

# Environmental Impact Assessment Guidelines



## Volume 5 - Forestry

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## Summary

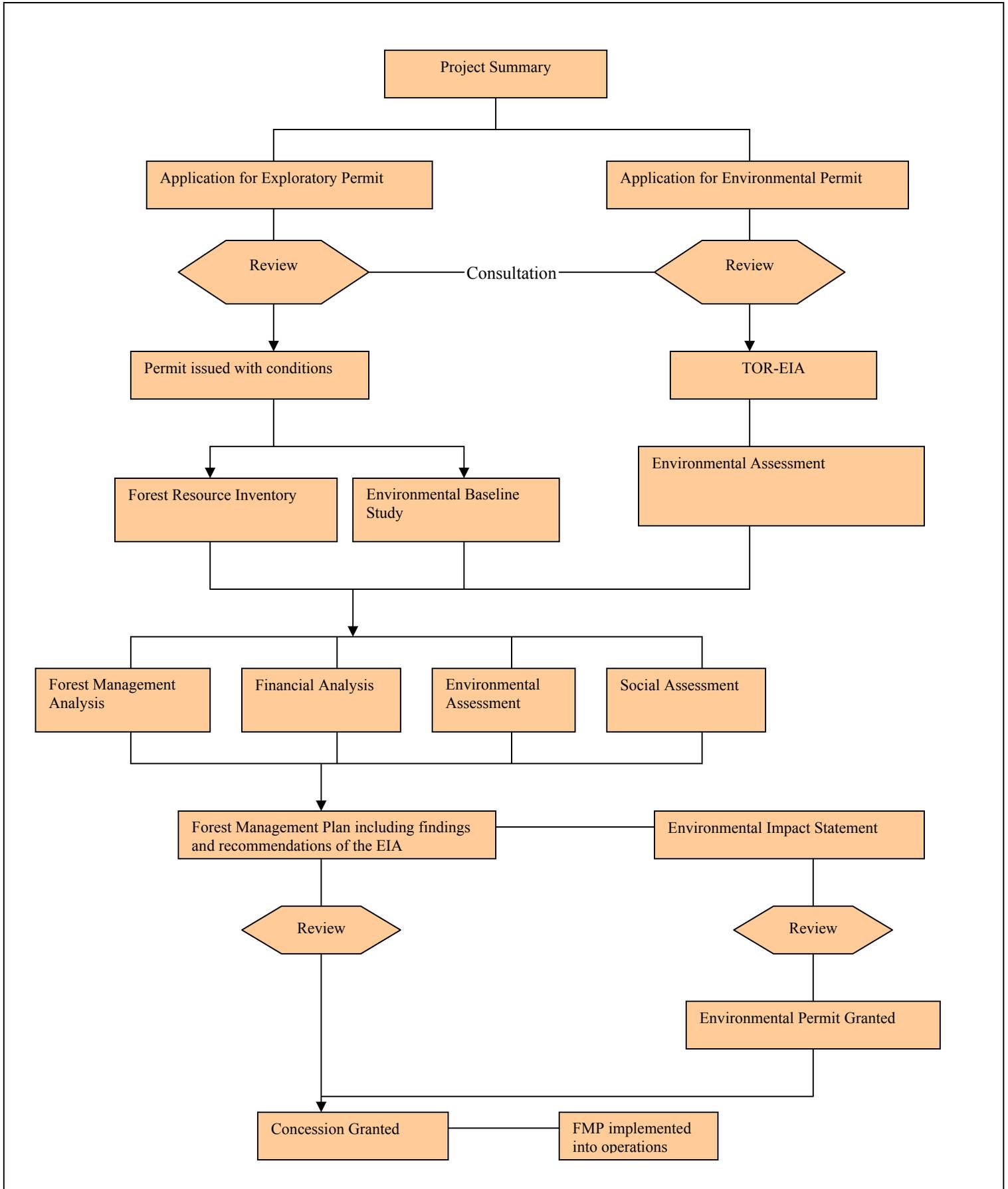
This manual is a result of the joint effort of the Environmental Protection Agency (EPA) and the Environmental Assessment Board (EAB). The intention is to provide to the EPA, EAB, sector agencies, private sector, NGOs, members of the public and consultants a set of approved guidelines for the conduct and review of Environmental Impact Assessments (EIA) for Forestry projects in Guyana.

As each project is different, EIAs will be customized to reflect issues that are relevant and specific to the project. While not exhaustive, the guidelines contained in this document and subsequent volumes are meant to compliment those in Section IV of the Environmental Protection Act, 1996 (EP Act). These guidelines are meant to be applied consistently to projects requiring EIAs and allows for transparent decision-making.

Since much of the information needed to prepare the Forest Management Plan (FMP) required by the Guyana Forestry Commission (GFC) will be relevant to the EIA, these two documents should be prepared at the same time so that the findings and recommendations of the EIA can be integrated into the FMP.

As our understanding and awareness of the environment improve, these guidelines will be updated to reflect new ideas or issues.

# Schematic Layout of EPA and GFC Approval Processes for New Concession



## **Components of an EIA**

The EIA will comprise three components: Environmental Baseline Study; Environmental Assessment; and Environmental Impact Statement. The Environmental Impact Assessment may be submitted in the three components stated above or could be submitted as one document depending on the size and nature of the proposed project.

The Environmental Baseline Study will record the present quality of the environment within the area of influence before project implementation. This data will then be analysed in the environmental assessment and will be used to predict and quantify impacts.

The Environmental Assessment is basically the identification and assessment of impacts of the proposed project and of its alternatives. The EA will also consider mitigation measures to offset negative impacts and will assess the impact of implementing these measures on the environment.

The Environmental Impact Statement is a summary of the findings of the Environmental Baseline Study and the Environmental Assessment and will include the Forest Management Plan. For large EIAs, the EIS will be the document which decision makers and the public will use. The Environmental Baseline Study and the Environmental Assessment will then serve as reference documents.

# EIA Guidelines for Forestry Projects

## Required Expertise

The following areas of expertise should be included in the EIA study team:

- Forestry (harvesting and extraction)
- Forest ecology
- Wildlife management
- Hydrology
- Watershed management
- Social development / Economic
- Occupational Health and Safety

## ENVIRONMENTAL BASELINE STUDY

The environmental baseline should be established in suitable detail to record the environmental conditions and seasonal variability prior to development, to permit the assessment of potential effects and to provide a baseline with which to monitor future changes. The needs will vary by project and potential environmental effects but would normally encompass the following physical, biological and socioeconomic conditions.

- ***Physical Environment.*** geology, topography, soil types (including characteristics such as fertility and susceptibility to erosion and compaction); known mineral resources within concession; water shed functions, climate and meteorology; surface and groundwater hydrology; surface and ground water quality; seasonal changes; sediment quality.
- ***Biological Environment.*** flora (including forest types); fauna; rare and endangered species; endemic flora and fauna; and sensitive ecological habitats and ecological balance; species with the potential to become nuisances. Specific data may be required on aquatic animals; fisheries

population, use, spawning sites, aquatic plants, wetlands, mangroves; and terrestrial plants and animals (species, distribution, use, valued habitats, hunting, commercial potential).

- ***Socioeconomic Environment.*** Land use including parks, reserves, protected areas, residential, commercial, mining, agricultural and industrial; effects on future development; cultural/historic resources (archaeology); indigenous peoples; demographics, infrastructure; employment and labour availability; extent of use of forest products, income, skills and education; resource use rights and public health. Describe non timber forest products including evaluation of their relative importance to the local or national economy.

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 procedures generally accepted by other international or regional jurisdictions.

## **ENVIRONMENTAL ASSESSMENT**

The environmental assessment will provide technical detail on the environmental effects of the project. The EA will focus on the proposed project but must also address alternatives. A summary of the data in the EA would be incorporated into the Environmental Impact Statement (see below). The EA should provide the following information and components;

1. Results of the regulatory and public participation program. These programs would normally include meetings, workshops, information brochures and should include consultation with NGOs, regulators, members of the public including indigenous peoples, etc. with the objective of identifying all issues and potential mitigation strategies.

2. Identification, description and assessment of alternatives in relation to siting, processing, technology selection and reclamation. Provide a comparison of the alternatives with and without the implementation of mitigation measures, including the recommended alternative (under the environmental point of view). Indication of the main reasons for selection of alternatives taking into account environmental factors. Inclusion of a prognosis of the state of the environment in each of the alternatives.
3. Detailed information regarding the methods used to analyse impacts (EIA methods) and the techniques used to estimate the magnitude of the impacts (prediction techniques).
4. Identification, characterization, description and determination of magnitude and importance of the social distribution of the potential impacts in the short, medium and long term. Analysis of impacts must include as a minimum, direct, primary and secondary, temporary and permanent, reversible and irreversible impacts on the physical, biological, social, economic and cultural components of the environment, when applicable.
5. Special emphasis should be placed on indirect impacts which may arise from project implementation.
6. Analysis of the compatibility of the proposal with the existing environmental legislation that applies to the project itself or to its area of influence. As a minimum, this should include the Environmental Protection Act, 1996; GFC Codes of Practice for forest operations; GFC Manual of Audit Procedures. In the event that national or local environmental standards do not exist, at least two international standards must inform.

7. Assessment of physical effects for all phases including construction, operation and closure. Estimation by type and quantity of expected contaminants, residues and emissions (water, air and soil pollution, noise, radiation, heat) resulting from the operation of the proposed project. Emphasis should be placed on impacts on soils ( nutrient loss, erosion, slope stability, temperature and structure); water resources ( hydrological changes, chemical contamination, organic waste from sawmills, sedimentation, decreased infiltration); road construction (loss of forest, increased access, damage to public roads, erosion, tourism, river transport).
8. Identify how much of a particular resource is degraded or eliminated and how quickly the natural system may deteriorate.
9. Assessment of the biological effects of all project phases (construction, operation, closure). Emphasis should be placed on impacts on vegetation (species composition, genetic diversity, loss of species, sustainability of timber resources, dispersal agents, damage to other trees from logging, primary forest, forest structure, effects of logging method on the capability of the forest to regenerate); wildlife (loss of rare species, aquatic environment, wildlife habitat, impacts of machines and people, displaced animals, poaching). Assess the project with the need to preserve the stability of ecosystems as well as the diversity of species.
10. Assessment of the positive and negative impacts on land use (compatibility) and land tenure, future development, existing uses of the forest, cultural/historic resources (archaeology), indigenous peoples, traditional forest uses; demographics; infrastructure; employment, income; skills and education and public health. Include the impact from the presence of logging camps and road construction teams.

11. A description of any hazards or dangers which may arise from the project and an assessment of the risk to the environment.
12. Assessment of the project with a view to the need to protect and improve human health and living conditions. Include an assessment of workers health and safety.
13. Detailed information regarding the measures which the proposed developer intends to use to mitigate any adverse effects and a statement of reasonable alternatives (if any), and reasons for their rejection. Evaluate the environmental impacts and proposed mitigation measures with a view to: achieving specific environmental quality objectives at acceptable cost; analyzing the optimum level of environmental damage reduction in relation to cost of mitigation; evaluating the economic value of unavoidable environmental impacts so that such costs can be incorporated into the final economic appraisal.
14. An assessment of mitigation measures including cost/benefit analysis and implementation strategy.

## **ENVIRONMENTAL IMPACT STATEMENT (EIS)**

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, the detailed description of the project, regulatory framework, a review of alternatives, environmental management plans,

socioeconomic factors, environmental impacts, mitigation, monitoring and reclamation. The EIS would be accompanied by supporting appendices, the baseline study report and the environmental assessment which will provide technical detail on specific issues, assumptions and modelling projections. These supporting documents would be more technical.

A typical EIS report could be organized as follows:

- Executive summary
- Introduction-overview of the project; details on the developer, information on the history of project development, ownership, the resource, description of the key components with site/land use maps; and regulatory framework and requirements.
- Detailed project description including the area of influence (spatial and temporal boundaries), location, layout, description of present land use of the project area and the area contiguous to it, project size and production, land requirements, activities associated with all development stages from construction to closure, forestry operations and production processes; alternatives considered, staffing and employment, emission characteristics, water supply and waste disposal, waste management plans.
- Economic information regarding the project, including financial statements, budgets etc. This may be submitted as a separate document to preserve confidentiality.
- Rationale for the project and its sustainability, including consideration of alternatives to the project as well as not proceeding (no-project option).

- Existing environment – summary of information that is provided in the baseline study report
- Summary of the public consultation programme
- A statement of the alternatives selected and the justification behind each choice.
- Summary of the environmental effects. A description of the likely significant effects of the proposed project on the environment resulting from: the existence of the project; the use of natural resources; the emission of contaminants, the creation of nuisances and the elimination of wastes.
- A statement of the degree of irreversible damage and an explanation of how it was assessed.
- A description of the best available technology.
- The Forest Management Plan (FMP) must incorporate the findings of the EIA and the recommendations on measures to reduce significant negative impacts to acceptable levels into the proposed forest operations. The plan should contain an estimate of the costs associated with mitigation; proposed work programmes, budget estimates, schedules, staffing and training requirement and other necessary support services to implement the mitigating measures. The FMP must also include an Emergency Response Plan for containing and cleaning up any pollution or spill of any contaminant and an initial plan for closure and reclamation of the environment.

- An indication of any difficulties (technical deficiencies or lack of knowledge or expertise) encountered in the EIA.
- Conclusion and Recommendations
- Annexes which include the Terms of Reference, Curriculum Vitae of the members of the EIA team, document references, field observations, etc.