and standards are shown in **Table 2** below.

Table 2 - Design Parameters and Standards

Design Standards/ Guidelines	• DSD Sewerage Design Manual, Part 1 & 2 (SDM) • EPD Guideline for Estimating Sewage Flows for Sewage Infrastructure Planning (GESF) • Data published by Census and Statistics Department (C&SD) • Commercial and Industrial Floor Space Utilization Survey (CIFSUS) by Planning Department
Flow Formula	Colebrook White Formula
Sewer Roughness Coefficient, Ks	1.5 mm

Unit Flow Factor	• 0.27m^3/d/head (Domestic, Private R2) • 0.28m^3/d/head (Commercial Employee plus "Community, Social & Personal Services", J11) • 1.58m^3/d/head (Commercial Employee plus "Restaurants & Hotels", J10) • 0.04m^3/d/head (School Student)
Contributing Population	Contributing Population = Calculated ADWF/0.27
Peaking Factors	Table T-5 of GESF
Catchment Inflow Factor	Table T-4 of GESF Catchment Inflow Factors (PCIF): Yuen Long =1.00
Average Household Size	2.7(reference to Table 150-12001: Projected number of domestic households and average household size of 2026 and 2031 whichever larger, by the Census and Statistics Department)
Staff Density of Club House	Table 8 of CIFSUS Community, Social & Personal Services: 2.3 workers per 100m^2 GFA
No. of Staff in Restaurant	15
No. of Student in Kindergarten	180 (6 classes of 30 students)
No. of Teacher in Kindergarten	23 (Pupil-Teacher Ratio is 8:1 under Key Statistics on Kindergarten Education)
Elderly Activity Centre Population	137.5 (based on a notional space allowance of 4 m^2/person , referencing the Hong Kong Planning Standards and Guidelines (HKPSG) Chapter 3 regarding the Net Operating Floor Area (NOFA) requirements for elderly community centre) (with GFA of 550 m^2)
No. of Staff in Elderly Activity Centre	45 (Assume 16 staff are required for every 50 service users, in accordance with the Hong Kong Social Welfare Department's staffing establishment for Day Activity Centre)

6. ESTIMATION OF SEWAGE FLOW

6.1. The estimation of sewage flow of the proposed development is shown in **Appendix C** and summarized in **Table 3** below.

Table 3 - Total Estimated Sewage Flow from the Proposed Development

Population Type	No. of Population	Unit Flow Factor (m^3/d/person)	Average Dry Weather Flow (m^3/d)
Residential Population	3,519	0.27	950.13
Staff of Clubhouse	53	0.28	14.84
Staff of Restaurant	15	1.58	23.70
Students in Kindergarten	180	0.04	7.20
Teachers in Kindergarten	23	0.28	6.44
Staff of Elderly Activity Centre	45	0.28	12.60
Outdoor Swimming Pool	-	-	7.03

Indoor Swimming Pool	-	-	8.44
Total	3,835	-	**1,030.38**

6.2. The estimated Average Dry Weather Flow (ADWF) from the proposed development is approximately 1,030.38m^3/day.

7. PROPOSED SEWERAGE SYSTEM

7.1. The sewage from the proposed development will be collected by the proposed gravity sewers within the Site and then conveyed to the proposed on-site sewage pumping station with the installed capacity not less the peak flow (4,121.52m3/day). The sewage will then be pumped by a twin DN150 rising mains to the gravity sewer and eventually be conveyed to NSWSPS.

7.2. Under normal circumstances, the sewage from the proposed rezoning development will be directed into NSWSPS via a proposed sewer line (PSL), which runs along the east of Kam Pok Road and Pok Wai Road South, ending at the existing manhole FSH1001886 that connects to NSWSPS, as depicted in Figure 2 in **Appendix D**.

7.3. There are four nearby planning application nos. (Y/YL-NSW/7, Y/YL-MP/7, Y/YL-MP/8, and Y/YL-MP/10) and a potential site development at Yau Mei San Tsuen. The proposed completion and population intake years of these developments are 2028 for Y/YL-NSW/7, 2031 for Y/YL-MP/10, and 2034 for both Y/YL-MP/7 and Y/YL-MP/8, which coincide with the timeline of this rezoning application.

7.4. To manage the cumulative impacts, there are three scenarios:

Scenario 1 – If this application is to be proceeded before all of the developments proposing the communal gravity sewer along Pok Wai Road South, the applicant will be responsible for the construction of the proposed PSL, subject to agreement with the Drainage Services Department (DSD) and Environmental Protection Department (EPD). The long-term maintenance responsibility for gravity sewers conveying sewage from multiple developers will be handed over to DSD.

Scenario 2 - If Planning Application Nos. Y/YL-NSW/7 is to be proceeded before this application, the hydraulic assessment in **Table 6** indicates that the capacity of some sections of the communal gravity sewer are insufficient to accommodate the sewage flow. The applicant will be responsible for the upgrading works and liaising with the relevant developers proposing the communal gravity sewer on the construction responsibility before the commencement of construction.

Scenario 3 – If this application is to be proceeded after all the six proposed developments (under application nos. Y/YL-NSW/7, Y/YL-MP/7, Y/YL-MP/8, Y/YL-MP/9 and Y/YL-MP/10 and the potential site development at Yau Mei San Tsuen). As the assessment in **Table 7** indicates that the existing twin DN675 gravity sewers constructed by the applicant of Y/YL-MP/10 have sufficient capacity to cater for the cumulative flow, the constructed sewers by the applicant of Y/YL-MP/10 will be utilized and no further upgrading works are required from the Applicant. This arrangement will ensure no adverse sewerage impact on the planned system.

Figure 3, Figure 4, and Figure 5 in **Appendix D** illustrates the schematic alignment and preliminary technical details of the PSL. The sewage will be pumped from NSWSPS to YLEPP eventually.

7.5. The hydraulic checking of the proposed rising mains is shown in **Appendix E**.

8. SEWERAGE IMPACT ASSESSMENT

8.1. The sewerage impact on NSWSPS and the gravity sewers due to the sewage flow generated by the proposed development within the Site has been assessed.

8.2. The results of the sewerage assessment on NSWSPS are summarized in **Table 4**. **Table 5** summarizes the results for Scenario 1. For Scenario 2, **Table 6** and **Table 5** present the assessment of the existing planned sewers under Application No. Y/YL-NSW/7 and the results of the proposed upgrading scheme respectively. For Scenario 3, **Table 7** present the assessment of the existing planned sewers under Application No. Y/YL-MP/10. The detailed hydraulic calculations for the planned gravity sewers and the proposed upgrading works (from the Site to FSH1001886) are shown in **Appendix F**.

Table 4 – Assessment Results of NSWSPS

Sewerage Facility	Design Capacity (m^3/day)	Current Average Daily Flow (m^3/day)	Estimated Future Average Daily Flow (m^3/day)(1)	Spare Capacity (m^3/day)
NSWSPS	42,921	3,900	15500	23521

(1) The estimated future flow includes the EPD initial estimation for the gravity sewers (i.e. 15,500m^3/d), which accounts for the sewage flow from proposed developments in the surrounding area.

Table 5 – Assessment Results of the Gravity Sewers (Scenario 1)

From Manhole	To Manhole	Nominal Diameter (mm)	Peak Daily Flow (m^3/s)	Gradient (1 in X)	Flow Velocity (m/s)	Flow Capacity (m^3/s)	% Used of Flow Capacity
Conversion Chamber	KPR001	1000	0.713	395	1.450	1.008	70.77%
KPR001	KPR002	1000	0.713	412	1.420	0.987	72.29%
KPR002	KPR003	1000	0.713	389	1.461	1.015	70.25%
KPR003	KPR004	1000	0.713	395	1.450	1.008	70.77%
KPR004	KPR005	1000	0.713	400	1.441	1.001	71.25%
KPR005	KPR006	1000	0.713	400	1.441	1.001	71.25%
KPR006	KPR007	1000	0.713	400	1.441	1.001	71.25%
KPR007	KPR008	1000	0.713	409	1.424	0.990	72.05%
KPR008	KPR009	1000	0.713	389	1.461	1.015	70.25%
KPR009	KPR010	1000	0.713	429	1.392	0.967	73.76%
KPR010	KPR011	1000	0.713	417	1.411	0.981	72.72%
KPR011	NSWSPS	1000	0.713	375	1.488	1.034	68.98%

Table 6 – Assessment Results of the Gravity Sewers Constructed by Applicant Y/YL-NSW/7 (Scenario 2)

From Manhole	To Manhole	Nominal Diameter (mm)	Peak Daily Flow (m^3/s)	Gradient (1 in X)	Flow Velocity (m/s)	Flow Capacity (m^3/s)	% Used of Flow Capacity
WKT009	WKT010	623.6	0.713	308	1.266	0.387	184.52%
WKT010	WKT011	623.6	0.713	296	1.290	0.394	181.06%
WKT011	WKT012	623.6	0.713	300	1.282	0.392	182.19%
WKT012	WKT013	623.6	0.713	292	1.300	0.397	179.63%
WKT013	WKT014	623.6	0.713	300	1.282	0.392	182.19%
WKT014	WKT015	623.6	0.713	313	1.256	0.384	185.96%
WKT015	NSWSPS	623.6	0.713	300	1.282	0.392	182.19%

Table 7 – Assessment Results of the Gravity Sewers Constructed by Applicant Y/YL-MP/10 (Scenario 3)

From Manhole	To Manhole	Nominal Diameter (mm)	Peak Daily Flow (m^3/s)	Gradient (1in X)	Flow Velocity (m/s)	Flow Capacity (m^3/s)	% Used of Flow Capacity
Conversion Chamber	FMH001	2x675	0.713	395	1.175	0.841	84.84%
FMH001	FMH002	2x675	0.713	412	1.150	0.823	86.66%
FMH002	FMH003	2x675	0.713	389	1.184	0.847	84.21%
FMH003	FMH004	2x675	0.713	395	1.175	0.841	84.84%
FMH004	FMH005	2x675	0.713	400	1.167	0.835	85.41%
FMH005	FMH006	2x675	0.713	400	1.167	0.835	85.41%
FMH006	FMH007	2x675	0.713	400	1.167	0.835	85.41%
FMH007	FMH008	2x675	0.713	409	1.154	0.826	86.37%
FMH008	FMH009	2x675	0.713	389	1.184	0.847	84.21%
FMH009	FMH010	2x675	0.713	429	1.127	0.807	88.42%
FMH010	FMH011	2x675	0.713	417	1.143	0.818	87.17%

FMH011	NSWSPS	2x675	0.713	375	1.205	0.863	82.68%

8.3. For scenario 1, the proposed DN1000 sewer has sufficient capacity to cater the sewage flow generated from the proposed development within the Site and the potential new developments.

8.4. For Scenario 2, the results of the assessment as shown in **Table 6** have demonstrated that the gravity sewers constructed by the applicant of Y/YL-NSW/7 do not have enough capacity to cater for the sewage flow generated from the proposed development within the Site. It is suggested to upgrade the sewer size to DN1000, which follows the same proposed scheme as in Scenario 1. The Applicant will be responsible for the upgrading of the proposed gravity sewers.

8.5. For Scenario 3, the results of the assessment as shown in **Table 7** have demonstrated that the gravity sewers constructed by the applicant of Y/YL-MP/10 (i.e. 2 x DN675) have sufficient capacity to cater the sewage flow generated from the proposed development within the Site and the potential new developments. No upgrading works for this section of gravity sewers are required.

8.6. After upgrade the planned gravity sewers, there will be no adverse sewerage impact on the planned gravity sewers, NSWSWS and YLEPP due to this proposed development is anticipated.

8.7. A comprehensive study on the technical feasibility focusing on the available underground space will be undertaken. Consideration will be given to construction feasibility, maintenance access, and future expansion possibilities to ensure the proposed rising mains can be safely and effectively accommodated within the constrained underground environment. Where necessary, coordination with relevant government departments, utility providers and other developments will be conducted to optimize the design and layout of the rising mains. The detailed design will be submitted at detailed design stage.

9. MAINTENANCE RESPONSIBILITY

9.1. All proposed sewers and sewerage facilities within the proposed development will be constructed, operated and maintained by the Applicant.

9.2. The proposed external twin DN150 rising mains will be constructed and maintained by the Applicant.

9.3. For the gravity sewers in Scenario 1, the Applicant will be responsible for the construction of the new DN1000 sewer to cater for the cumulative sewage flow. For Scenario 2, the assessment indicates that the planned DN623 sewer is insufficient. Therefore, the Applicant will be responsible for constructing the sewer from the development to WKT009 as well as upgrading the sewer section between WKT009 and NSWSPS, while liaising with the relevant developers on the construction responsibility before the commencement of construction. For Scenario 3, as the assessment indicates that the capacities of the planned sewers are sufficient to cater for the cumulative flow. Maintenance of sewers exclusively serving the development remains the responsibility of the Applicant at their own cost. However, as the proposed new pipes will be designed and constructed as communal facilities to serve multiple developments, the proposed

arrangement remains flexible at this stage, and the final design and construction of the new pipe will be determined during detailed design phase including maintenance and management requirement, to meet DSD's approval. The relevant sewer segments located on government land that serving multiple development shall handover to Drainage Service Department (DSD) for long-term maintenance.

10. CONCLUSION

10.1. This report has assessed the sewerage impact due to the proposed development of Lot No. 4822 in D.D. 104 and adjoining Government Land, Kam Pok Road, Mai Po, Yuen Long.

10.2. The sewage flow generated from the proposed development will be collected by proposed gravity sewers within the Site and then conveyed into the proposed sewer line via an on-site underground sewage pumping station. For Scenario 1, the proposed DN1000 sewer is technically feasible with sufficient capacity. In Scenario 2, upgrading the DN623 sewer to DN1000 is required. For Scenario 3, the 2 x DN675 sewer is technically feasible to cater for the cumulative flow and no upgrading works are required.

10.3. The results of the assessment have demonstrated that both proposed scenario options are technically feasible from the sewerage engineering standpoint.

APPENDIX A –

SITE LOCATION AND PROPOSED MASTER LAYOUT PLAN

PLOTTED BY : $USER$

823200 E
823400 E
823600 E
823800 E
837500 N
837300 N
837100 N

FAIRVIEW PARK
YAU POK ROAD LIGHT PUBLIC HOUSING
CHUK YUEN TSUEN
HA SAN WAI
KAM POK ROAD
FUNG CHUK ROAD
HA CHUK YUEN ROAD
SAN TIN HIGHWAY
YAU POK ROAD
NGAU TAM MEI CHANNEL
HA SAN WAI ROAD
HELENE TERRACE
VILLA CAMELLIA

T6
T5
T3
T2
T1
TX ROOM & MAIN SWITCH ROOM
SEWAGE PUMPING STATION
KINDERGARTEN & ELDERLY ACTIVITY CENTRE
OUTDOOR SWIMMING POOL
CLUBHOUSE

LEGENDS:

APPLICATION SITE

PLOT DRV : $PLTDRVL$

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LOT 4822 IN D.D. 104, KAM POK ROAD AND ADJOINING GOVERNMENT LAND, MAI PO, YUEN LONG

LOCATION PLAN AND PROPOSED MASTER LAYOUT PLAN

FIGURE 1

Scale 1 : 1250(A1)

CAD FILE : $FILE$

PLOT DATE & TIME : $DATE$ $TIME$

APPENDIX B –

NOT USED

APPENDIX C –

ESTIMATION OF SEWERAGE FLOW FOR THE PROPOSED DEVELOPMENT

	Lot 4822 in D.D. 104 and the Adjoining Government	
Project	: Land, Kam Pok Road, Mai Po, Yuen Long	
Project No.	: 91469	
Prepared by	: HSC	Checked by : CYM
Date	: 22/04/2026	Sheet No. : 1

Estimation of Sewage Flow from the Proposed Development

Residential

No. of Units	=	1303	
Average Household size per unit	=	2.7	
Residential Population (person)	=	3519	
Unit Flow Factor (m^3/d/head)	=	0.27	Domestic - Private R2
ADWF (m^3/day)	=	950.13	
ADWF (l/s)	=	11.00	

Club House

No. of Storeys	=	2	
Gross Floor Area per storey	=	1136	
Total Gross Floor Area (GFA) (m^2)	=	2272	
Assumed Worker Density (workers per 100m^2 GFA)	=	2.3	Table 8 of CIFSUS - Private Commercials - Community, Social & Personal Services
No. of Staff	=	53	
Unit Flow Factor (m^3/d/head)	=	0.28	Commercial - J11
ADWF (m^3/day)	=	14.84	
ADWF (l/s)	=	0.17	

Restaurant

No. of Staff	=	15	
Unit Flow Factor (m^3/d/head)	=	1.58	Commercial - J10
ADWF (m^3/day)	=	23.70	
ADWF (l/s)	=	0.27	

Kindergarten

Nos. of Students	=	180	Assume 6 classes and 30 students in a class
Nos. of Teacher	=	23	Pupil-Teacher Ratio is around 8:1 under Key Statistics on Kindergarden Education
Unit Flow Factor - Student (m^3/d/head)	=	0.04	
Unit Flow Factor - Teacher (m^3/d/head)	=	0.28	Commercial - J11
ADWF (m^3/day)	=	13.64	
ADWF (l/s)	=	0.16	

Elderly Activity Centre

Population	=	138	
Nos. of Staff	=	45	Assume 16 staff are required for every 50 service users, in accordance with the Hong Kong Social Welfare Department's staffing establishment for Day Activity Centres
Unit Flow Factor - Elderly / Staff (m^3/d/head)	=	0.28	Commercial - J11
ADWF (m^3/day)	=	12.60	
ADWF (l/s)	=	0.15	

Project : Lot 4822 in D.D. 104 and the Adjoining Government Land, Kam Pok Road, Mai Po, Yuen Long
Project No. : 91469
Prepared by : HSC
Date : 22/04/2026

Checked by : CYM
Sheet No. : 1

Outdoor Swinning Pool

Swimming Pool Volume (m^3) (25m x 15m x 1.5m)	=	562.5
Turnover rate (hours)	=	6
Assumed Surface Loading Rate of Filter ($m^3/m^2/hr$)	=	20
Filter Area Required (m^2)	=	4.69
Duration of Backwash (min/day)	=	3.00
Assumed Backwash Flowrate ($m^3/m^2/hr$)	=	30.00
Volume of Backwash (m^3/day)	=	7.03
Assumed Discharge Duration (min)	=	3
Discharge Flow Rate (m^3/min)	=	2.34
Discharge Flow Rate (m^3/s)	=	0.04

B1.1.2 Outdoor Swimming Pool Turnver Rate - General Specification for Swimming Pool Water Treatment Installation

Indoor Swinning Pool

Swimming Pool Volume (m^3) (20m x 15m x 1.5m)	=	450
Turnover rate (hours)	=	4
Assumed Surface Loading Rate of Filter ($m^3/m^2/hr$)	=	20
Filter Area Required (m^2)	=	5.63
Duration of Backwash (min/day)	=	3.00
Assumed Backwash Flowrate ($m^3/m^2/hr$)	=	30.00
Volume of Backwash (m^3/day)	=	8.44
Assumed Discharge Duration (min)	=	3
Discharge Flow Rate (m^3/min)	=	2.81
Discharge Flow Rate (m^3/s)	=	0.05

B1.1.2 Indoor Swimming Pool Turnver Rate - General Specification for Swimming Pool Water Treatment Installation

Total ADWF (m^3/day)	**=**	**1030.38**
ADWF (l/s)	**=**	**11.93**

Table 150-12001 : Projected number of domestic households and average household size

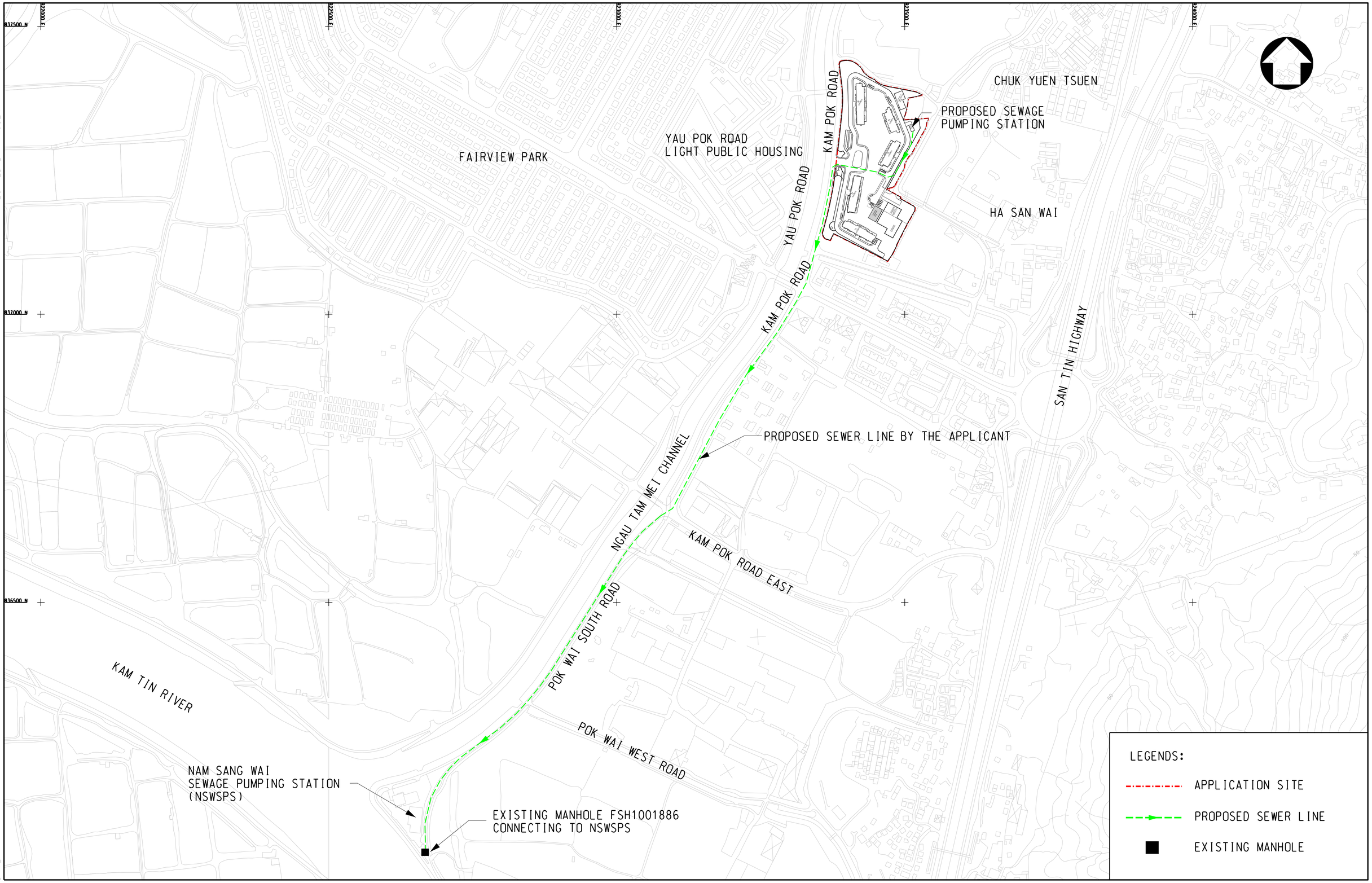
Statistics

	Domestic households	Average annual growth in domestic households over the past 5 years	Average household size
	Number	Number of domestic households	Number of persons
Year			
1981	1 244 700	-	3.9
1986	1 452 600	41 600	3.7
1991	1 582 200	25 900	3.4
1996	1 855 600	54 700	3.3
2001	2 053 400	39 600	3.1
2006	2 226 500	34 600	3.0
2011	2 368 800	28 500	2.9
2016	2 509 700	28 200	2.8
2021	2 674 200	32 900	2.7
2026 J	2 780 200	21 200	2.7
2031 J	2 884 800	20 900	2.6
2036 J	2 974 500	17 900	2.6
2041 J	3 042 800	13 700	2.6
2046 J	3 076 600	6 800	2.6

APPENDIX D –

LAYOUT PLAN FOR PROPOSED PRIVATE SEWAGE PUMPING STATION AND RISING MAINS

PLOTTED BY : $USER$



PLOT DRV : $PLTDRVL$

Meinhardt Infrastructure and Environment Limited
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LOT 4822 IN D.D. 104, KAM POK ROAD AND ADJOINING GOVERNMENT LAND, MAI PO, YUEN LONG

PROPOSED SEWERAGE ALIGNMENT

FIGURE 2

Scale 1 : 3000(A1)

CAD FILE : $FILE$

PLOT DATE & TIME : $DATE$ $TIME$

PLOTTED BY : $USER$

FAIRVIEW PARK

YAU POK ROAD
LIGHT PUBLIC HOUSING

KAM POK ROAD

CHUK YUEN TSUEN

PROPOSED SEWAGE
PUMPING STATION

HA SAN WAI

YAU POK ROAD

KAM POK ROAD

2x150ø RM

SAN TIN HIGHWAY

PROPOSED TWIN RISING MAINS
CONSTRUCTED AND MAINTAINED
BY THE APPLICANT

PROPOSED SEWER LINE BY THE APPLICANT

NGAU TAM MEI CHANNEL

PROPOSED CONVERSION CHAMBER
CONSTRUCTED BY THE APPLICANT

KAM POK ROAD EAST

KPR001

1000ø

KPR002

KPR003

PROPOSED GRAVITY SEWERS
BY THE APPLICANT

POK WAI SOUTH ROAD

KPR004

KAM TIN RIVER

KPR005

PROPOSED MANHOLE
CONSTRUCTED BY THE APPLICANT

1000ø

KPR006

POK WAI WEST ROAD

KPR007

KPR008

KPR009

NAM SANG WAI
SEWAGE PUMPING STATION
(NSWSPS)

KPR010

KPR011

EXISTING MANHOLE FSH1001886
CONNECTING TO NSWSPS

LEGENDS:

- APPLICATION SITE
- 2x150ø RM — PROPOSED RISING MAINS
- 1000ø — PROPOSED GRAVITY SEWERS BY THE APPLICANT
- CONVERSION CHAMBER
- PROPOSED MANHOLE
- EXISTING MANHOLE

PLOT DRV : $PLTDRVL$

Meinhardt Infrastructure and Environment Limited
邁進基建環保工程顧問有限公司

LOT 4822 IN D.D. 104, KAM POK ROAD AND ADJOINING GOVERNMENT LAND, MAI PO, YUEN LONG

PROPOSED SEWERAGE SYSTEM LAYOUT PLAN (SCENARIO 1)

FIGURE 3

Scale 1 : 3000(A1)

CAD FILE : $FILE$

PLOT DATE & TIME : $DATE$ $TIME$

PLOTTED BY : $USER$

FAIRVIEW PARK

YAU POK ROAD
LIGHT PUBLIC HOUSING

KAM POK ROAD

CHUK YUEN TSUEN

PROPOSED SEWAGE
PUMPING STATION

HA SAN WAI

YAU POK ROAD

KAM POK ROAD

2x150ø RM

PROPOSED TWIN RISING MAINS
CONSTRUCTED AND MAINTAINED
BY THE APPLICANT

SAN TIN HIGHWAY

PROPOSED SEWER LINE BY THE APPLICANT

PROPOSED GRAVITY SEWERS
BY THE APPLICANT

NGAU TAM MEI CHANNEL

PROPOSED CONVERSION CHAMBER
CONSTRUCTED BY THE APPLICANT

PROPOSED UPGRADE OF
GRAVITY SEWERS
BY THE APPLICANT

KPR001

KAM POK ROAD EAST

KPR002

PROPOSED GRAVITY SEWERS
CONSTRUCTED BY THE OTHER APPLICANT
(Y/YL-NSW/7)

KPR003

1000ø

POK WAI SOUTH ROAD

KPR004

KAM TIN RIVER

WKT009

PROPOSED MANHOLE
CONSTRUCTED BY THE OTHER APPLICANT (Y/YL-NSW/7)

600ø (1000ø)

WKT010

POK WAI WEST ROAD

WKT011

NAM SANG WAI
SEWAGE PUMPING STATION
(NSWSPS)

WKT012

WKT013

WKT014

WKT015

EXISTING MANHOLE FSH1001886
CONNECTING TO NSWSPS

LEGENDS:

- APPLICATION SITE
- 2x150ø RM — PROPOSED RISING MAINS BY THE APPLICANT
- 1000ø — PROPOSED GRAVITY SEWERS BY THE APPLICANT
- 600ø (1000ø) — PROPOSED UPGRADE OF GRAVITY SEWERS BY THE APPLICANT
- CONVERSION CHAMBER
- PROPOSED MANHOLE
- MODIFICATION OF PLANNED MANHOLE CONSTRUCTED BY THE OTHER APPICANTS
- EXISTING MANHOLE

Meinhardt Infrastructure and Environment Limited
邁進基建環保工程顧問有限公司

LOT 4822 IN D.D. 104, KAM POK ROAD AND ADJOINING GOVERNMENT LAND, MAI PO, YUEN LONG

PROPOSED SEWERAGE SYSTEM LAYOUT PLAN (SCENARIO 2)

FIGURE 4

Scale 1 : 3000(A1)

PLOT DRV : $PLTDRVL$

CAD FILE : $FILE$

PLOT DATE & TIME : $DATE$ $TIME$

PLOTTED BY : $USER$

FAIRVIEW PARK

YAU POK ROAD
LIGHT PUBLIC HOUSING

KAM POK ROAD

CHUK YUEN TSUEN

PROPOSED SEWAGE
PUMPING STATION

HA SAN WAI

YAU POK ROAD

KAM POK ROAD

2x150ø RM

PROPOSED TWIN RISING MAINS
CONSTRUCTED AND MAINTAINED
BY THE APPLICANT

SAN TIN HIGHWAY

PROPOSED SEWER LINE BY THE APPLICANT

NGAU TAM MEI CHANNEL

PROPOSED CONVERSION CHAMBER
CONSTRUCTED BY THE OTHER APPLICANT
(Y/YL-MP/10)

FMH001

KAM POK ROAD EAST

FMH002

PROPOSED GRAVITY SEWERS
CONSTRUCTED BY THE OTHER APPLICANT
(Y/YL-MP/10)

FMH003

2x675ø

FMH004

POK WAI SOUTH ROAD

KAM TIN RIVER

FMH005

PROPOSED MANHOLE
CONSTRUCTED BY THE OTHER APPLICANT
(Y/YL-MP/10)

POK WAI WEST ROAD

2x675ø

FMH006

FMH007

FMH008

FMH009

NAM SANG WAI
SEWAGE PUMPING STATION
(NSWSPS)

FMH010

FMH011

EXISTING MANHOLE FSH1001886
CONNECTING TO NSWSPS

LEGENDS:

- APPLICATION SITE
- 2x150ø RM — PROPOSED RISING MAINS BY THE APPLICANT
- 2x675ø — PROPOSED GRAVITY SEWERS CONSTRUCTED BY THE OTHER APPLICANT (Y/YL-MP/10)
- CONVERSION CHAMBER
- PROPOSED MANHOLE CONSTRUCTED BY THE OTHER APPICANTS (Y/YL-MP/10)
- EXISTING MANHOLE

Meinhardt Infrastructure and Environment Limited
邁進基建環保工程顧問有限公司

LOT 4822 IN D.D. 104, KAM POK ROAD AND ADJOINING GOVERNMENT LAND, MAI PO, YUEN LONG

PROPOSED SEWERAGE SYSTEM LAYOUT PLAN (SCENARIO 3)

FIGURE 5

Scale 1 : 3000(A1)

PLOT DRV : $PLTDRVL$

CAD FILE : $FILE$

PLOT DATE & TIME : $DATE$ $TIME$

APPENDIX E –

HYDRAULIC ASSESSMENT FOR RISING MAINS

Project	:	Lot 4822 in D.D. 104 and Adjoining Government Land, Kam Pok Road, Mai Po, Yuen Long
Project No.	:	91469
Prepared by	:	HSC
Date	:	22/04/2026

Checked by : CYM
Sheet No. : 1

Hydraulic Assessment of Proposed Pump Rate

Total ADWF (m^3/d)	=	1,030.38
Contributing Population	=	3,816.22
Peaking Factor	=	4.00
Total PDWF (m^3/d)	=	4,121.52
Total PDWF (l/s)	=	47.70
Design Pump Capacity (l/s)	=	50.00

Design of Proposed Twin Rising Mains

Diameter (mm)	=	140.40
Flow Area of one Rising Main (m^2)	=	0.02
Flow in one Rising Main (m^3/s)	=	0.03
Flow Velocity in one Rising Main (m/s)	=	1.61

APPENDIX F –

HYDRAULIC ASSESSMENT FOR SEWERS

Hydraulic Checking for Public Gravity Sewers (Scenario 1)																	INITIAL	DATE	REV.
																	HSC	4/29/2026	-
PROJECT :	**Lot 4822 in D.D. 104 and Adjoining Government Land, Kam Pok Road, Yuen Long**																Roughness Coefficient ks (mm)		1.5
Manholes		**Pipes Details**								**Pipe Capacity**		**Check for Capacity**						**Check for Self-cleansing Velocity**	
From	To	Internal Pipe Diameter (mm)	Upper Ground Level (mPD)	Lower Ground Level (mPD)	Upper Invert Level# (mPD)	Lower Invert Level# (mPD)	Pipe Length (m)	Existing Pipe (Y / N)	Minimum Hydraulic Gradient (1 in _)	Velocity (m/s)	Capacity (m3/s)	ADWF(m^3/s)	Contribution Population	Peaking Factor*	Peak Flow (m^3/s)	Ratio of the Peak flow to the Full Bore Capacity (%)	Pipe Capacity > Peak Flow?	Velocity in Full Pipe Condition (m/s)	Velocity >1 m/s?	**Remarks**
Conversion Chamber	KPR001	940.7	4.50	4.50	-2.68	-2.87	75.00	N	395	1.450	1.008	0.179398	57407.41	3.98	0.713338	70.77%	YES	1.450	OK	**DN1000 Pipe**
KPR001	KPR002	940.7	4.50	4.55	-2.87	-3.04	70.00	N	412	1.420	0.987	0.179398	57407.41	3.98	0.713338	72.29%	YES	1.420	OK	
KPR002	KPR003	940.7	4.55	4.60	-3.04	-3.22	70.00	N	389	1.461	1.015	0.179398	57407.41	3.98	0.713338	70.25%	YES	1.461	OK	
KPR003	KPR004	940.7	4.60	4.65	-3.22	-3.41	75.00	N	395	1.450	1.008	0.179398	57407.41	3.98	0.713338	70.77%	YES	1.450	OK	
KPR004	KPR005	940.7	4.65	4.20	-3.41	-3.61	80.00	N	400	1.441	1.001	0.179398	57407.41	3.98	0.713338	71.25%	YES	1.441	OK	
KPR005	KPR006	940.7	4.20	4.00	-3.61	-3.81	80.00	N	400	1.441	1.001	0.179398	57407.41	3.98	0.713338	71.25%	YES	1.441	OK	
KPR006	KPR007	940.7	4.00	4.15	-3.81	-4.01	80.00	N	400	1.441	1.001	0.179398	57407.41	3.98	0.713338	71.25%	YES	1.441	OK	
KPR007	KPR008	940.7	4.15	4.20	-4.01	-4.12	45.00	N	409	1.424	0.990	0.179398	57407.41	3.98	0.713338	72.05%	YES	1.424	OK	
KPR008	KPR009	940.7	4.20	4.15	-4.12	-4.21	35.00	N	389	1.461	1.015	0.179398	57407.41	3.98	0.713338	70.25%	YES	1.461	OK	
KPR009	KPR010	940.7	4.15	4.10	-4.21	-4.28	30.00	N	429	1.392	0.967	0.179398	57407.41	3.98	0.713338	73.76%	YES	1.392	OK	
KPR010	KPR011	940.7	4.10	4.05	-4.28	-4.34	25.00	N	417	1.411	0.981	0.179398	57407.41	3.98	0.713338	72.72%	YES	1.411	OK	
KPR011	NSWSPS	940.7	4.05	5.35	-4.34	-4.38	15.00	N	375	1.488	1.034	0.179398	57407.41	3.98	0.713338	68.98%	YES	1.488	OK	

Notes

* Peaking factors taken including stormwater allowance

Invert levels of the proposed sewerage system are subject to change during detailed design stage

The contribution population, peaking factors are determined according to GESF published by EPD

Roughness Coefficient ks of 1.5mm is adopted in the assessment.

All proposed sewers will be HDPE pipe

Hydraulic Checking for Public Gravity Sewers (Scenario 2)																INITIAL	DATE	REV.
																HSC	4/29/2026	-
PROJECT :	**Lot 4822 in D.D. 104 and Adjoining Government Land, Kam Pok Road, Yuen Long**																Roughness Coefficient ks (mm)	1.5

Manholes		**Pipes Details**								**Pipe Capacity**		**Check for Capacity**						**Check for Self-cleansing Velocity**		
From	To	Internal Pipe Diameter (mm)	Upper Ground Level (mPD)	Lower Ground Level (mPD)	Upper Invert Level# (mPD)	Lower Invert Level# (mPD)	Pipe Length (m)	Existing Pipe (Y / N)	Minimum Hydraulic Gradient (1 in _)	Velocity (m/s)	Capacity (m3/s)	ADWF(m^3/s)	Contribution Population	Peaking Factor*	Peak Flow (m^3/s)	Ratio of the Peak flow to the Full Bore Capacity (%)	Pipe Capacity > Peak Flow?	Velocity in Full Pipe Condition (m/s)	Velocity >1 m/s?	**Remarks**
WKT009	WKT010	623.6	4.20	4.00	-1.85	-2.11	80.00	N	308	1.266	0.387	0.179398	57407.41	3.98	0.713338	184.52%	NO	1.266	OK	**Proposed Upgrade to DN 1000 Pipe.**
WKT010	WKT011	623.6	4.00	4.15	-2.11	-2.38	80.00	N	296	1.290	0.394	0.179398	57407.41	3.98	0.713338	181.06%	NO	1.290	OK	**Please refer to calculation of KPR005 to KPR011 in Scenario 1 for the upgraded sewers.**
WKT011	WKT012	623.6	4.15	4.20	-2.38	-2.53	45.00	N	300	1.282	0.392	0.179398	57407.41	3.98	0.713338	182.19%	NO	1.282	OK	
WKT012	WKT013	623.6	4.20	4.15	-2.53	-2.65	35.00	N	292	1.300	0.397	0.179398	57407.41	3.98	0.713338	179.63%	NO	1.300	OK	
WKT013	WKT014	623.6	4.15	4.10	-2.65	-2.75	30.00	N	300	1.282	0.392	0.179398	57407.41	3.98	0.713338	182.19%	NO	1.282	OK	
WKT014	WKT015	623.6	4.10	4.05	-2.75	-2.83	25.00	N	313	1.256	0.384	0.179398	57407.41	3.98	0.713338	185.96%	NO	1.256	OK	
WKT015	NSWSPS	623.6	4.05	5.35	-2.83	-2.88	15.00	N	300	1.282	0.392	0.179398	57407.41	3.98	0.713338	182.19%	NO	1.282	OK	

Notes

* Peaking factors taken including stormwater allowance

Invert levels of the proposed sewerage system are subject to change during detailed design stage

The contribution population, peaking factors are determined according to GESF published by EPD

Roughness Coefficient ks of 1.5mm is adopted in the assessment.

All proposed sewers will be HDPE pipe

PROPOSED REZONING FROM "OU(CDWRA)" TO "OU(CDWRA)1"
FOR COMPREHENSIVE RESIDENTIAL DEVELOPMENT WITH WETLAND RESTORATION AREA
AT VARIOUS LOTS IN DD104 AND ADJOINING GOVERNMENT LAND,
WING KEI TSUEN, NAM SANG WAI, YUEN LONG – S12A AMENDMENT OF PLAN APPLICATION

Manhole Schedule - Wing Kei Tsuen

Manhole No.	Manhole type	Backdrop manhole required	Manhole type (Combine)	To Manhole	From Manhole	Ground Level (mPD)	PIPE IN			PIPE OUT			
							Invert Level (mPD)	Pipe Size (mm) DN	Pipe Size (mm) OD	Invert Level (mPD)	IL Check	Pipe Size (mm) DN	Pipe Size (mm) OD
WKT000	L	-	L	WKT001	WKT000	4.70	-0.27	351.35	400.00	-0.36	OK	351.35	400.00
WKT001	L	No	L	WKT002	WKT001	4.60	-0.36	491.85	560.00	-0.50	OK	491.85	560.00
WKT002	L	No	L	WKT003	WKT002	4.90	-0.50	491.85	560.00	-0.56	OK	491.85	560.00
WKT003	L	No	L	WKT004	WKT003	4.85	-0.56	491.85	560.00	-0.63	OK	491.85	560.00
WKT004	L	No	L	WKT005	WKT004	4.80	-0.63	491.85	560.00	-0.90	OK	491.85	560.00
WKT005	L	No	L	WKT006	WKT005	4.75	-0.90	491.85	560.00	-1.16	OK	491.85	560.00
WKT006	L	No	L	WKT007	WKT006	4.70	-1.16	491.85	560.00	-1.43	OK	491.85	560.00
WKT007	L	No	L	WKT008	WKT007	4.50	-1.43	491.85	560.00	-1.70	OK	491.85	560.00
WKT008	Special Type 1	No	Special Type 1	WKT009	WKT008	4.70	-1.70	491.85	560.00	-1.85	OK	491.85	560.00
WKT009	L	No	L	WKT010	WKT009	4.20	-1.85	623.60	710.00	-2.11	OK	623.60	710.00
WKT010	L	No	L	WKT011	WKT010	4.00	-2.11	623.60	710.00	-2.38	OK	623.60	710.00
WKT011	Special Type 1	No	Special Type 1	WKT012	WKT011	4.15	-2.38	623.60	710.00	-2.53	OK	623.60	710.00
WKT012	Special Type 1	No	Special Type 1	WKT013	WKT012	4.20	-2.53	623.60	710.00	-2.65	OK	623.60	710.00
WKT013	Special Type 1	No	Special Type 1	WKT014	WKT013	4.15	-2.65	623.60	710.00	-2.75	OK	623.60	710.00
WKT014	Special Type 1	No	Special Type 1	WKT015	WKT014	4.10	-2.75	623.60	710.00	-2.83	OK	623.60	710.00
WKT015	Special Type 1	No	Special Type 1	Existing	WKT015	4.05	-2.83	623.60	710.00	-2.88	OK	623.60	710.00

Details of the planned communal gravity sewers under the Approved Application No. Y/YL-NSW/7

Manhole No.	Material of pipe	Velocity (m/s)	Velocity check	Cumulative Design Flow (m3/s)	Full Bore Capacity (m3/s)	Full Bore Capacity with 10% reduction (m3/s)	Usage percentage (%)	Capacity check	TYPE OF BEDDING		
WKT000	HDPE	1.22	OK	0.072	0.118	0.107	67.98	OK	TYPE B BEDDING		
WKT001	HDPE	1.51	OK	0.166	0.287	0.258	64.46	OK	TYPE B BEDDING		
WKT002	HDPE	1.51	OK	0.166	0.287	0.258	64.46	OK	TYPE B BEDDING		
WKT003	HDPE	1.51	OK	0.166	0.287	0.258	64.46	OK	TYPE B BEDDING	20.00	300
WKT004	HDPE	1.51	OK	0.166	0.287	0.258	64.46	OK	TYPE B BEDDING	80.00	300
WKT005	HDPE	1.51	OK	0.166	0.287	0.258	64.46	OK	TYPE B BEDDING	80.00	300
WKT006	HDPE	1.51	OK	0.166	0.287	0.258	64.46	OK	TYPE B BEDDING	80.00	300
WKT007	HDPE	1.51	OK	0.166	0.287	0.258	64.46	OK	TYPE B BEDDING	80.00	300
WKT008	HDPE	1.51	OK	0.166	0.287	0.258	64.46	OK	TYPE B BEDDING	45.00	300
WKT009	HDPE	1.75	OK	0.320	0.535	0.481	66.56	OK	TYPE B BEDDING	80.00	300
WKT010	HDPE	1.75	OK	0.320	0.535	0.481	66.56	OK	TYPE B BEDDING	80.00	300
WKT011	HDPE	1.75	OK	0.320	0.535	0.481	66.56	OK	TYPE B BEDDING	45.00	300
WKT012	HDPE	1.75	OK	0.320	0.535	0.481	66.56	OK	TYPE B BEDDING	35.00	300
WKT013	HDPE	1.75	OK	0.320	0.535	0.481	66.56	OK	TYPE B BEDDING	30.00	300
WKT014	HDPE	1.75	OK	0.320	0.535	0.481	66.56	OK	TYPE B BEDDING	25.00	300
WKT015	HDPE	1.75	OK	0.320	0.535	0.481	66.56	OK	TYPE B BEDDING	15.00	300

Hydraulic Checking for Public Gravity Sewers (Scenario 3)

INITIAL	DATE	REV.
HSC	4/29/2026	-

PROJECT : **Lot 4822 in D.D. 104 and Adjoining Government Land, Kam Pok Road, Yuen Long**

Roughness Coefficient ks (mm): 1.5

Manholes		Pipes Details								Pipe Capacity		Check for Capacity						Check for Self-cleansing Velocity		Remarks
From	To	Internal Pipe Diameter (mm)	Nos. of Pipe	Upper Ground Level (mPD)	Lower Ground Level (mPD)	Upper Invert Level# (mPD)	Lower Invert Level# (mPD)	Pipe Length (m)	Existing Pipe (Y / N)	Minimum Hydraulic Gradient (1 in _)	Velocity (m/s)	Capacity (m3/s)	ADWF(m^3/s)	Contribution Population	Peaking Factor*	Peak Flow (m^3/s)	Ratio of the Peak flow to the Full Bore Capacity (%)	Pipe Capacity > Peak Flow?	Velocity in Full Pipe Condition (m/s)	Velocity >1 m/s?	
Conversion Chamber	FMH001	675	2	4.50	4.50	-2.68	-2.87	75.00	N	395	1.175	0.841	0.179398	57407.41	3.98	0.713338	84.84%	YES	1.175	OK	**(2XDN675) Existing Design**
FMH001	FMH002	675	2	4.50	4.55	-2.87	-3.04	70.00	N	412	1.150	0.823	0.179398	57407.41	3.98	0.713338	86.66%	YES	1.150	OK	
FMH002	FMH003	675	2	4.55	4.60	-3.04	-3.22	70.00	N	389	1.184	0.847	0.179398	57407.41	3.98	0.713338	84.21%	YES	1.184	OK	
FMH003	FMH004	675	2	4.60	4.65	-3.22	-3.41	75.00	N	395	1.175	0.841	0.179398	57407.41	3.98	0.713338	84.84%	YES	1.175	OK	
FMH004	FMH005	675	2	4.65	4.20	-3.41	-3.61	80.00	N	400	1.167	0.835	0.179398	57407.41	3.98	0.713338	85.41%	YES	1.167	OK	
FMH005	FMH006	675	2	4.20	4.00	-3.61	-3.81	80.00	N	400	1.167	0.835	0.179398	57407.41	3.98	0.713338	85.41%	YES	1.167	OK	
FMH006	FMH007	675	2	4.00	4.15	-3.81	-4.01	80.00	N	400	1.167	0.835	0.179398	57407.41	3.98	0.713338	85.41%	YES	1.167	OK	
FMH007	FMH008	675	2	4.15	4.20	-4.01	-4.12	45.00	N	409	1.154	0.826	0.179398	57407.41	3.98	0.713338	86.37%	YES	1.154	OK	
FMH008	FMH009	675	2	4.20	4.15	-4.12	-4.21	35.00	N	389	1.184	0.847	0.179398	57407.41	3.98	0.713338	84.21%	YES	1.184	OK	
FMH009	FMH010	675	2	4.15	4.10	-4.21	-4.28	30.00	N	429	1.127	0.807	0.179398	57407.41	3.98	0.713338	88.42%	YES	1.127	OK	
FMH010	FMH011	675	2	4.10	4.05	-4.28	-4.34	25.00	N	417	1.143	0.818	0.179398	57407.41	3.98	0.713338	87.17%	YES	1.143	OK	
FMH011	NSWSPS	675	2	4.05	5.35	-4.34	-4.38	15.00	N	375	1.205	0.863	0.179398	57407.41	3.98	0.713338	82.68%	YES	1.205	OK	

Notes

* Peaking factors taken including stormwater allowance

Invert levels of the proposed sewerage system are subject to change during detailed design stage

The contribution population, peaking factors are determined according to GESF published by EPD

Roughness Coefficient ks of 1.5mm is adopted in the assessment.

All proposed sewers will be HDPE pipe

Hydraulic Assessment of Proposed Communal Sewer

V of water = 0.000001 **m^2/s** 20˚C

Manhle No.		Pipe																
		Cover Level		Invert Level		Nominal Outside Diameter (OD)	Nominal Diameter (DN)	Length	Flow Area	Pipe Gradient	Pipe Velocity	Capacity (Twin Pipe)	Roughness (4)	Accumulated ADWF (5)	Contributing Population	Peaking Factor (6)	Estimated Peak Discharge	Capacity Check	Remark
U/S	D/S	U/S	D/S	U/S	D/S														
		mPD	mPD	mPD	mPD	mm	mm	m	m^2	(1 in)	m/s	m^3/s	mm	m^3/d			m^3/s	%	
Conversion Chamber	FMH001	4.50	4.50	-2.68	-2.87	800	675	75.0	0.36	400	1.09	0.78	1.5	15,500	57,408	3.98	0.713	91	
FMH001	FMH002	4.50	4.55	-2.87	-3.04	800	675	70.0	0.36	400	1.09	0.78	1.5	15,500	57,408	3.98	0.713	91	
FMH002	FMH003	4.55	4.60	-3.04	-3.22	800	675	70.0	0.36	400	1.09	0.78	1.5	15,500	57,408	3.98	0.713	91	
FMH003	FMH004	4.60	4.65	-3.22	-3.41	800	675	75.0	0.36	400	1.09	0.78	1.5	15,500	57,408	3.98	0.713	91	
FMH004	FMH005	4.65	4.20	-3.41	-3.61	800	675	80.0	0.36	400	1.09	0.78	1.5	15,500	57,408	3.98	0.713	91	
FMH005	FMH006	4.20	4.00	-3.61	-3.81	800	675	80.0	0.36	400	1.09	0.78	1.5	15,500	57,408	3.98	0.713	91	
FMH006	FMH007	4.00	4.15	-3.81	-4.01	800	675	80.0	0.36	400	1.09	0.78	1.5	15,500	57,408	3.98	0.713	91	
FMH007	FMH008	4.15	4.20	-4.01	-4.12	800	675	45.0	0.36	400	1.09	0.78	1.5	15,500	57,408	3.98	0.713	91	
FMH008	FMH009	4.20	4.15	-4.12	-4.21	800	675	35.0	0.36	400	1.09	0.78	1.5	15,500	57,408	3.98	0.713	91	
FMH009	FMH010	4.15	4.10	-4.21	-4.28	800	675	30.0	0.36	400	1.09	0.78	1.5	15,500	57,408	3.98	0.713	91	
FMH010	FMH011	4.10	4.05	-4.28	-4.34	800	675	25.0	0.36	400	1.09	0.78	1.5	15,500	57,408	3.98	0.713	91	
FMH011	FSH1001886	4.05	5.35	-4.34	-4.38	800	675	15.0	0.36	400	1.09	0.78	1.5	15,500	57,408	3.98	0.713	91	

Note:

1. Contributing population = Projected Flow + Flow from Development (ADWF in m^3/day) / 0.27 (m^3/person/day).
2. Peaking factor with stormwater allowance is adopted.
3. The proposed gravity sewer shall be constructed to discharge the sewage to from the both R(D) and REC Development and other residential development which has similar sewerage arrangement in the vicinity to the existing NSWSPS and ultimately to YLEPP.
4. Concrete sewers slimed to about half depth; velocity, when flowing half full, approximately 1.2 m/s, normal condition is assumed.
5. Base on EPD initial estimation, the commual gravity sewer need to cater for design sewage flow of at least 15,500 m^3/d.
6. The communal gravity sewer is subject to detailed design, the hydraulic calculation demonstrate the feasibility in terms of proposed pipe size and gradient

Details of the planned communal gravity sewers under the Approved Application No. Y/YL-MP/10