
Environmental Monitoring & Audit

11. ENVIRONMENTAL MONITORING & AUDIT

11.1 REQUIREMENTS

11.1.1 The emphasis on monitoring and audit shall be placed on the implementation of practical mitigation measures as recommended in this report. Due to the minor nature of the impacts after mitigation we do not envisage the need for physical monitoring. However, monitoring and audit based on site inspections and construction supervision is recommended to ensure that the mitigation measures recommended here are incorporated contractually and implemented on-site.

11.1.2 The following Environmental Monitoring Audit (EM&A) Programme will be constructed using guidelines in Annex 21 of the "Technical Memorandum on Environmental Impact Assessment Process". The EM&A Manual should contain the following content:

- i. project background including organisation and programme;
- ii. purpose of the manual;
- iii. an implementation schedule, summarising all recommended environmental mitigation measures with reference to the programme for their implementation. The measures shall include those identified at detailed design, contract preparation, construction and operation stages of the project;
- iv. drawings showing all environmentally sensitive receivers;
- v. an EM&A programme for the construction of the project including:
 - responsibility for EM&A work;
 - EM&A organisation and management structure;
 - EM&A methodology;
 - equipment to be used and calibration required;
 - locations, parameters, frequency and duration for baseline, impact compliance monitoring;
 - environmental quality performance limits (Action and Limit levels);
 - Event-Action plans and decision audit flow charts;
 - procedures for reviewing the monitoring results;
 - compliance and its procedures and follow-up;
- vi. implementation programme and impact prediction review procedures;
- vii. site inspection, deficiency and action reporting procedures;
- viii. complaint/consultation procedures; and

ix. reporting format and procedures.

11.1.3 As stated in the EIA Study Brief, the detailed EM&A programme will be developed and incorporated into the EM&A Manual separate from the EIA Final Report and after the preliminary findings have been approved by EPD.

11.2 PURPOSE OF THE ENVIRONMENTAL MONITORING AND AUDIT MANUAL

11.2.1 The EIA Final Report for the Project will predict the likely environmental effects of the Project and proposed mitigation measures. These measures should be incorporated during the Project's demolition/removal activities, construction activities and operation activities in order to avoid or minimise adverse environmental impacts.

11.2.2 It is a requirement of the EPD that the Project proponent will undertake an EM&A Programme during the construction and operation of the Project. This programme involves the following:

- Monitoring of the environmental performance of the Project and the effectiveness of mitigation measures;
- Verifying the environmental impacts predicted in the EIA;
- Determining Project compliance with regulatory requirements and government policies; and
- Taking remedial action if unexpected problems or unacceptable impacts arise.

11.2.3 The EM&A Programme for the Hebe Haven Yacht Club Phase 2 Development specifically relates to the monitoring and audit of marine water quality. The actual monitoring recommended is attached as Appendix F.

11.3 ENVIRONMENTAL MONITORING AND AUDIT REQUIREMENTS

11.3.1 It is a requirement of the EPD that the environmental monitoring programme is subject to environmental audit. Hence, the EM&A work will be carried out by qualified personnel.

11.3.2 An EM&A programme has been developed and the EM&A Manual is submitted as a separate document.

11.3.3 Table 11.1 summarises the environmental monitoring and audit requirement and the proposed implementation schedule for mitigation.

References

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Table 11.1 Environmental Mitigation Implementation Schedule (EMIS)

Item No.	EIA Ref.	Activity (What)	Where	(When)	(Who)	Audit Method (Why)	Implementation Status	Auditor signature
1	EIA Section 7.5 EM&A Manual Section 2.2-2.6	Water quality monitoring for duration of dredging works Samples collected for laboratory testing to be analysed using a HOKLAS accredited testing procedures. Parameters to be tested include suspended solids, turbidity and dissolved oxygen.	At impact stations 1-6 and control stations 1-3; figure 2.1 EM&A manual	Frequency is three times per week on mid ebb and mid flood. For the duration of the Dredging operations	Contractor/ET to ensure samples collected are sent to an HOKLAS accredited laboratory, to the satisfaction of the ICE	ICE / ET Leader to check results and laboratory testing procedures against HOKLAS methodologies, Water Quality objectives and the Event Contingency Plan (table 2.3 EM&A manual). (To ensure acceptable water quality is maintained as per the modelling predictions)		
2	EIA Section 5.2	Dredging: The dredger grab capacity shall be no greater than 6 m ³ , and "sweeping practice" shall not be used.	Dredging area as defined in the EIA Figure 2.5	For the duration of the dredging operations	Contractor responsible for implementation, to the satisfaction of the ICE	ICE/ ET Leader to carry out regular site inspections (To minimise the dispersion of suspended matter)		
3	EIA Section 5.9	Dredging: Daily dredging hours should be restricted to normal working hours 9a.m to 7 p.m.	Dredging area as defined in the EIA Figure 2.5	For the duration of the dredging operations.	Contractor responsible for implementation, to the satisfaction of the ICE.	ICE/ ET Leader to carry out regular checks (To minimise disturbance to residential areas and minimise period of disturbance to sediments and hence water quality impacts)		
4	EIA Section 9.5	Dredging: Only one dredger is in use on the site at any one time	Dredging area as defined in the EIA Figure 2.5	For the duration of the dredging operations.	Contractor responsible for implementation, to the satisfaction of the ICE.	ICE/ ET Leader to carry out regular checks To maintain water quality impacts at acceptable levels as per the EIA predictions		

ICE = Independent Checker Environment / ET = Environmental Team