REPUBLIC OF LIBERIA

ENVIRONMENTAL PROTECTION AGENCY

ENVIRONMENTAL IMPACT ASSESMENT PROCEDURAL GUIDELINES

2006

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1 INTRODUCTION

This manual is a result of the joint effort of the Environmental Protection Agency and the national stakeholders including line ministries/agencies and the private sectors. The intention is to provide the EPA, sector agencies, private sectors, NGOs, members of the public and consultants a set of approved guidelines for the conduct and review of Environmental Impact Assessments (EIA) in Liberia.

The need to have clear guidance on the EIA process has been evident since the establishment of the EPA. EIA is a means of identifying and planning for the avoidance or minimization of negative environmental impacts that may arise from development and exploitation of resources, and ensuring sustainable development. It will also be customized to reflect issues that are relevant and specific to projects. While not exhaustive, the guidelines are meant to complement other sectoral EIA guidelines which may be produced by the EPA from time to time.

The Environmental Protection and Management Law (EPML) **provides** for a wide ranging responsibility for environmental management by the EPA. One of the most prominent issues is the need for development of administrative procedures for the preparation of EIA to ensure effective environmental governance. The required administrative procedures and how they are arranged to reflect the intent of the law is the subject of the following guidelines. These Guidelines will be reviewed periodically and updated when necessary.

1.1 Meaning and Importance of EIA

Environmental impact assessment is a systematic process to identify, predict and evaluate the environmental effects of proposed projects, plans or policies. This process is applied prior to major decisions and commitments being made.

The EIA process helps to provide stakeholders with information about the likely environmental impacts of projects. In some cases the outcome of the EIA processes may require a developer to alter or in extreme cases abandon a project. Although the EIA processes may result in delays and added costs, these will be out-weighed by the overall benefits that accrue from EIA application.

1.2 Operating Stages of EIA

The following is sequence of major operating stages required in the EIA process:

Applications for EIA permit –A formal request made on a prescribed form to conduct EIA for an undertaking before commencement of work.

Submission of Project Brief – Presentation of a summary of the project.

Screening – is a process that is undertaken to determine whether or not a proposal should be subject to EIA and if so, to what level.

Notice of Intent – Notification through the media that a proponent intends to engage in an undertaking.

Scoping – is undertaken to identify the issues and impacts that are likely to be important and to establish the terms of reference for an EIA study.

Impact analysis – is the process that will identify and predict the likely environmental, social and other related effects of the proposal.

Evaluation of significance – is required to determine the relative importance of and acceptability of residual impacts (i.e. impacts that cannot be mitigated).

Mitigation and impact management – to establish the measures that are necessary to avoid, minimize or offset predicted adverse impacts and, where appropriate to incorporate these into an environmental management plan or system.

Preparation of an environmental impact statement (EIS) or report – to document clearly and impartially impacts of the proposal, the proposed measures for mitigation, the significance of effects, and the concerns of the interested public and the communities affected by the proposal.

Review of the EIS – to determine whether the report meets its terms of reference, provides a satisfactory assessment of the proposal and contains the information required for decision making.

Decision making – to approve or reject the proposal and to establish the terms and conditions for its implementation.

Follow up – to ensure that the terms and conditions of approval are met; to monitor the impacts of development and the effectiveness of mitigation measures; to strengthen future EIA applications and mitigation measures and where required, to undertake environmental audit and process evaluation to optimize environmental management.

1.3 Definitions

Important definitions relevant to the environmental impact assessment procedures include:

"Adverse impact" means any actual or potential effects on the environment that may lead in the present or in the future harm to the environment or human health or that may lead to an impairment of the ability of people and communities to provide for their health, safety and cultural and economic well-being."

"**Day** "means an official working day.

"**Developer**" means the proponent of a development project or activity that is subject to an environment impact assessment process.

"**Environmen**t" means the physical features of the surroundings of the human beings, indoors and outdoors, including land, water, atmosphere, climate, sound, odor, taste, biological factors of animals and plants and the social factors of aesthetics and includes both natural, built and cultural/historical environment;

"**Environment Court of Appeals**" means the appellate court established under section (33) of the Environment Protection Agency Act to hear appeals from the decisions of the Environmental Court and from which decisions may be appealed to the Supreme Court of Liberia.

"**Environmental Court**" means the Environmental Administrative Court established under section (32) of the Environment Protection Agency Act.

"**Environmental Impact Study**" means the study conducted to determine the possible environmental impacts of a proposed project and measures to mitigate their effects.

"FONSI" means a finding of no significant impact.

"**Line Ministry**" means a Ministry, Agency, Department, statutory corporation or authority in which any law vests or functions for the protection, conservation or management of any segment of the environment or whose activities may have an impact on the environment as defined in this Law; "Mitigation" means measures to minimize or reduce adverse effects to the environment and/or to avoid aggravating damages or adverse effects inflicted on the environment.

"**Project**" includes both plan and policy that lead to such undertaking, which has or is likely to have an impact on the environment;

"**Project Brief**" means a preliminary statement on the basis of which a determination is made as to the potential environmental impact of the project or activity.

"**Project Report**" means a summary statement of the likely environmental effects of a proposed development.

"**Proponent**" means a person proposing or executing a project, policy, program or an undertaking specified in the Annex I of the Environment Protection and Management Law.

"**Public participation**" means, in keeping with the peoples' right to know the potential impacts of decisions being made, the information relating to the right of any person to receive effective notice with relevant information and to review and comment on major decisions with such comments being taken into consideration at the decision making stage; and involves open, ongoing two-way communication, both formal and informal between decision makers and stakeholders – those interested in or affected by the decisions.

"**Public record**" means a record, memorial of some act or transaction, written evidence of something done, or document, considered as either concerning or interesting to the public, affording notice or information to the public or open to public inspection; any documentation prepared, owned, used or retained by any ministry or agency in pursuance of law or in connection with the transaction of public business;

"**Published notice**" means notice that shall be placed in at least one daily newspaper of major national circulation, and/or one newspaper having a district circulation, and shall be broadcast on a popular local station in English and at least one vernacular language

relevant to the venue; and shall be disseminated as widely as is practicable by Environmental County officers through the county and district environmental committees, NGOs and CBOs.

"**Scoping**" means an early and open process for determining the scope of the issues to be addressed and for identifying the significant issues related to the proposed activity.

"**Sustainable development**" means development that meets the needs of the present generation without compromising the ability of future generations to meet their needs by maintaining the carrying capacity of the supporting ecosystems;

"**Sustainable use**" means present use of the environment or natural resources which does not compromise or impose on the ability to use the same by future generations or degraded the carrying capacity of supporting ecosystems.

2 THE EIA PROCESS

2.1 Application for EIA Permit License and Submission of a Project Brief

Prior to the commencement of works, a proponent whose project /activity falls under the prescribed list of Annex 1 of the Environment Protection and Management Law of Liberia (EMPL) is required to submit an application for EIA permit/ license along with a project brief. A specified fee for project brief review is required. If the EPA considers the project brief to be complete, a copy of the project brief will be transmitted to individual relevant line ministry/agency ten days after its submission, for comments. The project brief must contain the following information:

a) The nature of the project;
b) The location of the project and the county under whose jurisdiction it is situated and reasons for proposing the project in the area;
c) The activities that shall be undertaken during and after the development of the project;
d) The design of the project;
e) The materials to be used in the project, including during construction;
f) The possible products or by-products anticipated and their environmental consequences including the potential mitigation methods and measures;
g) The number of people the project shall employ;
h) The projected areas of land, air and water that may be affected; and
i) Any other pertinent evidence and analysis which the Agency may require for decision-making.

2.2 Notice of Intent

A proponent whose undertaking requires an EIA must prepare and publish a Notice of Intent that provides information to enable stakeholders to identify their interest in the proposed project. Information in the Notice of Intent must include:

a) The nature of the project;
b) County, district, and community where the project or activity is to be carried out, or is likely to have a significant environmental impact;
c) The activities that shall be undertaken;
d) The proposed timeframe for the project or activity;

e) Notice that copy of the application is available for inspection at the Registry of the Agency

2.3 Screening

The EPA will evaluate the project brief and transmit a copy with comments to relevant line ministries /agencies. The sector agencies/ministries in turn shall review the document and submit to the EPA their comments on the project brief within 10 days of receiving copies of the project brief. After receiving comments on the Project brief, the EPA will communicate its decision on the project to the proponent 25 days from date of its submission. The decision will take into account comments from relevant sector agencies/ministries. The following determination may be made from the screening process:

- A certificate of approval may be issued to the applicant where the EPA considers that the project / activity will not have or is unlikely to have a significant environmental impact; or that the project discloses sufficient mitigation measures to ensure the acceptability of the anticipated impacts.

- Where further study is necessary to determine the level of EIA required, the applicant will need to prepare an environmental review/ initial environmental examination or evaluation.
- The proponent or applicant will be required to prepare an environmental impact study in accordance with Section 14 o f the EMPL if the project /activity will have or is likely to have a significant impact on the environment.

2.4 Scoping

If an EIA is required the proponent will be requested to carry out a public consultation termed scoping. The scoping exercises will identify what possible impacts there may be from the project and from alternatives considered. This process will also lead to the identification of terms of reference for preparation of Environmental Impact Statement of the proposed project. The Terms of Reference must take into account issues contained in Annex- C and the results of the consultations. The EPA must approve the TOR prior to commencement of the EIA study. Consultants for EIA must also meet the qualification criteria set by the Agency, and be in its Registry.

The scoping report must include the following:

- An overview or profile of the proposal, the environment and community and the community that is likely to be affected;
- Description of the scoping process used;
- Possible alternatives;
- Range of potential impacts;
- Mitigation measures for identified impacts
- Geographical areas(s) and the timeframe(s) for the impact analysis
- The policy and institutional frameworks under which the EIA will be conducted;
- Existing information sources, gaps, and constraints on methodology;
- The scheduling of the EIA study, and the allocation of resources and responsibility;

- Identification of all the authorities involved in the project or activities;
- The identification of interested and affected persons; and
- Terms of reference developed

2.5 Preparation and Submission of EIA Report

Where EIA is required, the applicant will prepare an EIA report that includes Environmental Impact Statement (EIS) and Environmental Management Plan (EMP) in line with the Terms of Reference approved by the EPA. The report contents must take into account Sections 14 and 15 of the EMPL. Ten hard copies and an electronic version (pdf) of the report are required for submission to the EPA.

2.6 Mitigation Strategy and Time Frame

Mitigation strategies and implementation time frame must be agreed upon by the proponent/management and the Agency in consultation with line ministries.

2.7 Review of the EIA Report

The EPA will study the report to ensure that it is of standard and addresses the scope of work outlined in the terms of reference. If the report is satisfactory in these respects, the Agency will distribute copies of it to relevant line ministry/agency and other relevant public agencies, and communities for comments. Comments from the public will be received within 30 days of the publication of notice in respect of the report. If deemed appropriate, on consideration of comments from public and sector agencies/ministries the EPA may determine the need for a public hearing to be held at a location suitable to persons who are likely to be affected by the project.

After receiving comments from stakeholders on the report, the EPA will constitute a Committee (Environmental Assessment Committee) to review the report. The committee will comprise technical experts from the Agency and sector agencies /ministries, a representative from the project, and also a representative from the project area. The body will give its opinions to the Agency for consideration.

2.8 Making a Decision on the EIA Report

Following the review of the EIA Report and considering comments received during the review period, the EPA will make a decision on the proposed project. In Pursuance of Section 21 of the EMPL, the Agency may:

- Approve the project unconditionally;
- Approve the application conditionally;
- Request for further study and/or submission of additional detail; or
- Reject the application if the project is likely to cause significant or irreversible damage to the environment.

2.9 Environmental License or Permit

The issuance of EIA permit/ license will be made within the time period specified below for different categories of projects:

- For project not requiring EIA, 15 days from the date of decision indicated in communication to the applicant.
- For projects requiring EIA, three months following receipt of the EIA Report.

3 DESCRIPTION OF EIA COMPONENTS

This section provides detail description of the various components of the EIA report.

3.1 Environmental Impact Statement

The Environmental Impact Statement is the document produced after studying the potential environmental impacts of a proposed project. The EIS will provide all relevant details on the project and its effect on the environment. This document should provide a summary level of detail adequate to allow the average reader to make an informed decision on the project. This document will include a broad range of data including information on the developer, schedule, and the detailed description of the project, regulatory framework, and review of alternatives, environmental management plans, socioeconomic factors, environmental impacts, mitigation, monitoring and reclamation.

The completion of the EIS requires gathering necessary resource information, conducting field investigations, and using scientific methods to evaluate potential interactions between the environment and activities associated with the undertaking. The EIS would be accompanied by supporting appendices, the baseline study report and the environmental assessment that will provide technical detail on specific issues, assumptions and modeling projections. These supporting documents would be more technical.

An Environmental Impact Statement must be written by an experienced professional with expertise in environmental issues of specific concern to the undertaking. It is the proponent's responsibility for preparing the Environmental Impact Statement and any associated costs involved with the study. The Environmental Impact Statement should be a well-organized document in order to provide reviewers with enough information to understand what is being proposed and the environment in which the project is to be located. The Environmental Impact Statement could be prepared by an independent consulting firm chosen by and paid for by the proponent. The proponent can be provided with a list of reliable and unanimous consulting firms that will act as a third party without prior intentions or unintended biasness.

3.2 Contents of the Report

The EIA report should contain a brief introduction explaining the need for the conduct of the project. There may be other applicable criteria of the project that may have to be

reviewed. However, in order to avoid delay in the review process, the proponent should ensure that all sections listed below are included in the report.

- Executive summary
- Introduction o r overview of the project
- Policy, legal and administrative framework
- Detailed project description
- Description of the potentially affected Environment including specific information necessary for identifying and assessing the environmental effect of the proposed project of activities
- Impact Prediction and Evaluation
- Socio-economic analysis of project impacts
- Economic Information regarding the project
- Environmental Management Plan and Mitigation Measures
- Identification of Alternatives
- Environmental Management and Training
- Monitoring Program
- Public Participation
- A statement of the degree of irreversible damage and an explanation
- A description of the best available technology
- An emergency response plan
- An indication of any difficulty encountered in the EIA
- Conclusion and Recommendations
- List of References
- Annexes

3.2.1 Executive Summary

The executive summary presents the most important findings of the report in a very concise and non-technical manner that is particularly suited for decision-makers in order to facilitate the comprehension of the study and corresponding decision-making.

The executive summary will include the following:

- Project Description: covering description of the proposed project and how environmental impacts will be resolved.
- Consultant Information: clearly indicated in a list of qualifications of individuals who have worked or will work the project.
- Findings: including assessed environmental impacts, recommended mitigation measures, and recommended monitoring program.

Significant environmental impacts will also be highlighted.

3.2.2 Introduction-overview of the project

This section will cover data regarding the EIA scope including:

- EIA Objective and Scope;
- Project Rationale: describing the principle of the project along with a review of similar projects and methods used therein to identify, predict and evaluate impacts.

3.2.3 Policy, legal and administrative framework

This section of the EIA report sets the policy, administrative and legal basis within which the project may be implemented. Regulations and standards applicable to the project should be referred to.

3.2.4 Detailed project description

This is a detailed statement of all the critical activities which will be involved in the proposed project including construction phase, start-up and commissioning through to operational phase of the facilities. This should include:

- Statement of need
- Concept and phases
- Location, scale, and scheduling of activities
- Building plans
- Project status and construction phase
- dimensions of building (if applicable)
- description of present land use of the project area and the area contiguous to it
- project size and production rates
- activities associated with development stages from construction to closure
- alternatives considered
- staffing and employment
- emission characteristics
- By-products from the process (i.e. sewage, water supply, waste management, wastewater, waste disposal, etc.)
- Additional projects required as a result of the project (i.e. treatment plants, road intersections, etc.)

Most development projects involve two stages-construction and operation.

3.2.4.1 Construction Phase

The construction activities associated with the proposed project should be described in this section of the Environmental Impact Assessment.

3.2.4.2 Operational Phase

This section of the Environmental Impact Statement should discuss the environmental issues related to the operation of the project. For example, the waste management strategy of the project should be dealt with in this section. The report should discuss the expected lifespan of the project and any planned updates to the facility over that time frame.

3.2.5 Description of the Environment

The environment in which the project is to be located should be described in this section. The type of information and level of detail provided in each part of the Description of the Environment section will vary according to the project, its location, and the natural features that may be impacted. This section should include description of the biological environment, physical environment, and human environment.

A checklist in Appendix A lists some factors which should be considered in describing the environment. This description of the environment setting is a record of conditions prior to implementation of the proposed project. It is primarily a benchmark against which to measure environmental changes and to assess impacts.

3.2.5.1 Biological Environment

This section should describe vegetation at and around the project site, presence of flora, fauna rare and endangered species; endemic flora and fauna; and sensitive ecological habitats and ecological balance. Specific data may be required on aquatic animals, endangered species and diversity; plankton; spawning sites; mercury levels; aquatic plants, wetlands, mangroves and salt marshes; and terrestrial plants and animals. Occurrences of rare species (plants and animals) and habitat suitable for rare species should be identified, particularly where the project will affect uncultivated areas. Field evaluations may be required to supplement existing information.

3.2.5.2 Physical Environment

Geology, topography, runoff characteristics and soil types, climate and meteorology; ambient air quality; noise; surface and groundwater hydrology; surface and groundwater quality; seasonal changes; sediment quality; seismology; and coastal and marine parameters such as currents, bathymetry, sedimentation and erosion.

3.2.5.3 Human Environment

The Environmental Impact Statement should address land use including parks, reserves, local zoning, protected areas, residential and community features, commercial,

agriculture and industrial at and around the project area including information concerning existing infrastructure (roads, utilities), significant cultural/historic or heritages status, etc. If there is known contamination of other disturbances identified on the property, this should also be described.

In the collection of data it is imperative to include a Quality Assurance/Quality Control program, submit detailed protocols for all field testing procedures and use procedure generally accepted by other jurisdictions.

3.2.6 Impact Prediction and Evaluation

Impact identification is a critical step in EIA. First an exhaustive list of all impacts including minor, short term, moderate, direct and indirect, is drawn up. Then the manageable, significant impacts are selected, based on magnitude, significance, extent and special sensitivity for further study.

The Environmental Impact Assessment should describe the positive and negative effects which the project may have on the environmental features. The level of evaluation on particular subjects will vary according to project complexity and potential for interaction with particular environmental components. Other impacts may relate to animal or plants species.

These impacts could include the following issues:

- Air quality
- Sewage disposal
- Sludge and wastewater management
- Groundwater impacts and servicing
- Surface water
- Proximity and impact on environmental features
- Waste management

The process usually consists of two stages. Magnitude refers to the amount of change to be created by the impact. For some impacts magnitude is calculated by computer modelling.

Significance refers to the actual effects. It looks beyond magnitude.

Extent refers to the area to be affected.

Quantification of impacts is a difficult technical aspect of an EIA. For some impacts the theoretical basis for computing the magnitude does not exist. Such impacts may have to be addressed in a qualitative way.

In identifying possible impacts, use of an impact identification matrix should be adopted as it is the most useful.

The scale in Table 1 could be used during the assessment.

Table 1: Impact Rating Scores

SCORE	IMPACT			
	MAGNITUDE	PERMANENCE	REVERSIBILITY	CUMULATIVE
1	Within the project site	Not applicable	Not applicable	Not applicable
2	Local conditions and/or to areas immediately outside	Temporary	Reversible	Non-cumulative/single
3	Regional / national / international change	Permanent	Irreversible	Cumulative

3.2.7 Socio-economic analysis of project impacts

The socio-economic characteristic of the existing location should be identified. The impacts of the proposed project on the socio-economic environment should then be analysed. The analysis should include the use of land, the main economic activities e.g. tourism, agriculture, the social level within nearby communities, employment levels and the existence of archaeological or historical sites.

Impacts should be categorized in terms of positive and negative. Examples of negative impacts are conflicts between existing businesses and new project workers, potential pollutants discharge that have an adverse effect on a waterbody of economic importance, and creation of increase in fees to be charged for services which used to be free. Positive impacts include creation of jobs, decrease public health risks, upgrading of physical infrastructure, and trading of worker.

3.2.8 Economic Information regarding the project

This can include financial statements, budgets, etc. This may be submitted as a separate document to preserve confidentiality.

3.2.9 Environmental Management Plan (EMP) and Mitigation Measures

The following issues should be addressed in an EMP Report:

- Summary of Impacts: The predicted adverse environmental and social impacts for which mitigations is required should be identified and briefly summarized. Cross-referencing to the EIA report or other documentation is recommended
- Description of mitigation measures: Each mitigation measures should be briefly described with reference to the impact to which it relates and the conditions under which it is required(for example, continuously or in the event of contingencies). This should be accompanied by, or referenced to, project design and operating procedures which elaborate on the technical aspects of implementing the various measures
- Description of monitoring programmes: The monitoring program should clearly indicate the linkages between impacts identified in the EIA report, measurement indicators, detection limits (where appropriate), and definition of thresholds that will signal the need for corrective actions.

- Assignment of responsibilities for plan implementation: Responsibilities for mitigation and monitoring should be clearly defined, including arrangements for coordination between the various actors responsible for mitigation.
- An impact management strategy to correct larger than predicted changes: In addition to the identified actions that can be undertaken to minimize the negative impacts or changes, the mitigation measures should take into consideration the likelihood of occurrence of larger impacts and set necessary mitigation measures.
- Implementation and Reporting procedures: The timing, frequency and duration of mitigation measures should be specified in an implementation schedule, showing links with overall project implementation. Procedures to provide information on the progress and results of mitigation and monitoring measures should be clearly specified.
- An estimate of cost of carrying out mitigation measures and sources of funds: These should be specified for both the initial investment and recurring expenses for implementing all measures contained in the EMP, integrated into the total project costs, and factored into loan negotiations.
- Proven efficacy of the mitigation measures: The proposed mitigation measures should be proven effective and successful in previously established projects.

3.2.10 Identification of Alternatives

The EIA will assist decision-makers in selecting optimum alternatives whether related to the materials, process/technology or selected sites. All the alternatives taken into account in developing the project should be documented. For example, if the project were to be sited elsewhere, the impacts associated should be reviewed and the associated mitigation action and costs defined. The long-term viability of the project would form the crux of this section. The investigation of alternative mitigation measures through assessment of operation is an integral part of the EIA process. Each alternative should be evaluated in respect of its potential environmental losses and gains must be combined with economic costs and benefits to give the full picture for each alternative.

Different options will be ranked in view of selecting the most suitable ones to meet the objectives of the project in a sustainable manner.

An analysis of the “no action” alternative should be included.

3.2.11 Monitoring Program

A detailed environmental monitoring programme/plan should be defined to identify the necessary monitoring activities to ensure proper process and performance efficiency of the project. The reasons for the costs associated with the monitoring activities should be covered. Institutional arrangements to ensure the proper implementation of the EMP will also be identified.

It should be noted that some details presented may change depending on the final designs after the EIA preparation and review. These changes must be submitted to and approved by the EPA.

The monitoring programme should clearly state the:

- Compliance with mitigation measures including information on location, time schedule, periodic reporting, audit/review results, implementation of mitigation measures.
- Residual impacts including indicators, standards, methodology, location, schedule, responsibilities and cost.

3.2.12 Public Participation

An important part of the Environmental Impact Assessment process is the public consultation that is carried out by the proponent. The proponent's plans for public consultation should be detailed in this section of the Environmental Impact Statement.

3.2.13 A description of the best available Technology

Details in this section depend on the type of project; however, it is necessary to describe and list the specifications of the technology used. For example, if an EIA is to be conducted for the use of incinerator, a full description should be provided in terms of specifications, internal structure, operating conditions, etc.

3.2.14 Conclusion and Recommendations

The consultant or report writer must make a conclusion or recommendation on whether the project should proceed as described in the Environmental Impact Assessment report. It is important to have this statement, as it provides the readers with a conclusion to assess. The Conclusion Statement muse be concise and incorporate the mitigation measures that are planned for the project.

3.2.15 Annexes

These include:

- Reference documents
- Unpublished data
- Terms of References
- Consulting team composition
- Notes on Public Consultation sessions.

3.3 Grading Table

A grading table is used by the reviewing authority to evaluate an EIA report.

ANNEX A: Basic checklist which can be used to compile the description of the environmental setting

1. Basic Land conditions

a. Geological Conditions

- Major land formations (valleys, rivers)
- Geological structures (faults, folds, sub-strata, etc)
- Geological resources (minerals, oil, etc.)
- Seismic hazards (faults, liquefaction, tidal wave, etc.)
- Slope stability and landslide potential

b. Soil Conditions

- Soil conservation service, classification
- Hazard potential (erosion, subsidence or expansiveness)
- Natural drainage rate
- Sub-soil permeability
- Run-off rate
- Effective depth
- Inherent fertility
- Suitability for method of sewage disposal

c. Archaeological value of site

2. Biotic Community Conditions

a. Plant

- General type of dominant species
- Densities and distributions
- Animal habitat value
- Historically important specimen
- Watershed value
- Man-introduced species
- Endangered species (location, distribution and conditions)
- Fire potential (chaparral, grass, etc.)
- Timber value
- Specimen of scientific or aesthetic interest

b. Animal

- General types / dominant species (mammal, fish, fowl, etc.)
- Densities and distribution
- Habitat (general)
- Migratory species
- Game species
- Man-introduced species (exotic species)
- Endangered species
- Commercially valued species

3. Watershed Conditions

- Water quality (groundwater and surface water)
- Source of public or private water supply on-site
- Watershed importance (on-site and surrounding area)
- Flood plain importance (on-site and surrounding area)
- Water run-off rate

- Streamside conditions (habitat conditions and stream flow rate)
- Location of wells, springs
- Marshlands, lakes, ocean frontage importance

4. Airshed conditions

- General climatic type
- Air quality
- Airshed Importance
- Wind hazards area (min/max speeds)
- Odour levels
- Noise levels
- Rainfall (average)
- Temperature (average highs and lows)
- Prevailing winds (direction and intensity)
- Fog conditions (hazard potential)

ANNEX B: EIA REVIEW CHECKLIST

Item Evaluated	Comments/Recommendations	Rating
1. Adherence to the TOR Adherence to the TOR must be simple by checking that all items and information requested in the TOR have been presented, regardless of the content or quality of such information.		
2. Multidisciplinary Team The accuracy of the EIA depends on the qualification of the multidisciplinary team not only regarding the EIA process and methods but also regarding their knowledge of the several stages of the specific type of project. Therefore, individual CVs should be submitted as part of the EIA Annexes. Signatures of each member of the team must be affixed.		
3. Inter-disciplinary achievement An EIA must present information regarding the interactions and integration between the physical, biological and socio-economic aspects of the environment in that particular area of the study.		
4. Executive Summary The Executive Summary, also referred to as the non-technical summary, should provide a brief description of the project and information regarding the potential impacts of the project, arranged in order of significance, along with the proposed mitigation/compensatory measures of each impact. The summary should end with the consultants' recommendations.		
5. Project Description The process of environmental impact assessment depends on the full understanding of the project proposal and accurate identification of the project actions. If actions are unclear, sufficiently detailed impacts are not likely to be identified with the accuracy and specificity needed to enable the development of appropriate mitigation measures. 5.01 Is the project proposal fully understood? 5.02 Are all phases identified (e.g. planning, construction, operation And decommissioning? 5.03 Is the geographical area for each phase identified? 5.04 Are the land use requirements for each phase identified? 5.05 Is there an inventory of the nature and quality of materials used In the production process? 5.06 Are there inventories of the type and quality of products ,by-Products and effluents expected to be produced by the project? 5.07 Is there an inventory of the type and quality of residue? 5.08 Are the levels of emission expected detailed with respect to ▪ Noise ▪ Vibration? ▪ Light? ▪ Heat?		

▪ Radiation? ▪ Gases? ▪ Liquids? Are the types and levels of any other emission included? 5.09 Has information on employment been provided?		
OVERALL RATING FOR SECTION 5		
6. Identification and description of alternatives The assessment of sound alternatives is necessary to validate the EIA process. Therefore reasonable alternatives have to be fully and comprehensively considered. As a minimum, one of the following alternatives must be considered: location, project layout, technology, scheduling, project scale. 6.01 Did the developer consider alternatives? 6.02 Was the "no-project" scenario considered? 6.03 Were the environmental factors adequately presented for each alternative? 6.04 Is the final choice adequate?		
OVERALL RATING FOR SECTION 6		
7. Definition and justification of physical boundaries (direct and indirect area of influence) *Inconsistency in identifying the correct areas of influence will inevitably lead to inconsistency in the baseline data and the impact analysis. The indirect area of influence is the area likely to be affected by indirect, secondary and/or long term impacts.*		
8. Analysis of the legal aspects involved *The analysis of the legal framework involves more than a list of legal Acts. It involves assessing the consequences for the project of enforcing all the environmental legislation and regulations regarding the proposed site and sectoral requirements relate4d to the proposed activity.*		
9. Identification of other existing planned activities or projects in the area of influence This information is of utmost importance to ensure that land-use and other types f conflicts do not arise later during the project implementation. 9.01 Has the compatibility between the proposal and the identified existing Activity been analyzed? 9.02 Are the activities compatible? 9.03 Does the inventory of existing activities match what is observed?		
OVERALL RATING FOR SECTION 9		

10. Adequacy and completeness of relevant baseline data Baseline data must be specific and relevant to the area of influence. General and superficial information does not allow for the use of adequate impact prediction techniques. 10.01 Is the information presented specific and relevant? 10.02 Were difficulties in attaining information (if any) documented? 10.03 Have the impact indicators identified been adequately covered (see Section 13)		
OVERALL RATING FOR SECTION 10		
11. Appropriateness of EA Methods The use of appropriate EA methods is necessary to ensure reliability of the results of the EIA study. Each type of EA method has different strengths and vulnerabilities regarding its appropriateness to perform each step of the EIA study. Some EA methods are unable to provide the means of identification of indirect, secondary and/or long-term impacts. Scientific and technical accuracy of the EIA methods used must therefore be evaluated to ensure the reliability of the conclusions drawn from the impact assessment.		
12. Impact Assessment 12.1 Physical Impacts ▪ Have al the identified impacts on air, water, soil, noise, landscape and natural resources been checked against the relevant impacts defined in the TOR ▪ Are impacts identified with respect to air? ▪ Are impacts characterized (positive/negative, direct/indirect, primary/secondary, short/medium/long-term, reversible/irreversible, temporary/permanent, local/regional/national/strategic, avoidable/unavoidable? ▪ Have the magnitude been estimated? ▪ Have the impacts been assigned a significance? ▪ Have the social implications of the impacts been assessed? ▪ Have cause/effect relations been properly identified?		

▪ Are impacts identified with respect to water? ▪ Are impacts characterized (positive/negative, direct/indirect, primary/secondary, short/medium/long term, reversible/irreversible, temporary/permanent, local/regional/national/strategic, avoidable/unavoidable? ▪ Have the magnitudes been estimated? ▪ Have the impacts been assigned significance? ▪ Have the social implications of the impacts been assessed? ▪ Have cause/effect relations been properly identified? ▪ Are impacts identified with respect to Soil? ▪ Are impacts characterized (positive/negative, direct/indirect, primary/secondary, short/medium/long term, reversible/irreversible, temporary/permanent, local/regional/national/strategic, avoidable/unavoidable? ▪ Have the magnitudes been estimated? ▪ Have the impacts been assigned significance? ▪ Have the social implications of the impacts been assessed? ▪ Have cause/effect relations been properly identified? ▪ Are impacts identified with respect to noise? ▪ Are impacts characterized (positive/negative, direct/indirect, primary/secondary, short/medium/long term. Reversible/irreversible, temporary/permanent, local/regional/national/strategic, avoidable/unavoidable? ▪ Have the magnitudes been estimated? ▪ Have the impacts been assigned significance?		

▪ Have the social implications of the impacts been assessed? ▪ Have cause/effect relations been properly identified? ▪ Are impacts identified with respect to Landscape? ▪ Are impacts characterized (positive/negative, direct/indirect, primary/secondary, short/medium/long term. Reversible/irreversible, temporary/permanent, local/regional/national/strategic, avoidable/unavoidable? ▪ Have the magnitudes been estimated? ▪ Have the impacts been assigned a significance? ▪ Have the social implications of the impacts been assessed? ▪ Have cause/effect relations been properly identified? ▪ Are impacts with respect to natural resources (excluding biological resources)? ▪ Are impacts characterized (positive/negative, direct/indirect, primary/secondary, short/medium/long term. Reversible/irreversible, temporary/permanent, local/regional/national/strategic, avoidable/unavoidable? ▪ Have the magnitudes been estimated? ▪ Have the impacts been assigned a significance? ▪ Have the social implications of the impacts been assessed? ▪ Have cause/effect relations been properly identified? ▪ Have cause/effect relations been properly identified? ▪ Have natural resources which are degraded/eliminated been identified? ▪ How quickly could the natural system deteriorate? ▪ How quickly could the natural system regenerate?		

OVERALL RATING FOR PHYSICAL IMPACT ASSESSMENT		
12.2 Biological Impacts ▪ Have all the identified impacts on flora, fauna, rare/ endangered species, sensitive ecosystem, species habitats and ecological balance been checked against the relevant impact in the TOR. ▪ Are impacts identified with respect to flora? ▪ Are impacts characterized (positive/negative, direct/indirect, primary/secondary, short/medium/long term. Reversible/irreversible, temporary/permanent, local/regional/national/strategic, avoidable/unavoidable? ▪ Have the magnitudes been estimated? ▪ Have the impacts been assigned a significance? ▪ Have the social implications of the impacts been assessed? ▪ Have cause/effect relation been properly identified? ▪ Are impacts identified with respect to fauna?? ▪ Are impacts characterized (positive/negative, direct/indirect, primary/secondary, short/medium/long term. Reversible/irreversible, temporary/permanent, local/regional/national/strategic, avoidable/unavoidable? ▪ Have the magnitudes been estimated? ▪ Have the impacts been assigned significance? ▪ Have the social implications of the impacts been assessed?		

▪ Have cause/effect relations been properly identified? ▪ Are impacts identified with respect to rare / endangered species? ▪ Are impacts characterized (positive/negative, direct/indirect, primary/secondary, short/medium/long term. Reversible/irreversible, temporary/permanent, local/regional/national/strategic, avoidable/unavoidable? ▪ Have the magnitudes been estimated? ▪ Have the impacts been assigned a significance? ▪ Have the social implications of the impacts been assessed? ▪ Have cause/effect relations been properly identified? ▪ To what extent does the project preserve the diversity of species? ▪ Are impacts identified with respect to sensitive ecoysystems? ▪ Are impacts characterized (positive/negative, direct/indirect, primary/secondary, short/medium/long term. Reversible/irreversible, temporary/permanent, local/regional/national/strategic, avoidable/unavoidable? ▪ Have the magnitudes been estimated? ▪ Have the impacts been assigned a significance? ▪ Have the social implications of the impacts been assessed? ▪ Have cause/effect relations been properly identified? ▪ To what extent does the project preserve the stability of ecoysystems? ▪ Are impacts identified with respect to species habitats? ▪ Are impacts characterized (positive/negative, direct/indirect, primary/secondary, short/medium/long term. Reversible/irreversible, temporary/permanent, local/regional/national/strategic, avoidable/unavoidable?		

▪ Have the magnitudes been estimated? ▪ Have the impacts been assigned a significance? ▪ Have the social implications of the impacts been assessed? ▪ Have cause/effect relations been properly identified? ▪ Are impacts identified with respect to ecological balance? ▪ Are impacts characterized (positive/negative, direct/indirect, primary/secondary, short/medium/long term. Reversible/irreversible, temporary/permanent, local/regional/national/strategic, avoidable/unavoidable? ▪ Have the magnitudes been estimated? ▪ Have the impacts been assigned a significance? ▪ Have the social implications of the impacts been assessed? ▪ Have cause/effect relations been properly identified?		
OVERALL RATING FOR BIOLOGICAL IMPACT ASSESSMENT		
12.3 Social and Health Impacts ▪ Have all the identified impacts on the social and health context been checked against the relevant impacts in the TOR? ▪ Are impacts identified with respect to human health? ▪ Are impacts characterized (positive/negative, direct/indirect, primary/secondary, short/medium/long term. Reversible/irreversible, temporary/permanent, local/regional/national/strategic, avoidable/unavoidable? ▪ Have the magnitudes been estimated? ▪ Have the impacts been assigned a significance? ▪ Have the social implications of the impacts been assessed?		

▪ Have cause/effect relations been properly identified? ▪ To what extent does the project protect/improve human health? ▪ To what extent does the project/improve human living conditions? ▪ Are impacts identified with respect to demographic and household characteristics? ▪ Are impacts characterized (positive/negative, direct/indirect, primary/secondary, short/medium/long term. Reversible/irreversible, temporary/permanent, local/regional/national/strategic, avoidable/unavoidable? ▪ Have the magnitudes been estimated? ▪ Have the impacts been assigned a significance? ▪ Have the social implications of the impacts been assessed? ▪ Have cause/effect relations been properly identified? ▪ Are impacts identified with respect to employment opportunities? ▪ Are impacts characterized (positive/negative, direct/indirect, primary/secondary, short/medium/long term. Reversible/irreversible, temporary/permanent, local/regional/national/strategic, avoidable/unavoidable? ▪ Have the magnitudes been estimated? ▪ Have the impacts been assigned a significance? ▪ Have the social implications of the impacts been assessed? ▪ Have cause/effect relations been properly identified? ▪ Are impacts identified with respect to size and distinguishing characteristics of resident population? ▪ Are impacts characterized (positive/negative, direct/indirect, primary/secondary, short/medium/long term. Reversible/irreversible, temporary/permanent, local/regional/national/strategic, avoidable/unavoidable?		

▪ Have the magnitudes been estimated? ▪ Have the impacts been assigned a significance? ▪ Have the social implications of the impacts been assessed? ▪ Have cause/effect relations been properly identified? ▪ Are impacts identified with respect to the provision of social services and infrastructure? ▪ Are impacts characterized (positive/negative, direct/indirect, primary/secondary, short/medium/long term. Reversible/irreversible, temporary/permanent, local/regional/national/strategic, avoidable/unavoidable? ▪ Have the magnitudes been estimated? ▪ Have the impacts been assigned a significance? ▪ Have the social implications of the impacts been assessed? ▪ Have cause/effect relations been properly identified?		
OVERALL RATING FOR SOCIAL AND HEALTH IMPACT ASSESSMENT		
12.4 CULTURAL, Historical and/or Archeological Impacts ▪ Have all the identified impacts related to cultural, historical and/or archeological sites and heritage been checked against the relevant impacts defined in the TOR? ▪ Are impacts identified with respect to cultural heritage? ▪ Are impacts characterized (positive/negative, direct/indirect, primary/secondary, short/medium/long term. Reversible/irreversible, temporary/permanent, local/regional/national/strategic, avoidable/unavoidable? ▪ Have the magnitudes been estimated?		

▪ Have the impacts been assigned a significance? ▪ Have the social implications of the impacts been assessed? ▪ Have cause/effect relations been properly identified?		
OVERALL RATING FOR CULTURAL IMPACT ASSESSMENT		
12.5 Economic Impacts ▪ Have all the identified impacts on the economy (local, regional, national) been checked against the relevant impacts defined in the TOR? ▪ Are impacts identified with respect to **economic assets and activities**? ▪ Are impacts characterized (positive/negative, direct/indirect, primary/secondary, short/medium/long term. Reversible/irreversible, temporary/permanent, local/regional/national/strategic, avoidable/unavoidable? ▪ Have the magnitudes been estimated? ▪ Have the impacts been assigned a significance? ▪ Have the social implications of the impacts been assessed? ▪ Have cause/effect relations been properly identified? ▪ Are impacts identified with respect to **income generation for the community and at the National Level**? ▪ Are impacts characterized (positive/negative, direct/indirect, primary/secondary, short/medium/long term. Reversible/irreversible, temporary/permanent, local/regional/national/strategic, avoidable/unavoidable? ▪ Have the magnitudes been estimated? ▪ Have the impacts been assigned a significance? ▪ Have the social implications of the impacts been assessed?		

▪ Have cause/effect relations been properly identified?		
OVERALL RATING FOR ECONOMIC IMPACT ASSESSMENT		
12.6 Other Impacts ▪ Have all other impacts been checked against the relevant impacts defined in the TOR? ▪ Are impacts characterized (positive/negative, direct/indirect, primary/secondary, short/medium/long term. Reversible/irreversible, temporary/permanent, local/regional/national/strategic, avoidable/unavoidable? ▪ Have the magnitudes been estimated? ▪ Have the impacts been assigned a significance? ▪ Have the social implications of the impacts been assessed? ▪ Have cause/effect relations been properly identified?		
OVERALL RATING FOR SECTION 12		

13. Cumulative Impacts There may be cases where an activity/project will contribute to a cumulative impact on the environment although individually it may not have a significant environmental impact. This may be as a result of the presence of similar activities within the vicinity of the project. 13.01 Have cumulative impacts been adequately identified and characterized? 13.02 Have the magnitudes been estimated? 13.03 Have the impacts been assigned a significance? 13.04 Has the social distribution of the impacts been identified? 13.05 Have cause/effect relations been properly identified?		
14. Impact Indicators Impact indicators are the parameters used to estimate the magnitude of the impacts. 14.01 Where the impact indicators used adequate for all the impacts identified?		
15. Prediction Techniques *Impact prediction techniques are necessary to enable the estimation of magnitude of the impacts. Without the use of adequate impact prediction techniques, accurate impact analysis is not possible.* 15.01 Have the impact prediction techniques used been described? 15.02 Are they adequate?		
OVERALL RATING FOR SECTION 15		

16. Magnitude of Impacts *Magnitude is the estimate of the absolute measure/value/dimension of the difference between the environmental situation of a given parameter before and after the project is implemented. In the majority of cases – physical, biological and economic impacts – it must be expresses in* ***quantitative*** *values. The estimation of the magnitude of each relevant impact is one of the most important steps in impact analysis. It ensures the accuracy of the EIA and allows for the identification of appropriate and cost-effective mitigation measures.* Have the magnitude of all the relevant impacts been adequately estimated (refer to impact indicators – Section 14)?		
OVERALL RATING FOR SECTION 16		
17. Important/significance of impacts (*usual methods involve objective criteria regarding the ecological and social relevance of the project)* 17.01 Is the relative importance/significance of each impact with regard to the environmental factor affected, and with regard to the other impacts given? 17.02 is the significance based on objective criteria in order to minimize subjectivity of judgments?		
OVERALL RATING FOR SECTION 17		
18. Social Distribution of Impacts *Identifies which social groups will be affected by the positive and the negative impacts. These groups are often not the same. The balance between positive and negative impacts cannot be done without the correct identification of the social distribution of the impacts, because it would not have scientific and technical relevance.*		
19. Stakeholder Participation 19.01 Are the results of stakeholder participation, such as the results of interviews, hearings etc. clearly documented? 19.02 Have questionnaires used been included? 19.03 Are the extent and method of stakeholder participation adequate? 19.04 Are the conclusions drawn valid, based on available data?		

20. Analysis and Selection of Best Alternative *Selection must be based on criteria derived from the impact assessment, and appropriate analysis and decision-making methods must be used.*		
21. Environmental Management Plan (EMP) *An EMP is sometimes called an Impact Management Plan. It is a necessary step to ensure that the developer is effectively committed to the implementation of the mitigation measures. It is also a useful corporate management tool.* Does the EMP, as a minimum, present ▪ The set of mitigation, remedial or compensatory measures? ▪ A detailed description of each one, with indication and criteria for their effectiveness? ▪ Detailed budgets for each one? ▪ Timetables for Implementation? ▪ Assignment of responsibilities, including an Environmental Manager? ▪ The Environmental Policy		
OVERALL RATING FOR SECTION 21		

22. Monitoring *Monitoring is a necessary step to ensure cost-effectiveness of the EMP. It is usually addressed under the EMP (see Section 20)* Does the monitoring plan, as a <u>minimum, address</u> ▪ What is going to be monitored (impact indicators)? ▪ Where will samples be taken? ▪ How the samples will be analysed (method/techniques)? ▪ Criteria used to evaluate the results? ▪ Financial and human resources required?		
OVERALL RATING FOR SECTION 22		
23. Implementation Plan for the Mitigation Measures and the Environmental Management Plan *Implementation mechanisms must be in place to ensure effective implementation of the mitigation measures and all other recommendations that might arise from the EIA study. It usually involves the assignment of a person responsible foe environmental management and an approved timetable for implementation of measures.*		
24. OVERALL EVALUATION OF THE EIA REPORT(use the same criteria below, do no use the average of the individual ratings)		

Criteria for Rating

1. Poorly performed; inadequate; large amount of complementary work needs to be done; existing work needs to be redone.
2. Not totally well performed; not completely adequate; significant complementary work needs to be done.
3. Well performed; adequate; small amount or no complementary work needs to be done.

Note:
Overall evaluation cannot be rated more than the rating assigned to items 3, 4, 9, 11, 13, 20 and 21. If 1 or 2<2, then reject.

ANNEX C: ISSUES TO BE CONSIDERED WHEN PREPARING THE TERMS OF REFERENCE

1. Ecological consideration, including

a. Biological diversity

(i) Effect on number, diversity, breeding sites, etc. of flora and fauna
(ii) Breeding populations of fish and game; and
(iii) Effects on the gene pools of domesticated and wild sustainable yield.

b. Sustainable use including

(i) Effects of soil fertility;
(ii) Nutrient cycles;
(iii) Aquifer recharge, water run-off rates, etc;
(iv) Aerial extent of habitats; and
(v) Bio-geographical processes.

2. Social, economic and cultural considerations including:

a. Effects on generation or reduction of employment in the area;
b. Social cohesion or disruption (resettlement);
c. Immigration (including induced development when people are attracted to a development site because of possible enhanced economic opportunities);
d. Communication - roads opened up, closed, re-routed; and
e. Local economic impacts.

3. Landscape

a. Views opened up or closed.
b. Visual impacts (features, removal of vegetation, etc.).
c. Compatibility with surrounding areas.
d. Amenity opened up or closed e.g. recreation facilities.

4. Land Use

a. Effects on land uses and land potential in the project area and in the surroundings areas.
b. Possibility of multiple uses.

5. Water

a. Effects of surface water quality and quantity.
b. Effects on underground water quality and quantity.
c. Effects on the flow regime the water course.

6. Air Quality

a. Effects on the quality of the ambient air of the area.
b. Type and amount of possible emissions (pollutants).