Appendix IV

Drainage and Sewerage Impact Assessment

Prepared by

Ramboll Hong Kong Limited

PROPOSED RESIDENTIAL INSTITUTION (STUDENT HOSTEL) AT MIDDLETON TOWERS, 140 POK FU LAM ROAD

DRAINAGE AND SEWERAGE IMPACT ASSESSMENT

Date	July 2026
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Project Reference	AECHUMT_EI00
Document No.	R10049_v1.3

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Appendix 2.1	Detailed Sewerage Impact Assessment Calculations_ Proposed Development
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1. INTRODUCTION

1.1 Project Background

1.1.1 The Subject Site is mainly zoned as “Residential (Group C)” (“R(C)”) with minor portion zoned as “Green Belt” (“GB”) under the Approved Pok Fu Lam Outline Zoning Plan (OZP) (No. S/H10/23). It is generally surrounded by University Hall to the Southeast, Woodbury Court to the southwest, and Alberose to the northwest.

1.1.2 Figure 1.1 shows the location of the Subject Site and its environment.

1.1.3 Ramboll Hong Kong Limited has been appointed to conduct the sewerage impact assessment for the Subject Site.

1.2 Proposed use

1.2.1 It consists of student hostel. Development Parameters for the Proposed use is summarised in Table 1.1.

Table 1.1 Development Parameters of the Proposed use

	Parameters
Site Area (m^2)	About 8,900
No. of Student Hostel (Rooms)	900

1.2.2 The typical floor plans of the planning statement of the Proposed use are shown in Appendix 1.1.

1.2.3 The tentative completion year for the Proposed use is 2028.

1.3 Sewerage Impact

1.3.1 The potential sewerage impact arising from the operation phase should be assessed and mitigated to fulfil the requirements under the relevant legislations and guidelines. The details will be discussed in Section2.

1.4 Drainage Impact

1.4.1 The potential drainage impact arising from the operation phase should be assessed and mitigated to fulfil the requirements under the relevant legislations and guidelines. The details will be discussed in Section 3.

2. SEWERAGE IMPACT ASSESSMENT

2.1 Scope of Work

2.1.1 The aim of this study is to compare the sewage flow generated from the Subject Site with the sewage flow from the existing usage, and to determine whether adverse sewerage impact is anticipated.

2.2 Assessment Criteria and Methodology

2.2.1 According to the Drainage Record obtained from the Geoinfo map and the approved SIA report of Student Residences and Residential Development for the University of Hong Kong at 142 Pok Fu Lam Road prepared by Ramboll (Report No. R7842_v4.0), there is public sewer network serving the Subject Site and the surrounding environment. Figure 2.1 shows the location of the sewer sections concerned.

2.2.2 The Environmental Protection Department's (EPD's) Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning, Version 1 (GESF) is referred to estimate the quantity of the sewage generated from the Subject Site and the existing development. Sewage flow parameters and global peaking factors in this document are adopted.

2.2.3 The Commercial and Industrial Floor Space Utilization Survey (CIFSUS) conducted by the Planning Department is used to determine the worker density for various economic activities and planned usage type.

2.2.4 In order to represent worst-case scenario, the sewerage impact assessment was conducted based on the assumption that all phases of the Subject Site have been completed.

2.2.5 Based on the designed use, the sewage flow from the proposed hostel development is determined and compared with the capacity of the existing sewerage system in order to investigate the necessity of sewerage system upgrading work.

2.3 Sewerage System

2.3.1 With reference to the approved SIA report of Student Residences and Residential Development for the University of Hong Kong at 142 Pok Fu Lam Road prepared by Ramboll (Report No. R7842_v4.0) and the sewerage system shown in Geoinfo Map, the sewage generated from the Proposed use will be discharged to the manhole FMH1.

2.3.2 The sewerage system is shown in Figure 2.1.

2.4 Wastewater Generated by the Existing Use and the Proposed Development

2.4.1 The sewage generated by the Existing use is given in Table 2.1 shown below. Detailed Calculation refers to Appendix 2.2.

Table 2.1 Estimated Peak Flow Generated by Existing Use

Calculation for Sewage Generation Rate of the Existing Development				
1a. Staff Quarters				
Number of residents	=	274	people	
Unit Flow Factors	=	0.27	m^3/day	(R2 in Table T-1 of GESF)
Sewage generation rate	=	52.0	m^3/day	
Total Flow from Existing Development				
Total ADWF in Catchment A1	=	55.9	m^3/day	
Catchment Inflow Factor PCIF	=	1.0		(Refer to Table T-4 of GESF - Sandy Bay)
Total ADWF with Catchment Inflow Factor PCIF	=	55.9	m^3/day	

Contributing Population	=	207	people	(Refer to Section 12 of GESF -- Contributing population is the Flow rate with PCIF ÷ 0.27, while 0.27 is the average unit flow factor of all typical residents plus employees)
Peaking factor	=	8		(Refer to Table T-5 of GESF for population <1,000 incl. stormwater allowance)
Peak Flow	=	5.2	L/s	

2.4.2 The sewage generated by the Proposed use is given in Table 2.2 shown below. Detailed Calculation refers to Appendix 2.1.

Table 2.2 Estimated Peak Flow from Proposed Use

Calculation for Sewage Generation Rate of the Proposed use				
1a. Dormitory for Student and staff				
Number of residents	=	900	people	
Unit Flow Factors	=	0.19	m^3/day	(Institutional and Special Class in Table T-1 of GESF)
Sewage generation rate	=	171	m^3/day	
Total Flow from Proposed Development				
Total ADWF in Catchment A1	=	171.0	m^3/day	
Catchment Inflow Factor PCIF	=	1.0		(Refer to Table T-4 of GESF - Sandy Bay)
Total ADWF with Catchment Inflow Factor PCIF	=	171.0	m^3/day	
Contributing Population	=	633	people	(Refer to Section 12 of GESF -- Contributing population is the Flow rate with PCIF ÷ 0.27, while 0.27 is the average unit flow factor of all typical residents plus employees)
Peaking factor	=	8		(Refer to Table T-5 of GESF for population <1,000 incl. stormwater allowance)
Peak Flow	=	15.8	L/s	

2.4.3 For the Proposed Development, the total number of residents will increase from 274 to 900, leading to an increase in sewage discharge of approximately 115.1m^3/day. The hydraulic capacity of the affected existing and future sewerage system, including the contribution from the Application Site, has been estimated and is shown in Appendix 2.1 for reference.

2.4.4 The discharge arrangement will be same as the existing condition.

2.5 Assessment of Sewerage Impact

2.5.1 Appendix 2.1 shows the details calculation on the estimated hydraulic capacity of the existing sewer and the calculation of the amount of the sewerage entering each segment of the said sewer network. The sewage generated from the Proposed Development will be discharged from the terminal manhole no.: FLH7002765 (S0) within the Subject Site to the public manhole FMH7022565 at Pok Fu Lam Road via the manholes FMH1, FMH2, and FMH3. The FMH1, FMH2, and FMH3 were constructed under the Project “The Student Residences and Residential Development for the University of Hong Kong at 142 Pok Fu Lam Road”. The locations of the terminal manholes and sewers are shown in Figure 2.1.

2.5.2 The potential sewerage impact due to the Proposed Development has been quantitatively addressed. Total sewage generation rate from the Proposed Development is estimated to be 171.0 m^3/day (i.e. peak flow 15.8 litre/sec) which is larger than that of the existing use (55.9 m^3/day (i.e. peak flow 5.2 litre/sec).

2.5.3 Based on the assessment results, it is found that the capacity of sewers FMH7022563, FMH7022561, FMH7022559, FMH7022572, and FMH7022554 are not sufficient for the sewerage generated from the Proposed Development and the surrounding catchment. Therefore, these sewers are proposed to upgrade. The proposed upgrading works are summarized in Table 2.3 and Figure 2.3.

2.5.4 With the proposed upgrading works, the above-mentioned sewers in section 2.5.3 would have sufficient capacity.

Table 2.3 Proposed Upgrading Works

Segment	Manhole Reference	Manhole Reference	Length (m)	Original Size (Ø)	Upgraded Size (Ø)
S4-S5	FMH7022565	FMH7022563	44.9	225	300
S5-S6	FMH7022563	FMH7022561	16.3	225	300
S6-S7	FMH7022561	FMH7022559	36.2	225	300
S7-S8	FMH7022559	FMH7022572	31.8	225	300
S8-S9	FMH7022572	FMH7022554	38.8	225	300
S9-S10	FMH7022554	FMH7022552	18.2	225	300

2.5.5 Detailed calculation is presented in **Appendix 2.1** as follows:

- Table 1: Estimated Sewage Flow for Proposed Development
- Tables 2- 12: Estimated Sewage Flow for Catchment Areas
- Tables 13: Estimated Sewage Flow from Swimming Pool
- Table 14: Hydraulic Capacity of Existing Sewers
- Table 15: Summary of Sewage Flow from Proposed Development and Catchment Areas
- Table 16: Hydraulic Capacity of the Sewerage System with Estimated Sewage Flow - After Upgrading Works
- Table 17: The Comparison of Estimated Peak Flow Generated by Proposed Development and Existing Use

2.5.6 Detailed calculation is presented in **Appendix 2.2** as follows:

- Table 1: Estimated Sewage Flow for Existing Development

2.6 Discussion on Further Studies

2.6.1 For further downstream manholes FMH7022550 to FMH7022538 (i.e., S11- S17), it is observed that the capacity of these sewers is also not sufficient for the existing and proposed development. The assessment results with the existing use and the proposed use are shown in the Table 17 in Appendix 2.1.

2.6.2 The current proposed 900-bedroom hostel use is an interim use and a full redevelopment of the Subject Site is under review. The tentative program of this interim use is around 4 years. The applicant commits to further liaise with DSD and submit a revised SIA based on the finalized design of the Middleton Development at redevelopment stage. Should upgrading of underground sewers from manholes FMH7022550 to FMH7022538 (i.e., S11- S17) be identified as necessary based on the revised SIA at the redevelopment stage, the applicant will consider undertaking the necessary upgrading works if entrusted by the Authority.

Table 2.4 The Comparison of Estimated Peak Flow Generated by Proposed Development and Existing Use

Segment	Manhole Reference	Manhole Reference	Proposed Development			Existing Use			Δ Change of % Capacity Occupied	Additional Peak Flow from Proposed Development with Catchment (L/s)
			Peak Flow with Catchment (L/s)	Peak Flow of Proposed Development only (L/s)	% Capacity Occupied by the Proposed Development	Peak Flow with Catchment (L/s)	Peak Flow of Proposed Development only (L/s)	% Capacity Occupied by the Existing Use		
S11-S12	FMH7022550	FMH7022549	80.8	15.8	140%	74.0	6.9	128%	9%	6.7
S12-S13	FMH7022549	FMH7022545	85.5		99%	78.7		91%	9%	6.8
S13-S14	FMH7022545	FMH7022544	91.8		144%	85.0		133%	8%	6.8
S14-S15	FMH7022544	FMH7022539	96.0		188%	89.3		175%	8%	6.7
S15-S16	FMH7022539	FMH7022538	96.0		150%	89.3		139%	8%	6.7
S16-S17	FMH7022538	FMH7022536	104.0		191%	97.3		179%	7%	6.7

3. DRAINAGE IMPACT ASSESSMENT

3.1 Discussion

3.1.1 Surface runoff is mainly from rainfall and it will be directed to existing public storm drains. As the existing site is currently on hard-paved ground, it is anticipated that the proposed development will not affect the drainage path or lead to any changes in the runoff behaviour.

3.1.2 There is no change or abandonment of existing drains and hence no extra stormwater discharge is imposed. Therefore, adverse impact on the existing drainage system is not anticipated and a detailed drainage impact assessment is therefore unnecessary.

3.1.3 An existing stormwater manhole (SLH7017621) is located within the Subject Site and serves the existing building. There will be no changes to its current configuration under the Proposed Development. The surrounding existing stormwater network is illustrated in Figure 3.1, and the location of the drainage reserve area is shown in Figure 3.2.

4. CONCLUSION

4.1.1 The Subject Site is mainly zoned as “R(C)” with minor portion zoned as “GB” on the Approved Pok Fu Lam Outline Zoning Plan (OZP) (No. S/H10/23).

4.1.2 The Proposed use consists of student hostel. The estimated sewage generation rate of the Proposed use has been quantitatively addressed.

4.1.3 The estimated peak sewage generation from the Proposed Development is about 15.8 litre/sec.

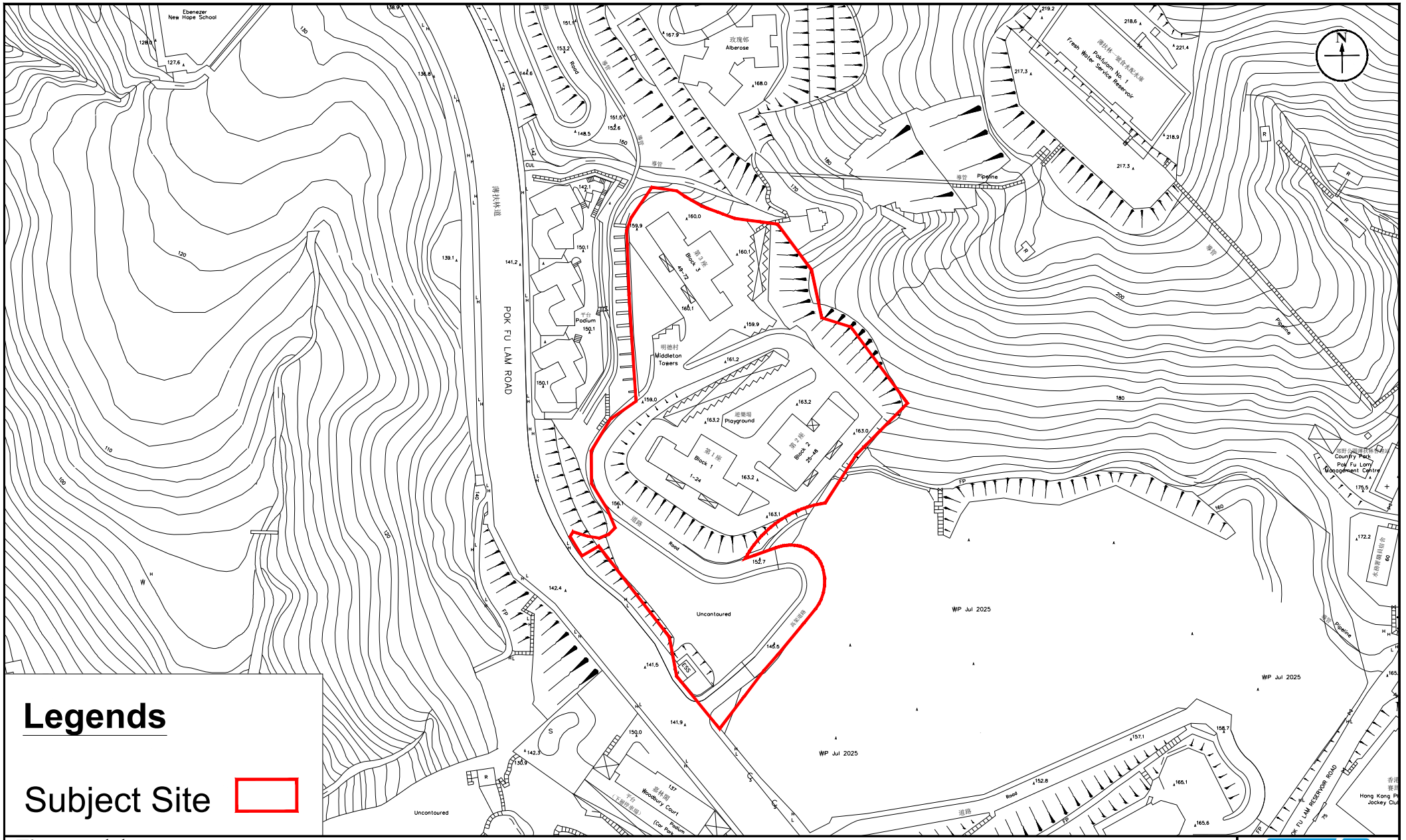
4.1.4 The potential sewerage impact arisen from the Proposed Development has been quantitatively assessed. Six (6) of existing Ø225mm sewerage pipes (S4-S10) will be upgraded to Ø300mm sewerage pipes.

4.1.5 The current proposed 900-bedroom hostel use is an interim use, and a full redevelopment of the Subject Site is under review. The tentative program of this interim use is around 4 years. The applicant commits to further liaise with DSD and submit a revised SIA based on the finalized design of the Middleton Development at redevelopment stage. Should upgrading of underground sewers from manholes FMH7022550 to FMH7022538 (i.e., S11- S17) be identified as necessary based on the revised SIA at the redevelopment stage, the applicant will consider undertaking the necessary upgrading works if entrusted by the Authority.

4.1.6 Surface runoff is mainly from rainfall and it will be directed to existing public storm drains. As the existing site is currently on hard-paved ground, it is anticipated that the proposed development will not affect the drainage path or lead to any changes in the runoff behaviour.

4.1.7 There is no change or abandonment of existing drains and hence no extra stormwater discharge is imposed. Therefore, adverse impact on the existing drainage system is not anticipated and a detailed drainage impact assessment is therefore unnecessary.

Figures



Legends

Subject Site

Figure: 1.1	RAMBOLL
Title: Location of Subject Site and its Environs	Drawn by: SC
	Checked by: TC
Project: Redevelopment of Middleton Towers at Pok Fu Lam	Rev.: 1.0
	Date: Feb 2026

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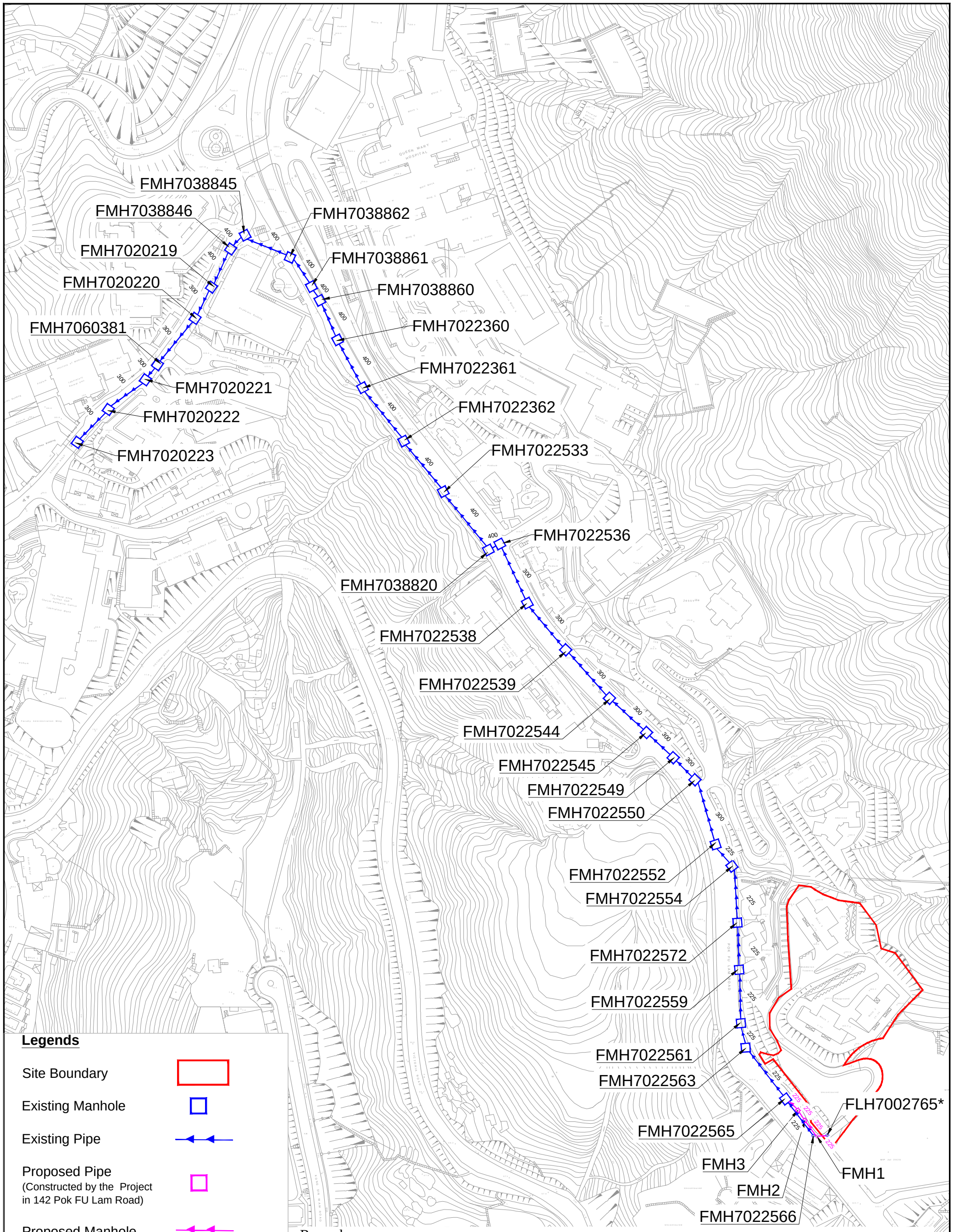

Remark:
For existing sewerage terminal manhole FLH7002765 would be maintained by the Hong Kong University

Figure: 2.1	RAMBOLL
Title: Existing Sewerage System in the Vicinity of the Subject Site	Drawn by: SC Checked by: TC
Project: Proposed Residential Institution (Student Hostel) at Middleton Towers, 140 PokfuLam Road	Rev.: 1.3 Date: Jul 2026

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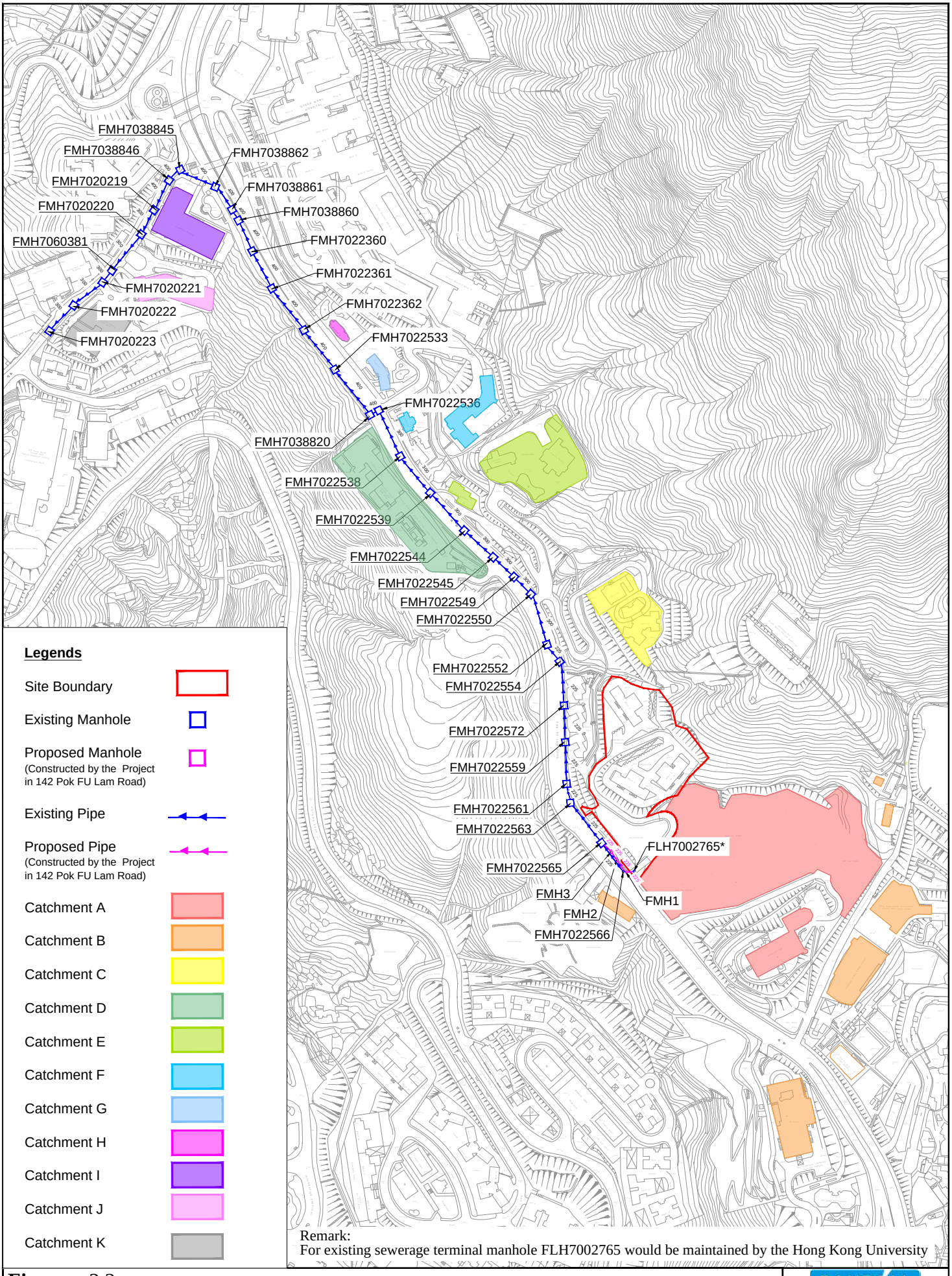

Remark:
For existing sewerage terminal manhole FLH7002765 would be maintained by the Hong Kong University

Figure: 2.2	RAMBOLL
Title: Existing Sewerage System and Catchment Areas in the Vicinity of the Subject Site	Drawn by: SC Checked by: TC
Project: Proposed Residential Institution (Student Hostel) at Middleton Towers, 140 PokfuLam Road	Rev.: 1.3 Date: Jul 2026

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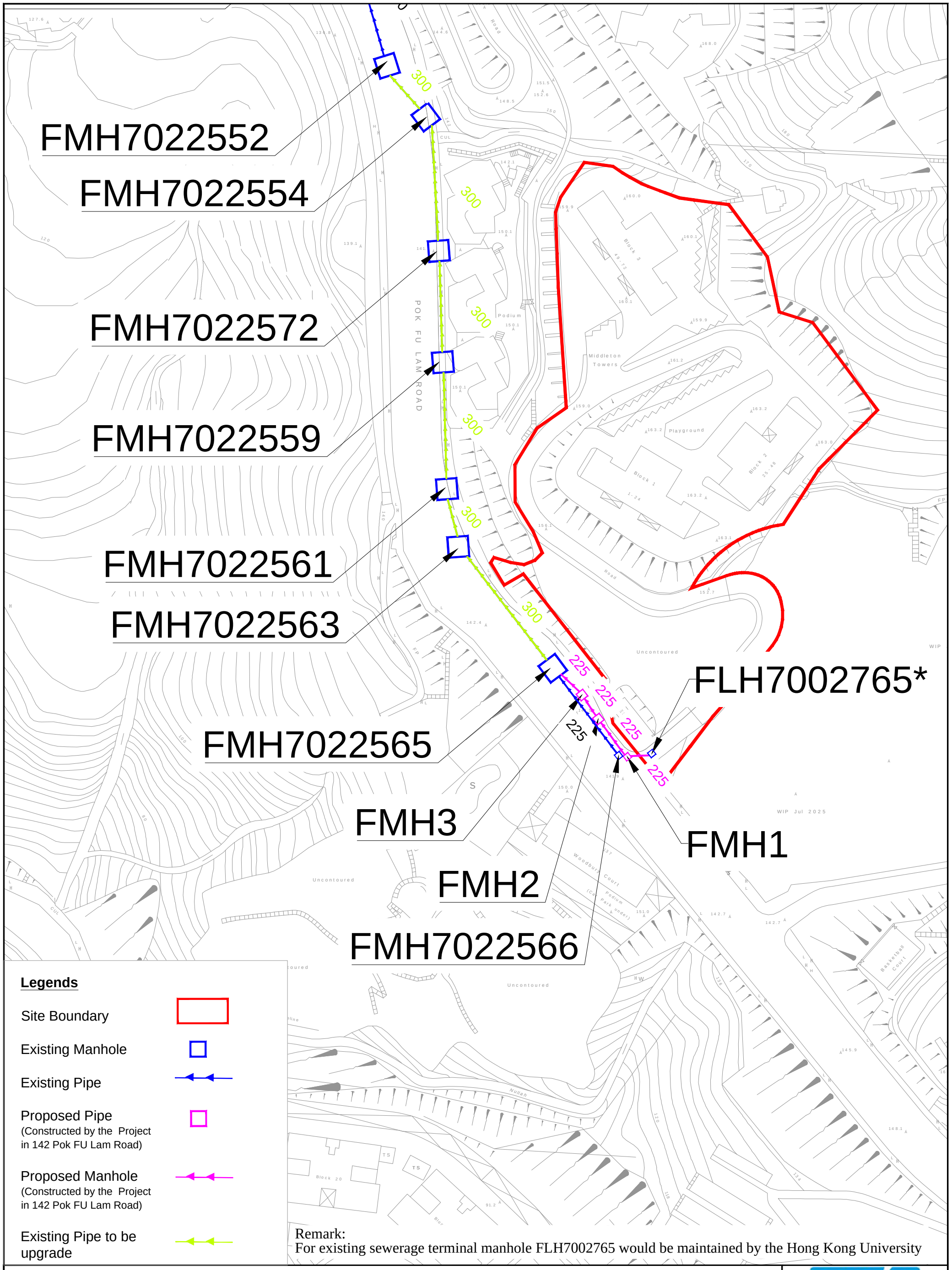

Remark:
For existing sewerage terminal manhole FLH7002765 would be maintained by the Hong Kong University

Figure: 2.3	RAMBOLL
Title: Proposed Upgrading Sewerage System	Drawn by: SC Checked by: TC
Project: Proposed Residential Institution (Student Hostel) at Middleton Towers, 140 PokfuLam Road	Rev.: 1.3 Date: Jul 2026

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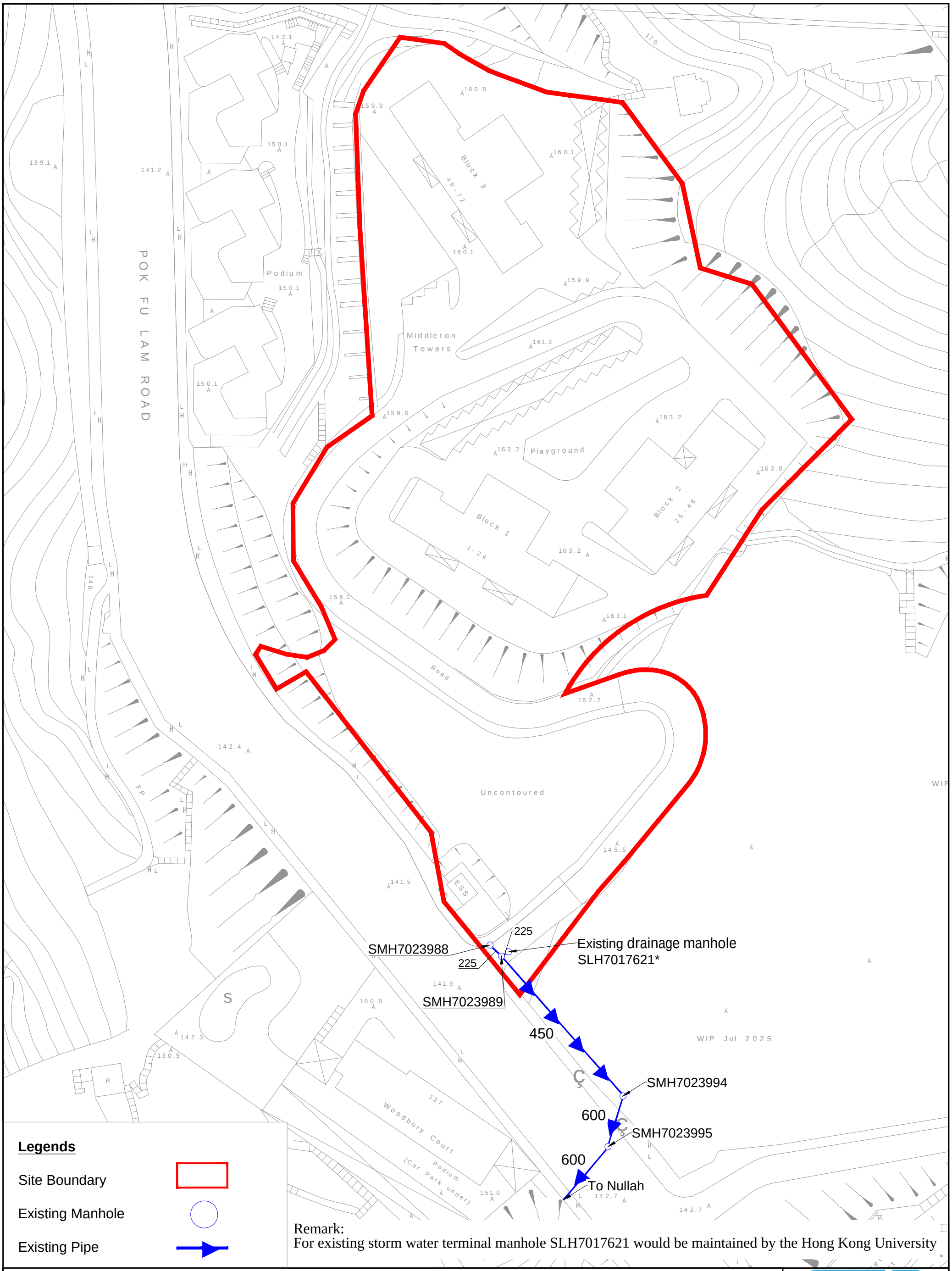

Figure: 3.1	RAMBOLL
Title: Existing Storm Water System in the Vicinity of the Subject Site	Drawn by: SC Checked by: TC
Project: Proposed Residential Institution (Student Hostel) at Middleton Towers, 140 PokfuLam Road	Rev.: 1.3 Date: Jul 2026

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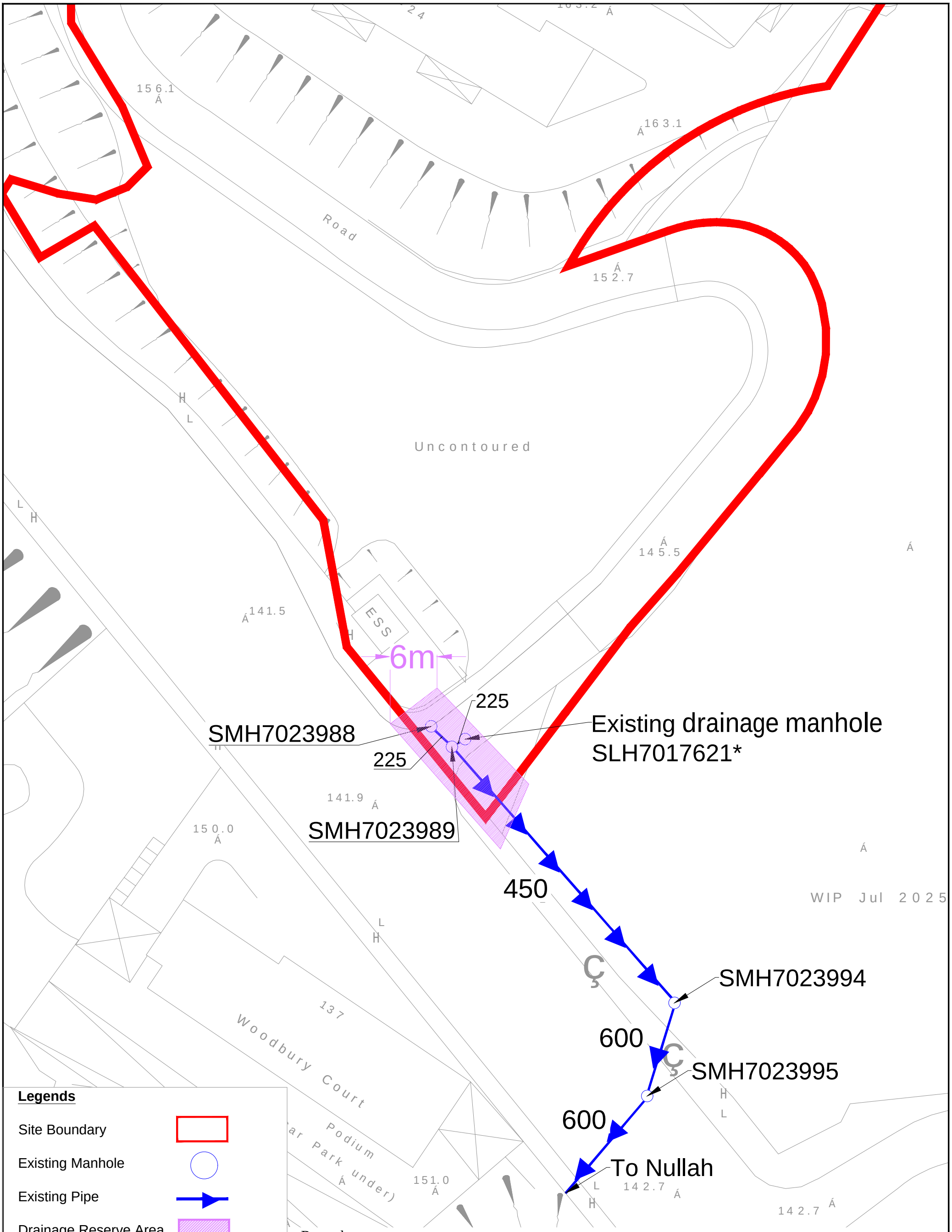

Remark:
For existing storm water terminal manhole SLH7017621 would be maintained by the Hong Kong University

Figure: 3.2	RAMBOLL
Title: The Location of the Drainage Reserve Area	Drawn by: SC Checked by: TC
Project: Proposed Redevelopment of Middleton Towers at Pok Fu Lam	Rev.: 1.2 Date: Jul 2026

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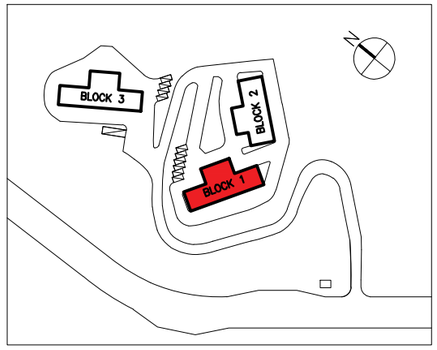
Appendix 1.1 The Typical Floor Plans of the Planning Statement



REFUSE STORAGE
AND MATERIAL
RECOVERY CHAMBER

COMMON
AREA

UP

M/E

COMMON AREA /
ANCILLARY FACILITIES

MAIN
LOBBY

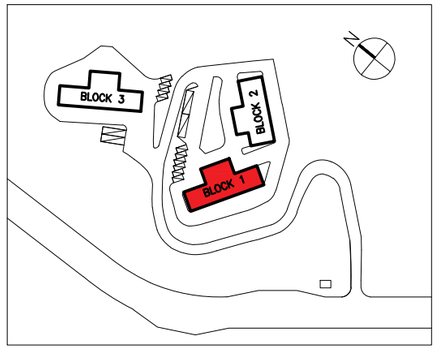
UP

COMMON AREA /
ANCILLARY FACILITIES

M/E = MECHANICAL & ELECTRICAL ROOM

BLOCK 1 – G/F LAYOUT

SCALE 1:100



B = BATH ROOM / SHARED BATH ROOM

BLOCK 1 TYPICAL (1/F – 12/F ; 12 STOREYS)

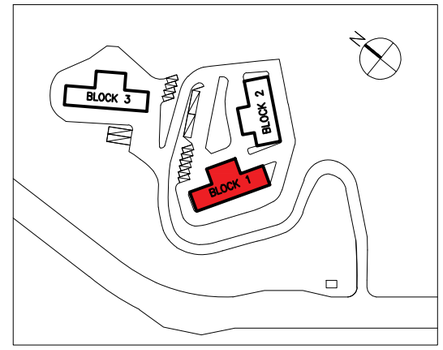
SCALE 1:100

BLOCK A TYPICAL FLOOR = 26 UNITS APPROX.

BLOCK 1 TO 3

TOTAL PROPOSED UNITS	=	900 UNITS
BLOCK 1 TYP	=	26 APPROX.
BLOCK 2 TYP	=	23 APPROX.
BLOCK 3 TYP	=	26 APPROX.

SUBJECT TO FUTURE DETAIL DESIGN



B = BATH ROOM / SHARED BATH ROOM

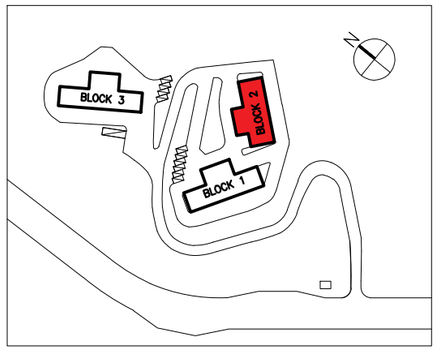
BLOCK 1 WITH ACCESSIBLE ROOM

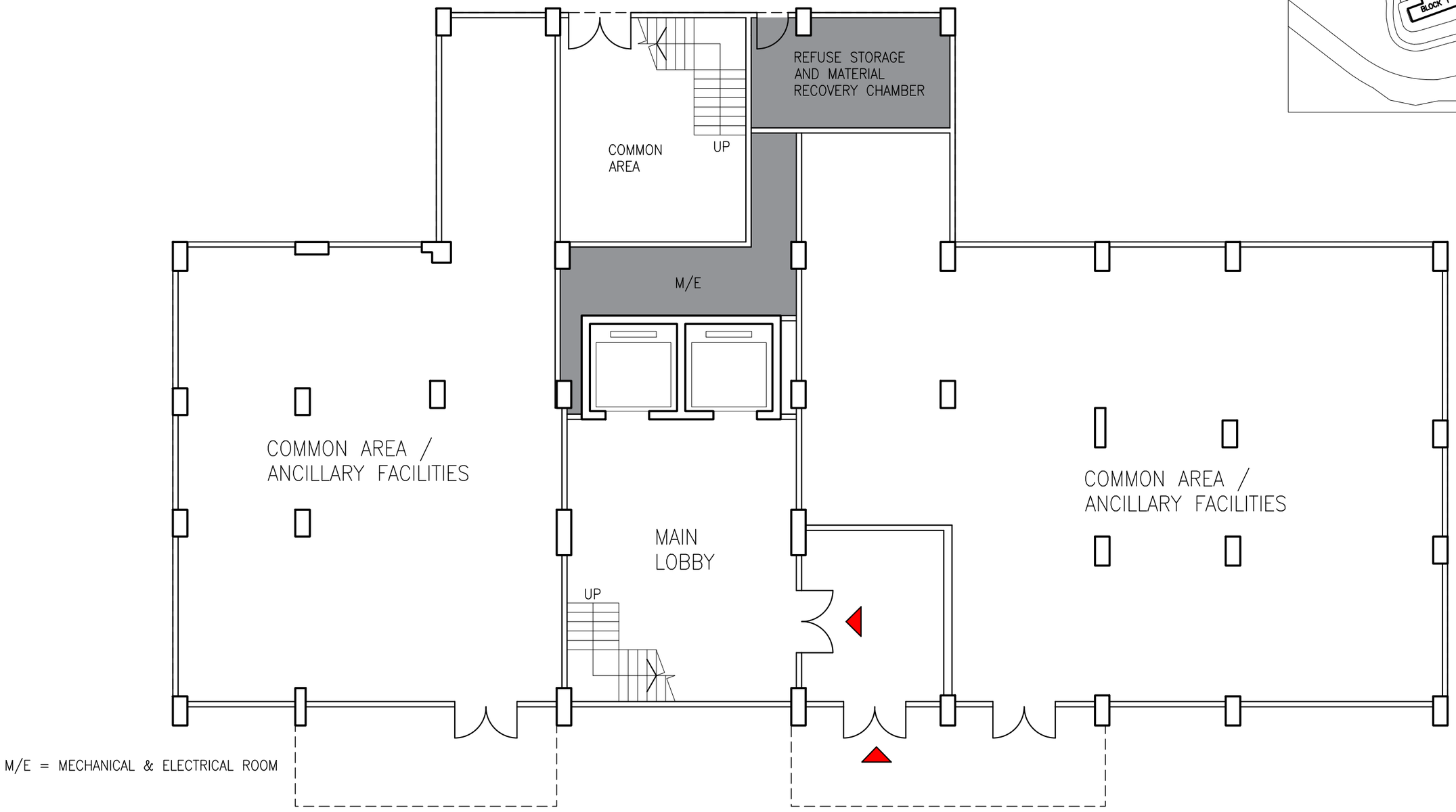
SCALE 1:100

BLOCK A TYPICAL FLOOR = 26 UNITS APPROX.

BLOCK 1 TO 3

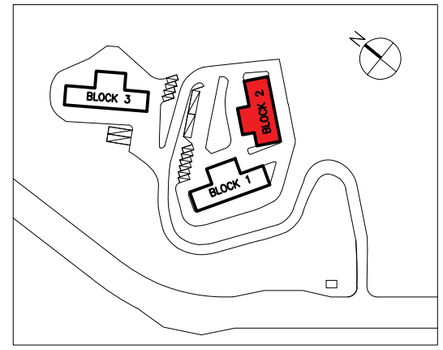
TOTAL PROPOSED UNITS = 900 UNITS
BLOCK 1 TYP = 26 APPROX.
BLOCK 2 TYP = 23 APPROX.
BLOCK 3 TYP = 26 APPROX.
SUBJECT TO FUTURE DETAIL DESIGN





BLOCK 2 – G/F LAYOUT

SCALE 1:100



BLOCK 2 TYPICAL (1/F – 12/F ; 12 STOREYS)

SCALE 1:100

BLOCK B TYPICAL FLOOR = 23 UNITS APPROX.

BLOCK 1 TO 3

TOTAL PROPOSED UNITS	=	900 UNITS
BLOCK 1 TYP	=	26 APPROX.
BLOCK 2 TYP	=	23 APPROX.
BLOCK 3 TYP	=	26 APPROX.

SUBJECT TO FUTURE DETAIL DESIGN

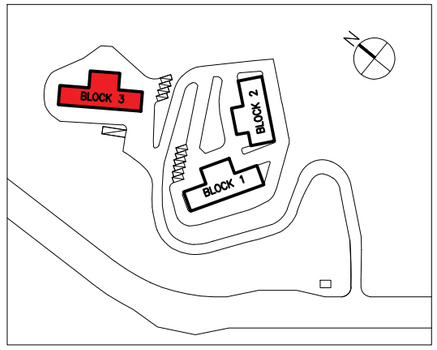
BLOCK 2 WITH ACCESSIBLE ROOM

SCALE 1:100

BLOCK B TYPICAL FLOOR = 23 UNITS APPROX.

BLOCK 1 TO 3

TOTAL PROPOSED UNITS = 900 UNITS
BLOCK 1 TYP = 26 APPROX.
BLOCK 2 TYP = 23 APPROX.
BLOCK 3 TYP = 26 APPROX.
SUBJECT TO FUTURE DETAIL DESIGN



REFUSE STORAGE
AND MATERIAL
RECOVERY CHAMBER

COMMON
AREA

UP

M/E

COMMON AREA /
ANCILLARY FACILITIES

MAIN
LOBBY

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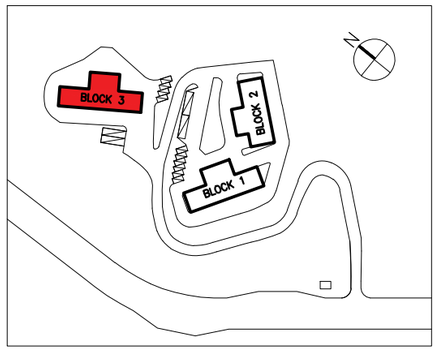
COMMON AREA /
ANCILLARY FACILITIES

M/E = MECHANICAL & ELECTRICAL ROOM

BLOCK 3 – G/F LAYOUT

SCALE 1:100



B = BATH ROOM / SHARED BATH ROOM

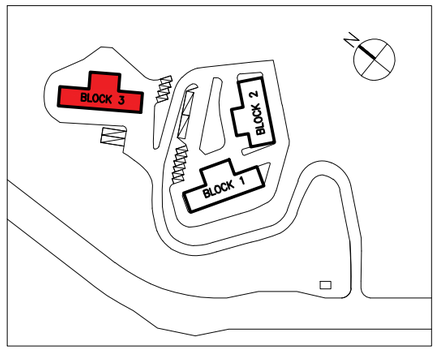
BLOCK 3 TYP (1/F – 12/F ; 12 STOREYS)

SCALE 1:100

BLOCK C TYPICAL FLOOR = 26 UNITS APPROX.

BLOCK 1 TO 3

TOTAL PROPOSED UNITS = 900 UNITS
BLOCK 1 TYP = 26 APPROX.
BLOCK 2 TYP = 23 APPROX.
BLOCK 3 TYP = 26 APPROX.
SUBJECT TO FUTURE DETAIL DESIGN



B = BATH ROOM / SHARED BATH ROOM

BLOCK 3 WITH ACCESSIBLE ROOM

SCALE 1:100

BLOCK C TYPICAL FLOOR = 26 UNITS APPROX.

BLOCK 1 TO 3

TOTAL PROPOSED UNITS = 900 UNITS
BLOCK 1 TYP = 26 APPROX.
BLOCK 2 TYP = 23 APPROX.
BLOCK 3 TYP = 26 APPROX.
SUBJECT TO FUTURE DETAIL DESIGN

Appendix 2.1 Detailed Sewerage Impact Assessment Calculations_ Proposed Development

Table 1 Calculation for Sewage Generation Rate of the Proposed Development

Estimated Sewage Flow from Proposed Development				
1a. Dormitory for Student and Staff				
Number of residents	=	900	people	
Unit Flow Factors	=	0.19	m^3/day	(Institutional and Special Class in Table T-1 of GESF)
Sewage generation rate	=	171.0	m^3/day	
Total Flow from Proposed Development				
Total ADWF in Proposed Developemt	=	171.0	m^3/day	
Catchment Inflow Factor PCIF	=	1.0		Refer to Table T-4 of GESF - Sandy Bay
Total ADWF with Catchment Inflow Factor PCIF	=	171.0	m^3/day	
				(refer to Section 12 of GESF -- Contributing population is the Flow rate with PCIF ÷ 0.27, while 0.27 is the average unit flow factor of all typical residents plus
Contributing Population	=	633	people	employees)
Peaking factor	=	8		Refer to Table T-5 of GESF for population <1,000 incl. stormwater allowance
Peak Flow	=	15.8	L/s	

Table 2 - Estimated Sewage Flow for Catchment Areas (Catchment A)

Catchment A -				
1a. Unviveraity Hall				
Number of residents	=	110	people	
Unit Flow Factors	=	0.19	m^3/day	(Institutional and Special Class in Table T-1 of GESF)
Sewage generation rate	=	20.9	m^3/day	
1b. Unviveraity Hall				
Total number of staff	=	20	people	
Design flow for staff	=	0.28	m^3/person/day	(refer to Table T-2 of GESF , Community, Social & Personal Services)
Sewage generation rate	=	5.6	m^3/day	
2a. High West- Students Hostels				
Number of residents	=	984	people	
Unit Flow Factors	=	0.19	m^3/day	(Institutional and Special Class in Table T-1 of GESF)
Sewage generation rate	=	187.0	m^3/day	
2b. High West- Staff Quarters 1&2				
Number of residents	=	819	people	
Unit Flow Factors	=	0.27	m^3/day	(Institutional and Special Class in Table T-1 of GESF)
Sewage generation rate	=	221.1	m^3/day	
2c. High West- Student Canteen				
Total number of staff	=	31	people	
Design flow for staff	=	1.58	m^3/day	(Institutional and Special Class in Table T-1 of GESF)
Sewage generation rate	=	49.0	m^3/day	
2d. High West- Student Canteen				
Total number of staff	=	35	people	
Design flow for staff	=	0.28	m^3/day	(Institutional and Special Class in Table T-1 of GESF)
Sewage generation rate	=	9.8	m^3/day	
Estimated Sewage Flow from Catchment A				
Catchment A				
Total ADWF in Catchment A	=	493.4	m^3/day	
Catchment Inflow Factor PCIF	=	1.0		Refer to Table T-4 of GESF - Sandy Bay
Total ADWF with Catchment Inflow Factor PCIF	=	493.4	m^3/day	
Contributing Population	=	1827	people	Refer to S12.1 of GESF, Contributing Population = Calculated total average flow/ UFF
Peaking factor	=	6		Refer to Table T-5 of GESF for population 1,000 - 5,000 incl. stormwater allowance
Peak Flow in Catchment A	=	34.3	L/s	
Total Flow from the Proposed Development and Catchment A				
Total ADWF with Catchment Inflow Factor P_{CIF}	=	664.4	m^3/day	
Catchment Inflow Factor PCIF	=	1.0		Refer to Table T-4 of GESF - Sandy Bay
Flow rate with P_{CIF}	=	664.4	m^3/day	
Contributing population	=	2461		(refer to Section 12 of GESF -- Contributing population is the Flow rate with PCIF ÷ 0.27, while 0.27 is the average unit flow factor of all typical residents plus emp
Peaking factor	=	6		Refer to Table T-5 of GESF for population 1,000 - 5,000 incl. stormwater allowance
Peak flow	=	46.1	litre/sec	

Table 3 - Estimated Sewage Flow for Catchment Areas (Catchment B)

Catchment B				
1. Bethanie				
Number of residents	=	50	people	
Unit Flow Factors	=	0.28	m^3/day	(R2 in Table T-1 of GESF)
Sewage generation rate	=	14.0	m^3/day	
2a. Po Fu Lam Transit Nursery				
Total number of staff	=	10	people	
Design flow for staff	=	0.28	m^3/person/day	(refer to Table T-2 of GESF , Community, Social & Personal Services)
Sewage generation rate	=	2.8	m^3/day	
3a.Country Park Pok Fu Lam Management Centre				
Number of residents	=	5	people	
Unit Flow Factors	=	0.19	m^3/day	(Institutional and Special Class in Table T-1 of GESF)
Sewage generation rate	=	1.0	m^3/day	
4. Woodbury Court				
Number of residents	=	110	people	
Unit Flow Factors	=	0.27	m^3/day	
Sewage generation rate	=	29.7	m^3/day	
5. WSD Staff Quarters				
Number of residents	=	24	people	
Unit Flow Factors	=	0.19	m^3/day	(Institutional and Special Class in Table T-1 of GESF)
Sewage generation rate		4.6	m^3/day	
6a.Hong Kong PHAB Association Jockey Club PHAB Camp				
Number of residents	=	160	people	
Unit Flow Factors	=	0.19	m^3/day	(Institutional and Special Class in Table T-1 of GESF)
Sewage generation rate	=	30.4	m^3/day	
6b.Hong Kong PHAB Association Jockey Club PHAB Camp				
Number of residents	=	20	people	
Unit Flow Factors	=	0.28	m^3/day	(Institutional and Special Class in Table T-1 of GESF)
Sewage generation rate	=	5.6	m^3/day	
7.Pokfulam Public Riding School				
Number of residents	=	170	people	
Unit Flow Factors	=	0.28	m^3/day	(Institutional and Special Class in Table T-1 of GESF)
Sewage generation rate	=	47.6	m^3/day	
Estimated Sewage Flow from Catchment B				
Total ADWF in Catchment B	=	135.6	m^3/day	
Catchment Inflow Factor PCIF	=	1.0		Refer to Table T-4 of GESF - Sandy Bay
Total ADWF with Catchment Inflow Factor PCIF	=	135.6	m^3/day	
Contributing Population	=	502	people	Refer to S12.1 of GESF, Contributing Population = Calculated total average flow/ UFF
Peaking factor	=	8		Refer to Table T-5 of GESF for population 1,000 - 5,000 incl. stormwater allowance
Peak Flow in Catchment B	=	12.6	L/s	
Total Flow from the Proposed Development and Catchment A and B				
Total ADWF with Catchment Inflow Factor P_{CIF}	=	800.0	m^3/day	
Catchment Inflow Factor PCIF	=	1.0		Refer to Table T-4 of GESF - Sandy Bay
Flow rate with P_{CIF}	=	800.0	m^3/day	
Contributing population	=	2963		(refer to Section 12 of GESF -- Contributing population is the Flow rate with PCIF ÷
Peaking factor	=	6		Refer to Table T-5 of GESF for population 1,000 - 5,000 incl. stormwater allowance
Peak flow	=	55.6	litre/sec	

Table 4 - Estimated Sewage Flow for Catchment Areas (Catchment C)

Catchment C				
1. Alberose				
Number of residents	=	8	people	
Unit Flow Factors	=	0.37	m^3/day	(R3 in Table T-1 of GESF)
Sewage generation rate	=	3.0	m^3/day	
Estimated Sewage Flow from Catchment C				
Total ADWF in Catchment C	=	3.0	m^3/day	
Catchment Inflow Factor PCIF	=	1.0		Refer to Table T-4 of GESF - Sandy Bay
Total ADWF with Catchment Inflow Factor PCIF	=	3.0	m^3/day	
Contributing Population	=	11	people	Refer to S12.1 of GESF, Contributing Population = Calculated total average flow/ UFF
Peaking factor	=	8		Refer to Table T-5 of GESF for population 1,000 - 5,000 incl. stormwater allowance
Peak Flow in Catchment C	=	0.3	L/s	
Total Flow from the Proposed Development and Catchment A, B and C				
Total ADWF with Catchment Inflow Factor P_{CIF}	=	803.0	m^3/day	
Catchment Inflow Factor PCIF	=	1.0		Refer to Table T-4 of GESF - Sandy Bay
Flow rate with P_{CIF}	=	803.0	m^3/day	
Contributing population	=	2974		(refer to Section 12 of GESF -- Contributing population is the Flow rate with PCIF ÷
Peaking factor	=	6		Refer to Table T-5 of GESF for population 1,000 - 5,000 incl. stormwater allowance
Peak flow	=	55.8	litre/sec	

Table 5 - Estimated Sewage Flow for Catchment Areas (Catchment D)

Catchment D				
1a. Ebenezer School & Home for the Visually imparier (Residents)				
Number of residents	=	259	people	
Unit Flow Factors	=	0.19	m^3/day	(Institutional and Special Class in Table T-1 of GESF)
Sewage generation rate	=	49.2	m^3/day	
1b. Ebenezer School & Home for the Visually imparier (Staff)				
Total number of staff	=	8	people	
Design flow for staff	=	0.28	m^3/person/day	(refer to Table T-2 of GESF , Community, Social & Personal Services)
Sewage generation rate	=	2.2	m^3/day	
2a. Ebenezer New Hope School (Student)				
Number of Student	=	65	people	
Unit Flow Factors	=	0.04	m^3/day	(Student in Table T-2 of GESF)
Sewage generation rate	=	2.6	m^3/day	
2b. Ebenezer New Hope School (Teacher)				
Number of Staffs	=	39	people	
Unit Flow Factors	=	0.28	m^3/day	(refer to Table T-2 of GESF , Community, Social & Personal Services)
Sewage generation rate	=	10.9	m^3/day	
Estimated Sewage Flow from Catchment D				
Total ADWF in Catchment D	=	64.9	m^3/day	
Catchment Inflow Factor PCIF	=	1.0		Refer to Table T-4 of GESF - Sandy Bay
Total ADWF with Catchment Inflow Factor PCIF	=	64.9	m^3/day	
Contributing Population	=	240	people	Refer to S12.1 of GESF, Contributing Population = Calculated total average flow/ UFF
Peaking factor	=	8		Refer to Table T-5 of GESF for population 1,000 - 5,000 incl. stormwater allowance
Peak Flow in Catchment D	=	6.0	L/s	

Total Flow from the Proposed Development and Catchment A, B, C and D				
Total ADWF with Catchment Inflow Factor P_{CIF}	=	867.9	m^3/day	
Catchment Inflow Factor PCIF	=	1.0		Refer to Table T-4 of GESF - Sandy Bay
Flow rate with P_{CIF}	=	867.9	m^3/day	
Contributing population	=	3214		(refer to Section 12 of GESF -- Contributing population is the Flow rate with PCIF ÷
Peaking factor	=	6		Refer to Table T-5 of GESF for population 1,000 - 5,000 incl. stormwater allowance
Peak flow	=	60.3	litre/sec	

Table 6 - Estimated Sewage Flow for Catchment Areas (Catchment E)

Catchment E				
1a. Dor Fook Mansion (Residents)				
Number of residents	=	93	people	
Unit Flow Factors	=	0.27	m^3/day	(R2 in Table T-1 of GESF)
Sewage generation rate	=	25.1	m^3/day	
1b. Dor Fook Mansion (Staff)				
Total number of staff	=	3	people	
Design flow for staff	=	0.28	m^3/person/day	(refer to Table T-2 of GESF , Community, Social & Personal Services)
Sewage generation rate	=	0.8	m^3/day	
2a. Jessville Manor (Residents)				
Number of residents	=	15	people	
Unit Flow Factors	=	0.27	m^3/day	(R2 in Table T-1 of GESF)
Sewage generation rate	=	4.1	m^3/day	
2b. Jessville Manor (Staff)				
Total number of staff	=	5	people	
Design flow for staff	=	0.28	m^3/person/day	(refer to Table T-2 of GESF , Community, Social & Personal Services)
Sewage generation rate	=	1.4	m^3/day	
3a. Jessville Tower (Residents)				
Number of residents	=	104	people	
Unit Flow Factors	=	0.27	m^3/day	
Sewage generation rate	=	28.1	m^3/day	
3b. Jessville Manor (Staff)				
Total number of staff	=	5	people	
Design flow for staff	=	0.28	m^3/person/day	
Sewage generation rate	=	1.4	m^3/day	
Estimated Sewage Flow from Catchment E				
Total ADWF in Catchment E	=	60.9	m^3/day	
Catchment Inflow Factor PCIF	=	1.0		Refer to Table T-4 of GESF - Sandy Bay
Total ADWF with Catchment Inflow Factor PCIF	=	60.9	m^3/day	
Contributing Population	=	225	people	Refer to S12.1 of GESF, Contributing Population = Calculated total average flow/ UFF
Peaking factor	=	8		Refer to Table T-5 of GESF for population 1,000 - 5,000 incl. stormwater allowance
Peak Flow in Catchment E	=	5.6	L/s	
Total Flow from the Proposed Development and Catchment A, B, C, D and E				
Total ADWF with Catchment Inflow Factor P_{CIF}	=	928.8	m^3/day	
Catchment Inflow Factor PCIF	=	1.0		Refer to Table T-4 of GESF - Sandy Bay
Flow rate with P_{CIF}	=	928.8	m^3/day	
Contributing population	=	3440		(refer to Section 12 of GESF -- Contributing population is the Flow rate with PCIF ÷
Peaking factor	=	6		Refer to Table T-5 of GESF for population 1,000 - 5,000 incl. stormwater allowance
Peak flow	=	64.5	litre/sec	

Table 7 - Estimated Sewage Flow for Catchment Areas (Catchment F)

Catchment F				
1a. Radcliffe (Residents)				
Number of residents	=	37	people	
Unit Flow Factors	=	0.27	m^3/day	(R2 in Table T-1 of GESF)
Sewage generation rate	=	10.0	m^3/day	
1b. Radcliffe (Staff)				
Total number of staff	=	2	people	
Design flow for staff	=	0.28	m^3/person/day	(refer to Table T-2 of GESF , Community, Social & Personal Services)
Sewage generation rate	=	0.6	m^3/day	
2a. Government Quarters (Residents)				
Number of residents	=	320	people	
Unit Flow Factors	=	0.19	m^3/day	(Institutional and Special Class in Table T-1 of GESF)
Sewage generation rate	=	60.8	m^3/day	
2b. Government Quarters (Staff)				
Total number of staff	=	30	people	
Design flow for staff	=	0.28	m^3/person/day	(refer to Table T-2 of GESF , Community, Social & Personal Services)
Sewage generation rate	=	8.4	m^3/day	
3. Hospital Authority				
Total number of staff	=	126	people	
Design flow for staff	=	0.28	m^3/person/day	(refer to Table T-2 of GESF , Community, Social & Personal Services)
Sewage generation rate	=	35.3	m^3/day	
Estimated Sewage Flow from Catchment F				
Total ADWF in Catchment F	=	115.0	m^3/day	
Catchment Inflow Factor PCIF	=	1.0		Refer to Table T-4 of GESF - Sandy Bay
Total ADWF with Catchment Inflow Factor PCIF	=	115.0	m^3/day	
Contributing Population	=	426	people	Refer to S12.1 of GESF, Contributing Population = Calculated total average flow/ UFF
Peaking factor	=	8		Refer to Table T-5 of GESF for population 1,000 - 5,000 incl. stormwater allowance
Peak Flow in Catchment F	=	10.7	L/s	
Total Flow from the Proposed Development and Catchment A, B, C, D, E and F				
Total ADWF with Catchment Inflow Factor P_{CIF}	=	1043.8	m^3/day	
Catchment Inflow Factor PCIF	=	1.0		Refer to Table T-4 of GESF - Sandy Bay
Flow rate with P_{CIF}	=	1043.8	m^3/day	
Contributing population	=	3866		(refer to Section 12 of GESF -- Contributing population is the Flow rate with PCIF ÷
Peaking factor	=	6		Refer to Table T-5 of GESF for population 1,000 - 5,000 incl. stormwater allowance
Peak flow	=	72.5	litre/sec	

Table 8 - Estimated Sewage Flow for Catchment Areas (Catchment G)

Catchment G				
1a. Roytalton (Residents)				
Number of residents	=	111	people	
Unit Flow Factors	=	0.27	m^3/day	(R2 in Table T-1 of GESF)
Sewage generation rate	=	30.0	m^3/day	
1b. Royalton (Staff)				
Total number of staff	=	6	people	
Design flow for staff	=	0.28	m^3/person/day	(refer to Table T-2 of GESF , Community, Social & Personal Services)
Sewage generation rate	=	1.7	m^3/day	
Estimated Sewage Flow from Catchment G				
Total ADWF in Catchment G	=	31.7	m^3/day	
Catchment Inflow Factor PCIF	=	1.0		Refer to Table T-4 of GESF - Sandy Bay
Total ADWF with Catchment Inflow Factor PCIF	=	31.7	m^3/day	
Contributing Population	=	117	people	Refer to S12.1 of GESF, Contributing Population = Calculated total average flow/ UFF
Peaking factor	=	8		Refer to Table T-5 of GESF for population 1,000 - 5,000 incl. stormwater allowance
Peak Flow in Catchment G	=	2.9	L/s	
Total Flow from the Proposed Development and Catchment A, B, C, D, E, F and G				
Total ADWF with Catchment Inflow Factor P_{CIF}	=	1075.5	m^3/day	
Catchment Inflow Factor PCIF	=	1.0		Refer to Table T-4 of GESF - Sandy Bay
Flow rate with P_{CIF}	=	1075.5	m^3/day	
Contributing population	=	3983		(refer to Section 12 of GESF -- Contributing population is the Flow rate with PCIF ÷
Peaking factor	=	6		Refer to Table T-5 of GESF for population 1,000 - 5,000 incl. stormwater allowance
Peak flow	=	74.7	litre/sec	

Table 9 - Estimated Sewage Flow for Catchment Areas (Catchment H)

Catchment H				
1a. Roytalton II (Residents)				
Number of residents	=	63	people	
Unit Flow Factors	=	0.27	m^3/day	(R2 in Table T-1 of GESF)
Sewage generation rate	=	17.0	m^3/day	
1b. Royalton II (Staff)				
Total number of staff	=	3	people	
Design flow for staff	=	0.28	m^3/person/day	(refer to Table T-2 of GESF , Community, Social & Personal Services)
Sewage generation rate	=	0.8	m^3/day	
Estimated Sewage Flow from Catchment H				
Total ADWF in Catchment H	=	17.9	m^3/day	
Catchment Inflow Factor PCIF	=	1.0		Refer to Table T-4 of GESF - Sandy Bay
Total ADWF with Catchment Inflow Factor PCIF	=	17.9	m^3/day	
Contributing Population	=	66	people	Refer to S12.1 of GESF, Contributing Population = Calculated total average flow/ UFF
Peaking factor	=	8		Refer to Table T-5 of GESF for population 1,000 - 5,000 incl. stormwater allowance
Peak Flow in Catchment H	=	1.7	L/s	
Total Flow from the Proposed Development and Catchment A, B, C, D, E, F, G and H				
Total ADWF with Catchment Inflow Factor P_{CIF}	=	1093.3	m^3/day	
Catchment Inflow Factor PCIF	=	1.0		Refer to Table T-4 of GESF - Sandy Bay
Flow rate with P_{CIF}	=	1093.3	m^3/day	
Contributing population	=	4049		(refer to Section 12 of GESF -- Contributing population is the Flow rate with PCIF ÷
Peaking factor	=	6		Refer to Table T-5 of GESF for population 1,000 - 5,000 incl. stormwater allowance
Peak flow	=	75.9	litre/sec	

Table 10 - Estimated Sewage Flow for Catchment Areas (Catchment I)

Catchment I				
1a. HKU Med Academic Building				
Total number of staff	=	40	people	
Design flow for staff	=	0.28	m^3/person/day	(refer to Table T-2 of GESF , Community, Social & Personal Services)
Sewage generation rate	=	11.2	m^3/day	
Estimated Sewage Flow from Catchment I				
Total ADWF in Catchment I	=	11.2	m^3/day	
Catchment Inflow Factor PCIF	=	1.0		Refer to Table T-4 of GESF - Sandy Bay
Total ADWF with Catchment Inflow Factor PCIF	=	11.2	m^3/day	
Contributing Population	=	41	people	Refer to S12.1 of GESF, Contributing Population = Calculated total average flow/ UFF
Peaking factor	=	8		Refer to Table T-5 of GESF for population 1,000 - 5,000 incl. stormwater allowance
Peak Flow in Catchment I	=	1.0	L/s	
Total Flow from the Proposed Development and Catchment A, B, C, D, E, F, G, H and I				
Total ADWF with Catchment Inflow Factor P_{CIF}	=	1104.5	m^3/day	
Catchment Inflow Factor PCIF	=	1.0		Refer to Table T-4 of GESF - Sandy Bay
Flow rate with P_{CIF}	=	1104.5	m^3/day	
Contributing population	=	4091		(refer to Section 12 of GESF -- Contributing population is the Flow rate with PCIF ÷
Peaking factor	=	6		Refer to Table T-5 of GESF for population 1,000 - 5,000 incl. stormwater allowance
Peak flow	=	76.7	litre/sec	

Table 11 - Estimated Sewage Flow for Catchment Areas (Catchment J)

Catchment J				
1a. HKU Hong Kong Jockey Club Building for Interdisciplinary Research				
Total number of staff	=	20	people	
Design flow for staff	=	0.28	m^3/person/day	(refer to Table T-2 of GESF , Community, Social & Personal Services)
Sewage generation rate	=	5.6	m^3/day	
Estimated Sewage Flow from Catchment J				
Total ADWF in Catchment J	=	5.6	m^3/day	
Catchment Inflow Factor PCIF	=	1.0		Refer to Table T-4 of GESF - Sandy Bay
Total ADWF with Catchment Inflow Factor PCIF	=	5.6	m^3/day	
Contributing Population	=	21	people	Refer to S12.1 of GESF, Contributing Population = Calculated total average flow/ UFF
Peaking factor	=	8		Refer to Table T-5 of GESF for population 1,000 - 5,000 incl. stormwater allowance
Peak Flow in Catchment J	=	0.5	L/s	
Total Flow from the Proposed Development and Catchment A, B, C, D, E, F, G, H, I and J				
Total ADWF with Catchment Inflow Factor P_{CIF}	=	1110.1	m^3/day	
Catchment Inflow Factor PCIF	=	1.0		Refer to Table T-4 of GESF - Sandy Bay
Flow rate with P_{CIF}	=	1110.1	m^3/day	
Contributing population	=	4112		(refer to Section 12 of GESF -- Contributing population is the Flow rate with PCIF ÷
Peaking factor	=	6		Refer to Table T-5 of GESF for population 1,000 - 5,000 incl. stormwater allowance
Peak flow	=	77.1	litre/sec	

Table 12 - Estimated Sewage Flow for Catchment Areas (Catchment K)

Catchment K				
1a. Development at No.7 Sassoon				
Number of Employee	=	933	people	
Unit Flow Factors	=	0.28	m^3/day	(Institutional and Special Class in Table T-1 of GESF)
Sewage generation rate	=	261.2	m^3/day	
1b. Development at No.7 Sassoon				
Total number of staff	=	1400	people	
Design flow for staff	=	0.04	m^3/person/day	(refer to Table T-2 of GESF , Community, Social & Personal Services)
Sewage generation rate	=	56.0	m^3/day	
Estimated Sewage Flow from Catchment K				
Total ADWF in Catchment K	=	317.2	m^3/day	
Catchment Inflow Factor PCIF	=	1.0		Refer to Table T-4 of GESF - Sandy Bay
Total ADWF with Catchment Inflow Factor PCIF	=	317.2	m^3/day	
Contributing Population	=	1175	people	Refer to S12.1 of GESF, Contributing Population = Calculated total average flow/ UFF
Peaking factor	=	6		Refer to Table T-5 of GESF for population 1,000 - 5,000 incl. stormwater allowance
Peak Flow in Catchment K	=	22.0	L/s	
Total Flow from the Proposed Development and Catchment A, B, C, D, E, F, G, H, I, J and K				
Total ADWF with Catchment Inflow Factor P_{CIF}	=	1427.4	m^3/day	
Catchment Inflow Factor PCIF	=	1.0		Refer to Table T-4 of GESF - Sandy Bay
Flow rate with P_{CIF}	=	1427.4	m^3/day	
Contributing population	=	5287		(refer to Section 12 of GESF -- Contributing population is the Flow rate with PCIF ÷
Peaking factor	=	5		Refer to Table T-5 of GESF for population 1,000 - 5,000 incl. stormwater allowance
Peak flow	=	82.6	litre/sec	

Table 13 - Estimated Sewage Flow from Swimming Pools

PHAB

Assumed area	=	500	m^2
Assumed depth of water	=	1.5	m
Volume of water	=	750.0	m^3
Turnover Rate	=	6.0	hr (CAP132CA, Section 9 Swimming Pools Regulation (open air pool))
Surface loading rate of filter	=	50.0	$m^3/m^2/hr$
Filter areas required	=	2.5	m^2
Backwashing flow rate	=	30.0	$m^3/m^2/hr$
Design flow for backwashing	=	75.0	m^3/hr
Backwash duration	=	7.0	min/day
Backwash generation rate	=	8.75	m^3/day
Backwash generation rate	=	**20.8**	litre/sec

Woodbury Court

Assumed area	=	105	m^2
Assumed depth of water	=	1.5	m
Volume of water	=	157.5	m^3
Turnover Rate	=	6.0	hr (CAP132CA, Section 9 Swimming Pools Regulation (open air pool))
Surface loading rate of filter	=	50.0	$m^3/m^2/hr$
Filter areas required	=	0.5	m^2
Backwashing flow rate	=	30.0	$m^3/m^2/hr$
Design flow for backwashing	=	15.8	m^3/hr
Backwash duration	=	7.0	min/day
Backwash generation rate	=	1.84	m^3/day
Backwash generation rate	=	**4.4**	litre/sec

131 PFL Road

Assumed area	=	150	m^2
Assumed depth of water	=	1.5	m
Volume of water	=	225.0	m^3
Turnover Rate	=	6.0	hr (CAP132CA, Section 9 Swimming Pools Regulation (open air pool))
Surface loading rate of filter	=	50.0	$m^3/m^2/hr$
Filter areas required	=	0.8	m^2
Backwashing flow rate	=	30.0	$m^3/m^2/hr$
Design flow for backwashing	=	22.5	m^3/hr
Backwash duration	=	7.0	min/day
Backwash generation rate	=	2.63	m^3/day
Backwash generation rate	=	**6.3**	litre/sec

Royalton II

Assumed area	=	105	m^2
Assumed depth of water	=	1.5	m
Volume of water	=	157.5	m^3
Turnover Rate	=	6.0	hr (CAP132CA, Section 9 Swimming Pools Regulation (open air pool))
Surface loading rate of filter	=	50.0	$m^3/m^2/hr$
Filter areas required	=	0.5	m^2
Backwashing flow rate	=	30.0	$m^3/m^2/hr$
Design flow for backwashing	=	15.8	m^3/hr
Backwash duration	=	7.0	min/day
Backwash generation rate	=	1.84	m^3/day
Backwash generation rate	=	**4.4**	litre/sec

Jessville Tower

Assumed area	=	240	m^2
Assumed depth of water	=	1.5	m
Volume of water	=	360.0	m^3
Turnover Rate	=	6.0	hr (CAP132CA, Section 9 Swimming Pools Regulation (open air pool))
Surface loading rate of filter	=	50.0	$m^3/m^2/hr$
Filter areas required	=	1.2	m^2
Backwashing flow rate	=	30.0	$m^3/m^2/hr$
Design flow for backwashing	=	36.0	m^3/hr
Backwash duration	=	7.0	min/day
Backwash generation rate	=	4.20	m^3/day
Backwash generation rate	=	**10.0**	litre/sec

Radcliffe

Assumed area	=	290	m^2
Assumed depth of water	=	1.5	m
Volume of water	=	435.0	m^3
Turnover Rate	=	6.0	hr (CAP132CA, Section 9 Swimming Pools Regulation (open air pool))
Surface loading rate of filter	=	50.0	$m^3/m^2/hr$
Filter areas required	=	1.5	m^2
Backwashing flow rate	=	30.0	$m^3/m^2/hr$
Design flow for backwashing	=	43.5	m^3/hr
Backwash duration	=	7.0	min/day
Backwash generation rate	=	5.08	m^3/day
Backwash generation rate	=	**12.1**	litre/sec

Royalton

Assumed area	=	70	m^2
Assumed depth of water	=	1.5	m
Volume of water	=	105.0	m^3
Turnover Rate	=	6.0	hr (CAP132CA, Section 9 Swimming Pools Regulation (open air pool))
Surface loading rate of filter	=	50.0	$m^3/m^2/hr$
Filter areas required	=	0.4	m^2
Backwashing flow rate	=	30.0	$m^3/m^2/hr$
Design flow for backwashing	=	10.5	m^3/hr
Backwash duration	=	7.0	min/day
Backwash generation rate	=	1.23	m^3/day
Backwash generation rate	=	**2.9**	litre/sec

Table 14 Hydraulic Capacity of Existing Sewers

Manhole Reference	Manhole Reference	Pipe Dia. (mm)	Pipe Length (m)	Invert Level 1 (mPD)	Invert Level 2 (mPD)	g (m/s^2)	k_s (m)	s	v (m^2/s)	V (m/s)	Area (m^2)	Q (m^3/s)	Estimated Capacity (L/s)
FLH7002765	FMH1	225	6	140.28	140.2	9.81	0.0003	0.0145	0.000001	1.72	0.040	0.1	68
FMH1	FMH2	225	15.0	140.20	140.05	9.81	0.0003	0.0100	0.000001	1.42	0.040	0.1	57
FMH2	FMH3	225	14.0	140.05	139.91	9.81	0.0003	0.0100	0.000001	1.42	0.040	0.1	57
FMH3	FMH7022565	225	4.0	139.91	139.87	9.81	0.0003	0.0100	0.000001	1.42	0.040	0.1	57
FMH7022565	FMH7022563	225	44.9	139.73	139.38	9.81	0.0006	0.0078	0.000001	1.15	0.040	0.0	46
FMH7022563	FMH7022561	225	16.3	139.35	139.24	9.81	0.0006	0.0068	0.000001	1.07	0.040	0.0	43
FMH7022561	FMH7022559	225	36.2	139.22	138.94	9.81	0.0006	0.0077	0.000001	1.15	0.040	0.0	46
FMH7022559	FMH7022572	225	31.8	138.89	138.71	9.81	0.0030	0.0057	0.000001	0.77	0.040	0.0	31
FMH7022572	FMH7022554	225	38.8	138.71	138.40	9.81	0.0006	0.0080	0.000001	1.17	0.040	0.0	46
FMH7022554	FMH7022552	225	18.2	138.40	137.96	9.81	0.0006	0.0242	0.000001	2.04	0.040	0.1	81
FMH7022552	FMH7022550	300	45.9	137.96	137.47	9.81	0.0006	0.0107	0.000001	1.63	0.071	0.1	115
FMH7022550	FMH7022549	300	20.9	137.32	137.23	9.81	0.0006	0.0043	0.000001	1.03	0.071	0.1	73
FMH7022549	FMH7022545	300	24.8	137.22	137.07	9.81	0.0006	0.0060	0.000001	1.22	0.071	0.1	86
FMH7022545	FMH7022544	300	34.1	137.07	136.89	9.81	0.0030	0.0053	0.000001	0.90	0.071	0.1	64
FMH7022544	FMH7022539	300	44.3	136.89	136.74	9.81	0.0030	0.0034	0.000001	0.72	0.071	0.1	51
FMH7022539	FMH7022538	300	41.2	136.74	136.52	9.81	0.0030	0.0053	0.000001	0.91	0.071	0.1	64
FMH7022538	FMH7022536	300	44.1	136.52	136.35	9.81	0.0030	0.0039	0.000001	0.77	0.071	0.1	55
FMH7022536	FMH7038820	400	7.4	136.33	136.26	9.81	0.0006	0.0095	0.000001	1.84	0.126	0.2	231
FMH7038820	FMH7022533	400	50.2	136.26	135.91	9.81	0.0006	0.0070	0.000001	1.57	0.126	0.2	198
FMH7022533	FMH7022362	400	44.0	135.89	135.55	9.81	0.0006	0.0077	0.000001	1.66	0.126	0.2	208
FMH7022362	FMH7022361	400	46.0	135.54	135.26	9.81	0.0006	0.0061	0.000001	1.47	0.126	0.2	185
FMH7022361	FMH7022360	400	38.0	135.54	134.65	9.81	0.0006	0.0234	0.000001	2.90	0.126	0.4	364
FMH7022360	FMH7038860	400	31.0	134.65	134.11	9.81	0.0006	0.0174	0.000001	2.50	0.126	0.3	314
FMH7038860	FMH7038861	400	11.0	134.11	133.63	9.81	0.0006	0.0436	0.000001	3.96	0.126	0.5	497
FMH7038861	FMH7038862	400	24.2	133.63	133.00	9.81	0.0006	0.0260	0.000001	3.05	0.126	0.4	384
FMH7038862	FMH7038845	400	35.0	133.00	132.50	9.81	0.0006	0.0143	0.000001	2.26	0.126	0.3	284
FMH7038845	FMH7038846	400	14.0	132.50	131.60	9.81	0.0006	0.0643	0.000001	4.81	0.126	0.6	604
FMH7038846	FMH7020219	400	30.0	131.76	129.79	9.81	0.0006	0.0657	0.000001	4.86	0.126	0.6	610
FMH7020219	FMH7020220	300	24.0	129.79	128.35	9.81	0.0006	0.0600	0.000001	3.87	0.071	0.3	274
FMH7020220	FMH7060381	300	42.0	128.35	124.46	9.81	0.0006	0.0926	0.000001	4.81	0.071	0.3	340
FMH7060381	FMH7020221	300	13.0	124.46	122.68	9.81	0.0006	0.1369	0.000001	5.85	0.071	0.4	414
FMH7020221	FMH7020222	300	33.0	122.68	117.41	9.81	0.0006	0.1597	0.000001	6.32	0.071	0.4	447
FMH7020222	FMH7020223	300	32.0	117.41	112.89	9.81	0.0006	0.1413	0.000001	5.94	0.071	0.4	420

Notes:

[1] Clayware (Clay) Pipe, reference to slimed clayware in poor condition in Sewerage Design Manual (SDM) Part 1, assumed <1.2m/s with Ks of 0.6mm and >1.2m/s with 3.0mm

[2] Proposed Polyethylene (PE) Pipe, reference to slimed uPVC in poor condition in Sewerage Design Manual (SDM) Part 1, assumed<1.2m/s with Ks of 1.5mm and >1.2m/s ith Ks of 0.3mm

[3] Catchment Inflow Factor of 1.0 applied to existing catchments

Table 15 Summary of Sewage Flow from Proposed Development and Catchment Areas

Sewer Pipe ID	Manhole Reference	Manhole Reference	Pipe Dia. (mm)	Pipe Length (m)	Gradient	Estimated Capacity (L/s)	Peak Flow from the Proposed Development and Surrounding Catchment (L/s)	Swimming Pool	Peak Flow from the Proposed Development and Surrounding Catchment (with Swimming Pool) (L/s)	Contribution from the Proposed Development and Surrounding Catchment (%)	Status	Catchment included/ to be included
S1- S2	FMH1	FMH2	225	15.0	0.010	56.5	46.1		46.1	82%	OK	Subject Site, Catchment A
S2- S3	FMH2	FMH3	225	14.0	0.010	56.5	46.1		46.1	82%	OK	Subject Site, Catchment A
S3- S4	FMH3	FMH7022565	225	4.0	0.010	56.5	46.1		46.1	82%	OK	Subject Site, Catchment A
S4-S5	FMH7022565	FMH7022563	225	44.9	0.008	45.8	46.1		46.1	101%	Spill	Subject Site, Catchment A
S5-S6	FMH7022563	FMH7022561	225	16.3	0.007	42.7	46.1		46.1	108%	Spill	Subject Site, Catchment A
S6-S7	FMH7022561	FMH7022559	225	36.2	0.008	45.7	46.1		46.1	101%	Spill	Subject Site, Catchment A
S7-S8	FMH7022559	FMH7022572	225	31.8	0.006	30.6	46.1		46.1	151%	Spill	Subject Site, Catchment A
S8-S9	FMH7022572	FMH7022554	225	38.8	0.008	46.4	46.1		46.1	99%	Spill	Subject Site, Catchment A
S9-S10	FMH7022554	FMH7022552	225	18.2	0.024	81.2	46.1		46.1	57%	OK	Subject Site, Catchment A
S10-S11	FMH7022552	FMH7022550	300	45.9	0.011	114.9	55.6	25.2	80.8	70%	OK	Subject Site, Catchment A, B, C, D & Swimming pool in PHAB, and Woodbury Court
S11-S12	FMH7022550	FMH7022549	300	20.9	0.004	72.6	55.6	25.2	80.8	111%	Spill	Subject Site, Catchment A, B, C, D & Swimming pool in PHAB, and Woodbury Court
S12-S13	FMH7022549	FMH7022545	300	24.8	0.006	86.2	60.3	25.2	85.5	99%	Spill	Subject Site, Catchment A, B, C, D & Swimming pool in PHAB, and Woodbury Court
S13-S14	FMH7022545	FMH7022544	300	34.1	0.005	63.8	60.3	31.5	91.8	144%	Spill	Subject Site, Catchment A, B, C, D & Swimming pool in PHAB, Woodbury Court, and 131 PFL Road
S14-S15	FMH7022544	FMH7022539	300	44.3	0.003	51.1	64.5	31.5	96.0	188%	Spill	Subject Site, Catchment A, B, C, D, E & Swimming pool in PHAB, Woodbury Court, 131 PFL Road, and Jessville Tower
S15-S16	FMH7022539	FMH7022538	300	41.2	0.005	64.2	64.5	31.5	96.0	150%	Spill	Subject Site, Catchment A, B, C, D, E & Swimming pool in PHAB, Woodbury Court, 131 PFL Road, and Jessville Tower
S16-S17	FMH7022538	FMH7022536	300	44.1	0.004	54.5	72.5	31.5	104.0	191%	Spill	Subject Site, Catchment A, B, C, D, E, F & Swimming pool in PHAB, Woodbury Court, 131 PFL Road, and Jessville Tower
S17-S18	FMH7022536	FMH7038820	400	7.4	0.009	230.6	72.5	53.6	126.1	55%	OK	Subject Site, Catchment A, B, C, D, E, F & Swimming pool in PHAB, Woodbury Court, 131 PFL Road, Jessville Tower,and Radcliffe
S18-S19	FMH7038820	FMH7022533	400	50.2	0.007	197.8	74.7	56.5	131.2	66%	OK	Subject Site, Catchment A, B, C, D, E, F, G & Swimming pool in PHAB, Woodbury Court, 131 PFL Road, Jessville Tower,Radcliffe and Royalton
S19-S20	FMH7022533	FMH7022362	400	44.0	0.008	208.3	75.9	60.9	136.8	66%	OK	Subject Site, Catchment A, B, C, D, E, F, G, H & Swimming pool in PHAB, Woodbury Court, 131 PFL Road, Jessville Tower, Radcliffe, Royalton, and Royalton II
S20-S21	FMH7022362	FMH7022361	400	46.0	0.006	184.7	75.9	60.9	136.8	74%	OK	Subject Site, Catchment A, B, C, D, E, F, G, H & Swimming pool in PHAB, Woodbury Court, 131 PFL Road, Jessville Tower, Radcliffe, Royalton, and Royalton II
S21-S22	FMH7022361	FMH7022360	400	38.0	0.023	363.8	75.9	60.9	136.8	38%	OK	Subject Site, Catchment A, B, C, D, E, F, G, H & Swimming pool in PHAB, Woodbury Court, 131 PFL Road, Jessville Tower, Radcliffe, Royalton, and Royalton II
S22-S23	FMH7022360	FMH7038860	400	31.0	0.017	313.6	75.9	60.9	136.8	44%	OK	Subject Site, Catchment A, B, C, D, E, F, G, H & Swimming pool in PHAB, Woodbury Court, 131 PFL Road, Jessville Tower, Radcliffe, Royalton, and Royalton II
S23-S24	FMH7038860	FMH7038861	400	11.0	0.044	497.2	75.9	60.9	136.8	28%	OK	Subject Site, Catchment A, B, C, D, E, F, G, H & Swimming pool in PHAB, Woodbury Court, 131 PFL Road, Jessville Tower, Radcliffe, Royalton, and Royalton II
S24-S25	FMH7038861	FMH7038862	400	24.2	0.026	383.7	75.9	60.9	136.8	36%	OK	Subject Site, Catchment A, B, C, D, E, F, G, H & Swimming pool in PHAB, Woodbury Court, 131 PFL Road, Jessville Tower, Radcliffe, Royalton, and Royalton II
S25-S26	FMH7038862	FMH7038845	400	35.0	0.014	283.8	75.9	60.9	136.8	48%	OK	Subject Site, Catchment A, B, C, D, E, F, G, H & Swimming pool in PHAB, Woodbury Court, 131 PFL Road, Jessville Tower, Radcliffe, Royalton, and Royalton II
S26-S27	FMH7038845	FMH7038846	400	14.0	0.064	603.9	75.9	60.9	136.8	23%	OK	Subject Site, Catchment A, B, C, D, E, F, G, H & Swimming pool in PHAB, Woodbury Court, 131 PFL Road, Jessville Tower, Radcliffe, Royalton, and Royalton II
S27-S28	FMH7038846	FMH7020219	400	30.0	0.066	610.3	75.9	60.9	136.8	22%	OK	Subject Site, Catchment A, B, C, D, E, F, G, H & Swimming pool in PHAB, Woodbury Court, 131 PFL Road, Jessville Tower, Radcliffe, Royalton, and Royalton II
S28-S29	FMH7020219	FMH7020220	300	24.0	0.060	273.5	76.7	60.9	137.6	50%	OK	Subject Site, Catchment A, B, C, D, E, F, G, H, I & Swimming pool in PHAB, Woodbury Court, 131 PFL Road, Jessville Tower, Radcliffe, Royalton, and Royalton II
S29-S30	FMH7020220	FMH7060381	300	42.0	0.093	340.1	77.1	60.9	138.0	41%	OK	Subject Site, Catchment A, B, C, D, E, F, G, H, I, J & Swimming pool in PHAB, Woodbury Court, 131 PFL Road, Jessville Tower, Radcliffe, Royalton, and Royalton II
S30-S31	FMH7060381	FMH7020221	300	13.0	0.137	413.7	82.6	60.9	143.5	35%	OK	Subject Site, Catchment A, B, C, D, E, F, G, H, I, J, K & Swimming pool in PHAB, Woodbury Court, 131 PFL Road, Jessville Tower, Radcliffe, Royalton, and Royalton II
S31-S32	FMH7020221	FMH7020222	300	33.0	0.160	446.9	82.6	60.9	143.5	32%	OK	Subject Site, Catchment A, B, C, D, E, F, G, H, I, J, K & Swimming pool in PHAB, Woodbury Court, 131 PFL Road, Jessville Tower, Radcliffe, Royalton, and Royalton II
S32-S33	FMH7020222	FMH7020223	300	32.0	0.141	420.2	82.6	60.9	143.5	34%	OK	Subject Site, Catchment A, B, C, D, E, F, G, H, I, J, K & Swimming pool in PHAB, Woodbury Court, 131 PFL Road, Jessville Tower, Radcliffe, Royalton, and Royalton II

Table 16 Hydraulic Capacity of the Sewerage System with Estimated Sewage Flow -After Upgrading Works

Sewer Pipe ID	Manhole Reference	Manhole Reference	Pipe Dia.	Pipe Length	US CL	DS CL	US IL	DS IL	Gradient	g	k_s	s	v	V	Area	Area	Perimeter	R=A/P (Full Bore Radius)	Q (Full)	Estimated Capacity	Remarks on Material Assumption	Peak Flow (L/s)	% Capacity Occupied
			mm	m	mPD	mPD	mPD	mPD	1 in	m/s^2	m		m^2/s	m/s	m^2	m^2	m	m	m^3/s	L/s			
S4-S5	FMH7022565	FMH7022563	300	44.9	143.01	142.04	139.73	139.38	128	9.81	0.0003	0.008	1.00E-06	1.50	0.07	0.07	0.94	0.08	0.11	106	uPVC	46.1	43%
S5-S6	FMH7022563	FMH7022561	300	16.3	142.04	141.65	139.35	139.24	148	9.81	0.0003	0.007	1.00E-06	1.40	0.07	0.07	0.94	0.08	0.10	99	uPVC	46.1	47%
S6-S7	FMH7022561	FMH7022559	300	36.2	141.65	141.65	139.22	138.94	129	9.81	0.0003	0.008	1.00E-06	1.50	0.07	0.07	0.94	0.08	0.11	106	uPVC	46.1	44%
S7-S8	FMH7022559	FMH7022572	300	31.8	141.65	141.00	138.89	138.71	177	9.81	0.0015	0.006	1.00E-06	1.04	0.07	0.07	0.94	0.08	0.07	74	uPVC	46.1	63%
S8-S9	FMH7022572	FMH7022554	300	38.8	141.00	140.61	138.71	138.40	125	9.81	0.0003	0.008	1.00E-06	1.52	0.07	0.07	0.94	0.08	0.11	108	uPVC	46.1	43%
S9-S10	FMH7022554	FMH7022552	300	18.2	140.61	139.76	138.40	137.96	41	9.81	0.0003	0.024	1.00E-06	2.67	0.07	0.07	0.94	0.08	0.19	189	uPVC	46.1	24%
S10-S11	FMH7022552	FMH7022550	300	45.9	139.76	139.22	137.96	137.47	94	9.81	0.0003	0.011	1.00E-06	1.76	0.07	0.07	0.94	0.08	0.12	125	uPVC	80.8	65%
S11-S12	FMH7022550	FMH7022549	300	20.9	139.22	138.78	137.32	137.23	232	9.81	0.003	0.004	1.00E-06	0.82	0.07	0.07	0.94	0.08	0.06	58	Clay [1]	80.8	140%
S12-S13	FMH7022549	FMH7022545	300	24.8	138.78	138.62	137.22	137.07	165	9.81	0.0006	0.006	1.00E-06	1.22	0.07	0.07	0.94	0.08	0.09	86	Clay [1]	85.5	99%
S13-S14	FMH7022545	FMH7022544	300	34.1	138.62	138.74	137.07	136.89	189	9.81	0.003	0.005	1.00E-06	0.90	0.07	0.07	0.94	0.08	0.06	64	Clay [1]	91.8	144%
S14-S15	FMH7022544	FMH7022539	300	44.3	138.74	138.89	136.89	136.74	295	9.81	0.003	0.003	1.00E-06	0.72	0.07	0.07	0.94	0.08	0.05	51	Clay [1]	96.0	188%
S15-S16	FMH7022539	FMH7022538	300	41.2	138.89	139.02	136.74	136.52	187	9.81	0.003	0.005	1.00E-06	0.91	0.07	0.07	0.94	0.08	0.06	64	Clay [1]	96.0	150%
S16-S17	FMH7022538	FMH7022536	300	44.1	139.02	138.98	136.52	136.35	259	9.81	0.003	0.004	1.00E-06	0.77	0.07	0.07	0.94	0.08	0.05	55	Clay [1]	104.0	191%
S17-S18	FMH7022536	FMH7038820	400	7.4	138.98	138.71	136.33	136.26	106	9.81	0.0006	0.009	1.00E-06	1.84	0.13	0.13	1.26	0.10	0.23	231	Clay [1]	126.1	55%
S18-S19	FMH7038820	FMH7022533	400	50.2	138.71	138.37	136.26	135.91	143	9.81	0.0006	0.007	1.00E-06	1.57	0.13	0.13	1.26	0.10	0.20	198	Clay [1]	131.2	66%
S19-S20	FMH7022533	FMH7022362	400	44.0	138.37	138.00	135.89	135.55	129	9.81	0.0006	0.008	1.00E-06	1.66	0.13	0.13	1.26	0.10	0.21	208	Clay [1]	136.8	66%
S20-S21	FMH7022362	FMH7022361	400	46.0	138.00	138.40	135.54	135.26	164	9.81	0.0006	0.006	1.00E-06	1.47	0.13	0.13	1.26	0.10	0.18	185	Clay [1]	136.8	74%
S21-S22	FMH7022361	FMH7022360	400	38.0	138.40	138.43	135.54	134.65	43	9.81	0.0006	0.023	1.00E-06	2.90	0.13	0.13	1.26	0.10	0.36	364	Clay [1]	136.8	38%
S22-S23	FMH7022360	FMH7038860	400	31.0	138.43	138.24	134.65	134.11	57	9.81	0.0006	0.017	1.00E-06	2.50	0.13	0.13	1.26	0.10	0.31	314	Clay [1]	136.8	44%
S23-S24	FMH7038860	FMH7038861	400	11.0	138.24	137.63	134.11	133.63	23	9.81	0.0006	0.044	1.00E-06	3.96	0.13	0.13	1.26	0.10	0.50	497	Clay [1]	136.8	28%
S24-S25	FMH7038861	FMH7038862	400	24.2	137.63	135.42	133.63	133.00	38	9.81	0.0006	0.026	1.00E-06	3.05	0.13	0.13	1.26	0.10	0.38	384	Clay [1]	136.8	36%
S25-S26	FMH7038862	FMH7038845	400	35.0	135.42	135.34	133.00	132.50	70	9.81	0.0006	0.014	1.00E-06	2.26	0.13	0.13	1.26	0.10	0.28	284	Clay [1]	136.8	48%
S26-S27	FMH7038845	FMH7038846	400	14.0	135.34	134.18	132.50	131.60	16	9.81	0.0006	0.064	1.00E-06	4.81	0.13	0.13	1.26	0.10	0.60	604	Clay [1]	136.8	23%
S27-S28	FMH7038846	FMH7020219	400	30.0	134.18	131.89	131.76	129.79	15	9.81	0.0006	0.066	1.00E-06	4.86	0.13	0.13	1.26	0.10	0.61	610	Clay [1]	136.8	22%
S28-S29	FMH7020219	FMH7020220	300	24.0	131.89	130.45	129.79	128.35	17	9.81	0.0006	0.060	1.00E-06	3.87	0.07	0.07	0.94	0.08	0.27	274	Clay [1]	137.6	50%
S29-S30	FMH7020220	FMH7060381	300	42.0	130.45	126.53	128.35	124.46	11	9.81	0.0006	0.093	1.00E-06	4.81	0.07	0.07	0.94	0.08	0.34	340	Clay [1]	138.0	41%
S30-S31	FMH7060381	FMH7020221	300	13.0	126.53	124.48	124.46	122.68	7	9.81	0.0006	0.137	1.00E-06	5.85	0.07	0.07	0.94	0.08	0.41	414	Clay [1]	143.5	35%
S31-S32	FMH7020221	FMH7020222	300	33.0	124.48	119.51	122.68	117.41	6	9.81	0.0006	0.160	1.00E-06	6.32	0.07	0.07	0.94	0.08	0.45	447	Clay [1]	143.5	32%
S32-S33	FMH7020222	FMH7020223	300	32.0	119.51	115.59	117.41	112.89	7	9.81	0.0006	0.141	1.00E-06	5.94	0.07	0.07	0.94	0.08	0.42	420	Clay [1]	143.5	34%

Notes:

[1] Clayware (Clay) Pipe, reference to slimed clayware in poor condition in Sewerage Design Manual (SDM) Part 1, assumed <1.2m/s with Ks of 0.6mm and >1.2m/s with 3.0r

[2] Proposed Polyethylene (PE) Pipe, reference to slimed uPVC in poor condition in Sewerage Design Manual (SDM) Part 1, assumed<1.2m/s with Ks of 1.5mm and >1.2m/s i

[3] Catchment Inflow Factor of 1.0 applied to existing catchments

Table 17 The Comparison of Estimated Peak Flow Generated by Proposed Development and Existing Use

Comparsion Between Proposed development and Existing Use																										
			Proposed Development											Existing Use												
Sewer Pipe ID	Manhole Reference	Manhole Reference	Peak Flow with Catachment (L/s)	Peak Flow of Proposed Development only (L/s)	% Capacity Occupied by the development	Water Level		FreeBoard*1.0 safty factor		Water Level		FreeBoard*1.15 safty factor		Peak Flow with Catachment (L/s)	Peak Flow of Existing Use only (L/s)	% Capacity Occupied by the development	Water Level		FreeBoard*1.0 safty factor		Water Level		FreeBoard*1.15 safty factor		Δ change of % Capacity Occupied	Additional Peak Flow from Proposed Development with Catahment (L/s)	The comparison of the peck flow between Exsiting and Propsoed Development (L/s)
						Up Stream	Down Stream	Up Stream	Down Stream	Up Stream	Down Stream	Up Stream	Down Stream				Up Stream	Down Stream	Up Stream	Down Stream	Up Stream	Down Stream	Up Stream	Down Stream			
						mPD	mPD	m	m	mPD	mPD	m	m				mPD	mPD	m	m	mPD	mPD	m	m			
S11-S12	FMH7022550	FMH7022549	80.8		140%	139.85	139.57	-0.63	-0.79	140.39	140.03	-1.17	-1.25	74.0		128%	139.42	139.19	-0.20	-0.41	140.29	139.98	-1.07	-1.20	9%	6.7	
S12-S13	FMH7022549	FMH7022545	85.5		99%	139.57	139.31	-0.79	-0.69	140.03	139.68	-1.25	-1.06	78.7		91%	139.19	138.97	-0.41	-0.35	139.98	139.69	-1.20	-1.07	9%	6.8	
S13-S14	FMH7022545	FMH7022544	91.8		144%	139.31	138.81	-0.69	-0.07	139.68	139.02	-1.06	-0.28	85.0		133%	138.97	138.54	-0.35	0.20	139.69	139.12	-1.07	-0.38	8%	6.8	
S14-S15	FMH7022544	FMH7022539	96.0	15.8	188%	138.81	138.14	-0.07	0.75	139.02	138.14	-0.28	0.75	89.3	6.9	175%	138.54	137.96	0.20	0.93	139.12	138.36	-0.38	0.53	8%	6.7	8.9
S15-S16	FMH7022539	FMH7022538	96.0		150%	138.14	137.51	0.75	1.51	138.14	137.30	0.75	1.72	89.3		139%	137.96	137.42	0.93	1.60	138.36	137.64	0.53	1.38	8%	6.7	
S16-S17	FMH7022538	FMH7022536	104.0		191%	137.51	136.73	1.51	2.25	137.30	136.27	1.72	2.71	97.3		179%	137.42	136.73	1.60	2.25	137.64	136.73	1.38	2.25	7%	6.7	
S17-S18	FMH7022536	FMH7038820	126.1		55%	136.73		2.25		136.27		2.71		119.4		52%	136.73		2.25		136.73		2.25		6%	6.7	

Appendix 2.2 Detailed Sewerage Impact Assessment Calculations_ Existing Development

Table 1 Calculation for Sewage Generation Rate of the Existing Development

Estimated Sewage Flow from Existing Development				
1a. Dormitory for Student				
Number of residents	=	274	people	
Unit Flow Factors	=	0.27	m^3/day	(R2 in Table T-1 of GESF)
Sewage generation rate	=	74.0	m^3/day	
Total Flow from Existing Development				
Total ADWF in Catchment A1	=	74.0	m^3/day	
Catchment Inflow Factor PCIF	=	1.0		Refer to Table T-4 of GESF - Sandy Bay
Total ADWF with Catchment Inflow Factor PCIF	=	74.0	m^3/day	
				(refer to Section 12 of GESF -- Contributing population is the Flow rate with PCIF ÷ 0.27, while 0.27 is the average unit flow factor of all typical residents plus employees)
Contributing Population	=	274	people	
Peaking factor	=	8		Refer to Table T-5 of GESF for population <1,000 incl. stormwater allowance
Peak Flow	=	6.9	L/s	