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13 Environmental Monitoring and Auditing Requirements

13.1 Introduction

13.1.1.1 This section summarises the requirements on environmental monitoring and audits for the construction and operation of the Schedule 2 Designated Project (DP) item, i.e. Tung Chung Line Extension, based on the assessment results of various environmental issues. Details of the Environmental Monitoring and Audit (EM&A) programme can be referred to the separate EM&A Manual.

13.2 Project Organization

13.2.1.1 A project organisation consisting of the Engineer's Representative (ER), Independent Environmental Checker (IEC), Environmental Team (ET), Project Proponent and Contractor should be established to take on the responsibilities for environmental protection for the Project. The IEC will be appointed by the Project Proponent to conduct independent auditing on the overall EM&A programme including environmental and operation monitoring, implementation of mitigation measures, EM&A submissions, and any other submission required under the Environmental Permit (EP). The organisation, responsibilities of respective parties and lines of communication with respect to environmental protection works are given in the EM&A Manual.

13.3 EM&A Manual

13.3.1.1 EM&A is an important aspect in the Environmental Impact Assessment (EIA) process which specifies the timeframe and responsibilities for the implementation of environmental mitigation measures. The requirements on environmental monitoring (including baseline and impact monitoring) are given in the EM&A Manual.

13.3.1.2 A project specific EM&A Manual to the Project has been prepared as part of the Environmental Impact Assessment Ordinance (EIAO) based on the latest design information available and Environmental Protection Department (EPD)'s generic EM&A Manual. The project specific EM&A Manual highlights the following issues:

- Organisation, hierarchy and responsibilities of the Contractor, the Engineer or ER, ET and IEC with respect to the EM&A requirements during construction phase of the Project;
- Information on project organisation and programming of construction activities for the Project;

- Requirements with respect to the construction schedule and necessary EM&A programme to track the varying environmental impacts;
- Full details of methodologies to be adopted, including all field, laboratory and analytical procedures, and details on quality assurance;
- Procedure for undertaking on-site environmental audits;
- Definition of Action and Limit Levels;
- Establishment of Event and Action Plans;
- Requirements for reviewing pollution sources and working procedures required in the event of non-compliance of environmental criteria and complaints;
- Requirements for reviewing the implementation of mitigation measures, and effectiveness of environmental protection and pollution control measures adopted; and
- Presentation of requirements for EM&A data and appropriate reporting procedures.

13.3.1.3 The Contractor shall be requested to review and adhere to the mitigation measures and Environmental Mitigation Implementation Schedule (EMIS) with respect to the design developments and construction methodology. Any proposed changes to the mitigation measures shall be certified by the ET Leader and verified by the IEC as conforming to the relevant information and recommendations contained in the EIA Report.

13.4 Environmental Mitigation Implementation Schedule

13.4.1.1 An EMIS has been prepared alongside the EM&A of this EIA to summarise all the mitigation measures required to be implemented during the design, the construction and operational phases of the Project. The implementation responsibilities have also been identified in the EMIS. The EM&A Manual has also presented the requirements for environmental monitoring and audit (e.g. monitoring and audit frequency) throughout the construction phase.

13.5 EM&A Programme

13.5.1.1 The Contractor and Project Proponent will be requested to implement an environmental monitoring programme throughout the Project. In case exceedance is found, the Contractor, Project Proponent and ET should take immediate actions to implement remediation measures following the procedures specified in the EM&A Manual.

13.5.1.2 Detailed requirements of the EM&A programme have been described in the EM&A Manual. Measurements and activities that shall be conducted in accordance with the requirements in the EM&A Manual are summarised as follows:

- Baseline monitoring (construction dust, noise, etc.)
- Impact monitoring (construction dust, noise, etc.);
- Remedial actions in accordance with the Event and Action Plans within the timeframe in case the specified criteria in the EM&A Manual were exceeded;
- Logging and keeping records of monitoring results; and
- Preparation and submission of Baseline, Monthly and Final EM&A Reports.

13.5.2 Air Quality

Construction Phase

13.5.2.1 With the implementation of the dust suppression measures, no adverse environmental impact anticipated during the construction phase. However, construction dust monitoring, regular site environmental inspection at least once per week should be carried out during construction phase to ensure that the dust level will comply with the relevant criterion and the recommended best practices as recommended in this EIA Report and the EM&A Manual are properly implemented by the Contractor.

Operational Phase

13.5.2.2 No air quality impact during operational phase would be anticipated. Hence, no environmental monitoring and site inspections are required.

13.5.3 Noise

Construction Phase

13.5.3.1 With the implementation of noise control measures, no adverse environmental impact is anticipated during the construction phase. However, airborne construction noise monitoring, regular site environmental inspection at least once per week should be carried out during construction phase to ensure that the construction noise levels will comply with the relevant criterion and the recommended best management practices as recommended in this EIA Report and EM&A Manual are properly implemented by the Contractor.

13.5.3.2 Groundborne construction noise monitoring is not recommended since adverse groundborne construction noise impact is not anticipated in the unmitigated scenario.

Operational Phase

- 13.5.3.3** The Contractor shall carry out airborne rail noise commissioning test and monitoring for selective scenario and implement all necessary measures to ensure compliance with the noise standards stipulated in the Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM) and Noise Control Ordinance (NCO) for rail operations.
- 13.5.3.4** The Contractor shall carry out groundborne rail noise commissioning test to ensure compliance with the noise standards stipulated in the EIAO-TM and Noise Control Ordinance (NCO).
- 13.5.3.5** The Contractor shall carry out a fixed plant noise audit for planned fixed noise sources before its operation, and implement all necessary measures to ensure compliance with the noise standards stipulated in the EIAO-TM and NCO for fixed noise sources operations.

13.5.4 Water Quality

Construction Phase

- 13.5.4.1** With the implementation of good site practices, recommended mitigation measures and enhancement measures to control construction site runoff, no adverse water quality impact is anticipated during the construction phase. Hence, regular water quality impact monitoring is not required. However, regular site environmental inspection at least once per week shall be carried out during construction phase to ensure that the recommended best management practices, mitigation measures and enhancement measures as recommended in this EIA Report and the EM&A Manual are properly implemented by the Contractor.

Operational Phase

- 13.5.4.2** With proper connection to the public drainage and sewerage systems, no adverse impact is anticipated during the operational phase. Hence, no environmental monitoring and audit is required.

13.5.5 Waste Management Implication

Construction Phase

- 13.5.5.1** During construction phase, the Contractor shall manage all generated waste in accordance with relevant legislation and guidelines. The recommended mitigation measures which include good site practice, waste reduction measures, employing dump trucks equipped with mechanical cover and Global Positioning System (GPS) or equivalent system for transportation, implementing record of trip-tickets as well as monitoring transportation of marine sediment by all vessels.

13.5.5.2 Regular site environmental inspection should be carried out to ensure proper waste management measures recommended in this EIA Report and EM&A Manual are implemented by the Contractor.

Operational Phase

13.5.5.3 During operational phase, sufficient number of trash bins and recycling bins would be provided for collection of general refuse by users at designated locations. Reputable waste collector should be employed to remove municipal solid waste regularly. In addition, chemical waste which cannot be recycled should be disposed of at Chemical Waste Treatment Centre (CWTC).

13.5.5.4 It is anticipated that there would not be any insurmountable impacts during the operational phase, and thus monitoring and audit are not required.

13.5.6 Land Contamination

13.5.6.1 The land contamination issues in the Project Site have been reviewed and assessed. No potential land contamination was identified within the Project. Environmental monitoring in relation to land remediation is not required.

13.5.6.2 Site re-appraisal would be recommended by the Project Proponent to assess the latest site situation prior to the commencement of the construction.

13.5.7 Ecology

Construction Phase

13.5.7.1 Indirect ecological impacts including noise, vibration, dust and potential water quality deterioration would be either insignificant or would be mitigated by appropriate mitigation measures together with environmental monitoring and audit. No significant ecological impact would be arisen from the Project.

Operational Phase

13.5.7.2 Both direct and indirect ecological impacts in operational phase were considered insignificant. Thus, additional ecological mitigation measures, monitoring and audit are not required.

13.5.8 Fisheries

Construction Phase

13.5.8.1 No specific fisheries monitoring and audit programme is required. With the implementation of good site practices to control construction site runoff, no adverse impacts on fisheries is anticipated during the construction phase.

Operational Phase

13.5.8.2 It is anticipated that there would be no adverse impacts on fisheries during operational phases, and thus monitoring and audit are not required.

13.5.9 Landscape and Visual

Construction Phase

13.5.9.1 Mitigation measures such as tree preservation, tree transplanting, landscape reinstatement, provision of site hoarding, optimization of construction area, lighting control should be adopted during the construction phase. Regular site environmental inspection should be undertaken during the construction period to ensure that the mitigation measures recommended in this EIA Report and EM&A Manual are properly implemented by the Contractor.

Operational Phase

13.5.9.2 Mitigation measures to be implemented, such as compensatory tree planting, optimising green provision on structure, landscape integration and screen planting, architectural aesthetic design of built structures and noise barrier should be integrated into the detailed design and built as part of the construction works so that they would be in place during the operation of the Project.

13.5.10 Cultural Heritage

Construction Phase

13.5.10.1 The sites of archaeological interest and an archaeological potential area are identified within or near the Project. No major archaeological impacts are expected within the whole project area during the construction phase. The extreme north end of the TCW Station area and above and adjacent the tunnel alignment was inaccessible for testing at the EIA stage due to land ownership issue. Testing after land resumption would be recommended including field scan, auger tests and test pits to be conducted by a qualified archaeologist who obtains a licence under the Antiquities and Monuments Ordinance (Cap. 53) to verify the archaeological interest of this area. Locations and scope should be agreed with AMO prior to implementation. The exact locations of the auger tests and test pits would be subject to site circumstances and constraints. Subject to the findings of the further archaeological testing, options for mitigation measures such as in-situ preservation, relocation and preservation by record etc would be fully investigated and agreed with AMO.

13.5.10.2 No adverse impact to the graded historic buildings, declared monuments as well as non-graded heritage items and other historic buildings is anticipated. Therefore, mitigation measure as well as impact monitoring and audit are not required.

13.5.10.3 AMO should be informed immediately in case of discovery of antiquities or supposed antiquities in the course of the project works in accordance with the Antiquities and Monuments Ordinance (Cap. 53), so that appropriate mitigation measures, if needed, can be timely formulated and implemented in agreement with AMO.

Operational Phase

13.5.10.4 The archaeology and built heritage would not be affected by the operational phase of the Project. Hence, mitigation measure as well as impact monitoring and audit are not required.

13.5.11 Hazard to Life

Construction Phase

13.5.11.1 With the implementation of good site practices and design measures for the potential use of explosives, no potential risk would be anticipated. Hence, monitoring and audit are not required.

Operational Phase

13.5.11.2 No potential risk during operational phase is envisaged. Hence, mitigation measure or monitoring and audit are not required.