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1 INTRODUCTION

1.1.1.1 The EMSD Hong Kong Workshop Project is to construct and operate a temporary vehicle workshop facility for around 5 years to replace the existing EMSD Hong Kong Workshop in Causeway Bay. The site is located in a largely industrial area of Sheung On Street, Chai Wan but is in proximity to residential and institutional sensitive receivers. The location plan of this Project is shown in **Figure 1.1**. The site constitutes an area of previously developed reclaimed land which is currently unoccupied and covered in hardstanding, with some trees. This Executive Summary highlights the key findings of the Environmental Impact Assessment (EIA) for the Project to comply with the EIA Ordinance (EIAO).

2 PROJECT DESCRIPTION

2.1 Project Nature and Scope

2.1.1.1 The proposed EMSD Hong Kong Workshop will be a single storey building comprising various facilities for vehicle repair and maintenance operation as well as parking of vehicles when not in operation. The facility will occupy a site area of about 2,040 m^2 and the vehicle repair and maintenance areas will be covered by a steel shelter with a 5.2 m high clearance. The rest of site will, also, be covered by hardstanding as part of the access road and parking bays.

2.1.1.2 This Project is a designated project under Item A.6, Part I, Schedule 2 of the EIAO: "A transport depot located less than 200 m from the nearest boundary of an existing or planned (a) residential area; (b) place of worship; (c) educational institution; or (d) health care institution" and requires an Environmental Impact Assessment (EIA) to be undertaken and an Environmental Permit (EP) to be obtained prior to construction commencement.

2.1.1.3 An application for the EIA Study Brief under section 5(1) of the Environmental Impact Assessment Ordinance (EIAO) was submitted by the EMSD on 13 June 2011 with a Project Profile (No. PP-442/2011). The EIA Study Brief No. ESB-231/2011 was issued by the Environmental Protection Department (EPD) on 20 July 2011.

2.2 Project Scheme Selection

2.2.1 Design of Workshop

2.2.1.1 The size of this proposed single-storey workshop is small (only about 2,040 m^2) and the flexibility to distribute individual repairing and maintenance processes within the workshop is comparatively low. The following design options were considered and reviewed, however, in order to optimise the operational and environmental benefits of the facility:

- The optimisation of the design to service a smaller number and types of vehicles (small and light vehicles, i.e. motorcycle, saloon cars and light vans) in the workshop in order to reduce any potential environmental issues during the operational phase, e.g. vehicular emissions, noise, wastewater, chemical waste, etc;

- The use of a simple open steel shed design instead of a typical building design of the workshop so as to reduce the duration of construction works and hence

potential environmental impacts during the construction phase, e.g. construction dust, noise, site effluent, C&D waste, etc; and

- The enhancement of utilising natural ventilation by providing a 5.2m high clearance instead of using mechanical ventilation systems for local exhaust of emissions from the workshop so as to minimise any potential noise impacts to the nearby sensitive receivers during the operational phase.

2.2.2 Construction Methodology

2.2.2.1 Construction of the workshop would be comparatively uncomplicated as it mainly involves the erection of a shed, underneath which the vehicle repairing and maintenance activities would be carried out. As such, consideration of alternatives was focused on the design of the foundation works and two typical construction methods being studied and compared, namely Steel-H Driven Piling and Raft Foundations:

- Steel-H Driven Piling: the strict control on the use of percussive piling methods in Hong Kong under the Noise Control Ordinance which limits the time per day for carrying out piling works, would pose significant implications to the construction programme. In terms of environmental issues, based upon the above, Steel-H driven piling is anticipated to bring in the following potential environmental benefits: (1) comparatively less excavated C&D materials arising; and (2) better site control and, hence, lower risk of site effluent runoff during the rainy season due to smaller exposed soil surfaces. Notwithstanding these minor benefits, there are some notable downsides to the use of percussive piling. The most notable is the significant noise and vibration impacts that would be caused due to the mechanical impaction induced by the hydraulic hammer. In addition, the limited times for undertaking percussive piling would affect the programme as noted above and therefore prolong the noise impacts to adjacent sensitive receivers. Also, potential construction dust impacts could be experienced as a result of soil excavation of soil for the construction of the pile caps; and

- Raft Foundation: While the raft foundation may increase the amount of excavated C&D materials arising, present a slightly bigger challenge to control the potential risk of site effluent runoff and have a slightly higher potential construction dust impacts due to the larger exposed soil surfaces, this method does have the benefit of notably reducing the noise and vibration impacts as no percussive piling machines will be used.

2.2.3 Preferred Option

2.2.3.1 Based on the above considerations of the design and construction methodology options, a preferred option has been selected in the Scheme and Preliminary Design phases of this Project as summarised below and shown in **Figures 2.1-2.4**, based on which the detailed design of this project will proceed and this EIA study was carried out:

- Optimum design for small servicing capacity of vehicles, simple open steel shed facility and natural ventilation for emissions exhaust; and

- Optimum construction methodology using raft foundation.

2.2.3.2 This preferred option is determined based on the comparison of the environmental benefits and dis-benefits of the various options and alternatives and has been selected on the basis that it minimises environmental impacts and presents overall

environmental benefits over the other options and is considered the optimum scheme from an environmental perspective.

2.3 Preliminary Construction Programme

2.3.1.1 The construction works would be scheduled to commence in August 2012 for the operation of the Workshop tentatively before June 2014.

3 ENVIRONMENTAL IMPACT ASSESSMENT

3.1.1.1 The EIA Study was conducted in accordance with the EIAO Study Brief No. ESB-231/2011, following the guidelines on assessment methodologies in the Technical Memorandum on Environmental Impact Assessment (EIAO-TM). The relevant aspects of the existing environment have been identified and described to provide a baseline for the identification and prediction of potential impacts which are likely to arise from implementing the Project. Individual aspect assessments have been undertaken with computer models to quantitatively predict environmental impacts for air quality and noise during the construction and operational phases. The predicted changes and effects resulting from the proposed Project have been evaluated. Mitigation measures have been identified and evaluated to avoid the impacts in the first instance to control, reduce and minimise or remedy the impacts.

3.2 Noise

Construction Phase

3.2.1.1 Potential noise emission would be generated from construction works activities. Powered mechanical equipment (PME) including excavators and cranes would be the major noise sources. Construction noise assessment was conducted in accordance with the EIAO-TM and the Technical Memorandum (TM) on Noise from Construction Work other than Percussive Piling. The unmitigated scenario showed that the construction airborne noise impact at respective NSRs ranges from 65 dB(A) to 77 dB(A), resulting in exceedances at 2 NSRs but the exceedances can be mitigated by using quieter PME and noise barrier/enclosure and acoustic fabric. Mitigated scenario showed that the construction noise impact at the NSRs would reduced to 58 dB(A) to 70 dB(A). As such, no adverse impact would be anticipated at the NSRs during construction phase of the Project.

Operational Phase

3.2.1.2 During operational phase, assessment was conducted in accordance to the TM for the Assessment of Noise from Places Other Than Domestic Premises, Public Places or Construction Sites. Noise emission would only be anticipated to generate during the speedometer calibration of motorcycles. The assessment showed that the speedometer calibration, which is anticipated to be carried out for only once per day and the testing would only last for 1 minute, resulting in an operational airborne noise level at the NSRs ranging from 43 dB(A) to 68 dB(A), indicating an exceedance of 3 dB(A) at NSR 8 Planned Educational Institute which would be located at the immediate vicinity to the western boundary of this proposed Workshop. However, it would not cause significant impact to the NSR after implementation of appropriate noise barrier within the proposed Workshop and an additional noise barrier in form of a noise curtain hanging from the supporting frame at the western site boundary. In addition, the vehicular traffic entering and exiting the workshop is anticipated to be small, about 50 vehicles per day, and therefore it would not cause significant impact to the large

amount of external traffic (about 23,000 per day) at Wing Tai Road. As such, no adverse impact would be anticipated at the NSRs during operational phase of the Project.

3.3 Air Quality

Construction Phase

3.3.1.1 The potential dust emission sources would be mainly from the construction work activities of the excavation and wind erosion at the work site. As the size of the work site is limited and the excavation is minor such that the amount of excavated materials generated would be small, adverse dust impact would not be anticipated at the ASRs with the implementation of sufficient dust suppression measures as stipulated under the Air Pollution Control (Construction Dust) Regulation and good site practices. As such, a quantitative dust impact assessment has not been considered as being required. With the implementation of sufficient dust suppression measures as stipulated under the Air Pollution Control (Construction Dust) Regulation and good site practices, no adverse residual impacts during the construction phase of the Project is expected.

Operational Phase

3.3.1.2 Comprehensive modelling was undertaken and the air quality background level for the future year of 2014 have been selected as the worst-case assessment year for this air quality impact assessment, which was selected based on the results of a sensitivity test.. Emissions from the traffic on nearby open roads within 500m from the study area, nearby two bus depots and this Project were predicted using the CALINE4 and ISCST3 models to calculate the emission concentrations of NO_2 and RSP. The results were then combined with the background concentrations calculated from the data of EPD's Air Quality Monitoring Station in Kwun Tong. The predicted overall cumulative 1-hour, 24-hour and annual average concentrations of NO_2, and the 24-hour and annual average concentrations of RSP ranged from 101 to 161 $\mu g/m^3$, 62 to 76 $\mu g/m^3$, 60.3 to 65.5 $\mu g/m^3$, 51 to 56 $\mu g/m^3$ and 50.1 to 52.2 $\mu g/m^3$ respectively. The findings indicated that the predicted NO_2 and RSP levels at the ASRs would comply with the relevant criteria in EIAO-TM and AQOs, so there would be no adverse residual impact predicted and no mitigation measures are required. No adverse residual impacts during the operational phase of the Project is expected.

3.4 Water Quality

Construction Phase

3.4.1.1 Potential water pollution sources were identified as construction site runoff, accidental chemical spillage and sewage from workforce. Measures including the implementation of good site practices to control site runoff, preventive measures for chemical use and storage and emergency spillage plan, and provision of chemical toilets for construction workforce were recommended to mitigate any adverse water quality impacts. No significant impacts would therefore be anticipated.

Operational Phase

3.4.1.2 During the operational phase, there would be no direct discharge of wastewater into the nearby WSRs. Potential water pollution sources during the operational phase would the sewage and wastewater from the Workshop's operation from staff and

repairing and maintenance activities. With the implementation of the wastewater treatment facilities, no adverse water quality impact would be anticipated.

3.5 Waste Management Implication and Land Contamination

Construction Phase

3.5.1.1 Construction wastes of the Project would include construction and demolition (C&D) materials including excavated C&D materials suitable for public fill, C&D waste including cleared vegetation which is not suitable for public fill, chemical waste, and general refuse. Opportunities to re-use materials have been considered and approximately 20 tonnes of sand and aggregate and approximately 75 tonnes of excavated materials will be reused as backfill for this Project.

3.5.1.2 Measures have been recommended for adoption to minimise the generation of C&D materials at the outset during the design stage. As excavation cannot be avoided, only a few measures can be taken to minimise the quantity of C&D materials. Alternative design of the Workshop has been adopted to minimize the generation of C&D materials.

3.5.1.3 With the implementation of the recommended waste management measures, no adverse residual impacts from the handling, storage, transportation or disposal of the waste generated by the project are predicted.

3.5.1.4 No land contamination impacts have been identified during the construction phase of the Project.

Operational Phase

3.5.1.5 The main types of waste generated during the operation of the Project would be the general refuse, chemical waste from the repairing and maintenance activities of the workshop and staff. No significant waste implications during the operational phase are predicted with the implementation of recommended waste management measures.

3.5.1.6 Preventive and precautionary measures have been recommended for the implementation during the operation of the Workshop to avoid land contamination due to the repairing and maintenance activities.

3.6 Landscape and Visual

Construction Phase

3.6.1.1 There would be moderate impacts on LR6-2 Open Space Vegetation due to felling of 10 trees which belong to very common and widespread species, and slight impacts on LR7-1 Open Space Vacant Land due to loss of approximately 2,040 m2 of LR7-1 (open space/vacant land, i.e. the Project site) during the construction phase of the Project, However, after felling of 10 trees and removal of some dead/ weedy trees, the site and the proposed development would still be well screened on the southern boundary by the retained trees and the existing footbridge. The resulting landscape and/or visual impacts from proposed tree felling without mitigation measures (e.g. on-site tree compensation) are still considered low. With proper implementation of the mitigation measures as recommended in the EIA Report, namely erection of construction site hoardings, landscape/visual impacts to the VSRs at road-side level can be effectively minimized.

Operational Phase

3.6.1.2 Given the temporary nature and scale of the project, the proposed development would not have any impacts on existing off-site landscape resources and landscape character areas, while on-site landscape impacts would be limited to felling of ten common tree species and removal of some weedy/dead trees and temporary loss of open space (the Project site). With the limited size of the Project site and the land use as a workshop, no space would be allowed for on-site tree compensation for the proposed felling of the 10 native trees. However, after felling of these 10 trees and removal of some dead/weedy trees, the site and the proposed workshop would still be well screened at the southern boundary by the retained trees and existing footbridge. The resulting landscape and/or visual impacts from proposed tree felling without mitigation measures (e.g. on-site tree compensation) are still considered low. Off-site tree compensation would be implemented at the EMSD Tuen Mun Vehicle Servicing Station, 202 Lung Mun Road, Siu Lang Shui, Tuen Mun. The compensatory planting regime would include the planting of thirty-one (31) heavy standard trees (assuming of trunk diameter at least 75mm) of aggregated trunk diameters of 2,325mm to compensate the 10 trees loss (of aggregated trunk diameters 2,321mm) due to the proposed Project. Other mitigation measures would include the use of low-rise structures/facilities (including the steel cover and facilities) which would be constructed in dull and light green color to resemble the original greenery of provided by the sparse vegetation of the existing Project site. Rolling plastic curtains made of durable and non-reflective materials would be installed along the western site boundary of the proposed Workshop to effectively screen off the operational activities such that the maintenance activities wouoldnot be visible to the users of the proposed educational institute (i.e. VSR-O6) during the possible 10-month concurrent operational period of both sites.

3.6.1.3 Due to the limited footprint of the Project site and the existing development setting, the Project site would only be occasionally/rarely viewed by most of the identified visually sensitive receivers (VSRs) in the study area. Except for the travellers at Sheung On Street who are considered to have low to medium sensitivity to visual change to the Project site, other identified VSRs are considered to have low sensitivity to visual change to the Project site.

3.6.1.4 The proposed Project is considered to have slight to moderate impacts on the travellers at Sheung On Street, and low to slight impact to the potential VSR-O6 The Proposed Education Institute at Junction of Shing Tai Road and Wing Tai Road during the approximate 10-month concurrent operational period. However, the impacts are generally considered “enhanced impacts”, as the Project would convert the existing site (a vacant site overgrown with weeds) of low amenity value to a neat, tidy-looking site (a maintenance workshop with a steel shelter) which is possibly considered of higher amenity value to the viewers. The proposed scheme is considered to have only slight to negligible impacts to the remaining VSRs in the study area during the approximate five-year operational period. As the site can be resumed for its originally planned uses in the Outline Zoning Plan, no long-term operational phase impacts on visual and landscape resources and/or visually sensitive receivers are anticipated.

4 ENVIRONMENTAL MONITORING AND AUDIT

4.1.1.1 An environmental monitoring and audit (EM&A) programme will be implemented during the construction and operation of the Project, to check the effectiveness of the recommended mitigation measures and compliance with relevant statutory criteria. The EM&A procedures are required during construction and operational phases of the project implementation. The EM&A requirements are divided into environmental

monitoring and/or project auditing in the form of site inspection and supervision. Only monitoring for construction phase noise has been recommended but regular auditing for all other parameters would be required. The proposed monitoring parameters are given in **Table 4.1** below:

Table 4.1: Proposed Environmental Monitoring during Construction Phase

Environmental Aspects	Phase	Monitoring Parameter
Airborne Noise	Construction	$L_{eq\text{-}30min}$

5 CONCLUSION

5.1.1.1 This EIA study has identified and assessed potential environmental impacts of the Project, in accordance with the EIA study brief and EIAO-TM guidelines. Overall, the EIA study has concluded that the Project would be environmentally acceptable, in compliance with environmental legislation and standards. With the implementation of environmental control measures during construction and operational phases, there would be no adverse residual impacts from the Project. This will be checked by a comprehensive EM&A programme.