PROJECT: NORTH-EAST NETWORK REHABILITATION PROJECT (NENRP)
COUNTRY: ZIMBABWE

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) SUMMARY

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ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) SUMMARY

Project Title: North-East Network Rehabilitation Project (NENRP)
Country: Zimbabwe
Project Category: Category 1

1. INTRODUCTION

The Zimbabwe Electricity Transmission and Distribution Company (ZETDC), a subsidiary company of the Zimbabwe Electricity Supply Authority (ZESA), is proposing to construct a 132kV transmission line from Atlanta 132/36kV Substation to Mutoko Growth Point, conduct downstream network rehabilitation, and construct a new substation at Mutoko, and is seeking funding from the African Development Bank (AfDB). The proposed transmission line will be approximately 42 km long while the substation will have a footprint of approximately 1.5 hectares. The Project consists of the following components: (i) a single circuit monopole transmission line; (ii) single bay extension at Atlanta 132/33kV Substation, (iii) new 132/36kV substation at Mutoko; (iv) re-routing part of the existing 33kV lines into the new substation; (v) downstream distribution network refurbishment; and (vi) social upliftment projects in the areas dissected by the line.

An Environmental and Social Impact Assessment (ESIA) was undertaken in fulfilment of the requirements of Zimbabwe’s Environmental Management Act (Chapter 20:27) and those of the AfDB’s Integrated Safeguards System (ISS) applicable to Category 1 projects. This ESIA Summary Report highlights the key environmental and social (E&S) assessments and corresponding management plans designed by ZETDC to ensure that the proposed project activities comply with national and AfDB E&S policy requirements. An Abbreviated Resettlement Action Plan (ARAP) was also developed and a summary thereof posted on the AfDB website in conjunction with this ESIA Summary Report.

2. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

2.1 National Legal Framework

The ESIA has been prepared in accordance with applicable environmental, social and sector policies, standards and legislation in Zimbabwe as well as relevant international ratified conventions. Zimbabwe’s ESIA process is governed by the provisions of the Environmental Management Act (Chapter 20:27), which stipulates that the implementation of the proposed Project requires an ESIA approval certificate to be issued by the Environmental Management Agency (EMA) prior to the commencement of construction works. The applicable national policies and legislation include:

- The Constitution of Zimbabwe Amendment (No. 20) Act, 2013
- Zimbabwe Agenda for Sustainable Socio-Economic Transformation 2013-2018 (ZIMASSET)
- HIV and AIDS Policy for the Energy Sector in Zimbabwe
- National Social Security Authority Act (Chapter 17:04)
- The Factories and Works Act (Chapter 14:08)
- Labour Relations Act (Chapter 28:01) Revised Edition 1996
- Rural District Councils Act (29:13)
• Environmental Management Act (Chapter 20:27)
• Public Health Act (Chapter 15:09)
• Pneumoconiosis Act (Cap 15:08 – Revised 1996)
• Forestry Act (Cap 19:05 Revised 1996)
• Water Act (Chapter 15:09)
• Parks and Wildlife Act (Chapter 20:14)
• Electricity Act (Chapter 13:19)

2.2 National Administrative and Institutional Framework

The ESIA process in Zimbabwe is administered by the Environmental Management Agency (EMA), which is a parastatal under the Ministry of Environment, Water and Climate. EMA receives ESIA studies from registered Consultancy firms and issues ESIA approval certificates upon review. Approval certificates are required before commencement of works and are valid for a period of two years. During project implementation and operation, EMA undertakes periodic environmental audits to monitor the proponent’s implementation of the Environmental and Social Management Plan (ESMP) developed for the Project.

In terms of wayleave certificates, the proposed transmission line dissects land under the jurisdiction of the Goromonzi, Murewa and Mutoko Rural District Councils (RDCs). A section of the line also dissects resettlement areas where the land falls under the Ministry of Lands and Rural Resettlement. ZETDC has applied for wayleave certificates from the Ministry and the respective Rural District Councils. ZETDC will furnish the Ministry with the Abbreviated Resettlement Action Plan (ARAP). The compensation process will be implemented in consultation with the Ministry of Local Government through the District Administrator’s office. The District Administrators in all the three directly affected districts were actively involved in the stakeholder consultation meetings.

2.3 International Conventions

Applicable international conventions and agreements include the United Nations Framework Convention on Climate Change (UNFCCC), the United Nations Convention on Desertification (UNCD), and the Stockholm Convention on Persistent Organic Pollutants (POPS).

2.4 AfDB Safeguards Requirements

The Project has been classified as a Category 1 by the African Development Bank in line with its Integrated Safeguards System (ISS). The following AfDB Operational Safeguards (OS) are triggered:

• Operational Safeguard 1 – Environmental and social assessment: This OS is triggered on account of the Project activities’ potential to generate significant environmental and social impacts to identified receptors within the Project’s area of influence.

• Operational Safeguard 2 – Involuntary resettlement (land acquisition, population displacement and compensation): This OS is triggered because the Project entails both physical and economic displacement. An ARAP has been developed to that effect.

• Operational Safeguard 3 – Biodiversity, renewable resources and ecosystem services: This OS is triggered due to the potential effect on wetlands.

• Operational Safeguard 4 – Pollution prevention and control, hazardous materials and resource efficiency: This OS is triggered due to the risk associated with the use of harmful and possibly hazardous materials during the construction phase.
• Operational Safeguard 5 – Labour conditions, health and safety: This OS is triggered on account of potential risks to worker health and safety during implementation of site-related works.

Additional AfDB policies and guidelines are also applicable when and if triggered under the ISS. These include the Bank’s: Gender Policy (2001); Framework for Enhanced Engagement with Civil Society Organizations (2012); Policy on Disclosure and Access to Information (2012); Handbook on Stakeholder Consultation and Participation in AfDB Operations (2001); Policy on Population and Strategies for Implementation (2002); Integrated Water Resources Management Policy (2000); and Environmental and Social Assessment Procedures for Bank Operations (2015).

3. PROJECT DESCRIPTION AND JUSTIFICATION

3.1 Project Description

The Project comprises of four main components: (i) Construction of a transmission line and the associated substation; (ii) Downstream network rehabilitation and additional customer connections; (iii) Project management, associated activities including project tools; and (iv) Social upliftment initiatives. A summary of Project components is presented in Table 1. Total Project costs are estimated at USD 14,226,085 with the AfDB contributing 90% of total costs and the balance covered by the Government of Zimbabwe.

Table 1: Project Components

<table>
<thead>
<tr>
<th>PROJECT COMPONENT</th>
<th>Cost (USD)</th>
<th>DESCRIPTION</th>
</tr>
</thead>
</table>
| Transmission Line and Substations | 9,276,931 | • Bay extension at Atlanta 132/33kV Substation  
• Construction of 42km x 132kV single circuit transmission line from Atlanta – Murehwa  
• Rehabilitation works on 66km of the existing Murewa –Mutoko 132kV line  
• Construction of a new Mutoko 132kV substation equipped with 2 x 30/50MVA, 132/36kV transformers  
• 7 x 36kV line bays for Mutoko  
• Re-routing part of the existing 33kV lines into the new Mutoko substation.  
• Replacement of 4 x 33kV substation circuit breakers |
| Network Rehabilitation | 1,761,900 | • Upgrade of 4 x 33/11kV distribution transformers  
• Replacement of 110 faulted distribution transformers  
• Installation of 16 Autoreclosers / Sectionerlisers  
• Construction of 27kM of 33 kV line  
• Construction of additional 33kV feeder bay at Atlanta |
| Project Management | 1,768,063 | • Provision of supervision engineering consulting services for the project  
• Project tools – Vehicles  
• Independent Procurement Audit  
• Project Financial Audit  
• Implementation and monitoring of the ESMP  
• Compensation and Resettlement of Affected communities |
| Social Upliftment | 300,000 | • Construction (and equipping) of a maternity shelter in Mutoko District  
• Drilling of solar boreholes, installation of drip irrigation and greenhouses as well as providing technical, business and financial skills training for horticulture production by women’s groups in Mutoko and Murehwa Districts |
3.2 Project Location

The proposed transmission line and substations project is located in Mashonaland East province. Within the province, the project spans three jurisdictions namely Mutoko, Murehwa and Goromonzi Rural District Councils. The proposed line route is shown in figure 1 below. It is intended that the 132kV line will follow the alignment of the current 33kV line, diverting at certain points to avoid homesteads and mountain ranges. From the Atlanta substation up to a point close to Juru Growth point, the line dissects productive commercial farms. Thereafter it cuts across densely settled communal areas characterised by subsistence farming. The line crosses three major rivers, Nyagu, Shavanhohwe and Chivake. It also cuts across mountains, hills, grazing and arable fields. The proposed new Mutoko substation site is on land belonging to the Mutoko Rural District Council.

*Figure 1: Project location and proposed transmission line route (in green)*

3.3 Project Justification

The electricity network infrastructure in Zimbabwe requires significant rehabilitation and upgrade of its basic infrastructure. Substantial financial support is required to address infrastructure-related fragility, improve on service delivery and energy security interventions. The proposed North-East Network Rehabilitation Project is targeted at addressing these issues and the challenge of aged, obsolete equipment, poor state of energy infrastructure, low access rates, unreliable and insufficient transmission distribution capacity and high losses. Due to lack of investments, more that 50% of the substations do not have firm capacity. In addition, new connections cannot be made owing to lack of transformer capacity at substations whilst the distribution system is in need of expansion to connect new customers and replace vandalized distribution materials. As such, the construction and rehabilitation of the Atlanta Mutoko transmission line and substations will strengthen and increase the country’s sub-transmission network capacity in the North
East of Zimbabwe, resulting in improved network reliability, improved quality of electricity supply and increased access to electricity. The Mutoko, Murewa, Uzumba, Maramba-Pfungwe and Mudzi districts are a critical commercial farming and mining hub. Increased access to reliable electricity supply will contribute to sustainable economic growth of the area and improve the social wellbeing of the community.

4. DESCRIPTION OF THE PROJECT ENVIRONMENT

A baseline survey of the project areas was conducted as part of the ESIA and is summarized in the following sections.

4.1 Physical Environment

Topography

There are significant variations in topography between the Atlanta Substation where the proposed transmission line starts up to Mutoko centre where it ends. The Atlanta substation is at an altitude of 1,100m and characterized by very gently undulating landscape which rises gradually northwards. As one moves from the substation, the landscape is again very undulating, with an average altitude of about 1,200m. This changes drastically upon crossing Chivake River where the landscape is characterized by steep and rugged mountain ranges and incised valleys dissected by a number of streams and rivers with altitude rising from an average of 1,260m (at Masviswa hill) to below 1,170m (at Nyatsamba River, a tributary of Chitora River).

Climate

Like the rest of Zimbabwe, the project area has a typical savanna type of climate characterized by hot, wet summers and cool dry winter periods. Mean annual temperature ranges from 15 -20°C, with the highest temperatures being recorded in October and November, while the lowest minimum temperature occurs between June and July. The regions are characterized by moderately high rainfall (750 to 1000 mm/yr), which is largely confined to the summer period which stretches from November to March.

Soils

The nature and type of soils in the project area is strongly influenced by the granite geological formations that dominate the project area. Atlanta substation sits on reddish clay loam soils that are fit for agricultural purposes. The clayic nature of the soils means they are poorly drained and are often waterlogged during periods of heavy rains. However, they are very stable and have a high erosion resistance index. As one follows the line route in the direction of Juru growth point, the soil type in the area is composed of dark to olive colored sandy soils derived from the gneissic granites. Generally, soils in the project area are very permeable.

Hydrology

The proposed project lies within the Mazowe River Catchment area and is on a NW-trending watershed, which separates the Nyadire and the Rwanya Rivers. The route crosses rivers flowing to both river systems at different points, but generally affects the upper reaches of these rivers. The north trending rivers are tributaries of the Nyadire whilst the south trending ones are tributaries of the Rwanya. The major rivers crossed by the line are Nyagu, Shavanhowe and Chivake.
4.2 Biological Environment

Vegetation

The proposed 132 kV power line lies in an area characterized by diverse vegetation species of different densities. A total of 122 taxa (including species, subspecies, and varieties) from 103 genera and 45 families were recorded from the study area. These are dominated by the families Poaceae and Fabaceae. No Threatened species were identified on the site according to the Plant Red Data List of Zimbabwe. No endemic or near endemic species were recorded according to Endemic species of Zimbabwe. Four specially protected indigenous plants were identified along the site; Platycorene pervillei, Satyrium trinerve, Glorisa superba and Eulophia sp. The species lie in the transmission line vicinity but outside the powerline wayleave. The proposed Mutoko substation site is currently forested, with the predominance of the miombo vegetation species consisting mainly of the munondo species.

Fauna

The variety and numbers of wildlife in the project area have been reduced by human activities, through direct killing and harassment, or indirectly through habitat change and encroachment. As such, there are no significant wildlife species that can be affected by the Project. None of the species said to be in the area are considered rare or endangered. The most common animals are baboons and monkeys which are found mostly in the mountainous areas around Chivake River and in Murewa as well as at the foot of the ridge on Devonia farm. Avifauna identified include owls, eagles, flamingos and crows.

Protected Areas

There are no legally protected areas within, or in the immediate vicinity of the direct impact zone of the Project.

4.3 Human Environment

Population and Demographics

The three (3) rural districts dissected by the line, namely Mutoko, Murewa, Goromonzi and Mudzi have a combined population of 511,343 people according to the 2012 national census report. Two additional districts will also benefit from the Project, namely Mudzi and UMP. The male to female ratio is 49.9 to 51.1%. Average household size is 4.3 while household incomes are less than $50 per month. Mudzi District is considered one of the poorest districts in the country, with an average poverty prevalence of 87.9%. The vast majority of people in the concerned districts have no access to electricity. The percent of dwellings with access to electricity is 24.8% in Goromonzi, Mudzi, Mutoko and Murewa districts respectively. As a result, 90% of the population in Mudzi district uses wood fuel, 88.4% in Mutoko, Murewa and Goromonzi.

Local Economy and Livelihoods

While the project area is endowed with a diversity of natural resources with quarrying and mining activities provided importance source of livelihoods in the project area, the most important aspect of the local economy is farming. Even though the five districts making up the project area are prone to droughts, the bulk of the population is involved in subsistence farming under rain fed conditions. There are commercial farms immediately outside Atlanta substation and resettlement areas between Murewa growth point and Mutoko centre. In the resettlement areas farmers got pieces of land averaging about 6 hectares during the land reform programme. Most people in the project area thus depend on farming as the major source of livelihoods. Periodic seasonal droughts and severe mid-season dry spells are experienced during the rainy
season making dry land farming a risky livelihood source. Irrigation facilities are available only in the commercial farms around Atlanta substation.

**Health**

Clinics and private medical doctors are available in growth points, but not so readily available in the farming areas dissected by the transmission line. Each of the districts in the project area has a district hospital, which is the referral hospital for all clinics in the respective districts. These hospitals also refer patients to the provincial hospital located in Marondera town. Most of the local people requested funding for refurbishment works at the various clinics. These clinics are generally unable to provide adequate service to the population in the area and are in dire need of upgrading. Supply of medicines is also erratic.

**Education**

The education situation closely resembles that of health. Schools are available in growth points to cater for both primary and secondary education. In the farming areas dissected by the line, schools are few and far from one another. In some areas, parents are constructing schools on their own after realizing that available schools are too far away for their children. The only institution of higher learning in the project area is Nyadire Teachers’ college.

**Infrastructure and Social Services**

Infrastructure and services such as telecommunication, shops, schools and banks are readily available only at the growth points such as Murewa, Mutoko, Kotwa and Mutawatawa. Television, telephone and GSM mobile coverage is also good in the areas immediately outside the growth points. Remote parts of the districts hardly have telephone services. They also lack health facilities hence several communities requested ZETDC to assist them by constructing new clinics or upgrading existing ones to enable them to better serve the communities. There are small shops stocking groceries and household commodities in most of the communal and resettlement areas. Radio reception is also very poor or completely unavailable in the rural areas.

**Water Supply, Sanitation and Waste Management**

Municipal water and waste management services are available in growth points i.e. at Juru, Murewa and Kotwa. In the rest of the project area, which are farming areas, water and sanitation facilities are still being developed. There are communal boreholes in some parts of the project area although in a few areas people still draw water from unprotected sources, mainly dams. A significant number of households in the farming areas do not have access to toilet facilities, one of the main issues affecting sanitation in the area. In Mudzi district, for instance, 37.7% of the population does not have toilets (37.7%) and rely on the bush system which is both an environmental and public health hazard.

**Land Tenure**

The land tenure system in the project area falls into three categories. In the Growth Points of Murewa and Mutoko, residential land is held under title while some businesses lease land from the Councils for a specified period of time. The Councils charge development levy. In the communal areas dissected by the line, land belongs to the state and is held under the communal tenure system. The larger portion of the land traversed by the line falls under this type of tenure. In the resettlement areas, all the land is also state land and is in the hands of the Ministry of Lands and Rural Resettlement. The Ministry authorizes use of this
land for any other purposes that are not agriculture. In this regard, ZETDC applied for and was granted the wayleave by the Ministry to enable construction of the line.

**Archaeological and Cultural Heritage**

An archaeological and cultural heritage assessment survey was conducted in the project area as part of the ESIA study. The study did not find any registered archaeological sites, but two burial sites and a sacred pool exist along the transmission line route. These burial sites will not be interfered with during the construction period. Despite the absence of recorded archaeological sites, the construction phase will require constant engagement of the Department of National Museums and Monuments in order to avert affecting other as yet unknown sites.

5. **PROJECT ALTERNATIVES**

The ESIA considered various project alternatives including the no-project alternative, different technical and design options, alternative line routing options and alternative sites for the new substation. While the no-project scenario results in the avoidance of all potential negative environmental and social impacts associated with project implementation, it also entails that all potential project benefits are forgone and is therefore deemed unacceptable on account of the urgency of provision of and access to reliable electricity supply to the project area.

In terms of technical options considered, various project design alternatives for increasing power supplies to Mutoko and surrounding areas were evaluated. The preferred option –namely the construction of a 42km, 132kv Single Wolf line from Atlanta to Mutoko, a 2 x 30/50MVA, 132/36kV Substation at Mutoko and rehabilitation of the existing 132kV line between Murewa and Mutoko-- was selected due to it being the most technically and economically feasible alternative resulting in significant reduction in system losses, increases line capacity to unlock suppressed demand, provides room for future loads growth, addresses the project problem-area stretching from Atlanta towards Mutoko, minimizes relocation, avoids unfavorable terrain and capitalizes on existing infrastructure.

Based on the preceding, alternative routing options of the Atlanta Mutoko 132kv line were considered with the selection guided by the principle of minimizing environmental and social impacts. Specifically, the parameters used included accessibility, impact on crops fields and relocation requirements. The comparative advantage of the selected line route consisted in the fact that part of the line utilized an existing wayleave and access roads thus requiring less vegetation clearance and optimizing costs, minimizes the number of commercial farms and communal crop fields impacted, and results in the least number of households affected by physical relocation.

Alternatives sites for the Mutoko Substation were also considered. Chief among the considerations which informed the preferred option is the avoidance of wetland area, which was informed by the mapping exercise conducted by EMA. As such, the chosen alternative avoids the wetland and will have a buffer zone of a least 30m between the edge of the wetland and the new substation. The chosen site is covered by sparse vegetation and has no human settlements or economic activities that would require displacement. The option’s proximity to the transmission line as well as access roads also make it the most technically and economically feasible alternative.
6. PROJECT IMPACTS

The following potential positive and negative environmental and social impacts are anticipated;

6.1 Positive Impacts

Positive impacts during the construction phase include employment creation opportunities for local people in wayleave clearing, offloading and delivery of materials and security services with ZETDC committing to ensuring that 60% of jobs are reserved for women; increasing income generation opportunities for local communities and businesses through the sale of construction materials and food items; and improvement of road infrastructure with an estimated 20km of access roads being upgraded. During the operation phase, the main benefits include improved power supply to target project areas; increased network reliability and quality of supply; improved employment and income generation activities including for marginalized groups; increased access to the internet and communication technology by local schools and institutions; reduced reliance on fossil fuels by reducing the need to rely on wood for energy; increase agricultural productivity through improved irrigation schemes; and improved access to safe drinking water and health and sanitation facilities.

6.2 Negative Impacts

During the construction phase, major impacts include vegetation clearance; increased runoff and soil erosion; deterioration of ambient air quality and increased noise levels; disturbances to farming operations and restriction of land use rights due to line crossing of commercial and communal farms as well as placement of monopole towers along the wayleave; and health and safety issues relating to hazards to people and livestock near construction sites as well as increased prevalence and spread of HIV/AIDS and other STDs due to the influx of temporary workforce from other areas. Expected negative impacts during the operation phase include potential impacts on wildlife, habitats and migratory birds; ozone and corona impacts associated with high voltage power lines; potential for pollution from oil spills; increased exposure to electromagnetic fields; and increased risk of electrocution.

6.3 Climate Change

Climate change-related impacts on the Project are not easy to relate directly and within project micro environment and in the short term. The link between climate change and the transmission project arises from the clearing of the 30-meter-wide wayleave. Ecosystems in the project area show signs of distress as evidenced by soil erosion and silted rivers. The siltation could be associated with climate change in that flash floods have been occurring more regularly than during the past 50 years. Typical flash floods and heavy erosion have taken place and is evident at different locations along the line route. Although clearing of the wayleave increases the risk of erosion, grass cover is generally not affected by clearing hence the erosion risk will be minimal. Although the deforestation attributable to the project is insignificant as compared to what is going on in the whole catchment, the destruction of vegetation constitutes a micro level depletion of carbon sinks. Overall, there are no significant climate change related negative impacts associated with the proposed project. Provision of electricity is part of the adaptation strategy as it will reduce deforestation and improve irrigation in the region.

6.4 Expected Residual Impacts

No negative residual impact of moderate or high impact is expected after implementation of the mitigation measures. The negative residual impacts are minor and will not be the subject of special measures.
6.5 Cumulative Impacts

A number of development projects are either underway or planned in the Mashonaland East Province, consisting in power generation, transmission and distribution projects but also road infrastructure development projects as well as extension of irrigation infrastructure. Associated negative cumulative impacts include loss of vegetation and wildlife habitats, reduction in carbon sequestration, increase soil erosion potential, increased demand on water resources, and potential for displacement of people and communities. Conversely, positive cumulative impacts include increased number of people with access to electricity, creation of employment opportunities and income generation activities, reduction in reliance on fossil fuels and associated climate change impacts, and improved access to improved social infrastructure. As such, and in view of the cumulative nature of the environmental and social impacts associated with development initiatives in the project areas, ZETDC is to ensure that ESIA studies are undertaken for all its projects in order to fully appreciate the magnitude of these cumulative impacts and mitigate where possible.
7. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

An ESMP was developed in the framework of this ESIA in order to prevent, minimize, mitigate and/or compensate for adverse environmental and social impacts associated with the proposed project activities. Table 2 summarizes the specific mitigation and enhancement measures developed as well as the associated implementation and monitoring responsibilities, costs, monitoring and reporting frequency, and performance indicators to assess and evaluate ESMP implementation compliance and performance.

*Table 2: Environmental and Social Management Plan (ESMP)*

<table>
<thead>
<tr>
<th>Impact</th>
<th>Mitigation Measure</th>
<th>Monitoring/Reporting Frequency</th>
<th>Performance Indicator</th>
<th>Locality</th>
<th>Responsibility</th>
<th>Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CONSTRUCTION PHASE</strong></td>
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<tr>
<td><strong>Biophysical Impacts</strong></td>
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<tr>
<td>Loss of Vegetation</td>
<td>• Confine vegetation clearance to the wayleave area</td>
<td>Daily</td>
<td>No vegetation cleared outside 30m wayleave</td>
<td>Along transmission line route</td>
<td>Contractor (I) Environmental Consultant (M) EMA (M) EMA (M) Respective RDCs (M)</td>
<td>Included in construction costs</td>
</tr>
<tr>
<td></td>
<td>• Indigenous plant species to be used for re-vegetation</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Waste Disposal</td>
<td>• Dispose waste in designated waste disposal sites</td>
<td>Weekly</td>
<td>#, location and status of waste disposal sites</td>
<td>Construction sites and camps</td>
<td>Contractor (I) Environmental Consultant (M) EMA (M) EMA (M) Respective RDCs (M)</td>
<td>Included in construction costs</td>
</tr>
<tr>
<td></td>
<td>• Bunding in substation to prevent spillage of oil into the environment</td>
<td></td>
<td>Evidence of Waste Management Plan implementation</td>
<td></td>
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<tr>
<td></td>
<td>• Ensure PCB free transformer oil is used</td>
<td></td>
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<tr>
<td>Water Usage and Pollution</td>
<td>• Obtain permits from ZINWA</td>
<td>Quarterly</td>
<td>No towers located on river banks</td>
<td></td>
<td>Contractor (I) Environmental Consultant (M) EMA (M) ZINWA</td>
<td>Included in construction costs</td>
</tr>
<tr>
<td></td>
<td>• Avoid placing towers on river banks</td>
<td></td>
<td>Evidence of Waste Management Plan implementation</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>• Storage and handling of fuel and hazardous materials away from water sources</td>
<td></td>
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<tr>
<td>Erosion and increased Runoff</td>
<td>• Avoid unnecessary vegetation clearance</td>
<td>Quarterly</td>
<td>Absence of erosion sites along line route</td>
<td>Erosion prone sites such as sloped terrains along t-line route</td>
<td>Contractor (I) Environmental Consultant (M) EMA (M) ZINWA</td>
<td>Included in construction costs</td>
</tr>
<tr>
<td></td>
<td>• Construct mechanical runoff control measures (culverts and drainage ditches)</td>
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<tr>
<td></td>
<td>• Restore vegetation cover as soon as possible</td>
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<tr>
<td>Deterioration of Ambient Air Quality</td>
<td>• Spray water on surfaces to avoid dust dispersion</td>
<td>Daily</td>
<td>Frequency of water spraying</td>
<td>Construction sites and camps</td>
<td>Contractor (I) Environmental Consultant (M) EMA (M)</td>
<td>Included in construction costs</td>
</tr>
<tr>
<td></td>
<td>• Limit vehicle speeds to 40km/h</td>
<td></td>
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</tr>
</tbody>
</table>
### Ambient air quality

- **Noise**
  - Confine operations to normal working hours
  - Provide workers with appropriate PPE
  - Daily
  - Noise levels kept within NSSA thresholds

- **Construction sites and camps**
  - Contractor (I)
  - Environmental Consultant (M)
  - EMA (M)
  - Included in construction costs

### Socio-economic Impacts

#### Physical Displacement

- Compensation and resettlement of affected households
- Once prior to commencement of works
- All displaced households resettled and compensated
- Along transmission line route

#### Economic Displacement

- Compensation for crop losses and compaction of land
- Construction to be undertaken during dry season
- Monthly
- All farmers compensated
- Farms dissected by the line

#### Occupational Health & Safety

- Supply appropriate PPE and ensure use by worker
- Provide first aid kits at all sites
- All workers to undergo induction training
- Monthly
- # of accidents recorded
- Construction sites and camps

#### Spread of HIV/STIs

- HIV sensitization of workforce and local communities
- Provision of information materials and condoms
- Quarterly
- # of awareness meeting held and # of people sensitized
- Project area

#### Employment of Local Labour

- Employ local people
- Reserve 60% of jobs to women and other disadvantaged groups
- Monthly
- # of locals employment by the Project
- Construction sites and camps

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*NENRP | ESIA Summary*
<table>
<thead>
<tr>
<th>Increase Economic Activity</th>
<th>Monthly</th>
<th># of local businesses supported</th>
<th>Project area</th>
<th>Contractor (I) ZETDC (M) Local leadership (M)</th>
<th>Included in construction costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support local businesses by prioritizing purchase of locally produce good where possible</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Friction between locals and outside workers</th>
<th>Monthly</th>
<th># of locals employment by the Project and # of complaints lodged</th>
<th>Project area</th>
<th>Contractor (I) ZETDC (M) Environmental Consultant (M) Local leadership (M)</th>
<th>Included in construction costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employ local people wherever possible</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Implement the grievance redress mechanism</td>
<td></td>
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<tr>
<td>Develop and implement an Influx Management Plan</td>
<td></td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Increase in Traffic accidents</th>
<th>Monthly</th>
<th># of accidents in project area</th>
<th>Access road in project area</th>
<th>Contractor (I) ZETDC (M) Environmental Consultant (M) District engineers from respective RDCs (M)</th>
<th>Included in construction costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erect adequate construction warning sites</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enforce maximum speed limits for construction vehicles on all access roads</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Construct speed bumps near settlements</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carry out regular road safety awareness programs</td>
<td></td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Damage to cultural heritage and burial sites</th>
<th>Monthly</th>
<th>Absence of disturbed sites # of complaints lodged</th>
<th>Along transmission line route</th>
<th>Contractor (I) ZETDC (M) Environmental Consultant (M) Local leadership (M)</th>
<th>Included in construction costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular consultation with the National Museums and Monuments</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avoid cultural heritage and burial sites</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work closely with local people</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Consult community leaders and custodians for decision in the event of encountering graves</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>In the event of exhumation of graves, meet all associated costs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**OPERATION PHASE**

<table>
<thead>
<tr>
<th>Biophysical Impacts</th>
<th>Annually</th>
<th>Clearing limited to wayleave; Invasive species cleared from wayleave</th>
<th>Along transmission line route</th>
<th>ZETDC</th>
<th>Included in operating costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Removal of bushes and invasive species from wayleave</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confine clearing to wayleave</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Impact on Wildlife and Birds</th>
<th>Quarterly</th>
<th>Instances of bird collisions; Bird diverters installed</th>
<th>Along transmission line route</th>
<th>ZETDC Bird Life Zimbabwe</th>
<th>Included in operating costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check and record incidences of bird collision with line</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Install bird diverters</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Land Contamination at Substation</th>
<th>Daily</th>
<th>#, location and status of waste disposal sites; Evidence of Waste Management Plan implementation</th>
<th>Substation</th>
<th>ZETDC</th>
<th>Included in operating costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bunding in substation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Due care exercised to minimize spillage and to ensure adequate disposal and remediation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ensure proper maintenance of motor vehicles and equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste Disposal</td>
<td>• Dispose of waste in designated authorized sites</td>
<td>Daily</td>
<td>Evidence of Waste Management Plan implementation</td>
<td>Substation</td>
<td>ZETDC</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Socio-economic Impacts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exposure to EMFs</td>
<td>• Ensure that there are no human settlements in the wayleave</td>
<td>Quarterly</td>
<td>No homesteads in wayleave</td>
<td>Along transmission line route</td>
<td>ZETDC</td>
</tr>
<tr>
<td>Electrocution</td>
<td>• Carry out regular public safety awareness programs • Ensure consistent and timely maintenance • Restrict access into substation</td>
<td>Quarterly</td>
<td># of cases of electrocution</td>
<td>Along t-line route, distribution network and substation</td>
<td>ZETDC</td>
</tr>
<tr>
<td>Acts of Vandalism</td>
<td>• Carry out awareness meetings to education public on need to protect public infrastructure and dangers associated with vandalizing electrical infrastructure</td>
<td>Quarterly</td>
<td># of cases of vandalism</td>
<td>Along t-line route and distribution network</td>
<td>ZETDC</td>
</tr>
<tr>
<td>Employment Creation</td>
<td>• Offer wayleave maintenance contracts to local people • Prioritize farmers affected by the transmission line</td>
<td>Annually</td>
<td># of locals employed by the Project</td>
<td>Along transmission line route</td>
<td>ZETDC Local leadership</td>
</tr>
<tr>
<td>Improved Power Supplies and Quality in Project Area</td>
<td>• Ensure proper network maintenance • Attend to faults quickly to minimize outage time</td>
<td>Monthly</td>
<td>Reduced # of faults on the line</td>
<td>Mutoko local power network</td>
<td>ZETDC</td>
</tr>
</tbody>
</table>

_NB: (I) – Implementation; (M) Monitoring_
ESMP Budget

The Project’s proposed mitigation measures form part of the project costs and their implementation will be the responsibility of the Contractor during the construction phase and ZETDC during the operational phase. As such, the Contractor and Project Proponent are to provide sufficient budget to ensure compliance with the ESMP. The cost estimate for the implementation and monitoring of the ESMP and RAP, as well as the social upliftment component are summarized in table 3.

Table 3: ESMP, RAP and Social Upliftment Cost Estimates

<table>
<thead>
<tr>
<th>Component</th>
<th>Cost (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESMP</td>
<td>208,063</td>
</tr>
<tr>
<td>RAP</td>
<td>220,000</td>
</tr>
<tr>
<td>Social Upliftment</td>
<td>300,000</td>
</tr>
</tbody>
</table>

ESMP Implementation

Prior to commencement of works, and in complementarity with the provisions stipulated in the ESMP, the following specific plans will be developed for implementation by the Contractor under the supervision of ZETDC. These include:

- Construction Environmental and Social Management Plan
- Wetland Management Plan
- Waste Management Plan
- Gravel Extraction Sites Management Plan
- Health and Welfare Management Plan
- Dust and Noise Management Plan.

The Project Manager within the Project Implementation Team (PIT) will have overall oversight responsibility for ESMP and RAP implementation including reporting obligations. The environmental and social officers within the PIT are to report to the Project Manager and are responsible for all Project’s environmental, social and health and safety issues in accordance with the ESMP. An independent Consulting firm to monitor ESMP implementation is also to be recruited by ZETDC.

8. MONITORING PROGRAM

The Environmental and Social Management Plan will be subject to monitoring. Table 2 provides an indication of the monitoring and reporting frequency, related performance indicators, monitoring roles and responsibilities and associated costs. All project phases will be subject to monitoring by external agencies. Locally, the Environmental Management Agency (EMA) undertakes periodic environmental audits to monitor the proponent’s implementation of the ESMP. Other Government agencies interested in the project implementation process include the Zimbabwe National Water Authority (ZINWA), which ensures that the contractor acquires the requisite licenses ahead of commencement of construction works and will conduct checks on adherence to water abstraction stipulations. Externally, the Project’s environmental and social compliance will also be monitored by the AfDB.

During the construction phase, the Contractor will be responsible for day to day operations along the transmission line and new substation and assume responsibility for effective ESMP implementation. ZETDC, as the Project developer, will conduct monitoring of Project implementation activities in order to
ensure effective implementation of ESMP mitigation and enhancement provisions. ZETDC will also engage an independent Consulting firm to monitor ESMP implementation. Relevant officials from the three Rural District Councils in whose areas the project will be implemented, traditional leaders, Government specialist services as well as selected NGOs will also be involved in project monitoring activities.

In order to improve accountability and ensure that the compensation process is undertaken fairly and transparently, Christian Care has agreed terms with ZETDC to monitor the implementation of the Resettlement Action Plan. Christian Care will monitor the RAP implementation and will ensure that farmers’ interests are safeguarded. Local people will participate in the ESMP through the local leadership, which includes Councilors, village heads and the Chiefs. The local leadership will be there to protect the interests of the community at large. The leadership has been fully appraised about the project and has so far actively participated in consultative meetings held in the area.

9. PUBLIC CONSULTATION AND DISCLOSURE

Stakeholder consultation is a key aspect of any ESIA study and is mandatory in Zimbabwe’s ESIA process. ZETDC ensured the participation of all interested and affected parties in the proposed Atlanta-Mutoko 132kV transmission line project in line with the country’s requirements and requirements of the African Development Bank. This consultation process enabled a two-way flow of information from ZETDC as the project proponent and local stakeholders who will benefit from the project and also face negative impacts that may arise from project implementation. The consultation process will be maintained throughout the project life-cycle and its results will always be integrated with the Environment and Social Management Plan.

The stakeholders were divided into institutional stakeholders and the general public which consisted largely of local people resident in the project area and other interested parties. The two groups were met separately in view of their varying interests in the project.

9.1 Meetings with Institutional Stakeholders

Institutional stakeholders that were met include heads of Government Departments and officials from the rural districts involved in the project. Meetings were held as shown in Table 4. The purpose of the meetings was to introduce the project to administration officials in the districts in which the project is to be implemented and to get their buy in. The meetings provided details of the project and were used to arrange venues and dates for consultative meetings with communities in the area.

<table>
<thead>
<tr>
<th>Date of meeting</th>
<th>Venue</th>
<th>Officials met</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 February 2017</td>
<td>Murewa RDC Offices</td>
<td>CEO, Murewa RDC CEO, Murewa RDC Council Chairman District Engineer Council Chairman District Engineer</td>
</tr>
<tr>
<td>3 February 2017</td>
<td>Ruwa Rehabilitation Centre</td>
<td>President’s office - Goromonzi District</td>
</tr>
<tr>
<td>17 February 2017</td>
<td>Goromonzi RDC Board Room – Ruwa</td>
<td>Heads of Government Departments in the District</td>
</tr>
<tr>
<td>14 March 2017</td>
<td>Mutoko RDC offices</td>
<td>Council CEO and District Administrator</td>
</tr>
<tr>
<td>14 March 2017</td>
<td>District Administrator’s Office, Kotwa</td>
<td>District Administrator Mudzi RDC Officials CEO Mudzi RDC</td>
</tr>
</tbody>
</table>
9.2 Public Consultations

Local people were consulted through community meetings held at accessible sites within the project area. A total of 12 meetings were held with communities as detailed in Table 5. These meetings were publicized using the local structures. Local councilors, village heads and ward coordinators mobilized people to attend the meetings. ZETDC complemented this by placing an advert in a local newspaper. The general structure of the consultation meetings was the same, covering presentation of background information to the project, project justification and how it will be implemented. This was followed by a question and answer session facilitated by local leadership. The first part of the session covered general discussion on current electricity supply challenges and opportunities in the project area and what communities wanted done to address the challenges. The second and final session focused on identification of corporate social responsibility projects which the communities wanted implemented in their area to help improve their wellbeing.

Table 5: Meetings with Local People in the Project Area

<table>
<thead>
<tr>
<th>Venue</th>
<th>Dates</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Reimer (Chipfumbi) Clinic</td>
<td>4 March 2017</td>
<td>10</td>
<td>7</td>
<td>17</td>
</tr>
<tr>
<td>Juru Growth Point</td>
<td>4 March 2017</td>
<td>15</td>
<td>18</td>
<td>33</td>
</tr>
<tr>
<td>Musasike business centre</td>
<td>4 March 2017</td>
<td>51</td>
<td>66</td>
<td>117</td>
</tr>
<tr>
<td>Domborembudzi business centre</td>
<td>15 February 2017</td>
<td>97</td>
<td>91</td>
<td>188</td>
</tr>
<tr>
<td>Murewa Growth Point</td>
<td>15 February 2017</td>
<td>44</td>
<td>57</td>
<td>101</td>
</tr>
<tr>
<td>Muhume business centre</td>
<td>15 February 2017</td>
<td>102</td>
<td>138</td>
<td>240</td>
</tr>
<tr>
<td>Mutoko Growth Point</td>
<td>25 March 2017</td>
<td>138</td>
<td>98</td>
<td>236</td>
</tr>
<tr>
<td>Bondamakara business centre</td>
<td>25 March 2017</td>
<td>59</td>
<td>65</td>
<td>124</td>
</tr>
<tr>
<td>Suswe business centre</td>
<td>20 March 2017</td>
<td>111</td>
<td>53</td>
<td>164</td>
</tr>
<tr>
<td>Kotwa Growth Point</td>
<td>20 March 2017</td>
<td>96</td>
<td>26</td>
<td>122</td>
</tr>
<tr>
<td>Chitsingo business centre</td>
<td>17 January 2018</td>
<td>55</td>
<td>68</td>
<td>123</td>
</tr>
<tr>
<td>Kafura business centre</td>
<td>29 January 2018</td>
<td>149</td>
<td>103</td>
<td>252</td>
</tr>
<tr>
<td>Total attendance all meetings</td>
<td></td>
<td>927</td>
<td>790</td>
<td>1,717</td>
</tr>
</tbody>
</table>

9.3 Consultation with Project Affected Persons (PAPs)

The recommended line route avoided many homesteads except three (3) that will need to be relocated and for whom replacement homes will be built. The routing was done with the objective of minimizing impact on the socio-economic activities of the people through whose areas the line cuts across. 23 families will potentially suffer economic displacement due to the transmission line cutting across their farmland. Farming activities will be affected if construction coincides with the cropping season. The people whose arable land is dissected by the line and the ones to be displaced are the project affected persons (PAPs) and are a particularly important group of stakeholders. An Abbreviated Resettlement Action Plan (ARAP) has been prepared in order to ensure that these PAPs receive fair compensation for their losses. The ARAP provides details of each of the affected persons and the nature and extent of the impact upon their socio-economic wellbeing.
9.4 Grievance Redress Mechanisms

ZETDC has put in place procedures that allow affected people to lodge complaints or claims with the Project Team. The full time Project Team ensures that all such grievances are resolved in a fair manner and within a reasonable time frame. ZETDC will ensure that grievances are resolved amicably and without taking a protracted course to the detriment of the project and the affected individual.

10. INSTITUTIONAL CAPACITIES AND STRENGTHENING PLAN

In terms of overall Project management and implementation, ZETDC has within its structures appropriate personnel to execute and manage the Project. The following project structure are in place:

a. **Steering Committee**: Primary interface between the stakeholders in respect of the project (ZETDC, Ministry of Energy and Power Development, Ministry of Finance, Ministry of Women’s Affairs, Gender and Community Development);
b. **Project Board**: ZETDC Executive Management; and
c. **Project Implementation Team (PIT)**: PIT to be headed by a Project Manager and will be supplemented by the following expert resources: Project administration; Engineering design; Quality assurance; Procurement; Financial Management and Environmental & Social experts.

Dedicated environmental and social experts are to be recruited within the PIT to ensure effective ESMP and RAP implementation. These are to bolster ZETDC’s existing E&S capacity who’s E&S Unit, housed in the System Development Section, consists of one (1) Chief Environmental Planner and one (1) E&S Officers. While ZETDC also has a Health and Wellness officer and a Risk and Safety Officer who report to different business units, the E&S Unit requires additional staffing and expertise to ensure proper ESMP and RAP implementation in the specific context of this Project, but also to allow it to contend with a growing portfolio and pipeline of projects.

In addition to bolstering E&S-specific staffing, and in order to build capacity in the institutions involved in Project monitoring, training and regular progress meetings will be held during the construction phase. These include an induction workshop and quarterly update meetings for all institutions involved in Project monitoring including representative of local communities, as well as a specific technical trainings for ZETDC and RDCs project staff on Environment, Health and Safety issues (to be conducted by NSSA). These have been costed as part of the ESMP budget.

11. CONCLUSION

The ESIA study has demonstrated that the Project will not engender significant and irreversible environmental and social impacts in the Project area. Impacts identified will be mitigated through the effective implementation of both mitigation and enhancement measures as enumerated in the ESMP and ARAP. The major environmental issues arising from the proposed Project consist in the clearance of vegetation along the way-leave. While this is inevitable if the project is to be implemented, the Contractor is to ensure that there is no vegetation clearing outside the wayleave and that re-planting is done in accordance with best practice and in consultation with the Forestry Commission and local people. The risk of locating the substation on a wetland has been averted in consultation with the EMA and further mitigated by the implementation of a wetland management plan. In terms of physical and economic displacement, the recommended line route avoided many homesteads except three (3) that will need to be relocated and for whom replacement homes will be built. The routing was done with the objective of minimizing impact on the socio-economic activities of the people through whose areas the line cuts across. 23 families will potentially suffer economic displacement due to the transmission line cutting across their farmland.
Farming activities will be affected if construction coincides with the cropping season. The people whose arable land is dissected by the line and the ones to be displaced are the project affected persons (PAPs) and are a particularly important group of stakeholders. An Abbreviated Resettlement Action Plan (ARAP) has been prepared in order to ensure that these PAPs receive fair compensation for their losses. The ARAP provides details of each of the affected persons and the nature and extent of the impact upon their socio-economic wellbeing.

On the other hand, the implementation of the Project is expected to results in a number of positive impacts. Positive impacts during the construction phase include employment creation opportunities for local people in wayleave clearing, offloading and delivery of materials and security services with ZETDC committing to ensuring that 60% of jobs are reserved for women; increasing income generation opportunities for local communities and businesses through the sale of construction materials and food items; and improvement of road infrastructure with an estimated 20km of access roads being upgraded. During the operation phase, the main benefits include improved power supply to target project areas; increased network reliability and quality of supply; improved employment and income generation activities including for marginalized groups; increased access to the internet and communication technology by local schools and institutions; reduced reliance on fossil fuels by reducing the need to rely on wood for energy; increase agricultural productivity through improved irrigation schemes; and improved access to safe drinking water and health and sanitation facilities. As such, the Project is deemed acceptable in relation to environmental and social considerations provided that ESMP and RAP stipulation are effectively implemented.

12. CONTACTS

The contacts within ZETDC in relation to the Project are:

- Mr. Chrispen MASEVA, Chief Environmental Planner, ZETDC, Zimbabwe, CMASEVA@ZETDC.CO.ZW

The contacts within AfDB in relation to the Project are:

- Ms. Liezl Cecilia HARMSE, AfDB, South Africa, LHARMSE@AFDB.ORG
- Ms. Erika AUER, AfDB, South Africa, E.AUER@AFDB.ORG
- Yusef HATIRA, AfDB, South Africa, Y.HATIRA@AFDB.ORG.