Technical Guidance Document for Environmental Impact Assessment (EIA)

April 2010

هيئة البيئة - أبوظبي
Environment Agency- ABU DHABI

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List of Abbreviations

AD EHS Center	Abu Dhabi Environment, Health, and Safety Center
ALARP	As Low As Reasonably Possible
CEMP	Construction Environmental Management Plan
COMAH	Control of Major Accident Hazards
EAD	Environment Agency–Abu Dhabi
EIA	Environment Impact Assessment
EHSIA	Environment, Health, and Safety Impact Assessment
EHSMS	Environment, Health and Safety Management System
EMF	Environmental Management Framework
HER	Hazards and Effects Register
MSDS	Material Safety Data Sheet
OHRA	Occupational Health Risk Assessment
PER	Preliminary Environmental Review
SEA	Strategic Environmental Assessment
SRA	Sector Regulatory Authority
TOR	Terms of Reference
UAE	United Arab Emirates

Definition of Terms

Area of Probable Impact—The extent of a physical area occupied by an environmental component that is likely to be impacted by at least one of the phases of the proposed project (i.e., construction, operation, and decommissioning activities and processes). The boundary of the area of probable impact is determined by measurements, previous studies, models, or best professional judgment and may vary by environmental component.

As Low as Reasonably Possible—To reduce a risk to a level that is as low as reasonably possible and involves balancing reduction in risk against the time, trouble, difficulty, and cost of achieving it. This level represents the point (objectively assessed) at which the time, trouble, difficulty, and cost of further reduction measures becomes unreasonably disproportionate to the additional risk reduction obtained.

Assessment Area—The physical area that the consultant and proponent have identified for assessment of potential environmental impacts.

Construction—The time period corresponding to any event, process, or activity that occurs during the construction phase (e.g., building of site, buildings, processing units) of the proposed project. This phase terminates when the project goes into full operation or use.

Decommissioning—The time period corresponding to any event, process, or activity that occurs during the decommissioning phase (destruction or dismantling) of the proposed project. The decommissioning phase follows the operation phase.

Environmental Component—Attribute or constituent of the environment (i.e., Air Quality; Marine Water; Waste Management; Geology, Seismicity, Soil, and Groundwater; Marine Ecology; Terrestrial Ecology; Noise; Traffic; Socio-economic) that may be impacted by the proposed project.

Environmental Hazard—Any substance, physical effect, or condition with potential to harm people, property, or the environment.

Environmental Impact—Positive or negative impact that occurs to an environmental component as a result of the proposed project. This impact can be directly or indirectly caused by the project's different phases (i.e., construction, operation, and decommissioning).

Hazard—Same as *Environmental Hazard*.

Hazardous Waste—Waste that poses potential harm to human health and the environment.

Operation—The time period corresponding to any event, process, or activity that occurs during the operation phase (fully functioning) of the proposed project (operation phase follows the construction phase, and then terminates when the project goes into the decommissioning phase).

Project Area—The physical area within which all phases (i.e., construction, operation, and decommissioning), processes, and activities of the proposed project will take place (boundary of project area is defined by titled property boundary). The project area is equivalent to the project site.

Project Site—Same as *Project Area*.

Proponent—The developer, permit applicant, company, or agency associated with the proposed project.

Residual Impact—A potential environmental impact that is associated with the proposed project that is not addressed as part of the recommended mitigation measures (i.e., is not mitigated as part of the proposed project).

Solid Waste—Rubbish, debris, garbage, and other discarded solid materials resulting from the project that are not classified as hazardous waste.

Purpose of This Guidance Document

This document outlines the requirements for developing a study and Environmental Impact Assessment (EIA) report in Abu Dhabi Emirate for review and evaluation by the Environment Agency–Abu Dhabi (EAD), which is the Competent Authority in the environmental field.

Section I. Background Information

Section I provides an overview of an EIA report and the role it plays within EAD's protocol for addressing and mitigating environmental impacts.

Definition of an EIA Report

An EIA report is a comprehensive document that, within the context of the federal laws of Abu Dhabi Emirate and the jurisdiction of EAD, serves as a planning tool to guide the evaluation of environmental impacts and potential mitigation and monitoring efforts associated with a proposed project within Abu Dhabi Emirate. The EIA report is intended to support the requirements of the Abu Dhabi Emirate Environment, Health and Safety Management System (EHSMS) Regulatory Framework (Decree 42 of 2009). In addition, the EIA report can be prepared in a way to work with the Environmental, Health, Safety, Impact Assessment (EHSIA) requirement for EHSMS (Code of Practice [COP] 07). Upon review of an environmental permit application, EAD may require the preparation and submission of an EIA report for industrial or development projects. An EIA may also be necessary following the completion and review of Strategic Environmental Assessment (SEA) or Preliminary Environmental Review (PER) reports.

If a nominated entity under the EHSMS is required to submit an EIA to EAD, then this will automatically become an EHSIA. The health and safety elements of the EHSIA are defined within COP 07 of the Abu Dhabi EHSMS Regulatory Framework. The Sector Regulatory Authority (SRA; i.e., responsible for implementing EHSMS in each Emirate sector), in conjunction with EAD and the Abu Dhabi Environment, Health, and Safety Center (AD EHS Center; i.e., the Competent Authority for the EHSMS Regulatory Framework), will review, approve, and monitor the health and safety elements of the EHSIA.

For entities that are currently not nominated under EHSMS, the SRA/AD EHS Center retains the right to request the EIA to consider health and safety. All requirements for health and safety are included within the EHSMS Regulatory Framework and shall be incorporated into an EHSIA when requested.

An EIA report clearly states the current environmental condition of the project site, provides details about the proposed development, provides an assessment of the potential and probable environmental impacts associated with the project, and recommends mitigation measures and monitoring efforts at a level of detail that satisfies EAD. The statement of commitments outlined in the EIA report will serve as the binding agreement between EAD and the project proponent.

Objective of an EIA Report

The objective of an EIA report is to provide EAD with a comprehensive description of the environmental baseline conditions, the probable impacts of the proposed project, and the potential mitigation and monitoring efforts, as required by EAD. The EIA report supports the goals of environmental protection and sustainable development; integrates environmental protection and economic decisions; predicts environmental, social, and economic consequences of a proposed activity and assesses plans to mitigate any adverse impacts resulting from the proposed activity; and provides for the involvement of government and other agencies in the review of proposed activities.

The findings and recommendations of the EIA effort should be documented clearly and concisely in the report and any necessary technical details should be provided, especially those regarding baseline data. The usefulness of an EIA report is measured by how well the potential problems are foreseen,

evaluated, and addressed with adequate and straightforward measures and proposed actions. An EIA report should not make recommendations, decisions, or conclusions about the appropriateness or approval of the proposed project.

Preparation and Submission of an EIA Report

The proponent of the proposed project is responsible for preparing and submitting an EIA report, which should be carried out by an EAD-approved and -registered consultant operating within Abu Dhabi Emirate. A current list of registered consultants can be obtained from EAD Customer Service or the EAD website.

An EIA report should include, but should not be limited to, all of the details, content, and requirements outlined Section II; the sections of an EIA report may be expanded to include other aspects relevant to the proposed project. The proponent should use the checklist in **Table 1** to ensure that all components and criteria are included and adequately addressed within the EIA report. An EIA report should adhere to the framework presented in **Table 2** and described in Section II of this guidance document.

Table 1. Checklist for Chapter-By-Chapter Review of an EIA Report to Assist the Proponent in the Preparation of the Report

Chapter 1—Executive Summary	
☐	Adequate summary of the proposed project of the EIA report
☐	Identification of the main environmental impacts and the ways in which they will be resolved (through mitigation measures and monitoring program[s]), and the advantages and disadvantages of the proposed project to society and the environment
Chapter 2—Introduction	
☐	The project title, general project description, and project rationale
☐	Contact details and information about project proponent and consultants
☐	Description, including justification and chronology, of the development of EIA report
Chapter 3—Legal Framework and Standards	
☐	Applicable laws, standards, protocols, and guidelines (e.g., local, regional, Abu Dhabi Emirate, international)
☐	Identification of the source(s) of the pollutant and contaminant standard limits adopted by the EIA report
Chapter 4—Project Description	
☐	Description of the need for the proposed project (economic and social benefits)
☐	Maps and descriptions of the location and scale of the proposed project
☐	Descriptions of the proposed project (i.e., components, design, technology, processes, and activities) and the utilities, wastes, chemicals, raw materials, pollutants, and disturbances associated with all phases (i.e., construction, operation, and decommissioning) of the project
☐	Identification of project activities that are likely to cause significant impacts to the environment, including detailed descriptions of raw materials, equipment/machinery used, pollution anticipated, and wastes generated
☐	The project status and schedule and project organisational chart
Chapter 5—Environment, Impacts, Mitigation, and Monitoring	
☐	Descriptions of the current environmental conditions (baseline conditions) for each environmental component and the data source or methodology used to collect new data
☐	Baseline maps for spatial data to orient reviewers on the distribution of the various resources in the project area and in the area of probable impact (completed for each environmental component)
☐	Descriptions of the potential environmental impacts associated with all phases of the proposed project (for both the project site and area of probable impact) for each environmental component
☐	Documentation of the cause-and-effect relationships between planned project activities and environmental impact(s) for each of the environmental components
☐	Assessment of the significance of the impacts (magnitude, reversibility, permanence and cumulative effects), including EIA impact matrix (before and after mitigation)

☐	Acknowledgement and description of the potential cumulative environmental impacts (including those from nearby past and ongoing projects) for each environmental component
☐	Detailed descriptions of the potential and selected mitigation measures to reduce or offset damaging environmental impacts, including the anticipated results of mitigation, comments on appropriateness (environmental and economic), and justification for the selection of certain mitigation measures (completed for each environmental component)
☐	Acknowledgement of residual, non-mitigated impacts; reasons for no mitigation measures (completed for each environmental component)
☐	Description of mitigation to address cumulative environmental impacts (completed for each environmental component)
☐	Schedule for implementing the mitigation measures (demonstrating that these measures will be in use before the project impacts are realised)
☐	Detailed description of the monitoring program for selected mitigation measures, including information on sampling design (frequency, intensity), who is responsible for the monitoring program, and reporting and documentation requirements
☐	Monitoring program objectives, attributes, conditions, and indicators that will be measured as part of the monitoring program
☐	Identification of environmental standards (allowable amounts) associated with monitoring program
☐	Description of the monitoring program for cumulative impacts
☐	Description of the monitoring program for residual, non-mitigated impacts
☐	Descriptions of the sources of accidental environmental impact risks and the procedures to minimize these risks and potential impacts
☐	Detailed summary of the Hazards and Effects Register, the Control of Major Accident Hazards (COMAH, if applicable)
☐	Description of the Environmental Management Framework that will be conducted to meet the objective and targets of the mitigation measures and monitoring program in the EIA report
Chapter 6—Project Alternatives	
☐	Presentation of at least two acceptable alternatives to the current proposed project
☐	Discussion of “no development” and “alternative location” options
☐	Objective comparison of the alternatives and reasons for the selection of current proposed project
Chapter 7—Statement of Commitments	
☐	Commitment to minimizing the environmental impact(s) of a proposed project
☐	Commitments to develop Environment, Management plans
☐	Adherence to EAD permitting regulations and procedures
Annexes	
☐	Annex 1—References
☐	Annex 2—Information on the Current Condition of the Environment (methodology, data, and results)
☐	Annex 3—Material Safety Data Sheets (if relevant)
☐	Annex 4—Terms of Reference
☐	Annex 5—COMAH report related to risk assessment (if applicable)
General	
☐	Logical organisation of integrated and easy-to-review components, including annexes
☐	Clarity (i.e., minimal technical terms, the adequate and appropriate use of graphics, text could be understood by non-specialists)
☐	Include a list of abbreviations, definition of terms, and full references to sources of information
☐	Include positive and negative impacts of the proposed project (for objectivity)
☐	Include a full suite of detailed maps (using standards formatting) describing the project, project area, and the area of probable impact at different scales
☐	Ensure that adequate information is provided so that EAD can gain a clear and complete understanding of the project area, the area of probable impact (for each environmental component), the proposed project, potential environmental impacts, mitigation options, and preferred monitoring program(s) associated with the proposed project

Review of an EIA Report

EAD officials will review the submitted EIA report to verify that all chapters are complete and that the report meets all of the stipulated requirements. The review of any health and safety elements required will be undertaken by the SRA, in conjunction with EAD. The timeframe for EAD review will be at least one to two months.

After EAD officials have reviewed and approved the EIA report, it is likely that a Construction Environmental Management Plan (CEMP) may be requested. The proponent may commence preparation of the CEMP in order to obtain the environmental permit required for construction.

Section II. EIA Report Format and Contents

Section II provides guidelines on the format and content of the EIA report to be submitted by the proponent to EAD. The EIA report should have a title page and a Table of Contents, with the Table of Contents adhering to the framework and layout outlined in Table 2.

Table 2. Standard Table of Contents for the EIA Report

Table of Contents		
List of Abbreviations		
Definitions of Terms		
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Chapter 1	Executive Summary	1.1 Project Description 1.2 Summary of Findings
Chapter 2	Introduction	2.1 Project Title and Project Proponent 2.2 EIA Consultants 2.3 Project Description and Rationale 2.4 Justification and Chronology for the Development of the EIA Report
Chapter 3	Legal Framework and Standards	
Chapter 4	Project Description	4.1 Statement of Need 4.2 Project Location and Scale 4.3 Project and Activity Description 4.4 Project Status and Schedule

Table of Contents		
Chapter 5	Environment, Impacts, Mitigation, and Monitoring	5.1 Air Quality 5.1.1 Description of the Environment 5.1.2 Environmental Impact Prediction and Evaluation 5.1.3 Mitigation Measures 5.1.3.1 Potential Mitigation Measures 5.1.3.2 Selected Mitigation Measures 5.1.3.3 Mitigation Measures to Address Cumulative Impacts 5.1.3.4 Residual Impacts 5.1.4 Monitoring Program 5.1.4.1 Monitoring Program for Compliance with Selected Mitigation Measures 5.1.4.2 Monitoring Program for Cumulative Impacts 5.1.4.3 Monitoring Program for Residual Impacts * NOTE: Sections 5.2–5.10 should also include the subsections listed for 5.1, Air Quality 5.2 Marine Water 5.3 Waste Management 5.4 Geology, Seismicity, Soil, and Groundwater 5.5 Marine Ecology 5.6 Terrestrial Ecology 5.7 Noise 5.8 Traffic 5.9 Socio-economic 5.10 Other Environmental Component(s) 5.11 Impacts, Mitigation, and Monitoring Summary 5.11.1 Selected Impacts 5.11.2 Cumulative Impacts 5.11.3 Residual Impacts 5.12 Risk Assessments 5.12.1 Accidental Environmental Impacts 5.13 Environmental Management Framework 5.13.1 Environmental Management Program Objectives 5.13.2 Roles and Responsibilities 5.13.3 Training and Competence 5.13.4 Communication 5.13.5 Monitoring and Reporting 5.13.6 Audit and Inspection
Chapter 6	Project Alternatives	
Chapter 7	Statement of Commitments	
Annexes		
Annex 1	References	
Annex 2	Information on the Current Condition of the Environment (methodology, data, and results)	
Annex 3	Material Safety Data Sheets (if applicable)	
Annex 4	Terms of Reference	
Annex 5	Control of Major Environmental Accidental Hazards Report related to risk assessment (if applicable)	

The following text describes the content that should be included in each of the chapters and sections of the EIA report. Reference should also be made to COP 07 of the EHSMS Regulatory Framework for the specific health and safety requirements of an EHSIA.

List of Abbreviations

This section should include a list of abbreviations and acronyms used in the EIA report. This list should be presented in a tabular format using a format similar to that on page iii of this guidance document.

Definitions of Terms

This section should include a list of terms used in the EIA report and their definitions. This information should be presented in a format similar to that used on page iv of this guidance document.

List of Tables

This section should include a list of all the tables presented within the main body of the EIA report and should indicate table numbers, table titles, and associated page numbers.

List of Figures

This section should include a list of all the figures presented within the main body of the EIA report and should indicate figure numbers, figure titles, and associated page numbers.

Chapter 1—Executive Summary

Chapter 1 of the EIA report should be a non-technical summary of the proposed project. This chapter should outline the environmental components and special features that should be included in the environmental baseline data and impact assessments and discuss the general mitigation measures and monitoring efforts. This chapter should be in English and Arabic and should include the following sections, which are discussed below:

- Project Description
- Summary of Findings.

1.1 Project Description

This section should contain a short description of the proposed project. This description should provide enough information for reviewers to understand the importance and scope of the proposed project.

1.2 Summary of Findings

This section should describe the environmental impacts associated with the proposed project and the ways in which these impacts will be resolved through mitigation and monitoring efforts. The following information and findings (as defined in the TOR or identified in the EIA report) should be included and described in this section:

- The types and magnitudes of the environmental impacts associated with the proposed project, including the main and cumulative environmental impacts
- The ways in which significant environmental issues will be resolved (with brief descriptions of the proposed mitigation measures and monitoring program)
- The residual, non-mitigated impacts (highlighting those that are irreversible or threaten flora or fauna)
- The project advantages and disadvantages to the environment and society.

General conclusions or recommendations concerning the overall project should not be included in the Summary of Findings section.

Chapter 2—Introduction

Chapter 2 should include information, data, and details relevant to the proposed project and be organised according to the following sections, which are discussed below:

- Project Title and Project Proponent
- EIA Consultants
- Project Description and Rationale
- Justification and Chronology for the Development of the EIA report.

2.1 Project Title and Project Proponent

This section should include the name, address, telephone number, and fax number of the proponent's firm; the name and designation of the contact person who is responsible for the project; the project's title; and a listing and brief description of any other projects that the proponent has conducted, is currently conducting, or will conduct on the same site or adjacent to the current proposed project.

2.2 EIA Consultants

This section should include the name, address, telephone number and fax number of the consultant's firm; the names of team members from that consultant firm who prepared the EIA report (and e-mail address for the key contact); and the field(s) of expertise of the consultant firm and the individual team members.

2.3 Project Description and Rationale

This section should include a description of the type and components of the proposed project (e.g., resort with a golf course, a hotel, a water park, an electric generator) and the location and size of the project area. This section should also include the purpose and rationale or justification (e.g., economic and/or social) for the proposed project.

2.4 Justification and Chronology for the Development of the EIA Report

This section should describe the justification for the selection of the EIA (versus a PER or SEA) and the schedule and steps taken to develop the EIA report. The following information should be included in this section:

- A list of the sequence of events and associated dates for the selection and preparation of an EIA report. If a PER or SEA report preceded the EIA report, then these reports should be identified and described.
- A list and description of the main outcomes of meetings that have already occurred or a list of intended meetings with stakeholders, governmental departments, and other groups potentially impacted by development in the area of the proposed project.

Chapter 3—Legal Framework and Standards

Chapter 3 should explain the legislative basis for the proposed project outlined in the EIA report and should outline the following information:

- All relevant and applicable international laws, standards, and guidelines.
- All relevant and applicable regional laws, standards, and guidelines.
- All relevant and applicable Emirate and local laws, standards, and guidelines.
- International conventions, treaties, and protocols that may be relevant and applicable to the proposed project.
- The source document(s) of standard pollutant limits. This source document should be the most current, published EAD and federal standards document and address all pollutants and contaminants that will be produced during the activities and phases of the proposed project. Reference should be made to the applicable COP within the EHSMS Regulatory Framework, which defines the current Standards and Guideline Values for air, water, land, and noise.

If EAD or federal standards are not available, then the best available source of standard limits, with a justification for the selection of these limits, should be detailed (multiple documents may be necessary.

Chapter 4—Project Description

Chapter 4 should include a detailed description of the proposed project with clear explanations for the need for the project and the location, scope, and activities associated with all phases of the project. This chapter should include the following sections, which are discussed below:

- Statement of Need
- Project Location and Scale
- Project and Activity Descriptions
- Project Status and Schedule.

4.1 Statement of Need

This section should include a statement of need for the proposed project and its compatibility with national development and environmental strategies. This statement should identify the clients and potential customers of the proposed project, demonstrate why the project should be located at the proposed site, and demonstrate both economic and social benefits of the project.

4.2 Project Location and Scale

This section should fully describe the exact location and scale of the proposed project and should include location maps and other relevant visual information. The following information should be included and described in this section:

- Detailed site description, including the important features and site characteristics unique to the project site (e.g., natural vegetation areas, soils, geology, bodies of water).
- The planned layout for the proposed project, including all divisions, units, and areas of activity within the project boundaries, addressing all phases (i.e., construction, operation, and decommissioning, if relevant) of the project. When possible, this information should be detailed with text, maps, photographs, and/or tables.
- Coordinates and geographic boundaries of the project area using EAD's *Geographic Information Systems—Data Management Standards*. GIS maps and shape files should be provided.
- Detailed maps showing the following information:
  - Proposed project site and its immediate surroundings
  - Proposed project site within the context of the regional landscape
  - Location of the proposed project within Abu Dhabi Emirate
  - Proximity of the proposed project to national parks, protected areas, or other areas of known sensitivity or environmental importance (check the EAD Geoportal www.geoportal.ae).
- General information regarding any known current or future proposed or planned project activities in surrounding areas (provide detail with text and maps, when possible). Such projects would include those being conducted by the proponent (and presented in Section 2.1) of this EIA report and by other proponents.

4.3 Project and Activity Descriptions

This section should describe and provide details on the proposed project and the project activities and equipment associated with the different phases of the project. The information presented in this section should match the expected operations outlined in the project master plan and should include the following:

- Detailed descriptions of the type, components, and units of the proposed project.
- Detailed descriptions of the processes and activities associated with the construction, operation, and decommissioning phases (if relevant) of the proposed project.

- A list of utility types (e.g., electricity, water, waste treatment) and quantities that may be used or produced during the operation phase of the proposed project and information about whether these utilities will be part of the proposed project or will be located off site. Estimates of the quantity of services (e.g., electricity, water, waste treatment) that will be required or produced by the project should also be included. If the proposed project will require the direct or indirect use of groundwater for any project activities or processes, then this should also be described.
- Detailed descriptions (e.g., locations, amounts) of any alterations that will be made to the project site. Such alterations include, but are not limited to, groundwater dewatering, dredging, and infilling activities, as well as land excavation and levelling and filling (cut and fill) activities.
- A project organisational chart listing the people who are managing the main activities, phases, and components of the proposed project. For each person, this chart should provide his or her name, his or her roles and responsibilities, and the number of employees he or she is supervising.
- A list of all raw materials and chemicals (including quantities) that will be used during the construction, operation, and decommissioning phases (if relevant) of the proposed project and their associated purposes and functions. Material Safety Data Sheets (MSDSs) should be included in Annex 3 for all hazardous chemicals and raw materials.
- A description of the different wastes (e.g., hazardous, solid, liquid) and quantities that will be generated by project activities conducted during the construction, operation, and decommissioning phases (if relevant) of the proposed project. MSDSs for all hazardous materials should be included in Annex 3.
- A list and descriptions of all the origins of point source emissions and pollution (e.g., gases, liquids, solids, noise) produced by project activities conducted during the construction, operation, and decommissioning phases (if relevant) of the proposed project. Emissions Process Flow Diagram(s) should be used to detail this information.
- A list that identifies all potentially polluting (emissions or noise) or environmentally damaging equipment and machinery that will be used during the proposed project's construction and decommissioning phases (e.g., bulldozers, dump trucks, generators) and during the operation phase (e.g., process, testing, or quality-control equipment; pollution-control devices that generate noise or emissions; specific vehicles used during this phase). This list of equipment should also describe the type and capacity of power or fuel used for each piece of equipment.
- A description of any planned or possible future project expansions or phases of the proposed project.

4.4 Project Status and Schedule

This section should describe the current status of project implementation, the schedule of the proposed project, and the components and phases therein (if it is a multicomponent or a multiphased project). This section should also include a concise overview of the approval procedures and steps for the proposed project.

Chapter 5—Environment, Impacts, Mitigation, Monitoring, and Risk Assessment

Chapter 5 should provide a comprehensive description of the environment, impacts, mitigation, monitoring, risk, and the Environmental Management Framework (EMF) associated with the proposed project. More specifically, this chapter should describe the current environmental baseline conditions, the methodology or sources of information used to determine the baseline conditions, the potential impacts associated with the project, and the mitigation measures and monitoring efforts that will be used to reduce the negative impacts of the proposed project on the environment. These descriptions should be created for all environmental components that occur within or near the project

area and should cover all applicable phases of project execution (i.e., construction, operation, and decommissioning).

Sections 5.1 through 5.9 in Chapter 5 discuss the environmental components and the corresponding section number for each component as it should appear in the EIA report. The remaining sections within Chapter 5 (i.e., 5.11, Impacts, Mitigation, and Monitoring Summary; 5.12, Risk Assessment; and 5.13, Environmental Management Framework) are summary sections and address all the environmental components together.

5.1 to 5.10 Environmental Components

Table 2 and **Table 3** list each environmental component and its respective section number. If an environmental component is not covered in Sections 5.1–5.9, then it should be described and detailed in Section 5.10, Other Environmental Component(s). If an environmental component is not within or near the project area, and therefore will not be impacted by the proposed project, then this should be stated and justified within the corresponding section (5.1–5.9).

Table 3. Organisation and Corresponding Section Number for the Environmental Components that Should Be Addressed in Chapter 5

Section Number	Environmental Component
5.1	Air Quality
5.2	Marine Water
5.3	Waste Management
5.4	Geology, Seismicity, Soil, and Groundwater
5.5	Marine Ecology
5.6	Terrestrial Ecology
5.7	Noise
5.8	Traffic
5.9	Socio-economic
5.10	Other Environmental Component(s)

For each environmental component (Sections 5.1–5.10), the following four sections (i.e., 5.x.1, 5.x.2, 5.x.3, and 5.x.4) and their contents should be included.

Note: The "x" in the following section numbers should be replaced with 1–10, corresponding to the environmental component outlined in Table 3. For example, for the Air Quality environmental component, the Description of the Environment section would be 5.1.1.

5.x.1 Description of the Environment

This section should describe the current status (baseline condition) of the environmental component and the methods and/or sources of information used to determine the baseline condition. There should be specific emphasis on areas and conditions that may be directly and indirectly affected by any of the proposed project activities conducted during the construction, operation, and decommissioning phases (if applicable). Analysis should be performed to identify existing and valid baseline data and additional baseline monitoring / surveying which are required based on extent of the project footprint and existing data, the validity of the existing data in manner of time, conformance with EAD standards and applicability of these data with project anticipated impacts.

For the EIA report, environmental baseline data should be collected to provide a comprehensive and detailed description of the current condition of the environmental component. The proponent should reference the EAD-issued document titled *General Guidelines for Submission of Baseline Environmental Data* and the Technical Guidelines within the EHSMS Regulatory Framework and should adhere to the guidance regarding data collection, formatting, and reporting methods. If pre-existing, relevant, and current baseline data are available for the project site and area of probable

impact (e.g., those data identified in the TOR), then these data can be used to supplement the data that are collected as part of the EIA effort. However, the EIA report should clearly describe the source of these data and clearly demonstrated that these data adequately represent the condition of the environment. Potentially suitable data sources include results from previous baseline condition assessments conducted on the project site and data from studies, literature, or reference documents that describe the environmental condition of a sufficiently comparable site. For data from such sources, the EIA report should contain a detailed description of the source and the methods used to collect the data (to the level of detail contained within the source document).

Baseline conditions that should be addressed include all existing physical, chemical, biological, and socio-economic conditions relevant to the environmental component. These conditions should be evaluated in the project area (i.e., site of proposed project) and in the area of probable impact (i.e., the extent of the area outside of the project area that is likely to be directly or indirectly impacted by the proposed project). Both the project area and area of probable impact should be clearly described and delineated with maps in the EIA report. The area of probable impact may differ by environmental component, and such differences should be reflected in the maps for each component. In addition, the maps for each environmental component should contain information that is important and relevant to the component. Specific information that should be addressed in this section includes the following:

- For the Air Quality and Marine Water environmental components, current levels of nutrients, pollutants, contaminants, and other relevant compounds should be evaluated and described. All relevant emissions, pollutants, and contaminants outlined in Section 4.3 and included in the legal framework and standards documents listed in Chapter 3 should be included in this section.
- For the Air Quality environmental component, the current levels of air pollutants and contaminants in the project area and area of probably impact should be reported. Detailed information regarding the monitoring stations and dates of collection used to establish the baseline condition should be described with maps and supplemental text. In addition, the climate and meteorology baseline conditions should be addressed, when relevant, and include a general description of the climate regime and general atmospheric patterns. Details about average (long-term annual and monthly) air temperatures, precipitation, and humidity should be presented. When relevant, atmospheric stability, wind speed and directions, and fog events should also be described.
- For the Marine Water environmental component, all relevant pollutants, contaminants, turbidity, and temperature should be assessed in both the water and sediments, and if applicable and available, information on bathymetry, currents, water flow patterns, and existing intakes and outfalls (at the project site and in the area of probable impact) should be presented.
- For the Waste Management environmental component, there should be descriptions of the existing waste management facilities and infrastructure that will process, manage, or receive the wastes (outlined in Section 4.3) generated by the proposed project. The facilities described in this section should not include any facilities or processes that will be built or developed as part of the proposed project. Examples of the facilities and infrastructure that should be described in this section include waste water treatment plants, landfill disposal sites, and hazardous waste treatment or containment facilities. In addition, if the project site has a history or evidence of waste disposal (e.g., old landfill site or dumping ground), then these conditions should also be described.
- For the Geology, Seismicity, Soil, and Groundwater environmental component, general descriptions of the topography and regional and site-specific geology (e.g., superficial deposits and bedrock, faults) should be included. When relevant, there should also be a description of seismic activity, including the origin and frequency of events and maps/charts of earthquake occurrences.
- For the Soil portion of this environmental component, the existing soils in the project area should be described. These descriptions should include relevant characteristics such as soil

type, geotechnical properties (e.g., liquefiable, cavernous), and whether the soil is native or reclaimed/fill material. There should also be a description of soil pollutant concentrations, existing contamination in the native or reclaimed/fill material, potential sources of the contamination, and the methods and sampling regime/locations used to determine the soil conditions. All relevant pollutants and contaminants outlined in Section 4.3 and included in the legal framework and standards document(s) listed in Chapter 3 should be included in this section.

- For the Groundwater portion of this environmental component, a description of the existing aquifer(s), geological setting, aquifer thickness and yield, depth to groundwater, groundwater flow pattern, and a list of the main users (e.g., commercial, residential, industrial) and their withdrawal rates (if available) should be presented. Information should also be included on water salinity, pollutant concentrations, existing groundwater contamination, the potential sources of the contamination, and the methods and monitoring wells that were used to establish these conditions. A map or diagram indicating the location of existing monitoring wells (in the project area and area of probable impact) should also be included, when relevant. All relevant pollutants and contaminants outlined in Section 4.3 and included in the legal framework and standards document(s) listed in Chapter 3 should be included in this section.
- For the Marine Ecology and Terrestrial Ecology environmental components, there should be an evaluation and description of all habitats, ecosystems, and flora and fauna that could or will be impacted by the proposed project, with special emphasis on habitats, systems, and flora and fauna that are threatened, endangered, uniquely sensitive, or of regional or international importance. For flora and fauna, information on local, regional, national, and international abundance, habitat requirements, territory or home-range size, migration patterns, and other behavioural characteristics that could be impacted by the proposed project should also be included. The sources of data or methods used to collect the baseline data should account for seasonal and annual variations in the presence and the abundance of flora and fauna. Therefore, the sampling regime used to characterise the baseline condition of flora and fauna may require sampling across multiple seasons and years. The selection of the sampling regime should be justified in the EIA report and be based on the flora and fauna present in the project area and area of probable impact.
- For the Noise and Traffic environmental components, the current levels of noise and traffic disturbance at different times of the day and seasonally, if applicable, should be evaluated and described. All sources of noise and traffic outlined in Section 4.3 should be included in this section. The requirements of COP 014 – Noise Management, must also be considered when considering the impacts of noise to the environment.
- For the Socio-economic environmental component, the current condition of population(s) that will or could potentially be impacted by the proposed project in the project area and area of probable impact should be evaluated and described. Population attributes that should be addressed include demographic characteristics, economic activity, and land-use composition.
- For each environmental component, there should be maps and other relevant visual information that orient reviewers to the distribution of important features and their proximity to the project site (covering the project site and area of probable impact). All maps should adopt a consistent format that includes a title (indicating what the map shows, the location, and the date the map was produced), a legend, a scale bar, and a North arrow.

5.x.2 Environmental Impact Prediction and Evaluation

This section should address the potential and anticipated impacts of the proposed project on environmental components. This section should include the direct and indirect impacts in the project area and area of probable impact identified by the proponent, contractors, and consultants associated with the proposed project and through the environmental baseline assessment data or other sources. Impacts associated with all construction, operation, and decommissioning phases (if relevant) should be addressed. The following information should be included and described in this section:

- All of the potential impacts and their respective sources, including a description of the cause-and-effect relationships between planned project activities and the environmental impacts.
- The location of the impacts in relation to the project activities and site boundaries.
- The probable significance of predicted impacts (i.e., magnitude of change or effect). When possible, estimation or quantification of the impacts should also be included.
- Identification of the permanence and reversibility of the predicted impacts.
- The methods or approaches used to predict the impacts. It is best to use quantitative assessment whenever possible, giving ranges and confidence limits. When possible and relevant, also include a list of stated assumptions that affect the predicted impacts, their probability of occurrence, the time scale, and degree of impact.
- If a model is used to evaluate or determine impacts on the environmental component, then the proponent should demonstrate that the model and data used to determine the impacts are appropriate for the current application and environmental component. To meet this need, there should be a full description of the model; the reason(s) for choosing that model; the origin of the data used in the model; descriptions and printouts of all model inputs, runs, and results; and an interpretation of the results. This information should clearly demonstrate the results, the way in which the results were derived, and that the results are accurate and applicable. This information should be included as an additional annex in the EIA report.
- If no impacts are anticipated, then this should be stated, along with a supporting justification for the conclusion (e.g., No impacts on marine ecology are anticipated because the facility will be located 50-km inland).
- Evaluation and detailed descriptions of the potential cumulative environmental impacts. Cumulative impacts are impacts that result from the incremental impact of an action added to other actions. Therefore, the potential impacts of the proposed project should be considered in the context of participating in a cumulative impact from past, current, and foreseeable future industrial and non-industrial activities on the project site and within and near the area of probable impact. To address the potential cumulative environmental impacts, include a description of any project-related activities or processes that may result in the cumulative effects associated with impacts from the following:
  - Off-site adjacent facilities, projects, or activities within or near the area of probable impact
  - Other project components, activities, and processes at the proposed project site
  - Additional projects planned at the site
  - New processes planned for the site
  - Cumulative effects across construction, operation, or decommissioning phases at the proposed project
  - Cumulative effects across resources; these are impacts from activities that can affect more than one resource (e.g., increased truck traffic affects air quality and can also impact traffic congestion and noise patterns, thus creating a cumulative effect).

Information that should be addressed for specific environmental components includes the following:

- For the Air Quality and Marine Water environmental components, the impacts associated with emissions and discharges of releases of pollutants, contaminants, and other relevant compounds (presented in Sections 4.3 and 5.1.1, 5.2.1, or 5.4.1) should be presented. When possible, emission and discharge estimates should also be outlined.
- For the Air Quality environmental component, the probable impacts of the proposed project on air quality should be described. When relevant, appropriate model(s) and maps should be used to estimate and determine the impacts.
- For the Marine Water environmental component, the probable impacts of the proposed project and project activities on the sediment quality, water quality, water temperature, and water

currents and flows should be described and supported by appropriate hydrodynamic model(s). The locations of facility intakes and outfalls associated with the project should be presented with maps, along with estimates of water intake and output quantities and rates.

- For the Waste Management environmental component, all wastes described in Section 4.3 should be addressed, and estimates of the rates and volumes for each waste stream (wastewater, solid waste, and hazardous wastes) should be generated, including a description of the methods used for developing the estimates. The impact for each waste stream should be evaluated against the waste management hierarchy scheme of elimination, reduction, reuse, recycling, treatment, and disposal to derive mitigation measures (addressed in the next section) that reflect the highest possible level within the hierarchy (i.e., the waste stream should be first evaluated for elimination, then minimisation, then reuse, then recycling, and so on). All aspects of waste management, including accumulation, storage, and disposal, should be discussed regarding both primary impact (i.e., land, water and air, on-site and off-site) and secondary impact (i.e., load on existing or planned waste management infrastructure or systems).
- For the Geology, Seismicity, Soil, and Groundwater environmental component, there should be descriptions of the impacts of the proposed project on the soil and groundwater, and all relevant pollutants and contaminants (presented in Section 4.3 and 5.4) should be addressed.
- For the Soil portion of this environmental component, there should be a description of the potential impacts of the proposed project and project activities on the pollutant and contaminant levels in the soil. Land alteration (e.g., cut and fill, dredging), land-use (e.g., fertiliser use, dewatering), and project activities (e.g., oil or chemical spills during certain processes) should be addressed. Maps should be used to indicate the locations and extent of the potential impacts.
- For the Groundwater portion of this environmental component, there should be a description of project activities that will require the use and withdrawal of groundwater, along with estimates of groundwater withdrawals rates and amounts (and seasonality, if applicable). In addition, a description of project activities that could potentially result in groundwater contamination (e.g., use of fertiliser, dewatering effluent, potential oil or chemical spills) should also be presented. When applicable, the impacts of the proposed project on the groundwater should be supported by map(s) and appropriate groundwater model(s).
- For the Marine Ecology and Terrestrial Ecology environmental components, there should be an evaluation and description of the impacts on all the habitats, ecosystems, and flora and fauna described in Section 5.5.1 or 5.6.1, with a special focus and increased detail on the ecosystems and flora or fauna that are threatened, endangered, uniquely sensitive, or of regional or international importance. Maps should be used to indicate the locations and extent of the potential impacts (both in the project area and area of probable impact).
- For the Noise and Traffic environmental components, the impacts of the proposed project and on noise levels and traffic disturbances daily and seasonally (if relevant) should be described and supported by appropriate model(s) and maps. Estimates of increases in noise and traffic should be provided, along with descriptions of the methods, parameters, and assumptions used to generate the estimates. All sources of noise and traffic outlined in Sections 4.3 and 5.7.1 or 5.8.1 should be included in this section.
- For the Socio-economic environmental component, impacts of the proposed project on the population(s) in the project area and area of probable impact should be described. More specifically, there should be a description of the probable impacts on demographic (e.g., employment) and economic (e.g., changes in purchasing and sales of services or provisions) characteristics, land-use patterns, and any additional conditions outlined in Section 5.9.1.

5.x.3 Mitigation Measures

This section should outline mitigation measures to reduce the negative impacts on the environmental component during all phases of the proposed project (i.e., construction, operation, and

decommissioning, if relevant) and should consist of the following sections, which are discussed below:

- Potential Mitigation Measures
- Selected Mitigation Measures
- Mitigation Measures to Address Cumulative Impacts
- Residual Impacts.

5.x.3.1 Potential Mitigation Measures

This section should list and describe all of the environmental impacts, including cumulative impacts, described in Section 5.x.2 and identify a variety of potential mitigation measures that could be adopted to reduce the impact of the proposed project on the environmental component during all phases of the proposed project (i.e., construction, operation, and decommissioning, if relevant). This section should be based on the TOR, developed with the EIA consultant, and be presented in a tabular format. The following information should be included and described:

- The environmental impacts and their sources, locations, and significance
- Potential mitigation measures that could be adopted to address the impacts (more than one option can be presented)
- Environmental standards (United Arab Emirates [UAE] or international) associated with the impacts, if relevant
- The maximum allowable limits (if different from standards), if relevant
- If an impact cannot be mitigated, then this should be stated.

5.x.3.2 Selected Mitigation Measures

This section should describe the mitigation measures that the project proponent will adopt to reduce the impact of the proposed project on the environmental component during all phases of the project (i.e., construction, operation, and decommissioning, if relevant). The selected mitigation measures should be from the options outlined in Section 5.x.3.1, be based on the EIA consultant's recommendations, and consist of practical, cost-effective measures that will sufficiently mitigate the negative environmental impacts. A brief description and justification for the selection of each mitigation measure should be provided. These recommended mitigation measures will provide the basis for the mitigation actions and acceptable environmental conditions (environmental standards or maximum allowable limits) to be agreed upon and adopted by the project proponent and EAD. Specific information that should be included and described in this section includes the following:

- A comprehensive description of each recommended mitigation measure, the way in which the measure will reduce or ameliorate the environmental impact, and why the measure was selected over other options (consider costs and reductions in environmental impact).
- Desired, anticipated, or targeted impacts of mitigation measures (e.g., meeting UAE or international standard, maximum allowable limits, sufficient re-colonisation by vegetation or animals, no loss of habitat).
- Relevant diagrams and information on all technology, equipment, units, processes, and facilities that will be part of the mitigation measure to control the potential impacts. Information on the effectiveness (i.e., reductions that could be achieved under normal operations) of the technology, equipment, unit, process, or facility should also be included.
- Descriptions of the ways in which each of the mitigation measures will be implemented, who will be responsible for implementing these measures, and the implementation schedule. This schedule should clearly demonstrate that the mitigation measure will be in place and in use before the project impacts are realised.

5.x.3.3 Mitigation Measures to Address Cumulative Impacts

The section should describe any mitigation measures or actions that will be taken to avoid, minimise, eliminate, or compensate for the cumulative environmental impacts of the proposed project on the environmental component. This section should address all the cumulative impacts outlined in Sections 5.x.2 and 5.x.3.1.

5.x.3.4 Residual Impacts

This section should clearly identify and describe residual environmental impacts on the environmental component that will not or cannot be mitigated. It should consist of all impacts, including cumulative impacts, listed in Section 5.x.3.1 that will not be mitigated by the project proponent, and include the following information:

- Justification for the absence of a mitigation measure (e.g., economic, mitigation not possible, minimal environmental impact)
- Estimation of the environmental impact(s) that will likely occur without mitigation, addressing duration, extent, and intensity of impact(s).

5.x.4 Monitoring Program

This section should describe the monitoring program(s) that will be implemented to ensure the compliance of the selected mitigation measures (including those that will address cumulative impacts) and to measure the residual impacts (including non-mitigated cumulative impacts) of the proposed project on the environmental components. The monitoring program(s) should address all phases of the projected project (i.e., construction, operation, and decommissioning) and both the project site and area of probable impact.

5.x.4.1 Monitoring Program for Compliance with Selected Mitigation Measures

The monitoring program and methods used to monitor the efficacy of and compliance achieved with the selected mitigation measures should be clearly outlined and described in this section. Specific details that should be addressed and described in this section include the following:

- Monitoring program(s) or program aspects that will address each of the mitigation measures. Information that should be presented includes the program objectives, attributes, and indicators and/or conditions that will be measured; program methodology that will be used; analyses that will be conducted; and equipment that will be used in the monitoring program. Specific information about the ways in which the program system will determine whether the standards outlined in Sections 5.x.3.1 and 5.x.3.2 have been achieved should also be detailed.
- Person(s) or the agency that is responsible for implementing, maintaining, and assuming financial responsibility for the monitoring program (include a detailed, documented process to show the ways in which the mitigation measures and the monitoring program are implemented and adhered to).
- Schedule for the monitoring program, including frequency and the number of site visits in relation to the projected duration of impacts and changes in environmental conditions. Part of this scheduling should include a documentation system or process to record results from site visits. When relevant, maps and photographs of sampling locations and areas should be provided.
- System and requirements for periodic reporting (frequency of reporting and who is responsible for creating and filing the reports).
- Actions that will be taken if mitigation measures are not meeting the desired or targeted improvements in the condition(s) of the environmental components.

5.x.4.2 Monitoring Program for Cumulative Impacts

This section should describe the monitoring program that will be implemented to measure the cumulative impacts (outlined in Section 5.x.3.2) associated with the proposed project and quantify the

extent to which cumulative impacts have been reduced by mitigation measures. When relevant, this section should contain the same level of detail and information as outlined for Section 5.x.4.1.

5.x.4.3 Monitoring Program for Residual Impacts

This section should describe a monitoring program that will be implemented to measure the residual environmental impacts associated with the proposed project. This monitoring program should be designed in such a way that it will be possible for the project proponent to demonstrate that the proposed project is not impacting the identified key environmental conditions beyond an acceptable level. This acceptable level should be defined and sufficiently supported by the appropriate limits outlined in the legal framework and standard documents presented in Chapter 3.

5.11 Impacts, Mitigation, and Monitoring Summary

This section should provide a summary of all the environmental impacts and associated mitigation measures and monitoring programs outlined in Sections 5.1–5.10. Relevant monitoring efforts should be detailed in each of the following sections, which are discussed below:

- Mitigated Impacts
- Residual Impacts.

5.11.1 Mitigated Impacts

This section should provide a summary of all the impacts, including cumulative impacts, and associated mitigation measures and monitoring programs outlined in Sections 5.1–5.10 and be presented in a series of three tables. The first table should provide a general summary of the impacts, mitigation measures, and associated monitoring program and contain the following information for each of the mitigated impacts:

- The environmental impact
- The source of the impact
- The selected mitigation measure to reduce the impact
- A brief description of the monitoring program that will determine the effectiveness of the mitigation measure(s)
- The name of the person who will be responsible for the monitoring program.

The second table should consist of an EIA matrix (**Table 4**) that ranks the significance of the environmental impacts before mitigation measures are implemented. This matrix should be divided according to the phases of the project (i.e., construction, operation, and decommissioning, if relevant), and all of the impacts that will be mitigated should be included in this matrix and assessed according to the following criteria and associated scores (note: the 1 through 3 values are ordinal rankings and should not be should not be added, subtracted, multiplied, or divided to describe a summary impact score):

- Magnitude of impact (geographical scale of the impact):
  1—Change or effect only within the project site
  2—Change or effect to local conditions or to areas immediately outside
  3—Regional, national, or international changes or effects.
- Permanence of impact (condition is temporary or permanent):
  1—No change (i.e., not applicable)
  2—Temporary
  3—Permanent.
- Reversibility of the impacted condition (impacted condition can be changed or reversed):
  1—No change (i.e., not applicable)
  2—Reversible

3—Irreversible.

- Extent that the impact is cumulative:

  1—No change (i.e., not applicable)

  2—Non-cumulative (i.e., single)

  3—Cumulative.

Following the EIA matrix table, the proponent should summarise the main trends and conclusions from the matrix.

Table 4. Example of EIA Impact Matrix (before mitigation measures are implemented)

Environmental Impact	Magnitude			Permanence			Reversibility			Cumulative		
	C	O	D	C	O	D	C	O	D	C	O	D
Air Quality—Emissions of sulphur oxides	2	3	2	2	2	2	2	2	2	2	3	2
Terrestrial and Marine Ecology—Lost habitat	1	2	1	2	2	2	2	2	2	3	3	3
Terrestrial and Marine Ecology—Disturbance of increased levels of light and noise	1	2	1	2	2	2	2	2	2	3	3	3
Groundwater—Withdrawal	2	2	2	2	2	2	2	2	2	2	2	2
Waste Management—Hazardous wastes	3	3	3	3	3	3	3	3	3	3	3	3
Waste Management—Solid wastes	1	1	1	2	2	2	2	2	2	3	3	3
Waste Management—Wastewater	1	1	1	2	2	2	2	2	2	3	3	3
Noise—High levels of noise during the night	1	1	1	2	2	2	2	2	2	3	3	3
Socio-economic—Higher regional employment in the service industry	2	2	2	2	2	2	2	2	2	3	3	3

C = construction, O = operation, D = decommissioning phases
Notes: The colour-coding of cells indicates the same ranking (e.g., 1 values are green, 2 values are orange, 3 values are red).
If the impact is positive, then a "+"should appear before a rank value.

The third table should consist of the EIA matrix after selected mitigation measures have been implemented. This table should list the same impacts identified in the first EIA matrix (the second table) and indicate the probable reductions or effects of the measures on the environmental impacts. Following this third table, the proponent should summarise the main trends and conclusions from the matrix.

5.11.2 Residual Impacts

This section should provide a summary of all the residual impacts (including non-mitigated cumulative impacts) and associated monitoring programs outlined in Sections 5.1–5.10. This information should be presented in a tabular format and indicate the following:

- The source of the impact
- The potential or anticipated environmental impact
- The reason(s) why the impact could not be mitigated
- A brief description of the monitoring program that will determine the effectiveness of the mitigation measure(s)
- The name of the person who will be responsible for the monitoring program.

5.12 Risk Assessments

This section should address the risks associated with impacts to the environment that could occur as a result of mishaps or failures during the construction, operation, and decommissioning phases of the proposed project. Examples of such occurrences are failure of material or equipment, procedures not being followed, unforeseen non-routine process upsets, and process equipment or processes not performing according to design parameters. Typical examples of impacts through mishaps include, but are not limited to, spills, leaks, fires, explosions, and process blow-downs. Such mishaps or failures may represent environmental hazards.

To account for, control, and avoid such potential hazards, this section of the EIA report should identify and provide a description of (1) all environmental hazards that could be encountered during a phase, activity, or process associated with the proposed project; (2) the level of risk associated with each identified hazard; and (3) the control and recovery measures that will be implemented to minimise the risk of the occurrence and impact of each hazard. This section should demonstrate that the proposed project has accounted for the risks associated with all potential hazards to the environment (all environmental components) and that facilities, activities, and processes of the project will be operated with measures and protocols to avoid or contain the direct and indirect risks associated with the identified hazards.

Within this section of the EIA report, accidental environmental impacts should be addressed by the Hazards and Effects Register (HER) and Control of Major Accident Hazards (COMAH) reports (if necessary).

5.12.1 Hazards and Effects Register

All accidental environmental impacts of the potential project should be identified and assessed for magnitude of potential risk within an HER.

In the HER, all hazards and effects associated with the project, project site, or operation are identified, documented, screened qualitatively, and categorized based on the risk consequences of each of the accident hazards (i.e., high, medium, or low risk). To qualitatively screen the hazards and effects associated with the project (i.e., high, medium, or low risk), the proponent should use the appropriate, industry-dependent risk assessment matrix. The proponent can either use an existing risk assessment matrix (specific to the activity planned) or can develop its own matrix based on a reasonable assessment of the potential hazards and effects and their associated risk, specific to the activity planned.

The HER should be comprehensive and include a description of the results from the analysis of each hazard or effect that is present in, or results from, the facility or operation during the construction, operation, and decommissioning phases.

Each hazard or effect that has been identified as having been encountered or involved with a facility or operation should be recorded with the associated assessments, the control and recovery measures in place or required to be in place, and an evaluation of risks. The proponent should demonstrate the ways in which any hazards identified as being low-risk or medium-risk will be controlled. If the HER shows that no high-risk accidental impact(s) exist, the proponent is required to demonstrate the rationale for such a determination.

5.12.2 Control of Major Accident Hazards Report

If a high-risk environmental accidental impact is documented in the HER, then the proponent is required to write a COMAH report. For high-risk environmental accidental hazards identified in the HER, the COMAH report should

- Identify hazards and hazardous events
- Define major accidents scenarios

- Assess risk
- Demonstrate tolerable and as low as reasonably possible (ALARP) risks
- Provide control, mitigation, and recovery plans
- Demonstrate how controls are to be managed
- Provide evidence of independent verification prior to submitting the COMAH report.

The summary results from any COMAH report effort should be included in this section, whereas the detailed report(s) should be included in Annex 5.

5.13 Environmental Management Framework

This section should provide an overview of the project-specific EMF that will be developed by the proponent to facilitate implementation, tracking, and reporting of the mitigation and monitoring measures that are identified and committed to in the EIA report. If a nominated entity under the EHSMS Regulatory Framework is required to submit an EMF, then the submission of an approved EHSMS shall be sufficient for the requirements of this section. The elements of this section should parallel the concepts of the Abu Dhabi EHSMS Regulatory Framework and should ensure that all parties involved in the project have a common and uniform understanding of the environmental management strategy, evaluation criteria, targets, and objectives. Information about and approach to the EMF should be organised according to the following sections, which are discussed below:

- Environmental Management Program Objectives
- Roles and Responsibilities
- Training and Competence
- Communication
- Monitoring and Reporting
- Audit and Inspection.

5.13.1 Environmental Management Program Objectives

This section should identify the EMF's core objectives that will provide the basis for implementation of the mitigation measures and monitoring program(s) indentified in Chapter 5 of the EIA report.

5.13.2 Roles and Responsibilities

This section should describe the proposed roles and responsibilities of key personnel (e.g., the Project Manager, the Project EMF Manager, the Project Construction Manager, subcontractors) who will be involved with EMF performance and implementation of the proposed mitigation measures and monitoring efforts.

5.13.3 Training and Competence

This section should describe the methods or procedures that will be implemented to assure that all management, supervisors, and workers are properly trained to the level necessary to conduct their work according to the EMF objectives. These methods and procedures should address documentation of training and verification of the competency of key personnel.

5.13.4 Communication

This section should describe the methods of internal and external communication that will be used to ensure effective implementation of the EMF programs. Methods of communication may include environment, health, and safety (EHS) induction training, newsletters, and regular project meetings (e.g., engineering, construction, and contractor coordination meetings). Examples of topics that should be discussed during project meetings include the status of EMF activities, implementation of the EMF program, and specific EMF issues identified during project execution.

5.13.5 Monitoring and Reporting

This section should describe the ways in which the project proponent will monitor the implementation of mitigation measures and/or the environment to verify and document successful EMF performance. There should also be a description of the methods and protocol for internal and external reporting of EMF performance, as required to demonstrate compliance.

5.13.6 Audit and Inspection

An audit and inspection program should be developed for projects involving multiple stakeholders, proponents, and/or contractors because this will ensure compliance with all EMF requirements and commitments (including applicable legal requirements, standards, and Codes of Practice) across all participants in the project activity. The audit program should be designed to provide oversight and coordination on EMF objectives. This section should provide an overview of the types of audits or inspections that would (or will) be conducted, including audit criteria, scope, frequency, and methods. The description should also include, at a minimum, who is responsible for planning and conducting audits and inspections, what reporting of audit and inspection findings will be conducted, the procedures for addressing non-conformance and corrective actions, and what records will be maintained.

Chapter 6—Project Alternatives

Chapter 6 should list and describe alternative approaches to the proposed project. This chapter's main objective is to target aspects of the project that are likely to have the largest impact on cost and the environment (physical and socio-economic) and to provide examples of less impacting alternatives to those aspects. At least two alternatives should be explored in depth, with any additional alternatives being covered in less detail. In addition, "no-development" and "alternative location" options should be presented. Descriptions of the alternatives should include the following information:

- Improved or new technology and equipment
- Process
- Size
- Location
- Implementation
- Impacts of the alternative approach on the environment and cost (as absolute values and as reductions relative to proposed project).

This chapter should conclude with a justification of the approach and components selected for the proposed project (i.e., why the alternatives were not adopted as part of the proposed project).

Chapter 7—Statement of Commitments

Chapter 7 should outline and reiterate commitments to mitigating the environmental impacts and potential risks associated with the proposed project (as outlined in Sections 5.1–5.12) and adhering to EAD standard operating procedures and protocols. A summary of the environmental impacts outlined in Chapter 5, along with a detailed commitment to managing these impacts to acceptable levels, should be included (commitment should include details about mitigation, monitoring, and recording and reporting processes). A description should also be included that clearly details who is responsible for ensuring that the commitments are fulfilled. There should also be text that describes a commitment to adhering to the procedures and steps specific to EAD protocols and the process for preparing relevant documents. More specifically, this chapter should clearly state a commitment to the following:

- Developing an Environmental Plan within 6 months after starting the proposed project
- Creating an EMF within 12 months after starting the proposed project

- Providing EAD with all developed management plans, any future updates and modifications of project plans or project activities, and periodic environmental monitoring reports
- Adhering to all EAD permitting regulations and procedures.

Annexes

Annexes should include all information not immediately relevant to the main text of the EIA report. Annexes should include the following:

- **Annex 1—References.** This annex should include all references used to develop the EIA report.
- **Annex 2—Information on the Current Condition of the Environment (methodology, data, and results).** This annex should include relevant and detailed descriptions of the methodology, data, and results of the assessments used to establish the current condition of the environment in the proposed project site and area of probable impact. Each environmental component should be addressed and should be organised according to the sequence outlined in Table 2 and followed in Sections 5.1 through 5.10. Included in this annex should be a full description of the current condition of each environmental component (product of assessments), sources of the information, and relevant maps and photographs not shown in Chapters 4 and 5 of the EIA report.
- **Annex 3—Material Safety Data Sheets (if applicable).** This annex should include all MSDSs associated with the hazardous materials identified in Section 4.3.
- **Annex 4—Terms of Reference.** This annex should contain the TOR that was prepared and approved for the SEA or EIA report.
- **Annex 5—Control of Major Accident Hazards Report(s) Related to Risk Assessment (if applicable).** If a major accidental impact is documented in the HER in Section 5.12, then the proponent is required to include in the EIA report a section known as the COMAH report. This annex should include the complete COMAH reports that address each major accident hazard as it was identified in the HER individually.

Additional annexes should be added as needed to support model selection and output, EHS documentation, large-scale drawings and diagrams, and record, checklist, and log templates for inspection, auditing, monitoring, maintenance, and training.