Appendix 4

Environmental Assessment

Issue No. : 2
Issue Date : Nov 2024
Project No. : 2244EA

ENVIRONMENTAL ASSESSMENT

FOR

PROPOSED NEW SCIENCE BUILDING OF LINGNAN UNIVERSITY

Prepared by

Allied Environmental Consultants Limited

COMMERCIAL-IN-CONFIDENCE

Allied Environmental Consultants Limited
Member of AEC Group (HKEX Stock Code: 8320.HK)
27/F, Overseas Trust Bank Building, 160 Gloucester Road, Wan Chai, Hong Kong
www.asecg.com T: +852 2815 7028 F: +852 2815 5399

沛然環境評估工程顧問有限公司
沛然環保集團成員（港交所股份代號：8320.HK）
香港灣仔告士打道 160 號海外信託銀行大廈 27 樓

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Allied Environmental Consultants Limited
Member of AEC Group (HKEX Stock Code: 8320.HK)
27/F, Overseas Trust Bank Building, 160 Gloucester Road, Wan Chai, Hong Kong
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1. Introduction

1.1.1. Allied Environmental Consultants Limited (AEC) has been appointed to conduct an Environmental Assessment (EA) for the proposed New Science Building at the existing Yu Kan Hing Memorial Garden of Lingnan University in Tuen Mun under S.16 of the Town Planning Ordinance (hereinafter called "Proposed Development").

1.1.2. The Proposed Development is currently zoned as "Government, Institution or Community" ("G/IC") on the Draft Tuen Mun Outline Zoning Plan (No.: S/TM/40). The Applicant proposes to develop the Application Site as a new science building to provide more floor space for general education purposes, as well as to provide specialised spaces such as computer laboratories, acoustic laboratories and a museum/exhibition space. Given that the development proposal does not comply with the building height restriction of 4 storeys for the subject "G/IC" zone, an application under s.16 of the Town Planning Ordinance is therefore required.

1.1.3. The Proposed Development will consist of the construction of a 7-storey new science building. The tentative completion year is 2028.

1.1.4. Indicative drawings and other technical information on the Proposed Development are provided by the Project Architect (P&T Architects Limited).

1.1.5. The proposed development involves the construction and operation of a tertiary teaching institute. In accordance with the guidelines outlined in ETWB Technical Circular (Works) No. 13/2003, Appendix A, Annex E, tertiary teaching institutes are categorized as developments that typically present limited potential for environmental impact.

1.1.6. While the potential environmental impact is generally low for this type of development, this assumption holds true provided that the project proponent strictly adheres to the implementation of standard pollution control measures. These measures include air quality control, noise control, water quality control, waste management and land contamination control.

2. Objectives

2.1.1. An Environmental Assessment for the Proposed Development is required in support of S16 Planning Application to assess the potential air quality, noise, water quality impacts, land contamination and waste management based on the Proposed Development scheme and recommend relevant mitigation measures where necessary.

3. The Site Environ

3.1.1. The site area of the Application Site is approximately 2,302.28m^2. The Proposed Development is located at Castle Peak Road- Lingnan within the Lingnan University Campus. It is at the existing Yu Kan Hing Memorial Garden at the south of Wing On Plaza, Leung Kau Kui Building in the East, the Main Building in the West and an existing terrain to the South. There are Lingnan University's main buildings in the surrounding. The location of the Application Site and its surroundings are presented in ***Figure 3.1***.

3.1.2. The Application Site is zoned as "Government, Institution or Community" ("G/IC") on the Draft OZP. The surrounding areas are mainly zoned G/IC", Residential(Group B) ("R(B)10" "R(B)11" and "R(B)16" zone), Residential(Group A) ("R(A)3". A strip of area zoned "Green Belt ("GB") are respectively located to the East of the Application Site.

4. The Proposed Development

4.1. Project Planning and Programme

4.1.1. The Proposed Development will comprise the construction of a 7-storey new science building with LG/F to cater for the increasing demand for tertiary education in both undergraduate and postgraduate studies.

4.1.2. A new science building with laboratories, offices and lecture halls will be completed by 2028. The LG/F consists of canteen, multipurpose room and store room. The Development Schedule is given in ***Table 4-1***. An indicative development layout of the Proposed Development is shown in ***Appendix 3.1***.

Table 4-1 Development Schedule

Floor	Major Uses
LG/F	Canteen & Multi-purpose Room
G/F	Lecture Rooms
1-2/F	Office
3/F – 4/F	Lab
5/F	Exhibition Area & Multipurpose Room

4.2. Interfacing with Other Project

4.2.1. Based on the best available information, only one concurrent project has been identified within 500m assessment area, as shown in table below and ***Figure 4.1***.

Table 4-2 Concurrent Project

Project	Construction Programme	Potential Cumulative Impacts	
		Construction Phase	Operation Phase
Proposed Lingnan Hub at Lingnan University	Commencement year unknown, expected completion in Q3 2024.	✘	✘

4.2.2. The proposed Lingnan Hub at Lingnan University is expected to be completed by Q3 2024, which is prior to the commencement of the proposed development. Therefore, no significant cumulative air and noise impacts are expected during the construction and operation phases of the concurrent project.

5. Implication of Environmental Impact Assessment

5.1.1. This is not a designated project under the Environmental Impact Assessment (EIA) Ordinance (Cap. 499). This EA has been undertaken with reference to the guidance for environmental considerations provided in Chapter 9 "Environment" of the Hong Kong Planning Standards and Guidelines (HKPSG). This EA presents a study of the potential environmental impacts, with respect to air quality, noise, water quality and land contamination aspects. Drainage and sewerage impact assessments are presented separately.

6. Air Quality Impact Assessment

6.1. Introduction

6.1.1. This section assesses the potential air quality impacts in association with the Proposed Development by taking into account the following considerations:

- Road traffic emissions from nearby roads in the proximity;
- Industrial emissions;
- Potential cumulative air quality impacts from concurrent projects during construction stage;
- Potential air quality impact from proposed laboratories, oily fumes and cooking odour from proposed kitchen, canteen and food storage; and
- Air quality impact from proposed construction and demolition

6.2. Environmental Legislation, Standards and Guidelines

General

6.2.1. The relevant legislations, standards and guidelines applicable to the present study for the assessment of air quality impacts include:

- Air Pollution Control Ordinance (APCO) (Cap. 311);
- Air Pollution Control (Construction Dust) Regulation;
- Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation; and
- Air Pollution Control (Fuel Restriction) Regulation.
- Control of Oily Fume and Cooking Odor from Restaurants and Food Business

Air Pollution Control Ordinance: Hong Kong Air Quality Objectives (AQOs)

6.2.2. Air quality in Hong Kong is governed under the Air Pollution Control Ordinance ("APCO") (Cap. 311). Under this legislation, the Government has designated various Air Control Zones for the whole territory, and the prevailing Air Quality Objectives ("AQOs") was taken into effect in January 2022. The AQOs stipulate the statutory limits for seven pollutants and dictate the maximum number of allowable exceedances over specified periods as shown in **Table *6-1***.

Table 6-1 Hong Kong Air Quality Objectives

Pollutant	Averaging Time	Concentration Limit (ug/m^3)[i]	Number of Exceedances to be allowed
Sulphur Dioxide (SO_2)	10-minute	500	3
	24-hour	50	3
RSP or PM_{10}[ii]	24-hour	100	9
	Annual[iv]	50	N/A
FSP or $PM_{2.5}$[iii]	24-hour	50	18[v]
	Annual[iv]	25	N/A
Nitrogen Dioxide (NO_2)	1-hour	200	18
	Annual[iv]	40	N/A
Ozone (O_3)	8-hour	160	9
Carbon monoxide (CO)	1-hour	30,000	0
	8-hour	10,000	0
Lead (Pb)	Annual[iv]	0.5	N/A

Note:
[i] All measurements of the concentration of gaseous air pollutants, i.e., sulphur dioxide, nitrogen dioxide, ozone and carbon monoxide, are to be adjusted to a reference temperature of 293Kelvin and a reference pressure of 101.325 kilopascal.
[ii] Respirable suspended particulates means suspended particles in air with a nominal aerodynamic diameter of 10 μm or less.
[iii] Fine suspended particulates means suspended particles in air with a nominal aerodynamic diameter of 2.5 μm or less.
[iv] Arithmetic mean
[v] The new AQO allows 35 days of exceedance per calendar year for daily FSP for non-government projects. However, government projects shall adopt a more stringent standard with the number of allowable exceedances of 18 days per calendar year.

Hong Kong Planning Standards and Guidelines

6.2.3. The Hong Kong Planning Standards and Guidelines (HKPSG) also provide guidance for all private and public development projects. A summary of relevant environmental design guidelines extracted from Table 3.1 of the HKPSG Chapter 9 is provided below.

Table 6-2 Recommended Buffer Distance for Land Uses (Table 3.1 of HKPSG Chapter 9)

Polluting Uses	Parameters	Permitted Uses	Buffer Distance
Road and Highways	Trunk roads and Primary Distributor	(a) Active and passive recreational uses (b) Passive recreational uses (c) Amenity areas	>20m 3 - 20m < 3m
	District Distributor	(a) Active and passive recreational uses (b) Passive recreational uses	>10m <10m
	Local Distributor	(a) Active and passive recreational uses (b) Passive recreational uses	>5m <5m
Industrial Areas	Difference in Height between Industrial Chimney Exit and the Site		
	< 20m	(a) Active and passive recreational uses (b) Passive recreational uses	>200m 5 - 200m

Polluting Uses	Parameters	Permitted Uses	Buffer Distance
	20 - 30m	(a) Active and passive recreational uses (b) Passive recreational uses	>100m 5 - 100m
	30 - 40m	(a) Active and passive recreational uses (b) Passive recreational uses	>50m 5 - 50m
	> 40m	Active and passive recreational uses	>10m
Construction and earth moving Activities	-	(a) Passive recreational uses (b) Active and passive recreational uses	>50m

Air Pollution Control (Fuel Restriction) Regulation

6.2.4. The Air Pollution Control (Fuel Restriction) Regulation was enacted in 1990 to impose legal control on the type of fuels allowed for use and their sulphur contents in commercial and industrial processes to reduce sulphur dioxide (SO_2) emissions. In June 2008, the Regulation was amended to tighten the control requirements of liquid fuels.

6.3. Background Air Quality

Existing Air Quality in Tuen Mun District

6.3.1. The nearest EPD air quality monitoring station (AQMS) is Tuen Mun Monitoring Station and is adopted to represent the ambient air quality of the area. Latest available 5 years of air quality data, i.e., 2019 to 2023, are summarised in **Table *6-3*** to depict the trend of the localised air quality.

Table 6-3 Background Air Quality at Tuen Mun Monitoring Station

Pollutant	Averaging time	Concentration 2019-2023 (μg/m³)[1][2]					AQO (μg/m³)
		2019	2020	2021	2022	2023	
SO_2	4th peak 10-min	45	98	22	29	23	500
	4th peak 24-hr	12	10	5	11	7	50
PM_{10}	10th peak 24-hr	89	84	87	65	76	100
	Annual Average	41	34	36	32	34	50
$PM_{2.5}$	36th peak 24-hr	42	35	36	33	33	50
	Annual Average	24	20	19	18	19	25
NO_2	19th peak 1-hr	166	166	172	128	160	200
	Annual Average	**47**	40	59	39	40	40
O_3	10th peak 8-hr	**203**	**166**	**161**	**195**	155	160
CO	1st peak 1-hr	2,050	1,650	1,720	1,480	1,370	30,000
	1st peak 8-hr	1,758	1,513	1,450	1,345	1,143	10,000

Notes:

[1] Monitoring result(s) exceeding the AQO is/are bolded and underlined.

[2] All air quality data were extracted from EPD's Environmental Protection Interactive Centre.

6.3.2. Exceedance of concentration of NO_2 and O_3 in the AQO has been recorded at Tuen Mun Monitoring Station. The exceedance of NO_2 is likely due to the influence from exhaust emission from traffic on the busy networks (e.g. Tuen Mun Rd Urban Trunk Rd) in Tuen Mun Area, whereas the exceedance of O_3 is mainly caused by regional air pollution problem and it is not directly emitted from man-made sources. In general, the results show a decreasing trend in the concentration of most pollutants in these 5 years.

Future Background Air Quality Condition

6.3.3. In view of the occupation year of 2028, background air quality concentrations extracted from the path v3 data at Grid (21, 43) in Year 2030 represents background air quality concentrations at the Application Site area. A summary of background air quality concentration in Year 2025 is shown in **Table 6-4**. These data have demonstrated that the concentrations of pollutants are below the AQOs, except for O_3. O_3 is not directly emitted from an emission source. It is formed by the chemical reactions of NOx and VOCs under the presence of sunlight and a regional pollution problem. O_3 is therefore not considered as a key

parameter in this assessment.

Table 6-4 Background Air Quality Concentration of Pollutants

Pollutant	Averaging time	AQOs Concentration limit ($\mu g/m^3$) (exceedance) [1]	Background (21,43)
SO_2	4th peak 10-min	500	28.46
	4th peak 24-hr	50	7.74
PM_{10}	10th peak 24-hr	100	56.57
	Annual Average	50	20.92
$PM_{2.5}$	36th peak 24-hr	50	28.81
	Annual Average	25	13.13
NO_2	19th peak 1-hr	200	85.94
	Annual Average	40	18.78
O_3	10th peak 8-hr	160	**185.47**
CO	1st peak 1-hr	30,000	592.75
	1st peak 8-hr	10,000	576.85

Notes:

[1] Prediction result(s) exceeding the AQO is/are bolded and underlined.

6.4. Identification of Assessment Area and Air Sensitive Receivers

6.4.1. In general, the assessment area for an air quality impact assessment (AQIA) is defined by a distance of 500m from the site boundary which is presented in ***Figure 6.1***.

6.4.2. Representative air sensitive receivers (ASRs) were identified and the separation distance between ASRs and Application Site are shown in ***Figure 6.1*** and summarized **Table 6-5**.

6.4.3. The existing ASRs were identified with reference to the latest best available information at the time of preparation of this report, including those earmarked on relevant OZP (draft Tuen Mun OZP No.: S/TM/40), Development Permission Area Plans, Outline Development Plans, Layout Plans and other relevant published land used plans, including plans and drawings published by the Lands Department and any land use and development applications approved by the Town Planning Board.

Table 6-5 Representative Air Sensitive Receivers

ASR ID	Location	Land Use	Shortest Horizontal Distance (m)	Maximum Building Height (mPD)
ASR01	Main Building- Lingnan University Campus	Educational	0	43.8
ASR02	Parkland Villas	Residential	94	94.7
ASR03	Beneville	Residential	199	72.4
ASR04	South Hillcrest	Residential	280	123
ASR05	President's Lodge-Lingnan University	Residential	82	2-storey
ASR06	South Student Hostels	Residential	84	10-storey
ASR07	Leung Kau Kui Building	Educational	24	4-storey
ASR08	Ho Sin Hang Building	Educational	32	6-storey

6.5. Potential Air Quality Impact - Construction Phase

6.5.1. Demolition, excavation, foundation and superstructure works would be anticipated in the construction phase. The estimated area for excavation within the project site is 600m^2.

6.5.2. Contractor(s) will be required to transport the excavated materials out from the site to avoid the cumulation of materials on site. Excavated materials will be reused as fill materials within the Application Site to minimize dust emission due to transportation of materials. The total volume of stockpile materials generated from project site is around 350m^3.In case temporary stockpiling of dusty materials is required, the stockpiling location will be covered by tarpaulin sheets and backfilled as soon as possible.

6.5.3. Construction activities are expected to generate about 300 m^3 of C&D waste. 1 truck trips per day is expected during the construction stage. Given relatively small scale of the project, significant air quality impact is unlikely with the implementation of proper dust control measures.

6.5.4. Fugitive dust will be the potential major source of air quality impact, significant emissions from NO_2, SO_2 and CO are not anticipated as there will be a limited number of diesel-fueled machinery operating.

6.5.5. Under the Air Pollution Control (non-road Mobile Machinery) (Emission), only approved or exempted non-road mobile machineries with a proper label are allowed to be used in the construction site. In addition, dust potentially generated from concreting works could be minimized with the use of prefabrication construction method where structures are prefabricated offsite whenever possible.

6.5.6. With the implementation of sufficient air quality mitigation measures as stipulated under the

Air Pollution Control (Construction Dust) Regulation and good site practices, significant adverse air impact generated from the construction of the Proposed Development is not anticipated. Mitigation measures to control construction dust/ gaseous and particulates emission listed below are recommended to be incorporated into the future contractor specifications for contractor's implementation:

- Wetting by water spraying or dust suppression chemical on dusty material before loading and unloading, stockpile of dusty materials, area where breaking, excavation or earth moving activities works is carried out, and unpaved main haul road.
- Providing hoarding of not less than 2.4m high from ground level along the site boundary which is next to a road or other public area.
- Providing effective dust screens, sheeting or netting to enclose any scaffolding built around the perimeter of a building.
- Covering or sheltering any stockpile of dusty materials.
- Disposing of any dusty materials collected by fabric filters or other pollution control system in totally enclosed containers.
- Properly treating any exposed earth, such as by compacting or hydroseeding, within 6 months after the last construction activity.
- Providing vehicle washing facilities at all site exits to wash away any dusty materials from vehicles body and wheels before they leave the site.
- Covering of dust load on vehicles before they leave the site.
- Use of ultra-low sulphur content for on-site generators to minimize black smoke emission.
- Providing water spraying system where available and applicable.
- Restricting heights from which materials are to be dropped, as far as practicable, to minimise the fugitive dust arising from unloading / loading.
- Where the public can be affected by exhaust fumes or smoke emission from any construction plants or activities, shielding the related activities by an incombustible screen such as corrugated sheet of at least 2m in width and 1.8m in height.
- Using enclosed chutes for dropping construction materials to ground level and the chutes are dampened regularly, if applicable.
- The foundation work can be carried out either by percussive piling method or non–percussive pilling method. For this project, adoption of non–percussive piling method is anticipated which helps generating lower dust emissions.
- The area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcore.
- Vehicles within the site are restricted to a maximum speed of 10 kph.
- Vehicles are inspected regularly and well maintained to ensure that they are operating efficiently and that exhaust emissions are not causing nuisance.

- Vehicle engines are turned off when they are not in use.
- Haul road of the Application Site is located as far as possible from nearby ASRs.
- Provide electric power supply for on-site machinery as far as practicable and diesel generators and machinery shall be avoided to minimise the gaseous and PM emissions
- Erect higher hoarding at the locations with ASRs in immediate proximity to the project site boundary
- Avoid using exempted NRMMS

6.5.7. Contractors shall also implement the recommended air pollution control measures set out in "Recommended Pollution Control Clauses for Construction Contracts" available on EPD website. An EM&A program should be implemented to monitor the dust impact arising from the construction activities associated with the project.

6.5.8. Due to the small development scale, the construction works to be involved the Application Site would be very limited. Also, requirements set out in the Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation to control potential emissions from non-road mobile machinery will need to be fully complied with. Therefore, gaseous and particulates emissions from diesel-fueled construction equipment would be minor and would not cause any adverse air quality impact.

6.6. Potential Air Quality Impact - Operation Phase

Industrial Emissions from Chimney

6.6.1. An environmental survey was conducted and records of specified licenses were reviewed in June 2024. A site visit was also conducted on 26 July 2024 to identify the surrounding condition of the site. The results of that survey and site visit have confirmed that no chimney is being located within 200m from the Application Site so that the horizontal buffer distance requirement is deemed complied with.

Odour Emission

6.6.2. Based on the results of environmental survey and site visit conducted in June and July 2024, no existing and proposed slaughterhouses, village incinerators, odour sources and industrial uses are found within 500m radius of the Application Site. The notable facility identified Tuen Mun Treatment Works is identified within assessment area. Based on site visit, no significant odor emission is detected since the treatment works is well designed and equipped with proper . Thus, no significant odour emission impact on the Proposed Development is anticipated.

Industrial Emissions from Other Specified Uses

6.6.3. No Industrial zone is identified in the vicinity of the Application Site. Thus, air Impact of these

activities on the Application Site during operation phase is thus not expected.

Vehicular Emissions from Open Road Traffic

6.6.4. Another potential air pollution source in the vicinity of the Application Site during operational phase would be tailpipe emission generated from road traffic along open road.

6.6.5. The Application Site is within the Lingnan University Campus. Lingnan University Campus is bounded by Castle Peak Road-Lingnan to the west, which is classified as a district distributor, source from Traffic Census 2022. The University Campus is also bounded by Fu Tei Road and an access road within Lingnan campus to the South, no information is available for these two roads in The Annual Traffic Census 2022. However, it is confirmed by TD that Fu Tei Road is considered as local distributor, the confirmation will be provided once the reply is received from TD. Based on the traffic survey done by the Traffic Consultant, the AM and PM peak of the access road is 66veh/hr and 81veh/hr respectively, and the traffic flow in 2031 will not be greater than 100veh/hr with the proposed development. Therefore, the access road is considered as a local distributor. The buffer distance is shown in **Figure 6.2** and summarized in **Table *6-6***. The buffer separation can meet the buffer distance requirement. No adverse air quality impact due to vehicular emission is anticipated.

Table 6-6 Buffer distance between the Proposed Development and Nearby Road

Road	Road Type	HKPSG Guideline Buffer Distance Requirement	Distance between Proposed Development Site Boundary and nearby road
Castle Peak Road-Lingnan	District Distributor	10m	67m
Fu Tei Road	Feeder Road	5m	33m
Access Road on the South	Feeder Road	5m	23m

6.6.6. Centralised air conditioning will be provided at the Project development, the location of fresh air intake will be carefully designed and will not encroach on the buffer zone as recommended in the HKPSG. Recreational uses in the open area will not be provided within the buffer zone as well.

Air quality impact arising from the Proposed Development

6.6.7. The nature of the Proposed Development is not environmental polluting. The use of the Proposed Development is similar to other typical institutional uses in Hong Kong, including office and lecture rooms. Wet laboratory will be constructed on 3/F and 4/F, Various organic

or inorganic chemicals such as chloroethane, chloroform, hexachlorobenzene, arsenic, beryllium etc. would be released during the laboratory testing. In view of the absence of local statutory guidelines for non-criteria pollutants, the criteria available from international recognizable organizations are adopted in this study.

6.6.8. Chemical testing will be carried out in the Wet Laboratory and serve as educational purposes only. The chemical tests will be conducted in small scale, occasionally and in short durations. Chemical fume hood with an exhaust vent will be installed in the laboratories. The organic, inorganic and volatile chemicals will be emit and discharged by the chemical fume hood with filter. The discharge point of the exhaust vent will be located at least 3m above the parapet wall of the highest point of any structure of the roof and will be designed to faced away from the fresh air intake of the proposed building and nearby ASRs. The estimated emission rates of the organic and inorganic chemicals emanated due to the Wet Laboratory operation are expected to be minimal and will fulfilled the threshold limit value/ permissible exposure limit of relevant international occupational safety and health requirements. In this connection, impact due to the volatile chemical emission of the Proposed Development is considered negligible.

6.6.9. The nature of the Proposed Development is not environmental polluting. The use of the Proposed Development is similar to other typical institutional uses in Hong Kong, including office and lecture rooms. Yet, Wet Laboratory will be provided on 3/F and 4/F which may generate odour impact on the surrounding. As the chemical tests are only carried out in small scale and occasionally and in short durations. In addition, the laboratory will be completely enclosed and equipped with chemical fume hood with exhaust vent. With the proper designed of the discharge point of the exhaust vent, the impact from the volatile chemicals is expected to have no adverse effects on the surrounding ASRs. In this connection, adverse odour impact from the laboratories is not expected.

6.6.10. The exhaust vent will be provided in the proposed kitchen, canteen and food storage within the Proposed New Building. The exhaust point of the vent will be located at the east of the Proposed Building and facing away from the fresh air intake of the proposed building and nearby ASR. The “EPD's Guideline on Control of Oily Fume and Cooking Odour from Restaurants and Food Business” will be followed in the design of kitchen and canteen for oily fume and odour control. As the kitchen and canteen is only serving the existing population of the lecturers, students and staff, the anticipated oily fume and odour impact is insignificant.

6.7. Conclusions

6.7.1. With the implementation of air quality mitigation measures of the Proposed Development and provision of good site practice as stipulated under the Air Pollution Control (Construction Dust) Regulation and Air Pollution Control (Non-road Mobile Machinery) (Emission)

Regulation, air quality impact from diesel-fueled construction equipment to the nearby air sensitive receivers due to construction works are not expected to be adverse.

6.7.2. For the vehicular emission, a sufficient horizontal buffer distance between Castle Peak Road, Fu Tei Road and Access Road on the South to the Application Site has been provided in accordance with the requirements set out in the HKPSG. No adverse air quality impact due to vehicular emission on the Proposed Development is anticipated.

6.7.3. In view of no chimney was identified within 200m from the project site boundary, no adverse air quality impact with respect to industrial chimney emission on the future users in the Proposed Development is anticipated.

6.7.4. Dust generation and gaseous emission are not anticipated during the operation phase from the Project as its primary function is for educational purposes. Given that the Proposed Development is non-industrial use, no significant dust gas emissions is anticipated. With reference to Traffic generation Survey 2006 (Trip rate of Lingnan University), the AM and PM peak traffic flow for the proposed building are 9 pcu/hr and 17 pcu/hr. As the proposed building is only serving existing lecturers, students and staff, and no carpark provision, the traffic flow induced by the operation of the Project are insignificant.

6.7.5. With the provision of control measures at Wet Laboratory, estimated emission rates of the organic and inorganic chemicals emanated due to the operation of the Wet Laboratory are to be of minimal amount and fulfil the threshold limit value/ permissible exposure limit of relevant occupational safety and health requirements. Potential volatile chemicals emissions associated with the operation of the proposed Project are negligible. Therefore, cumulative air quality impact arising from the Project during operation phase is not expected.

7. Noise Impact Assessment

7.1. Environmental Legislation, Standards and Guidelines

Construction Noise

7.1.1. The statutory legislation controlling construction noise is the Noise Control Ordinance (NCO) (Cap.400). The following construction activities are subjected to statutory control under the NCO, as listed in the Practice Notes for Professional Person (ProPECC) PN 1/24 "Minimizing Noise from Construction Activities", A Construction Noise Permit (CNP) will be required.

- Percussive piling; and
- Construction works other than percussive piling using powered mechanical equipment (PME) between the hours of 19:00 and 07:00 or at any time on a general holiday (i.e. restricted hours)

7.1.2. The carrying out of percussive piling is prohibited between 1900 and 0700 hours or at any time on a general holiday (including Sunday). A valid construction noise permit (CNP) is required for the carrying out of percussive piling during the permitted hours. The "Technical Memorandum on Noise from Percussive Piling" (PP-TM) sets out the requirements for working and determination of the permitted hours of operations.

7.1.3. Other than the abovementioned construction activities or construction activities outside restricted hours, ProPECC PN 1/24 stipulates noise criteria of 65 – 75 dB(A) for daytime construction activities, as shown in the ***Table 7-1***.

Table 7-1 Noise Criteria for Construction Activities

Noise Sensitive Receivers	Leq $_{(30\ mins)}$ * dB(A)
All domestic premises Temporary housing accommodation Hostels Convalescences homes Homes for the aged	75
Places of public worship Courts of law Hospital and medical clinics	70
Educational institutions (including kindergartens and nurseries)	70 (65 during examinations)
*Note: Leq(30mins) is a standard measure of noise level which means the continuous equivalent noise level over a 30 minutes interval.	

Traffic Noise

7.1.4. Noise standards are recommended in Chapter 9, "Environmental" of the HKPSG for planning against noise impact from sources such as road traffic, railway and aircraft. The applicable road traffic noise standards based on the proposed use are L10(1-hour) 70dB(A) for offices.

The noise standard applies to users which rely on openable windows for ventilation only.

Fixed Plant Noise

7.1.5. Legislation, standards, guidelines and criteria relevant to the consideration of planning against possible fixed noise impact under this assessment include the following:

- Noise Control Ordinance (NCO) Cap. 400
- Chapter 9 of HKPSG
- Technical Memorandum on Noise from Places other than Domestic Premises, Public Places or Construction Sites (IND-TM)

7.1.6. Existing Fixed Plant Noise is controlled under the NCO's Technical Memorandum on Noise from Places other than Domestic Premises, Public Places or Construction Sites (IND-TM), which shall not exceed the Acceptable Noise Level (ANL) for a Noise Sensitive Receiver.

7.1.7. More stringent criteria are applicable for planned fixed plants, as stipulated in the Chapter 9, "Environmental" of the HKPSG with the following requirements: 5dB(A) below the appropriate ANLs in the IND-TM, or in the case of the background noise being 5 dB(A) lower than the ANL, should not be higher than the background.

7.1.8. The ANLs for the Representative Noise Sensitive Receivers (NSRs) are based on the Area Sensitivity Rating (ASR), which is defined in the IND-TM issued under NCO. The ASR depends on the type of area and the degree of impact that Influencing Factors (IFs) have on the NSRs and as illustrated in below ***Table 7-2***. Industrial area and major road shall be considered to be an IF. For the given ASR, the ANL, in dB(A), is given in ***Table 7-3***.

Table 7-2 Area Sensitive Ratings (ASR) of NSRs

Type of Area Containing NSR	**Degree to which NSR is affected by Influencing Factors (Ifs)**		
	Not affected	*Indirectly affected*	*Directly affected*
i. Rural area, including country parks, or village type developments	**A**	**B**	**B**
ii. Low density residential area consisting of low-rise or isolated high-rise developments	**A**	**B**	**C**
iii. Urban area	**B**	**C**	**C**
iv. Area other than those above	**B**	**B**	**C**

Table 7-3 Acceptable Noise Level for Fixed Noise Source

Time Period	**ANL, dB(A)**		
	ASR "A"	**ASR "B"**	**ASR "C"**
Day (0700 to 1900 hours)	60	65	70
Evening (1900 to 2300 hours)	60	65	70
Night (2300 to 0700 hours)	50	55	60

7.1.9. According to the Traffic Census 2022, the Annual Average Daily Traffic (AADT) flow of Castle Peak Road - Lingnan is 10,980 veh/day. By definition, Castle Peak Road - Lingnan with AADT flow lower than 30,000 veh/day is not considered as Influencing Factors (IF) within the study area in accordance with the IND-TM.

7.1.10. The Project Site is located in low rise and low-density campus area. The type of area contained the concerned NSRs is considered as "iv. Area other than those above". As mentioned above, Castle Peak Road - Lingnan is not considered as IF. Thus, the noise criteria stipulated in the IND-TM for an ASR of "B" is adopted.

7.2. Identification of Noise Sensitive Receivers

7.2.1. NSRs within 300m assessment area of the Project Site have been with reference to the latest best available information at the time of preparation of this report are summarized in ***Table 7-4***. The buildings in the closed vicinity of the Application Site include the Main Building, So Sin Hang Building, Leung Kau Kui Building, B.Y. Lam Building and Patrick Lee Wan Keung Academic Building. These buildings are equipped with AC provision and thus they are not considered as representative NSR. The assessment area and representative NSRs in the vicinity are summarized in and illustrated in ***Figure 7.1***.

Table 7-4 Representative NSRs

NSR ID	Location	Land Use	Shortest Horizontal Distance (m)
NSR01	Parkland Villas	Residential	94
NSR02	Beneville	Residential	199
NSR03	South Hillcrest	Residential	280
NSR04	President's Lodge-Lingnan University	Residential	82
NSR05	Staff Quarters	Residential	130

7.3. Construction Noise Impact Assessment

7.3.1. Potential source of noise impact arising from construction phase will be the use of Powered Mechanical Equipment (PME) during various construction phase, including excavation and foundation works, substructure and superstructure construction and utilities installation in the Project Site PME likely to be used include excavator, hand-held breaker, concrete lorry mixer, air compressor and generator etc.

7.3.2. No percussive piling works will be carried out within the Project Boundary during the working hours, Drilling method such as pre-boring or other quieter construction methods will be selected specifically to minimize construction noise during the construction phase.

7.3.3. Construction works in restricted hours, i.e. between 1900 and 0700 hours or any time on a general holiday including Sundays are not anticipated for this Proposed Development in

general.

Prediction and Evaluation of Noise Impact

7.3.4. The potential sources of noise impact during the construction phase of the Proposed Development are the use of PME for various construction activities. The extent of construction noise impacts depends on the type and number of PME to be used in different construction activities and hence may vary throughout the construction phase, which is subject to the selection of Contractor to minimize the construction noise impact upon nearby NSRs.

7.3.5. Buildings within Lingnan University Campus located immediately next to the construction site, are used as an academic building, lecture room and library. The building is installed with air conditioner, it is expected to have closed windows and not rely on natural ventilation when used. The laboratory activities within the site surrounding are serve as educational purposes only, and the testing only conducted in a small scale. Thus, the laboratory activities are not vibration sensitive. Thus, the construction noise impact to these academic buildings is not anticipated.

7.3.6. NSR04 President's Lodge- Lingnan University is the closest representative NSR to the application site, with a horizontal separation distance of 82m from the application site.

7.3.7. With reference to the EPD's Recommended Pollution Control Clauses for Construction Contracts and Practices Note for Professional Persons (ProPECC PN 1/24) Minimizing Noise from Construction Activities, recommended noise mitigation measures include implementation of good site practices, use of quieter PME, avoidance of concurrent construction activities within an active construction site, siting of facilities and application of acoustic screen would be adopted to minimize the construction noise impact.

Implementation of Good Site Practices and Mitigation Measures

7.3.8. The following noise mitigation measures should be implemented to minimize the construction noise impact, e.g. "Recommended Pollution Control Clauses for Construction Contracts" available on EPD's website. A noise control plan should be set up to ensure regular maintenance of all plant and equipment, reduce noise generation at source, and that appropriate silencing applications are in use based upon the best reasonable practice. Typical noise mitigation measures include:

- Good site practice to limit noise emission at source;
- Scheduling of construction works outside school examination periods;
- Use of silenced equipment;
- Use of noise enclosure/ acoustic shed;
- Reduction in the number of items of PME operation at any given time; and

- Avoidance of works in restricted hours etc.

7.3.9. The Contractor should closely liaise with the school to schedule noisy construction works outside examination periods. The Contractor should ensure there will be no exceedance of the noise criterion of 65 dB(A) during the examination period.

Summary

7.3.10. With the implementation of recommended noise mitigation measures as detailed (e.g. scheduling noisy activities, use of silenced equipment/movable noise barrier, etc.), the construction noise impact to the nearby NSRs is anticipated to be insignificant.

7.4. Traffic Noise Impact Assessment

7.4.1. Based on the nature of the Proposed Development, the proposed Development is not expected to rely on openable windows for ventilation. It is anticipated that the Proposed Development will not be subject to adverse traffic noise impact.

Summary

7.4.2. With the provision of air conditioners, the Proposed Development is not relied on openable windows for air ventilation, it is anticipated that the Proposed Development will not be subject to adverse traffic noise impact.

7.5. Fixed Plant Noise Impact Assessment

7.5.1. Potential fixed plant noise associated with the Proposed Development will arise from the operation of outdoor chiller water tank and pump, cooling tower, mechanical ventilation and air-conditioning (MVAC), building services equipment and mechanical ventilation provisions for the plant rooms in the Proposed Development or developments nearby. Based on the layout plan of Proposed Development, the outdoor chiller water tank & pump area and cooling tower will be located on the roof floor. The air handling unit, transformer and chiller pump room will be located in the plant room of respective floors.

Inventory of Planned Noise Sources within the Project Site

7.5.2. Based on the GBP provided, the fixed noise source room are tabulated in ***Table 7-5***.

Table 7-5 Preliminary Plant Room Schedule

Floor	Plant Room / Plant	Fixed Noise Source
LG/F	Primary air handling unit room	AHU
G/F	Air handling unit room, Transformer room	AHU, Transformer
1/F	Air handling unit room	AHU
2/F	Primary air handling unit room	AHU
3/F	Primary air handling unit room	AHU

4/F	Primary air handling unit room, Chiller pump room	AHU, Chiller
5/F	Primary air handling unit room, Chiller pump room	AHU, Chiller
R/F	Outdoor chiller water tank & pump area, Cooling tower	Outdoor pump, cooling system

Evaluation of Noise Impact from Planned Noise Sources within the Project Site

7.5.3. The fixed plants will be designed to comply with the noise standards as stipulated in Chapter 9 of the HKPSG during operation phase.

7.5.4. In general, building services equipment, such as pump units, AHU and chiller will be placed in enclosed plant rooms with concrete building envelope, therefore no fixed plant noise will be anticipated at NSRs from the operation of such plant. The outdoor chiller water tank and pump and colling tower will be placed on the roof floor. The opening of all the plant room will be provided with typical acoustic treatment such as acoustic louvre when necessary and carefully designed to avoid direct facing to the sensitive receivers.

7.5.5. It is expected that nighttime operation will occur within the proposed building. However, air conditioning, chiller plants, lift, pump systems and other building services system will not operate in full capacity during nighttime operation. As a conservative approach, the fixed plant will be designed to meet the noise criteria for night time operation in later detailed design stage. Typical acoustic treatment such as acoustic louvers and silencers will be provided at the fixed plant on the roof floor whenever necessary. Therefore, significant impact on noise level is not expected.

7.5.6. The choice of equipment and the requirement of noise control measures, such as acoustic treatments by silencers and enclosures, will be determined to ensure that the noise level at potentially affected NSRs will comply with statutory requirement under NCO stipulated in IND-TM. For the design of plant noise control treatment, the plant noise shall be controlled and designed to meet the HKPSG requirement, i.e. 5 dB below ANL or the prevailing background noise level. The design requirement for the compliance of HKPSG criteria shall be stated in the tender specification for implementation.

Evaluation of Noise Impact from Fixed Plant Noise towards Project

7.5.7. The proposed Development is not expected to rely on openable windows for ventilation. It is anticipated that the Proposed Development will not be subject to adverse fixed plant noise impact from the surrounding building.

Summary

7.5.8. The potential fixed noise impact has been assessed. According to the assessment result, the

Proposed Development will not subject to any additional and significant adverse noise impact from fixed noise sources.

7.5.9. To ensure that the noise level at potentially affected NSRs will comply with the statutory requirement under Noise Control Ordinance stipulated in IND-TM, all on-site planned fixed plant within the Proposed Development shall be controlled and designed to meet the HKPSG requirement, i.e. 5 dB below ANL or the prevailing background noise level, whichever is the lower.

7.6. Conclusion

7.6.1. Noise Impact Assessment has been conducted based on the schematic layout plan. Potential noise sources were identified during construction phase and operation phase.

7.6.2. With the implementation of the recommended mitigation measures such as the use of QPME, limiting the number of construction plants operating concurrently, using movable noise barriers and adopting good site practices, it is feasible to reduce the construction noise to comply with the noise criteria, adverse construction noise impact is not anticipated at all NSRs.

7.6.3. For Traffic noise impact, with the provision air conditioner and not rely to natural ventilation, it is anticipated that the Proposed Development will not be subject to adverse traffic noise impact.

7.6.4. Fixed noise impact due to planned noise sources within the Project Site on nearby NSRs is assessed. With the proposed mitigation measures such as enclosed the building service equipment in the plant rooms, provision of acoustic treatment and detailed design of the noise control measures, the fixed plant noise impact due to Proposed Development to the vicinity is not anticipated.

7.6.5. It is concluded that with the implementation of the recommended mitigation measures, it is unlikely to cause any insurmountable noise impact during construction and operation phases of the Proposed Development. Proposed DevelopmentProposed DevelopmentProposed DevelopmentProposed DevelopmentProposed DevelopmentProposed Development

8. Water Quality Assessment

8.1. Introduction

8.1.1. This section presents an assessment of the potential water quality impacts associated with the construction and operation of the Project. Recommendations for mitigation measures have been provided, where necessary, to minimize the identified water quality impacts to an acceptable level.

8.2. Environmental Legislation, Standards and Guidelines

8.2.1. The water quality impact assessment is carried out with reference to the following:

- Water Pollution Control Ordinance (Cap. 358);
- Hong Kong Planning Standards and Guideline;
- Water Supplies Department (WSD) Water Quality Criteria;
- Professional Persons Environmental Consultative Committee Practice Note 2/23 "Construction Site Drainage" (ProPECC PN2/23); and
- Professional Persons Environmental Consultative Committee Practice Note 1/23 "Drainage Plans subject to Comment by the Environmental Protection Department" (ProPECC PN1/23)
- ETWB TC (Works) No. 5/2005 "Protection of Natural Streams/rivers from Adverse Impacts arising from Construction Works"

Water Pollution Control Ordinance (cap.358) ("WPCO")

8.2.2. Water quality in Hong Kong is legislated by the provisions of Water Pollution Control Ordinance (Cap 358), 1980 ("WCPO"). Territorial Water has been subdivided into ten Water Control Zones ("WCZ") and four supplementary water control zones. The study area lies within the North Western WCZ and the respective WQOs are summarized in **Table 8-1**.

Table 8-1 Summary of Water Quality Objectives for the North Western WCZ

Parameters	Objectives	Sub-Zone
Aesthetic appearance	a) Waste discharges shall cause no objectionable odours or discolouration of the water. b) Tarry residues, floating wood, articles made of glass, plastic, rubber or of any other substances should be absent. c) Mineral oil should not be visible on the surface. Surfactants should not give rise to a lasting foam. d) There should be no recognisable sewage-derived debris. e) Floating, submerged and semi-submerged objects of a size likely to interfere with the free	Whole Zone

Parameters	Objectives	Sub-Zone
	movement of vessels, or cause damage to vessels, should be absent. f) Waste discharges shall not cause the water to contain substances which settle to form objectionable deposits	
Bacteria	a) The level of Escherichia coli should not exceed 610 per 100 mL, calculated as the geometric mean of all samples collected in a calendar year.	Secondary Contact Recreation Subzones
	b) The level of Escherichia coli should be less than 1 per 100 mL, calculated as the running median of the most recent 5 consecutive samples taken at intervals of between 7 and 21 days.	Tuen Mun (A) and Tuen Mun (B) Subzones and Water Gathering Ground Subzones
	c) The level of Escherichia coli should not exceed 1 000 per 100 mL, calculated as the running median of the most recent 5 consecutive samples taken at intervals of between 7 and 21 days.	Tuen Mun (C) Subzone and other inland waters
	d) The level of Escherichia coli should not exceed 180 per 100 mL, calculated as the geometric mean of all samples collected from March to October inclusive. Samples should be taken at least 3 times in one calendar month at intervals of between 3 and 14 days.	Bathing Beach Subzones
Colour	a) Waste discharges shall not cause the colour of water to exceed 30 Hazen units.	Tuen Mun (A) and Tuen Mun (B) Subzones and Water Gathering Ground Subzones
	b) Waste discharges shall not cause the colour of water to exceed 50 Hazen units	Tuen Mun (C) Subzone and other inland waters
Dissolved Oxygen	a) Waste discharges shall not cause the level of dissolved oxygen to fall below 4 mg per litre for 90% of the sampling occasions during the whole year; values should be calculated as water column average (arithmetic mean of at least 3 measurements at 1 m below surface, mid-depth and 1 m above seabed). In addition, the concentration of dissolved oxygen should not be less than 2 mg per litre within 2 m of the seabed for 90% of the sampling occasions during the whole year.	Marine waters
	b) Waste discharges shall not cause the level of dissolved oxygen to be less than 4 mg per litre.	Tuen Mun (A), Tuen Mun (B) and Tuen Mun (C) Subzones, Water Gathering Ground Subzones and other inland waters
pH	a) The pH of the water should be within the range of 6.5–8.5 units. In addition, waste discharges shall not cause the natural pH range to be extended by more than 0.2 unit.	Marine waters excepting Bathing Beach Subzones
	b) Waste discharges shall not cause the pH of the water to exceed the range of 6.5–8.5 units.	Tuen Mun (A), Tuen Mun (B) and Tuen Mun (C) Subzones

Parameters	Objectives	Sub-Zone
		and Water Gathering Ground Subzones
	c) The pH of the water should be within the range of 6.0–9.0 units.	Other inland waters
	d) The pH of the water should be within the range of 6.0–9.0 units for 95% of samples collected during the whole year. In addition, waste discharges shall not cause the natural pH range to be extended by more than 0.5 unit.	Bathing Beach Subzones
Temperature	a) Waste discharges shall not cause the natural daily temperature range to change by more than 2.0°C.	Whole Zone
Salinity	Waste discharges shall not cause the natural ambient salinity level to change by more than 10%	Whole Zone
Suspended solids	a) Waste discharges shall neither cause the natural ambient level to be raised by more than 30% nor give rise to accumulation of suspended solids which may adversely affect aquatic communities.	Marine waters
	b) Waste discharges shall not cause the annual median of suspended solids to exceed 20 mg per litre.	Tuen Mun (A), Tuen Mun (B) and Tuen Mun (C) Subzones and Water Gathering Ground Subzones
	c) Waste discharges shall not cause the annual median of suspended solids to exceed 25 mg per litre.	Other inland waters
Ammonia	The un-ionized ammoniacal nitrogen level should not be more than 0.021 mg per litre, calculated as the annual average (arithmetic mean).	Whole Zone
Nutrients	a) Nutrients shall not be present in quantities sufficient to cause excessive or nuisance growth of algae or other aquatic plants.	Marine waters
	b) Without limiting the generality of objective (a) above, the level of inorganic nitrogen should not exceed 0.3 mg per litre, expressed as annual water column average (arithmetic mean of at least 3 measurements at 1 m below surface, mid-depth and 1 m above seabed).	Castle Peak Bay Subzone
	c) Without limiting the generality of objective (a) above, the level of inorganic nitrogen should not exceed 0.5 mg per litre, expressed as annual water column average (arithmetic mean of at least 3 measurements at 1 m below surface, mid-depth and 1 m above seabed).	Marine waters excepting Castle Peak Bay Subzone
5-Day Biochemical Oxygen Demand	a) Waste discharges shall not cause the 5-day biochemical oxygen demand to exceed 3 mg per litre	Tuen Mun (A), Tuen Mun (B) and Tuen Mun (C) Subzones and Water Gathering Ground Subzones
	b) Waste discharges shall not cause the 5-day biochemical oxygen demand to exceed 5 mg per litre.	Other inland waters

Parameters	Objectives	Sub-Zone
Chemical Oxygen Demand	a) Waste discharges shall not cause the chemical oxygen demand to exceed 15 mg per litre.	Tuen Mun (A), Tuen Mun (B) and Tuen Mun (C) Subzones and Water Gathering Ground Subzones
	b) Waste discharges shall not cause the chemical oxygen demand to exceed 30 mg per litre.	Other inland waters
Toxins	a) Waste discharges shall not cause the toxins in water to attain such levels as to produce significant toxic, carcinogenic, mutagenic or teratogenic effects in humans, fish or any other aquatic organisms, with due regard to biologically cumulative effects in food chains and to toxicant interactions with each other.	Whole Zone
	b) Waste discharges shall not cause a risk to any beneficial use of the aquatic environment.	Whole Zone
Phenol	Phenols shall not be present in such quantities as to produce a specific odour, or in concentration greater than 0.05 mg per litre as C_6H_5OH.	Bathing Beach Subzones
Turbidity	Waste discharges shall not reduce light transmission substantially from the normal level.	Bathing Beach Subzones

Technical Memorandum on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters

8.2.3. Discharge of effluents is subject to control under the WPCO. The Technical Memorandum on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (TM-DSS) gives guidance on the permissible effluent discharges based on the type of receiving waters (foul sewers, stormwater drains, inland and coastal waters).To ensure compliance with WPCO requirements, any discharges from both the construction and operation phases must undergo pre-treatment where necessary to meet the required standards. Furthermore, all discharge points should be carefully sited away from natural watercourses to prevent contamination. The limits control the physical, chemical and microbial quality of effluents. Any sewage from the proposed construction and operation activities must comply with the standards for effluents discharged into the foul sewers, inland waters and coastal waters of Deep Bay WCZ, as given in the TM-DSS.

Practice Note for Professional Persons on Construction Site Drainage (ProPECC Note PN 2/23)

8.2.4. A practice note for professional persons was issued by the EPD to provide guidelines for handling and disposal of construction site discharges. The Practice Note for Professional Persons on Construction Site Drainage (ProPECC Note PN 2/23) provides good practice guidelines for dealing with various types of discharge from a construction site. Practices outlined in ProPECC Note PN 2/23 should be followed as far as possible during construction to minimise the water quality impact due to construction site drainage.

Protection of Natural Streams/Rivers from Adverse Impacts Arising from Construction Works (ETWB TC (Works) No. 5/2005)

8.2.5. ETWB TC (Works) No. 5/2005 provides an administrative framework to better protect all natural streams/rivers from the impacts of construction works. The procedures promulgated under this Circular aim to clarify and strengthen existing measures for protection of natural streams/rivers from government projects and private developments. The guidelines and precautionary mitigation measures given in the ETWB TC (Works) No. 5/2005 should be followed as far as possible to protect the inland watercourses at or near the Project area during the construction phase.

8.3. Assessment Area and Water Sensitive Receivers

8.3.1. The assessment area for the water quality assessment shall generally include areas within 500m from the boundary of the Project. This has been identified accordingly and is shown in ***Figure 8.1***.

8.3.2. The Proposed Development is located in a developed campus site. No WSRs including water intakes, ecological valuable locations, country parks, water gathering grounds, beaches or water uses for agriculture within 500m study area of the proposed development, except 1 no. is identified. Key WSRs within 500m from the boundary of the Project were identified in **Table 8.2** below and their respective locations are illustrated in ***Figure 8.1***.

Table 8-2 Summary of Representative Water Sensitive Receivers

ID	Location	Nature	Distance(m)	Description
Key Inland WSR within 500m from the boundary of the Project				
WSR1	East side of Lingnan University	Channelised watercourse	55	The open channel is located at the upstream of Lingnan University near Ho Sin Hang Building and lead to the northeast part of Lingnan University near The Jockey Club New Hall.

8.3.3. WSR1 is located at downstream of the Proposed Development. The minimum separation distance from the site is 55m. The Proposed Development would not involve any construction works at/ within the above identified watercourses.

8.4. Construction Phase Assessment

Construction Site Runoff

8.4.1. The surface runoff from construction works areas may contain increased loads of suspended solids (SS) and contaminants. Potential sources of pollution from construction site drainage include:

- General Construction Activities;
- Wash water from vehicles, equipment and dust suppression sprays;
- Potential minor oil leaks or spills from vehicles and plants;
- Site surface runoff and erosion of exposed bare soil and earth, drainage channels, earth working areas and stockpiles; and
- Sewage generated from on-site workforce.
- Accidental spillage of chemicals

8.4.2. Construction site runoff may cause physical, biological and chemical effects. The physical effects include potential blockage of watercourses and drainage channels and increase of SS levels. Local flooding risk may be increased in heavy rainfall situations. The chemical and biological effects caused by the construction runoff are highly dependent upon its SS levels and pH values. Runoff containing significant amounts of concrete and cement-derived material may cause primary chemical effects e.g. increasing turbidity and discoloration, elevation in pH, and accretion of solids. A number of secondary effects may also result in toxic effects to water biota due to elevated pH values, and reduced decay rates of faecal micro-organisms and photosynthetic rate due to the decreased light penetration.

General construction activities

8.4.3. General construction activities can introduce pollutants into surface runoff, including sediment and other construction debris. The movement of materials, cutting, drilling, and demolition can release dust, fine particles, and SS into the environment, which may be carried away by stormwater or site runoff.

Wash water from vehicles, equipment and dust suppression sprays

8.4.4. Vehicles and equipment operating on the construction site are often washed down to remove dirt and debris, and dust suppression systems are frequently used to minimize airborne particles. The wash water generated from these activities can contain grease, sediment, and other contaminants. If not properly managed or treated, this water may enter the drainage

system, increasing the concentration of pollutants in surface runoff.

Potential minor oil leaks or spills from vehicles and plants

8.4.5. The use of engine oil and lubricants, and their storage as waste materials has the potential to create impacts on the water quality of adjacent water courses if spillage occurs and enters watercourses. Waste oil may infiltrate into the surface soil layer, or run-off into local water courses, increasing hydrocarbon levels.

Site Surface Runoff and Erosion of Exposed Bare Soil and Earth, Drainage Channels, Earth Working Areas, and Stockpiles

8.4.6. During construction, large areas of bare soil and earth are often exposed, increasing the risk of soil erosion. Heavy rainfall or construction site runoff can carry eroded soil and sediment into the site drainage system. Runoff from earth working areas and stockpiles of materials may contribute to higher levels of suspended solids and cause siltation of nearby water bodies.

Sewage Generated from On-Site Workforce

8.4.7. Sewage generated by construction workforce also requires requires proper collection and treatment. Portable toilets and other sanitary facilities need to be provided and adequately maintained to avoid leakage or overflow, which could result in untreated sewage entering the drainage system.

Accidental Spillage of Chemicals

8.4.8. Chemicals used on construction sites, such as paints, solvents, cleaning agents present risk of accidental spillage. If these chemicals are not stored and handled properly, they may be spilled or leaked, contaminating the soil or runoff. In the event of heavy rainfall, spilled chemicals can be washed into nearby watercourses or drainage systems.

Mitigation Measures and Good Site Practice

8.4.9. Runoff and drainage shall be avoided or minimised with the implementation of mitigation measures and good site practices outlined in ProPECC PN 2/23 which shall include but not limited to the following.

- Providing perimeter channels to intercept storm runoff from outside the site. These shall be constructed in advance of site formation works and earthworks.
- Providing sand/silt removal facilities such as sand traps, silt traps and sediment basins to remove sand/silt particles from runoff to meet the requirements of the standard in Technical Memorandum on Standards for Effluents Discharged into Drainage and Sewerage Systems,

Inland and Coastal Waters under the WPCO. These facilities shall be properly and regularly maintained. Channels or earth bunds or sand bag barriers shall be provided on site to properly direct storm water to such silt removal facilities

- Minimising soil excavation works by careful programming of works during rainy seasons
- Protecting exposed soil surface by paving as practical to reduce the potential of soil erosion
- Protecting temporary access roads by crushed gravel and exposed slope surfaces shall be protected when rainstorms are likely to occur
- Avoiding trench excavation in the wet season as far as practicable, and, if necessary, these trenches shall be excavated and backfilled in short sections. Rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities.
- Covering the open stockpiles of construction materials on site with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.
- Vehicle wheel washing facilities should be provided at the site exit such that mud, debris, etc. attached to the vehicle wheels or body can be washed off before the vehicle leaves the work site". Settling out the sand and silt in the wash water from the vehicles leaving the wheel washing facility, which ensures no earth, mud and debris is deposited on the road, before discharging into the storm drain. The section of the road between the wheel washing bay and the public road shall be paved with a back-fall to prevent wash water or other site runoff from entering the public area.
- Planning ahead the temporary site drainage management and wastewater treatment system for collection, treatment, reuse and discharge of surface runoff and wastewater before the construction works start.
- Groundwater pumped out of wells, etc. for the lowering of ground water level in basement or foundation construction should be discharged into storm drains after the removal of silt in silt removal facilities.

General Construction Activities

8.4.10. Debris and rubbish generated on site shall be collected, handled, and disposed of properly. All fuel tanks shall be provided with locks and be sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank. Open storm water drains and culverts near the works area shall be covered to block the entrance of large debris and refuse.

Accidental Spillage of Chemicals

8.4.11. The Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap. 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.

8.4.12. Any service shop and maintenance facilities should be located on hard standings within a

bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.

Sewage Generated from On-site Workforce

8.4.13. The sewage from construction work force is expected to be handled by portable chemical toilets. Sufficient portable toilets shall be provided by licensed contractors who shall be responsible for appropriate disposal of collected sewage and maintenance of these facilities.

Evaluation of Impact

8.4.14. The construction phase of the Project will be land-based which does not involve any marine works or works at the streams identified. Therefore, it is unlikely that the Project will have any adverse water quality impact from construction work, given good site practices properly implemented on site by Contractor.

8.4.15. The mitigation measures and good site practices will be included in the contract for contractor's implementation. With the provision and implementation of abovementioned mitigation measures, adverse water quality impact during construction phase is not anticipated.

8.5. Potential Impacts During Operation Phase

8.5.1. During the operation phase of the Proposed Development, surface run-off and sewage generated by the residents and staff are the main sources of water quality impacts. Surface run-off on site will be properly collected via stormwater drains and discharged to existing drainage system. The design of site drainage and disposal of various site effluents generated with the Proposed Development should follow the relevant guidelines and practices as given in the ProPECC PN1/23. Effluent arising from proposed development is subject to the control of WPCO, and the effluent discharge should be in compliance with the WPCO-TM and WPCO discharge license conditions.

Surface Runoff

8.5.2. The Application Site is currently a gentle flat, mainly comprising fish pond, vegetation, concrete paved landscape garden and concrete bridge. There will be no major changes in surface properties and gradient, which will not significantly alter the overall catchment characteristics.

8.5.3. Surface runoff within the Project Site will be collected by internal manhole within Lingnan University campus and discharged to existing public stormwater drainage network. The

Project will consist of at least 20% of greenery. Based on the GBP, changes in ground level and reduction of non-paved area is not expected. Additional discharge to the public drainage system is not expected.

Sewerage Generated from Population of Proposed Development

8.5.4. An average of 100.34 m^3/day of sewage discharge and a peak flow of 0.0102 m^3/s are anticipated from the proposed development. The generated sewage will be collected by the proposed terminal manhole (FTMH), directed through Lingnan University's internal sewerage system, and subsequently discharged into the public manhole (FMH1015211) along service land for conveyance to the Drainage Services Department Siu Hong Sewage Pumping Station (located at northwest of the site). The hydraulic calculation of sewerage flow and the pathway of the internal sewerage system to public drainage are shown in the SIA report.

Mitigation Measures during Operation Phase

8.5.5. In order to minimize the pollution loading, silt/sand traps should be provided for the drainage systems of open areas. Moreover, the pollution loading of runoff could be controlled by best management practices. The operator should manage the cleaning of roads and open areas within the Site before heavy rain. To further minimise pollution loading, cleaning should be carried out during low traffic periods. Cleaning methods for road/open areas, such as manual cleaning or mechanical methods and including street sweepers are recommended to be adopted. The substances during cleaning should be collected as far as practicable for off-site disposal at landfill sites. After the removal of the substances, the pollution loading of runoff would be reduced.

8.5.6. The sewage generation after development is tabulated in SIA report and it shows the capacity of existing sewers are able to cater the generated flow from proposed development and no sewer pipe exceeded the used capacity. Thus, no significant sewerage impact shall be anticipated.

8.5.7. During operational phase, regular inspection and maintenance of sewer within Project Site should be conducted by property management office to ensure proper performance.

8.6. Conclusion

8.6.1. WSR 1 is located downstream of the Proposed Development. The minimum separation distance from the Application site is 55m and the Proposed Development would not involve any construction works at/ within the above identified watercourses. Therefore, the water source of the existing WSRs is not expected to be affected during the construction and operation phases of the Project.

8.6.2. For construction phase, water quality impact is expected to be minimal when appropriate guidelines and mitigation measures stated in ETWB TC (Works) No. 5/2005 and good site practice outlined in ProPECC PN 2/23 are implemented to properly discharge site run-offs.

8.6.3. The contractor shall apply for a Discharge License from EPD under the WPCO. All site discharges should be treated as necessary in accordance with the terms and conditions of the Discharge License.

8.6.4. The contractor shall install silt traps and sedimentation tanks to manage surface runoff and prevent sediment pollution. Wheel washing facilities shall be placed at site exits and construction near natural rivers/streams must implement erosion control measures and be inspected regularly by contractor.

8.6.5. With the abovementioned mitigation measures, no adverse impacts on water quality are anticipated during construction phase.

8.6.6. For operation phase, efficient drainage management system shall be implemented to ensure runoff from building rooftops and paved areas are adequately managed. The generated sewerage from proposed development will be collected by proposed terminal manhole and conveyed towards Lingnan University's internal sewerage system, then discharges to public manhole for convetance to appropriate treatment facility. The effluent discharge should be in compliance with the WPCO-TM and WPCO discharge license conditions. Regular maintenance of drainage system shall be carried out to prevent blockage and ensure ongoing compliance with water quality regulations.

8.6.7. With the implementation of drainage management system, proper pre-treatment facilities and good management measures, the potential water quality impact is anticipated to be insignificant. Thus, no adverse water quality impact would be anticipated during operation phase.

9. Land Contamination Assessment

9.1. Guidelines

9.1.1. This assessment is prepared in accordance with the following guidance:

- Guidance Manual for Use of Risk-Based Remediation Goals (RBRGs) for Contaminated Land Management (Guidance Manual), dated December 2007, Revised in April 2023;
- Guidance Note for Contaminated Land Assessment and Remediation (Guidance Note), dated 15 August 2007, Revised in April 2023; and
- Practice Guide for Investigation and Remediation of Contaminated Land (Practice Guide) dated August 2011, Revised in April 2023.

9.2. Objectives

9.2.1. The objectives of this Site Appraisal for Land Contamination are

- to assess the potential land contamination impact at the Application Site due to current and historical land uses, activities that could result in contamination of the site through desktop review and site survey (e.g. site's land use history, historical aerial photographs, site visit photos, etc.);
- and to propose forthcoming actions in case the potential land contamination identified.

9.3. Review of Historical Aerial Photographs and Past Land Use

9.3.1. The earliest aerial photograph records of 1949 obtained from Lands Department (LandsD) of the Application Site showed that it was a Bowring Camp, a military camp, and the Application Site was located on the parade ground of the military camp. It is a bare ground without structure. In 1985, the Bowring Camp was converted into a refugee camp, no change on the Application Site is observed. In 1993, the refugee camp was demolished and Lingnan University was subsequently constructed in the Application Site in 1994. By 1996, the construction works for Application Site were completed, with the area mainly comprising fish pond, vegetation, landscape garden and concrete bridge. According to the Management Office of Lingnan University, there has been no change in land use of the Application Site since the completion of the construction works in 1996.

9.3.2. The historical aerial photographs are attached in ***Appendix 9.1***. A summary of the land use of the Application Site is given in ***Table 9-1***.

Table 9-1 Summary Table of Land Use

Period / Year	Land Use / Description	Sources of Information
1949 - 1984	The Application Site was a military camp (Bowring Camp) parade ground. It is a bare ground without structure.	Aerial photo from LandsD
1985 - 1993	The Application Site was converted into a refugee camp, no change in the Application Site. (Condition at site similar to that in 1949 – 1984)	Aerial photo from LandsD
1994 - 1995	Construction site for Lingnan University	Aerial photo from LandsD
1996 - 2023	Construction works for the Application Site was completed in 1996. The Application Sites are mainly comprising fish pond, vegetation, landscape garden and concrete bridge, no change in land use observed since 1996.	Aerial photo from LandsD & Lingnan management Office

9.3.3. In view of the activities observed from the historical aerial photographs, the past and current land use were not polluting uses, and no activities that may have caused contamination was observed. Therefore, land contamination is expected to be unlikely.

9.4. Information from Government Departments

9.4.1. The following HKSAR Government Departments have been enquired on the latest update on the availability of land use status and records of land contamination and/or spillage for the site. The summary of correspondence is presented in ***Table 9-2*** below. Copy of the letters replied from various Government Departments are included in ***Appendix 9.2*** for reference.

Table 9-2 Enquiries and Responses on Land Contamination Related Records in the Application Site

Gov. Department	Response Letter Ref.	Response Date	Summary
EPD	-	16 August 2024	No chemical waste disposal record nor accidental spillage record at the Subject Site.
FSD	(200) in FSD GR 6-5/4 R Pt.53	17 June 2024	The case is being handled. The following information will be furnished as soon as possible: • Dangerous Goods License Record: from the year of 1990 to present moment. • Incident Record: Past three years of fire and special services incidents. Consultant's follow up action has been taken and appointment letter was submitted in 25 July 2024.
	(105) in FSD GR 6-5/4 R Pt. 54	1 Aug 2024	1. No Dangerous Goods License was issued in respect of the captioned address.

			2. A total **2** incident records were found at the subject location.
LandsD	-	14 Aug 2024	1. The Proposed New Science Building ("the Location Concerned") falls within Tuen Mun Town Lot No. 376 ("the Lot"). The Lot was granted to Lingnan College [now known as Lingnan University] under New Grant No. 3136 on 17.3.1995. 2. There was no information regarding spillage accidents, illegal/ contaminating land uses, or uncontrolled dumping uses at the Location Concerned.

9.4.2. The consultant visited the territory-wide register of chemical waste producers maintained at the Territory Control Office in Wan Chai on 25 July 2024. Four valid registered chemical waste producers and three invalid chemical waste producers at the Application Site were identified. Details of the chemical waste producers are provided in ***Appendix 9.3.***

9.4.3. For the valid registered chemical waste producers, based on information available on public domain, “Jetford Engineering and Trading Company is expected to carry out works outside the Application Site, which involved whole campus lighting replacing, regular electrical installation inspection and air change testing. For “Science Unit Lingnan University”, it is outside the application site. For “Lingnan University”, due to limited information available, it is expected to be outside the application given the nature of the Application Site and there is no construction works at the application site since establishment. For “Penta-Ocean Construction CO. LTD.”, it is the contractor for the construction of Lingnan hub, which is outside the Application Site. In this connection, the four valid registered chemical waste producers are expected to the irrelevant to the Application Site.

9.4.4. As for the invalid chemical waste producers, which include "Lingnan College", "Penta-Ocean Construction CO. LTD." (expired license), and "China Overseas Building Construction Limited", no records of chemical spillages or fire incidents were found, based on responses from EPD and FSD. Given the license is expired and the absence of any such incidents, it is unlikely that these invalid chemical waste producers have caused any significant land contamination.

9.4.5. As advised by EPD, no chemical waste disposal record or accidental spillage record was found at the Application Site. According to the Fire Services Department reply, no Dangerous Goods License was issued on the Application Site. Two incident records were found at Lingnan University. Details of the incident records are provided in ***Appendix 9.2***.

9.4.6. For incident No. 1 the type of incident was a lift case, no lift was identified within the Application Site. Hence, the location of the incident shall be outside the Application site. No potential land contamination issue was expected for the lift case incident. Therefore, incident

No.1 was not considered related to the land contamination issue. For incident No. 2, the location of the incident was at the hostel area, which was also outside the Application Site. Considering the nearest separation distance of approximately 90m from the hostel, it is not considered that the late call fire incident at the hostel would be a potential land contamination issue for the Application Site. Furthermore, no incident of spillage/leakage of dangerous goods was found in the Application Site based on the Fire Services Department's record.

9.4.7. As refer to LandsD reply, the Application Site falls within Tuen Mun Town Lot No. 376 ("the Lot"). The Lot was granted to Lingnan College [now known as Lingnan University] under New Grant No. 3136 on 17.3.1995 and no information regarding spillage accidents, illegal/ contaminating land uses, or uncontrolled dumping uses at the Application Site.

9.4.8. Furthermore, no aboveground/ underground storage tank and pipe works were present within the entire Application Site as confirmed with representative of the Management Office of Lingnan University and verified on the BRAVO – online building records. The BRAVO – online building records are presented in ***Appendix 9.4***.

9.4.9. Given the nature of the Application Site usage as a landscape garden, no uses of chemicals and dangerous goods, chemical spillage and contamination is expected and confirmed with the representative of Management Office of Lingnan University. Therefore, no adverse land contamination impacts were expected from the Application Site based on the past and current land uses.

9.5. Site Visit and Observation

9.5.1. A site visit was conducted on 26 July 2024 to identify potential sources of land contamination. During the site visit, the Application Site was observed to be consistent with the abovementioned available information. A Site Walkover Checklist has been completed as required in the EPD's Practice Guide and attached in ***Appendix 9.5***. As confirmed and verified by the representative of the Management Office of Lingnan University, there have been no major changes in operations at the Application Sites since the completion of the construction in 1996. Furthermore, no polluting activities have been carried out on the Application Site. No underground or above-ground storage tanks and disused underground storage tanks in the Application Site. No spills have occurred on the Application Site.

9.5.2. Photo records of the Application Site taken during the site visit are presented in ***Appendix 9.5***. It was observed that the entire Application Site was paved or covered by stone bricks that were in good condition. No observable oil stain, crack, unidentified odour, or chemical storage was observed during the site visit. No hotspots were identified during the site visit. Additionally, there were no other signs of obvious or suspected contamination, such as abnormal odour and/or distressed vegetation. Therefore, no adverse land contamination impacts were expected from the Application Site based on the site visit.

9.6. Summary

9.6.1. According to the desktop study, the Application Site has been occupied by Lingnan University since its establishment in 1996. The entire Application Site was a landscape garden with a fish pond, concrete bridge and vegetation. No chemical manufacturing or dangerous goods storage was expected on the site. Since the landscape garden use is not identified as potential hotspots for contamination based on this land uses, no potential contamination sources were anticipated. Therefore, no potential contamination issues are anticipated from the past and current uses of the Application Site.

9.6.2. Based on the response from various government departments, there are no record of chemical waste disposal record, accidental spillage record, or submissions relating to land contamination assessment at the Application Site, no records of dangerous goods license, or incidents of spillage/leakage of dangerous goods were found at the Application Site according to the available records. The information collected from the review of historical aerial photographs was verified by the government responses and therefore, it is not anticipated that there would be any land contamination impact due to past land uses.

9.6.3. During the site visit, it was observed that the entire Application Site was paved or covered by stone bricks with good condition and no observable cracks. Considering the absence of signs of obvious or suspected contamination, such as abnormal odour and/or distressed vegetation, as well as the lack of aboveground/ underground storage tank and pipe works within the Application Site, it is believed that the Application Site is unlikely to be contaminated, and further site investigation is considered as not necessary.

10. Waste Management Implications

10.1. Legislation and Standards on Waste Management

Waste Disposal Ordinance (WDO) (Cap. 354)

10.1.1. Waste Disposal Ordinance, Cap. 354 provides legislative control on pollution caused by all forms of wastes such as livestock wastes, chemical waste etc. It provides the statutory framework for the planning, management and control of wastes in Hong Kong.

Public Health and Municipal Services Ordinance (Cap.132)

10.1.2. The Public Cleansing and Prevention of Nuisances Regulation provides control on illegal tipping of waste on unauthorized (unlicensed) sites.

Waste Disposal (Chemical Waste) (General) Regulation (Cap.354C)

10.1.3. Under the WDO, Waste Disposal (Chemical Waste) (General) Regulation (Cap.354C) provides regulations for chemical waste control, and administers the possession, storage, collection, transport and disposal of chemical waste. EPD has also issued the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes (1992), which details how the chemical waste producers should comply with the regulations on chemical waste.

Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap.354N)

10.1.4. Under the Waste Disposal (Charges for Disposal of Construction Waste) Regulation, construction waste delivered to a landfill for disposal must not contain more than 50% by weight of inert material; construction waste delivered to a sorting facility for disposal must contain more than 50% by weight of inert material; and construction waste delivered to a public fill reception facility for disposal must consist entirely of inert material.

10.1.5. Other Environmental Regulations / Guidelines

- Land (Miscellaneous Provisions) Ordinance (Cap. 28)
- ETWB TC(W) No. 22/2003 and 22/2003A, Additional Measures to Improve Site Cleanliness and Control Mosquito Breeding on Construction Sites
- Works Bureau TC No. 12/2002, Specifications Facilitating the Use of Recycled Aggregates
- Trip Ticket System for Disposal of Construction & Demolition Materials (DEVB TC(W) No. 6/2010)
- Environmental Management on Construction Sites (ETWB TC(W) No. 19/2005)
- Public Dumps (WBTC No. 2/93)
- Public Filling Facilities (WBTC No. 2/93B)
- Fill Management (WBTC No. 12/2000)
- Code of Practice on the Packaging, Labeling and Storage of Chemical Waste

- DevB TCW No. 8/2010 "Enhanced Specification for Site Cleanliness and Tidiness
- Management of Construction and Demolition Materials (Technical Circular No. 11/2019) published by CEDD
- CEDD's Project Administration Handbook for Civil Engineering Works
- Hong Kong Planning Standards and Guidelines, 2022 (Planning Department (PlanD))
- Monitoring of Solid Waste in Hong Kong – Waste Statistics for 2022

10.2. Assessment Approach and Criteria

10.2.1. The assessment of waste management implications from the construction and operation of the Project includes the following tasks:

- Identification of types and quantities of waste arising from various construction activities based on the latest understandings;
- Evaluation of opportunities for waste reduction, re-use and recycling on-site or off-site;
- Identification of disposal options for each type of waste;
- Evaluation of potential impacts from the handling (including stockpiling, labelling, packaing and storage), collection, transportation and reuse/disposal of waste with respect to potential hazards, air and odour emissions, noise, wastewater discharges and public transport; and
- Proposing mitigation measures and evaluation of residual impact.

10.3. Potential Impacts during Construction Phase

10.3.1. The construction works of the Project mainly include demolition, clearance and mobilization, excavation and foundation works, superstructure and fitting out works. Construction & Demolition (C&D) materials generated from the construction works comprises of inert and non-inert materials. For inert C&D materials (or public fills), such as soil, rock, concrete, etc., could be reused on-site as filling materials or off-site as public fill at public fills reception facilities (e.g. Tuen Mun Area 38 Fill Bank). The delivery site of inert C&D materials is subject to the designation by the PFC according to the DEVB TC(W) No.6/2010.

10.3.2. For non-inert C&D materials, such as topsoil, dead vegetative materials, glass, steel, plastics, paper, timber/woody materials etc., would be sorted for reuse/recycle as far as possible before disposal. Surplus non-inert C&D materials are proposed to be disposed at West New Territories (WENT) Landfill at Nim Wan. The designated disposal site of non-inert C&D materials shall be confirmed with the EPD. Since the works will not be conducted simultaneously, it is estimated that a maximum of 1 trucks trip per day would be required for the disposal at WENT Landfill.

10.3.3. Waste management planning is needed prior to the commencement of construction works. Construction waste management strategy is to avoid, minimize, reuse, re-cycle and finally dispose of waste with the desirability descending in this order. Contractor(s) will be required

to implement effective waste management measures to ensure their practices are in line with the strategies. In order to minimize the generation of wood waste, steel is recommended to be used for formworks.

10.3.4. Chemical waste from maintenance and servicing of construction equipment/plant may be generated. If chemical waste is produced, it will be disposed of according to Code of Practice on the Packaging, Labelling and Storage of Chemical Waste. Special handling and temporary storage of chemical waste is required before removal from site. A licensed chemical waste collector will be employed to deliver of these wastes at EPD licensed chemical waste treatment facility.

10.3.5. General refuse such as food scraps, waste paper, empty containers, etc. would be generated from the workforce during the construction phase. General refuse should be stored in enclosed bins separately from construction and chemical wastes. Recycling bins should also be placed to encourage recycling. Enclosed and covered areas should be provided for general refuse collection to prevent waste materials being blown around by wind, flushed or leached into nearby waters, or creating an odour nuisance or pest and vermin problem. Also, routine cleaning for these areas should be implemented to keep areas clean, so that intentional or accidental release to the surrounding environment does not occur with proper management. C&D materials

10.3.6. The majority of C&D materials will be generated from the key construction activities mentioned in Section 10.3.1. Where possible, inert C&D materials will be re-used on site and sent to public fill reception facilities as a last resort.

10.3.7. Apart from optimizing the construction programme, alternative designs and construction methods have been duly considered. Use of BIM and MiC will be considered, subject to detailed design.

10.3.8. As advised by project team, the quantities of C&D materials generated from the construction of new building will be 300m^3. The Contractor shall develop and implement their Environmental Management Plan (EMP) and Waste Management Plan (which is part of the EMP) to control any potential adverse impact associated with the construction waste as far as possible. It is targeted that about 20% of the inert materials can be reused onsite. The Contractor shall develop and implement their EMP and Waste Management Plan (which is part of the EMP) to control any potential adverse impact associated with the construction waste as far as possible. Half-Yearly Status Report and Quarterly Situation Report shall be prepared accordingly. The quantity of C&D waste arise from various construction activities are identified and summarized in ***Table 10-1***.

Table 10-1 Summary of C&D Materials Arising from the Project

Construction Waste Type	Estimated Quantity (m3)			Estimated No. of Truck Trips Required per day
	Generated	Reused/ Recycle	Disposal	
C&D Materials (1)	300m^3	60m^3	240m^3	1

Chemical Waste

10.3.9. Chemical waste is defined in the Cap 354C Waste Disposal (Chemical Waste) (General) Regulation. Where the construction processes produce chemical waste, the contractor must register with EPD as a chemical waste producer. Chemical waste that is likely to arise from the construction activities for the Project includes:

- Used paints, engine oils, hydraulic fluids and waste fuel;
- Spent mineral oils / cleansing fluids from machineries; and
- Spent solvent / solutions, some of which may be halogenated, from equipment cleansing activities.

10.3.10. Accidental spillages of chemicals in the works area may contaminate the top soils on exposed ground/ earth. The contaminated soil particles may be washed away by construction runoff causes water pollution.

10.3.11. Chemical wastes pose environmental and health and safety hazards if not stored and disposed of in an appropriate manner as outlined in the Waste Disposal (Chemical Waste) (General) Regulation. These hazards include:

- Toxic effects to workers;
- Adverse effects on water quality from spills; and
- Fire hazards.

10.3.12. The amount of chemical waste to be generated throughout construction phase cannot be accurately predicted at this stage since it largely depends on the contractor's housekeeping measures. It is estimated the quantities of chemical wastes will be about 0.1 m^3 on a monthly basis. The amount of chemical waste to be generated would be quantified in the Waste Management Plan (WMP) as part of the EMP to be prepared by the Contractors. Given that the chemical waste generated are to be handled, stored, collected, transported and disposed by licensed chemical waste collectors in accordance with the Waste Disposal (Chemical Waste) (General) Regulation, impacts such as potential hazard and spillage will not be anticipated.

General Refuse

10.3.13. General refuse such as waste papers, plastic packaging, food wastes, etc. will be generated

by the construction workforce during construction phase of the Project.

10.3.14. Recycling bins for waste papers, plastic packaging should be provided to maximize reuse and recycle volume. Other non-recyclable general refuse, the Contractor shall employ a reliable waste collector to separate general refuse from C&D materials and remove general refuse from the site to WENT Landfill. The impacts arising from increased traffic loading would be limited. With proper on-site handling and storage as well as regular disposal of the wastes, no adverse impact is envisaged. All dump trucks should be equipped with GPS or equivalent system for the monitoring of their travel routings and parking locations to prohibit illegal dumping and landfilling of C&D materials. No adverse impact (e.g., potential hazards, air and odour emissions, noise, wastewater discharges and public transport etc.) is envisaged with the implementation of appropriate mitigation measures such as using trucks with covering and enclosed containers.

10.4. Mitigation Measures to Control Construction Waste Impact

General

10.4.1. Inert C&D materials shall be delivered to the public fill reception facilities as far as practicable. Any remaining inert C&D materials shall be delivered sorting facilities and landfills. In order to facilitate process of transferring the construction waste to Government waste disposal facilities (e.g. public fill reception facilities, sorting facilities and landfills), waste sorting and segregation shall be carried out on site in accordance with the following categories:

- Hard rock and large broken concrete suitable for reuse on the Site or recycling;
- Metals (i.e. aluminium can, steel metal, ferrous metal, and non-ferrous metal);
- Plastic (i.e. plastic bag, plastic bottle, plastic packaging, etc.)
- Paper;
- Chemical waste;
- Materials suitable for disposal at public fill reception facilities, sorting facilities and landfills

10.4.2. In addition, the Contractor is required to implement good EMP and practices on handling and disposal of waste, including but not limited to:

- Handle, store and dispose of all wastes in accordance with the Waste Disposal Ordinance;
- Handle, store and dispose of chemical waste in accordance with the EPD recommended Codes of Practice on the Packaging, Labelling & Storage of Chemical Wastes and Waste Disposal (Chemical Waste) (General) Regulation under the Waste Disposal Ordinance;
- Store general refuse in enclosed bins or compaction units separate from C&D materials and chemical wastes. A reputable waste collector should be employed to collect and dispose of general refuse from the site on a daily or every second day basis;
- Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste;
- Waste storage areas within the project site should be well maintained and cleaned regularly to prevent cross-contamination;
- Cover trucks with tarpaulin and transporting waste in enclosed containers to minimize windblown litter and dust during transportation;
- Maintain temporary stockpiles and ensure with well cover to prevent inclement weather (e.g. heavy rain).

10.4.3. To clearly spell out the types and amount of waste generated and its associated mitigation measures, a WMP, as part of EMP should be prepared in accordance with ETWB TC(W) No.19/2005 and submitted to the Project / Site Engineer for approval. The recommended mitigation measures should form the basis of the WMP.

C&D Materials/Waste

10.4.4. It is presently anticipated that most of the C&D materials/waste will need to be transported off-site for re-use, recycling and disposal by trucks. With the implementation of the recommended dust and noise control / mitigation measures presented in the air quality and noise sections, such as covering and stockpiling materials to avoid dust and other nuisance impacts from truck movements, these secondary environmental factors are not expected to be a concern.

10.4.5. C&D materials should be segregated from other wastes to avoid contamination and ensure acceptability at public fill reception facilities or reclamation site. The following mitigation measures should be implemented in handling the excavated and C&D materials:

- Maintain temporary stockpiles and ensure with well cover to prevent inclement weather;
- Reuse excavated fill material for backfilling;
- Carry out on-site sorting; and
- According to the DEVB TC(W) No. 6/2010, implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials/waste is properly documented and verified. Where waste generation is unavoidable, the potential for recycling or reuse shall be considered. If waste cannot be recycled, disposal routes described in the EMP shall be followed. The amount of waste generated, recycled, and disposed shall be recorded. Trip-ticket system shall also be implemented in accordance with Development Bureau TC(W) No. 6/2010 to monitor the disposal of C&D material and control fly-tipping. Delivery site is subject to the designation by the PFC according to the DEVB TC(W) No.6/2010.

Chemical Waste

10.4.6. If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a Chemical Waste Producer and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosives, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. Chemical waste should be collected by a licensed chemical waste collector and to be disposed of at a licensed chemical waste treatment and disposal facility in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.

10.4.7. Mitigation measures will also include the provision of protective gloves and clothing to site workers, use of bulk earth movers to remove contaminated materials to prevent any possible human contact, provision of adequate washing facilities and the use of licensed chemical waste collectors to ensure legal disposal of waste, etc.

General Refuse

10.4.8. Recycling bins should also be placed to encourage recycling. Enclosed and covered areas should be provided for general refuse collection to prevent waste materials from being blown around by the wind, flushed or leached into nearby waters, or creating an odour nuisance or pest and vermin problem. Also, routine cleaning for these areas should be implemented to keep areas clean, so that intentional or accidental release into the surrounding environment does not occur without proper management.

10.4.9. Particularly, food waste is the main source of generating unpleasant odour and causing environmental hygiene concerns. The Project Team will explore the feasibility for providing separate recycling bins for food waste to facilitate the recycling of food waste on-site or off-site in a hygienic manner in detailed design stage.

10.4.10. With the implementation of good waste management practices, and the abovementioned mitigation measures at the Project Site, adverse environmental impacts are not expected to arise from the storage, handling and transportation of C&D materials, chemical waste and general refuse generated during construction phase.

10.5. Potential Impacts and Mitigation Measures during Operation Phase

10.5.1. The major type of waste generated from the operation phase is general refuse. With reference to Monitoring of Solid Waste in Hong Kong - Waste Statistics for 2022 by EPD, the disposal rate of non-domestic waste was 0.59 kg/person/day. The estimated general refuse generated by educational institutional uses will be 432.47 kg/day with an estimated of population in the building of 733 person.

10.5.2. General refuse will be removed on regular basis to minimize odour, pest and litter impacts. To promote the recycling of waste paper, aluminium cans and plastic bottles, the 3-coloured waste separation bins for the collection of recyclable municipal waste will be clearly labelled and placed at convenient locations. The recyclable materials will then be collected by reliable waste recycling agents on a regular basis. Waste generated will be disposed of at government waste disposal facilities such as WENT Landfill or refuse transfer station. Hence, adverse waste management implication is not anticipated during the operation phase.

10.6. Conclusion

10.6.1. During the construction phase, the major waste types generated by the construction activities for this project will include C&D materials from the excavation and foundation works, substructure and superstructures work; chemical waste from maintenance and servicing of construction site and equipment; general refuse from the workforce. Provided that all these identified wastes are reused and recycled if appropriate, handled, transported and disposed of in strict accordance with the relevant legislative and recommended requirements and that the recommended good site practices and mitigation measures are

properly implemented, no adverse environmental impact is expected during the construction phase.

10.6.2. During the operation phase, the key waste types generated will be general refuse. Provided that all these wastes are reused and recycled if appropriate, handled, transported and disposed of in strict accordance with the relevant legislative requirements and the recommended mitigation measures are properly implemented, no adverse environmental impact is expected during the operation phase.

11. Conclusion

11.1.1. Air quality impact (including emissions from vehicles, chimney, proposed laboratories, kitchen, canteen, food storage, and construction and demolition activities), traffic noise, fixed plant noise, water quality, and land contamination are evaluated in this Environmental Assessment Report for the Application Site.

11.1.2. No active chimneys and SP License records were identified within 200m from the Proposed Development based on the environmental survey and site visit. The Proposed Development will be equipped with a centralized AC system and the buffer separation distance meets the HKPSG requirement. Furthermore, with the provision of control measures at the Wet Laboratory, the estimated emission rates of the organic and inorganic chemicals emanated due to the operation of the Wet Laboratory are expected to be of minimal amount and fulfil the threshold limit value/ permissible exposure limit of relevant occupational safety and health requirements. Potential volatile chemicals emissions associated with the operation of the proposed Project are negligible.

11.1.3. The estimated emission rates of the organic and inorganic chemicals emanated due to the operation of the GL Specialist Laboratory are to be of minimal amount and fulfil the threshold limit value/ permissible exposure limit of relevant occupational safety and health requirements. Potential volatile chemicals emissions associated with the operation of the proposed Project are negligible.

11.1.4. The potential environmental noise impacts from nearby road traffic and fixed noise sources on the Proposed Development have been evaluated. Given that the Proposed Development will utilize the AC system and the implementation of the proposed mitigation measures for fixed plant noise, it is unlikely that any insurmountable noise impacts will occur during the construction and operation phases of the Proposed Development.

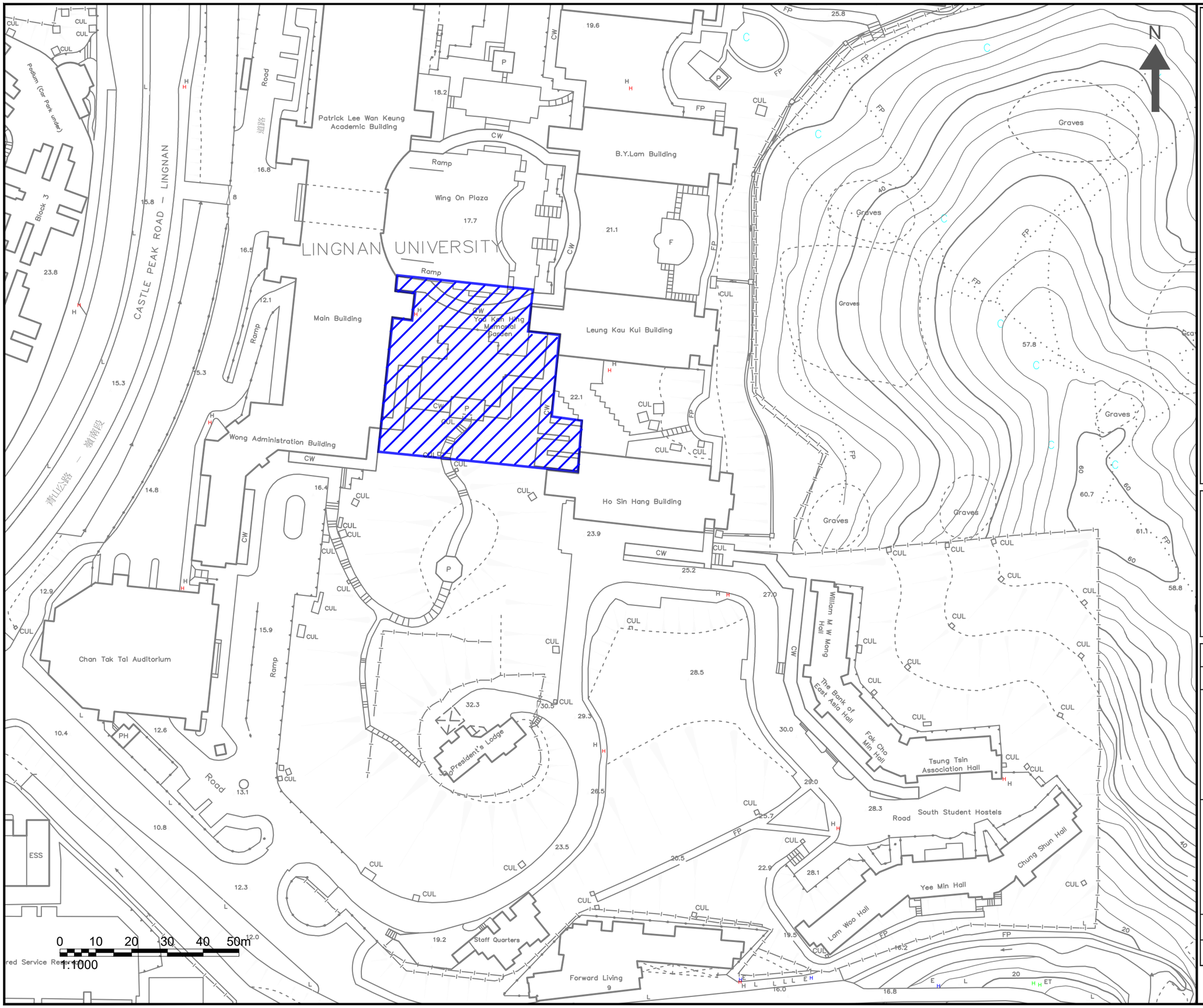
11.1.5. For water quality assessment, the Project would not involve any construction works at/within the above identified watercourses. Therefore, it is not expected to be affected during the construction and operation phases of the Project.

11.1.6. The Application Site is currently used as a landscape garden within the Lingnan University campus. Based on the information gathered, no chemical manufacturing or dangerous goods storage was expected on the site, and the past and current uses are not considered potential hotspots. According to replies from HKSAR Departments, there are no records of chemical storage/spillage accidents, or submissions relating to land contamination at the Application Site. During Site inspection, the entire Application site was paved or covered with stone bricks in good condition, with no observable cracks. No aboveground/ underground storage tank and pipe works were identified within the Application Site. Thus, no contamination activities

are anticipated for the past and current use and no potential sources and signs of contamination have been discovered. No land contamination impact is anticipated.

11.1.7. For waste management, top priority should be given to waste avoidance, followed by minimization, reuse/recycling, treatment and safe disposal of waste as a last resort during construction and operation phases.

Figures



NOTES :

PROJECT SITE

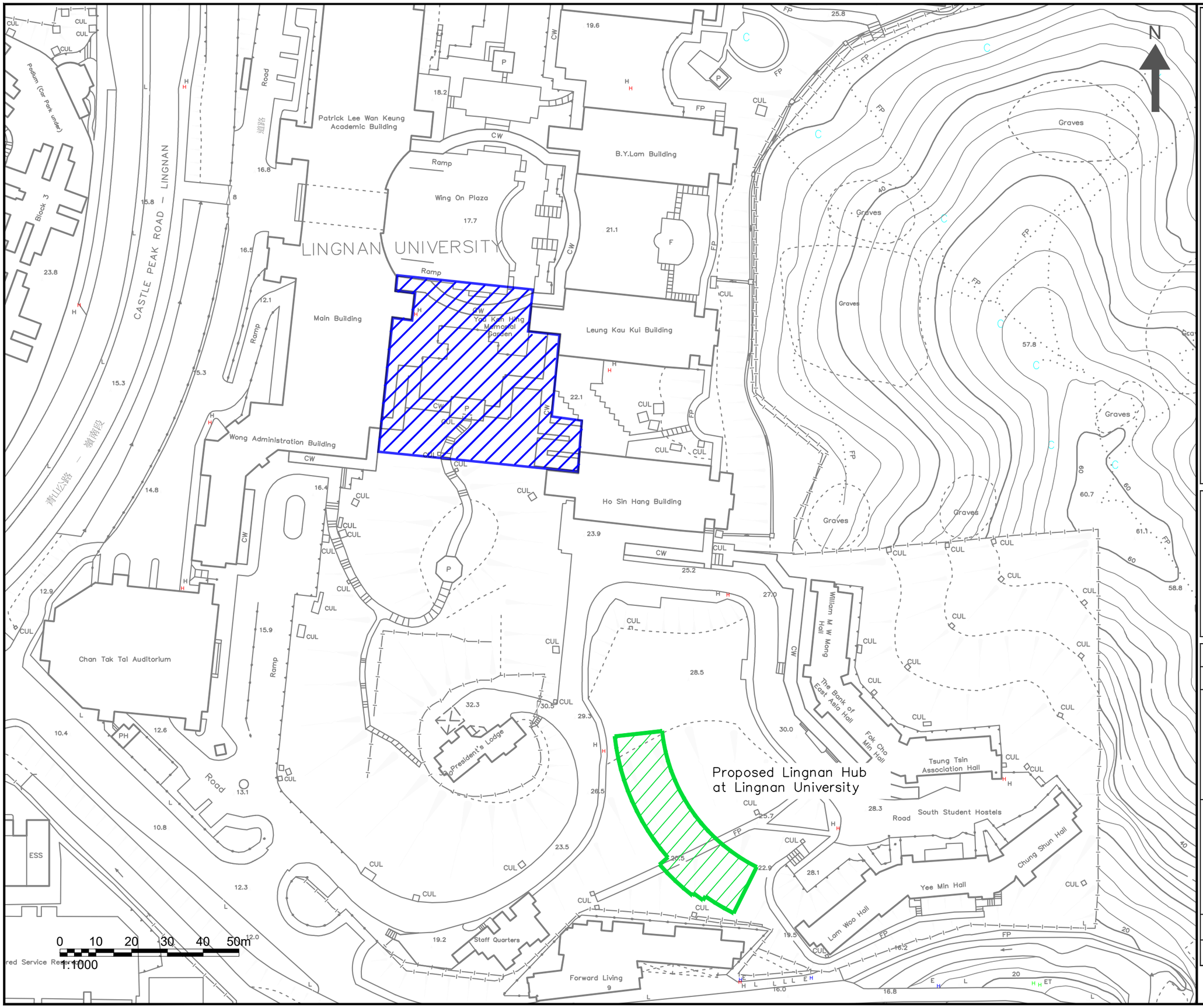
Consultant

Allied Environmental Consultants Limited

Project No. :	2244EA
Drawing By :	HC
Project :	PROPOSED NEW SCIENCE BUILDING OF LINGNAN UNIVERSITY
Drawing Title :	PROJECT SITE LOCATION
Drawing No : Figure 3.1	Revision : 0
Scale : AS SHOWN	Date : OCT 2024

A3 420 x 297

C:\USERS\NGANCHUNSANG\SYNOLOGYDRIVE\2244EA LINGNAN P&T\03 DRAWING\01 AEC DRAWINGS\ISSUE 2\FIG3.1_PROJECT LOCATION.DWG



NOTES :

PROJECT SITE

CONCURRENT PROJECT

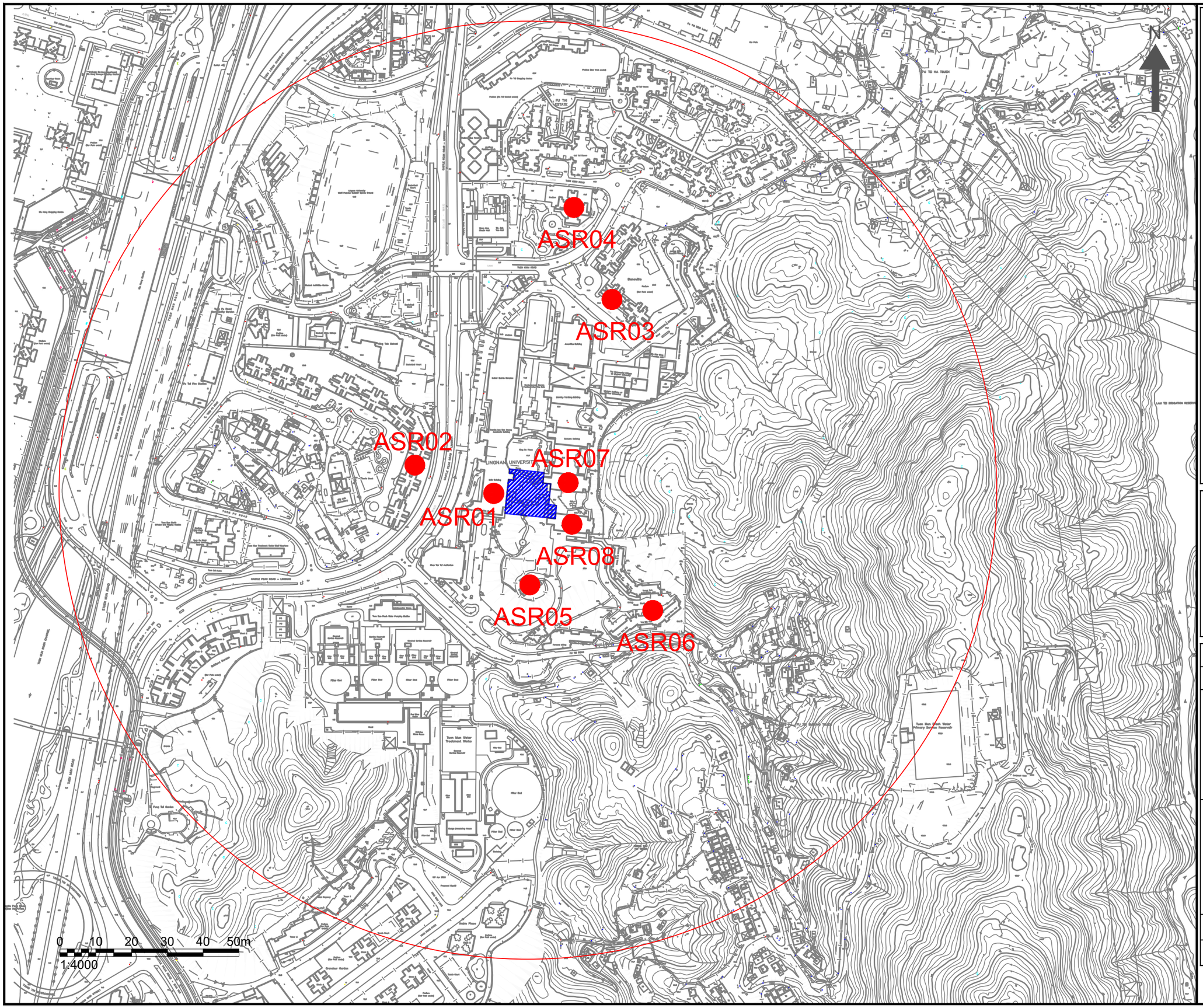
Consultant

Allied Environmental Consultants Limited

Project No. :	2244EA
Drawing By :	HC
Project :	PROPOSED NEW SCIENCE BUILDING OF LINGNAN UNIVERSITY
Drawing Title :	LOCATION OF CONCURRENT PROJECT
Drawing No : Figure 4.1	Revision : 0
Scale : AS SHOWN	Date : OCT 2024

A3 420 x 297

C:\USERS\NGANCHUNSANG\SYNOLOGYDRIVE\2244EA LINGNAN P&T\03 DRAWING\01 AEC DRAWINGS\ISSUE 2\FIG3.1_PROJECT LOCATION.DWG



NOTES :

PROJECT SITE

500m ASSESSMENT AREA

REPRESENTATIVE AIR SENSITIVE RECEIVERS

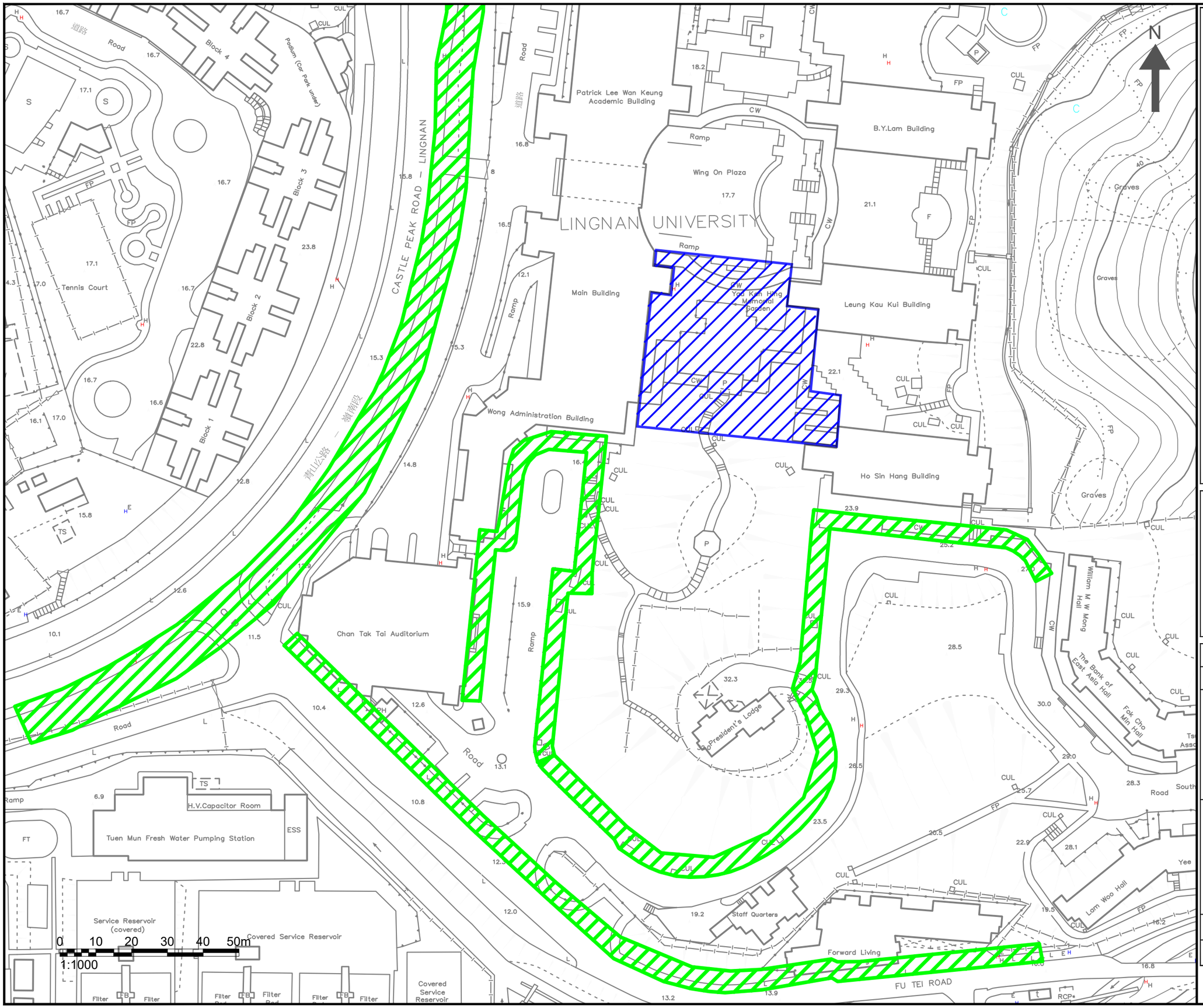
Consultant

Allied Environmental Consultants Limited

Project No. : 2244EA	
Drawing By : HC	
Project : PROPOSED NEW SCIENCE BUILDING OF LINGNAN UNIVERSITY	
Drawing Title : 500m Assessment Area and Representative Air Quality Sensitive Receivers	
Drawing No : Figure 6.1	Revision : 0
Scale : AS SHOWN	Date : OCT 2024

A3 420 x 297

C:\USERS\NGANCHUNSANG\SYNOLOGYDRIVE\2244EA LINGNAN P&T\03 DRAWING\01 AEC DRAWINGS\ISSUE 2\FIG6.1_500M ASSESSMENT AREA.DWG



NOTES :

PROJECT SITE

BUFFER DISTANCE

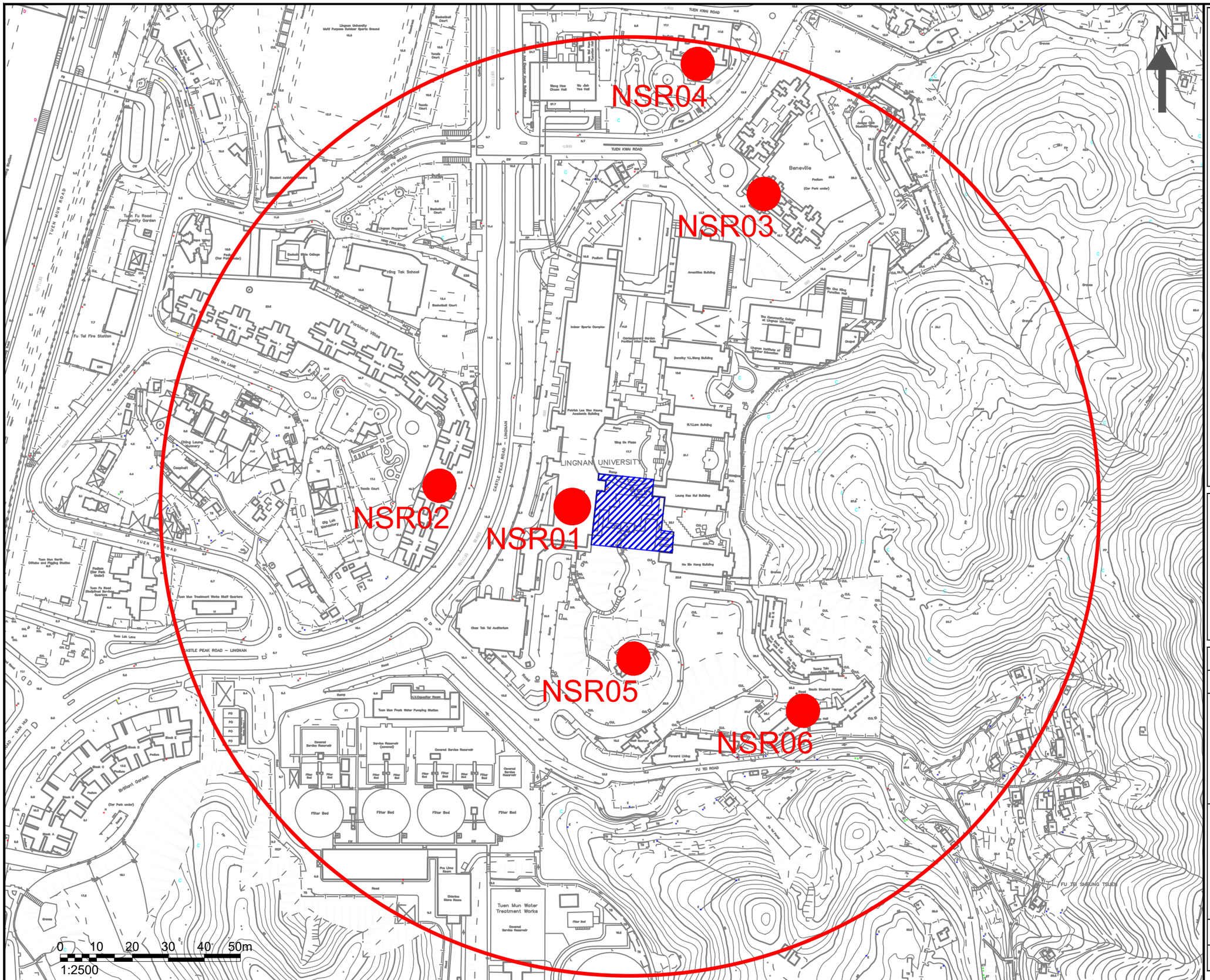
Consultant

Allied Environmental Consultants Limited

Project No. :	2244EA
Drawing By :	HC
Project :	PROPOSED NEW SCIENCE BUILDING OF LINGNAN UNIVERSITY
Drawing Title :	Buffer Distance from Nearby Roads
Drawing No :	Figure 6.2
Revision :	0
Scale :	AS SHOWN
Date :	OCT 2024

A3 420 x 297

C:\USERS\NGANCHUNSANG\SYNOLOGYDRIVE\2244EA LINGNAN P&T\03 DRAWING\01 AEC DRAWINGS\ISSUE 2\FIG6.2_BUFFER DISTANCE.DWG



NOTES :

PROJECT SITE

300m ASSESSMENT AREA

REPRESENTATIVE NOISE SENSITIVE RECEIVERS

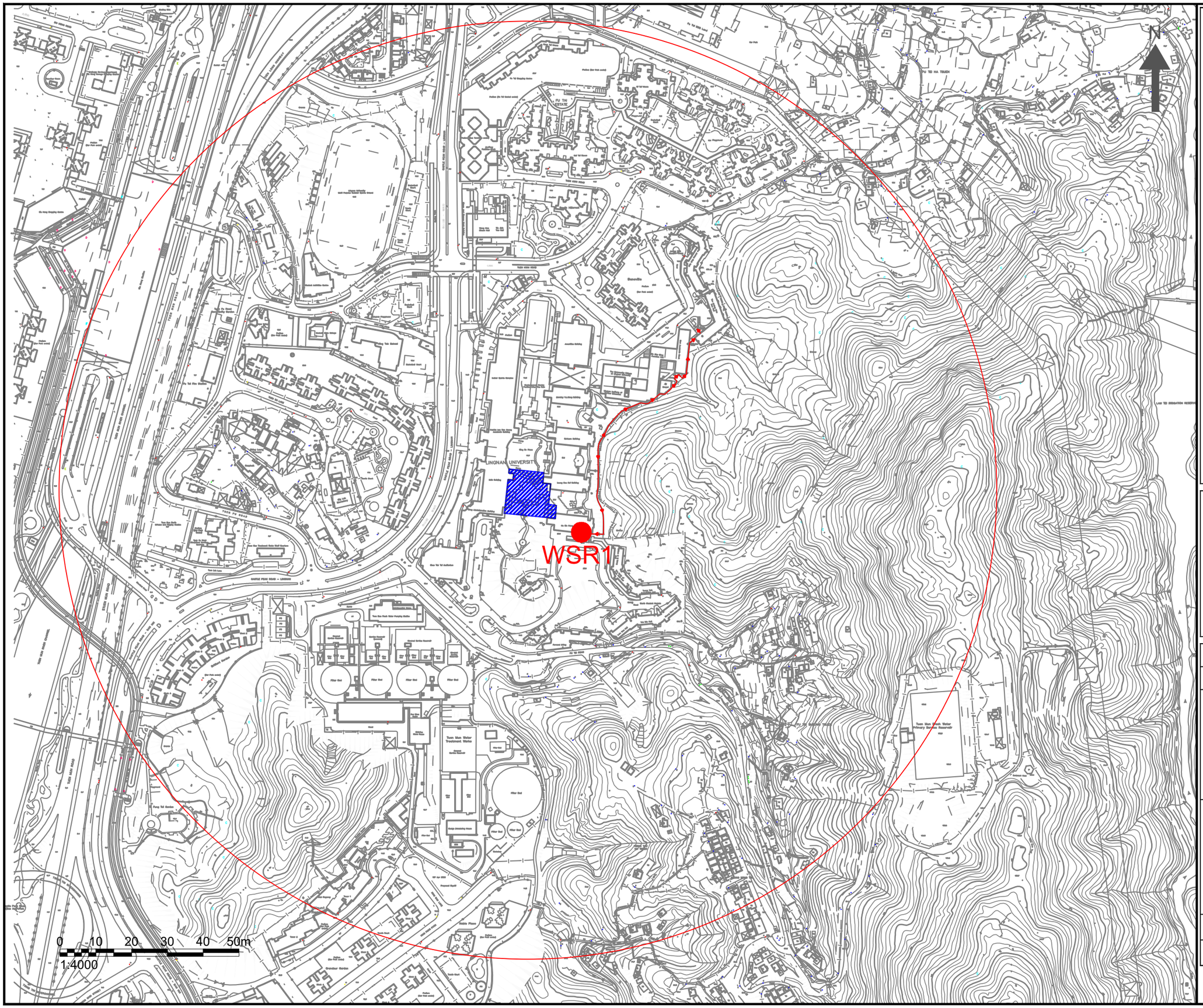
Consultant

Allied Environmental Consultants Limited

Project No. : 2244EA	
Drawing By : HC	
Project : PROPOSED NEW SCIENCE BUILDING OF LINGNAN UNIVERSITY	
Drawing Title : 300m Assessment Area and Representative Noise Sensitive Receivers	
Drawing No : Figure 7.1	Revision : 0
Scale : AS SHOWN	Date : OCT 2024

A3 420 x 297

C:\USERS\NGANCHUNSANG\SYNOLOGYDRIVE\2244EA LINGNAN P&T\03 DRAWING\01 AEC DRAWINGS\ISSUE 2\FIG7.1_300M ASSESSMENT AREA.DWG



NOTES :

PROJECT SITE

500m ASSESSMENT AREA

REPRESENTATIVE WATER SENSITIVE RECEIVERS

WSR FLOW DIRECTION

Consultant

Allied Environmental Consultants Limited

Project No. : 2244EA

Drawing By : HC

Project :

PROPOSED NEW SCIENCE BUILDING OF LINGNAN UNIVERSITY

Drawing Title :

500m Assessment Area and Representative Air Quality Sensitive Receivers

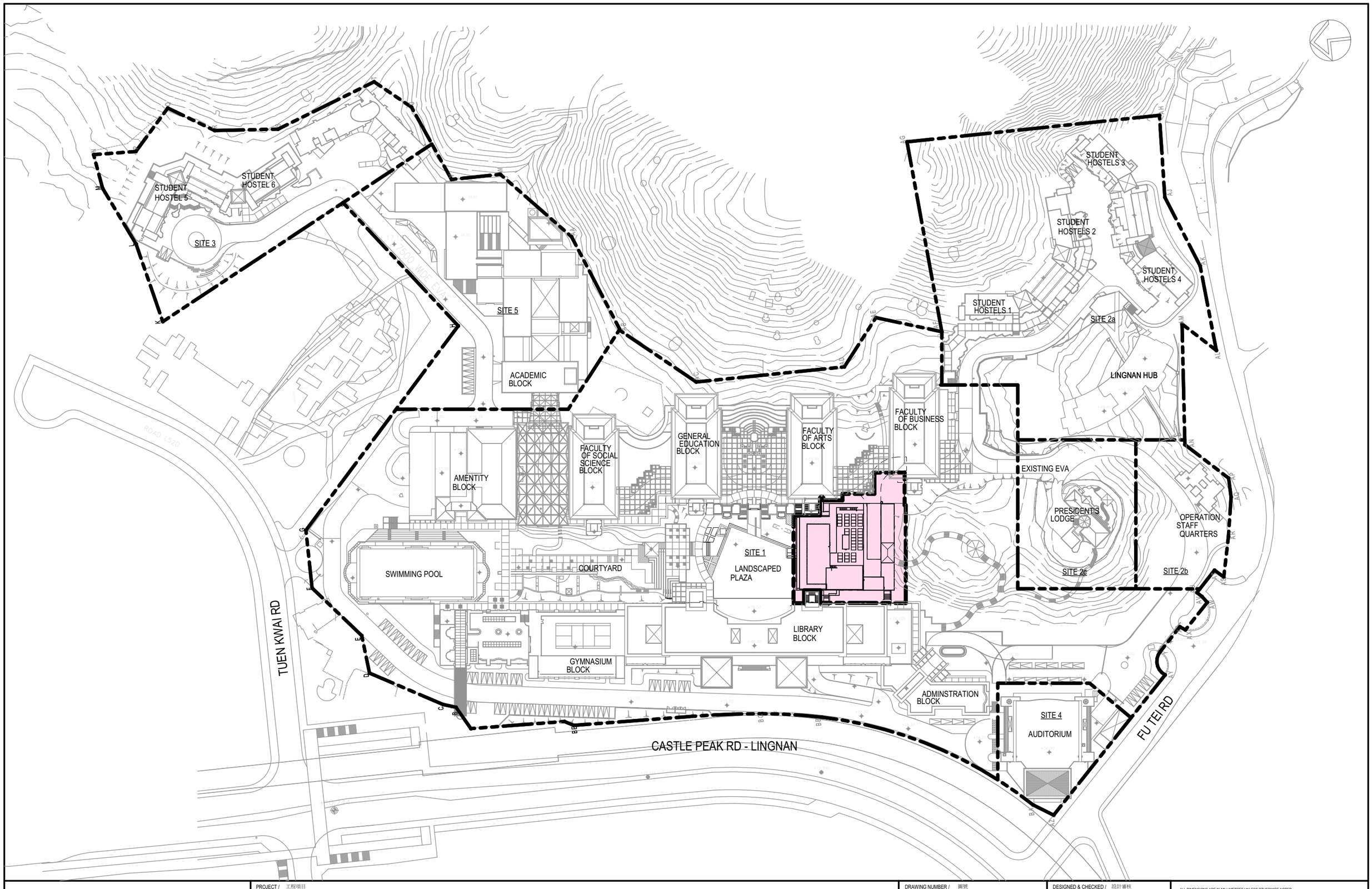
Drawing No :	Revision :
Figure 8.1	0
Scale :	Date :
AS SHOWN	OCT 2024

A3 420 x 297

C:\USERS\NGANCHUNSANG\SYNOLOGYDRIVE\2244EA LINGNAN P&T\03 DRAWING\01 AEC DRAWINGS\ISSUE 2\FIG8.1_WSR WITHIN 500M ASSESSMENT AREA.DWG

Appendix 3.1

Master Layout Plan of the Proposed Development



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PROJECT / 工程項目
LINGNAN UNIVERSITY - NEW SCIENCE BUILDING

DRAWING / 圖名
MASTER LAYOUT PLAN

DRAWING NUMBER / 圖號
SK-100

REV.
-

DESIGNED & CHECKED / 設計審核
P&T

SCALE / 比例
@A3

DATE / 日期
SEP 2024

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除特別註明外，所有尺寸均以毫米計
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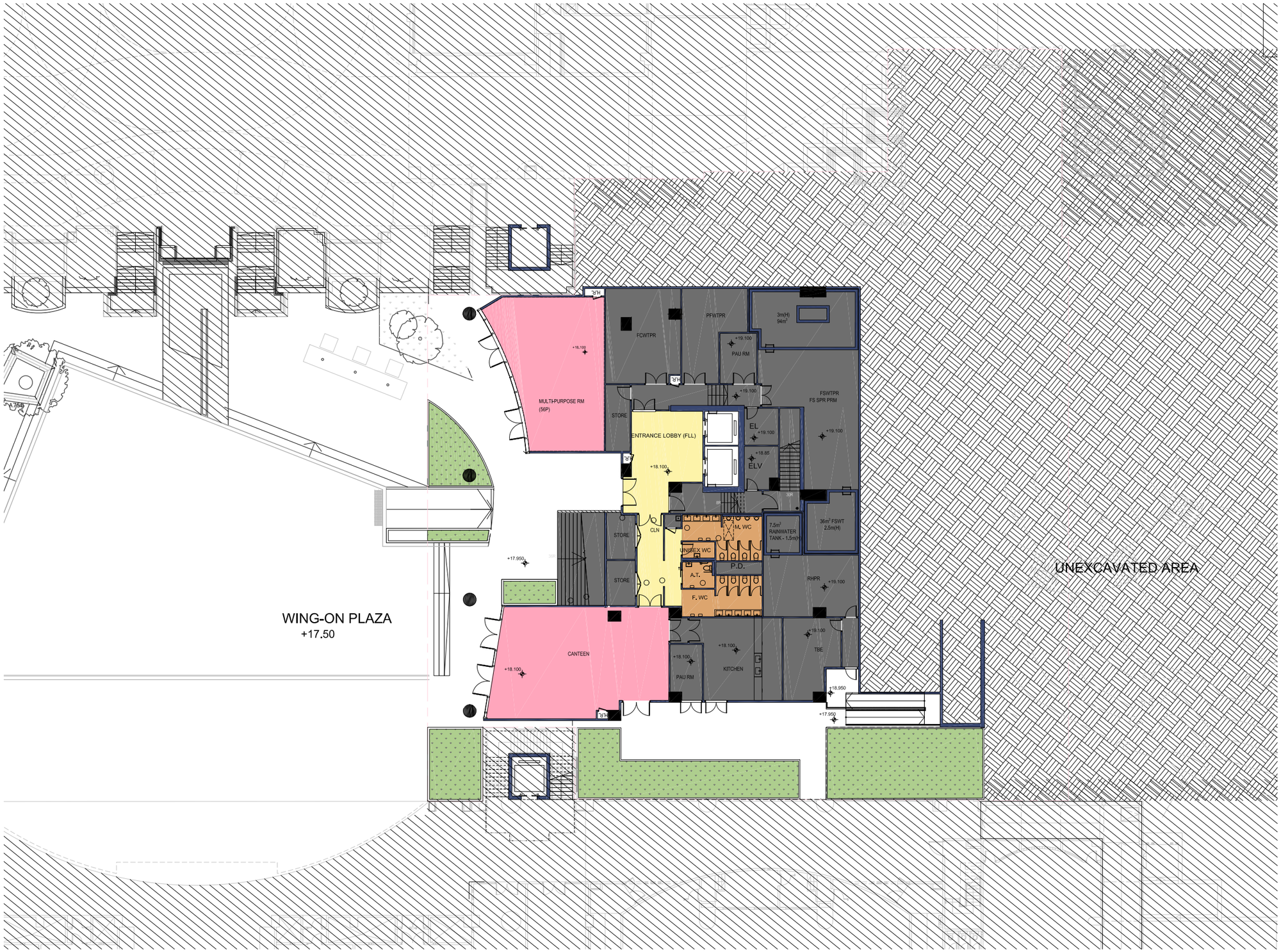
圖中以所有標注尺寸為準，不應量度
- ALL MEASUREMENTS SHOULD BE VERIFIED ON SITE
設計尺寸須在現場核對準確



LEGEND

- MULTI-PURPOSE
- CIRCULATION
- PLANT ROOM/ BOH
- WC

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PROJECT / 工程項目
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DRAWING / 圖名
LOWER GROUND FLOOR PLAN

DRAWING NUMBER / 圖號
SK-101

REV.
-

DESIGNED & CHECKED / 設計審核
P&T

SCALE / 比例
1:300@A3

DATE / 日期
SEP 2024

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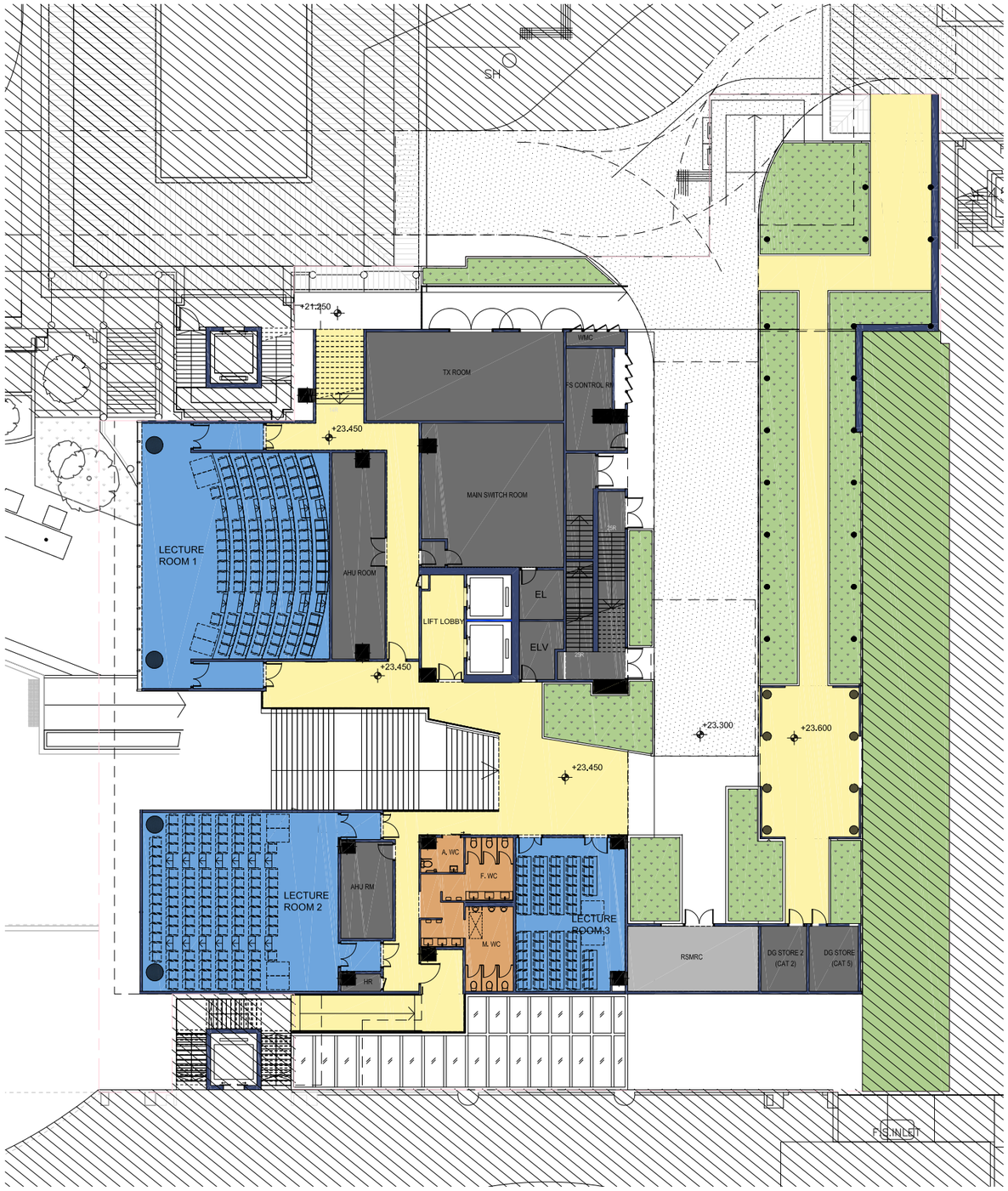
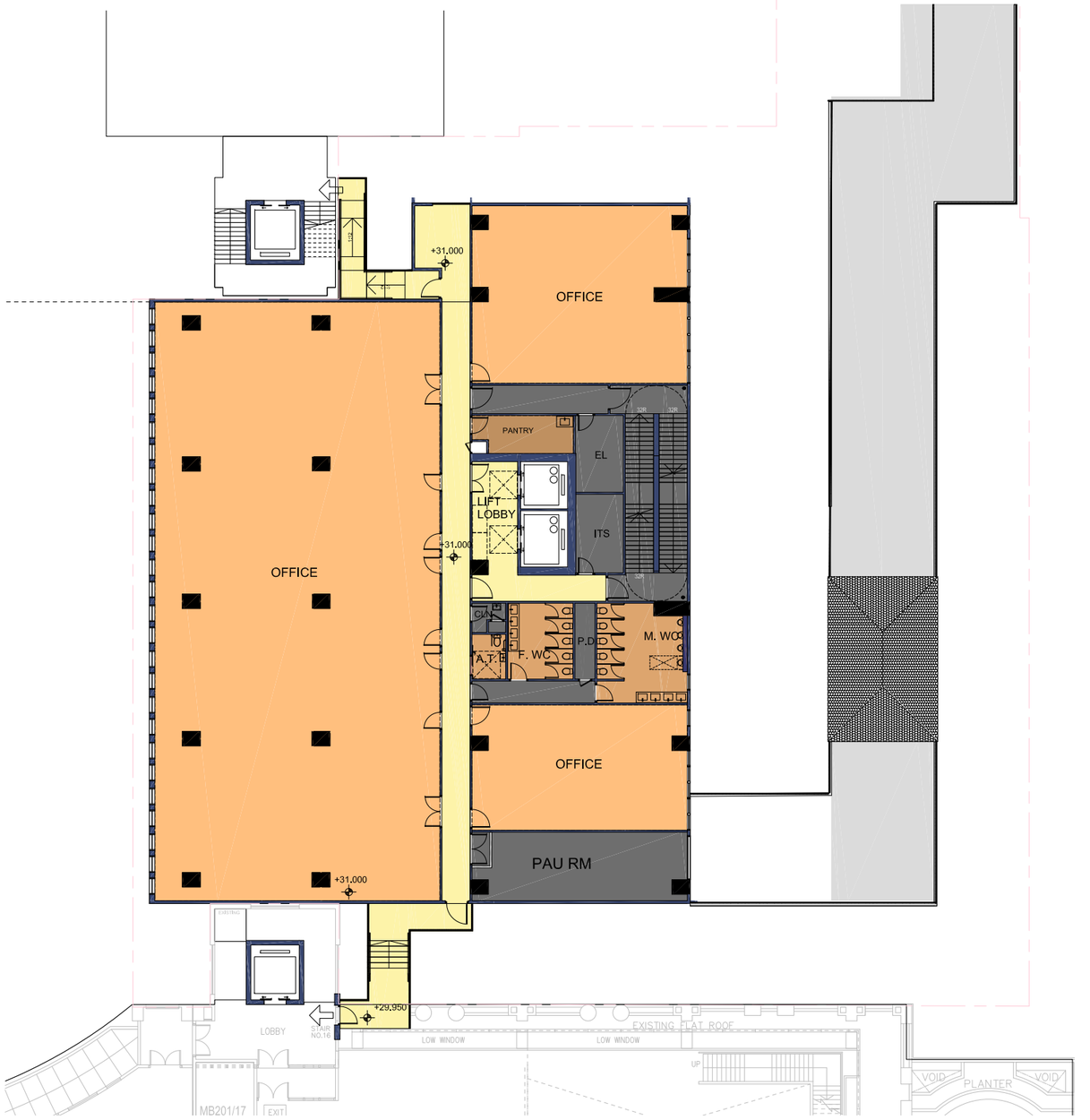
- ALL MEASUREMENTS SHOULD BE VERIFIED ON SITE
  處時尺寸須在現場核對準確

LEGEND

- LECTURE ROOMS
- CIRCULATION
- PLANT ROOM/ BOH
- OFFICES/ PAMTRY
- WC
- PLANTERS/ LAWN



1 GROUND FLOOR LAYOUT PLAN



2 1/F LAYOUT PLAN

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PROJECT / 工程項目
LINGNAN UNIVERSITY - NEW SCIENCE BUILDING
DRAWING / 圖名
GROUND & 1/F FLOOR PLAN

DRAWING NUMBER / 圖號
SK-102
REV.
-

DESIGNED & CHECKED / 設計審核
P&T
SCALE / 比例
1:300@A3
DATE / 日期
SEP 2024

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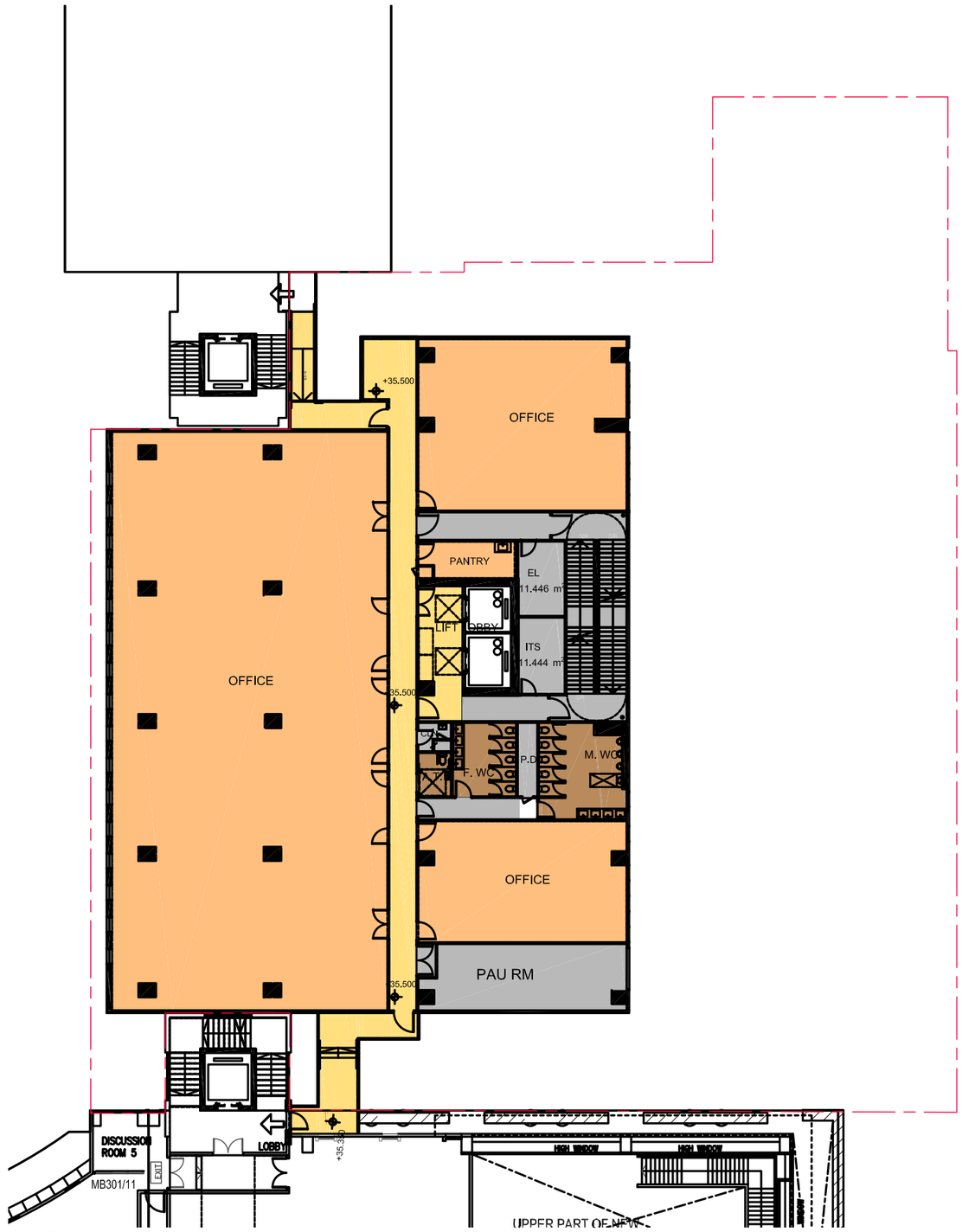
- ALL MEASUREMENTS SHOULD BE VERIFIED ON SITE
  最終尺寸須在現場核對準確

LEGEND

- LECTURE ROOMS
- CIRCULATION
- PLANT ROOM/ BOH
- OFFICES/ PANTRY
- WC
- PLANTERS/ LAWN
- LABORATORIES
- COMPUTER SERVICES



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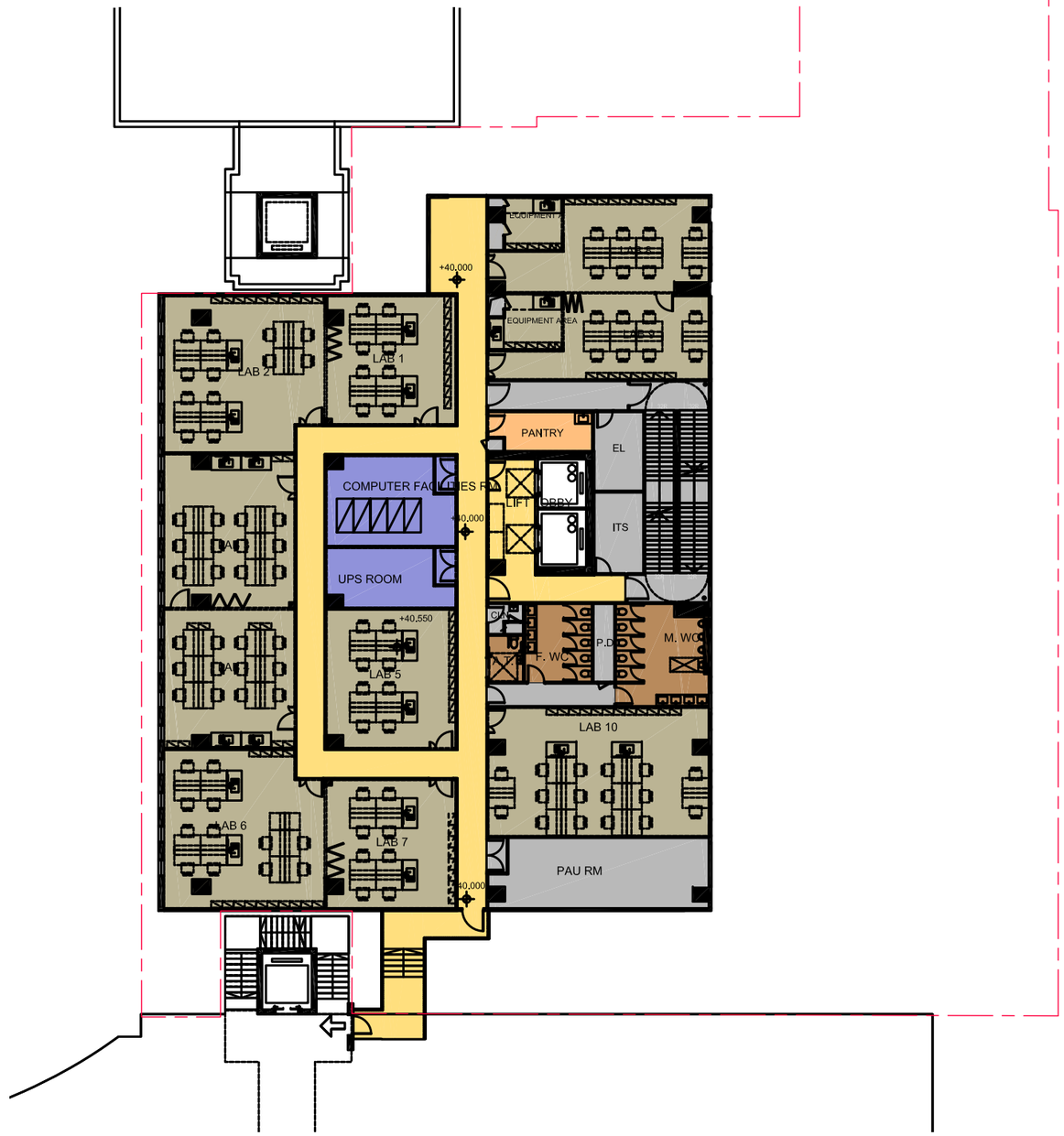

2 3/F LAYOUT PLAN

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LINGNAN UNIVERSITY - NEW SCIENCE BUILDING
DRAWING / 圖名
2/F & 3/F FLOOR PLAN

DRAWING NUMBER / 圖號: SK-103
REV.: -
DESIGNED & CHECKED / 設計審核: P&T
SCALE / 比例: 1:300@A3
DATE / 日期: SEP 2024

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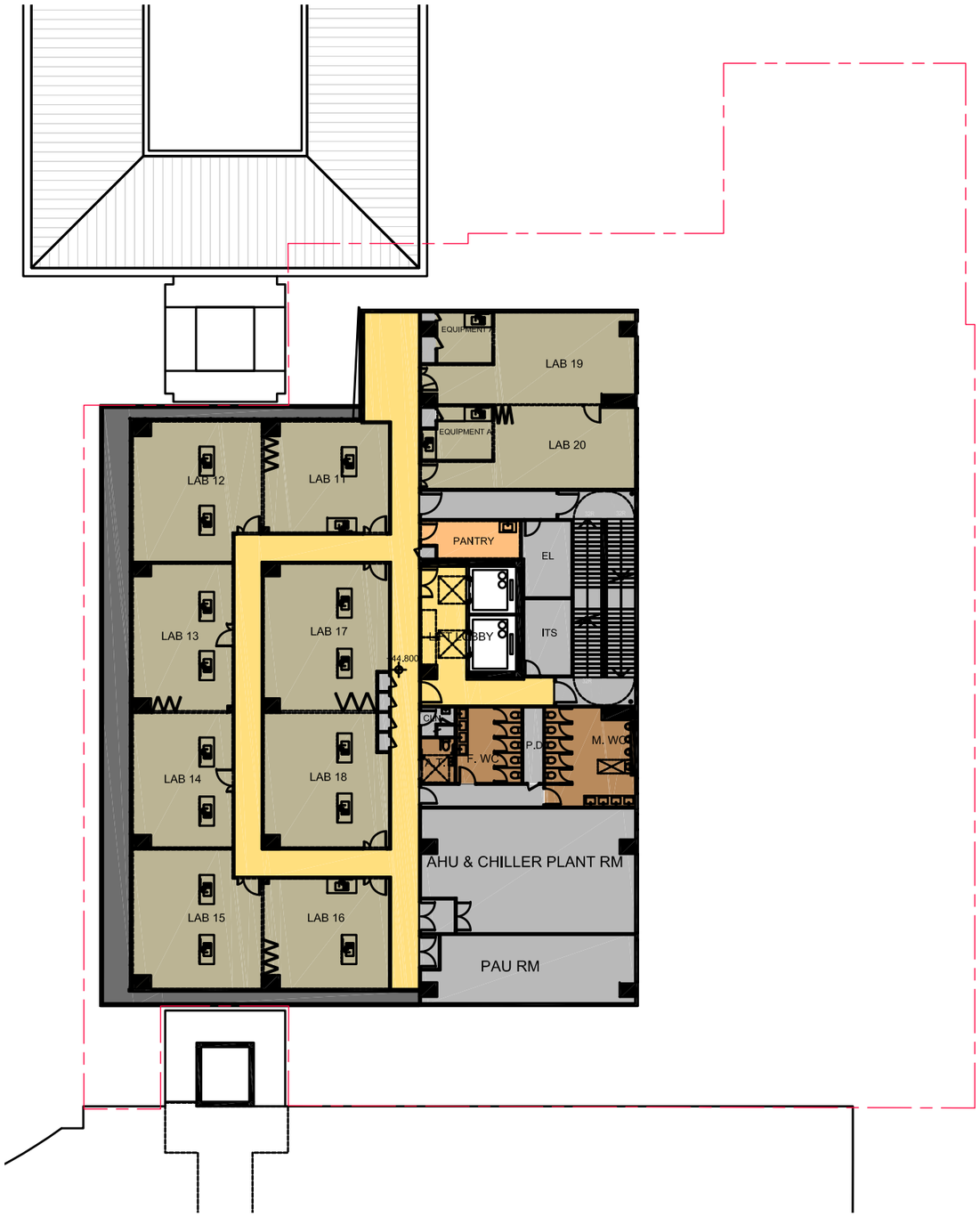
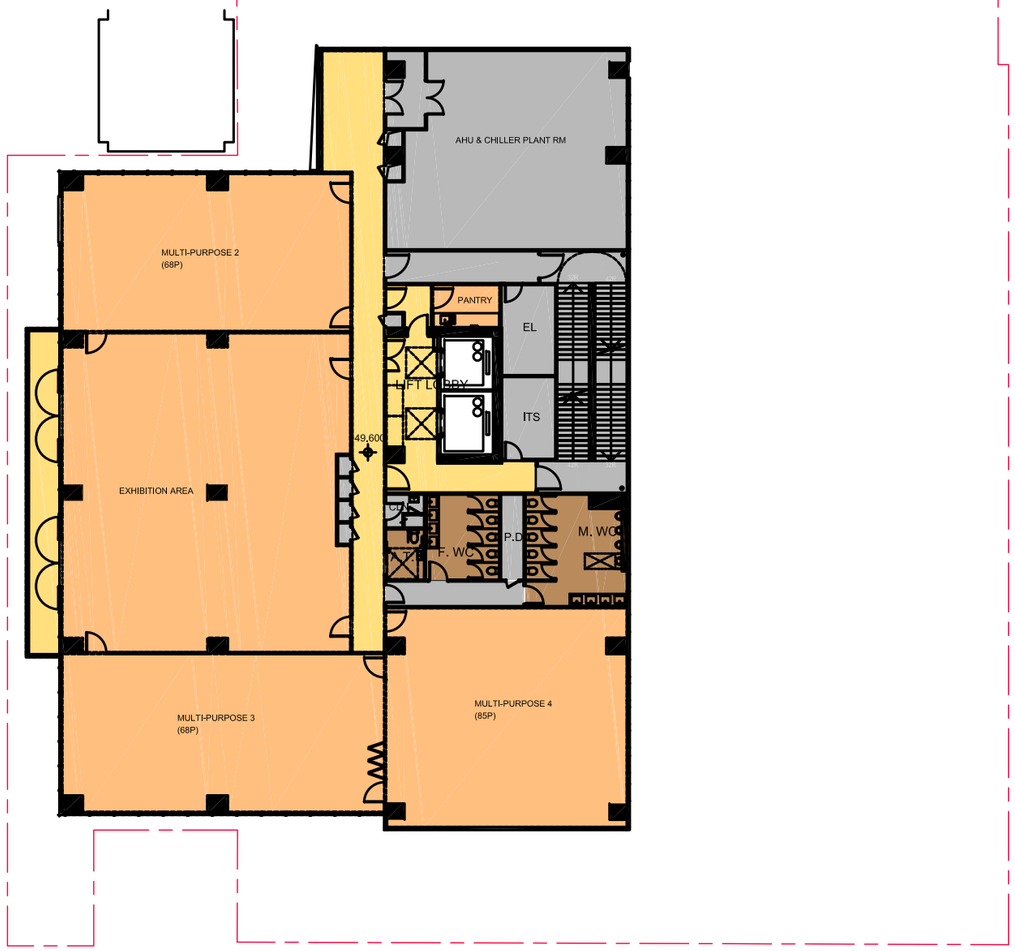
承辦尺寸須在現場核對準確

LEGEND

- LECTURE ROOMS
- CIRCULATION
- PLANT ROOM/ BOH
- EXHIBITION/ FUNCTION RMS
- WC
- LABORATORIES



1 4/F LAYOUT PLAN



2 5/F LAYOUT PLAN

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LINGNAN UNIVERSITY - NEW SCIENCE BUILDING

DRAWING / 圖名

4/F & 5/F FLOOR PLAN

DRAWING NUMBER / 圖號

SK-104

REV.

-

DESIGNED & CHECKED / 設計審核

P&T

SCALE / 比例

1:300@A3

DATE / 日期

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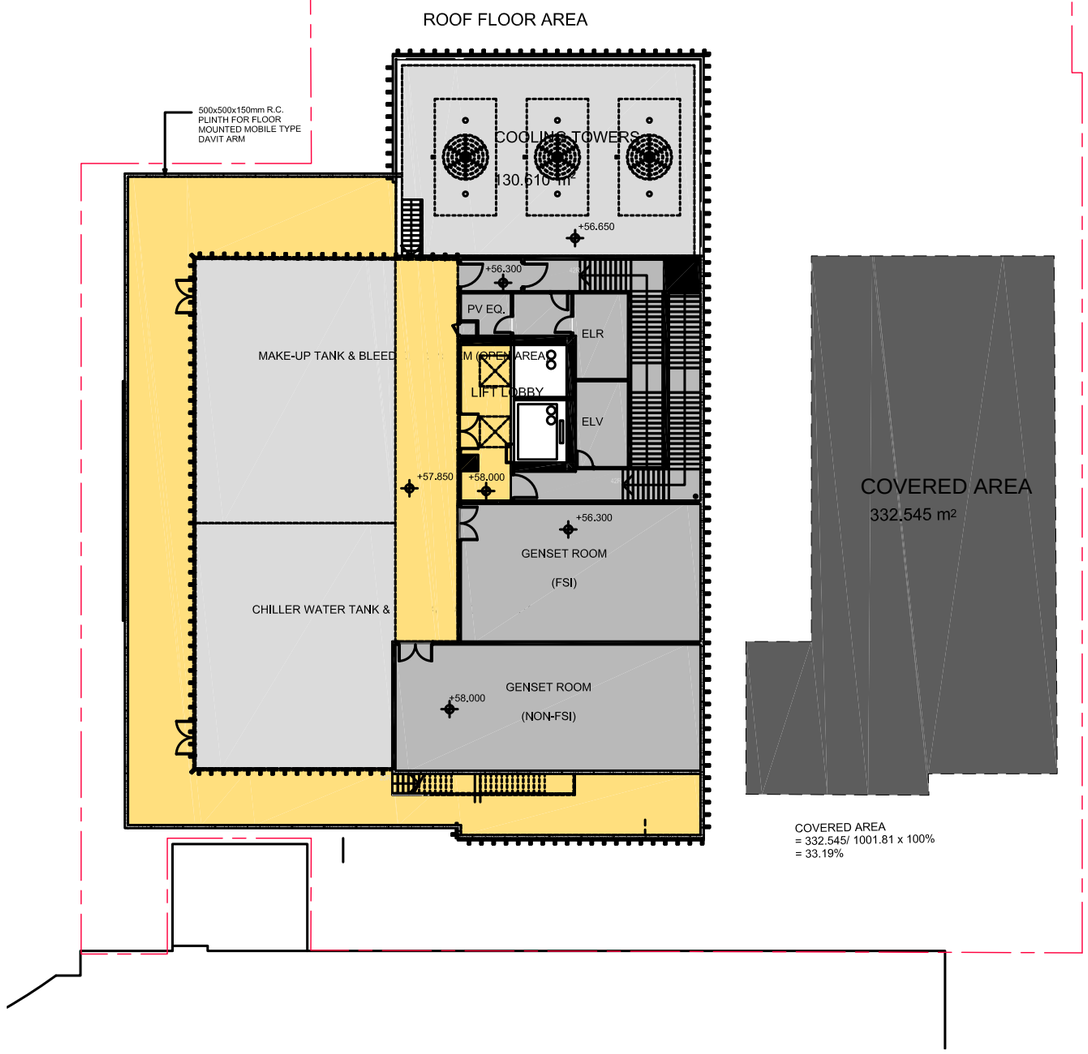
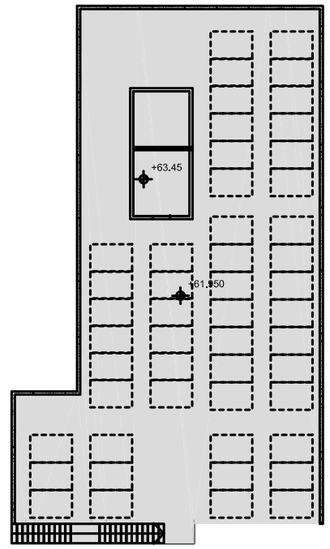
LEGEND

CIRCULATION

PLANT ROOM/ BOH



1 R/F LAYOUT PLAN



2 UR/F LAYOUT PLAN

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PROJECT / 工程項目
LINGNAN UNIVERSITY - NEW SCIENCE BUILDING
DRAWING / 圖名
R/F FLOOR PLAN

DRAWING NUMBER / 圖號
SK-105
REV.
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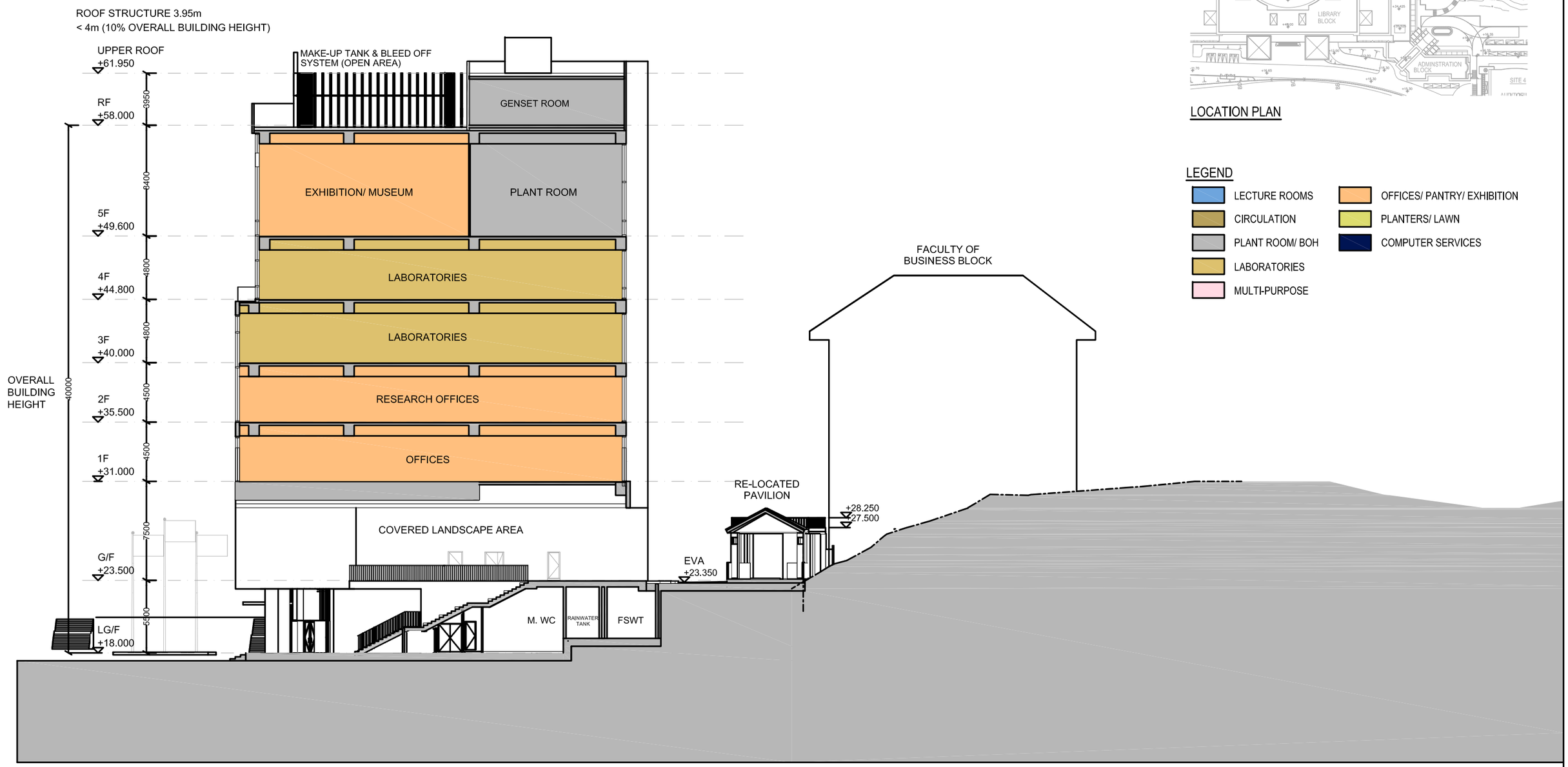
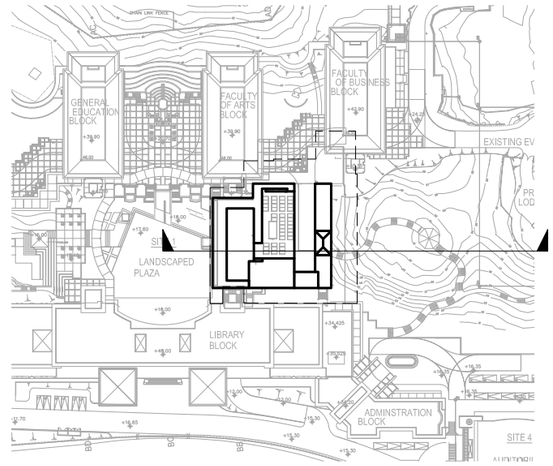
最終尺寸需在現場核對準確





LOCATION PLAN

LEGEND

- LECTURE ROOMS
- CIRCULATION
- PLANT ROOM/ BOH
- LABORATORIES
- MULTI-PURPOSE
- OFFICES/ PANTRY/ EXHIBITION
- PLANTERS/ LAWN
- COMPUTER SERVICES

SECTION A-A 1:200

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PROJECT / 工程項目
LINGNAN UNIVERSITY - NEW SCIENCE BUILDING

DRAWING / 圖名
SECTION A-A

DRAWING NUMBER / 圖號
SK-106

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P&T

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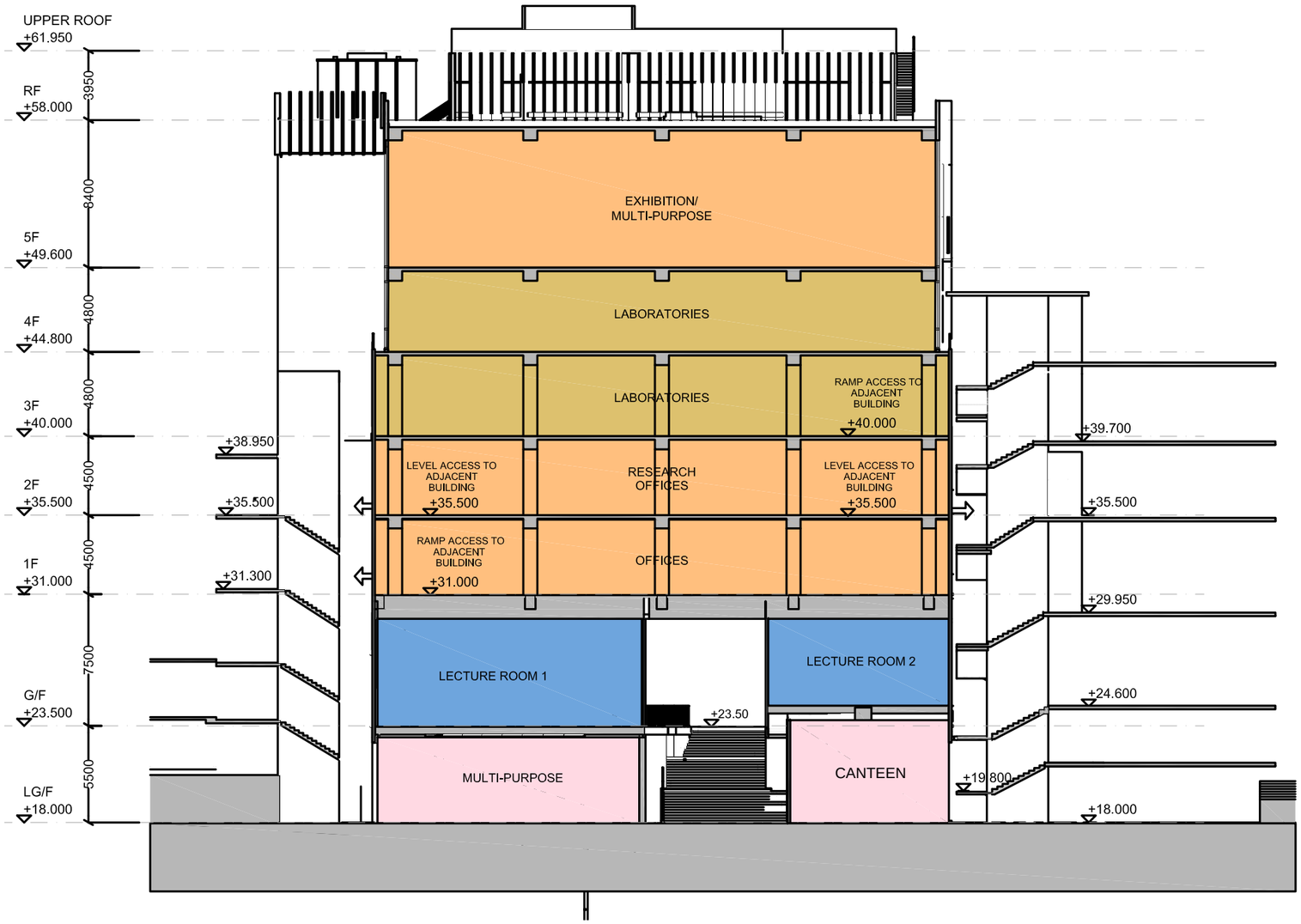
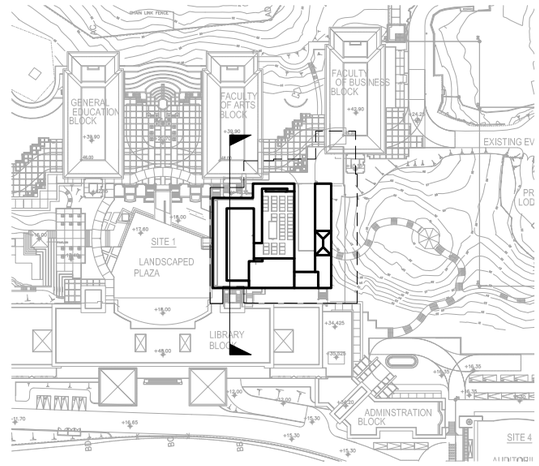
最終尺寸須在現場核對準確



1 SECTION B-B



LOCATION PLAN

LEGEND

- LECTURE ROOMS
- CIRCULATION
- PLANT ROOM/ BOH
- LABORATORIES
- MULTI-PURPOSE
- OFFICES/ PANTRY/ EXHIBITION
- PLANTERS/ LAWN
- COMPUTER SERVICES

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PROJECT / 工程項目

LINGNAN UNIVERSITY - NEW SCIENCE BUILDING

DRAWING / 圖名

SECTION B-B

DRAWING NUMBER / 圖號

SK-107

REV.

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DESIGNED & CHECKED / 設計審核

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SCALE / 比例

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DATE / 日期

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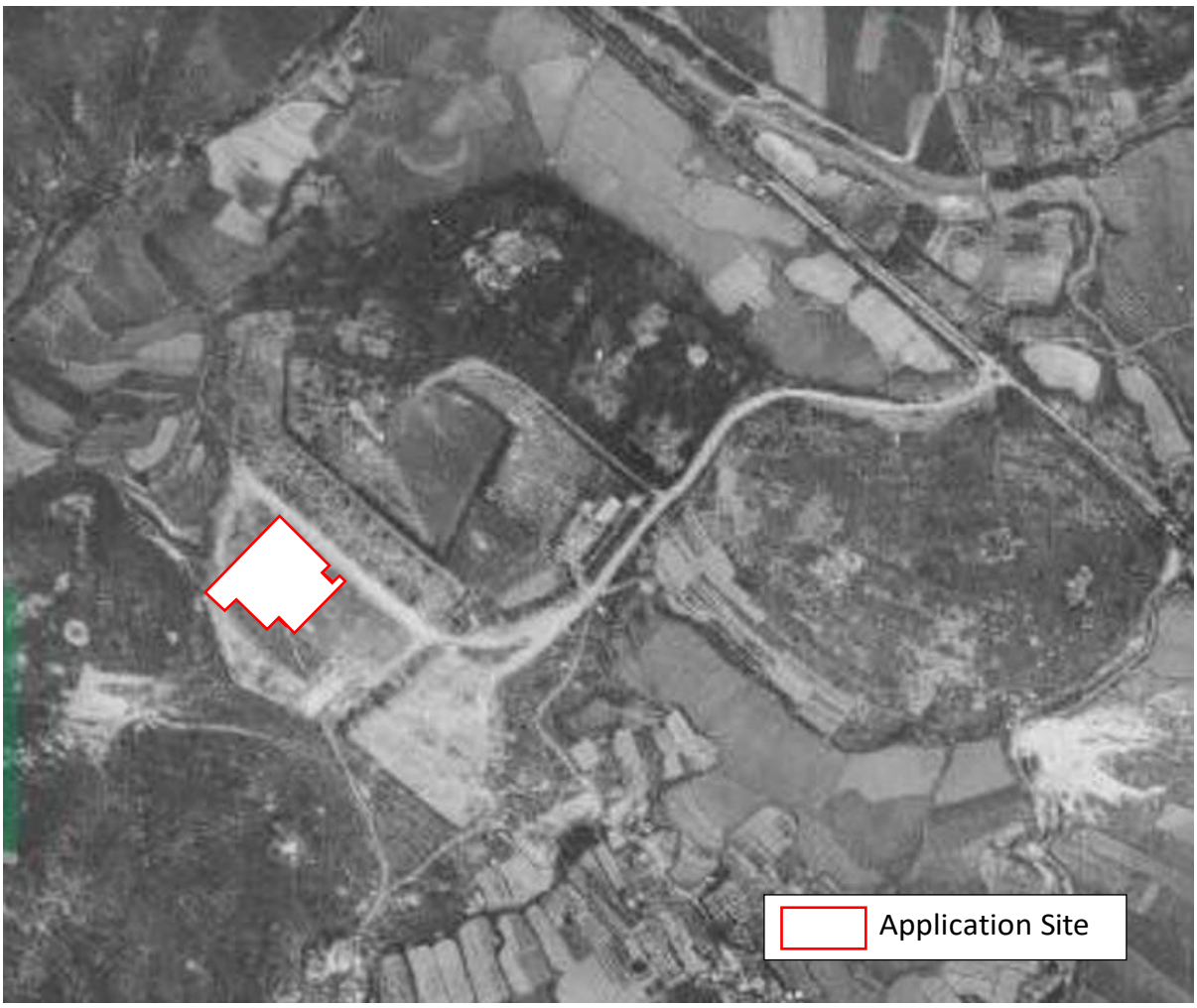
圖中以所有標注尺寸為準,不得量度
- ALL MEASUREMENTS SHOULD BE VERIFIED ON SITE
最終尺寸須在現場核對準確

Appendix 9.1

Historical Aerial Photographs



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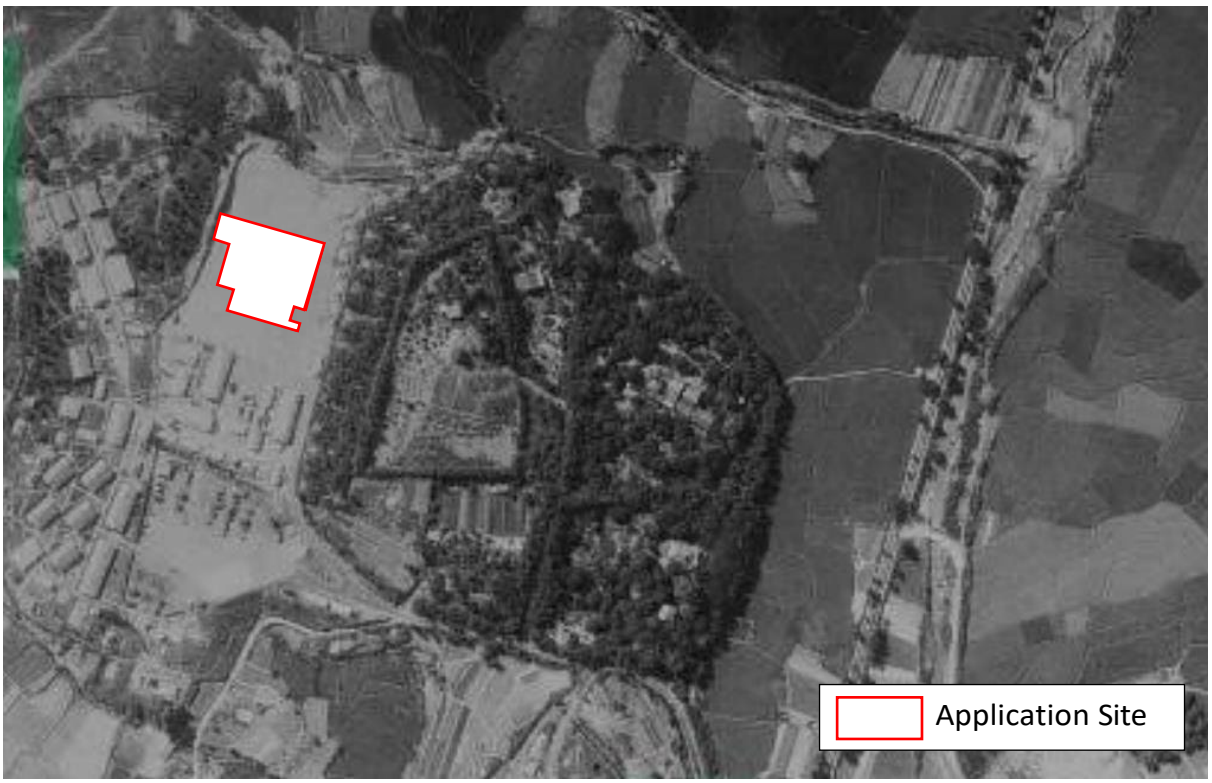
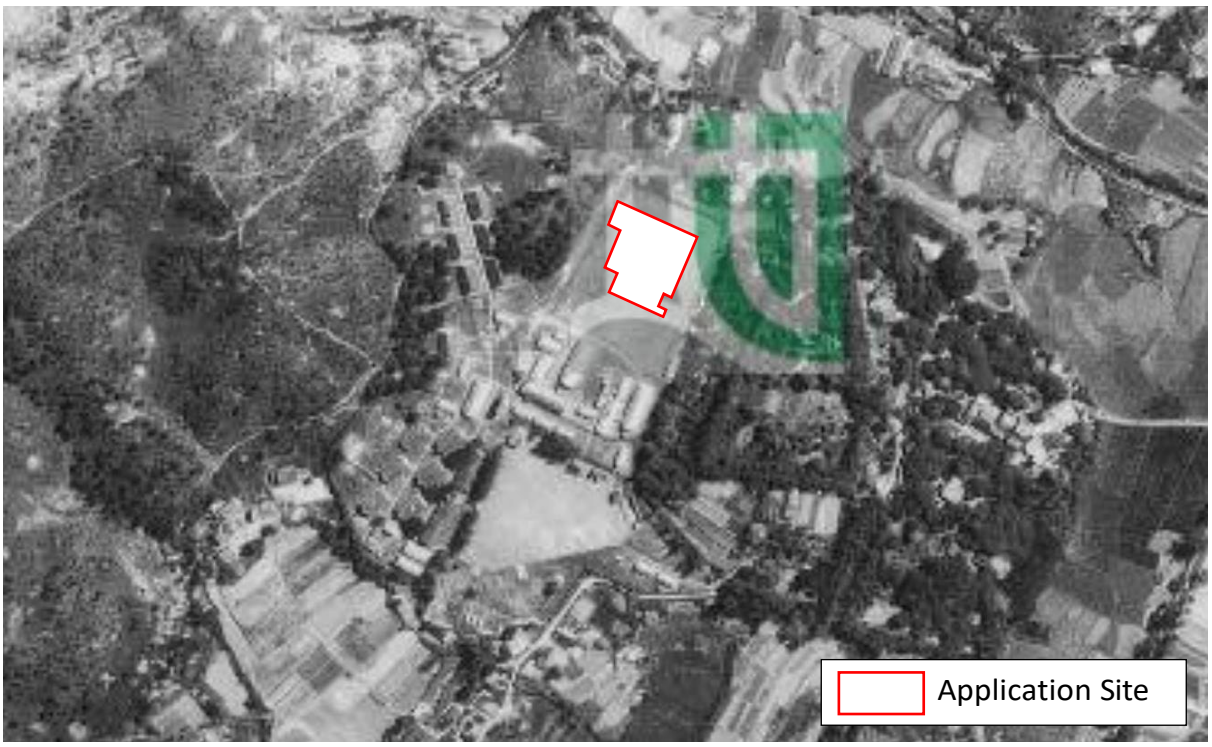
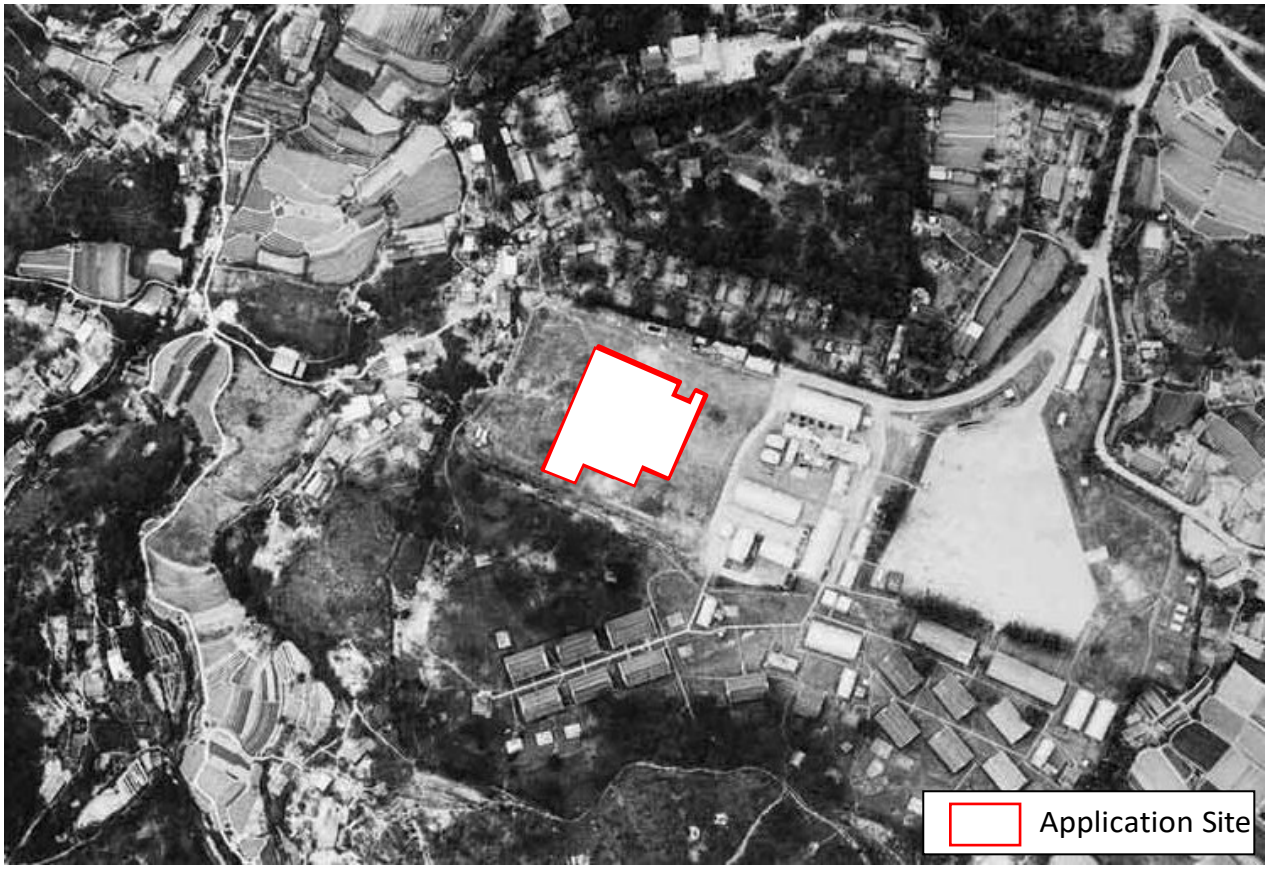


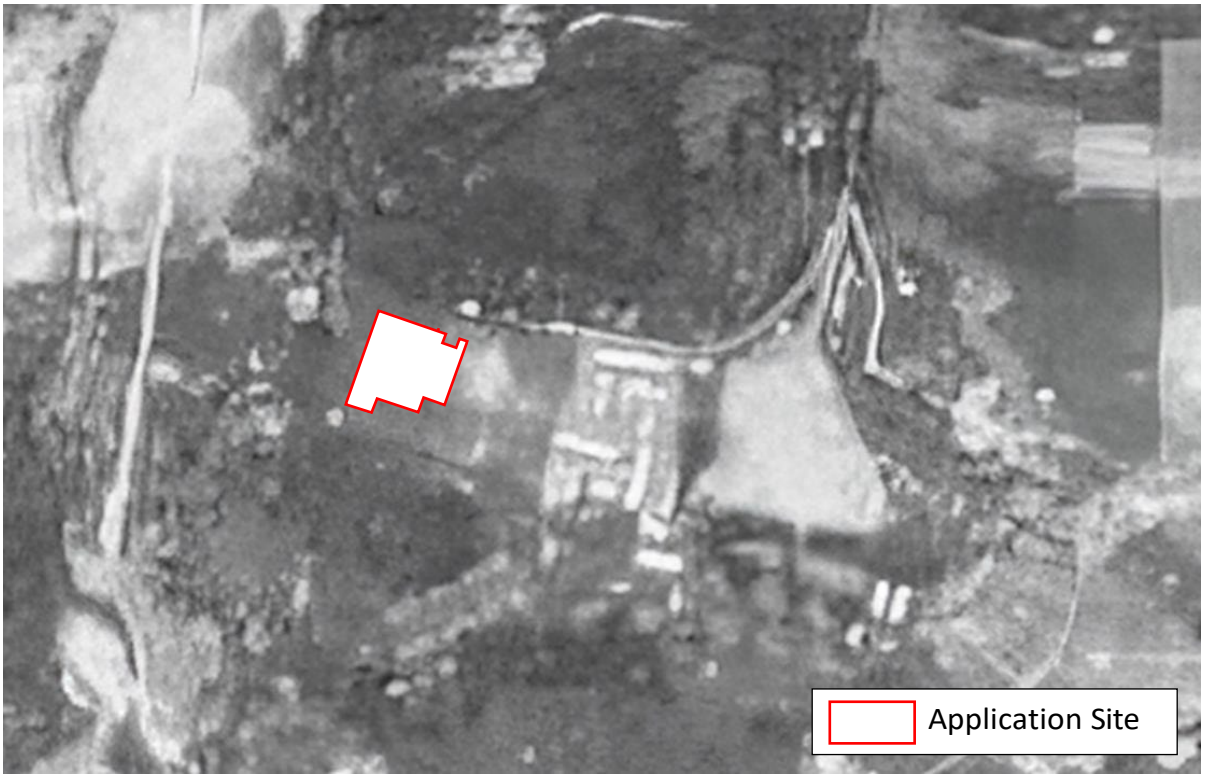
Year: 1954



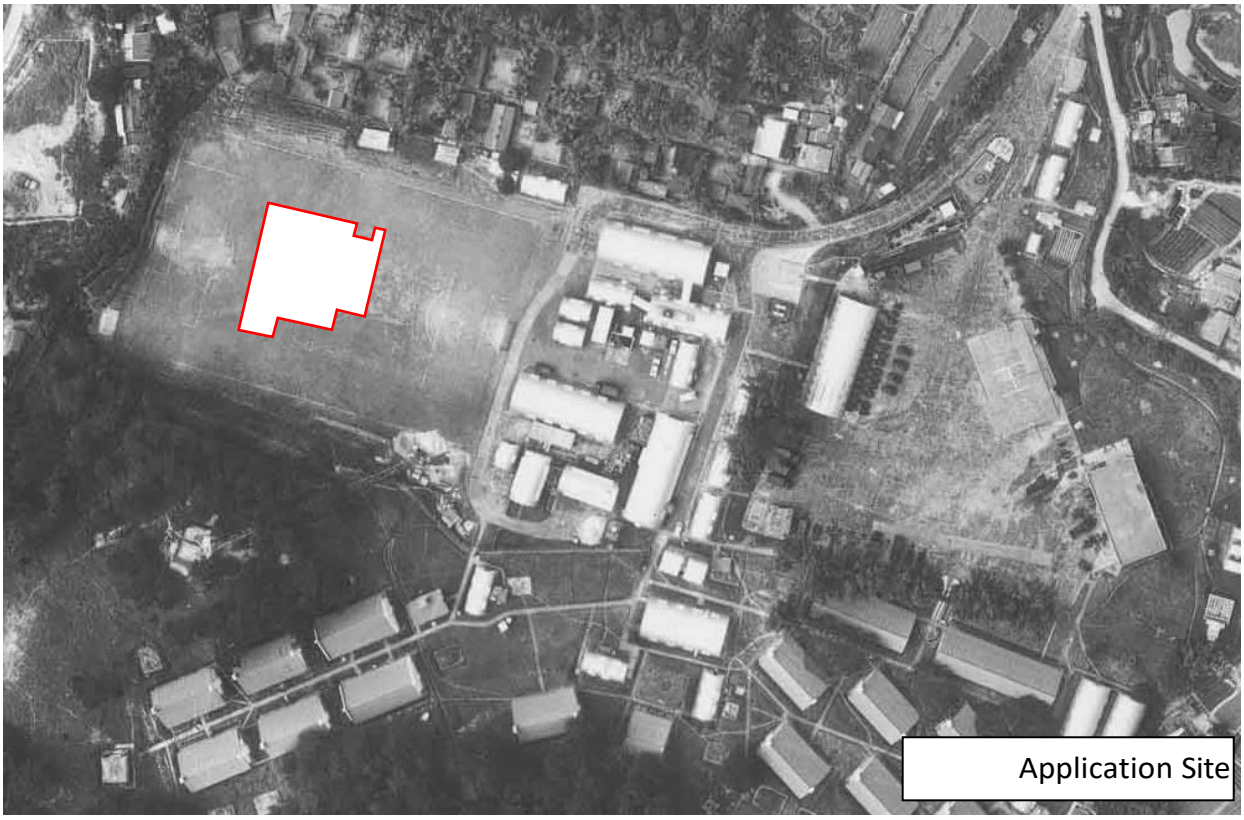
Year: 1961



Year: 1964

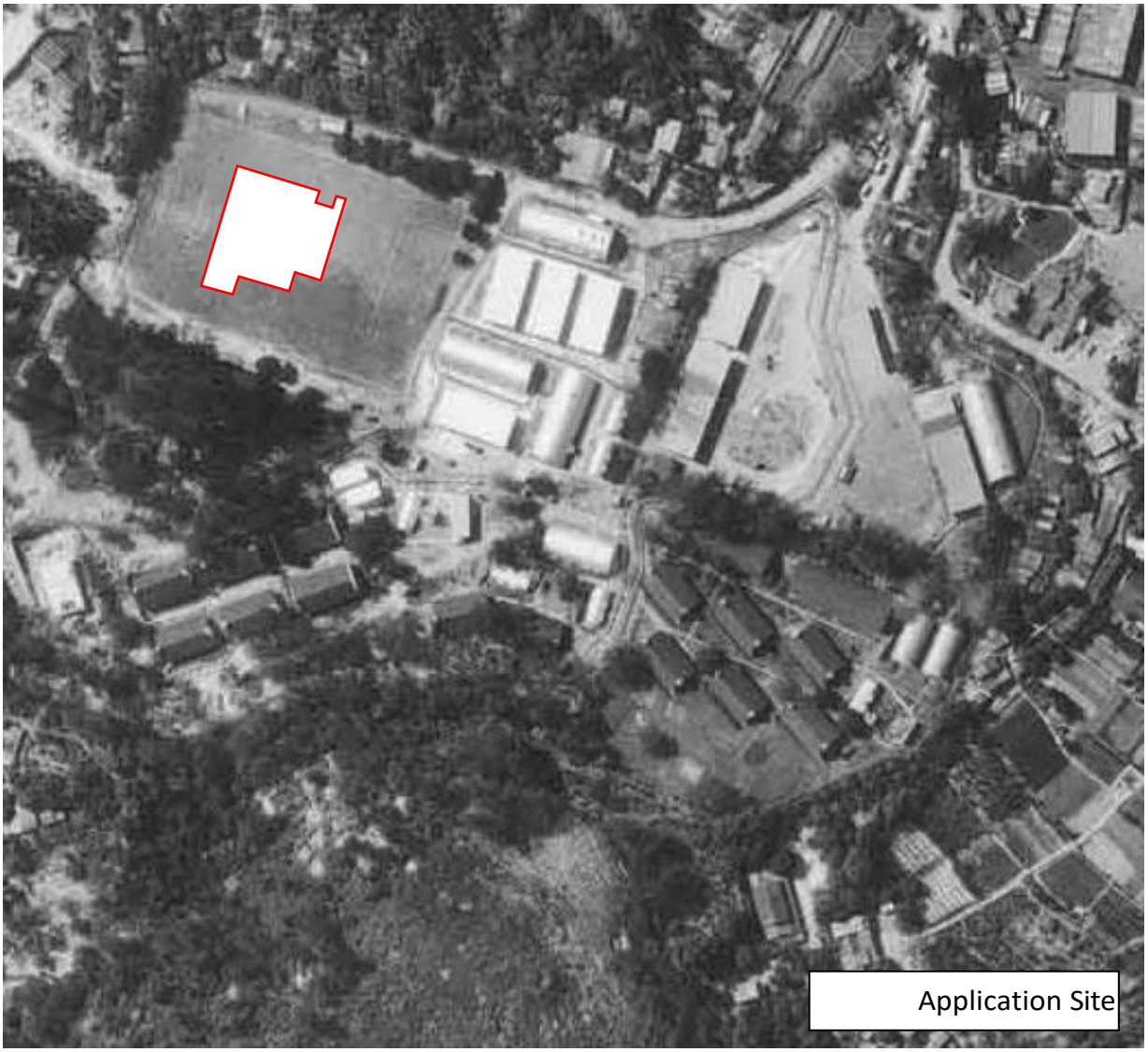


Year: 1968



Year:1973

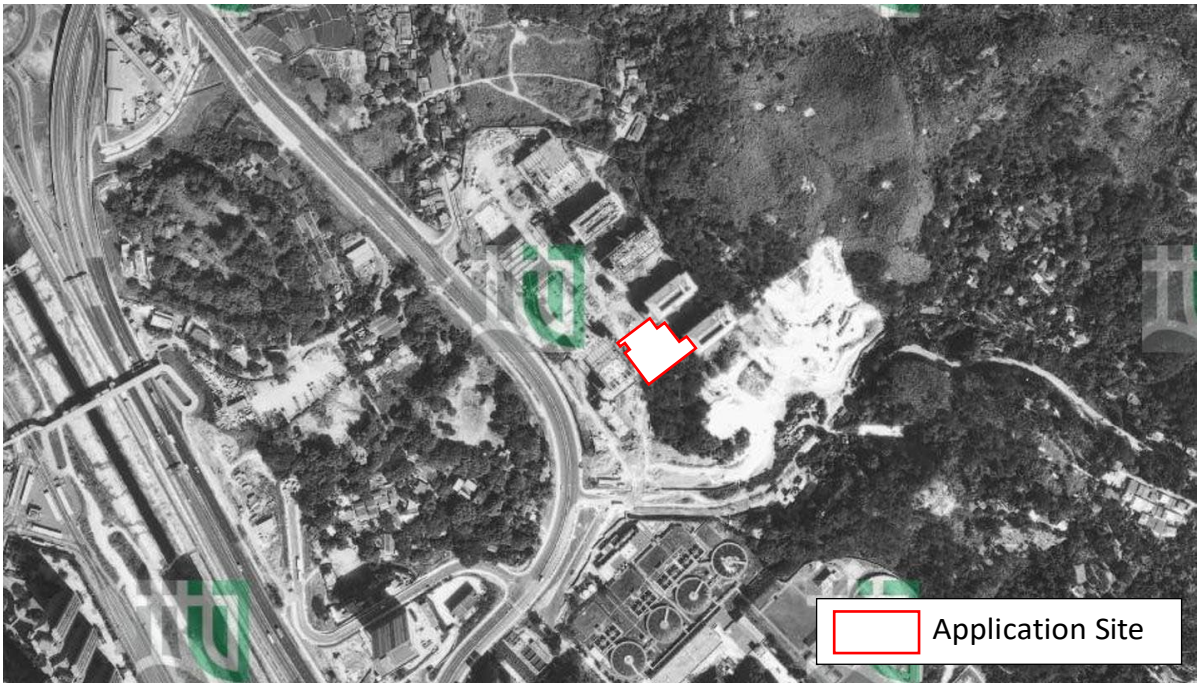
Year: 1978



Year: 1984

Year: 1985

Year: 1990



Year: 1994

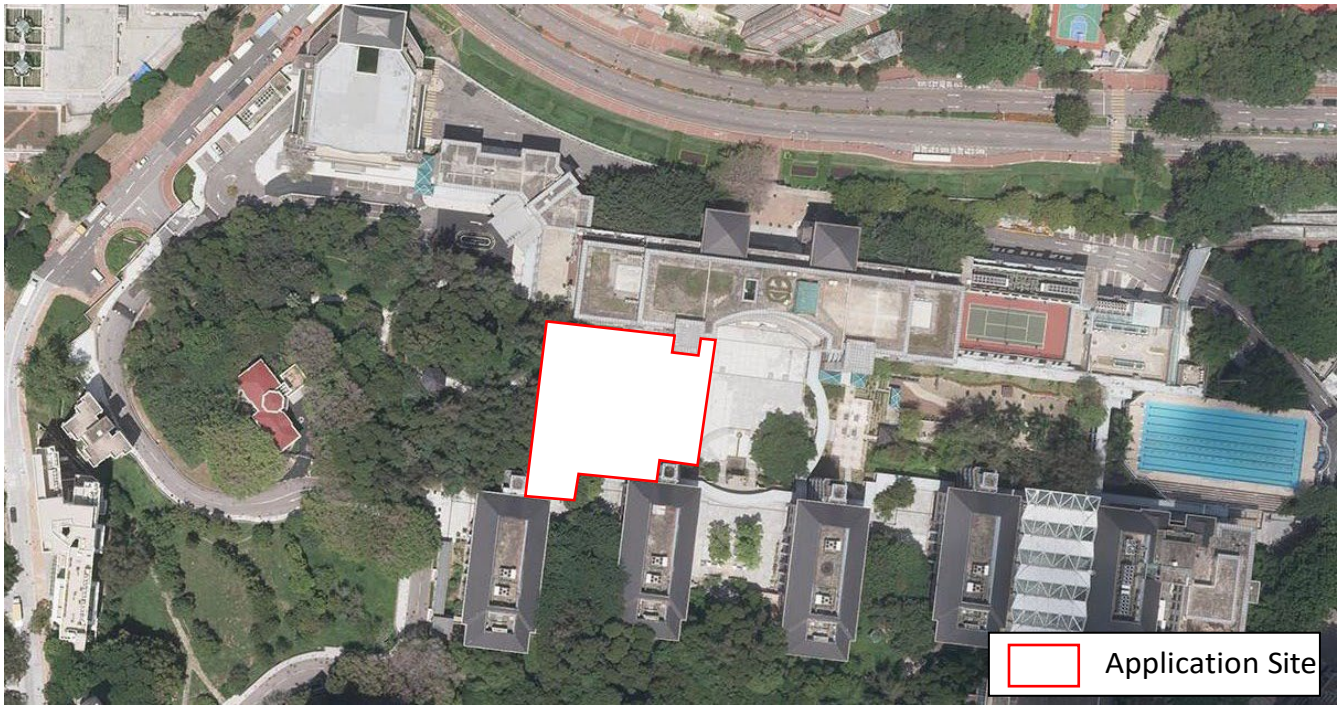
Year: 1996

Year:2001

Year: 2006

Year: 2011

Year: 2016



Year: 2021

Year: 2023

Appendix 9.2

Copy of Letter Replies from Various Government Departments

[819.5075] Information Request for Land Contamination Assessment - Lingnan U

laichiwong@epd.gov.hk <laichiwong@epd.gov.hk>

Fri 16/08/2024 09:30

To:Howard Chan <howardchan@aechk.com>
Cc:Cathy Man <cm@aechk.com>;NGAN Chun Sang <nganchunsang@aecasia.io>;hwwong@epd.gov.hk <hwwong@epd.gov.hk>; psyiu@epd.gov.hk <psyiu@epd.gov.hk>

Dear Mr Chan

According to our record, there is no chemical waste disposal record nor accidental spillage record as per your location plan.

Should you need more info, please call HW Wong at 2417 6103.

Regards

LC Wong
E(RW)14
Regional Office (West)
Environmental Protection Department
Direct: 2417 6139
Fax: 2415 7191

From: Howard Chan <howardchan@aechk.com>
To: "cfchang@epd.gov.hk" <cfchang@epd.gov.hk>
Cc: Cathy Man <cm@aechk.com>, NGAN Chun Sang <nganchunsang@aecasia.io>
Date: 31/07/2024 14:32
Subject: [819.5075] Information Request for Land Contamination Assessment - Lingnan U

Dear Mr. CHANG,

Proposed New Science Building for Lingnan University at 8 Castle Peak Rd - Lingnan, Tuen Mun
Request for Information for Land Contamination Assessment

We are conducting a S16 Application of the Proposed New Science Building for Lingnan University (LU) at 8 Castle Peak Rd - Lingnan, Tuen Mun (Subject Site). As required by the “Practice Guide for Investigation and Remediation of Contaminated Land” published by the Environmental Protection Department of the HKSAR, information pertaining to the change of land uses/past activities/incidents/accidents at the Subject Site is required as part of the vetting process.

Of particular interests is whether there are any registered chemical waste producers under your record in the Subject Site, any chemical waste disposal record, any accidental spillage record, any submission relating to land contamination assessment at the Subject Site and any information you could provide which might be useful for our study. We enclosed herewith a project site location map showing the location of the Subject Site for your reference.

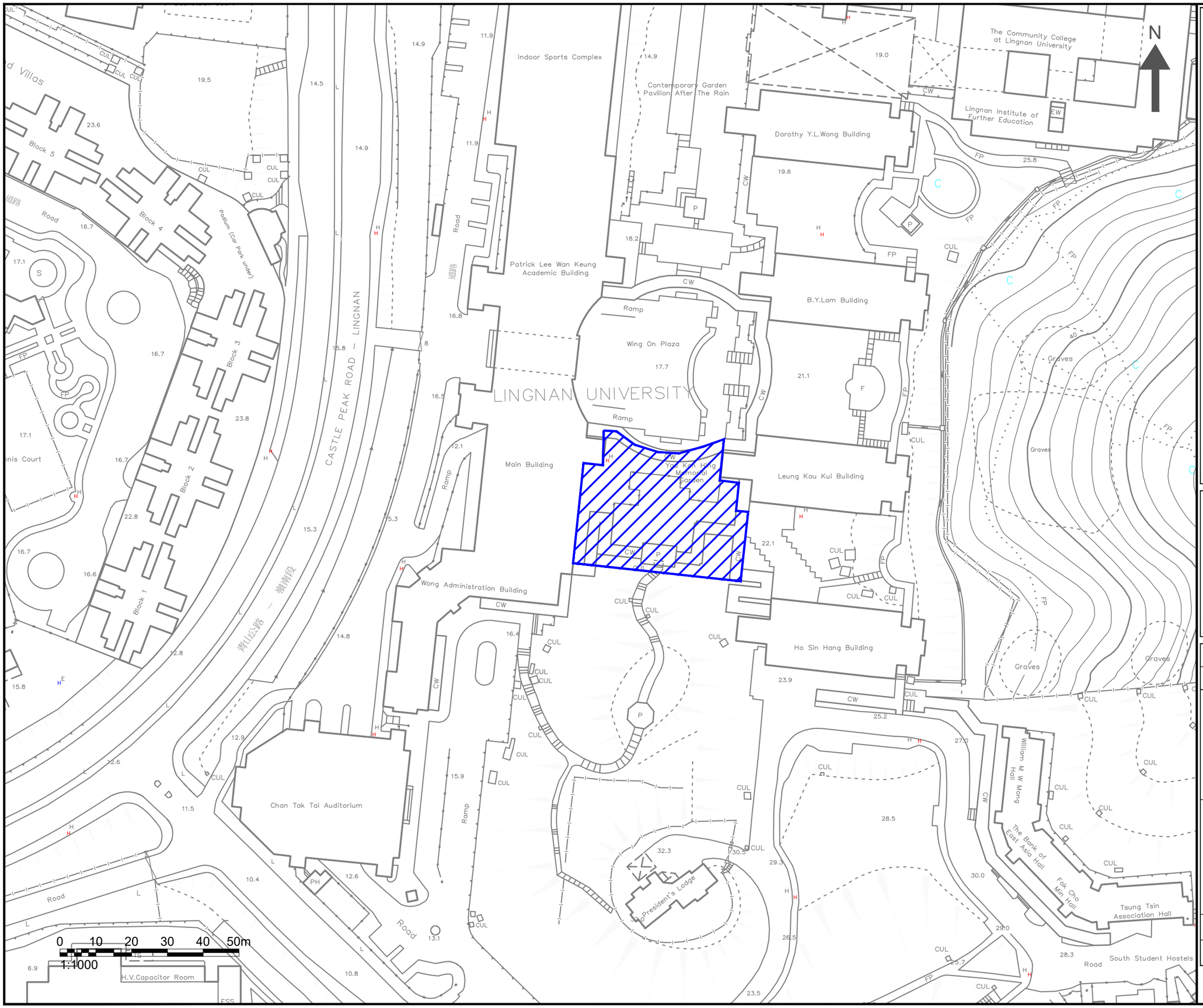
Due to tight schedule, it is highly appreciated if the above information could be available and returned to us via either

fax (Fax No. 2815 5399) or email by 14 August 2024. Thank you very much for your kind attention and assistance.

Should you have inqueries, please feel free contact us.

Thanks and Regards,

Howard Chan – Environmental Consultant
Environmental Consultancy | Green & Healthy Building
T: (852) 2815 7028 | **D:** (852) 3915 7153 | **F:** (852) 2815 5399 | **E:** howardchan@aechk.com



NOTES :

PROJECT SITE

Consultant

Allied Environmental Consultants Limited

Project No. :	819.5075
Drawing By :	HC

Project :

PROPOSED NEW SCIENCE BUILDING OF LINGNAN UNIVERSITY

Drawing Title :

Project Site Location

Drawing No :	Revision :
Figure 3.1	0
Scale :	Date :
AS SHOWN	JUL 2024

A3 420 x 297

C:\USERS\USER\DESKTOP\LINGNANU\FIG3.1_PROJECT LOCATION.DWG

消 防 處
香港九龍尖沙咀東部康莊道 1 號
消防處總部大廈

FIRE SERVICES DEPARTMENT
FIRE SERVICES HEADQUARTERS BUILDING,
No.1 Hong Chong Road,
Tsim Sha Tsui East, Kowloon,
Hong Kong.

本處檔號 **OUR REF.**	:	(200) in FSD GR 6-5/4 R Pt. 53
來函檔號 **YOUR REF.**	:	819.5075/24-0002
電子郵件 **E-mail**	:	hkfsdenq@hkfsd.gov.hk
圖文傳真 **FAX NO.**	:	2988 1196
電　話 **TEL NO.**	:	2733 7570

17 June 2024

Allied Environmental Consultants Limited
27/F, Overseas Trust Bank Building,
160 Gloucester Road,
Wan Chai, Hong Kong.
(Attn: Ms. Leanna LEI, Assistant Consultant)

By fax (2815 5399) only

Dear Ms. LEI,

Proposed Academic and Research Building of Lingnan University at 8 Castle Peak Rd - Lingnan, Tuen Mun
Request for Information of Dangerous Goods & Incident Records

I refer to your email of 14.6.2024 regarding the captioned subject.

Your case is being handled, and a reply will be furnished to you as soon as possible. Please be advised that due to time lapse, this Department can only provide the following information for your requested information:

(i) Dangerous Goods Licence Record: from the year of 1990 to present moment.

(ii) Incident Record: Past three years of fire and special services incidents.

Please also submit the appointment letter from your client for record.

Should you have further questions, please feel free to contact the undersigned.

Yours sincerely,

(LAI Kin-man)
for Director of Fire Services

消 防 處
香港九龍尖沙咀東部康莊道 1 號
消防處總部大廈

FIRE SERVICES DEPARTMENT
FIRE SERVICES HEADQUARTERS BUILDING,
No.1 Hong Chong Road,
Tsim Sha Tsui East, Kowloon,
Hong Kong.

本處檔號 **OUR REF.** : (105) in FSD GR 6-5/4 R Pt. 54
來函檔號 **YOUR REF.** : 819.5075/24-0002
電子郵件 **E-mail** : hkfsdenq@hkfsd.gov.hk
圖文傳真 **FAX NO.** : 2739 5879
電　　話 **TEL NO.** : 2733 7570

1 August 2024

Allied Environmental Consultants Limited
27/F, Overseas Trust Bank Building,
160 Gloucester Road,
Wan Chai, Hong Kong.
(Attn: Ms. Leanna LEI, Assistant Consultant)

Dear Ms. LEI,

Proposed Academic and Research Building of Lingnan University at 8 Castle Peak Rd - Lingnan, Tuen Mun
Request for Information of Dangerous Goods & Incident Records

I refer to your email of 14.6.2024 regarding the captioned request and reply below in response to your questions:-

1. No Dangerous Goods Licence was issued in respect of the captioned address.

2. A total of **2** incident records were found at the subject location. Please refer to **Appendix A** for details.

If you have further questions, please feel free to contact the undersigned.

Yours sincerely,

(LAI Kin-man)
for Director of Fire Services

Appendix A

Proposed Academic and Research Building of Lingnan University at 8 Castle Peak Rd - Lingnan, Tuen Mun
Request for Information of Dangerous Goods & Incident Records

No.	Date	Type of Incident	Address / Lamp Post No.
1.	8/12/2023	Lift Case	Block E, 8 Castle Peak Rd – Lingnan University
2.	27/3/2022	Late Call Fire	Hostel, 8 Castle Peak Rd – Lingnan University

Howard Chan

From: Leanna Lei
Sent: 2024年7月25日星期四 15:47
To: hkfsdenq@hkfsd.gov.hk
Cc: Howard Chan; Cathy Man; NGAN Chun Sang
Subject: [819.5057 Lingnan P&T] Submission of Appointment Letter
Attachments: 240725_appoinment letter.pdf; 24-0002_FSD Reply.pdf

Proposed New Science Building of Lingnan Univeristy
At 8 Castle Peak Rd-Lingnan, Tuen Mun
Submission of Appointment Letter

Dear Ms LAI,

Regarding your letter (Ref.:(200) in FSD GR6-5/4 R Pt.53) dated 17 June 2024 regarding the information request of dangerous goods and incident records, we are pleased to submit an Appointment Letter from our client for your record.

Due to the tight schedule, it would be highly appreciated if the above information could be available and returned to us via either fax (Fax No. 2815 5399) or email by **8 August 2024**.
Thank you very much for your attention and assistance. Should you have any queries, please contact me at 3915 7178.

Encl. copy of letter Ref.:(200) in FSD GR6-5/4 R Pt.53, Appointment Letter

Best Regards,
Leanna Lei

Leanna Lei – Assistant Consultant
Environmental Consultancy | Green & Healthy Building
T: (852) 2815 7028 | **D:** (852) 3915 7178 | **F:** (852) 2815 5399 | **E:** leannalei@aechk.com

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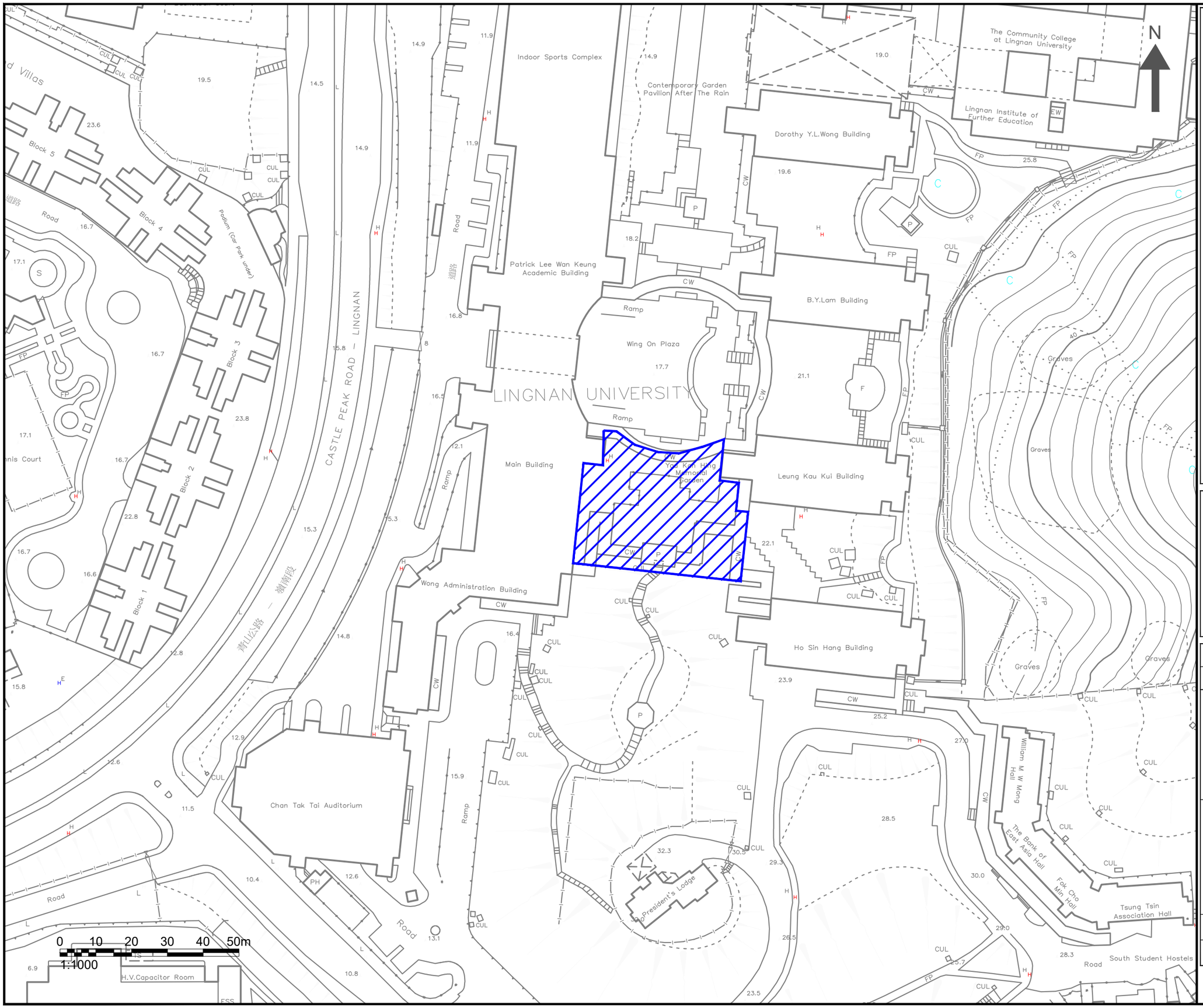
27/F, Overseas Trust Bank Building, 160 Gloucester Road, Wan Chai, Hong Kong
Follow us www.asecg.com



NOTES :

PROJECT SITE

Consultant

Allied Environmental Consultants Limited

Project No. :	819.5075
Drawing By :	HC

Project :

PROPOSED NEW SCIENCE BUILDING OF LINGNAN UNIVERSITY

Drawing Title :

Project Site Location

Drawing No :	Revision :
Figure 3.1	0
Scale :	Date :
AS SHOWN	JUL 2024

A3 420 x 297

C:\USERS\USER\DESKTOP\LINGNANU\FIG3.1_PROJECT LOCATION.DWG

Howard Chan

From: estmc2@landsd.gov.hk
Sent: 2024年8月14日星期三 11:57
To: Howard Chan
Cc: Cathy Man; NGAN Chun Sang
Subject: Re: Fw: [819.5075] Information Request for Land Contamination Assessment - Lingnan U

Dear Mr. CHAN,

I refer to your emails dated 31.7.2024 and 13.8.2024 regarding the subject matter.

2. According to the information provided, the location of the Proposed New Science Building ("the Location Concerned") falls within Tuen Mun Town Lot No. 376 ("the Lot"). The Lot was granted to Lingnan College [now known as Lingnan University] under New Grant No. 3136 on 17.3.1995.

3. As far as I am aware, there was no information regarding spillage accidents, illegal/contaminating land uses, or uncontrolled dumping uses at the Location Concerned.

Regards,
Karena KWAN
ES/C2, DLO/TM
Tel: 2451 3321

----- Forwarded by Bo PY LEUNG/LAO/LANDSD/HKSARG on 13/08/2024 16:10 -----

From: Howard Chan <howardchan@aechk.com>
To: "gendlotm@landsd.gov.hk" <gendlotm@landsd.gov.hk>
Cc: Cathy Man <cm@aechk.com>, NGAN Chun Sang <nganchunsang@aecasia.io>
Date: 13/08/2024 16:09
Subject: RE: [819.5075] Information Request for Land Contamination Assessment - Lingnan U

Dear Sir/Madam,

As discussed, please find the email below for record. Thank you.

Should you have inqueries, please feel free contact us.

Thanks and Regards,

Howard Chan – Consultant
Environmental Consultancy | Green & Healthy Building
T: (852) 2815 7028 | **D:** (852) 3915 7153 | **F:** (852) 2815 5399 | **E:** howardchan@aechk.com

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27/F, Overseas Trust Bank Building, 160 Gloucester Road, Wan Chai, Hong Kong
Follow us www.asecg.com

From: Howard Chan
Sent: Wednesday, July 31, 2024 3:18 PM
To: 'gendlotm@landsd.gov.hk' <gendlotm@landsd.gov.hk>
Cc: Cathy Man <cm@aechk.com>; NGAN Chun Sang <nganchunsang@aecasia.io>
Subject: [819.5075] Information Request for Land Contamination Assessment - Lingnan U

Dear Sir/Madam,

Proposed New Science Building for Lingnan University at 8 Castle Peak Rd - Lingnan, Tuen Mun
Request for Information for Land Contamination Assessment

We are conducting a S16 Application of the Proposed New Science Building for Lingnan University (LU) at 8 Castle Peak Rd - Lingnan, Tuen Mun (Subject Site). As required by the "Practice Guide for Investigation and Remediation of Contaminated Land" published by the Environmental Protection Department of the HKSAR, information pertaining to the change of land uses/past activities/incidents/accidents at the Subject Site is required as part of the vetting process.

Of particular interests are any information regarding spillage accidents, illegal/contaminating land uses, or uncontrolled dumping uses, as well as current and historical land use information, and any information you could provide which might be useful for our study. We have enclosed herewith a Project Location map showing the location of the subject site for your reference.

Due to tight schedule, it is highly appreciated if the above information could be available and returned to us via either fax (Fax No. 2815 5399) or email by 14 August 2024. Thank you very much for your kind attention and assistance.

Should you have inqueries, please feel free contact us.

Thanks and Regards,

Howard Chan – Environmental Consultant
Environmental Consultancy | Green & Healthy Building
T: (852) 2815 7028 | **D:** (852) 3915 7153 | **F:** (852) 2815 5399 | **E:** howardchan@aechk.com

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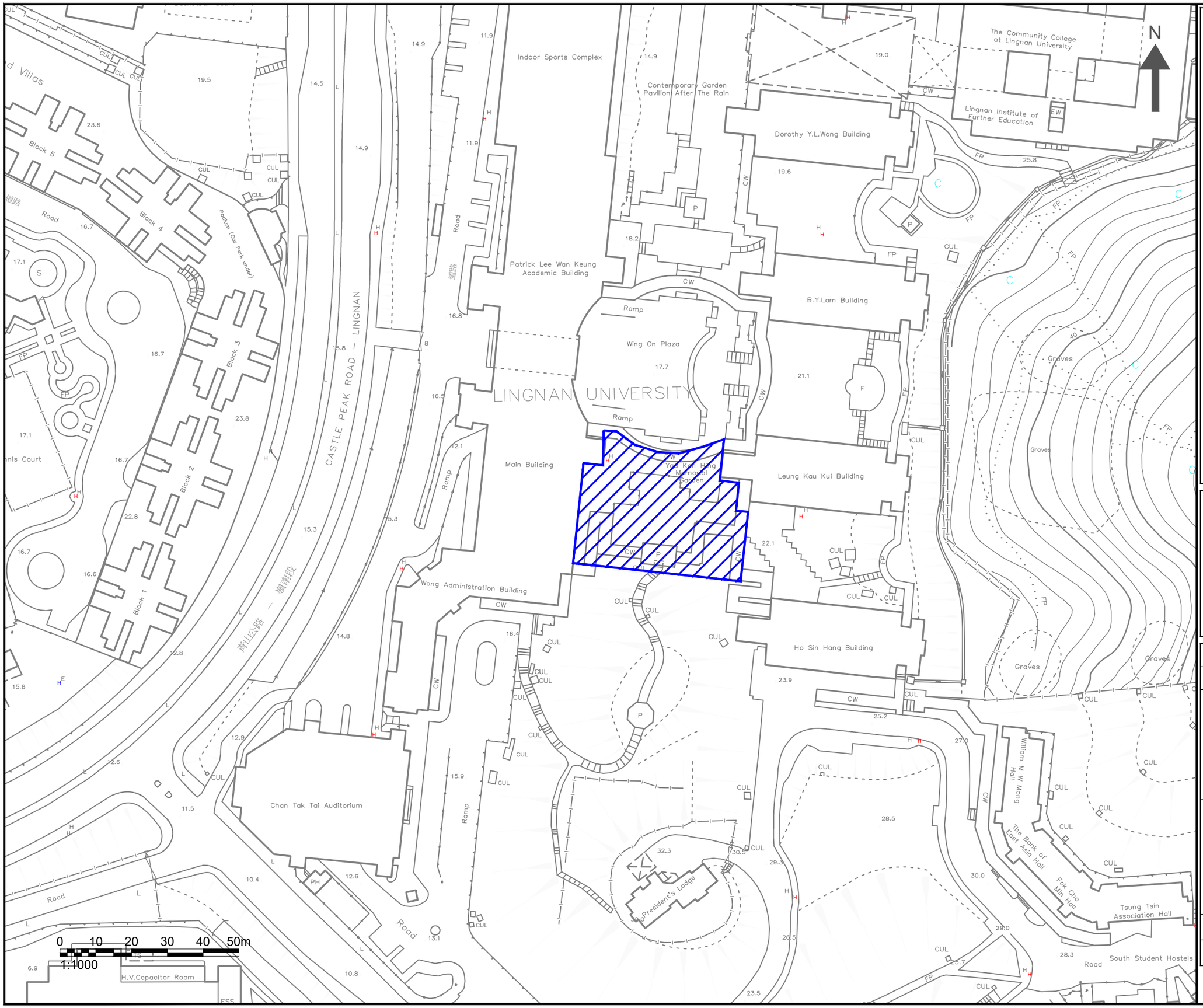
27/F, Overseas Trust Bank Building, 160 Gloucester Road, Wan Chai, Hong Kong
Follow us www.asecg.com



NOTES :

PROJECT SITE

Consultant

Allied Environmental Consultants Limited

Project No. :	819.5075
Drawing By :	HC

Project :

PROPOSED NEW SCIENCE BUILDING OF LINGNAN UNIVERSITY

Drawing Title :

Project Site Location

Drawing No :	Revision :
Figure 3.1	0
Scale :	Date :
AS SHOWN	JUL 2024

A3 420 x 297

C:\USERS\USER\DESKTOP\LINGNANU\FIG3.1_PROJECT LOCATION.DWG

Appendix 9.3

Chemical Waste Producer Record

Invalid

Lingnan Collage	Comptroller's Office Lingnan College No.8 Castle Peak RD. Tuen Mun NT	Educational Establishment
Penta-Ocean Construction CO. LTD.	Construction site of Lingnan University, Junction of Tuen Kwai Road and Castle Peak RD. Tuen Mun NT	Construction
China Overseas Building Construction Limited	New Campus Development (Community College) Lingnan University TMTL 410 Tuen Mun NT	Construction

Valid

Jetford Engineering and Trading Company	Lingnan University, No.8 Castle Peak RD. Tuen Mun NT	Educational
Science Unit Lingnan University	Room LCH 113, Lau Chung Him Building, Lingnan University, Tune Mun NT	Educational and Research
Lingnan University	No.8 Castle Peak RD. Tuen Mun NT	Educational Establishment
Penta-Ocean Construction CO. LTD.	Lingnan University, 8 Castle Peak RD. Tuen Mun NT	Construction

Appendix 9.4

BRAVO – online building records for the Proposed Development


BRAVO
GovHK | HeBROS | EN | Text Size
Home
Menu
Transaction History
Shopping Cart
Logout
Building
Slope
File Type:
All
Building
Structural
Drainage
Alterations & Additions
Site Formation
Existing Buildings
Others
Location
e.g. 750 Nathan Road
Inspection paid record(s).
Show search result only
Plan / Doc / MW
File Ref.
Address
Building Name
Lot No.
File Type
OP N
No data available in table
There is nether of building, structure, drainage, alternation & additions, site formation, minor works nor existing building available at the Project Site
Project Site
Showing 0 to 0 of 0 entries
25 | 50 | 100 | All
Page 1 of 0
Patrick Lee Wan Keung Academic Building
B.Y.Lam Building
Main Building
Leung Kau Kui Building
Graves
Wong Administration Building
Ho Sin Hang Building
Chan Tak Tai Auditorium
CASTLE PEAK ROAD - LINGNAN
TUEN MUN
FU TEI RD
6NW-C/C 288
6NW-C/CR 278
6NW-C/C 271
6NW-C/R 55
6NW-C/R 54
6NW-C/C 269
6NW-C/F 150
6NW-C/CR 3
6SW-A/CR 295
6NW-C/C 299
6SW-A/CR 296
6SW-A/F 127
© Building data from Buildings Department
Base Map from Lands Department

Appendix 9.5

Site Visit Photo Records and Site Walkover Checklist

Photo 1: Northeast portion of the Application Site

Photo 2: Northeast portion of the Application Site

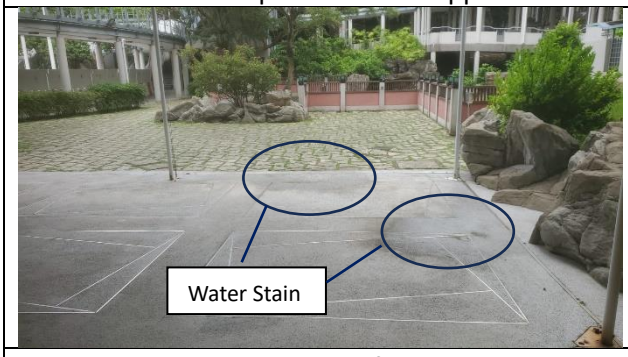


Photo 3: Northwest portion of the Application Site

Photo 4: Northwest portion of the Application Site

Photo 5: Concrete Bridge at Middle

Photo 6: Concrete Bridge at Northeast

Photo 7: Concrete Bridge at Northwest

Photo 8: South portion of Application Site

	
Photo 9: Slope at Southwest	Photo 10: Slope at southeast
	
Photo 11: East side of the Application Site	Photo 12: West side of the Application Site
	
Photo 13: Fish Pond	Photo 14: Fish Pond
	
Photo 15: Fish Pond	

LINGNAN UNIVERSITY

Ramp

Main Building

Yau Kan Hing Memorial Garden

Leung Kau Kui Bu

Ho Sin Hang

Photo 1
Photo 2
Photo 3
Photo 4
Photo 5
Photo 6
Photo 7
Photo 8-10
Photo 11
Photo 12
Photo 13
Photo 14
Photo 15

N

0 10 20 30 40 50m
1:300

NOTES :

PROJECT SITE

PHOTO VIEW POINT

Consultant

Allied Environmental Consultants Limited

Project No. :	2244EA
Drawing By :	HC
Project :	PROPOSED NEW ACADEMIC AND RESEARCH BUILDING OF LINGNAN UNIVERSITY
Drawing Title :	PHOTOLOG PLAN
Drawing No :	APPENDIX 9.2
Revision :	0
Scale :	AS SHOWN
Date :	JUL 2024

A3 420 x 297

C:\USERS\NGANCHUNSANG\SYNOLOGYDRIVE\2244EA LINGNAN P&T\05 REPORT\01 AEC REPORT\EA\ISSUE 2\APPENDIX\LAND CON\APPENDIX 9.5 PHOTO VIEW_NEW BOUNDARY.DWG

Annex C1

Site Walkover Checklist (26th July 2024)

GENERAL SITE DETAILS

SITE OWNER/CLIENT	Lingnan University
PROPERTY ADDRESS	No.8 Castle Peak Road. Tuen Mun. NT

PERSON CONDUCTING THE QUESTIONNAIRE

NAME	Howard Chan
POSITION	Consultant (Allied Environmental Consultants Limited)

AUTHORIZED OWNER/CLIENT REPRESENTATIVE (IF APPLICABLE)

NAME	Ms. KIANG Nagi Sze, Karen
POSITION	Senior Project Manager (Campus Development)
TELEPHONE	2616 7340

SITE ACTIVITIES

Briefly describe activities carried out on site, including types of products/chemicals/materials handled.

Obtain a flow schematic if possible.

Number of employees:	Full-time:	N/A
	Part-time:	N/A
	Temporary/Seasonal:	N/A
Maximum no. of people on site at any time:		N/A
Typical hours of operation:		N/A
Number of shifts:		N/A
Days per week:		N/A
Weeks per year:		N/A
Scheduled plant shut-down:		N/A

Detail the main sources of energy at the site:

Gas	~~Yes~~/No
Electricity	Yes/~~No~~
Coal	~~Yes~~/No
Oil	~~Yes~~/No
Other	~~Yes~~/No

SITE DESCRIPTION

This section is intended to gather information on site setting and environmental receptors on, adjacent or close to the site.

What is the total site area: Approximately 1,200 m^2

What area of the site is covered by buildings (%): 0%

Please list all current and previous owners/occupiers if possible. Lingnan University

Is a site plan available? If yes, please attach. ~~Yes~~/No

Are there any other parties on site as tenants or sub-tenants? ~~Yes~~/No

If yes, identify those parties: _____

Describe surrounding land use (residential, industrial, rural, etc.) and identify neighbouring facilities and types of industry.

North: Wing On Plaza (Garden) (renovation works are currently underway)

South: President's Lodge and small hill (Office & Green space)

East: Leung Kau Kui Building (Education Institution)

West: Lingnan University Main Building & Parkland Villas (Education Institution & Residential)

Annex C1 – Site Walkover Checklist (Page 43)

Describe the topography of the area (flat terrain, rolling hills, mountains, by a large body of water, vegetation, etc.).

Flat terrain, fishpond (dried as observed on site), Garden, Concrete bridge

State the size and location of the nearest residential communities.

Staff Quarters/ South Student Hostel (low/ midrise residential) located at south side and Parkland Villas (high rise residential development) located at west side

Are there any sensitive habitats nearby, such as nature reserves, parks, wetlands or sites of special scientific interest?

N/A

Questionnaire with Existing/Previous Site Owner or Occupier

Ref.		Yes/No	Notes
1.	What are the main activities/operations at the above address?	-	Garden, Fishpond, Concrete bridge
2.	How long have you been occupying the site?	-	Since 1999
3.	Were you the first occupant on site? (If yes, what was the usage of the site prior to occupancy?)	No	
4.	Prior to your occupancy, who occupied the site?	-	Bowring Camp
5.	What were the main activities/operations during their occupancy?	-	military camp
6.	Have there been any major changes in operations carried out at the site in the last 10 years?	No	No change since 1999
7.	Have any polluting activities been carried out in the vicinity of the site in the past?	No	
8.	To the best of your knowledge, has the site ever been used as a petrol filling station/car service garage?	No	
9.	Are there any boreholes/wells or natural springs either on the site or in the surrounding area?	No	
10	Do you have any registered hazardous installations as defined under relevant ordinances? (If yes, please provide details.)	No	
11.	Are any chemicals used in your daily operations? (If yes, please provide details.)	No	
	• Where do you store these chemicals?	-	
12.	Material inventory lists, including quantities and locations available? (If yes, how often are these inventories updated?)	No	
13.	Has the facility produced a separate hazardous substance inventory?	No	
14.	Have there ever been any incidents or accidents (e.g. spills, fires, injuries, etc.) involving any of	No	

	these materials? (If yes, please provide details.)		
15.	How are materials received (e.g. rail, truck, etc.) and stored on site (e.g. drums, tanks, carboys, bags, silos, cisterns, vaults and cylinders)?	No	No require materials receiving and storage.
16.	Do you have any underground storage tanks? (If yes, please provide details.)	No	
	▪ How many underground storage tanks do you have on site?	-	
	▪ What are the tanks constructed of?	-	
	▪ What are the contents of these tanks?	-	
	▪ Are the pipelines above or below ground?	-	
	▪ If the pipelines are below ground, has any leak and integrity testing been performed?	-	
	▪ Have there been any spills associated with these tanks?	-	
17.	Are there any disused underground storage tanks?	No	
18.	Do you have regular check for any spillage and monitoring of chemicals handled? (If yes, please provide details.)	N/A	No chemical handled on site.
19.	How are the wastes disposed of?	N/A	No waste generated on-site.
20.	Have you ever received any notices of violation of environmental regulations or received public complaints? (If yes, please provide details.)	No	
21.	Have any spills occurred on site? (If yes, please provide details.)	No	
	• When did the spill occur?	-	
	• What were the substances spilled?	-	
	• What was the quantity of material spilled?	-	
	• Did you notify the relevant departments of the spill?	-	
	• What were the actions taken to clean up the spill?	-	
	• What were the areas affected?	-	
22.	Do you have any records of major renovation of your site or rearrangement of underground utilities, pipe work/underground tanks (If yes, please provide details.)	No	No major renovation of the Project site.
23.	Have disused underground tanks been removed or otherwise secured (e.g. concrete, sand, etc.)?	N/A	
24.	Are there any known contaminations on site? (If yes, please provide details.)	No	
25.	Has the site ever been remediated?	N/A	

	(If yes, please provide details.)		

Observations

Ref.		Yes/No	Notes
1.	Are chemical storage areas provided with secondary containment (i.e. bund walls and floors)?	No	
2.	What are the conditions of the bund walls and floors?	N/A	
3.	Are any surface water drains located near to drum storage and unloading areas?	N/A	No drum storage and unloading areas.
4.	Are any solid or liquid waste (other than wastewater) generated at the site? (If yes, please provide details.)	No	
5.	Is there a storage site for the wastes?	No	
6.	Is there an on-site landfill?	No	
7.	Were any stressed vegetation noted on site during the site reconnaissance? (If yes, please indicate location and approximate size.)	No	
8.	Were any stained surfaces noted on-site during the site reconnaissance? (If yes, please provide details.)	No	
9.	Are there any potential off-site sources of contamination?	No	
10.	Does the site have any equipment which might contain polychlorinated biphenyls (PCBs)?	No	
11.	Are there any sumps, effluent pits, interceptors or lagoons on site?	No	
12.	Any noticeable odours during site walkover?	No	
13.	Are any of the following chemicals used on site: fuels, lubricating oils, hydraulic fluids, cleaning solvents, used chemical solutions, acids, anti-corrosive paints, thinners, coal, ash, oily tanks and bilge sludge, metal wastes, wood preservatives and polyurethane foam?	No	