SIERRA LEONE ROADS AUTHORITY

REPUBLIC OF SIERRA LEONE
MANO RIVER UNION (MRU) ROAD DEVELOPMENT AND TRANSPORT FACILITATION PROGRAMME PHASE IV, LOT 2: KAILAHUN – KOINDU, KOINDU – GUINEA /LIBERIA BOARDER ROADS PROJECT.

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

UPDATED BY THE ENVIRONMENT & SOCIAL SERVICES DEPARTMENT
SIERRA LEONE ROADS AUTHORITY

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### Acronym

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<th>Description</th>
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<tbody>
<tr>
<td>AfDB</td>
<td>African Development Bank</td>
</tr>
<tr>
<td>ARP</td>
<td>Abbreviated Resettlement Plan</td>
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<tr>
<td>CBO</td>
<td>Community Based Organizations</td>
</tr>
<tr>
<td>ECOWAS</td>
<td>Economic community of West African States</td>
</tr>
<tr>
<td>ED</td>
<td>Environment Division</td>
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<tr>
<td>EHS</td>
<td>environmental, health and safety</td>
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<tr>
<td>ESHIA</td>
<td>Environmental, Social and Health Impact Assessment</td>
</tr>
<tr>
<td>ESS</td>
<td>Environment and Social Services</td>
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<tr>
<td>ESIA</td>
<td>Environmental and Social Impact Assessment</td>
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<tr>
<td>GoSL</td>
<td>Government of Sierra Leone</td>
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<tr>
<td>GRC</td>
<td>Grievance Redress Committee</td>
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<td>Grievance Redress Mechanism</td>
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<td>FRP</td>
<td>Full Resettlement Plan</td>
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<tr>
<td>KFAED</td>
<td>Kuwait Fund for Arab Economic Development</td>
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<td>KLDC</td>
<td>Kailahun District Council</td>
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<tr>
<td>MAF</td>
<td>Ministry of Agriculture and Forestry</td>
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<tr>
<td>MDAs</td>
<td>Ministries, Departments and Agencies</td>
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<td>Monitoring and Evaluation</td>
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<tr>
<td>MLCP</td>
<td>Ministry of Lands and Country Planning</td>
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<td>MoF</td>
<td>Ministry of Finance</td>
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<td>MRU</td>
<td>Mano River Union</td>
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<td>NGO</td>
<td>Non-Governmental Organization</td>
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<td>Project Affected Persons</td>
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<td>Resettlement Action Plan</td>
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<tr>
<td>ROW</td>
<td>Right – of- Way</td>
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<tr>
<td>SLP</td>
<td>Sierra Leone Police</td>
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<td>SLRA</td>
<td>Sierra Leone Roads Authority</td>
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<tr>
<td>SR</td>
<td>Supervisor’s Representative</td>
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0. EXECUTIVE SUMMARY

0.1 Overview of the Project
This report is the summary of the Environmental and Social Impact Assessment (ESIA) report for the Construction of the Kailahun – Koindu, Koindu– Guinealiberia Border Roads Project. The studies were carried out in 2019 and updated in 2022 after receiving financing from the African Development Bank (AfDB). The report was submitted to the Bank to be disclosed on the Bank’s web site in preparation for financing the project. However, the project road was divided into two lots and the AfDB financing was only enough to implement lot 1: Kailahun- Buedu road project (25km) and the construction of the Bridge between Guinea and Sierra Leone which is currently being implemented.

The Government of Sierra Leone (GoSL) through the Ministry of Finance (MoF) has requested funding for the implementation of the remaining section of the Kailahun – Koindu, Koindu – Guinea / Liberia Border Roads Project (lot 2: Buedu – Koindu, Koindu- Guinealiberia Border Roads Project (37.85km)) The AfDB requested that the report be updated to reflect the current situation in the project road corridor and areas of influence. Therefore, the updated of the ESIA report are done to reflect the Environment Protection (EPA-SL) Act 2008 as amended in 2010 & 2022 and in accordance with the Integrated Safeguards System (ISS) 2013 of the AfDB and other national safeguards requirements. The project was classified as Category I and remains in this category due to the adverse impacts accompanying the project such as demolition of 155 structures and the accompanying involuntary displacement of Project Affected Persons (PAPs).

The ESIA summary was prepared in compliance with AfDB’s environmental and social assessment guidelines and procedures for category 1 projects and projects under the first schedule for the Environment Protection Agency.

The ESIA was undertaken with the primary aim of identifying the potential environmental and social risks and is has been updated to capture any new risks and impacts associated with the project that were not initially captured. It is also aimed at documenting any new beneficial impacts and development enhancement measures in the Environmental and Social Management Plan (ESMP). The ESMP, which summarizes the commitment to address and mitigate risks and impacts identified as part of the assessment and updates through avoidance, minimization and compensation, is expected to guide the decision and policy makers on the most appropriate ways to handle the relevant environmental and social issues that may arise during the project and post-project life afterwards. Various adverse impacts, ranging from the risk of
disease prevalence in the project area due to labor influx, changes in cultural orientation, human displacement, and environmental pollution appraised keenly to avoid where feasible and minimize the negative impacts associated with the project.

0.2 Brief Description of the Project
The Mano River Road Development and Transport Facilitation Program (MRU RDTFP) is funded by the African Development Bank and involve the paving to bituminous standard of roads in Sierra Leone and Liberia. In Sierra Leone, the project intervention is entirely in the Kailahun District, Eastern Province.

Kailahun District is one of the 14 districts in the country. It borders Guinea and Kono District in the north, Kenema District in the West, and Liberia in the East. The district has an area of about 2,859sq.m, and has 14 chiefdoms with Kailahun town as the Chiefdom Headquarter.

Prior to 2006, the Kenema – Kailahun – Koidu link was classified as a secondary gravel road. The protracted civil war in the region led to the complete isolation of the road without routine and periodic maintenance. The entire stretch from Kenema – Koidu – Guinea /Liberia borders is 176Km and was divided into sectors as follows:

- Link 1 Kenema – Mano Junction 20.15km
- Link 2: Mano junction – Segwema 24.95Km
- Link 3: Segwema – Kailahun 68.20Km
- Link 4: Kailahun – Koidu 50.45Km
- Link 5: Koidu – Guinea Border 4.60Km
- Link 6: Koidu – Liberia Border 7.80Km

The section between Kenema – Kailahun has been constructed in stages with the construction of Kenema – Pendembu segment between 2010 and 2014, and Pendembu – Kailahun construction in 2017 - 2022. This leaves out the much-needed connectivity through to Guinea and Liberia respectively from Kailahun. However, due to funding gap, the remaining links (4, 5 & 6) which was packaged as a single project was divided into two lots for implementation and lot 1: (25 km Kailahun – Buedu Road) is currently being implemented remaining with lot 2: 39km Buedu - Koidu, Koidu – Guinea/ Liberia Border roads.
Location Map

Buedu – Koindu, Koindu – Guinea / Liberia road traverses through the original alignment and commences from Buedu town through the original alignment to Koindu and the tributaries to Guinea and Liberia. The project intends to enhance connectivity between Sierra Leone, Guinea, and Liberia by providing an efficient transport infrastructure in the eastern province of Sierra Leone.

The upgrading of the remaining segment from Kailahun to Koindu, Koindu to Guinea/Liberia Border roads construction was divided into two lots and financing has been provided by the African Development Bank for the construction of Lot1: Kailahun – Buedu road under the MRU RDTFP Phase III. The Buedu - Koindu/Guinea/Liberia Borders section will be financed under Phase IV. The sections of road to be constructed include the Buedu – Koindu road (25.45km), the Koindu – Guinea Border Road (4.60Km) and the Koindu – Liberia Border (7.80km).
The MRU-RDTFP Phase IV aims to contribute to the opening of the interior of Liberia, and Sierra Leone and to the strengthening of sub-regional integration and trade.

Specifically, the Programme will (i) improve the level of service of the Kailahun - Beudu road (39km) on the Kailahun - Koindu corridor in Sierra Leone linking Guinea and Liberia borders and Fish Town – Zwedru (48.5km) and Voinjama Mendikoma (80km) axis in Liberia; (ii) improve accessibility and living conditions of the populations in the Programme’s Zone of Direct Influence (PDIA); and (iii) help build the portfolio of future road Programmes (new pipeline) by carrying out road studies.

Project Components and Main Activities. The project has four main components including the following:

(i) Component 1: Upgrading Climate Resilient Road: This component will support upgrading of 39km road section in Sierra Leone, including control and monitoring of civil works, civil works supervision, ESMP and RAP implementation and other related activities including HIV/AIDS and road safety awareness.

(ii) Component 2: Integrated Support: This component will support (i) construction of market in Koindu in Sierra Leone and (ii) implementation of GAP in Sierra Leone

(iii) Component 3: Transport and Trade Facilitation: This component will support study on needs assessment of trade facilitation, including streamlining of border and corridor procedures and processes of this Programme and development of transit zones; inter-agency coordination platform, sensitization, and training of customs officials, and Technical Assistant support to Mano River Union Secretariat in project Management.

(iv) Component 4: Programme Management: This component will support socio-economic impact monitoring/evaluation; monitoring the implementation of the Environmental and Social Management Plan (ESMP) including Annual E&S performance and Programme compliance audit; technical and road safety audit; accounting and financial audit; institutional support and professional training Course for sector engineers and PIU; equipment of the implementing agency (vehicles, computer equipment and furniture); functioning of the Implementing Agencies; and Functioning of the Joint Technical Committee (JTC).

Based on the detailed design, the road is to be upgraded to a bituminous surface comprising of 50mm wearing course, a granular base course of 200mm and granular subbase of 150mm. The road is proposed to be constructed as a single carriageway with each lane width of 3.5m and shoulder of 1.5m totaling
10m overall width. The scope of works will also include the construction of drainage structures such as culverts and side drains, and also provision of laybys especially in settlements. For these purposes, a road reserve for the right of way has been established with a width of 30m (15m on both sides of the existing road).

The works will require the establishment of a contractor’s works yard, quarry, asphalt production facility and crushing sites, Supervising Engineer’s campsite. The project will also require the operation of borrow pits at suitable locations along the project road corridor.

Analysis of Alternatives

Three (3) pavement alternatives were considered and analyzed in the feasibility study including Asphalt Concrete, Concrete, and Interlocking Blocks. The alternatives were assessed based on cost, environmental impact, and maintenance. Interlocking blocks was the cheapest in terms of construction cost but require a higher maintenance over its lifespan, also due to the undulating terrain it was not considered a suitable option, while the construction cost of concrete doubles that of asphalt and the maintenance cost of asphalt is higher compared to that of concrete. Asphalt Concrete was considered the most suitable option due to construction cost and maintenance because of the undulating terrain.

0.3 Brief Description of Project Baseline Environmental and Social Conditions

Kailahun District

Location and Size: Kailahun is one of the fourteen (14) districts in Sierra Leone and one of the three located in the Eastern Province. It borders Liberia to the east, Kenema to the west, Kono to the north and Guinea to the northeast. It occupies a total space of 3,859 sq. Km and comprises of fourteen (14) Chiefdoms. It has a population of 358,259. The administrative capital of the district is Kailahun Town.

Topography and Geology: the district is in the interior plateau and hill region in Sierra Leone. The interior plateau covers the northeastern half of the country and forms part of the Guinean Highlands. It consists mainly of elevated plateaus ranging from 300-600m above sea level. The district is characterized by undulating landscapes with several rocky hills and valleys.
Typical topography of the project area.

Soil type found within the district is mostly oxisols (or Ferralsols) which are common on the gently undulating uplands and in the inland swamps. They are strongly weathered and leached soils. They are usually deep, well-drained red or yellow soils with good structure, and deep profile, and uniform properties with depth.

**Climate:** Kailahun district experiences 2 major seasons; wet/rainy season from May – October and Dry Season from November to April. However, the district has in recent years experienced sporadic rainfall even in March.

**Rainfall**

The average rainfall in the district is between 2000 – 2500mm per annum. Temperature is relatively moderate virtually throughout the year due to its locations from the tropic. The highest temperature is experienced in March – April with a mean annual temperature between 27.1°C – 31.2°C, while the minimum temperature ranges from 24.9oC to 25.3oC.

**Relative humidity** is high with the average exceeding 8-% for most of the year.

**Vegetation:** Currently, about 70 - 80% of its forest has been lost due to human activities such as clearing for use in ‘slash-and-burn’, or shifting cultivation farming, timber, and firewood harvesting. The vegetation along the route is sparse in some areas due to anthropogenic activities with isolated patches of rain forest scattered in mountainous areas away from the project road corridor.
Secondary forest and forest regrowth are covering the district as a result of the clearing for agricultural use. These secondary forests have a closed canopy with trees 10-30m tall, most of it consisting of regrowth often from farming. There is no protected area along the project corridor or influence zone.

**Hydrology and Drainage:** The Mao River is a major river passing through the district and provides fair drainage system. Furthermore, eleven tributaries and other smaller stream and rivulets cross the road. These streams are mainly seasonal.

**Demography and Settlement:** The 2015 housing and population census shows that the population of the district is 525,372. This is the second highest recorded in the country with a population density of 140 inhabitants per km². Female representation is predominant in the district. The district has fourteen chiefdoms with over 90% of the population residing in rural communities with nucleated or scattered settlements. Most of the settlement have linear patterns that scatter outwardly with most of their houses constructed from mud bricks except to larger settlements that have concrete houses. Most of the houses have 2 to 3 rooms that are occupied by extended family members.

Subsistence agriculture is the main source of employment with 69% of the adults involved in agricultural labor. This translates into approximately 2 adults per household involved in agricultural labor.

**Health:** Medical care services in the Kailahun District are provided by 22 primary health units (PHU) comprising of hospitals and health centers. People in the district also utilize medical services from other sources such as traditional healers and traditional birth attendants. Malaria is the leading disease followed by the infectious diseases of Tuberculosis and Yellow Fever. In terms of population per functioning primary health care facility, the district has the worst, with 15,900 as compared to other district levels of 8000. The ratio of population per hospital bed is 348,500: 1 while the ratio of population per doctor is 174,400: 1.

Malaria, diarrhea and respiratory tract infection are among the leading causes of deaths in the district. The cause of respiratory disease could be related to the long-term exposure to dust from the road network in the district. Unemployment, lack of trained medical personnel, weak community awareness on issues, traditional and cultural practices and access to basic obstetric care pose challenges to public health in the district.

**Education:** There are currently about 82 functioning primary and secondary schools with 33% of these schools approved by the Ministry of Primary and Basic Education, with very few operational secondary schools in the district. At present 60% of the teachers have recognized qualifications.
Agriculture: The dominant mode of farming is the slash and burn traditional shifting cultivation technique with rudimentary hand tools such as the hoe and cutlass. Upland rice farming is the main agricultural industry which involves the practice of mixed cropping system. Other food crops include cassava, sweet potatoes and bananas. Most of these crops are planted as mixed crops. The district is a major producer of cacao and coffee.

Livestock was completely destroyed during the civil war, however, in the last three years several families have restock their livestock and domesticated animals. Investigation revealed that families owned several goats, sheep, chickens, ducks, and pigs in free range in all settlements along the project road corridors.

Inland fishing on small scale is currently being supported by the Ministry of Agriculture with facilities such as fishing kits for fishermen.

Road Network: The predominant mode of transport within the project influence zone is road transport with motor bikes in large numbers although truck also travels the route in search of agricultural produce. Generally, the road condition is very bad especially the Feeder roads. However, efforts are underway to improve access within the district. When the road is improved, communities in the project corridor will be open therein to economic and social development which will subsequently contribute to the alleviation of poverty. Furthermore, the road maintenance costs spent by SLRA on the road at its present state will drastically reduce. The project corridor is served mostly by motor bikes and trucks, but few vehicles such as minibuses ply the route to the Liberian Border. Due to the road condition, few vehicles use the road, leading to high transportation cost for both passengers and goods.

0.4 Institutional and Legal Framework
National and Administrative Framework for Environmental & Social Management

Ministry of Lands, Country Planning: 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.

Ministry of Environment: responsibility for the management and protection of the environmental is presently a stand-alone ministry overseeing several Agencies and Departments dealing with environmental and social safeguards
management such as the Environment Protection Agency- Sierra Leone, the Department of Forestry, the National Protected Area Authority etc.

**The Environmental Protection Agency:** The Environmental Protection Act (EPA) 2008 as amended in 2010 and 2022 empowers the Environment Protection Agency 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. It also levies fines and penalties for non-compliance with provision of its Act to ensure sustainable Environmental and social management while implementing development projects.

**National Environment Protection Board:** The EPA Act 2008 also provides for the establishment of an environmental Protection Board with the function to review and approve ESIA reports and direct the daily affairs of the agency.

**Sierra Leone Roads Authority (SLRA):** The executing agency of the project is SLRA. SLRA works with several Ministries, Agencies and Departments including District and Local councils, civil society and affected communities to ensure an efficient and sustainable implementation of the ESMP. The Project Implementation Unit is hosted in the SLRA and has the role to carry out monitoring of the project on daily and monthly basis to ensure that the contractor is fully compliant with the contract requirements, the implementation of the ESMP and ensure that the affected communities are not aggrieved with the project implementation.

**Ministry of Labor Social Security:** The ministry has the oversight responsibility to ensure that the project complies with the policy requirement for employment such as instituting the minimum wage and ensuring that the contractor has a contract with his employees on yearly basis which are subject to renewable if the parties involved so desire. The Ministry also resolves labor related grievances between the contractor and employees when the GRM cannot.

**Ministry of Finance (MoF):** The MoE is one of the bodies responsible for formulating the policies that guide the operations of MDA. With respect to the implementation of this ESMP and RAP, MoF has the responsibility to provide the required funds for the implementation of the RAP. The MoF’s role includes approve the RAP and request for the implementation of the RAP and provide
the required funds as counterpart funding for the project to implement the RAP.

**Non-Governmental Organizations (NGOs) and Civil Society:** NGOs which are the environmental and social advocacy groups have become key players in the assessment process. Grass root civil society group shall be involved to monitor the implementation of the ESMP. For instance, Rambow shall be contacted if there is any risk of sexual harassment or GBV threat in the project. Consultations held with these groups, as part of the ESMP preparation will reveal 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 implementation of the Kailahun – Koindu – Guinea/Liberia Borders road project.

**The Contractor:** The contractor Chico has the primary responsibility to ensure compliance in implementing the ESMP and their roles will include the following:

(i) Develops construction ESMP and work plan based on the project E&S safeguards instruments (ESIA & ESMP),

(ii) Submits the plan of work and schedule to the SLRA or Resident Engineer for approval,

(iii) Hire the services of qualified S & E Officers respectively to implement the ESMP.

(iv) Train/create awareness for all employees on relevant E&S safeguards management measures, and#

(v) Submits implementation report on E&S safeguards to the consultant and SLRA.

**Policy and Legal Framework**

**National Environmental Policy of 1994:** seeks to achieve sustainable development through the implementation of sound environmental and social management systems and promotes efforts which prevent, eliminate, or minimize damage to the environment and biosphere.

**Sierra Leone Vision 2035:** a comprehensive national development plan for the period 2013-2035 through which the country aspires to become a middle-income country. It would be an inclusive, green country, with 80% of the population above the poverty line. It would have gender equality, a well-educated, healthy population, good governance and rule of law, well developed infrastructure, macroeconomic stability, with private-sector, export-led growth generating wide employment opportunities; there would be good environmental protection, and responsible natural resource exploitation. The proposed road project will contribute to the realization of the goals of Vision 2035 through
improvement of a reliable and efficient road infrastructure facility, provision of employment opportunities, and provision of faster and efficient mode of transport, among others.

**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 environmental assessment (EA) of all developments, and to take appropriate measures to protect critical ecosystems, including the flora and fauna they contain against harmful effects, nuisance, or destructive practices.

**Medium Term National Development Plan (2019 -2023):** The objective of this plans is:

I. To build a diversified, resilient green economy,

II. Improve public health, empowerment and education,

III. Improve fairness, cohesiveness, security and peacefulness, and

IV. To build a competitive economy with sound infrastructure.

Medium-term National Development Plan charts a clear path towards 2023 enroute to the goal of achieving middle-income status by 2039 through inclusive growth that is sustainable and inclusive. The plan has seven clusters that are geared towards socio-economic development for the period 2019-2023 and defines the interventions of all development Partners in Sierra Leone. The NDP focuses on seven development pillars: (i) Human Capital Development; (ii) *Diversifying the economy and promoting growth*; (iii) *Infrastructure and economic competitiveness*; (iv) governance and accountability of results; (v) empowering women, children, and persons with disability; (vi) Youth employment, sports and migration; (vii) Addressing vulnerabilities and building resilience. **This project is aligned to Pillars ii and iii.**

**Second National Biodiversity Strategy and Action Plan 2017- 2026:** has been formulated since 2003 (NBSAP 2004-2010) to stem the alarming rate of loss of biodiversity and degradation of ecosystems in various ecological belts in the country. This reviewed version is effective for the period 2017- 2026. The project will need to comply with this strategy since the project may lead to loss of biodiversity in some sections along the proposed route.
The Constitution of Sierra Leone of 1991: this is the sovereign document of the republic and requires that land be used and managed in a manner that is equitable, efficient, productive and sustainable. It provides that the state shall provide and encourage efforts towards sustainable of natural resources, increasing of the national forest cover, public participation in the management, protection and conservation of the environment, protection of genetic resources and biodiversity, environmental impact assessment, environmental audit and monitoring of the environment, etc. It also makes 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 landowner’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.

The proposed project shall ensure compliance with the constitutional requirements in as far as equitable sharing of the resources between various stakeholders is concerned, on matters of sustainability of livelihoods and biological resources, public participation, Resettlement Action Plan amongst others.

National Lands Policy, 2015: serves as a legal instrument for the effective and efficient land management and administration system for Sierra Leone. The aspiration of the policy is to move towards a clearer, more effective and just land tenure system that shall provide for social and public demands, stimulate responsive investment and form a basis for the country’s continued development. It is concerned with achieving an effective, transparent, just and fair system for all citizens. It gives clear directives on how land and natural resources could be utilized by all sections of Sierra Leone in support of various socio-economic activities undertaken in accordance with sustainable resource management principles and in maintaining viable ecosystems.

Forestry Policy, 2010: supports the development and exploitation of forests of Sierra Leone in a sustainable manner for the material, cultural and aesthetic benefit of the people of Sierra Leone in particular and mankind in general. This policy is intended to ensure forests in the country are protected from wanton destruction.

Conservation and Wildlife Policy, 2010: guides the management and regulation of wildlife and protected areas. It is concurrent but separate from the Forestry Policy 2010. This policy supports the development and exploitation of wildlife in a sustainable manner for the material, cultural and
aesthetic benefit of the people of Sierra Leone in particular and mankind in general.

The wildlife policy is aimed at promoting protection and conservation of wildlife in Sierra Leone, both in protected and non-protected areas.

**National Gender Strategic Plan (2010):** articulates the policy approach of gender mainstreaming and empowerment of women at the ministry level. The policy seeks to have a society where women, men, children, and persons with disabilities enjoy equal rights, opportunities and a high quality of life.

**Occupational Safety and Health Policy of Sierra Leone (2021):** 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.

**National Health Sector Strategic Plan (HSSP II) 2017 – 2021:** form the foundation for better health security, preventing deaths, tackling diseases, strengthening the health system and improving the health and well-being of the population. It provides the overall direction for the sector, prioritizing and orienting efforts around the most pressing issues that need to be addressed. It also provides a basis for longer-term practices that are vital for the country’s achievement of the SDG.

**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.

**National Environmental Legal Framework**

**Local Government Act, 2004 as amended in 2010** deals with the establishment and operation of local councils around the country to enable meaningful decentralization and devolution of Government functions. 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.

**The National Water Resources Management Agency Act, 2017:** is enacted into law to provide for the equitable, beneficial, efficient, and sustainable use and management of Sierra Leone’s water resources; to establish a National Water Resources Management Agency; to provide a Water Basin Management Board and Water Catchment Area Management Committees for the management of the water resources and for other related matters.
The proposed road has the potential of impacting several water courses. It will be important to undertake appropriate mitigation measures to minimize or avoid degradation of wetlands.

**The Fisheries Act 1994 and The Fisheries (Amendment) Act 2007:** established sufficient provisions for the conservation of Marine Resources. These range from monitoring, control, and surveillance provisions, as well as those relating to enforcement. It also provides protection for both freshwater and marine species as classified by the International Union for Conservation of Nature and Natural resources (IUCN) within the Sierra Leone waters.

The proposed road has the potential of impacting marine life as it will cross several water bodies. Appropriate mitigating measures have been proffered in the ESMP to ensure that the project does not significantly affect marine life.

**National HIV and AIDS Commission Act 2011:** establish the National HIV/AIDS Secretariat which responsible for making policies for the prevention, management and control of HIV and AIDS, to provide for the treatment, counseling, support, and care of persons infected with, affected by or at risk of HIV and AIDS.

Because of the large of number of workers who will be involved in the project and the associated social issues with projects of such as scale, HIV/AIDS has been considered as one of the proposed impacts with adequate mitigation measures must also be proposed to that effect.

**The National Protected Area Authority and Conservation Trust Fund Act, 2012:** provide for the establishment of the National Protected Area Authority and Conservation Trust Fund, to promote biodiversity conservation, wildlife management, research, to provide for the sale of ecosystems services in the National Protected Areas and to provide for other related matters.

**The Forest Act, 1988:** is the main law for the forestry sector in Sierra Leone. The primary focus of this act is the management and use of forests resources for production and development purposes (e.g., through concessions).

**The Factories Act, 1974:** 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.

**Employers and Employed (Amendment) Act (1965):** defines the fundamental rights of employees including the basic conditions of employment of workers. It also regulates employment of children. The basic conditions of employees are observed to avoid unnecessary conflicts during the construction works. The
Contractor shall pay the entire amount of the wages earned by or payable to the workers. Payment of such wages will be done at the end of a working day at or near the place of work.

**Workmen's Compensation Act (1960):** provides guideline for compensating employees on work-related injuries and diseases contacted in the course of employment. The Act also requires provision of compulsory insurance for all employees. The Act defines an employee as any worker on contract of service with employer.

It will be important for the Contractor of the proposed project to ensure that all workers contracted during the project implementation phase are provided with appropriate insurance covers so that they are compensated in case of an injury while working on the project.

**The Road Traffic Act, 2007:** aims at consolidating the law relating to road traffic and to provide for other related matters, the Act reserves the use of the road corridor for road facilities only. Encroachment along the road corridor will have to be checked especially during the operational phase of the project. The Act also spells out conditions for use of roads by motorists, among others.

**The Sexual Offences Act, 2012:** The Contractor must observe a standard work ethic to ensure that male and female employees are not subjected to sexual offences. Ample working environment should prevail in all workplaces in the project, to be enhanced through implementation of a Sexual Misconduct Policy.

**International and Regional Requirements**

There are number Multi-Lateral Environmental Agreements (MEAs) that are relevant to the proposed project. These are described in the sub-sections below:

- Discrimination (Employment and Occupational) Convention, 1958
- Worst Forms of Child Labour Convention, 1999
- Equal Remuneration Convention, 1951
- Minimum Age Convention 1973
- Convention on the Conservation of Migratory Species of Wild Animals, 1988
- Convention Concerning the Protection of the World Cultural and natural Heritage 1972
- Vienna Convention on the Protection of the Ozone Layer
- United Nations Convention on Biological Diversity
• Convention on International Trade in Endangered Species
• The RAMSAR Convention for the Conservation and Sustainable Utilization of Wetlands
• The 1992 United Nations Framework Convention on Climate Change (UNFCCC)
• Kyoto Protocol for the United Nations Framework Convention on Climate Change
• Convention on the Rights of the Child
• Convention on the Elimination of all forms of Discrimination against Women

African Development Bank (AfDB) Integrated safeguards System 2013: The AfDB has keen interest in protection of the environment and social wellbeing for investment projects supported by the Bank. The Bank has developed an Integrated Safeguards System (ISS) through its five operational safeguards (OS):

**Operational Safeguard 1:** Environmental Assessment: this operational safeguard is triggered since this is an investment project subject to a de facto environmental and social impact assessment,

**Operational Safeguard 2:** Involuntary Resettlement – this operational safeguard is triggered since the project entails resettlement,

**Operational Safeguard 3:** Biodiversity, Renewable Resources and Ecosystem Services: this operational safeguard is not triggered since the project does not affect areas with biodiversity or ecosystem services potential.

**Operational Safeguard 4:** Pollution Prevention and Control, Greenhouse gases, hazardous materials, and efficient use of resources: This operational safeguard is triggered since there is a risk of various types of pollution and contamination during the works; and

**Operational Safeguard 5:** Working Conditions, Health, and Safety: this operational safeguard is triggered since there are risks to the health and safety of workers during implementation of site-related works.

In addition, other relevant policies and guidelines of the Bank shall remain applicable as soon as they are triggered under the ISS. These include:

• The Bank’s Gender Policy (2001),
• Framework for Enhanced Engagement with Civil Society Organizations (2012),
• Policy on Disclosure and Access to Information (2012),
• Bank’s Policy on Population and Strategies for Implementation (2002),
• Bank’s Integrated Water Resources Management Policy (2000), and

0.5 Major and Moderate Environmental and Social Risk and Impacts

Potential Environmental and Social Impact

The planned construction of the Buedu – Koindu, Koindu – Guinea /Liberia Border Roads will be accompanied by adverse and beneficial environmental and social impacts, which can be mitigated with appropriate measures designed to either, avoid minimize, mitigate, or compensate for adverse risks an impact and enhance beneficial ones. The potential environmental and social impacts likely to arise identified by matching the project activities with the surrounding environmental and socio-cultural resources are quite the same.

Adverse Environmental and Social Impacts

Loss of livelihood, Land Acquisition, and Involuntary Resettlement: The project will lead to loss of livelihood, land acquisition, and involuntary resettlement. A total of 156 structures will be affected including 86 businesses and other livelihood generating facilities, 40 dwelling structures, 28 other structures including unfinished buildings, sign boards and fences, 01 well, and 01 community heritage center (shrine).

Loss of Vegetation Cover: An estimated area of 106.64 Ha arable/farmland will be cleared including land for widening of right-of-way, borrow areas, and quarry sites.

Noise Pollution and Excessive Vibrations: Excavation, construction, and demolition works in the project area normally results in high noise and vibration levels. Noise and vibrations will also emanate from transportation vehicles, construction machinery, metal grinding and cutting equipment, and among others. This impact is short-lived and noise creating activities will be restricted to daytime and away from sensitive receptors such as hospitals or health centres.

Air pollution: Although the road corridor is an earth road, construction activities during the construction such as excavations, demolitions, and transportation of building materials will result in the increased emissions of dust within the project site and surrounding areas. This will be a serious issue requiring mitigation particularly in towns and villages along the corridor.
**Increased Solid Waste Generation:** Solid waste generation is anticipated to increase during construction with Volumes of solid wastes produced from domestic and construction sources onsite. For instance, demolition of structures acquired along the Row, clearing and grubbing of the road, cut – to – spoil waste and from contractor’s feeding remains. Significant quantities of rock and soil materials will be generated from earth moving during construction activities.

**Discharge of Sewage and Wastewater and Degradation of Water Quality:** A lot of wastewater and sewage will be generated during the construction phase of the project. This will take place in construction camp sites and in various settlements located along the road. There will be impact due to the oil use and spillage, used oil disposal during the construction of the project could pose risk of contamination of surface and subsurface water quality.

**Water Abstraction and Consumption:** During construction, there will be increased abstraction of water from rivers and streams situated along the proposed route. This may reduce the flow of water in the rivers, thus reduce the availability of water for local communities including possibility of degrading aquatic ecosystems due to reduction in base flows. This might also lead to distortion in the hydrological regime of smaller streams and rivers. In mitigating this impact, the contractor will only be allowed source water from big rivers which might have negligible impact on communities.

**Increased Risk of Soil Erosion and Soil Quality Degradation:** As earlier mentioned in the sub section above, the reconstruction of the road will involve creation of large impervious surface that restricts the infiltration of rainwater. This leads to high generation of surface runoff that flows on the sides of the road in drainage ditches. Where the surface runoff is channeled directly to bare steep slopes with loose soil, it can lead to serious soil erosion problem and its cascading effect of siltation in streams if they are situated close to cleared surfaces.

**Increased Risk of Spread of STDs, including HIV and AIDS:** Transmission of these diseases is largely through sexual activity. Promiscuity and marital unfaithfulness are 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. However, this risk shall be mitigated by carrying out awareness campaigns in communities and among workers to minimize the risk of transmission.
Delays in Transportation: During construction phase, the road traffic will be controlled, and, in some cases, complete road closure will be necessary especially at river crossings. This will entail disruption to traffic flows resulting in delay to transport of people and goods. There will be also delays caused by diversion during construction.

Occupational Safety and Health: Various occupational safety and health hazards will be associated with the construction and operation of the proposed road. These risks will include the physical hazards, chemical hazards, and noise physical hazards. Exposure to road construction materials, dust, exhaust emissions from heavy equipment and motor vehicles constitute chemical hazards during all road construction activities.

Community Health and Safety: Community health and safety issues will emerge during the proposed reconstruction of the road. The impacts will include dust, noise, and vibration from construction vehicle transit, and communicable disease associated with the influx of temporary construction labor. Significant community health and safety issues associated with the proposed road project will include pedestrian safety, traffic safety, and emergency preparedness. However, all of these could be mitigated satisfactorily by implementing the construction ESMP.

0.6 Consultations
During the update of the ESIA, consultations for the proposed Buedu– Koindu, Koindu – Guinea/Liberia Border roads was carried out from the 3rd -9th June 2023 in all affected communities including Kangama, Koindu and Yenga. The consultations were done in two phases namely one – on one (face to face individual) consultations in smaller communities that had only few people present at the time of the field visit. Phase two involved community meetings where the purpose of the visit was disclosed, and residents were interviewed and allowed to ask questions and raise concerns relating to the successful implementation of the project. Focus group discussion with residents along the road corridor (farmers, landowners, and traders including Local authorities form part of this report (see annex F).

Some of the issues raised during consultation focused on:

- Employment opportunities for youths (male & female) along the project road.
- Transfer of skills and technology
- Timely Compensation, ROW Encroachment and Property/Asset Valuation.
• Road Safety and risk of accidents emanating from speeding vehicles and construction machines especially to school children who travel to other settlements to attend classes.
• Public Utilities: Restoration of public utilities (water and electricity) disrupted during the construction.
• Start of the construction was a concern among majority of the communities including the Town Chief at Koindu.

0.7 Environmental and Social Management Plan (ESMP)
The environmental and social management Plan shall be implemented along with the civil works construction from pre-construction through construction and post construction periods of the project. It will consist of a number of activities, each with a specific purpose, key indicators, and significance criteria.
## Summary ESMP

<table>
<thead>
<tr>
<th>No</th>
<th>Potential Environmental and Social Risks and Impacts</th>
<th>Mitigation Measures</th>
<th>Responsible Party</th>
<th>Monitoring frequency</th>
</tr>
</thead>
</table>
| 1  | Involuntary Resettlement and Displacement of Local Communities, Loss of Properties and Businesses (362 PAPs 156 structures and 734 crops) | • Payment of timely and adequate compensation at replacement cost.  
• The SLRA will ensure that the final designs of the highway shall be realigned to minimize displacements minimized as much as possible.  
• A Resettlement Action Plan is implemented appropriately and professionally | SLRA/MoF | Prior to the commencement of civil works for assets & crops and during implementation for quarry, borrow pits and camp sites |
| 2  | **Loss of Vegetation Cover:** An estimated area of 106.64Ha arable/farmland will be cleared including land for widening of right-of-way, borrow areas, and quarry sites | • Revegetation of designated areas, particularly areas prone to erosion  
• Separate ESMPs to be prepared for borrow areas and quarry sites management | SLRA/Contractor | Weekly/Monthly |
| 3  | Increased risk of the spread of STDs including HIV and AIDS | • STDs and HIV and AIDS awareness program and community/workers sensitization throughout project implementation period. | SLRA/Contractor | Monthly |
| 4  | Water pollution | • Modify embankment slopes leading to water bodies avoid / minimize the missing of contaminants with water bodies.  
• Control excessive abstraction of water from rivers and wetlands.  
• Avoid complete blockage of river channels | Contractor /SLRA | Daily / Monthly |
<table>
<thead>
<tr>
<th>No.</th>
<th>Component</th>
<th>Actions</th>
</tr>
</thead>
</table>
| 2   | Air Pollution | - Sprinkling of water on dry and dusty surfaces regularly including the access roads.  
- Use of wastewater to sprinkle at the construction site so as to reduce excessive dust.  
- Adherence to personal protective clothing such as dust masks.  
- Enforce onsite speed limit regulations.  
- Ensure machines and vehicles are properly and regularly maintained. |
|     |            | Contractor/SLRA Daily / Monthly |
| 3   | Soil Pollution | - Vehicle, machinery, and equipment maintenance and refueling will be carried out so that spilled materials do not seep into the soil.  
- Vehicle maintenance and fuel areas shall be paved to avoid or minimize soil contamination.  
- Fuel storage and refilling areas will be located at least 300m from drainage structures and water bodies.  
- Oil traps will be provided for service and parking areas, the camp site.  
- All spoils and wastes will be disposed of as per the contractor’s approved waste disposal plans at designated waste site (excluding wasteland areas), after consultation with local communities. |
|     |            | Contractor/SLRA Daily/weekly/monthly |

**Social Component**

<table>
<thead>
<tr>
<th>No.</th>
<th>Component</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Occupational</td>
<td>- Development of a traffic management plan for</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Contractor / Daily / weekly/</td>
</tr>
<tr>
<td>Hazards</td>
<td>SLRA</td>
<td>monthly</td>
</tr>
<tr>
<td>-------------------------</td>
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<td>---------</td>
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<tr>
<td>Use protective barriers to shield workers from traffic vehicles, regulation of traffic flow by warning lights/ signs.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eliminate or decrease blind spots and ensure reduction of maximum vehicle speeds in work zones.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Training of workers in occupational safety.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Installation and maintenance of all signs, signals, markings, and other devices used to regulate traffic, specifically those related to pedestrian facilities or bikeways.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prepare an emergency preparedness and response plan in coordination with the local community and emergency responders.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6 Road Accidents

- Create parking areas for trucks or vehicles.
- Create speed humps in towns.
- Provide signage and markings such as zebra, stop signs etc.
- Provide and enforce speed limit along the project road.
- Conduct community awareness raising programs.

Contractor/SLRA Developed prior to the commencement of work and implemented throughout the life of the project.
**Cost of Implementation of the ESMP**

The costs relating to the implementation of environmental enhancement and mitigation measures that are triggered by the physical construction works of the proposed road to an asphaltic finished level have been estimated and included in the engineering designs and Bill of Quantities in tender document, ESMP and RAP. This cost is presented below:

*Overall Budget for the implementation of Environmental and Social Mitigation Measures*

<table>
<thead>
<tr>
<th>No.</th>
<th>Activity</th>
<th>Timeframe</th>
<th>Cost (USD)</th>
<th>Cost (Le)</th>
<th>Source of fund</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Preparation of contractor’s site-specific ESMP</td>
<td>First quarter in the pre-construction phase</td>
<td>50,000.00</td>
<td>1,129,490.00</td>
<td>Contractor</td>
</tr>
<tr>
<td></td>
<td>EIA License Acquisition and monitoring fee</td>
<td>Prior to the start of construction works after project approval</td>
<td>96,000.00</td>
<td>2,168,620.80</td>
<td>GoSL/MoF/SLRA</td>
</tr>
<tr>
<td>2</td>
<td>Complimentary Initiatives: Integrated support (construction of market, implementation of GAP in SL)</td>
<td>1st and 2nd Quarter of project implementation</td>
<td>600,000.00</td>
<td>13,553,880.00</td>
<td>AfDB</td>
</tr>
<tr>
<td>3</td>
<td>RAP Implementation and Monitoring and GRM operation</td>
<td>Monitor the payment of compensation Monthly basis throughout the project implementation</td>
<td>290,194.48</td>
<td>6,555,435.26</td>
<td>GoSL/MoF/SLRA</td>
</tr>
<tr>
<td></td>
<td>Implementatio n of ROW clearance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>HIV/AIDS, Covid-19 / communicable disease awareness and prevention</td>
<td>Monthly basis throughout the project implementation</td>
<td>50,000.00</td>
<td>1,129,490.00</td>
<td>AfDB</td>
</tr>
<tr>
<td>campaign</td>
<td>Monthly basis throughout the project implementation</td>
<td>75,000.00</td>
<td>1,694,235.00</td>
<td>Contractor</td>
<td></td>
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<tr>
<td>-------------------------------------------------------------------------</td>
<td>-------------------------------------------------------</td>
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<td></td>
</tr>
<tr>
<td>Occupational safety and Provision of appropriate PPEs and safety</td>
<td></td>
<td>75,000.00</td>
<td>1,694,235.00</td>
<td>Contractor</td>
<td></td>
</tr>
<tr>
<td>Reforestation Cost</td>
<td>During the Defects Liability Period</td>
<td>100,000.00</td>
<td>2,259,980.00</td>
<td>Contractor</td>
<td></td>
</tr>
<tr>
<td>Impact Mitigation Cost (soil, air pollution, waste management etc.)</td>
<td>Monthly basis throughout the project implementation</td>
<td>350,000.00</td>
<td>7,906,430.00</td>
<td>Contractor</td>
<td></td>
</tr>
<tr>
<td>Annual E&amp;S Audit</td>
<td></td>
<td>50,000</td>
<td>1,129,490.00</td>
<td>AfDB</td>
<td></td>
</tr>
<tr>
<td>Total costs</td>
<td></td>
<td>1,661,194.48</td>
<td>37,526,051.06</td>
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</table>

The total cost estimated for the implementation of the ESMP including the RAP is $1,661,194.48 (One Million, Six Hundred and Sixty-One Thousand, One Hundred and Ninety-Four United States Dollars, and Forty-Eight Cents) and equivalent of Le37,527,051.06 (Thirty-Seven Million, Five Hundred and Twenty-Seven Thousand, Fifty-One Leones and Six Cents) The PIU at SLRA will be required to produce periodic monthly and quarterly environmental and social compliance reports on project environment monitoring to be sent to the concerned agencies for information and supervision. SLRA will also be responsible for facilitate the payment for the project’s EIA license, by the Ministry of Finance (MoF)

**0.8 Grievance Redress Mechanism**

A Grievance Redress Mechanism (GRM) for the project has been established which can reduce risk for the proposed project, offers communities an effective avenue for expressing concerns and achieving remedies, and promotes a mutually constructive relationship. The procedures and recommendation from the GRM will be put in place upon commencement of the civil works. The GRM provides a way to reduce risk for the proposed project, offers communities an effective avenue for expressing concerns and achieving remedies, and promotes a mutually constructive relationship.

The GRM procedure involves setting up committees at various levels: project management, community, etc. for registering and providing redress to complaint as they arise. The structure comprises of key stakeholders, PIU, the contractor, and consultant. The GRM matrix provides a timeframe of 14 days for which grievances are to be resolved. If the grievances cannot be resolved at this level, it will be escalated to the main committee level for which resolution is with 5 days.
1. INTRODUCTION

1.1 Overview

The Environmental and Social Impact Assessment (ESIA) Study for the Kailahun – Koindu – Guinea/Liberia Borders Road was undertaken with the primary aim of identifying the positive and negative impacts of the road project, its potentials, environmental and social risks as well as create a sustainable Environmental and Social Management Plan (ESMP). The ESMP, which summarizes the commitment to address and mitigate risks and impacts identified as part of the assessment through avoidance, minimization, and compensation, is expected to guide the decision and policy makers on the most appropriate ways to handle the relevant environmental issues that may arise during the project and post-project life. Various adverse impacts, ranging from wildlife habitat destruction, changes in ecological setup, human displacement, and environmental pollution to cultural disorientation need to be appraised keenly to achieve reduced retrogressive impacts from such development.

Economic benefits from the road would hasten the realization of the national development goals, ultimately alleviating poverty in the long term. The project area has high potential for agricultural and livestock production which can play pivotal role in improving the levels of livelihood of a large cross-section of the rural poor and marginalized communities. This can only be realized through efforts to have a reliable road network in the chiefdoms.

The initial version was done in 2019, however, due to the considerable amount of time lapse between the implementation, an update of the report was necessary. Hence, the provision of this report.

1.2 Project Background

The Kailahun – Koindu Road is a strategic section in the national road network that links Sierra Leone to Guinea and Liberia through the Eastern Provincial town in Kailahun. Koindu a prominent town used to be a trading hub during post-colonial era. Trading activities use to attract merchants from the Mano River Union basin and from other West African Countries such as Mali and Senegal. This activity was greatly hindered by the brutal civil war that lasted a decade.

Since the end of the war in 2002, efforts by the Government to improve the road condition and re-establish the market has been discussed and steps have been taken to address the primary issue, connectivity. The Kuwait Fund for Arab Economic Development (KFAED) provided loan for the Feasibility Study and Detailed Resident Engineering Design for the construction of the section between Kenema – Kailahun - Koindu Road in 2006.

The upgrading of the road has been carried out in segments. To date the Kenema – Pendembu and Pendembu – Kailahun link has been completed with financing from the Islamic development Bank based outcome of the study carried out in 2006.
The Government of Sierra Leone (GoSL) through the Ministry of Finance and Economic Development (MOFED) solicited financing from the African Development Bank (AfDB) and Organisation of Petroleum Exporting Countries (OPEC) Fund for International Development under the Mano River Union Rehabilitation of Bo - Bandajuma Road Project, for the Consultancy Services for the Update of Feasibility Study and Detailed Resident Engineering Design for the Construction of the Kailahun - Koidu - Guinea and Liberia Border segment. This included the preparation of Environmental and Social Impact Assessment and the accompanying Resettlement Action Plan (RAP).

This section was divided into Lot; Lot I Kailahun – Buedu 25Km and Lot II Buedu – Koidu – Guinea – Liberia Borders due to financial constraint and the African Development Bank (AfDB) has committed funds for the upgrading. The 25Km link between Kailahun – Buedu has been financed under the Mano River Union Road Development and Transport Facilitation Program (MRU RDTFP) Phase III. The MRU RDTFP is an initiative to pave roads in MRU countries (Guinea, Liberia Ivory Coast and Sierra Leone) up to bituminous surface. The Phase IV is being prepared for board approval and the Environmental and Social Impact Assessment prepared in 2019 is to be updated.

The MRU RDTFP Phase IV aims to contribute to the opening of the interior of Liberia, and Sierra Leone and to the strengthening of sub-regional integration and trade.

Specifically, the Programme will (i) improve the level of service of the Kailahun - Beudu road (39km) on the Kailahun - Koidu corridor in Sierra Leone linking Guinea and Liberia borders and Fish Town – Zwedru (48.5km) and Voinjama Mendikoma (80km) axis in Liberia; (ii) improve accessibility and living conditions of the populations in the Programme’s Zone of Direct Influence (PDIA); and (iii) help build the portfolio of future road Programmes (new pipeline) by carrying out road studies

Kailahun District is a priority district that requires major road rehabilitation, not only for the provision of a reliable access road for the much-needed district recovery interventions, but also for the provision of a needed major trunk road in the southeastern region for economic and security reasons. About 2/3rd of the length of the Kenema – Kailahun -Koidu road is in the Kailahun District.
Figure 1: Map Showing Sierra Leone and Its International Borders

Figure 2: Google Map Showing Proposed Project Area in Relations to the Sierra Leone's Capital Freetown
1.3 Environmental and Social Impact Assessment (ESIA) Objectives

The primary objective of this ESIA study is to predict, assess, and analyze the possible positive and negative environmental and social risks and impacts that are expected during the construction, operation, and decommissioning phases of the project. This study also enhances the beneficial impacts and proposes the possible mitigation measures for all the highlighted adverse impacts. This will make sure that the development does not negatively impact the environment, especially with respect to the social, health, economic and physical (soil, water, plant, and animals) states of the proposed project site.

The initial exercise was carried out in accordance with the Sierra Leone Environmental Protection Agency Act, 2008, Sierra Leone Environmental Protection Agency (Amendment) Act, 2010, and the Environmental and Social Safeguards requirement of the African Development Bank. An update of the ESIA was necessitated as the timelines between the disclosure and implementation has significantly elapsed warranting a check of the conditions on site.

The specific objectives are:

- Prediction and evaluation of potential environmental impacts of the project and propose workable and sustainable mitigation measures for the significant negative impacts of the project on the environment.
- Propose measures to enhance the beneficial impacts of the project.
- Facilitation of consultative public participation and the incorporation of expressed views into the study report.
- Preparation of a detailed Environmental Monitoring Plan (EMP) for the proposed project.
- Preparation of a detailed Environmental and Social Management Plan (ESMP) for the proposed road project.
1.4 Objectives of the Proposed Road Project
The proposed road project is expected to meet the following objectives and service needs both during construction and operation phases of the project:

- Improve the region’s road network,
- Reduce travel time along and across the roads,
- Enhance the operational efficiency of the road,
- Promote economic growth within the region,
- Improve safety and reliability for all road users,
- Attract diverted traffic that will foster regional growth,
- Provide employment opportunities to local inhabitants, among other benefits.

1.5 Scope of the Proposed Road Project
To identify the potential environmental and social impacts, and to formulate the proper mitigation measures for the proposed Kailahun – Koindu – Guinea/Liberia Borders, AIM Consultants Limited used both conventional and participatory approaches.

In conducting this exercise, the consultant’s undertaking is summarized as follows:

1. Visiting the project site, and widely consulting with the local communities, local leaders, and other relevant key stakeholders.
2. Carrying out a comprehensive assessment ensuring all environmental concerns and views of all parties/persons likely to be affected by the project are taken into consideration.
3. Publicizing the project and its anticipated effects by posters in strategic places, publishing a notice in both official and local languages in the local newspapers.
5. Performing land surveying activities and developing topographic maps of the corridor.
6. Developing preliminary designs for the proposed project corridor.
7. The planning and preparing of a time schedule for the activities to be undertaken for the ESIA.
8. Carrying out geotechnical investigations – CBR and laboratory tests – along the proposed road corridor and embankments.
9. Developing detailed designs for the proposed project corridor.
10. Developing Tender and Contract documentations and Bill of Quantities.
11. Liaising with Sierra Leone Environment Protection Agency for compliance with all mandatory and regulatory requirements relating to the ESIA.

1.6. Data Collection Methods and Procedures
The data collection has been carried out through key stakeholder’s interviews, focused group discussions, use of checklists, observations and photography, site
visits and desktop environmental studies, where necessary in the manner specified in the Sierra Leone Environmental Protection Agency Act, 2008 and Sierra Leone Environmental Protection Agency (Amendment) Act, 2010 and the African Development Bank’s Safeguards.

The general steps followed during the assessment were as follows:

- Environment screening, in which the project has identified as among those requiring environmental impact assessment under the 1st Schedule (Section 24) (d) of the Sierra Leone Environmental Protection Agency Act, 2008
- Environmental scoping that provided the key environmental issues
- Desktop studies
- Physical inspection of the area and surrounding areas
- ESIA Public participation using interviews, meetings, focused group discussion.
- Data analysis and

1.7 Environmental Screening

This screening process is conducted through legal review and desktop studies to assess whether there will be a need for an environmental and social impact assessment, and what level of assessment is necessary. A screening checklist by the Sierra Leone Environmental Protection Agency Act, 2008 and specifically the 1st Schedule (Section 24) provided for activities that warrants an ESIA.

According to the Schedule I, Infrastructure projects such as roads, bridges etc. that are likely to have significant impact level on the environment to acquire an EIA license upon submission of a full Environmental and Social Impact Assessment study. Therefore, this has been opted for to comply with the provisions of the Act.

The project is classified as Category I: Bank’s Operation likely to cause significant environmental and social impact according to the AfDB’s E&S requirement. Therefore, a full environmental and social impact assessment is required to be undertaken by the borrower.

1.7.1 Environmental Scoping

This also was done using a checklist to help streamline issues down onto the most critical requiring attention during the assessment. Environmental issues are categorized into physical, natural/ecological, and social, economic, and cultural aspects. It also included discussions with key stakeholders, managers and design Resident Engineers as well as interviews with local communities.

1.7.2 Desktop Study

A review of project documents, designs, policy and legislative framework as well as the environmental setting of the area among others was done. The key documents reviewed included the following: -

- The Kailahun – Koindu – Guinea & Liberia Border design documents
1.7.3 Site Assessment
Field visits was conducted in June 2023 for physical inspections of the areas around the project site and the environmental status of the surrounding areas to determine the anticipated impacts.

1.7.4 Public Participation
Public participation meetings were conducted along settlements between Buedu and Koidu and other settlements. House to house surveys and Focused Group Discussions (FGDs) were conducted in the smaller villages and towns located along the road corridor i.e., Kangama, Dia junction, Koidu and Yenga. To ensure adequate public participation in the ESIA process, questionnaires were administered to the local communities, leaders, and the information gathered was subsequently analyzed, synthesized, and incorporated into the ESIA Study Report. AIM Consultants Limited incorporated the concerns and views of all stakeholders and the affected people into the ESIA Study Report.

1.7.5 Data Analysis, Reporting and Documentation
Data has been quantitatively and qualitatively analysed thematically. The Environmental Social Impact Assessment Study Report was compiled from the findings in accordance with the guidelines issued by EPA-SL for such works and prepared and will be submitted by AIM Consultants Limited for consideration and approval. A review of the analysis in 2019 ESIA was done to check appropriateness.

2. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

2.1 Introduction
This section provides a summary of applicable legal and institutional processes that underpin protecting the natural environment in Sierra Leone, also that of the AfDB with respect to infrastructural projects financed by the Bank.

<table>
<thead>
<tr>
<th>No</th>
<th>Title</th>
<th>Summary</th>
<th>Application</th>
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<tbody>
<tr>
<td>1</td>
<td>The 1991 Constitution</td>
<td>In Economic Objective of the Constitution of Sierra Leone, Section (7) 1, states that, the State shall undertake amongst others, the following in pursuit of social protection, and prosperity for its people:</td>
<td><em>The Kailahun – Koidu-Liberia/Guinea Border roads project will contribute towards the improvement of the wellbeing of citizens and economy and.</em></td>
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</table>
Harness all national resources of the nation to promote national prosperity and efficient, dynamic and self-reliant economy.

Manage and control the national economy in such a manner as to secure the maximum welfare and freedom of every citizen on the basis of social justice and equality of opportunity; and

Protect the right of any citizen to engage in any economic activity without prejudice to the rights of any other person to facilitate in areas of the economy.

In addition, under its Social Objective 8(3), the State shall direct its policy towards ensuring that, every citizen without discrimination on any grounds, whatsoever, shall have the opportunity for serving adequate means of livelihood as well as adequate opportunities to secure suitable employment and that, the health, safety and welfare of all persons in employment are safeguarded and not endangered or abused, and in particular, having regard to the resources of the state. Furthermore, there is emphasis on equal pay for equal work without discrimination on account of sex, and that adequate and satisfactory remuneration is paid to all persons in employment.
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<th></th>
<th>Law</th>
<th>Relevant Provisions</th>
<th>Projects Impacts</th>
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<tbody>
<tr>
<td>2</td>
<td>Environment Protection Agency Act, 2008 (No. 11 of 2008) as amended in 2010</td>
<td>Part IV: 23 of the Act exclusively deal with the activities requiring a full Environmental and social impact assessment and describe the permitting processes leading to the acquisition of an environmental licence.</td>
<td>ESHIA for the proposed project activities has been undertaken in line with the EPA-SL Act and regulation requirements. The ESMP has been provided to ensure that the measures are taken to mitigate adverse impacts.</td>
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<td>3</td>
<td>Wildlife Conservation Act 1972 (No 27 of 1972).</td>
<td>The act consists of 76 sections divided in 6 Parts: Preliminary (I); Constitution of Strict Natural Reserves, National Parks, etc. (II); Hunting of animals generally, licences and permits (III); trophies (IV); Evidence, penalties and forfeiture (V); General (VI). The purpose of a Strict Natural Reserve established under section 3 shall be for protecting land, fauna and flora therein from injury or destruction.</td>
<td>The project area is being assessed in relation to protected areas although project roads have no reserves, habitat disturbance and its impact on species as part of the impacts to be anticipated under this project.</td>
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<td>4</td>
<td>The Forestry Act, 1988</td>
<td>This Act came into operation on 1st July 1988 to ensure sustainable use of forest products, and the protection of soil and water resources that constitute the environment at large.</td>
<td>The project will implement this during the extraction of water resources for construction works and for water bodies found within the ROW.</td>
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<td>5</td>
<td>Factories Act – 1974</td>
<td>This Act became effective on 30th May 1974 and deals with the health and safety of workers in their work environments. The Act provides for the protection of the workers by their employers in aspects such as cleanliness of work environment, handling of all injuries, accidents, diseases and death during work. Whereas the name of the Act denotes “Factory based”, its provisions cut across spheres of work including roads and, in this case, the safety and welfare of the road workers have to be guaranteed by their employers i.e. road Contractor(s).</td>
<td>Project implementation operations will be carried out in accordance with the factory Act, 1974 requirements; although the Act is named “Factory Act”, its provisions cut across spheres of work including roads and, in this case, the safety and welfare of the road workers have to be guaranteed by their employers i.e. road Contractor(s).</td>
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<td>6</td>
<td>Sierra Leone Roads Authority (Amendment) Act 2010</td>
<td>The Sierra Leone Roads Authority Act, 1992 amended in 2010 provides for establishment of the Sierra Leone Roads Authority as an Agency for the control, development, maintenance, efficient planning and reliable management of the national road network to provide safe, reliable and sustainable means of transport. With specific reference to this project, the mandate of SLRA includes amongst others: develop strategies, programs and projects for roads forming part of the national road network and road infrastructure facilities. Commission engineering, traffic environmental and social and economic studies for the maintenance, safety and improvement of the national road network. commission location and design studies and preparation of construction plans, specifications, cost estimates etc.</td>
<td>The studies for the Roads project include this ESIA which is consistent with the named responsibilities and mandate of SLRA, in carrying out design studies among others and preparation of construction plans, specifications, cost estimates etc.</td>
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<td>7</td>
<td><strong>Local Government Act, 2004</strong></td>
<td>Being an Act to consolidate with amendments, the law on local government, and to provide for the decentralization and devolution of functions, powers and services to local councils and for other matters connected therewith. It shall be responsible, generally for promoting the development of the locality and the welfare of the people in the locality</td>
<td>Road selection and rehabilitation is done in collaboration with the local Councils, who have the responsibility of taking over the maintenance of feeder roads.</td>
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<td>8</td>
<td><strong>Land Policy 2015</strong></td>
<td>This policy framework provides the vision, principles and policy components to give direction to and definition of the roles and responsibilities of various government and customary authorities, and other non-state actors, in land management in the country. The aspiration of this policy is to move towards a clearer, more effective and just land tenure system that shall provide for social and public demands, stimulate</td>
<td>The Project will ensure fair compensation (if applicable) for private property or land that will be affected by the project</td>
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<td>Bank Requirements</td>
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<td><strong>1</strong> Operational Safeguard 1: Environmental and Social Assessment.</td>
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<td>The objective of this OS is to mainstream environmental and social considerations—including those related to climate change vulnerability—into Bank operations and thereby contribute to sustainable development in the region. The borrower’s responsibility is to identify, assess, and manage the potential environmental and social risks and impacts associated with a project, including climate change issues. This operational safeguard is triggered because the proposed Kailahun Koindu road project is a category 1 project with irreversible impacts which includes the displacement of more than 200 people by the implementation of the said project. This ESIA has been prepared in line with this requirement.</td>
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<td>The objective of this OS is to ensure that when people must be displaced, they are treated fairly, equitably, and in a socially and culturally sensitive manner; that they receive compensation and resettlement assistance so that their standards of living, income-earning capacity, production levels and overall means of livelihood are improved; and that they share in the benefits of the project that involves their resettlement. This operational safeguard is triggered because 528 structures are affected by the road widening to standard which will lead to the displacement of more than 200 people. <strong>An accompanying Resettlement Action Plan has been developed for the project.</strong></td>
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<td><strong>3</strong> Operational Safeguard 3: Biodiversity and Ecosystem Services</td>
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<td>The objective is for the borrower to (i) identify and implement opportunities to conserve and sustainably use biodiversity and natural habitats, and (ii) observe, implement, and</td>
<td>This operational safeguard is not triggered since the project area original native flora and fauna species population composition, richness and abundance have already been modified.</td>
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<td>4</td>
<td>Operational Safeguard 4: Pollution Prevention and Control, Hazardous Materials and Resource Efficiency</td>
<td>The objective of this operational safeguard is pollution prevention and control requirements to achieve high quality environmental performance, and efficient and sustainable use of natural resources, over the life of a project. This OS is triggered since different types of construction waste might pose risk of polluting or contaminating the soil, water resource and atmosphere during the construction such as oil and fuel spills which could affect the health of humans through soil and ground water pollution, if not properly managed.</td>
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<td>5</td>
<td>Operational Safeguard 5: Labor conditions, Health, and Safety</td>
<td>This operational safeguard basically protects workers right and provide for their basic needs. This triggered since a lot of workers will be required during the construction period of the project and there are risks to the health and safety of workers during implementation of site-related works. The borrower must ensure that workers form, join, and participate in workers’ organizations, such as trade unions or alternative organizations of their own choice, and ensure Non-discrimination and equal opportunity and all other requirements in accordance with the International Labor Organization’s standards, without contravening applicable laws.</td>
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In addition, other relevant policies and guidelines of the Bank shall remain applicable as soon as they are triggered under the ISS.
3. PROJECT DESCRIPTION AND JUSTIFICATION

3.1 Project Location and Area
Kailahun District is located between Latitude 8°28’N and Longitudes 10°57’ W of the Greenwich Meridian. It lies within the Eastern Province of Sierra Leone and occupies a total land area of about 3,859 sq. km.

Kailahun Town is the headquarter town of Kailahun District in the Eastern Province of Sierra Leone. It is also a major business and commercial center of Kailahun District, and its largest town. Other major towns in the district include Segbwema, Koindu, Pendembu and Daru. The 2020 mid-term census indicated that the population in the district is about 525,372. Kailahun District is subdivided into fourteen chiefdoms.

The district borders Liberia to the east, Guinea and the Kono District to the north, and Kenema District to the west. The border of the district with Guinea is delineated by a section of the Moa River. The total area of the district is 4,859 sq. km. The population of Kailahun District is largely from the Mende ethnic group. The district is predominantly Muslim.

The length of road from Kailahun to Koindu is approximately 57km and the spur from Koindu to Guinea and Liberia border spans 4.73km and 8.96km respectively. The existing Kailahun – Buedu – Koindu - Guinea and Liberia Borders road to be re-constructed commences from Kailahun, which is approximately 500 kilometers from Freetown, the country’s capital, off new road from western area to southern area, from Kenema to eastern area in Pendembu-Kailahun Road.

![Figure 4: Map Showing Proposed Project Route from Kailahun - Koindu Road](image)

Access to the project area is either through Kailahun, Medikoma Town road from Liberia or Nongoa Town road from Guinea using Moa/Makona River ferry.

The Buedu – Koindu section and traverses about 25.45km from Buedu Town along the original alignment to Koindu and then 4.63Km towards Nongoa and 7.83Km towards Mendikoma.
The Sierra Leone Road Classification categorizes the road as a secondary gravel road with the following features:

- Narrow road sections with sharp and dangerous horizontal curves and gradients in excess of 7%,
- Major intersections and vertical alignments with limited sight distances and inadequate road safety provisions,
- Fifteen palm-log crossings,
- Eight single lane concrete bridges, some with severely damaged decks and sharp horizontal curves approaches,
- Two damaged Bailey Bridges (one single span and one triple span),
- Virtually no side ditches on either side of the roadway,
- Poor (gravel) surface conditions with extensive potholes and depressions,
- Poor alignments of low operating speeds,
- Eleven low points requiring drainage structures.

3.2 Project Justification

3.2.1 Need for a Primary Rural Highway
During the twelve (12) years of the rebel war, almost all the roads, including the project road were left in a total state of disrepair, leaving Kailahun a priority district for road repair. Despite the poor road conditions, demand for transportation continued to increase resulting from the increased exploitation of economic opportunities in the region. Traffic between Kailahun and the border town of Koindu is on the increase as the border region continues to gain prominence in terms of national security and economic activities. Yet the existing road link from Kailahun to Koindu could at best be classified as an unpaved secondary road, with a number of inadequate drainage structures, poor road conditions and inferior Resident Engineering standards.

It is apparent that to meet the transportation demand in the southeastern region, there is a need to provide a reliable road network that will effectively harness the enormous amount of agricultural and other economic potentials. The SLRA's road infrastructure investment and the national trunk roads improvement programs will not be complete without the improvement of the Kailahun - Koindu Road, to complete the link between Kenema - Koindu Road. The rehabilitation of this road will complement the investments that are being made as part of the district-wide rural and feeder road programs.

3.2.2 Penetration/Feeder Road Connections
The rehabilitation of the Kailahun - Koindu Road will facilitate the improvement and construction of secondary penetrating/feeder roads culminating in establishing the badly needed road network in the southeastern region.

3.2.3 Enhancement of Economic Activities
The rehabilitation of the Kailahun - Koindu Road will specifically enhance the economic activities within the area of influence of the entire Kenema-Koindu Road. These activities include the production of main food crops such as rice, cassava, groundnuts, sweet potato, vegetables and relatively large plantations of cocoa and coffee and diamond mining in the Kenema District. Similar increases in
economic activities are envisaged in the Kailahun District where mining activities and production of cash crops with cocoa, coffee and oil palm are prevalent.

3.3 Project description
1. The upgrading works will form part of the activities under the Mano River Union Road Development and Transport Facilitation Program (MRU RDTFP) Phase IV. The MRU RDTFP is is initiative funded by the African Development Bank to develop roads within the MRU basin to bituminous surface standard. The programme aims to contribute to the opening up of the interior of Liberia, and Sierra Leone and to the strengthening of sub-regional integration and trade.

Specifically, the Programme will (i) improve the level of service of the Kailahun - Beudu road (39km) on the Kailahun - Koindu corridor in Sierra Leone linking Guinea and Liberia borders and Fish Town – Zwedru (48.5km) and Voinjama Mendikoma (80km) axis in Liberia; (ii) improve accessibility and living conditions of the populations in the Programme’s Zone of Direct Influence (PDIA); and (iii) help build the portfolio of future road Programmes (new pipeline) by carrying out road studies.

In general, existing curves will be straightened in some areas and upgraded to acceptable geometric design standards.

Feasibility and detailed design studies was done along with environmental and social impact assessment and other required studies which is being updated by this report. The design speed is 100km/hr with an operation speed of 80km/hr outside settlements and 50km/hr adopted along settlements.

The road is presently a gravel road which will be constructed to an asphalt paved surface road. Traffic Class T3 was adopted for the preliminary design based on a 7day, 12-hour traffic count. The collected data include traffic volumes by days and time of the day, as well as the distribution of vehicles by type and weight. The traffic data also included information on the trends, which contributed to the traffic design for future estimated traffic. The design speed adopted is 80km/hr. outside settlements and 30KM/hr. in settlement areas.

The project intervention will also include improving the road width that currently varies from 2 to 7 meters to 7.0m, which triggers the need for this resettlement action plan in accordance with the laws of Sierra Leone and African Development Bank’s Safeguards. The project components leading to RAP involves the reconstruction of bituminous road of about 62.8km from Kailahun to Koindu and to the Guinea/Liberia Borders section.

3.4 Conceptual Design for the Project
3.4.1 Traffic Surveys and Analysis
Traffic surveys were carried out to estimate the present and future traffic volumes using the existing road traffic that will be generated by and diverted to the new rehabilitated road, to analyze the parameters and indicators for future traffic growth and to estimate the average daily traffic volumes on the various road sections for the period 2017 to 2037.
The traffic count stations were selected by AIM Consultants Limited, (Nigeria). 7-days, 12-hour volume/classification counts were conducted at three (3) locations along the route.

These locations were selected with the view to counting vehicles on the straight sections of the road and at major junctions. Traffic surveys were carried to obtain data necessary for traffic study and economic evaluation.

In this study, the survey was conducted from 7a.m. to 7p.m. A continuous count of seven (7) days at 12 hours count was undertaken to arrive at a representative and reliable traffic data, though the road is accessed by trucks due to deep potholes on the road bed. The collected data include traffic volumes by days and time of the day, as well as the distribution of vehicles by type and weight. The data also include information on trends from which the design will estimate the traffic to be expected in the future.

Traffic Class T3 was adopted for the preliminary design.

### 3.4.2 Geometric Design

No Sierra Leone National Road Standards was available during the feasibility study ad detailed design period; however, a low-volume design manual has been developed by the Authority through the help from World Bank. The design was based on international standards which include the following:

- Departmental Standard TD 9/81 Highway Link Design” by Department of Transport, 1981.

The requirements of these standards have been adhered to in most situations. Wherever curve radii or vertical gradients are found to be below standards, a relaxation of standard in design has been adopted. The prevailing site conditions have dictated the use of relaxation of standards based on the minimum safety and overall economic considerations.

### 3.4.3 Design Speed

The design speed is 100km/hr while the operational speed adopted for the road is 80km/hr and 50km/hr for built up settlements.

### 3.4.4 Materials Design

Pavement design has been carried out in accordance with AASHTO 2011 and Road Note 6. The design considered pavement traffic loading expected during the design life, sub grade soil strength, and materials locally available for pavement construction including those for base, subbase and surfacing.

### 3.4.5 Gravel

Site reconnaissance and inspection visits have indicated numerous sources of gravel materials for road construction along the project road, many within 500m of the existing road. The gravels to be selected meet requirements for natural
gravel sub-base and base, improvement with 2-4% of either lime or cement recommended.

### 3.4.6 Sand
Sand for concrete is readily available on the beds of rivers, streams and at various locations along the proposed project road. Rivers and streams along the proposed route include Kissi, Bobobu, Pandobu, Buedu, Kpongbondu, Fenesu, Gawudu, Kangama, Kpengbedu, etc.

### 3.4.7 Water
Water for concrete and other uses is readily available in the rivers and streams along the proposed project road. Rivers and streams along the proposed route include Kpongbondu, Fenesu, Gawudu, Kangama, Kpengbedu, etc.

However, if yields from the streams are not sufficient for road construction purposes, it is expected that boreholes along the project road will be required during construction.

### 3.4.8 Stone Sources
Feasible quarries for hard stone suitable for chippings and concrete aggregates were explored during the reconnaissance surveys. There is evidence of availability of construction materials along the road alignment. Basalt rock outcrops and laterite borrow pit areas are visually evident along the route, adjacent to the existing road.

### 3.4.9 Borrow Pits
There is evidence of availability of laterite borrow pit areas along the road alignment. Basalt rocks outcrops and laterite borrow pit areas were visually evident adjacent to the existing road.

### 3.5 Project Activities and Processes

#### 3.5.1 Existing Road Alignment
The horizontal alignment of the existing road generally traverses a rolling to mountainous terrain and is within the acceptable design standards. Maximum gradient is less than 9% in most part of the route.

The existing carriageway has gravel to earth surface. At some portion, it is noted that the road sub-grade is a natural weathered and basalt rocks. The road width varies from 2 to 7 meters.

The existing carriageway has been damaged in some sections of the road up to the sub grade level. The damages result from erosion and potholes due to lack of drainage facilities. The earth surface has suffered failures too, as a result of cave-in.

In general, existing curves will have to be straightened in some areas and upgraded to acceptable standards to satisfy geometric design considerations.

#### 3.5.2 Project Phases
The project has 4 major phases:

1. Pre-construction (planning and design) phase
2. Construction phase
3. Operational/Defects Liability phase
4. Decommissioning phase

3.5.2.1 Pre-Construction (Planning and Design) Phase
This is the initial phase of the whole road reconstruction project. It involves the following activities:

- Design Review

The design review process and involves the following activities:

1. Review of the existing data on the proposed road project and social and economic activities in the project area.
2. Engineering survey and design work for the optimum alignment and design standards. These include.
   - Hydrological and hydraulic studies
   - Traffic analysis for the project road.
   - Material surveys (borrow sites, quarries, and water sources)
   - Soil survey, including test pits and CBR.
   - Field and laboratory soil investigations
   - To carry out an Environmental Impact Assessment of the project area in relation to the proposed project.

- Public Consultation and Disclosure

The initial ESIA was done in 2019, however, this is being reviewed to capture changes in the environment and social needs by stakeholders. Therefore, consultation was consulted carried in 2023 to inform them of the reasons and intention of the project as well as solicit their views and input.

Formal and informal discussions with governmental and non-governmental departments were also undertaken. Consultation will also be held during project implementation to determine the progress and impact of the project and assess the extent to which the objectives of the project are met. Furthermore, consultation is being carried out upon decommissioning of the project.

3.5.2.2 Construction Phase

- Setting Out

The construction works starts with the setting out of the alignment of the road. Reference pegs shall be 50mm in section and 600mm long, driven into the ground and painted white above the ground. The offset from the centerline shall be indicated by a small nail 20mm to 25mm long with its head driven flush with the top of the peg. Chainages, off-set and reference elevation will be indicated to the sides of the peg.

After cutting of benches and prior to the commencement of earthworks or sub-grade works, the Contractor shall take commencement cross-sections again and submit the copy of the same to the Consultant for approval. These cross-sections shall then be used as basis of measurement for all subsequent layers, unless otherwise stated.

- Clearance of the alignment and creation of diversions
This will involve clearance of the site on the road alignment including removal of trees, other vegetation, grub up roots and any deleterious materials. Backfilling and compaction to 100% MDD (AASHTO T99) with approved material will then follow. It will also involve removal of topsoil to a maximum depth of 200mm.

- Earthworks

Earthworks will involve:

- Filling in soft material including benching of embankments and compaction to 95% MDD (AASHTO T99) in layers not exceeding 150mm
- Filling in hard material (rock fill in selected sections)
- Cutting to spoil hard material
- Cutting to spoil soft material
- Landscaping and grassing, where applicable.

Specifically, this stage will involve:

**a. Preparation Prior to Forming Embankment**

Where benching is required for existing pavement to accommodate earthworks sub-grade or sub-base for widening the road, the rate for compaction of existing ground shall be deemed to cover this activity.

Excavation in the pavement of the existing road shall be kept dry. In the event of water penetrating the underlying layer, construction of the subsequent layers shall be postponed until the underlying layers are dry enough to accommodate the construction plant without deforming or otherwise showing distress.

Step construction shall be carried out per layer at the joint where excavating, both vertically and perpendicular to the direction of the travel. The step shall be 500mm perpendicular to the direction of the travel and 150mm vertical unless otherwise instructed.

**b. Construction of Embankments**

Only material approved by the Resident Engineer shall be used for filling in embankments.

Material with high swelling characteristics or high organic matter content and any other undesirable material shall not be used, unless specifically directed by the Resident Engineer.

Unsuitable material shall include:

- All material containing more than 5% by weight or organic matter (such as topsoil, material from swamps, mud, logs, stumps and other perishable material)
- All material with a swell of more than 3% (such as black cotton soil).
- All clay of plasticity index exceeding 50.
- All material having moisture content greater than 105% of optimum moisture content (Standard Compaction)
c. Embankment Repair

Any localized filling in soft, hard or natural selected material requirements shall be executed, where directed by the Resident Engineer.

d. Compaction of Earthworks

At pipe culverts, all fill above ground level around the culverts shall be compacted to density of 100% MDD (AASHTO T.99) up to the level of the top of the pipes or top of the surround(s), if any and for a width equal to the internal diameter of the pipe on either side of the pipe(s) or surround(s) as applicable.

At locations adjacent to structures, all fill above ground level up to the underside of the sub-grade shall be compacted to density of 105% MDD (AASHTO T.99). In case of fill around box culverts, this will be carried out for the full width of the fill and for a length bounded by the vertical plane passing through the ends of the wing walls.

Compaction of sub-grade material (i.e. material immediately below formation) in cut areas shall not be carried out by the contractor in areas where the formation is formed in hard material, unless specific instructions to the contrary are issued by the Resident Engineer.

Where improved sub-grade material shall be required, this shall be compacted and finished to the same standards and tolerances as those required for normal sub-grade and clauses in the specifications applying to normal sub-grade shall also apply.

e. Mass-Haul Diagram

Although Mass-Haul diagram may be provided with the Documents, the Contractor shall also be responsible for locating suitable materials for constructing earthworks along the alignment and elsewhere.

f. Borrow Pits

Fill material which is required in addition to that provided by excavation shall be obtained from borrow pits to be located and provided by the Contractor but to the approval of the Resident Engineer.

g. Topsoil and Grassing

The embankment slopes, cut faces and guiding check-dams of the Standard Specification are synonymous with fill slopes and cut slopes of clause 110 (c) and earth dams of clause 817 of the Standard Specifications respectively.

h. Sub-Grade

Sub-grade shall mean upper 300mm of earthworks either in-situ or in fill and sub-grade shall be provided, as part of earthwork material for sub-grade shall have a CBR of not less than 8% measured after a 4-day soak on a laboratory mix compacted to a dry density of 100% MDD (AASHTO T99) and swell less than 1%.

- Excavations and filling for Structures

The major activities will include:
1. Excavations and backfilling for gabions in soft material.
2. Excavation in soft materials for culverts and foundations for piers and abutments.
3. Placement for gabions and mattresses as directed by the Resident Engineer.
5. Placement of 200mm thick pitching including grouting to aprons upstream/downstream of bridges, culverts, and drains.

- **Culverts and Drainage Works**

The construction of culverts and drains will involve the following activities:

1. Excavations in both soft and hard material for pipe culverts, headwalls, wing walls aprons, toe walls and drop inlets.
2. Placement of class 20(20) concrete to headwalls, wing walls, aprons, inlets and outlets to pipe culverts including formwork.
3. Excavations for side drains, mitre, drains cut-off drains and outfall drains.

The Contractor shall excavate and remove all existing blocked or collapsed culvert pipes of 450mm, 600mm and 900mm diameter including concrete surround, bedding, and inlet and outlet structure. The void left after removal of culvert pipes shall be widened as necessary to accommodate new concrete bedding, pipe and haunching.

- **Storm Water Management Plan**

Storm water management plan will address storm water quantity and quality and how to protect ecological, social/cultural and economic values. The plan will be used to aid decision making to ensure that remedial measures (structural and non-structural) are undertaken in a cost-effective, integrated and coordinated manner and that the decisions made with regard to the project take into full account implications for storm water impacts.

- **Construction of Deviations for Traffic**

The contractor will construct temporary roads for deviations of traffic. Such roads will have minimum width of 6m, 150mm gravel thickness with minimum CBR of 20. The construction will also erect and maintain the signage and barriers along the route.

- **Procurement of Construction Materials**

Some of the major materials to be used in the construction of the road include:

- Natural gravel
- Water
- Ordinary Portland cement and lime
- Bitumen
- Kerosene
- Wrought Shuttering Timber
- Steel

A materials data schedule will be maintained and updated as necessary highlighting source, quantities and date of receipt of materials and in the converse materials going out, where utilized and date utilized.
• **Concrete Works**

All concrete works will be done according to the specifications as provided in the engineering design and specifications.

**A. Formwork for Culvert Walls and Slabs**

This work shall consist of all temporary moulds for forming the concrete for culvert walls and slabs together with all temporary construction for their support. Unless otherwise directed by the Resident Engineer, all formworks shall be removed on completion of the walls and slabs.

a) **Materials**

Forms shall be made of wood or metal and shall conform to the shape, lines and dimensions shown on the Drawings.

All timber shall be free from holes, loose material, knots, cracks, splits and warps or other defects affecting the strength or appearance of the finished structure.

**Release agents** shall be either neat oils containing a surface activating agent, cream emulsions, or chemical agents to be approved by the Resident Engineer.

b) **Construction Method**

i) **Formworks**

Formworks will be designed to carry the maximum loads that may be imposed, and so be rigidly constructed as to prevent deformation due to load, drying and wetting, vibration and other causes. After forms have been set in correct location, they shall be inspected and approved by the Resident Engineer before the concrete is placed.

If requested, the contractor shall submit to the Resident Engineer shop drawings of the forms and also, calculations to certify the rigidity of the forms, if requested.

All form joints for exposed surfaces of concrete shall form a regular pattern with horizontal and vertical lines continuous throughout each structure and all construction joints shall coincide with these horizontal and vertical lines, unless otherwise described in the Contract. PVC pipes of 50mm diameter for weep holes shall be arranged as shown on the shop drawings.

Unless otherwise specified, formwork shall be designed to form chamfers at all external corners, whether or not such chamfers are shown on the shop drawings, so as to prevent cracks and other damages from occurring.

The inside surface of forms shall be cleaned and coated with a releasing agent to prevent adhesion of the concrete. Release agents shall be applied strictly in accordance with the manufacturer’s instructions. The release agent shall be applied to the formwork prior to erection. Release agent must not come into contact with reinforcement. Immediately before concrete is placed, the forms shall be thoroughly cleaned and freed from sawdust, shavings, dust, mud or other debris by hosing with water. Temporary openings shall be provided in the forms to drain away the water and debris.

ii) **Scaffolding**
All scaffolding required to support the forms shall be designed and constructed to provide necessary rigidity and support the loads with minimum deflection or deformation.

Details, plans and structural and flexural calculations for scaffolding shall be submitted to the Resident Engineer for approval, but in no case shall the contractor be relieved of his responsibility for the results obtained by use of these plans, etc.

iii) Formwork Removal

The formwork shall not be struck and removed until the concrete strength has reached 20 N/mm² unless higher grade is specified.

B. Concrete Works (Class 20/25) of Culvert Walls and Slabs

This work involves the furnishing, mixing, delivering and placing of the concrete for the construction of culvert walls and slabs, in accordance with these Specifications and in conformity with the requirements shown on the shop drawings.

Concrete class 20/25 shall be used for culvert walls and slabs. The requirements of this class of concrete are provided as follows unless otherwise the Resident Engineer will designate any alteration:

- Design compressive strength (28 days) :25N/mm²
- Maximum size of coarse aggregates :20mm
- Maximum water/cement ratio of 45% with slump of 80mm

a) Concrete Materials

i) Cement

Cement shall be of Ordinary Portland Cement type.

The contractor shall select only one type or brand of cement or others. Changing of type or brand of cement will not be permitted without a new mix design approved by the Resident Engineer. All cement is subject to the Resident Engineer’s approval. The Resident Engineer shall not relieve the Contractor of the responsibility to furnish concrete of the specified compressive strength.

Conveyance of cement by jute bags shall not exceed more than two (2) months, and age of cement after manufacture at mill or storehouse shall not exceed more than four (4) months. The Contractor shall submit to the Resident Engineer for his approval the result of quality certificate prepared by the manufacturer.

Whenever it is found out that cement have been stored too long, moist, or caked, the cement shall be rejected and removed from the project.

ii) Aggregates

Fine and coarse aggregates must be clean, hard, strong and durable, and free from absorbed chemicals, clay coating, or materials in amounts that could affect hydration, bonding, strength and durability of concrete.

Grading of aggregates shall conform to the following requirements (Table 2 and 3):
Table 2: Grading of Fine Aggregates

<table>
<thead>
<tr>
<th>Sieve Size (mm)</th>
<th>Percentage by Weight Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.00</td>
<td>89 - 100</td>
</tr>
<tr>
<td>2.50</td>
<td>60 - 100</td>
</tr>
<tr>
<td>1.20</td>
<td>30 - 100</td>
</tr>
<tr>
<td>0.60</td>
<td>15 - 54</td>
</tr>
<tr>
<td>0.30</td>
<td>5 - 40</td>
</tr>
</tbody>
</table>

Table 3: Grading of Coarse Aggregates

<table>
<thead>
<tr>
<th>Size of Coarse Aggregate</th>
<th>Amounts finer than each standard sieve percentage by weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Other requirements for aggregates are as follows:

Table 4: Other material requirements for the project

<table>
<thead>
<tr>
<th>Fine Aggregates</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Fitness Modulus, AASHTO M-6</td>
<td>2.3 – 3.1</td>
</tr>
<tr>
<td>2 Sodium Sulphate Soundness, AASHTO T104</td>
<td>Max. 10% loss</td>
</tr>
<tr>
<td>3 Content of Friable Particles AASHTO 112</td>
<td>Max 1% by weight</td>
</tr>
<tr>
<td>4 Sand Equivalent, AASHTO T176:</td>
<td>Min. 75</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Coarse Aggregates</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Abrasion, AASHTO T96</td>
<td>Max. 40% loss</td>
</tr>
<tr>
<td>2 Soft Fragment and shale, AASHTO M80</td>
<td>Max. 5% by weight</td>
</tr>
<tr>
<td>3 Thin and elongated Pieces, AASHTO M80</td>
<td>Max. 15%</td>
</tr>
</tbody>
</table>
iii) Water

All sources of water to be used with cement shall be approved by the Resident Engineer. Water shall be free from injurious quantities of oil, alkali, vegetable matter and salt as determined by the Resident Engineer.

iv) Admixture

Only admixture which have been tested and approved in the site laboratory through trial mixing for design proportion shall be used.

Before selection of admixture, the Contractor shall submit to the Resident Engineer the specific information or guarantees prepared by the admixture supplier.

The Contractor shall not exclude the admixture from concrete proportions.

v) Proportioning Concrete

The Contractor shall consult with the Resident Engineer as to mix proportions at least thirty (30) days prior to beginning the concrete work. The actual mix proportions of cement, aggregates, water and admixture shall be determined by the Contractor under supervision of the Resident Engineer in the site laboratory.

The Contractor shall prepare the design proportions which has 120% of the strength requirement specified for the designated class of concrete.

No class of concrete shall be prepared or placed until its job-mix proportions have been approved by the Resident Engineer.

C. Concrete

a) Batch ing

Batching shall be done by weight with accuracy of:

1. Cement: ½ percent
2. Aggregate: ½ percent
3. Water and Admixture: 1 percent

Equipment shall be capable of measuring quantities within these tolerances for the smallest batch regularly used, as well as for larger batches.

The accuracy of batching equipment shall be checked every month in the presence of the Resident Engineer and adjusted when necessary.

b) Mixing and Delivery

Slump of mixed concrete shall be checked and approved at an accuracy of +25mm against designated slump in these specifications.

c) Concreting at Night

No concrete shall be mixed, placed, or finished when natural light is insufficient, unless an adequate approved artificial lighting system is operated, such night work is subject to approval by the Resident Engineer.
d) **Placing**
In preparation of the placing of concrete, the interior space of forms shall be cleaned and approved by the Resident Engineer prior to placing concrete. All temporary members except tie bars to support forms shall be removed entirely from the forms and not buried in the concrete. The use of open and vertical chute shall not be permitted unless otherwise directed by the Resident Engineer. The Contractor will provide a sufficient number of vibrators to properly compact each batch immediately after it is placed in the forms.

- **Road Furniture**
This will involve the erection of concrete posts and flex-beam guardrails complete with spacers at 3810mm intervals. The contractor will also be required to provide and erect permanent road signs were instructed by the Resident Engineer and in accordance with special specifications.

They will include:
- Warning signs
- Priority, prohibitory and mandatory signs
- Standard informatory signs
- Non-standard informatory signs

Along with the physical signs, the Contractor will be required to provide and deliver approved airtight corrosion resistant 20 liters containerized white and yellow paints (reflectorized) and mark the road as directed by the Resident Engineer. The works will also involve provisions of road studs of stim-Sonite nature or similar, both unidirectional and bidirectional.

a. **Edge Marker Posts**

Edge marker posts shall be provided as directed by the Resident Engineer and in compliance with standard applicable specifications.

b. **Permanent Road Signs**

Permanent road signs shall be provided as directed by the Resident Engineer and in compliance with the requirements of the Standard Manual for Traffic Sign. Old signs to be reused shall also be tested.

c. **Existing Road Signs**

Where directed by the Resident Engineer, the Contractor shall take down road signs including all posts, nuts, bolts and fittings, and remove and dispose of the concrete foundation and backfill the post holes. The signs shall be stored at the Contractor's store and they shall become the property of SLRA who shall remove them prior to the expiry of the maintenance period. Measurement and payment for taking down road signs shall be made by the number of signs of any type and size taken down, cleaned and stored as directed.

Where a salvaged existing sign complies with the requirements of new road signs, the Resident Engineer may instruct the Contractor to remove the sign for safe storage and re-erect it.
Measurement and payment shall be made by the number of road signs re-erected as directed and the rate shall include for excavation, concrete foundations and backfilling around posts and removal of surplus material to spoil.

a) **Road Marking**

Paint for road marking shall be internally reflectorized hot applied thermoplastic material (with Ballotini beads) in accordance with Standard Specification. The appropriate Government agency must approve this reflectorized paint inclusive of the Ballotini beads.

b) **Guardrails**

Guardrail posts shall be concrete 210mm x 210mm x 1710mm set vertically at least 1.2m into the shoulder as directed by the Resident Engineer. Beams for guardrails shall be "Armco Flex beam" or similar obtained from a manufacturer approved by the Resident Engineer and tested to ensure compliance with AASHTO M180.

c) **Kerbs**

**Insitu Kerbs:**

The materials for and making and placing of in situ asphalt kerbs shall comply with the recommendations of BS 5931. In addition, a tack coat shall be used, and they shall be laid by a machine capable of producing a dense, smooth-surfaced kerbs to true line and level.

Kerbs shall be constructed to the dimensions described in the Drawings and may be selected from the standard types for road works shown in the Road Construction Details listed in the Standards.

**Precast Kerbs:**

The precast concrete kerbs shall conform to BS 7533-6 and their dimensions, type designations and performances and classes shall be as described in the Specifications and may be selected from the standard types for road works shown in the Road Construction Details listed in the Standards. They shall be laid and bedded in accordance with BS 7533-6 on a mortar bed on a concrete pavement slab, a base or a ST4 in accordance with BS 8500-2 concrete foundation. The mortar bed may be omitted if units are bedded onto a concrete slab or foundation that is still plastic. All precast units laid on a mortar bed or bedded onto a plastic concrete shall be backed with a strength class ST4 concrete in accordance with BS 8500-2.

Precast concrete kerbs, which are to be bonded to the pavement surface, shall conform to BS 8500-2. The bonding materials and methods of bonding shall be to the manufacturer's recommendations for this specific application. Bonded kerbs shall not be less than 100mm in width at the base, their height shall not exceed their width and they shall be bonded over their full width. The clear distance between unsupported pavement edge and back of kerbs shall be not less than 100mm. Units shall be installed in accordance with the manufacturer's instructions. They shall be bonded to the pavement surface with a resilient adhesive compatible with the pavement materials and be capable of withstanding a static push-off load of 10kN/m applied parallel to the pavement surface at right angles to the kerbs.
d) **Vertical Joints**
Vertical joints between adjacent kerbs shall not be greater than 5mm in width and shall be filled with a mortar consisting of 1:3 cement: sand by volume.

e) **Transition between Flush and Raised Kerbs**
The transition between flush and raised kerbs (e.g. at bus bays) shall be termed as ramped kerbs. The transition between flush and raised kerbs shall occur within a length of 2.0 m.

f) **Kilometer Marker Posts**
Kilometer marker posts shall be provided as directed by the Resident Engineer and in compliance with standard specifications.

g) **Rumble Strips**
Where directed by the Resident Engineer, the Contractor shall provide, place, trim, shape and compact to line and level asphalt concrete rumble strips on the finished shoulders. This shall be done to the satisfaction of the Resident Engineer.

- **Construction Plant**
The plant will have the following, but not limited to these machineries for construction purposes.

  Cat D6 Bulldozer or Equivalent with Dozer/Ripper attachment
  - Cat 120H Motor Grader or Equivalent Complete with Scarifier
  - Vibrating Roller (10 Tonnes)
  - Hand Propelled Vibrating Roller 850 Kg
  - Cat 950G Wheel Loader or Equivalent
  - 10 Tonne Tipper Lorry
  - 50 mm Delivery water pump and motor
  - Concrete mixer 0.7m3/min.
  - Concrete Vibrator (Poker Type)
  - Tractor and Trailer

- **Quarries, Borrow Pits, Stockpiles and Spoil Areas**

  a) **Provision of Land**
The implementing agency will make available land for quarries, borrow pits, stockpiles, and spoil areas upon approval by the Resident Engineer. The contractor will be entirely responsible for locating suitable sources of materials complying with standard and special specifications and for the procurement, mining, and haulage to site of these materials and all costs involved therein. Similarly, the Contractor will be responsible for the provision and costs involved in providing suitable areas for stockpiling materials and spoil dumps. Should there be suitable sites for spoil dumps or stockpiles within the road reserve forming the site of the works, the Contractor may utilize these subjects to the approval of the Resident Engineer.

- **Safety and Public Health Requirements**
This is an integral part of the project especially during the construction phase. Warning and advisory notices, drugs and condoms would be provided for throughout the project duration. The contractor shall allow for qualified
professionals to conduct lectures to the workers regarding the spread of HIV/AIDS/Corona and Ebola. Ebola is considered as the outbreak was reported in Kailahun district and its trait prevalence in survivors.

**Summary Project Activities**

The major Works to be executed under the Contract comprise mainly of but are not limited to the following:

- Limited site clearance and topsoil removal
- Earthworks
- Preparation of the sub-grade to receive the pavement layers as per the standard specifications.
- Provision of cement improved gravel for road sub-base of the specified thickness.
- Provision of cement stabilized gravel for road base of the specified thickness.
- Provision of a double surface dressing using 14/20 mm and 6/10 mm pre-coated class 4 chippings for both the carriageway and the shoulders. The shoulders shall be constructed with the same material and thickness as for sub-base, base and surfacing.
- Construction of culverts and other drainage works.
- Protection works using stone pitching and gabions as necessary.
- Relocation of services as necessary.
- Installation of kerbstones where instructed
- Provision of road furniture, including road marking and traffic signs.
- Landscaping including top soiling and grassing.
- Maintenance of passage of traffic through and around the works.
- Any other activity not listed above in either category but deemed to be necessary by the Resident Engineer, shall be subject to the Resident Engineer’s formal instruction on mode of payment stipulated either by day works or on a measured basis.

**3.5.2.5 Operation/ Defects Liability Phase Activities**

This is the phase when the road is in use. Most of the activities in this phase will involve monitoring of the activities of the project in line to the objectives of the project. These will include repairs to destroyed areas, expansions, policy development and implementation and general maintenance of the road and the associated structures.

**3.5.2.6 Decommissioning Phase Activities**

Decommissioning refers to the final disposal of the project and associated materials at the expiry of the project life span. For the proposed project road, decommissioning is not anticipated. However, it will be sustained in accordance with transportation demands of the project area.
4. DESCRIPTION OF THE PROJECT ENVIRONMENT

4.1 Introduction
This section presents a description of the existing environment, comprising the bio-physical and socio-economic conditions of the proposed project area through which the proposed road will pass. The status quo for the project area is documented for the ultimate purpose of establishing and assessing the impacts of the project in future.

4.2 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 investigated and assembled. The information collected formed part of the baseline data that was for analysis.

The description of baseline information relevant to the project covers:

- The project district.
- Land use categories.
- Population characteristics.
- Socio-economic.
- Cultural resources.
- Health.
- Natural resources.
- Climate.

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. Kailahun and Koindu which are the focus of the reconstruction of the road for which the ESIA is being undertaken are part of the Eastern Area.

The existing Kailahun – Buedu – Koindu - Guinea and Liberia Borders road to be re-constructed commences from Kailahun, which is approximately 500 kilometers from Freetown, the country’s capital. The coordinates of Kailahun are approximately 915,285 N, 328,640 E, and Koindu are approximately 935,591 N, 352,694 E, and Buedu 915,458 N, 348,963 E. The length of road from Kailahun to Koindu is approximately 57 km., from Koindu to Guinea border the length is 4.73km and from Koindu to Liberia border is 8.96km (See Figure 2).

Access to the project area is either through Mendekoma Town road from Liberia and Nongoa Town road from Guinea using Moa River ferry boat.
4.3 Kailahun District

4.3.1 Physical Description

4.3.2 Location and Size

Kailahun is one of the fourteen (14) districts in Sierra Leone and one of the three located in the Eastern Province. It borders Liberia to the east, Kenema to the west, Kono to the north and Guinea to the northeast. It occupies a total space of 3,859 sq. Km and comprises of fourteen (14) Chiefdoms. It has a population of 358,259. The administrative capital of the district is Kailahun Town.

4.3.2.1 Topography and Geology

Kailahun is in the interior plateau and hill region of Sierra Leone.

The interior plateau and hill region cover the north-eastern half of the country and is part of the Guinean Highlands. It consists mainly of elevated plateau country, between elevations of 300-600 m above sea level. It is the most extensive physical region and includes the greatest variety of landforms. The Interior Plateau is dissected by the main rivers flowing westward towards the sea. In the central area and near the Guinea border, several hills and mountains, including the Kambui, Nimini, and Gori hills and the Sula, Kangari, Loma, Tingi, and Wara mountains rise above the general level of this region. Further south-east in the upper Moa/Makona River basin, the elevations decrease to only about 150 m and 300m.

The Kailahun district is characterized by an undulating landscape with several rock hills and valleys.

The soil type for Kailahun District is mostly Oxisols (or Ferralsols). Oxisols (or Ferralsols) are the common soils on the gently undulating uplands and in the inland swamps. They are strongly weathered and leached soils. They are usually deep, well-drained red or yellow soils with good structure, and deep profile, and uniform properties with depth.
4.3.2.2 Climate
Like Sierra Leone, Kailahun district has a tropical climate with two (2) pronounced seasons: a wet season from May to October, and a dry season from November to April.

Rainfall
Kailahun district experiences an average rainfall of 2000 to 2500 mm per annum.

Temperature
Kailahun district experiences medium temperatures virtually all the year round because of its latitudinal location far from the tropics. The highest temperatures are mostly in March and April. Minimum temperatures are recorded around July and August, and harmattan period between mid-December to mid-February. Mean annual maximum temperature in the project area ranges from 27.1°C to 27.7°C between February and April while mean annual minimum temperature within the project route ranges from 24.9°C to 25.3°C. The mean daily max temperature is between 27.32° and 28°C and can rise as high as 30°C during peak temperature periods.

The relative humidity is high; the average exceeds 80% for most of the year.

Wind, Humidity and Cloud
The project zone encompassing the project route is characterized by cloudless sky and cool nights. The surface winds are predominantly southwesterly and generally light in the morning but pick up around 10:00am due to mixing with upper layers to attain a speed of 6-10km/hr with 79% humidity.

The weather is fine on most days. There are also spells lasting 3-5 days and sometimes over a week of extensive harmattan dust haze which inhibits visibility.
This occurs annually between end of December and beginning of February. During severe spells the recorded visibility is reduced to as low as 80m.

**4.3.2.3 Vegetation**
The vegetation along the route is generally sparse with isolated patches of rain forest scattered in the district as shown in Plate 4. The project influence zone does not include any sensitive / designated protected area.

The road corridor is mainly covered by secondary forests and forests regrowth or ‘farmbush’ because of clearing for use in ‘slash-and-burn’ or shifting cultivation farming and for firewood. The secondary forests have a closed canopy with trees 10-30m tall; most of it consisting of re-growth often from farming.

Herbaceous layers which may include a few specialized grasses occur over a variable portion of the forest floor. Several timber trees are noticed along the proposed route, such as the African mahogany (*Khayaivorensis* and *K. grandifoliola*), the scented Sapele wood (*Entandrophragma Cylindricum*) and iroko (*Chlorophora excels*). There are also economic cash crops such as oil palm (*Elaeisguineensis*), cocoa (*Theobroma cacao*) and rubber (*Heveabrasiliensis*). Other crops cultivated include rice, sweet potatoes, yam, cassava, banana, corn, beans etc.

**4.3.2.4 Hydrology and Drainage**
The proposed route passes an area in the Kailahun District that is fairly drained with the river Moa being the major river passing through it. There are also eleven tributaries and other smaller streams and rivulets crossing the road.

The streams are mainly seasonal.

The streams along the proposed route are as tabulated below in Table 6. A typical stream along the proposed route is shown in Plate 5 below.

**Table 5: Streams along the Proposed Route**

<table>
<thead>
<tr>
<th>S/N</th>
<th>Location</th>
<th>Site</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ch.27+750</td>
<td>Buedu Stream 2</td>
<td>Seasonal ; dry river bed; broken bridge</td>
</tr>
<tr>
<td>2</td>
<td>Ch.28+472</td>
<td>Kpongbondu Stream</td>
<td>Seasonal ; dry river bed; broken bridge</td>
</tr>
<tr>
<td>3</td>
<td>Ch.31+005</td>
<td>Fenesu Stream</td>
<td>Seasonal ; dry river bed; broken bridge</td>
</tr>
<tr>
<td>4</td>
<td>Ch.31+362</td>
<td>Gawudu Stream</td>
<td>Seasonal ; dry river bed; broken bridge</td>
</tr>
<tr>
<td>5</td>
<td>Ch.34+800</td>
<td>Kangama Stream</td>
<td>Seasonal ; dry river bed; broken bridge</td>
</tr>
<tr>
<td>6</td>
<td>Ch.40+689</td>
<td>Ngadorhun-Dia Stream</td>
<td>Seasonal ; dry river bed; broken bridge</td>
</tr>
<tr>
<td>7</td>
<td>Ch.48+752</td>
<td>Kpengbedeu Stream</td>
<td>Seasonal ; dry river bed; broken bridge</td>
</tr>
</tbody>
</table>
4.3.2 Land Use
Land use in the district is categorized as agricultural land, forest cover, human settlement, cocoa and coffee plantations and diamond mining.

4.3.3 Demography and Settlement Patterns
Population Size and Composition
The 2015 census shows that the population of the district is 525,372, as shown in Table 6 below. The main ethnic groups in the district are Kissi and Mende with predominantly Muslim population.

Table 6: Population: Kailahun District: Population Distribution By Chiefdoms And Sex, 2015 Census

<table>
<thead>
<tr>
<th>Chiefdom</th>
<th>Total</th>
<th>Male</th>
<th>Female</th>
<th>Sex-Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jaluhun</td>
<td>525,372</td>
<td>259,435</td>
<td>265,937</td>
<td>97.6</td>
</tr>
<tr>
<td>Dea</td>
<td>13,257</td>
<td>6,580</td>
<td>6,677</td>
<td>98.5</td>
</tr>
<tr>
<td>Jawie</td>
<td>50,779</td>
<td>24,742</td>
<td>26,037</td>
<td>95.0</td>
</tr>
<tr>
<td>Kissi Kama</td>
<td>20,200</td>
<td>10,083</td>
<td>10,117</td>
<td>99.7</td>
</tr>
<tr>
<td>Kissi Teng</td>
<td>45,109</td>
<td>23,112</td>
<td>21,997</td>
<td>105.1</td>
</tr>
<tr>
<td>Kissi Tongi</td>
<td>50,659</td>
<td>25,680</td>
<td>24,979</td>
<td>102.8</td>
</tr>
<tr>
<td>Kpeje Bongre</td>
<td>25,011</td>
<td>11,953</td>
<td>13,058</td>
<td>91.5</td>
</tr>
<tr>
<td>Kpeje West</td>
<td>27,553</td>
<td>14,076</td>
<td>13,477</td>
<td>104.4</td>
</tr>
<tr>
<td>Luawa</td>
<td>81,610</td>
<td>38,778</td>
<td>42,832</td>
<td>90.5</td>
</tr>
<tr>
<td>Malema</td>
<td>37,042</td>
<td>18,927</td>
<td>18,115</td>
<td>104.5</td>
</tr>
<tr>
<td>Mandu</td>
<td>30,829</td>
<td>14,635</td>
<td>16,194</td>
<td>90.4</td>
</tr>
<tr>
<td>Njaluahun</td>
<td>61,128</td>
<td>30,707</td>
<td>30,421</td>
<td>100.9</td>
</tr>
<tr>
<td>Penguia</td>
<td>26,291</td>
<td>13,120</td>
<td>13,171</td>
<td>99.6</td>
</tr>
<tr>
<td>Upper Bambara</td>
<td>26,712</td>
<td>12,699</td>
<td>14,013</td>
<td>90.6</td>
</tr>
<tr>
<td>Yawei</td>
<td>29,192</td>
<td>14,343</td>
<td>14,849</td>
<td>96.6</td>
</tr>
</tbody>
</table>
4.3.4 Population Distribution and Density
The district has the second largest population in the country and a population density of 140 inhabitants per km².

4.3.5 Population Distribution by Sex
Table 6 above also shows the population distribution by sex. There is a predominance of females over the males, suggesting the high priority for involving females in the development projects.

4.3.6 Settlement Patterns
There are 14 Chiefdom in the Kailahun District where over 90 per cent of the population lives in rural communities in either nucleated or scattered settlements. The population is concentrated in Dara, Segbewa and Kailahun Town, which is the capital of the district.

Figure 8: Chiefdom map of Kailahun District

Migration
With limited employment opportunities in the district and no manufacturing industry, the people migrate to seek employment in towns in other districts such as Kenema town and Freetown or outside the country.

Employment and Income
Subsistence agriculture is the main source of employment with 69% of the adults involved in agricultural labour. This translates into approximately 2 adults per household involved in agricultural labour.

The highest percentage contribution to income for households is from the sale of agricultural crops with sale of cocoa representing (18%) followed by rice (15%) and palm oil (12%). The income received is spent primarily on food (33%), non-food items (47%) and medical expenses (20%).
4.3.4 Tourism
No plans are currently in progress for the development of tourism in the district.

4.3.5 Forestry and Natural Resources
Forests in the district mainly include primary and secondary regrowth with tropical lowland forest covering almost 15 percent of the land area. The fauna found in the district comprise of monkeys, squirrels, and birds. No sensitive species or protected area are found along the road corridor.

4.3.6 Commerce and Industry
Commercial trading activities take place in the towns of Buedu, Kangam and Koindu with the most important being the market day in Koindu. Traders from Guinea, Liberia, Mali, Ghana, Nigeria, Cameroon and Ivory Coast bring in the goods to Koindu for sale in exchange for agricultural products. There is a petrol station in each of the above-mentioned towns.

4.3.7 Health
Medical care services in the Kailahun District are provided by 22 primary health units (PHU) comprising of hospitals and health centers. People in the district also utilize medical services from other sources such as traditional healers and traditional birth attendants. Malaria is the leading disease followed by the infectious diseases of Tuberculosis and Yellow Fever. In terms of population per functioning primary health care facility, the district has the worst, with 15,900 as compared to other district levels of 8000. The ratio of population per hospital bed is 348,500: 1 while the ratio of population per doctor is 174,400: 1.

Rural and District Hospital
Kailahun has one Government operated hospital in Kailahun Town which was refurbished with USAID aids and re-opened in 2004 after the civil war.

Morbidity and Mortality
Malaria, diarrhea, and respiratory tract infection are among the leading causes of deaths in the district.

Health Sector Issues
The following challenges pose serious threats to the health of Kailahun district:

- Unemployment;
- Lack of trained health personnel;
- Extremely weak community awareness of issues of public health concerns;
- Harmful traditional and cultural beliefs and practices;
- Accessibility to basic obstetric care still impossible to most pregnant women; and
- lack of good drinking water

4.3.8 Education
There are currently only seven functioning primary schools and one operational secondary school along the project location. Presently, several primary schools are under rehabilitation but there are no secondary schools. At present 60% of the teachers have recognized qualifications.

Education Sector Issues
The major issues for providing education to the population of the district remains:
• Funding is required to meet the needs of school expansion and qualitative improvement of primary education;
• The need to upgrade the skills of teachers in order to upgrade the quality of teaching;
• Establishing sufficient commercial schools to make primary education accessible for girls; and
• Inadequate educational materials and facilities.

4.3.9 Agriculture
The dominant mode of farming is the slash and burn traditional shifting cultivation technique with rudimentary hand tools such as the hoe and cutlass. Upland rice farming is the main agricultural industry which involves the practice of mixed cropping system. Other food crops include cassava, sweet potatoes, and bananas. Most of these crops are planted as mixed crops.

Livestock
The livestock industry was destroyed during the rebel war. However, there is evidence of restocking of cow, goat, sheep, chicken, duck, and pigs.

Inland Fishing
This is small scale sector which is currently being supported by the Ministry of Agriculture, Forestry and Food Security with facilities such as fishing kits for fishermen.

4.3.10 Mining
The Ministry of Mineral Resources has designated two Chiefdoms where mining can take place. At present, there is no statutory information that this activity is taking place.

4.4 Road Network
General
The predominant mode of transport within the project influence zone is road transport. Generally, the road conditions are very bad especially away from the trunk roads. However, efforts are underway to improve access within the district. When the road is improved, communities in the project corridor will be open therein to economic and social development which will subsequently contribute to the alleviation of poverty. Furthermore, the road maintenance costs spent by SLRA on the road at its present state will drastically reduce.

4.4.1 Mode of Transport
The project corridor is served by all types of vehicles such as mini-buses, trucks, taxis, etc. The road condition and the few vehicles that use the road make transport cost high, both for passengers and for produced goods.
5. PROJECT ALTERNATIVES AND COMPARISON OF ALTERNATIVE

This road project is much needed as the country has suffered lack of good roads connecting major towns and districts. The road serves as an alternative route to the TAH 7 which runs from Guinea to Liberia through Sierra Leone.

Three (3) pavement alternatives were considered and analyzed in the feasibility study, Asphalt Concrete, Concrete, and Interlocking Blocks.

The alternatives were assessed based on cost, environmental impact, and maintenance. Interlocking blocks was the cheapest in terms of construction cost but require a higher maintenance over its lifespan, also due to the undulating terrain it was not considered a suitable option, while the construction cost of concrete doubles that of asphalt and the maintenance cost of asphalt is higher compared to that of concrete. Asphalt Concrete was considered the most suitable option due to construction cost and maintenance because of the undulating terrain.

Consequently, the environmental profile of concrete pavement also significantly depends on the depth of the concrete layer. The environmental burdens from paving and maintenance are rather low compared with those caused by production processes of high-strength concrete. The dust emissions of the concrete pavement are mainly induced by abrasion of the pavement unlike asphalitic concrete. The determining environmental burdens of asphalt pavement are carbon dioxide, sulphur dioxide and nitrogen oxide emissions, dust and energy consumption. The same is true with respect to concrete pavement. Reports have shown that the negative impact for concrete is partly due to the high valuation factors for mercury and cadmium.

The asphalt pavement design was recommended, and three (3) options were considered based on: i) AASHTO, ii) Overseas Road Note 31 and iii) Federal Ministry of Works and Highways Design Manual. The results are shown in the table below:

Table 7: Pavement structure

<table>
<thead>
<tr>
<th>Design Method</th>
<th>Design Thickness (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Asphalt</td>
</tr>
<tr>
<td>AASHTO</td>
<td>50</td>
</tr>
<tr>
<td>Overseas Road Note 31</td>
<td>50</td>
</tr>
<tr>
<td>FMWH</td>
<td>100</td>
</tr>
</tbody>
</table>

The design recommended a pavement structure comprising of 30mm asphalt wearing course and 40mm binder, 200mm base course and 150mm subbase.
6. POTENTIAL ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS

6.1 Introduction
It is certain that the proposed upgrading works will pose environmental and social impacts, both positively and negatively. Such impacts have been identified through two means, namely:

- Through an intensive and extensive field surveys, as well as key stakeholder consultation and public participation forums conducted on the proposed project area. Stakeholders were identified using a stakeholder identification matrix (see annex) and were involved in the identification of the potential impacts.
- Professional judgement from experts and other technocrats to provide a complete list of expected impacts on the road project with regards to the social, cultural, natural, and coastal resources.

The potential environmental and social impacts likely to arise were identified by matching the project activities with the surrounding environmental and socio-cultural resources. The impacts have been categorized according to construction, operation, and decommissioning phases of the project. The magnitude and the extent of the impacts were also quantified in this report.

The negative and positive impacts likely to result from the project are generally associated to the social and biophysical environment and the economic aspects along the area that the road will traverse. The associated impacts are as follows:

a. Biophysical Environment
   - Flora and Fauna
   - Hydrology and drainage of the area
   - Land and Soil
   - Climate/Weather

b. Socio-Economic Environment & Issues
   - Population patterns
   - Settlement trends
   - Land use patterns
   - Health and Safety
   - Culture
   - Trade and industries
   - Transportation and communication
   - Income generation activities

6.2 Methodology for Impact Identification
The road is being classified as Schedule I and II based on the EPA-SL and a Class I under the AfDB’s ISS implying that the project is likely to have significant impact on the environment.

- Location or extent: The area/volume covered.
- Timing: Whether immediate or delayed.
- Duration: Short term, long term, intermittent or continuous.
- Reversibility or irreversibility.
- Likelihood: Probability of the impact taking place.
- Significance: minor, moderate, major.
- Spatial: Whether it is local, regional or global.

The scale that was applied in the analysis of impacts is shown in Table 8 below. In making the observations in Table 10, expert knowledge based on the magnitude of the predicted impacts was relied upon. Positive impacts are assigned positive sign (+), while negative impacts are assigned negative sign (-).

### 6.3 Environmental and Social Impacts during Construction Phase

#### 6.3.1 Beneficial Environmental and Social Impacts

**6.3.1.1 Creation of Employment Opportunities**

The proposed project will create jobs for professionals, skilled as well as unskilled labour at the constructional and operational stages. The services of artisans, site clearers, construction workers, Resident Engineers and surveyors, 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 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. These jobs are expected to improve the economy of the area and improve the livelihoods of the local people.

**Table 8: Levels of Scale Used in the Impacts Analysis**

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
<th>Scale Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No impact</td>
<td>This means that to the best knowledge of the expert, the particular activity/action will not have any known impact on normal functioning of either the human or the natural systems and does not therefore warrant any mitigation.</td>
</tr>
<tr>
<td>±1</td>
<td>Minimal impact</td>
<td>Any activity with little impact on the environment calls for preventive measures, which are usually inexpensive and manageable. Such activities have minimum impacts on either natural or human environment or both.</td>
</tr>
<tr>
<td>±2</td>
<td>Moderate impact</td>
<td>A moderate impact will have localized effect on the environment. If the effect is negative and cumulative, action in form of mitigation measures needs to be put in</td>
</tr>
</tbody>
</table>
place to ensure that it doesn’t become permanent

±3 High impact

An impact is high if it affects a relatively high area (spatial), several biological resources (severity) and/or the effect is felt for a relatively long period (temporal) e.g. more than one year.

In case the effect is negative, such an impact needs to be given timely consideration and proper mitigation measures put in place to prevent further direct, indirect or cumulative adverse effects.

±4 Very high impacts

Such an activity rates highly in all aspects used in the scale i.e., temporal, spatial and severity. If negative, it is expected to affect a huge population of plants and animals, biodiversity in general and a large area of the geophysical environment, usually having trans-boundary consequences. Urgent and place to prevent further direct, indirect or cumulative adverse effects. Activities must be suspended until sufficient effective mitigation measures are put in place.

5 Not known

There are activities for which impacts are not yet known e.g., some chemicals are suspected to produce carcinogenic effects, but this has not yet been confirmed.

This impact will be very high hence given a value of 4.

6.3.1.2 Improvements in the Local and National Economy

Income from the salaries and wages will improve the economy of the town centres and the county at large due to the provision of employment to the locals. The contractor will procure most materials from the project area and as such contribute positively to the local and national economy. The materials for construction may also be procured from other parts of the country, thus positively affecting the national economy.

This impact will be very high hence given a value of +4.

6.3.1.3 Transfer of Skills

Many people from within the project area will be employed to provide different services. As such, the local people will learn new skills from the civil Resident Engineers, welders, masons, and other employees that come from beyond the project area. This impact will be moderate hence a value of +2.

6.3.1.4 Establishment of Market and Supply for Building Materials

The contractor will have to procure building materials such as sand, cement etc. from suppliers within the area or else go beyond the area. Suppliers will have to establish in the area to provide such materials.

This impact will have a moderate value hence a value of +2.
6.3.1.5 Improvement of Local and Regional Trade and Business Opportunities
The road will lead to the growth of local and regional trade. In the construction phase, building materials for road construction will be purchased both locally and regionally. Other small-scale businesspeople such as food vendors, kiosk owners will also benefit during the construction of the road. Farm products will be transported efficiently from the project area to local and regional markets. The export trade will also improve because of the development of the road.
This impact will be moderate hence value of +2.

6.3.1.6 Improved Security
It is expected that the proposed road project will lead to an improvement of security. There may be deployment of police along the project area during the construction. Road patrols may be conducted frequently during the operational phase thereby improving the security of the area.
This impact will be very high hence a value of +4.

6.3.2 Adverse Environmental and Social Impacts

6.3.2.1 Loss of livelihood, land acquisition and involuntary resettlement
The project will lead to loss of livelihood, land acquisition, and involuntary resettlement. A total of 156 structures will be affected including 86 businesses and other livelihood generating facilities, 40 dwelling structures, 28 other structures including unfinished buildings, sign boards and fences, 01 well, and 01 community heritage center (shrine). These impacts are considered very high (-4).

6.3.2.2 Noise Pollution and Excessive Vibrations
Excavation, construction, and demolition works in the project area will usually result in high noise and vibration levels. Noise and vibrations will emanate from transportation vehicles, construction machinery, metal grinding and cutting equipment, and among others. However, the Contractor shall take appropriate steps to minimize noise pollution through provision of appropriate personal protective equipment to construction workers, reducing the frequency of transportation of construction materials and ensuring that all construction machinery is well maintained.
This impact will be moderate hence value of +2.

6.3.2.3 Air pollution
During the construction, excavations, demolitions, and transportation of building materials will result in the emissions of large amounts of dust within the project site and surrounding areas. The diversion of traffic in the construction phase will also contribute to dust emissions. The Contractor will reduce this by sprinkling water on the areas that transport trucks use, excavated areas, and the diversion routes on daily basis.
This impact will be moderate hence value of -2.

6.3.2.4 Increased solid waste generation
Volumes of solid wastes will be produced during the different phases of the project development. Solid waste materials will be generated during demolition
works as well as from various packaging materials. Significant quantities of rock and soil materials will be generated from earth moving during construction activities. Solid waste generation during operation and maintenance activities will include road resurfacing waste (e.g., removal of the old road surface material), road litter, illegally dumped waste, or general solid waste from camp sites; vegetation waste from the clearance of road reserves; and sediment and sludge from storm-water drainage system. Paint waste may also be generated from road and bridge maintenance (e.g., due to removal of old paint from road stripping and bridges prior to re-painting).

The Contractor shall ensure that all solid wastes are collected and disposed appropriately to promote a clean and healthy environment along the transport corridor. The Contractor shall comply with recommendations provided in the ESMP, to be enhanced by a Solid Waste Management Plan that is detailed, effective and compliant. The plan shall be developed within the provisions of an Integrated Solid Waste Management approach, facilitating in implementation of the Three (3) R Principles of Solid Waste Management; Reduce (Source Reduction), Recycle and Reuse.

This impact will be moderate; hence value of -2.

6.3.2.5 Increased Energy Consumption
The upgrading of the proposed road is expected to lead to an increase in traffic between Kailahun, Koindu and Guinea/Liberia borders. Also, most of the traffic will be flowing faster. It is thus expected that this will lead to increased consumption of fossil fuel particularly petrol and diesel. It is also expected that there will be high consumption of fossil fuels due to high number of construction machineries and trucks that will be deployed in the project. In view of the measures that will be put in place to reduce consumption of fossil fuels, this impact will be moderate (value of -2).

6.3.2.6 Discharge of Sewage and Wastewater and Degradation of Water Quality
A lot of wastewater and sewage will be generated during the construction phase of the project. This will take place in construction camp sites and in various settlements located along the road. This is attributed to increased activities in these towns. There will be impact due to the oil spillage, used oil disposal and others during the construction of the project.

All these have the capacity to degrade surface and subsurface water quality.

This impact will be moderate; hence value of -2.

6.3.2.7 Water Abstraction and Consumption
During the reconstruction of the road, there will be increased abstraction of water from rivers and streams situated along the proposed route of the road. The water level increases during the rains due to downpour and reduces during the dry season. The rate of abstraction of water may reduce the flow of water in the rivers especially during the dry season as most of the rivers are seasonal leading to possible degradation of aquatic ecosystems due to reduction in base flows.

This impact will be moderate hence value of -2.
6.3.2.8 Distortion in Hydrological Regime
The expected increase in water abstraction from rivers, streams, and wetlands may modify the hydrological characteristics and regimes of these water bodies. Also, quarries and pits for extraction of road construction materials (ballast, soil, etc.) may provide localized areas for surface water infiltration with the possibility of recharging groundwater aquifers. However, water collecting in such open pits may also provide a large surface for the evaporation of water. Surface runoff may also accumulate along the sides of the highway preventing directly flow to river channels.

This impact will be low; hence value -1.

6.3.2.9 Generation of storm water and impact on drainage
The proposed reconstruction and widening of the road by asphaltic sealing will increase the amount of impermeable surface area, which increases the rate of surface water runoff. The project will also impact on the drainage during the construction phase of the road. There will be increased generation of surface runoff on the road. The increased or excess runoff could overwhelm local drainage systems including streams with potential for increasing downstream flooding, damage to property and crops. Flooding downstream can also become a health hazard (e.g., breeding grounds for mosquitoes, etc.). Good drainage design and construction in the development of roads is critical to the success of road construction. Also, storm water generated on the road may be contaminated with oil and grease, metals (e.g., lead, zinc, copper, cadmium, chromium, and nickel), particulate matter and other pollutants released by vehicles on the highway. Storm water may also contain nutrients and herbicides used for management of vegetation in the rights-of-way.

This impact will be moderate; hence value -2.

6.3.2.10 Increase in Risk of Soil Erosion and Soil Quality Degradation
As earlier mentioned in the sub section above, the reconstruction of the road will involve creation of large impervious surface that restricts the infiltration of rainwater. This leads to high generation of surface runoff that flows on the sides of the road in drainage ditches. Where the surface runoff is channeled directly to bare steep slopes with loose soil, it can lead to serious soil erosion problem. This can undermine the stability of the road including associated facilities such as bridges. Sediment and erosion from construction activities and storm water runoff may also increase turbidity of surface waters.

This impact will be moderate; hence the value -2.

6.3.2.11 Loss of Vegetation Cover and Biodiversity
During the construction phase of the project, there will be clearance of vegetation along the corridor to pave way for the proposed road. It is also expected that the project will require huge quantities of materials such as ballast, murrum, stones, conglomerates, sand, gravel, and soil, among others. In addition, the contractors will install several material camp sites as well as a batching plant that will impact on the environment, especially with the vegetation cover around the camp sites. The Contractor shall ensure that campsites and quarries are constructed in areas that are not high in vegetation density. An estimated area of 106.64Ha arable/farmland is to be cleared including land for borrow and quarry sites.
All borrow pits and quarries will need to undergo a separate specific Environmental and Social Management Plan by the contractor to ensure there will be no major negative impacts.

This impact will be moderate; hence value of -2.

6.3.2.12 Disturbance to Wildlife
The project area has wildlife that roam freely. There exists a concern that the wildlife will be disturbed considering they will not have freedom of movement from one side to the other side of the road since they will only be forced to use the underpasses. The influx of many people working at the project may also cause change in animal behavior. Reduced movement of wild animals may lead to concentration in certain areas leading to overgrazing, damage to natural vegetation and general loss of ecological integrity of the ecosystem along the road. There would also be visual and auditory disturbance due to the presence of machinery, construction workers, and associated equipment. The Contractor shall fence all the borrow pits and boreholes to avoid wildlife accidents.

This impact will be low; hence value of -1.

6.3.2.13 Spread of STD, HIV and AIDS
Transmission of these diseases 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 sexual favours for money.

National surveys by the Ministry of Health (MoH) have indicated that 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 them. Despite a reduction in prevalence of the infection in the country indicating that the situation is stabilizing, there is still a need for concerted action to maintain those interventions that have led to this reduction.

The Contractor will need to work jointly with appropriate county and national government health agencies to come with a comprehensive STD, HIV and AIDS control programme during the construction and operational phases of the project.

This impact will be moderate; hence value of -2.

6.3.2.14 Insecurity
There are concerns that due to an influx of many people as construction workers at the project, insecurity is likely to increase. There will be increased risk of poaching of wild animals. Also, construction workers may be attacked by wild animals which are prone in areas where the proposed road passes.

This impact will be low; hence value of -1.
6.3.2.15 Delays in Transportation
During construction phase, the road traffic will be controlled and, in some cases, complete road closure will be necessary especially at river crossings. This will entail disruption to traffic flows resulting in delay to transport of people and goods. There will be also delays caused by diversion during construction.

This impact will be low; hence value -1.

6.3.2.16 Cultural Changes
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. This impact will be low (-1).

The road traverses land inhabited by Kissi and Mende tribes who are predominantly Muslims.

6.3.2.17 Disruption and Loss of Businesses
It has been observed, during the field visits, that few squatters have established small-scale businesses and temporary structures on the road reserves in towns and villages along the route. These squatters will need to be evicted from the road reserve to pave way for the proposed road reconstruction project. This eviction will surely lead to loss of livelihood. A total of 86 businesses and other livelihood generating facilities including shops and workshops will be affected. This impact will be very high.

6.3.2.18 Occupational Safety and Health
Various occupational safety and health hazards will be associated with the construction and operation of the proposed road. These will include the physical hazards, chemical hazards, and noise physical hazards. Exposure to road construction materials, dust, exhaust emissions from heavy equipment and motor vehicles constitute chemical hazards during all road construction activities. Road construction and maintenance personnel are exposed to a variety of physical hazards from operating machinery and moving vehicles but also working at elevation on bridges and overpasses. Other physical hazards include exposure to weather elements, noise, work in confined spaces, trenching, contact with overhead power lines, falls from machinery or structures, and risk of falling objects. There is also a possibility of accidents when transporting workers to the construction sites.

This impact will however be insignificant or low: hence a value of 1.

6.3.2.19 Community Health and Safety
Community health and safety issues will emerge during the proposed reconstruction of the road. The impacts will include dust, noise, and vibration from construction vehicle transit, and communicable disease associated with the influx of temporary construction labor. Significant community health and safety
issues associated with the proposed road project will include pedestrian safety, traffic safety, and emergency preparedness.

Pedestrians and motor cyclists are at greatest risk of serious injury from collisions with moving vehicles. Children will generally be the most vulnerable due to lack of experience and knowledge of traffic related hazards, their behavior while at play, and their small size making them less visible to motorists. Collisions and accidents can involve a single or multiple vehicles, pedestrians or motor cyclists and animals. Many factors contribute to traffic accidents. Some are associated with the behavior of the driver or the quality of the vehicle, while others are linked to the road design, or construction and maintenance issues. Emergency situations most associated with road operations include accidents involving single or multiple vehicles, pedestrians, and/or the release of oil or hazardous materials.

The vehicular movement will cause disturbances to local communities at night and interfere with their sleep. This problem is likely to be greater in the future as vehicular traffic is set to increase several folds.

The impact scale is however considered to be significant; hence a value of $+2$.

**6.3.2.20 Gender and Equality Biases**

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 because they are more economically sound than the women. Men are often preferred for employment in development projects; and with the coming of the proposed upgrading of the section between Buedu – Koindu – Guinea/Liberia Borders road, this trend could worsen. In the face of present admonishing of women empowerment, this could be a setback as the women in the project communities may be further suppressed into the throes of economic dependency.

**6.4 Environmental and Social Impacts during Operation Phase**

**6.4.1 Beneficial Environmental and Social Impacts**

**6.4.1.1 Creation of Employment Opportunities**

Employment opportunities will ensue during the operation phase, both directly and indirectly. For the direct employment opportunities, people will be employed for the normal and continuous road maintenance. For the indirect employment opportunities, vehicular traffic will increase hence providing employment to the drivers and “motor boys”. Roadside businesses will also spring up ranging from small shops to big petroleum filling stations and garages along the road. This will in turn create indirect employment opportunities to the indigenes.

This impact will be very high; hence value $+4$.

**6.4.1.2 Improvement In District Socio-Economy**

It is certain that the proposed road reconstruction will contribute immensely to the development of business at the trading centers along the route. The following socio-economic benefits will result:
• Increased business opportunities at settlements and markets along the route due to the increased vehicular traffic. Such businesses may include petrol filling station, garages, shops etc.,
• Employment of indigenous workers during the operation phase of the project;
• Strengthening of local economy through the establishment of micro-enterprises such as foodstuff sales points.

The implementation of the project will result in the improvement of the living conditions of population living along the road thus contributing to poverty reduction.

This impact will be very high; hence value +4.

6.4.1.3 Increased Security
The road will make it easier for road patrols and security operations to be conducted in the area. Additionally, the road will lead to an improvement in the communication infrastructure as such making it easy for the relaying of crime reports.

The impact will be very high hence value +4.

6.4.1.4 Provision of a Cheaper and Faster Means of Transport
The proposed road project will provide a faster and cheaper means of transport for cargo and passengers traffic between Kailahun and Koindu. This will considerably reduce additional travelling and transportation costs being incurred currently and improve the current transport situation along the road. At present and during rainy seasons, the road is rendered impassable; however, asphalting will solve this problem. Provided along with the road project are bridges and associated road infrastructure which shall be constructed to enhance transportation.

This impact will be very high; hence value of +4.

6.4.1.5 Improvement to the National Economy
The main mode of transportation in the area is road transport. There are no other options for transport in the project area. Generally, the project road plays an important role in the area by transportation of passengers to the various settlements along the project road.

With improved road conditions, it is expected that there will be improved transport within the region. This is likely to benefit the local and regional economy in the short term and the national economy in the long term. There will also be easier access to the essential services offered in the neighbouring districts.

6.4.1.6 Revitalization of Large-Scale Agriculture in the Area
The project area is agricultural. The locals are largely farmers. However, the up scaling and growth of this farming has been hindered by the poor transportation network in the region. Therefore, the construction of the proposed road project in the area will offer numerous opportunities for farmers to upgrade their business and hence lead to the improvement of agriculture.

This impact will be very high; hence value of +4.
6.4.1.7 Reduction in Dust and Particulate Matter Emissions
The current carriage way is made of earthen material. Dust is a major concern as vehicles plying the route makes the area along the road quite dusty during dry season. Paving of the road surface with bitumen will eliminate dusty conditions experienced by users and villages located along the proposed road project.

This impact will be high; hence the value of 3.

6.4.1.8 Improved Road Safety
Road projects can lead to reduction in accidents when they involve significant improvements in vertical and horizontal alignments, improved carriageway width, junction layout or greater separation of pedestrians, non-motorized traffic and motor vehicles. The improvement of the project road may lead to significantly increased running speeds; the standard speed of the road will be 80 Km/hr - 100 Km/hr and is likely to induce significant generation of traffic. This will shorten the travelling time and transportation cost.

The proposed project design will contribute to improving road safety and the comfort of road users in several ways such as:

- Sight distance and visibility especially at approaches to bridges will be improved.
- Road signs (both warning and directional) and road markings will be included in the design;
- Adequate shoulders will be designed throughout its road corridor.

6.4.2 Adverse Environmental and Social Impacts

6.4.2.1 Noise Pollution and Excessive Vibrations
It is feared that there will be noise during operation stage of the project due to vehicular high speed along the road since its design speed is 80-100km/hr.

This impact will be moderate; hence value of -2.

6.4.2.2 Possible Risks of Accidents on the Road
With the asphalting and tarring of the road, vehicles will be travelling at a design speed of 80-100km/h. Considering the above-mentioned speed, there is a likelihood of possible accidents along the road, and more especially near villages. Road bumps, rumble strips and signage need to be provided throughout the road length and especially in towns and villages to reduce these incidences.

This impact will be moderate; hence the value of -2.

6.4.2.3 Generation of Solid Waste
Solid waste generation during operation and maintenance activities will include earthen materials, road litter, illegally dumped waste, or general solid waste from villages; vegetation waste from the clearance of road reserves; and sediment and sludge from storm water drainage system. The Contractor shall ensure that all solid wastes are collected and disposed of appropriately in order to promote a clean and healthy environment along the transport corridor.

This impact will be moderate; hence value of -1.
6.4.2.4 Energy Consumption
The construction of the proposed road project is expected to lead to an increase in traffic movement between Kailahun and Koidu and beyond. Also, most of the traffic will be flowing faster. It is thus expected that this will lead to increased consumption of fossil fuel, particularly petrol and diesel. It is also expected that there will be high consumption of fossil fuels due to high number of construction machineries and trucks that will be deployed in the project.

This impact will be moderate in view of the measures that will be put in place to reduce consumption of fossil fuels; hence value of -1.

6.4.2.5 Storm Water and Impact on Drainage
Construction of sealed roads (tarmacked road) increases the amount of impermeable surface area, which increases the rate of surface water runoff flow. The project will also impact on the drainage during the operational phase of the road. There will be increased generation of surface runoff on the road. The increased or excess runoff may likely overwhelm local drainage system including streams with potential for increasing downstream flooding, damage to properties, etc. Good drainage design and construction in the development of roads is critical to the success of road construction. Also, storm water generated on the road may be contaminated with oil and grease, metals (e.g. lead, zinc, copper, cadmium, chromium, and nickel), particulate matter and other pollutants released by vehicles on the road.

This impact will be high: hence value of -3.

6.4.2.6 Soil Quality Degradation Due to Oil Spills
Due to the increase in the traffic, it is expected that there will be an increase in the number of fuel stations and service garages established along the route. Oil residuals from such fuel service stations, motor garage yards and roadside truck parking are anticipated to impact the soil quality. The impact on soil quality from these activities will be cumulative. The impacts will be significant in settlements along the road.

This impact will be moderate; hence value of -3.

6.5 Environmental and Social Impacts during Decommissioning Phase

6.5.1 Beneficial Environmental and Social Impacts
6.5.1.1 Creation of Employment Opportunities
In the event of decommissioning, the indigenes/locals will gain employment from the various jobs that will arise.

6.5.1.2 Rehabilitation and Restoration of the Site to Its Original Status
During the decommissioning of the project, the area will be rehabilitated to its original status by revegetating areas where vegetation is cleared, making sure that water ways are cleared to facilitate drainage etc.

6.5.1.3 Reduced Environmental Pollution
Motor vehicles emit air, soil, and water polluting substances. In the unlikely event of road decommissioning, the traffic in the area will reduce, thereby considerably reducing environmental pollution.
6.5.1.4 Reduced Negative Environmental Impacts of Operation
At the operation phase of the project, many negative environmental impacts will arise. Such impacts include disturbance of wildlife, noise pollution, water pollution, road accidents etc. All these impacts will subsequently reduce when the project is decommissioned, however unlikely.

6.5.2 Adverse Environmental and Social Impacts

6.5.2.1 Noise Pollution and Excessive Vibrations
There will be noise and vibration from vehicles and machines that will be used during the decommissioning phase.

6.5.2.2 Solid Waste Generation
A lot of solid waste such as tarmac waste, cement waste, and among other wastes will be generated during decommissioning of the project.

6.5.2.3 Dust Emission
Dust will be emitted by moving vehicles and from the decommissioning works through digging and excavating of the tarmac surface.

6.5.2.4 Reduced/ Loss of Positive Impacts to The Project
During decommissioning, people will lose employment. Drivers, conductors and turn-boys and other bus operators will be affected because of the decommissioning. Other positive impacts that will be accrued during the operation phase like fast movement of goods and services, cheaper transportation etc. will also be reduced.

6.6 Resettlement Action Plan (RAP)
A census of property Affected Persons and structures likely to be affected by the reconstruction to ensure adherence to set guidelines and procedures in mitigating the adverse impacts that might occur during the project implementation was carried out.

The key findings from the study are summarised as in Table 14

An estimated 156 structures will be affected along the entire project corridor hence a detailed Resettlement Action Plan has been prepared for the project with the summary of the structure affected shown in Table below.

Table 9: Summary of Structures affected by the Proposed Road

<table>
<thead>
<tr>
<th>ITEM NO</th>
<th>DESCRIPTION</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Dwelling Houses/Kitchen</td>
<td>40</td>
</tr>
<tr>
<td>2</td>
<td>Business Structures (Shops, Workshops Etc.)</td>
<td>86</td>
</tr>
<tr>
<td>3</td>
<td>Community Structures (shrine, water well.)</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Other Structures (unfinished/Fence, posts, kitchen etc)</td>
<td>28</td>
</tr>
<tr>
<td>5</td>
<td>Cultural Heritage (Shrine)</td>
<td>1</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>156</td>
</tr>
</tbody>
</table>
To capture more comprehensive details on Project Affected Persons (PAP) and their entitlements, the abbreviated RAP shall cover the following:

a. A census survey of displaced people and valuation of assets
b. Description of compensation and other resettlement assistance to be provided.
c. Consultations with displaced people about acceptable alternatives
d. Institutional responsibility for implementation and procedures for grievance redress
e. Arrangements for monitoring and implementation; and
f. Timetable and budget

It is important to note that the road will be designed and constructed along the existing alignment with minor re-alignments allowed minimally as appropriate. Design options that will lead to minimal acquisition or none, has been explored along the project area extents by AIM Consultants Limited.

Additionally, the updated and approved detailed geometric design output that has plans and profiles must ideally guide the Contractor on the exact location of plots to be affected. Valuation of the same shall be undertaken and verified by a registered valuer.
7. MITIGATION/ENHANCEMENT MEASURES AND COMPLIMENTARY INITIATIVES

7.1 Introduction
The proposed upgrading of the Kailahun – Koindu – Liberia/Guinea Border Road Lot II: Buedu – Koindu – Guinea – Liberia Border Roads will have a vast range of impacts on the biophysical environment, health and safety of employees and members of the public, and socio-economic well-being of the local communities and households.

It is usually impossible to mitigate all the expected negative environmental and social impacts. Thus, in this section, an attempt is made to formulate options available and measures for preventing, minimizing, or managing the most significant negative environmental and social impacts for the proposed project already identified in section 6. The aim is to ensure that the most significant negative impacts are minimized as much as possible while maximizing on the positive benefits of the project.

The impact mitigation principles are considered in the sub-sections below. They provide a discussion on the mitigation measures that will be undertaken during construction of the project. It is important to note that a special focus has been given to the negative impacts that are considered significant and that warrant intervention to reduce the level of impact to the local communities and the environment.

7.2 Mitigation Measures during the Reconstruction of the Proposed Kailahun – Koindu – Liberia/Guinea Border Road Reconstruction Project

7.2.1 Mitigation Measures against The Effects of Loss of Livelihood, Land Acquisition and Involuntary Resettlement.
As discussed in earlier sections, the expropriation of land, or compulsory land acquisition, for this project could result in:

- The loss of lands used for petty trading.
- Loss of livelihood for others along the proposed route, and
- Social stress and conflicts

To prevent or reduce the impacts of land acquisition and loss of property, SLRA will adopt the principles of transparency and fairness. To provide transparency, and ensure key members feel engaged in the process SLRA 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, SLRA will:

- Ensure compensation rates for landowners 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.

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.

Grievances are sometimes raised by some project-affected persons (PAPs) during this phase of the project. Grievance resolution procedures must therefore be 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 discussed in the subsections below.

### 7.2.2 Mitigation Measures Against the Effects of Noise Pollution and Excessive Vibrations

Noise pollution and excessive vibrations shall be mitigated as follows:

a. Sensitize drivers of construction vehicles and machinery operators on the need to switch off engines or machinery that are not in use.
b. Ensure that all vehicles and construction machinery are kept in good condition all the time to avoid excessive noise generation.
c. Ensure that all workers wear earmuffs and other personal protective gear/equipment when working in activities generating noise.
d. Undertake loud noise and vibration level activities during off-peak hours during the daytime (i.e., between 8.00 am and 5.00 pm) and be suspended on religious or cultural occasions.
e. Noise levels in the nearest settlement arising from construction activities should not exceed 55 dB.
f. Support facilities such as hard rock quarries should adopt controlled blasting techniques, preventing flying rock debris and high intensity vibrations.
g. Blasting activities along the road corridor and associated quarries shall be undertaken as quickly as possible during the daytime and the public must be properly informed of the activity in time.

### 7.2.3 Mitigation Measures Against the Effects of Air Pollution Due To Dust Generation and Air Emissions

This negative impact of air pollution due to dust generation shall be mitigated in the following ways:

a. Dust suppression measures such as sprinkling will be done on lateritic roads with vehicular traffic.
b. Add suitable soil stabilizers on access roads or pave access roads to control dust.
c. Erection of dust screens around buildings under construction especially at the workers’ camps. Dust control measures also include providing adequate PPE to staffs and erecting dust screens around plants.
d. Collecting storm water and use to de-dust the construction site and the all-weather access roads if volumes stored are sufficient.
e. Comply with personal protective clothing requirement for dusty areas such as dust masks and protective glasses.
f. All vehicles on site will be confined to sign-posted speed limits.
g. Re-vegetating exposed areas during the operation phase of the project.
h. Sprinkling water along the diversion routes or earth along the road section.
i. Slowing the speed of traffic by using bumps and/or clearly marked road signs may contribute to reducing dust levels.
j. Haulage routes will need to be identified and maintained by watering to minimize the impact of dust.
k. Cement will be carefully handled when released from its sack, until it has been mixed with water and rocks to produce mortar or concrete.
l. Trucks carrying earth material and cement will have covered loads and tightly sealed tailgates.
m. Dust control mechanisms at the gravel borrow sites through extraction in wet conditions and transport in covered trucks.
n. Implement dust control measures at the quarry sites and aggregate crushing sites.
o. Covering heaps of soil.
p. Miscellaneous dust sources such as spillages from trucks and silts from sediment controls will be regularly cleaned up.

This negative impact of air pollution due to exhaust emissions shall be mitigated in the following ways:

a. Procure machines, equipment and vehicles which are environmentally friendly.
b. Vehicles and generators will be regularly serviced and handled well to minimize gas/fume emissions from exhaust pipes
c. Discourage plant operators and drivers of construction vehicles from unnecessary revving and idling.
d. Limit construction traffic movement and operations to the most necessary activities through adequate planning.
e. Sensitize construction drivers and machinery operators to switch off engines when not being used.
f. Ensuring that the construction machines, equipment and vehicles have the requisite inspection certificate.
g. Control the speed of the traffic movement by through adequate policing and monitoring.
h. Equipment and vehicles that show excessive emissions of exhaust gases due to poor engine adjustments, or other inefficient operating conditions will not be operated until corrective repairs or adjustments are made.

7.2.4 Mitigation Measures Against the Effects of Solid Waste Generation
This negative impact of solid waste generation shall be mitigated in the following ways:
a. Develop and implement a Construction Waste Management Plan before start of the project.
b. Maximizing the rate of recycling of road resurfacing waste either in the aggregate (e.g., reclaimed asphalt pavement or reclaimed concrete material) or as a base;
c. Incorporating recyclable materials (e.g. glass, scrap tires, certain types of slag and ashes) to reduce the volume and cost of new asphalt and concrete mixes.
d. Collecting road litter or illegally dumped waste and managing it according to the recommendations in the Waste Management Plan.
e. Provision of bottle and can trash disposal receptacles at parking lots to avoid littering along the road.
f. Obsolete products will be managed as a hazardous waste

g. Collecting animal carcasses in a timely manner and disposing them through prompt burial or other environmentally safe methods.
h. Composting of vegetation waste for reuse as a landscaping fertilizer.
i. Managing sediment and sludge removed from storm drainage systems maintenance activities as a hazardous or non-hazardous waste based on an assessment of its characteristics.
j. Management of all removed paint materials suspected or confirmed of containing lead as a hazardous waste.
k. Grinding of removed, old road surface material and re-use in paving, or stockpiling the reclaim for roadbed or other uses. Old, removed asphalt may contain tar and polycyclic aromatic hydrocarbons and may require management as a hazardous waste.
l. Sub-contract a licensed waste handling firm to collect solid wastes on regular basis and dispose off in approved dumping sites.
m. Drainage outfalls will be properly constructed to reduce the erosion from surface runoff and storm water.

n. All non-toxic or non-hazardous wastes that are not designated as combustible will be either recycled or disposed of in an approved landfill. Construction debris will be appropriately stored on site until removed.
o. Refuse generated during the servicing of equipment will be stored and removed from the site and disposed of in an appropriate manner.
p. Used batteries will not be placed in dumpsters or trash containers.
q. Used non-leaking batteries will be collected separately and temporarily stored in a safe place, and in a way that protects human health and the environment.

7.2.5 Mitigation Measures Against the Effects of Energy Consumption

This negative impact of solid waste generation shall be mitigated in the following ways.

a. Promote the use of solar energy and energy efficient bulbs in workers base camps and for streetlights in towns and villages situated along the road.
b. Switch off lights when not in use.
c. Install electricity meters to monitor the consumption of electricity in workers camps.
d. Ensure construction machineries and trucks are well maintained.
e. Use energy-efficient construction machineries and trucks during construction phase of the project.
f. Avoid routing the road on very steep sections.
g. Carry out Energy Audits for evaluation and improvement of energy consumption and saving practices adopted by all parties involved.

7.2.6 Mitigation Measures Against the Effects of Discharge of Wastewater, Sewage and Degradation of Water Quality
This negative impact of wastewater and sewage discharge shall be mitigated in the following ways.

a. Construct a standard septic tank/bio-digester linked to a constructed wetland system.
b. Promote recycling of wastewater and storm water.
c. Install meters in workers’ camps to regulate the use water.
d. Ensure regular maintenance of plumbing system and septic tanks to avoid spillage of raw sewage.
e. Ensure all waters and other releases meet EPA-SLs Environmental Quality Standards for water releases into the environment.

7.2.7 Mitigation Measures Against the Effects Of Water Abstraction and Consumption
This negative impact of water abstraction and consumption shall be mitigated in the following ways.

a. Install water conserving automatic taps and toilets in the various workers’ camps.
b. Install gutters on the roof of the workers’ camp to harvest rainwater.
c. Construct underground reservoir for storage of harvested rainwater.
d. Drilling of a borehole along the road corridor for use to reduce over reliance on water.
e. Harvest surface runoff in borrow pits for use to suppress dust.

7.2.8 Mitigation Measures Against the Effects Of Storm Water And Impact on Drainage
This negative impact of storm water and impact on drainage shall be mitigated in the following ways.

a. Use of storm water management practices that slow peak runoff flow, reduce sediment load, and increase infiltration.
b. Use of vegetated swales; filter strips; terracing; check dams; detention ponds or basins; infiltration trenches; and infiltration basins.
c. Regular inspection and maintenance of permanent erosion and runoff control features.
d. Paving in dry weather to minimize runoff of asphalt or cement materials.

7.2.9 Mitigation Measures Against the Effects of Modification of Hydrological Regime of Project Area
This negative impact of the modification of hydrological regime of project area shall be mitigated in the following ways.
a. Control excessive abstraction of water from wetlands, water pans and boreholes.
b. Provide diversion channels for rivers to avoid complete blockage during construction of bridges and culverts.
c. Re-open all blocked river channels after construction of bridges/culverts.
d. Quarries and pits for extraction of road construction materials to be used as water harvesting sites after reclamation.
e. Surface runoff on the sides of the road will be channeled to areas with gentle slopes to avoid excessive erosion of the road slopes.
f. Construct over passes and bridges in areas occupied by rivers and wetlands.
g. Using clean fill materials around watercourses such as quarried rock containing no fine soil.
h. Avoiding environmentally sensitive wetlands to prevent severe impacts on flora and fauna.
i. A buffer zone of 50 m will be established close to a neighbouring watercourse, but these will be extended in rare cases of sensitive watercourses and wetland.
j. Major construction will be restricted to the dry season to minimize the effect of runoff.
k. If clearing is conducted in the wet season, sediment control measures must be put in place.

7.2.10 Mitigation Measures Against the Effects Of Increased Soil Erosion Risk and Soil Quality Degradation
This negative impact of the increase in soil erosion and soil quality degradation in the project area shall be mitigated in the following ways.

a. Ensure surface runoff generated on impervious surface is not channeled directly to steep slopes.
b. Construct flow breaks on roadside drainage channels.
c. Promote harvesting of surface runoff.
d. Avoiding alignments which are susceptible to erosion, such as those crossing slopes.
e. Constructing run-off channels, contouring or other means of erosion control.
f. 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.

7.2.11 Mitigation Measures Against the Effects Of Loss of Vegetal Cover and Biodiversity
This negative impact shall be mitigated in the following ways.

a. Clearing of vegetation will be restricted to the defined project site. Maintaining trees that will not directly interfere with the project and adequately compensating those to be felled.
b. Neighbouring vegetation will remain undisturbed as site operations personnel will be deterred from conducting any work outside of the designated project site.
c. Minimize clearing of indigenous plant species and replanting of indigenous plant species in disturbed areas.
d. Employ reforestation and afforestation techniques to recover lost plant cover.
e. Design and construction of wildlife access to avoid or minimize habitat fragmentation.
f. Avoiding environmentally sensitive areas to prevent severe impacts on flora and fauna.

7.2.12 Mitigation Measures Against the Effect of Disruption and Loss of Businesses
This negative impact shall be mitigated in the following ways.

- 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.
- Provide support to squatters to establish small-scale businesses in other suitable locations in affected town.
- Educate squatters on the need to maintain free road reserve.
- Provide comprehensive health and safety education to squatters in affected town.
- Setting up of livelihood restoration committees 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 livelihood.
- Provision of subsistence of transitional allowance to squatters.
- Making provisions for the squatters to be employed at both construction and operation stages of the proposed project.
- Put in place a grievance redress mechanism as pointed out in subsections below.

7.2.13 Mitigation Measures Against the Spread of STD, HIV and AIDS
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 SLRA 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. SLRA 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 will 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 will 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.

7.2.14 Mitigation Measures Against Gender Inequality
The Contractor is obligated to ensure that the adverse impact on women and children due to the project are minimized or completely eliminated. Measures that will be taken are:

a. Provision of opportunities for employment of females.
b. Promotion of women empowerment programs.
c. Facilitation of education for children.
d. Undertake gender mainstreaming at project design, implementation/ construction, operation and decommissioning stages.
e. Incorporate best practices in gender mainstreaming from project partners.
f. Developing the project sustainably by transforming the distribution of opportunities, resources and choices for males and females so that they have equal power to shape their own lives and contribute to their families, communities, and countries.

7.2.15 Mitigation Measures Against Population Influx
With the main motivation behind migration of people into project catchment communities being employment, a recruitment control program when properly put in place by SLRA 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 will be achieved by the following:

a. Establishment of a recruitment committee to include appointed officials from EDSA and prominent persons representing the interests of the communities.
b. 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
c. 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. SLRA 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.

### 7.2.16 Mitigation Measures Against Social and Cultural Impacts

SLRA will observe all local customs at the construction and operational phases of the Kailahun – Koidu – Guinea/Liberia Borders road project. SLRA 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 be handed to traditional authorities to be preserved.
- Shrines and sacred groves that lie in the demarcated area will be appropriately relocated.
- EDSA 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.
- Ensure all stakeholders and the public are involved in the planning process.
- Ensure proper identification and compensation of all persons who will lose businesses and land.
- Largely involve the community in the project through their leaders, take keen in timely addressing their grievances and ensure a good percentage of the local community members are employees in the project.

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 SLEPA 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 the ISS 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 Resident 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.

### 7.2.17 Mitigation Measures Against Disturbance to Wildlife

This will be mitigated as follows:

a. Review existing information on species and habitats in the project area. Contact appropriate agencies early in the planning process to identify potentially sensitive ecological resources that may be present in the project area.

b. Conduct pre-disturbance surveys in order to locate site facilities away from important ecological resources (e.g., wetlands, upland habitats, sensitive species).

c. Ensure activities pose minimal impacts to downstream flora and fauna.

d. Ensure protection of important resources by establishing protective buffers to exclude unintentional disturbance.

e. Use existing facilities and disturbed areas (e.g., access roads, graded areas) to the extent possible to minimize the amount of new disturbance. Configure new access roads and rights-of-way (ROWs) to avoid high-quality habitats and minimize habitat fragmentation.

f. Develop a site and ROW reclamation plan that addresses both interim and final reclamation requirements and that identifies vegetation, soil stabilization, and erosion reduction measures.

g. Ensure that interim reclamation of disturbed areas is conducted as soon as possible following facility construction.

h. Develop a plan for control of noxious weeds and invasive plants that could occur as a result of new surface-disturbing activities at the site. The plan should address monitoring, weed identification, the manner in which weeds spread, and methods for treating infestations.

i. Require the use of certified weed-free mulch.

j. Prohibit the use of fill materials from areas with known invasive vegetation problems.

k. Minimize the amount of land disturbance and develop and implement stringent erosion and dust control practices.

l. Minimize the number of stream crossings when locating access roads. When stream crossings cannot be avoided, use fill ramps rather than stream bank cutting. Design stream crossings to provide in-stream conditions that allow for and maintain movement and safe passage of fish.

m. Develop site fencing in conjunction with appropriate natural resource agencies to either allow or prevent site access by wildlife species.

n. Minimizing clearing and disruption of riparian vegetation.
o. Minimize removal of indigenous plant species and replanting of indigenous plant species in disturbed areas.

7.2.19 Mitigation Measures Against Occupational Safety and Health Impacts
This shall be mitigated as follows:

a. Develop and enforce a fleet management plan for road construction that includes measures to ensure work zone safety for construction workers and the travelling public.
b. Establishment of work zones to separate pedestrians and livestock travelling by foot from vehicular traffic and equipment by routing of traffic to alternative roads where possible.
c. Use protective barriers to shield livestock and pedestrians from traffic vehicles, regulation of traffic flow by warning lights, avoiding the use of flaggers, if possible, design of the workspace to eliminate or decrease blind spots, and ensure reduction of maximum vehicle speeds in work zones. Training of workers in safety issues related to their activities, such as the hazards of working on foot around equipment and vehicles.
d. Ensure safe practices for work at night and in other low-visibility conditions, including use of high-visibility safety apparel and proper illumination for the workspace (while controlling glare so as not to blind workers and passing motorists).
e. Barricade the area around which elevated work is taking place to prevent unauthorized access. Working under personnel on elevated structures will be avoided.
f. Hoisting and lifting equipment will be rated and properly maintained, and operators trained in their use.
g. Elevating platforms will be maintained and operated according to established safety procedures including use of fall protection measures (e.g., railings).
h. Use of the correct asphalt product for each specific application and ensuring application at the correct temperature to reduce the fuming of bitumen during normal handling.
i. Maintenance of work vehicles and machinery to minimize air emissions.
j. Reduction of engine idling time in construction sites; Use of extenders or other means to direct diesel exhaust away from the operator; Ventilation of indoor areas where vehicles or engines are operated, or use of exhaust extractor hose attachments to divert exhaust outside.

7.2.20 Mitigation Measures Against Negative Impacts to Community Health and Safety
Community health and safety issues during the construction of the proposed road will be mitigated as follows:

a. Implement pedestrian safety management strategies such as provision of safe corridors/ side road along the road alignment and construction areas, including tunnels and bridges (e.g., paths separated from the roadway which will be used by both pedestrians and livestock), and safe crossings (preferably over or under the roadway) both during construction and operation.
b. Installation of barriers (e.g., guardrails, fencing, plantings) to deter pedestrian and livestock access to the roadway except at designated crossing points.

c. Installation and maintenance of speed control and traffic calming devices at pedestrian crossing areas.

d. Installation and maintenance of all signs, signals, markings, and other devices used to regulate traffic, specifically those related to pedestrian facilities or bikeways.

e. Installation and maintenance of all signs, signals, markings, and other devices used to regulate traffic, including posted speed limits, warnings of sharp turns, or other special road conditions.

f. Construction of roadside rest areas and bus stops at strategic locations to minimize driver fatigue. Installation of measures to reduce collisions between animals and vehicles (e.g., use of signs to alert drivers on road segments where animals frequently cross; construction of animal crossing structures; installation of fencing along the roadway to direct animals toward crossing structures; and use of reflectors along the roadside to deter animal crossings at night when vehicles are approaching.

g. Prepare an emergency preparedness and response plan in coordination with the local community and local emergency responders to provide timely first aid response in the event of accidents and hazardous materials response in the event of spills.

h. Ensure there is adequate wastewater disposal system to avoid breeding of malaria parasite transmitting mosquitos. Proper disposal of wastewater to minimize contamination of water supplies with typhoid causing organisms.

i. Ensure health and safety measures as proposed in the ESMP apply to the letter for quarrying and earth borrowing activities.

7.2.21 Mitigation Measures Against Increased Loss of Human and Animal Life due to Road Accidents
This shall be mitigated as follows:

a. Provide a clear and graded roadside animal track to run parallel to the main road demarcated for use by the locals when transporting livestock.

b. Create livestock holding pens at strategic locations along the road that enhances controlled crossing.

c. Inclusion of road bumps in towns and villages and speed breakers at intersections.

d. Adopt strict policing to ensure that there is no over speeding along the road.

7.2.22 Rural Economy Enhancement Measures
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 are put in place to alleviate the possible negative impacts of this proposed 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 SLRA 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.

7.3 Environmental Risks To The Project
In any project, there are risks associated with it during the project cycle. For the proposed Reconstruction of the Kailahun – Koidu – Guinea/Liberia Borders road project, the following environmental risks are identified and some recommendations to reduce their occurrence are outlined.

7.3.1 Flush Floods Along the Road Corridor
The project area is characterised by seasonal rivers. The seasonal rivers are usually impassable during heavy downpour especially from upstream. The project area is also flat and low lying in some areas, which makes part of the proposed road prone for flooding. The floods could be a risk to the project especially during construction and operation phases as they could lead to loss of properties, roads and even lives.

It will be prudent for the Contractor to consider the highest recorded flood levels of the area and include the data in the design of the various river crossings. During construction, it will also be prudent for the Contractor to ensure measures have been put in place to provide adequate warning before flooding. This will ensure adequate evacuation is done prior to the floods. A Storm Water Management Plan will also be required to state the measures to be taken during the flooding periods.

7.3.2 Fire
If vegetation growth is left unchecked or the slashed remains during routine maintenance are left to accumulate within the right-of-way, sufficient fuel can accumulate that may promote forest fires. Recommended measures to prevent and control risk of forest fire include:

• Monitoring of right-of-way vegetation according to fire risk.
• Removal of blow down and other high-hazard fuel accumulations.
• Trimming, slashing, and other maintenance activities to avoid seasons when the risk of forest fires is high.
• Removal of maintenance slash or management by controlled burning. Controlled burning should adhere to applicable burning regulations, fire suppression equipment requirements, and typically monitored.
• Planting and management of fire-resistant species (e.g., hardwoods) within, and adjacent to, rights-of-way.
7.3.3 Environmental Risk Management
The failure of environmental mitigation can result in serious impacts such as erosion, increased road accidents and disruption of the community lifestyles. Construction of a road also involves occupational health and safety risks to road workers, primarily in the areas of storage and handling of dangerous materials, and operation of heavy machinery close to traffic, slopes and watercourses.

The anticipated risks in this project include:

- Exposure to excessive dust particles or toxic fumes from bitumen and other chemicals used in road works.
- Potential for collapse of trenches.
- Risk of accidents involving passing traffic.
- Risk of bush fires during dry seasons
- Risk of rock falls during blasting
- Risk of fuel spills and therefore contaminating soil and groundwater.

The above risks will be mitigated to some extent through:

- Strengthening staff skills and training in environmental management
- Monitoring environmental actions and responsibilities and making provision for remedial actions
- Planning for remedial measures in case initial planned actions are not successful.
- Limiting time of exposure to dust particles, chemicals and noise
- Provision of Personal Protective Equipment (PPE)
- Establishing safety and inspection procedures in materials handling, operating heavy equipment and constructing trenches
- Safe handling of toxic materials, explosives and other hazardous substances.
8. EXPECTED RESIDUAL EFFECTS AND ENVIRONMENTAL HAZARD MANAGEMENT

8.1 Construction Hazards
The roadworks will pose occupational hazards/risks and accidents involving motorized road construction equipment, asphalt plant and stone quarries. The following measures are proposed to control this risk:

- Theft of property: All contractors equipment’s will be stored in one central place manned by a licensed company guard.
- Blasting explosives safety: During road construction, the contractor will ensure the following.
  - All explosives are delivered to quarry sites (under security escort as per the laws of Sierra Leone), on the day of blasting and any remnants returned to the security apparatus’ custody after blasting. After each blast, site inspection will be conducted for undetonated explosives.
  - Warning is given to local communities located close to the quarry site before blasting.
  - Inspection of the blasting incident in communities conducted immediately after detonating to identify any damage to private property which is to be duly compensated.
- Landslides: immediate evacuation of all workers and equipment in the event of any working signs of landslides
- Accidents from equipment: trained/certified operators are to operate motorized equipment.
- Risk of burns/scald at asphalt plant: this risk will be averted by contractors using only licensed operators following stringent safety procedures. Operations involving hot bitumen shall be limited to daytime in adequate sunlight.
- Fire safety: Fire safety equipment and personnel shall be provided in worker’s camp. Warning signs shall be provided at areas of potential fire source e.g. fuel storage areas.
- Medical emergency response: a clinic and standby vehicle shall be provided by the contractor for the transport of any accident victim to a nearby hospital. First aid facility will be provided on sites, equipment yards and camps.

8.2 Increased Road Safety Hazards During Operation
The road itself will become inherently safer than at present, as a result of improvements in surfcaing condition, geometry etc. During the operational phase, traffic levels are also unlikely to be high enough to give rise to problems of crossroad access for pedestreians. However, average vehicle speeds will be higher than at present

Pedestrian and livestock are likely to continue to use the whole width of the road and it is evitable that there will be an increase in accidents, particularly along rural sections, until people adjust to the change conditions.
Drivers, pedestrians and livestock will gradually become accustomed to the increased traffic and vehicular speed, and it is likely that the number of accidents will decrease after being at a relatively high rate in the beginning of operation.

It is very difficult to see that any physical measures taken which will effectively reduce the accident rate, since the problems are essentially related to driver behavior and level of competence. In the long term, better driver training and requirement of higher standard of competence to be achieved before the issuance of license.

8.3 Increased Noise Pollution During Operation
Noise is a growing form of pollution and can interfere with communication, increase stress and annoyance. According to the WHO, traffic noise is associated with sleep problems, tiredness, headaches, high blood pressure, hormonal effects, stress and increased risk of heart disease.

The operational phase of the project will see increase in number of vehicles plying the road and an associated increase in speed. This effect with the condition of the road often becomes a nuisance.

No mitigation measures are deemed appropriate in this instance. The locations where potential noise impacts may occur are in built up settlement, where noise levels are already elevated. The provision of noise mitigation measures in the form of noise barriers is not feasible in such areas.

8.4 Pressure on Local Medical Services
Construction is inherently a relatively dangerous industry and accidents invariably occur. In rural areas, which are already deficient in terms of adequate medical services, the presence of a relatively small contractor’s workforce can impose additional strain, reducing the effectiveness of the service as far as the local population is concerned. It is also reasonable to expect the contractor to exercise a duty for care towards the workforce in relation to injuries sustained at work.

It is unreasonable to expect the contractor to provide full emergency medical facility for the workforce; however, provision of adequate first aid facility is a requirement. The implementation of the Health and Safety Plan should provide a means of budgeting for the provision of a trained personnel and first aid kits suitable to handle minor injuries at all times. The facility provided by the contractor for his workforce shall as much as possible be made available in emergency to the local community at marginal cost, as a goodwill gesture.
9. MONITORING PROGRAM

9.1 Environmental Monitoring Plan

Environmental monitoring is an essential component of project implementation. An Environmental Monitoring Plan (EMP) provides mechanism of monitoring environmental impacts of a project during its execution to reduce their negative effects and to introduce standards of good practice to be adopted for all project works. The EMP facilitates and ensures the follow-up of the implementation of the proposed mitigation measures proposed in the ESMP. The parameters of the proposed Kailahun – Koindu – Guinea/Liberia Borders road identified for monitoring include water quality, air quality, solid waste generation, Occupational Health and Safety risks, wildlife/livestock/human accidents, HIV/AIDS incidences, soil erosion, storm water drainage, livelihood and environmental risks. This is represented in Table 15 below.

### Table 9: Environmental Monitoring Plan for the Proposed Project

<table>
<thead>
<tr>
<th>Environmental Component</th>
<th>Parameters To Be Monitored</th>
<th>Frequency Of Monitoring</th>
<th>Lab Materials And Equipment/Other Requirement</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Quality</td>
<td>pH, Total Suspended Solids (TSS) and Total Dissolved Solids (TDS), heavy metals, oils and grease, TSP, NOx, SO2, CO, Dust particles, particulate matter etc.</td>
<td>Quarterly</td>
<td>Sampling bottles, cooler box. Access to a NEMA accredited laboratory</td>
<td>Contractor and EPA-SL</td>
</tr>
<tr>
<td>Air Quality</td>
<td></td>
<td>Continuous</td>
<td>Air sampling equipment</td>
<td>Contractor and EPA-SL</td>
</tr>
<tr>
<td>Solid Waste Generation</td>
<td>Slag, domestic refuse, metallic scraps, sludge, waste composition, treatment methods</td>
<td>Monthly</td>
<td>Waste sampling bins, plastic bags, boxes, weighing machine</td>
<td>Contractor and EPA-SL</td>
</tr>
<tr>
<td>Human Accidents</td>
<td>Total number of human accidents, categories of humans knocked down, accident locations.</td>
<td>Continuous</td>
<td>Accident recording book, camera, field patrol vehicle, GIS machine</td>
<td>Contractor and SLEPA</td>
</tr>
<tr>
<td>Wildlife Accidents</td>
<td>Total number of wildlife accidents, types of animals knocked, accident locations</td>
<td>Continuous</td>
<td>Accident recording book, camera, field patrol vehicle, GIS machine</td>
<td>Contractor and SLEPA</td>
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</tr>
<tr>
<td>Environmental Component Parameters To Be Monitored</td>
<td>Frequency Of Monitoring</td>
<td>Lab Materials And Equipment/Other Requirement</td>
<td>Responsibility</td>
<td></td>
</tr>
<tr>
<td>Soil Erosion</td>
<td>Soils eroded, Turbidity in storm water and other water sources, sources and causes</td>
<td>Continuous</td>
<td>Camera, field vehicle</td>
<td>Contractor and SLEPA</td>
</tr>
<tr>
<td>Storm Water Drainage</td>
<td>Rainfall volume, Topography</td>
<td>Continuous</td>
<td>Rain-gauge, field survey maps</td>
<td>Contractor and SLEPA</td>
</tr>
<tr>
<td>Environmental Risks</td>
<td>Fire outbreak, floods etc.</td>
<td>Continuous during operation stage</td>
<td>Field inspections and information from lead agencies</td>
<td>Contractor and SLEPA</td>
</tr>
<tr>
<td>Occupational Health and Safety Risks</td>
<td>Safety training for workers, accident reports and records, number and types of accidents, hazards</td>
<td>Continuous</td>
<td>Incidents logbook</td>
<td>Contractor and SLEPA</td>
</tr>
</tbody>
</table>

9.2 Environmental and Social Monitoring and Reporting
Monitoring is a key component of the ESMP during project implementation. Monitoring shall be undertaken at the Kailahun – Koidu – Guinea/Liberia Borders road project implementation phase to verify the effectiveness of impact management, including the extent to which mitigation measures are successfully implemented. Monitoring shall involve three areas namely:

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

The aim of monitoring will 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.
9.3 Compliance Monitoring
This is to verify that the required mitigation measures, which are the environmental and social commitments agreed on by the SLRA (Proponent) and SLEPA (main environmental regulator) will be implemented. Compliance monitoring will include inspections during construction of the project’s activities 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 Kailahun – Koidu – Guinea/Liberia Borders road project will also be monitored. Compliance monitoring will be done by the EPA-SL.

9.4 Impacts Monitoring
Monitoring of sub-projects impacts mitigation measures shall be the duty of the EPA-SL. The Environmental and Social (E&S) safeguards given to the Contractor in the contract specifications shall be monitored to ensure that works are proceeding in accordance with the laid down mitigation measures. The SLRA shall ensure that the Contractor submits report on work progress and any challenges in observing the E&S safeguards. The monitoring results shall form a major part of the reports to be submitted to the EPA-SL and MLCPE.

9.5 Cumulative Impacts Monitoring
The impacts of the Kailahun – Koidu – Guinea/Liberia Borders road project on the environmental and social resources within the project’s area of influence will be monitored with consideration to other developments which might be established near the project area. There will be collaboration between SLRA and other proponents to compare E&S safeguards guiding the individual projects implementation to ensure comprehensive management of cumulative impacts.
10. PUBLIC CONSULTATIONS AND PUBLIC DISCLOSURE

10.1 Introduction
This section describes the process of public consultation and participation that was followed to identify the key issues and impacts of the proposed project. The chapter also demonstrates compliance with Equator Principles 5 on Stakeholder Engagement which states that; For all Category A and Category B Projects, the EPA will require the Client to demonstrate effective Stakeholder Engagement as an ongoing process in a structured and culturally appropriate manner with Affected Communities and, where relevant, Other Stakeholders.

Stakeholder involvement and public consultation about the proposed was carried out on two (2) separate occasions: i) during the design phase of the project in 2019 and ii) during the preparation of the financing of the Lot II under the MRU RDTFP Phase IV in 2023.

The initial consultation focuses primarily in two towns Kailahun and Koindu to capture the key concerns of stakeholders along the proposed road corridor. The Stakeholder Engagements were done to foster better mutual understanding, address concerns and incorporate opinions to this report.

Views from the residents, local leaders, surrounding institutions and development partners for the proposed upgrading works, who in one way or another would be affected or had interest in the proposed project were sought through interviews and public meetings as stipulated in the Environment Agency Protection Act, 2008 on ESIA. Appendices 1 and 2 contain photographs of the Stakeholders’ Meetings at Kailahun and Koindu.

10.2 Consultation and Public Participation
The public consultation involved the various stakeholders concerned with or affected by the project, the local authorities, and residents. The Consultative Stakeholder Engagements and Public Participation meetings involved key informants such as:

1. Sierra Leone Roads Authority (SLRA)
2. Kailahun District Government
3. Paramount Chiefs,
4. Section Chiefs
5. Kailahun, Koindu and other settlements’ inhabitants

The first batch of stakeholder engagements were held on 18th October 2018 at Kailahun and on 19th October 2018 at Kailahun, Buedu and Koindu. However, consultations were carried out in all settlements along the project road. Key stakeholder engagements were also conducted on 20th October 2018 at Freetown.

The second public engagement was done between 3-7th June 2023. The engagement employed both focus group discussions and individual or one on one
engagements with women, youth, trader’s associations, residents, and civil society.

Local Authorities along the road corridor were also consulted for any perceived impacts unique to their area or settlement for purpose of influencing the final design of the road, provision of street furniture and other amenities. Border Immigration and security officers were also engaged and discussions with them surrounded what provisions could enhance Border security and trading activities. Special attention was given to the provision of Infrastructure for the enhancement for Border security.

The general objectives of the consultation and public participation were to:

- Disseminate and inform the stakeholders about the project with special reference to its key components and location.
- Create awareness among the public on the need for the ESIA for the proposed project.
- Gather comments, suggestions, and concerns of the interested and affected parties.
- Incorporate the information collected in the ESIA study.

The pictures in Appendices 1 and 2 show some of the engagements during the Stakeholder Engagement and Public Participation meetings conducted on both occasions.

10.3 Methodology used in Stakeholder Engagement and Public Participation

The Consultative Stakeholder Engagements and Public Participation meetings involved in-depth consultations with key informants including:

- Sierra Leone Roads Authority (SLRA)
- Kailahun District Government
- Kailahun Chiefs
- Koindu Chiefs
- Kailahun, Koindu and other settlements’ inhabitants

In-depth interviews were used as a tool for stakeholder identification and mobilization as well as collection of baseline data and information. In addition, it provided an opportunity to the participants to raise their concerns about the proposed project and make recommendations on how negative impacts are minimized.

The stakeholders who will be affected or have interest in the proposed Kailahun – Koindu – Guinea/Liberia Border Road includes the Kailahun District Council, Civil Society and Community Based Organisation (CBO), farmers, landowners, and traders along the proposed road corridor.

The opinions of the above stakeholders were taken into account during the discussions and interviews and are summarized in Annex minutes of engagement.

10.4 Key informant interviews

About 50 members of the public working, residing and those owning business properties along the existing Kailahun – Koindu – Guinea/Liberia Border Road were engaged in the discussions (See the lists in Appendix 2). The discussion
exercises were conducted by experienced experts from SLRA, and the discussions conducted in such a way that the stakeholders concerns, comments and issues were comprehensively captured. The completion of the discussions subsequently allowed for the synthesis and analysis of issues that arose which provided basis upon which the environmental, economic and social aspects of the ESIA was undertaken. The purpose of carrying out the interviews was partly to identify the positive and negative impacts of the project. Interviews also assisted in the identification of miscellaneous issues that if overlooked may introduce conflicts that may hamper the implementation of the project.

From the public participation, it was apparent that the some of the members of the public were mostly aware of the proposed project, although no formal public meeting had been held prior to the public participation. Representatives of AIM Consultants Limited therefore presented the details of the project to the stakeholders.

The project was received with mixed reactions by the members of the public as they anticipated numerous impacts, both negative and positive. The local communities and major stakeholders independently expressed their views on the project (See Plates in Appendix).

10.5 Positive Comments made by the Stakeholders
The following sub-sections provides details on the beneficial impacts of the proposed project as expressed by the stakeholders who were interviewed:

10.5.1 Creation of Employment Opportunities
The respondents who were interviewed were optimistic that the project will create numerous employment opportunities for both for skilled and unskilled labor alike during the construction and operational phases. Despite the fact that most of the project will need skilled labor force during operation, people expressed hope that they will be able to gain employment once the project commences mostly as casual workers. The respondents were also optimistic that they will take up relevant training to take up jobs during operation stage. Job opportunities will arise at businesses that will spring up after the construction of the proposed road. These will be sources of income for several individuals and households and hence is expected to boost the GDP and improve the living standards of Sierra Leoneans.

10.5.2 Increased Business Opportunities
The respondents were optimistic that there will be an increase in business opportunities during the construction and operation of the Kailahun – Koindu – Guinea/Liberia Border Road. Small scale business-people such as food vendors and kiosk owners will benefit greatly during construction. Once the construction of the road is complete, the existing towns will be economically revitalized. The new road will also lead to the expansion of various businesses in various settlements located along the road. There is in particular high possibility of expansion of petrol stations, hotels and restaurants, shopping malls, etc. due to increased number of motor vehicles (and people) using the route.
10.5.3 Cheap and Faster Means of Transport
The respondents were positive that the proposed Kailahun – Koidu – Guinea/Liberia Border Road will provide a faster and cheaper means of transport for cargo trucks, passengers and personal cars, from Kailahun to Koidu. This will improve the current transport situation along the road.

10.5.4 Easy and Fast Movement of People
The public was positive that the road will reduce the travel time of people within the district and beyond. They also said that the road will lead to an increased number of bus, car and bicycle operators, making transportation easy.

10.5.5 Easy and Fast Movement of Goods
The public said that the road will improve the transportation of goods from and to the area. Since the area depends on subsistence farming, they stated that their farm products will reach to the market on time. Also, food stuffs e.g. vegetables, maize and other farm products will be delivered efficiently and timely.

10.5.6 Interaction of People from Different Communities
The members of the public revealed that this project will promote national cohesion since people from different communities in Sierra Leone will be working together during construction and operation phases of the project.

10.5.7 Growth of Towns
The locals were confident that the road would lead to development of the existing towns and the formation of newer settlements.

10.5.8 Transfer of Skills
The members of the public suggested that with the road being a source of employment. Many different skilled workers will be employed from within and without the area. This will lead to a transfer of skills and gaining of experience during the construction period.

10.6 Negative Concerns of the Stakeholders

10.6.1 Noise pollution
There was concern over the possibility of high noise and vibration levels at the project site as a result of excavation, construction and demolition works. The source of noise pollution will include, transport vehicles, construction machinery, metal grinding and cutting equipment, among others. Excavations will also cause vibrations. However, SLRA will take appropriate steps to minimize noise pollution through provision of appropriate protective equipment to construction workers, planning and minimizing the frequency of transporting construction materials and ensuring that all construction machinery and equipment are well maintained. The public also feared that there would be noise during operation stage of the project due to high speed and revving of motor vehicles along the road, since it will allow for speed of between 80km/hr to 100km/hr (design speed).

10.6.2 Dust Generation
The public expressed concerns over possibility of generation of large amounts of dust within the project site and surrounding areas as a result of demolition, excavation works and transportation of building materials. SLRA will thus need to
ensure that dust levels at the site are minimized as much as possible through sprinkling water in areas being excavated and on the access roads used by the transport trucks within the site. Additional mitigation measures presented in this report will need to be fully implemented to minimize the impacts of dust generation.

10.6.3 Loss of Vegetation Cover
Members of the public expressed concerns that during the construction phase of the project, there will be clearance of vegetation along the corridor, leading to the negative impacts in environmentally sensitive sites such as flood plains. There will also be loss of few trees along the proposed road. The clearance of vegetation will affect the scenic beauty and ecological functioning of these sensitive areas. Also, the clearance of vegetation will have impacts on the soil particularly increased soil loss which subsequently may impact on the water quality and ecosystem productivity.

10.6.4 Displacement of Local Communities and Loss of Property
The participants were concerned that the proposed project will lead to compulsory land acquisitions, causing displacement of people and loss of few properties along the transport corridor. It was noted that the project will affect persons living in Kailahun, Koindu and settlements situated along the corridor. The affected people will need to be compensated appropriately according to existing best practices.

10.6.5 Disruption and Loss of Businesses
The squatters who have established businesses in the road reserve especially in Kailahun and Koindu towns were concerned that they will be evicted from the road reserve in order to pave way for the reconstruction of the road. Some business people who depend on squatters operating businesses on the road reserves expressed concern that there would be low turnover for their sales. However, it was noted that only a few of the establishments will be affected and proper compensation will be issued to the affected.

10.6.6 Road Accidents
The residents along the road expressed fears that the new road will allow vehicles to move at high speed and this may increase the number of road accidents. The SLRA will need appropriate pedestrian crossing points in certain key areas. Also, there will be a need to create cross points (under passes) for livestock and wild animals at strategic locations along the road.

10.6.7 Increase In The Spread Of STD, HIV and AIDS
The residents along the proposed road corridor expressed concern that there would be an increase in incidences of sexually transmitted diseases including HIV and AIDS especially during construction of the road as a result of increased prostitution. The SLRA will need to work jointly with appropriate district and national government public health agencies in order to come with a comprehensive STD, HIV and AIDS control programme during the construction and operational phases of the project.

10.6.8 Restrictions On The Use Of The Road Reserve
The squatters operating small-scale businesses along the existing road reserve suggested that they be allowed to operate their businesses on the new road
reserve after construction of the road. This will however not be feasible in view of potential future challenges related to road maintenance and security of motorists along the road. Also, squatters operating next to the road poses road safety concern.

10.6.9 Cultural Erosion
The Public suggested that the entering of new people in the area could lead to erosion of their culture which has been preserved for a long time. It was said that the contractor should consult with the community so that he is informed on the critical issues of culture and traditions.

10. 7 Summary of Recommendations made by the Public
The following suggestions were made during the consultations process:

1. There is a general consensus among the stakeholders for the project to be implemented.
2. Stakeholders in Kailahun town wants the proposed road to be reconstructed to bypass the town to encourage expansion of the town towards the bypass area;
3. The welfare and comfort of the community and neighbours will be considered seriously by the Contractor.
4. The proponent should consider employing locals as casuals during construction and operation activities.
5. Workers’ campsites will be built closer to established villages so that the community benefits from services like water and clinics that will be available. This will also discourage the mushrooming of new settlements.
6. The environment and health of the public will be protected from degradation.
7. The SLRA should ensure fair compensation of all displaced persons.
8. In order to avoid flooding during rainy seasons, the road will be raised and big box culverts will be constructed in flood prone areas.
9. The SLRA will be able to optimize the utilization of the current facilities where possible such as campsites, quarries, boreholes, borrow pits among others to reduce the economic, environmental, and social impacts of coming up with new facilities.
10. Security of the wildlife will be ensured to protect them from poaching especially during the construction period as many people are expected to move to the area to work on construction of the road.
11. The Mosques along the road corridor should not be interfered with during the construction.
12. The SLRA should work in close consultation with the relevant government agencies and all other government and private utility developers along the road.
13. Where possible and necessary the Contractor should install speed bumps and rumble-strips for example in towns, near schools etc. Other structures also should include bus stops in all the villages along which the road traverses.
14. The Contractor should come up with a proper drainage mechanism along the road and in major towns.
15. Graveyards that are along the road reserve will be moved in consultation with the community elders.
16. Women will be considered for office jobs and all other available jobs during construction.
17. Public consultation should be continuous throughout the project.
11. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

11.1 Introduction
This section presents the Environmental and Social Management Plan (ESMP) that will need to be implemented by the Contractor to prevent or reduce significant negative impacts to acceptable levels.

This ESMP is developed in accordance to the EPA-SL and AfDB’s guidelines which requires the client to develop an adequate Environmental and Social Management Plan to address the impacts of the proposed project. All the project components are all considered when this ESMP is developed.

Environmental management plans for all project phases has been outlined to cover

- Design and Construction Phase
- Operation Phase
- Decommissioning Phase

Table 11 below tabulated the core of this ESMP for the construction, operational and decommissioning phases of the proposed road project. The following table details all necessary mitigation measures as well as the personnel/entities responsible for the implementation and monitoring of such measures. The table shall be used as checklists on site.

Due to the magnitude of the project, compliance with the ESMP must be monitored periodically and reports prepared and provided at monthly site meetings during the construction phase and quarterly during the operations and maintenance period. Annual audits will be conducted during the construction, operation and maintenance phases.
Table 10: Environmental and Social Management Plan

<table>
<thead>
<tr>
<th>POSSIBLE IMPACTS</th>
<th>MITIGATION MEASURES</th>
<th>RESPONSIBLE PARTY</th>
<th>FREQUENCY/TIMING</th>
<th>COST OF IMPLEMENTATION ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DESIGN AND CONSTRUCTION PHASE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Possible Displacement of Local Communities, Loss of Properties and Businesses</td>
<td>The affected communities will be compensated appropriately according to existing best practices. The SLRA will ensure that the final designs of the highway will be realigned to ensure that displacements are minimized as much as possible. A Resettlement Action Plan is done appropriately, professionally and implemented.</td>
<td>GoSL/MoF/SLRA</td>
<td>Continuous</td>
<td>$ 290,194.48</td>
</tr>
<tr>
<td>(138 PAPs for 156 properties/assets and 224 PAPs for 734 crops of 21 variety)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A total of 362 PAPs for assets and Crops affected by the project.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relocation of Community/Public Utilities ((1 water well, solar streetlights and water pipelines))</td>
<td>Prior notification and consultation to the affected communities and the responsible institutions. All public utilities likely to be impacted, such as water pipes, power and/or phone lines etc. must be relocated to suitable places, in consultations with respective agencies. The relocation is part of the activity to be undertaken in the BoQ.</td>
<td>Contractor/SLRA</td>
<td>Before Construction Period</td>
<td>An estimated cost of $35,000 has been embedded in the civil works for relocation of utilities and also $800 is included in the RAP for improvement of the water well.</td>
</tr>
</tbody>
</table>
Acquisition Of Land and Property for Borrow Pits, Quarries, Water, Spoil Pits and Workmen Camps (approx. 30 acres of land is required)

| Determination of agreeandee rates for compensation to affected persons. Separate ESIA/ESMP study reports will be conducted for quarries, borrow pits, campsites, and water pans. | Contractor/SLRA | Before Construction period | $40,726.35 provided in the RAP for land acquisition

| Noise Pollution and Excessive Vibrations | Contractor/Consultant/SLRA | Daily | An estimated cost of $25,000

- Sensitize drivers of construction vehicles and machinery operators to switch off engines or machinery that are not being used.
- Ensure that all vehicles and construction machinery are kept in good condition all the time to avoid excessive noise generation.
- Ensure that all workers wear earmuffs and other personal protective gear/equipment when working in noisy sections.
- Ensure machines are switched off when not in use.
- Undertake loud noise and vibration level activities during off-peak hours during the day (i.e. between 8.00 am and 5.00 pm).

| Air Pollution due to Dust Generation and Air Emissions | Contractor/SLRA | Monthly/Quarterly | An estimated cost of $50,000. The maintenance cost is captured under noise pollution embedded in the BoQ.

- Consideration of design options for the reduction of traffic congestion.
- Sprinkling of water on dry and dusty surfaces regularly including the access roads.
- Use of wastewater to sprinkle at the construction site so as to reduce excessive dust.
<table>
<thead>
<tr>
<th>Task</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adherence to personal protective clothing such as dust masks.</strong></td>
<td><strong>Daily</strong></td>
</tr>
<tr>
<td><strong>Enforce onsite speed limit regulations.</strong></td>
<td><strong>Weekly/Monthly</strong></td>
</tr>
<tr>
<td><strong>Ensure machines and vehicles are properly and regularly maintained.</strong></td>
<td><strong>Daily</strong></td>
</tr>
<tr>
<td><strong>Solid Waste Generation</strong></td>
<td><strong>Contractor/SLRA</strong></td>
</tr>
<tr>
<td>Maximizing the rate of recycling of road resurfacing waste either in the aggregate (e.g. reclaimed asphalt pavement or reclaimed concrete material) or as a base.</td>
<td>Daily</td>
</tr>
<tr>
<td>Incorporating recyclable materials to reduce the volume and cost of new asphalt and concrete mixes.</td>
<td>Daily</td>
</tr>
<tr>
<td>Collecting road litter or illegally dumped waste and managing it according to the recommendations in the contractor's waste management plan</td>
<td>Daily</td>
</tr>
<tr>
<td>Provision of bottle and can recycling and trash disposal receptacles at parking lots to avoid littering along the road.</td>
<td>Daily</td>
</tr>
<tr>
<td>Managing sediment and sludge removed from storm drainage systems maintenance activities as a hazardous or non-hazardous waste based on an assessment of its characteristics.</td>
<td>Quarterly</td>
</tr>
<tr>
<td><strong>Contamination Of Soil By Fuels And Lubricants</strong></td>
<td><strong>Contractor/SLRA</strong></td>
</tr>
<tr>
<td>Vehicle, machinery, and equipment maintenance and refueling will be carried out so that spilled materials do not seep into the soil.</td>
<td>Daily</td>
</tr>
<tr>
<td>Fuel storage and refilling areas will be</td>
<td>Daily</td>
</tr>
</tbody>
</table>

An estimated cost of $5,000 is embedded in the BoQ.
located at least 300m from drainage structures and important water bodies.

- Fuel storage and refueling areas, if located in agricultural land or areas supporting vegetation, will have topsoil stripped, stockpiled, and returned after completion of refueling activities.
- Oil traps will be provided for service areas, toll station areas, parking areas, and within drainage systems for bridges.
- All spoils and wastes will be disposed of as per the contractor’s approved waste disposal plans at designated waste sites (excluding wasteland areas), after consultation with local communities.
- Scarified bituminous wastes will be disposed of at approved sites with impervious linings.

Soil Compaction

- Construction vehicles, machinery, and equipment shall move or be stationed in designated areas only. While operating on temporarily acquired land for traffic detours, storage, material handling, or any other construction-related or incidental activities, topsoil from agricultural land will be preserved.
- The contractor shall ensure that the method of stockpiling materials, use of plants, or sitting of temporary buildings or

Contractor

- Weekly/Monthly
- Estimated cost of $3,500,000.00 for earthworks is included in the BoQ
- Daily
- Weekly/Monthly
| Structures do not adversely affect the stability of excavation or fills.  
• Any incidental damages like, soil trampling and damage to herbs, shrubs, and grasses will be kept to a minimum. | Contractor/SLRA | Daily/Weekly |
|---|---|---|
| Energy Consumption  
• Promote the use of solar energy and energy efficient bulbs in workers base camps and for streetlights in towns situated along the highway.  
• Switch off lights when not in use.  
• Install electricity meters to monitor the consumption of electricity in workers camps.  
• Ensure construction machineries and trucks are well maintained.  
• Use energy-efficient construction machineries and trucks during construction phase of the project.  
• Avoid routing the highway on very steep sections. | Contractor/SLRA | Daily  
Approximately $300,000 which forms part of the site establishment to ensure efficient energy consumption  
• Weekly/Monthly |
| Contamination Of Water Sources by Petrochemicals  
Traps will be provided at fueling points to prevent water contamination.  
Embankment slopes leading to water bodies will be modified and screened so that contaminants do not mix with water.  
Establishment of mechanical site away from water bodies  
Pavement and maintenance of fuel supply area | Contractor/SLRA | Monthly  
$30,000 embedded as part of the BoQ |
<table>
<thead>
<tr>
<th>Discharge of Wastewater, Sewage and Degradation of Water Quality</th>
<th>Construct communal septic tank linked to a constructed wetland system. Promote recycling of wastewater. Ensure regular maintenance of plumbing system to avoid spillage of wastewater. Ensure regular maintenance of plumbing system and septic tanks to avoid spillage of raw sewage.</th>
<th>Contractor/SLRA</th>
<th>Monthly</th>
<th>approximately $30,000.00 embedded in BoQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Conflicts With The Local Community</td>
<td>Advance measures to prevent any damage to water bodies will be avoided at all costs. Consultations will be made to the local communities to get permission to use water. The drilled boreholes and mini dams constructed shall be handed over to the communities after project completion. Campsites shall be constructed closer to settlements to make it possible for access of water and to avoid the “springing up” of new settlements. Underground water shall be sought as an alternative. Any water source like wells and springs in the community shall be replaced with alternative sources if spoilt or damaged.</td>
<td>Contractor/SLRA</td>
<td>Continuous</td>
<td>$9,800 as part of GRM cost for conflict resolution</td>
</tr>
<tr>
<td>Loss of Vegetation Cover and Biodiversity</td>
<td>Siting roads and support facilities to avoid critical terrestrial habitat by utilizing existing transport corridors. Design and construct wildlife access to avoid or minimize habitat fragmentation. Minimize clearing and disruption of riparian</td>
<td>Contractor/SLRA/Forestry Unit</td>
<td>Monthly</td>
<td>Approximately $50,000 is budgeted for in the RAP for payment to landowners and crops. Restoration</td>
</tr>
</tbody>
</table>
vegetation.
Provide adequate protection against scour and erosion and give consideration to the onset of the rainy season with respect to construction schedules.
Minimize removal of indigenous plant species and replant indigenous plant species in disturbed areas.
Explore opportunities for habitat enhancement through placement of nesting boxes in rights-of-way, bat boxes underneath bridges.
Re-afforestation of borrow areas and quarries

<table>
<thead>
<tr>
<th>Loss of Agricultural Land and Crops</th>
<th>Contractor/SLRA/Kailahun District Government</th>
<th>Monthly</th>
<th>Embedded in Resettlement Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide full compensation to farmers whose land will be taken over by the proposed highway. Develop a comprehensive Resettlement Action Plan. Promote alternative sources of income among local communities.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disruption and Loss of Businesses</td>
<td>Provide support to squatters to establish small-scale businesses in other suitable locations in affected towns. Educate squatters on the need to maintain free road reserve. Provide comprehensive health and safety education to squatters in affected towns. Promote other sources of livelihood among the local communities. GoSL/MoF/SLRA/Contractor</td>
<td>Monthly</td>
<td>Embedded in displacement cost</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------</td>
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<td>-----------------------------</td>
</tr>
<tr>
<td>Road Accidents</td>
<td>• Construct pedestrian crossing points with footbridges in certain key areas. • Create parking areas for trucks or vehicles. • Create speed humps in towns • Provide signage and markings such as zebra, stop signs etc. • Provide and enforce speed limit along the project road • Conduct awareness raising programs • Installation of road side barriers • Sight distance improvement • Drainage optimization • Regular road maintenance</td>
<td>Contractor/SLRA</td>
<td>Developed prior to the commencement of work and implemented throughout the life of the project. Additionally, cost for signage, markings and barriers is embedded in the works.</td>
</tr>
<tr>
<td>Spread of STD, HIV and AIDS</td>
<td>Develop a comprehensive STDS, HIV and AIDs control programme. Control of prostitution in main towns situated along the highway in collaboration with the Police and District Governments. Provision of STDs, HIV and AIDS prevention.</td>
<td>Contractor/SLRA/District Government</td>
<td>Monthly</td>
</tr>
<tr>
<td>Category</td>
<td>Action</td>
<td>Responsible Party</td>
<td>Frequency</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>----------------------------------------</td>
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</tr>
<tr>
<td>Interference of Existing Development Infrastructure</td>
<td>Compensate for the relocation of other infrastructural public utilities already existing along the proposed road corridor. Undertake an integrated system of planning for infrastructure development along the corridor for future developments. Ensure effective stakeholder participation in the design of the highway.</td>
<td>Contractor/SLRA/ District Government</td>
<td>Monthly</td>
</tr>
<tr>
<td>Security Risk and Human Conflicts</td>
<td>Thoroughly screen workers, suppliers and distributors. Accord the local people the first priority in employment. Ensure close liaison with the local Police Department.</td>
<td>Contractor/SLRA/ Wildlife Unit</td>
<td>Monthly</td>
</tr>
<tr>
<td>Land Acquisition and Involuntary Resettlement of Affected Persons</td>
<td>Ensure proper compensation of the affected persons. The Resettlement Action Plan will ensure all the affected persons are properly identified and duly compensated according to best practices.</td>
<td>GoSL/SLRA</td>
<td></td>
</tr>
<tr>
<td>Occupational Health and Safety</td>
<td>Development of a transportation management plan for road construction that includes measures to ensure work zone safety. Establishment of work zones to separate workers on foot from traffic and equipment by routing of traffic to alternative roads. Use protective barriers to shield workers from traffic vehicles, regulation of traffic flow by warning lights, design of the work space to</td>
<td>Contractor/SLRA</td>
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<tr>
<td>Eliminate or decrease blind spots, and ensure reduction of maximum vehicle speeds in work zones.</td>
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<tr>
<td>Training of workers in safety issues related to their activities.</td>
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<tr>
<td>Ensure safe practices for work at night and in other low-visibility conditions, including use of high-visibility safety apparel and proper illumination for the workspace.</td>
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<tr>
<td>Barricade the area around which elevated work is taking place to prevent unauthorized access.</td>
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<tr>
<td>Hoisting and lifting equipment is to be rated and properly maintained, and operators trained in their use.</td>
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<tr>
<td>Elevating platforms are to be maintained and operated according to established safety procedures including use of fall protection measures (e.g. railings).</td>
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<tr>
<td>Use of the correct asphalt products.</td>
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<tr>
<td>Installation of barriers (e.g. fencing, plantings) to deter pedestrian access to the roadway except at designated crossing points.</td>
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</tr>
<tr>
<td>Installation and maintenance of speed control and traffic calming devices at pedestrian crossing areas.</td>
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</tr>
<tr>
<td>Installation and maintenance of all signs, signals, markings, and other devices used to regulate traffic, specifically those related to pedestrian facilities or bikeways.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Installation and maintenance of all signs, signals, markings, and other devices used to regulate traffic.</td>
<td></td>
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</tbody>
</table>

Note: Monthly monitoring is required for the installation and maintenance of speed control and traffic calming devices, and for the installation and maintenance of all signs, signals, markings, and other devices used to regulate traffic.
traffic, including posted speed limits, sharp turns, warnings, and other special road conditions
Construction of roadside rest areas at strategic locations to minimize driver fatigue.
Prepare an emergency preparedness and response plan in coordination with the local community and local emergency responders

<table>
<thead>
<tr>
<th>Gender Discrimination</th>
<th>Apply Sierra Leone’s constitutional requirements for gender mainstreaming throughout the project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Apply all guidelines under the Gender Equality Act.</td>
</tr>
<tr>
<td></td>
<td>Undertake gender mainstreaming at project design, implementation/ construction, operation and decommissioning stages</td>
</tr>
<tr>
<td></td>
<td>Incorporate best practices in gender mainstreaming from project partners</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contractor/SLRA</th>
<th>Throughout the life of the project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part of sensitization cost</td>
<td></td>
</tr>
</tbody>
</table>
11.2 Complimentary Initiatives/Integrated Support

The project is designed to include activities or services that will complement the roadworks itself. The following complimentary initiatives proposed for the project include the Construction of market in Koidu in Sierra Leone and support to 2 health centers (iv) implementation of GAP in Sierra Leone. In addition, study on needs assessment of trade facilitation, including streamlining of border and corridor procedures and processes of this Programme and development of transit zones, Inter-agency coordination platform, sensitisation, and training of customs officials and Technical Assistant support to Mano River Union Secretariat in project Management.

11.3 Cost of Implementation of the ESMPs

For effective implementation of the ESMPs, the project must establish an environment, health and safety (EHS) unit that will be responsible for Project Environmental Monitoring and Evaluation to ensure compliance to EPA - SL and international standards and practices. SLRA will be required to produce periodic reports on project environment monitoring to be sent to the concerned agencies for information and supervision. SLRA will also be responsible for all costs of implementing the project’s EIA license, the actual costs of public involvement in the EIA process.

Hence, all costs proposed for the ESMPs below will be incurred by the project except those of EIA License, land acquisition and resettlement.

The costs to be outlined are current costs, mainly for project environmental monitoring and evaluation to ensure compliance to EPA - SL and international standards and practices.

To estimate future costs, an increase to cover annual inflation will be applied. The costs for actual activities will be included in the main bill of quantities of the project.
<table>
<thead>
<tr>
<th>No.</th>
<th>Activity</th>
<th>Timeframe</th>
<th>Cost (USD)</th>
<th>Cost (Le)</th>
<th>Source of fund</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Preparation of contractor’s site-specific ESMP</td>
<td>First quarter in the pre-construction phase</td>
<td>50,000.00</td>
<td>1,129,490.00</td>
<td>Contractor</td>
</tr>
<tr>
<td></td>
<td>EIA License Acquisition and monitoring fee</td>
<td>Prior to the start of construction works after project approval</td>
<td>96,000.00</td>
<td>2,168,620.80</td>
<td>GoSL/MoF/SLRA</td>
</tr>
<tr>
<td>2</td>
<td>Complimentary Initiatives:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Integrated support (construction of market, implementation of GAP in SL</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; and 2&lt;sup&gt;nd&lt;/sup&gt; Quarter of project implementation</td>
<td>600,000.00</td>
<td>13,553,880.00</td>
<td>AfDB</td>
</tr>
<tr>
<td>3</td>
<td>RAP Implementation and Monitoring and GRM operation</td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td>Monitor the payment of compensation</td>
<td>Monthly basis throughout the project implementation</td>
<td>290,194.48</td>
<td>6,555,435.26</td>
<td>GoSL/MoF/SLRA</td>
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<td></td>
<td>Implementation of ROW clearance</td>
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<td>4</td>
<td>HIV/AIDS, Covid-19 / communicable disease awareness and prevention</td>
<td>Monthly basis throughout the project implementation</td>
<td>50,000.00</td>
<td>1,129,490.00</td>
<td>AfDB</td>
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<tr>
<td></td>
<td>campaign</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>5</td>
<td>Occupational safety and Provision of</td>
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<td>75,000.00</td>
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appropriate PPEs and safety

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<th>implementation</th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Reforestation Cost</td>
<td>During the Defects Liability Period</td>
<td>100,000.00</td>
<td>2,259,980.00</td>
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<td>7</td>
<td>Impact Mitigation Cost (soil, air pollution, waste management etc.)</td>
<td>Monthly basis throughout the project implementation</td>
<td>350,000.00</td>
<td>7,906,430.00</td>
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<td>8</td>
<td>Annual E&amp;S Audit</td>
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<td>1,129,490.00</td>
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<td><strong>Total costs</strong></td>
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<td></td>
<td><strong>1,661,194.48</strong></td>
<td><strong>37,526,051.06</strong></td>
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### 11.4 ESMP Implementation

Environmental and social planning, implementation and management are undertaken by SLRA for its development projects to cover environmental and social assessment (ESA) and the pre-project/project planning processes. Key stages of the ESIA 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 proposed upgrading of the Kailahun – Koidu – Guinea/Liberia Borders road project. In the context of the ESMP, environmental and social planning identifies and assesses the potential concerns and implications that may arise with the implementation of the reconstruction of the Kailahun – Koidu – Guinea/Liberia Borders road project, to influence the design and other Resident Engineering feasibility options and decisions, for informed and sustainable project development. The successful implementation of the ESMP depends on the commitment of SLRA and related institutions, the capacity within the institutions and the appropriate and functional institutional arrangements among others.

The SLRA, EPA-SL and Kailahun District Council are identified as directly associated with the preparation, review, and the implementation of the ESMP. The Ministry of Environment, Local Councils and the project communities are involved for their inputs regarding the appropriate environmental, social and health safeguards to be observed when the project is being implemented. The Contractor to be employed to undertake construction works will also have a role to play in the implementation of the project.
This sub-section addresses the following key areas of the ESMP implementation:

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

### 11.4.1 Roles of Key Stakeholders in The ESMP Implementation

The ESMP provides the environmental and social safeguards for the proposed reconstruction of the Kailahun – Koindu – Guinea/Liberia Borders road project and its successful implementation will depend largely on the key stakeholder institutions. This will ensure that the project is 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 activities of the proposed reconstruction of the Kailahun – Koindu – Guinea/Liberia Borders road project are matched with the institutions which have jurisdiction in the areas of licensing, permitting, assessment, monitoring, etc. are stated below. These institutions and stakeholders are identified as having roles to play in the proposed reconstruction of the Kailahun – Koindu – Guinea/Liberia Borders road project’s ESMP preparation as well as implementation of the project:

- Sierra Leone Road Authority (SLRA)
- Environmental Protection Agency- Sierra Leone (EPA-SL)
- Ministry of Environment
- Local Council and Local Authority
- Non-governmental Organizations (NGOs).

### 11.4.1.1 Roles Of SLRA

The SLRA is in charge of the successful implementation of the Kailahun – Koindu – Guinea/Liberia Borders road project and all sub-projects with respect to the technical and environmental and social components.

SLRA will therefore play the following roles:

#### ESMP Phase

- Preparation of the ESMP.
- Registration of ESMP with SLEPA.
- Main implementer of the ESMP.
- Submits ESMP to the AfDB and SLEPA for review and approval.
- Implementation of the ESMP for the project and sub-projects.

#### Project/Sub-Projects Phase
• Registers the project/sub-projects with EPA.
• Prepares and submits scoping/TOR to EPA.
• Prepares and submits EIS to EPA/AfDB.
• Awards contract.
• Notifies EPA of project commencement.
• Conducts monitoring of road reconstruction.
• Submits monitoring report to EPA.
• Submits annual environmental report and ESMP to EPA.
• Prepares a decommissioning plan and submits to EPA, and
• Oversees decommissioning.

11.4.1.2 Roles Of EPA-SL
The EPA-SL 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 ESMP will involve:

**ESMP Phase**

• Monitor and ensure compliance with the ESMP during implementation, and
• Addresses any grievance where necessary.

**Project/Sub-Projects Phase**

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

The EPA-SL has its headquarter located in Freetown and operates in different regions across the country. However, in recent times, it has devolved some of its staff to the three provinces (Northern, Southern & Eastern) with provincial offices operating in Makeni, Bo and Kono and Kenema respectively. These offices play oversight role for the entire provinces and are under – staffed to effectively monitor all the development activities undertaken in the 16 districts of the country although they are normally supported by the Headquarter staff.

The Kenema EPA-SL office which is located about 135km away from the project area has the direct responsibility to monitor the project in Kailahun District since they have no offices in the project location. Sometimes the EPA-SL
utilizes the Safeguards officers (Environmental Officer, Social Office & Gender Officer) of Councils to have projects monitored and share information on non-compliance with them.

Monitoring fee is embedded in the cost of acquiring the EIA License from the EPA-SL to enable effective monitoring of the project. This cost is part of the GoSL contribution towards the project and is to be provided by the Ministry of Finance.

11.4.1.3 Kailahun District Council/Local Authorities
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 project/sub-projects. Land demarcation and general development plans of communities lie with the district government as well as the communities.

**ESMP Phase**
- Zoning of land within communities which lies within the district government’s jurisdiction.
- Land allocation/ acquisition.
- Provides the communication channel between the communities and the SLRA during consultations, and
- Monitoring of land use to ensure adherence to designated use schemes.

**Project/Sub-Projects Phase**
- Facilitates public consultations.

11.4.1.4 Ministry of Environment (MoE)
The MoE is one of the bodies responsible for formulating the policies that guide the operations of EPA-SL. With respect to the implementation of this ESMP, SLRA will deal with appeals that may arise as a result of SLEPA’s actions /in actions on any aspect of Kailahun – Koindu – Guinea/Liberia Borders road project and sub-projects.

The MoE will conduct compliance monitoring during the implementation of the Kailahun – Koindu – Guinea/Liberia Borders road project and sub-projects. The Ministry will also monitor the unlikely event of the decommissioning of the Kailahun – Koindu – Guinea/Liberia Borders road project when it is due.

11.4.1.5 Non-Governmental Organizations (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 are established or setup within their localities.

Consultations held with these groups, as part of the ESMP preparation will reveal 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 implementation of the Kailahun – Koindu – Guinea/Liberia Borders road project.

Their role in this ESMP will include the following:

**ESMP Phase**

- Create awareness of the project in the community.
- Act as a mouthpiece for the communities with regards to the Kailahun – Koindu – Guinea/Liberia Borders road project, and
- Participate in public consultation/ public hearing.

**Project/Sub-Projects Phase**

- Make inputs at the Scoping and EIS stages when the project/sub-projects are due, and
- Monitor the implementation of the Contractor’s corporate responsibilities to the communities.

**11.4.1.6 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 SLRA,
- Train/create awareness for all personnel and community on relevant E&S safeguards measures, and
- Submits implementation report on E&S safeguards to the SLRA.

**11.5 Institutional Arrangement and Inter-Agency Coordination**

Inter-agency coordination is key to the successful implementation of the the Kailahun – Koindu – Guinea/Liberia Borders road project, ESMP and sub-projects.

This sub-section describes the inter-relationship between stakeholders in their roles for the implementation process.

The MLCPE is the policy formulating and oversight body for all environmentally related developments. SLRA is in charge of the successful implementation of the Kailahun – Koindu – Guinea/Liberia Borders road
project and all sub-projects with respect to the technical, environmental and social components.

The EPA-SL is the lead environmental regulator and will oversee compliance of the Kailahun – Koindu – Guinea/Liberia Borders road 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 Kailahun – Koindu – Guinea/Liberia Borders road project. The SLEPA functions under the MLCPE, which is the policy formulating body that will, in concert with SLRA and EPA-SL, deal with any grievance redress issues that may arise between EPA-SL and any aggrieved party as a result of the Kailahun – Koindu – Guinea/Liberia Borders road project.

The District Government 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 District Government will work with SLRA, EPA-SL 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 will be involved in consultations and monitoring of the SLEPA’s corporate responsibilities as well as making inputs to the EIS and other reports emanating from the Kailahun – Koindu – Guinea/Liberia Borders road project.

11.6 Project Administration
This will include the appointment of a supervising consultant who will monitor the daily activities of the contractor to ensure compliance with environmental, social and health requirement for the project. Therefore, the consultant will require a health and safety specialist, a social specialist, and an environmental specialist to enforce the implementation of daily measure to avoid adverse impacts and enhance positive ones.

The contractor will also require safeguards personnel who will advises the engineers on measure to implement to combat adverse impacts on the environment and social wellbeing of workers and the project area population. The contractor will be guided by the project’s environmental and social management plan to develop site specific environmental and social management plan which will be integrated into project activities for implementation. The development of the site specific environmental and social management plan will be developed with appropriate consultations with SLRA and EPA –SL through the supervising environmental and social experts.
However, the overall monitoring of the project to ensure that all requirements are met rests on the client (SLRA) who will have the responsibility to ensure that the consultant and the contractor are implementing the project based on the given design and specifications and that the environmental and social measures outlined in the ESMP is satisfactorily implemented. A project implementation unit will be set up with different expertise at SLRA who will be responsible for the overall implementation of the proposed project. This expertise’ should include a project manager (an engineer), a social and environmental expert, a financial expert, a procurement expert and internal controls expert among others, who will carry out monthly supervision of the project or as and when required.

The Environmental, social and health (EHS) officer(s) of the Contractor shall fully understand the Engineering and management aspects of the project for effective coordination of relevant environmental issues listed in the Environmental and Social Management Plan.

The environmental and social personnel of the contractor shall be appointed by SLRA (as the project client) to ensure effective implementation of the environmental management plan. It is expected that the contractor will engage the services of an environmental expert (with experience) who shall master all environmental recommendations and the proposed action plans, timeframes and expected targets. The environmental expert shall be the liaison between the Contractor and the consultant including community stakeholders and SLRA on the implementation of environmental and social concerns as well as other safeguard issues associated with the implementation of the project activities.

11.7 Grievance Redress Mechanism (GRM)

A Grievance Redress Mechanism (GRM) for the project has been established which can reduce risk for the proposed project, offers communities an effective avenue for expressing concerns and achieving remedies, and promotes a mutually constructive relationship. The procedures and recommendation from the GRM will be put in place upon commencement of the civil works.

The GRM provides a way to reduce risk for the proposed project, offers communities an effective avenue for expressing concerns and achieving remedies, and promotes a mutually constructive relationship. A well-functioning grievance mechanism:

- Provides a predictable, transparent, and credible process to all parties, resulting in outcomes that are seen as fair, effective, and lasting.
• Builds trust as an integral component of broader community relations activities; and

• Enables more systematic identification of emerging issues and trends, facilitating corrective action and pre-emptive engagement.

The GRM procedure involves setting up committees at various levels: project management, community, etc. for registering and providing redress to complaint as they arise. The structure comprises of key stakeholders, PIU, the contractor and consultant.

The GRM matrix provides a timeframe of 14 days for which grievances are to be resolved. If the grievances cannot be resolved at this level, it will be escalated to the main committee level for which resolution is with 5 days.

GRM committees were established during the consultation process. This should be triggered during the implementation to mediate issues that may arise as a result of the implementation of the works.

**Figure 10:** GRM Escalation Matrix
Monitoring

Monitoring is a key component of the ESMP during project implementation. Monitoring shall be undertaken at the Kailahun – Koidu – Guinea/Liberia Borders road project implementation phase to verify the effectiveness of impact management, including the extent to which mitigation measures are successfully implemented. Monitoring shall involve three areas namely:

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

The aim of monitoring will 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.

### Table 12 Estimated Budget for Implementing GRM

<table>
<thead>
<tr>
<th>No</th>
<th>Item</th>
<th>Cost (US Dollars)</th>
<th>Responsible/Source funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Communication and awareness raising on GRM</td>
<td>10,000.00</td>
<td>GoSL/MoF/SLRA</td>
</tr>
<tr>
<td>2.</td>
<td>Establishment of GRM committees</td>
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</tr>
<tr>
<td>3.</td>
<td>Transport and communication cost associated with GRM operation</td>
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<td>GoSL/MoF/SLRA</td>
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<tr>
<td>4.</td>
<td>Training of various GRM committee members</td>
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<tr>
<td>5.</td>
<td>Cost for purchasing and operating equipment for GRM implementation</td>
<td>3,500.00</td>
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</tr>
<tr>
<td>6.</td>
<td>Cost of monitoring and reporting GRM activities</td>
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<td>GoSL/MoF/SLRA</td>
</tr>
<tr>
<td></td>
<td><strong>Total budget</strong></td>
<td><strong>44,000</strong></td>
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</table>
12. INSTITUTIONAL CAPACITIES AND STRENGTHENING PLAN

12.1 Introduction
The institutional arrangement proposed for the successful mainstreaming of environmental and social considerations.

12.1.1 The Role of Environmental Protection Agency (EPA-SL)
EPA will be responsible for reviewing and commenting on the ESIA reports and issuance of EIA license for the clearance of the project to be implemented. Once the ESIA report is approved, EPA will issue a Permit of Approval (EIA License), including conditions of approval for the proposed construction of the Kailahun – Koindu – and Border Road project after the payment for EIA license have been affected. The Approval Permit and related approval conditions are sent to the SLRA (as the client) and its implementation will be under the Environment and Social Services Unit in SLAR’s Directorate of Engineering Services, which is responsible for the planned road project.

By mandate, EPA has the responsibility to monitor, supervise and coordinate environmental and social compliance of development projects on quarterly basis after the reception of the environmental and social compliance monitoring quarterly reports. They do this through field visits on quarterly basis or as and when required to the project site in collaboration with the client and districts council environmental and social officer (ESO) responsible for environmental and social compliance management. Monitoring fees are paid to the EPA as part of the EIA License fee.

12.1.2 The Role of SLRA’s Environment and Social Services (ESS) Unit
The ESS unit will be responsible for ensuring that the environmental and social mitigation measures (terms and conditions of approval) identified in the project are fully taken on during implementation of the project. The ESS Manager has the obligation to ensure that mitigation measures are included in the Bidding document; including the Bill of Quantities and that a specific budget is allocated for implementing the mitigation measures. The ESS Unit has the responsibility to carry out monthly compliance monitoring site visits and compile report For the SLRA about the compliance status of the project.

However, the ESS Unit is understaffed with only one permanent staff (the ESS Manager) and the Assistant Environmental Officer (on Contract) managing compliance issues in all road projects in the Authority (SLRA). The ESS Unit requires equipment for air, water and noise quality monitoring and will also require training in the use of such equipment. At the moment, the Unit lacks a vehicle which makes it impossible to carry out field visits and will require office computers, printer and stationery to aid in report writing. The Unit visits the
site as and when required especially when the contractor is faced with difficulty during implementation.

The ESS unit has the overall responsibility to ensure that the project is implemented in compliance to National and donor safeguards requirements. It oversees the EIA License process, reviews and comments on the Supervising consultant’s safeguard quarterly report and forward it to the EPA-SL and the Bank.

12.1.3 Supervising Consultant

The Supervising consultant is on site with the contractor on daily basis and has the responsibility to monitor and ensure compliance in the implementation of mitigation measures by the contractor. From experience the input of the safeguard specialists during project implementation is not enough because they visit the site once in three months, stay for a month, write report and leave. The Engineer should ensure input from local safeguard specialists on regular basis.

12.1.4 The Role of the Contractor

Ultimately, the Contractor, in accordance with the contract provision, has the responsibility for the preparation of site specific ESMP and implementation of all mitigation measures under the supervision of the consultant’s safeguard personnel on daily basis. The SLRA ESS unit monitor the contractor on monthly basis to assess the contractor’s progress. In the schedule of works, the contractor must include all proposed mitigation measures, and the Supervising Engineers should also ensure that the schedules and monitoring plans are complied with. This will lend a sense of ownership to the contractor; therefore, the contractor must hire the services of qualified specialist to ensure full compliance.

Diligence on the part of the contractor and proper supervision during both the construction and defects liability period are crucial to the success of mitigating impacts. The contractor on their part will be responsible for planning, implementing and reporting on mitigation measures during the execution of the project works. The contractor will also be required to apply standard quality assurance procedures in full compliance with the EPA’s ESIA Approval Permit for this ESIA.

12.1.5 Role of the Civil Society Organizations

The CSOs are well placed to play an effective role on the project especially taking a lead in delivery of some roles. Aspects such as Covid-19 and HIV/AIDS sensitizations could be sub-contracted to some CSOs to undertake on behalf of the project implementers.
12.1.6 District Council Environmental and Social (ESO) officers and Engineer

The district council as custodian of the district are fully aware of and involved in the project. Kailannah district council has Safeguard Officers and Engineers responsible for monitoring the implementation of all projects in the district. The Engineer and safeguard officer can monitor the implementation on daily or weekly basis to ensure compliance with specifications and the implementation of mitigation measures.

However, for the councils to be fully involved in the project, the Engineer and the ESO will be provided with mobility, training, and incentives based on (performance such as submission of monitoring reports).

12.1.7 Role of the District Budget Oversight Committees

The District Budget Oversight Committees at the districts could be of help in ensuring that, payments for compensation to PAPs are done on time and adequately. They are well placed to liaise and sensitize the communities on compensation issues and project issues.

12.2 Institutional Capacity Building Arrangements

From the above it is evident that, SLRA’s Environmental and Social Services Unit has key responsibilities of ensuring that the project fully comply with its Permit Approval conditions issued by the EPA. This means this Unit will be facilitated and modestly equipped to ably discharge these responsibilities.

However, during this ESIA update process, it was established that the Unit lacks capacity in terms of staff numbers and logistics to cope with the entire SLRA road projects and the Environmental requirements in this project’s portfolio. There are only two staff members and without adequate equipment and facilities. It is proposed that, this Unit’s capacity be built in terms of:

- Provision of air, water and noise quality equipment and training in the use of such monitoring equipment.
- Provision of office equipment such as computers (2 laptop computers), printer (colored printer) and stationary
- Need for transport facilitation The Kailannah district council officers lack the capacity to carry out regular monitoring and produce reports. Therefore, they will require capacity in terms of facilitating their movement to and from site. The council will therefore require capacity building in terms of.
- Some short-term training for all safeguard team involved in environmental monitoring and reporting requirements for this project. Provision of a motor bike and fuel for council officers to monitor the project regularly.
13. CONCLUSION
The ESIA study has established that the proposed development project by SLRA is a worthy investment and will undoubtedly contribute significantly to the economic development of the country. This will be achieved through the earlier discussed positive impacts namely, growth of the economy, boosting of the informal sector during the construction phase, provision of market for supply of building materials, employment opportunities, increase in government revenue and optimal use of land among others. It is believed that indeed the project will pioneer development in North-eastern Sierra Leone.

However, the ESIA study has established that the proposed project will also come along with some negative impacts. The negative environmental impacts that will result from establishment of the proposed project which include possible livestock-vehicular accidents, hydrology and water quality degradation, noise pollution, dust emissions, solid waste generation, increased water demand, increased energy consumption, generation of exhaust emissions, workers accidents and hazards during construction, possible exposure of workers to diseases, increased storm water among others can however be sufficiently mitigated.

SLRA as the proponent of the proposed project shall be committed to putting in place several measures to mitigate the negative environmental, safety, health and social impacts associated with the life cycle of the project. It is recommended that in addition to this commitment, SLRA shall focus on implementing the measures outlined in the Environmental Management and Monitoring Plan as well as adhering to all relevant national and international environmental, health and safety standards, policies and regulations that govern establishment and operation of such projects in Sierra Leone. More emphasis should also be put on complying with the 10 Equator Principles, IFC World Bank and AfDB Guidelines discussed in the report. It is expected that the positive impacts that emanate from such project shall be maximized as much as possible as exhaustively outlined within the report.

Considering the positive socio-economic and environmental benefits which will accrue as a result of the proposed development and the ESIA study having identified the major impacts and proposed mitigation measures to minimize these impacts, it is our recommendation that the project be allowed to proceed on the understanding that the proponent will adhere to the mitigation measures recommended herein and will further still implement the proposed Environmental Management and Monitoring Plan to the letter. Sierra Leone as a country has a big shortage of such road project developments especially in the Northeastern side.
Therefore, the construction of the proposed project goes a long way in solving part of the road transportation sector.
14. ANNEXES
Annex A: Terms of Reference

The terms of reference developed for this study will be to assess the impacts that may result during the construction, operational and decommissioning phase of the proposed Kailahun – Koidu – Guinea/Liberia road project.

Specifically, the terms of reference (as guided by the Sierra Leone Environmental Protection Agency Act, 2008, Sierra Leone Environmental Protection Agency (Amendment) Act, 2010) developed for this study shall include:

- The description of the proposed road project
- A brief but in-depth description of the national and local environmental legislative and regulatory framework, baseline information, and any other relevant information related to the project.
- The project objectives.
- The products, by-products and waste to be generated by the project.
- A description of the potentially affected environment.
- The environmental effects of the project including the social and cultural effects and the direct, indirect, cumulative, irreversible, short-term and long-term effects anticipated.
- Analysis of alternatives for the project site, design and technologies.
- An Environmental and Social Management Plan (ESMP) proposing the measures for eliminating, minimizing or mitigating adverse impacts on the environment.
- Proposed measures for the prevention of health hazards and the ensuring of security in the working environment for the employees, local community and for the management in case of emergencies.
- Such other matters as may be directed by the Sierra Leone Environment Protection Agency.
Annex B: Chance Find Procedure

Purpose of the Chance Finds Procedure
The chance find procedure is a project-specific procedure that outlines actions required if previously unknown heritage resources, particularly archaeological resources, are encountered during project construction or operation. A Chance Find Procedure, as described in IFC Performance Standard 8 and EBRD Performance Requirement 8 is adopted by the project, is a process that prevents chance finds from being disturbed until an assessment by a competent specialist is made and actions consistent with the requirements are implemented.

Scope of the Chance Find Procedure
This procedure is applicable to all activities conducted by the personnel, including contractors, that have the potential to uncover a heritage item/site. The procedure details the actions to be taken when a previously unidentified and potential heritage item/site is found during construction activities. Procedure outlines the roles and responsibilities and the response times required from both project staff, and any relevant heritage authority.

Induction/Training
All personnel, especially those working on earth movements and excavations, are to be inducted on the identification of potential heritage items/sites and the relevant actions for them with regards to this procedure during the Project induction and regular toolbox talks.

Chance Find Procedure
1. If any person discovers a physical cultural resource, such as (but not limited to) archaeological sites, historical sites, remains and objects, or a cemetery and/or individual graves during excavation or construction, the following steps shall be taken: 1. Stop all works in the vicinity of the find, until a solution is found for the preservation of these artefacts, or advice from the relevant authorities is obtained;
2. Immediately notify a foreman. The foreman will then notify the Construction Site Manager and the Environment Officer (EO)/Environmental Manager (EM);
3. Record details in Incident Report and take photos of the find.
4. Delineate the discovered site or area; secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be arranged until the responsible local authorities take over.
5. Preliminary evaluation of the findings by archaeologists. The archaeologist must make a rapid assessment of the site or find to
determine its importance. Based on this assessment the appropriate strategy will be implemented. The significance and importance of the findings will be assessed according to the various criteria relevant to cultural heritage such as aesthetic, historic, scientific or research, social and economic values of the find.

6. Sites of minor significance (such as isolated or unclear features, and isolated finds) will be recorded immediately by the archaeologist, thus causing a minimum disruption to the work schedule of the Contractor. The results of all archaeological work must be reported to the Ministry/Agency, once completed.

7. In case of significant find the Agency/Ministry (Agency for Protection of National Heritage or Archaeological Research Centre, hereinafter referred to as Monument and Relics Commission) will be informed immediately and in writing within 7 days from the find.

8. The onsite archaeologist provides the Heritage team with photos, other information as relevant for identification and assessment of the significance of heritage items.

9. The Ministry must investigate the fact within 2 weeks from the date of notification and provide response in writing.

10. Decisions on how to handle the finding shall be taken by the responsible authorities. This could include changes in the layout (such as when finding an irremovable remain of cultural or archaeological importance) conservation, preservation, restoration and salvage.

11. Construction works could resume only after permission is granted from the responsible authorities.

12. In case no response received within the 2 weeks period mentioned above, this is considered as authorisation to proceed with suspended construction works.

One of the main requirements of the procedure is record keeping. All finds must be registered. Photolog, copies of communication with decision making authorities, conclusions and recommendations/guidance, implementation reports kept.

**Additional information.**

Management options for archaeological site

- Site avoidance. If the boundaries of the site have been delineated attempt must be made to redesign the proposed development to avoid the site. (The fastest and most cost-effective management option).
- Mitigation. If it is not feasible to avoid the site through redesign, it will be necessary to sample it using data collection program prior to its loss.
This could include surface collection and/or excavation. (The most expensive and time-consuming management option.).

- Site Protection. It may be possible to protect the site through the installation of barriers during the time of the development and/or possibly for a longer term. This could include the erection of high visibility fencing around the site or covering the site area with a geotextile and then capping it with fill. The exact prescription would be site-specific.

**Management of replicable and non-replicable heritage**

Different approaches for the finds apply to replicable and non-replicable heritage. Replicable heritage Where tangible cultural heritage that is replicable23 and not critical is encountered, mitigation measures will be applied.

The mitigation hierarchy is as follows:

- Avoidance.
- Minimization of adverse impacts and implementation of restoration measures, in situ.
- Restoration of the functionality of the cultural heritage, in a different location.
- Permanent removal of historical and archaeological artefacts and structures.
- Compensation of loss - where minimization of adverse impacts and restoration not feasible.

**Non-replicable heritage**

Most cultural heritage is best protected by in situ preservation since removal is likely to result in irreparable damage or even destruction of the cultural heritage.

Nonreplicable cultural heritage 24 must not be removed unless all of the following conditions are met:

- There are no technically or financially feasible alternatives to removal.
- The overall benefits of the project conclusively outweigh the anticipated cultural heritage loss from removal; and
- Any removal of cultural heritage must be conducted using the best available technique advised by relevant authority and supervised by archaeologist.
**Human Remains Management Options**

The handling of human remains believed to be archaeological in nature requires communication according to the same procedure described above.

There are two possible courses of action:

- **Avoid.** The development project is redesigned to completely avoid the found remains. An assessment will be made as to whether the remains may be affected by residual or accumulative impacts associated with the development, and properly addressed by a comprehensive management plan.

- **Exhumate.** Exhumation of the remains in a manner considered appropriate by decision makers. This will involve the predetermination of a site suitable for the reburial of the remains. Certain ceremonies or procedures may need to be followed before development activities can recommence in the area of the discovery.
EMERGENCY CONTACTS

Ministry of Tourism and Cultural Affairs 28B Kingharman Road Brookfield
Freetown, Sierra Leone, info@tourism.gov.sl +232-123-456-789

Monuments and Relics Commission – 96 Campbell Street Freetown
info@mrc.gov.sl T: +232-76-728237
# Annex C: Consultation/Stakeholder Engagement Matrix

## Stakeholder influence on Project outcomes

<table>
<thead>
<tr>
<th>Level of impact on stakeholder</th>
<th>A. High</th>
<th>B. Medium</th>
<th>C. Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Level</td>
<td><em>Influential community organizations: market women association, petty traders’ union, bike riders association,</em> <em>Community Leaders: Market chairladies, chiefs, youth leaders, community representatives</em> <em>Motor Drivers Union</em> <em>Petty traders on roads identified for improvement.</em> <em>Households along the road</em></td>
<td></td>
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<tr>
<td>Institutional Level</td>
<td>SLRA, MoWPA, <em>Ministry of Finance, MAFFS</em> <em>KDC, District Council Chairman, Chief Administrator, Paramount Chief, Environment Department,</em></td>
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<td><strong>1st Engagement</strong></td>
<td><strong>Meeting Location</strong></td>
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</table>
| Kailahun District Council | **Date:** 18<sup>th</sup> October 2018  
**Time:** 10:00 – 10:45am  
**Target Participants:** Local council officials, key stakeholders such as Paramount Chiefs section chiefs etc., Commercial Drivers’ Union Executive  
**Total Participants:** |
| Koindu | **Date:** 18<sup>th</sup> October 2018  
**Time:** 13:30am – 15:15pm  
**Target Participants:** Stakeholders in Yenga, Pengubengu,  
**Total Participants:** |
| **Focused/Household Group Engagement** | **Details** |
| Settlements along the Road (Borbu, Vaama, Kpandebu, Gbalahun Kangama, etc) | **Date:** 19<sup>th</sup> October 2018  
**Time:** 10:00 – 11:40am  
**Target Participants:** Petty traders, Commercial Drivers’ Union Executive,  
**Total Participants:** |
| **2nd Engagement**   | **Meeting Location** | **Details** |
| Kangama & Koindu, | **Date:** 3<sup>rd</sup> and 4<sup>th</sup> June 2023  
**Time:**  
**Target Participants:** Stakeholders in Koindu  
**Total Participants:** Residents, petty traders |
| **Focused/Household Group Engagement** | **Details** |
| Settlements along the Road (Kpongbondu community Centre Fenuesu Community, Koindu) | **Date:** 4<sup>th</sup> June  
**Time:** 10:00 – 11:40am  
**Target Participants:** Petty traders, Commercial Drivers’ Union Executive,  
**Total Participants:** |
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Strakeholder Consultations

Name: Kelolamu District Council Hall

Location: Kelolamu District Council Hall

Kolomu - Liberta Border Roads Project

Consultancy Services for Update of Feasibility Studies for the Kolomu - Kolomu - Gumea Border and
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Date: 18/10/2018

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Date: 19/10/2018

Location: Koindu Court Berry

Stakeholder Consultations

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**Stakeholder Consultations**

Kolindu - Liberia Border Roads Project:
Consultancy Services for Update of Feasibility Studies for the Kolindu - Kolindu - Guinea Border and

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Stakeholder Consultations

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<tr>
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<td>Chairman</td>
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Annex E: a. Photographic Plates

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<th>Engagement in Kailahun District Council</th>
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<td>Household consultation with locals along the road at Borbu</td>
<td>Bird Species along the road</td>
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<td>Consultation with Council Officials</td>
<td>Discussing with local traders along the Buedu Market</td>
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Discussions with locals at Kangama
Consultation with EPA regional office Kailahun
Administration of questionnaires
Consultation at Yenga

b. Photo during project updates

Bad section of the road
Sections that cut during the raining season
Seasonal stream flowing across the project road
Social Officer consulting with community youths

Safeguards team Engaging Chiefs at Koindu.

SLMB Primary school at Baoma Kukuma Junction
Annex F: Minutes of Stakeholders Engagement
STAKEHOLDERS ENGAGEMENT AT KPONGBONDU

MUNITES OF THE MEETING

A stakeholders consultation meeting was convened by the Environmental and Social services Department of the Sierra Leone Roads Authority (SLRA) headed by the Director, Md. Lucy Essa, from the 3rd - 7th June 2023, at different locations including Kpongbondu community Centre Fenesu Community, Koindu etc. However, individual consultations were carried out in smaller settlements to gather socioeconomic information and disseminate the information regarding the upgrading of the remaining section.

At Kpongbondu community Centre at 10:45 AM

The Director of Environmental and Social services Department called the meeting to order, and informed participants that it was a brief meeting meant to inform them of new developments relating the upgrading of the road from Buedu to Koindu, Koindu – Guinea/Liberia Border Roads Section. She told participants that the team is mindful that participants could have other engagements.

The started with individual silent prayers followed by self-introduction and registration of participants which was done by a community Teacher who volunteered.

In her opening statement, Madam Essa informed the gathering the team was there to consult with the for the upgrading of the Road and urged all participants to adequately respond to whatever questions may ask, with regards their socioeconomic status in their community. She further emphasized the relevance of those information to the project, and systematically explained the processes and procedures for the development of the proposed road project in compliance with the AfDB Environmental and social safeguards instrument requirements.

The ESS Director recalled the attention of the stakeholders about the Environmental Impact Assessment and property acquisition surveys which were done in 2018 and upgraded in 2021. She said the Bank has requested for an update of these environment and Social (E &S) instruments to reflect the current situation in the proposed project area of influence. For instance, all new construction and developments that within the past two years along the project road needs to be documented in the report and submitted to the Bank for display on the web site for 120days before presenting it to the Board this 2023.
Additionally, she educates the people that the Environmental policy of Sierra Leone recognizes the public consultation, which is an integral part of an EIA, and it should be ensured that EIA procedure include public comments before consideration by decision makers. AfDB environmental guidelines are required to ensure people’s participation. She also mentioned the importance of the consultation process in understand both the nature and extent of the potential environmental impacts and the acceptability of proposed mitigation measures.

She appealed to the participants to pay attention and corporate with the team to expedite the necessary data collection to enable them to meet the timeline of the Bank. Madam Lucy told participants hat since funding was not enough to update the entire road from Kailahun, the new cut -off -date is established as the 15th June 2023 beyond which any development of structures or planting of crops will not be eligible to compensation. Therefore, she admonished the town Chief and participants to inform all community members to avoid such developments.

The Town chief, Chief Tamba Nyuma welcomed the members of the team from SLRA, the participants, and thanked the Government of Sierra Leone and the AfDB for their relentless efforts to facilitate the completion the proposed project road. He however promised the team that, though the meeting was impromptu, he assured them of their fullest corporation and urged his people to corporate with the team. He mentioned the importance of the proposed road, linking several communities, which when is completed will create linkages between farming communities and the markets. He also mentioned the fatalities experienced currently for years especially during the raining season, transportation costs and the long travelling hours as the major constraints in plying along the route, which will become a thing of the past with its completion.

After presenting the reasons for the visit, a question-and-answer (Q&A) session was given for participants to raise their concerns and give salient information to form part of the reports such has any differences in the exploitation of natural resources in the project areas etc.

Q & A Session

Question 1. Mr. Fayia James, a school Teacher at the community wanted to know the duration for the Donor to approve the financing for the road to be constructed because government project has bureaucratic procedures that normally take years to implemented?

ANS: The Director, Madam Lucy explained updating the EIA and PAP are the policy requirements for the AfDB to approve funding for the implementation of infrastructural projects of this nature. She admonished participants to be
optimistic that the proposed project will come to fruition since a decision will be taken at the board meeting this year. She assured participants that they will be informed of any such development as soon as it occurs.

Question 2. Madam Tewa Tengbeh, an elderly woman in the village asked about their plantations that are located along the road?

Answer: The Environment and Social Services (ESS) Director informed participants that one of the main reasons for the visit is to take note of all the plantations and other economic crops that are within the Right of way, which is the 15 meters from the Centre of the road in settlements and 30m outside settlement. She also informed them that any plantation and economic crops within the right of way that will be affected by the project, will be compensated for to its rightful owner. She further cautioned the stakeholders not to allow anyone to build or plant very close to the road because they will not benefit from the compensation package from the date of that meeting since the Cut-off date will be peg as the 15th June 2023.

Question 3. Mr. Tamba Abu, the Youth Chairman of the community appealed to consider his colleagues in employment during the project implementation.

In responding, Madam Lucy explained the Local content policy which requires the employment of local populations in projects that are implemented in their area and gives more power to the local people. She however, cautioned that the youth should now engaged themselves in skills training so that they will easily gain employment during the project implementation. If the community along the project area have a lot of trained and qualify staff, it will be irrelevant for the contractor to import workers from other part of the country since it will be cheaper to get workers from the project areas. She also informed the participants that the youth employments should be done by the recommendations of the local chiefs who should only recommend disciplined workers.

Question 4. Madam Sia James, a women’s Leader, wanted to know if there will be some considerations in the areas of female employment?

They were assured that female participation has been given a legislative support of 30% quota and the contractor will be informed to implement this policy requirement fully. She cited other projects where women are truck Drivers, Operators and hold relevant technical positions.

STAKEHOLDERS ENGAGEMENTS AT FENESU COMMUNITY

A stakeholder consultation meeting was held under a forest tree at the chief’s compound by the Director of the Environmental and social Services Department, Madam Lucy Essa on the 4th June 2023 at 12 :15 PM. The meeting
was also chaired by the Director. She asked individual silent prayer to be observed followed by the introduced the members of the team and the participants. There was massive turnout, and a community teacher was assigned to write down the names of the participants.

In her opening statement, the Director, Madam Lucy Essa briefly explained to the participants the purpose of their visit, which she said was to give them an update on the status of the project and the needed funding. She reminded that that about two years ago (2021) a team of safeguards specialists visited that project road corridor to identify Project Affected Persons (PAPs) and their information relating to socioeconomic status. She further informed them that an ESIA study was also carried out which was disclosed in Kailahun and Koindu in 2022.

However, since the funding that was received from the AfBD was only adequate for 25km section on the Kailahun – Koindu and the Border Roads Project, the visit is meant to update those reports to reflect the current situation in the project areas. The updated reports are a policy requirement for the AfDB and are to be launched on their web site for 120days before presenting it to the Board later this year (2023) Madam Essa admonished participants to be optimistic that the Bank will approve the financing required to complete the remaining section of the road.

She admonished the people that those kiosks and other structures that were built along the right of ways after the PAPs and EIA studies will not be compensated. She further said they want to know if there are new NGOs operating in the area or any rape and other gender based violent are prevalent in the community. She also cautioned them and made them aware that it is punishable by law that any parent who allows her daughter to marry below the age of 18 years.

Q & A

1. **Fatu Fallah**, the women’s leader thanked the Director and her team on behalf of the entire women and expressed their happiness for the good news and assured her that they will continue to pray and have faith in the government find funding for the completion of the road with time. She called on her fellow women to corporate with the team in updating information relating to the Socio-Economic survey and property acquisition data respectively.

2. **Sahr Nyuma** an elderly man at Fenesu asked whether the road will be tared or just a sport improvement as it has been before?

Answer: The Director assured participants that the road will be upgraded to an asphaltic finished surface just like the one from Kenema to Kailahun Town.
3. Sahr James, a bike rider at Fenisu Village, also expressed his happiness for such good news on behalf of his colleagues. He said the maintenance cost is a burden on them due to the poor road network as commercial bikes remain the only fastest means of transportation from Koindu to Kailahun.

4. Finda Bockarie, the deputy women’s leader in the community, appealed to the Director to consider them for employment in the proposed project.

In responding, Madam Lucy gave assurances to the women that they have 30% Cota of employment in the project and must train themselves now to be relevant for employment in the project.

**Concerns raised during the other consultations and engagements held.**

A summary of the concerns and question raised during the individual consultations are as follows:

- At Koindu Madam Essa engaged with the Chiefdom Speaker and the Town Chief who informed that about the need to update the E & S instrument which she said aids in the approval process by the AfDB. She raised concerns about people selling close to the road and wanted to know if there were new PAPs.

The town chief said they have seen the team severally but all they want is the road. He said there is need for SLRA to come and engage with stakeholders in a town meeting since most people will doubt what they tell them especially the illiterate population.

- The Town chief at Koindu wanted to know why the time was chosen for such update of the E & S instrument since many might misunderstand it as being politically motivated.

Madam Essa in responding told the Chief that the GoSL has not relented in seeking funding for the completion of the remaining section, but it is only now that the AfDB has shown interest and they are not politically motivated but are interested in the reduction of poverty on the African Continent. The AfDB has its own procedures which includes displaying the E& S instruments and project information on their web site for 120 days prior to the Board sitting for approval of financing any project. To the AfDB, it does not matter if there is a change of Government, they will still continue with the project they have shown interest in financing.

The Town chief also appealed for the construction of 5km of township roads in Koindu which the team said they will recommend to the Engineers. Madam Essa said the town roads should not have resettlement issues because funding will not be available under this project. She also said they also faced challenge
in the past in identifying the owners several burnt houses whose owners were not available.

The Town and Section Chief Assured they team that the structures in question were built by foreigners who left during the war and never returned but word has been sent out for all to reclaim their houses within the next three months or lose it. They chiefs also assured the team that the road is what is important and if no one show up after three months then when verification is done, the structures should be removed from the RAP.

**Other Concerns**

- PAPs wanted to know when they project will started.
- Whether they PAPs will be compensated and allowed to reconstruct new structures to relocate to.
- If employment of youths will form part of the project Package.
- What benefits are attached to the project for farming communities.

In addressing these concerns, PAPs were informed that employment is part of the project benefit and women stand to gain 30% employment but must ensure that they have the requisite qualifications required.

PAPs were also assured that all those affected will only be required to move after receiving compensations and will be given three months duration to construct new structures for their relocation away from the ROW.

With regards to the Yenga occupation, PAPs were informed that the issue is a security matter and will be treated as such. Madam Essa admonished PAPs to exercise restraint and wait for the GoSL to have a lasting solution on their behalf.