

## **Annex A    Response to Departmental Comments**

**S.16 Planning Application for Proposed Residential Institution (Student Hostel) in “Residential (Group C)”  
with a minor portion within “Green Belt” Zones at Middleton Towers, 140 Pok Fu Lam Road (Rural Building Lot No. 825 RP)  
and adjoining Government Land, Pok Fu Lam, Hong Kong**

**Responses to Departmental Comments (3<sup>rd</sup> Batch)**

| <b>Item</b> | <b>Bureau/Department</b>            | <b>Date</b> |
|-------------|-------------------------------------|-------------|
| 1.          | Environmental Protection Department | 2 June 2026 |
| 2.          | Drainage Services Department        | 5 June 2026 |

## Response to Departmental Comments – Application No. A/H10/98

| Item | Comments Received                                                                                                                                                                                                                                                                                        | Responses                                                                                                                                                                                                                                                                      |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.   | Director of Environmental Protection<br>(Received via email from PlanD dated 2.6.2026)<br>(Contact Officer: Ms. Clara HO, tel: 2835 1594)                                                                                                                                                                |                                                                                                                                                                                                                                                                                |
| 1.1. | Please find our comments on the SIA report below:<br><br>Noted that the no. of residents is reduced from 1000 to 900 and the tentative completion year is postponed from Yr 2027 to Yr 2028 when compared to the SIA in pre-submission. Please highlight changes between submissions for easy reference. | Noted. Revisions made as compared with pre-submissions were highlighted in the updated DSIA for your easy reference.                                                                                                                                                           |
| 1.2. | For Section 2.5.1, it is reflected in Figures 2.1 and 2.2 that the 3 proposed terminal manholes FMH1, FMH2 and FMH3 are located at the upstream of FMH7022565 outside the site boundary, please advise if the 3 proposed manholes will be constructed between existing FMH7022566 and FMH7022565.        | Please be advised that FMH1, FMH2 and FMH3 were already constructed on site as per the approved SIA for "Student Residences and Residential Development for the University of Hong Kong at 142 Pok Fu Lam Road". Please find the attachment <b>Annex I</b> for your reference. |
| 1.3. | For Section 2.5.1, please revise typo "MH7022565" to "FMH7022565".                                                                                                                                                                                                                                       | Noted and revised accordingly.                                                                                                                                                                                                                                                 |
| 1.4. | For Tables 2 and 14 in Appendix 2.1, total ADWF in Catchment A should be sum of 1a, 1b, 2a, 2b, 2c and 2d, please revise the hydraulic calculations accordingly.                                                                                                                                         | Noted and updated accordingly.                                                                                                                                                                                                                                                 |
| 1.5. | For Table 3 in Appendix 2.1, unit is missing in estimated sewage flow for Catchment 4, please supplement.                                                                                                                                                                                                | Noted and updated accordingly.                                                                                                                                                                                                                                                 |

| Item  | Comments Received                                                                                                                                                                                                                           | Responses                                                                                                                                    |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| 1.6.  | For Table 3 in Appendix 2.1, please verify if there is swimming pool in Catchment 3b.                                                                                                                                                       | Noted and irrelevant information has been removed. Please refer to Table 13 in <b>Appendix 2.1</b> for the calculation of the swimming pool. |
| 1.7.  | For Table 3 in Appendix 2.1, backwash of swimming pools shall be accounted for in calculating peak flow only, please remove such sewage generation in calculating ADWF to avoid duplication.                                                | Noted and updated accordingly.                                                                                                               |
| 1.8.  | For Table 5 in Appendix 2.1, Ebenezer School & Home for the Visually impairers instead of Ebenezer New Hope School are included in Catchment D, please also include Ebenezer New Hope School in estimating existing sewage flow estimation. | Noted and updated accordingly.                                                                                                               |
| 1.9.  | For Tables 14 and 15 in Appendix 2.1, the pipe length of sewer section S24-S25 should be 24.2m instead of 125m, please revise and update the hydraulic calculation accordingly.                                                             | Noted and revised accordingly.                                                                                                               |
| 1.10. | For Table 14 in Appendix 2.1, please advise why Catchment A2 and E are excluded when calculating total ADWF.                                                                                                                                | Irrelevant information has been removed.                                                                                                     |
| 1.11. | For Tables 14, 15 and Tables – Backwater Analysis for Surcharged Sections in Appendix 2.1, backwash of swimming pools shall be included in respective catchment handled by corresponding sewer section, please revise.                      | Noted and updated accordingly.                                                                                                               |
| 1.12. | For Tables – Backwater Analysis for Surcharged Sections in Appendix 2.1, please seek DSD's agreement on the calculation of freeboard.                                                                                                       | Noted. The same submission has been referred to DSD for comment in parallel by Planning Department.                                          |



| Item | Comments Received                                                                                                                                                                                                                                                                                | Responses                                                                                                                      |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| 2.   | Chief Engineer/Hong Kong and Islands, Drainage Services Department<br>(Received via email from PlanD dated 5.6.2026)<br>(Contact Officer: Mr. Caryl POON, tel: 3101 2361)                                                                                                                        |                                                                                                                                |
| 2.1. | This is a coordinated reply from Land Drainage Division and Hong Kong and Islands Division.<br><br>Table 14 & 15 – Roughness value for slimed clayware sewers in poor condition should be 3.0mm ( $v < 0.75\text{m/s}$ ) and 0.6mm ( $v > 1.2\text{m/s}$ ). Please review the adopted roughness. | Noted and updated accordingly.                                                                                                 |
| 2.2. | Table 3 – Please show the adopted headloss coefficient in the table for checking.                                                                                                                                                                                                                | Noted and updated accordingly.                                                                                                 |
| 2.3. | Table 3 – Please critically review the water level. For example, the water level at FMH1 is 132.18mPD while the invert level is 140.2mPD.                                                                                                                                                        | Noted and updated accordingly.                                                                                                 |
| 2.4. | It appears that the consultants have not provided the sewage assessment under the existing case for comparison. Please review and append.                                                                                                                                                        | Noted and updated accordingly in <b>Appendix 2.2</b> , with existing case included.                                            |
| 2.5. | Figure 2.2 – For the proposed new alignment/manhole, please use another colour for indication on the layout and update the legend accordingly. They should not be labelled as "existing manhole/pipe" in the legend.                                                                             | Noted and updated accordingly.                                                                                                 |
| 2.6. | Please review and upgrade the pipe size with capacity exceeding 100% with risk of overflowing.                                                                                                                                                                                                   | Based on the calculations for the backwater profile under peak flow conditions (including a 1.15 safety factor), the freeboard |

| Item | Comments Received                                                                                                                                                                                                | Responses                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      |                                                                                                                                                                                                                  | <p>between the cover/ground level and the hydraulic grade line (HGL) at all manholes is greater than 1.72m. This is substantially more than the minimum DSD requirement of 1.0m.</p> <p>The proposed development intends to be an interim stage under the overall planning by the University to achieve soonest provision of student hostel supply, and further redevelopment is already under planning by the University as the building has already reached 60 years of age.</p> <p>For sewers connecting manholes FMH702255 to FMH702252 identified in this DSIA report as having capacity above 100% and hence recommended for upgrading by DSD on 3 July 2026 in upcoming redevelopment stage of the Middleton development, the Applicant commits to further liaise with DSD and submit revised DSIA based on the finalized design of the Middleton at redevelopment stage, and undertake the unnecessary upgrading works if entrusted by the Authority.</p> |
| 2.7. | Please be reminded that SIG/EPD is the planning authority of sewerage infrastructure as to whether or not a SIA is required for the revitalization project and it shall be subject to the discretion of SIG/EPD. | Noted and the team will coordinate with SIG/EPD at appropriate timing.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

# **Annex I**

## **Approved Sewerage Impact Assessment report of "Student Residences and Residential Development for the University of Hong Kong at 142 Pok Fu Lam Road**

Prepared for

**Andrew Lee King Fun & Associates Architects Limited**

Prepared by

**Ramboll Hong Kong Limited**

**STUDENT RESIDENCES AND RESIDENTIAL DEVELOPMENT  
FOR THE UNIVERSITY OF HONG KONG  
AT 142 POK FU LAM ROAD, POK FU LAM, R.B.L. NO. 925**

**SEWERAGE IMPACT ASSESSMENT**

Date **April 2023**

Prepared by **Kitty Wong**  
**Senior Consultant**



Signed

Approved by **Tony Cheng**  
**Senior Manager**



Signed

Project Reference **ALKHKUHWED00**Document No. **R7842\_v4.0**

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## APPENDICES

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| Appendix C | New connection from the proposed development to the existing sewer                                                      |
| Appendix D | New Internal Sewer Connection from the Existing University Hall<br>(Extracted from University Hall Drainage Submission) |

## 1. INTRODUCTION

### 1.1 Background

- 1.1.1 Andrew Lee King Fun & Associates Architects Limited (ALKF) is the Project's Architect for the student residences and residential development (the proposed development) for the University of Hong Kong (HKU) at 142 Pok Fu Lam Road, Pok Fu Lam, Rural Building Lot (R.B.L.) No. 925 (the Subject Site). The Site Location is shown on **Figure 1**.
- 1.1.2 The drainage and sewerage impact assessment (DSIA) for the Subject Site was conducted and approved in 2019 (DSIA – 2019) under Section 16 Planning Application (Application No.: A/H10/94) in 2019. There are no approval conditions related to SIA under this approved planning application.
- 1.1.3 The General Building Plan was further updated for the additional 1 storey of Q2 block and 7 staff quarter flats. A revised SIA (ref: R7842\_v3.0) prepared based on the latest design parameter of the proposed development was submitted in August 2022 and no adverse technical comments was received. In that SIA report, an upgrading work in terms of adjusting the sewer gradients of a sewer segment was recommended.
- 1.1.4 Under the detailed design, instead of provision of the upgrading work, an alternative proposal by constructing new sewers is proposed to bypass the concerned sewer segment. An updated SIA (ref: R7842\_v3.1) was prepared to assess the alternative proposal. It must be noted that the development parameters of the proposed development remain unchanged. The revised SIA (ref: R7842\_v3.1) was approved in February 2023.
- 1.1.5 The Subject Site consists of the proposed development and the existing University Hall, they have separate sewage discharge approach. Currently, the sewage generated from the existing University Hall discharge to Manhole FMH7022586 that is located to the southeast of the Subject Site. According to the latest Drainage Plan Amendment Submission and the University Hall Drainage Submission, new internal sewers to be constructed for the existing University Hall will join the terminal manhole of the Proposed Development then discharge the sewage via the public sewerage network towards northwest direction (see **Figure 5** and **Appendix D**). This updated SIA is prepared to reflect the above changes for the new internal sewers of the existing University Hall, please note the development parameters and relevant assessment for the proposed development remains unchanged.
- 1.1.6 Ramboll Hong Kong Limited has been appointed by ALKF to update the SIA based on the latest technical information of the proposed development were largely provided by Project Team.

### 1.2 Subject Site and Its Environs

- 1.2.1 The Subject Site falls within an area zoned as Residential (Group C) (R(C)) except a very small area at the northern fringe covered by vegetated slope falls within the "Green Belts" (GB) zone.
- 1.2.2 The Subject Site is situated at the hillside of Pok Fu Lam Country Park and to the southwest of Pok Fu Lam Reservoir. The Subject Site is bounded by the Pok Fu Lam Road on the Southwest. Further down the hill, there are several residential developments, such as Woodbury Court and Baguio Bay.
- 1.2.3 The area of the Subject Site is about 29,740m<sup>2</sup>. The proposed development within the Subject Site comprises i) student residence and ii) staff quarters. Although the

University Hall is located within the Subject Site, the existing sewerage system of the University Hall will not connect to the new sewerage system of the proposed development. Therefore, a SIA of the University Hall will not include in the estimated sewage flow for the proposed development.

1.2.4 **Figure 1** shows the location of the Subject Site and its environs.

### **1.3 Existing Development**

1.3.1 The area of the proposed development is a staff quarter owned by HKU, a landscape area and tennis courts with changing room facility.

### **1.4 Proposed Development**

1.4.1 As mentioned above, the proposed development includes i) student residence and ii) staff quarters.

1.4.2 The proposed student residence includes two 19-storey high towers (H1 and H2) on a single-storey common podium. As advised by ALKF, it will accommodate 952 hostel places for students, and living accommodation for management staff. The podium will provide common spaces, canteen, and supporting facilities for shared used.

1.4.3 The proposed staff quarters include one 19-storey high residential tower (Q1) and one 20-storey high residential tower (Q2) providing a 2-bedroom to 3-bedroom flat units. Supporting facilities and car-parking spaces at four lower ground floors of Q1 will be also provided.

1.4.4 Garden with soft landscape will be also provided within the proposed development.

1.4.5 Latest layout plan provided by ALKF is presented in **Appendix A**.



## 2. SEWERAGE IMPACT ASSESSMENT

### 2.1 Scope of Work

- 2.1.1 The aim of this SIA is to assess whether the capacity of the existing sewerage network serving the proposed development is sufficient to cope with the sewage flow from the proposed development and the existing developments in the vicinity. Drainage records from the Drainage Services Department (DSD) and LandsD's Geoinfo Map were obtained for the information for this SIA.

### 2.2 Existing Sewerage System

- 2.2.1 According to the Drainage records obtained from DSD and the Geoinfo Map, there are existing Ø225mm sewers along Pok Fu Lam Road, which flow northwest towards larger (Ø300mm) sewers along Pok Fu Lam Road (refer to **Figure 2**).
- 2.2.2 The sewage generated from the proposed development will be discharged to modified manhole ref.: FMH7022569 (as shown in **Figure 2**), located at the southwest corner of the proposed development.

### 2.3 Assessment Criteria and Methodology

- 2.3.1 Environmental Protection Department's (EPD's) Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning, Version 1 (GESF) has been referred to for the purposes of estimating the quantity of the sewage generated from the proposed development and the existing nearby catchment area. Sewage flow parameters, global peaking factors and inflow factors from GESF have been adopted for this SIA.
- 2.3.2 The Commercial and Industrial Floor Space Utilization Survey (CIFSUS) conducted by the Planning Department has been used to determine the worker density for various economic activities and planned usage types.
- 2.3.3 The following unit flow factors from the GESF have been adopted for this SIA:
- General commercial employee: 0.08m<sup>3</sup>/day per employee
  - Student canteen (F&B Area): 1.58m<sup>3</sup>/day per employee (J10)
  - Support facilities & office/meeting rooms: 0.28 m<sup>3</sup>/day per employee (J11)
  - Student residence towers (H1 & H2): 0.19m<sup>3</sup>/day per person (Institutional)
  - Staff quarters (Q1 & Q2): 0.27m<sup>3</sup>/day per person (R2)

### 2.4 Assessment of Sewerage Impact

- 2.4.1 Wastewater arising from the proposed development will be primarily contributed by the residential flow by the student residence towers and staff quarters, staff living accommodation & support spaces floor, and ground floor common facilities area.
- 2.4.2 An average household size of 3 (from the Hong Kong 2019 Population By-Census – Southern District) has been adopted to estimate the residential population for staff quarters and Catchment A – Middleton Towers. The identified catchment in the vicinity is indicated in **Figure 2**.
- 2.4.3 **Appendix B** shows the detailed calculation on the estimated hydraulic capacity of the existing sewer sections and the calculation of the amount of the sewage entering each segment of the said sewer network.
- 2.4.4 The estimated sewage flow for the proposed development is given in **Table 2.1**. The relevant calculation is presented in **Table 1** of **Appendix B**.

**Table 2.1 Estimated Sewage Flow from the Proposed Development**

| Development Parameter                                               |              | Flow                     |
|---------------------------------------------------------------------|--------------|--------------------------|
| Student canteen (F&B)                                               | 31 employees | 49.0                     |
| Support facilities & office/meeting rooms                           | 35 employees | 9.8                      |
| Student residence towers (H1 & H2)<br>(including student and staff) | 984 ppl      | 187.0                    |
| Staff quarters (Q1 & Q2)                                            | 819 ppl      | 221.1                    |
| Total Flow Rate                                                     |              | 466.9m <sup>3</sup> /day |
| Peak Flow                                                           |              | 32.4litre/sec            |

- 2.4.5 To the northwest of the proposed development, along Pok Fu Lam Road, the sewer serving the proposed development joins an adjacent sewerage system before discharging to a single Ø300mm sewer. The populations and flows discharging to the adjacent system, together with the overall combined flow are also included in **Table 1 of Appendix B**.

#### New Internal Sewer Connection from the Existing University Hall

- 2.4.6 Currently, the sewage generated from the existing University Hall currently discharge to Manhole FMH7022586 that is located to the southeast of the Subject Site (see **Figure 2**). According to the latest Drainage Plan Amendment Submission and the University Hall Drainage Submission, new internal sewers to be constructed for the existing University Hall will join the terminal manhole of the Proposed Development then discharge the sewage via the public sewerage network towards northwest direction (see **Figure 5** and **Appendix D**). According to the calculation presented in **Table 1 of Appendix B**, the sewage generated from the existing University Hall (for 110 Resident Students and 20 Staff) is 26.5m<sup>3</sup>/day.

## **2.5 Discussion**

- 2.5.1 The total flowrate with the catchment inflow factor from the proposed development is about 466.9m<sup>3</sup>/day, while the peak flow is 32.4litre/sec. Together with the sewage generation from the existing University Hall (26.5m<sup>3</sup>/day), the overall flowrate from the Subject Site is 493.4m<sup>3</sup>/day, while the peak flow is 34.3litre/sec.
- 2.5.2 After calculating the capacities of the sewerage system serving the proposed development, the estimated sewage flow from the proposed development has been compared with the capacity of the existing sewerage system to determine whether it has adequate spare capacity to accommodate the flow from the proposed development and nearby catchment areas (cumulative flow). The flows and sewerage capacities are shown in **Table 2 of Appendix B**.
- 2.5.3 According to **Table 2 of Appendix B**, the cumulative flow is slightly greater than the existing sewer capacity in some sections. A backwater assessment has therefore been undertaken to assess the likely hydraulic conditions at peak flow.

- 2.5.4 The local sewerage system would apparently be under-capacity from Manhole FMH7022563 to Manhole FMH7022554. Furthermore, based on surveyed invert levels, there are apparent reverse gradients between Manholes FMH7022568 and FMH7022566 and between FMH7022566 and FMH7022565. The backwater assessment has therefore been carried out from Manhole FMH7022554 upstream to the existing Terminal Manhole of the proposed development. The sewer immediately downstream of Manhole FMH7022554 has more than adequate capacity for the flow and it would be expected that the flow depth would be less than the pipe diameter, although, for simplicity and as a conservative assumption, it has been assumed that the sewer would be flowing full at Manhole FMH7022554. The sewer between FMH7022565 and FMH7022563 has adequate capacity for the peak flow and the water level would be less than the pipe diameter, so it has been assumed that the water level would pass through Critical Depth at Manhole FMH7022565 (N.B. this is an approximation, but a reasonable simplification for this assessment). In accordance with the DSD Sewerage Manual, two assessments have been undertaken, i.e. 1) to assess freeboard and Peak Flow conditions and 2) to assess the potential for flooding at Peak Flow x 1.15. Existing (surveyed) sewer and manhole levels have been used for this assessment.
- 2.5.5 The backwater calculations and results are included in **Tables 3** and **4** in **Appendix B** and illustrated in **Figures 3** and **4**. The analyses indicate that there will be more than 1m freeboard at Peak Flow and no potential flooding at Peak Flow x 1.15. However, the reverse gradients will tend to promote sedimentation at low flows and will therefore represent an on-going maintenance liability. The assessment calculation shows that improvement work should be provided for the sewer between the manhole FMH7022565 and FMH7022566 if the sewage from the proposed development is to be discharged to the manhole FMH7022566; while the sewers further downstream, between Manholes FMH7022563 and FMH7022554 are only slightly surcharged and it is considered that the disruption involved in reconstructing these sewers and manholes is not justified. It is noted that the peak flow and downstream boundary conditions for the hydraulic assessment are quite conservative and any actual surcharging is likely to be minimal and very temporary.
- 2.5.6 The capacity assessment has also covered the existing Ø300mm sewer downstream from Manhole FMH7022552, i.e. the first sewer downstream of the connection between the local connection system serving the proposed development and the adjacent system serving adjacent catchment areas. The combined Peak Flow from the entire upstream catchment represents on 75.6% of the sewer capacity, so no adverse impacts are identified in the downstream system.

New connection from the proposed development to the existing sewer

- 2.5.7 In the previous SIA report, it was proposed to provide a new Terminal Manhole (TM) and connection to the existing manhole FMH7022566, and the Manhole FMH7022566 would be reconstructed to new levels so that the gradient of the sewer between FMH7022566 and FMH7022565 is increased to have sufficient capacity. However, in this current submission, the sewage from the proposed development is to be discharged to the manhole FMH7022565 via new 225mm diameter sewers. The new sewers will be constructed along the existing sewer from the new terminal manhole of the proposed development to the manhole FMH7022565, its alignment is shown in **Figure 5**. The design information of this new sewer is provided by the project Building Services Engineer, Meinhardt (M&E) Limited. According to design information in **Appendix C**, the capacity of this new sewer is 48.4litre/sec while the amount of sewage from the proposed development **and the existing University Hall is 34.3litre/sec**. Therefore, the new sewer would have sufficient capacity to cater for the proposed development.

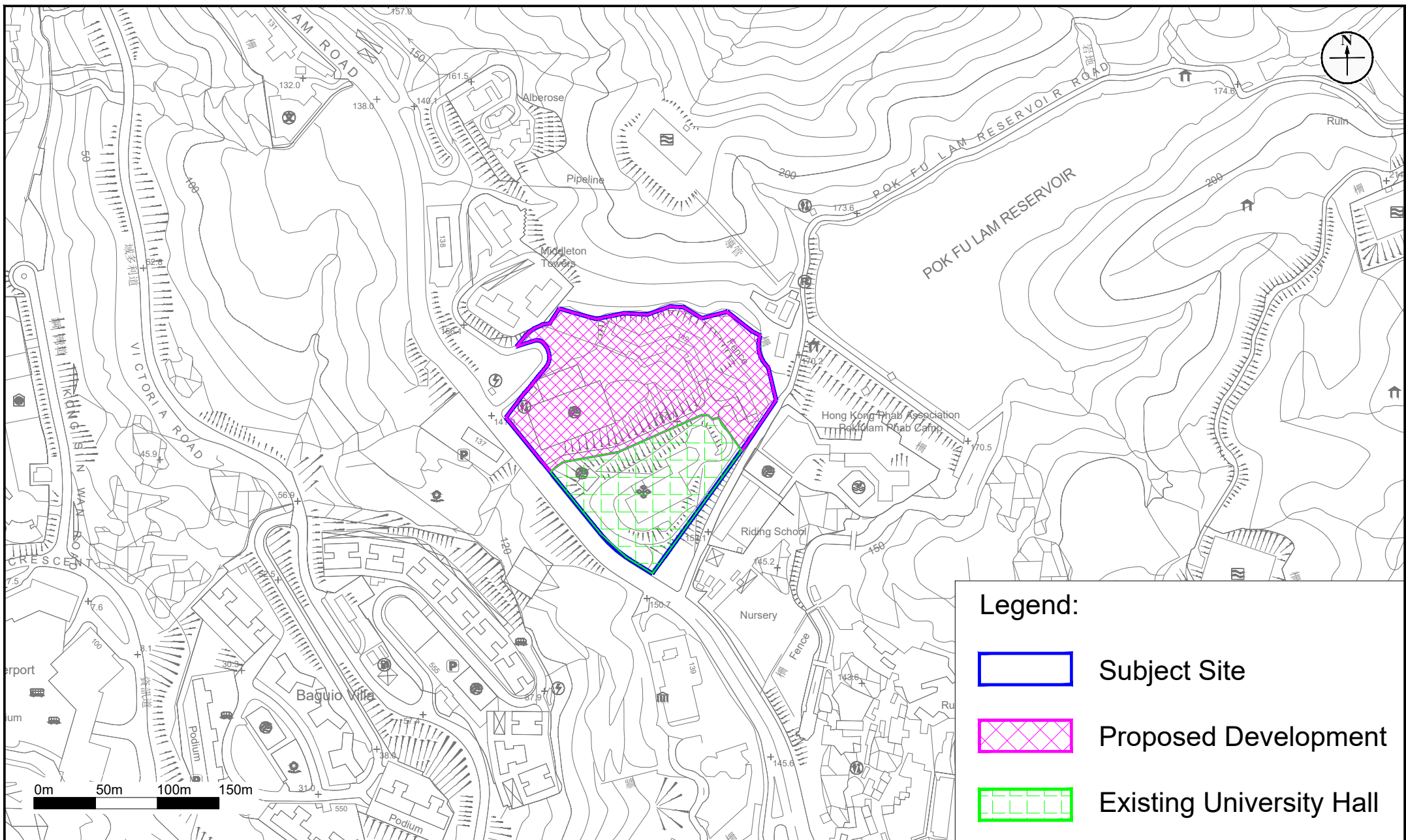
- 2.5.8 The project proponent will be responsible for the construction of the new sewers. The new terminal manholes would be located at the area outside the existing drainage reserve. During the construction of the new terminal manhole and sewers, the existing sewers between FMH7022566 and FMH7022579 would be sealed.

### 3. CONCLUSION

#### 3.1 Conclusion

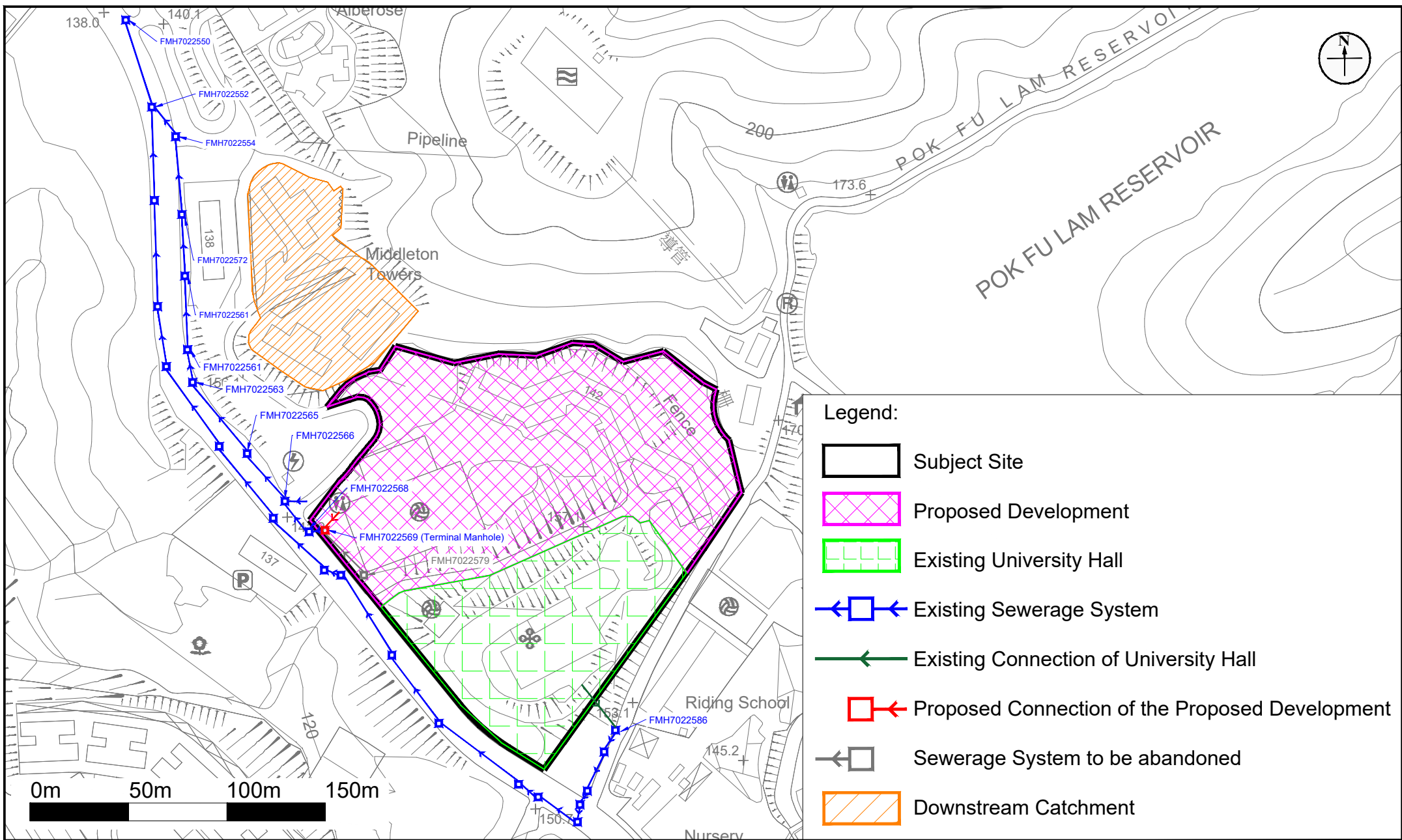
- 3.1.1 Student accommodation and Staff Quarters are proposed at the proposed development within the Subject Site, together with various supporting and ancillary facilities.
- 3.1.2 Although the expected future peak flows would not result in water levels exceeding 1m freeboard and would not result in flooding under Peak Flow x 1.15 conditions, the existing reverse gradients would result in a maintenance liability and improvement works in terms of construction new sewers to connect the proposed development to further downstream manhole FMH7022565 have therefore been proposed to eliminate this problem.
- 3.1.3 The new sewers for the proposed development and the existing University Hall will be constructed by the project proponent.
- 3.1.4 This SIA confirms the feasibility of the proposed development in terms of Sewerage Impact.

## Figures



|                                                                                                                                                  |                |
|--------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| <b>Figure:</b> 1                                                                                                                                 | <b>RAMBOLL</b> |
| <b>Title:</b> Location of the Subject Site and Its Environs                                                                                      | Drawn by: KC   |
| <b>Project:</b> Student Residences and Residential Development for the University of Hong Kong at 142 Pok Fu Lam Road, Pok Fu Lam, R.B.L.No. 925 | Checked by: LC |
|                                                                                                                                                  | Rev.: 1.0      |
|                                                                                                                                                  | Date: Feb 2021 |





**Figure: 2**

**Title:** Catchment, Existing Sewerage System and Connection of the Proposed Development

**Project:** Student Residences and Residential Development for the University of Hong Kong at 142 Pok Fu Lam Road, Pok Fu Lam, R.B.L.No. 925

**RAMBOLL**

Drawn by: KC

Checked by: LC

Rev.: 4.0

Date: Apr 2023



Figure 3 - Hydraulic Profile  
(Peak Future Discharge - Existing Sewers)

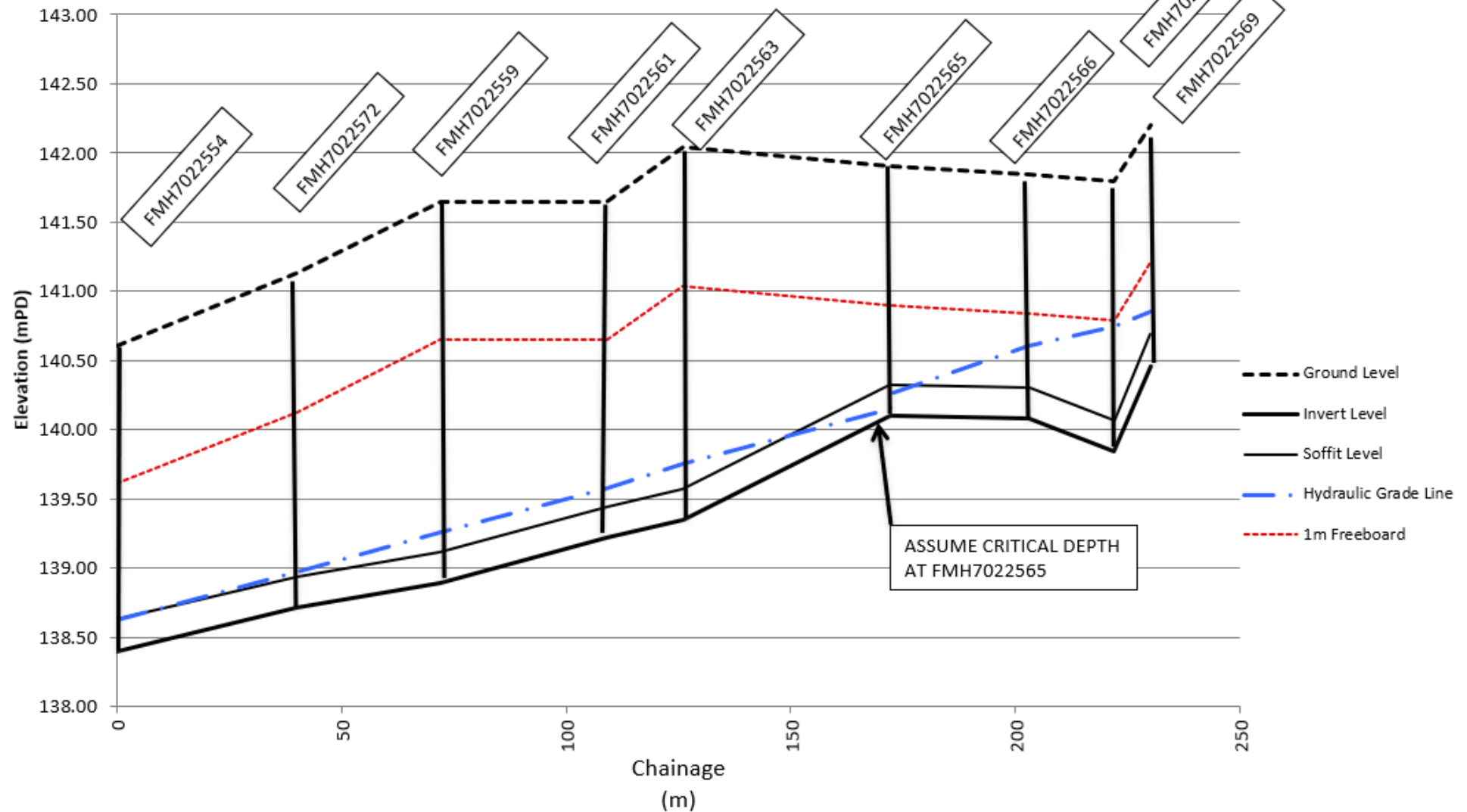


Figure: 3

**RAMBOLL**

Title: Hydraulic Profile (Peak Future Discharge)

Drawn by: KC

Checked by: YH

Project: Student Residences and Residential Development for the University of Hong Kong at 142 Pok Fu Lam Road, Pok Fu Lam,  
R.B.L. No. 925

Rev.: 4.0

Date: Apr 2023

Figure 4 - Hydraulic Profile  
(Peak Future Discharge x 1.15 - Existing Sewers)

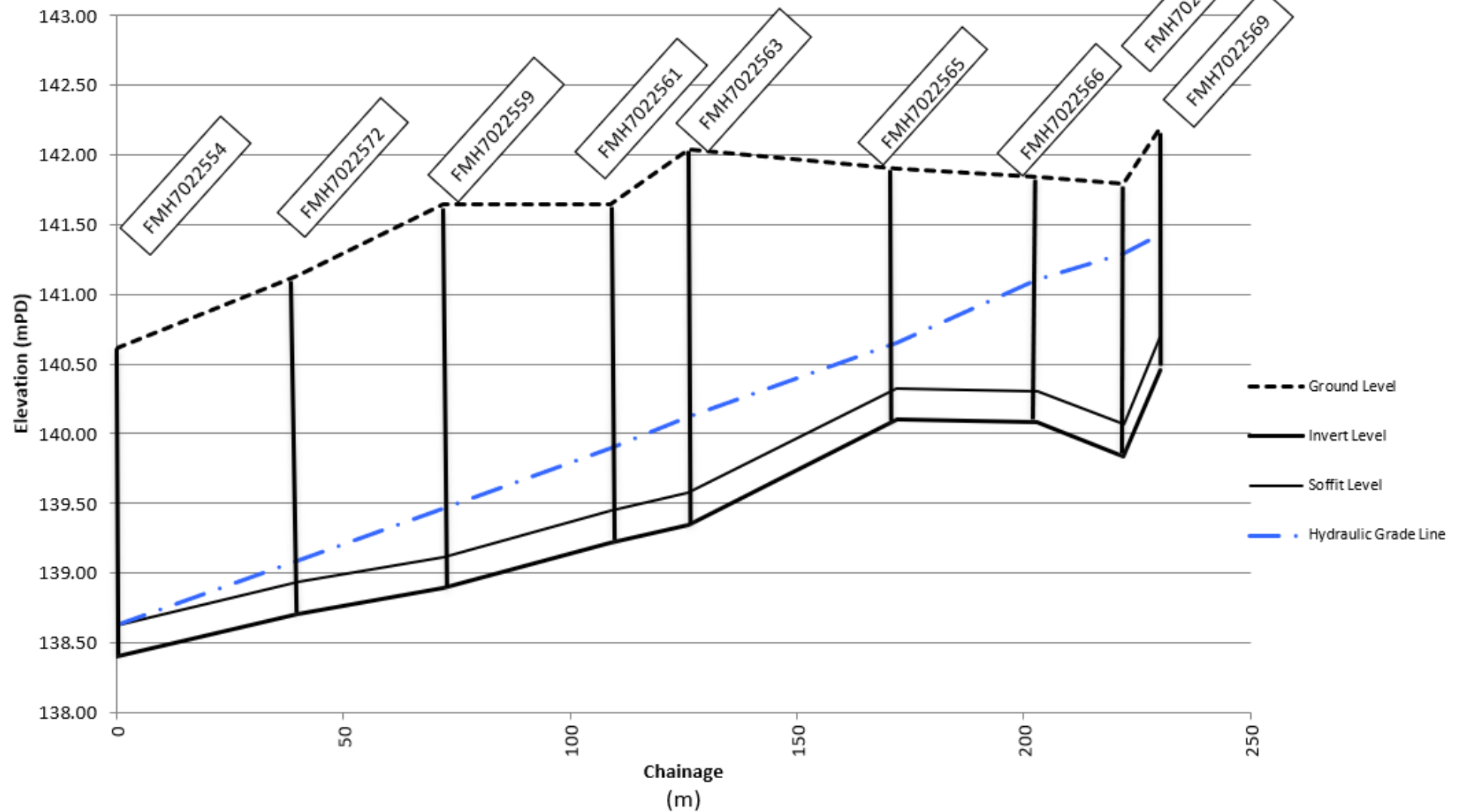


Figure: 4

**RAMBOLL**

Title: Hydraulic Profile (Peak Future Discharge x 1.15)

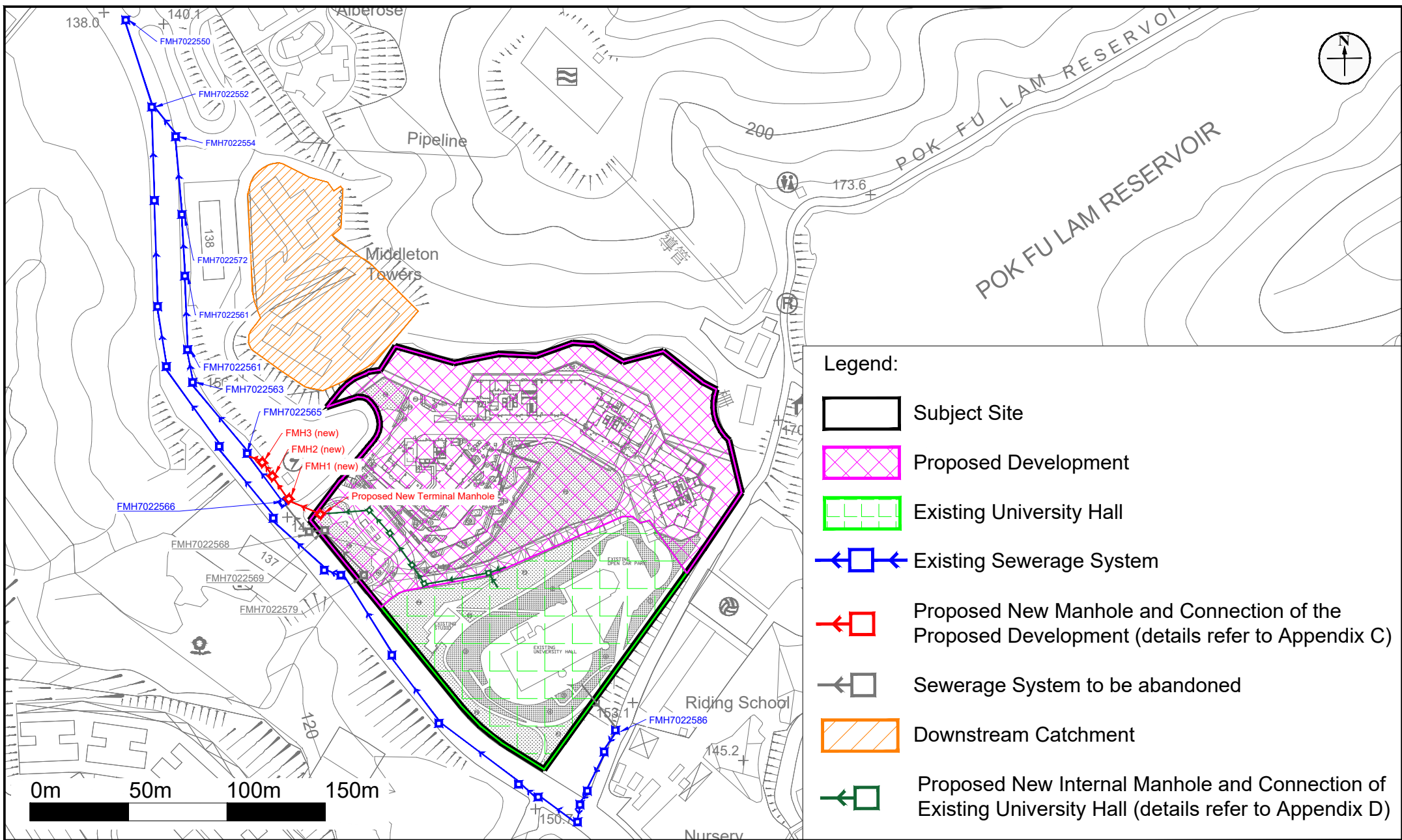
Drawn by: KC

Checked by: YH

Project: Student Residences and Residential Development for the University of Hong Kong at 142 Pok Fu Lam Road, Pok Fu Lam,  
R.B.L. No. 925

Rev.: 4.0

Date: Apr 2023



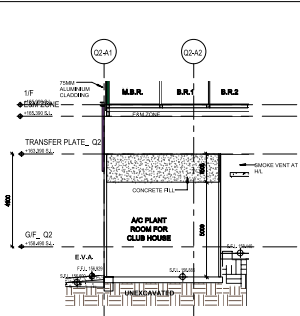
|                                                                                                                                                  |                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| <b>Figure:</b> 5                                                                                                                                 |                                |
| <b>Title:</b> Proposed Improvement Works                                                                                                         | Drawn by: KW<br>Checked by: TC |
| <b>Project:</b> Student Residences and Residential Development for the University of Hong Kong at 142 Pok Fu Lam Road, Pok Fu Lam, R.B.L.No. 925 | Rev.: 4.0                      |
|                                                                                                                                                  | Date: Apr 2023                 |

## **Appendix A    Layout Plans Provided by ALKF**

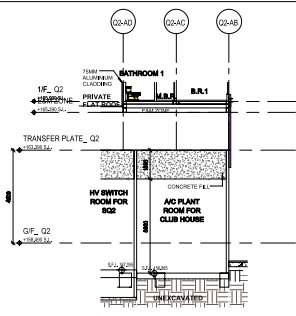




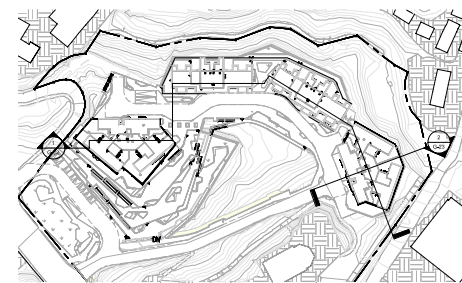




⑤ SECTION A OF A/C PLANT ROOM FOR CLUB HOUSE AT G/F (S02)  
1 : 100

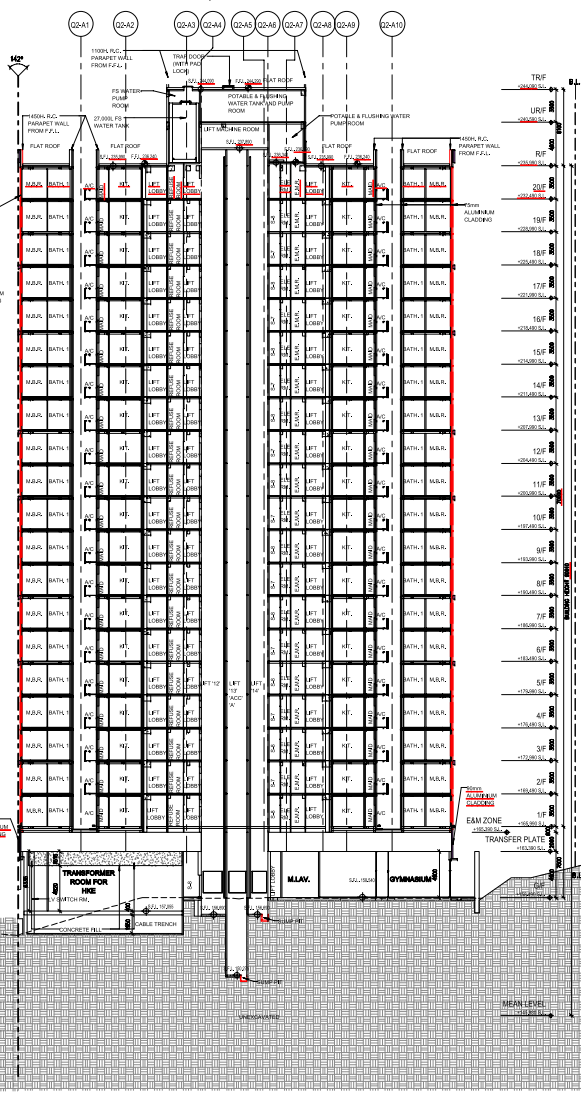


⑥ SECTION B OF A/C PLANT ROOM FOR CLUB HOUSE AT G/F (S02)  
1 : 100

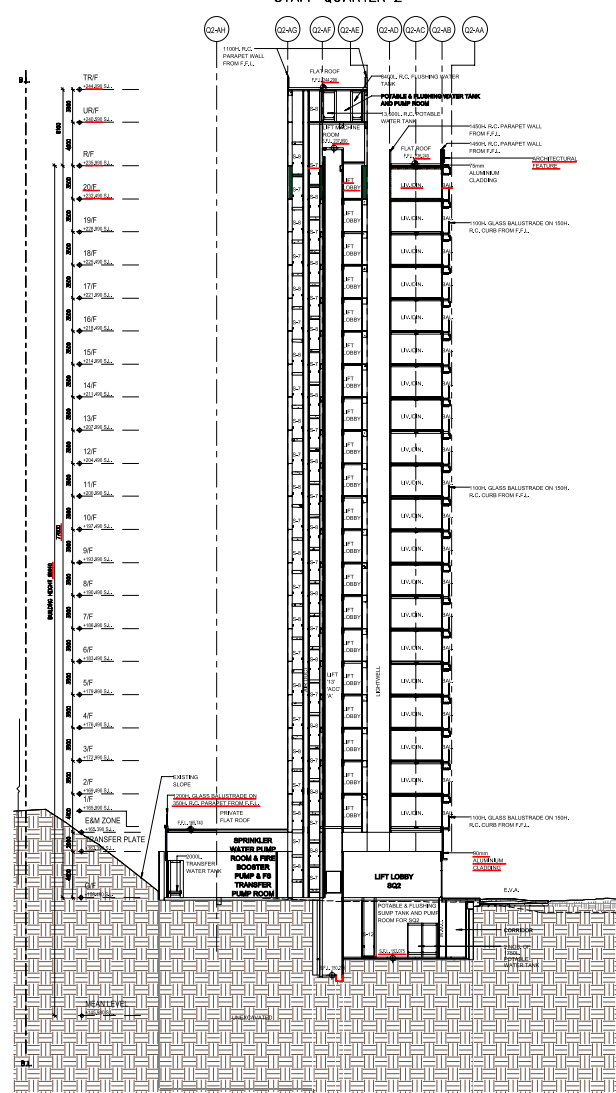


KEY PLAN  
1 : 1000

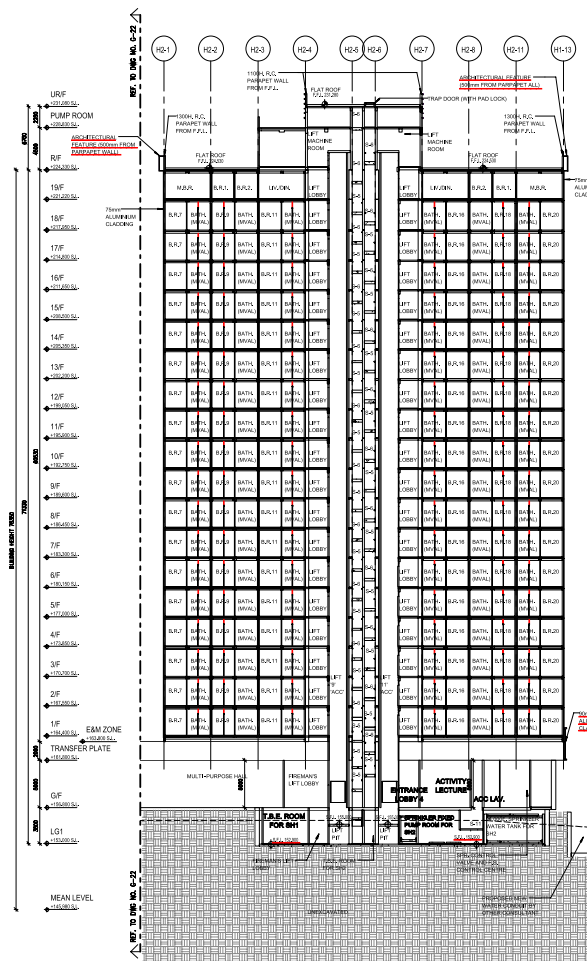
### STAFF QUARTER 2



### STAFF QUARTER 2



### STUDENT HOSTEL 2



① SECTION B-B (CONT.)  
1 : 200

② SECTION C-C  
1 : 200

### AMENDMENT PLAN

| NO. | DESCRIPTION | DATE       |
|-----|-------------|------------|
| 1   | REVISION    | 20/08/2022 |
| 2   | REVISION    | 20/08/2022 |
| 3   | REVISION    | 20/08/2022 |
| 4   | REVISION    | 20/08/2022 |
| 5   | REVISION    | 20/08/2022 |

**ALKE+**  
ARCHITECTS

ANDREW LEE KUNGLIN &  
APPROVED ARCHITECTS LTD

Job No. A-2009

Project: STUDENT RESIDENCES AND  
RESIDENTIAL DEVELOPMENT FOR THE UNIVERSITY OF  
HONG KONG AT 42 POK FU  
LAM ROAD, POK FU LAM,  
R.L. No. 925

Drawing No. SECTION (2)

| Drawn       | Checked      | Approved   | Date       |
|-------------|--------------|------------|------------|
| SHIRLEY G.  | SHIRLEY G.   | ANDREW LEE | 20/08/2022 |
| Approved    | Approved     | Approved   | 20/08/2022 |
| Scale       | As indicated |            |            |
| Drawing No. | G-23         | Revision   | C          |

## **Appendix B      Detailed Sewerage Impact Assessment Calculations**

**C187 The University of Hong Kong Accommodation - High West**  
**Table 1 - Populations and Sewage Flows**

Sewage Flows

Refer EPD Guidelines for the Estimation of Sewage Flows for Sewage Infrastructure Planning

See Centadata and Property websites for data

| Population                                                        | Category      | Population | Unit Flow<br>(m <sup>3</sup> /h/d) | Daily Flow<br>(m <sup>3</sup> /d) | Remarks                                                                                                                                    |
|-------------------------------------------------------------------|---------------|------------|------------------------------------|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <b><u>The Site (Proposed Development)</u></b>                     |               |            |                                    |                                   |                                                                                                                                            |
| Student Hostels                                                   | Institutional | 984        | 0.190                              | 187.0                             | Population from Project Data                                                                                                               |
| Staff Quarters 1 & 2                                              | R2            | 819        | 0.270                              | 221.1                             | 273 Units x 3PPF                                                                                                                           |
| Student Canteen                                                   | J10           | 31         | 1.580                              | 49.0                              | 603m <sup>2</sup> x 19.6m <sup>2</sup> per Employee (CIFSUS Data)                                                                          |
| Support Facilities, office and meeting rooms                      | J11           | 35         | 0.280                              | 9.8                               | 1041m <sup>2</sup> x 30.3m <sup>2</sup> per Employee (CIFSUS Data)                                                                         |
| <b><u>University Hall (Existing)</u></b>                          |               |            |                                    |                                   |                                                                                                                                            |
| Resident Students                                                 | Institutional | 110        | 0.190                              | 20.9                              | New internal sewers connection                                                                                                             |
| Staff                                                             | J11           | 20         | 0.280                              | 5.6                               |                                                                                                                                            |
| Total                                                             |               |            |                                    | 493.4                             |                                                                                                                                            |
| Average Flow (l/s)                                                |               |            |                                    | 5.71                              |                                                                                                                                            |
| Contributing Population                                           |               |            | 0.270                              | 1,827                             | Population 1,000 - 5,000                                                                                                                   |
| Peaking Factor - Gravity (Including Stormwater Allowance)         |               |            |                                    | 6                                 | GESF Table T-5                                                                                                                             |
| <b>Peak Flow (l/s)</b>                                            |               |            |                                    | <b>34.3</b>                       |                                                                                                                                            |
| <b><u>Downstream Sewer</u></b>                                    |               |            |                                    |                                   |                                                                                                                                            |
| Flow from the Site                                                |               |            |                                    | 493.4                             |                                                                                                                                            |
| <b><u>Middleton Towers</u></b>                                    |               |            |                                    |                                   |                                                                                                                                            |
| Residents                                                         | R2            | 274        | 0.270                              | 73.9                              | 72 Units. Average occupancy 3.8 PPF (2016 By-Census)                                                                                       |
| Management Staff, etc. @ 5% of resident population                | J11           | 14         | 0.280                              | 3.8                               |                                                                                                                                            |
| Total Flow                                                        |               |            |                                    | 571.1                             | Inflow Factor = 1.00 (GESF Table T-4)                                                                                                      |
| Average Flow (l/s)                                                |               |            |                                    | 6.61                              |                                                                                                                                            |
| Contributing Population                                           |               |            | 0.270                              | 2,115                             | Population 1,000 - 5,000                                                                                                                   |
| Peaking Factor - Gravity (Including Stormwater Allowance)         |               |            |                                    | 6                                 | GESF Table T-5                                                                                                                             |
| <b>Peak Flow (l/s)</b>                                            |               |            |                                    | <b>39.7</b>                       |                                                                                                                                            |
| <b><u>Flows to Adjacent 225mm-300mm Diameter Sewer System</u></b> |               |            |                                    |                                   |                                                                                                                                            |
|                                                                   |               |            |                                    |                                   | Population Data mostly from previous SIA Report for the Project                                                                            |
| Country Park Pok Fu Lam Management Centre                         | J11           | 5          | 0.280                              | 1.4                               |                                                                                                                                            |
| Staff Quarters of Water Supplies Department                       | Institutional | 36         | 0.190                              | 6.8                               |                                                                                                                                            |
| Hong Kong Phab Association Pok Fu Lam Phab Camp                   |               |            |                                    |                                   |                                                                                                                                            |
| Campers                                                           | Institutional | 160        | 0.190                              | 30.4                              |                                                                                                                                            |
| Staff                                                             | J11           | 20         | 0.280                              | 5.6                               |                                                                                                                                            |
| Swimming Pool Backwash                                            |               |            |                                    |                                   | Add to Peak Flow (below)                                                                                                                   |
| Pokfulam Public Riding School                                     |               |            |                                    |                                   |                                                                                                                                            |
| Public Users                                                      | Student       | 20         | 0.040                              | 0.8                               |                                                                                                                                            |
| Staff                                                             | J11           | 20         | 0.280                              | 5.6                               |                                                                                                                                            |
| University Hall (Existing)                                        |               |            |                                    |                                   | The existing sewers connected to Manhole FMH7022586 will be abandoned                                                                      |
| Resident Students                                                 | Institutional | 0          | 0.190                              | 0.0                               |                                                                                                                                            |
| Staff                                                             | J11           | 0          | 0.280                              | 0.0                               |                                                                                                                                            |
| Pokfulam Transit Nursery                                          | J7            | 20         | 0.080                              | 1.6                               |                                                                                                                                            |
| Bethanie                                                          |               |            |                                    |                                   |                                                                                                                                            |
| Tour Guides                                                       | J11           | 5          | 0.280                              | 1.4                               |                                                                                                                                            |
| HKAPA Students                                                    | Student       | 100        | 0.040                              | 4.0                               |                                                                                                                                            |
| HKAPA Staff                                                       | J11           | 10         | 0.280                              | 2.8                               |                                                                                                                                            |
| Woodbury Court (137 Pokfulam Road)                                |               |            |                                    |                                   |                                                                                                                                            |
| Residents                                                         | R2            | 114        | 0.270                              | 30.8                              | 30 Units from Centadata. Average occupancy 3.8 PPF (2016 By-census)                                                                        |
| Management Staff, etc. @ 5% of resident population                | J11           | 6          | 0.280                              | 1.6                               | Add to Peak Flow (below)                                                                                                                   |
| Swimming Pool Backwash                                            |               |            |                                    |                                   |                                                                                                                                            |
| 138 Pokfulam Road                                                 |               |            |                                    |                                   |                                                                                                                                            |
| Residents                                                         | R3            | 11         | 0.370                              | 4.2                               | 3 Houses under development. Average occupancy 3.8 PPF (2016 By-census)                                                                     |
| Flow from the Site and Middleton Towers                           |               |            |                                    | 571.1                             |                                                                                                                                            |
| Total Flow                                                        |               |            |                                    | 668.1                             | Inflow Factor = 1.00 (GESF Table T-4)                                                                                                      |
| Average Flow (l/s)                                                |               |            |                                    | 7.73                              |                                                                                                                                            |
| Contributing Population                                           |               |            | 0.270                              | 2,474                             | Population 1,000 - 5,000                                                                                                                   |
| Peaking Factor - Gravity (Including Stormwater Allowance)         |               |            |                                    | 6                                 | GESF Table T-5                                                                                                                             |
| <b>Peak Flow (l/s)</b>                                            |               |            |                                    | <b>46.4</b>                       |                                                                                                                                            |
| <b><u>Swimming Pool Backwash</u></b>                              |               |            |                                    |                                   |                                                                                                                                            |
| Pool at Pok Fu Lam PHAB Camp (l/s)                                |               |            |                                    | 18.2                              | Measured 505m <sup>2</sup> pool, say 1.3m deep = 657m <sup>3</sup> . With a 10-hour turnover, pump rate = 65.7m <sup>3</sup> /hr = 18.2l/s |
| Pool at Woodbury Court (l/s)                                      |               |            |                                    | 3.6                               | Measured 100m <sup>2</sup> pool, say 1.3m deep = 130m <sup>3</sup> . With a 10-hour turnover, pump rate = 13.0m <sup>3</sup> /hr = 3.6l/s  |
| <b>Peak Flow including Swimming Pool Backwash (l/s)</b>           |               |            |                                    | <b>68.2</b>                       |                                                                                                                                            |



**C187 The University of Hong Kong Accommodation - High West**  
**Table 2 - Existing Sewerage Capacity**

Refer LandsD GeoInfo Map

Check capacity of existing sewers from connection in Pokfulam Road

Roughness Factor,  $k_s = 3.0\text{mm}$  throughout (Assumed. All pipes are 225mm diameter, so very likely to be Clayware)

| Manhole Ref.                            | CL<br>(mPD) | IL<br>(mPD)      | Pipe<br>No. | Distance<br>(m) | Diameter<br>(mm) | Gradient<br>(1 in) | Capacity<br>(m <sup>3</sup> /s) | Future<br>Peak<br>Discharge<br>(m <sup>3</sup> /s) | Peak as<br>% of Capacity<br>Future<br>(%) | Remarks                                                                                                                     |
|-----------------------------------------|-------------|------------------|-------------|-----------------|------------------|--------------------|---------------------------------|----------------------------------------------------|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| <b>Existing Sewers in Pokfulam Road</b> |             |                  |             |                 |                  |                    |                                 |                                                    |                                           |                                                                                                                             |
| FMH7022579                              | 141.87      | 140.40           | -           | 29              | 225              | -                  | -                               | -                                                  | -                                         | Not in used, to be abandoned (information from GeoInfo Map)                                                                 |
| FMH7022569                              | 142.20      | 140.46<br>140.46 |             |                 |                  |                    |                                 |                                                    |                                           | Existing Connection Point from the Site. Surveyed IL                                                                        |
| FMH7022568                              | 141.79      | 139.84<br>139.84 | 1           | 8               | 225              | 13                 | 0.114                           | 0.0343                                             | 30.0                                      | Surveyed IL                                                                                                                 |
| FMH7022566                              | 141.84      | 140.08<br>140.08 | 2           | 19              | 225              | -79                | 0.004                           | 0.0343                                             | 860.8                                     | <b>Reverse gradient.</b> Shallow gradient assumed for calculation purposes<br>Connection from Middleton Towers. Surveyed IL |
| FMH7022565                              | 141.90      | 140.10<br>140.10 | 3           | 31              | 225              | -1550              | 0.004                           | 0.0397                                             | 996.4                                     | <b>Reverse gradient.</b> Shallow gradient assumed for calculation purposes<br>Surveyed IL                                   |
| FMH7022563                              | 142.04      | 139.38<br>139.35 | 4           | 46              | 225              | 64                 | 0.051                           | 0.0397                                             | 77.5                                      |                                                                                                                             |
| FMH7022561                              | 141.65      | 139.24<br>139.22 | 5           | 17              | 225              | 155                | 0.033                           | 0.0397                                             | 120.7                                     | <b>Under-capacity</b>                                                                                                       |
| FMH7022559                              | 141.65      | 138.94<br>138.89 | 6           | 37              | 225              | 132                | 0.036                           | 0.0397                                             | 111.6                                     | <b>Under-capacity</b>                                                                                                       |
| FMH7022572                              | -           | 138.71<br>138.71 | 7           | 32              | 225              | 178                | 0.031                           | 0.0397                                             | 129.5                                     | <b>Under-capacity</b>                                                                                                       |
| FMH7022554                              | 140.61      | 138.40<br>138.40 | 8           | 40              | 225              | 129                | 0.036                           | 0.0397                                             | 110.3                                     | <b>Under-capacity</b>                                                                                                       |
| FMH7022552                              | 139.76      | 137.96<br>137.96 | 9           | 19              | 225              | 43                 | 0.062                           | 0.0397                                             | 63.7                                      |                                                                                                                             |
| FMH7022550                              | 139.22      | 137.47           | 10          | 47              | 300              | 96                 | 0.090                           | 0.0682                                             | 75.6                                      | Connection to 300mm diameter sewer and adjacent sewerage system                                                             |

**C187 The University of Hong Kong Accommodation - High West**  
**Table 3 - Sewerage Hydraulic Profile at Peak Flow**

Refer LandsD GeoInfo Map

Check capacity of existing sewers from connection in Pokfulam Road

Roughness Factor,  $k_s = 3.0\text{mm}$  throughout (Assumed. All pipes are 225mm diameter, so assume Clayware)

| Manhole Ref.                            | CL<br>(mPD) | IL<br>(mPD)      | Pipe<br>No. | Distance<br>(m) | Diameter<br>(mm) | Future<br>Peak<br>Discharge<br>(m <sup>3</sup> /s) | Water Level<br>at Manhole<br>(mPD) | Freeboard<br>(m) | Remarks                                                            |
|-----------------------------------------|-------------|------------------|-------------|-----------------|------------------|----------------------------------------------------|------------------------------------|------------------|--------------------------------------------------------------------|
| <b>Existing Sewers in Pokfulam Road</b> |             |                  |             |                 |                  |                                                    |                                    |                  |                                                                    |
| FMH7022579                              | 141.87      | 140.40           | -           | 29              | 225              | -                                                  | -                                  | -                | Not in used, to be abandoned (information from GeoInfo Map)        |
| FMH7022569                              | 142.20      | 140.46<br>140.46 | 1           | 8               | 225              | 0.0343                                             | 140.849                            | 1.351            | Existing Connection Point from the Site. Surveyed IL               |
| FMH7022568                              | 141.79      | 139.84<br>139.84 |             |                 |                  |                                                    | 140.742                            | 1.048            | Surveyed IL                                                        |
| FMH7022566                              | 141.84      | 140.08<br>140.08 |             |                 |                  |                                                    | 140.603                            | 1.237            | Reverse gradient.<br>Connection from Middleton Towers. Surveyed IL |
| FMH7022565                              | 141.90      | 140.10<br>140.10 |             |                 |                  |                                                    | 140.151                            | 1.749            | Reverse gradient.<br>Surveyed IL                                   |
| FMH7022563                              | 142.04      | 139.38<br>139.35 |             |                 |                  |                                                    | 139.750                            | 2.290            |                                                                    |
| FMH7022561                              | 141.65      | 139.24<br>139.22 |             |                 |                  |                                                    | 139.579                            | 2.071            |                                                                    |
| FMH7022559                              | 141.65      | 138.94<br>138.89 |             |                 |                  |                                                    | 139.256                            | 2.394            |                                                                    |
| FMH7022572                              | 141.13      | 138.71<br>138.71 |             |                 |                  |                                                    | 138.975                            | 2.155            |                                                                    |
| FMH7022554                              | 140.61      | 138.40<br>138.40 | 8           | 40              | 225              | 0.0397                                             | 138.625                            | 1.985            | Assume Pipe-full conditions                                        |

**C187 The University of Hong Kong Accommodation - High West**  
**Table 4 - Sewerage Hydraulic Profile at Peak Flows x 1.15**

Refer LandsD GeoInfo Map

Check capacity of existing sewers from connection in Pokfulam Road

Roughness Factor,  $k_s = 3.0\text{mm}$  throughout (Assumed. All pipes are 225mm diameter, so very likely to be Clayware)

| Manhole Ref.                            | CL<br>(mPD) | IL<br>(mPD)      | Pipe<br>No. | Distance<br>(m) | Diameter<br>(mm) | Future<br>Peak<br>Discharge<br>x 1.15<br>(m <sup>3</sup> /s) | Water Level<br>at Manhole<br>(mPD) | Depth from<br>Ground Level<br>to Water<br>Level<br>(m) | Remarks                                                            |
|-----------------------------------------|-------------|------------------|-------------|-----------------|------------------|--------------------------------------------------------------|------------------------------------|--------------------------------------------------------|--------------------------------------------------------------------|
| <b>Existing Sewers in Pokfulam Road</b> |             |                  |             |                 |                  |                                                              |                                    |                                                        |                                                                    |
| FMH7022579                              | 141.87      | 140.40           | -           | 29              | 225              | -                                                            | -                                  | -                                                      | Not in used, to be abandoned (information from GeoInfo Map)        |
| FMH7022569                              | 142.20      | 140.46<br>140.46 | 1           | 8               | 225              | 0.0394                                                       | <b>141.432</b>                     | <b>0.768</b>                                           | Existing Connection Point from the Site. Surveyed IL               |
| FMH7022568                              | 141.79      | 139.84<br>139.84 |             |                 |                  |                                                              | <b>141.290</b>                     | <b>0.500</b>                                           | Surveyed IL                                                        |
| FMH7022566                              | 141.84      | 140.08<br>140.08 |             |                 |                  |                                                              | <b>141.106</b>                     | <b>0.734</b>                                           | Reverse gradient.<br>Connection from Middleton Towers. Surveyed IL |
| FMH7022565                              | 141.90      | 140.10<br>140.10 |             |                 |                  |                                                              | <b>140.653</b>                     | <b>1.247</b>                                           | Reverse gradient.<br>Surveyed IL                                   |
| FMH7022563                              | 142.04      | 139.38<br>139.35 |             |                 |                  |                                                              | <b>140.121</b>                     | <b>1.919</b>                                           |                                                                    |
| FMH7022561                              | 141.65      | 139.24<br>139.22 |             |                 |                  |                                                              | <b>139.894</b>                     | <b>1.756</b>                                           |                                                                    |
| FMH7022559                              | 141.65      | 138.94<br>138.89 |             |                 |                  |                                                              | <b>139.463</b>                     | <b>2.187</b>                                           |                                                                    |
| FMH7022572                              | 141.13      | 138.71<br>138.71 |             |                 |                  |                                                              | <b>139.090</b>                     | <b>2.040</b>                                           |                                                                    |
| FMH7022554                              | 140.61      | 138.40<br>138.40 | 8           | 40              | 225              | 0.0457                                                       | <b>138.625</b>                     | <b>1.985</b>                                           |                                                                    |

**C187 The University of Hong Kong Accommodation - High West**

**Table 5 - Sewerage Capacity - Revised Arrangement with New Terminal Manhole**

Refer LandsD GeoInfo Map

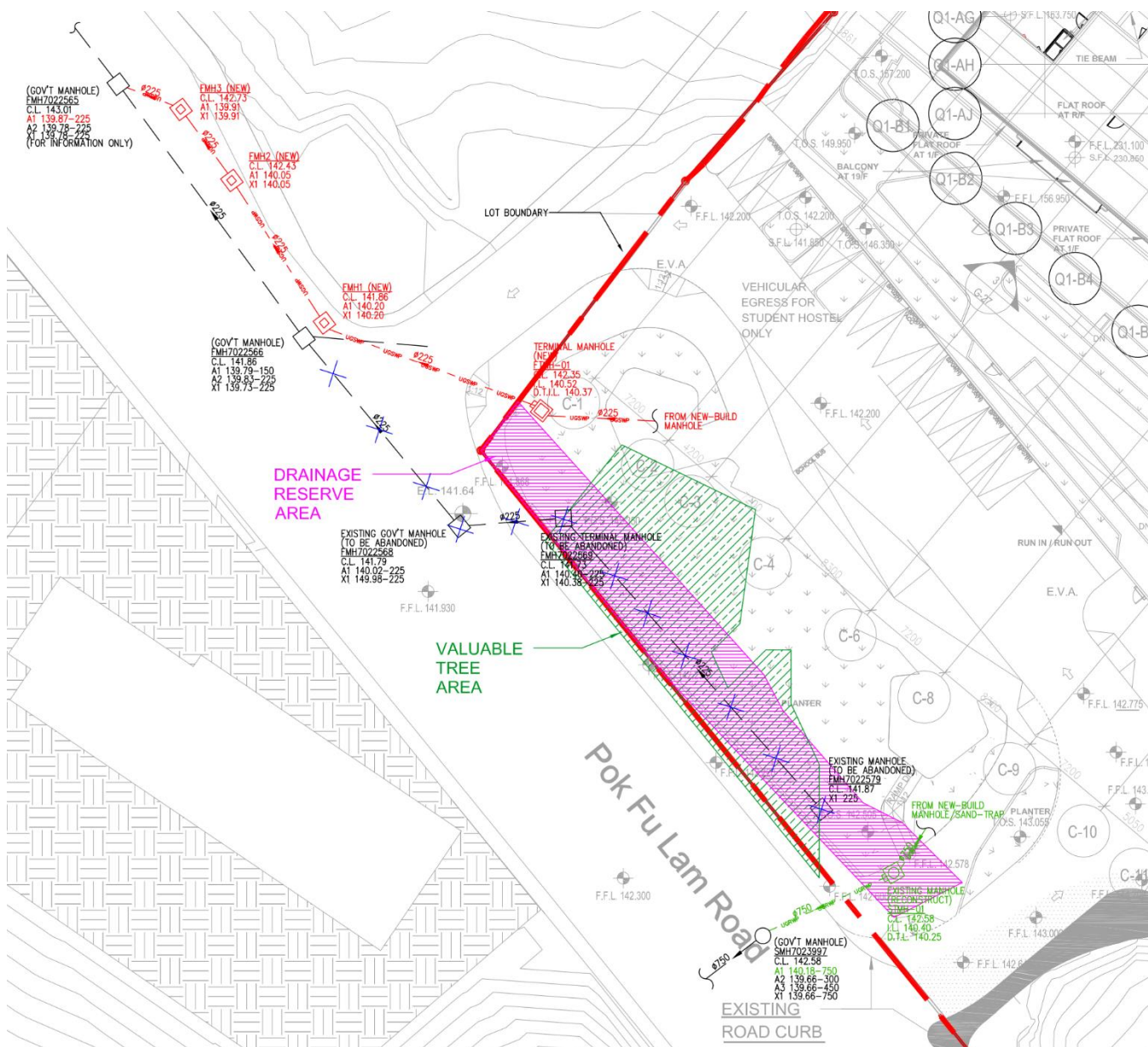
Check capacity of sewers from new connection in Pokfulam Road

Roughness Factor,  $k_s = 3.0\text{mm}$  throughout (Assumed. All pipes are 225mm diameter, so very likely to be Clayware)

| Manhole Ref.                            | CL<br>(mPD) | IL<br>(mPD)      | Pipe<br>No. | Distance<br>(m) | Diameter<br>(mm) | Gradient<br>(1 in) | Capacity<br>(m <sup>3</sup> /s) | Future<br>Peak<br>Discharge<br>(m <sup>3</sup> /s) | Peak as<br>% of Capacity<br>Future<br>(%) | Remarks                                                         |
|-----------------------------------------|-------------|------------------|-------------|-----------------|------------------|--------------------|---------------------------------|----------------------------------------------------|-------------------------------------------|-----------------------------------------------------------------|
| <b>Existing Sewers in Pokfulam Road</b> |             |                  |             |                 |                  |                    |                                 |                                                    |                                           |                                                                 |
| FMH7022579                              |             |                  | -           |                 |                  |                    |                                 |                                                    |                                           | Not in used, to be abandoned                                    |
| FMH7022569                              |             |                  | 1           |                 |                  |                    |                                 |                                                    |                                           | Manhole to be abandoned                                         |
| FWD7024627                              |             |                  | 2           |                 |                  |                    |                                 |                                                    |                                           | Sewer to be abandoned                                           |
| FMH7022568                              |             |                  |             |                 |                  |                    |                                 |                                                    |                                           | Manhole to be abandoned                                         |
| FWD7024626                              |             |                  |             |                 |                  |                    |                                 |                                                    |                                           | Sewer to be abandoned                                           |
| FMH7022565                              | 141.90      | 139.87<br>139.87 | 4           | 46              | 225              | 94                 | 0.042                           | 0.0397                                             | 94.0                                      | To be connected with the New Manholes and Sewers                |
| FMH7022563                              | 142.04      | 139.38<br>139.35 | 5           | 17              | 225              | 155                | 0.033                           | 0.0397                                             | 120.7                                     | Minor Under-capacity                                            |
| FMH7022561                              | 141.65      | 139.24<br>139.22 | 6           | 37              | 225              | 132                | 0.036                           | 0.0397                                             | 111.6                                     | Minor Under-capacity                                            |
| FMH7022559                              | 141.65      | 138.94<br>138.89 | 7           | 32              | 225              | 178                | 0.031                           | 0.0397                                             | 129.5                                     | Minor Under-capacity                                            |
| FMH7022572                              | -           | 138.71<br>138.71 | 8           | 40              | 225              | 129                | 0.036                           | 0.0397                                             | 110.3                                     | Minor Under-capacity                                            |
| FMH7022554                              | 140.61      | 138.40<br>138.40 | 9           | 19              | 225              | 43                 | 0.062                           | 0.0397                                             | 63.7                                      | Connection to 300mm diameter sewer and adjacent sewerage system |
| FMH7022552                              | 139.76      | 137.96<br>137.96 | 10          | 47              | 300              | 96                 | 0.090                           | 0.0682                                             | 75.6                                      |                                                                 |
| FMH7022550                              | 139.22      | 137.47           |             |                 |                  |                    |                                 |                                                    |                                           |                                                                 |

## **Appendix C**

### **New connection from the proposed development to the existing sewer**



Foul Water Pipe Size of **225** mm diameter

By Manning Formula:

$$\begin{aligned} \text{3/4 Full bore Area of flow,} &= 0.805 \times A \\ &= 0.805 \times \frac{1}{4} \times 3.14 \times (0.225)^2 \\ &= 0.0320 \text{ m}^2 \end{aligned}$$

$$\begin{aligned} \text{3/4 Full bore velocity,} \quad V &= \frac{\text{HMD}^{2/3} s^{1/2}}{n} = 1.51357 \text{ m/s} \end{aligned}$$

$$\begin{aligned} D &= 0.225 &= \text{Pipe Diameter in metre (m)} \\ s &= 1 : 100 &= \text{Gradient (slope)} \\ n &= 0.011 &= \text{Manning Friction Coefficient (Refer DSD Sewer Manual Part 1)} \\ \text{HMD} &= \text{Hydraulic Mean Depth (m)} \end{aligned}$$

$$\begin{aligned} &= \frac{A_f}{\text{Wetted perimeter}} = \frac{A_f}{2.094 \times D} = \frac{0.0320}{0.47115} = 0.0679 \end{aligned}$$

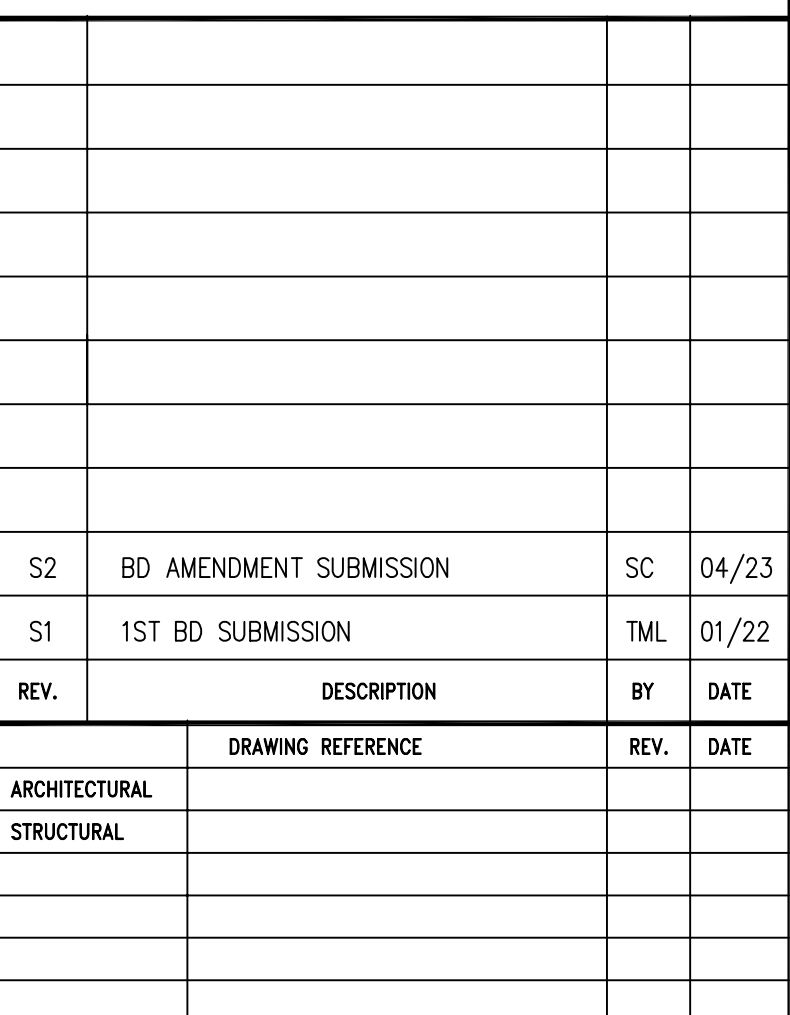
$$\begin{aligned} \text{3/4 Full bore flowrate,} \quad Q_1 &= V \times A_f \\ &= 1.514 \times 0.0320 \\ &= 0.0484 \text{ m}^3/\text{s} \\ &= 48.4 \text{ l/s} \end{aligned}$$

**Appendix D**  
**New Internal Sewer Connection from the Existing University Hall**  
**(Extracted from University Hall Drainage Submission)**









| REV. | DESCRIPTION | BY | DATE |
|------|-------------|----|------|
|------|-------------|----|------|

|               | DRAWING REFERENCE | REV. | DATE |
|---------------|-------------------|------|------|
| ARCHITECTURAL |                   |      |      |
| STRUCTURAL    |                   |      |      |
|               |                   |      |      |
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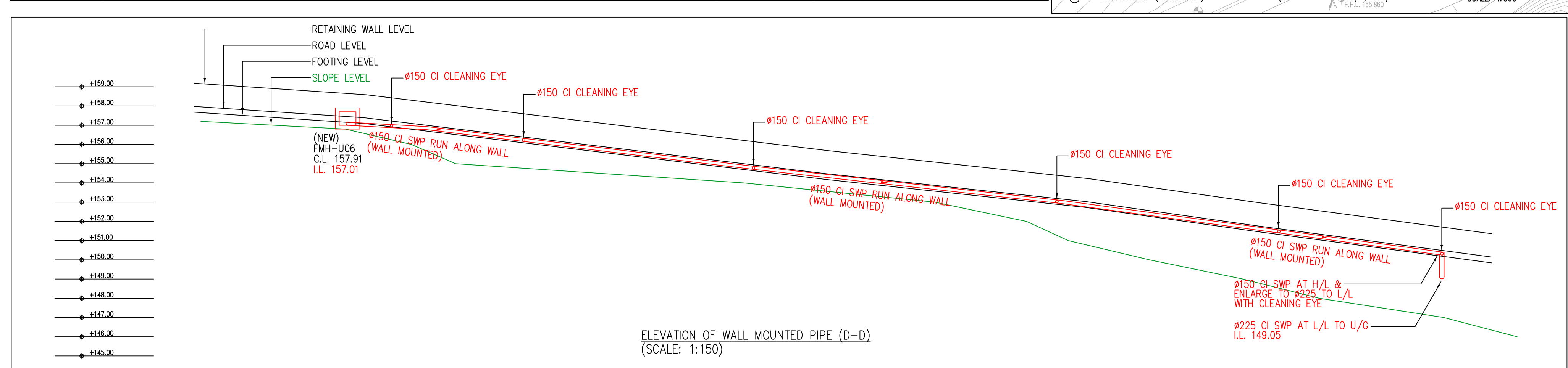
Telephone: 2858 0738  
2859 0100  
Facsimile: 2859 1613

PROJECT  
DRAINAGE WORKS OF UNIVERSITY HALL  
FOR THE UNIVERSITY OF HONG KONG  
AT 144 POK FU LAM ROAD, PO FU LAM, R.B.L. NO.1192

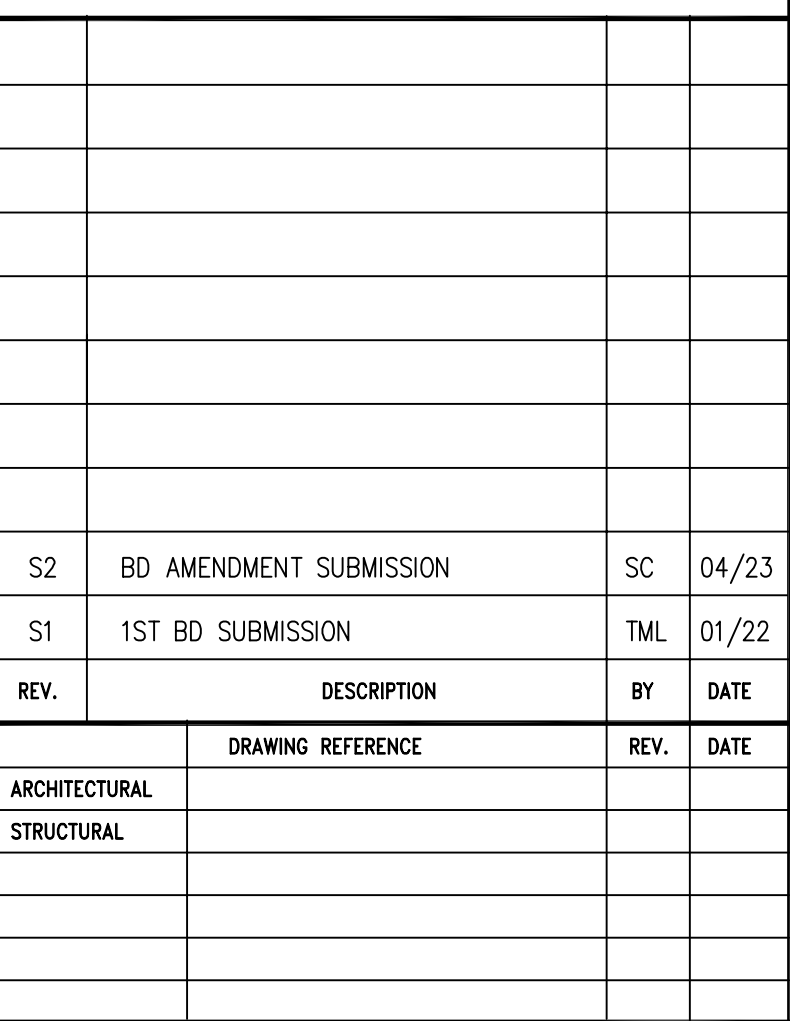
TITLE  
DRAINAGE SERVICE -  
SITE LAYOUT PLAN (SHEET 1 OF 2)

|             | NAME      | INITIAL | DATE  |
|-------------|-----------|---------|-------|
| DESIGNED BY | S.C       |         | 04/23 |
| DRAWN BY    | S.C       |         | 04/23 |
| CHECKED BY  | G.L       |         | 04/23 |
| APPROVED BY | T.K. CHAN |         | 04/23 |

|                                                                                       |                |                          |      |
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DRAINAGE SERVICE -

1. *How many people are there in your family?*

|  | NAME | INITIAL | DATE |
|--|------|---------|------|

|          |     |  |       |
|----------|-----|--|-------|
| DRAWN BY | S.C |  | 04/23 |
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