

17 ENVIRONMENTAL MONITORING AND AUDIT REQUIREMENTS

17.1 Introduction

- 17.1.1 This section elaborates the requirements of EM&A for the Project, based on the assessment results of various environmental issues.
- 17.1.2 The objectives of carrying out EM&A for the Project include the following:
- to provide a database against which any 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.
- 17.1.3 The EM&A reporting shall be carried out in paper based plus electronic submission upon agreeing the format with the ER and EPD. All the monitoring data (baseline and impact) shall also be submitted in electronic format.
- 17.1.4 The following sections summarise the recommended EM&A requirements. Details of EM&A are provided in the EM&A Manual.

17.2 Air Quality Impact

- 17.2.1 The construction work will inevitably lead to dust (TSP) emissions, mainly from excavation, filling activities, truck haulage and material handling. No exceedance of hourly and daily TSP criteria are predicted at air sensitive receivers (ASRs) in the vicinity of work sites with eight times daily watering on active work areas. With implementation of the proposed mitigation measures, dust suppression measures stipulated in the *Air Pollution Control (Construction Dust) Regulation*, good site practices and comprehensive dust monitoring and audit, the dust impact would be further diminished. Dust monitoring is recommended in the EM&A Manual to ensure the efficacy of the control measures.
- 17.2.2 With the implementation of suggested mitigation measures, the predicted air quality in the study area complies with the AQOs during operational phase. No environmental monitoring and audit is proposed for vehicular emissions, cruise ship emissions from the proposed cruise terminal at Kai Tak, chimney emissions from the San Po Kong and Kwun Tong industrial areas and emission from the Planned Hospital in Kai Tak.
- 17.2.3 Monthly (from July to September) monitoring of odour impacts from KTAC and KTTS, for a period of 2 years, is proposed during the operational phase of the Project to ascertain the effectiveness of the proposed mitigation measures over time, and to monitor any on-going odour impacts at the ASRs. If residual odour impact is still found at the end of the odour monitoring programme, further investigation would be carried out to review the odour problem and to identify the parties responsible for further remedial action.

- 17.2.4 In order to determine the effectiveness of the bioremediation monitoring of treated sediment is proposed. Annual sediment sampling for a period of 2 years should be conducted during the operational phase after completion of the odour remediation works conducted at KTAC and KTTS including the full-scale in-situ bioremediation, localized maintenance dredging and the 600m gap opening.

17.3 Noise Impact

- 17.3.1 Construction noise impacts from this Project, in addition to the concurrent construction tasks of other projects could be expected at the NSRs identified in this EIA. Appropriate mitigation measures are required in order to alleviate the impacts to meet the EIAO-TM criteria. Noise monitoring during construction phase will need to be carried out to ensure that such mitigation measures are implemented properly.
- 17.3.2 The Contractors are requested to implement and operate a continuous noise monitoring mechanism throughout the entire construction period of the Project. This mechanism will include a system to report the real time monitoring results on the Project Proponent's website within a period of time, to be agreed by EPD, after the relevant noise monitoring data are collected. In cases where exceedances are found, the Contractor and ET should take immediate actions to implement remediation measures following the procedures specified in the EM&A Manual.
- 17.3.3 No environmental monitoring and audit for potential noise impact during the operational phase is considered necessary.

17.4 Water Quality Impact

- 17.4.1 There would be potential impacts of suspended solids upon the flushing water intakes due to the marine construction works proposed under the KTD. Water quality monitoring and audit will need to be carried out for the proposed dredging and filling works to ensure that all the recommended mitigation measures are properly implemented.
- 17.4.2 Water quality monitoring and audit is also recommended to be carried out during and after the sediment treatment works proposed at KTAC and KTTS to ensure that the proposed treatment work would not result in unacceptable impact.
- 17.4.3 A water quality monitoring and audit programme will also be implemented before and after opening a 600 m gap at the runway to ascertain the runway opening would not result in unacceptable impact marine water quality as well as the WSD flushing water intakes and to confirm the water quality impacts predicted under operational phase of the Project. An algal bloom / red tide monitoring programme and action plan will also be implemented to ascertain the runway opening and bioremediation for the sediment at KTAC and KTTS would not result in unacceptable impact.
- 17.4.4 Details of the water quality monitoring programme and the Event and Action Plan are provided in the EM&A Manual.

17.5 Waste Management Implications

- 17.5.1 Waste management will 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 the recommended good waste management practices and EPD's regulations and requirements. The waste management measures recommended in this EIA Report should form the basis of the site Waste Management Plan to be developed by the Contractor at the construction stage.

- 17.5.2 It is recommended that the waste arisings generated during the construction activities should be audited periodically to determine if wastes are being managed in accordance with approved procedures and the site Waste Management Plan. The audits should look at all aspects of waste management including waste generation, storage, transport and disposal. An appropriate audit programme would be to undertake a first audit near the commencement of the construction works, and then to audit on a weekly basis thereafter. In addition, the routine site inspections should check the implementation of the recommended good site practices and other waste management mitigation measures.

17.6 Land Contamination Impact

- 17.6.1 The contaminated soil identified at the ex-GFS building area should be excavated and treated on-site by biopiling or solidification / stabilization. In order to gauge the effectiveness of the remedial system and minimise the potentially adverse environmental impacts arising from the handling of potentially contaminated materials, the recommended environmental mitigation and safety measures, progress monitoring and/or confirmation sampling / testing recommended during the course of remedial works should be implemented during the decommissioning / decontamination works of the Project. Detailed requirements are provided in the EM&A Manual.

17.7 Impact on Culture Heritage

Marine Archaeology

- 17.7.1 The recent 2007 MAI concluded no further MAI is necessary, yet it did not preclude the possibility that there could be items buried within the Marine Deposit which may be exposed by the dredging works. It is therefore recommended that the dredging contractor(s) should monitor the dredged spoils from those marine works that caused significant impact to the seabed. Guidelines for the Monitoring Brief have been prepared in consultation with the AMO and are attached as **Appendix 12.1**. Marine works in KTD that may cause significant impact to the seabed include the dredging works for the immersed tunnel section of CKR at To Kwa Wan, dredging works for the relocation of the Hong Kong China Gas (HKCG) submarine main, dredging works for the proposed cruise terminal, and dredging works for the immersed tunnel section of Road T2 (including the dredging required for the associated reconstruction of a section of the existing Kwun Tong submarine outfall). Details of the impacts and the recommended mitigation measures for the dredging works for proposed cruise terminal are presented in the corresponding approved EIA Report (EIAO Register No.: AEIAR-115/2007). Whereas the impacts and mitigation measures required for CKR, HKCG submarine main relocation, and Road T2 will be examined under the respective Schedule 2 EIA study.

Terrestrial Archaeology

- 17.7.2 Further archaeological investigation and rescue excavation will be undertaken at Trench AA3. Whereas for Trench AA5, preservation *in situ* of all identified sections of the Longjin Pier will be required after the completion of further archaeological investigation. The implementation of the works will be undertaken by the Hong Kong Government.

Built Heritage

- 17.7.3 No monitoring and audit programme specific for built heritage would be required.

17.8 Landscape and Visual Impact

- 17.8.1 The EIA has recommended landscape and visual mitigation measures to be undertaken during construction and operation phases of the Project. The following paragraphs define the EM&A requirements to ensure the proposed landscape and visual impact mitigation measures are effectively implemented.
- 17.8.2 The construction phase EM&A of the landscape and visual environment and mitigation works shall be carried out as part of the site audit programme. Specific EM&A during operation phase of the Project is not required as long as the proposed mitigation measures in the EIA and as depicted in the Landscape Mitigation Plan are fully implemented.
- 17.8.3 Baseline changes with respect to the landscape and visual environments should be carried out in reference to the recorded baseline conditions of the site as described in Section 13 of the EIA. The monitoring should in particular record changes of each landscape resource, landscape character area and the view conditions of each visually sensitive receiver. Parameters used to describe changes in each of the above should be the same as in **Section 13** of the EIA.
- 17.8.4 The baseline monitoring should be conducted as a one-off site survey prior to commencement of any construction works.
- 17.8.5 All mitigation measures proposed in the EIA and implemented by the Contractor should be audited by a landscape auditor, as a member of the Environmental Team, on a regular basis to ensure compliance with the intended aims of the measures. Site inspection should be undertaken at least once every two weeks throughout the construction period.
- 17.8.6 In particular, the extent of the agreed works areas should be regularly checked during the construction phase. Any trespass by the contractor outside the limit of the works, including any damage to the existing trees, woodland and vegetation should be noted.
- 17.8.7 The landscape auditor should also audit the proposed operation phase mitigation measures in the EIA to ensure that they are fully implemented within the Project design and construction.

17.9 Ecological Impact

Terrestrial Ecology

- 17.9.1 As only minor impacts on terrestrial ecology are identified in this assessment, no monitoring programme specific for terrestrial ecology is required under this Project.

Marine Ecology

- 17.9.2 To avoid and minimise potential loss of small and sparsely distributed coral colonies found in the Project area, it is recommended to translocate the directly affected corals within the Project area, as far as practicable, to the nearby suitable habitat such as Junk Bay where similar hydrographic condition and healthy coral communities of the same coral species were recorded. Coral translocation should be carried out during the winter season (November-March) in order to avoid disturbance to the transplanted colonies during the spawning period (i.e. July to October). A detailed translocation plan (including pre-translocation coral survey, translocation methodology and monitoring of transplanted corals) should be prepared during the detailed design stage of the Project. Pre-translocation survey on coral within the proposed dredging area(s) would be focused on identifying and mapping of coral colonies that would be directly impacted by the proposed dredging and investigating the translocation feasibility of these coral colonies (e.g. health status of coral colony). The detailed translocation plan (including pre-translocation coral survey, translocation methodology and monitoring proposal) and ecologist involved in coral translocation and monitoring should be approved by AFCD prior to commencement of the translocation exercises. It is also important to ensure that the proposed relocation of the coral colonies will not affect any private / public marine uses / rights at the recipient site.
- 17.9.3 It is recommended to implement monitoring of the transplanted corals after translocation, every 3 months for one year (this follows previous examples of post-translocation monitoring methodology, proposed in the EM&A Manual for Dredging Work for Proposed Cruise Terminal at Kai Tak). Information gathered during each post-translocation monitoring survey should include observations on the presence, survival, health condition and growth of the transplanted coral colonies. *Oulastrea crispata* is not expected to grow significantly over the one year monitoring period but previous study (Lam, 2000) has shown it to have a growth rate of 0.9-1.04 mm per month and thus, growth should be detectable over the 12 month post-translocation monitoring period. These parameters should then be compared with the baseline results collected from the pre-translocation survey.
- 17.9.4 The mitigation measures for coral colonies to be implemented for the dredging works for the proposed cruise terminal are detailed in the approved EIA Report and Environmental Monitoring and Audit (EM&A) Manual on Dredging Works for Proposed Cruise Terminal at Kai Tak.

17.10 Fisheries Impact

- 17.10.1 No unacceptable fisheries impacts would be anticipated during marine works associated with the project. Thus, no fisheries specific monitoring programme would be required.