

10. REPORTING

General

- 10.1 The reporting requirements of EM&A are based upon a paper-documented approach. However, the same information can be provided in an electronic medium upon agreeing the format with the IEC, the ER and EPD (for construction phase), and with the Environmental Consultant, DSD and EPD (for operation phase). This would enable a transition from a paper / historic and reactive approach to an electronic / real time proactive approach.
- 10.2 For construction phase EM&A, types of reports that the ET Leader shall prepare and submit include baseline monitoring report, monthly EM&A report, quarterly EM&A summary report and final EM&A review report. In accordance with Annex 21 of the EIAO-TM, a copy of the monthly, quarterly summary and final review EM&A reports shall be submitted to the Director of Environmental Protection. The exact details of the frequency, distribution and time frame for submission shall be agreed with the IEC, the ER and EPD prior to commencement of works.

Baseline Monitoring Report

- 10.3 The ET Leader shall prepare and submit a Baseline Environmental Monitoring Report within 10 working days of completion of the baseline monitoring. Copies of the Baseline Environmental Monitoring Report shall be submitted to the Contractor, the IEC, the ER, DSD and EPD. The ET Leader shall liaise with the relevant parties on the exact number of copies they require. The report format and baseline monitoring data format shall be agreed with the IEC, the ER and EPD prior to submission.
- 10.4 The baseline monitoring report shall include at least the following:
- (i) up to half a page executive summary
 - (ii) brief project background information
 - (iii) drawings showing locations of the baseline monitoring stations
 - (iv) monitoring results (in both hard and diskette copies) together with the following information:
 - monitoring methodology
 - name of laboratory and types of equipment used and calibration details
 - parameters monitored
 - monitoring locations (and depth)
 - monitoring date, time, frequency and duration
 - quality assurance (QA) / quality control (QC) results and detection limits
 - (v) details of influencing factors, including:
 - major activities, if any, being carried out on the site during the period/monitoring
 - weather conditions during the period/monitoring
 - other factors which might affect results
 - (vi) determination of the Action and Limit Levels for each monitoring parameter and statistical analysis of the baseline data, the analysis shall conclude if there is any significant difference between control and impact stations for the parameters monitored
 - (vii) revisions for inclusion in the EM&A Manual
 - (viii) comments, recommendations and conclusions.
- Monthly EM&A Reports (During Construction)**
- 10.5 The results and findings of all EM&A work carried out during the month shall be recorded in the monthly EM&A reports prepared by the ET Leader. The EM&A report shall be prepared and submitted within 10 working days from the end of each reporting month. Each monthly EM&A report shall be submitted to the following parties: the Contractor, the IEC, the ER, DSD and the EPD. Before submission of the first EM&A report, the ET Leader shall liaise with the parties on the

required number of copies and format of the monthly reports in both hard copy and electronic medium.

- 10.6 The ET leader shall review the number and location of monitoring stations and parameters every six months, or on as needed basis, in order to cater for any changes in the surrounding environment and the nature of works in progress.

First Monthly EM&A Report

- 10.7 The first monthly EM&A report shall include at least but not be limited to the following:

- (i) executive summary (1-2 pages):

- breaches of Action and Limit levels
- complaint log
- notifications of any summons and status of prosecutions
- changes made that affect the EM&A
- future key issues

- (ii) basic project information:

- project organisation including key personnel contact names and telephone numbers
- scope of works of the Project
- construction programme
- works undertaken during the month with illustrations (such as location of works etc)
- drawings showing the project area, any environmental sensitive receivers and the locations of the monitoring and control stations (with co-ordinates of the monitoring locations)

- (iii) a brief summary of EM&A requirements including:

- all monitoring parameters
- environmental quality performance limits (Action and Limit levels)
- Event-Action Plans
- environmental mitigation measures, as recommended in the project EIA study final report
- environmental requirements in contract documents

- (iv) environmental status:

- advice on status of compliance with environmental permit including the status of submissions under the environmental permit

- (v) implementation status:

- implementation status of environmental protection and pollution control / mitigation measures, as recommended in the EIA Report

- (vi) monitoring results (in both hard and diskette copies) together with the following information:

- monitoring methodology
- name of laboratory and types of equipment used and calibration details
- parameters monitored
- monitoring locations
- monitoring date, time, frequency, and duration
- weather conditions during the period/monitoring
- graphical plots of the monitored parameters in the month annotated against:
 - the major activities being carried out on site during the period
 - weather conditions that may affect the monitoring results
 - any other factors which might affect the monitoring results
 - QA/QC results and detection limits
 - EIA predictions

- (vii) Analysis of monitoring results, non-compliance, complaints, and notifications of summons and status of prosecutions:

- analysis and interpretation of monitoring results in the month

- any non-compliance (exceedances) of the environmental quality performance limits (Action and Limit levels)
 - changes made that affect the EM&A during the month
 - complaints received (written or verbal) for each media, including locations and nature of complaints, investigation, liaison and consultation undertaken, actions and follow-up procedures taken, results and summary
 - notification of summons and status of prosecutions for breaches of current environmental protection / pollution control legislation, including locations and nature of the breaches, investigation, follow-up actions taken, results and summary
 - reasons for and the implications of non-compliance, complaints, summons and prosecutions including review of pollution sources and working procedures
 - actions taken in the event of non-compliance and deficiency, and follow-up actions related to earlier non-compliance
- (viii) others
- an account of the future key issues as reviewed from the works programme and work method statements
 - comment on the solid and liquid waste management status during the month including waste generation and disposal records
 - outstanding issues and deficiencies
 - comments on effectiveness of the environmental management systems, practices, procedures and mitigation measures), recommendations (for example, any improvement in the EM&A programme) and conclusions
- (ix) appendix
- monitoring schedule for the present and next reporting period
 - cumulative statistics on complaints, notifications of summons and successful prosecutions
 - outstanding issues and deficiencies

Subsequent Monthly EM&A Reports

10.8 Subsequent monthly EM&A reports shall include the following:

- (i) executive summary (1-2 pages):
- breaches of Action and Limit levels
 - complaint log
 - notifications of any summons and status of prosecutions
 - changes made that affect the EM&A
 - future key issues
- (ii) environmental status:
- advice on status of compliance with environmental permit including the status of submissions under the environmental permit
- (iii) implementation status:
- implementation status of environmental protection and pollution control / mitigation measures, as recommended in the EIA Report
- (iv) monitoring results (in both hard and diskette copies) together with the following information:
- monitoring methodology
 - name of laboratory and types of equipment used and calibration details
 - parameters monitored
 - monitoring locations
 - monitoring date, time, frequency, and duration
 - weather conditions during the period/monitoring
 - graphical plots of the monitored parameters in the month annotated against:
 - the major activities being carried out on site during the period

- weather conditions that may affect the monitoring results
 - any other factors which might affect the monitoring results
 - QA/QC results and detection limits
 - EIA predictions
- (v) Analysis of monitoring results, non-compliance, complaints, and notifications of summons and status of prosecutions:
- analysis and interpretation of monitoring results in the month
 - any non-compliance (exceedances) of the environmental quality performance limits (Action and Limit levels)
 - changes made that affect the EM&A during the month
 - complaints received (written or verbal) for each media, including locations and nature of complaints, investigation, liaison and consultation undertaken, actions and follow-up procedures taken, results and summary
 - notification of summons and status of prosecutions for breaches of current environmental protection / pollution control legislation, including locations and nature of the breaches, investigation, follow-up actions taken, results and summary
 - reasons for and the implications of non-compliance, complaints, summons and prosecutions including review of pollution sources and working procedures
 - actions taken in the event of non-compliance and deficiency, and follow-up actions related to earlier non-compliance
- (vi) others
- an account of the future key issues as reviewed from the works programme and work method statements
 - comment on the solid and liquid waste management status during the month including waste generation and disposal records
 - outstanding issues and deficiencies
 - comments on effectiveness of the environmental management systems, practices, procedures and mitigation measures), recommendations (for example, any improvement in the EM&A programme) and conclusions
- (vii) appendix
- monitoring schedule for the present and next reporting period
 - cumulative statistics on complaints, notifications of summons and successful prosecutions
 - outstanding issues and deficiencies
- 10.9 Some information concerning the EM&A works, such as the EM&A requirements would remain unchanged throughout the EM&A programme. In the subsequent Monthly EM&A Reports, the First Monthly EM&A Report can be referred instead of repeating the description of the unchanged information.

Quarterly EM&A Reports (During Construction)

- 10.10 A quarterly EM&A report shall be produced and shall contain at least the following information. In addition, the first quarterly summary report should also confirm if the monitoring work is proving effective and that it is generating data with the necessary statistical power to categorically identify or confirm the absence of impact attributable to the works.
- (i) up to half a page executive summary
- (ii) basic project information including a synopsis of the project organisation and programme, and a synopsis of works undertaken during the quarter
- (iii) a brief summary of EM&A requirements including:
- monitoring parameters
 - environmental quality performance limits (Action and Limit levels)
 - environmental mitigation measures, as recommended in the project EIA Final Report

- (iv) drawings showing the project area, environmental sensitive receivers and the locations of the monitoring and control stations
- (v) implementation status of environmental protection and pollution control / mitigation measures, as recommended in the EIA Report
- (vi) graphical plots of the monitored parameters over the past four months (the last month of the previous quarter and the present quarter) for representative monitoring stations annotated against:
 - the major activities being carried out on site during the period
 - weather conditions during the period
 - any other factors which might affect the monitoring results
- (vii) advice on the solid and liquid waste management status during the quarter including waste generation and disposal records
- (viii) a summary of non-compliance (exceedances) of the environmental quality performance limits (Action and Limit levels)
- (ix) a brief review of the reasons for and the implications of any non-compliance, including a review of pollution sources and working procedures
- (x) a summary description of actions taken in the event of non-compliance and any follow-up procedures related to any earlier non-compliance
- (xi) a summary of all complaints received (written or verbal) for each media, liaison and consultation undertaken, actions and follow-up procedures taken
- (xii) comments on the effectiveness and efficiency of the mitigation measures); recommendations on any improvement in the EM&A programme and conclusions for the quarter
- (xiii) proponents' contacts and any hotline telephone number for the public to make enquiries.

Final EM&A Report (on Construction Phase Activities)

- 10.11 The EM&A program shall be terminated upon completion of those construction activities that have the potential to cause significant environmental impacts.
- 10.12 The proposed termination by the Contractor should only be implemented after the proposal has been endorsed by the IEC, the ER and the Project proponent followed by final approval from the Director of Environmental Protection.
- 10.13 The final EM&A report should include, inter alia, the following information:
 - (i) an executive summary
 - (ii) basic project information including a synopsis of the project organisation and programme, contacts of key management, and a synopsis of work undertaken during the entire construction period
 - (iii) a brief summary of EM&A requirements including:
 - monitoring parameters
 - environmental quality performance limits (Action and Limit levels)
 - environmental mitigation measures, as recommended in the project EIA study final report
 - (iv) drawings showing the project area, any environmental sensitive receivers and the locations of the monitoring and control stations
 - (v) advice on the implementation status of environmental and pollution control/mitigation measures, as recommended in the project EIA study final report, summarised in the updated implementation status proformas
 - (vi) graphical plots of the monitored parameters over the construction period for representative monitoring stations, including the post-project monitoring annotated against:
 - the major activities being carried out on site during the period
 - weather conditions during the period

- any other factors which might affect the monitoring results
 - the baseline condition
- (vii) compare the EM&A data with the EIA
- (viii) Effectiveness of the solid and liquid waste management
- (ix) a summary of non-compliance (exceedances) of the environmental quality performance limits (Action and Limit levels)
- (x) a brief account of the reasons the non-compliance including a review of pollution sources and working procedures
- (xi) a summary of the actions taken against the non-compliance
- (xii) a summary of all complaints received (written or verbal) for each media, liaison and consultation undertaken, actions and follow-up procedures taken
- (xiii) a review of the monitoring methodology adopted and with the benefit of hindsight, comment its effectiveness (including cost effectiveness)
- (xiv) a summary of notifications of summons and successful prosecutions for breaches of the current environmental protection/pollution control legislations, locations and nature of the breaches, investigation, follow-up actions taken and results
- (xv) a review of the practicality and effectiveness of the EM&A programme (e.g. effectiveness and efficiency of the mitigation measures), and recommendation on any improvement in the EM&A programme
- (xvi) a conclusion to state the return of ambient and/or the predicted scenario as per EIA findings

Operation Phase EM&A Reporting

- 10.14 For the operation phase EM&A, the Environmental Consultant Team shall prepare and submit Water Quality Monitoring Report for each emergency discharge event, Human Health and Ecological Risk Evaluation Report on the human health and ecological risk evaluation results, and Sediment Quality Monitoring and Benthic Survey Report on the results of sediment quality monitoring and benthic survey. Details of the reports distribution and time frame for submission shall be agreed with DSD and EPD prior to commencement of works. Monitoring results shall be reported to the Advisory Council on the Environment (ACE) quarterly after full operation.

Water Quality Monitoring Report

- 10.15 Water Quality Monitoring Report shall be prepared for each emergency discharge event. The report shall be submitted to EPD and LCSD within 10 days after the laboratory testing result for the last sample collected during the monitoring period is available. The findings of the water quality monitoring results including data presentation, statistical analysis, discussion, conclusion and recommendation shall be provided in the Water Quality Monitoring Report. The detailed reporting requirements shall be agreed with DSD and EPD.

Human Health and Ecological Risk Evaluation Report

- 10.16 The Human Health and Ecological Risk Evaluation Report shall be prepared and submitted by the Environmental Consultant to EPD and other relevant departments within 30 days from availability of the test results for the operation phase monitoring. The findings of the human health and ecological risk evaluation results including data presentation, statistical analysis, discussion, conclusion and recommendation shall be provided in the Human Health and Ecological Risk Evaluation Report. The detailed reporting requirements shall be agreed with DSD and EPD.

Sediment Quality Monitoring and Benthic Survey Report

- 10.17 The Sediment Quality Monitoring and Benthic Survey Report shall be prepared by the Environmental Consultant and submitted to EPD and other relevant departments within 30 days from availability of the test results for the operation phase monitoring. The findings of the sediment quality monitoring and benthic survey results including data presentation, statistical analysis, discussion, conclusion and recommendation shall be provided in the Sediment Quality Monitoring and Benthic Survey Report. The detailed reporting requirements shall be agreed with DSD and EPD.

Data Keeping

- 10.18 No site-based documents (such as monitoring field records, laboratory analysis records, site inspection forms, etc.) are required to be included in the EM&A reporting documents. However, any such document shall be well kept by the ET Leader / Monitoring Team and be ready for inspection upon request. All relevant information shall be clearly and systematically recorded in the document. Monitoring data shall also be recorded in magnetic media form, and the software copy must be available upon request. Data format shall be agreed with the IEC, the ER and EPD (construction phase), and with Environmental Consultant, DSD and EPD (operation phase). All documents and data shall be kept for at least one year following completion of the construction contract and one year after the completion of operation phase monitoring for construction phase EM&A and operation phase EM&A respectively.

Interim Notifications of Environmental Quality Limit Exceedances

- 10.19 For construction phase EM&A, with reference to the Event and Action Plan, when the environmental quality performance limits are exceeded, the ET Leader shall immediately notify the IEC, the ER and EPD, as appropriate and shall keep them informed of the results of the investigation, proposed remedial measures, actions taken, updated situation on site, need for further follow-up proposals, etc. A sample template for the interim notifications based on the one presented in *EM&A Guidelines for Development Projects in Hong Kong*, is shown in [Appendix C](#). The ET Leader may modify the interim notification form for this EM&A programme, the format of which should be approved by the ER and agreed by the IEC.