

Department of Environment, Parks and Recreation
Ministry of Development
Brunei Darussalam

**Environmental Impact Assessment Guidelines
For Brunei Darussalam**

CONTENTS

Chapter 1:-----

-Page 4

Introduction to Environmental Impact Assessment Guidelines

Chapter 2:-----

-Page 6

Environmental Impact Assessment: The Legal Aspects

Chapter 3:-----

- Page 8

Basic Concept of the Environmental Impact Assessment Guidelines for Development

Chapter 4:-----

Page 12

Project Planning Integration

Chapter 5:-----

Page 14

Scoping

Chapter 6:-----

Page 16

Identifying Baseline Situations

Chapter 7:-----

Page 17

Prediction of Risks and Impacts

Chapter 8:-----

Page 18

Mitigation Options

Chapter 9: -----

Page 19

Review

Chapter 10: -----

Page 20

EIA Statements

APPENDICES-----

Page 24

CHAPTER 1

1.0 Introduction to Environmental Impact Assessment Guidelines

1.1 Background

All development intrinsically involves 'trade-offs' between potentially conflicting goals, such as between economic growth and conservation. The challenge is to optimize these trade-offs between and across three systems basic to development which are the ecological system, the economic system and the social system (Barbier, 1987; Holmberg *et al*, 1991).

Environmental Impact Assessment (EIA) may be defined as a formal process used to predict the environmental consequences of any development project and is one of several tools that can be used to improve the way in which trade-offs are made. EIA thus ensures that the potential problems that are foreseen are addressed at an early stage in the projects planning and design, and helps to inform relevant decision-making bodies and enables decisions to be made so projects can be taken with full knowledge of the likely environmental consequences.

1.2 Purpose of Environmental Impact Assessment Guidelines

The Environmental Impact Assessment (EIA) compares alternatives, which could be used to realize a project, and identifies the one with the best combination of economic and environmental costs and benefits. EIA improves decision-making and ensures that the development options under consideration are environmentally and socially sound and sustainable. It is concerned with identifying, predicting and evaluating the foreseeable impacts, both beneficial and adverse, of public and private (development) activities, alternatives and mitigating measures, and aims to eliminate or minimize negative environmental impacts and optimize positive impacts.

The EIA process covers various topics in a systematic way as listed below:

- Collection of information about an area and its characteristics
- Prediction of the effects of a development on the area including effects on people living in or using the area
- Vital information that can be used to make an informed decision regarding whether the development should be permitted
- Introduction of changes into the design process to ameliorate any adverse effects of the project where necessary
- Consultation between the developer, stakeholders and decision-makers - assisting in resolving any conflicts between the project proponent and the public

The **Environmental Impact Guidelines for Brunei Darussalam** are guidelines for various forms of developments that are proposed to be carried out in Brunei Darussalam, and has also been designed to complement the **Pollution Control Guidelines for Industrial Development in Brunei Darussalam** (Department of Environment, Parks and Recreation, Ministry of Development, Brunei Darussalam, June 2003 Edition).

CHAPTER 2

2.0 Environmental Impact Assessment: The Legal Aspects

Any person who intends to carry out any of the prescribed activities described in the Schedule shall, before any approval for the carrying out of such activity is granted by the relevant approving authorities, submit an environmental impact assessment report to the Authority.

The environmental impact assessment report shall be in accordance with the guidelines issued by the Authority and shall contain an assessment of the impact such activity will have or is likely to have on the environment and the proposed measures that shall be undertaken to prevent, reduce or control the adverse impact on the environment and the proposed monitoring and mitigation measures.

The Schedule lists prescribed activities in the following areas:-

1. Agriculture
2. Airport
3. Drainage and Construction
4. Land Reclamation
5. Fisheries
6. Forestry
7. Housing
8. Industrial/ Petrochemicals
9. Infrastructure
10. Ports
11. Mining
12. Petroleum
13. Power Generation and Transmission
14. Quarries
15. Railways
16. Transportation
17. Resort and Recreational Development
18. Waste Treatment and Disposal
19. Water Supply

NB. The prescribed activities listed under these areas appear as annexed.

The areas listed above are for which an EIA report is required to be submitted to the EIA Review Committee for approval. It is highly stressed that the guidelines is not strictly limited for industrial development use only but may be applied if applicable to other areas of development (not strictly applied to the areas identified above only). The

guidelines are prepared mainly to assist in determining the most efficient way to shape a project whilst making sure it is suited to the environment.

CHAPTER 3

3.0 Basic Concept of the Environmental Impact Assessment Guidelines for Development

Environmental Impact Assessment (EIA) is a process that is used to predict the environmental consequences of a proposed development project. The aim of an EIA is to ensure that potential problems are foreseen and addressed at an early stage in the project's planning and design. Like other methods, EIA is meant to be a management tool for project initiators as well as relevant authorities to come to a sensible and practical decision on the proposed project. Information collected from an EIA study should be used to design a project that is economically and most importantly environmentally sustainable.

This section describes the main elements of a "typical" Environmental Impact Assessment (EIA) Process, although this can vary according to the context and type of projects proposed. EIA's consist of several generic stages (Appendix 1 outlines the generic stages of the EIA process). Many of the steps described are also common to other forms of impact assessment. Not every development project requires each element of the EIA process. For a major project, an EIA may take considerable time, manpower and resources.

The Environmental Impact Assessment (EIA) shall include:-

- i. The identification of sources of pollutants emitted as a result of the proposed development project which needs to include the source of emission, amount of discharge (of effluent) and amount of waste produced.
- ii. Quantification of the impacts of the emissions and provide a detailed evaluation.
- iii. Proposed appropriate mitigation measures to be undertaken with regards to the safe design and operation of the proposed development project to either reduce emissions that is acceptable according to the Brunei Darussalam standards or is deemed acceptable to the general public and the environment.

3.1 Procedural Stages of the EIA Process

In accordance to the typical project cycle, the EIA process for a proposed development project is recommended to be undertaken as a three stage process:-

- i) Screening
- ii) Preliminary EIA
- iii) Detailed EIA

3.1.1 Screening

Screening helps to focus resources on those projects most likely to have significant impacts, those where the impacts are uncertain and those where environmental management input is likely to be required.

Guidance to assist with the screening process may take several forms: screening criteria such as size, cost, or location of the project; lists of projects which do or do not usually require an EIA; and checklists of projects and environment types that require further investigation. The types of projects which generally require an EIA include:

- projects which involve a significant change in renewable resource use;
- projects which involve a substantial change in farming or fisheries practice;
- water resource projects, including dams, irrigation, watershed development;
- infrastructure projects;
- industrial projects;
- extractive industries; and
- waste management and disposal.

3.1.2 Preliminary EIA

If the screening process suggests that further assessment is required, or if there is uncertainty about the nature of potential environmental impacts, the next stage is for the project proponent to undertake a preliminary assessment. This may employ rapid assessment techniques but should be detailed enough to:

- identify key impacts on the local environment;
- describe the magnitude and significance of the impacts; and
- evaluate the importance of the impacts for decision makers.

Often a preliminary assessment will require the project proponent to undertake a number of components of the impact assessment process at a superficial level. If the screening process or the preliminary assessment indicates that an impact assessment is required, the first task of the study team should be to scope the impact assessment.

3.1.3 Detailed EIA

A detailed EIA comprises of the following stages:

Scoping

The Scoping exercise is carried out after site selection has been identified. The objective of scoping mainly is to help identify the focus and 'bulk' of the EIA study. It is essentially the first task to be conducted where discussions will highlight activities that are being carried out by the proposed development project.

Chapter 5 illustrates some scoping techniques.

Identifying Baseline Situations

The effects incurred from various development projects differ and is dependent on the location and the types within the site.

Chapter 6 explores the approach to which baseline situations can be identified in order to produce potential environmental impacts.

Prediction of risks and impacts

The EIA process must also attempt to determine the significance of impacts, a task that is often subjective and value-laden.

Chapter 7 outlines some methods for predicting risks and evaluating impacts for specific development projects activities.

Identifying Mitigation Options

If the evaluation process concludes that the impacts are significant, the next stage of the EIA study is to propose measures to prevent, reduce or rectify the impact(s). Such measures should be identified or negotiated as early as possible in the project cycle process, so that mitigation activities can be built into project design.

Chapter 8 outlines the important elements of mitigation for development projects.

Review and Revise Project

The purpose of an EIA review process is to assess the adequacy of the assessment for decision-making and to consider its implications for project implementation.

Chapter 9 outlines the review process and project revision guidelines.

Produce Report

Findings from an EIA study is required to be compiled into a report and submitted for review by the relevant regulatory agencies and project approving authorities under Brunei Darussalam's Environmental Committee. All completed EIA Statements must be submitted to the following address for review by the EIA Review Committee:

Environmental Impact Assessment Review Committee
Department of Environment, Parks and Recreation
Ministry of Development
Bandar Seri Begawan
Brunei Darussalam BB3510

Chapter 10 provides a guided template for EIA statements.

CHAPTER 4

4.0 Project Planning Integration

4.1 Integration of EIA to the Project Development Life Cycle

This chapter reviews and analyses the importance of the understanding the fundamental concepts of Environmental Impact Assessments and its integration within a proposed project cycle. The relevance of this understanding is important as to ensure that environmental considerations are taken into account at the earliest possible stage of the planning of a proposed project.

The involvement of private sectors in various forms of development has been quite significant over the years. The sequence of the project cycle does not differ much except for the stages involving planning approval.

The pathway of integration of EIA to the project development life cycle is illustrated in Appendix 2.

Generally, the pathway suggests that screening followed by a preliminary assessment be carried out within the pre-feasibility phase. This is preceded by a detailed EIA study within the feasibility stage. This is then followed by carrying out environmental monitoring and post-auditing, which is typically done in the implementation stage.

Each study should ensure that it attempts to answer such questions as:

- What impacts will occur as a result of the project?
- What will be the extent, magnitude and duration of the impacts?
- What will be the significance of these impacts within local, national and international contexts?
- What can be done to mitigate, reduce or avoid altogether the adverse impacts, or optimize positive impacts?
- The following steps are undertaken as components of most impact assessment procedures:
 - Identification
 - Screening, preliminary assessment and scoping all go some way to addressing the first question – what impacts will occur as a result of the project?

Once these steps are completed, the key impacts should have been identified, and the study focused on the most important issues. The EIA can then proceed to identify those impacts that should be investigated in detail. A variety of methods may be used including checklists, questionnaires, matrices, overlays, networks,

models and simulations. One of the simplest methods is to compile a list of key impacts that were identified in the impact assessments of other similar projects and compare them to the proposed development project.

Consideration should include not only alternative sites for the project, where practicable, but also alternative designs and operating processes, and the environmental implications of each proposal. Even if the alternatives are rejected at this stage, they may be reconsidered should unexpected adverse impacts be identified under the original proposal.

CHAPTER 5

5.0 Scoping

Scoping is a crucial part of the impact assessment process and involves the identification and ‘narrowing-down’ of potential environmental impacts to ensure that the assessment focuses on the key issues for decision-making. It also offers a crucial opportunity to involve local people in determining the scope and focus of the impact assessment.

Some guidelines have attempted to address this through introducing a more structured and objective approach to the scoping process, but it is clear that problems can still remain. One of the principal functions of scoping is to guide the development of appropriate terms of reference for the EIA process. It also provides a key opportunity to engage with different stakeholders interests to ensure their early involvement in the EIA process as a whole, and to make sure that different stakeholder needs and interests are addressed throughout the rest of the process.

The scoping exercise normally indicates detailed information needs and can also be used to review alternative options for project design and siting. Basic elements in conducting a scoping exercise include the following:-

- i) Identifying the activities to be carried out within the project cycle
- ii) Identifying the resources that will be imposed with the activities to be carried out
- iii) Knowing the interactions between the activities and the resources imposed

Some activities that are relevant to various development projects in Brunei Darussalam are tabulated below:-

PROJECTS RELEVANT TO PRE-CONSTRUCTION	PROJECTS RELEVANT TO SITE CONSTRUCTION	PROJECTS RELEVANT TO OPERATION AND MAINTENANCE	OTHER PROJECTS (FUTURE ACTIVITIES)
<ul style="list-style-type: none"> • Site surveying • Geological Investigations • Access Roads 	<ul style="list-style-type: none"> • Site clearing • Burning • Drilling/Blasting • Demolition works • Utilities • Waste Disposal 	<ul style="list-style-type: none"> • Air emissions • Noise • Waste disposal • Transportation 	<ul style="list-style-type: none"> • Residential developments • Pipelines

	• Drainage works		
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5.1 Scoping Techniques

There are many varieties of techniques which can be employed for identifying issues to focus on. It is recommended that the tool to carry out this task is through the **matrix which can be found in Appendix 3.**

This approach gives a simple outline on mapping the project activities against the impact it imposes. The assessment requires the degree of impact according to scale. The weighting of the scale provides some quantification of impact to the activity.

5.2 Checklist of Information Needed For Scoping

There are several types of information which may be useful for scoping. It is similar to that which is needed for screening but in more detail. At the scoping stage it may be necessary to carry out specific studies to help determine what the significant impacts of the project are likely to be. These might involve data collection and analysis, field studies and consultations. The aim is not to undertake the full EIA studies but to obtain sufficient information to allow a reasonable plan to be drawn up for those studies. Where there are gaps and uncertainties these will be identified and taken into account. **An example of a checklist for scoping can be found in Appendix 4**

CHAPTER 6

6.0 Identify Baseline Situations

It is important to identify baseline situations as Environmental Impact Assessments are dependent on understanding relationships particularly cause-effect relationships that may cause physical, biological and social changes to the environment. Should the proponent need to use secondary baseline data, the data shall be less than five years and it must be reviewed for reliability before utilizing it.

The identification of baseline situations must take into account the following components:-

Changes that may affect:

- i) Physical Components
 - a. Activities that may pose an effect geologically
 - b. Water Quality and Hydrology
 - c. Air Quality – noise and pollutants
- ii) Biological Components
 - a. Habitats
 - b. Biodiversity
- iii) Socio-Economic Components
 - a. Effects to the general population
 - b. Housing infrastructure
 - c. Economic effects – employment, etc.

Baseline situations must be created around the following information:-

- Location
- Scope
- Development elements
- Scheduling
- Resources

CHAPTER 7

7.0 Prediction of risks and impacts

Prediction attempts to determine the cause and effect of the impacts, although often these are not well understood. Prediction relies on data and analysis from a variety of sources - physical, biological and sociological. The quality and availability of data often imposes an important constraint on the accuracy and reliability of predictions.

The EIA process must also attempt to determine the significance of impacts, a task that is often subjective and value-laden. For example, an impact at a national level might be regarded as insignificant, but could be highly significant at a local level. The context of the evaluation must therefore be considered at each stage. Various quantitative approaches to assessing the significance of impacts have been developed to assist in quantifying and rating relative however, they tend to rely on the availability of good scientific data. More tangible considerations might include:

- Existing legislation, regulations or accepted standards;
- Protected status of particular areas or ecosystems, landscapes, and species;
- Government policy objectives; and
- Acceptability to potentially affected people and the general public.

In the absence of the use of standards, the EIA study team will need to define criteria based on professional expertise and experience. The table below provides methods or models that can be used for prediction on impacts most commonly used in various forms of developments:-

Impacts	Method/Model
Air	Air dispersal/emissions models
Noise	Noise impacts from activities
Soil erosion	Models indicating soil loss
Changes to hydrology/water quality	BOD estimates in rivers/other parameters
Ecology	Suitable ecological models which can be used for comparative assessments
Land use	Evaluation against present structure/existing plans
Visual	Critical Assessment
Socio-Economic	Cost-Benefit Analysis

CHAPTER 8

8.0 Identifying Mitigation Options

Identifying mitigation options in an EIA is critical in order to establish preventive measures for each impact identified from getting adverse. Mitigation measures can include the following:

- Selection of alternative sites, processes, designs, raw materials, etc.;
- Installation of pollution control or waste treatment technologies, introducing phase-by-phase implementation and construction;
- Use of landscaping, architectural restrictions; and
- Provision of monetary compensation, restoration, and off-site community programmes.

Alternative measures can be compared and costed, and a package proposed combining a number of these. The implications of the different alternatives should be made clear to assist decision-makers in their choice of options. The measures must also be practical and efficient to implement. The comparison of these alternative measures is dependent on the cost-benefit analyses of the options previously made.

CHAPTER 9

9.0 Review and Revise Project

The purpose of an EIA review process is to assess the adequacy of the assessment for decision-making and to consider its implications for project implementation. The following mechanisms are required to be carried out for the purpose of an EIA review process:-

Monitoring

The purpose of monitoring is to assess the effect of the project on the natural and cultural environment. To be effective, monitoring needs to collect data and information that is usable, particularly in post-project auditing. Inclusion of a framework for monitoring can significantly improve the effectiveness of EIA since it can provide a mechanism for ensuring whether mitigation measures have been carried-out and whether predictions were accurate.

Post-project audit

Auditing an EIA provides an opportunity and mechanism to learn from experience, and to refine project design and implementation procedures. Auditing also provides regulatory agencies with a framework for checking compliance with, and the performance of, an environmental management and monitoring plan. In most instances, the auditing process will depend heavily on the existence of relevant and good quality monitoring data. It is therefore the requirement for the inclusion of guidelines for Post-project audit.

CHAPTER 10

10.0 Produce Report

The conclusions and recommendations of the EIA process need to be communicated effectively to local people (particularly those that may be affected by a project), interest groups and decision-makers. Conventionally, this is achieved through the compilation of an environmental impact statement (EIS).

The EIS should be a key element of the decision-making process and the summary of the EIS should therefore focus on issues most relevant to decision-making. The presentation of the statement is of utmost importance and should be shaped for the target audience. It is vital to remember that the EIS does not constitute the end of the impact assessment process. Implementation of mitigation activities must still continue, as should activities such as monitoring, evaluation and auditing.

10.1 Report Format

The following has been recommended as the suggested format for an Environmental Impact Statement (EIS):-

- i) An Executive Summary
- ii) A listing of study team members and their credentials (simplified)
- iii) A matrix table of impacts and mitigation measures, according to these categories:- physical impacts, biological impacts and social impacts

The submission of the EIS must be followed according to the following guidelines:-

Executive Summary

The Executive Summary must be set up to give a brief summary of findings from the EIA Study. It must be explained in a simplified manner without any technical jargon to assist the understanding of a variety of readers which make up the panel of decision makers.

The Summary must contain the following information:-

- i) A Summary of the project description which includes scope, location, schedule and development components.
- ii) Identified impacts to existing environmental conditions

- iii) Where these impacts affect and the mitigation measures to address them
- iv) Any issues of significance which should be identified
- v) Recommendations

Body of Report

- A. Project Title
- B. Project Stakeholders
 - a. Project Initiator – name and contact details for easy reference if any information is required.
 - b. Project Consultant/Study Team Members – name and contact details of person primarily responsible for the EIA, normally the director or project coordinator. All consultants must be listed along with their credentials.
- C. Project Statement
 - a. What is the objective of this project(s).
 - b. What are the primary activities which will be carried out.
- D. Project Description
 - a. Project location
 - b. Project size, area (blocks of land) involved
 - c. Project schedule
 - d. Project benefits (economic and social)
- E. Project Alternatives (if any)
 - a. Which site(s) are available for development options
 - b. Evaluation of criteria used to select the optional site(s) for development

The following categories provide different alternatives which can be employed into a relevant development project/s:-

- demand alternatives (e.g. using energy more efficiently rather than building more generating capacity);
- activity alternatives (e.g. providing public transport rather than increasing road capacity);
- location alternatives, either for the entire proposal or for components (e.g. different routing options for a road or power transmission line; alternative locations for a development site);

- process and design alternatives (e.g., use of waste minimising or energy efficient technology, use of different irrigation scheme designs);
- scheduling alternatives (e.g. careful timing of water discharges);
- input alternatives (e.g. alternative fuel types for power generation);
- use of pulp from recycled sources (rather than from virgin fibre); and
- the 'no project' alternative - i.e. what would happen if the project wasn't implemented at all.

F. Environmental Assessment for existing environment

The following information must be provided in order to provide decision makers transparency of the current state of the site environment and how changes due to the project can impact it:-

- a. Physical characteristics of the project area
- b. Geological description of the site
- c. Hydrological description of the site
- d. Air Quality
- e. State of Noise
- f. Existing usage of land
- g. Sources of pollution (if any)
- h. Socio-economic state (according to population, employment, other economic activities)
- i. Existing infrastructure
- j. Existing utilities and services

G. Impacts and Mitigation Measures

Please provide information on any of the following impacts, where applicable as well as its mitigation measures:-

Air Pollution

- i. Source of pollution/odour.
- ii. Quality, quantity and rate of emission
- iii. Measures to control air pollution as well as ensuring compliance to the standards identified in the **Pollution Control Guidelines for Industrial Development in Brunei Darussalam.**

Water Pollution

- i. Sources of effluent
- ii. Quality, quantity and rate of effluent charges

- iii. Measures to control level of effluent as well as ensuring compliance to the standards identified in the **Pollution Control Guidelines for Industrial Development in Brunei Darussalam.**

NB. If impact identified involves the storage of chemicals, measures must be identified for control against leakages or spills.

Noise Pollution

- i. Sources of noise pollution
- ii. Estimation of noise emitted
- iii. Measures to control noise pollution as well as ensuring compliance to the standards identified in the **Pollution Control Guidelines for Industrial Development in Brunei Darussalam.**

Hazardous Substance Control

- i. Inventory of hazardous substances
- ii. Evaluation of hazardous impacts each chemical or its byproduct may pose to the environment and the public health
- iii. Measures to control noise pollution as well as ensuring compliance to the standards identified in the **Pollution Control Guidelines for Industrial Development in Brunei Darussalam.**

Social Impacts

- i. Socio-economic impacts

H. Environmental Management and Monitoring Plan

- a. Outline of project planning, execution and management of environmental requirements.
- b. Scheduling of environmental monitoring.

I. Conclusion

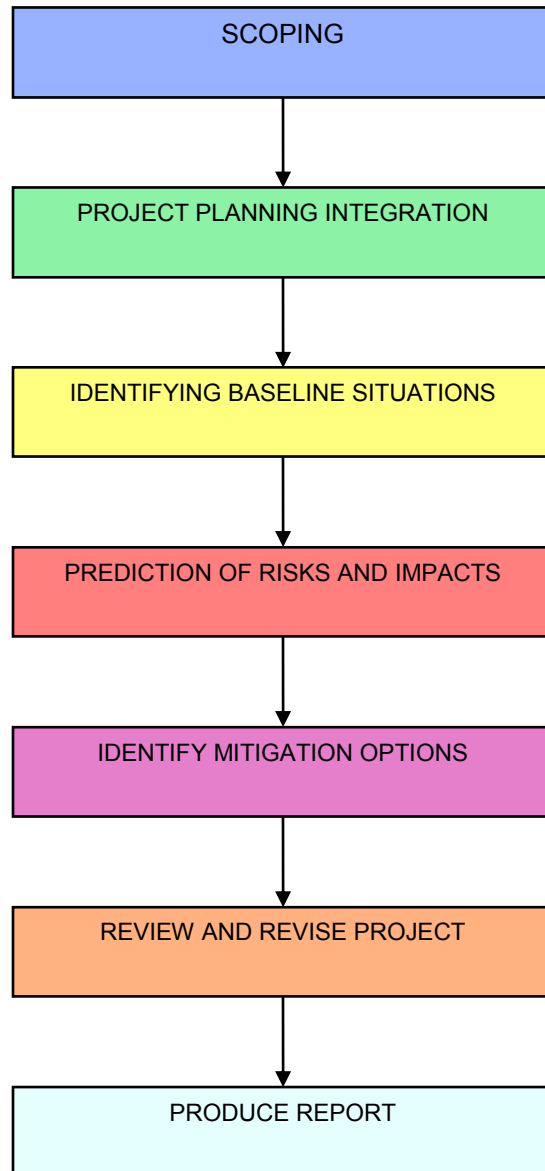
- a. General conclusion from the EIA study and an outline to deduce whether the proposed project would pose significant impacts on the environment.

J. Annexes/References

- a. Any supporting documents including detailed results /matrices/charts relating to the EIA study.

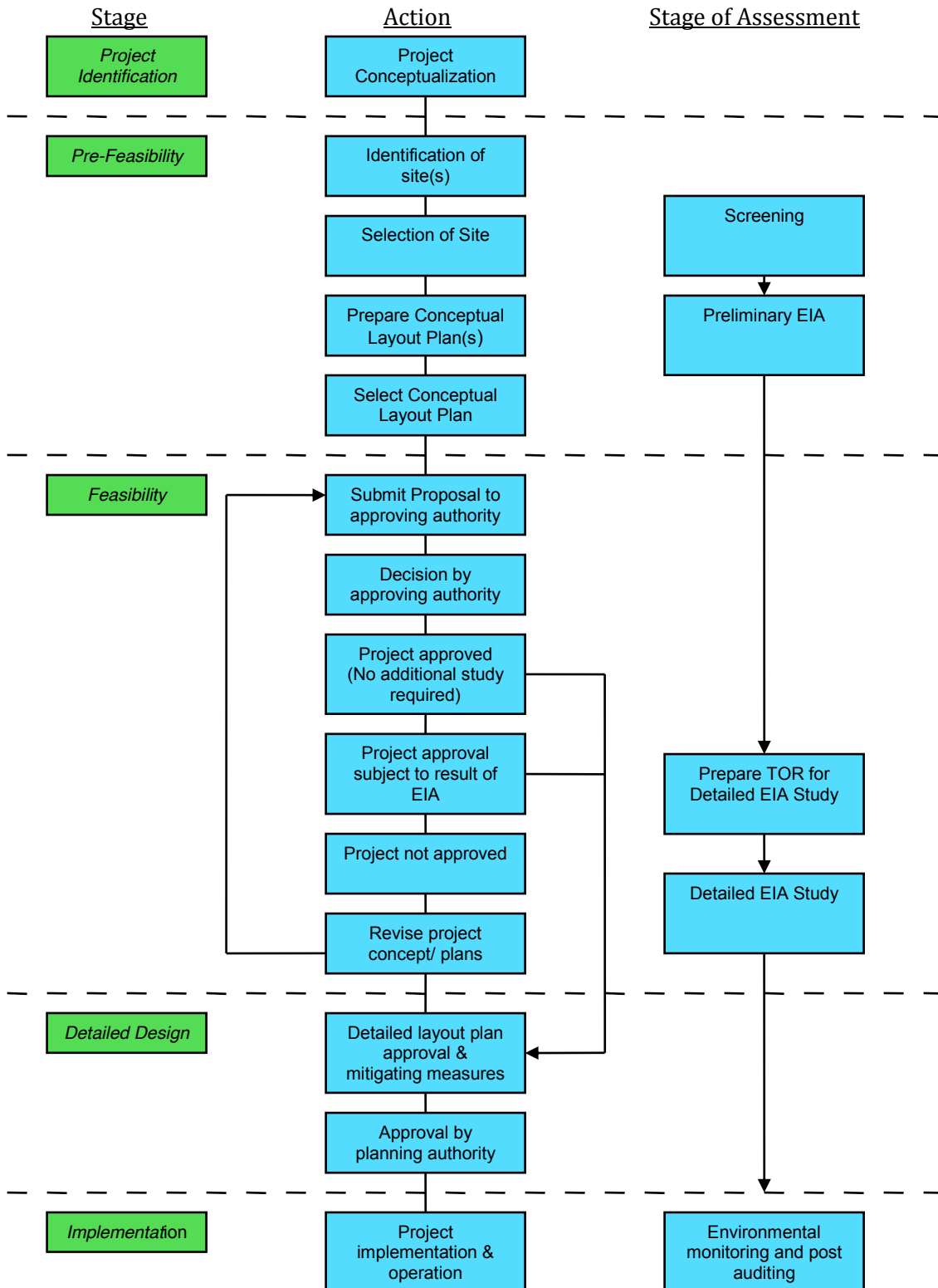
APPENDIX 1

STAGES IN THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS



APPENDIX 2

Integration Sequence for an Environmental Impact Assessment



APPENDIX 3

IMPACT ASSESSMENT MATRIX

ENVIRONMENTAL COMPONENTS	PHYSICAL							BIOLOGICAL					SOCIAL			
	LAND	WATER			AIR											
	SOIL EROSION	WASTEWATER/WATER QUALITY	COASTAL PROCESSES	CHANGES IN HYDROLOGY	AIR EMISSIONS	NOISE	ODOUR	MARINE LIFE	WILDLIFE	VEGETATION	MARINE ECOLOGY	FORESTS	HEALTH AND SAFETY	AESTHETIC	SOCIO-ECONOMIC	LABOUR FORCE
SITE CLEARANCE	-2	2	1	-1	-2	-3	-1	1	1	1	1	-3	-2	2	2	1
DRAINAGE WORKS	-2	2	1	-1	2	1	-2	1	1	1	1	-3	-2	2	2	1
TRANSPORTATION	2	2	1	-1	-2	-3	-1	1	1	1	1	-3	-2	2	2	1
NOISE	-2	2	1	-1	2	1	-2	1	1	1	1	-3	-2	2	2	1
CONSTRUCTION OF JETTY	-1	2	1	-1	-2	-3	-1	1	1	1	1	3	-2	2	2	1
WASTE DISPOSAL	-3	2	1	-1	2	1	-2	1	1	1	1	3	-2	2	2	1
AIR EMISSIONS	-2	2	1	-1	-2	-3	-1	1	1	1	1	3	-2	2	2	1
WATER QUALITY	-1	2	1	-1	2	1	-2	1	1	1	1	3	-2	2	2	1
VISUAL IMPACTS	-1	2	1	-1	-2	-3	-1	1	1	1	1	3	-2	2	2	1
TOTAL	-12	18	9	-9	-2	-11	-13	9	9	9	9	3	-18	18	18	9

POSSIBLE IMPACT RATINGS:-

	POSITIVE	NEGATIVE
MAJOR	3	-3
INTERMEDIATE	2	-2
MINOR	1	-1

APPENDIX 4

Information for Scoping

1. Contact Details of the Developer

- Name of the company.
- Main postal address, telephone, fax and e-mail details for the company.
- Name of the main contact person and direct postal address, telephone, fax and e-mail details.

2. Characteristics of the Project

- Brief description of the proposed project.
- Reasons for proposing the project.
- A plan showing the boundary of the development including any land required temporarily during construction.
- The physical form of the development (layout, buildings, other structures, construction materials, etc).
- Description of the main processes including size, capacity, throughput, input and output.
- Any new access arrangements or changes to existing road layout.
- A work programme for construction, operation and commissioning phases, and restoration and after-use where appropriate.
- Construction methods.
- Resources used in construction and operation (materials, waster, energy, etc.)
- The relationship with other existing/planned projects.
- Information about alternatives being considered.
- Information about mitigating measures which are being considered
- Other activities which may be required as a consequence of the project (*eg* new roads, extraction of aggregate, provision of new water supply, generation or transmission of power, increased housing and sewage disposal).
- Details of any other permits required for the project.

3. Location of the Project

- Maps and photographs showing the location of the project relative to surrounding physical, natural and man-made features
- Existing land-uses on and adjacent to the site and any future planned land uses
- Zoning or land-use policies
- Protected areas or features
- Sensitive areas
- Details of any alternative locations which have been considered

4. Characteristics of the Potential Impact

A brief description of the likely impacts of the project considering the following factors:

- Impacts on people, human health, fauna and flora, soils, land use, material assets, water quality and hydrology, air quality, climate, noise and vibration, the landscape and visual environment, historic and cultural heritage resources, and the interactions between them.
- Nature of the impacts (*i.e.* direct, indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative).
- Extent of the impact (geographical area, size of the affected population/habitat/species).
- Magnitude and complexity of the impact.
- Probability of the impact.
- Duration, frequency and reversibility of the impact.
- Mitigation incorporated into the project design to reduce, avoid or offset significant adverse impacts.
- Transborder nature of the impact.