Guidelines for EIA Report

I. Recommended Introduction

1. Introduction:

This guide aims to highlight in details the requirement for developing an Environmental Impact Assessment Study in the Emirate of Ras Al Khaimah for review and evaluation by EPDA; the competent authority in the field of environment.

In producing the report, EIA consultant should:

- Adhere to EPDA requirements and 'Standard table of contents' in the preparation of the EIA report.
- Verify the EIA report in line with EPDA chapter-by-chapter recommendations.
- Submit a filled and signed critique along with the EIA report.

The main purpose of an EIA report is to clearly list and describe what is *assessed and recommended*. Each of environmental issues defined in the TOR or identified during the EIA study, has to be assessed in relation to: (i) environmental impact, (ii) possible and recommended mitigation measures, and (iii) recommended monitoring requirements.

Of utmost importance is the effective communication of assessment findings and recommendations. The findings of an EIA study need to be documented in a clear and concise manner devoid of unnecessary technical details. The usefulness of an EIA report is measured by how the potential problems are foreseen and addressed with adequate and straightforward answers and proposals.

The EIA report is the responsibility of the EIA consultant.

The following table provides the recommended structure for an EIA report to be submitted to EPDA. Each section may be expanded to include other aspects of relevance to the project in question.

Recommended table of contents of an EIA report

General

The report should include;

(i) Title Page,
(ii) Table of Contents,
(iii) List of tables,
(iv) List of Figures,
(v) List of Pictures,
(vi) List of Maps and
(vii) Table of Abbreviations, which should be kept to a minimum within the body of the report.

Chapter No	Title	Contents
1	**Executive Summary**	(1.1) Project Description (1.2) Findings
2	**Introduction**	(2.1) Project Title and Project Proponent (2.2) EIA Consultants (2.3) Project Rationale
3	**Legal Framework**	List legislation (Federal, local) as well as international Conventions and Treaties, which may apply to the Project
4	**Project Description**	(4.1) Statement of Need (4.2) Concept and Phases (4.3) Location, Scale and Scheduling of Activities (4.4) Project Status
5	**Description of the Environment**	(5.1) Baseline Conditions (5.2) Components Likely To-Be-Affected
6	**Impact Prediction and Evaluation**	(6.1) The Most Important Environmental Impacts (6.2) The EIA Matrix (6.3) Impact Assessment
7	**Mitigation Measures**	(7.1) Recommendations (7.2) Additional Mitigation Measures (7.3) EMPs/Statement of Commitments
8	**Alternatives**	Enlist alternatives to the main technology/philosophy used in the project. All assumptions must be clearly stated in all of the alternatives considered.
9	**Monitoring Program**	(9.1) Monitoring Program for Compliance of Monitoring Measures. (9.2) Monitoring Program for Residual Impacts.
10	**Annexes**	
Annex 1	Data on Existing Environment	Detailed relevant description of the Environment
Annex 2	Methodologies and Data Analysis	Detailed methodologies; not only references
Annex 3	List of References	
Annex 4	TOR and Consultation Activities	▪ TOR for EIA Consultants ▪ List of consultation held. ▪ Details of involvement of key stakeholders (how, when, who). ▪ Quality of relevant background documents. ▪ Quality assurance of data presented. ▪ Reliability of data sources.

II. Recommended Chapter-By-Chapter contents

1.0 Executive Summary:

The executive summary should be regarded as a non-technical résumé of the findings and recommendations of the EIA. The executive summary should be in English and Arabic, and include the following two sections:

1.1 Project Description:

A short description of the proposed development project along with sufficiently detailed description of how significant environmental issues will be resolved; enough to allow the reader to grasp its importance and scope.

1.2 Findings:

No general conclusion or recommendations concerning the overall development project are to be given. Findings in relation to the environmental issues defined in the TOR or identified during the EIA must be summarized in relation to:

- The assessed environmental impacts.
- Recommended mitigation measures.
- Recommended monitoring program.

Environmental impacts that irreversible or threaten Fauna or Flora, environmental quality and sustainable development should be highlighted. The overall findings may be summarized in a table or any other effective and simple visual presentations of the type and magnitude of the impacts.

2.0 Introduction

This chapter should include data in relation to the undertaking of the EIA. The chapter requires three (3) sections:

2.1 Project Title and Project Proponent:

Name of the firm, address, telephone and fax number, name and designation of contact person responsible for the project, other projects subject to EIA, which have been carried out, are being carried out, and/or will be carried out.

2.2 EIA Consultants:

Name of the firm, address, telephone and fax number, list of team members involved in the preparation of the report and their field of expertise, list of EIA reports, which have been carried out.

2.3 Project Rationale:

Underlying principle of the project along with a review of similar projects and methods used therein to identify, predict and evaluate impacts. This section should also include the purpose and an overview of the report.

3.0 Legal Framework:

This chapter should include an explanation of the legislative basis for the EIA, including the process of under which the current EIA study is being produced. List of relevant federal and local legislation as well as international conventions and treaties maybe applicable to the project.

4.0 Project Description:

This chapter should include a description of the proposed project with a clear explanation for the need, content and scope of the project. The chapter is divided into four (4) sections:

4.1 Statement of Need :

Present a short argumentation for the need for the project and its compatibility with national development and environmental strategies. The argument should include identification of the clients and potential customers of the project and a listing of project activities that are likely to cause significant impacts to the environmental resources.

4.2 Concepts and Phases:

This section introduces the project concept and the intentions of the project proponent. Each phase of project activity should be described separately. Planned or possible future expansions should also be described. Potential accident or hazard scenarios covered in the risk assessment should be based on the characteristics of the project and the history of accidents at similar types of facilities would be an added benefit.

4.3 Location, Scale & Scheduling of Activities:

This section should make it possible to assess the existing location and environment in and around the project area. The section should consist mainly of location maps, timeline and other visual information, but should also include a brief site description, including the pertinent features in the project area.

The geographical and visual information provided for the location should include, as much as possible:

- Photographs of the existing environment in the project's and surrounding area.
- Location, including longitude/latitude or UTM co-ordinate and geographic boundaries of the project area and the assessment of area using the “Geographic Information Systems – Data Management Standards” published by *EPDA.*

- Local plan development and requirements.
- Location of nearby land owned or leased by the project proponent.
- Land use and existing environment of project site and surrounding area.
- Ongoing developments in the same area.
- Position and distance of nearest protected area/sensitive or undisturbed habitat.
- Drainage/hydrology.
- Slope map derived from 1:10.000 topographic map or larger.

The consultant is also expected to provide additional information such as:

- Project plan.
- Visualization, for example before/after.
- Other land ownership in surrounding areas.

4.4 Project status:

This section should include an exact description of the status of implementation of the project. Is the project on the planning stage? Has implementation begun and I so, which activities have been undertaken when and where? The section should also include a concise overview of the approval procedures for the project. What approvals are needed and when? What approvals have already been received submitted and/or will be submitted, and for which authority?

5.0 Description of the Environment:

This chapter should include a description of the current status of the environment with specific emphasis on the components that maybe affected by several or any of the project's activities. The chapter is divided into two (2) sections:

5.1 Baseline Conditions:

Description of the relevant existing physical, biological and socio-economic conditions within the project area supported by maps and photographs that can be utilized as a reference of the spatial data presented in this chapter. “General Guidelines for Submission of Baseline Environmental Data” pamphlet issued by *EPD*A should be adhered to as far as the data collection methods, quality and ownership while surveying as well as data formats and elements while reporting on different fields.

5.2 Component Likely To-Be-Affected**:**

Description of all environmental components those are likely to be significantly affected by the execution of the project. This should include direct and indirect effects on the components of concern.

6.0 Impacts Prediction and Evaluation:

This chapter should include impact assessments of *the environmental issues* identified by the scoping exercise and laid down in the TOR for the EIA. If additional environmental issues are identified during the EIA study, they should also be included and assessed. The chapter contains three (3) sections:

6.1 The Most Important Environmental Impacts:

This section outlines and describes in brief the impacts that have been evaluated to be the most likely and significant environmental impacts of the project. The top key impacts included in this section are later evaluated and documented in detail in section (iii) of this chapter.

6.2 The EIA Matrix**:**

This section includes the EIA matrix and provides an overview of *all* significant environmental impacts evaluated in the EIA study.

EIA should be divided according to the project cycle, i.e. (i) exploration and construction/implementation phase, (ii) operation, production and maintenance phase, and (iii) decommissioning phase.

All of the environmental impacts include in the EIA study should be assessed according to the criteria below and the scores shown in a matrix or a figure:

- The *magnitude* of change/effect, which is a measure of the importance in relation to the spatial boundaries. The following scale should be used: (1) change/effect only within the project site, (2) change/effect to local conditions and/or to areas immediately outside, (3) regional/national/international change/effect. Before each number place a + if the impact would beneficial.
- The *permanence* of the impact, which defines whether the condition is temporary or permanent. Scale: (1) no change/not applicable, (2) temporary; (3) permanent. Before each number place a + if the impact would be beneficial.
- The *reversibility* of the condition, which defines whether the condition can be changed and is a measure of the control over the effect of the condition. Scale: (1) no change/not applicable, (2) reversible, (3) irreversible.
- To what extent the impact is *cumulative*, which is a measure of whether the effect will have a single direct effect or whether there will be a cumulative effect over time, or a synergistic effect with other conditions. Scale: (1) no change/not applicable, (2) non-cumulative/single, (3) cumulative. Before each number place + if the impact would be beneficial.

It is essential to note that no further ranking and/or manipulation of the scores given will be accepted. Values in cells are rankings (the scales are ordinal and impacts should not be added, subtracted, multiplied or divided), therefore, comparison of cells and attempts to add or mathematically transform these ordinal scores must be avoided. For example, a score of 10

in one cell is of higher rank than the score of 5 in another cell, but it is not valid to conclude that the former is twice as important. The prime value of an interaction matrix is illustrative rather than analytical.

6.3 Impact Assessment:

Each of the environmental impacts listed in the EIA matrix should be *assessed* in this section.

The top listed impacts (in section 6.1) should be prioritized and assessed in detail (i.e. documentation of the cause and effect, relationships between most- impact-generating project activities and the environmental component, identification of secondary or higher order effects, with clearly defined pathways of impacts from higher order effects, etc.), while the remaining impacts listed in the matrix should be assessed in less detail.

For each environmental impact, the specific methodology of review, data collection and analysis should be described and the results of the analysis and conclusions of the assessment presented.

The methodologies used for the review, data collection and analysis are to be clearly stated and documented.

The results of the analysis and conclusion of the assessments have to be presented in a clear and concise manner. The conclusion must clearly and specifically summarize the results of the analysis and must correspond to the scores given in the EIA matrix. It is important in the analysis and conclusions to use and refer to existing environmental guidelines and published literature/case studies.

7.0 Mitigation Measures:

This chapter should include recommended and possible mitigation measures for the environmental impacts assessed in chapter 6 of the EIA report. Adverse impacts that cannot be mitigated must be highlighted. The chapter includes three (3) sections:

7.1 Recommendations:

The section should include a priority list of the most important mitigation measures that the project proponent should adopt, as recommended by the consultant. It is important that the EIA consultant works closely with the project proponent in preparing the shortlist of recommended mitigation measures in order to ensure that the recommendations are practical, cost-effective and at the same time sufficient to mitigate the impact.
The *recommended* mitigation measures will provide the basis for environmental conditions and mitigation measures to be agreed upon by the project proponent and EPDA.

Each recommended mitigation measure should be described in detail. This includes for example when and how the recommended mitigation measures should be incorporated into the detailed project design and in the construction contract documents, and information regarding its prior effective use, the range of environmental conditions under which it is effective, and the level of skill required to operate or maintain the technology.
Recommendations such as 'a proper handling and responsible management of fertilizer and pesticides' or ' proper management of effluent from the factory' Are Not Acceptable.

Cost-estimations for all proposed mitigation measures have to be provided, as well as a comparison of each option to the other options. Documentation on the review, data collection and analysis and assessment of the recommended mitigation measures needs to be provided. The existing environmental guidelines available at EPDA, FEA and other sources should be referred to.

Justification for the recommended option(s) must include an explanation of how its cost was weighed against the projected reduction in value of environmental resource.

7.2 Additional Mitigation Measures**:**

In this section, additional mitigation measures should be described. These additional mitigation measures includes measures that:

- Should be implemented, even though they are directed towards adverse environmental impacts of a minor significance.
- Have been analyzed and assessed, but for some reasons, e.g. cost-effectiveness, were considered inappropriate to implement.
- Are indirectly linked to the development project, for example, rehabilitation efforts in adjacent areas.

7.3 Environmental Management Plans/Statement of Commitments:

Where a potential impact has been identified, a full and detailed Environmental Management Plans (EMPs) and corresponding commitment aimed at managing that impact to an acceptable performance level is to be included in this section. The EMP and commitment statement should describe:

1. the nature of the work to be undertaken.
2. the objectives to met.
3. who is responsible for the EMP/commitment?
4. who will undertake the work?
5. when, or at which stage of Project development, the work is to be undertaken.
6. where the work is to be undertaken.
7. who is responsible for monitoring and recording that the EMP/commitment is properly fulfilled?
8. Who is responsible for reporting that the EMP/commitment has been met?

Each EMP/commitment should be numbered in the body of the report. It should also be designed to allow interested parties to determine whether all relevant issues have been addressed. The EMPs/commitments should be indexed to permit quick referral to the relevant sections in the body of the report.

8.0 Alternatives

This chapter should enlist alternatives to the main technology/philosophy used in the project. All assumptions must be clearly stated in the entire alternative considered.
At lease, two alternatives must be explored in depth while others could be covered in lesser detail. No-Development option and Alternative Route/Design/Location Options must be presented.

Justification of the recommended option/design/location must be offered in terms of technology, cost-effectiveness and implementation period along side the predicted environmental impacts.

9.0 Monitoring Program

This chapter should describe the recommended schedule and monitoring program for:

- Compliance of the recommended mitigation measures (as described in section 6.1).
- The residual impacts of the project on the environment.

This chapter includes two (2) sections:

9.1 Monitoring Program for Compliance of Mitigation Measures

This section clearly outlines methods to monitor the compliance of *all* the recommended mitigation measures. The methods should be designed in such a way that it will be possible for the project proponent to demonstrate that the mitigation measures are effectively implemented. The methods should include detail on how compliance of the recommended mitigation measures should be monitored, by whom and how often.

The recommended methods should include:

- The location of mitigation measures and monitoring sites maps and photographs.
- Time schedule for monitoring program, including frequency of site visits in relation to the project duration.
- Requirements of periodic reporting.
- How and when audit/review of results should be undertaken.
- How to check that actual implementation of recommended mitigation measures has taken place.

9.2 Monitoring Program for Residual Impacts:

This section should clearly describe a *recommended* monitoring program that will measure key residual environmental impacts of the project. The program should be

design in such a way that will make it possible for the project proponent to demonstrate that the project has acceptable impacts on the identified key environmental issues. The monitoring program should also include details as to how the key adverse changes in the environment should be monitored, by whom and how often.

The monitoring program for residual impacts should include:

- Indicators: For key environmental issues.
- Standards: It is not enough to just include – within an annex- environmental standards used in UAE. Detail on how these standards should be applied should be described and related to the project.
- Methodology, location and schedule: The methodology used for monitoring has to be stated. Maps, photographs and co-ordinates of proposed sampling areas should be presented. Regular monitoring is paramount to success in impact reduction. A recommended time schedule for monitoring should be stated.
- Responsibilities and costs: It should be established in detail what should be monitored, when and by whom. This includes for example, the responsibilities and role of the project proponent and estimated staff and consultant requirements, ensuring proper implementation of the monitoring program. An estimated budget should be provided as well as how the monitoring should incorporate into the detailed project design and contract documents.
- Reporting: Recommendations for monitoring reports have to be given. When and how often should the monitoring reporting take place and who is responsible for the reporting.

  Example: Indicators:
  'The environmental impact of road construction will be monitored in relation to the following issues: Noise '.

  Example: Standards:
  'The pH of retention pond water will be monitored on an hourly basis and if it falls below 4, discharge will be halted and lime will be added '.
  'Noise generated must not exceed 60 dB at the factory boundary and not exceed 55 and 45 dB at the residential area at day and night respectively '.

  Example: Methodology and location:
  'Project impact on air quality in the construction phase: continuous on-site air sampling will take place using High Volume Sampler (HVS). The samplers will be placed in the prevailing wind direction, upwind and downwind of pollution sources within a radius of 1 km '.
  It is paramount to abide by the "General Guidelines for Submission of Baseline Environmental Data and Geographical Information Systems- Data Management Standards" pamphlets issued by EPDA in reporting the various elements monitored.

10.0 Annexes

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

Annex 1: Data on Existing Environment:

This annex should include relevant descriptions of the existing environment at the proposed development site. The annex should primarily include descriptions of immediate relevance for the impact assessment and the recommendations made in chapters 6-7 of the report. This annex should also include additional maps and photographs not shown in chapter 5 of the EIA report. Environmental sampling reports, for example on ambient air data, should be presented in detail.

Annex 2: Methodology and Data Analysis:

In this annex, the methodologies used in the EIA for assessment of environmental impact and mitigation measures should be elaborated upon. Methodologies should be documented and references given. References should be briefly described, and explained in the light their applicability to the project. All data collected, modeled and extrapolated during the EIA should be provided.

Annex 3: List of References:

In this annex, references used for the preparation of the EIA report should be listed.

Annex 4: TOR and Consultation Activities:

This annex should include all other information relevant for the preparation and review of the EIA report, for example:

- TOR for EIA.
- List of consultations held.
- Details of involvement of key stakeholders (how, when, who).
- Quality of relevant background documents.
- Quality assurance of data presented.
- Reliability of data sources.

III. EIA Report Quality Control:

The EIA should be critiqued internally by the project consultant / proponent before being released for formal review by EPDA. The purpose of the critique is to ensure that the final EIA reports sent to EPDA and/or other governmental agencies for review and approval are complete, and present as accurate a picture as possible of the likely environmental effects of the project.

The critique confirms that all significant issues have been addressed and the provisions or the management of these issues are contained in the EIA report. It further ascertains that all tasks listed in the TOR for the EIA have been preformed. If the critique indicates that some requirements have not been met, they should be clearly defined in the form of a written set of additional work to be done by project

EIA team. This quality control step is critical for the EIA process, as the outcome may affect the environmental acceptability of the proposed project.

The checklist on the following pages has been developed and a copy must be filled/checked by the consultant and singed by the project manager prior to report submission. The singed checklist and the written set of additional work to be done by the EIA team (where applicable) must accompany the EIA report.

IV. Checklist for Chapter-By-Chapter Review of the EIA Report:

This section provides a list of what to look for in each section of the EIA report.

GENERAL

Presentation	
▪ Coverage all elements and assessments required for EIA.	
▪ Logical organization into integrated and easy to review components	
▪ Clarity (minimum technical terms; graphics; understood by non-specialists).	
▪ Presence of index, glossary of terms, full references to sources of information.	

Balance	
▪ Assessment is objective (not best-case statement for the development).	
▪ Both negative and positive impacts are discussed	
▪ Predicted large negative or positive impacts are emphasized appropriately	
▪ Adverse impacts are not disguised by euphemism or platitude.	
▪ Difficulties in collecting information and carrying assessments are described	
▪ Suitability of assessments for decision-making purposes	

Chapter 1: Executive Summary	
▪ Brief description of the project and the environment	
▪ Identification/description of key adverse environmental impacts	
▪ Identification/description of main mitigation measures / EMPs	
▪ Identification of any remaining/residual impacts	
▪ Statement of commitments	
▪ Comment on the methods/approaches used and confidence in the results.	

Chapter 2: Introduction	
▪ Purpose and overview of the report	
▪ Overview of the project (objectives, rationale, proponent, etc.)	
▪ Overview of related / similar projects	
▪ Overview of EIA methodology used	

Chapter 3: Legal Framework	
▪ Applicable Emirates and local laws, standards and guidelines	
▪ Applicable Regional laws, standards and guidelines	
▪ Applicable international laws, standards and guidelines	

Chapter 4: Project Description	
▪ Purpose and objectives of the project	
▪ Description of the project (e.g. location, operation, construction, characteristics, schedule, processes, technology, potential for accidents, decommissioning)	

▪ Need for manpower, materials and transport means during all phases.	
▪ Waste/residual types, quantities, rates of generation, estimation methods, and methods for handling, treatment and disposal	
▪ Definition of potentially affected areas and land uses (existing or planned)	
▪ Potentially affected areas off-site (e.g. due to dispersal of pollutant)	
▪ Description of related/similar developments	

Chapter 5: Description of the Environment	
▪ Description of the current environmental conditions.	
▪ Description of how environment would develop without project.	
▪ Base maps for spatial data, e.g., to show distribution and proximity of various resources. Map legends must be clear. Maps must be easy to read, accurately scaled, and show major topographical and land use features in the project area	
▪ Appropriateness of the methods used to collect baseline data/information.	
▪ Adequacy of the data to show importance of the area and environmental components potentially affected by the project	

Chapter 6: Impact Prediction and Evaluation	
▪ Identification of impacts during construction, operation, and decommissioning	
▪ Assessment of the probability and likely consequences of accidents/emergencies	
▪ Identification of all sensitive and potential receptors (human beings, flora, fauna, soil, water, air, climate, landscape, material assets, cultural heritage)	
▪ Identification of all impacts (positive, negative, cumulative, short-term, long-term, permanent, temporary, direct, indirect, local, regional, reversible, irreversible)	
▪ Appropriateness of methods used to predict impact magnitude and time scale (short/long; temporary/permanent; reversible/irreversible)	
▪ Adequacy of the information/data used their sources, and gap analysis.	
▪ Use of quantitative assessment whenever possible, with ranges/confidence limits	
▪ Full definition of qualitative descriptions	
▪ Adequacy of standards, methods or approaches for assigning impact significance	
▪ Discussion of significance (include likelihood) of all project-related impacts	
▪ Reasons for, and clear indication of which impacts are significant and which are not (i.e., trivialized)	

Chapter 7: Mitigation Measures	
▪ Consideration of mitigation of all significant adverse impacts.	
▪ Nature, details and justification of specific mitigation measures proposed...	
▪ Assessment of the effectiveness/appropriateness of the mitigation measures.	
▪ Where effectiveness is uncertain or based on assumptions, justification of the acceptance of these assumptions.	
▪ Indication of significance of residual/unmitigated impacts. Reasons for no mitigation	
▪ Clear details of when and how mitigation measures will be carried out	

▪ Well-defined environmental management plans.	
▪ Well-defined monitoring programs (e.g., to ensure effectiveness of mitigation)	
▪ Clear Statement of Commitments developed for the project.	

Chapter 8: Alternatives	
▪ Consideration of an acceptable range of alternatives (i.e. zero-development; alternatives sites; alternatives processes, etc.).	
▪ Extent to which alternatives are realistic and genuine.	
▪ Objective comparison of alternatives and reasons for final choice.	
▪ Appropriateness of the assumptions and evaluation methods used and confidence in the results.	

Chapter 9: Monitoring Program	
▪ Clear and well state objectives (e.g., to determine residual impacts or effectiveness of environmental protection measures).	
▪ Clearly defined indicators.	
▪ Adequate sampling design (frequency, intensity, and schedule).	
▪ Design of effective QA/QC program.	
▪ Identification of requirements for implementation (staff, equipment, budget, SOPs).	
▪ Stated mechanisms for reporting and for enforcement and corrective action.	

Annexes	
▪ Comprehensive and well presented data on existing environment.	
▪ Adequate description of EIA methodologies and associated data sets used for impact identification, prediction of magnitude, and assignment of significance.	
▪ Complete list of references.	
▪ Adequate description of TOR and consultation activities performed for scoping.	