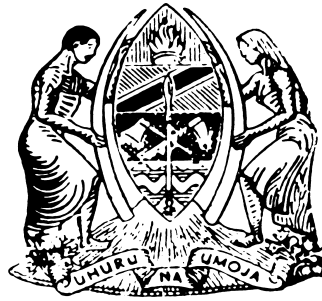


**THE UNITED REPUBLIC OF TANZANIA**



**MINISTRY OF LANDS, HOUSING AND HUMAN  
SETTLEMENTS DEVELOPMENT**

**IN COLLABORATION  
WITH  
PRESIDENT'S OFFICE PLANNING COMMISSION**

**PROJECT COORDINATION UNIT – BRU**

**ENVIRONMENTAL ASSESSMENT FRAMEWORK**

*October, 2008*

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## LIST OF ACRONYMS

BOD	Bio-Oxygen Demand
CCRO	Certificate of Customary Right of Occupancy
CRO	Certificate of Right of Occupancy
EA	Environmental Analysis
EFP	Environmental Focal Person
EIA	Environmental Impact Assessment
EMP	Environment Management Plan
EAF	Environmental Assessment Framework
ESSF	Environment and Social Screening Form
GOT	Government of Tanzania
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
HLG	Higher Local Government
LGSP	Local Government Support Program
LGI	Local Government Institution
LLG	Lower Local Government
LRP	Land Reform Program
MLHSD	Ministry of Lands, Housing and Human Settlements Development
MPEE	Ministry of Policy and Economic Empowerment
NEAC	National Environment Advisory Committee
NEMC	National Environmental Management Commission
NEMP	National Environmental Management Program
NGO	Non-Governmental Organization
OP	Operational Policy
PCU	Project Coordination Unit
PSCP	Private Sector Competitiveness Project
RAP	Resettlement Action Plan
RPF	Resettlement Policy Framework
RSP	Resettlement Screening Plan
SEAF	Strategic Environmental Assessment Framework
TAC	Technical Advisory Committee
TOR	Terms of Reference
TPC	Technical Planning Committee
VDC	Village Development Committee
WB	World Bank

## **EXECUTIVE SUMMARY**

### **BACKGROUND**

The Private Sector Competitiveness Project (PSCP) supports the government program through three mutually reinforcing components: Component 1 – Strengthening Business Environment; Component 2 – Developing Enterprise Competitive; and Component 3 – Improving Access to Financial Services. Component 1 on strengthening the business environment includes a subcomponent on land reform.

The Land Reform project which was appraised in October 2005 and approved by the World Bank Board on December 15, 2005, became effective on July 5, 2006. It was given category C because there was no expectation of safeguard issues. The project was later reclassified to category A or B which necessitated the preparation of Environmental Assessments Framework and Resettlement Policy Framework. This EAF Document is prepared to cover activities under Land Reform Program which are:

#### **a) Formalization of Property Rights in Unplanned Urban Settlements.**

There has been an ongoing project to formalize property rights in the unplanned settlements in Dar es Salaam by issuing Residential Licenses under Section 23 of the Land Act No. 4 1999 to enhance security of tenure and thereby increase the economic value of land and properties to such that they can be used as collateral by the majority of Tanzanians who run their economic activities in the informal sector without legal documents. This initiative has been included in the project and will cover Dar es Salaam and Mwanza.

#### **b) The Piloting of Systematic Adjudication and Surveying in Two rural Districts.**

Two rural districts, Babati and Bariadi have been identified for the piloting community – oriented systematic approach to the certification of land under the 1999 Village Land Act to issue Customary Certificates of Right of Occupancy (CCROs). The pilot will cover 9 villages in each of the 2 districts, with each village having an average of 4,000 land parcels. Altogether, about 70,000 land parcels will be surveyed, registered and CCROs impacts for them. It is estimated that half of the villages in the 2 districts have already had their boundaries surveyed and demarcated. It is presumed that during implementation of this project there will be some environmental impacts which need to be addressed; therefore this EAF has been prepared to take care of these issues.

### **2. Objectives of the Environmental Assessment Framework (EAF)**

The objective of this Environmental Assessment Framework is to provide an Environmental and social screening process to allow for the identification, assessment and mitigation of potential negative environmental and social impacts related to the Land Reform Program (LRP). Whilst this program does not appear from the consultations to present any major environmental or social concerns, safeguard measures have to be in place and these measures form crucial and imperative components in the planning process, both in Land Use Planning for the rural pilot schemes of nine villages each in the Districts of Babati and Bariadi and the Urban planning components on Unplanned Settlements in Mwanza and Dar es Salaam.

### **3. Methodology used to prepare the EAF**

The present EAF was prepared based on existing general literature, among them: Tanzanian Environmental Management Legislation and Impact Assessment Regulations, Guidelines and the World Bank's Safeguard Policies, Land Use and Urban Planning Acts as well as the Land Acts with their associated regulations and Schedules.

#### **4. Environmental And Social Impacts**

The land titling exercise itself, without Regularization involving infrastructure and services will not present major environmental impacts that are irreversible or could not be neutralized.

The re-alignment of the settlement accesses in the planning exercise in Dar es Salaam and Mwanza will necessitate and cause some loss of land and assets resulting in adjustments of existing concessions and possible relocation within the same settlement.

In the two pilot Districts of Babati and Bariadi, some small land loss may occur, again as a result of delineation of agricultural and grazing lands demarcation and protection of forests and sensitive areas such as lake shores and river banks.

In both settings, the World Bank OP4.12 on Involuntary Resettlement will be triggered and hence the proposal by the Bank for re-classification of the Land Reform Sub-component of the PSCP/BEST to category A or B in accordance with Bank criteria.

Future Regularization, however, will entail the provision of infrastructure and services particularly:

- Education and health facilities,
- Roads (community feeder roads in particular)
- Rural electrification,
- Water supply and sanitation facilities,
- Solid and liquid waste disposal
- Drainage,
- Markets
- Recreation facilities
- Cultural/ religious facilities

At which time major environmental, social and resettlement concerns will need to be addressed.

As regards to the land acquisition issue, specifically on resettlement and its consequences, this is dealt with in separate framework document (RPF) incorporating the existing Tanzania Government and World Bank mechanisms on the measures to be taken by the program to avoid the negative social impacts or to redress these impacts where unavoidable.

#### **5. National Environmental Legislation**

At national level, there are various legal instruments in place and the most important are:

- The National Environmental Management Act 2004
- EIA regulations and guidelines on environmental impact assessment,
- Environmental Protected Areas
- Standards for Discharge of Effluent or Wastewater,
- Draft Standards for Air Quality,
- Draft Standard for Noise and Vibration,
- Draft Standards for Soil Pollution,
- National Environment (Wetlands, River Banks and Lake shore management) Regulations and several other provisions as contained in the Act supplement too numerous to enumerate.

#### **World Bank's Safeguard Policies.**

A full list of the policies with appropriate comments is contained in the main report. Suffices to

say that:

- OP4.01 Environmental Assessment,
- OP4.04 Natural Habitats
- OP4.09 Pest Management
- OP4.10 Indigenous People
- OP4.11 Cultural Heritage,
- OP4.12 Involuntary Settlement
- OP4.36 Forests,

Could well be triggered by this program and other non - bank funded projects if screening process is not cognizant of the negative impacts and the mitigating measures associated with them.

## **6. Environmental Management Plan (EMP)**

An Environmental Management Plan (EMP) for the project is intended to ensure efficient environmental management of project within the program.

## **7. The screening Process**

The different stages of the environmental and social screening processes are detailed in the main report for use by technical staff in the Cities, village committees and Local Government. The scope of the environmental and social measures required for the Land Reform Program activities will be dependent on the results of the screening process. Thus, the results will determine whether:

- No environmental work will be required,
- The implementation of simple mitigation measures will suffice or
- A separate EIA will be required.

In the Land Reform Program the Environmental Management Plan (EMP) will be prepared. Specifically The EMP will have the following :

- The relevant project activities,
- The potential negative environmental and social impacts
- The proposed mitigation measures
- Responsibilities for implementing the mitigation measures,
- Responsibilities for monitoring the implementation of the mitigation measures,
- The frequency of the afore – mentioned measures
- Capacity building needs and
- The cost estimates for these activities.

The EMP will be included in the LRP Execution Manual (PEM), with associated costs.

## **8 Capacity Building on Environmental Issues:**

Environmental Management is the key for the sustainable development. In this project awareness campaign on environmental issues will be evident.

As to awareness raising activities several budgets have been proposed for training program for technical staff at the two districts in the form of seminars/workshop assessment exercises by Ministerial staff on the evolution of the program, consultations with the communities impacted by the LRP and with all stakeholders.

The total cost of the capacity building and mainstreaming exercises in two Districts is US \$



158,730.00. and

**9. Institutions Responsible for Management and Monitoring:**

Local Government Environmental Officers in collaboration with sector members of the LG technical committees, as well as village committees should manage and monitor the measures put in place to avoid the adverse effects that could emanate from LRP activities.

**10. Local Government Coordination/ Supervision, Implementation and Monitoring in each District or Municipality:**

A designated Environmental Focal Person (EFP) will be the Environmental Officer who will ultimately be responsible for Reviewing and if required completing the environmental and social checklists (Annex 2) and determine the environmental category of the screened activity to be able to identify and mitigate the potential environmental and social impacts of LRP activities.

The Environmental Officer will ensure that the supervision and overseeing of the conditions for implementing mitigation measures are adhered to in contractual obligations as stipulated for executing entities.

**Implementation**

Environmental Officers, Individual Consultants or Consultancy

Firms duly designated by NEMC will be retained for carrying out any EIA studies;

The Private contractors use for execution of certain works will be held responsible for the implementation of the mitigation measures as indicated in the Environmental Guidelines for Contractors (Annex 3).

**Monitoring**

At Local Government level, the LG Environmental Officers will, in consistent manner and in association with District/Municipal Sectoral Officers (works, agriculture, water, forestry, fisheries, etc) report to the LG authorities any deviation on the norms set out in the environmental and social management plan or framework.

At National level National Environmental Management Council (NEMC) will oversee as necessary the implementation of these activities.

**11. General Considerations**

Regional and District Commissioners will be closely associated with the Land Reform Program through information on the nature and scope of the program in their Administrative areas.

The anarchic occupation of wetlands, drainage valleys, cultural heritage and protected areas and forests should be discouraged. The answer lies in the vigilance of LGs to prevent their settlements at the out – set. Where the municipality, district or LG are is land stressed, the LGs should initiate less extensive socio–economic activities such as agro–processing, aqua–culture and appropriate cottage industries to sustain the populations concerned.

With respect to the infrastructure sub–projects of the Land Reform Program, the implementation of the EMPs and RAPs should be integral components of the overall project costs and as such cannot be side – lined nor postponed.

**The contractors, in the execution of their contracts should:**

Comply with the environmental management guidelines described in Annex 3,

Comply with all of the requirements of an EIA where this had to be carried out and the EAF and shall, in accordance with accepted standards, employ techniques, practices and methods of construction that will ensure compliance with these standards and, in general, minimize environmental damage, control waste, avoid pollution, prevent loss or damage to natural resources, and minimize effects on surrounding landowners, occupants and the general public,

Implement such agreed remedial measures immediately to prevent further damage and to repair and restore any damage that may have occurred prior to, during and after construction,  
Organise labour, plant, transport and equipment to perform the work in accordance with the environmental requirements,  
Ensure the project is implemented in accordance with the environmental standards specified in the EAF,  
Implement agreed actions resulting from routine monitoring, or inspections,  
In addition, shall implement their own audits to ensure conformity with the requirements of the EAF,  
No certificate of completion of works shall be given until such time as the Land Reform Program Management is satisfied through its own audit that all environmental and social mitigation measures have been effectively put in place.

## **1.0 INTRODUCTION**

### **1.1 BACKGROUND**

#### **1.1.1 The Private Sector Competitiveness Project (PSCP).**

The objective of the PSCP is to create sustainable conditions for enterprise creation, growth and innovation which respond to markets opportunities. The project objective will lead to the development of a healthy and competitive domestic private sector, measured in the number of new businesses, the growth of existing businesses and increasing formalization of informal business. This will be achieved by reducing the cost of doing business and increasing the capacity of the local private sector to participate in domestic and international markets. Private sector capacity will be developed in order to better utilize opportunities in value chains of key competitive clusters or areas of growth.

The PSCP supports the government program through three mutually reinforcing components: Component 1- Strengthening Business Environment; Component 2 -Developing Enterprise Competitiveness; and Component 3 - Improving Access to Financial Services. Component 1 on strengthening the business environment includes a subcomponent on land reform.

The project, which was appraised in October 2005 and approved by the World Bank Board on December 15, 2005, became effective on July 5, 2006. It was given a C category for safeguards because there was no expectation of safeguard issues.

It is now proposed that the Project be re-classified as A or B based on the criteria of the Project triggering one or more Operational Policies of the Bank.

The Bank felt also that this EAF should exclude all Environmental issues on infrastructure associated with the Formalization/Certification exercises in Dar es Salaam and Mwanza and the Adjudication in 9 villages retained for each of the 2 Pilot Districts of Babati and Bariadi and address only environmental issues and OPs that will be triggered by the Titling exercises leading to the delivery of CROs and CCROs.

### **1.2 PROJECT COMPONENTS**

#### **1.2.1 The Land Reform Sub-component.**

The objectives of the Land Reform Subcomponent are to support implementation of the key activities of Government of Tanzania's (GOT) Strategic Plan to Implement Land Laws or (SPILL) 2005 that will facilitate the development of a competitive domestic private sector. Support will be given to the more urgent activities identified for implementation in the short (two years) and medium (five years) term. Accordingly, the subcomponent will provide technical assistance and capacity building to develop efficient land registration and administration services by reengineering the processes, supporting updated legislation, improving the infrastructure for surveying, mapping and registration, and implementing the Village Land Act in 15 districts. The activities to be supported under the subcomponent include: (i) land registry and information; (ii) improved survey and mapping infrastructure; (iii) decentralization of land administration services including the issuing of certificates of customary rights of occupancy (CCROs); (iv) registration of property rights in unplanned urban settlements including the issuing of residential licenses; (v) strengthening the land dispute resolution mechanisms; and (vi) capacity building.

While the broad activities and process for implementation were identified and agreed before project approval, detailed preparation was undertaken as part of project implementation during which time two key adjustments were made to the activities for funding under the subcomponent.

First, a land titling pilot has been proposed in rural areas to test a community-oriented, systematic approach to land titling which also goes hand-in-hand with land use planning. Second, in addition to issuing residential licenses, it is proposed that certificates of rights of occupancy be issued in urban unplanned settlements as part of a land use planning exercise, called a “scheme(s) of regularization”, which involves zoning and laying out of plans for public investments such as roads, public utilities and sanitary landfills as well as delineation of “hazardous” areas where people may not live. While the overall goal of the rural land certification pilot and the registration of properties in unplanned urban settlements is to formalize and document land use rights of occupants, there is a possibility that some people would get displaced during the acquisition of land by local authorities for common, public or state use as part of land use planning (scheme(s) of regularization in urban areas). Because of the prospect that some people would get affected by the processes of land use planning and land registration, a resettlement policy framework is required to guide the authorities in undertaking their land use planning and property registration.

### **1.2.2 Formalization of Property Rights in Unplanned Urban Settlements.**

There has been an ongoing project to formalize property rights in the unplanned settlements in Dar es Salaam by issuing Residential Licences under Section 23 of the Land Act 1999 to enhance security of tenure and thereby increase the economic value of land and properties to be used as collateral by the majority of Tanzanians who run their economic activities in the informal sector without legal documents. It is estimated that there are 400,000 plots of unplanned housing in Dar es Salaam. Phase I of the Project commenced in 2004/05 and completed field work and documentation for 220,000 properties, and the local authorities are issuing residential licences to those (out of the 220,000) who apply for them. Under the PSCP, there is a proposal to upgrade the Residential licences to CROs to increase the term from the current 2 years to 33 years. And this has to be done together with “Scheme(s) of Regularization” that entail planning for the provision and/or upgrading of basic public services that involve land which local authorities have to acquire from occupants. Two areas have been selected for the “Scheme(s) regularization” and issuing of CROs: (i) the areas in Dar es Salaam covered by the Community Infrastructure Upgrading Program (CIUP) of the Local Government Support Project and the remaining parts of Dar es Salaam to be implemented in Phase II of the on-going government project; and (ii) areas in Mwanza where regularization schemes have been prepared in a participatory approach as per Land Act 1999 Sec 56-60 and GN 85 of the 1999 Land Act and the Land (Schemes of Regularisation) Regulations, 2001. The prospect of taking land from occupants during the regularization schemes has raised the need for preparation of a Resettlement Policy Framework that meets the Policy Requirements of the Republic of Tanzania and the World Bank’s Safeguard Policies for involuntary resettlement of residents as per OP 4.12.

### **1.2.3 The Piloting of Systematic Adjudication and Surveying in Two Rural Districts.**

Two rural districts, Babati and Bariadi, have been identified for the piloting of a community-oriented systematic approach to the certification of lands under the 1999 Village Land Act to issue CCROs. The pilot would cover 9 villages in each of the 2 districts, with each village having an average of 4,000 land parcels. Altogether, about 70,000 land parcels would be surveyed, registered and CCROs issued for them. It is estimated that half of the villages in the 2 districts have already had their boundaries surveyed and demarcated. While attempts would be made to select villages whose boundaries have already been surveyed and demarcated, there is a likelihood that the pilot would include some un-surveyed and un demarcated villages where surveying of village boundaries would have to be undertaken under the pilot project. In addition to surveying of village boundaries, it would be necessary to prepare village land use plans as provided for in the Land Use Planning Act 2007. The village land use plans would be prepared in a participatory process which

would also involve the formulation of village-level bylaws to govern the use of resources and establish a mechanism of redress in cases of violations especially if a village includes different types of land; these lands, such as lands for communal use, lands for seasonal use such as grazing lands on arable land, community woodlots and community forests would be identified on the ground, delineated and included in village land use plans which will be prepared with the aid of satellite imagery or aerial photography funded under the pilot. The preparation of a village land use plan is a necessary precondition for systematic adjudication, surveying and issuing of CCROs. Because of the prospect that village authorities may take land from customary land occupants settled on land designated for communal use or conservation purposes in their land use plan, an RPF needs to be prepared. The RPF would need to meet the Policy Requirements of the Republic of Tanzania and the World Bank's Safeguard Policies for involuntary resettlement of customary land occupants as per OP 4.12.

It should be noted at this stage that at the time the mission was taking place progress in the formalization and adjudication programs were as follows:

The planning exercises of the settlements in Mwanza were proceeding satisfactorily with road alignments and concessions clearly demarcated with reserved areas that will be required for education, health, markets and recreation facilities. For Dar es Salaam, the Planning exercise is envisaged in a second phase comprising among other processes the upgrading of Licences.

For the villages in the pilot districts the boundaries of some villages have been demarcated. Land Use Planning does not appear to have commenced. It was also not possible to confirm in the time available whether land and soil capability studies had been undertaken in conjunction/collaboration with the agricultural and livestock sectors in order to subsequently formulating appropriate technological packages/options for conservation of the land and soil resources in the Pilot Districts and the villages retained as well as avoiding overstocking and overgrazing.

### **1.3 OBJECTIVES OF THE ENVIRONMENTAL ASSESSMENT FRAMEWORK**

The objective of this EAF is to provide the tools for planning of the Land Reform Sub-component of the PSCP in an environmentally sustainable manner and in accordance with the dispositions of the Environmental Management Act of Tanzania and the safeguard policies of the World Bank.

The methodology adopted comprised a series of consultations with Government Ministries, Departments and Agencies in Dar es Salaam, Mwanza and the Districts of Babati and Bariadi as well as the communities targeted by the program.

Several documents relating to Urban and Land Use Planning leading to Formalization, Regularization, Adjudication and Certification, CROs in the cities of Dar Es Salaam and Mwanza and CCROs in the Pilot Districts were consulted.

## **2.0 INSTITUTIONAL AND LEGAL FRAMEWORKS**

### **Context**

The United Republic of Tanzania with its Constitution, the National Land Policies on land use, urban planning and the Environmental Management Act transferred the responsibility for service delivery from central to Local Government (LGs).

The second schedule of the Environmental Management Act devolved environmental and natural resources management to LGs. It is within this context that this current project has been building

up the capacities of LGs, amongst other activities in environmental and social screening, assessment and management of the program.

To ensure that, the Formalization/Certification exercises in Dar es Salaam and Mwanza and the Adjudication in selected villages in the two Rural Districts of Babati and Bariadi are carried out in an environmentally and socially sustainable manner, the project was required to formulate an Environmental Assessment Framework and a Resettlement Policy Framework to serve as management tools in the execution of the Land Reform sub-component of the PSCP.

The Formalization/Regularization/Certification Program in the two Urban settings of Dar Es Salaam and Mwanza and Adjudication in 9 chosen Villages in each of the two Pilot Districts will evolve within the context of Tanzania's constitution and the Land Reform Sub-Component of the PSCP and in conformity with the provisions of the Land Use Planning Act, the Urban Planning Act, the Land Acts and their related Regulations. To make this Formalization/Regularization/certification and adjudication program meaningful and sustainable, key infrastructure and services such as:

- roads (community feeder roads in particular)
- Education and health,
- Rural electrification,
- Water supply and sanitation,
- Solid and liquid waste disposal,
- Drainage,
- Markets with their associated water, sanitation and waste disposal facilities,
- Entomology, in particular malaria, bilharzia, sleeping sickness and others,
- Bee-keeping, aqua-culture, agro-industries and other income-generating pursuits,
- Agriculture, forestry, fisheries and animal husbandry and any other community-based or LG activities must subsequently be provided. in this connection, reference should be made to:-
- the subsidiary legislation of the Land Act on regularization GN No. 85 of May 2001,
- preparation of Land Component of the Micro, Small and Medium Enterprise Project,
- property Formalization in Unplanned Settlements in Mwanza City, March 2007 for the period 2007-2009,
- the Joint Development Partner Implementation Support Report-BEST of 13<sup>th</sup> October 2007.

The World Bank, however, in its perception of the Land Titling Program proposes that the Infrastructure and Services Components should be toned down in the present EAF and to be addressed later.

## **2.1. INSTITUTIONAL FRAMEWORK**

### **2.1.1 The Local Government Structures**

The Local Government Structures are designed to ensure participation of the communities in the formulation of the programs and projects in the Land Reform Program for example:

- The powers to prepare approve and implement their own development plans based on locally determined priorities.
- The powers to prepare, approve and implement their own budgets

- The power to raise and utilize their own resources according to their own priorities after making legally mandated transfers.
- The power to make ordinances and by laws as long as they do not contradict the constitution and other national laws.
- The power to hire, manage and dismiss their own staff.
- The powers to manage their own payrolls and separate personnel system.

Local Governments are required to formulate rolling development plans. The plans should incorporate priorities and plans for lower councils. Also, village executive committees are encouraged to initiate and participate in self-help projects and to monitor their execution.

### 2.1.2 Participatory Planning and Management

Participatory Planning and Management of this Program was clearly evident that structures have been established for the Formalization/Certification Program in Dar es Salaam and Mwanza.

It is apparent however that issues of economic and social empowerment will, in the future need to be addressed to avoid recreation of the main negative environmental and social conditions that pervade African Cities.

The Rural Pilot Adjudication Programs in Babati and Bariadi, the Land Use Planning exercise should ensure Conservation of Natural Resources such as Forests, Wetlands, Lakeshores and other Protected Areas and these are systematically incorporated in plans. The communities are key players in these activities and hence the need for education and awareness programs in the project. Subsequently, Income-Generation activities should be promoted especially to alleviate stresses on land use in the adjudicated areas, notably on crop-fallow ratios and soil regeneration.

### Division of Responsibility by Different Categories of Local Government

Project cycle	Community projects	Village Pilot community projects	District projects
Identification	Beneficiaries Village communities	Communities	District Planning Institutions.
Initial Prioritization	Village development committees	Investment committee, endorsed by local government council	District Council
Design/ costing	Investment committee	Investment committee	District Technical Dept.(or service provider, where service cannot be provided by the dept.
Appraisal/ screening	Technical Planning Committee	Technical Planning Committee with comments for District Technical Committee/Planner	District Technical Planning Committee With District Planner.
Allocation/ approval	Local Council	Local Government Council	District Council
Tendering	N/A	Depends on threshold	Depends on threshold
Construction	Local hire of labor.	through tendering	through tendering
Supervision	Mainly Village,/Town Council Technical Planning Committee also District Tech.	Supervisor of works or private supervisor- for smaller works	Supervisor of works, or services provider.

	Dept or Service Provider.		
Monitoring	Project management committee, local council,	Project management committee	Project management committee,
Ownership	Communities	Local council	District
Operation and maintenance	User group arrangements, project management committees	Owners responsibility, but Project Management Committee.	Owners responsibility plus district recurrent costs; project management committees/

**The main existing technical committees with responsibilities identified in the Village Pilot Schemes are shown in these tables:**

**At village level**

Institution	Composition	Role And Responsibility
Village council with five committees including the Environmental and Planning committees	As provided in the village land Act, 1999	Attend village planning meetings, Screen and identify environmental concerns and propose mitigating measures for inclusion in village plans Identify and submit to the District Council issues of concern in the village, Resolve problems identified at the village level, Plan the mobilization of locally available materials & labor towards the village projects, Monitor the delivery of services with the village, Plan and budget for the maintenance of village (e.g. water resources)
Village executive Council	As provided in the village land Act, 1999	Collect, analyze and keep villages information/ data (maintain village data bank) Mobilize village members for planning meetings; initiate, encourage, support and participate in self-help projects. Submit village proposals to the District Council for consideration, Oversee implementation of Village Council decisions, Monitor projects and other activities undertaken by the Government and NGO's in the area, Report to the Village And District Councils on the development activities/ concerns of the village.
Project Management Committee (PMC)	Village executive members Community representatives for Project Catchment area Representatives of disadvantaged groups (women, youth, IDP's etc.) Representation of women and youth groups will be defined by the community.	Provide project site security Mobilizing community contribution for project implementation Organizing meetings for project implementation, Organization of community operations, management and maintenance

**Unplanned Urban Settlements**

	Composition	Role And Responsibility
City Council	As provided for in the Land Use Planning	Discussion and approval of City Plans



	<p>and Urban Planning Acts as well as the National Environmental Management Act and the provisions of the World Bank O.P 4.01. The City TPC co-opts representatives from the unplanned settlements to meetings to address issues of: delivery of services, environmental, social and economic concerns infrastructure, resettlement issues such as loss of land or assets thereon, security and other issues</p>	<p>(plans to be implemented by city resources/this project) Discuss and decide on city priorities to be submitted to the affected communities and Council and/or the World Bank on Unplanned Urban Settlements. Approval of plans is however vested in the Ministry of Lands, Housing and Human Settlements Development</p>
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### 3.0 INSTITUTIONAL AND LEGAL FRAMEWORK FOR ENVIRONMENTAL MANAGEMENT

All aspects of Environmental Management are embodied in the Environmental Management Act, 2004 and its Supplements.

The General Principles, PART 2 entitles every Tanzanian to a clean, safe and healthy environment and this is particularly relevant in urban renewal programs such as those envisaged in this project.

The administrative and institutional arrangements for application of this Act are summarily discussed below.

PARTS 4 and 5 present the dispositions for Environmental Planning and Management, briefly with reference to:

- Planning at local government level,
- Sectoral planning,
- National planning,
- Regulations on preparation, adoption and implementation of action plans,
- Public participation in preparation of these plans

Also relevant to this project is legislation on management and protection of environmentally sensitive, fragile and areas declared as hazardous after identification especially the upper slopes of Mwanza City and in some areas of the district pilot adjudication program notably in Bariadi District.

The main environmental concerns that could trigger Tanzanian Law and the World Bank Operational Policies relate essentially to OP 4.01 EIA (Environmental Impact Assessment), OP 4.12 (Involuntary Resettlement) and OP 4.36 (Forests). Other Operational Policy issues are OP 4.11(Cultural Heritage) and OP 4.10 (Indigenous Peoples) the latter having been a source of contention in general in Africa and, in particular, to cite a few countries, Tanzania, Uganda and Senegal where the term “Vulnerable” is preferred. Both refers to cultural/social sensitivities that can be accommodated in this EAF.

#### 3.1 The Screening Process

The screening process is designed to determine, where appropriate the categorization of projects and to assign a category with the aid of the “ Screening Forms” and checklists contained in Annexes 1, 2A (City/Municipal) of this report. The screening process ensures objectivity and transparency.

The steps to be followed in the screening exercise are presented in chapter 7.

### **3.2 Screening Form**

This screening form, specifically for the Land Reform Sub-Component is designed only for cases where dispositions of Tanzanian Law or the World Bank Operational Policies are triggered.

General information is required at this first stage at the level of the City/Municipality for the Land Reform Sub-Component. If Urban Planning analysis has already been done, the results of the screening exercise should be indicated on the screening form.

The Private Developer or Corporate body will be required to complete a screening form different in scope and content tailored specifically for the Land Titling Program.

The outcome of the screening exercise, as stipulated in the form contained in annex 1 of this framework may bring out the need for EIA prior to approval by the Director of Environment.

### **3.3 Carrying out Environmental Impact Assessment (EIA)**

The EIA may be conducted by consultants/persons authorized or agreed by the appropriate Local Government Institution in conformity with the provisions of The Environmental Management Act of 2004.

The EIA will identify and assess the potential environmental impacts for the planned activities, assess alternative solutions and will design the mitigation, management and monitoring measures to be adopted. These measures will be quoted in the Environmental Management Plan (EMP) that will be prepared as part of the EIA for each activity. The preparation of the EIA and the EMP will be done in collaboration with all stakeholders including the people likely to be affected by the activity.

The EIA will follow the national procedure established in the framework of the Environmental Management Statutes and decrees in force and consistent with the WB OP 4.01. Sample EIA terms of reference have been provided in Annex 5 of this EAF, to be adapted as necessary.

### **3.4 Authority on Project Classification**

Based on information obtained from the screening form, a systematic review of the information is carried out by the Director of the Environment, herein referred as the Authority, to determine whether an environmental impact study needs to be conducted. Evaluation criteria have been established which provide general guidelines for determining whether or not a full EIA is required. This ensures a fair and consistent review of all proposed projects at this screening stage, based on the information provided by the project proponent. As a result of this screening, the project is classified in the following manner:

- Class A: Full Environmental Impact Assessment Required – If the Authority, the Director of Environment, either based on the screening form or after additional information has been provided, has sufficient reason to believe that the project will cause a significant negative impact on the environment and will require that an Environmental Impact Assessment be carried out in accordance with the provisions of the National Environmental Management Act and of World Bank Policy O.P 4.01
- Class B: Additional Information Necessary – In cases where doubts remain as to the significance of potential impacts on the environment, further information is required.

Projects rated as Class B will be required to provide additional information prior to the Authority making a decision on classification. In this case, the Authority will give the project proponent, in writing, a clear indication of the information that needs to be provided. The Director of Environment reserves the right to determine what additional information is required.

After additional information has been provided, the Authority will reassess the proposed project and will determine if it falls into Class A, B or C.

**Class C: No Environmental Impact Assessment required** – A project may be categorised as Class C if it is determined through the screening and the checklists that the proposed project will have no significant or adverse impact on the environment. The Director may grant environmental approval to the project without further analysis.

There has emerged recently in the scientific community the categorisations referred to as the green, brown and red agendas covering a very wide and diverse spectrum of environmental concerns from green-house gases through emissions from all manner of modern living practices to toxic, hazardous, dangerous materials and wastes generated by mankind's very existence.

The impacts due to implantation of various commercial and industrial enterprises in urban and peri-urban areas or the resettlement of populations close to these centres of economic activity will have to be dealt with in a timely manner for the safety, security and health of the communities.

These agendas can span districts, regions and countries with a lot being world-wide issues. Tanzanian Environmental Statutes and International Conventions cover most cases in these agendas. This EAF recognises the categorisations embodied in EIA Regulations of Tanzania and the World Bank OP.4.01 which are adapted to the realities of the country and easily applicable at Local Government and Central Government levels.

The National Environmental Management Act, in its Supplement of 11<sup>th</sup> February 2005 comprises twenty (20) parts and four (4) schedules and which cover every aspect of environmental protection/safeguards which are not at variance with those of the World Bank.

Ultimate power of control and management is entrusted in The Minister Environment with several tiers of advise such as the Advisory Committee and the Management council discussed below. The Director of Environment is responsible for implementing the provisions of the Act.

Of crucial importance in The Land Reform Sub-Component of the PSCP are the Guiding principles and its provisions embodied in Part 2 of the Act which assures every Tanzanian the right to a clean, safe and healthy environment. This right shall include the right of access to various public elements or segments of the environment for recreational, educational, health, spiritual, cultural and economic purposes.

Other provisions of the Act are far too numerous to be subject of comment in this report having been the subject of debates in the Tanzanian.

In cases where it is obvious that a project will not be in line with the Laws of Tanzania, The Minister responsible for Environment or the Director of Environment may reject a project without any obligation to carry out an EIA.

### **3.5 Consultations with relevant Government Ministries/Departments.**

The Advisory Committee comprising eminent persons in the public private and corporate sectors, upon receiving an appropriate project brief notably in the B and A categories consults the lead

sectoral departments. It invites public comments on statements of project intent submitted to it especially from those most likely to be affected by a proposed project. It is only subsequent to these two consultations that the Authority that is, the Department of the Environment is required to invite interested organs of the State to comment on both the statement and the comments made there-on.

A public enquiry or stakeholders meeting, presented in chapter 9 is the final form of consultation. This style of consultation is unique with fluidity and consistent with geographical and sectoral nuances. Other policy regulations relevant to the Land Reform Sub-component are:

### **3.6 National Policy for Conservation and Management of Wetlands**

Tanzania was one of the first African countries to develop a National Wetlands Policy. The strategy most pertinent to this study, as outlined in this Policy, is transcribed below:

'Any wetland serving as a source of water supply or receiving effluent as part of a designated service to any human settlement shall be declared a fully protected wetland from any encroachment, drainage or modification.'

Explanation: Wetlands can preserve the purity of water by their filtration and buffering capacity. One of the important reasons for this policy arises from the extensive draining of wetlands for horticulture where these areas also serve as water purification centers. In addition such drainage has led to changes to the hydrological cycle i.e. increase in floods, reduction in low flows and increase in sediment runoff.

Other key elements of the Management Act can be summarized as follows:

#### **A. National Environment (Wetlands, River banks and Lake Shore) Management**

The National Environment Regulations states that 'Each Local Government shall after the recommendation of the appropriate local environmental committee make by-laws

- a) Identifying river banks and lake shores within their jurisdiction which are at risk from environmental degradation;
- b) Promoting soil conservation measures along river banks and lake shores including the following;
  - Bunding;
  - Terracing;
  - Mulching;
  - Tree planting or agro forestry
  - Grassing;
  - Compaction and placement of fills;
  - Zoning and planning;
  - Gabions;
  - Control of livestock grazing.

PART 6: presents the provisions for EIA discussed later in this chapter

PART 7: Presents Strategic Environmental Assessments.

PARTS 8-10: also relates issues connected with both urban and rural environmental management and contained in the Environmental Checklists shown in annexes 2A and B to this framework document.

The other chapters relate essentially to public participation in decision making, international agreements, orders on easements, non-compliance and restoration, judicial, financial, general and transitional provisions.

### **B. Standards for Discharges of effluent Waste Water.**

The Tanzanian Standards for effluent discharges to land, the ambient and aquatic environment, as yet to be fully defined and enforced will propose maximum permissible limits (MPL) for selected parameters.

General obligations to mitigate pollution and the duty to keep records of offences are also outlined in the Environmental Management Act.

### **C. General Obligation to Mitigate Pollution**

Standards for Discharge of Effluent or Wastewater, 1999, states:

'Every industry or establishment shall install at its premises anti-pollution equipment for the treatment of effluent and chemical discharge emanating from the industry or establishment.' Anti-pollution equipment installed, under such regulation (1) shall be based on the best practicable means, environmentally sound practice or other guidelines as the Director may determine.'

### **D. Duty to Keep Records (from the Standards for Discharge of Effluent or Wastewater, 1999).**

Effluent Discharge Standards states: 'Keep a record of the amount of waste generated by the activity and of the parameters of the discharges.

The record referred to above shall be submitted to the Director and to any other relevant lead agency, every three months from the commencement of the activity for which the permit was issued'.

Any abnormal discharges that is those exceeding permissible limits shall be immediately reported to the Director.

### **E. Liabilities for Offences (from the Standards for Discharge of Effluent or Wastewater),**

A person who contravenes these Regulations (standards for discharge of effluent or waste water) commits an offence and is liable, on conviction, to imprisonment or a fine. The Director of Environment may, in addition to any penalty imposed under this Sub-Regulation give directives as to steps to be taken to mitigate the damage caused as a result of the contravention, and the person liable shall comply with the directives.

The Tanzania Bureau of Standards is empowered by the Act of 1975 to formulate various quality standards ranging from:

- Water for different uses,
- Effluent waste,
- Air quality,
- Noise and vibration ,
- Wastes emanating from different sectoral activities including hazardous and dangerous waste, to cite only these.

These cover pollution control in the occupational and ambient environment.

The Table below shows the most desirable targets to be achieved in the near future.

## **F. Administrative and Institutional Arrangements**

The main institutions of control and management of the environment and the provisions of the Act are as follows:

### **i. Minister Responsible for Environment**

The Minister Responsible for Environment has overall responsibility on matters relating to the environment and articulates the policy guidelines required for the promotion, protection and sustainable management of the environment in Tanzania.

### **ii. Director of Environment**

The Director is primarily responsible for coordination of all issues related to articulation and implementation of the National Land Policy and this regard, the various environmental management activities of all agencies, sectoral departments of government and promoting the integration of environmental considerations into development policies, plans, programs, strategies and projects. The Director also monitors all on-going activities in both the public and private sectors and undertakes strategic environmental assessments to ensure proper management and rational utilization of natural resources to enhance the quality of life for all Tanzanians.

### **iii. National Environmental Management Council**

The Council is a corporate body entrusted, amongst other attributes with monitoring compliance of activities with the provisions of this Environmental Management Act and to enforce this compliance, where necessary, through judicial means. It can also be held liable and sued for lapses in carrying out any attributions conferred on it.

It ensures stakeholder or public participation in decision-making processes on environmental management practices and in this regard, publishes manuals, codes of practice and guidelines to avoid environmental degradation in Tanzania.

### **iv. National Environmental Advisory Committee**

As the name implies has an advisory role to the titular Minister responsible for Environment and other sector Ministries, the committee presents opinions and makes recommendations on matters, without this being limitative relating to:

- The protection and management of the environment,
  - Stocking and limitation of stock,
  - Watering, grazing, depasturing and movement of stock,
  - Degradation of the environment,
  - Environmental standards, guidelines and regulations considered necessary,
- and to perform any other environmental advisory services as may be deemed necessary by the Minister.

The scope of the development programs could well evolve with private sector participation in the rural or urban settings and therefore trigger EIA regulations and provisions of the National Environmental Act, Resettlement issues, however insignificant and related to displacement or loss of assets/access to assets/resources, notably by vulnerable groups and hence the need for project reclassification.

For the screening process the following arrangements are proposed:

A special file should be opened for the communities, developers and corporate bodies including proper documentation of all the transactions and consultations for each assessment in addition to, where deemed necessary an environmental and social statement.

- The Authority designs standard letters to be issued to developers who have submitted project briefs. The letter specifies the class of EIA required,
- The Statement or its summary is published in local papers, also,
- requesting members of the public to forward to the Authority any comments they may have and
- inviting the public to study and comment on the Statement which will be available at the Authority, the lead sectoral Departments and Local Government Offices in the relevant regions,
- The Authority, the developer, and the Permanent Advisory Group on EIA and interest groups hold consultative meetings with the communities after the public comments on a Statement,
- The Authority issues a Certificate of Environmental Approval to any developer whose project has been approved.
- Test cases assess the capabilities of local consultants to contribute to an Environmental Impact study (and in the process receive training); assess the strengths and limitations of the guidelines.

Testing will lead to modifications of procedures and guidelines. Documentation and annual statistics will be vital for modelling possible future expansion of development activities and related projects requiring EIA.

The nature, type and location of the project is described in the environmental screening form with a preliminary indication of potential socio-economic and biophysical impacts (number of people/communities affected, sensitive habitats, threatened species, etc). Based on the screening exercise, The Director of Environment, DE or NEMC makes a decision on whether an EIA is required or not. In the event of an EIA is not required, the proponent is still obliged to describe methods and procedures for proper environmental management (storage of semi-hazardous materials, solid waste disposal, etc).

Apart from the EIA content, the procedures require a public survey prior to the issuance of any authorization on the basis of the EIA. The EIA conducted by the consultants at the request of the promoter is submitted for approval to the DE (approval of the TOR, approval of the studies, authorization given to consultants and consultancy firms, etc.). According to the classification level of the project (category A, B or C) the execution of the procedure is monitored at national level.

The National Environmental Management Council and the Director of the Environment established under the Statute are the principal entities responsible for the management of the environment.

One of the important functions of NEMC, in addition to reviewing policies and environmental impact statements, is to establish national environmental standards in consultation with various lead agencies. Environmental standards and guidelines have been proposed in this EAF.

**Table : Target Standards for Emissions,**

Pollutant	Exposure time	Standard applicable to	Standard
Total suspended particles	24 hr	Industries (e.g. cement, lime), quarry, grain millers, coffee processors, pharmaceuticals and any other trade	300 ug m <sup>3</sup>

Sulphur dioxide	24 hr	Combustion processes, boilers or any process involving sulphur burning	0.15 ppm
Carbon monoxide	8hr	Combustion process boilers	9.0 ppm
Ozone	1 hr	Mineral water bottling	0.10 ppm
Nitrogen oxides (NO)	24 hr	Combustion process, boilers	0.05 ppm
Lead	1 month	Battery manufacture and repair, metal fabrication	1.0 ppm
Carbon dioxide	8hr	Breweries, soft drink industries	9.0 ppm
Sulphur trioxide	24 hr	Sulphur burning sulphuric acid manufacture	200 ug m <sup>3</sup>
VOC's (Volatile organic carbons)	8hr	Breweries, fuel depots and stations,	6 mg m <sup>3</sup>
Pollutant	Exposure time	Standard applicable to	Standard
Silica	24 hr	Construction industry, detergent and manufacture, quarries	200 ug m <sup>-3</sup>
Soot	24 hr	Combustion, charcoal and brick making, boilers	500 ug m <sup>3</sup>
Ammonia	24 hr	Refrigeration, chemical stores and labs, fish processing	200 ug m <sup>-3</sup>
Hydrogen sulphide	8hr	Waste water treatment, tanneries	15 ug m <sup>-3</sup>
Acid mist	24 hr	Acid manufacture, battery manufacture and acid changing, chemical stores and labs	100 ug ml <sup>-1</sup>
Asbestos	24 hr	Construction industry, garages/car repairs, asbestos manufacture	fibres ml <sup>-1</sup>
Cement	24 hr	Cement industries, construction	200 pg m <sup>-3</sup>
Lime	24 hr	Tile and brick industries, ceramic industries, construction	200 pg m <sup>-3</sup>
Ceramics	24 hr	Tile and brick industries, ceramic industries, construction	200 pg m <sup>-3</sup>
Electrode manufacture emissions	24 hr	Electrode manufacture, garages/car repairs, welding, metal fabrication	150 pg m <sup>-3</sup>
Cotton fibres	24 hr	Cotton farming, ginning and export, textile manufacture	200 pg m <sup>-3</sup>
Coffee dust	24 hr	Coffee processing and trading	200 pg m <sup>-3</sup>
Synthetic fibres	24 hr	Synthetic textiles manufacture	0.01 fibres ml <sup>-1</sup>
Tea dust	24 hr	Tea processing and trading	200 pg m <sup>-3</sup>
Tobacco dust	24 hr	Cigarette manufacture including tobacco curing and tobacco farming	200 pg m <sup>-3</sup>
Grain dust	24 hr	Grain milling, bakeries, feed mills, breweries, agriculture	200 pg m <sup>-3</sup>
Wood dust	24 hr	Saw mills, timber works and furniture making, construction	1 mg m <sup>-3</sup>



Phosphates	24 hr	Fertiliser manufacture, soap and detergents industry	200 µg m <sup>-3</sup>
Copper dust	1 month	Copper mining and processing, metal works and fabrication	1.0 µg m <sup>-3</sup>
Pesticides	24 hr	Pest control and plant protection	See Appendix E (Mean daily emissions standards for pesticides)
Pollutant	Exposure time	Standard applicable to	Standard
Hydrocarbons	24 hr	Chemical stores and labs, fuel depots and stations	5 mg m <sup>-3</sup>
Bagasse	24 hr	Sugar processing plants	200 µg m <sup>-3</sup>
Smoke	Not to exceed 4 min in any one hour	Industry, trade or any combustion process	Ringlemann scale No. 2 or 40% observed at 6m or more
Chlorine	24 hr	Water treatment, fish processing, chemical stores and labs	m <sup>-3</sup>

#### 4.0 BIO-PHYSICAL AND SOCIO-ECONOMIC ENVIRONMENT OF PROJECT AREAS

##### Project Areas

##### A) Unplanned Urban Settlements.

##### i. Dar Es Salaam:

Formalisation Regularization/certification exercise in Dar es salaam City will cover all unplanned urban settlements starting with the following CIUP areas:

SN	WARD	SUB-WARD (Mtaa)
1	Manzese	Uzuri, Muungano, Mvuleni, Midizini, Mnazimmoja and Kilimani
2	Buguruni	Mnyamani, Malapa and Madenge
3	Vingunguti	Mtambani
4	Chang'ombe	Chang'ombe 'A', Changombe 'B' and Toroli
5	Sandali	Sandali, Mpogo and Mwembeladu

##### ii. Mwanza:

Formalization in Mwanza City will cover the whole unplanned urban settlements starting with areas with schemes of regularization.

In both cities, the settlements present the same bio-physical characteristics of habitations for the poor or the under-privileged strata of societies everywhere with, in some cases the bare minimum of services such as water supplies, primitive sanitation facilities and hardly any security except that provided by communal affinities.

The dwellings are mostly of mud or poor quality cement blocks with corroded corrugated iron sheets for roofing turning these homes to water-logged basins in the rainy seasons. The same applies to the narrow unpaved lanes leading to different concessions in the settlement. The latter are perennially flooded. Thus, whilst these communities can access facilities for health care, their domains are the most ideal environments for the proliferation of mosquitoes and the bilharzia snail, causing the prevalence of water borne and water related diseases. These communities, with the associated unemployment are subjected to a constant state of morbidity, sickness, promiscuity and crime and as a corollary HIV/AIDS.

There is no flora in these settlements to speak of except, in some concessions, a few trees and animals are limited to wild and possibly rabid dogs and some pigs and other small ruminants.

Some sites representative of all settlements, this Land Reform sub-component will not trigger any impacts/OPs of the Bank except in the case of delineation of the concessions for Formalization/Regularization Certification and Registration where alignments will cause relocation of people or assets hence triggering the Bank OP 4.12.

#### B) Nine Villages each in the two Pilot Districts

##### Babati Villages

- Kiru Six
- Gishameda
- Masware
- Kasangaji
- Mawemairo
- Ari
- Dohom
- Managhat
- Sharma

##### Bariadi villages

- Mwakibuga
- Old Maswa
- Bupandagila
- Nyakabindi
- Sanungu
- Nyaumata
- Nyangokolwa
- Ng'wang'wali
- Banemhi

Sample villages in the two districts presented the following features:

- A series of hamlets with mud-hut dwellings surrounded by or adjacent to the farms belonging to the hamlet community,

- Separation of agricultural farmland from stock movements by planting of sisal plants to avoid encroachment of livestock into the farms, the occasional breeches being causes of conflicts between agriculturalists and pastoralists.
- Small Kraals for cattle and other small ruminants adjacent to the hamlets with the size of farms and activities showing evidence of small mixed and subsistence farming,
- Trading centres covering the needs of the village communities both in the centres and the village hamlets for imported consumables for domestic use,
- Water supply facilities comprising generally lined wells equipped with hand pumps located at various distances from the communities in the hamlets and the trading centres with average populations of about 5000 per village.
- Absence of water and hence proper sanitation facilities in 75% of the primary and secondary schools with pupil intakes of more than 1000,
- Reliance on rainwater harvesting for water supply in health facilities, at least one of which, with maternity facilities was provided by an NGO and the precarious factor this represents for child-bearing and delivery for community mothers.

## 5.0 OVERVIEW OF THE WORLD BANK'S SAFEGUARD POLICIES

The World Bank's ten safeguard policies are designed to help ensure that projects proposed for Bank financing are environmentally and socially sustainable, and thus improve decision-making. These operational policies include:

- OP 4.01 Environmental Assessment,
- OP 4.04 Natural Habitats,
- OP 4.09 Pest Management,
- OP 4.11 Cultural Heritage,
- OP 4.12 Involuntary Resettlement,
- OP 4.10 Indigenous People,
- OP 4.36 Forests,
- OP 4.37 Safety of Dams,
- OP 7.50 Projects on International Waterways,
- OP 7.60 Projects in Disputed Areas.

In addition, there is the Bank's Disclosure Policy BP 17.50 which requires that all safeguard documents are disclosed in the respective countries and at the Bank's Info shop prior to appraisal. Of these operational policies, OP 4.01 is the "umbrella" policy as the environmental screening results will determine which of the afore-mentioned safeguard policies are likely to be triggered, in addition to OP 4.01.

Annex 4 summarizes these safeguard policies.

For the Land Reform Sub-Component the Policies that are of immediate concern are:

**OP 4.01 Environmental Impact Assessment:** The objective of OP 4.01 is to ensure that projects financed by the Bank are environmentally and socially sustainable, and that the decision making process is improved through an appropriate analysis of the activities including their potential environmental impacts. Environmental Impact Assessment (EIA) is a process whose breadth, depth, and type of analysis depend on the nature, scale, and potential environmental impact of the proposed project. EIA takes into account the natural environment (air, water, and land); human health and safety; social aspects (involuntary resettlement, indigenous/vulnerable peoples, and cultural property); and trans-boundary and global environmental aspects.

EIA considers natural and social aspects in an integrated way. OP 4.01 is triggered if a project is likely to present some risks and potential adverse environmental impacts in its area of influence. Thus, in the case of the local government projects, potential negative environmental and social impacts due to project activities and likely to include loss of vegetation, soil erosion, soil and groundwater pollution, air pollution, public health impacts such as traffic hazards, noise, dust, and loss of livelihoods must be fully identified and the appropriate mitigating measures clearly defined and costed to be incorporated into the project's overall budget.

This EAF has been designed to address potential impacts at the planning stage of the Land Reform Sub-component of the PSCP.

**OP 4.12 Involuntary Resettlement:** The objective of this operational policy is to

- (i) Avoid or minimize involuntary resettlement where feasible and explore all viable alternative project plans/designs.
- (ii) Assist affected persons in improving their former living standards, income earning capacity, and production levels, or at least in redressing the physical, economic social and moral prejudice caused by the project.
- (iii) Encourage community participation in planning and implementing resettlement,
- (iv) Provide assistance to affected people regardless of the legality of land tenure (encroachers and squatters included).

The policy does not only cover physical relocation, but:

- (i) Relocation causing loss of land and or loss of shelter;
- (ii) Loss of assets or access to assets; and
- (iii) Loss of income sources or means of livelihood, whether or not the affected people must move to another location.

This policy also applies to the involuntary restriction of access to legally designated parks and protected areas resulting in adverse impacts on the livelihoods of the displaced persons. In the event of land acquisition, the Land Reform Sub-Component will implement the provisions of the Resettlement Policy Framework (RPF) which has been prepared as a separate document.

## 6.0 POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS OF THE LAND REFORM SUB-COMPONENT

### 6.1 Environmental impacts of the Land Reform Project

**Table 6. Summary Table of General Concerns**

Area of environmental concern	Potential environmental impact	Remarks
Topography	Topography modification due to cut and fill activities.	Regulate the use of borrow sites to ensure that they are legally operated.
	-Increased costs in developing low gradient sites (for drainage and sewage treatment works)	Low lying swampy areas will not be classified for construction of buildings.
Geology and soils	Exposure and erosion of topsoil due to vegetation removal.	Set aside an area to stockpile topsoil for future landscaping
	Increased exploitation of sand and murrum for construction.	All illegal mining / quarrying operations should be stopped. Rehabilitate the borrow pits after use.
Flora and fauna	Removal of vegetation to make way for construction that may encroach on the wetland areas	The integrity of these areas should be safeguarded by NEMC
Wetlands	Pollution by unprocessed effluent / polluted runoff (solids, heavy metals, etc) may kill the wetland vegetation and destroy its effluent stripping capability.	All effluent must be treated by the relevant projects prior to discharge into wetlands. In the case of sewage, a pre-treatment is required before effluent is channeled into treatment plants. Baseline water quality data should be collected and analyzed for all effluent discharges for conformity with the standards specified in a wetlands monitoring program.
	For commercial/industrial enterprises/complexes drainage is more efficient in pollution control using lined canal systems.	In general, however creating a lined channel should be avoided to maximize the integrity and natural treatment processes of the wetland.

Air pollution Emissions	Increased levels of pollution due to an increase in motorized traffic and emissions from commercial/industrial activities.	Traffic emissions should be monitored and legally permitted levels should not be exceeded. NEMC should encourage the use of cleaner production technologies for all industrial processes and commercial activities associated with chemical, toxic, hazardous and dangerous materials.
Dust pollution	Modification of micro -climate	Monitoring studies recommended in order establishing baseline data.
	Un-paved access roads that will be used daily by trucks commercial activities and other construction vehicles will generate large amounts of dust. Some commercial/industrial activities/processes may expose their employees to large amounts of dust and particulate matter.	During construction, un-paved roads should be water sprayed / doused to reduce dust levels. Employers should provide protective equipment e.g. dust masks. Industries should construct well-ventilated factories/workshops.
Noise pollution	Increased traffic noise from commercial and transportation vehicles and machinery	Movement of vehicles and operation of construction machinery should be confined to daytime.
Groundwater pollution	Potential for pollution of groundwater from improper designs and location of latrines in the urban concessions, watering points, commercial and industrial liquid and solid waste.	Conditions of delivery of CROs to companies should stipulate the nature of activities that can be environmentally acceptable in the newly planned settlements or that a proviso be incorporated in CRO calling for an EA for the activities for which the CRO was delivered.
Surface water pollution	Construction of pit-latrines, septic tanks and soak-aways could cause seepage of contaminated water into aquifers.	Construction should be monitored by public health officials notably in the siting of these items.
	Commercial and Industrial effluent may pollute springs, streams and rivers and lakes	A specific monitoring program should be implemented by Local Governments in conjunction with NEMC and the Department of the Environment with systematic inspections of all water sources and bodies.

<p>Social</p>	<p>Human health problems.</p> <p>Employment opportunities for unskilled workers during construction for the community living around the project area.</p> <p>Increase in HIV / AIDS and STDs cases in the project areas.</p>	<p>Avoid implanting residential areas down-wind of heavy air polluting industries and activities.</p> <p>Improvement of income levels and living standards for the community.</p> <p>The health status of the general population should continue to be monitored and steps taken to prevent occurrence of HIV / AIDS and STDs through awareness programs.</p>
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## **Formalization/Regularization/Certification in the Cities of Dar Es Salaam and Mwanza**

It is pertinent at this stage to refer to the Land Act No. 4 of 1999 and The Land (Schemes of Regularization) Regulations of 2001 where, article 15,- 1 states that “A scheme of regularisation shall consist of proposals, set out in written form, accompanied by such maps of the area as may be necessary for, citing only key issues like:

- The economic and social advancement of the area and the community through development programs and projects and involving the full participation of people of the area and
- To establish or define the relationship of the schemes with any development plans or schemes applicable to the regularized area.

Notwithstanding any contentious issues the Formalization/Regularization/Certification exercise in the urban settings will generate impacts discussed below.

**OP 4.01 Environmental Impact Assessment** is triggered if not for those accorded CROs for purely habitation purposes but for companies that may establish commercial or industrial activities in the settlement.

It is pertinent at this point to note that, in the Land Titling exercise commenced in 2002 in three Municipalities in Dar es Salaam, 7% of the land was allocated to companies and 3.8% to joint ownership, land that will be used for economic/commercial activities in manufacturing or industrial ventures.

These activities may generate impacts and hence call for the execution of an EIA, particularly on liquid and solid waste (toxic, hazardous or dangerous) disposal, emissions of various gases, soot, particulates and noxious smells. In such cases, these activities should be classified as Category A or B depending on the outcome of the screening process.

### **Environmental, Social and Economic Impacts of Adjudication in Villages in the 2 Pilot Districts.**

As in the case of the Formalization Program in the Urban Unplanned Settlements, the Land Use Planning exercise and the delivery of CCROs in rural pilots to both individuals and companies will generate activities of both entities that will have both positive and potentially negative environmental, social and economic impacts in the pilot project areas.

As an example, the village of Matongo, outside of the project area, has an individual operator with 6000 Ha of irrigated land and 6000 head of cattle and there is no logical reason to believe that such an enterprise of this scale or even less is not in existence in the pilot districts or cannot be envisaged with evolving socio-economic activities in the two districts.

#### **a) Positive Environmental Impacts**

The major positive environmental impact is that the land use planning exercise and the subsequent adjudication and related awareness and sensitization programs will enhance the protection measures for natural resources such as forests, sensitive areas such as lakeshore and river environments, cultural heritage and religious sites to cite only these.

Locating watering points for livestock away from village settlements will alleviate pollution of aquifers and wells in these settlements.



The awareness and sensitization exercises proposed in this EAF, in the form of workshops/seminars will educate village communities and their committees on the location of their water facilities, shallow wells, in particular in relation to their sanitation facilities which, in village settings are mostly pit latrines. Where possible, village communities, in the awareness programs, should be presented with improved and affordable designs of sanitation facilities.

#### **b) Adverse Environmental Impacts**

The survey teams in the District Planning Departments have already demarcated a certain number of village boundaries. The location of the village hamlets and trading centres will eventually be incorporated in the maps for the ultimate planning exercise, regularization and adjudication.

It is a planning norm that, in a rural setting:

- Agricultural land should be clearly delineated,
- Livestock (cattle notably) grazing areas should be identified and demarcated,
- Forests, fragile soils and other sensitive areas, notably in the District of Bariardi (lakes shores and riverbanks) to be protected and identified during adjudication,
- Cattle tracks to grazing and watering points will have to be incorporated in the plans to avoid the perennial agriculturist/pastoralist conflicts,
- Human and animal watering points must be separated to avoid, in particular nitrate pollution of potable water sources.
- Fire breaks must be established for the protection of forests and other flora species and fauna habitats

The planning exercise in this adjudication exercise will therefore trigger OP.412, that is, even where resettlement of people is not envisaged, some re-alignment or loss of land could take place, especially, in the latter case, where fragile land is encountered in the adjudication and delivery of CCROs.

It is the failure of the village communities to adhere to certain guidelines/laws on conservation and management of natural resources such as forests, village woodlots and protection of sensitive habitats that could generate negative impacts. Ignoring these guidelines and laws will lead to degeneration of the environment.

The prevailing features of stagnant water ponds in villages and borrow pits and with village communities wading through these or use as swimming pools by children, or as washing areas for women or used by some community members for their sanitation needs will generate the conditions for the proliferation of malaria, bilharzia and other water-borne or related diseases.

It is imperative that the local councils through the awareness program takes/presents corrective measures to eliminate this prevailing phenomenon in the adjudication exercise.

In the lake areas of districts, emphasis should be put on the effects of certain practices on lakeshore and riverine environments such as:

- Bunding.
- Terracing
- Mulching
- Tree planting or agro forestry

- Grassing
- Compaction and placement of fills.
- Zoning.
- Gabions.
- Livestock grazing.

**c) Adverse Environmental Impacts of Socio-Economic Activities.**

<b>Sub-Sector</b>	<b>Potential Adverse Impacts</b>
Fruit trees (e.g Cashew)	<ul style="list-style-type: none"> <li>- Stripping and draining of wetlands, sensitive habitat destruction, reclamation of wooded zones,</li> <li>- Soil erosion, disruption of the water cycle,</li> <li>- Loss of grazing land,</li> <li>- Pollution of groundwater aquifers, rivers, water bodies,</li> <li>- Contamination of livestock watering points,</li> <li>- Pesticides poisoning,</li> <li>- Pesticides residues in the food chain,</li> <li>- Use of empty containers to store food or water,</li> <li>- Dislocation of non- targeted populations,</li> </ul>
Promotion of agricultural activities	
Market gardening	
Nurseries, orchards and small irrigated market gardening. .	
<b>Sub-sector</b>	<b>Potential Adverse Impacts</b>
Animal Husbandry	<ul style="list-style-type: none"> <li>- Reduction of grazing capacity</li> <li>- Tree felling for the establishment of paddocks,</li> <li>- Soil erosion</li> <li>- Loss of vegetation around the works (watering points, etc.),</li> <li>- Excessive withdrawal of the aquifers.</li> </ul>
<b>Sub-sector</b>	<b>Potential Adverse Impacts</b>
Fisheries	<ul style="list-style-type: none"> <li>- Disappearance of grazing lands</li> <li>- Change in water flows</li> <li>- Competition with other water uses</li> <li>- Water pollution (chemicals, etc.)</li> <li>- depletion of local fish populations with the introduction of exotic species</li> <li>- Development of water related diseases</li> </ul>

**6.1 Pest Management**

A variety of pests have been reported on several farms including snakes and rodents. The use of pesticides and fertilizers given the option of commercial farming being increasingly

Promoted could have adverse effects on biodiversity, soils and surface and groundwater as follows:

- Vegetable garden plots can be a source of pollution of surfaces or underground waters through the agricultural input residues (pesticides, fertilizers). In some low land zones, the use of synthetic chemicals (NPK fertilizer) in the Vegetable garden could contribute to soil salinity; while some pesticides can have adverse effects on the micro-organisms that have important roles in the restoration of soils,
- Pesticides are sources of several adverse impacts such as pollution of underground water tables; rivers; ponds; contamination of livestock drinking water, human poisoning especially in areas of high population density.

## **6.2 Social impacts of the Land Reform Project**

### **A) Positive Social and Economic/Financial Impacts**

At the institutional level:

- Improving the capacity of the district and village LGs at all levels to initiate, promote and monitor performance in various sectors of land reform and environmental and social issues being or, to be addressed,
- Gender and Fairness: Increased participation of the female gender, the young the senior citizenry and vulnerable/indigenous groups or those who might be marginalised in the Land Use Planning exercises. Women, who constitute essential levers in the organization and the animation of the Local Communities, will actively participate in the land reform sub-component activities.

The Land Use Planning and Adjudication exercise will create a sense of ownership or confirmation of rights of occupancy and serve as incentives for greater efforts in :

#### **Forestry**

The development of forestry nursery programs could assist and motivate communities in reforestation undertakings. With concurrent awareness programs of the positive impacts of reforestation and other conservation activities. These programs could well uplift the culture of environmental and social management practices that could improve their social and financial situations.

#### **Agricultural activities**

The promotion of orchards and other agricultural pursuits in communities has been a feature recognised in local government activities and should continue to be nurtured and promoted to the extent that they can serve as catalysts to:

- Improvement of nutrition standards,
- Improvement of production and productivity on high-value crops,
- Satisfaction of some of the basic needs of the populations and in certain cases provides key elements of the requirements of their communities.

#### **Other income Generating Activities**

The development of activities in bee-keeping, agro-processing, fish-farming especially where integrated with rice culture and poultry, weaving and dyeing, to cite only these will assist in resolving some of the issues of land stress in the districts apart from providing significant and immediate incomes to all genders in the communities and their household economies in general.

### **B) Adverse Social Impacts**

Adverse social impacts are likely to arise from the following if precautions are not taken:

- Exclusion of vulnerable groups from participating in and benefiting from project activities, due to stigmatization, harmful cultural practices, acute poverty among vulnerable groups, discrimination, lack of participation in the planning process etc.
- Land acquisitions/use resulting in involuntary resettlement or loss of land and or assets and livelihoods without redressing the adverse effects.

## **7.0 THE ENVIRONMENTAL AND SOCIAL SCREENING PROCESS**

### **7.1. The Environmental and Social Screening Process**

While the Private Sector Competitiveness Project with its Land Reform Sub-Component had been assigned an Environmental category C at the time the project was appraised and approved for financing, the safeguards classification has had to be reconsidered during implementation of the project because

more information has become available which indicate that land use planning and certification of land in rural and urban areas would trigger some safeguard policies. In urban areas, land use planning and certification of land would likely result in some involuntary taking of land for public purposes such as re-alignment of roads and public utilities and the construction of public facilities or parks which would trigger Involuntary Resettlement policies under OP 4.12. Similarly, land use planning in urban areas may confirm some occupied areas to be hazardous and hence would require the involuntary removal of people from hazardous lands thus triggering Involuntary Resettlement policies under OP 4.12.

The land use planning and land certification exercises in the Rural Pilot Districts may also call for re-alignment of farm boundaries, grazing land, cattle tracks and fire breaks which will involve involuntary taking of land for public or common use such as community grazing lands or woodlands, and possibly involving some relocation of affected people and temporary loss of assets such as crops. In both settings, at least OP4.12 is triggered and hence the re-classification of the Environmental category from C to B.

The sections below illustrate the stages (steps 1-7) of the environmental and social screening process leading to the review and approval of the Land Reform Sub-component activities to be implemented. The purpose of this screening process is to determine which activities are likely to have negative environmental and social impacts, to determine appropriate mitigation measures for activities with adverse impacts, to incorporate mitigation measures into the project as appropriate, to review and approve the project's proposals, to monitor environmental parameters during and after the implementation of activities.

The extent of environmental work that might be required prior to the commencement of sub-projects will depend on the outcome of the screening process described below.

## **7.2. The Screening Steps**

The process of screening can be broken down into the following steps:

### **Step 1: Screening of the Land Reform Sub-component.**

The initial screening in the field will be carried out by the Environmental Focal Person (EFP) so designated as such by existing structures of the city, district or in the village councils.

The EFP will complete the Environmental and Social Screening Form. Completion of this screening form will facilitate the identification of potential environmental and social impacts as for example, resettlement issues. Determine their significance, assign the appropriate environmental category, propose appropriate environmental mitigation measures, or recommend the execution of an Environmental Impact Assessment (EIA), if necessary.

### **Step 2: Assigning the appropriate Environmental Categories**

The assignment of an appropriate environmental category to a particular activity will be based on the information provided in the environmental and social screening form. The EFP will be responsible for categorising an activity either as A, B, or C.

The assignment of the appropriate environmental category will be based on the provisions of the National Environmental Management Act and OP 4.01 Environmental Assessment. Consistent with this operational policy, many activities under the Land Reform Sub-component are likely to be categorized as B or C for that matter, meaning that their potential adverse environmental impacts on human populations or on environmentally protected or sensitive areas including wetlands, forests, grasslands, and other natural habitats, cultural heritage or religious sites are neutral or reversible and mitigating measures are readily available for inclusion in the project design.

### **Step 3: Carrying out Environmental Work**

After analyzing the data contained in the environmental and social screening form and after having identified the right environmental category and thus the scope of the environmental work required, the EFP will make a recommendation to the TPCs at city/municipal and village councils establishing whether: (a) no environmental work will be required; (b) the implementation of simple mitigation measures will be enough; or (c) a separate Environmental Impact Assessment EIA will be required.

According to the results of the screening process, the following environmental work can be carried out:

Use of the environmental and social check list (Annexes 2A or B):

The Environmental and Social check list will be consulted by the Environmental Focal Persons (EFPs) in relation to the findings in the screening forms. Where the screening categorizes a sub-project as A, an EIA will be carried out in accordance with the provisions of the Environmental Management Act of Tanzania and OP 4.01 of the World Bank. Activities categorized as category B will benefit from the application of simple mitigation measures outlined in the checklists. In situations where the screening process identifies the need for land acquisition, qualified service providers would prepare a RAP (Resettlement Action Plan), consistent with the WB OP 4.12.

### **Step 4: Review and Approval**

Review: At the district or municipal level, the Technical Planning Committees (TPCs) at City/Municipal and District Councils will review the environmental and social screening forms against the checklists and the mitigation measures or safeguards envisaged to confirm the validity of the conclusions reached as to: the results and recommendations presented in the environmental and social screening forms, the proposed mitigation measures derived from the environmental and social checklists and,

Based on the results of the above review process, the TPCs will take the decision to proceed with the project without further ado or, where appropriate recommend to the Director of Environment the execution of an EIA.

### **Step 5: Public Consultations and Disclosure:**

Individual, community and sectoral consultations will be carried out throughout the planning and screening exercises especially where the need for EIA is clearly established. Community information and participation must be ensured during the planning period and, where required, the preparation of the Environmental Impact Assessment in collaboration with the competent bodies of the Ministry responsible for Environment. Public/Community information includes particularly:

- One or several meetings for the presentation of the project with a gathering of local authorities, the communities/populations and concerned organizations including NGOs,
- The opening of a register available to all the communities/populations where will be consigned the preoccupations, the appreciations, remarks and suggestions formulated on the project.

A public information program is initiated and public notices are issued during the planning exercises and, where called for, the EIA stages. Whenever a strong public concern over the proposed program is indicated and impacts are extensive and far-reaching, the Local Government Institution (LGI) is required to organize a public hearing or stakeholders meeting. The results of the public hearing/stakeholder's meeting should be taken into account and minutes presented when a decision is taken on the merits and shortfalls of the Land Reform sub-component as presented or potential lapses in its implementation.

These consultations should allow for the identification of the main issues and determine how the concerns of all parties including LGIs will be tackled in the terms of reference for the EIA. The results of the consultations will be included in the EIA report and made available to the public by the LGI,

### **Step 6: Environmental Monitoring and Follow-up**

Environmental monitoring aims at checking the effectiveness and relevance of the implementation of the proposed mitigation measures. LG Environmental Officers as well as the trained persons at lower local government level will, depending on the scale or scope of the projects, undertake the monitoring exercises in sequences and frequencies stipulated in the Project Implementation Manual including where appropriate an Inspection and Maintenance Schedule.

### **Step 7: Monitoring indicators:**

The monitoring indicators are described in the context of the Environmental Management Plan (EMP) presented in Chapter 8 below under the EMP.

#### **6.3. Responsibilities for the Implementation of the Screening Process**

The EAF is a tool to be used by qualified/trained Environmental Officers and Focal Persons (EFPs) located in the Local Government entities. The EOs will coordinate their activities with the Directorate of Environment and the NEMC at central level and provide, through the program, the requisite training for city/municipal and lower local government personnel.

The Environmental Checklists shown in annexes 2A and B clearly identify the potential environmental impacts of the Program and institutional responsibilities for the screening, preparation, assessment, approval where appropriate and implementation of the mitigating measures identified for the Land Reform Sub-component Program activities.

## **8.0 ENVIRONMENTAL MANAGEMENT PLAN (EMP)**

### **8.1. Environmental Management Plan**

An Environmental Management Plan (EMP) for Land Reform Sub-component is intended to ensure efficient environmental management of its activities. The EMP lists:

- (a) The relevant project activities,
- (b) The potential negative environmental and social impacts,
- (c) The proposed mitigating measures,
- (d) The LGI responsible for implementing the mitigation measures,
- (e) The LGI responsible for monitoring the implementation of the mitigation measures,
- (f) The frequency of the afore-mentioned measures;
- (g) The Capacity building needs and
- (h) The cost estimates for these activities.

It should be noted that whilst a general management plan for Districts, Municipalities/Cities and all other lower local government entities can be formulated especially on issues such as waste management, effluent discharges, pollution and others regulated by environmental legislation, this project with a number of diverse sub-projects in the pipeline will call for EMPs specific to these and conforming to the obligations stipulated in the screening exercises, the environmental checklists and all legal instruments in force notably the provisions of the National Environmental Management Act. Therefore, whilst the present EMP cites environmental concerns of a general nature, it does not dwell on issues related to infrastructure.

The equipment and logistics support requirements as well as the training components are specified below with all the associated costs. The EMP will be included in the Project Execution Manual for each sub-project with the associated costs.

At the time of the implementation of the sub-projects, the potential environmental and social impacts must be clearly identified and a management plan formulated, implemented and the plan's performance monitored during and after execution of sub-project activities. The impacts must be avoided or neutralised where possible or mitigated in conformity with Tanzania's and the World Bank's prescriptions for sound environmental management.

With this perspective in mind, the present EMP proposes to emulate the acquisitions and environmental lessons developed or learnt elsewhere in the continent with the view to orient the mechanisms that will enable the project to achieve and sustain the objectives desired.

## **8.2 Institutions Responsible for Implementing and Monitoring the Mitigation Measures Local**

Government Institutions, at their various levels are responsible for implementing and monitoring the prescribed mitigating measures throughout the program execution. This is in fact explicit in the participatory framework above and environmental checklists (Annexes 2A and B) formulated for this purpose and incorporated in this EAF.

The appointment/designation of Environmental Inspectors for the areas of the LR Sub-component Program would help to streamline the implementation process covering issues before (at planning stage), during and after execution of the Program. These Inspectors will be consulted at all stages of execution of the Program.

### **National Coordination/Supervision**

There are several levels of Environmental Management, supervision and control in Tanzania.

- The Minister responsible for Environment,
- The Director of Environment,
- The National Environmental Management Council
- Sector Ministries,
- Regional Secretariats,
- Local Government Authorities down to village committees.

## **8.3 Monitoring Plan and Indicators**

This exercise will be carried out by the Environmental Officers, specifically by EOs at Mwanza and Dar Es Salaam City Councils and for the Pilot Districts. In the latter case, there appeared a glaring need for training, equipment and logistics discussed below.

The objective for monitoring is two- fold:

To alert project authorities and to provide timely information about the effectiveness of the environmental and Social Management process outlined in the EAF in such a manner that changes can be made as required to ensure continuous improvement to the process,

To make a final evaluation in order to determine whether the mitigation measures have been successful in such a way that the pre- program environmental and social conditions have been restored, improved or worse than before and to determine what further mitigation measures may be required.

A number of indicators are specified below to be used in order to determine the status of the affected environment as follows:

- has the pre-program human and natural environmental state been maintained or improved from program activities and,
- has the effectiveness of the EAF technical assistance, review, approval and monitoring process been adequate to pre-empt and correct negative impacts inherent in certain types of Land Reform activities.

**Environmental Indicators:** Loss of vegetation; Land degradation; Compliance with Legislations.

These indicators must be reviewed in conjunction with:

Environmental Checklists and Guidelines for Contractors, Pesticides use, Waste management, Water and Sanitation Facilities Education and Health infrastructure, Markets, Roads,

**Social Indicators:** Population incomes, Environmental and social awareness, effect of program implementation on local household economies.

In order to assess the efficiency/functionality of the Land Reform Program on Environmental and Social Management MLHSD/POPC-BRU should review and, possibly improve on the following indicators:

- a) District /Municipal City development plans reflect sound analysis of Environmental opportunities and constraints.
- b) Evidence of submission (e.g District /Municipal/City environmental action plans)to and review by LGI committees.
- c) District /Municipal /City Environmental Officers participate in the Physical Planning exercise.
- d) Annual budget and allocations reflect the needs to address environmental issues in these plans.
- e) Evidence that environment screening and EIAs, where appropriate are carried out for activities, projects and plans and mitigation measures are planned and budgeted for:
  - Evidence that mitigating measures are being implemented.
  - Evidence that mitigating measures are incorporated in bid documents.
  - Special capacity enhancement strategies for District /Municipal/city environment committees are formulated and implemented.
  - Environmental awareness training planned for and carried out during the previous financial year.

These indicators are crucial in the monitoring process. They provide, taken together a method by which LGs can, in a timely manner identify and correct lapses or inadequacies, be these administrative, financial or technical, in the execution of project environmental and social safeguards.

The EAF presents additional technical indicators to cover the broad spectrum of key elements in monitoring:

- Water quality in communities meet international standards,
- Propriety and adequacy as well as location of sanitation facilities,
- Proper waste management practices established,
- Land restoration and re-vegetation after re-alignments of land and access structures and or rehabilitation works,
- Solid waste separation and recycling/disposal measures adopted in settlements,
- Quality of effluent waste discharges into the environment are specified, particularly from sewage and other sources,
- Compliance with the Environmental Guidelines for Contractors
- Best pest management practices by communities are adopted,
- Best practices in the implementation of program activities,
- Appropriate and safe medical waste management especially the disposal of sharps and placenta, expired drugs, etc are adopted.

These monitoring indicators should be incorporated in manuals for the annual assessments cited in the tables on mainstreaming.



## **8.4 Capacity Building**

This will be carried out through the following measures and activities:

- a) Provision of the minimum number of environmental officers for each of the two districts consistent with the scope and extent of environmental work required.
- b) Provision of the basic equipment and logistics required at the planning, implementation, sensitisation, training and monitoring stages of LG programs and this again for each district.
- c) Training of HLG and LLG officers in environmental management and issues on resettlement/relocation of populations and associated elements such as loss/loss of access to assets/resources and the mechanisms for redressment.
- d) Sustained sensitisation programs on education, awareness on environmental issues associated with the Land Reform Sub-Component on development, health, safety and security.
- e) Continued monitoring and assessment exercises by MLHSD/POPC/BRU to follow-up and correct lapses or inadequacies that could arise at various stages of implementation and monitoring of the program.

### **Capacity Building for Environment and Social Management of the LR Sub-Component Programs**

#### **Equipment, Training and Sensitisation Needs and Costs:**

In order to ensure smooth environment mainstreaming in the LRP, some City (Mwanza and Dar es Salaam) District technical staff (Babati and Bariadi) and village committees need training in the use of the tools for environmental management. So far the checklists have been rolled over at district level whereby 11 technical staff in each district were trained in the use of the checklists. However, following the training the following gaps were identified and need urgent address. A number of activities were planned to be implemented in order to:

- Consolidate capacity of environment mainstreaming at the two City levels,
- Strengthen capacity of environment management at the two Districts,
- Enhance capacity at village level.

It should be borne in mind that Land Reform Sub-component will have to scrutinise the activities of the EAF to ensure harmony with any capacity building activities of NEMC or those contained in the Formalization Program Write-ups.

#### **Objective 1: Consolidate Capacity of Environment Mainstreaming and Monitoring at the City/Municipal and District Levels**

In order to consolidate the capacity built at City/Municipal and District levels the following activities will be undertaken.

For City/Municipal equipment and logistics requirements however, the appraisal missions should determine the needs given the existence of service providers for infrastructure and services.

#### **ACTIVITY 1: Support for Environmental Monitoring and Surveillance for the LR Sub – Component in the Pilot Districts and Local Governments**

The support for environmental monitoring and surveillance for the Land Reform sub- component in the pilot areas and local government for water quality activity shall be done by water Department in Babati and Bariadi Districts, Dar es Salaam and Mwanza Cities; however when advanced test required, the Lake

Victoria Environmental Management Programme (LVEMP) will be consulted. This program is funded by the Global Environmental Facility (GEF) through World Bank.  
 Indicative Budget For One (1) District – Provision Of Equipment ( In \$ US)

ITEM	ITEM DETAIL	COST	TOTAL
Chemical and microbial test kits			24,000
3.no Computers			3,000
Printer			500
Photo copier			600
Fixed Lab			150,000
LCD Projector			1,380

Sub-Total Equipment-----\$US186, 480

Logistics

2no. 4-wheel drive vehicles----- \$US90, 000

Sub-Total—Logistics-----\$US90, 000

Recurrent costs, (annual) – maintenance of vehicles, fuel, consumables and chemical reagents:

approximately-\$US10,000

A staff audit must be undertaken at LGs to clearly define minimum personnel requirements. In discussions at the District Land and Water Offices, it was revealed that three technical officers will be made available at the next budget session and who would be used for the water quality monitoring program.

A consensus was reached that the Town Planner/Surveyor should receive a 6 to 9 month’s training in an Institute of the Environment in Tanzania or Kenya on Environmental Planning and Management.

At an indicative cost of -----\$US15, 000

Total one District-----\$US301,480

For the two Districts-(Equipment and Logistics----- \$US602,960

10% contincency----- \$US60,296

Total-----\$US663,256

Activity 2: Conduct Environment Mainstreaming Workshops in Dar es salaam and Mwanza and training for councillors of village committee members in 2 districts.

The proposal is to organize seminars for 5 days during the project cycle for at least 20 participants in City/Municipal councils, sector ministries, Regional and District Commissioners and at least four members of village committees in the Pilot Districts.

**Indicative Budget for each of the Pilot Districts, Mwanza City and Dar es Salaam in \$US as follow:**

Activity	Item	Item detail	Total	Comment
Workshops in Babati and Bariadi Districts Board and allowances Service vehicle Printing/Photocopying Stationery Vehicle for fieldwork			25,900	
Workshops in Mwanza and Dar es salaam Board and allowances Printing/Photocopying/ stationery Service vehicle Vehicle for fieldwork			27,900	

Grand Total for Workshops/Seminars-----\$US53, 800

**Activity 3: Undertake Assesments and Support for Environmental Compliance at the Districts and Cities. To be carried out by Staff of MLHSD and POPC as a routine annual exercise**

Activity	Item	Item detail	Cost	Total (USD)	Comment
Assessment for 4 days per district and City per year	2 monitors	100 USD x 2pers. x 16 days		3200	
	Driver	50 USD x 16 days		800	
	-2 Air tickets (Dar-Mwz-Dar)	400USD x 2 pers.		800	
	-2 Air tickets (Dar-Arusha-Dar)	350USD x 2 pers		700	
	Fuel in the field	40Ltrs@ 20USD x 16 days		12800	
	Contingency	Approx 10%		1,830	
	Total			20,130	

Total Assessments for two Cities and Pilot Districts----- US\$ 20,130

Activity 4: Stakeholders Consultations.

Activity	Item	Item detail	Cost	Total	Comment
Evaluation material		Lump sum		450	Visits to village and settlement communities
Hire consultant	15 man days	400 x 15		6000	
	Field travel			1750	
	Per diem	100 x 15		1500	
	Consultative meetings at district and City level	1,000 x 8		8000	
Stakeholder meetings-2 days each per District and per City	Approximately 40 participants per meeting.	40 @60 x 8		19,200	
	Hall Hire	200 p/d x 8		1600	
	Transport refund	20 x 40 for 8 days		6400	
	Printing	Lump Sum		1000	
	Stationery	Lump Sum		1000	
Publish materials	Posters, leaflets, booklets	320 participants @approx cost of \$20		6400	

Total-Stakeholder Consultations-----US\$53,300

#### Contents of Training

MLHSD, POPC or NEMC will be primarily responsible for carrying out this training. The contents of this exercise without being exhaustive will be:

- a) Environmental and Social Management process
  - Review of Environmental and Social Management Process.
  - Assignment of environmental categories
  - Use of Screening form and Checklist
  - Preparation of terms of reference for carrying out EA
  - Design of appropriate mitigation measures.
  - How to review and approve EA reports
  - The importance of public consultations in the EAF process.
  - How to monitor project implementation and mitigation measures.
  - How to embed the Environmental and Social Management process into the implementation of sub-projects.
- b) Environmental and Social Policies, Procedures and Guidelines
  - Review and discussion of Tanzania's national environmental policies, procedures and legislation,

Review and discussion of the Bank's safeguards policies,  
Strategies for consultation, participation and social inclusion,  
Collaboration with institutions and stakeholders at all levels (local, zonal, national, NGOs.)

c) Selected Topics on Environmental Protection

Hygiene and security during the program activities,  
Maintenance of infrastructures and equipments,  
Medical waste management,  
Pest management,  
Groundwater management,  
Protection of lakes, rivers, wetlands and other water bodies and other protected areas.

Provision for EIA and RAP:

Depending on the scope, extent or nature of sub- projects associated with the Land Reform Sub-components/ activities and related services on the program were yet to be finalised nor was it evident that these or just statements would suffice for project approvals.

A provision for EIA is however proposed for local consultants US\$ 50,000

Total Budget for the Environmental and Social Management Capacity Building

An overall budget for the sub-component is estimated at US\$ 1,126,966

## **8.5 Institutional Support to Local Government Institutions**

Local Government institutions must be endowed with:

Adequate personnel for environmental management tasks,  
Sufficient equipment and logistics such as transport, chemical and microbial monitoring equipment  
Sufficient financial provisions for recurrent costs, such as fuel and reagents for monitoring programs.

## **9.0 RECOMMENDATIONS**

### **9.1 Specific Recommendations**

The consultant recommends that, given the present scope of this EAF especially with regard to infrastructure and services, there will eventually be the need to address in the Land Reform Sub-component environmentally and socially salient issues in the Pilot Villages and the newly planned settlements in Mwanza and Dar Es Salaam.

Provision of proper and adequate water and sanitation facilities notably to schools, health facilities, markets and to the communities themselves,

**Solid Waste Management:** The handling and disposal of several categories of waste should be well defined:

-general household waste should be separated with inorganic matter set aside for subsequent recycling and organic (bio-degradable) matter to be composted for manure.–potentially toxic solid wastes such as batteries, discarded computers and refrigeration equipment should be properly stored. The present trend in some countries is for a contractual agreement between manufacturer and country for recovery and recycling or disposal of these types of waste.

Liquid Waste: All liquid waste should be treated and tested to determine its fitness for discharge into the environment. Liquid wastes from sewerage treatment plants, industrial and commercial enterprises and other sources are examples in this regard.

Oils and lubricants should be recovered as they can be recycled for use in power plants or sold in the mechanical/wood preservation market sector.

Water and Sanitation facilities should as a matter of priority be provided to all communities especially the poorest elements in densely populated settlements to pre-empt outbreaks of water-borne or water-related diseases. The siting of sanitation facilities should be such that no pollution of water sources can take place. Proper drainage systems must be included in the design of all water points.

Community and Settlement roads: dislocation of natural water-ways should where possible be avoided and use of culverts and drains along the road alignments should be the norm.

Markets and associated facilities such as adequate water and sanitation and waste disposal should be provided due to the crying need for them by communities.

Bee-keeping, weaving, dyeing, aqua-culture and agro-processing are key income-generating activities that should be promoted especially where they assist to alleviate pressures on land use and resettlement/relocation issues.

- a) Entomology programs such as malaria and bilharzia control should be promoted in all LG areas of the program.
- b) A staff and logistics audit should be carried out to determine the costs of environmental management and capacity building required at both HLG and LLG levels with the results translated into real financial obligations for Local Government support.
- c) A review of the number of villages and their spatial distribution for each of the two pilot Districts is strongly recommended in order to have a more representative sample and coverage of the Districts.

## **9.2 General recommendations**

Regional and District Commissioners will be closely associated with the Land Reform Sub-component through information on the nature and scope of the program in their Administrative areas.

The anarchic occupation of wetlands, drainage valleys, cultural heritage and protected areas and forests should be discouraged. The answer lies in the vigilance of LGs to prevent these settlements at the outset. Where the Municipality/ City, District or LG area is land stressed, the LGs should initiate less extensive socio-economic activities such as agro-processing, aqua-culture and appropriate cottage industries to sustain the populations concerned.

With respect to the subsequent infrastructure and services sub-projects of the Land Reform Sub-component, the implementation of the EMPs and RAPs should be integral components of the overall project costs and as such cannot be side-lined nor postponed.

The contractors, where engaged and, in the execution of their contracts should:

Comply with the environmental management guidelines described in Annex 3

Comply with all of the requirements of an EIA and the EAF and shall, in accordance with accepted standards, employ techniques, practices and methods of construction that will ensure compliance with these standards and, in general, minimise environmental damage, control waste, avoid pollution, prevent loss or damage to natural resources, and minimise effects on surrounding landowners, occupants and the general public,

Implement such agreed remedial measures immediately to prevent further damage and to repair and restore any damage that may have occurred prior to, during and after construction,

Organise labour, plant, transport and equipment to perform the work in accordance with the environmental requirements,  
Ensure the project is implemented in accordance with the environmental standards specified in the EAF,  
Implement agreed actions resulting from routine monitoring, or inspections,  
In addition, shall implement their own audits to ensure conformity with the requirements of the EAF,  
No certificate of completion of works shall be given until such time as the Land Reform sub-component Management is satisfied through its own audit that all environmental and social mitigation measures have been effectively put in place.

ANNEX 1

Environmental and Social Screening Form (ESSF)

Please type or print clearly, completing this form in its entirety. You may provide additional information on a separate sheet of paper if necessary. Kindly note that the information you are to provide is required by the National Environmental Management Act in Supplement No.3 of 2005 and it is an offence to give inaccurate information.

SECTION 1: INFORMATION ON THE CONTACT PERSON

Name: -----

Institutional Affiliation-----

Business Title / position -----

Institution/Business Address -----

Telephone -----

SECTION 2: DESCRIPTION OF THE PROPOSED PROJECT

Name of Proposed Project -----

Date expected to start implementation -----

Proposed location of project -----

(Attach a map or maps, covering the proposed site and surrounding 5 km radius)

Land Area -----

(Approximate land area and of proposed location)

Current Land Use (Describe how the land is being used at present)

-----

-----

Describe any Possible Alternative Site(s) -----

Describe other types of facilities (including health centres and schools) which are located within 100 metres of the site, or are proposed to be located near the proposed facility. Indicate the proximity of the proposed project site to residential areas, national parks or areas of ecological, historical or cultural importance.

-----

-----Indicate whether adequate infrastructure exists at the proposed location, or whether new buildings, roads,



electricity and water lines, or drainage systems will need to be constructed as a part of the proposed project.

-----

-----

-----

SECTION 3: EMPLOYEES AND LABOURERS

Number of people to be employed:

Employees and Labourers	During Implementation	During Routine Operation
FULL-TIME		
PART-TIME		

Indicate whether you plan to construct housing / sanitation facilities for temporary or permanent residents/workers.

SECTION 4: DESCRIPTION OF PROJECT AND METHOD OF IMPLEMENTATION

Briefly describe the type and nature of any sub-project/ processes that may be implanted/conducted as part of this project at the site.

-----

-----

-----

State the type and quantity of energy to be used (including the origin of the energy, i.e. public utility, on-site generator, wood, solar, wind, etc.)

Type(s) and Source	Quantity	Period (per day / week / etc.)

SECTION 5: WATER

Estimate the quantities of water to be used for the following:

Use(s) of Water	Quantity	Period	Source

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List the type and quantity of raw materials to be used per year in the production process (including soil, sand, cement, aggregates, wood, animals, etc.). Identify the sources of all raw materials.

Type	Quantity	Source

List of all the chemicals expected to be used in the project (A separate list may be attached with more detailed information)

Name / Type	Description	Quantity

### SECTION 6: PRODUCTS

Briefly state the nature of the product(s),if any or output of the proposed project and the expected quantities on a quarterly or annual basis. Indicate the intended uses of the product(s).

Name of Product / Output	Description of Uses	Anticipated Output per Qtr/Yr

### SECTION 7: BY-PRODUCTS, WASTE MANAGEMENT AND DISPOSAL

Specify the nature of each waste or by-product and the quantity to be generated

Type	Description	Quantity in Kg per wk/mo
Solid (Bulk)		
Solid (particulate)		
Liquid		
Gaseous		
Other		

Proposed method of disposal or management of waste (e.g. burning, burying, landfills etc.)

Type(s) and Source	Method of Disposal / Management

Indicate sources of noise pollution, the type / quality of noise (i.e. machinery / repetitive pounding, etc.)

Source of Noise	Type of Noise

**SECTION 8: ENVIRONMENTAL IMPACTS**

Please indicate environmental impacts that may occur as a result of the proposed project.

**A. The Biological Environment**

**8.0 The Natural Environment**

8.1 Describe the habitats and flora and fauna in the project area and in the entire area expected to be affected by the sub-project (e.g., downstream areas, access roads):

8.2 Will the project directly or indirectly affect:

8.2.1 Natural forest types?

8.2.2 Mangroves or swamps?

8.2.3 Wetlands (i.e., lakes, rivers, swamps, seasonally inundated areas)?

8.2.4 Natural critical habitats (parks, protected areas)?

8.2.5 Other habitats of threatened species that require protection under Tanzanian laws and/or international agreements?

YES \_\_\_\_\_ NO \_\_\_\_\_

8.3 Are there according to background research / observations any threatened / endemic species in the project area that could be affected by the project?

YES \_\_\_\_\_ NO \_\_\_\_\_

8.4 Will vegetation be cleared?

YES \_\_\_\_\_ NO \_\_\_\_\_

Will there be any potential risk of habitat fragmentation due to the clearing activities?

YES \_\_\_\_\_ NO \_\_\_\_\_

8.6 Will the project lead to a change in access, leading to an increase in the risk of depleting biodiversity resources?

YES \_\_\_\_\_ NO \_\_\_\_\_

Provide an additional description for “yes” answers: \_\_\_\_\_

**9.0 Protected Areas**

Does the sub-project area or do sub-project activities:

9.1 Occur within or adjacent to any designated protected areas?

YES \_\_\_\_\_ NO \_\_\_\_\_

9.2 Affect any protected area downstream of the project?

YES \_\_\_\_\_ NO \_\_\_\_\_

9.3 Affect any ecological corridors used by migratory or nomadic species located between any protected areas or between important natural habitats (protected or not) (e.g., mammals or birds)?

YES \_\_\_\_\_ NO \_\_\_\_\_

Provide an additional description for “yes” answers:

---

10.0 Invasive Species

10.1 Is the sub-project likely to result in the dispersion of or increase in the population of invasive plants or animals (e.g., along distribution lines or as a result of a dam)?

YES \_\_\_\_\_ NO \_\_\_\_\_

Provide an additional description for a “yes” answer:

---

B. The Physical Environment

11.0 Geology / Soils

11.1 Will vegetation be removed and any surface left bare? YES \_\_\_\_\_ NO \_\_\_\_\_

11.2 Will slope or soil stability be affected by the project? YES \_\_\_\_\_ NO \_\_\_\_\_

11.3 Will the sub-project cause physical changes in the project area (e.g., changes to the topography)? YES \_\_\_\_\_ NO \_\_\_\_\_

11.4 Will local resources, such as rocks, wood, sand, gravel, or groundwater be used? YES \_\_\_\_\_ NO \_\_\_\_\_

11.5 Could the sub-project potentially cause an increase in soil salinity in or downstream the project area? YES \_\_\_\_\_ NO \_\_\_\_\_

11.6 Could the soil exposed due to the project potentially lead to an increase in lixiviation of metals, clay sediments, or organic materials? YES \_\_\_\_\_ NO \_\_\_\_\_

---

12.0 Landscape / Aesthetics

- 12.1 Is there a possibility that the project will adversely affect the aesthetics of the landscape?  
YES \_\_\_\_\_ NO \_\_\_\_\_

---

13.0 Pollution

- 13.1 Will the project use or store dangerous substances (e.g., large quantities of hydrocarbons)?  
YES \_\_\_\_\_ NO \_\_\_\_\_
- 13.2 Will the project produce harmful substances? YES \_\_\_\_\_ NO \_\_\_\_\_
- 13.3 Will the project produce solid or liquid wastes? YES \_\_\_\_\_ NO \_\_\_\_\_
- 13.4 Will the project cause air pollution? YES \_\_\_\_\_ NO \_\_\_\_\_
- 13.5 Will the project generate noise? YES \_\_\_\_\_ NO \_\_\_\_\_
- 13.6 Will the project generate electromagnetic emissions? YES \_\_\_\_\_ NO \_\_\_\_\_
- 13.7 Will the project release pollutants into the environment? YES \_\_\_\_\_ NO \_\_\_\_\_

---

C. The Social Environment

14.0 Land Use, Resettlement, and/or Land Acquisition

- 14.1 Describe existing land uses on and around the sub-project area (e.g., community facilities, agriculture, tourism, private property, or hunting areas):

- 
- 14.2 Are there any land use plans on or near the project location, which will be negatively affected by sub-project implementation? YES \_\_\_\_\_ NO \_\_\_\_\_

- 14.3 Are there any areas on or near the project location, which are densely populated which could be affected by the project? YES \_\_\_\_\_ NO \_\_\_\_\_

- 14.4 Are there sensitive land uses near the project area (e.g., hospitals, schools)?  
YES \_\_\_\_\_ NO \_\_\_\_\_

- 14.5 Will there be a loss of livelihoods among the population? YES \_\_\_\_\_ NO \_\_\_\_\_

- 14.6 Will the project affect any resources that local people take from the natural environment?  
YES \_\_\_\_\_ NO \_\_\_\_\_

14.7 Will there be additional demands on local water supplies or other local resources? YES  
\_\_\_\_\_ NO \_\_\_\_\_

14.8 Will the project restrict people's access to land or natural resources?  
YES \_\_\_\_ NO \_\_\_\_

14.9 Will the project require resettlement and/or compensation of any residents, including squatters? YES \_\_\_\_\_ NO \_\_\_\_\_

14.10 Will the project result in construction workers or other people moving into or having access to the area (for a long time period and in large numbers compared to permanent residents)? YES \_\_\_\_ NO  
\_\_\_\_\_

14.11 Who is/are the present owner(s)/users of resources/infrastructures in the project area?  
\_\_\_\_\_

15.0 Loss of Crops, Fruit Trees, and Household Infrastructure  
Will the project result in the permanent or temporary loss of:

15.1 Crops?

15.2 Fruit trees / coconut palms?

15.3 Household infrastructure?

15.4 Any other assets/resources?

16.0 Occupational Health and Safety, Health, Welfare, Employment, and Gender

16.1 Is the project likely to safeguard residents'/worker's health and safety and public safety (e.g., occupational health and safety issues)? YES \_\_\_\_\_ NO \_\_\_\_\_

16.2 How will the project minimize the risk of accidents? How will accidents be managed, when they do occur?  
\_\_\_\_\_

16.3 Is the project likely to provide local employment opportunities, including employment opportunities for women? YES \_\_\_\_\_ NO \_\_\_\_\_

Provide an additional description for "yes" answers:  
\_\_\_\_\_

17.0 Historical, Archaeological, or Cultural Heritage Sites

Based on available sources, consultation with local authorities, local knowledge and/or observations, could the project alter:

17.1 Historical heritage site(s) or require excavation near the same? YES \_\_\_\_ NO \_\_\_\_\_

17.2 Archaeological heritage site(s) or require excavation near the same? YES \_\_\_\_ NO \_\_\_\_

17.3 Cultural heritage site(s) or require excavation near the same? YES \_\_\_\_ NO \_\_\_\_

17.4 Graves, or sacred locations (e.g., fetish trees or stones) or require excavations near the same?  
YES \_\_\_\_\_ NO \_\_\_\_\_

N.B For all affirmative answers ( YES) Provide description, possible alternatives reviewed and/or appropriate mitigating measures.

\_\_\_\_\_

D. RECOMMENDATIONS:

Based on the above screening results, the following recommendations are made:

\_\_\_\_\_ (a) Implementation of the environmental mitigation measures as proposed in the Environmental Checklist and Guidelines for Contractors.

\_\_\_\_\_ (b) Before implementation can commence, preparation and implementation of a resettlement action plan/compensation plan consistent with the provisions of the Resettlement Policy Framework, February 2008, will be required

\_\_\_\_\_

SECTION 18: TESTIMONY

I confirm that the information provided herein is accurate to the best of my knowledge. I will also endeavour to provide additional information and facilitate a site visit if required.

-----

Signed : Developer

Date :

For Official Use Only			
Reviewed by : D/M EO or Sector Officer			Date :
Classified	A	B	C
Reasons for the Classification:			

Endorsed by: NEMC ENVIRONMENTAL OFFICER	Date:
Approved by Director:	Date:

## A. ANNEX 2 . ENVIRONMENTAL CHECKLIST FOR CITY AND MUNICIPAL LOCAL GOVERNMENTS

Note: Users of the checklists should note that not all sectors of Local Government investments may have been covered in this checklist. Where such sectors may not have been covered then the user may refer to the checklist for the lower LGs for the mitigation measures. For example a project may be conceived by a district LG but its mitigation measures may be found in the checklist for the City/Town Council checklist. In addition where the checklist is not covering a particular project situation then that project may need a fully-fledged environment impact assessment (EIA).

### 2.1 WATER SUPPLY

Project/ Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by Local Government	Required action /mitigation measure by Community	Required action / mitigation measure by Contractor
Surface water supply intake PLANNING PHASE			Source for consultant to conduct an Environmental Impact Assessment (EIA). Consult the District Engineer and District Water Officer. Community consultation.		
Surface water supply intake CONSTRUCTION PHASE:  Project siting	Human beings Soil Aquatic ecology		Source for consultant to conduct an Environmental Impact Assessment (EIA). Consult the District Engineer and District Water Officer. Community consultation. Assessing potential impacts on aquatic plants and animals of Receiving water.		Safety of workers and accident prevention during construction should be ensured. Proper disposal of the excavated material. Limit vegetation removal to specific site to minimise



Environmental Checklists for City/Municipal Local Governments

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Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by Local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
		<p>area leading to Contamination of water. Social disruption of local population by imported construction workers. Some of the aquatic animals and plants may be destroyed during construction process.</p>			<p>Destruction of plants and animals.</p>
<p>supply intake OPERATION PHASE:  Maintenance of system</p>		<p>Drawing in water polluted with animal wastes. Solid and liquid waste polluting water supply. Diseases related to poor drainage.</p>	<p>Taking consideration of the potential social problems of the local population in utilizing the project facilities. Establish exclusion zone upstream of intake in which animals are not allowed. Establish water protection area in catchment of water supply intake and control access and use.</p>	<p>Educate the community about boiling water for drinking. Ensure that the drainage is not blocked so as to prevent breeding places for mosquitoes. Drainage could be directed into gardens in which suitable plants like yams are grown via forked channels.</p>	

Water treatment plant PLANNING PHASE			Source for consultant to conduct an Environmental Impact Assessment (EIA). Consult the City/Municipal Engineer and Water Officer.		
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Environmental Checklists for City Local Governments

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Project/ Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by Local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
			Community consultation		
Water treatment plant CONSTRUCTION PHASE:	Vegetation	Destruction of vegetation during excavation works Loss of habitat, Adverse aesthetic impacts	Construction contract documents should incorporate provisions for limiting vegetation of the construction area upon completion.		Safety of workers and accident prevention during construction should be ensured. Limit vegetation removal to the specific site. Re-plant vegetation on the construction area upon completion.
Water treatment plant	Water	Sludge from water treatment plant polluting water courses in	Establish and maintain sludge disposal facility.		.

OPERATION PHASE:		area Waste oil and grease from machinery polluting water courses in area Water treatment chemicals leaking from containers and contaminating surface and ground water.	Collect waste oil and dispose it properly. Store chemicals in secure dry building, clean up any spillage and replace broken packaging and leaking containers.		
Supply and distribution mains PLANNING PHASE			Source for consultant to conduct an Environmental Impact Assessment (EIA). Consult the City Engineer and City Water		

Environmental Checklists for City Local Governments

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September, 2008

Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by Local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
				Officer. Community consultation	
Supply and distribution mains CONSTRUCTION PHASE:	vegetation	Destruction of vegetation during excavation works Loss of habitat Adverse aesthetic impacts		Construction contract documents should incorporate provisions for limiting vegetative removal, and for re-	Limit vegetation removal to the specific site. Re-plant vegetation on construction area upon completion to

Excavation of trench				vegetation of the construction area upon completion.	<p>reduce soil erosion. Maintain positive pressure in pipes at all times.</p> <p>Install and maintain adequate number of drain points in system and Provide surface drainage to prevent collection of runoff water along pipeline route.</p> <p>Install sewage piping in separate trench from water supply piping with adequate separation, preferably on opposite sides of road. Where pipes cross, install impermeable barrier between the pipes.</p>
Supply and distribution mains OPERATION PHASE	Water	Leakages from broken pipes creating ponds of water in which disease carrying organisms thrive.	Establish and support leakage detection and repair either within local government or through private sector. Flush system once in a		

Project/ Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by Local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
		Negative pressure in pipes drawing contaminated water and soil into water supply	While to remove accumulated silt.		

## Environmental Checklists for City Local Governments

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### 2.2 ROADS

Project/ Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by Local Government	Required action /mitigation measure by Community	Required action / mitigation measure by Contractor
Roads PLANNING PHASE	Human beings Land	Displacement of people Source of materials for the gravel.	Identify good borrow pit areas near the road. Sensitization of people along the proposed route.		
Roads CONSRUCTION PHASE  Excavation in borrow areas.	Soil Human beings Animals Geology Plants	Creates ponds and pools of water if left open. May encourage breeding of mosquitoes and cause accidents. Siltation of waterways.	Regular maintenance of culvert crossings with proper de-sitting measures put in place.  Sensitise the worforce		Restore the borrow areas with topsoil that had been spread to the side of the  borrow area then plant grass and allow natural re-

<p>Grading to attain right camber Use of equipment. Culvert installation Fuelling</p>		<p>Erosion and sedimentation during construction. Accidents. Oil and petrol spills may happen during refueling or transportation. Low wages and untimely payment of workers. Dumping of construction debris e.g. soil waste material in wetlands. Clearing wetlands to give way for construction using culverts and embankment fills, infilling some parts with gravel. These activities are likely to</p>	<p>and communities about the risk of diseases, especially HIV/AIDS. This should be done throughout the construction process.</p> <p>Sensitise the communities on the benefits of having a properly constructed road</p> <p>Involve the community at the start of the project by recruiting them to work on the roads so that they can develop a sense of belonging to the entire project. Hold stakeholders' conferences and clearly map out the roles of each</p>	<p>growth of vegetation. Proper grading of the road at the right camber being adopted for earth roads. Creation of proper waterways like outfalls and offshoots at crossings and steep slopes to channel the water off the road. Provide first aid kits. Sensitise and train labourers in the use of equipments. Provide protective gear. Install the proper culverts and headwalls with outfalls sited in the proper direction of flow. Proper grading of the roads.</p>
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Project/ Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by Local Government	Required action / mitigation measure by Community	Required action / mitigation measure by Contractor
		<p>Interface with water flow/local drainage and may interface with the capacity of the wetland to filter and clean water.</p> <p>Increase accidents.</p> <p>Human and organic wastes polluting the watercourses.</p> <p>Reduction of cropping areas for local farmers adjacent to road.</p> <p>Increased likelihood of transmitting diseases such as cholera and STD's to and from, local population.</p> <p>Disputes with those neighbouring the roae reserve and land that has borrow areas.</p>	<p>Stakeholder on the project.</p> <p>This will be done using the area local council works communities.</p>		<p>Drainage channels should be designed and implemented to avoid the transfer, deposition and accumulation of silt, especially in wetlands.</p> <p>Fueling should be done away from water sources/wetlands.</p> <p>Soil bunds should be constructed around a single designated area for the washing, fueling and maintenance of vehicles and machinery. Servicing of machinery should not be done on site to minimize spills.</p> <p>Waste should not be disposed of in wetlands.</p> <p>Sensitise workers in the presence of supervision staff.</p> <p>Strict monitoring and supervision by staff concerned.</p> <p>Keep muster rolls.</p> <p>Dumping of such materials in or near the wetland should be avoided.</p>

Environmental Checklists for City Local Governments

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<b>Project/ Activity</b>	<b>Environmental component affected</b>	<b>Nature of environmental concern</b>	<b>Required action / mitigation measure by Local Government</b>	<b>Required action / mitigation measure by Community</b>	<b>Required action / mitigation measure by Contractor</b>
					<p>Install appropriate sizes of culverts and embankments to provide adequate drainage.</p> <p>Overburden should be removed after barren soil surfaces have stabilized through seeding with grass.</p> <p>Increase road width through adequate bush clearing to improve sighting distances of motorists and increase the braking distance in situations where quick reactions are necessary.</p> <p>Temporary pit latrines should be constructed at the camps.</p> <p>Construct speed control bumps in trading centers to reduce accidents.</p>



<p>Roads: OPERATION PHASE Slashing the roadsides to improve sighting distance</p>	<p>Soil Flora Water Human health</p>	<p>Increases accidents due to poor sighting distance. Roadway blocking drainage for runoff water. Roadway becoming a watercourse during rains and causing erosion. Ponding in roadway providing breeding site for</p>	<p>Establish and support roads maintenance program.</p>		<p>Install appropriate sizes of culverts and embankments to provide adequate drainage. Overburden should be removed after barren soil surfaces have stabilized through seeding with grass. Increase road width through adequate bush clearing to improve sighting distances of motorists and increase the braking distance in situations where quick reactions are necessary. Temporary pit latrines should be constructed at the camps. Construct speed control bumps in trading centers to reduce accidents.</p>
<p>Roads: OPERATION PHASE Slashing the roadsides to improve sighting distance</p>	<p>Soil Flora Water Human health</p>	<p>Increases accidents due to poor sighting distance. Roadway blocking drainage for runoff water. Roadway becoming a watercourse during rains and causing erosion. Ponding in roadway providing breeding site for</p>	<p>Establish and support roads maintenance program.</p>	<p>Slashing the sides of the road to improve the sighting distance of The motorists and generally improve the drainage of the road.</p>	<p>Minimise as much as possible destruction of vegetation and plant trees along the sides of the roads. Install culverts or bridges across natural and manmade drainage channels and keep them clear of debris.</p>

Environmental Checklists for City Local Governments

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Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
	<p>Water borne disease. Potholes in road causing vehicle and pedestrian accidents. Pedestrians injured and killed by over speeding vehicles</p>				<p>Provide drainage ditches on both sides of the road and install small check dams to reduce speed of water from roadway ditch into natural or man made drainage channels as frequently as possible to minimize the volume of runoff water carried by roadway ditch. Plant shrubs and trees on uphill side of ditch to slow water runoff. Raise road above surrounding ground level and slope the surface of the road towards the sides.</p>
<p>Primary bridges and culverts PLANNING PHASE</p>	<p>Human Beings Surface water</p>	<p>Flooding Road becoming Impassable. Bridge deck failure causing accidents and injuries.</p>	<p>Source for a consultant to conduct an EIA (Environmental Impact Assessment). Consult District Engineer for</p>		

			proper and safe design.		
Primary bridges and culverts:  CONSTRUCTION PHASE	Soil Vegetation Human beings Water Dust	Destruction of vegetation causing loss of habitat (home) for animals. Increased dust levels due to removal of vegetation and construction traffic.	Restrict construction to dry season to reduce soil erosion and silting of surface water sources.		Limit vegetation clearing. Restrict construction to dry season to reduce soil erosion and silting of surface water sources. If the dust levels are high,

Environmental Checklists for City Local Governments

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Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
		Soil erosion will occur especially during the rain season. Surface water downstream will be silted due to transportation of loose soil			The contractor should sprinkle water to reduce dust levels.
Primary bridges and culverts: OPERATION PHASE:	Soil Surface water Human beings	Flooding and erosion caused by overflowing and blockage of openings. Bridge deck failure causing accidents and injuries	Establish and implement maintenance program and establish source of funding to pay for repair works.	Organize regular cleanout of culverts to avoid blockage.	

Environmental Checklist for City Local Governments

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**2.3 DRAINAGE**

Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
Primary drains (Man-made and natural channels) PLANNING PHASE	Soil Water Human beings	Soil erosion Flooding may affect people’s property.	Community consultation. Proper site selection.		
Primary drains (man-made and natural channels) CONSTRUCTION PHASE	Soil Vegetation	Destruction of vegetation causing loss of habitat (home) for animals. Soil erosion will occur especially during the rain season. Surface water downstream will be silted as a result of transportation of loose soil.	Prevent construction of housing or commercial operations in flood prone areas.	Plant shrubs and trees on uphill side of ditch to slow water runoff. Prevent construction of housing or commercial operations in flood prone areas.	Limit vegetation clearing to the width of the drainage. Re-plant vegetation on construction area upon completion to reduce soil erosion. Restrict digging of drainage channel to dry season to reduce soil erosion and silting of surface water sources. Install check dams to reduce speed of flow. Plant shrubs and trees on uphill side of ditch to slow water runoff. Enlarge drain to accommodate peak flows. Stabilize sections of bank

Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
					Susceptible to erosion.
Primary drains (Man-made and natural channels) OPERATION PHASE:	Soil Surface water Human beings	Runoff water ponding beyond edge of property and providing breeding ground for water borne disease. Excessive erosion in drainage channel Drainage channel used for open defecation. Drainage channel used as disposal site for solid waste, which causes blockage of the channel (particularly by plastic bags) and contamination of the water. People drawing their water supply from drains resulting in ill health.	Conduct public education campaign to raise awareness of health risks of careless defecation and indiscriminate disposal of solid waste. Promote use of latrines. Local council should deal with polluters. Conduct public education campaign to raise awareness of health risks of using unprotected water sources. Provide alternative safe water supply sources that are affordable to users. Organize regular maintenance to remove debris from channels.	Ensure that the channel is kept clear of debris. Erosion along banks of drainage channel causing siltation of channel and loss of land.	

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## 2.4 SANITATION

Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
Latrines PLANNING PHASE	Water	Groundwater Contamination	Locate latrines at least 30 metres from dug wells, springs, and boreholes. If possible locate latrine at 60 meters. Promote use of pit latrines. Educate people on the risk of indiscriminate fecal disposal.		
Latrines CONSTRUCTION PHASE: Bush clearing Excavation/ digging pit.	Vegetation Soil Surface water Human beings	Destruction of vegetation causing loss of habitat (home) for animals. Increased dust levels due to removal of vegetation Soil erosion, especially during the rain season. Surface water downstream silted as a result of soil erosion.	Restrict construction to dry season to reduce soil erosion and silting of surface water sources.		Limit vegetation clearing to the specific of latrine. Re-plant vegetation on construction area upon completion to reduce soil erosion. Fence off the pit during construction to prevent accidents.
Latrines	Water	Contamination of	Locate latrines at least 30	Place lid on hole to	

OPERATION PHASE:  Use of latrines	Animals Human beings	ground water supply sources through sub- surface flow of human waste. Contamination of	metres from dug wells, springs, and boreholes. If possible locate latrine at 60 meters. If possible, construct lined	prevent flies. Slash area around the pit latrine to destroy habitat of disease causing vectors.	
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Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
		surface water sources through transportation by storm runoff. Animals carry disease-causing parasites. More land is used in construction of new latrines when old ones fill up.	Pit latrines, which can be emptied when full. Consider constructing water borne squat toilets if there is piped water in that area.		
Sewage collection piping and drains  PLANNING PHASE	Land Human beings	Land acquisition	Community consultation Proper site selection of where pipes will pass.		
Sewage collection piping and drains	Soil Vegetation Surface water	Destruction of vegetation causing loss of habitat (home) for animals.	Restrict construction to dry season to reduce soil erosion and silting of		Limit vegetation clearing to the specific site of trench. Re-plant vegetation on

CONSTRUCTION PHASE:  Excavation of trenches Pipe laying	Human beings	Increased dust levels due to removal of vegetation. Soil erosion will occur especially during the rain season. Surface water downstream will be silted as a result of transportation of loose soil.	surface water sources.		construction area upon completion to reduce soil erosion. Ensure that sewage piping is installed in separate trench from water supply piping with adequate separation, preferably on opposite sides of street. Where pipes cross, ensure that impermeable
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Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
					Barrier installed between the pipes.
Sewage collection piping and drains OPERATION PHASE	Piped water Human beings	Leakage from broken drains and overflow from plugged pipes forming ponds of wastewater and contaminating surface waters. Cross contamination of water supply from sewage collection piping. People coming in contact with wastewater	Conduct public education campaign aimed at reducing quantity of solid waste such as plastics entering the collection system. Provide leakage detection and repair and organize for cleaning out of the pipes. Ensure that collector drains are covered and cleaned in a regular basis.		



		in collector drains and from overflow from plugged drains.			
Sewage treatment lagoons PLANNING PHASE	Human beings	Sludge disposed of indiscriminately and causing health risk.	Source for a consultant to conduct an EIA (Environmental Impact Assessment). Consult District Engineer for proper design. Establish and enforce guidelines for design, construction and		

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Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
		Management of disposal facilities.			
Sewage treatment lagoons Construction phase	Vegetation	Destruction of vegetation during excavation works Loss of habitat for animals. Aesthetic impacts.	Construction contract documents should incorporate provisions for limiting vegetative removal, and for re-vegetation of the construction area upon completion.		Limit vegetation clearing to the specific site. Re-plant vegetation on construction area upon completion to reduce soil erosion and maintain natural beauty/ Construct proper fencing to prevent animals entering

					sewage lagoon area.
Sewage treatment lagoons Operation phase	Animals Human beings Vegetation Water	Animals accessing sewage lagoon and transmitting diseases to people. Incompletely treated waste water contaminating surface water streams Waste water used for irrigation and causing contamination of food consumed by humans.	Wastewater leaving the treatment site should be treated to meet prescribed quality standards. Ensure that lagoons are sized and operated to retain wastewater Adequate time to complete treatment process. Establish and enforce regulation of the usage of wastewater for irrigation to prevent transmission of disease to plants consumed by humans.	Maintain proper fencing to prevent animals entering sewage lagoon area.	

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**2.5 SOLID WASTE MANAGEMENT**

Project/ Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
Public collection points  PLANNING PHASE	Human beings Land Water	Contamination of water. Land acquisition. Disease outbreak. Accessibility of the waste skip.	Community consultation. Consult with District Engineer for appropriate design of the skip. Locate the skip or bunker in an accessible place for public use.		

			Ensure that the skip or bunker is of a comfortable height for the users to place the waste inside instead of throwing it outside.		
Public collection points  CONSTRUCTION PHASE	Aesthetics	Aesthetics	Supervise the contractor in construction of the skip.		Construct the skip according to the specifications given in the contract.
Public Collection points e.g. at markets  OPERATION PHASE		Unsightly overflowing skips or bunkers leading to nuisance smells and disease vectors such as flies and rodents	The waste skips should be emptied on a regular basis. Locate the skip or bunker in a place in an accessible place		

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Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
Actual use of the skip		Human wastes (flying toilets) thrown into skips and bunkers. Disease vectors such as flies and rodents using the skips and surrounding area as breeding ground.	For public use Conduct public education program to promote recovery of useable solid wastes Provide adequate equipment to empty skips and bunkers before they overflow. Conduct hygiene education campaign to raise awareness		

			of the health risks of discriminate disposal of human wastes and promote the use of latrines.		
Waste disposal site/ pit. PLANNING PHASE	Human beings Land Water	Contamination of water Land Acquisition Disease outbreak. Accessibility of the waste disposal site.	Community consultation. Ensure that the location of the pit is accessible to the public. Compensation of land as much as possible especially in the divisions.		
Waste disposal	Water	Contamination of	Select disposal site		Build fence around

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Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
Site/ pit CONSTRUCTION PHASE		water.	Underlain by low permeability materials (not sand and gravel) and as far as possible from aquifers and surface water.		Disposal site to keep out animals. Construct drain around perimeter of disposal site and lead runoff water to treatment pond.
Waste disposal site/ pit OPERATION PHASE:	Animals Human beings Water	Waste scattered by wind. Animals and flies feeding on garbage and carrying disease to human population. Runoff from disposal site	Conduct campaign to promote recovery of useable solid wastes, especially organic wastes that constitute up to 80% of the wastes.	Cover waste as soon as possible after dumping. Prevent general runoff from flowing across disposal site.	

		draining into and polluting local water sources. Leachate from waste polluting the ground water or surface water. Volume of waste accumulating too quickly and necessitating opening of new waste disposal site.		Clear debris from drain around perimeter of disposal site so that runoff water is led to the treatment pond. Fence around the disposal pit should be maintained to keep out animals.	
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Other Solid Waste projects such as the ones mentioned below would require an Environmental Impact Assessment (EIA)

- Recycling/resource recovery systems
- Landfill
- Incineration
- Refuse derived fuel production
- River or lake disposal
- Reduction of waste at source

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**2.6 GENERAL CONSTRUCTION**

Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
General construction  CONSTRUCTION PHASE	Vegetation Animals Soil Human beings Surface water	Destruction of vegetation during excavation works. Loss of animal habitat. Adverse aesthetic impacts. Soil erosion especially during the rain	The construction contract documents should incorporate provisions for limiting vegetative removal, and for re-vegetation of the construction area upon completion.	The contractor should be limited in the activities authorized during the rainy seasons.	Limit vegetation removal to specific area of construction. Re-plant vegetation on the construction area upon completion.

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Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
		season, where soil is loose. Surface water downstream will be silted as a result of transportation of loose soil. Traffic Disruption. Increased dust as a result of			In case of high dust levels, the contractor should sprinkle the construction area with water to minimize dust. Warning signs should be used to ensure that traffic

		vegetative cover removal.			disruption is kept to a minimum.
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**2.7 CROP HUSBANDRY**

Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
Crop Husbandry PLANNING PHASE	Soil Vegetation Animals Human beings Water Air	Loss of fertility Soil erosion Loss of vegetative cover Contamination of water by fertilizers, which may eventually affect people	Consult with the Agricultural Extension staff.		
Crop Husbandry ESTABLISHMENT PHASE  Vegetation clearing Tilling land Construction of irrigation/drainage infrastructure Planting Fertilizer application	Soil Vegetation Animals Water	Destruction of vegetation causing loss of habitat(home) for animals. Loss of biodiversity Soil erosion in hilly areas during the rainy season Siltation of surface water downstream as a result of transportation of loose soil.	Consult with the Agricultural Extension staff. Education and training of participants in soil and water protection. Restrict introduction of new species until scientific studies are done.	Phased vegetation clearing to allow animals time to adapt. Carry out assessment identify species of conservation concern. Using appropriate techniques to slow runoff e.g. use bunds, contours, terraces, mulching, grass strips, etc	

		Introduction of new invasive species			
Crop Husbandry  OPERATION PHASE	Soil Water Fauna	Loss of soil nutrients. Reduced water flow if stream or river is being	Education and training of participants in good agricultural practices	Appropriate crop selection. Use of registered and	

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Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
Crop husbandry (weeding, agrochemical application, harvesting) Processing		diverted for irrigation. Risk of disease from mosquitoes, snails, etc. Soil and water contaminating from agrochemicals (fertilizers and Pesticides) and some agro processing projects. Agrochemicals toxicity to humans. Use of manure resulting in spreading disease.		recommended agrochemicals. Implement good agricultural practices e.g. terracing, mulching. Planting trees in the catchment to improve water Retention. Timed or minimum use of chemicals e.g. use integrated pest management, cultural soil and crop protection measures	
Irrigation	Soil Surface water Ground water Fauna	Loss of soil quality e.g. development of salty soil Reduced water flow if stream or river is being diverted for irrigation	Consult Agricultural Officer for guidance. Initiate resources survey including water and soil quality and hydrology	Appropriate crop selection Using appropriate techniques to slow runoff Provide adequate irrigation channels to avoid stagnation	



		Risk of disease from mosquitoes, snails etc. Soil and water contamination from agrochemicals (fertilizers and pesticides).	Soil and water conservation measures built into the project e.g. narrow or covered irrigation canals or pipes.	of water. Regulate water flow into the irrigation fields. Planting trees in the catchment to improve water retention. Keep canals, ditches	
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Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
				Lined or free of weeds and sediments and with good drainage. Introduce fish that eat mosquitoes to control malaria.	

## 2.8 LIVESTOCK AND RANGE MANAGEMENT

Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
Livestock and Range Management PALNNING PHASE	Land Soil Plants Animals Human beings	Change of existing land use. Introduction of new invasive species.	Consult with Agricultural officer. Restrict introduction of new species until scientific studies are done.		
Livestock and Management CONSTRUCTION PHASE Planting pasture for animals. Construction of facilities e.g. for watering,	Soil Plants Water	Soil pollution. Contamination of water from cattle dips.	Agricultural officers should ensure implementation of research findings on new species to be introduced. Ensure proper construction of cattle dips to avoid spillage.	Plant approved species of pasture approved by local Government through the Agricultural Officer.	

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Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
Treatment of animals against pests.			Buy high yielding animal breeds.		
Livestock and Range Management OPERATION PHASE  Grazing Watering animals Livestock movement Preparation of products	Soil Surface water Plants Animals	Overgrazing leading to loss of soil nutrients and soil erosion. Change in vegetation types due to grazing pressure. Transmission of diseases.	Assess carrying capacity of the land and limit grazing pressure accordingly. Maximize forage productivity by combining different types of livestock. Location of watering points to avoid congregation to too many livestock in one place. Education and training of participants on control and management of manure. Proper veterinary services.	Practice rotational grazing to avoid over grazing. Utilize manure as fertilizer for their crops. Provide veterinary care.	

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**2.9 FISHERIES (AQUACULTURE)**

Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by	Required action /mitigation measure by Contractor

				Community	
Fisheries PLANNING PHASE	Land Wetlands Water Human beings	Land use conflicts Water supply conflicts Social and economic disruptions to existing community water management practices and relationships	Community consultation. Encourage use of existing depressions, hollows and ditches. Good pond design, Construction and maintenance to avoid premature abandonment and digging of new ponds by extension staff. Ensure adequate community participation in the project. Site ponds to avoid disrupting existing/ traditional uses of water (e.g. drinking, washing, animal watering). Develop ponds with other activities to combine water quantities are adequate and the project will not conflict with existing human,		

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Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
				Livestock, wildlife or aquatic water uses especially during the dry seasons. Site project well away from wetlands	
Fisheries ESTABLISHMENT	Vegetation Water	Loss of wetland vegetation leading to	<input type="checkbox"/> Restrict area cleared for ponds. Employ	Construct ponds during dry season.	

PHASE Clearing and excavation of wetland Pond bank stabilization Introduction of fish	Humans Water Quality	loss of habitats. Disease due to pollution of water sources from aquaculture wastes Creating habitats for disease carriers such as mosquitoes and snails and increasing the occurrence of water-related diseases such as malaria and bilharzias. Contamination of surface waters with aquaculture wastes	suitable prevention and mitigation measures, including education of local people e.g. good surface drainage around projects water supply, ponds and drainage works; use fish species that feed on disease carriers.	Stabilize exposed soil with grasses and other ground cover. Ensure good drainage and erosion control around ponds .	
Fisheries OPERATION PHASE	Water Humans Water quality	<input type="checkbox"/> Waste from intensive fish processing has high (BOD) Biochemical Oxygen	<input type="checkbox"/> Monitor disease occurrence and public health indicators, and take corrective measures	<input type="checkbox"/> Keep fish densities at moderate levels to reduce disease risk and need for antibiotics	

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Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
Feeding fish Harvesting fish Processing e.g. smoking		Demand which may result in deterioration of water quality	As needed (e.g. change project works, improve maintenance, education, medical) Monitoring of fisheries activities and impacts.	Dilute pond water prior to release. Use shorter retention time of water in ponds i.e. more frequent exchange of water Consider using pond sludge	

				as fertilizer if properly decomposed and non-toxic	
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**2.10 BEE KEEPING**

Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
Bee Keeping PLANNING PHASE	Human beings Animals	Risk of bee stings	Community consultation. Proper site selection. Educate people on proper harvesting techniques.	Use suitable protective gear during harvesting.	
Bee Keeping ESTABLISHMENT PHASE Setting up beehives	Vegetation Animals	Disturbance may be caused by trampling while setting up hives.	Set up hives in areas with little or no wildlife. Educate people on setting up modern beehives.	Set up modern beehives.	

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Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
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<p>Bee Keeping OPERATION PHASE Checking hives Harvesting honey Processing e.g. smoking</p>	<p>Animals Humans</p>	<p>Risk of fire from poor harvesting methods. Risk of bee stings. Minor disturbance may be caused by trampling while checking hives and harvesting.</p>	<p>Train people in modern techniques of harvesting honey.</p>	<p>Use proper harvesting equipment and techniques e.g. smokers. Fence off area of hives to avoid disturbance from other people. Use proper harvesting techniques with proper protective gear.</p>	
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PIGGERY

Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
<p>Piggery PLANNING PHASE</p>	<p>Surface water Human beings</p>	<p>Contamination of water sources Noise Odour</p>	<p>Provide proper design of shed. Sheds should not be sited on slopes above sensitive receiving environments. Sheds should have concrete floors for easy cleaning. Wash down and wastewater collection and transport systems should be designed and constructed so as to</p>	<p>If odours do occur, the cleaning and flushing of pen floors, drainage channels and pipes should be increased in frequency. Wastewater holding tanks should be covered or enclosed, to minimize odour release.</p>	

			avoid stagnation of wastewaters. Distance from the perimeter of a piggery, or from the nearest point of a treatment system i.e. 20m to any property boundary and 50m to any public area or road recommended to minimize the effect of odours as much as possible.		
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Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
			Shed should have vertical emission stacks rather than having emission points close to the road or along sidewalls.		
Piggery CONSTRUCTION PHASE  Setting up the piggery	Plants Animals Soil	Clearing of vegetation Soil erosion during construction of pig shed.	Educate community on proper management of pigs. Provide proper designs for shed construction.	Sheds should be constructed in a manner that makes them leak free and easy to maintain. Materials should be impervious to assist in cleaning and to avoid absorption of odours. Horizontal surfaces (other than the floor will tend to accumulate dust and other	



				wastes and should be avoided. Ventilation systems should not allow rain to enter the building and dampen litter	
Piggery OPERATION	Human beings	Wet litter is a significant odour source, especially	Moisture control of litter The moisture content of		

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Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
PHASE		as manure accumulates Health hazard in form of jiggers, lice and fleas	Litter should be controlled by:- Prompt repairs of leaks in roof and exterior walls; Prompt repair of leaks in drinking and drinkers; An adequate depth of bedding litter; The removal of damp litter around drinkers; A moisture content of 30-40% is optimal, avoiding dust (too dry) and odour (too damp). Odour mitigation measures include:		

			<p>A high standard of building and floor cleanliness ;</p> <p>Avoiding over-damp litter;</p> <p>Adequate separation from neighbouring properties/premises;</p> <p>Elevated discharge into the air from buildings.</p>		
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### 2.11 RABBIT KEEPING

Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
<p>Rabbit Keeping</p> <p>PLANNING PHASE</p> <p>Availability of the rabbits</p> <p>Plan for the storage and disposal of wastes, dead animals, manure, sludge and effluent etc.</p>	<p>Land</p> <p>Animals</p> <p>Water</p> <p>Human beings</p>	<p>Suitability of the site.</p> <p>Market for the rabbits.</p> <p>Odour.</p> <p>Storage and disposal of wastes.</p> <p>Compatibility with existing and surrounding land uses e.g. distances to any houses, property boundaries or watercourses.</p>	<p>Agricultural Officers should consider research findings on new species to be introduced.</p> <p>Community consultation.</p> <p>Avoid environmentally sensitive areas.</p> <p>The establishment of the rabbit farming at adequate distances from neighbours can assist in minimizing environmental impacts.</p> <p>The shed must not be located in an area that is subject to water logging.</p>	<p>Willingness of the community to participate in the project.</p>	

<p>Rabbit Keeping CONSTRUCTION PHASE</p> <p>Buiding the rabbit shed</p>	<p>Vegetation Human beings</p>	<p>Clearing of vegetation Soil erosion during construction of pig shed</p>	<p>Ensure proper construction of rabbit sheds. Buy good quality breeds of rabbits. Educate community on proper management of rabbits. Provide proper design for shed construction.</p>	<p>Sheds to be constructed in a manner that makes them free of leaks and easy to maintain.</p> <p>The shed floor should be impervious to assist in cleaning and to avoid absorption of odours.</p> <p>Ventilation systems should not allow rain to enter the building</p>	
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Project/Activity	Environmen tal component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
<p>Rabbit keeping OPERATION PHASE</p> <p>Animal health is likely to be affected by poor shed hygiene. Health risks assessment (if</p>	<p>Vegetation Animals Human beings Soil Water</p>	<p>Health of the rabbits, employees and surrounding residents due to the presence of vermin. Fast transmission of diseases throughout the stock, which may lead to death of the</p>	<p>Disease-control methods should be established for isolating diseased stock and for quickly dealing with the problem. Rabbits must be kept within a well-ventilated rabbit proof enclosure. All drainage water and animal</p>	<p>As rabbit hair builds up inside sheds, it should be removed regularly from vents and window screens to maintain the efficiency of shed ventilation systems. Sound management and maintenance practices in sheds, waste management areas are</p>	

<p>animals are being processed on-site for human consumption). Stock management I.e. Security Shed Hygiene, Vermin control including insects, Processing, Plans for disposal of stock Solid waste management (Rabbit manure should be viewed as a valuable nutrient resource and not as a waste product requiring</p>		<p>whole stock. Generation of odour from stockpiled manure and dead animals. Nutrient runoff from the manure and overflows from holding tanks may contaminate surface water. Poorly constructed holding ponds may lead to contamination of ground water Land disposal of effluent or sludge may lead to soil pollution and ground water contamination. Odour can result from</p>	<p>wastes should be collected via a drain and led to a suitably located designed holding pond. Depending on the scale of the enterprise, a sedimentation pond may be required to be constructed in order to collect effluent and settle out the solid material before it reaches the holding pond. The proposed water sources for the rabbit enterprise should be of an adequate quality and reliability during dry periods to meet the rabbits needs. The site layout and sheds should be designed to minimize the likelihood of storm water or floodwater</p>	<p>essential to prevent a vermin problem at the rabbit farm, which could also become a problem for surrounding residents In dry system, manure (and litter) may only need to be removed once every several weeks. Stockpiled manure should be kept dry to maintain nutrient quality and to avoid the potential for odour generation and nutrient runoff,</p>	
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.Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
Disposal). Manure		Poorly managed	Entering the shed or other	The manure and litter are suitable	

<p>and litter collection, storage and disposal  Disposal of dead animals  Wastewater collection and Storage. These include any wash-down water from periodic cleaning of sheds and cages, and any run-off from stockpiled manure.  Application of wastewater and sludge to land  Odour management  Water-related issue  Noise and Lights</p>		<p>sheds or waste storage and disposal, as rabbit manure and effluent contain high levels of ammonia.  Significant ammonia levels can affect the health of the rabbits as well as reduce the amenity of the surrounding area, potentially causing conflicts with neighbouring property owners.  Contamination of wetlands or groundwater may occur if sufficient care is not taken with the design and management of the sheds or the wastewater and solid waste management systems.  Likelihood of storm water or flood water entering the shed or</p>	<p>operational areas, particularly those areas, where the rabbits are housed or wastes are stored.  It is recommended that the shed floor be raised a minimum of 200 mm above the ground surface.  To prevent infiltration of liquid wastes into the soil, the shed floor and the solid waste storage area should be impermeable, either concrete or compacted dirt.  Absorbent litter such as sawdust or wood shavings should be maintained under the rabbit cages or wastes should be collected on trays or mats.  Vegetative screens in some circumstances reduce the transmission of odour. However, they do not negate the need for appropriate planning, siting, design and management practice.</p>	<p>for use directly onto land, or they can be used in composting mixes with green waste.  Dead animals should be removed and disposed of daily in a local landfill. On-site disposal is acceptable only if pits are specially constructed. The pits should be lined with impervious material, to ensure no leaching of nutrient, and constructed so that other animals cannot gain access.  If land disposal of effluent or sludge is to be carried out on a significant scale, applicants must demonstrate that the rate and frequency of application would not result in the overloading of the soil and possible nutrient contamination of groundwater.  Spreading sludge or irrigating with effluent must not occur in areas where</p>	
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		Other operational areas, particularly those areas where the rabbits are housed or waste is stored.		There is a risk of run-off into watercourses. Dry litter-based systems produce little odour provided they are regularly cleaned out and litter is maintained dry.	

## B ANNEX 3 : ENVIROMENTAL CHECKLIST FOR VILLAGE COUNCILS

### 3.1 WATER SUPPLY INFRASTRUCTURE

Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
Hand dug wells PLANNING PHASE	Human beings Land	Contamination of well water by seepage from latrines. Contamination from animals. Land disputes between the contractor and owners of land on which the borehole is constructed.	Community consultation. Acquire land from he the community. Proper site selection. Select site for well where there is drainage away from well. Do not construct well in a depression or on low-lying poor drained site Site should be a minimum of 30metres away from pit latrine. Destruction of vegetation causing loss of habitat (home)	Community should be willing to contribute land required for the hand dug well.	
Hand dug wells CONSTRUCTION	Vegetation Soil	Destruction of vegetation causing loss of habitat (home)	Minimum of 30metres away from	Limit vegetation clearing to the	

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Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
<p>PHASE :</p> <p>Excavation/didding of well</p> <p>Lining the bottom section</p> <p>Build and install the well cover</p> <p>Install the pump in the cover on the well</p>	<p>Air</p> <p>Surface water</p> <p>Human beings</p>	<p>For animals.</p> <p>Increased dust levels due to removal of vegetation and construction traffic.</p> <p>Soil erosion will occur especially during the rain season.</p> <p>Surface water downstream will be silted as a result of transportation of loose soil.</p> <p>Collapse of the hole during the digging, which may sometimes lead to death of individuals.</p>	<p>Pit latrine.</p> <p>Restrict construction to dry season to reduce soil erosion and silting of surface water sources.</p>		<p>specific site of well</p> <p>Re-planting of vegetation on construction area upon completion to reduce soil erosion.</p> <p>Construction of drainage ditches to divert run off water around the water point.</p> <p>Construct concrete pad around base of wellhead.</p> <p>Construct fence to keep animals away from wellhead</p> <p>Construct water trough at least 30 meters from well.</p> <p>Protect sides of the hole against collapsing.</p> <p>Install a hand pump on the well and do not allow users to draw water by lowering containers into the well.</p>



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Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
					Ensure that wellhead is properly sealed.
Hand dug wells  OPERATION PHASE : Pumping the well	Human beings Water	Overflow of water around wellhead providing breeding ground for vectors of water borne diseases. Contamination of water in well by users (human beings). Contamination of well water by seepage from latrines. Contamination of well by animal wastes.	Do not allow latrines to be constructed within a minimum 30 meters of the hand dug well, 60 meters is preference.	Maintenance of the well on a regular basis and keep the fence intact. Do construct latrines within a minimum 30 meters of the hand dug well, 60 meters is preferable	
Protected spring  PLANNING PHASE	Human beings Water	The number of people to benefit from the spring. Land disputes	Community consultation. Land acquisition. Ensure that there is an existing permanent spring. Educating the people about the importance of safe water		

Protected spring  CONSTRUCTION PHASE :	Vegetation Soil	Destruction of vegetation causing loss of habitat (home) for animals. Increased dust levels due to	Do not allow latrines to be constructed within 30meters of the spring, 60meters	Do construct latrines within 30 meters of the spring, 60meters	Limit vegetation clearing to the specific site of spring. Re-planting of
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Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
Excavation around the spring area. Preparation of a permeable construction into which the source waters enter		removal of vegetation. Soil erosion will occur especially during the rain season. Surface water downstream will be silted as a result of transportation of loose soil.	is preferable Establish an area above the spring that excludes animals and limits human activity. Restrict construction to dry season to reduce soil erosion and silting of surface water sources and to ensure that the spring protected is reliable.	is preferable. Ensure that the established area above the spring that excludes animals and limits human activity is respected.	Vegetation on construction area upon completion to reduce soil erosion and maintain. Construct drainage ditch to divert runoff water around spring area and discharge from this ditch should be a minimum of 25 feet and down slope from the spring. Construct fence to keep animals away from wellhead. Construct water trough at least 30 meters away from spring.
Protected springs  OPERATION PHASE :  Use of spring	Human beings Water Soil Water	Stagnant pools of water around spring providing breeding ground for vectors of water borne	Do not allow latrines to be constructed within 30meters of the spring, 60 meters is preferable. Periodic testing of the water for bacterial contamination.	Periodic maintenance of the filter package and clearing the spring area of dead leaves and other debris. Do not defecate in this	Cover wet soils with gravel in area around spring where people will walk. Plant shrubs in the protected area above the spring to protect the soil against erosion.

		diseases. Contamination of spring water by seepage from latrines. Contamination of water from animal and human wastes. Erosion of soils above the spring		area.	
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Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
		Carries debris into the collection facility			
Borehole PLANNING PHASE :	Human beings Soil/Land Groundwater	Land disputes between the driller and owners of land on which the borehole is constructed. Suitable site for the borehole.	Consult hydro -geologist to ensure that there is a potential site for the borehole. Community consultation Select site for borehole where there is drainage away from pump pad. Do not allow latrines to be constructed within 30	Do construct latrines within 30 meters of the borehole.	

			meters of the borehole.		
<p>Borehole</p> <p>CONSTRUCTION PHASE :</p> <p>Initial site preparation Drilling the borehole Lining/casing the hole Construction of well</p>	<p>Soil Vegetation Human beings Animals</p>	<p>Destruction of vegetation causing loss of habitat (home) for animals Increased dust levels due to removal of vegetation. Soil erosion will occur especially during the rain season. Surface water downstream will be silted as a result of transportation of loose soil. Land dispute between the driller and owners of land on</p>	<p>Do not construct borehole in a depression or on low-lying poorly drained site. Restrict construction to dry season to reduce soil erosion and silting of surface water sources.</p>	<p>Community to do vegetation clearing to the specific site of borehole. Community re-plants vegetation on construction area upon completion to reduce soil erosion and maintain natural beauty.</p>	<p>Fill any depressions near the borehole and construct a drainage channel to lead overflow away from pump pad. Place gravel fill around hand pump pad. Divert run off water away from borehole and maintain gravel fill</p>

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Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
Test pumping to test quality and quantity of wate		<p>Which the borehole is constructed. Overflow from the borehole may lead to stagnation</p>			<p>Around the pad. Construct fence to keep animals away from wellhead. Construct water trough at least 30 meters from</p>

					well
Borehole  OPERATION PHASE :	Human beings Soil Groundwater	Spilled water around borehole providing breeding ground for vectors of water borne diseases Erosion undermining hand pump pad. Contamination of borehole water by spillage water on pump pad. Contamination of borehole water by seepage from latrines. Contamination of well by animal wastes. Lowering of water table	Do not allow latrines to be constructed within 30 meters of the borehole.	Do construct latrines within 30 meters of the borehole. Desilting of borehole drainage channel. Slash grass around the borehole so as to destroy habitat for disease causing vectors like mosquitoes. Report borehole breakdowns to the water officer for repair.	

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Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
Latrines  PLANNING PHASE :	Water	Contamination of groundwater.	Locate latrines at least 30 meters (if possible 60 meters) from water sources. Build a lined pit latrine or water borne toilet if possible. Conduct hygiene education campaign to raise awareness		

			of adverse impact of careless defecation. Promote use of latrines.		
Latrines  CONSTRUCTION PHASE : Bush clearing. Excavation/ digging pit	Vegetation Soil Air Surface water Human beings	Destruction of vegetation causing loss of habitat (home) for animals. Increased dust levels due to removal of vegetation. Soil erosion will occur especially during the rain season. Surface water downstream will be silted as a result of	Restrict construction to dry season to reduce soil erosion and silting of surface water sources		Construct latrines at least 30 meters (if possible 60 meters) water sources. Limit vegetation clearing to the specific site of latrine. Re-planting vegetation on construction area

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B - 7

Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
		Transportation of loose soil. Collapsing soils during excavation			Upon completion to reduce soil erosion. Protect sides of pit during excavation. Fence off the pit to prevent accidents.
Latrines  OPERATION	Water Animals Human beings	Contamination of ground water sources through sub-surface flow of human waste.	If possible, construct lined pit latrines, which can be emptied	Place lid on hole to prevent flies. Slach area around the	

PHASE  Use of latrines		Contamination of surface water through transportation by storm runoff. Animals and flies carry disease-causing parasites from the latrines. More land is used in construction of new latrines when old ones fill up.	when full. Consider constructing water borne squat toilets if there is piped water in that area.	pit latrine so as to destroy habitat for disease causing vectors like mosquitoes.	
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B - 8

Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
Drainage around houses and community  PLANNING PHARE :	Human beings Soil Water	Flooding may destroy people's property. Soil erosion.	Site selection. Community involvement. Ensure that drainage channels are connected to secondary drains as much as possible.		
Drainage around houses and within community	Soil Vegetation	Destruction of vegetation causing loss of habitat (home) for animals. Soil erosion will occur			Living vegetation clearing to the width of the drainage. Re-planting vegetation on construction area upon

CONSTRUCTION PHASE :  Digging the drainage channel		especially during the rain season. Surface water downstream will be silted as a result of transportation of loose soil.			completion to reduce soil erosion. Restrict digging of drainage channel to dry season to reduce soil erosion and silting of surface water sources.
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Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
Drainage around houses and within community  OPERATION PHASE :  Storm water drainage	Vegetation Soil Surface water Human beings in terms of health	Runoff water ponding beyond edge of property and providing breeding ground for water borne disease. Excessive erosion in drainage channel. Drainage channel used for open defecation. Drainage channel used as disposal site for solid waste, which causes blockage of the channel (particularly by plastic bags) and contamination of the water.	Conduct public education campaign to raise awareness of health risks of careless defecation and indiscriminate disposal of solid waste. Promote use of latrines. Local Councils to deal with polluters. Conduct public education campaign to raise awareness of health risks of using unprotected water sources. Provide alternative safe water supply sources.	Ensure that drainage channels are kept clear of rubbish.	Install check dams to reduce speed of flow. Stabilize banks of channel with stones in sections that are highly susceptible to erosion. Plant shrubs and trees on uphill side of ditch to slow water runoff.



		Disposal of wastes into drainage channels causing water contamination. People drawing their water supply from drains resulting in ill health.	Organize regular maintenance to remove debris from channels. Promote recovery of useable solid wastes, in particular, plastics.		
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B – 10

Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
Footpaths PLANNING PHASE :	Human beings Vegetation	Nature of activity in the area. Displacement of people Source of materials for the gravel.	Identify good borrow pit areas near the road. Sensitization of people along the proposed road		
Footpaths PLANNING PHASE :	Soil Vegetation Human beings	Destruction of vegetation causing loss of habitat (home) for animals Increased dust levels due to removal of vegetation. Soil erosion will occur especially during the rainy season. Surface water downstream	Restrict digging of the road to dry season to reduce soil erosion and silting of surface water sources.		Limit vegetation clearing to the width of the road. Restrict digging of the road to dry season to reduce soil erosion and silting of surface water sources. Raise path above surrounding ground level

		will be silted as a result of transportation of loose soil.			slope the surface of the path toward the sides so that water drains away. Fill depressions with granular material such as aggregates. Provide drainage ditches on both sides of the path and install small check dams to reduce speed of water
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B – 11

Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
					Flow. Direct water from ditch along side footpath into natural or manmade drainage channels as frequently as possible to minimize the volume of runoff water carried by ditch. Plant shrubs and trees on uphill side of ditch to slow water runoff.
Footpaths	Soil	Footpath blocking	Conduct hygiene	Routine	

OPERATION PHASE :	Ground water Surface water Human health	drainage for runoff water. Ponding on path providing breeding site for water borne disease. Footpath becoming a watercourse during rains and causing erosion. Defecation on footpath.	education to raise awareness of health risks of indiscriminate defecating. Promote the use of latrines.	maintenance e.g. slashing sides of the road. Direct water from ditch along side footpath into natural or manmade drainage channels as frequently as possible to minimize the volume of runoff water carried by ditch.	
Tertiary roads within	Human beings	Increase of traffic related hazards	Sensitization of people where road is going to		

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Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
Community : PLANNING PHASE :			be constructed. Include traffic management plan in the contract. Identify good borrow pit areas near the road.		
Tertiary roads within community	Soil Vegetation Human	Destruction of vegetation causing loss of habitat (home) for	Sensitisation of people where road is being constructed		Limit vegetation clearing to the width of the road Re-plant vegetation on

<p>CONSTRUCTION PHASE</p> <p>Bush clearing Gravelling</p>		<p>animals. Increased dust levels due to removal of vegetation and construction traffic. Soil erosion will occur especially during the rain season. Surface water downstream will be silted as a result of loose soil. Land disputes between the contractor and the owners of land on which the trenches are constructed.</p>			<p>construction area upon completion to reduce soil erosion. Restrict construction to dry season to reduce soil erosion and silting of surface water sources. Install culverts or bridges across natural and manmade drainage channels and keep them cleared of debris. Raise road above surrounding ground level and slope the surface of the road toward the sides. Provide drainage</p>
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Project/Activity	Environmental component affected	Nature of environmental concern	Required action /mitigation measure by local Government	Required action /mitigation measure by Community	Required action /mitigation measure by Contractor
					<p>Ditches on both sides of the road and install small check dams to reduce speed of water flow. Direct water from roadway ditch into natural or manmade drainage channels as frequently as possible to</p>

					<p>minimize the volume of runoff water carried by roadway ditch. Plant shrubs and trees on uphill side of ditch to slow water runoff.</p>
<p>Tertiary roads within community:</p> <p>OPERATION PHASE:</p>	<p>Vegetation Soil Human health</p>	<p>Roadway blocking drainage for runoff water. Ponding on roadway providing breeding site for water borne disease. Roadway becoming a watercourse during rains and causing erosion.</p>	<p>Routine maintenance of roads.</p>	<p>Slashing grass at the sides of the road as part of Routine maintenance of roads</p>	
<p>Tertiary roads within community:</p> <p>OPERATION PHASE:</p>	<ul style="list-style-type: none"> <li>▪ Vegetation</li> <li>▪ Soil</li> <li>▪ Human health</li> </ul>	<ul style="list-style-type: none"> <li>▪ Roadway blocking drainage for runoff water.</li> <li>▪ <b>Ponding on roadway providing breeding site for water borne disease.</b></li> </ul> <p><b>Roadway becoming a watercourse during rains and causing erosion.</b></p>	<ul style="list-style-type: none"> <li>▪ Routine maintenance of roads.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Slashing grass at the sides of the road as part of Routine maintenance of roads</li> </ul>	

Project/Activity	Environmental component affected	Nature of environmental concern	Required action/mitigation measure by Local Government	Required action/mitigation measure by Community	Required action/mitigation measure by Contractor
Public collection points	<ul style="list-style-type: none"> <li>▪ Human health</li> <li>▪ Aesthetics</li> <li>▪ Air</li> <li>▪ Plants</li> <li>▪ Animals</li> </ul>	<ul style="list-style-type: none"> <li>▪ Depositing waste in public areas and causing a health risk</li> <li>▪ People disposing of human faeces in domestic/house hold waste (flying toilets).</li> <li>▪ Disease vectors such as flies, rodents</li> </ul>	<ul style="list-style-type: none"> <li>▪ Establish reliable and affordable primary system.</li> <li>▪ Conduct hygiene education campaign to raise awareness of health risk of indiscriminate faecal and soil waste disposal.</li> <li>▪ Ensure that the skip or bunker is of a comfortable height for the users to place the waste inside instead of throwing it outside</li> <li>▪ Promote the use of latrines.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Do not deposit waste in public areas.</li> </ul>	
<ul style="list-style-type: none"> <li>▪ <b>Composting Sites.</b></li> </ul>	<ul style="list-style-type: none"> <li>▪ Human health</li> <li>▪ Aesthetics</li> <li>▪ Air</li> </ul>	<ul style="list-style-type: none"> <li>▪ Rodents and flies using composting sites as breeding grounds</li> </ul>	<ul style="list-style-type: none"> <li>▪ Conduct education program on correct composting techniques to minimize odour, rodent and fly</li> </ul>		

		creating health risk. <ul style="list-style-type: none"> <li>▪ Odour from the compost.</li> </ul>	nuisance		
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<b>Project/Activity</b>	<b>Environmental component affected</b>	<b>Nature of environmental concern</b>	<b>Required action/mitigation measure by Local Government</b>	<b>Required action/mitigation measure by Community</b>	<b>Required action/mitigation measure by Contractor</b>
		<b>Carries debris into the collection facility</b>			
General Construction  PLANNING PHASE:	<ul style="list-style-type: none"> <li>▪ Human beings</li> <li>▪ Change of Land use.</li> <li>▪ Animals</li> <li>▪ Plants</li> </ul>	<ul style="list-style-type: none"> <li>▪ Destruction of site with unique cultural, historical, religious or spiritual value.</li> <li>▪ Displacement of people living in that area.</li> <li>▪ Destruction of vegetation causing loss of habitat (home) for animals.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Consult District Engineer for adequate technical designs and ensure that the site is not within the road reserve so that enough space is left for extension of public utilities like electricity water, water telephones etc.</li> <li>▪ Community</li> </ul>		

			<p>consultation and involvement.</p> <ul style="list-style-type: none"><li>▪ Select site that does not destroy a site that is important to preserving unique cultural, historical, religious, or spiritual values.</li><li>▪ Construction contract documents should include environmental mitigation measures.</li></ul>		
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Project/Activity	Environmental component affected	Nature of environmental concern	Required action/mitigation measure by Local Government	Required action/mitigation measure by Community	Required action/mitigation measure by Contractor
<p>General Construction</p> <p>CONSTRUCTION PHASE:</p> <ul style="list-style-type: none"> <li>▪ Bush clearing</li> </ul>	<ul style="list-style-type: none"> <li>▪ Vegetation</li> <li>▪ Soil</li> <li>▪ Human beings</li> <li>▪ Surface water</li> <li>▪ Traffic</li> <li>▪ Dust</li> </ul>	<ul style="list-style-type: none"> <li>▪ Destruction of vegetation causing loss of habitat (home) for latrines.</li> <li>▪ Soil erosion especially during the rain season, where soil is loose.</li> <li>▪ Surface water downstream will be silted as a result of transportation of loose soil.</li> <li>▪ Traffic disruption.</li> <li>▪ Increased dust as a result of vegetation removal.</li> <li>▪ Borrow pits may collect water, becoming a breeding site for vectors such as mosquitoes and potential hazard to</li> </ul>	<ul style="list-style-type: none"> <li>▪ Ensure that the Contract has implemented the mitigation measures mentioned in the contract.</li> <li>▪ The Local Governments should ensure that the mitigation measures are followed.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Community to contribute labour and local materials such as stones, bricks, sand etc to reduce costs.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Put warning signs and humps to prevent road accidents.</li> <li>▪ Contractor should sprinkle water on the road during construction, if possible to reduce dust if near public places.</li> <li>▪ Borrow pits should be rehabilitated by the contractor as part of the work contract.</li> </ul>

		animals and children.			
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<b>Project/Activity</b>	<b>Environmental component affected</b>	<b>Nature of environmental concern</b>	<b>Required action/mitigation measure by Local Government</b>	<b>Required action/mitigation measure by Community</b>	<b>Required action/mitigation measure by Contractor</b>
Crop Husbandry  PLANNING PHASE:	<ul style="list-style-type: none"> <li>▪ Soil</li> <li>▪ Vegetation</li> <li>▪ Animals</li> <li>▪ Human beings</li> <li>▪ Water</li> <li>▪ Air</li> </ul>	<ul style="list-style-type: none"> <li>▪ Loss of fertility.</li> <li>▪ Soil erosion.</li> <li>▪ Loss of vegetative cover</li> <li>▪ Contamination of water by fertilizers, which may eventually affect people.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Consult with the Agricultural Extension staff.</li> </ul>		

<p><b>Crop Husbandry ESTABLISHMENT PHASE</b></p> <ul style="list-style-type: none"> <li>▪ Vegetation clearing</li> <li>▪ Tilling land.</li> <li>▪ Construction of irrigation/drainage infrastructure</li> <li>▪ Planting</li> <li>▪ Fertilizer application</li> </ul>	<ul style="list-style-type: none"> <li>▪ Soil</li> <li>▪ Vegetation</li> <li>▪ Animals</li> <li>▪ Water</li> </ul>	<ul style="list-style-type: none"> <li>▪ Destruction of vegetation causing loss of habitat (home) for animals.</li> <li>▪ Loss of biodiversity</li> <li>▪ Soil erosion in hilly areas during the rainy season.</li> <li>▪ Siltation of surface water downstream as a result of transportation of loose soil.</li> <li>▪ Introduction of new invasive species.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Education and training of participants in soil and water protection.</li> <li>▪ Restrict introduction of new species until scientific studies are done.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Phased vegetation clearing to allow animals time to adapt.</li> <li>▪ Carry out assessment to identify species of conservation concern.</li> <li>▪ Using appropriate techniques to slow runoff e.g. use bunds, contours, terraces, mulching, grass strips etc.</li> </ul>	
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Project/Activity	Environmental component affected	Nature of environmental concern	Required action/mitigation measure by Local Government	Required action/mitigation measure by Community	Required action/mitigation measure by Contractor
<p><b>Crop Husbandry OPERATION PHASE:</b></p> <ul style="list-style-type: none"> <li>▪ Crop husbandry (weeding, agrochemical application, harvesting)</li> <li>▪ Processing</li> </ul>	<ul style="list-style-type: none"> <li>▪ Soil</li> <li>▪ Water</li> <li>▪ Fauna</li> </ul>	<ul style="list-style-type: none"> <li>▪ Loss of soil nutrients.</li> <li>▪ Reduce water flow if stream or river is being diverted for irrigation.</li> <li>▪ Risk of disease from mosquitoes, snails, etc.</li> <li>▪ Soil and water contamination from agrochemicals (fertilizers and pesticides) and some agro processing projects.</li> <li>▪ Agrochemical toxicity to humans.</li> <li>▪ Use of manure resulting in spreading disease.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Education and training of participants in good agricultural practices.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Appropriate crop selection.</li> <li>▪ Use of registered and recommended agrochemicals.</li> <li>▪ Implement good agricultural practices e.g. terracing, mulching.</li> <li>▪ Planting trees in the catchments to improve water retention.</li> <li>▪ Timed minimum use of chemicals</li> </ul>	

				e.g. use integrated pest management, cultural soil and crop protection measures.	
Irrigation	<ul style="list-style-type: none"> <li>▪ Soil</li> <li>▪ Surface water</li> <li>▪ Ground water</li> <li>▪ Fauna</li> </ul>	<ul style="list-style-type: none"> <li>▪ Loss of soil quality e.g. development of salty soil.</li> <li>▪ Reduced water flow if stream or river is being diverted for irrigation</li> <li>▪ Risk of disease from mosquitoes, snails, etc</li> <li>▪ Soil and water contamination from agrochemicals</li> </ul>	<ul style="list-style-type: none"> <li>▪ Consult Agricultural Officer for guidance.</li> <li>▪ Initiate resources survey including water and soil quality and hydrology.</li> <li>▪ Soil and water conservation measures built into the project e.g. narrow or covered irrigation canals or pipes.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Appropriate crop selection</li> <li>▪ Using appropriate techniques to slow runoff</li> <li>▪ Provide adequate irrigation channels to avoid stagnation of water.</li> <li>▪ Regulate water flow into the irrigated fields.</li> <li>▪ Planting trees in the</li> </ul>	

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Project/Activity	Environmental component affected	Nature of environmental concern	Required action/mitigation measure by Local Government	Required action/mitigation measure by Community	Required action/mitigation measure by Contractor
		(fertilizers and pesticides)		Catchments to improve water retention. <ul style="list-style-type: none"> <li>▪ Keep canals, ditches lined or free of weeds and sediment and with good drainage.</li> <li>▪ Introduce fish that eat mosquitoes to control malaria.</li> </ul>	

### 3.2 LIVESTOCK AND RANGE MANAGEMENT

Project/Activity	Environmental component affected	Nature of environmental concern	Required action/mitigation measure by Local Government	Required action/mitigation measure by Community	Required action/mitigation measure by Contractor
		<b>Carries debris into the collection facility</b>			
Livestock and Range Management  <b>PLANNING PHASE:</b>	<ul style="list-style-type: none"> <li>▪ Land</li> <li>▪ Soil</li> <li>▪ Plants</li> <li>▪ Animals</li> <li>▪ Human beings</li> </ul>	<ul style="list-style-type: none"> <li>▪ Change of existing land use</li> <li>▪ Introduction of new invasive species.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Consult with Agricultural Officer.</li> <li>▪ Restrict introduction of new species until scientific studies are done.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Do construct latrines within 30 meters of the borehole.</li> </ul>	
Livestock and Management  <b>CONSTRUCTION PHASE</b>  <ul style="list-style-type: none"> <li>▪ Planting pasture for animals</li> </ul>	<ul style="list-style-type: none"> <li>▪ Soil</li> <li>▪ Plants</li> <li>▪ Water</li> </ul>	<ul style="list-style-type: none"> <li>▪ Soil Pollution</li> <li>▪ Contamination of water from cattle dips.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Agricultural officers should ensure implementation of research findings on new species to be introduced.</li> <li>▪ Ensure proper</li> </ul>	<ul style="list-style-type: none"> <li>▪ Plant approved species of pasture approved by Local Government through the Agricultural Officer.</li> </ul>	

<b>Project/Activity</b>	<b>Environmenta l component affected</b>	<b>Nature of environmental concern</b>	<b>Required action/mitigation measure by Local Government</b>	<b>Required action/mitigation measure by Community</b>	<b>Required action/mitigation measure by Contractor</b>
Facilities e.g. for watering, treatment of animals against pests.			Construction of cattle dips to avoid spillage. Buy high yielding animal breeds.		



<p><b>Livestock and Range Management</b></p> <p>OPERATION PHASE</p> <ul style="list-style-type: none"> <li>▪ Grazing</li> <li>▪ Watering animals</li> <li>▪ Livestock movement</li> <li>▪ Preparation of products</li> </ul>	<ul style="list-style-type: none"> <li>▪ Soil</li> <li>▪ Surface water</li> <li>▪ Plants</li> <li>▪ Animals</li> </ul>	<ul style="list-style-type: none"> <li>▪ Assess carrying capacity of the land and limit grazing pressure accordingly.</li> <li>▪ Maximize forage productivity by combining different types of livestock.</li> <li>▪ Location of watering points to avoid congregation of too many livestock in one place.</li> <li>▪ Education and training of participants on control and management of manure.</li> <li>▪ Proper veterinary services.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Practice rotational grazing to avoid over grazing.</li> <li>▪ Utilize manure as fertilizer for their crops.</li> <li>▪ Provide veterinary care.</li> </ul>		
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Project/ Activity	Environmenta l component affected	Nature of environmental concern	Required action/mitigation measure by Local Government	Required action/mitigation measure by Community	Required action/mitigation measure by Contractor
		<b>Carries debris into the collection facility</b>			
Fisheries  PLANNING PHASE:	<ul style="list-style-type: none"> <li>▪ Land use conflicts</li> <li>▪ Water supply conflicts – Social and economic disruptions to existing community water management practices and relationships</li> </ul>	<ul style="list-style-type: none"> <li>▪ Community consultation</li> <li>▪ Encourage use of existing depressions, hollows and ditches.</li> <li>▪ Good pond design, construction and maintenance to avoid premature abandonment and digging of new ponds by extension staff.</li> <li>▪ Ensure adequate community participation in the planning and operation of the project.</li> <li>▪ Site ponds to avoid disrupting existing/traditio</li> </ul>			

		<p>nal uses of water (e.g. drinking, washing, animal watering).</p> <ul style="list-style-type: none"> <li>▪ Develop ponds with other activities to combine water sources (e.g. pond water used for irrigation of crops).</li> <li>▪ Develop supply sources where water quantities are adequate and the</li> </ul>			
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Project/Activity	Environmental component affected	Nature of environmental concern	Required action/mitigation measure by Local Government	Required action/mitigation measure by Community	Required action/mitigation measure by Contractor
			<p><b>Project will not conflict with existing human, livestock, wildlife or aquatic water uses especially during the dry seasons.</b></p> <ul style="list-style-type: none"> <li>▪ <b>Site project well away from wetlands</b></li> </ul>		
<p>Fisheries</p> <p>ESTABLISHMENT PHASE:</p> <ul style="list-style-type: none"> <li>▪ Clearing and excavation of wetland</li> <li>▪ Pond bank stabilization</li> <li>▪ Introduction of fish</li> </ul>	<ul style="list-style-type: none"> <li>▪ Vegetation</li> <li>▪ Water</li> <li>▪ Humans</li> <li>▪ Water Quality</li> </ul>	<ul style="list-style-type: none"> <li>▪ Loss of wetland vegetation leading to loss of habitats.</li> <li>▪ Disease due to pollution of water sources from aquaculture wastes.</li> <li>▪ Creating habitats for disease carriers such as mosquitoes and snails and increasing the occurrence of water-related diseases such as malaria and</li> </ul>	<ul style="list-style-type: none"> <li>▪ Restrict area cleared for ponds</li> <li>▪ Employ suitable prevention and mitigation measures, including education of local people e.g. good surface drainage around projects water supply, ponds and drainage works; use fish species that feed on disease carriers.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Construct ponds during dry season.</li> <li>▪ Stabilize exposed soil with grasses and other ground erosion control around ponds.</li> </ul>	

		bilharzias. <ul style="list-style-type: none"> <li>▪ Contamination of surface waters with aquaculture wastes.</li> </ul>			
<b>Fisheries OPERATION</b>	<ul style="list-style-type: none"> <li>▪ Water</li> <li>▪ Humans</li> </ul>	<ul style="list-style-type: none"> <li>▪ Waste from intensive fish processing has</li> </ul>	<ul style="list-style-type: none"> <li>▪ Monitor disease occurrence and public.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Keep fish densities at moderate levels to</li> </ul>	

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<b>Project/Activity</b>	<b>Environmental component affected</b>	<b>Nature of environmental concern</b>	<b>Required action/mitigation measure by Local Government</b>	<b>Required action/mitigation measure by Community</b>	<b>Required action/mitigation measure by Contractor</b>
PHASE:	<ul style="list-style-type: none"> <li>▪ Water quality</li> </ul>	High (BOD) Biochemical Oxygen Demand which may result in deterioration of water quality	Health indicators, and take corrective measures as needed (e.g. change project works, improve maintenance, education, medical) <ul style="list-style-type: none"> <li>▪ Monitoring of fisheries activities and impacts.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Reduce disease risk and need for antibiotics</li> <li>▪ Dilute pond water prior to release.</li> <li>▪ Use shorter retention time of water in</li> </ul>	

				ponds. i.e. more frequent exchange of water. <ul style="list-style-type: none"> <li>▪ Consider using pond sludge as fertilizer if properly decomposed and non-toxic</li> </ul>	
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<b>Project/Activity</b>	<b>Environmental component affected</b>	<b>Nature of environmental concern</b>	<b>Required action/mitigation measure by Local Government</b>	<b>Required action/mitigation measure by Community</b>	<b>Required action/mitigation measure by Contractor</b>
Bee keeping PLANNING PHASE:	<ul style="list-style-type: none"> <li>▪ Human beings</li> <li>▪ Animals</li> </ul>	<ul style="list-style-type: none"> <li>▪ Risk of bee stings</li> </ul>	<ul style="list-style-type: none"> <li>▪ Community consultation.</li> <li>▪ Proper site selection.</li> <li>▪ Educate people on proper harvesting techniques.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Use suitable protective gear during harvesting.</li> </ul>	

Project/Activity	Environmental component affected	Nature of environmental concern	Required action/mitigation measure by Local Government	Required action/mitigation measure by Community	Required action/mitigation measure by Contractor
Bee keeping ESTABLISHMENT PHASE  Setting up beehives	<ul style="list-style-type: none"> <li>▪ Vegetation</li> <li>▪ Animals</li> </ul>	<ul style="list-style-type: none"> <li>▪ Disturbance may be caused by trampling while setting up hives</li> </ul>	<ul style="list-style-type: none"> <li>▪ Set up hives in areas with little or no wildlife.</li> <li>▪ Educate people on setting up modern beehives.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Set up modern beehives.</li> </ul>	
Bee keeping OPERATION PHASE:	<ul style="list-style-type: none"> <li>▪ Animals</li> <li>▪ Humans</li> </ul>	<ul style="list-style-type: none"> <li>▪ Risk of fire from poor harvesting methods.</li> <li>▪ Risk of bee stings.</li> <li>▪ Minor</li> </ul>	<ul style="list-style-type: none"> <li>▪ Train people in modern techniques of harvesting honey.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Use proper harvesting equipment and techniques e.g. smokers.</li> </ul>	

<ul style="list-style-type: none"> <li>▪ Checkin g hives</li> <li>▪ Harvesti ng honey</li> <li>▪ Processi ng e.g. smoking</li> </ul>		<p>disturbance may be caused by trampling while checking hives and harvesting.</p>		<ul style="list-style-type: none"> <li>▪ Fence off area of hives to avoid disturbance from other people.</li> <li>▪ Use proper harvesting techniques with proper protective gear.</li> </ul>	
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<b>Project/Activity</b>	<b>Environmenta l component affected</b>	<b>Nature of environmental concern</b>	<b>Required action/mitigation measure by Local Government</b>	<b>Required action/mitigation measure by Community</b>	<b>Required action/mitigation measure by Contractor</b>
<p>Piggery</p> <p>PLANNING PHASE:</p>	<ul style="list-style-type: none"> <li>▪ Surface water</li> <li>▪ Human beings</li> </ul>	<ul style="list-style-type: none"> <li>▪ Contamination of water sources</li> <li>▪ Noise</li> <li>▪ Odour</li> </ul>	<ul style="list-style-type: none"> <li>▪ Provide proper design of shed.</li> <li>▪ Sheds should not be sited on slopes above sensitive receiving environments.</li> <li>▪ Sheds should have concrete floors for easy cleaning.</li> </ul>	<ul style="list-style-type: none"> <li>▪ If odours do occur, the cleaning and flushing of pen floors, drainage channels and pipes should be</li> </ul>	



			<ul style="list-style-type: none"> <li>▪ Wash down and wastewater collection and transport systems should be designed and constructed so as to avoid stagnation of wastewaters.</li> <li>▪ Distance from the perimeter of a piggery, or from the nearest point of a treatment system i.e. 20m to any property boundary and 50m to any public area or road recommended to minimize the effect of odours as much as possible.</li> <li>▪ Shed should have vertical</li> </ul>	<p>increased in frequency.</p> <ul style="list-style-type: none"> <li>▪ Wastewater holding tanks should be covered or enclosed, to minimize odour release.</li> </ul>	
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Project/Activity	Environmental component affected	Nature of environmental concern	Required action/mitigation measure by Local Government	Required action/mitigation measure by Community	Required action/mitigation measure by Contractor
		<b>Emission stacks rather than having emission points close to the road or along sidewalks.</b>			
Piggery  CONSTRUCTION PHASE:  Setting up the piggery	<ul style="list-style-type: none"> <li>▪ Plants</li> <li>▪ Animals</li> <li>▪ Soil</li> </ul>	<ul style="list-style-type: none"> <li>▪ Clearing of vegetation</li> <li>▪ Soil erosion during construction of pig shed.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Educate community on proper management of pigs</li> <li>▪ Provide proper designs for shed construction.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Sheds should be constructed in a manner that makes them leak free and easy to maintain.</li> <li>▪ Materials should be impervious to assist in cleaning and to avoid absorption of odours.</li> <li>▪ Horizontal surfaces (other than the floor) will tend to accumulate</li> </ul>	

				<p>dust and other wastes and should be avoided.</p> <ul style="list-style-type: none"> <li>▪ Ventilation systems should not allow rain to enter the building and dampen litter.</li> </ul>	
<ul style="list-style-type: none"> <li>▪ <b>Piggery OPERATIONAL PHASE</b></li> </ul>	<ul style="list-style-type: none"> <li>▪ Human beings</li> </ul>	<ul style="list-style-type: none"> <li>▪ Wet litter is a significant odour source, especially as measure</li> </ul>	<p><b>Moisture control of litter</b></p> <ul style="list-style-type: none"> <li>▪ The moisture content of litter should be controlled</li> </ul>		

Project/Activity	Environmental component affected	Nature of environmental concern	Required action/mitigation measure by Local Government	Required action/mitigation measure by Community	Required action/mitigation measure by Contractor
	<p>Accumulates</p> <ul style="list-style-type: none"> <li>▪ Health hazard in form of jiggers, lice and fleas</li> </ul>	<p>By: -</p> <ul style="list-style-type: none"> <li>- Prompt repair of leaks in roof and exterior walls;</li> <li>- An adequate depth of bedding litter;</li> <li>- The removal of damp litter around drinkers;</li> <li>- A moisture content of 30-40% is optional, avoiding dust (too dry) and odour (too damp)</li> </ul>			

Project/Activity	Environmental component affected	Nature of environmental concern	Required action/mitigation measure by Local Government	Required action/mitigation measure by Community	Required action/mitigation measure by Contractor
Rabbit Keeping  PLANNING PHASE: <ul style="list-style-type: none"> <li>▪ Availability of the rabbits</li> <li>▪ Plan for the storage and disposal of wastes, dead animals, manure, sludge and effluent etc</li> </ul>	<ul style="list-style-type: none"> <li>▪ Land</li> <li>▪ Animals</li> <li>▪ Water</li> <li>▪ Human beings</li> </ul>	<ul style="list-style-type: none"> <li>▪ Suitability of the site.</li> <li>▪ Market for the rabbits.</li> <li>▪ Odour</li> <li>▪ Storage and disposal of wastes.</li> <li>▪ Compatibility with existing and surrounding land uses e.g. distances to any houses, property boundaries or watercourses.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Agricultural officers should consider research findings on new species to be introduced.</li> <li>▪ Community consultation.</li> <li>▪ Avoid environmentally sensitive areas.</li> <li>▪ The establishment of the rabbit farming at adequate distances from neighbours can assist in minimizing environmental impacts.</li> <li>▪ The shed must not be located in an area that is</li> </ul>	<ul style="list-style-type: none"> <li>▪ Willingness of the community to participate in the project.</li> </ul>	

			subject to water logging		
<p><b>Rabbit Keeping</b> CONSTRUCTION PHASE</p> <p>Building the rabbit shed.</p>	<ul style="list-style-type: none"> <li>▪ Vegetation</li> <li>▪ Human Beings</li> </ul>	<ul style="list-style-type: none"> <li>▪ Clearing of vegetation</li> <li>▪ Soil erosion during construction of pig shed.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Ensure proper construction of rabbit sheds</li> <li>▪ Buy good quality breeds of rabbits</li> <li>▪ Educate community on proper management of rabbits.</li> <li>▪ Educate community on proper management of rabbits.</li> <li>▪ Provide proper designs for shed construction</li> </ul>	<ul style="list-style-type: none"> <li>▪ Sheds to be constructed in a manner that makes them free of leaks and easy to maintain.</li> <li>▪ The shed floor should be impervious to assist in cleaning and to avoid absorption of odours.</li> <li>▪ Ventilation systems should not allow rain to enter the building.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Fill any depressions near the borehole and construct a drainage channel to lead overflow away from pump pad.</li> <li>▪ Place gravel fill around hand pump pad. Divert run off water away from borehole and maintain gravel fill</li> </ul>

Project/Activity	Environmental component affected	Nature of environmental concern	Required action/mitigation measure by Local Government	Required action/mitigation measure by Community	Required action/mitigation measure by Contractor
<p>Rabbit keeping</p> <p>OPERATION PHASE:</p> <ul style="list-style-type: none"> <li>▪ Animal health is likely to be affected by poor shed hygiene.</li> <li>▪ Health risks assessment (if animals are being processed on site for human consumption).</li> <li>▪ Stock</li> </ul>	<ul style="list-style-type: none"> <li>▪ Vegetation</li> <li>▪ Animals</li> <li>▪ Human beings</li> <li>▪ Soil</li> <li>▪ Water</li> </ul>	<ul style="list-style-type: none"> <li>▪ Health of the rabbits, employees and surrounding residents due to the presence of vermin.</li> <li>▪ Fast transmission of diseases throughout the stock, which may lead to death of the whole stock.</li> <li>▪ Generation of odour from stockpiled manure and dead animals.</li> <li>▪ Nutrient runoff from the manure and overflows from holding tanks may contaminate</li> </ul>	<ul style="list-style-type: none"> <li>▪ Disease control methods should be established for isolating diseased stock and for quickly dealing with the problem.</li> <li>▪ Rabbits must be kept within a well-ventilated rabbit-proof enclosure.</li> <li>▪ All drainage water and animal wastes should be collected via a drain and led to a suitably located designed holding pond.</li> <li>▪ Depending on the scale of the enterprise, a sedimentation</li> </ul>	<ul style="list-style-type: none"> <li>▪ As rabbit hair builds up inside sheds, it should be removed regularly from vents and window screens to maintain the efficiency of shed ventilation systems.</li> <li>▪ Sound management and maintenance practices in sheds, waste management areas</li> </ul>	

<p>manage ment</p> <ul style="list-style-type: none"> <li>▪ I.e Security, shed Hygiene , Vermin control includin g insects, Processi ng,</li> <li>▪ Plans for disposal of stock</li> <li>▪ Solid waste manage ment (Rabbit manure should be viewed as a valuable nutrient resource and not as a waste product</li> </ul>		<p>surface water.</p> <ul style="list-style-type: none"> <li>▪ Poorly constructed holding ponds may lead to contamination of groundwater.</li> <li>▪ Land disposal of effluent or sludge may lead to soil pollution and ground water contamination.</li> <li>▪ Odour can result</li> </ul>	<p>pond may be required to be constructed in order to collect effluent and settle out the solid material before it reaches the holding pond.</p> <ul style="list-style-type: none"> <li>▪ The proposed water sources for the rabbit enterprise should be of an adequate quality and reliability during dry periods to meet the rabbits needs.</li> <li>▪ The site layout and sheds should be designed to minimize the likelihood of storm water or floodwater</li> </ul>	<p>and feed storage areas are essential to prevent a vermin problem at the rabbit farm, which could also become a problem for surroundin g residents.</p> <ul style="list-style-type: none"> <li>▪ Plans for quick disposal of stock should be in place whenever it is necessary for rabbit producers to quickly dispose of their stock.</li> <li>▪ In a dry system, manure (and litter) may only need to be</li> </ul>	
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				<p>removed once every several weeks.</p> <ul style="list-style-type: none"><li>▪ Stockpiled manure should be kept dry to maintain nutrient quality and to avoid the potential for odour generation and nutrient runoff.</li></ul>	
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Project/Activity	Environmental component affected	Nature of environmental concern	Required action/mitigation measure by Local Government	Required action/mitigation measure by Community	Required action/mitigation measure by Contractor
<p>Requiring disposal). Manure and litter collection, storage and disposal</p> <ul style="list-style-type: none"> <li>▪ Disposal of dead animals</li> <li>▪ Wastewater, collection and Storage. These include any wash down water from periodic cleaning of sheds and cages, and any</li> </ul>		<p>from poorly managed sheds or waste storage and disposal, as rabbit manure and effluent contain high levels of ammonia.</p> <ul style="list-style-type: none"> <li>▪ Significant ammonia levels can affect the health of the rabbits as well as reduce the amenity of the surrounding area, potentially causing conflicts with neighbouring property owners.</li> <li>▪ Contamination of wetlands or groundwater may occur if sufficient care is not taken</li> </ul>	<p>entering the shed or other operational areas, particularly those areas where the rabbits are housed or wastes are stored.</p> <ul style="list-style-type: none"> <li>▪ It is recommended that the shed floor be raised a minimum of 200mm above the ground surface.</li> <li>▪ To prevent infiltration of liquid wastes into the soil, the shed floor and the solid waste storage area should be impermeable, either concrete or compacted dirt.</li> <li>▪ Absorbent litter</li> </ul>	<ul style="list-style-type: none"> <li>▪ The manure and litter are suitable for use directly onto land, or they can be used in composting mixes with green waste.</li> <li>▪ Dead animals should be removed and disposed of daily in a local landfill. On-site disposal is acceptable only if pits are</li> </ul>	

<p>run-off from stockpiled manure.</p> <ul style="list-style-type: none"> <li>▪ Application of wastewater and sludge to land</li> <li>▪ Odour management</li> <li>▪ Water-related issue</li> <li>▪ Noise and lights</li> </ul>		<p>with the design and management of the sheds or the wastewater and solid waste management systems.</p> <ul style="list-style-type: none"> <li>▪ Likelihood of storm water or flood water entering the shed or</li> </ul>	<p>such as sawdust or wood shavings should be maintained under the rabbit cages, or wastes should be collected on trays or mats.</p> <ul style="list-style-type: none"> <li>▪ Vegetation screens in some circumstances reduce the transmission of odour. However, they do not negate the need for appropriate planning, siting, design and management practice.</li> </ul>	<p>specifically constructed . The pits should be lined with impervious material, to ensure no leaching of nutrient, and constructed so that other animals cannot gain access.</p> <ul style="list-style-type: none"> <li>▪ If land disposal of effluent or sludge is to be carried out on a significant scale, applicants must demonstrate that the rate and frequency of application would not result in the overloadin</li> </ul>	
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				<p>g of the soil and possible nutrient contamination of groundwater.</p> <ul style="list-style-type: none"><li>▪ Spreading sludge or irrigating with effluent must not occur in areas where</li></ul>	
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Project/Activity	Environmental component affected	Nature of environmental concern	Required action/mitigation measure by Local Government	Required action/mitigation measure by Community	Required action/mitigation measure by Contractor
		<p><b>Other operational areas, particularly those areas where the rabbits are housed or waste is stored.</b></p>		<p><b>there is a risk of run-off into watercourses.</b></p> <ul style="list-style-type: none"> <li>▪ <b>Dry litter-based systems produce little odour provided they are regularly cleaned out and litter is maintained dry.</b></li> </ul>	

Project/Activity	Environmental component affected	Nature of environmental concern	Required action/mitigation measure by Local Government	Required action/mitigation measure by Community	Required action/mitigation measure by Contractor
		<b>Carries debris into the collection facility</b>			
Zero grazing  PLANNING PHASE:	<ul style="list-style-type: none"> <li>▪ Water</li> <li>▪ Land</li> <li>▪ Humans</li> </ul>	<ul style="list-style-type: none"> <li>▪ Contamination of water by animal waste.</li> <li>▪ Odour</li> <li>▪ Storage and disposal of wastes</li> <li>▪ Compatibility with existing and surrounding land uses e.g. distances to any houses, property boundaries or watercourses.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Agricultural Officers should consider research findings on new breeds to be introduced.</li> <li>▪ Community consultation.</li> <li>▪ Establishment of the farming activity at adequate distances from neighbours can assist in minimizing</li> </ul>	<ul style="list-style-type: none"> <li>▪ Willingness of the community to participate in the project.</li> </ul>	

			<p>environmental impacts.</p> <ul style="list-style-type: none"><li>▪ The shed must not be located in an area that is subject to water logging.</li><li>▪ Ensure that there is adequate land for the animal pasture.</li><li>▪ Make sure that there is adequate water supply for the cattle.</li><li>▪ Establish where food supplements will be obtained e.g. matooke peelings</li></ul>		
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Project/Activity	Environmental component affected	Nature of environmental concern	Required action/mitigation measure by Local Government	Required action/mitigation measure by Community	Required action/mitigation measure by Contractor
Zero grazing  COONSTRUCTION PHASE:	<ul style="list-style-type: none"> <li>▪ Vegetation</li> <li>▪ Animals</li> </ul>	<ul style="list-style-type: none"> <li>▪ Clearing of vegetation.</li> <li>▪ Soil erosion during construction of animal shed.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Provide proper design of shed and ensure proper construction of animal shed.</li> <li>▪ Buy good quality breeds of cattle.</li> <li>▪ Educate community on proper management of cattle.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Sheds should be free of leaks and subsequently easy to maintain.</li> <li>▪ The shed floor should be impervious to assist in cleaning and to avoid absorption of odours.</li> </ul>	



<p>Zero grazing OPERATION PHASE</p>	<ul style="list-style-type: none"> <li>▪ Vegetation</li> <li>▪ Animals</li> <li>▪ Humans</li> </ul>	<ul style="list-style-type: none"> <li>▪ Flies and odours.</li> <li>▪ Risk of soil erosion.</li> <li>▪ Health hazard especially from acaricides.</li> <li>▪ Wastes e.g. dung and food remains</li> </ul>	<ul style="list-style-type: none"> <li>▪ Frequent repairs should be made on the shed particularly the floor and roof.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Frequent cleaning of the pens.</li> <li>▪ Let the cows eat from the same trough.</li> <li>▪ Person administering the acaricides should have protective gear.</li> <li>▪ There should be adequate water for the animals and cleaning activities.</li> </ul>	
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Project/Activity	Environmental component affected	Nature of environmental concern	Required action/mitigation measure by Local Government	Required action/mitigation measure by Community	Required action/mitigation measure by Contractor
Markets  PLANNING PHASE: <ul style="list-style-type: none"> <li>▪ Size of market</li> <li>▪ Location of market</li> </ul>	<ul style="list-style-type: none"> <li>▪ Solid-waste management;</li> <li>▪ Natural environment, heritage and landscape.</li> <li>▪ Human beings</li> </ul>	<ul style="list-style-type: none"> <li>▪ Land acquisition and resettlement impact;</li> <li>▪ Odour from waste</li> <li>▪ Risk of diseases from vectors that breed in the market waste.</li> <li>▪ Risk of market collapsing during windy and rainy storms causing accidents and death.</li> <li>▪ Displacement of people living in that area.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Proper location of the market.</li> <li>▪ Provision for disposal of market waste to minimize odours and disease.</li> <li>▪ Community consultation and sensitization of people about the project.</li> <li>▪ Ensure that the designs take care of the wind and storm.</li> <li>▪ Provision for a pit latrine to be constructed specifically for the market.</li> </ul>		

<p><b>Markets</b> CONSTRUCTION PHASE</p> <ul style="list-style-type: none"> <li>▪ Initial site preparation</li> <li>▪ Drilling the borehole</li> <li>▪ Lining/casing the hole</li> <li>▪ Construction of well.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Water</li> <li>▪ Dust</li> <li>▪ Vegetation</li> <li>▪ Animals</li> </ul>	<ul style="list-style-type: none"> <li>▪ Destruction of vegetation during construction causing loss of habitat (home) for animals.</li> <li>▪ Soil erosion and increased dust level due to removal of vegetation.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Ensure that the drainage is good to avoid stagnation of water.</li> <li>▪ Construct garbage skips for disposing off the garbage.</li> <li>▪ Restrict construction to dry season to reduce</li> </ul>		
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Project/Activity	Environmental component affected	Nature of environmental concern	Required action/mitigation measure by Local Government	Required action/mitigation measure by Community	Required action/mitigation measure by Contractor
		<ul style="list-style-type: none"> <li>▪ Surface water down stream will be silted as a result of transportation of loose soil.</li> </ul>	Soil erosion and silting of water surfaces.		
<p><b>Markets OPERATION PHASE</b></p>	<ul style="list-style-type: none"> <li>▪ Vegetation</li> <li>▪ Animals</li> <li>▪ Humans</li> </ul>	<ul style="list-style-type: none"> <li>▪ Uncleanliness in the market may lead to diseases</li> </ul>	<ul style="list-style-type: none"> <li>▪ Promote use of latrines</li> <li>▪ Appoint a market management committee to manage the market and keep it clean.</li> <li>▪ The Health Inspector should check the market regularly to ensure that the sanitation is of the Public Health standard.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Ensure that the market is kept clean to avoid diseases.</li> <li>▪ Use the pit latrines instead of indiscriminate fecal disposal in the market.</li> <li>▪ Slash area around the market to destroy breeding places for disease causing vectors.</li> </ul>	

## **ANNEX 3: ENVIRONMENTAL GUIDELINES FOR CONSTRUCTION CONTRACTORS**

### **General: Applicability of These Environmental Guidelines and ESMP**

1. These general environmental guidelines apply to any work to be undertaken under the Land Reform Program. For certain work sites entailing specific environmental and/or social issues, a specific Environmental and Social Impact Assessment, including an Environmental and Social Management Plan (ESMP), shall be prepared to address the above-mentioned specific issues in addition to these general environmental guidelines. In addition to these general Environmental Guidelines, the Contractor shall therefore comply with any specific ESMP for the works he is responsible for. The Contractor shall after being informed by the LGI, here-in referred to as the Client about such an ESMP for certain work sites, prepare his work strategy and plan to fully take into account relevant provisions of that ESMP. If the Contractor fails to implement the approved ESMP as embodied in the contract documents and/or after written instructions by the LGI's designated works supervisor to fulfill his obligation within the requested time, the LGI/Client reserves the right to arrange for execution of the missing action by a third party on account of the Contractor.
2. Notwithstanding the Contractor's obligation under the above clause, the Contractor shall implement all measures necessary to avoid undesirable adverse environmental and social impacts wherever possible, restore work sites to acceptable standards, and abide by any environmental performance requirements specified in an EAF/ESMP whichever applies.
3. These Environmental Guidelines, as well as any specific ESMP, apply to the Contractor. They also apply to any sub-contractors present on Project work sites at the request of the Contractor with permission from the Client.

### **General Environmental Protection Measures**

4. In general, environmental protection measures to be taken at any work site shall include but not be limited to:
  - (a) Minimize the effect of dust on the environment resulting from earth mixing sites, vibrating equipment, construction related traffic on temporary or existing access roads, etc. to ensure safety, health and the protection of workers and communities living in the vicinity of work sites and access roads.
  - (b) Ensure that noise levels emanating from machinery, vehicles and noisy construction activities (e.g. excavation, blasting) comply with Tanzanian standards and are generally kept at a minimum for the safety, health and protection of residents/workers within the vicinity of high noise levels and nearby communities.
  - (c) Ensure that existing water flow regimes in rivers, streams and other natural or irrigation channels are maintained and/or re-established where they are disrupted due to works being carried out.
  - (d) Prevent any construction-generated substance, including bitumen, oils, lubricants and waste water used or produced during the execution of works, from entering into rivers, streams, irrigation channels and other natural water bodies/reservoirs.
  - (e) Avoid or minimize the occurrence of standing water in holes, trenches, borrow areas, etc...

(f) Prevent and minimize the impacts of quarrying, earth borrowing, piling and building of temporary construction camps and access roads on the biophysical environment including protected areas and arable lands; local communities and their settlements. Restore/rehabilitate all sites to acceptable standards.

(g) Upon discovery of graves, cemeteries, cultural sites of any kind, including ancient heritage, relics or anything that might or believed to be of archeological or historical importance during the execution of works, immediately report such findings to the Client so that the Ministry in charge of Culture may be expeditiously contacted for fulfillment of the measures aimed at protecting such historical or archaeological resources.

In the event that the Contractor encounters chance finds during construction and/or rehabilitation activities, he will contact the appropriate LGI overseeing the project with the view to passing on this information to:

- the entity responsible for Culture and Tourism and
- the Authority of Research and Conservation of Cultural Heritage.

(h) Prohibit construction workers from engaging in the exploitation of natural resources such as hunting, fishing, and collection of forest products or any other activity that might have a negative impact on the social and economic welfare of the local communities. Prohibit explicitly the transport of any bush meat in Contractor's vehicles.

(i) Prohibit the transport of firearms in Project-related vehicles.

(j) Prohibit the transport of third parties in Project-related vehicles.

(k) Implement soil erosion control measures in order to avoid surface run off and prevent siltation, etc.

(l) Ensure that garbage, sanitation and drinking water facilities are provided in construction workers camps.

(m) Ensure that, in as much as possible, local materials are used to avoid importation of foreign material and long distance transportation.

(n) Ensure public safety, and meet Tanzanian traffic safety requirements for the execution of works to avoid accidents.

(o) Ensure that any trench, pit, excavation, hole or other hazardous feature is appropriately demarcated and signposted to prevent third-party intrusion and any safety hazard to third parties.

(p) Comply with Tanzanian speed limits, and any other traffic restrictions related to construction activities at LRP Project sites.

(q) Ensure that, where unskilled daily-hired workforce is necessary, such workers are hired from neighboring communities.

(r) Generally comply with any requirements of Tanzanian law and regulations.

5. Besides the regular inspection of the sites by the supervisor appointed by the Client for adherence to the Contract conditions and specifications, the Client may appoint an environmental inspector to oversee the compliance with these environmental conditions and any proposed mitigation measures. District or Municipal Environmental Officers may carry out similar inspection duties. In all cases, as directed by the Client's supervisor, the Contractor shall comply with directives from such inspectors.

### **Drilling**

6. The Contractor will make sure that any drilling fluid, drilling mud, mud additives, and any other chemicals used for drilling at any LRP Project construction site complies with Tanzanian health and safety requirements. In general, only bio-degradable materials will be used. The Contractor may be required to provide the detailed description of the materials he intends to use for review and approval by the Client. Where chemicals are used, general prescriptions of the World Bank's safeguard policy OP 4.09 "Pest Management" shall be complied with.

7. Drilling fluids will be recycled or disposed of in compliance with Tanzanian regulations in an authorized disposal site. If drilling fluids cannot be disposed of in a practical manner, and if land is available near the drilling site that is free of any usage rights, the Contractor may be authorized to dispose of drilling fluids near the drilling site. In this case, the Contractor will be required to provide to the Client due evidence of their total absence of potential environmental impacts, such as leachate tests certified by an agreed laboratory. In this case, drilling fluids will be dried at site, mixed with earth and spread at site.

8. Any site affected by drilling work will be restored to its initial condition. This applies to drilling pads, access roads, staging areas, etc... Topsoil will be stripped ahead of any earthmoving, stored near the construction site, and replaced in its original location after the re-contouring of the area affected by the works.

9. Where successive aquifers are intersected by the drilling works, and upon order by the work supervisor, the Contractor may be required to take measures to isolate aquifers from contamination by each other.

10. The Contractor will take all measures to avoid bacteriological or chemical contamination of the intersected aquifers by the drilling equipment. Similarly, the Contractor will take all measures to avoid bacteriological or chemical contamination of the intersected aquifers from the surface by providing an adequately sealed well-head.

11. When greasing drilling equipment, the Contractor will avoid any soil contamination. In the event of a limited hydrocarbon spill, the Contractor will recover spilled hydrocarbons and contaminated soils in sealed drums and dispose of them in an authorized waste management facility.

12. Unless duly requested by the Contractor and authorized by the supervisor, no servicing of drilling equipment or vehicles is permitted at the drilling site.

## **Pipelines**

13. No trench shall be left open for more than 7 days, unless duly authorized by the supervisor upon Contractor's request. Trenches and other excavation works shall be demarcated and/or signposted to avoid third party intrusion.

14. General conditions related with topsoil stripping, storage and restoration apply.

15. The Contractor will take measures to dispose of water used for pressure tests in a manner that does not affect neighboring settlements.

## **Waste Management**

16. All drums, containers, bags, etc. containing oil/fuel/surfacing materials and other hazardous chemicals shall be stored at construction sites on a sealed and/or bonded area in order to contain potential spillage. All waste containers, litter and any other waste generated during the construction shall be collected and disposed off at designated disposal sites in line with applicable Tanzanian government waste management regulations.

17. All drainage and effluent from storage areas, workshops, housing quarters and generally from camp sites shall be captured and treated before being discharged into the drainage system in line with applicable government water pollution control regulations.

18. Used oil from maintenance shall be collected, properly stored in sealed containers, and either disposed of appropriately at designated sites or be re-cycled.

19. Entry of runoff into construction sites, staging areas, camp sites, shall be restricted by constructing diversion channels or holding structures such as berms, drains, dams, etc. to reduce the potential of soil erosion and water pollution.

20. Construction waste shall not be left in stockpiles along the road, but removed and reused or disposed of on a daily basis.

21. Where temporary dump sites for clean excavated material are necessary, they shall be located in areas, approved by the Client's supervisor, where they will not result in supplemental erosion. Any compensation related with the use of such sites shall be settled prior to their use.

22. Areas for temporary storage of hazardous materials such as contaminated liquid and solid materials shall be approved by the supervisor and appropriate local and/or relevant national or local authorities before the commencement of work. Disposal of such waste shall be in existing, approved sites.

## **Quarries and Borrow Areas**

23. The Contractor shall obtain appropriate licenses/permits from relevant authorities to operate quarries or borrow areas. The location of quarries and borrow areas shall be subject to review and approval by relevant local and national authorities.

24. New extraction sites:



- a) Shall not be located less than 1km from settlement areas, archaeological areas, cultural sites – including churches and cemeteries, wetlands or any other valued ecosystem component, or on high or steep ground.
- b) Shall not be located in water bodies, or adjacent to them, as well as to springs, wells, well fields.
- c) Shall not be located in or near forest reserves, natural habitats or national parks.
- d) Shall be designed and operated in the perspective of an easy and effective rehabilitation. Areas with minimal vegetation cover such as flat and bare ground, or areas covered with grass only or covered with shrubs less than 1.5m in height, are preferred.
- e) Shall have clearly demarcated and marked boundaries to minimize vegetation clearing and safety hazards for third parties.

25. Vegetation clearing shall be restricted to the area required for safe operation of construction work. Vegetation clearing shall not be done more than two months in advance of operations.

26. Stockpile areas shall be located in areas where trees or other natural obstacles can act as buffers to prevent dust pollution, and generally at a distance from human settlements. Wind shall be taken into consideration when siting stockpile areas. Perimeter drains shall be built around stockpile areas.

27. The Contractor shall deposit any excess material in accordance with the principles of these guidelines, and any applicable EAF/ESMP, in areas approved by local authorities and/or the supervisor.

### **Rehabilitation of Work and Camp Sites**

28. Topsoil shall be stripped, removed and stored for subsequent rehabilitation. Soils shall not be stripped when they are wet. Topsoil shall not be stored in large or high heaps. Low mounds of no more than 1 to 2m high are recommended.

29. Generally, rehabilitation of work and camp sites shall follow the following principles:

- To the extent practicable, reinstate natural drainage patterns where they have been altered or impaired.
- Remove toxic materials and dispose of them in designated sites. Backfill excavated areas with soils or overburden that is free of foreign material that could pollute groundwater and soil.
- Ensure reshaped land is formed so as to be stable, adequately drained and suitable for the desired long-term land use, and allow natural regeneration of vegetation.
- Minimize erosion by wind and water both during and after the process of reinstatement.
- Compacted surfaces shall be deep ripped to relieve compaction unless subsurface conditions dictate otherwise.

### **Management of Water Needed for Construction Purposes**

30. The Contractor shall at all costs avoid conflicting with water needs of local communities. To this effect, any temporary water abstraction for construction needs from either ground or surface water shall be submitted to the following community consultation process:

- Identification of water uses that may be affected by the planned water abstraction,
- Consultation with all identified groups of users about the planned water abstraction,
- In the event that a potential conflict is identified, report to the supervising authority.

This consultation process shall be documented by the Contractor (minutes of meeting) for review and eventual authorization of the water withdrawal by the Client's supervisor.

31. Abstraction of both surface and underground water shall only be done with the consultation of the local community as mentioned and after obtaining a permit from the relevant authority.

32. Abstraction of water from wetlands is prohibited.

33. Temporary damming of streams and rivers shall be subject to approval by the appropriate water regulatory authority. It shall be done in such a way as to avoid disrupting water supplies to communities downstream, and to maintain the ecological balance of the river system.

34. No construction water containing spoils or site effluent, especially cement and oil, shall be allowed to flow into natural water drainage courses. Similarly, wash water from washing out of equipment shall not be discharged into water courses or road drains. Washing bays shall be sited accordingly. Unless site conditions are not favorable, it should be filtered through soakaways/ pits or similar filtering medium.

35. Site spoils and temporary stockpiles shall be located away from the drainage system, and surface run off shall be directed away from stockpiles to prevent erosion and pollution.

#### **Traffic Management and Community Safety**

36. Location of temporary access roads shall be done in consultation with the local community and based on the screening results, especially in important or sensitive environments. Temporary access roads shall not traverse wetland areas or other ecologically sensitive areas. The construction of any access roads shall be submitted to a prior consultation process with potentially affected communities that will have to be documented (minutes of meetings) for review and approval by the appropriate LG entity.

37. Upon the completion of civil works, all temporary access roads shall be ripped and rehabilitated.

38. Measures shall be taken to suppress dust emissions generated by Project traffic.

39. Maximum speed limits for any traffic related with construction at LRP Project sites shall conform to Tanzanian regulations or any others put in place for the purposes of execution of works in a safe environment.

#### **Salvaging and Disposal of Obsolete Components Found by Rehabilitation Works**

40. Obsolete materials and construction elements such as electro-mechanical equipment, pipes, accessories and demolished structures shall be salvaged and disposed of in a manner approved by the supervisor and in conformity with the disposal regulations in force. The Contractor will agree with the supervisor which elements are to be surrendered to the Client's premises, which will be recycled or reused, and which will be disposed of through approved disposal processes or landfill sites.

41. Any asbestos cement material that might be uncovered when performing rehabilitation works will be considered as hazardous material and disposed of at a designated facility.

### **Compensation of Damage to Property**

42. Compensation of land acquired permanently for Project purposes will be handled under Client responsibility based on the provisions of the RPF. However, in the event that the Contractor, deliberately or accidentally, damages property, he shall repair the property to the owner's satisfaction and at his own cost. For each repair, the Contractor shall obtain from the owner/user a certificate that the damage has been made good satisfactorily in order to indemnify the Client from subsequent claims.

43. In any case where compensation for inconveniences, damage of crops etc. are claimed by the owner, the Client has to be informed by the Contractor through the supervisor.

### **Contractor's Health, Safety and Environment Management Plan (HSE-MP)**

44. Within 6 weeks of signing the Contract, the Contractor shall prepare an HSE-MP to ensure the adequate management of the health, safety, environmental and social aspects of the works, including implementation of the requirements of these general conditions and any specific requirements of an EA/ESMP for the works.

45. The Contractor's HSE-MP will be reviewed and approved by the Client before start of the works. This review should demonstrate if the Contractor's HSE-MP covers all of the identified impacts, and has defined appropriate measures to counteract any potential impacts.

### **HSE Reporting**

46. The Contractor shall prepare bi-monthly progress reports to the Client on compliance with these general conditions of implementation of the project EAF and his own HSE-MP

47. The reporting of any significant HSE incidents shall be done as soon as practicable. Such incident reporting shall therefore be done individually. The Contractor should keep his own records on health, safety and welfare of persons, and damage to property. It is advisable to include such records, as well as copies of incident reports, as appendixes to the bi-monthly reports. Details of HSE performance will be reported to the Client.

#### **Training of Contractor's Personnel**

48. The Contractor shall provide sufficient training to its own personnel to ensure that they are all aware of the relevant aspects of these general conditions, any project EA or ESMP, and its own HSE-MP, and are able to fulfill their expected roles and functions. Specific training will be provided to those employees that have particular responsibilities associated with the implementation of the HSE-MP. Training activities will be documented for potential review by the Client.

50. Amongst other issues, training will include an awareness session for all employees on HIV-AIDS addressing the following topics:

- What is HIV/AIDS?
- How is HIV/AIDS contracted?
- HIV/AIDS prevention.

## ANNEX 4: SUMMARY OF THE WORLD BANK OPERATIONAL POLICIES

<p><b>OP 4.01 Environmental assessment</b></p>	<p>The objective of the policy is to ensure the projects financed by the Bank are sound and sustainable, and decision making be improved through an appropriate analysis of actions and of their potential environmental impacts. This policy is triggered if a project is likely to have environmental risks and impacts (adverse) on its area of influence. OP 4.01 covers the environmental impacts (nature air, water and land); human health and security; physical cultural resources; as well as trans-boundary and global environmental problems.</p>	<p>Depending on the project, and nature of impacts a range of instruments can be used: EIA, environmental audit, hazard or risk assessment and environmental management plan (EMP). When a project is likely to have sectoral or regional impacts, sectoral or regional EA is required.</p> <p>In the framework of the LRP, an Environmental Assessment Framework(EAF) has been prepared including an Impact Mitigation Plan; the EAF will help assess the impacts of future activities if necessary and orient implementation.</p>
<p><b>OP 4.04 Natural Habitats</b></p>	<p>This policy recognizes that the conservation of natural habitats is essential for long-term sustainable development. The Bank, therefore, supports the protection, maintenance, and rehabilitation of natural habitats in its project financing, as well as policy dialogue and analytical work. The Bank supports, and expects the Borrowers to apply, a precautionary approach to natural resource management to ensure opportunities for environmentally sustainable development.</p>	<p>This policy is triggered by any type of project (including any sub-project under sectoral investment regime or intermediary funding) that have the potential to cause some important conversion (loss) or degradation of natural habitats, whether directly (by the construction) or indirectly (by human activities triggered by the project).</p> <p>In the LRP activities that could have adverse impacts on natural habitats will not be funded.</p>
<p><b>OP 4.36 Forests</b></p>	<p>The objective of this policy is to help borrowers exploit the potential of forests in order to curb poverty in a sustainable manner, efficiently integrate forests in sustainable economic development and protect vital local and global environmental services and forest values. Where forest restoration and plantations are needed in order to achieve these objectives, the Bank helps borrowers in forest restoration activities in order to maintain or develop biodiversity and the operation of ecosystems. The</p>	<p>This policy is triggered each time an investment project financed by the Bank: (i) has the potential to cause health impacts and the quality of forests or the rights and the well being of the people and their dependency level with the interaction with forests; or (ii) aims at bringing some change in the uses of natural forests or plantations.</p> <p>LRP activities that will adversely affect the quality of the forests or bring in some change in the management will not be financed.</p>

	Bank helps borrowers in the ceation of forest plantations appropriate from the environmental viewpoint and socially beneficial and economically sound in order to help meet the growing forests' needs and services	
<b>OP 4.09 Pest Management</b>	The objective of this policy is to promote the use of biological or environmental control methods and reduce reliance on synthetic chemical pesticides. In Bank-financed agricultural operations, pest populations are normally controlled through Integrated Pest Management (IPM) approaches. In Bank-financed public health projects, the Bank supports controlling pests primarily through environmental methods. The policy further ensures that health and environmental hazards associated with pesticides are minimized. The procurement of pesticides in a Bank-financed project is contingent on an assessment of the nature and degree of associated risk, taking into account the proposed use and the intended user.	<p>The policy is triggered if procurement of pesticides is envisaged (either directly through the project or indirectly through on-lending); if the project may affect pest management in a way that harm could be done, even though the project is not envisaged to procure pesticides. This includes projects that may lead to substantially increased pesticide use and subsequent increase in health and environmental risks; and projects that may maintain or expand present pest management practices that are unsustainable.</p> <p>LRP activities requiring the use of pesticides (agricultural activities) could be financed. That is why a Pest and Pesticides Management Plan will be required.</p>
<b>OP 4.11 Cultural property</b>	The objective of this policy is the help countries avoid or reduce the adverse impacts of development projects on physical cultural resources. In order to implement such policy, the word “physical cultural resources” means movable and unmovable objects, sites, structures, natural’s aspects of landscapes that have an importance form the archeological, paleontologic, historic, architectural, religious, aesthetic or other. Physical cultural resources could be found in urban or rural areas, as well as both in the open air, under the ground and in the sea also.	<p>This policy applies to all projects included in category A or B of the Environmental assessment scheduled in OP4.01.</p> <p>LRP activities that are likely to have adverse impacts on cultural property will not be financed.</p>
<b>OP 4.10 Indigenous populations</b>	The objective of the policy is (i): ensure that the development process encourages full respect of dignity, human rights and cultural features of indigenous people; (ii) ensure they do not suffer from	The policy is triggered when the project affects indigenous people (with the characteristics described in OP 4.10) in

	the detrimental effects during the development process; and ensure indigenous people reap economic and social advantages compatible with their culture.	the area covered by the project.
<b>OP 4.12 Involuntary Resettlement</b>	The objective of this policy is to avoid or minimize involuntary resettlement where feasible, exploring all viable alternative project designs. Furthermore, it intends to assist displaced persons in improving their former living standards; it encourages community participation in planning and implementing resettlement; and to provide assistance to affected people, regardless of the legality of title of land.	This policy is triggered not only if physical relocation occurs, but also by any loss of land resulting in: relocation or loss of shelter; loss of assets or access to assets; loss of income sources or means of livelihood, whether or not the affected people must move to another location.
<b>OP 4.37 Dams security</b>	The objectives of this policy are established as follows: For new dams, ensure the design and supervision are done by experienced and competent professionals; for existing ones, ensure that any dam that can influence the project performance is identified, an assessment of the dam security conducted, and the other required safety measures and corrective measures implemented.	The policy is triggered when the Bank finances (i) a project involving the building of a big dam (15 m of height or more) or a dam presenting great hazard; and (ii) a project depending on another existing dam. For small dams, general safety measures designed by qualified engineers are appropriate.
<b>OP 7.50 Projects implemented on international waterways</b>	<p>The objective of this policy is to operate in such a way as the projects financed by the Bank affecting the international watercourses do not affect: (i) the relationships between the Bank and her borrowers and between States (members or non members of the Bank); and (ii) the international watercourses are used and efficiently protected.</p> <p>The policy applies to the following project types: (a) hydro electric, irrigation, flood control, drainage, water collection, industrial and other projects involving the use or potential pollution of international watercourses, and (b) detailed studies for project design under item (a) above quoted including those carried out by the Bank in her position of implementation agency or else.</p>	<p>This policy s triggered if (a) A river, a channel, lake or any other watercourse located between two states, or a river or a surface river discharging into a river located in one or two states, be they members of the World Bank or not (b) a river branch which is a component of a watercourse descried under item (a); recognized to be a necessary communication channel between the ocean and the other states, and any river discharging into these waters and (c) a bay, strait, or channel bound by two states or more or flowing in an unknown state.</p>

<p><b>OP 7.60 Projects located in contentious zones</b></p>	<p>The objective of this policy is to operate in such a way that problems experienced by projects in contentious areas are tackled as early as possible so that: (a) the relationships between the Bank and member countries are not affected; (b) the relationships between the borrower and neighbors are not affected; and either the Bank or concerned countries do not suffer any damage because of this situation.</p>	<p>This policy is triggered if the project proposed is located in a «contentious area».</p>
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## **ANNEX5: SAMPLE EIA TERMS OF REFERENCE**

### **Introduction and Context**

This part will be completed at time and will include necessary information related to the context and methodology to carry out the study.

### **Objectives of study**

This section will indicate (i) the objectives and the project activities; (ii) the activities that may cause environmental and social negative impacts and needing adequate mitigation measures.

### **Mission /Tasks**

The consultant should realize the following:

- Describe the biophysical characteristics of the environment where the project activities will be realized; and underline the main constraints that need to be taken into account at the field preparation, during the implementation and exploitation/maintenance of equipments.
- Assess the potential environmental and social impacts related to project activities and recommend adequate mitigation measures, including costs estimation.
- Assess the need for solid and liquid waste management and suggest recommendation for their safe disposal, including safe disposal of asbestos,
- Review alternative more cost-effective and environmentally and socially friendlier options for achieving the same objectives,
- Review policy, legal and institutional framework, at national and international level, related to the environment and identify the constraints for best practices in management with appropriate recommendations for improvements,
- Identify responsibilities and actors for the implementation of proposed mitigation measures,
- Assess the capacity available to implement the proposed mitigation measures, and suggest recommendations in terms of training and capacity building and estimate their costs,
- Develop an Environmental Management Plan (EMP) for the project. The EMP should underline (i) the potential environmental and social impacts resulting from project activities (ii) the proposed mitigation measures; (iii) the institutional responsibilities for implementation; (iv) the monitoring indicators; (v) the institutional responsibilities for monitoring and implementation of mitigation measures; (vi) the costs of activities; and (vii) the implementation schedule,
- Public consultations: The EIA results and the proposed mitigation measures will be discussed with populations, NGOs, local administration and other organisations impacted by the project activities. Recommendations from this public consultation will be include in the final EIA report.

### **Plan of the EIA Report**

- Cover page
- Table of contents
- List of acronyms
- Executive summary
- Introduction
- Description of project activities
- Description of environment in the project area
- Description of policy, legal and institutional framework
- Description of methodology and techniques used in the assessment and analyses of project impacts,
- Description of environmental and social impacts of project activities,



- Environmental Management Plan (EMP) for the project including the proposed mitigation measures; the institutional responsibilities for implementation; the monitoring indicators; the institutional responsibilities for monitoring and implementation of mitigation; Summary table for EMP
- Recommendations
- References
- List of persons / institutions met

**Qualification of the Consultant**

The Consultant will be agreed by the LGIs in consultation with NEMA.

**Duration of Study**

The duration of study will be determined according to the type of activity.

**Production of Final Report**

The consultant will produce the final report one (1) week after receiving comments from the LGI.

**Supervision of Study**

The consultancy will be supervised by the Environmental Focal Points and the NEMA