

12 ENVIRONMENTAL MONITORING & AUDITING REQUIREMENTS

12.1 Introduction

12.1.1 General

12.1.1.1 In accordance with assessment results, it is considered necessary to conduct the Environmental Monitoring and Audit (EM&A) programme during the construction and operation phase of the Project and to define the relevant scope of EM&A requirements, including:

- Provision of a database against which to determine any short-term or long-term environmental impacts of the Project;
- Provision of an early indication that any of the environmental control measures or other operation practices are failing to achieve the required standards;
- Provision of data to determine the effectiveness of any mitigation or control measures implemented through amendments in procedures during the life of Project;
- Provision of data to enable an environmental audit of the construction, operation, restoration and aftercare works to be undertaken; and
- Assessment of compliance with the environmental and pollution control and operation requirements.

12.2 Project Organisation

12.2.1.1 A project organisation consisting of the Engineer's Representative (ER), Independent Environmental Checker (IEC), Environmental Team (ET), Project Proponent and Contractors should be established to take on the responsibilities for environmental protection for the Project.

12.2.1.2 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.

12.3 EM&A Manual

12.3.1.1 EM&A is an important aspect in the 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.

12.3.1.2 An EM&A Manual specific to the Project will be prepared based on individual contractual requirements and latest design information by the ET. The project specific EM&A Manual will highlight the following issues:

- Organisation, hierarchy and responsibilities of the Contractor, Project Proponent, ET and IEC with respect to the EM&A requirements during construction and operational phases of the Project;
- Information on project organisation and programming of construction activities;
- Requirements with respect to the construction schedule and necessary EM&A programme to track the varying environmental impacts;
- 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 of 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.

12.4 Project Implementation Schedule

- 12.4.1.1 A Project Implementation Schedule (PIS) has been prepared and included in **Appendix 12.1** and the EM&A Manual to summarise all the required mitigation measures need to be implemented during the construction and operational phase of the Project. The implementation responsibilities are also identified in the PIS. The EM&A Manual will also present the requirements for environmental monitoring and auditing (e.g. monitoring and audit frequency), throughout the entire construction phase.
- 12.4.1.2 The Contractor should review the mitigation measures and PIS with respect to the design developments and construction methodology. In case the Contractor needs to update the mitigation measures and PIS, the EM&A Manual should be updated accordingly.

12.5 EM&A Programme

- 12.5.1.1 Detailed requirements of the EM&A programme are described in the EM&A Manual. Measurements and activities are summarised as follows:
- Baseline monitoring;
 - Impact monitoring;
 - Remedial actions in accordance with the Event and Action Plan within the timeframe in case the specified criteria in the EM&A Manual being exceeded;
 - Logging and keeping records of monitoring results;
 - Real-time reporting of construction monitoring data, wherever practicable, for the Project through a dedicated internet website; and

- Preparation and submission of Monthly and Final EM&A Reports.

12.6 Environmental Management Plan

- 12.6.1.1 The Contractor shall prepare the Environmental Management Plan (EMP) (including a Waste Management Plan, WMP), Construction Method Statement prior to the commencement of construction works and obtain approval from ER and IEC and other relevant authorities to encompass the recommended environmental protection / mitigation measures with respect to their latest construction methodology and programme.
- 12.6.1.2 A systematic EMP shall be set up by the Contractor to ensure effective implementation of the mitigation measures, monitoring and remedial requirements presented in the EIA, EM&A and PIS. The Project Proponent and IEC will audit the implementation status against the EMP and advise the necessary remedial actions required. These remedial actions shall be enforced by the Engineer's Representative through contractual means.
- 12.6.1.3 The EMP will require the Contractor (together with its sub-contractors) to define in details how to implement the recommended mitigation measures in order to achieve the environmental performance defined in the Hong Kong environmental legislation and the EIA documentation. The EMP would also need to include a Waste Management Plan to demonstrate the Contractor's proposal to minimize the waste generation and maximize the re-use of spoil as far as practicable
- 12.6.1.4 The review of on-site environmental performance shall be undertaken by the Project Proponent and IEC through a systematic checklist and audit once the project commences. The environmental performance review programme comprises a regular assessment on the effectiveness of the EMP.

Appendix 12.1

Project Implementation Schedule