



**OYO STATE**

**Ibadan Urban Flood Management Project**

**ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN  
(ESMP)**

**For the**

**RECONSTRUCTION OF THE CELE-RAINBOW- OJOEKUN – AJANAKU  
WAY- AGARA CULVERT**

**FINAL REPORT**

# **ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)**

## **Ibadan Urban Flood Management Project (IUFMP)**

### **FINAL REPORT**

**Submitted to:**

**Project Implementation Unit  
Ibadan Urban Flood Management Project (IUFMP)  
Ibadan Oyo State  
NIGERIA**

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## **LIST OF ABBREVIATIONS AND ACRONYMS**

BP	Bank Policy
BOD	Biochemical Oxygen Demand
CBOs	Community Based Organizations
CDA	Community Development Associations
DO	Dissolved Oxygen
EA	Environmental Assessment
EC	Electrical Conductivity
EIA	Environmental Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESO	Environmental Safeguard Officer
ESS	Environmental and Social Screening
FEPA	Federal Environmental Protection Agency
FMEnv	Federal Ministry of Environment
GoN	Government of Nigeria
GPS	Global Positioning System
HIV/AIDS	Human Immunodeficiency Virus / Acquired Immunodeficiency Syndrome
HSE	Health Safety and Environment
ISDS	Integrated Safeguards Data Sheet
Lexp	Exposure Levels
LGA	Local Government Area
Lmax	Maximum Noise Levels
Lmin	Minimum Noise Levels
MDAs	Ministries Departments and Agencies
MEH	Ministry of Environment and Habitat
MoW	Ministry of Works
ND	Not Detected
NESREA	National Environmental Standards and Regulations Enforcement Agency
NGOs	Non-Governmental Organization
NIMET	Nigeria Meteorological Agency (NIMET)
OP	Operational Policy
OYSG	Oyo State Government
PAD	Project Appraisal Document
PC	Project Coordinator
PDOs	Project Development Objectives
PIM	Project Implementation Manual
PIU	Project Implementation Unit
PPE	Personal Protective Equipment
RAM	Risk Assessment Matrix
sp	Species
SPM	Suspended Particulate Matter
TOR	Terms of Reference
WMP	Waste Management Plan

## **Currency and Equivalents**

Currency Unit = Nigerian Naira  
US\$ = N200

## EXECUTIVE SUMMARY

### ES 1: Project Background

The World Bank is supporting the Government of Nigeria and the Oyo State Government to prepare the Ibadan Urban Flood Management project (IUFMP) that aims at developing a long-term flood risk management framework by initiating risk assessment, community awareness, and providing enough flexibility in the project design to make changes based on learning. Specifically, the Bank's support will finance some priority investments related to improving the infrastructure of Ibadan City, especially those destroyed by August 26, 2011 floods.

### ES 2: Triggered World Bank Environmental and Social Safeguard Policies

The proposed project has triggered the following policies: OP/BP 4.01: Environmental Assessment; OP/BP and OP/BP 17.50: Disclosure of Information. The project is categorized as a B in accordance to the provisions of the World Bank OP: 4.01 on Environmental Assessment. This implies that the potential environmental and social impacts likely to arise will be minor, site-specific and manageable to a reasonable level.

### ES 3: Description of the Proposed Intervention Works

The reconstruction works proposed for this site will involve medium-sized civil works which is a replacement with a twin box culvert (3x2m), construction of a raised roadway across the valley of about 250m with a rectangular drainage (1x1m) and construction of 100m retaining wall of up to 3m high.

### ES 4: Potential Positive and Negative Environmental and Social Impacts

Potential Positive Environmental Impacts	Potential Positive Social Impacts
<ul style="list-style-type: none"> <li>Improved solid waste management;</li> <li>Soil stabilization and regeneration;</li> <li>Improved soil quality and quantity through improved drainage and flood protection systems;</li> <li>Reduction in the phenomenon of flooding in the project area;</li> <li>Restoration of vegetative cover and ecosystem;</li> <li>Improved ecological balance and biodiversity conservation;</li> <li>Reduced siltation along stream course with resultant preservation of ecosystem and aquatic life;</li> <li>Reduced risks of floods due to reduced siltation; and</li> <li>Disaster Risk Reduction from flooding events.</li> </ul>	<ul style="list-style-type: none"> <li>Job creation: Implementation activities will have a positive impact for the local economy, particularly with regard to job creation (labour for construction works, maintenance and monitoring) and related activities such as petty trading;</li> <li>Preservation of infrastructure (culvert, drains, approach roads);</li> <li>Employment of labour and development of personal skills;</li> <li>Improved livelihood/welfare;</li> <li>Construction of the culvert: Culvert will allow improved health conditions, health and safety of people, effective sanitation, reducing the mortality and morbidity associated with floods;</li> <li>Construction of the culvert: This will increase the resilience of communities at risk of flooding, and the preservation of assets of households and businesses against flood risk;</li> <li>Income generation: Civil works will have some impacts on the local economy, with the use of local SMEs whose project will lead to a high use of labour;</li> <li>Increase in household savings and welfare;</li> <li>Increased social interaction;</li> <li>Diversification of livelihood and increased productivity; and</li> <li>Lessening vulnerability of people and property.</li> </ul>
Potential Negative Environmental Impacts	Potential Negative Social Impacts
<ul style="list-style-type: none"> <li>Air Quality Deterioration</li> <li>Noise and Vibration</li> <li>Surface and Ground Water Contamination</li> <li>Vegetation Loss</li> <li>Ecosystem Disturbance &amp; Displacement/Destruction of Fauna</li> <li>Soil Erosion and Loss of Soil Quality</li> <li>Soil Contamination</li> <li>Solid and Liquid Waste Generation</li> </ul>	<ul style="list-style-type: none"> <li>Community Perception;</li> <li>Traffic Congestion;</li> <li>Temporal diversion of access to motorists and businesses;</li> <li>Temporal Disruption of Public Utility Services</li> <li>Gender Impacts</li> <li>Occupational Health and Safety</li> <li>Public Health and Safety</li> </ul>

## **ES 5: Environmental and Social Mitigation and Monitoring Plan**

The ESMP outlines the measures to be taken during project implementation and operation to control negative environmental and social impacts and the mitigation and monitoring actions needed. The ESMP components include recommended mitigation measures, description of monitoring program; institutional arrangement including capacity building; implementation schedule; and cost estimates. Table 3.3 chapter 3 gives a comprehensive detail of the ESMP.

### ***Mitigation Measures***

Feasible, practical and cost effective measures to reduce the potentially significant negative environmental and social impacts to acceptable levels have been developed. These measures are described in Table 3.3 and mainly relate to the adoption of best environmental practices in the design, construction and operations of the project. Consequently the mitigation measures will be included in the bid and contract documents for the successful enterprise to implement. Some of the key mitigation measures proposed in the ESMP include; suppression of dust emissions, proper maintenance of vehicles and machinery, fitting of exhaust mufflers/silencers, control of oil spillages, storm and flood water, proper management of spoils, selective land clearance and re-vegetation. Other measures include adoption of best engineering practices, preparation and implementation of Waste Management Plan (WMP) and site specific Health, Safety and Environment (HSE) Plan to address occupational health issues.

### ***Monitoring Program***

In order to effectively and efficiently implement this ESMP, an environmental and social performance monitoring program has been designed to ensure implementation and check effectiveness of recommended mitigation measures. Internal and external monitoring will be conducted to ensure compliance with the ESMP. The detailed proposed mitigation measures and related monitoring activities are provided in the Environmental and Social Mitigation and Monitoring Plan in Table 3.3, Chapter 3

## **ES 6: Institutional Arrangements**

The implementation of this ESMP requires the involvement of various institutions and stakeholders fulfilling roles to ensure sound environmental management during the life cycle of the project. The institutional arrangement as well as the roles and responsibilities of the various institutions and persons that will be involved in the implementation, monitoring and review of the ESMP are discussed in Section 3.5 in the main report. They include Oyo State Ministry of Environment and Habitat, FMEnv, Project Implementation Unit (PIU), World Bank, Contractor, CSOs/CBOs, Local Government as well as other relevant state MDAs. The safeguards unit will be responsible for the supervision of the ESMP under the project coordinator and ensuring that the environmental and social requirements are satisfied.

## **ES7: Capacity Building and Training**

Capacity building measures will be required to ensure that institutions involved in implementing the various ESMP components have the necessary knowledge and skills to fulfill their roles. The broad areas of capacity building and proposed training programme are presented in Table 3.5, Chapter 3. The cost for capacity building is estimated at US\$10,500 (N2, 100,000).

## **ES 8: Implementation Schedule**

The activities related to environmental and social management and monitoring will be integrated in the overall construction schedule. The key elements of the implementation schedule are presented in Table 3.6, Chapter 3.

## **ES 9: Cost Estimate**



The total indicative cost for implementing the ESMP is estimated **at Forty Thousand Four Hundred and Eighty Dollars only (\$40,480)** which is **Eight Million and Ninety Six Thousand Naira Only (N 8,096,000)**. The breakdown is as shown below:

Item	Responsibility	Cost Estimate in Nigerian Naira (N)	Cost Estimate In US Dollars (US\$)
Mitigation	PIU, Contractor	3,240,000	16,200
Monitoring	PIU, Oyo State Ministry of Environment and Habitat, NESREA, Oyo State Waste Management Board	2,020,000	10,100
Capacity Building	PIU, Oyo State Ministry of Environment and Habitat/Other relevant MDAs	2,100,000	10,500
Sub- Total		7,360,000	36,800
Contingency	10% of Sub- Total	736,000	3680
<b>Total</b>		<b>8,096,000</b>	<b>40,480</b>

#### ES 10: Disclosure

After review and clearance by the World Bank, the ESMP will be disclosed at the Project Implementation Unit, Oyo State Ministry of Environment and Habitat, the Local Government Office, the host community as well as the World Bank Info Shop. The purpose will be to inform stakeholders about the project activities; environmental and social impacts anticipated and proposed environmental and social mitigation and monitoring measures.

#### ES 11: Public Consultation

Consultation was carried out at different levels with relevant stakeholders and members of the community. These included: State MDAs, Traditional Rulers, Community Leaders, Community Association Members, Women Groups, Youths and NGOs/CBOs. See chapter 4.

#### ES 12: Summary and Recommendations

The roadway that once connected two parts of the city suburbs is impassable. Alternative routes do exist but these are much longer. However, the following summary and recommendations are listed below.

- The contractor and PIU coordinate with the Oyo State Federal Road Safety Commission and Oyo State Traffic Management Agency all through construction works on site to ensure that safety is maintained and potential traffic impact managed;
- Design and construct a temporary alternative pedestrian access bridge for community members school children, the elderly, pregnant women, physically challenged etc) who use the existing dilapidated wooden for access;
- Design and construct a temporary alternative access bridge for Okada rider's i.e Motor bikes.
- Proper lightening and relevant road signages and barriers should be used during construction works for safety precautions;
- Community members be sensitized and duly informed on the time and duration of works through consultations;
- Vegetation covering stream banks be cleared and width widened along the project area of influence;
- The water ways have a lot of obstacles such as silt and debris. These needs to be cleared and evacuated.
- Priority given to local workers during the construction phase. This would likely lead to fewer social problems at the community levels.
- Carry the community along during project implementation and mobilize them to provide community security for personnel working on site.
- Mobile clinics situated at project locations as existing clinics pharmacies are distant

- Construction works is carried out in an environmentally sustainable and socially responsible and inclusive manner;
- Potential environmental and social impacts of sufficient magnitude that could interrupt the execution of the project were not detected. Although, there were few negative environmental and social impacts that may potentially occur due to the activities associated with the proposed works but adequate mitigation measures have been provided to address them.
- The proposed intervention work is most desirable because of the obvious environmental, health and socio-economic benefits. These far out-weigh the negative environmental and social impacts that could arise in the course of implementation.
- The combination of engineering and biological approach (Vegetative land management measures) adopted in slope stabilization work to forestall undermining and washing away of structure.
- Appropriate institutional framework has been drawn up to implement the mitigation measures and environmental management plan while the proposed monitoring programmes shall be set in motion as soon as possible.

## **CHAPTER ONE: INTRODUCTION**

### **1.1 Cele Rainbow Culvert Study Area Ojoekun- Ajanaku way Agara**

The Cele Rainbow culvert is one of the priority sites for intervention under the Ibadan Urban Flood Management project (IUFMP). The culvert is located at about 1.4km from Cele-Rainbow - Ojoekun - Ajanaku Way-Agara in Oluyole Local Government Area. The site falls within the Ibadan Metropolis and lies between x and y coordinates N7.32354 and E3.85435 at an altitude of 145msl. This area is an average of 100m<sup>2</sup> around the culvert.

### **1.2 Description and Rationale of the Cele Rainbow Culvert Study**

The existing culvert was washed away during the August 2011 flood disaster; the collapsed culvert debris can be seen along the river bed. Presently, there is an existing culvert which connects the communities on both sides, however, it is not properly sized and there will be need to train the river both upstream and downstream of the culvert as the river bed is overgrown with weeds and shrubs. The road approaches are in bad condition because of heavy moving trucks to and fro a solid waste designated dump site.

The topography is a flat and characterized by basement geological formations and sandy soils. The area receives surface water (upstream) from Ogbere River and discharges into Ona River. Vegetation in the area is composed mainly of few trees, high shrubs and grasses. However, the original vegetation has been undergoing modifications due to urban expansions and human activities.

Human activities have impacted on the environment resulting in series of environmental and social concerns such as dilapidated drainages near damaged culvert and aquatic weeds restricting flow of water. The pictorial description of the environmental issues at the proposed site is shown in Figure 1.1

### **1.3 Description of the Proposed Intervention Works**

The proposed civil works includes: (i) reconstruction of the crossing using a triple cell box culvert (3.5x3.5m) (ii) construction of appropriate bed scour (upstream and downstream) and side protection to prevent outflanking, (iii) reconstruction of roadway approaches of 250m long, 7.3m wide with asphaltic concrete finish and 1m wide by 1m deep side drain in concrete grade 25 at both sides of the road and associated drainage (within the floodplain), (iv) removal of aggressive weeds from upstream channel (then to be managed by the local community), (v) 100m long retaining wall of up to 3m high in concrete grade 30 at various locations. The minimum land area required for the proposed intervention is estimated at about 100m<sup>2</sup>.

The earth work include demolition of existing partly collapsed culvert structure, channel protection, marker-posts and gauging staff and relocation of four (4) numbers of electric poles.

Specifically, the design includes:

- Excavation and stabilization;
- Construction of bed and concrete screeding;
- Construction of 9” thick reinforced concrete retaining wall (Abutments);
- Construction of deck concrete; and
- Construction of Parapet wall.

Figure 1.0 below shows the engineering design (survey and topography) of the study area and the points of intervention

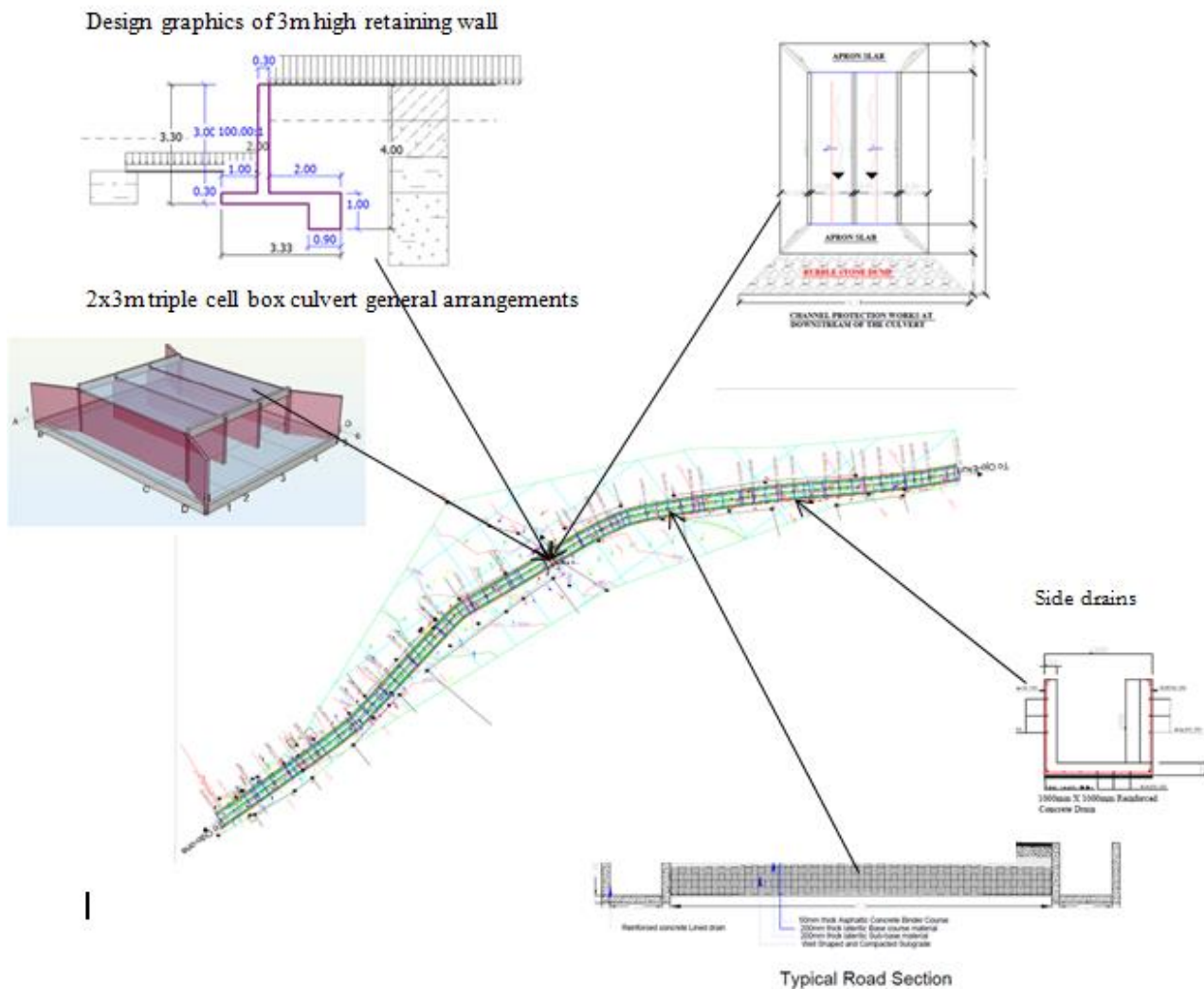


Figure 1.0: Engineering design (Survey and topographic map) of Cele Rainbow Site and points of intervention



Plate 1: Collapsed culvert on the river bed



Plate 2: Narrow width of existing damaged culvert



Plate 3: Temporary planks for cars

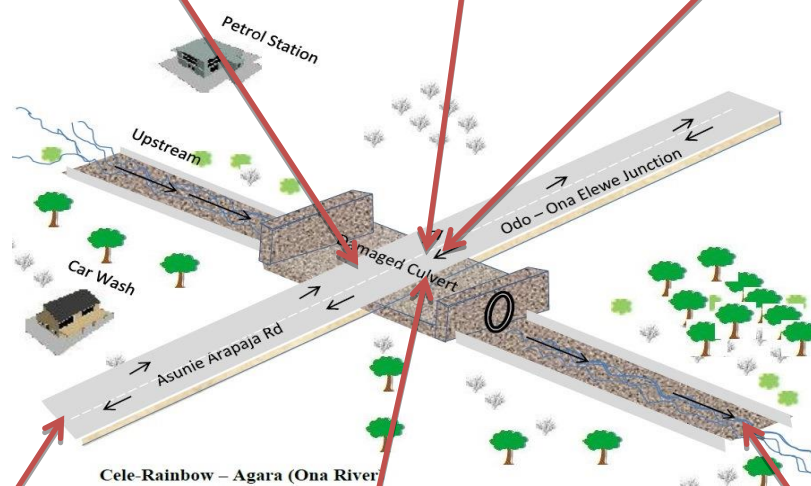


Plate 4: No side drains on approach road



Plate 5: Existing damaged culvert structure



Plate 6: Weeds and shrubs along River bed

Figure 1.1: Schematic diagram of project site showing environmental and social issues

## 1.4 Project Activities

The proposed works will be carried out in three phases namely; Pre-construction, Construction and Operational and Maintenance phases.

Table 1.0: Proposed activities

Phase	Proposed Intervention	Activities
<b>Pre-Construction</b>	Marking Clearing Mobilization	<ul style="list-style-type: none"> <li>Surveyors would mark the boundaries of the working areas around the site;</li> <li>Vegetation that falls within the working areas will be cleared</li> <li>project site will be cleared to allow for creation of access road to the site,</li> <li>Mobilization of trucks, vehicles and other equipment as well as installation of camp offices and workshops.</li> </ul>
<b>Construction</b>	Road works	<ul style="list-style-type: none"> <li>Bush clearing;</li> <li>Scarification;</li> <li>Sub-grade preparation;</li> <li>Earthworks; and</li> <li>Construction of base course and asphalt layers</li> </ul>
	Side drains	<ul style="list-style-type: none"> <li>Site clearing and excavation;</li> <li>Drainage structure and facilities;</li> <li>Retaining walls and earth – filling; and</li> <li>Any other ancillary works.</li> </ul>
	Culvert works	<ul style="list-style-type: none"> <li>Excavation, and stabilization</li> <li>Construction of bed, and concrete screeding.</li> <li>Construction of reinforced concrete wall (Abutments),</li> <li>Construction of deck concrete,</li> <li>Construction of Parapet wall</li> </ul>
<b>Operational and Maintenance</b>	Culvert and road maintenance	<ul style="list-style-type: none"> <li>Clearing of culverts and trenches of solid waste and silt;</li> <li>Regular checks of road surface;</li> <li>Regular checks and exchange of wearing course after number of years;</li> <li>Exchange of binder course after number of years;</li> <li>Inspections of foundations, joins etc;</li> <li>Routine pavement inspections;</li> <li>Routine maintenance condition surveys e.g. inspections of foundations, joins etc; and</li> <li>Routine maintenance condition surveys etc.</li> </ul>
	Others	<ul style="list-style-type: none"> <li>Maintenance of road restraint systems;</li> <li>Maintenance of traffic control and information systems;</li> <li>Maintenance of road markings and studs;</li> <li>Maintenance of fencing walls screens and environmental barriers; and</li> <li>Maintenance of the road verge (including landscaping and rehabilitation).</li> </ul>

## 1.5 Objectives of the ESMP

The overarching objective of the ESMP is to ensure that the environmental and social impacts likely to arise from the project activities are addressed and appropriate mitigation measures integrated into project implementation and operation in order to protect human and environmental health.

The specific objectives of the ESMP are to:

- Comply with applicable national environmental legislations, standards and guidelines as well as the World Bank's environmental and social safeguard policies;
- Achieve and demonstrate sound environmental performance based on the principle of continual improvement;
- Identify potential positive and negative environmental and social impacts that may arise from the implementation and operation of the project;
- Proffer management actions that need to be implemented in order to mitigate the negative environmental and social impacts and enhance the positive impacts of the project;



- Propose environmental and social monitoring programmes that will ensure that mitigation measures are implemented and effective during project execution and timely corrective actions are taken where required;
- Propose institutional arrangements, incorporating roles and responsibilities of stakeholders involved in management actions and monitoring;
- Describe capacity building and training requirements for effective implementation of the ESMP;
- Outline the implementation schedule and reporting procedures for the ESMP;
- Communicate environmental and social expectations and requirements throughout the project life cycle; and
- Ensure the allocation of sufficient resources for effective implementation.

## **1.6 Rationale for ESMP**

The proposed rehabilitation works at the Cele Rainbow culvert according to the Environmental and Social Screening Checklist prepared for potential projects under the IUFMP is categorized as a Category “B” project according to the World Bank’s Operational Policy on Environmental Assessment OP 4.01. The categorization is justified on the basis of the potential negative environmental and social impacts of the project on the biophysical and social environment.

It is therefore expected that this priority site is likely to have; (i) limited adverse impacts on the environmental and society living around the sites; (ii) the activities of the project are site specific and the impacts are irreversible; and (iii) defines the arrangements that will be put in place to ensure that mitigation measures are implemented by including recommendations of the roles and responsibilities of all critical stakeholders during project implementation.

These civil works raise environmental and social safeguards concerns and have triggered the World Bank’s safeguard policies including Environmental Assessment OP 4.01. The environmental and social safeguard concerns are being addressed through two instruments already prepared under the project: Environmental and Social Management Framework (ESMF) and a Resettlement Policy Framework (RPF).

*The sub-project activities in components 2 (sub component 2.1) will involve critical infrastructure improvements which includes the construction of a double cell box culvert and the construction of a raised roadway across the valley.*

The OP 4.01 when triggered requires that an ESMP be prepared that will ensure environmental and social sustainability of the project.

## **1.7 Approach and Methodology**

This ESMP was prepared in accordance with the World Bank safeguard policies and the Nigerian environmental assessment guidelines and procedures. The methodology essentially entailed: Preliminary site visits, literature review/desktop studies, field studies, community/stakeholder consultations and the preparation of ESMP Report.

### **1.7.1 Literature Review/Desktop Studies**

Literature review and desktop studies were undertaken to obtain information on the proposed project as well as the environmental and socio economic conditions in the project area.

The documents reviewed included:

- Project Appraisal Document (PAD);
- Environmental and Social Management Framework (ESMF);
- Resettlement Policy Framework (RPF); and
- Integrated Safeguard Data Sheet (ISDS) - Appraisal stage
- Environmental and Social Screening Report;
- World Bank Safeguards Policies;
- Baseline information relating to the physical, biological and socio-cultural environment of the project site;
- Federal and state environmental laws regulations, decrees, acts, policies and guidelines;

- Detailed engineering designs for priority structural works;
- Oyo State profile, June 2013; and
- Baseline report on solid waste management component.

### 1.7.2 Field Studies

Field studies were carried out with a view to gather additional information on the baseline environmental and social conditions that may potentially be affected during project implementation and operation phases. This involved in-situ measurements, collection of environmental samples for laboratory analysis, questionnaire administration, focus group discussions and oral interviews.

### 1.7.3 Environmental Parameter Sampling Locations

The sampling points in the study area were geo-referenced and mapped using GPS Garmin model 76CSX. The overriding considerations in the selection of sampling points included ecological features, geographical location of communities/settlements within the project area and accessibility. Control points were situated in undisturbed areas outside the project area but within the same ecological zone. Figure 1.2 below shows the sampling locations for air, water and soil in the study area.

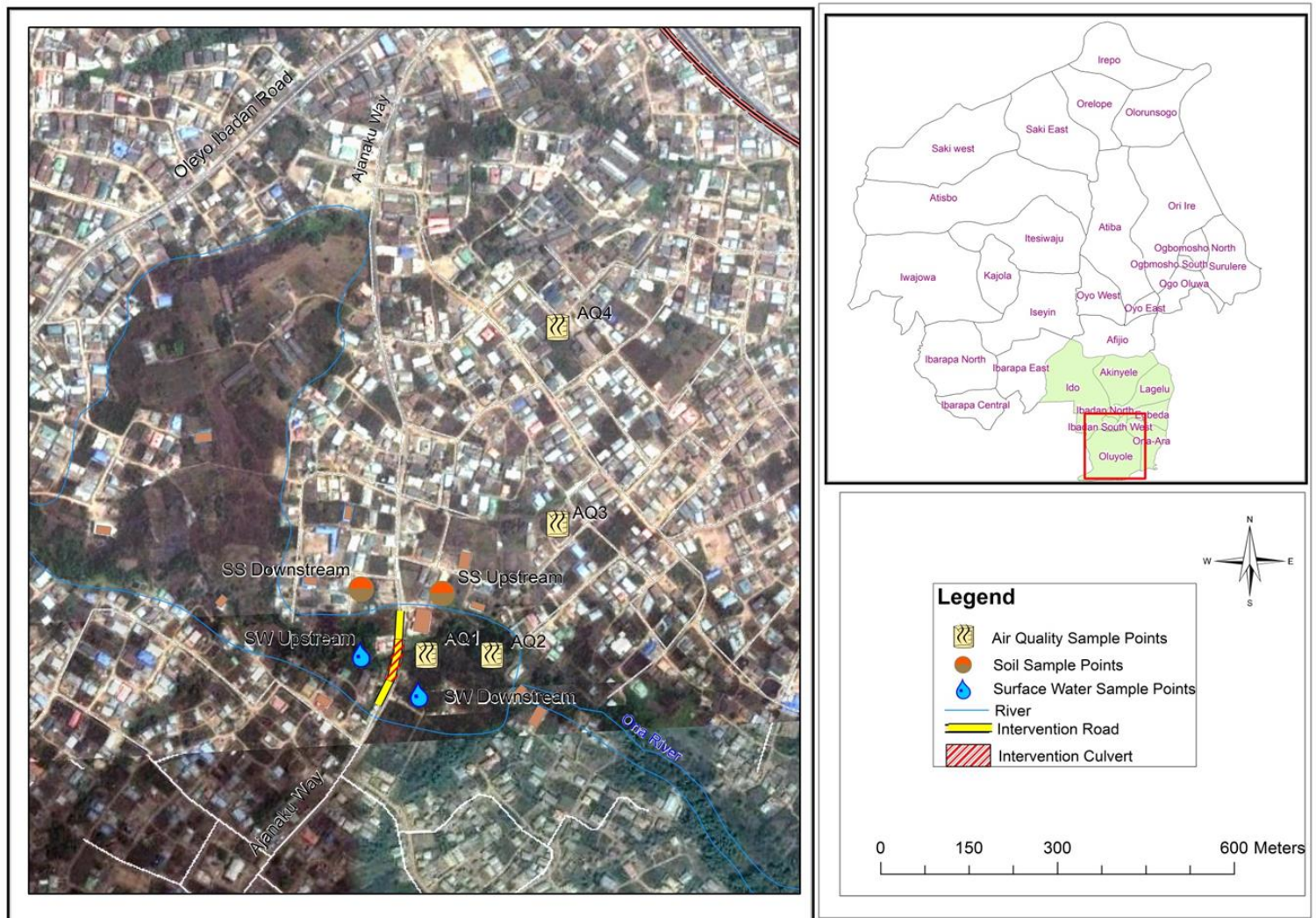


Figure 1.2: Sampling Locations (Air, water and soil quality) in the Study Area



### 1.7.3.1 Environmental Parameters

Table 1.1: Sampling methods for environmental parameters

S / N	Environmental Medium	Sampling Methodology										
	Climate & Meteorological Studies	The meteorological data of the project area were obtained from the Nigeria Meteorological Agency (NIMET) Oyo State Office whilst the prevailing climatic conditions were assessed in-situ.										
	Air Quality Studies	<div>The list of equipment used for the ambient air quality monitoring within and around the site are shown in table below</div> <table><tr><th>EQUIPMENT USED</th><th>PARAMETERS ANALYSED</th></tr><tr><td>BW Multiple Gas Analyzer</td><td>NO, NO<sub>x</sub>, CO, CO<sub>2</sub> and O<sub>2</sub></td></tr><tr><td>Sper Scientific Humidity/Temperature Meter</td><td>Relative Humidity And Temperature</td></tr><tr><td>Aerotrak Particulates Monitor, 9303</td><td>SPM (suspended particulate matter)</td></tr><tr><td>Sound Level Meter, Extech 407730</td><td>Noise level</td></tr></table>	EQUIPMENT USED	PARAMETERS ANALYSED	BW Multiple Gas Analyzer	NO, NO <sub>x</sub> , CO, CO <sub>2</sub> and O <sub>2</sub>	Sper Scientific Humidity/Temperature Meter	Relative Humidity And Temperature	Aerotrak Particulates Monitor, 9303	SPM (suspended particulate matter)	Sound Level Meter, Extech 407730	Noise level
EQUIPMENT USED	PARAMETERS ANALYSED											
BW Multiple Gas Analyzer	NO, NO <sub>x</sub> , CO, CO <sub>2</sub> and O <sub>2</sub>											
Sper Scientific Humidity/Temperature Meter	Relative Humidity And Temperature											
Aerotrak Particulates Monitor, 9303	SPM (suspended particulate matter)											
Sound Level Meter, Extech 407730	Noise level											
	Noise Measurement	Noise levels were measured using the precision Sound Level Meter, Extech 407730. Measurement of minimum noise levels (L <sub>min</sub> ), maximum noise levels (L <sub>max</sub> ) as well as noise exposure levels, (L <sub>exp</sub> ) were recorded at four sampling points between the hours of 9.00am and 4.00pm on hourly basis.										
	Soil Studies	Surface and sub- soil samples were collected within a soil depth of 0 - 15cm and 15 - 30cm at geo-referenced locations using the Dutch Hand Auger. Soil samples for physico-chemical analyses were collected in polyethylene bags and wrapped in aluminum foil. Samples for microbial analyses were collected in sterilized 100 ml McCartney bottles and stored in a cool box. A total of two soil samples were collected										
	Surface & Ground Water	Water samples were collected from surface and groundwater points across the project area. Clean sampling bottles and sterile 20 ml plastic containers were used to collect surface water samples at the designated geo-referenced locations. Amber bottles of 250ml capacity were used to collect water samples for heavy metals analysis. These samples were acidified to pH of 2 in the field using concentrated nitric acid. Fast changing physico-chemical parameters such as pH, Total Dissolved Solids (TDS), Dissolved Oxygen (DO) and Temperature were measured in the field using the Corning M-90 Checkmate Deluxe field system. These samples were preserved by storing in ice-filled cooler boxes before transportation to the laboratory. A total of two (2) surface water samples - upstream and downstream were collected for laboratory analyses of various parameters.										
	Hydrobiology Studies	Physical features of the water body in the project area including, depth profiles, width, current velocity and direction were determined. The prevailing use of the surface water was determined by physical observation and interviews.										
	Flora & Fauna	A 5 x 50m <sup>2</sup> quadrant was selected randomly for the collection of full floristic and structural information. A species list defining the floristic assemblages was recorded as much as possible and unrecognized species were collected for identification in approved laboratories. Plants were examined in vivo for signs and evidence of environmentally induced stress as well as disease conditions. Information on fauna was acquired by direct/ indirect sighting of animals and interviews/discussions with natives and residents within and around the project area.										

### 1.7.3.2 Quality Control

Quality assurance measures were applied during the field study. Samples were collected, handled and analyzed in accordance with FMEnv guidelines and international protocols.

### 1.7.3.3 Socio economics

The major instrument used in collecting data was the structured questionnaire which was used to elicit information from 103 randomly selected respondents (See Annex 3 for the structured questionnaire). The questionnaire was administered to Direct Project Affected Persons (PICs), Key Stakeholders, and other members of the community

Table 1.2 below shows details of the sampling methodology and the questionnaires administered. Finally, the analysis uses simple percentages, charts and figures to describe the results.

Table 1.2: Details of the Sampling Methodology and the Questionnaires Administered

Categories of Stakeholders Sampled	Questionnaire Administered	Questionnaire Returned	IDI	FGD	Town Meeting	Hall
Direct Project Affected Persons (PAPs)	30	30	1			
Key Stakeholders	10	10	1			
Other members of the community	60	60				
Total	100	100	2	2	1	

#### **1.7.4 Community and Stakeholder Consultations**

Community and stakeholder consultations were held within the project area on 31 July 2015. Structured questionnaires (See Annex 3), in-depth interviews and focus group discussions were held with impacted communities, community representatives and stakeholders. Through this process, concerns and issues were addressed; views and inputs as regards the potential environmental and social impacts of the project and proposed mitigation/enhancement measures were obtained.

##### **1.7.4.1 Approaches for Identification and Participation of Stakeholders**

The stakeholders for the community consultations were identified by the staff of the social development unit of the PIU and the community members through different associations within the community. Both the qualitative and quantitative aspects of the socioeconomic impacts took cognizance of the vulnerable groups. Vulnerable individuals that were asked about include physically challenged, visually impaired, elderly ones, children, and pregnant women among others. Furthermore, focus group discussion was held with their representatives (a cross section of the women representing different groups) in a secluded place out of the view of men. In depth interview was also conducted with a woman leader in the community.

##### **1.7.4.2 Stakeholder Categorization**

The stakeholders were categorized into affected parties and other interested parties. The affected parties were those who the project will affect directly as well as those passing through the route where the construction would take place as well as those that will be directly affected by the construction. Their interest in the project is to see to the successful completion of the construction in order to have easy access to the community.

## CHAPTER TWO: DESCRIPTION OF BASELINE CONDITIONS

### 2.1 Physical Environment

#### 2.1.1 Climate /Meteorology

The project area falls within the same climatic conditions as the Ibadan metropolis. The climate of Ibadan is equatorial, notably with dry and wet seasons with relatively high humidity. The dry season lasts from November to March while the wet season starts from April and ends in October. Average daily temperature ranges between 25 °C (77.0 °F) and 35 °C (95.0°F), almost throughout the year. In situ weather parameters are shown in Tables 2.1 below.

Table 2.1: In situ Field Meteorological Measurements

Parameter	Unit	FMEnv Standards	Point 1	Point 2	Point 3	Point 4
			7.324 N	7.329 N	7.324 N	7.326 N
			3.854 E	3.856 E	3.855 E	3.856 E
Temperature	°C	-	27	27	27	27
Humidity	%	-	74	74	74	74
Wind Speed/direction		13 KPH WSW				

Source: Fieldwork, 2015

#### 2.1.2 Air Quality and Noise Level

The air quality in the study area is fairly good as shown in the results of the ambient air quality measurement in Table 2.2. Most of the in-situ air quality analysis shows that all parameters falls within the standard used the FMEnv regulatory limits. Although carbon monoxide was detected it was still within limits. The proposed project has the potential to negatively impact air quality through the release of dusts and gaseous emissions during site preparation and construction activities. The measured noise levels were all below the FMEnv regulatory limit of 90 dB (A) over an 8 hour exposure period.

Table 2.3: Air Quality and Noise Measurements in the Study Area

Parameter	Unit	FMEnv Standards	Point 1	Point 2	Point 3	Point 4
			7.324 N	7.329 N	7.324 N	7.326 N
			3.854 E	3.856 E	3.855 E	3.856 E
CO	Ppm	10	1.0	2.0	2.0	1.0
Methane	Ppm	-	< 1.0	< 1.0	< 1.0	< 1.0
SO <sub>2</sub>	Ppm	0.14	< 0.01	< 0.01	< 0.01	<0.01
O <sub>2</sub>	%	20.5-20.9	20.9	20.9	20.9	20.9
NO <sub>2</sub>	Ppm	0.06	<0.01	<0.01	<0.01	<0.01
H <sub>2</sub> S			<0.01	<0.01	<0.01	<0.01
CO <sub>2</sub>	%		1.92	1.74	1.71	2.46
SPM	µg/m <sup>3</sup>	150	45	40	36	21
Noise	Db	90	69.0	64.5	76.1	62.8

Source: Fieldwork, 2015

#### 2.1.3 Geology/Hydrogeology

The site falls within the migmatite gneiss complex of the Southwestern Nigeria. The basement rock types in this region are characterized by low porosity and permeability in their unaltered form. The overburden is generally sand-clay mixtures with irregular surface exposure of outcrops, jutting out of the river channel.

Most of the less resistant parts of the rocks in these areas are already weathered leaving behind most of the resistant part forming landscapes of high and low reliefs.

## 2.2 Surface/Groundwater

### 2.2.1 Surface Water Hydrology

The main surface water body found in the study area is a tributary of Ona River. Table 2.4 shows the bathymetry data for the surface water.

Table 2.3: Surface Water Bathymetry in the Study Area

Location	Depth (m)	Width (m)	Flow Velocity (m/s)	Flow Direction
Upstream	0.07-0.5	≤ 0.07	0.001	NW-SE
Midstream		-		NW-SE
Downstream		≤ 1.7	0.18	NW-SE

Source: Fieldwork, 2015

### 2.2.2 Surface Water Quality

#### *Physico-chemistry*

The physico-chemical properties of surface water samples are presented in Table 2.4. All parameters sampled upstream and downstream were within acceptable FMEEnv limits.

Table 2.4: Physicochemical Properties of Surface in the Study Area

Parameter	PH	Ec/ms	Temp O°	mg/l Mn	mg/l Fe	mg/l Cu	mg/l Zn	mg/l Cd	mg/l Pb	mg/l Cl	mg/l Carbonate	mg/l BI Carbonate	mg/l NO3-N	mg/l SO4-S
Downstream	7.63	0.37	27.3	0.310	2.313	0.00	0.004	0.00	0.00	252.00	N/D	24.40	0.065	0.028
Upstream	7.62	0.39	27.1	1.150	11.387	0.00	0.088	0.00	0.00	230.40	N/D	549.01	0.194	0.274
FMEEnv Limits	6-9	-	<40	5	20	<1.0	<1.0	<1.0	<1.0	600	-	-	20	500

Source: Field Work, 2015

Parameter	mg/l Alkalinity	mg/l Po4	mg/l TDS	mg/l TSS	Hardness mg/l	mg/l DO	mg/l BOD
Downstream	4.02	2.249	0.04	0.91	0.724	6.81	2.00
Upstream	2.41	1.262	0.07	0.70	0.682	7.02	1.85
FMEEnv Limits	-	5	2000	30	200	-	30

Source: Field Work, 2015

## 2.3 Soil Studies

The soils in the study area mainly fall within the migmatite gneiss complex of the South-western Nigeria. The basement rock types in this region are characterized by low porosity and permeability in their unaltered form. The overburden is generally sand-clay mixtures with irregular surface exposure of outcrops, jutting out of the river channel.

#### *Soil Physico-chemical Characteristics*

Table 2.5 shows the result of the composite physicochemical analysis of the soil in the study area. The soil in the area is predominantly sandy and slightly acidic with pH values ranging from 6.48-6.67. Heavy metals, Mn, Fe and Zn content of the soil exceeded FMEEnv limits. This may be attributed to the underlying rocks where the soils of Ibadan region were formed. The major soil groups are the ferruginous soils.

Table 2.5: Physico chemical properties of soils from the project site

Sample ID	PH(1:1)	Ec/ms	Temp O°	% N	% Oc	Avail P mg/kg	Cmol/k g Ca	Cmol/k g Mg	Cmol/k g K	Cmol/k g Na	mg/kg Mn	mg/kg Fe	mg/kg Cu	mg/kg Zn	mg/kg Pb
Upstream	6.67	0.14	26.6	0.042	0.409	0.017	8.383	1.118	1.199	1.013	0.981	26.249	0.025	0.060	0.00
Downstream	6.48	0.28	26.5	0.131	1.265	0.036	5.095	2.015	0.310	1.113	0.672	19.375	0.016	0.061	0.00
FMEEnv Limits	6 -9	1.00				1.00					0.20	1.50	0.10	0.01	

Source: Fieldwork, 2015

Table 2.6 Grain size Distribution

Sample ID	% Sand	% Silt	% Clay
Upstream	59.8	27.4	12.8
Downstream	77.8	7.4	14.8

Source: Fieldwork, 2015

## 2.4 Biological Environment

### 2.4.1 Flora & Fauna

Flora species identified in the study area include: Economic trees, shrubs and grasses. The principal grasses in the area are mostly high grasses such as *Pennisetum sp.* Economic trees include: Plantain, Banana and Palm trees. (See figure 2.1).

Fauna diversity in the study area includes snails, toads, bush rats, alligators and monitor lizards. The River is also harbours fishes and tadpoles.



Figure 2.1: Sections of the Vegetation in the Study Area

## 2.5 Waste Management

Waste management practice in the study area is characterized by disposal of waste into the water course. See Figure 2.2. The waste stream comprised of organic wastes and plant materials.



Figure 2.2: Solid waste in stream

## 2.6 Socio-economics

According to the Federal Republic of Nigeria official gazette of 2nd February 2009 No. 2 Vol. 96, Oluyole Local Government area has a total population of 202,725 at the 2006 census.

This section assesses the socio-economic characteristics and the likely socio economic impacts of the proposed intervention project. The socio-demographic characteristics include among others; age, gender, education, income, occupation, residential, health status, standard of living rating, vulnerability during project intervention etc. Table 2.6 presents the summary table of socio economic characteristics of the respondents. Annex 7 and 8 shows photographs during consultations with communities and attendance log of participants respectively

Table 2.7: Summary table of socio economic characteristics of the respondents

Socioeconomic Characteristics	Label	Frequency	Percentage (%)
Age	Below 18 years	1	1.0
	19 – 35 years	43	43.0
	36 – 60 years	49	49.0
	61 and above	7	7.0
Sex	Male	52	52.0
	Female	48	48.0
Marital Status	Never married	18	18.0
	Married	82	82.0
Religion	Christian	60	60.0
	Islam	32	32.0
	Traditional	2	2.0
Education	No formal education	2	2.0
	Primary school not completed	4	4.0
	Primary school completed	22	22.0
	Secondary school not completed	4	4.0
	Secondary school completed	44	44.0
	Post secondary school	24	24.0
Occupation	Civil servants	4	4.0
	Fishing	1	1.0
	Artisan	34	34.0
	Trading	36	36.0
	Professional	8	8.0
	Retired	6	6.0
	Others	11	11.0
Duration of Living	1 – 5 years	43	43.0
	6 – 10 years	34	34.0
	11 – 15 years	10	10.0
	16 – 20 years	4	4.0
	21 – 25 years	3	3.0
	26 – and above	6	6.0
	Total	100	100.0
Construction material (wall)	Plastered Mud	3	3.0
	Cement Block	96	96.0
	Brick	1	1.0
	Total	100	100.0
Toilet Facility	Flush or Pour Flush Toilet	91	91.0
	Pit latrine	8	8.0
	Bucket Toilet	1	1.0
	Total	100	100.0
Type of Building	Bungalow	69	69.0
	Duplet	2	2.0
	Detached	1	1.0
	Semi detached	10	10.0
	One room apartment	13	13.0
	Self contain	5	5.0
	Total	100	100.0
Source of drinking water	Bore hole	27	27.0
	Dug well	58	58.0
	Water from spring	1	1.0
	Rainwater	1	1.0
	Sachet/bottle water	13	13.0
	Total	100	100.0
Location of house	Flat ground	83	83.0
	Sloppy ground	13	13.0
	Flood Plains	1	1.0
	Don't know	3	3.0
	Total	100	100.0
Solid waste management	Government	29	29.0
	Private	27	27.0
	Nobody	44	44.0
Effectiveness of solid waste management	Very effective	9	9.0
	Fairly effective	18	18.0
	Not effective	58	58.0
	No response	15	15.0
Methods of waste disposal	Burying	3	3.0
	Bush	1	1.0
	Burning	71	71.0

	Open dump	14	14.0
	Organised collection	11	11.0
Population group mostly represented in the community	Elderly	12	12.0
	Middle age	46	46.0
	Youth	38	38.0
	Children	1	1.0
	No response	3	3.0
Presence of unemployed youth	Yes	75	75.0
Provision of manpower for the project	Yes	93	93.0
Gender most mobile in the community	Male	87	87.0
	Female	13	13.0
Gender mostly marginalized	Male	35	35.0
	Female	60	60.0
	Both	2	2.0
	None	3	3.0
Gender mostly employed	Male	91	91.0
	Female	8	8.0
	Both	1	1.0
Monthly income	Less than 10,000	29	29.0
	10,001 – 20,000	16	16.0
	20,001 – 30,000	10	10.0
	30,001 – 40,000	5	5.0
	40,001 – 50,000	4	4.0
	50,001 and above	13	13.0
	No response	23	23.0
Amount spent on food on daily basis	Less than 500	24	24.0
	501 – 1000	24	24.0
	1,001 – 1,500	15	15.0
	1,501 – 2000	14	14.0
	2,001 – 2,500	4	4.0
	2,501 – 3000	12	12.0
	No response	7	7.0
Situation of Roads to the community	Very good	3	3.0
	Fair	5	5.0
	Poor	89	89.0
	No response	3	3.0
Situation of roads within the community	Very good	3	3.0
	Fair	9	9.0
	Poor	83	83.0
	No response	5	5.0
Situation of schools in the community	Excellent	2	2.0
	Very good	2	2.0
	Good	12	12.0
	Fair	16	16.0
	Poor	43	43.0
	Not applicable	25	25.0
Situation of public health institutions	Very good	2	2.0
	Good	5	5.0
	Fair	13	13
	Poor	47	47.0
	Not applicable	33	33.0
Primary source of electricity in the community	Private generator	6	6.0
	State government utility board	2	2.0
	Company operating in the community	1	1.0
	PHCN	91	91.0
Secondary source of electricity to the community	Hurricane lamp	9	9.0
	Private generator	85	85.0
	PHCN	6	6.0
Main source of fuel for cooking	Firewood	5	5.0
	Charcoal	1	1.0
	Kerosene	75	75.0
	Gas	19	19.0
Existence of public hospital	Yes	8	8.0
Existence of private hospital	Yes	55	55.0
Existence of maternity	Yes	18	18.0
Existence of dispensary	Yes	2	2.0
Existence of health centre	Yes	3	3.0

Existence of private clinic	Yes	40	40.0
Existence of patent medicine store	Yes	58	58.0
Existence of pharmacy store	Yes	43	43.0
Traditional healing home	Yes	15	15.0
Has flooding negatively affected your health?	Yes	23	23.0
Effect of flooding on health	Skin disease Yes	1	4.4
	Cough Yes	2	8.7
	Catarrh Yes	1	4.4
	Malaria Yes	15	65.2
	Water borne diseases Yes	4	17.3
	Total	23	100
Management of health during illness	Attend hospital/clinic	78	78.0
	Buy drugs from nearby chemist/pharmacy	15	15.0
	Visit traditional healing home	3	3.0
	None	4	4.0
Are there Security challenges in the community?	Yes	92	92.0
Concern about flooding in the community	Extremely concerned	55	55.0
	Very concerned	24	24.0
	Concerned	10	10.0
	Not concerned	11	11.0
Major floods that have impacted the community	2011 Yes	91	91.0
	2012 Yes	6	6.0
	2013 Yes	12	12.0
	2014 Yes	5	5.0
Impact of flooding on roads	Wash the road away Yes	80	80.0
	Cause pot holes Yes	20	20.0
	Cut off the road completely Yes	14	14.0
Impact of Flooding on Bridge	Wash of the bridge Yes	54	54.0
	Collapsed the bridge Yes	52	52.0
	Undermine/Weaken the bridge Yes	1	1.0
Impact of Flooding on Accessibility	Hinders movement Yes	58	58.0
	Block access completely Yes	14	14.0
	Block access for some time Yes	35	35.0
	Block vehicular movement Yes	8	8.0
Impact of flood on livelihood	Reduce business opportunity	98	98.0
	Erodes farmland	2	2.0
Level of awareness of the proposed project	Very aware	67	67.0
	Moderately aware	17	17.0
	Not aware	16	16.0
Concern about menace of flood	Yes	93	93.0
Awareness of proposed flood remedy	Yes	84	84.0
Source of information on awareness	Television Yes	4	4.8
	Newspaper Yes	4	4.8
	Government Official Yes	3	3.6



	Friends/relatives Yes	10	11.9
	Radio Yes	8	9.5
	Community Association Yes	62	73.0
Opinion about the project	Good Bad Can't say	90 9 1	90.0 9.0 1.0
Can project cause restiveness in community	Yes	13	13.0
Impact of construction on household	Reduce Business opportunity Yes Not been able to go to farm Yes Dusty environment during dry season Yes Others Yes	38 3 56 11	38.0 3.0 56.0 11.0
Impact of the intervention on the health of household	Yes	49	49.0
Opinion regarding whether the Project will affect Male and Female Differently	Yes	14	14.0
Changes in the Standard of living of Household members over the past four years	Same Better Worse	35 40 25	35.0 40.0 25.0
Modes of Transport own by the Households	Bicycle Yes Motorcycle Yes Tricycle Yes Car Yes Bus Yes None Yes	6 35 16 36 2 19	6.0 35.0 16.0 36.0 2.0 19.0
Modes of Transport frequently use by the Households	Bicycle Yes Motorcycle Yes Tricycle Yes Car Yes Truck Yes Bus Yes	11 71 20 22 2 4	11.0 71.0 20.0 22.0 2.0 4.0
Perceived effect of Construction on Okada Riders	Improve their Business Yes Reduce their Business Yes Will have no effect Yes	50 19 31	50.0 19.0 31.0
Perceived effect of Construction on Car	Improve their Business Yes Reduce their Business Yes Will have no effect Yes	35 37 28	35.0 37.0 28.0
Perceived effect of Construction on School children	Stop them from going to school Yes Make them go late to school Yes Can cause injury while going to school Yes Make them return late from school	8 50 6	8.0 50.0 6.0

	Yes	30	30.0
	Have no effect		
	Yes	43	43.0
Perceived effect of Construction on the Elderly	Disrupt their movement		
	Yes	40	40.0
	Cause injury		
	Yes	5	5.0
	Disallow relatives from visiting		
	Yes	9	9.0
	No effect		
	Yes	45	45.0
Perceived effect of Construction on the Pregnant women	Deny access to antenatal		
	Yes	28	28.0
	Cause delivery at home		
	Yes	11	11.0
	Cause injury		
	Yes	2	2.0
	No effect		
	Yes	60	60.0
Perceived effect of Construction on the handicap/visually impaired	Impaired Movement		
	Yes	36	36.0
	Cause injury		
	Yes	4	4.0
	No effect		
	Yes	62	62.0

## CHAPTER THREE: ENVIRONMENTAL AND SOCIAL MITIGATION AND MONITORING PLAN

### 3.1 Discussion of Significant Potential Environmental and Social Impacts

The project is expected to have highly positive environmental and social impacts for impacted communities in the project area as it provides incentives for improved environmental management and livelihoods. However, the intervention works will inevitably have some negative environmental and social impacts on the biophysical and social environment, particularly during the pre-construction, construction and maintenance phases (See table 3.1)

The negative environmental and social impacts will largely be localized in spatial extent, short in duration, occurring within less sensitive environmental areas and are manageable through the implementation of appropriate mitigation measures. Most of these negative environmental and social impacts can be avoided by sound design, good construction practices, effective maintenance and adequate supervision and enforcement during construction and operational phases of the project.

This section contains a summary of the significant potential positive and negative environmental and social impacts. It also discusses the Environmental and Social Management and Monitoring Plan which includes the following components; Description of the recommended mitigation measures, Description of monitoring program, Institutional arrangement, Implementation schedule and reporting procedures, Cost estimates and sources of funds. Table 3.3 describes the environmental and social mitigation and monitoring plan for the project site.

### 3.2 Summary of Potential Environmental and Social Impacts

The significant potential environmental and social impacts are summarized in Table 3.1 below.

Table 3.1: Summary of Significant Potential Environmental and Social Impacts

Project Phase	Significant Potential Impacts			
	Positive Impacts		Negative Impacts	
	Environment	Social	Environment	Social
<b>Pre-Construction</b>		<ul style="list-style-type: none"> <li>• Employment of local labour for site clearing</li> </ul>	<ul style="list-style-type: none"> <li>• Ambient Air deterioration from release of dusts and gaseous emissions</li> <li>• Noise and Vibration from the use of machineries and motorized equipment</li> <li>• Vegetation loss from land clearing and preparation activities</li> <li>• Fauna Habitat alteration and displacement due to site clearing</li> <li>• Exposure of soil to erosion and loss of quality from devegetation</li> <li>• Generation of vegetal wastes, other cleared materials and construction wastes</li> <li>• Surface water contamination as a result of sediment run off from exposed soils</li> </ul>	<ul style="list-style-type: none"> <li>• Traffic congestion and increased risk of road traffic accidents and injuries</li> <li>• Risk of occupational accidents, injuries and diseases</li> </ul>
<b>Construction</b>	<ul style="list-style-type: none"> <li>• Propagation of vegetal cover</li> <li>• Restoration of flora habitat</li> <li>• Ecological balance and conservation</li> <li>• Soil stabilization and regeneration</li> </ul>	<ul style="list-style-type: none"> <li>• Employment of local labour for construction and vegetation activities</li> </ul>	<ul style="list-style-type: none"> <li>• Ambient Air deterioration from release of dusts and gaseous emissions</li> <li>• Noise and Vibration from the use of machineries and motorized equipment</li> <li>• Soil erosion from exposure of soil to rain and wind</li> <li>• Slope instability arising from excavation in active areas</li> <li>• Predisposition of soil to erosion resulting from improper abandonment of borrow pit</li> <li>• Water pollution due to sedimentation and</li> </ul>	<ul style="list-style-type: none"> <li>• Damage to existing underground public utility cables and pipes and disruption of services</li> <li>• Traffic congestion and increased risk of road traffic accidents and injuries</li> <li>• Health and safety risks associated with falls and drowning in improperly abandoned borrow pits</li> </ul>

			<ul style="list-style-type: none"> <li>siltation from runoff from spoils</li> <li>• Soil contamination and loss of soil quality</li> <li>• Generation of spoils and other construction wastes</li> <li>• Underground water pollution from spillages &amp; leakages from oil storage tanks.</li> <li>• Increased surface water run-off due to diversion during construction.</li> </ul>	<ul style="list-style-type: none"> <li>• Risk of occupational accidents, injuries and diseases</li> <li>• HIV/AIDS and other STDs arising from the interactions amongst the workforce and the host community</li> <li>• Injuries from accidental discharge of construction materials during transportation to site</li> <li>• Social stress and disruptions due to lack of local labour</li> </ul>
<b>Operation/ Maintenance</b>	<ul style="list-style-type: none"> <li>• Reduced vulnerability to flooding hazards</li> <li>• Lesser vulnerability of people and property,</li> <li>• Improved disaster preparedness for adverse events;</li> <li>• Increased resilience of communities at risk of flooding, and the preservation of assets of households and businesses against flood risk</li> <li>• Improved solid waste management</li> </ul>	<ul style="list-style-type: none"> <li>• Reduced mortality and morbidity from water related diseases</li> <li>• Diversification of livelihood and increased productivity.</li> <li>• Reduction in public spending on replacement and rehabilitation of infrastructure</li> <li>• Creation of employment</li> </ul>	<ul style="list-style-type: none"> <li>• Reoccurrence of flooding as a result of uncontrolled solid waste disposal in the stream or side drains causing blockage</li> </ul>	<ul style="list-style-type: none"> <li>• Occupational accidents and injuries</li> <li>• Risk of falls from unprotected culvert structures.</li> </ul>

### 3.3 Mitigation Measures

The feasible, practical and cost effective measures mitigation measures are based on recommended good practice, regulatory requirements and contributions received from relevant stakeholders. The primary objectives of the mitigation measures are:

The mitigation measures mainly relate to the adoption of best environmental practices in the civil engineering design, construction, operation and maintenance of the project as well as technical civil engineering measures.

### 3.4 Monitoring Program

#### 3.4.1 Monitoring and Reporting Procedure

The environmental and social monitoring activities will be based on direct/indirect indicators of emissions, effluents, and resource use applicable to the project. Monitoring frequency will be sufficient to provide representative data for the parameter being monitored. Monitoring environmental and socio economic data will be analyzed and reviewed at regular intervals and compared with the operating standards for necessary corrective actions.

For effective monitoring, the following measures will be taken:

- Monitoring will be conducted by trained Environmental and Social Specialists and other relevant personnel;
- Measuring equipment will be accurately calibrated;
- Quality control of sampling undertaken will be ensured;
- Accredited laboratories will be used; and
- Certified methods of testing will be employed and where legal specifications exist for testing and sampling methods, these will be taken into account.

The activities during monitoring are highlighted in table 3.2

Table 3.2: Activities during monitoring

1	2	3	4
Internal Monitoring	External Monitoring	Reporting	Record Keeping
<ul style="list-style-type: none"> <li>○ The first level of monitoring will be carried out by the Contractor on an ongoing basis as specified in the monitoring plan;</li> <li>○ The second level of monitoring will be carried out by the PIU-Monitoring and Evaluation Specialist.</li> <li>○ Monitoring by the ESO will be done by checking regular monitoring reports to be provided by the Contractor and by carrying out regular site visits.</li> </ul>	<ul style="list-style-type: none"> <li>○ External monitoring and supervision will be done by Oyo State Ministry of Environment and Habitat, FMEnv, World Bank and other relevant agencies as may be required;</li> <li>○ check reports received periodically from the PIU and carry out inspections and/or audits on their own;</li> <li>○ Using the monitoring indicators each responsible institution will seek to measure the project's progress</li> </ul>	<ul style="list-style-type: none"> <li>○ Monthly Progress and Monitoring Report: to be prepared by the Contractor's EO or Environmental representative providing relevant information on all monitoring activities- These reports are to be made available to the PIU and the Oyo State Ministry of Environment and Habitat/FMEnv;</li> <li>○ Quarterly Reports: to be prepared by the Contractor, summarizing all observations of the period. Reports will also be made available to the PIU and the Oyo State Ministry of Environment and Habitat/FMEnv;</li> <li>○ Quarterly Report by PIU: based on the Contractor's reports and on own activities, for the Oyo State Ministry of Environment and Habitat and World Bank. The quarterly monitoring report will contain the following aspects of the ESMP implementation: <ul style="list-style-type: none"> <li>• Brief introduction to activities;</li> <li>• Objectives and scope of monitoring;</li> <li>• Monitoring parameters;</li> <li>• Field observations and analysis;</li> <li>• Percentage of safeguard compliance;</li> <li>• Non-compliance issues, gaps and weaknesses;</li> <li>• Recommendations for corrective measures; and</li> <li>• Data, analysis results and pictures</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>○ Procedures for the identification, collection, indexing, filing, storage, maintenance, retrieval and retention of records will therefore be established, implemented and maintained.</li> <li>○ Records to be kept will include amongst others: <ul style="list-style-type: none"> <li>• Complaint records;</li> <li>• Training records;</li> <li>• Inspection, maintenance and calibration records;</li> <li>• Monitoring data and audit results;</li> <li>• Pertinent contractor and supplier records;</li> <li>• Identified problems and corrective actions taken;</li> <li>• Incident reports; and</li> <li>• Significant communications with regulators.</li> </ul> </li> </ul>

Table 3.3: Environmental and Social Mitigation and Monitoring Plan

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)
<b>A</b>		<b>PRE CONSTRUCTION PHASE</b>								
<b>Community perception-</b>		<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>	IUFMP PIU- Environmental Specialist, Social development specialist, Community Development, Specialist, Communication specialist Oyo state Ministry of Information	400	•No of Complaints from community members and road users	Interviews	Construction Site	Once	PIU	-
1	Complaints from members of the community									
<b>Mobilization of Equipment to Site</b>		<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	800  300	<ul style="list-style-type: none"> <li>TMP Developed</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	PIU  Oyo State Road Traffic Management Authority, (OYRTMA)  Federal Road Safety Corps (FRSC)- Oyo State	-  200
2	Traffic congestion and increased risk of road traffic accidents and injuries as a result of movement of equipment									
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>Provision of PPE to workers; Emergency contingency plans; Education of workers; Incident/accident reporting; Provision of First Aid onsite</li> </ul>	•IUFMP	1000  200	<ul style="list-style-type: none"> <li>HSE Plan Developed</li> <li>Workers using PPE</li> <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>HSE Report</li> <li>Sighting</li> <li>Routine/ Unannounced Inspection</li> </ul>	Construction Site	Once  Daily	Environmental specialist-IUFMP  Oyo State Ministry of Environment and Habitat	-
<b>Site Clearing</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	200  -  -	<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  Daily	Environmental specialist-IUFMP  Oyo State Ministry of Environment and Habitat	300
4	Air quality deterioration from release of dusts and gaseous emissions from exposed soil surfaces and vehicles									
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</li> </ul>	• Contractor	200	<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-IUFMP  Oyo State Ministry of Environment	200

		<ul style="list-style-type: none"> <li>noise generation</li> <li>Avoid unnecessary idling of internal combustion engines</li> </ul>							and Habitat	
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-IUFMP  Oyo State Ministry of Environment and Habitat	300
7	Disturbance/Destruction of flora and fauna habitat (ecosystem) and displacement/destruction of fauna due to site clearing		• Contractor	400						200
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	200	<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-IUFMP  Oyo State Ministry of Environment and Habitat	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>	• IUFMP	1000	<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-IUFMP  Oyo State Ministry of Environment and Habitat  Oyo state Solid waste management authority	300
			• Contractor	300						
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	400	<ul style="list-style-type: none"> <li>Surface Water Quality (pH, TDS, TSS, BOD, COD, Turbidity, THC, Heavy Metals)</li> </ul>	• In-Situ/Laboratory Measurements	Discharge point, mid-stream & downstream	Once during Pre-Construction	Environmental specialist-IUFMP  Oyo State Ministry of Environment and Habitat	300
11	Risk of occupational diseases such as respiratory and eye disorder, noise related problems, stings and bites as a result of exposures to occupational hazards.	• Develop a site specific HSE plan	• IUFMP	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-IUFMP  Oyo State Ministry of Environment and Habitat  Oyo State Ministry of Health	-

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>	<ul style="list-style-type: none"><li>Contractor</li></ul>	-	<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	Once during Pre-Construction	IUFMP- Social Development Specialist	200	
Installation of Equipment and Site Structures		<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>	<ul style="list-style-type: none"><li>Contractor</li></ul>	300	<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-IUFMP  Oyo State Ministry of Environment and Habitat	200	
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>	<ul style="list-style-type: none"><li>IUFMP</li><li>Contractor</li></ul>	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-IUFMP  Oyo State Ministry of Environment and Habitat  Oyo state 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>	<ul style="list-style-type: none"><li>IUFMP</li></ul>	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-IUFMP  Oyo State Ministry of Environment and Habitat	-	
	SUB TOTAL				5,700	SUB TOTAL					2,400
B	CONSTRUCTION PHASE										
Excavation , Borrowing, Filling, Back filling and Compaction		<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>	<ul style="list-style-type: none"><li>Contractor</li></ul>	300	<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-IUFMP  Oyo State Ministry of Environment and Habitat	300	
1	Air quality deterioration from dusts generated during excavation , borrowing, filling, backfilling and compaction activities										
2	Noise and vibration from the use of heavy duty vehicles during excavation, borrowing, backfilling and compaction	<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></ul>	<ul style="list-style-type: none"><li>Contractor</li></ul>	300	<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-IUFMP  Oyo State Ministry of Environment and Habitat	200	



	activities	<ul style="list-style-type: none"> <li>• Avoid unnecessary idling of internal combustion engines</li> </ul>								
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	700	<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-IUFMP  Oyo State Ministry of Environment and Habitat	500
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	600	<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-IUFMP  Oyo State Ministry of Environment and Habitat  Oyo state Solid waste management authority	450
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-IUFMP  Oyo State Ministry of Environment and Habitat	400
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	650	<ul style="list-style-type: none"> <li>• Surface Water Quality (pH, TDS, TSS, BOD, COD, Turbidity, THC, heavy metals)</li> <li>• Contactor'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-IUFMP  Oyo State Ministry of Environment and Habitat	450
7	Damage to existing underground public utility cables	<ul style="list-style-type: none"> <li>• Use utility survey maps to identify existing underground facilities before excavation works to prevent</li> </ul>	• Contractor	400	<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-IUFMP	300

	and pipes during excavation works and disruption of services	<ul style="list-style-type: none"> <li>damages and disruption of services</li> <li>Where a need for shut down of service is necessary, it should be as temporal as possible to avoid significant adverse effect on the people</li> </ul>							Oyo State Ministry of Works	
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	600	<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-IUFMP  Oyo State Ministry of Environment and Habitat	300
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	600	<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-IUFMP  Oyo State Ministry of Environment and Habitat	400
<b>Civil Engineering Works</b> <ul style="list-style-type: none"> <li>Alternative pedestrian and motor cycle 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	600	<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-IUFMP  Oyo State Ministry of Environment and Habitat	<b>300</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	800	<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-IUFMP  Oyo State Ministry of Environment and Habitat	300
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  700	<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-IUFMP  Oyo State Ministry of Environment and Habitat  Oyo state Solid waste management authority	300
13	HIV/AIDS and other STDs arising	<ul style="list-style-type: none"> <li>Provide education , guidance and counseling on HIV/AIDS and</li> </ul>	• Contractor	600	<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	IUFMP-Social development	-

	from interactions amongst the workforce and the host community.	<ul style="list-style-type: none"> <li>other STDs for workers</li> <li>Provide condoms to construction staff</li> </ul>						construction)	specialist, Communication specialist	
14	Risk of occupational accidents and diseases such as noise related problems, respiratory and eye disorders from exposure to health and safety hazards.	<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> <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-IUFMP  Oyo State Ministry of Environment and Habitat;  Oyo State Ministry of Health	See B9
<b>Transportation of Construction Materials</b>		<ul style="list-style-type: none"> <li>Implement Traffic Management Plan (TMP)</li> </ul>	Contractor	See A2	<ul style="list-style-type: none"> <li>TMP Implemented</li> </ul>	-		Once	PIU	See A2
15	Injuries from accidental discharge of sand and stones during transportation to site	<ul style="list-style-type: none"> <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>		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>	Sighting Visual Observation  Complaint Register  Police/FRSC Report Interviews/ Training Records	Along transport corridor  Construction Site	Daily  Once	Oyo State Road Traffic Management Authority, (OYRTMA)  Federal Road Safety Corps (FRSC)- Oyo State	300
<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	<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-IUFMP  Oyo State Ministry of Environment and Habitat  Oyo state Solid waste management authority	See B11  300
16	Waste generation from site office & maintenance activities such as used containers, scraps and office waste			600						
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</li> </ul>	Contractor	650	<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-IUFMP  Oyo State Ministry of Environment and Habitat	500

		on top of impermeable surface preferably in contractors store								
18	Risk of occupational accidents and injuries from activities carried out in site offices and workshop including maintenance works	<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> <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-IUFMP  Oyo State Ministry of Environment and Habitat	See B9
<b>Vegetative land management measures</b>										
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 vegetal waste as compost to aid rapid vegetal propagation</li> </ul>	Contractor	900	<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-IUFMP  Oyo State Ministry of Environment and Habitat	400
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	IUFMP- Social Development Specialist	500
<b>SUB TOTAL</b>				<b>9,500</b>	<b>SUB TOTAL</b>					<b>6,200</b>
<b>Maintenance of Culvert, approach roads, side drains and other Flood Control Structures</b>		<ul style="list-style-type: none"> <li>Implement site specific HSE Manual</li> </ul>	<ul style="list-style-type: none"> <li>IUFMP</li> <li>Relevant line MDAs</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-IUFMP  Oyo State Ministry of Environment and Habitat	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>		500						
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>IUFMP</li> <li>Relevant line MDAs</li> <li>Contractor</li> </ul>	See B11  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-IUFMP  Oyo State Ministry of Environment and Habitat  Oyo state Solid waste	See B11  200

									management authority	
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> </ul>	<ul style="list-style-type: none"> <li>Contractor</li> </ul>	-	<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	IUFMP- Social Development Specialist	500
<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>IUFMP</li> <li>Relevant line MDAs</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	IUFMP OYSEMA	800
4	<b>Flooding events</b> Prevention of landslides as a result of land and drainage stabilization due to civil engineering works and vegetation									
<b>SUB TOTAL</b>				<b>1000</b>	<b>SUB TOTAL</b>					<b>1500</b>
<b>GRAND TOTAL</b>				<b>16,200</b>	<b>GRAND TOTAL</b>					<b>10,100</b>

### 3.5 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.

Annex 5 gives detailed general environmental management conditions during civil works while the roles and responsibilities of the various institutions in the implementation of this ESMP are outlined in Table 3.4

Table 3.4: Institutional Safeguards Responsibilities

S/No	Category	Roles & Responsibilities
1.	Safeguards Unit	<p><b>Environmental Safeguards</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-projects and their environmental impacts;</li> <li>• Ensure that project activities that are implemented will in accordance to best practices and guidelines set out in the site specific ESMP;</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>Social Safeguards</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.	PIU	<ul style="list-style-type: none"> <li>• Liaise closely with Oyo State Ministry of Environment and Habitat in preparing a coordinated response on the environmental and social aspects of project development respectively;</li> <li>• Safeguards due diligence</li> </ul>
3.	Ministry of Environment and Habitat	<ul style="list-style-type: none"> <li>• Environmental compliance overseer at the State level</li> <li>• Lead role - provision of advice on screening, scoping, review of draft ESMP report (in liaison with Federal Ministry of Environment)</li> <li>• Site assessment and monitoring of ESMP implementation</li> </ul>
4.	Federal Ministry of Environment	<ul style="list-style-type: none"> <li>• Implementing authority, has the mandate to:</li> <li>• Ensure the smooth and efficient implementation of the project's various technical programmes</li> <li>• Cooperate through a Steering Committee that provides guidance to the technical aspects of all project activities;</li> <li>• Maintain and manage all funds effectively and efficiently for the projects</li> </ul>
5.	Federal Ministry of Environment/EIA Department and NESREA	<ul style="list-style-type: none"> <li>• Lead role - provision of advice on screening, scoping, review of draft ESMP report (in liaison with State Ministry of Environment), receiving comments from stakeholders, public hearing of the project proposals, and convening a technical decision-making panel, Project categorization for EA, Applicable standards, Environmental and social liability investigations, Monitoring and evaluation process and criteria</li> </ul>
6.	Other relevant State Government MDAs	<ul style="list-style-type: none"> <li>• Other MDAs 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>• They participate in the EA processes and 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>
7.	World Bank	<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 sub- project ESMPs.</li> </ul>
8.	Contractor	<ul style="list-style-type: none"> <li>• Compliance to BOQ specification in procurement of material and construction</li> </ul>
9.	Site Engineers/Supervisors	<ul style="list-style-type: none"> <li>• Provide oversight function during construction and decommissioning</li> </ul>
10.	Local Government	<ul style="list-style-type: none"> <li>• Provide oversight function across subproject in LGAs for ESMP compliance</li> <li>• Liaising with the PIU. Engage and encourage carrying out comprehensive and practical awareness campaign for the proposed sub-projects, amongst the various relevant grass roots interest groups</li> </ul>
11.	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 infrastructures and engage/ encourage carrying out comprehensive and practical awareness campaign for the proposed projects, amongst the various relevant grass roots interest groups.</li> </ul>
12.	CDA	<ul style="list-style-type: none"> <li>• Ensure Community participation by mobilizing, sensitizing community members;</li> </ul>
13.	NGOs/CSOs	<ul style="list-style-type: none"> <li>• Assisting in their respective ways to ensure effective response actions, Conducting scientific researches</li> </ul>

		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 & Providing wide support assistance helpful in management planning, institutional/governance issues and other livelihood related matter, Project impacts and mitigation measure, Awareness campaigns
14.	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</li> </ul>

The proposed institutional arrangement for the ESMP implementation is shown in Figure 3.1 below.

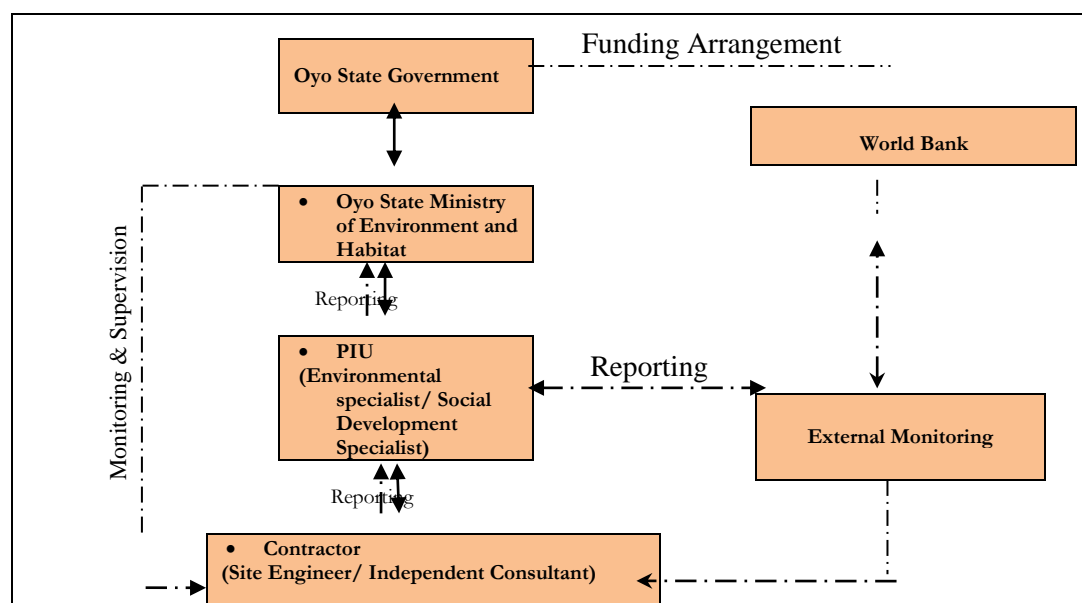


Figure 3.1: Institutional Arrangement for ESMP Implementation

### 3.6 Training and Capacity Strengthening Plan

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 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 3.5. The cost estimates are based on the assumption that the training program will be held in Ibadan Oyo State; resource persons are likely to come from other parts of the country and therefore require travel allowances; participants will come from institutions at state levels.

#### 3.7.1 Training of 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 3.5: Proposed Training Programme for the Implementation of ESMP

Capacity Building Activity	Proposed Topics	Target Audience	Duration	Estimated Budget \$
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>	Relevant staff of Oyo State Ministry of Environment and Habitat FMEnv (EA) Officers of PIU-Environmental Specialist/Social Development Specialist Oyo State Waste Management Board and other relevant MDAs LGA departments, NGOs, CBOs., Contractor	1 day	4000
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>	Relevant staff of Oyo State Ministry of Environment and Habitat FMEnv (EA) Officers of PIU-Environmental Specialist/Social Development Specialist, and other relevant MDAs LGA departments, NGOs, CBOs. Contractor	1 day	3500
Module 3: Training on Disaster Risk Reduction/Management and Solid waste Management	<ul style="list-style-type: none"> <li>DRR/DRM concepts and applications</li> <li>Solid waste management<sup>4</sup></li> </ul>	Relevant staff of Oyo State Ministry of Environment and Habitat FMEnv (EA), OYSEMA Officers of PIU-Environmental Specialist/Social Development Specialist, and other relevant MDAs LGA departments, NGOs, CBOs.	½ day	3000
<b>TOTAL</b>			<b>2 1/2 days</b>	<b>\$10,500</b>

### 3.7 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 3.6 include the following:

- Inclusion of environmental and social requirements in bid documents and contract;
- Review and approval of Contractor's ESMP;
- 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 3.6: Tentative ESMP Implementation Schedule

S/ N	Activity	Responsibility	Pre-Construction (Month)		Construction (Month)				Operation & Maintenance
Environmental & Social Management			1	2	3	4	5	6	
1	Clearance and Formal Disclosure of ESMP	PIU							
2	Inclusion of Environmental & Social Requirements in Bid Documents	PIU							
3	Allocating Budget for ESMP	PIU							
4	Appointing Support Staff for ESMP	PIU							
5	Review and Approval of Contractor's ESMP, Waste & Safety Plan	PIU							
6	Finalization of Engineering Designs	PIU/Engineering Design Consultant							
7	Implementation of Environmental and Social Mitigation Measures	Contractor							
8	Supervising ESMP Implementation	PIU							
9	Environmental and Social Auditing	PIU/Oyo State Ministry of Environment and Habitat/Consultant							
10	Monitoring & Reporting on ESMP Implementation	PIU/Relevant MDAs							
11	Environmental and Social Training	Environmental and Social Consultant							

### 3.9 Contractual Measures

It has been mentioned that most of the mitigation measures, since they are to be implemented during the construction period, will be the obligation of the Contractor. Table 3.7 below describes the actions to be taken.

Table 3.7: Contractual Measures

Step	Action	Remarks
1	The measures as described in this ESMP be included in the tender documents with appropriate flexibility to adjust these measures to site circumstances, and that the potential contractor will have to prepare their proposals taking into account these measures	The non-inclusion of these measures in the proposal will lead to a disqualification of the proponent; The contract with the successful bidder should contain these environmental and social management measures as firm conditions to be complied with.
2	Cost of mitigation measures of \$13,800 which is N 2,760,000 Naira only be added to the cost of the contractual document	The contractor must take into account and put the cost for the environmental and social requirements specified in the ESMP.

### 3.10 Indicative Budget for ESMP Implementation

The tentative budget for the project includes the environmental and social mitigation cost, cost of environmental and social monitoring and capacity building. All administrative costs for implementing the ESMP shall be budgeted for as part of the PIU costing.

The total indicative cost for implementing the ESMP is estimated at **Forty Thousand Four Hundred and Eighty Dollars only (\$40,480)** which is **Eight Million and Ninety Six Thousand Naira Only (N 8,096,000)**. The table 3.8 below shows an indicative budget breakdown and responsibility of the cost for implementing the ESMP in the project.

Table 3.8: Estimated Budget for the Implementation of ESMP

Item	Responsibility	Cost Estimate in Nigerian Naira (N)	Cost Estimate In US Dollars (US\$)
Mitigation	PIU, Contractor	3,240,000	16,200
Monitoring	PIU, Oyo State Ministry of Environment and Habitat, NESREA, Oyo State Waste Management Board	2,020,000	10,100
Capacity Building	PIU, Oyo State Ministry of Environment and Habitat/Other relevant MDAs	2,100,000	10,500
Sub- Total		7,360,000	36,800
Contingency	10% of Sub- Total	736,000	3680
<b>Total</b>		<b>8,096,000</b>	<b>40,480</b>

### 3.11 ESMP Disclosures

After the ESMP review and clearance by the World Bank, the following below in table 3.9 describes the process of disclosure.

Table 3.9: Disclosure procedure

	Action	Remarks
1	Disclosure on 2 state newspapers	The PIU will disclose the ESMP as required by the Nigeria EIA public notice and review procedures
2	Disclosure on 2 local newspapers	The PIU will disclose the ESMP as required by the Nigeria EIA public notice and review procedures
3	Disclosure at the Oyo State Ministry of Environment and Habitat	The PIU will disclose the ESMP as required by the Nigeria EIA public notice and review procedures
4	Disclosure at the IUFMP office	The PIU will disclose the ESMP as required by the Nigeria EIA public notice and review procedures
5	Disclosure at the Local Government Office & the host community	The purpose will be to inform stakeholders about the project activities; environmental and social impacts anticipated and proposed environmental and social mitigation measures.
6	Disclosure at the World Bank Info Shop	The ESMP will be disclosed according to the World Bank Disclosure Policy- OP/BP 17.50

## CHAPTER FOUR: PUBLIC CONSULTATION

### 4.1 Introduction

An overview of the IUFMP, the proposed intervention as well as the scope and objectives of the ESMP were presented to the community. Furthermore, the challenges that could impede the implementation of the project, potential environmental and social impacts that could arise from civil works and the support needed from beneficiary communities to ensure successful implementation were also discussed with the stakeholders. Annex 4 describes a plan for public consultations for the period of the project.

Below is a summary of the issues/comments raised by the various stakeholders and how the issues were addressed at the meeting.

Items	Description
Date of Public consultation	31 July 2015
Name of Stakeholders (community)	Cele Rainbow Oluyole LGA
	Ifesowapo Community, Isokan Community, Kasunmu Community, New Kasunmu Community, Atere Community, Karin-kapo Community, Itesiwaju Community, Dalute Community, All Chairmen of Landlord Association, pinion Leaders, Community Based Organization, Women Groups (Hairdresser's Association), Okada Riders Organization, Youths Organization, Religious Organizations
Language of communication	English/Yoruba
<b>Introduction</b>	The Social Development Specialist, IUFMP gave an opening remark, while the Environmental Specialist, IUFMP gave an overview of the IUFMP background and sub project intervention. The ESMP consultant highlighted on the scope of the ESMP study and the need of a public community consultation in order to more efficiently deliver improved project sustainably and to protect the interest of affected communities, especially the poor and vulnerable.

Issues/Comments Raised by the stakeholders	How they were/are addressed by the Consultant or Project Officers
Pastor Agboola, a member of a religious group raised concerns on the durability of the culvert and if a bridge will not be more appropriate in its stead.	The consultant Engineer argued that the choice of a 2 by 3 triple cell was hinged on topography, terrain and the different sources of River flow. Thus, a bridge as requested is not required as the culvert will suffice.
A community member reckoned that there is an alternate route but it is not in good condition and may need rehabilitation to make it motor able. He drew the attention of the route within the community to serve as alternate route to this community which is in a bad state and urged that the contractor and engineers do something about the routes.	The consultant Engineer stated that an alternative route has been established and further consultations would be carried out before construction. Therefore, before the contractor commences work at site, it is the responsibility of contractor to review the alternate route for the community. Also inclusive is a pedestrian a bridge during construction.
Pastor Agboola further expressed fears on the demolition of the culvert and the time of reconstruction.	The consultant Engineer in his response offered that the term and conditions to the contractors captures timelines but positive that civil works would be completed within 6-8months. Assurances were given by the Project Team that such issues will be given priority before works commences.
Another community member commented that he assures that the community will endure until the reconstruction of the culvert and approach roads are done. He further sought to know if the locals would be given the opportunity to work on site as many are unemployed after education.	The Social Specialist, IUFMP gave assurances that able and willing youths will be considered, engaged appropriately where necessary during civil works.
Mrs. Oluyemi, a member of the Traders Association raised	In response to that the Engr. mentioned that the culvert

<p>concerns on heavy duty vehicle and the need to prevent them from passing through the bridge to avoid quick damage to the culvert after the construction?</p> <p>A community Health Officer commented about the environment of the community that would be dusty and affecting traders along the road during civil works. He also encouraged the community on the issue of refuse disposal which should be dumped inside drums instead of into the river.</p> <p>A community member appreciated the intervention coming to their community and applauded its professionalism and adequacy. He further asked that since the work will be done in stages will there not be undermining from the joining? He pleaded that there should be proper joining.</p> <p>Secondly, he asked on the length of the up and downstream dredging as well as clearing of the water ways because in the past the community had suffered from poor dredging. He also wanted to be sure of the required length of intervention of the approach roads.</p>	<p>would be constructed in such a way that it can accommodate the trucks strength wise.</p> <p>The Environmental Specialist, IUFMP urged the people of the community to report any defaulter of solid waste disposal into stream courses to Oyo State Ministry. Of Environment or Oyo State Solid Waste Management Authority.</p> <p>The consultant engineer of the IUFMP noted that the existing culvert was cast twice and that was the reason for the damage therefore there was no proper joining. He stated that there will be proper casting assuring proper check during casting. On the water ways, dredging is not part of the intervention, but putting it into consideration there is going to be a lot of obstacles/debris, therefore before the contractors commences civil work, a site instruction would be issued to the contractors to extend the water ways both at up and downstream sources.</p> <p>The 500m is the approach road which is measured as 250m from the centre of the culvert to the approaches. On the choice of the type of culvert i.e 2 by 3 triple cells, the engineering consulting firm considered the topography and the terrain of the land which assisted in knowing the sources of water into the stream as well as the different sources of water flow. He suggested that if it would be more than 2 meters it would have been appropriate to propose a bridge but as it stands from the calculations the site requires a triple cells culvert.</p>
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#### 4.7 Concerns from FGDs and IDIs

Issues Raised	Responses from the Participants
Access to the community	<p>The participants at the FGD and IDI sessions were of the opinion that the road to the community is in a bad state due to the eroded culvert. A makeshift plank over the bridge is currently in use but it is not dependable as it is accident prone. Access at night is almost impossible.</p> <p>As a result transporting people, goods and services has been a challenge. The safety of children is also a huge concern especially during the rainy season.</p>
Description of the means of livelihood of the community	<p>The economic livelihood of the community is driven mainly by civil servants, motor cycle riders, welders, hair dressers, bricklayers and traders', taxi drivers, technicians and mechanics, food and other petty vendors among others.</p>
Description of the health status of members of the community	<p>Members of the community were generally described as being healthy. Malaria was mentioned as the most prevalent illness in the area due to the incidence of swamps.</p>
Communities most likely to be affected as a result of the intervention and how they will be affected	<p>Communities that were mentioned by the respondents include, Ifesowapo, Karin kapo, kasumu, Dalute, Isokan, Atere, Aba Ife, Asunle, Ojo Ekun, Aba Olosa, Alawo, Arapaja, Ilu Tuntun, Moboluwaduro and so on. They will be affected by taking longer routes, paying more for transportation fare, and dusty environment during dry season.</p>
Description of the Population of the community	<p>The respondents maintained that the predominant population in the area were youth. There were also children and the elderly. It is reported that the number of unemployed youth in the community is on the high side.</p>
How the intervention will impact on the health of the people of the community	<p>Dusty environment was repeatedly mentioned as a major problem that can lead to catarrh and cough.</p>

How will the construction affect the economic activities of the people in the community	The respondents were of the opinion that those who work outside, especially the civil servants, traders and transporters will spend more on fuel and this would impact on transport fares, goods and services. The possibility of traffic is alluded to.
Effect of the construction on the accessibility to the community	It was said that some car owners may not be able to go out with their cars, and longer routes would have to be taken. The respondents pleaded that the alternate routes be graded to allow unhindered access to the area.
Effect of the construction on vulnerable groups	Vulnerable groups such as the physically challenged, pregnant women and children will be guided to exercise more caution. Those who are near their due date will have to move closer to the hospital and those with younger children will be admonished to always keep an eye on them. It was also said that the elderly ones may find it difficult to move because the alternative roads are distant. Some children may also not go to school every day during construction because the transportation fare would be very high and parents may not be able to afford it.
How will the construction affect men and women differently?	The respondents were of the opinion that men will be able to cope better in terms of taking alternative routes than women. Furthermore, women are the ones that carry children and this may make it more difficult for them to cope according to the respondents.
What will be the effect of the construction on those whose livelihood are tied to the route	They may be temporarily out of job however considerations may be given to skilled and semi-skilled workers in the communities to cushion the effect.
Suggested measures to mitigate the negative environmental and socio economic impacts of the civil works	<p>Respondents asked government to locate a health centre in the area to mitigate health related issues</p> <p>The contractor to wet the road with water during construction in the dry season.</p> <p>Alternate routes are made motor able to mitigate accessibility problem. For those whose livelihood is tied to the route, provision of alternate route and temporary bridge were suggested to keep them in operation. The duration of the construction should be adhered to as proposed</p> <p>Those who may be put out of business due to construction works may be employed to cushion the effect.</p>

## **CHAPTER FIVE: SUMMARY AND RECOMMENDATIONS**

Generally, the study indicated that the proposed project will not severely impact negatively on the existing environmental, social and health as well as safe conditions of the people, locally.

The summary and recommendations for this ESMP include:

- The contractor and PIU coordinate with the Oyo State Federal Road Safety Commission and Oyo State Traffic Management Agency all through construction works on site to ensure that safety is maintained and potential traffic impact managed;
- Design and construct a temporary alternative pedestrian access bridge for community members school children, the elderly, pregnant women, physically challenged etc) who use the existing dilapidated wooden for access;
- Design and construct a temporary alternative access bridge for Okada rider's i.e Motor bikes.
- Proper lightening and relevant road signages and barriers used during construction works for safety precautions;
- Community members be sensitized and duly informed on the time and duration of works through consultations;
- Vegetation covering stream banks be cleared and width widened along the project area of influence;
- The water ways have a lot of obstacles such as silt and debris. These needs to be cleared and evacuated.
- Priority given to local workers during the construction phase. This would likely lead to fewer social problems at the community levels.
- Carry the community along during project implementation and mobilize them to provide community security for personnel working on site.
- Mobile clinics situated at project locations as existing clinics pharmacies are distant.
- Construction works is carried out in an environmentally sustainable and socially responsible and inclusive manner;
- Potential environmental and social impacts of sufficient magnitude that could interrupt the execution of the project were not detected. Although, there were few negative environmental and social impacts that may potentially occur due to the activities associated with the proposed works but adequate mitigation measures have been provided to address them.
- The proposed intervention work is most desirable because of the obvious environmental, health and socio-economic benefits. These far out-weigh the negative environmental and social impacts that could arise in the course of implementation.
- The combination of engineering and biological approach (Vegetative land management measures) adopted in slope stabilization work to forestall undermining and washing away of structure.
- Appropriate institutional framework has been drawn up to implement the mitigation measures and environmental management plan while the proposed monitoring programmes shall be set in motion as soon as possible.

## REFERENCES

- Project Implementation Manual (PIM)
- Integrated Safeguards Data Sheet (ISDS)
- Project Appraisal Document (PAD)
- Environmental and Social Screening Report;
- Oyo State Ministry of Environment and Habitat Edicts
- FEPA (1991): S.I.15 - National Environmental Protection Management of Solid and Hazardous Waste Regulation.
- IUFMP (2013) – Environmental and Social Management Framework (ESMF)
- IUFMP (2013) – Resettlement Policy Framework (RPF)
- UNEP (2002): Environmental Impact Assessment, Training Resource Manual
- World Bank (1999 ): Environmental Management Plan , OP 4.01 - Annex C
- World Bank (1996): Environmental Performance Monitoring and Supervision Update No 14
- World Bank (1999): Environmental Performance Indicators

## **ANNEX 1: TERMS OF REFERENCE**



### **IBADAN URBAN FLOOD MANAGEMENT PROJECT (IUFMP)**

#### **TERMS OF REFERENCE**

#### **FOR THE PREPARATION OF AN ENVIRONMENTAL AND SOCIAL MANAGEMENT PLANS (ESMPs) FOR FOUR PRIORITY SITES UNDER THE IBADAN URBAN FLOOD MANAGEMENT PROJECT (IUFMP)**

##### **1.0 Background**

The World Bank is supporting the Oyo State Government to implement the Ibadan Urban Flood Management project (IUFMP) that aims at developing a long-term flood risk management framework by initiating risk assessment, community awareness, and providing enough flexibility in the project design to make changes based on learning. The project also supports capacity building for flood risk management in the city of Ibadan. It reinforces Oyo State government's early warning and response capabilities and leverages existing World Bank projects in Oyo State in support of the IUFMP.

Specifically, the Bank's support will finance some priority investments related to improving the infrastructure of Ibadan City, especially those destroyed by August 26, 2011 floods. The Bank's support will help Ibadan reduce flood risks, improve waste collection and treatment, while developing and improving the quality of existing infrastructural assets.

The project would be designed to keep a good balance between urgent post disaster needs (dredging, reconstruction of bridges, roads, etc.) and medium-to-long term needs (institutional support, upgrading existing and building new infrastructure to upgrade services and mitigate future risks). Selected sub - projects should comply with regional and local government plans, address critical issues described above to integrate planning and operational aspects that maximize the benefits of infrastructure investments to the beneficiary communities in the long run.

The Project Development Objective (PDO) is to "improve the capacity of Oyo State to manage flood risk and to respond effectively and promptly to flooding in the city of Ibadan".

In Oyo State, IUFMP activities involve medium-sized civil works such as construction of infrastructure and/or stabilization or rehabilitation in and around the Ibadan city. These could result in environmental and social impacts thus triggering the World Bank's Safeguard Policies including Environmental Assessment OP 4.01; Involuntary Resettlement OP4.12; Natural Habitats OP 4.04; Physical Cultural Resources OP 4.11, and Safety of Dams OP 4.37.

The environmental and social safeguards concerns are being addressed through several instruments such as the Environmental and Social Management Framework (ESMF) already prepared under the project.

##### **AIM of the ESMP:**



According to the Environmental and Social Screening Checklist prepared for potential projects under the IUFMP, the 4 priority sites were categorized as Category “B” project. It is therefore expected that the 4 priority sites are likely to have; (i) limited adverse impacts on the environmental and society living around the sites; (ii) the activities of the project are site specific and the impacts are irreversible; and (iii) defines the arrangements that will be put in place to ensure that mitigation measures are implemented by including recommendations of the roles and responsibilities of all critical stakeholders during project implementation.

Furthermore, the nature of the proposed activities in the 4 priority sites is such that they will not represent large-scale interventions in the site and will not fundamentally change the environment, if adequately mitigated.

The Environmental and Social Management Plan has the following goals:

- Identifying activities that may have detrimental impact on the environment, health & social life of the neighbouring people;
- Identify expected environmental impacts of various activities to be carried out under IUFMP;
- Detailing the mitigation measures that will need to be taken, and the procedures for their implementation;
- Prepare institutional arrangement for the implementation of the ESMP;
- Prepare cost estimates for mitigation and monitoring; and
- Establishing the reporting system to be undertaken during the implementation of the proposed project activities

The ESMP also serve to highlight specific requirements that will be monitored during the development and should the environmental impacts not have been satisfactorily prevented or mitigated, corrective action will have to be taken. The document should, therefore, be seen as a guideline that will assist in minimizing the potential environmental impact of activities.

## **2.0 SPECIFIC OBJECTIVES:**

The specific objective of the consultancy is to assist Government of Oyo State to undertake the preparation of an Environmental and Social Management Plan (ESMP) for the proposed sub-project in compliance with the World Bank safeguards policies as well as the Oyo State Ministry of Environment and Habitat and the Federal Ministry of Environment guidelines and procedures.

The selected consultant will prepare four (4) separate ESMPs reports for the following 4 priority sites: (i) Pegba - Egbada Tuba Road – Pegba (Ogbere River) bridge; (ii) Saasa River Culvert, Apete Road-Osajin; (iii) Cele-Rainbow – Agara (Ona River) Culvert; and (iv) Ola Adua stream – Akufo Road – Ola Adua (Ona River) Culvert sites.

This Terms of Reference (TOR) defines the scope of work and core tasks to be undertaken by the Consultant. The Consultant is expected to make reference to the feasibility study report and engineering designs of the proposed bridge/culverts to be constructed. The documents should be obtained from the Project Implementation Unit (PIU).

## **3.0 GOAL OF THE CIVIL WORK**

The proposed civil work activities in the 4 priority sites is to: (i) rehabilitate and stabilize the hydraulic structures in the 4 priority sites in order to reverse the current trend as much as possible and preserve the by-pass that is being degraded by the flooding pattern in the area; and (ii) reconstruct bridges, culverts and approach roads.

## **6.0 CELE-RAINBOW – AGARA (ONA RIVER) CULVERT;**

The sub-project activities in components 2 (sub component 2.1) will involve critical infrastructure improvements which includes the reconstruction of the crossing using a single cell box culvert as well as road approaches and drainages.

### **6.1 CELE-RAINBOW STUDY AREA:**

The site is located at about 1.4km from Cele-Rainbow - Ojoekun - Ajanaku Way-Agara in Oluyole Local Government Area. The site falls within the Ibadan Metropolis and lies between x and y coordinates N7.32354 and E3.85435 at an altitude of 145msl. In the Cele-Rainbow - Ojoekun - Ajanaku Way - Agara (Ona River) intervention site, the consultant will visit the whole area as delimited in the given culvert stabilization design. This area is an average of 100m<sup>2</sup> around the culvert.

## **6.2 RATIONALE OF CELE-RAINBOW STUDY**

The existing culvert was washed away during the August 2011 flood disaster; the collapsed culvert debris can be seen along the river bed. Presently, there is an existing culvert which connects the communities on both sides, however, it is not properly sized and there will be need to train the river both upstream and downstream of the culvert as the river bed is overgrown with weeds and shrubs. The road approaches are in bad condition because of heavy moving trucks to and fro a solid waste designated dump site.

The topography is a flat and characterized by basement geological formations and sandy soils. The area receives surface water (upstream) from Ogbera River and discharges into Ona River. Vegetation in the area is composed mainly of few trees, high shrubs and grasses. However, the original vegetation has been undergoing modifications due to urban expansions and human activities.

Human activities have impacted on the environment resulting in series of environmental and social concerns such as dilapidated drainages near damaged culvert and aquatic weeds restricting flow of water.

### **Site Pictures**



Collapsed culvert on the river bed



Collapsed culvert in downstream



Thick weeds and shrubs on river bed



Road approaches

The proposed civil works includes: (i) reconstruction of the crossing using a triple cell box culvert (3.5x3.5m) (ii) construction of appropriate bed scour (upstream and downstream) and side protection to prevent outflanking, (iii) reconstruction of roadway approaches of 250m long, 7.3m wide with asphaltic concrete finish and 1m wide by 1m deep side drain in concrete grade 25 at both sides of the road and associated drainage (within the floodplain), (iv) removal of aggressive weeds from upstream channel (then to be managed by the local community), (v) 100m long



- Review Environmental Assessment procedures of the World Bank safeguards policies especially Environmental Assessment (OP 4.01);
- Assess the potential environmental and social impacts related to project activities and recommend adequate mitigation measures, including costs estimation..
- Review institutional assessment and framework for environmental management.
- Identify responsibilities and actors for the implementation of proposed mitigation measures
- Assess the capacity available to implement the proposed mitigation measures, and suggest recommendation in terms of training and capacity building, and estimate their costs.
- Develop a Environmental and Social Management Plan (ESMP) for the project. The ESMP should underline
  - (i) the potential environmental and social impacts resulting from project activities
  - (ii) the proposed mitigation measures;
  - (iii) the institutional responsibilities for implementation;
  - (iv) the monitoring indicators;
  - (v) the institutional responsibilities for monitoring and implementation of mitigation measures;
  - (vi) the costs of activities; and
  - (vii) the calendar of implementation.
- Public consultations. The ESMP results and the proposed mitigation measures will be discussed with relevant stakeholders, NGOs, local administration and other organizations mainly involved by the project activities. Recommendations from this public consultation will be include in the final ESMP report.
- Preparing the ESMP according to the generic contents presented hereafter.

#### **8.1.1 The following socio-economic issues shall be addressed in the ESMP:**

- Establish social baseline for pre project intervention
- Determine the project's social impacts on health and social well-being ; quality of the living environment; economic material well-being ;Family and community ; and gender relations
- A summary of the impacted communities for the project: location, access, population (number, demographic and social characteristics); economy (employment rate, income distribution); services (types, capacity, and adequacy) and housing. Concern is the ability to provide work force, service new development and absorb and adjust to growth (worker/family).
- The report should identify and assess the social impacts identified during the public consultation process and those that, based on consultant's experience, are also likely to occur. In some instances the affected communities may not be aware of or be in a position to identify all the social impacts that may occur. However, this does not mean that they will not occur. In such cases the consultant should use his/her experience to identify additional social impacts that have not been raised by the public. A summary of the views of the population including vulnerable groups, determined through thoroughly documented discussions with local communities. These meetings and discussions must be documented and should show how issues and problems raised are or will be resolved
- Pay particular attention to the impacts of the project on vulnerable and marginalized individuals and groups ( including but not limited to mobility impaired individuals and groups and People Living with Disability)
- Detail measures that will need to be taken to mitigate the negative social impacts identified and the procedures for their implementation;
- Identifying key uncertainties and risks: Identify and communicate any key uncertainties and risks associated with the accuracy of the findings of the social assessment, as well as of the proposed project. Some sources of uncertainty and risk commonly associated with projects are linked to: (a) Lack of adequate information at the community level; (b) Creation of employment and business opportunities for members from the local, historically disadvantaged communities; (c) The influx of job seekers and construction workers to the area and the impact on services; etc.
- Assess the impact of the construction on individuals and groups whose livelihoods are tied to the route/road (motor cycle taxi and tricycle operators etc.). As part of consultations, the ESMP should identify the potential negative impact on the livelihoods of these individuals and groups and propose appropriate mitigation measures

- Assess potential impact of the project on property access and suggest measures to minimize the effects on property access
- Information will be gathered from field surveys and secondary data sources (interviews, structured questionnaires, in-depth interviews and focus group discussions).

## **8.2.0 CONTENT OF THE ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN**

The 4 ESMP reports to be prepared shall be presented in a concise format containing all studies, processes, analyses, tests and recommendations for the proposed intervention. The report shall focus on the findings, conclusions and any recommended actions, supported by summaries of the data collected and citations for any references used. The ESMP report will include the following topics:

### **Preliminary pages**

Cover page

Table of contents

List of acronyms and their definitions

Executive Summary

### **Chapter 1: Introduction**

- Description of the proposed intervention
- Objectives of ESMP
- Rationale for ESMP
- Relevant Maps

### **Chapter 2: Institutional and Legal Framework for Environmental and Social Management**

- Discussion of the World Bank safeguards policies triggered by IUFMP and the intervention at Saasa site.
- Summary of relevant local and federal policy, legal, regulatory, and administrative frameworks

### **Chapter 3: Biophysical and Socio Economic Characteristics**

- Description of the area of influence and environmental baseline conditions
- Analysis of existing livelihoods opportunities, income, gender characteristics, age profile, health, transport access, existing community structures.

### **Chapter 4: Institutional Assessment and framework for Environmental and Social Management.**

- Highlight and define the roles, responsibilities and institutional arrangements for the implementation of the ESMP, as they are fundamental to the effective implementation of the environmental and social safeguard measures.

### **Chapter 5: Assessment of Potential Adverse Environmental and Social Impacts and Analysis of Alternatives**

- Methods and techniques used in assessing and analyzing the environmental and social impacts of the proposed project
- Discussion of alternatives to the current project and reasons for their rejection, including short description of likely future scenario without intervention;
- Discussion of the potentially significant adverse environmental and social impacts of the proposed project

### **Chapter 6: Environmental and Social Management Plan (ESMP), including:**

- Including the proposed mitigation measures( including cultural heritage management);

- Institutional Responsibilities for Implementation;
- Monitoring indicators;
- Institutional responsibilities for monitoring and implementation of mitigation;
- Summarized table for ESMP including costs
- ESMP Training requirements

## **Chapter 7: Consultation with Stakeholders**

- This chapter shall summarize the actions undertaken to consult the groups affected by the project, as well as other concerned key stakeholders including Civil Society Organizations. The detailed record of the consultation meetings shall be presented in annex to the ESMP.

## **Chapter 8: Summary and Recommendations**

### **Annexes**

Annex 1: List of Stakeholders consulted

Annex 2: Summary of World Bank Safeguard Policies

Annex 3: General Environmental Management Conditions for Constructions/Civil Works.

Annex 4: References

Annex 5: Photos

Annex 6: Checklist for Field data gathering

The main text of the ESMP should focus on findings, conclusions and recommended actions, supported by summaries of data collected and citations for any references used in interpreting those data. It should provide a description of the specialist studies undertaken and the report should include a bibliography, maps, photographs, diagrams and any other diagrammatic representation needed to facilitate understanding of the main text, detailed data should be presented in annexes or a separate volume. Unpublished documents used in the assessment should also be included or referenced in an appendix and the location of the originals of such documents indicated.

## **9.0 Qualifications and Experience of the Consultant:**

The consultant should have:

- Experience with, and a professional/technical background appropriate for understanding both the environmental and social management implications of flood risk intervention projects, especially in urban areas, including their design, construction, operation and monitoring.
- At least five (5) years' experience in practical safeguards, social and environmental management with demonstrated proficiency in the preparation, review, and approval of EAs/ESIAs/ESMPs to meet World Bank standards
- Excellent analytical, communication and writing skills.
- It is highly desirable that the consultant have experience with working with international development institutions like the World Bank, and on infrastructure related projects.

### **9.1.0 Deliverables and timing:**

**Inception reports:** Inception reports should be submitted about one week after awarding/signing of contract. The PIU shall double-check and ensure that the consultant has actually commenced work and that the consultant understands tasks.

**Week 2:** A draft ESMPs will be submitted for comments in **Two weeks** from the date of signing the contract. It will identify all the areas, the mitigation measures, and the environmental and social issues associated with the site intervention sub-projects, as well as the adequacy of the monitoring and institutional arrangements in the intervention site.

**Week 3:** The draft final ESMP Reports will take into account all comments, and will be submitted to the PIU at the end of **Three weeks** after commencement of contract.

**Week 4:** The Final ESMPs will be submitted to the PIU **Four weeks** after commencement of the consultancy.

The consultant will submit six (6) hard copies and a soft copy at each stage of the report.

Activities	Week 1	Week2	Week3	Week4
Contract Signing	X			
Submission of Inception Reports	X			
Meeting with the PIU		X		
Submission of Draft Reports		X		
Submission of Draft Final Reports			X	
Submission of Final Reports				X

### 9.2.0 Responsibilities of IUFMP

- The Consultant shall report to the Project Coordinator of the Project Implementation Unit of IUFMP.
- The PIU would review and discuss the Inception reports with the Consultant and necessary adjustment will be embarked upon.
- The Consultant would especially carry the PIU along in the Stakeholders consultative forum.
- The Consultant may seek Technical assistance from the PIU Specialists, especially the Safeguards Specialists of the PIU.
- The Draft Reports and Draft Final Reports would be reviewed by the PIU and relevant MDAs.
- In addition to the supervision and other responsibilities contained in the contract for this consultancy, the IUFMP shall provide the consultant with the following:
  - All relevant project instruments ;
  - Project Appraisal Document
  - Project Implementation Manual
  - World Bank safeguards policies;
  - Intervention design ;
  - Access to relevant officials, groups and communities

### 9.3.0 Payment Schedule

10% of Contract sum on submission of inception report  
 30 % of Contract sum on submission of Draft Report  
 40% of Contract sum on submission of Draft Final Report  
 20% of Contract sum of submission and Acceptance of Final Report



## ANNEX 2: SUMMARY OF TRIGGERED WORLD BANK ENVIRONMENTAL AND SOCIAL SAFEGUARD POLICIES

The World Bank has 10 + 2 Safeguard Policies to reduce or eliminate the negative environmental and social impacts of potential projects, and improve decision making. Details of the safeguard policies can be seen in Annex 2. These World Bank safeguard operational policies are:

- OP/BP 4.01: Environmental Assessment
- OP/BP 4.04: Natural Habitats
- OP 4.09: Pest Management
- OP/BP 4.12: Involuntary Resettlement
- OP 4.10: Indigenous Peoples
- OP 4.11: Physical Cultural Resources
- OP 4.36: Forests
- OP/BP 4.37: Safety of Dams
- OP/BP 7.50: Projects on International Waters
- OP/BP 7.60: Projects in Disputed Areas

### Plus 2

- OP/BP 4.00: Use of Country System

Safeguard Policies	Triggered by IUFMP?		Triggered by the reconstruction of the Cele Rainbow Culvert Project?		Applicability to Project due to	How Project Address Policy Requirements
	Yes	No	Yes	No		
Environmental Assessment (OP/BP 4.01)	[x]	[]	[x]	[]	Civil works with site-specific environmental and social impacts	ESMF prepared for IUFMP & site specific mitigation measures developed in this ESMP
Natural Habitats (OP/BP 4.04)	[x]	[]	[]	[x]	NA	NA
Pest Management (OP 4.09)	[]	[x]	[]	[x]	NA	NA
Physical Cultural Resources (OP/BP 4.11)	[x]	[]	[]	[X]	NA	NA
Involuntary Resettlement (OP/BP 4.12)	[x]	[]	[]	[ x ]	NA	NA
Indigenous Peoples (OP/BP 4.10)	[]	[x]	[]	[x]	NA	NA
Forests (OP/BP 4.36)	[]	[x]	[]	[x]	NA	NA
Safety of Dams (OP/BP 4.37)	[x]	[]	[]	[x]	NA	NA
Projects in Disputed Areas (OP/BP 7.60)*	[]	[x]	[]	[x]	NA	NA
Projects on International Waterways (OP/BP 7.50)	[]	[x]	[]	[x]	NA	NA



**ANNEX 3: HOUSEHOLD QUESTIONNAIRE FOR THE ESMP****QUESTIONNAIRE FOR THE PREPARATION OF AN ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP) FOR THE IUFMP PRIORITY SITES**

The Oyo State Government via Ibadan Urban Flood Management Project (IUFMP) intends to: (i) rehabilitate and stabilize the hydraulic structures in this priority site in order to reverse the current trend as much as possible and preserve the by-pass that is being degraded by the flooding pattern in the area; and (ii) reconstruct bridges, culverts and approach roads. IUFMP is financed with credit from the World Bank. The project is aimed to improve the capacity of Oyo State to manage flood risk and to respond effectively and promptly to flooding in the city of Ibadan.

This interview forms part of the Environmental and Social Management Plan (ESMP) of the project. The aim is to find out how the project's civil works and process activities may affect the social wellbeing and quality of living environment in the area. We need your cooperation in answering the questions asked below. Your answers will be treated as confidential.

**Please Tick the Appropriate Answers**

**SECTION A: IDENTIFICATION AND BACKGROUND CHARACTERISTICS**

NO.	QUESTION AND FILTERS	CODING CATEGORIES	CODES	SKIP
A1	Name of State			
A2	LGA			
A3	Name of Town/City/ Community			
A4	Stratum	Urban	1	
		Rural	2	
A5	Email (Optional)			
A6	Phone number (Optional)			
A7	Age Last Birthday			
A8	Gender of Respondent	Male	1	
		Female	2	
A9	Marital Status	Never Married	1	
		Married	2	
		Separated	3	
		Divorced	4	
		Widow	5	
A10	What religion do you practice?	Christian	1	
		Muslim	2	
		Traditional	3	
		Others Specify	4	
A11	Highest Educational Attainment	No Formal	1	
		Primary School Not Completed	2	
		Primary School Completed	3	
		Secondary School Not Completed	4	
		Secondary School Completed	5	
		Post Secondary Education	6	
		Koranic Education	7	
		Other (specify)		
A12	Occupation of respondents	Civil servants	1	
		Farming	2	
		Fishing	3	
		Artisan	4	
		Trading	5	
		Professional	6	
		Retired	7	
		Others Specify	8	
A13	How long have you lived in this community? (Years)			

A14	• What sort of housing does your household live in?	Bungalow Duplex Detached Semidetached One room apartment Self-contain Tent	1 2 3 4 5 6 7	
A15	What materials are used for your house?	Plastered mud Cement block Brick Others, Specify	1 2 3 4	
A16	What is the main source of drinking water for members of your household	Piped water Dug well Water from spring Rainwater Tanker/Truck Cart with small tank Surface water Sachet/bottle water Others, Specify	1 2 3 4 5 6 7 8 9	
A17	What kind of toilet facility do members of your household usually use?	Flush or pour flush toilet Pit latrine Composting toilet Bucket toilet No facility/Bush field Others, specify	1 2 3 4 5 6	
A18	How would you describe the location of your home?	Flat ground Sloppy ground Flood plains Steep slope	1 2 3 4	
A19	Which population group is mostly represented in this community?	Elderly Middle age Youth Adolescent Children Handicap	1 2 3 4 5 6	
A20	Are there many unemployed youth in this community?	Yes No	1 2	
A21	In your opinion, do you think this community can provide the manpower need for the construction?	Yes No	1 2	
A22	Which gender is the most mobile in this community?	Male Female	1 2	
A23	Which gender is the most marginalize in this community?	Male Female	1 2	
A24	Which gender is likely to be mostly employed in this community?	Male Female	1 2	

## SECTION B: SOCIOECONOMIC ATTRIBUTES

### Part A: Household Composition

Please report the household composition. Please note: A “household” includes all members of a common decision making unit (usually within one residence) that are sharing the same household resources. These include dependents that are away from home.

### Part B: Sources of income and livelihood

B1	What is your regular source of income? (Naira)			
B2	How much did you earn in the last one month			
B3	If you are in a wage employment, how much do you receive monthly?			

B4	Did you receive any financial or in-kind support from relatives, friends or charitable organizations in the last 12 months?	Yes No	1 2	If no, skip to B6
B5	If yes, complete the following table.			
	Source of financial support	1. Total amount (cash) received in the last 12 months (Naira)	2. Value of in-kind support received in the last 12 months (Naira)	
	1. Relatives & family members away from home			
	2. friends			
	3. charitable organizations from outside this community			
	4. Mutual support groups (local)			
	5. other sources financial support(specify)			
B6	What is your Annual Income?	<50,000 50,001-100,000 100,001-500,000 500,001 and above	1 2 3 4	
B7	If Annual Income is not known, what is your Monthly income (Naira)			
B8	Estimate the total annual incomes of other members of your household. (Naira)	<50,000 50,001-100,000 100,001-500,000 500,001 and above	1 2 3 4	
B9	If Annual Income is not known, what their Total Monthly Incomes...(Naira)			
B10	How much do you spend on food on average every day in your household? (Naira)			
B11	How much did your household spend on food in the last seven days? (Naira)			

### SECTION C: AVAILABILITY OF AMENITIES

C1	How would you describe the condition of the following amenities in your community?					
		EXCELLENT	VERY GOOD	GOOD	FAIR	POOR
	Roads to the community					
	Roads within the community					
	Schools in the community					
	Public Health Institutions					
	Potable Water					
	Public Electricity					
	Communication facilities (Postal Service, Telephone)					
	Public recreation facilities					
C2	What is the major source of water available to your household? <b>(Please Tick One)</b>	River Bore hole Commercial Bore hole Private Pond Public Pipe borne Well Water Vendor Others, Specify .....	1 2 3 4 5 6 7 8			
C3	If a public pipe borne water, how regular does the tap flow in a week?	Regularly Occasionally Rarely	1 2 3			
C4	What is the primary source of electricity/ light to this community? <b>(Please Tick One)</b>	Hurricane Lamp Private Generators Community Generators State Government Utility board Company operating in your community PHCN (National Grid)	1 2 3 4 5 6			
C5	What is the secondary source of electricity? <b>(Please Tick One)</b>	Hurricane Lamp Private Generators Community Generators	1 2 3			

		State Government Utility board Company operating in your community PHCN (National Grid)	4 5 6	
C6	What is the main fuel you use for cooking? <b>(Please Tick One)</b>	Firewood Charcoal Kerosine Gas Electricity Animal waste Crop residue Saw dust Others, specify	1 2 3 4 5 6 7 8 9	
C7	How do you dispose your household waste?	Burying Bush Burning Open dump Organised Collection Others, Specify.....	1 2 3 4 5 6	
C8	Who is responsible for solid waste management?	Government Private	1 2	
	How effective is solid waste management in your community?	Very effective Fairly effective Not effective	1 2 3	
C9	Indicate types/ of health care institutions in your community			
	Types	Exists (yes/no)	Near from my house (yes/no)	Medical personnel always available (yes/no)
	Hospital (public)			
	Hospital ((private)			
	Maternity			
	Dispensary			
	Health center			
	Private clinic			
	Patent medicine store			
	Pharmacy (chemist)			
	Traditional healing home			
C10	Is your present state of health affected in any way by flooding?	Yes No	1 2	
C11	If yes to C9, in what way?	Skin diseases Cough Catarrh Malaria Water-borne diseases Other, Specify.....	1 2 3 4 5 6	
C12	How do you manage your health conditions when sick?	Attend hospital/clinic Buys drugs from nearby chemist Traditional medicine None Others Specify.....	1 2 3 4 5	
C13	If you do attend hospital/clinic, when last did you visit one?	Last six months Last one year Last five years More than five years ago Never visited one.	1 2 3 4 5	
C13	Do you have a fire management agency in the community?	Yes No	1 2	
C14	How effective is fire service in your community?	Very effective Fairly effective Not effective	1 2 3	
C15	Have you had any security challenges in this community?	Yes No	1 2	

	How effective is policing in your community?	Very effective Fairly effective Not effective	1 2 3	
C16	Where is the nearest police station?			
<b>SECTION D FLOODING AND IMPACTS</b>				
D1	How concerned are you personally about the occurrence of flooding in your city/community?	Extremely concerned Very concerned Concerned Not concerned	1 2 3 4	
D2	Please indicate the major floods that have impacted your community in past 4 years	2011 2012 2013 2014	1 2 3 4	
D3	What areas of your community were impacted (Please include description with street names)			
D4	What has been the impact of the flood event on road infrastructure	Wash the road away Cause pot holes Cut off the road completely Others, specify.....	1 2 3 4	
D5	What has been the impact of the flood event on bridge/culvert infrastructure	Wash off the bridge Collapsed the bridge Undermine/Weaken the bridge Others, Specify.....	1 2 3 4	
D6	What has been the impact of the flood event on accessibility to the community?	Hinders movement Block access completely Block access for some time Block vehicular movement Others specify.....	1 2 3 4 5	
D7	What has been the impact of the flood event on Livelihood in the community?	Reduce business Erodes farmlands Others specify	1 2 3	
D8	Describe the level of awareness about this project in your community?	Very aware Moderately aware Not aware	1 2 3	
D9	Are you concerned about the menace of flooding events in your community?	Yes No	1 2	
D10	Are you aware of the proposed flood remedial development?	Yes No	1 2	If No, go to D 11
D11	If yes, what is the source?	Television Newspaper Government official Friend/relative Radio Community association Others, Specify.....	1 2 3 4 5 6 7	
D12	What is your opinion about the project?	Good Bad Can't say	1 2 3	
D13	Do you think the project can cause restiveness in your community?	Yes No	1 2	
D14	If D12 is yes how will the proposed intervention result in restiveness	<ul style="list-style-type: none"> <li>Disrespect of norms and culture by contractors</li> <li>Loss of farmland / Property</li> <li>Possible theft of sacred/archaeological items</li> <li>Local people not employed during construction</li> <li>Others, specify:</li> </ul>	1 2 3 4 5	
D15	If good, what positive impacts do you perceive	Increase in employment opportunity	1	

	(Tick as many as applicable)?	Increase in land price More value for local product Better infrastructure Facility Increase in business opportunity. Others Specify	2 3 4 5 6 7	
D16	If bad, what negative impacts do you perceive (Tick as many as applicable)?	Pressure on existing infrastructure Influx of population Conflict with outsiders Increase in antisocial elements Others Specify	1 2 3 4 5	
D17	What impact do you think the construction work to be carried out will have on members of your household?	Reduce business opportunity Not been able to go to farm Dusty environment during dry season Others Specify	1 2 3 4	
D18	Do you think the intervention will have any effect on the health of your household?	Yes No	1 2	
D19	If yes to D15, what effect do you think the intervention will have on the health of your household members?	Skin diseases Cough Catarrh Malaria Water-borne diseases Other, Specify.....	1 2 3 4 5 6	
D20	What effect will the construction or rehabilitation have on accessibility to your property?	Serious Negative effect Slight negative effect No effect Others Specify	1 2 3 4	
D21	How do you think this problem can be mitigated?			
D22	In your opinion, do you think the intervention will affect male and female differently?	Yes No	1 2	
D23	Who are likely to be more negatively affected?	Male Female	1 2	
D24	• In your opinion, how has the standard of living of your household changed over the previous four years?	Same Better Worse	1 2 3	
D25	• Is the option in D17 propelled by the flooding problem	Yes No	1 2	
D26	• If D18 is yes, do you think the proposed intervention will improve the situation?	Yes No	1 2	
D27	• If D19 is yes specify how the project will improve the situation			
D28	How do you suggest that the flooding problem in this community can be arrested?			
D29	• What sort of transport does your family own?	Bicycle Motorcycle Tricycle Car Truck Bus Others, Specify.....	1 2 3 4 5 6 7	
D30	• What mode of transport do you frequently use?	Bicycle Motorcycle Tricycle Car Truck Bus Others, Specify.....	1 2 3 4 5 6 7	
D31	• In what ways do you think the construction will affect Okada riders in this community?	Improve their business Reduce their business Will have no effect	1 2 3	

D32	• In what ways do you think the construction will affect Tricycle operators in this community?	Improve their business Reduce their business Will have no effect	1 2 3	
D33	• In what ways do you think the construction will affect Car/Bus drivers in this community?	Improve their business Reduce their business Will have no effect	1 2 3	
D34	• How will the construction affect school children?	Stop them from going to school Make them go late to school Can cause injury while going to school Make them return late from school Have no effect	1 2 3 4 5	
D35	• What effect will the construction have on the elderly?	Disrupt their movement Cause injury Disallow relatives from visiting Have no effect	1 2 3 4	
D36	• What effect will the construction have on pregnant women?	Deny access to ante natal clinic Cause delivery at home Cause injury Have no effect	1 2 3 4	
D37	• What effect will the construction have on the handicap/visually impaired?	Impaired movement Cause injury Have no effect	1 2 3	

SECTION E: ENVIRONMENT				
E1	On what scale has damage to wildlife habitats occurred due to past flooding events	Large Medium Small None	1 2 3 4	
E2	What species of animals exist in the community?	Fishes Amphibians Reptiles Aves Mammals None	1 2 3 4 5 6	
E3	What are the major sources of air pollution?	Car fumes Industrial fumes Animal husbandry Burning Others Specify	1 2 3 4 5	
E4	What are the major sources of noise pollution?	Transportation Construction Commercial and Industrial activities Social events household sources Others Specify	1 2 3 4 5 6	
E5	What effects/changes have you noticed on the landscape due to flooding?	Increased sedimentation Increased runoff Soil contamination Erosion Salinization Land degradation Others Specify	1 2 3 4 5 6 7	
E6	Are there any changes to the natural vegetation in the area	Yes No	1 2	
E7	What are the major sources of natural vegetation loss in your area	Cleaning of drainage Channels along flood plains Land clearing Burning Urbanization Agriculture Others Specify	1 2 3 4 5 6 7	
E8	What are the sources of surface/ground water pollution	Municipal wastewater Household waste	1 2	

		Human waste	3
		Septic tanks	4
		Others Specify	5

**ANNEX 4: PLAN FOR CONSULTATIONS FOR THE PERIOD OF THE PROJECT**

Timing/Phasing	Stakeholder Groups	Key consultation points	Language of Communication	Responsibility	Items	Indicative Cost USD\$
<b>Pre – Construction Phase</b>	<ul style="list-style-type: none"> <li>• Landlord Association</li> <li>• Opinion Leaders</li> <li>• Community Based Organizations</li> <li>• Women Groups</li> <li>• Okada Riders Organization</li> <li>• Youths Wing</li> <li>• Religious Organizations</li> <li>• Tradesmen and artisans</li> <li>• NGOs</li> <li>• Physically Challenged Associations</li> </ul>	<ul style="list-style-type: none"> <li>• Community perception and measures for enforcing social protection and social accountability</li> <li>• Environmental sustainability and measures for enforcing environmental sound management</li> <li>• The cooperation of the community members with the contractor</li> <li>• Security of lives of the construction workers</li> <li>• Safe work procedures for operations and activities</li> <li>• Security of equipment brought to the site by the contractor</li> <li>• Sensitizing communities on alternate routes</li> <li>• Availability of local workforce within the community</li> </ul>	English/Yoruba	IUFMP- Social Development Specialist, Environmental specialist & Communication Specialist /Consultant	<ul style="list-style-type: none"> <li>• Consultants fees</li> <li>• Hiring and outfitting of meeting venues</li> <li>• Public opinion surveys</li> <li>• Preparation and distribution of materials</li> <li>• Staff time preparing, attending, and keeping records on public meetings</li> <li>• Maintenance of channels of communication (telephone</li> <li>• Hotline, radio announcements , or other</li> <li>• means)</li> <li>• Travel expenses</li> </ul>	1000
<b>Construction Phase</b>	<ul style="list-style-type: none"> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Review of cooperation with the contractor</li> <li>• Review of security situation in the environment</li> <li>• Discussion of emerging issues not anticipated as a result of the construction</li> <li>• Review of accessibility to the community</li> <li>• Discussions on how the vulnerable and marginalized groups are coping</li> </ul>	English/Yoruba	IUFMP- Social Development Specialist, Environmental specialist & Communication Specialist /Consultant	Same as above	2000



Operations and Maintenance Phase	<ul style="list-style-type: none"> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Appreciation of the community members for their support and cooperation during the construction</li> <li>• Enlightenment on how to maintain the bridge/culvert constructed</li> <li>• Enlightenment on proper solid waste disposal to prevent blockage of water ways</li> <li>• Discussion on proper ways to maintain side drains along the approach roads.</li> <li>• Enlightenment on Disaster Risk Reduction measures.</li> </ul>	English/Yoruba	IUFMP- Social Development Specialist, Environmental specialist & Communication Specialist /Consultant	Same as above	1700
<b>TOTAL COST</b>						<b>3700</b>

## **ANNEX 5: GENERAL ENVIRONMENTAL MANAGEMENT CONDITIONS FOR CONSTRUCTION CONTRACTS**

### **General**

1. In addition to these general conditions, the Contractor shall comply with any specific Environmental Management Plan (EMP) or Environmental and Social Management Plan (ESMP) for the works he is responsible for. The Contractor shall inform himself about such an EMP, and prepare his work strategy and plan to fully take into account relevant provisions of that EMP. If the Contractor fails to implement the approved EMP after written instruction by the Supervising Engineer (SE) to fulfil his obligation within the requested time, the Owner reserves the right to arrange through the SE for execution of the missing action by a third party on account of the Contractor.
2. Notwithstanding the Contractor's obligation under the above clause, the Contractor shall implement all measures necessary to avoid undesirable adverse environmental and social impacts wherever possible, restore work sites to acceptable standards, and abide by any environmental performance requirements specified in an EMP. In general these measures shall include but not be limited to:
  - (a) Minimize the effect of dust on the surrounding environment resulting from earth mixing sites, asphalt mixing sites, dispersing coal ashes, vibrating equipment, temporary access roads, etc. to ensure safety, health and the protection of workers and communities living in the vicinity dust producing activities.
  - (b) Ensure that noise levels emanating from machinery, vehicles and noisy construction activities (e.g. excavation, blasting) are kept at a minimum for the safety, health and protection of workers within the vicinity of high noise levels and nearby communities.
  - (c) Ensure that existing water flow regimes in rivers, streams and other natural or irrigation channels is maintained and/or re-established where they are disrupted due to works being carried out.
  - (d) Prevent bitumen, oils, lubricants and waste water used or produced during the execution of works from entering into rivers, streams, irrigation channels and other natural water bodies/reservoirs, and also ensure that stagnant water in uncovered borrow pits is treated in the best way to avoid creating possible breeding grounds for mosquitoes.
  - (e) Prevent and minimize the impacts of quarrying, earth borrowing, piling and building of temporary construction camps and access roads on the biophysical environment including protected areas and arable lands; local communities and their settlements. In as much as possible restore/rehabilitate all sites to acceptable standards.
  - (f) Upon discovery of ancient heritage, relics or anything that might or believed to be of archaeological or historical importance during the execution of works, immediately report such findings to the SE so that the appropriate authorities may be expeditiously contacted for fulfilment of the measures aimed at protecting such historical or archaeological resources.
  - (g) Discourage construction workers from engaging in the exploitation of natural resources such as hunting, fishing, collection of forest products or any other activity that might have a negative impact on the social and economic welfare of the local communities.
  - (h) Implement soil erosion control measures in order to avoid surface run off and prevents siltation, etc.
  - (i) Ensure that garbage, sanitation and drinking water facilities are provided in construction workers camps.
  - (j) Ensure that, in as much as possible, local materials are used to avoid importation of foreign material and long distance transportation.
  - (k) Ensure public safety, and meet traffic safety requirements for the operation of work to avoid accidents.
3. The Contractor shall indicate the period within which he/she shall maintain status on site after completion of civil works to ensure that significant adverse impacts arising from such works have been appropriately addressed.
4. The Contractor shall adhere to the proposed activity implementation schedule and the monitoring plan / strategy to ensure effective feedback of monitoring information to project management so that impact management can be implemented properly, and if necessary, adapt to changing and unforeseen conditions.
5. Besides the regular inspection of the sites by the SE for adherence to the contract conditions and specifications, the Owner may appoint an Inspector to oversee the compliance with these environmental conditions and any proposed mitigation measures. State environmental authorities may carry out similar inspection duties. In all cases, as directed by the SE, the Contractor shall comply with directives from such inspectors to implement measures required to ensure the adequacy rehabilitation measures carried out on the bio-physical environment and compensation for socio-economic disruption resulting from implementation of any works.

### **Worksite/Campsite Waste Management**

6. All vessels (drums, containers, bags, etc.) containing oil/fuel/surfacing materials and other hazardous chemicals shall be banded in order to contain spillage. All waste containers, litter and any other waste generated during the construction shall be collected and disposed off at designated disposal sites in line with applicable government waste management regulations.
7. All drainage and effluent from storage areas, workshops and camp sites shall be captured and treated before being discharged into the drainage system in line with applicable government water pollution control regulations.
8. Used oil from maintenance shall be collected and disposed off appropriately at designated sites or be re-used or sold for re-use locally.
9. Entry of runoff to the site shall be restricted by constructing diversion channels or holding structures such as banks, drains, dams, etc. to reduce the potential of soil erosion and water pollution.
10. Construction waste shall not be left in stockpiles along the road, but removed and reused or disposed of on a daily basis.
11. If disposal sites for clean spoil are necessary, they shall be located in areas, approved by the SE, of low land use value and where they will not result in material being easily washed into drainage channels. Whenever possible, spoil materials should be placed in low-lying areas and should be compacted and planted with species indigenous to the locality.

### **Material Excavation and Deposit**

12. The Contractor shall obtain appropriate licenses/permits from relevant authorities to operate quarries or borrow areas.
13. The location of quarries and borrow areas shall be subject to approval by relevant local and national authorities, including traditional authorities if the land on which the quarry or borrow areas fall in traditional land.
14. New extraction sites:
  - a) Shall not be located in the vicinity of settlement areas, cultural sites, wetlands or any other valued ecosystem component, or on high or steep ground or in areas of high scenic value, and shall not be located less than 1km from such areas.
  - b) Shall not be located adjacent to stream channels wherever possible to avoid siltation of river channels. Where they are located near water sources, borrow pits and perimeter drains shall surround quarry sites.
  - c) Shall not be located in archaeological areas. Excavations in the vicinity of such areas shall proceed with great care and shall be done in the presence of government authorities having a mandate for their protection.
  - d) Shall not be located in forest reserves. However, where there are no other alternatives, permission shall be obtained from the appropriate authorities and an environmental impact study shall be conducted.
  - e) Shall be easily rehabilitated. Areas with minimal vegetation cover such as flat and bare ground, or areas covered with grass only or covered with shrubs less than 1.5m in height, are preferred.
  - f) Shall have clearly demarcated and marked boundaries to minimize vegetation clearing.
15. Vegetation clearing shall be restricted to the area required for safe operation of construction work. Vegetation clearing shall not be done more than two months in advance of operations.

16. Stockpile areas shall be located in areas where trees can act as buffers to prevent dust pollution. Perimeter drains shall be built around stockpile areas. Sediment and other pollutant traps shall be located at drainage exits from workings.
17. The Contractor shall deposit any excess material in accordance with the principles of the general conditions, and any applicable EMP, in areas approved by local authorities and/or the SE.
18. Areas for depositing hazardous materials such as contaminated liquid and solid materials shall be approved by the SE and appropriate local and/or national authorities before the commencement of work. Use of existing, approved sites shall be preferred over the establishment of new sites.

#### **Rehabilitation and Soil Erosion Prevention**

19. To the extent practicable, the Contractor shall rehabilitate the site progressively so that the rate of rehabilitation is similar to the rate of construction.
20. Always remove and retain topsoil for subsequent rehabilitation. Soils shall not be stripped when they are wet as this can lead to soil compaction and loss of structure.
21. Topsoil shall not be stored in large heaps. Low mounds of no more than 1 to 2m high are recommended.
22. Re-vegetate stockpiles to protect the soil from erosion, discourage weeds and maintain an active population of beneficial soil microbes.
23. Locate stockpiles where they will not be disturbed by future construction activities.
24. To the extent practicable, reinstate natural drainage patterns where they have been altered or impaired.
25. Remove toxic materials and dispose of them in designated sites. Backfill excavated areas with soils or overburden that is free of foreign material that could pollute groundwater and soil.
26. Identify potentially toxic overburden and screen with suitable material to prevent mobilization of toxins.
27. Ensure reshaped land is formed so as to be inherently stable, adequately drained and suitable for the desired long-term land use, and allow natural regeneration of vegetation.
28. Minimize the long-term visual impact by creating landforms that are compatible with the adjacent landscape.
29. Minimize erosion by wind and water both during and after the process of reinstatement.
30. Compacted surfaces shall be deep ripped to relieve compaction unless subsurface conditions dictate otherwise.
31. Revegetate with plant species that will control erosion, provide vegetative diversity and, through succession, contribute to a resilient ecosystem. The choice of plant species for rehabilitation shall be done in consultation with local research institutions, forest department and the local people.

#### **Water Resources Management**

32. The Contractor shall at all costs avoid conflicting with water demands of local communities.
33. Abstraction of both surface and underground water shall only be done with the consultation of the local community and after obtaining a permit from the relevant Water Authority.
34. Abstraction of water from wetlands shall be avoided. Where necessary, authority has to be obtained from relevant authorities.
35. Temporary damming of streams and rivers shall be done in such a way avoids disrupting water supplies to communities down stream, and maintains the ecological balance of the river system.
36. No construction water containing spoils or site effluent, especially cement and oil, shall be allowed to flow into natural water drainage courses.
37. Wash water from washing out of equipment shall not be discharged into water courses or road drains.
38. Site spoils and temporary stockpiles shall be located away from the drainage system, and surface run off shall be directed away from stockpiles to prevent erosion.

#### **Traffic Management**

39. Location of access roads/detours shall be done in consultation with the local community especially in important or sensitive environments. Access roads shall not traverse wetland areas.
40. Upon the completion of civil works, all access roads shall be ripped and rehabilitated.
41. Access roads shall be sprinkled with water at least five times a day in settled areas, and three times in unsettled areas, to suppress dust emissions.

#### **Blasting**

42. Blasting activities shall not take place less than 2km from settlement areas, cultural sites, or wetlands without the permission of the SE.
43. Blasting activities shall be done during working hours, and local communities shall be consulted on the proposed blasting times.
44. Noise levels reaching the communities from blasting activities shall not exceed 90 decibels.

#### **Disposal of Unusable Elements**

45. Unusable materials and construction elements such as electro-mechanical equipment, pipes, accessories and demolished structures will be disposed of in a manner approved by the SE. The Contractor has to agree with the SE which elements are to be surrendered to the Client's premises, which will be recycled or reused, and which will be disposed of at approved landfill sites.
46. As far as possible, abandoned pipelines shall remain in place. Where for any reason no alternative alignment for the new pipeline is possible, the old pipes shall be safely removed and stored at a safe place to be agreed upon with the SE and the local authorities concerned.
47. AC-pipes as well as broken parts thereof have to be treated as hazardous material and disposed of as specified above.
48. Unsuitable and demolished elements shall be dismantled to a size fitting on ordinary trucks for transport.

#### **Health and Safety**

49. In advance of the construction work, the Contractor shall mount an awareness and hygiene campaign. Workers and local residents shall be sensitized on health risks particularly of AIDS.
50. Adequate road signs to warn pedestrians and motorists of construction activities, diversions, etc. shall be provided at appropriate points.
51. Construction vehicles shall not exceed maximum speed limit of 40km per hour.

#### **Repair of Private Property**

52. Should the Contractor, deliberately or accidentally, damage private property, he shall repair the property to the owner's satisfaction and at his own cost. For each repair, the Contractor shall obtain from the owner a certificate that the damage has been made good satisfactorily in order to indemnify the Client from subsequent claims.
53. In cases where compensation for inconveniences, damage of crops etc. are claimed by the owner, the Client has to be informed by the Contractor through the SE. This compensation is in general settled under the responsibility of the Client before signing the Contract. In unforeseeable cases, the respective administrative entities of the Client will take care of compensation.

#### **Contractor's Environment, Health and Safety Management Plan (EHS-MP)**

54. Within 6 weeks of signing the Contract, the Contractor shall prepare an EHS-MP to ensure the adequate management of the health, safety, environmental and social aspects of the works, including implementation of the requirements of these general conditions and any specific requirements of an EMP for the works. The Contractor's EHS-MP will serve two main purposes:

- For the Contractor, for internal purposes, to ensure that all measures are in place for adequate EHS management, and as an operational manual for his staff.

- For the Client, supported where necessary by a SE, to ensure that the Contractor is fully prepared for the adequate management of the EHS aspects of the project, and as a basis for monitoring of the Contractor's EHS performance.

55. The Contractor's EHS-MP shall provide at least:

- a description of procedures and methods for complying with these general environmental management conditions, and any specific conditions specified in an EMP;
- a description of specific mitigation measures that will be implemented in order to minimize adverse impacts;
- a description of all planned monitoring activities (e.g. sediment discharges from borrow areas) and the reporting thereof; and
- the internal organizational, management and reporting mechanisms put in place for such.

56. The Contractor's EHS-MP will be reviewed and approved by the Client before start of the works. This review should demonstrate if the Contractor's EHS-MP covers all of the identified impacts, and has defined appropriate measures to counteract any potential impacts.

#### EHS Reporting

57. The Contractor shall prepare bi-weekly progress reports to the SE on compliance with these general conditions, the project EMP if any, and his own EHS-MP. An example format for a Contractor EHS report is portrayed below. It is expected that the Contractor's reports will include information on:

- EHS management actions/measures taken, including approvals sought from local or national authorities;
- Problems encountered in relation to EHS aspects (incidents, including delays, cost consequences, etc. as a result thereof);
- Lack of compliance with contract requirements on the part of the Contractor;
- Changes of assumptions, conditions, measures, designs and actual works in relation to EHS aspects; and
- Observations, concerns raised and/or decisions taken with regard to EHS management during site meetings.

58. It is advisable that reporting of significant EHS incidents be done "as soon as practicable". Such incident reporting shall therefore be done individually. Also, it is advisable that the Contractor keep his own records on health, safety and welfare of persons, and damage to property. It is advisable to include such records, as well as copies of incident reports, as appendixes to the bi-weekly reports. A sample format for an incident notification is shown below. Details of EHS performance will be reported to the Client through the SE's reports to the Client.

#### Training of Contractor's Personnel

59. The Contractor shall provide sufficient training to his own personnel to ensure that they are all aware of the relevant aspects of these general conditions, any project EMP, and his own EHS-MP, and are able to fulfil their expected roles and functions. Specific training should be provided to those employees that have particular responsibilities associated with the implementation of the EHS-MP. General topics should be:

- EHS in general (working procedures);
- emergency procedures; and
- social and cultural aspects (awareness raising on social issues).

#### Cost of Compliance

60. It is expected that compliance with these conditions is already part of standard good workmanship and state of art as generally required under this Contract. The item "Compliance with Environmental Management Conditions" in the Bill of Quantities covers this cost. No other payments will be made to the Contractor for compliance with any request to avoid and/or mitigate an avoidable EHS impact.

#### 3. Example Format: EHS Report

##### Contract:

##### Period of reporting:

##### EHS management actions/measures:

Summarize EHS management actions/measures taken during period of reporting, including planning and management activities (e.g. risk and impact assessments), EHS training, specific design and work measures taken, etc.

##### EHS incidents:

Report on any problems encountered in relation to EHS aspects, including its consequences (delays, costs) and corrective measures taken. Include relevant incident reports.

##### EHS compliance:

Report on compliance with Contract EHS conditions, including any cases of non-compliance.

##### Changes:

Report on any changes of assumptions, conditions, measures, designs and actual works in relation to EHS aspects.

##### Concerns and observations:

Report on any observations, concerns raised and/or decisions taken with regard to EHS management during site meetings and visits.

##### Signature (Name, Title Date):

Contractor Representative

#### 4. Example Format: EHS Incident Notification

##### EHS Incident Notification

Provide within 24 hrs to the Supervising Engineer

Originators Reference No.:.....

Date of Incident:..... Time:.....

Location of incident:.....

Name of Person(s) involved:.....

Employing Company:.....

Type of Incident:.....

##### Description of Incident:

Where, when, what, how, who, operation in progress at the time (only factual)

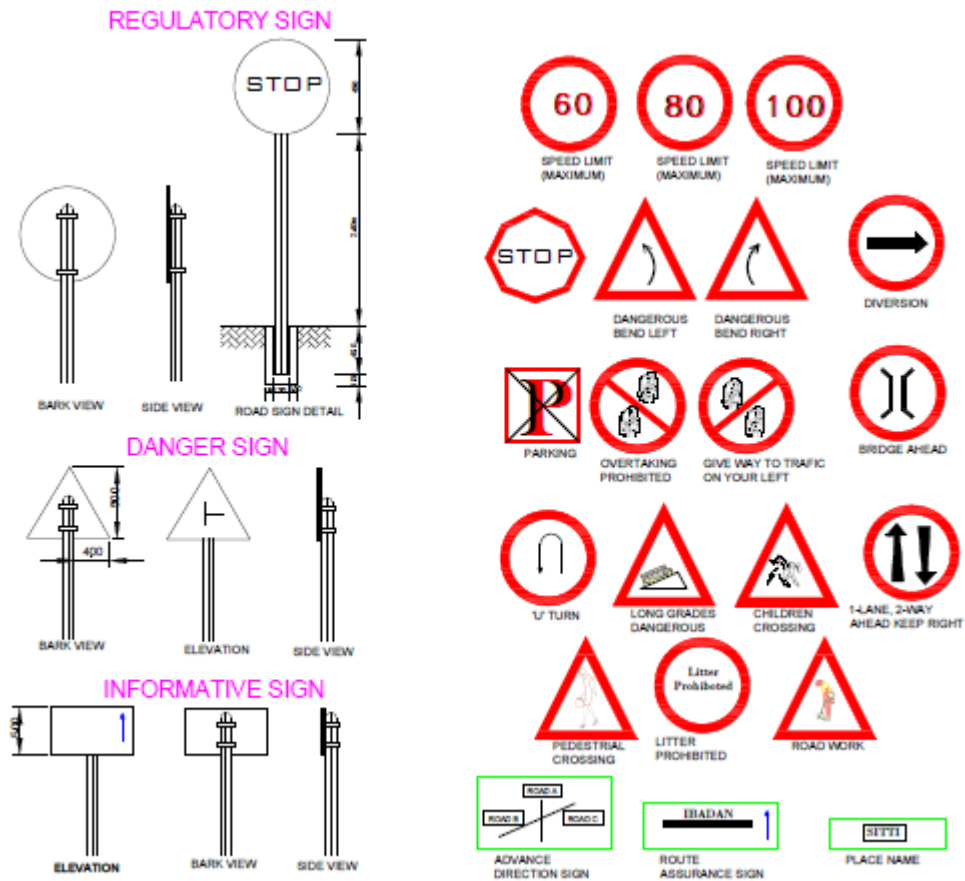
##### Immediate Action:

Immediate remedial action and actions taken to prevent reoccurrence or escalation

Signature (Name, Title, Date):.....

Contractor Representative

## ANNEX 6: ROAD SIGNS AND MARKS



## ANNEX 7: PUBLIC CONSULTATION IN PICTURES



Plate 7: Women group



Plate 8: Cross section of community participants



Plate 9: Director, Community Development, Oluyole LGA



Plate 10: Cross section of community participants



Plate 11: FGD with representatives of the male gender



Plate 12: FGD with representatives of the female gender





Plate 13: Community member making a comment



Plate 14: Community member making a comment





ATTENDANCE SHEET					
COMMUNITY/STAKEHOLDER CONSULTATION- FOR THE PREPARATION OF ENVIRONMENTAL AND SOCIAL MANAGEMENT PLANS (ESMPs) FOR THE RECONSTRUCTION OF THE CELE-RAINBOW- OJOEKUN - AJANAKU WAY- AGARA CULVERT					
Date: 31 <sup>st</sup> July 2015					
NO	NAME	COMMUNITY/ORGANIZATION/ ASSOCIATION	DESIGNATION	PHONE	EMAIL
103	Mrs. Adeniyi	Kelewa for Zone A	Landlady	0814885962	
104	Mr. Oluwalan	"	"	0805865414	
105	Mr. Oluwalan	"	"	09051247162	
106	Mr. Oluwalan	"	"	08052387897	
107	Mr. Joseph	"	"	08076727697	
108	Mr. Oluwalan	"	"	0805322847	
109	Mr. Oluwalan	"	"	"	
110	Mr. Oluwalan	"	"	"	
111	Mr. Oluwalan	"	"	"	
112	Mrs. Akintunde	Kelewa for Zone A	Landlady	0805865414	
113	Mr. Oluwalan	"	"	0805865414	
114	Mr. Oluwalan	"	"	0805865414	
115	Mr. Oluwalan	"	"	0805865414	
116	Mr. Oluwalan	"	"	0805865414	
117	Mr. Oluwalan	"	"	0805865414	
118	Mr. Oluwalan	"	"	0805865414	
119	Mr. Oluwalan	"	"	0805865414	
120	Mr. Oluwalan	"	"	0805865414	

ATTENDANCE SHEET					
COMMUNITY/STAKEHOLDER CONSULTATION- FOR THE PREPARATION OF ENVIRONMENTAL AND SOCIAL MANAGEMENT PLANS (ESMPs) FOR THE RECONSTRUCTION OF THE CELE-RAINBOW- OJOEKUN - AJANAKU WAY- AGARA CULVERT					
Date: 31 <sup>st</sup> July 2015					
NO	NAME	COMMUNITY/ORGANIZATION/ ASSOCIATION	DESIGNATION	PHONE	EMAIL
121	Mr. Oluwalan	Kelewa for Zone A	Landlady	0805865414	
122	Mr. Oluwalan	"	"	0805865414	
123	Mr. Oluwalan	"	"	0805865414	
124	Mr. Oluwalan	"	"	0805865414	
125	Mr. Oluwalan	"	"	0805865414	
126	Mr. Oluwalan	"	"	0805865414	
127	Mr. Oluwalan	"	"	0805865414	
128	Mr. Oluwalan	"	"	0805865414	
129	Mr. Oluwalan	"	"	0805865414	
130	Mr. Oluwalan	"	"	0805865414	
131	Mr. Oluwalan	"	"	0805865414	
132	Mr. Oluwalan	"	"	0805865414	
133	Mr. Oluwalan	"	"	0805865414	
134	Mr. Oluwalan	"	"	0805865414	
135	Mr. Oluwalan	"	"	0805865414	
136	Mr. Oluwalan	"	"	0805865414	
137	Mr. Oluwalan	"	"	0805865414	
138	Mr. Oluwalan	"	"	0805865414	
139	Mr. Oluwalan	"	"	0805865414	
140	Mr. Oluwalan	"	"	0805865414	

ATTENDANCE SHEET					
COMMUNITY/STAKEHOLDER CONSULTATION- FOR THE PREPARATION OF ENVIRONMENTAL AND SOCIAL MANAGEMENT PLANS (ESMPs) FOR THE RECONSTRUCTION OF THE CELE-RAINBOW- OJOEKUN - AJANAKU WAY- AGARA CULVERT					
Date: 31 <sup>st</sup> July 2015					
NO	NAME	COMMUNITY/ORGANIZATION/ ASSOCIATION	DESIGNATION	PHONE	EMAIL
141	Mr. Oluwalan	Kelewa for Zone A	Landlady	0805865414	
142	Mr. Oluwalan	"	"	0805865414	
143	Mr. Oluwalan	"	"	0805865414	
144	Mr. Oluwalan	"	"	0805865414	
145	Mr. Oluwalan	"	"	0805865414	
146	Mr. Oluwalan	"	"	0805865414	
147	Mr. Oluwalan	"	"	0805865414	
148	Mr. Oluwalan	"	"	0805865414	
149	Mr. Oluwalan	"	"	0805865414	
150	Mr. Oluwalan	"	"	0805865414	
151	Mr. Oluwalan	"	"	0805865414	
152	Mr. Oluwalan	"	"	0805865414	
153	Mr. Oluwalan	"	"	0805865414	
154	Mr. Oluwalan	"	"	0805865414	
155	Mr. Oluwalan	"	"	0805865414	
156	Mr. Oluwalan	"	"	0805865414	
157	Mr. Oluwalan	"	"	0805865414	
158	Mr. Oluwalan	"	"	0805865414	
159	Mr. Oluwalan	"	"	0805865414	
160	Mr. Oluwalan	"	"	0805865414	

ATTENDANCE SHEET					
COMMUNITY/STAKEHOLDER CONSULTATION- FOR THE PREPARATION OF ENVIRONMENTAL AND SOCIAL MANAGEMENT PLANS (ESMPs) FOR THE RECONSTRUCTION OF THE CELE-RAINBOW- OJOEKUN - AJANAKU WAY- AGARA CULVERT					
Date: 31 <sup>st</sup> July 2015					
NO	NAME	COMMUNITY/ORGANIZATION/ ASSOCIATION	DESIGNATION	PHONE	EMAIL
161	Mr. Oluwalan	Kelewa for Zone A	Landlady	0805865414	
162	Mr. Oluwalan	"	"	0805865414	
163	Mr. Oluwalan	"	"	0805865414	
164	Mr. Oluwalan	"	"	0805865414	
165	Mr. Oluwalan	"	"	0805865414	
166	Mr. Oluwalan	"	"	0805865414	
167	Mr. Oluwalan	"	"	0805865414	
168	Mr. Oluwalan	"	"	0805865414	
169	Mr. Oluwalan	"	"	0805865414	
170	Mr. Oluwalan	"	"	0805865414	
171	Mr. Oluwalan	"	"	0805865414	
172	Mr. Oluwalan	"	"	0805865414	
173	Mr. Oluwalan	"	"	0805865414	
174	Mr. Oluwalan	"	"	0805865414	
175	Mr. Oluwalan	"	"	0805865414	
176	Mr. Oluwalan	"	"	0805865414	
177	Mr. Oluwalan	"	"	0805865414	
178	Mr. Oluwalan	"	"	0805865414	
179	Mr. Oluwalan	"	"	0805865414	
180	Mr. Oluwalan	"	"	0805865414	

ATTENDANCE SHEET					
COMMUNITY/STAKEHOLDER CONSULTATION- FOR THE PREPARATION OF ENVIRONMENTAL AND SOCIAL MANAGEMENT PLANS (ESMPs) FOR THE RECONSTRUCTION OF THE CELE-RAINBOW- OJOEKUN - AJANAKU WAY- AGARA CULVERT					
Date: 31 <sup>st</sup> July 2015					
NO	NAME	COMMUNITY/ORGANIZATION/ ASSOCIATION	DESIGNATION	PHONE	EMAIL
181	Mr. Oluwalan	Kelewa for Zone A	Landlady	0805865414	
182	Mr. Oluwalan	"	"	0805865414	
183	Mr. Oluwalan	"	"	0805865414	
184	Mr. Oluwalan	"	"	0805865414	
185	Mr. Oluwalan	"	"	0805865414	
186	Mr. Oluwalan	"	"	0805865414	
187	Mr. Oluwalan	"	"	0805865414	
188	Mr. Oluwalan	"	"	0805865414	
189	Mr. Oluwalan	"	"	0805865414	
190	Mr. Oluwalan	"	"	0805865414	
191	Mr. Oluwalan	"	"	0805865414	
192	Mr. Oluwalan	"	"	0805865414	
193	Mr. Oluwalan	"	"	0805865414	
194	Mr. Oluwalan	"	"	0805865414	
195	Mr. Oluwalan	"	"	0805865414	
196	Mr. Oluwalan	"	"	0805865414	
197	Mr. Oluwalan	"	"	0805865414	
198	Mr. Oluwalan	"	"	0805865414	
199	Mr. Oluwalan	"	"	0805865414	
200	Mr. Oluwalan	"	"	0805865414	