



12. ENVIRONMENTAL MONITORING AND AUDIT REQUIREMENTS

12.1 Introduction

12.1.1 This section provides a summary of the requirements of the environmental monitoring and audit (EM&A) for the Project based on the findings of this EIA study. An EM&A programme has been formulated and the details are provided in the separate EM&A Manual prepared in accordance with Annex 21 of the EIAO-TM.

12.1.2 The objectives of conducting the EM&A programme for the Project are as follows:

- To provide a database against which any short or long-term environmental impacts of the Project can be determined;
- To provide an early indication should any of the environmental control measures or practices fail to achieve the acceptable standards;
- To monitor the performance of the Project and the effectiveness of mitigation measures;
- To verify the environmental impacts predicted in this EIA;
- To determine project compliance with regulatory requirements, standards and government policies;
- To take remedial action if unexpected problems or unacceptable impacts arise; and
- To provide data to enable an environmental audit.

12.1.3 The following section summarises the recommended EM&A requirements for the Project. Details of the specific requirements are provided in a stand-alone EM&A Manual.

12.2 Air Quality

Construction Phase

12.2.1 With the implementation of the dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices, no adverse construction dust impacts would be expected. No exceedances of odour level arising during the construction phase were predicted under the mitigated scenario. Regular environmental audits to be implemented by the Environmental Team during the construction stage are recommended to ensure the proper implementation of the dust control measures.

Operational Phase

12.2.2 All the odorous gas arising from the sewage would be collected and properly treated by deodorization units with 97% odour removal efficiency for Tai O STW, Hang Mei SPS and Fan Kwai Tong SPS. The predicted odour levels at the ASRs would comply with the TM-EIAO criterion. Odour monitoring and audit should be carried out during the commissioning stage to ensure the continuing effectiveness of the odour control measures. Details of monitoring and audit programme of odour due to the operation of Tai O STW, Hang Mei SPS and Fan Kwai Tong SPS are presented in the EM&A Manual. Commissioning test of the deodorization unit is also a mandatory requirement to confirm the effectiveness of the odour removal efficiency is in compliance with the design criteria.



12.3 Noise

Construction Phase

- 12.3.1 Mitigation measures have been recommended to control the construction noise impacts arising from the Project. All the recommended mitigation measures will be incorporated into the EM&A programme for implementation during construction.
- 12.3.2 The recommended mitigation measures, monitoring procedures and locations are detailed in the Environmental Monitoring and Audit (EM&A) Manual and should be implemented by the Environmental Team. This will allow the Contractor to have early warning and undertake the necessary actions to reduce noise emissions at specific areas.

Operational Phase

- 12.3.3 No noise impacts are anticipated as a result of the implementation of the Project during the operational phase. Thus, no specific EM&A programme with respect to noise during the operational phase is required. In order to ensure that compliance with the noise limits specified in the report are achieved, commissioning testing of the major noise generating equipment shall be conducted. The measurement data during commissioning should be submitted to the Environmental Team (ET) Leader for checking against the noise design criteria.

12.4 Water Quality

- 12.4.1 Monitoring and auditing for marine water quality during the construction would be necessary. The monitoring and audit aim to ensure that the released SS concentrations from the dredging activities would not adversely affect the sensitive receivers. This environmental monitoring and audit programme would be required to ensure the implementation of the recommended water quality mitigation measures and to assess the effectiveness of these measures during the construction works.
- 12.4.2 If monitoring results indicate that the dredging activities have resulted in exceedence of the predicted elevations of SS concentration even after the implementation of the recommended mitigation measures, the construction programme should be carefully reviewed to reduce the environmental impacts.

12.5 Waste Management

Construction Phase

- 12.5.1 The assessment on waste management has concluded that with proper handling, storage, collection, transportation and disposal of waste materials generated during construction phase, no significant impacts to nearby sensitive receivers are expected.
- 12.5.2 Waste management would be the Contractor's responsibility to ensure that all wastes produced during the construction of the Project are handled, stored and disposed of in accordance with good waste management practices and EPD's regulations and requirements. The mitigation measures recommended in **Section 6.5** should form the basis of the site Waste Management Plan to be developed by the Contractor at the construction phase.
- 12.5.3 Whilst no specific EM&A requirement have been considered necessary, it is recommended that during the construction phase, site inspections and supervisions of waste management procedures and auditing of the effectiveness of implemented mitigation measures should be undertaken by the Environmental



Team on a regular basis (e.g. weekly as a minimum). These tasks shall be scheduled in the WMP to be prepared by the Contractor, and the site audits summary shall be presented in the EM&A reports.

Operational Phase

- 12.5.4 No adverse waste management impacts would be expected as a result of the implementation of the Project during operational phase. Thus, no specific EM&A programme with respect to waste management during the operational phase is required.

12.6 Land Contamination

Construction Phase

- 12.6.1 There are no potential contamination land uses within the construction areas. Potential land contamination impacts on the sensitive receivers are not anticipated. No specific EM&A programme is required.

Operational Phase

- 12.6.2 The operation of the sewers, Fan Kwai Tong SPS, Hang Mei SPS and Tai O STW would not cause land contamination. Therefore, no impacts on land contamination are expected to occur. No specific EM&A programme is required.

12.7 Ecology

- 12.7.1 Given the limited sizes of the works areas, the ecological value of the habitats (“low” to “low to moderate”) affected by the works areas, other than the dolphin exclusion zone and dolphin watching plan, no specific ecological monitoring is required during construction phase.
- 12.7.2 Specific mitigation measures have been proposed for marine noise impact, including decoupling of noisy equipment on vessels, establishment of dolphin exclusion zone, and restrictions on vessel speed and routings to reduce impacts on Chinese White Dolphin. Dolphin exclusion zone of 250m radius should be implemented in the reclamation and dredging sites during the installation of the perimeter silt curtains and any re-deployment of the perimeter silt curtains. Dolphin monitoring will be implemented during the construction phase of the Project.
- 12.7.3 The Weekly site inspection should be carried out by the environmental team to ensure the implementation of mitigation measures and proper site practice proposed to safeguard air and water quality as well as noise impacts.
- 12.7.4 Details of the dolphin monitoring programme and site audit are presented in the EM&A Manual.
- 12.7.5 During the operation phase, adverse impacts are not expected to occur. Therefore, no dolphin monitoring is required.

12.8 Fisheries

- 12.8.1 The impact from water quality deterioration on fisheries resources and fisheries sensitive receivers during construction phase is ranked as **Minor**. During construction phase, 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.



- 12.8.2 During the operation phase, no adverse impacts are anticipated. Therefore, no further monitoring and audit for fisheries are required.

12.9 Cultural Heritage

Terrestrial Archaeology

- 12.9.1 During the construction phase of the sewers works, an Archaeological Watching Brief programme should be undertaken at Kat Hing and Kat Hing Back Streets, Wing O Street, Tai O Market Street and Tai Ping Street. Watching Brief should be undertaken by a qualified archaeologist, who must apply for a licence under the Antiquities and Monuments Ordinance (Cap. 53) from the Antiquities Authority before the commencement of archaeological watching brief.
- 12.9.2 The alignment of village sewers may be subject to refinement prior to the construction works, and potential findings of archaeological works in future under other projects may provide additional field data for a more precise planning of the proposed AWB in respect of extent and frequency. Thus, a review on the scope of AWB should be carried out and agreed with the AMO before the licence application.

Marine Archaeology

- 12.9.3 No mitigation or environmental audit will be required.

Built Heritage

- 12.9.4 No specific mitigation measures are required for the works of expansion and upgrading of Tai O STW under this Project. Monitoring and preventive measures for the sewers works and SPS construction will be recommended as part of the environmental monitoring and audit requirements. The recommended measures are described as follow:

Condition Survey

- 12.9.5 The requirements for the condition survey have been highlighted in **Sections 10.5.11** and **10.5.12**. Condition survey will be required for all highlighted Graded Historic Buildings and Nil-Graded Historic Structures as shown in **Section 10.5.19**, **Table 10-4** and **Table 10-5** respectively.

Vibration and Settlement Monitoring

- 12.9.6 The requirements for vibration and settlement monitoring have been identified in this report. The condition survey report will confirm the Graded Historic Buildings and Nil-Graded Historic Structures that will require vibration and settlement monitoring during the construction works.

Provision of Buffer Zone

- 12.9.7 The requirements for provision of buffer zone have been highlighted in **Section 10.5.15**. Resources requiring buffer zone are shown in **Table 10-4** and **Table 10-5**.

Protective Covering

- 12.9.8 The requirements for protective covering have been highlighted in **Section 10.5.16**. Resources requiring protective covering are shown in **Table 10-4** and **Table 10-5**.

Safe Public Access



- 12.9.9 The requirements for safe public access have been highlighted in **Section 10.5.17**. Resources requiring measures for safe public access are shown in **Table 10-4** and **Table 10-5**.

Operational Phase

- 12.9.10 No adverse impacts on any cultural heritage resources would be expected as a result of the implementation of the Project during operational phase. Thus, no specific EM&A programme with respect to cultural heritage during the operational phase is required.

12.10 Landscape and Visual

Construction Phase

- 12.10.1 During the construction phase of the Project, some of the existing trees and vegetation would be disturbed. A number of on-site landscape and visual mitigation measures are recommended to minimise the potential landscape and visual impacts. With the implementation of the recommended mitigation measures, the landscape and visual impacts are considered to be acceptable.
- 12.10.2 Regular audits should be carried out to ensure all the recommended landscape and visual mitigation measures would be effectively implemented and audited by the Environment Team during construction phases of the Project. The EM&A will comprise audit of the tree transplanting, compensatory planting and planting establishment through site audit programme.

Operational Phase

- 12.10.3 Operational stage EM&A during the operational phase will comprise audit of the implementation of the landscape plan in the form of site inspection.