

(10)

Appendix III

Sewerage Impact Assessment Report
with Response-to-Comment

Items	Comments	Response
Comments on Sewerage Impact Assessment from DSD		
a	This SIA report needs to meet the satisfaction of EPD, the planning authority of sewerage infrastructure.	Noted.
b	The applicant should check and ensure that the existing sewerage system to which the proposed connection will be made have adequate capacity and satisfactory condition to cater for the additional discharge from the site. He should also ensure that the flow from this site will not overload the existing sewerage system.	Noted.
c	Figure 3.1 should show the alignment of all existing public sewerage network in the vicinity of the site. The applicant should ensure that a 3m clear distance between the proposed structure and the existing public sewerage network would be maintained.	Noted. Figure 3.1 shows the alignment of existing public sewerage networks along Sha Tau Kok – Shek Chung Au. It is confirmed that a distance of more than 3m between the proposed structure and the existing public sewerage network is maintained. Please refer to Figure 3.1.
d	Consideration should be given to adopt polyethylene (PE100) pipe for buried sewage pipe beyond the sewage terminal manhole.	Noted. Polyethylene (PE100) pipe will be adopted.
e	The location of the terminal manhole shall be designed and constructed close to the lot boundary as far as practicable.	Noted and revised. The location of the terminal manhole has been designed to be as close to the lot boundary as possible. Please refer to Figure 3.1.

Items	Comments	Response
f	The applicant should conduct site checking to confirm invert levels of the public drainage system to which the sewage from the subject site is proposed to be discharged.	Noted. It is confirmed that no public drainage system exists in the vicinity of the Site. Consequently, the Proposed Development will not discharge sewage into any public drainage facilities.
g	Upon completion of the works, the applicant should apply to DSD for audit of the drainage connections, using an “HBP1” form. The applicant may visit DSD’s website (www.dsd.gov.hk) for details of connection audit fees and arrangements. Then, a joint inspection with DSD shall be arranged and those as-built drainage connection records and materials certificates should be furnished to DSD for record purpose.	Noted.
h	Please note that DSD would only consider taking up the maintenance of connection pipe located downstream of the terminal manhole and outside the private lot boundaries after satisfactory technical audit by DSD. The applicant should be responsible for the maintenance of pipes constructed under this development which have not been handed-over to other parties for maintenance.	Noted.
i	Under the Water Pollution Control Ordinance (Cap 358), discharge of wastewater into stormwater drains is not permitted. The applicant shall ensure that the proposed sewerage works shall	Noted. It is confirmed that no sewage generated from the Proposed Development will be discharged into the stormwater drains. All sewage generated from the Proposed

Items	Comments	Response
	convey all wastewater through the sewage terminal manhole(s) to the communal sewers. Besides, to ensure the sustainability of the public sewerage network, the applicant shall ensure that the surface runoff within the site will be collected and discharged via a stormwater drainage system and not be drained to the public sewerage network.	Development will be discharged through a terminal manhole to the communal sewer. Additionally, surface runoff within the site will be collected and discharged solely into the drainage system.

Comments from Planning Department, dated 8 January 2026

Comments on Sewerage Impact Assessment from DSD		
1	Figure 3.1 has not shown the alignment of all existing public sewerage network in the vicinity of the site (e.g. the sewerage system at Tong To). The applicant should review.	Noted and updated. Please refer to Figure 3.1.
2	RtoC item h: Please update section 5 regarding the handover arrangement of sewerage pipe to DSD. Please note that DSD would only consider taking up the maintenance of connection pipe located downstream of the terminal manhole and outside the private lot boundaries after satisfactory technical audit by DSD. The applicant should be responsible for the maintenance of pipes constructed under this development which have not been handed-over to other parties for maintenance.	Noted and revised. Please refer to Section 5.
3	Unless the applicant can submit satisfactory DIA and SIA reports, I do not support the application.	Noted.

Comments from Planning Department, dated 16 January 2026

Items	Comments	Response
Comment on Sewerage Impact Assessment from DSD		
1	We have no further comment on the draft SIA report. Comment from EPD, the sewerage infrastructure authority, should also be sought.	Noted.

Items	Comments	Response
Comments on Sewerage Impact Assessment from EPD		
1	Section 3.1: Please revise the following if applicable: - “The adequacy in capacities of the existing sewers along Sha Tau Kok Road (Shek Chung Au) has been checked...” - “Furthermore,...San Tsuen, Ng Nga Yiu Tau....” - “...segment between the planned manhole STKSTW1102 STKSTW1100A and STKSTW1106 is assessed.”	Noted and revised. Please refer to Section 3.1.
2	Appendix B: - Please revise as “3. Generation form Ng Nga Yiu Tau”. - In addition to the sewage generated from the proposed columbarium and surrounding villages, please be advised that there is a new planned GIC developments near Shan Tsui village whose sewage (i.e. 550m3/day) is planned to be conveyed into the public sewerage system through manhole STKSTW1100A. Please incorporate such flow in your calculation.	Noted and revised. Please refer to Appendix B. Noted and revised. The sewage generated from the new planned GIC developments has been included in the calculation. Please refer to Appendix B and Appendix C.
3	Appendix C: - Please refer to comment 2 on Appendix B above and update the flow capacity calculation accordingly. - It is noted that the information of pipe segment in between manhole P1 to P3 is provided by CMD/DSD in 2023/24. Please confirm with CMD/DSD if there is any updated data (e.g. the as-built records of those concerned pipes) and update Appendix C if applicable.	Noted and updated. Please refer to Appendix B and Appendix C. Noted. The reply from the CMD/DSD is still pending. It will be further supplemented.

Comments from Planning Department, dated 12 January 2026

Items	Comments	Response
Comments on Sewerage Impact Assessment from EPD		
1	Appendix C: It is noted that the latest sewerage information is to be provided by CMD/DSD. Please supplement and update the SIA Report upon receipt of the latest information.	Noted. The as-built drawing will be provided once available.

Section 12A Rezoning Application for Proposed Columbarium on Various Lots in D.D.41, Sha Tau Kok, New Territories

Sewerage Impact Assessment Report

Reference: P036/03 Issue 3

Date: 14 January 2026

Confidential





Section 12A Rezoning Application for Proposed Columbarium on Various Lots in D.D.41, Sha Tau Kok, New Territories

Sewerage Impact Assessment Report

Reference: P036/03 Issue 3

Date: 14 January 2026

Issue	Prepared By	Date	Checked by	Date	Approved By	Date
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2	Yan Lee	06/01/2026	Cheryl Chan	06/01/2026	Joan Choi	06/01/2026
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1 Introduction

1.1 Background

The Applicant intends to develop a columbarium located on various Lots in D.D. 41, Sha Tau Kok, New Territories (hereafter as “the Site”).

The Applicant proposes to rezone the Site to "Other Specified Uses" annotated "Columbarium" ("OU (Columbarium)") under Section 12A of Town Planning Ordinance (TPO).

Owing to the anticipated change in sewage generation arising from the change of uses, Urban Green Consultants Ltd. (UGC) has been commissioned to conduct a Sewerage Impact Assessment (SIA) to support the S12A rezoning application.

1.2 Objectives of the SIA

The objectives of this SIA are to assess the potential sewerage impact arising from the Proposed Development and recommend the mitigation measures, if necessary, to alleviate the impacts.

1.3 Report Structure

The remaining chapters of this report are shown below:

Chapter 2 – Site Context

Chapter 3 – Evaluation of Sewerage Impact

Chapter 4 – Results and Discussion

Chapter 5 – Conclusion

2 Site Context

2.1 Site Location and Its Environs

The Site is located in Sha Tau Kok and to the north of Sha Tau Kok Road (Shek Chung Au). Currently, to the north and northwest of the Site are village houses. Ma Tseuk Leng and Agong Point are located to the west and northwest of the Site. The Site area is approximately 13,382 m². [Figure 2.1](#) shows the site location and its environs.

2.2 Proposed Development

The Site is intended for the development of columbarium. The proposed development will include area for columbarium, office, multi-function rooms and toilets. Proper landscape and tree planting areas are planned at the remaining area of the Site.

The proposed columbarium will provide a maximum of 6,495 niches. The proposed columbarium is used for columbarium chamber only. There will be no burners / furnace provided for the proposed columbarium as there will be no burning joss paper. During Ching Ming and Chung Yeung Festivals, there will be a significant increase of visitor numbers to the Site. The operation year is year 2030. The general layout plans of the Proposed Development are presented in [Appendix A](#).

2.3 Existing Sewerage Condition

The drainage plans (plan no.: 3-NE-17A-2, 3-NE-17A-4, 3-NE-17B-1, 3-NE-12D-2, 3-NE-12D-3, 3-NE-12D-4, 3-NE-13C-1, 3-NE-13A-1 and 3-NE-13A-3) were obtained from the Drainage Services Department (DSD) in July 2023 and May 2025 to gather the background information on sewerage infrastructure in the vicinity of the Site. The relevant drainage plans are presented in [Figure 3.1](#) for the ease of reference.

3 Evaluation of Sewerage Impact

3.1 Assumptions and Methodology

The adequacy in capacities of the existing sewers along Sha Tau Kok Road (Shek Chung Au) has been checked based on the existing flow estimate and the estimation of future sewage generation from the Proposed Development. Figure 3.1 shows the existing and proposed sewerage system.

The discharges from the site will be collected in the proposed terminal manhole T1 and discharges into the existing 600 mm diameter sewer at the nearest manhole A1 (Manhole No.: FMH1054813). Polyethylene (PE100) pipes will be adopted in all proposed sewers.

According to drainage layout plans from DSD, existing manhole U1 is utilized to collect sewage from Shek Chung Au Sewage Pumping Station at the upstream.

Furthermore, the sewage generated from the villages at the downstream including Tong To, San Tsuen, Nga Yiu Tau, Muk Min Tau, Tsiu Hang, Ha Tam Shui Hang, Sheung Tam Shui Hang and Shan Tsui are included in the assessment.

Under Contract No. DC/2018/03, new sewers are being constructed at the downstream of the proposed development (i.e. Sha Tau Kok Town). The capacity of the sewers up to segment between the planned manhole STKSTW1100A and STKSTW1106 is assessed.

As advised by the Environmental Protection Department, there is a planned GIC development near Shan Tsui Village, with an estimated daily sewage generation of 550 m³/day. The generated sewage will be discharged into manhole STKSTW1100A and has been included in the assessment.

3.2 Sewage Generation

For the sewage flow estimation from the Proposed Development, the planning unit flow factors as stated in the GESF have been adopted. The unit flow factors adopted for the assessment are summarized in Table 3.1.

Table 3.1 Unit Flow Factors Adopted for the Assessment

Source of Sewerage	Reference of Flow rate	Unit Flow Factors
Visitors	"Visitor" of Table 3-4 of "Wastewater Engineering Treatment and Reuse (Fourth Edition)" published by Metcalf & Eddy Inc.	0.015 m ³ /person/day

Source of Sewerage	Reference of Flow rate	Unit Flow Factors
Employees Activities	Commercial Employee + Commercial Activities - J11 Community, Social & Personal Services	0.280 m ³ /person/day
	Domestic (catchment specific) - General - Other Housing"	0.175 m ³ /person/day
Canteen & Kitchen	Commercial Employee + Commercial Activities - J10 Restaurants & Hotels	1.580 m ³ /person/day
Villages	Domestics - Modern Village	0.270 m ³ /person/day

Based on the information provided by the Project Proponent, the estimated maximum number of visitors and employees of the Proposed Development are summarised in [Table 3.2](#).

Table 3.2 Estimation of Maximum Population of the Proposed Development

Type of People	Maximum Number of People per Day	
	Normal days	Festival Days
Visitors	240	4,660
Employees	7	13

The calculations of sewage generation from the Proposed Development during normal days and festival days are provided in [Appendix C](#).

3.3 Sewerage Capacity

According to the "Sewerage Manual – Key Planning Issues and Gravity Collection System" (Sewerage Manual) published by DSD in 2013, the capacities of respective sewers have been calculated based on Manning's equation, assuming full bore flow with no surcharge as below:

$$Q = A_w V$$

$$V = \frac{R^{2/3} S^{1/2}}{n}$$

where A_w = Wetted Area (Cross-sectional area of water body, m²)
 P_w = Wetted perimeter, m
 V = Velocity of flow, m/s
 R = Hydraulic radius (m) = A_w/P_w

S = Slope of the total energy line

n = Manning's roughness coefficient

The sewerage impacts on various segments of the sewer are evaluated by comparing the estimated peak flow against the capacity of the respective sewer segment. The detailed calculations are provided in [Appendix C](#).

4 Results and Discussion

Based on the worst-case scenario, the total estimated daily flow and peak flow of the Proposed Development will be approximately 123.00 m³/day and 0.011 m³/s, respectively. Sewerage generated from the Proposed Development would be discharged into an existing 600 mm diameter sewer at the manhole A1 (Manhole No.: FMH1054813, as shown in Figure 3.1) via the proposed terminal manhole T1 in the Site.

The capacities of each segment for the proposed sewer (segment T1 to A1) and the concerned upstream sewers and downstream sewers between each manhole have been evaluated. The percentage of used capacity for the proposed sewer (i.e. segment T1 – A1) is 7%, while the percentages of capacities for the existing sewers (i.e. U1-A1 and A1-P3) range from 10% to 93%. Estimation of the flows and capacities are detailed in Appendix B and Appendix C, respectively.

Table 4.1 Estimation of Proposed and Existing Pipe Capacities

Pipe Segment	Diameter, mm	Manning's roughness coefficient, m ⁻¹ /3s	Flow Capacity, m ³ /s	Estimated Peak Flow, m ³ /s	Used Capacity, %
Existing Upstream Pipe Segments					
U1 - U2	600	0.015	0.228	0.093	41%
U2 - U3	600	0.015	0.525	0.093	18%
U3 - U4	600	0.015	0.101	0.093	93%
U4 - U5	600	0.015	0.919	0.093	10%
U5 - A1	600	0.015	0.954	0.093	10%
Proposed Pipe Segment					
T1 - A1	300	0.009	0.165	0.011	7%
Existing Downstream Pipe Segments					
A1 - A2	600	0.015	0.618	0.100	16%
A2 - A3	600	0.015	0.584	0.100	17%
A3 - A4	600	0.015	0.590	0.100	17%
A4 - A5	600	0.015	0.701	0.100	14%
A5 - A6	600	0.015	0.805	0.100	12%
A6 - A7	600	0.015	0.438	0.100	23%
A7 - A8	600	0.015	0.781	0.100	13%

Pipe Segment	Diameter, mm	Manning's roughness coefficient, m-1/3s	Flow Capacity, m ³ /s	Estimated Peak Flow, m ³ /s	Used Capacity, %
A8 - A9	600	0.015	0.626	0.100	16%
A9 - A10	600	0.015	0.548	0.100	18%
A10 - A11	600	0.015	0.860	0.100	12%
A11 - A12	600	0.015	0.368	0.100	27%
A12 - A13	600	0.015	0.174	0.100	58%
A13 - A14	600	0.015	0.316	0.100	32%
A14 - A15	600	0.015	0.201	0.100	50%
A15 - A16	600	0.015	0.172	0.100	58%
A16 - A17	600	0.015	0.215	0.120	56%
A17 - A18	600	0.015	0.339	0.120	36%
A18 - A19	600	0.015	0.506	0.120	24%
A19 - A20	600	0.015	0.194	0.120	62%
A20 - A21	600	0.015	0.256	0.131	51%
A21 - A22	600	0.015	0.271	0.131	48%
A22 - A23	600	0.015	0.796	0.131	16%
A23 - A24	600	0.015	0.147	0.131	89%
A24 - A25	600	0.015	0.206	0.131	64%
A25 - A26	600	0.015	0.220	0.131	59%
A26 - P1	490	0.123	0.512	0.131	26%
P1 - P2	490	0.123	0.220	0.182	82%
P2 - P3	490	0.123	0.210	0.182	87%

Based on the assessment results presented in [Table 4.1](#), the flow capacities of all concerned sewers along Sha Tau Kok Road and the proposed sewer are capable to cater for peak flow under worst-case scenario from the Proposed Development, existing upstream and downstream development. As such, there will be no adverse sewerage impact arising from the Proposed Development and no upgrading works on the existing sewage network will be required.

5 Conclusion

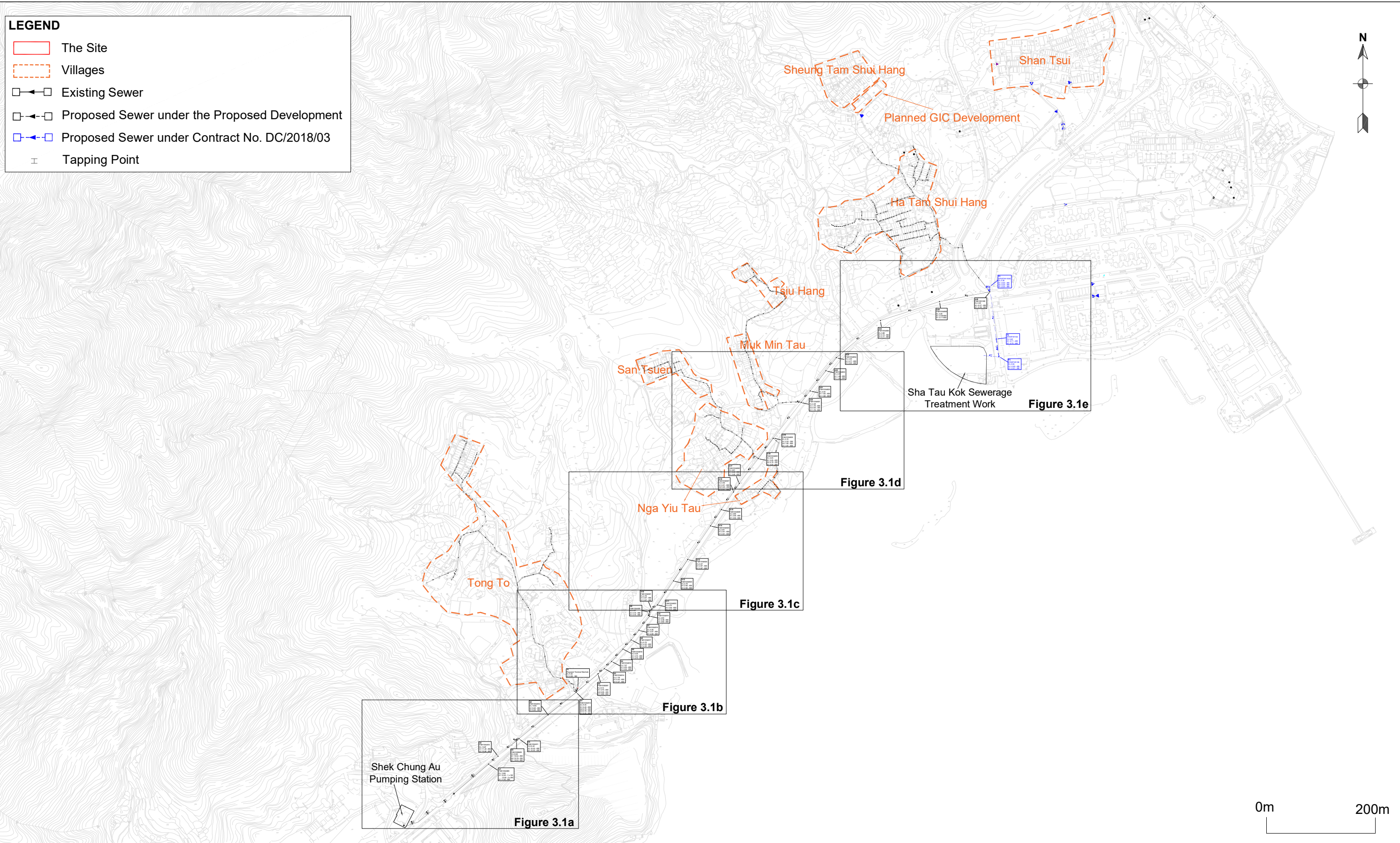
A Sewerage Impact Assessment (SIA) has been conducted to evaluate the possible impacts on the local sewerage network due to the operation of the Proposed Development.

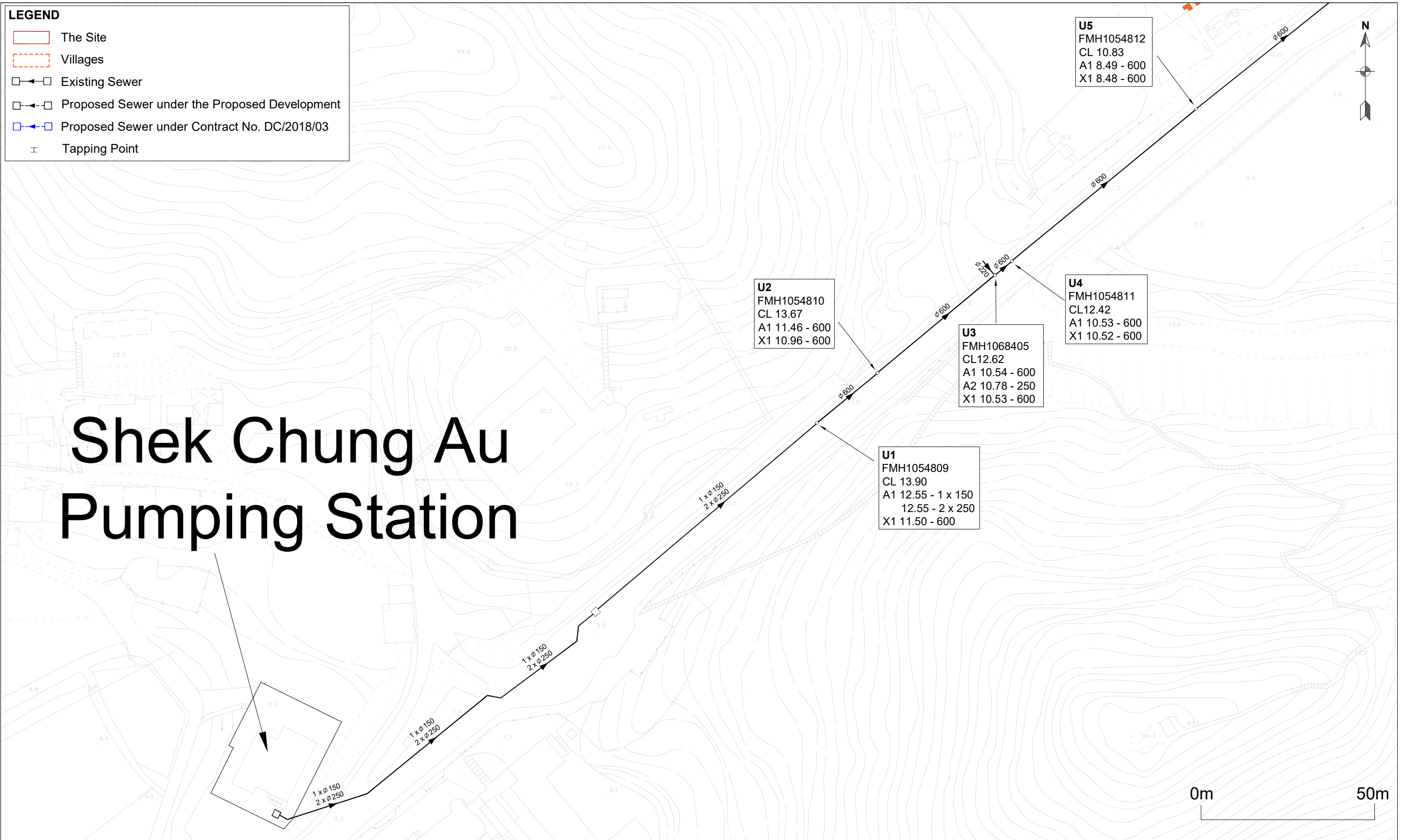
The assessment findings demonstrated and confirmed that there should be sufficient sewage capacity for the public sewers along Sha Tau Kok Road – Shek Chung Au even though there is a change of sewage generation due to the Proposed Development.

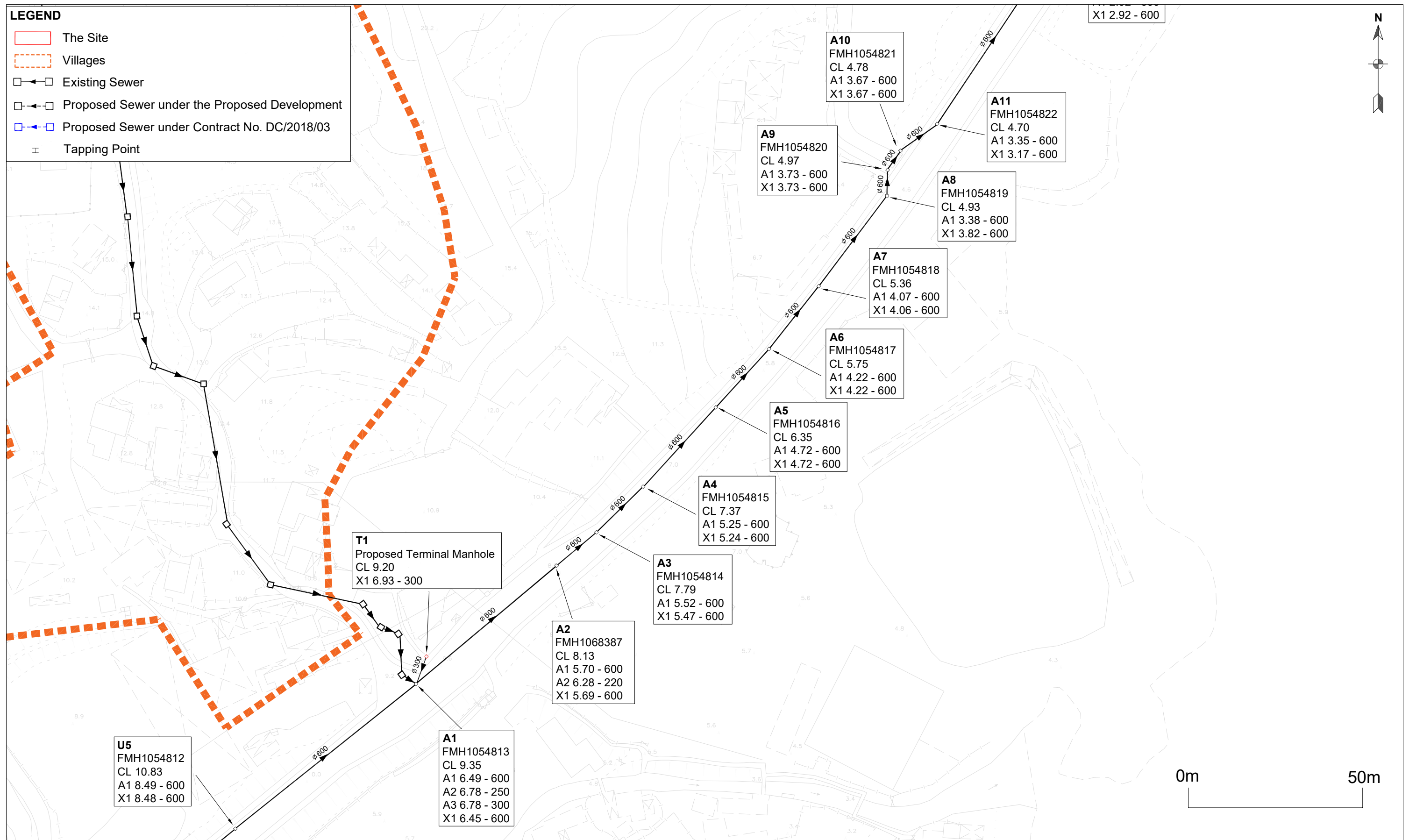
The Project Proponent will be responsible for the design and construction of the proposed sewer at the detailed design stage of the project. The detailed study will be submitted to relevant Government departments for further approval. Upon completion, the connection pipe located downstream of the terminal manhole and outside the private lot boundaries will be handed over to DSD for regular maintenance after satisfactory technical audit by DSD. The Project Proponent will be responsible for the maintenance of pipes constructed within the Site boundary.

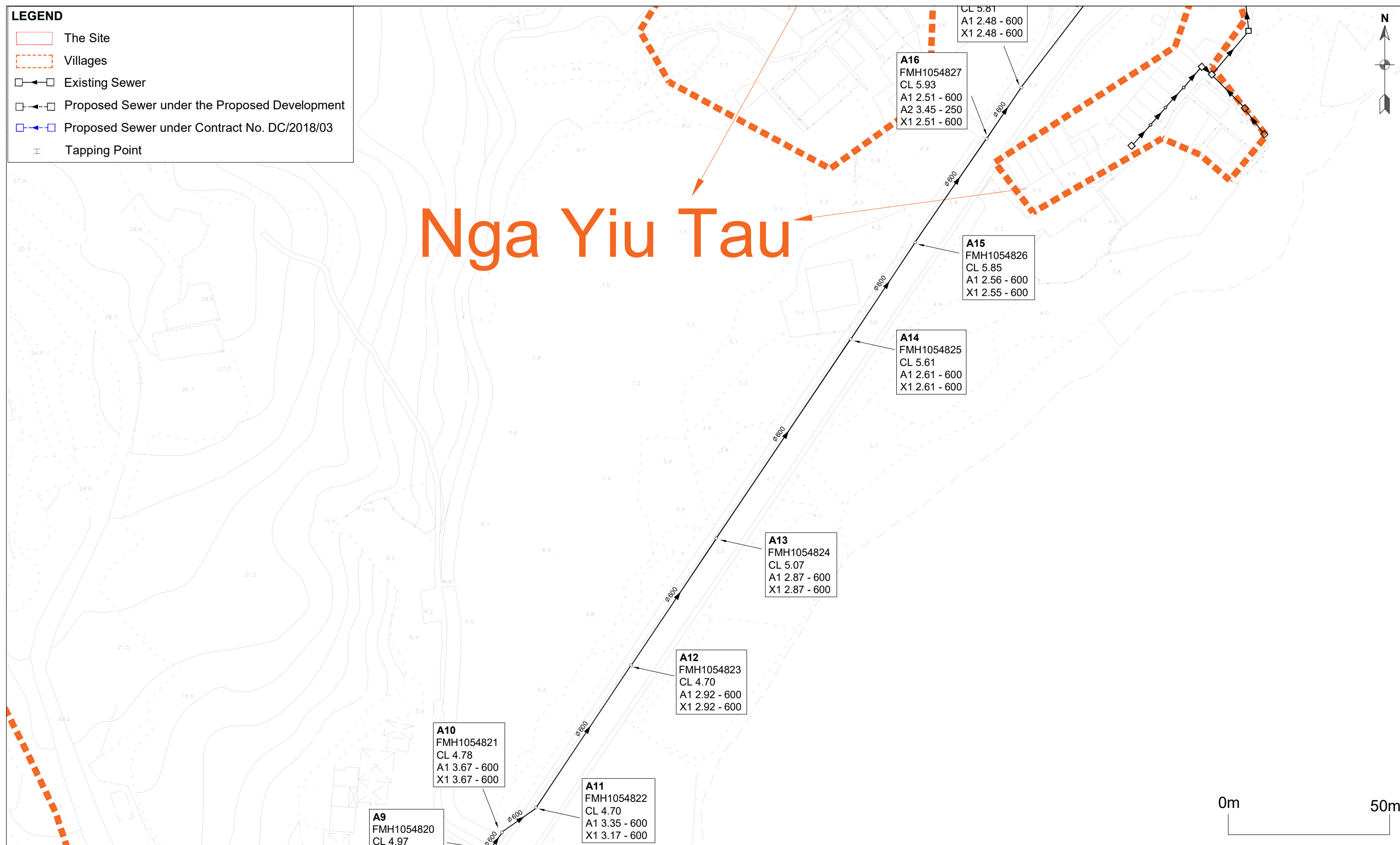
Based on the above, it is concluded that the sewerage impact arising from the Proposed Development should be acceptable.

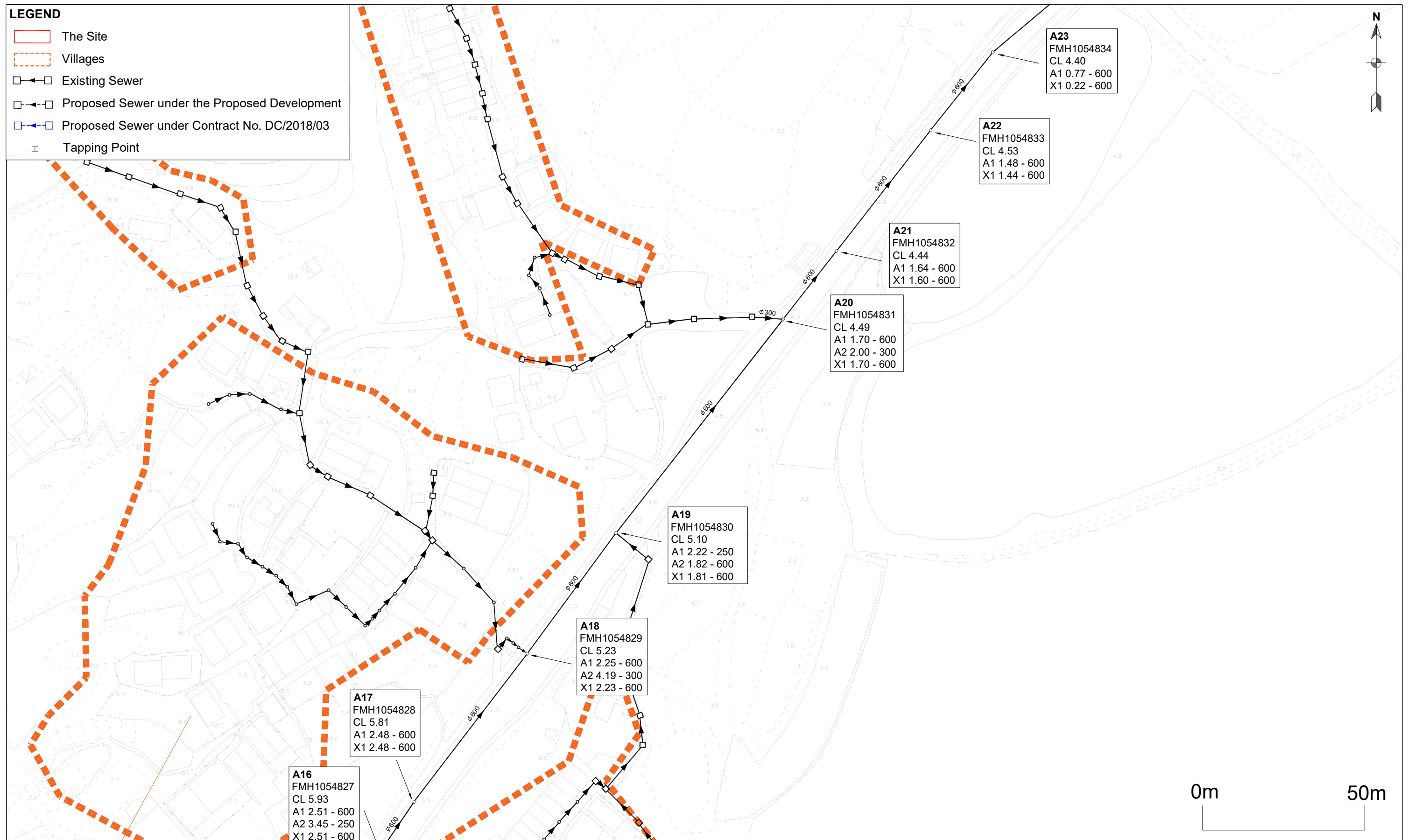
Figures

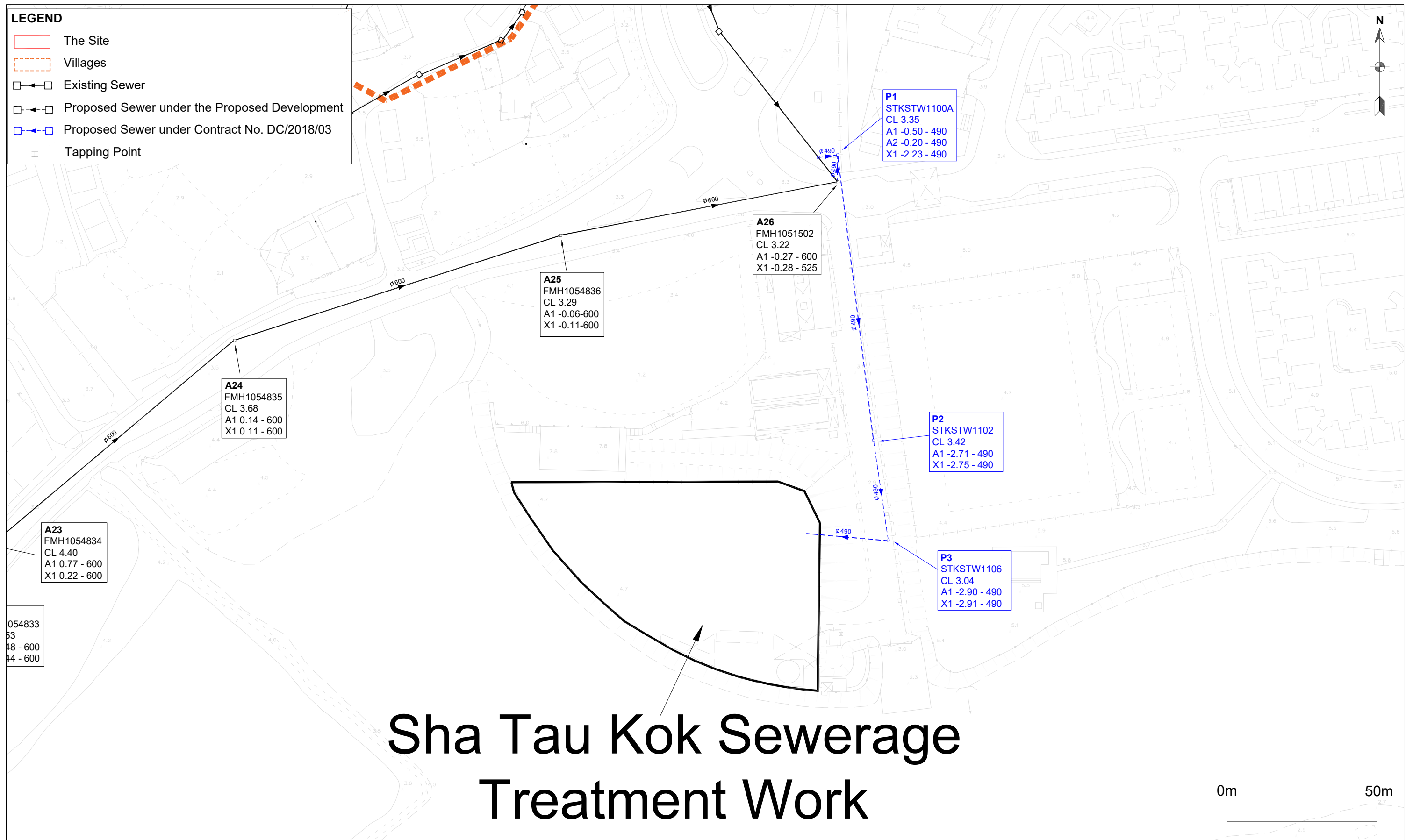












Section 12A Rezoning Application for Proposed Columbarium on Various Lots in D.D.41, Sha Tau Kok,
New Territories

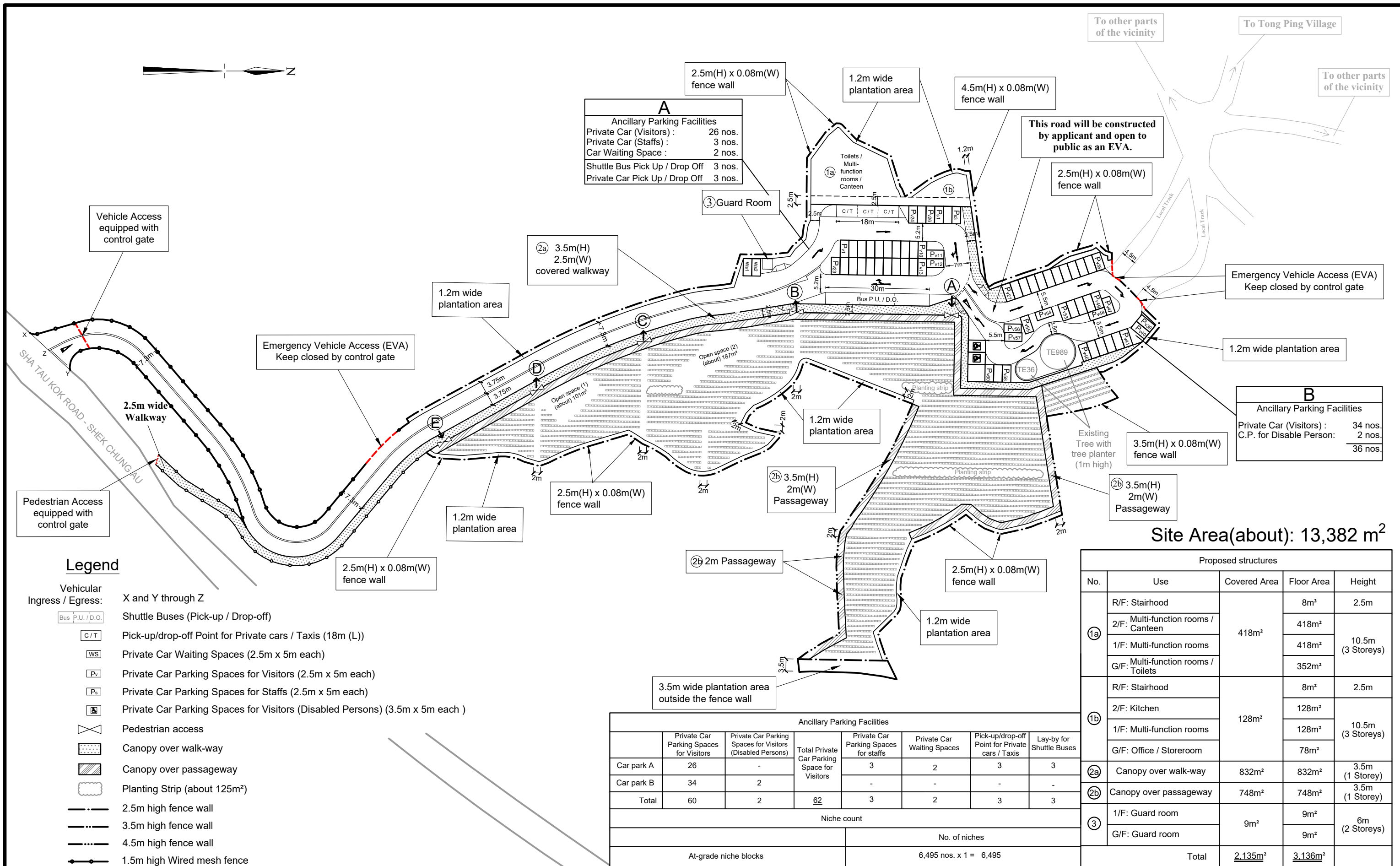
Sewers A24 - P3

Figure 3.1e

Rev. 0

Appendix A

Proposed Layout Plan



1 : 1000 (A3)

February 2026

Master Layout Plan

Rezoning Application from "AGR" and "GB" to "OU (Columbarium)"
on various Lots in D. D. 41
and Adjoining Government Land, Tong To, Sha Tau Kok, N.T.

Goldrich Planners
& Surveyors Ltd.

Plan 4b
(P 17106)

Appendix B

Calculation of Peak Flow

Estimation of Peak Flow from the Proposed Columbarium (Normal Days)			Remark
A1	Generation from Visitors		Provided by Project Proponent. Referred to the unit flow factor for "Visitor" of Table 3-4 of "Wastewater Engineering Treatment and Reuse (Fourth Edition)" published by Metcalf & Eddy Inc.
	Total number of visitors	240 persons	
	Unit flow	0.015 m ³ /person/day	
	Estimated daily flow	3.60 m ³ /day	
A2	Generation from Employees Activities		Provided by Project Proponent. Referred to the planning unit flow for "Commercial Employee" + Commercial Activities - J11 Community, Social & Personal Services" in Table T-2 of GESF ^(a) . Referred to the planning unit flow for "Domestic (catchment specific) - General - Other Housing" in Table T-1 of GESF ^(a) .
	Total number of employees	7 persons	
	Unit flow - Commercial employee + Activities	0.280 m ³ /person/day	
	Unit flow - Domestic (Laundry)	0.175 m ³ /person/day	
	Estimated daily flow	3.19 m ³ /day	
B1	Generation from Canteen & Kitchen		Provided by Project Proponent. Referred to worker density for Restaurants in Table 8 of CIFSUS(a). Referred to the planning unit flow for "Commercial Employee" + Commercial Activities - J10 Restaurants & Hotels" in Table T-2 of GESF ^(a) .
	Total Gross Floor Area	546 m2	
	Estimated floor area per worker density	5.1 workers per 100m2 GFA	
	Total number of people	28 persons	
	Unit Flow	1.58 m ³ /person/day	
	Estimated daily flow	44.00 m ³ /day	
	Total estimated daily flow	50.78 m ³ /day	
	Peaking factor	8	As the contributing population of the flow is <1000 people, peaking factor of 8 is adopted based on Table T-5 (including stormwater allowance) of GESF ^(a) .
	Estimated peak flow	0.005 m ³ /s	
Estimation of Peak Flow from the Proposed Columbarium (Festival Days)			Remark
A1	Generation from Visitors		Provided by Project Proponent. Referred to the unit flow factor for "Visitor" of Table 3-4 of "Wastewater Engineering Treatment and Reuse (Fourth Edition)" published by Metcalf & Eddy Inc.
	Total number of visitors	4660 persons	
	Unit flow	0.015 m ³ /person/day	
	Estimated daily flow	69.90 m ³ /day	
A2	Generation from Employees Activities		Provided by Project Proponent. Referred to the planning unit flow for "Commercial Employee" + Commercial Activities - J11 Community, Social & Personal Services" in Table T-2 of GESF ^(a) . Referred to the planning unit flow for "Domestic (catchment specific) - General - Other Housing" in Table T-1 of GESF ^(a) .
	Total number of employees	13 persons	
	Unit flow - Commercial employee + Activities	0.280 m ³ /person/day	
	Unit flow - Domestic (Laundry)	0.175 m ³ /person/day	
	Estimated daily flow	5.92 m ³ /day	
B1	Generation from Canteen & Kitchen		Provided by Project Proponent. Referred to worker density for Restaurants in Table 8 of CIFSUS(a). Referred to the planning unit flow for "Commercial Employee" + Commercial Activities - J10 Restaurants & Hotels" in Table T-2 of GESF ^(a) .
	Total Gross Floor Area	546 m2	
	Estimated floor area per worker density	5.1 workers per 100m2 GFA	
	Total number of people	28 persons	
	Unit Flow	1.580 m ³ /person/day	
	Estimated daily flow	44.00 m ³ /day	
	Total estimated daily flow	119.81 m ³ /day	
	Peaking factor	8	As the contributing population of the flow is <1000 people, peaking factor of 8 is adopted based on Table T-5 (including stormwater allowance) of GESF ^(a) .
	Estimated peak flow	0.011 m ³ /s	

<u>Estimation of Sewage Generation from Surrounding Villages</u>			
1	Generation from Tong To		
	Number of persons	1000 persons	Advised by EPD on 4 Jul 2023
	Unit flow	<u>0.27</u> m ³ /person/day	Referred to the planning unit flow for "Domestics - Modern Village" in Table T-1 of GESF ^(a) .
	Estimated daily flow	<u><u>270.0</u></u> m ³ /day	
2	Generation from San Tsuen		
	Number of persons	430 persons	Advised by EPD on 4 Jul 2023
	Unit flow	<u>0.27</u> m ³ /person/day	Referred to the planning unit flow for "Domestics - Modern Village" in Table T-1 of GESF ^(a) .
	Estimated daily flow	<u><u>116.10</u></u> m ³ /day	
3	Generation from Nga Yiu Tau		
	Number of persons	860 persons	Advised by EPD on 4 Jul 2023
	Unit flow	<u>0.27</u> m ³ /person/day	Referred to the planning unit flow for "Domestics - Modern Village" in Table T-1 of GESF ^(a) .
	Estimated daily flow	<u><u>232.20</u></u> m ³ /day	
4	Generation from Muk Min Tau		
	Number of persons	500 persons	Advised by EPD on 4 Jul 2023
	Unit flow	<u>0.27</u> m ³ /person/day	Referred to the planning unit flow for "Domestics - Modern Village" in Table T-1 of GESF ^(a) .
	Estimated daily flow	<u><u>135.00</u></u> m ³ /day	
5	Generation from Tsiu Hang		
	Number of persons	170 persons	Advised by EPD on 4 Jul 2023
	Unit flow	<u>0.27</u> m ³ /person/day	Referred to the planning unit flow for "Domestics - Modern Village" in Table T-1 of GESF ^(a) .
	Estimated daily flow	<u><u>45.90</u></u> m ³ /day	
6	Generation from Ha Tam Shui Hang		
	Number of persons	1560 persons	Advised by EPD on 4 Jul 2023
	Unit flow	<u>0.27</u> m ³ /person/day	Referred to the planning unit flow for "Domestics - Modern Village" in Table T-1 of GESF ^(a) .
	Estimated daily flow	<u><u>421.20</u></u> m ³ /day	
7	Generation from Sheung Tam Shui Hang		
	Number of persons	1330 persons	Advised by EPD on 4 Jul 2023
	Unit flow	<u>0.27</u> m ³ /person/day	Referred to the planning unit flow for "Domestics - Modern Village" in Table T-1 of GESF ^(a) .
	Estimated daily flow	<u><u>359.10</u></u> m ³ /day	
8	Generation from Shan Tsui		
	Number of persons	1220 persons	Advised by EPD on 4 Jul 2023
	Unit flow	<u>0.27</u> m ³ /person/day	Referred to the planning unit flow for "Domestics - Modern Village" in Table T-1 of GESF ^(a) .
	Estimated daily flow	<u><u>329.40</u></u> m ³ /day	
9	Genertion from a Planned GIC Development near San Tsui Village		
	Estimated daily flow	<u><u>550.00</u></u> m ³ /day	Advised by EPD on 5 January 2026

Note:
(a) GESF – “Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning” published by Environmental Protection Department (EPD) in 2005.

Appendix C

Flow Capacity Calculation

A. Estimated Pipe Capacity and Adequacy Check for Proposed and Existing Sewerage System

Pipe Segment	Length m	Level (out) mPD	Level (in) mPD	d m	A _w m ²	P _w m	R m	s -	n ^{[1][2]} m ^{-1/3} s	V m/s	Q _c m ³ /s	Q _d m ³ /day	PF	Q _p m ³ /s	Is Q _c > Q _p ? Y/N	% of capacity %	Remark
Existing Upstream Pipe Segments																	
U1 - U2	21.8	11.50	11.46	0.600	0.283	1.885	0.150	0.002	0.015	0.806	0.228	1344.00	6	0.093	Y	41%	The peak daily flow of Shek Chung Au Pumping Station is provided by DSD. Q _p = flow of former segment U1 - U2. Q _p = flow of former segment U2 - U3. Q _p = flow of former segment U3 - U4. Q _p = flow of former segment U4 - U5.
U2 - U3	43.2	10.96	10.54	0.600	0.283	1.885	0.150	0.010	0.015	1.856	0.525	1344.00	6	0.093	Y	18%	
U3 - U4	5.6	10.53	10.53	0.600	0.283	1.885	0.150	0.000	0.015	0.357	0.101	1344.00	6	0.093	Y	93%	
U4 - U5	68.1	10.52	8.49	0.600	0.283	1.885	0.150	0.030	0.015	3.250	0.919	1344.00	6	0.093	Y	10%	
U5 - A1	61.9	8.48	6.49	0.600	0.283	1.885	0.150	0.032	0.015	3.373	0.954	1344.00	6	0.093	Y	10%	
Proposed Pipe Segment																	
T1 - A1	10.8	6.93	6.78	0.300	0.071	0.942	0.075	0.014	0.009	2.329	0.165	119.81	8	0.011	Y	7%	Assume Q _p = the estimated peak flow from the proposed development (worst-case scenario).
Existing Downstream Pipe Segments																	
A1 - A2	55.5	6.45	5.70	0.600	0.283	1.885	0.150	0.014	0.015	2.187	0.618	1733.81	5	0.100	Y	16%	Q _p = flow of the Proposed Development, former segment U5-U6 and the flow from Tong To.
A2 - A3	14.1	5.69	5.52	0.600	0.283	1.885	0.150	0.012	0.015	2.067	0.584	1733.81	5	0.100	Y	17%	Q _p = flow of former segment A1 - A2.
A3 - A4	17.9	5.47	5.25	0.600	0.283	1.885	0.150	0.012	0.015	2.088	0.590	1733.81	5	0.100	Y	17%	Q _p = flow of former segment A2 - A3.
A4- A5	30.0	5.24	4.72	0.600	0.283	1.885	0.150	0.017	0.015	2.478	0.701	1733.81	5	0.100	Y	14%	Q _p = flow of former segment A3 - A4.
A5 - A6	21.9	4.72	4.22	0.600	0.283	1.885	0.150	0.023	0.015	2.846	0.805	1733.81	5	0.100	Y	12%	Q _p = flow of former segment A4 - A5.
A6 - A7	22.1	4.22	4.07	0.600	0.283	1.885	0.150	0.007	0.015	1.549	0.438	1733.81	5	0.100	Y	23%	Q _p = flow of former segment A5 - A6.
A7 - A8	31.6	4.06	3.38	0.600	0.283	1.885	0.150	0.022	0.015	2.761	0.781	1733.81	5	0.100	Y	13%	Q _p = flow of former segment A6 - A7.
A8 - A9	6.5	3.82	3.73	0.600	0.283	1.885	0.150	0.014	0.015	2.213	0.626	1733.81	5	0.100	Y	16%	Q _p = flow of former segment A7 - A8.
A9 - A10	5.7	3.73	3.67	0.600	0.283	1.885	0.150	0.011	0.015	1.937	0.548	1733.81	5	0.100	Y	18%	Q _p = flow of former segment A8 - A9.
A10 - A11	12.2	3.67	3.35	0.600	0.283	1.885	0.150	0.026	0.015	3.042	0.860	1733.81	5	0.100	Y	12%	Q _p = flow of former segment A9 - A10.
A11 - A12	52.3	3.17	2.92	0.600	0.283	1.885	0.150	0.005	0.015	1.302	0.368	1733.81	5	0.100	Y	27%	Q _p = flow of former segment A10 - A11.
A12 - A13	46.5	2.92	2.87	0.600	0.283	1.885	0.150	0.001	0.015	0.617	0.174	1733.81	5	0.100	Y	58%	Q _p = flow of former segment A11 - A12.
A13 - A14	73.7	2.87	2.61	0.600	0.283	1.885	0.150	0.004	0.015	1.118	0.316	1733.81	5	0.100	Y	32%	Q _p = flow of former segment A12 - A13.
A14 - A15	35.2	2.61	2.56	0.600	0.283	1.885	0.150	0.001	0.015	0.709	0.201	1733.81	5	0.100	Y	50%	Q _p = flow of former segment A13 - A14.
A15 - A16	38.1	2.55	2.51	0.600	0.283	1.885	0.150	0.001	0.015	0.610	0.172	1733.81	5	0.100	Y	58%	Q _p = flow of former segment A14 - A15.
A16 - A17	18.4	2.51	2.48	0.600	0.283	1.885	0.150	0.002	0.015	0.760	0.215	2082.11	5	0.120	Y	56%	Q _p = flow of former segment A15 - A16 and the flow from San Tsuen & Ng Yiu Tau.
A17 - A18	56.7	2.48	2.25	0.600	0.283	1.885	0.150	0.004	0.015	1.199	0.339	2082.11	5	0.120	Y	36%	Q _p = flow of former segment A16 - A17.
A18 - A19	45.3	2.23	1.82	0.600	0.283	1.885	0.150	0.009	0.015	1.790	0.506	2082.11	5	0.120	Y	24%	Q _p = flow of former segment A17 - A18.
A19 - A20	82.8	1.81	1.70	0.600	0.283	1.885	0.150	0.001	0.015	0.686	0.194	2082.11	5	0.120	Y	62%	Q _p = flow of former segment A18 - A19.
A20 - A21	26.0	1.70	1.64	0.600	0.283	1.885	0.150	0.002	0.015	0.904	0.256	2263.01	5	0.131	Y	51%	Q _p = flow of former segment A19 - A20 and the flow from Muk Min Tau & Tsiu Hang.
A21 - A22	46.4	1.60	1.48	0.600	0.283	1.885	0.150	0.003	0.015	0.957	0.271	2263.01	5	0.131	Y	48%	Q _p = flow of former segment A20 - A21.
A22 - A23	29.9	1.44	0.77	0.600	0.283	1.885	0.150	0.022	0.015	2.815	0.796	2263.01	5	0.131	Y	16%	Q _p = flow of former segment A21 - A22.
A23 - A24	105.0	0.22	0.14	0.600	0.283	1.885	0.150	0.001	0.015	0.520	0.147	2263.01	5	0.131	Y	89%	Q _p = flow of former segment A22 - A23.
A24 - A25	113.4	0.11	-0.06	0.600	0.283	1.885	0.150	0.001	0.015	0.729	0.206	2263.01	5	0.131	Y	64%	Q _p = flow of former segment A23 - A24.
A25 - A26	93.2	-0.11	-0.27	0.600	0.283	1.885	0.150	0.002	0.015	0.780	0.220	2263.01	5	0.131	Y	59%	Q _p = flow of former segment A24 - A25.
A26 - P1	8.1	-0.28	-0.5	0.490	0.189	1.539	0.123	0.027	0.015	2.715	0.512	2263.01	5	0.131	Y	26%	Q _p = flow of former segment A25 - A26.
P1 - P2	95.0	-2.23	-2.71	0.490	0.189	1.539	0.123	0.005	0.015	1.169	0.220	3922.71	4	0.182	Y	82%	Q _p = flow of former segment A26 - P1 and the flow from Sheung Tam Shui Hang, Ha Tam Shui Hang, Shan Tsui & a Planned GIC Development.
P2 - P3	32.8	-2.75	-2.9	0.490	0.189	1.539	0.123	0.005	0.015	1.113	0.210	3922.71	4	0.182	Y	87%	Q _p = flow of former segment P2 - P3.

Note

[1] Foul sewer material of concrete in fair condition is assumed for existing public sewers. Manning's roughness coefficient of 0.015 is adopted.

[2] Foul sewer material of Polyethylene (PE100) will be adopted for proposed sewers. As advised by supplier, manning's roughness coefficient of 0.009 is adopted.

Legend

A_w = Wetted Area, m²
P_w = wetted perimeter, m
R = hydraulic radius (m) = A_w/P_w
s = slope of the total energy line
n = Manning's roughness coefficient, m^{-1/3}s
V = Velocity of flow calculated based on Manning's Equation, m/s

Q_c = Flow Capacity, m³/s
Q_d = Estimated cumulative daily flow, m3/s
PF = Peaking Factor
Q_p = Estimated cumulative peak flow, m3/s

Appendix D

Information of Nominal Diameter at Pipe Segment A26 to P3 from DSD

Cheryl Chan

From: thlam@dsd.gov.hk
Sent: Wednesday, January 3, 2024 10:18 AM
To: Cheryl Chan
Cc: Joan Choi
Subject: Re: [Internet]RE: [Internet]RE: [Internet]Request for new sewers information under Contract No. DC/2018/03 in Sha Tau Kok [Filed 08 Jan 2024 09:22]

Follow Up Flag: Follow up
Flag Status: Completed

Dear Cheryl,

The nominal diameter of the concerned section of sewers is 490mm.

Regards,
Alex Lam
E/CM15, DSD
Tel: 2594 7262



From: Cheryl Chan <cheryl.chan@urbangreen.hk>
To: "thlam@dsd.gov.hk" <thlam@dsd.gov.hk>
Cc: Joan Choi <joan.choi@urbangreen.hk>
Date: 29/12/2023 05:48 PM
Subject: [Internet]RE: [Internet]RE: [Internet]Request for new sewers information under Contract No. DC/2018/03 in Sha Tau Kok
Serial No.:

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Dear Alex,

Attached please find the comments from EPD and the plan with mark up . Thanks.

Regards,
Cheryl
3565 3317

From: thlam@dsd.gov.hk <thlam@dsd.gov.hk>
Sent: Friday, December 29, 2023 3:24 PM
To: Cheryl Chan <cheryl.chan@urbangreen.hk>
Cc: Joan Choi <joan.choi@urbangreen.hk>
Subject: Re: [Internet]RE: [Internet]Request for new sewers information under Contract No. DC/2018/03 in Sha Tau Kok

Dear Cheryl,

We have provided the layout plan and manhole schedule under DC/2018/03 to you in my email dated 25 July 2023. Would you please provide copy of the comments from EPD and specify on plan that which section of new sewers you are referring to in your email below. Thanks.

Regards,
Alex Lam
E/CM15, DSD
Tel: 2594 7262



Follow us on:



From: Cheryl Chan <cheryl.chan@urbangreen.hk>
To: "thlam@dsd.gov.hk" <thlam@dsd.gov.hk>
Cc: Joan Choi <joan.choi@urbangreen.hk>
Date: 20/12/2023 16:55
Subject: [Internet]RE: [Internet]Request for new sewers information under Contract No. DC/2018/03 in Sha Tau Kok
Serial No.:

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=====

Dear Mr. Lam,

We refer to **Rezoning Application No. Y/NE-STK/4.**

As per the comment from EPD on Oct 2023 regarding the Sewerage Impact Assessment, we would like to know the nominal diameter (ND) for the new sewers from Sha Tau Kok Road – Shek Chung Au to Sha Tau Kok town under Contract No. DC/2018/03.

Regards,
Cheryl
3565 3317
Urban Green Consultants Ltd.

From: thlam@dsd.gov.hk <thlam@dsd.gov.hk>

Sent: Tuesday, July 25, 2023 5:37 PM

To: Cheryl Chan <cheryl.chan@urbangreen.hk>

Subject: Re: [Internet]Request for new sewers information under Contract No. DC/2018/03 in Sha Tau Kok [Filed 26 Jul 2023 16:22]

Dear Cheryl,

Please find attached for your information.

Regards,
Alex Lam
E/CM15, DSD
Tel: 2594 7262



Follow us on:



From: Cheryl Chan <cheryl.chan@urbangreen.hk>
To: "thlam@dsd.gov.hk" <thlam@dsd.gov.hk>
Cc: Joan Choi <joan.choi@urbangreen.hk>
Date: 21/07/2023 10:46

Subject: [Internet]Request for new sewers information under Contract No. DC/2018/03 in Sha Tau Kok
Serial No.:

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Dear Mr. Lam

We are the environmental consultant for the **Rezoning Application No. Y/NE-STK/4**.

As requested by the Environmental Department to facilitate our sewerage impact assessment, please kindly advise the information of the new sewers from Sha Tau Kok Road – Shek Chung Au to Sha Tau Kok town under Contract No. DC/2018/03. Many Thanks.

You may contact Ms. YAM Ying Yu, Frances (3427 9856) from EPD regarding the SIA comments they have issued.

Best regards.

Cheryl

3565 3317

Urban Green Consultants Ltd.

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