

12. ENVIRONMENTAL MONITORING AND AUDIT (EM&A) REQUIREMENTS

12.1 Introduction

12.1.1 This EIA Study has focused on the assessment and mitigation of the potential impacts associated with the construction and operation of the Project. One of the key outputs has been the identification of mitigation measures to be undertaken so that residual impacts comply with regulatory requirements including the EIAO-TM. To confirm effective and timely implementation of the mitigation measures, it is considered necessary to develop Environmental Monitoring and Audit (EM&A) procedures and mechanisms by which the Implementation Schedule (**Annex 12A**) may be tracked and its effectiveness assessed.

12.2 Objective of EM&A

12.2.1 The objectives of carrying out EM&A for the Project include:

- Providing baseline information against which any short or long term environmental impacts of the projects can be determined;
- Providing an early indication should any of the environmental control measures or practices fail to achieve the acceptable standards;
- Monitoring the performance of the Project and the effectiveness of mitigation measures;
- Verifying the environmental impacts identified in the EIA;
- Determining project compliance with regulatory requirements, standards and government policies;
- Taking remedial action if unexpected results or unacceptable impacts arise; and
- Providing data to enable an environmental audit to be undertaken at regular intervals.

12.2.2 The following sections summarise the recommended EM&A requirements and further details are provided in the EM&A Manual.

12.3 Air Quality

12.3.1 The EIA study concluded that no adverse construction dust or odour impact is anticipated on the identified air sensitive receivers (ASRs) provided that the recommended air quality and odour mitigation measures are properly implemented during the construction phase of the Project.

12.3.2 Odour impact arising from emissions from TSTP or STKSTW has been predicted to be in compliance with the odour criterion stipulated in Annex 4 of the EIAO-TM. Therefore, no adverse odour impact is anticipated during the operation phase of the Project provided that the recommended odour mitigation measures are properly equipped and maintained.

12.3.3 Regular site inspections and audits will be carried out during the construction phase in order to confirm that the mitigation measures are implemented and are working effectively. The detailed EM&A measures are presented in Section 3.7 of the EIA Report and the EM&A Manual. During the operation phase, it is proposed to carry out monitoring of odour emission at the exhausts at TSTP and STKSTW. Details of the recommended monitoring of odour emission are presented in Section 3.9 of the EIA Report and the EM&A Manual.

12.4 Noise

- 12.4.1 A construction noise assessment has been undertaken to predict the noise levels at the representative NSRs due to the construction of the Project. Practicable mitigation measures, including use of quiet construction plant / quiet construction method, temporary noise barriers and good site practices, have been recommended. With the implementation of the recommended mitigation measures, the predicted construction noise levels at all NSRs comply with the noise criteria during the daytime period. Therefore, no noise impact is expected to arise from the construction activities. Also, no cumulative impact or residual impact is anticipated. Regular noise monitoring at NSRs as part of the EM&A programme during the construction stage is recommended.
- 12.4.2 Potential noise impact from the operation of the expanded STKSTW and TSTP has been assessed. The predicted fixed plant noise levels at the representative NSRs due to the operation of the expanded STKSTW and TSTP are well within the relevant noise criteria. Commissioning test and noise monitoring for the expanded STKSTW and TSTP is considered unnecessary during the operation phase.
- 12.4.3 Regular site inspections and audits, and regular noise monitoring at NSRs as part of the EM&A programme during the construction stage is recommended in order to verify compliance with the regulatory requirements and conformity of the Contractor with regard to noise control and contract conditions. The detailed EM&A measures are detailed in the EM&A Manual for this Project.

12.5 Water Quality

- 12.5.1 Computational modelling has been conducted to predict various potential water quality impacts from the proposed installation and removal of sheetpiles for cofferdam construction under this Project, including Suspended Solids (SS) elevation, sedimentation, Dissolved Oxygen (DO) depletion, release of nutrient, heavy metal and trace organic pollutants. Modelling results indicate the potential impact on water quality from the installation and removal of sheetpiles would be minimal. To ensure environmental compliance, marine water monitoring for the sheetpile installation and removal is recommended. Site audit would also be conducted throughout the marine and land-based construction under this Project.
- 12.5.2 Whilst the discharge of treated sewage effluent from the TSTP and expanded STKSTW is the main environmental concern for the Project operation, no adverse water quality impact from the discharge of treated sewage effluent would be expected. To ensure environmental compliance, monitoring of discharge effluent quality and marine water quality at nearby selected WSRs are recommended. The detailed EM&A measures are detailed in Section 5.12 and the EM&A Manual for this Project.

12.6 Waste Management

- 12.6.1 Auditing should be carried out periodically to determine if waste is being managed in accordance with prescribed waste management procedures and the EMP. The audits should examine all aspects of waste management including waste generation, storage, recycling, treatment, transportation, and disposal. The general site inspections including waste management issues will be undertaken weekly by the Environmental Team to check all construction activities for compliance with all appropriate environmental protection and pollution control measures, including those set up in the EMP. Meanwhile, waste management audit will also be carried out as part of the monthly audit by the Independent Environmental Checker.
- 12.6.2 Provided that there is strict control of construction and demolition materials generated from construction works and that all arisings are stored, handled,

transported and disposed of in accordance with the recommended mitigation measures, no unacceptable impact due to waste management is expected during construction phase. The recommended mitigation measures can be enforced by incorporating them into the waste management requirements as part of the Environmental Management Plan. Environmental audit would be necessary to ensure the implementation of proper waste management practices during construction.

- 12.6.3 With reference to the Sediment Quality Report in **Annex 6B**, only Category L sediment was identified. In accordance with ETWB TCW No. 34/2002, Type 1 – Open Sea Disposal should be adopted for the disposal of 3,040 m³ excavated sediment during construction of the proposed outfall diffuser. The location of marine disposal site should be sought with MFC/CEDD. The Contractor shall obtain a Marine Dumping Permit in accordance with the Dumping at Sea Ordinance (DASO). The Contractor should provide separate submissions (e.g. Sediment Sampling and Testing Plan / Sediment Quality Report) to EPD / DASO authority when applying for the Marine Dumping Permit under the DASO.

12.7 Ecology

- 12.7.1 The assessment presented in *Section 7* of the EIA Report indicates that unacceptable construction phase impacts and operation phase impacts are not expected to occur to terrestrial ecological resources. The implementation of the ecological mitigation measures described in *Section 7.7* will be inspected regularly as part of the EM&A procedures during the construction period.

- 12.7.2 The following precautionary measure shall be implemented as far as practicable for the protection of the identified Night Roosting Site for Great Egret:

- Undertake Pre-construction survey to reconfirm the usage of the Night Roosting Site for Great Egret. If the Night Roosting Site is used by Great Egrets or other ardeids species, no work shall be undertaken within an area of 100m from the Night Roosting Site from 16:00 to 07:00 of the following day. In addition, strong artificial lighting should not be used in the area at night to avoid disturbance to the roosting ardeids. Clear signs should be erected on site to alert all site staff and workers about the requirement.

- 12.7.3 Details of all the recommended mitigation measures are included within the Implementation Schedule provided in Annex 12A. No terrestrial ecology specific operational phase monitoring is considered necessary.

- 12.7.4 The mitigation measures designed to mitigate impacts to water quality to acceptable levels (compliance with assessment criteria) are expected to mitigate impacts to marine ecological resources and thus specific measures are not deemed necessary. The water quality monitoring programme will provide management actions and supplemental mitigation measures to be employed should impacts arise, thereby ensuring the environmental acceptability of the Project. The detailed EM&A measures for ecology are presented in Section 7.10 of the EIA

12.8 Fisheries

- 12.8.1 Results from the review indicate that fisheries importance of the Project Area and its vicinity is low when compared to other waters of Hong Kong. Sensitive receivers including spawning ground, nursery ground, artificial reefs and Fish Culture Zone areas have been identified; however, the assessment of water quality impacts demonstrated that these areas will not be significantly affected. As no unacceptable impacts have been predicted to occur during the construction and operation of this Project, monitoring of fisheries resources during these project phases is not considered necessary.

12.8.2 Monitoring activities designed to detect and mitigate any unacceptable impacts to water quality during construction phase are also expected to serve to protect against unacceptable impacts to fisheries. The details of the water quality monitoring programme are presented in the EM&A Manual attached to this EIA. The detailed EM&A measures are presented in *Section 5.12* of the EIA Report.

12.9 Landscape and Visual Impact

12.9.1 The Landscape and Visual Assessment of the EIA recommended a series of mitigation measures for the construction phase to mitigate the landscape and visual impacts of the Project. Details of all the recommended mitigation measures are included in Sections 9.8 of the EIA Report and summarized in the Implementation Schedule provided in Annex 12A.

12.9.2 Implementation of the mitigation measures for landscape and visual resources recommended by the EIA shall be monitored through the site inspection and audit programme.

12.10 Cultural Heritage

12.10.1 No adverse impacts on any built heritage resources would be expected from the construction of the Project. During construction, precautionary measure will be carried out for the proposed works in the vicinity of the Tin Hau Temple. Details of all the recommended mitigation measures are included in Sections 10.3.50 to 10.3.55 of the EIA Report and summarized in the Implementation Schedule provided in Annex 12A. No specific EM&A programme is required.