MTR Corporation Limited

Tung Chung Line Extension

Plan on Noise Enclosure at Tung Chung Crescent

(Condition 2.15 of EP-614/2022)

Verified by: Adi Lee 

Position: Independent Environmental Checker

Date: 29 August 2023

MTR Corporation Limited

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Certified by: Edan Li

Position: Environmental Team Leader

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1. Introduction

Tung Chung Line Extension (hereafter referred to as “the Project”) is an approximately 1.3km extension of the existing Tung Chung Line (TCL) with two new stations namely Tung Chung East Station (TCE) and Tung Chung West Station (TCW). This Project forms a complementary package of sustainable transport solution in support of the future land supply, housing developments and airport expansion plans at Lantau North.

1.1 Project Description

Tung Chung West Station and Tunnels (Contract No: 1201), under the Project, consist of the construction work between Tung Chung Crescent (TCC), which beside Tung Chung Station (TUC), and new proposed underground TCW station.

Scope of works of the Contract 1201 includes:

- Extending the existing Tung Chung Line from existing overrun tunnel of TUC to the new TCW (in the form of a tunnel);
- Construction of a new TCW (underground) and overrun tunnel;
- Construction of the Emergency Access Point (EAP)/Emergency Egress Point (EEP) building;
- Establishment and operation of the barging facility at seawall of Tung Chung East.

The site layout plan of TCC site is shown in **Annex A**.

1.2 Purpose of this Plan

Pursuant to the Environmental Permit (No. EP-614/2022), Part C, Special Condition, Clause 2.15, a plan (hereafter referred to as “the Plan”) on the proposed noise enclosure at TCC shall be submitted no later than 2 months before commencement of the construction works at TCC.

The purpose of this Plan is to provide the detail information about the noise enclosure including its design, extent, access point locations, construction vehicle traffic management as well as the program of erection and demolition of the enclosure and site reinstatement, and the arrangement for temporary storage of construction and demolition waste. This Plan also demonstrates the effectiveness of the enclosure in mitigating the noise, air quality and any other potential environmental nuisances, as well as health and safety hazards during construction phase.

2. Programme of Erection and Demolition of The Enclosure and Site Reinstatement

The construction work at TCC work area will be conducted from September 2023 to Q1 2028. Noise enclosure at Tung Chung Crescent is expected to be constructed from Q1 2024 to Q3 2024. Disassembly of noise enclosure is expected to be conducted in Q1 2028. Site reinstatement will be conducted in Q1 2028 to Q1 2029.

3. Design and Extent of Noise Enclosure and Noise Cover

Noise enclosure and cover system will be built for the key construction work at TCC works area which comprise with an approximate 20m (L) x 36m (W) x 15m (H) **full noise enclosure** and 10m (W) x 55m (L) extended noise cover at ground level, both made of proprietary noise panels with minimum STC40 in sound insulation performance. The remaining parts of launching/retrieval shaft that are under the footbridge will be covered with same type of noise cover at ground level with dimensions of 10m (W) x 7m (L). The proposed noise enclosure design, its erection and operation has been enhanced with below consideration:

- With the current design, the time required for noise enclosure erection and dismantling is largely reduced, less impact will be generated to the surrounding.
- TBM operation, loading and unloading for tunnel segment and its storage will be carried out inside the noise enclosure, lifting equipment will be installed inside the noise enclosure.

This noise enclosure and cover will be constructed with **10dB(A) barrier effect** to achieve daytime construction noise criterion under EIAO-TM at nearby noise sensitive receivers. **Man-access double door** and **PME access door** will be installed. PME access door is facing Shun Tung Road. Doors of the man-access and PME-access should remain closed as far as practicable. All ventilation and enclosure openings will be installed with **acoustic silencers** to assure the noise reduction performance is the same as the noise panel. There should be no gaps in the noise covers as well.

An external canopy with dimension of 26m(W) x 40m(L) x 13m(H) and decorative curtains at side of external canopy will also be constructed outside noise enclosure for aesthetic purpose to enhance visual integration of the noise enclosure into the existing landscape setting. No noise barrier effect was applied from the external canopy for conservative approach.

An overview site plan of noise enclosure design, design drawing of noise enclosure/noise cover and external canopy, sample drawings and photos of man-access double door and ventilation silencer are shown in **Annex B**.

3.1 Construction Activities Not Involving Noise Enclosure

Critical operations such as excavation and concrete discharging will be conducted inside the noise enclosure. Before the erection of the noise enclosure, construction activities such as site clearance, pipe pile works, and pre-treatment work will be conducted. During the stage of TBM Assembly, TBM tail skin flipping and thrust frame installation with mobile crane, which takes only 2 weeks throughout the whole construction period, will be conducted outside of the enclosure after erection of enclosure. It is because head room inside noise enclosure is limited and insufficient for tail skin turning and thrust frame lifting. On the other hand, after dismantling of noise enclosure, reinstatement work will be carried out. Relevant mitigation measures before erection and after dismantling of noise enclosure will be adopted where necessary, including but not limited to:

- Use of Quieter Construction Method/Equipment (e.g. Hydraulic Crusher for site clearance work, QPME)
- Drilling Rig with acoustic plenum installed on engine box, localised noise enclosure and noise barrier for stationary PMEs
- frequent maintenance of machinery on site,
- water spraying on haul road and any spoil handling,
- covering any dusty material, etc

3.2 Evaluation of Noise Impacts

Due to possible PME access door opening for noise enclosure, 10dB(A) noise reduction shall be applied on the PMEs inside noise enclosure, without line of sight from NSRs, as conservative

approach. In-situ measurement will be conducted and submitted prior to the commissioning of the noise enclosure and cover system by qualified acoustician such as a member of the Institute of Acoustics on noise enclosure and noise covers. With the appropriate noise mitigation measures implemented, the construction activities can comply with the EIAO-TM daytime construction noise criterion of 75dB(A) for domestic premises and 70dB(A) / 65dB(A) during examination for educational institutions. Detail noise impact assessment and the 10dB(A) noise reduction will be updated and referred to the works near TCC in Section 3 of the Construction Noise Management Plan (CNMP) (for Works Contract No.1201). For construction work during restricted hours, a Construction Noise Permit (CNP) will be applied.

3.3 Environmental Monitoring and Audit

Environmental Monitoring and Audit (EM&A) Manual shall be followed to monitor the construction noise and site inspections will be conducted. This is to ensure compliance with the EIA study recommendations, to assess the effectiveness of the recommended mitigation measures and to identify any further need for additional mitigation measures or remedial actions.

4. Arrangement for Temporary Storage of Construction and Demolition Waste

During shaft excavation, all C&D material will be temporary stored inside the noise enclosure. Excavation work will also be conducted inside noise enclosure / noise cover. Dust suppression measure will be applied to the temporary storage locations, including but not limited to:

Any stockpile of dusty materials, shall be placed inside the noise enclosure:

- Covered entirely by impervious sheeting; or
- Sprayed with water or a dust suppression chemical to main the entire surface wet;
- Any dusty material shall be sprayed with water or a dust suppression chemical prior to any loading, unloading, transfer or mixing operation.

5. Access Point Locations and Construction Vehicle Traffic Management

During noise enclosure erection and demolition work, main construction traffic will be delivery of its construction materials: including pipe pile, noise panel and steel element of the noise enclosure during day-time. Once the enclosure has been erected, all activities at TCC will be screened off. Detail site plan arrangement on access point location and construction vehicle traffic management is shown in **Annex B**.

All traffic and delivery to the site will be planned and scheduled in advance with below consideration:

- No traffic will be allowed to queue outside the site area;
- Continuous communication between main contractor, its supplier and drivers will be kept;
- reduce delivery during peak hour (7:00 to 9:30 and 17:30 to 19:00 Monday to Friday) and to ensure smooth ingress and egress of the site;
- At TCC site entrance, traffic controller and/or banksman will ensure safety of public and pedestrian, to control movement of our vehicle and communicate with the pedestrian;
- CCTV at the entrance will be installed, to monitor the traffic in and out of the site area, if any abnormal traffic condition is observed, the team could react and review in timely manner;
- Traffic speed limited (10km/h) will be implemented within the site area.

6. Other Potential Environmental Nuisances

Apart from noise management, noise enclosure also effectively manages other potential environmental nuisances such as air quality, visual and Health and Safety.

6.1 Air Quality Management

Noise enclosure and **noise cover** will be installed covering shaft excavation, tunnel excavation and backfilling activities. Potential dust sources, including construction activities and stockpiles will be screened off and controlled within the enclosure with additional water spraying where necessary. In addition, wind erosion could be largely reduced with the protective enclosure. Dust mitigation measures are shown in **Annex C**.

6.1.1 Dust Suppression System

The dust suppression system will be adopted at the outlet of ventilation ducts. The system has been proven to successfully filter out the particles. The exhaust air will pass through a series of misting nozzles and filters at the outlet of the mechanical exhaust system to remove airborne contaminants.

6.2 Visual Impact Management

The erection of noise enclosure is an effective way of screening off the construction area from visual sensitive receivers and minimize the impact of visual during construction process. Besides, the noise enclosure will be provided with green features, for example green colouring or artificial green element (e.g. artificial grass mat) as well as external canopy with decorative curtains, the provision shall enhance visual integration of this noise enclosure into the existing landscape setting and help to alleviate the appearance of built form.

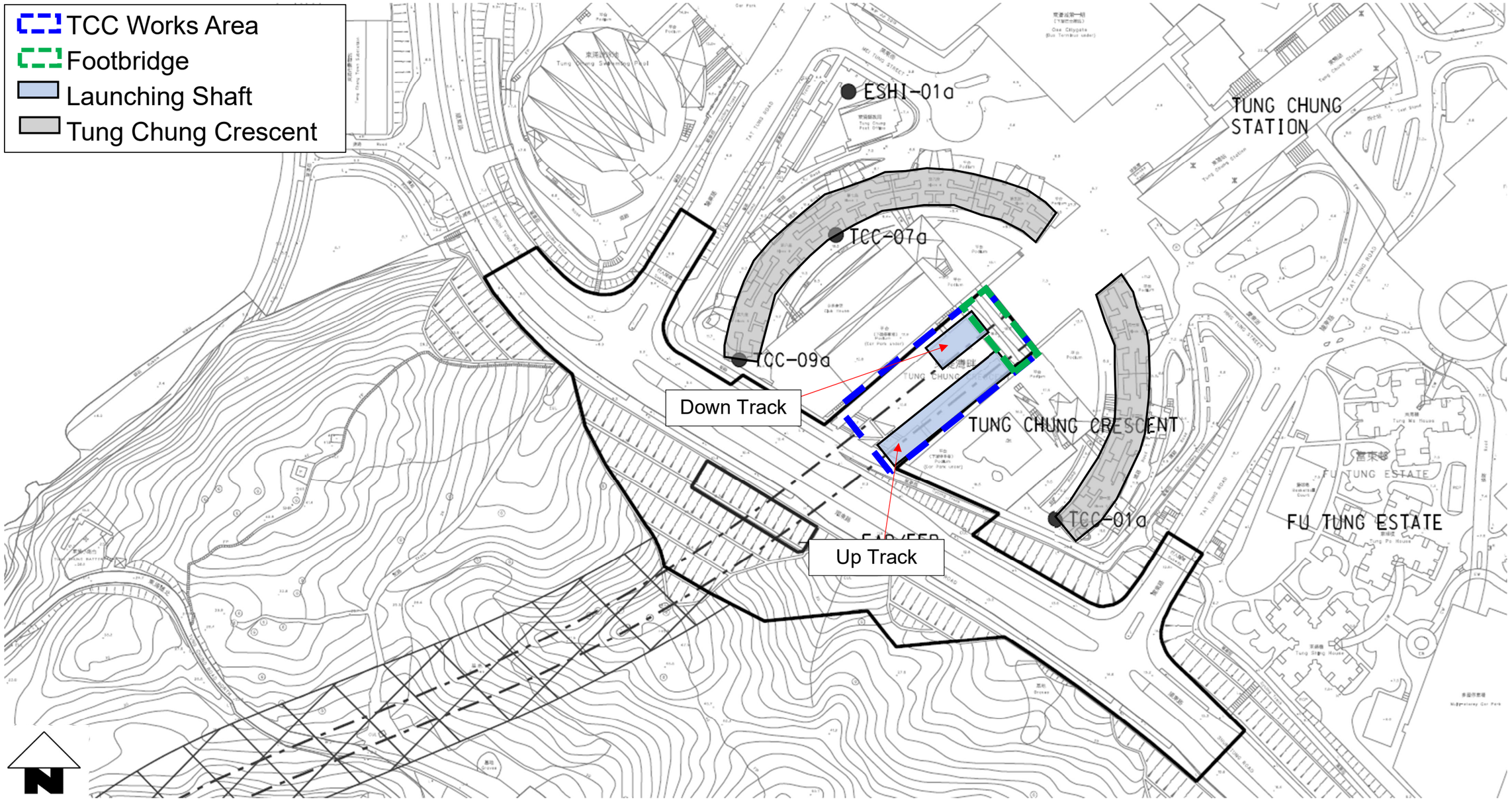
6.3 Health and Safety Management

Work environment related to health and safety with provision of noise enclosure will be enhanced:

- Work inside noise enclosure will be protected from inclement and extreme weather condition, for example rainy or hot sunny day, the enclosure will be served as a good shelter, in addition, dry and cool resting area could be provided;
- Dust suppression system will be installed inside the enclosure, which help to filter and suppressed, potential dusty particle;
- Sufficient task light could be provided to the work environmental at any time, in addition, safety signal/warning system could be deployed inside noise enclosures to enhance safety and communication to our workers without imposing any potential nuisance to the surrounding as far as practicable;
- Outdoor lighting will be minimized at specific location (e.g. pedestrian) for safety and security;
- With the silencer installed at the noise enclosure, to allow the integrity of noise isolation, fresh air will be able to intake from outside via the ventilation fan installed inside the noise enclosure / cover system, sufficient fresh air will be provided for all worker working inside the noise enclosure/cover system;
- Moreover, with the provision of enclosure provide better plant/worker segregation, worker walkway and entrance will be separated by the noise enclosure.

Annex A

(A) Site Layout at Tung Chung Crescent


TCC Works Area
Footbridge
Launching Shaft
Tung Chung Crescent
ESHI-01a
TUNG CHUNG STATION
TCC-07a
TCC-09a
Down Track
TUNG CHUNG CRESCENT
TCC-01a
FU TUNG ESTATE
Up Track
N

Annex B

(B) Designs of Noise Enclosure and Noise Cover

Figure B1.1: Schematic Drawing of Noise Enclosure, Noise Cover and External Canopy

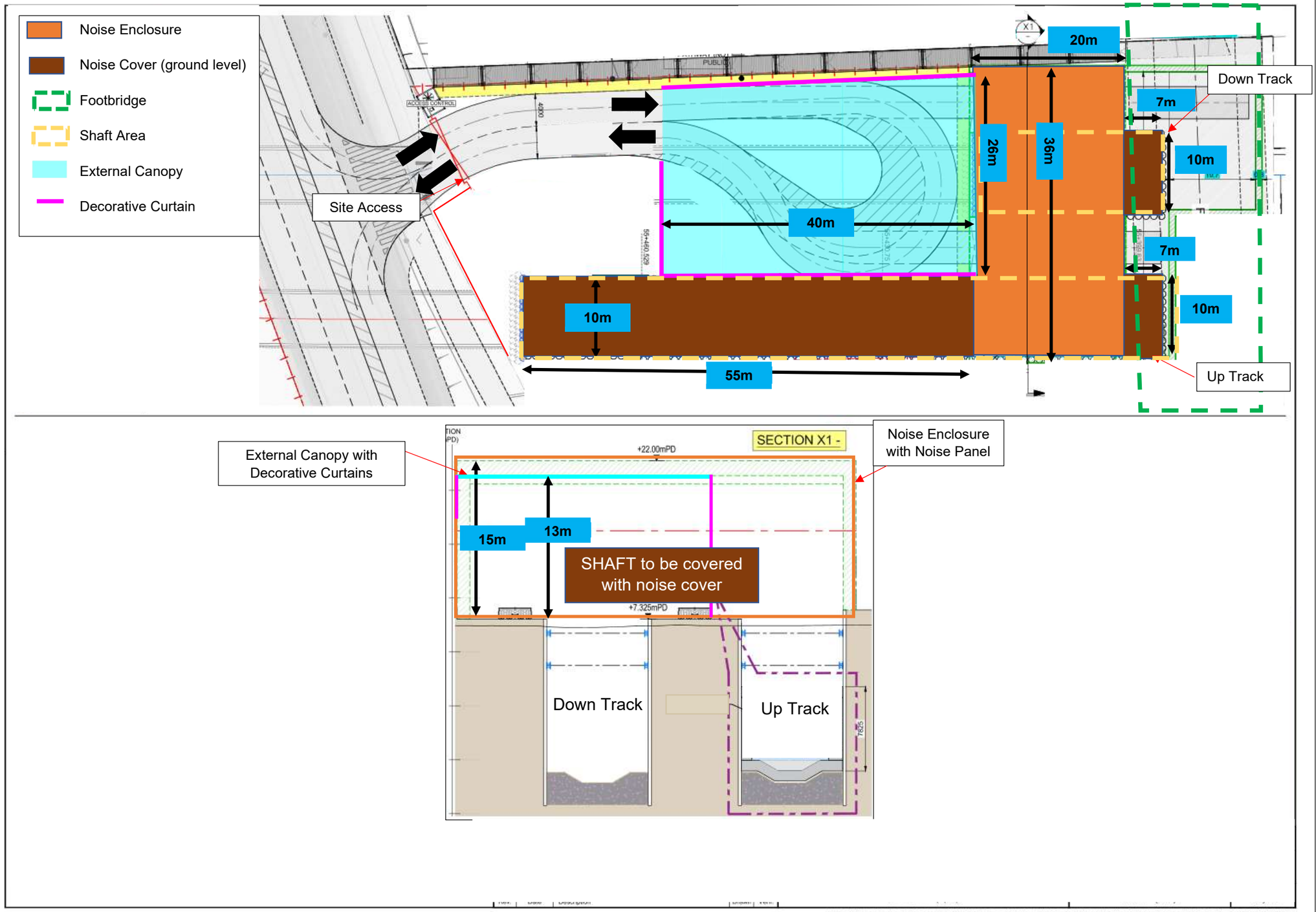
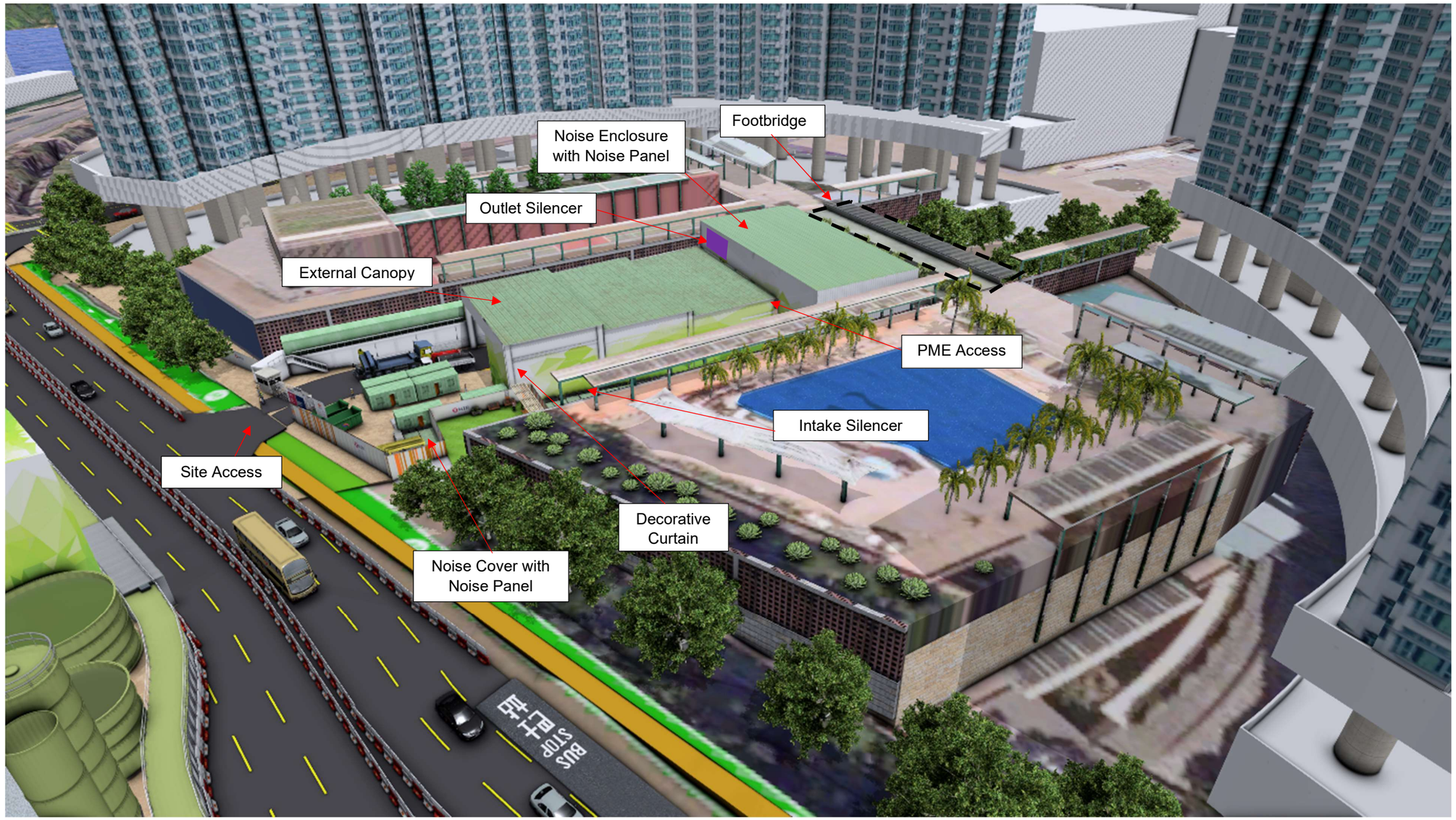


Figure B1.2: Schematic Drawing of Noise Enclosure, Noise Cover and External Canopy (cont.)



*3D computational drawing for indicating purpose only

Figure B1.3: Sample Drawing of Noise Enclosure

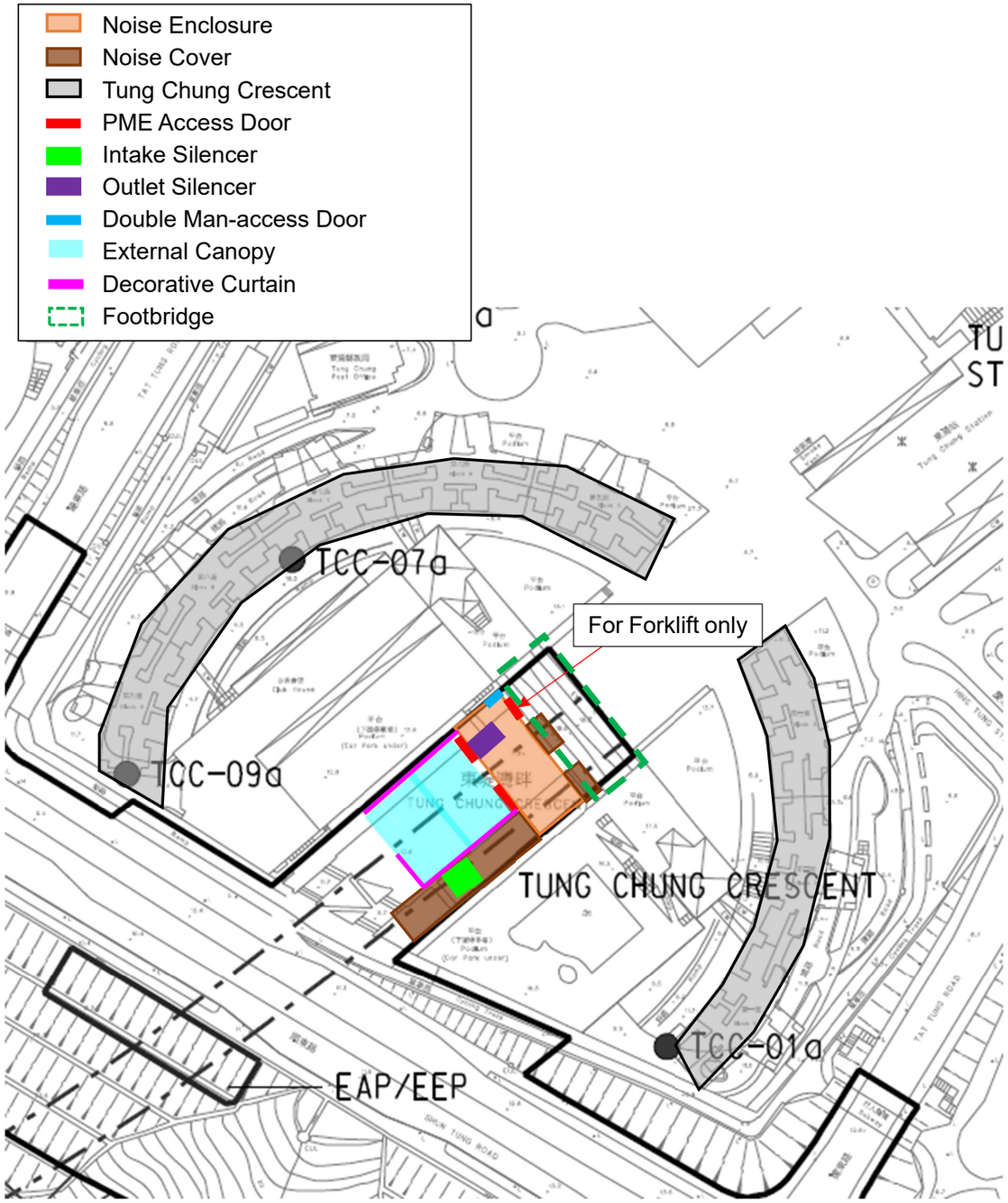


Figure B1.4: Drawing of Typical Man-access Double Door

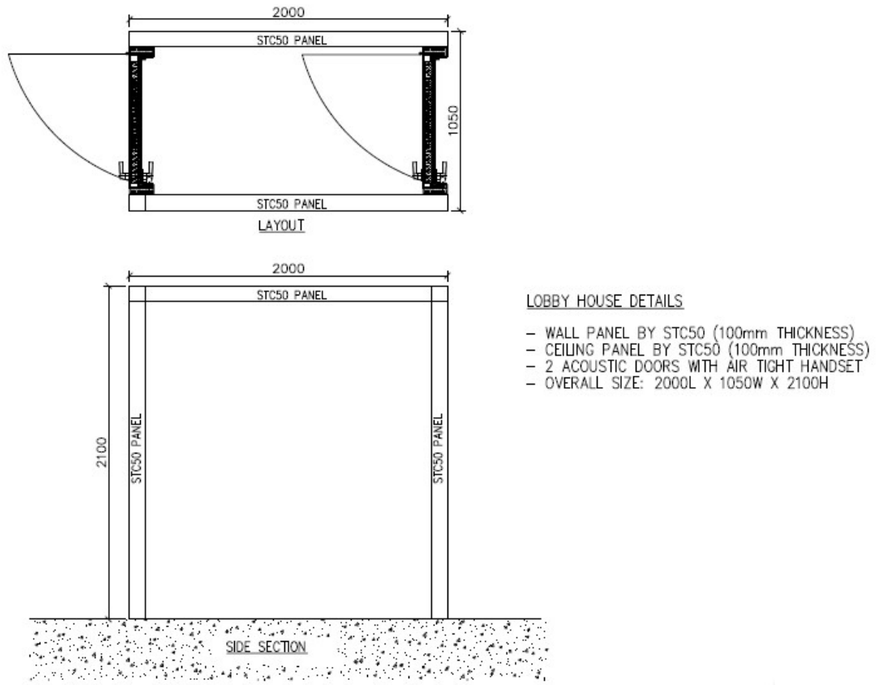


Figure B1.5: Drawing of Typical Silencer

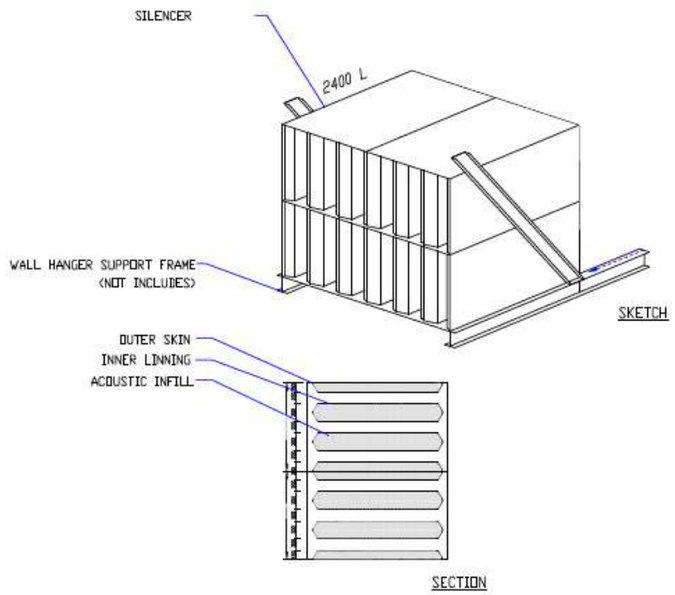


Photo B1.1: Sample Photo of Noise Enclosure (Central Kowloon Route – Centre Tunnel)

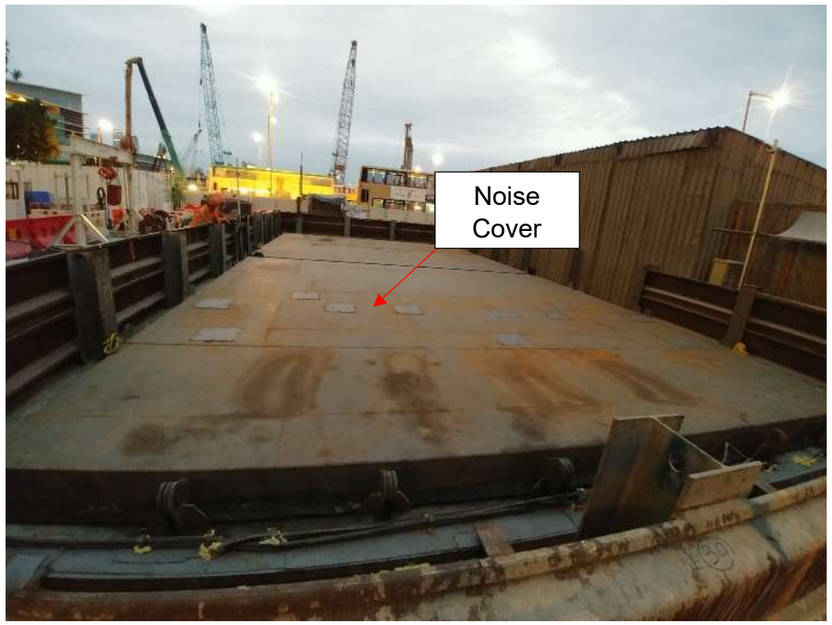


Photo B1.2: Sample Photo of Noise Cover (Central Kowloon Route – Centre Tunnel)

Photo B1.3: Sample photo of Man-access Lobby House with Double Door

Photo B1.4: Sample photo of Ventilation Silencer

Annex C

(C) Dust Mitigation Measures

Photo C1.1: Sample photo of Dust Filter with Mist Nozzle

Photo C1.2: Sample photo of Exhaust duct with Dust Filter and Mist Nozzle