



Proposed Amendment to the Approved Wan Chai Outline Zoning Plan No. S/H5/31 from "Comprehensive Development Area", "Residential (Group C)", "Open Space" and "Government, Institution or Community" zones and Area shown as "Road" to "Other Specified Uses (Residential Development with Historic Building Conserved)" and "Other Specified Uses (Elevated Walkway)" at Nos. 1, 1A, 2 and 3 Hill Side Terrace, No. 55 Ship Street (a.k.a. Nam Koo Terrace), Nos. 1-5 Schooner Street, No. 53 Ship Street, No. 18 Sau Wa Fong, Inland Lot No. 9048 and Adjoining Government Land, Wan Chai

Environmental Assessment Report

Prepared for:
Yuba Company Limited

17 September 2024



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For and on behalf of EnviroSolutions & Consulting					
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1 INTRODUCTION

1.1 Project Background

- 1.1.1 EnviroSolutions & Consulting Ltd ("ESC") has been engaged to prepare this Environmental Assessment ("EA") report to support a rezoning application under Section 12A of the *Town Planning Ordinance* ("TPO") ("the Section 12A Rezoning Application" or "the Planning Application") to amend the zoning of the Site at Nos. 1, 1A, 2 and 3 Hill Side Terrace, No. 55 Ship Street (a.k.a. Nam Koo Terrace), Nos. 1-5 Schooner Street, No. 53 Ship Street, No. 18 Sau Wa Fong, Inland Lot No. 9048 ("IL 9048") and adjoining Government Land, Wan Chai (the "Site" or "Rezoning Site") under the Approved Wan Chai Outline Zoning Plan No. S/H5/31 ("the Approved OZP").
- 1.1.2 The Rezoning Site is currently zoned "Comprehensive Development Area" ("CDA") and "Residential (Group C)" ("R(C)") and minor encroachment into the "Open Space" ("O") and "Government, Institution or Community" ("G/IC") and falls into area shown as 'Road' on the Approved OZP gazetted on 12 May 2023.
- 1.1.3 The Applicant proposed to rezone the Site to "Other Specified Uses (Residential Development with Historical Building Conserved)" ("OU(RDHBC)") and "Other Specified Uses (Elevated Walkway)" ("OU(EW)") zone to facilitate a Comprehensive Residential Development with supporting commercial uses and conservation of Nam Koo Terrace in-situ. The Rezoning Application also seeks to relax the plot ratio restriction to the level permitted under the *Building (Planning) Regulations* ("B(P)R") and building height restriction to 120mPD correspondingly. An Indicative Development Scheme is put forth to demonstrate the development intention and the feasibility of the Proposed "OU(RDHBC)" zone.

1.2 Site Description

- 1.2.1 The Site location and its environs are shown in **Figure 1-1**. The existing/previous buildings and site condition are summarised below:
- Nam Koo Terrace – It is a Grade 1 Historic Building located at No. 55 Ship Street, which is a two-storey mansion built in 1915-1921 but has been abandoned after the Second World War since 1945.
 - Hill Side Terrace – It comprises of four lots. IL 2272 & Ext ("No 1 Hill Side Terrace"), IL 1564 ("No 2 Hill Side Terrace"), IL 1669 ("No 3 Hill Side Terrace") and IL 1940 ("No 1A Hill Side Terrace") which all the buildings have been demolished and are vacant.
 - IL 2093 RP and IL 2093 S.A. RP – It is a six-storey residential-cum-commercial building previously known as Miu Kang Terrace, which is located at Nos 1-5 Schooner Street and No. 53 Ship Street and has been demolished. It was built in the 1970s.
 - IL 199 RP – The lot was occupied by a six-storey residential building (i.e. No. 18 Sau Wa Fong) that was built in the 1960s.
 - IL 9048 – It is a vacant land at Schooner Street.
- 1.2.2 The uses surrounding the site include:
- To the North: residential buildings at Sau Wa Fong and Sik On Street

- To the East: Hopewell Centre II
- To the South: St. Francis' Canossian College and residential buildings along Kennedy Road
- To the West: St. Francis' Canossian School

1.3 Project Description

1.3.1 The site area will be approximately 3,140.7m². The layout plans of the Indicative Development Scheme can be referred to Appendix 1 of Planning Statement, including:

- A 24-storey residential building over an Open Space open to public and three (3) podium levels
- Preservation of Nam Koo Terrace (a two-storeys Grade 1 Historic Building) with proposed commercial uses)
- Provision of open spaces
- Barrier-free access that links to Hopewell Centre II

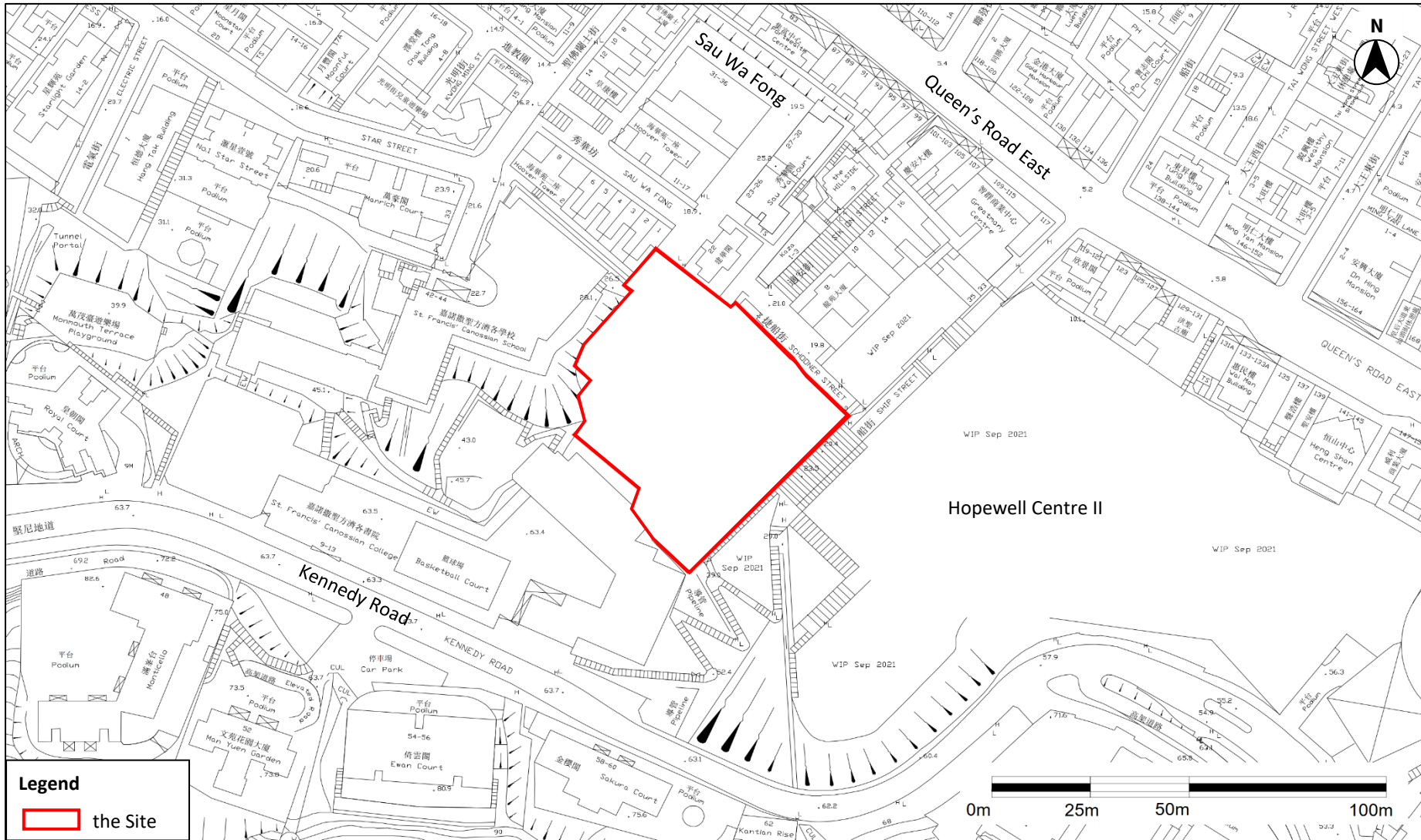
1.3.2 Some modification and refurbishment works, such as floor strengthening, fitting of modern services, improvements to fire safety, etc., will be carried out at Nam Koo Terrace.

1.4 Objectives of the Report

1.4.1 The objectives of this EA Report are to:

- Assess the potential environmental impacts arising from the operation of the Indicative Development Scheme, in terms of air quality, noise, water quality, waste management and land contamination.
- Recommend appropriate measures to mitigate any impacts if necessary.

Figure 1-1 Site Location and Its Environs



2 AIR QUALITY

2.1 Environmental Legislation and Standards

Air Quality Objectives

2.1.1 The *Air Pollution Control Ordinance* ("APCO") stipulates the Air Quality Objectives ("AQOs") shown in **Table 2-1**.

Table 2-1 Hong Kong Air Quality Objectives

POLLUTANT	AVERAGING TIME	CONCENTRATION LIMIT ^[Note 1] (µg/m ³)	NUMBER OF EXCEEDANCES ALLOWED
Sulphur Dioxide ("SO ₂ ")	10-minute	500	3
	24-hour	50	3
Respirable Suspended Particulates ("RSP" or "PM ₁₀ ") ^[Note 2]	24-hour	100	9
	Annual	50	Not applicable
Fine Suspended Particulates ("FSP" or "PM _{2.5} ") ^[Note 3]	24-hour	50	35
	Annual	25	Not applicable
Nitrogen Dioxide ("NO ₂ ")	1-hour	200	18
	Annual	40	Not applicable
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	Not applicable

Notes:

- All measurements of the concentration of gaseous air pollutants, i.e. SO₂, NO₂, O₃ and CO, are to be adjusted to a reference temperature of 293 Kelvin and a reference pressure of 101.325 kilopascal.
- Respirable suspended particulates mean suspended particles in air with a nominal aerodynamic diameter of 10µm or less.
- Fine suspended particulates mean suspended particles in air with a nominal aerodynamic diameter of 2.5µm or less.

Air Pollution Control (Construction Dust) Regulation

2.1.2 The *Air Pollution Control (Construction Dust) Regulation* enacted under Section 43 of the APCO, provides definition of notifiable and regulatory works to make sure that good dust abatement practices have been properly put in place so that dust emissions for various construction activities is limited.

2.1.3 The Regulation requires that the contractor shall give advance notice to the Environmental Protection Department ("EPD") for any notifiable work ^[Ref.#1] and shall conform to the

¹ As stipulated by the regulation, 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 or a building, construction of the superstructure of a building and road construction work.

Schedule of the Regulation when conducting notifiable and regulatory works, and further implement dust control and suppression measures.

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

2.1.4 This Regulation comes into force on June 2015 and mandates that all Non-road Mobile Machinery (“NRMM”), unless they are exempted, shall meet the prescribed emission standards. All regulated machines sold or leased for use in Hong Kong that are approved or exempted must bear a proper label in a prescribed format issued by EPD.

Asbestos Containing Materials (“ACMs”)

2.1.5 APCO regulates a series of activities involving ACMs. The owner of premises where ACMs are found or reasonably suspected of being shall engage a Registered Asbestos Consultant (“RAC”) to provide an Asbestos Investigation Report (“AIR”) before the building is demolished. In the case that any ACM is found, an Asbestos Management Plan (“AMP”) including an Operation and Maintenance Plan (“O&MP”) for ACM not requiring asbestos removal works; and an Asbestos Abatement Plan (“AAP”) for any asbestos abatement work or work which involves the use or handling of any ACM, shall be prepared, signed by the RAC and then submitted to EPD for approval. The owner shall notice EPD in writing no less than 28 days before date on which any asbestos abatement work is to be commenced in accordance with Section 73 of the APCO.

2.1.6 As stipulated in APCO, a Registered Asbestos Contractor shall engage in removal of ACMs in accordance with the approved AAP as the supervisor. Under Section 74(3) of the APCO, a RAC so appointed shall supervise the asbestos abatement work and notify EPD of any changes of AMP or the asbestos abatement work.. After the asbestos abatement work is done, the RAC shall prepare a summary report and submit to EPD for record and then demolition work can commence.

Hong Kong Planning Standards and Guidelines (“HKPSG”)

2.1.7 Chapter 9 Environment in HKPSG also recommends buffer distances for roads as summarised in **Table 2-2**.

Table 2-2 HKPSG Recommended Buffer Distances for Roads

POLLUTION SOURCE	TYPE OF ROAD	BUFFER DISTANCE	PERMITTED USES
Road and Highways	Trunk Road and Primary Distributor	>20m	Active and passive recreational 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: Table 3.1 of Chapter 9 Environment of HKPSG

2.2 Identification of Air Sensitive Receiver (“ASRs”)

2.2.1 The first layer ASRs within 500m study area from the Site have been identified. The study area of 500m from the Site boundary is shown in **Figure 2-1**. The relative locations of representative ASRs to site boundary are shown in **Figure 2-2** and summarised in **Table 2-3**.

Table 2-3 Identified Representative ASRs

ASR ID	DESCRIPTION	LAND USE	APPROXIMATE DISTANCE TO SITE BOUNDARY, m
ASR1	St. Francis’ Canossian College	Educational Institution	13.5
ASR2	St. Francis’ Canossian School	Educational Institution	8.3
ASR3	No.1, Sau Wa Fong	Residential	2.7
ASR4	Greenland House	Residential	4.1
ASR5	Kaza	Residential	8.2
ASR6*	Hopewell Centre II	Hotel/Office	6.0

Note: *ASR6 is the planned ASR and currently under construction.

2.3 Air Quality Impact during Construction Phase

2.3.1 Fugitive dust is the major pollutant affecting air quality during construction phase. It comes from construction activities including excavation, stockpiling, earth moving, transferring or handling of dusty materials. As there is no basement floor for the Proposed Development and deep excavation is not required, amount of excavated material from excavation works shall be minimal. For the whole construction period anticipated to be two years, 25,088 tonnes of C&D materials (including 24,480 tonnes of inert C&D materials and 608 tonnes of C&D waste) would be generated as estimated in **Section 5.2**. All the dusty materials will be covered or wetted on-site. With implementation of control measures recommended in **paragraph 2.3.3**, no adverse air quality impact arising from construction activities is anticipated.

2.3.2 The *Air Pollution Control (Construction Dust) Regulation* stipulated a number of air quality control measures. With these good practices, air quality impact arising from construction activities can be controlled, and therefore adverse impact on air quality is not expected.

2.3.3 The following good practices and air quality control measures shall be implemented during the construction phase to avoid adverse air quality impact on the surrounding air sensitive uses:

- Hard paving surface on open area, regular spraying water on exposed site surfaces and unpaved roads to reduce dust emissions, particularly during dry weather.
- Before, during and immediately after any excavation or earth moving operation, the working site shall be sprayed with water to keep the surface wet.
- Spraying water frequently for extra 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 three sides, or sprayed with water so as to maintain the entire surface wet.

- Before loading, unloading or transfer any dusty materials, wet the dusty materials as far as practicable.
 - Before, during and immediately after uprooting of trees, shrubs, or vegetation or for the removal of boulders, poles, pillars or temporary or permanent structures, the working area shall be watered 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 the site clearance) that may generate dust particles shall be covered entirely by impervious sheeting or placed in an area sheltered on the top and three sides within a day of demolition.
 - Tarpaulin covering of all dusty vehicles 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 for vehicle washing and the section of the road between the washing facilities and the exit point shall be paved with concrete, bituminous materials or hardcore.
 - At least 2.4m high hoarding from ground level shall be provided along site boundary where adjoins a road, streets or accessible to other public premises except for a site entrance or exit. For the portion of the site boundary in the vicinity of ASR2 to ASR6, site hoarding higher than 2.4m above ground should be erected as far as practicable to minimise any potential air quality impact on these ASRs.
 - Where possible, wet the surface of façade grinding work.
 - Equip vacuum cleaner on grinder for façade grinding work to collect dusty particles where possible.
 - Main haul road shall be kept wet by spraying water. Imposition of speed controls for vehicles on site haul roads and confine haulage and delivery vehicles to designated roadways inside the site.
 - A 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 the 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.
- 2.3.4 Many construction plants are driven by fuel combustion, use of construction plants could be a source of NO_x, SO₂ or CO. As advised by the Applicant, approx. 15 nos. of construction plants including excavator, generators, air compressor, etc., to be operated on site. All the plants to be used on site will comply with the relevant statutory regulations.
- 2.3.5 The *Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation* provides a guidance on control of emission from the use of NRMM. To minimise the air quality impact from the emission of NRMM, only approved NRMM should be used during the construction phase. Moreover, power supply shall be provided for on-site plants and diesel-powered machinery should be avoided as far as practicable. The engines of the NRMM should be switched off when not in use. Considering the quantity of on-site plants is limited and with

implementation of the mitigation measures, adverse air quality impact due to emission from construction plant is not expected.

- 2.3.6 As discussed in **paragraphs 5.2.16 and 5.2.29**, approx. 43.5 tonnes/day of construction waste (including 42.5 tonnes/day C&D materials and 1 tonne/day C&D waste) will be generated. Assuming the capacity of each dump truck is 15 tonnes, about 3 trips/day would be required to handle the generated waste. All loaded dump trucks shall be covered by impervious sheeting and the vehicle wheels shall be washed thoroughly before leaving the Site. Therefore, adverse air quality impact from dump trucks is not expected.
- 2.3.7 Regarding potential cumulative impact, desktop study and site visit has been conducted to ascertain the presence of any concurrent projects in the vicinity of the Site. Construction works are undergoing at Hopewell Centre II (i.e. ASR6). According to our site visit on 25 April 2024, major construction works for Hopewell Centre II were completed. As advised by the Applicant, the remaining works for Hopewell Centre II mainly include interior works, which is expected to be completed in 2024. In view of the works programme for the Proposed Development, no overlapping is anticipated with construction works of Hopewell Centre II. Hence, no adverse cumulative constructional air quality impact is expected.
- 2.3.8 Besides, according to TPB Portal, there is a planned residential development at 31-36 Sau Wa Fong, which may be the concurrent project in the vicinity of the Site. At the moment, there is no detail or solid timetable about this planned residential development. If the aforementioned project will be constructed concurrently with the Proposed Development, the Applicant will be responsible for the liaison with the responsible personnel of other projects to avoid adverse cumulative air quality impact. Moreover, mitigation measures including good site practice in accordance with the *Air Pollution Control (Construction Dust) Regulation* would be implemented for both the Proposed Development and the aforementioned project to further minimise dust generation. Hence, no adverse cumulative constructional air quality impact is expected.
- 2.3.9 A five-storey building at No. 18 Sau Wa Fong will be demolished as planned. Given the age of the building, ACM may be found inside the building. A RAC will be hired to conduct an asbestos study including AIR, AMR and AAP before and throughout demolition process to conform to the APCO. The AIR and AAP, if any, will be submitted to EPD at appropriate time required, and a registered asbestos contractor will be hired to carry out the asbestos abatement works in this case.
- 2.3.10 In addition, to minimise the fugitive dust emission during the demolition works, two layers of protective screen shall be placed over the scaffolds for the building. The area at which demolition work takes place shall be sprayed with water immediately prior to, during and immediately after the demolition activities so as to maintain the entire surface wet. With the implementation of recommend mitigation measures, no adverse air quality impact from the demotion works is anticipated.
- 2.3.11 In general, EPD publishes the *Practice Note for Professional Persons – Handling of Asbestos Containing Material in Buildings* (“ProPECC PN 2/97”), which stipulates the following precautionary measures that should be taken during the removal of ACMs:
- Adoption of protection, such as a full containment, mini containment, or segregation of work area.

- Provision of decontamination facilities for cleaning of workers, equipment and bagged waste before leaving the work area.
- Adoption of engineering control techniques such as use of negative pressure equipment with High Efficiency Particulate Air (“HEPA”) filters to ensure air flow between work area and the outside environment is free from any fibre release.
- Watering of ACMs before and during disturbance, minimising the breakage and dropping of ACMs, and packing of debris and waste immediately after it is produced.
- Provision of HEPA-filtered vacuum cleaner and wet wiping for cleaning the work area.
- Provision of sealants for coating any surfaces previously in contact with or contaminated by asbestos.
- Proper bagging, safe storage and disposal of asbestos and ACMs.
- Pre-treatment of all effluent from work area before discharge.
- Air monitoring strategy to check for leakage and clearance of the work area after the asbestos work.

2.3.12 By making out an asbestos abatement plan and taking recommended precautionary measures, it’s not expected to be adverse impact related to the removal of ACMs. Further details on disposal of asbestos waste is discussed in **Section 5** of this EA Report.

2.4 Air Quality Impact during Operation Phase

Chimney Emission

2.4.1 A site visit was previously conducted on 25 April 2024 to identify air pollution sources in the vicinity of the Site. No chimney was found within 200m from the Site during the site visit. The buffer distance between industrial chimneys and air sensitive uses recommended in Table 3.1 of Chapter 9 in HKPSG is fulfilled in this case. Therefore, no adverse air quality impact from chimney emission is expected.

Vehicular Emission from Open Road

2.4.2 Queen’s Road East, Kennedy Road and St. Francis Street are three major roads in vicinity of the Site as shown in **Figure 2-3**. With reference to the *Annual Traffic Census 2022* published by the Transport Department (“TD”), both Queen’s Road East and Kennedy Road are classified as District Distributors (“DD”). Table 3.1, Chapter 9 of HKPSG recommends a minimum buffer distance of 10m between DD and air sensitive uses, which has been adopted for Queen’s Road East and Kennedy Road.

2.4.3 St. Francis Street is not listed in the *Annual Traffic Census 2022*. It is a cul-de-sac leading from St. Francis’ Canossian School to Queen’s East Road, which may be classified as Local Distributor (“LD”) or District Distributor (“DD”). As a conservative approach, a buffer distance of 10m for DD is adopted for St. Francis Street.

2.4.4 For Schooner Street and Sau Wa Fong, they should be pedestrian walkways with staircase as observed on 25 April 2024. Therefore, no buffer distance is required for these two streets.

2.4.5 All the site area can fulfil the adopted buffer distances between the respective roads and air sensitive uses within the proposed development, as shown in **Figure 2-3**. Therefore, adverse air quality impact from vehicular emission on the Site is not expected.

Oily Fume and Cooking Odour

- 2.4.6 As observed during the site visit, the Site is surrounded by schools and residential buildings, and no restaurant was found in the vicinity. Moreover, no fume exhaust or cooking odour was identified during the site visit. Therefore, no adverse air impact due to oily fumes and cooking odour from nearby uses is expected.
- 2.4.7 Oily fumes and cooking odour emitted from the proposed commercial premises such as restaurants (usually kitchens of restaurants) could be another potential source of air pollution. In order to minimise the potential oily fume and odour emissions from kitchens, positioning of exhaust outlets from kitchens at detailed design stage should refer to the recommendations given by the *Control of Oily Fume and Cooking Odour from Restaurants and Food Business* published by the EPD, as follows:
- Locate the outlets at such a place where the ventilation is good and the emissions from them can be adequately dispersed without hindrance.
 - Provide sufficient separate distance from any sensitive receptor in the vicinity so that the emissions will not cause, or contribute to, an odour nuisance or other type of air pollution to the public.
 - Set the exhaust outlet high as possible for upward discharge. Advice should be sought from the environmental professionals to confirm if alternative location is also suitable.
 - Ensure the emission from the exhaust system will not be restricted or deflected by, for example, the use of plates or caps.
- 2.4.8 To minimise the impact of oily fumes and cooking odour, water spray hoods (hydrovents)/air washers or electrostatic precipitator should be installed to control oily fumes and cooking odour. Operation and maintenance of the exhaust system and air pollution control equipment should be carried out in accordance with the manufacturer's specification and specified procedures by competent staff with sufficient training. Qualified professionals should be employed to perform regular monitoring, inspection, cleaning and maintenance of components to ensure proper performance. In case of future complaint against oily fumes and cooking odour from the proposed development, the Applicant would carry out investigation and take remedial actions to rectify any odour nuisance on the ASRs nearby.

2.5 Conclusion

- 2.5.1 With the implementation of the recommended mitigation measures and good site practices, adverse impacts associated with air quality during the construction phase is not anticipated.
- 2.5.2 No adverse air quality impact on the Site from chimney and vehicular emissions is anticipated with the sufficient buffer distance provided between air pollution sources and the Site boundary. At the same time, no adverse air quality impact on surrounding air sensitive receptors during operation of the Proposed Development is anticipated with the implementation of the recommended measures on oily fumes and cooking odour emissions.
- 2.5.3 Overall, no adverse air quality impacts are anticipated during the construction and operation phases of the Proposed Development.

Figure 2-1 500m Study Area of Air Quality Assessment



Figure 2-2 Identified ASR within 500m from the Site Boundary

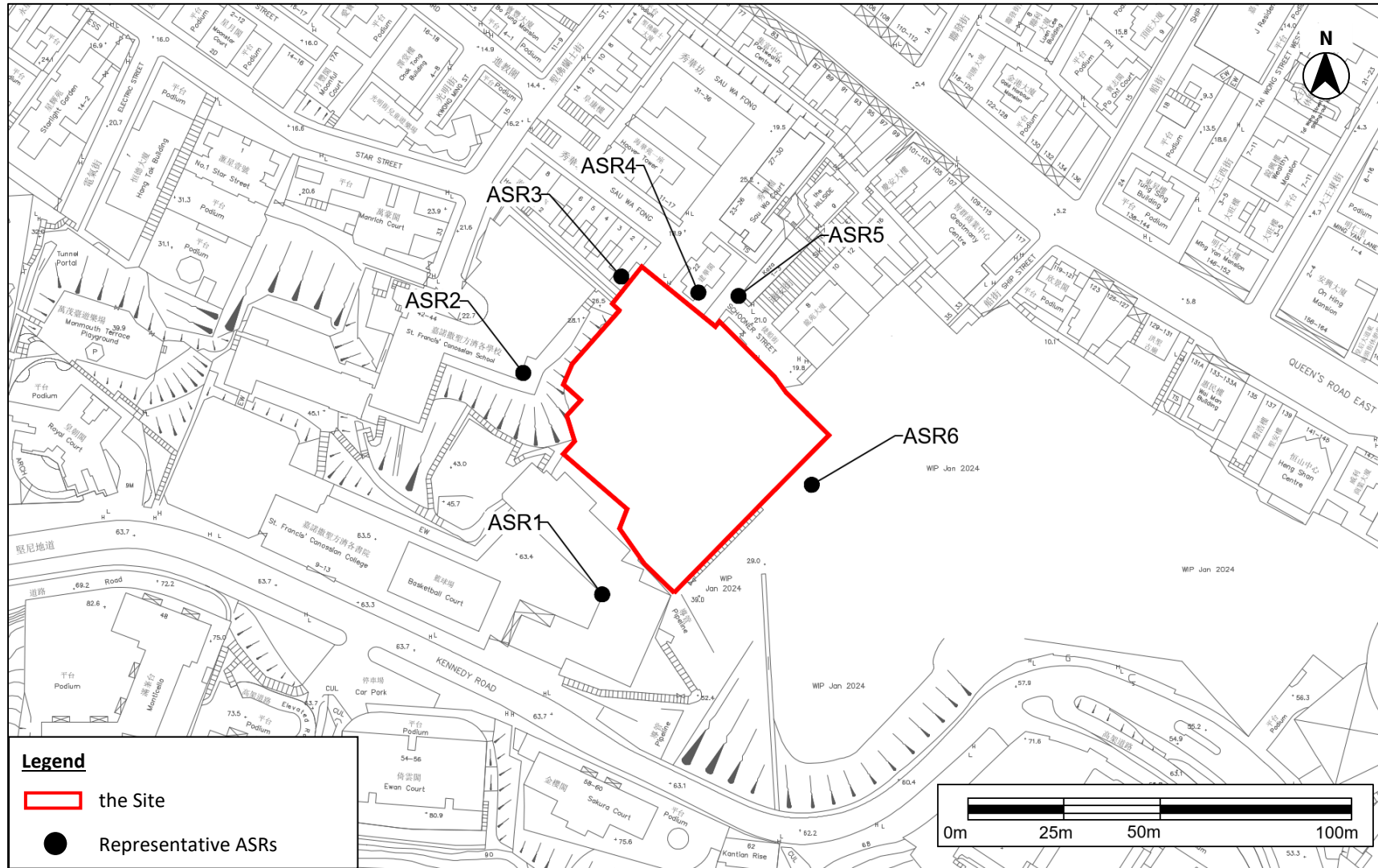
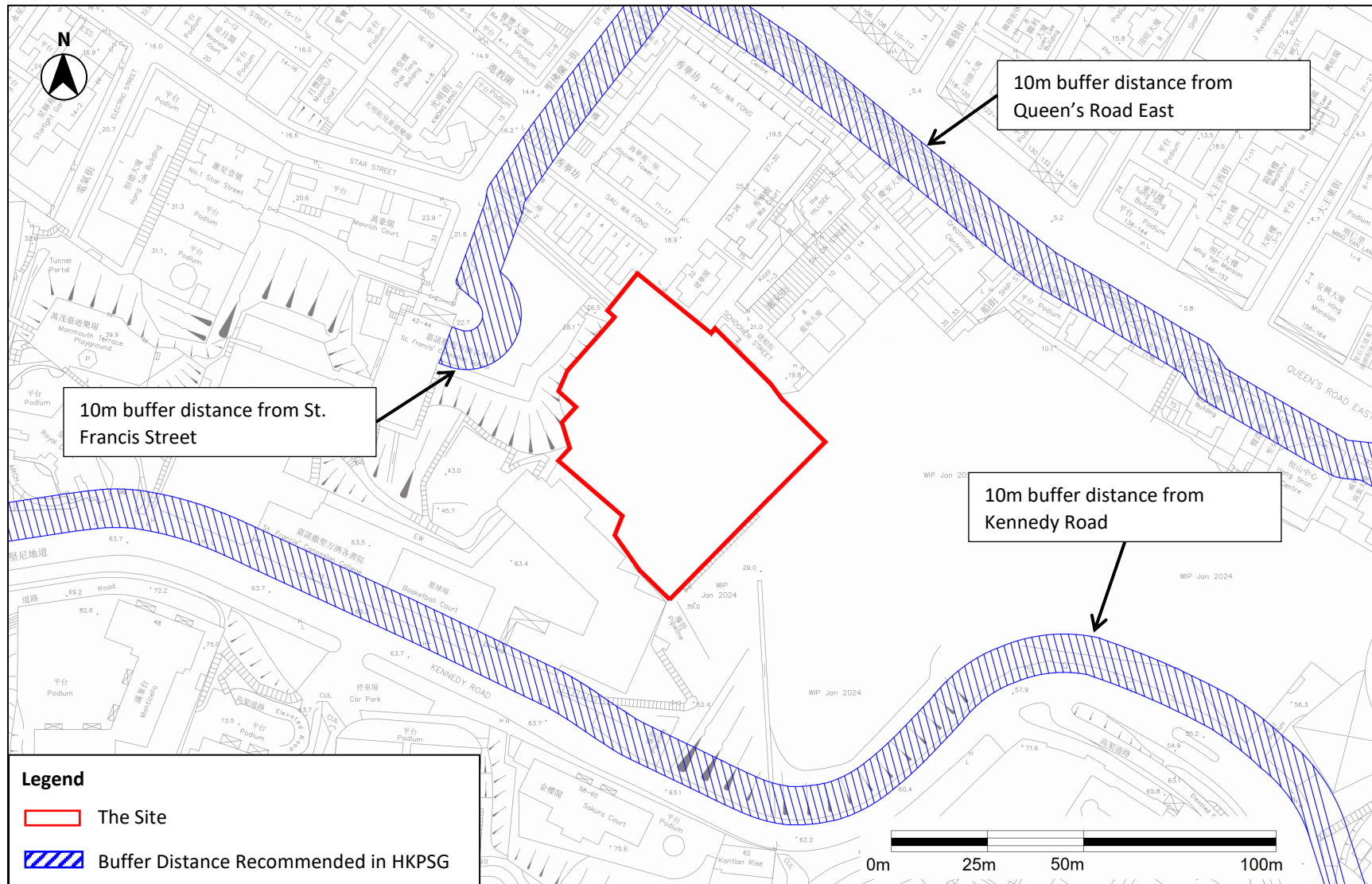


Figure 2-3 Buffer Distance Requirement from the Surrounding Roads



3 NOISE

3.1 Environmental Legislation and Standards

Practice Note for Professional Persons Minimising Noise from Construction Activities (“ProPECC PN 1/24”)

- 3.1.1 The noise arising from construction activities (other than percussive piling) during non-restricted hours (7am to 7pm from Monday to Saturday, not including Sunday and general holidays) should be minimized and not exceed the noise criteria as shown in **Table 3-1**. Besides the noise criteria, ProPECC PN 1/24 also recommends control measures for construction noise impact during non-restricted hours.

Table 3-1 Construction Noise Criteria for Non-Restricted Hours

NOISE SENSITIVE USE	$L_{eq(30min)}$ NOISE CRITERIA BETWEEN 0700 AND 1900 ON ANY DAY NOT BEING A SUNDAY OR GENERAL HOLIDAY
All domestic premises Temporary housing accommodation Hostels Convalescences homes Homes for the aged	75 dB(A)
Places of public worship Courts of law Hospitals and medical clinics	70 dB(A)
Educational institutions (including kindergartens and nurseries)	70 dB(A) (65 dB(A) during examinations)

Practice Note for Professional Persons Planning of Residential Developments Against Road Traffic Noise (“ProPECC PN 4/23”)

- 3.1.2 The project proponent shall conduct a Road Traffic Noise Impact Assessment to ensure road traffic noise standards are met. According to the HKPSG, the road traffic noise standard for domestic premises is 70 dB(A) $L_{10(1hr)}$. ProPECC PN 4/23 also recommends mitigation measures to be incorporated, if necessary, to meet the HKPSG’s standards.

Practice Note for Professional Persons Application of Innovative Noise Mitigation Design in Planning Private Residential Developments against Road Traffic Noise Impact (“ProPECC PN 5/23”)

- 3.1.3 ProPECC PN 5/23 provides some Innovative Mitigation Designs, such as Acoustic Window and Enhanced Acoustic Balcony, to help reduce traffic noise impact on private residential developments, as well as guidelines on calculation of noise reduction performance of these Innovative Mitigation Designs.

Noise Control Ordinance (Cap. 400)

- 3.1.4 The *Noise Control Ordinance* (“NCO”) is the main piece of legislation controlling environmental noise impact. Subsidiary regulations and Technical Memoranda (“TMs”) enacted under NCO, provide detailed control criteria, measurement procedures and other technical matters. The TMs of NCO include:

- TM on Noise from Percussive Piling (“PP-TM”)
- TM on Noise from Construction Work other than Percussive Piling (“GW-TM”)
- TM on Noise from Construction Work in Designated Area (“DA-TM”)
- TM for the Assessment of Noise from Places Other Than Domestic Premises, Public Places or Construction Sites (“IND-TM”)

3.1.5 According to Plan No. EPD/AN/HKI-01 for Hong Kong Island and Lamma Island on EPD Website, the Site entirely sit into a Designated Area (“DA”) and so the DA-TM is applicable to noise assessment within the Site.

3.1.6 Besides, construction activities are limited by the following requirement stipulated in the NCO:

- 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 Noise Emission Label (“NEL”) issued under the *Noise Control (Hand-held Percussive Breakers) Regulation* and *Noise Control (Air Compressors) Regulation*.
- Construction Noise Permit (“CNP”) shall be applied by the Contractor from EPD for any percussive piling at any time or any other construction activities conducted within restricted hours (for all days 7pm to 7am the next day and at all times on General Holidays including Sundays) as defined in NCO.

3.1.7 For fixed plant noise during operation phase, the requirements of IND-TM shall be complied with. Table 2 of IND-TM (recreated in **Table 3-2**) stipulates the day, evening and night time Acceptable Noise Levels (“ANLs”) for Noise Sensitive Receivers (“NSRs”) which considered the Influencing Factors (“IFs”) to determine the corresponding Area Sensitive Rating (“ASR”) in accordance with the IND-TM.

Table 3-2 Acceptable Noise Levels 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)			
Night (2300 to 0700 hours)	50	55	60

Hong Kong Planning Standards & Guidelines (“HKPSG”)

3.1.8 The noise criteria for planned fixed source shall follow the requirements of Table 4.1 of Chapter 9 of HKPSG:

- a. 5 dB(A) below the appropriate ANLs shown in Table 2 of IND-TM, and
- b. The prevailing background noise levels

3.1.9 Road traffic noise standards for the following uses relying on opened windows for ventilation are recommended in Table 4.1 of Chapter 9 in HKPSG, recreated in **Table 3-3**.

Table 3-3 Summary of Road Traffic Noise Standards

USES	NOISE CRITERIA L:10(1-HR) (dB(A))
All domestic premises including temporary housing accommodation	70
Hotels and hostels	70
Offices	70
Educational institutions including kindergartens, child care centres and all others where unaided voice communication is required	65
Places of public worship and courts of law	65
Diagnostic rooms and wards of hospitals, clinics, convalescences and residential care homes for the elderly	55

3.2 Noise Impact of Construction Phase

3.2.1 Various construction activities such as excavation, piling, etc. will be the key noise sources generated during the construction phase. In particular, the use of Powered Mechanical Equipment (“PME”) and the vehicle movement within the Site are the major noise sources.

3.2.2 Construction should be carried out during non-restricted hours as far as practicable. The mitigation measures recommended in ProPECC PN 1/24 should be implemented where applicable. In addition, the following measures and on-site practices are recommended in order to minimise the potential construction noise impacts as far as practicable:

- The Contractor shall devise, arrange methods of working and carry out the Works in such a manner so as to minimise noise impacts on the surrounding environment, and shall provide experienced personnel with suitable training to ensure that these methods are implemented
- Quality Powered Mechanical Equipment (QPME) and quieter construction methods should be adopted as far as practicable
- Use of Non-percussive pile driving methods such as hydraulic press-in method, vibration or jacking method for installing or extracting sheet piles as far as practicable
- Use of Non-percussive equipment such as hydraulic crusher, sawing, coring machines etc. for demolition and concrete breaking work
- Close all hoods, cover panels and inspection hatches of powered mechanical plant such as generators, air compressors etc. during operation
- Provide noise dampening materials inside and outside refuse chutes during building construction
- Fit mufflers or silencers, and dampening layer with steel collars to hand-held pneumatic breakers
- Use of non-explosive chemical expansion agents instead of explosive chemicals or expansive compounds
- Use of prefabricated structure / sections to replace in-situ construction to reduce the amount of mechanical equipment used on site

- Use of self-compacting concrete (without the aid of a vibrator e.g. poker for compaction) for in-situ concreting
 - Noisy equipment and noisy activities should be located as far away from the NSRs as far as practicable
 - Provide an acoustic screen or enclosure shield the public or NSR from the noisy activities
- 3.2.3 If PME is required for any construction work during restricted hours, a CNP shall be applied for as specified in the NCO. The GW-TM can be referred to for the noise criteria and assessment procedures for obtaining a CNP.
- 3.2.4 In addition, the EPD's Recommended Pollution Control Clauses ("RPCC") for Construction Contracts should be incorporated in the relevant works contract. The RPCC are generally good engineering practices to minimize inconvenience and environmental nuisance to nearby residents and other sensitive receivers. The general requirements as summarised as follows:
- The Contractor shall observe and comply with the NCO and its subsidiary regulation.
 - The Contractor shall ensure that all plant and equipment to be used on the Site are properly maintained in good operating condition and noisy construction activities shall be effectively sound-reduced by means of silencers, mufflers, acoustic linings and shields, acoustic sheds or screen or other means, to avoid disturbance to nearby noise sensitive receivers.
 - For carrying out any construction work other than percussive piling during the time period from 0700 to 1900 hours on any day not being a general holiday (including Sundays), the Contractor shall comply with the following requirements.
 - The noise level measured at 1m from most affected external façade of the nearby noise sensitive receivers from the construction works alone during any 30-minute period shall not exceed an equivalent sound level ("Leq") of 75dB(A).
 - The noise level measured at 1m from most affected external façade of the nearby schools from the construction works alone during any 30-minute period shall not exceed Leq of 70dB(A) [65dB(A) during school examination period]. The Contractor shall liaise with the schools and/or the Examination Authority to ascertain the exact dates and times of all examination periods during the course of the contract.
 - Should the limits stated in the above be exceeded, the construction shall stop and shall not recommence until appropriate measures acceptable to the Engineer that are necessary for compliance have been implemented.
 - The Contractor shall adopt, where necessary and practicable, the use of quieter construction equipment and/or methods when carrying out the construction works, including demolition works, foundation works, site formation works, road opening works during restricted hours.
 - Before commencement of any work, the Engineer may require the methods of working, plant equipment and sound-reducing measures to be used on the Site to be made available for trial demonstration inspection and approval to ensure that they are suitable for the project.
 - The Contractor shall devise, arrange methods of working and carry out the Works in such a manner so as to minimise noise impacts on the surrounding environment, and

shall provide experienced personnel with suitable training to ensure that these methods are implemented.

- Notwithstanding the requirements and limitations set out in the bullet above and subject to compliance with the second and fifth bullet above, the Engineer may upon application in writing by the Contractor, allow the use of equipment and the carrying out of any construction activities for any duration provided that the Engineer is satisfied with the application which, in Engineer's opinion, is considered to be of absolute necessity and adequate noise insulation has been provided to the schools to be affected, or of emergency nature, and not in contravention with the NCO in any respect.
- The Contractor shall, when necessary, apply for a construction noise permit in accordance with the Noise Control (General) Regulations prior to the commencement of the relevant part(s) of the works, display the permit as required and provide a copy to the Engineer.
- Measures that are to be taken to protect adjacent schools and adjacent noise sensitive receivers, if necessary, shall include, but not be limited to, adequate noise barriers. The barriers shall be of substantial construction and designed to reduce transmission of noise. The location and details of the barriers shall be submitted to the Engineer for approval before works commence adjacent to schools and other NSRs.

3.2.5 With the implementation of the aforementioned mitigation measures, adverse construction noise impact is not anticipated.

3.3 Noise Impact of Operation Phase

3.3.1 In view of residential-cum-commercial use of the Indicative Development Scheme, the Indicative Development Scheme will not only be the noise sensitive use, but also the planned noise source at the same time. Both potential fixed noise impact from the off-site fixed noise sources to the Development, and the noise impact arising from the on-site noise sources have been assessed.

Existing Fixed Noise Sources

3.3.2 Site visit was carried out on 25 April 2024 to identify any potential fixed plant noise in the vicinity of the Site. The premises within 300m study area include residential buildings, commercial buildings, schools and shopping malls. During the site visit, the background noise was dominated by road traffic noise. No significant fixed noise from was noticed at the vicinity of the Site.

3.3.3 To the southwest and north of the Site, some split-type air conditioners were observed around Dragon Villa, Greenland House and St. Francis' Canossian College. As the Sound Power Levels ("SWL") of outdoor unit split-type air conditioners are generally minimal, no significant noise impact on the Indicative Development Scheme from these split-type air conditioners is anticipated. Therefore, no adverse noise impact from these split-type air conditioners is anticipated.

3.3.4 Several fixed plants were identified on the roof of Hopewell Centre. However, due to the elevation difference between the building and the Indicative Development Scheme, there will be no line-of-sight between the fixed plants and the Indicative Development Scheme. Therefore, adverse noise impact from these fixed plants is not anticipated.

3.3.5 Besides, according to the aerial photos provided in Google Map, some fixed plants (air-cooled chillers and cooling towers), which might have direct line-of-sight to the Indicative Development Scheme, were observed on the roof of the buildings in the vicinity of the Site, including Greatmany Centre, St. Francis' Canossian School and Dominion Centre, as shown on **Figure 3-1**.

3.3.6 As the roof of these private premises are inaccessible, the exact models and Sound Power Levels (“SWL”) of these fixed noise sources cannot be identified. Instead, the brand of each fixed noise source has been identified as far as practicable and the SWL of a source of the same brand with similar capacity has been adopted. Photographs and catalogues of identified fixed noise sources are provided in **Appendix A**. The SWLs adopted in the assessment are summarised in **Table 3-4** below. These fixed noise sources are the ventilation equipment for office buildings and school, which only operate during day and evening time.

Table 3-4 Inventory of Identified Fixed Noise Sources

Source ID	Building Name	Noise Sources	SWL, dB(A)
FN1	Greatmany Centre	Air-cooled chiller	100
FN2	St. Francis' Canossian School	Air-cooled chiller	85
FN3	Dominion Centre	Cooling Tower	98

Noise Sensitive Receivers (“NSRs”) for Fixed Noise Impact Assessment

3.3.7 As a conservative approach, five NSRs along the site boundary are selected for the fixed noise impact assessment, as shown on **Figure 3-1**. As all the NSRs will not be affected by IFs, they should be classified as ASR “B”. Thus, the day and evening time ANL of 65dB(A) shall be adopted.

Assessment Methodology

3.3.8 The noise levels at the NSRs are calculated based on standard acoustical principle and practice. All identified noise sources were assumed as point source for the purpose to determine attenuation due to distance correction:

$$SPL = SWL - DC + FC$$

where

- SPL = Sound Pressure Level at NSRs, dB(A)
- SWL = Sound Power Level of the fixed noise source, dB(A)
- DC = Distance Correction, by $(20 \times \log_{10}(D) + 8)$ dB(A)
- D = Horizontal Distance between the NSR and the noise sources, m
- FC = Façade Correction, 3 dB(A)

Assessment Results

3.3.9 The results show that the noise levels at all NSRs comply with the ANL for daytime/evening time. As there is no night-time operation of the fixed noise sources, night-time assessment is considered unnecessary. Therefore, no adverse fixed noise impact on the Indicative Development Scheme is anticipated. The detailed calculation is provided in **Appendix B** and summarised in **Table 3-5** below.

Table 3-5 Summary of Fixed Noise Impact Assessment Results

NSR ID	SPL, dB(A)	Day and evening time ANL, dB(A)	Compliance? (Y/N)
NSR1	60	65	Y
NSR2	59		Y
NSR3	59		Y
NSR4	58		Y
NSR5	57		Y

Planned On-Site Fixed Noise Sources

3.3.10 Most of the M&E equipment installed in the Indicative Development Scheme including water pumps, Fire Services (“FS”) pumps, emergency generators and lift machines will be installed in plant rooms and will be enclosed with louvres installed at the openings. For the commercial places at the Indicative Development Scheme, outdoor split-type air conditioners will likely be the only outdoor fixed plants. As mentioned in **paragraph 3.3.3**, the SWL of outdoor split-type air conditioners is generally minimal. Therefore, no adverse noise impact arising from enclosed M&E equipment and the outdoor split-type air conditioners is anticipated.

3.3.11 Quiet air conditioning system will be selected as far as practicable. Outdoor air conditioning units will be located away from the nearest NSRs to minimise noise impact on the NSRs closest to the Indicative Development Scheme. Noise control measures recommended in the *Good Practice on Ventilation System Noise Control* should, where applicable, be implemented at ventilation facilities in order to minimise noise generation. Some good practices include:

- If practicable, equipment should be installed in a plant room with thick walls, behind a large enough obstruction or as far as practicable from the receivers.
- Equipment maintenance should be scheduled regularly to ensure that equipment is properly operated in order to maintain a controlled level of noise and vibration and prevent noise emissions from equipment from increasing over time.
- Erect a barrier or partial enclosure between the plant and nearby residential buildings to block direct line of sight between noise source and NSRs.
- Complete enclosure with silencers at condenser fan outlets and at air inlets of the enclosure should be provided so as to contain and absorb the noise from the chiller when there are noise sensitive receivers nearby.
- If the floor underneath is an NSR, floating floor can be installed to reduce noise transmission through the floor slab.
- Fan speed should be slowed down during non-rush hours, duct openings should be directed away from NSRs.
- Air discharge point of fans should be equipped with silencers so as to absorb noise generated from the fan.
- If practicable, fabricate a complete enclosure to contain and absorb noise energy radiated by the source.

3.3.12 With the provision of the above measures, no adverse noise impact from the operation of the Indicative Development Scheme is anticipated.

3.4 Road Traffic Noise Impact During Operation

3.4.1 Kennedy Road is the closest major road to the Site. Road traffic activities could cause potential adverse noise impact on the NSR of the Indicative Development Scheme.

Noise Prediction Methodology

3.4.2 Road traffic noise levels during peak hour have been predicted using computer noise modelling software “NoiseMap Enterprise”, which follows the prediction procedures of the *Calculation of Road Traffic Noise* (“CRTN”) published by the UK Department of Transport, as recommended in Chapter 9 of HKPSG.

Traffic Forecast

3.4.3 Operation of the Indicative Development Scheme will tentatively commence in 2028. The maximum traffic forecast within 15 years upon commencement of the Indicative Development Scheme in 2043 provided by the Project Traffic Consultant is adopted. Traffic forecast data adopted in the TNIA was based on the projected peak hourly traffic flow in 2043. All road sections within 300m of the Site have been considered. The traffic forecast data is shown in **Appendix C**.

Noise Sensitive Receivers for Traffic Noise Impact Assessment

3.4.4 Noise sensitive uses such as dining rooms, living rooms and bedrooms etc. will be the NSRs of the TNIA.

3.4.5 These NSRs will be provided with prescribed windows for natural ventilation in accordance with the *Building (Planning) Regulations, Cap 123* (“B(P)R”). The noise standards stipulated in the HKPSG are applicable to noise sensitive uses which rely on open windows for ventilation. Thus, the noise assessment points (“NAPs”) for noise sensitive uses are assigned to these prescribed windows.

3.4.6 The NAPs were all located 1m from the façade of opened windows and 1.2m above the floor of the NAPs as shown on **Figure 3-2**.

Assessment Result

3.4.7 The traffic noise levels at the NAPs of the Indicative Development Scheme will comply with the criterion of 70dB(A) recommended in Chapter 9 of HKPSG. The predicted road traffic noise levels are detailed in **Appendix D** and summarised in **Table 3-6**.

Table 3-6 Summary of Road Traffic Noise Impact Assessment Results

NSRs	NOISE LEVEL (L _{10(1-HR)} , (dB(A))	NOISE CRITERIA (L _{10(1-HR)}) (dB(A))	NO. OF UNITS WITH NOISE EXCEEDANCE	COMPLIANCE (%)
NAP_01a	54	70	0	100
NAP_01b	54		0	100
NAP_02a	53		0	100

NSRs	NOISE LEVEL (L _{10(1-HR)} , (dB(A))	NOISE CRITERIA (L _{10(1-HR)}) (dB(A))	NO. OF UNITS WITH NOISE EXCEEDANCE	COMPLIANCE (%)
NAP_02b	60		0	100
NAP_03	61		0	100
NAP_04	61		0	100
NAP_05	62		0	100
NAP_06a	62		0	100
NAP_06b	64		0	100
NAP_07a	63		0	100
NAP_07b	59		0	100
NAP_08	59		0	100
NAP_09	54		0	100
NAP_10	59		0	100
NAP_11	55		0	100
NAP_12a	60		0	100
NAP_12b	59		0	100
NAP_13a	57		0	100
NAP_13b	54		0	100

3.5 Conclusion

- 3.5.1 No adverse noise impact due to construction of the Indicative Development Scheme is anticipated given that the noise mitigation measures recommended in **paragraph 3.2.4** are implemented.
- 3.5.2 For operation phase, desktop review and site visit were carried out to identify any potential fixed noise source in the vicinity of the Site. Some fixed noise sources were identified in the vicinity of the Site. The fixed noise impact from these sources has been assessed. The results show that noise levels of all NSRs comply with the ANL. Thus, no adverse fixed noise impact is anticipated.
- 3.5.3 Since most of the M&E equipment of the Indicative Development Scheme will be enclosed in plant rooms with louvres installed at the openings, no adverse noise impact is anticipated from these enclosed M&E equipment. Outdoor split-type air conditioner units will be used for shops and restaurants, but their noise level is considered minimal and will not cause adverse noise impacts. Quiet air conditioning system will be selected as far as practicable and will be located away from the nearest NSRs to minimise noise impact. With the implementation of the noise mitigation measures recommended in **paragraphs 3.3.10 to 3.3.12**, no adverse noise impact from M&E equipment within the Indicative Development Scheme is anticipated.
- 3.5.4 Road traffic noise impacts have been predicted and shall comply with the criteria recommended in Chapter 9 of HKPSG.
- 3.5.5 Therefore, there will be no adverse noise impact during the construction and operation phases of the Indicative Development Scheme.

Figure 3-1 Location of Noise Assessment Points for Fixed Noise Impact

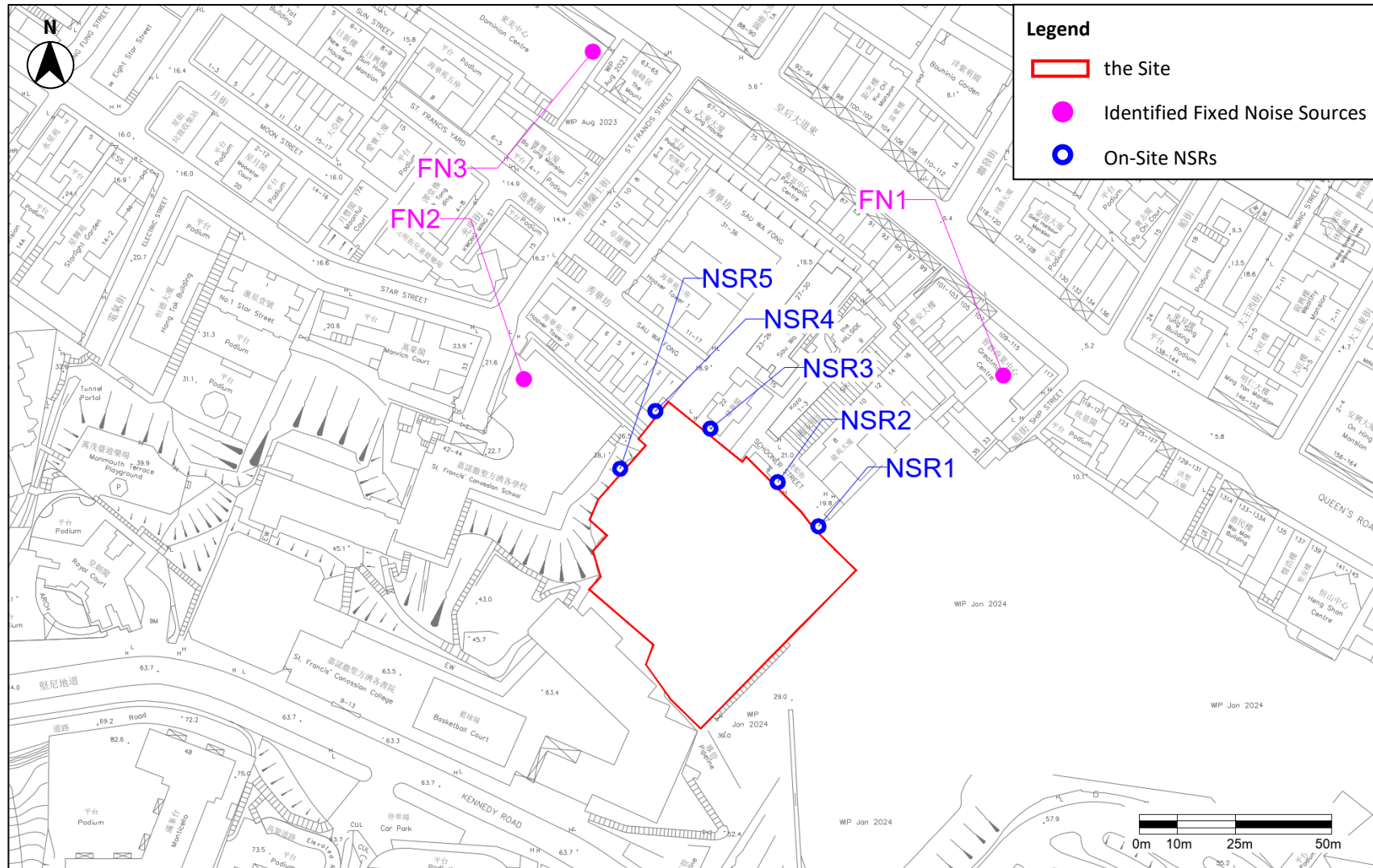
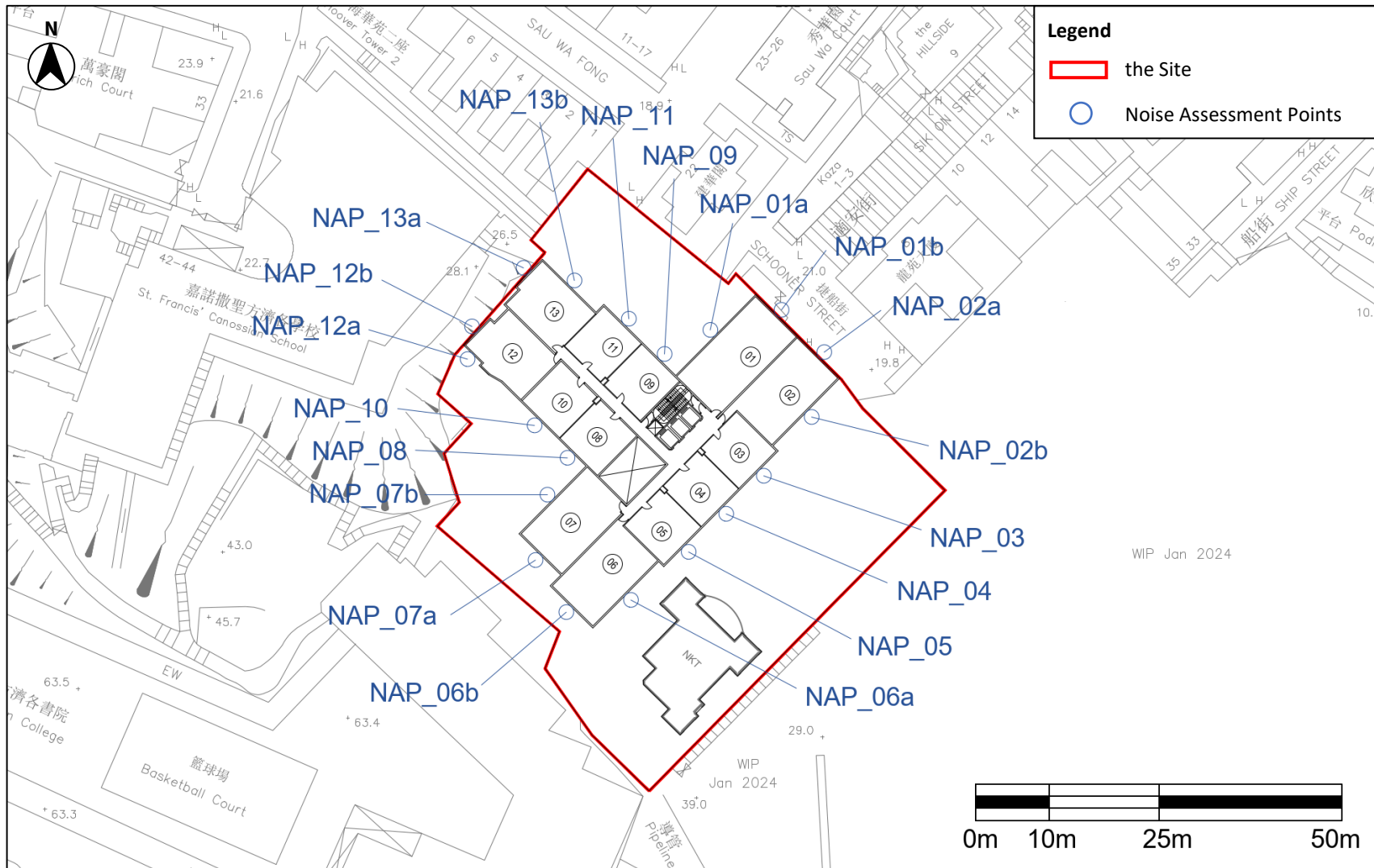


Figure 3-2 Location of Noise Assessment Points for Road Traffic Noise Impact



4 WATER QUALITY

4.1 Environmental Legislation and Standards

Water Quality Control Ordinance (Cap. 358)

- 4.1.1 The *Technical Memorandum – Standards for Effluent Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters* (“WPCO-TM”) is issued under Section 21 of the *Water Pollution Control Ordinance* (“WPCO”). All discharges into government sewerage systems, marine and inland waters are required to comply with the standards stipulated in the WPCO-TM.

Construction Site Drainage, ProPECC PN2/23

- 4.1.2 With reference to *Professional Persons Environmental Consultative Committee (“ProPECC”) Practice Note Construction Site Drainage* (“ProPECC PN2/23”), 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, overflow, sewage collection and treatment, and comprehensive waste management (collection, handling, transportation, and disposal) procedures.

Drainage Plan subject to Comment by the Environmental Protection Department, ProPECC PN1/23

- 4.1.3 With reference to *ProPECC Practice Note Drainage Plan subject to Comment by the Environmental Protection Department – Building (Standards of Sanitary Fittings, Plumbing, Drainage Works and Latrines) Regulations* (“ProPECC PN1/23”), various guidelines for the pollution control for discharge to storm drains and foul sewers, such as the use of grease trap for wastewater from the restaurant kitchen, the use of silt removal facilities for open surface channel led to stormwater drains, etc., are included. The guidelines also include the requirements for submission of drainage plans.

Protection of Natural Streams/Rivers from Adverse Impacts Arising from Construction Works, ETWB TCW No. 5/2005

- 4.1.4 Various procedures, guidelines and precautionary mitigation measures were circulated in *Protection of Natural Streams/Rivers from Adverse Impacts Arising from Construction Works* (“ETWB TCW No. 5/2005”) to reinforce existing measures for protection of natural streams/rivers from construction works.

4.2 Potential Impacts

Water Control Zone (“WCZ”) and Water Sensitive Receiver (“WSR”)

- 4.2.1 The Site is situated in Victoria Harbour (Phase 3) WCZ. With reference to Annex 14 of the *Technical Memorandum on Environmental Impact Assessment Process* (“EIAO-TM”), several inland water courses within the 500m study area were identified as potential WSRs through desktop study, using topographic map of GeoInfo Map and site visit. The identified WSRs are shown in **Figure 4-1**. Potential water quality impacts during construction and operation phase are discussed below.

Construction Phase

- 4.2.2 Muddy runoff from the Site may be generated during the construction phase, including filling activities, especially during the rainy season.
- 4.2.3 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 are all potential sources of water quality impacts. Without proper mitigation measures in force, these sources could lead to increased amounts of suspended solids, grease and oil, pH, Biochemical Oxygen Demand (“BOD”), etc. in the drainage system.
- 4.2.4 Sewage generated by construction workers may also cause water quality impacts.
- 4.2.5 Most of the WSRs identified within the 500m study area are located at an elevation higher than that of the Indicative Development Scheme. Therefore, with implementation of the recommended mitigation measures and good practices listed in **Section 4.3**, adverse water quality impacts from the Indicative Development Scheme on the WSRs are not anticipated.

Operation Phase

- 4.2.6 Majority of the sewage/wastewater generated during operation phase would be sewage and grey water from toilets, showers, sinks and kitchens from the residential and commercial use of the Indicative Development Scheme. Sewage and wastewater generated from the Indicative Development Scheme will be discharged into the public sewer. A separate Sewerage Impact Assessment (“SIA”) prepared by the Project Sewerage Consultant concludes that there will be no adverse sewerage impact on the municipal sewerage system arising from the Indicative Development Scheme. Hence, no adverse water quality impact resulting from the operation of the Indicative Development Scheme is anticipated.
- 4.2.7 Runoff during rainstorms could wash sources of non-point/diffuse source pollution, including dust, tyre, scraps oil etc. into nearby watercourses. In order to minimise this pollution loading, silt/sand traps should be provided for the drainage systems and should be regularly cleaned and maintained.
- 4.2.8 As mentioned in **paragraph 4.2.5**, most of the identified WSRs are located at a higher elevation than the Indicative Development Scheme. With implementation of the recommended mitigation measures and good site practices as listed in **Section 4.3**, adverse water quality impacts on the WSRs from the operation of the Indicative Development Scheme are not anticipated.
- 4.2.9 With the provision of the aforementioned mitigation measures, no adverse water quality impacts during operation phase are anticipated.

4.3 Mitigation Measures

Construction Phase

- 4.3.1 During construction phase, adequate capacity and number of portable toilets with adequate frequency for offsite disposal to be supplied, maintained and emptied by a licensed collector should be provided for construction workers.

4.3.2 The construction contractor shall follow good site practices and ensure proper implementation of the mitigation measures as specified in ProPECC PN 2/23 for construction site drainage. The key requirements are as follows:

- Surface run-off from construction sites should be directed into storm drains via suitable sand/silt removal facilities such as sand traps, silt traps and sediment basins. Temporary construction drainage or earth bunds or sand bag barriers should be provided on site to guide storm water to these silt removal facilities. Where needed, perimeter channels at site boundaries should be provided to stop storm run-off from outside the Site from washing across the Site. Catchpits and perimeter channels should be constructed before commencement of site formation works and earthworks. Silt removal facilities, channels and manholes should be adequately maintained and cleared of deposited silt and grit regularly, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times.
- Construction works should be scheduled so as to minimise soil excavation works during rainy seasons (generally from April to September). If soil excavation works could not be avoided in these months or at any time of year when rainstorms are likely, temporarily exposed slope surfaces should be covered by waterproof material (e.g. by tarpaulin), and temporary access roads should be protected by crushed stone or gravel, as excavation proceeds, to prevent soil erosion. Intercepting channels should be provided along the edge of the excavation area 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 onset of a rainstorm.
- Upon completion of earthworks, the resulting final surfaces should be well compacted, and the subsequent permanent works or surface protection works should be carried out immediately after the final surfaces are formed to minimise erosion caused by rainstorms. Appropriate drainage like intercepting channels should be provided when necessary.
- Measures should be taken to prevent rainwater from getting into trenches. If excavation of trenches in wet seasons is necessary, they should be dug and backfilled in short sections. If pumping of rainwater out from trenches is required, the effluent should be discharged into storm drains via silt removal facilities.
- Open stockpiles of construction materials (e.g. aggregates, sand and fill material) on sites should be covered 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.
- Manholes (including newly constructed ones) should 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.
- All vehicles and plants should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. A wheel washing bay should be provided at every site exit if practicable to wash off any mud or dirt and wash-water should have sand and silt settled out or removed before being discharged into storm water drains. The section of construction road between the wheel washing

bay and the public road should be paved to reduce vehicle tracking of soil and to prevent site run-off from entering public road drains.

- Discharge of surface run-off into foul sewers shall be avoided to prevent overloading of the foul sewerage system.
- Any chemical waste such as waste oil should be collected and stored at properly designed chemical waste storage area with reference to the requirements stipulated in the *Waste Disposal Ordinance*.
- Water used in ground boring and drilling during site investigation or rock/soil anchoring should be treated by passing it through a sedimentation tank and re-used on site as far as practicable. Wastewater shall be discharged in storm drains via silt removal facility as a last resort.
- Construction plants should be sited as far as practicable from watercourses to avoid adverse impact on the surface water.
- Temporary storage area for equipment, chemicals, fuel and other materials should be located away from watercourses as far as practicable.
- Proper shoring shall be implemented in order to avoid soil or mud to flow into nearby watercourses.
- Any service shop and maintenance facilities should be located on hard standings within a bounded area with sumps and oil interceptors. Any vehicle maintenance work or equipment with the potential for leakage and spillage should only be done within areas equipped to control any discharges from leakage and spillage.

4.3.3 All site discharges should be treated as necessary in accordance with the terms and conditions of the Discharge License.

4.3.4 With the implementation of the good site practices, no adverse water quality impact during construction phase is anticipated.

Operation Phase

4.3.5 Site drainage and disposal of site effluents generated from the Indicative Development Scheme should follow the ProPECC PN1/23 which provides some guidelines and practices for handling, treatment and disposal of various effluents.

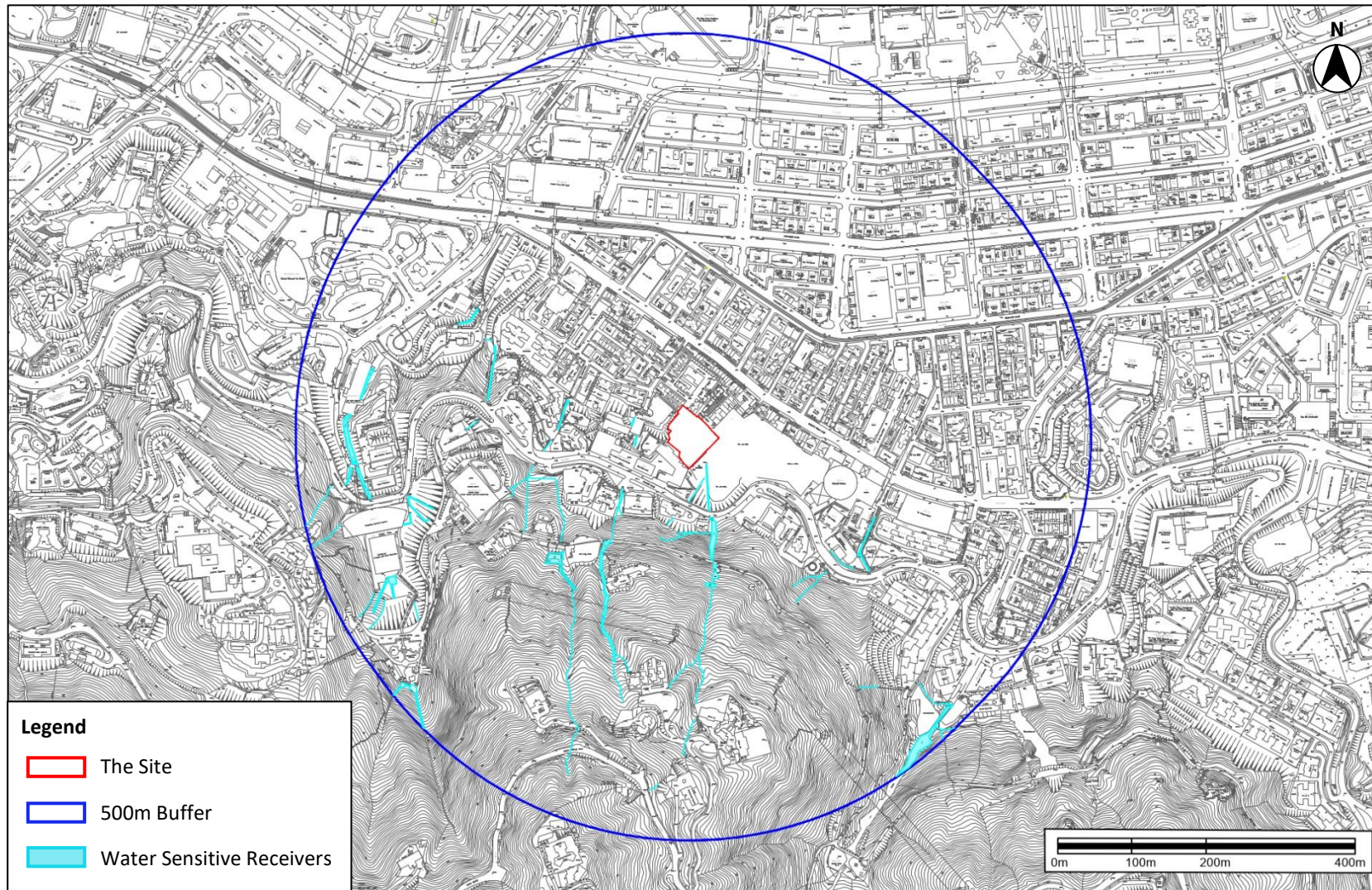
4.3.6 During operation of the Indicative Development Scheme, sewage generated will be discharged into municipal sewerage system. In order to reduce pollution due to runoff, silt/sand traps should be provided for the drainage systems of open areas and should be regularly cleaned and maintained in accordance with ProPECC PN1/23. In addition, runoff should be controlled by best management practice. Thus, no adverse water quality impact from operation of the Indicative Development Scheme is anticipated.

4.4 Conclusion

4.4.1 During construction phase, portable toilets will be supplied for construction workers. With the implementation of the mitigation measures and good site practices mentioned in **paragraph 4.3.2**, adverse water quality impacts from in construction phase are not anticipated.

- 4.4.2 The Contractor shall apply for a Discharge Licence under the WPCO. All site discharges shall be treated in accordance with the terms and conditions of the Discharge Licence.
- 4.4.3 During operation phase, sewage and wastewater generated from toilets, showers and kitchens will be collected and discharged into the public sewerage system. The separate SIA Report prepared by the Project Sewerage Consultant has concluded that there will be no adverse sewerage impact on the municipal sewerage system arising from the Site.
- 4.4.4 Moreover, with the provision and maintenance of silt/sand traps in the drainage system, no adverse water quality due to runoff is expected.
- 4.4.5 Therefore, no adverse water quality impact is anticipated during construction and operation phases of the Indicative Development Scheme.

Figure 4-1 Water Sensitive Receiver within 500m from the Site Boundary



5 WASTE MANAGEMENT

5.1 Environmental Legislation and Standards

5.1.1 The key environmental legislation standards are as follows:

- The Waste Disposal Ordinance (Cap. 354) (“WDO”)
- 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. 11/2019), Management of Construction and Demolition Materials.
- Building Department Practice Notes for Authorised Persons, Registered Structural Engineers and Registered Geotechnical Engineers Waste Minimisation – Construction and Demolition Waste (ADV-19).
- Buildings Department Practice Notes for Authorised Persons, Registered Structural Engineers and Registered Geotechnical Engineers Waste Minimisation – Provision of Fitments and Fittings in New Buildings (APP-114).
- Buildings Department Practice Notes for Registered Contractors (PNRC 17), Control of Environmental Nuisance from Construction.
- CEDD Project Administration Handbook for Civil Engineering Works (“PAH”).

5.2 Potential 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 such as waste battery and waste lubricating oil from vehicles/plant maintenance and ACMs from demolition of old buildings
- General refuse generated by site workers

Inert C&D Materials

- 5.2.2 Inert C&D materials are those which do not decay or decompose, such as debris, rubble, earth and concrete, which makes them suitable for land reclamation and site formation.
- 5.2.3 Some major sources of inert C&D materials during construction phase will be demolition of existing buildings, re-profiling of the Site, excavation and slope works.

Inert C&D Materials from Demolition

- 5.2.4 In demolition stage, since there is absence of any local GFA-based estimated method, the quantity of demolition waste was calculated based on the estimated GFA according to the USEPA's *Characterization of Building-Related Construction and Demolition Debris in the United States*^[Ref.#2]. The typical demolition generation rate of 561kg/m² was adopted in the estimation.
- 5.2.5 According to the GBP record of No. 18 Sau Wa Fong, its development sit area is approx. 179.3m² and total GFA is 244.8m². It is estimated that 137 tonnes of inert C&D materials will be generated from the demolition of existing building, as shown in calculation below:

$$\begin{aligned}\text{Demolition Waste} &= \text{demolition generation rate} \times \text{GFA} \\ &= 561\text{kg/m}^2 \times 244.8 \text{ m}^2 \\ &= 137,333 \text{ kg} \\ &= 137 \text{ tonnes}\end{aligned}$$

Inert C&D Materials from Site Formation

- 5.2.6 Inert C&D materials may also be generated during site formation stage, including site clearance, excavation or re-profile works. The Site area is approximately 3,140.7m² and about 80% of the site is paved, i.e. 2,513m². Assuming the paving density is 2,400 kg/m³ and the thickness of paving is 0.2m, approx. 1,206 tonnes (i.e. 2,513m² x 0.2m x 2.4 tonnes/m³) waste paving will be generated from the removal of paving.
- 5.2.7 The current elevation of the Site ranges from 19.8mPD to 33.6mPD. According to the Section Plans of the Indicative Development Scheme, the site formation level will remain unchanged. Moreover, no basement floor will be formed for the Indicative Development Scheme. Therefore, a large amount of inert C&D materials from deep excavation is not anticipated.
- 5.2.8 For the foundation works, it is assumed that the Site will be excavated to a depth of 2m. 6,281m³ (i.e. 3,140.7m² x 2m) of additional excavated materials is expected to be generated foundation construction and piling for new structures. With the density of 1,800kg/m³, approx. 11,307 tonnes of C&D materials will be generated.

² The approximate generation rate of 561kg/m² for residential use was converted from the average generation rate of 115lb/ft² in Table 5 from *Characterization of Building-Related Construction and Demolition Debris*, Franklin Associates, USEPA, 1998.

Inert C&D Materials from Superstructure

- 5.2.9 Construction waste will also be generated during construction of the Indicative Development Scheme. This will comprise inert C&D materials, such as concrete waste, waste from blockwork and brickwork; and non-inert C&D materials (or C&D waste) from timber formwork, packaging waste and other non-inert wastes.
- 5.2.10 In accordance with Section 3.2 of A Guide for Managing and Minimizing Building and Demolition Waste published by the Hong Kong Polytechnic University in May 2001 (“the Guide”), it provides a “waste index” for building waste generation in Hong Kong based on the Gross Floor Area (“GFA”) of three different building types as follows:
- Private Housing Projects 0.250m³/m² GFA
 - Government Housing Projects 0.174m³/m² GFA
 - Commercial Office Projects 0.200m³/m² GFA
- 5.2.11 To provide a conservative estimate of building waste from the Indicative Development Scheme, the “waste index” for private housing project are adopted. However, as noted above, in addition to inert C&D materials, this “waste index” also include non-inert C&D materials (or C&D wastes), such as timber formwork, packaging waste and other wastes, and the Guide does not identify what proportion of building waste is inert C&D materials and what proportion is non-inert C&D materials (or C&D waste).
- 5.2.12 With reference to Plate 2.12 of EPD’s *Monitoring of Solid Waste in Hong Kong – Waste Statistics for 2022*, in 2022 92% of construction wastes was either reused on-site or sent to the public fill reception facilities, implying that such construction wastes should be inert C&D materials. The proportion of inert C&D materials in the “waste index” can therefore be estimated by applying the Hong Kong-wide proportion of inert C&D materials in construction waste, i.e. 92%, to the “waste index” as follows:
- $$\begin{aligned} \text{Waste Index}_{\text{Inert C\&D materials (Private Housing Projects)}} &= 0.92 \times 0.250\text{m}^3/\text{m}^2 \text{ GFA} \\ &= 0.23\text{m}^3/\text{m}^2 \text{ GFA} \end{aligned}$$
- 5.2.13 The proportion of inert C&D materials of building waste from the Indicative Development Scheme with a GFA of about 28,884.9m², can therefore be estimated as follows:
- $$\begin{aligned} \text{Building Waste} &= \text{Waste Index}_{\text{Inert C\&D materials (Private Housing Projects)}} \times \text{GFA} \\ &= 0.23 \times 28,884.9 \\ &= 6,644\text{m}^3 \end{aligned}$$
- 5.2.14 Assuming the density of inert C&D materials is 1.8 tonnes/m³, approx. 11,959 tonnes of building wastes would be generated by the Indicative Development Scheme.
- 5.2.15 **Table 5-1** summarises the total estimated inert C&D materials generated during construction stage.

Table 5-1 Total Estimated Inert C&D Materials Generated During Construction

INERT C&D MATERIAL TYPE	ESTIMATED INERT C&D MATERIAL GENERATION (TONNES)
STAGE: DEMOLITION OF THE EXISTING BUILDING AND SITE FORMATION	
Demolition of Existing Building	137
Removal of Paving	1,206
Excavated Materials	11,307
STAGE: CONSTRUCTION OF SUPERSTRUCTURE	
Building Waste	11,959
Total	24,609

- 5.2.16 In total, approx. 24,609 tonnes of inert C&D materials may be generated throughout the construction period. Assuming the construction period to be two years with six working days a week and four weeks a month, the daily inert C&D material generation rate will be approx. 42.7 tonnes/day (i.e. 24,609 tonnes/ (6 x 4 x 24) days).
- 5.2.17 Inert C&D materials should be reused on-site as far as practicable. Good site practices and mitigation measures recommended in **Section 5.3** should be provided and implemented. Surplus inert C&D materials, if any, should be reused or recycled off-site as far as practicable. If there will still be any remaining materials, they should be delivered to public fill reception facilities, Fill Bank at Tuen Mun Area 38 and Fill Bank at Tseung Kwan O Area 137.
- 5.2.18 Most of the inert C&D materials generated from construction will be excavated materials and building waste. Since backfilling of excavated materials is not needed for construction, not much of the inert C&D materials will be re-used on site. Therefore, the 42.7 tonnes/day inert C&D material will be delivered to public reception facilities. The reuse of inert C&D materials in public filling reception facilities would be agreed with relevant authorities before delivery. Nonetheless, the reuse of inert C&D materials will be further explored in the later project stage.
- 5.2.19 With the provision and implementation of the recommended mitigation measures, no adverse waste impact from the handling or transportation of the inert C&D materials during construction of the Indicative Development Scheme is anticipated.

Non-Inert C&D Materials (or C&D Waste)

- 5.2.20 Non-inert C&D materials (or C&D waste) are those which can decompose such as bamboo, timber, vegetation, packaging waste and other organic material which makes them unsuitable for land reclamation.
- 5.2.21 The major source of non-inert C&D material during construction will be removal of topsoil and vegetation, and tree felling works during site formation and the non-inert C&D material component of building such as timber formwork, packaging waste.
- 5.2.22 Topsoil is the uppermost layer of soil capable of growing and supporting vegetation. The Site area is approximately 3,140.7m² and about 20% of the site is unpaved, i.e. 628m². Assuming the average depth of the topsoil is 0.25m and the density of topsoil is

1,600kg/m³, approx. 251 tonnes (i.e. 628m² x 0.25m x 1.6 tonnes/m³) topsoil will be generated during site formation works.

- 5.2.23 The building waste in the “waste index” provided in the Guide also includes inert C&D materials. Since Plate 2.12 of Waste Statistics for 2022 shows that in 2022, 8% of C&D waste was disposed of at landfills. The proportion of non-inert C&D materials (or C&D waste) in the “waste index” can be estimated by applying the Hong Kong-wide proportion of non-inert C&D materials (or C&D waste) in construction waste, i.e. 8%, to the “waste index” as follows:

$$\begin{aligned} \text{Waste Index}_{\text{Inert C\&D materials (Private Housing Projects)}} &= 0.08 \times 0.250\text{m}^3/\text{m}^2 \text{ GFA} \\ &= 0.0125\text{m}^3/\text{m}^2 \text{ GFA} \end{aligned}$$

- 5.2.24 Given the total GFA of the Indicative Development Scheme is approx. 28,574.7m², Hence, the non-inert C&D materials (or C&D waste) components in building waste can therefore be estimated as follows:

$$\begin{aligned} \text{Building Waste} &= \text{Waste Index}_{\text{Non-Inert C\&D materials (Private Housing Projects)}} \times \text{GFA} \\ &= 0.0125 \times 28,884.9 \\ &= 361\text{m}^3 \end{aligned}$$

- 5.2.25 Assuming the density of non-inert C&D materials is 1.0 tonnes/m³, approx. 361 tonnes of building waste would be generated by the Indicative Development Scheme.

Table 5-2 Total Estimated Non-Inert C&D Materials Generated During Construction

NON-INERT C&D MATERIAL TYPE	ESTIMATED NON-INERT C&D MATERIAL GENERATION (TONNES)
STAGE: SITE FORMATION	
Topsoil	251
STAGE: CONSTRUCTION OF SUPERSTRUCTURE	
Building Waste	361
Total	612

- 5.2.26 In total, approx. 612 tonnes of non-inert C&D materials may be generated throughout the construction period. Assuming the construction period to be two years with six working days a week and four weeks a month, the daily non-inert C&D material generation rate will be approx. 1.1 tonnes/day (i.e. 612 tonnes/ (6 x 4 x 24) days).
- 5.2.27 Non-inert C&D materials generated during construction should be sorted on-site. Recyclable materials, such as metal, paper product, timber and plastics, should be collected by local recyclers for recycling. All non-inert C&D materials should be recycled as far as possible and landfill disposal should only be adopted as the last resort. The nearest disposal facility is South East New Territories (“SENT”) Landfill. Disposal of C&D wastes of landfills would be agreed with relevant authorities.
- 5.2.28 It is expected that no more than 10% of the generated non-inert building waste can be recycled or reused. This means that the expected amount of non-inert C&D waste to be reused or recycled on-site is 61 tonnes at most.

5.2.29 If 10% C&D waste can be reused/recycled on-site, the surplus C&D waste mainly comprising building waste will be approx. 551 tonnes in total. Assuming the construction period to be 2 years with six working days a week and four weeks a month, the total daily C&D waste for disposal of at SENT Landfill would be approx. 1.0 tonnes/day (i.e. 551 tonnes/ (6 x 4 x 24 days)).

5.2.30 Considering the above estimation, and with the implementation of waste handling measures mentioned above and control measures listed in **Section 5.3**, no adverse waste impact from the handling, transportation or disposal of non-inert C&D materials (or C&D waste) during construction of the Indicative Development Scheme is anticipated.

General Refuse

5.2.31 General refuse from workers is similar to domestic waste and comprises packaging and organic material.

5.2.32 The number of workers will depend on the contractor and the construction methods employed. According to the Applicant's experience, the number of construction workers for the Indicative Development Scheme should be no more than 50 per day.

5.2.33 According to Plate 2.7 of Waste Statistics for 2022, the per capita domestic waste disposal rate in 2022 was 0.93kg/person/day, although the per worker generation rate of general refuse will likely be less than this. For a conservative approach, the per capita domestic waste disposal rate in 2022 has been adopted for general refuse generation by construction workers. Since every worker is expected to generate general refuse, the total general refuse generated by construction workers is estimated as follows:

$$\begin{aligned} \text{General Refuse/Day} &= \text{No. of workers/day} \times \text{per capita generation rate} \\ &= 50 \text{ workers} \times 0.93\text{kg/workers/day} \\ &= 46.5\text{kg/day} \end{aligned}$$

$$\begin{aligned} \text{Total General Refuse} &= \text{General Refuse/Day} \times \text{Construction Duration} \\ &= 46.5\text{kg/day} \times 6 \text{ days/week} \times 4 \text{ weeks/month} \times 24 \text{ months} \\ &= 26,784\text{kg or } 27 \text{ tonnes} \end{aligned}$$

5.2.34 General refuse generated during construction should be sorted on-site. Recyclable materials, such as metal, paper product and plastics should be collected by local recyclers for recycling. All general refuse should be recycled as far as possible and landfill disposal should only be adopted as the last resort.

5.2.35 According to Plate 3.2 of Waste Statistics for 2022, in 2022 the recovery rate of domestic waste is approx. 20%. It is therefore assumed that 20% of general refuse, i.e., approx. 5,357kg of general refuse, would be reused and recycled by the recyclers. The surplus general refuse of 21,427 kg or 37.2kg/day (i.e. 46.5kg x 80%) in average would be sent to landfills.

- 5.2.36 Given the above, no adverse waste impact from the handling, transportation or disposal of general refuse from workforce during construction of the Indicative Development Scheme is anticipated.

Chemical Waste

- 5.2.37 The existing building at No. 18 Sau Wa Fong was built in 1960s. ACM will likely be present in this building. Under the APCO, for demolition of buildings with potential to contain ACMs, asbestos investigation shall be conducted by a Registered Asbestos Consultant (“RAC”). In the case that ACMs are identified, an Asbestos Investigation Report (“AIR”) and an Asbestos Management Plan (“AMP”) comprising an Operation and Maintenance Plan (“O&MP”) and an Asbestos Abatement Plan (“AAP”) shall be submitted to EPD for approval. A Registered Asbestos Contractor (“RACont”) shall be engaged to carry out asbestos abatement work according to the approved AIR and AAP before demolition. The owner of the premises must notify the Labour Department and the EPD at least 28 days before the commencement of the asbestos abatement works in accordance with the regulatory requirement.
- 5.2.38 Once asbestos abatement work has been completed according to the approved AAP, the RAC shall conduct a visual inspection to check for any additional ACMs. If additional ACMs are discovered, demolition shall be suspended and the RAC shall be informed immediately, the RAC shall submit the modified AAP to the EPD after investigation for further asbestos abatement work by the RACont. An air sampling test shall be conducted by a Registered Asbestos Laboratory (“RAL”) at the working area when all ACMs has been removed, in order to verify that there is no asbestos fibre left suspended in the air.
- 5.2.39 The asbestos waste labelling, handling and packaging depends on the type of ACMs. The EPD’s Code of Practice on the Handling, Transportation and Disposal of Asbestos Waste shall be followed for handling, collection and transportation and disposal of asbestos waste. The quantity of the asbestos to be generated depends on the investigation and asbestos abatement plan carried out by RAC.
- 5.2.40 In general, the following precautionary measures stipulated in EPD’s *Code of Practice on Asbestos Control - Safe Handling of Low Risk Asbestos Containing Material and Code of Practice on Asbestos Control - Asbestos Work Using Full Containment or Mini Containment Method* should be taken during the removal of ACMs:
- Adoption of protection, such as a full containment, mini containment, or segregation of work area.
 - Provision of decontamination facilities for cleaning of workers, equipment and bagged waste before leaving the work area.
 - Use of engineering control techniques such as negative pressure equipment with High Efficiency Particulate Air (“HEPA”) filters to ensure air flow between work area and the outside environment is free from any fibre release.
 - Watering of ACMs before and during disturbance, minimising the breakage and dropping of ACMs, and packing of debris and waste immediately after it is produced.
 - Provision of HEPA-filtered vacuum cleaner and wet wiping for cleaning the work area.
 - Provision of sealants for coating any surfaces previously in contact with or contaminated by asbestos.

- Proper bagging, safe storage and disposal of asbestos and ACMs.
- Pre-treatment of all effluent from work area before discharge.
- Air monitoring strategy to check for any remaining asbestos present in the work area after the asbestos work.

5.2.41 Other than asbestos, other chemical waste produced during construction of the Indicative Development Scheme include waste batteries, lubricating oil, waste paints and waste lamp may be generated. However, given the small scale of the works, only a limited amount which is expected to be less than 1 tonne of these chemical wastes may be generated.

5.2.42 The Contractor shall register as a Chemical Waste Producer under the WDO. All chemical waste shall be stored at a properly designed chemical waste storage area located within the construction site in accordance with EPD's *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes*. A licensed collector shall be employed to handle and dispose of all chemical wastes, e.g. at the Chemical Waste Treatment Centre ("CWTC") at Tsing Yi, or other facility approved by EPD.

5.2.43 Given the above, no adverse waste impact from the handling, transportation or disposal of chemical waste during the construction of the Indicative Development Scheme is anticipated.

Summary

5.2.44 The type of waste and their estimated quantities generated during the construction phase are summarised in **Table 5-3**.

Table 5-3 Estimation of Wastes to be Generated During Construction Phase

WASTE TYPE	ESTIMATED QUANTITY (TONNES)	SOURCES OF WASTE	TREATMENT
INERT C&D MATERIAL			
Demolition waste	137	Demolition	On-site reuse/recycle
Paving	1,206	Removal of paving	Off-site reuse/recycle
Excavated material	11,307	Excavation	Sent to public fill reception facilities
Building Waste	11,959	Superstructure Construction	
NON-INERT C&D MATERIAL			
Topsoil	251	Site clearance and formation	On-site sorting for reuse/recycle
Building Waste	361	Superstructure Construction	Disposal of at landfill
ASBESTOS WASTE			
Asbestos Waste	Depends on the findings of the AIR	Asbestos abatement work	Supervision of asbestos waste handling, packaging and disposal by RAC Disposal by licensed asbestos waste collector
OTHERS			
General Refuse	27	Construction staff	On-site sorting for reuse/recycle

WASTE TYPE	ESTIMATED QUANTITY (TONNES)	SOURCES OF WASTE	TREATMENT
			Disposal of at landfill
Chemical Waste	<1	Waste batteries, lubricating oil and waste paints, etc.	All to be collected by the licensed chemical waste collector and treated in the CWTC.

Operation Phase

- 5.2.45 During operation phase, municipal solid waste will be the major type of waste being generated, this includes domestic waste from residents and commercial waste from commercial outlets. According to Waste Statistics for 2022, the most recent domestic waste disposal rate and commercial waste disposal rate are 0.93 kg/person/day and 0.59 kg/person/day respectively.
- 5.2.46 According to the Applicant, the number of units in the Indicative Development Scheme is 312. With reference to the 2021 Population By-census for Tertiary Planning Unit 131, the average domestic household size is assumed to be 2.1 persons/unit, which means that the total residential population of the Indicative Development Scheme will be approx. 655 persons. As a result, the total domestic waste to be generated every year is estimated to be approx. 222,340 kg or 222 tonnes (i.e. 655 persons x 0.93 kg/person/day x 365 days/year).
- 5.2.47 The total non-domestic GFA in the Indicative Development Scheme is about 1,064.6m². With reference to Table 2 in Chapter 5 of HKPSG, the density of workers in business use is 20m² to 25m²/worker. Assuming a worker density of 20m²/worker, the number of workers is estimated to be 54. As a result, the total commercial waste generated every year is estimated to be 11,629 kg, or 11.6 tonnes (i.e. 54 workers x 0.59 kg/person/day x 365 days/year).
- 5.2.48 With reference to Plate 3.2 of Waste Statistics for 2022, the recovery rate of domestic waste and commercial waste is 20% and 45% respectively. Therefore, it is estimated that 20% of domestic waste (i.e. 44.4 tonnes/year) and 45% of commercial waste (i.e. 5.2 tonne/year) could be reused and recycled.
- 5.2.49 The remaining municipal solid waste of 184 tonnes/year (i.e. 177.6 tonnes/year domestic waste plus 6.4 tonnes/year commercial waste) would be disposed of at a landfill managed by EPD.
- 5.2.50 Since the remaining domestic and commercial waste will be collected on a regular basis by registered waste collectors and disposed of at landfill managed by EPD, no adverse waste impacts from handling, transportation or disposal are anticipated. Nevertheless, domestic waste generation should be minimised by implementing the mitigation measures proposed in **Section 5.3**.
- 5.2.51 Overall, there should be no adverse waste impact from the handling, transportation or disposal of domestic waste during the operation of the Indicative Development Scheme.

5.3 Mitigation Measures

Construction Phase

- 5.3.1 Both contractual requirements and statutory requirements shall be followed for controlling waste management.
- 5.3.2 A Waste Management Plan (“WMP”) should be developed by the contractor and submitted to the Project Engineer/Architect for approval in accordance with ADV-19 before the commencement of any construction works. The WMP will aim to identify potential environmental impacts from the generation of waste at the Site; to recommend appropriate measures to handle, collect, sort, dispose of and recycle waste in accordance with requirements of the current regulations; and to categorise and permit segregation of C&D materials where practicable, such as sorting between inert and non-inert material, for disposal considerations i.e. public fill reception facilities/landfill.
- 5.3.3 The contractor should segregate waste with reference to the WMP prior to disposal. Waste should be properly collected and stored to prevent materials from being blown by wind, flushed or leached into nearby waters, or creating odour nuisance or pest and vermin problems. Good housekeeping practices should be adopted to ensure waste storage areas are well maintained and cleaned properly.
- 5.3.4 A trip-ticket system should be established in accordance with DevB TC(W) No. 6/2010 and the *Waste Disposal (Charges for Disposal of Construction Waste) Regulation* to monitor the disposal of public fill and solid wastes at public filling facilities and landfills, which will prevent fly-tipping. A trip-ticket system should be included as one of the contractual requirements that the contractor shall implement.
- 5.3.5 Any excess recyclable construction materials such as bricks, plastics and metals should be reused and recycled as far as practicable to minimise the amount of waste being disposed of. Additional inert materials which are not recyclable such as concrete and asphalt should be treated as public fill, while non-inert materials which are not recyclable should be disposed of at the designated landfills.
- 5.3.6 General refuse should be stored in enclosed bins or compaction units separate from C&D material. A reputable waste collector should be employed by the construction contractor to remove general refuse from the Site, separately from C&D materials. Preferably an enclosed and covered area should be provided to prevent materials from being blown by wind.
- 5.3.7 For chemical waste, the Contractor should follow the trip-ticket system of which the arrangement of production, collection and disposal in accordance with the *Waste Disposal (Chemical Waste) (General) Regulation*. If any ACMs are identified by the RAC, the relevant legislations, guidelines and Code of Practice on Asbestos Control for the labelling, handling, transportation and disposal of ACMs to ensure they are dealt with properly.
- 5.3.8 In addition, the EPD’s RPCC for Construction Contract should be followed and incorporated in the relevant works contract. The RPCC are generally good engineering practices to minimise inconvenience and environmental nuisance to nearby residents and other sensitive receivers. The general requirements are as follows:
- The Contractor shall follow and comply with the WDO and its subsidiary.

- The Contractor shall seek the Engineer's approval for a waste management plan with suitable mitigation measures including allocation of an area for waste segregation. The Contractor shall follow the waste management plan and ensure that the day-to-day site operations comply with the approved waste management plan.
- The Contractor shall minimise the generation of waste from his work as far as practicable. Careful planning and good site management should be implemented to minimise generation of waste, and design and practices should be changed as necessary to avoid generation of waste as much as possible.
- The Contractor shall sort and store different types of waste in different containers, skips or stockpiles to facilitate reuse / recycling of waste and, as the last resort, disposal at different outlets as appropriate.
- Recyclable waste such as paper, cardboard, timber, plastic and metal should be reused and recycled as far as practicable.
- The Contractor shall ensure that C&D materials are sorted into public fill (inert portion) and C&D waste (non-inert portion). The public fill which comprises soil, rock, concrete, brick, cement plaster/mortar, inert building debris, aggregates and asphalt shall be reused for earth filling, reclamation, site formation works, etc. as far as practicable, and sent to a Fill Bank as the last resort. The C&D waste which comprises metal, timber, paper, glass, etc. shall be reused and recycled as far as practicable, and, as the last resort, disposal of at landfills.
- The Contractor shall record the amount of waste generated, recycled and disposed of (including the disposal sites). The records shall be properly kept and easily retrieved for inspection.
- The Contractor shall use a trip ticket system to monitor and ensure the disposal of C&D materials to any designated public filling facility and/or landfill.
- Workers will receive training about the concepts of site cleanliness and proper waste management procedure, including waste reduction, reuse and recycling.
- The Contractor shall not permit the discharge or disposal of sewage and untreated effluent containing sand, cement, silt or any other suspended or dissolved material , or any solid waste including refuse which is not part of the final product from waste processing plants respectively, from anywhere within the Site on to any adjoining land. Removal of such matter from the Site shall be arranged in a proper manner to the satisfaction of the Engineer in consultation with the EPD.
- The *Waste Disposal (Chemical Waste) (General) Regulation* shall be followed and complied with regarding the handling, storage and disposal of chemical waste.
- If chemical waste is produced, the Contractor shall register as a chemical waste producer under the *Waste Disposal (Chemical Waste) (General) Regulation*, and properly store, label, package and collect chemical waste in accordance with the Regulation.

Operation Phase

- 5.3.9 The operator shall encourage reuse and recycling of commercial wastes in line with government policy. Commercial wastes should be managed by the building management in accordance with the waste management hierarchy. The waste management hierarchy is a

concept which shows the desirability of various waste management methods and comprises the following in order of preference:

- Avoidance
- Minimisation
- Recycling/reuse

5.3.10 The majority of waste generated during the operation of the Indicative Development Scheme will mainly comprise of municipal solid waste including domestic waste and commercial wastes such as food waste, food packaging, paper, can, plastic bottles, etc., which shall be collected and stored in appropriate waste receptacles with a secure lid to minimise the potential adverse impact due to wind blowing away any waste and to improve hygiene. Recyclable and non-recyclable waste shall be regularly collected by licensed waste collectors and taken off-site for recycling or disposal, respectively.

5.4 Conclusion

5.4.1 With the development of WMP and the implementation of good site practices recommended therein, the waste generation during construction phase can be greatly reduced. Provided that good engineering practices as recommended in **Section 5.3** will be followed, there should be no adverse impacts related to the management, handling and transportation of waste during the construction phase.

5.4.2 During the operation phase, the major type of waste generated will be domestic waste generated by the residential portion of the Indicative Development Scheme and commercial wastes from commercial outlets. Both types of waste will be collected on a regular basis by registered waste collectors and will be disposed at a landfill managed by EPD. Therefore, no adverse waste impacts from handling, transportation, or disposal are anticipated during operation.

5.4.3 With the implementation of the recommended mitigation measures, adverse waste impacts generated during the construction and operational phases of the Indicative Development Scheme are not anticipated.

6 LAND CONTAMINATION

6.1 Environmental Legislation and Standards

6.1.1 The following legislation, standards and guidelines were taken reference to for conducting the land contamination assessment:

- EPD Guidance Note for Contaminated 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.

6.2 Assessment Methodology

6.2.1 Land contamination assessment was done according to EPD's Practice Guide. A typical land contamination assessment is done according to the following steps:

1. Carry out site assessment, including background information collection, to determine whether there is any potential for land contamination in the Site

6.2.2 In the case that potential land contamination issues are identified, a complete land contamination assessment with the following steps should be undertaken:

1. Design a site investigation ("SI") strategy and prepare a Contamination Assessment Plan ("CAP") for EPD's approval
2. Upon EPD's approval of the CAP, conduct SI according to the approved CAP
3. Upon completion of SI, interpret the results and prepare a Contamination Assessment Report ("CAR") for EPD's approval
4. Plan and design remediation strategy and prepare a Remediation Assessment Plan ("RAP") for EPD's approval
5. Carry out remediation works according to the approved RAP
6. Prepare a Remediation Report ("RR") for EPD's endorsement

6.3 Site Appraisal Findings

6.3.1 Site appraisal was carried out. Past and present land use activities at the Site was assessed to identify any potential contamination sources that could have caused land contamination.

Historical Use of the Site

6.3.2 The historical uses of the Site include:

- Residential use (former Miu Kang Terrace, which has been demolished; No. 18 Sau Wa Fong, which is vacant)
- Educational use (Hill Side Terrace i.e. former St. Luke's College, which has been demolished)

- Grade I Historical Building (Nam Koo Terrace)

6.3.3 With reference to historical documents provided in **Appendix E**, the Site area was used primarily for residential and educational uses, which shall not lead to any land contamination potential. There is no aerial photograph available before the development of Nam Koo Terrace, which is the oldest structure on the Site.

6.3.4 Historical aerial photographs provided in **Appendix F** show that the Site has been occupied by Nam Koo Terrace, St. Luke's College and Miu Kang Terrace since 1963 or earlier. And the No. 18 Sau Wa Fong was present since 1973. Moreover, the historical documents do not provide any information about previous land use prior to construction of Nam Koo Terrace. No existing and previous development with land contamination potential on the Site is identified. Hence, no land contamination issue is anticipated.

Site Walkover

6.3.5 A site walkover was carried out on 25 April 2024. At the time of site visit, the buildings at Miu Kang Terrace and Hill Side Terrace (i.e. former St. Luke's College) have been demolished, while No. 18 Sau Wa Fong has been vacant. No chemical storage, or stressed vegetation were observed. Therefore, no land contamination issue is anticipated. The photographs of the site walkover and checklist is shown in **Appendix G**.

Dangerous Goods and Incident Records

6.3.6 Regional Office (South) of EPD was contacted to review if any record of registered Chemical Waste Producer ("CWP") or accident spillage / leakage of dangerous or chemical is related to the Site. According to EPD's reply dated 19 April 2024, Regional Office (South) did not have any record of potential land contamination incident and Chemical Waste Producers Registration within the Site.

6.3.7 Moreover, Fire Services Department ("FSD") was also contacted to review any current / past licences for storage of Dangerous Goods ("DG"), registration of DG licence, fire incidents, spillage/leakage of DG etc., relating to the Site. According to FSD's reply dated 19 April 2024, no DG licence was issued in respect of the Site, while 1 incident record of No. 1 Fire Alarm was recorded at No. 53 Ship Street, which is located within the Site. As there is no any CWP or DG license issued within the Site, it is considered that the fire incident does not have any land contamination potential to the Site. The information request letters and replies from EPD and FSD are attached in **Appendix H**.

6.4 Conclusion

6.4.1 A detailed investigation of the past and present land-use of the Site was carried out. Based on historical records and the site walkover, no potential sources of land contamination were identified in the past and no existing land contamination issues were identified. As such, steps 1 to 6 of **paragraph 6.2.2** are not required. Hence, no adverse impact from the land contamination issue is anticipated and site investigation is considered not necessary.

7 CONCLUSIONS AND RECOMMENDATIONS

7.1.1 This EA has indicated that the Indicative Development Scheme will not generate any adverse environmental impacts during construction and operation phases, provided that all the recommended mitigation measures and good site practices are strictly implemented.

7.1.2 Specific conclusions for air quality, noise, water quality, waste management and land contamination are as follows:

Air Quality

7.1.3 With the implementation of the recommended mitigation measures and good site practices, adverse air quality impacts during construction phases are not anticipated.

7.1.4 No adverse air quality impact on the proposed development and nearby ASRs is anticipated with the implementation of the proposed mitigation measures on oily fumes and cooking odour emissions during operation phase.

7.1.5 Overall, no adverse air quality impact is anticipated during the construction and operation phases of the proposed development.

Noise

7.1.6 During construction phase, with the implementation of recommended noise mitigation measures, no adverse impacts is anticipated.

7.1.7 Some fixed noise sources were identified within the vicinity of the Site during desktop review and site visit. After assessing the fixed noise impact from these sources, it is concluded that the noise levels of all NSRs would comply with the ANL. No adverse fixed noise impact is anticipated.

7.1.8 Since most of the M&E equipment of the Indicative Development Scheme will be enclosed in plant rooms with louvres installed at the openings, no adverse noise impact is anticipated from these enclosed M&E equipment. Quiet air conditioning system will be selected as far as practicable, and the air conditioning units will be located away from the nearest noise sensitive receivers to reduce noise impact. With the implementation of the recommended noise mitigation measures, no adverse noise impact is anticipated.

7.1.9 Road traffic noise impact on the Indicative Development Scheme was assessed. The predicted noise levels shall comply with the standards recommended in Chapter 9 of HKPSG.

7.1.10 Overall, there will be no adverse noise impact during the construction and operation phases of the Indicative Development Scheme.

Water Quality

7.1.11 During construction phase, water quality impacts will be properly controlled by implementing the good site practices recommended in **Section 4.3**. Portable toilets, when necessary, will be provided for construction 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 WPCO and the effluent discharged from the construction site shall comply with the terms and condition of the Discharge Licence.

- 7.1.12 The municipal sewerage system will be constructed prior to operation of the Indicative Development Scheme. Sewage and wastewater from toilets, showers and kitchens will be collected and discharged into the municipal sewerage system. Thus, no adverse water quality impact is anticipated from operation of the Indicative Development Scheme. The separate SIA Report has also acknowledged that there will be no adverse impact arising from the Indicative Development Scheme.
- 7.1.13 Overall, no adverse water quality impact is anticipated during construction and operation phase of the Indicative Development Scheme.

Waste Management

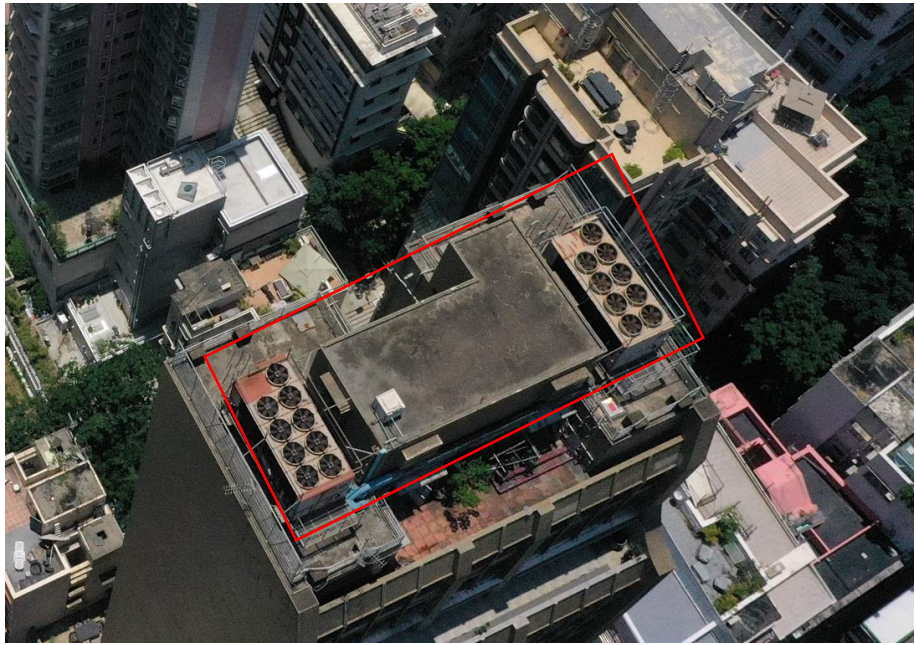

- 7.1.14 With the development of WMP and provision and implementation of the good site practices therein, the waste generation during construction phase will be reduced. Provided that good site practices are followed, no adverse impacts related to the management, handling and transportation of waste during construction phase is anticipated.
- 7.1.15 During operation phase, domestic and commercial waste produced by the Indicative Development Scheme will be the main concern with regard to waste generation. Since domestic and commercial waste will be collected on a regular basis by registered collectors and will be disposed of at landfill, no adverse waste impacts from handling, transportation or disposal are anticipated during the operation phase.
- 7.1.16 With the implementation of the recommended mitigation measures, adverse waste impacts generated during the construction and operation phases of the Project are not anticipated.

Land Contamination

- 7.1.17 A detailed investigation of the past and present land-use of the Site was carried out. Based on historical records and the site walkover, no potential sources of land contamination were identified in the past and no existing land contamination issues were identified. Hence, no adverse impact from the land contamination issue is anticipated and site investigation is considered not necessary.

Appendix A PHOTOS AND CATALOGUES OF IDENTIFIED FIXED NOISE SOURCES

FN1 – Greatmany Centre

<p>Aerial Photos</p>	
<p>Brand: <u>TRANE</u></p>	



Air-cooled helical-rotary chillers Series R™

412 - 1451 kW
RTAC



Customer benefits

- Reliability: Trane helical-rotary compressor with only 3 moving parts
- Eurovent certified class A
- Ease of installation: wide choice of hydraulic modules
- Reliability: main components designed and manufactured by Trane
- Advanced Adaptive Control™ to keep chiller online in extreme operating conditions
- Optional remote monitoring by Trane Intelligent Services
- Single power supply connection
- Exact load matching

Main features

- Rental crash frame
- Integral hydraulic module (pumps)
- Compact design: reduced footprint and low profile design
- Falling film evaporator - high COP
- Two acoustic packages: SN and LN
- Wide operating map: airside and waterside
- Easy customized couple connections

Chiller model	RTAC 120	RTAC 200	RTAC 300	RTAC 400
Cooling capacity	412	737	1077	1451
Power input (kW)	135	232.90	370	498
Refrigerant type	R134a	13	R134a	R134a
Minimum chiller load (%)	30	17	13	10
Qty. of compressors	2	2	3	4
Number of refrigerant circuits	2	2	2	2
Power supply (V/Ph/Hz)	400/3/50	400/3/50	400/3/50	100/3/50
Max. amps (A)	390	562	844	1096
Starting amps (A)	410	594	813	1002
Length (mm)	5041	5960	10058	12244
Width (mm)	2260	2260	2250	2250
Height (mm)	2411	2381	2530	2530
Weight (kg)	4506	5590	9375	11929
Sound pressure level 10 m free field dB(A)	65	68	69	81

Cooling capacity and power input at Eurovent conditions:
12/7°C entering/leaving water temperature and 35°C ambient temperature according to EN 14-511


Trane® is a brand of Ingersoll Rand®. Ingersoll Rand (NYSE:IR) advances the quality of life by creating comfortable, sustainable and efficient environments. Our people and our family of brands—including Ingersoll Rand®, Trane®, Thermo King® and Club Car® — work together to enhance the quality and comfort of air in homes and buildings; transport and protect food and perishables; and increase industrial productivity and efficiency. We are a global business committed to a world of sustainable progress and enduring results.

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We are committed to using environmentally conscious print practices that reduce waste.



FN2 – St. Francis' Canossian School

<p>Aerial Photos</p>	
<p>Brand: <u>MITSUBISHI</u></p>	<p>No photo can be provided for this fixed noise source. As advised by the staff of St. Francis' Canossian School, the brand of the outdoor units should be MITSUBISHI.</p>



Specifications

Model		PUCY-P400YKE (-BS)	PUCY-P450YKE (-BS)	PUCY-P500YKE (-BS)
Power source		3-phase 4-wire 380-400-415 V 50/60 Hz	3-phase 4-wire 380-400-415 V 50/60 Hz	3-phase 4-wire 380-400-415 V 50/60 Hz
Cooling capacity (Nominal)	*1 kW	44.0	48.0	56.0
	BTU/h	150,100	163,800	191,100
	Power input kW	11.12	12.67	14.73
	Current input A	18.7-17.8-17.1	21.3-20.3-19.5	24.8-23.6-22.7
EER	kW/kW	3.95	3.78	3.80
Temp. range of cooling	Indoor W.B.	15.0~24.0 °C (59~75 °F)	15.0~24.0 °C (59~75 °F)	15.0~24.0 °C (59~75 °F)
	Outdoor D.B.	10.0~52.0 °C (50~126 °F)	10.0~52.0 °C (50~126 °F)	10.0~52.0 °C (50~126 °F)
Indoor unit connectable	Total capacity	50~130% of outdoor unit capacity	50~130% of outdoor unit capacity	50~130% of outdoor unit capacity
	Quantity	1~34	1~39	1~43
Sound power level (measured in anechoic room)	dB <A>	83.5	83.5	82.5
Refrigerant piping diameter	Liquid pipe mm (in.)	12.7 (1/2) Brazed	15.88 (5/8) Brazed	15.88 (5/8) Brazed
	Gas pipe mm (in.)	28.58 (1-1/8) Brazed	28.58 (1-1/8) Brazed	28.58 (1-1/8) Brazed
Fan	Type x Quantity	Propeller fan x 1	Propeller fan x 1	Propeller fan x 2
	Air flow rate m ³ /min	250	250	320
	L/s	4,167	4,167	5,333
	cfm	8,828	8,828	11,299
Control, Driving mechanism		Inverter-control, Direct-driven by motor	Inverter-control, Direct-driven by motor	Inverter-control, Direct-driven by motor
Compressor	Motor output kW	0.92 x 1	0.92 x 1	0.92 x 2
	External static press.	0 Pa (0 mmH ₂ O)	0 Pa (0 mmH ₂ O)	0 Pa (0 mmH ₂ O)
	Type	Inverter scroll hermetic compressor	Inverter scroll hermetic compressor	Inverter scroll hermetic compressor
	Starting method	Inverter	Inverter	Inverter
Case heater	Motor output kW	8.7	10.0	10.9
	Case heater kW	-	-	-
External finish		Pre-coated galvanized steel sheets (+powder coating for -BS type) <MUNSELL 3Y 7.8/1.1 or similar>	Pre-coated galvanized steel sheets (+powder coating for -BS type) <MUNSELL 3Y 7.8/1.1 or similar>	Pre-coated galvanized steel sheets (+powder coating for -BS type) <MUNSELL 3Y 7.8/1.1 or similar>
External dimension H x W x D	mm	1,650 x 1,220 x 740	1,650 x 1,220 x 740	1,650 x 1,750 x 740
	in.	65 x 48-1/16 x 29-3/16	65 x 48-1/16 x 29-3/16	65 x 68-15/16 x 29-3/16
Protection devices	High pressure protection	High pressure sensor, High pressure switch at 4.15 MPa (601 psi)	High pressure sensor, High pressure switch at 4.15 MPa (601 psi)	High pressure sensor, High pressure switch at 4.15 MPa (601 psi)
	Inverter circuit (COMP./FAN)	Over-heat protection, Over-current protection	Over-heat protection, Over-current protection	Over-heat protection, Over-current protection
	Refrigerant	Type x original charge	R410A x 5.0 kg (12 lbs)	R410A x 5.0 kg (12 lbs)
Net weight	kg (lbs)	207 (457)	207 (457)	260 (574)
Heat exchanger		Salt-resistant corrugated fin & aluminium alloy tube	Salt-resistant corrugated fin & aluminium alloy tube	Salt-resistant corrugated fin & aluminium alloy tube
Optional parts		Joint: CMY-Y102SS/LS-G2, CMY-Y202S-G2 Header: CMY-Y104/108/1010-G	Joint: CMY-Y102SS/LS-G2, CMY-Y202S-G2 Header: CMY-Y104/108/1010-G	Joint: CMY-Y102SS/LS-G2, CMY-Y202S-G2 Header: CMY-Y104/108/1010-G

Notes:

*1 Nominal cooling conditions (subject to JIS B8615-2)



	Indoor	Outdoor	Pipe length	Level difference
Cooling	27 °C D.B./19 °C W.B. (81 °F D.B./66 °F W.B.)	35 °C D.B. (95 °F D.B.)	7.5 m (24-9/16 ft.)	0 m (0 ft.)

*2 External static pressure option is available (30 Pa, 60 Pa/3.1 mmH₂O, 6.1 mmH₂O). Consult your dealer about the specification when setting External static pressure option.

*3 The sound level may increase at high outside air temperature.

*Due to continuing improvement, above specifications may be subject to change without notice.

FN3 – Dominion Centre

<p>Aerial Photos</p>	
<p>Brand of the outdoor unit: <u>RYOWO</u></p>	



RYOWO COOLING TOWER

FWS SERIES
Low Noise Cross Flow Type



3 SPECIFICATION

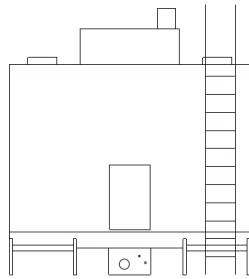
Model	Nominal Water Flow M ³ /hr	Dimension				Fan Motor kW	Fan Dia mm	Piping					Sound Power Level	Weight	
		L mm	W mm	h mm	H mm			In mm	Out mm	Fv mm	Of mm	Dr mm		Dry kgs	Wet kgs
FWS-94-3.7	94	4000	2000	4125	4625	3.7	1600	100x2	150	25	50	50	88	1335	2300
FWS-94-5.5	107				4705	5.5							91	1385	2350
FWS-94-7.5	119				4745	7.5							93	1400	2365
FWS-127-5.5	127	4400	2300	4125	4705	5.5	1800	100x2	150	25	50	50	90	1570	3000
FWS-127-7.5	141				4745	7.5							92	1585	3015
FWS-127-11	166				4825	11							94	1620	3060
FWS-169-7.5	169	4400	2600	4125	4745	7.5	2000	125x2	200	25	50	50	92	1690	3700
FWS-169-11	192				4825	11							94	1760	3770
FWS-169-15	213				4870	15							95	1770	3780
FWS-200-7.5	190	4600	2600	4145	4785	7.5	2400	125x2	200	40	80	50	91	2195	4000
FWS-200-11	215				4865	11							93	2250	4055
FWS-200-15	235				4910	15							95	2255	4060
FWS-250-7.5	210	4800	3200	4345	4985	7.5	2400	125x2	200	40	80	50	90	2890	5000
FWS-250-11	240				5065	11							93	2945	5055
FWS-250-15	265				5110	15							94	2950	5060
FWS-275-7.5	225	5200	3200	4145	4785	7.5	2900	150x2	200	40	80	50	89	3050	5160
FWS-275-11	255				4865	11							92	3105	5215
FWS-275-15	285				5910	15							94	3110	5220
FWS-300-7.5	235	6000	3200	4345	4895	7.5	2400	150x2	200	40	80	50	89	3310	6500
FWS-300-11	270				5065	11							91	3365	6555
FWS-300-15	300				5110	15							93	3370	6560
FWS-300-18.5	320	6300	3200	4145	5175	18.5	2900	150x2	250	50	80	50	94	3410	6600
FWS-300-22	340				5215	22							95	3470	6660
FWS-330-7.5	260				4785	7.5							88	3405	6595
FWS-330-11	300	4865	11	91	3460	6650									
FWS-330-15	330	4910	15	93	3465	6655									
FWS-330-18.5	350	5175	18.5	94	3505	6695									
FWS-330-22	375	5215	22	95	3565	6755									
FWS-350-7.5	275	5400	3600	5425	6065	7.5	3000	150x2	250	50	80	50	89	3580	6770
FWS-350-11	315				6145	11							91	3635	6825
FWS-350-15	350				6190	15							93	3640	6830
FWS-350-18.5	375	6255	18.5	94	3680	6870									
FWS-350-22	400	6295	22	95	3740	6930									
FWS-400-7.5	285	6600	3600	4345	4985	7.5	3000	125x4	250	50	80	50	87	3630	7000
FWS-400-11	325				5065	11							89	3685	7055
FWS-400-15	360				5110	15							91	3690	7060
FWS-400-18.5	385	5135	18.5	92	3730	7100									
FWS-400-22	410	5195	22	93	3790	7160									
FWS-400-30	450	5255	30	94	3820	7185									
FWS-500-7.5	305	6000	4200	5355	5990	7.5	3400	125x4	250	50	80	50	87	4230	8000
FWS-500-11	345				6070	11							90	4285	8055
FWS-500-15	385				6115	15							91	4290	8060
FWS-500-18.5	410	6180	18.5	93	4325	8100									
FWS-500-22	435	6220	22	94	4390	8120									
FWS-500-30	485	6280	30	95	4415	8145									
FWS-550-7.5	315	6600	3600	5355	5990	7.5	3000	125x4	250	50	80	50	87	4350	8080
FWS-550-11	360				6070	11							89	4405	8135
FWS-550-15	400				6115	15							91	4410	8140
FWS-550-18.5	430	6180	18.5	92	4450	8180									
FWS-550-22	455	6220	22	94	4510	8240									
FWS-550-30	500	6280	30	95	4535	8275									
FWS-600-11	435	7000	4200	5500	6255	11	3700	150x4	300	50	80	50	89	5015	9000
FWS-600-15	485				6300	15							91	5020	9005
FWS-600-18.5	520				6365	18.5							92	5060	9045
FWS-600-22	550	6405	22	94	5120	9085									
FWS-600-30	610	6465	30	95	5140	9110									
FWS-600-37	650	6485	37	96	5330	9300									
FWS-700-11	515	7000	5000	5500	6255	11	3700	150x4	300	50	80	50	89	5650	12000
FWS-700-15	570				6300	15							91	5655	12005
FWS-700-18.5	610				6365	18.5							92	5690	12055
FWS-700-22	645	6405	22	93	5755	12120									
FWS-700-30	720	6465	30	95	5780	12145									
FWS-700-37	765	6485	37	96	5970	12335									
FWS-800-11	555	7500	5000	6400	7155	11	4200	150x4	300	50	80	50	88	6905	14880
FWS-800-15	615				7200	15							90	6910	14885
FWS-800-18.5	655				7265	18.5							91	6945	14920
FWS-800-22	695	7305	22	93	7010	14985									
FWS-800-30	760	7365	30	95	7035	15010									
FWS-800-37	820	7385	37	98	7225	15200									
FWS-800-45	880	7405	45	99	7255	15230									
FWS-800-55	940	7495	55	100	7365	15340									

Notes:

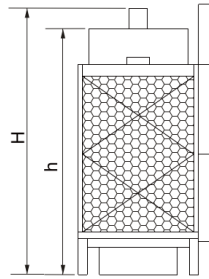
- 1/CTI Certification applies to the operation with the Wet Bulb Temp. between 12.8°C and 32.2°C, Max. Entering Water Temp. 51.7°C, Min. Range of 2.2°C and Min. Approach of 2.8°C.
- 2/The nominal water flows are based upon 37°C HWT, 32°C CWT, 28°C WBT, 32°C DBT and 101.3 kPa Barometric pressure.
- 3/Sound Power Level is in dBA re 10⁻¹² Watt.
- 4/Data and specifications are subjected to change without prior notice.



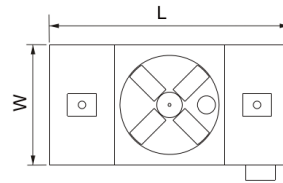
TOWER SCHEMATIC



Casing Panel

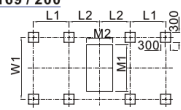


Air Intake

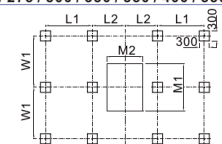


Top view

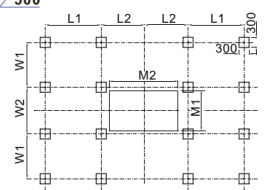
FWS 94 / 127 / 169 / 200



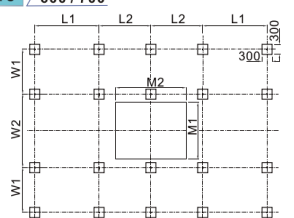
FWS 250 / 275 / 300 / 330 / 350 / 400 / 550



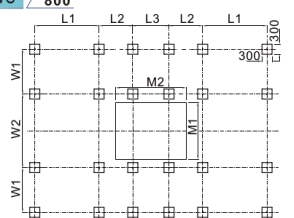
FWS 500



FWS 600 / 700



FWS 800



Model	L1	L2	L3	W1	W2	M1	M2
FWS 94 3 7	1060	915		1850		1400	800
FWS 94 5 5	1060	915		1850		1400	800
FWS 94 7 5	1060	915		1850		1400	800
FWS 127 5 5	1060	1115		2150		1400	800
FWS 127 7 5	1060	1115		2150		1400	800
FWS 127 11	1060	1115		2150		1400	800
FWS 169 7 5	1060	1115		2450		1400	800
FWS 169 11	1060	1115		2450		1400	800
FWS 169 15	1060	1115		2450		1400	800
FWS 200 7 5	1400	875		2450		1400	1100
FWS 200 11	1400	875		2450		1400	1100
FWS 200 15	1400	875		2450		1400	1100
FWS 250 7 5	1400	975		1540		1400	1100
FWS 250 11	1400	975		1540		1400	1100
FWS 250 15	1400	975		1540		1400	1100
FWS 275 7 5	1400	1175		1540		1400	1100
FWS 275 11	1400	1175		1540		1400	1100
FWS 275 15	1400	1175		1540		1400	1100
FWS 300 7 5	1848	1127		1540		1400	1100
FWS 300 11	1848	1127		1540		1400	1100
FWS 300 15	1848	1127		1540		1400	1100
FWS 300 18 5	1848	1127		1540		1400	1100
FWS 300 22	1848	1127		1540		1400	1100
FWS 330 7 5	1848	1277		1540		1400	1100
FWS 330 11	1848	1277		1540		1400	1100
FWS 330 15	1848	1277		1540		1400	1100
FWS 330 18 5	1848	1277		1540		1400	1100
FWS 330 22	1848	1277		1540		1400	1100
FWS 350 7 5	1675	1000		1740		2100	1200
FWS 350 11	1675	1000		1740		2100	1200
FWS 350 15	1675	1000		1740		2100	1200
FWS 350 18 5	1675	1000		1740		2100	1200
FWS 350 22	1675	1000		1740		2100	1200
FWS 400 7 5	1925	1350		1740		1400	1100
FWS 400 11	1925	1350		1740		1400	1100
FWS 400 15	1925	1350		1740		1400	1100
FWS 400 18 5	1925	1350		1740		1400	1100
FWS 400 22	1925	1350		1740		1400	1100
FWS 400 30	1925	1350		1740		1400	1100
FWS 500 7 5	1675	1300		1340	1400	1300	2100
FWS 500 11	1675	1300		1340	1400	1300	2100
FWS 500 15	1675	1300		1340	1400	1300	2100
FWS 500 18 5	1675	1300		1340	1400	1300	2100
FWS 500 22	1675	1300		1340	1400	1300	2100
FWS 500 30	1675	1300		1340	1400	1300	2100
FWS 550 7 5	1925	1350		1740		2100	1300
FWS 550 11	1925	1350		1740		2100	1300
FWS 550 15	1925	1350		1740		2100	1300
FWS 550 18 5	1925	1350		1740		2100	1300
FWS 550 22	1925	1350		1740		2100	1300
FWS 550 30	1925	1350		1740		2100	1300
FWS 600 11	1925	1550		1340	1400	1300	2100
FWS 600 15	1925	1550		1340	1400	1300	2100
FWS 600 18 5	1925	1550		1340	1400	1300	2100
FWS 600 22	1925	1550		1340	1400	1300	2100
FWS 600 30	1925	1550		1340	1400	1300	2100
FWS 600 37	1925	1550		1340	1400	1300	2100
FWS 700 11	1925	1550		1340	2200	1300	2100
FWS 700 15	1925	1550		1340	2200	1300	2100
FWS 700 18 5	1925	1550		1340	2200	1300	2100
FWS 700 22	1925	1550		1340	2200	1300	2100
FWS 700 30	1925	1550		1340	2200	1300	2100
FWS 700 37	1925	1550		1340	2200	1300	2100
FWS 800 11	2050	1090	1170	1340	2200	1300	2100
FWS 800 15	2050	1090	1170	1340	2200	1300	2100
FWS 800 18 5	2050	1090	1170	1340	2200	1300	2100
FWS 800 22	2050	1090	1170	1340	2200	1300	2100
FWS 800 30	2050	1090	1170	1340	2200	1300	2100
FWS 800 37	2050	1090	1170	1340	2200	1300	2100
FWS 800 45	2050	1090	1170	1340	2200	1300	2100
FWS 800 55	2050	1090	1170	1340	2200	1300	2100

Notes:

- 1/The footing dimensions are for preliminary layout only. For detail footing drawing, please consult RYOWO engineers.
- 2/Dimensions are in mm.



Appendix B CALCULATION OF FIXED NOISE IMPACT ASSESSMENT

Sound Power Levels of Existing Fixed Noise Sources

ID	Building Name	Fixed Noise Sources	Sound Power Level, dB(A)	Quantity	Total SWL, dB(A)
FN1	Greatmany Centre	TRANE Chillers	97*	2	100
FN2	St. Francis' Canossian School	MITSUBISHI Chillers	82.5	2	85
FN3	Dominion Centre	RYOWO Chillers	92	4	98

* Sound Power Level of FN1 was determined by free-field sound pressure level at 10m provided in the catalogue. $SWL = (SPL + 20 \log(D) + 8 + 3) \text{ dB(A)}$

Calculation of Fixed Noise Level on the Indicative Development Scheme

	Source ID	SWL, dB(A)	Horizontal Distance, m	Distance Correction, dB(A)	Façade Correction, dB(A)	SPL, dB(A)
NSR1	FN1	100	63.1	44	3	59
	FN2	85	84.2	47	3	42
	FN3	98	135.8	51	3	50
	Total					
NSR2	FN1	100	66.2	44	3	59
	FN2	85	69.7	45	3	43
	FN3	98	121.1	50	3	51
	Total					
NSR3	FN1	100	78.8	46	3	57
	FN2	85	48.7	42	3	46
	FN3	98	102.1	48	3	53
	Total					
NSR4	FN1	100	92.3	47	3	56
	FN2	85	33.7	39	3	49
	FN3	98	94.5	48	3	54
	Total					
NSR5	FN1	100	103.9	48	3	55
	FN2	85	33.1	38	3	50
	FN3	98	108.5	49	3	52
	Total					

Appendix C **TRAFFIC FORECAST IN 2043**

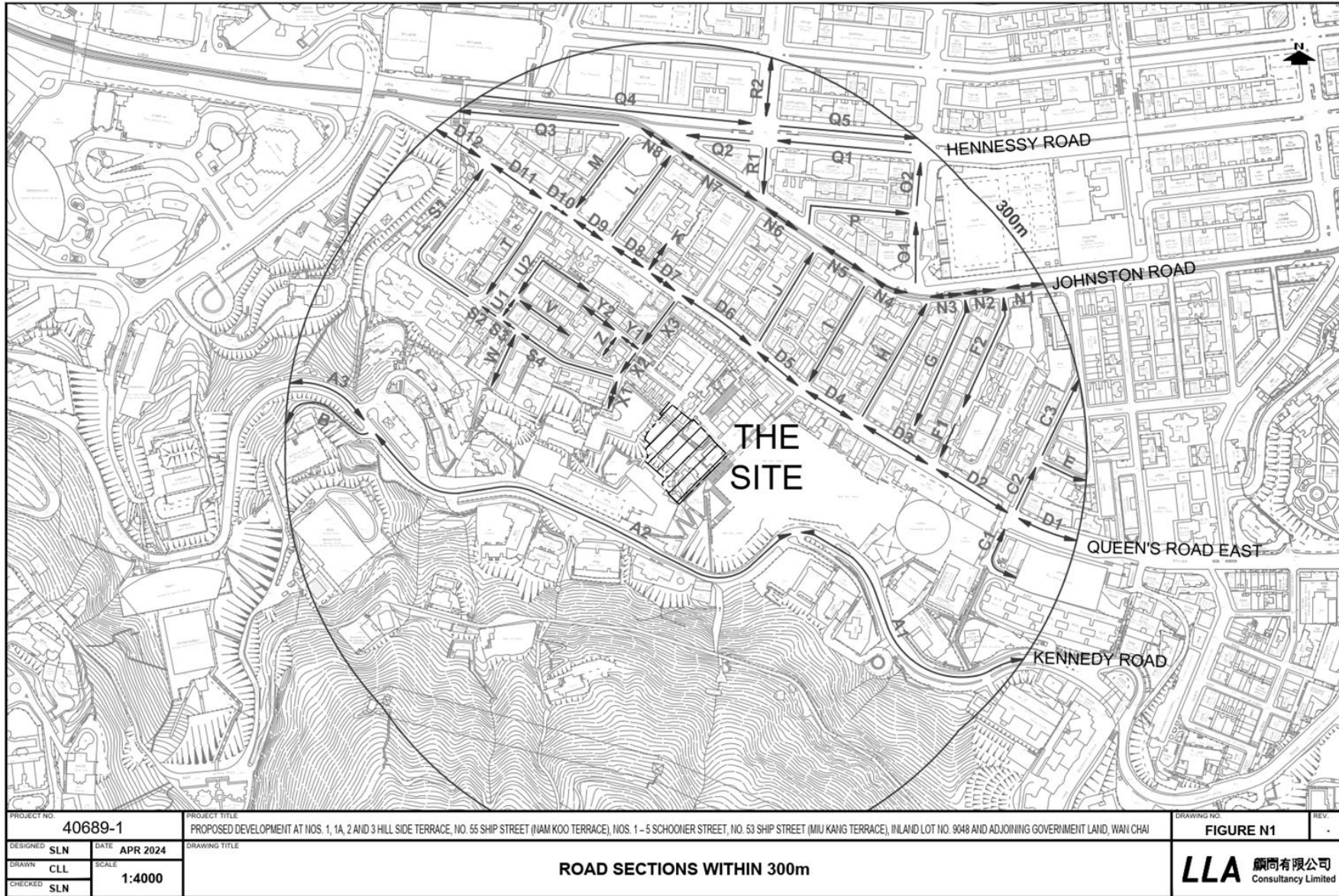


Table 2 2043 Traffic Forecast – AM Peak Hour

No.	Road	Direction	2043 Project Traffic Flows (veh/hr)	% of Heavies
				[1-P]
A1	Kennedy Road	EB	580	8.8%
A1	Kennedy Road	WB	350	8.2%
A2	Kennedy Road	EB	490	8.8%
A2	Kennedy Road	WB	330	8.2%
A3	Kennedy Road	EB	710	8.8%
A3	Kennedy Road	WB	420	8.2%
B	Bowen Drive	WB	50	8.2%
C1	Spring Garden Lane	NB	50	15.9%
C1	Spring Garden Lane	SB	180	8.2%
C2	Spring Garden Lane	NB	290	3.3%
C3	Spring Garden Lane	NB	340	2.7%
D1	Queen's Road East	EB	970	8.2%
D1	Queen's Road East	WB	1,290	13.2%
D2	Queen's Road East	EB	980	11.1%
D2	Queen's Road East	WB	1,010	9.2%
D3	Queen's Road East	EB	900	12.8%
D3	Queen's Road East	WB	1,020	10.8%
D4	Queen's Road East	EB	970	12.1%
D4	Queen's Road East	WB	790	10.6%
D5	Queen's Road East	EB	700	17.7%
D5	Queen's Road East	WB	820	14.7%
D6	Queen's Road East	EB	750	17.4%
D6	Queen's Road East	WB	800	14.6%
D7	Queen's Road East	EB	880	16.9%
D7	Queen's Road East	WB	760	14.4%
D8	Queen's Road East	EB	880	16.9%
D8	Queen's Road East	WB	760	14.4%
D9	Queen's Road East	EB	1,080	15.7%
D9	Queen's Road East	WB	750	14.1%
D10	Queen's Road East	EB	810	17.5%
D10	Queen's Road East	WB	750	14.1%
D11	Queen's Road East	EB	690	17.9%
D11	Queen's Road East	WB	720	13.3%
D12	Queen's Road East	EB	760	11.7%
D12	Queen's Road East	WB	960	10.1%
E	Sam Pan Street	EB	10	22.2%
F1	Amoy Street	SB	120	3.9%
F2	Amoy Street	NB	40	17.6%
F2	Amoy Street	SB	140	8.0%

G	Swatow Street	NB	30	29.4%
G	Swatow Street	SB	30	29.4%
H	Tai Wong Street East	NB	300	9.8%
I	Ship Street	SB	290	8.0%
J	Lun Fat Street	NB	80	15.4%
K	Li Chit Street	NB	10	20.0%
K	Li Chit Street	SB	10	20.0%
L	Landale Street	NB	230	10.0%
M	Anton Street	SB	280	9.8%
N1	Johnston Road	EB	590	12.9%
N1	Johnston Road	WB	380	13.4%
N2	Johnston Road	EB	670	12.3%
N2	Johnston Road	WB	370	12.6%
N3	Johnston Road	EB	670	12.3%
N3	Johnston Road	WB	370	12.6%
N4	Johnston Road	EB	610	14.0%
N4	Johnston Road	WB	200	10.3%
N5	Johnston Road	EB	770	14.7%
N5	Johnston Road	WB	100	12.8%
N6	Johnston Road	EB	840	12.3%
N6	Johnston Road	WB	120	12.5%
N7	Johnston Road	EB	130	29.4%
N7	Johnston Road	WB	120	10.8%
N8	Johnston Road	EB	90	25.3%
N8	Johnston Road	WB	350	8.3%
O1	Luard Road	NB	420	13.1%
O2	Luard Road	NB	540	10.6%
P	Thomson Road	EB	120	5.7%
Q1	Hennessy Road	WB	500	42.2%
Q2	Hennessy Road	WB	880	33.3%
Q3	Hennessy Road	WB	950	29.3%
Q4	Hennessy Road	EB	1,150	35.8%
Q5	Hennessy Road	EB	750	50.4%
R1	Fenwick Street	SB	720	8.8%
R2	Fenwick Street	NB	10	88.9%
R2	Fenwick Street	SB	740	16.8%
S1	Monmouth Path	NB	190	14.9%
S2	Star Street	WB	150	7.1%
S3	Star Street	WB	150	7.1%
S4	Star Street	WB	120	7.1%
T	Wing Fung Street	SB	130	21.1%
U1	Sun Street	NB	30	22.2%
U1	Sun Street	SB	30	22.2%

U2	Sun Street	NB	10	22.2%
U2	Sun Street	SB	10	22.2%
V	Moon Street	EB	10	22.2%
V	Moon Street	WB	10	22.2%
W	Electric Street	NB	10	22.2%
W	Electric Street	SB	10	22.2%
X1	St Francis Street	NB	10	22.2%
X1	St Francis Street	SB	10	22.2%
X2	St Francis Street	SB	120	7.1%
X3	St Francis Street	SB	170	7.1%
Y1	St Francis Yard	EB	30	22.2%
Y1	St Francis Yard	WB	30	22.2%
Y2	St Francis Yard	EB	10	22.2%
Y2	St Francis Yard	WB	10	22.2%
Z	Kwong Ming Street	NB	10	22.2%
Z	Kwong Ming Street	SB	10	22.2%

Appendix D **PREDICTED ROAD TRAFFIC NOISE LEVEL**

**Project: Nam Koo Terrace
 Road Traffic Noise Impact Assessment**

Floor	Floor Height (m)	Floor Level (mPD)	NAP Level (mPD)	NAP_01a	NAP_01b	NAP_02a	NAP_02b	NAP_03	NAP_04	NAP_05	NAP_06a	NAP_06b	NAP_07a	NAP_07b	NAP_08	NAP_09	NAP_10	NAP_11	NAP_12a	NAP_12b	NAP_13a	NAP_13b
28/F	3.3	116.2	117.4	54	54	53	60	61	61	62	62	64	63	59	58	54	59	55	60	59	57	54
27/F		112.9	114.1	54	54	53	60	61	61	62	62	64	63	59	59	54	59	54	60	59	57	54
26/F		109.6	110.8	54	54	53	60	61	61	61	62	64	63	59	59	54	59	54	59	59	57	54
25/F		106.3	107.5	54	54	53	60	61	61	61	62	64	62	59	59	53	59	54	59	59	57	54
24/F		102.9	104.1	54	53	52	60	60	61	61	62	64	62	59	59	53	59	54	59	59	57	54
23/F		99.6	100.8	53	53	52	60	60	61	61	62	64	62	59	59	53	59	54	59	59	57	54
22/F		96.3	97.5	53	53	52	59	60	61	61	62	63	62	59	59	53	59	54	59	58	57	54
21/F		93.0	94.2	53	53	52	59	60	61	61	62	63	62	59	59	53	59	54	59	58	57	54
20/F		89.6	90.8	53	53	52	59	60	61	61	61	63	62	59	58	53	59	53	59	58	57	54
19/F		86.3	87.5	53	53	52	59	60	60	61	61	63	61	58	57	53	58	53	58	58	57	53
18/F		83.0	84.2	53	53	52	58	60	60	60	60	61	60	56	55	53	56	53	57	58	57	53
17/F		79.7	80.9	53	53	52	58	59	60	60	59	58	56	53	53	53	56	53	57	57	56	53
16/F		76.3	77.5	53	53	51	58	59	59	59	59	55	52	48	52	53	55	53	57	57	56	53
15/F		73.0	74.2	53	52	50	57	58	59	59	58	54	50	46	52	52	54	53	56	57	56	53
14/F		69.7	70.9	53	51	49	56	58	58	58	57	52	49	45	51	52	54	52	56	56	56	53
13/F		66.4	67.6	53	50	49	55	56	57	57	56	50	46	44	51	52	53	52	55	55	55	53
12/F		63.0	64.2	52	49	49	54	55	56	55	54	48	44	43	50	51	52	52	53	54	55	53
11/F		59.7	60.9	52	49	48	53	54	54	54	52	45	41	43	49	51	52	52	53	53	54	53
10/F		56.4	57.6	51	49	48	52	53	53	53	52	43	39	43	49	50	51	51	51	52	53	52
9/F		53.1	54.3	51	48	45	52	52	53	53	51	41	38	43	48	50	50	51	50	50	52	52
8/F		49.7	50.9	50	48	43	51	52	53	53	51	40	37	42	48	49	49	51	49	50	50	52
7/F		46.4	47.6	49	46	42	50	52	52	53	50	39	37	42	47	48	49	50	49	49	49	51
6/F		43.1	44.3	47	45	42	50	51	52	52	50	38	36	42	47	47	48	48	48	48	48	49
5/F		39.8	41.0	45	43	41	50	51	52	52	50	37	36	42	47	46	48	47	47	47	47	48

Appendix E HISTORIC DOCUMENTS RELATED TO THE SITE

Reference Document 1

1840: Document indicating that residential areas with gardens were situated along Spring Garden Lane in the past, which is near to Nam Koo Terrace

開埠初期（即1840年代），港府有意把灣仔的海傍地段開發為海濱住宅區。位於灣仔道至大王東街的「春園」（今春園街附近），是一整排面向海濱的歐式大宅，這個當年最時髦的高級住宅區，吸引大批洋人入住。至於春園名字的由來，眾說紛紜，有指開發者把附近一帶闢作花園，栽種花木，並引注後山山水入園，故英文原名「Spring」可能是指泉水，而非春天。

也有歷史學者指，Spring Gardens原是和記洋行老闆Blenkin Rawson的大宅名稱，後來泛指那一帶的住宅。真相無從稽考，但肯定那一帶風景怡人，據說當時一名路過香港的植物學家Robert Fortune，也曾盛讚該處的花園異常漂亮¹，以至在港督府未建成之前，第三任港督般咸也曾租住Blenkin Rawson在春園的大宅作暫居之所²（參看圖片7）。

春園 (Spring Gardens)



圖片7 1846年的春園一帶，圖中右邊的大宅曾作為港督般咸的官邸（1848-1854）

¹ “1840-1850.” Display Wan Chai, 1841-1997. Government Records Office. Web. 11 Dec 2012. <http://www.grs.gov.hk/ws/online/wanchai/index_tc.htm>

² Hacker, Arthur. Arthur Hacker's Wan Chai. Hong Kong: The Guidebook Co. Ltd. 1997. P28.

Source: 55 Wai Chai Ship Street Nam Koo Terrace Research Report, SEE Network Limited, Hong Kong, p.9

Reference Document 2

1868: Document Indicating that North of Queen's Road East at Ship Street were Storage Areas and South of Queen's Road East, at Ship Street, Were Residential and Shops Areas

南固臺所位於的船街（Ship Street），從舊地圖可見，它屬灣仔區最早一批發展的公共街道，其興建年份未能確實，大概是隨着地段的出售及發展，為方便居民進出之故而建成的。資料顯示，海旁地段36號及64號（參看圖片11）是香港開埠後首批拍賣出售（1841年）的土地，兩個地段中間便劃出了一小段街道，是為船街的前身。船街名字可能來自早年開設在附近的船塢，也有指在香港開埠前，這個地方的水域和海灘也許由中國漁民或商人的小船所使用，因而得名⁶。今天的船街，以往稱作「洋船街」，在南固臺基座護土牆上，有非官方的路牌刻着此名。翻查舊報章的報道，亦曾出現灣仔洋船街這名字，但官方何時將街道正命船街，則仍有待查考。

船街早年的土地用途分佈

根據1868年的差餉紀錄顯示，船街以皇后大道東為分野，其北面主要為倉庫用地，南面起則為唐樓住宅和商舖。那個年代的唐樓，居住人口已相當密集，單位裡沒有水廁，居民要靠夜香工人上門倒夜香，或到附近的公共廁所解決。在現時的捷船街與船街交界的位置，便曾出現一所由名叫「彭華」的中國人營的收費廁所。由1867年起的30多年來，他一家都以此維生。政府後來於19世紀末在收費廁所不遠處加設一公共廁所(參看圖片14)，由此可以想像當年船街人口之增長。



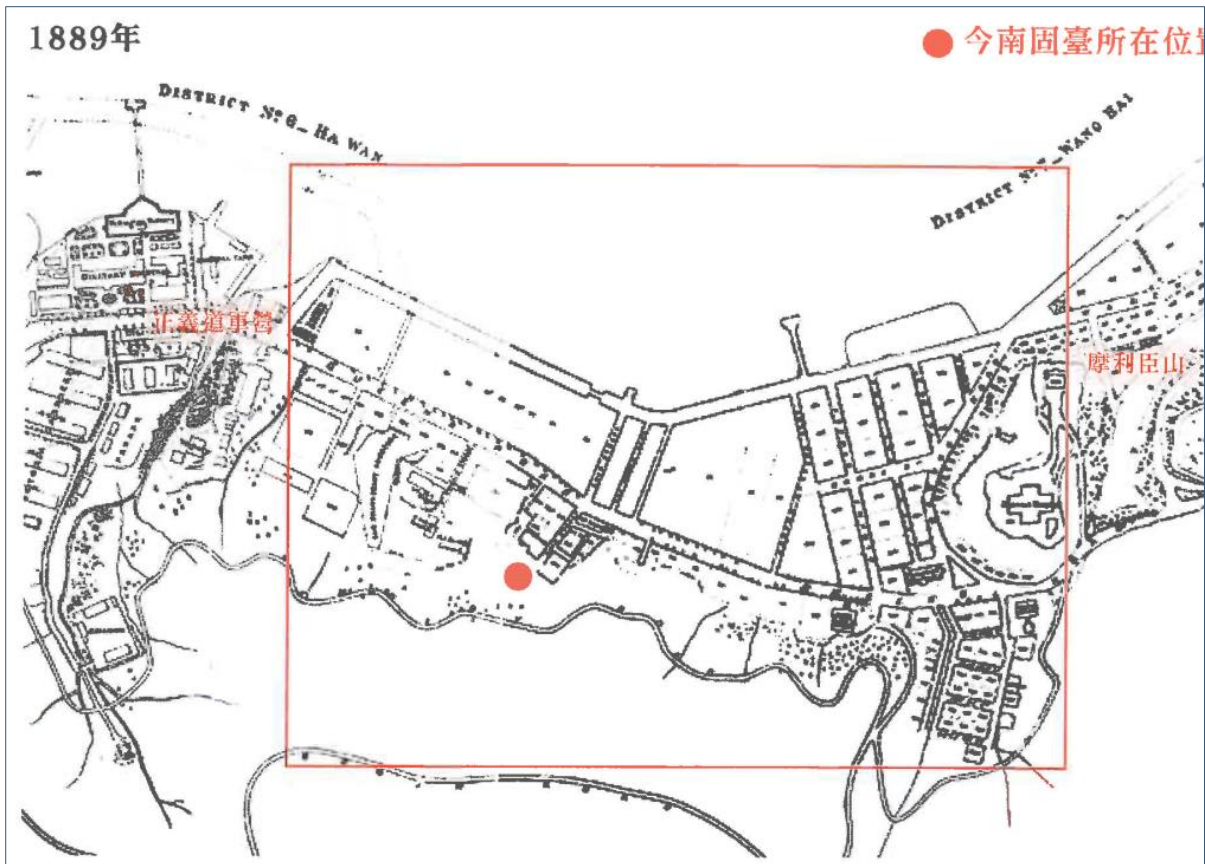
圖片13 刻着「洋船街」的路牌

⁶ 施其樂著，宋鴻耀譯，《歷史的覺醒：香港社會史論》，香港：香港教育圖書公司，1999年，160頁。

Source: 55 Wai Chai Ship Street Nam Koo Terrace Research Report, SEE Network Limited, Hong Kong, p.18

Reference Document 3

1889: Map Indicating That There Was No Development at the Present Nam Koo Terrace and Surrounding Areas



Source: 55 Wai Chai Ship Street Nam Koo Terrace Research Report, SEE Network Limited, Hong Kong, p.8

Reference Document 4

1922-45: Document Indicating that Areas Surrounding Nam Koo Terrace Were Used as Japanese Geisha, Including Chitose Hotel

南固臺於日治時期是否曾作慰安所？

日軍於1942年2月20日，宣佈香港為佔領地；同年8月，副總督平野茂通知防衛司令部岡田梅吉計劃在港設立500家慰安所，並在駱克道一帶圍地作「慰安區」，封佔160多間樓宇，要求住戶必須在三天內無條件遷出¹²。但從資料可見，杜澤文於1943年4月16日，即「慰安區」成立後，死於南固臺大宅地下。

對照兩方資料來推論，日佔中期的1943年，南固臺很可能仍是杜家宅第，未被徵用作其他用途。另一方面，南固臺毗鄰亦曾有日式高級藝妓場所千歲花壇經營，地點接近可能造成部分距離較遠的街坊印象混淆，反而最近範圍的鄰舍則卻未有聽聞，誤會不排除由是而起。

¹² 謝永光：《戰時日軍在香港暴行》，香港：明窗出版社，1999

千歲花壇—高級日本酒店

從1922年的街道索引可見，厚豐街6號為一日本酒店，應為「千歲花壇」。

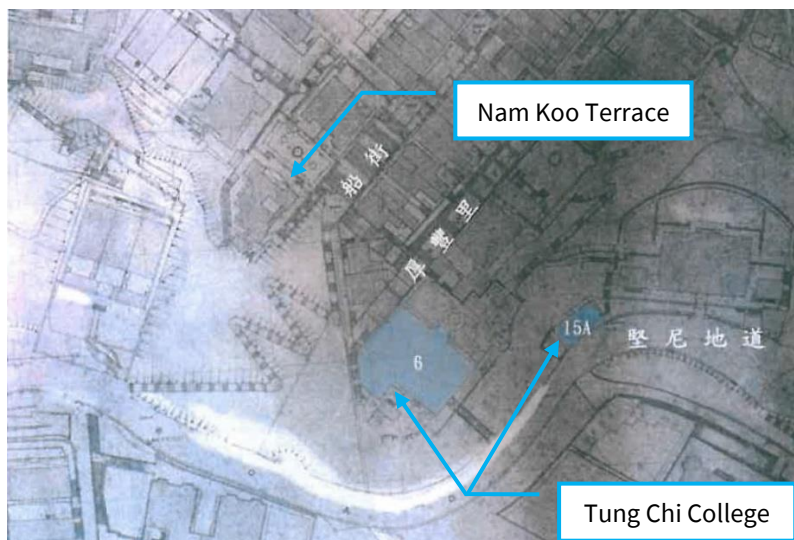
《日本人訪港見聞錄》收錄了1898-1941年訪港日人的所見所聞，當中不只一篇有提及一所位近堅尼地道，名為「千歲花壇」的高級日本娛樂場所：

「五時過後，我們便乘車往堅尼地道一處叫『千歲花壇』的地方，它座落的地方跟前環島一周的公路相反，由於地處島上的高處，可以俯瞰香港的市街。下車後，我們沿路首先走到千歲花壇的屋頂，再從屋頂的入口走下兩道樓梯，來到宴會廳。在走下來之前，我們在屋頂上觀賞了下方的景緻一會兒，車子又拍了照。」

「到千歲花壇去，上次走上邊的路，由屋頂往下走，今次改走下邊的路，得步上很多石級。上次相識的八重、久千代等都來了，侍候杯盤，還有千菊、玉千江等新臉孔。」

山木實彥 04-16.11.1937

高瀆虛子 28-29.02.1936



Source: 55 Wai Chai Ship Street Nam Koo Terrace Research Report, SEE Network Limited, Hong Kong, p.46, 58, 65

Reference Document 5

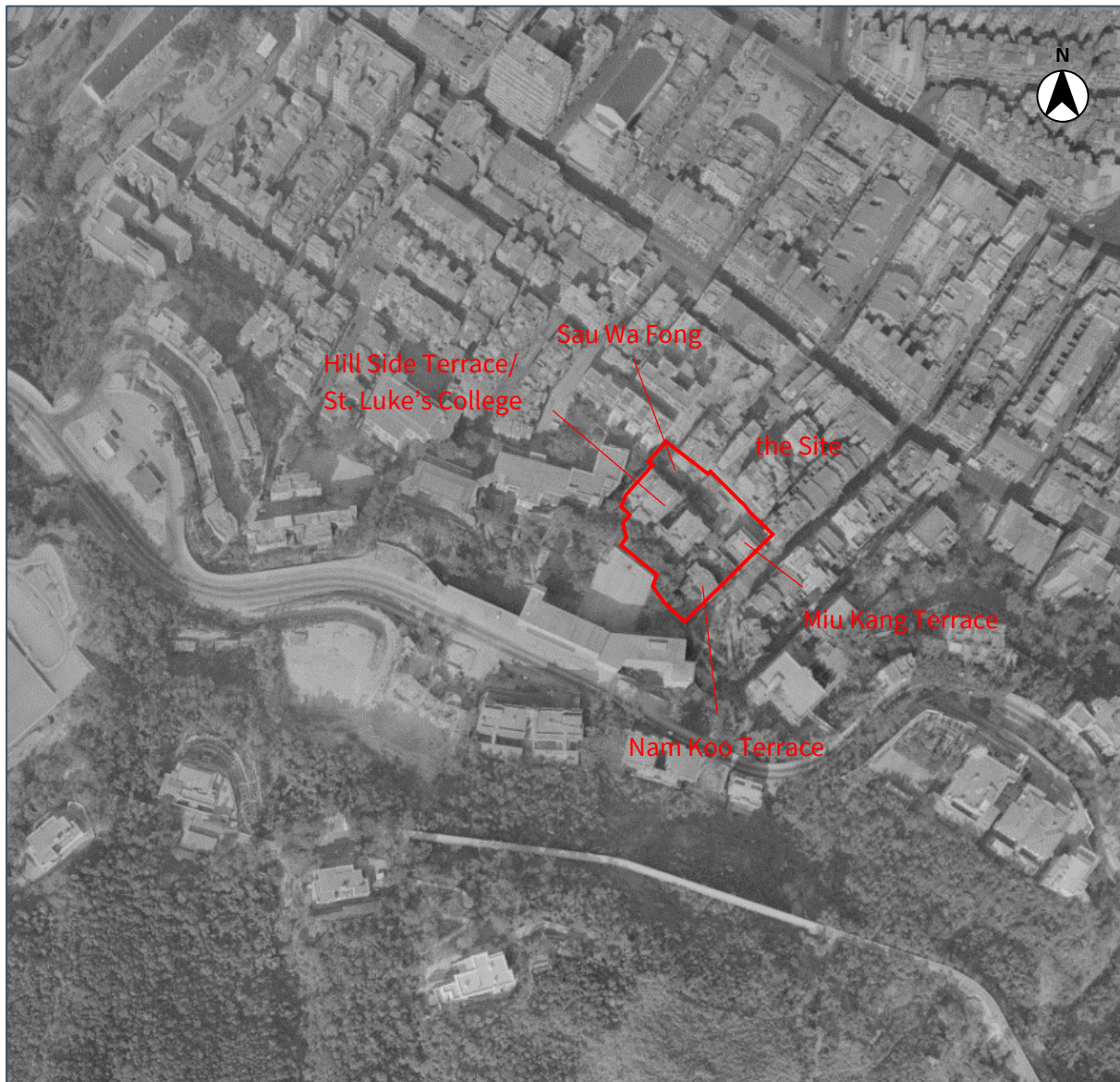
1959 - 80: Map Showing Areas Surrounding Nam Koo Terrace



Source: 55 Wai Chai Ship Street Nam Koo Terrace Research Report, SEE Network Limited, Hong Kong, p.57

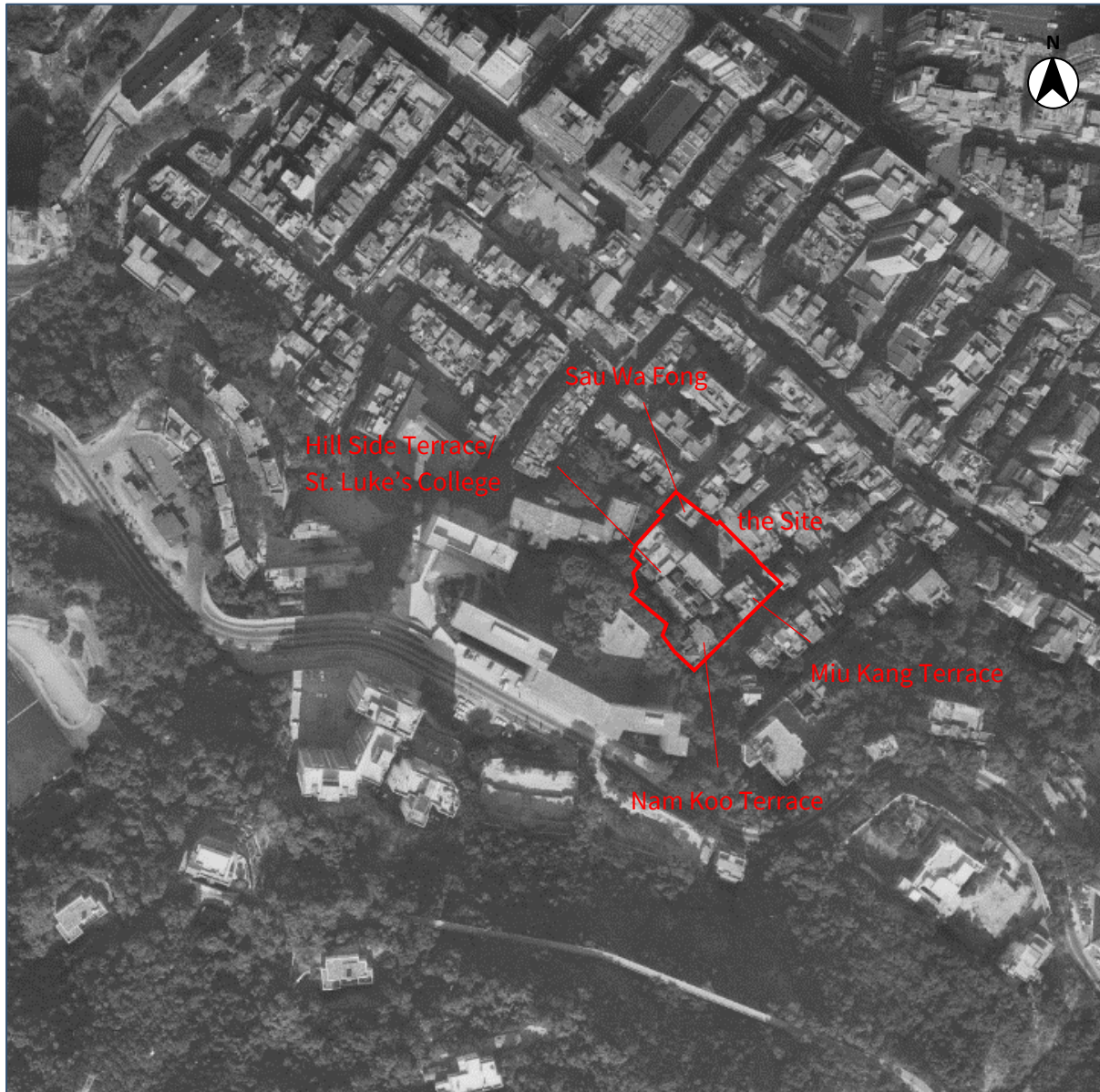
Appendix F HISTORICAL AERIAL PHOTOGRAPHS

Figure E-1 Aerial Photograph in Year 1963



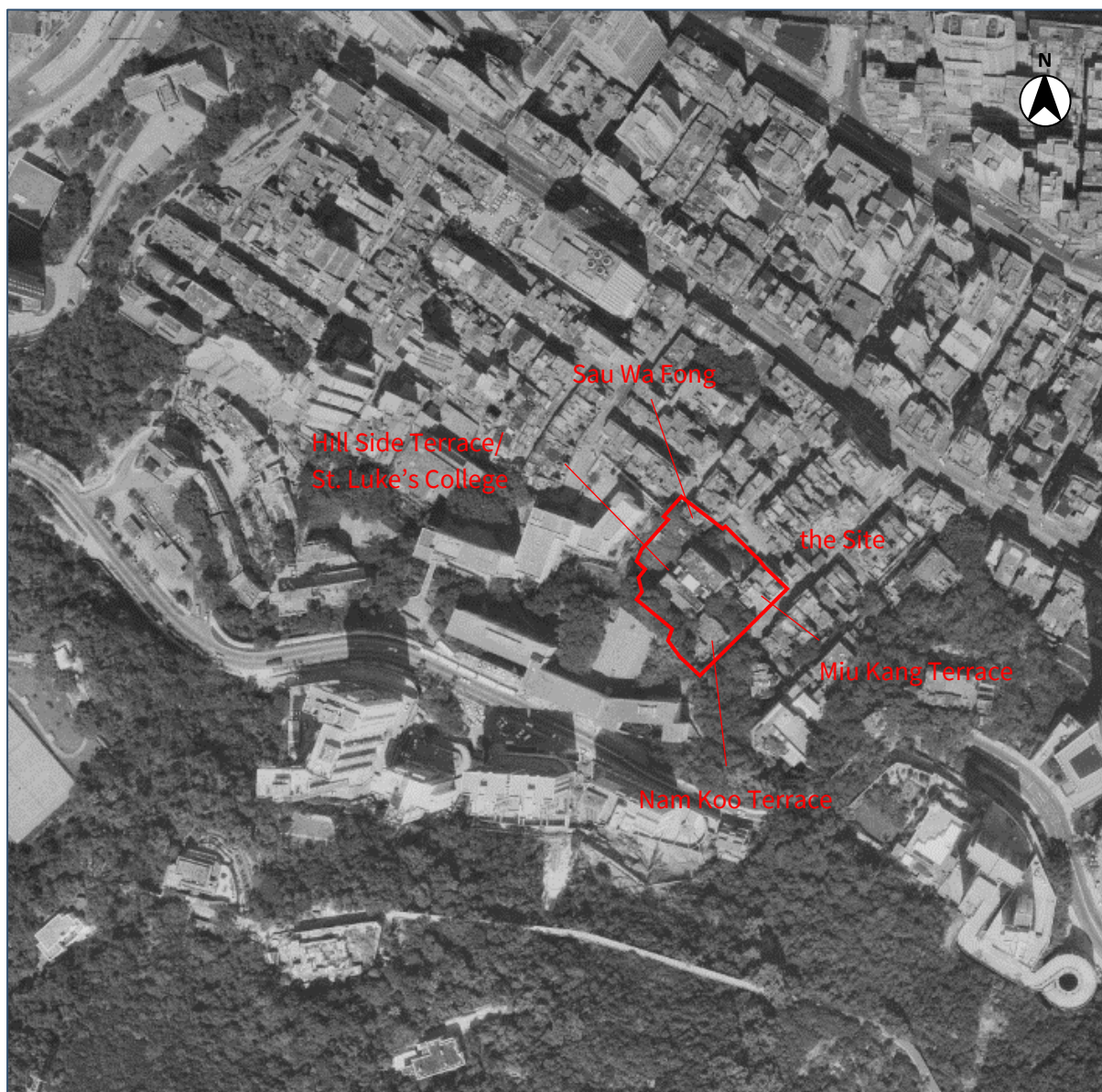
Nam Koo Terrace, Hill Side Terrace, and Miu Kang Terrace had been already developed for residential uses and school in Year 1963 (the earliest aerial photo available). No. 18 Sau Wa Fong was a piece of vacant land. No land use with potential land contamination activities was observed.

Figure E-2 Aerial Photograph in Year 1973



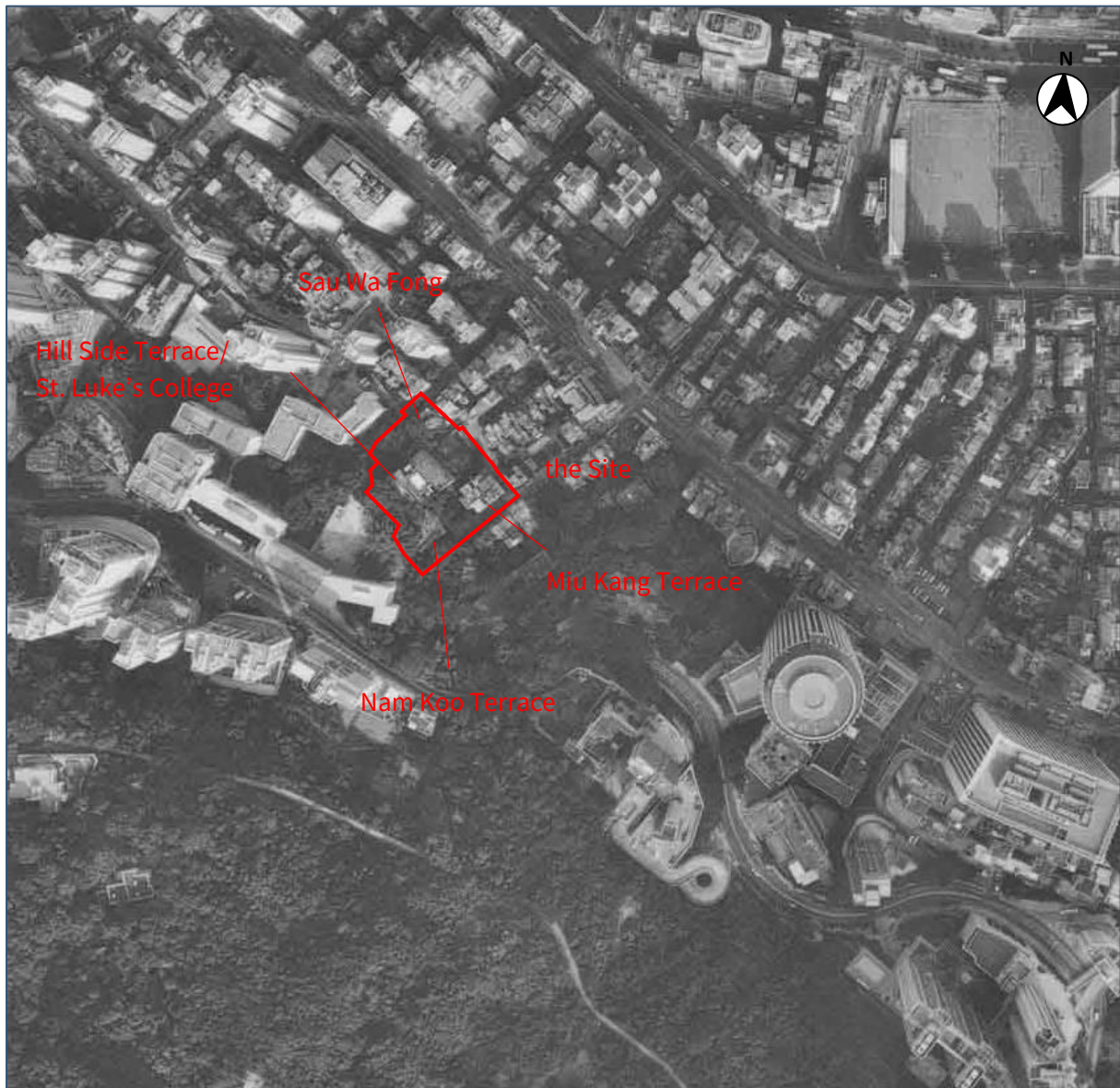
Minor modification of buildings was observed at Hill Side Terrace in Year 1973. However, the land uses at Nam Koo Terrace, Hill Side Terrace and Miu Kang Terrace remain the same as residential uses and school. A residential building was developed at No. 18 Sau Wa Fong. No land use with potential land contamination activities was observed.

Figure E-3 Aerial Photograph in Year 1983



No change was observed between Year 1983 and Year 1973. The land uses at Nam Koo Terrace, Hill Side Terrace, Miu Kang Terrace and No. 18 Sau Wa Fong remained as residential uses or school. No land use with potential land contamination activities was observed.

Figure E-4 Aerial Photograph in Year 1993



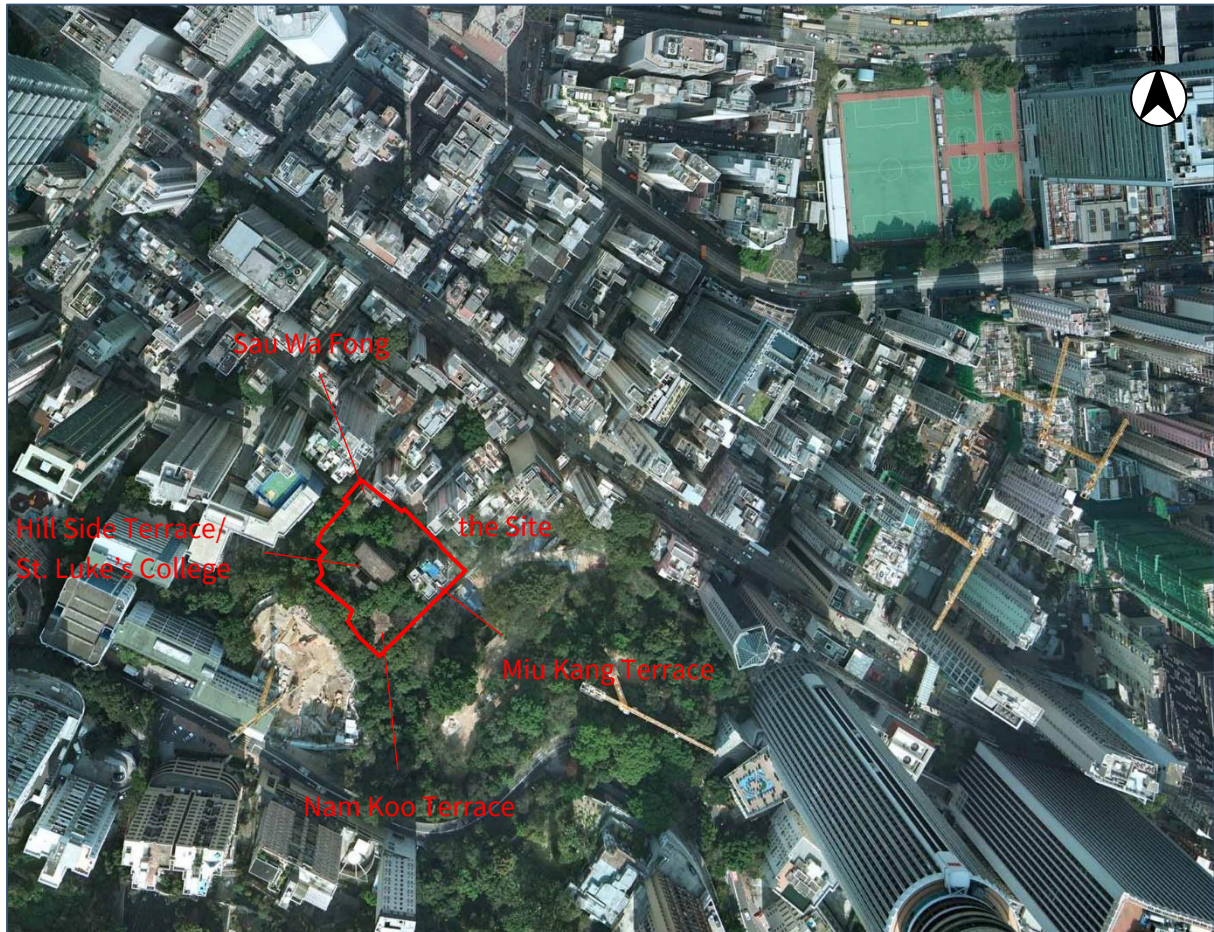
No change was observed between Year 1983 and Year 1993. The land uses at Nam Koo Terrace, Hill Side Terrace, Miu Kang Terrace and No. 18 Sau Wa Fong remained as residential uses or abandoned school. No land use with potential land contamination activities was observed.

Figure E-5 Aerial Photograph in Year 2003



No change was observed between Year 1993 and Year 2003. The land uses at Nam Koo Terrace, Hill Side Terrace, Miu Kang Terrace and No. 18 Sau Wa Fong remained as residential uses or abandoned school. No land use with potential land contamination activities was observed.

Figure E-6 Aerial Photograph in Year 2013



No change was observed between Year 2003 and Year 2013. The land uses at Nam Koo Terrace, Hill Side Terrace, Miu Kang Terrace and No. 18 Sau Wa Fong remained as residential uses or abandoned school. No land use with potential land contamination activities was observed.

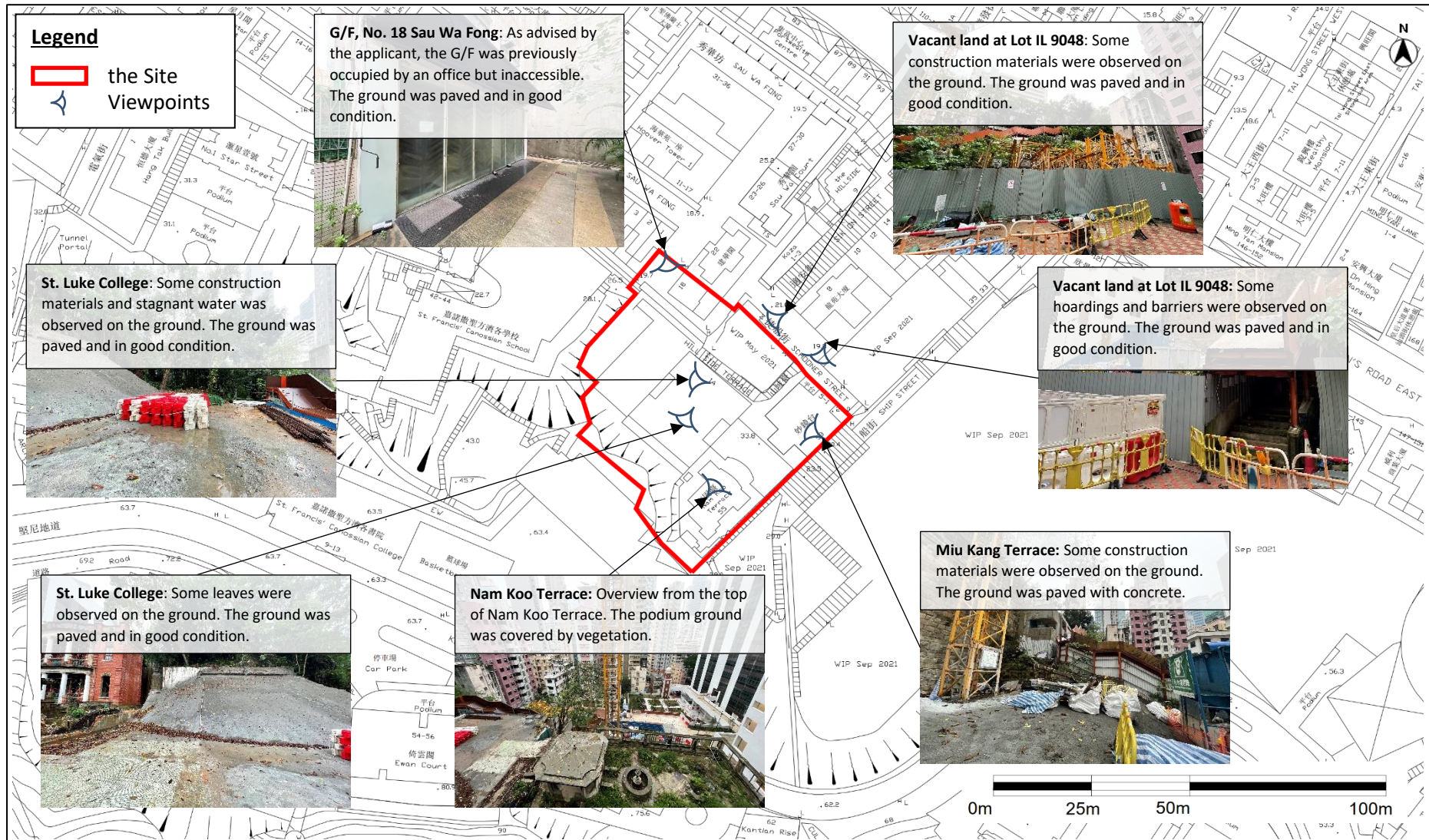
Figure E-7 Aerial Photograph in Year 2021



No change was observed between Year 2013 and Year 2021. The land uses at Nam Koo Terrace, Hill Side Terrace, Miu Kang Terrace and No. 18 Sau Wa Fong remained as residential uses or abandoned school. No land use with potential land contamination activities was observed.

Appendix G **SITE SURVEY PHOTOGRAPHS AND SITE WALKOVER CHECKLISTS**

Site Survey Photographs Taken on 26 April 2024



Site Walkover Checklist for Site Inspection on 26 April 2024

Annex C1

Site Walkover Checklist

GENERAL SITE DETAILS

SITE OWNER/CLIENT Yuba Company Limited

PROPERTY ADDRESS Nam Koo Terrace, Hill Side Terrace, Miu Kang Terrace,
Inland Lot No. 9048, No. 18 Sau Wah Fong and Adjoining
Government Land

PERSON CONDUCTING THE QUESTIONNAIRE

NAME Charls LIANG

POSITION Environmental Consultant

AUTHORIZED OWNER/CLIENT REPRESENTATIVE (IF APPLICABLE)

NAME N/A

POSITION N/A

TELEPHONE N/A

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: _____

Part-time: _____

Temporary/Seasonal: _____

Maximum no. of people on site at any time: N/A _____

Typical hours of operation: _____

Number of shifts: _____

Days per week: _____

Weeks per year: _____

~~Scheduled plant shut-down: _____~~

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: 3,158 m³

What area of the site is covered by buildings (%): 90%

Please list all current and previous owners/occupiers if possible. N/A

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: N/A

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

North: Residential blocks

South: Slope, education institution

East: Commercial use, hotel

West: Education institution

Annex C1

Site Walkover Checklist

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

Paved area sitting on the slope

State the size and location of the nearest residential communities.

The nearest medium-size residential communities are located to the north of the site

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

No

Questionnaire with Existing/Previous Site Owner or Occupier

	Yes/No	Notes
1. What are the main activities/operations at the above address?		Vacant land, abandoned buildings
2. How long have you been occupying the site?		10~40 years
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?	N/A	
5. What were the main activities/operations during their occupancy?		Residential/Retail/Educational Use
6. Have there been any major changes in operations carried out at the site in the last 10 years?	No	
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?	N/A	
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 these materials? (If yes, please provide details.)	No	

	Yes/No	Notes
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)?	N/A	
16. Do you have any underground storage tanks? (If yes, please provide details.)	No	
• How many underground storage tanks do you have on site?	N/A	
• What are the tanks constructed of?	N/A	
• What are the contents of these tanks?	N/A	
• Are the pipelines above or below ground?	N/A	
• If the pipelines are below ground, has any leak and integrity testing been performed?	N/A	
• Have there been any spills associated with these tanks?	N/A	
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	
19. How are the wastes disposed of?		General refuse to be disposed of at landfill
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?	N/A	
• What were the substances spilled?	N/A	
• What was the quantity of material spilled?	N/A	
• Did you notify the relevant departments of the spill?	N/A	
• What were the actions taken to clean up the spill?	N/A	
• What were the areas affected?	N/A	
22. Do you have any records of major renovation of your site or re-arrangement of underground utilities, pipe work/underground tanks (If yes, please provide details.)	No	
23. Have disused underground tanks been removed or otherwise secured (e.g. concrete, sand, etc.)?	No	
24. Are there any known contaminations on site? (If yes, please provide details.)	No	
25. Has the site ever been remediated? (If yes, please provide details.)	No	

Annex C1

Site Walkover Checklist

Observations

	Yes/No	Notes
1. Are chemical storage areas provided with secondary containment (i.e. bund walls and floors)?	N/A	
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	
4. Are any solid or liquid waste (other than wastewater) generated at the site? (If yes, please provide details.)	Yes	General refuse, construction waste
5. Is there a storage site for the wastes?	Yes	
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	

Appendix H **CORRESPONDENCE WITH EPD AND FSD**

Information Request to EPD



EnviroSolutions & Consulting Ltd

Solutions for Environment | Safety | Sustainability

16/F & 17/F, 700 Nathan Road, Mong Kok,
Kowloon, Hong Kong
+852 3960 7000
+852 3960 7111
www.envirosc.com | www.simplyehs.com
enquiries@envirosc.com

Our Ref. EPA23.1039-J.01/L00087/AW/CL
Your Ref.

15 April 2024

Wanchai - Regional Office (South)
Environmental Compliance Division
Environmental Protection Department
3rd floor, Chinachem Exchange Square
1 Hoi Wan Street, Quarry Bay, Hong Kong

By Email (cnlee@epd.gov.hk)

Attention: Mr. LEE Chee Ngai, Joseph

Dear Sir

**Section 12A Rezoning Application at Nam Koo Terrace, Hill Side Terrace, Miu Kang Terrace, Inland Lot No. 9048, No. 18 Sau Wah Fong and Adjoining Government Land
Environmental Assessment - Information Request to EPD**

We have been appointed by Hopewell Construction Company Limited as the Environmental Consultant to prepare an Environmental Assessment for the captioned project. The site location of the project is shown in **Figure 1**. Appointment letter is also provided for your information.

To address the potential land contamination issue, we would appreciate if you could provide us with a list of records of Chemical Waste Producers Registration or incidents of chemical spillage/leakage, etc, if any.

Should you have any enquiries regarding the above, please do not hesitate to contact our Charls LIANG on 3960 7141 or undersigned on tel. 3960 7211.

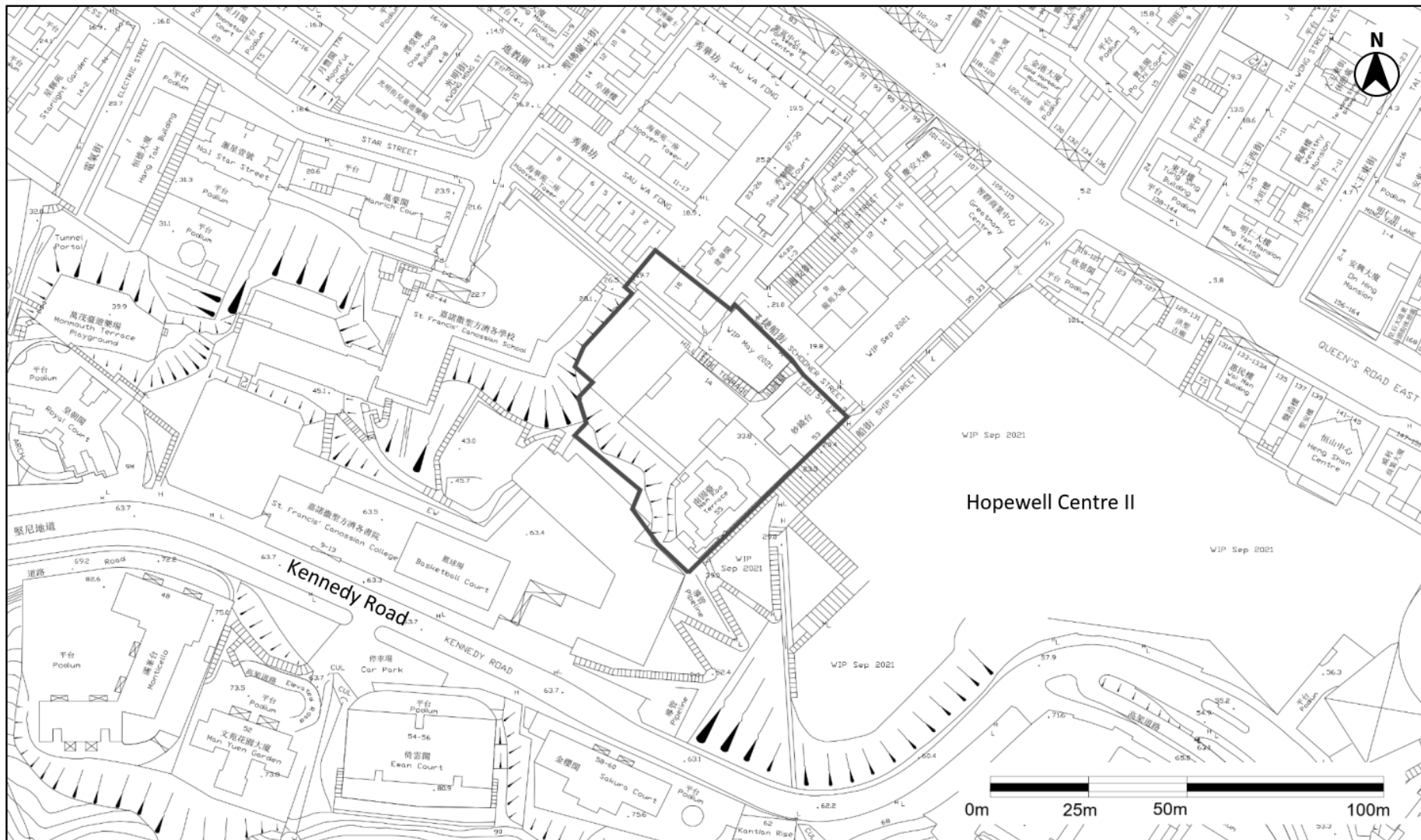
Yours faithfully
for and on behalf of ESC



Antony WONG
Country Manager, Hong Kong



Figure 1: Site Location



EPD's Reply

From: cnlee@epd.gov.hk
Sent: Friday, 19 April 2024 2:16 pm
To: Charls LIANG
Cc: Antony; Matthew Joseph WALKDEN
Subject: Re: EPA23.1039-J.01 S12A Rezoning Application at Nam Koo Terrace _Information Request to EPD

Dear Charls,

I refer to your mail referenced above dated 15 April 2024, requesting the following information with respect to study area in your attached figure:

- (1) Historical Records of Chemical Spillage / Leakage
- (2) Chemical Waste Producers Registration

Please be advised that this Regional Office (South) does not have any record of potential land contamination incident and Chemical Waste Producers Registration within the site boundary. However, please be reminded that this information is not exhaustive and you are advised to check with other concerned parties/authorities. You may also consider taking samples for your study of land contamination, if necessary.

Best Regards,
Joseph Lee
AE(RS)43
Environmental Protection Department
2516 1876

From: Charls LIANG <charls.liang@envirosc.com>
To: "cnlee@epd.gov.hk" <cnlee@epd.gov.hk>
Cc: Antony <antony@envirosc.com>, Matthew Joseph WALKDEN <matt@envirosc.com>
Date: 15/04/2024 12:26
Subject: EPA23.1039-J.01 S12A Rezoning Application at Nam Koo Terrace _Information Request to EPD

Dear Mr. LEE,

**Section 12A Rezoning Application at Nam Koo Terrace, Hill Side Terrace, Miu Kang Terrace, Inland Lot No. 9048, No. 18 Sau Wah Fong and Adjoining Government Land
Environmental Assessment - Information Request to EPD**

We have been appointed by Hopewell Construction Company Limited as the Environmental Consultant to prepare an Environmental Assessment for the captioned project. Please refer to the attached letter for details of the project and requested information.

To address the potential land contamination issue, we would appreciate if you could provide us with a list of records of Chemical Waste Producers Registration or incidents of chemical spillage/leakage, etc., if any. Should you have any enquiries regarding the above, please do not hesitate to contact our Antony WONG on 3960 7211 or me on 3960 7141. Thanks.

Information Request to FSD



EnviroSolutions & Consulting Ltd

Solutions for Environment | Safety | Sustainability

16/F & 17/F, 700 Nathan Road, Mong Kok,
Kowloon, Hong Kong
+852 3960 7000
+852 3960 7111
www.envirosc.com | www.simplyehs.com
enquiries@envirosc.com

Our Ref. EPA23.1039-J.01/L00088/AW/CL
Your Ref.

15 April 2024

Corporate Services Division
Corporate Strategy Command
Fire Services Department
9/F, Fire Services Headquarters Building
1 Hong Chong Road, Tsim Sha Tsui East
Kowloon, Hong Kong

By Email (ado_lad@hkfsd.gov.hk)

Attention: Mr. LAI Kin Man

Dear Sir

**Section 12A Rezoning Application at Nam Koo Terrace, Hill Side Terrace, Miu Kang Terrace, Inland Lot No. 9048, No. 18 Sau Wah Fong and Adjoining Government Land
Environmental Assessment - Information Request to FSD**

We have been appointed by Hopewell Construction Company Limited as the Environmental Consultant to prepare an Environmental Assessment for the captioned project. The site location of the project is shown in **Figure 1**. Appointment letter is also provided for your information.

To address the potential land contamination issue, we would appreciate if you could provide us with a list of records of dangerous goods license, fire incidents or incidents of spillage/leakage of dangerous goods, etc. relating to the Site, if any.

Should you have any enquiries regarding the above, please do not hesitate to contact our Charls LIANG on 3960 7141 or undersigned on tel. 3960 7211.

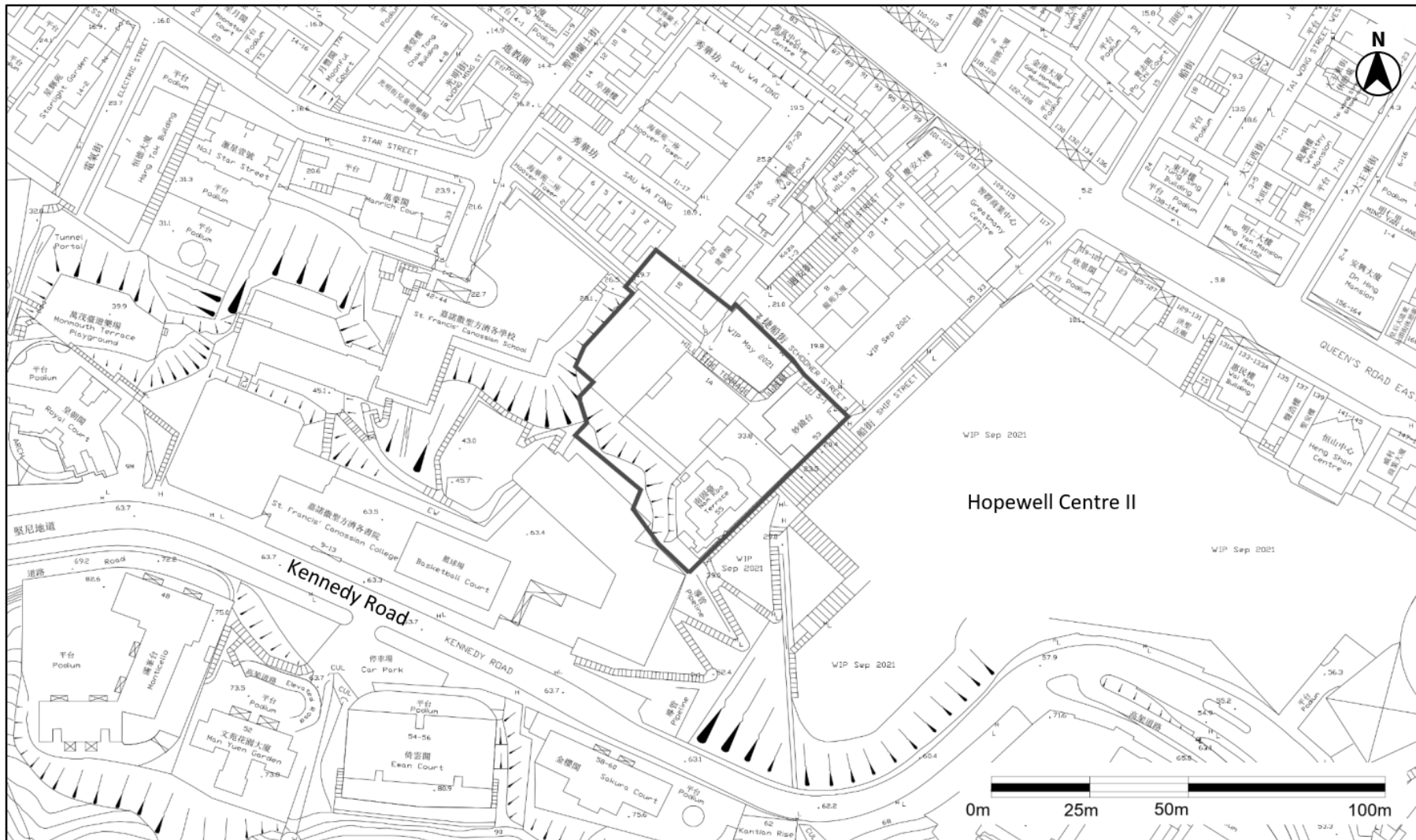
Yours faithfully
for and on behalf of ESC



Antony WONG
Country Manager, Hong Kong



Figure 1: Site Location



FSD's Reply

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.** : (18) in FSD GR 6-5/4 R Pt. 53
來函檔號 **YOUR REF.** : EPA23.1039-J.01/L.00088/AW/CL
電子郵件 **E-mail** : hkfsdenq@hkfsd.gov.hk
圖文傳真 **FAX NO.** : 2988 1196
電話 **TEL NO.** : 2733 7570

7 May 2024

EnviroSolutions & Consulting Ltd
16/F & 17/F,
700 Nathan Road,
Mong Kok, Kowloon.
(Attn: Mr. Antony WONG, Country Manager)

Dear Mr. WONG,

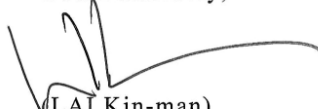
**Section 12A Rezoning Application at Nam Koo Terrace,
Hill Side Terrace, Miu Kang Terrace, Inland
Lot No. 9048, No. 18 Sau Wah Fong and Adjoining Government Land
Request for Information of Dangerous Goods & Incident Records**

I refer to your letter of 15.4.2024 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 1 incident record was 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

Ref. number and date should be quoted in reference to this letter
凡提及本信時請引述編號及日期

Appendix A

**Section 12A Rezoning Application at Nam Koo Terrace,
Hill Side Terrace, Miu Kang Terrace, Inland
Lot No. 9048, No. 18 Sau Wah Fong and Adjoining Government Land
Request for Information of Dangerous Goods & Incident Records**

No.	Date	Type of Incident	Address
1.	19/8/2023	No.1 Fire Alarm	53 Ship Street, Miu Keng Terrace



EnviroSolutions & Consulting Ltd

16/F & 17/F
700 Nathan Road
Mong Kok
Kowloon
Hong Kong

Tel: No. +852 3960 7000 | Fax: +852 3960 7111

Email: enquiries@envirosc.com

Web: www.envirosc.com | www.simplyehs.com



Accountability

We understand the importance of being accountable to each other and our clients.



Passion

We are completely passionate about providing practical solutions and outcomes that deliver for our clients.



Insight

We work in an environment that encourages and values insight as a critical quality which informs our decisions and our clients and supports practical solutions and project delivery.



Integrity

We behave with respect and honesty toward each other, our clients and our stakeholders.