

16 REPORTING

16.1 General

- 16.1.1 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. The formats for air quality, noise and water quality monitoring data to be submitted on diskette are shown in **Appendix B**.
- 16.1.2 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 made available to the Director of Environmental Protection (DEP).

16.2 Electronic Reporting of EM&A Information

- 16.2.1 To facilitate public inspection of the baseline monitoring report and various EM&A reports via the EIAO internet website and at the EIAO Register Office, electronic copies of these reports shall be prepared in Hyper Text Markup Language (HTML) (version 4.0 or later) and in Portable Document Format (PDF version 4.0 or later), unless otherwise agreed by EPD and shall be submitted at the same time as the hardcopies. For the HTML version, a content page capable of providing hyperlink to each section and sub-section of these reports shall be included at the beginning of the document. Hyperlinks to all figures, drawings and tables in these reports shall be provided in the main text from where the respective references are made. All graphics in these reports shall be in interlaced GIF format unless otherwise agreed by EPD. The content of the electronic copies of these reports must be the same as the hard copies. The summary of the monitoring data taken shall be included in the various EM&A reports to allow for public inspection via the EIAO internet website.

16.3 Baseline Monitoring Report

- 16.3.1 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 and EPD. The ET Leader shall liaise with the relevant parties on the exact number of copies they require.
- 16.3.2 The baseline monitoring report shall include, but not be limited to 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) An updated construction programme with milestones of environmental protection / mitigation activities annotated;

- (v) Monitoring results (in both hard and soft 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; and
 - Quality assurance (QA) / quality control (QC) results and detection limits.
- (vi) Details on influencing factors, including:
 - Major activities, if any, being carried out on the site during the period;
 - Weather conditions during the period; and
 - Other factors which might affect results.
- (vii) Determination of the Action and Limit Levels (AL 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;
- (viii) Revisions for inclusion in the EM&A Manual; and
- (ix) Comments, recommendations and conclusions.

16.4 Monthly EM&A Reports

- 16.4.1 The results and findings of all EM&A work required in this Manual 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 at the end of each reporting month, with the first report due the month after construction commences. Each monthly EM&A report shall be submitted to the following parties: the Contractor, the IEC, the ER and 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.
- 16.4.2 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.

16.5 First Monthly EM&A Report

- 16.5.1 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 successful prosecutions;
 - Reporting changes; and
 - Future key issues.

(ii) Basic project information:

- Project organisation including key personnel contact names and telephone numbers;
- Construction programme with fine tuning of construction activities showing the inter-relationship with environmental protection / mitigation measures for the month;
- Management structure; and
- Works undertaken during the month.

(iii) Environmental status:

- Works undertaken during the month with illustrations; and
- 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);
- Advice on the status of statutory environmental compliance, the status of compliance with environmental permit (EP) conditions under the EIA Ordinance, submission status under the EP and implementation status of mitigation measures.

(iv) A brief summary of EM&A requirements including:

- All monitoring parameters;
- Environmental quality performance limits (Action and Limit Levels);
- Event and Action Plans;
- Environmental mitigation measures, as recommended in the EIA report; and
- Environmental requirements in contract documents.

(v) Implementation status:

- Advice on the implementation status of environmental protection and pollution control / mitigation measures, as recommended in the EIA report, summarised in the updated implementation schedule.

- (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;
 - 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 results; and
 - Any other factors which might affect the monitoring results.
 - Any other factors which might affect the monitoring results; and
 - Quality assurance (QA) / quality control (QC) results and detection limits.
- (vii) Report on non-compliance, complaints, notifications of summons and successful prosecutions:
- Record of all non-compliance (exceedances) of the environmental quality performance limits (Action and Limit Levels);
 - Record of all 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;
 - Record of all notification of summons and successful prosecutions for breaches of current environmental protection / pollution control legislations, including locations and nature of the breaches, investigation, follow-up actions taken, results and summary;
 - Review of the reasons for and the implications of non-compliance, complaints, summons and prosecutions including review of pollution sources and working procedures; and
 - Description of the actions taken in the event of non-compliance and deficiency reporting and any follow-up procedures related to earlier non-compliance.
- (viii) Others:
- Compare and contrast the EM&A data in the month with the EIA predictions and annotate with explanation for any discrepancies;
 - An account of the future key issues as reviewed from the works programme and work method statements;
 - Advice on the solid and liquid waste management status during the month including waste generation and disposal records; and
 - Comments including effectiveness of the environmental management systems, practices, procedures, mitigation measures, recommendations (for example, any improvement in the EM&A programme) and conclusions.

16.6 Subsequent EM&A Reports

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

- (i) Executive summary (1 - 2 pages):
 - Breaches of Action and Limit Levels;
 - Complaints log;
 - Notifications of any summons and successful prosecutions;
 - Reporting changes; and
 - Future key issues.
- (ii) Environmental status:
 - Construction programme with fine tuning of construction activities showing the inter-relationship with environmental protection / mitigation measures for the month;
 - Works undertaken during the month with illustrations including key personnel contact names and telephone numbers;
 - Drawing showing the project area, any environmental sensitive receivers and the locations of the monitoring and control stations; and
 - Advice on the status of statutory environmental compliance, the status of compliance with environmental permit (EP) conditions under the EIA Ordinance, submission status under the EP and implementation status of mitigation measures.
- (iii) Implementation status:
 - Advice on the implementation status of environmental protection and pollution control / mitigation measures, as recommended in the EIA report, summarised in the updated implementation schedule.
- (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;
 - 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 results; and
 - Any other factors which might affect the monitoring results.
 - Any other factors which might affect the monitoring results; and
 - Quality assurance (QA) / quality control (QC) results and detection limits.

- (v) Report on non-compliance, complaints, and notifications of summons and successful prosecutions:
 - Record of all non-compliance (exceedances) of the environmental quality performance limits (Action and Limit Levels);
 - Record of all 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;
 - Record of all notification of summons and successful prosecutions for breaches of current environmental protection / pollution control legislations, including locations and nature of the breaches, investigation, follow-up actions taken, results and summary;
 - Review of the reasons for and the implications of non-compliance, complaints, summons and prosecutions including review of pollution sources and working procedures; and
 - Description of the actions taken in the event of non-compliance and deficiency reporting and any follow-up procedures related to earlier non-compliance.
- (vi) Others:
 - Compare and contrast the EM&A data in the month with the EIA predictions and annotate with explanation for any discrepancies;
 - An account of the future key issues as reviewed from the works programme and work method statements;
 - Advice on the solid and liquid waste management status during the month including waste generation and disposal records; and
 - Comments including effectiveness of the environmental management systems, practices, procedures, mitigation measures, recommendations (for example, any improvement in the EM&A programme) and conclusions.
- (vii) Appendix
 - Action and Limit Levels;
 - Graphical plots of trends of monitored parameters at key stations over the past four reporting periods for representative monitoring stations annotated against the following:
 - Major activities being carried out on site during the period;
 - Weather conditions during the period; and
 - Any other factors that might affect the monitoring results.
 - Monitoring schedule for the present and next reporting period;
 - Cumulative statistics on complaints, notifications of summons and successful prosecutions;
 - Outstanding issues and deficiencies.

16.7 Quarterly EM&A Summary Reports

16.7.1 A quarterly EM&A summary report of around five pages shall be produced and shall contain at least the following information. Apart from these, the first quarterly summary report should also confirm that 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) Executive summary (1 - 2 pages);
- (ii) Basic project information including a synopsis of the project organisation, programme, contacts of key management, 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); and
 - Environmental mitigation measures, as recommended in the EIA report.
- (iv) Advice on the implementation status of environmental protection and pollution control / mitigation measures, as recommended in the EIA report, summarised in the updated implementation schedule;
- (v) Drawings showing the project area, any environmental sensitive receivers and the locations of the monitoring and control stations;
- (vi) Graphical plots of the trends of 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; and
 - 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) Compare and contrast the EM&A data in the month with the EIA predictions and annotate with explanation for any discrepancies;
- (ix) A summary of non-compliance (exceedances) of the environmental quality performance limits (Action and Limit Levels);
- (x) A brief review of the reasons for and the implications of non-compliance, including a review of pollution sources and working procedures;
- (xi) A summary description of the actions taken in the event of non-compliance and any follow-up procedures related to earlier non-compliance;
- (xii) A summarised record of all complaints received (written or verbal) for each media, liaison and consultation undertaken, actions and follow-up procedures taken;
- (xiii) A summary record 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;

- (xiv) Comments (for examples, a review of the effectiveness and efficiency of the mitigation measures and the performance of the environmental management system, that is, of the overall EM&A programme); recommendations (for example, any improvement in the EM&A programme) and conclusions for the quarter; and
- (xv) Proponents' contacts and any hotline telephone number for the public to make enquiries.

16.8 Final EM&A Review Reports

- 16.8.1 The EM&A program shall be terminated upon completion of those construction activities that have the potential to result in a significant environmental impact.
- 16.8.2 Prior to the proposed termination, it may be advisable to consult relevant local communities. The proposed termination should only be implemented after the proposal has been endorsed by the IEC, the Engineer and the Project Proponent followed by final approval from the Director of Environmental Protection.
- 16.8.3 The final EM&A report should contain at least the following information:
 - (i) Executive summary (1 - 2 pages);
 - (ii) Basic project information including a synopsis of the project organisation, contacts of key management, and a synopsis of work undertaken during the course of the Project or past twelve months;
 - (iii) A brief summary of EM&A requirements including:
 - Monitoring parameters;
 - Environmental quality performance limits (Action and Limit Levels); and
 - Environmental mitigation measures, as recommended in the EIA report.
 - (iv) Advice on the implementation status of environmental protection and pollution control / mitigation measures, as recommended in the EIA report, summarised in the updated implementation status proformas;
 - (v) Drawings showing the project area, any environmental sensitive receivers and the locations of the monitoring and control stations;
 - (vi) Graphical plots of the trends of monitored parameters over the course of the Project, including the post-project monitoring for all monitoring stations annotated against:
 - The major activities being carried out on site during the period;
 - Weather conditions during the period; and
 - Any other factors which might affect the monitoring results;
 - The return of ambient environmental conditions in comparison with baseline data.
 - (vii) Compare and contrast the EM&A data with the EIA predictions and annotate with explanation for any discrepancies;
 - (viii) Provide clear-cut decisions on the environmental acceptability of the Project with reference to the specific impact hypothesis;
 - (ix) Advice on the solid and liquid waste management status including waste generation and disposal records;

- (x) A summary of non-compliance (exceedances) of the environmental quality performance limits (Action and Limit Levels);
- (xi) A brief review of the reasons for and the implications of non-compliance including review of pollution sources and working procedures;
- (xii) A summary description of the actions taken in the event of non-compliance and any follow-up procedures related to earlier non-compliance;
- (xiii) A summary record of all complaints received (written or verbal) for each media, liaison and consultation undertaken, actions and follow-up procedures taken;
- (xiv) Review monitoring methodology adopted and with the benefit of hindsight, comment on its effectiveness (including cost effectiveness);
- (xv) A summary record of notifications of summons and successful prosecutions for breaches of the current environmental protection/pollution control legislations, locations and nature of breaches, investigation, follow-up actions taken and results;
- (xvi) Review the practicality and effectiveness of the EIA process and EM&A programme (for examples, a review of the effectiveness and efficiency of the mitigation measures and the performance of the environmental management system, that is, of the overall EM&A programme), recommendations (for example, any improvement in the EM&A programme); and
- (xvii) A conclusion to state the return of ambient and / or the predicted scenario as per EIA findings.

16.9 Data Keeping

- 16.9.1 No site-based documents (such as monitoring field records, laboratory analysis records, site inspection forms, etc.) are required to be included in the monthly EM&A reports. However, any such document shall be well kept by the ET Leader 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 electronic format, and the software copy must be available upon request. Data format shall be agreed with EPD. All documents and data shall be kept for at least one year following completion of the construction contract.

16.10 Interim Notifications of Environmental Quality Limit Exceedances

- 16.10.1 With reference to the Event and Action Plan, when the environmental quality performance limits are exceeded, the ET Leader shall immediately notify the IEC and EPD, as appropriate. The notification shall be followed up with advice to IEC and EPD on the results of the investigation, proposed actions and success of the actions taken, with any necessary follow-up proposals. A sample template for the interim notifications is presented in **Appendix C**.