



# **Integrated Wheelset Maintenance Centre at Ho Man Tin Siding**

**- Project Profile**

**February 2024**

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## 1 BASIC INFORMATION

### 1.1 Project Title

- 1.1.1 Integrated Wheelset Maintenance Centre (iWMC) at Ho Man Tin Siding (hereinafter referred to “the Project”).

### 1.2 Purpose and Nature of Project

- 1.2.1 The train running mileage has surged due to the expansion of rail network in recent years, leading to an increase of annual wheel replacement demand. The highly labour intensive and heavy-duty wheelset maintenance works for electric multiple unit (EMU) are currently carried out at the workshops at Ho Tung Lau Depot and Pat Heung Depot, which are already at capacity operation with no resilience to cope with growth in the replacement demands. A new centralized wheelsets maintenance facility is therefore required to meet the upsurge demand of wheel maintenance works.
- 1.2.2 As the existing maintenance siding of East Rail Line (EAL) at Ho Man Tin (HMS) has sufficient space and necessary road / rail connections, it is considered that HMS is a suitable location for the setup of iWMC.
- 1.2.3 The iWMC would accommodate equipment and facilities with proven process automation technologies to centralise the inspection, maintenance and reconditioning of wheelsets to cope with the increasing demands of wheelset maintenance.

### 1.3 Name of Project Proponent

- 1.3.1 The Project Proponent is the MTR Corporation Limited (MTRCL).

### 1.4 Description, Scale and History of Project

- 1.4.1 The Project site, covering an area of about 1,700m<sup>2</sup>, is located on the ground floor of Block Z, The Hong Kong Polytechnic University (HKPU), which is bounded by three major roads, namely Princess Margaret Road, Chatham Road South and Hong Chong Road. It is located within “Government, Institution or Community” (G/IC) zone on the Yau Ma Tei Outline Zoning Plan (OZP) No. S/K2/25. The location of the Project site and its surrounding environment is shown in **Figure 1**.
- 1.4.2 HMS was slightly modified during the construction of the Shatin to Central Link (Mong Kok East to Hung Hom) (SCL(MKK-HUH)). The associated environmental impacts due to the modification works at HMS were duly assessed in the approved EIA Report for SCL(MKK-HUH) (Register No.: AEIAR-165/2012) and no significant environmental impacts were resulted during and after the modification works. The modification works was formerly governed by Environmental Permit No. EP-437/2012/A. As mentioned in the approved EIA Report for SCL(MKK-HUH), three siding tracks were reduced to one track with spur track approaching the Hong Kong Polytechnic University Phase 8 (HKPU Phase 8) area and the number of crossing was reduced. After the modification works of HMS, the alignment of the reprovisioned track is slightly further away from the nearby residential blocks (Wylie Court). The operation mode (e.g. train frequency) and function of the siding remained the same and the siding was only be used for maintenance and emergency operation. Given that the HMS was no longer in use under SCL(MKK-HUH) and therefore variation of the EP-437/2012/A was applied and approved by Director of Environmental Protection (DEP) to exclude the project area of HMS on 8 February 2024.
- 1.4.3 The HMS is now under EAL and currently used for storage of goods / major spares only. The HMS will be reconfigured and renovated to accommodate machinery for wheelset maintenance works. Major equipment for wheelset maintenance includes overhead cranes and gantries for transportation of materials within iWMC, and heavy machinery operation for wheel lathing / milling, cleaning, inspection and replacement. The tentative general layout plan of iWMC is presented in **Appendix 1.1**.

1.4.4 Transportation of wheelsets and other necessary materials to iWMC for maintenance works will be carried out by road traffic or rail via the existing track connecting to current HMS. It is expected that the train frequency for transportation of wheelsets and other necessary materials to iWMC will remain the same as the operation of HMS (Section 3.9 of SCL(MKK-HUH) EIA Report refers). Loading and unloading of wheelsets and materials will be carried out within the building structure. The wheel maintenance activities will normally be undertaken during daytime and evening time, while only minimal activities such as cleaning and inspection may be carried out as necessary during night-time.

## **1.5 Material Change to an Exempted Project**

1.5.1 Section 9(2) of the Environmental Impact Assessment Ordinance (EIAO) specifies that Designated Project (DP) in Part I of Schedule 2 that has commenced construction or been in operation before the Ordinance had come into operation is exempted from EIAO. HMS, the former livestock sidings area from 1970s to 1990s, was a siding of the EAL which was in operation before the EIAO was in force on 1 April 1998. Therefore, EAL, including HMS, is classified as an exempted DP.

1.5.2 Section 9(4) of the EIAO specifies that material change to an exempted project requires an EP under the Ordinance unless it is subsequently exempted. Material Change as defined in Schedule 1 of the EIAO means a physical addition or alteration to a designated project which results in an adverse environmental impact as defined in the Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM). Section 6.1 of the EIAO-TM lists out the circumstances of changes that are considered as material change.

1.5.3 Based on the works nature of the proposed iWMC, it is considered to constitute material changes to the exempted DP, i.e. the Ho Man Tin Siding under EAL, where the following circumstances under Section 6.1 of the EIAO-TM are considered applicable:

- 6.1(a) a change to physical alignment, layout or design of the project causing an adverse environmental impact likely to affect existing or planned community, ecologically important areas or sites of cultural heritage;
- 6.1(c) an increase in pollution emissions or discharges or waste generation likely to violate guidelines or criteria in this technical memorandum.

1.5.4 This Project Profile has been prepared for direct application of an environmental permit for the material changes to the exempted DP under Section 5(10) of the EIAO.

## **1.6 Number and Types of Designated Projects Covered by the Project Profile**

1.6.1 The Project is designated project by virtue of Item A.4 “a railway maintenance workshop”, Part 1, Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (Cap. 499).

## **1.7 Name and Telephone Number of Contact Person**

1.7.1 All queries regarding the Project can be addressed to:

Name of Project Proponent:	MTR Corporation Limited
Name of Contact Person:	Mr. Raymond Wong
Telephone Number of the Contact Person:	2621 7304

## 2 OUTLINE OF PLANNING AND IMPLEMENTATION PROGRAMME

### 2.1 Outline of Planning

- 2.1.1 The Project will be implemented by engaging relevant professionals throughout the planning, design and construction stages.
- 2.1.2 The construction works will be carried out by qualified contractors to be appointed under various works contracts.

### 2.2 Project Implementation Programme

- 2.2.1 The construction of the Project will be implemented tentatively from 2024 to 2025. The tentative construction programme is shown in **Appendix 2.1**.

### 2.3 Project Interface

- 2.3.1 Major concurrent projects in the vicinity which would interface with this Project have been identified and the potential cumulative impacts from these concurrent projects have also been reviewed. A summary of findings is presented in **Table 2.1**.

**Table 2.1 Major Interface Projects**

Project	Project Proponent	Implementation Programme	Potential Cumulative Impact
Shatin to Central Link - Mong Kok East to Hung Hom Section (SCL(MKK-HUH))	MTR Corporation Limited	Construction Completed & In operation since May 2022	• Nil <sup>(1)(2)</sup>
Shatin to Central Link – Tai Wai to Hung Hom Section (SCL(TAW-HUH))	MTR Corporation Limited	Construction Completed & In operation since Jun 2021	• Nil <sup>(1)(2)</sup>
Central Kowloon Route (CKR)	Highways Department	Construction commenced in 2017 for completion in 2025 <sup>(3)</sup>	• Nil <sup>(3)</sup>

Notes:

- (1) The construction works of SCL(MKK-HUH) and SCL(TAW-HUH) were completed, and thus cumulative environmental impact is not anticipated during construction phase.
- (2) During operation phase, given that the Project site will be solely used as iWMC, in addition to the nature and scope of the Project, no cumulative operational noise impact is anticipated.
- (3) Reference was from the project website (<https://ckr-hyd.hk/projects/?lang=en>) of the CKR for its construction period. There would be no cumulative impact arising from the nearest drill-and-blast tunnel section located at more than 450m from the Project site. In addition, the ventilation building adjacent to Ho Man Tin West Service Reservoir are located at more than 500m from the Project site and thus cumulative construction dust impact is not anticipated.

### 3 MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT

#### 3.1 Air Sensitive Receivers

3.1.1 Representative air sensitive receivers (ASRs) identified in the vicinity of the Project site are listed in **Table 3.1** and their locations together with 500m study boundary are presented in **Figure 3.1**.

**Table 3.1 Representative Air Sensitive Receivers (ASRs)**

ASR ID	Description	Land Use	No. of Floors	Approx. Closest Distance from Project Site, m
A1	Block Z, The Hong Kong Polytechnic University	Educational Institution	15	Directly above the Project site
A2	Block V, The Hong Kong Polytechnic University	Educational Institution	15	57
A3	Block W, The Hong Kong Polytechnic University	Educational Institution	6	140
A4	Block X, The Hong Kong Polytechnic University	Educational Institution	2	92
A5	Block Y, The Hong Kong Polytechnic University	Educational Institution	14	105
A6	Wylie Court	Residential	20	50
A7	Pakistan Club Hong Kong	Institutional	1	51
A8	Princess Margaret Road Garden	Recreational	-	38
A9	The Hong Kong Girl Guides Association	Institutional	5	115
A10	Filipino Club	Institutional	4	260
A11	Hong Kong Chinese Civil Servants' Association	Institutional	3	233
A12	SCAA King's Park Tennis Court	Recreational	-	103
A13	King's Park Hockey Ground	Recreational	-	131
A14	King's Park Sports Ground	Recreational	-	107
A15	Carmel Secondary School	Educational Institution	5	217
A16	Shun Man House, Oi Man Estate	Residential	23	308
A17	Wing Fung Building	Residential	8	241
A18	Lai Tai Building	Residential	5	260
A19	Kowloon Public Mortuary	Institutional	2	251
A20	Global Funeral Parlour	Institutional	6	254
A21	International Funeral Parlour	Institutional	6	292
A22	China Travel Cargo Logistic Centre	Commercial	10	384
A23	Gun Club Hill Barrack	Residential	6	145
A-P1	New Academic Building of The Hong Kong Polytechnic University	Educational Institution	14	159

#### 3.2 Noise Sensitive Receivers

3.2.1 Representative noise sensitive receivers (NSRs) identified within 300m from the Project site are listed in **Table 3.2** and presented in **Figure 3.2**.

**Table 3.2 Representative Noise Sensitive Receivers (NSRs)**

NSR ID	Description	Land use	No. of Floors	Approx. Closest Distance from Project Site, m
N6	Wylie Court	Residential	20	50
N15	Carmel Secondary School <sup>(1)</sup>	Educational Institution	5	217
N17	Wing Fung Building	Residential	8	241

NSR ID	Description	Land use	No. of Floors	Approx. Closest Distance from Project Site, m
N18	Lai Tai Building	Residential	5	260
N23	Gun Club Hill Barrack	Residential	6	145

Remark: The buildings of the Hong Kong Polytechnic University, and the planned campus expansion at Ho Man Tin Slope of The Hong Kong Polytechnic University are provided with central air-conditioning system and does not rely on opened windows for ventilation. Hence, these buildings are not considered as representative NSRs.

Note:

(1) All rooms in Carmel Secondary School are provided with air-conditioning and soundproof windows.

3.2.2 The existing noise environment is dominated by road traffic noise from heavily trafficked roads including Princess Margaret Road, Chatham Road South and Hong Chong Road, and railway traffic from the EAL.

### 3.3 Cultural Heritage

3.3.1 There is no Sites of Archaeological Interest (SoAI) within the 300m study boundary of the Project.

3.3.2 According to the List of the 1,444 Historic Buildings with Assessment Results and List of New Items for Grading Assessment with Assessment Results (as of December 2023) prepared by Antiques and Monuments Office (AMO), a total of two historic buildings have been identified within 300m study boundary and is listed in **Table 3.3** below, with their locations shown in **Figure 3.3**.

**Table 3.3 Historic Buildings**

ID	Description	Closest Distance from Project Site, m
BH1	Municipal Services Staff Recreation Club (Grade 3)	135
BH2	Club de Recreio (Grade 3)	296

### 3.4 Landscape and Visual

3.4.1 The Project site is located on the ground floor of existing Block Z, HKPU, which has been zoned "G/IC" under the approved Yau Ma Tei OZP No. S/K2/25. No trees would be affected by the construction works of the Project.

3.4.2 The site (i.e. the ground floor of existing Block Z, HKPU) located at a lower level is screened by man-made slope and the adjacent roads (i.e. Princess Margaret Road, Chatham Road South and Hong Chong Road) and thus nearby visual sensitive receivers such as Block Z of HKPU, Wylie Court, Pakistan Recreation Ground, Travelers on Hong Chong Road and Chatham Road South do not have direct view on the site.

## 4 POSSIBLE IMPACT ON THE ENVIRONMENT

### 4.1 Project's Works and Potential Associated Impacts

4.1.1 The internal layout of existing HMS will be reconfigured to accommodate the automatic wheelset maintenance process without major structural modifications to the existing building. Major construction works to be carried out include the following:

- Site Establishment - Hoarding, Site Office, Site Utilities, Site Survey, etc.
- Demolition Works and Minor Excavation / Earthworks;
- Structural Construction / Modification Works;



- Architectural Builder's Work and Finishes (ABWF) and Electrical and Mechanical (E&M) Fix Works; and
- Final Installation & Testing and Commission (T&C) for fire service installations (FSIs).

4.1.2 As discussed in **Section 1.4**, major activities during operation phase would include the following:

- Transportation of the wheelsets by overhead crane/gantry;
- Wheel lathing and milling;
- Wheel cleaning; and
- Inspection and replacement involving heavy machinery operation such as assembling.

4.1.3 Based on the nature and location of the Project as discussed in **Section 1.4** and the associated works discussed in **Section 4.1.1** and **4.1.2**, potential environmental impacts associated with construction and operation of the Project have been identified and are presented in **Table 4.1**.

**Table 4.1 Potential Impact from the Project**

Potential Impact	Potential Impact from the Project	
	Construction Phase	Operation Phase
Air Quality	√	x
Noise	√	√
Water Quality	√	√
Waste Management Implication	√	√
Cultural Heritage	x	x
Landscape and Visual	x	x
Land Contamination	x	√
Ecology	x	x

Notes:

√ - Possible impact

X – Impact not expected

4.1.4 The potential environmental impacts as identified in **Table 4.1** are further discussed below.

## 4.2 Potential Environmental Impacts during Construction Phase

### Air Quality

4.2.1 The anticipated construction period is from 2024 to 2025, and the construction works as presented in **Section 4.1.1** are considered to be minor and localized. Fugitive dust emissions could be generated from construction activities such as excavation works, backfilling, material handling, and wind erosion. However, only a small-scale excavation works (i.e. about 180 m<sup>2</sup>) with approximately 250 m<sup>3</sup> of excavated materials would be conducted, and excavated materials would be reused on-site where feasible. In view of the limited scale of works and the number of PME to be used (See **Appendix 4.2**), in addition to the majority of the construction works related to building services works within the building, it is anticipated that, with the implementation of good site practices and dust suppression measures as discussed in **Section 5.1.1**, the proposed construction works would not result in significant fugitive dust emissions and the potential fugitive dust impact is expected to be minimal.

4.2.2 In addition, in view of limited works area and scale of the Project, only limited number of diesel-powered construction plant will be adopted during the construction of the Project, therefore the associated gaseous emissions are expected to be limited.

4.2.3 As discussed in **Section 2.3**, potential cumulative environmental impact is not anticipated in view of considerable separation distance between the Project site and the concurrent projects.

### Noise

- 4.2.4 The major source of construction noise impact will be the operation of items of powered mechanical equipment (PMEs) for carrying out construction activities. The activities will be conducted daily from 7am to 7pm excluding Sundays and public holidays. A construction noise impact assessment has been performed in order to assess the anticipated noise levels at nearby NSRs during the construction phase.

*Environmental Legislation, Standards, and Guidelines*

- 4.2.5 Noise impacts were assessed in accordance with Annexes 5 and 13 of the Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM).
- 4.2.6 The Noise Control Ordinance, Cap. 400 (NCO) and Environmental Impact Assessment Ordinance, Cap. 499 (EIAO) provide the statutory framework for noise control. Assessment procedures and standards are set out in the Technical Memorandum on Noise from Construction Work other than Percussive Piling (GW-TM).
- 4.2.7 There is no statutory limit on construction noise during non-restricted hours (i.e. 0700 – 1900 hours) under NCO and related TMs. Nevertheless, the EIAO-TM promulgated under the EIAO imposes noise criteria to ensure a better environment. Daytime general construction works (excluding percussive piling) between the 0700 – 1900 hours on weekdays, is controlled under the EIAO-TM. Annex 5 of the EIAO-TM sets out the construction noise assessment limits, which are Leq(30 min) 75 dB(A) for domestic premises, hotels and hostels; and Leq(30 min) 70 dB(A) for schools during normal hours (65 dB(A) during examination periods) and all other places where unaided voice communication is required. The noise criteria are summarised in **Table 4.2**.

**Table 4.2 Noise Criteria for Daytime Construction Noise**

Uses	Daytime (0700 to 1900 hours on any day not being a Sunday or general holiday) (Leq, 30min, dB(A))
Domestic premises, hostel	75
Educational Institution	70
Educational Institution (during examination)	65

Notes:

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

*Assessment Methodology*

- 4.2.8 The construction noise impact assessment was conducted based on the following procedures:
- Determine 300m from the boundary of the Project and the works of the Project;
  - Identify and locate representative NSRs that may be affected by the works;
  - Obtain the construction method and work sequence for the construction period;
  - Obtain the construction plant inventory for each corresponding construction work sequence;
  - Determine the Sound Power Levels (SWLs) of the plant items according to the information stated in the GW-TM or other recognised sources of reference, where appropriate;
  - Calculate the correction factors based on the distance between the NSRs and the notional noise source positions of the work sites;
  - Apply corrections for façade, distance, barrier attenuation, acoustic reflection where applicable;
  - Predict construction noise levels at the NSRs in accordance with GW-TM;

- Predict the cumulative noise impacts from any concurrent construction works in the vicinity of the proposed work;
- Examine all practical mitigation measures such as alternative construction methodology, quiet plant, noise barrier, etc. to alleviate the predicted noise exceedances as much as practicable; and
- Consider noise mitigation measures with reference to Annex 13 of EIAO-TM, EIAO Guidance Note “Preparation of Construction Noise Impact Assessment under the Environmental Impact Assessment Ordinance” [GN 9/2010] and Good Practices on Mitigation Construction Noise by EPD.

4.2.9 The PME to be employed were grouped under each construction activity for evaluation of noise to be generated and the construction noise impact assessment was carried out based on standard acoustic principles and practices. SWLs of the PMEs were obtained from Table 3 of the GW-TM and are presented in **Appendix 4.1**. The plant inventory for the proposed construction activities was confirmed by the Project’s engineers to be feasible, realistic, practical and practicable in completing the works and is presented in **Appendix 4.2**.

4.2.10 Since the building blocks of the HKPU are served by central air-conditioning system and do not rely on opened windows for ventilation, they are not identified as representative NSRs for construction noise impact assessment. Construction noise calculation was therefore conducted at the nearest NSR, Wylie Court, with its location shown in **Figure 4.1**.

*Unmitigated Construction Noise Impact During Non-Restricted Hours*

4.2.11 The predicted unmitigated noise levels are summarized in **Table 4.3**, with detailed calculations under unmitigated scenario presented in **Appendix 4.3**. The predicted noise levels at the representative Noise Assessment Point (NAP) would be in the range of 67 – 77 dB(A), which exceed with criterion set out in EIAO-TM (i.e. 75 dB(A)).

**Table 4.3 Predicted Noise Levels (PNL) Generated from Proposed Construction Activities (Unmitigated Scenario)**

NAP ID	Description	Land Use	EIAO-TM Noise Criteria, $L_{eq\ 30mins}$ , dB(A)	Max. Predicted Construction Noise Levels, $L_{eq\ 30mins}$ , dB(A)	Exceedance, dB(A)
N6a	Block D, Wylie Court	Residential	75	77	2

*Mitigation Measures*

4.2.12 The results of the construction noise assessment indicated that there would be exceedance of the construction noise criterion at Wylie Court with no mitigation measures in place. The use of movable noise barrier to screen noise from construction plant was considered to alleviate the adverse construction noise impacts. Noise barriers will be more effective when located immediately adjacent to the PME and can reduce the noise level by up to 5 dB(A) and 10 dB(A) for mobile and stationary plants, respectively. The Contractor should be responsible for design of the noise barrier with due consideration given to the size of the PME and the requirement of intercepting the line of sight between the NSRs and PME. The use of movable noise barrier for PME adopted for noise assessment is detailed in **Appendix 4.4**. It is recommended that the proposed mitigation measures should be specified in the construction contracts to ensure that they will be duly implemented by the Contractor.

4.2.13 In addition, good site practices listed in **Section 5.1.4** should be implemented as far as practicable to minimize impacts during the construction phase.

4.2.14 The “Recommended Pollution Control Clauses for Construction Contracts” published by the EPD should be adopted in the Contract Specification for the Contractor to follow and implement relevant measures and good site practices in minimising noise impact.

*Mitigated Construction Noise Impact During Non-Restricted Hours*

- 4.2.15 With the implementation of the movable noise barrier mentioned in **Section 4.2.12** above, the predicted noise levels at the NSR would be in range of 67 – 74 dB(A). Therefore, no adverse construction noise impact is anticipated. The predicted mitigated noise levels are summarized in **Table 4.4**, with detailed calculations under presented in **Appendix 4.5**.

**Table 4.4 Predicted Noise Levels (PNL) Generated from Proposed Construction Activities (Mitigated Scenario)**

NAP ID	Description	Land Use	EIAO-TM Noise Criteria, $L_{eq\ 30mins}$ , dB(A)	Max. Predicted Construction Noise Levels, $L_{eq\ 30mins}$ , dB(A)	Exceedance, dB(A)
N6a	Block D, Wylie Court	Residential	75	74	-

*Quieter Construction Methods*

- 4.2.16 Traditional renovation works relies on mini robot hydraulic / handheld breaker for concrete breaking which would generate construction noise impact to nearby NSRs. As such, where practicable, the Contractor should follow EPD's "Guidelines on Managing Quiet Renovation" and adopt quieter concrete breaking equipment (e.g. hydraulic crusher, hand-held concrete crusher or hand-held breaker with QPME label) in some activities as a mitigation measure. These quieter concrete breaking equipment would minimise noise impact to the nearby NSRs. The Contractor should proactively adopt quieter demolition equipment to carry out the demolition works, where practicable. Use of quieter construction methods (i.e. hydraulic crusher, hand-held concrete crusher) and movable noise barrier will be specified in the construction contract to ensure proper implementation of all practical measures.

Water Quality

- 4.2.17 The Project is located in Hung Hom Area and would involve land-based construction works only. There is no water sensitive receiver within 500m from the Project boundary. Potential major sources of water quality impacts may arise from general construction activities, the discharge of construction run-off, accidental spillage of chemical and sewage effluent due to workforce during the construction phase.
- 4.2.18 Given that the Project site is currently paved and provided with proper drainage, with implementation of good site practices as stipulated in EPD's Practice Note for Professional Persons ProPECC PN 2/23 "Construction Site Drainage" and "Recommended Pollution Control Clauses for Construction Contracts" (**Sections 5.1.5 to 5.1.6** refer) to control the construction site discharges, unacceptable impacts on the water quality are not expected.
- 4.2.19 The use of engine oil and lubricants, and their storage as waste materials also has the potential to create impacts on the water quality if spillage occurs and enters adjacent water environment. Waste oil may infiltrate into the surface soil layer, or run-off into nearby water environment, increasing hydrocarbon levels. Chemical waste should be handled and stored in accordance with the *Code of Practice on the Packaging, Labelling and Storage of Chemical Waste*. Any spillage should be cleaned immediately, and the wastewater should be treated prior to discharge to the sewer or treated as chemical waste for disposal at the Chemical Waste Treatment Facility. The potential impacts could however be mitigated by practical mitigation measures and good site practices presented in **Section 5.1.5**.
- 4.2.20 Sewage would be generated from the workforce during the construction phase. As the Project site has connected to public sewerage network, sewage generated from the workforce will be discharged to the public foul sewers. Portable toilets may also be provided when necessary and proper arrangements will be made with a licensed contractor to collect the sewage regularly for off-site treatment and disposal. Provided that all of the recommended mitigation measures,

good construction site practices and house-keeping are properly implemented and all construction site / works area discharges comply with the Technical Memorandum on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters (TM-DSS) standards, it is unlikely that sewage generated from the workforce would have adverse water quality impact. Mitigation measures and good site practices given in **Section 5.1.5** should be implemented.

#### Waste Management

- 4.2.21 Waste to be generated from the construction of the Project will comprise construction and demolition (C&D) materials, chemical waste and general refuse. In view of the small scale of the Project, the amount of C&D materials generated from the construction works (i.e. construction of transformation room, CLP draw pits and cable trench) is expected to be small, with approximately 250m<sup>3</sup> inert and 150m<sup>3</sup> non-inert C&D materials. In order to minimise the waste quantity, soft inert materials (e.g. fill), should be used for backfilling where feasible, while the surplus C&D materials would be delivered to the appropriate facilities (i.e. Public Fill Reception Facilities for broken concrete and Fill Bank for soft inert materials). The reception site of inert C&D materials is subject to the designation by the Public Fill Committee according to DEVB TC(W) No.6/2010. Other wastes such as chemical wastes and general refuse would be minimal in quantity due to the nature and small scale of works. With adoption of good site practices and waste reduction measures as recommended in **Section 5.1.8 – 5.1.12**, there would be no adverse environmental impacts arising from the handling, transportation and disposal of wastes during construction stage.

#### Cultural Heritage

- 4.2.22 Referring to **Section 3.3**, there is only two historic buildings and no SoAI located within 300m of the Project. As there are no cultural heritage resources within the Project Site, no direct impact on cultural heritage resources is anticipated. Due to considerable separation distances (>100 m) between the Project Site and the historic buildings, in addition to only minor and small scale construction works to be undertaken, potential vibration impact to the historic buildings is not expected. Therefore, adverse impact to cultural heritage resources is not anticipated.

#### Landscape and Visual

- 4.2.23 No tree will be affected due to the proposed construction works. In view of the scale, nature and location of the Project, no landscape and visual impacts are anticipated during the construction of the Project.

#### Land Contamination

- 4.2.24 Based on the findings of the approved EIA report for SCL(MKK-HUH) (Register No.: AEIAR-165/2012), no potentially contaminated site was identified within the HMS. As mentioned in **Section 1.4**, the HMS is being used for storage of goods / major spares only. Neither maintenance works nor other polluting activity are being conducted within the Project site, land contamination issue is therefore not expected.

#### Ecology

- 4.2.25 Given that the Project site is located in urban area where ecological resources are limited and the construction work will be undertaken largely within the building structure, no ecological impact is therefore anticipated.

### **4.3 Potential Environmental Impacts during Operation Phase**

#### Air Quality

- 4.3.1 Potential sources of air quality impact include the use of vehicles for material transportation to iWMC. However, there would be no more than 2 vehicles per hour for transportation of the necessary materials and wheelsets, the increase in traffic due to the Project is considered minimal, no significant air quality impact is therefore envisaged. For the wheelset maintenance activities described in **Section 4.1.2**, all of the machines involved would be electric-powered such that exhaust gases are not expected. The wheelset maintenance activities will be carried out under an enclosed workplace and will not have chimney exhaust from the workplace. Wheelsets will be cleaned by water with cleaning agents in enclosed cleaning machines, therefore, generation of dirt and vapour is not expected. Small amount of VOCs containing solvent may be used manually for gearbox cleaning, when necessary. Provided that the operator would follow the regulations related to VOCs, the impact due to VOCs emission is expected to be minimal.

#### Noise

- 4.3.2 As described in **Section 4.1.2**, wheelset maintenance activities will include component transporting by overhead crane and gantry, lathing / milling, cleaning, inspection and replacement involving heavy machinery operation such as assembling. The wheel maintenance activities will be carried out during daytime and evening (0700 – 2300 hours) only within the building structure.
- 4.3.3 Transportation of necessary materials and wheelsets will be largely by road vehicle and thus no increase of train frequency at day and night times is anticipated. There would be no more than 2 vehicles to be generated per hour during the operation of the Project, and thus no adverse off-site road traffic noise impact is anticipated. There is an access road inside building boundary, the loading and unloading activities should be conducted within building structure.
- 4.3.4 Major source of operational noise impact will be the fixed plant used for wheelset maintenance activities. Given that noise specifications and exact locations of fixed plant items are not available during the preparation of this Project Profile, a preliminary fixed plant noise assessment was conducted to estimate the maximum allowable sound power levels of the fixed plant noise sources based on the assessment methodology stated in **Sections 4.3.10 to 4.3.12**. The design of fixed noise source should be reviewed by Engineer/Contractor to ensure the compliance of NCO and EIAO-TM criteria in the detailed design stage or fitting-out stage.

#### *Environmental Legislation, Standards, and Guidelines*

- 4.3.5 Fixed plant noise impact was assessed in accordance with Annexes 5 and 13 of the EIAO-TM, and Technical Memorandum for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Sites (IND-TM) under NCO.
- 4.3.6 Fixed noise sources associated with the Project are controlled by the NCO and IND-TM. The ANL is a function of the type of area within which the NSRs are located, and the degree of the effect on the NSRs of influencing factors such as major roads and industrial areas.
- 4.3.7 More stringent criteria for planned fixed plant noise impact stipulated in the EIAO-TM for planning purposes are as follows.
- 5 dB(A) below the appropriate ANL set out in the IND-TM; or
  - prevailing background noise level where the prevailing background noise level is 5 dB(A) below the appropriate ANL (i.e. ANL – 5 dB(A)).
- 4.3.8 The ANLs for different time periods are given in **Table 4.5**. In any event, the Area Sensitivity Rating (ASR) assumed in this Project Profile is for indicative assessment only. Therefore, the Noise Control Authority shall determine noise impact from concerned 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 the Project Profile shall

bind the Noise Control Authority in the context of law enforcement against any of the fixed noise sources being assessed.

**Table 4.5 Acceptable Noise Levels for Fixed Noise Source**

Time Period	ANL, dB(A)			ANL-5, dB(A)		
	ASR 'A'	ASR 'B'	ASR 'C'	ASR 'A'	ASR 'B'	ASR 'C'
Daytime and Evening (0700 to 2300 hours)	60	65	70	55	60	65
Night (2300 to 0700 hours)	50	55	60	45	50	55

- 4.3.9 Based on Annual Traffic Census (ATC) 2022, the annual average daily traffic (AADT) of Chatham Road South, Hong Chong Road and Gascoigne Road Flyover are more than 30,000, and therefore these roads are classified as an Influencing Factor (IF) according to IND-TM. Given that the NSRs in the vicinity of iWMC are located in urban area and directly affected by the influencing factors. The ASR of NSRs in the vicinity of iWMC are considered as ASR C.

#### *Assessment Methodology*

- 4.3.10 For the assessment of noise from the fixed plant, the maximum allowable sound power levels (Max. SWLs) of the identified fixed noise sources were determined by adopting standard acoustics principles. The following formula is used for calculating the Max. SWLs of the fixed plant:

$$\text{SPL} = \text{Max SWL} - \text{DC} + \text{FC} + \text{BC}$$

where

SPL	Sound Pressure Level, in dB(A)
Max SWL	Maximum Permissible Sound Power Level, in dB(A)
DC	Distance Attenuation, in dB(A) (i.e. $20 \log D + 8$ [where D is the distance in metres])
FC	Facade Correction, in dB(A) (i.e. 3 dB(A))
BC	Barrier Correction, in dB(A)

- 4.3.11 It is assumed that all the fixed plant within the iWMC would be operated at the same time as worst-case scenario. Screening correction offered by buildings or other structures was taken into account in calculating the predicted noise levels. Barrier correction of -10 dB(A) was applied if the direct line of sight between the noise source and NSR is blocked by buildings or natural terrains. A positive 3 dB(A) was added to predicted noise levels at the NSRs due to the façade effect.
- 4.3.12 Corrections of tonality, intermittency or impulsiveness were not included owing to the lack of design/supplier information at this stage. If the noise exhibits any of these characteristics during detailed design or procurement stage, the Max. SWLs of the plants should be reduced in accordance with the recommendation given in IND-TM. The design of the fixed plant noise sources associated with the operation of the Project will comply with the requirements in EIAO-TM having due regard to the characteristics of tonality, impulsiveness and intermittency.

#### *Prevailing Background Noise Measurement and Noise Criteria*

- 4.3.13 Background noise measurements were conducted near Wylie Court to obtain prevailing background noise levels.
- 4.3.14 In accordance with IND-TM, sound level meter in compliance with International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1) specifications were used for carrying out the noise measurement. Immediately prior to and following each noise measurement, the accuracy of sound level meter was checked using an acoustic calibrator generating 94dB at 1000 Hz. Measurement was considered to be valid with the calibration level from before and after the noise measurement within 1.0 dB(A). Otherwise, repeat of noise

measurement would be conducted after repair or re-calibration of the equipment. **Table 4.6** summarizes the equipment used in the noise measurement.

**Table 4.6 Noise Measurement Equipment**

Equipment	Model <sup>(1)</sup>
Integrating Sound Level Meter	• Nti XL2 (Serial No. A2A-17440-E0)
Calibrator	• B&K 4231 (Serial No. 3006428)

Note:

(1) Calibration certificates are provided in **Annex B** of **Appendix 4.6**.

4.3.15 During the noise measurement, the following procedures were followed:

- The measurements were made in free field condition. The microphone of the sound level meter was positioned about 3 m from the external wall of Wylie Court.
- Parameters such as frequency weighting, the time weighting and the duration of measurement were set as follows:
  - Frequency weighting: A
  - Time weighting: Fast
  - Duration of measurement: 24 hours (with data being logged at every one second)
- Noise measurements were conducted in accordance with standard acoustic principles and practices in the relation to weather conditions.

4.3.16 Location of the prevailing background noise measurement are shown in **Figure 4.2** with the measurement details presented in **Appendix 4.6**. The prevailing noise measurement results are presented in **Table 4.7** below.

**Table 4.7 Summary of Measured Prevailing Background Noise Levels**

ID	Measurement Location	Dominant Noise Source	Measured Noise Level, L <sub>90</sub> (1hr), dB(A) <sup>(1)</sup>	
			Daytime and Evening (0700 to 2300 hours)	Night-time (2300 to 0700 hours)
M01	Wylie Court	Road noise from Chatham Road South	65	59

Note:

(1) A facade correction of 3 dB(A) has been included in the measurement results.

4.3.17 Appropriate noise criteria for fixed plant noise assessment were determined by comparing the prevailing background noise levels as presented in **Table 4.7** and the appropriate ANL-5 dB(A). The proposed fixed plant noise criteria for the representative NSRs are 65 dB(A) for daytime/evening period and 55 dB(A) for night-time period.

4.3.18 Since the building blocks of the HKPU are served by central air-conditioning system and do not rely on opened windows for ventilation, they are not identified as representative NSRs for fixed plant noise assessment. Fixed plant noise calculations were therefore conducted at the nearest NSRs, Wylie Court, Wing Fung Building and Gun Club Hill Barrack, with their locations shown in **Figure 4.3**.

*Maximum allowable SWLs*

4.3.19 The summary of maximum allowable SWLs of the planned fixed noise sources is presented in **Table 4.8** and the detailed noise calculations are shown in **Appendix 4.7**.

**Table 4.8 Summary of Maximum Allowable Sound Power Levels**



Fixed Plant Source	Direction Facing	Maximum Allowable SWL during Daytime/Evening Period, dB(A)	Maximum Allowable SWL during Night-time Period, dB(A)
East Facade	East	110	101
South Facade	South	113	103
West Facade	West	103	93
North Facade	North	105	95

4.3.20 Based on the preliminary assessment results, the predicted maximum allowable SWLs are in the range of 93 – 113 dB(A) and are considered achievable by selection of proper plant and adoption of acoustic treatment based on the past experience of other similar railway projects. The determined maximum allowable sound power levels of planned fixed plants will be incorporated into contract requirement and taken into consideration during plant and mitigation measure in order to ensure it is properly implemented and adhered to. Prior to the operation of the Project, the Project Proponent should conduct noise commissioning tests at / near the representative NSRs (i.e. Wylie Court, Wing Fung Building and Gun Club Hill Barrack) to verify the operation noise from fixed plant within the criteria determined in this Project Profile. The test should be carried out by a qualified person possessing at least 7 years of noise control experience and a corporate membership of Hong Kong Institute of Acoustics or equivalent. The noise commissioning test report should be submitted to the ET Leader and IEC for approval.

4.3.21 With the adoption of maximum allowable SWLs, it is anticipated that there would be no adverse fixed plant impact at the NSRs. Nevertheless, it is also recommended the following measures should be considered and implemented as far as practicable:

- Choose quieter plant and equipment;
- Include noise levels specification when purchasing new fixed plant items;
- Locate noisy fixed plant items as far as practicable from the openings of the building, such as entrances, exits and the louver wall at the west side of the Project Site; and
- Develop and implement a scheduled plant maintenance programme so that plant items are properly operated and serviced. The programme should be implemented by properly trained personnel.

#### Water Quality

4.3.22 Sewage effluents generated from staffs of iWMC, wastewater discharged from general cleaning and washing, and accidental spillage of chemicals would be the key potential sources of water pollution. The total flow rate of sewage effluents and wastewater from general cleaning and washing would be about 3.5 L/s. Wastewater from general cleaning and washing would be discharged via standard oil/grit interceptors/chambers for removal of oil, lubricants, grease, silt and grit from the wastewater before being discharged into the existing foul sewer system via public foul water terminal manhole. With the proper connection to the existing foul sewer system and adoption of standard oil/grit interceptors/chambers, no adverse water quality impact would be anticipated. Discharge of any effluent, other than domestic sewage, into the public sewers will be regulated under the WPCO and the relevant dischargers shall apply to the EPD for a discharge licence. The discharge quality must satisfy all the standards listed in the TM-DSS and comply with the requirements specified in the discharge licence.

4.3.23 About 4m<sup>3</sup> wastewater would be generated monthly from wheelset cleaning and maintenance process such as axle cleaning, axle paint removal, axle magnetic particle inspection and wheelset ultrasonic testing. This type of wastewater would be temporarily stored in an aboveground wastewater tank and collected by licensed waste collector regularly.

- 4.3.24 A number of chemicals such as paints, lubricants and used batteries would be stored onsite and be used for supporting the operation of the Project. Chemical wastes will be properly stored onsite and will be collected regularly by licensed chemical waste collector for disposal. Adverse water quality impacts arising from chemical spillage can be minimised by appropriate storage management and drainage system design as recommended in **Section 5.2.4**.

#### Waste Management

- 4.3.25 The major types of wastes generated during operation of the Project include:
- Chemical waste;
  - Municipal solid waste (MSW); and
  - Steel components.
- 4.3.26 About 2m<sup>3</sup> chemical / oily wastewater generated per month from gearbox part cleaning process and wheel anti-corrosion coating removal process would be contained by the plant itself and collected by licensed chemical waste collector regularly, while about 4m<sup>3</sup> waste oil generated per month from gearbox oil and those waste oil would be collected by licensed chemical waste collector. In addition, monthly generation of about 0.5m<sup>3</sup> chemical wastes such as lubricants, solvents, paints, cleaning fluids and used batteries would be anticipated from the operation of the Project. The operator should register with EPD as a chemical waste producer as specified in the *Guide to the Registration of Chemical Waste Producers*. The chemical wastes will be properly collected and stored in either drum-type containers or an aboveground chemical waste tank for temporary storage. Licensed chemical waste collector will be engaged for regular collection and disposal of chemical wastes. With proper storage, handling and disposal of chemical wastes, no adverse environmental impact is anticipated. Measures as stipulated in the *Waste Disposal (Chemical Waste) (general) Regulation* and the *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes* would be strictly followed for the handling and disposal of chemical wastes.
- 4.3.27 Approximate 4m<sup>3</sup> of MSW such as food waste, paper, plastic and office waste would be generated per month by staff and facility operators. As iWMC is designed to operate with high degree of automation, there would be limited no. of staff to be involved and the quantities of MSW generated during the operation phase are negligible. Plastics, papers and other recyclable wastes should be separated from MSW and recycled as far as possible. The remaining refuse would be collected by waste collectors and disposed of at landfills.
- 4.3.28 Approximate 122 tons of steel components will be generated from replacement of wheel blanks, brake discs, axles and gearboxes, wheel boring and re-profiling per month. A reputable waste collector will be employed to collect and remove such materials regularly for recycling.

#### Cultural Heritage

- 4.3.29 The machinery involved in the operation of the Project will not generate significant vibration, in addition to the considerable separation distance between the Project Site and historic buildings, indirect impact to the historic buildings is not expected. Therefore, adverse impact to cultural heritage resources is not anticipated.

#### Landscape and Visual

- 4.3.30 In view of the scale, nature and location of the Project, no landscape and visual impacts are anticipated during the operation of the Project.

#### Land Contamination

- 4.3.31 An existing genset with a diesel tank of approximately 360 Litres would be maintained in-situ to support the operation of the Project. Any accidental spillage or leakage of fuel and rupture of the diesel tank would cause a land contamination issue.
- 4.3.32 Diesel is being stored in a securely closed tank with clear and proper label. The diesel tank would be used for fuel oil storage only and the floor was paved with an impermeable surface. No surface water drains or foul sewers are connected to the storage area.
- 4.3.33 With implementation of the recommended mitigation measures presented in **Section 5.2.10**, the land contamination impact caused by the Project is deemed to be low.

#### Ecology

- 4.3.34 Given that the Project site is located in urban area where ecological resources are limited and the operation of the Project will be undertaken largely within the building structure, no ecological impact is therefore anticipated during operation phase.

## 5 ENVIRONMENTAL PROTECTION MEASURES TO BE INCORPORATED AND FURTHER ENVIRONMENTAL IMPLICATIONS

### 5.1 Construction Phase

#### Air Quality

5.1.1 Although the potential construction dust impact to the surrounding sensitive receivers is considered to be minimal, the following good site practices should be employed on site and measures stipulated in the *Air Pollution Control (Construction Dust) Regulation*, *Air Pollution Control (Non-road Mobile Machinery (NRMM)) (Emission)*, and *Regulation and Air Pollution Control (Fuel Restriction) Regulation* should also be adopted to minimise air quality impact during the construction phase:

- Use of watering, with complete coverage, to reduce dust emissions from exposed site surfaces and unpaved areas, particularly during dry weather.
- Dusty material on the dump trucks transported to, from and between site locations should be covered by impervious sheeting.
- Use of side enclosure or impervious sheets, as well as watering, for any dusty material storage piles, if applicable, to reduce emissions.
- Open stockpiles shall be avoided or covered with tarpaulin sheets. Where possible, prevent placing dusty material storage piles near ASRs.
- Use of watering immediately prior to loading, unloading or transfer of dusty material to reduce emission.
- Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs.
- Connecting construction plant and equipment to main electricity supply and avoid use of diesel generators and diesel-powered equipment.
- Avoiding use of exempted NRMMs as far as practicable.
- Deploying electrified NRMMS as far as practicable.
- Use of liquid fuel, if required, with a sulphur content of less than 0.005% by weight.

5.1.2 The following clauses as stated in *Recommended Pollution Control Clauses for Construction Contracts* should also be adopted in works contract where applicable as good engineering practice to minimise inconvenience and environmental nuisance to nearby ASRs:

- The Contractor shall observe and comply with the Air Pollution Control Ordinance and its subsidiary regulations, particularly the Air Pollution Control (Open Burning) Regulation, Air Pollution Control (Construction Dust) Regulation, Air Pollution Control (Non-road Mobile Machinery)(Emission) Regulation, Air Pollution Control (Fuel Restriction) Regulation and Air Pollution Control (Smoke) Regulation.
- The Contractor shall undertake at all times to prevent dust nuisance and smoke as a result of the construction activities.
- The Contractor shall ensure that there will be adequate water supply / storage for dust suppression.
- The Contractor shall devise, arrange methods of working and carrying out the works in such a manner so as to minimise dust impacts on the surrounding environment, and shall provide experienced personnel with suitable training to ensure that these methods are implemented.
- Before the commencement of any work, the Contractor may require to submit the methods of working, plant, equipment and air pollution control system to be used on the site for the Engineer inspection and approval.

### Noise

- 5.1.3 According to the assessment findings in **Section 4.2.15**, with the implementation of movable noise barriers, adverse noise impact arising from the construction works of the Project during non-restricted hours is not anticipated.
- 5.1.4 To further minimise the noise impact to the surrounding environment, the following good site practices should be adopted, where applicable, during construction phase:
- Only well-maintained plant should be operated on-site and plant should be serviced regularly during construction;
  - Silencers or mufflers on construction equipment should be utilised and should be properly maintained during construction;
  - Mobile plant, if any, should be sited as far from NSRs as possible;
  - Machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum;
  - The engine of lorry should be switched off after arriving the unloading position;
  - Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and
  - Material stockpiles should be effectively utilized, wherever practicable, in screening noise from on-site construction activities.
- 5.1.5 In addition, the “Recommended Pollution Control Clauses for Construction Contracts” and “Guidelines on Managing Quiet Renovation” published by the EPD should be adopted in the Contract Specification for the Contractor to follow and implement relevant measures and good site practices in minimising construction noise impact.

### Water Quality

- 5.1.6 The site practices outlined in EPD’s ProPECC PN 2/23 “Construction Site Drainage” should be followed as far as practicable to minimize surface runoff. Recommended mitigation measures for minimizing potential water quality impact listed below should be followed throughout the construction phase:

#### *Surface run-off*

- Surface run-off from construction site 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 on sites should be covered with tarpaulin or similar fabric as necessary during rainstorms.
- Good site practices should be adopted to remove rubbish and litter from construction site so as to prevent the rubbish and litter from spreading from the site area. It is recommended to clean the construction sites on a regular basis.

#### *Accidental Spillage of Chemicals*

- Contractor must register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.
- Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.

- Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The “Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes” published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows:
  - Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport.
  - Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents.
  - Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.

#### *Sewage from Workforce*

- Sewage from the workforce should be properly discharged to the public foul sewers.
- If necessary, portable toilets may also be used during the construction phase.
- Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the nearby environment.

- 5.1.7 The contractor should ensure all the discharge from the construction site will be properly disposed of in accordance with the requirements stipulated in Water Pollution Control Ordinance (WPCO). Discharge quality shall satisfy relevant standards listed in the TM-DSS and meet the requirements specified in the discharge licence.

#### Waste Management

- 5.1.8 Although only minimal amount of waste would be generated from the construction activities, the following waste management hierarchy has been adopted to develop the mitigation measures with preferences arranged in descending order:

- Avoidance and reduction of waste generation;
- Reuse of materials as far as practicable;
- Recovery and recycling of residual materials where possible; and
- Treatment and disposal according to relevant laws, guidelines and good practices.

- 5.1.9 Good management and control of construction site activities / processes can minimise the generation 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 of waste reduction measures have been stated below:

#### *Waste Reduction Measures*

- Maximise the use of reusable steel formwork to reduce the amount of C&D materials;
- Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste;
- Segregate and store different types of construction related waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal;
- Provide separate labelled bins to segregate recyclable waste such as aluminium cans from other general refuse generated by the work force, and to encourage collection by individual collectors;
- Recycle any unused chemicals or those with remaining functional capacity; and
- Encourage collection of aluminum cans by providing separate labelled bins to enable this waste to be segregated from other general refuse generated by the workforce.

5.1.10 The following good site practices should be adopted to avoid and minimise the adverse environmental impacts arising from the storage, collection and transportation of waste.

*Good Site Practices on Storage, Collection and Transportation of Waste*

- Adopt proper storage and site practices to minimise the potential for damage to, or contamination of construction materials.
- Provision of sufficient waste disposal points and regular collection of waste.
- Appropriate measures to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers.
- Waste should be handled and stored well to ensure secure containment, thus minimising the potential of pollution.
- Storage area should be provided with covers and, if necessary, water spraying system to prevent materials from wind-blown or being washed away.
- Different locations should be designated to stock each material to enhance reuse.
- In order to fully implement the trip-ticket system, it is recommended that warning signs should be put up at the temporary and permanent accesses of vehicle to remind the drivers of dump truck of the proper designated disposal outlet and the penalties of offence. To prevent illegal entrance of the dumping sites at night and during public holidays, fences should be installed.

5.1.11 If chemical wastes were to be produced at the construction site, the Contractor would be required to register with the EPD as a Chemical Waste Producer, and to follow the guidelines stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.

5.1.12 Appropriate containers with proper labels should be used for storage of chemical wastes. Chemical wastes should be collected and delivered to designated outlet by a licensed chemical waste collector. Chemical wastes (e.g. spent lubricant oil) should be recycled at an appropriate facility as far as possible, while the chemical waste that cannot be recycled should be disposed of at either the Chemical Waste Treatment Centre (CWTC), or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.

5.1.13 Any unused chemicals or those with remaining functional capacity should be collected for reuse as far as practicable.

Cultural Heritage

5.1.14 Impact to cultural heritage resources is not anticipated, hence mitigation measures are considered not necessary.

Landscape and Visual

5.1.15 No landscape and visual impact are anticipated during the construction of the Project, hence mitigation measures are considered not necessary.

Land Contamination

5.1.16 As stated in **Section 4.2.24**, no land contamination issue is expected during the construction phase, mitigation measures are therefore considered not necessary.

Ecology

5.1.17 As ecological impact is not expected during the construction phase, mitigation measures are considered not necessary.

## 5.2 Operation Phase

### Air Quality

- 5.2.1 No significant air quality impact is envisaged due to the operation of the Project. Mitigation measures are considered not necessary. The operator should follow the regulations related to VOCs and use low VOCs content products as far as practicable.

### Noise

- 5.2.2 Fixed plant noise impact would be minimized through regular maintenance of the plant and equipment and good site practices. It is also recommended to adopt quiet plant, acoustics louvers and silencers where necessary. The following measures will be implemented as far as practicable:

- Choose quieter plant and equipment;
- Include noise levels specification when purchasing new fixed plant items;
- Locate noisy fixed plant items as far as practicable from the noise leakage areas, such as entrances, exits and the louver wall at the west side of the Project site; and
- Develop and implement a scheduled plant maintenance programme so that plant items are properly operated and serviced. The programme should be implemented by properly trained personnel.

### Water Quality

- 5.2.3 Sewage effluents generated from the operation of iWMC and wastewater generated from cleaning and washing should be properly collected and diverted to public sewers for proper treatment and disposal. Standard oil/grit interceptors/chambers should be provided where necessary to remove the oil, lubricants, grease, silt and grit from wastewater generated from cleaning, washing and maintenance facilities before discharge to the foul sewer system. Discharge of any effluent, other than domestic sewage, to the public sewers will be subject to control under the WPCO and the relevant dischargers shall apply to EPD for a discharge licence for discharge of commercial and industrial effluent and the discharge quality must satisfy all the standards listed in the TM-DSS and meet the requirements specified in the discharge licence. The practices outlined in ProPECC PN 1/23 for handling, treatment and disposal of operational stage effluent would also be adopted where applicable. Wastewater generated from wheelset cleaning and maintenance process should be stored in wastewater tank and collected by licensed waste collector regularly.
- 5.2.4 Chemicals should be stored within a bunded area and separate drainage system as appropriate should be provided to avoid any spilled chemicals from entering the storm drain in case of accidental spillage. Also, adequate tools for cleanup of spilled chemicals should be stored on site and appropriate training shall be provided to staffs to further prevent potential adverse water quality impacts from happening.

### Waste Management

- 5.2.5 Waste lubricants, solvents and chemical wastes generated during the maintenance activities in iWMC, as well as the MSW, should be handled with good housekeeping practices such as waste segregation prior to disposal. Appropriate containers with proper labels should be used for storage of chemical wastes. Chemical wastes should be collected and delivered to designated outlet by a licensed chemical waste collector. Chemical wastes (e.g. spent lubricant oil and solvents) should be recycled at an appropriate facility as far as possible, while the chemical waste that cannot be recycled should be disposed of at either the CWTC, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.



- 5.2.6 The waste, such as plastics, steels and other metals generated from the maintenance work should be reused and recycled as far as practicable for waste minimisation.
- 5.2.7 MSW should be stored in enclosed bins or compaction units. A reputable waste collector should be employed to remove MSW. Preferably an enclosed and covered area should be provided to reduce the occurrence of “wind-blown” light materials. Any recyclable materials should be sorted and reuse as far as practicable.

#### Cultural Heritage

- 5.2.8 As impact to cultural heritage resources is not expected during the operation phase, mitigation measures are considered not necessary.

#### Landscape and Visual

- 5.2.9 As no landscape and visual impact is anticipated during the operation of the Project, mitigation measures are considered not necessary.

#### Land Contamination

- 5.2.10 The existing diesel tank will be maintained and inspected according to the Dangerous Goods (General) Regulations (Cap. 295B) and the relevant Codes of Practices issued under the FSD. Appropriate preventive measures are being adopted and will be maintained to minimize the probability of accidental spillage, leakage and the rupture of the storage tank:
- Refuel (from tank trucks) by authorized staff of the fuel company using the company's standard procedures to avoid spillage of diesel fuel;
  - Provide spill control materials and equipment on site;
  - Conduct regular inspection and maintenance of the fittings, valves and flanges of storage tanks; and
  - Monitor regularly the fuel inventory to spot early leaks/ seepage.

#### Ecology

- 5.2.11 As ecological impact is not anticipated during the operation of the Project, mitigation measures are considered not necessary.

### **5.3 Severity, Distribution and Duration of Environmental Effects**

- 5.3.1 No residual environmental impacts are anticipated with the implementation of the recommended mitigation measures.

### **5.4 Further Environmental Implications**

- 5.4.1 No further environmental impacts are anticipated with the implementation of the recommended mitigation measures.

## 6 SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

6.1.1 The potential environmental impacts and proposed mitigation measures to be incorporated during construction and operation stages of the Project are summarized in **Table 6.1**.

**Table 6.1 Summary of Potential Environmental Impacts and Mitigation Measures**

Potential Environmental Impact	Project Stage	Mitigation Measure	Implementation Agent	Text Ref.
Construction Dust	Construction	<ul style="list-style-type: none"> <li>Adopt good site practices and measures during construction phase</li> </ul>	Contractor	5.1.1 – 5.1.2
Construction Noise	Construction	<ul style="list-style-type: none"> <li>Adopt movable noise barriers to PMEs</li> <li>Adopt quieter construction methods and good site practices to minimise the noise impacts</li> </ul>	Contractor	5.1.3 – 5.1.5
Fixed Plant Noise	Operation	<ul style="list-style-type: none"> <li>Regular maintenance and good site practices</li> <li>Adopt quiet plant, acoustics louvers and silencers</li> </ul>	MTRCL	5.2.2
Water Quality	Construction	<ul style="list-style-type: none"> <li>Adopt good site practices to collect and discharge of surface runoff and sewage</li> <li>Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport</li> <li>Sewage from the workforce should be properly discharged to the public foul sewers</li> <li>All the discharge from the construction site should comply with the requirements stipulated in Water Pollution Control Ordinance (WPCO)</li> </ul>	Contractor	5.1.6 & 5.1.7
	Operation	<ul style="list-style-type: none"> <li>Provide standard oil/grit interceptors/chambers to separate the grease, oil and lubricants etc.</li> <li>Discharge the sewage from the workforce to the public foul sewers</li> <li>Store the chemicals at a bunded area and provide separate drainage system as appropriate.</li> <li>Store adequate tools on site for cleanup of spilled chemicals on site and provide appropriate training to staffs to further prevent potential adverse water quality impacts from happening</li> </ul>	MTRCL	5.2.3 & 5.2.4
Waste Management	Construction	Implement waste reduction measures and good site practices on storage, collection and transportation of waste	Contractor	5.1.8 – 5.1.13
	Operation	<ul style="list-style-type: none"> <li>Implement waste reduction measures and good housekeeping practices in</li> </ul>	MTRCL	5.2.5 – 5.2.7

Potential Environmental Impact	Project Stage	Mitigation Measure	Implementation Agent	Text Ref.
		reusing, recycling and handling of wastes as far as practicable <ul style="list-style-type: none"> <li>• Appropriate containers with proper labels should be used for storage of chemical wastes. Chemical wastes should be collected and delivered to designated outlet by a licensed chemical waste collector. Chemical wastes (e.g. spent lubricant oil and solvents) should be recycled at an appropriate facility as far as possible, while the chemical waste that cannot be recycled should be disposed of at either the CWTC, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.</li> </ul>		
Land Contamination	Operation	<ul style="list-style-type: none"> <li>• Refuel (from tank trucks) by authorized staff of the fuel company using the company's standard procedures to avoid spillage of diesel fuel</li> <li>• Conduct regular inspection, monitoring and maintenance</li> </ul>	MTRCL	5.2.10

6.1.2 With the implementation of recommended mitigation measures, no adverse environmental impacts are anticipated, environmental monitoring and auditing are therefore not required.

## 7 USE OF PREVIOUSLY APPROVED EIA REPORTS

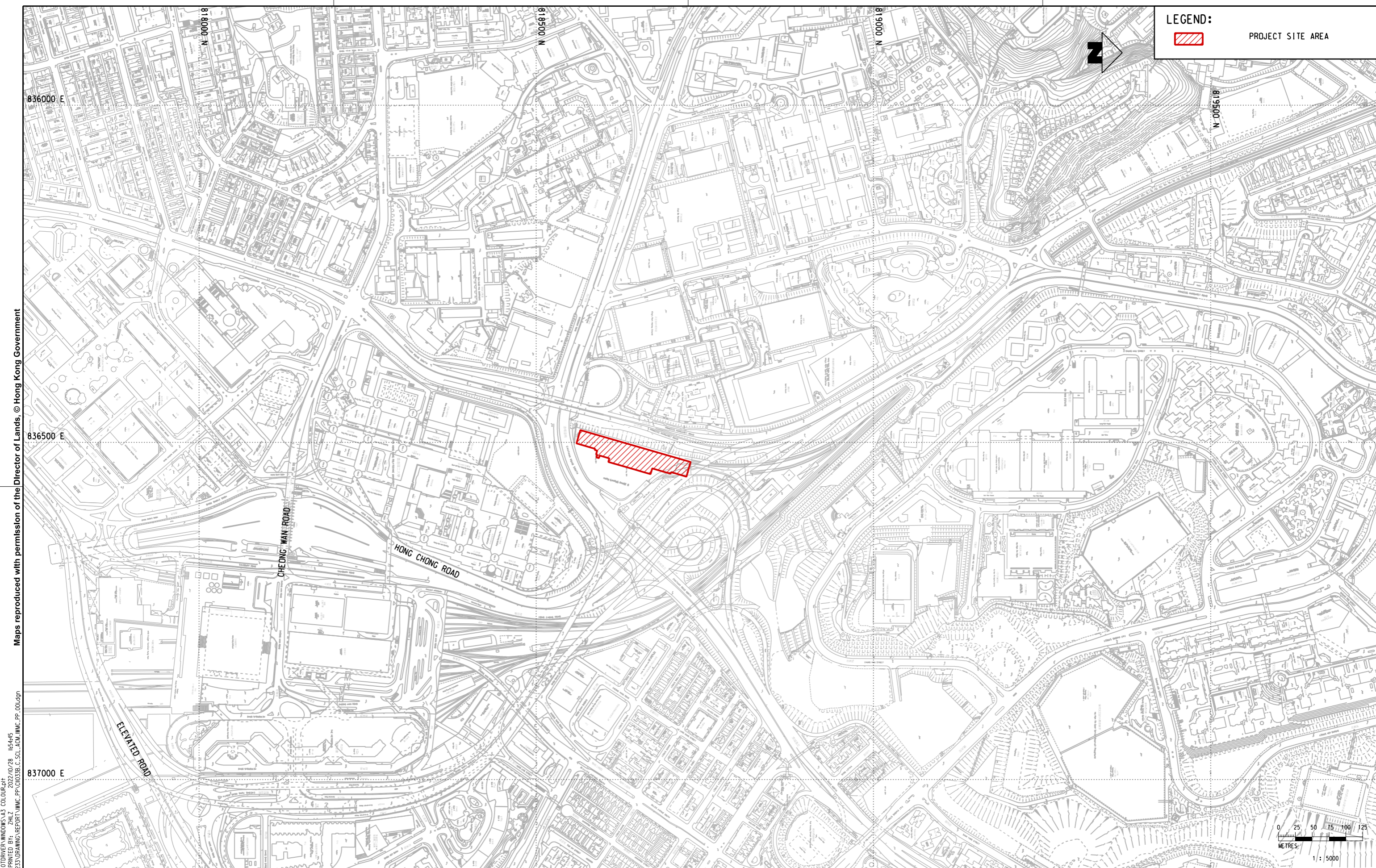
7.1.1 Reference was made from the following environmental impact assessment reports approved under the EIAO for projects located in the vicinity of the Project site:

- The EIA Report for Shatin to Central Link - Mong Kok East to Hung Hom Section (Register No.: AEIAR-165/2012), as approved on 17 February 2012, has been used for the preparation of this Project Profile. The environmental aspects addressed in this approved EIA report include landscape and visual, air quality, airborne noise, ground-borne noise, water quality, waste management and land contamination. The HMS was slightly modified during the construction of the Shatin to Central Link (Mong Kok East to Hung Hom). The associated environmental impacts due to the modification works at HMS were duly assessed in this approved EIA Report. The train frequency and the findings of land contamination mentioned in this Project Profile were made reference to this approved EIA report.
- The EIA Report for Shatin to Central Link - Tai Wai to Hung Hom Section (Register No.: AEIAR-167/2012), as approved on 17 February 2012, has been used for the preparation of this Project Profile. The environmental aspects addressed in this approved EIA report include cultural heritage, ecology, landscape and visual, construction dust, airborne noise, ground-borne noise, water quality, waste management, land contamination and hazard to life. Based on the information presented in this approved EIA report, no cumulative impact is expected during the operation phase.
- The EIA Report for Shatin to Central Link - Stabling Sidings at Hung Hom Freight Yard (Register No.: AEIAR-164/2012), as approved on 17 February 2012, has been used for the preparation of this Project Profile. The environmental aspects addressed in this approved EIA report include cultural heritage, ecology, landscape and visual, construction dust, airborne noise, ground-borne noise, water quality, waste management and land contamination. Based on the information presented in this approved EIA report, no cumulative impact is expected during the operation phase.
- The EIA Report for Central Kowloon Route (Register No.: AEIAR-171/2013), as approved on 11 July 2013, has been used for the preparation of this Project Profile. The environmental aspects addressed in this approved EIA report include air quality, noise, water quality, waste management, land contamination, hazard to life, landscape and visual and cultural heritage. Based on the information presented in this approved EIA report, no cumulative impact is expected during the construction and operation phases.

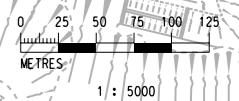
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## FIGURES

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 PROJECT SITE AREA




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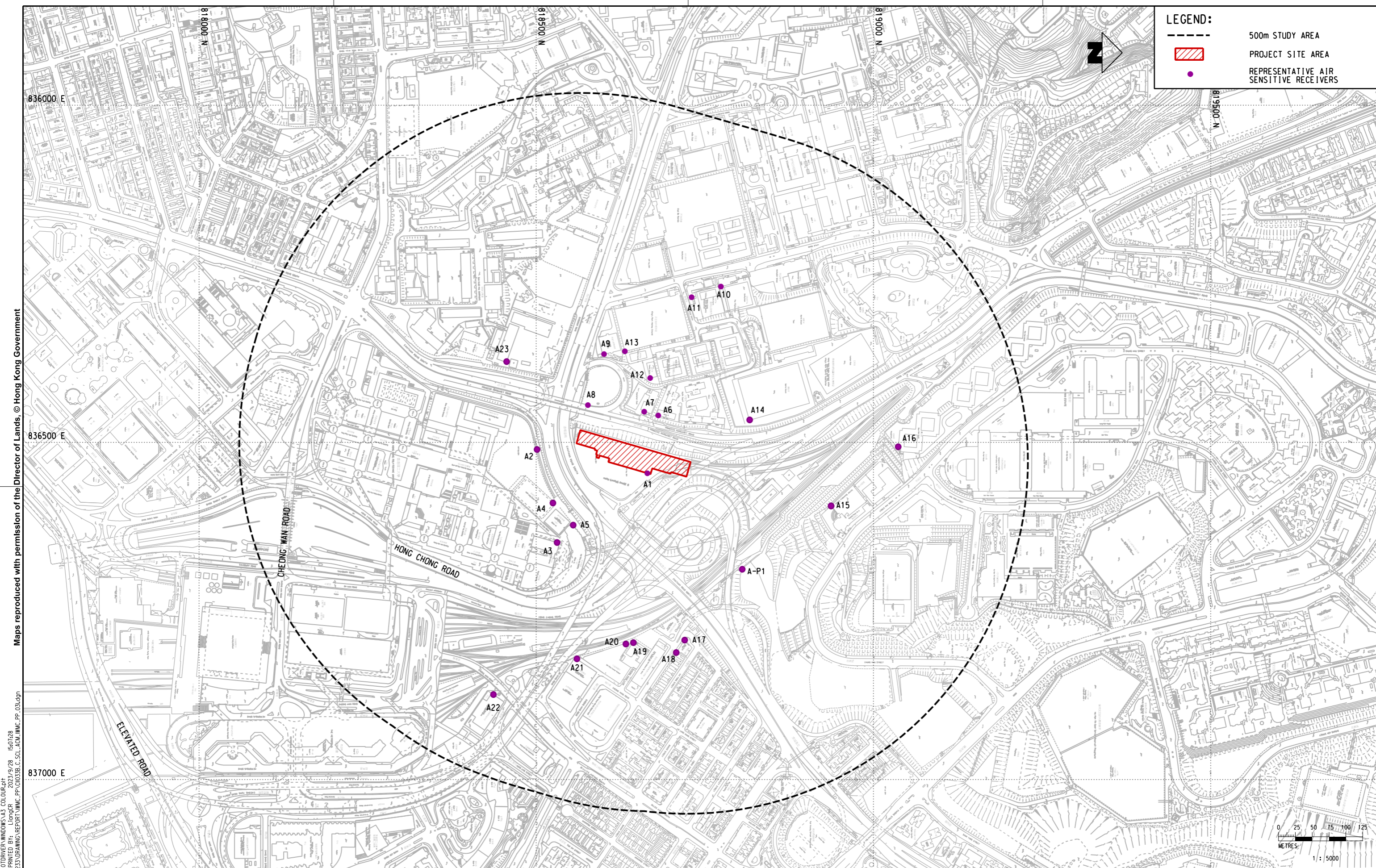
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APPROVED	---
DATE	24/AUG/2020


  
 SHATIN TO CENTRAL LINK  
**AECOM**  
 ORIGINATOR  
 CADD REF. C11033B\_C\_SCL\_ACM\_I\MCM\_PP\_001.dgn

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LOCATION PLAN OF THE PROJECT SITE		SCALE 1 : 5000 (A3)	
FIGURE NO.	FIGURE 1	REV.	A

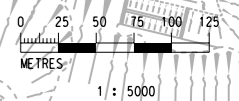


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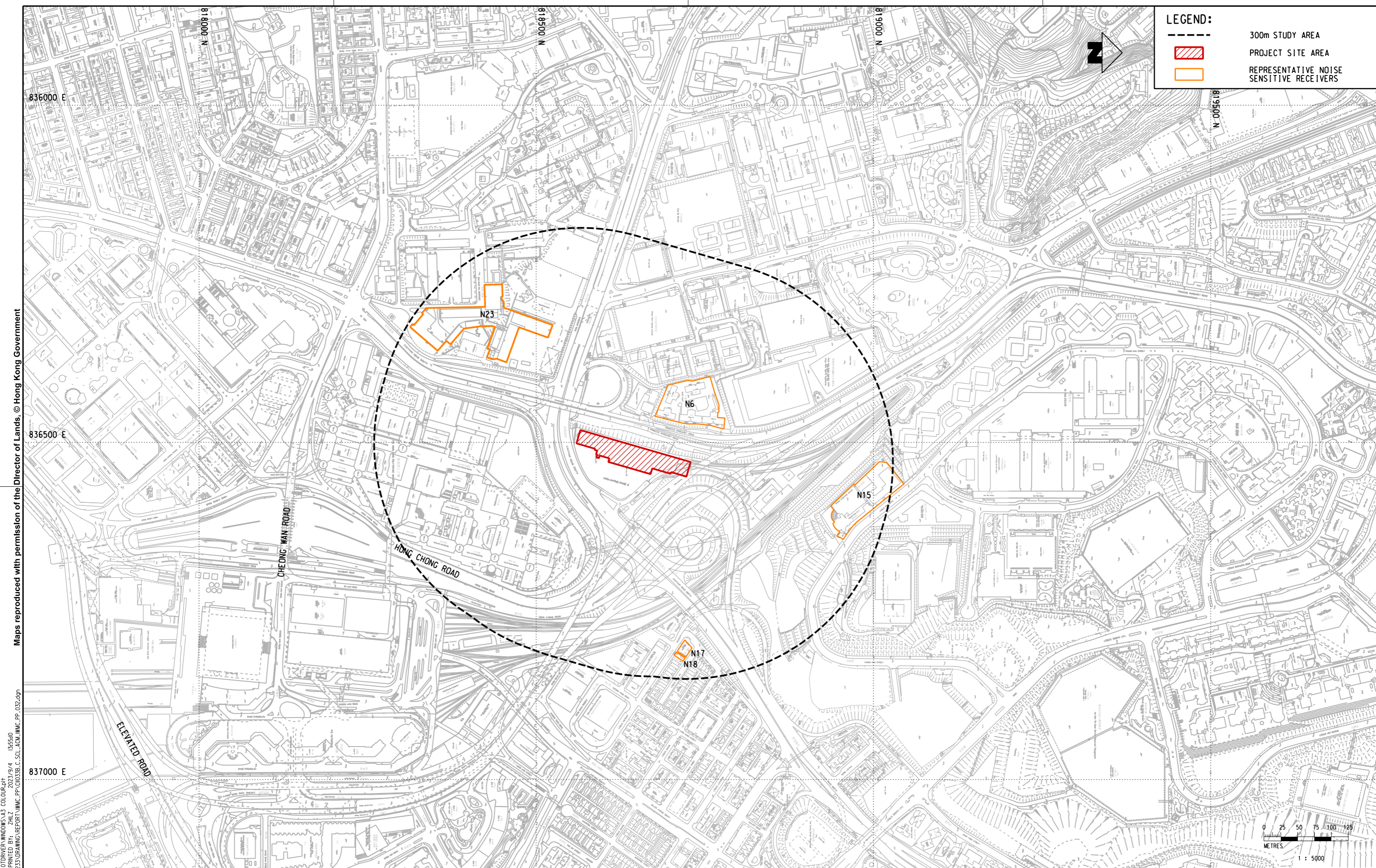
- 500m STUDY AREA
- PROJECT SITE AREA
- REPRESENTATIVE AIR SENSITIVE RECEIVERS

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DRAWN: ZLZ DESIGNED: --- CHECKED: --- APPROVED: --- DATE: 24/AUG/2020 <small>DO NOT SCALE DRAWINGS. ALL DIMENSIONS SHALL BE VERIFIED ON SITE.          © MTR CORPORATION LIMITED 2008 COPYRIGHT IN RESPECT OF THIS DRAWING / DOCUMENT IS OWNED BY THE MTR CORPORATION LIMITED OF HONG KONG. NO REPRODUCTION OF THE DRAWING / DOCUMENT OR ANY PART BY WHATEVER MEANS IS PERMITTED WITHOUT THE PRIOR WRITTEN CONSENT OF THE MTR CORPORATION LIMITED.</small>						TITLE: INTEGRATED WHEELSET MAINTENANCE CENTRE AT HO MAN TIN SIDING LOCATIONS OF REPRESENTATIVE AIR SENSITIVE RECEIVERS			
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CADD REF.: C11033B_C_SCL_ACM_I\MC_PP_031.dgn				FIGURE NO.: FIGURE 3.1		REV: A			
REV	DESCRIPTION	BY	DATE	APPROVED	REV	DESCRIPTION	BY	DATE	APPROVED



**LEGEND:**

- 300m STUDY AREA
- PROJECT SITE AREA
- REPRESENTATIVE NOISE SENSITIVE RECEIVERS

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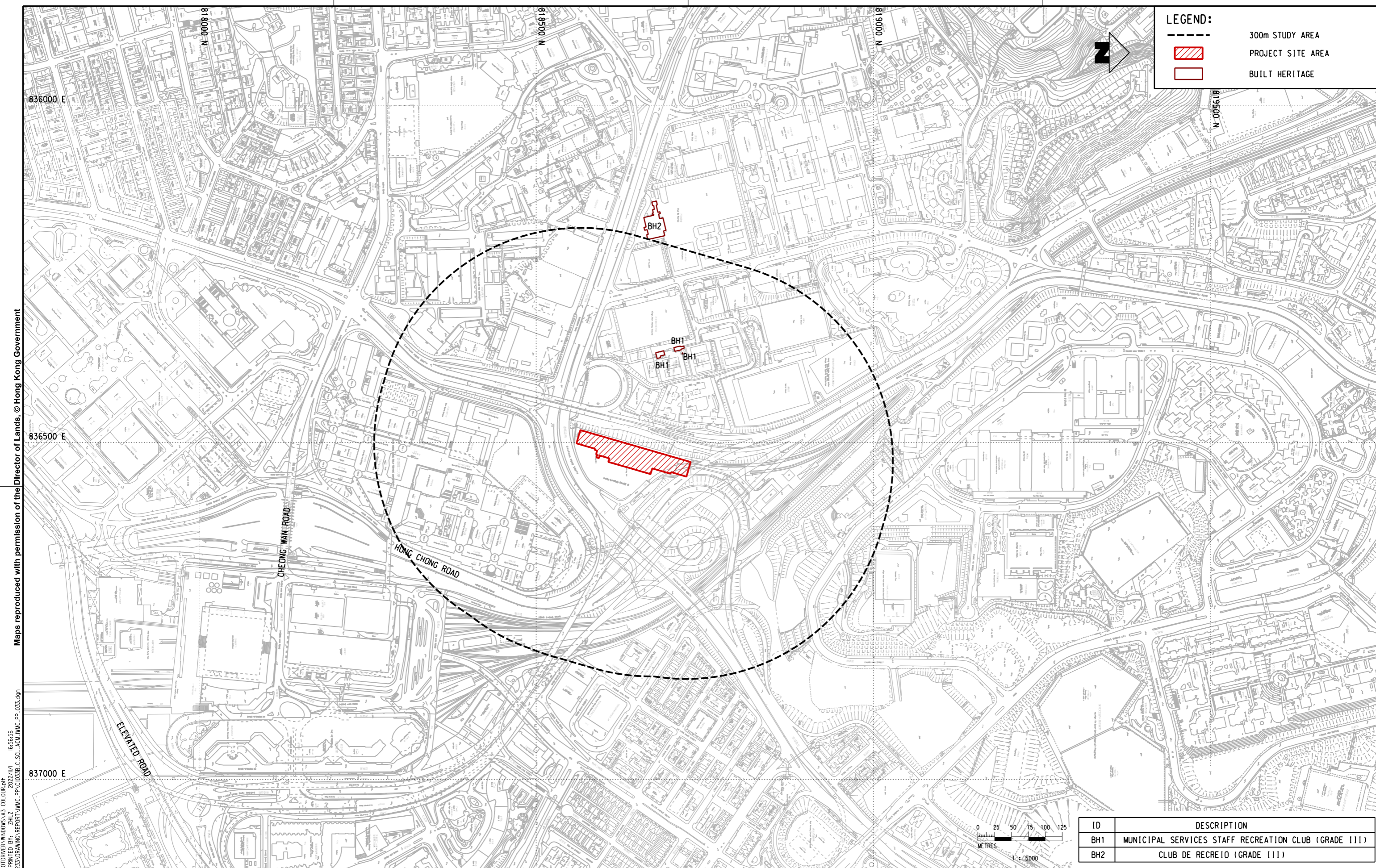
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SHATIN TO CENTRAL LINK  
**AECOM**  
 SCALE 1 : 5000 (A3)

**INTEGRATED WHEELSET MAINTENANCE CENTRE AT HO MAN TIN SIDING**  
 LOCATIONS OF REPRESENTATIVE NOISE SENSITIVE RECEIVERS  
 SCALE 1 : 5000 (A3) FIGURE NO. FIGURE 3.2  
 REV. A

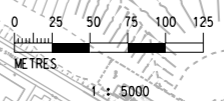




**LEGEND:**

- 300m STUDY AREA
- PROJECT SITE AREA
- BUILT HERITAGE

ID	DESCRIPTION
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BH2	CLUB DE RECREIO (GRADE III)



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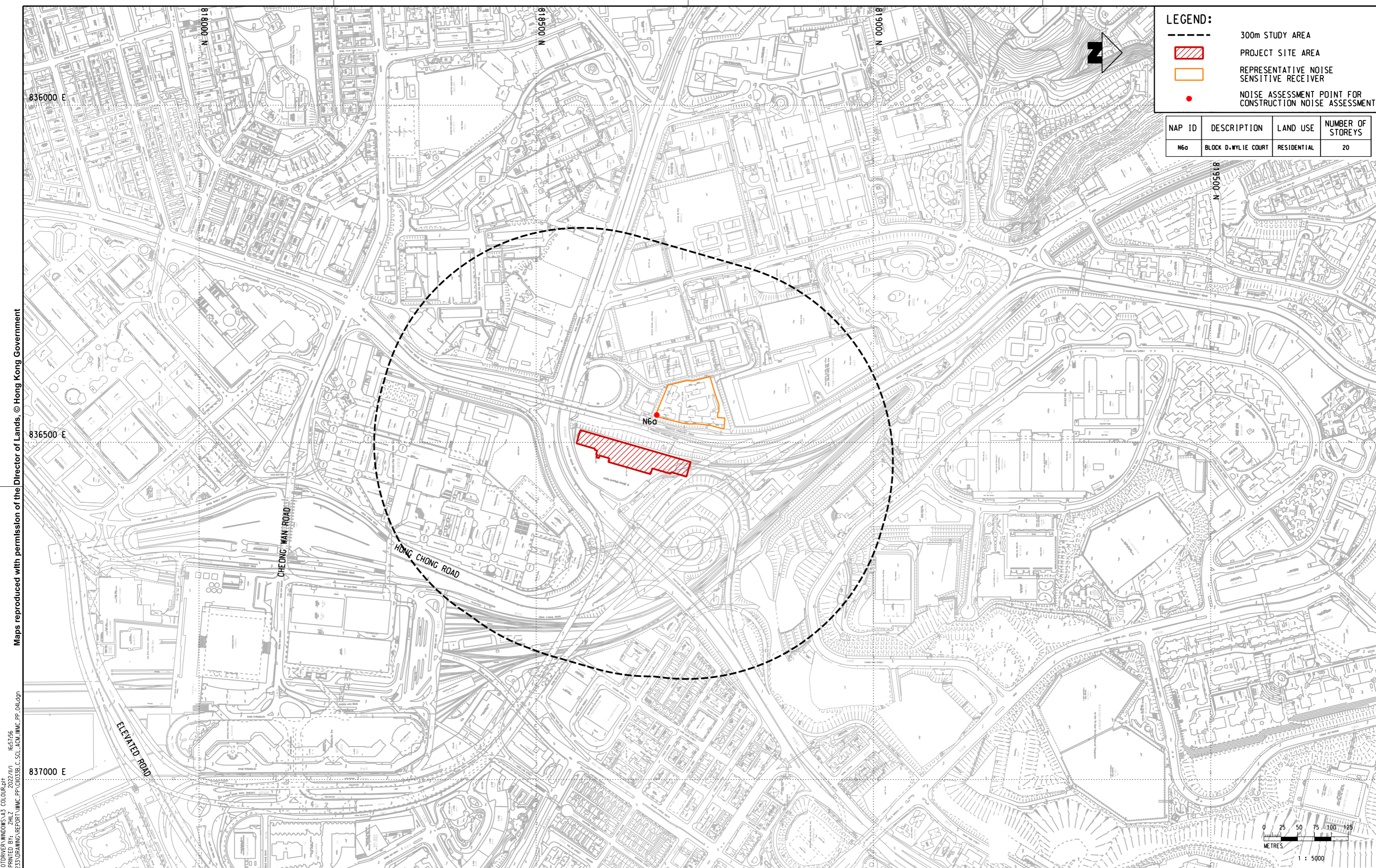
**SHATIN TO CENTRAL LINK**

ORIGINATOR

CADD REF. C11033B\_C\_SCL\_ACM\_IWM\_PP\_033.dgn

**INTEGRATED WHEELSET MAINTENANCE CENTRE AT HO MAN TIN SIDING**  
 LOCATIONS OF CULTURAL HERITAGE RESOURCES

SCALE 1 : 5000 (A3)    FIGURE NO. **FIGURE 3.3**    REV. **A**



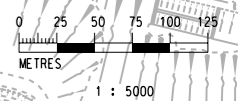
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- 300m STUDY AREA
- PROJECT SITE AREA
- REPRESENTATIVE NOISE SENSITIVE RECEIVER
- NOISE ASSESSMENT POINT FOR CONSTRUCTION NOISE ASSESSMENT

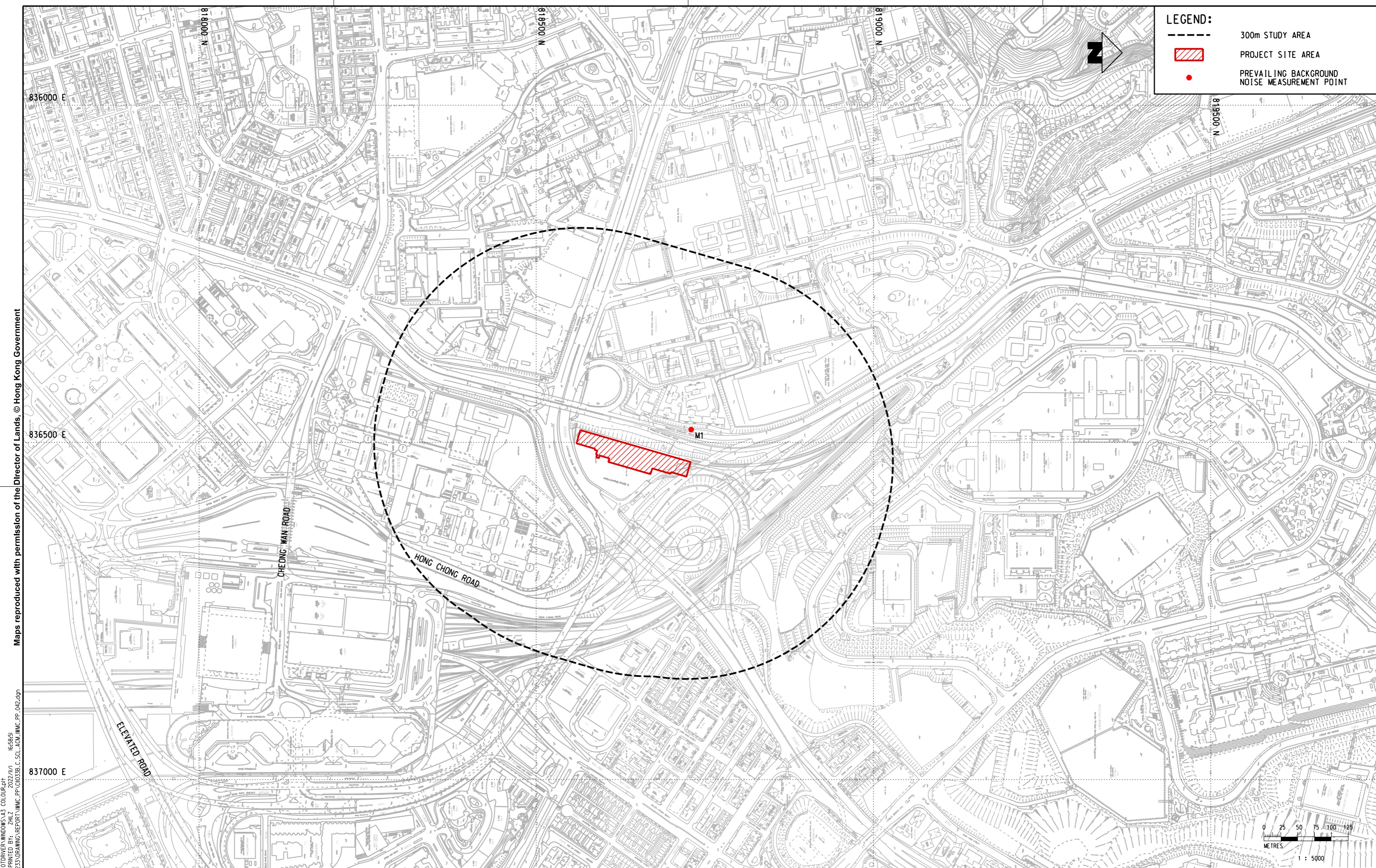
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N60	BLOCK D, WYLIE COURT	RESIDENTIAL	20

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**LEGEND:**

- 300m STUDY AREA
- PROJECT SITE AREA
- PREVAILING BACKGROUND NOISE MEASUREMENT POINT

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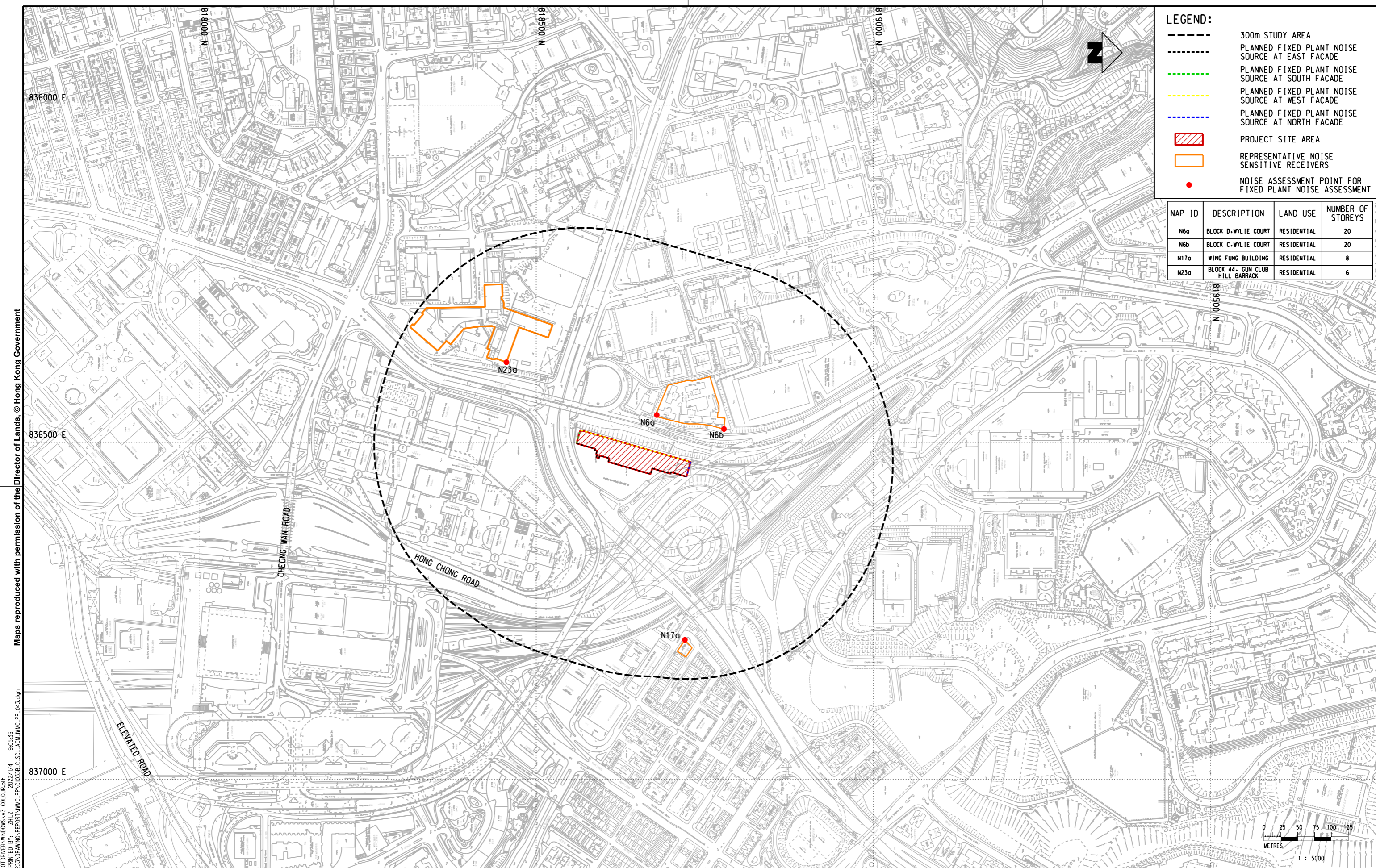
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**SHATIN TO CENTRAL LINK**  
**AECOM**  
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**INTEGRATED WHEELSET MAINTENANCE CENTRE AT HO MAN TIN SIDING**  
**LOCATION OF PREVAILING BACKGROUND NOISE MEASUREMENT**  
 SCALE 1 : 5000 (A3)  
 FIGURE NO. **FIGURE 4.2**  
 REV. **A**

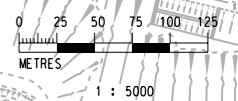


- LEGEND:**
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  - PLANNED FIXED PLANT NOISE SOURCE AT SOUTH FACADE
  - PLANNED FIXED PLANT NOISE SOURCE AT WEST FACADE
  - PLANNED FIXED PLANT NOISE SOURCE AT NORTH FACADE
  - ▨ PROJECT SITE AREA
  - ▭ REPRESENTATIVE NOISE SENSITIVE RECEIVERS
  - NOISE ASSESSMENT POINT FOR FIXED PLANT NOISE ASSESSMENT

NAP ID	DESCRIPTION	LAND USE	NUMBER OF STOREYS
N6a	BLOCK D,WYLIE COURT	RESIDENTIAL	20
N6b	BLOCK C,WYLIE COURT	RESIDENTIAL	20
N17a	WING FUNG BUILDING	RESIDENTIAL	8
N23a	BLOCK 44, GUN CLUB HILL BARRACK	RESIDENTIAL	6

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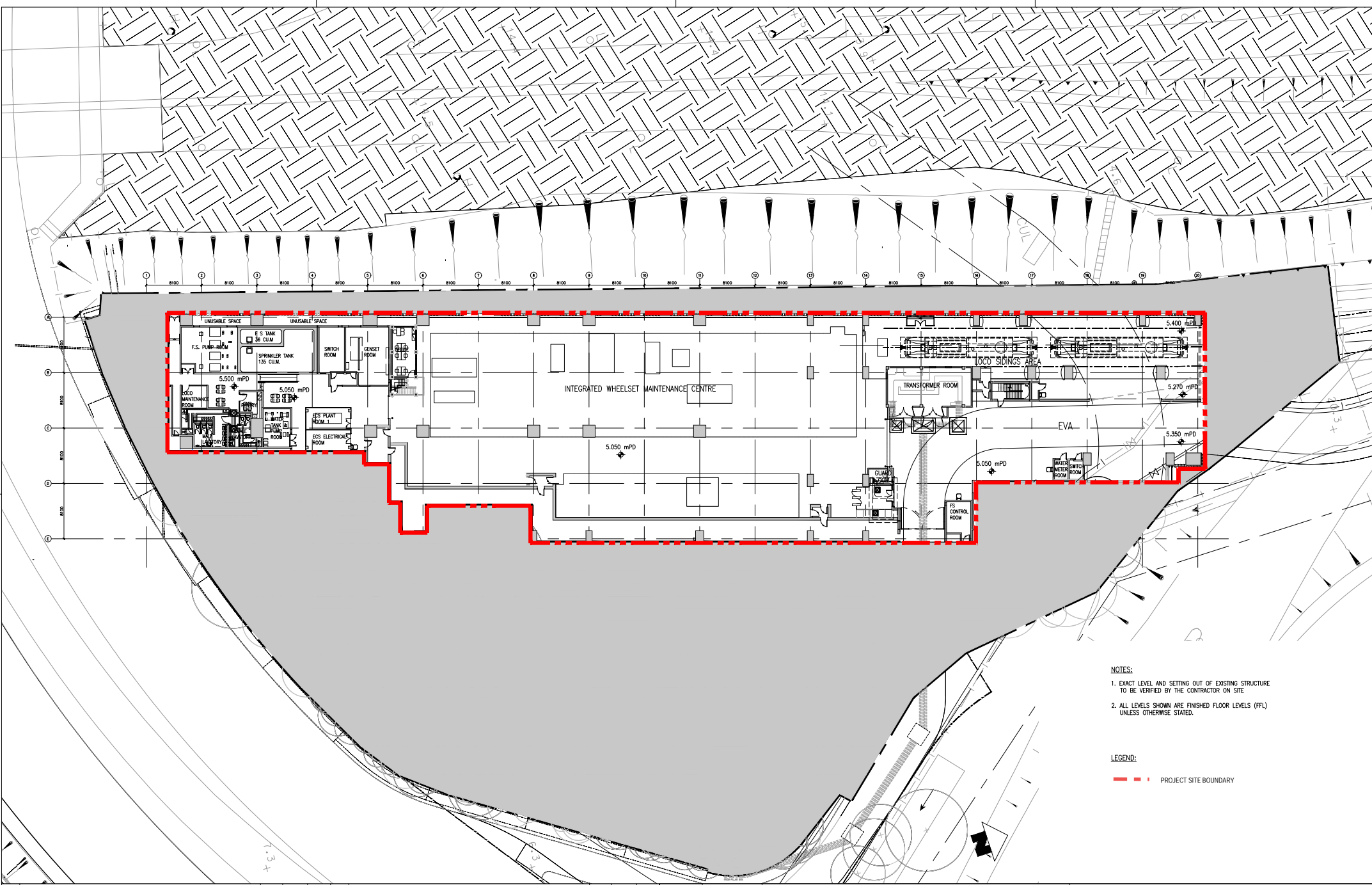
## APPENDICES

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**APPENDIX 1.1**  
**TENTATIVE GENERAL LAYOUT PLANS**

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- NOTES:**
1. EXACT LEVEL AND SETTING OUT OF EXISTING STRUCTURE TO BE VERIFIED BY THE CONTRACTOR ON SITE
  2. ALL LEVELS SHOWN ARE FINISHED FLOOR LEVELS (FFL) UNLESS OTHERWISE STATED.

**LEGEND:**  
- - - PROJECT SITE BOUNDARY

REV		DESCRIPTION		BY	DATE	APPROVED	REV	DESCRIPTION		BY	DATE	APPROVED	REV	DESCRIPTION																																																																																																																																				
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**APPENDIX 2.1**  
**CONSTRUCTION PROGRAMME**

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**APPENDIX 4.1**

**SWL OF PME**

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Appendix 4.1 SWL of PME

Reference	Identification Code	Description	Unit Sound Power Level, dB(A)
GW-TM	CNP 001	Air Compressor, air flow ≤ 10m3/min	100
	CNP 002	Air Compressor, air flow > 10m3/min and ≤ 30m3/min	102
	CNP 003	Air Compressor, air flow > 30m3/min	104
	CNP 004	Asphalt paver	109
	CNP 005	Agitator (electric)	90
	CNP 006	Air blower (electric)	95
	CNP 021	Bar bender and cutter (electric)	90
	CNP 022	Batching plant	108
	CNP 023	Breaker, hand-held, mass ≤ 10kg	108
	CNP 024	Breaker, hand-held, mass > 10kg and < 20kg	108
	CNP 025	Breaker, hand-held, mass ≥ 20kg and ≤ 35kg	111
	CNP 026	Breaker, hand-held, mass > 35kg	114
	CNP 027	Breaker, excavator mounted (pneumatic)	122
	CNP 028	Breaker, excavator mounted (hydraulic)	122
	CNP 029	Ballast tamper, hand-held (electric)	105
	CNP 030	Bulldozer	115
	CNP 031	Breaker, mini-robot mounted (electric)	115
	CNP 041	Conveyor belt	90
	CNP 042	Concrete corer	117
	CNP 043	Chipper, hand-held (pneumatic)	112
	CNP 044	Concrete lorry mixer	109
	CNP 045	Concrete mixer (electric)	96
	CNP 046	Concrete mixer (petrol)	96
	CNP 047	Concrete pump, stationary/lorry mounted	109
	CNP 048	Crane, mobile/barge mounted (diesel)	112
	CNP 049	Crane, tower (electric)	95
	CNP 050	Compactor, vibratory	105
	CNP 051	Concrete burster	90
	CNP 052	Concrete crusher, mini-robot mounted (electric)	94
	CNP 053	Concrete crusher, hand-held	97
	CNP 054	Concrete pump (electric)	109
	CNP 055	Concrete crusher, excavator mounted	103
	CNP 056	Cutter, circular, steel (electric)	112
	CNP 061	Derrick barge	104
	CNP 062	Dredger, chain bucket	118
	CNP 063	Dredger, grab	112
	CNP 064	Drill, percussive, hand-held (electric)	103
	CNP 065	Drill/grinder, hand-held (electric)	98
	CNP 066	Dumper	106
	CNP 067	Dump truck, gross vehicle weight > 38 tonne	117
	CNP 068	Dump truck, 5.5 tonne < gross vehicle weight ≤ 38 tonne	105
	CNP 069	Dump truck, with grab, 5.5 tonne < gross vehicle weight ≤ 38 tonne	105
	CNP 070	Dredger, suction	103
	CNP 071	Drill, hand-held (dry cell)	89
	CNP 072	Drill rig, rotary type (diesel)	110
	CNP 081	Excavator/loader, wheeled/tracked	112
	CNP 082	Excavator, mini-robot mounted (electric)	94
	CNP 101	Generator, standard	108
	CNP 102	Generator, silenced, 75dB(A) at 7m	100
	CNP 103	Generator, super silenced, 70dB(A) at 7m	95
	CNP 104	Grader	113
	CNP 105	Grout mixer	90
	CNP 106	Grout pump	105
	CNP 121	Hoist, passenger/material (pneumatic)	108
	CNP 122	Hoist, passenger/material (electric)	95
	CNP 123	Hoist, passenger/material (petrol)	104
	CNP 131	Jig-saw, hand-held, wood (electric)	99
	CNP 141	Lorry, gross vehicle weight > 38 tonne	112
	CNP 142	Lorry, 5.5 tonne < gross vehicle weight ≤ 38 tonne	105
	CNP 143	Light goods vehicle, gross vehicle weight ≤ 5.5 tonne	101
	CNP 144	Lorry, with crane, gross vehicle weight > 38 tonne	112
	CNP 145	Lorry, with crane, 5.5 tonne < gross vehicle weight ≤ 38 tonne	105
	CNP 161	Paint line marker	90
	CNP 162	Piling, diaphragm wall, bentonite filter plant	105
	CNP 163	Piling, diaphragm wall, hydraulic extractor	90
	CNP 164	Piling, large diameter bored, grab and chisel	115
	CNP 165	Piling, large diameter bored, oscillator	115
	CNP 166	Piling, large diameter bored, reverse circulation drill	100
	CNP 167	Piling, earth auger, auger	114
	CNP 168	Power pack for hand-held items of PME	100
	CNP 169	Power rammer (petrol)	108
	CNP 170	Poker, vibratory, hand-held	113
	CNP 171	Planer, wood, hand-held (electric)	117
	CNP 172	Piling, vibrating hammer	115
	CNP 173	Poker, vibratory, hand-held (electric)	94
	CNP 174	Power pack (diesel)	100
	CNP 175	Power swivel	100
	CNP 176	Paint line marker (low pressure)	87
	CNP 177	Paint line remover	104
	CNP 181	Rock drill, crawler mounted (pneumatic)	128
	CNP 182	Rock drill, crawler mounted (hydraulic)	123
	CNP 183	Rock drill, hand-held (pneumatic)	116
	CNP 184	Road planer or miller	111

## Appendix 4.1 SWL of PME

	CNP 185	Road roller	108
	CNP 186	Roller, vibratory	108
	CNP 187	Road grinder (petrol)	108
	CNP 188	Road sweeper	107
	CNP 189	Road ripper, mini-robot mounted (electric)	97
	CNP 190	Road ripper, excavator mounted (hydraulic)	105
	CNP 201	Saw, circular, wood	108
	CNP 202	Saw, chain, hand-held	114
	CNP 203	Saw/groover, concrete (petrol)	115
	CNP 204	Scraper	119
	CNP 205	Saw, wire	101
	CNP 206	Soil pump	103
	CNP 221	Tug boat	110
	CNP 222	Tractor	118
	CNP 241	Ventilation fan	108
	CNP 261	Winch (pneumatic)	110
	CNP 262	Winch (electric)	95
	CNP 263	Winch (petrol)	102
	CNP 281	Water pump (electric)	88
	CNP 282	Water pump (petrol)	103
	CNP 283	Water pump, submersible (electric)	85
	CNP 284	Water jetting unit (diesel), silenced	94
	CNP 285	Water jetting unit (diesel), standard	107
EPD Sound power levels of other commonly used PME	OCUPME-001	Aerial work platform, working height $\leq$ 13m	95
	OCUPME-002	Agitator (electric)	90
	OCUPME-003	Air blower (electric)	95
	OCUPME-004	Breaker, electric hand-held, 10kg < mass < 18kg	103
	OCUPME-005	Breaker, electric hand-held, 18kg $\leq$ mass $\leq$ 35kg	108
	OCUPME-006	Breaker, mini-robot mounted	115
	OCUPME-007	Concrete burster	90
	OCUPME-008	Concrete crusher mini-robot mounted	94
	OCUPME-009	Concrete crusher, hand held	97
	OCUPME-010	Concrete pump (electric)	109
	OCUPME-011	Concrete crusher, excavator mounted	103
	OCUPME-012	Cutter, circular, steel (electric)	112
	OCUPME-013	Dredger, suction	103
	OCUPME-014	Drill, hand-held (battery)	89
	OCUPME-015	Drill rig, rotary type (diesel)	110
	OCUPME-016	Excavator, mini-robot mounted	94
	OCUPME-017	Excavator, hybrid and tracked (with QPME label)	98
	OCUPME-018	Forklift, LPG, output power $\leq$ 32kW, speed $\leq$ 10km/hr	104
	OCUPME-019	Forklift, LPG, output power $\leq$ 32kW, 10km/hr < speed $\leq$ 15km/hr	116
	OCUPME-020	Forklift, LPG, 32kW < output power $\leq$ 57kW, speed $\leq$ 15km/hr	122
	OCUPME-021	Grout mixer	90
	OCUPME-022	Grout pump	105
	OCUPME-023	Generator, portable	100
	OCUPME-024	Jig-saw, hand-held, wood (electric)	99
	OCUPME-025	Loader, mini-wheeled, output power $\leq$ 41kW, speed $\leq$ 15km/hr	103
	OCUPME-026	Piling, vibrating hammer	115
	OCUPME-027	Poker, vibratory, hand-held (electric)	102
	OCUPME-028	Power pack (diesel)	100
	OCUPME-029	Power swivel	100
	OCUPME-030	Paint line marker (low pressure)	87
	OCUPME-031	Paint line remover	104
	OCUPME-032	Road grinder (petrol)	108
	OCUPME-033	Road sweeper	107
	OCUPME-034	Road ripper, mini-robot mounted	97
	OCUPME-035	Road ripper, excavator mounted	105
	OCUPME-036	Saw, wire	101
	OCUPME-037	Soil pump	103
	OCUPME-038	Water jetting unit (diesel), silenced	94
	OCUPME-039	Water jetting unit (diesel), standard	107
	OCUPME-040	Light goods vehicle, gross vehicle weight $\leq$ 5.5 tonne	101
	OCUPME-041	Lorry, gross vehicle weight > 38 tonne	112
	OCUPME-042	Lorry, 5.5 tonne < gross vehicle weight $\leq$ 38 tonne	105
	OCUPME-043	Lorry, with crane/grab, gross vehicle weight > 38 tonne	112
	OCUPME-044	Lorry, with crane/grab, 5.5 tonne < gross vehicle weight $\leq$ 38 tonne	105
	OCUPME-045	Dump truck, gross vehicle weight > 38 tonne	117
	OCUPME-046	Dump truck, 5.5 tonne < gross vehicle weight $\leq$ 38 tonne	105
	OCUPME-047	Dump truck, with grab, 5.5 tonne < gross vehicle weight $\leq$ 38 tonne	105

Note:

(1) The identification code for "Other Commonly Used PME" is assigned for cross referencing in various appendices for assessment purpose only. Reference is made to [https://www.epd.gov.hk/epd/sites/default/files/epd/english/application\\_for\\_licences/guidance/files/OtherSWLe.pdf](https://www.epd.gov.hk/epd/sites/default/files/epd/english/application_for_licences/guidance/files/OtherSWLe.pdf)

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**APPENDIX 4.2**

**CONSTRUCTION PLANT INVENTORY  
(UNMITIGATED SCENARIO)**

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## Appendix 4.2 Construction Plant Inventory (Unmitigated Scenario)

Activity Index	Reference Code	Activities	No. of plant item	Utilisation rate	Unit SWL, dB(A)	SWL, dB(A)	Total SWL, dB(A)	Max SWL, dB(A)
W1-1		<b><u>Site Establishment - Hoarding, Site Office, Site Utilities, Site Survey, etc.</u></b>						110
	OCUPME-044	Lorry, with crane, 5.5 tonne < gross vehicle weight $\leq$ 38 tonne	1	80%	105	104		
	OCUPME-001	Aerial work platform, working height $\leq$ 13m	2	80%	95	97		
	CNP 065	Drill/grinder, hand-held (electric)	8	100%	98	107		
	CNP 102	Generator, silenced, 75dB(A) at 7m	1	100%	100	100	110	
W1-2		<b><u>Demolition Works and Minor Excavation / Earthworks</u></b>						117
	OCUPME-044	Lorry, with crane, 5.5 tonne < gross vehicle weight $\leq$ 38 tonne	1	80%	105	104		
	OCUPME-001	Aerial work platform, working height $\leq$ 13m	2	80%	95	97		
	OCUPME-006	Breaker, mini-robot mounted	2	60%	115	116		
	OCUPME-004	Breaker, electric hand-held, 10kg < mass < 18kg	3	80%	103	107		
	CNP 065	Drill/grinder, hand-held (electric)	8	100%	98	107		
	CNP 102	Generator, silenced, 75dB(A) at 7m	1	100%	100	100	117	
W1-3		<b><u>Structural Construction / Modification Works</u></b>						118
	OCUPME-044	Lorry, with crane, 5.5 tonne < gross vehicle weight $\leq$ 38 tonne	1	80%	105	104		
	OCUPME-001	Aerial work platform, working height $\leq$ 13m	2	80%	95	97		
	OCUPME-006	Breaker, mini-robot mounted	2	60%	115	116		
	CNP 044	Concrete lorry mixer	1	80%	109	108		
	OCUPME-004	Breaker, electric hand-held, 10kg < mass < 18kg	3	80%	103	107		
	CNP 065	Drill/grinder, hand-held (electric)	8	100%	98	107		
	CNP 102	Generator, silenced, 75dB(A) at 7m	1	100%	100	100	118	
W1-4		<b><u>ABWF and E&amp;M Fix Works</u></b>						110
	OCUPME-044	Lorry, with crane, 5.5 tonne < gross vehicle weight $\leq$ 38 tonne	1	80%	105	104		
	OCUPME-001	Aerial work platform, working height $\leq$ 13m	4	80%	95	100		
	CNP 065	Drill/grinder, hand-held (electric)	8	100%	98	107		
	CNP 102	Generator, silenced, 75dB(A) at 7m	1	100%	100	100	110	
W1-5		<b><u>Final Installation &amp; T&amp;C for FSIs</u></b>						108
	OCUPME-001	Aerial work platform, working height $\leq$ 13m	4	80%	95	100		
	CNP 065	Drill/grinder, hand-held (electric)	8	100%	98	107	108	



**APPENDIX 4.3**

**DETAILED CALCULATION OF CONSTRUCTION NOISE  
IMPACT ASSESSMENT DURING NON-RESTRICTED HOURS  
(UNMITIGATED SCENARIO)**



**Appendix 4.3 Detailed Calculation of Construction Noise Impact Assessment During Non-Restricted Hours (Unmitigated Scenario)**

NSR: N6a  
 Description: Wylie Court

Activity Name	Activity Index	SWL,dB(A)	Hori. Distance, m	Vertical Distance, m	Slant Distance, m	Distance Correction, dB(A)	Façade Correction, dB(A)	2024				2025										
								M	J	J	A	S	O	N	D	J	F	M	A	M	J	J
<b>Civil &amp; E&amp;M Construction Stage</b>																						
Site Establishment - Hoarding, Site Office, Site Utilities, Site Survey, etc.	W1-1	110	61	31	68	-44	3	69														
Demolition Works and Minor Excavation / Earthworks	W1-2	117	61	31	68	-44	3	76	76	76												
Structural Construction / Modification Works	W1-3	118	61	31	68	-44	3				77	77	77	77								
ABWF and E&M Fix Works	W1-4	110	61	31	68	-44	3							69	69	69	69					
Final Installation & T&C for FSIs	W1-5	108	61	31	68	-44	3										67					
Predicted Noise Level , dB(A)								69	76	76	76	77	77	77	77	69	69	69	69	69	69	67



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**APPENDIX 4.4**  
**CONSTRUCTION PLANT INVENTORY**  
**(MITIGATED SCENARIO)**

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## Appendix 4.4 Construction Plant Inventory (Mitigated Scenario)

Activity Index	Reference Code	Activities	No. of plant item	Utilisation rate	Type of Noise Control	Noise Reduction, dB(A)	Unit SWL, dB(A)	SWL, dB(A)	Total SWL, dB(A)	Max SWL, dB(A)
W1-1		<b><u>Site Establishment - Hoarding, Site Office, Site Utilities, Site Survey, etc.</u></b>								110
	OCUPME-044	Lorry, with crane, 5.5 tonne < gross vehicle weight $\leq$ 38 tonne	1	80%			105	104		
	OCUPME-001	Aerial work platform, working height $\leq$ 13m	2	80%			95	97		
	CNP 065	Drill/grinder, hand-held (electric)	8	100%			98	107		
	CNP 102	Generator, silenced, 75dB(A) at 7m	1	100%			100	100	110	
W1-2		<b><u>Demolition Works and Minor Excavation / Earthworks</u></b>								114
	OCUPME-044	Lorry, with crane, 5.5 tonne < gross vehicle weight $\leq$ 38 tonne	1	80%			105	104		
	OCUPME-001	Aerial work platform, working height $\leq$ 13m	2	80%			95	97		
	OCUPME-006	Breaker, mini-robot mounted	2	60%	Movable Noise Barrier	-5	115	111		
	OCUPME-004	Breaker, electric hand-held, 10kg < mass < 18kg	3	80%			103	107		
	CNP 065	Drill/grinder, hand-held (electric)	8	100%			98	107		
	CNP 102	Generator, silenced, 75dB(A) at 7m	1	100%			100	100	114	
W1-3		<b><u>Structural Construction / Modification Works</u></b>								115
	OCUPME-044	Lorry, with crane, 5.5 tonne < gross vehicle weight $\leq$ 38 tonne	1	80%			105	104		
	OCUPME-001	Aerial work platform, working height $\leq$ 13m	2	80%			95	97		
	OCUPME-006	Breaker, mini-robot mounted	2	60%	Movable Noise Barrier	-5	115	111		
	CNP 044	Concrete lorry mixer	1	80%			109	108		
	OCUPME-004	Breaker, electric hand-held, 10kg < mass < 18kg	3	80%			103	107		
	CNP 065	Drill/grinder, hand-held (electric)	8	100%			98	107		
	CNP 102	Generator, silenced, 75dB(A) at 7m	1	100%			100	100	115	
W1-4		<b><u>ABWF and E&amp;M Fix Works</u></b>								110
	OCUPME-044	Lorry, with crane, 5.5 tonne < gross vehicle weight $\leq$ 38 tonne	1	80%			105	104		
	OCUPME-001	Aerial work platform, working height $\leq$ 13m	4	80%			95	100		
	CNP 065	Drill/grinder, hand-held (electric)	8	100%			98	107		
	CNP 102	Generator, silenced, 75dB(A) at 7m	1	100%			100	100	110	
W1-5		<b><u>Final Installation &amp; T&amp;C for FSIs</u></b>								108
	OCUPME-001	Aerial work platform, working height $\leq$ 13m	4	80%			95	100		
	CNP 065	Drill/grinder, hand-held (electric)	8	100%			98	107	108	



**APPENDIX 4.5**

**DETAILED CALCULATION OF CONSTRUCTION NOISE  
IMPACT ASSESSMENT DURING NON-RESTRICTED HOURS  
(MITIGATED SCENARIO)**



**Appendix 4.5 Detailed Calculation of Construction Noise Impact Assessment During Non-Restricted Hours (Mitigated Scenario)**

NSR: N6a  
 Description: Wylie Court

Activity Name	Activity Index	SWL,dB(A)	Hori. Distance, m	Vertical Distance, m	Slant Distance, m	Distance Correction, dB(A)	Façade Correction, dB(A)	2024				2025										
								M	J	J	A	S	O	N	D	J	F	M	A	M	J	J
<b>Civil &amp; E&amp;M Construction Stage</b>																						
Site Establishment - Hoarding, Site Office, Site Utilities, Site Survey, etc.	W1-1	110	61	31	68	-44	3	69														
Demolition Works and Minor Excavation / Earthworks	W1-2	114	61	31	68	-44	3	73	73	73												
Structural Construction / Modification Works	W1-3	115	61	31	68	-44	3				74	74	74	74								
ABWF and E&M Fix Works	W1-4	110	61	31	68	-44	3								69	69	69					
Final Installation & T&C for FSIs	W1-5	108	61	31	68	-44	3										67					
Predicted Noise Level , dB(A)								69	73	73	73	74	74	74	74	69	69	69	69	69	69	67

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**APPENDIX 4.6**  
**PREVAILING BACKGROUND NOISE MEASUREMENT**

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**Appendix 4.6 Prevailing Background Noise Measurement**

Location ID	Measurement Location	Dominant Noise Source	Measurement Condition (Free-field / Façade)	Measurement Date	Measured Noise Level, L <sub>90</sub> (1hr), dB(A)	
					Daytime and Evening (0700 to 2300 hours)	Night-time (2300 to 0700 hours)
M01	Wylie Court	Road noise from Chatham Road South	Free-field	22 October 2020	65	59

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**ANNEX A**  
**MEASUREMENT PHOTOS**

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**Photograph 1 Measurement Set Up**





**ANNEX B**  
**CALIBRATION CERTIFICATES**



# Cert 1: Calibration Certificate of Integrated Sound Level Meter NTi XL2 (SN: A2A-17440-E0)



綜合試驗有限公司  
SOILS & MATERIALS ENGINEERING CO., LTD.  
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Fax: (852) 2555 7533



## CERTIFICATE OF CALIBRATION

Certificate No.: 20CA0520 02-01 Page 1 of 2

### Item tested

Description:	Sound Level Meter (Type 1)	Microphone	Preamp
Manufacturer:	Nti	Nti Andio	Nti Andio
Type/Model No.:	XL2	MC230A	MA220
Serial/Equipment No.:	A2A-17440-E0	A18423	9087
Adaptors used:	-		

### Item submitted by

Customer Name: AECOM  
Address of Customer: -  
Request No.: -  
Date of receipt: 20-May-2020

Date of test: 23-May-2020

### Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Multi function sound calibrator	B&K 4226	2288444	23-Aug-2020	CIGISMEC
Signal generator	DS 360	61227	24-Dec-2020	CEPREI

### Ambient conditions

Temperature:  $21 \pm 1$  °C  
Relative humidity:  $55 \pm 10$  %  
Air pressure:  $1000 \pm 5$  hPa

### Test specifications

- The Sound Level Meter has been calibrated in accordance with the requirements as specified in BS 7580: Part 1: 1997 and the lab calibration procedure SMTP004-CA-152.
- The electrical tests were performed using an electrical signal substituted for the microphone which was removed and replaced by an equivalent capacitance within a tolerance of  $\pm 20\%$ .
- The acoustic calibration was performed using an B&K 4226 sound calibrator and corrections was applied for the difference between the free-field and pressure responsiveness of the Sound Level Meter.

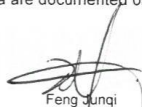
### Test results

This is to certify that the Sound Level Meter conforms to BS 7580: Part 1: 1997 for the conditions under which the test was performed.

Details of the performed measurements are presented on page 2 of this certificate.

Actual Measurement data are documented on worksheets.

Approved Signatory:

  
Feng Junqi

Date: 25-May-2020

Company Chop:



Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.



# 綜合試驗有限公司

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## CERTIFICATE OF CALIBRATION

(Continuation Page)

Certificate No.: 20CA0520 02-01 Page 2 of 2

### 1, Electrical Tests

The electrical tests were performed using an equivalent capacitance substituted for the microphone. The results are given in below with test status and the estimated uncertainties. The "Pass" means the result of the test is inside the tolerances stated in the test specifications. The "-" means the result of test is outside these tolerances.

Test:	Subtest:	Status:	Expanded Uncertainty (dB)	Coverage Factor
Self-generated noise	A	Pass	0.3	
	C	Pass	0.8	2.1
	Lin	Pass	1.6	2.2
Linearity range for Leq	At reference range, Step 5 dB at 4 kHz	Pass	0.3	
	Reference SPL on all other ranges	Pass	0.3	
	2 dB below upper limit of each range	Pass	0.3	
	2 dB above lower limit of each range	Pass	0.3	
Linearity range for SPL	At reference range, Step 5 dB at 4 kHz	Pass	0.3	
	Frequency weightings	A	Pass	0.3
Time weightings	C	Pass	0.3	
	Lin	Pass	0.3	
	Single Burst Fast	Pass	0.3	
Peak response	Single Burst Slow	Pass	0.3	
	Single 100µs rectangular pulse	Pass	0.3	
R.M.S. accuracy	Crest factor of 3	Pass	0.3	
Time weighting I	Single burst 5 ms at 2000 Hz	Pass	0.3	
	Repeated at frequency of 100 Hz	Pass	0.3	
Time averaging	1 ms burst duty factor 1/10 <sup>3</sup> at 4kHz	Pass	0.3	
	1 ms burst duty factor 1/10 <sup>4</sup> at 4kHz	Pass	0.3	
Pulse range	Single burst 10 ms at 4 kHz	Pass	0.4	
Sound exposure level	Single burst 10 ms at 4 kHz	Pass	0.4	
	Overload indication	SPL	Pass	0.3
	Leq	Pass	0.4	

### 2, Acoustic tests

The complete sound level meter was calibrated on the reference range using a B&K 4226 acoustic calibrator with 1000Hz and SPL 94 dB. The sensitivity of the sound level meter was adjusted. The test result at 125 Hz and 8000 Hz are given in below with test status and the estimated uncertainties.

Test:	Subtest	Status	Expanded Uncertainty (dB)	Coverage Factor
Acoustic response	Weighting A at 125 Hz	Pass	0.3	
	Weighting A at 8000 Hz	Pass	0.5	

### 3, Response to associated sound calibrator

N/A

The expanded uncertainties have been calculated in accordance with the ISO Publication "Guide to the expression of uncertainty in measurement", and gives an interval estimated to have a level of confidence of 95%. A coverage factor of 2 is assumed unless explicitly stated.

- End -

Calibrated by:

Fung Chi Yip

Date: 23-May-2020

Checked by:

Shek Kwong Tat

Date: 25-May-2020

The standard(s) and equipment used in the calibration are traceable to national or international recognised standards and are calibrated on a schedule to maintain the required accuracy level.

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Form No CARP152-2/Issue 1/Rev C/01/02/2007

Hong Kong Accreditation Service (HKAS) has accredited this laboratory (Reg. No. HOKLAS 028) under the Hong Kong Laboratory Accreditation Scheme (HOKLAS) for specific calibration activities as listed in the HOKLAS directory of accredited laboratories. The results shown in this certificate are traceable to the International System of Units (SI) or recognised measurement standards. This certificate shall not be reproduced except in full.

## Cert 2: Calibration Certificate of Calibrator B&K 4321 (SN: 3006428)



綜合試驗有限公司

SOILS & MATERIALS ENGINEERING CO., LTD.

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Tel: (852) 2873 6860  
Fax: (852) 2555 7533



### CERTIFICATE OF CALIBRATION

Certificate No.: 20CA0330 01

Page: 1 of 2

#### Item tested

Description: Acoustical Calibrator (Class 1)  
Manufacturer: B & K  
Type/Model No.: 4231  
Serial/Equipment No.: 3006428  
Adaptors used: -

#### Item submitted by

Customer: AECOM  
Address of Customer: -  
Request No.: -  
Date of receipt: 30-Mar-2020

Date of test: 31-Mar-2020

#### Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2341427	03-May-2020	SCL
Preamplifier	B&K 2673	2239857	17-May-2020	CEPREI
Measuring amplifier	B&K 2610	2346941	05-Jun-2020	CEPREI
Signal generator	DS 360	33873	10-May-2020	CEPREI
Digital multi-meter	34401A	US36087050	08-May-2020	CEPREI
Audio analyzer	8903B	GB41300350	13-May-2020	CEPREI
Universal counter	53132A	MY40003662	10-May-2020	CEPREI

#### Ambient conditions

Temperature:  $22 \pm 1$  °C  
Relative humidity:  $55 \pm 10$  %  
Air pressure:  $1005 \pm 5$  hPa

#### Test specifications

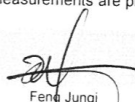
- The Sound Calibrator has been calibrated in accordance with the requirements as specified in IEC 60942 1997 Annex B and the lab calibration procedure SMTP004-CA-156.
- The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.
- The results are rounded to the nearest 0.01 dB and 0.1 Hz and have not been corrected for variations from a reference pressure of 1013.25 hectoPascals as the maker's information indicates that the instrument is insensitive to pressure changes.

#### Test results

This is to certify that the sound calibrator conforms to the requirements of annex B of IEC 60942: 1997 for the conditions under which the test was performed. This does not imply that the sound calibrator meets IEC 60942 under any other conditions.

Details of the performed measurements are presented on page 2 of this certificate.

Approved Signatory:

  
Feng Junqi

Date: 31-Mar-2020 c Company Chop:





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**APPENDIX 4.7**  
**FIXED PLANT NOISE CALCULATION**

---

## Appendix 4.7 Fixed Plant Noise Calculation

NAP	Plant item	Direction Facing	Distance, m <sup>[1]</sup>	Correction for line of sight, dB(A) <sup>[2]</sup>	Distance Correction of Point Source, dB(A)	Façade Correction, dB(A)	Day / Evening Period (0700-2300)			Night-time Period (2300-0700)		
							Max. allowable SWL, dB(A)	Predicted SPL, dB(A)	Criterion, dB(A)	Max. allowable SWL, dB(A)	Predicted SPL, dB(A)	Criterion, dB(A)
N6a	East Façade	East	79	-10	-46	3	110	57	65	101	48	55
	South Façade	South	116	-10	-49	3	113	57		103	47	
	West Façade	West	53	0	-42	3	103	64		93	54	
	North Façade	North	86	-10	-47	3	105	51		95	41	
	Total SPL, dB(A):							65			Total SPL, dB(A):	

NAP	Plant item	Direction Facing	Distance, m <sup>[1]</sup>	Correction for line of sight <sup>[2]</sup> , dB(A)	Distance Correction of Point Source, dB(A)	Façade Correction, dB(A)	Day / Evening Period (0700-2300)			Night-time Period (2300-0700)		
							Max. allowable SWL, dB(A)	Predicted SPL, dB(A)	Criterion, dB(A)	Max. allowable SWL, dB(A)	Predicted SPL, dB(A)	Criterion, dB(A)
N6b	East Façade	East	95	-10	-48	3	110	55	65	101	46	55
	South Façade	South	214	-10	-55	3	113	51		103	41	
	West Façade	West	75	0	-46	3	103	60		93	50	
	North Façade	North	75	0	-46	3	105	62		95	52	
	Total SPL, dB(A):							65			Total SPL, dB(A):	

NAP	Plant item	Direction Facing	Distance, m <sup>[1]</sup>	Correction for line of sight <sup>[2]</sup> , dB(A)	Distance Correction of Point Source, dB(A)	Façade Correction, dB(A)	Day / Evening Period (0700-2300)			Night-time Period (2300-0700)		
							Max. allowable SWL, dB(A)	Predicted SPL, dB(A)	Criterion, dB(A)	Max. allowable SWL, dB(A)	Predicted SPL, dB(A)	Criterion, dB(A)
N17a	East Façade	East	247	-5	-56	3	110	52	65	101	43	55
	South Façade	South	332	-10	-58	3	113	>300m		103	>300m	
	West Façade	West	263	-10	-56	3	103	40		93	30	
	North Façade	North	241	0	-56	3	105	52		95	42	
	Total SPL, dB(A):							55			Total SPL, dB(A):	

NAP	Plant item	Direction Facing	Distance, m <sup>[1]</sup>	Correction for line of sight <sup>[2]</sup> , dB(A)	Distance Correction of Point Source, dB(A)	Façade Correction, dB(A)	Day / Evening Period (0700-2300)			Night-time Period (2300-0700)		
							Max. allowable SWL, dB(A)	Predicted SPL, dB(A)	Criterion, dB(A)	Max. allowable SWL, dB(A)	Predicted SPL, dB(A)	Criterion, dB(A)
N23a	East Façade	East	159	-10	-52	3	110	51	65	101	42	55
	South Façade	South	148	0	-51	3	113	65		103	55	
	West Façade	West	148	0	-51	3	103	55		93	45	
	North Façade	North	310	-10	-58	3	105	>300m		95	>300m	
	Total SPL, dB(A):							65			Total SPL, dB(A):	

Remarks:

[1] As a conservative approach, only horizontal distance has been considered in the calculation of distance correction.

[2] A negative correction of 10 dB(A) has been adopted to the plant item totally screened by buildings and a negative correction of 5 dB(A) has been adopted to the NSR that does not have direct line of sight to the plant item.