

CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

AGREEMENT NO. CE 47/2020 (CE) – TERM CONSULTANCY FOR SITE FORMATION AND INFRASTRUCTURE WORKS FOR PROPOSED HOUSING DEVELOPMENTS IN ZONE 2 (2021 – 2024) – FEASIBILITY STUDY

TASK ORDER NO. 9 – SAN TIN Preliminary Environmental Review Report (Draft – Issue 2)

August 2023





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**Preliminary Environmental Review Report
(Draft – Issue 2)**

PROJECT NO.: 2512218A

DATE: AUGUST 2023

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1 INTRODUCTION

1.1 BACKGROUND

- 1.1.1. WSP (Asia) Ltd. (WSP) is commissioned by the Civil Engineering and Development Department (CEDD) of the Hong Kong Special Administrative Region under Task Order No. 9 - San Tin of Agreement No. CE 47/2020 (CE) Term Consultancy for Site Formation and Infrastructure Works for Proposed Housing Developments in Zone 2 (2021 - 2024) - Feasibility Study, to prepare the Section 16 Planning Application to seek permission from the Town Planning Board (TPB/ the Board) for the Proposed Temporary Training Facilities (proposed development) at the Community Isolation Facility (CIF) of San Tin, Yuen Long (Application Site / Project Site / Site).
- 1.1.2. The Application Site falls within an area that is zoned for "Other Specified Uses (Services Stations)" ("OU (Services Station)" under the Approved San Tin Outline Zoning Plan No. S/YL-ST/8 (OZP). In accordance with Clause No. (11) (b) of the covering Notes of the approved OZP, ...temporary use or development of any land or building not exceeding a period of three years requires permission from the Town Planning Board.
- 1.1.3. In this connection, WSP prepared this Preliminary Environmental Report (PER) alongside with the planning application of the proposed development to the TPB for consideration and approval.

1.2 OVERALL OBJECTIVE

- 1.2.1 The objective of this PER is to review existing available information and findings in order to identify any potential changes in environmental impacts and required mitigation measures arising from the construction and operation phases of the proposed development.
- 1.2.2 The PER reviews the potential environmental impact according to the current project design and timeframe, and recommends necessary mitigation measures to avoid / minimise the potential environmental impacts.

1.3 SCOPE OF THE REPORT

- 1.3.1 After this introductory section, the remainder of this PER is arranged as follows:
- (a) Section 2 presents the description of the project;
 - (b) Section 3 reviews the air quality impact assessment;
 - (c) Section 4 reviews the noise impact assessment;
 - (d) Section 5 reviews the water quality impact assessment;
 - (e) Section 6 reviews the waste management and disposal impact;
 - (f) Section 7 reviews the land contamination impact;
 - (g) Section 8 reviews the ecological impacts; and
 - (h) Section 9 presents the conclusions.

2 PROJECT DESCRIPTION

2.1 EXISTING SITE CONDITION

- 2.1.1 The Site is located at San Tin, with approximate area of 38,567 m². It is currently occupied by Community Isolation Facility (CIF) since March 2022. The CIF was used for accommodating confirmed patients with mild or no symptoms to reduce the risk of transmission to the community. The location of the Site is illustrated in **Figure 2.1**.
- 2.1.2 With the pandemic in Hong Kong having been brought under control gradually, some CIFs have been put into standby mode.
- 2.1.3 The Application Site is trapezium in shape and formed on a relatively gentle ground with concrete pavement. The Application Site is surrounded by boundary fence. Currently, the Application Site is occupied by modular units and ancillary facilities.
- 2.1.4 All of these existing modular units have already been equipped with air conditioning (A/C) units and basic furniture and are ready for use as classrooms, group activity areas and storages. Ancillary facilities including service buildings and staff offices, toilets, washing basins and shower facilities are being provided and these facilities will be retained in the proposed development.

2.2 SCOPE OF THE PROJECT

- 2.2.1 In accordance with Government's announcement on 13 July 2023, the Client proposes to convert the existing San Tin CIF to temporary training centre for the Construction Industry Council (CIC) to hold training courses and trade tests, including on-site training on the Modular Integrated Construction (MIC) method regarding safety legislation, lifting and assembly to support a wider adoption of the MIC method in Hong Kong.
- 2.2.2 As the proposed development will fully utilise the existing building structures and services utilities, no site formation or infrastructure works are to be carried out at the Site. Existing electrical and mechanical buildings will be preserved *in-situ* for the proposed development use.
- 2.2.3 The target occupancy for the proposed development is targeted in October 2023 tentatively, and it will last for about one year only.
- 2.2.4 No site formation or infrastructure works would be expected for the proposed development.

3 AIR QUALITY

3.1 INTRODUCTION

3.1.1 This section presents the review and findings of the air quality implications associated with the construction and operation phases of the proposed development.

3.2 ENVIRONMENTAL LEGISLATION, STANDARDS AND GUIDELINES

3.2.1 The relevant legislations and standards for the assessment of air quality applicable to the Study Area include:

- Air Pollution Control Ordinance (APCO) (Cap 311);
- Air Pollution Control (Construction Dust) Regulation;
- Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation;
- Air Pollution Control (Fuel Restriction) Regulation; and
- Annex 4 & Annex 12 of the Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM).

Air Quality Objectives (AQOs)

3.2.2 The Hong Kong Air Quality Objectives (AQOs) stipulating the maximum allowable concentrations and frequency of exceedance over specific periods for criteria pollutants shall be met. The prevailing AQOs which was enacted on 1 January 2022 are listed in **Table 3-1** below:

Table 3.1 The Hong Kong Air Quality Objectives

Pollutant	Averaging Time	AQO Concentration ^[i] ($\mu\text{g}/\text{m}^3$)	Allowable Number of Exceedance
Respirable Suspended Particulates (PM ₁₀) ^[ii]	24-hour	100	9
	Annual	50	Not Applicable
Fine Suspended Particulates (PM _{2.5}) ^[iii]	24-hour	50	18 ^[iv]
		50	35
	Annual	25	Not Applicable
Nitrogen Dioxide (NO ₂)	1-hour	200	18
	Annual	40	Not Applicable
Sulphur Dioxide (SO ₂)	10-minute	500	3
	24-hour	50	3
Carbon Monoxide (CO)	1-hour	30,000	0
	8-hour	10,000	0
Ozone (O ₃)	8-hour	160	9
Lead	Annual	0.5	Not Applicable
Notes: [i] All measurements of the concentration of gaseous air pollutants, i.e., sulphur dioxide, nitrogen dioxide, ozone and carbon monoxide, are to be adjusted to a reference temperature of 293Kelvin and a reference pressure of 101.325kPa. [ii] Respirable suspended particulates mean suspended particles in air with a nominal aerodynamic diameter of 10 μm or less. [iii] Fine suspended particulates mean suspended particles in air with a nominal aerodynamic diameter of 2.5 μm or less. [iv] 18 times of allowed exceedance is for government projects.			

Air Pollution Control (Construction Dust) Regulation

3.2.3 Notifiable and regulatory works are under the control of Air Pollution Control (Construction Dust) Regulation. Notifiable works include site formation, reclamation, demolition, foundation and superstructure construction for buildings and road construction. Regulatory works are building renovation, road opening and resurfacing slope stabilization, and other activities including stockpiling, dusty material handling, excavation, concrete production, etc. Contractors and site agents are required to adopt construction dust suppression measures to reduce dust emission to the acceptable level.

3.2.4 The Regulation requires that any notifiable work shall give advance notice to the Environmental Protection Department (EPD), and the contractor shall ensure that both notifiable works and regulatory works will be conducted in accordance with the Schedule of the Regulation, which provides dust control and suppression measures.

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

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

Air Pollution Control (Fuel Restriction) Regulation

- 3.2.6 To minimize SO₂ emission from construction plants and equipment, requirements stipulated in the Air Pollution Control (Fuel Restriction) Regulation (Amendment) Regulation 2008, using liquid fuel with sulphur content of less than 0.005% by weight or viscosity less than 6 Centistokes at 40°C should be fulfilled.

Hong Kong Planning Standards and Guidelines (HKPSG)

- 3.2.7 In accordance with Chapter 9 Environment of Hong Kong Planning Standards and Guidelines (HKPSG), the minimum buffer distances are recommended between different types of roads and the active open spaces. The buffer distance requirements of HKPSG for different road types are listed in listed in **Table 3-2** below for reference:

Table 3.2 Setback Distances from Roads according to HKSPG Recommendation

Pollution Source	Type of Road	Buffer Distance	Permitted Uses
Road and Highways	Trunk Road and Primary Distributor	> 20m	Active and passive recreation uses
		3 – 20m	Passive recreational use
		< 3m	Amenity areas
	District Distributor	> 10m	Active and passive recreational uses
		< 10m	Passive recreational uses
	Local Distributor	> 5m	Active and passive recreational uses
		< 5m	Passive recreational use
Under Flyovers	-	Passive recreational use	

- 3.2.8 Chapter 9 of HKPSG also stipulates the minimum buffer distance between ASRs and industrial chimneys. The buffer distance requirements are shown in **Table 3-3** below.

Table 3.3 Required Minimum Buffer Distances between ASRs and Chimneys

Difference in Height between Industrial Chimney Exit and ASR (m)	Minimum Buffer Distance (m)	Permitted Uses
<20	>200	Active and passive recreational uses
	5 – 200	Passive recreational use
20 – 30	>100	Active and passive recreational uses
	5 – 100	Passive recreational use
30 – 40	>50	Active and passive recreational uses
	5 – 50	Passive recreational use
>40	>10	Active and passive recreational uses

3.3 BACKGROUND AIR QUALITY REVIEW

- 3.3.1 Existing air quality of the Study Area has been reviewed with reference to the EPD's routine air quality monitoring data collected in 2018 – 2022. The nearest EPD air quality monitoring station (AQMS) from the Project Site is the Yuen Long AQMS at Yuen Long District Office Building, 269 Castle Peak Road. Its most recent 5 years of air quality data records (i.e., Sulphur Dioxide, Nitrogen Dioxide, Respirable and Fine Suspended Particulates and Ozone) are summarized in **Table 3-4** to depict the trend of the local air quality.

Table 3.4 Background Air Quality Records at Yuen Long AQMS From 2018 to 2022

Pollutant	Averaging Time	Conc. Limits ($\mu\text{g}/\text{m}^3$)	Number of Exceedances Allowed	Concentration ($\mu\text{g}/\text{m}^3$) ^[i]					Remarks
				2018	2019	2020	2021	2022	
Respirable Suspended Particulates (PM ₁₀)	24-hour	100	9	75	83	77	73	56	10 th highest conc.
	Annual	50	Not Applicable	37	37	30	30	25	/
Fine Suspended Particulates (PM _{2.5})	24-hour	50	35/18 ^[ii]	41	38	33	36	38	19 th highest conc.
	Annual	35	Not Applicable	20	20	16	17	16	/
Nitrogen Dioxide (NO ₂)	1-hour	200	18	150	161	135	148	122	19 th highest conc.
	Annual	40	Not Applicable	43	44	32	40	37	/
Sulphur Dioxide (SO ₂)	10-minute	500	3	52	42	26	24	21	4 th highest conc.
	24-hour	50	3	16	11	10	14	7	4 th highest conc.
Ozone (O ₃)	8-hour ^[iii]	160	9	162	200	154	178	194	10 th highest conc.
Carbon Monoxide (CO)	1-hour	30,000	0	1720	2150	1530	2090	1700	1 st highest conc.
	8-hour	10,000	0	1574	1903	1279	1591	1519	1 st highest conc.

Notes:

[i] **Bolded** concentrations indicate exceedance of the Air Quality Objectives (AQOs).

[ii] 18 frequency of exceedances of AQO limits are allowed per year for daily FSP for new government projects.

[iii] No information of the 19th highest daily FSP is available in Annual Air Quality Reports from 2018 - 2022, the 19th highest daily FSP were obtained from the Environmental Protection Interactive Center (<https://cd.epic.epd.gov.hk/EPICDI/air/?lang=en>).

3.3.2 The ambient air quality in the vicinity of the project site is generally complied with the AQOs except exceedances were found for ozone and annual average NO₂. Ozone exceeded the AQO limit from 2018 to 2019 and from 2021 to 2022. Ozone is a regional problem in Hong Kong rather than a local issue. Annual average NO₂ exceeded the AQO limit from 2018 to 2019 and 2022 and were in compliance with AQO limit from 2020 to 2021.

3.4 REPRESENTATIVE AIR SENSITIVE RECEIVERS

3.4.1 The representative planned Air Sensitive Receivers (ASRs) of the proposed development have been identified and summarized in **Table 3-5**. The locations of the representative ASRs are shown on **Figure 3.1**.

Table 3.5 Identifications of Representative Planned On-site ASRs

ID	ASRs	Type of Use
P01	Project Site	Educational
P02	Project Site	Educational
P03	Project Site	Educational
P04	Project Site	Educational
P05	Project Site	Educational
P06	Project Site	Educational

3.4.2 On the other hand, some representative existing off-site ASRs are also identified within 500m study Area. The locations of these existing off-site ASRs are also shown in **Figure 3.1** and tabulated in **Table 3-6** below:

Table 3.6 Identifications of Representative Existing off-site ASRs

ASR	Description	Type of Use	Horizontal Distance from Site Boundary (m)
A01	Wing Ping Tsuen	Residential	41
A02	Tung Chan Wai	Residential	74
A03	Gospel Bridge Care & Attention Home for the Aged	GIC	312
A04	Tung Shan Temple	Place of Worship	352
A05	Tun Yu School	Educational	386

3.4.3 As revealed from **Figure 3.1** and **Table 3-6** above, most of the off-site ASRs are located to the south or southwest of the project site. The closest off-site ASR are A01 and A02, which are located to the southwest of the project site. These ASRs have separation distances of at least 41m away from the project.

3.5 ENVIRONMENTAL IMPACTS DURING CONSTRUCTION PHASE

3.5.1 The existing location of the Project is the San Tin Community Isolation Facility (CIF), which were built in 2022 for accommodating confirmed patients with mild or no symptoms to reduce the risk of transmission to the community. To date, the CIF in San Tin, Yuen Long has been put into standby mode.

3.5.2 Most of the MiC units are remained *in-situ* for the proposed development. No demolition or construction works would be expected for the proposed development. Hence, construction dust impact arising from the construction phase of the proposed development is not anticipated.

3.6 ENVIRONMENTAL IMPACTS DURING OPERATION PHASE

3.6.1 This section will discuss the potential air quality impacts arising from the surrounding emission sources to the proposed development.

Vehicular Emissions from Off-Site Traffic

3.6.2 The proposed development are bounded by a few roads including Tung Wing On Road, Castle Peak Road – San Tin, San Tin Tsuen Road, San Sham Road, San Tin Highway and Tun Yu Road. The road types which have been confirmed by Transport Department (TD) internally and their required buffer distances from the planned ASRs with reference to **Table 3-3** are listed below and are demonstrated in **Figure 3.2**.

- (1) Tung Wing On Road is classified as Feeder Road based on assumption in accordance with Chapter 3.2 of Transport Planning and Design Manual (TPDM) Vol. 2. Hence, a 5m buffer similar as a local distributor is applied as a conservative approach. The shortest separation distance between the nearby planned development and the road kerb of this road could meet 5m buffer zone requirement.
- (2) Castle Peak Road – San Tin is classified as Rural Road with reference to the Annual Traffic Census (ATC) in 2021. As Rural Road could be considered as either District Distributor (DD) or Local Distributor (LD), hence, a 10m buffer similar as a DD is applied as a conservative approach. The shortest separation distance between the nearby planned development and the road kerb of this road could meet 10m buffer zone requirement.
- (3) San Tin Tsuen Road is classified as Feeder Road based on assumption in accordance with Chapter 3.2 of TPDM Vol. 2. A 5m buffer similar as a local distributor is applied as a conservative approach. The shortest separation distance between the nearby planned development and the road kerb of San Tin Tsuen Road could meet 5m buffer zone requirement.
- (4) San Sham Road is classified as Rural Road with reference to the Annual Traffic Census (ATC) in 2021. As Rural Road could be considered as either DD or LD, hence a 10m buffer similar as a LD is applied as a conservative approach. The shortest separation distance between the nearby planned development and the road kerb of San Sham Road could meet 10m buffer zone requirement.
- (5) San Tin Highway is classified as Expressway with reference to ATC 2021. Hence, a buffer distance of 20m is considered applied. The separation distance between the proposed development and the road kerb of San Tin Highway could meet the 20m buffer zone requirement.
- (6) Tun Yu Road is classified as Feeder Road based on assumption in accordance with Chapter 3.2 of TPDM Vol. 2. A 5m buffer similar as a local distributor is applied as a conservative approach. The shortest separation distance between the nearby planned development and the road kerb of this road could meet 5m buffer zone requirement.

3.6.3 Given separation distances between the nearby road and the proposed development could meet the buffer distance requirement of Table 3.1 in Chapter 9 of HKSPG, therefore no adverse impact arising from the vehicular emission is anticipated.

Industrial Emissions

3.6.4 According to review from survey maps of Lands Department and site visit carried out on 23 June 2023, open storage were found at the northern of the project site. It is observed that the industrial area is used as moto services centre and no chimney is identified within 200m away from the project site boundary. Therefore, no potential air quality impact is anticipated from the industrial emissions.

3.6.5 As no chimney within 200m sway from the project site is confirmed and verified by site visit, and the conditions of the proposed development will remain unchanged as that of the existing San Tin CIF, and thus, no change of existing air quality impact is expected after the operation of the proposed development as compared to the existing condition.

Odour Impact



- 3.6.6 Site visits were conducted on 23 June 2023, and the surrounding of the Project Site were visited. It was observed that the some of the nearby open areas are mainly used for vehicles parking or open storage, and no odour impacts was detected when passing through the access roads at the surroundings of these open area.

3.7 CONCLUSION

- 3.7.1 No site formation or infrastructure works would be expected for the proposed development. Hence, potential construction dust impacts arising from the construction activities of the proposed development is not anticipated.
- 3.7.2 During operation phase, separation distances between the nearby roads and the proposed development could meet the buffer distance requirements of HKSPG, therefore no adverse impacts arising from the vehicular emission is anticipated. No gaseous emission arising from the nearby industrial area was identified during site visit. In addition, the conditions of the proposed development will remain unchanged as that of the existing San Tin Community Isolation Facility. Hence, no adverse air quality impact arising from the industrial emission is anticipated.
- 3.7.3 In view of the abovementioned, no adverse air quality impact is therefore anticipated to the proposed development during construction and operation stages.

4 NOISE

4.1 INTRODUCTION

4.1.1 The potential noise impacts associated with the construction and operation phases of the project have been assessed.

4.2 RELEVANT LEGISLATION, GUIDELINES AND CRITERIA

Construction Noise

4.2.1 Legislation, Standards, Guidelines and Criteria relevant to the consideration of construction noise impact under this Study include the following:

- Noise Control Ordinance (NCO);
- Technical Memoranda (TM) on Noise from Construction Work other than Percussive Piling (GW-TM);
- TM on Noise from Percussive Piling (PP-TM);
- TM on Noise on Construction Work in Designated Areas (DA-TM);
- Chapter 9 of Hong Kong Planning Standards and Guidelines (HKPSG);
- Recommended Pollution Control Clauses for Construction Contracts; and
- ProPECC PN 2/93 Environmental Protection Department Practice Note for Professional Persons: Noise from Construction Activities – Non-statutory Controls.

General Construction Activities during Non-Restricted Hours

4.2.2 ProPECC PN 2/93 provides assessment criteria as well as requirements relating to construction noise not currently controlled under the NCO. The Practice Note also provides information on noise abatement measures. Noise impacts arising from general construction activities other than percussive piling during the daytime period (07:00-19:00 hours on any day not being a Sunday or general holiday) would be assessed against the noise standards tabulated in **Table 4.1** below. Practicable direct mitigation measures will be evaluated and exhausted to maximise the protection of NSRs.

Table 4.1 Noise Standards for Daytime Construction Activities

Noise Sensitive Uses	0700 to 1900 hours on any day not being a Sunday or general holiday, L_{eq} (30 min), dB(A)
Residential	75
School	70 65 during examination

Source: Practice Note for Professional Persons (ProPECC) PN 2/93 “Noise from Construction Activities – Non-Statutory Controls” issued by EPD in 1993.

Note: The above noise standards apply to uses, which rely on opened windows for ventilation. The above standards shall be viewed as the maximum permissible noise levels assessed at 1 m from the external façade.

General Construction Activities during Restricted Hours

- 4.2.3 Noise impacts arising from general construction activities (excluding percussive piling) conducted during the restricted hours (19:00-07:00 hours on any day and anytime on Sunday or general holiday) and percussive piling during anytime are governed by the NCO.
- 4.2.4 For carrying out of any general construction activities involving the use of any Powered Mechanical Equipment (PME) within the restricted hours, a Construction Noise Permit (CNP) issued by the Authority must be obtained under the NCO. The noise criteria and the assessment procedures for issuing a CNP are specified in GW-TM published under the NCO.
- 4.2.5 Regardless of any description or assessment made in this section, in assessing a filed application for a CNP the Authority shall follow the relevant guidelines and requirements according to Technical Memoranda. The Authority will consider all the factors affecting their decision taking contemporary situations/ conditions into account. Nothing in this study shall pre-empt the Authority in making their decisions, and there is no guarantee that a CNP will be issued. If a CNP is to be issued, the Authority may include any conditions they consider appropriate and such conditions are to be followed while the works covered by the CNP are being carried out. Failing to do so may lead to cancellation of the CNP and prosecution action under the NCO.
- 4.2.6 No site formation and infrastructure works would be expected for the proposed development. In case of any construction activities during restricted hours, it is the contractor's responsibility to ensure compliance with the NCO and the relevant TMs. The Contractor will be required to submit CNP application to the Noise Control Authority and abide by any conditions stated in the CNP, should any be issued. No construction works in restricted hours will be required for the Project based on the currently envisaged programme.

Operation Phase

- 4.2.7 The noise criteria for evaluating noise impact of planning development with respect to road traffic noise are based on the HKPSG. The summary of noise criteria is given in **Table 4.2**.

Table 4.2 Relevant Road Traffic Noise Standards for Planning Purposes

Common Uses	Road Traffic Noise Peak Hour Traffic L₁₀ (1 Hour), dB(A)
All domestic premises including temporary housing accommodation, offices	70
Educational institutions including kindergartens, childcare centres and all other where unaided voice communication is required	65
Diagnostic rooms and wards of hospitals, clinics, convalescences and homes for the aged	55

Notes:

- (i) The above standards apply to uses which rely on opened windows for ventilation.
- (ii) The above standards should be viewed as the maximum permissible noise levels assessed at 1m from the external façade.

Fixed Noise Sources

- 4.2.8 Fixed noise sources are controlled under the Noise Control Ordinance (NCO) and Technical Memorandum for the Assessment of Noise from Places Other Than Domestic Premises, Public Places or Construction Sites (IND-TM). More stringent criteria for assessing noise impacts of fixed plant are recommended in the HKPSG for planning purposes. A noise criterion of 5 dB(A) below the appropriate Acceptable Noise Levels (ANLs) shown in the IND-TM or the prevailing



background noise levels, whichever is the lower has been adopted for the assessment of fixed noise source impact in relation to operation of the Proposed Development. For a given Area Sensitivity Rating (ASR), the ANL, in dB(A), is given by **Table 4.3**.

- 4.2.9 In any event, the ASRs and the ANLs assumed in this report are indicative and are used for assessment only. It should be noted that noise from fixed noise sources is controlled under Section 13 of the Noise Control Ordinance. Therefore, the ASRs and ANLs determined in this report shall not prejudice the Noise Control Authority’s discretion to determine the noise impact due to fixed noise sources on the basis of prevailing legislation and practices being in force and taking account of contemporary conditions/ situations of adjoining land uses. Nothing in this report shall bind the Noise Control Authority in the context of law enforcement against any of the fixed noise sources being assessed.

Table 4.3 Acceptable Noise Level for Fixed Plant Noise

Time Period	Area Sensitivity Rating		
	A	B	C
Day-time (0700 to 1900 hours)	60	65	70
Evening (1900 to 2300 hours)	60	65	70
Night-time (2300 to 0700 hours)	50	55	60

Note:

- (i) The above standards apply to uses which rely on opened windows for ventilation
- (ii) The above standards should be viewed as the maximum permissible noise levels assessed at 1m from the external façade

- 4.2.10 According to Outline Zoning Plan (S/YL-ST/8), the Proposed Development is located at “Other Specified Uses” while the “Village Type Development” (“V” type) is identified within 50m of the Proposed Development. Area Sensitivity Rating of “A” is adopted. The ANL in $L_{eq(30min)}$ dB(A) regarding to the ASR for both daytime and night-time are shown in **Table 4.4** below.

Table 4.4 Noise Criteria for Fixed Noise Impact Assessment

Area Sensitivity Rating	Time Period	ANL, $L_{eq(30min)}$, dB(A)
A	Day and evening time (0700 – 2300 hours)	60
	Night-time (2300 – 0700 hours)	50

- 4.2.11 For planned fixed sources, the noise criteria shall follow the requirements of Table 4.1 of Chapter 9 of HKPSG –
- (a) 5 dB(A) below the appropriate ANLs shown in Table 2 of IND-TM, and
 - (b) the prevailing background noise levels

4.3 REPRESENTATIVE NOISE SENSITIVE RECEIVERS

- 4.3.1 The Assessment Area is defined as an area within 300m away of the Project Site boundary for noise impact assessment.
- 4.3.2 In accordance with HKPSG, Noise Sensitive Receivers (NSRs) refers to, but not limited to all domestic premises including temporary housing, education institutions, hospitals, medical clinics, homes for the aged, convalescent homes, places of public worship, libraries, courts of law, performing arts centres, auditoria, amphitheatres, hostels and country parks.

- 4.3.3 For the proposed development, air conditioning system with mechanical ventilation will be provided to all noise sensitive uses (i.e., training centre) where they will not rely on openable window/door for ventilation. Thus, adverse noise impact on the proposed development will not be anticipated and the noise standard will not be applicable.
- 4.3.4 A temporary container tractor/trailer park for a period of one year which located at the “V” zone is identified at the immediate southwest of the proposed development. Village houses at Wing Ping Tsuen and Tung Chan Wai have been identified as noise sensitive receivers (NSRs). The identified representative NSRs are listed in **Table 4.5** below, and their locations are illustrated in **Figure 4.1**. No planned or committed NSRs are identified within the Assessment Area.

Table 4.5 Representative Noise Sensitive Receivers

ID	Description	Type of Use	Existing/ Planned	Horizontal Distance from site boundary (m)
NSR_01	271 Wing Ping Tsuen	Residential	Existing	37
NSR_02	161 Wing Ping Tsuen	Residential	Existing	40
NSR_03	17B Tung Chan Wai	Residential	Existing	77

4.4 CONSTRUCTION NOISE IMPACT ASSESSMENT

Evaluation of Construction Noise Impact

- 4.4.1 No site formation or infrastructure works would be expected for the proposed development. As mentioned in **Section 2.2.1**, some minor construction works would be carried out. However, the use of powered mechanical equipment (PME) will be very limited during the construction phase and mitigation measures would be adopted as per established requirements and guidelines. Therefore, construction noise impact is not expected.
- 4.4.2 Current land use within the Site is the San Tin Community Isolation Facility (CIF) which was built for accommodating confirmed patients with mild or no symptoms to reduce the risk of transmission to the community. The San Tin CIF is converting to the proposed training school on a not more than 1-year temporary basis at the San Tin Community Isolation Facility (CIF).
- 4.4.3 The Applicant shall prioritize and adopt quieter construction methods/equipment as far as practicable, and incorporate the EPD’s “Recommended Pollution Control Clauses for Construction Contracts” into the construction works contract(s) to ensure the implementation of the noise mitigation measures for minimizing the potential construction noise impacts.
- 4.4.4 Considering that no site formation or infrastructure works would be expected for the proposed development, and thus, no insurmountable construction noise impact is anticipated.

4.5 OPERATION NOISE IMPACT ASSESSMENT

Road Traffic Noise

Identification and evaluation of Noise Sources

- 4.5.1 Road traffic noise from the nearby road network is anticipated. The nearby road network within the 300m Project Area is identified and showed in **Figure 4.1**. However, all noise sensitive use of the Project will be served with air conditioning (A/C) units and would not rely on openable

window / door for ventilation. Therefore, no road traffic noise from the nearby road networks to our Project Site is anticipated.

- 4.5.2 The future population of not more 200 people are served for training every day, subject to the capacity of existing public transport. No coach service will be provided. The primary means of transportation of staff and students will be the existing public transport at nearby locations of the Project. No change to the existing traffic (in terms of vehicle/hour for both light and heavy vehicles) due to the Project is anticipated. Hence, no additional traffic flow is anticipated due to the proposed development. Given that there will be only eight private car parking spaces allowed within the site, the potential of road traffic noise from our Project Site to the nearby NSRs will be limited.
- 4.5.3 According to the Annual Traffic Census 2021, about 6,500 nos. of vehicles were recorded during AM and PM peak hour at San Tin Highway, Castle Peak Road and San Tam Road. The noise climate in San Tin is dominated by traffic noise impacts arising from San Tin Highway, which is next to Castle Peak Road – San Tin. The road traffic noise impacts induced from the Site will be largely screened by the traffic noise from the San Tin Highway. To minimize the potential road traffic noise impact, the staff and/or student travelling to/ from the site should make use of the entrance at San Tin Tsuen Road via San Tin Highway and avoid using Tung Wing On Road as far as practicable. Thus, the potential traffic noise impacts induced from the Site to the nearby NSRs is limited.
- 4.5.4 In addition, A/C units will be provided for all noise-sensitive uses in the site, which will not rely on openable windows / doors for natural ventilation, there is no Noise Assessment Point (NAPs) identified within the Site and no adverse traffic noise impact on the proposed development is anticipated.

Fixed Plant Noise

- 4.5.5 Based on the site visit conducted on 23 June 2023, the existing major fixed noise source within 300m from the Project Site is identified and tabulated in **Table 4.6**. The site layout plan which shows the exact type and location of the training activities/ demonstration to be carried out on-site is presented in **Appendix 4.1**. The locations and site photos of the fixed noise source are shown in **Figure 4.2**.

Table 4.6 Summary of Fixed Noise Source

Exiting NSRs		Distance from the Site Boundary (m)
ID	Details	
OS1	MAN Truck & Bus Hong Kong Limited	174
OS2	Dah Chong Motor Service Center Co., Ltd. Isuzu Service Center	210
OS3	中國重汽陳列室及服務中心	165

- 4.5.6 OS1 is identified as an open storage, which is located at the north of about 174m from the Site. As observed during site visit, it is used for parking of trucks and buses while no evidence of construction activities being carried out in the open storage area.
- 4.5.7 OS2 is identified as an open storage, which is located at the north of about 210m from the Site. As observed during site visit, it is used for parking of commercial vehicles while no evidence of construction activities being carried out in the open storage area.

- 4.5.8 OS3 is identified as an open storage, which is located at the north of about 165m from the Site. As observed during site visit, it is used for parking of commercial vehicles while no evidence of construction activities being carried out in the open storage area.
- 4.5.9 Considering that there are no noisy activities at all the identified fixed noise sources, such as use of trucks and frequent trips of vehicles observed during the site visits. Noisy operation from this open storage is considered to be minor. The distance between the Project Site boundary to the closest fixed noise sources are far more than 165m). In addition, both the proposed development and the 3 fixed noise sources identified are surrounded by steel hoardings of about 2m high, and the noise climate is dominant by traffic noise, in which traffic flow along San Tin Highway is the dominant noise source. Therefore, it is considered that the operation of OS1, OS2 and OS3 has no adverse fixed plant noise impact on the proposed development.

Planned Fixed Noise

- 4.5.10 Background noise measurement was conducted on 4 August 2023 (from 1500 to 1600) to identify the background noise level of the surrounding environment of Wing Ping Tsuen. Parking area near 161 Wing Ping Tsuen is selected for background noise measurement to represent the background noise level for Ho Sze House. The measurement result is illustrated in **Table 4.7** and **Appendix 4.2**.

Table 4.7 Background Noise Measurement

Location of Background Noise Measurement	Measurement ID	Background Noise Levels, L90 (1hr), dB(A) ^[1]
Parking area near 161 Wing Ping Tsuen	BN_01	58

Notes:

[1] Night-time operation of the planned noise source is not anticipated.

[2] 3 dB(A) is added for façade effect correction.

- 4.5.11 Given that the nature of the proposed development is to provide training activities on-site and demonstration and classroom teaching of construction-related techniques, mobile cranes would be operated on-site; and the operation time of the proposed development, including the mobile crane will be limited within the 8 hour working day (between 0700 to 1900 hours during days excluding public holidays and Sundays). All the training activities/courses and trade tests will be conducted indoors only except for the safety training course of specified trade (Silver Card) which will involve the use of mobile crane outdoor. There will be no use of hand-held tools like hammering/drilling, handling of construction materials such as steel bar, loading and unloading activities, or other noisy activities carried out outdoor. The number of mobile cranes will be limited to 3.

Assessment Methodology

- 4.5.12 For those planned fixed noise sources, the design information will be made reference to the relevant catalogues/reports or obtained by on-site noise measurements. Fixed noise sources impact assessment will be conducted based on the following procedures:
- Determine the assessment area;
 - Identify and locate representative NSRs that may be affected by the noise sources;
 - Determine the noise criteria for both daytime and night-time;
 - Use standard acoustic principle for attenuation and directivity;
 - Calculate the noise impacts for worst case scenario; and

- Cumulative impacts will be included.

4.5.13 Noise impact levels due to individual noise sources have been predicted at each NSR after the corrections for distance attenuation and screening effects as the PNL.

$$PNL_i = SWL_i + C_{dist} + C_{barrier}$$

4.5.14 For the mobile crane that will be carried out concurrently, the relevant individual PNLs are then summed logarithmically with correction for façade reflection for the overall impacts (“CNL”) at each individual NSR:

$$CNL = \sum PNL_i + C_{façade}$$

where;

- PNL_i = Predicted noise level arising from various individual source after corrections for distance attenuation and screening
- SWL_i = Sound power level of individual noise sources
- C_{dist} = Correction for distance attenuation
- $C_{barrier}$ = Correction [-5 to -10 dB(A)] for barrier effects due to in-situ screening by obstacles, architectural features or purpose-built noise barrier
- $C_{façade}$ = Correction [+3 dB(A)] for façade reflection at NSR
- CNL = Corrected overall noise level being logarithmic sum of individual PNLs occurring at the same time together with correction for façade at the NSR

4.5.15 The distance attenuation was estimated using the standard acoustic equation which was presented in relevant appendices. As a conservative approach, horizontal distances between the selected NAPs and the fixed noise sources were adopted for calculating the distance attenuation. Screening correction offered by buildings or other structures, if any, has been taken into account in calculating the predicted noise levels. A positive 3 dB(A) has been added to predicted noise levels at the NAPs due to the façade effect.

4.5.16 Acceptable Noise Level (ANL) will be adopted for the cumulative noise from all the identified sources. The predicted noise levels at NSRs from the fixed noise sources by adopting standard acoustics principles were compared with the noise criteria to determine whether mitigation measures shall be adopted.

Evaluation of Impact

4.5.17 Noise assessment points (NAPs) are selected for fixed noise impact assessment. Three scenarios will be presented in this report and are listed below. The actual arrangement of mobile crane will be subject to the future operation of the training centre:

Option (1): Only 1 mobile crane at the location of MC3 as shown in **Figure 4.3** without noise mitigation measures;

Option (2): 3 mobile cranes with movable noise barriers at the proposed location as indicated in **Appendix 4.3**.

Option (3): 3 mobile cranes at the location of mobile crane as shown in **Figure 4.3** without any movable noise barriers at the proposed location.

4.5.18 The locations of the representative NAPs and distances between the fixed noise sources (planned) and NAPS are illustrated in **Figure 4.3**. Information regarding the design, configuration and application of the movable noise barriers, including at least the product surface density (i.e., 10kg/m²), the configuration drawings, their setups and arrangements as against the mobile cranes and the nearby NSRs are presented in **Appendix 4.3**. The % on-time in 30 minutes as advised by the project proponent, the type/model of the mobile cranes to

be used and the SWLs of the mobile crane, as listed in **Table 4.8**, subject to the actual operation of the proposed development. Details presentation for Options (1), (2) and (3) are shown in **Appendix 4.4**.

Table 4.8 Summary of fixed noise impact assessment for different options

Option	ID	QPME ref.	Quantity	% on-time in 30 min	PME Sound Power Level, dB(A)
1 (without any noise mitigation measures)	MC3	EPD-08025	1	20%	107
2a	MC1	EPD-08025	1	10%	107
	MC2	EPD-08025	1	20%	107
	MC3	EPD-08025	1	20%	107
2b	MC1	EPD-13564	1	30%	103
	MC2	EPD-13564	1	50%	103
	MC3	EPD-13564	1	50%	103
2c	MC1	EPD-13684	1	60%	101
	MC2	EPD-13684	1	70%	101
	MC3	EPD-13684	1	70%	101
3 (without any noise mitigation measures)	MC1	EPD-13685	1	80%	95
	MC2	EPD-13685	1	90%	95
	MC3	EPD-13685	1	90%	95

Note:

1. Sound Power Level of QPME

(<https://www.epd.gov.hk/epd/english/environmentinhk/noise/qpme/index.html>)

4.5.19 The QPME label, i.e., EPD-08025, EPD-13564, EPD-13684 or EPD-13685 for the mobile cranes are adopted in the assessment for reference purposes only, and the future operator(s) shall be required to use mobile cranes with SWL equivalent or lower than the QPME reference on-site only and ensure the mobile cranes would be regularly inspected and properly maintained for the controlled level of noise at all times.

4.5.20 In addition to the SWL of the mobile cranes to be used, noise mitigation measures in terms of operation requirements including:

(1) the % on-time in 30 minutes; and

(2) limiting the mobile cranes to be operated at the fixed locations shown in **Figure 4.3**, shall be strictly followed by the future operator(s).

4.5.21 The initial draft assessment of unmitigated noise at the closest sensitive receiver (i.e., Wing Ping Tsuen) are predicted to exceed by approximately 5 dB(A). Mitigation measures are hence recommended for consideration. Use of movable noise barriers will be adopted to screen noise

from the mobile crane. Due consideration should be given to the potential noise leakage/reflection, and the noise barrier should be fitted with absorptive material on the side facing the noise sources to minimize the impact. The mobile crane will be positioned as far away from the NSRs as possible. The predicted noise levels with proposed mitigation measure (i.e., noise barrier) are summarized in **Table 4.9**. Detailed calculations are shown in **Appendix 4.3**.

Table 4.9 Predicted noise levels with proposed mitigation measures

ID	Description	Noise Criterion ^[1] , dB(A)	Cumulative Noise Level (Option 1), dB(A)	Cumulative Noise Level (Option 2), dB(A)	Compliance
NSR_01	271 Wing Ping Tsuen	55	53	53	Yes
NSR_02	161 Wing Ping Tsuen	55	55	55	Yes
NSR_03	17B Tung Chan Wai	55	53	52	Yes

Note[1]: Background noise level is higher than ANL – 5 dB(A). ANL- 5 dB(A) is adopted as noise criteria.

- 4.5.22 Fixed noise sources such as outdoor small-powered VRV for non-centralized air conditioning will be adopted. However, these VRVs are not noise intensive and are of limited provision, and thus, fixed noise impact associated with the operation of VRVs is expected to be minimal.
- 4.5.23 Since air conditioning system will be provided to all noise sensitive uses (i.e., classrooms of training centre), where they will not rely on openable window/door for natural ventilation. Thus, adverse fixed noise impact on the proposed development is not anticipated.

4.6 CONCLUSION

- 4.6.1 No site formation and infrastructure works would be expected for the proposed development, and thus, no construction noise impact is anticipated.
- 4.6.2 For traffic noise impact and fixed noise impact during operation phase, as all noise sensitive uses (i.e., classrooms of training centre) will be served with air conditioning (A/C) units and openable window/door will not rely on natural ventilation. Therefore, no potential traffic noise from the nearby road networks and fixed noise impact to the Project Site is anticipated.
- 4.6.3 With the implementation of practical mitigation measures including use of movable noise barrier for option 2, the planned fixed noise impacts at all of the nearby existing residential noise sensitive uses would be controlled to acceptable levels. With the recommended mitigation measures in place, fixed noise impacts of the proposed development on all representative NSRs would comply with the relevant criteria.
- 4.6.4 Based on the above, no adverse noise impact for option 1, 2 and 3 is therefore anticipated to the proposed development during construction and operation stages.

5 WATER QUALITY

5.1 INTRODUCTION

5.1.1 This section reviews the findings and recommendations of the assessment for water quality impacts associated with the construction and operation of the proposed development. Any likely impacts from the implementation of the proposed Project on the water sensitive receivers (WSRs) have been identified and mitigation measures are proposed to avoid or minimise these impacts where necessary.

5.2 RELEVANT LEGISLATION, GUIDELINES AND CRITERIA

- 5.2.1 The relevant legislation, guidelines and criteria on water quality assessment include:
- Water Pollution Control Ordinance (WPCO, Cap 358);
 - Technical Memorandum for Effluents Discharge into Drainage and Sewerage Systems, Inland & Coastal Waters (TM-DSS);
 - Environmental Impact Assessment Ordinance (EIAO, Cap. 499), Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM), Annexes 6 and 14;
 - Practice Note for Professional Persons ProPECC PN 5/93 "Drainage Plans Subject to Comment by the Environmental Protection Department";
 - Professional Persons Environmental Consultative Committee Practice Note 1/94 Construction Site Drainage (ProPECC PN 1/94)
 - Hong Kong Planning Standards and Guidelines (HKPSG); and
 - Environment, Transport and Works Bureau (ETWB) Technical Circular (Works) No. 5/2005: Protection of Natural Streams/Rivers from Adverse Impacts Arising from Construction Works.

5.3 WATER SENSITIVE RECEIVERS

5.3.1 The Site is located within the Deep Bay Water Control Zone (WCZ). Water Sensitive Receivers (WSR) within the 500 m assessment area are described below in **Table 5-1**. The Project Site, i.e., the San Tin Community Isolation Facility (CIF) located in the northwest of the San Tin Interchange, 500-m assessment area and identified Water Sensitive Receivers (WSRs) are illustrated in **Figure 5.1**.

Table 5-5.1 Summary of Water Sensitive Receivers

ID	Description	Type	Status	Estimated distance from Project Site
WSR01	San Tin Wetland	Wetland	Active	310 m
WSR02	Nullah surrounding San Tin Wetland	Nullah	Active	310 m

ID	Description	Type	Status	Estimated distance from Project Site
WSR03	Pond next to San Tin Stormwater Pumping Station	Pond	Active	180 m
WSR04	San Tin Tsuen Road Nullah	Nullah	Active	Immediate vicinity
WSR05	San Tin Tsuen Road / Tun Yu Road Nullah	Nullah	Active	35 m
WSR06	Nullah next to Lok Ma Chau Control Point	Nullah	Active	250 m
WSR07	Pond	Pond	Active	330 m
WSR08	Nullah Connecting Lok Ma Chau Road and San Sham Road (north)	Nullah	Active	300 m
WSR09	Nullah Connecting Lok Ma Chau Road and San Sham Road (south)	Nullah	Active	120 m
WSR10	Nullah	Nullah	Active	270 m
WSR11	Pond next to Chau Tau Tsuen Stormwater Pumping Station	Pond	Active	460 m
WSR12	Conservation Area Next to Lok Ma Chau Control Point	Conservation Area	Active	280 m
WSR13	Conservation Area South of Sam Tin Interchange	Conservation Area	Active	330 m
WSR14	Watercourses surrounding Chau Tau Tsuen Stormwater Pumping Station	Watercourse	Active	380 m
WSR15	Watercourse north of Chau Tau West Road	Watercourse	Active	320 m

5.4 BASELINE CONDITIONS

5.4.1 The Site is situated within the inland waters of Deep Bay WCZ and the Water Quality Objectives (WQOs) designated for the whole zone are thus relevant to this Project. There are no existing EPD marine or river water quality monitoring stations within immediate vicinity or 500 m from the Project boundary. The closest river water quality monitoring stations are located along Kam Tin River and Fairview Park Nullah, marine water quality monitoring stations closest to Project Boundary are DM1 and DM2 of Deep Bay WCZ. Locations of river and marine water quality monitoring stations are shown in **Figure 5.2**.

Baseline River Water Quality

- 5.4.2 Kam Tin River has two monitoring stations (KT1 and KT2), which are 7.13 km and 6.78 km southwest of the Project Site; while the monitoring station on Fairview Park Nullah (FVR1) is 3.88 km southwest of the Project Site.
- 5.4.3 The overall Water Quality Objectives (WQO) compliance rate of Kam Tin River in 2021 was 38%, as compared with 21% in 1991, including Water Quality Index (WQI) gradings of KT1 and KT2 achieved in 2021 were at “Bad” and “Very Bad” respectively. Whereas at Fairview Park Nullah (FVR1), the overall Water Quality Objectives (WQO) compliance rate in 2021 was 55%, as compared with 50% in 2011, including the WQI grading remained “Fair” in 2021.
- 5.4.4 The latest river water quality data reported in the Annual River Water Quality Report are presented in **Table 5-2**.

Table 5-5.2 Summary of River Water Quality Monitoring Data collected by EPD River Water Quality Monitoring Programme for Inland Water in the Deep Bay WCZ (2021)

Parameter	Kam Tin River		Fairview Park Nullah
	KT1	KT2	FVR1
Dissolved Oxygen (mg/L)	4.0 (2.0 – 6.5)	2.4 (1.4 – 4.0)	7.5 (4.4 - 11.0)
pH	7.5 (7.2 – 8.1)	7.5 (7.4 – 7.7)	7.6 (7.2 - 8.4)
Suspended Solids (SS) (mg/L)	7.5 (2.5 – 53.0)	24.0 (3.6 – 120.0)	29.0 (12.0 - 77.0)
5-day Biochemical Oxygen Demand (BOD ₅) (mg/L)	7.2 (3.7 – 34.0)	27.0 (7.3 – 160.0)	8.6 (5.2 – 12.0)
Chemical Oxygen Demand (mg/L)	21 (14 – 70)	58 (14 – 200)	28 (21 – 44)
Oil & Grease (mg/L)	<0.5 (<0.5 – 1.4)	<0.5 (<0.5 – 2.9)	<0.5 (<0.5 - <0.5)
<i>E. coli</i> (count/100ml)	46 000 (13 000 – 250 000)	120 000 (39 000 – 1 600 000)	33 000 (1 700 – 580 000)
Fecal Coliforms (count/100ml)	160 000 (47 000 – 600 000)	240 000 (79 000 – 2 400 000)	120 000 (18 000 – 1 100 000)
Ammonia-Nitrogen (mg/L)	6.600 (2.300 – 12.000)	9.800 (4.800 – 36.000)	1.400 (0.610 – 2.900)
Nitrate Nitrogen (mg/L)	0.820 (0.054 – 1.700)	0.007 (<0.002 – 0.480)	0.430 (0.230 – 1.000)
Total Kjeldahl Nitrogen (mg/L)	12.50 (7.70 – 14.00)	19.00 (11.00 – 44.00)	3.30 (3.20 – 5.40)
Orthophosphate Phosphorus (mg/L)	0.880 (0.530 – 2.600)	1.600 (1.100 – 2.700)	0.350 (0.220 – 0.590)
Total Phosphorus (mg/L)	1.75 (1.20 – 3.00)	2.80 (1.70 – 4.50)	0.60 (0.44 – 0.92)
Sulphide (mg/L)	<0.02 (<0.02 – 0.12)	0.04 (<0.02 – 0.18)	0.02 (<0.02 – 0.04)
Aluminum (µg/L)	<50 (<50 – <50)	<50 (<50 – <50)	<50 (<50 - <50)
Cadmium (µg/L)	<0.1 (<0.1 – <0.1)	<0.1 (<0.1 – <0.1)	<0.1 (<0.1 - <0.1)
Chromium (µg/L)	<1 (<1 – <1)	<1 (<1 – <1)	<1 (<1 – 2)
Copper (µg/L)	2 (2 – 4)	<1 (<1 – 2)	2 (<1 – 3)
Lead (µg/L)	<1 (<1 – <1)	<1 (<1 – <1)	<1 (<1 - <1)

Parameter	Kam Tin River		Fairview Park Nullah
	KT1	KT2	FVR1
Zinc (µg/L)	<10 (<10 – 17)	<10 (<10 – 11)	<10 (<10 – 20)
Flow (m ³ /s)	0.462 (0.259 – 1.153)	0.290 (0.193 – 1.451)	NM

Notes:

- i) Data source: EPD River Water Quality in Hong Kong in 2021.
- ii) Data presented are in annual medians of monthly samples; except those for faecal coliforms and *E. coli* which are in annual geometric means.
- iii) Figures in brackets are annual ranges.
- iv) NM indicate no measurement taken.
- v) Values at or below laboratory reporting limits are presented as laboratory reporting limits.
- vi) Equal values for annual median (or geometric means) and ranges indicate that all data are the same as or below laboratory reporting limits.

Baseline Marine Water Quality

- 5.4.5 There are nine marine monitoring station within Deep Bay WCZ. The closest marine water quality monitoring stations in the Deep Bay WCZ are DM1 and DM2, with their marine water quality monitoring data summarised in **Table 5-3**.
- 5.4.6 In 2021, overall WQO compliance rate of Deep Bay WCZ was 60%, comparing with the ten-year average of 47% between 2009 – 2018. Through implementation of the Deep Bay Water Pollution Control Joint Implementation Programme overseen by the governments of Hong Kong and Shenzhen, significant improvements in water quality has been observed within the Deep Bay area, predominantly achieving full compliance of NH₃-N WQOs in the last seven years.
- 5.4.7 Even though as compared with other WCZs, Deep Bay has recorded higher nutrient levels with annual depth-averaged TIN levels exceeding the respective TIN WQOs, an evident continuous decrease in TIN level since the mid-2000s has been noticed.

Table 5.3 Summary of Marine Water Quality Monitoring Data collected by EPD Marine Water Quality Monitoring Programme in the Deep Bay WCZ (2021)

Parameter		Inner Deep Bay	
		DM1	DM2
Temperature (°C)		26.4 (17.6 – 32.6)	26.7 (18.2 – 32.9)
Salinity		16.2 (9.4 – 22.2)	18.8 (9.8 – 26.5)
Dissolved Oxygen (DO) (mg/L)	Depth-averaged	5.5 (4.0 – 7.7)	6.0 (4.4 – 10.1)
	Bottom	N/A N/A	N/A N/A
Dissolved Oxygen (DO) (% Saturation)	Depth-averaged	74 (56 – 101)	83 (65 – 125)
	Bottom	N/A N/A	N/A N/A
pH		7.3 (6.9 – 7.8)	7.4 (6.9 – 7.9)
Secchi Disc Depth (m)		1.0 (0.9 – 1.3)	1.1 (0.7 – 1.5)
Turbidity (NTU)		23.6 (9.8 – 38.0)	33.6 (10.7 – 146.0)
Suspended Solids (SS) (mg/L)		29.5 (13.0 – 57.0)	29.0 (6.4 – 70.0)
5-day Biochemical Oxygen Demand (BOD ₅) (mg/L)		2.5 (1.1 – 12.0)	2.4 (0.4 – 9.0)
Ammonia Nitrogen (mg/L)		0.417 (0.150 – 0.950)	0.267 (0.041 – 1.000)
Unionised Ammonia (UIA) (mg/L)		0.005 (0.002 – 0.009)	0.004 (<0.001 – 0.011)
Nitrite Nitrogen (mg/L)		0.152 (0.060 – 0.260)	0.102 (0.026 – 0.180)
Nitrate Nitrogen (mg/L)		1.260 (0.490 – 2.700)	0.965 (0.350 – 2.400)
Total Inorganic Nitrogen (TIN) (mg/L)		1.83 (0.82 – 3.41)	1.33 (0.50 – 2.81)
Total Kjeldahl Nitrogen (mg/L)		0.75 (0.51 – 0.86)	0.63 (0.40 – 0.94)
Total Nitrogen (mg/L)		1.95 (1.55 – 2.23)	1.48 (1.19 – 2.33)
Orthophosphate Phosphorus (mg/L)		0.159 (0.110 – 0.220)	0.110 (0.056 – 0.170)
Total Phosphorus (mg/L)		0.20 (0.14 – 0.26)	0.18 (0.11 – 0.28)
Silica (as SiO ₂) (mg/L)		6.18 (1.40 – 11.00)	4.68 (0.70 – 8.50)
Chlorophyll-a (µg/L)		8.3 (1.7 – 15.0)	11.0 (2.1 – 43.0)
<i>E. coli</i> (count/100ml)		160 (23 – 1600)	56 (9 – 3200)
Fecal Coliforms (count/100ml)		400 (86 – 3000)	120 (11 – 6000)

Notes:

- i) Data source: EPD Marine Water Quality in Hong Kong in 2021.
- ii) Except as specified, data presented are depth-averaged values calculated by taking the means of three depths: surface, mid-depth, bottom.
- iii) Data presented are annual arithmetic means of the depth-averaged results except for *E. coli* and fecal coliforms which are annual geometric means.
- iv) Data in brackets indicate the ranges.

5.5 EVALUATION OF WATER QUALITY IMPACTS

- 5.5.1 Minor works at the proposed development shall include removal of Modular Integrated Construction (MiC) units and fences, road marking painting, utility diversion, providing loading / unloading bays for coaches, and creating additional recreational facilities.
- 5.5.2 As the Project only involves converting from an isolation facility to temporary training centre, therefore, there shall not be any site formation and infrastructure works, nor alterations to the existing drainage and sewerage system which has already been built within the Site, the expected impacts on water quality during construction and operation phases shall be minimal.

Potential Impacts During Construction Phase

- 5.5.3 The minor works will involve utilities diversion, removal of fences and existing MiC units and road marking painting. Foundation works shall not be performed. No diversion works and river training of the existing streams are required.
- 5.5.4 However, potential water quality impacts arising from the construction may be due to following:
- General construction activities;
 - Construction site runoff;
 - Sewage effluent; and
 - Accidental spillage of chemicals.
- 5.5.5 Since the Site in close proximity of the San Tin Wetland, nullahs and ponds, there could be potential impact on these locations through the release of discharges and runoff laden with suspended solids and other polluting characteristics such as high pH. However, considering the sewerage system, including a sewage pumping station and 1.8-km twin rising mains, that was already built within the Community Isolation Facility (CIF) in March 2022 to convey sewage from the CIF to the sewage treatment facility at Lok Ma Chau Control Point, which would be utilised by construction workforce; as well as existing road drainage system of the CIF, will both be sustained to curtail water quality impacts to nearby waterbodies. No direct disturbance to the identified WSRs is expected.
- 5.5.6 With implementation of recommended mitigation measures as described in **Section 5.6**, it is unlikely that there would be any adverse water quality impacts on these watercourses during construction phase.

Potential Impacts During Operation Phase

- 5.5.7 The potential water quality would be mainly road surface runoff, sewage and drainage discharge.
- 5.5.8 Surface runoff may contain grit, oil and debris from the road users including vehicles and pedestrians. The existing road drainage system will receive road run-off.
- 5.5.9 Existing road drainage outfall locations will be maintained to receive road drainage, avoiding impacts to the waterbodies.
- 5.5.10 Sewage generated from the proposed development shall be directed to the nearby existing public sewerage system at the Lok Ma Chau Control Point.
- 5.5.11 With proper implementation of recommended mitigation measures, it is expected that the impact on water quality will be minimal.

5.6 MITIGATION MEASURES

Mitigation Measures During Construction Phase

- 5.6.1 While no site formation and infrastructure works would be expected for the proposed development. Any close proximity of the construction works to inland watercourses has the potential to impact the receiving water quality near the Project Site. Mitigation measures listed in ProPECC Note PN1/94 on Construction Site Drainage and ETWB TC (Works) No. 5/2005 on Protection of Natural Streams/rivers from Adverse Impacts Arising from Construction Works should be implemented.
- 5.6.2 Mitigation measures of relevance from ETWB TC (Works) No. 5/2005 include:
- Stockpiling of construction materials and spoil, should be properly covered and located away from any natural stream/river.
 - Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being washed into the nearby water receivers.
 - Construction works close to the inland waters should be carried out in dry season as far as practicable where the flow in the surface channel or stream is low.
 - Removal of existing vegetation alongside the riverbanks should be avoided or minimised. When disturbance to vegetation is unavoidable, all disturbed areas should be hydroseeded or planted with suitable vegetation to blend in with the natural environment upon completion of works.
- 5.6.3 Site practices outlined in ProPECC PN 1/94 on “Construction Site Drainage should be considered to minimise surface runoff and wastewater produced from construction activities:
- Wastewater produced during construction, including cleaning, should not be discharged into the stormwater drainage system.
 - Silt removal facility, with pH adjustment where necessary, should be considered to remove settleable solids prior to discharge.
 - Channels and manholes should be maintained, with removal of silt and grit deposits performed regularly, especially at the onset of and after rainstorms.
 - EPD licensing of discharge from construction activities into any drainage or sewerage systems, or inland or coastal waters, or into the ground within the Water Control Zone, *except discharge of domestic sewage into foul sewers or discharge of unpolluted water into storm drains or into the waters of Hong Kong*, shall be required, in case there is any discharge of effluent from the construction site under the WPCO.
- 5.6.4 Given that no site formation and infrastructure works would be expected for the proposed development, adverse water quality impact during construction phase is not anticipated.

Mitigation Measures During Operation Phase

- 5.6.5 A surface water drainage system is being provided to collect road runoff. Screening facilities such as standard gully grating and trash grille, with spacing which is capable of screening off large substances such as fallen leaves and rubbish is being provided at the inlet of drainage system.
- 5.6.6 Road gullies with standard design of silt traps and oil interceptors to remove silt and grit before entering the public storm water drainage system is being provided.
- 5.6.7 The silt traps and oil interceptors should be regularly cleaned and maintained in good working condition.



- 5.6.8 Sewage generated during operation phase shall be connected and conveyed to nearby existing sewerage system the nearby Lok Ma Chau Control Point Sewage Treatment Plant for treatment.
 - 5.6.9 With the implementation of the above-mentioned mitigation measures, adverse water quality impact during the operation phase is not anticipated.
-

5.7 CONCLUSION

- 5.7.1 The key water quality impacts during construction is not anticipated as no site formation and infrastructure works would be expected for the proposed development.
- 5.7.2 As a sewerage system has already been in place and sewage produced during construction phase and operation phase shall be conveyed to nearby existing public sewerage system, no adverse water quality impacts is anticipated.

6 WASTE MANAGEMENT

6.1 INTRODUCTION

6.1.1 This section presents the review and findings of waste management implications associated with the construction and operation of the proposed development.

6.2 LEGISLATION, STANDARDS AND GUIDELINES

6.2.1 The following legislation, circulars and guidelines are applicable to waste management and disposal in Hong Kong:

- Waste Disposal Ordinance (Cap. 354);
 - Public Health and Municipal Services Ordinance (Cap. 132);
 - Environmental, Transport and Works Bureau Technical Circular (Works) No. 19/2005 – Environmental Management on Construction Sites;
 - Development Bureau Technical Circular (Works) No. 8/2010 – Enhanced Specification for Site Cleanliness and Tidiness; and
 - Development Bureau Technical Circular (Works) No. 2/2011 – Encouraging the Use of Recycled and other Green Materials in Public Works Projects.
-

6.3 ASSESSMENT APPROACH AND METHODOLOGY

6.3.1 The assessment on waste management implications is based on the following:

- (i) Estimation of types and quantities of the wastes generated;
 - (ii) Identification of disposal options for each type of waste;
 - (iii) Assessment of potential environmental impacts from the handling (including stockpiling, labelling, packaging and storage), collection, transportation and disposal of the identified wastes; and
 - (iv) Evaluation of the opportunity for reducing waste generation, maximizing reuse and recycling and minimising waste disposal.
-

6.4 IDENTIFICATION OF POTENTIAL SOURCES AND TYPES OF WASTES

Construction Phase

6.4.1 The Site has been formed and existing modular MiC units have been placed at the Project Site since 2022 for the purpose of a community isolation facility. Occupancy for the training centre is expected in October 2023.

6.4.2 Since the site formation has already been completed and existing modular units will be utilized for the proposed development, no site formation and infrastructure works, and/or demolition works would be expected for the proposed development. Limited amount of general refuse from local workforce (at most 10 workers) is anticipated for the maintenance of the MiC units for the proposed development.

6.4.3 The estimated quantity of wastes anticipated during construction phase is summarised in **Table 6-1** below.

Table 6.1 Summary of Wastes Anticipated during Construction Phase and Disposal Outlets

Work Activities	Waste Type	Amount in m ³ unless otherwise stated	Management Options		Total Amount Disposed in m ³ unless otherwise stated
			Recommended Outlets	Amount Reused / Recycled (m ³)	
Maintenance of MiC units	General refuse from local workforce	5.9 kg/day ^[i]	Recycle as far as practicable prior to disposal to landfill		5.9 kg/day

Notes:

[i] Based on the commercial and industrial waste generation rate of 0.59 kg/person/day and local work force of 10 during construction phase; Monitoring of Solid Waste in Hong Kong – Waste Statistics for 2021, EPD.

6.4.4 The general refuse generated from local workforce should be stored in enclosed bins separated from other waste types. Recycling bins should also be placed to encourage recycling. Preferably enclosed and covered areas should be provided for general refuse collection and routine cleaning for these areas should also be implemented to keep areas clean before disposed to landfill via waste transfer facilities.

6.4.5 Mitigation measures are required to ensure the proper handling, storage, transportation and disposal of waste is carried out during construction phase. Other mitigation measures, including good site practices, waste reduction measures, for all categories of waste have been recommended as below:

Good Site Practices

6.4.6 Appropriate waste handling, transportation and disposal methods the different types of wastes generated from construction activities should be implemented to ensure these waste streams do not enter the nearby water sensitive receivers.

6.4.7 Adverse impacts related to waste management such as dust, odour, noise and wastewater discharge will not be expected to arise, provided that good site practices will be strictly followed. Recommendations for good site practices during the construction activities include:

- Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site;
- Training of site personnel in proper waste management handling procedures;
- Provision of sufficient waste disposal points and regular collection of waste;
- Appropriate measures to minimise windblown litter and dust / odour during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; and
- Provision of wheel washing facilities before the trucks leaving the works area so as to minimise dust introduction to public roads.

Waste Reduction Measures

6.4.8 Good management and control can prevent the generation of a significant amount of waste. Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include:

- Sorting wastes to recover any recyclable portions such as metals, plastics and paper;

- Segregation and storage of different types of waste in different containers or skips to enhance reuse or recycling of materials and their proper disposal;
- Encourage collection of recyclable waste such as waste paper and aluminum cans by providing separate labelled bins to enable such waste to be segregated from other general refuse generated by the work force; and
- Proper site practices to minimise the potential for damage or contamination waste material.

6.4.9 In addition to the above measures, specific mitigation measures are recommended below for the identified waste arising to minimise environmental impacts during handling, transportation and disposal of these wastes.

Storage, Collection and Transportation of Waste

6.4.10 Storage of general refuse onsite may induce adverse environmental implications if not properly managed. The following recommendation should be implemented to minimise the impacts:

- All waste should be handled and stored properly to prevent leakage or overflow. An enclosed and covered area is preferred to reduce the occurrence of wind-blown light material; and
- Designation of waste collection points to enhance recycling.

6.4.11 The collection and transportation of waste from works area to respective disposal sites may also induce adverse environmental impacts if not properly managed. The following recommendation should be implemented to minimise the impacts:

- Remove waste in a timely manner;
- Employ trucks with cover or enclosed containers for waste transportation;
- Obtain relevant waste disposal permits from the appropriate regulatory authorities; and
- Disposal of waste should be done at licensed waste disposal facilities.

General Refuse

6.4.12 The number of workforce to be employed for the Project is expected to be no more than 10 workers. Based on the industrial waste generation rate of about 0.59 kg/person/day¹, the total refuse generated per day would be 5.9 kg/day.

6.4.13 Such refuse will be properly managed so that intentional or accidental release to the surrounding environment will be avoided. Disposal of refuse at sites other than approved waste transfer or disposal facilities will be prohibited. Effective collection of site wastes will be required to prevent waste materials being blown around by wind, flushed or leached into the marine environment, or creating an odour nuisance or pest/ vermin problem. Waste storage areas will be well maintained and cleaned regularly.

6.4.14 Provided that the mitigation measures are adopted, the potential environmental impacts caused by the storage, handling, transportation and disposal of general refuse are expected to be minimal. It is recommended that general refuse should be collected on a daily basis for disposal.

Operation Phase

6.4.15 Most of the wastes generated during operation phase would be general refuse generated from the students and staff at the training centre. The quantity of general refuse is expected to be reasonable with implementation of appropriate control measures identified below.

¹ Plate 2.7 Per capita disposal rates of MSW, domestic waste and commercial & industrial waste from 2011 to 2021. Monitoring of Solid Waste in Hong Kong – Waste Statistics for 2021; Environmental Protection Department, The Government of the Hong Kong Special Administrative Region.

6.4.16 With reference to the data from *Monitoring of Solid Waste in Hong Kong – Waste Statistics for 2021*² by EPD, which contains the latest information available, the commercial and industrial waste generation was 0.59 kg/person/day. The estimated waste arising from the students and staff is summarised in **Table 6-2**, showing about 0.059 tpd of domestic refuse would be generated during the full operation phase.

Table 6.2 Waste Types and Sources in the Operation Phase of the Project

Site	Planned Occupancy during Full Operation	EPD's Domestic Refuse Generation Rate	Estimated Domestic Refuse Arising	Example of Wastes Found in Domestic Refuse
Students and staff	Around 100	0.59kg/person/day	0.059 tpd ^[i] (equivalent to 21.5 tpa ^[ii])	<ul style="list-style-type: none"> • Mixed refuse • Recyclable waste
Notes: [i] tpd denotes tonnes per day. [ii] tpa denotes tonnes per annum, assuming 365 days per annum.				

Waste Recycling

6.4.17 This estimate assumed no waste reduction measure to reduce the demand for valuable landfill space. Based on information from EPD, the major components of domestic refuse in Hong Kong included glass, metals, paper, plastics and putrescible. Most of these materials are recyclable which could significantly reduce the amount of the general refuse for final disposal.

6.4.18 To facilitate effectual waste recycling, future management of the proposed development is recommended to implement a waste recycling programme, such as a 4-bin recycling system for paper, metal, glass and plastic, alongside with a general refuse bin, and collection of food wastes. They should be placed in prominent places with clear indications to promote waste separation at source.

6.4.19 Recyclable materials should be segregated into different containers to avoid potential odour nuisance to people and the surrounding environment during transport of waste. Enclosed waste containers should be used, the collection route and time should be properly planned.

Waste Collection and Disposal

6.4.20 An effective and efficient waste handling system is essential in order to minimise potential environmental impacts for the general refuse storage, collection and transport, as such impacts may include odour if waste is not collected frequently; water quality if waste enter storm water drains; aesthetics and vermin problems if the waste storage area is not well maintained and cleaned regularly. The waste handling system may also facilitate materials recovery and recycling.

6.4.21 The wastes should be collected at least once a day and must be disposed at approved waste transfer or disposal facilities by a reputable waste collector. With the proper implementation of the recommended mitigation measures, adverse impacts from waste management during operation phase are not anticipated.

6.4.22 As mentioned in this section, wastes arised during construction and operation phase will be transported or disposed of at the designated landfill(s). **Table 6-3** summarised the information on waste facilities serving the Project.

Table 6.3 Information of Waste Facility Serving the Project

Waste Facility	Location
Strategic Landfill	
North East New Territories (NENT) Landfill	Ta Kwu Ling, New Territories

6.5 CONCLUSION

- 6.5.1 Small amount of general refuse is expected to generate during the construction phase from local workforce but with the implementation of recommended mitigation measures which include appropriate waste control and management, good site practices and waste reduction measures, no adverse environmental impact is anticipated from the handling (including stockpiling, labelling, packaging and storage), collection, transportation and disposal of general refuse.
- 6.5.2 During the operation phase, no significant waste implication is expected from the students and staff. The quantity of general refuse arising from the operation phase can be minimised by implementing an effectual waste handling system, a waste reduction programme, and by hiring a reputable waste collector to collect the wastes on a daily basis.
- 6.5.3 Recyclable materials should be segregated into different containers to avoid potential odour nuisance to the public and surrounding environment during transport of waste. Enclosed waste containers should be used, the collection route and time should be properly planned.
- 6.5.4 Provided that the wastes are managed by implementing all the recommended mitigation measures, no significant environmental impact is anticipated during the construction and operation phases of the proposed development.

7 LAND CONTAMINATION

7.1 INTRODUCTION

- 7.1.1 This section presents the review and findings of contaminated land management associated with proposed development.
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7.2 LEGISLATION, STANDARDS AND GUIDELINES

- 7.2.1 The following legislation, standards and guidelines are relevant to the assessment of land contamination:
- Guidance Note for Contaminated Land Assessment and Remediation (EPD, Revised April 2023)
 - Guidance Manual for Use of Risk-Based Remediation Goals for Contaminated Land Management (EPD, Revised April 2023); and
 - Practice Guide for Investigation and Remediation of Contaminated Land (EPD, Revised April 2023).
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7.3 APPROACH AND METHODOLOGY

- 7.3.1 The guidelines for evaluating and assessing potential land contamination issue stated in EPD's Guidance Note for Contaminated Land Assessment and Remediation, Guidance Manual for Use of Risk-Based Remediation Goals for Contaminated Land Management and Practice Guide for Investigation and Remediation of Contaminated Land were followed.
- 7.3.2 The assessment area for contaminated land assessment shall cover the entire area of the Project Site. Desktop review, site reconnaissance and a review of historical and current land uses will provide information and guidance to characterise and identify if potential contamination exists or may be present during the construction and operation of the Project. Under the Guidance Note, a land contamination assessment shall include at minimum the following:
- a) Provide a clear and detailed account of present land use and relevant past land use activities that may lead to potential land contamination;
 - b) Visual site inspection to identify areas of potential contamination and associated impacts, risks or hazards to human health and the environment; and
 - c) Conclude and provide recommendation if further works regarding land contamination issues are required for the Project.
-

7.4 PROJECT DESCRIPTION

- 7.4.1 The Site is surrounded predominantly by a residential area (village-type houses) to the south and west, open areas with denser vegetation to the north and road network to the east. A location plan of the Site is illustrated in **Figure 2.1**.
- 7.4.2 Previous land use was the San Tin Community Isolation Facility (CIF) and it has been placed in standby mode. The proposed development will fully utilise existing MiC structures, and no site formation or infrastructure works would be expected for the proposed development.

7.5 REVIEW OF SITE HISTORY

7.5.1 The development history of the Site was reviewed with the aid of aerial photographs and historical land uses to identify known or potential environmental concerns. Historical aerial photographs are included in **Appendix 7.1** and summarised in **Table 7-1**.

Table 7.1 Historical Land Use Summary

Year	Height (Feet)	Photo Reference Number	Site Description
1945	20,000	681_4-3076	Project Site is located on vegetated agricultural land.
1956	16,700	F22-561-0129	No changes to land use between 1945 to 1955.
1964	12,500	1964-2807RM	No changes to land use between 1956 to 1963. In 1964, Project Site and the surroundings were excavated and filled with water, where some were converted into fishponds.
1974	12,500	10011RM	No changes to land use between 1964 to 1973. In 1974, Project Site and the surroundings were excavated and filled with water, where some were converted into fishponds. A road was seen cutting through the Project Site from east to west.
1984	4,000	55858	No changes to land use between 1975 to 1983. In 1984, some fishponds within the Project Site were observed.
1989	4,000	A18206	Backfilling of fishponds observed within the Project Site. Construction of San Tin Highway and San Sham Road were in progress.
1992	2,000	CN02860	Backfilling of fishpond commenced in 1989 and completed in 1992. Some temporary containers (seacan) were observed at the Site. Construction of San Tin Highway and San Sham Road were completed.
2001	4,000	CN30028	No changes to Project Site except paving within the Project Site started in the eastern corner. San Tin Tsuen Road was constructed to the north of Project Site.
2008	6,000	CS18195	Paving within the Project Site was completed between 2003 and 2008. Temporary site office with a roof observed (in yellow) within north of the Project Site.
2013	2,300	CW102213	Another site office with roof (in green) was established within Project Site.
2016	2,500	E005049C	Previous temporary structures at The Boxes were completely removed.
2018	6,900	E040602C	The Boxes (shopping mall) in portable units was established at Project Site.
2022	6,900	E153622C	According to historical sources, The Boxes was closed in 2019. In 2022, Portable units at The Boxes were removed and seen replaced by the San Tin Community Isolation Facility (also in portable units) and it resembles to present day.

- 7.5.2 Based on the first aerial photograph in 1945, the Site was located in vegetated agricultural land. No land use changes were observed from 1946 to 1973. In 1974, the Site was excavated and a road was seen cutting through from east to west. Fishponds within the Project Site were observed in 1984 but then backfilled in 1989.
- 7.5.3 From 1992, temporary containers in the open area were seen and more buildings with roof were observed within the Project Site in 2008, and until in 2016, all temporary structures were removed from the Project Site and the whole Project Site was re-paved. The observations from review of aerial photographs indicated that there were no potential sources or signs of contamination such as chemicals, oils and hazardous waste handling and storage locations at the Project Site.
- 7.5.4 The complete structures of The Boxes (shopping mall) was seen in 2018 and according to historical resource, The Boxes ceased its operation in 2019. In 2022, the Project Site is completely replaced by the portable / modular units (MiC units) and is known as the San Tin Community Isolation Facility (CIF).
- 7.5.5 In retrospect, there is no land use change from 1989 where fishponds within the Project Site were backfilled. The Project Site has been an open area since 1992 and the review of aerial photographs did not identify any potentially contaminating land uses within Project Site and/or activities in the surrounding area of the Site. Potential contamination from surrounding land uses is not anticipated.

7.6 SITE INSPECTION

- 7.6.1 Current land use at the Project Site is the San Tin Community Isolation Facility (CIF). The facility completed its construction in March 2022. Surrounding land uses include road network, open storages and vegetated land. The CIF has been put into standby mode.
- 7.6.2 WSP Land Contamination Specialist (Specialist) conducted a site visit to ascertain the latest site condition in order to identify whether contamination exists at the Site. Site inspection photos are illustrated in **Appendix 7.2**. Upon site inspection, it is a gated facility and fenced perimeter (**Photos 1, 4 and 9**).
- 7.6.3 The ground condition of the facility is concrete-paved, elevated and stain-free are observed (**Photos 2 to 3**). Modular units and stormwater drainages are observed (**Photo 5 to 7**) at the facility. DSD drainage pipes are also observed (**Photo 8**) within Project Site. It is not anticipated that the proposed development during construction and operation stages will lead to any potential contamination of soil and/or groundwater.
- 7.6.4 A structure is identified as the existing transformer room (according to the Site Plan) within the Site boundary during site visit (**Photo 10 to 12**). The structure is inaccessible and locked away from public access. Existing water tanks are also observed adjacent to the transformer room. The ground condition at the transformer room is concrete-paved and well-maintained, no cracks or oil stains are observed. In addition, there is an absence of aboveground storage tanks (ASTs), underground storage tanks (USTs) and/or any DG storerooms, which would cause pollution activities leading to potential contamination to the Site. Potential contamination from transformer-use activities is not anticipated provided that the transformer is to be retained and no development is to be carried out at the transformer room structure.
- 7.6.5 Land use outside Project Site are residential area (village-type houses), road network and open space consists of densed vegetation and trees (**Photos 13 to 16**). There is an absence of industrial and/or pollution activities leading to potential contamination the Site. Potential contamination from surrounding land uses is not anticipated.



- 7.6.6 However, if there are any other areas that are to be acquired as part of the works sites for this Project, site re-appraisal is required to be carried out at these areas to determine the extent and potential land contamination.

7.7 EVALUATION OF LAND CONTAMINATION ISSUES

- 7.7.1 Based on review of historical aerial photos of the Application Site by WSP's Land Contamination Specialist, land contamination of the Application Site is not anticipated. It is understood that the existing transformer room is to be retained *in-situ* and no development is to be carried out around the transformer room structure, potential contamination from transformer-use activities is therefore not anticipated.
- 7.7.2 Surrounding land uses with potentially contaminating activities leading to potential contamination of soil and/or groundwater are not observed from current operations during site inspection, and a review of historical aerial photographs. Potential contamination from surrounding land uses is not anticipated.
- 7.7.3 However, any potential change of land uses may result in potential land contamination and re-appraisal of these areas are also required when they become part of the land requirement to determine the extent and potential land contamination.

7.8 CONCLUSION

- 7.8.1 WSP's Land Contamination Specialist conducted a site inspection to ascertain the latest site condition. The surface is concrete-paved, stain-free and appeared well-maintained; drains are labelled clearly and observed within the Site. Based on review of historical aerial photos of the Application Site by WSP's Land Contamination Specialist, land contamination of the Application Site is not anticipated.
- 7.8.2 One structure identified as the transformer room is observed and it is to be retained *in-situ* and no development is to be carried out around the transformer room structure, potential contamination from transformer-use activities is therefore not anticipated.
- 7.8.3 No presence of industrial-related activities or building structures, underground storage tanks (USTs), chemical drums or oil stains, unnatural colours / odours and abandoned piping / mechanical components are observed at the Site during site inspection. Potential land contamination at the Site is not anticipated.
- 7.8.4 Surrounding land uses include existing road network, residential area and open space with denser vegetation and trees; potentially contaminating activities and industrial land uses leading to potential contamination of soil and/or groundwater are not observed from current operations during site inspection and review of historical aerial photographs. Potential contamination from surrounding land uses is not anticipated.

8 ECOLOGY

8.1 INTRODUCTION

- 8.1.1 This section reviews the ecological baseline based on the existing literature, and provides the ecological impact assessment on the proposed development.
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8.2 REVIEW OF ENVIRONMENTAL LEGISLATIONS

- 8.2.1 The HKSAR ordinances and regulations relevant to the Ecological Assessment for the proposed development include:
- Forests and Countryside Ordinance (Cap. 96) and its subsidiary legislation, the Forestry Regulations (Cap. 96A);
 - Town Planning Ordinance (Cap. 131);
 - Wild Animals Protection Ordinance (WAPO, Cap. 170);
 - Protection of Endangered Species of Animals and Plants Ordinance (Cap. 586); and
 - Environmental Impact Assessment Ordinance ("the EIAO", Cap. 499) and the associated Technical Memorandum (TM-EIAO).
- 8.2.2 The Ecological Assessment also made reference to the following guidelines and standards as well as international conventions, including but not limited to Hong Kong Planning Standards and Guidelines (HKPSG) Chapter 10, "Conservation"; Ecological Baseline Survey For Ecological Assessment (EIAO Guidance Note No. 7/2010); Methodologies for Terrestrial and Freshwater Ecological Baseline Surveys (EIAO Guidance Note No. 10/2010). The species identified as having conservation importance are further categorized in accordance with their relevancy with the identified impacts, and the potential impacts in them were assessed in accordance with the TM-EIAO criteria.
-

8.3 APPLICATION SITE AND STUDY AREA

- 8.3.1 The Application Site is located adjacent to San Sham Road leading to the Lok Ma Chau Boundary Crossing. The Study Area for ecological assessment covered the Application Site and area within 500m from the Application Site boundary (**Figure 8.1**).
-

8.4 REVIEW OF EXISTING INFORMATION

- 8.4.1 A literature review was conducted to characterize the existing conditions within the Application Site and the Study Area, and to identify habitats and species of potential importance in the area. Reviewed information included, but not be limited to, the following:
- Outline Zoning Plan;
 - Historical and latest government aerial photos;
 - Hong Kong Biodiversity Information Hub;
 - Rare and Precious Plant of Hong Kong (AFCD 2003);
 - Hong Kong Biodiversity – Newsletter of AFCD;



- Memoirs of Hong Kong Natural History Society;
- Porcupine! – Newsletter of Department of Ecology and Biodiversity, University of Hong Kong;
- Ecological Impact Assessment Report for the Planning Application No. A/YL-ST/477

8.5 RESULTS OF LITERATURE REVIEW

STATUTORY ZONING PLAN

- 8.5.1 The Study Area (including the Application Site) and the surrounding habitats are covered by the Approved San Tin Outline Zoning Plan No. S/YL-ST/8, and the Application Site is within OU(Service Stations)' ("OU(SS)") zone.
- 8.5.2 According to the Explanatory Statement of the OZP, the OU(SS) zone is intended primarily for providing support service facilities such as eating places, petrol filling stations, etc. for the cross-boundary traffic and the container related facilities nearby.

RECOGNISED SITES OF CONSERVATION IMPORTANCE

- 8.5.3 The recognised sites of conservation importance within the Study Area or are likely to be impacted include the following:
- Wetland Conservation Area;
 - Wetland Buffer Area;
 - Priority Site for Enhanced Conservation: Deep Bay Wetland outside Ramsar Site;
 - Conservation Area;
 - Mai Po Lung Egrettry;
 - Mai Po Village Egrettry (Mai Po Village Site of Special Scientific Interest).
- 8.5.4 The recognised sites of conservation importance in close proximity to the Application Site or within the Study Area are indicated in **Figure 8.1**. Other recognised sites of conservation importance in Northwest New Territories include the Ramsar Site, which are all located away and outside the Study Area.

ECOLOGICAL BASELINE

- 8.5.5 The Application Site of the Planning Application No. A/YL-ST/477 was the same as the present Application Site boundary. As the habitats within the Study Area remain similar over the years, the ecological baseline for that Planning Application is adopted for the present ecological assessment. The survey period and the taxa groups of the ecological surveys for A/YL-ST/477 are summarized in **Table 8-1**. Habitats within the Study Area including the Application Site were updated based on aerial photos and ground truthing in July 2023.

Table 8-1 The Survey Period of the Ecological Surveys of the Planning Application A/YL-ST/477

Year	2013		2014									
Month	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Habitat and Vegetation		√										√

Bird	√	√	√	√	√	√	√	√	√	√	√	√
Mammal	√		√				√			√		
Herpetofauna	√	√			√	√	√			√	√	
Night Survey	√					√	√	√		√		
Butterfly & Dragonfly	√			√	√	√	√			√	√	√
Stream and Freshwater Fauna		√								√		

Note: Update surveys were also performed in December 2015 to January 2016 to update the site conditions and ecological baseline

HABITATS AND VEGETATION

- 8.5.6 The Study Area covers 11 types of habitats identified in the literature review (Planning Application No. A/YL-ST/477 as well as from aerial photos and ground truthing conducted in July 2023), namely agricultural land, developed area, flood storage pond, grassland, mitigation wetland, plantation, pond, shrubland, watercourse, wasteland, and woodland (**Figure 8.2**). As the Application Site has already been occupied as cabin hospital, all habitats within the Application Site are identified as developed area as shown in **Figure 8.2**.
- 8.5.7 A total of 199 plant species were identified within the Study Area. No flora species of conservation importance was recorded within the Application Site and the Study Area. The overall floral diversity was low.

TERRESTRIAL FAUNA

- 8.5.8 The faunal species of conservation importance identified in the Study Area in the EcolA Report for A/YL-ST/477 are summarized and evaluated in **Appendix 8.1**.

MAMMAL

- 8.5.9 It was reported that 6 mammal species were recorded within the Study Area in the EcolA report for A/YL-ST/477. Species of conservation importance include Japanese Pipistrelle, and Pomona Leaf-nosed Bat, but none of them was found within the Application Site.

AVIFAUNA

- 8.5.10 It was reported that a total of 90 bird species were recorded within the Study Area of EcolA report for A/YL-ST/477, including 27 species of conservation importance. Among these, 17 avifauna species were recorded within the Application Site, of which 6 species are of conservation importance. Most of the recorded species within the Application Site are common and widespread in Hong Kong. The 6 species of conservation importance recorded within the Application Site were all waterbirds, but the Application Site now is all paved area without wetland habitats, which is not a typical habitat for wildlife including waterbirds.

HERPERTOFAUNA

- 8.5.11 It was reported that 8 species of reptiles were recorded within the Study Area from the EcolA report for A/YL-ST/477, including 1 species of conservation importance i.e., Common Rat Snake in the EcolA report for A/YL-ST/477, which was recorded outside the Application Site near On Lung Tsuen. Seven species of amphibians were recorded within the Study Area. None of the recorded species is of conservation importance.

ODONATA

8.5.12 Twenty-four species of dragonfly were recorded within the Study Area according to the EcolA report for A/YL-ST/477. Only one individual of species of conservation importance i.e., Scarlet Basker was recorded in the San Tin Eastern Channel which is outside the Application Site.

BUTTERFLIES

8.5.13 Forty-seven species of butterfly were recorded within the Study Area according to the EcolA report for A/YL-ST/477. The recorded species are mostly common in Hong Kong. Only 1 individual of species of conservation importance i.e., Grass Demon was recorded in agricultural land in Chau Tau (outside Application Site).

AQUATIC FAUNA

8.5.14 It is reported that a total of 3 species were recorded within the Study Area of the EcolA report for A/YL-ST/477. None of them were of conservation importance.

8.6 EVALUATION OF HABITATS

8.6.1 The habitats within the Study Area and the Application Site are evaluated in **Table 8-2** and **Table 8-3**, respectively.



Table 8-2 Evaluation of Overall Ecological Value of Habitats within the Study Area

Habitat	Cultivated Land	Drainage channels	Degraded watercourses	Fishpond	Flood Storage Pond	Grassland/Shrubland
Overall ecological value	Low	Low to moderate	Very low	Moderate	Low	Low
Habitat	Mitigation Wetland	Plantation	Woodland	Urbanised/Disturbed Area	Wasteland	
Overall ecological value	Moderate	Low	Low to moderate	Very low to low	Low	

Table 8-3 Evaluation of Habitats within the Application Site based on Current Application

Criterion	Developed Area
Naturalness	Predominately man-made, composed of cabin hospital
Size	3.85 ha
Diversity	Very low floral and faunal diversity
Rarity	Fauna species of conservation importance included Great Cormorant, Common Teal, Great Egret, Grey Heron, Little Egret and Chinese Pond Heron. These species merely flew over the Application Site without landing (from Planning Application A/YL-ST/477)
Re-creatability	Easy to recreate
Fragmentation	N/A
Ecological Linkage	Not functionally linked to habitats of conservation importance
Potential value	Low
Nursery/breeding ground	No significant observations. Developed area is limited as breeding habitat of wildlife due to high disturbance level, low habitat complexity and vegetation cover.
Age	N/A
Abundance/richness of wildlife	Very low abundance of wildlife.
Overall ecological value	Very low

8.7 IMPACT IDENTIFICATION AND EVALUATION

- 8.7.1 The potential impacts associated with the proposed development include the following but not limited to
- Disturbance impacts to surrounding habitats and fauna;
 - Disturbance impacts to surrounding fauna, habitats and recognized sites of conservation importance during operation;
 - Potential disturbance to flight paths of ardeids and other large-sized birds;
 - Potential collision of birds; and
 - Night-time light impacts.
- 8.7.2 The significance of ecological impacts has been evaluated based primarily on the criteria set out in Table 1 of Annex 8 of the Technical Memorandum for EIAO:
- Habitat quality;
 - Species affected;
 - Size/abundance of habitats/species affected;
 - Duration of impacts;
 - Reversibility of impacts; and
 - Magnitude of environmental changes.

8.8 CONSTRUCTION PHASE IMPACTS

Direct Impact – Permanent Habitat Loss

- 8.8.1 The proposed development only utilises the developed area of **very low** ecological value and it does not encroach the wetland habitats in the vicinity of the Application Site. The potential impact of permanent loss of the developed area is considered **insignificant**.

Direct Impact – Temporary Habitat Loss

- 8.8.2 There will be neither off-site works area nor temporary access for the construction works. Hence, no temporary habitat loss is anticipated.

Fragmentation (habitats)

- 8.8.3 The Application Site is currently covered by habitats with **very low** ecological value. Movement of non-volant fauna (i.e., mammal, herpetofauna) through the Application Site is therefore limited under the existing condition. Hence, the potential impact due to habitat fragmentation is ranked as **insignificant**.
- 8.8.4 For birds, in particular waterbirds, due to the lack of sizable wetland habitat within the Application Site suitable for species that normally occur in significant numbers in Inner Deep Bay. Hence, it is considered that indirect impacts (loss of ecological linkage) on the Inner Deep Bay wetland ecosystem as a result of this development would be **negligible**.

Fragmentation (flight-lines)

- 8.8.1 As the existing cabin hospital is only one-storey high, and the proposed development will make use of existing cabins, potential impacts to the flight-line of breeding ardeids are not expected.



The proposed development within the Application Site is also not an obstacle to the flight-line of wintering birds. The potential fragmentation impacts to breeding ardeids at Mai po Lung Egretty and Mai Po Village Egretty, from the proposed development are considered **insignificant**.

Indirect Impacts – Construction Noise

8.8.2 The construction activities, including removal/rearrangement of existing MiC units, have the potential to produce noise and cause disturbance to wildlife. As the construction activities do not involve any noisy construction work (site formation or infrastructure works), the indirect impacts from construction phase are considered to be **insignificant**.

Indirect Impacts – Dust

8.8.3 Dust will increase during construction phase, and might temporarily reduce the abundance and distribution of fauna in habitats adjacent to the works area. Impacts from dust deposition of these types will, however, be temporary and reversible. Dust deposition impacts arising from the Project, therefore, are considered **insignificant**.

Indirect Impacts – Light glare

8.8.4 As there will be no additional lighting installations during construction phase, the potential impacts of lighting on ecology will be remained as the existing conditions. Besides, there are already existing street lights and constant traffic that are at and near the Application Site, potential light glare impacts to surrounding wildlife are considered **insignificant**.

Indirect Impacts – Water Quality and Site Run-off

8.8.5 During the construction phase, sediments from construction activities may also enter water bodies during heavy rain, leading to high turbidity, reduced light penetration, eutrophication, and oxygen depletion, which could adversely affect aquatic macrophytes and animals that prey on them. Potential impacts is considered **insignificant** due to the nature of works can be minimized and controlled through implementation of good site practices.

Impacts on Recognized Sites and Species of Conservation Importance

8.8.6 The Application Site is located within WBA, and other sites of conservation importance are either further away or separated by other land use and hence will not be affected much. Species of conservation importance identified in the proximity of the Study Area are either recorded away from the Application Site or very mobile species (e.g. bird and bat). Due to the absence of noisy construction works during the construction phase, the indirect impact on the surrounding recognized site and species of conservation importance is considered minor.

8.9 OPERATION PHASE IMPACTS

Direct Impact – Habitat Loss

8.9.1 No additional habitat loss will occur during operation phase; as the proposed development only utilises the developed area of **very low** ecological value and it does not encroach the wetland habitats in the vicinity of the Application Site. The potential impact of permanent loss of the developed area is considered **insignificant**.

Direct Impact – Fragmentation to Wetland Habitats

8.9.2 The Application Site is entirely a developed area and is already placed with MiC units, both are with very limited use by wetland-dependent fauna. The potential indirect impacts of habitat fragmentation during operational phase will be **insignificant**.

Direct impact – Fragmentation to Flight-line of Waterbirds

8.9.3 As discussed in the construction phase impact, no breeding ardeids were observed passing through the Application Site. Hence, the potential fragmentation impacts to breeding ardeids from Mai Po Lung Egretty and Mai Po Village Egretty is not expected, and on other waterbirds from the proposed development are considered **insignificant**.

Indirect Impact – Human Disturbance

8.9.4 During the operation phase, there may be indirect disturbance impacts to wildlife in the surrounding habitats due to an increased in human activity inside the Application Site. However, human activities will mainly be indoors and noise which will be screened by perimeter fencing elements of the Application Site. Hence, it is anticipated that any impacts of increased disturbance to these sites will be **minor**. As a precautionary measure, noise control measures will be implemented by the future operators.

Indirect Impact – Water Quality

8.9.5 The proposed development however is a temporary classroom, group activities areas and storages. Pollutants on road surface would be very limited, and significant bare grounds will be unlikely. The built-in structures of the drain system within the Application Site such as sand trap could also help isolate and collect sediment and pollutants. Point pollution would not be an issue for the proposed development as the sewerage will collect all domestic effluent and organic load. It is anticipated that any impacts of water quality changes will be **insignificant**.

Indirect Impact – Light Glare

8.9.6 There are already existing street lights along Castle Peak Road. The potential of light impact on the wildlife in the vicinity is considered **insignificant**.

Direct Impact – Bird Collision

8.9.7 Considering that the current residential development would not have extensive glass façade, and no major flightlines across or near the Application Site, the potential bird collision impact is considered **insignificant**.

Impact on Recognized Sites and Species of Conservation Importance

8.9.8 The Application Site is located within the WBA. However, the proposed development will not affect the ecological integrity of the wetlands within WBA or cause direct wetland habitat loss in WBA. Small area of very low ecological value within WBA will be permanently lost and hence is considered insignificant. The Study Area is already subjected to various level of human disturbance, and the fauna within the Study Area are considerably habituated to human disturbance. No additional ecological impacts are expected further to the evaluation as for the construction phase.

8.10 IMPACT AVOIDANCE, MINIMISATION & MITIGATION MEASURES

General

8.10.1 According to the principles in the TM-EIAO Annex 16 and EIAO Guidance Note 3/2010, ecological impacts on important habitats and the associated wildlife caused by the proposed Project should be avoided, minimized and mitigated where practicable. The potential impacts arising from the construction and operation of the proposed development have been assessed. Since most of the potential ecological impacts are of minor or insignificant levels, specific ecological mitigation measures are not required for most impacts.



Impact Avoidance

- 8.10.2 The Application Site has avoided habitats of higher ecological values, or other natural habitats. Only man-made/disturbed habitats of very low ecological value will be affected.

Impact Minimisation

- 8.10.3 No piling foundation or noisy construction works is required for the current Application Site. Fencing elements are present along the boundary of the Application Site, which could minimize the noise impact generated during the construction phase. This fence elements would serve as a buffer to shield potential noise, traffic and other human disturbance from the Proposed Development to the surrounding environment during the operational phase.
- 8.10.4 Considering the drainage system which has already been built within the CIF which includes toilets that can be provided to local work force during construction phase, and locations of existing road drainage outfall near waterbodies will be sustained to curtail water quality impacts. However, in order to minimise the contamination of wastewater discharge, accidental of chemical spillage and construction site run-off, the below general good practices shall be adopted:
- The good site practices outlined in ProPECC PN 1/94 “Construction Site Drainage” should be followed to minimize surface runoff;
 - Surface run-off from construction sites should be discharged into storm drains via adequately designed sand / silt removal facilities such as sand traps, silt traps and sedimentation basins;
 - Open stockpiles of construction materials (i.e., aggregates, sand and fill material) on sites should be covered with tarpaulin or similar fabric during rainstorms; and
 - Good construction and site management practices should be observed to ensure that litter, paints, fuel or chemicals do not enter the storm water drains.

Precautionary Measures

- 8.10.5 Although mitigation measures would not be required for the potential light glare impact, it is recommended to maintain the security lighting angle during construction phase and avoid unnecessary external lighting during operational phase to further minimise any potential disturbance.

8.11 RESIDUAL IMPACTS

- 8.11.1 With the above-mentioned mitigation measures, no secondary / induced / additional / synergistic impacts, or residual impacts are anticipated.

8.12 CONCLUSION

- 8.12.1 Within the Application Site, the developed area will be lost directly. However, due to the very low ecological values of the habitat, the potential impacts due to loss of those habitats are considered **insignificant** during construction and operation phase.

9 CONCLUSION

9.1 AIR QUALITY IMPACT

- 9.1.1 No site formation or infrastructure works would be expected for the proposed development. Hence, construction dust impact arising from the construction phase of the proposed development is not anticipated.
 - 9.1.2 During operation phase, separation distances between the nearby road and the proposed development could meet the buffer distance requirement of HKSPG, therefore no adverse impacts arising from the vehicular emission is anticipated. No active and no gaseous emission from these chimneys was identified within the 500m Study Area. In addition, the conditions of the proposed development will remain unchanged as that of the existing Yuen Long San Tin Community Isolation Facility and hence no adverse air quality impact arising from the industrial emission is anticipated.
 - 9.1.3 No adverse air quality impact is therefore anticipated to the proposed development during construction and operation stages.
-

9.2 NOISE IMPACT

- 9.2.1 No site formation and infrastructure works would be expected for the proposed development, and thus, no construction noise impact is anticipated.
 - 9.2.2 For traffic noise impact and fixed noise impact during operation phase, as all noise sensitive uses (i.e., training centre) will be served with air conditioning (A/C) units and openable window/door will not rely on natural ventilation. Therefore, no road traffic noise from the nearby road networks and fixed noise impact to the Project Site is anticipated.
 - 9.2.3 With the implementation of practical mitigation measures including use of movable noise barrier for option 2, the planned fixed noise impacts at all of the nearby existing residential noise sensitive uses would be controlled to acceptable levels. With the recommended mitigation measures in place, fixed noise impacts of the proposed development on all representative NSRs would comply with the relevant criteria.
 - 9.2.4 Based on the above, no adverse noise impact for option 1, 2 and 3 is therefore anticipated to the proposed development during construction and operation stages.
-

9.3 WATER QUALITY IMPACT

- 9.3.1 The key water quality impacts during construction phase associated with the proposed development of the Project include general construction activities, construction site run-off, accidental spillage and sewage effluent, could impact the water bodies.
 - 9.3.2 Considering that a drainage and sewerage system have been constructed along the existing Community Isolation Facility (CIF), with proper implementation of the recommended mitigation measures, no adverse water quality impacts would be anticipated.
-

9.4 WASTE MANAGEMENT IMPACT

- 9.4.1 Small amount of general refuse is expected to generate during the construction phase from local workforce but with the implementation of recommended mitigation measures which



include appropriate waste control and management, good site practices and waste reduction measures, no adverse environmental impact is anticipated from the handling (including stockpiling, labelling, packaging and storage), collection, transportation and disposal of general refuse.

- 9.4.2 During the operation phase, no significant waste implication is expected from the students and staff. The quantity of general refuse arising from the operation phase can be minimised by implementing an effectual waste handling system, a waste reduction programme, and by hiring a reputable waste collector to collect the wastes on a daily basis.
- 9.4.3 Recyclable materials should be segregated into different containers to avoid potential odour nuisance to the public and surrounding environment during transport of waste. Enclosed waste containers should be used, the collection route and time should be properly planned.
- 9.4.4 Provided that the wastes are managed by implementing all the recommended mitigation measures, no significant environmental impact is anticipated during the construction and operation phases of the proposed development.

9.5 LAND CONTAMINATION IMPACT

- 9.5.1 WSP's Land Contamination Specialist conducted a site inspection to ascertain the latest site condition. The surface is concrete-paved, stain-free and appeared well-maintained; drains are also observed within the Site.
- 9.5.2 One structure identified as the transformer room is observed and it is to be retained in-situ and no development is to be carried out around the transformer room structure, potential contamination from transformer-use activities is therefore not anticipated.
- 9.5.3 No presence of industrial-related activities or building structures, underground storage tanks (USTs), chemical drums or oil stains, unnatural colours / odours and abandoned piping / mechanical components are observed at the Site during site inspection. Potential land contamination at the Site from industrial-related activities is not anticipated.
- 9.5.4 Surrounding land uses include existing road network, residential area and open space with denser vegetation and trees; potentially contaminating activities and industrial land uses leading to potential contamination of soil and/or groundwater are not observed from current operations during site inspection and review of historical aerial photographs. Potential contamination from surrounding land uses is not anticipated.

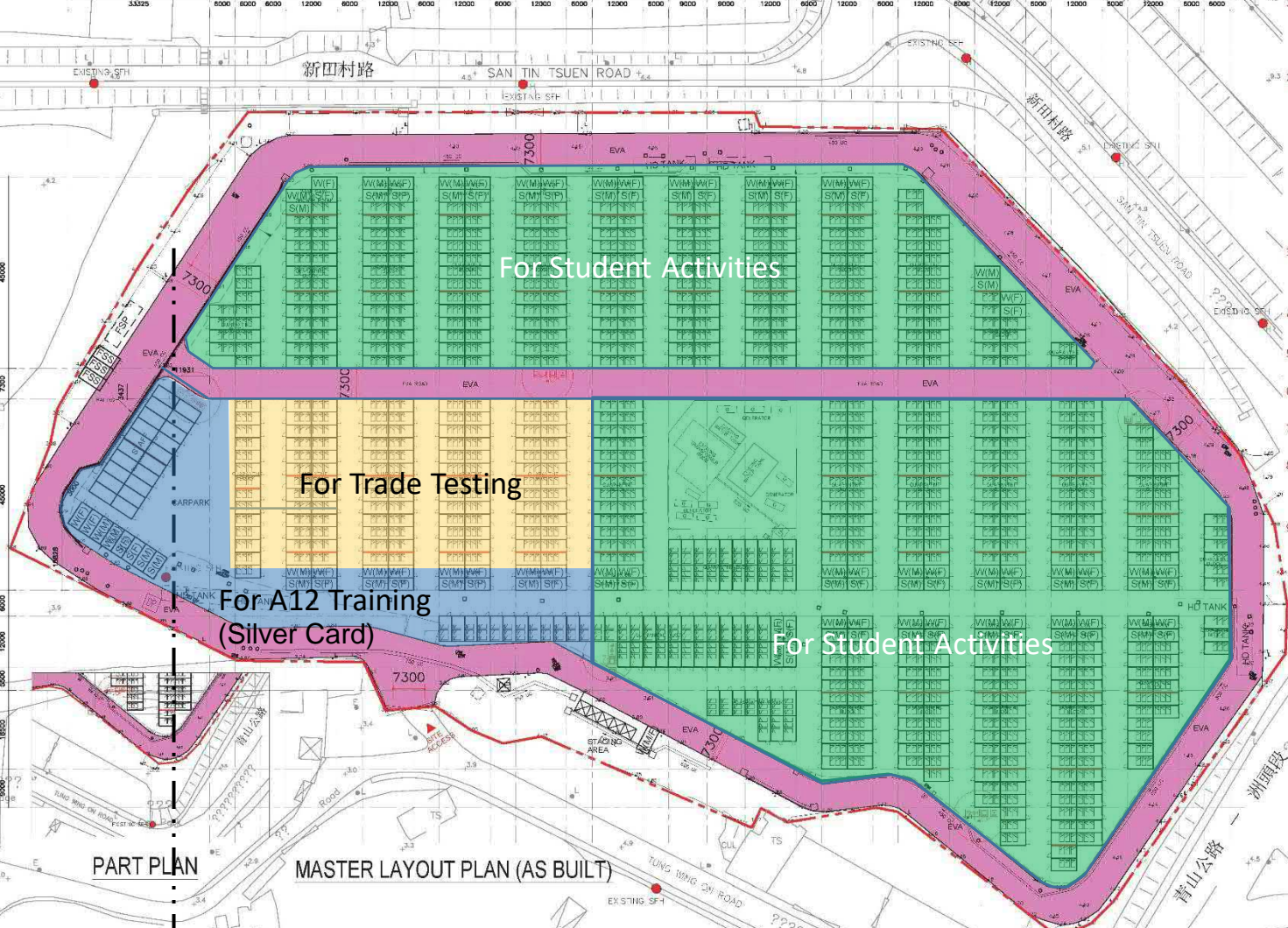
9.6 ECOLOGICAL IMPACT

- 9.6.1 Within the Site, the developed area will be lost directly. Due to the very low ecological values of the habitat, the potential impacts due to loss of those habitats are considered insignificant during the construction and operation phase.



APPENDIX 4.1

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PART PLAN

MASTER LAYOUT PLAN (AS BUILT)



APPENDIX 4.2

General	
Location	161 Wing Ping Tsuen
Date	04-Aug-23
Measurement Start Time	3:00 PM
Measurement End Time	4:00 PM
Equipment	
Noise Meter Model/Identification	Brüel & Kjær Type 2250, S/N: 3010691
Calibrator Model/Identification	Brüel & Kjær Type 4231, S/N: 3016988

Measurement Result

Measurement Points	Measured SPL in L90 (1 Hour), dB(A)	
	Free-Field	With Façade Correction (+3 dB(A))
BN_01	55	58

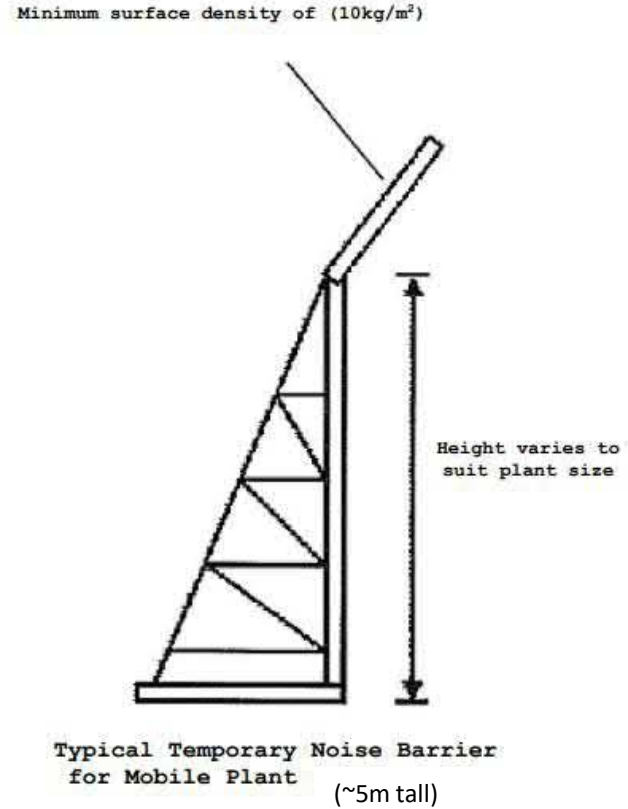
Measurement Location





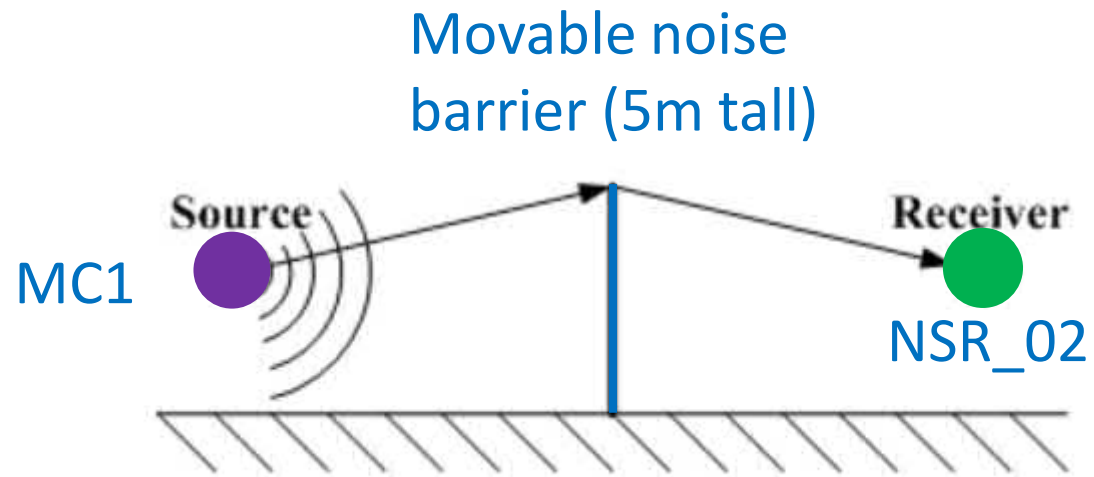
APPENDIX 4.3

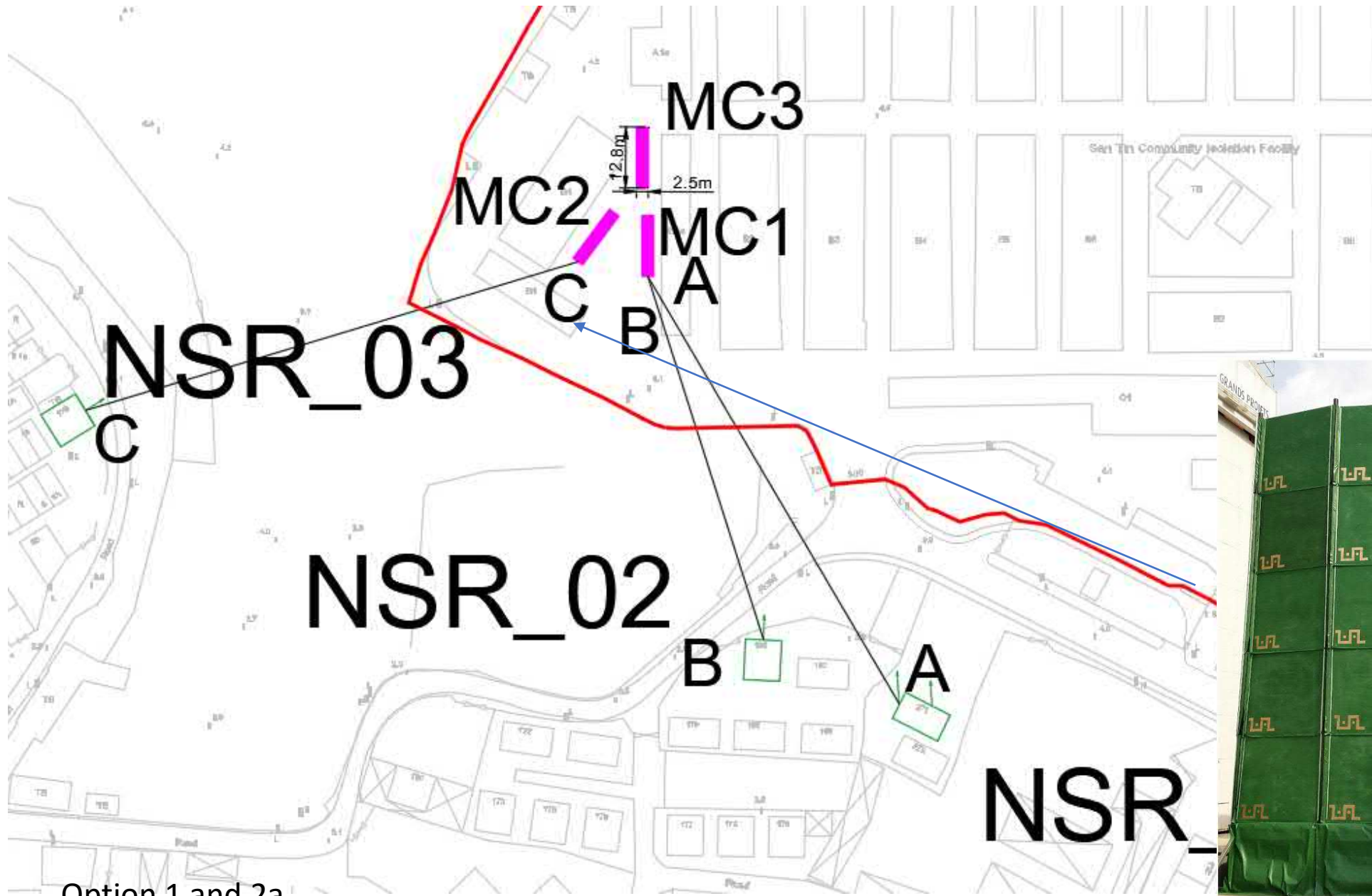
Schematic Configurations of Movable Noise Barriers



Due consideration should be given to the potential noise leakage/reflection, and the noise barrier should be fitted with absorptive material on the side facing the noise sources to minimize the impact.

Alteration of Noise Paths by a Noise Barrier



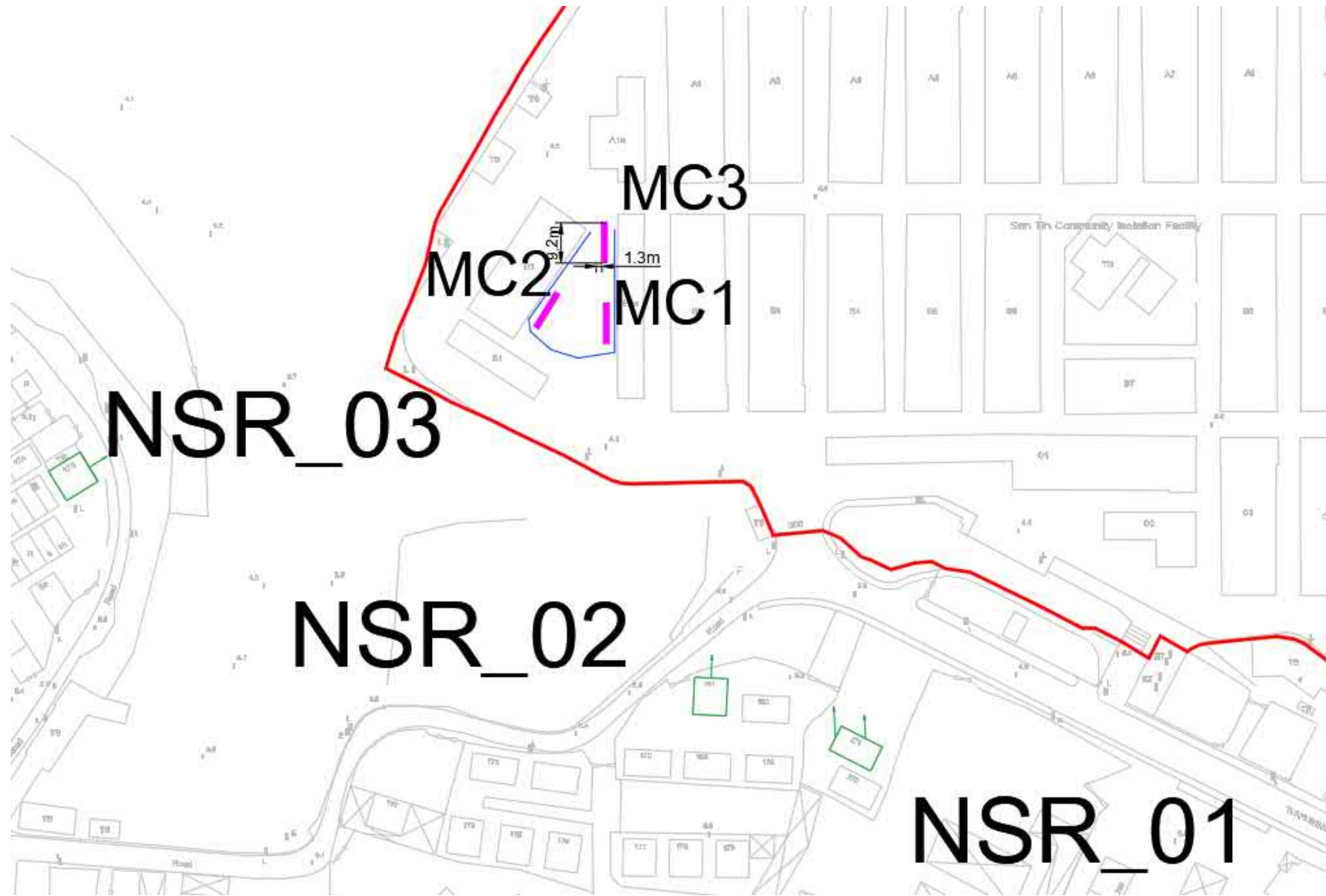


Proposed Movable
noise barrier (5m
height)



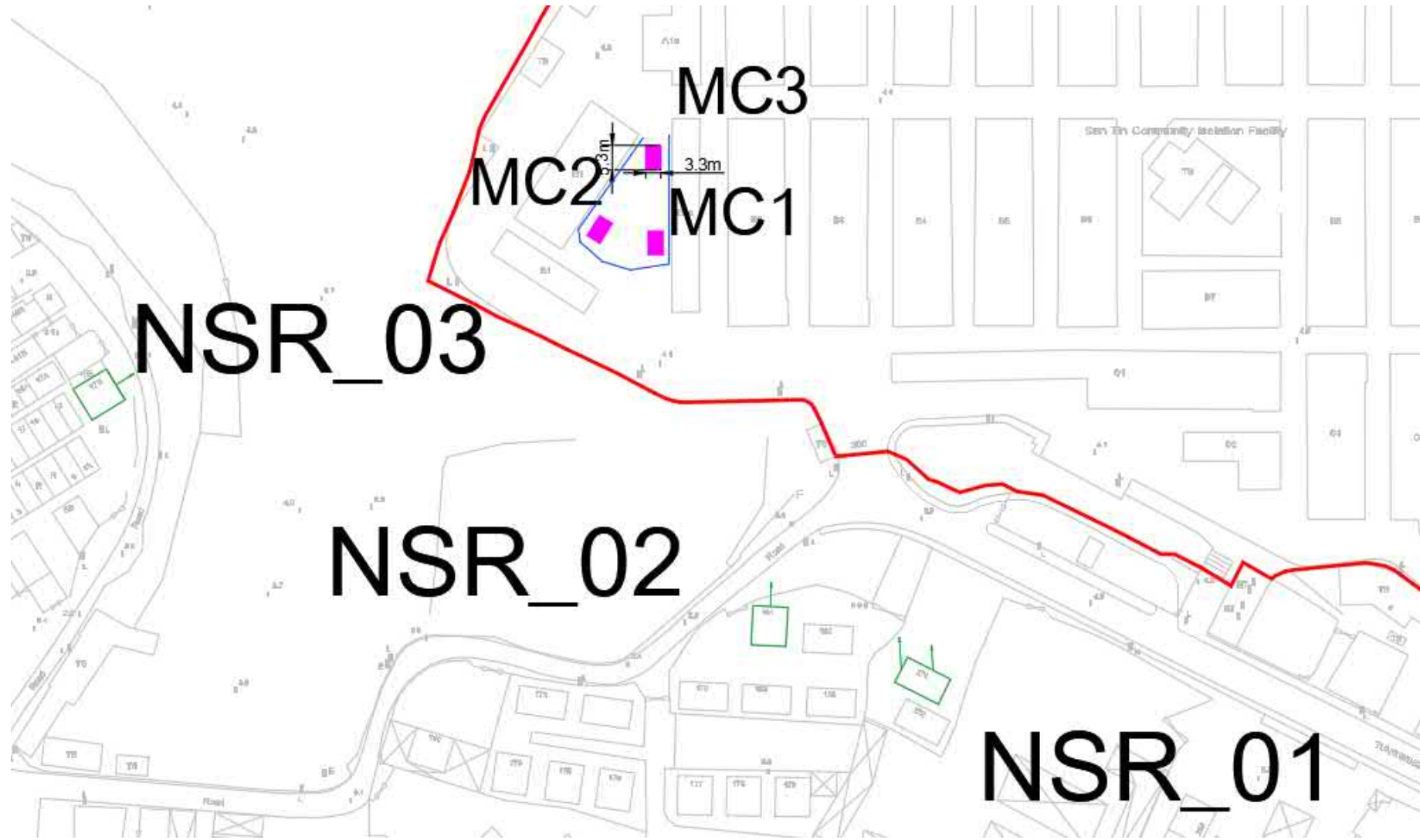
Reference: Wilson Acoustic Limited

Option 1 and 2a



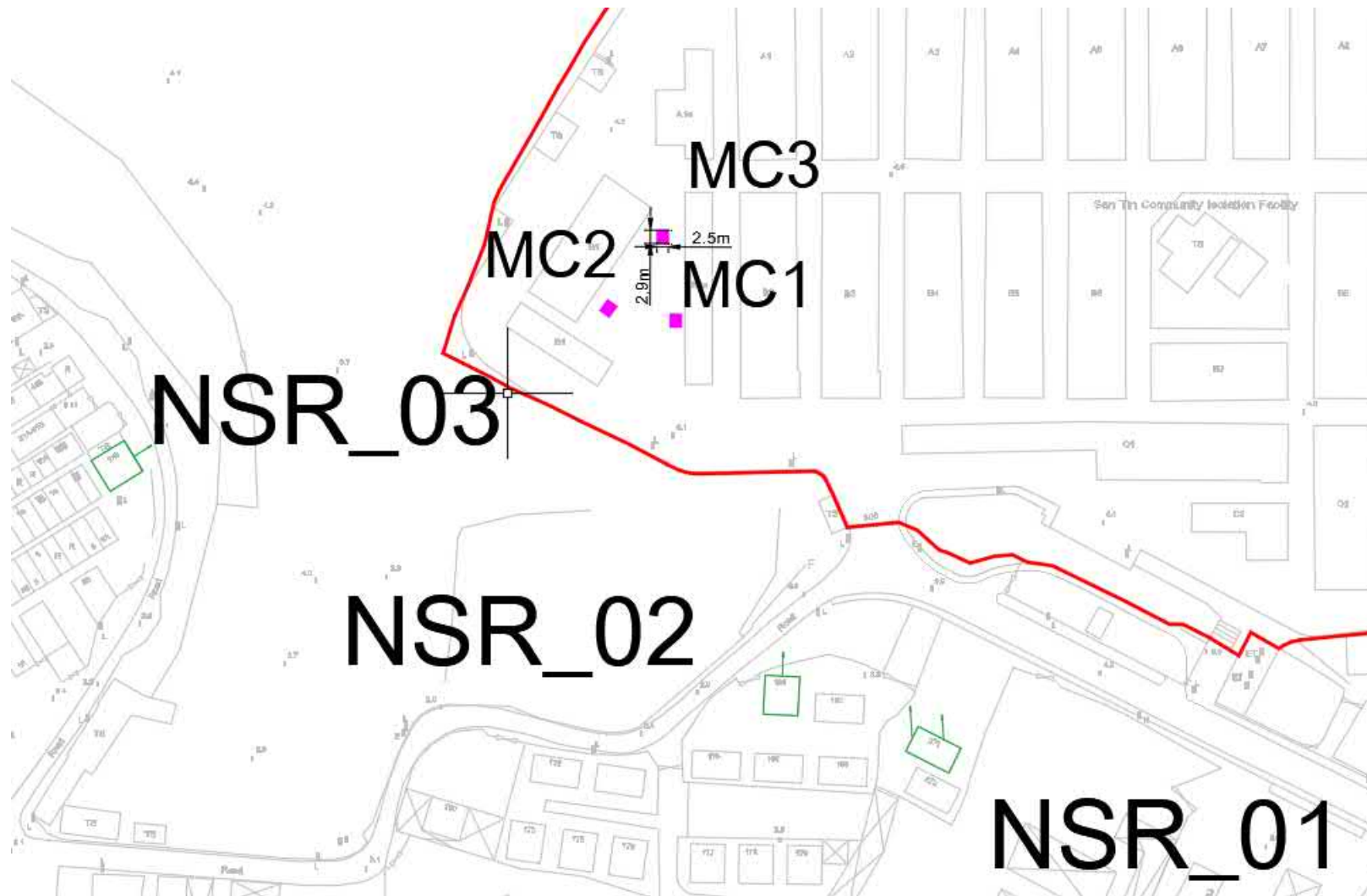
Proposed Movable
noise barrier (5m
height)

Option 2b

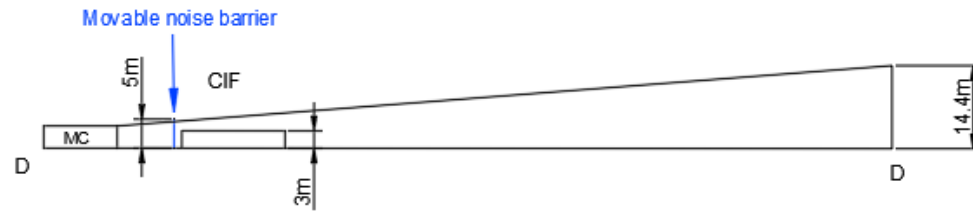
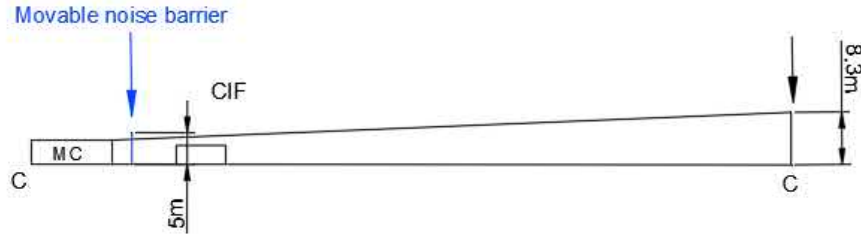
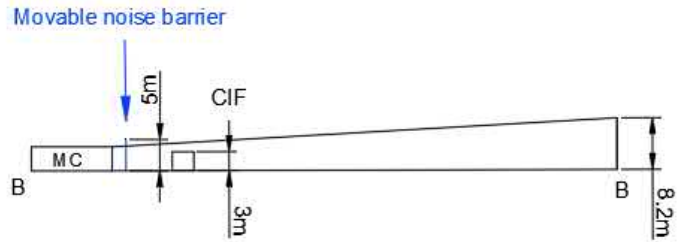
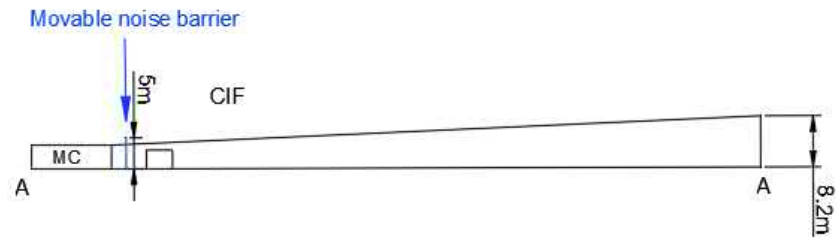


Proposed Movable
noise barrier (5m
height)

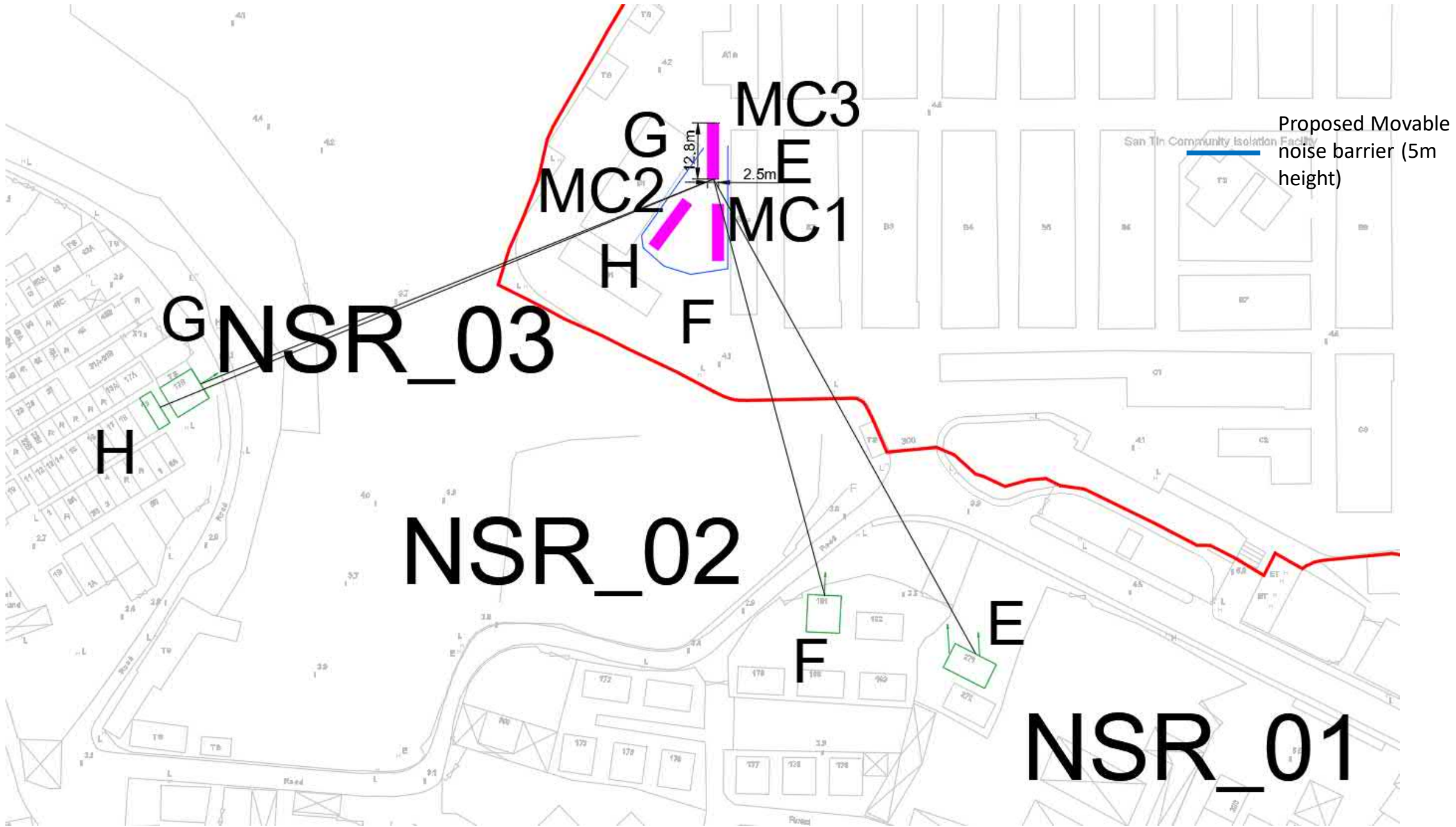
Option 2c



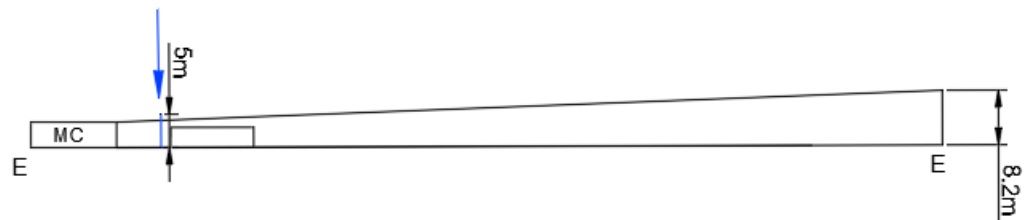
Option 3



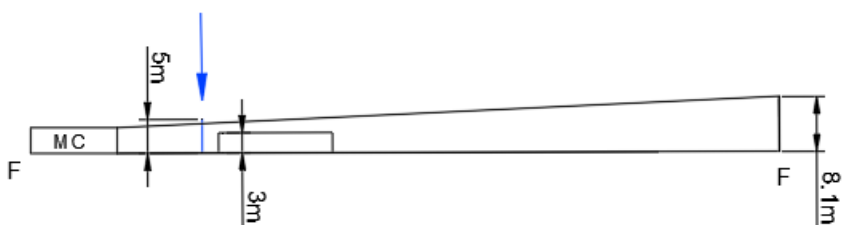
Note: The height of EPD-08025 (i.e. 3.82m) is used for illustration purpose as this model is with the highest height among the options.



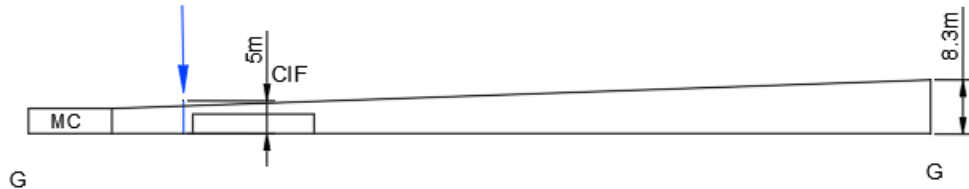
Movable noise barrier



Movable noise barrier



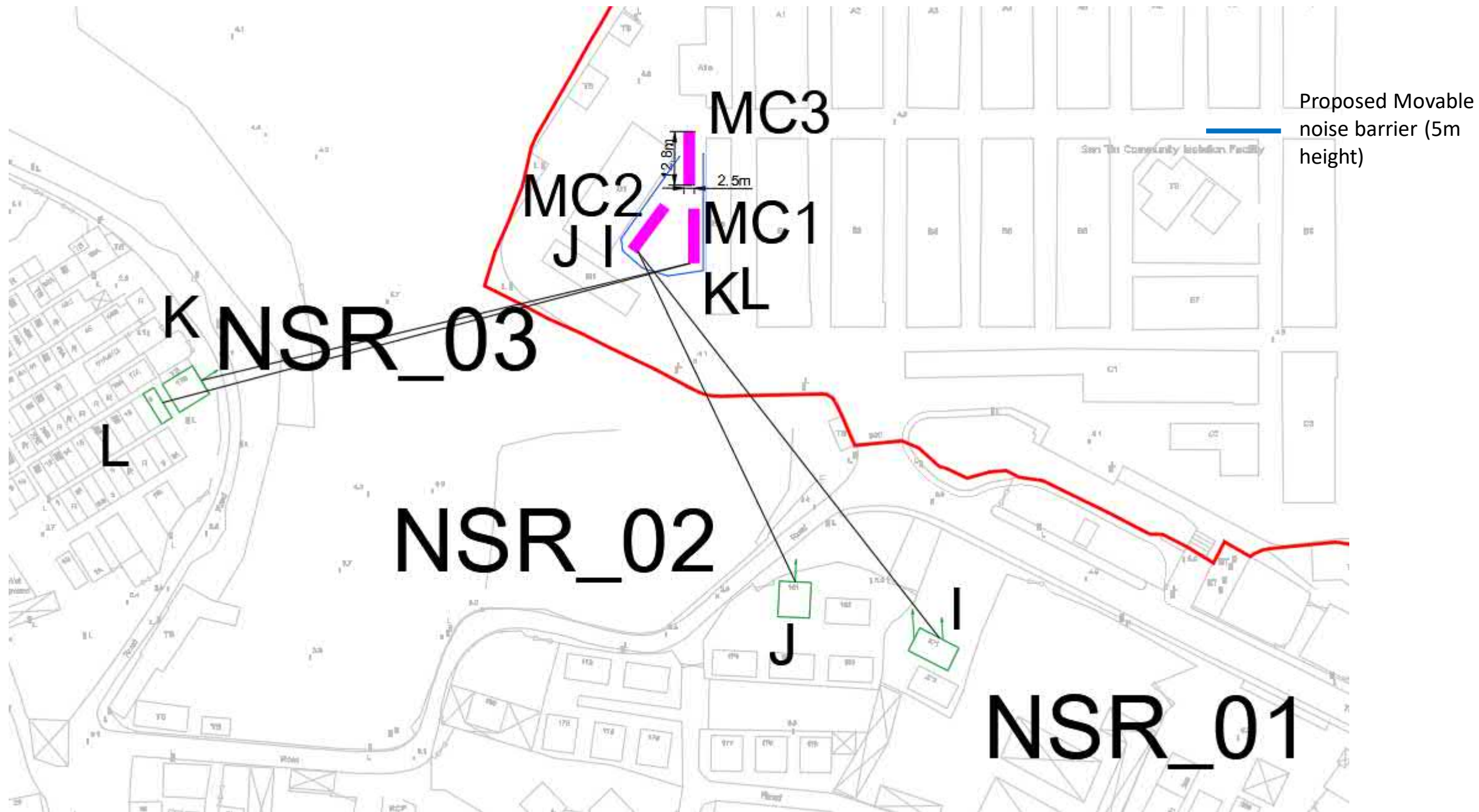
Movable noise barrier



Movable noise barrier



Note: The height of EPD-08025 (i.e. 3.82m) is used for illustration purpose as this model is with the highest height among the options.



Proposed Movable
noise barrier (5m
height)

MC3

MC2

MC1

K NSR_03

NSR_02

NSR_01

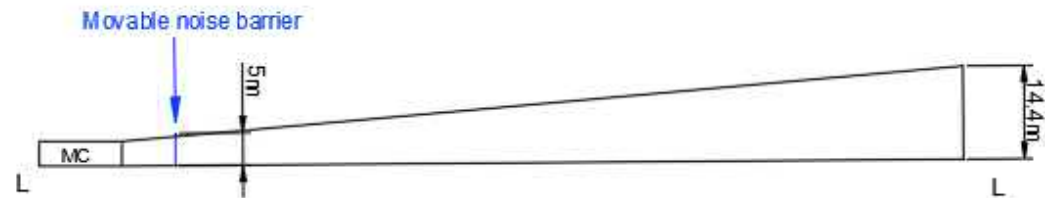
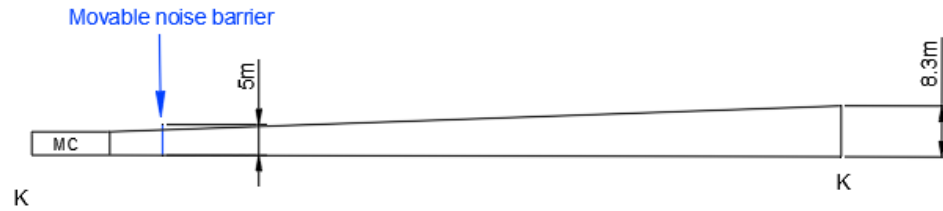
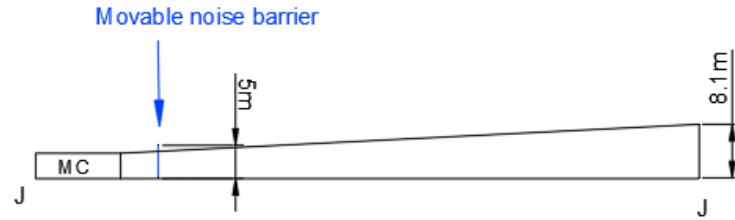
2.8m

2.5m

L

J

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Note: The height of EPD-08025 (i.e. 3.82m) is used for illustration purpose as this model is with the highest height among the options.



APPENDIX 4.4

Detailed Calculation of Fixed Noise Impact Assessment

Option 1

Noise Sensitive Receiver	Notional NAP	Noise Criterion
NSR_01	NSR_01	55

Location	Fixed Noise Source	ID	QPME ref.[3]	Quantity	% on-time in 30 min	PME Sound Power Level, dB(A)	Sound Pressure Level at 1m (Free Field), dB(A)	Predicted Sub-total SWL, dB(A)	Direct Line of Sight (Y/N)	Horizontal Distance Between NAP and Fixed Noise Source, m	Distance Correction, dB(A)	Barrier Correction, dB(A)	Façade Correction, dB(A)	Predicted Noise Level, dB(A)	Cumulative Noise Level, dB(A)	Compliance (Y/N)
Training ground	Mobile Crane	MC3	EPD-08025	1	20%	107	0.0	100.0	Y	123	-49.8	0	3	53.2	53.2	Y

Note:

1. Sound Power Level of QPME (<https://www.epd.gov.hk/epd/english/environmentinhk/noise/qpme/index.html>)

Detailed Calculation of Fixed Noise Impact Assessment

Option 1

Noise Sensitive Receiver	Notional NAP	Noise Criterion
NSR_02	NSR_02	55

Location	Fixed Noise Source	ID	QPME ref.[3]	Quantity	% on-time in 30 min	PME Sound Power Level, dB(A)	Sound Pressure Level at 1m (Free Field), dB(A)	Predicted Sub-total SWL, dB(A)	Direct Line of Sight (Y/N)	Horizontal Distance Between NAP and Fixed Noise Source, m	Distance Correction, dB(A)	Barrier Correction, dB(A)	Façade Correction, dB(A)	Predicted Noise Level, dB(A)	Cumulative Noise Level, dB(A)	Compliance (Y/N)
Training ground	Mobile Crane	MC3	EPD-08025	1	20%	107	0.0	100.0	Y	97	-47.7	0	3	55.3	55.3	Y

Note:

1. Sound Power Level of QPME (<https://www.epd.gov.hk/epd/english/environmentinhk/noise/qpme/index.html>)

Detailed Calculation of Fixed Noise Impact Assessment

Option 1

Noise Sensitive Receiver	Notional NAP	Noise Criterion
NSR_03	NSR_03	55

Location	Fixed Noise Source	ID	QPME ref.[3]	Quantity	% on-time in 30 min	PME Sound Power Level, dB(A)	Sound Pressure Level at 1m (Free Field), dB(A)	Predicted Sub-total SWL, dB(A)	Direct Line of Sight (Y/N)	Horizontal Distance Between NAP and Fixed Noise Source, m	Distance Correction, dB(A)	Barrier Correction, dB(A)	Façade Correction, dB(A)	Predicted Noise Level, dB(A)	Cumulative Noise Level, dB(A)	Compliance (Y/N)
Training ground	Mobile Crane	MC3	EPD-08025	1	20%	107	0.0	100.0	Y	123	-49.8	0	3	53.2	53.2	Y

Note:

1. Sound Power Level of QPME (<https://www.epd.gov.hk/epd/english/environmentinhk/noise/qpme/index.html>)

Detailed Calculation of Fixed Noise Impact Assessment

Option 2a

Noise Sensitive Receiver	Notional NAP	Noise Criterion
NSR_01	NSR_01	55

Location	Fixed Noise Source	ID	QPME ref.[3]	Quantity	% on-time in 30 min	PME Sound Power Level, dB(A)	Sound Pressure Level at 1m (Free Field), dB(A)	Predicted Sub-total SWL, dB(A)	Direct Line of Sight (Y/N)	Horizontal Distance Between NAP and Fixed Noise Source, m	Distance Correction, dB(A)	Barrier Correction, dB(A)	Façade Correction, dB(A)	Predicted Noise Level, dB(A)	Cumulative Noise Level, dB(A)	Compliance (Y/N)
Training ground	Mobile Crane	MC1	EPD-08025	1	10%	107	0.0	97.0	Y	104	-48.3	-5	3	46.7	52.8	Y
		MC2	EPD-08025	1	20%	107	0.0	100.0	Y	115	-49.2	-5	3	48.8		
		MC3	EPD-08025	1	20%	107	0.0	100.0	Y	121	-49.7	-5	3	48.4		

Note:

1. Sound Power Level of QPME (<https://www.epd.gov.hk/epd/english/environmentinhk/noise/qpme/index.html>)

Detailed Calculation of Fixed Noise Impact Assessment

Option 2a

Noise Sensitive Receiver	Notional NAP	Noise Criterion
NSR_02	NSR_02	55

Location	Fixed Noise Source	ID	QPME ref.[3]	Quantity	% on-time in 30 min	PME Sound Power Level, dB(A)	Sound Pressure Level at 1m (Free Field), dB(A)	Predicted Sub-total SWL, dB(A)	Direct Line of Sight (Y/N)	Horizontal Distance Between NAP and Fixed Noise Source, m	Distance Correction, dB(A)	Barrier Correction, dB(A)	Façade Correction, dB(A)	Predicted Noise Level, dB(A)	Cumulative Noise Level, dB(A)	Compliance (Y/N)
Training ground	Mobile Crane	MC1	EPD-08025	1	10%	107	0.0	97.0	Y	79	-46.0	-5	3	49.0	55.0	Y
		MC2	EPD-08025	1	20%	107	0.0	100.0	Y	87	-46.8	-5	3	51.2		
		MC3	EPD-08025	1	20%	107	0.0	100.0	Y	97	-47.7	-5	3	50.3		

Note:

1. Sound Power Level of QPME (<https://www.epd.gov.hk/epd/english/environmentinhk/noise/qpme/index.html>)

Detailed Calculation of Fixed Noise Impact Assessment

Option 2a

Noise Sensitive Receiver	Notional NAP	Noise Criterion
NSR_03	NSR_03	55

Location	Fixed Noise Source	ID	QPME ref.[3]	Quantity	% on-time in 30 min	PME Sound Power Level, dB(A)	Sound Pressure Level at 1m (Free Field), dB(A)	Predicted Sub-total SWL, dB(A)	Direct Line of Sight (Y/N)	Horizontal Distance Between NAP and Fixed Noise Source, m	Distance Correction, dB(A)	Barrier Correction, dB(A)	Façade Correction, dB(A)	Predicted Noise Level, dB(A)	Cumulative Noise Level, dB(A)	Compliance (Y/N)
Training ground	Mobile Crane	MC1	EPD-08025	1	10%	107	0.0	97.0	Y	121	-49.7	-5	3	45.3	52.8	Y
		MC2	EPD-08025	1	20%	107	0.0	100.0	Y	106	-48.5	-5	3	49.5		
		MC3	EPD-08025	1	20%	107	0.0	100.0	Y	123	-49.8	-5	3	48.2		

Note:

1. Sound Power Level of QPME (<https://www.epd.gov.hk/epd/english/environmentinhk/noise/qpme/index.html>)

Detailed Calculation of Fixed Noise Impact Assessment

Option 2b

Noise Sensitive Receiver	Notional NAP	Noise Criterion
NSR_01	NSR_01	55

Location	Fixed Noise Source	ID	QPME ref.[3]	Quantity	% on-time in 30 min	PME Sound Power Level, dB(A)	Sound Pressure Level at 1m (Free Field), dB(A)	Predicted Sub-total SWL, dB(A)	Direct Line of Sight (Y/N)	Horizontal Distance Between NAP and Fixed Noise Source, m	Distance Correction, dB(A)	Barrier Correction, dB(A)	Façade Correction, dB(A)	Predicted Noise Level, dB(A)	Cumulative Noise Level, dB(A)	Compliance (Y/N)
Training ground	Mobile Crane	MC1	EPD-13564	1	30%	103	0.0	97.8	Y	104	-48.3	-5	3	47.4	53.0	Y
		MC2	EPD-13564	1	50%	103	0.0	100.0	Y	115	-49.2	-5	3	48.8		
		MC3	EPD-13564	1	50%	103	0.0	100.0	Y	121	-49.7	-5	3	48.3		

Note:

1. Sound Power Level of QPME (<https://www.epd.gov.hk/epd/english/environmentinhk/noise/qpme/index.html>)

Detailed Calculation of Fixed Noise Impact Assessment

Option 2b

Noise Sensitive Receiver	Notional NAP	Noise Criterion
NSR_02	NSR_02	55

Location	Fixed Noise Source	ID	QPME ref.[3]	Quantity	% on-time in 30 min	PME Sound Power Level, dB(A)	Sound Pressure Level at 1m (Free Field), dB(A)	Predicted Sub-total SWL, dB(A)	Direct Line of Sight (Y/N)	Horizontal Distance Between NAP and Fixed Noise Source, m	Distance Correction, dB(A)	Barrier Correction, dB(A)	Façade Correction, dB(A)	Predicted Noise Level, dB(A)	Cumulative Noise Level, dB(A)	Compliance (Y/N)
Training ground	Mobile Crane	MC1	EPD-13564	1	30%	103	0.0	97.8	Y	79	-46.0	-5	3	49.8	55.2	Y
		MC2	EPD-13564	1	50%	103	0.0	100.0	Y	87	-46.8	-5	3	51.2		
		MC3	EPD-13564	1	50%	103	0.0	100.0	Y	97	-47.7	-5	3	50.3		

Note:

1. Sound Power Level of QPME (<https://www.epd.gov.hk/epd/english/environmentinhk/noise/qpme/index.html>)

Detailed Calculation of Fixed Noise Impact Assessment

Option 2b

Noise Sensitive Receiver	Notional NAP	Noise Criterion
NSR_03	NSR_03	55

Location	Fixed Noise Source	ID	QPME ref.[3]	Quantity	% on-time in 30 min	PME Sound Power Level, dB(A)	Sound Pressure Level at 1m (Free Field), dB(A)	Predicted Sub-total SWL, dB(A)	Direct Line of Sight (Y/N)	Horizontal Distance Between NAP and Fixed Noise Source, m	Distance Correction, dB(A)	Barrier Correction, dB(A)	Façade Correction, dB(A)	Predicted Noise Level, dB(A)	Cumulative Noise Level, dB(A)	Compliance (Y/N)
Training ground	Mobile Crane	MC1	EPD-13564	1	30%	103	0.0	97.8	Y	121	-49.7	-5	3	46.1	52.9	Y
		MC2	EPD-13564	1	50%	103	0.0	100.0	Y	106	-48.5	-5	3	49.5		
		MC3	EPD-13564	1	50%	103	0.0	100.0	Y	123	-49.8	-5	3	48.2		

Note:

1. Sound Power Level of QPME (<https://www.epd.gov.hk/epd/english/environmentinhk/noise/qpme/index.html>)

Detailed Calculation of Fixed Noise Impact Assessment

Option 2c

Noise Sensitive Receiver	Notional NAP	Noise Criterion
NSR_01	NSR_01	55

Location	Fixed Noise Source	ID	QPME ref.[3]	Quantity	% on-time in 30 min	PME Sound Power Level, dB(A)	Sound Pressure Level at 1m (Free Field), dB(A)	Predicted Sub-total SWL, dB(A)	Direct Line of Sight (Y/N)	Horizontal Distance Between NAP and Fixed Noise Source, m	Distance Correction, dB(A)	Barrier Correction, dB(A)	Façade Correction, dB(A)	Predicted Noise Level, dB(A)	Cumulative Noise Level, dB(A)	Compliance (Y/N)
Training ground	Mobile Crane	MC1	EPD-13684	1	60%	101	0.0	98.8	Y	104	-48.3	-5	3	48.4	52.9	Y
		MC2	EPD-13684	1	70%	101	0.0	99.5	Y	115	-49.2	-5	3	48.2		
		MC3	EPD-13684	1	70%	101	0.0	99.5	Y	121	-49.7	-5	3	47.8		

Note:

1. Sound Power Level of QPME (<https://www.epd.gov.hk/epd/english/environmentinhk/noise/qpme/index.html>)

Detailed Calculation of Fixed Noise Impact Assessment

Option 2c

Noise Sensitive Receiver	Notional NAP	Noise Criterion
NSR_02	NSR_02	55

Location	Fixed Noise Source	ID	QPME ref.[3]	Quantity	% on-time in 30 min	PME Sound Power Level, dB(A)	Sound Pressure Level at 1m (Free Field), dB(A)	Predicted Sub-total SWL, dB(A)	Direct Line of Sight (Y/N)	Horizontal Distance Between NAP and Fixed Noise Source, m	Distance Correction, dB(A)	Barrier Correction, dB(A)	Façade Correction, dB(A)	Predicted Noise Level, dB(A)	Cumulative Noise Level, dB(A)	Compliance (Y/N)
Training ground	Mobile Crane	MC1	EPD-13684	1	60%	101	0.0	98.8	Y	79	-46.0	-5	3	50.8	55.2	Y
		MC2	EPD-13684	1	70%	101	0.0	99.5	Y	87	-46.8	-5	3	50.7		
		MC3	EPD-13684	1	70%	101	0.0	99.5	Y	97	-47.7	-5	3	49.7		

Note:

1. Sound Power Level of QPME (<https://www.epd.gov.hk/epd/english/environmentinhk/noise/qpme/index.html>)

Detailed Calculation of Fixed Noise Impact Assessment

Option 2c

Noise Sensitive Receiver	Notional NAP	Noise Criterion
NSR_03	NSR_03	55

Location	Fixed Noise Source	ID	QPME ref.[3]	Quantity	% on-time in 30 min	PME Sound Power Level, dB(A)	Sound Pressure Level at 1m (Free Field), dB(A)	Predicted Sub-total SWL, dB(A)	Direct Line of Sight (Y/N)	Horizontal Distance Between NAP and Fixed Noise Source, m	Distance Correction, dB(A)	Barrier Correction, dB(A)	Façade Correction, dB(A)	Predicted Noise Level, dB(A)	Cumulative Noise Level, dB(A)	Compliance (Y/N)
Training ground	Mobile Crane	MC1	EPD-13684	1	60%	101	0.0	98.8	Y	121	-49.7	-5	3	47.1	52.7	Y
		MC2	EPD-13684	1	70%	101	0.0	99.5	Y	106	-48.5	-5	3	48.9		
		MC3	EPD-13684	1	70%	101	0.0	99.5	Y	123	-49.8	-5	3	47.7		

Note:

1. Sound Power Level of QPME (<https://www.epd.gov.hk/epd/english/environmentinhk/noise/qpme/index.html>)

Detailed Calculation of Fixed Noise Impact Assessment

Option 3

Noise Sensitive Receiver	Notional NAP	Noise Criterion
NSR_01	NSR_01	55

Location	Fixed Noise Source	ID	QPME ref.[3]	Quantity	% on-time in 30 min	PME Sound Power Level, dB(A)	Sound Pressure Level at 1m (Free Field), dB(A)	Predicted Sub-total SWL, dB(A)	Direct Line of Sight (Y/N)	Horizontal Distance Between NAP and Fixed Noise Source, m	Distance Correction, dB(A)	Barrier Correction, dB(A)	Façade Correction, dB(A)	Predicted Noise Level, dB(A)	Cumulative Noise Level, dB(A)	Compliance (Y/N)
Training ground	Mobile Crane	MC1	EPD-13685	1	80%	95	0.0	94.0	Y	104	-48.3	0	3	48.7	53.1	Y
		MC2	EPD-13685	1	90%	95	0.0	94.5	Y	115	-49.2	0	3	48.3		
		MC3	EPD-13685	1	90%	95	0.0	94.5	Y	121	-49.7	0	3	47.9		

Note:

1. Sound Power Level of QPME (<https://www.epd.gov.hk/epd/english/environmentinhk/noise/qpme/index.html>)

Detailed Calculation of Fixed Noise Impact Assessment

Option 3

Noise Sensitive Receiver	Notional NAP	Noise Criterion
NSR_02	NSR_02	55

Location	Fixed Noise Source	ID	QPME ref.[3]	Quantity	% on-time in 30 min	PME Sound Power Level, dB(A)	Sound Pressure Level at 1m (Free Field), dB(A)	Predicted Sub-total SWL, dB(A)	Direct Line of Sight (Y/N)	Horizontal Distance Between NAP and Fixed Noise Source, m	Distance Correction, dB(A)	Barrier Correction, dB(A)	Façade Correction, dB(A)	Predicted Noise Level, dB(A)	Cumulative Noise Level, dB(A)	Compliance (Y/N)
Training ground	Mobile Crane	MC1	EPD-13685	1	80%	95	0.0	94.0	Y	79	-46.0	0	3	51.1	55.3	Y
		MC2	EPD-13685	1	90%	95	0.0	94.5	Y	87	-46.8	0	3	50.8		
		MC3	EPD-13685	1	90%	95	0.0	94.5	Y	97	-47.7	0	3	49.8		

Note:

1. Sound Power Level of QPME (<https://www.epd.gov.hk/epd/english/environmentinhk/noise/qpme/index.html>)

Detailed Calculation of Fixed Noise Impact Assessment

Option 3

Noise Sensitive Receiver	Notional NAP	Noise Criterion
NSR_03	NSR_03	55

Location	Fixed Noise Source	ID	QPME ref.[3]	Quantity	% on-time in 30 min	PME Sound Power Level, dB(A)	Sound Pressure Level at 1m (Free Field), dB(A)	Predicted Sub-total SWL, dB(A)	Direct Line of Sight (Y/N)	Horizontal Distance Between NAP and Fixed Noise Source, m	Distance Correction, dB(A)	Barrier Correction, dB(A)	Façade Correction, dB(A)	Predicted Noise Level, dB(A)	Cumulative Noise Level, dB(A)	Compliance (Y/N)
Training ground	Mobile Crane	MC1	EPD-13685	1	80%	95	0.0	94.0	Y	121	-49.7	0	3	47.4	52.9	Y
		MC2	EPD-13685	1	90%	95	0.0	94.5	Y	106	-48.5	0	3	49.0		
		MC3	EPD-13685	1	90%	95	0.0	94.5	Y	123	-49.8	0	3	47.7		

Note:

1. Sound Power Level of QPME (<https://www.epd.gov.hk/epd/english/environmentinhk/noise/qpme/index.html>)



APPENDIX 7.1

Aerial Photographs

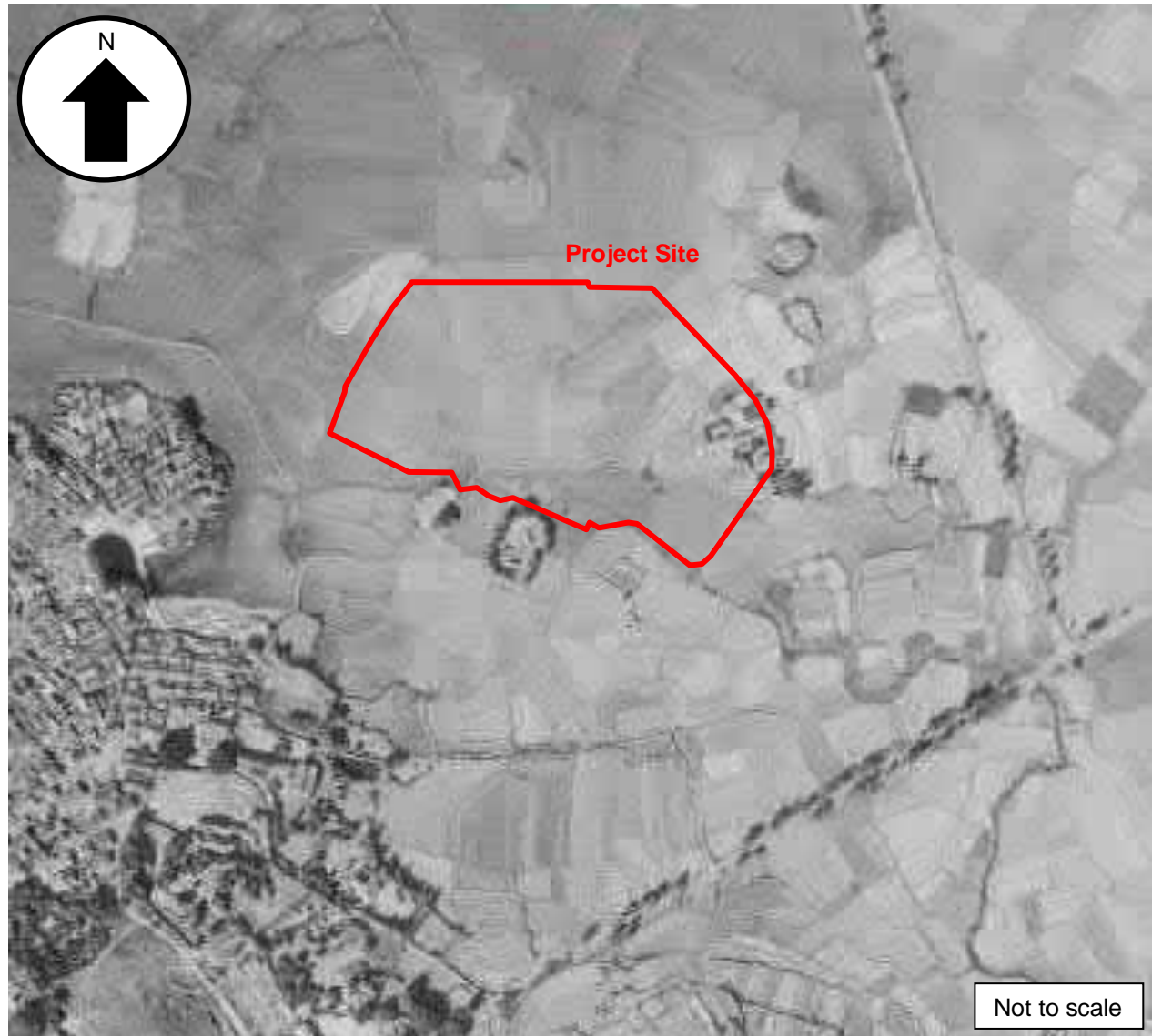
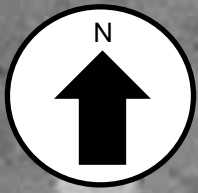
1945 (Photo reference: 681_4-3076) 20,000 ft.



Observation: Project Site is located on vegetated agricultural land.

'Not to scale' refers to the identification of the 'Project Site' on the aerial photo.

1956 (Photo reference: F22_561-0129) 16,700 ft.



Not to scale

Observation: No changes to land use between 1945 to 1955.

'Not to scale' refers to the identification of the 'Project Site' on the aerial photo.

1964 (Photo reference: 1964-2807RM) 12,500 ft.



Observation: No changes to land use between 1956 to 1963. In 1964, Project Site and the surroundings were excavated and filled with water, where some were converted into fishponds.

'Not to scale' refers to the identification of the 'Project Site' on the aerial photo.

1974 (Photo reference: 10011RM) 12,500 ft.



Observation: No changes to land use between 1964 to 1973. In 1974, Project Site and the surroundings were excavated and filled with water, where some were converted into fishponds. A road was seen cutting through the Project Site from east to west.

'Not to scale' refers to the identification of the 'Project Site' on the aerial photo.

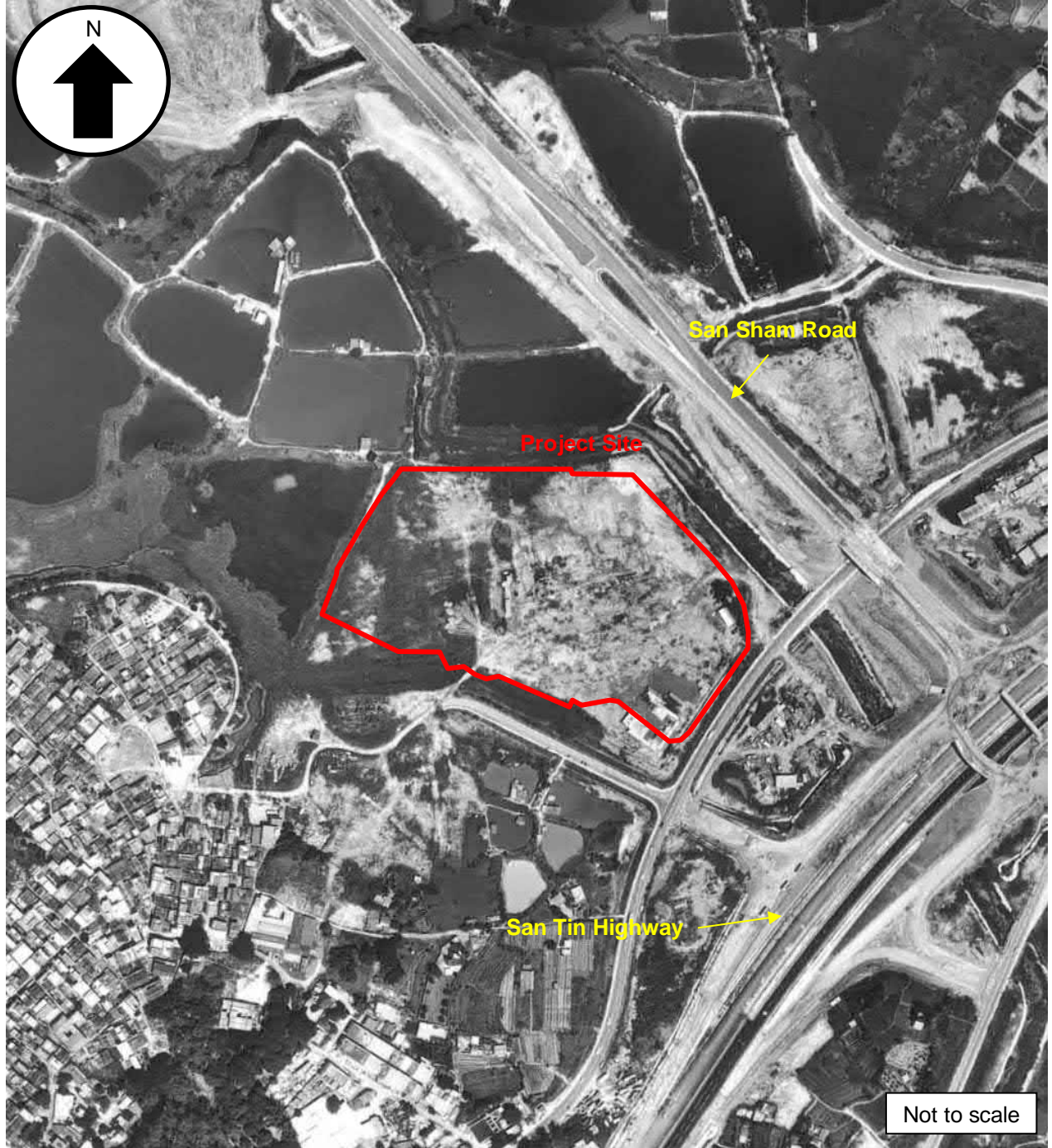
1984 (Photo reference: 55858) 4,000 ft.



Observation: No changes to land use between 1975 to 1983. In 1984, some fishponds within the Project Site were observed.

'Not to scale' refers to the identification of the 'Project Site' on the aerial photo.

1989 (Photo reference: A18206) 4,000 ft.



Observation: Backfilling of fishponds observed within the Project Site. Construction of San Tin Highway and San Sham Road were in progress.

'Not to scale' refers to the identification of the 'Project Site' on the aerial photo.

1992 (Photo reference: CN02860) 2,000 ft.



Observation: Backfilling of fishpond commenced in 1989 and completed in 1992. Some temporary containers were observed at the Site . Construction of San Tin Highway and San Sham Road were completed.

'Not to scale' refers to the identification of the 'Project Site' on the aerial photo.

2001 (Photo reference: CN30028) 4,000 ft.



Observation: No changes to Project Site except paving within the Project Site started in the eastern corner. San Tin Tsuen Road was constructed to the north of Project Site.

'Not to scale' refers to the identification of the 'Project Site' on the aerial photo.

2008 (Photo reference: CS18195) 6,000 ft.



Observation: Paving within the Project Site was completed between 2003 and 2008. Temporary site office with a roof observed (in yellow) within north of the Project Site.

'Not to scale' refers to the identification of the 'Project Site' on the aerial photo.

2013 (Photo reference: CW102213) 2,300 ft.



Observation: Another site office with roof (in green) was established within Project Site.

'Not to scale' refers to the identification of the 'Project Site' on the aerial photo.

2016 (Photo reference: E005049C) 2,500 ft.



Observation: Previous temporary structures at The Boxes were completely removed.

'Not to scale' refers to the identification of the 'Project Site' on the aerial photo.

2018 (Photo reference: E040602C) 6,900 ft.



Observation: The Boxes (shopping mall) in portable units was established at Project Site.

'Not to scale' refers to the identification of the 'Project Site' on the aerial photo.

2022 (Photo reference: E153622C) 6,900 ft.



Observation: According to historical source, The Boxes was closed in 2019. In 2022, Portable units at The Boxes were removed and seen replaced by the San Tin Community Isolation Facility (also in portable units) and it resembles to present day.

'Not to scale' refers to the identification of the 'Project Site' on the aerial photo.



APPENDIX 7.2

Site Inspection Checklist

General Site Details:

Site Owner: N/A

Property Address: San Tin Community Isolation Facility

Person Conducting the Questionnaire

Name and Position: Cassie Chow, Principal Consultant

Date of Site Inspection: 23 June 2023

Interviewee: N/A; currently vacant

Site Activities

Number of employees: **Full-time:** 4 (security)
 Part-time: 0
 Temporary / Seasonal: 0

Maximum no. of people on site at any time: 0

Typical hours of operation: Vacant site

Number of shifts: Vacant site

Days per week: N/A

Weeks per year: N/A

Scheduled plant shut-down: No

Detail the main sources of energy at the site:

Gas No

Electricity Yes, transformer room identified but inaccessible

Coal No

Oil No

Other No

Site Description

What is the total site area: approximately 38,500 m²

What area of the site is covered by buildings (%): 99%

Is a site plan available? Yes

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

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

Proposed Development Area:

North: San Tin Tsuen Road (road network)

South: Residential (village-type houses)

East: Castle Peak Road (San Tin) (road network)

West: Open area and residential (village-type houses)

Describe the topography of the area (flat terrain, rolling hills, mountains, by a large body of water, vegetation, etc.). Flat terrain surrounded by majority residential area (village-type houses), open space, paved road network. Shenzhen-Hong Kong River is approximately 1.8 km away.

State the size and location of the nearest residential communities. San Tin Wing Ping Village is located approximately 25 m southwest of Project Site boundary.

Are there any sensitive habitats nearby, such as nature reserves, parks, wetlands or sites of special scientific interest? No.

Questionnaire with Existing / Previous Owner or Occupier: No occupier during site inspection.

	Yes / No	Notes
1. What the main activities/operations at the above address?		Community Isolation Facility made up of portable units
2. How long have you been occupying the site?		Since 2022
3. Were you the first occupant on site? (If yes, what was the usage of the site prior to occupancy.)	No	Shopping mall
4. Prior to your occupancy, who occupied the site?		Shopping mall owner
5. What were the main activities/operations during their occupancy?		Shopping mall
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 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.) • Where do you store these chemicals?	No	
12. Material inventory lists, including quantities and locations available? (If yes, how often are these inventories updated?)	No	
13. Has the facility produced a separate hazardous substance inventory?	No	
14. Have there ever been any incidents or accidents (i.e., spills, fires, injuries, etc.) involving any of these materials? (If yes, please provide details.)	No	
15. How are materials received (i.e., rail, truck, etc.) and stored on site (i.e., drums, tanks, carboys, bags, silos, cisterns, vaults and cylinders)?	N/A	
16. Do you have any underground storage tanks? • How many underground storage tanks do you have on site? • What are the tanks constructed of? • What are the contents of these tanks? • Are the pipelines above or below ground? • If the pipelines are below ground, has any leak and integrity testing been performed? • Have there been any spills associated with these tanks?	No	
17. Are there any disused underground storage tanks?	No	
18. Do you have regular check for any spillage and monitoring of chemicals handled? (If yes, please provide details.)	No	No chemicals onsite
19. How are the wastes disposed of?	Yes	Waste bins provided onsite and collected by waste 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	

<ul style="list-style-type: none"> • When did the spill occur? • What were the substances spilled? • What was the quantity of material spilled? • Did you notify the relevant departments of the spill? • What were the actions taken to clean up the spill? • What were the areas affected? 		
22. Do you have any records of major renovation of your site or 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 (i.e., 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	

Observations

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



LEGEND :
 PROJECT SITE BOUNDARY



Rev	Description	By	Date



Project title
 AGREEMENT NO. CE47/2020(CE) –
 TASK ORDER NO. 9 – SAN TIN CIF

Drawing title
 PROJECT SITE

Drawing no. SITE INSPECTION PHOTOS		Rev.	
Drawn	Date AUG2023	Checked	Approved
Scale 1:1000@A3	Status —		



Date : 2023-08-14
 Filename : \\hkkn200dat16\SDE\ENV\7. Projects\Project_H321_ENV\Son Tin CIF\Drawings\Fig_San Tin_20230814.dwg



PHOTOGRAPHIC LOG – Site Inspection

Client Name
CEDD

Site Location
San Tin Community Isolation Facility

Project No.
TO9

Photo No.	Date	Photo and Description
1.	23 June 2023	 <p data-bbox="316 1184 887 1211">Gated entrance Tung Wing On Road</p>
2.	23 June 2023	 <p data-bbox="316 2013 911 2049">Modular Integrated Construction (MiC) units and drains observed within Project Site.</p>



PHOTOGRAPHIC LOG – Site Inspection

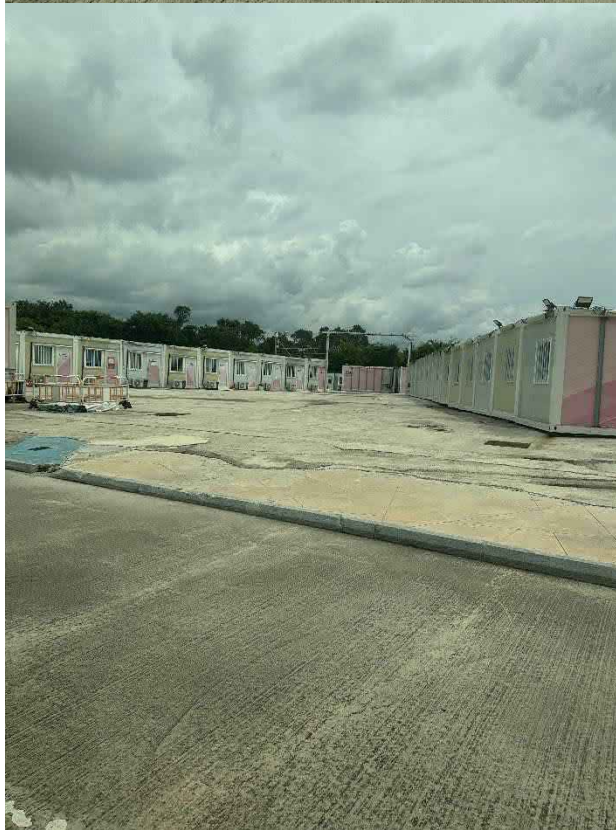
Client Name
CEDD

Site Location
San Tin Community Isolation Facility

Project No.
TO9

3.

23 June
2023



MiC units observed on an elevated concrete within Project Site.



PHOTOGRAPHIC LOG – Site Inspection

Client Name
CEDD

Site Location
San Tin Community Isolation Facility

Project No.
T09

4.

23 June
2023



Top: Ground condition is well-maintained and paved.
Bottom: DSD pipes observed in the Project Site and labelled clearly.



PHOTOGRAPHIC LOG – Site Inspection

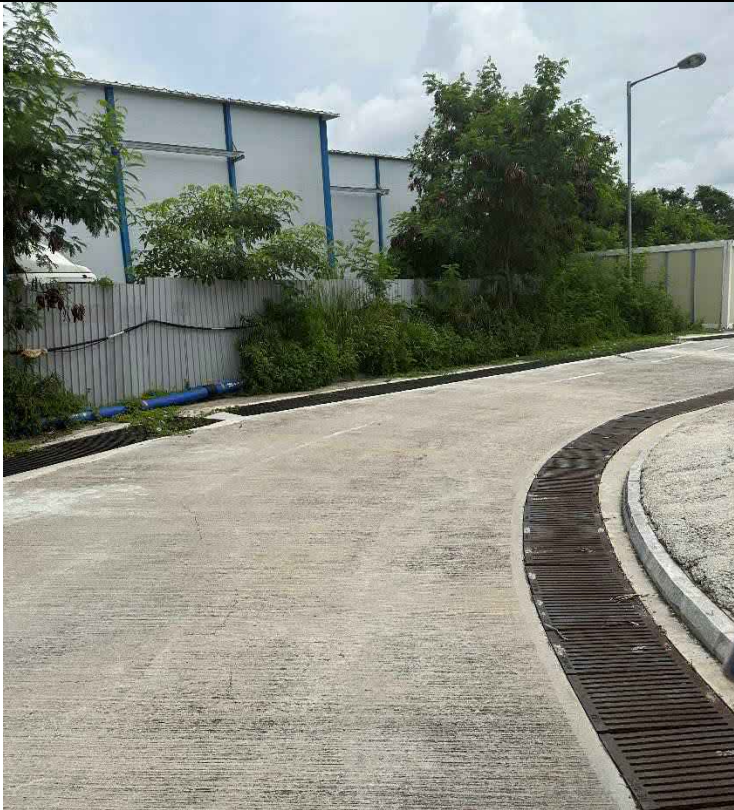
Client Name
CEDD

Site Location
San Tin Community Isolation Facility

Project No.
TO9

5.

23 June
2023



Paved road and drains; paved road is stain-free and well-maintained, no cracks observed.

6.

23 June
2023



Within the San Tin CIF are paved roads and MIC units with A/C, drainages observed. No stains and/or underground/above-ground storage tanks observed.



PHOTOGRAPHIC LOG – Site Inspection

Client Name
CEDD

Site Location
San Tin Community Isolation Facility

Project No.
TO9

7.

23 June
2023



Inside of Project Site and fenced around the perimeter; MiC units, paved road and drains observed; potential contamination is anticipated as no stains and/or underground/above-ground storage tanks observed.

8.

23 June
2023



DSD pipes observed along fences around the perimeter.



PHOTOGRAPHIC LOG – Site Inspection

Client Name
CEDD

Site Location
San Tin Community Isolation Facility

Project No.
TO9

9.

23 June
2023



Top: Overview of the MiC units inside Project Site.
Bottom: Site is surrounded by densed vegetation and trees.



PHOTOGRAPHIC LOG – Site Inspection

Client Name
CEDD

Site Location
San Tin Community Isolation Facility

Project No.
TO9

10.

23 June
2023



Existing transformer room and water tanks located in the centre of the Project Site; area is fenced and inaccessible but is well-maintained. Ground condition is good, no water leakage or oil stains observed.

11.

23 June
2023



Overview of the MIC units located next to the existing transformer room and water tanks.



PHOTOGRAPHIC LOG – Site Inspection

Client Name
CEDD

Site Location
San Tin Community Isolation Facility

Project No.
TO9

12.

23 June
2023



Front view of the existing transformer room structure and water tank located next to the structure.

13.

23 June
2023



Outside Project Site is Tung Wing On Road, residential area across from Project Site.



PHOTOGRAPHIC LOG – Site Inspection

Client Name
CEDD

Site Location
San Tin Community Isolation Facility

Project No.
TO9

14.

23 June
2023



Village-type houses observed across from Project Site.

15.

23 June
2023



Residential area, village-type houses and cars observed outside Project Site



PHOTOGRAPHIC LOG – Site Inspection

Client Name
CEDD

Site Location
San Tin Community Isolation Facility

Project No.
TO9

16.

23 June
2023



Along San Tin Tsuen Road. Exterior of Project Site, fenced and surrounded by open space with densed vegetation and trees.



APPENDIX 8.1

Appendix 8.1 Species of conservation importance recorded within the Assessment Area

Common Name	Scientific name	Application Site	Assessment Area	Commonness & Distribution in Hong Kong	Conservation Status/Protection Status/level of Concern
Bird					
Little Grebe	<i>Tachybaptus ruficollis</i>		√	Common resident. Found in Deep Bay area	Fellowes et al. 2002:LC
Great Cormorant	<i>Phalacrocorax carbo</i>	√	√	Common winter visitor. Widely distributed in coastal areas throughout Hong Kong	Fellowes et al. 2002:PRC
Grey Heron	<i>Ardea cinerea</i>	√	√	Common winter visitor. Mainly found in Deep Bay area	Fellowes et al. 2002:PRC
Great Egret	<i>Ardea alba</i>	√	√	Common resident and winter visitor. Widely distributed in Hong Kong	Fellowes et al. 2002:PRC, (RC)
Little Egret	<i>Egretta garzetta</i>	√	√	Common resident. Widely distributed in coastal area throughout Hong Kong	Fellowes et al. 2002:PRC, (RC)
Chinese Pond Heron	<i>Ardeola bacchus</i>	√	√	Common resident. Widely distributed in Hong Kong	Fellowes et al. 2002:PRC, (RC)
Black-crowned Night Heron	<i>Nycticorax nycticorax</i>		√	Common resident and winter visitor. Widely distributed in Hong Kong	Fellowes et al. 2002: (LC)
Northern Shoveler	<i>Anas clypeata</i>		√	Abundant winter visitor. Found in Deep Bay area	Fellowes et al. 2002:RC
Common Teal	<i>Anas crecca</i>	√	√	Common winter visitor. Mainly found in Deep Bay area	Fellowes et al. 2002:RC
Black Kite	<i>Milvus migrans</i>		√	Common resident and winter visitor. Widely distributed in Hong Kong	Class 2 Protected Animal of China;
Eastern Buzzard	<i>Buteo japonicus</i>		√	Appendix II of CITES	
Common	<i>Falco</i>		√	(RC)	

Common Name	Scientific name	Application Site	Assessment Area	Commonness & Distribution in Hong Kong	Conservation Status/Protection Status/level of Concern
Kestrel	<i>tinnunculus</i>				
Greater Spotted Eagle	<i>Clanga clanga</i>		√	Common winter visitor. Widely distributed in Hong Kong	Class 2 Protected Animal of China;
Black-winged Stilt	<i>Himantopus himantopus</i>		√	Common passage migrant. Mainly found in Deep Bay area	Fellowes et al. 2002:RC
Pied Avocet	<i>Recurvirostra avosetta</i>		√	Abundant winter visitor. Found in Deep Bay area	Fellowes et al. 2002:RC
Little Ringed Plover	<i>Charadrius dubius</i>		√	Common winter visitor and passage migrant. Widely distributed in freshwater areas throughout Hong Kong	Fellowes et al. 2002: (LC)
Common Redshank	<i>Tring totanus</i>		√	Common passage migrant. Found in Deep Bay area	Fellowes et al. 2002:RC
Common Greenshank	<i>Tringa nebularia</i>		√	Abundant passage migrant and winter visitor. Found in Deep Bay area	Fellowes et al. 2002:RC
Wood Sandpiper	<i>Tringa glareola</i>		√	Common passage migrant and winter visitor. Widely distributed in wetland area throughout Hong Kong	Fellowes et al. 2002:LC
Marsh Sandpiper	<i>Tringa stagnatilis</i>		√	Common winter visitor and passage migrant. Found in Deep Bay area	Fellowes et al. 2002:RC
Greater Coucal	<i>Centropus sinensis</i>		√	Common resident. Widely distributed in Hong Kong	Class 2 Protected Animal of China
White-throated	<i>Halcyon smyrnensis</i>		√	Common resident. Widely	Fellowes et al. 2002: (LC)

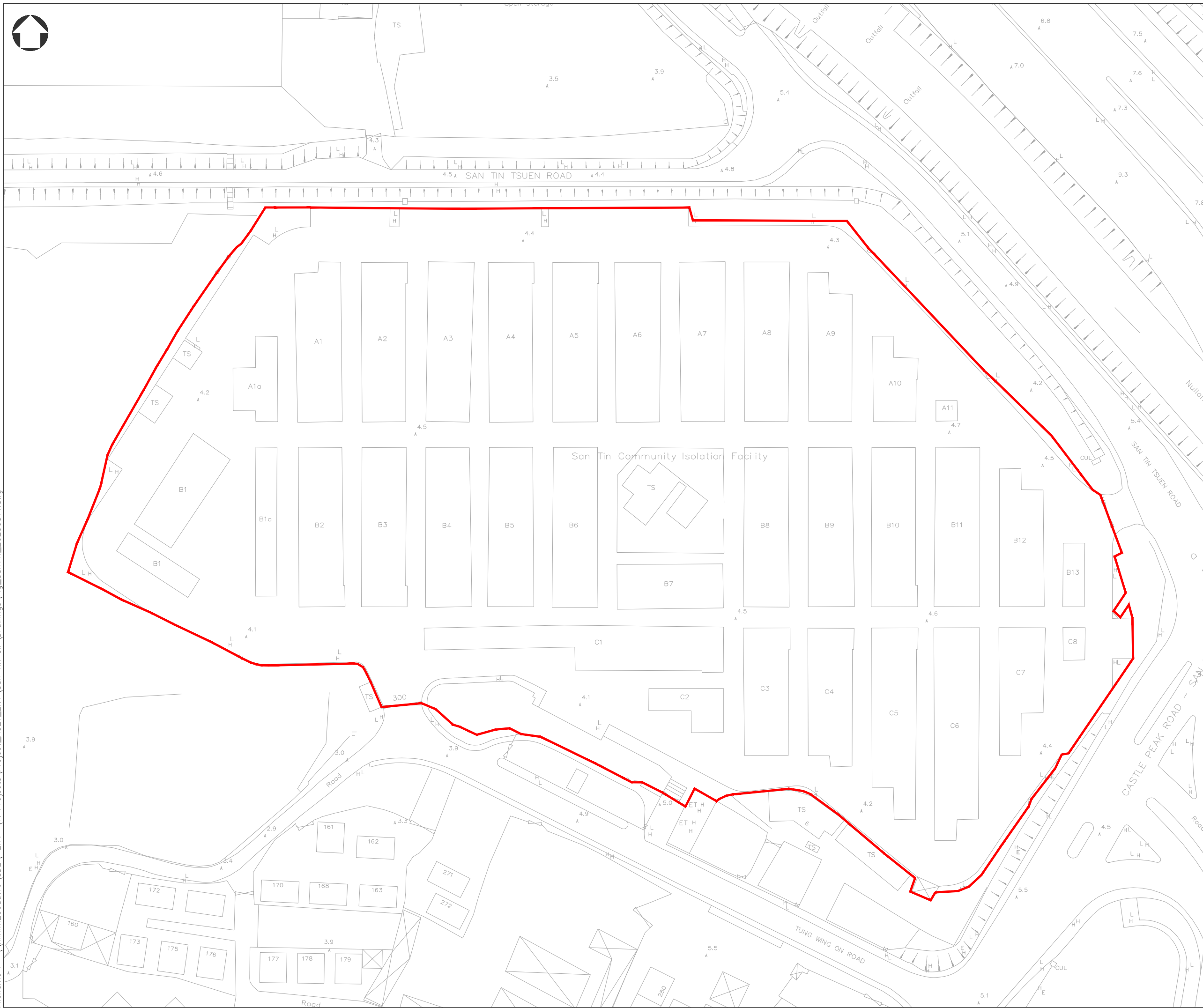
Common Name	Scientific name	Application Site	Assessment Area	Commonness & Distribution in Hong Kong	Conservation Status/Protection Status/level of Concern
Kingfisher				distributed in coastal areas throughout Hong Kong	
Grey-chinned Minivet	<i>Pericrocotus solaris</i>		√	Common in winter, scarce in summer. Found in well wooded areas	Fellowes et al. 2002:LC
Zitting Cisticola	<i>Cisticola juncidis</i>		√	Common passage migrant and winter visitor. Widely distributed in grassland throughout Hong Kong	Fellowes et al. 2002: LC
Common Starling	<i>Sturnus vulgaris</i>		√	Scarce winter visitor. Found in northwestern, northern and central New Territories	Fellowes et al. 2002: LC
Red-billed Starling	<i>Sturnus sericeus</i>		√	Common winter visitor. Widely distributed in Hong Kong	Fellowes et al. 2002: GC
White-shouldered Starling	<i>Sturnus sinensis</i>		√	Common passage migrant Found in widespread locations in Hong Kong	Fellowes et al. 2002: (LC)
Butterfly					
Grass Demon	<i>Udaspes folus</i>		√	-	R
Herpetofauna and Mammal					
Common Rat Snake	<i>Ptyas mucosus</i>		√	Widely distributed throughout Hong Kong	Appendix 2 of CITES; China Red Data Book: endangered; Fellowes et al. 2002: PRC
Japanese Pipistrelle	<i>Pipistrellus abramus</i>		√	Very common	WAPO
Pomona Leaf-nosed Bat	<i>Hipposideros pomona</i>		√	Very common	WAPO

Level of concern: LC = local concern; RC = regional concern; PRC = potential regional concern; GC = global concern. Letters in parentheses indicate that the assessment is based on restrictedness in breeding and/or roosting sites rather than in general occurrence

Commonness: VC = very common, C = common, UC = uncommon, R = rare, VR = very rare; follow Chan *et al.* 2011



LEGEND :
— PROJECT SITE BOUNDARY

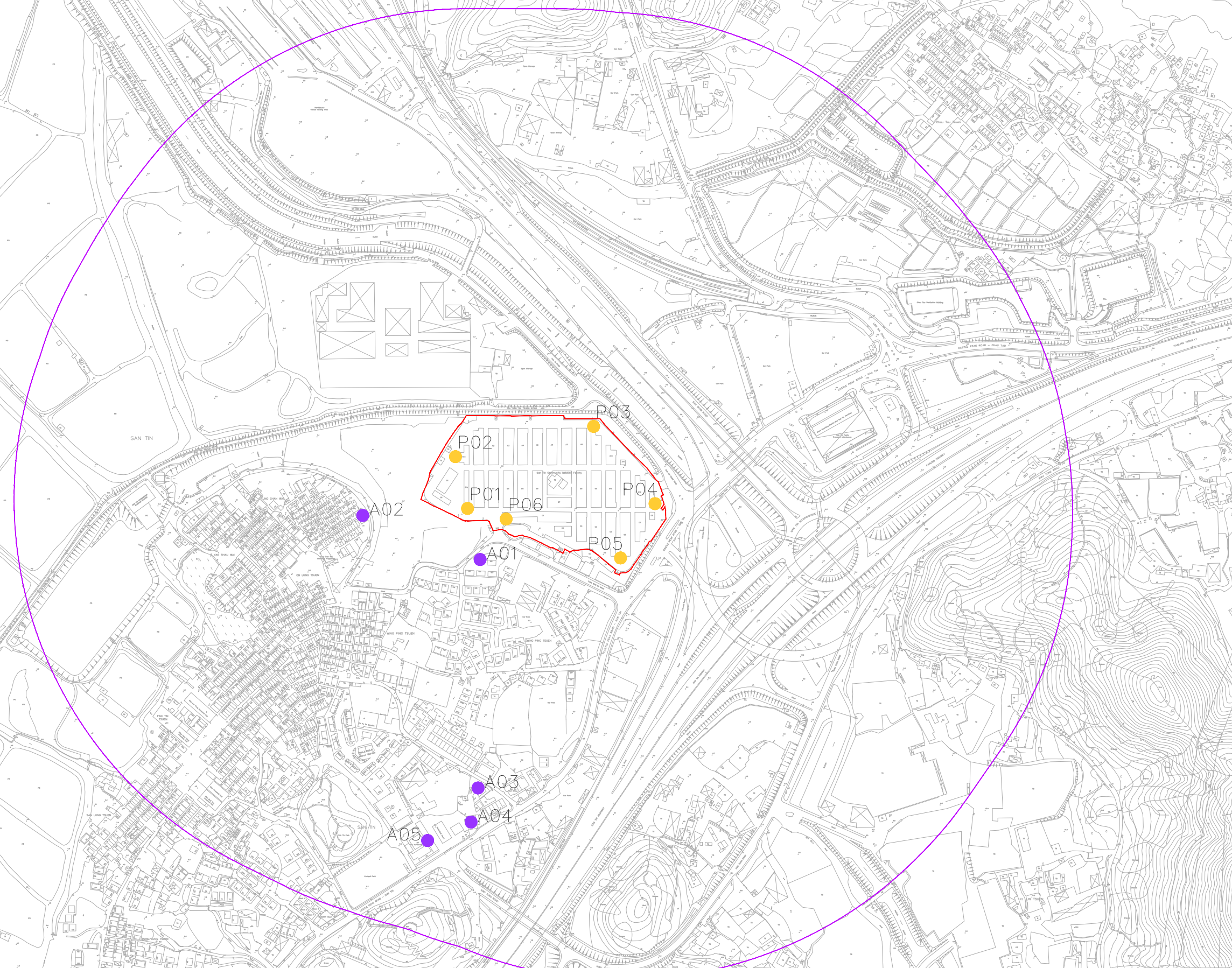


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Rev	Description	By	Date
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Drawing title PROJECT SITE			
Drawing no. FIGURE 2.1		Rev.	
Drawn	Date AUG2023	Checked	Approved
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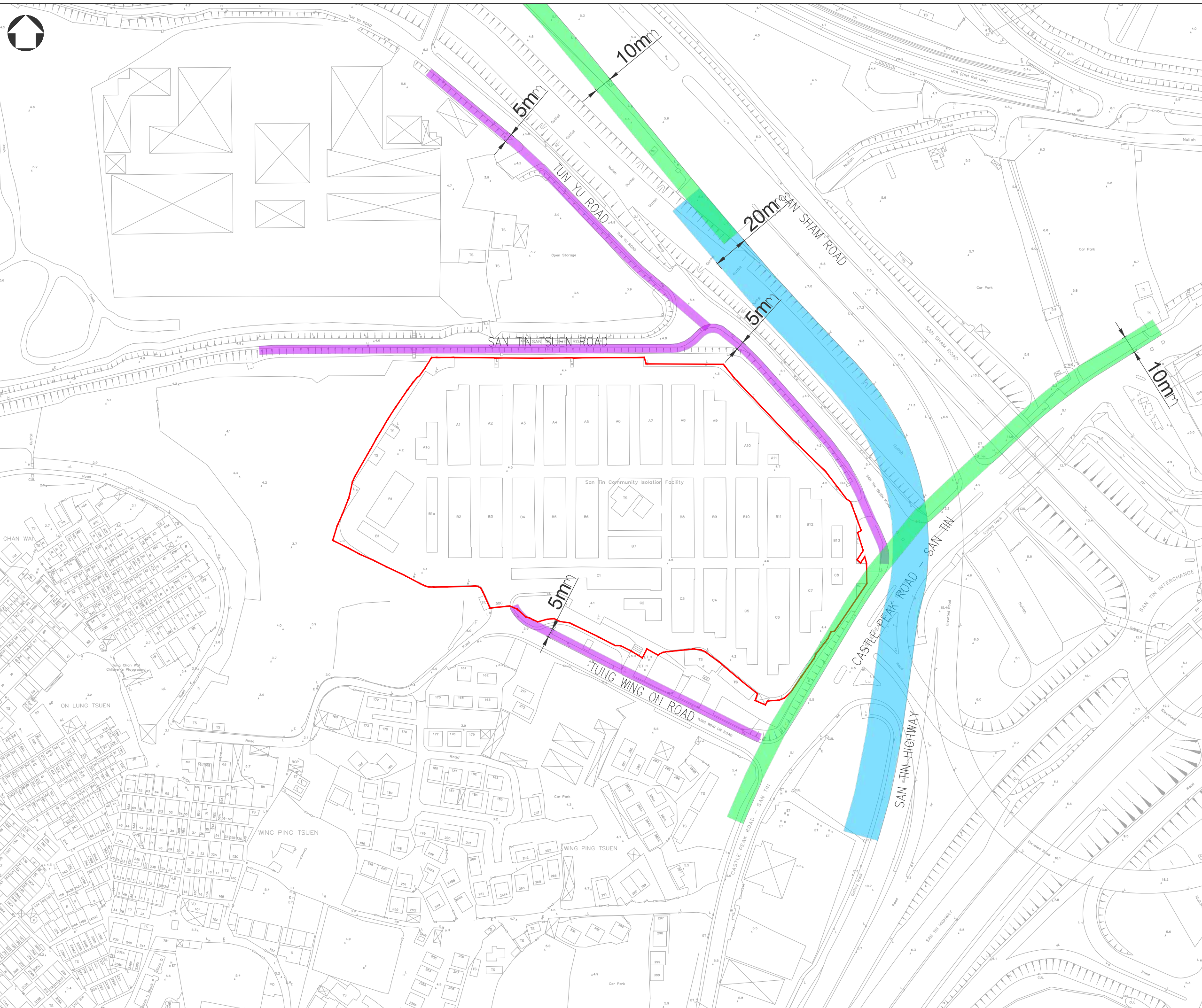
- LEGEND :
- PROJECT SITE BOUNDARY
 - 500M AIR ASSESSMENT AREA
 - AIR SENSITIVE RECEIVERS WITHIN THE PROJECT SITES
 - OFF-SITE AIR SENSITIVE RECEIVERS



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Rev	Description	By	Date
Consultant			
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Drawing title LOCATIONS OF THE REPRESENTATIVE AIR SENSITIVE RECEIVERS (ASRS)			
Drawing no. FIGURE 3.1		Rev.	
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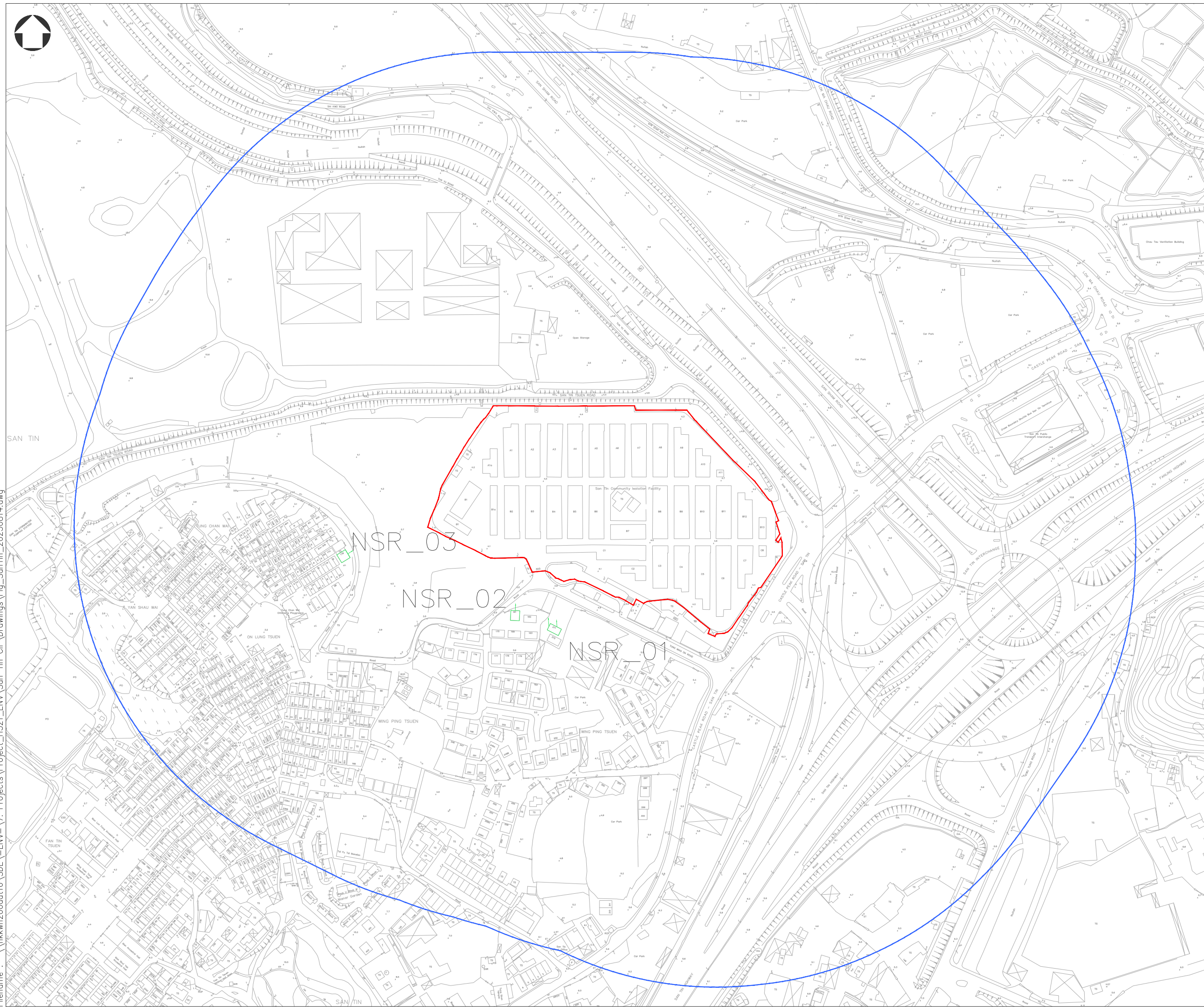
- LEGEND :
- PROJECT SITE BOUNDARY
 - 5M BUFFER DISTANCE
 - 10M BUFFER DISTANCE
 - 20M BUFFER DISTANCE

Date : 2023-08-16
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Rev	Description	By	Date
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Project title AGREEMENT NO. CE47/2020(CE) – TASK ORDER NO. 9 – SAN TIN CIF			
Drawing title BUFFER DISTANCE BETWEEN THE NEARBY ROADS AND THE PROJECT BOUNDARY			
Drawing no.		Rev.	
FIGURE 3.2			
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Scale	Status		
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- LEGEND :
- PROJECT SITE BOUNDARY
 - 300M NOISE ASSESSMENT AREA
 - NOISE SENSITIVE RECEIVERS

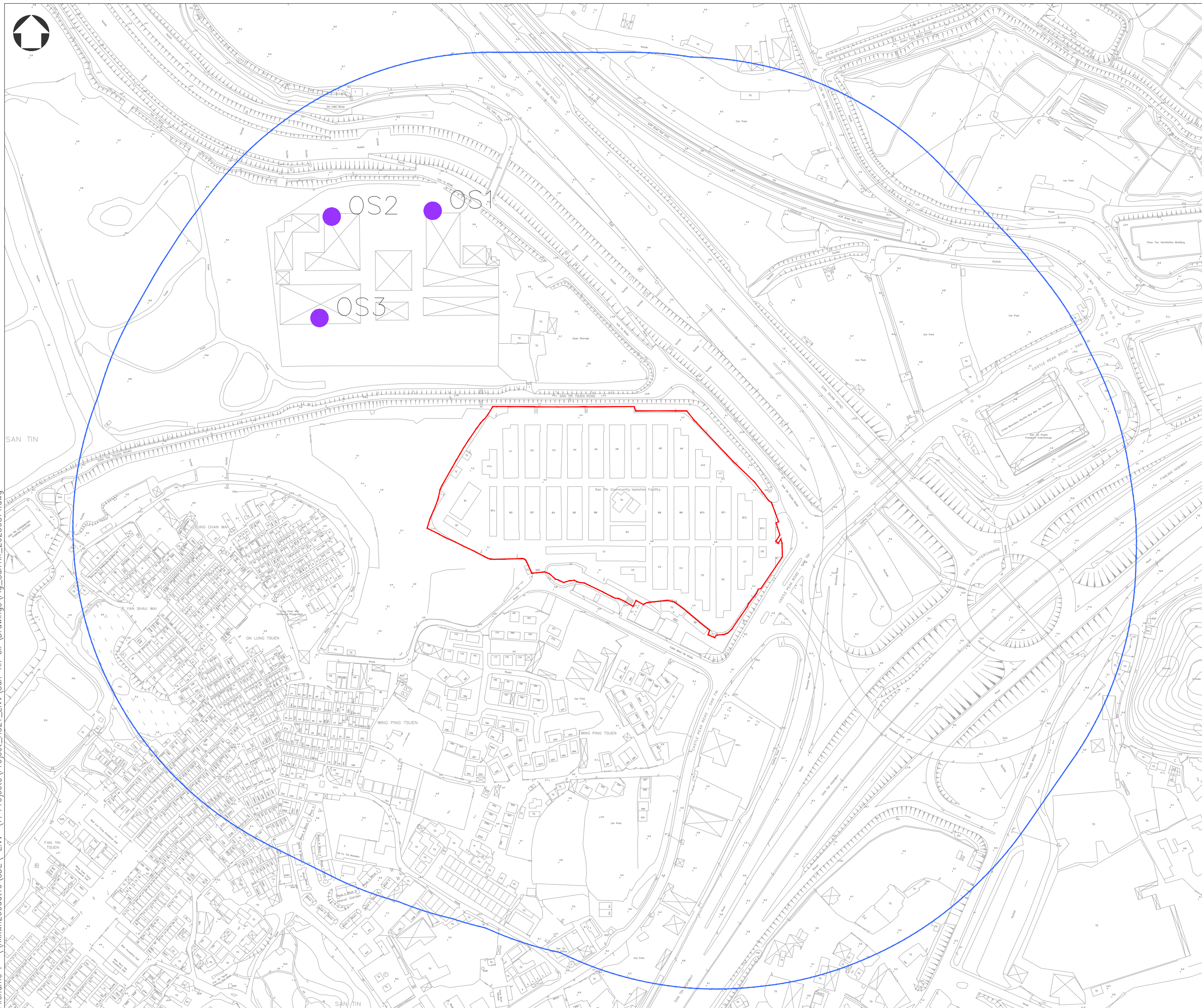


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Drawing no.		FIGURE 4.1		Rev.
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- LEGEND :
- PROJECT SITE BOUNDARY
 - 300M NOISE ASSESSMENT AREA
 - FIXED NOISE SOURCE



Rev	Description	By	Date



Project title
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 TASK ORDER NO. 9 – SAN TIN CIF

Drawing title
 REPRESENTATIVE FIXED NOISE SOURCES

Drawing no. FIGURE 4.2		Rev.	
Drawn	Date AUG2023	Checked	Approved
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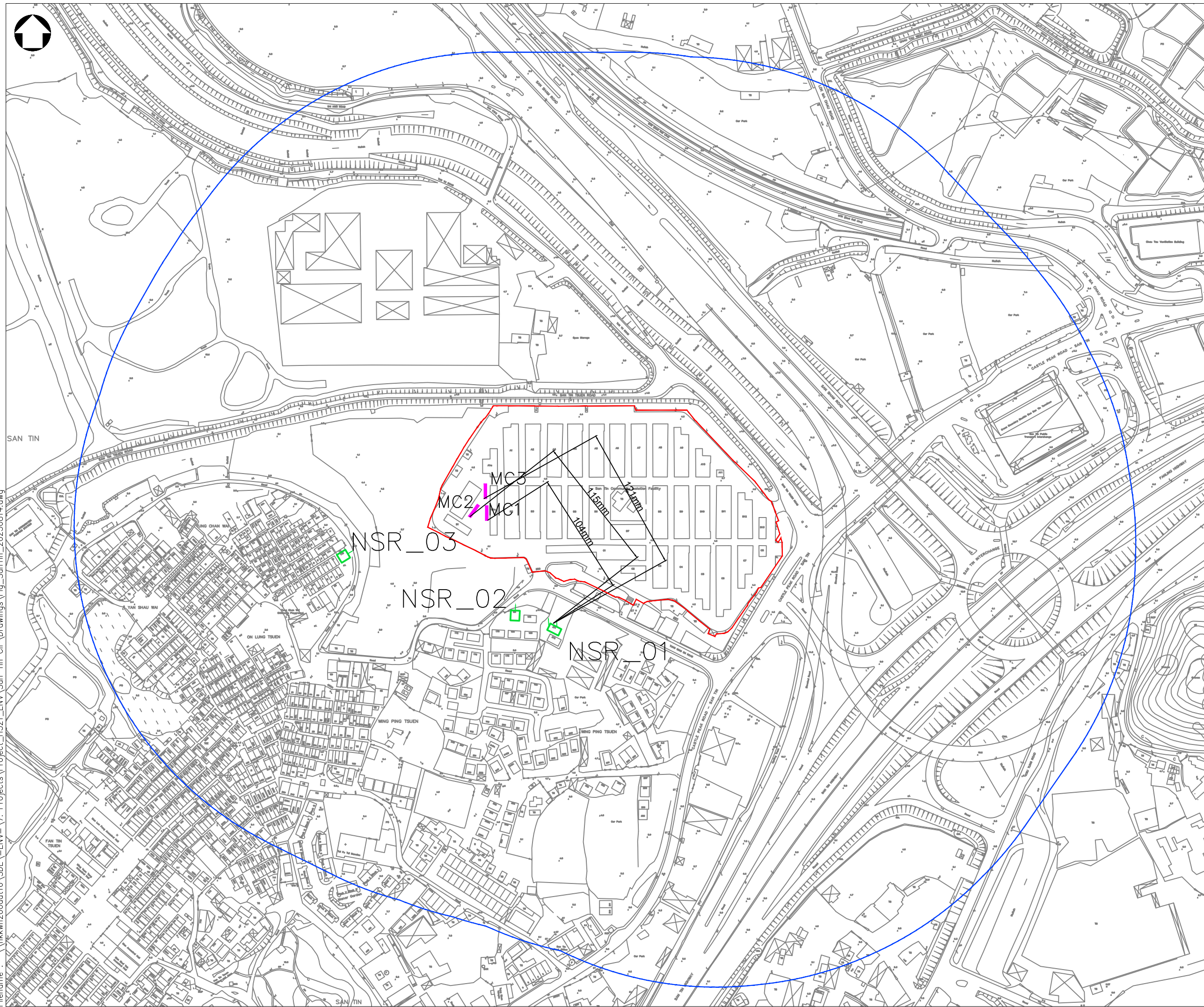
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- LEGEND :
- PROJECT SITE BOUNDARY
 - 300M NOISE ASSESSMENT AREA
 - REPRESENTATIVE NAPs
 - MACHINERY



Rev	Description	By	Date
Consultant			
Project title AGREEMENT NO. CE47/2020(CE) – TASK ORDER NO. 9 – SAN TIN CIF			
Drawing title LOCATIONS OF REPRESENTATIVE FIXED NOISE SOURCES (PLANNED) AND DISTANCE TO REPRESENTATIVE NAPs			
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Drawn	Date AUG2023	Checked	Approved
Scale 1:3000@A3	Status		

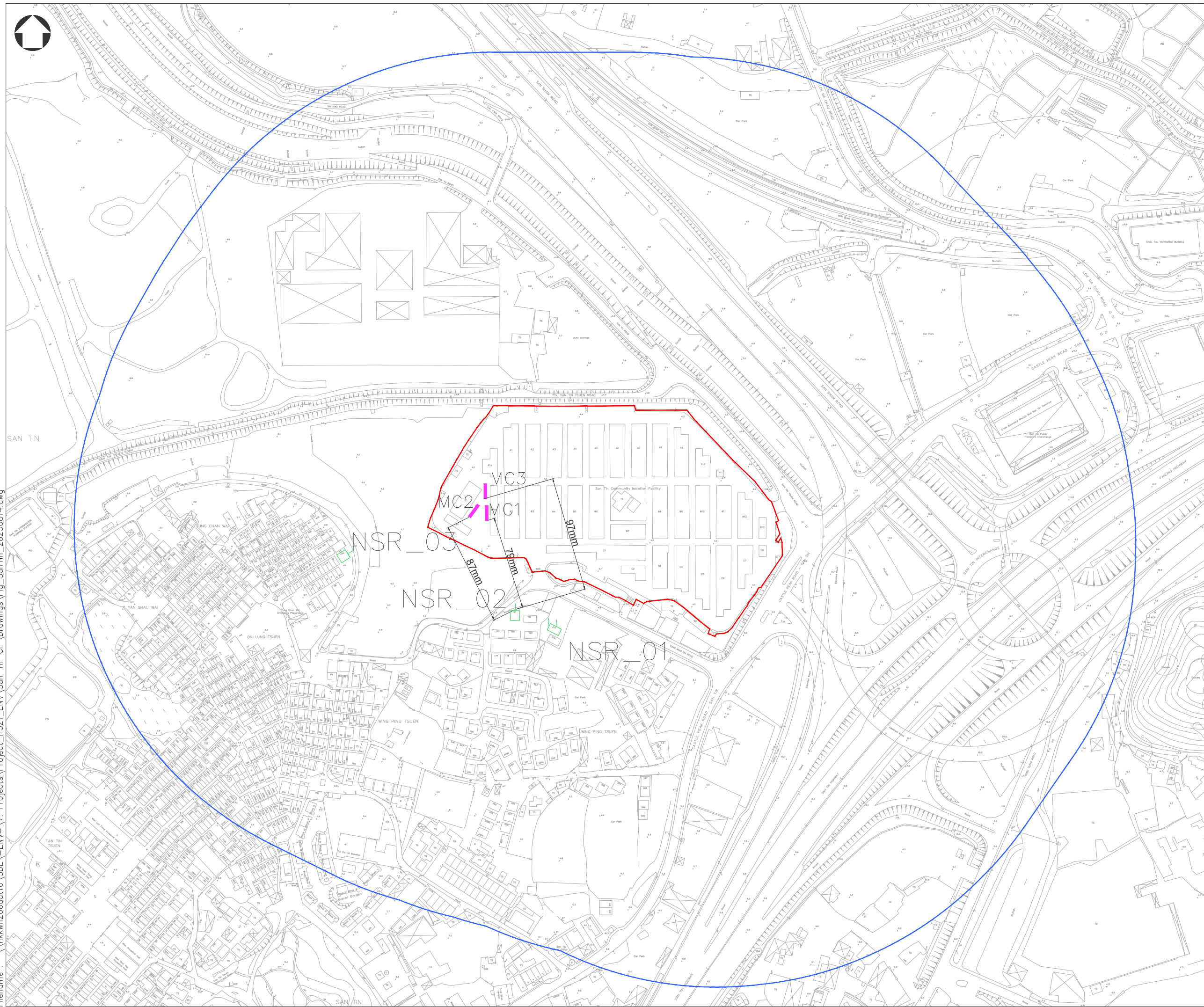
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- LEGEND :
- PROJECT SITE BOUNDARY
 - 300M NOISE ASSESSMENT AREA
 - REPRESENTATIVE NAPs
 - MACHINERY



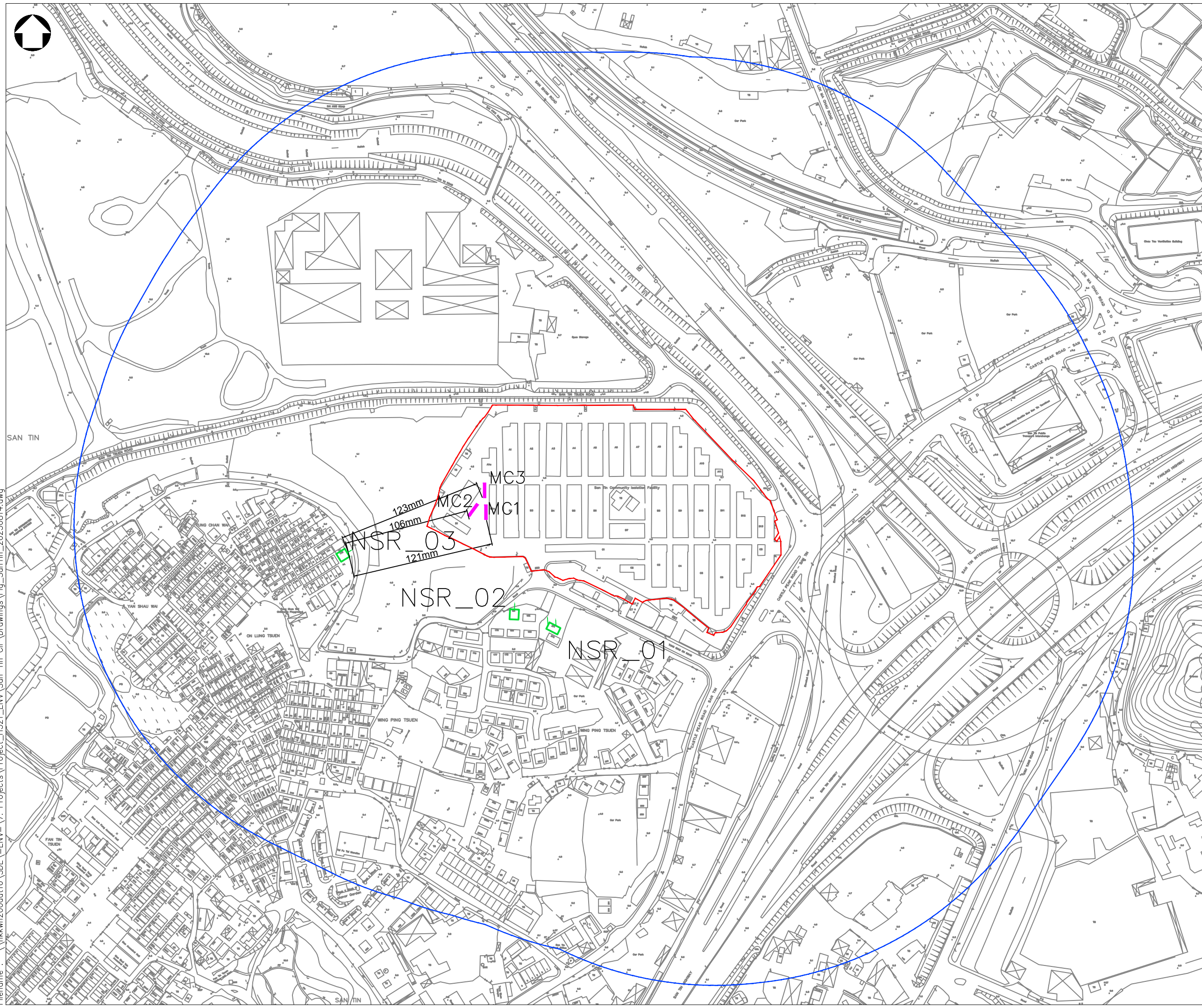
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Drawing title LOCATIONS OF REPRESENTATIVE FIXED NOISE SOURCES (PLANNED) AND DISTANCE TO REPRESENTATIVE NAPs			
Drawing no. FIGURE 4.3b		Rev.	
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- LEGEND :
- PROJECT SITE BOUNDARY
 - 300M NOISE ASSESSMENT AREA
 - REPRESENTATIVE NAPs
 - MACHINERY

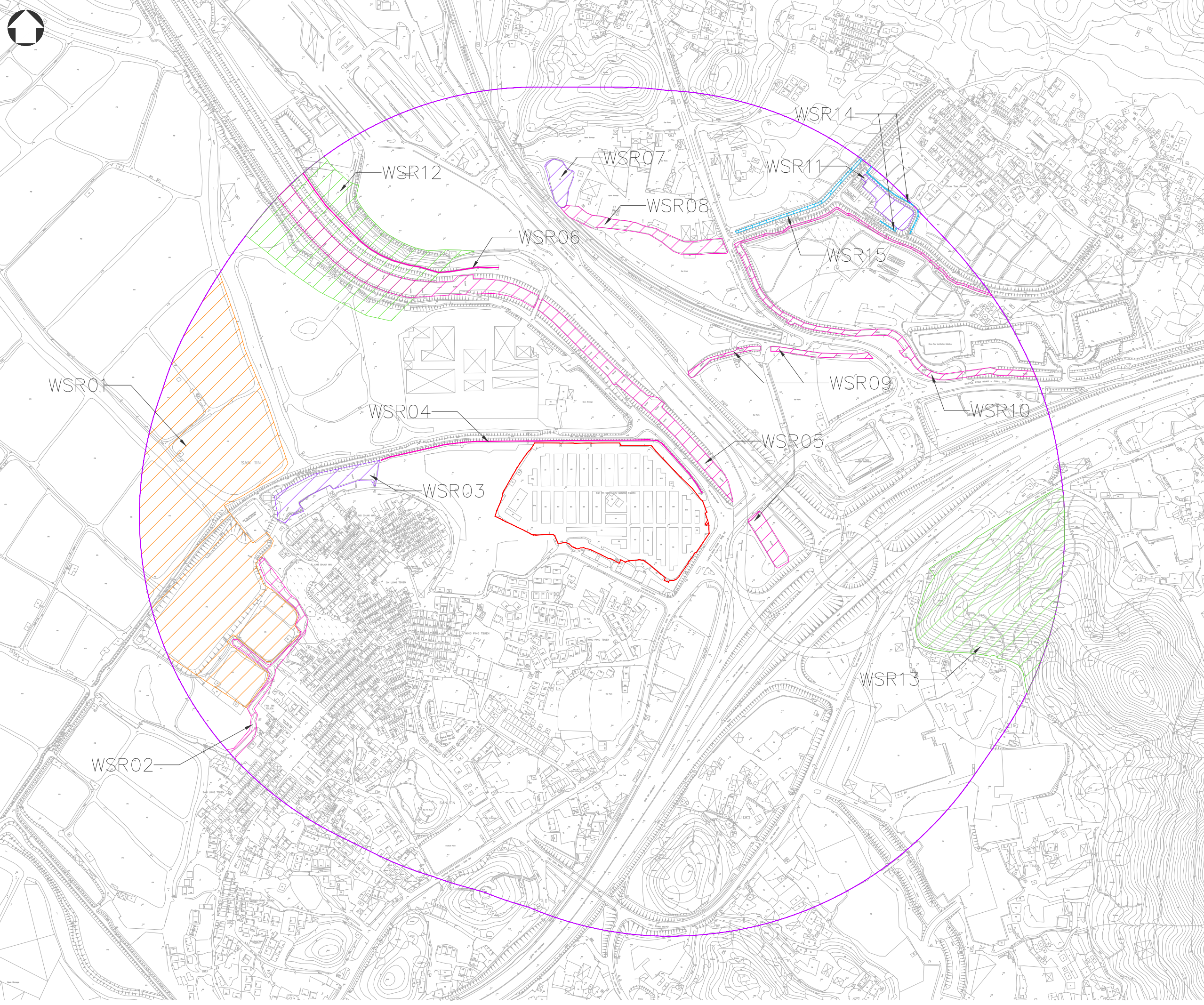
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Rev	Description	By	Date
Consultant			
Project title			
AGREEMENT NO. CE47/2020(CE) – TASK ORDER NO. 9 – SAN TIN CIF			
Drawing title			
LOCATIONS OF REPRESENTATIVE FIXED NOISE SOURCES (PLANNED) AND DISTANCE TO REPRESENTATIVE NAPs			
Drawing no.		Rev.	
FIGURE 4.3c			
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- LEGEND :
- PROJECT SITE BOUNDARY
 - 500M ASSESSMENT AREA
- WATER SENSITIVE RECEIVERS
- ▨ WETLAND
 - ▨ POND
 - ▨ NULLAH
 - ▨ CONSERVATION AREA
 - ▨ WATERCOURSE

Date : 2023-08-14
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Rev	Description	By	Date
Consultant			
			
Project title AGREEMENT NO. CE47/2020(CE) – TASK ORDER NO. 9 – SAN TIN CIF			
Drawing title WATER QUALITY IMPACTS ASSESSMENT 500M BOUNDARY			
Drawing no. FIGURE 5.1		Rev.	
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- LEGEND :
- PROJECT SITE BOUNDARY
 - EPD RIVER WATER MONITORING STATIONS
 - EPD MARINE WATER QUALITY MONITORING STATIONS

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Rev	Description	By	Date



Project title
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 TASK ORDER NO. 9 – SAN TIN CIF

Drawing title
 LOCATIONS OF WATER MONITORING STATIONS

Drawing no.		Rev.	
FIGURE 5.2			
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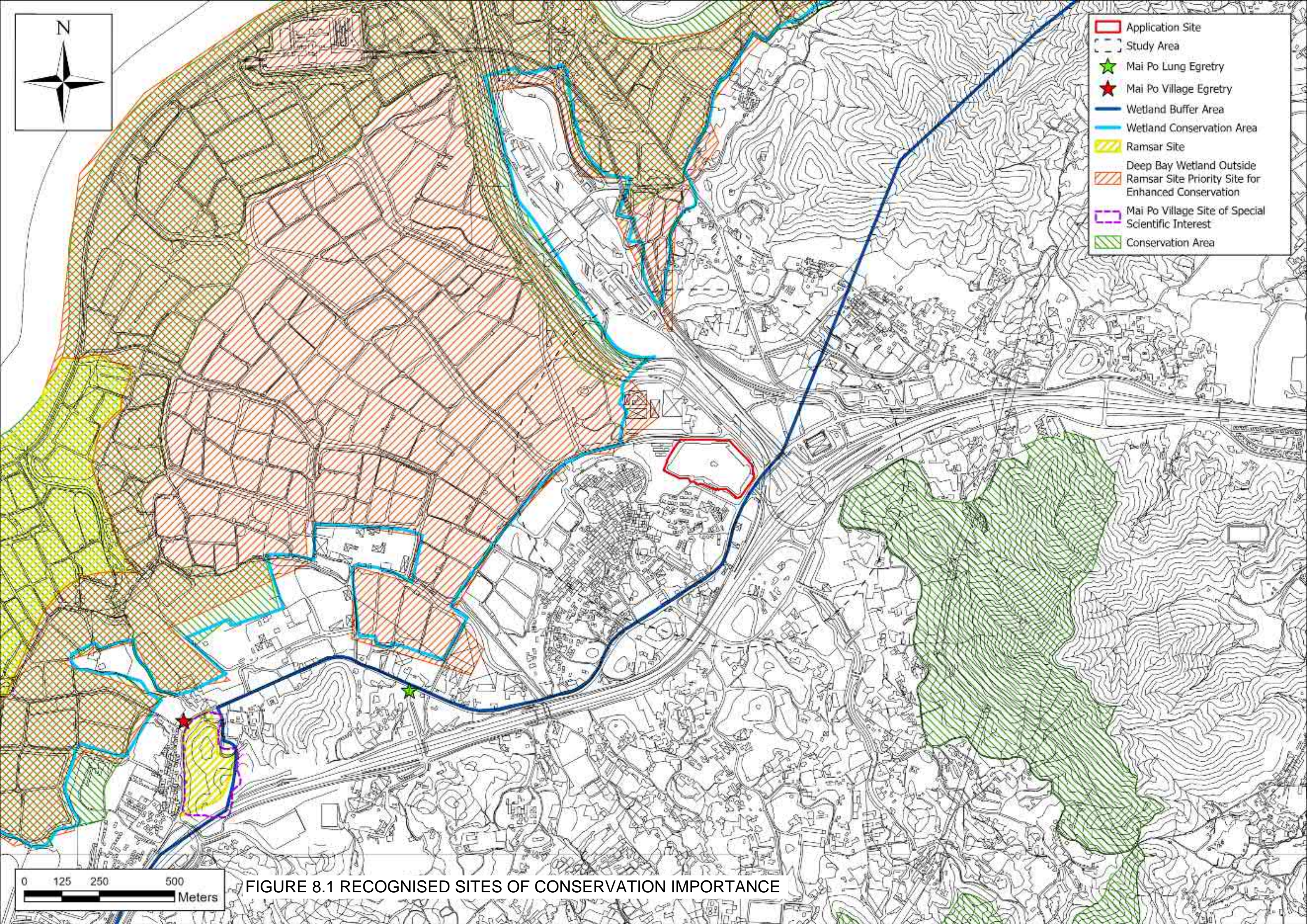


FIGURE 8.1 RECOGNISED SITES OF CONSERVATION IMPORTANCE

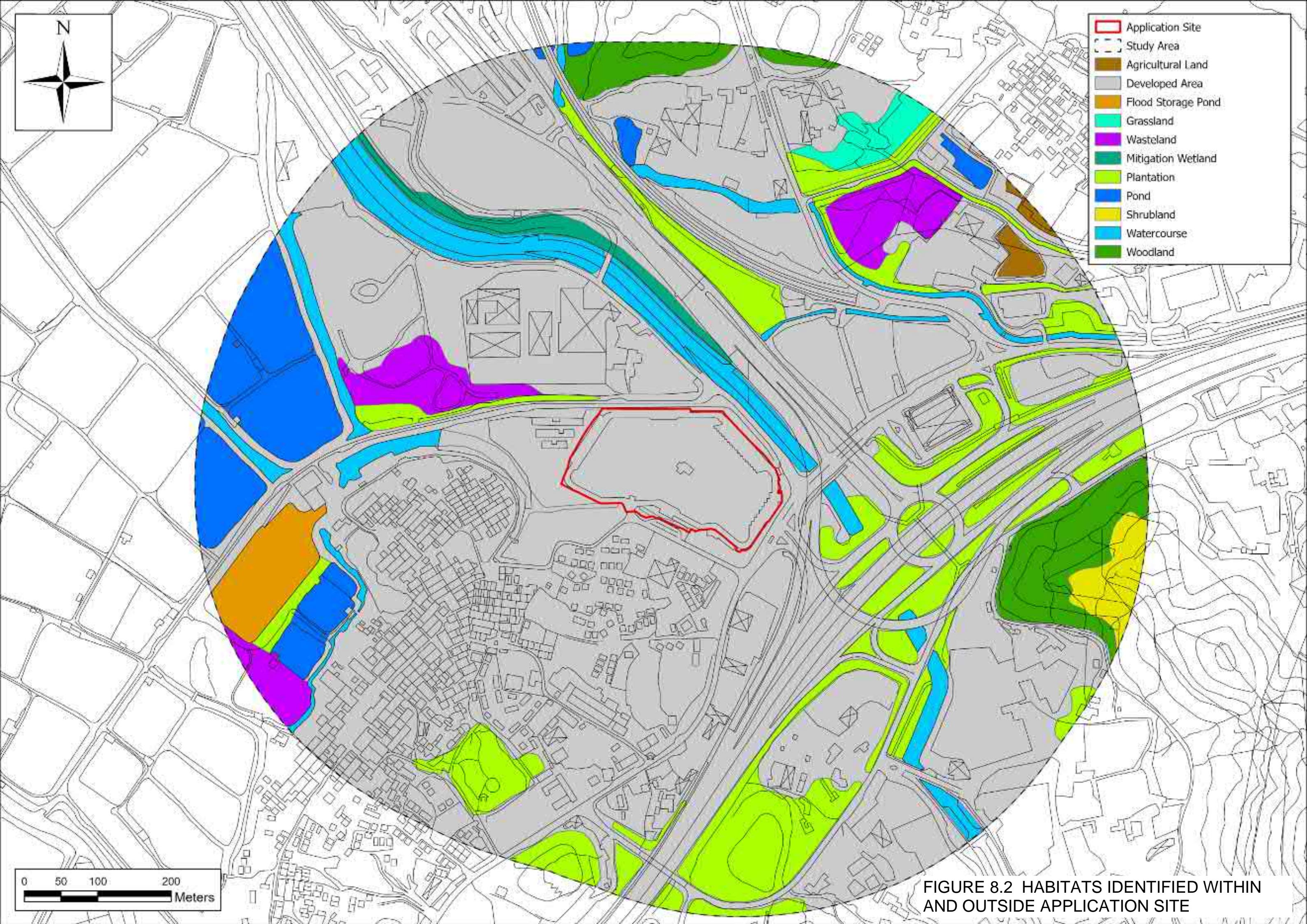


FIGURE 8.2 HABITATS IDENTIFIED WITHIN AND OUTSIDE APPLICATION SITE