



# ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK FINAL REPORT

**Consultancy Services for the Design and Preparation of Bidding Documents for a Countrywide Roll-out of the Output and Performance Based Road Contracts - OPRC Region I**

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## ACRONYMS

CAP	Chapter
CSC	Construction Supervision Consultant
DWNP	Department of Wildlife and National Parks
EA	Environmental Assessment
ECZ	Environmental Council of Zambia
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
ESMU	Environmental and Social Management Unit
EPB	Environmental Project Brief
EMA	Environmental Management Act
ER	Environmental Review
ESAs	Environmental Sensitive Areas
ESMF	Environmental and Social Management Framework
GRZ	Government of the Republic of Zambia
IEC	Information, Education and Communication
Km <sup>2</sup>	Kilometre Squared
LEA	Limited Environmental Assessment
MCTWS	Ministry of Communications, Transport, Works and Supply
NHCC	National Heritage Conservation Commission
MLNREP	Ministry of Lands, Natural Resources and Environmental Protection
NFRA	National Road Fund Agency
NBSAP	National Biodiversity Strategy and Action Plan
NGOs	Non-governmental Organisations
NWP	National Water Policy
NWRMP	National Water Resources Master Plan
RAP	Resettlement Action Plan
RDA	Road Development Agency
RMS	Road Maintenance Strategy
RPF	Resettlement Policy Framework
TOR	Terms of Reference
WB	World Bank
ZAWA	Zambia Wildlife Authority
ZIRC	Zambia Improved Rural Connectivity

## **WORKING DEFINITIONS**

### **Contaminant**

A substance or physical agent, or a combination of substances and physical agents that may contribute to or create a condition of pollution.

### **Environment**

Means land, water, air and other external influences and conditions which affect the development and life of all organisms including person.

### **Environmental Assessment (EA)**

The process of managing the environmental aspects of a policy, strategy, program or sub projects from the earliest stages of identifying the potential actions to their completion and evaluations. The process encompasses identification of potential adverse environmental impact, assessments of these impacts and comparison with impacts of alternative approaches; design and implementation measures and plans to avoid, minimize, mitigate, or compensate for adverse impacts; and development of associated management and monitoring measures.

### **Environmental and Social Impact Assessment (ESIA)**

An environmental and social impact assessment instrument to identify and assess major potential environmental and social impact of proposed sub projects, evaluate alternatives and design appropriate mitigation, management and monitoring measures.

### **Environmental Review (ER)**

An environmental assessment instrument in which the sub-projects is likely to have minimum impacts but should be reviewed with a simple and standardized checklist of possible impacts and appropriate mitigation measures.

### **Environmental Screening (ES)**

The process of determining the level of environmental analysis required for the project: and identifying the most relevant EA instrument needed to address the potential impacts and environmental issues associated with sub projects. The screening process will indicate whether environmental assessment is required for each sub-project or not, and if it is required, which of the three environmental instruments (ER, LEA or ESIA) should be used.

### **Limited Environmental Assessment (LEA)**

An instrument to assess whether a subproject is likely to cause environmental impacts that merit consideration by an environmental specialist, and which special measures of mitigation should be incorporated into the design. Detailed checklists, customized for

different sub-projects types, would normally be used and supplemented on a case-by – case basis, possibly by field visit.

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

An instrument that details (a) the measures to be taken during the implementation and operation of a project to eliminate or offset adverse environmental impacts, or to reduce them to acceptable levels; and (b) the actions needed to implement these measures.

### **Environmental Monitoring (EM)**

Monitoring is a systematic measuring and recording of physical, social and economic variables associated with project impacts. The objective of monitoring is to provide information on the characteristics and functioning of the occurrence and magnitude of impacts and whether mitigation measures have been carried out. Thus monitoring is one of the important factors for environmental management within the EIA context.

### **Environmental Audit**

Environmental Audits involve reassessment of the developed project by looking at the positive and negative impacts. The environmental Audit report will be prepared by the proponent and submitted to competent authorities for evaluation.

### **Pollution**

The presence in the environment of one or more contaminants in such quantities and for such duration and under such conditions as may cause discomfort to or endanger the health; safety and welfare of persons, or which may interfere unreasonably with the normal enjoyment of life or use of property or conduct of business.

### **Scoping**

The process for determining the extent of environmental impact of the project to be undertaken. In the process extensive consultations with principle stakeholders is mandatory in order to inform them about the proposed activities and solicit their views about it.

### **Wetlands**

Transitional areas between terrestrial and aquatic systems in which the water table is usually at or near the surface or the land is covered by shallow water. Under the United Nations Ramsar Convention, wetlands can include tidal mudflats, natural ponds, marshes, potholes, wet meadows, bogs, peat lands, freshwater swamps, mangroves, shallow lakes and some rivers.

## **EXECUTIVE SUMMARY**

### **Background**

The Government of the Republic of Zambia (GRZ) through the Road Development Agency (RDA) recognises the need for improving rural roads infrastructure in Zambia and to this effect the GRZ has applied for a credit of US\$200 million from the World Bank and intends to use part of this credit (to be availed through a Project Preparation Facility) towards procurement of a Consultant to prepare an Environmental and Social Management Framework (ESMF) for the intended project. The project objective is to enhance mobility in selected rural areas in support of inclusive agriculture and other livelihoods of local communities in the targeted Counties. The project development objective will be achieved through targeted interventions that will rehabilitate rural roads (primary, secondary, and tertiary) and build the capacity of the RDA to participate in better planning, prioritization and management of road development and maintenance expenditures for rural roads, and improve overall quality of life of the rural poor and vulnerable groups.

### **ZIRC Project Objective and Design Strategy**

The objective of the ZIRC IS to improve rural accessibility for communities in selected areas in Zambia through provision of better roads and other rural transport related infrastructure and strengthening of institutional capacity.

The project is intended to support two components vis a vis improvement of feeder roads, and institutional capacity building.

### **Objectives of the ESMF**

The objectives of the ESMF are:

- i. To establish methodologies for environmental and social impact assessment procedure within the ZIRC sub-project cycle;
- ii. To assess the potential environmental and social impacts of the ZIRC project, whether positive or negative, and propose mitigation measures which will effectively address these impacts;
- iii. To inform the stakeholder of the potential impact of different anticipated sub projects, and relevant mitigation measures and strategies;

- iv. To serve as a tool for project implementers at the National, District, Community, Ward/Village level to identify and mitigate potential environmental and social impacts during all stages of the subproject cycle thereby avoiding long term negative impacts;
- v. To identify potential environmental policies, legal and institutional framework pertaining to ESMF,
- vi. To highlight National EIA guidelines and procedures.

## **COUNTRY SETTING**

### **GEOPHYSICAL ENVIRONMENT**

#### **Location**

Zambia is a landlocked country in Southern Africa, and covers an area of 752,614 km<sup>2</sup> (MTENR, NBSAP:1) located between latitudes 8 and 18 degrees south and longitudes 22 and 33 degrees east and is surrounded by Mozambique, Malawi, Tanzania, Democratic Republic of Congo, Angola, Namibia, Botswana and Zimbabwe. The whole country lies on the Central African Plateau with an average altitude of 1200m above sea level.

#### **Biodiversity**

Zambia's natural vegetation is characterised by savanna woodland dominated by miombo woodlands which cover about 50% of the country. Mopane and Munga woodlands cover much of the hot and dry southern valleys of the Zambezi and Luangwa. Zambia has a total of 8,017 species of organisms out of which micro-organisms constitute 8%, plants 47% and fauna 45%. In addition there are a total of 316 of the species which are endemic, 174 rare and 31 endangered/ vulnerable species of plants and animals (SoE, 2000).

#### **River Systems**

There are two main river systems in Zambia, namely the Zambezi River and the Zaire (Congo) River. The Zambezi River system covers three quarters of the country and can be divided into three smaller systems, the Zambezi, Kafue and Luangwa rivers. The Zaire River system includes the rivers in the northern region, mainly the Chambeshi and Luapula rivers.

### **PROTECTED AREAS**

#### **Forest Reserves**

Forest reserves were established by government to conserve forest resources for sustainable use by local people in the case of local forests and to protect major catchment areas and biodiversity in the case of national forests. There are 432 Forest Reserves in Zambia, which cover a total area of 7.4 million hectares. (MTENR, NBSAP: 19).

#### **Botanical Reserves**

Botanical reserves were established by government for three objectives, namely; a) to preserve some relic vegetation types and/ or plant species, b) to act as sources of

germplasm for multiplication and breeding programmes; and c) to act as reference sites in determining human impacts on forest ecosystems outside the reserve. There are 59 botanical reserves in Zambia which cover a total area of 148, 000 hectares (MTENR, NBSAP:19).

### **National Parks and Game Management Areas**

National Parks were established by government primarily for the conservation of biodiversity. There are 19 national parks in Zambia and these cover a total area of 6.358 million hectares (MTENR, NBSAP:19). Sustainable use of wildlife and its habitats in national parks is promoted through eco-tourism while settlements and hunting are prohibited.

Game management areas were established by government to control the hunting of game and protected animals through a licensing and monitoring system. There are 34 GMAs in Zambia which cover a total area of 16.57 million hectares (MTENR, NBSAP:19). Because other forms of land use, such as settlements and agriculture are allowed, GMAs are not strictly protected areas.

Game ranches support both consumptive and non-consumptive uses of wildlife. There are 28 game ranches in Zambia that have been established by the private sector. Because of the substantial economic benefits derived from game ranching, a number of commercial farmers have opted for game ranching. Game ranching has therefore significantly contributed to biodiversity conservation, especially of rare and endangered animal species. Currently 26 species, mainly of the ungulate group, are covered in game ranches.

### **Wetlands of National and International Importance**

Wetlands have economic, cultural, scientific and recreational value and their loss would be irreparable. They are important for their functions of water retention, recharge, and filter and as regulators of floods, and for being habitats for unique species of plants and animals, especially waterfowl.

In Zambia, Lochnivar National Park in Kafue Flats and Chikuni in Bangweulu basin are protected sites of international importance under the Ramsar Convention.

The Kafue Flats host large numbers of the endemic semi-aquatic antelope Kafue Lechwe (*Kobus Leche kafuensis*) and other large mammals. The flats are important sites for water birds including the globally threatened Crane, *Grus carunculatus*.

## **Cultural and Natural Heritage Properties**

Under the Convention concerning the Protection of the World Cultural and Natural Heritage, selected heritage properties are entered in the World Heritage List on the basis of guidelines set by the World Heritage Committee. In Zambia, so far, only the Victoria Falls, which is shared with Zimbabwe, has been identified as a cultural and natural heritage of world value and is listed and protected under the Convention concerning the Protection of the World Cultural and Natural Heritage.

## **SOCIO-ECONOMIC ENVIRONMENT**

Zambia's economic environment is characterised by heavy dependence on copper mining for the country's export earnings, government revenue, source of employment and Gross Domestic Product (GDP). Despite the potentials of other natural resources, the mining sector will continue to play a role of driving force in the economic development of the country.

### **Poverty**

Zambia is now one of the highly indebted countries in the world. The performance of the economy has had negative impacts on the development of nearly all sectors and the living standards of the people have considerably declined. Poverty is widespread and very high in Zambia. More than 70% of the households live below the poverty datum line. The poverty situation in Zambia intensifies resource use and its degradation.

### **HIV/AIDS**

Zambia, like many countries in Sub-Saharan Africa, is a nation gripped by HIV/AIDS, a veritable crisis that is seriously undermining its development.

The National HIV and AIDS Strategic Framework (NASF) 2006-2010 was built on the process of joint annual reviews and a broad consultative process with the cooperating partners. The management intent of the NASF is to:

- Support coordinated, prioritized and knowledge-based scale up of the response;
- Facilitate broad ownership of the response by all partners and practical partnerships for the implementation of the response;
- Represent joint strategic direction of all Partners;
- Enable the involvement of key sectors and decentralized levels in all stages of the process; and



- Guide resource management at the strategic level.

The six themes of the NASF represent the cooperating partners' priority action areas and include:

- Intensifying efforts for prevention of HIV;
- Expanding treatment, care and support for people affected by HIV and AIDS;
- Mitigating the socioeconomic impact of HIV and AIDS;
- Strengthening the decentralized response and mainstreaming HIV and AIDS;
- Improving the monitoring of the multi-sectoral response; and
- Integrating advocacy and coordination of the multi-sectoral response.

## **Population**

According to Central Statistical Office (CSO, 2010) Zambia's population in 2010 was 13,092,666. This was an increase from 9,885, 591 in 2000. The population grew at an average annual rate of 2.8 percent during the 2000-2010 inter-censal period. This average annual rate was higher than 2.4 percent recorded in the inter-censal period 1990-2000.

Of the total population in 2010, 60.5 percent were residing in rural areas while 39.5 percent were residing in urban areas.

## **DESCRIPTION OF THE ZIRC PROJECT ACTIVITIES**

The ZIRC project has two major components, which are described in the sections below.

### **i) Component 1: Feeder Roads Improvement**

Under this component the main focus are the unpaved feeder road networks serving local communities. The understanding is that at this stage the actual roads may not be known however the principal idea would be packages of about 300-500 km of the classified rural road network linking these communities with their economic activities and the nearest good quality District roads. It is estimated that a total of about 6 packages could be financed over a period of about two-three years. On the overall an estimated 1,800 to 3,000 km would be improved and maintained under the Project. The works contract would cover improvement of feeder roads, construction of drainage structures, small

bridges, emergency works, maintenance, and community facilities in support of agricultural development.

## **ii) Component 2: Institutional Capacity Building**

The component dealing with institutional capacity building is essentially intended to support the institutional capacity to manage rural roads. This would be realised as a result of policy and strategic viewpoints and also direct support in the skills development. The focus for strategic and policy support will encompass strengthening the procedures and processes of funding road maintenance with special attention to rural roads. The component will furthermore support the National Construction Council's role in the development and regulation of the road construction industry and RDA's efforts to reclassify the roads.

## **ENVIRONMENTAL SCREENING PROCESS**

The purpose of the screening process is to determine the appropriate type of environmental analysis, based on the nature, potential magnitude, and sensitivity of the issues. The ZEMA - EIA Schedule of Guidelines illustrates the categories of projects.

For ZIRC funded projects, Environmental Screening will be done using information provided on Environmental and Social Screening Form (refer to Annex 1). A checklist found in Annex 2 is provided to guide the ZIRC project team identify appropriate mitigation measures for the sub project identified.

For situations where the environmental and social screening process identifies land acquisition needs, that would trigger OP 4.12 Involuntary Resettlement, then the provisions of the Resettlement Policy Framework (RPF) provided in a separate report would apply.

The screening process will lead to three safeguard requirements:

- No further action if the sub project has no impacts on the environment.
- Carry out Limited Environmental Review or partial EIA (Project Brief) if sub project may create minor environmental problems that require frequent site visit or construction modifications to minimize or eliminate impact.
- Carry out full EIA (EIS) if sub project will result into potentially significant direct or indirect adverse impacts.

## **INSTITUTIONAL ARRANGEMENTS AND NECESSARY STRENGTHENING OF CAPACITY FOR ESMF IMPLEMENTATION**

### **Institutional Requirements**

Effective implementation of environmental and social safeguard issues for the ZIRC project will be achieved by establishing an institutional framework with qualified and experienced staff. It is imperative that certain institutional arrangements be in place before the ZIRC project is implemented in an efficient manner and according to World Bank and Zambia's law requirements.

The following are institutional requirements:

- A functioning and properly staffed and trained personnel in the Environmental and Social Management Unit established within the RDA,
- Agreement on Safeguard Management Guidelines between Ministry of Communications, Transport; Works and Supply (MCTWS), RDA, Ministry of Lands, Natural Resources And Environmental Protection (MLNREP), ZEMA, World Bank and other stakeholders who may be involved at project implementation such as Local Authorities, etc.

### **Strengthening of the Environmental and Social Management Unit within Road Development Agency**

As part of strengthening of capacity for ESMF implementation, it is recommended that the Environmental and Social Management Unit (ESMU) be strengthened within Road Development Agency (RDA). This will make it possible to co-ordinate environmental matters and will also ensure institutionalization of the EA process and eventually full-scale ESIAs in the rural roads sub-sector. Assistance in the form of training and capacity building will be required in order that the RDA become fully strengthened.

### **Safeguard Management Guidelines**

It is important that scoping studies and EAs be incorporated into the ZIRC project development cycle. With this in mind, the development of Sectoral EA guidelines is of paramount importance especially targeting the rural roads improvement. This need to take into account steps for preparation of the project briefs, screening, scoping and the drafting of the terms of reference for full-scale ESIAs.

The establishment of safeguard management guidelines for ZIRC project can facilitate this process through institutional strengthening and capacity building.

## **Capacity Strengthening**

The need for carrying out ESIA's, for the rural road sector has risen sharply as a result of the regulatory framework developed by ZEMA and the policy initiatives associated with the EMA Act.

The capacity to conduct ESIA in the road sector, and indeed ZIRC project will be stretched as well as the need to carry out measures to manage the situation. Most, if not all, of the ESIA's have been conducted by international firms, with or without Zambian partners.

Another objective in this regard is to contribute to the overall development of the country by building Zambian capacity to carry out ESIA studies and related work.

## **Proposed Support**

The principle in developing this proposed support package is that training inputs should be modest, given the fact that some skills already exist. However, there is need to ensure that practitioners are familiar with the specific requirements of Zambia and are made aware of the opportunities and challenges specific to the needs of the country.

The following is the recommended approach:

- a) Training for road sector planners, senior design construction and maintenance staff.
- b) Training for Ministry of Works Transport Communication and Supply and training for staff in the ESMU of the Road Development Agency.
- c) Support to the Environmental Officers at the District level where the subprojects are being implemented.

## **Environment and Social Safeguard Management Plan**

A program to address the human capacity strengthening requirements is given in Table A. The training course contents for each category have been outlined under **Chapter 12**.

### **Training for Road Planners, Senior Design Construction and Maintenance Staff including Engineers**

This training will be targeted at middle management personnel. The purpose of the training is to have sufficient understanding of ESIA and to ensure that environmental issues are adequately addressed in planning, design, construction and maintenance of ZIRC programme. **Participants** will be trained for 3 days. A sample of the course content

is presented below which would be updated after carrying out detailed training needs and capacity assessment.

### **Training of Government Staff, National Road Fund Agency and Road Development Agency Staff**

The purpose of the training is to develop a thorough understanding of the ESIA process and its integration into the project development cycle. The training of government **officers** will be for 3 days. A sample of the course content is presented below which would be updated after carrying out detailed training needs and capacity assessment.

### **Inspectors and District Environmental Officers**

The aim of training this group is to develop a practical understanding of environmental implications of ZIRC sub projects. Participants will be trained for five days. For better impact the group could be split into three. A sample of the course content is presented below which would be updated after carrying out detailed training needs and capacity assessment.

#### **Summary of Environmental Training Program**

<b>Target Group</b>	<b>Nos. of Participants</b>	<b>Duration</b>
Technocrats	50	3 days
MCTWS, MLNREP, NFRA & RDA Staff	25	3 days
District Environmental Officers (3 Staff Per District)	120	5 days

### **ESMF Implementation Budget**

The cost estimate for the capacity building program; as well as an indicative cost estimate for other technical assistance (consulting services) for the following sub-projects, which were identified as the priority projects in ZIRC are presented below:

#### **Overall Costs for Implementation of ESMF in ZIRC Project**

<b>Activity</b>	<b>Description</b>	<b>Unit cost, US\$</b>	<b>No</b>	<b>Total Cost, US\$</b>
Preparation and implementation of ESIA's, ESMPs and related safeguard management plans for investments funded from the World Bank	Recruitment of Consultants and experts to prepare the ESIA's	250,000.00		250,000.00
Monitoring of ESIA's, ESMPs and related safeguard management plans for investments funded from the World Bank	Recruitment of Consultants and experts to monitor the ESIA's and ESMPs	250,000.00		250,000.00

Capacity building	Training workshop/seminars on Programme for District Officers	50,000.00		50,000.00
ESMU	Monitoring implementation of ZIRC	30,000.00	Biannual	30,000.00
Capacity building/improvement for Regional Engineers	Training workshops	50,000.00	Biannual	50,000.00

## **CHAPTER 1**

### **1 INTRODUCTION TO THE ZAMBIA IMPROVED ROAD CONNECTIVITY (ZIRC) PROJECT**

#### **1.1 Background**

In a bid to improve rural roads infrastructure in Zambia the Government of the Republic of Zambia (GRZ) has applied for a credit of US\$200 million from the World Bank towards Zambia Improved Rural Connectivity (ZIRC) Project and intends to use part of this credit. The Zambia Improved Rural Connectivity (ZIRC) Project objective is to enhance mobility in selected rural areas in support of inclusive agriculture and other livelihoods of local communities in the targeted districts. The project development objective will be achieved through targeted interventions that will rehabilitate rural roads (primary, secondary, and tertiary) and build the capacity of the Road Development Agency (RDA) to participate in better planning, prioritization and management of road development and maintenance expenditures for rural roads, and improve overall quality of life of the rural poor and vulnerable groups.

#### **1.2 ZIRC Project Objective and Design Strategy**

The objective of the ZIRC is to improve rural accessibility for communities in selected areas in Zambia through provision of better roads and other rural transport related infrastructure and strengthening of institutional capacity.

#### **1.3 Project Component**

A big amount of the ZIRC project funds will be directed towards supporting the implementation of RDA's long term Road Maintenance Strategy (RMS). Specifically, the Bank support will focus on the part of the strategy that includes the roll-out of the Performance Based Contracting. While the strategy is primarily focused on improving the condition of PFRs, there will be a need to broaden and prioritize the interventions, in terms of geographical coverage and selection of road links. A road network approach will be adopted and extended to include roads below PFRs i.e. the SFRs and TFRs. Priority provinces and district will be those with high poverty incidences as well as high agricultural potential. A Multi-criteria analysis will be used to prioritize road links, and to determine participating districts and provinces. To ensure sustainability of the project, the works will be executed through performance-based approach, to improve selected roads and to maintain them, as part of the same lump-sum contracts, to pre-defined levels of service. The intermediate results of this approach will be a new network of all-weather connectivity between the rural agricultural areas and the rest of the national road network. For sustainability purposes, the project will also support institutional capacity strengthening at strategic and skills development levels. The support will aim to spotlight rural connectivity as a strategically essential part of the national road network and to improve institutions' ability to manage this part of the network. The project will therefore

support two components: improvement of feeder roads, and institutional capacity building. The ZIRC Project will have the following components:

**i) Component 1: Feeder Roads Improvement**

The feeder roads improvement component will target primarily the unpaved feeder road network serving local communities. While it is too early to define in more detail, the overall concept would be packages of about 300-500 km of the classified rural road network linking these communities with their economic activities and the nearest good quality district roads. A total of about 6 packages could be financed over a period of about two-three years. In total an estimated 1,800 to 3,000 km would be improved and maintained under the project. The works contract would cover improvement of feeder roads, construction of drainage structures, small bridges, emergency works, maintenance, and community facilities in support of agricultural development. Typical contract duration would be about five years and the contracts will include participation of local contractors. The contracts will provide an ideal opportunity for both short-term and longer-term employment opportunities for local labour, especially through labour-based methods. Local road authorities will be involved in the design and implementation of the eventual roads packages. The necessary concept design and monitoring consultancy costs, as well as other technical support services would also be financed under this component.

**ii) Component 2: Institutional Capacity Building**

This component will in general support the institutional capacity to manage rural roads. This would be achieved through policy and strategic aspects as well as direct support toward skills development. Areas of strategic and policy level support would include strengthening the procedures and processes of funding road maintenance with special attention to rural roads. Specifically, the support would include a review of the application of the road fund towards road maintenance. It would also strengthen the systems for road asset management. The component will furthermore support road safety efforts in relation to rural roads. It will also support the National Construction Council's role in the development and regulation of the road construction industry and RDA's efforts to reclassify the roads. Of particular importance will be the overall institutionalization of performance-based road contracting.

## **1.4 Purpose and Objectives of the ESMF**

The Environmental Impact Assessment (EIA) Regulations No. 28 of 1997 provides the general framework and procedures for carrying out EIA and environmental management (EM) of development activities of all sectors (including the transport sector). The co-operating partners and funding institutions, including the World Bank also have their EA requirements, which should be followed as a key conditionality to fund projects.

In order to qualify for the credit agreement with the World Bank, the Bank's environmental and social safeguards policies (OP/BP 4.01, Environmental Assessment and OP/BP 4.12, Involuntary Resettlement) must be applied to any project which has



adverse environmental and or social impacts. The ESMF is used in the case of operations with multiple sub-projects, various phases and spread over a long period.

The ESMF outlines corporate environmental and social safeguard policy frameworks, institutional arrangements and capacity available to identify and mitigate potential safeguard concerns and impacts of each sub-project. This ensures that the sub-projects meet the national and local environmental and social requirements and consistent with OP 4.01 and OP 4.12 and other applicable safeguard provisions of the Bank.

The decision by the Road Development Agency to prepare an ESMF in the implementation of the ZIRC project is to adapt for the RDA and the implementing agencies a framework that will facilitate compliance with relevant national, the World Bank EA and other requirements for sub-projects under the ZIRC Project in a coherent manner. The ESMF represents a statement of policy, and provides the guiding principles and institutional arrangements as well as environmental and social safeguards instrument of reference, in the implementation of road sector activities. The framework gives a platform of standard principles and processes for the road sub-sector activities agreeable to all parties – RDA and the implementing Agencies, the ZEMA, the World Bank and others, as appropriate. The main objectives of the ESMF include:

- i. To establish clear procedures and methodologies for the environmental and social planning, review, approval and implementation of subprojects to be financed under the ZIRC;
- ii. To provide guidelines on the assessment of potential environmental and social impacts of the ZIRC programme, whether positive or negative and propose mitigation measures, which will effectively address these impacts.
- iii. To inform the stakeholder of the potential impact of different anticipated sub projects, and relevant mitigation measures and strategies;
- iv. To serve as a tool for project implementers at the national, district, community, Ward/Village level to identify and mitigate potential environmental and social impacts during all stages of the subproject cycle thereby avoiding long term negative impacts;
- v. To identify potential environmental policies, plans, legal and institutional framework pertaining to ESMF,
- vi. To determine the training, capacity building and technical assistance needed to successfully implement the provisions of the ESMF;

### **1.5 Purpose and Objectives of the Resettlement Policy Framework**

A Resettlement Policy Framework (RPF) has been developed as a separate document to address matters that relate to involuntary resettlement. The overall objective of this RPF is to provide guidance on how to deal with issues relating to land acquisition, compensation and resettlement during the implementation of the ZIRC Project.

The specific objectives of the RPF are as follows:

- i. To minimise, as much as possible, acquisition of land for implementation of project sub-components, where such acquisition or project related activities will result in adverse social impacts;
- ii. To ensure that where land acquisition is necessary, this is executed as sustainable programs to enable people share in the project benefits,
- iii. To ensure meaningful consultation with people to be affected or displaced; and
- iv. To provide assistance that will mitigate or restore the negative impacts of ZIRC implementation on the livelihoods of people affected in order to improve their livelihoods or at least restore to pre-project levels.

### **1.6 Approach and Methodology for the ESMF Preparation**

The ESMF preparation involved document reviews and consultation with key stakeholders in the road sector, in addition to the RDA. Key stakeholders consulted included the Provincial Roads Engineer, District Local Authorities, government officials at national level, etc. The list of stakeholders is presented in Annex 7. The national and the World Bank reference documents reviewed during the study are presented in Table 1 and include among others the following key documents:

- i) Environmental Management Act of 2011;
- ii) Environmental Impact Assessment Regulations No 28 of 1997;
- iii) Public Roads Act of 2002
- iv) Roads and Road Traffic Act of 1995
- v) National Environmental Policy,
- vi) Sectoral Environmental Laws.
- vii) Procedures Manual for Environmental and Social Management in the Roads Sector in Zambia of December 2006
- viii) Involuntary Resettlement Framework in the Road Sector of November 2003
- ix) The World Bank's Environmental and Social Safeguards Policies (OP/BP 4.01 and OP/BP 4.12).

## **CHAPTER 2**

### **2 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK**

#### **2.1 Relevant Policies and Strategies**

##### **2.1.1 National Environmental Policy**

The National Policy on Environment (NPE) is the principal policy that coordinates environmental management in Zambia. The National Environmental Policy was formulated in May 2005 by the Ministry of Tourism, Environment and Natural Resources. The NPE is designed to create a comprehensive framework for effective natural resource utilization and environmental conservation, which will be sensitive to the demands of sustainable development. The Policy is defined in terms of four basic natural resources of climate, land, water and biological diversity. The specific objectives of the NPE are to:

- Promote the sound protection and management of Zambia's environment and natural resources in their entirety, balancing the needs for social and economic development and environmental integrity to the maximum extent possible, while keeping adverse activities to the minimum;
- Manage the environment by linking together the activities, interests and perspectives of all groups, including the people, nongovernmental organizations (NGOs) and government at both the central and decentralized local levels;
- Accelerate environmentally and economically sustainable growth in order to improve the health, sustainable livelihoods, income and living conditions of the poor majority with greater equity and self-reliance;
- Ensure broadly-based environmental awareness and commitment to enforce environmental laws and to the promotion of environmental accountability;
- Build individual and institutional capacity to sustain the environment;
- Regulate and enforce environmental laws; and
- Promote the development of sustainable industrial and commercial processes having full regard for environmental integrity.

The ZIRC project will incorporate sustainable road designs and incorporate climate smart technologies to minimize impacts on the environment.

##### **2.1.2 Wildlife Policy**

Zambia's wildlife resources must be seen in the context of its potential to contribute to the country's socio-economic development and to the contribution Zambia's wildlife makes to the global biodiversity. The country's wildlife policy recognises that the most effective way to protect rare and endangered species is to conserve entire ecosystems in

which the species occur. Zambia is committed to improve human welfare by using the national's renewable resources in a sustainable manner.

### **2.1.3 Fisheries Policy**

Zambia's fisheries policy is focussed on maximising production, sustainable utilisation of fish resources and attracting both private and public sector investment into fish farming, (MAFF, 1990). The two policy strategies under the fisheries sector are:

- Development of capture fisheries
- Aquaculture

### **2.1.4 Health Policy**

The Health Reform Policy with regard to malaria disease states that its prevention and control will be implemented in line with the principle of health reforms. It will endeavour to implement quality assured, cost effective malaria prevention and control programme that is as close to the family as possible through the principle of equity, partnership and accountability.

### **2.1.5 Forestry Policy**

The mission statement of the forestry sector is to ensure sustainable flow of wood and non-wood forest products and services while at the same time ensuring protection and maintenance of biodiversity for the benefit of the present and future generations. The Policy is based on the following principles:

- Ensure sustainable forest resources management;
- Develop capacity of stakeholders in sustainable forest resources management and utilization;
- Promote a participatory approach to forest development by developing close partnership among stakeholders;
- Facilitate private sector involvement in forestry development;
- Promote equitable participation by women, men and children in forestry development; and
- Adopt an integrated approach, through intra and inter-sectoral coordination in forestry sector development.

### **2.1.6 Decentralization Policy**

The National Decentralization Policy (developed in 2002, launched in 2004) aimed at decentralizing government responsibilities and functions to lower levels of government through 'devolution'. It reaffirms the local authorities as the institutions responsible for water supply and sanitation.

### **2.1.7 Water Policy**

The National Water Policy is the overarching policy framework for the water and sanitation sector in Zambia. The Policy was developed and adopted by the GRZ in 1994,

and subsequently updated in 2010. The National Water Policy envisions “to optimally harnessing water resources for the efficient and sustainable utilization of this natural resource to enhance economic productivity and reduce poverty”.

In order to achieve the national goal of increasing accessibility to reliable safe water by all sectors of the economy the policy addresses two broad categories of water resources management and development. The major outcome of the policy is to improve the management of water resources, institutional coordination and defined roles and responsibilities. The policy encourages the use of water resources in an efficient and equitable manner consistent with the social, economic and environmental needs of present and future generations.

Following the adoption of the National Water Sector Policy in 1994, the government implemented several strategies, including:

- *Strategy and Institutional Framework for the Water and Sanitation Sector (1995)*: identifies the framework and arrangements for providing water and sanitation services by local authorities;
- *Environmental Sanitation Strategy (1998)*: increases the awareness of sanitation in basic social services and outlines the strategy to provide sanitation services;
- *Peri-Urban Water Supply and Sanitation Strategy (2000)*: targets water supply and sanitation services to urban low income communities, and;
- *Community Water Supply and Sanitation Strategy (2000)*: primarily targets rural areas, but also peri-urban areas.

### **2.1.8 National Gender Policy**

From time to time, the GRZ has been making attempts to mainstream gender in the different sectors of the country. In the 1980s, government adopted the Women in Development (WID) approach as a framework to incorporate gender issues into its development activities. For example, there was a WID desk at the then National Commission for Development Planning. In 1996, this approach was changed to the Gender in Development Division (GIDD). In the year 2000, the government launched the National Gender Policy, which serves as a gender mainstreaming institutional framework for government ministries. In the year 2006, the government established the Ministry of Women’s Affairs, which was later changed to the Ministry of Gender and Development to oversee the gender mainstreaming activities in the country.

It is expected that all government projects on road construction and rehabilitation and drainage will adhere to the requirements of the National Gender Policy of 2000 particularly in the incorporation of gender issues where at least 30% of labour recruited in the project must be women. However, there is no Act of Parliament to back the National Gender Policy has been promulgated and this is its major weakness as therefore there is no legal recourse for not following its requirements.

### **2.1.9 National Conservation Strategy**

The National Conservation Strategy (NCS) formulated in 1985 has been the main policy document on the Environment and Natural Resources in Zambia. The NCS was prepared by the Government to manage natural resources and the environment in the context of a centrally planned and controlled economy. The Strategy's main goal is to: "...satisfy the basic needs of all the people of Zambia, both present and the future generations, through the wise management of natural resources".

The strategy establishes policies and devises plans and to aims at fully integrating conservation into Zambia's social and economic development. It also aims to analyze trends and current issues to better anticipate problems and needs. The main objectives of the NCS are to:

- Ensure the sustainable use of Zambia's renewable natural resources such as forests;
- Maintain Zambia's biological diversity; and
- Maintain essential ecological processes and life support systems in Zambia.

The formulation and implementation of the NCS considerably enhanced the conservation of natural resources in Zambia. The NCS triggered the enactment in 1990 of the Environmental Protection and Pollution Control Act, which was a regulatory instrument that cuts across sectors; and led to the creation in 1991, of the Environmental Council of Zambia to regulate environmental matters and deal with related issues.

### **2.1.10 National Environmental Action Plan**

The focus of the National Environmental Action Plan (NEAP) of 1994 is to identify environmental problems and issues, analyze their causes, and recommend necessary interventions. The NEAP was prepared as a comprehensive plan to contain the ever increasing environmental degradation in Zambia. The preparation of NEAP was as a result of Government's desire to update the NCS for the following reasons<sup>12</sup>:

- The economy was undergoing a period of liberalization;
- The main NCS recommendations had been implemented;
- The technical information in the NCS needed updating; and
- There was a requirement by World Bank for a NEAP as a prerequisite for International Development Association (IDA) loan funding.

The NEAP is founded on three fundamental principles:

- The right of citizens to a clean and healthy environment;
- Local community and private sector participation in natural resources management; and
- Obligatory EIA is made compulsory for major development projects in all sectors.

The overall objective of the NEAP is to integrate environmental concerns into Zambia's social and economic development planning process.

### **2.1.11 National Biological Diversity Strategy and Action Plan**

In May 1993 Zambia ratified the Convention on Biological Diversity and as part of the commitment to fulfil its objectives Zambia developed the National Biological Diversity Strategy and Action Plan (NBSAP), which was finalized in 1998. The main goals of the NBSAP are to:

- Ensure the conservation of the full range of Zambia's natural ecosystems through a network of protected areas;
- Conserve the genetic diversity of Zambia's crops and livestock;
- Improve the legal and institutional framework and human resources to implement the strategies for conservation, sustainable use and equitable sharing of benefits from biodiversity management;
- Sustainable management and use of Zambia's biological resources; and
- Develop an appropriate legal framework and the needed human resources to minimize the risks of the use of genetically modified organisms.

### **2.1.12 National HIV and AIDS Strategic Framework**

The National HIV and AIDS Strategic Framework (NASF) 2006-2010 was built on the process of joint annual reviews and a broad consultative process with the cooperating partners. The management intent of the NASF is to:

- Support coordinated, prioritized and knowledge-based scale up of the response;
- Facilitate broad ownership of the response by all partners and practical partnerships for the implementation of the response;
- Represent joint strategic direction of all Partners;
- Enable the involvement of key sectors and decentralized levels in all stages of the process; and
- Guide resource management at the strategic level.

The six themes of the NASF represent the cooperating partners' priority action areas and include:

- Intensifying efforts for prevention of HIV;
- Expanding treatment, care and support for people affected by HIV and AIDS;
- Mitigating the socioeconomic impact of HIV and AIDS;
- Strengthening the decentralized response and mainstreaming HIV and AIDS;
- Improving the monitoring of the multi-sectoral response; and
- Integrating advocacy and coordination of the multi-sectoral response.

**Table 1: Relevant National Legal Provisions**

<b>Legislation</b>	<b>Interpretation of Legislation</b>	<b>Relevance to the Project</b>
Anti-Gender-Based Violence Act, 2010.	An Act to provide for the protection of victims of gender-based violence; constitute the Anti-Gender-Based Violence Committee; establish the Anti-Gender-Based Violence Fund; and provide for matters connected with, or incidental to, the foregoing.	The ZIRC project will open up rural communities and link them to markets resulting in improved livelihoods. This will reduce on the cost of doing business and travel time. This will give vulnerable grouping such as women increased financial security and independence. Increased incomes will result in a reduction of reported incidences of Gender Based Violence (GBV).
Disaster Management Act, 2010	An Act to establish and provide for the maintenance and operation of a system for the anticipation, preparedness, prevention, coordination, mitigation and management of disaster situations and the organization of relief and recovery from disasters; establish the National Disaster Management and Mitigation Unit and provide for its powers and functions; provide for the declaration of disasters; establish the National Disaster Relief Trust Fund; provide for the responsibilities and involvement of the members of the public in disaster management; and provide for matters connected with, or incidental to, the foregoing.	Component 1 of the project will involve emergency road works on feeder roads in disaster areas to ensure communities are not cut off from the main road network. The Disaster Management and Mitigation Unit (DMMU) has been established and mandated to anticipate, prepare and manage disasters should they occur. The DMMU will work in collaboration with RDA to respond to disasters that threaten connectivity of feeder roads.
Employment Act, 1997	An Act to provide legislation relating to the employment of persons; to make provision for the engagement of persons on contracts of service and to provide for the form of and enforcement of contracts of service; to make provision for the appointment of officers of the Labour Department and for the conferring of powers on such officers and upon medical officers; to make provision for the protection of wages of employees; to provide for the control of employment agencies; and to provide for matters incidental to and consequential upon the foregoing.	During project implementation and associated sub projects, various individuals will be engaged to perform multiple tasks. This will require that all contractors on the project adhere to the provision of the employment act and the national labour laws. This will be achieved by creating a conducive work environment, treating workers in a humane manner and remuneration is favourable.



<b>Legislation</b>	<b>Interpretation of Legislation</b>	<b>Relevance to the Project</b>
Employment of Young Persons and Children Act, 2004	An Act to regulate the employment of young persons, and children; and to provide for matters incidental thereto.	During project construction and operational phase of the project, contractors will undertake mandatory screening to ensure that no children are recruited. The will be reinforced by periodic monitoring from RDA officials and Ministry of Labour officials.
Energy Regulation Act, 1995	An Act to establish an Energy Regulation Board and to define its functions and powers; to provide for the licensing of undertakings for the production of energy or the production or handling of certain fuels; to repeal the National Energy Council Act and the Zambia Electricity Supply Act; and to provide for matters connected with or incidental to the foregoing.	The ZIRC project activities will require the use petroleum products for road construction equipment and field vehicles. This will require storage facilities on site for hydrocarbons.
Environmental Impact Assessment Regulations, 1997	A developer shall not implement a project for which a project brief or an environmental impact statement is required under these Regulations, unless the project brief or an environmental impact assessment has been concluded in accordance with these Regulations and the Council has issued a decision letter.	The various activities to be undertaken on the project are likely to trigger environmental and social impact and this will require that site specific environmental instruments be prepared to eliminate or minimize possible impact. At national level, In Zambia the Environmental Impact Assessment (EIA) regulation of 1997 gives guidance, schedules and categories the various project types and the relevant EIA studies to undertaken. It further gives provision on post EIA approval management of projects and guidelines for developing Environmental Social Management Plans (ESMP's) and Resettlement Action Plans (RAP's).
Environmental Management Act, 2011.	An Act to continue the existence of the Environmental Council and re-name it as the Zambia Environmental Management Agency; provide for integrated environmental management and the protection and conservation of the environment and the sustainable management and use of natural resources; provide for the preparation of the State of the Environment Report, environmental management strategies and other plans for environmental	Implementation of the ZIRC will involve construction works. This will require that screening be undertaken and appropriate EIA's be developed for various subprojects and activities. Specific and generic ESMP's will also be prepared in accordance with the

Legislation	Interpretation of Legislation	Relevance to the Project
	management and sustainable development; provide for the conduct of strategic environmental assessments of proposed policies, plans and programmes likely to have an impact on environmental management; provide for the prevention and control of pollution and environmental degradation; provide for public participation in environmental decision making and access to environmental information; establish the Environment Fund; provide for environmental audit and monitoring; facilitate the implementation of international environmental agreements and conventions to which Zambia is a party; repeal and replace the Environmental Protection and Pollution Control Act, 1990; and provide for matters connected with, or incidental to, the foregoing.	provisions of the ZEMA EIA regulations.
Explosives Act, 1995	An Act to make provision for regulating control over the manufacture, use, possession, storage, importation, exportation, transportation and destruction of explosives; and to provide for matters incidental thereto or connected therewith.	Explosives may be used at quarry sites and road construction for the purpose of sourcing aggregate and opening up new areas. This will require compliance with the explosives act to ensure the safety of construction staff and surrounding communities.
Factories Act, 1994	An Act to make further and better provision for the regulation of the conditions of employment in factories and other places as regards the safety, health and welfare of persons employed therein; to provide for the safety, examination and inspection of certain plant and machinery; and to provide for purposes incidental to or connected with the matters aforesaid.	The ZIRC sub-projects to improve feeder roads will require the use of machinery for construction works which is regulated under this Act in terms of its usage and safety of workers. The developer will ensure that all issues with regards to safety, health and welfare of all persons employed at the construction site are addressed in line with the provisions of this Act.
Fisheries Act, 2011	An Act to provide for the appointment of the Director of Fisheries and fisheries officers and provide for their powers and functions; promote the sustainable development of fisheries and a precautionary approach in fisheries management, conservation, utilisation and development; establish fisheries management areas and fisheries management committees; provide	Fisheries including aquaculture continues to be the main stay of many farmers across Zambia and is a rich source of protein. This has however remained at subsistence levels despite the country being endowed with

Legislation	Interpretation of Legislation	Relevance to the Project
	for the regulation of commercial fishing and aquaculture; establish the Fisheries and Aquaculture Development Fund; repeal and replace the Fisheries Act, 1974; and provide for matters connected with, or incidental to, the foregoing.	abundant water resources. The ZIRC project will increased access to markets by ensuring that access roads are passable. RDA will work in close collaboration with the fisheries department in order to maximise returns from this sector and contribute to improved nutrition across the country.
Forests Act, 2015	An Act to provide for the establishment and declaration of National Forests, Local Forests, joint forest management areas, botanical reserves, private forests and community forests; provide for the participation of local communities, local authorities, traditional institutions, non-governmental organisations and other stakeholders in sustainable forest management; provide for the conservation and use of forests and trees for the sustainable management of forests ecosystems and biological diversity; establish the Forest Development Fund; provide for the implementation of the United Nations Framework Convention on Climate Change, Convention on International Trade in Endangered Species of Wild Flora and Fauna, the Convention on Wetlands of International Importance, especially as Water Fowl Habitat, the Convention on Biological Diversity, the Convention to Combat Desertification in those Countries experiencing Serious Drought and/or Desertification, particularly in Africa and any other relevant international agreement to which Zambia is a party; repeal and replace the Forests Act, 1999; and provide for matters connected with, or incidental to, the foregoing.	The project is likely to result in the loss of vegetation as most feeder roads have been left unattended to and highly vegetated. Furthermore, construction activities in some areas are likely to involve opening up new areas for expansion or as alternative routes. Vegetation loss will however, be minimised as the contractors will be restricted to the project footprint.
Gender Equity and Equality Act, 2015	An Act to establish the Gender Equity and Equality Commission and provide for its functions and powers; provide for the taking of measures and making of strategic decisions in all spheres of life in order to ensure gender equity, equality and integration of both sexes in society; promote gender equity and equality as a cross cutting issue in all spheres of life and stimulate productive resources and development opportunities for both sexes; prohibit harassment, victimisation and harmful social, cultural and religious practices; provide for public awareness and training on issues of gender	The project will mainstream gender equality into its project activities to help groupings such as women and children that are marginalized, are more susceptible to climate change, economic shocks and environmental – social risks be more resilient.

Legislation	Interpretation of Legislation	Relevance to the Project
	equity and equality; provide for the elimination of all forms of discrimination against women, empower women and achieve gender equity and equality by giving effect to the Convention on the Elimination of all Forms of Discrimination against Women, the Protocol to the African Charter on Human and People's Rights on the Rights of Women in Africa and the SADC Protocol on Gender and Development; and provide for matters connected with, or incidental to, the foregoing.	
Human Rights Commission Act, 1996	An Act to provide for the functions and powers of the Human Rights Commission; to provide for its composition and to provide for matters connected with or incidental to the foregoing.	The proposed ZIRC project will enhance connectivity and access to markets for the rural population. Increased revenues and quality of life will ensure that the rural population dwellers have a dignified life and a say on their welfare and plight.
Lands Act, 1964	An Act to provide for the continuation of leaseholds and leasehold tenure; to provide for the continued vesting of land in the President and alienation of land by the President; to provide for the statutory recognition and continuation of customary tenure; to provide for the conversion of customary tenure into leasehold tenure; to establish a Land Development Fund and a Lands Tribunal; to repeal the Land (Conversion of Titles) Act; to repeal the Zambia (State Lands and Reserves) Orders, 1928 to 1964, the Zambia (Trust Land) Orders, 1947 to 1964, the Zambia (Gwembe District) Orders, 1959 to 1964, and the Western Province (Land and Miscellaneous Provisions) Act, 1970; and to provide for matters connected with or incidental to the foregoing.	The ATP will involve the development of small infrastructure works to build or upgrade markets points and associated auxiliary structures in the agri-business value chain. The ZIRC project will require access to land during construction and expansion activities. This will require that the provisions on the lands act are taken into consideration with regard to titling and land tenure.
Local Government Act, 1995	An Act to provide for an integrated three tier local administration system; to define the functions of local authorities; to repeal the Local Administration Act and certain related laws; and to provide for matters connected with or incidental to the foregoing.	Project implementation and supervision will require the support of local authorities country wide as they have strong links with the grassroots and farming with the rural communities in their jurisdiction. The function of the local authorities is guided by the provision of the Local Government Act.
Mines and	An Act to revise the law relating to the exploration for, mining and	Quarrying for laterite and aggregate materials

<b>Legislation</b>	<b>Interpretation of Legislation</b>	<b>Relevance to the Project</b>
Minerals Development Act, 2015	processing of, minerals; provide for safety, health and environmental protection in mining operations; provide for the establishment of the Mining Appeals Tribunal; repeal and replace the Mines and Minerals Development Act, 2008; and provide for matters connected with, or incidental to, the foregoing.	will be necessary for primary feeder road construction. A permit will be required under this Act to operate a burrow and quarry material sites. Rehabilitation of burrow pits and quarries created will be done with the guidance of ZEMA and the Ministry of Mines.
National Heritage Conservation Commission Act, 1989	An Act to repeal and replace the Natural and Historical Monuments and Relics Act; to establish the National Heritage Conservation Commission; to define the functions and powers of the Commission; to provide for the conservation of ancient, cultural and natural heritage, relics and other objects of aesthetic, historical, prehistorical, archaeological or scientific interest; to provide for the regulation of archaeological excavations and export of relics; and to provide for matters connected with or incidental to the foregoing.	The project will develop a chance finds procedure to guide contractors on reporting channels and processes. The National Heritage and Conservation Commission (NHCC) will be notified should a chance find be cited and offer guidance on how such sensitive findings should be handled.
National Road Fund Act, 2002	An Act to establish the National Road Fund Agency and to define its functions; to establish the National Road Fund; and to provide for matters connected with or incidental to the foregoing.	The suitability of the project beyond its lifecycle will be secured by finances raised by the National Roads Fund.
Non-Governmental Organisations Act, 2009	An Act to provide for the co-ordination and registration of non-governmental organisations; establish the Non-Governmental Organisations' Registration Board and the Zambia Congress of Non-Governmental Organisations; constitute the Council of Non-Governmental Organisations; enhance the transparency, accountability and performance of non-governmental organisations; and provide for matters connected with or incidental to the foregoing	Non-Governmental Organizations (NGO's) are some of the major stakeholders on the project, Their involvement on the project will range from; information dissemination, educational activities and livelihood initiatives. This will require that NGO's are registered, regulated and adhere to ethical practices set by the Non-Government Organizations Registration Board and The Zambia Congress of Non-Governmental Organizations.
Occupational Health and Safety Act, 2010	An Act to establish the Occupational Health and Safety Institute and provide for its functions; provide for the establishment of health and safety committees at workplaces and for the health, safety and welfare of persons at work; provide for the duties of manufacturers, importers and suppliers of	During the implementation of project activities, personnel involved in construction of infrastructure and their operation will be required to adhere to best practices with

Legislation	Interpretation of Legislation	Relevance to the Project
	articles, devices, items and substances for use at work; provide for the protection of persons, other than persons at work, against risks to health or safety arising from, or in connection with, the activities of persons at work; and provide for matters connected with, or incidental to, the foregoing.	regards to Occupational Health and Safety. Procedures and manuals and regular onsite training will be undertaken to ensure personnel working on site are conversant with the information contained. The project will ensure that high risk areas are clearly marked with restricted access and the provision of the relevant Personal Protective Equipment (PPE) will be mandatory.
Petroleum Act, 2005	An Act to make provision for regulating the importation, conveyance and storage of petroleum and other inflammable oils and liquids; and to provide for incidental matter.	Petroleum product will be used for operations and maintenance of construction machinery, hence stored at the construction site. Transportation, storage and handling of Petroleum products for use at the construction site will be done in line with the provisions of the Act.
Public Health Act, 1995	An Act to provide for the prevention and suppression of diseases and generally to regulate all matters of public health in Zambia.	During project implementation, all activities will incorporate measures that prevent and minimize the spread of diseases in order to protect the health of the general public. The project poses some potential risks to public health and safety during the construction and operational phase. General and domestic waste generated from the road construction camp sites is managed under this Act. Therefore RDA will have to operate according to the stipulations of the Act wherever a camp site has been set up. project will ensure that measures to prevent diseases and pollution dangerous to human health and to any including water supply are taken into account consideration

Legislation	Interpretation of Legislation	Relevance to the Project
		by ensuring that there are good toiletsanitation facilities as well as drainage and waste disposal systems on its premises.
Public Procurement Act, 2008	An Act to continue the existence of the Zambia National Tender Board and re-name it as the Zambia Public Procurement Authority; revise the law relating to procurement So as to ensure transparency and accountability in public procurement; regulate and control practices relating to public procurement in order to promote the integrity of, fairness and public confidence in, the procurement process; repeal and replace the Zambia National Tender Board Act, 1982; and provide for matters connected with or incidental to the foregoing	The project will involve the procurement of works, goods and services and this will require that the process follow the Zambia Public Procurement Authority (ZPPA) guidelines to ensure fairness, transparency, integrity, accountability and promote public and stakeholder confidence. The process will be further complimented by World Bank procurement polices
Public Roads Act, 2002	An Act to establish the Road Development Agency and to define its functions; to provide for the care, maintenance and construction of public roads in Zambia; to regulate maximum weights permissible for transmission on roads; and to provide for matters connected with and incidental to the foregoing.	The Act lists the powers of the Agency which include setting road reserves and drains and define powers for control of structures, road signs and advertisement in the road reserve respectively. It further describes the works of utility companies which includes works for buried pipelines and apparatus. Therefore, construction works along roads and in road reserves require consent of the Road Development Agency whose powers in this case are exercised through Local Authorities.
Roads and Road Traffic Act, 1995	An Act to make provision for the care, maintenance and construction of roads in Zambia, for the control of motor traffic, for the licensing of drivers and motor vehicles, for the compulsory third party insurance of motor vehicles, for the licensing and control of public service vehicles and public services, and for other miscellaneous provisions relating to roads and motor traffic.	During implementation of project activities, they is likely to be disruption to roads and traffic in surrounding areas. This will be during construction activities requiring earthworks in close proximity to roads and delivery of materials. Constructors will be required to adhere to set speed limits, undertake works and bulk deliveries away

Legislation	Interpretation of Legislation	Relevance to the Project
		from off pick time and work within the project footprint to minimize intrusion into surrounding areas.
Tolls Act, 2011	An Act to establish and provide for the operation of toll roads; provide for the charging and collection of tolls; provide for private sector participation in the tolling of roads; repeal and replace the Tolls Act, 1983; and provide for matters connected with, or incidental to, the foregoing.	The project sustainability will be enhanced by the current road tolling being spread out country wide by the National road Fund. Resources from toll plazas will ensure that finances are readily available even after project closure.
Urban and Regional Planning Act, 2015	An Act to provide for development, planning and administration principles, standards and requirements for urban and regional planning processes and systems; provide for a framework for administering and managing urban and regional planning; provide for a planning framework, guidelines, systems and processes for urban and regional planning; establish a democratic, accountable, transparent, participatory and inclusive process for urban and regional planning that allows for involvement of communities, private sector, interest groups and other stakeholders in the planning, implementation and operation of human settlement development; ensure functional efficiency and socio-economic integration by providing for integration of activities, uses and facilities; establish procedures for integrated urban and regional planning in a devolved system of governance so as to ensure multi-sector cooperation, coordination and involvement of different levels of ministries, provincial administration, local authorities, traditional leaders and other stakeholders in urban and regional planning; ensure sustainable urban and rural development by promoting environmental, social and economic sustainability in development initiatives and controls at all levels of urban and regional planning; ensure uniformity of law and policy with respect to urban and regional planning; repeal the Town and Country Planning Act, 1962, and the Housing (Statutory and Improvement Areas) Act, 1975; and provide for matters connected with, or incidental to, the foregoing.	The proposed ZIRC Project must be aligned within the overall District Development Plan and approved land use plans. Compliance: The programme will be operated within the confines of this Act and all necessary applications to be made to the local council before commencement of any project activities
Water Act, 1964	An Act to consolidate and amend the law in respect of the ownership,	The abstraction or use of water during



Legislation	Interpretation of Legislation	Relevance to the Project
	control and use of water; and to provide for matters incidental thereto or connected therewith.	construction and operational activities will be required to be done in a sustainable manner. This will reduce or eliminate incidences of infringing on the rights of other water users to access the resource.
Water Resources Management Act, 2011	An Act to establish the Water Resources Management Authority and define its functions and powers; provide for the management, development, conservation, protection and preservation of the water resource and its ecosystems; provide for the equitable, reasonable and sustainable utilisation of the water resource; ensure the right to draw or take water for domestic and non-commercial purposes, and that the poor and vulnerable members of the society have an adequate and sustainable source of water free from any charges; create an enabling environment for adaptation to climate change; provide for the constitution, functions and composition of catchment councils, sub-catchment councils and water users associations; provide for international and regional co-operation in, and equitable and sustainable utilisation of, shared water resources; provide for the domestication and implementation of the basic principles and rules of international law relating to the environment and shared water resources as specified in the treaties, conventions and agreements to which Zambia is a State Party; repeal and replace the Water Act, 1949; and provide for matters connected with, or incidental to, the foregoing.	During the implementation of the ATP ZIRC project, any activities that are likely to affect water resources will be required to comply with the provision of the water resources will ensure that water resources and ecosystems are protected.
Zambia Wildlife Act, 2015	An Act to governing the affairs of the Zambia Wildlife Authority; establish the Department of National Parks and Wildlife in the Ministry responsible for tourism; provide for the establishment, control and management of National Parks, bird and wildlife sanctuaries and for the conservation and enhancement of wildlife eco-systems, biological diversity and objects of aesthetic, pre-historic, historical, geological, archeological and scientific interest in National Parks; provide for the promotion of opportunities for the equitable and sustainable use of the special qualities of public wildlife estates; provide for the establishment, control and co-management of Community Partnership Parks for the conservation and restoration of	The construction, activities on the project may affect flora and fauna in the area. The project will ensure that all personnel on site undergo orientation on how to handle the siting of wild species. During construction activities, effluent discharge to water bodies, as well as emission of air pollutants may affect the environmental quality of wildlife habitats especially aquatic habitats in wild ecosystems either in open areas and/or game

Legislation	Interpretation of Legislation	Relevance to the Project
	<p>ecological structures for non-consumptive forms of recreation and environmental education; provide for the sustainable use of wildlife and the effective management of the wildlife habitat in Game Management Areas; enhance the benefits of Game Management Areas to local communities and wildlife; involve local communities in the management of Game Management Areas; provide for the development and implementation of management plans; provide for the regulation of game ranching; provide for the licensing of hunting and control of the processing, sale, import and export of wild animals and trophies; provide for the implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora, the Convention on Wetlands of International Importance especially as Waterfowl Habitat, the Convention on Biological Diversity, the Lusaka Agreement on Cooperative Enforcement Operations Directed at Illegal Trade in Wild Fauna and Flora and other international instruments to which Zambia is party; repeal the Zambia Wildlife Act, 1998; and provide for matters connected with, or incidental to, the foregoing.</p>	<p>management areas and National parks. Measures to prevent or reduce any negative impacts on wildlife ecosystems will be included in the Environmental and Social Management Framework (ESMF).</p>

## **2.2 Institutional Framework and the EIA Process in Zambia**

This section discusses the key road sector agencies, as well as the other stakeholder institutions whose statutory functions bear on or relate to the sector or activities thereof.

### **2.2.1 Zambia Environmental Management Agency**

By administering the Environmental Management Act (EMA) of 2011, the ZEMA is the major environmental institution in Zambia and the main lead agency on matters pertaining to EIA. It is empowered by the EMA to identify projects, plans and policies for which Environmental Impact Assessment is necessary. Through Statutory Instrument No. 28 of 1997, the ZEMA is responsible for facilitating the EIA process and for quality control of environmental assessment statements. The ZEMA is further responsible for supervision of the implementation of Environmental and Social Management Plans (ESMPs).

The services provided by the ZEMA include:

- i) review of environmental impact statements (EIS) and decision making;
- ii) disclosure of the EIS to the public through the media;
- iii) holding public meetings to discuss the EIS;
- iv) conducting verification surveys of the affected environment;
- v) monitoring the project once implemented; and
- vi) conducting compliance audits of the project between 12 and 36 months after implementation.

### **2.2.2 Road Development Agency**

In Zambia, road projects are initiated by the Road Development Agency (RDA). The RDA will identify new roads to be rehabilitated to augment the Zambian road network or they will determine which roads are to be upgraded.

As the developer/project proponent, the RDA is responsible for:

- i) the preparation of project documents and providing information regarding the nature and scope of the project;
- ii) sub-contracting design work and/or construction activities to engineering consultants and contractors;
- iii) planning and supervising all sub-contracted work;
- iv) commissioning and paying for EIA studies through the consultant;

- v) ensuring the implementation of the Environmental and Social Management Plan;
- vi) facilitating consultations with the potentially affected public or other stakeholders and the Zambia Environmental Management Agency.

### **2.2.3 Environmental and Social Management Unit**

The Environmental and Social Management Unit (ESMU) was established in the Road Development Agency with the task of developing an environmental management system within the sector. In order to achieve operational efficiency, and in line with Zambia's institutional arrangements regarding the environment, the ESMU works in close collaboration with the Zambia Environmental Management Agency (ZEMA).

The role of the ESMU in the EIA process is:

- i) To be responsible for sensitisation of the public on environmental impacts of road improvement related activities;
- ii) To facilitate the integration of environmental concerns into all road projects, road rehabilitation, maintenance and construction;
- iii) To approve the appointment of the EIA team and peer review the EIA outputs e.g. scoping report, Environmental Impact Statement (EIS);
- iv) To facilitate the carrying out of EIAs and conduct monitoring work related to road works;
- v) Promote the involvement and cooperation of various government institutions in mitigation efforts where there are cross-sectoral effects e.g. water pollution, soil erosion, impacts on biodiversity etc.;
- vi) To prepare and revise technical standards and regulations regarding EIAs for roads;
- vii) To collaborate with other agencies on the development and implementation of road works.

It is expected that key stakeholders in roads project should work in close collaboration with ESMU staff at all stages of the EIA process.

### **2.2.4 Government Institutions and Agencies**

Environmental issues cut across a wide variety of sectors and there are a number of government institutions and agencies that are involved in environmental management. Some sectoral agencies and planning authorities that may have to be contacted for a road project include:

- i) Ministry of Lands;

- ii) Department of Forestry (if forestry areas are affected or protected species must be removed);
- iii) Department of Water Affairs (for river crossings);
- iv) Ministry of Mines and Minerals Development (for quarries and borrow pits);
- v) National Heritage Conservation Commission (heritage sites);
- vi) Zambia Wildlife Authority (if the road passes through any protected area).

In addition to government authorities there are other important stakeholders in the EIA process. These include:

- i) Consultants (these are mainly engineering firms but include environmental and social specialists in conducting their work);
- ii) The public which includes those persons directly affected by the road development, civil society and NGOs/CBOs;
- iii) Contractors.

### **2.2.5 Environmental and Social Consultants**

Independent environmental consultants are normally sub-contracted by engineering consulting firms to undertake EIA studies and compile the Environmental Impact Statement (EIS). The consultant's team should comprise an experienced team leader, a public participation facilitator and a number of specialists, depending on the type of project, its impacts and the nature of its location. The team leader should have previous road project experience.

The role of the environmental and social consultants includes the following:

- i) Contribute the environmental and social input to the route planning process;
- ii) Facilitate the public consultation meetings;
- iii) Prepare the scoping report;
- iv) Conduct environmental and social studies;
- v) Evaluate alternatives from an environmental and social point of view.

The environmental and social consultants is required to work closely with the ESMU and the engineering design team to ensure the continuous flow of information and feedback relating to route options, camp and borrow pit alternatives and design parameters.

### **2.2.6 The Public**

In view of the socio-economic implications of most investment projects, it has become established practice to involve potentially affected people during the implementation of the environmental and social assessment process. Public participation in project formulation and implementation is also a legislative requirement under the Environmental Management Act of 2011.

Involvement of the public is important to ensure that projects are not only economically viable and environmentally sustainable but also that they are socially acceptable. The public brings local knowledge relevant to the project and can assist in designing mitigation measures that prevent social disruption and maximize human welfare.

### **2.2.7 Contractors/Construction Companies**

From to time the Road Development Agency sub-contracts out construction work for new roads, rehabilitation and/or road upgrade projects to engineering construction companies. Based on the point of departure, these companies may be responsible for:

- i) Site mobilisation and setting up of camps;
- ii) Sourcing and extraction of materials for road construction (gravel and aggregate);
- iii) Project implementation.

These companies may do all the work in house or they may sub-contract various components out to smaller companies. In each case, the contractors need to be made aware of the environmental and social conditions contained in the Environmental and Social Management Plan, which must be included in the Contract Documents, and in view of that they are tendered accordingly.

**Table 2: Relevant Institutions**

No.	Institution	Mandate	Potential Roles and Responsibilities
1.	Road Development Agency (RDA)	<ul style="list-style-type: none"> <li>• RDA is mainly responsible for planning, designing and supervision of road works.</li> <li>• Undertaking emergency road works and repairs.</li> </ul>	<ul style="list-style-type: none"> <li>• Coordinating project implementation by the designated implementing agencies,</li> <li>• Supervision, quality assurance, monitoring and reporting,</li> <li>• Provide the secretariat (Resettlement Coordinator) for the project Steering Committee chaired by the Road Development Agency,</li> <li>• Disbursement of project funds</li> <li>• Ensuring the carrying out of social surveys and related assessments,</li> <li>• Ensuring the participation of other stakeholders such as the project affected community and non-governmental organisations,</li> <li>• Overseeing the implementation process and ensuring compensation and rehabilitation mechanisms are implemented adequately,</li> <li>• Monitoring and evaluation of affected projects.</li> </ul>
	Zambia Environmental Management Agency (ZEMA)	<ul style="list-style-type: none"> <li>• The Zambia Environmental Management Agency (ZEMA) is a lead agency on all matters of environment in Zambia. It is empowered by the Environmental Management Act of 2011 (Cap 204) to do all such things as are necessary to protect the environment and control pollution so as to provide for the health and welfare of persons, animals, plants and the environment. It is further empowered to identify projects, plans and policies for which environmental assessment are necessary and ensure that</li> </ul>	<ul style="list-style-type: none"> <li>• Its roles include managing the EIA process, making decisions and ensuring that management occurs in accordance with the decision made. In this regard the ZEMA reviews reports including the project brief, EIA and follow-up, monitoring reports. The Agency also helps the project proponent to establish a public consultation process.</li> </ul>

		the same is done in line with the provisions of EIA regulations.	
2.	Ministry of Local Government	<ul style="list-style-type: none"> <li>• Implementation and maintenance of a decentralised planning system in Local Government,</li> <li>• Formulation of guidelines for the creation of efficient information systems management and application strategy for Local Authorities,</li> <li>• Technical support on the development and management of roads which fall under the jurisdiction of Local Authorities,</li> <li>• Technical support in capacity and institutional building for infrastructure development and management in districts,</li> <li>• Institutional support to local authorities, in project planning, implementation and evaluation in infrastructure development and management in districts,</li> <li>• Technical advice to Provincial Local Government Officers on the maintenance of a decentralized system, and</li> <li>• Advice and guidelines to the Ministry and Local Authorities on financial planning and capital budgetary systems.</li> </ul>	<ul style="list-style-type: none"> <li>• Co-ordinating and organising activities within and outside the organisation,</li> <li>• Supervising and/or carrying out environmental and social studies that will lead to the design of the EMPs/RAP for the project,</li> <li>• Co-ordinate and carry out routine monitoring activities during the implementation of activities, and</li> <li>• Carry out or cause others to carry out an evaluation of the EMP/RAP once implemented.</li> </ul>
3	Department of Resettlement under the Vice President's Office	<p>The Department performs the following functions:</p> <ul style="list-style-type: none"> <li>• Identification and acquisition of land for resettlement;</li> <li>• Planning of resettlement schemes;</li> </ul>	<ul style="list-style-type: none"> <li>• Livelihoods assessment and enumeration of PAPs;</li> <li>• In consultation with the Resettlement coordinator, land identification for resettlement;</li> <li>• Land acquisition negotiations and documentation;</li> <li>• Lay out planning of site(s) particularly for</li> </ul>



		<ul style="list-style-type: none"> <li>• Demarcation of farm plots;</li> <li>• Processing applications for resettlement;</li> <li>• Allocation of settlement farm plots to suitable applicants;</li> <li>• Recommending deserving settlers to acquire certificates of title to their farm plots from, the Ministry of Lands;</li> <li>• Co-ordinating provision of infrastructure in resettlement schemes and managing the resettlement programme and resettlement schemes.</li> </ul>	<p>agricultural related land use;</p> <ul style="list-style-type: none"> <li>• Work closely with local authorities and Department of Infrastructure and Support Services;</li> <li>• Sit on the steering committee.</li> </ul>
4	District Councils	<ul style="list-style-type: none"> <li>• Implementation of the Local Government Act</li> </ul>	<p>Project identification, supervision, monitoring and evaluation.</p> <ul style="list-style-type: none"> <li>• District Councils being closer to project affected persons will be critical in ensuring participation of such affected groups as they understand the cultural dimensions of such groups.</li> </ul>
5	NGOs & Private Sector Agencies	<ul style="list-style-type: none"> <li>• Advocacy and facilitation</li> </ul>	<ul style="list-style-type: none"> <li>• Ensuring that community concerns are taken into account at every stage of the planning and implementation process.</li> <li>• Providing information on behalf of the community about key aspects that require consideration in the assessment process, and</li> <li>• Participating in the supervision, Monitoring and evaluation of project activities.</li> <li>• Organising the community's participation in the planning and undertaking of the resettlement planning activities.</li> </ul>
6	Ministry of Infrastructure and Housing	Ministry of Infrastructure and Housing is responsible for infrastructure development and is supposed to improve co-ordination between the Local Authorities, Donors, NGO's and other Agencies. The Ministry is	<ul style="list-style-type: none"> <li>• Co-ordinating and organising the resettlement programme within and outside the organisation,</li> <li>• Supervising and/or carrying out studies that will form the resettlement plan leading to the design of the Resettlement Action Plan,</li> </ul>

		<p>responsible for:-</p> <ul style="list-style-type: none"><li>• Co-ordination and supervision of donor funded projects,</li><li>• Formulation of guidelines for the creation of efficient information systems management and application strategy for local authorities,</li><li>• Implementation and maintenance of a decentralized planning system in Local Government,</li><li>• Formulation of Local Authority Service Provision policy.</li></ul>	<ul style="list-style-type: none"><li>• Co-ordinate and carry out routine monitoring activities during the implementation of the resettlement plan, and</li><li>• Carry out or cause others to carry out an evaluation of the plan once implemented.</li></ul>
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## CHAPTER 3

### 3 WORLD BANK SAFEGUARD POLICIES OVERVIEW

As a key financing institution, the World Bank is committed to supporting developmental projects, while eliminating or minimizing any adverse impacts or risks on the environment, society and human health. These impacts can be severe or moderate, localized or regional, short or long term. In order to minimize and manage environmental and social impacts, the Bank's operational policies are triggered and the environmental assessment (EA) is key process of the Bank due diligence. These safeguards provide a mechanism and tools for ensuring integration of environmental concerns and social issues into the planning and implementation of development projects financed by the Bank.

The Bank has a total of ten safeguard policies, which can be triggered depending on the nature and complexity of the proposed projects or sub-projects. In the context of the proposed mining remediation and improvement project, and the associated sub-projects, three (3) of the ten (10) safeguard policies have been triggered. Table 3 below shows the World Bank safeguard policies that have been triggered to mitigate possible impacts during the project and in associated sub-projects.

#### 3.1 Safeguards Approach

The project includes a number of activities for which screening may be required leading to preparation of EIA's and simplified ESMP's. Contracts will cover improvement of feeder roads, construction of drainage structures, small bridges, emergency works, maintenance, and community facilities in support of agricultural development. For instance, subprojects and activities under component 1 will require screening and where applicable undertake the necessary environmental assessment. The ESMF provides the procedures to address the environment and social risks. However the details under this sub-component such as the site details, including designs are expected to be available during the course of project implementation. Table 1 highlights the anticipated subprojects and investments envisaged under the project.

**Table 3: Project Categorisation and anticipated subprojects**

Project Category	Project Component	Anticipated Sub-Projects
Infrastructure/Construction related	Component 1	<ul style="list-style-type: none"><li>• Periodic maintenance of feeder roads that will involve; grading and the enforcement with a layer of laterite (gravel)</li><li>• Construction of drainage structures and small bridges</li><li>• Emergency road works in disaster areas</li></ul>
Income Generating Activities		<ul style="list-style-type: none"><li>• Maintenance of community Agro facilities in rural areas.</li></ul>

### **3.1.1 World Bank Safeguard Policies**

The World Bank's policy on disclosure requires that all the people residing in the given areas of a project have the right to be informed of the proposed development project in their respective areas. Prior to project appraisal therefore, the summary of the study of the development action along with other relevant information should be disclosed to or at the level of the Bank and the project area.

As a key financing institution, the World Bank is committed to supporting development projects in a manner that protects people from any form of adverse impacts while ensuring that there is little environmental damage both in the short and long term. In order to minimize and manage environmental and social impacts, the Bank's operational policies and procedures require "environmental assessment (EA) of projects proposed for Bank financing" as part of their due diligence. These safeguards provide a mechanism and tools for ensuring integration of environmental concerns and social issues into the planning and implementation of development projects financed by the Bank. The Bank has a total of ten safeguard policies which are triggered depending on the nature and complexity of the proposed projects or sub-projects.

The World Bank 'Environmental and Social Safeguard Policies' consist of the following Operational Policies (OP).

- Environmental Assessment (OP 4.01)
- Natural Habitats (OP 4.04)
- Pest Management (OP 4.09)
- Indigenous People (OP 4.10)
- Physical Cultural Resources (OP 4.11)
- Involuntary Resettlement (OP 4.12)
- Forestry (OP 4.36)
- Safety of Dams (OP 4.37)
- Projects on International Waterways (OP 7.50)
- Public Disclosure (BP 17.50)

In the context of the ZIRC Project, the World Bank Safeguard policies are relevant to ZIRC project and will be triggered by the ZIRC subprojects depending on the nature of the activities as discussed below:

A brief overview of relevance and objectives of these safeguard policies are explained in the sections below and for full policies, refer to the website: [www.worldbank.org](http://www.worldbank.org).

### **3.1.2 Environmental Assessment (OP 4.01)**

The objective of the policy is to ensure that Bank-financed projects are environmentally and socially sound and sustainable, and that decision-making is improved through appropriate analysis of actions and of their likely environmental and social impacts.

The OP 4.01 requires among others that screening for potential impacts is carried out early, in order to determine the level of EA to assess and mitigate potential adverse impacts. The Bank's project screening criteria group projects into three categories:

**Table 4: World Bank Project Classification**

Classification	Type of sub-project	Safeguard Instrument
<b>Category A:</b>	A proposed project is classified as Category A if it is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented. These impacts may affect an area broader than the sites or facilities subject to physical works. The ZIRC project has been categorized as B and is envisaged not to have activities or subproject that fall within category A.	During project design and preparation the project will not have any category A subprojects as defined by the Bank Policy.
<b>Category B:</b>	A <i>Category B</i> project has potential adverse environmental impacts on human populations or environmentally important areas - including wetlands, forests, grasslands, and other natural habitats - which are less adverse than those of Category A projects. These impacts are site-specific; few if any of them are irreversible; and in most cases mitigation measures can be designed more readily than for Category A projects. The scope of EA for a <i>Category B</i> project may vary from project to project, but it is narrower than that of Category A assessment. Like Category A, a <i>Category B</i> environmental assessment examines the project's potential negative and positive environmental impacts and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance.	<p>This will be applicable on activities on the projects that will involve the</p> <ul style="list-style-type: none"> <li>• Periodic maintenance of feeder roads that will involve; grading and the enforcement with a layer of laterite (gravel)</li> <li>• Construction of drainage structures and small bridges</li> <li>• Emergency road works in disaster areas</li> <li>• Maintenance of community Agro facilities in rural areas.</li> </ul> <p>An ESIA or EPB and associated ESMPs depending on the scale and intensity of impacts of subprojects will be applicable in identification and mitigation of impacts.</p>
<b>Category C:</b>	A Category C project is likely to have minimal or no adverse environmental impacts. Beyond screening, no further EA action is required.	This is relevant to the subprojects and activities that will focus on technical assistance without any physical works.

The EA ensures that appropriate levels of environmental and social assessment are carried out as part of project design, including public consultation process, especially for Category A and B projects. The OP 4.01 is applicable to all components of Bank financed projects, even for co-financed components.

The policy covers impacts on the natural environment (air, water and land); human health and safety; physical cultural resources; and trans-boundary and global environment concerns. EA considers natural and social aspects in an integrated way. Particular social aspects (involuntary resettlement, indigenous peoples) as well as issues of natural habitats, pest management, forestry, and safety of dams are covered by separate policies with their own requirements and procedures. However, the environmental assessment process provides insights to ascertain the applicability of other safeguard policies to specific projects. This is especially the case for the

policies on natural habitats, pest management, and physical cultural resources that are typically considered within the EA process.

The policy describes an environmental assessment (EA) process for the proposed project. The breadth, depth, and type of analysis of the EA process depend on the nature, scale, and potential environmental impact of the proposed project. EA evaluates a project's potential environmental risks and impacts in its area of influence; examines project alternatives; identifies ways of improving project selection, siting, planning, design, and implementation by preventing, minimizing, mitigating, or compensating for adverse environmental impacts and enhancing positive impacts; and includes the process of mitigating and managing adverse environmental impacts throughout project implementation. The policy favours preventive measures over mitigation or compensation measures, whenever feasible.

The policy is triggered if a project is likely to have potential (adverse) environmental risks and impacts in its area of influence.

In ZIRC Programme, all sub-projects will be screened in the earliest stages of their preparation to ensure compliance with the policy and ascertain whether other safeguard policies are triggered. Since the ZIRC project has an EA categorization of B, no category A subprojects will be financed on the project.

### **3.1.3 Natural Habitats (OP 4.04)**

The objective of the policy is to support the protection, management, and restoration of natural habitats. The Bank adheres to a precautionary approach to natural resource management to ensure opportunities for environmentally sustainable development. The conservation of natural habitats is essential to safeguard their unique biodiversity and to maintain environmental services and products for human society and for long-term sustainable development.

The policy is triggered by any project with the potential to cause significant conversion (loss) or degradation of natural habitats, whether directly (through construction) or indirectly (through human activities induced by the project). Natural habitats are land and water areas where ecosystems' biological communities are formed largely by native plant and animal species, and human activity has not essentially modified the area's primary ecological functions.

The policy has not been triggered since periodic maintenance of feeder roads will be restricted to already existing roads and alteration of exiting routes will avoid areas of ecological sensitivity.

### **3.1.4 Indigenous People (OP 4.10)**

This policy aims at ensuring that the development process foster full respect for the dignity, human rights and cultural uniqueness of indigenous people; that they do not suffer adverse effects during the development process; that indigenous peoples receive culturally compatible social and economic benefits.

This policy is triggered if there are indigenous groups in the project area; when potential adverse impacts on indigenous people are anticipated; and if indigenous people are among the intended beneficiaries.

Specifically, during the screening of subprojects, the developer will assess whether an opportunity exists for indigenous people to be beneficiaries of the subproject, or if they will in any way be negatively affected by the proposed subproject. If so, an Indigenous Peoples Development Plan (IPDP) will be prepared by the developer, and submitted to ZEMA for their review and clearance. The IPDP will also share with the Bank.

### **3.1.5 Physical Cultural Resources (OP 4.11)**

The objective of the policy is to avoid or mitigate adverse impacts of Bank financed development projects on physical cultural resources. Normally, the Bank would not finance projects that will significantly damage non-replicable cultural property, and will assist only those projects that are sited or designed so as to prevent such damage.

The policy is premised on the need to investigate and take inventory of cultural resources likely to be affected. Mitigations are provided for in cases of adverse impacts on physical cultural resources. Mitigation measures should be undertaken in conjunction with the appropriate authorities, organizations and institutions that are also required to be consulted and involved in the management of cultural property.

The Bank does not support development actions likely to significantly damage nonreplicable cultural property, and does assist only those projects sited or designed to prevent such damage.

This policy applies to physical cultural resources in all projects requiring a Category A or B Environmental Assessment under the OP4.01 on Environmental Assessment under Section 4.1.1. Physical cultural resources are movable or immovable objects, sites, structures, groups of structures, natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. Physical cultural resources may be located in urban or rural settings, and may be above ground, underground, or underwater.

In ZIRC subproject, compliance with this policy will ensure that construction activities will not cause harm to physical cultural resources that may be located in the project area of influence. The policy will be implemented through the EA process. During project implementation the ESIA and ESMP will incorporate a chance find procedure to help manage artifacts of historical and heritage value.

### **3.1.6 Involuntary Resettlement (OP 4.12)**

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 person 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.

Specifically, during the screening of subprojects, the developer will assess whether an opportunity exists for land acquisition and resettlement. If so, then the Consultant will through the ESMF provide for additional project-funded technical assistance to prepare more detailed plans to be implemented at the subproject level such as an Environmental and Social Management Plan (ESMP) or Resettlement Action Plan (RAP) which will serve as guidance for sub projects that involve land acquisition.

### **3.1.7 Forestry (OP 4.36)**

This policy focuses on the management, conservation, and sustainable development of forest ecosystems and their associated resources. It applies to project that may/may not have impacts on (a) health and quality of forests; (b) affect the rights and welfare of people and their level of dependence upon or interaction with forests and projects that aim to bring about changes in the management, protection or utilization of natural forests or plantations, whether they are publicly, privately or communally owned. The Bank does not support the significant conversion or degradation of critical forest areas or related critical natural habitats.

The OP 4.36 aims at enhancing the environmental and social contribution of forested areas, and the need to reduce deforestation. The protection of forests through the control of forest-related impact of all investment operations is a concern of the policy. It promotes the restriction of operations affecting critical forest and conservation areas, while requiring that the sector and other relevant stakeholders should be consulted as appropriate.

This policy is triggered by forest sector activities and other Bank sponsored interventions which have the potential to impact significantly upon forested areas.

Under the ZIRC project, compliance with this policy will ensure that investment activities that are funded under this project have no impact on populations and forests. The policy will be implemented through the EA process.

### **3.1.8 Public Disclosure (BP 17.50)**

The World Bank's Policy on Disclosure of Information is to be open about its activities and to welcome and seek out opportunities to explain its work to the widest possible audience. The Bank has broadened the scope of information about its activities that it makes publicly available. The Bank has established the InfoShop at headquarters, plus regional Public Information Centers (PICs), to serve individuals seeking to obtain Bank information. In addition, Country Offices are encouraged to establish modest PIC services for their country clientele.

This policy is triggered for sub-projects categorized as A and B. The developer consults project affected groups and local NGOs: a) during scoping and before TORs are prepared; b) when the draft EA is available; and c) throughout project implementation as necessary.



The developer provides relevant information in a timely manner prior to consultation and in a form and language accessible to the groups being consulted.

The Borrower makes the draft EA (for category A projects) or any separate EA report (for category B projects) available in country in a local language and at a public place accessible to project-affected groups and local NGOs prior to appraisal. It is good practice to disclose the draft EA report at the InfoShop.

**Table 5: World Bank Safeguards Policies and their relevance to ZIRC Project**

<b>Safeguard Policies</b>	<b>Triggered</b>	<b>Relevance of World Bank Safeguards policies to the mining remediation and improvement project and associated sub-projects</b>
Environmental Assessment OP/BP 4.01 including Environmental Health and Safety Guidelines	Yes	The project will involve the upgrading and maintenance of about 1,800 - 3,000 km of rural roads serving rural communities. Since the specific roads are yet to be defined, it will be required that ESMF be developed by the Road Development Agency (RDA) to address the environmental and social risks. Once the project scope and the exact roads have been identified, RDA will be required to develop an ESIA and the ESMP to comply with the Bank Safeguards policies and the ZEMA requirements at national level
Natural Habitats OP/BP 4.04	No	The policy has not been triggered since periodic maintenance of feeder roads will be restricted to already existing roads and alteration of exiting routes will avoid areas of ecological sensitivity.
Forests OP/BP 4.36	Yes	The policy is triggered as maintenance and upgrade of feeder roads will require the clearance of vegetation and trees to allow for road works.
Pest Management OP 4.09	No	The policy is not triggered because project will not involve the use of pesticides.
Physical Cultural Resources OP/BP 4.11	Yes	The policy has been triggered since the upgrade and maintenance of feeder road will cover a total of 3,600km increasing the likelihood of chance finds. During project implementation the ESIA and ESMP will incorporate a chance find procedure to help manage artefacts of historical and heritage value.
Indigenous Peoples OP/BP 4.10	No	The policy is not triggered as the geographical areas in consideration are not likely to have indigenous people as defined by the Bank policy.
Involuntary Resettlement OP/BP 4.12	Yes	The policy is triggered as the upgrade of feeder roads and possible encroachment on the road reserves may require relocation and resettlement. This will require that an RPF be development to address issues related to resettlement
Safety of Dams OP/BP 4.37	No	The policy is not triggered as it will not involve the construction or maintenance of dams as defined by the Bank policy.
Projects on International Waterways OP/BP 7.50	No	The policy is not triggered as it will not involve financing activities or subprojects lying within riparian areas of international waterways.
Projects in Disputed Areas OP/BP 7.60	No	The policy is not triggered as it will not finance any activities in disputed areas or territories.

### 3.2 Complementarity between Zambian Legislation and World Bank Safeguard Policies

A comparison between Zambian legislation and the operational safeguard policies the World Bank reveals no significant differences or gaps. There are more similarities than there are differences. The two sets of policies and legislation recognize the importance of environmental and social benchmarks in order to mainstream environmental and social issues in development project, and will play a complementary role in the project. However, at national level ZEMA and other relevant Government agencies continue to struggle with effective implementation of ESMP's and retention of qualified staff. This requires that Bank financed projects PIUs have a qualified safeguards focal person to ensure proposed mitigation measures are complied with. Furthermore the Bank should periodically train and support the PIU with regard to adherence to safeguards policies and national environmental requirements.

**Table 6: Complementary roles of World Bank Policies and Zambian Legislation**

WB Safeguard Policies		Zambian Legislations
Environmental	<b>4.01: Environmental Assessment (1999)</b> <b>4.04: Natural Habitats</b> <b>4.36: Forests</b>	<ul style="list-style-type: none"> <li>• Anti-Gender-Based Violence, Act, 2010.</li> <li>• Disaster Management Act, 2010</li> <li>• Energy Regulation Act, 1995</li> <li>• Environmental Impact Assessment Regulations, 1997</li> <li>• Environmental Management Act, 2011.</li> <li>• Explosives Act, 1995</li> <li>• Fisheries Act, 2011</li> <li>• Forests Act, 2015</li> <li>• Lands Act, 1964</li> <li>• Local Government Act, 1995</li> <li>• Mines and Minerals Development Act, 2015</li> <li>• National Heritage Conservation Commission Act, 1989</li> <li>• National Road Fund Act, 2002</li> <li>• Petroleum Act, 2005</li> <li>• Public Health Act, 1995</li> <li>• Public Roads Act, 2002</li> <li>• Roads and Road Traffic Act, 1995</li> <li>• Urban and Regional Planning Act, 2015</li> <li>• Water Act, 1964</li> <li>• Water Resources Management Act, 2011</li> <li>• Zambia Wildlife Act, 2015</li> </ul>
Social	<b>4.12 Involuntary Resettlement (2001)</b>	<ul style="list-style-type: none"> <li>• Anti-Gender-Based Violence, Act, 2010.</li> <li>• Disaster Management Act, 2010</li> <li>• Employment Act, 1997</li> <li>• Employment of Young Persons and Children Act, 2004</li> <li>• Gender Equity and Equality Act, 2015</li> </ul>

WB Safeguard Policies		Zambian Legislations
		<ul style="list-style-type: none"> <li>• Human Rights Commission Act, 1996</li> <li>• Lands Act, 1964</li> <li>• Local Government Act, 1995</li> <li>• Non-Governmental Organisations Act, 2009</li> <li>• Public Health Act, 1995</li> <li>• Public Roads Act, 2002</li> <li>• Roads and Road Traffic Act, 1995</li> <li>• The Workers Compensation Act, 199</li> </ul>

There is a need to streamline and harmonize the various pieces of legislation. Currently, the EMA is probably the closest to overarching legislation for environmental planning and protection. This would require the amendment of the other sectoral acts recognizing the EMA as the main legislation. This is achievable because there is coherence and harmony at the broader national level (Vision 2030 and the Sixth National Development Plan)

## CHAPTER 4

### 4 PROJECT BASELINE INFORMATION

#### 4.1 Geophysical Environment

##### 4.1.1 Location

Zambia is a landlocked country in Southern Africa, and covers an area of 752,614 km<sup>2</sup> (MTENR, NBSAP:1) located between latitudes 8 and 18 degrees south and longitudes 22 and 33 degrees east and is surrounded by Mozambique, Malawi, Tanzania, Democratic Republic of Congo, Angola, Namibia, Botswana and Zimbabwe. The whole country lies on the Central African Plateau with an average altitude of 1200m above sea level. Zambia is divided into ten provinces namely; Central, Copperbelt, Western, North-Western, Eastern, Northern, Muchinga, Luapula and Southern. The proposed ZIRC project will be implemented in all the ten provinces.



Figure 1: Map of Zambia and the 10 Provinces (Sourced from [http://zambiaflora.com/images/zambia\\_administrative\\_divisions.png](http://zambiaflora.com/images/zambia_administrative_divisions.png))

#### **4.1.2 Geology**

The geology of Zambia comprises various rocks and layers dating from over 1,000 million years ago (Precambrian era) to more recent times. These rock formations consist of igneous, sedimentary and metamorphic rocks.

#### **4.1.3 Soils**

Soils in Zambia have been formed from a great diversity of parent materials. However, the characteristics and distribution of the soils are largely influenced by climate particularly rainfall. Zambia lies roughly between latitudes 8° and 18° south of the equator. Zambia experiences strongly clear rainy and dry seasons, the rainy season starts late October in the north and November in the south and lasts up to April and March respectively. Mean annual rainfall exceeds 1100mm in the western part of Northern and the northern part of North-Western Provinces, decreasing southward to Southern Province, only 700mm in southeastern margin of the country. Mean annual temperatures range between 19 – 22°C except in the major river valleys of Zambezi, Luangwa and Luapula. Zambia ranges roughly between 600m and 2000m in the elevation, and it consists of level to gently undulating plateau except the escarpments zones which divide the middle Zambezi and Luangwa valleys.

Geomorphology of Zambia has shown the first four legends as Montane Zone, Central African Plateau, Escarpment Zone and Rift Trough, respectively. The latter two topographical features show the elevation from transitional to lower one. Zambia is underlain by a wide range of rock types. Except the Kalahari system that has been formed from the tertiary to recent period and has covered the west and north-west side of the country, such igneous rocks as granite, gabbro and others in various ages probably older than the Pre-Cambrian period, and the Basement complex which consisted of ancient crystalline rocks like schist, gneiss, quartzite and migmatite in the Pre-Cambrian period formed the Central African Plateau in the north, east and south-east side of the country. In the south-west, west and north-west side of the country, such sedimentary rocks as shale, sandstone, mudstone and limestone in the Katanga system, and in the east, south-east side of the country, lava (basalt), marl, sandstone and others in the Karroo system both from the Lower Paleozoic to the Mesozoic periods also formed the stable land blocks overlying the Basement Complex. These systems and the Complex accompanied by repeated folding and metamorphism through the geological ages have altered the original of the rocks, followed by their slow protrusion, erosion and weathering, various types of soils were formed.

#### **4.1.4 River Systems**

There are two main river systems in Zambia, namely the Zambezi River and the Zaire (Congo) River. The Zambezi River system covers three quarters of the country and can be divided into three smaller systems, the Zambezi, Kafue and Luangwa rivers. The Zaire River system includes the rivers in the northern region, mainly the Chambeshi and Luapula Rivers.

In addition to the above river basins, Zambia has large lakes such Bangweulu, Kariba, Tanganyika, Mweru and Mweru-wa-Ntipa. Lakes Bangweulu, and Mweru-wa-Ntipa lie completely within Zambia while the other lakes are shared with other countries.

In all, the surface water resources are estimated to cover 45,000 km<sup>2</sup> (6%) of the total land area. The Zambezi River basin covers an estimated land area of 1.18 million km<sup>2</sup> (MEWD, NWP:6) and spreads over several country territories within Southern Africa. Of this total area, 578,000 km<sup>2</sup> is within the Zambian territory and constitutes about 77% of the total Zambian land area (MEWD, NWP:6).

The Zambezi basin represents by far the largest water resource for Zambia and is currently used for hydro-power generation at Victoria Falls (108 MW) and Kariba Dam (1,266 MW).

The Kafue River with a total length of 1,576km is part of the Zambezi basin but is completely inside Zambian territory.

The Luangwa River with a total length of 867 km has a basin which consists of some 165,000 km<sup>2</sup> and contributes an estimated 500 cumecs as annual run-off to the Zambezi basin at its confluence with the Zambezi.

The Chambeshi and Luapula rivers are part of the Congo basin and discharge through Lake Mweru into the Congo River which flows towards the west into the Atlantic Ocean. The total length of the Chambeshi from the source to the Bangweulu swamps is about 579 km MEWD, NWP:7). Luapula River on the other hand is 627 km from Lake Bangweulu to Lake Mweru. It also forms the boundary between Zambia and Zaire over a large distance. Within the two basins there is potential for construction of small hydro-power schemes at several locations.

#### **4.1.5 Climate**

Zambia experiences moderately cool sub-tropical climate with three seasons namely; the cool dry (April-August), hot dry (August-November) and hot wet (November-April). Average temperatures range from a mean monthly minimum of 10°C in June and July to a mean monthly maximum of 30°C in October and November. Rainfall varies from 700mm in the south to 1500mm in the north.

### **4.2 Biological Environment**

#### **4.2.1 Biodiversity**

On the basis of the terrestrial biome, Zambia's natural vegetation is characterised by savanna woodland dominated by miombo woodlands which cover about 50% of the country. Mopane and Munga woodlands cover much of the hot and dry southern valleys of the Zambezi and Luangwa.

Zambia has a total of 8,017 species of organisms out of which micro-organisms constitute 8%, plants 47% and fauna 45%. In addition there are a total of 316 of the species which

are endemic, 174 rare and 31 endangered/ vulnerable species of plants and animals (MTENR, NBSAP:10).

#### **4.2.2 Forestry**

Zambia's forests cover an area of 105,700km<sup>2</sup>, equivalent to about 14% of the national land area (MEWD, NWRMP: 18). Out of the total, the Reserve Forests account for 72,000km<sup>2</sup>, 90% of the territory and 68% of the forest area. Miombo woodlands account for 80% of the forested area. It has been observed that deforestation is proceeding as rapidly as 1,390km<sup>2</sup>/year and the main causes identified are forest fires, over grazing, shifting cultivation and high demand for fuel and building timber.

#### **4.2.3 Fisheries Resources**

The Lakes, swamps and flood plains of three main river systems; namely Luapula, Zambezi, Chambeshi, and Kafue River basin form the fisheries of Zambia.

There are over 400 different species of fish recorded in all water bodies of Zambia. The fisheries of Zambia are under increasing pressure due to unsustainable fishing practices, habitat changes, aquaculture practices and aquatic pollution. The observed impacts include, the reduction in number of *Labeco altivelis* in Mweru-wa-Ntipa fish, the replacement of Cyprinids and Charachids by the green-headed bream *Oreochromis macronir* in Lake Kariba, and elimination of species of eel in Zambezi basin due to damming at Kariba and Cabora bosa dams.

### **4.3 Protected Areas**

#### **4.3.1 Forest Reserves**

Forest reserves were established by government to conserve forest resources for sustainable use by local people in the case of local forests and to protect major catchment areas and biodiversity in the case of national forests. There are 432 Forest Reserves in Zambia which cover a total of 7.4 million hectares, (MTENR, NBSAP: 19).

Botanical reserves were established by government for three objectives, namely; a) to preserve some relic vegetation types and/ or plant species, b) to act as sources of germplasm for multiplication and breeding programmes; and c) to act as reference sites in determining human impacts on forest ecosystems outside the reserve. There are 59 botanical reserves in Zambia which cover a total area of 148, 000 hectares. (MTENR, NBSAP:19).

#### **4.3.2 National Parks and Game Management Areas**

National Parks were established by government primarily for the conservation of biodiversity. There are 19 national parks in Zambia and these cover a total area of 6.358 million hectares. Sustainable use of wildlife and its habitats in national parks is promoted through eco-tourism while settlements and hunting are prohibited. (MTENR, NBSAP:14).



Game management areas were established by Government to control the hunting of game and protected animals through a licensing and monitoring system. There are 34 GMAs in Zambia which cover a total area of 16.57 million hectares (MTENR, NBSAP:19). Because other forms of land use, such as settlements and agriculture are allowed, GMAs are not strictly protected areas.

Game ranches support both consumptive and non-consumptive uses of wildlife. There are 28 game ranches in Zambia that have been established by the private sector. Because of the substantial economic benefits derived from game ranching, a number of commercial farmers have opted for game ranching. Game ranching has therefore significantly contributed to biodiversity conservation, especially of rare and endangered animal species. Currently 26 species, mainly of the ungulate group, are covered in game ranches. (See Figure 4 on the specific location on the map of Lakes, National Parks and Game Management Areas).

#### **4.3.3 Wetlands of National and International Importance**

Wetlands have economic, cultural, scientific and recreational value and their loss would be irreparable. They are important for their functions of water retention, recharge, and filter and as regulators of floods, and for being habitats for unique species of plants and animals, especially waterfowl.

In Zambia, Lochnivar National Park in Kafue Flats and Chikuni in Bangweulu basin are protected sites of international importance under the Ramsar Convention.

The Kafue Flats host large numbers of the endemic semi-aquatic antelope Kafue Lechwe (*Kobus Leche kafuensis*) and other large mammals. The flats are an important site for water birds including the globally threatened Crane *Grus carunaulatus*.

The Bangweulu swamp, the tenth largest swamp in Africa, is a good example of a wetland common to more than one bio-geographical region. The site also hosts the globally threatened crane and the endemic semi aquatic Black Lechwe (*Kobus Leche smithemani*.) Birdlife in the Bangweulu swamps is abundant. The Shoebill stork, (*Balaeniceps rex*) is severely threatened.

#### **4.3.4 Cultural and Natural Heritage Properties**

Under the Convention concerning the Protection of the World Cultural and Natural Heritage, selected heritage properties are entered in the World Heritage List on the basis of guidelines set by the World Heritage Committee. In Zambia, so far, only the Victoria Falls, which is shared with Zimbabwe, has been identified as a cultural and natural heritage of world value and is listed and protected under the Convention concerning the Protection of the World Cultural and Natural Heritage. (See Figure 2 and 3 showing the national parks and game management areas, which include archaeological, cultural and historical sites).

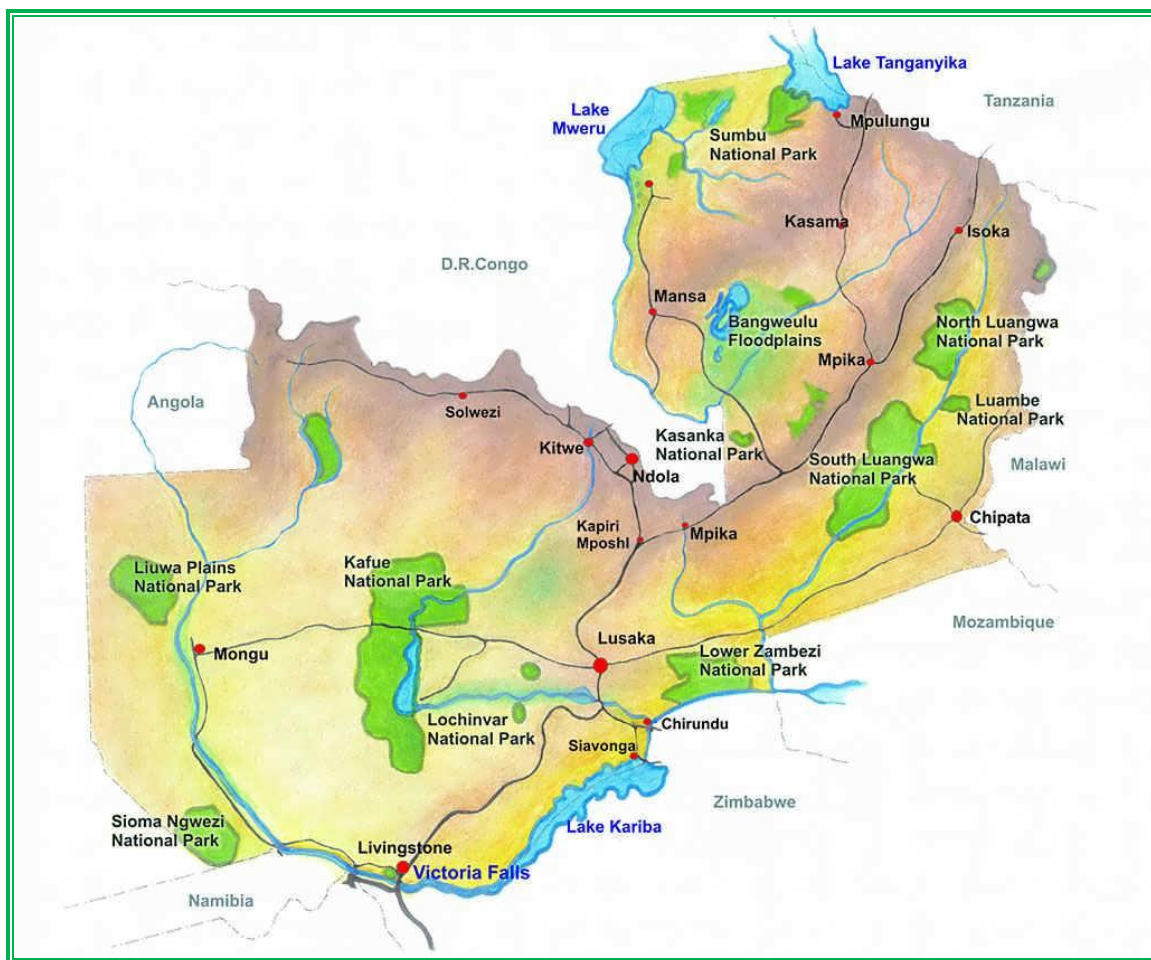


Figure 2: Lakes, National Parks and Game Management Areas (Sourced from: <https://www.afrizim.com/Image/maps/zambia/default.asp>)

## 4.4 Socio-economic Environment

Zambia's economic environment is characterised by heavy dependence on copper mining for the country's export earnings, government revenue, source of employment and Gross Domestic Product (GDP). Despite the potentials of other natural resources, the mining sector will continue to play a role of driving force in the economic development of the country.

Over the past years the world copper prices fell drastically. Zambia had implemented socialist policies during the first and second republics. This situation resulted in a registration of a cash stripped economy and as result of this; Zambia has resorted to heavy borrowing thus precipitating a high debt crisis.

### 4.4.1 Poverty

Zambia is now among of the highly indebted countries in the world. The performance of the economy has had negative impacts on the development of nearly all sectors and the living standards of the people have considerably declined. Poverty is widespread and

very high in Zambia. More than 70% of the households live below the poverty datum line. The poverty situation in Zambia intensifies resource use and its degradation. The incidence of poverty was higher in rural areas (83%) than in urban areas (56%) according to UNDP Zambia Human Development Report of 2003. The poverty situation in Zambia intensifies resource use and its degradation.

#### **4.4.2 HIV/AIDS**

Zambia, like many countries in Sub-Saharan Africa, is a nation gripped by HIV/AIDS, a veritable crisis that is seriously undermining its development.

The National HIV and AIDS Strategic Framework (NASF) 2006-2010 was built on the process of joint annual reviews and a broad consultative process with the cooperating partners. The management intent of the NASF is to:

- Support coordinated, prioritized and knowledge-based scale up of the response;
- Facilitate broad ownership of the response by all partners and practical partnerships for the implementation of the response;
- Represent joint strategic direction of all Partners;
- Enable the involvement of key sectors and decentralized levels in all stages of the process; and
- Guide resource management at the strategic level.

The six themes of the NASF represent the cooperating partners' priority action areas and include:

- Intensifying efforts for prevention of HIV;
- Expanding treatment, care and support for people affected by HIV and AIDS;
- Mitigating the socioeconomic impact of HIV and AIDS;
- Strengthening the decentralized response and mainstreaming HIV and AIDS;
- Improving the monitoring of the multi-sectoral response; and
- Integrating advocacy and coordination of the multi-sectoral response.

#### **4.4.3 Population**

According to Central Statistical Office (CSO, 2010) Zambia's population in 2010 was 13,092,666. This was an increase from 9,885, 591 in 2000. The population grew at an average annual rate of 2.8 percent during the 2000-2010 inter-censal period. This average annual rate was higher than 2.4 percent recorded in the inter-censal period 1990-2000.

Of the total population in 2010, 60.5 percent were residing in rural areas while 39.5 percent were residing in urban areas

## 4.5 Road Network in Zambia

This strategic geographical position makes Zambia an important transit country needing to develop a robust international road core network with harmonized traffic regulations. Zambia has a total classified road network of 67,671Km's of which 37, 000km are gazetted roads and 30,671km are un-gazetted roads classified as feeder, national park and estate roads. Prior to the policy and legal reform under the public road act of December 2002 approximately 21, 000kms of gazetted roads were under the jurisdiction of the Roads Department in the Ministry of Works and Supply (MWS). The balance of the roads was shared by local authorities under the Ministry of Local Government and Housing (MLGH) and the national park roads under the jurisdiction of the National Parks and Wildlife Service (NPWS) now the Department of National Parks and Wildlife. By the end of the 1970s, Zambia's road network was valued at US\$2.3 billion but only about 40 to 50% of the roads were considered to be in good condition. By the end of 1990s, the value of Zambia's road network had shrunk to about US\$1.5 billion due to neglect of maintenance. Currently, the asset value has increased to US\$3.0 billion.

Most of the roads in the country were constructed after independence (between 1964 and late 1970's). At the time, Zambia had one of Africa's most prosperous economies and was classified as a Middle Income Country. With healthy tax revenues from the mining sector and negligible debt, the new Government could afford to embark on major programmes of public investment in road infrastructure. Since their construction, these roads received very little or no maintenance. This is despite the country at that time having had a steady financial income to support maintenance. Government's priority then was to open up the country with a decent road network. The roads were built to very high standards. At the time, the heaviest truck rarely exceeded 20 tons (truck and trailer). Following the nationalization of the copper mines in 1972, there was a sharp economic decline that led to the inadequate resources being available for road maintenance. Thus due to inadequate maintenance, most of the roads had deteriorated sharply by the late 1980s. Coupled with ever dwindling revenue for the country caused by low copper and high fuel prices and depreciation of the Kwacha, it became increasingly difficult for Government to finance the repair of the road network from its annual budgets.

A road condition survey conducted in 1995 on 8,800 km of Trunk, Main and District (TMD) roads revealed that only 20 per cent were in 'good' condition (World Bank, 1997), 29 per cent 'fair' and 51 per cent 'poor'. In addition, 90 per cent of feeder roads were in 'poor' condition. A recent road condition survey of 2013 on 40,454 km of the Core Road Network (CRN) revealed that 72 per cent of Primary Feeder Roads (PFR) was still in poor condition while the composite condition of the TMD network has seen some slight improvements with 56 per cent good, 21.5 per cent fair and 22.5 per cent poor (RDA Condition Report, 2013). This improvement is largely due to major rehabilitation and reconstruction works in the past decade. There is still a need for more emphasis on maintenance of the existing road network to cut down on the high cost of major rehabilitation and maintenance works. This will be best achieved through the development of a comprehensive Road Maintenance Strategy (RMS) that will ensure that there is timely execution of maintenance activities on the road network.

### **4.5.1 Network Condition**

According to a road network condition survey conducted on the CRN in 2013 (RDA Condition Report, 2013), 85 per cent of the paved TMD network was in good condition while 13 per cent and 2 per cent were in fair and poor condition respectively. Similarly for the unpaved TMD network, 12 per cent was in good condition while 70 per cent and 18 per cent was in fair and poor condition respectively. About 72 per cent of the unpaved Primary Feeder Roads were in poor condition with only 18 and 10 per cent in fair and good condition respectively. The Urban roads on the other hand recorded 49 per cent in good condition while 32 and 19 per cent was in poor and fair conditions respectively.

### **4.5.2 Benefits of Road Maintenance**

Though the need for road maintenance is widely recognized, it is still not a number one priority for most developing countries. Most countries spend only about 20 to 50 percent of what they should be spending on maintenance of their road networks (TRN- 4, 2005). According to the RDA 2012 Maintenance Needs Report on the CRN, an annual minimum of US\$721 million needed to be allocated for maintenance activities to bring the road network into a maintainable condition between 2012 and 2016. However, in 2014, only 21.5 per cent of the required yearly maintenance funding was allocated. This meager allocation to maintenance activities is largely attributed to the pre-occupation with new construction and rehabilitation projects and inadequate available resources for maintenance. This has, subsequently over the years, led to most of the roads deteriorating into poor condition. The impacts of poor road maintenance have been mostly borne by the road users in the form of increased Vehicle Operating Costs (VOCs) due to the poor state of the riding surface leading to frequent breakdowns and repairs. There are, however, massive benefits to having roads in a good and fair condition. Outlined below are some of the key benefits to road users when roads are kept in a maintainable condition:

- Improved access to hospitals, schools, markets and tourist sites;
- Improved comfort, speed, and safety; and
- Lower vehicle operating costs.

In order to sustain the above benefits, road development programmes need to be followed by a well planned and an adequately financed Road Maintenance Strategy. In the absence of such a strategy, roads will deteriorate rapidly, preventing realization of the longer term impacts of road improvements on social and economic development.

## **CHAPTER 5**

### **5 DESCRIPTION OF THE ZIRC PROJECT**

#### **5.1 Project Activities**

The project will involve the construction and rehabilitation of feeder roads and drainage structures in rural parts of Zambia. At the time of this appraisal the specific site of the actual road links is not yet established, though these will be rural access roads and tracks that are presently in bad condition but whose alignment is generally defined. The activities of the road improvement works will involve bush clearing to demarcate the road corridors and to improve safety, earthworks to achieve engineered road profiles and excavation of material for road layers. Installation of drainage structures will include channels, culverts, drifts and small bridges.

#### **5.2 Sub Projects Impacts**

The supported sub projects under this project will be small in size and constructed in areas set aside by communities for public use. In addition, this project will support community sub projects that will be identified, designed, implemented, commissioned and operated through a well-defined participatory process, thus no extensive involuntary resettlement is foreseen. Nevertheless, in the event of exemptions, the Environmental and Social Management Framework (ESMF) is being prepared, which will be the basis for undertaking the Environmental and Social Impact Assessment (ESIA) and the preparation of the subprojects' specific Environmental and Social Management Plans (ESMPs).

Principles as well as environmental and social measures which will be applied in all ZIRC funded activities will be in accordance to this ESMF which is in compliance with the laws of the Republic of Zambia and the World Bank Operational Policy (OP) 4.01, OP4.04, OP4.36 and OP4.12. Sub projects to be undertaken under this Project include community roads.

These sub-projects will involve use of land. The impact of this demand for land will vary depending on the situation of the community. For communities without land use plan, the sub-project is likely to cause both positive and negative impacts due to demand of land.

Land might be under uses of some sort, either by individuals or community. Individual land uses include homestead building, crop cultivation, business running, etc.

## CHAPTER 6

### 6 POTENTIAL IMPACTS AND GUIDELINES FOR MITIGATION MEASURES OF ZIRC PROJECT ACTIVITIES

Generally, the project will have positive benefits for the rural population. This ZIRC project, which is focussing on feeder roads improvement in the targeted Districts will generate potential impacts (both positive and negative) directly on people in the rural and indirectly in urban areas. The social impacts identified at this stage are preliminary in nature and will need to be further elaborated and potential for occurrence has to be ascertained during further stages of project design and implementation. This chapter identifies potential impacts that could arise from the activities of the sub-project, either during the construction phase or the operation phase. The identified impacts apply to the socioeconomic environment (health, security, economic activities, employment, and finances), etc.

The following are the potential impacts that could be considered in an Environmental Analysis of ZIRC supported sub-projects.

#### 6.1 Potential Project Benefits

Throughout the construction period, local inhabitants of this area stand to benefit in the following ways:

##### 6.1.1 Socio-economic

The ZIRC project is anticipated to have positive socio-economic implications for people in rural areas where the projects will be implemented. For instance facilities, such as schools, educational services, market access, depots and facilities serve as communal meeting points for many people. Many of these places (eg. schools) are venues for religious meetings and polling points during times of elections. Thus, improving accessibility through the planned road infrastructure rehabilitation will have an important impact on the possibilities for overall poverty reduction as the social and economic benefits of a more connected population are significant.

##### 6.1.2 Impact on Access to Education and Health Facilities

There is a high economic price paid for insufficient access to social facilities, particularly with respect to health and education. Poor people are ill more often and are less likely to have savings to support them during ill health. The roads will increase access to health and educational facilities and trips for social and economic needs to such facilities as health, religious centres, markets, government offices, friends and relatives. Additionally, many of these places in rural areas (e.g. schools) are venues for religious meetings and polling points during times of elections.

Attendance levels at schools are affected by the lack of access roads to schools – both for pupils and teachers. Teachers are not attracted because of the remoteness and associated

difficulties of many poor areas. Construction of the roads will enable school children to get to school throughout the year where previously this was not the case due to the overgrown bush paths that do not guarantee security from being attacked. Better roads also increase the ease of use of mobile health centres. Many rural populations are extremely scattered, and if one health centre was provided for a district it would still be many miles from many villages. Mobile health centres can get round this problem.

### **6.1.3 Market Access, Reduced Travel Time and Cost**

The improved infrastructure will create a corresponding increase in traffic. Other opportunities will result from the general economic improvement of the area due to increased market access and increased traffic flow, which will create further indirect jobs. The roads will support the provision comfortable journeys, reduce congestion and travel time increased private motorised transport. Market Access and will likely contribute to poverty alleviation of rural income are other positive impacts likely be to be gained from the feeder road improvement. This is because the rehabilitation and maintenance of feeder roads will reduce the overall transportation cost and allow exchange of food and goods between regions. Furthermore farmers will get market for their produce access to inputs, and reduced travelling distance.

### **6.1.4 Gender Impacts**

The influx of workers during the construction of the road will not significantly affect the demographic pattern of the communities in terms of numbers and population structure because of the relatively small size of the projects (kilometre length is short). This will also give a great opportunity for women to be employed; this will in turn enhance the situation of women. This can be affected if the contractor has a deliberate policy of giving opportunities to women when hiring workers. However the impact would be selective in those job seekers for work will be dominated by males.

### **6.1.5 Impacts on Employment Creation**

The project will create employment, as the bulk of the staff recruited will be from within the area. The Contractor will commit to a policy that gives priority to the locals in the neighbourhood at the time of employing casual or skilled labour. Employment will also facilitate the transfer of skills such as driving, welding, bricklaying to local employees. Those that will be employed directly will also have potential to accumulate household and economic and productive assets such as bicycles, hoes, wheel barrows, and livestock.

### **6.1.6 Impact on Government and Local Government Revenue**

Revenues shall be collected by the Government in the form of VAT from the Contractors that will be engaged on feeder road Rehabilitation through procurement of construction materials and finishes, employees' salaries, such as; VAT from sold products among others. Local Authorities in possession of road equipment such as excavators, Graders, Water Bowsers and Trucks may hire out the equipment to the Contractor and earn income.



### 6.1.7 Project as in income to Food Sellers

Farmers and food sellers will earn income through the sale of food such as maize, livestock, and sweet beer including vehicles for transportation of construction material.

### 6.1.8 Impact on Income Generation

An increase in population will create a corresponding increase in demand for services such as food for construction workers. These needs will be satisfied by people living within the project area where local women will provide food-vending services and benefit from increase of sales. Roadside vending activities tends to favour women who have demonstrated better preparedness than men and capitalize on them. This impact is considered to be significant and positive. All these avenues are bound to create indirect employment opportunities. Disposable income will be used to pay school fees, uniforms, and other household consumables.

### 6.1.9 Increased Traffic Flow and Market Access

The improved infrastructure will create a corresponding increase in traffic. Other opportunities will result from the general economic improvement of the area due to increased market access and increased traffic flow, which will create further indirect jobs. The roads will support the provision comfortable journeys, reduce congestion and travel time increased private motorised transport.

### 6.1.10 Market Access and Reduced Poverty

Poverty alleviation of rural income are other positive impacts likely be to be gained from the feeder road improvement because the rehabilitation and maintenance of feeder roads will reduce the overall transportation cost and allow exchange of food and goods between regions. Furthermore farmers will get market for their produce access to inputs, and reduced travelling distance.

**Table 7: The table below summarizes the potential positive Social impact associated with Feeder Roads Development Project**

Construction Phase	Potential Impact/ Issue
Gender	Project will impact on gender during the construction of the road. There will be job opportunities for both men and women to be employed; this will in turn enhance the situation of women through adoption of a deliberate policy of giving opportunities to women and men when hiring workers
Social Economic	Positive socio-economic implications for people in rural and peri-urban areas. Facilities, such as schools, educational services, market access, depots and facilities which serve as communal meeting points, weddings venues, cultural and religious meetings, elections, and polls take place will be accessible, making road services available to these facilities will have an important impact on the possibilities for overall poverty reduction since the positive externalities and hence the social benefits of a healthier and more

	connected population are significant
Government revenues	Revenues shall be collected by the Government in the form of VAT on procured construction materials and employees' salaries,
Increased Income	People living within the project will provide food vending services and benefit from increase of sales of food items. Disposable income will be used to pay school fees, uniforms, and other household consumables.
Improved infrastructure Increased Traffic	Quick and efficient flow of traffic and reduced travelling time access to markets in the urban areas
Employment	Many Local People will be employed by the Contractor and therefore earn income
Market Access and Reduced Poverty	Poverty alleviation, rise in rural income because the rehabilitation and maintenance of feeder roads, thus reducing the overall transportation cost and allow exchange of food and goods between regions. Furthermore farmers will get market for their production and earn money and farming inputs.

## 6.2 Potential Negative Social Impact

Impacts resulting from construction activities include site clearance, earthworks, civil works and other activities. The details of these impacts are discussed in the sections below.

### 6.2.1 Loss of Roadside Structures (temporary shelters, sale points)

Pre-construction impacts may rise due to dismantling of existing roadside small structures. Construction activities may cause community convenience vs Consultant's technical judgement for chosen routes. It is anticipated that objects that lie along, besides or near to the roads ear-marked for construction/maintenance might get displaced to pave way for the construction works. This is on account that most of these roads have never been rehabilitated and hence might have lost their boundaries and consequently narrowed down. It is expected therefore that any structures that lie within the radius of the stretch of land along the project road.

Some of the structures likely to be affected include the following include: temporary sale points, makeshift structures, some of which might practically stand in the road, maize fields in case where crops might have been cultivated near or close to the course of the road., This might see a case where crops are deliberately slashed out or trampled upon by machinery or the labourers. Either way crops might have been lost in the process roadside shelters, farm land or even households. Another case might be change or modifications to the design of the road in order to effectively implement the project.

### 6.2.2 Involuntary Resettlement

Assessments will be carried out by professional valuers hired by the Developer. This will result in the resettlement and compensation plans which will be implemented by the Developer together with RDA. Resettlement and compensation plan will be financed by the Developer therefore it will be part of the overall budget of the individual project. This should be done before project works begin.

### **6.2.3 Impacts of HIV/AIDS, Pregnancies**

There are a number of issues to consider related to health. Changes in Health and disease pattern are likely to occur when constructing the roads. These changes will be most noticeable when construction workers move on site. Health issues of concern are HIV/AIDS and STIs. It is necessary to take measures minimise the negative consequences of increased human activity. Measures to minimise the incidences should involve employing increased numbers of locally based staff, employing of women who are may succumb to prostitution due poverty, health HIV/AIDS awareness education, and condom distribution.

The project will entail some labor influx and establishment of work camps in some areas, especially in the first two years of the contracts. For the maintenance part of the OPRC contracts, contractors will be advised to recruit local communities to carry out some of the road maintenance activities. However, there are likely to be potential health impacts. Some of these impacts include, spread of STD /HIV amongst the construction workers and within the community in the vicinity of construction activities etc. The influx of workers can also lead to inappropriate fraternization with host or local communities and in particular women and children. Workers and community members will be sensitized on such risks and a Code of Conduct will be enforced to regulate the workers' behavior. In addition, any child labor will be prohibited.

### **6.2.4 Impacts on Public Health**

Impacts on local community health may arise due to many reasons such as interaction of local people with contractors resulting in relations resulting in sexually transmitted diseases such as STIs/AIDS, Reduced localized air quality due to dust from construction sites and surrounding areas, including the areas along materials transportation route may affect localized air quality through Increased dust levels along roads used for transportation of granular construction materials The impacts usually last in a relative short time, are of low magnitude but can causes nuisances to local people, and disturb local daily life causing and aggravating respiratory conditions such as asthma, emphysema or bronchitis.

Increased localized noise levels and vibration due to earthmoving equipment and machinery, construction plants and construction activities such as piling, excavation or installation of equipment, loading of construction materials, concrete pouring, drilling. Increased localized noise levels usually occur in short term. The scope of impacts would depend on (i) number, frequency and working durations of noise sources, and (ii) time of the day (night time),

### **6.2.5 Impacts on Occupational Health and Safety**

At the construction phase it is anticipated that heavy machinery will be employed. Heavy duty machinery generates a lot of noise, cause carbon dioxide emissions and generate dust and may cause accidents among operators if not handled properly. This is likely to have negative impact on health of the workers. To limit the risk of accidents, safety

procedures will be put in place and enforced by the Health and Safety Officer to ensure that vehicles and machinery only drive in designated places by authorized personnel.

#### **6.2.6 Strain on Existing Health Facilities**

There is a possible strain on existing health facilities during a construction period and the influx of workers and camp followers, risks from pollution, the potential to spread waterborne diseases and Sexual Transmitted Diseases such as HIV/AIDS unplanned pregnancies or given the poor state of health facilities in many parts of the country, measures may need to be introduced to control any potential health hazards HIV/AIDS, Marriage disruption, Unplanned pregnancies, Prostitution. It is convenient to think that the contractor might have to move in camp within easy access and vicinity of the road being worked on and hence might have to move in with its work force. These workers might engage in temporal affairs with the local women and men.

#### **6.2.7 Population Influx**

Increases in population due to camps and population influx into project areas may present problems in terms of pollution and health. Poor sanitary conditions can lead to the increased biological pollution in the form of E. coli bacteria and unsafe drinking water. Other diseases to be aware of are the spread of malaria (increases in stagnant water) and parasites (unsanitary conditions). Such as increases in population and subsequent strains on social relations should be addressed and monitored. Measures for controlling human impacts could involve not establishing construction road work camps in and working with local authorities in limiting population influx.

#### **6.2.8 Land Acquisition and Resettlement**

There will be no displacement of people living in the ZIRC sub-program areas. However, small parcels of land may be required in road sections where the design will necessitate adjustments to existing feeder road alignments, which may imply widening of the road width or re-routing the road in some cases. Construction activities could lead to very limited temporal and/or permanent loss of cultivable land and/or crops at some sub-program areas in some districts. In the case of involuntary resettlement, an Abbreviated Resettlement Action Plan (ARAP) will be prepared to guide the resettlement process.

#### **6.2.9 Gender Concerns**

A further direct and common impact relates to gender differences in incomes for the same position and a tendency to provide income that is below the legal standards in the country. Often women receive less income than men, for doing the same job and in the same position. Contractors will be required to develop an equal opportunity employment policy that does not discriminate on grounds of gender. Income will be monitored both in terms of gender disaggregation and to ensure compliance to the minimum wages act.

**Table 8: The table below highlights the social impacts/risks and proposed mitigation measures associated with the ZIRC project**

Project Component	Project Activities	Risk/Impact	Mitigation Measures	Responsibility	Accountability
Component 1	<ul style="list-style-type: none"> <li>Periodic maintenance of feeder roads that will involve; grading and the enforcement with a layer of laterite (gravel)</li> <li>Construction of drainage structures and small bridges</li> <li>Emergency road works in disaster areas</li> </ul>	Socio Economic risks associated with road maintenances	Periodic maintenance of feeder roads, the construction of drainages and dams and emergency works will result in disturbances of structures, crops and households. RDA and the contractor will ensure that construction activities are restricted to the project footprint and road reserves. Furthermore, deviation or addition of a new route for the roads will follow a route with the least impacts such as few settlements and farm lands.	RDA, Road Contractors and Municipality	RDA
	<ul style="list-style-type: none"> <li>Periodic maintenance of feeder roads that will involve; grading and the enforcement with a layer of laterite (gravel)</li> <li>Construction of drainage structures and small bridges</li> <li>Emergency road works in disaster areas</li> </ul>	Destruction of roadside structures and displacement.	During project implementation, construction activities are likely to result in resettlements and remove of roadside structures and stores. Issues relating to resettlement will be dealt with in line with the recommendation of the RPF, to ensure the interests of the PAP's are taken into consideration.	RDA, ZEMA, Road Contractors and Municipality	RDA and ZEMA
	<ul style="list-style-type: none"> <li>Periodic</li> </ul>	Increased	The influx of workers at construction sites will	Road	Road

Project Component	Project Activities	Risk/Impact	Mitigation Measures	Responsibility	Accountability
	<p>maintenance of feeder roads that will involve; grading and the enforcement with a layer of laterite (gravel)</p> <ul style="list-style-type: none"> <li>• Construction of drainage structures and small bridges</li> <li>• Emergency road works in disaster areas</li> <li>• Maintenance of community Agro facilities in rural areas.</li> </ul>	incidence of sexually transmitted diseases.	result in increases incidences of Sexual Transmitted Diseases such as HIV/AIDS. Workers and community members will be sensitized on the dangers posed by HIV/AIDS or other STCs as well as the means of prevention. The influx of migratory labour can also lead to inappropriate fraternization with host or local communities and in particular women and children. Workers and community members will be sensitized on such risks and a Code of Conduct will be enforced to regulate the workers' behavior. Any child labour will be prohibited.	Contractors, Ministry of Health	Contractor
	<ul style="list-style-type: none"> <li>• Periodic maintenance of feeder roads that will involve; grading and the enforcement with a layer of laterite (gravel)</li> <li>• Construction of drainage structures and small bridges</li> <li>• Emergency road works in disaster areas</li> </ul>	Employment and improved livelihood	Construction activities are envisaged to created employment opportunities and good road connectivity will open up remote areas to markets improving livelihoods and incomes for the local communities. The maintenance of agro facilities in the rural area will boost linkages to value chains to ensure farmers get favourable prices for their commodities.	RDA, Ministry of Agriculture and Municipalities	RDA and the Ministry of Agriculture

Project Component	Project Activities	Risk/Impact	Mitigation Measures	Responsibility	Accountability
	<ul style="list-style-type: none"> <li>Maintenance of community Agro facilities in rural areas.</li> </ul>				
	<ul style="list-style-type: none"> <li>Periodic maintenance of feeder roads that will involve; grading and the enforcement with a layer of laterite (gravel)</li> <li>Construction of drainage structures and small bridges</li> </ul>	Loss agricultural land.	Periodic maintenance of feeder roads, the construction of drainages and dams and emergency works will result in loss of agricultural land. RDA and the contractor will ensure that construction activities are restricted to the project footprint and road reserves. Furthermore, deviation or addition of a new route for the roads will follow a route with the least impacts such as few settlements and farm lands.	Road Contractors RDA, Ministry of Agriculture and Municipalities	Road Contractors and RDA
	<ul style="list-style-type: none"> <li>Periodic maintenance of feeder roads that will involve; grading and the enforcement with a layer of laterite (gravel)</li> <li>Construction of drainage structures and small bridges</li> <li>Emergency road works in disaster areas</li> <li>Maintenance of community Agro</li> </ul>	Impact on vulnerable groups	Vulnerable groups such as women will be given preference with regard to job opportunities such as coordinating traffic and support services.	Road Contractors, RDA and Ministry of Labour	RDA and Ministry of Labour.

Project Component	Project Activities	Risk/Impact	Mitigation Measures	Responsibility	Accountability
	facilities in rural areas.				
	<ul style="list-style-type: none"> <li>• Periodic maintenance of feeder roads that will involve; grading and the enforcement with a layer of laterite (gravel)</li> <li>• Construction of drainage structures and small bridges</li> <li>• Emergency road works in disaster areas</li> <li>• Maintenance of community Agro facilities in rural areas.</li> </ul>	Occupational health and safety	The construction areas will be properly secured with signposting, warning signs, barriers and traffic diversions. Signage should inform the public of potential hazards. Provision of safe passages and crossings for pedestrians, along with active traffic management. Adjustment of working hours to prevent disruption of pedestrian access and local traffic patterns, e.g. avoiding major transport activities during rush hours or times of livestock movement Community to be informed about possible temporary restrictions to access. On the job training of workers and provision of appropriate PPE by contractors.	Road Contractors, RDA and Ministry of Labour	Road Contractors and RDA



### **6.3 Potential Biophysical Impact**

#### **6.3.1 Impacts on Land and Soil**

Dust which is raised from gravel access roads by haulage trucks while transporting laterite, stone aggregate, cement, lime, petroleum products and other chemicals may change the soil structure. Soil contamination may be caused by leakages from the asphalt plant operations, poor handling of petroleum products such as oil and fuel spillage during dispensing as well as improper disposal of used oils, hydraulic fluids, toxic and empty oil containers.

Some activities involving site installation, stockpiles preparation, quarrying, construction of detours, access roads, plant park sites and drainage excavation may also cause soil destabilization.

Soil erosion could occur during the construction phase when loose soil is swept by waters and during the construction phase. This will be as a result of the intensive activities that will be going on in the construction areas especially land clearing. The heavy equipment and machines that shall be used in the construction process will interfere with the soil structure making it loose hence liable to erosion. Mitigation shall be by safeguards in construction contracts and requirement to re-vegetate each area upon completion of construction in that area.

#### **6.3.2 Impacts on Vegetation**

The vegetation to be affected most is that which is confined along road reserve and where borrow pits may have to be established. However, in some districts there may be feeder roads that may have to be opened in completely new Greenfield areas. The ecological value of such ecosystems cannot be ignored in that such vegetation stands contain several niches for diversity of animal species and provide a habitat for them. If the design of the road construction is confined to the limits of the road reserve, then this will not affect vegetation clearing in the outlying areas. However, trees within the road reserve should be preserved for ecological and aesthetic reasons. The ZIRC subprojects are in wetland areas with immense biological diversity in areas such as the Bangweulu wetlands, Kafue Flats, etc. Hence impacts on wildlife and wildlife habitats are considered significant.

#### **6.3.3 Impacts on Water Quality**

At the construction phase, the bridges, side drains, and culverts will require cleaning, de-silting, reshaping and repair. Some of the drains and culverts might be prone to soil erosion, which will result in siltation of nearby watercourses. In addition impacts on water quality may be caused by contaminated run-off of petroleum product spillages, leakages from storage areas and heavy vehicles, improper disposal of used oils and from hydraulic fluids, which enter the nearby surface water courses. Similarly, easily eroded destabilized soils may be washed into surface water sources and cause siltation and sedimentation, which will reduce the water quality and impact on aquatic life. Activities

that will give rise to this impact include construction of detours, access roads, drainage channels, excavation and grading works.

At the construction phase water will be needed for various purposes such as for watering down the dust. Abstraction of water in large quantities from local sources may lead to water shortage to the local community. This impact is considered significant.

In some section of the road, the Contractor will set up temporary camps for its labour force and will require sanitation. Construction of sub-standard sanitation facilities such as pit latrines for campsite labour force may contaminate groundwater due to seepage to the groundwater.

Mitigation measures shall include strict monitoring of construction methods and protection of watercourses during construction.

#### **6.3.4 Impacts on Air Quality**

It is anticipated that during construction phase large amounts of soil will be excavated and transported. The equipment used for excavation will generate dust, which can be dispersed by the wind affecting a zone of up to 100m around the excavation site. Emissions to the air in form of exhaust fumes and dust from vehicles and machines including operations from the asphalt plant may cause nuisance to the closest surroundings. Dust raised from gravel access roads by haulage trucks during transportation of materials will also pollute the air of the immediate local environment.

#### **6.3.5 Impacts on Climate Change**

Clearing of vegetation especially trees which acts as a sink for CO<sub>2</sub> could lead to the increase of CO<sub>2</sub> emissions in the atmosphere. It is well known fact that vegetation such as trees acts to sequester carbon from the atmosphere through the process of photosynthesis. Carbon is a known greenhouse gas and has one of the highest global warming potential, which contributes to a rise in global average temperature resulting in climate change. Hence, vegetation clearing will have to be limited to a small section perhaps just along the primary feeder roads earmarked for construction or rehabilitation under ZIRC project.

#### **6.3.6 Impacts of Quarries and Borrow Pits**

At the construction phase, a number of quarries and borrow pits along the route will be opened up. Potential impacts include vegetation clearance and landscape scars resulting from the absence of re-vegetation programmes and poor excavation techniques. Extraction of construction materials from quarries and borrow pits could generate excessive noise caused by blasting, movement of machinery and labourers and thus impact on the nearby communities. Another potential impact associated with this is the increased air pollution due to diesel fumes and dust generation resulting from the presence of construction machinery and site clearing activities.

Quarries and borrow pits have a direct impact on the visual and aesthetic view of the site taken up for such activities. The excavated areas become prone to soil erosion during

rainy season and could contaminate nearby surface water in the absence of proper mitigation measures.

### **6.3.7 Impacts on Cultural and Historic Sites**

In the proposed ZIRC Subproject areas there are a number of cultural and historic sites such as the local forests, local gravesites, etc. The impacts, which are likely to affect these sites are due to dust generation from haulage trucks and vehicles using detour and access roads. The dust will settle on the gravesite and once it has accumulated it is likely to disfigure the outlook. Other activities that may also lead to this impact include location of stockpile nearby the gravesite. In addition construction of detours, access roads near gravesites can disfigure the outlook of the cultural heritage site.

### **6.3.8 Impacts of Noise**

At the construction phase heavy machinery will be used for the excavation of soil. The machinery generates noise and to some extent will cause a certain degree of nuisance to the surrounding environment.

The noise levels of machines and vehicles vary widely and depend on the type of noise generated and level of activity. A front end loader has for instance a power level of 100dB(A) while a truck will have a power level of 85 dB(A). In the worst case a combined power level of 115 dB(A) will be in place during construction which will result in the 50 dB(A) contour being located at a maximum 250m from the construction site. However since the equipment will never work at exactly the same location the 50 dB(A) contour will be confined to the construction site and within the road reserve area.

The common impacts of noise nuisance include annoyance, sleep disturbance and interference with communication. The acceptable levels of noise are deemed to be 40 dB(A) during the night and 50 dB(A) during the day. Since construction will take place during the day only the 50 dB(A) level is of importance.

### **6.3.9 Impacts on Landscape and Aesthetics**

Generation of dust during quarrying, equipment movement including land clearing for stockpiles as well as reshaping during detour, access roads and park site construction distorts the natural landscape and may degrade areas of scenic beauty. In addition extensive excavations and dumping of stripped top soils in scenic area spoils the beauty of the areas.

At decommission phase, abandoned structures, which are left near areas of scenic beauty after construction works including excess construction materials of laterite, stone aggregate and concrete slabs left in areas of scenic beauty reduces the quality scenery.

### **6.3.10 Impacts on Land-use and Surrounding Environment**

Where recruitment of labour is concerned, it is proposed that labour be recruited from local areas otherwise if people who reside far away from the project are taken on then

they may start to settle near the road project and construct temporary houses. Resettlement of communities in new areas shall be done in consultation with host or existing community. It is strongly recommended that local people with the necessary skills shall be employed in the road project

#### **6.4 Mitigation Measures for ZIRC Sub project Activities**

This section proposes mitigation measures for identified potential impacts as discussed in earlier chapters. Mitigation measures are actions that are intended to avoid, alleviate or reduce environmental impacts on the environment. Mitigation measures form a basis on which an Environmental and Social Management Plan is formulated. The mitigation measures are set forth to maximise positive impacts and minimise negative impacts as a result of the proposed ZIRC subproject development.

**Table 9:** The table below highlights the environmental impacts/risks and proposed mitigation measures associated with the ZIRC project.

Project Component	Project Activities	Risk/ Impact	Mitigation Measure	Responsibility	Accountability
<b>Land and Soil</b>					
Component 1	<ul style="list-style-type: none"> <li>• Periodic maintenance of feeder roads that will involve; grading and the enforcement with a layer of laterite (gravel)</li> <li>• Construction of drainage structures and small bridges</li> <li>• Emergency road works in disaster areas</li> <li>• Maintenance of community Agro facilities in rural areas.</li> </ul>	Soil contamination due to improper storage of materials, fuels and poor waste oil disposal methods.	<ul style="list-style-type: none"> <li>• Petroleum products dispensing points shall have drip pans;</li> <li>• Storage of potential pollutants such as fuel, oil and chemicals should be done on sealed surfaces to prevent soil contamination;</li> <li>• Collection and recycling of used oil &amp; lubricants;</li> <li>• Petroleum storage tanks shall have bund walls around and shall be high enough to contain any spillage.</li> </ul>	<ul style="list-style-type: none"> <li>• Roads Contractor and RDA</li> </ul>	<ul style="list-style-type: none"> <li>• Roads Contractor</li> </ul>

Project Component	Project Activities	Risk/ Impact	Mitigation Measure	Responsibility	Accountability
	<ul style="list-style-type: none"> <li>• Periodic maintenance of feeder roads that will involve; grading and the enforcement with a layer of laterite (gravel)</li> <li>• Construction of drainage structures and small bridges</li> <li>• Emergency road works in disaster areas</li> <li>• Maintenance of community Agro facilities in rural areas.</li> </ul>	<ul style="list-style-type: none"> <li>• Soil Erosion</li> </ul>	<ul style="list-style-type: none"> <li>• Limitation of earth moving to dry periods;</li> <li>• Protection of susceptible soil surface with mulch;</li> <li>• Protection of drainage channels by stone pitching;</li> <li>• Installation of sedimentation basins or planting of erodible surfaces as soon as possible.</li> </ul>	<ul style="list-style-type: none"> <li>• Road Contractor, ZEMA and RDA</li> </ul>	<ul style="list-style-type: none"> <li>• Road Contractor</li> </ul>

Project Component	Project Activities	Risk/ Impact	Mitigation Measure	Responsibility	Accountability
	<ul style="list-style-type: none"> <li>• Periodic maintenance of feeder roads that will involve; grading and the enforcement with a layer of laterite (gravel)</li> <li>• Construction of drainage structures and small bridges</li> <li>• Emergency road works in disaster areas</li> <li>• Maintenance of community Agro facilities in rural areas.</li> </ul>	<ul style="list-style-type: none"> <li>• Stripping and stockpiling of topsoil could lead to erosion and degradation of soil quality.</li> <li>• Soil compaction could result following the construction activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Exposed soil should be avoided by selective soil stripping;</li> <li>• Areas requiring less clearing shall be preferred for stock piles. Clearing shall be limited to the site approved by the local authorities.</li> <li>• Only heavy equipment with pneumatic tyres shall be used on access roads.</li> </ul>	<ul style="list-style-type: none"> <li>• Road Contractor, ZEMA, RDA and the Municipality</li> </ul>	<ul style="list-style-type: none"> <li>• Road Contractor and RDA</li> </ul>
<b>Impacts on Vegetation</b>					

Project Component	Project Activities	Risk/ Impact	Mitigation Measure	Responsibility	Accountability
Component 1	<ul style="list-style-type: none"> <li>• Periodic maintenance of feeder roads that will involve; grading and the enforcement with a layer of laterite (gravel)</li> <li>• Construction of drainage structures and small bridges</li> <li>• Emergency road works in disaster areas</li> <li>• Maintenance of community Agro facilities in rural areas.</li> </ul>	<ul style="list-style-type: none"> <li>• Retardation of vegetation growth due to contamination from dust particles and gas emissions.</li> <li>• Loss of vegetation due to site clearing which will lead to loss of habitat and displacement of fauna species, especially avifauna.</li> </ul>	<ul style="list-style-type: none"> <li>• Dust control by application of water;</li> <li>• Haulage trucks shall not exceed the speed limit of 60km/hr.</li> <li>• Less vegetated areas shall be preferred;</li> <li>• Careful site planning;</li> <li>• Implementation of the EIA-EMP mitigation measures.</li> </ul>	<ul style="list-style-type: none"> <li>• Road Contractor, ZEMA and RDA</li> </ul>	<ul style="list-style-type: none"> <li>• Road Contractor</li> </ul>
<b>Impacts on Wildlife and Wildlife Habitat</b>					



Project Component	Project Activities	Risk/ Impact	Mitigation Measure	Responsibility	Accountability
Component 1	<ul style="list-style-type: none"> <li>• Periodic maintenance of feeder roads that will involve; grading and the enforcement with a layer of laterite (gravel)</li> <li>• Construction of drainage structures and small bridges</li> <li>• Emergency road works in disaster areas</li> <li>• Maintenance of community Agro facilities in rural areas.</li> </ul>	<ul style="list-style-type: none"> <li>• Disturbance to birds and small animals and loss of habitat.</li> </ul>	<ul style="list-style-type: none"> <li>• Rehabilitation should be confined to the road reserve area;</li> <li>• Noisy activities to be scheduled to occur within prescribed normal working hours.</li> </ul>	<ul style="list-style-type: none"> <li>• Road Contractor SHEQ Officer and RDA</li> </ul>	<ul style="list-style-type: none"> <li>• Road Contractor</li> </ul>
<b>Impacts on Water Quality</b>					

Project Component	Project Activities	Risk/ Impact	Mitigation Measure	Responsibility	Accountability
Component 1	<ul style="list-style-type: none"> <li>• Periodic maintenance of feeder roads that will involve; grading and the enforcement with a layer of laterite (gravel)</li> <li>• Construction of drainage structures and small bridges</li> <li>• Emergency road works in disaster areas</li> <li>• Maintenance of community Agro facilities in rural areas.</li> </ul>	<ul style="list-style-type: none"> <li>• Siltation of water courses due to soil erosion of nearby drains and culverts.</li> <li>• Water shortage to the local community due to over exploitation for rehabilitation works.</li> <li>• Ground water contamination due to construction of sub-standard campsite pit latrines for workers.</li> </ul>	<ul style="list-style-type: none"> <li>• Sides of the drainage shall be planted with grass or stone pitched;</li> <li>• Drainage systems shall have scour checks;</li> <li>• Drainage systems shall discharge into settlement basins;</li> <li>• Silt traps shall be put along drainage systems;</li> <li>• Exploitation of water sources for rehabilitation works shall be done with approval by the local authority and with consent from the local community.</li> <li>• Proper siting of pit latrines away from water logged areas;</li> <li>• Good hygienic standards and proper maintenance of pit latrines.</li> </ul>	<ul style="list-style-type: none"> <li>• Road Contractor, ZEMA and RDA</li> </ul>	<ul style="list-style-type: none"> <li>• Road Contractor</li> </ul>
<b>Impacts on Air Quality</b>					

Project Component	Project Activities	Risk/ Impact	Mitigation Measure	Responsibility	Accountability
Component 1	<ul style="list-style-type: none"> <li>Periodic maintenance of feeder roads that will involve; grading and the enforcement with a layer of laterite (gravel)</li> <li>Construction of drainage structures and small bridges</li> <li>Emergency road works in disaster areas</li> <li>Maintenance of community Agro facilities in rural areas.</li> </ul>	<ul style="list-style-type: none"> <li>Air pollution caused by exhaust fumes and dust from excavators, bull dozers, graders as well as site clearing will affect human, vegetation and also disturb habitats for birds and insects.</li> <li>Unpleasant odours due to un-maintained toilets and poor waste management.</li> </ul>	<ul style="list-style-type: none"> <li>Regular maintenance of construction vehicles and equipment in order to reduce emission of exhaust fumes;</li> <li>Periodically water down on temporary roads;</li> <li>Cleaning and regular maintenance of toilets to avoid unpleasant odours.</li> <li>Waste should be carefully managed to prevent unpleasant odours.</li> </ul>	<ul style="list-style-type: none"> <li>Road Contractor, ZEMA and RDA</li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>
• Impacts on Noise					
	<ul style="list-style-type: none"> <li>Periodic maintenance of feeder roads that will involve;</li> </ul>	<ul style="list-style-type: none"> <li>Noise and vibration caused by construction machinery, equipment and drilling.</li> </ul>	<ul style="list-style-type: none"> <li>Working hours limited to day light only;</li> </ul>	<ul style="list-style-type: none"> <li>Road Contractor, ZEMA and RDA</li> </ul>	<ul style="list-style-type: none"> <li>Road Contractor</li> </ul>

Project Component	Project Activities	Risk/ Impact	Mitigation Measure	Responsibility	Accountability
	grading and the enforcement with a layer of laterite (gravel) • Construction of drainage structures and small bridges • Emergency road works in disaster areas • Maintenance of community Agro facilities in rural areas.		• Enforcement of the Factories Act by the Factories Inspectorate under the Ministry of Labour.	•	•
<b>Impacts on Landscape and Aesthetics</b>					

Project Component	Project Activities	Risk/ Impact	Mitigation Measure	Responsibility	Accountability
	<ul style="list-style-type: none"> <li>• Periodic maintenance of feeder roads that will involve; grading and the enforcement with a layer of laterite (gravel)</li> <li>• Construction of drainage structures and small bridges</li> <li>• Emergency road works in disaster areas</li> <li>• Maintenance of community Agro facilities in rural areas.</li> </ul>	<ul style="list-style-type: none"> <li>• Disfigurement of the natural landscape and aesthetic view due to construction works.</li> </ul>	<ul style="list-style-type: none"> <li>• Development designs which are compatible with the final slope angles of the surrounding environment.</li> </ul>	<ul style="list-style-type: none"> <li>• Road Contractor, ZEMA and RDA</li> </ul>	<ul style="list-style-type: none"> <li>• RDA</li> </ul>
<b>Impacts on Land-use and Surrounding Environment</b>					

Project Component	Project Activities	Risk/ Impact	Mitigation Measure	Responsibility	Accountability
	<ul style="list-style-type: none"> <li>• Periodic maintenance of feeder roads that will involve; grading and the enforcement with a layer of laterite (gravel)</li> <li>• Construction of drainage structures and small bridges</li> <li>• Emergency road works in disaster areas</li> <li>• Maintenance of community Agro facilities in rural areas.</li> </ul>	<ul style="list-style-type: none"> <li>• Construction of temporary detours will disturb the environment within the immediate and surrounding environment.</li> </ul>	<ul style="list-style-type: none"> <li>• Detours, access roads and equipment park site location shall be done in consultation with local people and take into account the existing land use in settled areas.</li> </ul>	<ul style="list-style-type: none"> <li>• Road Contractor, ZEMA and RDA</li> </ul>	<ul style="list-style-type: none"> <li>• Road Contractor</li> </ul>
	<ul style="list-style-type: none"> <li>• Periodic maintenance of feeder roads that will involve;</li> </ul>	<p>If labour is not recruited from local areas people who reside far may start to settle near the road project.</p>	<ul style="list-style-type: none"> <li>• Local people with the necessary skills shall be employed in the road project;</li> </ul>	<ul style="list-style-type: none"> <li>• Road Contractor, ZEMA and RDA</li> </ul>	<ul style="list-style-type: none"> <li>• Road Contractor</li> </ul>

Project Component	Project Activities	Risk/ Impact	Mitigation Measure	Responsibility	Accountability
	<p>grading and the enforcement with a layer of laterite (gravel)</p> <ul style="list-style-type: none"> <li>• Construction of drainage structures and small bridges</li> <li>• Emergency road works in disaster areas</li> <li>• Maintenance of community Agro facilities in rural areas.</li> </ul>		<ul style="list-style-type: none"> <li>• Resettlement of communities in new areas shall be done in consultation with host or existing community.</li> </ul>		

## **CHAPTER 7**

### **7 PROCEDURES FOR ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT PROCESS**

The Environmental and Social Impact Assessment for roads in Zambia encompasses four important stages:

- i) Screening (classification) of projects,
- ii) Scoping,
- iii) EIA (baseline) Studies; and
- iv) Monitoring implementation of ESMPs.

The following parts of this report provide guidance on the steps to be followed to initiate, conduct and implement each stage of the EIA process.

#### **7.1 Environmental and Social Impact Assessment**

An Environmental and Social Impact Assessment (ESIA) is a logical investigation that is carried out to find out what kind of impacts (negative or positive) a project impact on the natural and human environments and to recommend actions to offset, mitigate and eliminate negative impacts and enhance any positive ones. The ESIA's is conducted whenever there will be significant adverse impact resulting from a particular project.

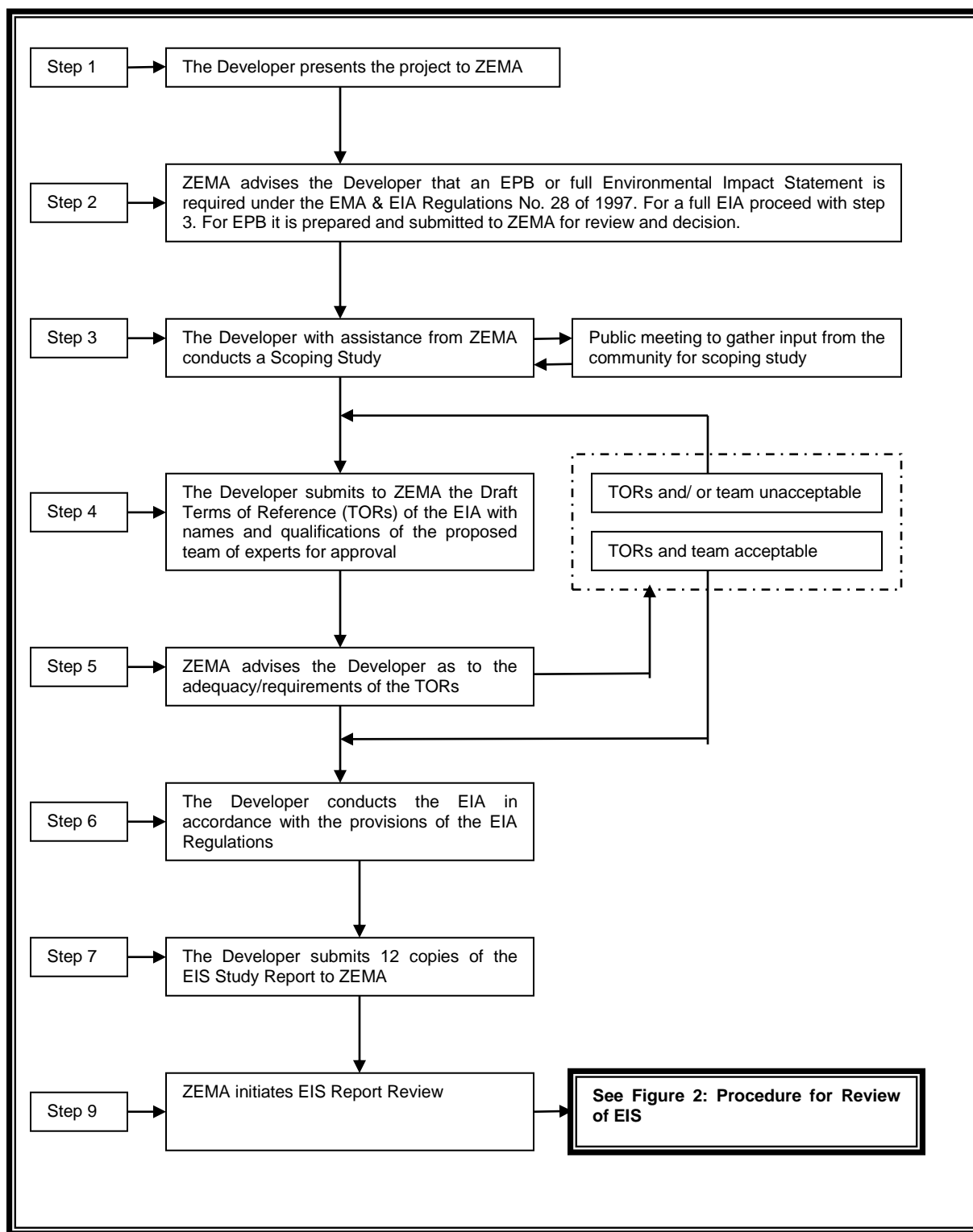
The ESIA procedure consists of the following steps or aspects: screening, scoping, baseline study, description of impacts, analysis of alternatives, description of mitigation measures and estimation of their costs, preparation of an environmental management plan and preparation of the Environmental Impact Statement.

The sub-project shall be assessed based on the step-by step process beginning with the screening stage. On the one hand the screening checklist will help identify sub-projects which have substantial social and environmental impacts requiring appropriate mitigation measures, whereas on the other hand it will help identify sub-projects which have insignificant environmental and social consequences and the environmental review process could be limited in scope.

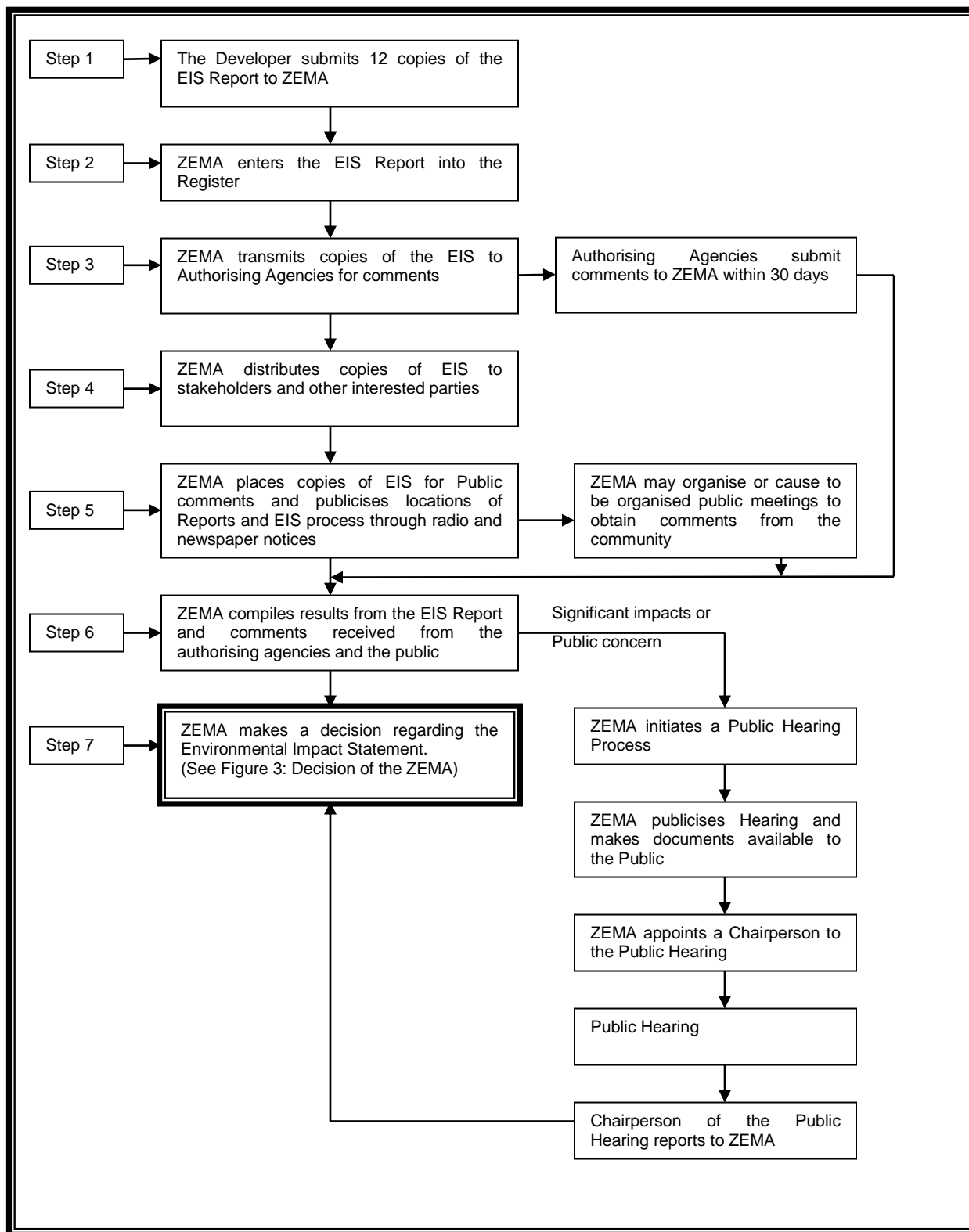
The project will use a structured approach to environmental and social management to allow the project development process, follow the hierarchy of avoidance, minimization, compensation/mitigation for negative impacts and enhancement of positive impacts where practically feasible and advantageous. The overall process is depicted in a Figure 3 to 5 below.



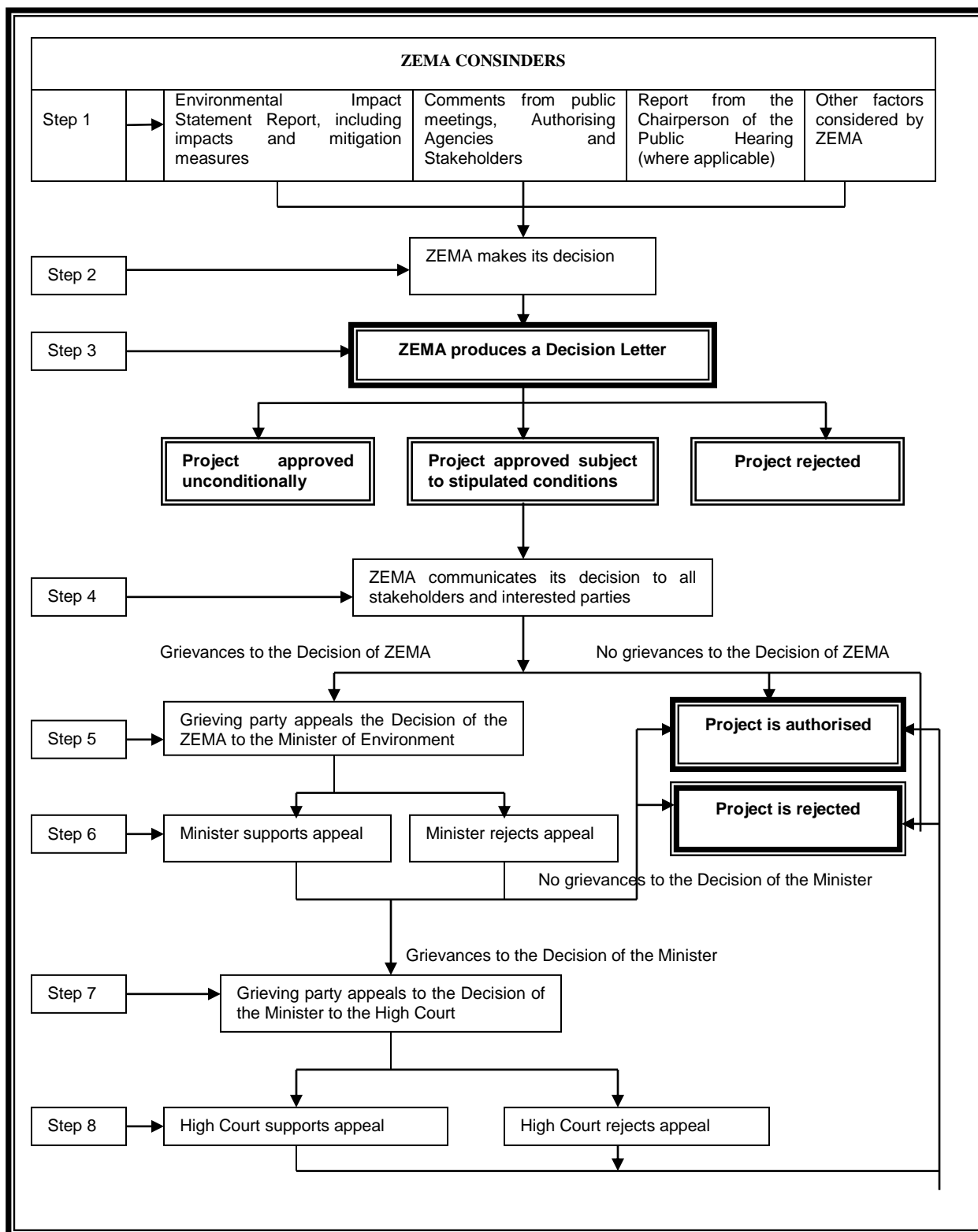
**Figure 3: Procedure for Preparation and Submission of Environmental Impact Statements**



**Figure 4: Procedure for Review of Environmental Impact Statements**



**Figure 5: Procedure for Decision Making by the Environmental Council of Zambia**



The following sections describe what needs to be done at each stage of the overall project life – sub-project selection, design of the project supported interventions, implementation of the project activities, and reporting on progress.

### **7.1.1 Project Screening**

In the screening process the ultimate outcome is to determine the level of environmental analysis required for the project i.e., whether a partial ESIA (Project Brief), full ESIA (Environmental Impact Statement) or no ESIA at all.

This step will involve review of the available environmental information about the sub-project and its surrounding areas. It would help identify issues to be verified during reconnaissance site visits and also provide a preliminary idea regarding the nature, extent, and timing of environmental issues that would need to be handled during the subsequent stages. It will also help identify opportunities for avoidance and/or minimization early in the project cycle so that the design process can be informed appropriately. The steps to be followed include the following:

- i) Confirm the presence of environmentally sensitive areas from secondary sources or preliminary site observations.
- ii) Verify the extent of applicability of Government of Zambia Laws and World Bank policies in sub-project activities
- iii) Identify potential negative and positive impacts; provide clarity on which issues need to be investigated more comprehensively during preparation of Environmental & Social Impact Assessment that will be done during the design stage.
- iv) This should help with sequencing of sub-projects, and factoring in timelines like those associated with regulatory clearance processes into project implementation.
- v) The process of preparing the environmental and social screening checklist and scoping will typically cover:
- vi) Describing the need for the project, i.e. the issues or problems to be addressed.
- vii) Describing the proposed project or options.
- viii) Identifying the potential environmental and social impacts of the sub-projects or options.
- ix) Undertaking a preliminary evaluation of the potential environmental and social impacts of the project or options.
- x) Consulting local officials on the project or options, and the potential impacts.

- xi) Describing the preliminary consultation with relevant agencies and local community. The focus of these consultations would be informing the local community, reviewing the likely issues and problems.
- xii) Selecting a preferred project option or short list of options. The appraisal of the available ZIRC Project/Feasibility study reports should be included from an environmental and social perspective.
- xiii) Identifying the planning approvals which are likely to be required from ZEMA, District Authorities and other regulatory agencies.
- xiv) Determining the type and scope of EIA study. ToR for an Environmental and Social Assessment Study of the preferred option or a short list of options.

While more extensive data is likely to be required for ESIAs, some data on baseline conditions will generally be required for screening to compare the environmental and social impacts of project options and to assess the extent of any environmental and social impacts.

The robustness of screening will often be dependent on the quality of data on baseline conditions and the assessment of projects induced environmental and social impacts. The assessment of baseline conditions should take into account:

- i) Past trends in environmental and social quality
- ii) Community preferences and competing demands for resources
- iii) Other current or proposed development programs in the project area.

It is helpful to obtain some maps in the study because they are generally required to indicate the spatial relationship between the sources and recipients of the environmental and social impacts. Google Earth and other open source satellite imagery data can also be very useful in indicating changes in land use and other environmental features.

The following checklists in Annex 1 to 5 will help identify the screening components that need to be investigated in detail during the preliminary stages of evaluation or to conclude that insignificant adverse impacts are anticipated.

The results of the above mentioned checklists will help identify the scope of the ESIA study and timeframe required for obtaining the regulatory clearances (if any). The environmental and social safeguard screening shall occur during the project preparation stage as soon as the fairly accurate site location is known for the sub-project. The formulation of the sub-project specific ToR shall be done based on the screening outputs highlighting environmental and social components that require detailed assessment during the ESIA stage.

EIAs may take the form of Comprehensive EIAs or Rapid EIAs depending on whether the environmental and social impacts can be readily mitigated. Comprehensive EIAs

generally need to rely on data collected over a 12-month period whereas Rapid EIAs can rely on data collected in one season to facilitate a speedier assessment process.

Rapid EIAs are generally acceptable if the analysis of environmental and social impacts is sufficient for the purposes of selecting a preferred project option and determining appropriate measures for mitigating environmental and social impacts. The outcome of a Rapid EIA process will sometime determine if a Comprehensive EIA is required and, if this is likely, then it will often be more efficient to prepare a Comprehensive EIA from the outset.

### **7.1.2 Project Scoping**

Scoping stage is the initial assessment of the magnitude and implications of the environmental impacts that have been identified as being significant.

WB categories will apply to ZIRC sub projects. Most ZIRC sub projects can be classified under Category B (rehabilitation, maintenance and upgrading of existing road projects) Category B projects may require full EIAs, and each individual project will need to be considered by ZEMA as to what actions are needed. Category C projects do not require full Environmental Assessments.

In cases of anticipated large-scale impacts and a full ESIA, the Scoping will likely focus on the important areas of consideration for the full ESIA.

Usually this includes meetings with relevant agencies and stakeholders to obtain their views on what should be included in the assessment and what alternatives should be considered in order that an adequate ESIA shall be conducted.

The scoping exercise will determine among others, the following:

- Suggested delineation of the appropriate boundaries to be considered in the ESIA
- Questions about the proposed project which should be answered through the ESIA
- Identification of the potentially significant impacts of the project which shall be addressed in the ESIA
- Alternatives to the proposed action.
- The full range of stakeholders to be consulted and suggestions for full public involvement in the process
- Identification of full range of stakeholders who may be affected or are interested in the proposed project
- Identification of other past, present, or foreseeable future projects in the area that may be impacted upon by, or will impact on the proposed project
- How the proposed project conforms to existing laws, policies and regulations
- The major issues, impacts and considerations involved in, or that need to be addressed by, the ESIA
- How these issues should be addressed by the ESIA
- The methodology for public participation in the ESIA
- The availability, type and quality of data required for the ESIA

- The amount of person months required to satisfactorily carry out the ESIA
- The logistical and practical arrangements that need to be in place for the study to achieve its purpose.

### **7.1.3 Baseline Studies**

As part of an ESIA process, the ESIA team undertakes the collection of data/information related to the actual proposed project, a baseline study is carried out to establish existing environmental conditions which help identify changes/trends in the environment once project is implemented. It involves gathering baseline data to facilitate identification of impacts of future project activities and preparation of a monitoring plan. Much of the baseline information may be contained in the project brief. However, during the baseline study any gaps should be identified and filled.

The baseline study will make use of a number of standard methods, including surveys, field visits and review of existing literature.

### **7.1.4 Analysis of Impacts**

An analysis of impacts could be based on the use of various indicators and "weighing" the impacts against threshold values, where these exist. Threshold values may be in the form of standards for various environmental parameters to be assessed during the study. Any impact that exceeds the threshold value is considered to be significant.

In the absence of standards, impact ratings can be based on prediction analysis, depending on magnitude, extent and duration of impacts. These anticipated impacts might be described in quantitative or qualitative terms, using terms such as adverse or beneficial in the latter case. Such predictive analysis of the potential magnitude of impacts may be based on the use of existing facts and data related to the nature of project being assessed. This approach may include use of existing literature and data on related past studies and/or projects to provide information relevant to disclose the potential magnitude of impacts of a proposed project.

In order to provide a quantitative assessment of the predicted impacts, a numerical scale may be developed. An example of such numerical scale is provided in the table below:

**Table 10: Numerical Scale**

<b>Impact (Magnitude)</b>	<b>Intensity</b>	<b>Spatial Extent</b>	<b>Duration</b>
High/Major 50		Regional 50	Long-term 20
Moderate 20		Local 20	Medium-term 10
Minor 08		Site specific 08	Short-term 03

This type of ranking methodology may be applied for comparing different project alternatives. The impact values or scores for each alternative are summed up and multiplied by the probability of occurrence of the particular impact. The numerical scale used is based on Significance Test Methodology-1 adapted from ISO 14001, EMS Implementation Handbook.

Other tools for quantitative assessment, such as environmental economics may be applied to determine the level of impacts likely to result from a proposed project. The method adopted to quantify the impacts will vary from project to project.

### **7.1.5 Analysis of Alternatives**

The analysis of alternatives for ZIRC Sub-projects should seek to compare various alternative options that may be available for any project, and thus determine which represents the most desirable in view of environmental and social factors. The process should therefore include an analysis and discussion of a range of alternatives to the proposed project that could feasibly meet the basic World Bank Environmental & Social Standards. The analysis and discussion should include an evaluation of the merits of each alternative with respect to the following:

- Nature of the alternative sites/locations of the ZIRC Sub-project
- Feasibility of the alternative
- The trade-offs of advantages and disadvantages of each alternative
- Cost effectiveness, including associated environmental costs and benefits of each alternative
- Technology and engineering design
- Interference and/or harmony with the surroundings and future plans
- Construction practices for each alternative
- Operations, including associated demands for road services and other inputs by the various alternatives
- Risks associated with the alternative, including potential risks to human health
- Existence of important cultural and sensitive ecological systems and habitats in the proposed project area
- Presence of endangered, rare and/or threatened species that may be at risk if the project is implemented
- Conformity to existing policies, plans, laws, regulations, etc
- The "No Project" alternative

During alternative analysis, the environmental losses and gains associated with the various alternatives are compared to provide a balanced and full picture for road



development. A recommendation and indication of the preferred alternative and why it was chosen shall normally be given in the discussion of alternatives. If the preferred alternative is not the one with the least impacts, the discussion shall indicate why it was chosen. The environmental and social analysis associated with alternative analyses is an important aid to the decision-making process.

Where it may not be possible to quantify or attach monetary value to a certain set of environmental impacts for purposes of comparing the various alternatives, other approaches may be adopted for placing value on such environmental impacts and thus permitting a decision to be made on the alternative to be implemented. This may involve holding meetings, seminars and/or round table discussions involving stakeholders, and/or ranking the alternatives using various important weighting techniques adopted on a project-by-project basis.

### 7.1.6 Impact Mitigation Guidelines

The purpose of impact mitigation is to look for alternative and better ways of implementing the proposed project or associated activities so that the negative impacts are eliminated or minimised, while benefits are enhanced. Impact mitigation requires that the full extent of the anticipated environmental and social problems be understood. In the following sections key environmental issues and social are outlined as guidelines for assessing impacts and formulating mitigation measures.

- i) **Avoidance of Areas of High Biodiversity:** The most important guideline in relation to the ZIRC project or any sub-project of this kind is the avoidance of sensitive and high biodiversity sites as locations for projects. This includes avoidance of National Parks and other areas with a high biodiversity or conservation value. Avoidance of these areas concerns not only project impacts but also the anticipated population influx and human development that may remain after project completion.
- ii) **Water Flow:** Changes in water flow and water quality are likely to occur when constructing a road project, including run-of-the-river. It is necessary to measure existing flows in terms of velocity of the proposed affected stretch of the river. Determining minimum by-pass flows will depend on good hydrological data. Another consideration is the generation capacity and needs which will in turn affect river flow.
- iii) **Water Quality:** Water quality covers a range of issues and a number of ZIRC sub projects. The issues relating to water quality are sedimentation and erosion, various forms of pollution and changing flora. Sediment loads may increase during construction periods for road projects. Measuring sediment loads during the various stages of project development and introducing measures to reduce loads during construction may be required for some ZIRC sub projects. Measures could include limiting construction activities to certain areas and protecting riverbanks from erosion. In addition, human activities that could contribute to erosion, such as increases in population and subsequent strains on natural

resources, should also be addressed and monitored. Measures for controlling human impacts could involve establishing camps away from sensitive areas and working with local authorities in limiting population influx. Pollution in the form of fuel, oil, lubricants and other chemicals need to be controlled and carefully monitored. This is not only for the construction period but in the use of diesel generator for power generation it will be an integral part of the operation period. Safe sites away from water sources and human population need to be designated for such harmful materials. Increase in population due to camps and population influx into project areas also presents problems in terms of pollution and health. Poor sanitary conditions can lead to the increased biological pollution in the form of E. coli bacteria and unsafe drinking water. Other diseases to be aware of are the spread of malaria (increases in stagnant water) and parasites (unsanitary conditions).

- iv) Degradation and Erosion:** Related to water quality are the themes of soil degradation and erosion due to construction activities and potential increases in agricultural activities in ZIRC sub project areas. This may be primarily due to expected population increases in area where there is road improvement. Increased demand for food could result in the use of areas prone to erosion and other negative impacts that degrade the soil and cause erosion.
- v) Pollution:** Changes in air quality in terms of dust, gaseous substances and other particles should be monitored carefully. Noise pollution is also an issue during construction and in the running of diesel generators. Limitations on location of machines and permanent structures should conform to safety and acceptable standards and may require consultations with locally affected people.
- vi) Impacts on Vegetation:** Many ZIRC sub projects will involve some clearing activities, potential population influx into new areas and possible destruction of natural habitat. Measures to control negative impacts may include demarcating areas, limiting project activities away from sensitive areas and conducting environmental awareness programs. The latter would be imperative when projects are located near National Parks or other biodiversity areas. After project construction, revegetation programs and reforestation programs may be undertaken and should be funded by the project developer as part of the overall mitigation plan.
- vii) Impacts on Fauna:** Most ZIRC sub projects are likely to be in the inhabited areas but there may be some examples of impacts on mammals, herpetofauna, avifauna and aquatic life. If this is the case, a proper baseline study of wildlife needs to be undertaken and measures suggested by experts to offset or eliminate risks to habitats or hunting. Environmental Awareness Programs and strengthening government authorities would be typical measures.
- viii) Community Health and Safety:** In addition, the World Bank Group Environmental, Health and Safety Guidelines are applicable to the project, with the following specific guidelines to be adopted and utilized by the contractors

and other project implementers: general, occupational health and safety, community health and safety and waste management facilities.

### **7.1.7 Ascertaining Opportunities from Positive Impacts**

The ESIA study should address positive impacts that may arise from the ZIRC Programme. It should also explore opportunities for environment enhancement. The involvement of local communities is essential in developing ways to enhance positive impacts.

## **7.2 Environmental and Social Management Plan**

Environmental and Social Management Plans that are developed during ESIA studies must contain sufficient detail to enable the proper implementation of mitigation measures during construction, to allow the evaluation of impacts that arise as a result of a road project, to enable the prediction of impacts that were not anticipated during the ESIA study, and to be able to assess the success of the mitigation measures that were initially recommended. In view of the fact that ESIA study is necessary, only when significant impacts are anticipated, must specific plans be developed to address particular issues.

A mitigation plan must indicate description and technical details for each mitigation measure, responsibility (during construction and when the project is operational), schedules and methods for implementation of mitigation measures, and sources of funds. It may recommend site supervision by an environmentalist during the implementation of certain interventions and subsequent monitoring.

Monitoring plans are put in place to ensure that the proposed mitigation measures are successful, so that in the event that they are not effective or cause secondary impacts in themselves, others may be developed to replace existing mitigation structures. Monitoring methods must be compatible with existing or proposed systems for monitoring environmental and social indicators.

### **7.2.1 Monitoring**

The project proponent is required to prepare and execute an appropriate monitoring programme during implementation, which consists of the following aspects of sub project activities.

- Verification of impact reductions
- Evaluation of mitigation measures
- Adherence to approved Environmental Agreement

This will allow for compliance enforcement as well as learning from mistakes facilitating impact management and handling of unanticipated aspects to aid in the improvement of ESIA process and practice.

### **7.2.2 Environmental and Social Audits**

The environmental and Social Audit report will be prepared by the proponent and submitted to competent authorities for evaluation.

### **7.2.3 Decommissioning**

The decommissioning report including restoration or rehabilitation activities shall be prepared by the proponent and submitted to ZEMA for record. Should there be need for continued environmental monitoring; the proponent shall bear the costs.

### **7.2.1 Environmental and Social Impact Statement**

Below is an Environmental and Social Impact Assessment (ESIA) suggested format:

**Table 11: ESIA Suggested Format**

<b>Chapter/Section</b>	<b>Contents</b>
<b>Executive Summary</b>	A summary of the main findings of the ESIA study including the major positive and negative impacts, recommended actions and conclusions.
<b>1. Introduction</b>	Background to the study; information on general features of electrification project; objective of the study; justification of the development, policy, legal and institutional framework.
<b>2. Project Description</b>	Describes proposed project including project development objectives, technical description and alternatives to the project activities that the project will entail.
<b>3. Project Setting</b>	Describes the geographic, ecological, social and temporal context of the project including transmission lines, power plants, access roads, water supply etc.
<b>4. Project Impacts</b>	Predicts and assesses environmentally and socially positive and negative impacts anticipated/identified as resulting from the electrification project, including an analysis of magnitude, significance and persistence. Mitigation measures are identified and opportunities for environmental enhancement explored.
<b>5. Analysis of Alternatives</b>	A comparison of alternatives to proposed project site, technology, operation. The zero option should be included in the analysis. Recommendations for the most preferable options.
<b>6. Mitigation Measures</b>	A detailed description of measures to avoid, eliminate, or minimise adverse impacts, including technical drawings of structures and costs for constructing or incorporating such measures.
<b>7. Environmental and Social Management Plan</b>	An action plan for mitigation measures, giving a Plan schedule for incorporating them, a monitoring schedule, an indication of responsibility for monitoring, identification of indicators that need to be monitored, monitoring methods, funding sources for monitoring, schedules for evaluations and audits, and institutional strengthening arrangements.
<b>8. Conclusions and Recommendation</b>	A statement of the environmental and social acceptability of the rural connectivity project and the viability of the proposed alternatives; a summary of recommended mitigation measures and other recommendations/conditions necessary to ensure Mitigation
<b>References</b>	
<b>Appendices</b>	Terms of Reference for the study List of individuals/agencies/organisations consulted. Record of itinerary and consultation meetings Tables of relevant data Other relevant information

## CHAPTER 8

### 8 PUBLIC CONSULTATIONS AND PARTICIPATION APPROACH

It is essential that environment and social assessment in ZIRC Project involve public consultations because it accords the public (particularly those most likely to be affected by the project) an opportunity to contribute both to its design and operation. In this way the concerns and views of the public are heard and their anxieties tend to be reduced. Public participation will be held in ZIRC Project through appropriate instruments including focus group discussion, stakeholder consultations, etc. Specific consultations will be held around the subproject sites proposed for different primary feeder road improvements to seek the residents' support for those sites and to get their feedback during subproject implementation. The public is therefore expected to play a key role in defining the concerns that may arise and in suggesting other available alternatives. The outcome of consultations will be incorporated as appropriate in the designs and mitigation plans.

#### 8.1 Participation Strategy

The participation strategy mainly provides a full opportunity for involvement of all Stakeholders who include the project beneficiaries, those likely to be adversely affected and other stakeholders who may have an interest in the ZIRC project for one reason or another. Because of the difficulty in identifying the public, care must be taken in deciding who participates to ensure that a fair and balanced representation of views is obtained from those directly affected, the poor, minority groups as well as influential members of the public.

As a matter of strategy, public consultation and involvement should be an ongoing activity taking place throughout the entire ESIA process/ project cycle and subproject implementation and should include the following:

- Public consultation before the inception of the project and before the environmental and social study is done.
- Public consultation during the environmental and social impact study and during the project design.
- Consultations after the environmental and social impact study have been done.
- Holding of public hearing if ZEMA should find it necessary as well as appropriate notification regarding the hearing.
- The use of "local languages" in public consultation process to ensure full participation in local communities.

#### 8.2 Public Consultation Strategy

The strategy to involve the public will be determined by the size of the ZIRC project and the nature of the communities to be affected. The public may appropriately be involved through some of the following:

- Informing them about the proposed ZIRC sub project opportunities through the various district administrative machinery i.e. Local Council systems
- Involving the public in scoping exercises
- Providing opportunities for open public meetings or hearings on the proposed ZIRC project opportunities/projects.
- Inviting written documents on proposed ZIRC sub projects
- Involving the Local Council officials (LCs) and other opinion leaders
- Involving the traditional leaders in public consultation
- Making relevant documents available to any interested member of the public.

Since public involvement and participation is going to take place throughout the entire project cycle, it is necessary that the following phases as emphasized in the strategy be followed.

### **8.2.1 Public Consultation before Inception Phase**

If the ZIRC sub project activity is an initiative of the Developer who is not a member of the local community of the project area, he or she should provide a project brief seeking public comments. The EPB or ESIA and its associated ESMP will be provided by developer in consultation with ZEMA being the Lead Agency. Extensive publicity of this should be given through the Local Authority or/and the media.

### **8.2.2 Public Consultation during the Environmental and Social Study**

All the way through all the stages of the study, the study team will seek public opinion/views on environmental and social aspects of the ZIRC sub project. Preferred methods of consultation may include Participatory Rural Appraisal, Structured questionnaire, group discussions and interviews and the media among others.

### **8.2.3 Public Hearing**

Whereas ZEMA identifies that it is essential to hear the opinion of the public, they may hold public hearings. On the day contained in the notice for public hearing, all stakeholders and concerned parties may participate along with the developer and government authorities. The ZEMA being the Lead Agency in accordance with the EIA Regulations should give adequate notification on public hearing. Such notice should contain full information about the location, time of proposed meeting and items to be considered by the meeting.

#### **8.2.4 Consultations During Implementation**

Consultations will continue to be held during implementation of the project, periodically and as needed to inform PAPs and other local stakeholders of key project activities and allow them to express their views as the project progresses. The PIU safeguards and communications staff will work with RDA and local authorities to organize these consultations.

#### **8.2.5 Grievance Redress Mechanism**

A grievance mechanism must be made available to parties who have grievances that may arise from activities carried out during the project's construction and operations phases, including any grievances related to the resettlement and compensation process, as well as any other grievances. These grievances could relate to issues concerning construction environmental, health, and safety issues and nuisances caused by construction, as well as any issues that may arise due to interactions between the labor workforce and communities. Resettlement-related grievances, such as the valuation of assets, amount of compensation paid, level of consultation, non-fulfilment of contracts, and timing of compensation, amongst others, will also be handled by this process. More information on how those grievances will be managed is detailed in the Resettlement Policy Framework for this project. Grievances will be handled through negotiation aimed at achieving consensus.

ZIRC project will work closely with all communities in the determination of subproject alignments/sitings, and will consider all locally preferred alternatives from a technical, economic and social perspective.

First, on the premise that disputes are most amicably resolved informally at the local level, RDA will first work through the District Development Coordinating Committee (DDCC) where it shall also be represented to resolve disputes for each subproject, which may be referred for resolution. In the event that there is dissatisfaction from affected groups, the provisions of the Arbitration Act No. 19 of 2000 shall apply.

The Complaints shall be forwarded through the DDCC to the DDCC sub-committee. Upon receipt, the sub-committee shall determine whether the complaint can be resolved without the involvement of the DDCC. If it requires the involvement of the DDCC, it shall then forward to the DDCC. If the DDCC fails to resolve the issue, then the provisions of the Arbitration Act No. 19 of 2000 shall apply. If it is resolved at that level, then the DDCC shall report back to the complainant in writing with a copy to the chairperson of the DDCC.

On the understanding that the project is intended to be implemented at district and sub-district levels, therefore the District Development Coordinating Committee shall be



composed of the main stakeholders commonly represented in the DDCC which includes the Road Development Agency, the Ministry of Infrastructure and Housing, Department of Wildlife, Zambia Environmental Management Agency, and Affected District Councils.. While the DDCC sub-committee will have members derived from the District Development Co-ordinating Committee (DDCC), this sub-committee shall also be used in the grievance redress system if need arises. The RDA Environmental and Social Management Unit shall form the link between the DDCC and the sub-committee. The RDA ESMU shall report progress to the DDCC.

## **DISCLOSURE REQUIREMENTS AND PROCEDURES APPROACH**

### **8.2.6 World Bank Disclosure Requirements**

In accordance with WB policy, the sharing of information is essential for effective and sustainable development. Experience has shown that the quality of projects increases with participation of stakeholders in the development process.

### **8.2.7 ZEMA ESIA Disclosure Requirements**

Disclosure procedures for ZIRC subprojects should conform to both WB policy guidelines and EIA Regulations. The procedure entails the following:

- Information access to all public documents including EA statement, ESIAs and other relevant material concerning projects.
- Public consultation during all project stages, involving all stakeholders as outlined in Chapter 8, including time for feedback and comments to draft documents.
  - In seeking the views from the local community under Public Consultation Process, the developer is required to publicise the intended project, its effects and benefits, in the mass media, in a language understood by the community, for a period not less than fifteen days and subsequently at regular intervals throughout the process; and,
  - After the expiration of the period of fifteen days, referred to above, hold meetings with the affected communities to present information on the project and to obtain the views of those consulted.
- ZEMA Co-ordinates the involvement of relevant government agencies and departments in dissemination of information.
- Public hearings are to be conducted as a requirement under the EIA Regulations, which includes invitations and updates to local and national media. Where a public hearing is to be conducted under EIA Regulations the ZEMA being the Lead Agency shall undertake the following:
  - Publish a notice three times a week for two consecutive weeks in the national papers at least fifteen days prior to the public hearing; and all expenses of the notices shall be incurred by the project proponent;
  - All documents shall, from the end of the period of the public review, until the end of the public hearing remain available for public inspection accompanied by all written comments at the specified location;
  - Such hearing shall begin no later than twenty-five days after the last public notification:

Provided that if the ZEMA determines that the number and complexity of the issues, to be considered at a hearing, require additional preparation time, on the part of those wishing to make a presentation to the hearing, it can extend this period up to a maximum of ten days;

- The ZEMA shall, where it feels, necessary and appropriate request any relevant persons to be present at the public hearing to make comments or solicit in writing, for comments from other Government agencies which have expertise or regulatory power over the proposed project as well as the authorising agency.
- The ZEMA shall appoint a person who, in its opinion, is suitably qualified to preside over the public hearing and who shall serve on such terms and conditions as may be agreed between the ZEMA and the person so appointed.
- The public hearing shall be conducted at a venue which shall be convenient and accessible to those persons who are likely to be specifically affected by the project.
- On the conclusion of the public hearing the person presiding at the hearing shall, within fifteen days from the termination of the public hearing, make a report of his findings to the ZEMA.

## CHAPTER 9

### 9 MONITORING AND EVALUATION MEASURES

#### 9.1 Monitoring of Participation Procedure

Monitoring is a key component of the ESMF during project implementation. The significance of monitoring stems from the fact that the inputs derived from the ESA into the project design and planning, including mitigation measures are based largely on “predictions”. It is essential that the basis for the choices, options and decisions made in formulating or designing the project and other environmental and social safeguard measures are verified for adequacy and appropriateness. Monitoring verifies the effectiveness of impact management, including the extent to which mitigation measures are successfully implemented. In case the Contractor is found not to comply with environmental and social safeguards during works execution, the Project through the supervision Consultant or directly shall technically assist and advise the contractor on how compliance with environmental and social safeguards should be done. If the non-compliance persists, the contractor will be notified in writing and deadline for making corrective measures provided. At the expiration of this deadline, the contractor may be suspended if no improvement is recorded.

Monitoring specifically helps to:

- Improve environmental and social management practices;
- Check the efficiency and quality of the EA processes;
- Establish the scientific reliability and credibility of the EA for the project (as well as the quality of experts providing EA consultancy services in the road sector); and
- Provide the opportunity to report the results on safeguards and impacts and proposed mitigation measures implementation.

Monitoring is one of the principal activities of the environmental and social management (ESM) phase of a road project. Once environmental permit is secured for a project, contract is awarded and the project implementation will commence. The Environmental Units of RDA commence monitoring as an important feedback mechanism. This ensures that the environmental and social mitigation measures:

- Identified in the planning phase (contained in the EA report), and incorporated in the project design and costed are being implemented;
- Are maintained throughout the construction phase and where applicable in the road-use phase and to the decommissioning of sites, facilities and equipment; and
- Where inadequate, additional remedial actions are identified (including corrective measures or re-design of mitigation measures).

Monitoring by the Environmental and Social Management Unit in RDA is effectively on the contractor engaged in the road construction project, and covers other areas such as adherence to the environmental and social clauses and principles. The ESMPs and RAPs that are prepared and/or the other mitigation provisions that made as components or part of the project ESA will also be monitored, the Environmental Units playing a lead role. The monitoring results will be analysed and the monitored information and recommended actions will be compiled for the attention and action by the respective road sector agency. The monitoring report will be formalized with the agency's agreed action and timeframes, and submitted as the respective road agency's to ZEMA.

The ZEMA carries out its own compliance monitoring to satisfy itself that the permit conditions and relevant standards and mitigation measures are being fulfilled by the executing agency. The Environmental and Social Monitoring Report (ESMR) from the executing agencies often forms the basis for ZEMA's compliance monitoring. Traditionally, ZEMA's oversight role covers or represents the monitoring interest of the other institutions. These institutions such as DWNP, Forestry, etc, however, have the right to perform their own monitoring activities and to deal with the contractor through the executing agencies.

Monitoring verifies the effectiveness of impact management, including the extent to which mitigation measures are successfully implemented. Monitoring specifically helps to:

- Improve environmental and social management practices;
- Check the efficiency and quality of the EA processes;
- Establish the scientific reliability and credibility of the EA for the project (as well as the quality of experts providing EA consultancy services in the road sector); and
- Provide the opportunity to report the results on safeguards and impacts and proposed mitigation measures implementation.

The following are indicators for monitoring of the participation process involved in ZIRC sub projects.

- Number and percentage of affected households consulted during the planning stage
- Levels of decision-making of affected people
- Level of understanding of project impacts and mitigation/ resettlement options
- Effectiveness of local authorities to make decisions
- Frequency and quality of public meetings
- Degree of involvement of women or disadvantaged groups in discussions

## **9.2 Monitoring of Implementation of Mitigation Plans**

The following are indicators for monitoring of the implementation of mitigation plans for ZIRC sub projects.

### **9.2.1 Environmental Indicators**

- Air quality - particulate pollution, noise pollution
- Water quality - chemical content, sediment load and bacterial counts
- Bio-indicators of environmental conditions - presence or absence of selected species of mammals, reptiles, birds, insects and aquatic animals
- Fish species diversity and abundance
- Vegetation change
- Wildlife change

### **9.2.2 Social Indicator**

- Agricultural output and income of affected peoples
- Height-weight ratio for children to measure nutritional status and food security
- Malaria prevalence, bilharzia (intestinal and urinary), and water-borne vector diseases (blood and stool testing)
- Amount of waste generation and disposal from camps and trading centres as well as rubbish disposal and sanitation arrangements for camps
- Availability of water use and safe drinking water
- Conditions of local dispensaries and staffing
- Availability of STD/VCT Services for addressing HIV/AIDS issues and prevention program for project area and camps
- Level of involvement of traditional leaders in projects, stability of communities,
- Availability of good primary feeder roads in rural communities,
- Quality of buildings in project area and temporary dwellings for worker camps
- Availability of schooling, attendance and teacher per student ratio
- Availability and use of cooking fuel
- Inflation and availability of essential goods in local markets
- Effectiveness of compensation payments and procedures
- Effectiveness of resettlement of affected families and procedure -provisions for support in relocation
- Traffic safety
- Worker safety, referral system to hospitals and work site inspections
- Involvement of local authorities in project-related activities

- Effectiveness of Grievance Redress Mechanisms (GRMs)
  - Levels of employment of local people on the project site
- Percentage of Population influx and general security in the project area

### **9.3 Evaluation of Results**

The evaluation of results of environmental and social mitigation can be carried out by comparing baseline data collected in the planning phases with targets and post-project situations.

#### **9.3.1 Environmental Indicators and Possible Targets**

Environmental indicators are measurements that help to present a meaningful picture of what is happening with the environment. They are useful in tracking environmental changes overtime i.e. identifying trends due to project implementation. They can be based on physical, biological or chemical measures associated with environmental quality or natural resources. Process indicators can also be used to measure the level of response. Indicators make more sense when compared with targets. Some indicators and targets related to the ZIRC Project have been identified whenever possible but will be project-specific.

**Table 12: Environmental Indicators, Frequency of Monitoring and Possible Targets**

INDICATORS	FREQUENCY	TARGET
Air Quality		
Ambient air quality standards	Daily During construction	Non-violation of international and compliance to ZEMA Air Pollution standards
Visibility		Visibility not hampered
Ambient noise level standards		Acceptable noise levels by international and compliance to ZEMA Regulations on Noise standards
River Flow		
River flow speed	Monthly during Construction and bi annual during the operational phase	Unaltered or minor alterations in river flow
River flow pattern		No or little change in river flow patterns
Velocity in reservoirs		Unaffected velocity or minor changes in velocity in reservoirs
Water Resources		
Salinization level	Monthly during Construction and bi annual during the operational phase	Compliance to ZEMA Regulations on Waste water Standards
Pollution level		Clean water supply and Compliance to ZEMA Regulations on Waste water Standards
Siltation of water bodies		No or limited temporary siltation
Clear Water		Clear water and compliance to ZEMA Regulations on Waste water Standards
Erosion load		No or limited temporary erosion load
Sedimentation load		No or limited temporary sedimentation load
Microbial counts in water		Low microbial counts in water
Level of water table		Maintenance of high water table
Volume of surface water		Abundant water supply
Soil Condition		
Soil erosion incidence	Monthly during Construction	Low rate of or no soil erosion incidence rate
Soil compaction		No soil compaction
Oil spillage		Controlled oil handling
Vegetation		
Deforestation/ de-vegetation rate	Monthly during Construction	Conservation awareness and re-forestation/ afforestation programs
Changes in species composition		Maintenance of species composition
Presence of water hyacinth		Measures to control water hyacinth



## Environmental Indicators, Frequency of Monitoring and Possible Targets (Cont'd)

Environmental Indicators, Frequency of Monitoring and Possible Targets (Cont'd)		
INDICATORS		TARGET
Wildlife		
Disruption of natural habitats	Annually during the construction and implementation phases	Protection of natural habitats Maintenance of species composition
Changes in species composition		Protection of endangered species
Endangered species		Prevention of loss in biodiversity
Biodiversity		Ecological restoration Ecological balance
Aesthetic Quality		
Aesthetic state of falls	Before construction and bi-annual during construction	Unaltered natural terrain

## 9.3.2 Social Indicators and Possible Targets

For social issues it is possible to identify some basic targets for ZIRC project. This table covers many indicators that may not be relevant for all ZIRC project but could function as a check list for monitoring, especially long-term monitoring of a project area. Possible targets are filled in whenever possible but these would have to be defined in specific EAs or EIAs and relate to the baseline data collected. Monitoring and Evaluation will be carried out by RDA and other Consultants contracted. However this will be funded by the RDA.

Table 13: Social Indicators, Frequency of Monitoring and Possible Targets

INDICATORS	FREQUENCY	TARGET
General		
Village access to roads	Annually	Roads maintained or improved
Consumer price index		Stable
Real GNP <i>per capita</i>		Exceed national average
Headcount index		Reduction of poverty and food poverty lines
Poverty gap index		No increase in poverty gap
Cultural heritage		No loss of cultural heritage site or full replace of sites
Income Generation		
Amount and number of small enterprise loans disbursed/repaid	Monthly During Construction	Possible increase depending on demand and local economy
Number of small enterprises		Increase during construction in project area
Number of skilled labourers		Increase during construction in project area

**Social Indicators and Possible Targets (Cont'd)**

INDICATORS		TARGET
Income Generation		
Unemployment	Monthly during construction	Decrease during construction in project area
Number of unskilled wage earners		Increase during construction through employment of local labour
Number of skilled wage earners		Increase during construction through employment of local labour
Unskilled rural wage		Increase in average wages due to increase in demand during construction
Skilled rural wage		Increase in average wages due to increase in demand during construction
Credit and Savings groups established		Establishment of groups in project area
Livelihood		
Desegregated (ethnicity, gender, village income strata) imputed income summation of livelihood components (hunting/ gathering, arable cropping, tree cropping, livestock husbandry, forestry, handicrafts, other commercial activities, wage labour)	Annually	Need to be enough so as to provide basic needs (food, shelter, health, education) and savings for investment
Sustainability analysis		For sustainability (i.e. compliance with the requirements of environmental and ecological integrity, social equity and legality)
Staple food sufficiency		Less than 2,100 calories per capita, per day, considered to constitute food poverty (UNDP, 1999)
Livestock holdings		Defined number of cattle equivalents per hectare of arable crop land
Land holdings (by category)		Proportionate to family labour availability
Agricultural equipment		In accordance with agricultural practice requirements

**Social Indicators and Possible Targets (Cont'd)**

INDICATORS		TARGET
Livelihood		
House size and type	Annually	Not less than average floor space per capita than in project surrounding area
Household assets (proxy, as a measure of savings)		Savings target of 10% annual imputed income
Crop yields (by land type)		Not less than average yields for region
Health		
Maternal mortality	Annually	Significant improvements
Infant mortality		Significant improvements
Under 5 mortality		Significant improvements
Calorie intake		Significant improvements
Dietary diversity		Adequate balance between staples, proteins and 'greens'
Public expenditure on health		Significant increases related services
Access to health care		Access for all households in project affected areas
Population per nurse/ health assistant		Increase in ratio due to recruitment and training of local personnel and upgrading of facilities
Population per doctor		Increase in ratio due to recruitment and training of local personnel and upgrading of facilities
Access to clean drinking water		Improved access
Availability of contraceptives		Increase as part of health awareness (STD prevention)
Contraceptive use		Increase as part of health awareness (STD prevention)

## CHAPTER 10

### 10 INSTITUTIONAL ARRANGEMENT AND REQUIRED CAPACITY STRENGTHENING FOR ZIRC IMPLEMENTATION

#### 10.1 Institutional Arrangement for ESMF Implementation

##### 10.1.1 Safeguard Management Guidelines

Successful implementation of environmental and social safeguard issues for the ZIRC Programme will be greatly realized through establishing an institutional arrangement with qualified and experienced staff. It is essential that certain institutional arrangements be in place before the ZIRC sub projects are carried out in an efficient manner and according to WB and Zambia's law requirements.

The following are the institutional arrangement for ESMF implementation.

##### 10.1.2 Project Implementation Unit

To assist with the implementation and management functions of the project, the RDA will set up a Project Implementation Unit (PIU) which will be staffed as follows:

**Project Manager;** who will be responsible for the smooth implementation and day to day running and administration of the project with an overall oversight in Procurement, Financial Management, Communication and Monitoring & Evaluation and Safeguards;

**Project Engineer;** who will provide support related technical advice on operations and management of the project;

**Monitoring and Evaluation Officer;** who be responsible for keeping a tag on the key performance indicators agreed for the project;

**Financial Management Officer (FMO,);** to undertake financial management, disbursement and selected administrative functions of the project;

**Communications Officer;** to coordinate an effective communication strategy to enable the project achieve its goal; and

**Procurement Officer (PO);** who will coordinate all procurement functions of the project.

In addition, the PIU will be accountable for the implementation of the ESMF and the RPF. The ESMF implementation takes place within the overall framework of the ZIRC project implementation arrangements. Should the current institutional arrangements change, then the proposed ESMF implementation arrangements should be adjusted accordingly.

### 10.1.3 Project Steering Committee

In order to ensure efficient oversight of the Project, there shall be a Project Steering Committee, with a mandate, composition and requisite resources. The Project Steering Committee shall be chaired by the Director & CEO of the RDA and comprised of representatives from different public and private institutions including as in table 2. In order to ensure that a quorum is met at all steering committee sitting, the representatives of the various organization will be asked to official delegate a representative to represent them should they be unable to attend.

**Table 14: Composition of Steering Committee**

<b>Organization</b>	<b>Representative on Steering Committee</b>
Road Development Agency	Director and Chief Executive Officer
Ministry of Finance	Permanent Secretary
Ministry of National Development Planning,	Permanent Secretary
Ministry of Agriculture	Permanent Secretary
Ministry of Livestock Development and Fisheries,	Permanent Secretary

The Steering Committee shall be responsible, among other things, for overseeing overall Project implementation, providing policy guidance to the project, ensuring inter-agency coordination of the Project, reviewing the annual work plans, and approving Budgets. The Committee will also consider issues to do with resettlement during the course of the project if they arise. In such cases, other relevant government departments will be coopted into the steering committee since it is envisaged that such cases are unlikely to arise.

### 10.1.4 Responsibility matrix of institutions during implementation

For purposes of the ESMF, there are three layer structure for project management – Project Steering Committee (PSC); Project Coordination at ZIRC and Project Implementing Unit (PIU).

### 10.1.5 Road Development Agency

The Road Development Agency is a statutory Institution created through the Public Roads Act No. 12 of 2002 to provide for the care, maintenance and construction of public roads in Zambia.

The RDA being the focal point will host the Project Implementation Unit (PIU) for the ZIRC project that will be responsible for the overall coordination of the project including facilitation of any decisions of a policy nature relating to the project.

#### **10.1.6 The Ministry of Finance (MoF)**

The Ministry is charged with economic, national development planning and budgeting, and financial management responsibilities. The Ministry is headed by a Minister, while the administrative and technical team is headed by the Secretary to the Treasury who is assisted by two Permanent Secretaries responsible for Economic Management and Finance respectively. As the Ministry is responsible for coordinating national economic management, mobilizing and managing public resources in a transparent and accountable manner for sustainable national development, it will be a channel through which funds from the WB will be transmitted to RDA. There will be need to enhance the capacity of the Ministry in financial management of World Bank funded projects.

#### **10.1.7 Ministry of National Development Planning**

The Ministry is charged with national planning and monitoring and evaluation as well as the coordination of economic and technical assistance from cooperating partners. In view of its mandate, the Ministry will be part of the project steering committee and in so doing ensure that project implementation is complementary to national development objectives.

#### **10.1.8 Ministry of Agriculture**

The Ministry of Agriculture is responsible for administering and implementing policies and programmes to facilitate and support the development of a sustainable, diversified and competitive agriculture sector that assures food and nutrition security, contributes to job creation, and maximises profits and the sector's contribution to GDP. Given its important role in promoting production in the agriculture sector, the Ministry will form part of the steering committee and in so doing ensure that the project effectively supports the policy objective for the sector.

#### **10.1.9 Ministry of Livestock Development and Fisheries**

The Ministries of Fisheries and Livestock is responsible for promoting the growth of the two sectors by implementing policies and programmes in that regard. Given this role, the Ministry will be part of the project steering committee and help identify sub projects in the livestock and fisheries sector.

#### **10.1.10 The Ministry of Local Government and Housing**

The Ministry is charged with the administration of the local government system and will ensure that the people in the project areas are provided with the necessary municipal services. The Ministry of Local Government and Housing, is multi-functional in nature and oversees the implementation of delegated functions and responsibilities by the local authorities by managing the social, economic and political spheres of governance. This

is in line with the Decentralisation Policy. The ministry is responsible for Co-ordination of Local Government Administration, Regulation and provision of social amenities, Affairs and House of Chiefs, Water Supply and Sanitation, Provision of housing, Provision of municipal infrastructure services and support services, and Provision of feeder, community and urban roads

#### **10.1.11 Zambia Environmental Management Agency**

The mandate of Zambia Environmental Management Agency (ZEMA) formerly called Environmental Council of Zambia (ECZ), is drawn from the Environmental Management Act (EMA) No. 12 of 2011. ZEMA plays a regulatory, advisory, consultative, monitoring, co-ordination and information dissemination role on all environmental issues in Zambia. This institution sufficient institutional capacity to support project implementation and provisions of the ESMF.

#### **10.1.12 Community Based Organisations**

The ATP will work with Community Based Organisations (CBOs) such as cooperatives and strengthen their capacities in the areas of agribusiness and market linkages. These will be provided capacity building in various areas relevant to the project.

#### **10.1.13 Vulnerable Social Groups**

Typical vulnerable social groups may include women-headed households; widows and elderly (both men and women); rural youths; and people living with HIV-AIDS or caring for HIV-AIDS patients and orphans. These vulnerable social groups will be factored into the ATP environmental and social safeguards. This may be directly or through NGOs working these groups in the sub-project areas.

### **10.2 Capacity Building Program**

#### **10.2.1 Current Capacity of and Training needs for the Various Actors in the Implementation of ESMF**

The study on Institutional Strengthening of RDA has shown that RDA has staff dedicated to Environment and implementation of safeguard requirements. In addition the Local Authorities (Las) under the Ministry of Local Government and Housing have Planning Departments, which as a whole oversee the Environmental Issues in the Districts.

The departments have got at least one district planning officer who solely deals with environmental issues on daily basis. The rest of other staff in these departments and whole Councils has limited knowledge of WB safeguard requirements and generally lack experience in environmental and social issues. Such low capacity represents a risk to the implementation of safeguards requirements as contained in the ESMPs and as required by the WB policy. The ESMF institutional framework requires LAs officers, including the District Environmental Officer, Community Development Officer,

Municipal engineers, and Municipal valuers, who have limited experience with implementation of World Bank safeguard policies.

It is, therefore, necessary to address this weakness through capacity building through technical assistance that will support the Local Authorities (LAs) during the implementation of the ESMPs. The technical assistance will specifically provide the necessary support to LAs in their work with contractors as well as other entities involved in the implementation of the ESMPs.

The technical assistance will include support to experts and training that will cover:

- General knowledge of safeguards requirements and project procedures, and
- Important specific knowledge in safeguard procedures and requirements for project staff, consultants, and national contractors.

Specifically, the above will include, for example, assistance with the preparation of documents and implementation of training programs on environmental management and environmental monitoring for contractors and relevant staff of RDA (coordinators of contract packages) to do their tasks. It will also include assisting District environment and social staff with the review of contract documents to ensure compliance with the ESMPs. It will further provide general environmental guidance as requested by LAs to enhance overall project implementation and performance.

Given the nature, locations, and scale of construction, it is anticipated that the safeguard technical assistance support and training will be provided at least during the first 3 years of the project implementation. The WB safeguard specialists will support this in the capacity building program, in particular in the training activities as appropriate.

### **10.3 Capacity Strengthening**

The institutions are aware about the purpose of the ESMF, their expected responsibilities and the extent to which the ESMF will facilitate their statutory mandates and in the performance of their functions. The executing agencies were fully involved in the preparation of the ESMF.

The broad areas for capacity building to enhance their respective roles and collaboration include the following:

- i) Project screening techniques, screening tools and the applicable legislations and procedures;
- ii) General project planning and management inter-faced with environmental and social assessment and management;
- iii) Environmental Impact Assessment (EIA);
- iv) Strategic Environmental Assessment (SEA);
- v) Review techniques and specifically review of ZIRC, ESIS and SEA, etc;
- vi) Environmental Management Planning;
- vii) Monitoring and Environmental Audit;
- Viii) Annual Environmental Report preparation and other reporting requirements;



- ix) Public participation techniques Public Hearing Procedure;
  - x) Grievance and Conflict Resolution
- Public awareness creation / educational techniques (on environmental, social and health issues).

The key EA and EM functional areas of the institutions and the respective institutional capacity needs should be based on the Needs Assessment. A more targeted, focused capacity building plan will be carried out as part of project preparation, before implementation.

The requirement for undertaking ESIAs, in the road sector has risen sharply as a result of the regulatory framework developed by ZEMA and the policy initiatives associated with the EM Act.

The capacity to conduct ESIA in the road sector, and indeed ZIRC sub projects will be stretched as well as the need to carry out measures to manage the situation. Most, if not all, of the ESIAs have been conducted by international firms in association with Zambian partners. This association with international firms is appreciated as it contributes to the overall development of the country by building Zambian capacity to carry out ESIA and related work.

### **10.3.1 Planned Support**

The core idea in developing this proposed support package is that training inputs should be modest, given the fact that some skills already exist. However, there is need to ensure that practitioners are familiar with the specific requirements of Zambia and are made aware of the opportunities and challenges specific to the needs of the country.

The following is the recommended approach:

- a) Training for road sector planners, senior design construction and maintenance staff.
- b) Training for Road Development Agency (RDA) staff and other Government personnel working in environmental management.
- c) Support for Environmental Inspectors and District Environmental Officers

### **Resources and Payments**

The seminar would be conducted under the auspices of the RDA by staff with environmental issues responsibilities from Ministry of Land and Environmental Protection, ZEMA and private sector in environmental management.

### **10.3.2 Recommended Capacity Building Support**

- (a) This will involve conducting a survey to update information on training and sensitization needs and identify capacity gaps related to environmental and social management at all levels within RDA. This activity will entail the following:

- Prepare and pre-testing data collection instruments;
  - Data collection
  - Data processing and analysis
  - Preparation of report
  - Presentation of report to stakeholders
- b) Conduct a survey to update information on the existing capacities to train and sensitize at all levels within RDA in areas related to environmental and social management. This activity will entail the following:
- Prepare and pre-testing data collection instruments
  - Data collection
  - Data processing and analysis
  - Preparation of report
  - Presentation of report to stakeholders
  - Update the strategy for sensitization, training and capacity building on the basis of existing training capacity, identified training needs and capacity gaps. Meetings and workshops will be organized for stakeholders to discuss the revised strategy
  - Update sensitization, training and capacity building programmes on environmental and social management for ESMF. The revised programmes will be presented to stakeholders for their inputs.
  - Update IEC materials.
  - Update training modules.

The focus of this ESMF capacity building support should be targeted at those involved in the implementation of supported sub-projects. Training should be designed according to the identified needs to ensure that ZIRC Project will be implemented in an environmentally and socially sustainable manner.

### **10.3.3 Training for Road Planners, Senior Design Construction and Maintenance Staff including Engineers**

This training will be targeted at middle management personnel. The purpose of the training is to have sufficient understanding of ESIA and to ensure that environmental issues are adequately addressed in planning, design, construction and maintenance of ZIRC programme. Participants will be trained for 3 days. A sample of the course content is presented below which would be updated after carrying out detailed training needs and capacity assessment.

#### **Course Content**

- Overview of ZIRC Project
- Road construction and rehabilitation and environment
- Primary Feeder Roads systems overview
- The role of ZEMA and RDA in the ESIA process
- Legal and Administrative Framework for Environmental Management and Regulations in Zambia
- Environment Impact Assessment methodologies and objectives

- Design and implementation of mitigation measures
- Case study - design and costing of mitigation measures
- Overview of ESIS and Environmental Management Plan

#### **10.3.4 Training of Government Staff, National Road Fund Agency and Road Development Agency Staff**

The purpose of the training is to develop a thorough understanding of the ESIA process and its integration into the project development cycle. The training will be for 3 days. A sample of the course content is presented below which would be updated after carrying out detailed training needs and capacity assessment.

##### **Course Content**

- The links between road construction, rehabilitation and environment,
- Environmental Impact Assessment methodologies and objectives
- The role of ZEMA and RDA in the ESIA process
- How to carry out environmental and social assessment
- Preparation of Environmental Management Plans
- How to implement Environmental Management Plans

Exercises; i) Integrating ESIA in decision making, research and presentation, ii) Group exercise and discussion on preparation of the terms of references.

#### **10.3.5 Inspectors and District Environmental Officers**

The aim of training this group is to develop a practical understanding of environmental implications of ZIRC sub projects. Participants will be trained for five days. For better impact the group could be split into three. A sample of the course content is presented below which would be updated after carrying out detailed training needs and capacity assessment.

##### **Course Content**

- Environmental policy, legislation and administrative framework
- Environmental assessments - practical applications
- Primary Feeder Roads Rehabilitations
- Mitigation measures
- Environmental Monitoring

**Table 15: Training programs for Capacity Building in Social and Environmental Supervision and Management**

<b>Target Group</b>	<b>RDA and LAs Staff</b>
Course Title	Social and Environmental supervision, monitoring and reporting
Participants	Social and Environmental staff and technical staff
Training Frequency	Soon after project effectiveness but at least 1 month before start of construction of the first contract. Follow-up training will be scheduled as needed.
Time	Four days of training, to be held twice a year, and then to be repeated on a yearly basis until year three of implementation.
Content	<ul style="list-style-type: none"> <li>• General Social and environmental management relating to the project, and covering the requirements of WB;</li> </ul>
	<ul style="list-style-type: none"> <li>• General aspects of social and environmental supervision;</li> </ul>
	<ul style="list-style-type: none"> <li>• Implementation and supervision of mitigation measures;</li> </ul>
	<ul style="list-style-type: none"> <li>• Community participation in social and environmental supervision monitoring.</li> </ul>
	<ul style="list-style-type: none"> <li>• Guidance and supervision of contractors, Subcontractors and community representatives in the implementation of environmental supervision.</li> </ul>
	<ul style="list-style-type: none"> <li>• Use of forms for social and environmental supervision;</li> </ul>
	<ul style="list-style-type: none"> <li>• Risk response and control;</li> </ul>
	<ul style="list-style-type: none"> <li>• Receipt and submission of reporting forms</li> </ul>
	<ul style="list-style-type: none"> <li>• Other areas of training needs, as determined</li> </ul>
Responsibilities	RDA, LAs with support of the Technical Assistance Team for the implementation of safeguards.
<b>Target Groups</b>	<b>Contractors, Subcontractors, Community Representatives (NGOs)</b>
Course Title	Implementation of mitigation measures
Participators	On-site construction management staff; environmental staff of contractors; NGOs.
Training frequency	After bidding, and determine based on needs
Time	3 days of training for contractors and 2 days of training for others, to be repeated twice a year on an annual basis depending on needs.

Content	<p>Overview of environmental monitoring; Requirements of social and environmental monitoring;</p> <p>Role and responsibilities of contractors;</p> <p>Scope and methods of social and environmental monitoring;</p> <p>Response and risk control;</p> <p>Propagate monitoring forms and guide how to fill in the forms and risk report;</p> <p>Preparation and submission of reports</p> <p>Other areas to be determined.</p>
Responsibilities	RDA, LAs with support of the Technical Assistance team for the implementation of safeguards
<b>Target Groups</b>	<b>Communities and Workers</b>
Course Title	Environmental and safety
Participators	Representatives of community and/or worker leaders (as appropriate)
Training frequency	As appropriate
Time	One-day presentation and one-day on-the job training twice a year, to be repeated on need basis
Content	<p>Preliminary presentation on environmental protection and environmental overview.</p> <ul style="list-style-type: none"> <li>• Key issues that require communities' and workers' attention to minimize safety risks (roads, equipment, machines, open excavations, etc.) as well as reduce pollution (dust, fumes, gases, oil/grease spills, waste management, etc.)</li> <li>• Management of environmental safety and sanitation on work sites;</li> <li>• Mitigation measures at construction sites;</li> <li>• Safety measures on electricity, mechanical, transportation, air pollution;</li> <li>• Procedures to deal with emergency situations;</li> <li>• Other areas to be determined.</li> </ul>
Responsibilities	Contractor and Las

#### 10.4 Monitoring Plan

It is essential to develop national level monitoring systems for monitoring and evaluations of ZIRC sub project activities from an environmental and social perspective. This will be the responsibility of the RDA-ESMU and ZEMA.

- Establishment of environmental performance indicators for monitoring
- Project implementation.
- Development of standardized format for recording monitoring and auditing information.
- Commissioning of evaluations every three years.

#### **10.5 Environmental and Social Safeguard Management Plan**

A program to address the human capacity strengthening requirements is given in Table 16. The training course contents for each category have been outlined.

**Table 16: Institutional Arrangement and Co-ordination**

ITEM	INSTITUTIONS	KEY FUNCTIONS/ RESPONSIBILITIES	KEY ROLES WITH RESPECT TO ESMF
1.	<b>The Road Development Agency (RDA)</b>	<ul style="list-style-type: none"> <li>• Administer and manage ZIRC Fund,</li> <li>• Develop, implement and update RDA master plans for the ZIRC systematic rehabilitation of Primary Feeder Roads of rural areas,</li> <li>• Promote the utilization of available road rehabilitation technological options to enhance the contribution of road rehabilitation to the development of agriculture, industry, mining and other economic activities in rural areas;</li> <li>• Mobilise funds from within and outside Zambia in support of ZIRC primary feeder roads rehabilitation;</li> <li>• Offer, on a competitive basis, the construction of ZIRC primary feeder road projects and periodically publish information on programmes being carried out.</li> <li>• Design and offer, on a competitive basis, to developers or operators, smart subsidies for capital costs on ZIRC sub projects that are designed for development of rural areas;</li> <li>• In conjunction with stakeholders, develop mechanisms for the rehabilitation of ZIRC primary feeder road networks for rural areas;</li> <li>• Finance project preparation studies for ZIRC sub projects in accordance with guidelines developed and approved by the Authority;</li> <li>• Recommend to Government policies for the enhancement of ZIRC system for primary feeder roads to the rural populations; and</li> <li>• Undertake such other activities as are conducive or</li> </ul>	<ul style="list-style-type: none"> <li>• Collaborate with Sector Ministries in all matters concerning ZIRC primary feeder roads rehabilitation and environment;</li> <li>• Play the role of a Lead Agency in the ESMF implementation process.</li> <li>• Carrying out environmental and social surveys and related assessments and ensuring the participation of other stakeholders such as the project affected community and non-governmental organisations.</li> <li>• Overseeing the implementation process and ensuring that mitigation measures and EMP are implemented adequately.</li> <li>• Together with other stakeholders, carry out monitoring and evaluation of affected projects.</li> </ul>

ITEM	INSTITUTIONS	KEY FUNCTIONS/ RESPONSIBILITIES	KEY ROLES WITH RESPECT TO ESMF
		incidental to the performance of the Act.	
2.	<b>Zambia Environmental Management Agency</b>	It is further empowered to identify projects, plans and policies for which environmental assessment are necessary and ensure that the same is done in line with the provisions of EIA regulations. Its responsibilities include managing the EIA process, making decisions and ensuring that management occurs in accordance with the decision made. In this regard the ZEMA establishes the terms of reference for project assessments, reviews reports including the project brief, EIA and follow-up, monitoring reports. The Agency also helps the project proponent to establish a public consultation process.	<ul style="list-style-type: none"> <li>Identify projects and programmes that need LEA or EIA;</li> <li>Review and approval of ZIRC sub -projects Environmental Impact Statements;</li> <li>Enforce and ensure compliance to the national standards;</li> <li>Monitors implementation of project EMP by developer.</li> </ul>
3.	<b>Local Authorities</b>	Given the current state of most Local Authorities such as inadequate financial resources, limited and inadequately qualified human resources, the role of the councils will be limited to complimentary efforts regarding the planning and Implementation of such projects.	<ul style="list-style-type: none"> <li>Local Authorities being closer to project affected persons will be critical in ensuring participation of such affected groups as they understand the cultural dimensions of such groups;</li> <li>Local Authorities Responsibilities among others will include:</li> <li>Participate in the preparation of, review and approval of Environmental and Social Impact Assessment (EIAs) for local investments;</li> <li>Review by-laws on environmental management and on sector specific activities related to environment;</li> <li>Work closely with RDA on the implementation of ESMF in their area of jurisdiction.</li> <li>Specifically, LAs responsibilities include the following:</li> <li>Visit and inspect Sub-project sites regularly, to ascertain the level of compliance of works and</li> </ul>



ITEM	INSTITUTIONS	KEY FUNCTIONS/ RESPONSIBILITIES	KEY ROLES WITH RESPECT TO ESMF
			<p>report back environmental issues;</p> <ul style="list-style-type: none"> <li>• Maintain inspection reports on files;</li> <li>• Working with the Resident Engineers who have day-to-day interaction through supervisory staff;</li> <li>• Ensures the Contractors have all plans, procedures, approvals, and documentation in place to ensure ESMP compliance prior to commencement of any work;</li> <li>• Verifying environmental compliance and issuing of penalties for contraventions of the ESMPs;</li> <li>• Ordering the removal of person(s) and/or equipment not complying with the ESMP specifications;</li> <li>• Taking decisions in case severe non-compliances to the ESMPs are detected;</li> <li>• Providing input for on-going internal review of the ESMPs;</li> <li>• Stopping works in case of emergency or if significant environmental impacts are apparent or imminent;</li> <li>• Monitoring and verifying that environmental impacts are kept to minimum;</li> <li>• Preparing reports on environmental and social mitigation and monitoring and submit them to ZEMA quarterly;</li> <li>• Recommending ZEMA the issuing of penalties for contraventions of the ESMPs;</li> </ul>

ITEM	INSTITUTIONS	KEY FUNCTIONS/ RESPONSIBILITIES	KEY ROLES WITH RESPECT TO ESMF
			<ul style="list-style-type: none"> <li>Support the Resident Engineer through the site construction supervision staff.</li> </ul>
4.	NGOs	There are various roles that non-governmental organisations could play in the resettlement process. They could act as facilitators enabling the participation of the local community. They could also play an advocacy role to ensure that community concerns are taken into account at every stage of the planning and implementation process	<ul style="list-style-type: none"> <li>Providing information on key community related issues that require addressing under the project, and</li> <li>Organising the community's participation in the planning and execution of the Environmental Management Plan.</li> </ul>
5.	Contractor	The roles of the contractor among others are to ensure that the environmental and social specifications of the ESIA and ESMP (including any revisions, additions or amendments) are effectively implemented;	<ul style="list-style-type: none"> <li>Notify the RDA Environmental and Social Management Unit (RDA ESMU) immediately, in the event of any accidental infringements of the environmental requirements to enable appropriate remedial action to be taken;</li> <li>Prepare a contractor's ESMP and obtain its approval by RDA and the Bank prior to starting any works.</li> <li>Notify the RDA ESMU and other relevant agencies and Engineer, at least ten working days in advance, of any activity he has reasons to believe that may have significant negative impacts, so that mitigation measures are implemented accordingly;</li> <li>Ensure environmental and social awareness among his/her employees and subcontractors so that they are fully aware of, and understand the environmental and social requirements and the need for them;</li> <li>Report and record all accidents and incidents resulting in major injuries or death;</li> <li>Inform RDA ESMU and other relevant agencies of problems arising when</li> </ul>

ITEM	INSTITUTIONS	KEY FUNCTIONS/ RESPONSIBILITIES	KEY ROLES WITH RESPECT TO ESMF
			<p>implementing the ESMP and ways of improving the ESMP;</p> <ul style="list-style-type: none"> <li>• Undertake rehabilitation of all areas affected by construction activities in order to restore them to their original state, as determined by the Engineer;</li> <li>• Undertake the required works within the designated working areas</li> <li>• Have in place and enforce Code of Conduct</li> </ul>
6.	<b>Construction Supervision Consultant (CSC)</b>	<p>The Supervision Consultant will be appointed by RDA and will be responsible for monitoring and supervision of the construction works including implementation of ESMP. The Supervision Consultant will appoint a Resident Engineer.</p> <p>For supervision and monitoring of the implementation of ESMP throughout the construction phase, the implementing agency will engage an Independent Environmental and Social Consultant.</p>	<ul style="list-style-type: none"> <li>• Supervision activities will comprise:</li> <li>• Environmental and social compliance and monitoring, including checking, verifying and validating the overall environmental performance of the project through regular audits, inspection and review of project submissions and report back regularly to RDA.</li> <li>• Monitoring activities by the resident engineer will comprise:</li> <li>• Visual observation during site inspection carried out at the same time as the engineering supervision activities,</li> <li>• Site inspections that will take place with emphasis on early identification of any environmental or social problems and the initiation of suitable remedial action;</li> <li>• Where remedial actions have been required on the part of the Contractor, further checks will need to be made to ensure that these are actually being implemented to the agreed</li> </ul>

ITEM	INSTITUTIONS	KEY FUNCTIONS/ RESPONSIBILITIES	KEY ROLES WITH RESPECT TO ESMF
			schedule and in the required form
7.	<b>National Council for Construction (NCC)</b>	NCC is a statutory body set up under the National Council for Construction Act No. 13 of 2003 with the responsibility of providing for the promotion, development, training and regulation of the construction industry in Zambia. The regulatory function is extensive, and covers standardization, registration of contractors, assessment of technical proficiency, and adoption of fair practices and norms in the industry. As an industry regulator, NCC does perform certain oversight functions to influence the performance of the sector.	<ul style="list-style-type: none"> <li>• NCC will, in addition to performing its strategic institutional strengthening activities, will monitor compliance and provide oversight and guidance on the application of environmental and social safeguard requirements on road contracts.</li> <li>• In particular, NCC will review the process used by RDA's contractors to manage any potential risks of adverse impacts due to temporary project induced labour influx</li> </ul>

**Table 17: Summary of Environmental Training Program**

Target Group	Nos. of Participants	Duration
Technocrats	50	3 days
MTCWS, MLNREP, NFRA & RDA Staff	25	3 days
District Environmental Officers (3 Staff Per District)	120	5 days

**10.5.1 ESMF Implementation Budget**

The cost estimate for the capacity building program; as well as an indicative cost estimate for other technical assistance (consulting services) for the following sub-projects, which were identified as the priority projects in ZIRC are presented below:

**Table 18: Overall Costs for Implementation of ESMF in ZIRC Project**

Activity	Description	Unit cost, US\$	No	Total Cost, US\$
Preparation and implementation of ESIA's, ESMPs and related safeguard management plans for investments funded from the World Bank	Recruitment of Consultants and experts to prepare and review the ESIA's and ESMPs	250,000.00		250,000.00
Monitoring of ESIA's, ESMPs and related safeguard management plans for investments funded from the World Bank	Recruitment of Consultants and experts to monitor the ESIA's and ESMPs	250,000.00		250,000.00
Capacity building	Training workshop/seminars on Programme for District Officers	50,000.00		50,000.00
ESMU	Monitoring implementation of ZIRC Projects	30,000.00	Biannual	30,000.00
Capacity building/improvement for Regional engineers	Training workshops	50,000.00	Biannual	50,000.00

## **CHAPTER 11**

### **11 CONCLUSIONS AND RECOMMENDATIONS**

The sub-projects under the ZIRC Programme are feasible and consistent with the socio-economic development plans of their respective districts, and of Zambia. Apart from meeting the socio-economic development needs of the municipalities, they support sustainable development of the districts, through basic the provision of essential rehabilitation of road links including in unplanned settlement areas. Detailed EIAs where applicable will be prepared for each subproject, whereby all potential environmental and social impacts will be identified and evaluated.

The positive impacts of the project include employment opportunities to local people, improving the living conditions of the local residents. Many existing roads will be rehabilitated, improving access and reducing traffic-related environmental problems.

During project implementation, some negative impacts may affect the local environment and local populations in the project areas. Land acquisition and associated compensation of project-affected households may take place in subproject areas in which case RPF and RAPs will have to be prepared. Typical of all construction activities with negative impact relate to noise, air and water pollution, generation of solid wastes, disruption of public utilities, occupational health risks, and soil erosion to mention a few.

Most impacts will be typical and can be mitigated by the use of environmental codes of practice (ECOPs). The ECOPs provisions will form part of the project contractors' contracts and the RDA and their CSC will ensure that the contractors comply with the provisions of their contracts, including those relating to environmental impacts. In accordance with their contracts, in case of site-specific impacts, contractors will be required to prepare site-specific detailed designs and ESMPs. The site-specific ESMPs will be approved by the CSCs prior to the work commencing. Periodic monitoring reports will be prepared by independent environmental monitoring consultants and the results will be submitted to the RDA and the World Bank.

To facilitate effective mitigation of impacts during operation, the project will also provide substantial support for capacity building, including training courses, at various levels to ensure that the ESMPs will be implemented and their performance monitored. Environmental monitoring will be carried out to ensure that the project activities will not create adverse impacts. The monitoring results will be periodically reported to the RDA and World Bank.

The ESIAs, and RAPs will be disclosed to local communities and authorities in the project areas.

# **ANNEXES**

**Annex 1: Environmental and Social Screening Forms**

The Environmental and Social Screening Form (ESSF) has been designed to assist in the evolution of sub-projects of the ZIRC program in Zambia. The form is designed to place information in the hands of implanters and reviewers so that impacts and their mitigation measures, if any, can be identified and/or that requirements for further environmental analysis be determined.

The ESSF contains information that will allow reviewers to determine the characterization of the prevailing local biophysical and social environment with the aim to assess the potential sub-project impact on it. The ESSF will also identify potential socio-economic impacts that will require mitigation measures and/or resettlement and compensation.

This form must be filled by the ESMU staff after identification of the type of sub-project to be implemented.

**PART A: General Information**

1. Name of sub-project: .....
2. Sector: .....
3. Name of the Village: .....
4. Name of Ward .....
5. Name of District .....
6. Name of Executing Agent .....
7. Name of the Approving Authority .....
8. Name, job title, and contact details of the person responsible for filling out this ESSF:
  - a) Name: .....
  - b) Job title: .....
  - c) Telephone Number: .....
  - d) Fax Number: .....
  - e) E-mail Address: .....
  - f) Date: .....
  - g) Signature: .....



**PART B: Brief Description of the Sub project**

Please provide information on the type and scale of the sub-project (area, required land, approximate size of total building floor area).

Provide information about actions needed during the construction of facilities including support/ancillary structures and activities required to build it, e.g. need to quarry or excavate borrow materials, laying pipes/lines to connect to energy or water source, access road etc.

**PART C: Brief Description of the Environmental Situation and Identification of Environmental and Social Impacts**

Describe the sub-project location, siting, surroundings (include a map, even a sketch map)

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Describe the land formation, topography, vegetation in/adjacent to the project area.

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Estimate and indicate where vegetation might need to be cleared.

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**1. Environmental sensitive areas or threatened species are there any environmentally sensitive areas or threatened species (specify below) that could be adversely affected by the project?**

S/No.	Description	Yes	No	Not Known
1.	Intact nature forests			
2.	Riverine forest			
3.	Surface water courses, natural springs			
4.	Wetlands (lakes, rivers, swamp seasonally inundated areas)			
5.	How far is the nearest wetland (lakes, river, seasonally inundated areas)			
6.	Area of high biodiversity			
7.	Habitats of endangered/threatened for which protection is required under Zambian Laws			

**2. Geology and Soils**

S/No.	Description	Yes	No	Not Known
1.	Is there any possibility of soil instability in the project area? (e.g. black cotton soil, landslide, subsidence)			
2.	Is there any possibility of the area having risks of large scale increase in soil salinity?			
3.	Based on inspection, is there any possibility of the area being prone to floods, poorly drained, low-lying depression or block run-off-water?			

**3. Contamination and Pollution Hazards**

S/No.	Description	Yes	No	Not Known
1.	In there any possibility that the project will be at risks of contamination and pollution hazards from latrines, dump sites, industrial discharge, etc.			

**4. Lands**

S/No.	Description	Yes	No	Not Known
1.	Are there farm lands in the project area			
2.	Will project result in more or improved farm lands			
3.	Will projects result in less or damaged farm land			
4.	Will the project results in loss of crops, fruit trees or household infrastructure (e.g. livestock shed, toilets, granaries)			
5.	Will the project interfere or block access, routes (e.g. fro people, livestock, etc)			

**5. Soil Erosion**

S/No.	Description	Yes	No	Not Known
1.	Will project help to prevent soil loss or erosion			
2.	Will project directly cause or worsen soil loss or erosion			
3.	Could project indirectly lead to practices that could cause soil loss or erosion			
4.	Is it necessary to consult a soil scientist			

**6. Slope Erosion**

S/No.	Description	Yes	No	Not Known
1.	Does project involve modification of slopes?			
2.	Will project affect stability of slopes directly or indirectly?			
3.	Could project cause people or property to be located where existing unstable hazard could be a hazard?			
4.	Is it necessary to consult a geo-technical engineer?			

**7 Surface Water Quantity**

S/No.	Description	Yes	No	Not Known
1.	Do surface water resources exist in project area?			
2.	Is information available on present land future demands on water resources as a result of the project?			
3.	Will project help to increase or preserve available surface water supplies?			
4.	Will project increase demand or cause loss of available surface water?			
5.	Is it necessary to consult a hydrologist?			

**8 Surface Water Quality**

S/No.	Description	Yes	No	Not Known
1.	Is current data available on existing water quality?			
2.	Will project lead to additional natural or man-made discharges into surface water?			
3.	Will project help to improve or protect surface water quality?			
4.	Could project cause deterioration of surface water quality?			
5.	Is it necessary to consult a water quality expert?			

**9 Ground Water Quantity**

S/No.	Description	Yes	No	Not Known
1.	Do ground water resources exist in project area?			
2.	Is information available on demands on ground water resource as a result of the project?			
3.	Will project help to increase or preserve available ground water supplies?			
4.	Will project increase demand or cause loss of available ground water?			
5.	Is it necessary to consult a geo-hydrologist?			

**10 Ground Water Quality**

S/No.	Description	Yes	No	Not Known
1.	Is information available on present water quality?			
2.	Will project cause any natural or man-made discharge into ground water aquifer?			
3.	Will project help to improve or protect ground water quality?			
4.	Could project cause deterioration of surface water quality?			
5.	Is it necessary to consult a geo-hydrologist?			

**11 Air Quality**

S/No.	Description	Yes	No	Not Known
1.	Is information available on existing air quality?			
2.	Will project produce any air emission directly?			
3.	Will project help to reduce existing air pollution sources?			
4.	Could project lead to practices that worsen air quality?			
5.	Could project lead to a change in engine or fuel use that could cause serious air pollution?			

**12 Noise**

S/No.	Description	Yes	No	Not Known
1.	Is noise now a problem in project area?			
2.	Will project help in reducing undesirable noise conditions?			
3.	Will project cause increases in noise generating conditions?			
4.	Could project cause movements of people to high noise level locations?			

**13 Aquatic Ecosystems**

S/No.	Description	Yes	No	Not Known
1.	Are there any aquatic ecosystems in the project area such as rivers, streams, lakes or ponds, which might be considered significant?			
2.	Will project affect the condition and use of these systems for human consumptions?			

**14 Wetland Ecosystem**

S/No.	Description	Yes	No	Not Known
1.	Are there any wetlands ecosystems in the project area such as marsh, swamp, flood plains, or estuary, which might be considered significant?			
2.	Will project affect the use or condition of such wetlands?			

**15 Terrestrial Ecosystems**

S/No.	Description	Yes	No	Not Known
1.	Are there any terrestrial ecosystems in the project area such as forest, savanna, grassland or desert which might be considered significant?			
2.	Will project affect the use or condition of such system?			

**16 Endangered/ Threatened/ Rare/ Endemic Species**

S/No.	Description	Yes	No	Not Known
1.	Is the existence of endangered species in the project area known?			
2.	Will project affect the habitat of any such species?			

**17 Migratory Species**

S/No.	Description	Yes	No	Not Known
1.	Do migratory fish, birds, or animals use the project area?			
2.	Will project affect the habitat and numbers of such species?			

**18 Beneficial Plants**

S/No.	Description	Yes	No	Not Known
1.	Do non-domesticated plants occur in the project area which are used or sold by local people?			
2.	Will project affect these species by reduction of their habitat and number in any way?			

**19 Beneficial Animals and Insects**

S/No.	Description	Yes	No	Not Known
1.	Do non-domesticated animals occur in the project area which are used or sold by local people?			
2.	Will project affect these species by reducing their habitat and number in any way?			

**20 Pest (Plants and Animals)**

S/No.	Description	Yes	No	Not Known
1.	Are there currently any problems with pest (plants or animals) in the project area?			
2.	Are there any plants or animals in the area which might become pest because of ecological changes brought about by the project?			
3.	Will project improve or increase the habitat for such species?			

**21 Disease Vectors**

S/No.	Description	Yes	No	Not Known
1.	Are there known disease problems in the project area transmitted through vector species?			
2.	Will project increase vector habitat?			
3.	Will project decrease vector habitat or provide opportunity for control?			
4.	Are there clinics or other disease control programmes in operation or planned for the area?			
5.	Is it necessary to consult a Public Health Officer?			

**22 Resource/ Land Use**

S/No.	Description	Yes	No	Not Known
1.	Are lands in the project area intensively developed?			
2.	Will project increase pressure on land resources?			
3.	Will project result in decrease holdings by small land owners?			
4.	Should a land use planner be consulted?			
5.	Will project result in involuntary land take?			

**23 Energy Source**

S/No.	Description	Yes	No	Not Known
1.	Will project increase demand for conventional energy sources?			
2.	Will project create demand for other energy sources?			
3.	Will project promote supply of conventional energy sources?			

**24 Degradation of Resources during Construction**

S/No.	Description	Yes	No	Not Known
1.	Will the project involve considerable use of natural resources (construction materials, water supplies, land, energy) that may lead to depletion or degradation at point source/			

**25 Distribution Systems**

S/No.	Description	Yes	No	Not Known
1.	Will project enhance the equitable distribution of agricultural and/ or manufactured products?			
2.	Will project increase demand for certain commodities within or outside the project area?			
3.	Will project result in decrease in production of certain vital commodities?			
4.	Will project enhance equitable distribution of benefits?			

**26 Employment and Income**

S/No.	Description	Yes	No	Not Known
1.	Will project increase the rate of employment?			
2.	Will project remove job opportunities from the area?			
3.	Will project increase/ decrease income sources or means of livelihood?			

**27 At-Risk Population**

S/No.	Description	Yes	No	Not Known
1.	Are the adverse impacts of the project unequally distributed in the target population?			

**28 Land Acquisition and Livelihoods**

S/No.	Description	Yes	No	Not Known
1.	Will land be acquired?			
2.	Will people's assets or livelihoods be impacted?			
3.	Will people lose access to natural resources?			

**29 Existing Population**

S/No.	Description	Yes	No	Not Known
1.	Are there currently any people living in or near the project area?			
2.	Will project affect people in or near the project area?			
3.	Has liaison community participation in projects design and implementation be necessary?			
4.	Is it necessary to consult a Sociologist?			
	Could presence of outside labor force present economic or social strain for local population?			

**30 Migrant Population**

S/No.	Description	Yes	No	Not Known
1.	Are there currently any mobile groups in the target population?			
2.	Will project result in the movement of people in or out of the area?			
3.	Is it necessary to consult a Sociologist?			

**31 Cultural and Religious Values**

S/No.	Description	Yes	No	Not Known
1.	Are cultural characteristics unique to the project area understood?			
2.	Will project adversely affect religious and/ or cultural attitudes of area residents (including through presence of outside labor force)?			
3.	Are there special superstitions or taboos that will affect acceptance of the project?			

**32 Tourism Resources**

S/No.	Description	Yes	No	Not Known
1.	Is there at present a significant degree of tourism in the area?			
2.	Is there unexploited tourism or recreation potential in the area?			
3.	Will project adversely affect existing or potential tourist or recreation attractions?			

**33 Maintenance and Repairs**

S/No.	Description	Yes	No	Not Known
1.	Will the project require frequent maintenance and repair?			

## CONCLUSION

Tick	Summary	Safeguard Requirements
	All the above answers are "No"	If the above answers are "No", there is no need for further action
	There is at least one "Yes"	If there is at least one "Yes", then Simple Environmental Review (ER), Limited Environmental Assessment (LEA), or Full Environmental Impact Assessment (EIA) is required

### Which course of action do you recommend?

- ☐ No further action if sub-project has no impacts on environment and presents no social risk
- ☐ Simple Environmental Review (RE) if sub-project may create a few minor and easily mitigatable environmental problems
- ☐ Limited Environmental Assessment (LEA) if sub-project may create minor environmental or social problems that requires site visit or construction modifications to minimize or eliminate impacts
- ☐ Full Environmental Impact Assessment (EIA) if the sub-project will result into potentially significant direct or indirect adverse impact as per ZEMA EIA Regulations
- ☐ Resettlement Action Plan (RAP) if sub-project will result in resettlement of affected people.
- ☐ Any other recommendation (Explain)

### This form has been completed by:

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Signature: \_\_\_\_\_



**Annex 2: Sample Checklist for Sub-project**

Stage	Potential Negative Impact	Tick	Mitigation Measure	Tick	Responsible Person
Before construction	Displacement of habitat		Prepare Resettlement Action Plan as per OP 4.12		
	Loss of farming land		Prepare Resettlement Action Plan as per OP 4.12		
	Sloppy land and hilly site, landslide and erosion		Terracing		
			Excavation to level		
			Control of Water Flows		
	Pit formation from sand mine		Use of sand from designated areas		
			Back fill pits		
	Pit formation from clay soil demand for brick moldings		Backfill pits		
	Pressure on fire-wood for brick curing (Deforestation)		Planting fuel-wood fast growing trees		
			Buying fuel-wood from recognized dealers		
During Construction					
	Cement dust pollution during block making		Use of masks		
	Noise		Use of ear protector		
	Cement dust pollution during construction		Dust control by water or other means		
	Pressure on existing water resources		Provision of more local wells		
After Construction	Pressure on timber required for supports, door/windows and furniture (Deforestation)		Buying poles, timber and furniture from recognized dealers		
	Large of number of labourers to the site (Human waste)		Building of pit latrines		
	Solid waste of concrete, bricks, blocks, colour stains on floor				
	Used tools and equipment		Removal of equipment from the site		
	Medical waste from dispensary (health post)		Construction of special designed system for disposal of medical waste (e.g. incinerator)		

This Form has been completed by:

a) Environmental Co-ordinator: .....

b) Signature: .....Date: .....

### Annex 3: Sample Environmental Review Form

TYPE OF EXPECTED IMPACT	DESCRIPTION OF IMPACT	PROPOSED MEASURE	MITIGATION
<b>Physical Environment:</b>			
• Increased soil erosion?			
• Increased sediment load into receiving water?			
• Likely contamination of surface of sub-surface water			
• Excessive dust or noise during construction			
<b>Biological Environment</b>			
• Removal or disturbance of natural vegetable			
• Sub project in core or buffer area of a protected area			
• Description of disturbance of animal or any locally important annual habitat?			
<b>Social Environment</b>			
• Aesthetic degradation of a landscape?			
• Degradation or disturbance of an historical or cultural sites			
• Transport or use of toxic substance that pose a risk to human health			
• Involuntary displacement of individuals and families			
• Economic losses to individuals or families because of the sub project			

**The Form has been filled by:**

Name: .....  
 Position: .....  
 Signature: .....  
 Date: .....

**Approved by:**

Name: .....  
 Position: .....  
 Signature: .....  
 Date: .....

#### Annex 4: Limited Environmental Assessment (LEA) Form

Note: This form must be completed for sub project that may pose minor environmental problems.  
The form must be filled by the designated Environmental Co-ordinator

- Sub project Name: .....
- Location (Village, Ward, District).....
- Type of sub project: .....
- Number of people benefiting the sub project: .....
- General Description of the sub project:-

Sub project objectives: .....

.....

.....

.....

.....

.....

Sub project components: .....

.....

.....

.....

.....

.....

#### a) Baseline Description of affected Environment

Description of physical chemical environment (soil, air, water, etc.)

.....

.....

.....

Description of Biological Environment (habitats and Communities, Flora etc):

.....

.....

.....

Description of Socio-economic Environment e.g. historical sites, aesthetic aspects, public health, infrastructure

.....

.....

.....

#### b) Identification of Negative Environmental Impacts

Impacts in the physical-chemical environment (soil, water, etc)

.....

.....  
 .....  
 .....  
 Impact on the Biological Environment (Flora, habitats and communities etc.)  
 .....  
 .....  
 .....  
 .....

Impacts on the Socio-economic Environment (Historical, sites, aesthetic, public health, infrastructure etc)  
 .....  
 .....  
 .....

**c) Mitigation Measures**

Description of Impact	Mitigation Measures
.....	.....
.....	.....
.....	.....
.....	.....

Report prepared by:

Name: .....  
 Position: .....  
 Signature: .....  
 Date: .....

Approved by:

Name: .....  
 Position: .....  
 Signature: .....  
 Date: .....

**Annex 5: Sample Matrix of Environmental and Social Management Plan (ESMP)**

No.	Environmental and Social Impact Identification	Proposed Mitigation Measures	Monitoring	Responsibility	Schedule	Costs and Source of Fund
1.	Siltation of water courses due to soil erosion of nearby drains and heavy rains.	Sediment traps in streams	<ul style="list-style-type: none"> <li>Inspect sediment traps and ensure it is well constructed</li> </ul>	<ul style="list-style-type: none"> <li>District Water Engineer/ Consulting Engineer</li> <li>Engineer/Consulting Engineer</li> </ul>	<ul style="list-style-type: none"> <li>During construction period</li> <li>During Construction period</li> </ul>	<ul style="list-style-type: none"> <li>Included in sub project budget</li> <li>Included in sub project budget</li> </ul>
2.	Relocation of or loss of shelter	Implementation of Resettlement Policy Framework	<ul style="list-style-type: none"> <li>Ensure new land allocated and compensation done to affected group</li> </ul>	<ul style="list-style-type: none"> <li>District Commissioner</li> <li>Commissioner for Land</li> </ul>	<ul style="list-style-type: none"> <li>Before commencement of the sub project</li> </ul>	<ul style="list-style-type: none"> <li>To be determined by land valuer as per compensation schedule</li> </ul>

## **Annex 6: Environmental Clauses in Bidding Documents**

The contractor shall execute the Works in accordance with the Environmental Management Plan (EMP) prepared for the particular Works. Where an EMP does not exist, the clauses contained herein shall form the basis of a management plan.

### **1. Environmental Health and Safety Management**

- 1.1 The Contractor shall ensure the safety and health of the public and workers and meet safety requirements for the operation of the Works, which shall include but not necessarily limited to:

1.1.1 Adopt and enforce Code of Conduct regulating workers' behaviour and in particular, limiting fraternization with host communities or other workers.

Sensitizing workers and local residents in consultation with other stakeholders on the dangers of contracting and spreading sexually transmitted diseases and other health risks including HIV/AIDS that may be compounded as a result of the construction activities and on the requirement to comply with a Code of Conduct limiting fraternization with host communities or other workers.

1.1.2 Ensuring that stagnant water in uncovered borrow pits is treated to avoid creating breeding grounds for mosquitoes if such pits are within 500m of human settlements or workers' camps.

1.1.3 Providing his workforce and the Project Manager's Site staff with protective gear such as safety helmets, work boots, etc.; and where appropriate: safety goggles; dust masks; ear/noise protection headgear, etc.

1.1.4 Spraying water on all access roads and diversions to suppress dust emissions in accordance with the 'Air Pollution Control Standards enforced by Zambia Environmental Management Agency.

1.1.5 Ensuring that noise levels emanating from machinery, vehicles and construction activities are kept to a minimum. Noise levels reaching the communities from construction activities shall not exceed 90 decibels.

1.1.6 Ensuring that blasting activities are not carried out in the vicinity of settlement areas, cultural sites, wetlands and are located not less than 1.5km from such areas; and that they are carried out during daylight hours after consulting with local communities on the proposed blasting times.

### **2. Displacement and Resettlement**

- 2.1 The Contractor shall ensure that the execution of the Works does not cause to move or disadvantage people, their property or their activities.

- 2.2 In the event of any people or their properties or activities are caused to move or disadvantaged, as agreed necessary by the Project Manager, the Contractor shall formally notify the Project Manager of the physical extent and time frame the Contractor requires to use the areas affected and the Contractor shall submit copies of his notification to the Employer for action in respect of compensation and any other measures required and the Employer shall formally inform, through the Project Manager, the Contractor when the resettlement arrangements have been concluded such that the Contractor shall have access to the affected areas.

### **3. Water Resources Management**

- 3.1 The Contractor shall ensure that water flows in rivers, streams and other natural or irrigation channels are maintained and/or re-established where they are disrupted due to the execution of the Works.
- 3.2 The Contractor shall ensure that temporary damming of streams and rivers is done in such a way that disruption of water supplies to communities downstream is avoided and the ecological balance of the river system is maintained.
- 3.3 The Contractor shall obtain a permit from the Water Board and the Local Authority for extraction of both surface and underground water to avoid conflicting with water demands for local communities. Water extraction shall not be permitted from wetlands.
- 3.4 The Contractor shall ensure that disposal of effluent (waste water or water containing spoils) into the aquatic environment shall be in accordance with the 'Water Pollution Control Standards enforced by Zambia Environmental Management Agency, to avoid water pollution.

### **4. Material Extraction**

- 4.1 Prior to execution of the Works, the Contractor shall obtain appropriate licenses/permits from relevant authorities including traditional authorities to operate each quarry or borrow area.
- 4.2 The Contractor shall ensure that each material extraction site is not located in a forest reserve, national parks, agricultural land, areas of high scenic value, or in the vicinity of settlement areas, cultural or archaeological sites, wetlands, river channels or any other valued ecosystem component and shall be located at not less than 500m from such areas. However, where there is no practical alternative, permission shall be sought from the Forest Department, Department Wildlife and National Parks, Department of Agriculture, Local Authority, National Heritage Conservation Commission or the Zambia Environmental Management Agency respectively and an environmental impact study shall be conducted in accordance with the Environmental Impact Assessment regulations enforced by Zambia Environmental Management Agency.

## **5. Reinstatement of the Site**

- 5.1 Upon completion of the Works or as directed by the Project Manager, all borrow pits, quarry sites, access roads, diversions, camp sites and any other temporary Works shall be cleared of construction debris and surplus construction material shall be reinstated as far as practicable to its original condition to the approval of the Project Manager. After which topsoil shall be reinstated over the affected areas to a depth of not less than 150 mm to facilitate natural vegetation growth. The Contractor shall ensure that reinstated areas are inherently stable and self-draining.
- 5.2 Where provided for in the Contract, the Contractor shall provide and plant trees in reinstated areas as directed by the Project Manager and shall ensure the survival of planted trees by watering and protecting seedlings from fires, pests and diseases and other anthropogenic factors. The Contractor shall take care of all the required maintenance to the end of the Defects Liability Period.
- 5.3 For such replanting, the Contractor shall have first identified the availability and respective costs of suitable plant species readily available for replanting or reseeded for the approval of the Project Manager. The suitable plant species shall provide vegetative cover to control erosion, provide vegetative diversity, and that will through succession, and contributes to a stable and compatible ecosystem.
- 5.4 Where, a pit or quarry is declared a usable water source for the local community or livestock in the surrounding areas, the Contractor shall ensure that such areas are reshaped so as to be inherently stable, adequately drained and suitable for the desired long-term land use and minimize the long-term visual impact by creating landforms, which are compatible with the adjacent landscape.

## **6. General**

- 6.1 The Contractor shall stockpile all topsoil excavated or removed during execution of the Works. The Contractor shall, as far as practicable, ensure that the stockpiles are located where trees can act as buffers to prevent dust pollution, and the stockpiles shall not interfere with existing drainage systems; all to the approval of the Project Manager.
- 6.2 The Contractor shall ensure that vegetation clearing is minimized during execution of the Works and that protected tree species as listed in the Forest Act are preserved.
- 7.3 The Contractor shall ensure that all waste including construction waste generated during execution of the Works, is collected and disposed of at designated disposal sites in line with the 'Waste Management Regulations' of the Zambia Environmental Management Agency or shall be re-used or sold for re-use locally as approved by the Project Manager.



- 8.4 The Contractor shall ensure that excess spoil material is disposed of in areas approved by the Project Manager and upon completion of the Works all such areas shall be landscaped and rehabilitated to the approval of the Project Manager.
- 8.5 The Contractor shall ensure that all hazardous waste, chemicals and toxic substances are handled, treated and disposed of in line with the 'Pesticides and Toxic Substances Standards enforced by Zambia Environmental Management Agency.

**9. Penalties**

- 9.1 If the Contractor fails to implement the approved Environmental Management Plan or contravenes any order as instructed by the Engineer, the Employer shall be entitled to seek legal redress through ZEMA and appropriate penalties may be instituted in accordance with the provisions of the ZEMA of 2011.

**Annex 7: List of Stakeholders Consulted**

No.	Name	Designation	District	Mobile	Email Address
1	Sifaya Mainga	Council Treasurer	Mkushi	0972-136130	maingasifya@yahoo.com
2	Frank Mupesha	Director Works	Serenje	0977-394386	
3	Kabimba	District Planning Officer	Chibombo	0975-757571	
4	Enock Ngulube	Director of Works	Serenje		
5	Milly Muluti	Council Secretary	Kapirimposhi	0977-891774	lombemilly@yahoo.com
6	Teckler Mujala	District Planner	Kapiri Mposhi	0979-914279	
7	Chibefwe Tapson	Councillor	Kapiri Mposhi	977175200	
8	Victor Chawinga	Director Engineering	Kabwe	0977-883162	
9	Cosmas Sakala	Superintendent	Mkushi	0974-737453	
10	Kephas Mushikwa	District Building Superintendent	Mkushi	0962-301151	
11	Julia Mulenga	Education Standards Officer Acting DESO	Mkushi	979335152	
12	Naomi Sakala	Director planning	Kabwe	973863184	
13	Graphine Walubita	District Planning Officer	Itezhi-tezhi	977561968	
14	Stanely Mwanakayaya	District Planning Officer	Mumbwa		
15	Mr Chipili	Director administration	Mazabuka	0965-087809	
16	Wisdom Bwalya	Town clerk	Mazabuka	0977-635722	
17	Douglas Mumba	Director of Engineering	Mazabuka	0976-460737	md_doug@yahoo.com
18	Chifunilowilliam	Social Economist	Mazabuka	0979-323538/	williamchifunilo@yahoo.com
19	Jeff Mweenge	District Planning	Gwembe	0968-909077	jeffmweenge@yahoo.com

		Officer			
20	Peter Madubeko	Director of Works	Gwembe	0955-584635	petermadubeko@yahoo.com
21	Lubasi Munalula	Director of Works	Senanga	977660004	
22	Tyson Chunga	Council Secretary	Monze	0977 - 282923	
23	Lynda Mapara	Council Secretary	Monze	0977-604419	lynda.mapara@gmail.com
24	Francis Mpiana	District Planning Officer	Monze	0973-029357	
25	Scriviner Kalundu	Road Superintended	Monze	0977-836707	kalunduscriviner@yahoo.com
26	John Ndumba	Director of Works	Sesheke	977877005	
27	Mr Kalumba	Council Secretary	Senanga	0973-902747	
28	Mr Mungalu	Council Secretary	Kaoma	0977-743601	
29	Mrs Banda	Council Secretary	Kalabo	0971-629846	
30	L Muteto	Council Secretary	Sesheke	0966-684975	
31	L Siwale	Chief Planner	Choma		
32	Kennedy Mubanga	Provincial Planner	Choma	0977-372974	kennedymubanga@gmail.com
33	Matthews Mashapi	Director of Works	Kalomo	0977-616545	matthewsmashapi@yahoo.com
34	Mrs Machai	Council Secretary	Kalomo	0977805344	
35	Benson Choongo		Kapiri Mposhi		