



THE REPUBLIC OF RWANDA



RWANDA ENVIRONMENT MANAGEMENT AUTHORITY (REMA)

Final Report

**Guidelines for Environmental Impact Assessment for Wetland
Management In Rwanda**

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FOREWORD

The principal environment management law, the Organic Law No. 04/2005 provides the modalities for protection, conservation and promotion of environment in Rwanda. The requirement for all projects to be subjected to Environmental Impact assessment (EIA) is stated by the Organic Law in article 67. General principles and specific responsibilities for the management of the environment are clearly spelt. The Rwanda Environment Management Authority therefore within its mandate has embarked on the preparation of environmental management regulations and guidelines. These guidelines for EIA for wetland management are one such sectoral guideline prepared to provide for the EIA process specific to wetland management.

These guidelines serve as an administrative directive to guide EIA for wetland management. The guidelines should be used together with the General EIA Guidelines 2006 and any other relevant EIA instruments developed by REMA

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LIST OF ACRONYMS

ADB	African Development Bank
CP	Cleaner production
EA	Environmental Audit
EDPRS	Economic Development and Poverty Reduction Strategy
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EMS	Environmental Management System
GoR	Government of Rwanda
IEE	Initial Environmental Examination
ISAR	Institut des Sciences Agronomiques du Rwanda
IRST	Institute for Scientific and Technological Research
KIST	Kigali Institute for Science and Technology
LG	Local Governments
MDGs	Millennium Development Goals
MINELA	Ministry of Natural Resources
MINAGRI	Ministry of Agriculture and Animal Resources
MINALOC	Ministry of Local Government
MINICOM	Ministry of Commerce and Industry
MININFRA	Ministry of Infrastructure
MINITERE	Ministry of Lands, Environment, Forestry, Water and Mines (Now ministry of Natural Resources, MINELA)
MINECOFIN	Ministry of Finance and Economic Planning

MINIJUST	Ministry of Justice
MIGEPROFE	Ministry in Prime Minister's Office in charge of Gender and Family Promotion
MINISANTE	Ministry of Health
MINEDUC	Ministry of Education
NEMA	National Environment Management Authority
NGOs	Non Governmental Organization
NUR	National University of Rwanda
ORTPN	Office Rwandais du Tourisme et des Parcs Nationaux
RBS	Rwanda Bureau of Standards
REMA	Rwanda Environment Management Authority
SWAP	Sector Wide Approach
TDA	Transboundary Diagnostic Analysis
ToR	Terms of Reference
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNICEF	United Nations Children's Fund
UNFPA	United Nations Population Fund
USAID	United States Agency for International Development
VECs	Valued Environmental Components
WB	The World Bank

DEFINITIONS

These definitions apply to terms used in the following guidelines:

Authority: Means the Rwanda Environment Management Authority.

Environment: The physical factors of the surroundings of the human beings including land, water, atmosphere, climate, sound, odour, taste, the biological factors of animals and plants and the social factor of aesthetics and includes both the natural and built environment.

An Impact: Is the effect of any action that affects one or more elements of the natural, social or economic environment, either adversely or beneficially.

Cumulative Impacts: Those impacts that result from the incremental impact of the proposed action added to the impacts of other past, present, and foreseeable future actions.

Developer: Means a person, group of persons or agency developing a new project or proposing to extend an existing project which is subject to an environmental impact assessment process

Direct Impacts: Those impacts that are caused by the action and which generally occur at the same time and place as the action.

Indirect Impacts: Those impacts that induce changes in the natural environment, population, economic growth, and land use, as a result of actions not directly linked to the project in question.

Environment Impact Assessment: A systematic examination conducted to determine whether or not a project will have any adverse impacts on the environment.

Environmental Impact Statement: The written report which presents the results of an Environment Impact Study.

Environmental Impact Study: Means the study conducted to determine the possible environmental impacts of a proposed policy, project or activity, and measures to mitigate any such impacts.

Environmental Monitoring: The continuous determination of the actual and potential effects of any activity or phenomenon whether short-term or long term.

Guidelines: Means the description of the methodology for implementation of environmental impact assessment.

Lead Agency: Any ministry, Department, Parastatal agency, Local Government system or Public Officer in which or in whom any laws vests functions of control or management of any segment of the environment.

Mitigation measures: Actions which reduce, avoid or offset the potential adverse environmental consequences of a project, and include engineering works, technological improvements, management measures and ways and means of ameliorating effects to the environment and losses suffered by individuals and/or communities, including compensation and resettlement.

Participation: A process through which stakeholders influence and share control over development initiatives and decisions or resources that affect them.

Pollution: Any direct and indirect alteration of the physical, thermal, chemical, biological or radioactive properties of any part of the environment by discharging, emitting or depositing wetlands so as to affect any beneficial use adversely, to cause a condition which is hazardous or potentially hazardous to public health, safety or welfare, or to animals, plants or aquatic life, or to cause a contravention of any condition, limitation or restriction to a healthy environment.

Project: A set of planned activities to achieve objectives within a given area and time frame.

Project brief: A summary statement designed to achieve specific objectives within a given area and the likely environmental impacts and mitigation measures thereto.

Scoping: Is the early transparent process of interaction that identifies concerns, evaluates them, organises by eliminating insignificant impacts and focusing on significant impact for further assessment so that attention and therefore resources, can be effectively and efficiently utilised.

Screening: Selection of actions or projects requiring EIA. Common methods for screening include: project threshold, sensitive area criteria, positive and negative list, preliminary assessment/ IEE.

Significance: An expert evaluation/judgment of the magnitude of the magnitude of impact or the degree to which a proposed activity or project may (potentially) impact on the environment if implemented.

Significant effect: On the environment means: “substantial, or potentially substantial, adverse changes in any of the physical factors of the surroundings of human beings including land, water, atmosphere, climate, sound, odour, taste, the biological factors of animals and plants and the social factor of aesthetics and includes both the natural and built environment”.

Stakeholders: Those affected by the outcome of a project or can affect the outcome of a proposed either negatively or positively.

Water: includes drinking water, river, stream, watercourse, reservoir, well, dam, canal, channel, lake, swamp, open drain, or underground water.

Wetland: Means areas permanently or seasonally flooded by water where plants and animals have become adapted, and include swamps, dambos, marsh, peat land, mountain bogs ,banks of rivers vegetation, lake shore vegetation areas, impeded drainage area.

PART I: INTRODUCTION

1. INTRODUCTION

Environmental Impact Assessment (EIA) is a tool for the prevention and control of environmental impacts caused by development projects. EIA enable early and timely identification of impacts so that adequate mitigation measures can be done to eliminate or control the impacts. The *EIA Guidelines for Wetland Management* has been prepared to specifically improve environmental management of projects that impact wetlands. The EIA Guidelines will serve agencies and individuals involved in the EIA process and those in the management of projects with potential impacts on wetlands.

1.1 Background to the Environmental Impact Assessment guidelines

The Republic of Rwanda has environmental challenges that have been faced by the population for decades. Wetland degradation is a major concern because major socio-economic activities that exploit them. Agricultural use such as rice growing, industrial pollution, mining and grazing are among the major activities that are degrading wetlands in Rwanda. Poverty, low level of awareness, inadequate resources (technical, human, financial), low inter-sectoral coordination and socio-economic activities exacerbate environmental degradation.

The Government of Rwanda has demonstrated strong commitment in addressing the current environmental challenges. Enabling environment is created by the developed environment policy and sectoral policies that recognise environmental management as a prerequisite for sustainable socio-economic development. The GoR established Rwanda Environmental Management Authority (REMA) to coordinate and oversee all aspects of environmental management for sustainable development.

The lead government ministry environment is the Ministry of Natural Resources (MINELA) but the overall responsibility of environmental management lies with Rwanda Environment Management Authority (REMA). One of the key functions of REMA is the implementation of Environmental Impact Assessment (EIA) and Environmental Audit (EA). The main focus of REMA is to achieve environmental conservation that will sustain economic development agenda.

In 2006 the *General Guidelines and Procedure for Environment Impact Assessment* was published to streamline the EIA process in Rwanda. The development of EIA guidelines for Wetlands is in response to Government and public concern for wetland protection by ensuring that project impact on wetlands are identified and adequately mitigated and managed to prevent degradation. The *Guidelines* is intended to serve developers, agencies and individuals involved in EIA process of projects that impact wetlands.

1.2 Introduction to Wetlands

Wetlands are *areas that are seasonally or permanently flooded with characteristic soils, inhabited by flora and fauna adapted to living in water logged conditions. These include seasonally flooded grassland, swamp forest, permanently flooded papyrus and grass swamp and upland bog.* The term wetland is defined by the Organic Law as *'a place made up of valleys, plainlands and swamps'*. Wetlands provide a variety of goods, services and attributes. Some of these are locally relevant; others have a regional, national or international importance. All together, the goods, services and attributes constitute a considerable ecological, social and economic value, which may be lost when wetlands are converted or altered.

1.2.1 Wetlands in Rwanda

In general, wetlands represent 14.9 % of the national territory whose 6.3% are marsh lands and 8.6% are for lakes, rivers and permanent or seasonal wetlands (CEREDE 2002). Wetland degradation has taken place for decades for example the Akagera valley and associated lakes in the East. Most of the riverine wetlands have been completely converted into agricultural use for crops such as rice, irish and sweat potatoes, maize, beans, peas, tomatoes and cabbages (TDA Rwanda 2006). The upstream wetlands were converted to grow tea and sugarcane on a large scale. Along the River Nyabarongo upland stream the dry riverbed is being systematically dug up in search of rocks and suitably weathered stones for construction. Some dry stream valleys that result from total degradation of upland wetlands have been converted into stone quarries. Most of the upland wetlands have now lost their ecological character and hence environmental and socio-economic attributes (TDA Rwanda 2006).

The principal threats to wetlands of Rwanda are linked to the agricultural (mainly rice) and livestock activities, mining activities, human settlements, exploitation of clay and sand quarries. Agricultural pressure is particularly important since most of the population depend on agriculture. There is pollution from sources such as domestic effluents, waste leachates, industries, agro-chemicals and storm water. The impacts are the harmful effects on the wetlands ecosystem observed as biodiversity loss and disturbance of the ecological functions of wetlands. The capacity of the wetlands to deliver services to the community is also greatly affected by the degradation.

1.3 Definition of Environmental Impact Assessment

Environmental impact assessment (EIA) is *"an assessment of the impact of a planned activity on the environment"*. EIA is the process used to integrate environmental management with planning for development proposals. In essence, EIA is a systematic process whereby information about the environmental effects of an action is collected and evaluated, with the conclusions being used as a tool in decision-making. The General Guidelines and Procedure for Environmental Impact Assessment (GoR 2006) defines EIA as *"a systematic evaluation of a project to determine its impact on the environment and natural resources"*. While the Organic Law No 04/2005 of 08/04/2005 defines EIA as

‘an evaluation which identifies effects that may be caused by planned human activities or a project’.

1.4 The Purpose of the EIA Guidelines for Wetlands

These EIA guidelines are to provide clear and detailed direction on carrying out effective EIA for wetland management. The *‘Environmental Impact Assessment Guidelines for wetlands’* will provide guidance on the undertaking of comprehensive EIAs. The EIA guidelines will provide a means of compliance assistance to enable the process of wetland management EIA and submission of EIA reports to the regulatory authority in Rwanda, the REMA. The objectives of *EIA Guidelines for Wetland Management* are:

- i) to provide direction and information for decision making by the REMA in wetland management EIA;
- ii) to provide advice on EIA processes as regards the management of wetlands;
- iii) to enable proponents/developers and stakeholders to participate effectively in wetland management EIA process and related administrative actions; and
- iv) enable environmentally adequate management of all development project activities that may negatively impact wetlands

1.5 The Scope of the EIA Guidelines

The Wetland Management EIA guidelines are intended to *apply to all proposals that will affect wetlands and which are listed under Article 2 of the Ministerial Order* establishing the list of works, activities and projects that have to undertake Environmental Impact Assessment and those listed in these Wetland Management EIA guidelines in Appendix IV. The Guidelines are intended to be used by:

- i) Rwanda Environment Management authority (REMA);
- ii) EIA consultants undertaking Wetland Management EIA studies or projects that affect wetland in Rwanda;
- iii) Proponents of projects with wetlands management components or projects with adverse impacts on wetlands;
- iv) Stakeholders affected by wetland management proposals;
- v) Community representatives, interested persons and organisations and
- vi) Academic institutions and researchers among others.

These guidelines provide advice to encourage sound EIA outcomes across all phases of planning for projects in the wetlands from project conception and design to approval. When using these guidelines it should be recognised that each wetland management proposal has specific features (e.g. location, type of wetland, conservation status of wetland, nature of project, etc) and proposal specific issues that should be taken into account. The approach used to conduct the EIA should take account of the particular circumstances of individual proposals.

1.6 Quality assurance

Roles and responsibilities of key stakeholders in Wetland Project Management (WPM) process are dynamic (socio-economic) therefore it may be necessary to review the guidelines periodically. This reflects a continuous improvement approach to the provision of advice and information by the REMA. Reviews may be triggered by changes to policy or legislation; changes in the role of REMA; or requests for reviews by stakeholders.

PART II: POLICIES, LEGAL AND INSTITUTIONAL FRAMEWORK

2. POLICIES, LEGAL AND INSTITUTIONAL FRAMEWORK FOR WETLAND MANAGEMENT EIA

2.1 International Context of Environmental Assessment

Environmental Impact Assessment is an environmental management tool that operates within the concept of sustainable socio-economic development. EIA enables the achievement of commitments to international environmental conventions. The Government of Rwanda has ratified several international conventions and agreements on the protection of the environment and sustainable development. Some of the Conventions ratified by Rwanda that are relevant to Wetland Management include:

- i) The Convention on Biological Diversity and its Habitat signed Presidential Order n° 017/01 of 18 March 1995.
- ii) The United Nations Framework Convention on Climate Change, Presidential Order n° 021/01 of 30 May 1995.
- iii) The Stockholm Convention on persistent organic pollutants, Presidential Order n° 78/01 of 8 July 2002.
- iv) The Rotterdam Convention on the establishment of international procedures agreed by states on commercial transactions of agricultural pesticides and other poisonous products, by Presidential Order n° 28/01 of 24 August 2003.
- v) The Kyoto Protocol to the Framework Convention on Climate Change ratified by Law n° 36/ 2003 of 29 December 2003.
- vi) The Bonn Convention on conservation of migratory species of wild animals ratified by Law n° 35/2003 of 29 December 2003.
- vii) The Washington Agreement on International Trade in endangered species of Wild Flora and Fauna , Presidential Order n° 211 of 25 June 1980.

2.2 Rwandan Policies and Regulations Relating to EIA

The Constitution of the Republic of Rwanda (2003) provides for the protection and sustainable management of the environment and encourages rational use of natural resources. The Environment Policy (2003) sets the overall goals for environmental management in Rwanda. The policy provides for the management of the environment at both central and local levels that is consistent with the policy on decentralisation and good governance. All government sectoral policies recognise environmental protection. Environment is treated as a sector and a cross cutting issue in the Economic Development and Poverty Reduction Strategy (EDPRS) document (2007). The environment policy provides for the institutional and legal reforms. The implementation of environmental management strategies employs the Sector Wide Approach (SWAP), which enables integrated management of vital resources like wetlands, where all the different development actors participate. Wetland is a key natural resource in Rwanda protected by these laws.

Agencies and individuals that will be involved in EIAs for wetland protection against the adverse impact of project activities will consult the relevant statutory provisions. The Organic law provides for Environmental Impact Assessment in article 67 and article 68 the contents of EIA. Article 69 states the roles of REMA in the approval of EIA and article 70 describes how projects may be exempt from EIA by order of the Minister. Articles of the Organic Law that that are relevant to wetland management are:

General provisions are:

Article 3: *Every person has the duty to protect, conserve and promote environment. The State has a responsibility of protecting, conserving and promoting the environment.*

Article 6: *Every person in Rwanda has a fundamental right to live in a healthy and balanced environment. He or she also has the obligation to contribute individually or collectively to the conservation of natural heritage, historical and socio-cultural activities.*

Article 7 (3⁰): *Provides for the **Polluter pays principle**. Every person who demonstrates behaviour or activities that cause or may cause adverse effects on environment is punished or is ordered to make restitution. He or she is also ordered to rehabilitate it where possible.*

Specific provisions to wetlands and EIA are:

Article 19: *Swamps with permanent water shall be given special protection. Such protection shall consider their role and importance in the preservation of the biodiversity*

Article 30: *Public or private construction works such as the construction of roads, dams are subject to EIA*

Article 60: *Generally, decentralised entities are responsible for the implementation of laws, policies, strategies, objectives and programmes relating to protection, conservation and promotion of the environment in Rwanda.*

Article 67: *Every project shall be subjected to environmental impact assessment, before obtaining authorisation for its implementation. This applies to programmes and policies that may affect the environment. An order of the Minister having environment in his or her attributions shall determine the list of projects mentioned in this organic law.*

Article 69: *The environmental impact assessment shall be examined and approved by the Rwanda Environmental Management Authority or any other person given a written authorisation by the Authority. The promoter pays a levy reduced from the operating cost of his or her project excluding the working capital. This tax is determined by the law establishing the National Fund for the Environment. The environment impact assessment shall be carried out at the expense of the promoter.*

Article 70: An order of the Minister having environment in his or her attributions establishes and revises the list of planned works, activities and projects, and of which the public administration shall not warrant the certificate, approve or authorise without an environmental impact assessment of the project. The environmental impact assessment shall describe direct and indirect consequences on the environment.

Article 83: It is prohibited to dump in wetlands: 1⁰ - wastewater, except after treatment in accordance with instructions that govern it; 2⁰ any hazardous waste before its treatment. Any activity that may damage the quality of water is prohibited.

Article 87: It is prohibited to construct houses in wetlands (rivers, lakes, big or small swamps), in urban or rural areas, to build markets there, a sewage plant, a cemetery and any other buildings that may damage such a place in various ways. All buildings shall be constructed in a distance of at least twenty (20) metres away from the bank of the swamp. If it is considered necessary, construction of buildings intended for the promotion of tourism may be authorised by the Minister having environment in his or her attributions. It is also prohibited to carry out any activities, except those related to research and science, in reserved swamps.

Article 90 (3⁰): It is prohibited to immerse burn or eliminate waste in wetlands by any process without respecting rules applied in Rwanda.

Articles 80-94 contain the lists of prohibited activities that impact negatively on the environment and natural resources.

Articles 95 -115 elaborates punitive sanctions against activities that adversely impact on the environment and natural resources

The provisions above shall guide Environmental Impact Assessment for Wetlands management in Rwanda to ensure sustainable wetland resources exploitation and environmental conservation. In addition to the Organic law there are other legislative instruments and various socio-economic development strategy documents whose relevance to wetland management varies depending on each particular project activities or location. The following additional documents need to be consulted during Environmental Impact Assessment:

- i) Law No. 16/2006 of 03/04/2006 on organisation, operation and attributions of the Rwanda Environment management Authority (REMA).
- ii) Organic Law No 29/2005 of 31/12/2005 determining the Administrative Entities of the Republic of Rwanda, including all annexes.
- iii) Law No. 08/2005 of 14/07/2005 determining the use and management of Land in Rwanda. Under this law the wetlands are classified as public resource.
- iv) Disaster Policy Framework (2003).
- v) Sectoral Policy on Water and Sanitation (2004).

- vi) Environmental Regulations (Management and Disposal of Wastewater). Dumping of wastewater in wetlands is prohibited, except after treatment in accordance with instructions that govern it.
- vii) Environmental Protection (Standards of Effluent Discharge Permit) Regulations. Prevention of pollution of wetlands.
- viii) Environmental Protection (Standards of Effluent for use in Irrigation) Regulations. Control of the quality of irrigation water that finally drains into wetlands to prevent pollution.

Some relevant national documents that provide for the protection of the environment and natural resource conservation include among others the Rwanda Investment and Exports Strategic Action Plan, 2005-2007” and “Vision 2020” that calls for a well regulated environment management system that takes into account principles of sustainable development while at the same time contributing to poverty reduction; Agricultural policy (July 2004) recognises the need for the protection against land, water and soil degradation and Strategic Plan for Agriculture in Rwanda (October 2004) that in section 8.2 (345 -347) recognises the need for the protection of environment, water and land. A number of relevant legal instruments that are in the process of formulation and others have to be formulated during the implementation of these Guidelines.

Sectoral policies such as that on water and sanitation (October 2004), water Policy, wetland policy, the National Land Policy (February 2004), the National Forestry Policy (February 2004), Sectoral Strategy 2005-2010 (REMA 2004), National Strategy and Action Plan for the Conservation of Biodiversity in Rwanda (GoR 2003) and the draft law relating to Mining and Quarry Exploitation all recognise the need for environmental protection.

All parties – the client, EIA study team, and the regulatory authority (REMA) in the implementation of EIA, should use national environmental standards and international ones directed by REMA where national legal instruments are not yet developed.

2.3 Institutional Responsibility for wetland management

The Organic laws provides for the establishment of REMA under article 65 and the National Fund for Environment in Rwanda, while article 66 provides for the establishment of committees responsible for conservation and protecting the environment at the Provincial, City of Kigali, District, Town, Municipality, Sector and the Cell levels. The organisation, functioning and their responsibilities are determined by Prime Minister’s Order. The Ministry of Natural Resources (MINELA) is the government lead ministry for environmental management in Rwanda.

To implement MINELA sectoral strategies other Ministries are involved such as the Ministry of Agriculture, and Animal Resources (MINAGRI), the Ministry of, Commerce, and Industry (MINICOM), the Ministry of Infrastructure (MININFRA), Ministry of Local Government, (MINALOC), Ministry of Finance and Economic Planning (MINECOFIN), Ministry of Justice (MINIJUST), Ministry of Gender and Family

Promotion (MIGEPROFE), Ministry of Health (MINISANTE), Ministry of Education (MINEDUC) are all involved to ensure sustainable development in line with the efforts of achieving Millennium Development Goals (MINECOFIN, 2007).

Public institutions such as Rwanda Authority for Tourism and National Parks (ORTPN), Rwanda Bureau of Standards (ORN), as well as higher teaching and research institutes such as the National University of Rwanda (NUR), Kigali Institute for Science, Technology (KIST), Rwanda Institute for Agricultural Science (ISAR), Institute for Scientific and Technological Research (IRST) also are important institutions for environmental management in Rwanda.

There are also Non Governmental Organisations (NGOs) and partner agencies that are involved or supporting financially the environmental management activities in Rwanda. These organisations includes among others the Global Environment Facility (GEF), United Nations Environment Programme (UNEP), United Nations Development Programme (UNDP), United Nations Food and Agriculture Organisation (FAO), United Nations Children's Fund (UNICEF), United Nations Population Fund (UNFPA), World Bank (WB) and USAID.

The EIA process for wetland management will involves the agencies stated above and individuals. The participants in the EIA process have roles described below.

REMA: It is the principal corporate agency in Rwanda for the control, monitoring and evaluation of the integration of environmental concerns in all development projects or activities. It has a responsibility to organise the EIA procedure by undertaking screening, guiding developers on assessment procedures, conducting public hearings, reviewing EIA reports based on the terms of reference (ToR) and taking decisions on approval or disapproval of proposed projects. The Authority is also responsible for monitoring implementation of environmental protection measures recommended by EIA studies. REMA advises the Government on legislative and other measures for the management of the environment or the implementation of relevant international conventions, treaties and agreements in the field of environment (e.g. the Ramsar Convention). *The roles of REMA in the EIA processes is summarised in the General Guidelines and Procedure for EIA Part 3, section 4.* The mission statement of MINELA consists of ensuring a rational management of lands, taking care of the conservation and protection of the environment in view of a sustainable human development. Wetlands are land resources falling under MINERENA jurisdiction. It is responsible for the formulation of policies and laws aimed at the protection and rational use of environment.

MINAGRI: It is in charge of agriculture. MINAGRI is in charge of the implementation of Agricultural policy (July 2004) that recognises the need for the protection against land, water and soil degradation or pollution. Since crop agriculture (e.g. rice growing) is a major user of wetlands, MINAGRI has the responsibility to guard against wetland degradation from agricultural activities.

Districts: The districts with advice from committees responsible for the protection of the environment and implement decentralised environmental protection and management activities. Wetland is a key resource of the districts and its management for conservation involves participation of the districts.

Developers: The developer has direct responsibility for the project and should provide necessary information about the project at all stages of the EIA process. Developers hire experts to undertake EIA studies on their behalf and answer questions about potential impacts and proposed mitigation recommendations at public hearings. Developers have the responsibility to implement the environmental management plan including mitigation measures as proposed in the EIA report and carry out subsequent environmental monitoring and auditing.

EIA Experts: EIA experts are professionals registered with REMA to undertake impact studies. They help the developer to carry out EIA, design mitigation measures, prepare EIA report, and design environmental management and monitoring plans.

Lead Agencies: Lead agencies such as government ministries or departments have the responsibility for management and protection of environmental resources, public health and socio-economic development. Lead agencies are responsible for the EIA of projects under their sectors. They provide valuable technical information to EIA experts during EIA studies and are involved in the review process. Key lead agencies in wetlands are government agencies such as MINELA, MINAGRI, MINALOC, etc.

The Public: Communities have a right to take part in the EIA process. Public participation allows important social and environmental problems to be identified and gain consensus on nature and adequacy of proposed mitigation measures and recommendations. The role of the public in the EIA process includes contributing information and advice to EIA studies during scoping and public hearing process. The public also advises project developers and REMA on approaches to avoid, minimize or compensate for adverse environmental impacts.

International Funding Organisations: All international funding organisations require EIA for projects they are to fund and especially those in which the impacts may be substantial.

Academic Institutions: Members of academic institutions are commonly co-opted on EIA Technical Committees. They also institutionalise environmental education in their curricula. Training institutions should incorporate training in wetland management in curriculum such that capacity and awareness are developed for wetlands and natural resources management. Developing training modules for both EIA and wetland management and implementing training programmes could be done by academic institutions liaising with REMA.

PART III: EIA GUIDELINES FOR WETLAND MANAGEMENT

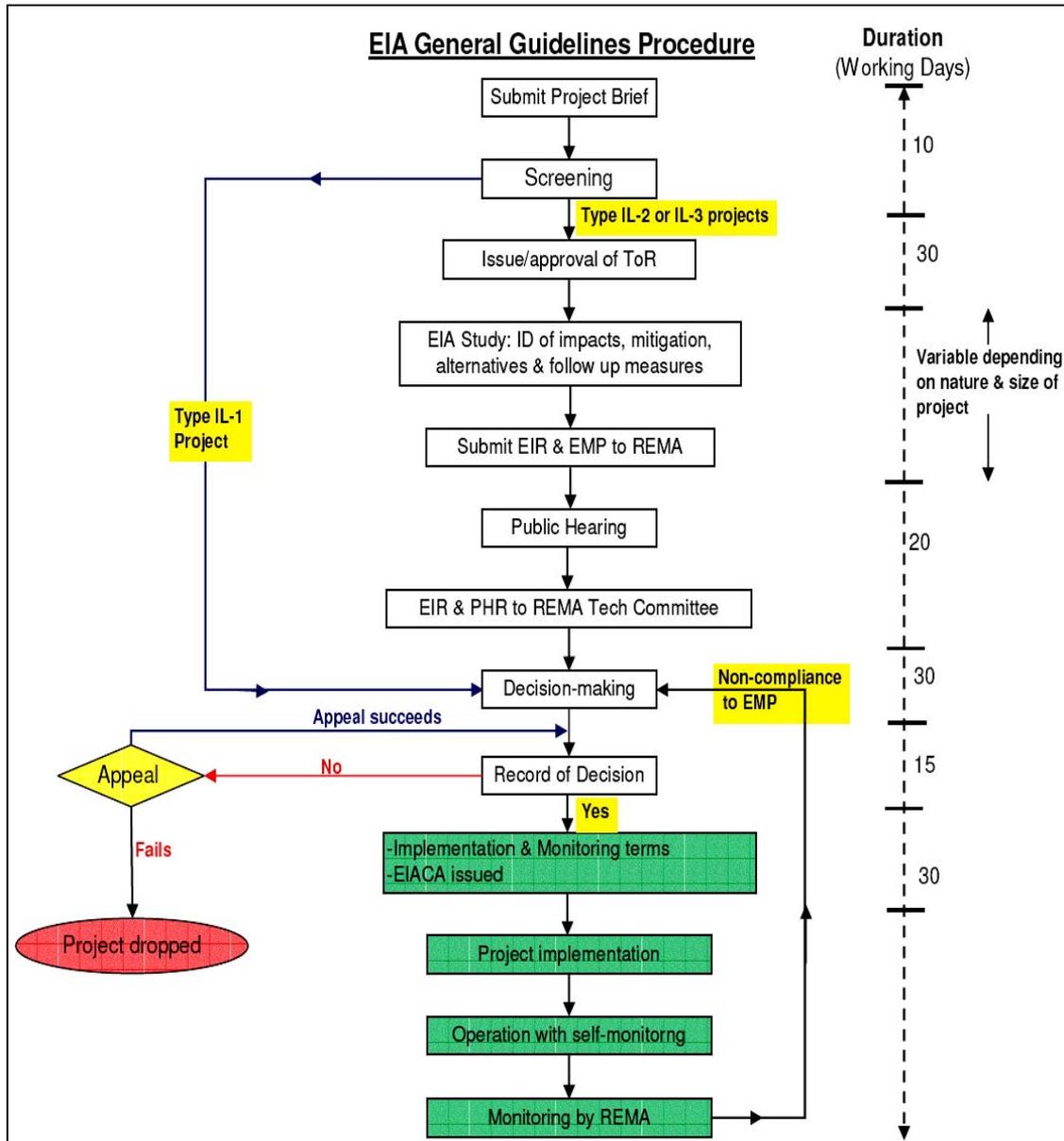
3. THE EIA GUIDELINES FOR WETLAND MANAGEMENT

The EIA guidelines for Wetland Management emphasise public participation to ensure public input in the EIA process. These guidelines are consistent with the General EIA Guidelines for Rwanda (REMA 2006). The procedures presented in these guidelines are basically the standard EIA procedures in guidelines (NEMA, 1998, REMA 2006, UNEP 1996) with modifications introduced to streamline the EIA process to accommodate wetland management project cycle.

These guidelines provide guidance to REMA, the proponent/developer, consultants, the public and all others stakeholders in the wetland EIA process. The resultant EIA will enable the approving authority (REMA), the public, local government (LG) and central government and the developer to properly consider the potential environmental consequences of a proposal on wetlands, and to make recommendations to mitigate negative environmental impacts.

The EIA for Wetland Management will be guided by Wetland Management sector laws, regulations and standards. Each step in the EIA process requires consultation to ensure that all relevant views are taken into account throughout the EIA process. Ideally consultation should be maintained throughout the EIA process with the developer and designer of the proposed project, so that modifications to the design to reduce potential environmental impacts may be introduced before completion of the final design. The steps of carrying out EIA are outlined hereafter in sections 3.1 to 3.10 and summarized by Figure 3.1.

Figure 3.1: Steps in carrying out EIA displayed as a Flow Chart



3.1 Project Brief

A developer is required to prepare a project brief which is a description of the project. This is the background information on the project for consideration by REMA. The EIA process normally begins once the developer has submitted the project brief to REMA for screening. Suggested format for a Project brief is presented in Appendix I (see general Guidelines for EIA REMA 2006 section 2.1).

3.2 Screening

This is the task of deciding whether or not an EIA is required for a particular project. Basic details of the proposed development will be needed for the project to be screened. Screening results in the categorization of the proposals in three categories:

- i) No EIA required (Exempted).
- ii) Initial Environmental Examination (IEE) required for confirmation if EIA is required or not.
- iii) Full EIA is required.

Appendix II presents key steps in screening of projects. For wetland projects or project that impact on wetlands factors like the category of project (e.g. agriculture, infrastructure, industries, waste management, etc), size of the project, anticipated impacts, type of wetland, use(s) of the wetland are important during screening. The general Guidelines for EIA in Rwanda (REMA 2006) in Appendix 2 provide the general criteria for screening. The Ministerial Order establishes the list of works, activities and projects that have to undertake Environmental Impact assessment in Rwanda. However every waste management project will have unique characteristics to require screening. A summary of information on screening is provided in the Table 3.2.

3.2.1 Screening criteria

The guiding Criteria for screening of any project that is likely to impact wetlands are:

- i) The size of the project in relation to the total wetland area.
- ii) Project category (e.g. agriculture, infrastructure, processing industries, mining, urban development, drainage/reclamation, etc).
- iii) Project location in relation to the wetland.
- iv) The type and conservation status of the wetland.
- v) Wetland use by local communities and local authority (Local Government).
- vi) Wetland type (rooted, floating) and hydrology.
- vii) Wetland value to local climate modifications.
- viii) Local, national and international interest in the project and the wetland (e.g. Ramsar site, nesting sites, home to migratory species, wastewater and storm water polishing, community subsistence, tourism, etc).
- ix) Social, economic and cultural issues.

Table 3.2: Summary information on screening

Screening	Typical proposal that require full-scale EIA	Screening methods	Screening information required by decision-makers	Typical project list categories
It is a process for determining whether or not a proposal requires full-scale EIA and the level at which the assessment should occur	<ul style="list-style-type: none"> • Natural resources exploitation • Infrastructure development • Industrial activities • Extractive industries • Waste management and disposal • Substantial changes in farming or fishing activities • Wetland drainage/ reclamation • Large scale agricultural activities • Aerial spraying 	<ul style="list-style-type: none"> • IEE • Project lists - inclusive • Exclusive list • Decision-makers' discretion 	<ul style="list-style-type: none"> • Information on the proposal and its potential impacts • Level of confidence of predictions of impacts • Characteristics of the environment (Wetland) and its resilience • Planning, environmental management and decision-making framework • Degree of public interest in the project and the wetland 	<ul style="list-style-type: none"> • Full-scale EIA required • Some further environmental analysis required • No EIA required

3.3 Scoping

Scoping, or identification of potential environmental impacts, is an important early stage of the EIA process to ensure that the EIA is properly carried out. For a project to be properly scoped, a site visit and preliminary consultations with relevant regulatory authorities (e.g. REMA, MINELA) and lead agencies (e.g. MINAGRIC, MINALOC, MINICOM, etc) must be included at the scoping stage. Ideally public consultation should also be carried out at the screening and scoping stage of the EIA. Consultations should involve exchange of information about the characteristics of the proposed project, characteristic and use of the wetland and identifying local, regional and international issues and/or sources of information of relevance to the EIA process. From consultations and a preliminary assessment of baseline conditions the consultant must:

- i) Identify the characteristics of the proposed development that are likely to give rise to impacts on the wetland,
- ii) Identify what type of impacts may arise, and
- iii) Determine which environmental resources and people in the vicinity of the proposed site is likely to be affected, and what categories of impacts are likely to occur.

In case the project characteristics or the boundaries of the proposed site changes, then the potential impacts may also change, and the scope of the EIA will have to be reviewed accordingly.

Scoping should focus attention on the key issues of concern. Not all issues identified will have the same degree of relevance for all proposals. The identification and prioritization process should therefore result in:

- i) A list of all issues with a preliminary estimate of the relative significance of their impacts.
- ii) Identification of the key issues.
- iii) An explanation as to why other issues are not considered to be key in the project.

The EIA should address the key issues as fully as practicable. Lesser attention should be given to those issues which have lesser significance. For significant issues, there should be sufficient analysis to develop a sustainable mitigation strategy for any potential adverse impacts. *Consideration of alternatives, particularly alternative sites or schemes, should be done during the scoping stage.* The scoping report should indicate why the preferred alternative was chosen based on environmental grounds. The main part of the EIA can then concentrate on the preferred option. An important output of scoping is the Terms of Reference (ToR) for the EIA study. Guidelines for preparation of ToR are in Appendix IV of the General Guidelines for EIA for Rwanda. During the preparation of the ToR issues identified during the screening process in section 3.2.1 should be considered. Summary of information on scoping is provided in the Table 3.3. Suggested format for ToR for Wetland management EIA is in Appendix V of the Guidelines.

Table 3.3: Summary information on scoping

Scoping	Purpose of scoping	Steps in scoping process	Who is involved in scoping	Outline of ToR
<ul style="list-style-type: none"> • A process of interaction • Identifies <ol style="list-style-type: none"> i. Boundaries of EIA study ii. Important issues iii. Information for decision-making iv. What to be considered during EIA • Identifies concerns, evaluates, organizes and presents to assist decision-making 	<ul style="list-style-type: none"> • Consider project alternatives • Inform affected public • Identifies impacts • Understand local values • Evaluated concerns • Define EIA boundary • Determine methodology and consultation procedures • Establish ToR for EIA 	<ul style="list-style-type: none"> • Prepare outline of the EIA scope • Develop the scope through informal discussion • Make the draft scope widely available • Identify issues of concern • Evaluate concerns • Incorporate concerns • Develop strategy for addressing concerns • Provide feedback 	<ul style="list-style-type: none"> • The proponent • The authority • Lead agencies • Environmental practitioners, experts, consultants • Those affected by the project • The wider community 	<ul style="list-style-type: none"> • Background to the proposal • Context of the issues • Alternatives • Institutions and public involvement • Required information • Analysis of impacts • Mitigation and monitoring • Conclusions and recommendations • Requirements for managing the EIA

3.4 Baseline Environmental Conditions of the proposed Project

Existing data should be collated as the first step in collection of baseline information. It should be reviewed for its relevance to the proposed project, its being current or not, and used as a basis for determining what survey work may be needed. Original site surveys should be done to determine its structure (plant and animal species, invertebrates, biodiversity, the wetland type (floating or rooted), water quality and hydrology, uses of the wetland by communities and others, location of the wetland in relation to other features. It is important to obtain information on the type of wetland, conservation status, home to unique flora and fauna, use by migratory species and other attributes like values to the community and the environment. Important issues considered when collecting baseline data are summarised in Table 3.4. The listed environmental and socio-economic considerations in Table 3.4 should apply throughout the wetland EIA process.

Table 3.4: Issues to be considered in doing Environmental Impact Assessment (*source Uganda EIA Regulations 1998 with modifications*)

<ol style="list-style-type: none">1. Ecological Considerations<ol style="list-style-type: none">(a) Biological diversity including impacts on:<ol style="list-style-type: none">i. The number, diversity, breeding habitats, etc of wild animals and plants of the wetland.ii. Gene pool of plants and animals (wetland dependent).(b) Sustainable use including effect of proposal on:<ol style="list-style-type: none">i. Soil quality (e.g. acidification, loss of fertility, salinization, pollution).ii. Breeding of fish, birds and wetland plants.iii. Natural regeneration of wetland forests, reeds, sedges, etc and sustainable yields.iv. Wetland resources (e.g. vegetation, animals, water, soil, sand) and wise use of the wetlands.(c) Ecosystem maintenance including effects on:<ol style="list-style-type: none">i. Water pollution, drainage causing drop in water table, water loss from the wetland system.ii. Food chains.iii. Nutrient cycles.iv. Aquifer recharge, water run-off, rates, etc.v. Area extent of habitats.vi. Fragile ecosystems.2. Social considerations including effects on<ol style="list-style-type: none">i. Employment, livelihood.ii. Social cohesion or disruption.iii. Human health.iv. Immigration or emigration.v. Communication – roads opened, closed, re-routed, etc.vi. Local economy.vii. Culture and cultural values.viii. Aesthetics.3. Landscape<ol style="list-style-type: none">i. Views opened or closed.ii. Visual impacts (features, removal of vegetation, pits, channels, etc).iii. Compatibility with surrounding area.iv. Amenity opened or closed.4. Land uses<ol style="list-style-type: none">i. Impacts on current land uses.ii. Possibility of multiple uses.iii. Effects on surrounding land uses and land use potentials.

Baseline information should describe the wetland in details by indicating conservation status of the wetland in terms of identified values (Table 3.5) and classification (Table 3.6).

Table 3.5: The values of wetlands that can be identified during EIA

Direct values	Indirect values	Optional values	Non- use values
<i>Production and consumption goods such as:</i>	<i>Ecosystem function and services such as:</i>	<i>Premium placed on some future uses and applications, including:</i>	<i>Intrinsic significance in form of:</i>
Fishing	Water quality improvement	Pharmaceutical	Cultural value
Fuel wood	Water flow	Agriculture	Aesthetic value
Building poles	Water storage	Industry	Heritage value
Thatch	Water purification	Leisure	Bequest value
Water	Water recharge	Water use	etc
Wild foods	Water cycling (hydrological cycle)	etc	
Medicines	Flood control		
Agriculture	Storm protection		
Transport	Nutrient retention		
Pasture	Micro-climate		
Recreation	Shoreline/riverbank stabilisation		
etc	etc.		

Table 3.6: Information on wetland classification that should be done during EIA

	CRITERIA	ATTRIBUTES
1	HYDROLOGICAL OR WATER REGIME	Seasonal
		Permanent
2	TYPE OF VEGETATION OR HABITAT	Swamp forest
		Papyrus swamp
		Peat bog
		Mud flat
3	SOIL	Organic soil
		Mineral soil
		Peat
4	LOCATION	Lacustrine
		Riverine
		Estuary/flood plain
5	RECOGNIZED IMPORTANCE (CURRENT OR FUTURE USE VALUES)	
	Critical or vital wetland	High socio-economic value
	Valuable wetland	Medium to high value
	Dispensable wetland	Low value
	Conservation status	Nature reserve
		Ramsar site
		Important bird area
		Heritage site

Data collection must focus on the key issues needing to be examined for the EIA (identified during the scoping process), and should be collected at the appropriate time(s) of year taking into consideration seasonal climatic variables. *Consideration of likely monitoring requirements should be borne in mind during survey planning, so that the data collected is suitable for use as a baseline to monitor impacts or success or failure of mitigation measures in the future.*

The need for long-term sampling should also be assessed as early as possible. Data should be collected over a sufficiently wide area to make sure that any effects likely to be caused by the development on the wetland can be assessed.

3.5 Prediction of Impacts

Impact prediction must encompass the whole system from plants, animals, soils, water and hydrology. Impact on the socio-economic and cultural should be identified. Impacts should be quantified wherever possible, or fully described if not quantifiable. The following should be considered:

- i) Nature (positive, negative, indirect, direct) of impact.
- ii) Magnitude of impact.
- iii) Duration (short term, long term, intermittent, continuous) impact.
- iv) Extent or location (area or volume covered, where impact occurs).
- v) Whether impacts are reversible or permanent.
- vi) Timing (during construction, operation, immediate, delayed, decommissioning).
- vii) Likelihood (risk, uncertainty or confidence in prediction).
- viii) Significance (local, regional, global).

Beneficial as well as adverse impacts on the following specific aspects of the physical, socio-cultural and biological environment must be assessed:

- i) Flora and fauna.
- ii) Hydrology and groundwater.
- iii) Water quality.
- iv) Soils.
- v) Microclimate.
- vi) Agricultural activities.
- vii) Social, economic and cultural environment.
- viii) Human Settlements.
- ix) Health issues and diseases.
- x) Grazing.
- xi) Visual environment and landscape.

Impacts of the projects as proposed (i.e. assuming no mitigation) on the wetland should be clearly identified, so that if for any reason mitigation is not implemented, the consequences will be clearly identified in the EIA. The impacts and the assigned mitigation measures must be presented clearly for easy understanding and adoption of the mitigation.

3.6 Evaluation:

Criteria for evaluation of impacts must be stated. Where possible, legislative standards or International laws (e.g. Ramsar convention, etc) standards should be followed. If no suitable regulations and standards exist, descriptive criteria may be used, but must be fully explained. The values of the wetland (Table 3.5) and classification (Table 3.6) can be used together with its national and international conservation status for evaluation. Evaluation of significance of impacts should take account of the magnitude, duration and extent of impact, and whether the impact is temporary or permanent. Some indication of probability of occurrence of impacts should also be included.

3.7 Mitigation:

Mitigation strategies must be considered both in relation to individual impacts and collectively for all impacts. Many mitigation measures can be incorporated into the early design stages of the project by regular communication between the consultant and developer or designer of the project. Reporting of mitigation should include such specific features which have been incorporated during the EIA process into the planning and design of the proposed development. *Where mitigation has not already been incorporated into the design or siting of the proposed project during the EIA process, or specific commitment to mitigation measures from the developer has not been obtained, mitigation measures should be included as recommendations, and should be clearly identified as such.* Recommendations for monitoring impacts in the form of an Environmental Management Plan (EMP) should be included. It is not expected that a detailed EMP will be prepared for the EIA however an outline of the content and structure and commitment to prepare an EMP is required (Appendix IV).

3.8 EIA Report

Details of EIA report preparation is provided in appendix VIII, where all the sections of the report are discussed to help on the report preparation.

3.9 Review

Review of the EIA Report /Environmental Impact Statement (EIS) is normally done by the authority (REMA), a government lead agency or an independent panel of reviewers. REMA issues certificate of approval of EIAs or may not approve the EIA. After reaching a decision on the proposed action, if it is approved, the developer will be licensed or permitted to implement the project in accordance with the mitigation measures stipulated in the Environmental Impact Statement and any other terms and conditions attached to the approval. If it is denied, the developer may, if such denial is based on environmental considerations that can further be improved, be urged to revise the proposed action to eliminate adverse impacts. The developer may appeal against the decision in line with the provisions of the Organic Law.

3.10 Monitoring and audits

Monitoring is normally adopted as a mechanism to check that any conditions imposed on the project is being enforced or checks the quality of the affected environment. Audits are periodic assessments to test the accuracy of impact predictions and check on environmental management practices for compliance with requirements of national environmental laws.

3.11 Decommissioning

For various reasons a project may be decommissioned. The decommissioning may have impacts on the environment that have to be understood in order to put in place adequate mitigation measures. The impact may be caused by items such as written off equipment, chemicals, physical structures, pits, ponds, etc of the project if they are just abandoned on site without proper management. Environmental assessment of the decommissioning process should be done to provide adequate mitigation measures.

3.12 Cost of EIA

Article 69 of the Organic Law (N^o. 04/2005 of 08/04/2005) indicates that environment impact assessment shall be carried out at the expense of the developer. Upon project approval, a developer is required to pay an administrative fee to an environmental fund to be determined as a percentage of the estimated cost of the investment.

3.13 Professional Expertise Required for the Wetland EIA Process

Conducting EIA for Wetland Management requires a team that should include, but not necessarily be limited to the following:

- a) Wetland management specialist
- b) Environmental specialist
- c) Wetland, fauna and flora specialist
- d) Environmental Lawyers
- e) Environmental economist
- f) Aquatic biologist
- g) Hydrologist/hydrogeologist
- h) Sociologist (with knowledge of equity and gender issues in natural resources management)
- i) Health (public health, occupational health) specialist;
- j) Development planner or landscape architect;
- k) Archaeologist/Heritage specialist

Minimum academic qualifications should be a University degree or its equivalent in the respective fields of specialisation stated above. The team should have experience in Wetland Management and science and or wetland related EIAs. The composition of the EIA team will vary depending on the project type and complexity. Some team members may fulfil several of the above roles if suitably qualified and experienced. Each member of the team, for their

specialist subject(s), will follow the basic process of EIA: *screening, scoping, consultation, baseline data collection, impact prediction and evaluation of impacts, evaluation of alternatives and identification of mitigation measures.*

Appendix I: Project Brief Format

The developer/Proponent shall submit a project brief containing the following information to REMA:

1. Name and title, address of developer
2. Name, purpose, objectives and nature of the project:
 - a. Outline of the project including size of project,
 - b. Design and activities that shall be undertaken during and after the implementation of the project,
 - c. Inputs (e.g. agricultural inputs, water for irrigation, etc) and products (e.g. effluents, agricultural wastes, industrial wastes, etc) and, sources of inputs etc.
3. Spatialized description using Geographic Information Systems and Remote Sensing as appropriate of the proposed project site and its surroundings, and alternative sites, if any:
 - a. Geographical area to be affected – boundaries, area to be directly impacted
 - b. Flora and fauna
 - c. Meteorological information
 - d. Topographic information
 - e. Land use in and surrounding the site
4. Description of conformity to existing laws on wetlands, project type and the environmental protection.
5. Description of any likely environmental impacts that may arise due to activities of the various phases/stages of the project and proposed mitigation measures
6. Description of any other alternatives which are being considered (e.g. siting, technology, construction and operation procedures, sources of raw materials, etc.).
7. Any other information that may be useful in determining the level of EIA required.
 - a. Facilities: specific description of any infrastructure or related facilities that will be created to meet the objectives of the project;
 - b. Operations: with particular emphasis on the number of workers, their working hours, housing and transportation needs, occupational health or safety hazards, raw materials (sources and supply routes), and products (basic items and transportation needs). Any expected pollution of air, water and land from the proposed action; and

- c. Decommissioning and Restoration: plans for closure of the site (and for restoration of the site to productive post-closure use).

Appendix II: Screening Process in EIA

1.0 Methods used in the Screening

Screening is that part of the EIA process which determines whether an EIA is required for a particular project. A number of steps are involved in deciding whether EIA is required for a proposed project. Explanation of each step (1-5) during screening is given below. The process should be followed through until a decision is made on whether or not EIA is required.

Step 1 - Is the Project listed under Article 2 of the Ministerial Order establishing the list of works, activities and projects that have to undertake Environmental Impact Assessment?

The first step in the screening exercise is to determine whether the project (components) is listed under either in the above Article, Appendix III of these EIA guidelines or in The World Bank Category A or B projects.

In summary, if a project is not of a type listed in the Ministerial Order or The World Bank Category A and B projects, EIA is not required, unless a special reason exists for further environmental examination of the project.

Step 2 - Is the Project on a Mandatory List Requiring EIA?

The second task is to determine whether there is a mandatory requirement for EIA. An EIA will be required if the project is listed under mandatory list for EIA (Appendix III of the Wetland Management EIA Guidelines or if it is in the World Bank Category A and B list of projects). In summary, if a project is on a mandatory list then EIA will be required.

Step 3- Is the Project on an Exclusion List exempting it from EIA?

This step is used to check whether there is any legal exemption for the project. Some projects may be classified by the state as emergency activities that require quick response and delay may cause disaster. These are set out in exclusion or negative lists of projects. If a project is on an exclusion list EIA will not be required.

States' legislation may provide for exceptions to exclusion lists if the project is in a specified sensitive location. Such an exception would apply if the project were likely to have significant effects on a fragile environment e.g. wetlands, surface water, groundwater, lake shores, river banks, etc). State legislation must also be checked to determine any other locations defined as sensitive in which an exclusion list would not apply.

Step 4 - Case-by-Case Consideration: Is the Project Likely to have Significant Effects on the Environment?

Mandatory and exclusion lists are designed to simplify the process by identifying thresholds and criteria defining projects, which are always or are never considered likely to have significant effects on the environment. If a project is not on a mandatory or exclusion list a screening decision must be made on a case-by-case basis.

In undertaking case-by-case screening, the following information is required for decision-making:

- i) Information about the proposal/project and its potential impacts.
- ii) Level of confidence in impacts.
- iii) Characteristics of the wetland, conservation status of the wetland and its surrounding environment and the ecosystem resilience to change.
- iv) Planning, environmental management and decision-making framework
- v) Degree of public interest.

Also considered in the screening analysis are the project size, type and location relative to the wetland and other sensitive environment. In addition such guidance may refer to indicative thresholds and criteria. This is used to check project activities/components that do not appear on the mandatory and exclusion lists.

In summary, where it is decided that a project is likely to have significant effects on the wetland and the environment through a case-by-case examination, then EIA will be required.

Step 5 – Recording Screening Decision

After the screening process, the authority will make a final decision and the developer will be informed in writing. Screening decision is made based on findings of steps 1 through to 4 above. In the screening process the Authority may consult the lead agencies to discuss the proposed project.

Professional judgment

Based on the professional experience the authority and the screening team can make judgement to predict the magnitudes of the impact of the project on the wetland and related environment and decide the levels of EIA required for the project. The following should be considered during screening:

- i) Identification of assessment issues and the selection of Valued Environmental Components (VECs);
- ii) Establishment of study boundaries and criteria for the assessment of the significance of environmental effects for each of the VECs;

- iii) Identification of past, present and likely future projects that could result in cumulative environmental effects in combination with the project;
- iv) Identification of project-environment interactions and likely environmental effects;
- v) Assessment of the significance of residual environmental effects; and
- vi) Determination of the need for further environmental study (EIA) or no EIA.

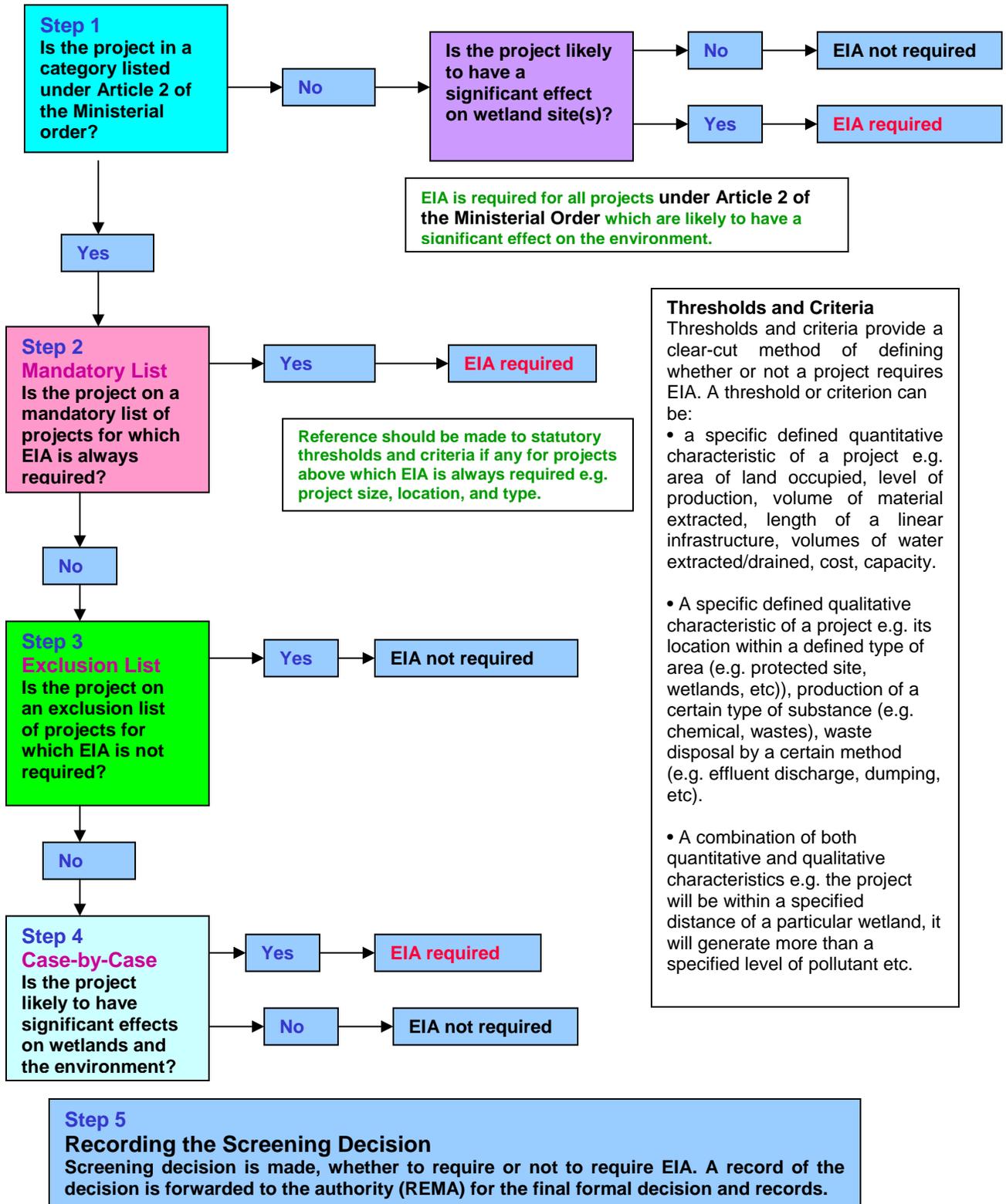
The analysis should consider the project-related environmental effects, cumulative environmental effects, and the incremental environmental effects of the continued operation of the project. The analysis should also provide an integrated evaluation of project-related and cumulative environmental effects.

Valued environmental components that should be considered in the screening exercise for EIA for wetland management are:

- i) Wetland Environment;
- ii) Aquatic (water) Environment;
- iii) Sensitive environment (e.g. nature conservation areas, Ramsar site, nesting site, refugia, endangered species site, etc.);
- iv) Terrestrial Environment;
- v) Public and Worker Health and Safety; and
- vi) Socio-economic conditions in relation to the wetland functions and values.

The screening process follow logical series of steps as described above in steps 1-5. These screening steps are summarised below in Figure AI.

Figure AI: Diagrammatic flow of decision making steps in screening



Screening results

The result of the screening should clearly describe the path followed in Figure AI to arrive at the screening decisions

Checklist such as the one displayed below (Table A.I) can be used to explain the screening results.

Table A3.1. Screening checklist results

The questions here in this checklist should focus (be specific) on projects that can be carried out in wetlands

Brief Project Description:		
Questions	Yes / No /? Briefly describe	Is this likely to result in a Significant effect? Yes/No/? - Why?
1. Will activities of the project phases involve actions which will cause physical/structural changes in the wetlands		
2. Will project activities cause changes in the functions, values and attributes a wetland?		
3. Will the Project use/remove wetland resources such as, water, soils/clay, plants, animals, sand?		
4. Will the project violate any legal requirement for the protection of wetlands?		
5. Is the wetland protected by any national, regional and global laws, conventions, etc?		
6. Will the Project involve use, storage, transport, handling or production of substances or materials, which could be harmful to wetland ecosystem (breeding grounds, nesting grounds, refugia, roosting, etc) or wetland materials that are sources of livelihood to communities (e.g. fish, papyrus, water, etc)?		
7 Will the Project involve drainage or reclamation of the wetland?		
8. Will the Project involve clearing of wetland vegetation?		
9. Will the Project lead to risks of groundwater depletion in the vicinity of the wetland?		
10. Will the project involve disposal of materials that will cause filling that cover the wetland to dry land?		
11. Will the Project involve water withdrawal from surface and groundwater upstream from the wetland?		

Brief Project Description:		
Questions	Yes / No /? Briefly describe	Is this likely to result in a Significant effect? Yes/No/? - Why?
12. Will the Project involve water withdrawal from surface and groundwater downstream from the wetland?		
13. Are there any 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?		
14. Are there other areas apart from the wetland in areas on or around the project 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?		
15. Apart from the wetland are there any other areas on or around the location which are important or sensitive for reasons of their ecology e.g. water courses or other water bodies, forests or woodlands, which could be affected by the project?		
16. Is the wetland or any area on or around the location used by protected, important or sensitive species of fauna or flora e.g. for breeding, nesting, foraging, resting, migration, which could be affected by the project?		
17. Are there any areas or features of the wetland scenic value which could be affected by the project?		
18. Is the wetland important for tourism?		
19. Does the wetland have areas or features of historic or cultural importance, which could be affected by the project?		
20. Does the project location interfere with community access route to the wetland and other resources in the area?		
21. Will the project involve alteration of water courses (e.g. dams, diversions, etc) that will affect wetland water input or output?		
22. Are there existing wetland dependent land uses on or		

Brief Project Description:		
Questions	Yes / No /? Briefly describe	Is this likely to result in a Significant effect? Yes/No/? - Why?
around the location e.g. industry, commerce, recreation, community facilities, agriculture, forestry, tourism, mining or quarrying which could be affected by the project?		
23. Is it a commercial agricultural or ranching project dependent on wetlands?		
24. Is it a mining or quarrying activity that impacts the wetland?		
25. Will the project involve aerial spraying?		
26. Are there any plans for future wetland use(s), which could be affected by the project?		
27. Is it a forestry related activity in or near the wetland, which will impact the wetland?		
28. Are there extractions of resources by the project that can impact ecosystems?		
29. Is there aquaculture or fish breeding project dependent on the wetland, which will impact on the wetland?		
30. Are there any areas on or around the wetland which contain important, high quality or scarce resources e.g. groundwater, surface waters, forestry, agriculture, fisheries, minerals, sand, clay, which could be affected by the project?		

When using these screening guidelines refer to project screening criteria found in Appendix 2 of the General Guidelines for EIA for Rwanda.

Appendix III: List of projects to be considered for Environmental Impact Assessment

All projects listed under Article 2 of the Ministerial Order establishing the list of works, activities and projects that have to undertake Environmental Impact Assessment (infrastructure, agriculture and animal husbandry, works in parks and its buffer zones and works of extraction mines) and those that directly impact the wetlands. Projects considered in the wetland sector should include but not limited to the following:

A. Projects for which EIA required

1. **Urban Developments/ expansion:** construction of markets, housing, townships, industries, shopping centres, fuel stations, leisure complexes/parks
2. **Transportation:** major roads, railways lines, airports and airfields, pipelines and water transport.
3. **Wetland drainage:** wetland reclamation by draining and filling to convert large wetland areas to dry land for other purposes.
4. **Dams, rivers and water resources:** storage dams, barrages, weirs, river diversions, water transfers, canals/channels, flood control schemes, drilling for purposes of utilizing ground water resources including geothermal or drilling for petroleum.
5. **Aerial spraying :** e.g. Pesticides, herbicides, etc
6. **Mining:** quarrying and open cast
7. **Forestry related activities :** timber harvesting; clearance of forest areas; reforestation and afforestation in or adjacent to wetlands
8. **Agriculture:** irrigation projects/schemes, agro-processing & manufacturing industries. Drainage for large scale agriculture (rice, sugarcane, etc); use of new pesticides; introduction of new crops and animals; use of fertilizers.
9. **Commercial aquaculture and fish breeding**
10. **Waste disposal activities:** sites for solid waste disposal; sites for hazardous waste disposal; sewage disposal works; effluent discharge.
11. **Electrical infrastructure**

B. Regulated Activities in wetlands (may require EIA depending on nature and complexity)

1. **Sand/clay mining**
2. **Grazing**
3. **Recreational activities**
4. **Cultivation** (subsistence)
5. **Commercial exploitation of wetland resources** (e.g. harvesting of wetland resources for commercial purposes)
6. **Sewage treatment**
7. **Aquaculture**
8. **Fishing** (traditional fishing, use of fishing gear)

Appendix IV: Preparing Environmental Management Plan

- a) The major output of environmental assessment for proposed project is an EIA report, which includes Environmental Management Plan (EMP). In view of the increasing importance in improving the quality of project implementation and to ensure compliance with required mitigation and monitoring measures identified EIA report will include, as part of EMP, concerned government or related agency undertaking the activities included in environmental management and monitoring plan.
- b) Environmental management involves the implementation of environmental protection and mitigation measures and monitoring of significant environmental impacts. Environmental protection measures are taken to (i) mitigate environmental impacts, (ii) provide in-kind compensation for lost environmental resources, or (iii) enhance environmental resources. These measures are usually set out in an EMP, which covers all phases of the project and outlines mitigation and other measures that will be undertaken to ensure compliance with environmental regulations and reduce or eliminate adverse impacts (see Table A 4.1). The EMP will also cover a proposal for recommending the proposed project to use goods and products that are environmentally friendly.

Table A4.1: Contents of an EMP

i)	Summary of potential impacts
ii)	Description of planned mitigation measures
iii)	Description of planned environmental monitoring
iv)	Description of planned public consultation process
v)	Description of responsibilities and authorities for the implementation of EMP
vi)	Description of responsibilities for reporting and review
vii)	Work Plan: staff chart, schedules, activities and inputs of all including lead agencies
viii)	Procurement Plan that is environmentally responsible
ix)	Detailed cost estimates
x)	Mechanism of feedback and adjustment

- c) Environmental monitoring involves (i) planning a survey and sampling program for systematic collection of data/information relevant to environmental assessment and project environmental management; (ii) conduct of the survey and sampling program; (iii) analysis of samples and data/information collected, and interpretation of data and information; and (iv) preparation of reports to support environmental

- d) Environmental monitoring should have clear objectives, and the survey and sampling program designed to focus on data required to meet the objectives. In addition, the design of the monitoring program has to take into account its practicability considering the technical, financial, and management capability of the institutions that will carry out the program and period of monitoring that will be needed to achieve the objectives (see Table A4.2). The monitoring program should include action or emergency plans so that appropriate action can be taken in the event of adverse monitoring results or trends. It should also be constantly reviewed to make sure that it is effective, and determine when it can be stopped.

Table A4.2: Features of an Effective Environmental Monitoring Plan

i)	Realistic sampling programme (temporal and spatial)
ii)	Sampling methods relevant to sources
iii)	Collection of quality data
iv)	Comparable new data with other relevant data used in environmental assessment
v)	Cost-effective data collection
vi)	Quality control in measurements and analysis
vii)	Innovative methods (e.g. automated stations tracing pollutants)
viii)	Appropriate databases
ix)	Data interpretation by multidisciplinary team
x)	Internal reporting and external checks
xi)	Allowance for third party inputs
xii)	Avenues for public participation (e.g. public presentations, external assessments etc)

Both the environmental management and monitoring plans need to include who will implement them, when, and where. The capacity of the executing agency, Local

Governments (LGs) and community organization should be reviewed to identify feasible approach for implementing the plans. The project lifecycle should be taken into account in setting the timing of implementation. For example, the EMP should identify environmental mitigation measures that should be implemented in the engineering design for the contract documents, and materials to be avoided in procurement, among others. On the other hand, the location for monitoring should be selected based on where the impacts would occur and the areas to be affected. To ensure that the environmental management and monitoring plans will be implemented, it is necessary to identify the key management issues to be included.

Appendix V: Sample Terms of Reference (ToR) for wetland management EIA studies

1. Introduction

The following guide to develop ToRs for wetland management EIAs was adopted with modifications from appendix 4 of the General Guidelines and Procedure for Environmental Impact Assessment 2006.

Developer applies to Rwanda Environment Management Authority (REMA) to carry out an EIA for a proposed project with potential impacts on wetlands in accordance with requirements of EIA Regulations of the Republic of Rwanda. The objective is that the proposed project will incorporate all practical and cost-effective measures for avoiding or minimizing negative environmental impacts, for capturing environmental benefits and for ensuring sound environmental management. Therefore the purpose of the EIA study is to:

- i) provide the Developer with advice on how project design can avoid or mitigate negative impacts and to enhance anticipated environmental benefits, and
- ii) prepare for review by REMA, an EIA report and Environmental Management Plan (EMP) according to national EIA Guidelines and Regulations, 2006.

The Guidelines for EIA for Wetland Management should be followed during the EIA process.

The following are specific issues to address in the EIA study;

2. Project Description

The EIA Expert should provide a description of proposed project and any alternatives being considered in sufficient detail to benefit stakeholders and decision-makers. Policies, legislation, regulations directly relevant to the proposed project and wetland management should be discussed in the EIA report. Relevant documents on wetland management and conservation should also be reviewed.

3. Environmental Concerns to be addressed in the EIA

The EIA study should address key ecological (biophysical), wetland resources use, socioeconomic and catchment landuse issues. In particular the impacts on wetland functions and services should be addressed. Refer to section 3.4 of the Guidelines for EIA for wetland management where key issues are presented.

While the impact study is to be focused on the above issues, the EIA Experts may, in the course of the impact study, identify further concerns which should be investigated. Any such other issues should be brought to the attention of REMA and the Developer.

4. Environmental Management

The expert should pay particular attention to identifying and recommending measures or practices for avoiding, mitigating or managing negative impacts of the project on wetlands and for enhancing potential environmental and socio-economic benefits. Any potential measures or practices identified by the EIA Expert should be brought to the attention of the Developer for possible inclusion in project design and planning.

In particular, the expert should prepare an Environmental Management Plan (EMP) for *construction, operation and decommissioning* of the project. The EIA Expert should estimate the costs of implementing this plan, including all capital, operating and training costs.

5. EIA Project planning and Design

To maximize opportunity for good environmental planning and design of the project, EIA Experts should work closely with the Developer to offer feasible options to enhance the project's environmental performance.

6. Public Consultation

The Developer is obliged to ensure that all concerned public and private stakeholders in the project have adequate input during the EIA study. The EIA Expert should therefore undertake comprehensive consultation with the local community, relevant lead agencies such as REMA, MINAGRI, MINELA, MINALOC, MININFRA, MIGEPROFE in addition to any relevant stakeholders identified when conducting the impact study.

7. Content of the EIA Report

At minimum, the EIA report produced by EIA Experts should contain information outlined in the Appendix VIII of Guidelines for Environmental Impact Assessment for Wetland Management.

8. Reporting Requirements

The expert should submit a final EIA report including Environmental Management Plan (EMP) to the Developer. The Developer after reviewing and appending an EIA Report Addendum to it, if necessary, will submit 10 copies of the final draft report to REMA.

The EIA Expert and developer should be available for discussions about the EIA report with REMA and participate in any public hearings organised by the Authority.

9. EIA Team Members

EIA experts to undertake the EIA study must be recognised and authorised by REMA. Professional experts to undertake this study are listed in section 3.14 of Guidelines for Environmental Impact Assessment for Wetland Management.

Appendix VI: Format of questionnaire for public hearing

The public has a right to express their opinion in the EIA processes. There is no standard format of questionnaire for public consultation however the following may be use to guide the process. Different formats should be developed to suit different categories of stakeholders i.e., general population, lead agencies, local authorities and the Authority (REMA). The procedure to conduct the consultation and the timing can vary, i.e. whether before the EIA study or after review.

1. Presentation of an overview of the proposed project which should include but not limited to:

- a. Name and title, address of developer
- b. Name, purpose, objectives and nature of the project

After the overview presentation the public may be guided to assess the following sections (2 to 6) and express their opinion.

2. Project impacts:

- a. Are there identified impacts of the project to the wetland in question? Make use of a few common parameters e.g. flora and fauna, hydrology, area of wetland, i.e. any environmentally sensitive indicators (e.g. wetlands structure, lakes, rivers, wetland soils, wetland vegetation, wetland fauna, wetland water quality, conservation areas, etc)?
- b. Have all impacts been considered (social, economic, cultural, biophysical, etc)?
- c. Are there explicit indications of positive impacts of the project?
- d. Have offsite (e.g. downstream and upstream) effects of the project been considered?
- e. Have transboundary impacts been considered (if applicable)?
- f. Have cumulative impacts been considered and the nature of impacts clearly stated?
- g. Are there additional impacts to be considered?

3. Mitigation measures

- a. What mitigation measures are proposed? Are they relevant?
- b. Are experiences from previous similar project adequately used in this EIA?
- c. Have concerned population and other groups been involved and have their concerns been adequately addressed by the project preparation?
- d. If settlement is involved, is it clearly and adequately provided for?
- e. If compensation is involved, are adequate compensatory measures provided for?
- f. Are there additional mitigations to be considered?

4. EIA Procedure

- a. Has the Wetland Management EIA Guidelines been adequately used in project planning and the EIA process

- b. Have the national policies and other statutory requirements relevant to wetlands management been adequately addressed by the project and the EIA?
- c. In which phases of the decision-making process has environmental assessment been included?
- d. Is there an economic analysis of the project that also assesses the environmental impacts?
- e. Have there been adequate consultations (e.g. local community, lead agencies, other stakeholders)?
- f. Are there any identifiable gaps in the EIA process?

5. Project alternatives

- a. Have all the possible project alternatives been addressed?
- b. Are the impacts of the alternatives adequately analyzed?
- c. Are the selected alternatives the best?
- d. What additional alternatives do you feel should be included?

6. Project Implementation

- a. Are there adequate capacities for the implementing the EIA recommendations?
- b. Have the responsibilities for project implementation including impact mitigation and monitoring been clearly stated?
- c. Is there a clear Environmental Management Plan for the proposed project?
- d. Is the developer committed to the suggested environmental management actions or activities?
- e. Are there any suggestions to improve on the environmental management within the project?

Appendix VII: Summary of Institutional responsibilities in wetland management.

Institutions	Responsibilities
REMA	Coordination and supervision of environmental protection activities undertaken by environmental promotion agencies (e.g. Wetland management and conservation)
MINELA	
NATIONAL LAND CENTRE AND DISTRICT LAND BUREAU ,	Land use planning and land suitability mapping
ORTPN	
MINAGRI	Is in charge of agriculture. Implementation of Agricultural policy (July 2004) that recognises the need for the protection against land, water and soil degradation of pollution
MINALOC	Is in charge of mobilising the population to participate in the management and protection of the environment (e.g. best practices in wetland use, management and conservation).
MINICOM	Is in charge of the promotion of industries, trade and agro-livestock production cooperatives and management of protected tourist areas. To ensure and promote environmental conservation.
MININFRA	In charge of the organisation of human settlement, town planning, public infrastructure and transport; and ensure environmental protection during infrastructure development
MINECOFIN	In charge of the mobilisation of funds, coordination of donors and allocation of budgets to different Ministries. Coordination of the financing of wetland management projects
MINIJUST	In charge of giving support in the resolution of conflicts by formulating appropriate laws
MIGEPROFE	In charge of mobilisation of men and women in the activities of natural resource protection and management.
MINISANTE	In charge of the promotion of hygiene and sanitation among the population. Public Health
MINEDUC	In charge of training human resources in the management and protection of natural resources
Higher Institutions of learning	In charge of capacity building and research in wetland management and environmental management
NGOs/CBOs	In charge of support and working with communities in environment and wetland management projects, capacity building and financing community projects
Development partners	Support sector budgets
Districts/Local Governments	Implement decentralized services
Private sector	Work under contract to implement environment management projects
Community	Demand and contribute positively to environmental conservation.

Appendix VIII: Guidelines for Wetland Management EIA Report

Environmental Impact Assessment (EIA) report or Environmental Impact Statement (EIS) is the final output of the EIA study for communicating the study findings to the authority (REMA), Lead Agencies, and the public and other stakeholders. The information provided should be clear, succinct and objective. It should include maps, drawings, photos, or other descriptive detail. Only data relevant to the decision-making process should be included.

An EIA report is technically robust, but at the same time it must be clear, intelligible and unambiguous. Those making a decision on the benefits and disadvantages of a proposed development will not be technical experts in all the areas covered by the EIA report. The principal advice is to keep the report short, simple and avoid use of technical terms unless absolutely necessary. Technical appendices may be included as appropriate. Below is the proposed contents list for the EIA report:

1. Executive summary.
2. Introduction.
3. Legislative framework.
4. Description of the proposed development.
5. Description of the existing environmental conditions within and surrounding the site (baseline data) .
6. Prediction and evaluation of significant environmental impacts(Potential impacts, Residual impacts).
7. Mitigating measures.
8. Alternatives.
9. Environmental Management Plan (EMP).
10. Conclusions.
11. Bibliography/ list of references.
12. Appendices (e.g. maps and technical information).

1. Executive Summary (Non Technical)

The summary must be written in non-technical language to facilitate understanding by all readers. It should be concise and must give an overview of:

- i) What the project is.
- ii) What the significant environmental impacts will be.
- iii) What has been done or is recommended to minimize these impacts.
- iv) What significant residual impacts will remain after mitigation?

2. Introduction

The introduction should present the background to the project, the purpose of the EIA, responsibility for the EIA, the content of the EIA report, responsible party for preparing the EIA report, EIA methodology used.

3. Legislative Framework

This section deals with the laws and their administrative regulations considered during the planning of the project, as they relate to the environment and to the proposed project. This section must highlight the policy; legal and institutional matters related to the proposed project (see section 2.2). Policy and legislative documents that need to be reviewed under this section of the report are elaborated in section 2.2. The statutory documents reviewed will differ depending on the nature of the project being assessed and the category of project and the characteristics of the wetland anticipated to be impacted.

4. Description of the Proposed Project

This section of the report should be brief, and may refer to a feasibility study carried out by the developer or their agent. The following should be covered briefly.

a) Objectives and Scope of the Proposal

There should be a clear statement of the objectives of the proposal, including rationale and/or need for the development.

b) The Location

The following information should be provided:

- i) Title details and land tenure.
- ii) Land use constraints.
- iii) Maps, plans, ortho-rectified aerial photographs or satellite imagery of appropriate resolution used in site description, clearly identifying the location of the proposed development relative to: the wetlands; Land and water uses; vegetation and fauna communities; infrastructure such as roads, utilities, etc.
- (iv) Compatibility of the proposal with: Any strategy such as local management plans; Wetlands location in relation to proposed activities; any historical sites, cultural or environmental protection area and Community wetland uses.

c) Description of activities to be done at the project site

Describe the works required prior to commencement of operations, such as:

- i) Any additional land requirement.
- ii) Timing, staging and hours of work.
- iii) Proposed work methods including temporary works, the equipment to be used.
- iv) Methods and route of transport of the equipment to the site.
- v) Pollution control systems, e.g. erosion and sediment control systems.
- vi) Import or export of material to/from the site, including method and route of transport.
- vii) Any stabilization structures or earthworks including dredging, reclamation,

- viii) Details of the workforce, including source, expected numbers and distribution throughout construction.
- ix) Details of potential land, wetland and water contamination and degradation which may constrain work on the site or disposal of excess material.

5. Potential Impacts, Alternatives and Consultation

The section is a summary of the outcome of the process of identification and prioritization of potential impacts, it should include:

- i) All issues identified.
- ii) The key issues, which will need a full analysis in the EIA.
- iii) The issues which will not need a full analysis in the EIA, and the reasoned assessment of why they do not need full analysis.

A summary of the general alternatives (e.g. alternative locations, alternative schemes, alternative equipment use, alternative activities, etc) should be given, with the reasons for the selection of the preferred option. The section should include details of who has been consulted, and the outcome of such consultations.

a) Potential Impacts

Scoping of the EIA should develop from a preliminary investigation of baseline conditions, consultation with regulatory bodies, and a preliminary site visit. The land preparation phase is likely to give rise to negative impacts regarding land take and wetland degradation. During implementation negative impacts on water quality and quantity, hydrology in general may also occur. Negative impacts are likely regarding loss of useful land to the project, wetlands degradation, and landscape alteration. Drainage caused by project activities may have a negative impact on the wetland, groundwater and the flora and fauna. There will be impacts on the wetland structure and functions.

The procedures or methodology used to identify and priorities issues should be outlined. This should include:

- i) Relevant guidelines issued by government authorities, provisions of any relevant environmental protection legislation, and relevant strategic plans or policies.
- ii) Relevant research such as wetland hydrodynamics, flora, fauna and ecology as a reserve for plants and animals, nutrient dynamics, water purification, breeding habitat and refugia, etc and relevant preliminary studies or pre-feasibility studies.

b) Alternatives

The EIA should include an assessment of the impacts on the wetland or consequences of adopting alternatives, including:

- i) Alternative location(s).
- ii) Alternative schemes and layouts of the development and services (these may be further developed under mitigation section).
- iii) Alternative management or operational practices (these may be further developed under mitigation section).

The scoping exercise can explicitly report on what grounds the preferred alternative was chosen. The main part of the EIA can then concentrate on the preferred option.

c) Consultation

The EIA report should include details of consultation undertaken as part of the EIA process. A brief description of the reason for and the outcome of consultation should be included. Typical stakeholders consulted are the local community, the proponent and project beneficiaries, government and other lead agencies, NGO and CBOs, the private sector, academic institutions, research institutions and donor agencies. Important agencies or departments might include those responsible for water resources and biodiversity, conservation of natural resources as appropriate.

Consultation methods should include the following selected as appropriate depending on the target groups to be consulted:

- i) Informing: this is a one way flow of information to the public
- ii) Consulting: this is a two way flow of information that gives opportunities for the public to express views
- iii) Participation: this is where there is interaction and sharing analysis and agenda setting between the public, proponent and other stakeholders. All stakeholders are involved in decision making through consensus.

6. Description of the Existing Environmental Conditions within and surrounding the project site

An overview of the existing environment should be provided in order to place the proposal in its local and regional context using maps, plans, ortho-rectified aerial photographs or satellite imagery of appropriate resolution, and to provide baseline data which may be used for subsequent monitoring. Key issues during baseline data collection are presented in section 3.4. General information to be provided during the EIA includes:

- i) Major wetland uses (e.g. community fishing, harvesting, wastewater treatment, etc).
- ii) Hydrology and groundwater.
- iii) Biodiversity.
- iv) Flora and fauna.
- v) Water quality
- vi) Socio-economic and cultural environment.

- vii) Land use (e.g. crop agricultural activities, livestock raring, waste management, urban development, etc)
- viii) Microclimate.
- ix) Diseases.
- x) Wetland type and conservation status.
- xi) Visual environment and landscape

Data must be specific to the proposed site, rather than general information on a particular area, and the EIA should only deal with issues relevant to the proposal being assessed. For easy reading of EIA reports it may be sensible to include the specialist detail for each of the following sections as a technical appendix to the report, with a summary of each section in the main EIA report.

7. Water Quality

Discussion should be focused on those water quality characteristics that may be altered, and on the assimilation capacity of the wetland which will be affected by the project. The existing microbiological, chemical, biological and hydrological conditions in the wetlands and any water body nearby. Baseline data collected should be sufficient that predicted conditions can be calculated should the development be approved. The following wetland and water quality indicators and aquatic conditions must be assessed when the proposed project is implemented:

- i) Dominant wetland vegetation and its status
- ii) Endemic wetland fauna.
- iii) Aquatic biological indicators (e.g. invertebrates, vegetation, etc).
- iv) Nutrients (nitrogen and phosphorus).
- v) Levels of dissolved oxygen and Biochemical Oxygen Demand,
- vi) Particulate matter,
- vii) Chemical contaminants from likely industrial or agricultural sources such as metals, biocides (insecticides, herbicides, etc), PCBs and hydrocarbons and heavy metals

8. Social, Economic and Cultural Issues

Collection of baseline data should cover the following:

- i) Existing community use of the wetlands.
- ii) Other stakeholders use of the wetlands.
- iii) Existing health of the local population (in quantitative terms where possible) which may be affected by impacts on the wetlands and water.
- iv) Existing potable water usage of the community, which may be affected after destruction of wetlands.
- v) Local employment conditions which may be affected during construction and operation.

- vi) Existing economic situation which may be affected by negative impacts on the wetlands and water sources in the project area (other developments, land values, agriculture, tourist facilities).
- vii) Identification of cultural or historical sites of significance likely to be affected by the proposal, and an assessment of their cultural and/or financial importance.

Areas or sites of wetland that are of particular social or cultural importance or sensitivity should be plotted on maps or diagrams, shown in relation to the proposed development.

9. Flora and Fauna

Wetlands flora and fauna or their habitats which are likely to be disturbed or obliterated by the project must be identified and their importance evaluated. Data collection and surveys by expert on flora and fauna should include:

- a) Identification, description and distribution of areas of wetland habitats that may be directly or indirectly affected especially those:
 - i) Supporting threatened or protected species or habitats.
 - ii) Of socio-economic importance (e.g. tourism, crafts, aquaculture or subsistence fisheries, cultural).
 - iii) Of nature conservation or scenic importance.
- b) Assessment of the importance of the wetland habitats or species identified above, in terms of International, National, Regional or Local importance.
- c) The reviewer therefore bases on the above data collection to make the appropriate decisions.

10. Hydrology and Groundwater

Hydrological issues to consider are those that may either be affected by the development, or affect the development itself, include:

- i) Drainage patterns, including the location of community water sources, areas prone to floods.
- ii) Status of water bodies (river, stream, lake) associated with the wetland (water quality, flow, uses, etc).
- iii) Groundwater quantity, and quality, e.g. depth to groundwater level, whether groundwater is used for water supply and its quality, whether control of the use of groundwater is done in the proposed project area.
- iv) Presence and importance of structures likely to be affected by changes in groundwater levels.

For larger projects that drain the wetland it is highly recommended that the hydrology and groundwater conditions are analysed.

11. Visual Environment and Landscape

The visual environment and landscape should be assessed for their sensitivity to change. Sensitive receptors likely to be affected should be identified (e.g. tourist establishments, prestigious developments, schools, recreation, etc).

12. Prediction and Evaluation of significant Environmental Impacts

EIS should include a discussion of impacts during the entire project cycle. Impacts of different aspects of the proposed project on the wetland should be considered separately. Criteria for evaluation of the significance of impacts should distinguish between impacts which are:

- i) Positive and negative.
- ii) Reversible and irreversible.
- iii) Short term and long term.
- iv) Direct, indirect or cumulative.

Evaluation criteria should be based on local legislative standards wherever possible. Where these are not available, acceptable international standards should be used (e.g. WHO, US EPA, etc. guidelines).

13. Mitigation Measures and Alternative Process

Mitigation measures and strategies are considered to reduce the negative impacts on the wetlands and wetland stakeholders. Mitigation must be sustainable, integrated and feasible. Some mitigation measures should be implemented at a very early stage of design works easily, but are difficult or expensive to implement once early design has been completed. Therefore it is vital that any mitigation should be discussed and developed in consultation with the developer and regulatory authorities throughout the EIA process. This section of the EIA report should therefore be a summary of any mitigation already implemented in the ongoing design of the facility, and also include any recommended mitigation strategy to be implemented during the project phases.

This section may also include any enhancement measures for which there is a commitment from the developer, which will enhance any positive impacts of the development. This may include measures such as planned public education programmes in wetland conservation and wise use of wetlands.

14. Residual Impacts

This section should give a summary of those impacts which will remain assuming mitigation has been implemented. It will therefore include those impacts for which there are no suitable or only low levels of mitigation, and positive impacts.

15. Monitoring Plan

The EIA should outline the need for, and use of any proposed monitoring plan, its duration and reporting procedures, define suitable criteria for monitoring, and actions to be taken in the event of non-compliance with these criteria. Parameters which may be relevant include:

- a) Performance indicators in relation to critical operational issues including:
 - i) Flora and fauna of the wetland.
 - ii) Water quality.
 - iii) Wetland area undisturbed.
 - iv) Wetland functions (e.g. flood control, support of endemic species, etc).
 - v) Wetland use(s).
 - vi) Ground water and hydrology.
 - vii) Wetland wise use.
- b) Monitoring of complaints received.
- c) Environmental Management Plan.

This is a document designed to ensure that the commitments in the EIA, subsequent assessment reports, and approval or license conditions, are fully implemented. This should demonstrate that sound environmental practices will be followed throughout the project cycle. It should cover the following:

- i) Management of preparation phase impacts, (e.g. disposal of waste material, re-vegetation management plans, drainage system).
- ii) Management of operational impacts, (e.g. Wastes, effluent quality and quantity management, pollution, hazardous materials, groundwater drawdown, drainage, water abstraction, soil acidification, soil salinization, etc).
- iii) Strategies and action plans to feed information from the monitoring program into the management practices.
- iv) Public awareness and training programmes for operational staff.
- v) Indicators of compliance with licensing and approval requirements.
- vi) Key information that will be monitored, its criteria and the reasons for monitoring (e.g. hydrology, flora and fauna, soils, water quality, wetlands existing uses, water volumes and flows, area of the wetland, conservation status, population density in the wetland catchment).
- vii) Actions to be undertaken if the monitoring indicates a non-compliance with the defined criteria or an abnormality.

- viii) Internal reporting procedures and links to management practices and action plans.
- ix) Flooding records
- x) Reporting procedures to relevant authorities and, if appropriate, to the consent authority or the community.

16. Conclusions

Conclusion should be a summary of the prediction of the impacts and evaluation of the impacts, the mitigation measures assigned to the impacts and the alternatives and also the identified residual impacts to emphasize:

- i) Which impacts are likely to be significant/
- ii) How significant they will be/
- iii) Which parts of the environment are likely to be affected?
- iv) Whether mitigation is possible.
- v) The likely success of mitigation measures adopted or recommended to alleviate those impacts.

This information can be presented either as text, or as summary tables, if desired.

17. Recommendation

Based on the baseline data, the predicated impacts and the consideration of alternatives recommendations should be made on the proposed project. Recommendation may include instructions for strict monitoring of some wetland attributes at a certain frequency temporally and spatially as indicators of impacts or success of mitigation. In this section it will be stated whether the project can be implemented or not. In many cases implementation is recommended with some conditions to be fulfilled by the proponent. REMA will make decision to issue certificate of authorisation or not based on these recommendations.