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EXECUTIVE SUMMARY

Introduction

National Power Authority (NPA), through the Government of Sierra Leone (GoSL) has acquired a credit facility from the International Bank for Reconstruction and Development (IBRD) for an energy access project known as the Sierra Leone Energy Sector Utility Reform Project. This project involves the upgrading and rehabilitation of key primary Medium Voltage (MV) network infrastructure, including aged MV substations and feeder lines in the Greater Freetown area. Due to decades of neglect, primary MV substations are in a state of disrepair, substation batteries and circuit breakers are mostly not functional, and DC supplies nonoperational. Sections of the system are overloaded, protection relays are faulty and there is a serious risk of infrastructure damage occurring as a result of protection system or circuit breaker failure. The envisaged upgrade will require that certain existing links be replaced with appropriately sized cables/overhead lines, and will help reduced technical losses and enhance reliability. Appropriately matching needed investments in MV feeder upgrade to appropriate investments in corresponding substations will enable systematic system upgrade and protection of infrastructure. The upgrade will also be complementary to network investments effected under the SLIDF energy access project and will form part of a systematic approach to rehabilitate the Freetown network on an incremental basis. In particular it should be noted there has been an increase in demand in certain areas from newly established commercial operations and consideration will be given to expanding the network to meet this demand.

Purpose of the ESMF

The general framework for the assessment and management of environmental and social safeguards of developments/projects in Sierra Leone is provided in the Environmental Assessment (EA) Regulations. Some development partners however, have their respective Environmental and Social (E&S) safeguards procedures and policies which must be followed for projects funded by them. As part of the funding arrangements for the Sierra Leone Energy Sector Utility Reform Project therefore, the World Bank’s E&S safeguards policies (OP/BP 4.01) must apply. This requires the preparation of an Environmental and Social Management Framework (ESMF). The features of the Sierra Leone Energy Sector Utility Reform Project which make an ESMF the appropriate requirement under the Bank’s OP/BP 4.01 are listed below. The Sierra Leone Energy Sector Utility Reform Project has:

- A number of sub-projects and components;
- Various developmental stages to be carried out in modules;
- Sub-projects spread over a wide geographic area;
- Implementation phases and duration spread over 5 years; and
- Design of the sub-projects and exact locations for implementation, as well as impacts are not yet determined at this stage.
The ESMF spells out the E&S safeguards, institutional arrangements and capacity required to use the framework. This ensures that sub-projects under the Sierra Leone Energy Sector Utility Reform Project meet the national and local E&S requirements, and also consistent with OP 4.01 and OP 4.12 (of the Bank). The ESMF sets out principles and processes within which the sub-projects are implemented agreeable to all parties. The other objectives of the ESMF include:

- Assessment of potential adverse E&S impacts commonly associated with the sub-projects and the way to avoid, minimize or mitigate them;
- Establishment of clear procedures and methodologies for the E&S planning, review, approval and implementation of sub-projects;
- Development of an EA screening/initial assessment system to be used for sub-projects; and
- Specification of roles and responsibilities and the necessary reporting procedures for managing and monitoring sub-project E&S concerns.

Policy, Legal and Administrative Framework

Ministry of Lands, Country Planning and the Environment
There is an overall institutional and legal framework for the management and protection of our environment in the national context. The responsibility for the management and protection of the environmental presently lies with the Department of the Environment of the Ministry of Lands, Country Planning and the Environment. The political head of the Department of the Environment at present is the Minister of Lands, Country Planning and the Environment.

The Administrative head is the permanent Secretary who is responsible for coordinating the function of the departments within the Ministry viz. department of Land and Country Planning (DLCP), Department of surveys and Lands (DSL) and the Department of the Environment, (DOE). He is also the Principal Adviser to the Minister and the Vote Controller of the Ministry’s budget.

Department of the Environment
The Department of the Environment (DOE) has developed with World Bank Support, the national Environmental Action Plan (NEAP). It is presented into two volumes. Volume 1 analyses the environmental issues in Sierra Leone and the recommended interventions. Volume 2 contains the environmental proposals. A National Environmental Policy (NEP) has been prepared. The goals, objectives and strategies of the (NEP) are outlined below:

Policy Goals
The goal of the national Environmental Policy is to achieve sustainable development in Sierra Leone through sound environmental management.

**The Environmental Protection Act**
The environmental protection Act (EPA) 2000 empowers the Department of the environment to perform the following tasks amongst others:
- Screen projects for Environmental Impact Assessment (EIA)
- Issuance of environmental Impact Assessment Licenses
- Formulate or promote the formulation of, and monitor the implementation of environmental policies, programs, projects, standards and regulations.

**National Environment Protection Board**
The EPA 2000 also provides for the establishment of an environmental protection Board with the following functions:
- Facilities coordination, cooperation and collaboration among government ministries, local authorities and other agencies in areas of environmental protection;
- Review national and sectoral policies and make such recommendations or proposal it make think necessary to the Minister.
- Review environmental impact assessments prepared pursuant to this Act and make appropriate recommendations to the Director.
- Investigate or cause to be investigated, any activity, occurrence or transaction which it considers is likely to have or result in harmful consequences to the environment and advise on measures necessary to prevent or minimize such consequences;
- Advise the Minister on areas of environmental protection and control requiring special or additional measures indicating the priorities and specific goals to be achieved;
- Undertake or cause to be undertaken specific studies and research aimed at developing strategies for the protection of the environment and make appropriate recommendations to the Minister; and
- Consider any other matters which may be referred to it by the Minister and make appropriate recommendations or proposal thereon.

**Project Description**
The project comprises three major components and which are as follows:
- Investment in Distribution and Rehabilitation;
- Rehabilitation and Upgrade of secondary Medium Voltage (MV) network;
- NPA Performance Improvement and Enhancement of Implementation Capacity/Skills (including Impact Evaluation),

**Component 1:**
Investments in Distribution Rehabilitation, Metering and Management Systems

The distribution grid requires well over $170 million of investment, in the Greater Freetown area alone. Some of the most urgently needed system investments are in the process of having specifications prepared under the recently approved Sierra Leone Infrastructure Trust Fund (SLIDF) energy access project, under which provision was also made for technical assistance that will be used to carry out a condition assessment of the entire Freetown distribution network and to develop a comprehensive investment plan of prioritized and optimal next investments. The plan, to be based on the assessment, system studies as well as the existing JICA funded load flow study, will exactly define network sections and equipment needing urgent upgrade to remove serious bottlenecks in the system and to upgrade quality of supply. Apart from forming the basis for investment under the IDA project, this systematic approach will ensure a sound basis for further financing of the network rehabilitation and upgrade going forward.

2. A major component of the IDA project will be to upgrade and rehabilitate key primary MV network infrastructure, including aged MV substations and feeder lines in the Greater Freetown area. Due to decades of neglect, primary MV substations are in a state of disrepair, substation batteries and circuit breakers are mostly not functional, and DC supplies nonoperational. Sections of the system are overloaded, protection relays are faulty and there is a serious risk of infrastructure damage occurring as a result of protection system or circuit breaker failure. The envisaged upgrade will require that certain existing links to be replaced with appropriately sized cables/overhead lines, and will help reduced technical losses and enhance reliability. Appropriately matching needed investments in MV feeder upgrade to appropriate investments in corresponding substations will enable systematic system upgrade and protection of infrastructure. The upgrade will also be complementary to network investments effected under the SLIDF energy access project and will form part of a systematic approach to rehabilitate the Freetown network on an incremental basis. In particular it should be noted there has been an increase in demand in certain areas from newly established commercial operations and consideration will be given to expanding the network to meet this demand.

3. Quality of electricity service in Freetown is poor. Low voltage conditions caused by feeder overloading are present in most areas of the city and regular outages occur due to power shortages as well as system unreliability. Undersized transformers and excessive LV feeder lengths result in low voltage conditions. Suitable areas for secondary MV and LV system upgrade will be defined in the investment plan developed under the SLIDF energy access project, including consideration of high consumption areas in order to maximize investment benefit and positively impact the commercial performance of NPA. A $3 million-$5 million IDA investment in this area, matched by coordinated and well-targeted LV upgrade investments supported by the
Islamic Development Bank Investments in LV system upgrades will be necessary to reduce technical losses and to improve service delivery and overall utility performance. 4. As a means to improving commercial performance, NPA has embarked on a program to gradually replace all credit meters with pre-paid meters. This strategy has already paid dividends in terms of reduced non-technical losses and improved collection ratio. The Project will complement NPA’s ongoing re-metering program by financing supply and installation of approximately 10,000 pre-paid meters. NPA currently has no means of precisely locating high loss areas in the network. Therefore, the Project will finance supply and installation of a further 500 statistical meters to complement the investment made under the SLIDF.

**Component 2: NPA Performance Improvement and Enhancement of Implementation Capacity/Skills (including Impact Evaluation)**

**Component 3: Targeted sector/utility technical Assistance**
5. Owing to the enormity of the challenges in the sector, the Government as well as the utility with limited staff are often reactive rather than proactive, and in fire-fighting mode rather than strategic, with necessary focus in key areas which are pre-requisites for well-informed decision-making for prioritizing and selecting future public and private investments in generation, transmission and distribution. Technical assistance will be procured to strengthen utility/system planning and dispatch capabilities. This capability should also include regional opportunities and constraints. TA under the SLIDF for an Integrated Resource Plan study is currently under procurement, and will help identify promising opportunities, especially in generation. In addition, technical assistance under IDA will be provided for proper development of the most promising power investment opportunities emerging in generation, including feasibility of related transmission and distribution infrastructure.

**Description of the Project Environment**
The specific proposed site for the Sierra Leone Energy Sector Utility Reform Project is not known but are all in the environment of South-western corner of the Western Region of Sierra Leone. The project area has a south-western equatorial climate. It experiences a bimodal rainfall pattern from April to July and October to December. There is a short dry season in August and a long period in January and February. The area is hot and humid with a relatively humidity of 90% in the night and 75% in the afternoon. The hottest month is March and the coldest is August. In the proposed project the distribution lines will replace the existing lines and there is not likely to be new alignment

**Stakeholder consultations**
The following major stakeholders were consulted for role identification and for potential environmental and social impacts likely to arise from the Sierra Leone Energy Sector Utility Reform Project implementation:

- Sierra Leone National Power Authority (NPA);
- Ministry of Energy and Water Resources
- Environmental Protection Agency (EPA);
- District Assembly (Town and Country Planning Department);
- Ministry of Health (MoH);
- Project catchment communities;
- Labour Commission (LC);
- Forestry Commission/Wildlife Division (WD);
- Ministry of Environment, Science and Technology (MLCPE) and
- NGOs.

Environmental and Social Impact

The impacts have been categorized into beneficial and adverse. The beneficial impacts include:

- Improvement in national energy supply;
- Provide adequate and reliable power supply to all NPA customers in the Western Area.
- Reduction in the losses in the transmission and distribution of electricity
- Assure system integrity and security
- Eliminate or reduce hazards to public and occupational health and safety
- Provide necessary support for sustainable development of the country

The negative impacts include constructional waste, occupational heal and safety, and visual intrusion.
### Table ES.1: Impact Matrix

<table>
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<th>Activities</th>
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<th>Socio-Cultural Environment</th>
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<tr>
<td></td>
<td>Land/soil degradation</td>
<td>Air quality</td>
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<tr>
<td></td>
<td>Noise</td>
<td>Water Resources</td>
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<td></td>
<td>Land Use</td>
<td>Waste Generation</td>
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<td></td>
<td>Cultural/Religious Heritage</td>
<td>Visual Intrusion/Aesthetics</td>
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<tr>
<td></td>
<td>Electrical Infrastructure</td>
<td>Occupational/Public Health &amp;Safety</td>
</tr>
<tr>
<td><strong>Pre-construction Phase</strong></td>
<td></td>
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<tr>
<td>Secure Access to Tx. Routes</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Secure Access to T &amp; D sites</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Clean up Substations</td>
<td>0</td>
<td>0/1</td>
</tr>
<tr>
<td><strong>Construction Phase</strong></td>
<td></td>
<td></td>
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<tr>
<td>Transport Equipment to Site</td>
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<td>0/1</td>
</tr>
<tr>
<td>Clearing RoW/Tower route</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Excavating Foundations</td>
<td>1</td>
<td>0/1</td>
</tr>
<tr>
<td>Erecting Towers/Poles</td>
<td>0</td>
<td>0/1</td>
</tr>
<tr>
<td>Stringing Lines</td>
<td>0</td>
<td>0/1</td>
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<tr>
<td>Construct Substation housing</td>
<td>1</td>
<td>0/1</td>
</tr>
<tr>
<td>Replace cables/conductors</td>
<td>1</td>
<td>0/1</td>
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<tr>
<td>Install new Transformers and Eqpt.</td>
<td>1</td>
<td>0/1</td>
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<tr>
<td><strong>Operation and Maintenance Phase</strong></td>
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<td></td>
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<tr>
<td>Test and Commission System</td>
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<td>0</td>
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<tr>
<td>EMF effects</td>
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<td>Vegetation Control</td>
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<td>Line Maintenance</td>
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<tr>
<td>Tower Maintenance</td>
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<tr>
<td>Substation Eqpt. Maintenance</td>
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</tbody>
</table>

Key:

- **0**  No potential impact or not significant.
- **1 or 0/1**  Potential effect, expected to be less significant.
- **2**  Potential significant adverse impact.
- **2+**  Potential significant beneficial impact.
**Environmental and Social Mitigation Principles**

The ESMF considered a number of mitigation and enhancement measures and also principles for implementation to ensure the Sierra Leone Energy Sector Utility Reform Project and sub-projects become socially acceptable, environmentally sound and sustainable. The measures include:

- Mitigation principles for the effects of land ownership, property and buildings loss;
- Mitigation principles on impact of noise;
- Prevention of Impact on Public Safety principles;
- Prevention of Impact on Occupational Health and Safety principles;
- HIV/AIDS prevention and management principles;
- Socio-cultural conflict prevention principles;
- Gender impacts mitigation principles;
- Substation, Cable theft/security principles.
- Chance find procedure principles
- Population influx control principles;
- Air quality control principles;
- Explosion control and health and safety principles;
- Mitigation as a result of operation of substation principles

Accidental spillage of oil, fuel and paints will be avoided as much possible. Any spilt materials will be quickly mopped up with rags and/or sawdust. The use sawdust and rags will be disposed of at appropriate public waste dumping sites.
<table>
<thead>
<tr>
<th>PROJECT ACTIVITY</th>
<th>POTENTIAL ENVIRONMENTAL IMPACTS</th>
<th>PROPOSED MITIGATION MEASURE(S) (including legislation &amp; regulations)</th>
<th>INSTITUTIONAL RESPONSIBILITIES (incl. enforcement &amp; coordination)</th>
<th>COST ESTIMATES</th>
<th>COMMENTS (eg. Secondary impacts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upgrading of Distribution Line</td>
<td>- Noise, dust, air pollutants, road accidents</td>
<td>- Replant disturbed sites</td>
<td>- Contractor</td>
<td>- Contractor’s costs</td>
<td>- Appropriate contract clauses to be specified</td>
</tr>
<tr>
<td></td>
<td>- Loss of land use</td>
<td>- Segregate and dispose as appropriate</td>
<td>- Contractor/NPA</td>
<td>- Contractor’s costs</td>
<td>- Approx. 3100 persons affected</td>
</tr>
<tr>
<td></td>
<td>- Soil erosion, sedimentation and runoff</td>
<td>- Report to authorities</td>
<td>- Contractor</td>
<td>- Contractor’s costs</td>
<td>- Appropriate contract clauses to be specified</td>
</tr>
<tr>
<td></td>
<td>- Waste generation</td>
<td>- Personnel safety equipment</td>
<td>- Contractor/NPA</td>
<td>- Contractor’s costs</td>
<td>- Appropriate contract clauses to be specified</td>
</tr>
<tr>
<td></td>
<td>- Historical/cultural finds</td>
<td>- Improve alignment and tensioning</td>
<td>- Contractor</td>
<td>- Contractor’s costs</td>
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<th>PROPOSED MITIGATION MEASURE(S) (including legislation &amp; regulations)</th>
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<th>COST ESTIMATES</th>
<th>COMMENTS (eg. Secondary impacts)</th>
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| - Stringing Lines and replacing existing cables/conductors | - Waste generation  
  - mostly metals, insulators etc.  
  - Disposal of transformers and other items, oil leaks | - Adopt best practices and safety procedures | - NPA  
  - Contractor/ NPA | - Contract costs  
  - NPA sells as scrap and gets revenue to offset costs | - TBD | contract clauses to be specified |
| - Install new Transformers and Equipment | | | | | |
| Operation and Maintenance of the line     | - Loss of vegetation cover  
  - Loss of income from fruit trees     | - Replant as necessary  
  - Compensate | - NPA  
  - NPA | - To be determined  
  - To be determined | | |
| - Vegetation control                     | | | | | |
| Maintenance of Right of Way              | - Waste generation  
  - Health and | - Segregate and dispose as necessary | - NPA  
  - NPA | - TBD | - Annual maintenance cost (2 staff |
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<td>Health hazard</td>
<td>Safe handling Procedures</td>
<td>NPA</td>
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<td>for training and institutional strengthening in environmental management TBD</td>
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<td>Tests to be carried out to determine if PCB exists in NPA systems</td>
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<td>Use of SF6 equipment</td>
<td>Health hazards</td>
<td>Safety Procedures</td>
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<td>- Construct bunds around transformers</td>
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<td>Use of transformers</td>
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**ESMF Implementation**

The successful implementation of the ESMF depends on the commitment of NPA and related institutions, the capacity within the institutions and the appropriate and functional institutional arrangements among others. The NPA, MoEWR and EPA have been involved in the preparation and the review of the ESMF. The key ESMF implementation areas and the relevant institutional roles as well as the institutional arrangement and collaboration for successful implementation of the ESMF of the Sierra Leone Energy Sector Utility Reform Project have been determined and outlined.

The E&S monitoring and reporting roles and responsibilities have within institutions and among the stakeholders have been mapped out.
1.0 INTRODUCTION

1.1 Background
The National Power Authority (NPA), is a statutory body established by the National Power Authority Act, 1982 (Act No. 3), incorporating the former Sierra Leone Electricity Corporation. NPA is responsible for generation, transmission, distribution and sales of electricity throughout the country, with the exception of the Bo and Kenema Districts, which are served by the Bo Kenema Power Services (BKPS), an autonomous subsidiary of NPA.

The rebel war (1991 – 2002) and its consequences have reduced the operations of NPA to the Western Area, the peninsular on which the capital Freetown is situated.

National Power Authority (NPA), through the Government of Sierra Leone (GoSL) has acquired a credit facility from the International Bank for Reconstruction and Development (IBRD) for an energy access project known as the Sierra Leone Energy Sector Utility Reform Project. This project involves the upgrading and rehabilitation of key primary MV network infrastructure, including aged MV substations and feeder lines in the Greater Freetown area. Due to decades of neglect, primary MV substations are in a state of disrepair, substation batteries and circuit breakers are mostly not functional, and DC supplies nonoperational. Sections of the system are overloaded, protection relays are faulty and there is a serious risk of infrastructure damage occurring as a result of protection system or circuit breaker failure. The envisaged upgrade will require that certain existing links to be replaced with appropriately sized cables/overhead lines, and will help reduce technical losses and enhance reliability. Appropriately matching needed investments in MV feeder upgrade to appropriate investments in corresponding substations will enable systematic system upgrade and protection of infrastructure. The upgrade will also be complementary to network investments effected under the SLIDF energy access project and will form part of a systematic approach to rehabilitate the Freetown network on an incremental basis. In particular it should be noted there has been an increase in demand in certain areas from newly established commercial operations and consideration will be given to expanding the network to meet this demand.

As part of the World Bank requirement for safeguards to ensure that the project either avoids completely negative impacts or minimize such impacts, the project will have to prepare an Environmental and Social Management Framework (ESMF). The NPA intends to use part of the credit for the development of the required Environmental and Social Policy Framework (ESMF).
1.2 Project Justification
The project will ensure quality power generation and distribution and create new infrastructure as the foundation for a vibrant power sector reform to evolve, thereby providing a new economic growth pole for Sierra Leone. The relatively more stable voltage and quality power generation and distribution will be the basis for generating much lower cost power than Sierra Leone currently has, thereby securing the competitiveness of Sierra Leone industry for accelerated economic development. It will also provide the basis for Sierra Leone to achieve its strategic objective of becoming a power sufficient and to resume its strategic role as energy efficient in the sub-region.

1.3 Purpose and Objectives of the ESMF
A general framework for Environmental Management (EM) of development projects is provided in the Environmental Assessment (EA) Regulations of the Legislative Instrument, LI (1652) of Sierra Leone. The GoSL’s development projects are usually supported by development partners such as the World Bank. The development partners usually have their Environmental and Social (E&S) safeguards which provide guidelines for the projects. As part of funding arrangements for the Sierra Leone Energy Sector Utility Reform Project therefore, the Bank’s E&S safeguards policies (OP/BP 4.01 - EA, and OP/BP 4.12 - Involuntary Resettlement) must apply. The Sierra Leone Energy Sector Utility Reform Project has the following attributes (quite distinct from project-specific level assessment):

- Various developmental stages to be carried out in modules;
- A number of components, sectors and sub-projects involved;
- Sub-project encompass a wide geographic spread;
- Implementation duration spread over 5 years;
- Involvement of several institutions at the national, district and local levels and;
- Design of the sub-projects, types and numbers for implementation, are all not determined at this stage.

These attributes are typical of a program-type undertaking for which the appropriate level of EA is the Strategic Environmental Assessment (SEA) under the Sierra Leone EA Procedures. The term ESMF is used by the World Bank to depict operations with multiple sub-projects, various phases and spread over a long period - similar in concept to SEA.

According to the EA Regulations of Sierra Leone “the construction of substations and rehabilitation of distribution lines is an undertaking that requires registration and an environmental permit. Thus, the Sierra Leone Energy Sector Utility Reform Project falls under EIA mandatory of the EA Regulations. The Sierra Leone Energy Sector Utility Reform Project is classified as Category B under the World Bank’s EA Procedures.

The ESMF spells out the E&S safeguards, institutional arrangements and capacity required to use the framework. This ensures that sub-projects meet the national and
local E&S requirements, and are consistent with OP 4.01 and OP 4.12, etc., and sets out principles and processes for the sub-projects agreeable to all parties. The other objectives of the ESMF include:

- Assessment of potential adverse E&S impacts commonly associated with sub-projects and the way to avoid, minimize or mitigate them;
- Establishment of clear procedures and methodologies for the E&S planning, review, approval and implementation of sub-projects;
- Development of an EA screening system for the sub-projects; and
- Specification of roles and responsibilities and the necessary reporting procedures for managing and monitoring sub-project E&S concerns.

1.4 Report Organization
This Draft ESMF contains nine (9) main sections and appendices, preceded by the executive summary. The main sections are:

- Chapter One - General introduction to the ESMF; providing an overview of the objectives and justification of the project;
- Chapter Two - Overview of applicable legislations and policies;
- Chapter Three - Description of the project in terms of its location and main components;
- Chapter Four - Description of baseline conditions;
- Chapter Five - Description of the potential environmental and social impacts;
- Chapter Six - Environmental and social mitigation principles;
- Chapter Seven - ESMF Implementation; including:
  - Roles of stakeholders;
  - Institutional arrangement and inter-agency coordination;
  - Description of capacity building, training and technical assistance required to implement the ESMF; and
  - An ESMF implementation budget;
- Chapter Eight - Decommissioning Plan
2.0 GENERAL POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

The environmental policy and environmental assessment (EA) legislation and procedures of Sierra Leone and those of the World Bank, which are relevant to the project, are outlined below. In principle, the two are similar in many respects though the World Bank policies are more stringent. Hence, the policies of the World Bank override those of the Sierra Leone should any discrepancy arise.

2.1 Sierra Leone Environmental Requirements

The relevant Sierra Leone national regulatory frameworks include:

- Constitution of Sierra Leone, 1991
- Local Government Act, 2004
- National Land Policy, 2005
- Environmental Protection Agency Act, 2008 and Environmental Protection Agency (Amendment) Act, 2010.

2.1.1 Constitution of Sierra Leone, 1991

The Constitution includes provisions to protect the rights of individuals to private property, and also sets principles under which citizens may be deprived of their property in the public interest as described in Section 21. It also makes provision for the prompt payment of adequate compensation and access to the court or other impartial and independent authority for the determination of the land owner’s interest or right, and the amount of any compensation to which he/she is entitled and for the purpose of obtaining prompt payment of that compensation.

2.1.2 Local Government Act, 2004

The Act establishes the Local Council (LC) as the highest political authority in the locality and confers legislative and executive powers to be exercised in accordance with this Act. This Act in its First Schedule under Section 2 establishes the localities, namely: districts, towns and cities. Part II of this schedule also establishes the number of Paramount Chiefs in each LC. The Third Schedule establishes the functions devolved to the LCs. The Fourth and Fifth Schedules establish departments under each LC, and a Valuation List and Rate Books respectively.

2.1.3 National Lands Policy, 2005

As provided in the Constitution, the 2005 National Land Policy also provides for the compulsory acquisition of land in the public interest. The principles of the land policy include among others: The principle of land as a common national or communal property resource held in trust for the people and which must be used in the long term interest of the people of Sierra Leone. Such a principle only holds where it does not violate existing rights of private ownership. Compensation to be paid for lands acquired through compulsory government acquisition will be fair and adequate and will be determined, among other things, through negotiations that take into consideration...
government investment in the area. Local Authorities (City and District Councils) may negotiate for land for project development purposes, but all such grants should be properly documented and processed. No interest in or right over any land belonging to an individual or family can be disposed of without consultation with the owner or occupier of the land. No interest in or right over any land belonging to an individual or family can be compulsorily acquired without payment, in reasonable time, of fair and adequate compensation.

2.1.4 Environmental Protection Agency Act, 2008 and Environmental Protection Agency (Amendment) Act, 2010

The Environmental Protection Agency Act, 2008 established the Sierra Leone Environmental Protection Agency (SLEPA), to provide for the effective protection of the environment and for other related matters. This Act mandates the EPA among others to:

- Advise the minister on the formulation of policies on all aspects of the environment and in particular make recommendations for the protection of the environment.
- Issue environmental permits and pollution abatement notices for controlling the volume, types, constituents and effects of waste discharges, emissions, deposits or other sources of pollutants of substances which are hazardous or potentially dangerous to the quality of the environment or any segment of the environment.
- Prescribe standards and guidelines relating to ambient air, water and soil quality, the pollution of air, water and land and other forms of environmental pollution including the discharge of waste and the control of toxic substances.
- Ensure compliance with any environmental impact assessment procedures laid down in the planning and execution of development projects, including compliance in respect of existing projects.
- Impose and collect environmental protection levies in accordance with this Act or regulations made under this Act.
- Sections 24 of the Act lists project activities requiring an Environmental Impact Assessment license which include infrastructural projects such as roads and bridges. Sections 25 and 26 describe factors for determining whether a project requires an environmental impact assessment and the contents of the environmental impact assessment respectively. The Act describes the procedures to be followed to obtain permits for both existing and proposed undertakings through the conduct of environmental impact assessments.
- The Environmental Protection Agency (Amendment) Act, 2010 sought to give executive powers to the Board.

2.2 World Bank Safeguards Policies

The project is classified as Category B, implying that the expected environmental impacts are largely site-specific, that few if any of the impacts are irreversible, and that mitigation measures can be designed relatively readily. The environmental assessment for a Category B project:
• Examines the project’s potential negative and positive environmental impacts
• Recommends measures to prevent, minimize, mitigate, or compensate for adverse impacts
• Recommends measures to improve environmental performance.

The Bank’s ten safeguards policies are designed to help ensure that the projects proposed for financing are environmentally and socially sustainable, and thus improve decision-making. The Bank’s Operational Policies (OPs) are meant to ensure that Bank operations do not lead to adverse impacts or cause any harm. The safeguards policies are divided into environmental and social policies, as listed below.

2.2.1 Physical Cultural Resources (OP 4.11)
The policy is premised on the Bank assisting countries to avoid or mitigate adverse impacts on physical cultural resources from development projects that it finances. The impacts on physical cultural resources resulting from project activities, including mitigation measures, may not contravene either the borrower’s national legislation, or its obligations under relevant international environmental treaties and agreements.

2.2.2 OP 4.12: Involuntary Resettlement
The World Bank’s safeguards policy on involuntary resettlement, OP 4.12, is to be complied with where involuntary resettlement, impacts on livelihoods and assets, acquisition of land or restrictions to natural resources may take place as a result of the project. It includes requirements that:
• Involuntary resettlement should be avoided where feasible, or minimized, exploring all viable alternative project designs.
• Where it is not feasible to avoid resettlement, resettlement activities should be conceived and executed as sustainable development projects, providing sufficient investment resources to enable persons displaced by the project to share in project benefits.
• Displaced persons should be meaningfully consulted and should have opportunities to participate in planning and implementing resettlement projects.
• Displaced persons should be assisted in their efforts to improve their livelihoods and standards of living or at least to restore them, in real terms, to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher.

According to OP 4.12, the resettlement plan should include measures to ensure that the displaced persons are:
• Informed about their options and rights pertaining to resettlement.
• Consulted on, offered choices among and provided with technically and economically feasible resettlement alternatives.
• Provided prompt and effective compensation at full replacement cost for losses of assets attributed directly to the project.
If the impacts include physical relocation, the resettlement plan should include measures to ensure that the displaced persons are:

- Provided assistance (such as moving allowances) during relocation.
- Provided with residential housing, or housing sites, or as required, agricultural sites for which a combination of productive potential, location advantages, and other factors is at least equivalent to the advantages of the old site.

The precise type and location of subprojects is not known at this time, there is the possibility of limited land acquisition or restriction of access to and destruction of property. However, should the case of involuntary resettlement arise the framework to tackle such issues is addressed in the Resettlement Policy Framework.

**Access to Information Policy**

The policy on Access to Information provides for the disclosure of more information than ever before: on projects under preparation, projects under implementation, analytic and advisory activities (AAA), and Board proceedings. This information will be easily accessible on the World Bank’s external website and available through the Info Shop, public information centres, and the World Bank Group Archives.

At the same time, the policy strikes a balance between maximum access to information and respect for the confidentiality of information pertaining to its clients, shareholders, employees and other parties. Recognizing that the sensitivity of some information declines over time, the policy provides for the eventual declassification and disclosure of restricted information over a period of 5, 10 or 20 years, depending upon information type.

**2.3 Institutional Framework for Environmental Management**

The responsibility for the management and protection of the environment presently lies with the EPA, The Department of the Environment of the Ministry of Lands, Country Planning, and the Environment (MLCPE). The political head of the Department of the Environment at present is the MLCPE. The administrative head is the Permanent Secretary who is responsible for coordinating the functions of the departments within the ministry viz. Department of Land and Country Planning (DLCP), Department of Surveys and Lands (DSL), Department of Forestry (DoF) and the Environmental Protection Agency (EPA). He/She is also the principal adviser to the minister and the controller of the ministry’s budget. With assistance from the World Bank, the defunct Department of the Environment (DOE) now Environmental Protection Agency, developed the National Environmental Action Plan (NEAP). The country has also
prepared its first National Environmental Policy (NEP) with very clear goals, objectives and strategies as outlined below.

### 2.4 National Environmental Policy Goals

The goal of the National Environmental Policy is to achieve sustainable development in Sierra Leone through sound environmental management.

### 2.5 National Environmental Policy Objectives

- Secure for all Sierra Leoneans a quality environment adequate for their health and well-being.
- Conserve and use the environment and natural resources for benefit of present and future generations.
- Restore, maintain and enhance the ecosystems and ecological processes essential for the functioning of the biosphere; preserve biological diversity and the principle of optimum sustainable yield in the use of living natural resources and ecosystems.
- Raise public awareness on environmental issues and promote understanding of the essential linkages between the environment and development, and encourage individual and community participation in environmental improvement efforts.

### 2.6 Strategies:

These strategies will be pursued in order to achieve the policy goals and objectives:

- Establish and/or strengthen environmental protection standards, monitor changes in and publish relevant data on environmental quality and resource use
- Manage environmental impact assessment (EIA) of proposed activities which may significantly affect the environment or use of a natural resource, and provide relevant information, in a timely manner, to persons likely to be significantly affected by a planned activities and grant them equal access and due process in administrative and judicial proceedings
- Promote environmental management through the creation of administrative and infrastructure support with appropriate financial backing
- Co-operate in good faith with other countries and agencies to achieve optimal use of trans-boundary natural resources and effective trans-boundary environmental protection.

### 2.7 Ministry of Lands, Country Planning, and the Environment (MLCPE)

The Ministry is responsible for conserving and managing Sierra Leone’s natural environment. It is also responsible for addressing land acquisition and transfer, land
ownership and use, and national development in a planning capacity. It provides advisory services to the public on land matters as well as physical planning and management of the forestry resources.

2.8 Ministry of Mineral Resources
Responsible for supervising mining operations in the country, the Ministry of Mineral Resource issues licenses for all mining operations and enforces laws and provisions contained in the Mining Act and its amendments. It is also responsible for enforcing provisions in the new Mining Act relating to the rehabilitation of mined-out areas. The main institutional conflicts are: (i) extent to which the ministry has jurisdiction over marine areas with respect to marine-based mineral resources, offshore dredging and its impact on marine resources and (ii) overlap of water quality monitoring with the interest of the Ministry of Marine Resources.

2.9 National Environmental Requirements
2.9.1 Sierra Leone’s Environmental Policy
The environmental policy of Sierra Leone formulated in the National Environmental Action Plan (NEAP) of 1993 hinges strongly on ‘prevention’ as the most effective tool for environmental protection. The policy aims at a sound management of resources and environment, and the reconciliation between economic planning and environmental resources utilization for sustainable national development. It also seeks among others, to institute an environmental quality control and sustainable development programs by requiring prior EA of all developments, and to take appropriate measures to protect critical eco-systems, including the flora and fauna they contain against harmful effects, nuisance or destructive practices. The adoption of the NEAP led to the enactment of the EPA Act 1994 (Act 490); and subsequently the passing of the Sierra Leone EIA Procedures into the EA Regulations, 1999 (LI 1652).

2.9.2 Strategic National Energy Plan (SNEP)
The SNEP reiterates the sector Ministry’s vision to develop an ‘energy economy’ that would ensure sustainable production, supply and distribution of high quality energy services to all sectors of the economy in an environmentally friendly manner for Sierra Leone’s future, while making significant contribution to the country’s export earnings. The objective of the SNEP for the industrial sector is to ensure sufficient, cost effective but affordable high quality energy supply to meet the increasing demand of an efficient and expanding industrial sector. A key strategy among others is to achieve an average
of 95% power factor per annum in the industrial sector by 2015, expanding to 98% by 2020.

2.9.3 National Land Policy
The Policy sets out a broad framework and policy guidelines for land administration and utilization. The main objective of the policy is to provide guidelines aimed at enhancing land management systems, land use, conservation of land resources and enhancing environmental quality.

2.10 National Labour, Safety and Health Requirements

2.10.1 Factories, Offices and Shops Act
The Factories, Offices and Shops Act mandates the Factories Inspectorate Department to register factories and ensure that internationally accepted standards of providing safety, health and welfare of persons are adhered to. It defines a factory to include any premises (whether in or not in a building) in which one or more persons are employed in manual labour, among others.

2.10.2 Occupational Safety and Health Policy of Sierra Leone (Draft)
The policy statement of the OSH Policy is: ‘to prevent accidents and injuries arising out of or linked with or occurring in the course of work, by minimizing as far as reasonably practicable the cause of the hazards in the working environment and, therefore the risk to which employees and the public may be exposed’. The policy is derived from provisions of the International Labour Organization (ILO) Conventions 155 and 161. The policy document has specific sections on objectives, scope, strategies, activities promotion and awareness creation.

2.10.3 National Workplace HIV/AIDS Policy
The broad objectives of the policy among others, are to provide protection from discrimination in the workplace to people living with HIV and AIDS; prevent HIV and AIDS spread amongst workers; and provide care, support and counselling for those infected and affected.

2.10.4 Labour Act
The purpose of the Labour Act, is to amend and consolidate existing laws relating to labour, employers, trade unions and industrial relations. The Act provides for the rights and duties of employers and workers; legal or illegal strike; guarantees trade unions and freedom of associations, and establishes the Labour Commission to mediate and act
in respect of all labour issues. Under Part XV (Occupational Health, Safety and Environment), the Act explicitly indicates that it is the duty of an employer to ensure that every worker works under satisfactory, safe and healthy conditions.

2.11 International and Regional Requirements

2.11.1 International Labour Organisation Conventions;
(a) Discrimination (Employment and occupation) Convention, 1958
The convention is labeled C111 under the ILO. It affirms that all human beings, irrespective of race, creed or sex, have the right to pursue both their material well-being and their spiritual development in conditions of freedom and dignity, of economic security and equal opportunity.

(b) Worst Forms of Child Labour Convention, 1999
The convention (labeled C182) aims at ensuring effective elimination of the worst forms of child labor, taking into account the importance of free basic education and the need to remove the children concerned from all such work and to provide for their rehabilitation and social integration while addressing the needs of their families. It also recognizes that child labour is to a great extent caused by poverty and with long-term solution lying in sustained economic growth leading to social progress, in particular poverty alleviation and universal education.

The African convention on the conservation of nature and natural resources (1967) enshrines that contracting States shall undertake to adopt the measures necessary to ensure conservation, utilization and development of soil, water, flora and fauna resources in accordance with scientific principles and with due regard to the best interests of the people. To this end:

- The contracting States shall take effective measures for conservation and improvement of the soil and shall in particular combat erosion and misuse of the soil;

- The contracting States shall establish policies for conservation, utilization and development of underground and surface water, and shall endeavour to guarantee for their populations a sufficient and continuous supply of suitable water. Where surface or underground water resources are shared by two or more of the contracting States, the latter shall act in consultation, and if the need arises, set up inter-State Commissions to study and resolve problems arising from the
joint use of these resources, and for the joint development and conservation thereof;

- The contracting States shall take all necessary measures for the protection of flora and to ensure its best utilization and development;

- The Contracting States shall ensure conservation, wise use and development of faunal resources and their environment, within the framework of land-use planning and of economic and social development. Management shall be carried out in accordance with plans based on scientific principles and also adopt adequate legislation on hunting, capture and fishing; and

- The Contracting States recognize that it is important and urgent to accord a special protection to those animal and plant species that are threatened with extinction, or which may become so, and to the habitat necessary to their survival. Where such a species is represented only in the territory of one Contracting State, that State has a particular responsibility for its protection.

2.11.3 Convention on the Conservation of Migratory Species of Wild Animals, 1988;
The contracting parties to this convention recognizing that wild animals in their innumerable forms are an irreplaceable part of the earth’s natural system which must be conserved for the good of mankind; aware that each generation of man holds the resources of the earth for future generations and has an obligation to ensure that this legacy is conserved and, where utilized, is used wisely; conscious of the ever-growing value of wild animals from environmental, ecological, genetic, scientific, aesthetic, recreational, cultural, educational, social and economic points of view; concerned particularly with those species of wild animals that migrate across or outside national jurisdictional boundaries; recognizes that the states are and must be the protectors of the migratory species of wild animals that live within or pass through their national jurisdictional boundaries and are convinced that conservation and effective management of migratory species of wild animals require the concerted action of all states within the national jurisdictional boundaries of which such species spend any part of their life cycle.

2.11.4 Convention concerning the Protection of the World Cultural and Natural Heritage, 1972
State Party to this Convention recognizes that the duty of ensuring the identification, protection, conservation, presentation and transmission to future generations of the cultural and natural heritage and situated on its territory, belongs primarily to that State. It will do all it can to this end, to the utmost of its own resources and, where appropriate, with any international assistance and co-operation, in particular, financial, artistic, scientific and technical, which it may be able to obtain.
2.12 World Bank Requirements

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

2.12.2 Involuntary Resettlement (OP/BP 4.12)
The policy of involuntary resettlement is intended to assist displaced people arising from developing projects, in order not to impoverish any affected people within the area of influence of projects. An action plan that at least restores the standard of living must be instituted, in cases where resettlement is inevitable or loss of assets and impacts on livelihood occurs. Public consultation of “re-settlers’ as well as the host communities is significant for the successful resettlement process and implementation of the action plan, in order to incorporate appropriate choices.

2.12.3 Forestry (OP/BP3.36)
The OP/BP 4.36 aims at enhancing the environmental and social contribution of forested areas, and the need to reduce deforestation. The protection of the forests through the control of forested –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. However this policy has not been triggered.

2.12.5 Natural Habitat (OP/BP 4.04)
The OP 4.04 aims at promoting the protection, maintenance and rehabilitation of natural habitats and their function. The Bank promotes and supports natural habitat conservation and improved land use by financing projects designed to integrate into national and regional development the conservation of natural habitats and the maintenance of ecological functions. Furthermore, the Bank promotes the rehabilitation of degraded natural habitats. However this policy has not been triggered.
2.12.6 Physical Cultural Resource (OP 4.11)
The OP 4.11 aims at ensuring that physical cultural resources defined as movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance are protected impacts resulting from project activities. The Bank assists countries to avoid or mitigate adverse impacts on physical cultural resources from development projects that it finances while not contravening either the borrower’s national legislation, or its obligations under relevant international environmental treaties and agreements. However this policy has not been triggered

2.12.7 Constitution of Sierra Leone, 1991
The Constitution includes provisions to protect the rights of individuals to private property, and also sets principles under which citizens may be deprived of their property in the public interest as described in Section 21. It also makes provision for the prompt payment of adequate compensation and access to the court or other impartial and independent authority for the determination of the land owner’s interest or right, and the amount of any compensation to which he/she is entitled and for the purpose of obtaining prompt payment of that compensation.

2.12.8 Local Government Act, 2004
The Act establishes the Local Council (LC) as the highest political authority in the locality and confers legislative and executive powers to be exercised in accordance with this Act. This Act in its First Schedule under Section 2 establishes the localities, namely: districts, towns and cities. Part II of this schedule also establishes the number of Paramount Chiefs in each LC. The Third Schedule establishes the functions devolved to the LCs. The Fourth and Fifth Schedules establish departments under each LC, and a Valuation List and Rate Books respectively.

2.12.9 National Lands Policy, 2005
As provided in the Constitution, the 2005 National Land Policy also provides for the compulsory acquisition of land in the public interest. The principles of the land policy include among others: The principle of land as a common national or communal property resource held in trust for the people and which must be used in the long term interest of the people of Sierra Leone. Such a principle only holds where it does not violate existing rights of private ownership. Compensation to be paid for lands acquired through compulsory government acquisition will be fair and adequate and will be determined, among other things, through negotiations that take into consideration government investment in the area. Local Authorities (City and District Councils) may
negotiate for land for project development purposes, but all such grants should be properly documented and processed. No interest in or right over any land belonging to an individual or family can be disposed of without consultation with the owner or occupier of the land. No interest in or right over any land belonging to an individual or family can be compulsorily acquired without payment, in reasonable time, of fair and adequate compensation.

2.12.10 Environmental Protection Agency Act, 2008 and Environmental Protection Agency (Amendment) Act, 2010

The Environmental Protection Agency Act, 2008 established the Sierra Leone Environmental Protection Agency (SLEPA), to provide for the effective protection of the environment and for other related matters. This Act mandates the EPA among others to:

- Advise the minister on the formulation of policies on all aspects of the environment and in particular make recommendations for the protection of the environment.
- Issue environmental permits and pollution abatement notices for controlling the volume, types, constituents and effects of waste discharges, emissions, deposits or other sources of pollutants of substances which are hazardous or potentially dangerous to the quality of the environment or any segment of the environment.
- Prescribe standards and guidelines relating to ambient air, water and soil quality, the pollution of air, water and land and other forms of environmental pollution including the discharge of waste and the control of toxic substances.
- Ensure compliance with any environmental impact assessment procedures laid down in the planning and execution of development projects, including compliance in respect of existing projects.
- Impose and collect environmental protection levies in accordance with this Act or regulations made under this Act.
- Sections 24 of the Act lists project activities requiring an Environmental Impact Assessment license which include infrastructural projects such as roads and bridges. Sections 25 and 26 describe factors for determining whether a project requires an environmental impact assessment and the contents of the environmental impact assessment respectively. The Act describes the procedures to be followed to obtain permits for both existing and proposed undertakings through the conduct of environmental impact assessments.
- The Environmental Protection Agency (Amendment) Act, 2010 sought to give executive powers to the Board.
3.0 DESCRIPTION OF THE SIERRA LEONE ENERGY ACCESS PROJECT

The project comprises three major components and these are:
- Investment in Distribution and Rehabilitation ($25 million);
- Rehabilitation and Upgrade of Secondary Medium Voltage (MV) network;
- NPA Performance Improvement and Enhancement of Implementation Capacity/Skills (including Impact Evaluation).

Component 1: Investments in Distribution Rehabilitation, Metering and Management Systems

The distribution grid requires well over $170 million of investment, in the Greater Freetown area alone. Some of the most urgently needed system investments are in the process of having specifications prepared under the recently approved Sierra Leone Infrastructure Trust Fund (SLIDF) energy access project, under which provision was also made for technical assistance that will be used to carry out a condition assessment of the entire Freetown distribution network and to develop a comprehensive investment plan of prioritized and optimal next investments. The plan, to be based on the assessment, system studies as well as the existing JICA funded load flow study, will exactly define network sections and equipment needing urgent upgrade to remove serious bottlenecks in the system and to upgrade quality of supply. Apart from forming the basis for investment under the IDA project, this systematic approach will ensure a sound basis for further financing of the network rehabilitation and upgrade going forward.

2. A major component of the IDA project will be to upgrade and rehabilitate key primary MV network infrastructure, including aged MV substations and feeder lines in the Greater Freetown area. Due to decades of neglect, primary MV substations are in a state of disrepair, substation batteries and circuit breakers are mostly not functional, and DC supplies nonoperational. Sections of the system are overloaded, protection relays are faulty and there is a serious risk of infrastructure damage occurring as a result of protection system or circuit breaker failure. The envisaged upgrade will require that certain existing links to be replaced with appropriately sized cables/overhead lines, and will help reduced technical losses and enhance reliability. Appropriately matching needed investments in MV feeder upgrade to appropriate investments in corresponding substations will enable systematic system upgrade and protection of infrastructure. The upgrade will also be complementary to network investments effected under the SLIDF energy access project and will form part of a systematic approach to rehabilitate the Freetown network on an incremental basis. In particular it should be noted there has been an increase in demand in certain areas from newly established commercial operations and consideration will be given to expanding the network to meet this demand.
3. Quality of electricity service in Freetown is poor. Low voltage conditions caused by feeder overloading are present in most areas of the city and regular outages occur due to power shortages as well as system unreliability. Undersized transformers and excessive LV feeder lengths result in low voltage conditions. Suitable areas for secondary MV and LV system upgrade will be defined in the investment plan developed under the SLIDF energy access project, including consideration of high consumption areas in order to maximize investment benefit and positively impact the commercial performance of NPA. A $3 million-$5 million IDA investment in this area, matched by coordinated and well-targeted LV upgrade investments supported by the Islamic Development Bank Investments in LV system upgrades will be necessary to reduce technical losses and to improve service delivery and overall utility performance.

4. As a means to improving commercial performance, NPA has embarked on a program to gradually replace all credit meters with pre-paid meters. This strategy has already paid dividends in terms of reduced non-technical losses and improved collection ratio. The Project will complement NPA’s ongoing re-metering program by financing supply and installation of approximately 10,000 pre-paid meters. NPA currently has no means of precisely locating high loss areas in the network. Therefore, the Project will finance supply and installation of a further 500 statistical meters to complement the investment made under the SLIDF.

Component 2: NPA Performance Improvement and Enhancement of Implementation Capacity/Skills (including Impact Evaluation)

Component 3: Targeted sector/utility technical Assistance

5. Owing to the enormity of the challenges in the sector, the Government as well as the utility with limited staff are often reactive rather than proactive, and in fire-fighting mode rather than strategic, with necessary focus in key areas which are pre-requisites for well-informed decision-making for prioritizing and selecting future public and private investments in generation, transmission and distribution. Technical assistance will be procured to strengthen utility/system planning and dispatch capabilities. This capability should also include regional opportunities and constraints. TA under the SLIDF for an Integrated Resource Plan study is currently under procurement, and will help identify promising opportunities, especially in generation. In addition, technical assistance under IDA will be provided for proper development of the most promising power investment opportunities emerging in generation, including feasibility of related transmission and distribution infrastructure.
4.0 DESCRIPTION OF THE PROJECT ENVIRONMENT

This section presents a description of the existing environment, comprising the bio-physical and socio-economic conditions of the proposed project area.

4.1 Methodology for Data Collection

Various techniques were applied for collecting data on the project environment. These included document review, institutional consultations, focus group discussions and field surveys of the existing environment. An account of the existing physical and biological environment and socio-economic conditions (ethnic groups, culture, economic activities, etc.) were assembled. These formed part of the baseline information and the information obtained used in the environmental analysis/assessment. Samples of the questionnaires and the outcomes of the consultations and stakeholder involvements are attached in Appendix 3.

The description of baseline information relevant to the project covers:

1. The project district;
2. Land use categories;
3. Population characteristics;
4. Socio-economic;
5. Cultural resources;
6. Health;
7. Natural resources;
8. Climate; and
9. Air quality
Map of Sierra Leone

4.2 General

Sierra Leone is bounded on the north and east by Guinea, on the southeast by Liberia, and on the southwest and west by the Atlantic Ocean. The total area of the country is 71,740 sq km (27,699 sq mi). The country is divided into four administrative regions: the Northern, Eastern, and Southern provinces and the Western Area. Freetown, the capital city is part of the Western Area which is the focus of the NPA transmission and distribution works for which the EIA is being undertaken for power distribution purposes, the Western Area is divided into the eastern villages, greater Freetown, western rural areas and the mountain area.
Generally the coastal area is a low-lying plan extended inland from the Atlantic Ocean. The area closest to the ocean is a largely swampy region; however, the Sierra Leone Peninsula, where Freetown is situated, is dominated by hills. To the east the land rises from the coastal plain to a plateau in the north and to fully terrain in the south.

4.3 Climate

The climate of the Western Area is similar to the rest of the country, which is a typical tropical climate. The mean temperature in the Freetown area is about 27°C in January and 26°C in July. Annual rainfall averages more than 3800 mm along the coast with most of the rains falling from May to October. The rains are usually accompanied by thunderstorms. The dry season, from November to April, has high day and night temperatures with low humidity.

The T & D network in the Western Area has suffered considerable damage from storms. Winds speeds in the coastal area are relatively high at an average of 3 – 4 m/s. During the rainy period. Strong squalls develop which can cause damage to structures such as buildings and transmission towers. This situation is of concern in the hilly slopes of Freetown where the transmission systems tend to get damaged during the storms and create hazardous conditions for the public.

4.4 Land Use

Freetown is sited on the Southern bank of the estuary of the Sierra Leone Fiver. The city lies on sloping ground at the foot of a range of hills. It is bordered on the North and the East by the Sierra Leone River, to the South by the hills, and to the West by the Atlantic Ocean.

Fig. 2, obtained during consultations with the Ministry of Lands, Town and Country Planning and Environment, shows the land use pattern in the Greater Freetown area and projected up to 2011. The route for the 33 kV transmission network likes mostly within the coastal low lands which slow at high density of occupany.

The lack of adequate planning and development control over the years, as well as constraints to development posed by the conflict (1991-2002) has led to rather inefficient land use. The residential settlements are expanding on the coastal lowlands with increasing encroachment on the hill slopes. Generally, conditions of housing in the central parts of the city have deteriorated due to overcrowding in the low income areas. Commercial activities are concentrated in the central business district and development of shops. Offices and workshops are expanding along the roads leading to the city
centre. Industrial activities, on the other hand, are concentrated in the eastern part of the city. All these developments place excessive demands on utility services and have a direct bearing on the expectations of the T & D rehabilitation and reinforcements.

4.5 Population Characteristics

The current estimated population of Sierra Leone is around 5 million of which Freetown and the Western Area account for over 2 million. This represents nearly a fourfold increase over the level existing before the civil conflict. Many people from the rural areas moved into Freetown for refuge during the conflict. This has resulted in considerable pressure on land resources in the Freetown and has particular significance for the protection of the 33 kV and 161 kV transmission lines. The project would be implemented nationwide and in all 19 Local Councils (LCs). A brief description of the country’s physical and social setting is described in the sections below.

Sierra Leone is a small West African country located at latitude 8° 30’ N and longitude 11° 30’ W, Bordered on the north and east by Guinea for about 652 km, on the south by Liberia for about 306 km and on the west by the Atlantic Ocean. Sierra Leone has a total surface area of 71,740 sq. Km of which the total land area is 71,620 sq. km and 120 sq. km is water. The country got its name from the 15-century Portuguese explorer, who was the first to sight and map Freetown Harbor. The original Portuguese name of Serra Lyoa (ion Mountains) referred to the range of hills that surrounds the harbor. Sierra Leone can be divided into four distinct physical regions.

Coastal Swamp Region
This extends along the Atlantic for about 320 km. It is a flat, low lying, and frequently flooded plain that is between 32 and 64 km wide and is composed mainly of sands and clays. Its numerous creeks and estuaries contain mangrove swamps. Parallel ridges, often separated by silting lagoons, are common and sometimes form the actual coast.

Sierra Leone Peninsula
Freetown, the capital of Sierra Leone, is sited in this region, which has thickly wooded mountains that run parallel to the sea for about 40 km. The Peninsula Mountains rise from the coastal swamps and reach 888 m at Picket Hill.

Inland from Coastal Plain
This is the interior plains region. In the north, it comprises featureless grasslands (savannah) that are known as "Bolilands" (boli being a Temne word for those lands that are flooded in the rainy season and hard in the dry season and on which only grass can
grow). In the south, the plains comprise rolling wooded country where isolated hills rise abruptly to more than 200 m. The interior contains a variety of landforms ranging from savannah-covered low plains to rocky scarp and hill country. The plateau region, encompassing roughly the eastern half of the country, is composed mainly of granite with a thick laterite (iron-bearing) crust; to the west it is bounded by a narrow outcrop of mineral bearing metamorphic rocks known as the Kambui Schists. Rising above the plateau are a number of mountainous masses.

**Loma Mountains (Northeast)**
This is crowned by Mount Loma Mansa (Mount Bintimani) at 1,948 m (the highest point in Sierra Leone), and the Tingi Hills rise to 1,824 m at Sankanbiriwa Peak.

4.6 **Climate**
The climate is tropical and is characterized by alternating rainy and dry seasons. Conditions are generally hot and humid. Mean monthly temperatures range from 25°C to 28°C in low-lying coastal areas; inland the range may be from 23°C to 28°C. In the northeast, where extremes of temperature are greater, mean daily minimums fall to 13°C in January, and mean daily maximums rise to 32°C in March. During the rainy season, from May to October, humid air masses from the Atlantic dominate. Precipitation is greater on the coast than inland, with as much as 5,080 mm of rain fall annually on the Peninsula Mountains, while the northeast receives about 2,032 mm a year. The mean annual and seasonal rainfall distribution pattern is as follows:

- Coastal areas receive more than 3,000 mm rain per year with the Western Area recording up to 5000 mm.
- North-central and south eastern regions receive between 2,500 and 3,000 mm.
- The North receives from 2,500 to less than 2,000 mm.
- Distinctly higher rainfall values above 3000 mm are recorded around Makeni, Mabonto and Bumbuna areas presumably due to the relief influence of the Sula Mountain scarp to the east.

The dry season, from November to April, is characterized by the dry harmattan that blows from the Sahara. The rainy season tends to have cooler daily maximum temperatures than the dry season by about 60°C. The relative humidity, however, may be as high as 90 percent for considerable periods, particularly during the wettest months, from July to September.
4.7 Soils and Hydrology

The country’s drainage pattern is dense. Numerous rivers have their sources from the well-waters of the Fouta Djallon highlands of Guinea and flow in a general northeast to southwest direction across Sierra Leone. Their middle courses are interrupted by rapids that restrict navigability to only a short distance inland. River levels show considerable seasonal fluctuations. The drainage system has nine major rivers and a series of minor coastal creeks and tidal streams. From north to south, the principal rivers are the Great Scarcies, Little Scarcies, Rokel (which is known in its lower courses as the Sierra Leone River) Gbangbaia, Jong, Sewa, Wanje, Moa, and Mano. The Great Scarcies and Moa form portions of the border with Guinea, while the Mano River forms much of the country’s frontier with Liberia. In most areas, the dominant soils are of the weathered and leached lateritic (iron bearing) type. Red to yellow-brown in color, they contain oxides of iron and aluminium and are acidic. Kaolin clays are important in some areas, and when cultivated a light, readily workable, free-draining soil results, whose productivity depends largely on the nutrients provided from the vegetation previously cleared and burned. In coastal plains lateritic soils developed on sandy deposits are agriculturally poor, but those derived from basic igneous rocks are somewhat better.

4.8 Natural Resources

Sierra Leone is a country blessed with abundant mineral resources, which include: diamonds, chromite, rutile (among the largest reserves in the World), iron ore, titanium ores, bauxite, columbite (a black mineral of iron and columbium) pyrochlore, gold, platinum, and manazite. Forests cover more than one-fourth of the country, the most important area of which is the Gola Forest Reserve, a tract of primary tropical rain forests, near the Liberian border.

4.9 Wetlands

The Convention on Wetlands came into force for Sierra Leone on 13 April 2000. Sierra Leone presently has one site designated as a Wetland of International Importance, which is the Sierra Leone River Estuary, with a surface area of 295,000 hectares. The Estuary, near Freetown Peninsula, is dominated by mangrove swamps, with lowland coastal plains to the north. As it enters the Atlantic Ocean, the estuary widens to 11 about 16 km and deepens to form a natural harbor and is said to be the third largest in the world. Of Sierra Leone’s total mangrove, 19 percent is included within the site. The site exceeds the 1 percent threshold for at least eight bird species, namely Ringed and Kentish Plovers, Sanderling, Curlew Sandpiper, Whimbrel, Greenshank and Redshank, and Western Reef Heron; and is a breeding habitat for some of these birds.
4.10 Socio-Economic Features

Sierra Leone is one of the poorest countries in the world, and its economic activity is largely influenced by the public sector. The economy has always been based on the exploitation of natural resources, notably agricultural, marine and mineral resources. The agricultural sector which accounts for 44.1 percent of the Gross Domestic Product (GDP). Agriculture has remained traditional and subsistence in character, incapable of satisfying the food needs of the country by a wide margin, and improving the living standards of the broad mass of the population. Over 70 percent of the country’s labour force is employed in agriculture.

4.11 Population

The population of Sierra Leone is estimated at 6 million, growing at a rate of about 2.6 percent per year. The country’s population is made of many ethnic groups the largest and most prominent being the Mende, Temne, Limba, Kuanko, Sisu, Yalunka, Loko, Mandinka, Kono, Kisi and the Creoles. The population density of about 58 persons per sq. km is relatively high as compared to other countries in Sub-Saharan Africa. The population is concentrated in some particular regions of the country including the Freetown Peninsula and the Kono, Kenema and Bo districts. The northern part of the country is sparsely populated. A large section of the population is unemployed, especially among the youth. An estimated 68 percent live close to the forest or forest regrowth area on which they depend for their livelihood.

4.12 Land Tenure

Land tenure in the Republic of Sierra Leone is characterized by a dual ownership structure. Land in the Western Area observes the English system of Freehold Interests. This area includes the capital city Freetown and is clearly distinguishable from the rest of the country by the level and quality of development. Land in the rest of the country is held in Communal Ownership under customary tenure and is controlled by traditional rulers who administer it on behalf of their communities in accordance with customary principles and usage. The result is a dichotomy between modernization and tradition. While in the Western Area interest in land can be assigned with little difficulty, in the Provinces the traditional authorities are unwilling to assign interests in land. A detailed description of the land tenure system follows.

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Western Area
Land tenure in the Western Area traces its history from the British Colonial administration. The area settled by the freed slaves was declared a Colony of the British Empire, and the settlers, having lived in England and having experienced the English way of life and system of governance, were more inclined to live their lives like the British. As a result of this and other socio-political considerations, British concepts of tenure were introduced in the colony (Western Area). Since the land on which the freed slaves were resettled was purchased in the name of the British monarch, the settlers were therefore tenants of the British Crown and the title passed on to them was the tenancy in fee simple or freehold. After independence in 1961 the Government of Sierra Leone replaced the crown as the “landlord” of the Western Area and the freehold system was allowed to persist.

Provinces
Land is communally held under customary tenure in the provinces with minor differences among the various ethnic communities. Land is deemed to belong to the family, comprised of departed ancestors, the living and the unborn. It is regarded as a divine heritage entrusted to the living with a responsibility to ensure its preservation and legacy to future generations.

Family Interests
The absolute interest in land is vested in families. The Paramount Chief is regarded as the custodian of the land on behalf of the entire Chiefdom, but decisions regarding land are the preserve of heads of families. The administration of the community interest is vested in the heads of the land-owning families, who are aided by a Council of Elders. Of important, every member of the family has an inherent right to occupy and use any part of the family land.

Individual Interest
Where a family member wishes to cultivate any part of the family land, he/she has to obtain special permission from the family head who would normally allocate land to him/her. In some societies, the individual has to pay (locally referred to as kola or “handshake”) the family head as acknowledgement of the land granted to him/her. The grant, however, does not confer ownership of the land but only the right to use the land.
State or Public Lands
There are two types of State lands in Sierra Leone: Crown Lands and Government Reservations. Crown Lands are found in the Western Area while Government Reservations are found in the Provinces. Crown Lands are comprised of lands which have been acquired “for the service of the colony” under the Public Lands Ordinance, 1898.
5.0 POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS

5.1 Methodology for Impact Identification

The potential environmental and social impacts likely to arise as a result of the Sierra Leone Energy Sector Utility Reform Project were identified by matching the project components with the surrounding environmental and socio-cultural resources. This section presents both the likely positive and negative impacts that can arise from the activities of the project. The project activities considered may be grouped into three (3) sets of project activities as follows:

- Activities related to the works on the 33 kV and 161 kV overhead transmission lines
- Activities related to the rehabilitation and reinforcement of the components of the distribution network
- Activities related to loss reduction.

Information regarding the social, cultural, natural and coastal resources, etc., was sourced from related literature, visits to the project site and consultation with relevant stakeholders.

Stakeholders were identified using a stakeholder identification matrix and were involved in the identification of the potential impacts of the Sierra Leone Energy Sector Utility Reform Project. The key stakeholders include:

- National Power Authority
- Dept of Environment of Min of Lands and Country Planning;
- Lands Commission;
- Ministry of Energy (MoEWR and Water Resources);
- Environmental Protection Agency (EPA);
- Free Town Country Planning Department;
- Ministry of Health (MoH);
- Project catchment communities;
- Ministry of Environment, Science and Technology (MLCPE); and
- NGOs.

5.2 Beneficial Impacts

The Sierra Leone Energy Sector Utility Reform Project will bring various benefits to its immediate communities and region and the nation as a whole. The following benefits have been expatiated in this section:
- Provide adequate and reliable power supply to all NPA customers in the Western Area.
- Reduce the losses in the transmission and distribution of electricity
- Assure system integrity and security
- Eliminate or reduce hazards to public and occupational health and safety
- Provide necessary support for sustainable development of the country

5.2.1 Improvement in the National Energy Supply
The Energy Commission (EC) of Sierra Leone in 2009 predicted a challenging energy year for 2010 due to supply shortfall with reference to three impending energy-related projects namely losses in transmission, poor quality of electrical energy and persistent load shedding. The Sierra Leone Energy Sector Utility Reform Project will provide adequate and reliable power supply to all NPA customers in the Western Area, reduce the losses in the transmission and distribution of electricity, assure system integrity and security, eliminate or reduce hazards to public and occupational health and safety and provide necessary support for sustainable development of the country.

5.2.2 Reduce the losses related to loss reduction
This different between the energy generated by NPA and that sold to customers is considered loss within the distribution system. System losses are currently around about 33% and these impacts adversely on NPA operations. About 13% of the losses may be classified as technical losses while about 20% are non-technical or commercial losses.

Reduction in technical losses is expected to occur as a result of the proposed rehabilitation and reinforcement of the distribution network. Upgrading from 11kV to 33kV sub-transmission should enhance this objective.

Non-technical losses involve non-payment by customers and faulty metering, billing and collection procedures. The proposal is to improve the commercial operations and introducing pre-payment meters. New customer service centers are to be built.

Individually, these activities do not raise issues of significant environmental concern, however the cumulative effects of some related aspects such as generation of waste material, disposal of old meters etc.. could be of concern.

5.2.3 Creation of Employment Opportunities
The Sierra Leone Energy Sector Utility Reform Project would create jobs for professionals, skilled as well as unskilled labour at the constructional and operational stages. The services of artisans, site clearers, construction workers, electrical engineers
and geodetic engineers, plant operators and environmental health and safety officers will be required to construct and effectively implement the project. Community members will have the opportunity to work as unskilled labourers with the possibility of the company upgrading their skills in order for them to take up more challenging positions. Other jobs such as provision of catering and other services as well as the sale of groceries will accrue as indirect benefits.

The availability of steady power supply would be advantageous to the general populace as investors can set up factories and employ the citizens.

5.2.4 Reduction in Emissions
The project will reduce emissions from the burning of LCO and D2 diesel respectively. The sources of the electrical power would be from Bumbuna and will therefore eliminate the release of NOx, SOx and most of the harmful gases. This will go a long way produce clean air and reduce the potential adverse impacts on air quality and greenhouse gas emissions of these power plants generating sets.

5.3 Potential Adverse Impacts
The following likely adverse impacts on the environment and socio-cultural resources of the project area were considered:

5.3.1 Construction Phase
As with most projects of this nature, construction phase impacts are generally of a transient nature and will be felt mainly during the actual period of construction. The issues involved in the Transmission and Distribution and transformer station rehabilitation construction phase are:

a) Transportation of equipment and materials to site
This would involve medium to heavy duty trucks carrying loads to the various construction sites along the tower route and to substation sites. Some of the materials are currently stored at Wellington, Black hall Road and Kington, average travel distance should be between 4 – 10 km per trip. The road network to most of the sites is quite adequate although access to the hilly areas could be difficult. The impacts associate with the transportation would include

- Noise from truck movements
- Emissions from vehicle exhausts
- Dust emission from haulage of sand
- Damage to road surfaces and dust generation where roads are not paved
- Possible road accidents including falling objects from trucks.
• Vehicular pedestrian conflicts

These impacts would affect soil, air quality, surface water, ambient noise, land use and occupational/public health and safety

b) Clearing Transmission Lines Right-of-Way (RoW) and Tower Routes/Spots
This involves mainly vegetation clearing and removal of all unauthorized structures. All trees directly in the way of the lines shall be suitably lopped or completely removed as required for safety. Using the prescribed standards, no structures are permitted directly beneath the 161 kV, 33 kV or 11 kV lines. Spots for erecting towers shall be suitably cleared and graded. The impacts arising from this activity include:
  • Exposure of soils to erosion and degradation from runoff
  • Noise from grading machinery
  • Sediments and runoff from exposed soil surfaces polluting receiving water bodies
  • Loss of use of land in RoW by existing users

(c) Excavating Foundations and Erecting towers and Poles and laying of cables
This involves works at selected spots where towers and poles are to be located. About 40% the towers are already in place and excavation works will be limited. In the case of the wooden poles, existing poles will be replaced with new ones at the same spots. Typical excavation for mounting the towers and poles will be up to 2 m deep for towers and 1 m deep for poles and the soil will be reused for backfilling. Tower pads will be of concrete construction to avoid direct contact between the metal parts and the soils which tend to be acidic. The erection of towers and new wood poles will enhance the status of the electrical infrastructure in the T & D network, which is a beneficial impact. A further benefit is that of towers serving as perches for birds. The adverse impacts associated with these works such as noise and dust generation are similar to those discussed earlier. Workers assembling tower members and poles have to work at heights of up to 10 m and beyond and there is the risk of slipping/falling. Adequate personnel safety equipment including safety climbing belts and appropriate clothing shall be provided for all workers engaged in such activities. Other concerns include:
  • Waste Generation
  • Chance archaeological finds during excavations
  • Safety of workers assembling tower members.

(d) Stringing of lines and replacement of existing cables and conductors –
This activity will be mostly carried out manually. There may be the need to use mobile cranes to assist with the replacement of damaged conductors on the 161 kV line. Some of the 33 kV towers are located in cemeteries and working on the them will require careful monitoring to avoid damaging any grave/tombs. The stringing process will pose occupational health and safety hazards. A major impacts of erecting and stringing
towers/poles is the visual intrusion impact. During the filed survey, it was observed that many of the LV overhead lines are strung haphazardly creating aesthetic problems particularly within the eastern parts of the city. The impact caused by visual intrusion is mainly associated with the LV overhead lines and can be significant in areas intended as tourist attractions. In many parts of Freetown, the poor physical planning and development has resulted in indiscriminately scattered overhead lines, which are visually disruptive. Overhead lines may create collision hazards to birds; birds which tend to rest on power lines may be affected by heat and electric fields. This type of impact may be considered as residual.

The other significant impact expected from this activity is the large amounts of waste to be generated from replacing huge quantity of damaged conductors. In addition, the wooden cores of the new conductors which will be used for the stringing and replacements will remain as waste material. Other wastes will include broken and damaged insulators and other similar equipment.

(e) Clearing Transmission Lines Right-of-Way (RoW) and Tower Routes/Spots – this involves mainly vegetation clearing and removal of all unauthorized structures. All trees directly in the way of the lines shall be suitably lopped or completely removed as required for safety. Using the prescribed standards (see Annex 4), no structure are permitted directly beneath the 161 kV, 33 kV or 11 kV lines. Spots for erecting towers shall be suitably cleared and graded.

The impacts arising from this activity include:
- Exposure of soils to erosion and degradation from runoff
- Noise from grading machinery
- Sediments and runoff from exposed soil surfaces polluting receiving water bodies
- Loss of use of land in RoW by existing users

(f) Excavating Foundations and Erecting towers and Poles – this involves works at selected spots where towers and poles are to be located. About 40% the towers are already in place and excavation works will be limited. In the case of the wooden poles, existing poles will be replaced with new ones at the same spots. Typical excavation for mounting the towers and poles will be up to 2 m deep for towers and 1 m deep for poles and the soil will be reused for backfilling. Tower pads will be of concrete construction to avoid direct contact between the metal parts and the soils which tend to be acidic.
The erection of towers and new wood poles will enhance the status of the electrical infrastructure in the T & D network, which is a beneficial impact. A further benefit is that of towers serving as perches for birds.

The adverse impacts associated with these works such as noise and dust generation are similar to those discussed earlier. Other concerns include:

- Waste Generation
- Chance archaeological finds during excavations
- Safety of workers assembling tower members.

Usually during excavations there is a possibility of encountering buried items of archaeological or cultural/historical significance. Any such finds shall be duly notified to the authorities of appropriate action.

Workers assembling tower members and poles have to work at heights of up to 10 m and beyond and there is the risk of slipping/falling. Adequate personnel safety equipment including safety climbing belts and appropriate clothing shall be provided for all workers engaged in such activities.

A major impact of erecting and stringing towers/poles is the visual intrusion impact. During the filed survey, it was observed that many of the LV overhead lines are strung haphazardly creating aesthetic problems particularly within the eastern parts of the city. The impact caused by visual intrusion is mainly associated with the LV overhead lines and can be significant in areas intended as tourist attractions. In many parts of Freetown, the poor physical planning and development has resulted in indiscriminately scattered overhead lines, which are visually disruptive.

Overhead lines may create collision hazards to birds; birds which tend to rest on power lines may be affected by heat and electric fields. This type of impact may be considered as residual.

5.3.2 Potential Impacts on HIV/AIDS
Transmission of the disease is largely through sexual activity. Promiscuity and marital unfaithfulness is predominant among people who travel from their homes to stay at another place, be it for the reason of work or other. The project is likely to attract migrants into catchment communities who may seek to engage in casual sexual activities, and may also attract sex workers. Casual sex with multiple partners is the vehicle for the spread of HIV/AIDS. An increased number of individuals participating
in these high risk behaviours increase the risk of infection for existing community members, especially the women who offer sex favours for money.

The Ministry of Health (MoH) national sentinel surveys still on-going indicate that in 2005 the most affected age groups are those between 20-34 years. Workers in the construction sectors largely fall into this age group and therefore any impact of the epidemic on the age group will likely affect the productivity of this sector, which is needed for the implementation of the Sierra Leone Energy Sector Utility Reform Project. Despite a reduction in prevalence of the infection in 20010 2011 in the country indicating that the situation is stabilising, there is still a need for concerted action to maintain those interventions that have led to this reduction.

5.3.3 Conflict with Social and Cultural Values
People from different geographical and social environments have different beliefs and views concerning religion, sacred objects and traditional practices. Thus, the convergence of many people at communities in the project area has the potential to generate conflict between the migrants and the local inhabitants, who may insist on the observance of their values and traditional practices by the migrant community. Thus, the existing community cohesion in the Project area could be impacted through the transformations resulting new businesses and people with differing social value systems.

5.3.4 Potential Effects on Women
The traditional family system sets roles for men as the providers and the women as the supporters. Women are made to feel dependent on the men who most often abuse this role and tend to be dictatorial. The issue is about power play where the advantage lies with the men for the reason that they are more economically sound than the women. Men are often preferred for employment in development projects; and with the coming of the Sierra Leone Energy Sector Utility Reform Project and subsequent swell of industrialization in the District, this trend could worsen. In the face of present admonishing of women empowerment, this could be a set back as the women in the project communities may be further suppressed into the throes of economic dependency.

5.4 Operational phase
These impacts will arise from the operation of the transformers and substations
5.4.1 Transformer oils
The presence of transformers on the premises of substations introduces the potential environmental impacts inherent in transformer oils. Polychlorobiphenyls (PCBs) are harmful substances to the environment. They are not produced during electricity generation or distribution, but which are contained in certain equipment, mainly in transformers and condensers. These are often purchases from the manufacturers of electrical equipment who use them because of their perfect dielectric properties. The transformer oils shall be collected and handled adequately. Qualified agencies or approved by the SPC, Ministry of Energy and Water Resources or NPA shall be engaged for that activities. NPA will ensure that the new transformers are free from PCB containing oils. Modern day/new transformers are free from PCB oil as they contain mineral oil. Annex 1 Regulations for the Prevention of Pollution by Oil, Annex 2 Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk of International Convention for the Prevention of Pollution from Ships (MARPOL) will be referred. The transformers to be purchased will be required to meet all applicable safety standards and will be enclosed in separate secondary containment structures that will prevent any accidental spills or routine leakages that may occur from being released to the environment. The transformers will be serviced outside the country.

5.4.2 Fire hazards
The presence, storage and use of oils, fuels and other flammable products on the premises of substations and work sites may give rise to the very likely hazards of fire outbreaks. In addition, there always is a likelihood of fire outbreaks in substations and work sites that are sited in areas where bushes surround them. Some mitigation measures have been proposed for this impact.

5.4.3 Noise
Assessments of existing substations in the Freetown municipality indicate that generated noise could be heard up to only about 60 m from substation sites. Additional noise in the surrounding area may be heard from generators in the substations, but these are fitted with silencers. This noise fluctuates on a daily basis, particularly the weekdays when vehicular use is at its peak in the vicinity. The noise level will however be maintained well within the guideline value for residential areas of between 35 ~ 40 dB. Existing trees around the proposed substations that will not pose threats to the incoming or outgoing transmission lines will be left in place to act as noise buffer to would-be residents in the future and to road users. No further mitigation for generated noise from substations will be proposed.

5.4.5 Avifauna
Potential impacts by/on bird species present in the area associated with the construction and operation of a substation include electrocutions and disturbance
during the construction and maintenance of the substation. The distribution grade T-lines are not expected to cause any impediment for the locally known avifauna. Other problems include electrical faults caused by bird excreta when roosting or breeding on electricity infrastructure within the substation. Mitigating measures have been proposed for this potential impact.

5.4.6 Substation security and public safety
The substations will be located in relatively built up area. Due to the voltages to be handled by the stations, it is important that they are made secure at all times and that unauthorized persons are kept away from the premises. The substations shall be suitably fenced to ward off persons from the premises. Also, Security officers shall man the substations at all times to ensure security and report all incidents that might be out of the ordinary for prompt action. In addition, suitable warning signs indicating the dangers within shall be placed at regular intervals on the fencing to warn would-be encroachers.

5.4.8 Explosion, Health and Safety Risks
Explosion would be a major risk of the Sierra Leone Energy Sector Utility Reform Project due to the blowing up of transformer stations. Fire/explosion at transformer stations could have serious implications for human health as well as the plant quality of power supply. Fire will also introduce more CO₂ into the atmosphere, increasing GHG emissions and affecting climate change. The workers would be most at risk in the case of an explosion.

Accidents constitute one of the most important risks in any construction resulting in injuries. These are likely to arise from moving machinery in the course of operation, unguarded parts of equipment and a disregard for health and safety measures. These may pose risks to the workers. Other sources of injuries are excessive noise, vibration and heat, and also lubricants some of which contain solvents with potential to cause skin irritation and allergies, respiratory disorders and acute poisoning.

5.4.9 Cable theft/Sabotage and Security Issues
Deliberate cable theft/ damages could be attempted through blow-ups, cut-ins, and thefts. Already, the cables are being damaged by road construction activities which could be aggravated as a result of dissatisfaction with consultations or compensation payments.
Potential also exist for attacks on construction workers, other transmission line facilities which may result in major obstacles for the production and transmission of the electrical energy. These impacts could result in disruption in quality electricity supplies to the communities and unexpected power cuts. Illegal connections may also result in fire outbreaks which could be widespread leading to destruction of lives and property.

6.0 ENVIRONMENTAL AND SOCIAL MITIGATION PRINCIPLES

The ESMF offers options available and principles for preventing, minimizing or managing various environmental and social impacts as an integral part of the Sierra Leone Energy Sector Utility Reform Project planning and management. This section provides impact mitigation principles for the potential adverse Project impacts identified in section 6. The following impact mitigation principles were considered:

- Mitigation principles for the effects of land ownership, property and buildings loss;
- Mitigation principles on impact of noise;
- Prevention of Impact on Public Safety principles;
- Prevention of Impact on Occupational Health and Safety principles;
- HIV/AIDS prevention and management principles;
- Socio-cultural conflict prevention principles;
- Gender impacts mitigation principles;
- Substation, Cable theft/security principles.
- Chance find procedure principles
- Population influx control principles
- Air quality control principles;
- Explosion control and health and safety principles;
- Mitigation as a result of operation of substation principles

6.1 Mitigation Principles against the Effects of Land Loss

As discussed in earlier section, the expropriation of land, or compulsory land acquisition, for such a project could result in:

- the loss of lands used for petty trading;
- loss of livelihood for others in the Project area;
- social stress and conflicts; and
- additional independent power producers expected in the near future would mean additional land losses.
To prevent or reduce the impacts of land acquisition and loss of property, NPA will adopt the principles of transparency and fairness. To provide transparency, and ensure key members feel engaged in the process NPA will:

- Involve community leaders such as chiefs, opinion leaders and assembly members in the land acquisition process;
- Collaborate with NGOS to ensure members of the community fully understand the benefits of the Project and are properly informed about its various aspects.
- Liaise with the Town and Country Planning department to ensure that all future related developments of the project are within the area designated by the Assembly
- Assist the planning unit of the Assembly to undertake proper planning and allocation of zone for specific development schemes in the communities.

To ensure that local community members are treated in a fair manner during the land acquisition process, NPA will:

- Ensure compensation rates for land owners reflect current market realities;
- Educate affected community members on the alternative forms of livelihood available to them, and provide support to ensure a smooth transition to these alternative livelihoods.

6.1.1 Land ownership/land-use issues

Land ownership issues are expected to persist during this phase of the project. In case where property owners could not be traced after all efforts has been made during the constructional phase additional efforts will be made during the operational phase to locate such people. Prompt compensation payment will then be affected.

6.1.1.2 Grievance resolution

Grievances are sometimes raised by some project-affected persons (PAPs) during this phase of the project. Grievance resolution procedures have therefore been put in place with the sole objective of minimizing disputes that may arise in relation to the compensation payments. The grievance/dispute processing and settlement mechanisms will be based on the following:

- Traditional dispute resolution
  Dissatisfied claimants would be invited for negotiation together with the traditional authorities of the area or Assembly members of there in order to arrive at acceptable
figures. This process had been employed at the survey stage to resolve grievances that arose from joint ownership of land, tenant-landlord conflicts and boundary between farm disputes. Mediation took place in the palaces of the traditional rulers. Resolutions were amicably arrived at to the satisfaction of all.

- Submission of counter proposals
  The second stage of the mechanism is to request the claimant to submit counter proposals supported by valuation opinion prepared by private values of their choice. The private reports will be considered by NPA in conjunction with the Land Valuation Board, the witness NGO and the PAP (with his/her counsel, if any) to ensure that claimants are treated fairly.

At such meetings efforts will be made to arrive at amicable settlements in order to endure that the third stage of the dispute resolution is not triggered.

- Resort to Legal action
  PAPs may, in the event of dissatisfaction with the decisions taken in the instances discussed above or without resort to any of the instances above resort to legal action to have the dissatisfaction resolved. Given the mechanisms described above, it is unlikely that disputes will end up in the law courts.

6.2 Rural Economy Enhancement Principles

A major concern related to development projects involving displacement of people or disruption of their income earning activity is for the affected people not to be left off worse than they used to be. Project proponents are supposed to ensure that the livelihoods of affected persons are restored and the general economic outlook of the catchment communities is enhanced. Measures that can be put in place to alleviate the possible negative impacts of a project such as the Sierra Leone Energy Sector Utility Reform Project on the people include:

- Exhaustive consultation with affected persons and the community as a whole to inform them of the implications of the project on their economic activities;
- Appropriate valuation of size of affected properties (i.e., land) and payment of realistic compensation;
- Setting up of a livelihood restoration committee by NPA to explore the economic outlook of the communities, identify potential vibrant areas for business and advise affected persons on the best alternative to their lost livelihoods; and
• Making provisions for people to be employed at both construction and operation stages of the Sierra Leone Energy Sector Utility Reform Project.

6.3 Population Influx Control Principles

With the main motivation behind migration of people into project catchment communities being employment, a recruitment control program when properly put in place by NPA could help minimize the numbers that troop into the project communities. The expected end result will be to give prominence to the local community people during employment, thereby discouraging the influx of in-migrants into the project area. This can be achieved by the following:

• Establishment of a recruitment committee to include appointed officials from NPA and prominent persons representing the interests of the communities; and
• Conducting the recruitment exercise based on criteria to ensure that the indigenes form the majority of the quota allocated for, for instance, unskilled labour; and
• Establishment of clear criteria that describe the desired characteristics and priorities for use by the recruitment committee when hiring employees.

The above measures would reduce the overall extent of influx but cannot prevent the menace in entirety as the promise of indirect jobs is too attractive to be resisted by migrants. As communities become congested the main concerns of increased pressure on existing toilet and other sanitary facilities, water, schools and healthcare facilities will be of great concern to the inhabitants. NPA will intervene by:

• Identifying the basic community infrastructural needs through consultation with the communities; and
• Providing, as part of their corporate responsibilities, amenities such as water, toilets, schools etc..

6.4 HIV/AIDS Prevention and Management Principles

To ensure the intensive education on the issues of transmission and prevention of HIV/AIDS as recommended by Sierra Leone AIDS Commission and ILO, the NPA will work in collaboration with the Health Directorate of the Ministry of Health to increase education of workers and the townsfolk on safe sex practices, condom use, abstinence and remaining faithful to one partner. NPA shall ensure that the appropriate tools to collect, analyze and organize the information needed to maintain a safe and healthy working environment are made available and used in the workplace. Highlights of the
principles to be followed by workers are set out below, based on ILO guidelines and those of the Sierra Leone AIDS Commission:

- HIV/AIDS prevention and treatment guidelines for community/workplace will be prepared;
- HIV/AIDS prevention clauses will be incorporated into works contracts;
- There should be no discrimination or stigma against workers on the basis of real or perceived HIV status;
- Refusal of employment or dismissal should not be based on HIV status, nevertheless testing for HIV should be carried out as specified in the code;
- Relations with infected/potential workers will be governed by the basic human rights as enshrined in the Constitution of Sierra Leone;
- Due care and confidentiality will be exercised in handling information on HIV status of workers bound by the rules of confidentiality set out in existing ILO instrument; and
- Prevention programs on HIV by contractors will include education and information provision, peer counseling, condom use promotion and distribution, and facilitation of voluntary counseling and testing and support for behavioural change.

6.5 Socio-Cultural Conflict Prevention Principles

NPA will observe all local customs at the construction and operational phases of the Sierra Leone Energy Sector Utility Reform Project. It will also liaise with the traditional leaders of the project communities to hold civic education sessions in the communities on their customs, beliefs and practices in order to re-emphasize the obligation for their observance by everyone living in those communities. The following will be observed:

- Cultural resources uncovered during land clearing will handed to traditional authorities to be preserved;
- Shrines and sacred groves that lie in the demarcated area will be appropriately relocated;
- NPA will collaborate with traditional authorities in identifying and avoiding damage to cultural sites and resources; and
- Important cultural sites will be marked and fenced during land clearing.

6.6 Gender Impacts Mitigation Principles

The proponent in accordance with its obligations as stipulated in Schedule 2, Clause 2 (e) of the Sierra Leone National Petroleum Company Act (1983) will ensure that the
adverse impact on women and children due to the project are minimized or completely eliminated. Measures that will be taken are:

- Provision of opportunities for employment of females;
- Promotion of women empowerment programs; and
- Facilitation of education for children.

6.7 **Air Quality Control Principles**

The NPA would have to collaborate with EPA to develop air quality management plans which will, among others aim at the reducing adverse impacts on air quality. To reduce impacts from dust generation the following principles must be followed:

- Water dousing to minimize dust;
- Contract specifications to include dust control measures;
- Covering of hauling trucks carrying sand to avoid dust emission; and
- Ensuring effective use of water to control dust emission during construction.

To reduce impacts of emissions the following principles should be adhered to:

- Promoting the culture of vehicular maintenance; and
- Air emission specifications for all equipment will be checked before purchase.

6.8 **Water and Coastal Resources Protection Principles**

Mitigation principles to prevent, minimize and manage impacts on the water and coastal resources from the implementation of the project will include:

- A network of storm drains shall be constructed in the substation to collect and direct storm water away from the substation. This network shall be isolated from the oil and fuel storage areas to ensure that storm water is not contaminated with oil and oil products prior to discharge
- Avoiding alignments which are susceptible to erosion, such as those crossing slopes;
- Using clean fill materials around watercourses such as quarried rock containing no fine soil;
- Providing settling basins to remove silt, pollutants, and debris from construction site runoff water before discharge to adjoining streams, rivers, the sea and other sensitive areas;
- Constructing run-off channels, contouring or other means of erosion control;
- Avoiding petroleum products leakages by using high integrity containers.
Mitigation principles to address habitat destruction and disruption impact in the project areas will include the following:

- Avoiding environmentally sensitive areas and wetlands to prevent severe impacts on flora and fauna;
- Ensure all waters and other releases meet EPAs General Environmental Quality Standards for releases into the environment; and
- Maintaining trees that will not directly interfere with the project and adequately compensating those to be felled.

6.9 **Cable theft / Security Principles**

To ensure smooth operations and peaceful coexistence of the project with the nearby communities to avoid conflicts and potential cable theft and sabotage, the following measures should be implemented:

- The implementation authorities adequately liaising with the law enforcement agencies (Police, Navy, Fire Service, etc.) to provide the needed protection/security to all facilities of the project.
- Avoiding areas/zones under litigation which could be potential sources of conflict;
- Adequately involving/engaging all stakeholders (Traditional Leaders, Youth Groups, District Assembly, NGOs, etc.) in future consultations regarding the execution of sub-projects and other ancillary developments;
- Formation of complaint unit within the project area and at the District Assembly to address or forward all complaints to the appropriate authorities for redress;
- Formation of Grievance Redress Committee to deal with any grievance regarding compensation payments;
- The authorities adequately securing the project site and transmission line right of way by preventing any induced developments (settlements, trading centers, etc.) that could threaten the project.

6.10 **Chance Find Procedure Principles**

During the constructional phase, cultural/archaeological ‘chance finds’ - sites of cultural significance such as sacred woods or trees or rock outcrops and historical or archaeological heritage/items or sites which the local residents may not have mentioned at the survey stage will be monitored to ensure that such sites or items are properly managed to the satisfaction of both the local communities, the EPA and/or other relevant authorities. The “Chance Finds” procedure will be included in the ESMP
and will be covered in the contract for civil works, referring to the small areas to be occupied by towers and substations. If in case there is any archaeological site in any of the proposed camp sites, measures will be taken to change such a site. In the event that an archaeological resource is discovered during the construction process a Chance Find Procedure such as a rapid archaeological survey will be implemented in substation and camp site. This procedure needs to be included in the Contractor’s EMP (Environmental Management Plan). A Chance Find Procedure is a process that prevents archaeological sites from being disturbed until an assessment by a competent specialist is made and actions consistent with the requirements of OP4.11 are implemented. It is a project-specific procedure that outlines what will happen if previously unknown physical resources are encountered during project construction or operation. The procedure includes record keeping and expert verification procedures, chain of custody instructions for movable finds, and clear criteria for potential temporary work stoppages that could be required for rapid disposition of issues related to the finds.

In accordance with this Procedure, work will cease on a site where archaeological material is found. The consulting engineer will inspect and secure the site, and will then contact the monitoring agency for advice and arrange for a survey or salvage work as appropriate.

6.11 Mitigation of Noise, vehicular emission, and road accidents avoidance principles

Noise from truck movements is transient and will not require special mitigation except to educate drivers to avoid unnecessary blaring of horns and revving of engines especially in the vicinity of residences.

Emissions from vehicles contain pollutant such as CO, CO₂ and smoke, soot and other products of combustion. The quality of exhaust depends among other things on the state of maintenance of the engine. The contractor shall ensure that all vehicles used are properly maintained to avoid excessive air pollution.

Dust emission from haulage of sand shall be mitigated by ensuring that trucks carrying sand have suitable covering material such as tarpaulin in place. Damage to road surfaces and dust generation where roads are not paved is an unavoidable impact especially in the wet season.
Road accidents shall be minimized by ensuring that trucks are in good state of maintenance and that drivers are properly qualified and obey appropriate traffic signals. All materials being transported shall be suitably secured and trucks shall carry suitable warning signal such as “flashing amber light” and “red flags” on long items such as wood poles.

6.12 Mitigation of impacts on Occupational safety and health issues principles

The NPA will carry out the operation and maintenance of the proposed transmission line based on accepted international standards, such as those of the International Electrotechnical Commission (IEC) and the NPA’s own ‘Corporate Safety Rules.

However some specific potential occupational safety and health hazards expected during the operational phase of the project are dealt with below:

6.12.1 Potential collapse of towers

As stated earlier, collapse of towers occurs only rarely. Since the hazardous effects (e.g. falling on people and electrocution) of the collapse are normally felt only within the RoW public safety will be ensured by restricting public access to the right-of-way. In line with existing NPA practice, all towers will be clearly marked with a red inscription on white background – “DANGER – 330,000 Volts” to warn off trespassers and prevent them from exposing themselves to the potential dangers of electrocution.

Regular maintenance will minimize corrosion and wearing out of parts of the towers and their accessories. The NPA already has a comprehensive planned and emergency maintenance programs for the existing transmission lines. It is expected that the same level of care will be applied to the new transmission lines to be constructed.

In addition, tower members will be secured and improved by anti-theft fasteners to check acts of vandalism and its harmful consequences on the towers. Security patrol will be conducted on sections of the transmission line especially the outskirts of urban areas and towns, which are more prone to acts of vandalism. It is expected that the patrols will ensure early detection of any acts of vandalism and signs of tower corrosion. Prompt and necessary remedial actions will be taken to repair the structures to forestall the possible collapse of towers.
6.12.2 Falling and/or swinging objects

The measure proposed earlier to minimize the potential hazards posed by falling and swinging objects are valid for the maintenance phase of the project and will be fully implemented.

6.12.3 Falls from heights

Potential accidental falls from heights during the operational or maintenance phase of the proposed project will be minimized through of appropriate personal protective equipment such as body harness, climbing belts, etc. The NPA will insist that only well-trained and experienced personnel work at heights on the towers.

6.12.4 Machine Safety

All potentially hazardous machinery such as lifting appliances (cranes, forklifts, etc.) and unfired pressure vessels (compressors, etc.) will undergo statutory examination by certified engineer. This will ensure that accidents due to material failure are pre-empted. All electrical cables of mobile or hand-held machines (electric hand drills, temporary lights) will be examined for flaws in insulation and when any flaws are detected the cables will be promptly replaced to forestall the hazards of electrical burns and electrocution of employees. In addition, employees will be required to wear protective clothing in the course of work to protect them from undue exposure to electrical power.

6.12.5 Public Safety

Tower members will be secured and improved by anti-theft fasteners to check acts of vandalism and its harmful consequences on the towers. Furthermore, anti-climbing guards will be installed to discourage adventurous individuals from endangering their lives and limbs.

The shattering of insulators, which could pose potential danger to passers-by, will be minimized by the use of quality insulators as well as the periodic washing of the insulators.

Measures proposed earlier to minimize public safety hazards relating to transportation and potential tower collapse are valid for ensuring public safety. These measures will be fully implemented to enhance public safety. Other public safety issue of potential health and other implications of electromagnetic field (EMF) effects have been dealt with below.
Threatening trees will be felled as stated earlier in the report to prevent them from falling onto the transmission lines during stormy weather conditions. This will minimize the potential of the fall of live electrical conductors, which could pose safety hazards to the public. Insulator pins will also be checked regularly for signs of rusting and any defective pins found will be promptly replaced to prevent the live electrical conductors from falling from the towers.

A potential positive public safety impact is the possible use of transmission lines and towers as landmarks to aid in “navigating” when driving through the countryside since they are clearly marked on Ghana’s topographical maps.

6.12.16 Electromagnetic field (EMF) effects

According to the World Environmental Library, WEL 1.1, information derived from prolonged observations and experiments in numerous countries indicate that the electric and magnetic fields around transmission and distribution facilities exhibiting frequencies between 50 and 60 Hz have no harmful effects on human health. Magnetic field strengths below 0.4 mT at 50 – 60 Hz induce no detectable biological reaction in humans. The magnetic fields acting on the ground below overhead lines develop maximum field strength of only 0.055 mT for frequencies between 50 and 60 Hz. Hence potential effects of EMFs on human health are non-existent according to current knowledge.

However, an electrically grounded person touching an ungrounded metallic object or a conductor in a static or oscillating field may draw electric current from the object and may experience a micro shock from a spark discharge. This potential effect will be minimized by the NPA, as usual, by multiple earthlings. Protective multiple earthlings minimize the changes of people getting electric shocks and the changes of such shocks being fatal.

In order to debunk the misconception that EMFs may cause cancer or harm children and minimize fear and avoid panic among the local populations, the NPA will undertake public education and create awareness in the local communities wherever such concerns are expressed. The NPA will also ensure that dwelling houses and other structures are not built within the RoW in contravention of existing regulations.
6.13 **Effects on birds**

No specific breeding grounds for birds have been identified within the RoW hence the potential danger of debasement of such areas does not exist. The potential dangers of birds flying into or colliding with the lines and interference in the navigation of birds exist and can only be regarded as residual hazards.

6.14 **Impact on telecommunications**

Even when the transmission line crosses over telephone lines, the vertical distance between the two line will ensure that interference is non-existent or minimal.

6.15 **Substation**

Principles of mitigation measures proposed for the potential impacts due to the operation of the substation below are below:

6.15.1 **Fire hazards**

The best defense against fire outbreaks is to ensure they are not caused at all. NPA is well aware of the potential disastrous consequences of fire outbreaks on its substation. Measures are therefore put in place to ensure that fires do not break out in the substations.

Prior to the operation of the substation, and as part of project planning, the in-house NPA Fire Service will carry out a fire survey on the premises to identify peculiar firefighting equipment for the station. These pieces of equipment will be purchased and installed at vantage positions within the substation in addition to the standard water hydrants and fire extinguishers provided for all the substations. This will ensure that the substation remains in a high state of preparedness against potential fire outbreaks.

In addition, a fire buffer will be created and maintained around the fencing to ensure that potential bush fires are not able to affected substations.

Potential fire hazards as a result of electrical faults will be minimized by adhering to technical specifications relevant to electrical safety. The use of low quality components, inadequate sizing of cables, negligent execution of works and general non-observance of safety rules will be avoided to minimize the potential hazard of electrical fires. Also, the operating personnel will be sufficiently trained in connection with electrical safety
measures and their observance. Proper and sufficient supervision of workers will be undertaken.

In addition, the NPA will not allow the use of the fire for the maintenance of vegetative growth within the RoW. Bush fires will be minimized through public education. It is expected that the full implementation of the measures will minimize the occurrence of fires.

6.15.2 Avifauna

The NPA ensures that good housekeeping is kept at all times in the substations. Bird nests in areas likely to cause electrical faults shall be promptly removed and transferred to nearby trees, if practicable.

6.16 Work camp management

First and foremost, the NPA will ensure that contractors do not establish work camps close to any water body to avoid water pollution problems. The NPA will also ensure that employees from the local communities are not accommodated at the camp.

During maintenance of construction machinery/equipment and vehicles care will be taken to avoid accidental oil spills, which could lead to soil contamination. Accidental spillage of oil, fuel and paints will be avoided as much as possible. Any spilt materials will be quickly mopped up withy rags and/or sawdust. The used sawdust and rags will be collected, put in polythene bags and disposed of at appropriate public waste dumping sites. Waste oil will be drained into impermeable sumps at the work camp for collection and disposal.

Metal wastes will be collected and sold as scrap to dealers who will in turn sell them for re-cycling.

Other solid wastes such as damaged cables and conductors, rags, paper cartons and domestic wastes will be collected and disposed of at appropriate public waste dumping sites. The reuse of empty paint and oil containers for storage of water will be prohibited.

Mobile toilet facilities will be provided at the work camp to avoid the pollution of the environment with human waste. The holding tanks of the mobile toilets will be emptied as and when required for disposal at appropriate sites.
6.17 Waste management

Solid wastes in the form of trees, tree stumps and wooden containers will be gathered together and made available to the local communities as fuel wood. Metal wastes will be collected and disposed of appropriately and/or recycle. Wastewater from tower base excavations is not expected to be significant. No towers will be sited in permanently wet locations requiring the extraction of large volumes of wastewater. At worse, towers will only be allowed to be sited at seasonally wet locations. The required dewatering will therefore be temporary, limited and localized. Hence only small quantities of wastewater will be pumped and discharged through sediment traps or silt screens into surrounding marshlands. The effects of discharging the wastewater into the surrounding marshlands will be insignificant and short-lived.

Accidental spillage of oil, fuel and paints will be avoided as much possible. Any spilt materials will be quickly mopped up with rags and/or sawdust. The use sawdust and rags will be disposed of at appropriate public waste dumping sites.
<table>
<thead>
<tr>
<th>PROJECT ACTIVITY</th>
<th>POTENTIAL ENVIRONMENTAL IMPACTS</th>
<th>PROPOSED MITIGATION MEASURE(S) (including legislation &amp; regulations)</th>
<th>INSTITUTIONAL RESPONSIBILITIES (incl. enforcement &amp; coordination)</th>
<th>COST ESTIMATES</th>
<th>COMMENTS (eg. Secondary impacts)</th>
</tr>
</thead>
</table>
| Upgrading of Distribution Line | - Noise, dust, air pollutants, road accidents  
- Loss of land use  
- Soil erosion, sedimentation and runoff  
- Waste generation  
- Historical/cultural finds  
- Health and safety risks workers doing upgrades  
- Visual intrusion | - Replant disturbed sites  
- Segregate and dispose as appropriate  
- Report to authorities  
- Personnel safety equipment  
- Improve alignment and tensioning  
- Segregate and reuse, recycle or dispose as appropriate | - Contractor  
- Contractor/NPA | - Contractor’s costs  
- Contractor’s costs | - Appropriate contract clauses to be specified  
- Approx. 3100 persons affected  
- Appropriate contract clauses to be specified  
- Appropriate contract clauses to be specified |
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<thead>
<tr>
<th>PROJECT ACTIVITY</th>
<th>POTENTIAL ENVIRONMENTAL IMPACTS</th>
<th>PROPOSED MITIGATION MEASURE(S) (including legislation &amp; regulations)</th>
<th>INSTITUTIONAL RESPONSIBILITIES (incl. enforcement &amp; coordination)</th>
<th>COST ESTIMATES</th>
<th>COMMENTS (eg. Secondary impacts)</th>
</tr>
</thead>
</table>
| - Stringing Lines and replacing existing cables/conductors | - Waste generation  
- mostly metals, insulators etc.  
- Disposal of transformers and other items, oil leaks | - Adopt best practices and safety procedures | - NPA  
- Contractor/ NPA | - Contract costs  
- NPA sells as scrap and gets revenue to offset costs | contract clauses to be specified |
| - Install new Transformers and Equipment | | | | | |
| Operation and Maintenance of the line | - Loss of vegetation cover  
- Loss of income from fruit trees | - Replant as necessary  
- Compensate | - NPA  
- NPA | - To be determined  
- To be determined | |
| - Vegetation control | | | | | |
| Maintenance of Right of Way | - Waste generation  
- Health and | - Segregate and dispose as necessary | - NPA  
- NPA | - TBD | Annual maintenance cost (2 staff |
<p>| | | | | | |
| | | | | | |</p>
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<th>PROJECT ACTIVITY</th>
<th>POTENTIAL ENVIRONMENTAL IMPACTS</th>
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<th>COST ESTIMATES</th>
<th>COMMENTS (eg. Secondary impacts)</th>
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<tbody>
<tr>
<td></td>
<td>safety</td>
<td>- NPA Safety rules and personnel protection</td>
<td></td>
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<td>policing area)</td>
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<td></td>
<td>- Control encroachment</td>
<td></td>
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<tr>
<td>Tower maintenance</td>
<td>- Waste generation</td>
<td>- As above</td>
<td>- NPA</td>
<td>- TBD</td>
<td></td>
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<tr>
<td></td>
<td>- Health and safety</td>
<td>- Shore up affected towers</td>
<td>- NPA</td>
<td></td>
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<tr>
<td></td>
<td>- Erosion effects on tower pads</td>
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<td>Special issues</td>
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<td>- Unknown health hazards</td>
<td>- Protect public from equipment</td>
<td>- NPA</td>
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<td></td>
<td></td>
<td></td>
<td>- Public education</td>
<td></td>
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<tr>
<td></td>
<td>- PCB in insulating oils</td>
<td>- Health hazard</td>
<td>- Safe handling Procedures</td>
<td>- NPA</td>
<td>- for training and institutional strengthening in environmental management TBD</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Personnel Protection</td>
<td></td>
<td>- Tests to be carried out to determine if PCB exists in NPA systems</td>
</tr>
<tr>
<td></td>
<td>- Use of SF6 equipment</td>
<td>- Health hazards</td>
<td>- Safety Procedures</td>
<td>- NPA</td>
<td>- Training in environmental issues</td>
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<tr>
<td></td>
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<td></td>
<td>- Training in environmental issues</td>
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<td>PROJECT ACTIVITY</td>
<td>POTENTIAL ENVIRONMENTAL IMPACTS</td>
<td>PROPOSED MITIGATION MEASURE(S) (including legislation &amp; regulations)</td>
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<td>COST ESTIMATES</td>
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<tr>
<td>Hazard management</td>
<td>- Health and safety Hazards</td>
<td>- Training in environmental issues</td>
<td>- NPA</td>
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<tr>
<td>Waste management</td>
<td>- Health, safety and pollution hazards</td>
<td>- Training in environmental issues</td>
<td>- NPA</td>
<td></td>
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<tr>
<td>Transformer oil leaks</td>
<td>- Pollution hazards</td>
<td>- Construct bunds around transformers</td>
<td>- NPA</td>
<td></td>
<td>- TBD</td>
</tr>
<tr>
<td>Construction and Operation of substation</td>
<td></td>
<td></td>
<td>- NPA</td>
<td></td>
<td></td>
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<tr>
<td>Ground clearing</td>
<td>- Waste generation</td>
<td>- Training in environmental issues</td>
<td>- NPA</td>
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<td></td>
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<tr>
<td>Setting up of bays, battery</td>
<td>- Pollution hazards</td>
<td>- Training in environmental issues</td>
<td>- NPA</td>
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<tr>
<td>Use of transformers</td>
<td>- Pollution hazards</td>
<td>- Construct bunds around transformers</td>
<td>- NPA</td>
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<tr>
<td>Drainage water supply and</td>
<td>- Pollution hazards</td>
<td>-</td>
<td>- NPA</td>
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<td>PROJECT ACTIVITY</td>
<td>POTENTIAL ENVIRONMENTAL IMPACTS</td>
<td>PROPOSED MITIGATION MEASURE(S) (including legislation &amp; regulations)</td>
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<td>sanitation aspects</td>
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<td>- Health and safety hazards</td>
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<td>- NPA</td>
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<td>-</td>
<td>- NPA</td>
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</table>
A Results and Monitoring Framework to document and measure the Project’s development impact will be discussed and agreed with the PMU, NPA and the MoE. The Framework will identify result indicators for the Project as a whole as well as for each of its components. The project agencies will be requested to provide annual target values for the results indicators and baseline data against which results can be measured.

Depending on the indicators, current data will be either provided by NPA from the utility database and accounts, or collected through direct observation, or from consultant’s technical reports. The PMU will be responsible for collecting, verifying and collating information and submit progress reports to the Bank, on an annual basis for PDO indicators and on a semi-annual basis for the intermediate indicators at component level.
7.0 ESMF IMPLEMENTATION

Environmental and social planning, implementation and management are undertaken by NPA for its development projects to cover environmental and social assessment (ESA) and the pre-project/project planning processes. Key stages of the ESA include proposal screening, EIA and mitigation measures, while the pre-project/planning process involves project concept, identification, design and appraisal. The ESA process links up with the pre-project/planning process signifying the importance of the two processes (i.e. EA and feasibility) to influence one another in the development of the Sierra Leone Energy Sector Utility Reform Project. In the context of the ESMF, environmental and social planning identifies and assesses the potential concerns and implications that may arise with the implementation of the Sierra Leone Energy Sector Utility Reform Project, in order to influence the design and other engineering feasibility options and decisions, for informed and sustainable project development. The successful implementation of the ESMF depends on the commitment of NPA and related institutions, the capacity within the institutions and the appropriate and functional institutional arrangements among others.

The NPA, EPA and MoEWR were identified as directly associated with the preparation, review and the implementation of the ESMF. The Ministry of Health (MoH), Lands Commission (LC) and the project communities were involved for their inputs regarding the appropriate environmental, social and health safeguards to be observed when the sub-projects are being implemented. The contractor(s) to be employed to undertake construction works will also have a role to play in the implementation of the sub-projects. This section addresses the following key areas of the ESMF implementation:

- Roles of Key Stakeholders in the ESMF implementation;
- Capacity building;
- Environmental and social monitoring and reporting; and
- ESMF implementation budget.

7.1 Roles of Key Stakeholders in the ESMF Implementation

The ESMF provides the environmental and social safeguards for the Sierra Leone Energy Sector Utility Reform Project and its successful implementation will depend largely on the key stakeholder institutions. This will ensure that the sub-projects are undertaken with due regard for the integrity of the resources to be affected by the
project development activities. The roles of the major stakeholders are identified in an institutional role in which the various components of the Sierra Leone Energy Sector Utility Reform Project were matched with the institutions which have jurisdiction in the areas of licensing, permitting, assessment, monitoring, etc. are stated below. These institutions and stakeholders were identified as having roles to play in the Sierra Leone Energy Sector Utility Reform Project ESMF preparation as well as implementation of the sub-projects:

- Sierra Leone National Power Authority (NPA);
- Ministry of Water, Energy and Power
- Environmental Protection Agency (EPA);
- Dept of Environment, of Min of Lands Country Planning and Environment (MLCPE);
- Town and Country Planning Department); and
- Non-governmental Organizations (NGOs).

7.1.1 Roles of NPA
The NPA is in-charge of the successful implementation of the Sierra Leone Energy Sector Utility Reform Project and all sub-projects with respect to the technical and environmental and social components. NPA will therefore play the following roles:

ESMF Phase
- Preparation of the ESMF;
- Registration of ESMF with EPA;
- Main implementer of the ESMF;
- Submits ESMF to the WB and EPA for review and approval;
- Implementation of the ESMF for the sub-projects; and

Sub-Projects Phase
- Registers sub-projects with EPA;
- Prepares and submits scoping/TOR to EPA;
- Prepares and submits EIS to EPA/WB;
- Award contact;
- Notifies EPA of project commencement;
- Conducts monitoring of cable laying;
- Submits monitoring report to EPA ;
- Submits annual environmental report and ESMP to EPA;
• Prepares a decommissioning plan and submits to EPA; and
• Oversees decommissioning.

7.1.2 Roles of Energy and Water,
The Energy Commission Ministry has the responsibility, among others, to promote and ensure uniform rules of practice for the generation, transmission and distribution and sale of electricity. The Sierra Leone Energy Sector Utility Reform Project is in line with this mandate and therefore the EC will be involved in the implementation of the ESMF with regards to the following:

ESMF Phase
• Receives and reviews applications from NPA and grants license for the project.
• Conducts monitoring of cable laying

7.1.3 Roles of EPA
The EPA is the lead environmental regulator, which oversees compliance with ESA requirements in Sierra Leone, facilitates public participation and disclosure. The roles in the implementation of this ESMF will involve:

ESMF Phase
• Determines the form of the ESMF (ToR);
• Reviews and approves the ESMF;
• Organises public hearing on the ESMF; and
• Addresses any grievance where necessary.

Sub-Projects Phase
• Registers sub-projects;
• Reviews/approves scoping/TOR;
• Reviews and approves EIS and issues permits;
• Receives and reviews monitoring report from NPA;
• Undertakes compliance monitoring for the sub-projects;
• Reviews/approves AER and EMPs and grants environmental certificates; and
• Monitoring of decommissioning of project.

7.1.4 Roles of Freetown Municipal Assembly
Project implementation will involve aspects such as land acquisition, employment and issues to do with the livelihood of the people in the communities which will
accommodate the sub-projects. Land demarcation and general development plans of communities lie with the assemblies as well as the communities. The DA’s roles are:

**ESMF Phase**
- Zoning of land within communities which lies within the assembly’s jurisdiction;
- Land allocation/acquisition;
- Provides the communication channel between the communities and the NPA during consultations; and
- Monitoring of land use to ensure adherence to designated use schemes.

**Sub-Projects Phase**
- Facilitates public consultations

### 7.1.5 Roles of NGOs
NGOs which are the environmental and social advocacy groups have become key players in the assessment process. Due to their grass root level dealing with the communities, they are privy to the main concerns of the people with respect to their socio-economic well being and how they are affected by the operations of companies which setup within their locality. Organisations such as Community Lands Development Foundation (COLANDEF), Centre for Social and Community Advancement (CESCA) and Friends of the Earth are active in advocating the interests of communities likely to be affected by the land related issues.

Consultations held with these groups, as part of the ESMF preparation revealed that they are a worthy source of information with regards to the existing land use and problems, economic status, ecological resources and their vulnerability and how the people will be affected by The Sierra Leone Energy Sector Utility Reform Project development. Their role in this ESMF will include the following:

**ESMF Phase**
- Create awareness of the project in the community;
- Act as a mouth piece for the communities with regards to the Sierra Leone Energy Sector Utility Reform Project; and
- Participate in public consultation/public hearing.

**Sub-Projects Phase**
- Make inputs at the Scoping and EIS stages when the sub-projects are due; and
• Monitor the implementation of NPA’s corporate responsibilities to the communities.

7.1.6 Roles of MoEWR
The MoEWR is one of the bodies responsible for formulating the policies that guide the operations of EPA and NPA respectively. With respect to the implementation of this ESMF, NPA would deal with appeals that may arise as a result of EPA’s actions / in actions on any aspect of The Sierra Leone Energy Sector Utility Reform Project and sub-projects.

The Ministry of Energy and Water Resources would conduct compliance monitoring of during implementation of the Sierra Leone Energy Sector Utility Reform Project sub-projects. The Ministry would also monitor decommissioning of the Sierra Leone Energy Sector Utility Reform Project when it is due.

7.1.7 Roles of the Contractor
The contractor’s roles will include the following:
• Develops a work plan based on the E&S safeguards;
• Submits the plan of work and schedule to the Environmental department of NPA;
• Train/create awareness for all personnel and community on relevant E&S safeguards measures; and
• Submits implementation report on E&S safeguards to the Environmental department of NPA.

7.2 Sub-Project Screening and Approval
This section outlines the screening, review and approval process for sub-projects that will be financed under the Sierra Leone Energy Sector Utility Reform Project. This is to help the EPA screen the sub-projects for potential impacts and provide guidelines for implementing measures to address them while adhering to legislative requirements for screening and EAs.

7.2.1 Screening of sub-projects
Once a sub-project activity has been defined, the screening form (provided in Appendix 2) would be completed by the Proponent (NPA). The form will allow for identification of potential environmental and social impacts associated with the proposed activity.
Since the ESMF and the RPF will be utilized together, the screening form also allows for the identification and appraisal of impacts related to potential land acquisition and involuntary resettlement.

7.2.2 Assessment and classification of impacts
Based on the information provided on the screening form, the EPA will determine whether the sub-project will require a more detailed investigation of the impacts through field appraisal resulting in a particular EA study level or otherwise. Also, the level of assessment required will be determined based on the level of expected impact i.e. whether high, medium or low level. Figure 8.1 gives a chart of how the screening of sub-projects would be expected to flow. Based on the level of impacts, a decision is made as to whether the sub-project will:

i. Require an EIA study and/ or RAP for highly significant impacts which may result in land acquisition and/ or involuntary resettlement;

ii. Require a PEA, since the impacts are not significant and can be dealt with without going through a full-scale EIA study; or

iii. Require no safeguard measures, as the impacts are considered minimal.
Figure 8.1 Sub-projects Implementation Chart
7.3 Institutional Arrangement and Inter-agency Coordination

Inter-agency coordination is key to the successful implementation of the Sierra Leone Energy Sector Utility Reform Project ESMF and sub-projects. This section describes the inter-relationship between stakeholders in their roles for the implementation process.

The MoEWR is the policy formulating and oversight body for all energy-related developments. NPA which is under Ministry of Energy and Water Resources and is in charge of the successful implementation of the Sierra Leone Energy Sector Utility Reform Project and all sub-projects with respect to the technical, environmental and social components.

The MoEWR would regulate the generation, transmission, distribution and sale of the electricity and issue permit for operation of the NPA. The NPA would require permits from the EPA to be able to start operations.

The EPA is the lead environmental regulator, and will oversee compliance of the Sierra Leone Energy Sector Utility Reform Project with Sierra Leone’s ESA requirements, facilitate public participation and disclosure of EIS during implementation of the sub-projects and issue environmental permits for the Sierra Leone Energy Sector Utility Reform Project. The EPA functions under the MLCPE, which is the policy formulating body that would, in concert with NPA and EPA, deal with any grievance redress issues that may arise between EPA and any aggrieved party as a result of the Sierra Leone Energy Sector Utility Reform Project.

The Municipal Assembly has a major role to play when it comes to project implementation which will involve land acquisition, employment and issues to do with the livelihood of the people in the project catchment communities. The assembly would work with NPA, EPA etc. on issues such as land demarcation and general development plans of communities.

Environmental and social advocacy groups are already active in advocating the interests of communities in the area likely to be affected in future by land related issues. These would be involved in consultations and monitoring of the NPA’s corporate responsibilities as well as making inputs to the EIS and other reports emanating from the Sierra Leone Energy Sector Utility Reform Project.
Figure 8.2 is a flow diagram of the roles and inter-relationship between stakeholders for the ESMF whereas Figure 8.3 presents their roles in the implementation of the sub-projects.
Figure 8.2  Institutional Roles and Arrangement for Implementing the ESMF

- Sub-project screening by NPA and EPA
  - ToR preparation by NPA
    - EPA reviews and accepts ToR
  - EA preparation and public consultation
    - EPA reviews, approves and grants permits
- Contract Awarded
  - EPA notified of sub project commencement
- E&S safeguards / mitigation implementation by contractors
- Monitoring by NPA (Quarterly Reports & AERs)
  - Report review, compliance monitoring by EPA
  - EC reviews report and does monitoring
  - MoE reviews report and monitor
- NPA receives and inputs comments from EPA, EC and MoE
- NPA prepares ESMP
  - EPA reviews and approve
  - EPA grants Environmental Certificate to NPA
Fig 8.3 Institutional Roles in the Implementation of the Sierra Leone Energy Sector Utility Reform Project Sub-Projects

7.4 NPA Capacity Building Needs

The NPA has no sole regulator that oversees its operations. The responsibility of licensing, management and monitoring of the sector is shared among a number of institutions including NPA, EPA, and MoEWR.

Approval of sub-projects of the Sierra Leone Energy Sector Utility Reform Project will be done under the expanded mandate of NPA and MoEWR. The EPA under MLCPE is the responsible body for issuing the Environmental Permits for the operation of the Sierra Leone Energy Sector Utility Reform Project. The responsibility for ensuring environmental and social integrity of development projects such as the Sierra Leone Energy Sector Utility Reform Project lies with the Environmental and Social Management Unit (ESMU) of the organization involved. The NPA has no formal ESMU within its organizational structure; the environmental and social responsibilities of its projects are currently borne by the Operations Department as added responsibilities. The absence of a well-structured ESMU within the organization may hinder effective implementation of the ESMF.

As is stipulated in section 2 (e) of the Sierra Leone National Power Authority is to “ensure that operations are conducted in a manner as to prevent adverse effects on the environment, resources and people of Sierra Leone”. In view of this, it is necessary to establish an Environmental and Social Department to oversee environmental, health and social integrity of NPA’s projects. The department should comprise of 3 units i.e. environmental, social and health and safety. Figure 8.4 shows the original organizational structure of NPA with the proposed new department shaded. The department is to be headed by a director with a minimum of 2 officers for each unit with specialization in the respective fields.

7.5 EPA’s Capacity-Building Needs

The EPA is mandated to undertake monitoring of development projects to which an environmental permit has been issued. The Sierra Leone Energy Sector Utility Reform Project components require the need to travel to locations for monitoring. The EPA presently has limited personnel and means of travel. Compliance monitoring will have
to cover transportation means to facilitate their work. Also, further training may be needed for the personnel who will be responsible for the monitoring especially at the regional office in Freetown.

7.6 Capacity Building Needs of the Freetown Assembly

Consultation with the Planning Unit of the district assembly revealed that there has not been an official land demarcation in the district for developments such as industry, farms and settlements. This implies that should a project be designated for the district, siting it at an appropriate/agreed location could pose a problem. Siting the project at an inappropriate location may also have dire consequences on the surrounding environment as well as potential social conflicts.

The planning unit of the assembly will have to be given additional training and capacity building to undertake proper planning and demarcation of the district into various development zones. With properly marked out zones in place, delays in project implementation and issues of environmental and social disruption could be minimised. A proposed budget for the ESMF implementation is given in Table 8.2.
Figure 8.4  Organizational Structure of NPA (Proposed Department Shaded)
7.7 Environmental and Social Monitoring and Reporting

Monitoring is a key component of the ESMF during project implementation. Monitoring should be undertaken at the Sierra Leone Energy Sector Utility Reform Project sub-projects implementation phase to verify the effectiveness of impact management, including the extent to which mitigation measures are successfully implemented. Monitoring should involve three areas namely:

- Compliance monitoring;
- Impact monitoring; and
- Cumulative impact monitoring.

The aim of monitoring would be 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; and
- Provide the opportunity to report the results on safeguards and impacts and proposed mitigation measures implementation.

7.8 Compliance Monitoring

This is to verify that the required mitigation measures, which are the environmental and social commitments agreed on by the NPA (Proponent) and EPA (main environmental regulator) are implemented. Compliance monitoring would include inspections during construction of the project’s components such as the substations as well as the right of way to verify the extent to which conditions based on which licenses are issued are adhered to. The operational/decommissioning phase of the sub-projects of the Sierra Leone Energy Sector Utility Reform Project will also be monitored. Compliance monitoring will be done by the EPA.

7.9 Impacts Monitoring

Monitoring of sub-projects impacts mitigation measures should be the duty of the Environment Department (which is yet to be created) of the NPA. The Environmental and Social (E&S) safeguards given to the contractor in the contract specifications should be monitored to ensure that works are proceeding in accordance with the laid down mitigation measures. The NPA should ensure that the contractor submits report on work progress and any challenges in observing the E&S safeguards. The monitoring
results should form a major part of the reports to be submitted to the EPA, MoEWR and EC.

7.10 Cumulative Impact Monitoring

The impacts of the Sierra Leone Energy Sector Utility Reform Project on the environmental and social resources within the Project’s area of influence should be monitored with consideration to other developments which might be established near the Sierra Leone Energy Sector Utility Reform Project enclave. There should be collaboration between NPA and other proponents to compare E&S safeguards guiding the individual projects implementation to ensure comprehensive management of cumulative impacts.

Table 8.1 ESMF Implementation Budget

<table>
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<tr>
<th>No.</th>
<th>Institution</th>
<th>Capacity Gaps Identified</th>
<th>Capacity Building Measure</th>
<th>Rate/UD$</th>
<th>Estimated Cost (UD$)</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>National Power Authority (NPA)</td>
<td>• Absence of an Environmental and Social Department</td>
<td>• Two weeks capacity building for about six (2) staffs of operations department to carry out E&amp;S responsibilities</td>
<td>• 8,000/specialist/2 wks</td>
<td>16,000.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Absence of trained personnel for EHS issues</td>
<td>• 30 day course for 6 staff</td>
<td>• 9685/Tuition cost</td>
<td>144,846.00</td>
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<td></td>
<td></td>
<td>• 6456/ accommodation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• 6000/allowance</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• 2000/transportation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• total cost per head = 24,141.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sub-Total</td>
<td></td>
<td></td>
<td></td>
<td>160,846.00</td>
</tr>
</tbody>
</table>


### 2. Environment Protection Agency (EPA)

- Capacity building for the staff to carry out compliance monitoring
- Lack of means of transport to ensure efficient monitoring of SIERRA LEONE ENERGY SECTOR UTILITY REFORM PROJECT area of influence
- One week capacity building for two (4) staffs to carry out compliance monitoring
- Facilitating transportation by EPA

<table>
<thead>
<tr>
<th>Action</th>
<th>Cost (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5,000/Officer/wk</td>
<td>20,000.00</td>
</tr>
<tr>
<td>5,000/Officer/wk</td>
<td>50,000.00</td>
</tr>
</tbody>
</table>

**Sub-Total** 70,000.00

### 4. District Assembly (DA)

- Inadequate capacity to undertake proper planning and zoning of lands
- Inadequate survey equipment
- Inadequate Personal Protective Equipment (PPE)
- One week capacity building for four (4) Planners of the District Assembly
- Procurement of addition survey equipment to include Total Stations, etc.
- Procurement of PPE

<table>
<thead>
<tr>
<th>Action</th>
<th>Cost (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,000/Planner/wk</td>
<td>8,000.00</td>
</tr>
<tr>
<td>2,000/Planner/wk</td>
<td>20,000.00</td>
</tr>
<tr>
<td>2,000/Planner/wk</td>
<td>10,000.00</td>
</tr>
</tbody>
</table>

**Sub-Total** 38,000.00

**TOTAL** 268,846.00
9.0 CONSULTATIONS

9.1 Introduction

Consultations play a major role in identifying the potential impacts of any proposed transmission system project. Community consultations assist in the identification of socio-economic, religious and cultural impacts. Stakeholder consultation to support the ESMF and the resettlement process, if any, specifically aims to achieve the following objectives:

- To provide information about the project and its potential impacts to those interested in or affected by the project, and solicit their opinion in that regard
- To manage expectations and streamline misconceptions regarding the project
- To agree on resettlement preferences, if any, and discuss concerns
- To ensure participation and acceptance of the project by the communities

Information obtained during consultations can be used to make an inventory of existing infrastructures and to collect information on land management, socio-economic activities, infrastructure, and expectations of the local residents.

9.2 Methodology

A team consisting of the staffs of NPA, and representatives of the Environmental Consulting Firm collected data for the consultations. Community opinion leaders such as assemblymen/women, faith based organization leaders, youth leaders, chiefs, or headmen served as key contacts to encourage meeting attendance.

The meetings that were held either at the community center were interactive, with questions from the communities and answers and explanations from the consultant and NPA’s Staff. The main issues discussed were regarding compensations, jobs creation, and provision of amenities.
Presented below are the list of communities consulted, attendees, contact details of the opinion leaders and the socioeconomic and cultural issues forming the bases of the discussions.

9.3 CONGO TOWN COMMUNITY

i. Community Profile

<table>
<thead>
<tr>
<th>District</th>
<th>Congo Town District</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>500,000</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>Mixed but mostly Creole</td>
</tr>
<tr>
<td>Main occupation</td>
<td>Trading, artisans</td>
</tr>
<tr>
<td>Land tenure system</td>
<td>Stool land</td>
</tr>
<tr>
<td>Dominant Religion</td>
<td>Christianity and Moslem</td>
</tr>
<tr>
<td>Source of Water</td>
<td>Boreholes</td>
</tr>
<tr>
<td>Educational facilities</td>
<td>Kindergarten (1no.), Primary school (1no.)</td>
</tr>
<tr>
<td>Health facilities</td>
<td>No health post, however, the community accesses health care at Freetown</td>
</tr>
<tr>
<td>Cultural heritage</td>
<td>There is a no cultural heritage sites close by.</td>
</tr>
<tr>
<td>Venue</td>
<td>community center</td>
</tr>
<tr>
<td>Date</td>
<td>19/03/2013</td>
</tr>
<tr>
<td>Time</td>
<td>8:34am to 9:41am</td>
</tr>
</tbody>
</table>

ii. Attendees

<table>
<thead>
<tr>
<th>Attendees at the meeting</th>
<th>Designation</th>
<th>Contact numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rowland Stevens</td>
<td>Assembly man</td>
<td>078617</td>
</tr>
<tr>
<td>Augusta Berewa</td>
<td>Resettlement Specialist</td>
<td>0709154883</td>
</tr>
<tr>
<td>Kadija Sessay</td>
<td>Unit Committee</td>
<td></td>
</tr>
<tr>
<td>Kamara Sulley</td>
<td>Elder of the community</td>
<td></td>
</tr>
<tr>
<td>Dr Kamara Sulley</td>
<td>Consultant, BEST Consult</td>
<td></td>
</tr>
<tr>
<td>Nicholas Jamay</td>
<td>Elder of the community</td>
<td></td>
</tr>
<tr>
<td>Ernestina Wade</td>
<td>Community member</td>
<td></td>
</tr>
<tr>
<td>Barrie Abdul</td>
<td>Community member</td>
<td></td>
</tr>
<tr>
<td>Cecilia Abdul</td>
<td>Community member</td>
<td></td>
</tr>
<tr>
<td>Grace Abdul</td>
<td>Community member</td>
<td></td>
</tr>
</tbody>
</table>
i. WELLINGTON COMMUNITY

ii. Community Profile

<table>
<thead>
<tr>
<th>District</th>
<th>Wellington District</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>400,000</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>Mixed but mostly Creole</td>
</tr>
<tr>
<td>Main occupation</td>
<td>Trading, artisans</td>
</tr>
<tr>
<td>Land tenure system</td>
<td>Stool land</td>
</tr>
<tr>
<td>Dominant Religion</td>
<td>Christianity and Moslem</td>
</tr>
<tr>
<td>Source of Water</td>
<td>Boreholes</td>
</tr>
<tr>
<td>Educational facilities</td>
<td>Kindergarten (1no.), Primary school (1no.)</td>
</tr>
<tr>
<td>Health facilities</td>
<td>No health post, however, the community accesses health care at Freetown</td>
</tr>
<tr>
<td>Cultural heritage</td>
<td>There is no cultural heritage sites close by.</td>
</tr>
<tr>
<td>Venue</td>
<td>Community center</td>
</tr>
<tr>
<td>Date</td>
<td>19/03/2013</td>
</tr>
<tr>
<td>Time</td>
<td>8:34am to 9:41am</td>
</tr>
</tbody>
</table>

iii. Attendees

<table>
<thead>
<tr>
<th>Attendees at the meeting</th>
<th>Designation</th>
<th>Contact numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rowland Simons</td>
<td>Assembly man</td>
<td>078617</td>
</tr>
<tr>
<td>Rahida Michael</td>
<td>biologist</td>
<td>033309154883</td>
</tr>
<tr>
<td>Sydney Kakam</td>
<td>Unit Committee</td>
<td></td>
</tr>
<tr>
<td>Kamara Sulkley</td>
<td>Elder of the community</td>
<td></td>
</tr>
<tr>
<td>Dr Kamara Sulley</td>
<td>Consultant, BEST Consult</td>
<td></td>
</tr>
<tr>
<td>Richard Kamara</td>
<td>Elder of the community</td>
<td></td>
</tr>
<tr>
<td>Koroma Banda</td>
<td>Community member</td>
<td></td>
</tr>
<tr>
<td>Benson Rahman</td>
<td>Community member</td>
<td></td>
</tr>
<tr>
<td>Abdel Satti</td>
<td>Community member</td>
<td></td>
</tr>
<tr>
<td>Veronica Abdul</td>
<td>Community member</td>
<td></td>
</tr>
</tbody>
</table>
i. Community Profile

<table>
<thead>
<tr>
<th>District</th>
<th>Western Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>500,000</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>Creole</td>
</tr>
<tr>
<td>Main occupation</td>
<td>Trading and artisan</td>
</tr>
<tr>
<td>Land tenure system</td>
<td>Stool land</td>
</tr>
<tr>
<td>Dominant Religion</td>
<td>Moslems and Christianity</td>
</tr>
<tr>
<td>Source of Water</td>
<td>Boreholes</td>
</tr>
<tr>
<td>Educational facilities</td>
<td>Junior High School</td>
</tr>
<tr>
<td>Health facilities</td>
<td>No health post.</td>
</tr>
<tr>
<td>Cultural heritage</td>
<td>There is a cemetery close</td>
</tr>
<tr>
<td>Venue</td>
<td>School compound</td>
</tr>
<tr>
<td>Date</td>
<td>20/3/2013</td>
</tr>
<tr>
<td>Time</td>
<td>10:05am- 11:28am</td>
</tr>
</tbody>
</table>

ii. Attendees

<table>
<thead>
<tr>
<th>Attendees at the meeting</th>
<th>Designation</th>
<th>Contact numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fafana Fabian</td>
<td>The Chief</td>
<td></td>
</tr>
<tr>
<td>Barie Fana</td>
<td>The Queen mother</td>
<td>033698602</td>
</tr>
<tr>
<td>Kwasi Boahen</td>
<td>Unit committee Chairman</td>
<td>076165135</td>
</tr>
<tr>
<td>Peter Bofa</td>
<td>Elder of the community</td>
<td>076532954</td>
</tr>
<tr>
<td>Kadiwo Badu</td>
<td>Elder of the community</td>
<td>033822413</td>
</tr>
<tr>
<td>Kwawo Fori</td>
<td>Elder of the community</td>
<td>033172172</td>
</tr>
<tr>
<td>Jones Tweneboa</td>
<td>Elder of the community</td>
<td>033894716</td>
</tr>
<tr>
<td>Akua Atta</td>
<td>Member of the community</td>
<td></td>
</tr>
<tr>
<td>Akusua Atta</td>
<td>Member of the community</td>
<td></td>
</tr>
<tr>
<td>Abena Nato</td>
<td>Member of the community</td>
<td></td>
</tr>
<tr>
<td>Paul .Kadu</td>
<td>Member of the community</td>
<td></td>
</tr>
</tbody>
</table>

3. Central Area Community Profile

<table>
<thead>
<tr>
<th>District</th>
<th>Freetown Central</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>200,000</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>Creole</td>
</tr>
<tr>
<td>Main occupation</td>
<td>Mixed</td>
</tr>
</tbody>
</table>
Land tenure system | stool lands  
---|---  
Dominant Religion | Moslems, Christianity  
Source of Water | Borehole (1no)  
Educational facilities | Kindergarten (1no.), Primary school (1no.)  
Health facilities | Health post.  
Cultural heritage | There was no shrine or sacred property of cultural significance in the proposed project’s vicinity.  
Venue | Durbar grounds  
Date | 19/03/2013  
Time | 12:16pm–1:06pm

### i. Attendees

<table>
<thead>
<tr>
<th>Attendees at the meeting</th>
<th>Designation</th>
<th>Contact numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr Atakura Amaniaon</td>
<td>Elder of the community</td>
<td>0541887512</td>
</tr>
<tr>
<td>Kanda Bongo</td>
<td>Elder of the community</td>
<td>0206790567</td>
</tr>
<tr>
<td>Samuel Boata</td>
<td>Elder of the community</td>
<td>0200993394</td>
</tr>
<tr>
<td>Kwakwa Wusu</td>
<td>Elder of the community</td>
<td>0241246847</td>
</tr>
<tr>
<td>Opan Konfa</td>
<td>Elder of the community</td>
<td>0241246847</td>
</tr>
</tbody>
</table>

### 4. Eastern Freetown,

#### i. Community Profile

| District | Eastern District  
---|---  
| Population | 500,000  
| Ethnicity | Mixed but mostly Creole  
| Main occupation | Trading, artisans  
| Land tenure system | Stool land  
| Dominant Religion | Christianity and Moslem  
| Source of Water | Boreholes  
| Educational facilities | Kindergarten (1no.), Primary school (1no.)  
| Health facilities | No health post, however, the community accesses health care at Freetown  
| Cultural heritage | There is no cultural heritage site close by.  
| Venue | Community center |
Date 19/03/2013
Time 8:34am to 9:41am

ii. Attendees

<table>
<thead>
<tr>
<th>Attendees at the meeting</th>
<th>Designation</th>
<th>Contact numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maxwell Kabbah</td>
<td>Assemblyman</td>
<td>033321976</td>
</tr>
<tr>
<td>Koppong Francis</td>
<td>Member of the community</td>
<td></td>
</tr>
<tr>
<td>Stephen Kabbah</td>
<td>Member of the community</td>
<td></td>
</tr>
</tbody>
</table>

5. Magazine

i. Community Profile

<table>
<thead>
<tr>
<th>District</th>
<th>Wellington District</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>400,000</td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td>Mixed but mostly Creole</td>
<td></td>
</tr>
<tr>
<td>Main occupation</td>
<td>Trading, artisans</td>
<td></td>
</tr>
<tr>
<td>Land tenure system</td>
<td>Stool land</td>
<td></td>
</tr>
<tr>
<td>Dominant Religion</td>
<td>Christianity and Moslem</td>
<td></td>
</tr>
<tr>
<td>Source of Water</td>
<td>Boreholes</td>
<td></td>
</tr>
<tr>
<td>Educational facilities</td>
<td>Kindergarten (1no.), Primary school (1no.)</td>
<td></td>
</tr>
<tr>
<td>Health facilities</td>
<td>No health post, however, the community accesses health care at Freetown</td>
<td></td>
</tr>
<tr>
<td>Cultural heritage</td>
<td>There is a no cultural heritage sites close by.</td>
<td></td>
</tr>
<tr>
<td>Venue</td>
<td>community center</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>19/03/2013</td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>8:34am to 9:41am</td>
<td></td>
</tr>
</tbody>
</table>

ii. Attendees

<table>
<thead>
<tr>
<th>Attendees at the meeting</th>
<th>Designation</th>
<th>Contact numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mamadi Tia</td>
<td>Unit Committee Chairman</td>
<td></td>
</tr>
<tr>
<td>Ato Kwamina</td>
<td>Elder of the community</td>
<td></td>
</tr>
</tbody>
</table>
9.3 The General Concerns of the communities

The concerns raised were unanimous across all the districts and communities:

- Prompt, fair and adequate compensation payment for affected properties
- Job creation for the youth. There was a cyclical request for employment particularly unskilled labour to be sourced from the various affected communities.
- Permissible activities within the corridor. Communities inquired whether particularly backyard gardening is allowed in the 40m right of way.
- Compensation for affected lands within the proposed corridor. An appeal was made across all the communities visited for the lands within the proposed corridor to be compensated instead of only the structural properties.
- Extension of electric power to the communities who are not yet connected to the National grid.
- Upholding and respect of community values (reverence towards the communities’ cultural heritage-shrines, sacred groves, etc.).
- The health implication of the proposed high voltage line to the close-by communities regarding emission of EMF
- Request for the provision of basic social amenities, not necessarily in the context of the proposed project

8.0 DECOMMISSIONING

In accordance with the Environmental Assessment Energy Guidelines, a detailed Decommissioning Plan will be prepared and submitted to EPA at least two years before
the planned abandonment of the project infrastructure and its components and its operations. The plan will cover other sub-projects.

The Decommissioning Plan shall:
Describe the fate of all fixed equipment;
Indicate the end use(s) of all buildings, all processing plant components and any other infrastructure components;
Describe the mode of disposal of all types of wastes;
Indicate the end use(s) of all belongings to the project and its operations;
Describe the steps required to make the operational areas safe for each identified end use;
Describe how public access will be managed after closure of operations;
Describe the type and duration of post decommissioning monitoring; and
Describe how the decommissioning obligations will be financed.

NPA shall honour all commitments made in the detailed Decommissioning Plan upon receipt

REFERENCES

2. Environmental Protection Agency (2004): Environmental Sensitivity Map for Coastal Areas of Sierra Leone, Volume I – Atlas


4. Environmental Protection Agency (2004): Environmental Sensitivity Map for Coastal Areas of Sierra Leone, Volume III – Oil Spill Sensitivity Ranking


Appendix 1

Contract Specifications for Contractor

8.0 General

a. Environmental and Social safeguards for the sub-projects shall be adhered to by the contractor handling the project. Contractor shall prepare the work strategy and plan for the sub-project taking into account all the E&S issues within the project and shall fully update him/herself about any E&S safeguards.

b. The contractor shall build up a plan of work indicating all Environmental and Social safeguards at various stages of a sub-project, indicating the period within which sites shall be maintained back to its original state after completion of works, while ensuring that all significant adverse impacts arising are addressed properly.

c. E&S measures shall be implemented by the Contractor to avoid all undesirable adverse environmental and social impacts within sub-projects wherever possible, restoring work sites to acceptable standard and abide by mitigation measures within the Impact Assessment for the Sub-projects.

d. NPA shall appoint an Officer from the Environmental and Social Department to oversee the compliance with these environmental and social conditions and any proposed mitigation measures. The EPA would carry out similar inspection duties. In all cases the Contractor shall comply with directives from such officers to implement measures required to ensure the adequacy of mitigation measures carried out on the bio-physical environment and compensation for socio-economic disruption resulting from implementation of all works.

e. The Contractor shall implement all measures necessary to avoid undesirable adverse environmental and social impacts wherever possible, restore work sites to acceptable standards, and abide by any environmental performance requirements specified in the EPA permit conditions and the sub-project ESMP.

f. If the Contractor fails to implement the approved ESMP after written instruction by fulfilling his/her obligation within the requested time, NPA reserves the right to arrange for execution of the missing action by a third party on account of the Contractor.
g. The Contractor shall take into account in the implementation of the sub-project any RAP obligation to project affected persons (as agreed with NPA), in cases where there is preparation of a RAP, based on the RPF (where land is acquired, assets lost, or impact on livelihood occurs).

9.0 Noise Due to Construction Activities

The contractor shall ensure that noise originating from machinery and equipment, vehicles and noisy construction activities are kept at a minimum for the safety, health and protection of workers and nearby communities.

10.0 Dust Abatement

a. The Contractor shall minimize the effect of dust on the surrounding environment resulting from earth cutting and movement, concrete mixing sites, asphalt mixing sites, vibrating equipment, temporary access roads, etc., to ensure safety, health and the protection of workers and communities living in the vicinity of dust producing activities.

b. During the performance of the work and any operations appurtenant thereto, the contractor shall carry out proper and efficient measures, such as sprinkling with water or other means, whenever necessary to reduce the dust nuisance, and to prevent dust which has originated from his operations from damaging crops, cultivated fields, and dwellings or causing a nuisance to persons. The contractor will be held liable for any damage resulting from dust originating from his operations.

11.0 Coastal, Wetland and Water Resources Management

a. The contractor shall ensure that existing lagoons, rivers and other water flow regimes in the area (e.g. where pipes are laid) are maintained and/or re-established where they are disrupted due to works being carried out.

b. The contractor shall take all steps necessary to prevent contamination of lagoons and other natural water bodies, wetlands and coastal and beach resources.

c. Oils, lubricants and wastewater used or produced during the execution of the sub-project works will not be released directly into the coastal environment, drainage channels and other natural water bodies or wetlands and also ensure that all stagnant water generated is treated in the best way to prevent the creation of possible breeding grounds for mosquitoes.
d. No construction water containing spoils or site effluent, especially cement and oil, shall be allowed to flow into the coastal and wetland areas or natural water drainage courses.

e. Site spoils and temporary stockpiles shall be located away from the coastline, wetlands and drainage system, and surface runoff shall be directed away from stockpiles to prevent erosion.

12.0 Vegetation and Wildlife

a. Discourage construction workers from engaging in the exploitation of natural resources such as hunting, fishing and collection of coconut fruits or any other activity that might have a negative impact on the social and economic welfare of the local communities.

b. The contractor shall take care in planning, constructing, maintaining and operating temporary works such as camps, roads, spoil, stockpile and construction facilities areas, to avoid unnecessary damage to areas of particular environmental and social interest, such as patches of remaining forest, valuable trees (coconut trees) and erosion of sensitive areas, as well as areas in which the presence of wildlife has been noted.

c. In case some part of a forest or single trees have to be removed, or where erosion problems that may affect some portion of the works are expected, and in any case where in the engineer's opinion it is beneficial for land conservation, the contractor may be required to carry out landscaping, seeding and planting of trees, as well as executing drainages and water control works according to the prescriptions contained in the pertinent sections of these specifications.

d. d) No valuable trees (including coconut trees) or crops shall be damaged or removed by the contractor during the execution of works without the prior consent of the NPA and the engineer.

e. The contractor shall avoid forest reserves as much as possible. However, where there are no other alternatives, permission shall be obtained from the appropriate authorities and an environmental impact study shall be conducted.

13.0 Waste Management

a. Construction waste shall not be left in piles, but removed/reused and disposed of on a daily basis.
b. The contractor shall provide sanitary facilities (e.g. garbage collection and disposal bins, drinking water facilities, toilet, etc..) in the work site areas for all sub-projects.

c. All vessels (drums, containers, bags, etc..) containing oil/fuel/surfacing materials and other hazardous chemicals shall be banded in order to contain spillage. Used oil and hydraulic fluid generated on the construction sites must be collected in a closed container and stored temporarily in a safe place and sent to an authorized recycling depot.

d. If disposal sites for clean spoil are necessary, they shall be located in areas, approved by the DA, for landfill and where they will not result in material being easily washed into drainage channels.

14.0 Site Restoration/Rehabilitation
a. To the extent practicable, the Contractor shall rehabilitate the site progressively so that the rate of rehabilitation is similar to the rate of construction.

b. At the end of the construction phase, the pipeline right of way (RoW) shall be landscaped and rehabilitated to acceptable standards. The stated areas shall be first landscaped, dressed with topsoil and covered with appropriate plant species or grass seeding.

15.0 Occupational Health and Safety
a. Adequate road signs to warn pedestrians and motorists of construction activities, diversions, etc.. shall be provided at appropriate points.

b. Construction vehicles shall not exceed maximum speed limit of 40km per hour in the project neighbourhoods and townships.

16.0 Contractor's Environment and Social Management Plan (ESMP)
a. The Contractor shall adapt the ESMP (relevant sections) prepared for the sub-project to ensure the adequate management of the environmental and social aspects of the sub-project, including implementation of the requirements of the general conditions and any specific E&S requirements. The Contractor's ESMP will serve two main purposes:

• For the Contractor’s internal purposes, to ensure that all measures are in place for adequate E&S management, and also as an operational manual for his/her staff;
- For the NPA, to ensure that the Contractor is fully prepared for the adequate management of the E&S aspects of the project, and as a basis for monitoring of the Contractor's E&S performance.

b. The Contractor's ESMP shall provide at least:
   - A description of procedures and methods for complying with these general environmental management conditions, and any specific conditions specified in the ESMP;
   - A description of specific mitigation measures that will be implemented in order to minimize adverse impacts;
   - A description of all planned monitoring activities and the reporting thereof; and
   - The internal organizational, management and reporting mechanisms put in place.

The Contractor's ESMP shall be reviewed and approved by the NPA before start of the works. This review should demonstrate if the Contractor's ESMP covers all of the identified impacts, and has defined appropriate measures to offset any potential impacts as contained in the project ESMP.

17.0 Labour Sourcing
The contractor shall ensure that as much as possible employment priorities are given to the local community members, before sourcing for additional workforce to the extended to project catchment communities.

18.0 Reporting
a. The Contractor shall prepare monthly progress report to NPA on compliance with the general conditions and the project E&S safeguards. It is expected that the Contractor's reports will include information on:
   - E&S management actions/measures taken, including the permit/approval conditions from EPA;
   - Problems encountered in relation to E&S aspects (incidents, including delays, cost consequences, etc. as a result thereof);
   - Changes of assumptions, conditions, measures, designs and actual sub-project works in relation to E&S safeguards; and
   - Any lessons learnt during the implementation of the E&S safeguards.

b. It is advisable that reporting of significant E&S incidents be done "as soon as practicable". Such incident reporting shall therefore be done individually. Also, it is advisable that the Contractor keeps his/her own records on health, safety and
welfare of persons, and damage to property. It is advisable to include such records, as well as copies of incident reports, as appendixes to the monthly reports. Details of E&S performance will be reported to the Client through the SE's reports to the Client.

19.0 Training of Contractor's Personnel
The Contractor shall provide sufficient training to his/her own personnel to ensure that they are all aware of the relevant aspects of these general conditions, any project ESMP, and his/her own adapted ESMP, and are able to fulfil their expected roles and functions. Specific training should be provided to those employees that have particular responsibilities associated with the implementation of the ESMP. General topics should be:

- EHS in general (working procedures);
- Emergency and response procedures; and
- Social and cultural aspects (awareness creation on social issues).

20.0 Cost of Compliance
It is expected that compliance with these conditions is already part of standard good workmanship and state-of-the-art as generally required under this Contract. No other payments will be made to the Contractor for compliance with any request to avoid and/or mitigate an avoidable E&S impact.
Appendix 2

Appendix 2
Initial Assessment / Screening Form

ENVIRONMENTAL PROTECTION AGENCY, SIERRA LEONE

(Completed in Duplicate)

Sub-Project: _______________________________________________________

Name:

______________________________________________________________

Region: _________________________ District: ______________________

Town_____________________

Address for correspondence

______________________________________________________________

Contact Person ___________________________ Position

____________________________

Phone No.____________________________ Fax No.

____________________________

E-mail Contact

Telephone: __________________________ Fax: __________________________

E-mail: __________________________
1.0 Description of Sub-project

1.1 Nature of Sub-project and Duration

1.2 Scope of Sub-project [Size of labour force, area covered, type of raw materials (quantities and sources), types of equipment, implements, machinery, etc.]

1.3 Location [attach a site plan or a map (if available)]
   i. Location or Area (and nearest Town(s)):

   ii. Land take (total area for sub-project and related activities):

1.4 Site Description and Sensitivity [Attach photographs and sketches showing distances]
   i. Distance from nearest water body or drainage channel (minimum distance measured from the edge of proposed site to the bank of the water body or drain).
      More than 100 meters □ 100 meters □ Less than 100 meters □
   ii. Number of water bodies and/or drainage channels/depressions close to site

........
iii. Distance to nearest community (house) and/or other existing structures from the proposed site:

..........................................................................................................................................................

...........

iv. Number of affected properties within the designated project area:

..........................................................................................................................................................

...........

1.5 Land Cover and Topography

i. Land cover of the site consists (completely or partly or noticeably) of:

   Vegetation □    Sparse Vegetation □    Physical Structure(s) □
   Flood Plane □    Agriculture □    Cultural Resource (Animals) □
   Water □    Agriculture (Crops) □    Other specify........

ii. Elevation and topography of the area for the Sub-project:

   Flat □    Valley □    Slope □    Undulating □
   Hill □    Mountain □    Depression □

iii. Elevation and topography of the adjoining areas (within 500 meters radius of the site):

   Flat □    Valley □    Slope □    Undulating □
   Hill □    Mountain □    Depression □

2.0 Infrastructure

i. The Sub-project would be developed in/on:

   Undeveloped site □    Partly developed site □    Well developed □    Other (specify) □
   ..............................................................................

ii. The Sub-project would involve excavation Yes □    No □

iii. Estimated number and depth of the excavations, etc.):

   ..............................................................................

vi. Are any of the following located on-site or within 50 metres from the edge of the proposed site?
Water supply source  Yes □  No □
Pipeline  Yes □  No □
Power supply source (electric pylon)  Yes □  No □
Drainage  Yes □  No □
Other(s) specify: ..............................................................

3.0 Environmental and Social Impacts

3.1 Land Use
i. Complete change of existing land use  Yes  No
ii. High population of land owners to be resettled  Yes  No

3.2 Air Quality - Is the proposed sub-project:
  i. Expected to emit any of the following during construction and operation?
     Dust □  Smoke □  VOCs □
  ii. Expose workers or the public to substantial emissions?  Yes □  No □
  iii. Result in cumulatively increased emissions in the area?  Yes □  No □
  vi. Create objectionable odour affecting people?  Yes □  No □

3.3 Flora and Fauna - Would the proposed Sub-project:
  i. Have adverse effect on any reserved area?  Yes □  No □
  ii. Have adverse effect on wetland areas through removal, filling, hydrological interruption or other means?  Yes □  No □
  iii. Interfere substantially with the movement of any wildlife species or organisms?  Yes □  No □
  vi. Be located within 100m from an Environmentally Sensitive Area?  Yes □  No □

3.4 Cultural Resources - Would the proposed sub-project:
  i. Disturb any burial grounds or cemeteries?  Yes □  No □
  ii. Cause substantial adverse effect on any archeological or historic site?  Yes □  No □
  iii. Alter the existing visual character of the area and surroundings, including trees and rock outcrops?  Yes □  No □
3.5 **Water Quality and Hydrology** - Would the proposed sub-project:
   
i. Generate and discharge during construction:
   
<table>
<thead>
<tr>
<th>Liquid waste</th>
<th>Liquid with oily substance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquid with human or animal waste</td>
<td>Liquid with chemical substance</td>
</tr>
<tr>
<td>Liquid with pH outside 6-9 range</td>
<td>Liquid with odour/smell</td>
</tr>
</tbody>
</table>

   ii. Lead to changes in the drainage pattern of the area, resulting in erosion or siltation? Yes □ No □

   iii. Lead to increase in surface run-off, which could result in flooding on or off-site? Yes □ No □

   iv. Increase runoff, which could exceed the capacity of existing storm water drainage? Yes □ No □

   v. Lead to multiple water users, which could affect water quality and quantity? Yes No

3.6 **Noise Nuisance** - Would the proposed Undertaking:

   i. Generate noise in excess of established permissible noise level? Yes □ No □

   ii. Expose persons to excessive vibration and noise? Yes □ No □

3.7 **Waste Generation**

   i. Types: Solid □ Liquid □ Gaseous □ Other

   ii. Quantity:

   iii. Means/Place of Disposal:

3.8 **Occupational Health and Safety** - Would the proposed sub-project:

   i. Expose workers to emissions? Yes No

   ii. Involve using machinery that generate excessive noise (above 70dB) and vibration? Yes No

   iii. Expose workers to working at height? Yes No

   iv. Expose workers to heavy lifting? Yes No

3.9 **Socio-economic** - Would the proposed sub-project:
i. Lead to loss of livelihoods
   Yes  No

ii. Influx of people from other communities?
    Yes  No

3.10 Other Environmental and Social Impacts

4.0 Management of (Environmental and Social) Impacts

4.1 Air Quality

4.2 Flora and Fauna

4.3 Cultural Resources

4.4 Coastal and Water Resources
4.5 Noise

4.6 Occupational Health and Safety

4.7 Waste Generation

4.8 Socio-economic

4.9 Other Measures
DECLARATION

I, …………………………………………… hereby declare that the information provided on this form is true to the best of my knowledge and shall provide any additional information that shall come to my notice in the course of processing this application.

……………………………….. ………………………………..

Signature Date

Official use

Recommendations:

☐ Requires and EIA and/ or RAP
☐ Requires a PEA
☐ Does not require further environmental study

*Use extra sheets where space provided is inadequate*