



***Appendix D -
Environmental Assessment***



D01 Environmental Assessment

Application for Planning Permission under Section 16 at Sheung Shing Street Lot

Reference No. 7076880
Prepared for Hong Kong Metropolitan University
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Table of Contents

Main Text

1	INTRODUCTION	1-1
1.1	Project Background	1-1
1.2	Site Description	1-1
1.3	Project Description	1-1
1.4	Objective of the Report	1-1
2	AIR QUALITY	2-1
2.1	Introduction	2-1
2.2	Environmental Legislation and Standards	2-1
2.3	Background Air Quality	2-2
2.4	Identification of Air Sensitive Receivers (“ASRs”)	2-3
2.5	Evaluation of Environmental Impact	2-3
2.6	Conclusion	2-6
3	NOISE IMPACT	3-1
3.1	Environmental Legislation and Standards	3-1
3.2	Identification of Representative Noise Sensitive Receivers	3-3
3.3	Construction Noise Impact Assessment	3-4
3.4	Fixed Noise Source Impact Assessment	3-6
3.5	Traffic Noise Impact Assessment	3-7
3.6	Conclusion	3-8
4	WATER QUALITY	4-1
4.1	Introduction	4-1
4.2	Environmental Legislation and Standards	4-1
4.3	Potential Water Quality Impacts	4-3
4.4	Mitigation Measures	4-3
4.5	Conclusion	4-5
5	WASTE MANAGEMENT	5-1
5.1	Environmental Legislation and Standards	5-1
5.2	Potential Waste Management Impacts	5-2
6	CONCLUSION	6-1

Appendices

APPENDIX A MAXIMUM ALLOWABLE SOUND POWER LEVEL OF PLANNED FIXED NOISE SOURCES

List of Tables

Table 2.1	Hong Kong Air Quality Objectives	2-1
Table 2.2	HKPSG Minimum Setback Distances	2-2
Table 2.3	Representative ASRs	2-3
Table 2.4	The Buffer Distance Requirements between Air Sensitive Uses and Roads in the Vicinity of the Site	2-5
Table 3.1	Area Sensitivity Ratings	3-1
Table 3.2	Acceptable Noise Levels	3-2
Table 3.3	Noise Criteria of Existing/ Cumulative Fixed Noise Sources	3-3
Table 3.4	Prevailing Noise Measurement Results	3-3

Table 3.5	Summary of Identified Representative NSRs	3-4
Table 3.6	NSRs for Fixed Noise Source Impact Assessment.....	3-6
Table 3.7	Noise Criteria of Planned Fixed Noise Source	3-6
Table 3.8	Maximum Allowable Sound Power Level of Planned Fixed Noise Source	3-7
Table 4.1	Water Quality Objectives of Victoria Harbour Water Control Zone	4-1

List of Figures

Figure 1-1	Site Location and its Environs.....	1-3
Figure 2-1	Locations of Representative Air Sensitive Receivers.....	2-7
Figure 2-2	HKPSG Buffer Distance for Vehicular Emission	2-8
Figure 2-3	Locations of Potential Industrial Emission / Chimneys	2-9
Figure 3-1	Location of Prevailing Background Noise Measurement	3-9
Figure 3-2	Location of Representative Noise Sensitive Receivers	3-10
Figure 3-3	Proposed Location of Planned Fixed Noise Source and Horizontal Distances from Selected NSRs	3-11

1 INTRODUCTION

1.1 Project Background

- 1.1.1 Hong Kong Metropolitan University (hereafter “HKMU” or “the University”) has carried out discussions with Education Bureau (“EDB”) and Lands Department (“LandsD”) for the use of an unallocated lot at the junction of Sheung Shing Street and Fat Kwong Street for the construction of a new building complex. Mutual agreement was gained between the University, EDB and LandsD in 2021 for the use of the unallocated lot for Education Institute use and the University shall proceed with the necessary statutory applications for the use of the lot.
- 1.1.2 The Project Development Site is currently zoned “Residential (Group A)” (“R(A)”) under the approved Ho Man Tin Outline Zoning Plan (“OZP”) No. S/K7/24. The proposed complex is categorized as “Education Institution”, despite education institute is always permitted for the lowest 3 floors of a building, planning application for Section 16 under *Town Planning Ordinance* (“TPO”) is required.
- 1.1.3 SMEC Asia Ltd (“SMEC”) has been commissioned to conduct this Environmental Assessment (“EA”) to support the application. As the purpose of the technical assessment is to assess the potential impact of the proposed HKMU Campus development project, only the Development Site boundary will be used for the later impact identification and assessment, and the terminology “Site” or “Project Site” within this EA refers solely to the Development Site.

1.2 Site Description

- 1.2.1 The Site is located in a developed area in Ho Man Tin, Kowloon City, which is a slope site with approximately 61 trees within the lot. As shown on **Figure 1-1**, Fat Kwong Street is located to the immediate south of the Site and Sheung Shing Street is located to the immediate west of the Site. Princess Margaret Road is located at approx. 135m to the west of the Site. The Site is mainly surrounded by educational institutions and medium to high-rise residential buildings.
- 1.2.2 Based on the site visit on 26 April 2022, the area next to the lot is currently a private car park. Location is shown on **Figure 1-1**, on which is a 24-classroom development planned by EDB and a proposed Ho Man Tin Government Complex planned by Architectural Service Department (ASD). These two proposed development will also be considered in this report.

1.3 Project Description

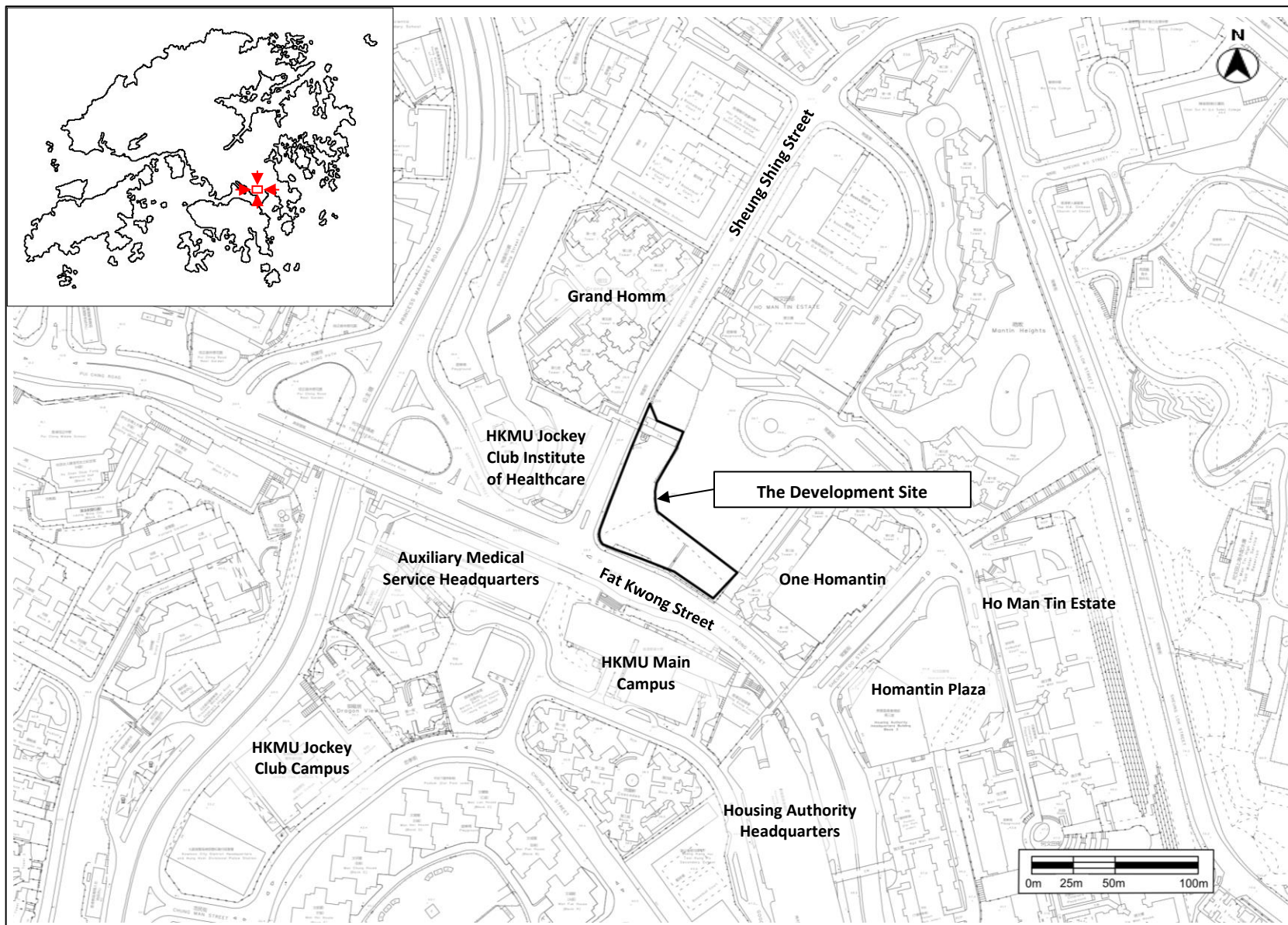
- 1.3.1 The Proposed Development will tentatively comprise various facilities, including library, learning common, classrooms, lecture theatres, offices and amenity facilities such as sports hall, canteen, health clinic, laboratories, bank and so on. It is the University’s intention to maximize the development potential on the subject lot, and 1 storey of basement is envisaged for car parking and plant room use.
- 1.3.2 The tentative plan for commencement of work is Q3 2025 and completion by Q1 2028.
- 1.3.3 An EA shall be prepared to ascertain the environmental acceptability of the Project. The Proposed Development is not classified as a designated project under the Environmental Impact Assessment Ordinance (“EIAO”) (Cap. 499).

1.4 Objective of the Report

1.4.1 The objectives of this EA are to:

- Identify and qualitatively assess potential environmental impacts arising from surrounding emissions to the Site, as well as that arising from the operation of the Project Site to the nearby sensitive uses, in terms of air quality, noise, water quality and waste management.
- Recommend mitigation measures, where appropriate, to alleviate any identified environmental impacts or constraints during the operation of the Project. Potential environmental impacts during construction phase, though transient, have also been reviewed and mitigation measures have been recommended to reduce any identified environmental impacts to acceptable levels.

Figure 1-1 Site Location and its Environs



2 AIR QUALITY

2.1 Introduction

2.1.1 This section assesses the potential air quality impacts that will be generated by the Project during the construction and its operation. On the other hand, potential air pollution problem arising from the surrounding of the Site is also evaluated. Mitigation measures are recommended, where necessary, as part of the assessment.

2.2 Environmental Legislation and Standards

Air Quality Objectives

2.2.1 The Air Quality Objectives (“AQOs”) established under the *Air Pollution Control Ordinance* (“APCO”) Cap.3.11 are given in **Table 2.1**.

Table 2.1 Hong Kong Air Quality Objectives

POLLUTANT	AVERAGING TIME	PREVAILING AQOs	
		CONCENTRATION LIMIT [NOTE 1], µg/m ³	NO. OF EXCEEDANCE ALLOWED
Sulphur Dioxide (“SO ₂ ”)	10-minutes	500	3
	24-hour	50	3
Respirable Suspended Particulates (“RSP” or “PM ₁₀ ”)	24-hour	100	9
	Annual	50	N/A
Fine Suspended Particulates (“FSP” or “PM _{2.5} ”)	24-hour	50	35
	Annual	25	N/A
Nitrogen Dioxide (NO ₂)	1-hour	200	18
	Annual	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	0.5	N/A

Notes:

1. 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 293 Kelvin and a reference pressure of 101.325 kilopascal.
2. RSP or PM₁₀ means suspended particles in air with a nominal aerodynamic diameter of 10 µm or less.
3. FSP or PM_{2.5} means suspended particles in air with a nominal aerodynamic diameter of 2.5 µm or less.

Air Pollution Control (Construction Dust) Regulation

2.2.2 Enacted under Section 43 of the APCO, the *Air Pollution Control (Construction Dust) Regulation* defines notifiable and regulatory works for achieving the purpose of dust control for a number of activities.

- 2.2.3 The Regulation requires that any notifiable work ^[Ref. #2] shall give advance notice to the Environmental Protection Department (“EPD”), and the contractor shall ensure that the notifiable and regulatory works are carried out in accordance with the Schedule of the Regulation. Dust control and suppression measures are also provided in the Schedule.

Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation

- 2.2.4 This Regulation takes effect on 1 June 2015 and requires Non-road Mobile Machinery (“NRMM”), except those exempted, to comply with the prescribed emission standards. As from 1 September 2015, all regulated machines sold or leased for use in Hong Kong must be approved or exempted with a proper label in a prescribed format issued by EPD. Starting from 1 December 2015, only approved or exempted NRMMs with a proper label are allowed to be used in specified activities and locations including construction sites, container terminals and back up facilities, restricted areas of the airport, designated waste disposal facilities and specified processes.

Hong Kong Planning Standards and Guidelines (“HKPSG”)

- 2.2.5 The minimum buffer distances required between the relevant class of roads and active open spaces are recommended in Chapter 9 of the Environment of HKPSG. The relevant buffer distances of HKPSG are summarised in **Table 2.2** for ease of reference.

Table 2.2 HKPSG Minimum Setback Distances

POLLUTANT	TYPE OF ROAD	BUFFER DISTANCE	PERMITTED USES
Road and Highways	Trunk Road and Primary Distributor	>20m	Active and passive recreation use
		3 – 20m	Passive recreational use
		<3m	Amenity areas
	District Distributor	>10m	Active and passive recreational use
		<10m	Passive recreational uses
	Local Distributor	>5m	Active and passive recreational use
		<5m	Passive recreational use
Under Flyovers	-	Passive recreational use	

Source: Adapted from Table 3.1 of Chapter 9 Environment of HKPSG.

2.3 Background Air Quality

- 2.3.1 The surrounding areas of the Site is generally located at a developed area in Ho Man Tin, Kowloon City which are surrounded by educational institutions and medium to high-rise residential buildings. The major road networks at the surrounding of the Site include Princess Margaret Road, Sheung Shing Street, Fat Kwong Street and Sheung Foo Street.
- 2.3.2 In addition, the Environment Bureau released the report A Clean Air Plan for Hong Kong in March 2013. The report documents an air quality management system to reduce air pollution including, reducing roadside air pollution; reducing marine emissions; emission control of power plant; and emission control of non-road mobile machinery. It is anticipated that the future background air quality would be improving.

² Notifiable works include site formation, reclamation, demolition of a building, work carried out in any part of a tunnel that is within 100m of any exit to the open air, construction of the foundation of a building, construction of the superstructure of a building and road construction work.

2.4 Identification of Air Sensitive Receivers (“ASRs”)

2.4.1 A study area for Air Quality Impact Assessment (AQIA) is defined as areas within 500m from site boundary (see **Figure 2-1**). Based on the Site visit conducted on 26 April 2022, and the information on the survey map, representative ASRs within the study area are identified, which are listed in **Table 2.3** and shown on **Figure 2-1**.

Table 2.3 Representative ASRs

ASR NO.	DESCRIPTION	LAND USE ^[1]	APPROX. SHORTEST DISTANCE TO SITE BOUNDARY (m)
A1	King Man House, Ho Man Tin Estate	Residential	69
A2	Grand Homm	Residential	25
A3	Sheung Shing Street Park	Recreational	55
A4	HKMU Jockey Club Institute of Healthcare	Educational	16
A5	Auxiliary Medical Service Headquarters	G/IC	36
A6	Hong Kong Metropolitan University	Educational	34
A7	One Homantin	Residential	6
A8	Mantin Heights	Residential	140
A9	Housing Authority Headquarters	G/IC	74
A10	Hong Kong Football Association	G/IC	51
A11	Proposed 24 classrooms Primary School	Educational	42
A12	Proposed Ho Man Tin Government Complex	G/IC	30

Remarks: [1] ‘G/IC’ stands for Government/Institution or Community.

2.5 Evaluation of Environmental Impact

Construction Phase

- 2.5.1 Fugitive dust is the major impact that will be generated during construction activities, such as excavation, stockpiling, earth moving, transferring or handling of dusty materials, site formation, foundation and superstructure of the proposed development. With the implementation of mitigation measures mentioned in **paragraph 2.5.3** and **2.5.4**, no adverse air quality including dust impact due to construction stage is anticipated.
- 2.5.2 With the implementation of mitigation measures that are recommended in the *Air Pollution Control (Construction Dust) Regulation*, dust generation can be controlled and significant fugitive dust impact is therefore not anticipated.
- 2.5.3 To avoid adverse dust impact on the air sensitive uses nearby, good practice and dust control measures to be implemented during the construction phase are as follows:
- Provide hard paving on open area, regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather.
 - The working area of any excavation or earth moving operation shall be sprayed with water immediately before, during and immediately after the operation so as to maintain the entire surface wet.
 - Frequent watering for particularly dusty areas and areas close to ASRs.

- Any stockpile of dusty materials shall be either covered entirely by impervious sheeting, placed in an area sheltered on the top and the 3 sides, or sprayed with water so as to maintain the entire surface wet.
- Where possible, dusty materials shall be sprayed with water immediately prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet.
- The working area for the uprooting of trees, shrubs, or vegetation or for the removal of boulders, poles, pillars or temporary or permanent structures shall be sprayed with water immediately before, during and immediately after the operation so as to maintain the entire surface wet.
- All demolished items (including trees, shrubs, vegetation, boulders, poles, pillars, structures, debris, rubbish and other items arising from site clearance) that may dislodge dust particles shall be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides within a day of demolition.
- Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations.
- Vehicle washing facilities including a high-pressure water jet shall be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the section of the road between the washing facilities and the exit point shall be paved with concrete, bituminous materials or hardcore.
- Provision of not less than 2.4m high hoarding from ground level along site boundary where adjoins a road, streets or other accessible to the public except for a site entrance or exit.
- Spray water on the surface of façade before and during grinding work.
- Equip vacuum cleaner on grinder for façade grinding work as far as practicable.
- Main haul road shall be sprayed with water so as to maintain the entire road surface wet. Imposition of speed controls for vehicles on site haul roads and confine haulage and delivery vehicles to designated roadways inside the site.
- The portion of any road leading only to a construction site that is within 30m of a discernible or designated vehicle entrance or exit shall be kept clear of dusty materials.
- Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs.
- Every stock of more than 20 bags of cement or dry Pulverised Fuel Ash (“PFA”) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and three sides.
- Plan the site layout to locate machinery and dust causing activities, including haul roads and stockpiling areas away from receptor as far as possible.
- Erect solid screens or barriers around dusty activities as far as practicable.
- Where possible, connect the construction plant and equipment to mains electricity supply and avoid use of diesel generator and diesel-powered equipment to minimize air quality impact arising from the equipment.

2.5.4 The construction contractors shall also provide regular maintenance of any plant and equipment so as to minimise gaseous emissions.

2.5.5 With proper dust control measures as described above, significant fugitive dust impacts during the construction phase are not anticipated.

Operation Phase

Vehicular Emissions

2.5.6 Princess Margaret Road and Sheung Foo Street located approx. 135m and 75m from the Site respectively. The large separation between these roads and the Site (i.e. >20m) could fulfil the

buffer distances as recommended in HKPSG. Fat Kwong Street and Sheung Shing Street are the public roads closest to the Site (see **Figure 2-2**). With reference to *The Annual Traffic Census* (“ATC”) 2021 published by the Transport Department (“TD”) in September 2022, Fat Kwong Street and Sheung Shing Street are the nearest roads to the Site and both are classified as District Distributor. According to the HKPSG, buffer distances of 10m, measured from the road kerbs of District Distributor are recommended. **Figure 2-2** shows the buffer distances and the layout of the Proposed Development.

- 2.5.7 The buffer distance requirements between air sensitive uses and the major roads in the vicinity of the Site are summarised in **Table 2.4**.

Table 2.4 *The Buffer Distance Requirements between Air Sensitive Uses and Roads in the Vicinity of the Site*

ROAD NAME	ROAD TYPE	BUFFER DISTANCE REQUIREMENTS (m)	COMPLY WITH BUFFER DISTANCE REQUIREMENTS?
Fat Kwong Street	District Distributor	10	Yes with the provision of buffer zone shown on Figure 2-2
Sheung Shing Street	District Distributor	10	Yes with the provision of buffer zone shown on Figure 2-2

- 2.5.8 An EPD comment suggests the Central Ventilation Building of Central Kowloon Route (CKR) may cause air quality impact to air sensitive use. This Central ventilation Building is about 350m from the Proposed HKMU campus. Its construction work has been completed in 2019, the air quality impact from this Central Ventilation Building will be the vehicular emission from the CKR during its operation stage. Referring to the Highway Department webpage on Benefit of Central Kowloon Route, the air purification system adopted is designed to have a removal efficiency of 80% on nitrogen dioxide and respirable suspended particulate. It is very unlikely that the CKR project can cause adverse air quality impact to Ho Man Tin area.
- 2.5.9 As illustrated on **Figure 2-2**, based on the current design, no openable windows and fresh air intake of mechanical ventilation are located within the buffer distances. Therefore, no adverse air quality impact on the Site from vehicular emission is anticipated.

Industrial Emissions

- 2.5.10 According to HKPSG, the recommended buffer distance from industrial emission is 200m. Based on desktop review on previous environmental studies and the site visit on 26 April 2022, three potential industrial emission sources/ chimneys within 200m from the site boundary were identified. Locations of these emission sources/ chimneys are shown on **Figure 2-3**.

- CH1: HKMU Jockey Club Institute of Healthcare
As advised by HKMU, the identified potential emission source/ chimney from the generator which would be kept on standby mode and only operate in case of emergency.
- CH2: Auxiliary Medical Service Headquarters (AMSH)
Formal correspondence was sent to AMSH regarding the information of the identified potential emission source/ chimney. According to subsequent telephone interview dated 24 May 2022, the identified potential emission source/ chimney is used to connect emergency

generator only. It operates on the occasion of a power outage and during monthly maintenance checkups.

- CH3: Hong Kong Metropolitan University

As advised by HKMU, the identified potential emission source/ chimney from the generator which would be kept on standby mode and only operate in case of emergency.

- 2.5.11 All these chimneys are connected to emergency generators only. As highlighted from the CLP website, the electricity delivery from CLP is highly reliable (99.999%) [Ref. #3]. Therefore, the possibility to operate the emergency generator can be concluded to be extremely low and adverse air quality impact due to the operation is not anticipated.
- 2.5.12 With reference to approved Environmental Assessment Report for proposed HKMU Campus at a Government Land currently known as Land Allocation No. K-255 Sheung Shing Street, Ho Man Tin (2013) [Ref. #4], there was an exhaust of general laboratory works located at HKMU rooftop. As verified by the Applicant, those exhausts located at HKMU rooftop are connected to fume cupboard/ laboratory equipment. Industrial emission is not anticipated.
- 2.5.13 There is no new industrial emission source planned for the Proposed Development. Thus, adverse air quality impact on and from the Proposed Development is not anticipated.

2.6 Conclusion

- 2.6.1 With the implementation of the recommended mitigation measures and good site practice, adverse air quality impacts during the construction phases are not anticipated.
- 2.6.2 Based on the layout of the Proposed Development, there is no openable windows and fresh air intakes of mechanical ventilation system located within the buffer distances as recommended in HKPSG for vehicular emissions. The identified potential emission sources/ chimneys within 200m from the site boundary are only for emergency purpose/ general laboratory works. Therefore, no adverse air quality impact on the Proposed Development from industrial emission and vehicular emissions is anticipated. Meanwhile, the operation of the Proposed Development will not cause any adverse air quality impact on the surrounding air sensitive uses.

³ CLP Website: <https://www.clpgroup.com/en/about/our-business/assets-and-services/hong-kong/transmission---distribution-network.html>

⁴ Reference was made to an Environmental Assessment Report (dated Dec2013) which was submitted to support an application under Section 12A of the Town Planning Ordinance (Cap. 131) in respect of the Government Land Allocation No. GLA-K 255 at Sheung Shing Street for an amendment to the Approved Ho Man Tin Outline Zoning Plan No. S/K7/22.

Figure 2-1 Locations of Representative Air Sensitive Receivers

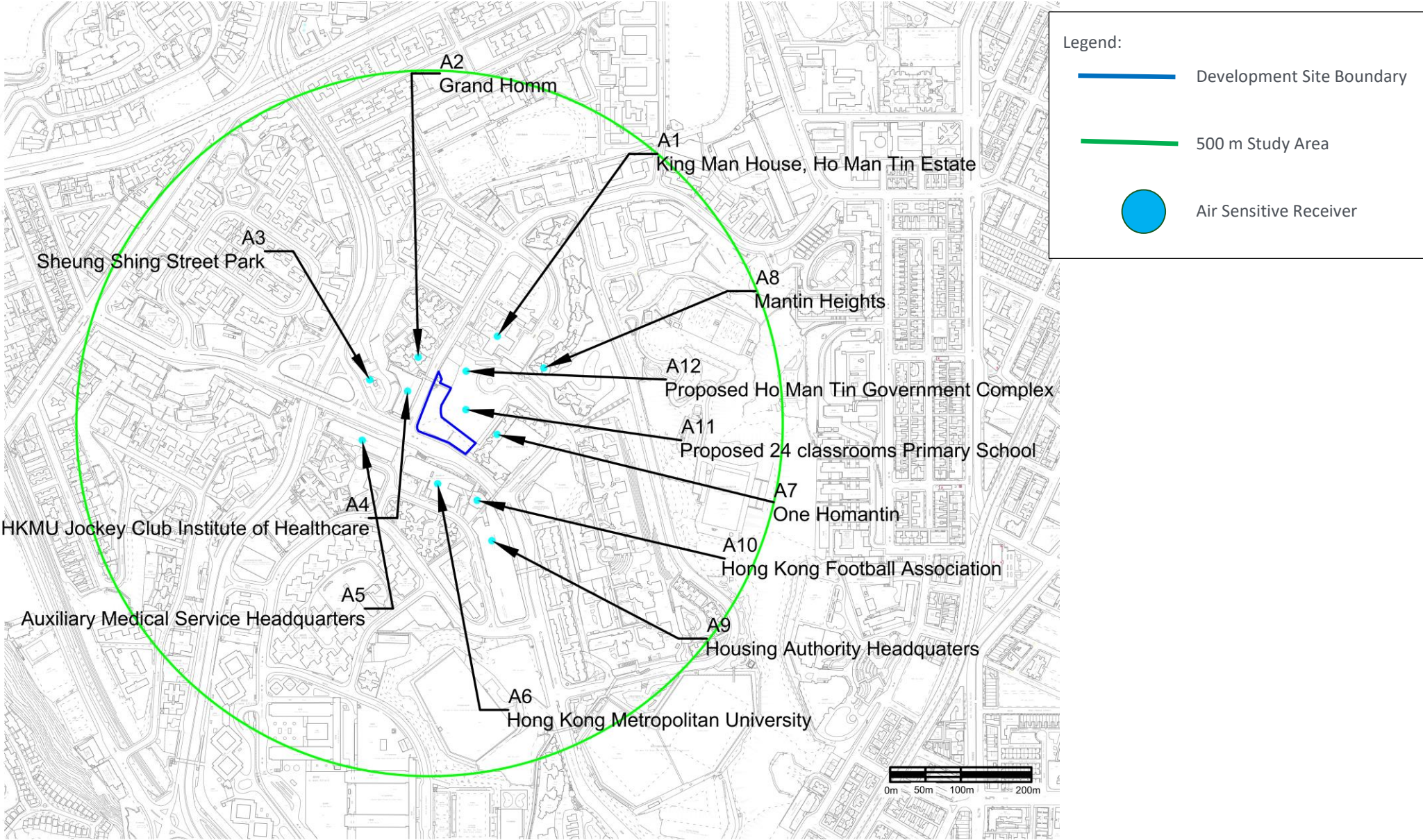


Figure 2-2 HKPSG Buffer Distance for Vehicular Emission

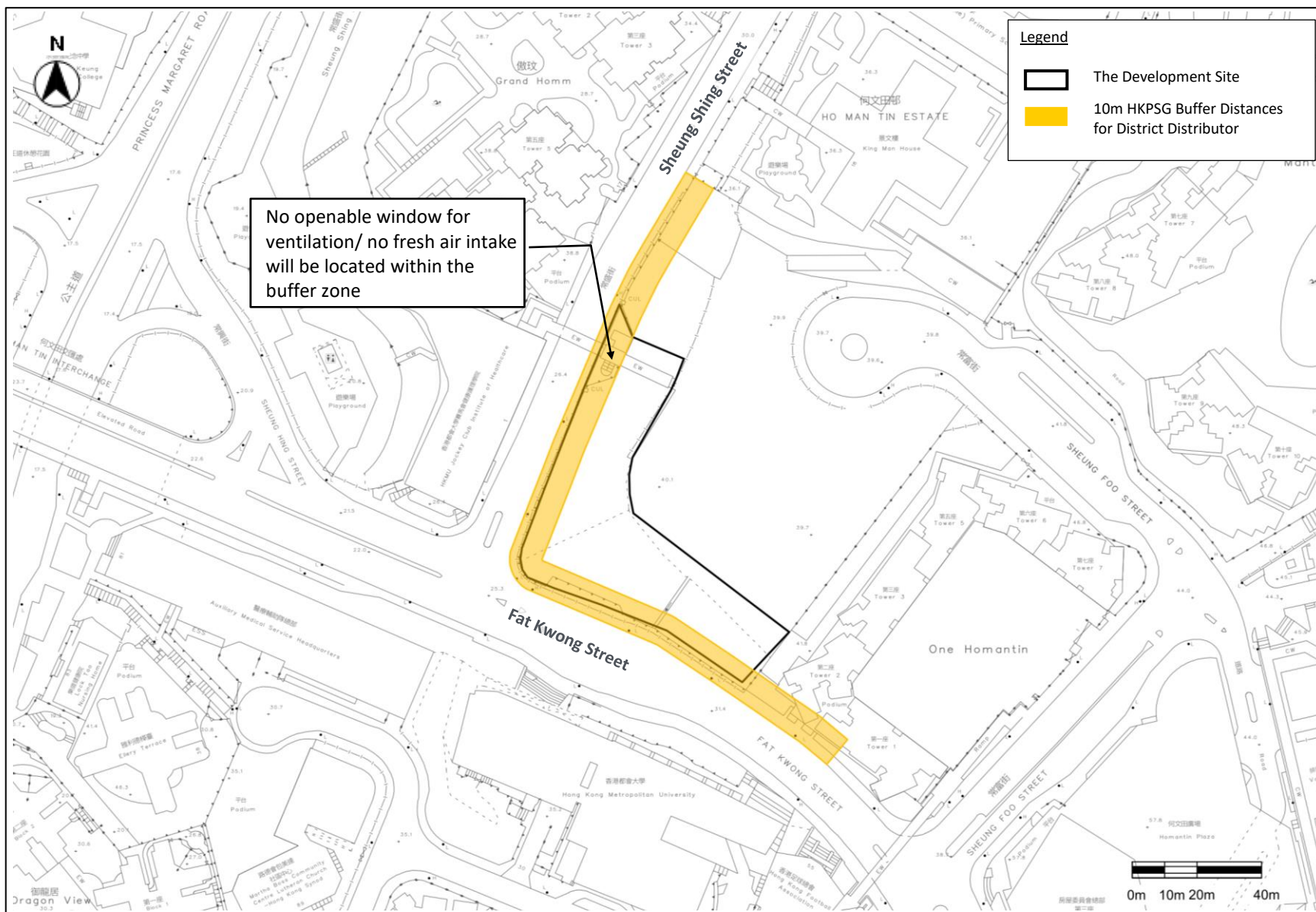
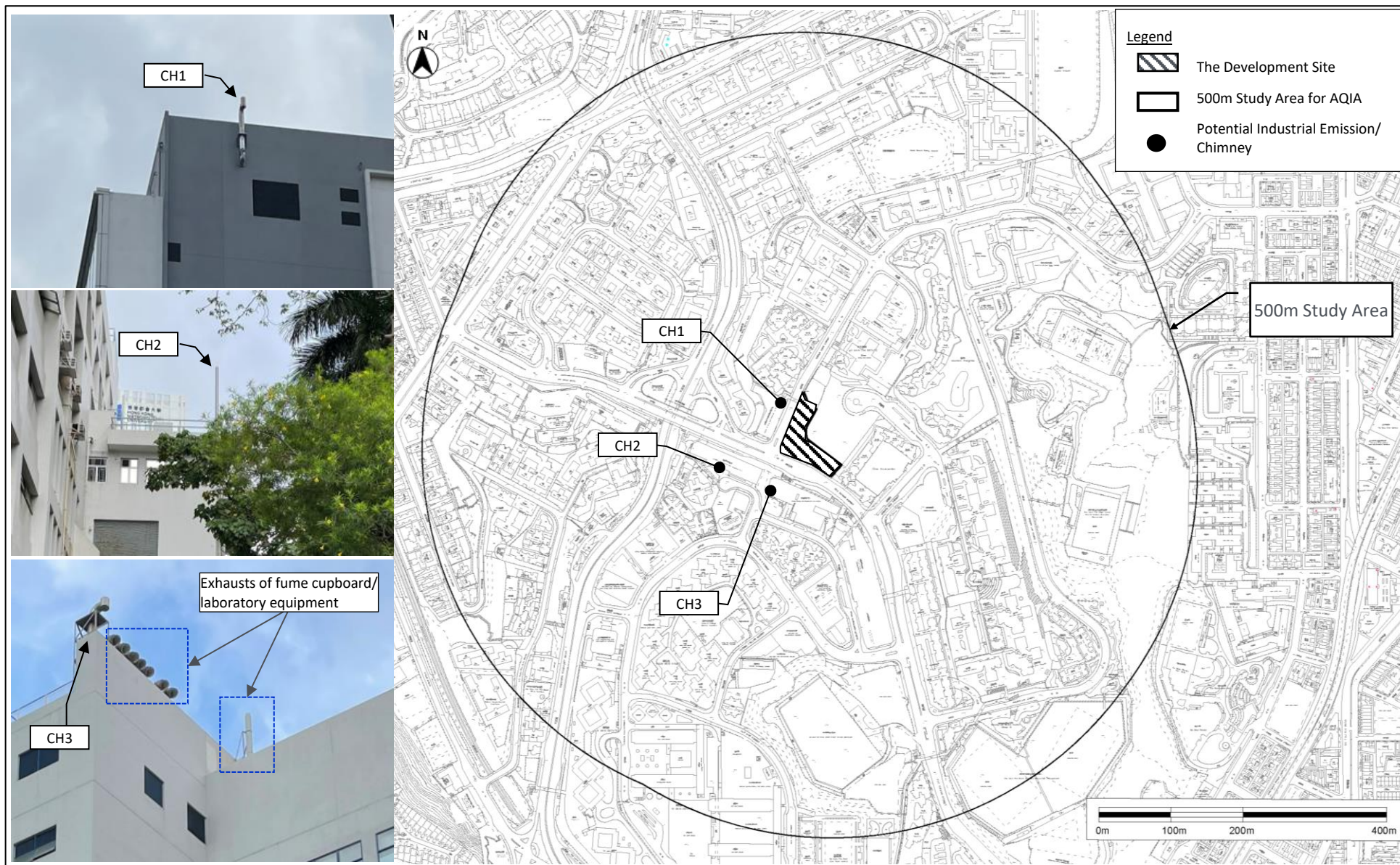


Figure 2-3 Locations of Potential Industrial Emission / Chimneys



3 NOISE IMPACT

3.1 Environmental Legislation and Standards

Noise Control Ordinance (Cap. 400)

- 3.1.1 The main piece of legislation controlling environmental noise nuisance is the *Noise Control Ordinance* (“NCO”). The NCO enables regulations and Technical Memoranda (“TMs”) to be made, which introduce detailed control criteria, measurement procedures and other technical matters. The relevant TMs include:
- Technical Memorandum on Noise from Percussive Piling (“PP-TM”).
 - Technical Memorandum on Noise from Construction Work other than Percussive Piling (“GW-TM”).
 - Technical Memorandum for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Sites (“IND-TM”).
- 3.1.2 The Site falls within the Designated Area (“DA”) in accordance with EPD’s Plan No. EPD/AN/K & NT-01 for Kowloon West, Kwai Chung, Tsuen Wan and Tsing Yi. Therefore, the *Technical Memorandum on Noise from Construction Work in Designated Area* (“DA-TM”) is applicable.
- 3.1.3 Construction noise during noise control restricted hours (for all days 1900-0700 of the next days and all times on general holidays or Sundays) is governed by the PP-TM and GW-TM
- 3.1.4 In addition, the Contractor shall comply with the following requirements under the NCO:
1. Hand-held breakers having a mass of above 10kg and any air compressor capable of supplying compressed air at 500kPa or above must be fitted with a Noise Emission Label issued under the *Noise Control (Hand Held Percussive Breakers) Regulation* and *Noise Control (Air Compressors) Regulation* of NCO.
 2. Construction Noise Permit (“CNP”) must be applied by the Contractor from EPD for any percussive piling at any time or any other construction activities conducted within restricted hours.
- 3.1.5 There is no statutory control for noise arising from construction activities (other than percussive piling) during normal working hours (07:00 to 19:00 from Monday to Saturday, not including general holidays). Nevertheless, *Professional Persons Environmental Consultative Committee (ProPECC) Practice Note PN2/93 Noise from Construction Activities – Non-statutory Controls* (ProPECC PN2/93) recommends a guideline to minimise the potential construction noise impact during normal hours, the $L_{eq(30min)}$ should not exceed 75dB(A) at dwelling; 70dB(A) at School except examination periods, at which the noise level should not over 65dB(A).
- 3.1.6 For fixed noise assessment, the assessment criteria are determined with reference to the Section 4.2.13 in Chapter 9 of HKPSG. The Acceptable Noise Levels (“ANLs”) for the Noise Sensitive Receivers (“NSRs”) are determined with consideration of the Area Sensitivity Rating (“ASR”), which is defined in the IND-TM. The ASR depends on the type of area and the degree of impact that Influencing Factors (“IFs”) have on the NSRs as illustrated in **Table 3.1**. Industrial area, major road or the area within the boundary of Hong Kong International Airport shall be considered to be an IF.

Table 3.1 Area Sensitivity Ratings

TYPE OF AREA CONTAINING NSR	DEGREE TO WHICH NSR IS AFFECTED BY IF
-----------------------------	---------------------------------------

TYPE OF AREA CONTAINING NSR	DEGREE TO WHICH NSR IS AFFECTED BY IF		
	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

Note:

1. "country park" means an area that is designed as a country park pursuant to Section 14 of the *Country Parks Ordinance*;
2. "directly affected" means that the NSR is at such a location that noise generated by the IF is readily noticeable at the NSR and is a dominant feature of the noise climate of the NSR;
3. "indirectly affected" means that the NSR is at such a location that noise generated by the IF, whilst noticeable at the NSR, is not a dominant feature of the noise climate of the NSR;
4. "not affected" means that the NSR is at such a location that noise generated by the IF is not noticeable at the NSR;
5. "urban area" means an area of high density, diverse development including a mixture of such elements as industrial activities, major trade or commercial activities and residential premises.

- 3.1.7 Fixed noise impact arising from existing noise source is controlled under the NCO and shall comply with the ANLs laid down in the Table 2 of the IND-TM. For a given ASR, the ANL, in dB(A), is given by The ANLs are summarised in **Table 3.2**.

Table 3.2 Acceptable Noise Levels

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

Note:

1. The above standards apply to uses which rely on opened windows for ventilation;
2. The above standards should be view as the maximum permissible noise levels assessed at 1m from the external facade

- 3.1.8 The Site is located in a highly developed area with commercial activities, surrounded by the medium to high-rise buildings, such as One Homantin, Ho Man Tin Estate, Grand Homm, Hong Kong Metropolitan University, and Auxiliary Medical Service Headquarters. According to **Table 3.1**, the type of area containing NSR of the Proposed Development is Urban Area. According to Annual Traffic Census 2020, the Annual Average Daily Traffic ("AADT") of Princess Margaret Road is higher than 30,000 vehicle/day. Thus, Princess Margaret Road is identified as IF. For NSRs facing Princess Margaret Road would be directly affected. According to IND-TM, the Area Sensitivity Rating is considered as ASR "C". For NSRs not facing Princess Margaret Road would be considered not affected by IF. The Area Sensitivity Rating is considered as ASR "B". The ASR and ANLs adopted in this EA are used for assessment purpose only, they should not bind the Noise Control Authority's decision in determining the noise criteria based on the legislation and practices being in force, and contemporary conditions/ situations of adjoining land uses.
- 3.1.9 Noise impact arising from the existing fixed noise sources would be calculated and compared against the relevant ANL criteria as shown in **Table 3.3** below.

Table 3.3 Noise Criteria of Existing/ Cumulative Fixed Noise Sources

AREA SENSITIVITY RATING	ANL, dB(A)		
	DAY-TIME	EVENING TIME	NIGHT-TIME
B	65	65	55
C	70	70	60

3.1.10 The planned fixed noise sources criteria to be adopted for the NSRs are dependent on the background noise monitoring results. Should the measured prevailing background noise level be lower than the ANL by more than 5 dB(A), the background noise level would be adopted as the criteria. HKPSG recommend the following noise criteria for fixed noise sources:

- 5 dB(A) below the appropriate ANLs of IND-TM; or
- Lower than the prevailing background noise levels if the background is 5 dB(A) lower than the ANLs.

3.1.11 Since the prevailing background noise level may vary with weekday/weekend, background noise measurement was conducted during weekday and weekend. Prevailing noise levels were measured near the existing NSR on 22 May 2022 (Sunday) and 23 May 2022 (Monday). The measurement results were considered representative. **Figure 3-1** shows the locations of the prevailing noise measurement. A summary of the prevailing noise measurement (day and evening time periods) results is given in **Table 3.4**.

Table 3.4 Prevailing Noise Measurement Results

ID	LOCATION	MEASUREMENT RESULTS	
		L ₉₀ (1 hour), dB(A) ^{[1] [2]}	
		DAY-TIME (0700 to 1900 HOURS)	EVENING TIME (1900 to 2300 HOURS)
BG1	Sheung Shing Street	54	55

Notes:

[1] The noise measurement descriptor is A-weighted sound pressure level exceeded for 90% of the time (L₉₀) measured using Type 1 (or equivalent) sound level meter. The hour within the day and evening time periods with the lowest noise levels were taken to represent the prevailing noise levels. Measurements were taken free-field.

[2] +3 dB(A) façade correction is included

Road Traffic Noise Criteria

3.1.12 As recommended in Table 4.1 of Chapter 9 Environment of the HKPSG, the standards of road traffic noise in terms of L₁₀(1-hr) for the following uses relying on opened windows for ventilation are:

- All domestic premises including temporary housing accommodation (residential): 70 dB(A).
- Hotels and hostels: 70 dB(A).
- Offices: 70 dB(A).
- Educational institutions including kindergartens, child care centres and all others where unaided voice communication is required (school): 65 dB(A).
- Places of public worship and courts of law: 65 dB(A).
- Hospitals, clinics, convalescence homes and residential care homes for the elderly: 55 dB(A).

3.2 Identification of Representative Noise Sensitive Receivers

- 3.2.1 The first layer of existing NSRs located close to boundary of the Project within the assessment area have been identified as representative NSRs. Descriptions of the identified representative NSRs are tabulated in **Table 3.5**. According to the latest design, the Proposed Development would be equipped with fixed glazing and centralized air-conditioning system. Therefore, the Proposed Development does not rely on opened windows for ventilation and classified as “protected” NSR. The locations of the representative NSRs are shown in **Figure 3-2**.

Table 3.5 Summary of Identified Representative NSRs

NSR ID	DESCRIPTION	TYPE OF USE	EXISTING/ PLANNED	NO OF STOREYS
N1	Grand Homm	Residential	Existing	17-26
N2	One Homantin	Residential	Existing	16-17
N3	Ho Man Tin Estate	Residential	Existing	40
N4	Mantin Heights	Residential	Existing	21-23
N5	Auxiliary Medical Service Headquarters	G/IC	Existing	7
N6	Hong Kong Football Association	G/IC	Existing	4

3.3 Construction Noise Impact Assessment

Identification of Construction Noise Sources

- 3.3.1 The potential source of noise impact for construction of the Project would be the use of PME for construction activities, including hoarding, site clearance, site formation, excavation, earth works, construction of retaining structure, foundation, building works and associated utilities works. PME likely to be used include hand-held breaker, excavator, concrete lorry mixer, air compressor, and generator etc. In the current stage, as the project construction plan has not been formulated, the inventory of powered mechanical equipment is not yet available. Construction activities for the Project would only be carried out during non-restricted hours (i.e. 0700 – 1900 hours on normal working dates).

Evaluation of Noise Impact

- 3.3.2 Construction activities will be confined inside the small site area which is less than 0.3 hectare in size. The number of PME is expected to be limited. Given that the small scale and limited extent of construction, the construction noise is anticipated to be minimal.
- 3.3.3 Construction noise impacts could be effectively mitigated by inclusion of proper contracts clauses for construction noise mitigation in the works contracts. Given that the recommended noise mitigation measures as detailed in **Paragraphs 3.3.4 to 3.3.10** (e.g. scheduling noisy activities, use of silenced equipment / movable noise barrier, etc.) are implemented, the construction noise impact to the NSRs in the vicinity is anticipated to be insignificant.

Mitigation Measures

- 3.3.4 It is recommended that the following noise mitigation measures should be implemented to minimize the construction noise impact, e.g. “Recommended Pollution Control Clauses for Construction Contracts” and “Good Practice about Mitigating Construction Noise” available on EPD’s website ^[Ref. #5]. A noise control plan should be set up to ensure regular maintenance of all

⁵ EPD Website “Recommended Pollution Control Clauses for Construction Contracts”:
http://www.epd.gov.hk/epd/english/environmentinhk/eia_planning/guide_ref/rpc_3.html

plant and equipment, reduce noise generation at source, and that appropriate silencing applications are in use based upon the best reasonable practice.

3.3.5 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 movable noise barrier;
- 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.

3.3.6 These mitigation measures can be enforced by specifying a construction noise control plan as part of the contract document.

Good Site Practice

3.3.7 Good site practice and noise management can significantly reduce the impact of site activities on nearby NSRs. The following package of measures should be followed while carrying out of the Project:

- only well-maintained plant to be operated on-site and plant should be serviced regularly during the works;
- machines and plant that may be in intermittent use to be shut down between work periods or should be throttled down to a minimum;
- plant known to emit noise strongly in one direction, should, where possible, be orientated to direct noise away from the NSRs;
- mobile plant should be sited as far away from NSRs as possible; and
- material stockpiles and other structures to be effectively utilised, where practicable, to screen noise from on-site construction activities.

Selection of Quieter Plant

3.3.8 The Contractor may be able to obtain particular models of plant that are quieter than the standards given in the GW-TM. This is one of the most effective measures and is increasingly practicable because of the availability of quiet equipment. Quiet plant is defined as Quality Powered Mechanical Equipment (QPME) whose actual SWL is less than the value specified in GW-TM for the same piece of equipment.

Use of Movable Noise Barriers

3.3.9 Movable noise barriers can be very effective in screening noise from particular items of plant when implementing the Project. Noise barriers located along the active works area close to the noise generating component of a PME could produce at least 10 dB(A) screening for stationary plant and 5 dB(A) for mobile plant provided the direct line of sight between the PME and the NSRs is blocked.

Use of Noise Enclosure/ Acoustic Shed

3.3.10 The use of noise enclosure or acoustic shed is to cover stationary PME such as air compressor and generator. With the adoption of the noise enclosure, the PME could be completely screened, and noise reduction of 10-15 dB(A) can be achieved according to the EIAO Guidance Note No.9/2010. Noise barriers should be free of gaps and made of materials having a surface mass density in excess of 10 kg/m². To improve the effectiveness of noise reduction, non-flammable absorptive lining can be adhered on the inner surface of the noise barriers. The barrier can be in the form of vertical or bend top barrier with an effective height to block the line of sight to NSRs.

3.4 Fixed Noise Source Impact Assessment

Identification of Fixed Noise Source

- 3.4.1 The dominant planned fixed noise source of the Proposed Development would be the potential outdoor Electrical and Mechanical (“E&M”) equipment at upper roof floor. As advised by the Applicant, there is no planned residential uses in the Proposed Development. The E&M equipment would be operated during day and evening time periods (0700 – 2300 hours) only. The exact quantities and types of plants are subject to user's requirements to be determined during the detailed design stage.
- 3.4.2 As the Proposed Development would be equipped with centralised air-conditioning system, the noise sensitive uses in the Proposed Development would not rely on opened windows for ventilation. Potential noise impact due to the surrounding fixed noise sources to the Proposed Development is not anticipated.

Identification of Assessment Locations

- 3.4.3 The identified representative NSRs located closest to the location of the planned fixed source is the Tower 6 of Grand Homantin, denoted as N1, and Tower 2 of Homantin One, denoted as N2. They have been selected for noise impact assessment. The location of planned fixed source, the mentioned outdoor Electrical and Mechanical equipment, denoted as EM1, is determined according to the proposed roof layout plan. Its height is 110 mPD. The NSRs adopted in the assessment and the proposed location of the planned fixed source (i.e. EM1) are shown on **Figure 3-3**. The horizontal distances between the selected NSRs and the planned fixed source are summarised in **Table 3.6**. The vertical distances between NSRs and the planned fixed source are taken as zero for a conservative estimation in calculation.

Table 3.6 NSRs for Fixed Noise Source Impact Assessment

NSR ID	DESCRIPTION	HORIZONTAL DISTANCE TO THE PLANNED FIXED NOISE SOURCE, m
N1	Grand Homm	48
N2	One Homantin	85

Assessment Methodology

- 3.4.4 As the planned fixed noise sources (i.e. the E&M equipment at upper roof floor) would be operated during day & evening time periods (i.e. 0700 – 2300 hours) only. Thus, the day & evening time noise criteria are adopted and are summarised in **Table 3.7**. The prevailing background noise level measured at Sheung Shing Street, is expected to be applicable to both N1 and N2 as baseline because there is no other key noise source at the vicinity of site boundary.

Table 3.7 Noise Criteria of Planned Fixed Noise Source

NSR ID	ASR ^[3]	ANL, dB(A) ^[1]	ANL – 5, dB(A)	PREVAILING BACKGROUND NOISE LEVEL, dB(A) ^[2]	CRITERIA FOR PLANNED FIXED NOISE SOURCES, dB(A)
N1	B	65	60	54	54
N2	B	65	60	54	54

Notes:

[1] Acceptable Noise Level (ANL) for day and evening time periods (0700 – 2300 hours)

[2] The lower measured background noise level among day-time and evening time is adopted as a conservative approach. Summary of prevailing noise measurement results is provided in **Table 3.4**.

[3] Justification of Area Sensitivity Rating (ASR) is discussed in **paragraph 3.1.8**.

- 3.4.5 Standard acoustics principles would be adopted to predict the potential fixed noise source impacts at NSRs.

Evaluation of Noise Impact

- 3.4.6 NSRs N1 and N2 are located horizontally at 48m and 85m from the boundary of the planned source EM1 respectively. The nearest NSR N1 is thus adopted in determining the maximum allowable sound power level (“SWL”) of E&M equipment to be installed at the upper roof floor. The maximum allowable SWL of E&M equipment under 100% operation (worst-case scenario) will be predicted based on backward calculation of separation distance and relevant noise criteria. Detailed calculation is shown in **Appendix A**.

Table 3.8 Maximum Allowable Sound Power Level of Planned Fixed Noise Source

SOURCE LOCATION	REPRESENTATIVE NSR	HORIZONTAL DISTANCE, m	MAXIMUM ALLOWABLE SWL, dB(A)
EM1	N1	48	87

- 3.4.7 The Contractor should take into account both the acoustic and engineering requirement, choose quieter equipment as far as practicable and adopt mitigation measures if necessary. This is subject to further design taking into account the structural capacity and the noise emission of planned equipment.
- 3.4.8 The maximum SWL should be implemented and refined during the detailed design stage of the Project by the Contractor/ future operator taking into account the exact design details of plants and the actual surrounding conditions. Any planned noise sensitive uses identified at later stage should also be incorporated and taken into consideration for the assessment.
- 3.4.9 With the adoption of the proposed maximum allowable SWL, the noise impacts due to the operation of Project to the surrounding NSRs would comply with the relevant noise criteria. Therefore, significant fixed noise impact from the Project to the nearby NSRs is not anticipated.
- 3.4.10 The Contractor may apply appropriate noise attenuation measures such as acoustic silencers, acoustic louvre or acoustic enclosure, etc. as practicable to ensure the stipulated maximum SWLs will not be exceeded. The future design and selection of the equipment shall also aim to reduce the effect of tonality at the NSRs as much as practicable. However, the Contractor shall also take into account the latest available information at time of detailed design to review and update the maximum allowable SWL as appropriate.

3.5 Traffic Noise Impact Assessment

Identification of Noise Sources

- 3.5.1 The induced traffic by the Proposed Development would be limited to private car by staff/ students/ visitors and trucks for delivery. Given the minimal induced traffic, significant traffic noise impact from the Project is not anticipated.
- 3.5.2 In addition, according to the latest design, all noise sensitive uses such as classrooms and offices of the Proposed Development will be equipped with fixed glazing and centralised air-conditioning

systems i.e. does not rely on opened windows for ventilation. As such, no adverse road traffic noise impact on the Proposed Development is anticipated.

3.6 Conclusion

- 3.6.1 The construction activities will be within the small site area which is less than 0.3 hectare in size. The number of PME is expected to be limited. Given that the small scale and limited extent of construction, the construction noise is anticipated to be minimal. Construction noise impacts could be effectively mitigated by inclusion of proper contract clauses for construction noise mitigation in the works contracts. With implementation of recommended noise mitigation measures, the construction noise impact to the NSRs in the vicinity is anticipated to be insignificant.
- 3.6.2 For fixed noise sources impact, with the adoption of the maximum allowable SWL for the planned fixed noise source, the impact noise levels at representative NSR would comply with the relevant criterion. Therefore, significant fixed noise impact from the Project to the nearby NSRs is not anticipated. The maximum SWL should be implemented and refined during the detailed design stage by the Contractor/ future operator taking into account the exact design details of plants and the actual surrounding conditions.
- 3.6.3 For traffic noise impact, the induced traffic by the Proposed Development would be limited to private car by staff/ students /visitors and trucks for delivery. Given the minimal induced traffic, significant traffic noise impact from the Project is not anticipated. As the Proposed Development will not rely on opened windows for ventilation, no adverse road traffic noise impact on the Proposed Development is anticipated.
- 3.6.4 Overall, therefore, there will be no adverse noise impact during the construction and operation phases of the Proposed Development.

Figure 3-1 Location of Prevailing Background Noise Measurement

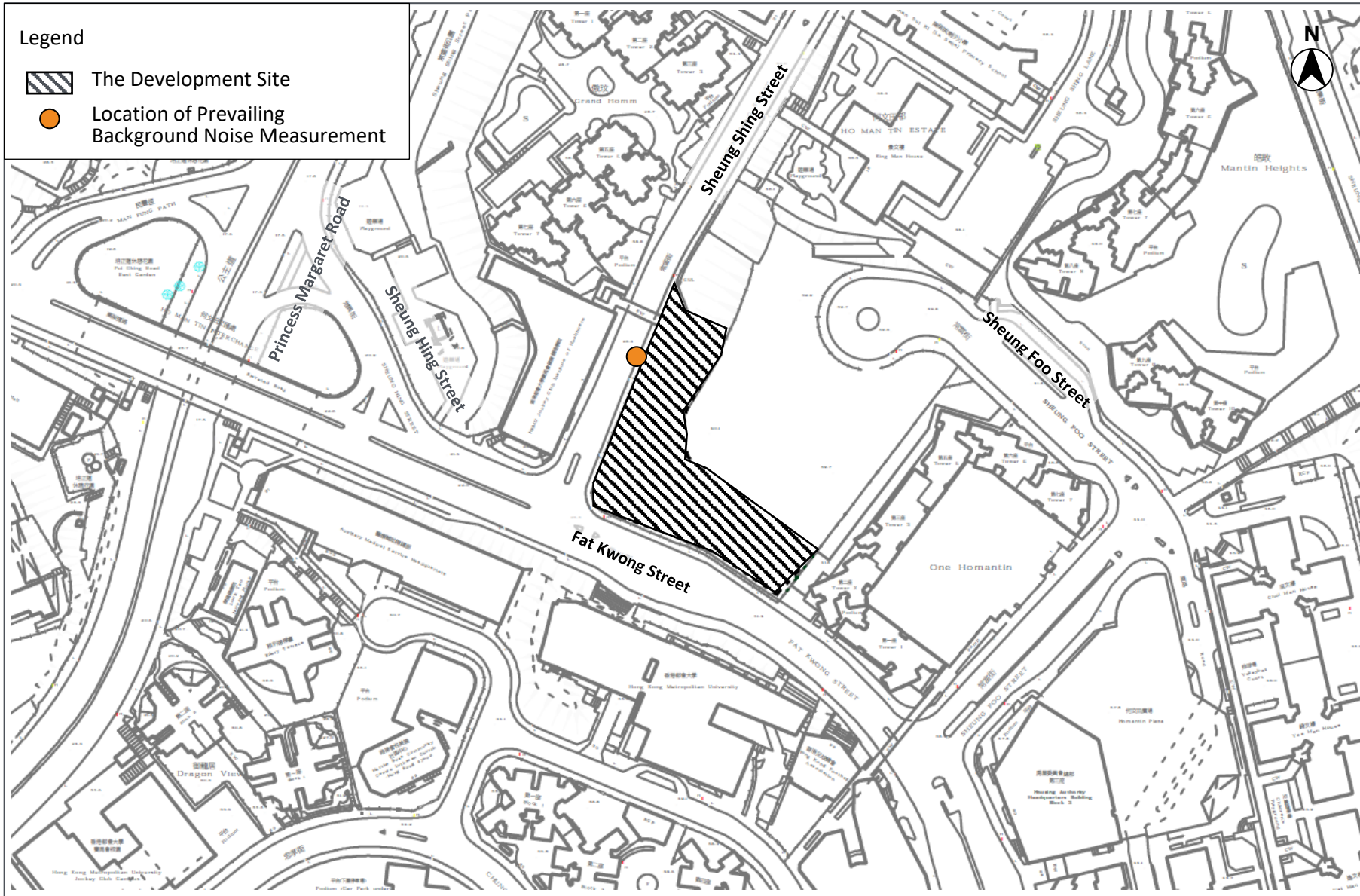


Figure 3-2 Location of Representative Noise Sensitive Receivers

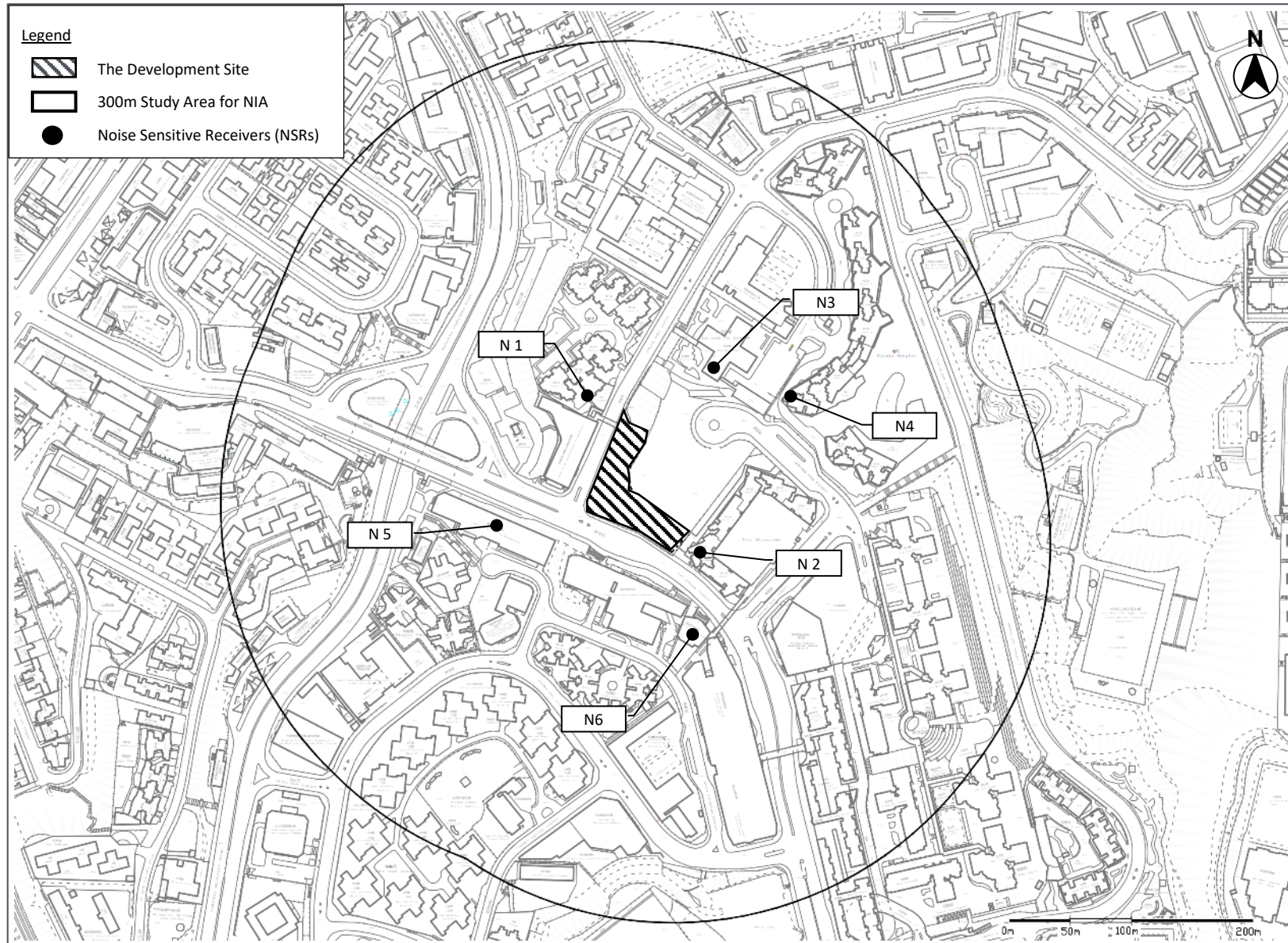
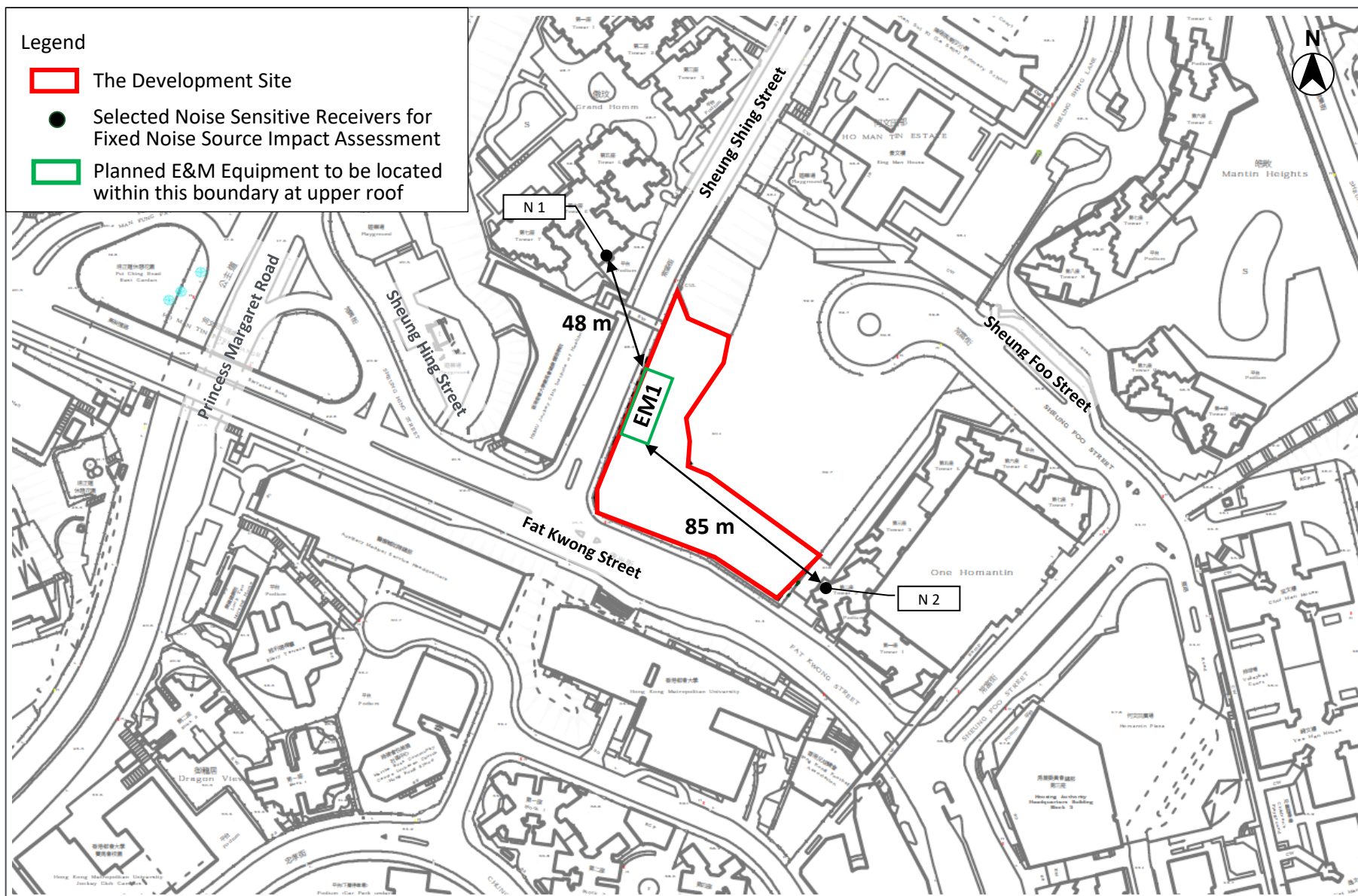


Figure 3-3 Proposed Location of Planned Fixed Noise Source and Horizontal Distances from Selected NSRs



4 WATER QUALITY

4.1 Introduction

4.1.1 This section assesses the potential water quality impact arising from the Proposed Development during construction and operation phases. Mitigation measures are recommended, where necessary, as part of the assessment.

4.2 Environmental Legislation and Standards

Water Pollution Control Ordinance (Cap. 358)

4.2.1 An amendment to the *Water Pollution Control Ordinance* (“WPCO”) was enacted in 1990 and provides a mechanism for setting effluent standards. These are included in the *Technical Memorandum Standards for Effluents Discharged in to Drainage and Sewerage Systems, Inland and Coastal Waters* (WPCO Cap 358, S.21). All discharges into government sewerage systems, marine and inland waters are required to comply with the standards stipulated in the Technical Memorandum.

Construction Site Drainage, ProPECC PN1/94

4.2.2 Under ProPECC Practice Note PN1/94 Construction Site Drainage (ProPECC PN1/94), various guidelines for the handling and disposal of construction site discharges are included. The guidelines include the use of sediment traps, wheel washing facilities for vehicles leaving the Site, adequate maintenance of drainage systems to prevent flooding and overflow, sewage collection and treatment, and comprehensive waste management (collection, handling, transportation, and disposal) procedures.

Drainage Plans subject to Comment by the Environmental Protection Department, ProPECC PN5/93

4.2.3 Under ProPECC Practice Note PN5/93, drainage plans submitted to the Building Authority are referred to EPD for comment whenever there is a concern for pollution control. EPD has, based on the experience of the common problems found in the drainage submissions, prepared this practice note for reference by Authorised Persons (“APs”) in preparing drainage plans. Although the guidelines contained in this practice note are not meant to be exhaustive, it is hoped that they will help secure early approval of drainage plans.

Water Quality Objective (WQO)

4.2.4 Under the Water Pollution Control Ordinance, water Quality Objective has regulated the discharges and deposits within each water control zone. The project site locates at Victoria Harbour Water Control Zone Phase Two. The corresponding objectives are list below at:

Table 4.1 Water Quality Objectives of Victoria Harbour Water Control Zone

WATER QUALITY OBJECTIVES OF VICTORIA HARBOUR WATER CONTROL ZONE			
A. Aesthetic Appearance	(a)	There should be no objectionable odours or discolouration of the water.	Whole Zone
	(b)	Tarry residues, floating wood, articles made of glass, plastic, rubber or of any other substances should be absent.	Whole Zone

WATER QUALITY OBJECTIVES OF VICTORIA HARBOUR WATER CONTROL ZONE			
	(c)	Mineral oil should not be visible on the surface. Surfactants should not give rise to a lasting foam.	Whole Zone
	(d)	There should be no recognisable sewage-derived debris.	Whole Zone
	(e)	Floating, submerged and semi-submerged objects of a size likely to interfere with the free movement of vessels, or cause damage to vessels, should be absent.	Whole Zone
	(f)	The water should not contain substances which settle to form objectionable deposits.	Whole Zone
B. Bacteria		The level of Escherichia coli should not exceed 1000 per 100 mL, calculated as the geometric mean of the most recent 5 consecutive samples taken at intervals of between 7 and 21 days.	Inland Waters
C. Colour		Human activity should not cause the colour of water to exceed 50 Hazen units.	Inland Waters
D. Dissolved Oxygen	(a)	The level of dissolved oxygen should not fall below 4 mg per litre for 90% of the sampling occasions during the whole year; values should be calculated as the annual water column average (see Note). 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)	The level of dissolved oxygen should not be less than 4 mg per litre.	Inland Waters
E. pH	(a)	The pH of the water should be within the range of 6.5–8.5 units. In addition, human activity should not cause the natural pH range to be extended by more than 0.2 unit.	Marine Waters
	(b)	Human activity should not cause the pH of the water to exceed the range of 6.0–9.0 units.	Inland Waters
F. Temperature		Human activity should not cause the daily temperature range to change by more than 2.0°C.	Whole Zone
G. Salinity		Human activity should not cause the salinity level to change by more than 10%.	Whole Zone
H. Suspended Solids	(a)	Human activity should neither cause the suspended solids concentration to be raised more than 30% nor give rise to accumulation of suspended solids which may adversely affect aquatic communities.	Marine Waters
	(b)	Human activity should not cause the annual median of suspended solids to exceed 25 mg per litre.	Inland Waters
I. 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
J. Nutrients K. 5-day Biochemical	(a)	Nutrients should not be present in quantities sufficient to cause excessive or nuisance growth of algae or other aquatic plants.	Marine Waters

WATER QUALITY OBJECTIVES OF VICTORIA HARBOUR WATER CONTROL ZONE			
Oxygen Demand L. Chemical Oxygen Demand	(b)	Nutrients should not be present in quantities sufficient to cause excessive or nuisance growth of algae or other aquatic plants.	Marine Waters
		The 5-day biochemical oxygen demand should not exceed 5 mg per litre.	Inland Waters
		The chemical oxygen demand should not exceed 30 mg per litre.	Inland Waters
M. Toxic Substances	(a)	Toxic substances in the water should not attain such level 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 interactions of toxic substances with each other.	Whole Zone
	(b)	Human activity should not cause a risk to any beneficial use of the aquatic environment.	Whole Zone

4.3 Potential Water Quality Impacts

Water Sensitive Receiver (“WSR”)

- 4.3.1 Desktop study on the OZP, topographic map and site visit were conducted, there are no existing natural watercourses, open drainage culverts, marine water sensitive receivers identified within 500m assessment area.

Construction Phase

- 4.3.2 Muddy runoff from the Site may be generated during the construction phase, especially during the rainy season.
- 4.3.3 Wash water from vehicles and equipment; silt from any on-site stockpiles of soil, cement and grouting materials; and spillage of fuels, oil and lubricants from construction vehicles and plant may generate water quality impacts. If these pollution sources are not properly controlled, it would lead to increased amounts of suspended solids, grease and oil, pH, Biochemical Oxygen Demand (“BOD”), etc. in the drainage system.
- 4.3.4 There is also the issue of sewage generated by construction workers on-site.

Operation Phase

- 4.3.5 Wastewater arising from the Proposed Development will be discharged into the municipal sewerage system. Therefore, no adverse water quality impact will be arising from the operation phase of the Proposed Development.

4.4 Mitigation Measures

Construction Phase

- 4.4.1 During the Site visits on 26 April 2022, no watercourse was observed within the Site boundary. In order to avoid muddy surface runoff from entering the existing watercourse/storm water drainage system outside the Site, channels along the site boundary shall be provided to collect and direct

the muddy runoff to the wastewater treatment facilities for treatment prior to being discharged. The design of the construction site drainage system shall be independent from the existing watercourse. The details of wastewater treatment arrangement shall be submitted to EPD for review during the application of the wastewater discharge licence before commencement of the construction activities.

4.4.2 The construction contractor shall also follow good site practice and be responsible for the design construction, operation and maintenance of all the mitigation measures as specified in ProPECC PN 1/94 for construction site drainage:

- Surface run-off from construction sites shall be discharged into storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels or earth bunds or sand bag barriers shall be provided on site to properly direct storm water to such silt removal facilities. Perimeter channels at site boundaries shall be provided where necessary to intercept storm run-off from outside the Site so that it will not wash across the Site. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks.
- Silt removal facilities, channels and manholes shall be maintained and the deposited silt and grit should be removed regularly, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times.
- Construction works should be programmed to minimize soil excavation works in rainy seasons (April to September). If excavation in soil could not be avoided in these months or at any time of year when rainstorms are likely, for the purpose of preventing soil erosion, temporarily exposed slope surfaces should be covered e.g. by tarpaulin, and temporary access roads should be protected by crushed stone or gravel, as excavation proceeds. Intercepting channels should be provided (e.g. along the crest/edge of excavation) to prevent storm runoff from washing across exposed soil surfaces. Arrangements should always be in place to ensure that adequate surface protection measures can be safely carried out well before the arrival of a rainstorm.
- Earthworks final surfaces shall be well compacted and the subsequent permanent work or surface protection shall be carried out immediately after the final surfaces are formed to prevent erosion caused by rainstorms. Appropriate drainage like intercepting channels shall be provided where necessary.
- Measures shall be taken to minimise the ingress of rainwater into trenches. If excavation of trenches in wet seasons is necessary, they shall be dug and backfilled in short sections. Rainwater pumped out from trenches or foundation excavations shall be discharged into storm drains via silt removal facilities.
- Open stockpiles of construction materials (e.g. aggregates, sand and fill material) on sites shall be covered with tarpaulin or similar fabric during rainstorms. Measures shall be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.
- Manholes shall always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers. Discharge of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system.
- Wash water from vehicles shall be reused on site. The wastewater generated from potential pollution sources as stated in paragraph 4.3.5 shall be maintained as limited as possible, and shall be properly treated to fulfil the valid Water Discharge Licence before discharge.
- Vehicle and plant servicing areas, vehicle wash bays and lubrication bays should as far as possible be located within roofed areas. The drainage in these covered areas should be connected to foul sewers via a petrol interceptor. Oil leakage or spillage should be contained

and cleaned up immediately. Waste oil should be collected and stored for recycling or disposal in accordance with the Waste Disposal Ordinance.

- Wastewater generated from building construction activities including concreting, plastering, internal decoration, cleaning of works and similar activities should not be discharged into the stormwater drainage system. If the wastewater is to be discharged into foul sewers, it should undergo the removal of settleable solids in a silt removal facility, and pH adjustment as necessary.

4.4.3 During construction, it is recommended that portable toilets should be provided for construction workers. These will be supplied, maintained and emptied (at a sewage treatment facility) by a special contractor.

Operation Phase

4.4.4 During operation, a separate SIA indicated that the capacity of the existing sewerage system is sufficient for conveying the sewage generated from the Site to the downstream areas. During operation, no adverse water quality impact is anticipated arising from the wastewater / sewage generated by the students and employees of the Site. Best practices should be followed in accordance with ProPEC PN 5/93.

4.4.5 Based on the preliminary design layout, there will have some landscape area with greening within the Proposed Development. To avoid any potential non-point source pollutions arising from application of agrochemicals, environmentally friendly fertilisers and pesticides will be adopted for these plantings to avoid contamination of the water ponds or other water resources and minimise any potential water quality impact generated. The types of fertilisers and pesticides to be used will make reference to the guidelines published by the Agriculture, Fisheries and Conservation Department (“AFCD”) including “Good Agricultural Practices – General Guidelines: Production of Local Vegetables” and “Good Agricultural Practices for Crop Production: Farm Operation – Use of Fertilizers”.

4.4.6 With the implementation of the good practice and control measures, no adverse water quality impact is anticipated from the Proposed Development.

4.5 Conclusion

4.5.1 During construction, water quality impacts can be properly controlled with the implementation of good site practice, as stated in **paragraph 4.4.2**. Portable toilets will be provided for constructions workers on-site. Provided these measures are implemented, it is unlikely that any adverse water quality impacts from the Site will be generated during the construction phase.

4.5.2 The contractor shall apply for a Discharge Licence from EPD under the WPCO. All site discharges shall be treated in accordance with the terms and conditions of the Discharge Licence.

4.5.3 The wastewater generated from the Proposed Development will be discharged into the municipal sewerage system and a separate SIA indicated that the capacity of the existing sewerage system is sufficient for conveying the sewage generated from the Site to the downstream areas. During operation, no adverse water quality impact is anticipated arising from the wastewater / sewage generated by the students and employees of the Site.

4.5.4 Moreover, there will be no adverse water quality impact due to runoff with the provision and implementation of the recommended mitigation measures for non-point sources as mentioned in **Section 4.4**.

1.1.1 Overall, therefore, no adverse water quality impacts are anticipated during the construction or operational phases of the Proposed Development.

5 WASTE MANAGEMENT

5.1 Environmental Legislation and Standards

5.1.1 In carrying out the assessment, references have been made to the following relevant legislation, documents and guidelines that are applicable to waste management and disposal in Hong Kong:

- The *Waste Disposal Ordinance* (Cap. 354) (“WDO”) setting out requirements for storage, handling and transportation of all types of wastes, and subsidiary legislation such as the *Waste Disposal (Charges for Disposal of Construction Waste) Regulation* and the *Waste Disposal (Chemical Waste) (General) Regulation*.
- Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C).
- Waste Disposal (Charges for Disposal of Chemical Waste) Regulation (Cap. 354J).
- Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N).
- Land (Miscellaneous Provisions) Ordinance (Cap. 28).
- Public Health and Municipal Services Ordinance (Cap.132BK) – Public Cleansing and Prevention of Nuisances Regulation
- Environmental, Transport and Works Bureau (“ETWB”) Technical Circular (Works) No. 19/2005, Environmental Management on Construction Sites.
- ETWB Technical Circular (Works) No. 22/2003A, Additional Measures to improve Site Cleanliness and Control Mosquito Breeding on Construction Sites.
- Development Bureau (“DevB”) Technical Circular (Works) No. 6/2010, Trip Ticket System for Disposal of Construction & Demolition Materials.
- Civil Engineering and Development Department (“CEDD”) Technical Circulars (CEDD TC No. 03/2015), Management of Construction and Demolition Materials.
- Building Department Practice Note for Authorised Persons, Registered Structural Engineers and Registered Geotechnical Engineers – Construction and Demolition Waste (“ADV-19”).
- Building Department Practice Note for Authorised Persons, Registered Structural Engineers and Registered Geotechnical Engineers Waste Minimisation – Provision of Fitments and Fittings in New Buildings (“APP-114”).
- Building Department Practice Note for Registered Contractors (“PNRC 17”), Control of Environmental Nuisance from Construction Sites.
- CEDD Project Administration Handbook for Civil Engineering Works (“PAH”).
- EPD Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.
- EPD Recommended Pollution Control Clauses (“RPCC”) for Construction Contracts in COP.
- EPD Guidance Note for Contamination Land Assessment and Remediation.
- EPD Practice Guide for Investigation and Remediation of Contaminated Land.
- Guidance Manual for Use of Risk-Based Remediation Goals for Contaminated Land Management.

5.2 Potential Waste Management Impacts

Construction Phase

5.2.1 The key potential waste sources during the construction phase are:

- Inert Construction and Demolition (“C&D”) materials (e.g. waste concrete, surplus soil, waste asphalt, etc.).
- Non-inert C&D Waste (e.g. wood and plastics).
- Chemical wastes (e.g. waste battery and waste lubricating oil from vehicles / plant maintenance)
- General refuse, i.e. Municipal Solid Waste (“MSW”), generated by site workers.

5.2.2 On-site waste management should be implemented to sort and separate inert and non-inert wastes prior to disposal. Inert C&D wastes should be re-used on-site as far as practicable. The remaining inert C&D wastes should be sent to public fill reception facilities, Fill Bank at Tuen Mun Area 38 and/or Fill Bank at Tseung Kwan O Area 137. Non-inert C&D wastes are materials that can decompose, and on-site sorting should be carried out for non-inert C&D wastes generated from the construction works. All non-inert wastes should be recycled as far as possible and landfill disposal should be adopted as the last resort. The nearest disposal facility to the Site is the West New Territories Landfill (“WENT”) Landfill.

5.2.3 Chemical wastes such as spent lubricants may be generated in small quantity. If any chemical wastes will be generated during the construction phase, the relevant contractors shall be registered as chemical waste producers with EPD. A licensed collector shall be employed to handle and dispose of the chemical wastes, if any. In addition, any chemical waste generated should be handled in accordance with EPD’s Code of Practice on the Packaging, Labelling and Storage Chemical Waste.

5.2.4 For general refuse, provisions of recycle bins for different types of recyclable waste should be provided together with a general refuse bin to separate from C&D materials. Arrangements should be made with the recycling companies to collect the recycle waste. The remaining general refuse generated by site workers after sorting and recycling will be collected and stored in enclosed bin, and disposed of at the nearest Tai Kiu Refuse Collection Point regularly along with the existing MSW generated from the Site so as to avoid creating odour impact or pest and vermin problem within the Site, and will finally be disposed of at WENT Landfill.

5.2.5 Common Good Site practices are recommended as follows:

- The construction contractor should adopt good housekeeping practices, such as waste segregation prior to disposal. Besides the provision of stockpiling and segregation areas within the site, effective collection of site wastes would be required to prevent waste materials being blown around by wind, flushed or leached into nearby waters, or creating odour impact or pest and vermin problems. Waste storage areas should be well maintained and cleaned regularly.
- General refuse, or MSW, should be stored in enclosed bins or compaction units. A waste collector will be used by the contractors to remove MSW from the Site. Preferably an enclosed and covered area should be provided to reduce the occurrence of windblown materials.

5.2.6 With the implementation of above measures, no unacceptable waste management impact during the construction phase is anticipated.

Operation Phase

- 5.2.7 During the operation phase, the major type of waste generated will be MSW generated from the Proposed Development. The general refuse generated will be stored in enclosed bins. The refuse bins will be collected and disposed of regularly by a licensed waste collector, and also disposed of at an appropriate waste disposal facility. Different types of waste will be considered to be reused or recycled by the operator of the project as far as practicable before they are disposed.
- 5.2.8 There will be a wet laboratory within the proposed HKMU Campus. It is expected that biological waste and chemical waste will be generated during the operation of laboratory. A licensed chemical waste collector will be arranged to collect the chemical waste and transport to disposal facilities. The biological waste will firstly be sterilized by autoclave or chemical disinfectant in the laboratory and then transported by a licensed clinical waste collector to disposal facility.
- 5.2.9 With the implementation of recommended waste handling practices, no adverse waste management impact is anticipated.

6 CONCLUSION

- 6.1.1 The potential environmental impacts arising from the Proposed Development on the nearby sensitive uses, have been assessed. Mitigation measures have been recommended, where appropriate, to alleviate any identified adverse environmental impacts during the construction and operation of the Project. This EA has indicated that the Proposed Development will not generate any unacceptable environmental impacts during construction and operation phases, provided that all the recommended mitigation measures and good site practice are strictly implemented.

Air Quality

- 6.1.2 With the implementation of the recommended mitigation measures and good site practice, adverse air quality impacts during the construction phases are not anticipated.
- 6.1.3 Based on the layout of the Proposed Development, there is no openable windows and fresh air intakes of mechanical ventilation system located within the buffer distances as recommended in HKPSG for vehicular emissions. The identified potential emission sources/ chimneys within 200m from the site boundary are only for emergency purpose/ general laboratory works. Therefore, no adverse air quality impact on the Proposed Development from industrial emission and vehicular emissions is anticipated. Meanwhile, the operation of the Proposed Development will not cause any adverse air quality impact on the surrounding air sensitive uses.

Noise

- 6.1.4 The construction activities will be within the small site area which is less than 0.3 hectare in size. The number of PME is expected to be limited. Given that the small scale and limited extent of construction, the construction noise is anticipated to be minimal. Construction noise impacts could be effectively mitigated by inclusion of proper contracts clauses for construction noise mitigation in the works contracts. With implementation of recommended noise mitigation measures, the construction noise impact to the NSRs in the vicinity is anticipated to be insignificant.
- 6.1.5 For fixed noise sources impact, with the adoption of the maximum allowable SWL for the planned fixed noise source, the impact noise levels at representative NSR would comply with the relevant criterion. Therefore, significant fixed noise impact from the Project to the nearby NSRs is not anticipated. The maximum SWL should be implemented and refined during the detailed design stage by the Contractor/ future operator taking into account the exact design details of plants and the actual surrounding conditions.
- 6.1.6 For traffic noise impact, the induced traffic by the Proposed Development would be limited to private car by staff/ students /visitors and trucks for delivery. Given the minimal induced traffic, significant traffic noise impact from the Project is not anticipated. As the Proposed Development will not rely on opened windows for ventilation, no adverse road traffic noise impact on the Proposed Development is anticipated.
- 6.1.7 Overall, therefore, there will be no adverse noise impact during the construction and operation phases of the Proposed Development.

Water Quality

- 6.1.8 During construction, water quality impacts will be properly controlled with the implementation of good site practice. Portable or Container toilets, when necessary, will be provided for constructions workers on-site. Provided these measures are implemented, adverse water quality impact is not anticipated during the construction phase. The Contractor shall apply for a Discharge Licence under the WPCO and the effluent discharged from the construction site shall comply with the terms and conditions of the Discharge Licence.

- 6.1.9 The wastewater generated from the Proposed Development will be discharged into the municipal sewerage system and a separate SIA indicated that the capacity of the existing sewerage system is sufficient for conveying the sewage generated from the Site to the downstream areas. During operation, no adverse water quality impact is anticipated arising from the wastewater / sewage generated by the students and employees of the Site.

Waste Management

- 6.1.10 With the provision and implementation of the good site practices recommended therein, the waste generation during construction phase will be reduced. Provided that good site practices are followed, there should be no adverse impacts related to the management, handling and transportation of waste during the construction phase.
- 6.1.11 During operation stage, MSW generated will be stored in enclosed bins, which will be collected and disposed of regularly by a licensed waste collector and disposed of at an appropriate waste disposal facility. Chemical waste and biological waste generated from the laboratory will also be collected by a licensed waste collector after proper treatment. Different types of waste will be considered to be reused or recycled by the operator of the project as far as practicable before they are disposed.
- 6.1.12 Waste generated from the laboratory will be collected by licensed holder after proper treatment.

Appendix A **MAXIMUM ALLOWABLE SOUND POWER LEVEL OF PLANNED FIXED NOISE SOURCES**

Project: Application for Planning Permission under Section 16 at Sheung Shing Street Lot									
Title: Calculation of Maximum Allowable SWL of Planned Noise Source									
Source Location	Source Description	NSR	Noise Criteria, dB(A)	Distance to NSR, m	Correction				Maximum Allowable SWL,
					Distance	Facade	Tonality	Screening	
EM1	E&M Equipment at roof floor	N1	54	48	42	-3	-6	0	87

Project: Application for Planning Permission under Section 16 at Sheung Shing Street Lot										
Title: Predicted Noise Impact from Fixed Noise Sources										
NSR	Source Location	SWL, dB(A)	Distance, m	Correction, dB(A)				Predicted SPL, dB(A)	Noise Criteria, dB(A)	Compliance [Y/N]
				Distance	Facade	Tonality	Screening			
N1	EM1	87	48	-42	3	6	0	54	54	Y
N2	EM1	87	85	-47	3	6	0	49	54	Y

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