Enclosure | 4

Revised Environmental Assessment

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D01 Environmental Assessment

S12A Rezoning Application – Request for Amendment to the Lung Yeuk Tau and Kwan Tei South OZP from "Residential (Group C)" Zone and "Agriculture" Zone to "Residential (Group A)2" Zone at Various Lots in D.D. 83 and Adjoining Government Land, Lung Yeuk Tau, N.T.

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This report is confidential and is provided solely for the purposes of supporting S12A Rezoning Application – Request for Amendment to the Lung Yeuk Tau and Kwan Tei South OZP from "Residential (Group C)" Zone and "Agriculture" Zone to "Residential (Group A)2" Zone at Various Lots in D.D. 83 and Adjoining Government Land, Lung Yeuk Tau, N.T.. This report is provided pursuant to a Consultancy Agreement between SMEC Asia Limited ("SMEC") and Carlton Woodcraft Manufacturing Ltd, under which SMEC undertook to perform specific and limited tasks for Carlton Woodcraft Manufacturing Ltd. This report is strictly limited to the matters stated in it and subject to the various assumptions, qualifications and limitations in it and does not apply by implication to other matters. SMEC makes no representation that the scope, assumptions, qualifications and exclusions set out in this report will be suitable or sufficient for other purposes nor that the content of the report covers all matters which you may regard as material for your purposes.

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1 PROJECT BACKGROUND

1.1 Introduction

1.1.1 With reference to the latest policy address in developing the Northern Metropolis, it is aimed to optimise the use of land resources, adopt a higher development intensity and increase high-quality housing supply. In order to address the aforementioned needs, it is planned to redevelop a land with an area of approximately 22,445m^2 comprising various lots in D.D. 83, and the adjoining government land with an area of about 1,358m^2, Lung Yeuk Tau, New Territories, into proposed flat, shop and services and eating place ("the Site" or "the Proposed Development").

1.1.2 The Site is currently zoned "Residential (Group C)" ("R(C)") and "Agriculture" ("AGR") under the Lung Yeuk Tau and Kwan Tei South Outline Zoning Plan ("OZP") No. S/NE-LYT/19. It is planned to develop a commercial complex for shop and services and eating place, and Residential Development comprising five blocks for domestic use.

1.1.3 In this regard, a rezoning application under Section 12A of the *Town Planning Ordinance* ("TPO") to rezone the Site from "R(C)" and "AGR" zones to "Residential (Group A)2 ("R(A)2") zone under Column 1 shall be required. SMEC Asia Ltd ("SMEC") has been commissioned to conduct this Environmental Assessment ("EA") to support the application.

1.2 Site Description

1.2.1 The Site is located in a developed area in Lung Yeuk Tau, New Territories, which is a flat land used for workshop, storage and warehouses. Its northern part is currently occupied by a permanent domestic structure, temporary structures for open storage yards, storage of construction materials and workshops, open carparks and vacant land. The southern part is currently occupied by the Applicant for warehouse storage.

1.2.2 As shown on ***Figure 1-1***, Sha Tau Kok Road (Lung Yeuk Tau) Section is located to the immediate north of the Site that runs along the northeast-southwest direction. Across the opposite site of Sha Tau Kok Road (Lung Yeuk Tau) Section, there are San Wai Barracks, a recycling centre and some warehouses. The Site is mainly surrounded by Tung Chun Soy Sauce factory place and some vegetated land to the east, Queen's Hill Estate to the south, village houses and warehouses to the west, intermixed with temporary structures, scattered vegetated and abandoned land.

1.3 Project Description

1.3.1 The Proposed Development will tentatively comprise a commercial complex and a Residential Development with the following components:

- Five Residential Blocks
- One Clubhouse
- One Swimming Pool
- One Commercial Complex
- One Sewage Treatment Plant ("STP")

1.3.2 The tentative intake year of the Proposed Development is 2031.

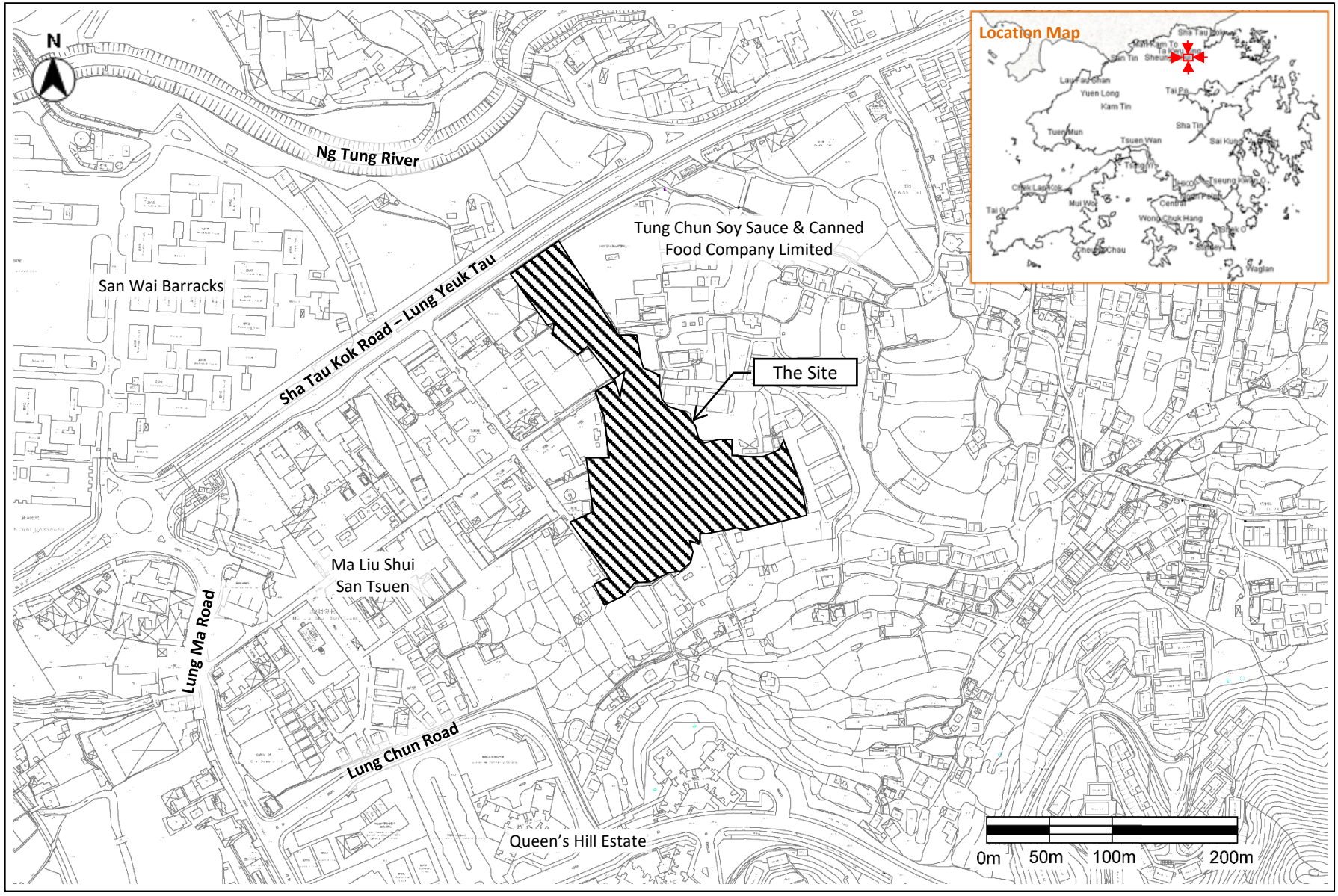
1.4 Objective of this Report

1.4.1 The objectives of this EA are to:

- Identify and qualitatively assess potential environmental impacts arising from surrounding emissions to the Site, as well as that arising from the operation of the Project Site to the nearby sensitive uses, in terms of air quality, noise, water quality and waste management.

- Mitigation measures have been recommended, where appropriate, to alleviate any identified environmental impacts or constraints during the operation of the Project. Potential environmental impacts during construction phase, thought transient, have also been reviewed and mitigation measures have been recommended to reduce any identified environmental impacts to acceptable levels.

Figure 1-1: Site Location and its Environs



2 AIR QUALITY

2.1 Introduction

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

2.2 Environmental Legislation and Standards

Air Quality Objectives

2.2.1 The Air Quality Objectives ("AQOs") established under the *Air Pollution Control Ordinance* ("APCO") (Cap. 3.11) enacted from 1 January 2022 are given in ***Table 2-1***.

Table 2-1: Hong Kong Air Quality Objectives

POLLUTANT	AVERAGING TIME	PREVAILING AQOs	
		CONCENTRATION LIMIT [1] ($\mu g/m^3$)	NO. OF EXCEEDANCE ALLOWED
Sulphur Dioxide ("SO_2")	10-minutes	500	3
	24-hour	50	3
Respirable Suspended Particulates ("RSP" or "PM_{10}") [2]	24-hour	100	9
	Annual	50	N/A
Fine Suspended Particulates ("FSP" or "$PM_{2.5}$") [3]	24-hour	50	35
	Annual	25	N/A
Nitrogen Dioxide (NO_2)	1-hour	200	18
	Annual	40	N/A
Ozone ("O_3")	8-Hour	160	9
Carbon Monoxide ("CO") [4]	1-hour	30,000	0
	8-Hour	10,000	0
Lead ("Pb")	Annual	0.5	N/A

Notes:

1. All measurements of the concentration of gaseous air pollutants, i.e., sulphur dioxide, nitrogen dioxide, ozone and carbon monoxide, are to be adjusted to a reference temperature of 293 Kelvin and a reference pressure of 101.325 kilopascal.
2. RSP or PM10 means suspended particles in air with a nominal aerodynamic diameter of 10 µm or less.
3. FSP or PM2.5 means suspended particles in air with a nominal aerodynamic diameter of 2.5 µm or less.
4. The 8-hour mean of CO concentration is calculated based on Item 9 of Schedule 5 of APCO. The maximum daily 8-hour mean concentration of CO in air is selected by examining 8-hour running averages, calculated from CO hourly data and updated each hour, that is:
   - **(a)** the first calculation period for a day is the period from 5pm on previous day to 1am on that day.
   - **(b)** the last calculation period for a day is the period from 4pm to 12 midnight on that day.

Air Pollution Control (Construction Dust) Regulation

2.2.2 Enacted under Section 43 of the APCO, the *Air Pollution Control (Construction Dust) Regulation* defines notifiable and regulatory works to ensure effective dust abatement measures have been properly implemented to reduce dust emissions for a number of construction activities.

2.2.3 The Regulation requires that any notifiable work [Ref. #1] shall give advance notice to the Environmental Protection Department ("EPD"), and the contractor shall ensure that the notifiable and regulatory works are carried out in accordance with the Schedule of the Regulation. Dust control and suppression measures are also provided in the Schedule.

Air Pollution Control (Furnaces, Ovens and Chimneys) (Installation and Alteration) Regulations

2.2.4 Enacted under Section 43 of the APCO, the *Air Pollution Control (Furnaces, Ovens and Chimneys) (Installation and Alteration) Regulations* stipulate that a prior approval from EPD will be required if the total fuel consumption capacity of any fuel-burning equipment or its chimney on premises to be installed or altered exceeds (a) 25 litres ("L") of conventional liquid fuel per hour; or (b) 35 kilograms (kg) of conventional solid fuel per hour; or (c) 1,150 megajoules ("MJ") of any gaseous fuel per hour.

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

2.2.5 This Regulation requires Non-road Mobile Machinery ("NRMM"), except those exempted, to comply with the prescribed emission standards. All regulated machines sold or leased for use in Hong Kong must be approved or exempted with a proper label in a prescribed format issued by EPD. Only approved or exempted NRMMs with a proper label are allowed to be used in specified activities and locations including construction sites, container terminals and back up facilities, restricted areas of the airport, designated waste disposal facilities and specified processes.

Hong Kong Planning Standards and Guidelines (HKPSG)

2.2.6 The minimum buffer distances required between different types of roads and active open spaces are recommended in Chapter 9 Environment of *Hong Kong Planning Standards and Guidelines* ("HKPSG") and are summarised in ***Table 2-2*** for ease of reference.

Table 2-2: HKPSG Minimum Setback Distances

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

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

2.2.7 The minimum buffer distances required between industrial chimneys and active open spaces are recommended in HKPSG as well. The relevant buffer distances of HKPSG are summarised in ***Table 2-3*** for ease of reference.

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

Table 2-3: HKPSG Recommended Setback Distances from Industrial Chimneys

Pollution Source	Difference in Height between Industrial Chimney Exit and the Site	Buffer Distance	Permitted Uses
Industrial Chimneys	< 20m	> 200m	Active and passive recreation use
		5 – 200m	Passive recreational use
	20 – 30m	> 100m	Active and passive recreational use
		5 – 100m	Passive recreational uses
	30 – 40m	> 50m	Active and passive recreational use
		5 – 50m	Passive recreational use
	> 40m	> 10m	Active and passive recreational use

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

2.2.8 Minimum buffer distance of 200m is required between odour sources and sensitive use, as recommended in HKPSG.

2.3 Background Air Quality

2.3.1 The surrounding areas of the Site is generally located at a developed area in Lung Yeuk Tau, which are surrounded by warehouses, open storages, factories, a number of low-rise residential blocks located at its west and high-rise public estates to the south of the Site.

2.3.2 The major road networks at the surrounding of the Site include Sha Tau Kok Road (Lung Yeuk Tau) Section located to its north, Dao Yang Road and Hai Wing Road to the west of the Site.

2.3.3 To evaluate the background air quality of the Site, EPD air quality monitoring data from air quality monitoring station ("AQMS") at Northern District between 2021 and 2022, and air quality data from PATH v2.1 model (year 2025 at Level 1 of Grid cells (38,54) and (39,54)) were reviewed.

2.3.4 For the reviewed air quality monitoring data from monitoring station at Northern District, all the pollutant concentrations were compiled with the AQOs except ozone, as shown in ***Table 2-4***:Air Quality Monitoring Data from AQMS at Northern District. For the air quality data from PATH model, all pollutant data are lower than the AQOs except ozone with the number of exceedances more than that allowed, as shown in ***Table 2-5***: Air Quality Data from PATH v2.1 model at Level 1. Nevertheless, it is considered that the Site is not located in a severely polluted urban centre.

Table 2-4: Air Quality Monitoring Data from AQMS at Northern District

POLLUTANT	PARAMETER	CONCENTRATIONS (µg/m^3)		PREVAILING AQOs (µg/m^3) [1]
		2021	2022	
SO_2	4th highest 10-minute	18	27	500 (3)
	4th highest 24-hour	7	7	50 (3)
RSP	10th highest 24-hour	62	50	100 (9)
	Annual	25	23	50
FSP	36th highest 24-hour	25	25	50 (35)

POLLUTANT	PARAMETER	CONCENTRATIONS (µg/m³)		PREVAILING AQOs (µg/m³) [1]
		2021	2022	
	Annual	15	14	25
NO_2	19th highest 1-hour	135	115	200 (18)
	Annual	36	42	40
O_3	10th highest 8-hour	**187**	**197**	160 (9)

Notes:
1. Values in () indicate the number of exceedances allowed per year.
2. Data extracted from EPD Website (https://www.aqhi.gov.hk/en/download/air-quality-reportse469.html?showall=&start=1).
3. Bolded and underlined values represent exceedances of the AQOs.

Table 2-5: Air Quality Data from PATH v2.1 model at Level 1

POLLUTANT	PARAMETER	CONCENTRATIONS IN PATH GRIDS (µg/m³)		PREVAILING AQOs (µg/m³) [1]
		38,54	39,54	
SO_2	4th highest 10-minute	95	84	500 (3)
	4th highest 24-hour	11	11	50 (3)
RSP	10th highest 24-hour	66	65	100 (9)
	Annual	27	27	50
FSP	36th highest 24-hour	24	23	50 (35)
	Annual	15	16	25
NO_2	19th highest 1-hour	99	88	200 (18)
	Annual	12	11	40
O_3	10th highest 8-hour	**206**	**206**	160 (9)

Notes:
1. Values in () indicate the number of exceedances allowed under the AQOs.
2. With reference to EPD's guidelines on Choice of Models and Model Parameters, the concentration of 24-hour RSP is adjusted by adding 11.0 µg/m³.
3. With reference to EPD's guidelines on Choice of Models and Model Parameters, the concentrations of annual RSP and FSP are adjusted by adding 10.3 µg/m³ and 3.5 µg/m³.
4. Bolded and underlined values represent exceedances of the AQOs.

2.4 Assessment and Mitigation

Identification of Air Sensitive Receivers ("ASRs")

2.4.1 Based on the site visits conducted on 6 December 2022 and 18 January 2023, and the information on the survey map, several representative ASRs in the vicinity of the Site are identified, which are listed in ***Table 2-6*** and shown on ***Figure 2-1***. In addition, the Proposed Development itself is also identified as an ASR during the operation phase.

Table 2-6: Representative ASRs surrounding/ within the Site

ASR ID	DESCRIPTION	LAND USE	APPROX. SHORTEST DISTANCE TO SITE BOUNDARY (m)	ASSESSMENT HEIGHT (m)
A1	Tung Chun Soy Sauce & Canned Food Company Limited	Industrial	2	3
A2	Shun Cheong Electrical Products Factory Limited	Industrial	17	6
A3	No. 4 Dao Yang Road (恩基廬)	Residential	61	6
A4	No. 26 Hai Wing Road (英豪苑)	Residential	61	6
A5	Park Villa	Residential	3	6
A6	No. 31 Hai Wing Road (竹園)	Residential	1	6
A7	King Chong	Residential	1	6
A8	Domestic blocks within the Proposed Development	Residential	-	150
A9	Fresh air intakes of shopping arcade within the Proposed Development	Commercial	-	32
A10	Fresh air intakes of club house within the Proposed Development	Recreational	-	23

Construction Phase

2.4.2 Fugitive dust is the major impact that will be generated during construction activities, such as excavation, stockpiling, earth moving, transferring or handling of dusty materials, site formation, foundation and superstructure of the Proposed Development. Two-storey basement carpark and plant rooms will be constructed. Therefore, excavation works and stockpiling are expected in the construction stage. With the implementation of mitigation measures mentioned in ***paragraphs 2.4.3*** and ***2.4.4***, no adverse air quality including dust impact due to construction stage is anticipated.

2.4.3 With the implementation of mitigation measures that are recommended in the *Air Pollution Control (Construction Dust) Regulation*, dust generation can be controlled and significant fugitive dust impact is therefore not anticipated.

2.4.4 To avoid adverse dust impact on the air sensitive uses nearby, good practice and dust control measures to be implemented during the construction phase are as follows:

- Provide hard paving on open area, regular watering to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather.
- The working area of any excavation or earth moving operation shall be sprayed with water immediately before, during and immediately after the operation so as to maintain the entire surface wet.
- Frequent watering for particularly dusty areas and areas close to ASRs.
- Any stockpile of dusty materials shall be either covered entirely by impervious sheeting, placed in an area sheltered on the top and the 3 sides, or sprayed with water so as to maintain the entire surface wet.
- Where possible, dusty materials shall be sprayed with water immediately prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet.
- The working area for the uprooting of trees, shrubs, or vegetation or for the removal of boulders, poles, pillars or temporary or permanent structures shall be sprayed with water immediately before, during and immediately after the operation so as to maintain the entire surface wet.

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

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

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

Operation Phase

Industrial Emissions

2.4.7 A site visit was conducted on 18 January 2023 and 12 June 2023 to identify the potential air pollution sources in the vicinity of the Site. Based on the site visit, no active chimney or dusty use was identified within 200m from the Site. Therefore, the buffer distance between industrial chimneys and air sensitive uses recommended in Table 3.1 of Chapter 9 in HKPSG has been satisfied. No adverse air quality impact from industrial emissions is therefore anticipated.

Vehicular Emission from Open Road

2.4.8 Sha Tau Kok Road (Lung Yeuk Tau) is the major public road in the vicinity of the Site as shown on ***Figure 2-2***. It is 4 ways road with a traffic flow of about 2,500 vehicle/hour. There is planned upgrade for Sha Tau Kok Road. It should be classified as "Primary Distributor". A buffer distance of 20m recommended by the HKPSG should be adopted for Sha Tau Kok Road (Lung Yeuk Tau).

2.4.9 For Hai Wing Road and Dao Yang Road in the vicinity of the Site, they are not classified in ATC 2021. As discussed with TD, both roads are private roads and not managed by TD. Thus, the road types of the two roads could not be classified by TD. After reviewing the natures of the roads

with reference to the Traffic Planning and Design Manual version 2021, it is considered that the two private roads are Feeder Roads which connect villages or remote settlements to RR, i.e. Sha Tau Kok Road (Lung Yeuk Tau). Therefore, these roads are considered not similar to RR. There is no specific minimum buffer distance requirement for Feeder Road recommended in Table 3.1, Chapter 9 of the HKPSG. Nevertheless, as a conservative approach, a buffer distance of 5m for the Feeder Roads is recommended.

2.4.10 The buffer distance requirements between air sensitive uses and the major roads in the vicinity of the Site are summarised in ***Table 2-7***.

Table 2-7: The Buffer Distance Requirements between Air Sensitive Uses and Roads in the Vicinity of the Site

ROAD NAME	ROAD TYPE	BUFFER DISTANCE REQUIREMENTS (m)	COMPLY WITH BUFFER DISTANCE REQUIREMENTS?
Sha Tau Kok Road	Rural Road	20	Yes
Hai Wing Road	Feeder Road	5	Yes
Dao Yang Road	Feeder Road	5	Yes

2.4.11 As illustrated on ***Figure 2-2***, the entire site area could satisfy the buffer distance summarised in ***Table 2-7***. As such, no adverse air quality impact arising from vehicle emissions on the air sensitive uses of the development is anticipated.

Odour Impact from Surrounding Uses

2.4.12 Tung Chun Soy Sauce & Canned Food Company Limited ("Tung Chun Soy Sauce Factory") is located to the adjacent north-east of the Site, at approximately 57m to the nearest residential block of the Proposed Development. Site visits conducted on 6 December 2022 and 18 January 2023 confirmed that no odour is noticeable at the boundary of the Site. To further identify any potential odour impact, another site visit was made on 12 June 2023 (i.e. during hot and humid season). According to the weather monitoring data on 06/12/2023 at the nearby Ta Kwu Ling station, the daytime temperature was above 30 degrees Celsius, the relative humidity during daytime ranged from 60 to 75 percent, wind direction was east. Even though the weather condition on that day should be favoured for odour generation and diffusion from the soy sauce factory to the site, no odour nuisance was identified inside Site area and at the entrance of the soy sauce factory. In addition, regional office of EPD was contacted to review if any complaint record for the odour impact from the factory. Email reply confirmed that no complaint was made on the factory. Information request letter and reply from EPD are attached in ***Appendix A***. No active chimney was identified at the factory. As such, odour impact from the Tung Chun Soy Sauce Factory upon the Proposed Development is not anticipated.

2.4.13 Nevertheless, the fresh air intake for the ventilation system of the proposed Shopping Arcade shall be located away from the Tung Chun Soy Sauce Factory, and they shall also be located at high elevation to enhance quality of the air to be extracted for indoor air flushing. Activated carbon filters are recommended to be installed at fresh air intakes of the mechanical ventilation system to alleviate any potential odour impact at the Proposed Development.

2.4.14 The Sha Tau Kok Road Ma Liu Shui San Tsuen Sewage Pumping Station is located at over 180m to the nearest residential block of the Proposed Development. As observed during site visit, the sewage pumping station is fully enclosed with concrete and no odour is noticeable at the pumping station. Therefore, no adverse odour impact arising from the sewage pumping station on the Proposed Development is anticipated.

Odour Impact from the Proposed On-site STP

2.4.15 During the operation phase, a Sewage Treatment Plant (STP) is proposed to treat the sewage discharge of the Proposed Development, which may result in potential odour impact to the existing ASRs and the operation of the Proposed Development.

2.4.16 As the contributing population of the proposed STP has exceed 10,000, the Guideline for the Design of Small Sewage Treatment Plants will no longer be suitable to follow. The project team is expected to approach Environmental Protection Department to discuss the possibility of adopting a more rational design approach. Sewage treatment units with potential odour nuisance of the STP will be fully enclosed and vented to maintain at negative pressure to avoid any fugitive odourous emissions. Collected foul gas will be conveyed to activated carbon deodourisers for treatment before discharge. As the STP will be constructed right under the shopping arcade, the emission of volatile organic compound should be restrained. The odour removal efficiency of the deodourizing unit is proposed to be at least 80% to avoid nuisance to the public. The treated air discharge points will be located away from the nearby ASRs as far as practicable. Good housekeeping and regular maintenance of the STP will be kept to ensure efficiency and smooth operation.

2.4.17 With the application of the above mitigation measures, any potential odour impacts due to the proposed STP could be alleviated and no adverse odour impact from the operation of the Proposed Development is anticipated.

Underground Carpark

2.4.18 The *Environmental Protection Department Practice Note for Professional Persons - Control of Air Pollution in Car Parks* (ProPECC PN 2/96) provides guidance on the control of air pollution in car parks including air quality guidelines required for the protection of public health; and factors that should be considered in the design and operation of car parks in order to achieve the required air quality.

2.4.19 The proposed 2-storey carpark of the Proposed Development with 485 spaces for private car will be located at basement. To minimize the air quality impact on the nearby ASRs, the exhaust/opening/ingress/egress of the carpark will be faced and located away from the nearby ASRs as far as practicable. The proposed carpark will be designed and built in accordance with the requirements and appropriate mitigation measures stipulated in ProPECC PN 2/96. No major air quality impact from the Proposed Development on nearby sensitive uses during operational phase is expected.

2.5 Conclusion

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

2.5.2 No adverse air quality impact on the Proposed Development from industrial emission and vehicular emissions is anticipated with the implementation of the proposed mitigation measures during the operation phase. Meanwhile, the operation of the Proposed Development will not cause any adverse air quality impact on the surrounding air sensitive uses.

2.5.3 Overall, therefore, no adverse air quality impacts are anticipated during the construction and operation phases of the Site.

Figure 2-1: Locations of Representative Air Sensitive Receivers

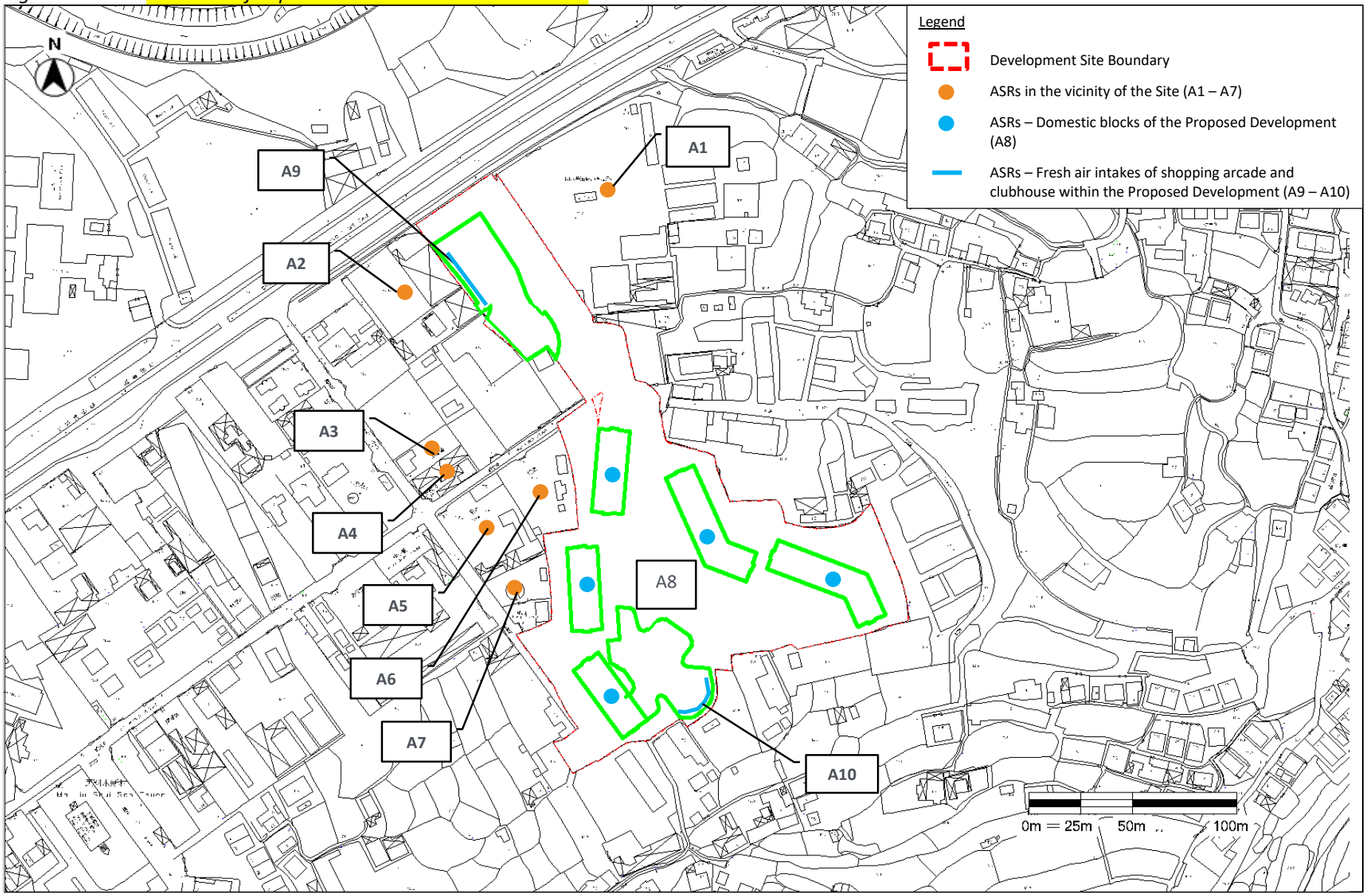
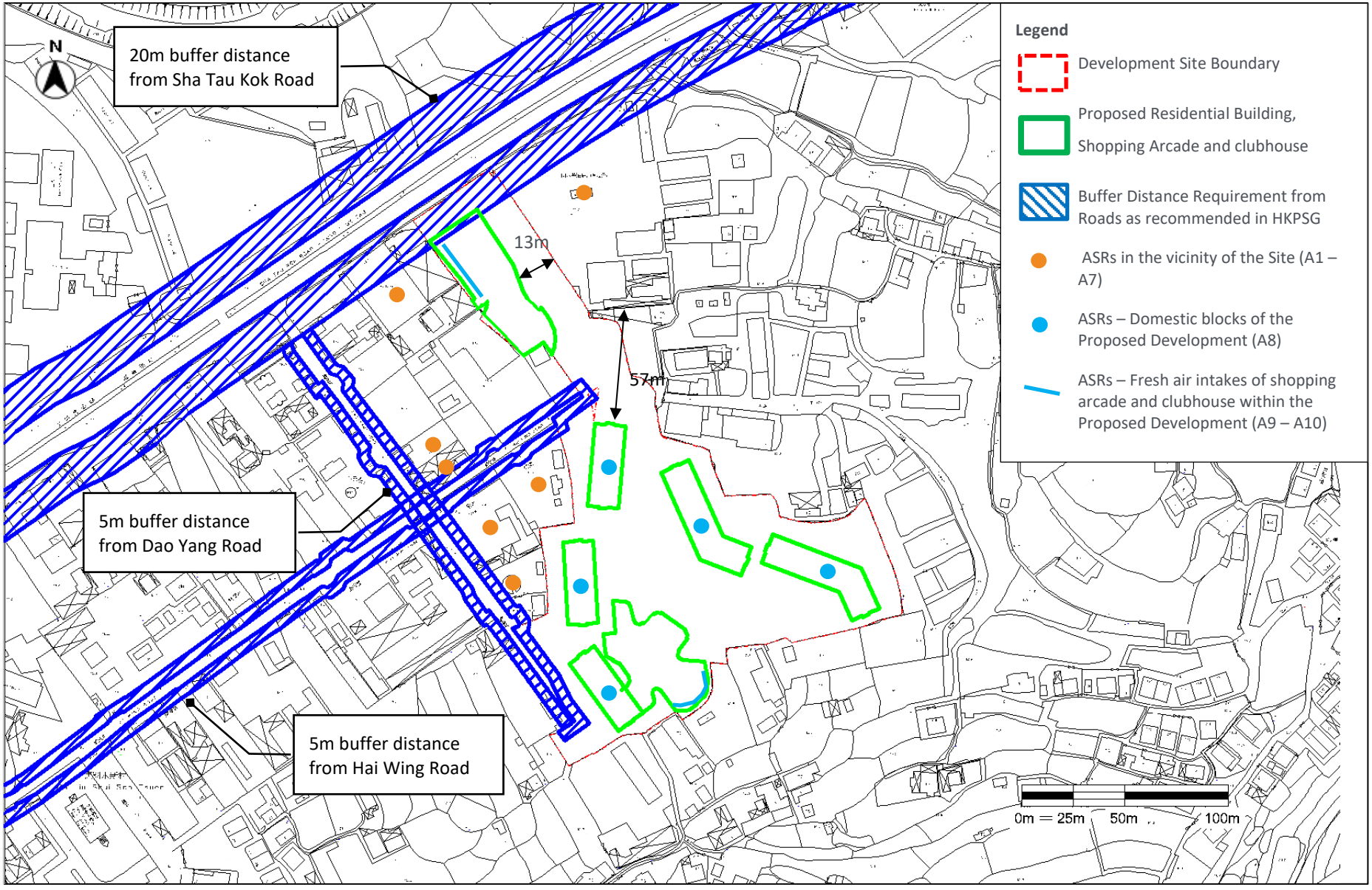


Figure 2-2: Shortest Horizontal Distances Between Nearby Roads and Site Boundary



3 NOISE IMPACT

3.1 Introduction

3.1.1 The potential noise impacts in associated with the Project during the construction and operation phases are assessed in the section. Mitigation measures are recommended where required.

3.1.2 Construction noise is considered to be the major source of potential noise impact during the construction stage of the Project and is assessed in the following sections with relevant standard and criteria.

3.1.3 The Proposed Development is a potential noise sensitive receiver of traffic noise impact during operational phase. Road traffic noise impact on the Proposed Development has been quantitatively assessed with a study area of 300m from the Proposed Development. Mitigation measures are proposed to mitigate any adverse noise impact.

3.1.4 Apart from traffic noise impact, potential fixed plant noise during the operation phase has also been assessed in the following sections with relevant standard and criteria.

3.1.5 Within this Environmental Assessment, as the proposed residential buildings (Tower 1, 2, 3, 4, 5) are all located around the site boundary, they will be selected as the Noise Sensitive Receivers (NSRs) in the following noise assessment.

3.2 Environmental Legislation and Standards

Noise Control Ordinance (Cap. 400)

3.2.1 The main piece of legislation controlling environmental noise nuisance is the *Noise Control Ordinance* ("NCO"). The NCO enables regulations and Technical Memoranda ("TMs") to be made, which introduce detailed control criteria, measurement procedures and other technical matters. The relevant TMs include:

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

3.2.2 According to EPD's Plan No. EPD/AN/NT-02 for Tai Po, Fanling, Sheung Shui and Sha Tau Kok, the Site is entirely located within a Designated Area (DA) and so the DA-TM is applicable.

3.2.3 A Construction Noise Permit ("CNP") must be obtained by the contractor for any percussive piling at any time. CNP must also be obtained for the use of any Powered Mechanical Equipment ("PME") within restricted hours as defined in the NCO (for all days 7pm to 7am the next day and at all times on general holidays or Sundays).

3.2.4 In addition to a CNP, hand-held breakers having a mass of above 10kg and any air compressor capable of supplying compressed air at 500kPa or above for carrying out construction work must be fitted with a Noise Emission Label ("NEL") issued under the *Noise Control (Hand Held Percussive Breakers) Regulations and the Noise Control (Air Compressors) Regulations* of the NCO.

3.2.5 There is no statutory control for noise arising from construction activities (other than percussive piling) during normal working hours (7am to 7pm from Monday to Saturday, not including general holidays). Nevertheless, *Professional Persons Environmental Consultative Committee* ("ProPECC") *Practice Note PN2/93 Noise from Construction Activities – Non-statutory Controls*

("ProPECC PN2/93") recommends the noise criteria as shown in ***Table 3-1*** and guideline to minimise the potential construction noise impact during normal working hours.

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

NOISE SENSITIVE USE	$L_{eq\ (30\ MIN)}$ NOISE CRITERIA BETWEEN 0700 AND 1900 ON ANY DAY NOT BEING A SUNDAY OR GENERAL HOLIDAY
Dwellings	75 dB(A)
School	70 dB(A) (or 65 dB(A) during examination)

3.2.6 For fixed plant noise during operation phase, the requirements of IND-TM shall be complied with. Table 2 of IND-TM stipulates the day, evening and night time Acceptable Noise Levels ("ANLs") for Noise Sensitive Receivers ("NSRs") according to the corresponding Area Sensitive Rating ("ASR"), which is determined by Influencing Factors ("IFs") in accordance with the IND-TM. These are summarized in ***Table 3-2*** and ***Table 3-3*** .

Table 3-2: Area Sensitivity Ratings

TYPE OF AREA CONTAINING NSR	DEGREE TO WHICH NSR IS AFFECTED BY IF		
	NOT AFFECTED	INDIRECTLY AFFECTED	DIRECTLY AFFECTED
i) Rural area, including country parks or village type developments	A	B	B
ii) Low density residential area consisting of low-rise or isolated high-rise developments	A	B	C
iii) Urban Area	B	C	C
iv) Area other than those above	B	B	C

Table 3-3: 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

3.2.7 The Site is located in a low-density residential area consisting of some low-density residential developments in the vicinity, the site should be classified as "Type (ii) Low density residential area" according to the IND-TM. The Site is not affected by any IFs, ASR "A" shall be considered.

Hong Kong Planning Standards & Guidelines ("HKPSG")

Planned Fixed Noise Source

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

(a) 5dB(A) below the appropriate ANLs shown in Table 2 of IND-TM, or

(b) the prevailing background noise levels.

3.2.9 To identify prevailing background noise levels during day/evening time and night time at the site, noise measurements were conducted on 20 and 23 June 2023. Two measurement locations

namely B1 and B2, as shown on ***Figure 3-1***, were selected to represent the prevailing noise environment. The measured background noise levels are summarised in ***Table 3-4***.

Table 3-4: Noise Criteria for Planned Fixed Noise Sources

TIME PERIOD	BACKGROUND NOISE LEVEL, $L_{Aeq30min}$ dB(A)		HKPSG NOISE CRITERIA [i.e. ANL – 5 dB(A)], dB(A)	NOISE CRITERIA, dB(A)
	B1	B2		
Day (0700 to 1900 hours)	50	55	55	50
Evening (1900 to 2300 hours)	48	49	55	48
Night (2300 to 0700 hours)	47	46	45	45

Noted: Façade correction of +3dB(A) has been applied to the measured background noise level.

3.2.10 Referring to ***Table 3-4***, the prevailing background noise during day/evening time is lower than the HKPSG noise criteria, while prevailing background noise during night time is higher than HKPSG noise criteria. Therefore, the noise criteria for planned fixed noise sources as presented in ***Table 3-4*** should be followed.

Road Traffic Noise

3.2.11 As recommended in Table 4.1 of Chapter 9 Environment of HKPSG, standards for road traffic noise in terms of $L_{10(1\text{-}hr)}$ for the following uses relying on opened windows for ventilation are shown in ***Table 3-5***.

Table 3-5: Summary of Road Traffic Noise Standards

USES	NOISE CRITERIA $L_{10(1\text{-}hr)}$, 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

3.2.12 All the office uses of the Proposed Development will not rely on prescribed window for natural ventilation and so the above traffic noise standard of 70dB(A) does not apply to the office uses.

3.3 Construction Noise Impact

3.3.1 Various construction activities will be the key noise sources generated during the construction phase. In particular, the use of PME and the vehicle movement within the Site are the major potential noise sources.

3.3.2 Construction shall be carried out during non-restricted hours as far as practicable. The mitigation measures recommended in ProPECC PN2/93 should be implemented where applicable. In addition, the following measures and on-site practice are recommended in order to minimise the potential construction noise impacts during daytime:

- Quiet PME and construction method should be adopted if possible.

- The Contractor shall devise and execute working methods to minimise the noise impacts on the surrounding sensitive uses, and provide experienced personnel with suitable training to ensure that those methods are implemented.
- Switch off idling equipment.
- Regular maintenance of equipment.
- Fit muffler or silencer for equipment.
- Noisy equipment and noisy activities should be located as far away from the NSRs as is practical.
- Use quiet construction method, e.g. use saw-cut or hydraulic crusher instead of excavator-mounted percussive breaker.
- PME should be kept to a minimum and the parallel use of noisy equipment / machineries should be avoided.
- Erect noise barriers or noise enclosure for the PME if appropriate.
- Implement good house-keeping and provide regular maintenance to the PME.
- Spot check resultant noise levels at nearby NSRs.

3.3.3 If construction work involving use of PME will be required during restricted hours, a CNP shall be applied for under the NCO. The noise criteria and assessment procedures for obtaining a CNP are specified in GW-TM.

3.3.4 With the implementation of the abovementioned mitigation measures, adverse construction noise impact is not anticipated.

3.4 Fixed Noise Impacts during Operation

Existing Fixed Noise Sources Impact

3.4.1 According to the desktop study and site surveys conducted in January and June 2023, some fixed noise sources were identified near the Site. Description of the identified noise sources are summarized in ***Table 3-6***. The locations are shown on ***Figure 3-2***.

Table 3-6: Identified Fixed Noise Sources

ID	FIXED NOISE SOURCES	DESCRIPTIONS
S1	Shun Cheong Electrical Products Factory Ltd	According to the site surveys, loading/unloading activities were observed during day time. No night-time operation was observed. On-Site noise measurement was conducted to estimate the sound power level from the noisy activities. The corrected sound power level of 102dB(A) was adopted in the assessment. Detailed calculation is provided in ***Appendix B***.
S2	Fanling Environmental Recycling Limited	According to the site surveys, sorting and loading/unloading activities were observed during day time. No night-time operation was observed. On-Site noise measurement was conducted to estimate the sound power level from the noisy activities. The corrected sound power level of 109dB(A) was adopted in the assessment. Detailed calculation is provided in ***Appendix B***.

ID	FIXED NOISE SOURCES	DESCRIPTIONS
S3	Tung Chun Soy Sauce and Canned Food Company Limited	During the site surveys, no any mechanical equipment was observed. And no auditable noise from this source was noticed. Therefore, the noise impact from Tung Chun Soy Sauce and Canned Food Company Limited is not anticipated.
S4	Riches Profit Logistics (HK) Limited	The logistics company is enclosed by steel structure. And no auditable noise was noticed. Therefore, the noise impact from Riches Profit Logistics (HK) Limited is not anticipated.

Assessment Methodology

3.4.2 Several assumptions were adopted in the calculation as follows:

- All identified fixed noise sources operate simultaneously.
- As a conservative approach, the shortest horizontal distance between identified fixed noise source and representative NSRs was adopted in the Corrected Noise Level ("CNL") calculation.
- As a conservative approach, it is assumed that there is no screening effect between the fixed noise sources and NSRs.
- Site visit confirmed that all the fixed noise sources are in operation continually, so no intermittency for all fixed noise sources is adopted in the noise calculation.
- Site visit also confirmed that noise from the identified fixed noise sources rise and fall gradually but not impulsive in nature, therefore impulsiveness is not adopted in the noise calculation.

3.4.3 The CNL from identified fixed noise sources have been assessed based on the following formula:

$$CNL = SWL + DC + FC$$

Where:

CNL = Corrected Noise Level at NSR, in dB(A)

SWL = Calculated sound power level of fixed noise sources, in dB(A)

DC = Distance correction, -(20 log (distance between source and NSR)+8) dB(A)

FC = Façade correction, +3 dB(A)

Assessment Result

3.4.4 As shown on ***Figure 3-3***, three representative NSRs (R1 to R3) were identified for fixed noise impact assessment arising from existing fixed noise sources. The results are summarized in the table below. Detailed calculation is provided in ***Appendix B***.

Table 3-7: Predicted Cumulative Fixed Noise Levels at the NSRs

NSR ID	PREDICTED NOISE LEVELS, dB(A)	NOISE CRITERIA, dB(A)
R1	57	60
R2	60	
R3	59	

3.4.5 The predicted cumulative noise level is not greater than the noise criteria. Therefore, no adverse noise impact from the surrounding fixed noise sources on the proposed development is anticipated.

Planned Fixed Noise Sources Impact

3.4.6 For the fixed plant noise impacts that will be generated within the Proposed development, most of Electrical and Mechanical ("E&M") equipment such as emergency generators, water pumps including Fire Services ("FS") pumps and transformer of the Proposed Development will be enclosed or located within the building structures. It is anticipated that the noise impacts from these noise sources to the off-site NSRs will be relatively low and insignificant.

3.4.7 For the Heating, Ventilation and Air Conditioning ("HVAC") system, split-type air conditioners and/or window-type air conditioners will be selected and installed at the residential units. The power ratings of these systems are considered as small and the potential noise impact to the offsite NSRs shall be minimal.

3.4.8 The proposed sewage treatment plant (STP) will be located at the basement 1st floor of the shopping arcade. The enclosed indoor environment is expected to confine the noise emitted from the STP during its operation phase. As the shopping arcade itself is not identified as a Noise Sensitive Receiver, the noise impact from the proposed STP can be neglected.

3.4.9 Besides, central air conditioning will be provided for the club house and shopping arcade of the Proposed Development. The chillers for central air conditioning will be installed at roof tops of the buildings in the Site. The indicative locations of proposed outdoor units and the representative NSRs are shown on ***Figure 3-4***.

3.4.10 As the sound power level of the proposed outdoor units is not available in this stage, therefore, the noise impact from concerned outdoor units upon the NSRs cannot be assessed in this stage. Instead, the maximum allowable sound power level ("SWL") of the outdoor units is determined in order to ensure the compliance of statutory requirements and HKPSG.

3.4.11 In general, the outdoor units would start and stop gradually. The effect of impulsiveness would be unlikely be occurred. As there will be no sporadic or intermittent events during operation of the ventilation system, the correction for intermittency would not be applied. In addition, the outdoor units will be properly maintained by the operator of the proposed development. Therefore, the effect of tonality, impulsiveness and intermittency is unlikely to be occurred.

3.4.12 With the assumption of placing the outdoor units on the roof of the club house and shopping arcade, same noise levels for two assessed outdoor units, the detailed calculation for the potential NSR has been carried out and presented in ***Appendix C*** and summarized in ***Table 3-8***. Tower 1 of the proposed residential building (denoted as F1), No. 31 Hai Wing Road (denoted as F2) and Tower 3 of the proposed residential building (denoted as F3) have been selected as the representative Noise Sensitive Receiver for the planned noise source evaluation because they are the closest NSRs to the proposed shopping arcade or clubhouse.

Table 3-8: Maximum Allowable Sound Power Level of the Proposed Outdoor Units

TIME PERIOD	NOISE CRITERIA, dB(A)	MAXIMUM ALLOWABLE SWL, dB(A)
Day Time	50	84
Evening Time	48	82
Night Time	45	79

3.4.13 The above calculation shows that the maximum allowable sound power level is 84dB(A) during day time, 82 dB(A) during evening time and 79dB(A) during night-time for each proposed outdoor units and should be followed in order to avoid adverse operational noise impact upon the surrounding NSR. As the design layouts have not been finalized at this stage, the maximum allowable SWL is subject to change. To reduce the noise nuisance to the residents, the residual noise impact shall also subject to the practicable noise mitigation measures, and the opening of the noise source shall be oriented away from the nearby NSRs.

3.4.14 Nevertheless, the actual noise impact from the fixed noise sources shall be subject to the selected model, brand of the equipment and the locations to be placed. The design consultant/ E&M consultant/ contractor should ensure the compliance of planning and statutory standards for operational noise impacts in the detailed design stage. The requirements for compliance of the HKPSG criteria can make reference to the above calculation.

3.5 Traffic Noise Impacts during Operation

3.5.1 A quantitative road traffic noise impact assessment has been carried out to demonstrate the feasibility of the proposed design of the Project in terms of road traffic noise impact.

Assessment Methodology

Noise Prediction Methodology

3.5.2 The peak hour road traffic noise levels have been predicted using a computer noise model, RoadNoise, which mainly follows the prediction procedures of the UK Department of Transport's *Calculation of Road Traffic Noise* ("CRTN"), as recommended in Chapter 9 Environment of HKPSG.

Noise Source

3.5.3 The assessment was carried out based on the projected peak hourly traffic flows in 2046, which corresponds to the maximum projected traffic conditions within 15 years of occupancy of the Proposed Development, anticipated to be commenced in 2031. All road sections with free flow traffic situated within 300m of the Proposed Development have been considered. Traffic forecasts provided by the Project Traffic Consultant were adopted to assess the traffic noise impact at the Site. Detailed peak hour traffic forecasts for the assessment year of 2046, TD's endorsement letter and traffic consultant's confirmation letter are provided in ***Appendix D***.

3.5.4 The proposed development is expected to introduce additional traffic flow the existing condition. Referring to the Traffic Impact Assessment within the planning statement, the daytime averaging hourly traffic flow at Sha Tau Kok Road - Lung Yeuk Tau will be increased to 1733 PCU. This value will replace the original Sha Tau Kok Road traffic flows in the mentioned Traffic Forecast as the input of Traffic noise impact assessment. Sha Tau Kok Road will be the major entrance of the vehicle enter and exit the proposed development project upon its completion. By taking the increased traffic flow in Sha Tau Kok Road into consideration, the traffic noised impact induced by the proposed development has been quantitively included.

Noise Sensitive Receivers ("NSRs")

3.5.5 The noise sensitive uses e.g. living rooms and bedrooms of the residential blocks are considered to be NSRs of road traffic noise impact. All noise sensitive uses other than the residential units (e.g. management office) will be equipped with air conditioning system and will not rely on opened window for ventilation.

3.5.6 These NSRs will be provided with prescribed windows for natural ventilation complying 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 opened windows for ventilation. Thus, assessment points ("APs") for NSRs are assigned to these prescribed windows.

3.5.7 The APs were all taken to be 1m from the exterior façade of opened windows and 1.2m above the floor of the APs as shown on ***Figure 3-5*** to ***Figure 3-7***.

3.5.8 In order to alleviate traffic noise impact, traffic noise mitigation measures recommended in Section 4.3 of Chapter 9 of HKPSG have been referred to. The traffic noise mitigation measures in terms of self-protecting building design and arrangement have been considered and incorporated into the layouts as follows:

i. For the domestic blocks, building setback of about 130m from Sha Tau Kok Road (Lung Yeuk Tau) has been made to minimize the potential noise impact.

ii. For the commercial complex, which is classified as noise tolerant use, has been arranged and located near the Sha Tau Kok Road (Lung Yeuk Tau) to shield noise sources.

Assessment Results

3.5.9 The predicted road traffic noise levels are detailed in ***Appendix E*** and summarised in ***Table 3-9***. With the mitigation measures proposed in **Section 3.5.8**, the traffic noise levels at all APs of the Proposed Development are predicted to comply with the criterion of 70 dB(A) recommended in Chapter 9 of HKPSG.

Table 3-9: Summary of Traffic Noise Assessment Results

PROPOSED DEVELOPMENT	NO. OF UNITS WITH NOISE EXCEEDANCE	NOISE LEVEL ($L_{10\ (1\text{-}hr)}$, dB(A))	NOISE CRITERIA ($L_{10\ (1\text{-}hr)}$, dB(A))	NOISE COMPLIANCE (%)
Domestic Blocks	0	44-69	70	100

3.6 Conclusion

3.6.1 During the construction phase of the Proposed Development, with the implementation of the noise mitigation measures recommended in ***Section 3.3,*** no adverse noise impact is anticipated.

3.6.1 The Proposed Development is located at a low-density residential area, which is surrounded by village houses, such as Park Villa and King Chong, and some temporary dwellings, etc. These buildings provided effective acoustic shielding for the Proposed Development with buildings up to three storeys. Moreover, quantitative fixed noise impact assessment has been conducted to evaluate the fixed noise impact from the existing fixed noise sources. The predicted cumulative noise level is not greater than the noise criteria. Therefore, no adverse noise impact from the surrounding fixed noise sources on the proposed development is anticipated.

3.6.2 Most of the E&M equipment of the Proposed Development will be installed inside plant rooms. Potential noise sources have been identified as fixed mechanical equipment, such as chillers for central air conditioning. The chillers will be installed at roof top, which provided greatest separation from the identified NSRs and they will be shielded by the on-site building structure itself.

3.6.3 The maximum allowable sound power level of the proposed outdoor units has been determined in order to ensure the compliance of statutory requirements and guidelines, which is subject to be changed in the detailed design stage.

3.6.4 For road traffic noise, the noise impact on the Proposed Development is predicted to comply with the standards as recommended in Chapter 9 Environment of the HKPSG with the building setback of about 130m to Sha Tau Kok Road (Lung Yeuk Tau).

3.6.5 Overall, therefore, no adverse noise impact during the construction and operation phases of the Proposed Development is expected.

Figure 3-1: Location of Background Noise Measurement

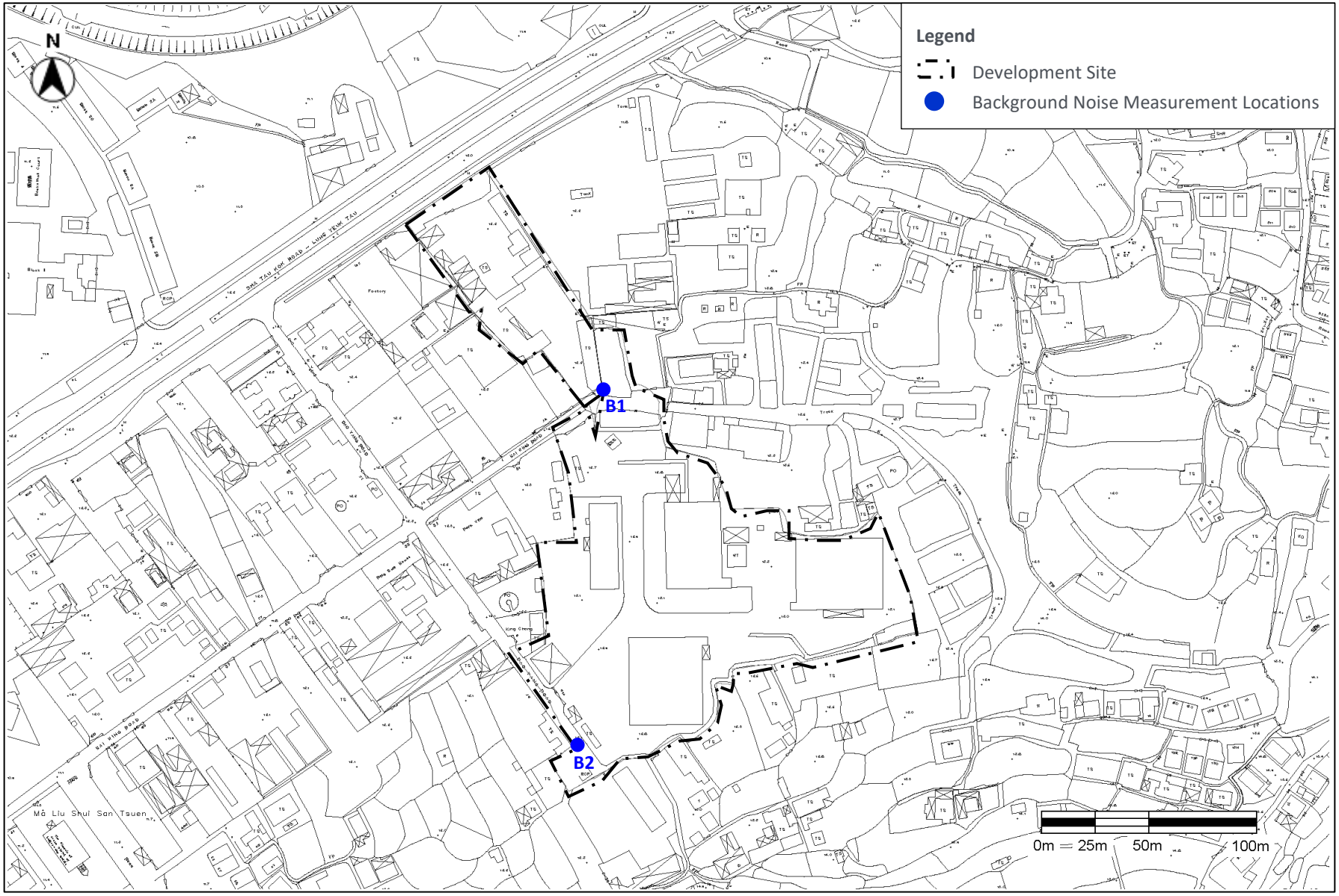


Figure 3-2: Location of Identified Fixed noise Sources

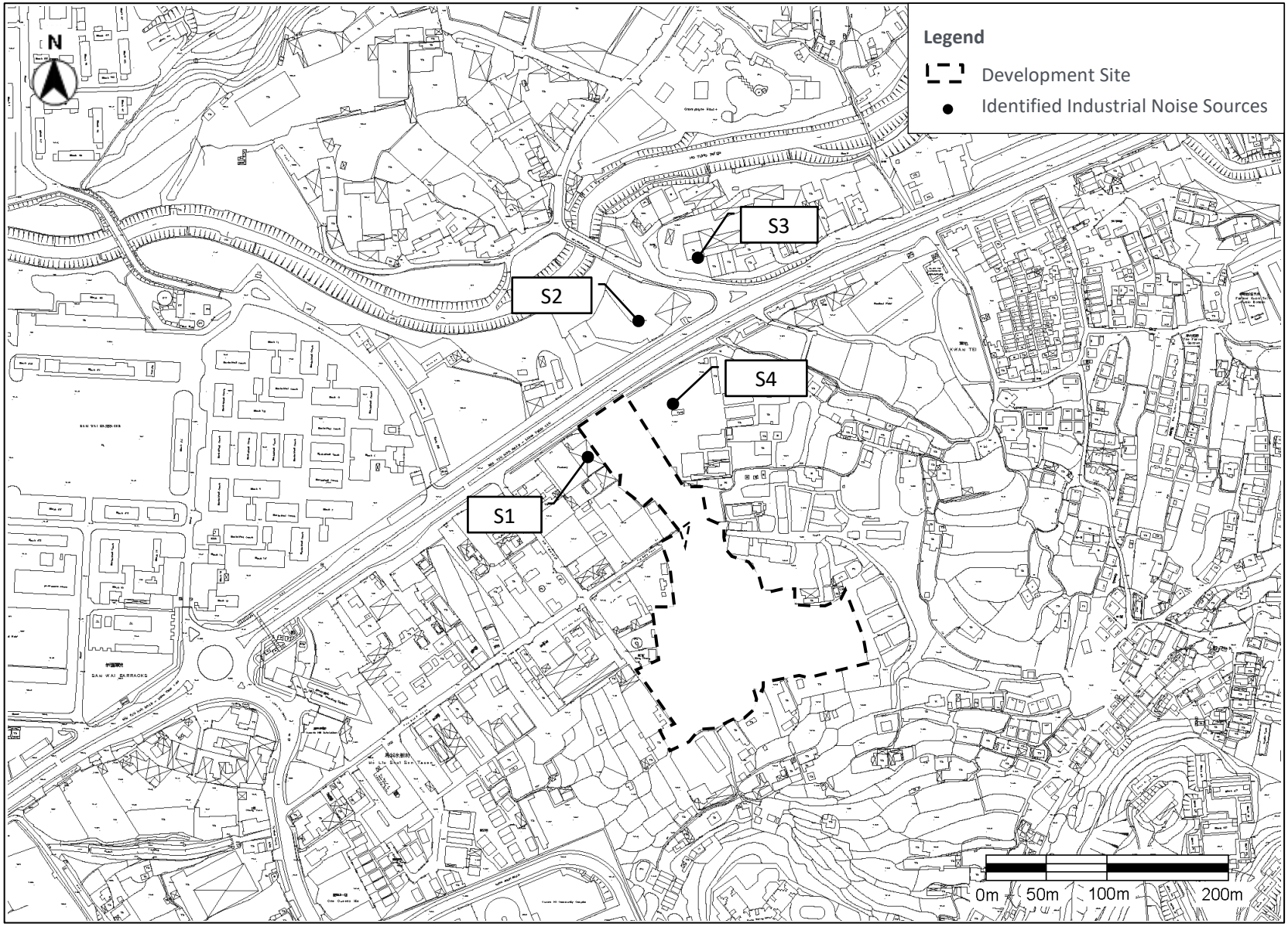


Figure 3-3: Location of Representative NSRs for Existing Fixed noise Impact

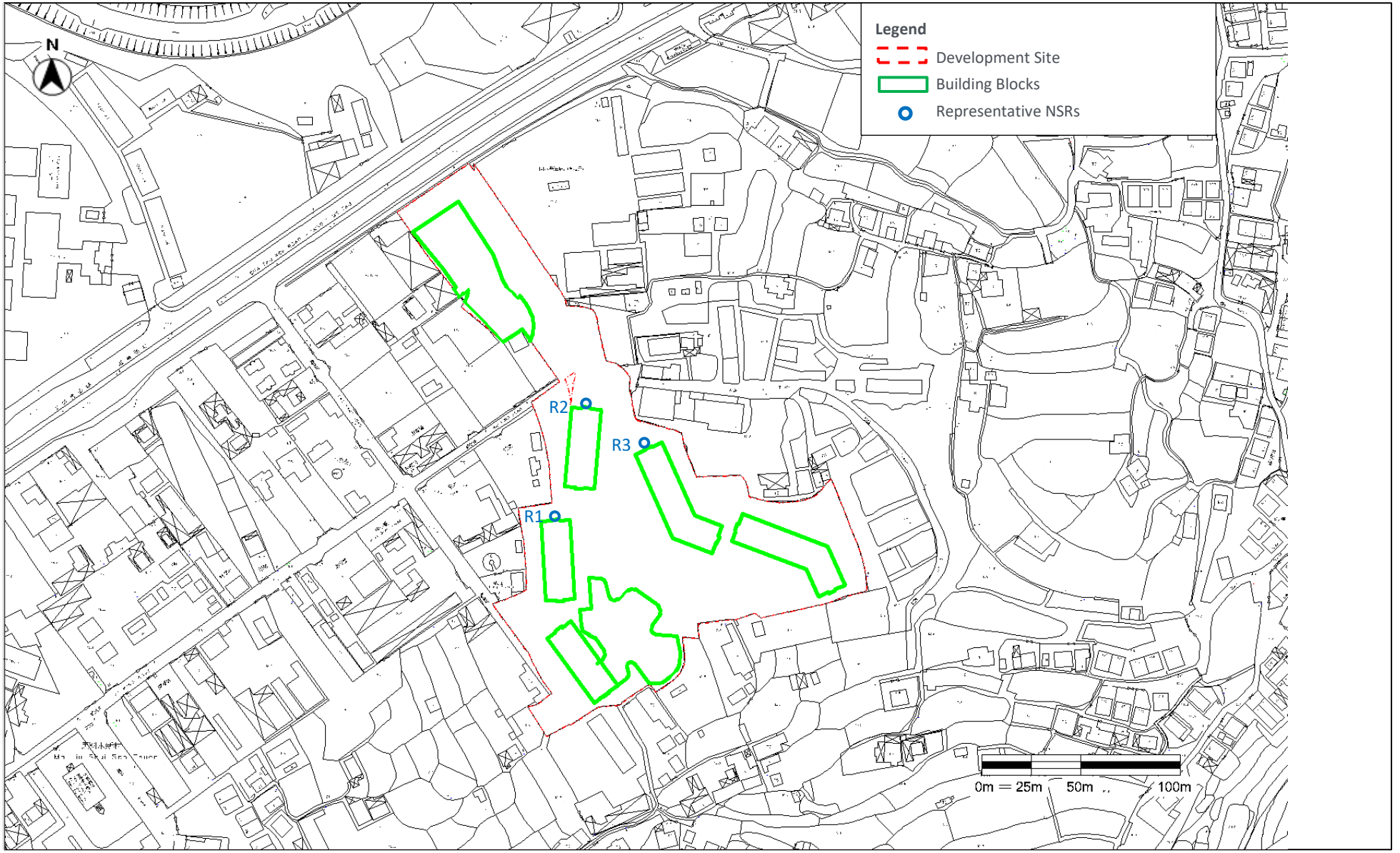


Figure 3-4: Indicative Locations of Proposed Outdoor Units and Representative NSRs

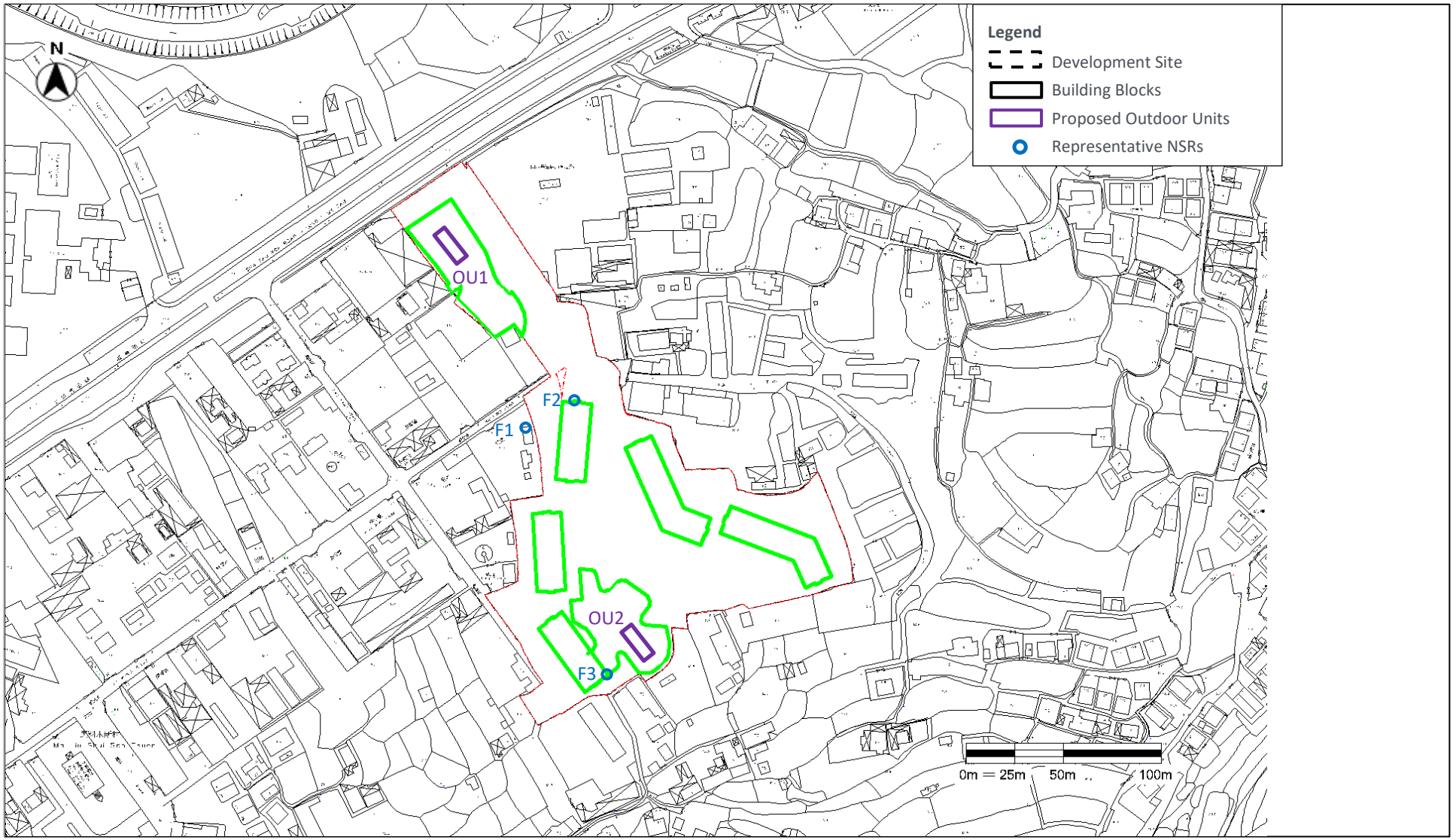


Figure 3-5: Location of Assessment Points for Road Traffic Noise on G/F

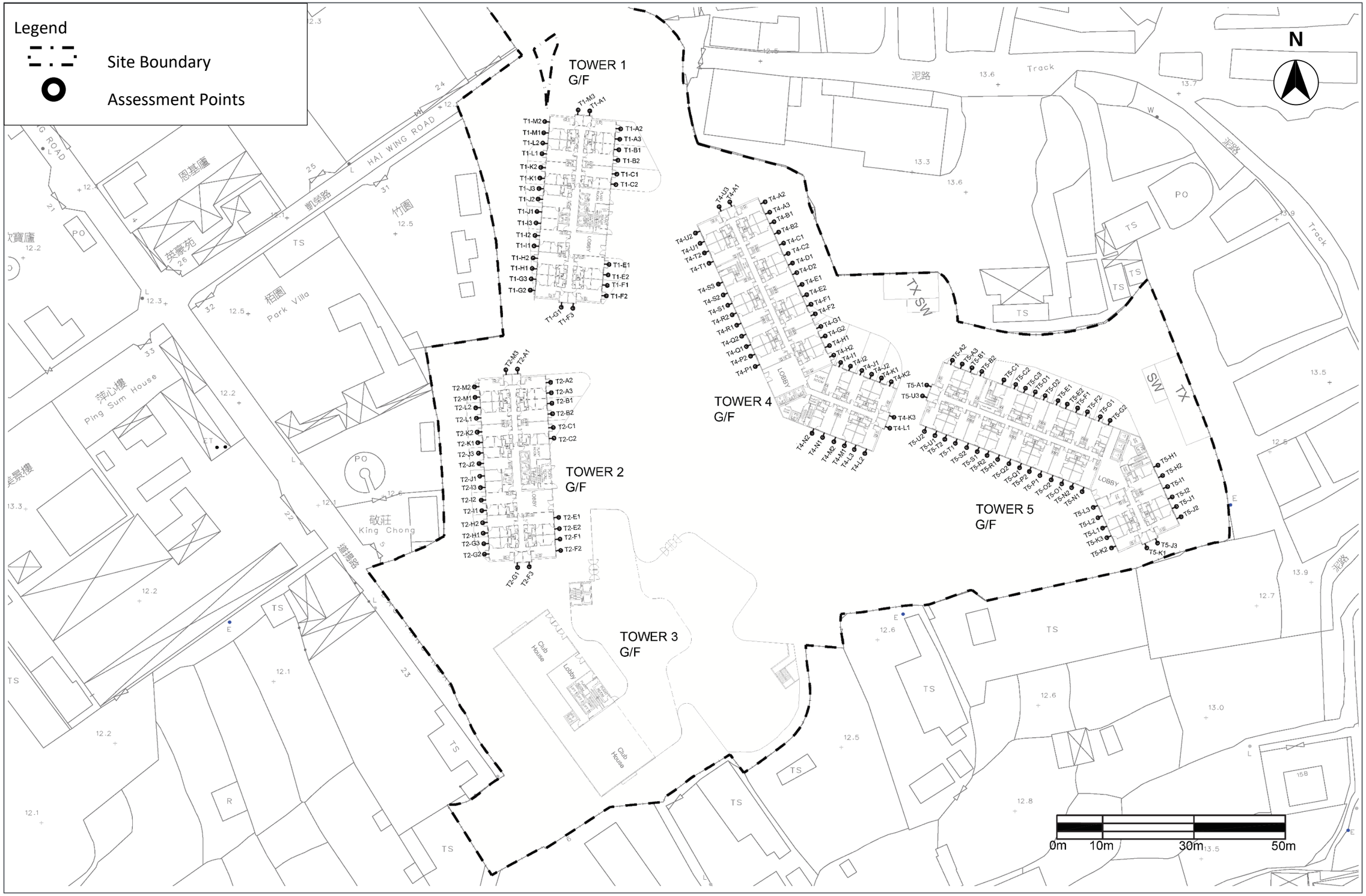


Figure 3-6: Location of Assessment Points for Noise Sensitive Receivers on Typical Floor A

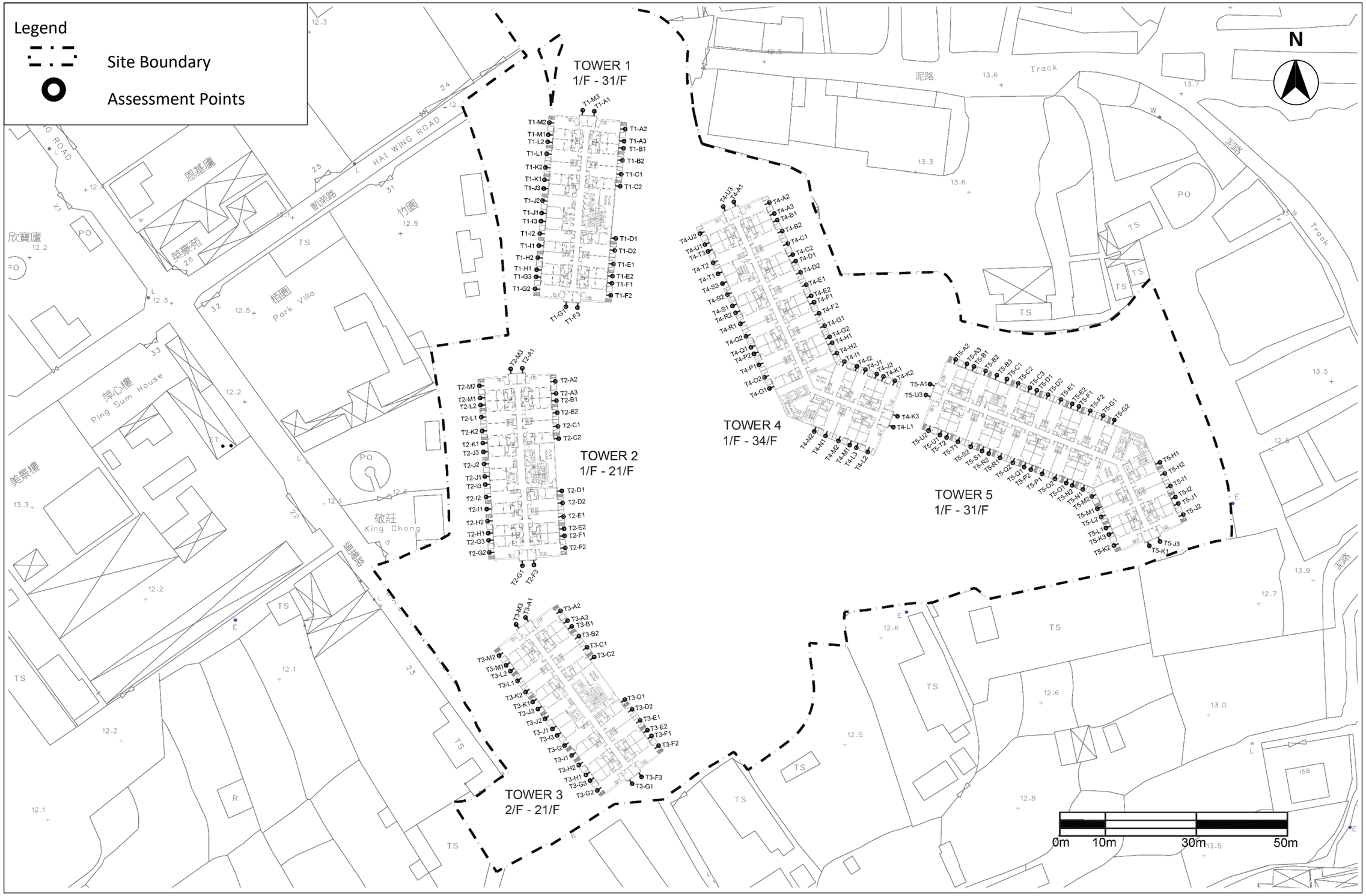
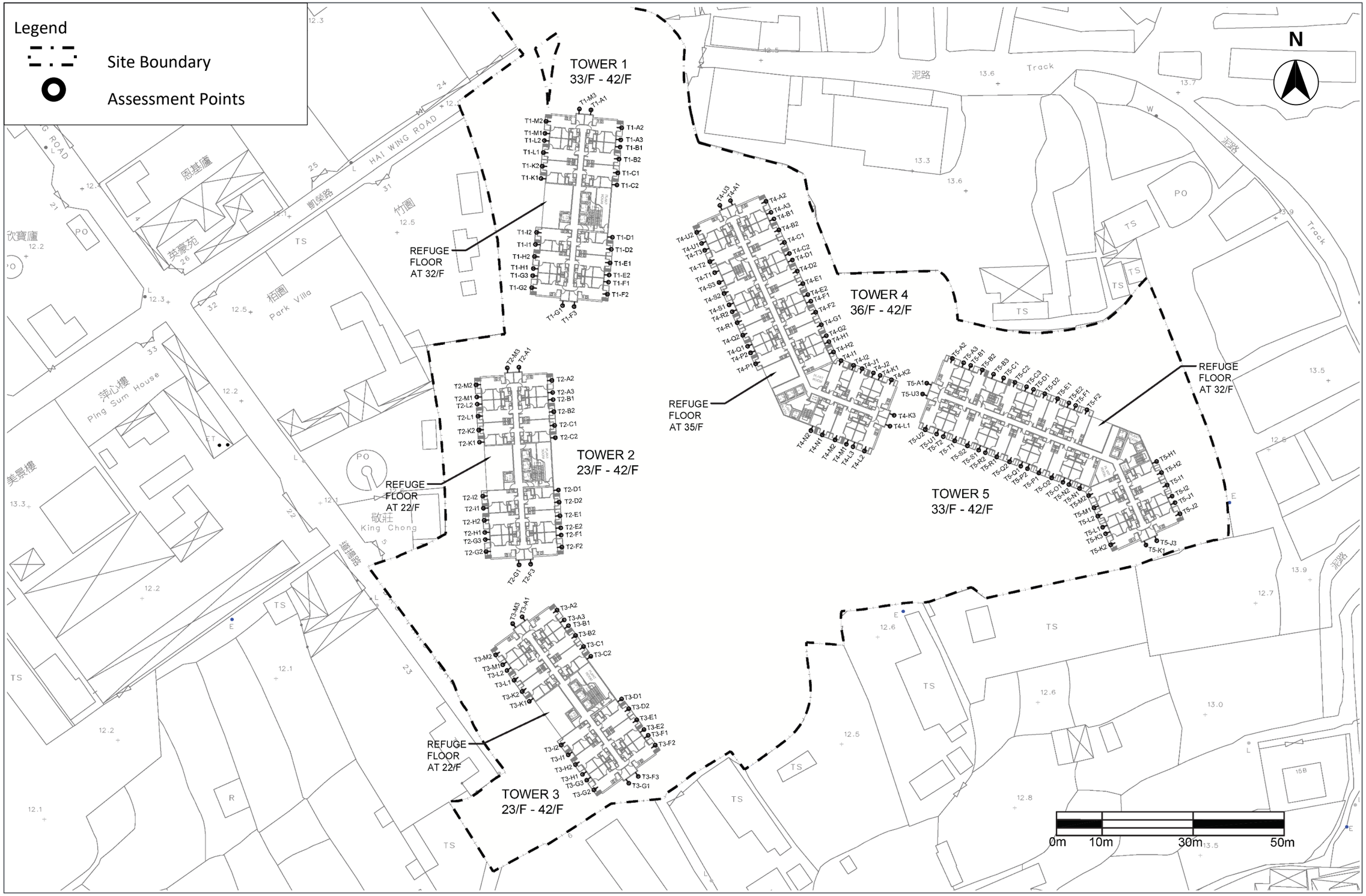


Figure 3-7: Location of Assessment Points for Noise Sensitive Receivers on Typical Floor B



4 WATER QUALITY

4.1 Introduction

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

4.2 Environmental Legislation, Standards and Guidelines

Water Pollution Control Ordinance (Cap. 358)

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

4.2.2 Water Control Zone and the corresponding Water Quality Objectives have been set up under WPCO. Referring to the Statement of Water Quality Objectives (Deep Bay Water Control Zone), the site is located within Indus Subzone. The water quality objectives for Deep Bay Water Control Zone Indus Subzone have been shown in Table 4-1.

Table 4-1 Water Quality Objectives for Deep Bay Water Control Zone Indus Subzone

WATER QUALITY OBJECTIVES (DEEP BAY WATER CONTROL ZONE INDUS SUBZONE)	
A. Appearance	(a) Waste discharges shall cause no objectionable odours or discolouration of the water.
	(b) Tarry residues, floating wood, articles made of glass, plastic, rubber or of any other substances should be absent.
	(c) Mineral oil should not be visible on the surface. Surfactants should not give rise to a lasting foam.
	(d) There should be no recognisable sewage-derived debris.
	(e) Floating, submerged and semi-submerged objects of a size likely to interfere with the free movement of vessels, or cause damage to vessels, should be absent.
	(f) Waste discharges shall not cause the water to contain substances which settle to form objectionable deposits.
B. Bacteria	(b) The level of Escherichia coli should be zero per 100 mL, calculated as the running median of the most recent 5 consecutive samples taken at intervals of between 7 and 21 days. (E.R. 6 of 2019)
C. Colour	(a) Waste discharges shall not cause the colour of water to exceed 30 Hazen units.
D. Dissolved Oxygen	(d) Waste discharges shall not cause the level of dissolved oxygen to be less than 4 milligrams per litre.
E. pH	(b) Waste discharges shall not cause the pH of the water to exceed the range of 6.5–8.5 units.
F. Temperature	Waste discharges shall not cause the natural daily temperature range to change by more than 2.0 degree Celsius.
G. Salinity	Waste discharges shall not cause the natural ambient salinity level to change by more than 10%.
H. Suspended Solids	(b) Waste discharges shall not cause the annual median of suspended solids to exceed 20 milligrams per litre.
I. Ammonia	The un-ionized ammoniacal nitrogen level should not be more than 0.021 milligram per litre, calculated as the annual average (arithmetic mean).
K. 5-Day Biochemical Oxygen Demand	(a) Waste discharges shall not cause the 5-day biochemical oxygen demand to exceed 3 milligrams per litre.
L. Chemical Oxygen Demand	(a) Waste discharges shall not cause the chemical oxygen demand to exceed 15 milligrams per litre.
M. Toxins	(a) Waste discharges shall not cause the toxins in water to attain such levels as to produce significant toxic carcinogenic, mutagenic or teratogenic effects in humans, fish or any other aquatic organisms, with due regard to biologically cumulative effects in food chains and to toxicant interactions with each other.
	(b) Waste discharges shall not cause a risk to any beneficial uses of the aquatic environment.

Construction Site Drainage, ProPECC PN1/94

4.2.3 Under ProPECC Practice Note PN1/94 Construction Site Drainage (ProPECC PN1/94), various guidelines for the handling and disposal of construction site discharges are included. The

guidelines include the use of sediment traps, wheel washing facilities for vehicles leaving the Site, adequate maintenance of drainage systems to prevent flooding and overflow, sewage collection and treatment, and comprehensive waste management (collection, handling, transportation, and disposal) procedures.

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

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

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

4.2.5 Under Environment, Transport and Works Bureau ("ETWB") Technical Circular (Works) No. 5/2005 *Protection of Natural Streams/Rivers from Adverse Impact Arising from Construction Works* ("ETWB TCW No. 5/2005"), an administrative framework for the protection of all natural streams/rivers from the impacts of construction works is provided. It also introduces existing measures and provides guidelines on planning for construction works and on developing precautionary measures during construction stage.

4.3 Potential Water Quality Impacts

Water Sensitive Receiver ("WSR")

4.3.1 In accordance with the *Technical Memorandum on Environmental Impact Assessment Ordinance* ("EIAO-TM"), WSR is defined as existing or potential beneficial uses that are sensitive to water pollution, which include, but are not limited to, the following:

- Areas of ecological or conservation values including marine conservation areas, existing or gazetted proposed marine parks and marine reserves, Sites of Special Scientific Interest ("SSSI"), existing or gazetted proposed country parks and special areas, wetlands, mangroves and important freshwater habitats;
- Area for abstraction of water for potable water supply;
- Water abstraction for irrigation and aquaculture;
- Fish spawning grounds, fish culture zones, shellfish harvesting/culture site and brackish/freshwater fish ponds;
- Beaches or other recreational areas;
- Water abstraction for cooling, flushing and other industrial purposes;
- Areas for navigation/shipping including typhoon shelters, marinas and boat parks.

4.3.2 In order to identify the WSRs, a desktop study on the OZP, topographic map and aerial photographs has been conducted together with site visits. The WSRs in the vicinity of the Site are summarised in ***Table 4-2*** and shown on ***Figure 4-1***.

Table 4-2: Water Sensitive Receivers

WSR ID	Description	Type	Distant to Site Boundary (m)
W1	Ng Tung River	Natural river	104.9
W2	Kwan Tei River	Natural river	496.6

WSR ID	Description	Type	Distant to Site Boundary (m)
W3	Fish Pond in Kwan Tei	Freshwater fish pond	235.2
W4	Watercourse to the northeast of the Site	Nullah	94.9
W5	Watercourse to the southwest of the Site	Nullah	362.6
W6	Another Watercourse to the southwest of the Site	Nullah	415.0

Construction Phase

4.3.3 Muddy runoff from the Site may be generated during the construction phase, especially during the rainy season. If the muddy water is not properly controlled, it would lead to increased amounts of suspended solids in the drainage system.

4.3.4 Wash water from vehicles and equipment; silt from any on-site stockpiles of soil, cement and grouting materials; and spillage of fuels, oil and lubricants from construction vehicles and plant may generate water quality impacts. If these pollution sources are not properly controlled, it would lead to increased amounts of suspended solids, grease and oil, pH, Biochemical Oxygen Demand ("BOD"), etc. in the drainage system.

4.3.5 There is also the issue of sewage generated by construction workers on-site. The sewage may result in high levels of NH_3-N, BOD and *E. coli* if it is not disposed of properly before discharging into drainage system.

4.3.6 Accidental spillage of chemicals during construction may leak into the nearby watercourses, causing sediment contamination or water quality degradation. The spilled chemical may also flow into the drainage system, blocking or corrupting the drainage pipe.

Operation Phase

4.3.7 Surface runoff is mainly discussed in a separate Drainage Impact Assessment Report ("DIA") supporting this planning application. It is concerned that the surface runoff from the site may carry the residual fertilisers and pesticides applied to landscape area, introducing toxins, nutrients, and suspended solid to the watercourses.

4.3.8 During the operation phase, sewage will be generated from toilets flushing, and grey water. It will contribute to the major sources of wastewater generation arising from the Proposed development. The sewerage impact on the municipal sewerage system has been assessed in a separate Sewerage Impact Assessment ("SIA") Report supporting this planning application. A sewerage treatment plant is proposed. All the sewerage generated from the site during operation phase will undergo proper treatment to satisfy the WPCO private sewerage treatment plant discharge standard before discharging to Ng Tung River. The SIA concluded that no unacceptable sewerage impact arising from the Proposed Development is anticipated.

4.4 Mitigation Measures

4.4.1 During the Site visits on 6 December 2022 and 18 January 2023, no watercourse was observed within the Site boundary. In order to avoid muddy surface runoff from entering the existing watercourse/storm water drainage system outside the Site, channels along the site boundary shall be provided to collect and direct the muddy runoff to the wastewater treatment facilities for treatment prior to being discharged. The design of the construction site drainage system shall be independent from the existing watercourse. The details of wastewater treatment arrangement shall be submitted to EPD for review during the application of the wastewater discharge licence before commencement of the construction activities.

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

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

- Surface run-off from construction sites shall be discharged into storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Channels or earth bunds or sand bag barriers shall be provided on site to properly direct storm water to such silt removal facilities. Perimeter channels at site boundaries shall be provided where necessary to intercept storm run-off from outside the Site so that it will not wash across the Site. Catchpits and perimeter channels should be constructed in advance of site formation works and earthworks.
- Silt removal facilities, channels and manholes shall be maintained and the deposited silt and grit should be removed regularly, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times.
- For the purpose of preventing soil erosion, temporarily exposed slope surfaces should be covered e.g. by tarpaulin, and temporary access roads should be protected by crushed stone or gravel, as excavation proceeds. Intercepting channels should be provided (e.g. along the crest/edge of excavation) to prevent storm runoff from washing across exposed soil surfaces. Arrangements should always be in place to ensure that adequate surface protection measures can be safely carried out well before the arrival of a rainstorm.
- Earthworks final surfaces shall be well compacted and the subsequent permanent work or surface protection shall be carried out immediately after the final surfaces are formed to prevent erosion caused by rainstorms. Appropriate drainage like intercepting channels shall be provided where necessary.
- Measures shall be taken to minimise the ingress of rainwater into trenches. If excavation of trenches in wet seasons is necessary, they shall be dug and backfilled in short sections. Rainwater pumped out from trenches or foundation excavations shall be discharged into storm drains via silt removal facilities.
- Open stockpiles of construction materials (e.g. aggregates, sand and fill material) on sites shall be covered with tarpaulin or similar fabric during rainstorms. Measures shall be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system.
- Manholes shall always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris from getting into the drainage system, and to prevent storm run-off from getting into foul sewers. Discharge of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system.
- Discharge of surface run-off into foul sewers shall always be prevented in order not to unduly overload the foul sewerage system.
- Regulated by Pesticides Ordinance, the utilisation of pesticide should be carried by a permit holder. Overdosing should be carefully avoided. The soil in the landscape area should be confined by enclosed planter so that surface runoff will not flow out. Minimum drainage system should be provided on the landscape area and directed to the proposed sewerage treatment plant in case the soil fully saturates and cannot precipitate excessive rainfall.

4.4.4 Besides registering as a chemical waste producer, the contractor shall prepare an emergency cleanse plan to respond the accidentally spillage of chemicals. The contractor will need to prepare sufficient absorbent material to control the spread of spilled chemical, enabling the later collection and decontamination works. The detailed management scheme of chemicals utilisation in construction phase is discussed in Section 5.3.36.

4.4.5 During operation, sewage arising from the Proposed Development will be discharged to the municipal sewerage system, no adverse water quality impact due to the Proposed Development is therefore anticipated. Nevertheless, as specified in ProPECC PN 5/93, mitigation

measures/recommendations for effluent discharge to storm drains and foul sewers shall be followed:

- Drainage outlets provided in open areas and areas subjected to a substantial amount of wind-blown rain, including balconies and podiums, should be discharged to stormwater drains.
- Drainage outlets provided in covered areas, including covered podiums and other roofed areas, should be discharged to foul sewers.
- Drainage outlets of verandahs next to kitchens and utilities rooms where a substantial amount of wind-blown rain is not expected should, as far as possible, be connected to foul sewers because of the concern that dwellers might discharge laundry or dishwater wastewater through these drainage outlets.
- Swimming pool main drain, footbath main drain and swimming pool make-up tank drain should be connected to stormwater drains while the filtration plant backwash should be discharged to foul sewers. Swimming pool drainage layout, filtration plant room drainage layout and filtration plant schematic line diagrams are required to be included in drainage plans.
- Drainage in covered carparks should be connected to foul sewers via petrol interceptors.
- All wastewater collected from a restaurant kitchen, including that from basins, sinks and floor drains, should be discharged via a grease trap capable of providing at least 20 minutes retention during peak flow.

4.5 Conclusion

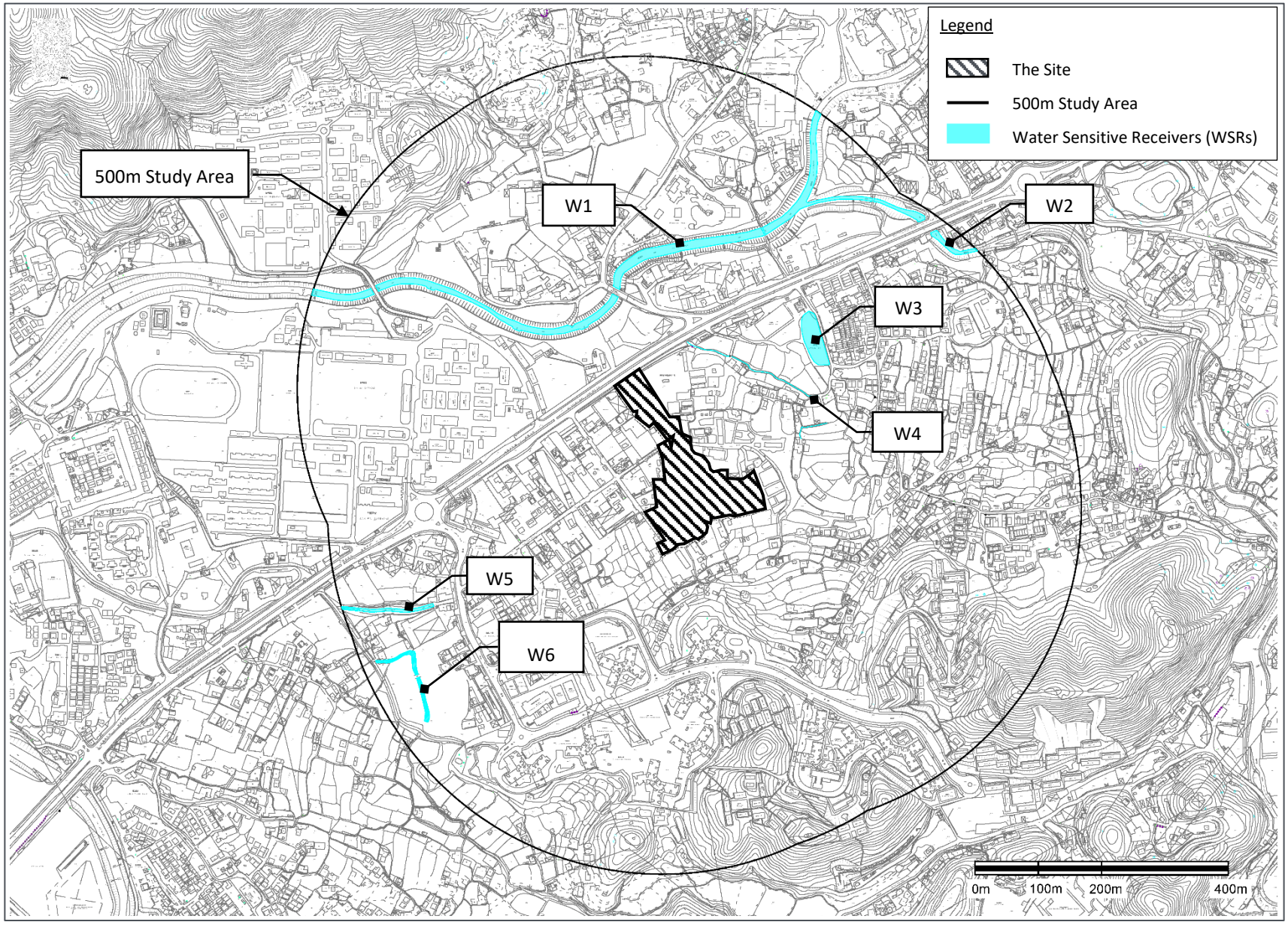
4.5.1 During construction, water quality impacts can be properly controlled with the implementation of good site practice, as stated in ***paragraph 4.4.3***. Portable toilets will be provided for constructions workers on-site. Provided these measures are implemented, it is unlikely that any adverse water quality impacts from the Site will be generated during the construction phase.

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

4.5.3 The wastewater generated from the Proposed Development will be treated in an on-site sewerage treatment plant before discharging into Ng Tung River. During operation, no adverse water quality impact is anticipated arising from the wastewater / sewage generated by the residents and employees of the Site.

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

Figure 4-1: Location of Identified Water Sensitive Receiver (WSR)



5 WASTE MANAGEMENT

5.1 Environmental Legislation and Standards

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

- The *Waste Disposal Ordinance* (Cap. 354) ("WDO") setting out requirements for storage, handling and transportation of all types of wastes, and subsidiary legislation such as the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N), the Waste Disposal (Charges for Disposal of Chemical Waste) Regulation (Cap. 354J) and the Waste Disposal (Chemical Waste) (General) Regulation (Cap. 354C).
- Land (Miscellaneous Provisions) Ordinance (Cap. 28).
- Air Pollution Control Ordinance ("APCO") (Cap. 3.11)
- Public Health and Municipal Services Ordinance – Public Cleansing and Prevention of Nuisances Regulation (Cap.132BK)
- Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.
- Code of Practice on the Handling, Transportation and Disposal of Asbestos Wastes
- Code of Practices and Guidelines for Asbestos Control and Handling.
- 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.
- DevB Technical Circular (Works) No. 9/2011, Enhanced Control Measures for Management of Public Fill.
- Civil Engineering and Development Department ("CEDD") Technical Circular No. 11/2019, Management of Construction and Demolition Materials.
- Building Department Practice Notes for Registered Contractors (PNRC 17), Control of Environmental Nuisance from Construction.
- Building Department Practice Notes for Authorized Persons and Registered Structural Engineers – Construction and Demolition Waste (PNAP ADV – 19).
- CEDD Project Administration Handbook for Civil Engineering Works, 2022 Edition ("PAH").
- Monitoring of Solid Waste in Hong Kong 2021.
- Work Branch Technical Circular No. 2/93 Public Dumps
- Work Branch Technical Circular No. 2/93B Public Filling Facilities
- Work Branch Technical Circular No. 12/2000 Fill Management
- Hong Kong Planning Standards and Guidelines (2021)

5.2 Assessment Methodology

5.2.1 The assessment methodology for waste management will include the followings:

- Identification/estimation of the types and quantities of waste arising from the Proposed Development;
- Addressing impacts caused by handling (including stockpiling, labelling, packaging and storage), collection, transportation and reuse/disposal of wastes in detail and propose appropriate mitigation measures;
- Adoption of waste management hierarchy with priorities towards waste reduction, on-site or off-site reuse and recycling;
- Estimation of the types and quantities of wastes required to be disposed of and their disposal method; and
- Assessment of the impacts on the capacity of waste collection, transfer and disposal facilities.

5.3 Potential Impacts

Construction Phase

5.3.1 Demolition of existing temporary structures and construction of new building will be included in the construction phase. The major construction activities include site clearance, demolition of temporary structures, excavation for construction of basement and foundation, site formation, site construction, superstructure works, etc. 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 materials (e.g. wood and plastics)
- Asbestos-containing demolition materials
- Chemical wastes (e.g. waste battery, waste lubricating oil from vehicles / plant maintenance)
- General refuse, i.e. Municipal Solid Waste ("MSW"), generated by site workers.

Inert C&D Materials

5.3.2 Inert C&D materials are those which do not decompose, such as debris, rubble, earth and concrete, and which are suitable for land reclamation and site formation.

5.3.3 The major source of inert C&D materials during construction will be demolition of existing buildings and site formation works for the Proposed Development.

5.3.4 In demolition stage, reference has been made to the USEPA's Characterization of Building-Related Construction and Demolition Debris in the United States[Ref.:2], since there is absence of any local GFA-based estimated method. The typical demolition generation rates for residential building of 561kg/m^2 GFA and non-residential building of 757kg/m^2 are adopted for demolition of the existing buildings. Therefore, it is estimated that 5,647 tonnes of inert C&D material will be generated from the demolition of existing buildings as shown in ***Table*** 5-1. The USEPA

2 Characterization of Building-Related Construction and Demolition Debris in the United States. Report No. EPA530-R-98-010 prepared for USEPA Municipal and Industrial Solid Waste Division, Office of Solid Waste, by Franklin Associates, June 1998.

estimation methods can provide only the mass estimation of the inert C&D material generated. The volume estimation will subject to further investigation on the existing buildings.

Table 5-1: Estimated Quantity of Demolition Waste

Building Name	Building Type	Generation Rate (kg/m^2 GFA)[Note 1&2]	GFA (m^2) [NOTE 3]	Waste Quantity (Tonnes)
Tin Wah House	Residential	561	130	72.9
Warehouse	Industrial	757	110	83.3
Warehouse	Industrial	757	1,043	789.4
Warehouse	Industrial	757	2,132	1,614.1
Warehouse	Industrial	757	2,682	2,030.2
Warehouse	Industrial	757	1,396	1,057
			Total	5,647

1. The approximate generation rates of 561kg/m^2 GFA for residential use was converted from the average generation rates of 115lb/ft^2 in Table 5 from Characterization of Building-Related Construction and Demolition Debris, Franklin Associates, WSEPA, 1998. (561kg/m^2 = 115lb/ft^2 x 0.4536kg/lb x 10.76ft^2/m^2)
2. The approximate generation rates of 757kg/m^2 GFA for non-residential use was converted from the average generation rates of 155lb/ft^2 in Table 6 from Characterization of Building-Related Construction and Demolition Debris, Franklin Associates, WSEPA, 1998. (757kg/m^2 = 155lb/ft^2 x 0.4536kg/lb x 10.76ft^2/m^2)
3. The GFA of the existing buildings are estimated on the topographical map.

5.3.5 Assuming the 95% of the Site area i.e. about 21,323m^2 is paved with a slab thickness of 0.2m, about 4,265m^3 of paving waste will therefore be required to be disposed of.

5.3.6 The current elevation of the Site ranges from 12.2mPD to 13.3mPD of the ground level. After re-profiling, the ground level will maintain at around 13mPD, which is higher than the current elevation. According to the indicative layout and sectional plans shown in ***Appendix 2*** of the Supporting Planning Statement, deep excavation shall be required for partial area. Excavated materials will be generated from the Site.

5.3.7 In addition to construction waste from site formation works, building waste will also be generated during construction. This includes inert C&D materials, such as concrete waste, waste from blockwork and brickwork, waste from screening and plastering; and non-inert C&D materials from timber formwork, packaging waste and other wastes.

5.3.8 As shown in ***Appendix F***, section 3.2 of *A Guide for Managing and Minimizing Building and Demolition Waste ("the Guide")* published by The Hong Kong Polytechnic University in May 2001 provides a "waste index" for building waste generation in Hong Kong based on the GFA of three different building types:

- Private Housing Projects 0.250m^3/m^2 GFA
- Government Housing Projects 0.175m^3/m^2 GFA
- Commercial Office Projects 0.200m^3/m^2 GFA

5.3.9 To provide a conservative estimate of building waste from the Proposed Development, the "waste index" for private housing projects is the most appropriate index to use. However, as noted above, in addition to inert C&D materials, this "waste index" also includes non-inert C&D materials, 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.

5.3.10 Plate 2.12 of EPD's *Monitoring of Solid Waste in Hong Kong – Waste Statistics for 2021* identifies that in 2021, 93% of construction waste was either reused on-site or off-site or was sent to

public fill reception facilities, meaning it must 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. 93%, to the "waste index" as follows:

Waste Index INERT C&D MATERIALS = 0.93 x "waste index" for private housing projects

= 0.93 x 0.250m^3/m^2 GFA

= 0.23m^3/m^2 GFA

5.3.11 The inert C&D materials component of building waste from the Proposed Development, which has a GFA of about 151,451m^2 (145,881m^2 of domestic GFA + 5,570 m^2 of non-domestic GFA), can therefore be estimated as follows:

Building Waste = $\text{Waste Index}_{\text{INERT C\&D MATERIALS}}$ x GFA

= 0.23m^3/m^2 GFA x 151,451m^2

= 35,212m^3

5.3.12 The majority of the inert Construction and Demolition waste is expected to come from excavation. Referring to the Development Proposal, the area and depth of the excavation would be about 15,810 m^2. Advised by the Architects, the total volume of excavated soil will be about 111,895 m^3. The detailed breakdown of excavation is list as below in Table 5-2. The area requiring excavation can be found in the Master layout Plan Basement B1/F & B2/F (drawing number: A-P-102) in Enclosure 2 of Planning Statement.

Table 5-2: Approximate Estimation of Volume of Excavated Soil

Location	Floor Height + Estimated Depth for Structure	Estimated Depth of Excavation	Area of Excavation	Volume
B1/F (Retail)	3.85 m + 0.8 m	4.65 m	1,950 m^2	9,068 m^3
B1/F (Residential)	5.6 m + 0.8 m	6.4 m	13,860 m^2	88,704 m^3
B2/F (Residential)	3.5 m	3.5 m	4,035 m^2	14,123 m^3
Total	-	Maximum 10 m	15,810 m^2	111,895 m^3

5.3.13 The total estimated inert C&D material generated during construction is summarised in Table 5-3.

Table 5-3: Summary of Waste Generation and Management Options During Construction

INERT C&D MATERIALS TYPE	ESTIMATED INERT C&D MATERIAL GENERATION	
	VOLUME (m^3)	WEIGHT (tonnes)*
Stage: Demolition of Existing Buildings, Site Clearance and Formation		
Building demolition	3,137	5,647
Removal of Paving	4,265	7,677
Soil Excavation	157,550	283,590
Sub-total	**164,952**	**296,914**
Stage: Infrastructural Works		
Building Waste	35,212	64,382
Total	**200,164**	**361,296**

Note(*):The density of all inert construction and demolition waste is assumed to be 1.8 tonnes/m^3, based on previously approved EIA report (AEIAR-145/2009 - Hong Kong - Zhuhai - Macao Bridge Hong Kong Boundary Crossing Facilities).

5.3.14 As such, the inert C&D materials will be generated from the 6-month-long site clearance and formation works. An estimated 164,952m^3 (or 296,914 tonnes) of inert C&D materials may be generated throughout the 6 months period, equivalent to around 1,057m^3 per day (or 1,903 tpd) on average for 26 working days per month. The inert C&D materials may be generated are dominantly from the infrastructural and building works which is expected to last for about 18 months. An estimated 35,212m^3 (or 64,382 tonnes) of inert C&D materials may be generated throughout the 18 months period, equivalent to around 7845m^3 per day (or 137 tpd) on average for 26 working days per month.

5.3.15 Inert C&D materials should be reused on-site as far as practicable and efforts should be made to optimise cut and fill requirements during the detailed design. Good site practice and mitigation measures should be implemented, as recommended in ***Section 5.4***. Surplus inert C&D materials should be sent off site for the reuse or recycling as far as practicable in other projects. The remaining should be sent to public fill reception facilities as the last resort. The quantity of the generated inert C&D materials that could be reused on site is targeted by the project team as 10%. As such, it is estimated that the quantity of inert C&D materials to be reused/recycled is 20,016m^3 (or 36,030 tonnes). It is estimated that half of the quantity (i.e. 18,015 tonnes) would be reused for site re-profiling from 12.2mPD to 13.3mPD, and the other half would be reused/recycled off-site in other projects. The reuse of inert C&D materials in public filling reception facilities as last resort would be agreed with relevant authorities before disposal. As discussed in Section 5.3.14, the inert C&D material generation rate will reach 1903 tonne per day in the site formation work stage, assuming the maximum capacity of 50 tonnes per dump truck, around 38 dump trucks per day will be required.

5.3.16 According to Section 4.1.3 of the Project Administrative Handbook for Civil Engineering Works (2022 Edition) ("PAH") and CEDD TC No. 11/2019, the project office is required to draw up a Construction and Demolition Materials Management Plan (C&DMMP) at the feasibility study or preliminary design stage of each Project, which generates more than 50,000m^3 of C&D materials. For projects which are not classified as "designated projects" under Schedule 2 of the EIAO but generating surplus C&D material in excess of 300,000m^3 or requiring imported fill exceeding 300,000m^3, the C&DMMP should be submitted to Public Fill Committee ("PFC") for in-principle approval prior to commencement of the detailed design in accordance with PAH Clause 4.1.3 and DEVB TCW No. 9/2011.

5.3.17 Given the above, no adverse waste impact from the handling, transportation or disposal of inert C&D materials during construction of the Proposed Development is anticipated if the C&DMMP can be drafted and followed. Appropriate design, general layout, construction methods and programme have been considered to minimize the generation of public fill/inert C&D materials and maximize the use of public fill/inert C&D materials for other construction works. Control measures are proposed in ***Section 5.4*** for the identified waste management implications.

Non-inert C&D Materials

5.3.18 Non-inert C&D materials, are those which can decompose or generate odour, such as bamboo, timber, vegetation, metal, packaging waste and other organic material, and which are therefore unsuitable for land reclamation. Usually, the density of non-inert construction and demolition waste will vary according to the composition, and in general, less than 1 tonne/m^3 (even in the approved AERAR – 14/2019). In this report, the density of non-inert waste will be taken as 1 tonne/m^3 because this value is higher than the densities of most organic material. This assumption is considered as a more conservative factor.

5.3.19 Existing temporary houses which are mainly composed of metal plates will be removed. In demolition stage, reference has been made to the USEPA's *Characterization of Building-Related Construction and Demolition Debris in the United States*, since there is absence of any local GFA-based estimation method. The typical demolition generation rates for residential buildings of 561kg/m^2 GFA is adopted for demolition of existing temporary structures at the Site. Therefore, it is estimated that 3,017,619kg (3,018 tonnes) of non-inert C&D material will be generated from the demolition of existing single storey temporary structures with the GFA about 5379m^2. The demolition is included in the 6 months site formation works, equivalent to around 19.3 tpd on average for 26 working days per month.

5.3.20 Plate 2.12 of *Waste Statistics for 2021* identifies that 6% of construction and demolition waste was disposed of in landfills, meaning it must be non-inert C&D materials. The proportion of non-inert C&D materials in the "waste index" can therefore be estimated by applying the Hong Kong-wide proportion of non-inert C&D materials in construction waste, i.e. 6%, to the "waste index" as follows:

$$\text{Waste Index}_{\text{NON-NERT C\&D MATERIALS}} = 0.06 \times \text{"waste index"}$$

$$= 0.06 \times 0.250 m^3/m^2 \text{ GFA}$$

$$= 0.015 m^3/m^2 \text{ GFA}$$

5.3.21 The non-inert C&D materials components in building waste can therefore be estimated as follows:

$$\text{Building Waste} = \text{Waste Index}_{\text{NON-INERT C\&D MATERIALS}} \times \text{GFA}$$

$$= 0.015 m^3/m^2 \times 151{,}451 m^2$$

$$= 2{,}272 m^3$$

5.3.22 Assuming a density of 1.0 tonnes/m^3, an estimated 2,272 tonnes of non-inert C&D materials may be generated dominantly throughout the 18 months construction period of infrastructural and building works, equivalent to around 4.85 tpd on average for 26 working days per month.

5.3.23 A total of 5,290 tonnes non-inert materials will be generated during the demolition and construction stage, equivalent to around 8.48 tpd on average for 26 working days per month. On-site sorting should be carried out for non-inert C&D materials generated from the works. Recyclable materials, such as metal, paper product, timber and plastic, 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 be adopted as the last resort. The recycle site is suggested to be the Yard Waste Recycling Centre in Y-Park. The disposal site for non-inert C&D materials shall be agreed with EPD/CEDD.

5.3.24 The quantity of the generated non-inert C&D materials could be recycled/reused is expected to be no more than 10% of the generated amount in view of the scale of the Project. As such, it is estimated that the quantity of non-inert C&D materials to be reused/recycled is 529m^3 (or 529 tonnes). It is estimated that half of the quantity (i.e. 264.5 tonnes) would be reused/recycled on-site and the other half would be reused/recycled off-site.

5.3.25 Given the above, no adverse waste impact from the handling, transportation or disposal of non-inert C&D materials during construction of the Proposed Development is anticipated. Control measures are proposed in ***Section 5.4*** for the identified waste management implications.

General Refuse

5.3.26 Based on industry experience, we estimate the number of construction workers for a project of this size would average around 100 per day over the 24 months construction period.

5.3.27 The generation rate of 0.65kg/person/day adopted in previously approved Environmental Assessment Report (AEIAR-221/2019 - Shuen Wan Golf Course) has been adopted for general refuse generation by construction workers. On this basis:

General Refuse/day = No. workers/day x per capita generation rate

= 100 workers x 0.65kg/worker/day

= 65kg/day

Total General Refuse = General Refuse/day x duration of construction contract

= 65kg/day x (26 days/month x 24 months)

= 40,560kg= 40.6 tonnes assuming a density of 1.0 tonnes/m^3

5.3.28 An estimated 40.6 tonnes of general refuse may be generated throughout the entire 24 months construction period, equivalent to around 0.07 tpd on average.

5.3.29 On-site sorting should be carried out general refuse generated from the works. Recyclable materials, such as metal, paper and plastic, should be collected by local recyclers for recycling. All general refuse should be recycled as far as possible and landfill disposal should be adopted as the last resort. Most construction workers have meal at nearby canteens, the food waste generation on site during the construction is expected to be neglectable. This nearest disposal facility is NENT Landfill, which is around 4km from the Site.

5.3.30 Given the above, no adverse waste impact from the handling, transportation or disposal of general refuse during construction of the Proposed Development is anticipated. Control measures are proposed in ***Section 5.4*** for the identified waste management implications.

Asbestos Containing Materials ("ACMs")

5.3.31 ACMs are suspected present in the existing temporary structures to be demolished. Under the APCO, asbestos investigation shall be conducted by Registered Asbestos Consultant ("RAC") before demolition work potentially involving ACMs. If any ACMs is identified, an Asbestos Investigation Report ("AIR") and an Asbestos Abatement Plan ("AAP") shall be submitted to EPD. 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.

5.3.32 The RAC shall be requested to conduct a visual inspection upon the completion of asbestos removal for each working area identified in the AAP. If additional ACMs is discovered during the work, demolition shall be suspended and inform the RAC immediately, the RAC shall submit the modified AAP to the EPD after the investigation. 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 there is no asbestos fibre left suspended in the air.

5.3.33 Under the *Waste Disposal (Chemical Waste) (General) Regulation*, asbestos waste should not be mixed with household waste, nor delivered to the refuse collection points nor public dumping areas. Registered asbestos contractor shall arrange a licensed collector to remove the asbestos waste in accordance with the Regulation.

5.3.34 The asbestos waste labelling, handling and packaging depends on the type of ACMs. All the handling, collection and transportation and disposal of asbestos waste shall be carried out according to EPD's Code of Practice on the Handling, 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.

5.3.35 Given the above, no adverse waste impact from the handling, transportation or disposal of asbestos-containing waste during the construction of the Proposed Development is anticipated.

Chemical Waste

5.3.36 In addition to asbestos, several hundred kilograms of chemical waste, such as spent lubricants or waste batteries, may be generated given the small scale of the works. As a conservative approach, 1 tonne of chemical waste is assumed to be generated during the construction phase for assessment purpose. The amount of chemical waste to be generated should be quantified in the Waste Management Plan ("WMP") to be prepared by the contractor. A licensed collector shall be employed to handle and dispose of all chemical wastes. Furthermore, the chemical waste should be handled in accordance with EPD's Code of Practice on the Packaging, Labelling and Storage Chemical Waste. Disposal of chemical waste shall be at an appropriate licensed facility as directed by the Authority, such as the Chemical Waste Treatment Centre ("CWTC"), a licensed chemical waste recycler, etc. The contractor shall also follow the Waste Disposal (Chemical Waste) (General) Regulation (Cap.354), and register as a chemical waste producer.

5.3.37 With the implementation of the good site practice and recommended mitigation measures, no adverse waste impact from the handling, transportation or disposal of chemical waste during the construction of the Proposed Development is anticipated.

Summary

5.3.38 Based on the above assessment, Table 5-3 summarises the generation of waste during the construction phase and identifies the appropriate management options for treatment and disposal of each waste type.

Table 5-4: Summary of Waste Generation and Management Options During Construction

WASTE TYPE	ESTIMATED WASTE QUANTITY		MANAGEMENT OPTIONS	
	CUBIC METRES	TONNES	TREATMENT	DISPOSAL
Inert C&D Materials				
Building Demolition	3,137	5,647	On-site Reuse + Off-site Recycling by Local Recyclers Estimated quantity = 36,030 tonnes	Residual C&D Waste to Public Fill Reception Facilities Estimated quantity = 325,266 tonnes
Removal of Paving	4,265	7,677		
Soil Excavation	157,550	283,590		
Building Waste	35,212	64,382		
Non-inert C&D Materials	5,290	5,290	Segregation + Off-site Recycling by Local Recyclers Estimated quantity = 264.5 tonnes (on site) and 264.5 tonnes (off site)	Residual Non-inert C&D Materials to Public Fill Reception Facilities Estimated quantity = 4,761 tonnes
General Refuse	40.6	40.6	Segregation + Off-site Recycling by Local Recyclers	Residual General Refuse to NENT Landfill

WASTE TYPE	ESTIMATED WASTE QUANTITY		MANAGEMENT OPTIONS	
	CUBIC METRES	TONNES	TREATMENT	DISPOSAL
Chemical Waste	1	1	All to be collected by the licensed chemical waste collector and treated in CWTC.	
ACMs	Depends on the asbestos investigation and asbestos abatement plan		Supervision of the asbestos waste handling and packaging for disposal by RAC and follow the relevant legislation, guidelines and Code of Practice on Asbestos Control. All to be collected by the licensed chemical waste collector and treated in CWTC.	
Total	**205,496**	**366,628**		

5.3.39 In total, therefore, an estimated 366,628 tonnes of waste may be generated throughout the 24 months construction period.

5.3.40 Overall, provided that good site practices as recommended in ***Section 5.4*** are followed, there should be no adverse waste impact from the handling, transportation or disposal of inert C&D materials, non-inert C&D materials, asbestos-containing material, general refuse or chemical waste during the construction of the Proposed Development.

Operation Phase

5.3.41 During the operation phase, the major type of waste will be domestic waste from the residents. According to the EPD's *Waste Statistics for 2021* published in December 2022, the most recent per domestic waste disposal rate waste disposal is 0.94 kg/person/day.

5.3.42 As advised by Project Applicant, the estimated maximum number of the Domestic (Flat) is 3,305 and it is estimated to accommodate a residential population of 9,915 persons. On this basis, it is estimated that 9.3tpd of domestic waste will be generated.

5.3.43 The nearest disposal point for domestic waste is NENT landfill, which is around 4km from the Site.

5.3.44 In order to minimize the final disposal quantities of general refuse, recyclables shall be segregated for recycling as far as practicable. Provisions of recycle bins for different types of recyclable waste should be provided together with general refuse bins. Arrangements should be made with the recycling companies to collect the recyclable as required.

5.3.45 Since domestic waste will be collected on a regular basis by private waste collectors, and since domestic waste will be recycled by waste segregation before disposing at a landfill managed by EPD, no adverse waste impacts from handling, transportation or disposal are anticipated. Nevertheless, to minimise domestic waste generation mitigation measures proposed in ***Section 5.4*** should be implemented.

5.3.46 Overall, there should be no adverse waste impact from the handling, transportation or disposal of domestic waste during the operation of the Proposed Development.

5.3.47 During the operation phase of the proposed STP, coagulant and flocculant will be applied in the secondary treatment process, and sludge cake will be generated after the sludge thickening process. Chlorine tablets or chlorine bleach may be applied in the disinfection process.

5.4 Mitigation Measures

Construction Phase

5.4.1 Waste management shall be controlled through contractual requirements as well as through statutory requirements.

5.4.2 A Waste Management Plan ("WMP") should be prepared and implemented in accordance with *Practice Note for Authorized Persons and Registered Structural Engineers – Construction and Demolition Waste* (PNAP ADV – 19) issued by the Buildings Department and submitted to the Engineer/Architect for approval before the commencement of any construction works. The objectives of the WMP will be to identify any potential environmental impact from the generation of waste at the Site; to recommend appropriate waste handling, collection, sorting, disposal and recycling measures in accordance with requirements of the current regulations; and to categorize and permit segregation of C&D materials where practicable (i.e. inert material / non-inert material) for disposal considerations i.e. public fill / landfill.

5.4.3 The Contractors should adopt good housekeeping practices with reference to the WMP such as waste segregation prior to disposal. Besides the provision of stockpiling and segregating areas at site, effective collection of site wastes is required to prevent waste materials being blown around by wind, flushed or leached into nearby waters, or creating odour nuisance or pest and vermin problems. Waste storage areas should be well maintained and cleaned regularly.

5.4.4 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 filing facilities and landfills, and to control fly-tipping. A trip-ticket system should be included as one of the contractual requirements for the contractor to strictly implement.

5.4.5 Whenever there are excess inert C&D materials, including bricks, plastics, metals, concrete and asphalt, reuse and recycling should be carried out as far as practicable to minimize the amount of waste disposal. All inert and non-inert C&D materials shall be sorted on-site for reuse and recycling as far as practicable prior to disposal at public fill and landfill.

5.4.6 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 reduce the occurrence of "wind-blown" materials.

5.4.7 In order to minimize the final disposal quantities of general refuse, provisions of recycle bins for different types of recyclable waste should be provided together with general refuse bins. Arrangements should be made with recycling companies to collect recycled waste as required.

5.4.8 In addition, food waste is the main source of generating unpleasant odour and causing environmental hygiene concerns. Food waste will be separated from other waste to facilitate the recycling of food waste on-site or off-site. Recycling bins should be placed in prominent places to promote waste separation at-source.

5.4.9 The arrangement of production, collection and disposal of chemicals should follow the "trip-ticket" system in accordance with the *Waste Disposal (Chemical Waste) (General) Regulation*. The storage, handling, transport and disposal of chemical wastes should also be arranged as per the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published by EPD. If any ACMs is identified, the project proponent would strictly follow the relevant legislations, guidelines and Code of Practice on Asbestos Control for the labelling, handing, transporting and disposal of ACMs.

5.4.10 In addition, the EPD's RPCC for Construction Contract should be incorporated in the relevant works contract. The RPCC are generally good engineering practice 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 WDO and its subsidiary.

- The Contractor shall submit the Engineer for approval a waste management plan with appropriate mitigation measures including allocation of an area for waste segregation and shall 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. Avoidance and minimisation of waste generation can be achieved through changing or improving design and practices, careful planning and good site management.
- The Contractor shall ensure that different types of wastes are segregated on-site and stored in different containers, skips or stockpiles to facilitate reuse / recycling of waste and, as the last resort, disposal at different outlets as appropriate.
- The reuse and recycling of waste shall be practised as far as possible. The recycled materials shall include paper / cardboard, timber and metal etc.
- The Contractor shall ensure that Construction and Demolition ("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 in earth filling, reclamation or site formation works, The C&D waste which comprises metal, timber, paper, glass, junk and general refuse shall be reused and recycled and, as the last resort, disposed of at landfills.
- The Contractor shall record the amount of waste generated, recycled and disposed of (including the disposal sites).
- The Contractor shall use a trip-ticket system for the disposal of C&D materials to any designated public filling facility and/or landfill.
- Training shall be provided for workers about the concepts of site cleanliness and appropriate waste management procedure, including waste reduction, reuse and recycling.
- The Contractor shall observe and comply with the *Waste Disposal (Chemical Waste) (General) Regulation*.
- The Contractor shall apply for registration as chemical waste producer under the *Waste Disposal (Chemical Waste) (General) Regulation* if chemical waste is produced. All chemical waste shall be properly stored, labelled, packaged and collected in accordance with the Regulation.

5.4.11 When inclement weather (e.g. heavy rain, typhoon, etc.) is forecast, additional control measures should be adopted as follows:

- Construction material, stockpiles, chemical and waste storage / recycling facilities should be immediately moved to secured area.
- Construction material, stockpiles and waste storage / recycling facilities should be covered by an impermeable sheeting, if necessary.
- Intercepting channels will be provided at the edge of the excavated area to prevent storm runoff from washing across the exposed surface.
- Silt removal facilities, channels and manholes will be maintained and the deposited silt and grit will be removed regularly.

Operation Phase

5.4.12 The building management shall encourage proper waste management in line with the government policy. The waste management hierarchy shall be adopted by the building management to manage waste in a sustainable manner. 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

5.4.13 During the operation phase of sewage treatment plant, the selections of coagulant and flocculant are expected to be the less irritating and toxic species for the convenience of maintenance. This practice will also deduct the severity of accident if spillage happens. The sludge cake will be transported and disposed to landfill. The waste impact from the possible chlorine application is expected to be small as this chemical is expected to appear commonly in domestic waste, and there is no evidence about its carcinogenic potential. The property management team is suggested to register as a chemical waste producer in EPD.

5.4.14 The waste generated during the operation of the Proposed Development will mainly be general refuse comprising recyclable waste, such as paper, aluminium cans, plastic bottles, food waste etc. Waste shall be segregated, collected and stored in appropriate waste receptacles, each with a proper cover to minimize odour and hygiene issues. Different kinds of waste shall be regularly collected by private waste collectors and taken off-site for proper recycling or disposal, respectively.

5.5 Conclusions

5.5.1 With the development of WMP and to implement the good site practices recommended therein, the waste generated during construction phase can be greatly reduced. Provided that good site practices recommended are followed, there should be no adverse impacts related to the management, handling and transportation of waste during the construction phase.

5.5.2 During the operation phase, the major type of waste generated will be domestic wastes generated from residents of the Proposed Development. Since domestic waste will be collected on a regular basis by waste collectors and will be disposed of at landfill, and domestic waste will be collected on a regular basis by FEHD or licenced collector, and will be disposed at a landfill managed by EPD, no adverse waste impacts from handling, transportation or disposal are anticipated during operation.

5.5.3 With the implementation of recommended mitigation measures, adverse waste impacts generated during the construction and operation phase of the Proposed Development are not anticipated

6 LAND CONTAMINATION

6.1 Environmental Legislation and Standards

6.1.1 The land contamination assessment has been conducted in accordance with the following legislation, standard and guidelines:

- 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 The assessment for land contamination of the Site was carried out with reference to EPD's Practice Guide. A normal land contamination assessment will involve the following steps:

(a) Carry out site appraisal, including background information collection
(b) Design site investigation ("SI") strategy and prepare a Contamination Assessment Plan ("CAP") for EPD's approval
(c) Conduct SI according to the approved CAP
(d) Interpret SI results and prepare a Contamination Assessment Report ("CAR") for EPD's approval
(e) Plan and design remediation strategy and prepare a Remediation Assessment Plan ("RAP") for EPD's approval
(f) Carrying out the remediation works
(g) Preparing the Remediation Report ("RR") for EPD's endorsement

6.3 Site Environment

6.3.1 Referring to the Draft Lung Yeuk Tau and Kwan Tei South Outline Zoning Plan No. S/NE-LYT/18, the zoning of the project site area is "Residential (Group C)" and "Agriculture". The project site area is currently a flat land, being occupied for the use of workshop, storage and warehouses. The northern portion of the application site is currently occupied by one permanent domestic structure, some temporary structures for open storage yards, storage of construction materials and workshops, open carparks and vacant land with little vegetation cover. The southern portion of the application site is currently occupied by the Applicant using as warehouse purposes. There is a total of 4 warehouses currently in operation. Overall, the application site is featured by warehouses and brownfield undertakings and observed with little vegetation cover.

6.3.2 Referring to the Land Registry record, the project site area is owned by multiple landlords, and the planning applicant, Catlton Woodcraft Manufacturing Limited, is the major owner of the southern portion. The planning applicant has already obtained the consent from all landlords on the project site for the Town Planning Ordinance Section 12A application. The site boundary includes 1,358 m^2 government land.

6.4 Site Appraisal Findings

6.4.1 Site appraisal was conducted in order to identify any potential contamination sources generated by the past and present land-use activities within the Site and the associated causes for land contamination.

Historical Use of the Site

6.4.2 Aerial photographic records obtained from the Survey and Mapping Office ("SMO") of Lands Department between Year 1963 and Year 2022 were reviewed. These photographic records revealed that the Site was an agricultural land on or before Year 1963. In Year 1973, it is found

that much of the previous farmlands were abandoned and became vacant with vegetations, while small part of farmland remained in the middle and southeast of the Site. Small temporary structures were also identified at the northwest of the Site. In Year 1982, the aerial photo indicated more farmlands were abandoned and became vacant, while only the middle part of the Site remained as agricultural land. Building structures were identified at the north of the Site. In Year 1993, the Site was partly paved and four building structures were identified at the southern part of the Site, several temporary structures and possible open car park were also found at the northern part of the Site. In Year 2002, the Site was almost entirely paved, while open car park, temporary structures and the four building structures still existed. A village house was also found at the north of the Site. Between Year 2013 and Year 2022, similar site conditions could be observed. The northern part of the Site was further paved and building structures within the Site remained the same. Activities such as parking of heavy trucks and open storage of construction materials could be identified. As advised by the Applicant, there were no underground contamination sources such as storage tanks and pipework in previous land uses.

6.4.3 As observed from the aerial photos, there is potential land contamination issues associated with past land uses as open area storage and possible vehicle maintenance activities. Land contamination issue from the warehouse usage is not likely as the stored goods are mainly construction materials like metal plates and formworks. Therefore, investigation on potential land contamination issues is further discussed in ***paragraphs 6.4.4*** to ***6.4.6.*** The historical land uses of the Site based on the aerial photographic records is summarized ***Table 6-1*** and aerial photographs are provided in ***Appendix G.***

Table 6-1: Historical Land Uses of the Site based on the Aerial Photographical Records

Photo Date	Reference No.	Land Use
1963	1963-0148	Entirely covered by agricultural land.
1973	05591	Mainly abandoned farmland / vacant land covered with vegetations, with scattered farmland found at middle and southeast of the Site. Small temporary structures were identified at the northwest of the Site.
1982	46797	Mainly abandoned farmland / vacant land covered with vegetations, small part of agricultural land could be found in the middle of the Site. Building structures observed at the northwest of the Site.
1993	CN05044	The Site was mainly paved with small part of vegetated land at the middle of the Site. Four building structures were found at the south of the Site. At the north of the Site, temporary structures and possible open carpark were identified.
2002	CW41443	The Site was almost entirely paved. Possible open carpark, temporary structures and four building structures identified in 1993 were also found in aerial photo of 2002. Besides, a village house was also identified at the north of the Site.
2013, 2020, 2022	CW102122, E093906C, E152970C	The Site was almost entirely paved with similar conditions since 2002. Parking of heavy trucks and open storage of construction materials could be identified.

Site Walkover

6.4.4 A site walk was carried out on 18 January 2023. The Site is mainly paved with concrete and it is currently used as warehouses, open storage yards, storage of construction materials and equipment, and vehicle maintenance workshops. One village house, Tin Wah Building, was found at the northern tip of the Site. As observed, no underground diesel tank and dangerous goods store present in the Site and no existing development with potential land contamination activities was found on the Site. During site visit, a crawler crane and several forklifts were observed in the Site. Nevertheless, no maintenance works or chemical storages were anticipated from the use of the equipment. In general, no obvious contamination issue is observed during the walkover. The photos of the existing site and the site walkover checklist are shown on ***Appendix H.*** There is concern that the periphery of the project site may cause off-site contamination, like the migrated contamination from Shun Cheong Electrical Products Factory Limited. During the previous site visit, all the windows and doors of Shun Cheong Electrical Products Factory Limited was closed. The business nature was unknown. It was observed to be a two-story reinforced concrete structure. Even if it did produce pollutant, the pollutant can very unlikely leak out from the structure and cause off-site contamination to the proposed project.

6.4.5 Based on recorded nature of the past and present land use activities, no obvious contamination issue was identified. Nevertheless, there is still potential land contamination issues associated with the previous and current activities, including open storage yards and vehicle maintenance works. Therefore, steps (b) to (g) of ***paragraph 6.2.1*** shall be required. As the village house, temporary structures (i.e. open storage and vehicle maintenance workshops) and warehouses within the Site are still currently in use, it is not appropriate to carry out site investigation at this planning stage. A CAP with updated site information is recommended to be prepared for EPD's review during the detailed design stage of the Proposed Development. The CAR should be prepared for EPD's review after site investigation. If land contamination is confirmed, RAP should be prepared for EPD's review and remediation works should be carried out according to the approved RAP. No commencement of the construction work will be allowed prior to completing remediation works. A RR should also be prepared for EPD's endorsement to demonstrate that the clean-up of the contaminated land is completed.

Review of Information from Relevant Government Departments

6.4.6 Based on our background research on this project area, there is no chemical spillage, incident, accidental chemical issues. Also, we did receive the confirmation from EPD and FSD of chemical incident. The information request letters and replies from EPD and FSD are attached in ***Appendix I.***

6.5 Conclusion

6.5.1 A detailed investigation of the past and present land-use of the Project Site was carried out. It is expected that no land use changes and additional hotspot will be introduced to the project site prior to the development. There are potential land contamination issues associated with previous and current activities within the Site. Nonetheless, a CAP is recommended to be prepared for EPD's endorsement during the detailed design stage, if necessary. The CAR shall be prepared for EPD's approval after site investigation. If land contamination is confirmed, RAP shall be prepared for EPD's approval and remediation works shall be carried out according to the approved RAP. No commencement of the construction work will be allowed prior to the completion of the remediation works. A RR shall also be prepared for EPD's endorsement to demonstrate that the clean-up of the contaminated land is completed. Updated CAP, CAR, RAP (if contamination is identified) and RR (if contamination is identified) shall also be provided.

7 CONCLUSION

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

7.1.2 The conclusions of the different aspects of environmental impact assessments are as follows:

Air Quality

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

7.1.4 No existing chimney was identified within 200m from the Site. Therefore, no adverse air quality impact from industrial emissions on the Proposed Development is anticipated.

7.1.5 No adverse air quality impact on the Proposed Development from the vehicular emissions is anticipated with the sufficient buffer distance provided between these air pollution sources and the Proposed Development. No adverse air quality from the Proposed Development on the surrounding air sensitive uses is also anticipated.

7.1.6 Overall, therefore, no adverse air quality impact is anticipated during the construction or operation phases of the Proposed Development.

Noise

7.1.7 During the construction phase of the Proposed Development, with the implementation of the noise mitigation measures recommended in ***Section 3.3***, no adverse noise impact is anticipated.

7.1.8 The Proposed Development is located at a low-density residential area, which is surrounded by village houses, such as Park Villa and King Chong, and some temporary dwellings, etc. These buildings provided effective acoustic shielding for the Proposed Development with buildings up to three storeys. Moreover, quantitative fixed noise impact assessment has been conducted to evaluate the fixed noise impact from the existing fixed noise sources. The predicted cumulative noise level is not greater than the noise criteria. Therefore, no adverse noise impact from the surrounding fixed noise sources on the proposed development is anticipated.

7.1.9 Most of the E&M equipment of the Proposed Development will be installed inside plant rooms. Potential noise sources have been identified as fixed mechanical equipment, such as chillers for central air conditioning. The chillers will be installed at roof top, which provided greatest separation from the identified NSRs and they will be shielded by the on-site building structure itself.

7.1.10 The maximum allowable sound power level (SWL) of the proposed outdoor units has been determined in order to ensure the compliance of statutory requirements and guidelines, which is subject to be changed in the detailed design stage.

7.1.11 For road traffic noise, the noise impact on the Proposed Development is predicted to comply with the standards as recommended in Chapter 9 Environment of the HKPSG with the building setback of about 130m to Sha Tau Kok Road (Lung Yeuk Tau).

7.1.12 Overall, therefore, no adverse noise impact during the construction and operation phases of the Proposed Development is expected.

Water Quality

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

7.1.14 During operation, no adverse water quality impact is anticipated from the wastewater / sewage generated by the Proposed Development. The separate SIA Report has concluded that there will be no adverse sewerage impact from the Proposed Development.

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

Waste Management

7.1.16 With the development of WMP and to implement the good site practices recommended therein, the waste generated during construction phase can be greatly reduced. Provided that good site practices recommended are followed, there should be no adverse impacts related to the management, handling and transportation of waste during the construction phase.

7.1.17 During the operation phase, the major type of waste generated will be domestic wastes generated from residents of the Proposed Development. Since domestic waste will be collected on a regular basis by waste collectors and will be disposed of at landfill, and domestic waste will be collected on a regular basis by FEHD or licenced collector, and will be disposed at a landfill managed by EPD, no adverse waste impacts from handling, transportation or disposal are anticipated during operation.

7.1.18 With the implementation of recommended mitigation measures, adverse waste impacts generated during the construction and operation phase of the Proposed Development are not anticipated.

Land Contamination

7.1.19 A detailed investigation of the past and present land-use of the Project Site was carried out. There are potential land contamination issues associated with previous and current activities within the Site. Nonetheless, a CAP is recommended to be prepared for EPD's endorsement during the detailed design stage, if necessary. The CAR shall be prepared for EPD's approval after site investigation. If land contamination is confirmed, RAP shall be prepared for EPD's approval and remediation works shall be carried out according to the approved RAP. No commencement of the construction work will be allowed prior to the completion of the remediation works. A RR shall also be prepared for EPD's endorsement to demonstrate that the clean-up of the contaminated land is completed. Updated CAP, CAR, RAP (if contamination is identified) and RR (if contamination is identified) shall also be provided.

Appendix A ODOUR COMPLAINT RECORDS OF CONCERNED SOURCES NEAR THE SITE

Pinky LAM

From: shchu@epd.gov.hk
Sent: 2023年6月16日星期五 11:00
To: Pinky LAM
Subject: Re: 7076933 Section 12A Rezoning Application at Lung Yeuk Tau - Odour and Noise Impact Review

Dear Pinky,

I refer to your email below.

There is no odour complaint records on (1) Tung Chun Soy Sauce & Canned Food Company Limited and Sha Tau Kok Road Ma Liu Shui San Tsuen Sewage Pumping Station in the past two years whilst one noise complaint was lodged against the recycling site (known as 天時環保廢料回收有限公司) located at Point 3 marked in the map in Nov 2022, regarding a noise nuisance from construction waste handling.

Thanks.

Regards,
CHU Shun-hang
AE(RN)33 / EPD
2158 5832

From: Pinky LAM <Pinky.Lam@smec.com>
To: "shchu@epd.gov.hk" <shchu@epd.gov.hk>
Cc: Charls LIANG <Charls.Liang@smec.com>, Fred NG <Fred.Ng@smec.com>
Date: 15/06/2023 14:08
Subject: 7076933 Section 12A Rezoning Application at Lung Yeuk Tau - Odour and Noise Impact Review

Dear Mr. CHU,

Section 12A Rezoning Application – Request for Amendment to the approved Lung Yeuk Tau and Kwan Tei South Outline Zoning Plan No. S/NE-LYT/19 from "Residential (Group C)" Zone and "Agriculture" Zone to "Residential (Group A) 2" Zone
Request for Information – Odour and Noise Impact Review

We have been appointed by Carlton Woodcraft Manufacturing Ltd as the Environmental Consultant to undertake an Environmental Assessment ("EA") for the captioned project. In order to review potential odour and noise impact, we would be most grateful if you could provide us with the following information, if any:

1. Odour complaint record on (1) Tung Chun Soy Sauce & Canned Food Company Limited and (2) Sha Tau Kok Road Ma Liu Shui San Tsuen Sewage Pumping Station
2. Noise complaint record on (3) 粉嶺環保回收有限公司

Please refer to the attached plan for the locations of the project site and the listed items. Should you have any enquiries regarding the above, please do not hesitate to contact the undersigned. Thank you.

Regards,

Pinky LAM
Assistant Environmental Consultant
D +852 3995 8135 T +852 3995 8100 F +852 3995 8101 E pinky.lam@smec.com

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[attachment "7076933_Location Plan.pdf" deleted by SH CHU/EPD/HKSARG]

Appendix B CALCULATION OF NOISE IMPACT FROM EXISTING FIXED NOISE SOURCES

Calculation of Sound Power Level of Existing Fixed Noise Sources

Fixed Noise Sources	Measured SPL, dB(A)	Distance from the Noise Source, m	distance Correction, dB(A)	Corrected SWL, dB(A)
S1 Shun Cheong Electrical Products Factory Ltd	74.5	9	27.1	101.6
S2 Fanling Environmental Recycling Limited	71.1	31	37.8	108.9

Calculation of Fixed Source Noise Impact from Existing Sources

NSR ID	Sources	Corrected SWL, dB(A)	Distance, m	Distance Attenuation, dB(A)	Façade Correction, dB(A)	Predicted SPL, dB(A)	Total SPL, dB(A)
R1	S1	102	167	-52.4	3	52.1	57
	S2	109	251	-56.0	3	55.9	
R2	S1	102	131	-50.4	3	54.2	60
	S2	109	197	-53.9	3	58.0	
R3	S1	102	169	-52.6	3	52.0	59
	S2	109	197	-53.9	3	58.0	

Appendix C CALCULATION OF MAXIMUM ALLOWABLE SOUND POWER LEVEL OF PROPOSED OUTDOOR UNITS

Predicted Noise Level at F1

Fixed Noise Source ID	Maximum SWL, dB(A)			Distance, m	Correction, dB(A)		Predicted Noise Level, dB(A)			Overall Noise Level, dB(A)		
	Day Time	Evening Time	Night Time		Distance	Façade	Day Time	Evening Time	Night Time	Day Time	Evening Time	Night Time
OU1	84	82	79	102	-48	3	39	37	34	41	39	36
OU2	84	82	79	129	-50	3	37	35	32			
							Criteria, dB(A)			50	48	45

Predicted Noise Level at F2

Fixed Noise Source ID	Maximum SWL, dB(A)			Distance, m	Correction, dB(A)		Predicted Noise Level, dB(A)			Overall Noise Level, dB(A)		
	Day Time	Evening Time	Night Time		Distance	Façade	Day Time	Evening Time	Night Time	Day Time	Evening Time	Night Time
OU1	84	82	79	103	-48	3	39	37	34	41	39	36
OU2	84	82	79	132	-50	3	37	35	32			
							Criteria, dB(A)			50	48	45

Predicted Noise Level at F3

Fixed Noise Source ID	Maximum SWL, dB(A)			Distance, m	Correction, dB(A)		Predicted Noise Level, dB(A)			Overall Noise Level, dB(A)		
	Day Time	Evening Time	Night Time		Distance	Façade	Day Time	Evening Time	Night Time	Day Time	Evening Time	Night Time
OU1	84	82	79	229	-55	3	32	30	27	50	48	45
OU2	84	82	79	28	-37	3	50	48	45			
							Criteria, dB(A)			50	48	45

Appendix D TRAFFIC FORECAST FOR YEAR 2046

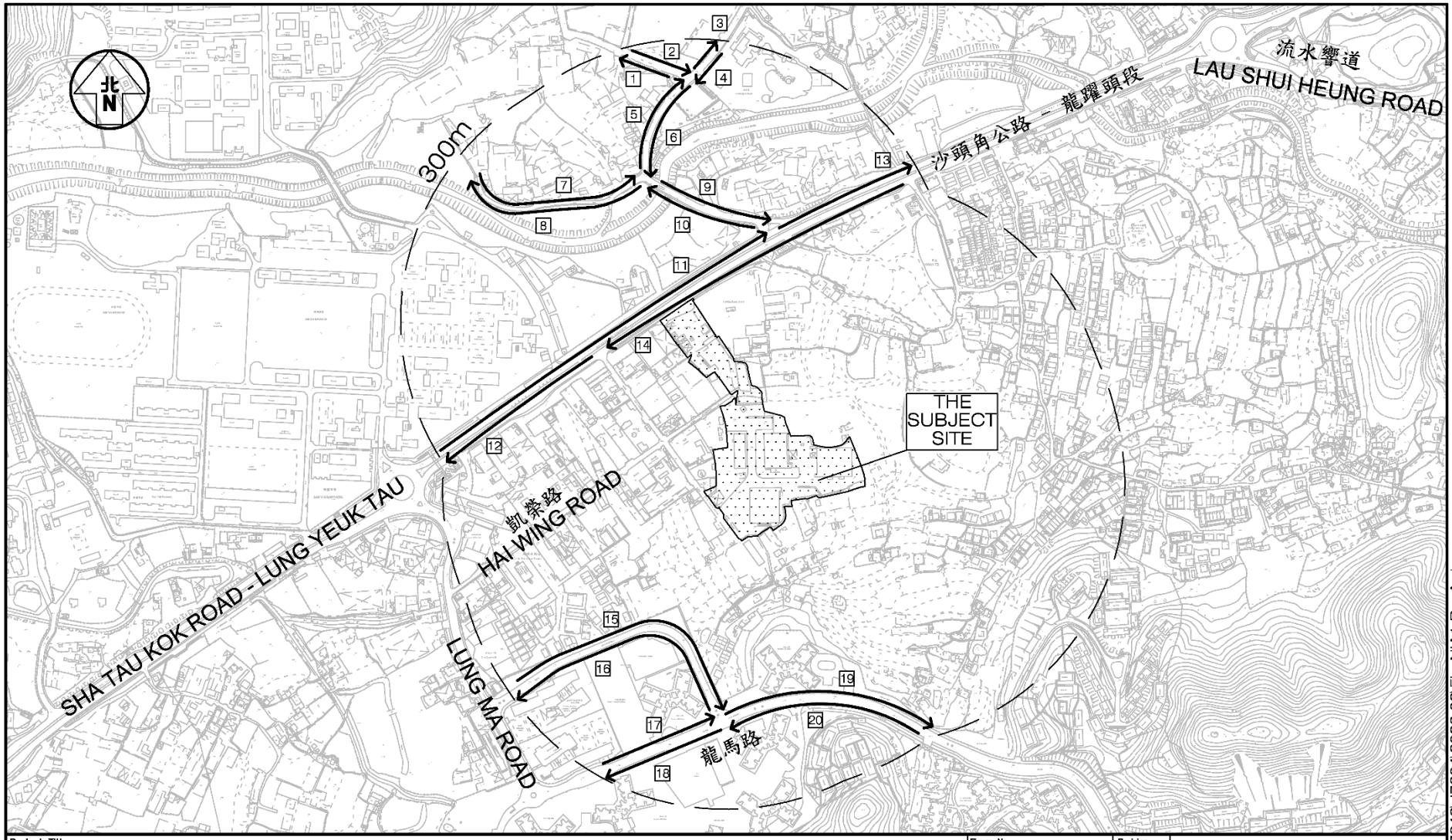
TABLE 1 – PEAK HOUR TRAFFIC FLOW AND VEHICLE COMPOSITION

YEAR 2046 TRAFFIC FORECAST

Date: 10 February 2023 Job No.: J7204

Link ID	Road Section	From Road	To Road	Peak Hour		
				Traffic Flows (veh/hr)	Vehicle Composition	
					LV	HV
L001	Unnamed Access Road (L001/L002)	Access Road to Kwai Tei (North)	Unnamed Site Access	50	42.9%	57.1%
L002	Unnamed Access Road (L001/L002)	Unnamed Site Access	Access Road to Kwai Tei (North)	50	42.9%	57.1%
L003	Access Road to Kwai Tei (North)	Unnamed Access Road (L001/L002)	Kwan Tei North	100	47.7%	52.3%
L004	Access Road to Kwai Tei (North)	Kwan Tei North	Unnamed Access Road (L001/L002)	200	66.0%	34.0%
L005	Access Road to Kwai Tei (North)	Unnamed Access Road (L007/L008)	Unnamed Access Road (L001/L002)	100	47.4%	52.6%
L006	Access Road to Kwai Tei (North)	Unnamed Access Road (L001/L002)	Unnamed Access Road (L007/L008)	200	65.4%	34.6%
L007	Unnamed Access Road (L007/L008)	Cul-de-sac	Unnamed Access Road (L001/L002)	50	40.0%	60.0%
L008	Unnamed Access Road (L007/L008)	Unnamed Access Road (L001/L002)	Cul-de-sac	50	40.0%	60.0%
L009	Access Road to Kwai Tei (North)	Unnamed Access Road (L007/L008)	Sha Tau Kok Road - Lung Yeuk Tau	200	63.6%	36.4%
L010	Access Road to Kwai Tei (North)	Sha Tau Kok Road - Lung Yeuk Tau	Unnamed Access Road (L007/L008)	150	46.2%	53.8%
L011	Sha Tau Kok Road - Lung Yeuk Tau	Lung Ma Road	Unnamed Access Road (L001/L002)	1,150	69.6%	30.4%
L012	Sha Tau Kok Road - Lung Yeuk Tau	Dao Yang Road	Lung Ma Road	1,300	71.1%	28.9%
L013	Sha Tau Kok Road - Lung Yeuk Tau	Unnamed Access Road (L001/L002)	Lau Shui Heung Road	1,200	70.8%	29.2%
L014	Sha Tau Kok Road - Lung Yeuk Tau	Lau Shui Heung Road	Dao Yang Road	1,250	70.4%	29.6%
L015	Lung Chun Road	Lung Ma Road	Lung Ma Road	150	75.5%	24.5%
L016	Lung Chun Road	Lung Ma Road	Lung Ma Road	100	63.4%	36.6%
L017	Lung Ma Road	Mini Roundabout at Lung Ma Road	Lung Chun Road	400	73.2%	26.8%
L018	Lung Ma Road	Lung Chun Road	Mini Roundabout at Lung Ma Road	350	73.0%	27.0%
L019	Lung Ma Road	Lung Chun Road	Access Road (Shan Lai Court)	400	74.7%	25.3%
L020	Lung Ma Road	Access Road (Shan Lai Court)	Lung Chun Road	300	72.5%	27.5%

Note: "LV" includes motorcycle, private car and taxi
"HV" includes light / medium / heavy goods vehicle, public / private light bus, non-franchised bus and franchised bus



Project Title: PROPOSED DEVELOPMENT AT VARIOUS LOTS IN DD83 LUNG YEUK TAU, FANLING, N.T. J7204	Figure No.: NIA1	Revision: A	CKM Asia Limited Traffic and Transportation Planning Consultants 21st Floor, Methodist House, 36 Hennessy Road, Wan Chai, Hong Kong Tel : (852) 2520 5990 Fax : (852) 2528 6343 Email : mail@ckmasia.com.hk
Figure Title: LOCATION OF SUBJECT SITE AND ROAD LINKS WITH TRAFFIC DATA WITHIN THE 300M STUDY AREA	Designed by: N C L / Drawn by: S C Y / Checked by: K C		
	Scale in A4: 1 : 6,000	Date: 10 FEB 2023	

T:\JOBs\J7200-J7249\J7204\2023 02\Fig NIA1 RevA.dwg

TD's Endorsement

By Fax
2528 6343

運輸署
Transport Department

本署檔案 Our Ref. : (NNK0Z) in TD NR146/194-S19
來函檔號 Your Ref. : J7204/5
電 話 Tel. : 2399 6933
圖文傳真 Fax : 2381 3799
電 郵 Email : homanchu@td.gov.hk

28 July 2023

CKM Asia Limited
21st Floor, Methodist House,
36 Hennessy Road,
Wan Chai,
Hong Kong
(Attn: Mr. CHIN Kim Meng)

Dear Sir,

S12A Rezoning Application from Residential (Group C) Zone & Agriculture Zone to Residential (Group A)2
Proposed Development at Various Lots in DD83
Lung Yeuk Tau, Fanling
Traffic Forecast for Noise Impact Assessment ("NIA")

I refer to your letter ref. J7204/5 dated 30 June 2023 providing the response to our previous comments.

Please be informed that we have no further comments on the proposed methodology on the traffic forecast for NIA from traffic engineering point of view.

Yours faithfully,

(Hoffman CHU Ho-man)
for Commissioner for Transport

c.c.
PlanD (Attn: Ms. CHEUNG Chui Ying, Carman fax: 2691 2806)

新界分區辦事處
NT Regional Office
九龍聯運街三十號旺角政府合署七樓
7th Floor, Mong Kok Government Offices, 30 Luen Wan Street, Kowloon.
圖文傳真 Fax No.: 2381 3799 (新界區) (NTRO)
網址 Web Site: http://www.td.gov.hk

TOTAL P.001

Traffic Consultant's Confirmation Letter

CKM ASIA LIMITED 陳錦敏亞洲有限公司

Traffic and Transportation Planning Consultants 交通及運輸策劃顧問

Our Ref: J7204/6

2nd August, 2023

SMEC Hong Kong
27/F Ford Glory Plaza
37-39 Wing Hong Street
Cheung Sha Wan, Kowloon
Hong Kong

Attn: Mr. Alex GBAGUIDI

(By E-mail: alex.gbaguidi@smec.com)

Dear Mr. Gbaguidi,

S12A Rezoning Application from
Residential (Group C) Zone & Agriculture Zone to Residential (Group A) 2
Proposed Development at Various Lots in DD83
Lung Yeuk Tau, Fanling (Y/FL-LYT/16)

2046 Traffic Forecast for Traffic Noise Impact Assessment ("TNIA")

This is to confirm that the traffic forecast methodology for the captioned project submitted to Transport Department ("TD") on 17th March 2023 (CKM Ref: J7204/3) and 30th June 2023 (CKM Ref: J7204/5), were produced in accordance to the relevant guideline issued by the TD.

Subsequent to our submission, TD replied with *"no further comments on the proposed methodology on the traffic forecast for NIA from traffic engineering point of view"* as stated in the TD letter dated 28th July 2023 (TD Ref: (NNK0Z) in TD NR146/194-S19). The relevant correspondences mentioned are attached herewith for your reference.

The peak hour traffic flows produced for Year 2046 are the highest within 15 years after occupation of the captioned project, which is assumed to be Year 2031.

Should you have any queries, please do not hesitate to contact us.

Thank you very much for your attention.

Yours sincerely,

CHIN Kim Meng
Director

Encl.

cc: Client

KIM/WCH

21st Floor, Methodist House, 36 Hennessy Road, Wanchai, Hong Kong
香港灣仔軒尼詩道36號循道衛理大廈21樓
Tel 電話: (852) 2520 5990 Fax 傳真: (852) 2528 6343
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Appendix E PREDICTED ROAD TRAFFIC NOISE LEVELS

Predicted Road Traffic Noise Levels for Tower 1

Tower 1

Floor	mPD	T1-A1	T1-A2	T1-A3	T1-B1	T1-B2	T1-C1	T1-C2	T1-D1	T1-D2	T1-E1	T1-E2	T1-F1	T1-F2	T1-F3	T1-G1	T1-G2	T1-G3	T1-H1	T1-H2	T1-I1	T1-I2	T1-I3	T1-J1	T1-J2	T1-J3	T1-K1	T1-K2	T1-L1	T1-L2	T1-M1	T1-M2	T1-M3
G	**13.2**	63	60	56	56	56	55	55	-	-	54	54	54	54	47	47	60	60	60	60	61	62	62	62	62	62	62	62	63	63	63	63	60
1	**18.2**	64	63	60	60	59	59	59	58	58	58	58	58	58	52	52	61	61	62	62	62	62	62	63	63	63	63	63	63	62	64	64	64
2	**21.3**	66	64	62	62	61	61	60	60	60	60	59	59	59	53	53	62	62	62	62	63	63	63	63	63	63	64	64	64	62	64	65	66
3	**24.5**	66	65	63	63	62	62	62	61	61	61	61	61	60	53	54	62	63	63	63	63	63	63	63	64	64	64	64	64	62	65	66	66
4	**27.6**	67	66	64	63	63	62	62	62	62	61	61	61	61	54	55	63	63	63	63	63	64	64	64	64	64	64	64	65	63	65	66	67
5	**30.8**	67	66	64	64	63	63	63	62	62	62	62	62	62	54	55	63	63	63	64	64	64	64	64	64	65	65	65	65	63	66	67	67
6	**33.9**	67	66	64	64	63	63	63	62	62	62	62	62	62	55	56	64	64	64	64	64	64	64	65	65	65	65	65	65	63	66	67	67
7	**37.1**	67	66	64	64	63	63	63	62	62	62	62	62	62	56	57	64	64	64	64	65	65	65	65	65	65	65	66	66	64	66	67	68
8	**40.2**	68	66	64	64	64	63	63	62	62	62	62	62	62	56	58	64	65	65	65	65	65	65	65	66	66	66	66	66	64	67	68	68
9	**43.4**	68	66	64	64	64	63	63	62	62	62	62	62	62	57	58	65	65	65	65	65	65	66	66	66	66	66	66	67	65	67	68	68
10	**46.5**	68	66	64	64	64	63	63	62	62	62	62	62	62	57	59	65	65	65	65	66	66	66	66	66	66	66	67	67	65	67	68	68
11	**49.7**	68	66	65	64	64	63	63	62	62	62	62	62	62	58	59	66	66	66	66	66	66	66	66	66	67	67	67	67	65	68	68	68
12	**52.8**	68	66	65	64	64	63	63	63	62	62	62	62	62	58	60	66	66	66	66	66	66	66	66	66	67	67	67	67	66	68	68	68
13	**56**	68	66	65	64	64	63	63	62	62	62	62	62	62	59	60	66	66	66	66	66	67	67	67	67	67	67	67	67	66	68	69	69
14	**59.1**	68	66	64	64	64	63	63	62	62	62	62	62	62	59	60	66	66	66	66	67	67	67	67	67	67	67	67	67	67	68	69	69
15	**62.3**	69	66	64	64	64	63	63	62	62	62	62	62	62	59	60	66	66	66	67	67	67	67	67	67	67	67	67	68	67	68	69	69
16	**65.4**	69	66	64	64	64	63	63	62	62	62	62	62	62	59	60	66	66	67	67	67	67	67	67	67	67	67	68	68	67	68	69	69
17	**68.6**	69	66	64	64	64	63	63	62	62	62	62	62	62	59	60	67	67	67	67	67	67	67	67	67	67	67	68	68	67	68	69	69
18	**71.7**	69	66	64	64	64	63	63	62	62	62	62	62	62	60	61	67	67	67	67	67	67	67	67	67	67	67	68	68	67	68	69	69
19	**74.9**	69	66	64	64	64	63	63	62	62	62	62	62	62	60	61	67	67	67	67	67	67	67	67	67	67	67	68	68	68	68	69	69
20	**78**	69	66	64	64	63	63	63	62	62	62	62	62	62	60	61	67	67	67	67	67	67	67	67	67	67	67	68	68	68	68	69	69
21	**81.2**	69	66	64	64	63	63	63	62	62	62	62	62	62	60	61	67	67	67	67	67	67	67	67	67	67	67	68	68	68	68	69	69
22	**84.3**	69	66	64	64	63	63	63	62	62	62	62	62	62	60	61	67	67	67	67	67	67	67	67	67	67	67	68	68	68	68	69	69
23	**87.5**	69	66	64	64	63	63	63	62	62	62	62	62	62	60	61	67	67	67	67	67	67	67	67	67	67	67	68	68	68	68	69	69
24	**90.6**	69	66	64	64	63	63	63	62	62	62	62	62	62	60	61	67	67	67	67	67	67	67	67	67	67	67	68	68	68	68	69	69
25	**93.8**	68	66	64	64	63	63	63	62	62	62	62	62	62	60	61	67	67	67	67	67	67	67	67	67	67	67	68	68	68	68	69	69
26	**96.9**	68	66	64	64	63	63	63	62	62	62	62	62	62	60	61	67	67	67	67	67	67	67	67	67	67	67	68	68	68	68	69	69
27	**100.1**	68	66	64	64	63	63	63	62	62	62	62	62	62	60	61	67	67	67	67	67	67	67	67	67	67	67	68	68	68	68	69	69
28	**103.2**	68	66	64	64	63	63	63	62	62	62	62	62	62	60	61	67	67	67	67	67	67	67	67	67	67	67	68	68	68	68	69	69
29	**106.4**	68	65	64	64	63	63	63	62	62	62	62	62	62	60	61	67	67	67	67	67	67	67	67	67	67	67	68	68	68	68	69	69
30	**109.5**	68	65	64	64	63	63	63	62	62	62	62	62	62	60	61	67	67	67	67	67	67	67	67	67	67	67	68	68	68	68	69	69
31	**112.7**	68	65	64	64	63	63	63	62	62	62	62	62	62	60	61	67	67	67	67	67	67	67	67	67	67	67	68	68	68	68	69	69
32	**115.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33	**119**	68	65	64	64	63	63	63	62	62	62	62	62	62	60	61	67	67	67	67	67	67	-	-	-	-	67	67	68	68	68	69	69
34	**122.1**	68	65	64	64	63	63	63	62	62	62	62	62	62	60	61	67	67	67	67	67	67	-	-	-	-	67	67	67	68	68	69	68
35	**125.3**	68	65	64	64	63	63	63	62	62	62	62	62	62	60	61	67	67	67	67	67	67	-	-	-	-	67	67	67	68	68	68	68
36	**128.4**	68	65	64	63	63	63	63	62	62	62	62	62	62	60	61	67	67	67	67	67	67	-	-	-	-	67	67	67	68	68	68	68
37	**131.6**	68	65	64	63	63	63	62	62	62	62	62	62	62	60	61	67	67	67	67	67	67	-	-	-	-	67	67	67	68	68	68	68
38	**134.7**	68	65	64	63	63	63	62	62	62	62	62	62	62	60	61	67	67	67	67	67	67	-	-	-	-	67	67	67	68	68	68	68
39	**137.9**	68	65	64	63	63	63	62	62	62	62	62	62	62	60	61	67	67	67	67	67	67	-	-	-	-	67	67	67	68	68	68	68
40	**141**	68	65	64	63	63	63	62	62	62	62	62	62	61	60	61	67	67	67	67	67	67	-	-	-	-	67	67	67	68	68	68	68
41	**144**	68	65	64	63	63	63	62	62	62	62	62	62	61	60	61	66	67	67	67	67	67	-	-	-	-	67	67	67	68	68	68	68
42	**147.3**	68	65	64	63	63	63	62	62	62	62	62	62	61	60	60	66	66	67	67	67	67	-	-	-	-	67	67	67	68	68	68	68

Predicted Road Traffic Noise Levels for Tower 2

Tower 2

Floor	mPD	T2-A1	T2-A2	T2-A3	T2-B1	T2-B2	T2-C1	T2-C2	T2-D1	T2-D2	T2-E1	T2-E2	T2-F1	T2-F2	T2-F3	T2-G1	T2-G2	T2-G3	T2-H1	T2-H2	T2-I1	T2-I2	T2-I3	T2-J1	T2-J2	T2-J3	T2-K1	T2-K2	T2-L1	T2-L2	T2-M1	T2-M2	T2-M3
G	**13.2**	59	48	47	50	51	48	49	-	-	49	49	49	49	45	47	53	53	53	53	54	55	55	55	55	55	56	56	57	58	58	58	56
1	**18.2**	60	53	51	53	54	55	55	55	55	55	54	54	54	53	52	54	59	59	59	59	59	59	59	59	60	60	60	61	61	62	62	62
2	**21.3**	61	54	53	55	56	57	57	57	57	57	57	57	57	56	54	55	59	59	59	60	60	60	60	60	60	61	61	61	62	62	62	63
3	**24.5**	62	55	55	55	56	57	58	58	58	58	58	58	57	57	54	55	60	60	60	60	60	60	60	61	61	61	61	62	62	62	63	63
4	**27.6**	62	55	55	56	57	58	58	58	59	58	58	58	58	58	54	55	61	61	61	61	61	61	61	61	61	62	62	62	63	63	63	64
5	**30.8**	63	56	56	56	57	58	58	59	59	59	58	58	58	58	54	55	61	61	61	61	62	61	62	62	62	62	62	63	63	63	64	64
6	**33.9**	63	56	56	56	57	58	58	59	59	59	58	58	58	58	54	56	62	62	62	62	62	62	62	62	62	63	63	63	64	64	64	65
7	**37.1**	63	56	56	56	57	58	58	59	59	59	59	58	58	58	54	56	62	62	62	62	62	62	62	63	63	63	63	64	64	64	64	65
8	**40.2**	64	56	56	56	57	58	58	59	59	59	59	59	58	58	54	56	62	63	63	63	63	63	63	63	63	63	64	64	64	64	65	65
9	**43.4**	64	56	56	56	57	58	58	59	59	59	59	59	59	58	54	56	63	63	63	63	63	63	63	63	64	64	64	64	65	65	65	66
10	**46.5**	64	56	56	56	57	58	58	59	59	59	59	59	59	58	54	56	63	63	63	63	63	63	64	64	64	64	64	65	65	65	65	66
11	**49.7**	65	57	56	57	57	58	58	59	59	59	59	59	59	58	54	56	63	64	64	64	64	64	64	64	64	64	64	65	65	65	66	66
12	**52.8**	65	57	57	57	57	58	58	59	59	59	59	59	59	58	55	56	64	64	64	64	64	64	64	64	65	65	65	65	65	66	66	66
13	**56**	65	57	57	57	57	58	58	59	59	59	59	59	59	59	55	57	64	64	64	64	64	64	65	65	65	65	65	65	66	66	66	66
14	**59.1**	66	57	57	57	57	58	58	59	59	59	59	59	59	59	55	57	64	64	64	65	65	65	65	65	65	65	65	66	66	66	66	67
15	**62.3**	66	57	57	57	58	58	58	59	59	59	59	59	59	59	55	57	65	65	65	65	65	65	65	65	65	65	65	66	66	66	66	67
16	**65.4**	66	58	57	58	58	58	58	59	59	59	59	59	59	59	55	57	65	65	65	65	65	65	65	65	65	66	66	66	66	66	66	67
17	**68.6**	66	58	58	58	58	58	58	59	59	59	59	59	59	59	55	57	65	65	65	65	65	65	65	65	65	66	66	66	66	66	66	67
18	**71.7**	66	58	58	58	58	58	58	59	59	59	59	59	59	59	55	57	65	65	65	65	65	65	65	66	66	66	66	66	66	66	67	67
19	**74.9**	66	58	58	58	58	58	58	59	59	59	59	59	59	58	55	57	65	65	65	65	65	65	65	66	66	66	66	66	66	66	67	67
20	**78**	66	58	58	58	58	58	58	59	59	59	59	59	59	58	55	57	65	65	65	65	65	65	66	66	66	66	66	59	60	60	60	60
21	**81.2**	66	59	58	53	53	52	53	52	52	52	52	52	51	50	52	57	57	57	57	58	58	58	58	58	59	59	59	60	61	61	62	61
22	**84.3**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	**87.5**	66	59	58	58	58	58	58	59	59	59	59	58	58	55	57	65	65	65	66	66	66	-	-	-	-	66	66	66	67	67	67	66
24	**90.6**	66	59	58	58	58	58	58	59	59	59	59	58	58	55	57	65	65	66	66	66	66	-	-	-	-	66	66	66	66	67	67	66
25	**93.8**	66	59	58	58	58	58	58	59	59	59	58	58	58	55	57	65	66	66	66	66	66	-	-	-	-	66	66	66	66	67	67	66
26	**96.9**	66	59	58	58	58	58	58	59	59	59	58	58	58	55	57	65	65	66	66	66	66	-	-	-	-	66	66	66	67	67	67	66
27	**100.1**	66	59	58	58	58	58	58	59	59	59	58	58	58	55	57	65	66	66	66	66	66	-	-	-	-	66	66	66	66	67	67	66
28	**103.2**	66	59	58	58	58	58	58	59	59	58	58	58	58	55	57	65	66	66	66	66	66	-	-	-	-	66	66	66	66	67	67	66
29	**106.4**	66	59	58	58	58	58	58	59	59	58	58	58	58	55	57	65	65	65	66	66	66	-	-	-	-	66	66	66	66	67	67	66
30	**109.5**	66	59	58	58	58	58	58	59	59	58	58	58	58	55	57	65	65	65	66	66	66	-	-	-	-	66	66	66	66	67	67	66
31	**112.7**	66	59	58	58	58	58	58	59	59	58	58	58	58	55	57	65	65	65	66	66	66	-	-	-	-	66	66	66	66	67	67	66
32	**115.8**	66	59	58	58	58	58	58	59	58	58	58	58	58	55	57	65	65	66	66	66	66	-	-	-	-	66	66	66	66	67	67	66
33	**119**	66	59	58	58	58	58	58	59	58	58	58	58	58	55	57	65	65	65	66	66	66	-	-	-	-	66	66	66	66	67	67	66
34	**122.1**	66	59	58	57	58	58	58	59	58	58	58	58	58	54	57	65	65	65	65	66	66	-	-	-	-	66	66	66	66	67	67	66
35	**125.3**	66	59	58	57	58	58	58	58	58	58	58	58	58	54	57	65	65	65	66	66	66	-	-	-	-	66	66	66	66	67	67	66
36	**128.4**	66	59	58	57	58	58	58	58	58	58	58	58	58	54	57	65	65	65	65	66	66	-	-	-	-	66	66	66	66	67	67	66
37	**131.6**	66	59	58	57	57	58	58	58	58	58	58	58	58	54	57	65	65	65	65	66	66	-	-	-	-	66	66	66	66	67	67	66
38	**134.7**	66	59	58	57	57	58	58	58	58	58	58	58	58	54	56	65	65	65	65	66	66	-	-	-	-	66	66	66	66	67	67	66
39	**137.9**	66	59	58	57	57	58	58	58	58	58	58	58	58	54	56	65	65	65	65	66	66	-	-	-	-	66	66	66	66	66	67	66
40	**141**	66	60	58	57	57	58	58	58	58	58	58	58	58	54	56	65	65	65	65	66	66	-	-	-	-	66	66	66	66	66	67	66
41	**144**	66	60	58	57	57	58	58	58	58	58	58	58	58	54	56	65	65	65	65	65	66	-	-	-	-	66	66	66	66	66	67	66
42	**147.3**	66	60	58	58	58	58	58	58	58	58	58	58	58	54	56	65	65	65	65	65	66	-	-	-	-	66	66	66	66	66	67	66

Predicted Road Traffic Noise Levels for Tower 3

Floor	mPD	T3-A1	T3-A2	T3-A3	T3-B1	T3-B2	T3-C1	T3-C2	T3-D1	T3-D2	T3-E1	T3-E2	T3-F1	T3-F2	T3-F3	T3-G1	T3-G2	T3-G3	T3-H1	T3-H2	T3-I1	T3-I2	T3-I3	T3-J1	T3-J2	T3-J3	T3-K1	T3-K2	T3-L1	T3-L2	T3-M1	T3-M2	T3-M3
G	**13.2**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1	**18.2**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	**21.3**	55	56	55	55	54	54	54	54	55	55	56	56	56	60	60	61	61	61	61	61	61	61	61	61	60	61	60	61	60	61	61	56
3	**24.5**	56	57	55	55	55	55	55	55	55	56	56	56	56	60	60	62	62	62	61	61	61	61	61	61	61	61	61	61	61	61	61	57
4	**27.6**	58	58	56	56	56	56	56	56	56	56	56	57	57	60	60	62	62	62	62	62	61	61	61	61	61	61	61	61	61	61	62	58
5	**30.8**	59	58	56	56	56	56	56	56	56	56	57	57	57	60	60	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	59
6	**33.9**	59	59	57	57	57	56	56	56	56	57	57	57	57	60	60	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	60
7	**37.1**	60	59	57	57	57	57	57	56	56	57	57	57	57	60	60	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	63	60
8	**40.2**	60	59	57	57	57	57	57	57	57	57	57	57	57	60	60	62	62	62	62	62	62	62	62	62	62	62	62	62	63	63	63	61
9	**43.4**	60	60	57	57	57	57	57	57	57	57	57	57	57	60	60	63	63	63	62	62	62	62	62	62	62	62	62	63	63	63	63	61
10	**46.5**	61	60	57	57	57	57	57	57	57	57	57	57	57	60	60	63	63	63	63	63	62	62	62	62	62	63	63	63	63	63	63	61
11	**49.7**	61	60	57	57	57	57	57	57	57	57	57	57	57	60	60	63	63	63	63	63	63	63	63	62	63	63	63	63	63	63	63	62
12	**52.8**	61	60	57	57	57	57	57	57	57	57	58	58	58	60	60	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	64	62
13	**56**	62	60	57	57	57	57	57	57	57	57	58	58	58	60	60	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	64	62
14	**59.1**	62	61	57	57	57	57	57	57	57	57	58	58	58	60	60	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	64	62
15	**62.3**	62	61	57	57	57	57	57	57	57	57	58	58	58	60	60	63	63	63	63	63	63	63	63	63	63	63	63	64	64	64	64	63
16	**65.4**	62	61	57	57	57	57	57	57	57	57	58	58	58	60	60	63	63	63	63	63	63	63	63	63	63	63	63	64	64	64	64	63
17	**68.6**	62	61	57	57	57	57	57	57	57	57	58	58	58	60	60	63	63	63	63	63	63	63	63	63	63	63	64	64	64	64	65	63
18	**71.7**	63	61	57	57	57	57	57	57	57	57	58	58	58	60	60	63	63	63	63	63	63	63	63	63	63	64	64	64	64	64	65	63
19	**74.9**	63	61	57	57	57	57	57	57	57	57	58	58	58	60	60	63	63	63	63	63	63	63	63	63	64	64	64	64	64	64	65	63
20	**78**	63	62	57	57	57	57	57	57	57	57	58	58	58	60	60	63	63	63	63	63	63	63	64	64	64	64	64	64	64	64	65	63
21	**81.2**	63	62	57	57	57	57	57	57	57	57	58	58	58	60	60	63	63	63	63	64	64	64	64	64	64	64	64	64	64	64	65	64
22	**84.3**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	**87.5**	63	61	57	57	57	57	57	57	57	57	58	58	58	60	60	63	64	64	64	64	64	64	-	-	-	-	64	64	64	64	65	64
24	**90.6**	63	61	57	57	57	57	57	57	57	58	58	58	58	60	60	63	64	64	64	64	64	64	-	-	-	-	64	64	64	65	65	64
25	**93.8**	63	61	57	57	57	57	57	57	57	58	58	58	58	60	60	63	64	64	64	64	64	64	-	-	-	-	64	64	64	65	65	64
26	**96.9**	63	61	57	57	57	57	57	57	57	58	58	58	58	60	60	64	64	64	64	64	64	64	-	-	-	-	64	64	64	65	65	64
27	**100.1**	63	61	57	57	57	57	57	57	57	58	58	58	58	60	60	63	64	64	64	64	64	64	-	-	-	-	64	64	64	65	65	64
28	**103.2**	63	61	57	57	57	57	57	57	57	58	58	58	58	60	60	63	64	64	64	64	64	64	-	-	-	-	64	64	64	65	65	64
29	**106.4**	63	61	57	57	57	57	57	57	57	58	58	58	58	60	60	63	64	64	64	64	64	64	-	-	-	-	64	64	64	65	65	64
30	**109.5**	63	61	57	57	57	57	57	57	57	58	58	58	58	60	60	63	64	64	64	64	64	64	-	-	-	-	64	64	64	65	65	64
31	**112.7**	63	61	57	57	57	57	57	57	57	58	58	58	58	59	60	63	64	64	64	64	64	64	-	-	-	-	64	64	64	65	65	64
32	**115.8**	63	61	57	57	57	57	57	57	57	57	58	58	58	59	59	63	63	64	64	64	64	64	-	-	-	-	64	64	64	65	65	64
33	**119**	63	61	57	57	57	57	57	57	57	57	58	58	58	59	59	63	63	64	63	64	64	64	-	-	-	-	64	64	64	65	65	64
34	**122.1**	63	61	57	57	57	57	57	57	57	57	58	58	58	59	59	63	63	63	64	64	63	64	-	-	-	-	64	64	64	65	65	64
35	**125.3**	63	61	57	57	57	57	57	57	57	57	58	58	57	59	59	63	63	63	63	64	63	64	-	-	-	-	64	64	64	64	65	64
36	**128.4**	63	61	57	57	57	57	57	57	57	57	58	58	57	59	59	63	63	63	63	63	63	64	-	-	-	-	64	64	64	64	65	64
37	**131.6**	63	61	57	57	57	57	57	57	57	57	58	57	57	59	59	63	63	63	63	63	63	64	-	-	-	-	64	64	64	64	65	64
38	**134.7**	63	61	57	57	57	57	57	57	57	57	57	57	57	59	59	63	63	63	63	63	63	64	-	-	-	-	64	64	64	64	65	64
39	**137.9**	63	61	57	57	57	57	57	57	57	57	57	57	57	59	59	63	63	63	63	63	63	64	-	-	-	-	64	64	64	64	65	64
40	**141**	63	61	57	57	57	57	57	57	57	57	57	57	57	59	59	63	63	63	63	63	63	64	-	-	-	-	64	64	64	64	65	64
41	**144**	63	61	57	57	57	57	57	57	57	57	57	57	57	59	59	63	63	63	63	63	63	64	-	-	-	-	64	64	64	64	65	64
42	**147.3**	63	61	57	57	57	57	57	57	57	57	57	57	57	59	59	63	63	63	63	63	63	64	-	-	-	-	64	64	64	64	65	64

Predicted Road Traffic Noise Levels for Tower 4

Floor	mPD	T4-A1	T4-A2	T4-A3	T4-B1	T4-B2	T4-C1	T4-C2	T4-D1	T4-D2	T4-E1	T4-E2	T4-F1	T4-F2	T4-G1	T4-G2	T4-H1	T4-H2	T4-I1	T4-I2	T4-J1	T4-J2	T4-K1	T4-K2	T4-K3	T4-L1	T4-L2	T4-L3	T4-M1	T4-M2	T4-N1	T4-N2	T4-O1	T4-O2	T4-P1	T4-P2	T4-Q1	T4-Q2	T4-R1	T4-R2	T4-S1	T4-S2	T4-S3	T4-T1	T4-T2	T4-T3	T4-U1	T4-U2	T4-U3
G	13.2	60	60	60	58	58	58	58	58	58	58	59	59	59	59	59	58	58	58	58	57	56	55	56	54	54	53	53	53	53	53	53	-	-	57	57	57	57	57	58	58	58	58	58	59	-	59	60	60
1	18.2	62	62	62	61	61	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	58	58	55	55	55	55	55	55	56	58	58	58	58	58	58	58	58	58	58	58	59	59	59	59	60	61	62
2	21.3	64	64	63	63	62	62	62	62	62	62	61	61	61	61	61	61	61	61	61	61	61	61	61	59	59	56	56	56	56	56	57	58	58	58	58	58	58	58	58	58	58	59	59	59	59	60	61	62	64
3	24.5	65	65	64	64	64	63	63	63	63	63	62	62	62	62	62	62	62	62	62	62	62	62	62	60	59	57	57	57	56	56	57	58	58	58	58	58	58	59	59	59	59	59	59	60	60	61	63	65
4	27.6	65	65	65	64	64	64	64	64	63	63	63	63	63	63	63	63	62	63	63	63	63	63	63	60	59	57	57	57	57	57	57	59	59	59	59	59	59	59	59	59	59	59	59	60	60	61	62	63	65
5	30.8	65	65	65	65	65	64	64	64	64	64	64	63	63	63	63	63	63	63	63	63	63	63	63	60	60	57	57	57	57	57	58	59	59	59	59	59	59	59	59	59	59	59	59	60	60	60	61	62	64	65
6	33.9	66	66	65	65	65	65	64	64	64	64	64	64	64	63	63	63	63	63	63	63	63	64	64	60	60	57	57	57	57	57	58	59	59	59	59	59	59	59	59	59	59	59	59	60	60	60	61	62	64	66
7	37.1	66	66	66	65	65	65	65	64	64	64	64	64	64	64	64	63	63	63	64	64	64	64	64	60	60	57	57	57	57	57	58	59	59	59	59	59	59	59	59	59	59	59	59	60	60	60	61	62	64	66
8	40.2	66	66	66	65	65	65	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	60	60	58	58	58	58	58	59	59	59	59	59	59	59	59	59	59	59	59	59	60	60	60	61	62	64	66
9	43.4	66	66	66	65	65	65	65	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	60	60	58	58	58	58	58	59	60	60	60	59	59	59	59	59	59	59	59	59	60	60	60	61	62	64	66
10	46.5	66	66	66	65	65	65	65	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	60	60	58	58	58	58	58	59	60	60	60	60	60	60	59	59	59	59	59	60	60	60	60	61	62	64	66
11	49.7	66	66	66	65	65	65	65	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	60	60	58	58	58	58	59	59	60	60	60	60	60	60	59	59	59	59	59	60	60	60	60	61	62	64	66
12	52.8	66	66	66	65	65	65	65	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	60	60	58	58	58	59	59	60	60	60	60	60	60	60	59	59	59	59	60	60	60	60	61	62	64	66
13	56	66	66	66	65	65	65	65	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	60	60	59	59	59	59	59	60	60	60	60	60	60	60	59	59	59	59	60	60	60	60	61	62	64	66
14	59.1	66	66	66	65	65	65	65	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	60	60	59	59	59	59	59	60	61	61	61	60	60	60	60	59	59	59	60	60	60	61	62	64	66
15	62.3	66	66	66	65	65	65	65	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	60	60	59	59	59	59	59	60	61	61	61	60	60	60	60	59	59	59	59	60	60	61	62	64	66
16	65.4	66	66	66	65	65	65	65	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	60	60	59	59	59	59	59	60	61	61	61	61	60	60	60	60	59	59	59	60	60	61	62	64	66
17	68.6	66	66	66	65	65	65	65	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	60	60	59	59	59	59	59	60	60	61	61	61	61	61	60	60	60	60	59	59	59	60	60	61	62	64	66
18	71.7	66	66	66	65	65	65	65	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	60	60	59	59	59	59	59	60	61	61	61	61	61	61	60	60	60	60	59	59	59	60	60	61	62	64	66
19	74.9	66	66	66	65	65	65	65	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	60	60	59	59	59	60	60	61	61	61	61	61	61	61	60	60	60	60	59	59	59	60	60	61	62	64	66
20	78	66	66	66	65	65	65	65	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	60	60	59	59	59	60	60	61	61	61	61	61	61	61	60	60	60	60	59	59	59	60	60	61	62	64	66
21	81.2	66	66	65	65	65	65	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	60	60	59	59	59	60	60	61	61	61	61	61	61	61	60	60	60	60	59	59	59	60	60	61	62	64	66
22	84.3	66	66	65	65	65	65	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	60	60	59	59	59	59	60	60	61	61	61	61	61	61	60	60	60	60	59	59	59	60	60	61	62	64	66
23	87.5	66	66	65	65	65	65	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	60	60	59	59	60	60	60	61	61	61	61	61	61	61	60	60	60	60	59	59	59	60	60	61	62	64	66
24	90.6	66	66	65	65	65	65	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	60	60	59	59	60	60	60	61	61	61	61	61	61	61	60	60	60	60	59	59	59	60	60	61	62	64	66
25	93.8	66	66	65	65	65	65	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	60	60	59	59	60	60	60	61	61	61	61	61	61	61	60	60	60	60	59	59	59	60	60	61	62	64	66
26	96.9	66	66	65	65	65	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	60	59	59	59	60	60	60	61	61	61	61	61	61	61	60	60	60	60	59	59	59	59	60	61	62	64	66
27	100.1	66	66	65	65	65	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	60	59	59	60	60	60	60	61	61	61	61	61	61	61	60	60	60	60	59	59	59	59	60	61	62	64	66
28	103.2	66	66	65	65	65	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	60	59	59	59	60	60	60	61	61	61	61	61	61	61	60	60	60	60	59	59	59	59	60	61	62	64	66
29	106.4	66	66	65	65	65	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	60	59	59	59	59	60	60	61	61	61	61	61	61	61	60	60	60	60	59	59	59	59	60	61	62	64	66
30	109.5	66	66	65	65	65	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	60	59	59	59	60	60	60	61	61	61	61	61	61	61	60	60	60	60	59	59	59	59	60	61	61	64	66
31	112.7	66	66	65	65	65	65	64	64	64	64	64	64	64	64	64	64	64	63	64	64	64	64	64	60	59	59	59	59	60	60	61	61	61	61	61	61	61	60	60	60	60	59	59	59	59	60	61	61	64	66
32	115.8	66	66	65	65	65	64	64	64	64	64	64	64	64	64	64	64	64	63	63	64	64	64	64	60	59	59	59	59	60	60	61	61	61	61	61	61	61	60	60	60	60	59	59	59	59	60	60	61	64	66
33	119	66	66	65	65	65	64	64	64	64	64	64	64	64	64	64	64	64	63	63	64	64	64	64	60	59	59	59	59	60	60	61	61	61	61	61	61	61	60	60	60	60	59	59	59	59	60	60	61	64	66
34	122.1	66	66	65	0	65	64	64	64	64	64	64	64	64	64	64	64	63	63	63	64	64	64	64	60	59	59	59	59	60	60	61	61	61	61	61	61	61	60	60	60	60	59	59	59	59	60	60	61	63	65
35	125.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36	128.4	66	66	65	65	65	64	64	64	64	64	64	64	64	64	63	63	63	63	64	64	64	64	64	60	59	59	59	59	60	60	61	-	-	61	61	61	61	60	60	59	59	59	59	60	60	61	63	65
37	131.6	66	66	65	65	65	64	64	64	64	64	64	64	64	64	63	63	63	63	64	64	64	64	64	60	59	59	59	59	60	60	61	-	-	61	61	61	61	60	59	59	59	59	59	60	60	61	63	65
38	134.7	66	66	65	65	65	64	64	64	64	64	64	64	64	64	63	63	63	63	64	64	64	64	64	60	59	59	59	59	60	60	61	-	-	61	61	61	60	60	59	59	58	59	59	60	60	61	63	65
39	137.9	66	66	65	65	65	64	64	64	64	64	64	64	64	63	63	63	63	63	64	64	64	64	64	60	59	59	59	59	60	60	61	-	-	61	61	61	60	60	59	59	58	59	59	60	60	61	63	65
40	141	66	65	65	65	64	64	64	64	64	64	64	64	64	63	63	63	63	63	64	64	64	64	64	60	59	59	59	59	60	60	60	-	-	61	61	61	60	60	59	59	58	59	59	60	60	61	63	65
41	144	66	65	65	65	64	64	64	64	64	64	64	64	64	63	63	63	63	63	63	64	64	64	64	60	59	59	59	59	59	60	60	-	-	61	61	61	60	60	59	59	58	59	59	60	60	61	63	65
42	147.3	66	65	65	65	64	64	64	64	64	64	64	64	63	63	63	63	63	63	63	64	64	64	64	60	59	59	59	59	59	60	60	-	-	61	61	61	60	60	59	59	58	59	59	60	60	61	63	65

Predicted Road Traffic Noise Levels for Tower 5

Tower 5

Floor	mPD	T5-A1	T5-A2	T5-A3	T5-B1	T5-B2	T5-B3	T5-C1	T5-C2	T5-C3	T5-D1	T5-D2	T5-E1	T5-E2	T5-F1	T5-F2	T5-G1	T5-G2	T5-H1	T5-H2	T5-I1	T5-I2	T5-J1	T5-J2	T5-J3	T5-K1	T5-K2	T5-K3	T5-L1	T5-L2	T5-M1	T5-M2	T5-N1	T5-N2	T5-O1	T5-O2	T5-P1	T5-P2	T5-Q1	T5-Q2	T5-R1	T5-R2	T5-S1	T5-S2	T5-T1	T5-T2	T5-U1	T5-U2	T5-U3
G	**13.2**	58	59	59	59	57	-	54	54	54	56	57	57	58	57	57	57	56	53	53	52	52	53	56	56	56	56	56	55	57	-	-	55	55	54	54	54	53	54	53	54	53	54	55	53	53	53	58
1	**18.2**	62	61	62	61	61	61	61	61	61	61	61	61	60	60	60	60	60	59	59	58	58	58	59	57	57	57	57	57	58	58	57	57	57	57	57	57	56	57	56	56	56	56	57	56	56	56	56	61
2	**21.3**	62	62	62	62	62	62	62	62	62	62	62	62	61	61	61	61	61	60	60	59	59	59	60	57	57	58	58	57	59	58	58	57	57	57	57	57	57	57	57	57	57	57	57	56	56	56	56	62
3	**24.5**	63	63	63	63	63	63	63	63	63	62	62	62	62	62	62	62	62	61	60	60	60	60	61	58	58	58	58	58	59	59	58	58	58	58	58	58	57	57	57	57	57	57	58	57	57	57	57	63
4	**27.6**	64	63	64	63	63	63	63	63	63	63	63	63	63	63	63	63	63	61	61	60	60	60	61	58	58	58	58	58	59	59	58	58	58	58	58	58	57	58	57	57	57	57	58	57	57	57	57	64
5	**30.8**	64	64	64	64	64	64	63	63	63	63	63	63	63	63	63	63	63	62	61	61	61	61	61	58	58	58	58	58	59	59	58	58	58	58	58	58	58	58	57	57	57	58	58	57	57	57	57	64
6	**33.9**	64	64	64	64	64	64	64	64	64	64	64	63	63	63	63	63	63	62	61	61	61	61	61	58	58	58	58	58	59	59	58	58	58	58	58	58	58	58	57	57	57	58	58	57	57	57	57	64
7	**37.1**	64	64	65	64	64	64	64	64	64	64	64	64	64	64	63	63	63	62	62	61	61	61	62	58	58	58	58	58	59	59	58	58	58	58	58	58	58	58	57	57	57	58	58	57	57	57	57	64
8	**40.2**	64	64	65	64	64	64	64	64	64	64	64	64	64	64	64	64	63	62	62	61	61	61	62	58	58	58	58	58	59	59	59	58	58	58	58	58	58	58	57	57	57	58	59	57	57	57	57	64
9	**43.4**	64	64	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	62	62	61	61	61	62	58	58	58	58	58	60	59	59	58	58	58	58	58	58	58	57	57	57	58	59	57	57	57	57	64
10	**46.5**	64	64	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	62	62	61	62	61	62	58	58	59	58	58	60	59	59	58	58	58	58	58	58	58	57	57	57	58	59	57	57	57	57	64
11	**49.7**	65	64	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	62	62	62	62	62	62	58	58	59	58	58	60	59	59	58	58	58	58	58	58	58	57	57	57	59	59	57	57	57	57	64
12	**52.8**	65	64	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	62	62	62	62	62	62	58	58	59	59	58	60	59	59	59	59	59	59	59	58	59	57	57	57	59	59	57	57	57	57	64
13	**56**	65	64	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	62	62	62	62	62	62	58	58	59	59	58	60	60	59	59	59	59	59	59	58	59	57	57	57	59	59	57	57	57	57	64
14	**59.1**	65	64	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	62	62	62	62	62	62	58	58	59	59	59	60	60	59	59	59	59	59	59	58	59	57	57	57	59	60	57	57	57	57	64
15	**62.3**	65	64	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	62	62	62	62	62	62	58	58	59	59	59	60	60	59	59	59	59	59	59	58	59	57	57	57	59	60	57	57	57	57	64
16	**65.4**	65	64	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	62	62	62	62	62	62	58	58	59	59	59	60	60	59	59	59	59	59	59	58	59	57	57	57	59	60	57	57	57	57	64
17	**68.6**	65	64	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	62	62	62	62	62	62	58	58	59	59	59	60	60	60	59	59	59	59	59	58	59	57	57	57	59	60	57	57	57	57	64
18	**71.7**	65	64	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	63	62	62	62	62	62	58	58	59	59	59	60	60	60	59	59	59	59	59	58	59	58	57	57	59	60	57	57	57	57	64
19	**74.9**	65	64	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	63	62	62	62	62	62	58	58	59	59	59	60	60	60	59	59	59	59	59	58	59	58	57	57	60	60	57	57	57	57	64
20	**78**	65	64	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	63	62	62	62	62	62	58	58	59	59	59	60	60	60	59	59	59	59	59	58	59	58	57	57	60	60	57	57	57	57	64
21	**81.2**	65	64	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	62	62	62	62	62	62	58	58	59	59	59	60	60	60	59	59	59	59	59	58	59	58	57	57	60	60	57	57	57	57	64
22	**84.3**	65	64	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	62	62	62	62	62	62	58	58	59	59	59	60	60	60	59	59	59	59	59	58	59	58	57	57	60	60	57	57	57	57	64
23	**87.5**	64	64	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	62	62	62	62	62	62	58	58	59	59	59	60	60	60	59	59	59	59	59	58	59	58	57	57	60	60	57	57	57	57	64
24	**90.6**	64	64	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	62	62	62	62	62	62	58	58	59	59	59	60	60	60	59	59	59	59	59	58	59	58	57	57	60	60	57	57	57	57	64
25	**93.8**	64	64	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	62	62	62	62	62	62	58	58	59	59	59	60	60	60	59	59	59	59	60	58	59	58	57	57	60	60	57	57	57	57	64
26	**96.9**	64	64	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	62	62	62	62	62	62	58	58	59	59	59	60	60	60	59	60	59	59	60	58	59	58	57	57	60	60	57	57	57	57	64
27	**100.1**	64	64	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	62	62	62	62	62	62	57	58	59	59	59	60	60	60	59	60	59	59	59	58	59	58	57	57	60	60	57	57	57	57	64
28	**103.2**	64	64	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	62	62	62	62	62	62	57	58	59	59	59	60	60	60	59	59	59	59	60	58	59	58	57	57	60	60	57	57	57	57	64
29	**106.4**	64	64	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	62	62	62	62	62	62	57	57	59	59	59	60	60	60	59	59	59	59	59	58	59	58	57	57	60	60	57	57	57	57	64
30	**109.5**	64	64	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	62	62	62	62	62	62	57	57	59	59	59	60	60	60	59	59	59	59	59	58	59	58	57	57	60	60	57	57	57	57	64
31	**112.7**	64	64	65	64	64	64	64	64	64	64	64	64	64	64	64	64	64	62	62	62	62	62	62	57	57	59	59	59	60	60	60	59	59	59	0	59	58	59	57	57	57	60	60	57	57	57	57	64
32	**115.8**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33	**119**	64	64	65	64	64	64	64	64	64	64	64	64	64	64	64	-	-	62	62	62	62	61	62	57	57	59	59	59	60	60	60	59	59	59	58	58	58	59	57	57	57	60	57	57	57	57	57	64
34	**122.1**	64	64	65	64	64	64	64	64	64	64	64	64	64	64	64	-	-	62	62	62	62	61	62	57	57	59	59	59	60	60	60	59	59	59	58	58	58	59	57	57	57	60	57	57	57	57	57	64
35	**125.3**	64	64	65	64	64	64	64	64	64	64	64	64	64	64	64	-	-	62	62	62	62	61	62	57	57	59	59	59	60	60	60	59	59	59	58	58	58	59	57	57	57	60	57	57	57	57	57	64
36	**128.4**	64	64	65	64	64	64	64	64	64	64	64	64	64	64	64	-	-	62	62	62	62	61	62	57	57	59	59	59	60	60	60	59	59	59	58	58	58	59	57	57	57	59	57	57	57	57	57	64
37	**131.6**	64	64	65	64	64	64	64	64	64	64	64	64	64	64	64	-	-	62	62	62	62	61	62	57	57	59	59	59	60	60	60	59	59	59	58	58	58	59	57	57	57	59	57	57	57	57	56	64
38	**134.7**	64	64	65	64	64	64	64	64	64	64	64	64	64	64	64	-	-	62	62	61	62	61	62	57	57	59	59	59	60	60	60	59	59	59	58	58	58	59	57	57	57	59	57	57	57	57	56	64
39	**137.9**	64	64	65	64	64	64	64	64	64	64	64	64	64	64	64	-	-	62	62	61	62	61	62	57	57	59	59	59	60	60	60	59	59	59	58	58	58	59	57	57	57	59	57	57	57	57	56	64
40	**141**	64	64	65	64	64	64	64	64	64	64	64	64	64	64	64	-	-	62	62	61	62	61	62	57	57	59	59	59	60	60	60	59	59	59	58	58	58	59	57	57	57	59	57	57	57	57	56	64
41	**144**	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	-	-	62	62	61	61	61	62	57	57	59	59	59	60	60	60	59	59	59	58	58	58	59	57	57	57	59	57	57	57	57	56	64
42	**147.3**	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	-	-	62	62	61	61	61	62	57	57	59	59	59	60	60	60	59	59	59	58	58	58	59	57	57	57	59	57	57	57	57	56	64

Appendix F EXTRACTION OF A GUIDE FOR MANAGING AND MINIMIZING BUILDING AND DEMOLITION WASTE

Figure 3.9 Damage of dry wall panels

Figure 3.10 Cutting waste of dry wall

Figure 3.11 Lost of plaster while applying

Figure 3.12 Improper stacking of blocks

Figure 3.13 Damage of sanitary fitments

Figure 3.14 Cutting waste of tiles

3.2 Estimation and Auditing of Building Waste Generated from the Construction of New Buildings

3.2.1 Estimation

The first step in implementing a waste minimization programme is to estimate the quantity of construction wastes that will be generated from building projects. It can be done using a standard form, and an example is shown in Appendix A. The estimate provides information on the quantities of the different types of waste that will be generated. Based on this information, the direct cost of materials wastage and the consequent cost of waste removal and treatment, for example, sorting can be calculated for the purpose of cost

control.

- Concrete Waste

  The amount of concrete waste, for example, can be estimated if the material wastage level of concrete is known. Recent research indicated that the average wastage level is about 4%, which is considered the norm for the concreting trade in this guideline. However, it could be reduced to 3% if careful material ordering and handling is applied. The amount of waste can be estimated according to:

  Quantity of Concrete Works (m^3) x Material Wastage (%)

- Waste from blockwork and brickwork

  Inert granular waste generated by blockwork and brickwork is estimated to be 10% of the quantity of this work required in the building project. The estimate can be calculated according to:

  Quantity of work done (m^2) x thickness (m) x Material Wastage (%)

- Waste from screeding and plastering

  A higher wastage of 15% is given as the norm since these trades are difficult to control. The estimate can be calculated according to:

  Quantity of work done (m^2) x thickness (m) x Material Wastage (%)

- Waste from timber formwork

  Timber formwork is assumed to have been used at least 12 times before being discarded. The timber waste can be estimated according to:

  Quantity of Formwork (m^2) x thickness (m) ÷ 12 (no of uses)

- Packaging Waste

  Building contractors have little control on the quantity of packaging wastes produced, which is estimated at 5% of the volume of the materials that required packaging, hence

  Volume of packaged construction materials x 5%

- Other Wastes

  There are blank rows in the standard form for the provision of estimates for other types of wastes.

Recent results for the percentage wastage by different trades for public housing projects and private residential buildings are shown in Tables 3.2 and 3.3 for reference.

Trade	Material	Percentage wastage
Concrete	Concrete	3-5%
Formwork	Timber broad	5%
Reinforcement	Steel bars	3-5%
Masonry	Brick and block	6%
Dry Wall	Fine aggregate	5%
Wall screeding	Ready-mix cement	7%
Floor screeding	Ready-mix cement	1%
Wall plastering	Plaster	2%
Ceiling plastering	Plaster	2%
Floor tiling	Tiles	6%
Wall tiling	Tiles	8%
Installation of bathroom fitting	Sanitary fitting	2%
Installation of kitchen joinery	Kitchen joinery	1%

Table 3.2 Percentage wastage of materials for various trades on public housing projects

Trade	Material	Percentage wastage
Concrete	Concrete	4-5%
Formwork	Timber broad	15%
Reinforcement	Steel bars	1-8%
Masonry	Brick and block	4-8%
Dry Wall	Fine aggregate	6-10%
Wall screeding	Ready-mix cement	4-20%
Floor screeding	Ready-mix cement	4-20%
Wall plastering	Plaster	4-20%
Ceiling plastering	Plaster	4-20%
Floor tiling	Tiles	4-10%
Wall tiling	Tiles	4-10%
Installation of bathroom fitting	Sanitary fitting	1-5 %
Installation of kitchen joinery	Kitchen joinery	1-5 %

Table 3.3 Percentage wastage of materials for various trades for private residential building

Based on waste generation per GFA, it has been found that the generation rate of construction waste is in the range of $0.125m^3$ to $0.25m^3$ (waste index) per gross floor area GFA (m^2).

A contractor uses the following figures:

Private housing projects Waste index = 0.250 m^3/m^2 GFA

Government housing projects Waste index = 0.175 m^3/m^2 GFA

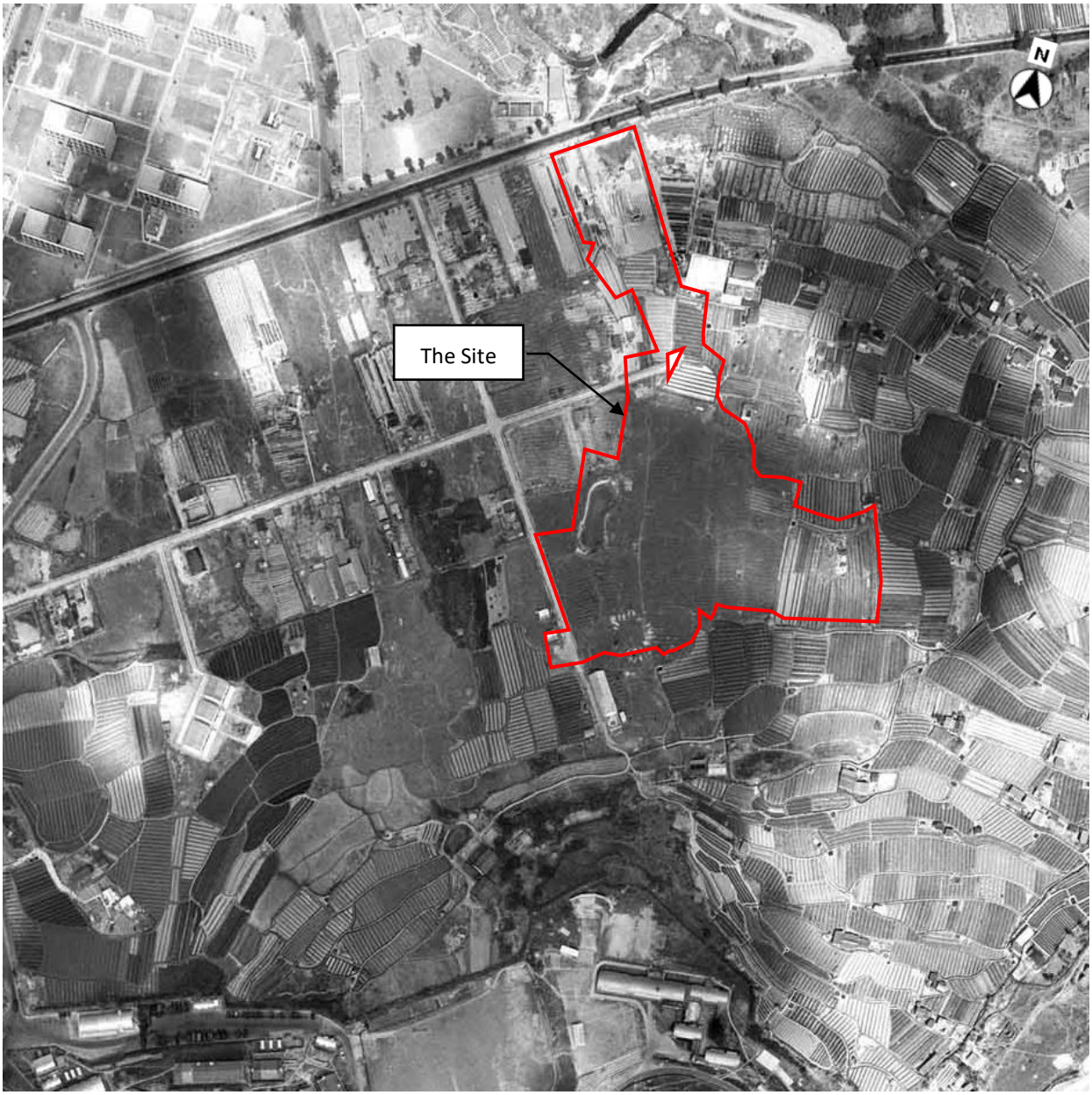
Commercial office projects Waste index = 0.200 m^3/m^2 GFA

And,

The total waste generated from the project (W) = GFA of the project x Waste index (depending on the type of the project

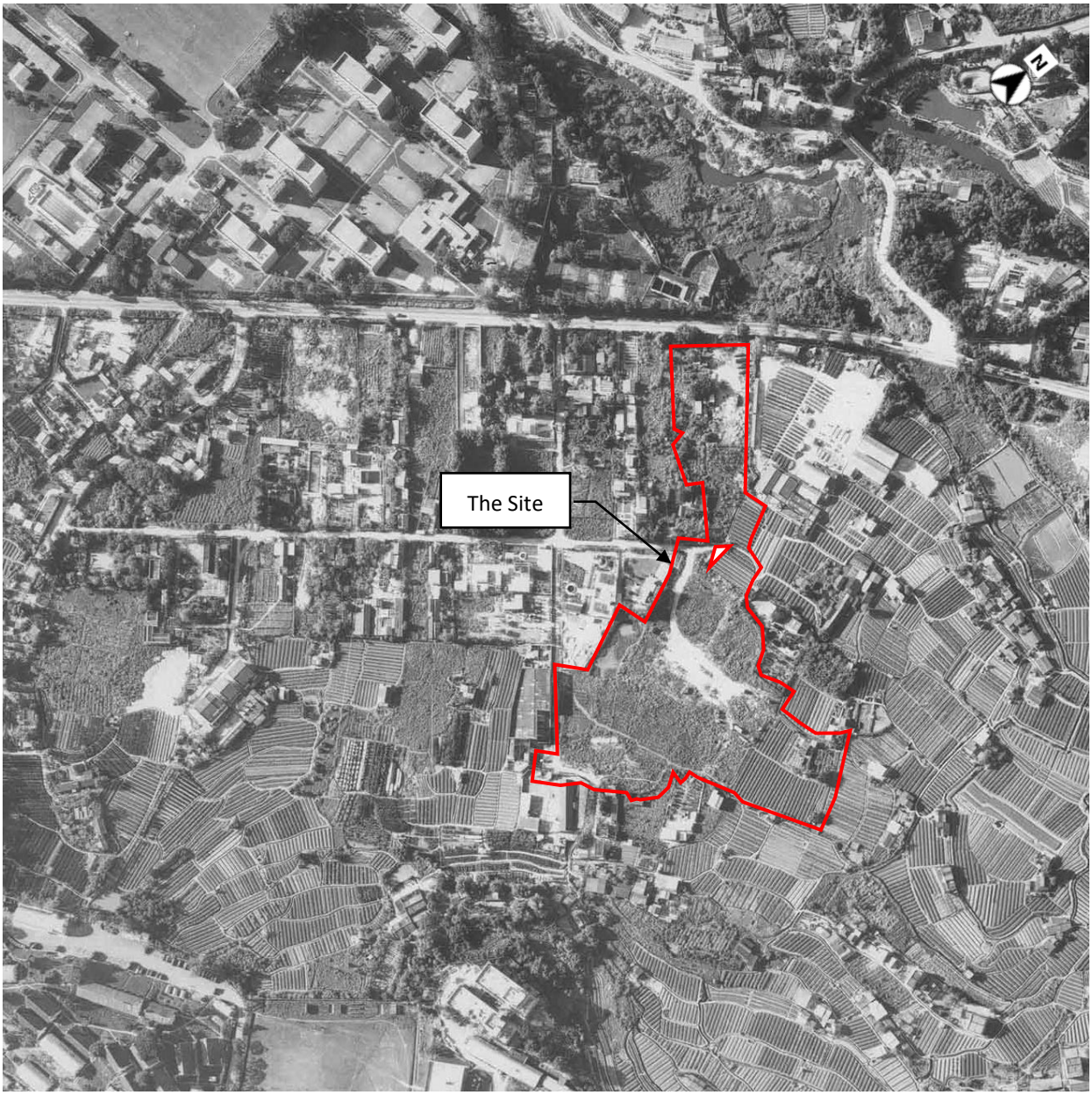
Appendix G AERIAL PHOTOS

Figure G-1: Aerial Photo in Year 1963



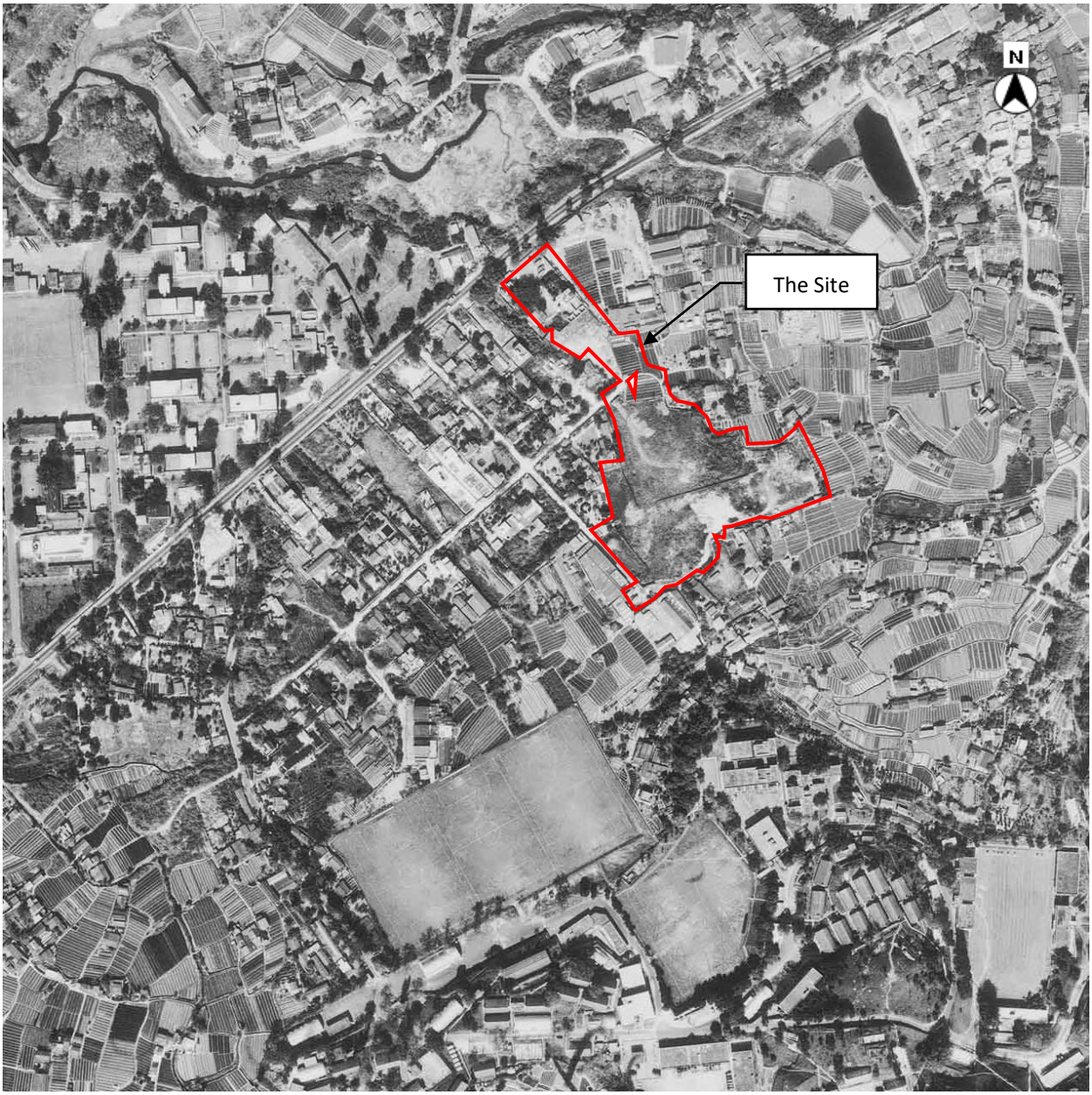
Source: Lands Department

Figure G-2: Aerial Photo in Year 1973



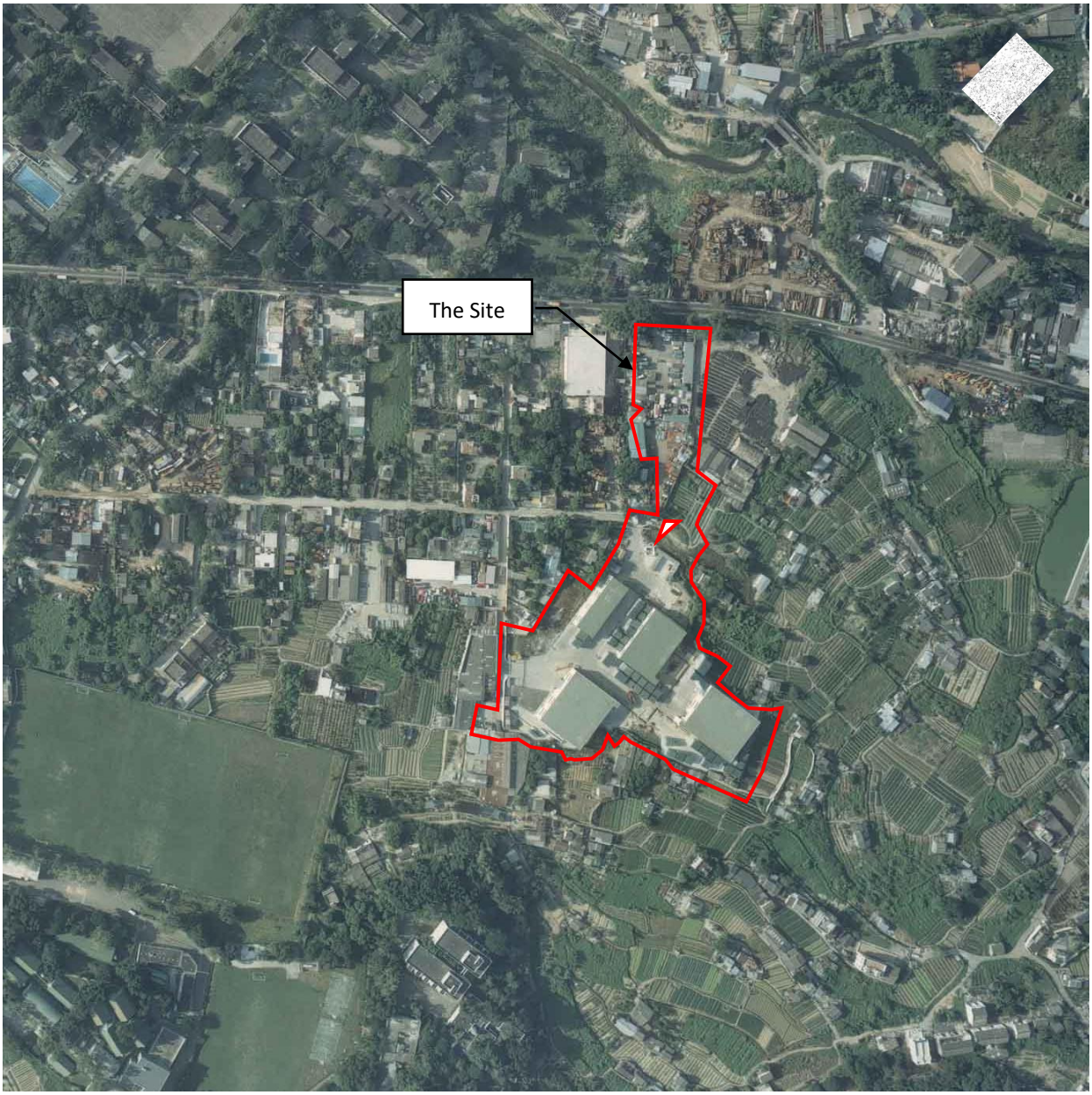
Source: Lands Department

Figure G-3: Aerial Photo in Year 1982



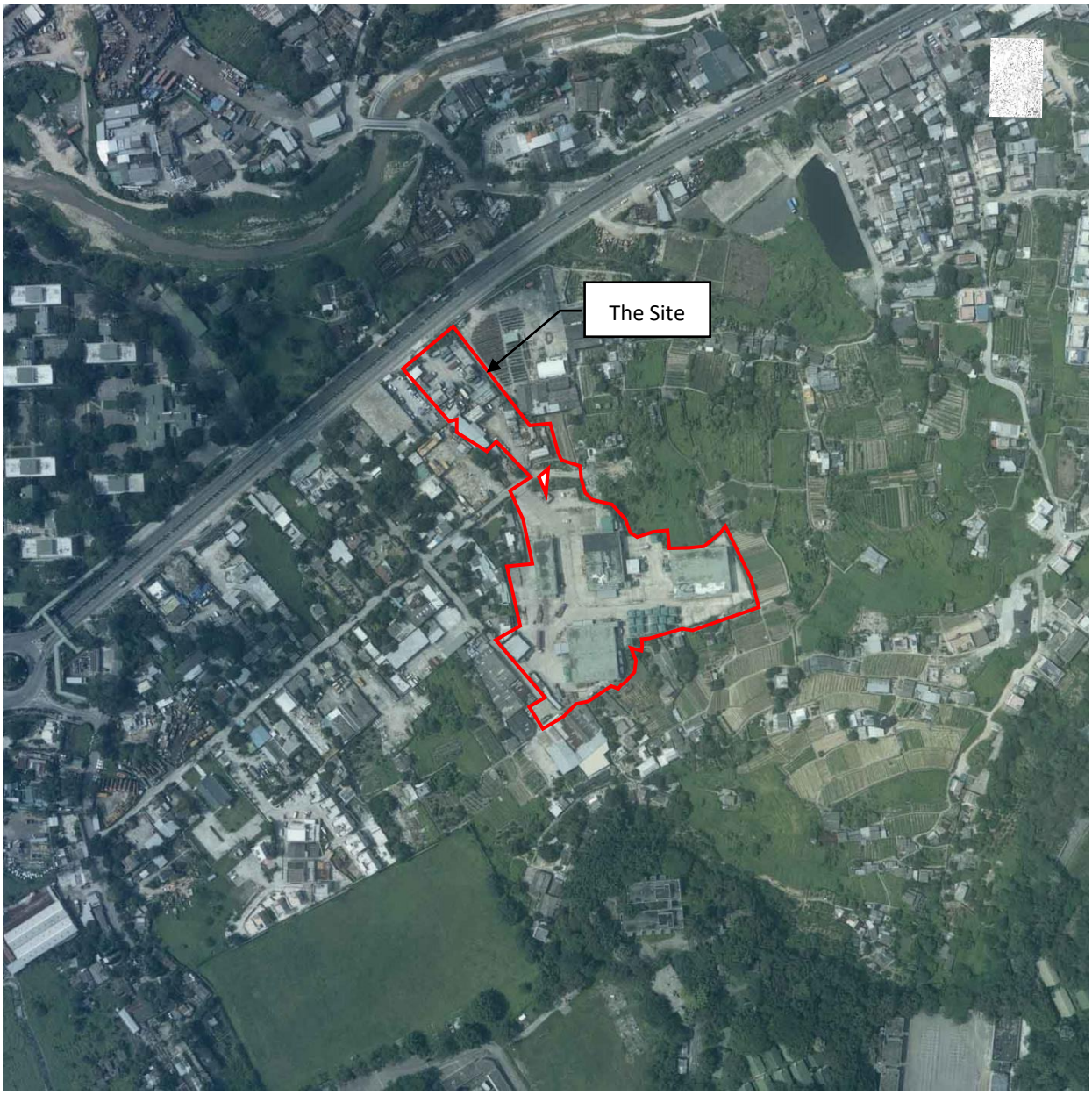
Source: Lands Department

Figure G-4: Aerial Photo in Year 1993



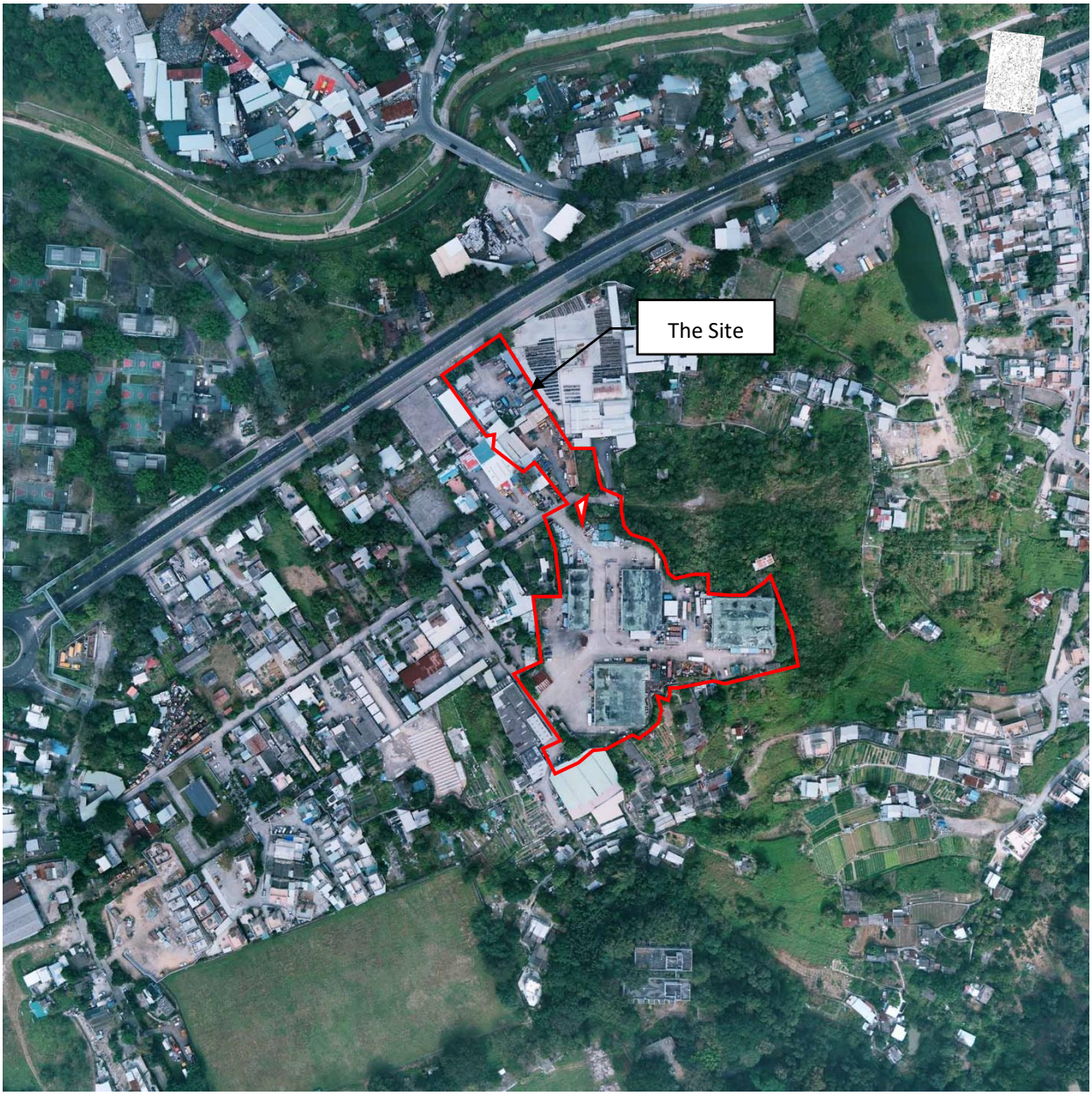
Source: Lands Department

Figure G-5: Aerial Photo in Year 2002



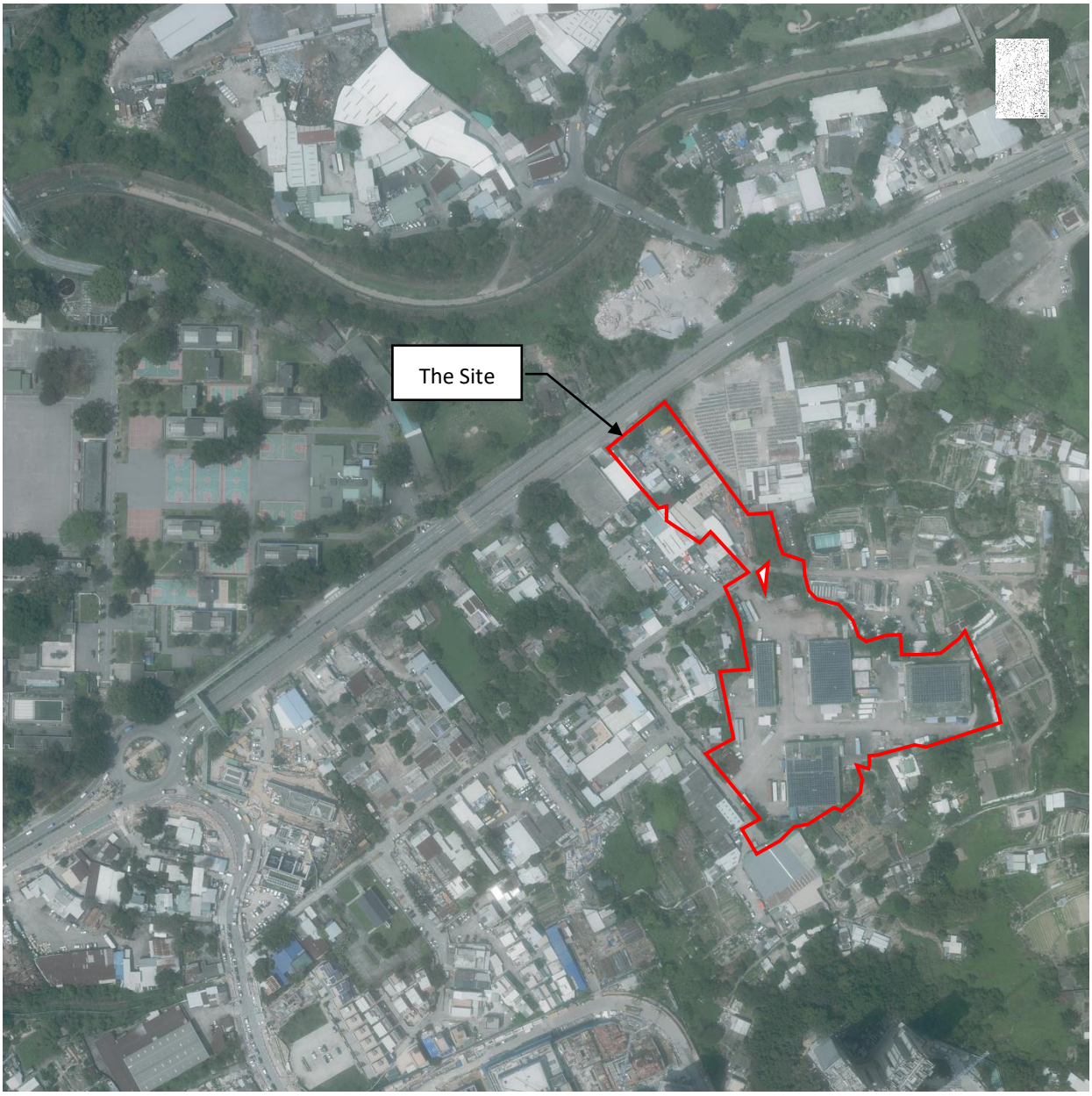
Source: Lands Department

Figure G-6: Aerial Photo in Year 2013



Source: Lands Department

Figure G-7: Aerial Photo in Year 2020

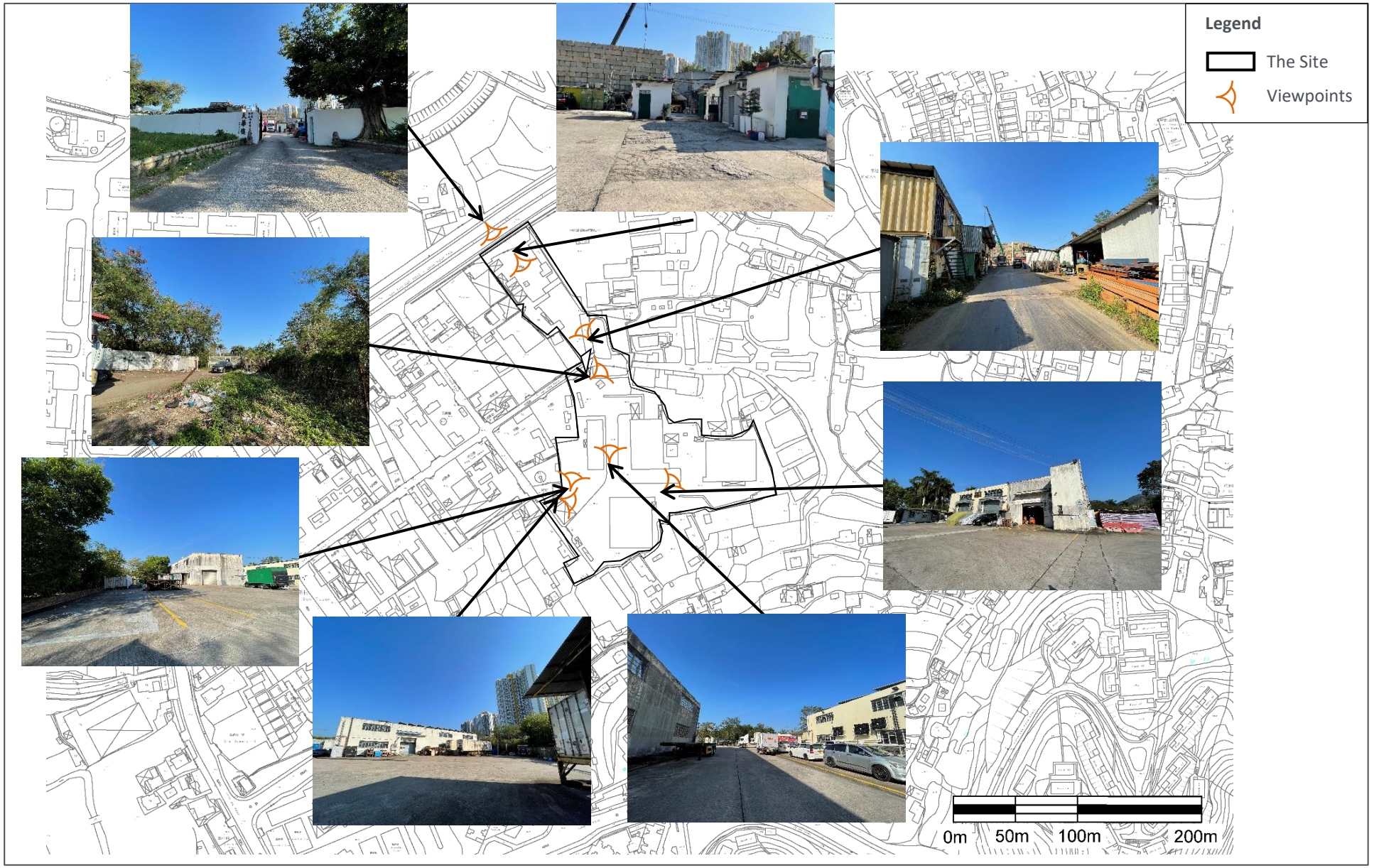


Source: Lands Department

Figure G-8: Aerial Photo in Year 2022

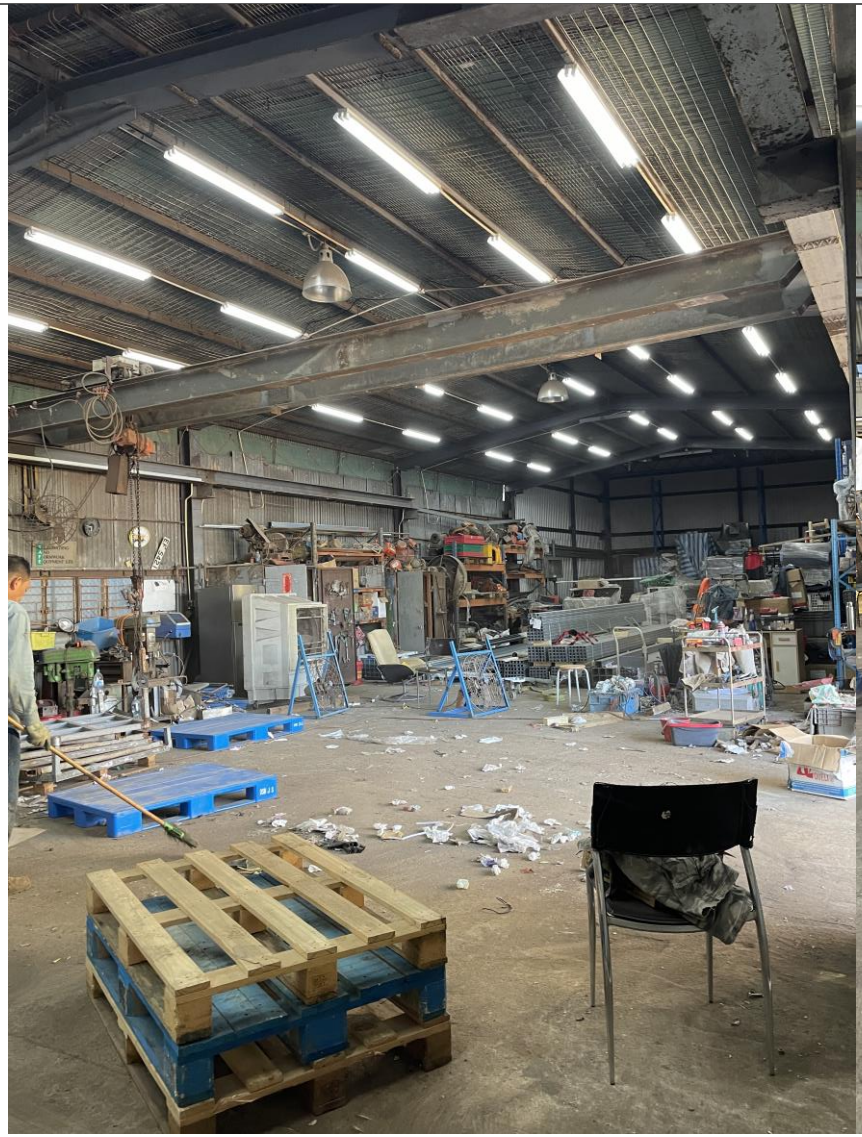
Source: Lands Department

Appendix H SITE SURVEY PHOTOS AND SITE WALKOVER CHECKLIST


Legend
The Site
Viewpoints
0m
50m
100m
200m

Site Photo showing usage of Forklift in warehouse.

Site photo showing crawler crane in the open storage yard.



Site photos of workshop.

Annex C1
Site Walkover Checklist

GENERAL SITE DETAILS

SITE OWNER/CLIENT: Carlton Woodcraft Manufacturing Ltd

PROPERTY ADDRESS: Various Lots in D.D. 83 and Adjoining Government Land, Lung Yeuk Tau, N.T.

PERSON CONDUCTING THE QUESTIONNAIRE

NAME: Charls LIANG

POSITION: Assistant Environmental Engineer

~~AUTHORIZED OWNER/CLIENT REPRESENTATIVE (IF APPLICABLE)~~

NAME

POSITION

TELEPHONE

SITE ACTIVITIES

Briefly describe activities carried out on site, including types of products/chemicals/materials handled. **Obtain a flow schematic if possible.**

N/A

Number of employees: Full-time:

Part-time:

Temporary/Seasonal:

Maximum no. of people on site at any time:

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: 22,445m^2

What area of the site is covered by buildings (%): 60%

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: Industrial Use (Fanling Environmental Recycling Limited)

South: Argricultural Use (Farmland)

Residential Uses (Village Houses and Queen's Hill Estate)

East: Argricultural Use (Farmland)

Industrial Use (Tung Chun Soy Sauce and Canned Food Company Limited)

West: Industrial Use (Shun Cheong Electrical Products Factory Ltd)

Residential Use (Village Houses)

Annex C1
Site Walkover Checklist

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

Flat paved areas with small part of vegetations

State the size and location of the nearest residential communities.

Some separate village houses are identified near the Site. And a public housing development is located to the south of the Site.

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

N/A

Questionnaire with Existing/Previous Site Owner or Occupier

		Yes/No	Notes
1.	What are the main activities/operations at the above address?	N/A	Storage/Residential
2.	How long have you been occupying the site?	N/A	More than 40 years
3.	Were you the first occupant on site? (If yes, what was the usage of the site prior to occupancy.)	Yes	Farmland
4.	Prior to your occupancy, who occupied the site?	N/A	
5.	What were the main activities/operations during their occupancy?	N/A	
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.)	Yes	Lubricating oil for PME maintenance
	• Where do you store these chemicals?		Drum with secondary containment
12.	Material inventory lists, including quantities and locations available? (If yes, how often are these inventories updated?)	N/A	
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	Drums
16.	Do you have any underground storage tanks? (If yes, please provide details.)	N/A	
	• 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?	Yes	Water tank for fire serivces
18.	Do you have regular check for any spillage and monitoring of chemicals handled? (If yes, please provide details.)	No	
19.	How are the wastes disposed of?		Chemical waste would be collected by licensed collector
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)?	Yes	
2.	What are the conditions of the bund walls and floors?		Paved with concrete in good conditions
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; Lubricating oils
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?	Yes	Shun Cheong Electrical Products Factory Ltd Tung Chun Soy Sauce and Canned Food Company Limited
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?	Yes	Lubricating oils

Appendix I INFORMATION REQUEST LETTERS AND REPLIES FROM EPD AND FSD

Information Request Letter to EPD

Member of the Surbana Jurong Group

local people
global experience

Our ref: 7076933/L29461/AW/TSC/CL/rw

20 January 2023

Environmental Protection Department
Environmental Compliance Division
Regional Office (North)
10/F Shatin Government Offices
No.1 Sheung Wo Che Road, Sha Tin
N.T., Hong Kong

By Email (shchu@epd.gov.hk)
& Fax (2685 1133)

Attention: Mr. CHU Shun Hang

Dear Sir

Section 12A Rezoning Application – Request for Amendment to the approved Lung Yeuk Tau and Kwan Tei South Outline Zoning Plan No. S/NE-LYT/19 from "Residential (Group C)" Zone and "Agriculture" Zone to "Residential (Group A) 2" Zone
Request for Information - Land Contamination Review

We have been appointed by Carlton Woodcraft Manufacturing Ltd as the Environmental Consultant to undertake an Environmental Assessment ("EA") for the captioned project. A copy of appointment letter (ref: 17601076-0785/L29290/AB/AW/FN/rw) dated 7 December 2022 regarding the appointment of the captioned Agreement is enclosed for your information. The Subject Site is in Lung Yeuk Tau, Fanling, and its location is shown on the attached figure.

In order to review potential land contamination issue, we would be most grateful if you could provide us with a list of records of Chemical Waste Producers Registration or incidents of chemical spillage/leakage, etc. relating to the Site, if any.

Should you have any enquiries regarding the above, please do not hesitate to contact the undersigned on tel. 3995 8124 or to cindy.chung@smec.com or our Mr. Charls LIANG on tel. 3995 8128 or to charls.liang@smec.com.

Yours faithfully

Cindy CHUNG
Senior Environmental Consultant

Encl.

SMEC ASIA LIMITED
27/F Ford Glory Plaza, 37-39 Wing Hong Street
Cheung Sha Wan, Kowloon, Hong Kong
T +852 3995 8100
F +852 3995 8101
E hongkong@smec.com
W www.smec.com

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Information Request Letter to EPD

Appointment Letter

SMEC
Member of the Surbana Jurong Group

local people
global experience

Our ref: 17601076-0785/L29290/AB/AW/FN/rw

7 December 2022

Carlton Woodcraft Manufacturing Ltd
15/F VIP Commercial Centre
116-120 Canton Road
Tsim Sha Tsui
Kowloon
Hong Kong

By Hand

Attn: Mr Joseph S.P. FU

Dear Sir

12A Rezoning Application from "Residential (Group C)" Zone and "Agriculture" Zone to "Residential (Group A)2" Zone under the Draft Lung Yeuk Tau and Kwan Tei South Outline Zoning Plan No. S/NE-LYT/18
Technical and Fee Proposal

Thank you for your invitation. We are pleased to provide this Scope of Works and Fee Proposal including our scope of services and the fees, as appended to this letter, for your consideration.

We look forward to receiving your formal instruction to proceed by providing a signed copy of this letter, a works order/purchase order, or a letter confirming your acceptance of the attached proposal.

Should you have any queries regarding this proposal, please do not hesitate to contact our Mr Antony WONG, on 3995 8120 or at antony.wong@smec.com.

Yours faithfully
for and on behalf of
SMEC Asia Ltd

Ir Alexi BHANJA
Managing Director

Encl.

Signed and Agreed
for and on behalf of the Client

Name: Joseph S.P. Fu

Position: Chairman

SMEC ASIA LIMITED
27/F Ford Glory Plaza, 37-39 Wing Hong Street
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F +852 3995 8101
E hongkong@smec.com
W www.smec.com

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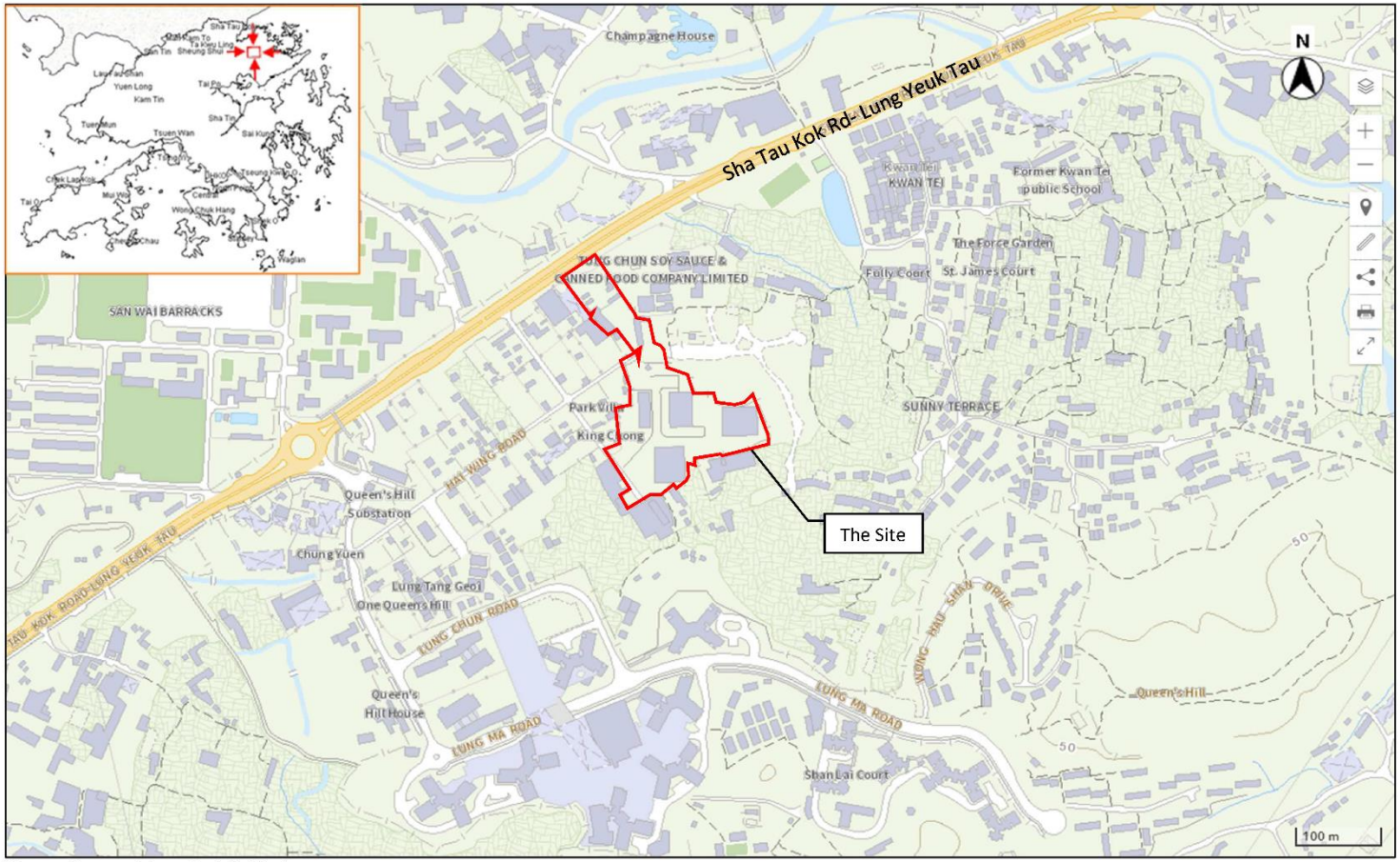
Attachment Page 1 of 2

Site Location Plan



(Source: Processed from GeoInfo Map)

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Attachment Page 2 of 2

Email Reply from EPD

Charls LIANG

From: herrickho@epd.gov.hk
Sent: Friday, 17 February 2023 5:22 pm
To: Charls LIANG
Cc: Cindy CHUNG
Subject: Re: FW: 7076933 Section 12A Rezoning Application at Lung Yeuk Tau - Land Contamination Review
Attachments: 230120_EPD_Info Request_29461.pdf

Dear Charls,

There is no registered Chemical waste producer in concerned area.

Thanks & Regards,
Herrick HO / CI(RN)32
2158 5831

From: Charls LIANG <Charls.Liang@smec.com>
To: "herrickho@epd.gov.hk" <herrickho@epd.gov.hk>
Cc: Cindy CHUNG <Cindy.Chung@smec.com>
Date: 31/01/2023 15:48
Subject: FW: 7076933 Section 12A Rezoning Application at Lung Yeuk Tau - Land Contamination Review

Dear Herrick,

We just spoke. In addition to the incident of chemical spillage/leakage record in the last 5 years, could you please also advise whether there is any registered Chemical Waste Producer related to the Project Site? Please feel free to contact me should there be any queries.

Thanks.
Regards,
Charls LIANG
Graduate Engineer
D +852 3995 8128 T +852 3995 8100 F +852 3995 8101 E charls.liang@smec.com

Charls LIANG

From: Cindy CHUNG
Sent: Monday, 30 January 2023 12:31 pm
To: Charls LIANG
Subject: FW: 7076933 Section 12A Rezoning Application at Lung Yeuk Tau - Land Contamination Review
Attachments: 230120_EPD_Info Request_29461.pdf

From: herrickho@epd.gov.hk <herrickho@epd.gov.hk>
Sent: Thursday, January 26, 2023 10:17 AM
To: Cindy CHUNG <Cindy.Chung@smec.com>
Cc: shchu@epd.gov.hk
Subject: Re: 7076933 Section 12A Rezoning Application at Lung Yeuk Tau - Land Contamination Review

Dear Cindy,

According to our records, there is no incident of chemical spillage/leakage in relevant location in last 5 years .

Thanks & Regards,
Herrick HO / EPD
2158 5831

From: SH CHU/EPD/HKSARG
To: CI[RN]32
Cc: SI[RN]34, DPI[RN]1, I[RN]34
Date: 20/01/2023 17:18
Subject: 7076933 Section 12A Rezoning Application at Lung Yeuk Tau - Land Contamination Review

---

Dear Herrick,

Would you please provide the records as requested and reply to the Cindy Chung.

Regards,
CHU Shun-hang
AE(RN)33 / EPD
2158 5832

----- Forwarded by SH CHU/EPD/HKSARG on 20/01/2023 17:11 -----

From: Cindy CHUNG <Cindy.Chung@smec.com>
To: "shchu@epd.gov.hk" <shchu@epd.gov.hk>
Cc: Antony WONG <Antony.Wong@smec.com>, Charls LIANG <Charls.Liang@smec.com>, Isa Yuen <iyuen@aikon.hk>, Thomas Luk <tluk@aikon.hk>, "jlee@carltonwood.com.hk" <jlee@carltonwood.com.hk>
Date: 20/01/2023 17:06
Subject: 7076933 Section 12A Rezoning Application at Lung Yeuk Tau - Land Contamination Review

---

Dear Mr. CHU,

Email Reply from EPD

Section 12A Rezoning Application – Request for Amendment to the approved Lung Yeuk Tau and Kwan Tei South Outline Zoning Plan No. S/NE-LYT/19 from "Residential (Group C)" Zone and "Agriculture" Zone to "Residential (Group A) 2" Zone
Request for Information - Land Contamination Review

We have been appointed by Carlton Woodcraft Manufacturing Ltd as the Environmental Consultant to undertake an Environmental Assessment ("EA") for the captioned project. In order to review potential land contamination issue, we would be most grateful if you could provide us with a list of records of Chemical Waste Producers Registration or incidents of chemical spillage/leakage, etc. relating to the Site, if any. Please refer to the attached letter for details of the project and requested information.

Should you have any enquiries regarding the above, please do not hesitate to contact the undersigned. Thank you.

Regards,

Cindy CHUNG
Senior Environmental Consultant
D +852 3995 8124 **T** +852 3995 8100 **F** +852 3995 8101 **E** cindy.chung@smec.com

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Information Request Letter to FSD

SMEC
Member of the Surbana Jurong Group

local people
global experience

Our ref: 7076933/L29462/AW/TSC/CL/rw

20 January 2023

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

By Email (hkfsdenq@hkfsd.gov.hk)
& Fax (2739 5879)

Attention: Mr. NG Wing Chit

Dear Sir

Section 12A Rezoning Application – Request for Amendment to the approved Lung Yeuk Tau and Kwan Tei South Outline Zoning Plan No. S/NE-LYT/19 from "Residential (Group C)" Zone and "Agriculture" Zone to "Residential (Group A) 2" Zone
Request for Information - Land Contamination Review

We have been appointed by Carlton Woodcraft Manufacturing Ltd as the Environmental Consultant to undertake an Environmental Assessment ("EA") for the captioned project. A copy of appointment letter (ref: 17601076-0785/L29290/AB/AW/FN/rw) dated 7 December 2022 regarding the appointment of the captioned Agreement is enclosed for your information. The Subject Site is in Lung Yeuk Tau, Fanling, and its location is shown on the attached figure.

In order to review potential land contamination issue, we would be most grateful if you could provide us with a list of records of 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 the undersigned on tel. 3995 8124 or to cindy.chung@smec.com or our Mr. Charls LIANG on tel. 3995 8128 or to charls.liang@smec.com.

Yours faithfully

Cindy CHUNG
Senior Environmental Consultant

Encl.

SMEC ASIA LIMITED
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ECO-Healthy WORKPLACE
Green Office Awards Labelling Scheme

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Information Request Letter to FSD

Appointment Letter

SMEC
Member of the Surbana Jurong Group

local people
global experience

Our ref: 17601076-0785/L29290/AB/AW/FN/rw

7 December 2022

Carlton Woodcraft Manufacturing Ltd
15/F VIP Commercial Centre
116-120 Canton Road
Tsim Sha Tsui
Kowloon
Hong Kong

By Hand

Attn: Mr Joseph S.P. FU

Dear Sir

12A Rezoning Application from "Residential (Group C)" Zone and "Agriculture" Zone to "Residential (Group A)2" Zone under the Draft Lung Yeuk Tau and Kwan Tei South Outline Zoning Plan No. S/NE-LYT/18
Technical and Fee Proposal

Thank you for your invitation. We are pleased to provide this Scope of Works and Fee Proposal including our scope of services and the fees, as appended to this letter, for your consideration.

We look forward to receiving your formal instruction to proceed by providing a signed copy of this letter, a works order/purchase order, or a letter confirming your acceptance of the attached proposal.

Should you have any queries regarding this proposal, please do not hesitate to contact our Mr Antony WONG, on 3995 8120 or at antony.wong@smec.com.

Yours faithfully
for and on behalf of
SMEC Asia Ltd

Ir Alexi BHANJA
Managing Director

Encl.

Signed and Agreed
for and on behalf of the Client

Name: Joseph S.P. Fu
Position: Chairman

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W www.smec.com

ECO-Healthy WORKPLACE
Green Office

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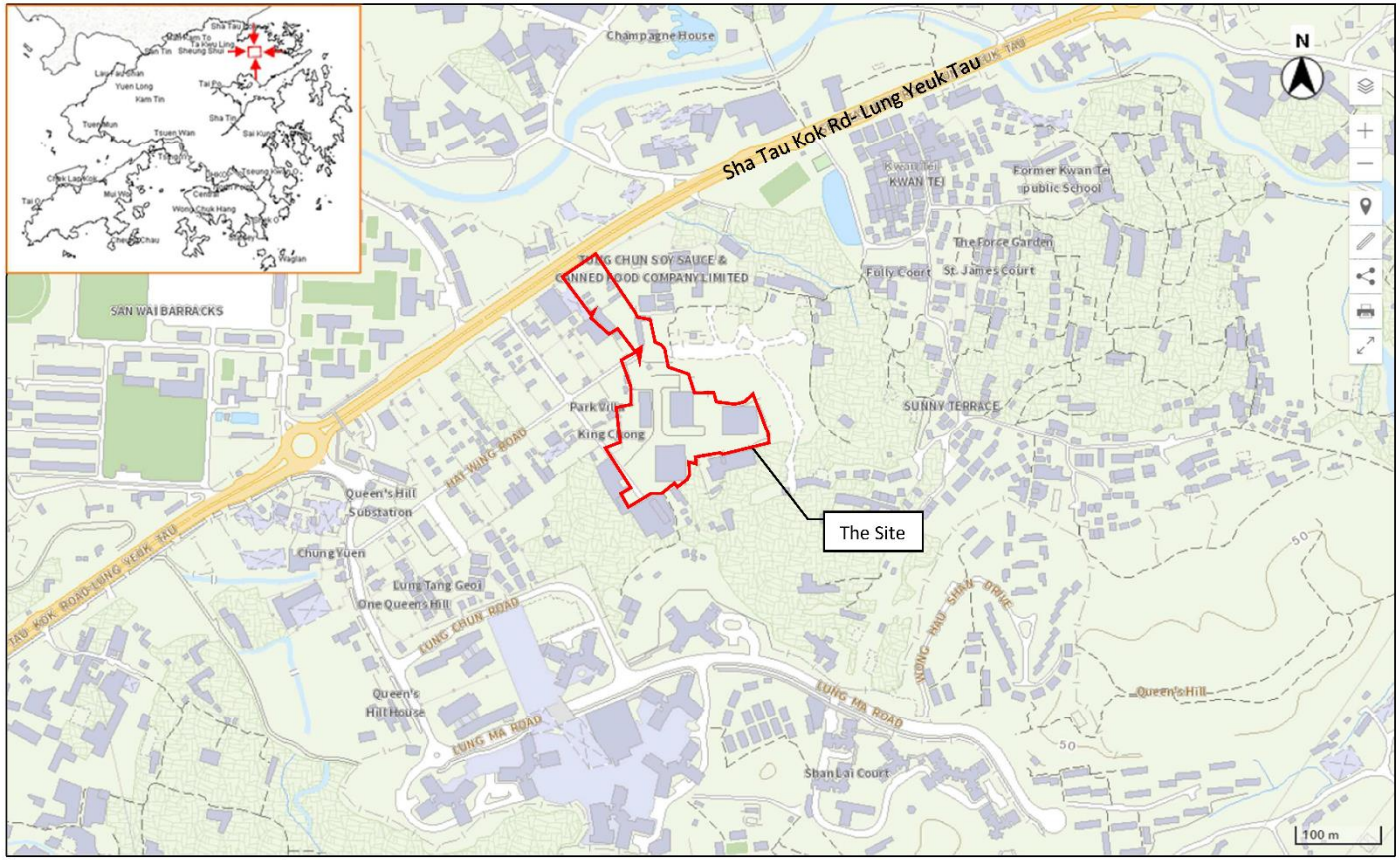
Attachment Page 1 of 2

Information Request Letter to FSD

Site Location Plan



(Source: Processed from GeoInfo Map)

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Attachment Page 2 of 2

Reply from FSD

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. : (91) in FSD GR 6-5/4 R Pt. 45
來函檔號 YOUR REF. : 7076933/L29462/AW/TSC/CL/rw
電子郵件 E-mail : hkfsdenq@hkfsd.gov.hk
圖文傳真 FAX NO. : 2739 5879
電 話 TEL NO. : 2733 7741

24 February 2023

SMEC Asia Limited
27/F Ford Glory Plaza,
37-39 Wing Hong Street,
Cheung Sha Wan, Kowloon, Hong Kong.
(Attn: Ms. Cindy CHUNG, Senior Environmental Consultant)

Dear Ms. CHUNG,

Section 12A Rezoning Application – Request for Amendment to the approved Lung Yeuk Tau and Kwan Tei South Outline Zoning Plan No. S/NE-LYT/19 from "Residential (Group C)" Zone and "Agriculture" Zone to "Residential (Group A) 2" Zone
Request for Information of Dangerous Goods & Incident Records

I refer to your letter of 20.1.2023 regarding the captioned request and reply below in response to your questions:-

Please be advised that neither records of dangerous goods license, fire incidents nor incidents of spillage / leakage of dangerous goods were found in connection with the given conditions of your request at the subject location.

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

Yours sincerely,

(NG Wing-chit)
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

local people
global experience

SMEC is recognised for providing technical excellence and consultancy expertise in urban, infrastructure and management advisory. From concept to completion, our core service offering covers the life-cycle of a project and maximises value to our clients and communities. We align global expertise with local knowledge and state-of-the-art processes and systems to deliver innovative solutions to a range of industry sectors.

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