SECOND RURAL ACCESS AND MOBILITY PROJECT (RAMP-2)

Under the

Federal Ministry of Agriculture and Rural Development

(WORLD BANK ASSISTED)

OSUN STATE

FINAL REPORT

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

For the

Construction/Rehabilitation of Prioritized Rural Roads and River Crossings

December 2014

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Acronyms

ARAP	Abbreviated Resettlement Action Plan
CITES	Convention on International Trade in Endangered Species of wild Fauna and Flora
CO	Carbon Monoxide
CPS	Country Partnership Strategy (World Bank)
ECOWAS	Economic Community of West African States
EIA	Environmental Impact Assessment
ESIA	Environment and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FEPA	Federal Environmental Protection Agency
FGN	Federal Government of Nigeria
FMARD	Federal Ministry of Agriculture and Rural Development
FMEnv	Federal Ministry of Environment
IDA	International Development Association
MARPOL	Marine Pollution by Dumping of Waste
MDG	Millennium Development Goal
NIMET	Nigerian Meteorological Agency
NRTTP	National Rural Travel and Transport Policy
NEEDS	National Economic Empowerment & Development Strategy
NGO	Non-Governmental Organization
OP	Operational Policy (World Bank)
PAD	Project Appraisal Document
PPA	Project Preparatory Advance
RAMP-II	Second Rural Access and Mobility Project
ROW	Right of Way
RPF	Resettlement Policy Framework
R&R	Resettlement and Rehabilitation
RTTP	Rural Travel and Transport Program
SPM	Suspended Particulate Matter
SPIU	State Project Implementation Unit
TOR	Terms of Reference
VOC	Volatile Organic Carbon

EXECUTIVE SUMMARY

Report Background

The Rural Access and Mobility Project (RAMP) respond's to the urgent and critical need to improve rural roads in Nigeria. It is being implemented by the Federal Government of Nigeria with financing from the World Bank (WB) and French Development Agency (AFD) in four States in Nigeria, including Osun.Each implementing state possesses a semi-autonomous implementing agency, including the Osun RAMP.

This report outlines the Environmental and Social Management Plan (ESMP) for the Second Rural Access and Mobility Project (RAMP-2) in Osun State. It focuses on the initial 224.62KM of prioritized rural roads and river crossings to be constructed or rehabilitated under RAMP-2 in Osun State.

The Consultants' study team commenced the survey in February 2012. The ESMP kicked off with preliminary meetings with the SPIU officials of Osun State and the Federal Ministry of Environment. Survey activities involved (i) preliminary consultations, (ii) reconnaissance visit to project cluster roads. (iii) Public consultations, (iv) Literature Review (v) Fieldwork, involving survey of the biophysical and socioeconomicenvironment, including Focus Group Discussions and Questionnaire administration. Laboratory analysis was entrusted to M/s Searchgate Laboratories Limited; Lagos, an accredited laboratory by Federal Ministry of Environment, Housing and Urban Development.

Report Findings

Impacts

The project promises a range of positive environmental and social impacts. These include, but not limited to:

- Improved access to inputs, markets, production outputs as well as movement of people leading to improved agro-business.
- Employment in the course of construction and civil works
- Reduction of hardship, particularly for women
- Improved access to schools and health facilities, especially in emergencies e.g women in labour
- Others

Negative impacts to mitigate include:

- Involuntary resettlement as a result of Land take/acquisition
- Deforestation resulting from construction activities
- Pressure on existing infrastructure
- Soil erosion
- Water pollution
- Air pollution
- Noise pollution

- Spread of diseases
- Traffic and workers accidents
- Waste generation
- Temporary disruption of transportation
- Transmission of communicable diseases, social/moral habits and cultural values. Exposure to STDs/HIV. Change in local culture and society
- Potentials for increase in vehicular accidents
- Injuries and accidents resulting from poorly decommissioned burrow pits
- Insect vectors and spread of disease from poorly decommissioned burrow pits

Mitigation Measures

Mitigation measures were readily provided and mainstreamed in the ESMP to ensure environmental and social sustainability.

Monitoring and supervision

Monitoring and supervision of the Environmental and Social safeguard measures will run through every phase of the project. Key role players are:

- Osun RAMP
- Contractor/ Contractor's Environmental Officer
- Supervising Consultant

The Osun RAMP Environmental Officer shall take the foremost responsibility for safeguards management and supervision. He/She shall report to the Osun RAMP Project Coordinator (PC). Critical stakeholder issues shall involve the collaboration of other key officers of Osun RAMP such as the Project Engineer, Communications officer and Monitoring and Evaluation Officer, which will altogether compose the Environmental and Social Management Unit (ESMU)

Osun RAMP shall ensure that major engineering solutions are incorporated into the contracts for the contractor and supervising contractors. In this case, the Project Engineer shall play a significant role. Additionally, OsunRAMP will incorporate stage by stage details of activities to be carried out and monitored from the pre- construction stage through construction, completion, and decommissioning stages.

Under the supervision of the supervising consultant, the contracting firm shall ensure the implementation of the major mitigation measures

Instruments for effective management shall include (i) Monitoring checklists (ii) Duty roasters and (iii) Reporting format templates etc.

Capacity Strengthening and Training

Institutional strengthening may be required at different levels to ensure adequate interpretation and activation of the ESMP. This implies that training for project and contract staff on environmental management should to be conducted. A training program has been proposed, which includes:

(i) Refresher and Advanced courses on World Bank's Environmental Safeguard Policies, OP 4.01 and OP 4.12 for PC - Osun RAMP (PC, Environmental Officer, Project Engineer, Communication officer, M&E Officer, Project Accountant); Contractor's Environmental Officer; Supervising Consultant; Contractor/ Resident Site Engineer

(ii) General environmental awareness training and ESMP mitigation measures for Site workers and Community stakeholders

Budget for Environmental and Social Management Plan Implementation

The implementation cost of the ESMP is **Three Million, Three Hundred and Fifty Thousand Naira** (**Twenty Thousand, Nine Hundred and Thirty-Seven Dollars only)** which includes mitigation cost, monitoring cost, capacity training cost and contingency. The breakdown of the implementation cost is as follows: This is broken down as follows:

ESMP Implementation	₦ 2,050,000 or $12,812
ESMP Monitoring	₦ 1,000,000 or $6,250
Training	₦300,000 or $,1,875

1.0 BACKGROUND AND INTRODUCTION

1.1 Introduction

This report outlines the Environmental and Social Management Plan (ESMP)for the Second Rural Access and Mobility Project (RAMP-2) in Osun State. It focuses on the initial 224.62KM of already prioritized rural roads and river crossings to be constructed or rehabilitatedunder RAMP-2 in Osun State. RAMP-2 is being implemented by the Federal Government of Nigeria with financing from the World Bank (WB) and French Development Agency (AFD) in four States in Nigeria, including Osun.

1.2 Project Background

The absence or poor condition of roads, culverts and bridges in the rural areas of Nigeria has for long diminished the economic and socio-cultural wellbeing of her rural dwellers. The Rural Access and Mobility Project (RAMP) respond's to the urgent and critical need to improve rural roads, thereby:

- Enhancing accessibility and mobility in the rural areas
- Easing the movement of people and their agricultural inputs and outputs.
- Reducing vehicle operating costs and travel times
- Improving rural and national economy, especially in the agricultural sector
- Reducing mobility hardship, especially for women

Osun State is one of the benefitting States of RAMP 2. This ESMP covers the rural roads prioritized for construction and rehabilitation in Osun State, which are in 3 clusters, namely Iwo, Ile-Ife and Ilesa region. These roads are bundled into four (4) lots for systematic procurement management - as further described in section 2 (Project Description) and listed in Appendix 1.

This ESMP builds upon an Environmental and Social Management Framework (ESMF) that was previously developed for the Project. Additionally, it improves upon a previously developed ESMP, which did not meet thespecified country and World Bank standards.

RAMP 2 has three (3) components. These are:

Component 1: **Rehabilitation of Rural and State Roads**

This component would finance rehabilitation works for an indicative 500km of rural roads and state roads in each of the initial four states (including Osun State).

Components 2: **`Roads Maintenance and Local Development**

Components 3: **Capacity Building and Project Administration**

1.3 Objectives

The main objective of the consultancy service is to prepare a site specific ESMP for the project in Osun State. In specific terms, it requires the following:

- Review and update of the existing ESMP prepared.
- Identification of potential impacts that may occur during the construction and rehabilitation of rural roads within the project areas.
- Development of detailed mitigation measures with relevant costs implication that will need to be achieved during and after sub-project implementation
- Specification of responsibilities and institutional arrangements that will be in place to ensure that the mitigation measures are implemented, and
- Provision of implementation and monitoring schedule

1.4 Scope of Consultancy

The scope of work for the assignment is as follows:

(i) Develop an Environmental and Social Management Plan (ESMP) with indicative costs for implementation.

- Identify those construction and/or rehabilitation activities that may have detrimental impact on the environment and the society in each of the lots;
- Determine the mitigation measures that will need to be taken into consideration, and the procedures for their implementation;
- Define the institutional arrangements for implementing activities to mitigate adverse environmental impacts, suppressing or reducing them to acceptable levels;

(ii) Review the existing ESMP reports for the 4 lots and provide improvement;

(iii) Align the existing ESMP with the design of the road to ensure that there are no discrepancies between the technical specifications of the works to be implemented and the ones used for the development of the ESMP

1.5 ESMP Approach and Methodology

This ESMP was prepared in accordance with country and World Bank safeguard policies and procedures; as well as the guidelines set out in the ESMF previously developed. Baseline information on Environment and Socio-Economic conditions was captured through secondary as well as primary data. Specific activities are outlined below

Activity1: Preliminary Consultations

The ESMP kicked off with preliminary meetings with the SPIU officials of Osun State and Federal Ministry of Environment. The Consultants study team visited Osun state between 13.03.2012 to 15.03.2012. The team met with the SPIU officials including the Environmental specialist for RAMP-2. Discussions centred on the survey approach and schedule; obtaining relevant Project information and documents, logistics etc.

Public consultation questionnaires were designed and shared with SPIU officials.

The study team also visited the State Ministry of Environment to discuss EIA/ESMP procedures in Nigeria and to further understand the related policy and legal framework to be followed for ESIA study in Nigeria. Key issues discussed included:

- State expectations;
- Existence of any kind of protected area (e.gwild life sanctuary) in project road areas;
- Project implementation framework

Fig 1: Meeting with Osun State SPIU Members

Activity 2: Reconnaissance visit to project cluster roads.

A Reconnaissance survey was undertaken by the study team to project roads covering all the three clusters. This afforded the team first-hand views into the social and environmental issues of the project. The geography of the terrain was observed as well as the people. Economic activities were observed first hand as well as several other environmental and social factors.

Additionally, a road condition survey was carried out. Observations were as follows:

- Project roads are earthen roads with varying width from 4m-6m;
- Roads are degraded in places with pot holes;
- Natural vegetation and farm lands exist along the project roads;
- The first two meters on either side of the project roads comprises mostly of bushes and few economic crops;
- The project roads can be developed within the existing carriageway with some geometrical improvement and realignments;

Some site visit photographs area presented below.

Figure 2a: Joint Site Visit of SPIU and Consultant's Study TeamRoad Condition Survey Pics

Figure 2b: Joint Site Visit of SPIU and Consultant's Study Team:Road Condition Survey

Activity 3: Public Consultations

The study team conducted two public consultation in Ila Village (under Ilesa region) and at Isero village (under Iwo region) to share information and learn from the communities. This afforded the enrichment of the survey methods, instruments and findings from feedback of villagers. It also helped in project screening. Details of the consultations are provided in the Appendices

Activity 4: Literature Review

Relevant documents were gathered and reviewed. Amongst these were:

- Previously developed Environmental and Social Management Plan (ESMP)
- Previously developed Environmental and Social Management Framework (ESMF)
- Project Appraisal Document (PAD)
- Project Implementation Manual (PIM)

- Federal and state environmental laws regulations
- World Bank's Safeguard Policies. Procedural manuals on Environmental Assessment
- Engineering designs and tender documents
- Relevant State policy documents, conventions etc
- ESMF prepared for Kaduna State under RAMP-1 and
- ESMF prepared for RAMP-II including state of Osun.

Activity 5: Fieldwork II: Socioeconomic Survey

Focus Group Discussions

A total 13 Focus Group Discussions (FGD) were conducted. Eleven of these focused on local communities in Iwo, Ilesha and Ife along the 3 clusters of roads. Additionally, one FGD was conducted with forest officers of Shasha Native forest and one in a local market.

Questionnaire administration

Questionnaires were administered to gather information on the baseline social conditions as well as perceptions on the Project. (See Appendices)

2.0 PROJECT DESCRIPTION

The rural roads prioritized for construction and rehabilitation in Osun State are in 3 clusters, namely Iwo, Ile-Ife and Ilesa region. For administrative reasons, these roads are bundled into four (4) lots as listed below.

TABLE 2.1: LIST OF ROADS

NO	PROJECT NAME	Distance Kilometer	LOCAL GOVERNMENT
	Lot 1 (Iwo Region)		
1.	Agboowu/Ogbaagba – Idiroko – Eleru – Bode-Osi – Aba Onile	11.6km	Ola-Oluwa
2.	Bode-Osi township – Asa Junction (Double Bitumen Surface Treatment (DBST)	1.4km	Ola-Oluwa
3.	Asa – Dagbolu – Ajagunlaase (Double Bitumen Surface Treatment (DBST)	3.1km	Ola-Oluwa
4.	Eleke - Kanko	3.91 km	Ayedire
5.	Agoro – Ikonifin	11.6km	Iwo and Ola-Oluwa
6.	Ikonifin – Sade – Ajagunlaase	13.63km	Ola-Oluwa
7.	Akinleye – Aba Ayo – Isero	7km	Iwo
8.	Pataara – Ileko-Oba – Odo-Omi – Farm Settlement Road 1	4.6km	Iwo
9	Farm Settlement Spur	1.9km	Iwo
	Lot 2 (Ife Region 1)		
10	JagunOsi/Onikoko – Osi-Sooko	10.5km	Ife South
11.	Osi-Sooko – Osi-Ara (Elebu)	9.5km	Ife South
12.	Osi-Ara – Falala (YiminOja)	9.3km	Ife South
13.	Alogba (Gbengbeleku Junction) – Owode Amu	10.9km	Ife South
14.	Owode-Amu – OyereFadehan	18.2km	Ife North
	Lot 3 (Ife Region 2)		
15.	Shasha Road (Lawoka Junction) – Apoje junction	53.87km	Ife South
	Lot 4 (Ilesa Region)		
16.	Ilesa – Odogbo – Araromi – Igbowiwi	8.73km	Atakumosa East
17.	Ilesa – Ilo-Olomo boundary (Double Bitumen Surface Treatment (DBST)	3km	Atakumosa East
18.	Ira – Ikeji-Ile – JABU	8.3km	Oriade
19.	Ira Township (Double Bitumen Surface Treatment)	0.8km	Oridade
20.	Ikeji-Ile Township (Double Bitumen Surface Treatment)	1km	Oriade
21.	Ira – Ikeji-Ile – Ajebandele/Arinmo	2km	Oriade
22.	Ira – Ikeji-Ile – Oligeri – Iragbiji – Oniyo – Ogbomoso	11.3km	Oriade
23.	Isale-General Hospital – Moroko – Oke-Bode	10.9km	Ilesa West
24.	Isale General Hospital township road (Double Bitumen Surface Treatment (DBST)	1km	Ilesa West
25.	Odogbo – Iwara	6.58km	Atakumosa East
	TOTAL	224.62Km	

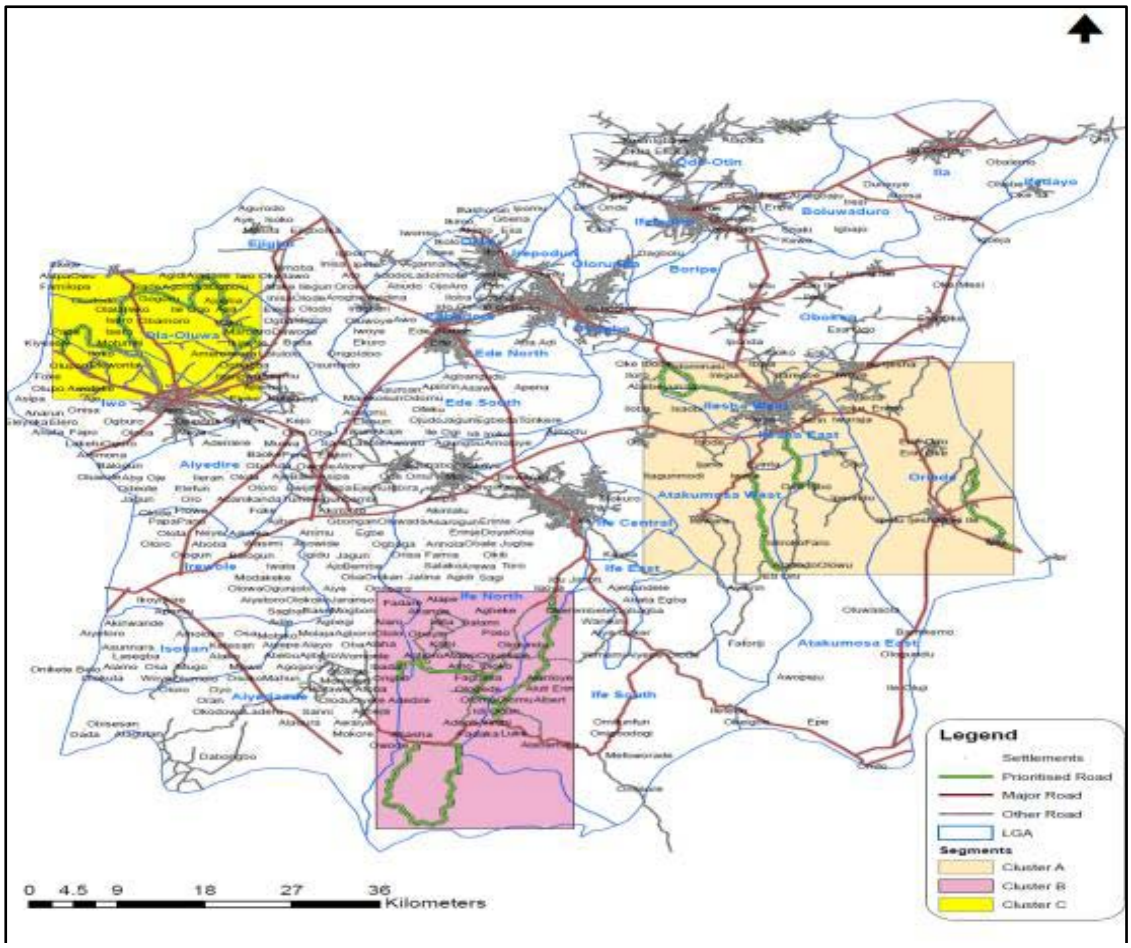


Figure 6: Location Map Osun State Ramp-2 Project Sites

The selected roads were prioritized on the basis of:

- Being local government and state link roads - not federal roads.
- Being feeder roads that link up paved state and federal roads; as well as major market places, areas of medium to high agricultural and mining production.
- Links that are inaccessible due to impassable terrain (collapse or damage culverts, marshy areas) and difficult topographical terrain. The project focuses on recreation of basic access and on roads in poor state.
- Being roads with current average daily vehicle traffic (AADT) of less than 50 vehicles per day (vpd).
- Avoidingcreating access to environmentally sensitive and protected areas (national parks; protected forests) to minimize the risk of excessive logging, illegal hunting, forest clearing (cut and slash burning) for agriculture and to protect plant and animal.

The road works will include earthworks, laterite materials, and construction of new pipe and box culvertsas well as repairs and extension of existing culverts.

Horizontal Alignments: The improved link will follow existing road alignment. Minor deviations (short cuts) will be permitted for tracks reopened to vehicle traffic.

Vertical Alignments: They will follow essentially the existing topography. Minor cuts and fills will be considered in sections of excessive gradients. In sections liable to flooding and marshy areas the road embankment will be raised to a minimum height of + 0.5 m above maximum water level.

Crossing of zones consisting of sub-soils of insufficient strengths (e.g. CBR< 10: clayey soils): If these zones are limited in length, building up of road embankments ongeo-textiles shall be preferred to soil replacement. If such crossings are excessive in length, alternative and more cost efficient horizontal alignments shall be sought (ridge road).

Existing Road Features

The terrain is predominantly plain and rolling. There are some horizontal and vertical curves along the project stretch. Steep gradients also feature in some roads in the Ilesa region.The riding quality of Pavement is fair to poor.The existing carriageway width varies from 4 to 6m and there is no clearly defined RoW.

The general condition of the drainage system is very poor; lacking sufficient camber to drain off the water from the carriageway surface, which worsens during the rainy season.

Design Features

The roads shall be widened - opened to 6.0M; shoulder width is 1.0m on each side with a 5% camber. A slope of 2 H: 1 V has been adopted for earthen embankment in general filling areas and for cut section a slope of 1V: 1H has been adopted. Slope beyond Embankment Height of 3.0 is designed for a side slope of 1.5 H: 1 V.

The proposed design speed is 50-60 km/h. However, to save the building adjacent to road side the design speed has been kept at lower side at selected locations. All geometric design aspects have been carried out as per the Federal Highway Design Manual,1, 2008.Existing profiles shall be maintained as far as possible.

Culverts and Bridges

There are a total of 143 culverts on the project roads, including 84 box culverts and 59 Pipe culverts

EquipmentProposed

Types of equipment to be used for the project are excavator, concrete mixer, dozers, motor grader, water tanker, smooth wheeled loader, vibratory loader, generator, tipper, tractor-trolley, asphalt paver, bitumen pressure distributor, cooker, air compressor, mechanical broom, portable mixer for asphaltic concrete preparation, others.

Labour Camps

Two (2) numbers of construction camps are being proposed for each ofthe project clusters. The estimated size of each work camp is 100M X30M =3000SQM=0.3 HCT. The proposed facilities in each construction camp are laboratory, site office, labour camp,

storage space for material, toilet, vehicle parking area and open space. The open space will be approximately about 30% of the gross area.

Quarry and Borrow Areas

The required quarry materials for the project shall be taken from nearby regions inBode Osi- Idiroko, Telemu-Ileogbo, Ajagunlase-Asa, Akinleye-Ajagunlase, Pataara-Ileeko 1, Agoro-Akinleye, Ife, Onikoko-Osi, Gbengbeleku-Olomu, Lawoka-Araromi, Ilesa, Ira Ikeji-Ogbomosho, Ira – Aradeji, Odogbo-Araromi, Odogbo-Iwara, Odogbo Junction-Odogbo Village, Ijesa-Okebode

Project Schedule and Activities

The total duration for the construction of project roads has been considered as 2 years.
Apre-constructionof four months will involveclearing and grubbing of road land; dismantling of structures within row; cutting of trees; utility shifting if required; preparation of base camp and stacking of material.

The Construction phase of 20 months will involve earthwork excavation,embankment preparation,preparation of sub base,preparation of base,preparation of asphaltic surface courseto prevent erosion, where applicable construction of pipe and box culverts,construction of lined and unlined drain,installation of traffic signs for safety of pedestrian and vehicular traffic.

Operations involve routine maintenance every year; periodic maintenance every5 years and emergency maintenance, when required

3.0 POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

"*The State shall protect and improve the environment and safeguard the water, air, land, forest and wild life of Nigeria*." (S.20, Constitution of the Federal Republic of Nigeria)

Towards achieving this set standard, several subsidiary laws and regulations have been made and international conventions and other instruments embraced. These include:

- National Policy on Environment (1989) and as reviewed in 1999
- Laws and regulations, standards, policies, codes and recommended practices relating to the Infrastructural Development by the Nigerian Government and its Agencies such as the Federal Ministry of Environment and the Osun State Ministry of Physical Planning.
- International guidelines and conventions to which Nigeria is a signatory.

This section outlines the germane Nigerian legislation, guidelines and international conventions that are relevant to the project.

3.1 Nigerian Government regulators and regulations

3.1.1 National agencies

Relevant edicts are provided below.

- **The FEPA Act**

The Federal Environmental Protection Agency (FEPA) was established by Decree No. 58 of 1988;first amended by Decree 59 of 1992; and later amended by Decree 14 of 1999. FEPA was absorbed into the Federal Ministry of Environment (FMENV) in 1999 by a presidential directive and its functions among others are now the responsibility of the new Ministry. The FEPA Act has now been repealed in the NESREA Act No 25 of 2007.

- **Act No 25 of 2007 creating The National Environmental Standards and Regulations Enforcement Agency (NESREA)**

NESREA was created in 2007 to take responsibility for (i) the protection and development of the environment, biodiversity conservation; (ii) sustainable development of Nigeria's natural resources; (iii) development of environmental technology, (iv) coordination and liaison with relevant stakeholders within and outside Nigeria on matters of enforcement of environmental standards, regulations, rules, laws, policies and guidelines etc.

With regard to waste, sewage and domestic effluent control there are Federal Regulations and State Sanitation Laws. Some of these regulations include:

The National Guidelines and Standards for Environmental Pollution control in Nigeria (March, 1991), which is the basic instrument for monitoring and controlling industrial and urban pollution;

The National Environmental Protection (Effluent Limitation) Regulations S.I.8 of 1991, makes it mandatory for industrial facilities to install anti-pollution equipment, treat

effluent and prescribes maximum limits of effluent parameters allowed for discharge. It also provides that all industries in Nigeria should be operated on the basis of Best Available Technology (BAT);

The National Environmental Protection (Pollution Abatement in Industries and Facilities Generating Wastes) Regulations S.I.9 of 1991, imposes restrictions on the release of toxic substances and stipulates requirements for monitoring of pollution; it also makes it mandatory for existing industries and facilities to conduct an environmental audit;

The National Environmental Protection (Waste Management) Regulations S.I.15 of 1991, regulates the collection, treatment and disposal of solid and hazardous wastes from municipal and industrial source.

The National Environmental (Sanitation and Wastes Control) Regulation S.I 28 of 2009: This regulation is on sustainable and environment friendly practices in environmental sanitation and waste management.

National Environmental (Noise Standard and Control Emission) Regulations, S.I No. 35 of 2009: This Regulation is to ensure tranquillity of surroundings and to protect the psychology well-being of the public by regulating noise levels. It prescribes maximum permissible noise levels for facilities and activities and provides mitigating measures for noise reduction.

National Environmental (Surface and Ground Water Quality) Regulation, S. I. No. 22 of 2011: establishes environmental objectives to be achieved in groundwater bodies, groundwater quality standards and threshold values for the classification of groundwater and the protection of groundwater against pollution and deterioration in groundwater quality.

National Environmental (Permitting and Licensing system) Regulations, S. I. No. 23 of 2009 among other things, enables consistent application of Environmental Laws, Regulations, and Standards in all sectors of the economy and geographical regions.

Harmful Waste (Special Criminal Provisions etc.) Act. Cap 165, LFN 1990 criminalizes the act of transporting, dumping and depositing harmful waste on land or water.

Criminal Code Act Cap 77 LFN 1990. The Act specifies that fouling of water bodies is a criminal offence.

Environmental Impact Assessment (EIA) Act Cap 131 LFN 1991:
This law prescribes the procedure for conducting and reporting EIAs. It makes it mandatory to have an EIA study for any major development project likely to have adverse effects on the environment. It provides the development of procedures for information exchange, notification and consultation between trans- boundary.

3.1.2 Sector EIA Guidelines

In September 1995, FEPA (now Federal Ministry of Environment) published Sectoral EIA Guidelines for Infrastructural Projects in the following sectors:

- Coastal Development Project
- Port and Harbour Development Project
- Railways
- Roads and Highways,
- Airports
- Urban development project
- Domestic water supply and sanitation project
- Electrification projects

Statutory Limits for Effluents and Gaseous Emissions:

The Guidelines and Standards for Environmental Pollution Control in Nigeria (FEPA, 1991) provides interim permissible limits as protective measures against indiscriminate discharge of particulate matter and untreated industrial effluents into lakes, rivers, estuaries, lagoons and coastal waters.

Air Quality Standards:

There are ambient air quality limitations and standards in Nigeria enforced by the FMENV, NESREA and Osun State Ministry of Environment

Noise Limitations

NESREA Regulation (2009) provides:

- Noise standards including acoustic guarantees;
- Guidelines for the control of neighbourhood noises especially with respect to construction sites, market and meeting places;
- Permissible noise levels in noise-prone industries and construction sites and to ensure the installation of noise dampers on noisy equipment.

Land use

Land Use Act Cap 202 LFN 1990. This legislation put an end to absolute ownership of land by the individual and community and vests "*all land comprised in the territory of each state (except land vested in the Federal Government or its agencies) solely in the hands of the Governor of the State, who would hold such land in trust for the people*."

3.2 World Bank Safeguard Policies

The World Bank's has over 10safeguard policies, with Operation Policy (OP) 4.01on Environmental assessment being the one that is directly relevant to this ESMP.

The OP 4.01 requires among others that screening for impacts is carried out early, in order to determine the level/category of EA. The Bank's project screening criteria groups projects into three categories.

- Category A - Detailed Environmental Assessment;
- Category B - Initial Environmental Examination and
- Category C - Environmental Friendly

Nigerian Regulations operate three levels of environmental assessment, which correspond in principle with the World Bank's Environmental Assessment requirements of Category A, B and C. These are:

- Environmental Impact Assessment (EIA) required;
- Partial/ Preliminary Environmental Assessment Required;
- No Further Environmental Assessment required

The World Bank and Nigeria's EA requirements are similar and the operational procedure has been harmonized, leading to (i) the previous development of the Environmental and Social Management Framework (ESMF) and (ii) the current development of this ESMP.Key requirements being demonstrated by the development of this ESMP are:

- Requirement to develop site-specific ESMPs at the point of implementation
- Early consideration of the environmental and social issues
- Identification and early consultation with stakeholders;
- Consideration of feasible alternatives to prevention of adverse impacts
- Incorporation of mitigation measures into planning and (engineering) design.

3.3 International Guidelines and Conventions

Nigeria is a signatory to several international conventions and treaties that promote the maintenance of a viable environment and achieving sustainable development. The Federal Ministry of Environment is the focal point and designated National Authority for the implementation of a number of the international conventions. The ones relevant to the project at hand are:

- Kyoto Protocol to the United Nations Convention on Climate Change, 1997
- Framework Convention on Climate Change, 1992
- Montreal Protocol on substances that Deplete the Ozone Layer 1987 (Ratified 1991)

4.0 EXISTING ENVIRONMENTAL CONDITIONS

4.1 Study Area

Osun state was carved out of the Old Oyo State in 1991. It is located in the south- western part of Nigeria, covers a land area of approximately 14,875 square kilometers. In terms of location, Osun State lies between longitude 0400'E and 05 05' and latitude 05 558" and

08 07”. The state is bounded in the south by Ogun state; in the North by Kwara state; in the west by Oyo state; and in the East by Ondo and Ekiti states.

Fig 8: Location of Ọsun State in Nigeria

The population of Osun State is 3,423,535 (2006) census.Osun State is home to several of Nigeria's most famous landmarks, including the campus of ObafemiAwolowo University, Nigeria's pre-eminent institution of higher learning. The university is also located in the ancient town of Ile-Ifẹ, the historical cultural and traditional headquarters of the Yorubasand centre of political and religious development for Yoruba culture. Other important cities and towns include the ancient kingdom-capitals of Oke-Ila, Ila-Orangun, Ijebu-Jesa, Ede, Iwo, Ejigbo, Modakeke, Ibokun, Ifetedo, Esa-Oke and Ilesa.

The socioeconomic profile of Osun State is summarised in Table 4.1

TABLE 4.1 - BRIEF PROFILE OF OSUN STATE

Date created	August 27, 1991	
Capital	Osogbo	
Major Cities:	Oke-IlaOrangun, IlaOrangun, Ijebu-Jesa, Ede, Iwo, Ejigbo, Modakeke, Ibokun, Ifetedo, Esa-Oke and Ilesa	
Geographical coordinates	Lies between latitude 7° 30'0"N and longitude 4° 30 0 E Located in the south-western Nigeria; Bounded in the north by Kwara State, in the east partly by Ekiti State and partly by Ondo State, in the south by Ogun State and in the west by Oyo State	
Land Area	Land area of approximately 14,875 sq km.	
Population	3,423,535	
Ethnic composition	People are mainly Yoruba; composed of Osun, Ifes, Ijesas and Igbominas. Language is Yoruba but there are variations in intonation and accent across the towns and cities.	
LGAs	30	Ayedaade, Ayedire, Atakunmosa East, Atakunmosa West, Boluwaduro, Boripe, Ede North, Ede South, Egbedore, Ejigbo, Ife Central. Ife East, Ife North, Ife South, Ifedayo, Ifelodun, Ila, Ilesa East, Ilesa West, Irepodun,

		Irewole, Isokan, Iwo, Obokun, OdoOtin, Ola Oluwa, Olorunda, Oriade, Orolu and Osogbo
Notable facts		
	1	The cultural and traditional headquarters of the Yorubas

The major sub-ethnic groups in Ọṣun State are Ife, Ijesha, Oyo, Ibolo and Igbomina.

Osun State is divided into three federal senatorial districts, each of which is composed of two administrative zones. The state consists of thirty Local Government Areas (LGAs), the primary (third tier) unit of government in Nigeria. The 30 LGAsare listed below along with their headquarters:

TABLE 4.2 – LGAs in OSUN

LGA	Headquarters
Aiyedaade	Gbongan
Aiyedire	Ile Ogbo
Atakunmosa East	Iperindo
Atakunmosa West	Osu
Boluwaduro	Otan-Ayegbaju
Boripe	Iragbiji
Ede North	OjaTimi
Ede South	Ede
Egbedore	Awo
Ejigbo	Ejigbo
Ife Central	Ile-Ife
Ife East	Oke-Ogbo
Ife North	Ipetumodu
Ife South	Ifetedo
Ifedayo	Oke-IlaOrangun
Ifelodun	Ikirun
Ila	IlaOrangun
Ilesa East	Ilesa
Ilesa West	Ereja Square
Irepodun	Ilobu
Irewole	Ikire
Isokan	Apomu
Iwo	Iwo
Obokun	Ibokun
OdoOtin	Okuku
Ola Oluwa	Bode Osi
Olorunda	Igbonna, Osogbo
Oriade	Ijebu-Jesa
Orolu	Ifon-Osun
Osogbo	Osogbo

4.2 Meteorology and Climate

There are two seasons annually in Osun state and Nigeria in general, the wet and dry seasons. The wet season generally starts from April and extends till October. The dry season lastsfrom November to March. The dry season starts with Harmattan – a dry chilly spell that lasts until February and a dusty atmosphere is brought about by the northeast winds blowing from the Arabian Peninsula across the hot Sahara desert. The second half of the dry season (February- March) is the hottest part of the year with temperatures getting to as high as 38degree Celsius.

4.3 Rainfall

The mean annual rainfall varies from 231.75 cm in the southern part to 206 cm in Osun State, and highest rainfall is usually recorded in the months of July and August.

Onset of rains in the project area is actually supposed to start around February and March, while cessation is about November. The lowest of about 14mm recorded in January and December, while the highest in June with average of 287mm.

4.4 Temperature

Mean maximum ambient temperature values range between 33.84°C in February and 28.8°C in August, while mean minimum temperatures range between 25.18°C in March and 23.0°C in August. Higher temperatures were recorded at the peak of the dry season, between November and May, while lower temperatures were recorded in the rainy season.

4.5 Wind Speed and Direction

The mean annual wind speed varies between a narrow range of 4.0 and 6.2m/s. Speeds are higher between July and August, the period of August break. Conversely, at the peak of the rainy season in September and October, wind speeds are lowest, measuring between 4.1 and 4.2m/s.

According to the statistics available for the last ten years the prevalent wind directions is south-westerly. Often the South-Westerly dominates the wetter period of the year in the area while North-easterlies dominate the drier season.

4.6 Relative Humidity

Relative humidity is usually in excess of 70%, especially during the peak of the wet season. Highest values of 78% occur in June to October and the lowest value of 57% was recorded in February.

4.7 Atmospheric Pressure

Atmospheric pressure is highest around November with 58.36hpa and lowest in August with51.83hpa.

4.8 Soil Characteristics

The soil is of the highly ferruginous tropical red soils typology, which is associated with basement complex rocks. As a result of the dense humid forest cover in the area, the soils

are generally deep and of two types, namely, deep clayey soils formed on low smooth hill crests and upper slopes; and the sandier hill wash soils on the lower slopes.

The well drained clay soils of the hill crest and slopes are very important, because they provide the best soils for cocoa and coffee cultivating in the state. The lighter loams are more suitable for cultivation the local food crops, such as yam, cassava, and maize. Soil degradation and soil erosion are generally not serious in the state, but considerable hill wash is recorded along the slopes of the hills.

Soil samples were collected from each of the project road section. The locations of the soil samples collected Odogbo-Iwara, Ilesa-Odogbo-Araromi, Jabu-Irakeji, Ira-Ikeji Ile, Oligeri-Iragbiji, Onikoko-Osi, Elebu-Osi, Osi-Falala, Forest Reserve and Alogba-Owode. Others are Eleru Town, Agbowu-Idiroko, Ajagunlase Town, Akinleye-Odo Omi, Agoro-Ikonifin, Eleke-Kanko

The PH range of the soil sample was 6.29- 6.90,slightly acidic The concentrations of nitrates were 36.5-44.3mg/kg and Sulphates were 33.3-43.6 the chloride concentration were 8.43-13.35mg/kg and other anions were found to be in low/moderate concentrations.

4.9 Water Resource Studies

The pH of the water samples collectedwas slightly acidic and within the required range of (6.5-8.5).No heavy metals were detected in all the samples and all other physiochemical. Parameters examined did not exceed the FMENV permissible limits.

The water sample results are given in Annexure 5.2 and 5.3 respectively.

4.10 Air Quality

During this study, key pollution indices (air pollutants) like SPM (g/m3), CO (g/m3), SO2 (g/m3),NO2 (g/m3), H2S (g/m3), and NH3 (g/m3) were measured at designated transects, using portablegas meters. The details of the air quality results are given in Appendix 5. All the parameters were well within the permissible limits.

4.11 Biological Environment

The state Osun is covered by secondary forest and in the northern part, the derived savannah mosaic predominates. Originally, virtually all parts of the state had natural lowland tropical rainforest vegetation; but this has since given way to secondary forest re-growth due to fuel wood production, road construction, clay and sand quarrying and traditional farming practices. Human interference, by way of cocoa plantation, has also replaced the forest. Hence, the natural tree species have given way to oil palm (Elacisguinniensis), gmelina and dense thickets. Mature forests still exist in the Owu forest reserve at the southern part of the state. Part of this high forest has recently been cleared to make way for forest plantations of Tectonagrandis andGmelinaarborea.

As hunting is an important traditional occupation in the state, the game population of the state has dwindled considerably. None of the thirty three game reserves in the country is located in the state, and although there is a forest reserve, it was not established to protect

game. The fauna species found in the state include grass cutter, antelope and bus pig (warthog).

4.12 Flora/Vegetation

The vegetation along the project road are mostly short grasses and timber grade trees are not observed just adjacent to project road and trees are not required to be cut down for the base station to be constructed.

4.13 Fauna

There are wild animals close or around the road clusters to be constructed in Osunstate. Animals found around the locations are poultry animals, goats, and domestic animals.

4.14 Demography

Osun state is spread over an area of 9,251km2 (3,571.8 sq mi) and based on 2006 national population headcount, the state has a population of about 3,423,535 people.

The population distribution in the state of Osun is provided below.

TABLE 4.3 – POPULATIONIN OSUN LGAs

LGA	Population
Ifefayo	37,058
Ila	62,049
Boluwaduro	70,775
Odo-Otin	134,110
Ifelodun	96,748
Olorunda	131,761
Irepodun	119,497
Orolu	103,077
Egbedore	74,435
Oshogbo	156,694
Boripe	139,358
Obokun	116,511
Oriade	148,617
Ilesha East	106,586
Atakunmosa West	68,643
Ilesha west	103,555
Ede North	83,831

Ede south	76,035
Ejigbo	132,641
Ola Oluwa	76,593
Iwo	191,377
Ajyedire	75,846
Irewole	143,599
Isokan	103,177
Ajyedaade	150,392
Ife North	153,694
Ife Central	167,254
Ife East	188,087
Atakunmosa East	76,197
Ife South	135,338
Total	**3,423,535**

Source: National Population Commission (2006)

4.15 Administrative setup

The Project area is in Osun state in the South West of Nigeria, which has its state capital at Oshogbo. OsunState has 30 Local Government Areas and Ife East Area Office, Modakeke. The local governments are headed by elected chairmen who govern within the stipulated tenure of office. The local government has careers officers working for the smooth implementation of programmes and other initiatives of the government. Departments in local governments includes; Works, Agriculture, Health, Water and Environmental Sanitation, Social Development, Finance, Administration and General Services.

4.16 Ethnic composition

People of the Project area are of the Yoruba ethnic group - who predominate much of the South west part of Nigeria. The traditional language is Yoruba. English is widely spoken and serves as the official language in governance and business.

The major sub-ethnic groups in Ọṣun State are Ife, Ijesha, Oyo, Ibolo and Igbomina, although there are also people from other parts of Nigeria. Yoruba and English are the official languages.

4.17 Religion and Beliefs

Majority of the families along the ROW were Muslims (57.89%). Christians were 26.32% and 15.79% had other forms of religion.

People of Osun State practice Islam, Christianity and paganism called traditional faith. Yoruba tradition has it that Ile-Ife in the State of Osun is where

Olodumarestarted the creation of the world. It represents the beginning of life, the birthplace of civilization, the embodiment of all that is seen and felt. Osun is the ancestral home of the Yoruba Race whether home or abroad. The state's name is derived from the River Osun, the venerated natural spring that is the manifestation of the Yoruba goddess *Osun*.

Important cultural events in the state include the OriOkeand Egungunfestival in Iragbiji, Olojoin Ife, and OsunOshogbo.

Osun Oshogbo Festival

The annual Osun-Osogbo festival is held in August. It attracts adherents and spectators from Nigeria and abroad; including foreign nationalities from Brazil, Cuba, Trinidad, Grenada, and other nations in the Americas with a significant Yoruba cultural heritage and history. Osun is one of the Orisa (the traditional deities of the Yoruba people). Annually, festivities and invocations of the Osun goddess are held along the banks of the river bearing her name into which - according to Yoruba Oratory traditions - she transformed.Ọṣun-Ọṣogbo Grove, the shrine was declared a World Heritage Site in 2005.

Fig 9: OSUN TEMPLE

4.18 Occupation

The affected population are mainly farmers, living in farming settlements

TABLE 4.4 – OCCUPATION OF PAHs

Occupation type	Percentage

Services	0
Business	0
Agriculture	100.00
Small trader	0
Household	0
Labour	0
Unemployed	0
Professional	0

Cocoa is a main export crop grown in the state. Indeed, Osun State is second only to Ondo in terms of cocoa production. Other crops are palm oil, plantain, banana and cassava. The food crops are diverse, ranging from yam, rice, maize, beans and cassava to vegetables. Furthermore, there are other known land based economic activities in the area such as lumbering and hunting.

Osun State has considerable cover of secondary forest, in addition to the forest reserves and plantation found in the southern part of the state. As a result, lumbering is an important activity. Sawmills are scattered all over the state and especially the major urban centres in the lower half of the state. Aside from timber, the resources are also utilized for fire wood.
Farming practices arestill predominantly rotational bush fallow, except in areas around urban concentrations where a combination of farmyard manure and fertilizers permit continuous cultivation. Osun State has considerable hectarage of citrus fruits, especially oranges. The citrus farms are largely own by private individuals.

Fig 10: Cocoa trees along project road sideFig 11Palm oil loaded in Idiogun village

Osun state is not yet highly industrialized. However, a few of the local industries are worth noting. These includeInternational Breweries Ltd, in Ilesha; and Cocoa Products Ltd in Ede, which together employ over 500, workers. Additionally, there are the steelrolling mill and a machine tools factory in Oshogbo, which are large scale, employing over 1,000 workers. Cottage industries are scattered. Furthermore, there are Adeniran steel and wire industries, rainbow paints etc. Cottage industries include soap making, cream making, leather works, textile units, dye units; and weaving industrial units. Others include carving, ceramics making; raffia works, cane works, foundries, gold

smiths and brick moulding. Making of black native soap is widelypracticed by rural women in the state as well as Tie and dye activities in Ede, Ola Oluwa, Oshogbo, Okuku and Awo.

4.19 Income/Expenditure

Nearly 55% respondents fall within monthly expenditure limit of ₦10,000-₦20,000, while 30% earn less than ₦10,000 naira. Fifteen per cent (15%) of the respondents fall within monthly expenditure limit of ₦20,000-₦50,000.

4.20 Land Tenure

The land tenure system, originally communal in nature, has long given way to individual tenure. This has considerably constrained access to land for Agricultural and industrial purposes. For this reason, migrant tenant farmers are able to secure land on which they grow annual food crops, albeit on a temporary basis.

4.21 Educational Level

The highest level of education attained by Project Affected Households (PAHs) is secondary school education, with 61.54%, while 38.46% attained primary education. (Table 4.6)

TABLE 4.5 – LEVEL OF EDUCATION

No formal education	0.00
Primary	38.46
Secondary	61.54
Tertiary	0 0 0.00
Above University	0 0.00

5. CONSULTATIONS

Public Consultations were carried out at different levels in line with country and World Bank requirements. Continuous involvement of the stakeholders and the affected community was ensured to obtain community support and to understand the felt needs of the people. Public consultation sessions were carried out in a two-way information flow, from project authorities to people and, from people to project authorities. The locations of the consultations were strategically chosen, combining a handy number of communitiestogether. The details of consultation location are as follows:

ILESA Cluster

- OdogboJabu - Ikeji-Arakeji-Ira at Ira
- Oligeri – Iragbiji at Ilaa village
- Isale GH – Muroko-Ila-Isolo-Ijesa-Okebode at Ilaa village

ILE-IFE Cluster

- Onikoko – Osi at Osi
- Elebu – Osi–Falala; Alogba – Owode at Owode
- Owode – Oyere at Fadahan
- Shasha Native Authority Forest Reserve Road; Shasha Reserve forest Authority and local people

IWO Cluster

- Abogimile–Eleru at Eluru
- Agbowu–Idiroko at Idi Iroko
- Akinleye–Idiroko; Eleke; Agoro–IkonifinIkonifin - Ajagunlase
  Ajagunlase - Bode Osi; Ajagunlase; Akinleye-Odo-omi-Aba-Ayo at Isero village -Isero

5.1 Outcome of Public Consultations

Outcome of Public Consultation are:

- The project is much desired by the people/benefitting communities. Project roadsare not passable during the rainy season; causing hardship, agricultural losses; poor access to hospital, schools, local markets and other social /economic destinations.
- Beneficiaries know that there could be losses to crops and structures. Losses are expected to be minor. Majority will give up some crops for the sake of the road rehabilitation and development. Many expect compensations
- No rare and endangered flora and fauna species are reported
- Project road is not being used as any migratory route by wild animals;
- The improved road condition will help the women in carrying the farm products to the local market as well in fetching water from long distance for their family

The broad outcomes from the Public consultation are presented in the table below.

Table 5.1: Outcome of Public Consultations in Ira Village

S.No	Issues Discussed	Outcome
1	How do you access the rural road? Mode of transport and frequency/numbers.	The rural roads are mostly useful during the dry season for buses, minibuses, cabs; pick up vans and timber logging trucks. During the rainy season, roads are mostly not passable, due to water logging and mud.
2	Why there is a need for the development of rural road? /Explain various benefits?	In rainy season there is no mobility along the roads. With road development, farm produce can be sold throughout the year and there will be no loss during the rainy season. For example, Cocoa begins to mature from April

		to August/September, but cannot be accessed due to rain and immobility. Therefore, lots of losses are incurred. With the project road such losses will be reduced.
3	Average daily traffic in the road	Some of the minibuses and pick up vans visit the area to a total of 20 vehicles per day and 10 logging trucks. During market days nearly 50 vehicles ply along the project road.
4	Where the nearest local market is and how much time it take in average to reach to the local market with the present condition of rural road?	10 Km away. During dry season it takes 40 minutes to reach the market through vehicles/pick up vans. However during the rainy season is worst and takes longer times.
5	What is the accident rate on these roads	Very low. Occasional
6	What is the average distance to the nearest hospital and how much time does it take to reach through the present rural road?	Travel time to nearest hospital is 30 minutes
7	What is the nearest primary/secondary school to the community children and how much it takes to reach school?	Range from 15 minutes to 30 minutes distance. For higherstudies people go outside.
8	Is there any incidence of wild animals coming in the community or crosses the rural road?	Till date no
9	Is there any migratory route of wild animal exists crossing or along the rural road?	No
10	The project road may have certain impacts on the farm lands belonging to community. Are you willing to give land for the sake of the development?	All agreed
11	The project road development may require some loss of trees/crops. What is expectation for the same?	Beneficiaries acknowledge the reality. Losses are expected to be minor. Majority will give up some crops for the sake of the road rehabilitation and development. Many expect compensations.

The summary tables for the separate town meetings are presented in Appendix 1

6 POTENTIAL PROJECT IMPACTS AND MITIGATION MEASURES

Project activities such as: land acquisition, site-clearing; grading, levelling, and compacting soil; excavation has potential impacts.The screening procedures as well as the potential positive and negative impacts are provided below

6.1 Environmental Screening Exercise

During the initial site visit to the project site between 13.03.2012 and 15.03.2012 some,important project road sections were visited to identify the major Environmental and Social factors in line with the guidelines of WB and ESMF developed for Osun State. The factors which were looked into include:

Environmental Factors:

- Sensitive areas, natural habitats, other state declared sensitive areas
- Felling of trees/Clearance of vegetative cover
- Loss of productive agricultural land
- Cuts across perennial streams or surface water bodies
- Vulnerability to natural hazards, landslides/slips, soil erosion and,
- Environmental features as wet lands, protected ground water zone, etc.

Social Factors

- Land availability
- Loss of structures
- Loss of livelihood
- Impacts on common property resources

Cultural factors such as sacred places and worship grounds were also considered.

The outcome of the Environment and Social Screening is given in Table 6.1.

Table 6.1: Outcome of Environment and Social Screening

Environmental Factors	Outcome
Sensitive areas, natural habitats,other state declared sensitive areas	In IWO and ILESA region there is no sensitive area as such, only in ILE-IFE section, wherea section of the project road passes through Shasha native forest which is a protected area. However the road in this section will be strengthened as per the existing alignment only and no additional impact is envisaged.
Felling of trees/Clearance of vegetative cover	The development of the project would involve clearance of , bushes/ vegetative cover all along the project route.
Loss of productive agriculture land	No major impacts on farm land is envisaged as there are bushes along the project road serving as buffer for 2-3 m in general from the edge of existing roads. However, in few sections such impacts could be there.
Cuts across perennial streams or surface water bodies	The project road in different clusters crosses few streams and surface water bodies. Adequate cross drainage structure are required. Raised levels of roads are suggested in design to avoid water logging
Vulnerability to natural hazards, landslides/landslips and soil erosion	Project roads are mostly in plain terrain except in selected sections in ILESA region where some undulating terrain has been observed. This section of the project road is at present prone to soil erosion. Proper drainage planning to be undertaken in this section.
Sensitive Wetlands, protected ground water zone	Such zones do not exist.
Loss of structures	Few or no structures are expected to be affected
Loss of livelihood	Loss of some crops and minor impact on livelihood isexpected.
Impact on common property Resources	Almost negligible along the project route

6.2 Potential Positive Impacts

The project promises a range of positive environmental and social impacts. The project beneficiaries are the population of poor rural communities living alongside the roads. These rural communities rely almost exclusively on agriculture and livestock for their subsistence. A significant part of the agricultural works is performed by women. The lack

of all-weather rural roads severely constrains the access of these communities to economic opportunities (agricultural inputs, markets, rural-urban linkages) as well as to social services (health and education). This scenario is expected to change for the better with the proposed project. The significant benefits arising from the road construction and upgrade are:

- Improved access to fresh produce and other market commodities.Agro-business improvements, resulting from increase access to inputs, markets, production outputs as well as movement of people
- Improved access to school, health facilities, especially in emergencies e.g women in labour
- Reduction of hardship, particularly for women fetching water; manual lifting offirewood/farm produce, other hauling etc.
- Providing employment in the course of construction and civil works

6.3 Potential Negative Impacts

The potential negative impacts are discussed in the broad themes below:

Deforestation

Road construction requires clearing of vegetation cover; which could be significant considering over 220 km of construction works to be carried out in Osun state. This also brings to mind the meteorological parameters, with implications for temperature increment as a cumulative factor with climate change. However, the project involves mostly improvements of existing rural roads, meaning vegetation shall not be cleared afresh. Therefore the chances of change in macro and micro climate are very low. However, some tree felling and clearance of vegetation will be required, which may add to climate change factors on the micro-climate temperature increment. It is expected that this impact could be brought to the absolute minimal or fully mitigated by adequate control measures

Pressure on existing infrastructure

The pressure on local infrastructure and services, such as water/local wells will be increased with the influx of construction workers and demand for water for construction.
As part of the project construction, camps will be located at 2 identified locations for each of the project clusters. The construction schedule is for 24 months; of which pre-construction is for 4 months and rest 20 months will be for construction stage. The labour requirement is provided in Table 6.2 below.

Table 6.2: Labour Requirement

Project Phases	Type of Labour Requirement	Labour Requirement
Pre-Construction	Skilled Labor:	10
	Unskilled Labor	80
Construction	Skilled Labor	30
	Unskilled Labor	150

Project Phases	Type of Labour Requirement	Labour Requirement
Operation	Skilled Labor:	5
	Unskilled Labor	40

Solid Waste Generation

Construction solid waste such as cement bags, metals, plastics, carpentry spoil and living waste could cause secondary pollution if not cleared in time. Additionally, domestic waste from construction camps could be significant. Poor disposal of waste has secondary potentials for spread of disease, contamination of drinking water (ground and surface), degradation of aquatic ecosystems and generation of greenhouse gases.

From the observation on current management of waste streams around the area, wastes are poorly disposed as these areas are not covered by the Osun State Waste Management Authority, being remote and not easily accessible.

Storm Water Runoff, Erosion, Sedimentation and Contamination

Removal of natural land cover, excavation, extraction of construction materials and other construction-related activities can result in soil erosion, thus there is environmental risk from storm water runoff and flooding of farms, resulting in loss of crops, disruption of access to farms and sacred places; blockage of routes as well as rapid soil loss by erosion.

In turn, erosion can lead to sedimentation in receiving waters. Sedimentation may reduce the capacity of ponds and reservoirs, increasing flood potential, or substantially altering aquatic ecosystems by changing streambed, lakebed and estuary conditions. Sediment, particularly construction materials flowing into the storm water drainage system, poses nuisance to workers and residents in adjoining communities.

Another related sensitive factor is the risk of loss of access and disturbance to graveyards, burial plots and sacred areas located adjacent to the project roads.

Additionally, contamination of ground and surface water supplies can be caused by toxic construction materials, such as solvents, paints, vehicle maintenance fluids (oil, coolant), and diesel fuel. Contamination of ground or surface water by spills or dump of hydraulic oil, motor oil or other harmful mechanical fluids puts workers at risk from exposure to hazardous materials. If these are dumped on the ground or wash into streams they may contaminate ground or surface water supplies. This may harm the health of the local community, as well as populations living downstream. Aquatic and terrestrial ecosystems may also be damaged. Where sanitary facilities for construction crews are inadequate, human waste may contaminate water resources.

Air Emissions

Dust will be raised from construction activities such as evacuation, backfilling, demolition and transportation, loading, unloading and piling of sand. Air quality will be impacted by emissions from vehicles, earthmoving equipment and released particulate matter. This could have health impacts on the workers particularly.

The excavation of quarries and borrow pits used for obtaining rocks, soil and aggregate materials for road construction can cause direct and indirect long - term adverse impacts on the environment. A major source of dust during the construction stage is from stone crushing operations from the crusher and the vibrating screen. The dust, in addition to being a health concern also reduces visibility thereby increasing safety concerns. As no new quarry needs to be opened for this project (majority of the material shall be from cut operations, reuse of old materials and existing quarries within the site itself), therefore, no new impacts are likely to arise due to quarrying operations. A properly enforced ESMP could improve the working conditions of workers in the existing quarry areas selected for the project.

Noise

Nuisance noise will be generated during construction by excavators, skid steers, dump trucks, paving machines, vibratory drum rollers, and hand compactors. Potential victims/targets to protect are workers. Furthermore, these impacts can affect the quietness of the work areas or community and provoke irritation and public nuisance.

Accidents and Injuries

Accidents and injuries could arise from:

- Increased vehicular speed that could lead to significant increase in accident rates
- Exposure of inhabitants and crew to risk of falls and injuries in excavation pits
- Danger from quarry operations and safety risks from abandoned quarries or borrow pits as well as when quarries continue to be used by unauthorized persons
- Injuries and damages from landslides or other forms of mass instability on slopes; poor slope stability/excavation, cutting, and filling, inappropriately piled excavations
- Operation of machinery endangers both operators and labourers
- Exposure to threats of falls from quarry faces and drowning in quarry pits that have become standing water reservoirs
- Injury/accident due to lack of warning signs, site barricades and safeguards

Land take/acquisition- Involuntary Resettlement.

Potential losses of houses, agricultural land/farm land is high. Physical and/or economic displacement could affect (i) persons living or engaged in livelihood activity within the right of way; or (ii) for technical or safety reasons, the road departs from the existing alignment and affects persons living or engaged in livelihood activities with the altered right of way.

Temporary Disruption of Transportation

Construction works could cause temporary blockage of transport and accessroutesto inputs, business etc. with implications for disruption of business activities and increased hardship

Spread of disease

Vector-borne diseases are spread when stagnant water accumulates in active or abandoned quarries or borrow pits and breeds insect vectors, resulting in spread of communicable diseases including malaria

Transmission of communicable diseases, social/moral habits and cultural values. Exposure to STDs/HIV.Change in local culture and society

The influx of construction workers from other areas may introduce new diseases to the local population or increase the incidence of local infection. This is a particular concern with sexually transmitted diseases, such as HIV/AIDS. Furthermore, construction crew who come from outside the region could introduce alcohol or other socially destructive substances. Additionally, socio-cultural values may be altered and the stability of communities adversely affected by exposure to rapid social change or tourism brought in by construction crew who come from outside the region

6.4 Mitigation measures

Deforestation

Deforestation shall be minimized by:

- Sticking to existing Right of Way, as much as possible.
- Keeping camp size to a minimum.
- Clearing onlyvegetation required
- Re-vegetating camps and other areas after usage

Pressure on existing infrastructure

Pressure exerted on existing community infrastructure by the incoming crew of workers and construction demands for water, fuel, power etc. shall be mitigated by providing adequate supplies of fuel, alternative sources of water (water borehole), power (transformers, power generating plants), fuel storage etc.

Solid Waste Generation

Improved waste management measures shall be employed and enforced. This will include standard measures for segregation, storage, evacuation and disposal at government approved sites. Adequate latrinesshall be provided and maintained. Additionally, the contractor shall provide (i) temporary sanitation on site, e.g. mobile toilet facilities and (ii) recover all reusable material from demolition waste.

Storm Water Runoff, Erosion, Sedimentation and Contamination

Run-off leading to erosion shall be checked by

(i) Placing drain outlets so as to avoid the usual cascade effect;
(ii) Proper termination of drains;
(iii) Planting vegetation. Slopes to be turfed with shrubs and grasses

(iv) Slope protection for steep slopes

Additionally, asphalt roads are proposed at areas of very high erosion and cutting sections in ILESAregion as given below:

Name of Road	**Length of Road**
A7 Ira - Ajebandele - Arinmo	3.85
A8 Oligeri - Iragbiji - Oniyo	3.2
A9 Oniyo – Ogbomoso	11.65

To conserve the productive topsoil, the topsoil from all areas of cutting shall be stored in stockpiles; and returned to cover the disturbed area and cut slopes. The stockpiles shall be covered with gunny bags or tarpaulin. Additionally, top soil shall also be utilised for redevelopment of borrow areas, landscaping along slopes, incidental spaces etc.

Mitigation measures for contamination of ground and surface water supplies will include:

- Provision of balancing culverts of adequate capacity where the level of the formation is being raised, and
- Provision of adequately sized drains to prevent flooding etc.
- Provision of adequate size and number of cross-drainage structuresto prevent water logging along the side of the roads
- Provision of lined drains at settlement areas and high erosion prone areas

All these measures form a part of the good engineering practice and should be part of the design drawings themselves. In addition to the above design requirements, the contractor shall ensure that the following are taken care of during construction work:

- Construction work near stream and other flowing water body have to be carried out in such a way that flow of water is not blocked and even if it has to be blocked then the contractor must ensure that the local communities are informed about the same in advance.
- Work near the water bodies should be carried out in dry season to avoid shortage of water,

Flooding of local drainage channels shall be avoided by:

- Ensuring that remnants from earthwork, stonework and other waste material do not hinder the cross-drainage of streams; andconstruction material waste would be disposed of in a manner not to block the flow of water.
- Regular cleaning of roadside drains, to maintain efficient storm water flow especially before the rainy season.

Soil Contamination due to accident spills shall be mitigated by:

- Ensuring that fuel is safely stored.
- Ensuring that used oil from maintenance of generator is collected and disposed off appropriately or reused under safe guidance or sold for reuse in the local market

- Carrying out Site Worthiness Tests to ensure that vehicles and equipment are in good condition
- Ensuring that vehicle parking area is made impervious using 75 mm thick P.C.C. bed over 150 mm thick rammed brick bats. The ground will be sloped towards a drain that will take all the spilled material to the oil interceptor.
- Proper sanitation facilities shall be provided in construction camp in the form of septic tank and soak pit so that the untreated sewage is not disposed into land.

Air Emissions

Mitigation measures for generation of dust and other gaseous pollutants are as follows:

Generation of Dust

- Water will be sprayed during construction
- Special care will be taken when working near educational institutions and health centres.
- The Stone crusher plant/batching plant shall be located sufficiently away from human settlements –in a downwind direction in line with the guidelines of Osun State Ministry of Environment.
- Preservation of vegetation screens

Gaseous Pollution

- All the Construction vehicles and machineries as well as DG sets will be regularly maintained to conform to the FEPA Act and emission standards prescribed by the State Ministry of Environment/FMEnv.
- Checking to ensure that site vehicles need not idle for prolonged periods unnecessarily.
- Ambient air quality will be monitored as per environmental monitoring program during construction phase.

Noise

Work will be limited to day time; workers will be obliged to use PPE (ear mufflers)

Accidents and Injuries

Occurrences of traffic and workers accidents shall be mitigated by installation of Danger Sign-posts and Speed limits as well as patrols by the Road Safety Corps of Nigeria and use of PPE.

Danger of accidents, injuries and health from sewers/ septic tanks, utilities and other apparatus during the construction phase shall be checked by mounting Safety Cordons and Danger Signs where necessary. Furthermore, the Contractor shall properly safeguard all buildings, structures, works, pipes, installations cablesetc. with potentials to harm.

Lastly, *Good Housekeeping* shall be enforced to prohibit open fire as well as clearance of all working areas both within and outside the site areas and control of accesses to construction works.

Land take/acquisition. Involuntary Resettlement.

Physical and economic displacement shall be avoided as much as possible by:

- Sticking to existing Right of Way, as much as possible.
- Keeping camp size to a minimum.

Project affected families will be adequately compensated as per the guidelines of OP:4.12(Involuntary Resettlement) of World Bank. The mitigation measures are detailed in the ARAP.

Temporary Disruption of Transportation

Contractor shall create alternative access routes, defined footpaths and temporary footways/carriageways for public use where necessary. Diversion routes shall be constructed in advance of any interference with the existing routes and shall be maintained to provide adequately for the traffic flows.

Transmission of communicable diseases, social/moral habits and cultural values. Exposure to STDs - HIV.Change in local culture and society

Mitigation measures to limit the Transmission of communicable diseases, social/moral habits and cultural values; exposure to STDs/HIV; and change in local culture and society are as follows:

- Construction camps will be constructed at least 500m away from nearby settlement or habitation.
- Sourcing of unskilled labour from local villages/settlements.
- The skilled labour can be rotated in on and off duty cycles to make them available to meet with their family members (back home) to minimize the chances of their mixing with the project village women and thereby minimizing the chances of spreading the HIV/AIDs.
- The camps will be provided with proper sanitation, recreation, waste disposal and drinking water

Additionally, awareness campaigns/orientation covering but not limited to HIV/AIDS/STI transmission risks shall be carried out for workers and host communities.

7 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

The Environmental Management Plan is presented in Table 7.1 overleaf.

7.1 Responsibilities for Implementation

Monitoring and supervision of the Environmental and Social safeguard measures will run through every phase of the project. The major actors for implementation are:

- State Project Implementation Unit (SPIU)
- Contractors
- Federal Ministry of Environment (FMEnv)
- State Ministry of Environment/SEPA
- Federal Project Management Unit (FPMU)
- Supervising Engineer
- LGA Waste Management Authority (if applicable)
- Community and Community based Organizations (CBOs)
- World Bank and French Development Agency (AFD)Supervising Consultant

State Project Implementation Unit (SPIU)

The SPIU is responsible for the overall implementation, administration and enforcement of the recommendations of the ESMP report. The SPIU, as the implementing authority will be responsible for:

- Ensuring that the basic requirements for safeguard implementation such as HSE plan, Borrow pit reclamation plan and other plans for environmental and social are included and used as a basis for selection of the contractor
- Including ESMP provisions in tender documents.
- Co-ordinating the implementation of the ESMP and other agencies
- Supervising contractors, receiving safeguard compliance quarterly reports from contractors
- Preparing annual environmental progress reports. Providing Environment Ministry, FPMU and the World Bank, AFD and other Project Stakeholders with safeguard status reports on environmental and social compliance as part of their annual progress reports and annual environmental monitoring reports
- Conducting training for institutional capacity building
- Preparing ESMP plans;
- Organising biannual environmental and social audits for the project
- Maintaining and managing all funds effectively and efficiently for the sub-projects; ensuring that contractors and consultants are paid as and when due in order to ensure timely project delivery
- Recommend on policy issues to the State Governor including mechanisms for implementation;

Contractors

The contractor is at the center of the implementation of this ESMP. As the one coordinating and directing the civil works activities including staff and machinery, it is important that the contractor carries out the following as a minimum requirement:

- Ensure that all safeguard considerations stated in his contract agreements are complied with;
- Ensure that the environmental and social specifications of this ESMPs (including any revisions, additions or amendments) are effectively implemented
- Reads, understands and implement the mitigation measures as stated in this ESMP
- Ensure environmental awareness among his/her employees and subcontractors so that they are fully aware of, and understand the environmental and social requirements and the need for them
- Provide personal protective equipment for workers
- Supervise the workers to ensure compliance with occupational health safety rules;
- Report and record all accidents and incidents resulting in major injuries or death
- Provide medical services and emergency arrangements for workers
- Engage the community members in occupation during construction
- Inform SPIU of problems arising when implementing the ESMP and ways of improving the ESMP
- Undertake rehabilitation of all areas affected by construction activities in order to restore them to their original states, as determined by the Engineer
- Undertake the required works within the designated working areas

Federal Ministry of Environment (FMEnv)

The Federal Ministry of Environment shall play the lead role as environmental regulator. The FMEnv shall be responsible for:

- Reviewing monitoring reports to ensure regulatory compliance
- Provide advice to the SPIU project secretariat on any national guideline/standards
- Grant approval and public disclosure of ESMP and ARAP

State Ministry of Environment/SEPA

The role of SEPA shall be as follows:

- Overseeing the safeguard activities to ensure that her general compliance requirements for environmental protection and conservation are met;
- Monitor and enforce best practices
- Sanction where necessary any breach capable of compromising environmental quality and standard by the contractor
- Ensure that RAMP 2 project adhere to the principle of environmental auditing
- Receive and keep record of ESMP implementation and auditing

Federal Project Management Unit (FPMU)

The role of the FPMU in this project will be that of monitoring the overall project activities. The coordination and facilitation of sub-project activities in the participating States which includes the prioritized rural roads and river crossings to be constructed/rehabilitated. The Environmental and Social Safeguards Officer at FPMU shall:

- Ensure that correct procedures are followed by SPIUs to acquire land in inevitable events involving land acquisition and displacement of people
- Ensure compensation to current land owners follow what is indicated in the laws
- Collaborate with SPIUs in executing different project activities
- Undertake internal monitoring of the ESMP in full coordination with the SPIUs Report to WB, AFD and other Project Stakeholders on the status of safeguard matters through submission of quarterly/annual progress reports

Environmental and Social Safeguards Unit

This unit shall be manned be an environmental and social safeguard officer (ESO) and shall be responsible for monitoring, reviewing and verifying compliance with the ESMPs by Contractors. More specifically, their responsibilities include the following:

- Oversee and monitor Contractor adherence toESMP
- Review ESMP prepared by environmental and social safeguards consultant and ensure adequacy under the World Bank Safeguard policies.
- Ensure that the project design and specifications adequately reflect the recommendations of the ESMPs;
- Co-ordinate. follow up processing and obtain requisite clearances required for the project, if required;
- Visit and inspect major subproject sites regularly, to ascertain the level of compliance of works and report back environmental issues
- Ensures the Contractor has all plans, procedures, approvals, and documentation in place to ensure ESMP compliance prior to commencement of any work
- Review and approve the Contractor's Implementation Plan for the environmental measures, as per the ESMP and any other supplementary environmental and social studies that may need to be carried out by the SPIU
- Prepare compliance/inspection reports with statutory requirements and maintain reports on files
- Develop, organize and deliver training program for the SPIU staff, the contractors and others involved in the project implementation, in collaboration with the SPIU
- Liaise with the Contractors and the SPIU / MDAs on implementation of the ESMPs
- Liaise with various Central and State Government agencies on environmental and other regulatory matters
- Continuously interact with the community groups that would be involved in the project

- Establish dialogue with the affected communities and ensure that the environmental and social concerns and suggestions are incorporated and implemented in the project
- Review the performance of the project through an assessment of the periodic environmental and social monitoring reports; provide a summary of the same to the Project Coordinator, and initiate necessary follow-up actions
- Provide support and assistance to the State Government Agencies and the World Bank to supervise the implementation.

Supervising Engineer

The roles and responsibilities of the engineer shall include the following:

- Be familiar with the contents of the ESMP
- Monitor the Contractor's compliance with the environmental and social requirements on a daily basis and enforce compliance
- Communicate to the SPIU any infringements of the environmental requirements and accompany them during site inspections
- Maintain a record of complaints from the public and communicate to the Employer and Contractor
- Facilitate all communication between all role players in the interest of effective environmental management
- Monitor the compliance of the Contractor through the SPIU/FPMU, SEPA/FMEnv and ESOs reports

LGA Waste Management Authority (if applicable)

The relevant LGAs of project intervention will be liaised with particularly for support with logistics for waste collection and disposal. Also the LGAs have the statutory responsibility to supervise and monitor the rural road infrastructure construction in its area of jurisdiction

Community and Community based Organizations (CBOs)

The primary aim of the CBOs is to sensitize community members for community actions with minimal support from Government. The responsibilities of the community and CBOs in this project include but not limited to:

- Mobilizing rural communities with a view to maximizing the benefits of the project
- Facilitating the selection of the Road maintenance group
- Monitoring of the progress of the road implementation work
- Sensitize community members for community actions; and

World Bank and French Development Agency (AFD)

The World Bank/AFD will supervise monitoring indicators in the ESMP and recommend additional measures for strengthening the management framework and implementation performance, where need be. The reporting framework, screening procedures and

preparation of management and mitigation plans shall be discussed and agreed by the Bank team and SPIU during the early part of project implementation.

7.2 Implementation Instruments

Environmental and social safeguard clauses

Osun RAMP shall guide and enforce contractor compliance by insertion of safeguard clauses in the contractual agreement. These will be included in the bidding documents and contractor documents by the procurement section.It will impose the need on the contractor/ supervising consultant to deploy an Environmental/Social Specialists whose role will be to guide the implementation of the mitigation measures proposed in the ESMP and attend project monthly site meetings to present progress and adherence of the project to ESMP and National Environmental conditions.

Secondly, the bills of quantities as well as the contract documents will integrate environmental and mitigation measures as outlined in the ESMP and this will further ensure that the allocation and utilization of resources for the implementation of mitigation measures are monitored and subsequently captured as part of the overall project audit process.

Clauses for civil works contracts should cover at least the following issues:

- Compliance with general national environmental guidelines;
- Compliance with World Bank Operational Policy on Involuntary Resettlement (WB OP 4.12), if relevant.
- Adequate disposal of construction and excavation wastes;
- Location of construction camps;
- Restoration of the quasi-original conditions of landscape in construction sites after works completion, including the removal and storage of top soil before using materials from quarries and borrow pits for use in the restoration;
- Occupational safety and health (Consultants and contractors working on the program will be required to adhere to all applicable laws and regulations controlling workplace health and safety), etc.

Monitoring Checklist

Environmental supervision will entail the drafting and enforcement of the applicable environmental procedures and recommended solutions. A monitoring checklist shall be developed by the Project Environmental Officer for regular spot checks, while checks shall be provided by the contractor; and spot checks by the supervising consultant. This checklist shall include but not limited to the following monitoring activities:

- Ensure use of PPE. Check provision and use of personal protective wears by contractors and staff where applicable
- Check all sediment control fences and repair if needed.
- Sweep roadway of soil and waste,. Do not hose.
- Check all stockpiles are covered securely

- Check all tree protection fences and repair them if needed
- Check waste materials are correctly sorted and stored
- Check personal safety of equipment before each use
- Check dust filters on equipment
- Check noise suppression devices on equipment
- Check containers of hazardous materials are properly stored and not damaged
- Visual check on vehicle and equipment air emissions. Service if unsatisfactory
- Clean out uncontaminated sediment from silt fences and return to secure stockpile
- Inspect all sediment control measures
- Check for blockages in drains and fix where required
- Check appropriate safety and security signage are in place to inform the public and replace if needed

Record keeping and Reporting Format

Records and reports serve as proof that the ESMP is being implemented as should and is achieving stated objectives. Types of records to be kept include:

- Completed forms, checklists and maintenance logs
- Identified problems and corrective actions undertaken
- Monitoring data / results (e.g. for storm water treatment device monitoring)
- Incident forms (especially pollution incidents and response)
- Internal and external communications regarding the EMP (e.g. with waste disposal contractors where you specify that your waste must be disposed of appropriately)
- Results of internal or external assessments and compliance visits.

Additionally, periodic reports on the surveillance, monitoring and efficiency of environmental measures and on solutions to unforeseen environmental problems will be developed. The reporting formats shall be guided by the Osun RAMP Environmental Officer

Table 7.1: Environmental and Social Management Plan

S/N	Activity	Potential Environ. & Social Impacts	Mitigation Measures	Monitoring Indicators	Frequency	Responsibility	Cost (N)
	PRE-CONSTRUCTION PHASE						
1	Movement to Site. Labour camps	Land take/acquisition. Involuntary Resettlement.	Stick to existing Right of Way, as much as possible.	Supervising consultants' report	Weekly	SPIU	Included in ARAP budget
			Keep camp size to a minimum		Weekly.	SPIU	
			Compensate affected families as per the guidelines of OP: 4.12 (Involuntary Resettlement) of World Bank	ARAP implementation report.	Quarterly	SPIU	
				Community corroboration	Quarterly	SPIU	

	Transportation of Vehicles, equipment and materials to site	Risk of Accidents, Accidents resulting from movement of construction vehicles, equipment and materials	• All vehicles working either directly with the company or through contractors, should maintain Journey Hazard Management Plans. • Contractor to maintain HSE plans • Contractor HSE plans shall be reviewed for adequacy prior to contract award. • Workers shall be trained on basic safety procedures and environmental issues. • Preparation of work procedures to cover each aspect of site preparation and commissioning.	Material Safety Data Sheet (MSDS) Road Safety Signage Speed limit	Daily	Contractor	₦250,000
2	CONSTRUCTION PHASE						
	Construction	Deforestation	Stick to existing Right of Way.	Supervising consultants' report	Weekly	Contractor/Supervising Consultant, Environmental and Social Safeguards Officer (ESO)	Included in Supervising Consultants' budget
			Clear only vegetation required	Supervising consultants' report	Weekly.	Contractor /Consultant, ESO	
			Re-vegetate camps and other areas after usage	Supervising consultants' report	Quarterly	Contractor /Consultant, ESO	
		Pressure on existing infrastructure	Provide independent supplies for work and	Supervising consultants' report	Quarterly	Contractor /Consultant	

S/N	Activity	Potential Environ. & Social Impacts	Mitigation Measures	Monitoring Indicators	Frequency	Responsibility	Cost (N)
			workers(adequate supplies/services, water borehole, fuel storage, transformers, power generating plant etc)				
		Soil Erosion	Place drain outlets so as to avoid cascade effect;	Drain outlets in place	Quarterly	Contractor /Consultant, ESO	
			Properly terminate drains;	Drains properly terminated	Quarterly		
			Plant vegetation	Vegetation planted	Quarterly		
		Water Pollution	Construct and adequately place culverts drainage systems, embankment drainage channels	Culverts, drainage and embankments in place	Quarterly		
		Air Pollution	Periodic water sprinkling,	Construction dust/PM minimized	Weekly	Contractor/Supervising Consultant, SPIU/ ESO	N1.5M
			Ensure worthiness of machines, equipment and vehicles	Exhaust smoke minimized	Weekly		
		Noise Pollution	Ensure worthiness of machines, equipment and vehicles	Supervising consultants' report	Weekly		
			Equip and enforce the usage of PPE (ear mufflers) by workers	Supervising consultants' report	Weekly		
			Limit construction work to day time .	Supervising consultants' report	Weekly		
		Spread of Diseases	HIV/AIDS/STI awareness campaigns/orientation for workers and host communities	Supervising consultants' report	Weekly		

S/N	Activity	Potential Environ. & Social Impacts	Mitigation Measures	Monitoring Indicators	Frequency	Responsibility	Cost (N)
		Traffic and Workers accidents	Diversion, Sign-posts, Speed limits, FRSC patrol, use of PPE Prohibition of open fire. Control access after working hours	Supervising consultants' report	Weekly	Contractor /consultant	
		Waste generation	Segregation, storage, evacuation and disposal at government approved sites; provide adequately located and maintained latrines	Absence of piled up waste. Supervising consultants' report	Quarterly	Contractor, SPIU	₦250,000
		Temporary Disruption of Transportation	Create alternative access routes	Alternative access routes in place. Supervising consultants' report	Quarterly	Contractor, SPIU	
		Transmission of communicable diseases, social/moral habits and cultural values. Exposure to STDs/HIV. Change in local culture and society	Construction camps to be constructed at least 500m away from nearby settlement	Supervising consultants' report	Quarterly	Contractor, SPIU	
			Source unskilled labour from local villages/settlements. Rotate skilled workers in on and off duty cycles. Provide camps with proper sanitation, recreation, waste disposal and drinking water	Supervising consultants' report	Quarterly	Contractor, SPIU	
	OPERATIONS PHASE						

S/N	Activity	Potential Environ. & Social Impacts	Mitigation Measures	Monitoring Indicators	Frequency	Responsibility	Cost (N)
	Road usage	Potentials for increase in vehicular accidents	Installation of danger sign-posts and speed limits as well as patrols by the Road Safety Corps of Nigeria	Safety signs and patrol in place	Quarterly	Contractor, SPIU	Included in Contractors' budget
			Road repairs and maintenance implemented as scheduled	SPIU roads maintenance reports	Quarterly	Contractor, SPIU	Included in Program budget
	DE-COMMISSIONING PHASE						
	De-commissioning of burrow pits	Injuries and accidents resulting from poorly decommissioned burrow pits	Decommissioning of burrow pits according to design specifications	SPIU roads maintenance reports	Quarterly	Contractor, SPIU	Included in Contract budget
		Insect vectors and spread of disease from poorly decommissioned burrow pits					
		Damage to vegetation and compacting of soil structure	Develop proper decommissioning procedures that will prevent and avoid damage to vegetation and ecosystem	Number of procedures/work instructions No of inspections.	Once Daily during process/before every major operation	Contractor Project Engineer SPIU	₦50,000
						TOTAL AMOUNT	₦2,050,000

7.3 Environmental and Social Monitoring Plan

This section sets out requirements for the monitoring of the environmental and social impacts for the construction and rehabilitation of rural roads under intervention. Monitoring of environmental and social indicators will be mainstreamed into the overall monitoring and evaluation system for the project.

Monitoring and evaluation is primarily required to ensure proper and timely implementation of environmental and social mitigation measures identified in the planning stage, based on the ESMP.

Monitoring at regular intervals during implementation and for a specified period in the post implementation stages is necessary to identify and implement any change / improvement needed in the execution of the sub-project activities or in the mitigation measures.

A list of indicators for monitoring in the implementation and post implementation stages is given on Table 7.2

Monitoring will be used to measure the success rate of the project; it will also be used to determine whether the established mitigation measures have resulted in dealing with the negative environmental and social impacts associated with the sub-projects. It will be used to establish whether further monitoring is to be extended in some areas.

7.4 Environmental and Social Auditing

To promote compliance with the environmental and social issues identified in this ESMP, an auditing of the road project intervention sites shall be carried out on every quarter during the construction phase; and annually when the project gets into operation phase or as required directed by the SPIU. The objectives of these environmental auditing shall include the following;

- Ensuring compliance with environmental and social guidelines;
- Recommending areas of improvements in the current ESMP; and
- Updating database of environmental and social issues encountered on the road project.

TABLE 7.2: MONITORING PLAN AND BUDGET

Component	Monitoring Parameter/Action	Method	Frequency	Responsible Party	Budget (₦)
Air quality	SPM, SO_2, CO, NO_X	Visual Observation and *purchase* of equipment for, air monitoring using standard method of sampling and analysis around the premises	Ensure testing Once a week (night and day each time)	Environmental specialist/M&E unit	₦500,000
Noise	55dB	Noise measurement equipment	Same as above	Environmental specialist/M&E unit	
Soil	K, SO2, pH, Ca, Temperature, BOD	Collection of soil sample and analyzing in the laboratory	Once (pre-rehabilitation/construction phase)	Supervising Engineer	

HSE & Waste Management	Proper disposal of waste Health assessment	Regular visit to site	Twice weekly	Contractor HSE officer/ Environmental Specialist/M&E officers	
Social	Ensure cultural and sacred areas are not destroyed, Disease transmission etc.	Regular visit to site	Weekly	M&E officers	₦500,000
Traffic conditions and speed	Compliance with speed limit Number of road accidents	Visual assessment	Daily during construction	Contractor Road Safety	
Health and Sanitation	Flood, Water logging of surfaces, prevention of stagnant water	Visual assessment by regular visits to site	Routinely during construction	RAMP-2 monitoring and evaluation team	
Total Monitoring Cost					₦1,000,000

7.5 Capacity Strengthening and Training

Institutional strengthening may be required at different levels to ensure adequate interpretation and activation of the ESMP. This training is most important for the key implementing officers, who are directly in charge. These include:

(i) Osun RAMP Environmental Officer (ESO)
(ii) Osun RAMP Monitoring and Evaluation Officer (M&E)
(iii) Project engineer,
(iv) Procurement officer
(v) Contractors and Maintenance Gang

The following capacity needs and targets are suggested to enhance the capacity and team coordination in safeguards implement of the present and future sub-projects.

TABLE 7.2 RECOMMENDED MINIMUM TRAINING REQUIRED.

Schedule	Capacity Need	Target Participants	Duration	Estimated Cost
Day 1	World Bank Safeguard Policies and Nigeria Extant Laws on Environmental Protection	ESO, M&E, Project engineer, Procurement officer	3hours	₦50,000

Schedule	Capacity Need	Target Participants	Duration	Estimated Cost
	ESMP Implementation, Project Monitoring and Evaluation	ESO, M&E, Project engineer, Procurement officer	3 hours	₦50,000
	Environmental Management for Construction Contracts	ESO, M&E, Project engineer, Procurement officer	2 hours	₦50,000
Day 2	Introduction to HSE in the workplace	Contractors and Maintenance Gang	2 hours	₦50,000
	The Use of PPE, Waste Management concerns, Occupational Safety and Health	Contractors and Maintenance Gang	2 hours	₦50,000
	Community and Stakeholder Engagement and Roles in RAMP Projects	Contractors and Maintenance Gang	3hours	₦50,000
	Basic Health Awareness on Communicable Diseases and Prevention	Contractors and Maintenance Gang		
	Total cost for capacity and Training			₦300,000

7.6 Budget Estimate and Sources of Funds

The key financial stakeholder is OSUNRAMP, the implementing agency.

The ESMP budget falls under the following 4 spending lines:

- Implementing the Environmental and Social Management
- Monitoring and
- Training

Mitigation costs are mostly to beincorporated into the construction works contract. Therefore they need not be repeated herein the ESMP budget. However, the cost heads, which do not fall under the construction works contracthave been included in the ESMP budget. These are (i) Awareness Training on HIV/STIs transmission of diseases and (ii) Involuntary Resettlement Compensation costs.

Similarly, for ESMP Monitoring and Management, the major spending is on staff payments, which are incorporated under other Project cost heads. For instance, all the monitoring is the responsibility of the SPIU Environmental officer,Contractors environmental officer and supervising consultant; to be paid under separate budgets (SPIU Staff listings; Components 3: Capacity Building and Project Administration and construction works contract). Additionally, much of the management cost for the Operational phase is expected to be taken up by the budget for Components 2 (Roads Maintenance and Local Development). However, allowance is made for SPIU logistic costs for site specific environmental management and monitoring.

A total amount of N3,350,000 or $20,937is estimated for these activities. The budget summary is presented in the table below.

Table 7.3: Budget Summary

Item	Sub-Item	Responsibility	Cost Estimate	
			(N)	(USD)@ N160/$
ESMP Implementation	Awareness Resettlement compensation	SPIU	2,050,000	$12,812
ESMP Monitoring	SPIU logistic costs for site specific environmental monitoring	SPIU	1,000,000	$6,250
Training	Safeguard Policies. Project Monitoring and Evaluation. Environmental Management for Construction Contracts. HSE. Stakeholder Engagement. Basic Health Awareness	SPIU	300,000	$,1,875
Total			₦3,350,000	$20,937

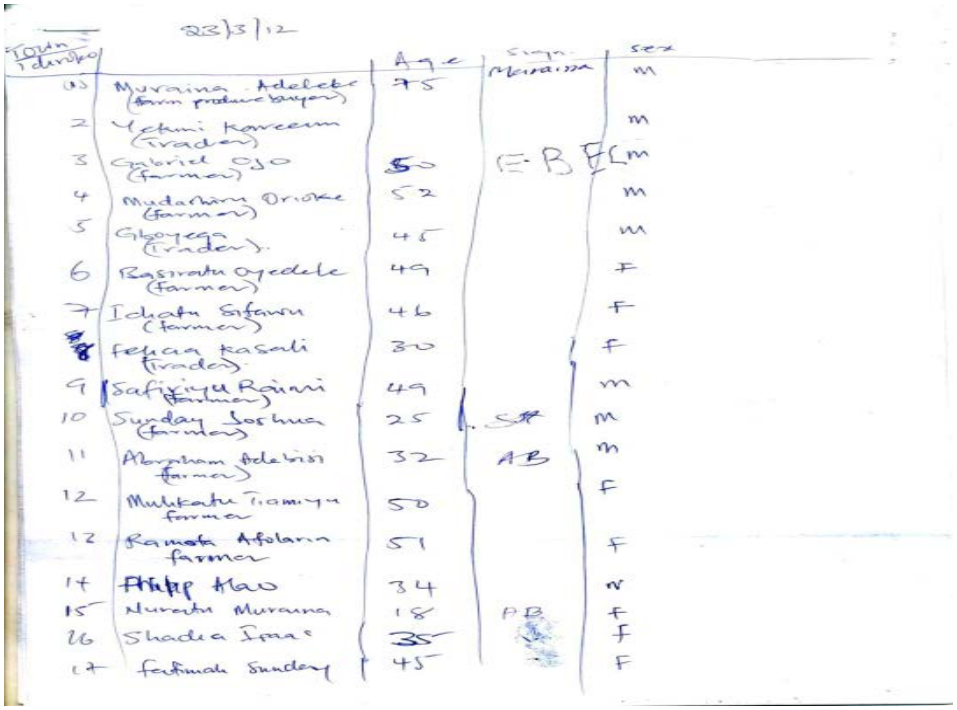
APPENDICES

Appendix 1: Public Consultations

ISERO VILLAGE

Item	Description
Date of Public consultation	15.03.2012
Name of stakeholders (community)	Isero Village Isero village is located in Agoro - Ikonifin road section in cluster A IWO Region The target group was villagers and farmers
Language of communication	Yoruba and English
Introduction	Brief description of the introduction of the project
Response of stakeholders about the project	People are in favor of the project; given the immense advantages it presents for access, business, health and education.
Feedback of the Stakeholders	People are willing give their land and structures for the sake of the project
Concerns and complaints	There are no dangers to archaeologically important places and rare or endangered flora and fauna specie. Additionally, chances of involuntary resettlement are low in this project. However, care should be taken to minimize the impact on cultural resources like church etc.
Remarks/Recommendation	Start quickly


Item	Description
Date of Public consultation	23.03.2012
Name of stakeholders (community)	IdirokoVillage Isero village is located in Agoro - Ikonifin road section in cluster A IWO Region The target group was villagers and farmers
Language of communication	Yoruba and English
Introduction	Brief description of the introduction of the project
Response of stakeholders about the project	People are in favor of the project; given the immense advantages it presents for access, business, health and education.
Feedback of the Stakeholders	People are willing give their land and structures for the sake of the project
Concerns and complaints	There are no dangers to archaeologically important places and rare or endangered flora and fauna specie. Additionally, chances of involuntary resettlement are low in this project. However, care should be taken to minimize the impact on cultural resources like church etc.
Remarks/Recommendation	Start quickly
	



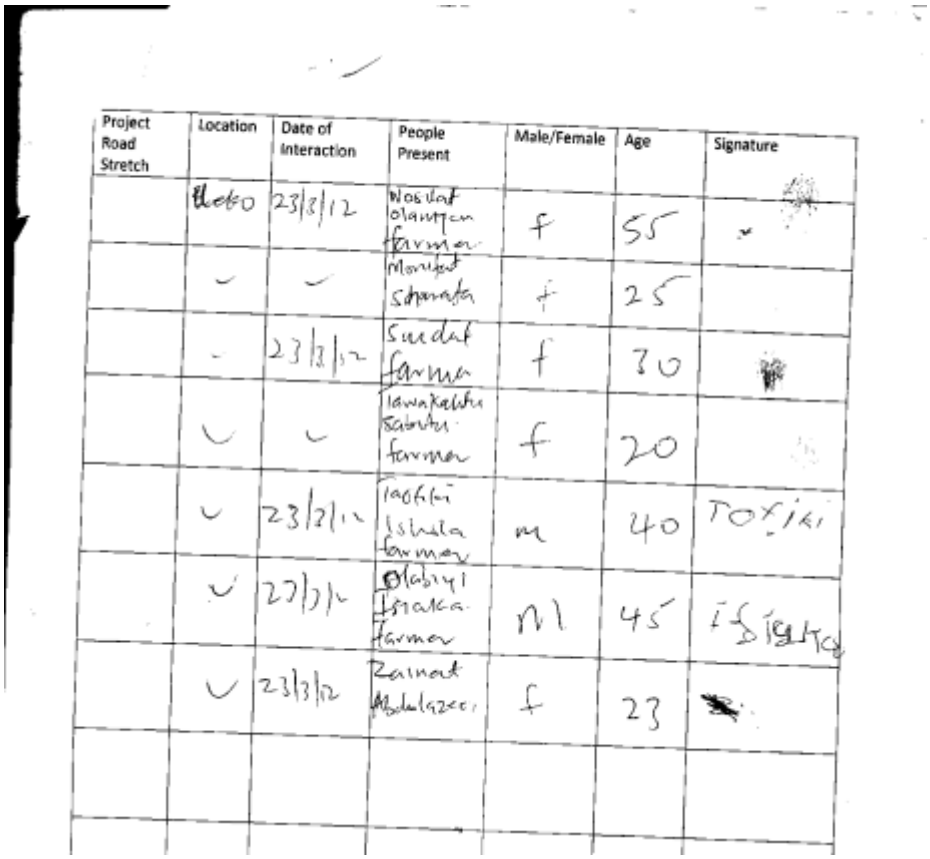
23/3/12

Town Idunko		Age	Sign.	sex
01	Muraina Adeleke (farm produce buyer)	75	Muraina	m
2	Yekini Kareem (trader)			m
3	Gabriel Ojo (farmer)	50	E.B	m
4	Mudathir Oriake (farmer)	52		m
5	Gbogeja (trader)	45		m
6	Rasiratu Ogedele (farmer)	49		F
7	Idiatu Safaru (farmer)	46		F
8	Fejiaa Kasali (trader)	30		F
9	Safiriyu Rainri (farmer)	49		m
10	Sunday Joshua (farmer)	25		m
11	Abraham Adebisi (farmer)	32	AB	m
12	Mulikatu Tiamiyu farmer	50		F
13	Ramota Afolarin farmer	51		F
14	Philip Alao	34		m
15	Nuratu Muraina	18	P.B	F
16	Shadia Isaac	35		F
17	Fatimah Sunday	45		F

ELEKU TOWN

Item	Description
Date of Public consultation	23.03.2012
Name of stakeholders (community)	Eleku Town The target group was villagers and farmers
Language of communication	Yoruba and English
Introduction	Brief description of the introduction of the project
Response of stakeholders about the project	People are in favor of the project; given the immense advantages it presents for transportation, access, business, health and education. Project will; • It will increase population growth. • It will increase production in farm produce. • It will improve sales; enhance rural economy Earnings farm produce will increase greatly
Feedback of the Stakeholders	People expect payment of compensation for losses
Concerns and complaints	Insecurity/Stealing may increase.
Remarks/Recommendation	Start quickly

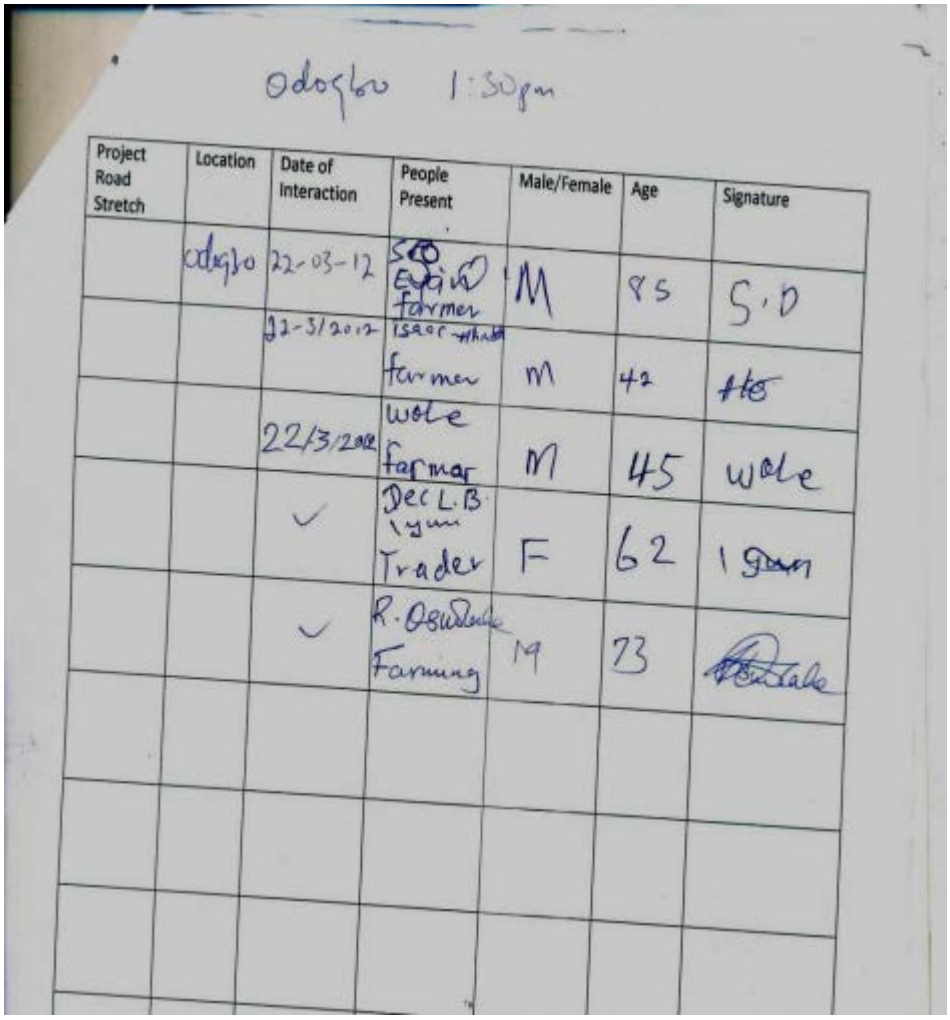
Cross Section of Participants during the consultation in Eleku



Project Road Stretch	Location	Date of Interaction	People Present	Male/Female	Age	Signature
	Eleku	23/3/12	Nosirat olanipekun farmer	f	55	
	✓	✓	Monisat Sharafa	f	25	
	✓	23/3/12	Suedat farma	f	30	
	✓	✓	Iawakelu Saidu farmer	f	20	
	✓	23/3/12	Tagiki Ishola farmer	m	40	Toriki
	✓	23/3/12	Olabiyi Israka farmer	m	45	Ifsiyiko
	✓	23/3/12	Zainab Abdulazeez	f	23	

ODOGBO

Item	Description
Date of Public consultation	22.03.2012
Name of stakeholders (community)	Odogbo Village
Language of communication	Yoruba and English
Introduction	Brief description of the introduction of the project
Response of stakeholders about the project	People are in favor of the project; given the immense advantages it presents for access, business, health and education. Earnings will increase over 100%
Feedback of the Stakeholders	People are willing to bear minor losses to their farm crops for the road
Concerns and complaints	Road accidents could increase
Remarks/Recommendation	Start quickly

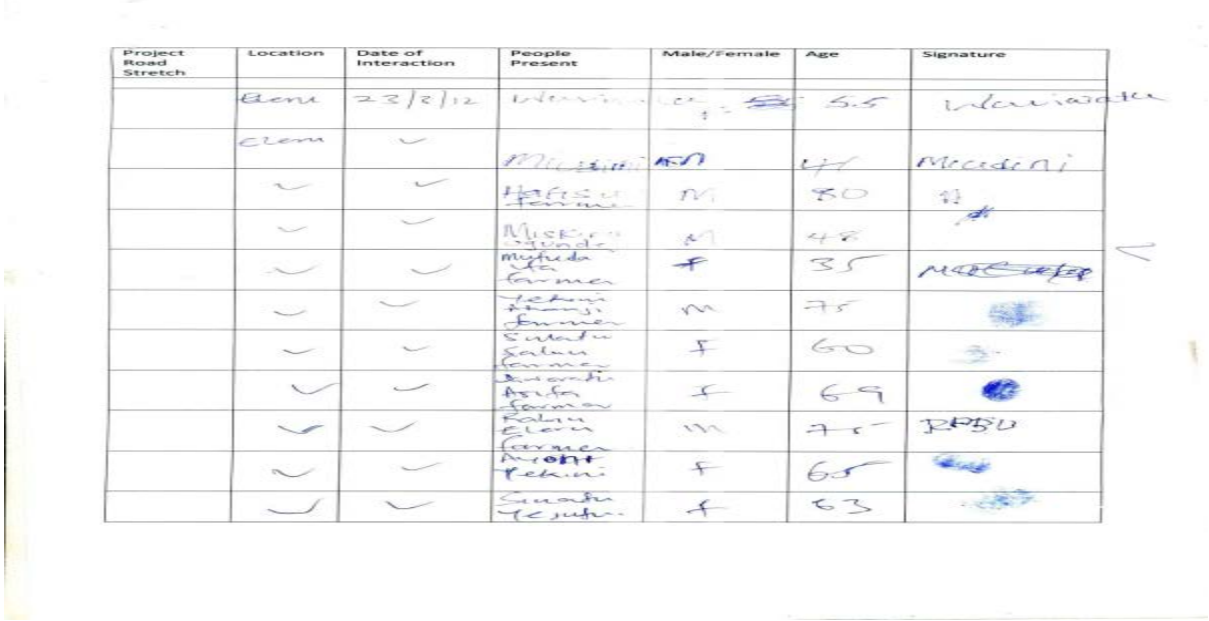
Odogbo 1:30pm

Project Road Stretch	Location	Date of Interaction	People Present	Male/Female	Age	Signature
	odogbo	22-03-12	S.O Evwin farmer	M	85	S.O
		22-3/2012	Isaac farmer	M	42	[illegible]
		22/3/2012	wole farmer	M	45	wole
		✓	Dec L.B Iyun Trader	F	62	Iyun
		✓	R. Osuntade Farming	M	73	[illegible]

ELERU TOWN

Photographs of the public consultation

Item	Description
Date of Public consultation	23.03.2012
Name of stakeholders (community)	Eleru Town Isero village is located in Agoro - Ikonifin road section in cluster A IWO Region The target group was villagers and farmers
Language of communication	Yoruba and English
Introduction	Brief description of the introduction of the project
Response of stakeholders about the project	People are in favor of the project; given the immense advantages it presents for access, business, health and education. Stress on women will be greatly reduced. Similar farm gains will increase immensely
Feedback of the Stakeholders	People are willing give their land and structures for the sake of the project
Concerns and complaints	There are no dangers to archaeologically important places and rare or endangered flora and fauna specie. Additionally, chances of involuntary resettlement are low in this project. However, care should be taken to minimize the impact on cultural resources like church etc.
Remarks/Recommendation	Start quickly



Project Road Stretch	Location	Date of Interaction	People Present	Male/Female	Age	Signature
	Eleru	23/2/12	[illegible]	[illegible]	55	[illegible]
	Eleru	✓	[illegible]	M	47	[illegible]
	✓	✓	[illegible]	M	50	[illegible]
	✓	✓	[illegible]	M	48	[illegible]
	✓	✓	[illegible] farmer	F	35	[illegible]
	✓	✓	[illegible] farmer	M	75	[illegible]
	✓	✓	[illegible] farmer	F	60	[illegible]
	✓	✓	[illegible] farmer	F	69	[illegible]
	✓	✓	[illegible] Eleru farmer	M	75	[illegible]
	✓	✓	[illegible]	F	65	[illegible]
	✓	✓	[illegible]	F	63	[illegible]