

1.0 Introduction

Biophysical Impact Assessment (BIA) is the assessment or evaluation of the impact of a proposed project on identified environmentally significant areas, natural parks and natural areas. Biophysical impact assessment is usually required for projects that have the potential to incur negative impacts on identified environmentally significant areas, natural environmental parks and natural parks. The objective of Biophysical Impact Assessment is to ensure the adequate protection of these aforementioned areas with ecologically diverse components and to prevent and/ or minimize environmental impacts.

The purpose of this guideline is to provide mechanisms for those conducting Environmental Impact Assessment on the Biophysical Environment such as proponents of a project, competent agencies and other stakeholders for determining the potential significant impacts of a project. This guideline is developed to provide advice and consistent stepwise guidance on the Biophysical EIA process for the identification, prediction, evaluation and mitigation of all potential significant environmental impacts associated with the life cycle of a proposed project development as well as information to assist project proponents and other relevant stakeholders on the appropriate mechanisms for conducting Biophysical Environmental Impact Assessment.

2.0 Project Proposal

As soon as a proponent decides to embark on any development project, he shall inform the Ministry in writing by writing a letter of intent. Such letter of intent shall be accompanied by the submission of a project proposal and a duly completed “Biophysical Impact Assessment Notification Form” which will be made available to the proponent by the Ministry upon the payment of an application fee as prescribed by the Ministry. The project proposal shall provide relevant information about the proposed project.

Concise details of what is to be contained in the project proposal can be found in Annex I. All proposals and accompanying documents shall be addressed to the Minister of Environment at the Federal Ministry of Environment, Abuja.

2.1 Development of Proposal

The proponent shall develop a project proposal and submit same to the Ministry, notifying the Ministry of his intent to develop the proposed project.

Upon the submission of the project proposal to the Ministry, the Ministry is deemed to have formal knowledge of the proposed project and the BIA process shall be deemed to commence.

2.2 Registration

The Ministry shall officially register the project proposal, issue a Registration number and acknowledge receipt immediately. Thereafter, the Ministry shall supply the proponent with the necessary documentation, general guidance, contacts, and any other available support which will facilitates a smooth BIA process immediately.

3.0 Screening

The Ministry, sequel to the receipt and registration of the project proposal shall conduct an Initial Environmental Examination (IEE) to determine if the project will or will not have significant effect on the biophysical environment as well as to identify the natural resources that may need to be protected from the impact of the proposed project. The location of the project in Environmentally Sensitive Areas (ESAs), wetlands, streams, natural conservation

sites etc. are important criteria to be considered by the Ministry in making a decision. Flowcharts for decision making for BIA based on the project location are provided in Annex ii.

In characterizing impacts, possible reference should be made to the following factors:

- a) Magnitude
- b) Extent
- c) Duration
- d) Reversibility
- e) Timing and frequency
- f) Impact significance

The decision of the Ministry after the screening process shall be communicated timeously to the proponent. The screening report shall state the level of Biophysical impact assessment required based on the category of the project, location of the project and other relevant factors. A Checklist for Biophysical impact screening is provided in Annex III.

4.0 Scoping

The proponent shall, upon receipt of screening report shall undertake a detailed scoping exercise for the identification of potentially significant environmental impact of the proposed project on the environment.

Scoping shall be done to:

- create platforms for consultations and meetings with the Ministry, Lead Agencies and all relevant stakeholders;
- incorporate relevant national and international policies, regulations and standards as may be relevant to the biophysical components
- gather information for decision-making that will representative of those that will be mostly affected by the project development;
- determine of boundaries and scope of the Biophysical EIA study;

- Identification of physical (water, air, soil/land use) and biological (ecology and biodiversity) environmental factors that will be of local and regional concerns due to the project;
- Identify and evaluate all potential significant impacts to the environmental and their extent;
- communicate with affected public to identify and evaluate concerns;
- identify reasonable alternatives and mitigation measures; and
- prepare Terms of Reference (ToR) to guide the Biophysical EIA study.

During scoping, the proponent shall take into account the impacts associated with construction and operation; direct, indirect and synergistic impacts; and those that are temporary, reversible and irreversible. The biophysical receptors shall be considered as well. Biophysical receptor groups of developmental impacts are presented in Annex V.

During Scoping:

- a. The proponent shall submit a Terms of Reference (TOR) indicating the scope of the proposed Biophysical EIA study. The Ministry may demand a preliminary assessment report and any additional information from the proponent to assist in vetting the scope and the TOR of the proposed study.
- b. Public Hearing maybe requested depending on the public interest in the project
- c. The proponent shall also consult with other relevant agencies and stakeholders during the scoping process. A Checklist for scoping consultation is provided in Annex IV.
- d. If the data available is inadequate, the proponent may be required to undertake specific studies to fill data gaps. After consideration of (a) and (b) above, the Ministry shall define the scope of the EIA required.

Thereafter, the proponent shall undertake the Biophysical EIA study according to the ToR agreed with the Ministry.

4.1 Environmental Baseline Study

The Proponent shall conduct a baseline environmental assessment during scoping to identify the impact of the proposed project on the existing biophysical components within and around the project location.

The baseline study shall involve:

- i. collection of existing and new acquisition of data on aspects of the physical and biological components of the environment such as on climate data, air quality, water quality, hydrology, geology, soil, land-use agriculture and acoustic, etc. that could be affected by any developmental stage of the proposed project. Consideration should be given to parameters that may require seasonal variation;
- ii. Gathering of information on existing use of some environmental resources in terms of quality of physical environment, water and soil quality as well as the existing land use.
- iii. Identification of the location and effect of the activity of the project in relation to all valued environmental resources such as water bodies, vegetation and animals. The presence and proximity of Environmentally Sensitive areas (ESAs) shall be considered.

4.2 Establishing a Zone of Influence for the Project

The proponent shall establish the receiving environment for the activities associated with the project and the biophysical changes that are likely to result based on the nature of the proposed project. The zone of influence shall be an estimated effect area over which the change is likely to occur. The proponent should map the location of the various activities of the proposed project and their effect areas.

Zones within which noise is expected to increase; the anticipated locations of drainage outfalls and the receiving watercourses shall be mapped out by the proponent. The proponent shall also identify the ecological areas and features (i.e. the ecological resources/receptors)

likely to be affected by the project. The zone of influence should be reviewed as the project develops, through each of the project management phases.

4.3 Impact Assessment

The proponent shall identify and assess all potential impacts of the project on the biophysical components of the environment. Predicting the likely impacts of a project requires a thorough understanding of the developmental activities and project programme. The proponent, in assessing the possible impacts of the project shall acquire all relevant information on activities associated with operations that are likely to cause biophysical changes in its spatial extent, timing, frequency and duration. The project proponent shall ensure that all significant impacts and reasonable alternatives are addressed.

In assessing the potential impacts of the proposed project, the proponent shall take into consideration direct impact expected to result from every phase of development; site preparation, construction, operation and decommissioning of equipment.

Method employed must be able to interpret the level of impacts such as on a quantitative scale to describe the severity of impacts. Indirect and cumulative impacts must also be considered and assessed. To identify and assess the potential impacts, the proponent shall

- i. Evaluate the baseline environmental assessment, the initial environmental examination; climatic conditions, habitation and presence study appropriately.
- i. sufficient knowledge of the project activities, operational procedures, equipment types
- ii. baseline and preliminary assessment of the environmental components of the study area, including climatic information resource use: e.g. water sources (their uses and abundance), land uses, vegetation, ecological status (e.g. species abundance and diversity of plants and animals)
- iii. consultation with experts from diverse fields with sufficient experience in BIA
- iv. Make reference to previous BIA studies in similar projects.

4.4 Prediction of Impact

Prediction of impact shall cover all aspect of the environment that the development of the project may cause and all biological receptors outlined in Annex V. Impact should be quantified wherever possible or fully described where quantifying may be difficult. Although, impacts will vary depending on the nature of the project as a result of the project-specific nature of biophysical impact assessment, the following general parameters should be considered:

- i. Nature (positive, negative, indirect, direct) of impact.
- ii. Magnitude of impact. i.e. probable degree of severity
- iii. Prevalence. i.e. likely extent of impact
- iv. Duration and frequency (short term, long term, intermittent, continuous) of impact.
- v. Extent and location (area/volume covered, where impact occurs).
- vi. Whether impacts are reversible or permanent.
- vii. Timing (during all phases of the project).
- viii. Likelihood (risk, uncertainty or confidence in prediction).
- ix. Significance (local, regional, global). See Annex VI for a Checklist for evaluating the significance of the project and
- x. Ecological functions and structure of the environment. See Annex VII for a Checklist of the ecological functions and structure to be considered.

See Annex VIII for a list of potential biophysical impacts.

5.0 Impact Mitigation

To mitigate the impact of the proposed project on the environment, the following should be taken into consideration.

1. The Proponent shall consider all strategies for ameliorating impacts both for the individual project action and collectively.
2. Mitigation measures should be incorporated into project design from an early stage
3. Mitigation shall take into consideration where project may need to be modified, where compensation to the community is to be made and provision of alternatives where there will be waste disposal or emission of dangerous pollutants

4. Mitigation measures shall state clearly the extent to which mitigation will be effective, period and how mitigation will be carried out
5. Data from baseline assessment should be included in the report to validate proposed mitigation measures

Mitigation measures shall include:

- a) Engineering works in noise reduction, prior treatment of effluent, air pollution reduction measures and solid waste minimization through reclamation, recycling and any other appropriate measures and
- b) Management measures especially in areas of natural resources, reforestation, control of soil erosion, desalinization and de-silting.

6.0 Environmental Management Plan (EMP)

The project Proponent shall develop an EMP which will be implemented to mitigate and monitor identified impacts of the proposed project. The EMP should encompass all potential impacts of the proposed project on the environment and the Proponent commitments on how those impacts shall be resolved, managed or minimised.

The EMP should address the following:

- i. identification of environmental sensitivities;
- ii. identification of potential significant impacts;
- iii. adoption of design measures or operational procedures that minimises impacts to acceptable levels;
- iv. establish emergency and contingency plans
- v. monitoring the effectiveness of environmental protection; and
- vi. auditing the success of overall strategy

A summary of project phase and corresponding action to implement an EMP is described in Appendix IX.

7.0 Biophysical Assessment Process

7.1 Project Biophysical Description

The proponent shall provide the information for environmental setting of the proposed project area. The information should include at a minimum the following:

- i. Physical landscape assessment – topography, soil and geology;
- ii. Hydrology – presence of wetlands and water bodies such as drainage corridors, streams, creeks, and rivers;
- iii. Habitat types;
- iv. Landscape Ecology assessment – wildlife corridors, habitat connections, and unique features;
- v. database research results on the potential presence of listed species at risk, species of special status or rare communities.

The distance to the biophysical indicator categories listed should be given in meters. The measurement should be taken from the actual project activity location to the edge of the biophysical element. The distance threshold of 50 meters should be employed for decision-making purposes in deciding for further levels of BIA assessments.

7.2 Biophysical Impact Assessment Requirements Criteria

- a. Projects that have the potential to incur in negative impacts to identified Environmentally Significant Areas (ESA), Natural Environment Parks (NEP), and natural areas that qualify as Environmental Reserve (ER) will require at least a Preliminary Natural Site Assessment.
- b. Any proposed project that is intended to be developed on a land containing or abutting identified Environmentally Significant Areas (ESA) will require a Level 3 Biophysical Impact Assessment.
- c. Any channelization, utility crossing, within a natural environment park (NEP) will require a Level 3 Scoped Biophysical Impact Assessment.

- d. Size and the regional context of the project. Larger project that has the potential for impacts of a regional scale will require a Preliminary Natural Site Assessment.
- e. Distance of the project to the ESA, NEP, and ER with a maximum distance of 50m. Projects within 50m of the ESA, NEP, and ER will require a Preliminary Natural Site Assessment.

A table showing some project examples requiring different levels of review can be found in Annex x.

7.3 Levels of Biophysical Impact Assessment

The Biophysical impact assessment process entails three levels of environmental review.

- a) Level 1 requires an initial project review i.e. Preliminary Natural Site Assessment (PNSA)
- b) Level 2 requires an environmental Screening
- c) Level 3 requires Scoped Biophysical Impact Assessment

The level of assessment required is dependent on the type of project and nature of existing environment.

7.3.1 Level 1: Initial Review (Preliminary Natural Site Assessment)

The initial project review provides an overview of the proposed project and the existing environment to determine the level and extent of any further requirements for environmental review. The Checklist is divided into two distinctive categories – Project Description and Baseline Information and Potential Environmental Effects.

Project Description and Baseline Information is used to collect relevant information on the existing environmental elements found within the project site and provide direction for further environmental assessments and reports required.

Potential Environmental Effects category is used to document the potential project effects of the biophysical elements – if there are any project interaction; brief description of the

interactions; level of interaction; the type of interaction and brief description of potential adverse environmental effect.

The project proponent conducts a Preliminary Natural Site Assessment (PNSA) and completes an impact Checklist. Air photos, concept drawings, and site checks shall be required.

The PNSA can be used by project managers and project proponents as a preliminary decision-making tool to assist in determining the need to prepare Biophysical Impact Assessment.

A table on PNSA to guide project proponents in a more streamlined decision-making whether the need for further environmental assessment is required is in Annex xi.

7.3.2 Level 2: Environmental Screening (ES)

The Environmental Screening (ES) is a level of study describing the project impacts, including project alternatives, in a manner that ensures mitigation of known or suspected impacts to the environment. Upon completion, there shall be prepared an ES report. The ES report will:

- outline the rationale for the project;
- explore the alternatives that have been investigated;
- describe the existing environment including the biophysical and socio-economic elements; and
- describe both short- and long-term environmental effects and mitigation measures.

The Ministry shall review the ES report and provides approval with or without conditions depending on report quality, acceptance of the recommended mitigation measures.

See Annex xii for guide and requirements of environmental screening.

7.3.3 Level 3: Scoped Biophysical Impact Assessment (Scoped BIA)

The Scoped Biophysical Impact Assessment provides a detailed study and review of a project including project alternatives, and recommended mitigation measures. It predicts, interprets

and evaluates impacts and identifies mitigation measures to avoid, minimize or compensate for these impacts. A Biophysical Impact Assessment report must:

- a. describe the proposed activity and provide rationale, including alternatives considered;
- b. describe the existing environment;
- c. predict and analyse the possible effects of the activity on the environment;
- d. recommend mitigation measures that would avoid, minimize or compensate for the environmental impacts of the activity; and
- e. describe how mitigation measures will be monitored over time to ensure effectiveness.

Scoped Biophysical Impact Assessment is based on project specific conditions and interactions with the existing natural elements within the project site, therefore the issues and project needs to be addressed will vary based on the nature of the proposed project.

A scoped BIA is generally similar to an environmental screening except that the Scoped BIA provides more detailed information and requires an environmental protection plan.

The Biophysical Impact Assessment should provide a clear assessment methodology that will lead to specific recommendations. Tools employed should provide feasible rationale for recommending specific mitigation measures. Such tools shall include but are not limited to matrix evaluation, Checklist evaluation, ecological land classification and valued ecosystem components. See Annex xiii for table on the components of scoped BIA.

7.4 Where Biophysical Impact Assessment will not be required

A preliminary natural site assessment and subsequent Biophysical Impact Assessment will not be required in the following circumstances

- a. Where an Environmentally Significant Area is nowhere near the project site (within 50m-500m radius)
- b. Where no water body is present on the project site

- c. Where wetlands are not present on the project site
- d. Where the presence of contaminated sites is unlikely
- e. Where the presence of the rare species/species-at-risk is unlikely (previous confirmation or demonstrated lack of habitat)
- f. Where there are no areas with habitat value
- g. Where the project is within the urban area

7.5 Seasonality

All biophysical assessments should be conducted during the appropriate growing season (growing season shall be determined based on the peculiarity of the climatic conditions of the year of the proposed project) to ensure that the data acquired are representative of the biophysical features and capture adequate information on the seasonally-dependant species such as the rare species and/or species at risk within the project area.

The Preliminary Natural Site Assessment may be prepared outside the growing season with synthesis of existing background information on the particular project site and a desk-top research. Further environmental assessment such as the Environmental Screening and Scoped BIA will require in-depth biophysical inventories and assessments conducted during the appropriate season to ensure that the required information and data are captured accurately.

8.0 Draft Biophysical EIA Report

The Proponent shall draft a Biophysical EIA where a scoped Biophysical Impact Assessment was carried out or an Environmental screening report as the case may be. The proponent shall submit at least ten (10) copies of the draft Biophysical EIA report to the Ministry for review. The report should be clear, comprehensive, addressing only relevant issues and objective. It should include descriptive details of the project area including photographs and map(s) showing the study area as well as spatial relationships of the environmental features in the study area.

See Annex XIV for a sample BIA report format.

9.0 Review Process

Upon receipt of the draft Biophysical EIA report from the proponent, the Ministry shall review the draft BIA report. The review can be done through:

- i. an In-House Review;
- ii. A technical Review Panel or
- iii. By Public Review. This shall include a 21 days public display of the Biophysical EIA report at the Local Government Area, State Ministry of Environment or at the Headquarters of the Federal Ministry of Environment. The public shall be invited to participate through newspaper advertisements.

The Ministry may also visit the site of the proposed project. The Ministry shall inform the proponent of the selected review method(s) within 15 working days of receipt of the draft report.

The selected review method(s) shall be implemented and the related comments furnished within a minimum period of one (1) month after the review process.

The final BIA report shall incorporate all issues raised during the review process and solutions proffered to them by the proponent, including any amendments to the report of the BIA.

9.1 Conditions of Approval

Following the submission of a satisfactory final EIA report, the Ministry, may in consultation with the proponent set a number of conditions. Such conditions may provide for the establishment of a follow-up programme (mitigation compliance and monitoring plan) with specified tasks to be undertaken in the construction, operational and decommissioning phases of the development. By mutual agreement, a monitoring strategy and audit procedure may also be determined at this early stage, so that the proponent can make the necessary budgetary provisions well in advance. Penalties as stipulated in the EIA Act, 1992 may also be invoked for failure to adhere to the conditions of approval.

9.2 Criteria for Disapproval

The criteria for disapproval shall include non-compliance with the provisions of this guideline, other relevant national guidelines and regulations as well as the environmental unsustainability of the project.

9.3 Stages of Disapproval

Stage I: If the comments from the review process are not favourable, the raised shall be addressed and a revised draft Biophysical EIA report submitted to the Agency.

Stage II: In the event of the receipt of an unsatisfactory final report, a “No Project” option decision may be taken by the Ministry and such decision shall be communicated to the proponent.

10.0 Final BIA Report

The final Biophysical Impact Assessment report shall be submitted to the Agency within 6 months of the receipt of the Ministry’s comments failing which the Ministry may request for a revised and upgraded BIA report.

11.0 Technical Committee/Decision Making

The Technical Committee of the Ministry, under the supervision of the Ministry, is the decision making body on approval or disapproval of Biophysical EIA reports. Upon receipt of satisfactory comments from the review process, and an acceptable final EIA report is submitted, the Technical Committee shall consider and approve the issuance of an Environmental Impact Statement (EIS). The EIS shall be issued as appropriate within a minimum of one month of the receipt of the final report in the Ministry.

12.0 Certification

Upon receipt of an EIS, the Minister shall issue a certificate. The Agency shall publish its decision in manner by which members of the public shall be notified in accordance with the decree.

13.0 Project Implementation

After certification, the Proponent may proceed to implement the project, in accordance with all the stipulated mitigation measures as contained in the final Biophysical EIA Report. The proponent, in implementing the project shall also conform to the stipulated specifications presented in the final Biophysical EIA report. In the event of the project not being commissioned within the validity period provided in the certificate, the proponent shall seek revalidation of the certificate from the Ministry by re-submitting a revised and upgraded EIA report.

14.0 Mitigation Compliance Monitoring (Prior to Commissioning)

During the implementation of the project, the Ministry shall monitor the progress of the project from site preparation to commissioning in order to ensure compliance with all stipulated mitigation measures and project specifications.

15.0 Environmental Auditing (Post Commissioning)

This involves a periodic assessment of the positive and negative impacts of the project. This shall be carried out by the Ministry to help improve the Biophysical EIA process. The Ministry shall also prepare the consultative terms of reference for undertaking the environmental audit.

16.0 Processing and Certificate Fee

The processing fee as well as the certificate fee shall be computed and charged by the ministry as appropriate. This shall be paid before issuance of EIS and Certificate.

Annex i

Outline of Information Content Required for Project Proposals

1. A Concise Description of the Project

(a) Preliminary information

- Project title
- Proponent
- Contact Person (name/telephone)
- Nature of the project
- Location (include plans if possible)

(b) Comment on any activities involved in construction/operation which may result in the following:

- gaseous emissions
- dust
- odour
- noisy operations
- liquid effluents/discharges
- night time operations
- traffic generation
- waste and/or by-products generated
- storage/disposal of hazardous goods
- disposal of spoil materials
- risk of accidents resulting in pollution or hazard
- visual impact

(c) This section should include an outline of the processes involved, process flow diagrams, site plans, general arrangement plan, elevations and storage and emission inventories (both point source and fugitive with source and location).

2. An Outline of the Planning and Implementation Programme

(a) How will the project be planned and implemented?

e.g. consultants/contractor/in-house

(b) What is the project time table for:

- appointing consultants/authorized person?
- initiating submissions to Government?
- finalising designs?
- Implementation?
- completion/commencing operation?

(b) Are there any interactions with other projects which should be considered?

3. An Outline of the Major Elements of the Surrounding Environment which Might be Affected

(a) Consider –

- Residential development
- Air-sheds with limited dispersal
- Temporary housing areas
- Schools, hospitals, homes, for the aged
- Country parks
- cultural features
- site of specific interest
- site of archaeological interest
- Beach
- Water Gathering Ground
- Groundwater resources
- Fisheries/mariculture areas
- Industries sensitive to pollution (e.g. dust)

(b) This section should identify environmentally sensitive areas and should include plans showing the location of community elements which may be affected

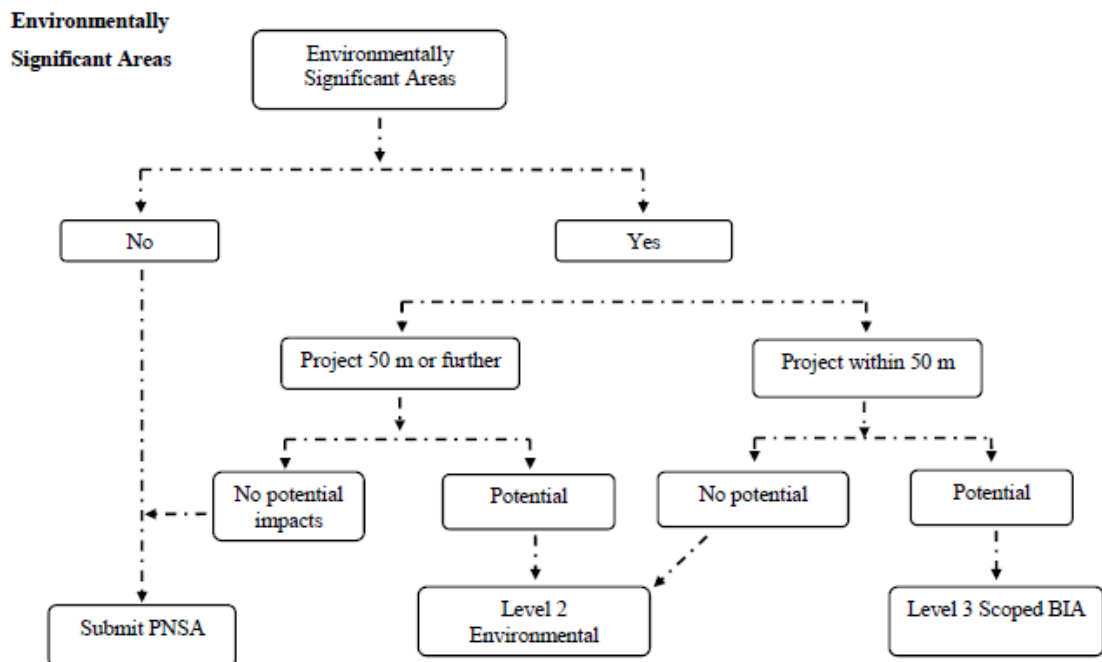
4. Comment on Environmental Protection Measures incorporated in the design and any further Environmental Implications

Consider:

- Contractual controls
- Beneficial/adverse effects
- Short/long effects
- Secondary/induced effects
- Cumulative effects
- Magnitude and distribution of effects
- History of similar projects
- Public Consultation to date
- Sensitivity/Public interest
- Ability to mitigate adverse environmental consequences
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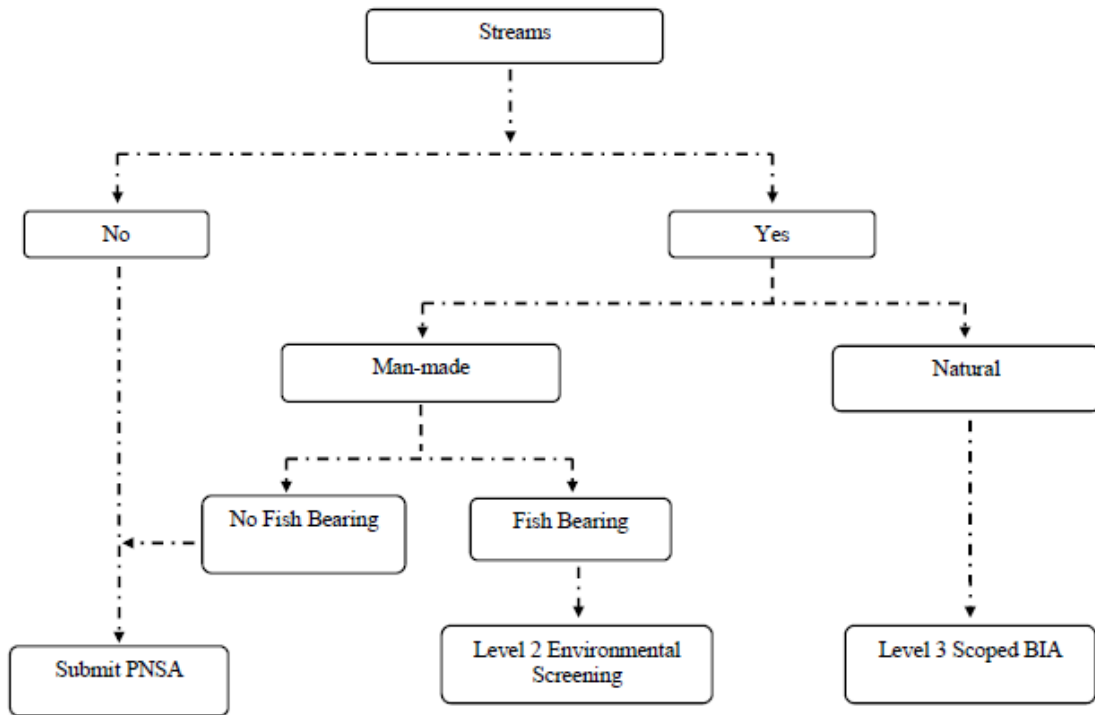
5. Proceedings of consultations and comments with other stakeholders in a public forum

ANNEX ii: Decision Making Flowcharts for BIA



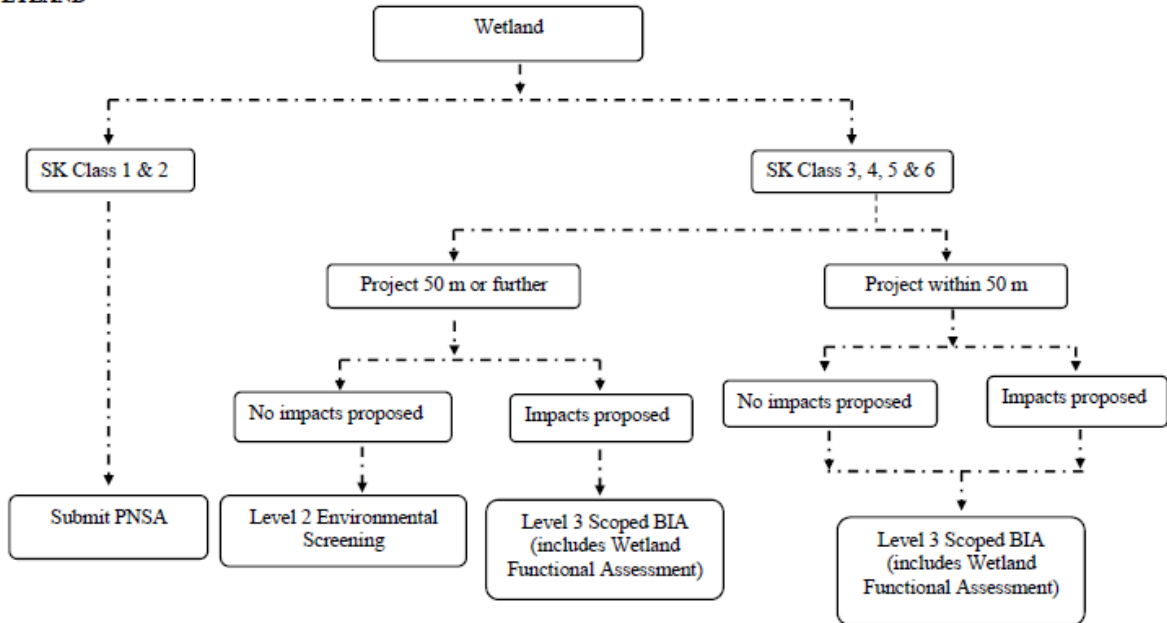
Flowchart 1 Decision-making tool to arrive at the required environmental assessment when considering ESAs

STREAMS



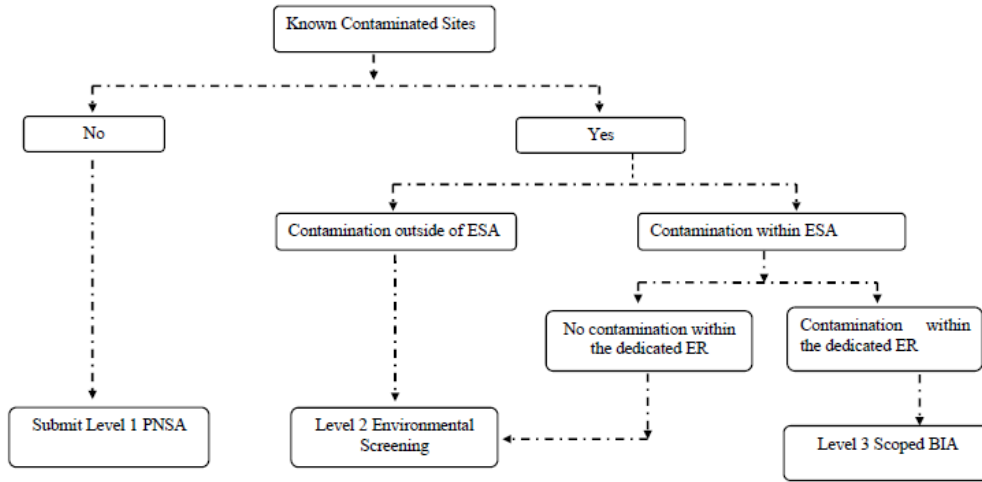
Flowchart 2 Decision-making tool to arrive at the required environmental assessment when considering Streams

WETLAND



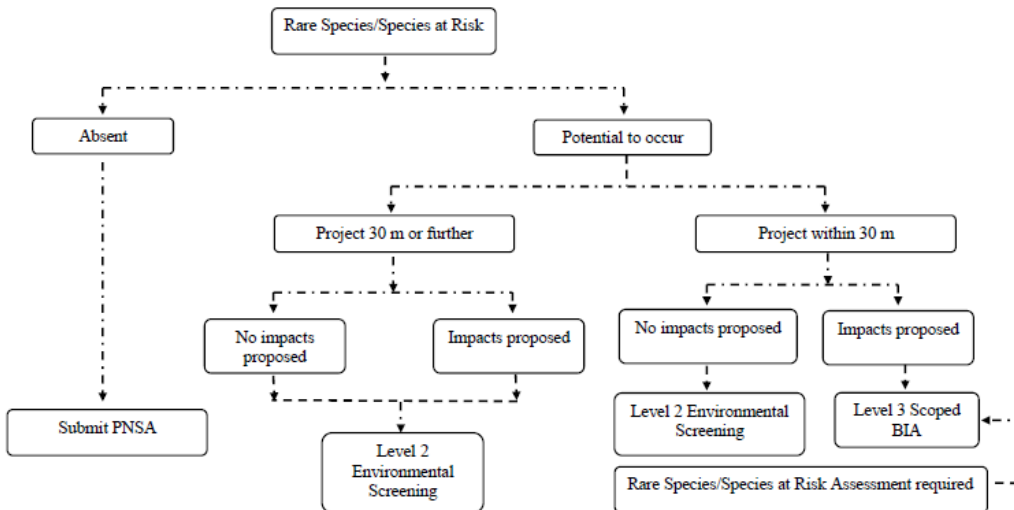
Flowchart 3 Decision-making tool to arrive at the required environmental assessment when considering Wetlands

KNOWN CONTAMINATED SITES



Flowchart 4 Decision-making tool to arrive at the required environmental assessment when considering Known Contaminated Sites

RARE SPECIES/SPECIES AT RISK



Flowchart 5 Decision-making tool to arrive at the required environmental assessment when considering Rare Species/Species at Risk

Annex iii
Biophysical Screening Checklist

Questions to be considered	Yes/No? describe	Briefly	Is this likely to result in a significant effect? Yes/No/? Why?
Brief Project Description:			
1. Will construction, operation or decommissioning of the Project involve actions which will cause physical changes in the locality (topography, land use, changes in water bodies, etc.)?			
2. Will construction or operation of the Project use natural resources such as land, water, materials or energy, especially any resources which are non-renewable or in short supply?			
3. Will the Project involve use, storage, transport, handling or production of substances or materials which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health?			
4. Will the Project produce solid wastes during construction or operation or decommissioning?			
5. Will the Project release pollutants or			

	any hazardous, toxic or noxious substances to air?		
6.	Will the Project cause noise and vibration or release of light, heat energy or electromagnetic radiation?		
7.	Will the Project lead to risks of contamination of land or water from releases of pollutants onto the ground or into surface waters, groundwater, coastal waters or the sea?		
8.	Will there be any risk of accidents during construction or operation of the Project which could affect human health or the environment?		
9.	Are there any areas on or around the location which contain important, high quality or scarce resources e.g. groundwater, surface waters, forestry, agriculture, fisheries, tourism, minerals, which could be affected by the project?		
10.	Are there any other factors which should be considered such as consequential development which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activities in the locality?		
11.	Are there any areas on or around the location which are protected under international or national or local		

	legislation for their ecological, landscape, cultural or other value, which could be affected by the project?		
12.	Are there any other areas on or around the location which are important or sensitive for reasons of their ecology e.g. wetlands, watercourses or other water bodies, the coastal zone, mountains, forests or woodlands, which could be affected by the project?		
13.	Are there any areas on or around the location which are used by protected, important or sensitive species of fauna or flora e.g. for breeding, nesting, foraging, resting, overwintering, migration, which could be affected by the project?		
14.	Are there any inland, coastal, marine or underground waters on or around the location which could be affected by the project?		
15.	Are there any areas or features of high landscape or scenic value on or around the location which could be affected by the project?		
16.	Are there any routes or facilities on or around the location which are used by the public for access to recreation or other facilities, which could be affected by the project?		
17.	Are there any transport routes on or		

	around the location which are susceptible to congestion or which cause environmental problems, which could be affected by the project?		
18.	Are there any areas on or around the location which are already subject to pollution or environmental damage e.g. where existing legal environmental standards are exceeded, which could be affected by the project?		
19.	Is the project location susceptible to earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions e.g. temperature inversions, fogs, severe winds, which could cause the project to present environmental problems?		

Annex iv: Table for Biophysical Scoping Consultation

S/N	Environmental Component	Agency/Source of Information	Impact Indicators
1.	Water	Water Resources Act, Cap W2, LFN 2004 Sea Fisheries Act, CAP S4, LFN 2004 Inland Fisheries Act, Cap I10, LFN 2004	Water Quality Assessment Surface water hydrology and channel morphology; surface water quality; Ground Quality Hydrology; Ground Water Quality
2.	Air	Harmful Waste (Special Criminal Provisions) Act Cap H1, LFN 2004 Associated Gas Re-Injection Act, CAP20, LFN 2004 Oil in Navigable Waters Act, Cap 06, LFN 2004	Ambient Air Quality; Regional Air Quality
3.	Land, Soil	Land Use Act Petroleum Act, CAP P10, LFN 2004 Hydrocarbon Oil Refineries Act, CAP H5, LFN 2004	Landscape; Soil Quality; Geology, Waste Generation
4.	Fauna and Flora	The Endangered Species Act, cap E9, LFN 2004.	Aquatic Ecology; Terrestrial Ecology

Annex v: Biophysical Receptor Groups of Developmental Impact

Flora and Fauna	<ul style="list-style-type: none"> • Population • Housing • Nuisance (Noise and vibration) • Pollution • Architectural and archaeological heritage • Health and safety • Visual Impact • Local transport
Flora and Fauna	<ul style="list-style-type: none"> • Plant and Animal communities • Individual species • Habitats • Biodiversity
Water	<ul style="list-style-type: none"> • Surface water hydrology and quality • Ground water resources and quality • Water cycle • Coastal/Estuarine
Soil	<ul style="list-style-type: none"> • Geology • Agricultural and quality • Alteration of geomorphology • Accumulation of heavy metals and persistent organic pollutants
Land	<ul style="list-style-type: none"> • Land use/ Land cover • Landscape character and quality • Landform/ topography • Deforestation • Afforestation • Removal of bedrock • Loss of mineral deposits • Loss of non-renewable resources
Air quality	<ul style="list-style-type: none"> • Particulate matter emissions • Heat, chemical, odorous and gaseous

	<p>emissions</p> <ul style="list-style-type: none"> • Alteration of airflow • Acid deposition • Reduction in sunlight • Ozone levels • Carbon dioxide levels
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Annex vi: Checklist for Evaluating Significance of Impact

- i.** Will there be a large change in environmental conditions?
- ii.** Will new features be out-of-scale with the existing environment?
- iii.** Will the effect be unusual in the area or particularly complex?
- iv.** Will the effect extend over a large area?
- v.** Will there be any potential for trans-border impact?
- vi.** Will many people be affected?
- vii.** Will many receptors of other types (fauna and flora, businesses, facilities) be affected?
- viii.** Will valuable or scarce features or resources be affected?
- ix.** Is there a risk that environmental standards will be breached?
- x.** Is there a risk that protected sites, areas, and environmental features will be affected?
- xi.** Is there a high probability of the effect occurring?
- xii.** Will the effect continue for a long time?
- xiii.** Will the effect be permanent rather than temporary?
- xiv.** Will the impact be continuous rather than intermittent?
- xv.** If it is intermittent will it be frequent rather than rare?
- xvi.** Will the impact be irreversible?
- xvii.** Will it be difficult to avoid, or reduce or repair or compensate for the effect?

Annex vii:

Typical Aspects of Ecological Structure and Function to Consider When Predicting Impacts

Available resources	Territory: hunting/foraging grounds; shelter and roost sites; breeding sites; corridors for migration and dispersal; stop-over sites. Food and water (quantity and quality). Soil minerals and nutrients and hydrochemistry. Solar radiation and gaseous resources
Stochastic processes	Flooding, drought, wind blow and storm damage, disease, eutrophication, erosion, deposition and other geomorphological processes, fire and climate change.
Ecological processes	Population dynamics: population cycles; survival rates and strategies; reproduction rates and strategies; competition; predation; seasonal behaviour; dispersal and genetic exchange; elimination of wastes. Vegetation dynamics: colonisation; succession; competition; and nutrient-cycling.
Human influences	Animal husbandry, cutting, burning, mowing, draining, irrigation, culling, hunting, excavations, maintenance dredging, earth shaping, ploughing, seeding, planting, cropping, fertilising, pollution and contamination, use of pesticides and herbicides, introduction of exotics, weeds and genetically

	modified organisms and disturbance from public access and recreation, pets and transport
Ecological relationships	Food webs, predator-prey relationships, herbivore-plant relationships, herbivore-carnivore relationships, adaptation, and dynamism.
Ecological role or function	Decomposer, primary producer, herbivore, parasite, predator, keystone species.

Annex viii: Potential Biological Impacts

Potential Biophysical Impacts					
Environmental Element	Project Interaction? Y/N/U	Description of Interaction (How, When, Where)	Significance Rating High/Med/Low	Type of Potential Impact	Potential Adverse Impact
Topography					
Hydrogeology					
Aquatic Resources					
Geology/ Geomorphology					
Soils and terrain					
Vegetation					
Wildlife and					

Wildlife habitat					
Fish and fish habitat					
Species of Special status (within the State, Local, National)					
Species at Risk (Federal-SARA)					
Historical & Archaeological					
Land and Resource use					

Annex ix: Project Phase Cycle and Required Action

S/N	Project Phase	Required Action
1.	Project design	Review design compliance with EMP and regulations
2.	Project planning and scheduling	Setting up of an environmental focal point
3.	Contingency planning	Training, plan development and implementation
4.	Project mobilization	Supervision of the process
5.	Construction phase supervision	Supervision of the process
6.	Operations and maintenance phase supervision	Supervision including inspection, monitoring and auditing of activities
7.	Project Decommissioning	Post project monitoring and auditing

Annex x: Project Examples Requiring Different Levels of Review

Level of Environmental Review	Type of Project	Nature of Existing Environment	Examples
No Environmental Review Required	Minor maintenance or upgrading projects which imply no change in existing use	In previously disturbed areas. Project is not foreseen to have significant environmental effects	Minor amenity replacements; repairs to granular trails
Initial Project Review Required - PNSA	Minor maintenance, upgrading or construction projects which imply no change in existing use	In potentially sensitive areas (e.g., vegetative cover, wildlife corridor). Potential impacts are small and easily mitigated	Regional pathway upgrade in a NEP, MCI Project, RCS,
Environmental Screening Report Required	Maintenance or construction which may imply a change in existing use	In potentially sensitive areas. Environmental effects and mitigation measures may be unknown	ASP, ARP & Outline Plans, Natural Environment Park Management Plan
Biophysical Impact Assessment Required	Large-scale capital works, excavation, new construction that implies a change in existing use	In potentially sensitive areas. Environmental effects and mitigation measures may be unknowns	Large Capital Projects, Outline Plans, Federal and Provincially funded Projects

Annex xi : Table for Preliminary Natural Site Assessment

Project Description and Baseline Information			
	Project Name		Project Size
	Project Description		

	Location (legal, street address). Provide map, air photos			
	Project Construction Date			
Project	Proposed Construction Date		Estimated Completion Date	
			PNSA Date	PNSA Performed By

	Internal Projects		
	Project Manager/ Engineer		
	Division/Business Unit		
	Estimated Project		Project Funded By
Project	Description of Biophysical Elements		

	<p>Location of Project in Proximity to (in metres):</p> <ul style="list-style-type: none"> • Environmentally Significant Areas <ul style="list-style-type: none"> ○ Patch of native vegetation ○ Streams ○ Wetland • Spatially Continuous Wildlife Corridor • Unique landscape feature • Known Contaminated Site 	<p style="text-align: right;">(Refer to ESA chart)</p> <hr/> <hr/> <p style="text-align: right;">(Refer to Water body chart)</p> <hr/> <p style="text-align: right;">(Refer to Wetland chart)</p> <hr/> <hr/>
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		(Refer to Contaminated Site chart)
	Presence of listed species at risk or species of special status (plant and/or wildlife) or habitat located within the project area	(Refer to Rare Species/Species At Risk chart)
Regulatory Information	Has the proponent consulted with relevant State, Local and Federal departments/agencies? Are there issues of concern? (explain)	(If Yes, Scoped BIA required)

Annex xii: Components of Environmental Screening

Environmental Screening

Executive Summary

1. Introduction

- ❖ Project Overview
- ❖ Regulatory Information Requirements
- ❖ Environmental Assessment Scope
- ❖ Related Documents and Plans

2. Project Description

- ❖ Project Need
- ❖ Project Setting / Site Description (location, surrounding land use, etc.)
- ❖ Scope of Work (design considerations, extent of alteration/construction, duration or work)
- ❖ Alternatives (concept/design alternatives and location)
- ❖ Review of Project Alternatives
- ❖ Impact Assessment of Project Alternatives
- ❖ Evaluation of the Recommended Alternative with the Least Environmental Impacts

6. Mitigation Measures

- ❖ Accepted methods – Avoidance and/or Best Management Practices
- ❖ Recommended Mitigation Measures

8. Environmental Monitoring And Follow-Up

- ❖ Environmental Monitoring (monitoring during construction, routine operations monitoring)
- ❖ Follow-up Programs – preparation of Restoration Plans

9. Environmental Protection Plan

- ❖ ECO Plan may be required if ESA is impacted by the project

10. Conclusion And Recommendations

- ❖ Summary of Significant Environmental Impacts, Recommended Project Alternatives and Recommended Mitigation Measures
- 41 ❖ Summary of Outstanding Issues and Concerns

Appendices

4. Existing Environment

- ❖ General Description
- ❖ Biophysical Inventory: vegetation; wildlife and wildlife habitat; aquatic resources; fish and fish habitat; geology/geomorphology; soils and terrain; hydrogeology
- ❖ Heritage resources; land use; traditional land and resource use; visual resources

5. Impact Assessment Methods

- ❖ Approach to the Assessment
- ❖ Scoping the Assessment
- ❖ Spatial and Temporal Extents
- ❖ Assessment of Effects
- ❖ Determining Significance of Effects

- ❖ Preliminary Natural Site Assessment
- ❖ Technical Data (i.e., fish, vegetation sampling data)
- ❖ Restoration Plan
- ❖ Erosion and Sediment Control Plan
- ❖ Photographs, Maps, Illustrations
- ❖ Historical Resources Impact Assessment

Annex xiii : Components of Scoped BIA

Phase 3: Scoped Biophysical Impact Assessment

Executive Summary

1. Introduction

- ❖ Project Overview
- ❖ Environmental and Land Use Overview
- ❖ Regulatory Information Requirements
- ❖ Environmental Assessment Scope
- ❖ Related Documents and Plans

2. Project Description

- ❖ Project Need
- ❖ Project Setting / Site Description (location, surrounding land use, etc.)
- ❖ Scope of Work (design considerations, extent of alteration/construction, duration or work)
- ❖ Environmental Constraints
- ❖ Alternatives (concept/design alternatives and location)

3. Regulatory Approvals

- ❖ Federal and Provincial Regulatory Approvals

- ❖ Assessment of Effects
- ❖ Determining Significance of Effects
- ❖ Cumulative Effects in relation to the lands within the Regional Context Study area
- ❖ Follow-up and Monitoring

7. Mitigation Measures

- ❖ Accepted methods – Avoidance, Minimization, Compensation and/or Best Management Practices
- ❖ Recommended Mitigation Measures – Based on site-specific requirements
 - Wetlands – No Net Loss of Wetland Function
 - Conservation Design
 - Slope Adaptive Designs
- ❖ Monitoring of Mitigation Measures

8 Environmental Monitoring and Follow Up

- ❖ Environmental Monitoring (monitoring during construction, routine operations monitoring)
- ❖ Follow-up Programs

4. Existing Environment

- ❖ General Description
- ❖ Biophysical Inventory: vegetation; wildlife and wildlife habitat; aquatic resources; fish and fish habitat; geology/geomorphology; soils and terrain; hydrogeology
- ❖ Heritage resources; land use; traditional land and resource use; visual resources

5. Construction and Engineering

- ❖ General Description (including methods of construction, duration)
- ❖ Options Alternatives (concept/design alternatives and location)
 - Review Project Alternatives
 - Impact Assessment of Project Alternatives
 - Evaluation of the Recommended Alternatives with the Least Environmental Impacts
- ❖ Proposed Construction Components and Techniques (including site preparation, access, lighting)

9. Environmental Protection Plan And Eco Plan

- ❖ Summary of the plan to demonstrate the minimization of project impacts
- ❖ Tree Protection Plan for Natural Environment Parks and ESAs
- ❖ ECO Plan may be required the project is within 50 m of and within the ESA

10. Conclusion and Recommendations

- ❖ Summary of Significant Environmental Effects and Recommended Mitigation Measures
- ❖ Summary of Outstanding Issues and Concerns

Appendix

- ❖ Technical Data (i.e., flora and fauna sampling data)
- ❖ Wetland Delineation and Classification Report
- ❖ Restoration Plan
- ❖ Photographs, Maps, Illustrations
- ❖ Historical Resources Impact Assessment

- ❖ Proposed Scheduling (including timing, phasing)

6. Assessment methods

- ❖ Approach to the Assessment
- ❖ Scoping the Assessment
- ❖ Spatial and Temporal Extents

Annex xiv: Sample BIA report format

- i. Executive Summary
- ii. Introduction
- iii. Legislative Framework
- iv. Project Justification
- v. Project and Process Description
- vi. Description of Existing Environment (climate/meteorology, Air quality, water quality, soil/land use/agricultural use, geology, geomorphology and hydrology, benthos, plankton, vegetation, wildlife and waste inventory)
- vii. Environmental Impacts and Mitigation Measures/ Alternatives
- viii. Environmental Management Plan (EMP)
- ix. Decommissioning
- x. Conclusion
- xi. Biography
- xii. Appendices

Bibliography

African Development Bank. 2001. ‘Environmental and Social Assessment Procedures: Public Sector Operations of the African Development Bank.

European Commission (2001). Guidance on EIA Scoping

Science, Energy, Environmental Management Systems (SEEMS), 2004 *Environmental Monitoring and Impact Assessment* – ‘Proceedings of an International Workshop’ Frimay Press, Lagos. Eds.Oluwole A.F., Obioh I.B., et al

The World Bank Operational Policies (OP 4.01). “Environmental Assessment