

# Environmental & Social Management Plan (ESMP)

*ESMP for Phase 6 of the Coastal Highway Project- Liberia: Construction of Road from Sanniquellie to Loguatu in Nimba County*

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DECEMBER 2017

**GENERAL INFORMATION**

**Project Title:** COASTAL HIGHWAY PROJECT PHASE 6 - LIBERIA:  
CONSTRUCTION OF ROAD FROM SANNIQUELLIE TO  
LOGUATUO IN NIMBA

**Project Number:**

**Country:** LIBERIA

**Department:** MINISTRY OF PUBLIC WORKS

**Division:**

**Project Category:**

**Starting date of implementation:**

**Project completion date:**

**Date of operation :**

**Period covered by the plan:**

## LIST OF ACRONYMS

AfDB	African Development Bank
AIC	AIC Progetti
CSP	Country Strategy Paper
EPA	Environmental Protection Agency
EPE	European Principles for the Environment
EPML	Environmental Protection and Management Law
ESAP	Environmental and Social Assessment Procedure
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
EU	European Union
FAPS	Food and Agriculture Policy Strategy
FDA	Forestry Development Authority
FFI	Fauna and Flora International
GoL	Government of Liberia
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
IESIA	Integrated Environmental and Social Impact Assessment
ITF	Infrastructure Trust Fund
MPEA	Ministry of Planning and Economic Affairs
MPW	Ministry of Public Works
PS8	Performance Standard 8
PIU	Project Implementation Unit
RAP	Resettlement Action Plan
RMC	Regional Member Country
RoW	Right of Way
SESA	Strategic Environmental and Social Assessment
SIA	Strategy Impact Assessment
TSC	Tristar Collaborative

## **EXECUTIVE SUMMARY**

### **Introduction**

After the war that ended in 2003, the Government of Liberia, with the assistance of the donor community, developed in 2008 the first Poverty Reduction Strategy (PRS). The PRS defined the development programme of the government of Liberia. Since then, a new Poverty Reduction Strategy called The Agenda for Transformation, Steps toward Liberia RISING 2030, covering the period 2012-2017 has been developed and is now underway. Together with the wider economy the transport system was devastated by the long period of war. Value added by the transport and communication sector in Liberia fell by 69% between 1987 and 2005. However, following policy reforms introduced by the new government, Liberia has made substantial progress. The National/Regional Indicative Programme of the 10th EDF signed by the Government of Liberia and the European Commission reflects the EC's willingness to support the transport sector in Liberia. Within the framework of this Indicative Programme, it has been foreseen to allocate funds for feasibility studies, detailed designs, optional procurement services and optional supervision of works, of which the Environmental and Social Impact Assessment for Phase 6 of the Coastal Highway project; stretching from Sanniquellie to Loguatu

### **Objective**

The objective of the assignment was to prepare a detailed ESMP to address the anticipated negative environmental and social impacts of the project.

### **Scope**

The scope of services undertaken by the Consultant included the preparation of the ESMP whose purpose was to define and reach an agreement with project sponsors concerning the following:

- Beneficial and Adverse Impacts
- Mitigation and enhancement programs
- Monitoring programs
- Consultations
- Complementary initiatives
- Responsibilities and institutional arrangements
- Estimated costs
- Implementation schedules and Reporting

## **Legislative Framework**

Chapter Two of this project report outlines several legislative issues that were considered during the exercise. This is to ensure that the proposed project complies with the relevant legislative and planning requirements of Liberia. They generally comprise of legislations that encompass laws relating to environment, agriculture, water, public health and land.

The project in question generally conforms to the legal requirements outlined in Chapter Two and subject to the ESMP proposed in Chapter Five of this report.

## **Context**

As indicated in the introduction section, This project falls under the “Coastal Highway Project” which comprises the construction of a number of roads across Liberia, funded by the African European Union and the Development Bank (AfDB). Specifically, this component is the phase 6 of the Coastal High Project and involves the reconstruction of the road from Sanniquellie to Loguatu in Nimba County. This chapter of the ESMP document looks at the location and technical description of the proposed project and briefly describes project activities and major environmental and social components that will likely be affected positively or negatively by the project.

## **Methodology**

The consultant adopted a participatory methodology during the study. Several consultative meetings were conducted with MPW, the communities and other stakeholders. The consultant further reviewed various legal issues relevant to the exercise. The existing Environmental Impact Assessment Report was reviewed in detail by the consultant. The following sections provide a brief of the key findings.

## **Beneficial and Adverse Impacts**

### *Positive Impacts*

The major positive impacts are related to job opportunities. The direct and indirect job opportunities that will be provided by the project can be considered as a positive aspect. The local people will be directly employed to work at the construction sites. Some individuals may gain skills that can be applied in other road construction projects.

The benefits of the project include easy access to other communities and major towns and cities as well as to schools and public services are evident. Potential beneficiary enterprises affected by and contributing to regional socio-economic transformation will be small industries like saw mills and joineries, grain mills and other agricultural processing, trade and storage businesses. As a consequence, the quality of life and extent of economic opportunity will be transformed.

On the gender side, women should benefit from opportunities to work on the project as a result of project gender policy. Such income and opportunities for trading and provision of services to salaried project workers will help women to start small businesses.

### *Adverse Impacts*

Road construction projects can be expected to have direct and indirect impacts on villages/settlements where the proposed route will pass. The potential for negative direct impacts might be in any social and cultural interaction between the contractor's workers and local populations. There may also be minor effects on agriculture, if there would be a restriction on land use in the right of way, and, in any involuntary resettlement requirement. Issues addressed in the ESMP include negative impacts with respect to the biophysical environment; the main aspects analyzed are the impacts of the project on water resources, tree cutting, local land degradation and soil erosion, slope stability, aesthetics and visual impact and ecological issues.

### *Potential Socio - Economic Impacts*

Along the road and within the right of way there were housing units, fences of different types. However, these will need to be compensated for, hence there will be the need for a Resettlement Action Plan (RAP) for this project.

Also, farmlands and plantations along the wayleave owned by different farmers may be affected by the project. The project intends to mitigate this by minimizing land takes in areas of ROW where there are farms and plantations.

Furthermore, other important potential socio-economic impacts which need to be managed include: health and safety threats, possible impact of immigrant workers, together with impact on aesthetic values.

### **Mitigation Measures and Complementary Initiatives**

No impacts are anticipated if planning and management for the project follows detailed frameworks developed for the project. The road follows the old corridors and therefore will minimize compensation and resettlement requirements.

### **Environmental and Social Monitoring Programme**

The overall objective of environmental and social monitoring is to ensure that mitigation measures are implemented and that they are effective. Environmental and social monitoring will also enable response to new and developing issues of concern. The activities and indicators that have been recommended for monitoring are presented in the ESMP. Environmental monitoring will be carried out to ensure that all construction activities comply and adhere to environmental provisions and standard specifications, so that all mitigation measures are implemented.

### **Consultations**

Public consultations have been held with local population in the project area by AIC/TSC and MPW while preparing the ESMP. Furthermore, the standard procedures will be followed for disclosure in line with guidelines of the EPA.

## **Responsibilities and Institutional Arrangements**

MPW will ensure implementation of the project ESMP with the support of its environmental staff. Contractors will be held to account for implementation of their responsibilities in the Project Management Matrix. The institutional arrangements for implementation of the ESMP under the project include the following:

- EPA
- MPW
- Environmental steering committee
- Supervision consultant (Lead environmentalist)
- Contractor
- Project Financiers

## **Estimated costs**

The estimated cost of implementing the ESMP was a total of Eight Hundred and Ninety Seven Thousand, Seven Hundred and Ten United States Dollars (USD 897,710). Table 7 details the cost items of Capacity Building and institutional strengthening while Table 9 provides the cost breakdown for Mitigation Activities as well as Monitoring Measures.

## **Implementation Schedule and Reporting**

The activities related to environmental and social management and monitoring have to be integrated in the overall construction schedule. Most of the environmental management actions are standard or "good housekeeping" measures applicable to construction projects. These have to be observed throughout the construction activities and are shown as an overall activity. The key elements of the implementation schedule are presented in Table 8 of this ESMP.

## **Conclusion**

MPW recognizes that it has a role to play and a responsibility in protecting and enhancing the environment in which the project is to be deployed to meet the needs of the communities without compromising the integrity of the environment and a major disruption of the socioeconomic setup of project affected areas. This Social and Environmental Management Plan has therefore described in detail the processes MPW will follow to maximize its compliance to statutory requirements as well as those of project sponsors and minimize the impacts of the project on the general environment.

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## 1.0 INTRODUCTION

After the war that ended in 2003, the Government of Liberia, with the assistance of the donor community, developed in 2008 the first Poverty Reduction Strategy (PRS). The PRS defined the development programme of the government of Liberia. It was implemented between April 1, 2008 and June 30, 2011 (the end of the 2010/2011 fiscal year). The main thrust of the first PRS was to build on the country's potential. It considers transport as a key factor in reducing poverty and raising living standards in the medium and longer term. Since then, a new Poverty Reduction Strategy called The Agenda for Transformation, Steps toward Liberia RISING 2030, covering the period 2012-2017 has been developed and is now underway. The activities related to Infrastructure are now part of Pillar II – Economic Transformation, more specifically Sector Goal C: Infrastructure.

Together with the wider economy the transport system was devastated by the long period of war. Value added by the transport and communication sector in Liberia fell by 69% between 1987 and 2005. However, following policy reforms introduced by the new government, Liberia has made substantial progress.

Liberia's growth strategy is based on rebuilding roads and other critical infrastructure; reviving the traditional engines of growth in mining, minerals, forestry, and agriculture; and establishing a competitive business environment to help diversify the economy in the medium-term. However, the majority of roads are unpaved and unable to provide all-year access to either county or district headquarters. Vehicle operating costs, fares and tariffs are, consequently, very high. The Liberian long and intense rainy season makes it one of the harshest for maintaining roads. Some 3 000 to 5 000 mm of rain falls per annum, concentrated over a 5-6 month rainy season from May to October, though some rain falls during every month of the year. cursory observation indicates that laterite (gravel) roads never fully dry during the rainy season.

The European Union has been a long-term development partner with Liberia and has been in the past years (and still is) the largest grant donor. Based on its own research and recommendations, the EU, with the approval of the Government of Liberia, intends to focus their assistance to the transport (road) sector in Liberia, which involves what is described as the Coastal Highway Project including;

- ✚ Hybrid Performance-based Maintenance and Management of Roads (HPMMR);
- ✚ Feasibility Studies, Designs and optional Supervision services for:
  - Improvement/expansion of sections of the Coastal Corridor, connecting Sierra Leonean Border (Bo River) - Monrovia – Buchanan – Greenville – Harper;
  - Upgrading of the section Toe Town to the border crossing with Ivory Coast;
  - Upgrading the road Sanniquellie in the Nimba County to Danané in Ivory Coast

The National/Regional Indicative Programme of the 10th EDF signed by the Government of Liberia and the European Commission reflects the EC's willingness to support the transport sector in Liberia. Within the framework of this Indicative Programme, it has been foreseen to allocate funds for feasibility studies, detailed designs, optional procurement services and optional supervision of works, of which the Environmental and Social Impact Assessment for Phase 6 of the Coastal Highway project; stretching from Sanniquellie to Loguatu

## 2.0 OBJECTIVE OF THE ESMP

The objective of the assignment is to prepare a detailed ESMP to address the anticipated environmental and social project impacts.

### 2.1 Scope of the ESMP

The scope of services undertaken by the Consultant included the preparation of the ESMP with the aim to define and reach requirements of the project sponsors and local environmental regulations regarding the following:

- Beneficial and Adverse Impacts
- Mitigation and enhancement programs
- Monitoring programs
- Consultations
- Complementary initiatives
- Responsibilities and institutional arrangements
- Estimated costs
- Implementation schedules and reporting

### 2.2 POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

The ESIA for the proposed Phase 6 of the Coastal Highway project will be conducted within the policy, legal and institutional framework of the Liberia, EPA, EU, AfDB and relevant international environmental conventions to which the Government of Liberia is a signatory. The Environmental Protection Agency (EPA) is the environmental regulatory authority in charge of issuing environmental guidelines and reviewing the Environmental Impact Assessment process. This framework implies that all projects implemented within the Republic of Liberia should be sustainable and environmentally friendly. The section focuses on:

- Environmental Protection Agency Functions and Policies
- Ministry of Public Works
- Constitution of the Republic of Liberia
- Components of Legal Framework
  - i. Categories of Legislations in Liberia
  - ii. Laws
  - iii. Executive order
  - iv. Regulations
  - v. The National Environmental Policies of Liberia
  - vi. The Environmental Management and Protection law
  - vii. The Act Creating the Environmental Protection Agency
  - viii. Community Right Law
  - ix. Land Rights and Land Tenure Policy

- x. Customary Law
- xi. The National Transport Master Plan
- xii. Liberia Land Commission Act of 2009
- xiii. Key Policy Issues
- African Development Bank Operational/ Safe Guard Policies
- EU Environmental Policy, Legal and Institutional Framework
- International standard and Best Practices

The main functions of the EPA are:

- Co-ordinate, integrate, harmonize and monitor the implementation of environmental policy and decisions of the Policy Council by the Line Ministries,
- Propose environmental policies and strategies to the Policy Council and ensure the integration of environmental concerns in overall national planning;
- Collect, analyze and prepare basic scientific data and other information pertaining to pollution, degradation and on environmental quality, resource use and other environmental protection and conservation matters and undertake research and prepare and disseminate every two years a report on the state of the environment in Liberia;
- Encourage the use of appropriate environmentally sound technologies and renewable sources of energy and natural resources;
- Establish environmental criteria, guidelines, specifications and standards for production processes and the sustainable use of natural resources for the health and welfare of the present generation, and in order to prevent environmental degradation for the welfare of the future generations,
- Responsible for the provision of guidelines for the preparation of Environmental Assessment and Audits, and the evaluation of environmental permits

Regionally, Liberia is a member of a number of organizations that play important role in the protection and management of the environment. These organizations include the Economic Community of West African States (ECOWAS), the Mano River Union (MRU), the West African Rice Development Association (WARDA), and the African Union (AU).

Nationally, in addition to the EPA, other organizations play vital role relevant to a particular proposed project as it relates to the protection and management of the environment. Particularly, the Forestry Development Authority (FDA), Ministry of Public Works (MPW), and Ministry of Health and Social Welfare (MHSW), Ministry of Agriculture (MoA), Ministry of Commerce (MoC), the various cities corporation, and the Liberia Water and Sewer Corporation.

### 2.2.1 Ministry of Public Works

Department of Public Works was created by an Act of the National Legislature in 1928, and was later changed to the Ministry of Public Works in 1972 to adequately administer the Engineering component of the State in terms of surveying, drafting/designing, construction and supervision, to improve and maintain, direct or by contract all highways, bridges, roads, streets, airport, seaport, and all other public infrastructure in the Republic of Liberia.

### 2.2.2 Constitution of the Republic of Liberia

Article 7 of the 1986 Constitution of the Republic of Liberia sets the fundamental basis for the Constitutional, legislative, and institutional frameworks for the protection and management of the environment. It also encourages public participation in the protection and management of the environment and the natural resources of Liberia.

### 2.2.3 Components of legal framework

#### Categories of Legislations in Liberia

These categories of legislations in Liberia, relevant to Environmental works are governed by national bodies and are mandatory to be observed and taken in consideration when undertaking a major project that requires and Environmental and Social Impact Assessment (ESIA).

#### Laws

Laws are passed by the National Legislature of Liberia comprising of the Senate and the House of Representatives. Any citizen or group of citizens, Cabinet Ministers, Managing Directors of public corporations or agencies can propose a bill to the National Legislature for enactment. The draft bill is first passed over to the appropriate Steering Committee of the Legislature. In case the environmental bill, this committee is generally the Committee on Natural Resources and the Environment. The Committee reviews, assesses and presents the bill to the Legislative Plenary with appropriate amendments for debate, public hearing and subsequent enactment by the legislature.

#### Executive order

The Executive Branch of government headed by the president can issue Executive Order without the approval of the National Legislature. The Executive orders have the power of a law provided that they do not contravene the existing law. The power of such orders has a limited time of existence.

#### Regulations

The national Legislature has empowered Cabinet Ministers and Managing Directors of public corporations and agencies to issue regulations for their respective functionaries without legislative approval or supervision, provided that such regulations are not inconsistent with the statutory Laws and the Constitution of Liberia.

### 2.2. 4 The National Environmental Policy of Liberia

Approved in November 2002, the National Environmental Policy of Liberia is a legal instrument that provides a broad framework for the implementation of national environmental objectives and plans. The National Environmental Policy Provides:

- The systematic and logical framework by which to address environmental issues. Section 4.7 of the policy calls for an EIA on all major developmental, socio-

economic and land use activities in any form which may have adverse effect/impact on the environment to one degree or another

- ☐ Benchmarks for addressing environmental problems in the medium and long term
- ☐ Context for financial donor support to particular sector and non-sector projects
- ☐ Demonstration of Liberia's commitment to sustainable management of the environment and natural resources.

#### **2.2.4.1 The Environment Protection and Management Law**

The approved law provides:

- a. Regulations for conducting EIAs
- b. Tools for environmental management
- c. Framework for the effective enforcement of environmental standards
- d. Sector-specific regulations
- e. Integration of concepts of international environmental laws into national environmental protection and development frameworks

#### **2.2.4.2 The Act Creating the Environmental Protection Agency**

The Act Adopting the Environment Protection and Management Law of the Republic of Liberia 2003, (GOL, 2003b) hereafter referred to as the Environment Protection and Management Law (EPML) is the principal piece of legislation covering environmental protection and management in Liberia. It provides the legal framework for the sustainable development, management and protection of the environment by the EPA in partnership with relevant ministries, autonomous agencies and organizations. It also stresses inter-sectorial coordination while allowing for sector specific statutes. This act provides for:

- f. An autonomous entity empowered to ensure that environmental policies and laws are implemented
- g. A Policy Council to propose and update environmental policies as required/needed
- h. An institutional arrangement that supports the agency in carrying out its mandate/functions

Other existing GoL policies and laws may be found relevant to the proposed AfDB-funded coastal highway project during the conduct of the PEA. The ones discussed below will be updated and elaborated during the ESIA.



### 2.2.5 The National Transport Policy and Strategy

In 2009, in an attempt to set a framework for implementing a programme of rehabilitation, the first National Transport Policy and Strategy (NTPS) was produced. Its focus was on a number of strategic objectives, namely to:

- a. rehabilitate, reconstruct and construct primary/secondary, feeder and neighbourhood roads;
- b. improve the transport sector through effective systems and infrastructure for quality service provision;
- c. improve urban and rural transport;
- d. and build human resource capacity.

The NTPS noted that in order to accomplish these objectives, Liberia needed:

- a. A National Transport Master Plan, and
- b. An effective Road Maintenance Management System.

### 2.2.6 Community Rights Law

The Community Rights Law was enacted in 2009, and provides:

- a. Community rights guidance regarding ownership and use of forest land resources. It aims to empower communities to fully engage in the sustainable management of the forests of Liberia by creating a legal framework that defines and supports community rights in the management of forest resources;
- b. For all forest resources on community forest lands to be owned by local communities;
- c. For all forest resources in Liberia, regardless of any proprietorship, to be regulated by the Forestry Development Authority for the benefit of the people, except forest resources located in community forests and forest resources that have been developed on private or deeded land through artificial regeneration (see Recent Development in Forestry Regulation above);
- d. For any decision, agreement or activity affecting the status or use of community forest resources to not proceed without the prior, free, informed consent of said community;
- e. For the recognition of community land tenure rights such that they shall apply to tenure systems recognized by the Constitution and laws of Liberia;
- f. For all matters related to land tenure and proprietorship to be dealt with by the Land Commission in accordance with national land policies issued and legislations enacted;
- g. For the Authority to perform its duties in a fair and impartial manner to ensure that all communities equitably benefit from the Authority's technical assistance and support in the management of community forest resources;
- h. For all forest resources to be regulated, protected, managed and developed so as to;
  - ☐ sustain and optimize the potential yield of their economic, social and environmental benefits;
  - ☐ ensure the fair and equitable distribution of their economic, social and environmental benefits to members of society;

- ☐ promote community-based forest management with the vision of granting communities the right to manage forest resources;
- ☐ develop the capacities and capabilities of communities to enable them equitably participate and benefit from sustainable management of forests;
- ☐ conserve natural resources, biological diversity, ecosystems and habitats;
- ☐ encourage the active participation of all members of society; and
- ☐ promote aesthetic and cultural value of the Liberian society,

### 2.2.7 Customary Law

The Constitution of Liberia recognizes customary law. Therefore, customs are a recognized source of law in Liberia, according to Article 2 of the Constitution. The Constitution provides that statutory laws and common law of the formal legal system govern all Liberians. This provides:

- a. That the administration of justice in the hinterland are government-created customary courts, presided over by the chiefs while commissioners and superintendents are involved with administrative duties and as agents of executive oversight. (Article 65 of the Constitution);
- b. That statutory circuit courts are legally allowed to review customary law decisions, but this is very rarely done; and
- c. That [the administration of] tribal affairs through tribal chiefs who shall govern freely according to tribal customs and traditions so long as these are not contrary to [statutory] law. (Article 29, the General Rule of Administration within customary law includes a number of guidelines that deal with land ownership, resource allocation and appropriate measures for decision-making that will come into play in all phases of the Coastal Highway Project)

### 2.2.8 AfDB's Environmental Policy, Legal and Institutional Framework

The consultant has taken into account the International environmental and social requirements of the project financing institutions; these include the African Development Bank policies. The Social and Environmental assessment of the project was therefore carried in accordance with the AfDB policies and guidelines as follows:

- AfDB Policies and guidelines typically applicable to ESIA process as follows:
  - a. Policy for Integrated Water Resources Management (2000);
  - b. Handbook on Stakeholder Consultation and Participation (2001);
  - c. Integrated Environmental and Social Impact Assessment Guidelines (2003);
  - d. Involuntary Resettlement Policy (2004)
  - e. AfDB Group's Policy on the Environment (2004);
  - f. Environmental and Social Assessment Procedures (2009);
  - g. AfDB Bank Group Policy on Disclosure and Access to Information (May2011)

Several international conventions and agreements are considered applicable to the project, including, convention on biological diversity, convention on wetlands of international importance (RAMSAR), convention on conservation of migratory species of wildlife; the Rio de Janeiro

Agenda 21, adopted in 1992, and the African convention on conservation of nature and natural resources.

The project triggers the five operational safeguards of the AfDB as outlined below.

OS 1: Environmental and Social Assessment: This includes issues such as scope, categorization, use of Strategic Environmental and Social Assessment (SESA), and Environmental and Social Management Frameworks, climate-change vulnerability, public consultation, grievance procedures. This safeguard is catered to in the ESIA document prepared for the project, particularly Chapters 6 to 8. Chapter 6 and 7 of the ESMP also lays out how this operational safeguard will be adhered to.

OS 2: Involuntary Resettlement: Land Acquisition, Population Displacement and Compensation. An entire Resettlement Action Plan (RAP) is being prepared for the project to ensure adherence to the requirements of Land Acquisition, Population Displacement and other compensations issues as required by the Operation Safeguard 2 of the AfDB

OS 4: Pollution Prevention and Control, Greenhouse Gases, Hazardous Materials and Resource Efficiency: Section 6.8 of the ESIA addresses these considerations and Chapter 6 of the ESMP ensures their effective monitoring

OS 5: Labor Conditions, Health and Safety: Issues concerning Labour , Health and Safety on the project are assessed in Chapter 6 of the ESIA and Chapters 6.1 and 8 of the ESMP by way of Monitoring and Impact Mitigation.

While the ESIA and the ESMP provide the overall assessment and Management Plan for the project, the MPW shall demand specific actionable plans to be implemented during the construction phase in a Construction Environmental and Social Management Plan (CESMP). To ensure that the above operational safeguards are duly observed, the CESMP shall come with attachments of the following specific plans to be adhered to by the Contractor; and monitored as described in the ESMP:

- a. Waste Management Plan (WMP);
- b. Traffic Management Plan(TMP);
- c. Erosion Control Management Plan;
- d. Water Resources Management Plan;
- e. Biodiversity Management Plan;
- f. Risk and Emergency Response and Management Plan;
- g. Human Resources Management Plan;
- h. Contractor Management;
- i. Resource Energy Efficiency
- j. Physical Cultural Resources Management (PCR) Plan;

### **2.2.9 EU's Environmental Policy, Legal and Institutional Framework**

EU's requirements for preparing Scoping Statements as well as for coordinating with host country ESIA requirements, are presented in section 1.3.1 of this scoping statement.

### **2.2.10 International Standards and Best Practices**

The EA will also be guided according to international standards and best practices, including the following documents:

- a. World Bank Environmental Health and Safety Guidelines, Environmental Assessment Sourcebook
- b. IFC Environmental Health and Safety General Guidelines

### 3.0 CONTEXT

As indicated in the introduction section, this project falls under the Coastal Highway project and funded by the European Union and the African Development Bank (AfDB). Specifically, this component of the Coastal Highway project involves the construction of the road from Sanniquellie to Loguatu in Nimba County of Liberia. This chapter of the ESMP document looks at the location and technical description of the proposed project and briefly describes project activities and major environmental and social components that will likely be affected positively or negatively by the project.

#### 3.1 Project Location

Table 1 indicates the route through towns and villages, located in Nimba County, where the proposed project will be implemented; spanning Sanniquellie to Loguatu, Provided in the table are the distances within each district that the proposed road would cover. Finally, each town and village was assessed with respect to its relative proximity to other existing towns. Figure 1 depicts the course of the project within Liberia.

#### 3.2 Location of Nimba County

Nimba gained county status in 1964 by an act of the National legislature during William V. S. Tubman presidential tenure and has the third largest population in Liberia. It has 17 administrative districts and 9 electoral districts. It is named after the tallest and largest mountain in the country with the dominant tribes being the Mano and Gio. The structure of Nimba County's government is consistent with that of the rest of the other counties.

**Table 1: Project Route Within Nimba County**

From	To	Distance (KM)
Sanniquellie	Schikimpa	
Schikimpa	Suakarzue	
Suakarzue	Gbobayee	
Gbobayee	Vidigayee	
Vidigayee	Zorgowee	
Zorgowee	Kialey	
Kialey	Sonkarley	
Sonkarley	Tuah Village	
Tuah Village	Napea Village	
Napea Village	Karplay	
Karplay	Tommie Village	

Tommie Village	Larpea #2	
Larpea #2	Larpea #1	
Larpea #1	Duohn Play	
Duohn Play	Zeanlay	
Zeanlay	Henlay #2	
Henlay #2	Daoplay	
Daoplay	Kissiplay	
Kissiplay	Dro Village	
Dro Village	Loguatuo	

### 3.4 Anticipated Extent of Environmental and Social Impact

The proposed project involves the reconstruction of road along the old dirt road from Sanniquellie to Loguatuo in Nimba County. The project will be the later linked to other constructed road projects from Monrovia to Ganta.

The proposed project will be implemented along forested unpaved routes along a 47.98km distance. The project will pass through small cities, village and towns before it reaches Loguatuo. The overall impact is expected to be fairly significant because the area has human settlements close to the RoW.

### 3.5 ESMP Approach

To enrich this review and ensure optimal participation of all the stakeholders, a participatory and collaborative approach was adopted. Emphasis was put on consultations between MPW, the communities and other stakeholders. AIC and TSC concisely described the project and its geographic, ecological and general Right of Way (RoW). Additional information on size and capacity of pre-construction activities, construction activities, schedule, support, material/facilities and services and operation and maintenance activities were also taken into account. In addition, environmental and social impacts of the project were identified with subsequent mitigation measures.

#### 3.5.1 Methodology

##### 3.5.1.1 Desk Review

The consultant reviewed the following documents as part of this review:

- African Development Bank guidelines,
- EU Legal and Institutional Framework and Guidelines
- Guidelines and ESIA Procedure for Liberia
- The National Environmental Policy of Liberia

- The Environmental Protection and Management Law
- The Act Creating the Environmental Protection Agency
- The National Transport Master Plan for Liberia
- Community Rights Law
- Customary Law

#### 3.5.1.2 Public Consultation Forum

The consultant organized and convened a public consultation meeting between; a) MPW - To share the project information in terms of its implementation and predicted impacts. b) Communities - To convey the consultation theme c) Individuals - Project Affected Persons (PAPs) d) Other Stakeholders i.e.

- EPA
- FDA; and
- Nimba County Authorities.





Figure 1: Project Route From Sanniquellie to Loguato



## 4.0 BENEFICIAL AND ADVERSE IMPACTS

MPW considered and investigated several alternative routes for the development. The proposed route was identified as the best for the road through an analysis of alternatives taking into account constraints on social and natural environment. Any other alternative to the current will mean re-routing from the existing road. This will result in the opening up of more vegetation areas as well as affecting crop lands and farms. As such, maintaining the current RoW and ensuring minimum way leave, especially out of settlement areas, provides an environmental and socially beneficial edge to other alternatives. The implementation of the project along the proposed route is likely to have the following positive impacts.

### 4.1 Negative Impacts

#### 4.1.1 Disruptions from Pre-Construction Activities:

There will be minor clearance of vegetation for RoW and the area for construction of camp sites. In the event that camp sites may lead to significant opening up of vegetation, they would be located in already cleared zones in nearby communities with consultation with the town chiefs. Specific arrangements for location of camp sites will be clearly defined in the CESMP for the project. It is recommended however that the approach adopted for location of camp sites is one that will have no adverse impact on the integrity of the environment.

#### 4.1.2 Disruption during construction

Road construction projects characteristically generate impacts such as acquisition and maintenance of the right of way, clearing of vegetation from sites and line corridor; construction of access roads, bridges, and culverts, balustrades etc. are the most obvious sources of construction-related impacts. The construction phase is the period where most disturbances to the environment will occur. Broadly, key negative impacts of the development are likely to include:

#### Impacts on Flora and Fauna

It is well known that road construction projects may create noise and drive away birds and animals from their natural habitats. This is likely to be of concern during the operation stage of the project but can be mitigated by using well maintained equipment and mufflers to reduce construction related noise emissions.

The impact of road construction on fauna is limited. However, the cleared RoW creates a specific biotope in areas with denser vegetation. This biotope is similar to a natural meadow, although obviously much longer in extent, that acts as an open grazing area for herbivores, and hence as a hunting ground for carnivores. The construction of the proposed road may have negative impact on both livestock and wildlife grazing in the area. The owners of the livestock will look for alternative grazing areas.

Vegetation is affected in the RoW, in the sense that higher trees and shrubs are cleared, creating an open stretch in woodland and shrub land. The most intense effect is during the construction phase, when in addition to clearing, vehicles and machines move in the way-leave for bridge and side walk construction. These impacts will be negligible since the contractor will be monitored to work within the extent of the way leave.

#### Impacts on Drainage, Surface Waters and Water Resources

Roads may have both short-term and long-term impacts on water resources. Earthworks might release suspended particles in the water which could have temporary detrimental effect on water organisms. However, the main concern aside from these short-term impacts during construction work is the effect from asphalt and maintenance of roads on the hydrological functions of wetlands or water resources as well as seeping of such into groundwater, which are also of minimal nature.

No water will be used for technological purposes. Water shall also not be extracted from rivers for construction purposes. Quantities of determined by the contractor for construction purposes shall be procured by pumps from ground water sources, and also from rain harvesting. Since it is a generally wet terrain, it is expected that pumped ground water for construction works will not affect the ground water resources to significantly. The Road Construction route crosses Six (6) rivers. Bridges will be constructed over these rivers and waterway diverted to allow easy flow of the rivers and streams in the event where construction work may overly sediment the water body. Wastewaters from construction camps will be collected in mobile containers and discharged into approved sewer systems.

#### Impacts on Natural Vegetation

To a large extent, the road will pass through shrub land and Forest land used mainly for farming and plantations. While the passage through the border line of most of these natural vegetation areas will inevitably take up some land, this will affect similar types of land, and is generally not expected to cause substantial impacts on the flora and fauna. While impact on woody vegetation is going to be permanent, impact on grasses and herbs is mostly transient.

In order to minimize the environmental impact, it is recommended that clearing is done manually as much as possible with no burning of the cleared vegetation. In order to reduce the impact of firewood used in the worker's camps, it is recommended that wood from the clearings is transported to the camp sites.

#### Impact on Biodiversity and Loss of Habitat

The consultant reviewed the relevant Forestry and Conservation Acts and noted that the proposed development will not cause significant adverse effects on any Forest or land area that will be affected. The construction activities may cause temporary and limited damage to local flora and fauna. Tree and bush clearance will be limited. The cleared vegetation will be recovered by planting small trees and plants.

### Land Excavation, Access Roads Construction and Camp Sites

In order to minimize the need for construction of access roads, the course of the road is along the existing dirt road for the entire corridor. Access roads for heavy equipment that will be used only during the construction phase should be removed after completion of the work. Depots and working camps should be located in such a way that they can either be used for other purposes after the time of construction (i.e. in conjunction with local plans), or be removed without trace.

Erosion may be a problem during construction, especially in areas with thin soil layers. Great care should be exercised when constructing along slopes to compact the area well and provide the needed mulch over areas close to the RoW to avoid loss of soil and low vegetation that protect from erosion.

### Noise

During the construction, permissible/acceptable human noise levels can be temporarily exceeded due to the operation of vehicles and equipment in the working zone. Noise abatement measures will be taken in the zones crossing the residential areas, including adequate work scheduling.

#### 4.1.3 Social Impacts

The project areas immediately outside the Sanniquellie – Loguatus communities are not densely populated. Most of the area is characterized by small-scale farming and peri-urban type of settlements. There will be some impacts due to;

##### Displacement of Populations:

Some residences in the project affected communities are located quite close to the RoW and would be displaced during the construction phase of the project. This triggers the necessity for involuntary settlement of these persons. The Resettlement Action Plan (RAP) document being developed through consultations with the various Project Affected Persons (PAPs) shall address this impact.

##### Destruction of Property:

Most of the project communities are involved in farming as their means of livelihood. A number of these farms are located along the RoW and as such will be affected. The project will thus lead to fragmenting of cultivated lands thereby compromising productivity and incomes, loss of crops and fruit trees. Other private properties such as homes, shops and education institutions that are located too close to the RoW will be affected. This impact challenges are however addressed in the RAP for the project.

### Health Challenges (STDs such as HIV/AIDS):

Another specific social concern of the Project involves importation of labour into the areas; the influx of workers from outside the area portends possibility of transfer of STDs such as HIV/AIDS.

### **Cultural Impacts**

The selected route is expected to cause some damage to historical, archaeological and cultural sites. MPW will consult widely and monitor the road construction throughout the works period to ensure no archaeologically valuable areas will be disturbed; and in any such event, the necessarily cultural and social consultations are undertaken to preserve/relocate these sites if possible or mitigate effects.

In the event that an archaeological resource is discovered during the construction process a Chance Find Procedure will be implemented. A Chance Find Procedure, as described in Performance Standard 8 (PS8) of IFC, 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 PS8 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 site Environmental Officer will inspect and secure the site, and will then contact Museums of Liberia or the appropriate institution for advice and arrange for a survey or salvage work as appropriate.

### **Impact on Agriculture, Settlements and Community facilities**

Most of the impact on social life along the road will be during the construction period. The impacts will be both positive and negative. Positive impacts include temporary markets for goods and services, including sources of employment for certain tasks during construction. Some of the recreation requirements of the work force are likely to cause negative impacts. Use of alcohol among the working crew may affect the local population negatively through increased violence and abuse of local women. There will also be an increased risk for spreading of sexually transmitted diseases among them HIV/AIDS in the project area.

### **Impact on Ambient Air**

The air emissions from construction machinery and traffic will be minor and they will have negligible impact on ambient air quality. However dust emissions from construction may change air quality in areas in proximity to construction site during the construction phase

### Solid Waste

There will be loss of existing under growth during the clearing of the way leaves in readiness for the construction work. There will also be solid waste generated from the excavation works and the clearance of overburden. Some of the excavated soil will be reused as backfill while the rest will be disposed off to the designated areas. Solid topsoil wastes from the sites will be the main form of solid waste. Other solid wastes will include metallic pieces, wooden planks, and stone debris waste generated at construction camps; including liquid and hazardous as well as accidental oil spills, especially during maintenance of vehicles and other machinery.

### Health Issues

Some of the significant health concerns associated with new projects include shortage of facilities like toilets and catering facilities for construction workers. In this instance the constructor remains the only responsible party to ensure that his or her workers are provided with the required facilities. These facilities should be put in place before the construction of lines commences.

The control building for equipment and control facility will be supplied with portable water and shall have sanitation and wastewater facility. Periodical investigations and maintenance and remedy of failures and accidents will be performed by specifically trained staff.

### Safety Issues

During the construction phase, the work will involve the use of sharp objects, noisy machineries and dusty environment. The contractor will be required to provide his workers with the relevant protective gears like boots, gloves, protective clothing, dust masks and earmuffs. These should be provided for in the project budget. The ground will also be watered to prevent dust. Warning signs will be expected to be displayed next to dangerous points and machines so as to restrict the movement of unauthorised personnel on site during construction and to warn heavy load vehicles that will be at the site against possible danger. All litter and debris will be picked up and disposed in a central disposal site so as to avoid subsequent injuries during and after the construction work is complete. A Health, Safety and Environmental Officer (HSE) will be at the construction site during the construction phase, at all times. The HSE officer will make sure a first aid kit is always available and that the workers are aware of the safety rules. The contractor will develop a Traffic Management Plan as well as an Occupation Health and Safety Management Plan as stipulated in section 2.2.8 to handle address the above stated issues.

The immediate surrounding will experience an increase in human traffic and noise during ground preparation. In a construction site noise is likely to be produced by the construction machinery, excavator and other vehicles during the civil works. Noise is also most likely to emanate from the regular masonry operations such as stone dressing. The machine operators and workers who will be in close proximity to the machinery will be required to wear protective gears such as earmuffs during the construction period.

There will be significant amounts of dust during the excavation and civil works. A high fence of about 3.0m with a gate should be done first before most of the other civil works to minimize the dust being blown off by the winds especially if construction will be done during dry spells. This should be done especially for the sub-stations.

Workers must wear safety gears like gumboots, helmets, safety belts (harness), dust masks and approved welding glasses for welders. Other safety precautions as stipulated in the relevant Liberian or International Industrial Safety Code should be followed.

#### 4.1.4 Operation Phase Negative Impacts

##### Waste Generated

The expected liquid waste after commissioning might result from leakages of oil from broken vehicles during use of the road. However, careful maintenance and enforcement of traffic regulations can prevent this. In case of oil leakage, it shall be immediately cleaned and the broken vehicle towed off to avert any significant pollution of surrounding environment. However, a road worthy laws must be enforced to avoid any incidence of leakages and pollution of areas with vehicular emissions. Solid waste shall be properly disposed in dust bins (minor camp site waste) and bulk waste disposed at designated locations to be collected intermittently for disposal in the communal waste site of the communities.

##### Noise

Increased vehicular activity, especially from old and ill-maintained vehicles will produce noise. During operation phase, this noise will have limited impact on the health and comfort of people who live in the immediate vicinity (within 100 m) of the road. The effect will be minimal and/or reduced by ensuring that vehicles which ply the road are mostly road worthy and speed and other traffic regulations enforced.

##### Landscape and Visual Impacts

The visual impact of roads has an effect on a socio-cultural level. From the perspective of a tourist seeking pristine natural environments, any infrastructure reminding of industrial society is disturbing. However, from the perspective of rural populations, it may be seen as a sign of development, of hope that things will change for the better. Both these views are present in the development of infrastructure in Africa. The option that shall prevail depends on political decisions, and on economic reasoning.

The proposed development will also have minimal effects on the landscape. The route was established so as to meet the co-inhabitation requirements imposed by the natural landscape, objects, buildings, and facilities in the neighbourhoods, assuring its framing into the existing landscape and with an impact on as limited land areas as possible.

#### 4.1.5 Decommissioning Phase Impacts

The lifespan of the proposed road is expected to be long. At the end of its lifespan, decommissioning of the project would occur. This is because, as with any project, the facilities, such as asphalt, culverts, and bridges in this Project will have a lifetime after which they may become worn out and need reconstruction or alternative routes constructed.

During reconstruction or decommissioning, all structures and traffic equipment would be dismantled and removed. The physical removal of the road infrastructure when there is a change in route will be the reversal of the construction process. All areas disturbed by the proposed project would be restored to pre-project conditions and/or to conditions acceptable to the Liberian EPA.

At least two years prior to the anticipated cessation of operations, a decommissioning plan for permanent closure of the project would be developed in cooperation with MPW and EPA. This plan would identify specific actions and a schedule for decommissioning of the project, identify steps and procedures to restore the project area to acceptable conditions and also provide measures to minimize effects to the surface water, groundwater, and other resources during decommissioning, and identify how project materials would be recycled.

The disposal of materials from the decommissioned road is not seen as a high-risk matter. Much of the material would be recyclable (steel structures) or inert (insulators, concrete foundations, etc.). These materials would however, need to be disposed of at a formal waste disposal or recycling centre.

The components of negative environmental mitigation that will be addressed will include, risk management analysis and emergency response. Implementation and monitoring of environmental, health, and safety issues with regards to legislations outlined in the legislative framework in chapter two of this report.

Potential environmental impacts caused during decommissioning which will be mitigated as per the provided environmental management and social plan, are dust and noise to the surrounding environment and public safety. Some of the impacts are:

##### Structural Foundation Removal

When asphalt, bridges, culverts etc are removed from their foundations, the foundations need to be removed too so as to enable re-vegetation of the land. The concrete and steel in the foundations will be broken-up and removed to appropriate depth. Shallow foundations (like that for buildings) will be removed in their entirety. All concrete and steel debris will be removed from the site.

##### Public safety

A safety officer, hired by the contractor, will have the authority or responsibility of keeping all members of the public away from the decommissioning zone, especially if members of the public



choose to ignore posting signs or requests for them to keep some distance from the decommissioning zone. Some of the threats to public safety may include:

- i. Dust Impacts: Temporary and localized impacts from dust would occur from the decommissioning phase as a result of vehicular traffic, and other soil disturbances.
- ii. Noise Impacts: Local noise levels will be affected temporarily by decommissioning activities (such as equipment movement), but for the remote nature of the sites no impacts are anticipated to residences or businesses. Impacts during decommissioning are expected to be limited to workers on-site.

#### **Fire and Oil Spill Prevention**

Fire will be prevented during decommissioning by ensuring that there is adequate availability of fire extinguishers onsite. The personnel undertaking the removal of the equipment will have to be trained on fire fighting and if possible, reasonable fire drills will have to be done to enhance awareness and safety. In case of oil spills, all the equipment and machines that will have the potential of spilling or leaking oil will be checked regularly. If oil spills/leaks are discovered, then capping or any other necessary actions will be taken immediately to prevent the spill/leak from dropping onto the ground. However, careful handling will be done to avoid spilling at all times.

## **4.2 Positive Impacts of the Project:**

The anticipated positive impacts of the project during construction and operation phases include:

#### **Pre-Construction Phase:**

The communities may be presented in form of temporary employment, when engaged to assist surveyors. Also, experts involved in feasibility studies and other pre-project consultations may lead to some level of purchases of items from petty traders and farmers during their presence in the communities.

#### **Construction and Operation Phases:**

The construction phase benefits of the project may include:

##### **Employment:**

Some form of temporary employment for community members during the construction phase by the project directly. However, completion of the road means easy accessibility along the corridor which may lead to the increase in the movement of business concerns to areas along the corridor, hence enhancing the employment possibilities of inhabitants.

##### **Income Generation:**

The sale of food and other services to immigrant workers during the construction phase of the project will lead to some direct incomes as a form of project impact. However, the accessibility will lead to better transport services, hence increasing income of operators in that business. The



location of businesses along the corridor due to accessibility could also change the income levels of the community members due to increased employment possibilities.

#### Improved Access:

The project will result in improved access to nearby communities along the road and other major settlements. Also, cross boundary commuters from Monrovia and other cities like Gbarnga and Ganta, to neighbouring Cote D'Ivoire, thus increasing cross boundary trade.

#### Reduced Transportation and Vehicle Maintenance Costs:

The reconstruction of the existing road and asphaltting will result in reduced transportation costs and increased number of vehicles plying the route. The motorable nature of the road will also reduce greatly instances of vehicle break downs and maintenance. This will lead to an increment in the lifespan of vehicles that ply the road.

#### Increased Investments:

Accessibility of the corridor will increase the frequency of private entities locating their businesses in the area, hence increasing overall investment in along the road corridor. Cross border investments could also be possible from Cote D'Ivoire, since the road allows smooth access to and from both countries. The road will also enhance access to nearby markets.

#### Stimulation of Development:

Easy access to the Sanniquellie- Loguatu corridor will also stimulate the easy development of other social amenities, such as building of health centers, schools, bore holes and major development projects. This will also enable the facilitation of other economic activities in the settlement areas.

#### Improved Delivery of Healthcare and Education:

The project when completed will enhance access to schools and health facilities. It will also reduce the time spent by students to get to school and patients to the health centres. Additionally, ambulance services could be deployed easily to communities in along the project corridor without much difficulty

#### Opening up of important Historic/Tourist Sites:

Tourist or historic sites which may be located in the larger project area could get higher patronage due to easy access which would be created after completion of the project, hence enhancing their economic value.

### Decommissioning Phase:

The decommissioning process may generate temporary employment for some members of the communities along the RoW. Some metal scraps that may be considered undesirable during the decommissioning of bridges and other such infrastructure could be sold to recyclers and hence serve as source of income by some members of the communities. The decommissioning project will lead to workers carrying out the works purchase goods and other items from petty traders in the communities resulting in income generation

## 5.0 ENAHNCEMENT AND MITIGATION PROGRAMME

This Chapter contains a description of mitigation measures for adverse impacts, measures for enhancing the beneficial effects, and the cost of mitigation against the impacts. MPW will implement an Environmental and Social Management Plan (ESMP), which has been developed for the project. The ESMP will also ensure compliance with applicable environmental standards during the construction of the road. The ESMP includes measures for waste management and disposal, noise abatement, maintenance, emergency response planning as well as monitoring and informing public on the environmental and safety impacts of the project.

The ESMP is to be availed to prospective bidders in order to ensure that normal environmental mitigation costs are factored into construction costs. The Contractor is expected to prepare work plans for environmental management in line with the ESMP. The costs of incorporating the recommended mitigation measures, including compensation costs for unforeseen/additional mitigation and environmental and social monitoring are presented below and subject to confirmation at appraisal.

MPW will be responsible for reviewing civil works contracts in accordance with the ESMP report; coordinating the implementation of the ESMP by the contractor, local environmental authorities (e.g. County Authorities); monitoring the implementation of the ESMP and the civil works contracts in collaboration with the EPA; and, preparing annual environmental progress reports.

### 5.1 Mitigation of Impact on Local Population

The consultant recommends that since property or productive assets would be infringed upon, wherever the case arises during implementation, they should be sufficiently and promptly compensated. Section 6.8 of the ESIA for the project gives a detailed layout of mitigation of the potential environmental impacts. Below is a summary of the overall impact mitigation requirements as detailed in the ESIA document:

The project involves activities that have the potential to impact significantly on the physical, biological and socio-cultural/socio-economic environments within the project's area of environmental influence. This ESIA addresses potential impacts on all resources and receptors so that the scale of overall impact of the project can be elicited. The identifiable net changes in key environmental issues have been assessed.

The following mitigation measures have been proposed for the significant potential impacts:

#### 5.1.1 Contractors' obligations and legal requirements

The Contractor is to prepare various management plans and environmental mitigation plans for review prior to commencement of constructional activities. The general plans as indicated in

section 2.2.8 shall cover, among others, the following key issues;

- a. Sourcing and transportation of materials
- b. Storage of material at site
- c. Movement of vehicles to and from site, and during work at site
- d. Construction practice affecting:
  - ✓ Erosion Control
  - ✓ Noise and Vibration
  - ✓ Waste Management/minimization
  - ✓ Contaminated Materials and Wastes
  - ✓ Emergency Response Procedures
  - ✓ Air Quality
  - ✓ Water Quality
  - ✓ Litter
  - ✓ Storage of Chemicals and Fuels
  - ✓ Cleanliness of the road from mud etc. from site traffic;
  - ✓ Hours of work in the vicinity of dwellings;
  - ✓ Movement and generation of surface water;
  - ✓ Pedestrian and vehicle diversion and safety;
  - ✓ Siltation and blockage of drains and river courses;
  - ✓ Occupation health and safety;
  - ✓ Physical Cultural Resources and,
  - ✓ The level of monitoring to be undertaken.

Recommendations will be made regarding any modifications that are necessary to achieve the desired level of environmental protection. Throughout the construction period, regular site inspections will be made to monitor the effectiveness of environmental protection measures, as well as to check that no previously unforeseen impacts are occurring. In the event of the latter, recommendations will be made for additional environmental protection measures to be adopted. The frequency of site inspections will vary depending on the nature of works being carried out at any one time. In general, attention will be concentrated on those operations and locations where the most potentially damaging impacts might be anticipated, with particular attention being paid to earthworks sites. The frequency of inspection will be highest at the initiation of works at each site, so that any problems can be recognized at an early stage, and remedial works or procedures can be implemented before irreparable damage has occurred.

Notwithstanding the Contractor's obligation under the above clause, the Contractor shall implement all measures necessary to restore the sites to acceptable standards and abide by environmental performance indicators specified in the AfDB Operational Safeguards to measure progress towards achieving objectives during execution or upon completion of any works.

## 6.0 MONITORING PROGRAMME

The overall objective of environmental and social monitoring is to ensure that mitigation measures are implemented and that they are effective. Environmental and social monitoring will also enable response to new and developing issues of concern. The activities and indicators that have been recommended for monitoring are presented in the ESMP.

Environmental monitoring will be carried out to ensure that all construction activities comply and adhere to environmental provisions and standard specifications, so that all mitigation measures are implemented. The contractor shall employ an officer responsible for implementation of social/environmental requirements. This person will maintain regular contact with MPW's Principal Environmental Officer and the local District Environmental Officers. The contractor and MPW have responsibility to ensure that the proposed mitigation measures are properly implemented during the construction phase.

The environmental monitoring program will operate through the preconstruction, construction, and operation phases. It will consist of a number of activities, each with a specific purpose with key indicators and criteria for significance assessment. The following aspects will be subject to monitoring:

- a. Vegetation maintenance around project work sites, workshops and camps
- b. Works safety elements, including a log of accidents
- c. HIV/AIDS programme implementation and levels at local health centres

Monitoring should be undertaken at a number of levels. Firstly, it should be undertaken by the Contractor at work sites during construction, under the direction and guidance of the Supervision Consultant who is responsible for reporting the monitoring to the implementing agencies. It is recommended that the Contractor employ local full time qualified environmental inspectors for the duration of the Contract. The Supervision Consultant should include the services of an international environmental and monitoring specialist on a part time basis as part of their team.

Environmental monitoring is also an essential component of project implementation. It facilitates and ensures the follow-up of the implementation of the proposed mitigation measure, as they are required. It helps to anticipate possible environmental hazards and/or detect unpredicted impacts over time. Monitoring includes:

- a. Visual observations;
- b. Selection of environmental parameters at specific locations;

- c. Sampling and regular testing of these parameters.

Periodic ongoing monitoring will be required during the life of the Project and the level can be determined once the Project is operational.

#### 6.1 Internal Monitoring

It is the responsibility of the MPW proponent to conduct regular internal monitoring of the project to verify the results of the Contractor and to audit direct implementation of environmental mitigation measures contained in the ESMP and construction contract clauses for the Project. Their Project teams should include an environmental monitoring and management specialist. The monitoring should be a systematic evaluation of the activities of the operation in relation to the specified criteria of the condition of approval.

The objective of internal monitoring and audit will be:

- a. To find out any significant environmental hazards and their existing control systems in force.
- b. Meeting the legal requirements as stipulated by the regulations of the Environmental Protection Agency (EPA).

The responsibility for mitigation monitoring during the operation phase will lie with the Environmental Section in MPW. Environmental monitoring of the following parameters is recommended as a minimum for the Project:

##### Noise Levels Monitoring:

Although noise during construction is not expected to be a major problem with the Project, periodic sampling of Contractor equipment and at work sites should be undertaken to confirm that it is not an issue. Noise level monitoring could be supplemented by consulting with Project Affected People in the first instance to identify the level of monitoring required. Standards of Monitoring should be measured against WHO standards and should not be allowed to exceed this.

Noise measurements should be carried out to study the hourly equivalent noise levels as per IS:4594-1968. Noise levels should be measured for 24hours on hourly basis by using a high precision Integrated Sound Level Meter in the project area and expressed in dB(A).

##### Air Quality Protection:

The Construction Contractor shall monitor wind velocity and site dust levels and ensure they do not lead to protracted exposure to dust during earthmoving activities by use of a monitoring station. The Construction Contractor shall also monitor emissions from vehicles. If dust is generated, the Construction Contractor shall immediately water down areas generating dust or, if this is not effective, cease the activities generating dust. Stop all excavation work if wind threshold velocity is sustained and could lead to exposure of workers or communities to 10 mg/m<sup>3</sup>, as a time-weighted average over an 8 hours, of total inhalable dust, 4 mg/m<sup>3</sup>, as a time-weighted average over an 8-hours, of respirable dust, according to IOSH standards

In general, the location of the air quality monitoring stations should satisfy the following:

- The site should be representative of the area selected
- The station should be setup and operated so as to yield data that can be compared with those from stations within the network
- Certain physical requirements such as consistent availability of power

**Table 2: Ambient Air Quality Monitoring**

Activity	Parameter to be Measured	Sampling Period and Frequency
Ambient Air Quality (AAQ)	Particulate matter (PM): <ol style="list-style-type: none"> <li>Particulate Matter(size less than 10 <math>\mu</math>)PM<sub>10</sub></li> <li>Particulate Matter(size less than 2.5 <math>\mu</math>) PM<sub>2.5</sub></li> <li>Gaseous Pollutants (GP)</li> <li>Sulphur Dioxide(SO<sub>2</sub>)</li> <li>Oxides of Nitrogen (NO<sub>2</sub>)</li> </ol>	Sampling Period: 24 hourly sample for Particulate Matter (PM <sub>10</sub> and PM <sub>2.5</sub> ) and 8 hourly samples for gaseous pollutants and averaged for 24hours Frequency: Twice a week for one season.

### Water Quality Monitoring:

Where the construction work crosses any of the Six Rivers along the course of the road, the contractor must ensure that there is no silting of the rivers. Activities during asphaltting should also ensure hot mix and machinery and vehicle fuel oil does not pollute the water bodies. Monitoring of rivers that serve as sources of drinking water to the communities should conform to WHO standards as laid out in Table 3. Monitoring of all Surface water, Ground water and other effluents should be monitored according to the Standards in Table 4

**Table 3: WHO Drinking Water Quality Standards**

PHYSICAL PARAMETERS	WHO Limits for Drinking Water
pH	6.5-8.5
Turbidity (NTU)	5
TDS	600
2.0 CHEMICAL (mg/l)	
NO <sub>3</sub> -N	10
Total Hardness	500
Cl	150

SO <sub>2</sub>	400
CN	0.10
Hg	0.001
Cd	0.005
Pb	0.05
As	0.05
Cu	1.0
Cr	0.05
Zn	5.0

Table 4: Water Quality Monitoring Standards

Activity	Parameter to be Measured	Sampling Period and Frequency
Ambient Air Quality (AAQ)	Physico-Chemical and Biological Characteristics as per the following standards: a. IS:10500-for Groundwater samples b. IS: 2296-for Surface water samples c. GSR-801 (E)-for Effluents if any.	Frequency: Frequency: One sample per season per

**Soil Erosion Monitoring:**

The excavation of earth for the establishment of foundations, temporary and permanent access roads, work camps and storage facilities will exacerbate soil erosion. It will, therefore, be the responsibility of the Contractor's environmental inspectors to ensure the implementation and effectiveness of erosion control measures. Focus should be given to work sites where soil is disturbed and its immediate environ as well as along the ROW during and after vegetation clearing. As indicated earlier, the contractor must develop an Erosion Management Master Plan and the monitoring effort must ensure the contractor goes by the plan.

**Monitoring of Vegetation Clearing:**

No unique stand of trees were discovered during the ESIA study. The Contractor's environmental inspectors should however make sure that no unique tree stands identified during the construction phase be removed.



### Monitoring Rehabilitation of Work Sites:

The Contractor's environmental inspectors should ensure that areas used as temporary campsites for workers are progressively rehabilitated as they are no longer required. Once a site is rehabilitated it should be "signed off" by MPW environmental staff.

### Monitoring of Accidents/Health:

The Contractor's environmental inspectors must make sure that appropriate signs are posted at appropriate locations/positions to minimise/eliminate risk of accidents. In addition, the environmental inspectors should make sure that:

- a. Measures to create awareness regarding sexually transmitted diseases, primarily HIV/AIDS, and other diseases such as malaria are taken;
- b. Preventive measures to reduce/eliminate malarial, infections where/when ever appropriate are put in place;
- c. Periodic health surveys are carried out along the route.
- d. Prevent vector breeding sites e.g. creation of stagnant water or rubbish dumps that may increase vector borne diseases
- e. Provide sanitary facilities and potable water and lay down areas, to be in compliance with OS 5 requirement standards of the AfDB .

MPW will have overall responsibility to oversee that all environmental measures are put in place and that regulations are enforced. The construction supervision consultant should assist MPW in this process in order to make sure that contractors fulfill the environmental requirements.

The following parameters could be used as indicators:

- a. Presence of posted visible signs on construction structures, etc;
- b. Presence of sanitary facilities at campsites;
- c. Level of awareness of communities pertaining to dangers/risks associated diverted roads and ongoing works along route;
- d. Presence/absence of unique stands of indigenous trees along the route; and
- e. Accident reports. Records on actual accidents associated during construction.

The worker's rights and working conditions will be monitored according to the Human Resource Management plan to be developed by the contractor, which must specify workers' employment conditions and conform to the requirements of the labour laws of Liberia and AfDB Operational Safeguards. And enforced by a collaboration between the HSE officer on the project and the Employment unit of the Ministry of Labour

### Waste Management Monitoring:

The Construction Contractor shall regularly monitor the management of wastes to ensure that;

- All stores waste shall be contained within construction sites;
- Solid waste: all site waste is to be collected and disposed of in an approved registered landfill. Where possible segregation of waste (paper, glass, metal) should be undertaken and recycling opportunities identified.
- Compost or use as animal food all green or organic wastes; and
- Sewage shall be disposed of into sealed pit latrines or into a septic tank system, or other approved sanitation devices.

### Workforce Training:

The Construction Contractor shall ensure that all workers have been inducted. The Construction Contractor shall regularly monitor that occupational health and safety requirements are implemented. MPW's representative shall audit that all requirements are met. Where occupational health and safety requirements are not being implemented relevant workers shall immediately be trained and instructed to implement these requirements.

### Physical Cultural Resources Monitoring:

During the ESIA and the RAP studies the physical and cultural resources were also documented and evaluated. As indicated in section 2.2.8, the contractor is required to develop a Physical Cultural Resources (PCR) Management Plan. Its role is to specify how the physical and cultural resources, i.e. archaeological, cemeteries, paleontological and botanical remains will be managed to ensure adequately considerations in conservation and project development, especially during construction and operation. The Plan is expected to include the legal and institutional frameworks for the management and conservation PCR and detailed description and management of archaeological, artifacts, cemeteries, sacred sites, paleontological and botanical remains that may be discovered during construction and those that were detailed and captured in Figure 10 of the ESIA report.

#### Identified Physical Cultural Resources:

During the ESIA, a number of PCR were identified and mapped along the road corridor (Figure 10, ESIA Report). However, consultations indicated that a number of unmarked graves may also come up along the RoW during construction. A limited number of these graves may have to be relocated if there is a risk of being destroyed by construction activities.

From consultations, beliefs and traditions in the project area allow graves to be relocated if the exercise is done in a culturally acceptable way. Compensation will be paid for the relocation of graves such as expenses for ceremonies and labor in connection with exhumation and reburial as indicated in the RAP.

The proposed road construction project will also affect other cultural sites; including areas where local communities perform their traditional rites or ceremonies.

Most of the stakeholders along the proposed way leave were concerned about whether the graves will be compensated and the process of relocating the graves will be participatory and take into account their cultures and values. Where graves that would be adversely affected by the Project need to be exhumed and reburied at alternative locations, rituals and ceremonies will often need to be conducted, in consultation with relatives, and proper compensation for them should be considered as provided for by the law. The Social officers that were also part of the ESIA and ESMP Team explained how the procedure would be carried out.

*Chance findings during project implementation:*

Investigation and archaeological surveys during the implementation of the project should also be undertaken for the purpose of spotting the Physical Cultural Resources in the area. In the PCR management plan, both random and systematic survey should be employed. Systematic survey shall be conducted in areas with high concentration of PCR through systematic walking over transects using three meters interval from one individual to another in parallel transects. Unsystematic survey should be conducted in areas with an overgrowth of vegetation and rough terrain.

All cultural materials located or distributed on the way leave corridor shall be recorded, collected and mapped out using a global positioning system (GPS). Shovel test pits (STP) shall be conducted to supplement surface observations in areas with plenty of surface scatters. This will be followed by evaluation of the identified PCR to decide what measures should be taken. The evaluation process will be followed by the exercise of treatment. At this stage the handling and management of the resources will be done according to their tradition, typology and cultural sequence. The last stage will be documentation and publication of the findings recovered from the area in order to share knowledge with professionals and the community at large.

Survey and salvage work shall be undertaken by a qualified archaeologists recognized and permitted by the relevant Department in Liberia.

*Capacity Building/Awareness and Mobilization:*

All non-experts in physical cultural resources involved in execution of the project shall be briefed on the basics of physical cultural resources. The training shall aim at enabling non-experts in physical cultural resources to identify, prevent damage to physical cultural resources, record and report whenever they encounter any cultural recourse along the RoW corridor in the absence of personnel responsible.

During the execution of the works, if a PCR comes to light, the contractor shall stop the works and communicate to consultant. However, contractor may decide whether to stop *all works*, or only the works immediately involved in the discovery depending on the nature of PCR uncounted.

After stopping work, the contractor must immediately report the discovery to the Resident Engineer. With the approval of the Resident Engineer, the contractor is then required to temporarily demarcate, and limit access to, the site.

*Conservation of Known and Chance findings:*

Movable PCR found along the way leave shall be taken to a National museum for conservation. Identified Immovable PCR but not impacted by the project shall be reported and conserved on site by the relevant Antiquities department in collaboration with Local Authorities.

**6.1.1 External Monitoring and Evaluation**

The Consultant recommends that a consultant should be hired to carry out Annual Environmental Audits in line with EPA requirements. The EPA has the overall responsibility for issuing approval for the Project and ensuring that their environmental guidelines are followed during Project implementation. Its role therefore is to review environmental monitoring and environmental compliance documentation submitted by the implementing authorities and they would not normally be directly involved in monitoring the Project unless some specific major environmental issue arose.

MPW through the consultant will therefore provide the EPA with reports on environmental compliance during implementation as part of their annual progress reports and annual environmental auditing reports. Depending on the implementation status of environmentally sensitive project activities, the EPA will perform annual environmental reviews in which environmental concerns raised by the project will be reviewed alongside project implementation.

The Consultant recommends that relevant representatives from the EU and AfDB, should be incorporated. The project affected persons should be represented through relevant Public consultation and public participation forums should be held during the audits.

### 6.1.2 Monitoring Controls

HSE Controls in place during the Project construction stage are based on an HSE compliance assurance (monitoring and reporting) process to ensure that HSE Project policies, regulations and standards are met. This HSE compliance assurance process is implemented at two levels:

- a. **First level:** Contractor Self-Verification programme (inspections, monitoring, reporting) to demonstrate compliance with HSE policies, regulations and standards, and to provide evidence that it is meeting its obligations.
- b. **Second level:** MPW Oversight and Assurance activities; oversight is performed by MPW HSE staff to ensure that the self verification conducted by the Contractor has been carried out sufficiently and includes review of HSE reports, documentation, monitoring data, procedures & plans, undertaking formal inspections and attendance of meetings with Contractors to drive performance and raise issues. Assurance activities are performed by personnel (or specialized service providers) not directly involved in the works being checked, to provide an additional layer of assurance beyond self-verification and oversight and measure the compliance of Project activities. Assurance process comprises targeted audits and formal reviews. Assurance activities are typically detailed and focused upon defined risk areas or guided by feedback from the results of the self-verification and oversight activities.

The controls put in place at the two levels above indicated to manage, monitor, measure and report compliance with Project HSE policies, regulations and standards during the Project construction stage are outlined in this ESMP section.

#### 6.1.2.1 Contractor Self-Verification Programme

The Contractor is required to operate an Environmental and Social Management System (ESMS) in alignment with the principles of ISO14001, which requires self-verification of compliance in accordance with the plan-do-check-review cycle (ESMS accreditation to ISO14001 although recommended is not a requirement). As part of construction works planning, Contractors are required to prepare and implement an overarching Contractor HSE Plan and subordinate topic-specific Contractor Management Procedures and/or method statements. These Contractor HSE management planning documents will detail how the Contractor will meet and comply with the specific Project HSE policies, regulations and standards through a self-verification programme including:

- Undertaking Pre-construction Surveys and HSE assessments to identify and manage HSE risks;

- Performing Contractor HSE inspections and audits;
- Performing Contractor HSE Monitoring;
- Contractor non-conformance and incident notification and response;
- Contractor HSE Action Tracking System.

### Contractor Pre-Construction Surveys

Prior to initiating construction works at a specific Project location, the Contractor is required to perform pre-construction surveys to identify HSE risks and support mitigation planning and implementation. Contractor is responsible for ensuring that planning and execution of pre-construction surveys are performed by appropriately qualified staff with sufficient time in advance of construction initiation. The scope of pre-construction surveys are defined on a case by case basis with consideration of site specific monitoring requirements or applicable HSE constraints identified and are to be agreed with MPW before initiation. The Pre-construction surveys include assessment of HSE risks and identify mitigation measures or actions necessary to appropriately avoid or mitigate potential HSE impacts. Contractor's HSE team is required to communicate the findings of pre-construction surveys to other members of the construction team to enable implementation of any site-specific construction approach and mitigation.

### Contractor Inspections and Audits

To provide assurance that the provisions of the HSE Plan and subordinate topic-specific management procedures/method statements are implemented effectively, Contractors are required to implement a programme of documented inspections and audits. This includes undertaking walk-around inspections during construction works execution to visually monitor that mitigation measures are implemented, undertaking joint inspections with MPW using checklists, and engagement with project affected parties, stakeholders and regulators. Contractor internal audits will be performed in line with each Contractor's management system procedures as approved by MPW. As a minimum HSE internal audits are to be performed by the Contractor on annual or bimonthly as appropriate for project duration. The audits are to be performed by an interdisciplinary team of appropriately qualified environmental, social, cultural heritage auditors. MPW HSE staff may join the audit team and participate in the Contractor's internal audits.

### Contractor Action Tracking, Non-Conformance and Incident Response and Notification System:

In response to any issues, observations, non-conformances and incidents the Contractor is to propose appropriate corrective actions and record these (including responsibilities and timescale

for completion) in its own HSE Action Tracking System (ATS). MPW HSE management staff will review Contractor's ATS on a regular basis and will follow-up on progress and confirm actions closure. Non-conformances identified as result of inspections, monitoring and audits performed are recorded by Contractor as actions to be addressed within their own management systems and reported to MPW in monthly reports as a minimum. Contractor is required to implement own HSE Incident Reporting and Investigation procedures. All HSE incidents and near misses will be notified to MPW. Incidents will be notified immediately as they occur, while near misses will be reported on weekly basis. MPW /PIU or similarly tasked officer will review and qualify non-conformances and incidents reported by Contractor. MPW /PIU will regularly meet relevant Contractor representatives to review the Action Tracking System and status of actions progress and closure.

### **Contractor Monitoring and Reporting:**

The procedures for monitoring implementation and outcomes of the HSE mitigation measures, HSE KPIs and environmental and social monitoring are defined by each Contractor in their HSE Plan and subordinate topic specific management procedures/method statements. The monitoring frequencies, parameters, methodology and duration are determined based upon site activities requiring monitoring, which is assessed on a case by case basis dependent upon construction activity type and location. Contractor is responsible for reporting monitoring results to MPW on a monthly basis.

#### **6.1.2.2 Mpw HSE Oversight And Assurance Programme**

##### **MPW Oversight (Monitoring):**

HSE oversight is aimed at monitoring construction works activities to determine whether environmental, socio-economic and cultural heritage mitigation measures implemented by Contractors are effective (i.e. are avoiding and minimising environmental, social or cultural heritage impacts as intended, or whether work practices require revision). During construction works stage, HSE oversight monitoring is undertaken typically on weekly basis by the MPW /PIU by performing inspections of the construction work sites or Project-affected areas. These HSE oversight inspections are intended to highlight key Contractor conformance aspects, and their outcome is used to determine the required actions. Checklists may be used in support of the field inspections which may be organised based on specific HSE topics addressing key aspects associated with the construction works activities being inspected. Inspections' observations and findings are discussed with Contractor HSE representatives to determine and agree on any required actions. MPW HSE oversight (monitoring) reports are generated as simple records to include:



- indication of the construction works construction site inspected;
- indication of the construction activities inspected;
- observation notes providing description of positive aspects, good practice or issues/non-compliances identified;
- photographic evidence of the observations made/issues identified.

Where HSE oversight (monitoring) inspections identify issues or nonconformances, the remedial actions required in response are discussed and agreed with the Contractor and recorded into the Contractor's ATS.

#### MPW Regular HSE Oversight Reporting:

A brief HSE oversight report is provided by the /PIU to MPW Leadership on quarterly basis. The report summarises the key issues and challenges during the reporting period as resulted from the HSE oversight inspections and the review of the Contractors' HSE reports and ATS. Regular reporting is intended to keep MPW Leadership informed on HSE aspects, so that direction and feedback can be provided to Contractors and leadership support obtained for addressing key and more strategic issues at appropriate decision levels as applicable.

#### MPW HSE Reporting to AfDB:

MPW will submit to the bank on monthly basis environmental, health & social, and safety (EHSS) activity reports summarising all environmental, social health and safety initiatives implemented in relation to the execution of the works during the reporting period. The monthly EHSS activity reports are concise documents in a pre-defined format agreed with AfDB, and submitted within 10 working days from the last day of the previous month. Moreover, the AfDB will conduct quarterly monthly project supervision missions in the field to ensure compliance with HSE requirements.



Table 5: Monitoring Plan

No.	Component	Parameters to be monitored	Frequency/Responsibility
1	<i>Air quality, GHG and noise</i>	<ul style="list-style-type: none"> <li>• Vehicle and Equipment Maintenance plan implementation;</li> <li>• Noise/Dust Levels at construction sites based on EHS guidelines</li> <li>• Noise and Air Quality complaints recorded</li> <li>• Dust watering</li> <li>• Air Quality monitoring of particulate matter</li> </ul>	<p>Daily/Weekly Contractors/Project engineers</p> <p>MPW/EPA for external</p>
2	<i>Water resources</i>	<ul style="list-style-type: none"> <li>• Water management plan</li> <li>• Pollution and Siltation levels in rivers located along the road</li> <li>• waste management plan and Spill prevention and control plan</li> <li>• Construction site management plan;</li> <li>• Water pollution and degradation complaints recorded</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Daily self-checks by contractors;</li> <li>• Spot checks/audits by project engineers/MPW</li> </ul> <p>During construction and operation phases</p> <p>Externally EPA</p>
3	<i>Land and Soils</i>	<ul style="list-style-type: none"> <li>• Erosion control and restoration plan</li> <li>• waste management plan</li> <li>• Construction site management plan</li> <li>• Areas rehabilitated at construction and workers camp areas</li> <li>• Final Rehabilitation Records</li> <li>• Periodic reports</li> </ul>	<p>Daily Self Checks and Weekly checks by Project Engineers/MPW</p> <p>Throughout the project implementation</p> <p>Externally by EPA</p>
4	<i>Waste Generation &amp; Disposal</i>	<ul style="list-style-type: none"> <li>• Waste management plans</li> <li>• Number of Site Waste Bins</li> <li>• Final Disposal Records</li> <li>• Segregation of waste</li> </ul>	<p>Weekly Checks by Project Engineers/Contractors/MPW</p> <p>Throughout the project implementation</p> <p>Externally by EPA</p>

No.	Component	Parameters to be monitored	Frequency/Responsibility
5	<i>Public and Occupational health and safety hazards</i>	<ul style="list-style-type: none"> <li>• EHSP</li> <li>• Health and Safety/Pesticide Incidents Register</li> <li>• Construction site management plan with adequate sanitary facilities</li> <li>• Fencing of construction sites and marked with high visibility</li> <li>• Contractor periodic reports</li> <li>• Danger warning signs</li> <li>• EHS training records</li> <li>• Vector Borne Disease Incidences</li> <li>• Use of PPE</li> <li>• Community Sensitisation records on construction related risks</li> </ul>	<p>Daily self-checks and Monthly verifications by project engineers</p> <p>During construction and operation</p> <p>Externally by EPA</p>
6	<i>Biodiversity</i>	<ul style="list-style-type: none"> <li>• Areas cleared for construction and operation activities restricted to RoW</li> <li>• Incidences of construction workers hunting</li> <li>• Rehabilitation records</li> </ul>	<p>Regular checks by contractor/Project Engineer/MPW</p> <p>During Construction and operation</p> <p>Externally by EPA</p>
7	<i>Resource Efficiency</i>	<p>Water resources management plan</p> <p>Energy Efficiency Plans</p> <p>Complaints about water quantity</p>	<p>Weekly Checks by project engineers/MPW</p> <p>During construction</p> <p>Externally by EPA</p>
8	<i>HIV/Aids Programs</i>	<ul style="list-style-type: none"> <li>• HIV/AIDS awareness &amp; training records</li> </ul>	<p>Preconstruction/Construction</p> <p>Contractors</p>

No.	Component	Parameters to be monitored	Frequency/Responsibility
			Externally by EPA
9	<i>Social Conflicts</i>	<ul style="list-style-type: none"> <li>Grievances and complaints recorded</li> <li>Number of social conflicts recorded</li> </ul>	Throughout the project cycle By Contractor/Project Engineer/MPW Site Externally by EPA
10	<i>Loss of land</i>	<ul style="list-style-type: none"> <li>Land Acquisition Plan and Records</li> <li>Compensation and Relocation Assistance records</li> <li>Livelihoods Restoration Plan</li> <li>Complaints recorded and addressed</li> </ul>	Pre-construction/ construction phase MPW/PIU/PFMU Externally EPA/AfDB
11	<i>Gender</i>	<ul style="list-style-type: none"> <li>Number of women employed within project activities</li> <li>Number of women trading at constructed markets</li> <li>Number of women benefiting from business skills training</li> </ul>	Construction and operation phases Contractors/MPW
12	<i>Social/Cultural</i>	<ul style="list-style-type: none"> <li>Cultural sites compensated and relocated</li> <li>Chance Find procedures implementation records</li> </ul>	Daily self-checks and verification by contractors/MPW Preconstruction/construction and post construction

## 7.0 CONSULTATIONS

Community participation and consultation were undertaken among people living along the proposed road corridor and area of influence as an integral part of the ESMP study. These meetings enabled interested and affected parties to contribute their concerns (views and opinions on the proposed development) which might have been overlooked during the scoping exercise. A synopsis of the views of the project affected people as well as representatives of counties through which the project traverses were interviewed in predicting impacts and the development of the ESMP.

During the study, the consultant and MPW further explained to the public and relevant stakeholders that the proposed development would involve construction of over a 47.9km road from Sanniquellie to Loguatu and also answered any questions that the public sought to know about the project.

### 7.1 Construction and Operational Phase Consultations

Following the completion of the ESIA report and once the construction starts, the Contractor and MPW will perform on-going engagement throughout the life of the project. The Contractor and MPW will conduct on-going engagement and reporting with the communities guided by this Stakeholder Engagement Plan(SEP) that will support the long term viability of the Project by establishing and maintaining good relations with the communities and using feedback to inform the decision making process. The SEP is a living document that should be refined and modified throughout the life of the Project by the contractor and MPW accordingly. During this iterative process, the focus and scope of the SEP may shift somewhat in response to changing engagement needs and priorities for the Project, and as such the SEP should be updated as the project proceeds in order to meet the life of project requirements. The key elements to be considered when implementing stakeholder engagement during the Project's life cycle are as follows;

- Maintain existing relations with stakeholders;
- Maintain social license to operate;
- Enhance Contractor and MPW efforts with implementing environmental and social management plans; and
- Enhance MPW with monitoring and managing environmental and social impacts.

## 7.2 Stakeholder Engagement Plan

### 7.2.1 Establishment of Community Liaison Team

The contractor in collaboration with the MPW shall institute a trained community liaison team that will take responsibility and lead all aspects of the stakeholder engagement. This team should ensure there is availability of information and materials to community members on the project and allow the public to meet and communicate personally with company representatives, to obtain information on ongoing project activities, ask questions on topics of interest as well as to lodge complaints or concerns.

### **7.2.2 The Consultation Plan**

The overall aim of the consultation plan for the project is addressing the concerns and opinions of the stakeholders with the ultimate view to assuring a smooth project implementation.

Consultation about the project has been initiated during the ESIA and ESMP as well as RAP studies with the surrounding Communities and shall remain a continuous process during implementation by the contractor and the MPW. The specific consultation plan for the project construction and operations stages shall be developed by the contractor in consultation with the MPW, immediately after the contractor is done with pre-construction surveys and HSE assessments of the project route. The components of this plan shall include:

Visits and courtesy calls on community leaders and other stakeholders to discuss the effectiveness of the addressed social issues on the lives of the host communities. Direct visit to the affected populations to consider issues (through questionnaires, interviews and visual observations.)

Organizing large public meetings to discuss public welfare, clarify misconceptions and address new issues as regards the project.

Holding workshops and extension courses on resource management (using simply written materials, visual representation, videos and scale models to decode technical languages) and sensitising local people on the latest impact mitigation techniques.

Establishing a voluntary participatory programme in the local media, television and radio) through which NGOs, CBOs and other key stakeholders concerned and the general public can comment on various aspects of the project and to ensure that all socio-economic and environmental issues are adequately addressed.

## **7.3 Grievance Redress Mechanism**

### **7.3.1 Purpose of Grievance Redress Mechanism**

The project affected persons or communities will raise their grievances about actual or perceived impacts in order to find a satisfactory solution. This is an especially important aspect in this project because property displacement is indispensable through the course of the RoW. These grievances, influenced by their physical, situational (e.g., employment), and/or social losses, can surface at different stages of the project cycle. Some grievances registered during the project design and planning stage will be captured in the RAP, while others may yet come up during project implementation. In order to ensure that such grievances are addressed, the Contractor, MPW in consultation with key stakeholders in the communities and local authorities shall establish a Grievance Redress Committee (GRC)

### **7.3.2 Members of the Grievance Redress Committees (GRC)**

The Grievance Redress Committees, GRC, shall be mandated to deal with all types of grievances arising at the community level due to the project. This committee should be constituted as soon as a project contractor is selected and the contractor is done with his Pre-construction survey; and its members should comprise qualified, experienced, and competent personnel who are able to interact and gain the trust of the

Project Affected Persons and the communities. The GRC should consist of both male and female representatives, and should be able to accept complaints, provide relevant information on the process, discuss the complainants' situations with affected persons and communities and explore possible approaches for resolution. The committee should comprise of the following members:

- The Resettlement Action Plan Consultant
- A HSE officer of contractor
- HSE officer from the MPW/PIU;
- A representative of women residing in the affected Project area;
- A representative from the small businesses located within the affected area;
- A representative of a voluntary organization, NGOs;
- A representative of the AfdB;
- A representative appointed by the Community head.

#### **7.3.3 Steps involved in the Grievance Redress Mechanism**

There is no ideal method of approach to grievance resolution however; the best solutions to conflicts are generally achieved through localized mechanisms that take account of the specific issues, cultural context, local customs, and the project state and its magnitude. The proposed Grievance Redress Committee will endeavor to hold meetings with the aggrieved person(s) or groups within a maximum of 3 weeks from the time of receiving the complaint. The Contractor (during construction) and the MPW/PIU(during operation) shall put in place and publicize a Grievance Redress Mechanism (GRM) that provides for an accessible local contact point (telephone number, address, email address, name and title) to which stakeholders can direct questions, concerns, complaints and claims. The Mechanism will include:

- service standards (how quickly the complainant may expect a response),
- a log to record the grievance,
- the steps taken to investigate, the conclusion, and
- the response to the complainant.

It should also have an appeals procedure in case the complainant is unsatisfied with the response. Grievances shall be part of monitoring reports.

## 8.0 COMPLIMENTARY INITIATIVES

### 8.1 Gender Assessment

This activity will mitigate and respond to the potential impacts of the project on especially women, children and the vulnerable. It will review the current status and the approach and methodology for addressing gender issues on projects of this sort and monitor the effectiveness of the proposed mitigation measures. The gender monitoring activity will take place during construction and operation, and will recommend new mitigation measures where those proposed are not effective. Emphasis on collaboration with the Liberia Ministry of Gender Development and local communities will ensure success of the proposed measures.

#### Gender Gaps:

Mostly, women are involved in transport of produce to market places, conveying of produce from farms, taking children to school and the hospital in the project affected communities. Apart from women involved in petty trading and their own individual farming, couples usually have the male counterparts controlling income realised from economic activities. Women therefore have to walk long distances in terms of conveying produce home. Sometime children are unable to make it to school due to infrequent transportation to location of schools, especially higher levels of education above the primary school level. Women have to also endure patiently to take sick wards to hospitals due to lack of frequent vehicular traffic.

#### Gender Differentiated Opportunities and Constraints:

##### Opportunities:

Several opportunities come with the construction of the road for the communities in the project area. Key among them, especially for women and children are;

- It will significantly reduce women's workload as they are the primary gatherers, transporters and users of firewood and other farm produce.
- More children who typically need to be assisted by their parents to catch a vehicle for school after waiting for hours or have to walk can have easy access to school in nearby communities.
- Improvement upon the healthcare access by all genders, especially women and children. It will allow rapid access to health centres and thus reduce incidences of both maternal and infant mortalities.
- Economically, women involved in petty trading will be able to more revenue due to the ability to transport products from the farm to the market centres easily and avoid the spoling of perishable produce. They will also be able to easily convey manufactured products from city centres to the communities for sale.

### Constraints:

A number of issues that may confront women and children upon implementation of the project include;

- The tendency that temporary construction jobs are usually reserved for men are usually high on such projects.
- Male construction workers who come from differentiate areas usually may leave behind cases of single mothers and teenage pregnancies in the wake of such project, in some cases STDs
- Mother especially become very concerned about the safety of their children dueto increased traffic and relatively higher vehicular speed along the road

### **Implementation of Gender Mainstreaming:**

As part of the project Human Resource Management Plan, it is important that equitable opportunities are granted in terms of temporary jobs that may be availed by the project. The Traffic and Safety Management Plan must include education that involves women and children as well as other vulnerable groups. STD and other Safety and other plans developed for the project must be mainstreamed for gender and inclusive.

### **8.2 HIV/AIDS Component**

It is proposed that the activities carried out involve implementation of an HIV/AIDS Awareness/Prevention Campaign. There should be a review of mid-term likely effectiveness of the approach and methods adopted in case new approaches and strategies are deemed appropriate. The activity will thus be re-oriented as necessary to achieve its full potential in lasting benefits to project affected communities by the end of the construction period. The project contractor shall work with the County Coordinators in Nimba according to the GoL's decentralization policy to work with Focal Persons who will conduct sensitization meetings for the project staff as well as the project affected community members.



## 9.0 RESPONSIBILITIES AND INSTITUTIONAL ARRANGEMENTS

The successful implementation of this ESMP depends on the commitment and capacity of various institutions and stakeholders to implement the ESMP effectively. Thus, the arrangement as well as the roles and responsibilities of the institutions and persons that will be involved in the implementation, monitoring and review of the ESMP are discussed below.

**Table 6: Institutional Responsibilities**

No	Institution	Roles & Responsibilities
1.	Safeguards Committee (This committee is proposed to comprise representatives from MPW, EPA, Civil Society and the representatives of the Communities.)	<p><b><u>Environmental Safeguards</u></b></p> <ul style="list-style-type: none"> <li>• Collate environmental baseline data on relevant environmental characteristics of the selected project sites;</li> <li>• Analyze potential community/individual sub-project activities and their environmental impacts;</li> <li>• Ensure that project activities that are implemented will be in accordance to best practices and guidelines set out in the ESMP and site specific CESMP;</li> <li>• Identify and liaise with all stakeholders involved in environment related issues in the project; and be responsible for the overall monitoring of mitigation measures and the impacts of the project during implementation.</li> </ul> <p><b><u>Social Safeguards</u></b></p> <ul style="list-style-type: none"> <li>• Develop , coordinate and ensures the implementation of the social aspects of the ESMP</li> <li>• Identify and liaise with all stakeholders involved in social related issues in the project;</li> <li>• Conduct impact evaluation and beneficiaries assessment; and</li> <li>• Establish partnerships and liaise with organizations, Community Based Organizations (CBOs) and Civil Society Organizations (CSOs).</li> </ul>
2.	MPW/PIU	<ul style="list-style-type: none"> <li>• Liaise closely with EPA in preparing a coordinated response on the environmental and social aspects of project development respectively;</li> <li>• Safeguards due diligence</li> </ul>
3.	EPA	<ul style="list-style-type: none"> <li>• Environmental compliance overseer responsible for external monitoring</li> <li>• Lead role – monitoring implementation of ESIA, RAP and other prescriptive actions to ensure adherence to applicable standards, as well as conduct Environmental and social liability investigations etc,</li> <li>• Site assessment and monitoring of ESMP implementation</li> <li>• Ensure the smooth and efficient implementation of the project's various technical programmes</li> <li>• Maintain and manage all funds effectively and efficiently for the project.</li> </ul>
4.	Nimba County Authority and other local government institutions	<ul style="list-style-type: none"> <li>• Come in as and when relevant areas or resources under their jurisdiction or management are likely to be affected by or implicated projects.</li> <li>• Participate in project decision-making that helps prevent or minimize environmental and social impacts and to mitigate them. These institutions may also be required, issue a consent or approval for an aspect of a project; allow an area to be included in a project; or allow impact to a certain extent or impose restrictions or conditions, monitoring responsibility or supervisory oversight</li> </ul>
5.	AfDB	<ul style="list-style-type: none"> <li>• Overall supervision and provision of technical support and guidance.</li> <li>• Recommend additional measures for strengthening the management framework and implementation performance;</li> <li>• Supervising the application and recommendations of ESMP.</li> </ul>

6.	Contractor	<ul style="list-style-type: none"> <li>Compliance to BOQ specification in procurement of material and construction and implementation of CESMP and other required plans and programmes as stipulated in ESMP</li> </ul>
7.	Site Engineer/Supervision Consultant	<ul style="list-style-type: none"> <li>Provide oversight function during construction and decommissioning and ensures that contractor abides by all relevant laws</li> </ul>
8.	Local Community	<ul style="list-style-type: none"> <li>Promote environmental awareness</li> <li>Assist and Liaise with other stakeholders to ensure proper siting and provision of approval for such sites</li> <li>Support with provision of necessary facilities for supporting the construction works and engage/ encourage carrying out comprehensive and practical awareness campaign for the proposed project, amongst the various relevant interest groups.</li> </ul>
9.	NGOs/CSOs	<ul style="list-style-type: none"> <li>Assisting in their respective ways to ensure effective response actions, Conducting scientific researches alongside government groups to evolve and devise sustainable environmental strategies and rehabilitation techniques, Organizing, coordinating and ensuring safe use of volunteers in a response action, and actually identifying where these volunteers can best render services effectively &amp; Providing wide support assistance helpful in management planning, institutional/governance issues and other livelihood related matter, Project impacts and mitigation measure, Awareness campaigns</li> </ul>
10.	Others/General Public	<ul style="list-style-type: none"> <li>Identify environmental and social issues that could derail the project and support project impacts and mitigation measures, Awareness campaigns etc.</li> </ul>

The ESMP implementation Organogram defining the line of Communication in the proposed road construction is as highlighted below:

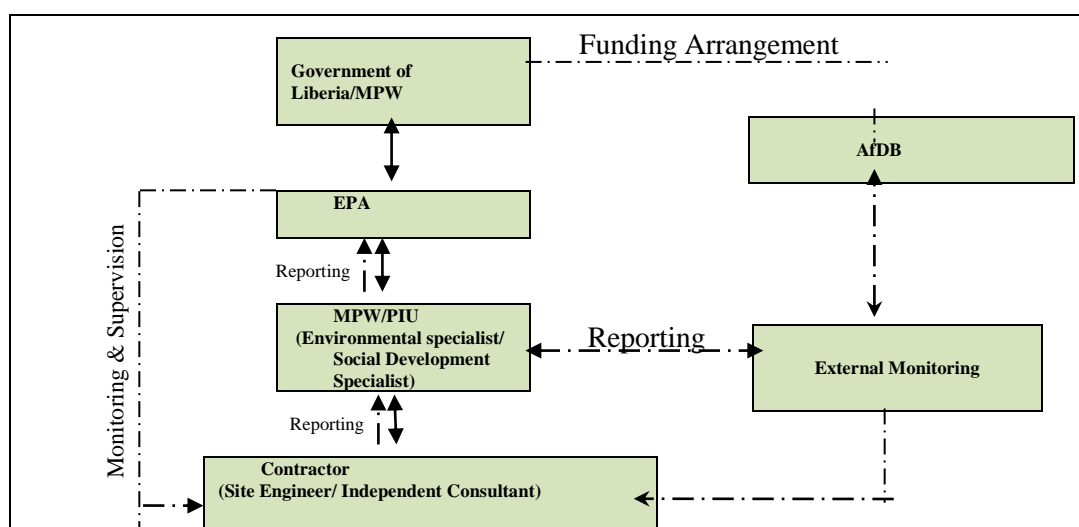


Figure 2: Institutional Arrangement for ESMP Implementation

## 9.1 Capacity Building and Institutional Strengthening

Table 7 outlines the proposed training for MPW/PIU staff as well as employees of the Contractor. The training is aimed at the practical aspects of environmental monitoring and management.

Training is essential for ensuring that the ESMP provisions are implemented efficiently and effectively. Based on the assessment of the institutional capacities of the different agencies that will be involved in the implementation of the ESMP, the following broad areas of capacity building have been identified and recommended for the MPW/PIU and other relevant agencies for effective implementation of the ESMP.

- Environmental and Social Management Plan (ESMP);
- Environmental and Social Monitoring and Audit;
- Solid waste Management;
- Disaster Risk Reduction/Management;
- Environmental and Social Reporting;
- Construction Health Safety and Environment.

The type of trainings proposed to be organized during the project period and estimated cost is given in Table 6. The cost estimates are based on the assumption that the training program will be held in Monrovia; resource persons are likely to come from other parts of the country and therefore require travel allowances; participants will come from institutions at state and local level.

### Capacity building for Contractor Personnel:

The Environmental and Social Consultant will be required to provide sufficient training to the contractor's team in order to ensure they are fully aware of the relevant aspects of the ESMP and are able to fulfill their roles and functions.

This training will be a requirement of contract for the Contractor. Specific training should be provided for workers that have specific tasks associated with the implementation of the ESMP such as Training on General Environmental Awareness to foster the implementation of environmentally sound practices.

**Table 7: Proposed Capacity Building Programme for ESMP Implementation**

Capacity Building Activity	Proposed Topics	Target Audience/Trainer	Duration	Estimated Budget US\$
Module 1: Training on Environmental and Social Management Plan Implementation	<ul style="list-style-type: none"> <li>• Overview of Environmental and Social Impact Assessment Process</li> <li>• Overview of Potential Environmental and Social Impacts of Project</li> <li>• Environmental Pollution &amp; Control</li> <li>• Environmental Engineering</li> <li>• Environmental and Social Management Plan</li> <li>• Environmental Performance Monitoring – Monitoring Mitigation Measures in ESMP</li> <li>• Environmental and Social Audits</li> <li>• Environmental Reporting</li> </ul>	<u>Target audience include:</u> Relevant Officers of PIU-Environmental Specialist/Social of Nimba County, NGOs, CBOs., Contractor  <u>Trainer:</u> Environmental and Social Consultant or EPA	2 day	16,000

Module 2: Training on Construction HSE	<ul style="list-style-type: none"> <li>• Introduction to Construction HSE</li> <li>• Overview of Health and Safety Hazards in Construction</li> <li>• Incidents: Causation, Investigation &amp; Reporting</li> <li>• Excavation Safety</li> <li>• Construction Site Inspection</li> <li>• Personal Protective Equipment</li> </ul>	<u>Target Audience:</u> Relevant staff of MPW/PIU, Nimba County Environmental Specialist/Social Development Specialist, NGOs, CBOs, Contractor  <u>Trainer:</u> Environmental and Social Consultant/EPA	1 day	10,000
Module 3: Training on Disaster Risk Reduction/Management	<ul style="list-style-type: none"> <li>• DRR/DRM concepts and applications</li> </ul>	Relevant staff of MPW/PIU, Nimba County Environmental Specialist/Social Development Specialist, and other relevant NGOs, CBOs, and contractor	½ day	8,000
<b>TOTAL</b>			<b>3.5 days</b>	<b>\$34,000</b>

## 10.0 ESTIMATED COSTS

Below is the estimated cost of implementing the ESMP; a total of Eight Hundred and Ninety Seven Thousand, Seven Hundred and Ten United States Dollars (USD 897,710). Table 7 details the cost items of Capacity Building and institutional strengthening while Table 9 provides the cost breakdown for Mitigation Activities as well as Monitoring Measures.

**Table 6: Estimated Budget for Implementation of ESMP**

<b>Item</b>	<b>Responsibility</b>	<b>Cost Estimate In US Dollars (US\$)</b>
Mitigation	PIU, Contractor	512,800
Monitoring	PIU, EPA	269,300
Capacity Building	EPA/Environmental and Social Consultant	34,000
Sub- Total		816,100
Contingency	10% of Sub- Total	81610
<b>Total</b>		<b>897,710</b>

## 10.1 Environmental and Social Management Plan Cost

### Table 7: Proposed Impact Mitigation Measures and Costs

Potential Impacts		Mitigation Measures	Responsibility (Implementation)	Cost of Mitigation Dollars (USD)	Indicators/ Parameters	Method of Measurement	Sampling Location	Frequency of Monitoring	Responsibility ( Supervision)	Cost of Monitoring Dollars (USD)
A		PRE CONSTRUCTION PHASE								
Community perception-		<ul style="list-style-type: none"><li>Providing enlightenment forums to community members from the preparatory stage and on potential environmental and social concerns from civil works</li></ul>	MPW/PIU- Environmental Specialist, Social development specialist, Community Development, Specialist, Communication specialist	12,000	•No of Complaints from community members and road users	Interviews	Construction Site	Once	PIU	-
1	Complaints from members of the community									
Mobilization of Equipment to Site		<ul style="list-style-type: none"><li>Develop a Traffic Management Plan (TMP)</li><li>Traffic control measures to include: strict enforcement of speed limits, use of appropriate road safety signages and signalers and minimization of movement at peak hours of the day.</li><li>Ensure submission of TMP is a condition in the procurement document for the contractor</li><li>Train drivers on haulage safety and pedestrian safety</li></ul>	•Contractor	11,500	• TMP Developed	-	Along transport corridor	Once	PIU	-
2	Traffic congestion and increased risk of road traffic accidents and injuries as a result of movement of equipment			10,500	<ul style="list-style-type: none"><li>Traffic flow</li><li>Safety signage &amp; signalers installed at strategic locations</li><li>No of Complaints from residents and other road users</li><li>No of Road Traffic Accidents (RTA)</li><li>No of Drivers Trained</li></ul>	<div>Sighting Visual Observation</div> <div>Complaint Register</div> <div>Police/FRSC Report Interviews/ Training Records</div>		Construction Site		
3	Occupational accidents and injuries from the use of machineries and equipment	<ul style="list-style-type: none"><li>Prepare a site specific HSE plan for workers addressing issues including: HSE rules and instruction;</li><li>Emergency contingency plans; Education of workers; Incident/accident reporting; Provision of First Aid onsite</li></ul>	•Contractor	10,500	• HSE Plan Developed	• HSE Report	Construction Site	Once	Environmental specialist- Contractor	-
				9,500	<ul style="list-style-type: none"><li>First Aid Provision</li><li>No of accidents and injuries</li><li>HSE Statistics {First Aid Cases (FAC), Lost Time Injuries (LTI), etc}</li></ul>	<ul style="list-style-type: none"><li>Sighting</li><li>Routine/ Unannounced Inspection</li></ul>		Daily	EPA	
Site Clearing		<ul style="list-style-type: none"><li>Suppress dust emissions by appropriate methods such as spraying water on soil</li><li>Maintain vehicles in good working condition</li><li>Ensure exhaust fumes from vehicles conform to applicable National standards and specifications</li></ul>	• Contractor	15,000	• Suspended Particulates (TSP, PM <sub>10</sub> , or smaller), SO <sub>2</sub> , NO <sub>x</sub> , CO, THC	• In-Situ Measurement	Construction Site and surrounding area	Daily	Environmental specialist- Contractor	9,400
4	Air quality deterioration from release of dusts and gaseous emissions from exposed soil surfaces and vehicles			-	-	-		<ul style="list-style-type: none"><li>Vehicle Exhaust Measurements</li><li>Records of maintenance for all machineries and equipment</li></ul>	• Sighting	Daily
61										

5	Noise and vibration from the use of machineries and motorized equipment	<ul style="list-style-type: none"> <li>• Maintain equipment and machineries adequately to reduce their noise levels</li> <li>• Fit machineries and motorized equipment with exhaust mufflers/silencers to minimize noise generation</li> <li>• Avoid unnecessary idling of internal combustion engines</li> </ul>	• Contractor	11,500	<ul style="list-style-type: none"> <li>• Noise Levels (Not to exceed 90dB(A))</li> <li>• No of Complaints</li> <li>• Records of Equipment Maintenance</li> </ul>	<ul style="list-style-type: none"> <li>• In-Situ Measurement</li> <li>• Sighting</li> <li>• Complaint Register</li> </ul>	Construction Site (high activity areas) and to some extent transport corridor	Daily	Environmental specialist-Contractor  EPA	<b>9,000</b>
6	Vegetation loss from land clearing	<ul style="list-style-type: none"> <li>• Limit clearing strictly to necessary areas so as to minimize the destruction of flora and fauna.</li> <li>• Re vegetate areas likely to be impacted with indigenous plant species immediately</li> </ul>	• Contractor	-	<ul style="list-style-type: none"> <li>• Clearly Defined Boundaries</li> <li>• % of Vegetal Density Loss/Vegetal cover</li> <li>• Diversity of indigenous and exotic plant species</li> <li>• No of micro habitats</li> </ul>	<ul style="list-style-type: none"> <li>• Visual Observation</li> <li>• Visual Estimate of Cover</li> <li>• Framed Quadrants</li> </ul>	Construction Site	Once during site clearing and quarterly afterwards	Environmental specialist-Contractor  EPA	10,000
7	Disturbance/Destruction of flora and fauna habitat (ecosystem) and displacement/destruction of fauna due to site clearing		• Contractor	13,500						9,000
8	Exposure of soil to sheet erosion and loss of quality from devegetation	<ul style="list-style-type: none"> <li>• Avoid removal of vegetation and trees to the extent possible</li> <li>• Protect all vegetation not required to be removed against damage</li> <li>• Re vegetate exposed soil quickly</li> </ul>	• Contractor	10,500	<ul style="list-style-type: none"> <li>• % of Vegetal Loss</li> <li>• Ratio of Natural/Cultivated Cover</li> </ul>	• Visual Estimate	Project area where vegetation was cleared	Once during site clearing and quarterly afterwards	Environmental specialist-contractor  EPA	8,200
9	Generation of vegetal wastes and other cleared materials from devegetation and site clearing activities	<ul style="list-style-type: none"> <li>• Prepare a Waste Management Plan (WMP), using the waste minimization hierarchy principles of avoid-reduce- reuse- recycle- disposal.</li> <li>• Ensure proper handling, stockpiling and disposal of wastes (e.g cleared vegetation, timber, rubbles, etc.)</li> </ul>	• Contractor	15,000  9,000	<ul style="list-style-type: none"> <li>• WMP Developed</li> <li>• Contractor's Compliance to WMP</li> <li>• Waste Handling and Disposal of Wastes</li> </ul>	<ul style="list-style-type: none"> <li>• Sighting</li> <li>• Visual Observation</li> <li>• Waste Tracking Report</li> </ul>	Construction Site	Weekly	Environmental specialist-Contract  EPA  Nimba County Solid waste management authority	<b>8,300</b>
10	Surface water contamination as a result of sediment run off from exposed soils	<ul style="list-style-type: none"> <li>• Install silt fences or other similar devices at strategic locations to prevent run-offs of sediment/silt to surface water</li> <li>• Define flood plain boundaries and pollutants of concern, and conduct resource inventory and information analysis.</li> <li>• Regular inspection of the project sites will be needed.</li> <li>• Identify sensitive areas in order to protect surface water and prevent non-point source pollution.</li> </ul>	• Contractor	15,500	• Surface Water Quality (pH, TDS, TSS, BOD, COD, Turbidity, THC, Heavy Metals)	• In-Situ/Laboratory Measurements	Discharge point, mid-stream & downstream	Once during Pre-Construction	Environmental specialist-Contractor  EPA	<b>8,400</b>
11	Risk of occupational diseases such as respiratory and eye disorder, noise related problems, stings and bites as a result of exposures to occupational	• Develop a site specific HSE plan	• Contractor	See A3	<ul style="list-style-type: none"> <li>• Contractors Compliance</li> <li>• Workers Using PPE</li> <li>• HSE Statistics (FAC, LTI, etc)</li> </ul>	<ul style="list-style-type: none"> <li>• Routine Inspection</li> <li>• HSE Reports</li> </ul>	Construction Site	Once during Pre-Construction	Environmental specialist-Contractor  EPA	-

	hazards.									
12	Employment of local labour for site clearing	<ul style="list-style-type: none"><li>Maximize employment of local labour by ensuring the submission of statement of intent to employ local labour as a condition in the procurement document for the contractor.</li></ul>	Contractor	-	<ul style="list-style-type: none"><li>No of local labour used</li></ul>	Log book	Construction Site	Once during Pre-Construction	MPW/PIU-Social Development Specialist	7000
<b>Installation of Equipment and Site Structures</b>		<ul style="list-style-type: none"><li>Maintain equipment and machineries adequately to reduce their noise levels</li><li>Fit machineries and motorized equipment with exhaust mufflers/silencers to minimize noise generation</li><li>Avoid unnecessary idling of internal combustion engines</li></ul>	Contractor	13,500	<ul style="list-style-type: none"><li>Noise Levels (Not to exceed 90dB(A))</li><li>Records of Equipment Maintenance</li></ul>	<ul style="list-style-type: none"><li>In-Situ Measurement</li><li>Sighting</li></ul>	Construction Site (high activity areas) and to some extent transport corridor	Daily	Environmental specialist-Contractor  EPA	8,400
13	Noise and vibration from the use of machineries and motorized equipment during construction of site structures									
14	Generation of construction wastes	<ul style="list-style-type: none"><li>Develop a Waste Management Plan (WMP)</li><li>Promote waste avoidance; reduction; reuse and recycling as applicable</li><li>Ensure proper handling, and disposal of wastes (especially contaminated soil, concrete, oils, grease, lubricants, metals, etc.)</li></ul>	Contractor	See A9	<ul style="list-style-type: none"><li>Contractors Compliance to WMP</li><li>Waste Handling and Disposal</li></ul>	<ul style="list-style-type: none"><li>Visual Observation</li><li>Waste Tracking Report</li></ul>	Construction Site	Weekly	Environmental specialist-Contractor  EPA  Nimba County Solid waste management authority	See A9
15	Risk of noise related problems amongst workers from exposure to excessive noise.	<ul style="list-style-type: none"><li>Develop a site specific HSE Plan and Noise Control plan for workers to include use of hearing protective devices</li></ul>	Contractor	See A3	<ul style="list-style-type: none"><li>No of workers using hearing protective devices (ear plugs)</li><li>Workers with noise related problems</li></ul>	<ul style="list-style-type: none"><li>Routine Inspection</li><li>HSE Report</li></ul>	Construction Site	Weekly	Environmental specialist-Contractor  EPA	-
<b>• SUB TOTAL</b>		<b>157,500</b>			<b>SUB TOTAL</b>				<b>85,900</b>	
<b>B</b>	<b>CONSTRUCTION PHASE</b>									
<b>Excavation , Borrowing, Filling, Back filling and Compaction</b>		<ul style="list-style-type: none"><li>Suppress dust emissions by appropriate methods such as spraying water on soil</li><li>Maintain vehicles in good working condition</li><li>Ensure exhaust fumes from vehicles conform to applicable National standards and specifications</li></ul>	Contractor	25,500	<ul style="list-style-type: none"><li>Suspended Particulates (TSP, PM<sub>10</sub>, or smaller), SO<sub>2</sub>, NO<sub>x</sub>, CO, THC</li><li>Vehicle Exhaust Measurements</li><li>Records of maintenance for all machineries and equipment</li></ul>	<ul style="list-style-type: none"><li>In-Situ Measurement</li><li>Sighting</li></ul>	Construction Site and surrounding area	Daily	Environmental specialist-Contractor  EPA	<b>9,500</b>
1	Air quality deterioration from dusts generated during excavation , borrowing, filling, backfilling and compaction activities			-				Daily		
				-						
2	Noise and vibration from the use of heavy duty vehicles during excavation, borrowing, backfilling and compaction activities	<ul style="list-style-type: none"><li>Maintain equipment and machineries adequately to reduce their noise levels</li><li>Fit machineries and motorized equipment with exhaust mufflers/silencers to minimize noise generation</li><li>Avoid unnecessary idling of internal combustion engines</li></ul>	Contractor	18,500	<ul style="list-style-type: none"><li>Noise Levels (Not to exceed 90dB(A))</li><li>No of Complaints</li><li>Records of Equipment Maintenance</li></ul>	<ul style="list-style-type: none"><li>In-Situ Measurement</li><li>Sighting</li><li>Complaint Register</li></ul>	Construction Site (high activity areas) and to some extent transport corridor	Daily	Environmental specialist-Contractor  EPA	<b>8,500</b>



3	Soil erosion from exposure of soil to rain and wind	<ul style="list-style-type: none"> <li>Avoid removal of vegetation and trees to the extent possible</li> <li>Protect all vegetation not required to be removed against damage</li> <li>Apply best engineering practices to minimize soil structure damage and adhere strictly to design specifications</li> <li>Work on exposed areas and re-vegetate quickly</li> <li>Control off-site storm &amp; flood water before it reaches areas being excavated to prevent run-off of sediment. This can be achieved by construction of temporary drainage channels with sedimentation traps and/or screens</li> </ul>	Contractor	17,000	<ul style="list-style-type: none"> <li>% of Vegetal Loss</li> <li>Compliance with Design Specification</li> <li>Ratio Natural/Cultivated Cover</li> <li>Evidence of drainage channels, etc</li> </ul>	Visual Estimate/ Observation	Excavated Area	Once during project activity and quarterly afterwards	Environmental specialist-Contractor  EPA	7,300
4	Generation of Spoils	<ul style="list-style-type: none"> <li>Reuse excavated materials immediately as fill, or stockpile for later use or dispose off appropriately</li> <li>Ensure stockpile and disposal areas are stable and protected against erosion and not interfere with run off or subsequent construction activities. Stockpile to be covered and stored in a sealed and bonded area in order to prevent run-off</li> <li>As part of the WMP, implement Spoil Handling Management (SHM) Sub-Plan that will identify how spoil will be handled, stockpiled, reused and disposed</li> </ul>	Contractor	13,000	<ul style="list-style-type: none"> <li>Spoil Handling Management Sub-Plan</li> <li>Contractors compliance</li> </ul>	Visual Observation	Construction Site	Weekly	Environmental specialist-Contractor  EPA  Nimba County Solid waste management authority	8,200
5	Predisposition of soil to erosion resulting from improper abandonment of borrow pit	<ul style="list-style-type: none"> <li>Implement Site Reclamation Plan to ensure that site is rehabilitated and restored to a safe and stable state</li> </ul>	Contractor	-	<ul style="list-style-type: none"> <li>Site Reclamation Plan</li> <li>Contractor's Compliance</li> </ul>	<ul style="list-style-type: none"> <li>Sighting</li> <li>Visual Observation</li> </ul>	At the worksite and material borrow area	Once during construction	Environmental specialist-Contractor  EPA	6,500
6	Water pollution due to sedimentation and siltation from runoff from spoils	<ul style="list-style-type: none"> <li>Control off-site storm and flood water before it reaches areas being excavated to prevent run-off of sediment. This can be achieved by construction of temporary drainage channels with sedimentation traps and/or screens</li> <li>Install sediment silt fences or other similar devices at strategic locations to prevent run-offs of sediment/silt to surface water</li> <li>Implement SHM Sub-Plan</li> </ul>	Contractor	17,500	<ul style="list-style-type: none"> <li>Surface Water Quality (pH, TDS, TSS, BOD, COD, Turbidity, THC, heavy metals)</li> <li>Contractor's Compliance to SHM Sub-Plan</li> </ul>	<ul style="list-style-type: none"> <li>In-Situ/ Laboratory Measurements</li> <li>Visual Observation</li> </ul>	Discharge point, mid-stream and downstream	Monthly	Environmental specialist-Contractor  EPA	<b>9,400</b>
7	Damage to existing underground public utility cables and pipes during excavation	<ul style="list-style-type: none"> <li>Use utility survey maps to identify existing underground facilities before excavation works to prevent damages and disruption of services</li> <li>Where a need for shut down of service is necessary, it should be as</li> </ul>	Contractor	16,500	<ul style="list-style-type: none"> <li>Complaints to Utility Service Providers</li> </ul>	<ul style="list-style-type: none"> <li>Complaints Register</li> <li>Visual Observation</li> </ul>	Construction Site (excavated areas)	During excavation	Engineer-Contractor  MPW	11,000

	works and disruption of services	temporal as possible to avoid significant adverse effect on the people								
8	Health and safety risks associated with falls, injuries in improperly abandoned borrow pits	<ul style="list-style-type: none"> <li>Implement Site Reclamation Plan</li> <li>Take appropriate measures to ensure borrow pits are secured where borrow pit is likely to pose significant risk after rehabilitation e.g. stock proof fencing in concert with signages</li> </ul>	• Contractor	15,500	<ul style="list-style-type: none"> <li>Contractor's Compliance</li> <li>Warning Signages</li> <li>No of Incidents</li> </ul>	<ul style="list-style-type: none"> <li>Visual Inspection</li> <li>Incident Reports</li> </ul>	Construction Site and material borrow area	During borrowing	Environmental specialist- Contractor  EPA	10,800
9	Risk of occupational accidents and injuries from the use of machineries & equipment	<ul style="list-style-type: none"> <li>Implement site specific HSE plan</li> </ul>	• Contractor	17,500	<ul style="list-style-type: none"> <li>HSE Statistics (FAC, LTI, etc)</li> <li># Accidents/Injuries</li> <li>Workers using PPEs</li> </ul>	<ul style="list-style-type: none"> <li>HSE Reports</li> <li>Routine Inspection</li> </ul>	Construction Site	Daily	Environmental specialist- Contractor  EPA	10,600
<b>Civil Engineering Works</b> <ul style="list-style-type: none"> <li>Alternative pedestrian bridge;</li> <li>Approach Roads</li> <li>Side drains</li> <li>Culvert</li> </ul>		<ul style="list-style-type: none"> <li>Maintain equipment and machineries adequately to reduce their noise levels</li> <li>Fit machineries and motorized equipment with exhaust mufflers/silencers to minimize noise generation</li> <li>Avoid unnecessary idling of internal combustion engines</li> </ul>	• Contractor	16,800	<ul style="list-style-type: none"> <li>Noise Levels (Not to exceed 90dB(A)</li> <li>No of Complaints</li> <li>Records of Equipment Maintenance</li> </ul>	<ul style="list-style-type: none"> <li>In-Situ Measurement</li> <li>Sighting</li> <li>Complaint Register</li> </ul>	Construction Site (high activity areas) and to some extent transport corridor	Daily	Environmental specialist- Contractor  EPA	<b>10,400</b>
10	Noise and vibration from the use of machineries and motorized equipment									
11	Soil contamination and loss of soil quality from waste water and spills of oil and other petroleum products from leakages and/improper handling.	<ul style="list-style-type: none"> <li>Implement WMP including measures to control oil spillage from machinery</li> <li>Proper maintenance of equipment to avoid oil spillages.</li> <li>Refueling and maintenance of vehicles should conform to best practices to ensure there are no spillages or leakages.</li> </ul>	• Contractor	23,000	<ul style="list-style-type: none"> <li>Soil Quality Test (Biological, Chemical and Physical Properties such as Nitrate, pH, Heavy Metals)</li> <li>Contractor's Compliance</li> <li>Evidence of leakages of oil and fuels</li> </ul>	<ul style="list-style-type: none"> <li>In situ / Laboratory Measurement</li> <li>Visual Observation</li> <li>Spot Check</li> </ul>	Soil Quality Sample Points  Construction Site	Monthly  Daily	Environmental specialist- Contractor  EPA	11,600
12	Waste generation from cement and concrete works such as cement bags and metal scraps etc.	<ul style="list-style-type: none"> <li>Implement the Waste Management Plan (WMP)</li> <li>Promote avoidance; reduction; reuse and recycling;</li> <li>Enhance proper handling and disposal of wastes (especially contaminated soil or water, concrete, demolition materials, oils, grease, lubricants, metals, etc.)</li> </ul>	• Contractor	See B11  14,500	<ul style="list-style-type: none"> <li>Contractors Compliance</li> <li>Waste Handling, and Disposal</li> </ul>	<ul style="list-style-type: none"> <li>Visual Observation</li> <li>Waste Tracking Report</li> </ul>	Construction Site	Weekly	Environmental specialist- Contractor  EPA  Nimba County Solid waste management authority	7,400
13	HIV/AIDS and other STDs arising from interactions amongst the workforce and the host community.	<ul style="list-style-type: none"> <li>Provide education, guidance and counseling on HIV/AIDS and other STDs for workers</li> <li>Provide condoms to construction staff</li> </ul>	• Contractor	24,000	<ul style="list-style-type: none"> <li>No of workers educated on IV/AIDS &amp; other STDs</li> </ul>	<ul style="list-style-type: none"> <li>Interview</li> </ul>	Construction Site	Once (before start of construction)	Contractor/PIU- Social development specialist, Communication specialist	-
14	Risk of occupational accidents and diseases such as	<ul style="list-style-type: none"> <li>Implement site specific HSE plan</li> </ul>	• Contractor	See B9	<ul style="list-style-type: none"> <li>HSE Statistics (FAC, LTI, etc)</li> <li># Accidents/Injuries</li> </ul>	<ul style="list-style-type: none"> <li>HSE Reports</li> <li>Routine Inspection</li> </ul>	Construction Site	Daily	Environmental specialist- Contractor	See B9

	noise related problems, respiratory and eye disorders from exposure to health and safety hazards.				• Workers using PPEs				EPA Ministry of Health – Nimba County	
<b>Transportation of Construction Materials</b>		<ul style="list-style-type: none"> <li>Implement Traffic Management Plan (TMP)</li> <li>Traffic control measures to include: strict enforcement of speed limits, use of appropriate road safety signages and signalers and minimization of movement at peak hours of the day.</li> <li>Ensure submission of TMP is a condition in the procurement document for the contractor</li> <li>Train drivers on haulage safety and pedestrian safety</li> </ul>	• Contractor	See A2  19,000	<ul style="list-style-type: none"> <li>TMP Implemented</li> <li>Traffic flow</li> <li>Safety signage &amp; signalers installed at strategic locations</li> <li>No of Complaints from residents and other road users</li> <li>No of Road Traffic Accidents (RTA)</li> <li>No of Drivers Trained</li> </ul>	-  Sighting Visual Observation  Complaint Register  Police/FRSC Report Interviews/ Training Records	Along transport corridor  Construction Site	Once  Daily  Once	Contractor/PIU  Road Safety Management Authority,	See A2  9,200
15	Injuries from accidental discharge of sand and stones during transportation to site									
<b>Operations of Site Installations-office, workshops, storage materials</b>		<ul style="list-style-type: none"> <li>Implement the Waste Management Plan</li> <li>Promote waste avoidance; reduction; reuse and recycling;</li> <li>Ensure proper handling and disposal of wastes (especially oils, grease, lubricants, sanitary wastes, metals, etc.)</li> </ul>	• Contractor	See B11  15,500	<ul style="list-style-type: none"> <li>Contractors Compliance</li> <li>Waste Handling, and Disposal</li> </ul>	<ul style="list-style-type: none"> <li>Visual Observation</li> <li>Waste Tracking Report</li> </ul>	Construction Site	During construction  Weekly	Environmental specialist- Contractor  EPA Nimba County Solid waste management authority	See B11  8,200
16	Waste generation from site office & maintenance activities such as used containers, scraps and office waste									
17	Underground water pollution from spillages and leakages from oil storage tanks.	<ul style="list-style-type: none"> <li>Implement measures to control oil spillages &amp; procedures for storage handling of hazardous wastes and raw materials (e.g. batteries, chemicals, fuels).</li> <li>Ensure refueling, maintenance as well as storage of diesel and oil conforms to best practices to ensure there are no spillages or leakages</li> <li>Ensure fuel storage tanks are leak-proof and checked daily. The tanks should be installed in a bonded area and should be replaced in cases of leakage;</li> <li>Store oils in original drums and kept on top of impermeable surface preferably in contractors store</li> </ul>	• Contractor	17,000	<ul style="list-style-type: none"> <li>Written Spills &amp; Leaks Response Procedures</li> <li>Evidence of bond around storage tanks</li> <li>Visual Signs of leakages of oils/ fuels</li> <li>Underground Water Quality (pH, TDS, TSS, BOD, COD, Turbidity, THC, Heavy Metals)</li> </ul>	<ul style="list-style-type: none"> <li>Visual Observation</li> <li>Spot Check</li> <li>Lab Measurement</li> </ul>	Storage Area  Water Quality Sampling Point	Monthly  Monthly	Environmental specialist- Contractor  EPA	8,200
18	Risk of occupational accidents and injuries from activities carried	• Implement site specific HSE plan	• Contractor	See B9	<ul style="list-style-type: none"> <li>HSE Statistics (FAC, LTI, etc)</li> <li># Accidents/Injuries</li> <li>Workers using PPEs</li> </ul>	<ul style="list-style-type: none"> <li>HSE Reports</li> <li>Routine Inspection</li> </ul>	Construction Site	Daily	Environmental specialist- Contractor  EPA	See B9

	out in site offices and workshop including maintenance works									
Vegetative land management measures										
19	Impact on soil- Soil stabilization and regeneration as result of vegetation	<ul style="list-style-type: none"><li>• Nurture vegetation and prevent deforestation activities</li><li>• Use vegrtal waste as compost to aid rapid vegetal propagation</li></ul>	• Contractor	19,000	<ul style="list-style-type: none"><li>• No of indigenous trees planted</li></ul>	<ul style="list-style-type: none"><li>• Routine Inspection</li></ul>	Construction Site	At completion of civil works	Environmental specialist- Contractor  EPA	10,200
20	Employment of local labour for re vegetation activities resulting in improved livelihood and welfare	<ul style="list-style-type: none"><li>• Maximize employment of local labour by ensuring the submission of statement of intent to employ local labour as a condition in the procurement document for the contractor.</li><li>• Target women, poor and vulnerable groups within the community for employment.</li><li>• Train employed locals to acquire skills that will be useful after the completion of the project.</li></ul>	• Contractor	-	<ul style="list-style-type: none"><li>• No of local labour used</li></ul>	<ul style="list-style-type: none"><li>• Log book</li></ul>	Construction Site	During land vegetative measures	Contractor/PIU- Social Development Specialist	11, 500
SUB TOTAL		289,800			SUB TOTAL 147, 000					
Maintenance of Culvert, approach roads, side drains and other Flood Control Structures		<ul style="list-style-type: none"><li>• Implement site specific HSE Manual</li></ul>	<ul style="list-style-type: none"><li>• Contractor</li><li>• Relevant Nimba County Agency</li></ul>	See B9	<ul style="list-style-type: none"><li>• HSE Manual Submitted</li><li>• HSE statistics</li><li>• Contractors Compliance</li><li>• Training Records</li><li>• Workers using PPE</li></ul>	<ul style="list-style-type: none"><li>• Sighting</li><li>• HSE Reports</li><li>• Routine Inspection</li></ul>	Project Site	During maintenance	Environmental specialist- Contractor  EPA	See B9
1	Occupational accidents and injuries as a result of falling and tripping during routine maintenance	<ul style="list-style-type: none"><li>• Train maintenance and other workers on HSE</li><li>• Provision of PPE to workers</li></ul>		15,000						
2	Waste generation from operations and maintenance works	<ul style="list-style-type: none"><li>• Implement the Waste Management Plan (WMP)</li><li>• Promote avoidance; reduction; reuse and recycling;</li><li>• Enhance proper handling and disposal of wastes (especially contaminated soil or water, concrete, demolition materials, oils, grease, lubricants, metals, etc.)</li></ul>	<ul style="list-style-type: none"><li>• Contractor/PIU</li><li>• Nimba County Authority</li></ul>	See B11   10,500	<ul style="list-style-type: none"><li>• Contractors Compliance</li><li>• Waste Handling, and Disposal</li></ul>	<ul style="list-style-type: none"><li>• Visual Observation</li><li>• Waste Tracking Report</li></ul>	Construction Site	During maintenance  Weekly	Environmental specialist- Contractor  EPA  Nimba Solid waste management authority	See B11   6,200
3	Creation of employment by training locals as maintenance officers	<ul style="list-style-type: none"><li>• Maximize employment of local labour for maintenance activities by enhancing their skills through appropriate training.</li><li>• </li></ul>	• Contractor	-	<ul style="list-style-type: none"><li>• No of local labour used</li></ul>	<ul style="list-style-type: none"><li>• Log book</li></ul>	Construction Site	Daily	PIU/Contractor- Social Development Specialist	8,200

<b>Disaster Risk Reduction/Management (DRR/DRM)</b>		<ul style="list-style-type: none"> <li>Reduce exposure to flooding hazards,</li> <li>Lesser vulnerability of people and property,</li> <li>Improve disaster preparedness for adverse events</li> </ul>	<ul style="list-style-type: none"> <li>Contractor</li> <li>Relevant Nimba County Authority</li> </ul>	-	<ul style="list-style-type: none"> <li>Vulnerability index</li> </ul>	<ul style="list-style-type: none"> <li>Vulnerability maps</li> </ul>	Project site	Annually	Contractor	9,300
4	<b>Flooding events</b> Prevention of landslides as a result of land and drainage stabilization due to civil engineering works and vegetation									
<b>PCR Management</b>		<ul style="list-style-type: none"> <li>Implement PCR Management Plan</li> <li>Exact location of all graves and grave yards</li> <li>Managing impacts on sacred trees</li> <li>Managing impacts on areas of spiritual significance to local communities</li> </ul>	<ul style="list-style-type: none"> <li>Contractor</li> <li>Relevant Antiquities and Museums Authority</li> </ul>	25,000	<ul style="list-style-type: none"> <li>As detailed in RAP</li> </ul>	<ul style="list-style-type: none"> <li>Transect and Sysyrmatic inspections</li> </ul>	Project Site	As construction proceeds	Contractor	15,000
5	<b>PCR:</b> Inventory of PCR known to be within the RoW of road corridor Inventory of PCR known close to RoW of corridor as to be at risk of damage or disturbance			15,000						
	<b>SUB TOTAL</b>			<b>65,500</b>	<b>SUB TOTAL</b>					<b>29,400</b>
	<b>TOTAL</b>			<b>512,800</b>						<b>269,300</b>
	<b>GRAND TOTAL</b>	<b>782,100.00</b>								

## 11.0 ESMP IMPLEMENTATION SCHEDULE

The activities related to environmental and social management and monitoring have to be integrated in the overall construction schedule. As discussed, most of the environmental management actions are standard or "good housekeeping" measures applicable to construction projects. These have to be observed throughout the construction activities and are shown as an overall activity. The key elements of the implementation schedule presented in Table 8 include the following:

- Inclusion of environmental and social requirements in bid documents and contract;
- Review and approval of Contractor's CESMP and sub-management plans;
- Preparation and submission of construction schedule;
- Implementation of mitigation and enhancement measures;
- Training;
- Environmental and Social Auditing; and
- Monitoring and reporting of ESMP implementation

**Table 8: Tentative ESMP Implementation Schedule**

No.	Activity	Responsibility	Pre-Construction (Month)			Construction (Month)				Operation & Maintenance
Environmental & Social Management			1	2	3	3	4	5	6 etc.	
1	EHS Officer and CLO for Contractors to be recruited before construction works	MPW/PIU								
2	Environmental and Social Training	Environmental and Social Consultant/EPA								
3	Review and Approval of Contractor's CESMP, Waste & Safety Plan, etc.	MPW/PIU								
4	Finalization of Engineering Designs	PIU/Engineering Design Consultant								
5	Implementation of Environmental and Social Mitigation Measures	Contractor								
6	Supervising ESMP Implementation	MPW/PIU								
7	Monitoring & Reporting on ESMP Implementation	EPA								
8	Environmental and Social Auditing	MPW/PIU								

Table 8 above provides a tentative schedule for implementing the ESMP. Prior to the activities in the table, Clearance and Formal Disclosure of ESMP will be done in May 2018, and budget for ESMP included in the project implementation costs. The MPW/PIU shall Include the Environmental and Social Requirements as detailed in the various studies in Bid Documents for the project and allocate budget for the ESMP.

## **12.0 CONCLUSION**

MPW recognizes that it has a role to play and a responsibility in protecting and enhancing the environment in which the project is to be deployed to meet the needs of the communities without compromising the integrity of the environment and a major disruption of the socioeconomic setup of project affected areas. This Social and Environmental Management Plan has therefore described in detail the processes MPW will follow to maximize its compliance to statutory requirements as well as those of project sponsors and minimize the impacts of the project on the general environment.

Monitoring and surveillance will be conducted to ensure that the Action Plans stipulated in this document are appropriate and effectively being implemented and are helping MPW meet the project's Social and Environmental objectives.


## **REFERENCES**

- African Development Bank 2013. Disclosure and Access to Information
- African Development Bank GROUP, 2012. Energy Sector Policy
- EPA, 2008. Liberia's Initial National Communication (INC). Monrovia
- IFC, 2007. Performance Standards on Social & Environmental Sustainability. World Bank Group
- LISGIS, 2008. National Population & Housing Census. Monrovia
- Ministry of Foreign Affairs, 2002. Environmental Protection Agency Act of Liberia. Monrovia
- Ministry of Foreign Affairs, 2002. Act Adopting the Environment Protection and Management Law of the Republic of Liberia. Monrovia
- Ministry of Foreign Affairs, 2002. National Environmental Policy of the Republic of Liberia. Monrovia
- Ministry of Public Works, October 2013. EMP for lot 2 of the Zwedru to Harper Road Project. Monrovia



## APPENDICES

### APPENDIX A: Newspaper Publications of Notice of Intent

The New Republic, Monday, September 25, 2017	
<p><b>GOVERNMENT OF THE REPUBLIC OF LIBERIA</b> <b>MINISTRY OF PUBLIC WORKS</b></p> <p><b>ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA)</b></p> <p>Phase 6: Sanniquellie to Loguatu Coastal Highway Road Project</p> <p><b>NOTICE OF INTENT</b></p> <p>The Government of Liberia, through the Ministry of Public Works (MPW), with Assistance from the European Union(EU), proposes to construct a 47.98Km road from Sanniquellie through Karplay to Loguatu, as part of the Coastal Highway Project; in the Nimba County of Liberia.</p> <p>The proposed undertaking would pass close to the following communities: Sanniquellie, Schikimpa, Suakarzue, Gbobayee, Vidigayee, Zorgowee, Kiale, Sonkarley, Tuah Village, Napea Village, Karplay, Tommie Village, Larpea #2, Larpea #1, Duohn Play, Zeanlay, Henlay #2, Daoplay, Kissiplay, Dro Village, Loguatu , among others.</p> <p>Notice of the proposed 47.98Km Sanniquellie to Loguatu Coastal Highway Road Project is hereby served for public information, as required under the procedure for the conduct of Environmental and Social Impact Assessment (ESIA).</p> <p>Any person(s) having an interest, concern, or special knowledge relating to potential environmental &amp; social effects of the proposed project may contact or submit such concerns, etc. to:</p> <p>The Project Manager Coastal- Highway Project Ministry of Public Works – Liberia OR Cell: +233 50 701 8200</p> <p>The Environmental Consultants Phase 6: Coastal Highway Project Monrovia – Liberia Cell: +231777442233</p>	<p><b>JUD REP</b></p> <p>RECEIVED IN 16</p> <p>Form This is Repub Repub</p> <p>REGIS</p> 
<p>I, Lois</p>	



GOVERNMENT OF THE REPUBLIC OF LIBERIA  
**MINISTRY OF PUBLIC WORKS**



**ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT  
(ESIA)**

**Phase 6: Sanniquellie to Loguatus Coastal Highway Road Project**

**NOTICE OF INTENT**

The Government of Liberia, through the Ministry of Public Works (MPW), with Assistance from the European Union (EU), proposes to construct a 47.98Km road from Sanniquellie through Karplay to Loguatus, as part of the Coastal Highway Project; in the Nimba County of Liberia.

The proposed undertaking would pass close to the following communities: Sanniquellie, Schikimpa, Suakarzee, Gbobayee, Vidigayee, Zorgowee, Kiale, Sonkarley, Tuah Village, Napea Village, Karplay, Tommie Village, Larpea #2, Larpea #1, Duohn Play, Zeanlay, Henlay #2, Daoplay, Kissiplay, Dro Village, Loguatus, among others.

Notice of the proposed 47.98Km Sanniquellie to Loguatus Coastal Highway Road Project is hereby served for public information, as required under the procedure for the conduct of Environmental and Social Impact Assessment (ESIA).

Any person(s) having an interest, concern, or special knowledge relating to potential environmental & social effects of the proposed project may contact or submit such concerns, etc. to:

The Project Manager  
Coastal-Highway Project  
Ministry of Public Works – Liberia  
Cell: +233 50 701 8200

**OR**

The Environmental Consultants  
Phase 6: Coastal Highway Project  
Monrovia – Liberia  
Cell: +231 777 442 233

**LIBERTY PARTY**

S

September 20, 2017

Mr. Princeton Monnia  
National Election Commission Magistrate  
Upper Nimba County NEC Office  
Sanniquellie  
Nimba County

**Dear Magistrate Monnia:**

**Re: Formal Complaint against CDC's Disruption of Liberty Party on Wednesday, September 20, 2017**

On September 13, 2017, the Liberty Party National Elections Commission regarding the 2017. Copies of the said communication Sanniquellie City, Nimba County.

On the morning of September 20, 2017, the meeting with the Upper Nimba Magistrate along with the Nimba County Police Commission the CDC was attempting to have a rally in Sanniquellie City for its official campaign launch. In this meeting, the CDC did not receive any written request from the Liberty Party to conduct its activities as per the law. With this assurance, we returned to our local area to prepare for the parade and subsequent launch of our campaign. The process was going on with distribution of our campaign materials. A team of CDC including three pickups arrived on the main street of Sanniquellie, where our party was holding a rally. The police stated that they were only driving through the area to ensure peace and to allow us to distribute our party t-shirts, thus causing a disruption. The police initially intervened to stop their action. However, about 3:15 P.M. a large convoy of Standard-bearers arrived in Sanniquellie and assembled along the main street of Sanniquellie for the official launch. When the police tried to intervene, they refused and insisted on passing through the area. When we again protested their illegal action, they started a rampage attacking our partisans and supporters, breaking through our Party Headquarters and offices. Below is the list of the items damaged, and the stolen items:

**I. Description of Damaged items**

Liberty Party Pickups .....  
Liberty Party Large Billboards .....  
Musical set .....  
Office doors .....

**II. Stolen items**



## APPENDIX B: Letter of Introduction for Studies



Office Of The Deputy Minister  
Technical Services

REPUBLIC OF LIBERIA  
**MINISTRY OF PUBLIC WORKS**

P. O. Box 9011  
Lynch Street South  
Monrovia, Liberia



### Letter of Introduction

CEL-DMTS/MPW-RL/188/'16

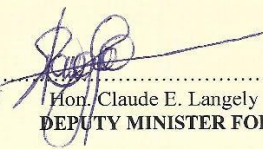
July 22, 2016

#### TO WHOME IT MAY CONCERN

The Ministry of Public Works write to introduce **AIC Progretti** as the project consultant hire by the National Authorizing Office (NAO) of the Ministry of Finance and Development Planning to perform consultancy services for the project **"Design of Priority Section of Coastal Highway"** on behalf of the Government of Liberia.

You are require to accord any member of the consultant's staff free access within the Republic of Liberia were necessary for the purpose of data collection for preparation of Feasibility Studies and Detail Engineering Design as per the contract Terms of Reference signed between the National Authorizing Office(NAO) and the Consultant.

Please contact the Ministry of Public Works for any clarifications were require.

Authorized Signature: .....  
Name and Title of Signatory:  Hon. Claude E. Langely  
**DEPUTY MINISTER FOR TECHNICAL SERVICES**

Name of Agency: MINISTRY OF PUBLIC WORKS

CC: Hon. W. Gyude Moore  
**MINISTER**