ARUP

Appendix A

Revised Sewerage Impact Assessment

Application for Permission Under Section 16 of the Town Planning Ordinance (Cap. 131) for Proposed Comprehensive Development including Flats, Retail and Community Facilities and Minor Relaxation of Plot Ratio and Building Height Restriction in "Comprehensive Development Area" Zone at Various Lots in S.D.4 and Adjoining Government Land, Kau Wa Keng, Kwai Chung

Sewerage Impact Assessment

Issue 4 | 18 December 2025

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ARUP

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1 Introduction

1.1 Background

1.1.1.1 Arup Hong Kong Limited was commissioned to conduct a Sewerage Impact Assessment (SIA) in support of the Section 16 Planning Application for Proposed Comprehensive Development including Flats, Retail and Community Facilities and Minor Relaxation of Plot Ratio and Building Height Restriction in "Comprehensive Development Area" Zone at Various Lots in S.D.4 and Adjoining Government Land, Kau Wa Keng, Kwai Chung (the Application Site).

1.1.1.2 The Application Site, with an area of about 48,313.167 m^2, is located at the Kau Wa Keng valley floor abutting Lai King Hill Road with high accessibility to public transport. It falls within the "CDA" zone on the Approved Kwai Chung Outline Zoning Plan (OZP) No. S/KC/32.

1.2 Purpose of this Report

1.2.1 The purpose of this Sewerage Impact Assessment (SIA) is to review the sewerage impact on the overall sewerage network based on preferred option and developments in the vicinity, assess whether there is adequate capacity for the planned development, and propose mitigation measures (if any).

1.3 Structure of this Report

1.3.1 This SIA report will include the following:

Section 1 – Introduction, presents the project background, the purpose and structure of the report;

Section 2 – Project Description, presents an outline description of the project;

Section 3 – Outline of Existing and Planned Sewerage System, describes the existing and planned sewerage systems near the project area;

Section 4 – Hydraulic Assessment Methodology for Sewerage System, present the sewerage system assessment methodologies;

Section 5 – Sewage Flow Projection, Potential Sewerage Impacts and Mitigation Measures, contains the proposed sewage flow, potential sewerage impacts and corresponding mitigation measures;

Section 6 – Conclusion, provides a conclusion to this SIA report.

2 Proposed Development

2.1 Proposed Master Layout Plan

2.1.1 The Master Layout Plan is given in **Appendix A**. The Proposed Scheme will be developed by four phases, including two early phases (i.e. Phases 1A and 1B) and two remaining phases (i.e. Remaining Phases A and B). For ease of reference, a table showing the key development parameters of the Proposed Scheme is shown in the table below.

Table 2.1 – Design Parameters

Development Parameters	P1A	P1B	RPA	RPB	Total
No. of Flats	1,981	1,476	1,158	2,437	7,052
Community Facilities (GFA)	Home Care Services for Frail Elderly Persons (513.8m^2) School Social Work Office (650.2m^2) Residential Care Home for the Elderly (RCHE) (100 places) (2,708m^2)	Neighbourhood Elderly Centre (656m^2) Residential Care Home Centre for the Elderly (100 Places) (2,708m^2)	60-place Day Care Centre for the Elderly (716m^2) Office Base of On-site Pre-school Rehabilitation Services (392m^2) 120-place Day Care Centre for the Elderly (DE) (non kitchen based) (1,422m^2)	60-place Special Child Care Centre (818.8m^2) Residential Care Home Centre for the Elderly (150 Places) (3,826m^2) 100-place Child Care Centre (1,060m^2)	15,470.8m^2
Resident's Clubhouse GFA	Not more than 3,000m^2	Not more than 2,427 m^2	Not more than 2,142 m^2	Not more than 3,500 m^2	Not more than 11,068 m^2
Retail GFA	2,912.323m^2	1,516.286m^2	1,437.357m^2	832.970m^2	6,698.936m^2

3 Outline of Existing and Planned Sewerage System

3.1 Review of Existing Sewerage System

3.1.1 The existing sewerage system in the vicinity of the proposed site location for the development options has been reproduced with reference to the GeoInfo Map[1] and presented in **Appendix B**. The areas surrounding the north turnaround part of Lai King Hill Road are served by existing 300mm gravity sewer along Lai King Hill Road.

3.1.2 Kau Wa Keng areas locate to the north of Lai King Hill Road, which include the study area of this project, are currently rural residential and cultivated areas with small village houses and squatters, and without any public sewerage system. The sewage generated from the local areas is either discharged to soakaway systems that could potentially pollute the ground water, or directly discharged to the drainage system.

3.1.3 The topography of Kau Wa Keng areas slopes down from the outer parts of the areas in the north, east and west, to the central part in the south. Surface runoff from the local areas is collected by 4 channels flowing through the central part, the 4 channels connect to downstream drainage system from underneath Lai King Hill Road.

3.1.4 There are 4 existing dry weather flow interceptors (DWFIs) locate at the downstream ends of the 4 channels to intercept dry weather flow (DWF) from the local areas, the feature nos. of the 4 DWFIs, from the west to the east, are SWD4014921, SDH4000981, SDH4000982 and SDH4000983 in the drainage record. The 4 DWFIs are hereafter called DWFI1 to 4 respectively for simplification. Since that the inverts of the 4 channels as well as the ground levels of the central part are lower than Lai King Hill Road and the existing 300mm gravity sewer underneath, the flow collected by the 4 DWFIs is conveyed to the existing 300mm gravity sewer by a 150mm rising main via Kau Wa Keng DWFI Sewage Pumping Station (KWKSPS).

3.1.5 The DWF is conveyed to the Cheung Sha Wan Sewage Pumping Station (CSWSPS) from Kau Wa Keng DWFI Sewage Pumping Station via existing 300mm sewer. The downstream facilities of sewage flow from the Cheung Sha Wan Sewage Pumping Station will be the Northwest Kowloon Preliminary Treatment Works before entering the Stonecutter Island Sewage Treatment Works. The design capacity of

[1] GeoInfo Map is a geospatial information service provided by the Hong Kong Special Administrative Region (HKSAR) Government to the general public.

the sewage pumping stations (SPSs) are summarized in in **Table 3.1** below.

Table 3.1 – Design Capacity of the Downstream Sewage Pumping Stations

Name of the Sewage Pumping Station	Design Capacity (m^3/day)	Mean Flow (m^3/day)	Spare Capacity (m^3/day)	% Spare
Kau Wa Keng DWFI Sewage Pumping Station	1,152	1,056	96	8.4%
Water Boat Dock Sewage Pumping Station	57,888	32,603	25,285	43.7%
Cheung Sha Wan Sewage Pumping Station	456,863	342,915	113,948	24.9%

3.2 Review of Planned Sewerage System

3.2.1 According to the information that is publicly available to, there are three interface public sewerage projects regarding urban and village sewerage in Lai King Hill Road or Kau Wa Keng areas. The projects are summarized in **Table 3.2** below, the source of information and design drawings provided by works divisions of the corresponding projects are presented in **Appendix C**.

Table 3.2 – Summary of Interface Public Sewerage Projects near Study area

Project No.	Planned Works Relevant to this Study	Expected Time of Completion	Refer to	Interface Issue
PWP No. 4389DS	Upgrading the existing 300mm gravity sewer along Lai King Hill to Lai Wan Road.	End 2025 - Early 2026* (for Contract No. DC.2019/11)	Appendix C1	Downstream sewer of Phase 1A and Phase 1B
PWP No. 4358DS	Village sewerage in Kau Wa Keng Old Village	End 2025	Appendix C2	Overlap with the footprint of Remaining Phase A

Project No.	Planned Works Relevant to this Study	Expected Time of Completion	Refer to	Interface Issue
PWP No. 4391DS	Village sewerage in Kau Wa Keng San Tsuen	TBD[#]	Appendix C3	Overlap with the footprint of Remaining Phase A

* Information provided on DSD website and confirmed by the RSS of DC/2019/11.

The proposed Drainage Improvement Works (DIW) under this project is preliminary. Further study is in progress while the said DIW is yet to be confirmed.

3.2.2 A plan showing the existing and planned sewerage infrastructures overlaying with the proposed CDA development is given in **Appendix D**. It is illustrated that the sewage generated from the rural areas surrounding the study area in Kau Wa Keng, as well as Remaining Phases A and B of this study, will be served by the planned village sewerage under PWP Nos. 4358DS and 4391DS.

4 Assessment Methodology for Sewerage System

4.1 Assumptions and Parameters for Hydraulic Assessment

Unit Flow Factors

4.1.1 The proposed CDA will include 14 residential buildings, clubhouse facilities and community facilities, therefore sewage flows would be generated: domestic and staff of clubhouse and community facilities. Sewage generated during backwash of filters for swimming pools will also be considered.

4.1.2 The population in village houses inside and/or in the upstream of the proposed CDA will be considered for estimation of existing sewage flow.

4.1.3 ADWF for the sewage sub-catchment areas is calculated based on the estimated population and the unit flow factors (UFFs) in accordance with the EPD's Guidelines for Estimating Sewage Flow for Sewage Infrastructure (GESF). The UFFs adopted in this SIA are shown in or **Table 4.1** below. Since a domestic plot ratio of 6 and an assumed flat size of 40m^2 are adopted in the CDA, the UFF for Residential Private Housing (R2) is adopted for the domestic sewage flow in the CDA. For existing catchments along Lai King, Residential Private Housing (R1) and (R2) are adopted for lands defined as R(A) and R(B), respectively. There are 5 swimming pools in the proposed development, 2 swimming pools in P1A and one in rest of each phase. Information of these items and calculation of daily backwash flows are presented in **Table 4.1a**. Since the sewage from the CDA will be discharged to public sewers via a pumping system, the backwash flow will not directly contribute to the peak flow discharged to the public sewers.

Table 4.1 – Unit Flow Factors

Category	Unit	UFF (m^3/day)
Domestic [1]		
Residential Private Housing (R1)	person	0.19
Residential Private Housing (R2)	person	0.27
Modern Village	person	0.27
Institution and special class (For RCHE - resident)	person	0.19
Commercial [2]		
Community, Social and Personal Service	employee	0.28

Restaurants & Hotels (for F&B Services in Clubhouse)	employee	1.58
Community, Social & Personal Services (For RCHE - Staff)	employee	0.28
Notes: [1] Table T-1 of GESF [2] Table T-2 of GESF		

Table 4.1a – Swimming Pools Backwash Flow

Item	Phase	Total Volume (m^3)	Turnover Rate (hr)	Surface Loading Rate ($m^3/m^2/hr$)	Filter Area (m^2)	Backwash Duration (min/day)	Backwash Flow Rate ($m^3/m^2/hr$)	Daily Backwash Flow (m^3)
Two Swimming Pools in P1A	P1A	780	6	20	6.5	3	30	10
One Swimming Pool in P1B	R1B	600	6	20	5.0	3	30	8
One Swimming Pool in RPA	RPA	384	6	20	3.2	3	30	5
One Swimming Pool in RPB	RPB	384	6	20	3.2	3	30	5
Notes: [1] The actual surface loading rate, backwash duration and backwash flow rate are subject to supplier's information in detailed design.								

Peaking Factors

4.1.4 The peak flow for the corresponding section of sewer is used in the hydraulic assessment to examine the sewerage impact. The peak flow is calculated from multiplying the ADWF by the relative peaking factor.

4.1.5 The peaking factor is based on the cumulative contributing population. The contributing population is equal to the calculated total average flow divided by a factor of 0.27. The factor is taken as an average unit flow factor described in Section 12 of the GESF. As the cumulative contributing population increases, the peaking factor and the peak flow will decrease.

4.1.6 As a conservative approach, the peaking factors including stormwater allowance will be used for assessing the peak flow condition. The peaking factor is selected in accordance with **Table 4.2** below.

Table 4.2 – Peaking Factors

Population Range [1]	Peaking Factor (including stormwater allowance) [2]
(a) For sewers	
< 1,000	8
1,000 – 5,000	6
5,000 – 10,000	5
10,000 – 50,000	4
> 50,000	Max [7.3/$N^{0.15}$, 2.4]
(b) For sewage treatment works, preliminary treatment works & pumping stations (including stormwater allowance for SPS)	
< 10,000	4
10,000 – 25,000	3.5
25,000 – 50,000	3
> 50,000	Max [3.9/$N^{0.065}$, 2.4]

Notes:
[1] N is the contributing population in thousands:
N = Calculated total average flow (m^3/day) / 0.27 (m^3/person/day)
[2] Table T-5 of GESF

Pipe Roughness

4.1.7 Colebrook-White Equation is used to estimate the hydraulic capacity. In this hydraulic assessment, the roughness coefficients (k_s) adopted representing the roughness of the inner surface are as follows:

- k_s = 1.5 mm (for HDPE sewer in poor condition)

Catchment Inflow Factor

4.1.8 The catchment inflow factor (P_{CIF}) is extracted from the GESF to assess broadly the extent of the overall net excessive inflow situation of sub-catchments. Since the sewage will be discharged to the sewerage network of North West Kowloon, a P_{CIF} of 1.30 is adopted for the rural and existing and planned sewerage catchments.

4.2 Design Flow for the Village Sewerage

4.2.1 The design flows for Kau Wa Keng Old Village and Kau Wa Keng San Tsuen are provided by project divisions of PWP Nos. 4358DS and 4391DS. The design flow for Kau Wa Keng Old Village is 1115.74m^3/day with population of 1,964, and the design flow for Kau Wa Keng San Tsuen is 418.9m^3/day based on a population of 971.

4.2.2 House counting method is used to estimate the sewage flow from the villages after developing of the CDA. Numbers of houses covered by the planned village sewerage are counted according to the design

drawings provided by the project divisions of the village sewerage (refer to **Appendix C2 and C3**). Sewage flows from the parts of villages outside the proposed development are estimated based on the corresponding house numbers on a prorate basis.

4.3 Planning Assumptions and Parameters

4.3.1 According to the proposed development scheme, a domestic plot ratio of 6 and a non-domestic plot ratio of 0.5 are applied to different phases of the CDA. A person per flat (PPF) ratio of 2.7 is adopted with reference to the PPF of the Kwai Chung District as reported in the 2021 Population By-census by the Census and Statistics Department.

4.3.2 For the proposed community services facilities, numbers of employees are based on the notional staffing establishment provided by Social Welfare Department (refer to website address: https://www.swd.gov.hk/en/ngo/subventions/suballoc/subvention/nses/).

4.4 Estimating of Sewage Flow from Existing Residential Buildings Along Lai King Hill Road

4.4.1 The sewage flow from existing residential buildings along Lai King Hill Road is provided, which include Lai Yan Court, Happy Villa, Wah Fung Garden, Lai Chi Kok Bay Garden, Greenwood Villas and other residential buildings in Lai King Hill Road and Chung Shan Terrace. The population is based on 2021 Population By-census by the Census and Statistics Department.

4.4.2 Population growth is considered. According to "2019 - based Territorial Population and Employment Data Matrix" (TPEDM) available on PlanD's website, there will be a decrease in population from Year 2026 to 2031 in the entire Kowloon. Therefore, population projection in Kwai Chung is adopted in this study for conservative purpose. According to TPEDM, five-year population growth rate is 1.235% according to the projected pollutions in Year 2026 and 2031. Assuming 1.235% to be the average five-year growth rate and the growth rate from Year 2026 to 2041 is 3.751%. A growth rate of 5% is adopted in the calculation of this assessment for conservative purpose.

5 Sewage Flow Projection, Potential Sewerage Impacts and Mitigation Measures

5.1 Assessment Scenarios and Corresponding Sewer Network

5.1.1 Three development scenarios that are considered in this assessment are listed in **Table 5.1** below. Scenario 1 representing the original planned condition is baseline scenario, in which the CDA development does not exist, and all the sewage is generated from existing villages and collected by existing DWFI or the planned village sewerage (the DWFIs could be demolished after provision of the village sewerage). Scenario 2 (early phase development scenario) is an intermediate scenario, in which only phases P1A and P1B of the CDA have been developed. Scenario 3 is the ultimate condition with the fully developed CDA, in which the CDA is fully developed with part of the original villages being transferred to the proposed CDA, the sewage generated from the remaining of the villages will be conveyed to the public sewer network via diverted village sewerage. The existing and planned sewer network in the first scenario is shown **Appendix D**. The proposed conditions and corresponding sewerage diversion in the second and third scenarios are shown in **Appendix E1 and E2**.

Table 5.1 – Development Scenarios in this Assessment

No	Description	Source of Sewage			Sewer Network
		Kau Wa Keng Old Village	Kau Wa Keng San Tsuen	CDA	
1	Baseline	Entire Village	Entire Village	None	Existing DWFI/ Planned Village Sewerage
2	Early Phase Development* (Intake year 2032)	Entire Village	Entire Village	Phases P1A and P1B	Planned Village Sewerage and Sewers for Early Phase Development
3	Fully Developed CDA (Intake year 2032)	Village outside the Study Area	Village outside the Study Area	Entire CDA	Proposed Diversion to the Planned Village Sewerage and Sewers for CDA Development

* The intake year of the village sewerage will be further verified in later stages.

5.1.2 In Scenario 2, the planned village sewerage will not be affected by the proposed early phase development. The sewage generated inside the early phase development will be collected by a separated sewer network (detailed network to be available in the design stage) which conveys the sewage to a proposed SPS for the CDA, the sewage will then be discharged to existing sewer manhole No. FMH4009609 via existing and proposed rising mains. The proposed SPS will cover an area of around 78m^2. An overflow pipe is also provided to the proposed SPS in order to responding to emergency flow overload. The applicant will be responsible for the construction, operation and maintenance of the proposed SPS, rising mains, discharge sump and the connecting pipe. The planned village sewerage will along the edge of the early phase development which is still within the site of CDA. The maintenance authority of the government will have free access from outside the CDA to carry out maintenance works. A cantilevered structure of the Block 3 will be on top of a small section of the village sewerage for Kau Wa Keng San Tsuen and corresponding land will be acquired by the Applicant. The land around the planned village sewerage will become drainage reserved and DSD will have free access. The existing DWFI SDH4000981 will be demolished and re-provided. The re-provided DWFI will be located in the in the downstream of the proposed drainage system that collects stormwater from the site and an upstream catchment outside the site. The re-provided DWFI is to collect DWF only from the upstream catchment outside the site as no dry weather flow from the new development is expected. The DWF intercepted by the re-provided DWFI will be discharged to KWKSPS.

5.1.3 In Scenario 3, the sewage generated in the remaining parts of the villages will be diverted along the north and west boundary of the CDA, a new 225mm sewer will be provided to covey the sewage from remaining village houses outside the CDA to an existing sewer manhole No. FMH4009599. The sewage generated in the fully developed CDA will be discharged to the SPS and then existing sewer manhole No. FMH4009609 via proposed rising mains. The village sewerage diversion will be implemented by the future developer(s) of respective development phases on their own cost, the diverted village sewerage will be subsequently handed over to DSD. The proposed village sewerage diversion will be carried out prior to the proposed demolition of planned sewer. The planned village sewerage and corresponding diversion will be along the edge of CDA which is still within the site. The maintenance authority of the government will have free access from outside the CDA to carry out maintenance works. A drainage reserve along the proposed sewerage diversion as shown in **Appendix**

E2 will be provided for construction the planned village sewerage if the completion of the proposed development is before the completion of the planned village sewerage. The existing DWFI SDH4000980 will be demolished and re-provided. This DWFI is located in an existing channel within the site boundary of Phase RPA Development. The existing channel will be demolished and a new box culvert will be re-provided along the site boundary and the re-provided DWFI will be constructed in the downstream of the box culvert. The DWF intercepted by the re-provided DWFI will be discharged to the diverted village sewer that connects to KWKSPS.

5.1.4 The re-provision of DWFI Nos. SDH4000980 and SDH4000981 will be implemented by the Applicant and no adverse sewerage impact is anticipated due to demolishment and re-provision of DWFIs as all DWFI would be retained or re-provided so that all potential DWF from the original catchments will be intercepted, and there is no additional catchment for the DWFIs so no additional DWF will be collected.

5.2 Estimation of Sewage Flow under Different Assessment Scenarios

5.2.1 Calculation of the population and corresponding ADWF in different assessment scenarios are provided in **Appendix F**. **Table 5.2** below gives the key information required for impact assessment. In scenario 2, the ADWF from CDA is 3,667 m^3/day and the total ADWF is 5,201m^3/day. In Scenario 3, the ADWF from CDA is 7,389 m^3/day and the total ADWF is 8,011m^3/day.

Table 5.2 – Summary of ADWF in Different Assessment Scenarios

Scenario No.	Discharge Point	ADWF from Different Sources (m^3/day)			Total ADWF (m^3/day)	Peak Flow for the Proposed SPS (m^3/s)
		Kau Wa Keng Old Village	Kau Wa Keng San Tsuen	CDA		
1	FMH4009607 from KWKSPS	1,116	419	0	1,535	0
2	FMH4009609 from KWKSPS and the proposed SPS	1,116	419	3,667	5,201	0.149

Scenario No.	Discharge Point	ADWF from Different Sources (m^3/day)			Total ADWF (m^3/day)	Peak Flow for the Proposed SPS (m^3/s)
		Kau Wa Keng Old Village	Kau Wa Keng San Tsuen	CDA		
3	FMH4009609 from KWKSPS and the proposed SPS	228	393	7,389	8,011	0.257

5.2.2 Catchment inflow factor (P_{CIF}) of 1.30 and peaking factors including stormwater allowance are adopted in the calculation for the proposed SPS. The design capacity of the proposed SPS is 7,389 m^3/day. For KWKSPS, since it is an existing facility, the maximum pump rate (average design ADWF with peaking factor of 4) is the peak flow discharged to downstream sewer network.

5.3 Potential Sewerage Impacts and Mitigation Measures

5.3.1 Impact assessments have been done for the following potential impacts to the existing sewerage system:

- Potential impact to sewers to the downstream of manhole No. FMH4009599 due to the proposed diversion of village sewerage in Scenario 3 for village sewerage diversion;
- Potential impact to sewers to the downstream of manhole No. FMH4009607 due to sewage generated from the proposed CDA;
- Potential impact to the downstream of manhole No. FMH4009445 due to the upstream flow.

Detailed calculation has been included in **Appendix G**.

5.3.2 In Scenario 3, the peak sewage flow discharged to sewer manhole No. FMH4009599 will be 0.043m^3/s after the village sewerage diversion, which is larger than the capacity of downstream gravity sewer. Therefore, it is proposed to upgrade the existing sewer between FMH4009599 and FMH4009602 to 300mm, proposed upgrading works will be constructed by the Applicant at their own cost and subsequently handed over to DSD for future maintenance.

5.3.3 The additional peak sewage flow discharged from the proposed SPS to sewer manhole No. FMH4009609 in Scenario 2 and 3 will be 0.149m^3/s and 0.257m^3/s, respectively. According to the latest information of Contract No. DC/2019/11 (refer to information of PWP No. 4389DS in

Appendix C1), the sewer in the downstream of sewer manhole No. FMH4009607 will be upgraded to a 675mm sewer by early 2026, which is cater for the peak sewage flow from existing KWKSPS, existing residential buildings along Lai King Hill Road and the proposed development via the proposed SPS and rising main. In case of programme mismatch between the interfacing project, proposed sewerage upgrading works between manhole Nos. FMH4009607 and FMH4009444 will be constructed by the Applicant at their own cost and subsequently handed over to DSD for future maintenance.

5.3.4 The proposed SPS rising mains, discharge sump and the connecting sewer between the discharge sump and manhole FMH4009607 will be constructed and maintained by the Applicant at their own cost. The capacity of the proposed SPS is 7,364m^3/day. Layout of the proposed SPS is shown on **Appendix E1**.

6 Conclusion

6.1.1 A SIA study has been undertaken for the proposed development.

6.1.2 The estimated ADWF generated from CDA is 7,389 m^3/day and the total ADWF is 8,011m^3/day.

6.1.3 Upgrading works to the existing sewer between Kau Wa Keng San Tsuen and KWKSPS should be carried out to mitigate potential impacts due to the village sewerage diversion works. The proposed upgrading works will be constructed by the Applicant at their own cost and subsequently handed over to DSD for future maintenance. The proposed CDA has no adverse impact on the downstream sewer after considering the planned sewer upgrading works under PWP No. 4389DS to be completed by early 2026. In case of programme mismatch between the proposed development and PWP No. 4389DS, the corresponding sewerage upgrading works between manhole Nos. FMH4009607 and FMH4009444 will be constructed by the Applicant at their own cost and subsequently handed over to DSD for future maintenance.

6.1.4 The applicant will be responsible for the construction, operation and maintenance of the proposed SPS, rising mains, discharge sump and the connecting pipes.

Appendix A

Master Layout Plan

MASTER LAYOUT PLAN (DOMESTIC PR:6 NON-DOMESTIC PR:0.5)

1:500@A0 1:1000@A2

REPROVISION OF FEHD'S REFUSE COLLECTION POINT ON GROUND FLOOR (DESIGN SUBJECT TO FURTHER REVIEW IN DETAILED DESIGN STAGE)

WATER WORKS RESERVE WITH MIN. 10m VERTICAL CLEARANCE ABOVE FROM GROUND

PROPOSED REPROVISIONING OF BUS LAY-BY

PROPOSED REPROVISIONING OF PEDESTRIAN CROSSING

PROPOSED SEWAGE PUMPING STATION

APPLICATION SITE BOUNDARY (KAU WA KENG "CDA" ZONE)	
DEVELOPMENT SITE BOUNDARY	
PHASING BOUNDARY	
P1A	PHASE 1A
P1B	PHASE 1B
RPA	REMAINING PHASE A
RPB	REMAINING PHASE B
HISTORIC BUILDING	
RESIDENTIAL BLOCK	
NON-DOMESTIC AREA (RETAIL/GIC)	
CARPARK ENTRANCE	

N

0m 10m 30m 60m 100m

PROPOSED COMPREHENSIVE DEVELOPMENT INCLUDING FLATS, RETAIL AND COMMUNITY FACILITIES AND MINOR RELAXATION OF PLOT RATIO AND BUILDING HEIGHT RESTRICTION IN "COMPREHENSIVE DEVELOPMENT AREA" ZONE
AT VARIOUS LOTS IN S.D.4 AND ADJOINING GOVERNMENT LAND, KAU WA KENG, KWAI CHUNG
18 NOVEMBER 2025

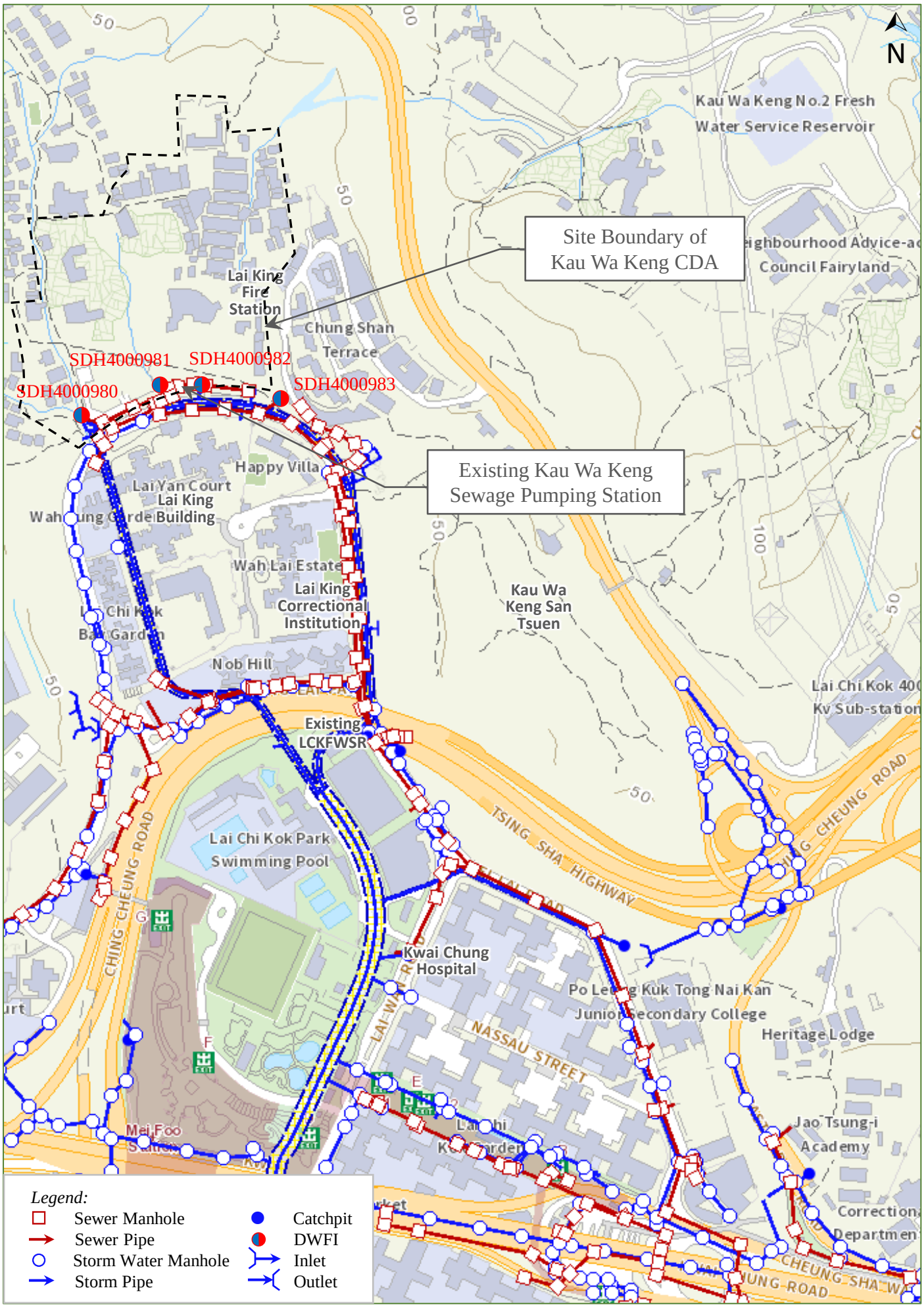
DRAWING NO.: MLP-SK01-R13

LU TANG LAI ARCHITECTS LTD.
L T L 呂鄧黎建築師有限公司

Appendix B

Existing Sewerage Systems

Appendix B - Existing Drainage & Sewerage Systems



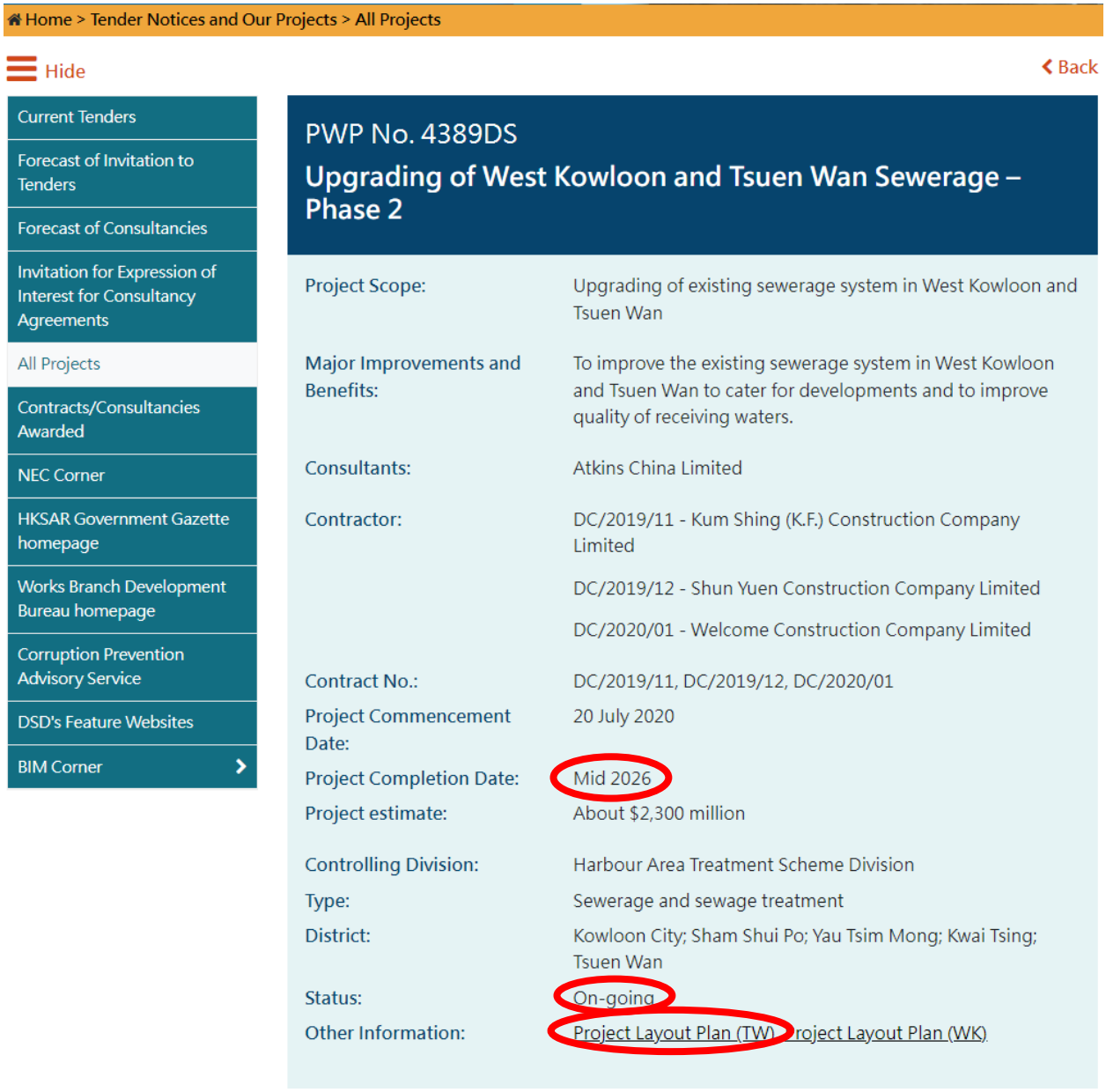
Note: the site boundaries are indicative only, and would be updated if more information is available

Appendix C

Interface Projects

Appendix C1

Status of PWP No. 4389DS according to DSD's website



Appendix C1

DO NOT SCALE

LEGEND:

SEWER UPGRADING WORKS

EXISTING SEWER CROSSING WITHIN DRAINAGE BOX CULVERT TO BE REHABILITATED

Project layout plan of the sewer upgrading works in Tsuen Wan under PWP Item No. 4389

Site of Kau Wah Keng CDA

Sewer upgrading works in Kau Wah Keng under PWP Item No. 4389

MATCH LINE A-A

MATCH LINE A-A

TSUEN WAN 荃灣

KWAI CHUNG 葵涌

SHAM TSENG 深井

HA KWAI CHUNG 下葵涌

LAI KING 荔景

Rev.	Date	Description	By	Chk'd	App'd
-	MAR 2021	FIRST ISSUE	XJY	WKML	DF

Drawing Status: CONSTRUCTION

Suitability: -

ATKINS

Member of the SNC-Lavalin Group

Client: 渠務署 Drainage Services Department

淨化海港計劃部 Harbour Area Treatment Scheme Division

Project Title: PUBLIC WORKS PROGRAMME ITEM NO. 4389DS - UPGRADING OF WEST KOWLOON AND TSUEN WAN SEWERAGE - PHASE 2

Drawing Title: PROPOSED SEWERAGE UPGRADING WORKS IN TSUEN WAN

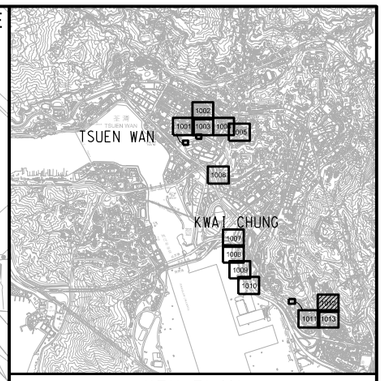
Scale	Designed	Drawn	Checked	Authorised
1:10000	XJY	AC	WKML	DF
Original Size: A1	Date: MAR 2021	Date: MAR 2021	Date: MAR 2021	Date: MAR 2021

Drawing Number: TW-KEYPLAN-ALL-0006

Revision: -

User name: YUXB119 Date:16-Mar-21 Time:11:35:56 AM
File name: P:\CNHKA\Project\513068-KW_TW_Urban_Sewerage\22.00 Study or Design Input\KEYPLAN\LRP-P2 for RAE\TW-KEYPLAN-ALL-0006.dgn

DO NOT SCALE



KEY PLAN
N.T.S.

NOTES:

1. FOR NOTES AND LEGEND, PLEASE REFER TO DRAWING NO. 5130661-DC1912-1001.

Rev.	Date	Description	By	Chk'd	App'd
-	JAN 20	ISSUE FOR TENDER	XJY	WKML	DF

Drawing Status: TENDER

Suitability: -

ATKINS
Member of the SNC-Lavalin Group

Client
渠務署
Drainage Services Department
顧問工程管理部
Consultants Management Division

Contract Title
CONTRACT NO. DC/2019/11
UPGRADING OF WEST KOWLOON AND TSUEN WAN SEWERAGE - PHASE 2A

Drawing Title
PROPOSED SEWERAGE WORKS (SHEET 12)

Scale	Designed	Drawn	Checked	Authorised
1:500	XJY	AC	WKML	DF
Original Size: A1	Date: JAN 2020	Date: JAN 2020	Date: JAN 2020	Date: JAN 2020

Drawing Number: 5130661-DC1911-1012

Revision: -

User name: CHEUI8306 Date:1/23/2020 Time: 7:26:10 PM
Filename: P:\CNHKA\Project\5130661-KW_TW_Urban_Sewerage\23.00 CAD\23.20 Drawing\Tender 2A\5130661-DC1911-1012.dgn

DO NOT SCALE

MANHOLE SCHEDULE (TSUEN WAN AREA)

MANHOLE REFERENCE NUMBER	MANHOLE TYPE	APPROX GROUND LEVEL (mPD)	INLET PIPE				OUTLET PIPE				BEDDING TYPE
			INVERT LEVEL (mPD)	SIZE (mm)	PIPE MATERIAL	FROM MANHOLE NO.	INVERT LEVEL (mPD)	SIZE (mm)	PIPE MATERIAL	TOMANHOLE NO.	
MC1	D1	5.21	-	-	-	-	4.000	OD355	PE	MC2	GROUTING
MC2	D1	5.27	3.850	OD355	PE	MC1	3.850	OD355	PE	MC3	Class B
MC3	D1	5.19	3.820	OD355	PE	MC2	3.780	OD450	PE	MC4	Class B
			-	225	EXT.	FMH4006933					
MC4	D1	5.19	3.740	OD450	PE	MC3	3.740	OD450	PE	MC5	Class B
MC5	D1	5.13	3.640	OD450	PE	MC4	3.640	OD450	PE	FMH4007131	Class B
FMH4007131	EXT. MH	5.12	3.580	OD450	PE	MC5	-	-	-	FMH4007134	-
MC6	D1	5.9	-	150	EXT.	-	4.700	OD280	PE	FMH4006902	Class B
FMH4006902	EXT. MH	5.88	4.000	OD280	PE	MC6	-	-	-	-	-

MANHOLE SCHEDULE (KWA CHUNG AREA)

MANHOLE REFERENCE NUMBER	MANHOLE TYPE	APPROX GROUND LEVEL (mPD)	INLET PIPE				OUTLET PIPE				BEDDING TYPE
			INVERT LEVEL (mPD)	SIZE (mm)	PIPE MATERIAL	FROM MANHOLE NO.	INVERT LEVEL (mPD)	SIZE (mm)	PIPE MATERIAL	TOMANHOLE NO.	
MC6	E1	11.8	-	375	EXT.	FMH4022463	9.920	OD450	PE	MC7	Class A
MC7	F1	12.58	9.000	OD450	PE	MC6	9.000	OD450	PE	MC8	Class A
			-	375	EXT.	FMH4022482	-	375	EXT.	MC8A	
MC8	F1	12.58	8.950	OD450	PE	MC7	8.950	OD450	PE	MC8A	Class A
MC8A	E1	8.81	6.910	OD450	PE	MC8	-	375	EXT.	FMH4006969	-
			-	375	EXT.	MC7					
			-	225	EXT.	FMH4006988					
			-	300	EXT.	FMH4006986					
MC9A	F1 + BD	20.8	-	225	EXT.	FMH4088220	17.500	OD450	PE	MC9B	GROUTING
							-	225	EXT.	FMH4023100	-
MC9B	F1	20.6	17.160	OD450	PE	MC9A	17.160	OD450	PE	MC9C	Class A
			-	225	EXT.	FMH4023100					
MC9C	F1	20.49	17.000	OD450	PE	MC9B	17.000	OD450	PE	FMH4023102	Class A
FMH4023102	EXT. MH	20.35	16.740	OD450	PE	MC9C	-	-	-	FMH4023103	-
MA10	E1	4.5	-	150	EXT.	FMH4020078	3.290	OD560	OC	MA17	TYPE I
MA11	D1	5	-	375	EXT.	FMH4020067	3.500	675	OC	MA12	TYPE I
MA12	E1	5	3.280	675	OC	MA11	3.280	675	OC	MA13	Class B
			-	350	EXT.	-					
MA13	E1	5	3.195	675	OC	MA12	3.195	675	OC	MA14	GROUTING
MA14	E1	5	3.050	675	OC	MA13	3.050	675	OC	MA15	GROUTING
							-	450	EXT.	FMH4020079	
MA15	E1	5	2.989	675	OC	MA14	2.989	675	OC	MA16	Class B
MA16	E1	4.9	2.894	675	OC	MA15	2.894	675	OC	MA17	Class B
MA17	E1 + BD	4.84	3.590	OD560	OC	MA10	2.880	675	OC	MA18	Class B
			2.880	675	OC	MA16					
MA18	E1	4.89	2.650	675	OC	MA17	2.650	675	OC	MA19	Class B
MA19	E1	4.79	2.510	675	OC	MA18	2.510	675	OC	MA20	Class B
MA20	H	4.77	2.480	675	OC	MA19	2.480	750	OC	MA21	Class B
			-	150	EXT.	FMH4020077					
MA21	H	4.69	2.370	750	OC	MA20	2.370	750	OC	MA22	Class B
MA22	H	4.56	2.230	750	OC	MA21	2.230	750	OC	MA23	Class B
MA23	H	4.46	2.090	750	OC	MA22	2.090	750	OC	MA24	Class B
MA24	H	4.627	1.960	750	OC	MA23	1.960	750	OC	MA25	Class B
MA25	H	4.79	1.820	750	OC	MA24	1.820	750	OC	MA26	Class B
			-	225	EXT.	FMH4022729					
MA26	G1	3.86	1.700	750	OC	MA25	1.700	750	OC	MA27	Class B

MANHOLE REFERENCE NUMBER	MANHOLE TYPE	APPROX GROUND LEVEL (mPD)	INLET PIPE				OUTLET PIPE				BEDDING TYPE
			INVERT LEVEL (mPD)	SIZE (mm)	PIPE MATERIAL	FROM MANHOLE NO.	INVERT LEVEL (mPD)	SIZE (mm)	PIPE MATERIAL	TOMANHOLE NO.	
MA27	H	4.15	1.500	750	OC	MA26	1.500	750	OC	MA28	Class B
MA28	H	4.5	1.370	750	OC	MA27	1.370	750	OC	MA29	Class A
			-	375	EXT.	FMH4022735					
MA29	I	5.132	1.250	750	OC	MA28	1.250	900	OC	MA30	GROUTING
MA30	L	5.5	1.180	900	OC	MA29	1.180	900	OC	MA31	GROUTING
			-	450	EXT.	FMH4019828					
			-	375	EXT.	FMH4019804					
MA31	I	5.16	1.160	900	OC	MA30	1.160	900	OC	MA32	Class A
MA32	I	5.247	1.080	900	OC	MA31	1.080	900	OC	MA33	Class A
MA33	L	5.41	1.010	900	OC	MA32	1.010	900	OC	MA34	Class A
			-	300	EXT.	FMH4022722					
MA34	L	5.23	0.880	900	OC	MA33	0.880	900	OC	MA35	Class A
			-	375	EXT.	FMH4022696					
MA35	L	5.28	0.840	900	OC	MA34	0.840	900	OC	MA36	Class A
MA36	SP3+BD	6.36	0.790	900	OC	MA35	0.780	900	OC	MA43	GROUTING
			3.180	225	EXT.	FMH4022715	0.780	600	EXT.	FMH4022698	-
			3.340	300	EXT.	FMH4022710					
MA43	SP3	6.225	0.420	900	OC	MA36	0.420	675	OC	FMH4022703	GROUTING
			0.420	600	EXT.	FMH4022701	0.420	675	EXT.	FMH4022703	-
FMH4022703	EXT. MH	7.6	0.370	675	OC	MA43	-	-	-	FMH4022704	-
			0.370	675	EXT.	MA43					
MB1	D1	31.73	-	150	EXT.	FMH4009638	30.430	OD280	PE	MB2	GROUTING
MB2	D1	31.42	30.135	OD280	PE	MB1	30.135	OD280	PE	MB3	GROUTING
MB3	D1	31.21	30.042	OD280	PE	MB2	30.042	OD280	PE	MB4	GROUTING
MB4	C1	30.64	29.783	OD280	PE	MB3	-	150	EXT.	FMH4009643	-
MB5	E1	41.44	-	300	EXT.	FMH4009419	39.440	OD560	PE	MB6	GROUTING
MB6	E1	39.44	37.440	OD560	PE	MB5	37.440	OD560	PE	MB7	GROUTING
MB7	E1 + BD	37.49	35.490	OD560	PE	MB6	35.490	OD560	PE	MB8	LEAKAGE COLLECTION
			-	225	EXT.	FMH4009658					
MB8	E1	36.54	34.540	OD560	PE	MB7	34.540	OD560	PE	MB9	LEAKAGE COLLECTION
MB9	E1	33.65	31.645	OD560	PE	MB8	31.645	OD560	PE	MB10	LEAKAGE COLLECTION
MB10	E1	31.09	29.090	OD560	PE	MB9	29.090	OD560	PE	MB11	LEAKAGE COLLECTION
MB11	E1	28.91	26.910	OD560	PE	MB10	26.910	OD560	PE	MB12	LEAKAGE COLLECTION
MB12	E1	26.3	24.300	OD560	PE	MB11	24.300	OD560	PE	MB13	LEAKAGE COLLECTION
MB13	E1	23.8	21.800	OD560	PE	MB12	21.800	OD560	PE	MB14	LEAKAGE COLLECTION
MB14	E1	20.6	18.600	OD560	PE	MB13	18.600	OD560	PE	MB15	LEAKAGE COLLECTION
MB15	E1	18.27	16.270	OD560	PE	MB14	16.270	OD560	PE	MB16	LEAKAGE COLLECTION
							-	300	EXT.	FMH4009431	
MB16	E1	15.92	13.540	OD560	PE	MB15	-	300	EXT.	FMH4009432	-
			-	300	EXT.	FMH4009610					
MB17	D1	5.97	-	150	EXT.	-	4.500	600	OC	MB17A	TYPE I
MB17A	E1	5.97	4.390	600	OC	MB17	4.390	600	OC	MB18	TYPE I
MB18	E1	5.98	4.350	600	OC	MB17A	4.350	600	OC	MB19	Class B

NOTES:

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NO. 5130661-DC1911-1000 TO 1037.
2. FOR BEDDING TYPE:
   a) CLASS A : CLASS A (REINFORCED) BEDDING DETAILS REFER TO DSD STANDARD DRAIWNG NO. DS1048.
   b) CLASS B : CLASS B BEDDING DETAILS REFER TO DSD STANDARD DRAWING NO. DS1048.
   c) TYPE I : TYPE I CONCRETE SURROUND DETAILS REFER TO DSD STANDARD DRAWING NO. DS1049.
   d) LEAKAGE COLLECTION : LEAKAGE COLLECTION SYSTEM DETAILS REFER TO DRAWING 5130661-DC1911-2102.
3. DETAILS OF MANHOLES AND COVERS REFER TO DSD STANDARD DRAWINGS UNLESS OTHERWISE SPECIFIED.
4. DETAILS OF SPECIAL MANHOLES REFER TO DRAWING NOS. 5130661-DC1911-2001 TO 2005.

LEGEND AND ABBREVIATION :

BD	BACKDROP TYPE 3
Ext	EXISTING SEWERAGE
OC	PRECAST CONCRETE
PE	POLYETHYLENE
SP1	SPECIAL MANHOLE TYPE 1
SP2	SPECIAL MANHOLE TYPE 2
SP3	SPECIAL MANHOLE TYPE 3
SP4	SPECIAL MANHOLE TYPE 4
SP5	SPECIAL MANHOLE TYPE 5

Rev.	Date	Description	By	Chk'd	App'd
A	MAR 20	TENDER ADDENDUM NO. 1	XJY	WKML	DF
-	JAN 20	ISSUE FOR TENDER	XJY	WKML	DF

Drawing Status: TENDER
Suitability: -

ATKINS
Member of the SNC-Lavalin Group

Client
渠務署
Drainage Services Department
顧問工程管理部
Consultants Management Division

Contract Title
CONTRACT NO. DC/2019/11
UPGRADING OF WEST KOWLOON AND TSUEN WAN SEWERAGE - PHASE 2A

Drawing Title
MANHOLE SCHEDULE (SHEET 3)

Scale	Designed	Drawn	Checked	Authorised
N.T.S.	XJY	AC	WKML	DF
Original Size: A1	Date: JAN 2020	Date: JAN 2020	Date: JAN 2020	Date: JAN 2020

Drawing Number: 5130661-DC1911-1103
Revision: A

User name: CHEUI8306 Date:2/28/2020 Time: 8:18:44 PM
File name: P:\CNHK\Projects\5130661-KW_TW_Urban_Sewerage\23.00 CAD\23.20 Drawing\Tender 2A\5130661-DC1911-1103.dgn

DO NOT SCALE

MANHOLE SCHEDULE (KWAI CHUNG AREA)

MANHOLE REFERENCE NUMBER	MANHOLE TYPE	APPROX GROUND LEVEL (mPD)	INLET PIPE				OUTLET PIPE				BEDDING TYPE
			INVERT LEVEL (mPD)	SIZE (mm)	PIPE MATERIAL	FROM MANHOLE NO.	INVERT LEVEL (mPD)	SIZE (mm)	PIPE MATERIAL	TOMANHOLE NO.	
MB19	E1	5.98	4.290	600	OC	MB18	4.290	675	OC	MB20	Class B
			-	300	EXT.	FMH4009566					
MB20	E1	5.94	4.240	675	OC	MB19	4.240	675	OC	MB21	Class B
MB21	E1	5.78	4.010	675	OC	MB20	4.010	675	OC	MB22	Class B
MB22	E1	5.65	3.810	675	OC	MB21	3.810	675	OC	MB23	Class B
MB23	E1	5.47	3.650	675	OC	MB22	3.650	675	OC	MB24	Class B
			-	150	EXT.	-					
MB24	E1	5.4	3.510	675	OC	MB23	3.510	675	OC	MB25	Class B
MB25	E1	5.34	3.330	675	OC	MB24	3.330	675	OC	MB26	Class B
MB26	E1 + BD	5.34	3.210	675	OC	MB25	3.210	675	OC	MB27	GROUTING
			3.900	225	EXT.	FMH4009597					
MB27	E1	5.62	3.090	675	OC	MB26	3.090	675	OC	MB28	Class B
MB28	E1	5.62	3.030	675	OC	MB27	3.030	675	OC	MB29	Class B
MB29	E1	5.22	2.860	675	OC	MB28	2.860	675	OC	MB30	Class B
MB30	E1	4.97	2.730	675	OC	MB29	2.730	675	OC	MB31	Class B
MB31	E1	4.7	2.580	675	OC	MB30	2.450	675	OC	MB32	GROUTING
MB32	E1	4.84	2.350	675	OC	MB31	2.350	OD560	PE	FMH4009443	Class B
							-	375	EXT.	FMH4009444	-
FMH4009443	EXT. MH	4.84	2.320	OD560	PE	MB32	-	600	EXT.	FMH4009444	-
			-	600	EXT.	FMH4009589					
			-	500	EXT.	FMH4009442					

MANHOLE SCHEDULE (SHAM SHUI PO AREA)

MANHOLE REFERENCE NUMBER	MANHOLE TYPE	APPROX GROUND LEVEL (mPD)	INLET PIPE				OUTLET PIPE				BEDDING TYPE
			INVERT LEVEL (mPD)	SIZE (mm)	PIPE MATERIAL	FROM MANHOLE NO.	INVERT LEVEL (mPD)	SIZE (mm)	PIPE MATERIAL	TOMANHOLE NO.	
MF38	E1	9.81	-	-	-	-	8.000	OD355	PE	MF39	Class B
MF39	F1 + BD	10	6.900	OD355	PE	MF38	6.900	OD355	PE	MF42	Class A
			8.740	150	EXT.	FMH4010169					
			-	150	EXT.	FMH4010172					
			8.740	150	EXT.	FMH4010173					
MF40	F1 + BD	9.57	7.500	300	EXT.	FMH4010176	6.030	525	OC	MF41	Class B
			6.030	450	EXT.	FMH4010166					
MF41	F1	9.65	5.970	525	OC	MF40	5.970	525	OC	MF42	Class A
			6.300	300	EXT.	-					
MF42	I	9.95	6.100	OD355	PE	MF39	5.700	525	OC	FMH4010148	Class A
			5.700	525	OC	MF41					
			5.700	225	EXT.	-					
FMH4010148	EXT. MH	10.31	5.430	525	OC	MF42	-	-	-	FMH4010149	-
MF01	C1	6.07	5.160	150	EXT.	FMH4010270	5.160	OD355	PE	MF02	Class A
			5.160	150	EXT.	FMH4010320					
MF02	D1	6.15	4.930	OD355	PE	MF01	4.930	OD355	PE	MF03	Class B
			5.140	150	EXT.	-					

MANHOLE REFERENCE NUMBER	MANHOLE TYPE	APPROX GROUND LEVEL (mPD)	INLET PIPE				OUTLET PIPE				BEDDING TYPE
			INVERT LEVEL (mPD)	SIZE (mm)	PIPE MATERIAL	FROM MANHOLE NO.	INVERT LEVEL (mPD)	SIZE (mm)	PIPE MATERIAL	TOMANHOLE NO.	
MF03	D1	6.25	4.790	OD355	PE	MF02	4.790	OD355	PE	MF04	Class B
			5.790	225	EXT.	-					
			5.150	150	EXT.	-					
MF04	D1	6.13	4.720	OD355	PE	MF03	4.720	OD355	PE	MF05	Class B
			4.720	150	EXT.	-					
MF05	D1	6.12	4.680	OD355	PE	MF04	4.680	OD355	PE	MF06	Class B
			5.220	150	EXT.	-	4.650	300	EXT.	MF06	-
MF06	E1	6.24	4.640	OD355	PE	MF05	4.640	OD355	PE	MF07	Class B
			-	150	EXT.	-	4.630	300	EXT.	MF07	-
			4.630	300	EXT.	MF05					
MF07	E1	6.24	4.600	OD355	PE	MF06	4.600	OD355	PE	MF08	Class B
			4.630	300	EXT.	MF06	4.630	300	EXT.	MF08	-
MF08	E1	6.25	4.170	OD355	PE	MF07	4.170	OD355	PE	MF09	Class B
			-	300	EXT.	MF07	-	300	EXT.	MF09	-
MF10	C1	6.13	-	-	-	-	5.290	OD355	PE	MF11	Class A
MF11	D1	6.2	5.100	OD355	PE	MF10	5.100	OD355	PE	MF12	Class A
MF12	D1	6.19	5.040	OD355	PE	MF11	5.040	OD355	PE	MF13	Class A
			5.060	150	EXT.	-					
MF13	D1	6.2	4.950	OD355	PE	MF12	4.950	OD355	PE	MF14	Class B
			-	150	EXT.	-					
MF14	E1	6.24	4.670	OD355	PE	MF13	4.670	OD355	PE	MF15	Class B
MF15	E1	6.25	4.648	OD355	PE	MF14	4.648	OD355	PE	MF16	Class B
			-	150	EXT.	-					
			-	150	EXT.	-					
			-	150	EXT.	-					
MF16	E1	6.28	4.581	OD355	PE	MF15	4.581	OD355	PE	MF17	Class B
			-	150	EXT.	-					
MF17	E1	6.28	4.539	OD355	PE	MF16	4.539	OD355	PE	MF18	Class B
MF18	E1	6.26	4.470	OD355	PE	MF17	4.470	OD355	PE	MF19	Class B
MF19	E1	6.27	4.430	OD355	PE	MF18	4.430	OD355	PE	MF20	Class B
			-	150	EXT.	-					
MF20	E1	6.27	4.247	OD355	PE	MF19	4.247	OD355	PE	MF09	Class B
MF09	E1	6.27	3.950	OD355	PE	MF08	3.930	450	EXT.	FMH4010274	-
			4.100	OD355	PE	MF20					
MF33	E1	7.31	-	-	-	-	4.940	OD560	PE	MF34	Class B
MF34	E1	7.36	4.840	OD560	PE	MF33	4.840	OD560	PE	MF35	Class B
			6.160	150	EXT.	-					
MF35	E1	7.36	4.780	OD560	PE	MF34	4.780	OD560	PE	MF62	Class B
			5.910	150	EXT.	-					
MF21	E1	6.18	-	150	EXT.	FMH4064080	4.380	OD560	PE	MF22	Class B
MF22	E1	6.24	4.120	OD560	PE	MF21	4.120	OD560	PE	MF23	Class B
MF23	E1	6.24	4.000	OD560	PE	MF22	4.000	OD560	PE	MF24	Class B
MF24	E1	6.24	3.873	OD560	PE	MF23	3.873	OD560	PE	MF25	Class B
			4.390	150	EXT.	-					
MF25	E1	6.205	3.800	OD560	PE	MF24	3.800	OD560	PE	MF26	Class B
MF26	E1	6.2	3.728	OD560	PE	MF25	3.728	OD560	PE	MF70	Class B
MF27	E1	6.21	4.650	150	EXT.	-	4.070	OD560	PE	MF28	Class B
			4.100	150	EXT.	FMH4062347					
			4.580	150	EXT.	-					
MF28	E1	6.18	3.625	OD560	PE	MF27	3.625	OD560	PE	FMH4010234	Class B
FMH4010234	EXT. MH	6.12	3.500	OD560	PE	MF28	-	-	-	FMH4010235	-
MF29	D1	6	4.920	150	EXT.	FMH4054447	4.800	OD560	PE	MF30	Class A

NOTES:

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NO. 5130661-DC1911-1000 TO 1037.
2. FOR BEDDING TYPE:
   a) CLASS A : CLASS A (REINFORCED) BEDDING DETAILS REFER TO DSD STANDARD DRAIWNG NO. DS1048.
   b) CLASS B : CLASS B BEDDING DETAILS REFER TO DSD STANDARD DRAWING NO. DS1048.
   c) TYPE I : TYPE I CONCRETE SURROUND DETAILS REFER TO DSD STANDARD DRAWING NO. DS1049.
   d) LEAKAGE COLLECTION : LEAKAGE COLLECTION SYSTEM DETAILS REFER TO DRAWING 5130661-DC1911-2102.
3. DETAILS OF MANHOLES AND COVERS REFER TO DSD STANDARD DRAWINGS UNLESS OTHERWISE SPECIFIED.
4. DETAILS OF SPECIAL MANHOLES REFER TO DRAWING NOS. 5130661-DC1911-2001 TO 2005.

LEGEND AND ABBREVIATION :

BD	BACKDROP TYPE 3
Ext	EXISTING SEWERAGE
OC	PRECAST CONCRETE
PE	POLYETHYLENE
SP1	SPECIAL MANHOLE TYPE 1
SP2	SPECIAL MANHOLE TYPE 2
SP3	SPECIAL MANHOLE TYPE 3
SP4	SPECIAL MANHOLE TYPE 4
SP5	SPECIAL MANHOLE TYPE 5

Rev.	Date	Description	By	Chk'd	App'd
-	JAN 20	ISSUE FOR TENDER	XJY	WKML	DF

Drawing Status: TENDER
Suitability: -

ATKINS
Member of the SNC-Lavalin Group

Client
渠務署
Drainage Services Department
顧問工程管理部
Consultants Management Division

Contract Title
CONTRACT NO. DC/2019/11
UPGRADING OF WEST KOWLOON AND TSUEN WAN SEWERAGE - PHASE 2A

Drawing Title
MANHOLE SCHEDULE (SHEET 4)

Scale	Designed	Drawn	Checked	Authorised
N.T.S.	XJY	AC	WKML	DF
Original Size: A1	Date: JAN 2020	Date: JAN 2020	Date: JAN 2020	Date: JAN 2020

Drawing Number: 5130661-DC1911-1104
Revision: -

Millimetres 0 10 100

What's New

DSD awarded Contract No. DC/2019/11 "Upgrading of West Kowloon and Tsuen Wan Sewerage – Phase 2A"

31 July 2020

The Drainage Services Department (DSD) signed a works contract of about $257 million with Kum Shing (K.F.) Construction Company Limited on 31 July 2020. The works include construction of about 14 kilometres of gravity sewers; provision of internal lining at 6 existing sewers; construction of 2 new dry weather flow interceptors and ancillary works. This 65-month works contract commenced on 20 July 2020.

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工務計劃項目第 4358DS 號
老圍、川龍及九華徑舊村污水收集系統（部分）
新界葵青九華徑舊村鄉村污水收集系統

工程項目簡介

工程計劃的背景及效益

1. 現時仍有不少村屋或食肆的污水及生活廢水未經妥善處理便直接或間接地排放進溪澗或河道之內，對區內環境造成環境污染（如附件一:「化糞池所產生的污染問題」)。 為了減少這些污染以改善鄰近環境的衛生及符合有關污染管制法例的要求，政府現正計劃在沙頭角、打鼓嶺、荃灣及葵青等一帶地區的鄉村內建造公共污水收集系統。詳情可參閱渠務署印製的附件二:「鄉村污水收集系統計劃」單張。

當工程完成後，村內所產生的污水將會經由公共污水收集系統排放至污水處理廠集中處理，以取代村內現有的化糞池系統和減少村民長期維修化糞池的需要。 更重要是可以改善村內及附近地區的水質，提升村民的生活質素和環境衛生。

工程計劃的範圍

2. 工程計劃範圍包括為位於沙頭角、打鼓嶺、荃灣及葵青等一帶地區的鄉村建造污水收集系統。當中位於葵青區的鄉村包括：

九華徑舊村

3. 工務計劃項目第 4358DS 號將會為九華徑舊村鋪設約 1.6 公里長的污水渠。工程範圍及初步設計請參閱附件三。

環境影響及相應的紓減措施

4. 我們將會就本工程計劃制定適當的環境影響紓緩措施，以紓減施工期間及當有關設施啟用後對環境的影響。

徵收土地

5. 我們在規劃及設計有關污水收集系統時，會將有關的污水渠建於現有鄉村通道之下及政府土地範圍內，避免徵收私人土地。擬建工程將不會涉及徵收私人土地及清拆現有房屋。

村屋的污水接駁安排

6. 有關的公共污水渠及主要沙井將由渠務署負責建造及維修保養，而村民則須要自行建造及保養各自物業的終端沙井及接駁渠。 現附上附件四:「村屋接駁污水渠的示意圖」、環境保護署印製的附件五:「接駁污水渠計劃」中英文版單張及渠務署印製的附件六:「終端沙井的規格」以供參考。

排污費用

7. 排污費用將會在村屋/物業成功接駁至公共污水收集系統後開始收取。根據現時的污水處理服務收費，住宅用戶每立方米用水須繳交 2.92 元排污費，而每個住宅用戶每 4 個月一期的首 12 立方米用水，是免收排污費的。 排污費用將會在將來作出調整。 排污收費的詳情可參考渠務署印製的附件七:「排污收費」單張及附件八:「住宅用水排污費與水費參考表」。

鄉村污水渠的接駁與維修資助

8. 終端沙井及接駁渠的建造費用，會視乎個別情況有所不同，包括村屋大小、地勢環境、村民與各自聘用的工程承包商的商討等。 在工程進行期間，工程人員必會先到有關鄉村，盡量安排預留的接駁點貼近村屋邊界，方便村民接駁，以期減低日後的接駁費用。 至於個別經濟有困難的村民，可以考慮申請由政府透過香港房屋協會提供的家居維修免息貸款計劃或有需要人士維修自住物業津貼計劃。 有關計劃已獲批准涵蓋村渠接駁在內的排污裝置更換維修工程。 詳情可參閱「鄉村污水渠的接駁與維修資助」小冊子。

未來路向

9. 我們計劃於 2021 年年中根據《水污染管制（排污設備）規例》（第 358AL 章）第 26 條引用《道路（工程、使用及補償）條例》（第 370 章）把九華徑舊村工程計劃的詳情刊登於憲報。

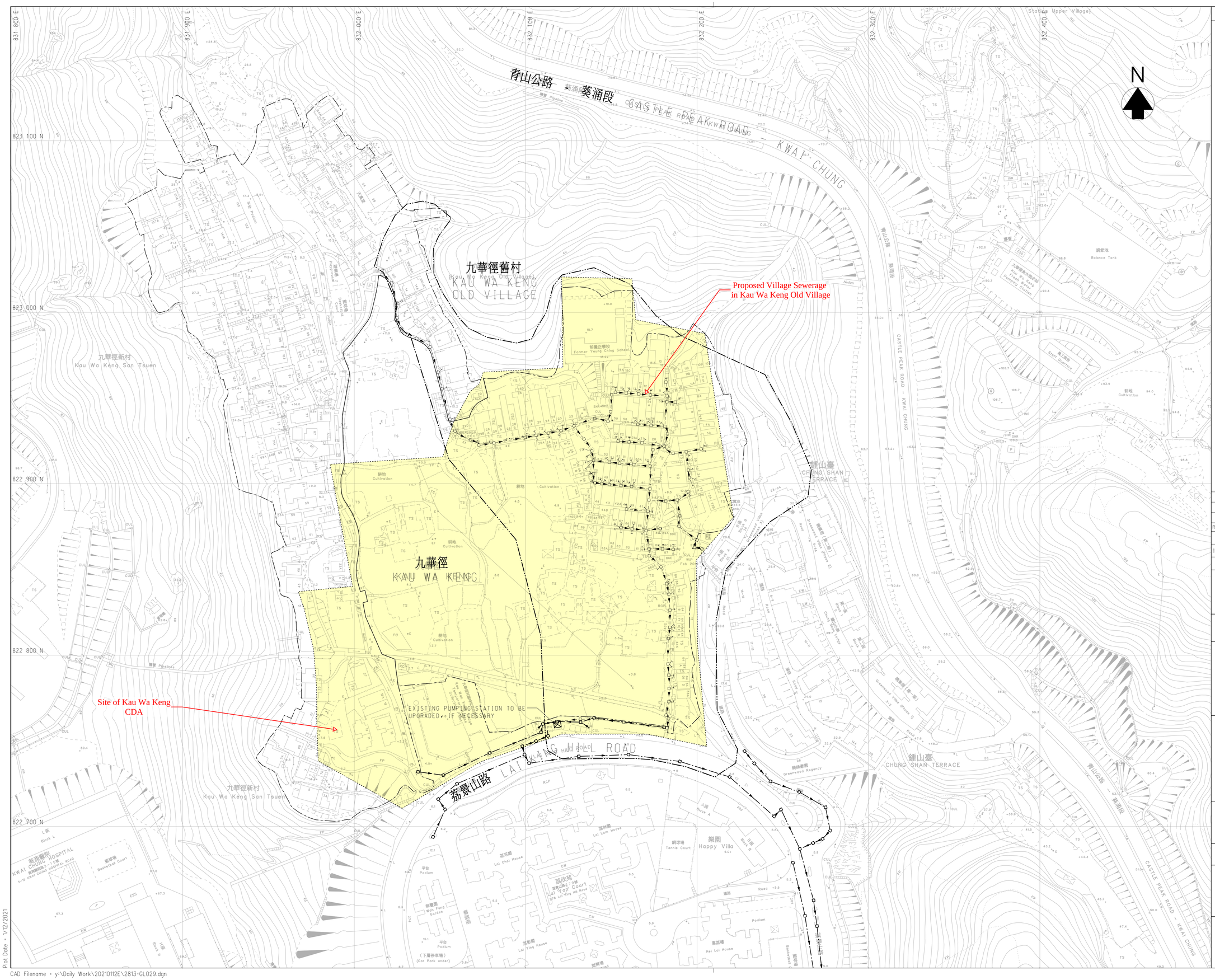
預計進度

10. 我們初步計劃在 2022 年年底為九華徑舊村開展工程，並預計於 2025 年年底完成。

諮詢意見

11. 請各委員就上述工程提出意見，並支持上述工程計劃，使工程可以盡快如期展開。

渠務署
2021 年 3 月



LEGENDS:

- AREA TO BE SEWERED
- AREA OF VILLAGE ELECTION
- EXISTING SEWER AND MANHOLE
- PROPOSED SEWER AND MANHOLE
- PROPOSED RISING MAIN
- DN150 TAPPING SEWER

Revision	Date	Description	Initial
C	01/21	REVISED ALIGNMENT	ML
B	08/09	REVISED ALIGNMENT	KP
A	12/08	REVISED ALIGNMENT	SHC

	Designed	Checked	Drawn	Checked
Initial	SHC	CC	SZ	SHC
Date	12/08	12/08	12/08	12/08

Approved

Contract no.

CE 50/2007 (DS)

Contract title

NORTH DISTRICT SEWERAGE STAGE 2 (REMAINDER) AND SEWERAGE TO CHUEN LUNG, KAU WA KENG OLD VILLAGE AND LO WAI – INVESTIGATION, DESIGN AND CONSTRUCTION

Drawing title

GENERAL LAYOUT PLAN
(35) KAU WA KENG OLD VILLAGE

SHEET 29 OF 29

Drawing no.: 382813/GL/029

Revision: C

Scale: A1 1 : 1000, A3 1 : 2000

香港特別行政區政府渠務署
THE GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION
DRAINAGE SERVICES DEPARTMENT

BLACK & VEATCH HONG KONG LIMITED
博威工程顧問有限公司

Plot Date = 1/12/2021

CAD Filename = y:\Daily Work\20210112E\2813-GL029.dgn

LEGEND:

- WORKS LIMIT
- EXISTING SEWER AND MANHOLE
- PROPOSED SEWER AND MANHOLE
- DN150 TAPPING SEWER

Revision	Date	Description		Initial
	Designed	Checked	Drawn	Checked
Initial	SYW	CT	SZ	CC
Date	04/22	04/22	04/22	04/22

Approved

Contract no.

DC/2022/06

Contract title

VILLAGE SEWERAGE IN MUK WU, LO WAI, CHUEN LUNG AND KAU WA KENG OLD VILLAGE

Drawing title

KAU WA KENG OLD VILLAGE - PROPOSED SEWERAGE LAYOUT PLAN

Drawing no.

382813/BIN/KWK/SR/001

Revision

-

Scale

A1 1 : 500
A3 1 : 1000

香港特別行政區政府渠務署
THE GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION
DRAINAGE SERVICES DEPARTMENT

BINNIES HONG KONG LIMITED
賓尼斯工程顧問有限公司

Plot Date = 4/28/2022

CAD Filename = Y:\Daily Work\20220426a\working\382813-BIN-KWK-SR-001.dgn

KAU WA KENG MANHOLE SCHEDULE FOR BRANCH 1

MANHOLE NO.	MANHOLE TYPE	COVER LEVEL (mPD)	INLET		OUTLET			PIPE MATERIAL	TYPE OF BEDDING	REMARKS
			INVERT LEVEL (mPD)	PIPE SIZE (mm) DN	INVERT LEVEL (mPD)	PIPE SIZE (mm) DN	TO MANHOLE			
KWK0101	C1	13.00	12.00	250.00	11.96	250.00	KWK0102	PE	TYPE B BEDDING	-
KWK0102	D1	12.76	11.66	250.00	11.60	250.00	KWK0103	PE	TYPE B BEDDING	-
KWK0103	C1	12.38	11.38	250.00	11.34	250.00	KWK0104	PE	TYPE B BEDDING	-
KWK0104	C1	12.11	11.11	250.00	11.08	250.00	KWK0105	PE	TYPE B BEDDING	-
KWK0105	C1	11.90	10.90	250.00	10.85	250.00	KWK0106	PE	TYPE B BEDDING	-
KWK0106	C1	11.65	10.65	250.00	10.60	250.00	KWK0107	PE	TYPE B BEDDING	-
KWK0107	C1	11.46	10.46	250.00	10.38	250.00	KWK0108	PE	TYPE B BEDDING	-
KWK0108	D1	11.14	9.94	250.00	9.89	250.00	KWK0109	PE	TYPE B BEDDING	-
KWK0109	BACKDROP T3	10.64	7.54	250.00	7.45	250.00	KWK0110	PE	TYPE B BEDDING	WITH BACKDROP
KWK0110	BACKDROP T3	8.18	6.38	250.00	6.34	250.00	KWK0111	PE	TYPE B BEDDING	WITH BACKDROP
KWK0111	D1	7.16	6.06	250.00	6.01	250.00	KWK0112	PE	TYPE B BEDDING	-
KWK0112	C1	6.76	6.01	250.00	5.98	250.00	KWK0113	PE	TYPE B BEDDING	-
KWK0113	C1	6.73	5.98	250.00	5.94	250.00	KWK0114	PE	TYPE B BEDDING	-
KWK0114	C1	6.68	5.94	250.00	5.85	250.00	KWK0115	PE	TYPE B BEDDING	-
KWK0115	C1	6.58	5.85	250.00	5.81	250.00	KWK0116	PE	TYPE B BEDDING	-
KWK0116	C1	6.54	5.81	250.00	5.78	250.00	KWK0117	PE	TYPE B BEDDING	-
KWK0117	C1	6.50	5.78	250.00	5.74	250.00	KWK0118	PE	TYPE B BEDDING	-
KWK0118	C1	6.46	5.74 NE	250.00	5.70	250.00	KWK0401	PE	TYPE B BEDDING	-

KAU WA KENG MANHOLE SCHEDULE FOR BRANCH 2

MANHOLE NO.	MANHOLE TYPE	COVER LEVEL (mPD)	INLET		OUTLET			PIPE MATERIAL	TYPE OF BEDDING	REMARKS
			INVERT LEVEL (mPD)	PIPE SIZE (mm) DN	INVERT LEVEL (mPD)	PIPE SIZE (mm) DN	TO MANHOLE			
KWK0201	D1	11.00	9.80	250.00	9.76	250.00	KWK0202	PE	TYPE B BEDDING	-
KWK0202	D1	10.49	9.35	250.00	9.33	250.00	KWK0203	PE	TYPE B BEDDING	-
KWK0203	BACKDROP T3	10.27	8.67	250.00	8.60	250.00	KWK0204	PE	TYPE B BEDDING	WITH BACKDROP
KWK0204	C1	9.37	8.37	250.00	8.35	250.00	KWK0205	PE	TYPE B BEDDING	-
KWK0205	D1	9.07	7.87	250.00	7.83	250.00	KWK0206	PE	TYPE B BEDDING	-
KWK0206	C1	8.62	7.62	250.00	7.59	250.00	KWK0207	PE	TYPE B BEDDING	-
KWK0207	C1	8.40	7.40	250.00	7.35	250.00	KWK0208	PE	TYPE B BEDDING	-
KWK0208	BACKDROP T3	8.09	4.79 S	250.00	4.74	250.00	KWK0501	PE	TYPE B BEDDING	WITH BACKDROP

KAU WA KENG MANHOLE SCHEDULE FOR BRANCH 3

MANHOLE NO.	MANHOLE TYPE	COVER LEVEL (mPD)	INLET		OUTLET			PIPE MATERIAL	TYPE OF BEDDING	REMARKS
			INVERT LEVEL (mPD)	PIPE SIZE (mm) DN	INVERT LEVEL (mPD)	PIPE SIZE (mm) DN	TO MANHOLE			
KWK0301	D1	7.77	6.32	250.00	6.21	250.00	KWK0302	PE	TYPE B BEDDING	-
KWK0302	D1	7.51	6.06	250.00	5.89	250.00	KWK0303	PE	TYPE B BEDDING	-
KWK0303	D1	7.31	5.86 W	250.00	5.56	250.00	KWK0404	PE	TYPE B BEDDING	-

KAU WA KENG MANHOLE SCHEDULE FOR BRANCH 4

MANHOLE NO.	MANHOLE TYPE	COVER LEVEL (mPD)	INLET		OUTLET			PIPE MATERIAL	TYPE OF BEDDING	REMARKS
			INVERT LEVEL (mPD)	PIPE SIZE (mm) DN	INVERT LEVEL (mPD)	PIPE SIZE (mm) DN	TO MANHOLE			
KWK0401	C1	6.42	5.69	250.00	5.64	250.00	KWK0402	PE	TYPE B BEDDING	-
KWK0402	C1	6.37	5.47	250.00	5.43	250.00	KWK0403	PE	TYPE B BEDDING	-
KWK0403	C1	6.32	5.32	250.00	5.29	250.00	KWK0404	PE	TYPE B BEDDING	-
KWK0404	C1	6.28	5.28	250.00	5.24	250.00	KWK0405	PE	TYPE B BEDDING	-
KWK0405	C1	6.15	5.24	250.00	5.21	250.00	KWK0406	PE	TYPE B BEDDING	-
KWK0406	C1	6.07	5.21	250.00	5.19	250.00	KWK0407	PE	TYPE B BEDDING	-
KWK0407	C1	6.00	5.19	250.00	5.17	250.00	KWK0408	PE	TYPE B BEDDING	-
KWK0408	C1	5.94	4.94	250.00	4.91	250.00	KWK0409	PE	TYPE B BEDDING	-
KWK0409	C1	5.83	4.91	250.00	4.88	250.00	KWK0410	PE	TYPE B BEDDING	-
KWK0410	C1	5.73	4.88 SE	250.00	4.82	250.00	KWK0501	PE	TYPE B BEDDING	-

KAU WA KENG MANHOLE SCHEDULE FOR BRANCH 5

MANHOLE NO.	MANHOLE TYPE	COVER LEVEL (mPD)	INLET		OUTLET			PIPE MATERIAL	TYPE OF BEDDING	REMARKS
			INVERT LEVEL (mPD)	PIPE SIZE (mm) DN	INVERT LEVEL (mPD)	PIPE SIZE (mm) DN	TO MANHOLE			
KWK0501	C1	5.57	4.57	250.00	4.48	250.00	KWK0502	PE	TYPE B BEDDING	-
KWK0502	C1	5.47	4.48	250.00	4.40	250.00	KWK0503	PE	TYPE B BEDDING	-
KWK0503	C1	5.37	4.40	250.00	4.25	250.00	KWK0504	PE	TYPE B BEDDING	-
KWK0504	C1	5.19	4.19	250.00	4.05	250.00	KWK0505	PE	TYPE B BEDDING	-
KWK0505	C1	5.01	4.05	250.00	3.99	250.00	KWK0506	PE	TYPE B BEDDING	-
KWK0506	C1	4.94	3.99	250.00	3.87	250.00	KWK0507	PE	TYPE B BEDDING	-
KWK0507	C1	4.78	3.78	250.00	3.64	250.00	KWK0508	PE	TYPE B BEDDING	-
KWK0508	C1	4.60	3.64	250.00	3.56	250.00	KWK0509	PE	TYPE B BEDDING	-
KWK0509	C1	4.50	3.50	250.00	3.38	250.00	KWK0510	PE	TYPE B BEDDING	-
KWK0510	C1	4.32	3.38	250.00	3.25	250.00	KWK0511	PE	TYPE B BEDDING	-
KWK0511	C1	4.13	3.13	250.00	3.04	250.00	KWK0512	PE	TYPE B BEDDING	-
KWK0512	C1	4.00	3.04	250.00	2.85	250.00	KWK0513	PE	TYPE B BEDDING	-
KWK0513	D1	3.90	2.85	250.00	2.76	250.00	KWK0514	PE	TYPE B BEDDING	-
KWK0514	D1	3.86	2.76	250.00	2.66	250.00	KWK0515	PE	TYPE B BEDDING	-
KWK0515	D1	3.80	2.66	250.00	2.56	250.00	KWK0516	PE	TYPE B BEDDING	-
KWK0516	D1	3.75	2.56	250.00	2.45	250.00	KWK0517	PE	TYPE B BEDDING	-
KWK0517	D1	3.69	2.45	250.00	2.42	250.00	KWK0518	PE	TYPE B BEDDING	-
KWK0518	D1	3.68	2.42	250.00	2.35	250.00	KWK0519	PE	TYPE B BEDDING	-
KWK0519	D1	3.64	2.35	250.00	2.01	250.00	KWK0520	PE	TYPE B BEDDING	-
KWK0520	D1	3.47	2.01	250.00	1.81	250.00	KWK0521	PE	TYPE B BEDDING	-
KWK0521	E1	3.36	1.81	250.00	1.68	250.00	EXISTING	PE	TYPE B BEDDING	-

KAU WA KENG MANHOLE SCHEDULE FOR BRANCH 6

MANHOLE NO.	MANHOLE TYPE	COVER LEVEL (mPD)	INLET		OUTLET			PIPE MATERIAL	TYPE OF BEDDING	REMARKS
			INVERT LEVEL (mPD)	PIPE SIZE (mm) DN	INVERT LEVEL (mPD)	PIPE SIZE (mm) DN	TO MANHOLE			
KWK0601	E1	10.50	8.70	250.00	8.65	250.00	KWK0602	PE	TYPE B BEDDING	-
KWK0602	BACKDROP T3	9.38	7.98	250.00	7.95	250.00	KWK0603	PE	TYPE B BEDDING	WITH BACKDROP
KWK0603	BACKDROP T3	8.74	7.14	250.00	7.10	250.00	KWK0604	PE	TYPE B BEDDING	WITH BACKDROP
KWK0604	BACKDROP T3	7.85	5.75 SW	250.00	5.69	250.00	KWK0401	PE	TYPE B BEDDING	WITH BACKDROP

KAU WA KENG MANHOLE SCHEDULE FOR BRANCH 7

MANHOLE NO.	MANHOLE TYPE	COVER LEVEL (mPD)	INLET		OUTLET			PIPE MATERIAL	TYPE OF BEDDING	REMARKS
			INVERT LEVEL (mPD)	PIPE SIZE (mm) DN	INVERT LEVEL (mPD)	PIPE SIZE (mm) DN	TO MANHOLE			
KWK0701	C1	10.50	9.50	250.00	9.47	250.00	KWK0702	PE	TYPE B BEDDING	-
KWK0702	C1	10.40	9.47	250.00	9.43	250.00	KWK0703	PE	TYPE B BEDDING	-
KWK0703	C1	10.28	9.43	250.00	9.40	250.00	KWK0704	PE	TYPE B BEDDING	-
KWK0704	C1	10.16	9.40 E	250.00	9.35	250.00	KWK0202	PE	TYPE B BEDDING	-

KAU WA KENG MANHOLE SCHEDULE FOR BRANCH 8

MANHOLE NO.	MANHOLE TYPE	COVER LEVEL (mPD)	INLET		OUTLET			PIPE MATERIAL	TYPE OF BEDDING	REMARKS
			INVERT LEVEL (mPD)	PIPE SIZE (mm) DN	INVERT LEVEL (mPD)	PIPE SIZE (mm) DN	TO MANHOLE			
KWK0801	E1	11.10	9.50 W	250.00	9.48	250.00	KWK0203	PE	TYPE B BEDDING	-

KAU WA KENG MANHOLE SCHEDULE FOR BRANCH 9

MANHOLE NO.	MANHOLE TYPE	COVER LEVEL (mPD)	INLET		OUTLET			PIPE MATERIAL	TYPE OF BEDDING	REMARKS
			INVERT LEVEL (mPD)	PIPE SIZE (mm) DN	INVERT LEVEL (mPD)	PIPE SIZE (mm) DN	TO MANHOLE			
KWK0901	C1	9.45	8.65	250.00	8.61	250.00	KWK0902	PE	TYPE B BEDDING	-
KWK0902	C1	9.41	8.61 SE	250.00	8.57	250.00	KWK0204	PE	TYPE B BEDDING	-

KAU WA KENG MANHOLE SCHEDULE FOR BRANCH 10

MANHOLE NO.	MANHOLE TYPE	COVER LEVEL (mPD)	INLET		OUTLET			PIPE MATERIAL	TYPE OF BEDDING	REMARKS
			INVERT LEVEL (mPD)	PIPE SIZE (mm) DN	INVERT LEVEL (mPD)	PIPE SIZE (mm) DN	TO MANHOLE			
KWK1001	C1	9.50	8.60	250.00	8.57	250.00	KWK1002	PE	TYPE B BEDDING	-
KWK1002	C1	9.29	8.29	250.00	8.25	250.00	KWK1003	PE	TYPE B BEDDING	-
KWK1003	D1	9.04	7.94 SE	250.00	7.87	250.00	KWK0206	PE	TYPE B BEDDING	-

KAU WA KENG MANHOLE SCHEDULE FOR BRANCH 11

MANHOLE NO.	MANHOLE TYPE	COVER LEVEL (mPD)	INLET		OUTLET			PIPE MATERIAL	TYPE OF BEDDING	REMARKS
			INVERT LEVEL (mPD)	PIPE SIZE (mm) DN	INVERT LEVEL (mPD)	PIPE SIZE (mm) DN	TO MANHOLE			
KWK1101	E1	11.20	9.40	250.00	9.36	250.00	KWK1102	PE	TYPE B BEDDING	-
KWK1102	BACKDROP T3	10.22	8.62	250.00	8.58	250.00	KWK1103	PE	TYPE B BEDDING	WITH BACKDROP
KWK1103	BACKDROP T3	9.36	7.86 NW	250.00	7.83	250.00	KWK0206	PE	TYPE B BEDDING	WITH BACKDROP

KAU WA KENG MANHOLE SCHEDULE FOR BRANCH 12

MANHOLE NO.	MANHOLE TYPE	COVER LEVEL (mPD)	INLET		OUTLET			PIPE MATERIAL	TYPE OF BEDDING	REMARKS
			INVERT LEVEL (mPD)	PIPE SIZE (mm) DN	INVERT LEVEL (mPD)	PIPE SIZE (mm) DN	TO MANHOLE			
KWK1201	C1	10.20	8.65	250.00	8.61	250.00	KWK0902	PE	TYPE B BEDDING	-
KWK1202	BACKDROP T3	9.51	8.61 N	250.00	8.57	250.00	KWK0204	PE	TYPE B BEDDING	WITH BACKDROP

KAU WA KENG MANHOLE SCHEDULE FOR BRANCH 13

MANHOLE NO.	MANHOLE TYPE	COVER LEVEL (mPD)	INLET		OUTLET			PIPE MATERIAL	TYPE OF BEDDING	REMARKS
			INVERT LEVEL (mPD)	PIPE SIZE (mm) DN	INVERT LEVEL (mPD)	PIPE SIZE (mm) DN	TO MANHOLE			
KWK1301	E1	10.52	8.12	250.00	8.08	250.00	KWK1302	PE	TYPE B BEDDING	-
KWK1302	BACKDROP T3	8.88	6.78	250.00	6.75	250.00	KWK1303	PE	TYPE B BEDDING	WITH BACKDROP
KWK1303	BACKDROP T3	7.49	4.69 W	250.00	4.64	250.00	KWK0502	PE	TYPE B BEDDING	WITH BACKDROP

KAU WA KENG MANHOLE SCHEDULE FOR BRANCH 14

MANHOLE NO.	MANHOLE TYPE	COVER LEVEL (mPD)	INLET		OUTLET			PIPE MATERIAL	TYPE OF BEDDING	REMARKS
			INVERT LEVEL (mPD)	PIPE SIZE (mm) DN	INVERT LEVEL (mPD)	PIPE SIZE (mm) DN	TO MANHOLE			
KWK1401	D1	6.00	4.60 SE	250.00	4.54	250.00	KWK0503	PE	TYPE B BEDDING	-

KAU WA KENG MANHOLE SCHEDULE FOR BRANCH 15

MANHOLE NO.	MANHOLE TYPE	COVER LEVEL (mPD)	INLET		OUTLET			PIPE MATERIAL	TYPE OF BEDDING	REMARKS
			INVERT LEVEL (mPD)	PIPE SIZE (mm) DN	INVERT LEVEL (mPD)	PIPE SIZE (mm) DN	TO MANHOLE			
KWK1501	D1	6.00	4.54	250.00	4.52	250.00	KWK1502	PE	TYPE B BEDDING	-
KWK1502	D1	5.73	4.43 SE	250.00	4.39	250.00	KWK0504	PE	TYPE B BEDDING	-

NOTES:

1. ALL LEVELS ARE METERS ABOVE P.D.H.K.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
3. PE DENOTES POLYETHYLENE.
4. B DENOTES CLASS B BEDDING IN ACCORDANCE WITH DSD STANDARD DRAWING NO. DS1048.
5. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRG. NO. 382813/BIN/KWK/SR/001.

Revision	Date	Description			Initial
	Designed	Checked	Drawn	Checked	
Initial	SYW	CT	SZ	CC	
Date	04/22	04/22	04/22	04/22	

Approved

Contract no.

DC/2022/06

Contract title

VILLAGE SEWERAGE IN MUK WU, LO WAI, CHUEN LUNG AND KAU WA KENG OLD VILLAGE

Drawing title

KAU WA KENG OLD VILLAGE - PROPOSED MANHOLE SCHEDULE

Drawing no.

382813/BIN/KWK/SR/002

Revision

-

Scale

N.T.S.

香港特別行政區政府渠務署
THE GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION DRAINAGE SERVICES DEPARTMENT

BINNIES HONG KONG LIMITED
賓尼斯工程顧問有限公司

Plot Date = 4/28/2022

CAD Filename = Y:\Daily Work\20220426a\working\382813-BIN-KWK-SR-002.dgn

工程計劃項目編號 4391DS
九龍西部及荃灣鄉村污水收集系統－第 2 期

1. 目的

本文件目的是簡介工程計劃項目編號 4391DS「九龍西部及荃灣鄉村污水收集系統－第 2 期」(下稱「工程」)，當中包括葵青區九華徑新村及長坑路怡菁山莊下游建造新污水渠，並就有關工程諮詢各委員的意見，希望委員支持進行此項工程。

2. 背景資料

環境保護署於 2010 年完成《西九龍及荃灣污水收集整體計劃檢討》，檢討建議在九龍西部及荃灣區內某些未有公共污水收集系統的鄉村/地區，提供鄉村污水收集系統，將所產生的污水收集並輸送至污水處理廠處理，以改善鄉村/地區內的衛生狀況和下游水體的水質。

整項鄉村污水收集系統工程共分兩期進行。 第 1 期工程已於 2020 年開展，預期於 2023 年年底完成。 就第 2 期工程我們亦已於 2017 年 6 月諮詢荃灣鄉事委員會，並獲得支持。 我們正就第 2 期工程進行規劃及設計。

3. 工程範圍

整個項目第 2 期工程包括在荃灣區七個鄉村/地區(即橫龍、新村、三疊潭、和宜合、上葵涌、芙蓉山、漢民寮屋區)、葵青區兩個鄉村/地區(即九華徑新村、長坑路怡菁山莊下游)及深水埗區青山公路段建造總共約 9 公里長的新污水渠，將相關鄉村/地區所產生的污水收集並輸送至現有的污水系統。

當中我們擬於葵青區內九華徑新村建造長約 1.4 公里長的污水渠，及於長坑路怡菁山莊下游建造約 1.2 公里長的污水渠。 有關葵青區的擬議工程的位置平面圖載於**附件一**。

4. 施工計劃

我們會為本工程完成法定程序後，啟動申請撥款程序，一旦獲立法會批准撥款，我們預計整項第 2 期工程需時約 6 年完成建造工程。

5. 環境及交通影響評估

5.1 環境影響評估

我們對本工程已進行初步環境評審，所得結論是工程在建造時對環境所造成的影響輕微。 在施工期間，我們會實施相應的環境緩解措施，以儘量減低工程對環境帶來的影響。

為減低噪音對附近居民的影響，我們會在有需要的地方實施以下緩解措施：

- 使用流動隔音屏障；
- 使用配有滅音裝備的機械；及
- 適當地計劃工序，例如安排只在非繁忙時段進行噪音較大如開掘路面等工作。

為減少挖土工序及處理填土物料所產生的泥塵，我們會在施工期間實施以下緩解措施：

- 經常在工地內灑水以減少在空氣中飄浮的塵埃；及
- 用帆布覆蓋在運送途中或儲存的泥土。

整體而言，我們會妥善實施上述的環境緩解措施，並在施工期間進行密切的監察及工地巡察，相信工程對環境的影響將會很輕微。

5.2 交通影響評估

在施工期間，我們會提供足夠的臨時行車路及行人徑，以維持交通暢順。施工區域會被小心分隔，確保道路使用者安全。 在非施工期間時，已開掘的路面會被妥善覆蓋以維持交通正常運作。 而工程完成後，我們會重鋪因本工程而受影響的現有車道及行人通道，確保行車及行人通道回復正常。 工程進行期間，承建商會成立交通管理聯絡小組，並會向附近居民提供聯絡電話，以保持緊密聯繫及在有需要時處理有關工程的查詢和投訴。

6. 徵收土地

為了減低對居民的影響，本工程會儘量減少徵收私人土地。 在規劃及設計污水系統走綫時，我們已儘量將擬建的污水系統建造於政府土地範圍內。但因受到地形及環境的限制，在無可避免的情況下，我們亦有需要徵收部分私人土地以建造完整的污水系統。

於長坑路至青山公路工程將不涉及私人土地。 至於九華徑新村，在過往與荃灣區鄉事委員會及九華徑新村村代表諮詢時，我們已提供初步污水渠走綫圖讓相關人士參考，並與村代表進行實地視察。 於 2021 年 1 月，我們就土地徵用方案再向地政處諮詢意見，在可行的情況下已作出相應修改。我們會繼續諮詢村代表、村民及地政處，不時檢視情況及因應實際需要而對污水渠走綫作出修正，在可行的情況下儘量配合各方面的需要。

7. 公眾參與

施工前，我們再會諮詢受影響的市民，提供有關工程的資料，並與他們商討有關的施工安排，以減低對公眾帶來的影響。

施工期間，我們會設立熱線電話，方便市民查詢，並收集公眾對本工程的意見。

8. 諮詢

歡迎各委員就本諮詢文件提出意見。在獲得委員的支持後，我們會盡快完成工程的詳細設計及開展工程。

渠務署
2021 年 4 月

DO NOT SCALE

Millimetres 0 10 100

Proposed Village Sewerage in Kau Wa Keng San Tsuen

Site of Kau Wa Keng CDA

葵青區

深水埗區

九華徑新村

荔景山路

青山公路 – 葵涌段

長坑路

呈祥道

怡菁山莊

位置圖
N.T.S.

圖例:

- 擬建污水渠
- 擬建的鄉村污水收集系統範圍
- 區議會選區分界

Rev.	Date	Description	By	Chk'd	App'd
A	APR 21	SECOND ISSUE	SS	WKML	DF
-	FEB 21	FIRST ISSUE	SS	WKML	DF

ATKINS
阿特金斯顧問有限公司

Client
渠務署
Drainage Services Department

Project Title
PUBLIC WORKS PROGRAMME ITEM NO.4391DS - WEST KOWLOON AND TSUEN WAN VILLAGE SEWERAGE - PHASE 2
工程計劃項目編號4391DS
九龍西部及荃灣鄉村污水收集系統
一第2期

Drawing Title
WEST KOWLOON AND TSUEN WAN VILLAGE SEWERAGE - PHASE 2 (KWAI TSING DISTRICT AND SHAM SHUI PO DISTRICT)
九龍西部及荃灣鄉村
污水收集系統 –
第二期示意圖
(葵青區及深水埗區)

Scale	Designed	Drawn	Checked	Authorised
1:2000	SS	AC	WKML	DF
Original Size	Date	Date	Date	Date
A1	FEB 2021	FEB 2021	FEB 2021	FEB 2021

Drawing Number
FIGURE 1
附件一

Revision
-

0 50 100 m
1 : 2 000 SCALE BAR

User name: CHEU8306 Date:4/12/2021 Time:5:41:07 PM
Filename: P:\CNHKA\Project\5125001 - CE25_2013 (DS)_West Kln\23.00 CAD\23.30 Sketch\ATK-SK-000052-FIGURE 1B.dgn

DO NOT SCALE

NOTES:

1. EXACT LOCATION OF MANHOLES TO BE DETERMINED ON SITE BY THE ENGINEER.
2. TAPPING PIPES AND TIMBER BOXES FOR THE PROPOSED MANHOLE FOR FUTURE HOUSE CONNECTION ARE NOT SHOWN FOR CLARITY. EXACT LOCATION OF TAPPING PIPES AND TIMBER BOXES SHALL BE DETERMINED ON SITE BY THE ENGINEER.
3. FOR DETAILS OF LEAKAGE COLLECTION SYSTEM, REFER TO 5125001-FIG-LCS-1001.
4. DETAILS OF EXISTING SEWERS SHOWN ARE FOR INFORMATION ONLY AND SHALL BE VERIFIED ON SITE WHEN NECESSARY FOR THE EXECUTION OF WORKS.
5. FOR MANHOLE SCHEDULE REFER TO DRAWING NOS. 5125001-FIG-MS-1001 TO 1023.

LEGEND:

- PROPOSED SEWER
- EXISTING SEWER
- UNSEWERED AREAS
- PROPOSED DWFI
- LEAKAGE COLLECTION SYSTEM

KAU WA KENG SAN TSUEN

KAU WA KENG OLD VILLAGE

{Kau Wa Keng Old Village}

CASTLE PEAK ROAD - KWAI CHUNG

CASTLE PEAK ROAD

LEAKAGE COLLECTION SYSTEM

MATCH LINE
FOR CONTINUATION
SEE DWG SLP-WK1-2

Rev.	Date	Description	By	Chk'd	App'd

Drawing Status: DESIGN

Suitability: -

ATKINS
Member of the SNC-Lavalin Group

Client: 渠務署 Drainage Services Department

淨化海港計劃部 Harbour Area Treatment Scheme Division

Project Title: CE25/2013 (DS) WEST KOWLOON AND TSUEN WAN VILLAGE SEWERAGE AND NORTH DISTRICT SEWERAGE - INVESTIGATION, DESIGN AND CONSTRUCTION

Drawing Title: SEWERAGE LAYOUT PLAN IN KAU WA KENG SAN TSUEN (SHEET 1 OF 2)

Scale	Designed	Drawn	Checked	Authorised
1:500	NB	MW	HKML	XY
Original Size	Date	Date	Date	Date
A1	MAR 2017	MAR 2017	MAR 2017	MAR 2017

Drawing Number: 5125001-FIG-SLP-WK1-1

Revision: -

User name: SZES6414 Date:20/06/2022 Time:17:30:18
Filename: P:\CNHKA\Project\5125001 - CE25_2013 (DS)_West Kln\23.00 CAD\23.20 Drawing\5125001-FIG-SLP-WK1-1.dgn

DO NOT SCALE

FOR CONTINUATION
SEE DWG SLP-WK1-1

MATCH LINE

KAU WA KENG

KAU WA KENG SAN TSUEN

LAI KING HILL ROAD

LAI YAN COURT

KAU WAH KENG SPS
Pumping Station
WPS4001080

Kau Wah Keng Village
Temporary Reuse
Collection Point

NOTES:

1. EXACT LOCATION OF MANHOLES TO BE DETERMINED ON SITE BY THE ENGINEER.
2. TAPPING PIPES AND TIMBER BOXES FOR THE PROPOSED MANHOLE FOR FUTURE HOUSE CONNECTION ARE NOT SHOWN FOR CLARITY. EXACT LOCATION OF TAPPING PIPES AND TIMBER BOXES SHALL BE DETERMINED ON SITE BY THE ENGINEER.
3. FOR DETAILS OF LEAKAGE COLLECTION SYSTEM, REFER TO 5125001-FIG-LCS-1001.
4. DETAILS OF EXISTING SEWERS SHOWN ARE FOR INFORMATION ONLY AND SHALL BE VERIFIED ON SITE WHEN NECESSARY FOR THE EXECUTION OF WORKS.
5. FOR MANHOLE SCHEDULE REFER TO DRAWING NOS. 5125001-FIG-MS-1001 TO 1023.

LEGEND:

- PROPOSED SEWER
- EXISTING SEWER
- UNSEWERED AREAS
- PROPOSED DWFI
- LEAKAGE COLLECTION SYSTEM

Rev.	Date	Description	By	Chk'd	App'd

Drawing Status: DESIGN

Suitability: -

ATKINS
Member of the SNC-Lavalin Group

Client
渠務署
Drainage Services Department
淨化海港計劃部
Harbour Area Treatment Scheme Division

Project Title
CE25/2013 (DS)
WEST KOWLOON AND TSUEN WAN VILLAGE SEWERAGE AND NORTH DISTRICT SEWERAGE - INVESTIGATION, DESIGN AND CONSTRUCTION

Drawing Title
SEWERAGE LAYOUT PLAN
IN KAU WA KENG SAN TSUEN
(SHEET 2 OF 2)

Scale	Designed	Drawn	Checked	Authorised
1:500	NB	MW	HKML	XY
Original Size	Date	Date	Date	Date
A1	MAR 2017	MAR 2017	MAR 2017	MAR 2017

Drawing Number: 5125001-FIG-SLP-WK1-2

Revision: -

User name: SZES6414 Date:20/06/2022 Time:17:30:21
File name: P:\CNHKA\Project\5125001 - CE25_2013 (DS)_West Kln\23.00 CAD\23.20 Drawing\5125001-FIG-SLP-WK1-2.dgn

MANHOLE SCHEDULE

DO NOT SCALE

Manhole Number	MH type	Approx Ground Level (mPD)	Inlet Pipe				Outlet Pipe				
			Invert Level (mPD)	Size (mm)	Pipe Material	From manhole no.	Invert Level (mPD)	Size (mm)	Pipe Material	To manhole no.	Bedding Type
WK1.1.1	E1	17.4	-	-	-	-	15.65	225	HDPE	WK1.1.2	Class B
WK1.1.2	E1	17.3	15.58	225	HDPE	WK1.1.1	15.58	225	HDPE	WK1.1.3	Class B
WK1.1.3	D1	17	15.52	225	HDPE	WK1.1.2	15.52	225	HDPE	WK1.1.4	Class B
WK1.1.4	E1	17.5	15.84	225	HDPE	WK1.4.2	15.29	225	HDPE	WK1.1.5	Class B
			15.29	225	HDPE	WK1.1.3					
WK1.1.5	D1	9	8.10	225	HDPE	WK1.1.4	7.80	225	HDPE	WK1.1.6	Class B
WK1.1.6	C1	8.5	7.55	225	HDPE	WK1.1.5	7.55	225	HDPE	WK1.1.7	Class B
WK1.1.7	D1	7.85	6.89	225	HDPE	WK1.7.13	6.83	225	HDPE	WK1.1.8	Class B
			6.83	225	HDPE	WK1.1.6					
WK1.1.8	E1	7.8	6.77	225	HDPE	WK1.14.2	6.26	225	HDPE	WK1.1.9	Class B
			6.26	225	HDPE	WK1.1.7					
WK1.1.9	E1	7.55	6.09	225	HDPE	WK1.15.1	5.82	225	HDPE	WK1.1.10	Class B
			5.82	225	HDPE	WK1.1.8					
			6.09	225	HDPE	WK1.17.1					
WK1.1.10	E1	7.5	5.99	225	HDPE	WK1.16.1	5.69	225	HDPE	WK1.1.11	Class B
			6.26	225	HDPE	WK1.6.18					
			5.69	225	HDPE	WK1.1.9					
WK1.1.11	C1	6.3	5.44	225	HDPE	WK1.1.10	5.44	225	HDPE	WK1.1.12	Class B
WK1.1.12	D1	6	4.79	225	HDPE	WK1.19.3	4.79	225	HDPE	WK1.1.13	Class B
			4.87	225	HDPE	WK1.1.11					
WK1.1.13	E1	5.9	4.31	225	HDPE	WK1.22.2	4.31	225	HDPE	WK1.1.14	Class B
			4.72	225	HDPE	WK1.1.12					
WK1.1.14	D1	5.75	4.44	225	HDPE	WK1.24.9	4.27	225	HDPE	WK1.1.15	Class B
			4.27	225	HDPE	WK1.1.13					
WK1.1.15	E1	5.6	4.00	225	HDPE	WK1.25.2	4.00	225	HDPE	WK1.1.16	Class B
			4.25	225	HDPE	WK1.1.14					
WK1.1.16	E1	5.5	3.97	225	HDPE	WK1.1.15	3.97	225	HDPE	WK1.1.17	Class B
WK1.1.17	D1	5.1	4.02	225	HDPE	WK1.26.1	3.92	225	HDPE	WK1.1.18	Class B
			3.92	225	HDPE	WK1.1.16					
WK1.1.18	D1	5	4.05	225	HDPE	WK1.27.1	3.88	225	HDPE	WK1.1.19	Class B
			3.88	225	HDPE	WK1.1.17					
WK1.1.19	D1	4.9	3.67	225	HDPE	WK1.28.3	3.67	225	HDPE	WK1.1.20	Class B
			3.82	225	HDPE	WK1.1.18					
WK1.1.20	D1	5	3.71	225	HDPE	WK1.30.3	3.62	225	HDPE	WK1.1.21	Class B
			3.62	225	HDPE	WK1.1.19					
WK1.1.21	D1	4.6	3.54	225	HDPE	WK1.1.20	3.54	225	HDPE	WK1.1.22	Class B
WK1.1.22	C1	4.4	3.46	225	HDPE	WK1.1.21	3.46	225	HDPE	WK1.1.23	Class B
WK1.1.23	C1	4	3.11	225	HDPE	WK1.31.6	3.10	225	HDPE	WK1.1.24	Class B
			3.10	225	HDPE	WK1.1.22					
WK1.1.24	E1	5	3.07	225	HDPE	WK1.1.23	3.07	225	HDPE	WK1.1.25	Class B
WK1.1.25	E1	4.9	3.05	225	HDPE	WK1.1.24	3.05	225	HDPE	WK1.1.26	Class B
WK1.1.26	D1	4	2.98	225	HDPE	WK1.1.25	2.98	225	HDPE	WK1.1.27	Class B
WK1.1.27	D1	4	2.66	225	HDPE	WK1.34.11	2.66	225	HDPE	FMH4009599	Class B
			2.77	225	HDPE	WK1.1.26					
WK1.4.1	E1	24	-	-	-	-	22.35	225	HDPE	WK1.4.2	Class B
WK1.4.2	E1	22	20.34	225	HDPE	WK1.4.1	20.34	225	HDPE	WK1.1.4	Class B
WK1.6.1	D1	30	-	-	-	-	28.55	225	HDPE	WK1.6.2	Class B
WK1.6.2	E1	30	28.33	225	HDPE	WK1.6.1	28.33	225	HDPE	WK1.6.3	Class B
WK1.6.3	E1	30	28.26	225	HDPE	WK1.6.2	28.26	225	HDPE	WK1.6.4	Class B
WK1.6.4	E1	30	27.97	225	HDPE	WK1.6.3	27.97	225	HDPE	WK1.6.5	Class B
WK1.6.5	E1	30	27.89	225	HDPE	WK1.6.4	27.89	225	HDPE	WK1.6.6	Class B
WK1.6.6	D1	27	26.15	225	HDPE	WK1.6.5	25.85	225	HDPE	WK1.6.7	Class B
WK1.6.7	E1	27	25.79	225	HDPE	WK1.6.6	25.49	225	HDPE	WK1.6.8	Class B
WK1.6.8	D1	21.5	20.51	225	HDPE	WK1.6.7	20.21	225	HDPE	WK1.6.9	Class B
WK1.6.9	E1	20	18.76	225	HDPE	WK1.6.8	18.46	225	HDPE	WK1.6.10	Class B
WK1.6.10	E1	19.9	18.34	225	HDPE	WK1.6.9	18.04	225	HDPE	WK1.6.11	Class B
WK1.6.11	D1	17	15.99	225	HDPE	WK1.6.10	15.69	225	HDPE	WK1.6.12	Class B
WK1.6.12	D1	15.5	14.60	225	HDPE	WK1.6.11	14.30	225	HDPE	WK1.6.13	Class B
WK1.6.13	D1	13.42	12.49	225	HDPE	WK1.6.12	12.09	225	HDPE	WK1.6.14	Class B
WK1.6.14	D1	12.56	11.59	225	HDPE	WK1.6.13	11.19	225	HDPE	WK1.6.15	Class B
WK1.6.15	E1	10.88	9.77	225	HDPE	WK1.6.14	9.37	225	HDPE	WK1.6.16	Class B
WK1.6.16	D1	8.96	8.05	225	HDPE	WK1.6.15	7.65	225	HDPE	WK1.6.17	Class B
WK1.6.17	E1	8.47	7.39	225	HDPE	WK1.6.16	6.89	225	HDPE	WK1.6.18	Class B
WK1.6.18	C1	7.39	6.50	225	HDPE	WK1.6.17	6.50	225	HDPE	WK1.1.10	Class B
WK1.7.1	C1	27.55	-	-	-	-	26.70	225	HDPE	WK1.7.2	Class B
WK1.7.2	C1	27.5	26.54	225	HDPE	WK1.7.1	26.54	225	HDPE	WK1.7.3	Class B
WK1.7.3	D1	27.65	26.25	225	HDPE	WK1.7.2	26.25	225	HDPE	WK1.7.4	Class B
WK1.7.4	F1	28.82	26.06	225	HDPE	WK1.8.1	25.50	225	HDPE	WK1.7.6	Class B
			26.00	225	HDPE	WK1.7.3					
WK1.7.6	E1	23.45	21.49	225	HDPE	WK1.9.1	21.49	225	HDPE	WK1.7.9	Class B
			21.98	225	HDPE	WK1.7.4					
WK1.7.9	D1	17.6	16.45	225	HDPE	WK1.10.1	16.43	225	HDPE	WK1.7.10	Class B
			16.60	225	HDPE	WK1.7.6					
			16.43	225	HDPE	WK1.11.3					
WK1.7.10	D1	17.5	16.35	225	HDPE	WK1.7.9	16.35	225	HDPE	WK1.7.11	Class B
WK1.7.11	C1	11.6	10.64	225	HDPE	WK1.7.10	10.64	225	HDPE	WK1.7.12	Class B
WK1.7.12	D1	11.7	10.73	225	HDPE	WK1.12.1	10.51	225	HDPE	WK1.7.13	Class B
			10.51	225	HDPE	WK1.7.11					
			10.84	225	HDPE	WK1.13.1					
WK1.7.13	D1	11.7	10.41	225	HDPE	WK1.7.12	10.41	225	HDPE	WK1.1.7	Class B
WK1.8.1	D1	27.5	-	-	-	-	26.25	225	HDPE	WK1.7.4	Class B
WK1.9.1	C1	22.4	-	-	-	-	21.55	225	HDPE	WK1.7.6	Class B
WK1.10.1	C1	17.5	-	-	-	-	16.65	225	HDPE	WK1.7.9	Class B
WK1.11.1	D1	18.3	-	-	-	-	17.15	225	HDPE	WK1.11.2	Class B
WK1.11.2	D1	18.33	16.89	225	HDPE	WK1.11.1	16.89	225	HDPE	WK1.11.3	Class B
WK1.11.3	C1	17.55	16.55	225	HDPE	WK1.11.2	16.55	225	HDPE	WK1.7.9	Class B
WK1.12.1	C1	11.64	-	-	-	-	10.78	225	HDPE	WK1.7.12	Class B
WK1.13.1	C1	11.8	-	-	-	-	10.94	225	HDPE	WK1.7.12	Class B
WK1.14.1	D1	12	-	-	-	-	10.55	225	HDPE	WK1.14.2	Class B
WK1.14.2	D1	11.26	10.23	225	HDPE	WK1.14.1	10.23	225	HDPE	WK1.1.8	Class B
WK1.15.1	D1	11.5	-	-	-	-	10.05	225	HDPE	WK1.1.9	Class B
WK1.16.1	D1	7.5	-	-	-	-	6.05	225	HDPE	WK1.1.10	Class B
WK1.17.1	D1	8	-	-	-	-	6.55	225	HDPE	WK1.1.9	Class B
WK1.18.1	C1	8.45	-	-	-	-	7.59	225	HDPE	WK1.19.3	Class B
WK1.19.1	D1	9.26	-	-	-	-	8.01	225	HDPE	WK1.19.2	Class B

NOTES:

1. FOR BEDDING TYPE:
   a) CLASS B : CLASS BEDDING
      DETAILS REFER TO DSD STANDARD DRAWING NO. DS104B.
   b) TYPE I : TYPE I CONCRETE SURROUNG
      DETAILS REFER TO DSD STANDARD DRAWING NO. DS1049.
2. DETAILS OF MANHOLES AND COVERS REFER TO DSD STANDARD DRAWINGS UNLESS OTHERWISE SPCICIED.

Rev.	Date	Description	By	Chk'd	App'd
-	APR 22	FIRST ISSUE	SS	LLL	KP

Drawing Status: DESIGN

Suitability: -

ATKINS
Member of the SNC-Lavalin Group

Client
渠務署
Drainage Services Department
淨化海港計劃部
Harbour Area Treatment Scheme Division

Project Title
CE25/2013 (DS)
WEST KOWLOON AND TSUEN WAN VILLAGE SEWERAGE AND NORTH DISTRICT SEWERAGE - INVESTIGATION, DESIGN AND CONSTRUCTION

Drawing Title
MANHOLE SCHEDULE - KAU WA KENG SAN TSUEN (SHEET 1)

Scale	Designed	Drawn	Checked	Authorised
1:500	SS	AC	LLL	KP
Original Size: A1	Date: APR 2022	Date: APR 2022	Date: APR 2022	Date: APR 2022

Drawing Number: 5125001-FIG-MH-WK1-1

Revision: -

MANHOLE SCHEDULE

DO NOT SCALE

Manhole Number	MH type	Approx Ground Level (mPD)	Inlet Pipe				Outlet Pipe				
			Invert Level (mPD)	Size (mm)	Pipe Material	From manhole no.	Invert Level (mPD)	Size (mm)	Pipe Material	To manhole no.	Bedding Type
WK1.19.2	D1	9	7.61	225	HDPE	WK1.19.1	7.61	225	HDPE	WK1.19.3	Class B
WK1.19.3	C1	5.7	4.82	225	HDPE	WK1.18.1	4.82	225	HDPE	WK1.1.12	Class B
			4.82	225	HDPE	WK1.19.2					
WK1.21.1	D1	8	-	-	-	-	6.75	225	HDPE	WK1.22.2	Class B
WK1.22.1	D1	5.8	-	-	-	-	4.55	225	HDPE	WK1.22.2	Class B
WK1.22.2	D1	5.8	4.80	225	HDPE	WK1.21.1	4.48	225	HDPE	WK1.1.13	Class B
			4.48	225	HDPE	WK1.22.1					
WK1.23.1	D1	12.22	-	-	-	-	10.97	225	HDPE	WK1.24.6	Class B
WK1.24.1	E1	24	-	-	-	-	22.35	225	HDPE	WK1.24.2	Class B
WK1.24.2	D1	23.5	22.25	225	HDPE	WK1.24.1	22.25	225	HDPE	WK1.24.3	Class B
WK1.24.3	D1	23.25	21.94	225	HDPE	WK1.24.2	21.94	225	HDPE	WK1.24.4	Class B
WK1.24.4	D1	17.86	16.74	225	HDPE	WK1.24.3	16.74	225	HDPE	WK1.24.5	Class B
WK1.24.5	D1	16	14.88	225	HDPE	WK1.24.4	14.88	225	HDPE	WK1.24.6	Class B
WK1.24.6	D1	11.7	10.81	225	HDPE	WK1.23.1	10.57	225	HDPE	WK1.24.7	Class B
			10.57	225	HDPE	WK1.24.5					
WK1.24.7	D1	10.15	9.02	225	HDPE	WK1.24.6	9.02	225	HDPE	WK1.24.8	Class B
WK1.24.8	D1	10	8.86	225	HDPE	WK1.24.7	8.86	225	HDPE	WK1.24.9	Class B
WK1.24.9	D1	5.65	4.46	225	HDPE	WK1.24.8	4.46	225	HDPE	WK1.1.14	Class B
WK1.25.1	C1	5	-	-	-	-	4.14	225	HDPE	WK1.25.2	Class B
WK1.25.2	C1	5	4.09	225	HDPE	WK1.25.1	4.09	225	HDPE	WK1.1.15	Class B
WK1.26.1	C1	8.2	-	-	-	-	7.34	225	HDPE	WK1.1.17	Class B
WK1.27.1	D1	5.45	-	-	-	-	4.10	225	HDPE	WK1.1.18	Class B
WK1.28.1	C1	4.7	-	-	-	-	3.85	225	HDPE	WK1.28.2	Class B
WK1.28.2	C1	4.7	3.80	225	HDPE	WK1.28.1	3.80	225	HDPE	WK1.28.3	Class B
WK1.28.3	C1	4.77	3.77	225	HDPE	WK1.28.2	3.77	225	HDPE	WK1.1.19	Class B
WK1.29.1	C1	8	-	-	-	-	7.14	225	HDPE	WK1.29.2	Class B
WK1.29.2	E1	9	7.09	225	HDPE	WK1.29.1	7.09	225	HDPE	WK1.29.3	Class B
WK1.29.3	E1	9.88	7.05	225	HDPE	WK1.29.2	7.05	225	HDPE	WK1.29.4	Class B
WK1.29.4	E1	9.88	7.04	225	HDPE	WK1.29.3	7.04	225	HDPE	WK1.30.3	Class B
WK1.30.1	E1	13	-	-	-	-	11.25	225	HDPE	WK1.30.1a	Class B
WK1.30.1a	D1	12	11.09	225	HDPE	WK1.30.1	10.69	225	HDPE	WK1.30.2	Class B
WK1.30.2	C1	10.5	9.56	225	HDPE	WK1.30.1a	9.56	225	HDPE	WK1.30.3	Class B
WK1.30.3	C1	8	7.02	225	HDPE	WK1.29.4	7.02	225	HDPE	WK1.1.20	Class B
			7.15	225	HDPE	WK1.30.2					
WK1.31.1	C1	12	-	-	-	-	11.14	225	HDPE	WK1.31.2	Class B
WK1.31.2	C1	12	11.13	225	HDPE	WK1.31.1	11.13	225	HDPE	WK1.31.3	Class B
WK1.31.3	C1	9	8.14	225	HDPE	WK1.31.2	8.14	225	HDPE	WK1.31.4	Class B
WK1.31.4	C1	6	5.12	225	HDPE	WK1.31.3	5.12	225	HDPE	WK1.31.5	Class B
WK1.31.5	C1	5	4.15	225	HDPE	WK1.31.4	4.15	225	HDPE	WK1.31.6	Class B
WK1.31.6	E1	5.9	4.13	225	HDPE	WK1.31.5	4.13	225	HDPE	WK1.1.23	Class B
WK1.33.1	C1	13.5	-	-	-	-	12.64	225	HDPE	WK1.34.4	Class B
WK1.34.1	E1	14.47	-	-	-	-	12.42	225	HDPE	WK1.34.2	Class B
WK1.34.2	E1	13.5	12.59	225	HDPE	WK1.37.6	11.55	225	HDPE	WK1.34.3	Class B
			11.85	225	HDPE	WK1.34.1					

Manhole Number	MH type	Approx Ground Level (mPD)	Inlet Pipe				Outlet Pipe				
			Invert Level (mPD)	Size (mm)	Pipe Material	From manhole no.	Invert Level (mPD)	Size (mm)	Pipe Material	To manhole no.	Bedding Type
WK1.34.3	C1	11	10.13	225	HDPE	WK1.34.2	10.13	225	HDPE	WK1.34.4	Class B
WK1.34.4	D1	7.18	6.19	225	HDPE	WK1.33.1	6.13	225	HDPE	WK1.34.5	Class B
			6.13	225	HDPE	WK1.34.3					
			6.12	225	HDPE	WK1.35.4					
WK1.34.5	D1	7	5.94	225	HDPE	WK1.34.4	5.74	225	HDPE	WK1.34.6	Class B
WK1.34.6	E1	7	5.54	225	HDPE	WK1.34.5	5.24	225	HDPE	WK1.34.7	Class B
WK1.34.7	E1	6.5	4.93	225	HDPE	WK1.34.6	4.63	225	HDPE	WK1.34.8	Class B
WK1.34.8	E1	6	4.48	225	HDPE	WK1.34.7	4.18	225	HDPE	WK1.34.9	Class B
WK1.34.9	E1	5.18	3.91	225	HDPE	WK1.34.8	3.61	225	HDPE	WK1.34.10	Class B
WK1.34.10	D1	4.5	3.51	225	HDPE	WK1.34.9	3.21	225	HDPE	WK1.34.11	Class B
WK1.34.11	D1	3.97	3.09	225	HDPE	WK1.34.10	2.79	225	HDPE	WK1.1.27	Class B
WK1.35.1	C1	7.18	-	-	-	-	6.32	225	HDPE	WK1.35.2	Class B
WK1.35.2	E1	8.2	6.28	225	HDPE	WK1.35.1	6.28	225	HDPE	WK1.35.3	Class B
WK1.35.3	E1	8	6.24	225	HDPE	WK1.35.2	6.24	225	HDPE	WK1.35.4	Class B
WK1.35.4	E1	7.94	6.21	225	HDPE	WK1.35.3	6.21	225	HDPE	WK1.34.4	Class B
WK1.36.1	E1	17.44	-	-	-	-	15.49	225	HDPE	WK1.36.2	Class B
WK1.36.2	E1	16.5	15.37	225	HDPE	WK1.36.1	14.87	225	HDPE	WK1.37.4	Class B
WK1.37.1	E1	16.1	-	-	-	-	14.35	225	HDPE	WK1.37.2	Class B
WK1.37.2	E1	16.1	14.22	225	HDPE	WK1.37.1	14.22	225	HDPE	WK1.37.3	Class B
WK1.37.3	E1	15.65	14.04	225	HDPE	WK1.37.2	14.04	225	HDPE	WK1.37.4	Class B
WK1.37.4	E1	16.1	14.55	225	HDPE	WK1.36.2	13.96	225	HDPE	WK1.37.6	Class B
			13.96	225	HDPE	WK1.37.3					
WK1.37.6	E1	15	13.05	225	HDPE	WK1.37.4	13.05	225	HDPE	WK1.34.2	Class B

NOTES:

1. FOR BEDDING TYPE:
   a) CLASS B : CLASS BEDDING
      DETAILS REFER TO DSD STANDARD DRAWING NO. DS104B.
   b) TYPE I : TYPE I CONCRETE SURROUNG
      DETAILS REFER TO DSD STANDARD DRAWING NO. DS1049.
2. DETAILS OF MANHOLES AND COVERS REFER TO DSD STANDARD DRAWINGS UNLESS OTHERWISE SPCICIED.

Rev.	Date	Description	By	Chk'd	App'd
-	APR 22	FIRST ISSUE	SS	LLL	KP

Drawing Status: DESIGN

Suitability: -

ATKINS
Member of the SNC-Lavalin Group

Client
渠務署
Drainage Services Department
淨化海港計劃部
Harbour Area Treatment Scheme Division

Project Title
CE25/2013 (DS)
WEST KOWLOON AND TSUEN WAN VILLAGE SEWERAGE AND NORTH DISTRICT SEWERAGE - INVESTIGATION, DESIGN AND CONSTRUCTION

Drawing Title
MANHOLE SCHEDULE - KAU WA KENG SAN TSUEN (SHEET 2)

Scale	Designed	Drawn	Checked	Authorised
1:500	SS	AC	LLL	KP
Orlginal Size: A1	Date: APR 2022	Date: APR 2022	Date: APR 2022	Date: APR 2022

Drawing Number: 5125001-FIG-MH-WK1-2

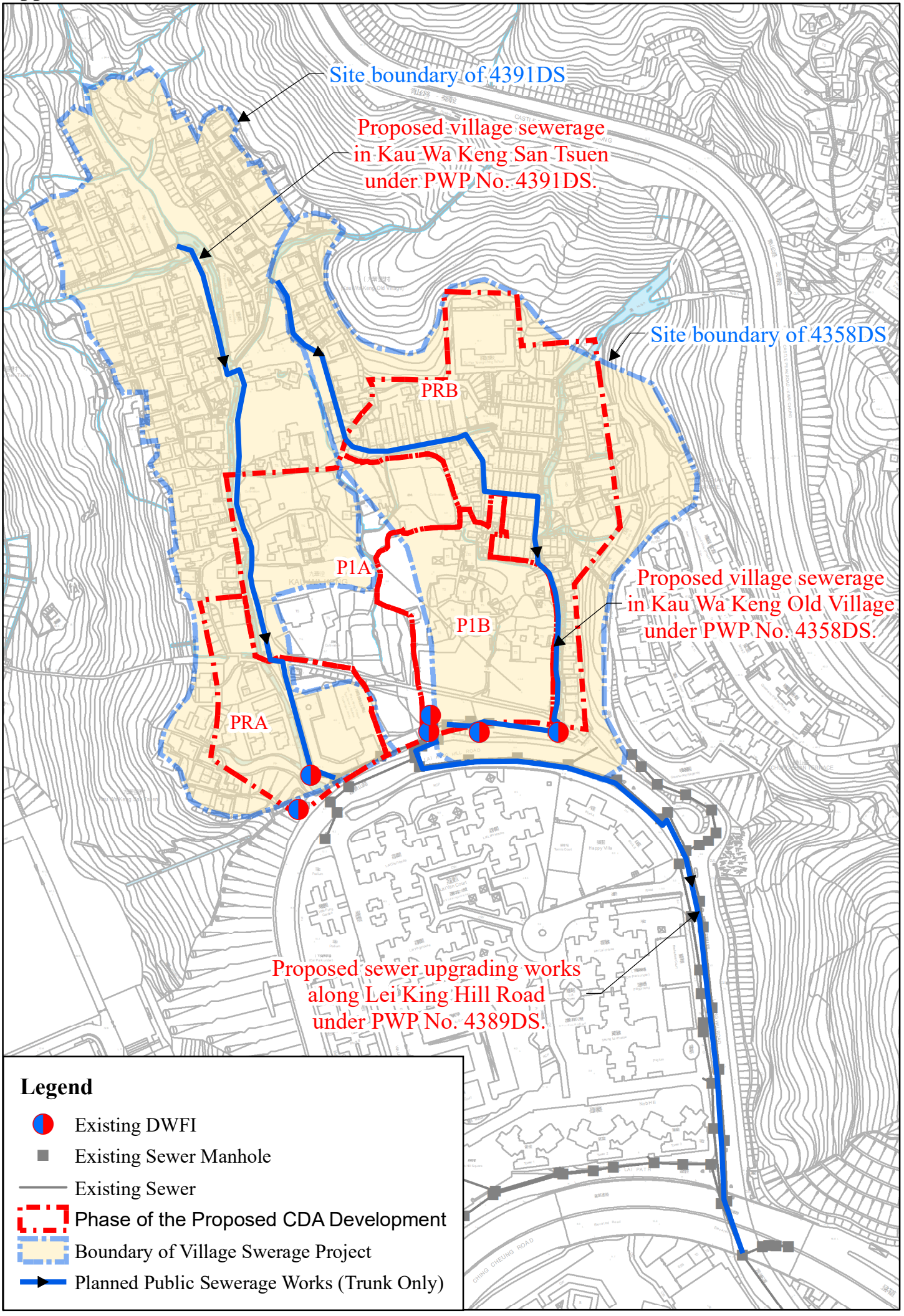
Revision: -

Millimetres 0 10 100

Appendix D

Layout of Baseline Sewer Network

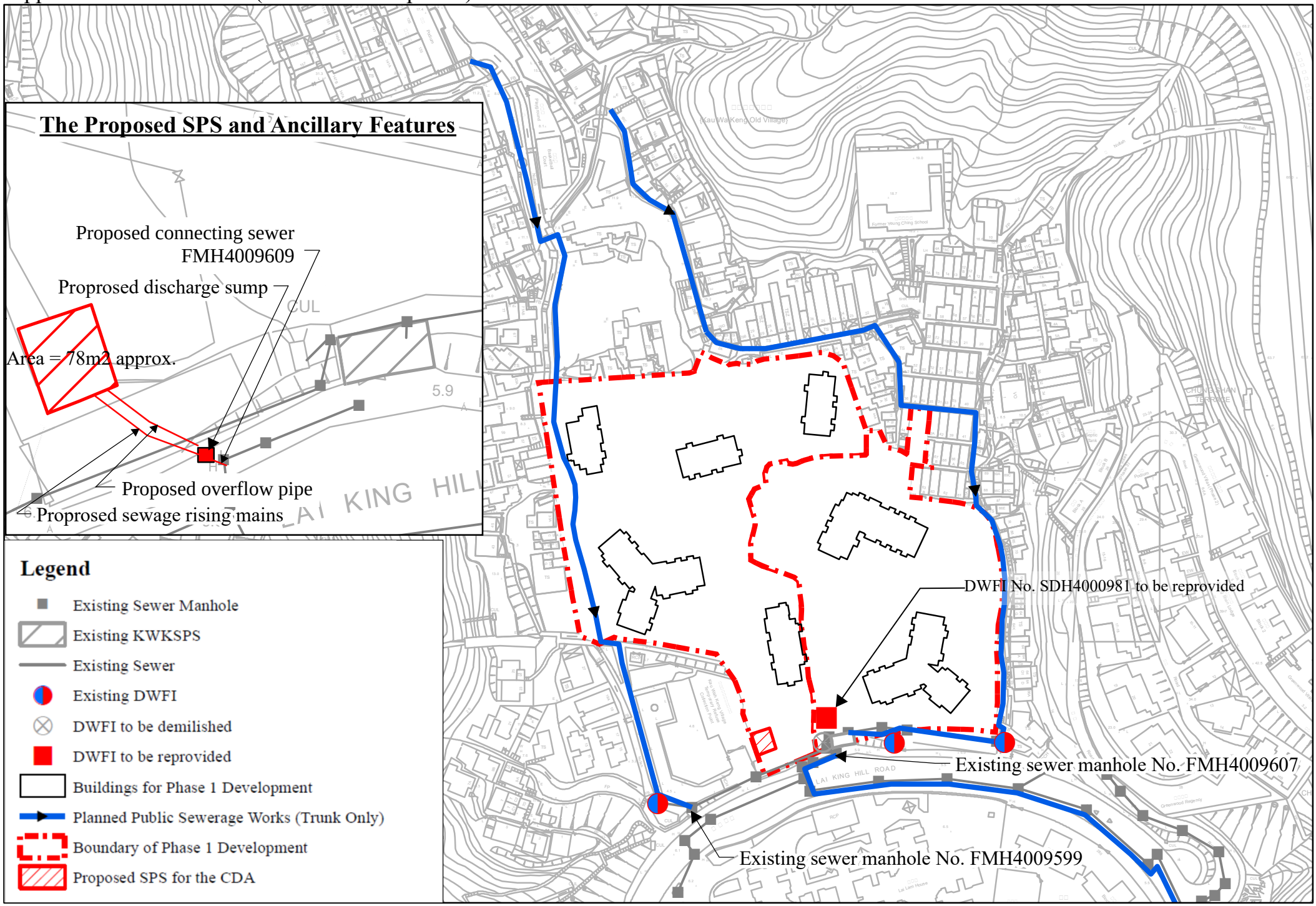
Appendix D


Site boundary of 4391DS
Proposed village sewerage in Kau Wa Keng San Tsuen under PWP No. 4391DS.
Site boundary of 4358DS
PRB
P1A
P1B
PRA
Proposed village sewerage in Kau Wa Keng Old Village under PWP No. 4358DS.
Proposed sewer upgrading works along Lei King Hill Road under PWP No. 4389DS.
Legend
Existing DWFI
Existing Sewer Manhole
Existing Sewer
Phase of the Proposed CDA Development
Boundary of Village Swerage Project
Planned Public Sewerage Works (Trunk Only)

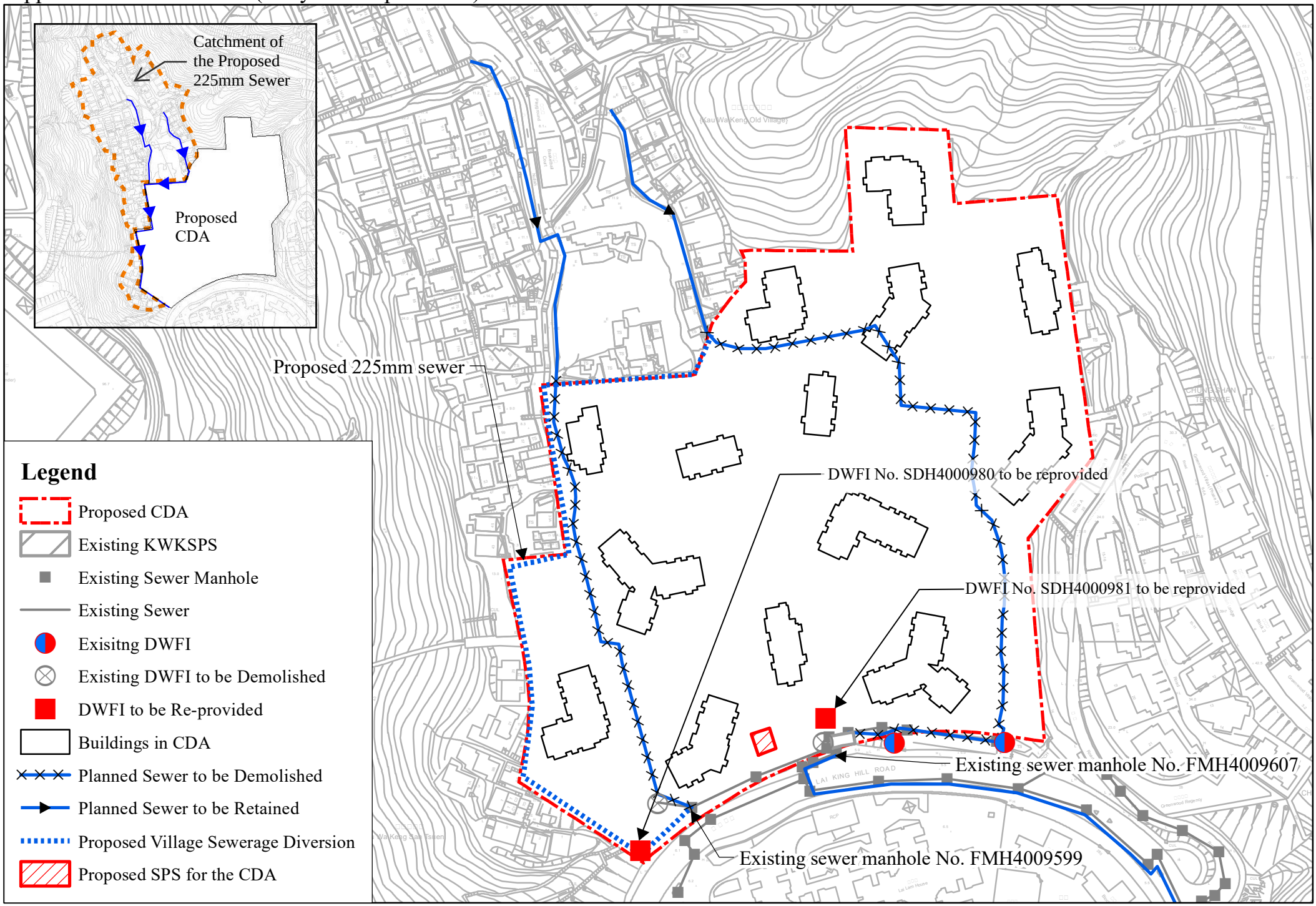
Appendix E

Layout of Proposed Sewer Network

Appendix E1 - Scenario 2 (Phase 1 Development)



Appendix E2 - Scenario 3 (Fully Developed CDA)



Appendix F

Population and Flow under Different Scenario

Appendix F - Estimation of Population and Sewage Flow of the under different Scenarios

Part 1 - Population and Sewage in Villages and CDA Development

Villages

Name of Village	Section	No. of Village House	Projected Population[1]	Estimated Population by Section[2]	Projected ADWF[3] (m3/day)	Projected ADWF[2] in Scenario 1&2 (m3/day)	Projected ADWF in Scenario 3 (m3/day)
Kau Wa Keng Old Village	Inside CDA Development	144	1964	1,563	1115.74	888	0
	Outside CDA Development	37		401		228	228
Kau Wa Keng San Tsuen	Inside CDA Development	7	971	60	418.90	26	0
	Outside CDA Development	107		911		393	393
					Total	1535	621

(1) Data from design population under PWP No. 4358DS and 4391DS.
(2) Prorata values according to number of houses.
(3) Data from design flow under PWP No. 4358DS and 4391DS.

CDA Development

Phase	Site Area[1] (m^2)	Type	No. of Flats[2]	Occupancy Rate[3]	Population[4]	UFF (m^3/ person/ day)	Projected ADWF (m^3/day), with P_{CIF}=1.3
1A	13,577.3	Residential	1,981	2.7	5,348.7	0.27	1,877
	513.8	Home Care Services for Frail Elderly Persons (HCS for Frail Elderly Persons)	-	-	15.2	0.28	6
	650.2	School Social Work Office	-	-	41.0	0.28	15
	2,708.0	Residential Care Home Centre for the Elderly (RCHE) (100 Places) - resident	-	-	100.0	0.19	25
		Residential Care Home Centre for the Elderly (RCHE) (100 Places) - staff	-	-	9.3	0.28	3
	300.0	Clubhouse - F&B	-	5.1	15	1.58	31
	2,700.0	Clubhouse - Other Staff	-	3.3	89	0.28	32
	873.7	Retail - F&B	-	5.1	45	1.58	92
	2,038.6	Retail - Other Staff	-	3.3	67	0.28	24
	650.0	Backwash flow for swimming pool P1A	-	-	-	-	10
1B	10,111.8	Residential	1,476	2.7	3,985	0.27	1,399
	656.0	Neighbourhood Elderly Centre (NEC)	-	-	11.25	0.28	4
	2,708.0	Residential Care Home Centre for the Elderly (RCHE) (100 Places) - resident	-	-	100.0	0.19	25
		Residential Care Home Centre for the Elderly (RCHE) (100 Places) - staff	-	-	9.3	0.28	3
	242.7	Clubhouse - F&B	-	5.1	12	1.58	25
	2,184.3	Clubhouse - Other Staff	-	3.3	72	0.28	26
	454.9	Retail - F&B	-	5.1	23	1.58	48
	1,061.4	Retail - Other Staff	-	3.3	35	0.28	13
	500.0	Backwash flow for swimming pool P1B	-	-	-	-	8

RPA	7,934.7	Residential	1,158	2.7	3,127	0.27	1,097
	716.0	60-place Day Care Centre for the Elderly	-	-	22.507	0.28	8
	392.0	Office Base of On-site Pre-school Rehabilitation Services (OPRS)	-	-	17	0.28	6
	1,422.0	120-place Day Care Centre for the Elderly	-	-	45.014	0.28	16
	214.2	Clubhouse - F&B	-	5.1	11	1.58	22
	1,927.8	Clubhouse - Other Staff	-	3.3	64	0.28	23
	431.2	Retail - F&B	-	5.1	22	1.58	45
	1,006.1	Retail - Other Staff	-	3.3	33	0.28	12
	320.0	Backwash flow for swimming pool RPA	-	-	-	-	5
RPB	16,689.3	Residential	2,437	2.7	6,580	0.27	2,310
	818.8	60-place Special Child Care Centre (SCCC)	-	-	27.2	0.28	10
	3,826.0	Residential Care Home Centre for the Elderly (RCHE) (150 Places) - resident	-	-	150.0	0.19	37
		Residential Care Home Centre for the Elderly (RCHE) (150 Places) - staff	-	-	13.5	0.28	5
	1,060.0	Child Care Centre (100 places) - Children/ Student	-	-	100.0	0.04	5
		Child Care Centre (100 places) - Staff [5]	-	-	20.0	0.28	7
	350.0	Clubhouse - F&B	-	5.1	18	1.58	37
	3,150.0	Clubhouse - Other Staff	-	3.3	104	0.28	38
	249.9	Retail - F&B	-	5.1	13	1.58	26
	583.1	Retail - Other Staff	-	3.3	19	0.28	7
	320.0	Backwash flow for swimming pool RPB	-	-	-	-	5
				Total	20,364	-	7,389

(1) GFA for school and clubhouse

(2) For calculation of the flat no., please refer to Supporting Planing Statement

(3) The unit is no. of residents per flat and no. of clubhouse employee per 100m^2 GFA, the occupacy rate for clubhouse refer to Commercial and Industrial Floor Space Utilization Survey by PlanD

(4) Notional staffing for the proposed welfare facilities according to the establishment from SWD website.

(5) The children/ staff ratio is assumed to be 5:1 conservatively to inlude child care supervisor, child care worker, child care aide, clerical assisstant and cook/workman.

Part 2 - Calculation of Flows from Kau Wah Keng

Scenario	Discharge Point	ADWF from Different Sources (m^3/day)			Total ADWF (m^3/day)	Contributing Population	Peaking Factor for Sewer(1)	Peaking Factor for SPS(2)	Peak Flow for Sewer (m^3/s)	Peak Flow for SPS (m^3/s)
		Kau Wa Keng Old Village	Kau Wa Keng San Tsuen	CDA						
1. Baseline	FMH4009607 from KWKSPS	1116	419	0	1535	5,684	-	4	-	0.071
2. Early Phase Development	FMH4009607 from KWKSPS (Village Only)	1116	419	0	1535	5,684	-	4	-	0.071
	FMH4009609 from the proposed SPS (CDA Only)	0	0	3,667	3,667	13,581	-	3.5	-	0.149
	FMH4009609 (Total Flow)	1116	419	3,667	5,201	-	-	-	-	-
3. Fully Developed CDA	FMH4009607 from FMH4009599 and KWKSPS (Village Only)	228	393	0	621	2,301	6	4	0.043	0.043
	FMH4009609 from the proposed SPS (CDA Only)	0	0	7,389	7,389	27,368	-	3.0	-	0.257
	FMH4009609 (Total Flow)	228	393	7,389	8,011	-	-	-	-	-

(1) The calculation is only for the sewerage impact to sewer manhole No. FMH4009599 due to village sewerage diversion
(2) Since the sewage from the village sewerage and the CDA are discharged to seperated SPS, the peak flow are estimated seperately.

Additional ADWF = **3,667** m^3/day in Scenario 2, and **7,389** m^3/day in Scenario 3.
Additional Peak Flow to Downstream Sewers = **0.149** m^3/s in Scenario 2, and **0.257** m^3/s in Scenario 3.
 # Regardless of the flow from DWFI and village sewerage, the sewage flow discharged to the downsteam sewer network is controlled by the design capacity of KWKSPS. Therefore, the additional flow in this assessment will be the sewage from the proposed development and will not consider the sewage flow reduction in the villages due to the devlopment.

Design Capacity of the Proposed SPS = **7,389** m^3/day
Design Pump Rate of the Proposed SPS = **0.257** m^3/s
Design Diameter of the Proposed Sewage Rising Mains* = **450** mm
* Assumed flow velocity 1.3 - 2 m/s

Part 3 - Calculation of Other Flows Discharged to Lai King Hill Road
(based on 2021 Population By-Census from CentaMap)

Building Group No.	Total Population	Name of Estate/Building	Zoning in OZP	Projected Population (1)	UFF (m^3/ person/ day)	Projected ADWF (m^3/day), with P_{CIF}=1.3	Contributing Population	Peaking Factor for Sewer	Peak Flow for Sewer (m^3/s)
KT0197	5601	Lai Yan Court	R(A)	5,881	0.19	1,453	9,007	5	**0.141**
KT0200	2657	Happy Villa, Wah Fung Garden, Greenwood Villas and buildings No. 7-22 of Chung Shan Terrace (assume equivalent to Lai Chi Kok Bay Garden)	R(B)	2,790	0.27	979			

(1) 5% growth rate is applied to the residentail population

Appendix G

Calculation for Impact Assessment

Appendix G - Calculation for Potential Sewerage Impacts

Manning Equation is used to estimate the performace of the existing/planned sewers

$$\overline{V} = -\sqrt{32gRS_f}\log\left[\frac{k_s}{14.8R} + \frac{1.255\nu}{R\sqrt{32gRS_f}}\right]$$ *where*

R (hydraulic radius) = A/P;
ks (Roughness coefficient) = 1.5mm for HDPE sewers in poor condition;
S_f *(friction gradient) = sewer gradient for normal flows.*
ν *is kinematic viscosity of water = 1.01e-6 at 1atm and 20°C*

Part 1 - Impact Assessment for Sewers to the Downstream of Manhole No. FMH4009599

Existing Sewers

US MH No.	DS MH No.	Pipe Length (m)	Pipe Diameter (mm)	US IL (mPD)	DS IL (mPD)	Pipe Gradient	Hydaulic Radius R (m)	Full Bore Velocity (m/s)	Full Bore Capacity (m^3/s)	Cumulative Peak Flow (m^3/s)	% Full Bore Capacity	Remarks
FMH4009599	FMH4009600	29.22	225	1.71	1.42	0.0099	0.05625	1.143	0.0455	0.043	95%	Upgrading works required
FMH4009600	FMH4009601	31.62	225	1.42	1.18	0.0076	0.05625	0.999	0.0397	0.043	109%	
FMH4009601	FMH4009602	4.11	225	1.18	1.14	0.0097	0.05625	1.132	0.0450	0.043	96%	
FMH4009602	FMH4009605	8.28	300	1.14	1.1	0.0048	0.075	0.962	0.0680	0.043	63%	

Proposed upgrading works

US MH No.	DS MH No.	Pipe Length (m)	Pipe Diameter (mm)	US IL (mPD)	DS IL (mPD)	Pipe Gradient	Hydaulic Radius R (m)	Full Bore Velocity (m/s)	Full Bore Capacity (m^3/s)	Cumulative Peak Flow (m^3/s)	% Full Bore Capacity	Remarks
FMH4009599	FMH4009600	29.22	300	1.71	1.42	0.0099	0.075	1.382	0.0977	0.043	44%	No adverse impact
FMH4009600	FMH4009601	31.62	300	1.42	1.18	0.0076	0.075	1.208	0.0854	0.043	51%	No adverse impact
FMH4009601	FMH4009602	4.11	300	1.18	1.14	0.0097	0.075	1.368	0.0967	0.043	45%	No adverse impact
FMH4009602	FMH4009605	8.28	300	1.14	1.1	0.0048	0.075	0.962	0.0680	0.043	63%	No adverse impact

Part 2 - Impact Assessment for Sewers to the Downstream of Manhole No. FMH4009607

Proposed Upgrading Works under 4389DS (Manhole Schedule refer to Appendix C1)

US MH No. (4389DS Refernce No.)	DS MH No. (4389DS Refernce No.)	Pipe Length (m)	Pipe Diameter (mm)#	US Invert^ (mPD)	DS Invert^ (mPD)	Gradient	Hydaulic Radius R (m)	Full Bore Velocity (m/s)	Full Bore Capacity (m^3/s)	Additonal Peak Flow from CDA (m^3/s)	Flow from Other Catchments (m^3/s)	Note for Flow from Other Catchments	Total Peak Flow (m^3/s)	% Full Bore Capacity
FMH4009607 (MB17)	FMH4009608 (MB17A)	9.90	600	4.500	4.390	0.011	0.15	2.288	0.647	0.257	0.053	KWKSPS*	0.310	48%
FMH4009608 (MB17A)	FMH4009609 (MB18)	3.97	600	4.390	4.350	0.010	0.15	2.178	0.616	0.257	0.053	/	0.310	50%
FMH4009609 (MB18)	FMH4009567 (MB19)	4.42	600	4.350	4.290	0.014	0.15	2.529	0.715	0.257	0.053	/	0.310	43%
FMH4009567 (MB19)	FMH4009568 (MB20)	5.83	675	4.290	4.240	0.009	0.16875	2.166	0.775	0.257	0.194	Building Group No. KT0197, KT0200	0.451	58%
FMH4009568 (MB20)	FMH4009569 (MB21)	29.30	675	4.240	4.010	0.008	0.16875	2.072	0.741	0.257	0.194	/	0.451	61%
FMH4009569 (MB21)	FMH4009570 (MB22)	29.00	675	4.010	3.810	0.007	0.16875	1.942	0.695	0.257	0.194	/	0.451	65%
FMH4009570 (MB22)	FMH4009571 (MB23)	30.30	675	3.810	3.650	0.005	0.16875	1.698	0.608	0.257	0.194	/	0.451	74%
FMH4009571 (MB23)	MB24	29.02	675	3.650	3.510	0.005	0.16875	1.623	0.581	0.257	0.194	/	0.451	78%
MB24	FMH4009573 (MB25)	35.01	675	3.510	3.330	0.005	0.16875	1.676	0.600	0.257	0.194	/	0.451	75%
FMH4009573 (MB25)	FMH4009575 (MB26)	25.50	675	3.330	3.210	0.005	0.16875	1.603	0.574	0.257	0.194	/	0.451	79%
FMH4009575 (MB26)	FMH4009576 (MB27)	29.95	675	3.210	3.090	0.004	0.16875	1.479	0.529	0.257	0.194	/	0.451	85%
FMH4009576 (MB27)	FMH4009577 (MB28)	14.73	675	3.090	3.030	0.004	0.16875	1.491	0.534	0.257	0.194	/	0.451	84%
FMH4009577 (MB28)	FMH4009578 (MB29)	48.30	675	3.030	2.860	0.004	0.16875	1.386	0.496	0.257	0.194	/	0.451	91%
FMH4009578 (MB29)	FMH4009579 (MB30)	37.08	675	2.860	2.730	0.004	0.16875	1.383	0.495	0.257	0.194	/	0.451	91%
FMH4009579 (MB30)	FMH4009580 (MB31)	42.23	675	2.730	2.580	0.004	0.16875	1.392	0.498	0.257	0.194	/	0.451	90%
FMH4009580 (MB31)	FMH4009581 (MB32)	34.35	675	2.580	2.350	0.007	0.16875	1.913	0.685	0.257	0.194	/	0.451	66%

*For upstream of manhole FMH4009567, design flow of KWKSPS is adopted. The pump rate is assumed to be four times of the average flow under ADWF. Design capacity of KWKSPS is 1,152m^3/day (provided by DSD).

^According to the manhole schedule on the latest design drawings.

The proposed upgrading works will be undertaken by the applicant in case of project mismatch of PWP 4389DS.

Part 3 - Impact Assessment for Sewers to the Downstream of Manhole No. FMH4009445

US MH No.	DS MH No.	Pipe Length (m)	Pipe Diameter (mm)#	US Invert^ (mPD)	DS Invert^ (mPD)	Gradient	Hydaulic Radius R (m)	Full Bore Velocity (m/s)	Full Bore Capacity (m^3/s)	Flow from Upstream* (m^3/s)	% Full Bore Capacity
FMH4009442	FMH4009443	23.28	500	2.550	2.210	0.015	0.125	2.335	0.458	Considered full bore	/
FMH4009589	FMH4009443	43.54	600	2.250	2.210	0.001	0.15	0.654	0.185	Considered full bore	/
FMH4054163	FMH4009444	12.10	150	/	/	0.005	0.0375	0.618	0.011	Considered full bore	/
FMH4009444	FMH4009445	55.33	1500	1.650	1.630	1.005	0.375	38.806	68.576	1.105	2%

*For upstream of manhole FMH4009444, the inlet flow is from one DN150 pipe discharge from FMH4054163, one DN500 pipe from FMH4009442, one DN600 pipe from FMH4009589 and one DN675 pipe from FMH4009580. It is considered full bore flow from the DN150, DN600 and DN500. The sewerage plan can be refered as below.