ABIA STATE RURAL ACCESS & AGRICULTURAL MARKETING PROJECT (RAAMP)

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

FOR

SPOT IMPROVEMENT (12Nos- 64.362KM), BACKLOG/MAINTENANCE (10Nos-55.60KM), UPGRADE (11Nos–54.16KM) AND CROSS DRAINAGE (9Nos - 79M) IN ABIA STATE (PHASE 1)

DRAFT REPORT

June, 2024

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ABBREVIATIONS AND ACRONYMS

AbSME	Abia State Ministry of Environment
AFD	Agence Francaise de Development
AIDS	Acquired Immune Deficiency Syndrome
BOD	Biological Oxygen Demand
BOQ	Bill of Quantity
CAP	Chapter
CBO	Community Based Organization
C-ESMP	Contractor's Environmental and Social Management Plan
CMP	Campsite Management Plan
CoC	Code of Conduct
COD	Chemical Oxygen Demand
CSO	Civil Society Organisation
DO	Dissolved Oxygen
EC	Electrical Conductivity
E&S	Environmental and Social
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
ESDD	Environmental and Social Due Diligence
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESO	Environmental Safeguards Officer
FAO	Food and Agriculture Organization
FDRD	Federal Department of Rural Development
FGN	Federal Government
FGD	Focus Group Discussion
FMARD	Federal Ministry of Agriculture and Food Security.
FMEnv	Federal Ministry of Environment
FPMU	Federal Project Management Unit
FRSC	Federal Road Safety Corps
GBV	Gender Based Violence
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
HIV	Human Immunodeficiency Virus
IEE	Initial Environmental Evaluation
IPOB	Indigenous People of Biafra
KII	Key Informant Interview
LFN	Law of the Federal Republic of Nigeria
LFN	Laws of the Federation of Nigeria
LGA	Local Government Area
LVRs	Low Volume Roads
MDA	Ministries, Departments and Agencies
NESREA	National Environmental Standards & Regulations Enforcement Agency
NGOs	Non-Governmental Organization
OHS	Occupational Health and Safety
OP/BP	Operational Policies / Bank Procedures
PAD	Project Appraisal Document
PAPs	Project Affected Persons
PDO	Project Development Objective

PHC	Primary Healthcare Centre
PIM	Project Implementation Manual
RAAMP	Rural Access and Agricultural Marketing Project
RAMP	Rural Access and Mobility Project
RAP	Resettlement Action Plans
RC	Reinforced Concrete
RoW	Right of Way
RPF	Resettlement Policy Framework
RTTP	Rural Travel and Transport Policy
SEA/SH	Sexual Exploitation and Abuse/Sexual Harassment
SEP	Stakeholder Engagement Plan
SME	State Ministry of Environment
SPIU	State Project Implementation Unit
SSO	Social Safeguard Officer
STDs	Sexually Transmitted Diseases
ToR	Terms of Reference
WBG	World Bank Group

EXECUTIVE SUMMARY

ES1. Background Information

The Federal Government of Nigeria (FGN) has initiated the preparation of the Rural Access and Agricultural Marketing Project (RAAMP), the successor of the second Rural Access and Mobility Project (RAAMP-2). The participating states are: eleven northern states (Bauchi, Gombe, Kaduna, Kano, Katsina, Kebbi, Kogi, Kwara, Niger, Plateau and Sokoto); and eight southern states (Abia, Akwa Ibom, Ebonyi, Ekiti, Ogun, Ondo, Osun and Oyo). The RAAMP is aimed at improving and enhancing accessibility and mobility in the rural areas of Nigeria. The Abia State Rural Access and Agricultural Marketing is therefore rehabilitating the 33No roads totaling 174.122km (12No Spot Improvement roads totaling 64.362km, 10No backlog maintenance/rehabilitation road totaling 55.60km, 11No upgrade roads totaling 54.16km) and 9No cross drainage structures totaling 79m under phase one intervention works in the 17 LGAs in Abia State. (Details of the project development objective and project components are provided in the Project Appraisal Document (PAD)[1]. Beneficiaries of RAAMP in Abia State will include crop farmers, traders, poultry and livestock farmers, agro product processors, transporters and people that rely on the roads and bridges for access to their farms, markets and other social service centres. An environmental and social (E&S) safeguards screening was undertaken between August 7th to September 26th 2023 which indicated that the proposed project activities will result in E&S impacts and thus triggering the World Bank's Safeguard Policy OP/BP 4.01 (Environmental Assessment), OP/BP 4.04 (Natural Habitats), OP/BP 4.12. (Involuntary resettlement) except OP 4.11 (Physical Cultural Resources). However, there is possibility of chance find with excavation works hence the need to activate OP 4.11 (Physical Cultural Resources). Consequently, this Environmental and Social Management Plan (ESMP) has been prepared to identify and address all E&S risks and impacts that may arise from the implementation of the proposed civil works while a stand-alone Resettlement Action Plan (RAP) will be prepared to effectively manage resettlement related impacts.

ES 2. Administrative and Regulatory Framework

The proposed project will be guided by applicable Federal, State and World Bank Operational Safeguard Policies and Regulations. The ESMP has been prepared in accordance with the procedures for conducting Environmental Assessments (EA) for development projects in line with the Environmental Impact Assessment Act No. 86, 1992 (codified as EIA Act CAP E12 LFN 2004), and the World Bank Operational Policies: OP 4.01 (Environmental Assessment), OP 4.04 (Natural Habitats), OP4.12 (Involuntary Resettlement) and OP 4.11 (Physical Cultural Resources). Consequently, the project implementation will be guided by the provisions of the National Policy on Environment (2016) and the applicable World Bank operational policies. The detailed legal and regulatory framework is in chapter 2.

ES3. Project Description

Abia State RAAMP has selected 10 roads for Backlog maintenance, 11 roads for upgrade, 12 roads for Spot Improvement intervention works with a total length of 174.122 and 9Nos cross drainage structures with a total length of 79m. Construction of approach roads are not part of cross drainage structure intervention. However, the construction of approach roads will be constructed as part of spot improvement interventions.

[1] https://documents1.worldbank.org/curated/en/420261582340546033/pdf/Nigeria-Rural-Access-and-Agricultural-Marketing-Project.pdf

The proposed intervention work on the various identified rural roads and cross drainage structures will involve engineering works such as but not limited to the following:

Project Activities description for all Interventionss

Spot Improvement:	Backlog Maintenance	Upgrade	Cross Drainaget
• Site clearance, earthworks, • provision of earth and concrete lined side drains, • provision of single and multiple cells pipe culvert extensions/repairing of existing culvert and new culverts, • provision of reinforced concrete box culverts, provision of slope protection where applicable, • provision of soil stabilization where applicable during earthworks, • provision of base course at critical sections, surfacing where applicable and other works (i.e., provision of road furniture etc.).	• site clearance, earthworks (i.e., removal of unsuitable material and filling of lateritic material and compaction), • provision of sub-base, provision of lateritic base-course, provision of prime coat, • provision of single or double surface dressing, provision of earth and lined side drains, • provision of single and multiple cells pipe culvert extensions/repairing of existing culvert and new culverts, • provision of reinforced concrete box culverts, provision of slope protection where applicable, • provision of soil stabilization where applicable and other works (i.e., provision of road markings, signs and other infrastructure).	• site clearance, earthworks (i.e., removal of unsuitable material and filling of lateritic material), • provision of sub-base, provision of lateritic base-course, • provision of prime coat, • provision of 30mm asphaltic surfacing, • provision of earth and lined side drains, • provision of single and multiple cells pipe culvert extensions/repairing of existing culvert and new culverts, • provision of slope protection where applicable, provision of reinforced concrete box culverts, provision of soil stabilization where applicable, • provision of slope protection where applicable and other works (i.e., provision of road markings, signs and other infrastructure).	• Construction of cross drainages/bridges not exceeding a single span of 15m, • provision of slope protection where applicable, other works (i.e., provision of traffic, signs and other infrastructure).

ES4. Description of Project Environment

The environmental baseline data obtained through field data gathering around the projects areas took place during the dry season, between 7th February and 21st February, 2024. Data collected include Air quality and noise, Topsoil and subsoil, surface water, ground water, vegetation, wildlife and socioeconomics data. The study area was classified into three (3) sections A, B and C for the three senatorial zones, Abia South roads (9), Abia Central Roads (7) with 3 cross drainage structures and Abia North roads (17) with 6 cross drainage structures.

Socioeconomic Condition of Project Area

A total of 342 questionnaires were administered face-to-face using trained interviewers in the surveyed 112 communities in four (4) sections across 17 LGA (Section A - 126 respondents, Section B – 93 respondents, Section C - 60 and Section D – 63 respondents) using random sampling technique. The survey shows that Farming is the major occupation and source of income for the inhabitants of the project communities. The communities are majorly Christians. The highest academic qualification of the people is WASC/SSCE for most of the people. This may be due to lack of tertiary institutions in the rural communities, attitude

towards education and poverty level. Most of the respondents among the project communities attest that they earn monthly income below the national minimum wage of #30,000. The average family size in the project communities is large with an average of 7 persons per family. Private borehole and commercial borehole are the main sources of water available to the households within the communities. Although there are no tertiary institutions in the project communities, there are few primary schools in some communities. There are Health Posts, Health Centers and Primary Healthcare Centers in few project communities but there is generally lack of adequate personnel, equipment and facilities. The communities generally prioritized road maintenance thereby improving road access which enhances trade and commerce within the communities.

ES5. Potential Environmental and Social Impacts

Positive Impacts: The proposed project is expected to be largely beneficial to the communities, 17 LGAs and the state at large which include but not limited to the following:

- Improvement of accessibility and mobility to rural communities, markets, farms and agro-processing centres in the project areas.
- Increase in agricultural output as the roads will ultimately facilitate easy access to farm inputs, extension services, primary and secondary (urban) markets.
- Improvement in agricultural productivity will translate to economic empowerment, poverty reduction and socio-cultural wellbeing of the benefiting communities.
- Provision of employment opportunities as locals will be engaged as semi-skilled (e.g., masons, carpenters, electrical technicians, welders, etc.) and unskilled labour (e.g., for site clearance, loading and offloading of materials, security services etc.).
- There will also be indirect opportunities for local contractors and businesses (food vendors, traders).
- Improved communication and socioeconomic integration amongst adjoining communities from improved connectivity.
- Reduction in travel time and transport cost due to improvement in riding quality of the roads.
- Increase environmental aesthetics from the road construction.
- Reduction in erosion and flooding issues along intervened roads from provision of cross drainages, culverts and road civil works.
- Subsequent reduction in dust pollution due to roads improvement leading to general communal environmental quality.

Potential Negative Environmental Impacts and Mitigation Measures

The potential negative environmental impacts and their mitigation measures are summarized below;

S/N	***Potential Negative Environmental Impact***	***Mitigation Measures***
		➢
1	Deterioration of local air quality due to generation of dusts and emission of gases,	➢ Abia SPIU shall ensure that dust/emission control measures are implemented such as: ● Use water to wet ground for dust suppression at least twice daily in built up areas. ● Use of covers on trucks transporting loose materials that may generate dust. ● Enforce appropriate speed limit to reduce dust on unpaved surfaces. ● Limiting soil disturbance activities and travel on unpaved roads during period of high winds ➢ Abia SPIU shall implement routine preventative maintenance including tune-ups on all heavy

S/N	*Potential Negative Environmental Impact*	*Mitigation Measures*
		duty/combustion equipment and vehicles. ➢ Abia SPIU shall train drivers/ workers on proper operation of vehicles & equipment to include maintenance and use fuel efficiency techniques. ➢ Abia SPIU shall ensure all equipment are turned off when not in use, in order to reduce carbon emissions. ➢ Abia SPIU shall ensure that vehicles/ equipment or engines that meet emission quality standards are used
2	Noise and vibration	➢ Abia SPIU shall ensure that vehicles/ equipment with lower sound power levels or noise proof or engines that meet noise quality standards are used. ➢ Abia SPIU shall respond promptly to noise complaints
3	Loss of vegetation and biodiversity due to the removal of vegetation and trees along RoW.	➢ Abia SPIU shall ensure that economic crops and trees shall also be compensated for. ➢ Abia SPIU shall ensure revegetation in areas of significant vegetation loss. ➢ Abia SPIU shall ensure that workers are not allowed to hunt or kill wild animals' ➢ Abia SPIU shall ensure that wandering animals are protected, captured and returned to the wild. ➢ Vegetal waste can be given to farmers as compost or animal feed.
4	Road Traffic causing delay in travel time.	➢ Abia SPIU shall prepare & implement TMP (see framework in Appendix 8) ➢ Abia SPIU shall give prior notification and proper continuous consultations with PAPs including mosque, church, schools, markets etc. ➢ Abia SPIU shall put traffic/caution signs at strategic locations/junctions ➢ Abia SPIU shall ensure continuous collaboration with FRSC regularly to manage traffic build up within the community. ➢ Movement of equipment and machinery shall be limited during peak hours/days/period as identified such as market days
5	Contamination of surface water from vegetal waste especially at the river crossing.	➢ SPIU shall ensure that the streams and rivers are not contaminated with vegetal waste, wastes are properly managed; - can be given to farmers as compost or animal feed. ➢ SPIU shall implement site-specific waste management plan as presented in the Appendix 5.
6	Climate Change from GHG emissions from heavy duty diesel machines and equipment's (A9)	➢ Abia SPIU shall implement routine preventative maintenance including tune-ups on all heavy duty/combustion equipment and vehicles. ➢ Abia SPIU shall train drivers/ workers on proper operation of vehicles & equipment to include maintenance and use fuel efficiency techniques. ➢ Abia SPIU shall ensure all equipment are turned off when not in use, in order to reduce carbon emissions. ➢ Abia SPIU shall ensure that vehicles/ equipment

S/N	Potential Negative Environmental Impact	Mitigation Measures
		or engines that meet emission quality standards are used ➢ Abia SPIU shall engage in renewable energy transition campaign and awareness. ➢ Abia SPIU shall ensure revegetation in areas of significant vegetation loss.
7	Sewage and Solid waste generation in as well as sewage at camp sites.	➢ Abia SPIU shall develop and implement Waste Management Plan (WMP) (see Appendix 5) ➢ Abia SPIU shal ensure waste is evacuated from site by AbSME or approved waste contractors to prevent unregulated dumping. ➢ Abia SPIU record of type, volume, mode of transportation, final disposal site and waste vendors should be kept as part of project documents.

Potential Negative Social Impacts and Mitigation Measures

The potential negative social impacts and their mitigation measures are summarized below;

S/N	Potential Negative Impact	Mitigation Measures
1	Grievance due to loss of economic trees, crops and structures (fence, shops, electric poles, etc) along the RoW: Grievances from stakeholder community, competition for employment.	➢ Abia SPIU shall pay compensation for buildings identified to be at high risk. ➢ Structural damage during construction shall be repaired promptly. ➢ Economic crops and trees shall also be compensated for. ➢ Secret areas or spots shall be identified and avoided. ➢ GRM shall be deployed in resolving all conflict ➢ Community youths shall be given priority in recruitment of unskilled jobs.
2	Gender Based Violence (GBV) due to establishment of Campsite and Influx of workers	➢ Abia SPIU shall ensure priority is giving to sourcing of local workforce. ➢ Abia SPIU shall ensure all contractors' workers are sensitized and sign Code of Conduct (CoC) (see Annex 9 for sample CoC). ➢ Abia SPIU shall ensure strict compliance with CoC. ➢ Abia SPIU shall prohibit workers sexual relations with minors, school children and community members. ➢ Abia SPIU shall ensure separate toilets for male and females with locks, and to be well lit at night. ➢ Abia SPIU shall ensure that community leaders/ women group/youth group to sensitize the community on appropriate conduct with contractors. ➢ Abia SPIU shall establish a GRM equipped to handle GBV cases with reporting channels that are easily accessible and community members feels safe reporting to ➢ Abia SPIU shall map GBV service providers in the project area and develop a referral pathway to enable survivors access to quality care. ➢ Abia SPIU shall mainstream GBV/SEA action

S/N	*Potential Negative Impact*	*Mitigation Measures*
		plan in Contractor's contract ➢ Signage against tolerance for SEA/SH/GBV to be installed along the project communities/corridor. ➢ Abia SPIU shall ensure compliance with the GBV Action Plan and A&RF
3	Child labour and school dropout due to opportunities for the host community to sell goods and services to construction workers (A8).	➢ Abia SPIU shall ensure that children and minors under the age of 18 are not employed directly or indirectly on the project. ➢ Abia SPIU shall ensure that communication on hiring criteria, minimum age, and applicable laws are followed. ➢ Abia SPIU shall apply the enforcement of legislation prohibiting child labour.
4	Increase demand on existing community health and sanitation infrastructure due to influx of temporary workers.	➢ Abia SPIU shall develop and implement Camp Site Management Plan (Appendix 11). ➢ Abia SPIU shall establish workers' camp with sufficient capacity for workers & sub-contractors. ➢ Abia SPIU shall ensure that workers' camp are equipped with all essential services (water, sanitary facilities, electricity etc.). ➢ Abia SPIU shall ensure that Worker Code of Conduct cover the aspect on water and electricity consumption. ➢ Abia SPIU shall implement the GRM and act on grievances received
5	Increased risk of spread of communicable diseases (including sexually transmitted diseases (STDs) and HIV/AIDS) due to influx of construction workers and camp followers.	➢ Abia SPIU shall conduct a periodic awareness campaign on sexual diseases. ➢ Abia SPIU shall implement Labour Influx Plan (see Appendix 11)

ES6. Grievance Redress Mechanism (GRM)

The framework for the Community based GRM that is accessible and inclusive to receive and act on complaints and suggestions in a timely fashion and facilitate resolution of concerns arising from a project has been included in this ESMP. The GRM is multi-layered with the first level closest to the local people and uses the existing traditional structure for grievance redress in the local area. The members of the community level grieviance redress committee will be mostly drawn from the project communities and will include, The traditional leader (Chairman) Palace/community secretary (Secretary) Opinion leaders or community influencers /Women, Youth, a Community Grievance Focal Person (Intermediary Service Provider), any minority group(s) within the community e.g. non-indigenous settlers, Community Liaison Officer as well as SPIU Social Safeguard Officer (as an ad-hoc member). The second channel for filing grievance shall be at the level of the project's SPIU. The Abia SPIU has constituted a team within the SPIU that receives, hears and addresses complaints that are not resolved by the project level GRCs at the community level. For GBV GRM, a separate channel has been designed to ensure GBV related complaints are received and handled by an intermediary (to be engaged by the SPIU and approved by the FPMU/WB), who is also responsible for referring the survivor, with consent to required services (including health, legal, psychosocial, security, livelihood support amongst others.

ES7. Environmental and Social Management and Monitoring Plan

Detailed environmental and social impacts, mitigation measures and monitoring plan for pre-construction, construction and operational phases for backlog maintenance and upgrade roads, spot improvement roads and cross drainage structures have been provided in Tables 19 and 20. The total estimated cost for the ESMP implementation, capacity building, monitoring and disclosure is ₦50,058,767.00 equivalent to 37,080.57 United Dollars (₦1,350 per USD) as presented in the table below:

Summary of ESMP Implementation Budget

SN	Item	Responsibility	Total Cost (₦)	Total (USD)
1	Cost of Mitigation across 33 Roads - 174.122Km in 12Lots	Contractor	30,190,632.00	22,363.43
2	Monitoring Programme across 33 Roads - 174.122Km in 12Lots	Abia RAAMP SPIU, Supervising Consultant, responsible MDAs	9,299,988.00	6,888.88
3	Capacity Building and Training	Abia RAAMP SPIU, Supervising Consultant, responsible MDAs	4,000,000.00	2,962.96
4	ESMP Disclosure	Abia RAAMP SPIU	2,017,350	1,494.33
5	**Sub-total**		**45,507,970.00**	**33,709.61**
6	Contingency	10% of Sub-Total	4,550,797.00	3,370.96
	Total		**50,058,767.00**	**37,080.57**

ES8. Stakeholders Engagement

For the ESMP, the consultant visited Abia state between 7th February and 16th February, 2024. Informal interactive sessions with the various stakeholders were engaged and consulted in all the community across the 17 LGAs under RAAMP. The gathering provided insights into the state of the proposed interventions, hierarchy of traditional rulers in the study area, community lifestyle and dispute resolution system amongst others. The consultations served as platforms to elicit information, questions and concerns relevant to the project. It was also a platform to ascertain the fear and expectation of the project from the community perspective and livelihood-based issues that might be supported by the project. Participants at the community meetings comprised of the traditional rulers, community leaders, men, women, youths, farmers, market men and women, religious leaders amongst others. However, across the project communities, the people welcomed the project and pledged their support to ensure successful implementation.

Issues raised at the stakeholders' engagement are highlighted below:

S/N	Issues Raised at the Stakeholders' Engagement	How Issues were Addressed
1	Cconflicts due to lack of opportunities for their youths to work during construction	SPIU assured the people that measures will be put in place to ensure locals are engaged as unskilled labour. Where the required expertise can be found in the communities, semi skilled can also be engaged by the contractor.
2	Compensation of affected economic trees and cash crops	The people were also assured that RAP will

S/N	Issues Raised at the Stakeholders' Engagement	How Issues were Addressed
	and structures (fence, shops, electric pole, etc.)	be prepared and the people will be duly compensated for all impacted assets.
3	Clear communication regarding the commencement of the road to enable the people harvest their produce along the road.	SPIU addressed all concerned raised and assured the communities that they will be carried along and consulted before and during project implementation.
4	Influx of construction workers which may lead to introduction of vices into the communities, gender-based issues particularly Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH) of children/girls, increased prevalence of sexually transmitted diseases and security challenges.	The people were assured that measures will be put in place to prevent SEA/SH and as part of these measures, communities will be sensitized and contractors will be made to sign code of conducts.

ES9. Conclusion and Recommendation

The following recommendations are for the consideration of the Abia State RAAMP SPIU. The recommendations are geared towards ensuring the improvement of decisions and filling of gaps identified by the ESMP study.

- There is need for more public consultation and awareness to ensure the buy-in and ownership of the proposed projects by the host communities.
- There is a need to create more awareness on the anthropogenic causes of soil erosion and flooding with a bid to ensure project sustainability after the river crossing rehabilitation works.
- Waste management is also a serious issue in the area as residents tend to dump their refuse in the drainages. These should be discouraged and programme designed to enlighten them on best practice for refuse disposal.
- All contractors must sign the contractor's Code of Conduct' detailing their responsibilities for implementing the contractor's commitments and enforcing the responsibilities in the 'Individual Code of Conduct'.
- All employees must sign the project's 'Individual Code of Conduct' confirming their agreement not to engage in activities resulting in GBV/SEA/SH or VAC.
- Displaying the Contractor and Individual Codes of Conduct prominently and in clear view at workers' camps, offices, and in public areas of the work space.
- Examples of areas include waiting, rest and lobby areas of sites, canteen areas, health clinics.
- Ensure that posted and distributed copies of the Contractor and Individual Codes of Conduct are translated into the appropriate language of use in the work site areas as well as for any international staff in their native language.
- That the contractor effectively implements the Action Plan, providing feedback to the GCCT for improvements and updates as appropriate. Contractors should be encouraged to recruit local laborers and, when feasible, certain technical workers from project host communities during project implementation. This approach aims to minimize the reliance on migrant workers, thereby mitigating potential threats to community culture, health, safety, and security. Additionally, it is expected to stimulate local socioeconomic activities, enhance livelihoods, and contribute to the reduction of poverty in the affected communities.

CHAPTER ONE

INTRODUCTION

1.0 BACKGROUND

The Federal Government of Nigeria (FGN) has initiated the preparation of the Rural Access and Agricultural Marketing Project (RAAMP), the successor of the second Rural Access and Mobility Project (RAAMP-2). The participating states are: eleven northern states (Bauchi, Gombe, Kaduna, Kano, Katsina, Kebbi, Kogi, Kwara, Niger, Plateau and Sokoto); and eight southern states (Abia, Akwa Ibom, Ebonyi, Ekiti, Ogun, Ondo, Osun and Oyo). The RAAMP is aimed at improving and enhancing accessibility and mobility in the rural areas of Nigeria.
Abia Rural Access and Agricultural Project (RAAMP) is rehabilitating the 33 No roads totaling 174.122km (12No Spot Improvement roads totaling 64.362km, 10No backlog maintenance/rehabilitation road totaling 55.60km, 11No upgrade roads totaling 54.16km) and 9 No cross-drainage structures totaling 79m under phase one intervention works in the 17 LGAs in Abia State. (Details of the project development objective and project components are provided in the Project Appraisal Document (PAD).

Beneficiaries of RAAMP in Abia State will include crop farmers, poultry and livestock farmers, agro product processors, transporters and people that rely on the roads and bridges for access to their farms, markets and other social service centres. Notwithstanding these positive impacts, project activities such as site clearing, mobilization of equipment to site, removal of topsoil, dewatering and excavation will have some negative environmental and social impacts. These has triggered four of the World Bank Operational Policies: OP 4.01 (Environmental Assessment), OP 4.04 (Natural Habitats), OP4.12 (Involuntary Resettlement) and OP 4.11 (Physical Cultural Resources) as detailed in the Project Appraisal Document (PAD) and the Environmental and Social Management Framework (ESMF)[2].

The project has been assigned category II based on the Nigerian EIA Law which corresponds to the World Bank Category B, which requires an ESMP to be prepared, approved and disclosed prior to civil works. The proposed works are envisaged to have potential negative environmental and social impacts which will be site specific, reversible and manageable through appropriate mitigation measures. The Abia State Project Implementation Unit (SPIU) has prepared this Environmental and Social Management Plan (ESMP) as an instrument to address the environmental and social safeguard concerns for the proposed road, while a stand-alone Resettlement Action Plan (RAP) will also be prepared to address issues such as loss of economic trees, cash crops, loss of assets, economic displacement and minimal impact on farm land within the right of way, associated with Involuntary Resettlement (OP4.12). The ESMP and RAP will be disclosed in-country according to the guidelines of the Federal Ministry of Environment (FMEnv) and on the World Bank website.

1.1 DESCRIPTION OF THE INTERVENTION

The proposed intervention includes spot improvement and cross drainage structures, backlog maintenance / rehabilitation and upgrading on the various identified rural roads in Abia State. and will involve engineering works such as:

- **Spot Improvement Activities (along 12 roads):** Activities include Site clearance, earthworks, provision of earth and concrete lined side drains, provision of single and

[2]https://documents1.worldbank.org/curated/zh/751201571907380000/Environmental-and-Social-Management-Framework-for-Abia-Akwa-Ibom-Bauchi-Kano-Katsina-Kebbi-Kogi-Kwara-Ogun-Ondo-Oyo-Plateau-and-Sokoto.docx

multiple cells concrete pipe culvert extensions and new culverts, provision of reinforced concrete box culverts, provision of slope protection where applicable, provision of soil stabilization where applicable during earthworks, provision of base course at critical sections and other works (i.e., provision of road furniture etc.).

- **Backlog Maintenance Activities (along 10 roads):** Activities include site clearance, earthworks (i.e., removal of unsuitable material and filling of lateritic material), provision of sub-base, provision of lateritic base-course, provision of prime coat, provision of surface dressing, provision of earth and lined side drains, provision of single and multiple cells concrete pipe culvert extensions and new culverts, provision of reinforced concrete box culverts, provision of slope protection where applicable, provision of soil stabilization where applicable and other works (i.e., provision of road markings, signs and other infrastructure).

- **Upgrade Activities (along 11 roads):** Activities include site clearance, earthworks (i.e., removal of unsuitable material and filling of lateritic material), provision of sub-base, provision of lateritic base-course, provision of prime coat, provision of 30mm asphaltic concrete, provision of earth and lined side drains, provision of single and multiple cells concrete pipe culvert extensions and new culverts, provision of slope protection where applicable, provision of reinforced concrete box culverts, provision of soil stabilization where applicable, provision of slope protection where applicable and other works (i.e., provision of road markings, signs and other infrastructure).

- **Cross Drainage (along 9 roads):** Activities include construction of 9Nos cross drainages/bridges not exceeding a single span of 15m (see revised Table 9 of the PAD) along selected intervention roads. The works package would involve engineering works such as site clearance, installation of pillars, installation of superstructures (support beams and latticework), installation of cross bars, provision of slope protection where applicable, other works (i.e., provision of safety signs and other infrastructure).

1.2 SCOPE OF THE ESMP

The assignment is for the preparation of a site specific ESMP for the selected 33Nos roads (174.122) and 9Nos Cross Drainage Structures (79m) for phase 1 of the Backlog Maintenance (10Nos – 55.60km), Spot Improvement (12Nos – 64.362km), Cross Drainage Structures (9Nos – 79m) and Upgrading (11Nos – 54.16km) intervention work package that should consist of a well-documented set of likely environmental and social issues with appropriate mitigation measures, monitoring, and institutional actions to be taken before, during and after implementation to eliminate the identified adverse environmental and social impacts, offset or reduce them to acceptable levels. It should also include the measures required to implement these actions, costing, and responsibility, addressing the adequacy of the monitoring and institutional arrangements in the intervention sites.

1.3 RATIONALE FOR THE ESMP

The environmental and social risk assigned to this project is category II based on the Nigerian EIA law which corresponds to the World Bank category B, which requires ESMP to be prepared, approved and disclosed prior to civil works. This categorization is based on the nature, scale and scope of proposed intervention on the selected roads which are not envisaged to result to cumulative, unprecedented and large-scale adverse impacts on both the biophysical and the socioeconomic components of the project environment. In addition, the

scope of intervention does not include construction of new roads but rather maintaining and upgrading existing roads within existing alignment. This will ensure that the envisaged impacts resulting from project activities will largely be site specific and concentrated in the adjoining areas along existing right-of-way.

In compliance with the World Bank Safeguard Policies triggered under this project: Environmental and Social Assessment (OP/BP 4.01), Natural Habitat (OP/BP 4.04), Physical Cultural Resources (OP/BP 4.11) and Involuntary Resettlement (OP/BP 4.12), the potential adverse environmental and social impacts such as gas emisions, dust emisions, noise pollution, waste generation, impact to livelihood of project beneficiaries, etc that are likely to occur, can be avoided, reduced or minimized, mitigated through the implementation of appropriate environmental and social mitigation measures provided in the ESMP. This ESMP identifies the environmental and social impacts of the proposed project and defines roles and responsibilities of all stakeholders throughout the project life cycle to ensure that mitigation measures are implemented, and overall sustainability of the project is assured.

1.4 OBJECTIVES OF THE ESMP

The specific objective of this ESMP is to:

- Assess the potential environmental and social impacts of the proposed works as described in the detailed preliminary designs and develop appropriate mitigation measures to address the negative impacts.
- Outline mitigation costs & responsibilities, and a monitoring plan which includes monitoring parameters, frequency, responsibility and costs.
- Advise any required updates to the engineering design based on impacts reduction strategies and mitigation measures, prior to finalization of the engineering design. Furthermore, the costs for mitigation of this ESMP which is due to the contractor will be embedded in Bill 1 in the standard bidding documents for contractors to enable adequate consideration and costing for E&S management in their bids.

CHAPTER TWO

ADMINISTRATIVE AND REGULATORY FRAMEWORK

2.1 INTRODUCTION

This section presents the administrative, regulatory and institutional framework that guides the implementation of the project.

2.1.1 Administrative Framework

2.1.1 Federal Institutions

i. National Council on Environment

This is the apex policy-making organ on environment.
The Council:

- Consists of the Minister of Environment, Minister of State for Environment, and State Commissioners of Environment.
- Participates in the formulation, coordination, harmonization and implementation of national sustainable development policies and measures or broad national development.

Meets regularly to

- Consider and receive States 'reports on environmental management.
- Consider national environmental priorities and action plans as it affects Federal and State governments; and
- Exchange ideas and information where necessary with Federal Government on environmental issues

ii. Federal Ministry of Environment (FMEnv)

Set up by Presidential Directive No. Ref. No. SGF.6/S.221 of October 12, 1999, and empowered with regulation of all environmental matters protecting, enhancing and preserving the Nigerian environment

In line with her mandate, developed far reaching legal instruments for achieving environmentally sound management of resources and sustainable development across all major sectors of the economy.

Regulatory instruments are enforced through the activities of the following agencies:

- National Environmental Standards and Regulations Enforcement Agency (NESREA) [with Gazette No. 92, Vol. 94 of 31st July, 2007 with responsibility for the protection and development of the environment, biodiversity conservation and sustainable development of Nigeria's natural resources in general and environmental technology, including coordination and liaison with relevant stakeholders within and outside Nigeria on matters of enforcement of environmental standards, regulations, rules, laws, policies and guidelines.
- National Park Service of Nigeria is responsible for preserving, enhancing, protecting and managing vegetation and wild animals in the national parks of Nigeria.
- Forestry Research Institute of Nigeria (FRIN) established to develop the nation's manpower, education, training for forestry and agricultural practices.

Developed the procedures for Environmental Impact Assessments (EIA) of all development projects in accordance with the provisions of the Environment Impact Assessment (EIA) Act. No. 86 of 1992 and managed by the Environmental Assessment (EA) Department with the following functions:

- Implementation of the provisions of the Environmental Impact Assessment (EIA) Act of 1992 on development projects.

- Ensure environmental sustainability of development projects through regulation of activities within the oil and gas, mining, infrastructure, agriculture, manufacturing sectors, etc.
- Development of guidelines and standards for environmental quality monitoring, ecolabelling, etc; and Accreditation of environmental laboratories. Implementation of Environmental Audit and Environmental Management System (EMS) in Nigeria.

2.1.1.2 **State Institutions**

The State has a number of Ministries, Departments and Agencies (MDAs) relevant to the Project and these include the followings:

i. Abia State Ministry of Environment and Solid Minerals Development

The Ministry of Environment as it was earlier known from inception had the mandate to keep Abia State and its environs clean for healthy living and habitation. It had a VISION to serve as the primary vehicle for the execution of Government plans and programmes towards the rapid environmental transformation of Abia State for sustainable development and a MISSION to formulate policies and co-ordinate action on environmental protection and conservation of natural resources for sustainable development.

The statutory functions and responsibilities of the Ministry of Environment and Solid Minerals Development as it is known today are as follows:

- Environmental Conservation.
- Solid Waste Management
- Environmental Assessment.
- Erosion/ Flood and Coastal Zone Management.
- Afforestation and wildlife Preservation.
- Pollution control and Environmental Health.
- Monitoring of Exploration and exploitation of Solid mineral deposits

The Ministry has an agency named the Abia State Environmental Protection Agency (ASEPA). The Abia State Environmental Protection Agency (ASEPA) has the mandate to put measures aimed at enhancing the cleanliness of the State and ensures the enforcement of the relevant laws including the use of mobile courts to prosecute defaulters.

ii. Ministry of Works

The related responsibilities assigned to the Ministry are as follows:

- State roads and bridges (construction and maintenance);
- Regulation of traffic on State roads and bridges.
- Road safety measures and control.
- Infrastructural levies on transport, haulage and franchise.
- Registration of contractors, auctioneers and renewal of licenses;
- Construction and repair of sewage and drainage systems;
- Road Transport Policy;
- Storage of explosives for road construction;

iii. Ministry of Lands Survey and Urban Planning

The related responsibilities assigned to the Ministry are as follows-

- Development and Maintenance of Open Spaces;
- Acquisition of lands for public purposes;
- Registration of title to lands;

- Mapping and Surveying
- Administration of Land Use Decree
- Town and Country Planning;

Iv. Ministry of Local Government and Chieftaincy Affairs
The related responsibilities assigned to the Ministry are as follows:

- Co-ordinate Local Government Matters.
- Appraisal and monitoring Capital Projects of Local Governments.

V. Ministry of Women Affairs and Poverty Alleviation

- Initiate, formulate, execute, monitor, and evaluate policies relating to Women Affairs and Poverty Alleviation
- Promotion of Women Co-operative Societies
- Mobilization of women through public enlightenment programmes
- Promotion of small-scale industries/commercial activities amongst women groups
- To promote survival, protection, and development of Children in the State
- Vocational Training and Skill Acquisition for all categories of Women and others in need of special assistance

2.1.1.3 Local Government

Like the State Government, the Local Government liaise and cooperate with the Federal and State Ministries of Environment to achieve a healthy or better management of the environment within their domains with the relevant byelaws.

2.1.1 Regulatory and Policy Framework

The proposed roads and bridges construction sub-projects is essentially guided by the Environmental Impact Assessment (EIA) Act CAP E12 LFN 2004 and other applicable Federal and State policies and laws as well as the requirements of the World Bank operational safeguard policies OP/BP 4.01. Relevant legal and policy framework in Nigeria is presented in Table 2-1 below.

Table 0-1: Relevant Legal and Policy Framework

S/N	Policy/Legal / Regulatory Instrument	Relevant Provisions
ACTS		
1.	Environmental Impact Assessment (EIA) Act CAP E12, LFN 2004	Provides guidelines for activities of developmental projects for which EIA is mandatory in Nigeria. The Act also stipulates the minimum content of an EIA as well as a schedule of projects, which require mandatory EIAs.
2.	National Environmental Standards and Regulations Enforcement Agency (NESREA) (Establishment) (Amendment) Act 2018	The Act established NESREA and empowers her with the responsibility of enforcing all environmental laws, guidelines, policies, standards and regulations in Nigeria.
3.	The Endangered Species Act CAP E9, LFN 2004	This Act prohibits, except under a valid license, the hunting, capture or trade in animal species, either presently or likely to be in danger of extinction and defines the liability of any offender under this Act. It also provides for regulations to be made necessary for environmental

S/N	Policy/Legal / Regulatory Instrument	Relevant Provisions
		prevention and control as regards the purposes of this Act.
4.	Land Use Act 1978 modified 1990	The Act is the legal framework for land acquisition and resettlement in Nigeria. Subject to the provisions of this Act, all land comprised in the territory of each State in the Federation are vested in the Governor of that State and such land shall be held in trust and administered for the use and common benefit of all Nigerians in accordance with the provisions of this Act.
5.	Forestry Act CAP 51 LFN 1994	This Act provides for the preservation of forests and the setting up of forest reserves. It is an offence, punishable with up to 6-month imprisonment, to cut down trees over 2 ft in height or to set fire to the forest except under special circumstances.
6.	Water Resources Act 101 of 1993	This provision vests all water and water resources in the Federal Government of Nigeria and regulates the exploitation of water resources. It also vests in the Federal Government the rights and control of water in any water course affecting more than one state for the purpose, inter alia, of ensuring the application of appropriate standards and techniques for the investigation, use, control, protection, management and administration of water resources.
7.	Labour Act, CAP L1, Laws of the Federation of Nigeria 2004	This Act is the principal and most direct legislation on employment matters in Nigeria. It is a piece of legislation, which seeks to protect the employment rights of individual workers and it includes matters such as classification of worker types, wages, contracts, employment terms and conditions, and recruitment.
8.	Natural Resources Conservation Council Act 286 of 1990	This Act is aimed at establishing the Natural Resources conservation council to be responsible for the conservation of natural resources of Nigeria and to formulate national policy for natural resources conservation.
9.	Employees Compensation Act (2010)	The Act provides compensation to employees who suffer from occupational diseases or sustain injuries arising from accidents at the workplace or in the course of employment. Payment of compensation (to the worker or to his dependents in case of death) by the employer is rooted in the accepted principle that the employer has a duty of care to protect the health, welfare and safety of workers at work.
10.	Harmful Waste (Special Criminal Provision Etc.) Act 1988	The purpose of this Act is to prohibit the carrying, depositing and dumping of hazardous wastes on any land, territorial waters and matters relating thereto.
11	Child Right Act, 2003	Codifies the rights of children in Nigeria (a person below the age of 18 years), consolidates all laws relating to children into a single law and specifies the duties and obligations of government, parents and other authorities, organizations and bodies. More particularly, the Act gives full protection to privacy, honor, reputation, health and prevention from indecent and inhuman treatment through sexual exploitation, drug abuse, child labor, torture, maltreatment and neglect to a Nigerian Child.
12	Climate Change Act, 2021	The Nigeria's Climate Change Act provides for a framework for mainstreaming climate actions in line with national development priorities and sets a net-zero target for 2050-2070. The Act mandates the FMEnv to set a carbon budget and pursue efforts to limit the temperature increase to 1.5^0C above pre-industrial levels. It further approves of formulation of a National Climate Change Action Plan in every five-year cycle to ensure that the national emission profile is consistent with the carbon budget goals and prescribes measures for identifying actions for climate adaptation and

S/N	Policy/Legal / Regulatory Instrument	Relevant Provisions
		mitigation.
13	Federal Road Safety Commission (Establishment) Act 2007	The Act established the Federal Road Safety Commission (FRSC) and charged the commission with the responsibility for traffic management, preventing and minimizing accidents on the highways, the supervision of road users, regulation of traffic on the roads and clearing of obstruction on any part of the highways amongst other functions. The Commission is also tasked with educating drivers, motorists and the public generally on the proper use of highways and other matters related to safety on the highways.
REGULATIONS & GUIDELINES		
12.	EIA Sectoral Guidelines for Infrastructure – Transportation Development Project (Roads and Highways), 1995	The Guidelines were designed to assist project proponents in conducting detailed environmental assessment of roads and highways projects with emphasis on the significant associated and potential impacts of such projects on the environment, mitigation measures for avoiding, minimizing or alleviating any adverse impacts as well as future monitoring programme for ensured sustainability of the project are also contained therein for guidance.
13.	National Environmental Protection (Management of Solid and Hazardous Wastes) Regulations 1991. S.1.15, 1991:	The Regulations define the requirements for groundwater protection, surface impoundment, land treatment, waste piles, landfills, and incinerators. The Regulations describe the hazardous substances tracking programme with a comprehensive list of acutely hazardous chemical products and dangerous waste constituent. The requirements and procedure for inspection, enforcement and penalty are also described.
14	National Environmental (Air Quality Control) Regulations (S.I No. 64) 2014	The purpose of these regulations is to provide for improved control of the nation's air quality to such extent that would enhance the protection of flora and fauna, human health, and other resources affected by air quality deteriorations.
15.	National Environmental (Sanitation and Wastes Control) Regulations, 2009. S. I. No. 28	The purpose of the Regulation is the adoption of sustainable and environment friendly practices in environmental sanitation and waste management to minimize pollution. The Instrument amongst others makes provisions for the control of solid wastes, hazardous wastes and effluent discharges. It in addition, spells out roles and responsibilities of State and Local Government Authorities.
16.	National Environmental (Soil Erosion & Flood Control) Regulations (S.I. 12), 2011	The purpose of these Regulations is to establish technically feasible and economically reasonable standards and procedures to achieve appropriate level of management and conservation practices to abate soil erosion, siltation and sedimentation of the waters of Nigeria, due to soil erosion and flood aggravated by non-agricultural earth-disturbing activities.
17.	National Environmental (Noise Standards and Control) Regulations, 2009. S. I. No. 35	The main objective of the provisions of this Regulation is to ensure tranquillity of the human environment or surroundings and their psychological well-being by regulating noise levels. The regulations prescribe maximum permissible noise levels of a facility or activity to which a person may be exposed; and provides for the control of noise/mitigating measures for the reduction of noise.
18.	Nigerian Standard for Drinking Water Quality, 2007	This standard sets parameters and maximum allowable limits in drinking water in Nigeria. It also includes normative references/laws guiding drinking water quality, definition of terminologies, institutional roles and responsibilities, monitoring, data management and compliance criteria.
19.	National Environmental (Construction Sector) Regulations, 2010. S. I. No.	The purpose of these regulations is to prevent and minimize pollution from construction, decommissioning and demolition activities in the Nigerian environment. It stipulates that new projects in the construction sector shall apply cost-effective, up-to-date, efficient, best available technology, to

S/N	Policy/Legal / Regulatory Instrument	Relevant Provisions
	19	minimize pollution to the barest degree practicable. In addition, every operator or facility shall carry out an EIA and submit an EMP for new projects or modification including expansion of existing ones before commencement of activity.
20.	National Environmental (Control of Vehicular Emissions from Petrol and Diesel Engines) Regulations, S. I. No. 20, 2010.	The purpose of these regulations is to restore, preserve and improve the quality of air. The standards contained herein provide for the protection of the air from pollutants from vehicular emission. This law will guide vehicular emissions and emission.
21.	National Environmental (Surface and Groundwater Quality Control) Regulations, 2010. S. I. No. 22	The purpose of these Regulations is to restore, enhance and preserve the physical, chemical and biological integrity of the nation's surface waters and to maintain existing water uses. The Regulations also seek to protect groundwater sources by regulating the discharge of hazardous wastes, fossil fuels energy and any other substances having the potential to contaminate groundwater.
POLICIES		
22	National Policy on Environment 2016	Describes the conceptual framework and strategies for achieving the overall goal of sustainable development in Nigeria. The policy will guide the implementation of the subprojects in Plateau state.
23	National Policy on Flood and Erosion Control 2006 (FMEnv)	This policy addresses the need to combat erosion in the country utilizing the procedures outlined in the National Action Plan for Flood and Erosion Control and Technical Guidelines, developed by the WIC Environmental Committee which was set up to plan an operational platform for these issues.
24	National Gender Policy 2006	The overall goal of the national gender policy is to promote the welfare and rights of Nigerian women and children in all aspects of life: political, social and economic. The policy seeks to plan, coordinate, implement, monitor and evaluate the development of women in the county. In concrete terms, the National Gender Policy in Nigeria focus on: ▪ Contribution towards women's empowerment and the eradication of unequal gender power relations in the workplace and economy, in trade unions and in broader society. ▪ Encouragement of the participation, support and co-operation of men in taking shared responsibility for the elimination of sexism and redefining of oppressive gender roles. ▪ Increase the participation of women in leadership and decision-making. ▪ Ensure that through labour legislation and collective bargaining, the particular circumstances of women are considered and that measures are promoted to eliminate discrimination on the basis of gender. ▪ Ensure that there is a gender perspective in all sectors of development.
25	National Climate Change Policy for Nigeria 2021 – 2030	The Policy's overall goal is to promote a low-carbon, climate-resilient and gender-responsive sustainable socio-economic development. The goal of the Policy is to ensure i. Reduced vulnerability to climate change impacts across all sectors. ii. Improved social, cultural, economic and ecological resilience. iii. Reduced greenhouse gas emissions. iv. Increased awareness of climate change impacts and adaptation and mitigation measures. v. Enhanced and strengthened research, innovation and technology development and transfer and systematic observations. vi. Enhanced capacity to implement climate change related interventions at national, state and community levels. vii. Climate change and its cross-cutting issues

S/N	Policy/Legal / Regulatory Instrument	Relevant Provisions
		mainstreamed in development
26	National Policy on Occupational Safety and Health, revised 2020	This policy was approved by the Federal Executive Council (FEC) in September 2020. It provides a guide for voluntary compliance and serves as a basis for Occupational health and safety programs for workers even under such development projects.

2.1.2 World Bank Safeguard Policies Triggered by RAAMP

The world bank safeguard policies triggered by this project and its works activities include: OP/BP 4.01, which sets the groundwork for the conduct of Environmental Assessment of projects that have the potential to negatively impact the environmental media; Natural Habitats (OP/BP 4.04), Physical Cultural Resources (OP/BP 4.11) and Involuntary Resettlement (OP/BP 4.12). While a standalone RAP will also be prepared to address issues such as loss of economic trees, cash crops, loss of assets, economic displacement and minimal land acquisition, associated with Involuntary Resettlement (OP4.12). The triggered operation policies are described in Table 2-2.

Table 2- 2: Summary of the World Bank Operational Policies Triggered by RAAMP

Triggered Operational Policies	Description of Policies
Environmental Assessment (OP 4.01)	This Operational Policy is triggered. The Bank requires Environmental Assessment (EA) of projects proposed for Bank financing to help ensure that they are environmentally sound and sustainable, thereby improving decision making. With regards to RAAMP, activities involving road rehabilitation may result in an increase in fugitive dust, carbon emissions from incoming vehicles or machines/equipment (generators) running on fossil fuels, noise, labour influx, SEA/SH. Furthermore, there will be subsequent generation of wastes, particularly construction and demolition wastes (including but not limited to disused metals, woods, broken concrete, excavated soil, plastics, etc.), and biodegradable food wastes. Depending on the nature of these waste, quantity and degree of exposure, they may pose potential adverse E&S risks and impacts. In this regard, the Bank requires the borrower to conduct an E&S assessment. Specifically, for the intervention works, this ESMP shall be prepared in a manner that is proportionate to the nature and scale of the identified E&S risks and impacts.
Natural Habitats (OP 4.04)	This policy promotes the protection and conservation of the natural home or environment of animals, plants, or other organisms, as a means to enhance sustainability. The general landscape of Abia state is largely filled with vegetation which include grasses, shrubs and trees (including mangrove and rainforests). Vegetation has encroached into the original dimensions of the selected roads and bridges proposed for rehabilitation; some of the vegetation types are essential for feeding livestock, traditional medicine, food and other uses. Vegetation/Land clearing in order to permit suitable ground-area[3][4] for rehabilitation works, siting of equipment staging areas and campsites may pose adverse E&S risks. This is quite notable considering that in the project locations and wider southern regions of Nigeria, forests are believed to play a huge role in providing communities with unique raw materials and commodities that distinguish their identity, customs and way of life[4][5].

3[4] Ground Area means the total surface area of land that would be converted to an impervious surface by the proposed project. It includes structures, parking lots, approaches, service facilities, appurtenant structures, and recreational facilities.

4[5] The Ibibio *(Etinan, Ibiono Ibom, Ikono, Ikot Abasi, Itu, Mkpat Enin, Nsit Atai, Nsit-Ubium, Onna, Uruan, Uyo, Ini LGAs)* and Annang *(Abak, Essien Udim, Etim Ekpo, Ika, Ikot Ekpene, Oruk Anam and Ukanafun LGAs)* people of Akwa Ibom State are known for their raffia palm products. Raffia palm is a versatile material that can be used to make mats, baskets, hats, and other items.

Triggered Operational Policies	Description of Policies
	Additionally, fresh water bodies within the vicinity of the project locations may be impacted by sediment runoff and waste which may affect aquatic life therefore OP 4.04 is triggered and would be addressed in the ESMP report through the proffering of mitigation measures and other best environmental practices during and after the project.
Physical Cultural Resources (OP 4.11)	This policy protects i) Cultural property - monuments, structures, ancestral trees, works of art, or sites of significance, and are defined as sites and structures having archaeological, historical, architectural, or religious significance and ii) Natural sites with cultural values. This includes cemeteries, graveyards and graves etc. In Abia State, where cultural practices and sites of cultural significance and heritage can be found across the project locations; and are prone to potential adverse impacts associated with the proposed intervention works, OP 4.11 is triggered. Some infrastructural development activities such as site clearing, excavations and earth works may result in the moving of shrines and sacred spots (in some instances designs will be reviewed to achieve "Mitigation by Avoidance"). In line with this, the ESMP will incorporate annexures for Physical Cultural Resources Management Plan (PCRMP) to guide the AB-RAAMP PIU and their Contractors during civil works. The proper, diligent and apt implementation of PCRMP to be contained in the ESMP report is expected to provide guidelines for chance find procedures, mitigate adverse social impacts such as displeasure and ethnic conflicts associated with PCRs. This will help in addressing concerns triggered by OP 4.11.
Involuntary Resettlement (OP 4.12)	This policy takes into consideration all projects requiring land acquisition and/or resettlement in the event that there is encroachment on people's land, right of way, assets and livelihood activities. Most of the infrastructural development activities will not result in major losses or acquisition of land or restriction to sources of livelihoods. However, it is triggered because some rural roads where intervention works will be undertaken have been encroached by roadside petty trading activities and farms consisting of economic trees and cash crops. Some roads which may pass through communities will require expansions in terms of width and length; this may result in some forms of physical and economic displacement. Importantly, the proposed intervention works will require Contractors to enter agreements for land lease for the purpose of borrow pits and campsites. It is noteworthy to state that a standalone Resettlement Action Plan (RAP) for the intervention works to be carried out in the 33 rural roads and 9 CDS will be prepared by the AB-RAAMP PIU to address these issues in line with OP 4.12.

2.2 SUMMARY AND COMPARISON OF RELEVANT STATE LAWS, NATIONAL LAWS AND WORLD BANK OPERATIONAL POLICIES

The provisions and comparison of the applicable National laws, Abia state laws and World Bank operational policies triggered by the proposed RAAMP project activities are summarized in Table 2-3.

Table 2- 3: Comparison of Abia State, Nigerian EA and World Bank EA Guidelines

Abia State Laws	Nigeria National Laws	World Bank Policies	Comments
✓ Abia State Policy on Environment 2010 emphasises state government	✓ Environmental Impact Assessment (EIA) Act CAP. E12 L.F.N (*2004)* makes it mandatory for	✓ Environmental Assessment (OP/BP 4.01) which ensures that projects likely to have potential	✓ Based on the limited coverage and capacity of the Abia State environmental laws, Abia

Abia State Laws	Nigeria National Laws	World Bank Policies	Comments
efforts to sustainable management of Abia environment ✓ Abia State Basic Environmental Law No. 1 of 2004 amended in 2013 which establishes basic environmental sanitation practice and enforcement, the Abia State Environmental Protection Agency and penalties for environmental defaulters	all major development projects likely to have negative impacts on the environment like the RAAMP to conduct Environmental Impact Assessments. ✓ RAAMP is rated a category II based on the Nigerian EIA law which stipulates the need for an Environmental Management Plan (EMP)	environmental and social negative impacts undergo environmental assessments based on the defined project category. ✓ RAAMP is rated a category B due to the nature of envisaged limited environmental and social impacts. An ESMF has been prepared to identify all potential risks and mitigation for the project. This ESMP also provides site-specific mitigation plans for potential negative impacts.	RAAMP has adopted the World Bank OP 4.01 as a guide for the project, which is also in tandem with the Nigerian EIA law for a category B project.
No specific law	✓ Forestry Act 2006 has provisions to restore, maintain and enhance the ecosystems and ecological processes essential for the functioning of the biosphere to preserve biological diversity and the principle of optimum sustainable yield in the use of these natural resources and ecosystems.	✓ Natural Habitat (OP/BP 4.04) which is triggered by RAAMP activities such as vegetation clearance. The policy aims to conserve biological diversity and promote the sustainable use of natural resources. Mitigation measures for envisaged associated negative impacts have been captured in this ESMP	There are no associated specific state laws thus, Abia RAAMP has adopted World Bank OP/BP 4.04
No specific law	✓ National	✓ Physical	In the absence of an

Abia State Laws	Nigeria National Laws	World Bank Policies	Comments
	Cultural Policy 1988. The National Commission for Museums and Monuments Act has provisions for cultural heritage items. Please review and include	Cultural Resources (OP/BP 4.11) which stipulates the need to protect the integrity of physical and cultural heritage. ✓ Excavation works under RAAMP may lead to chance finds, project activities may not be able to completely avoid unknown sacred sites and cultural resources. To address this policy, chance find procedures have been provided in Appendix 13	associated robust law at the state and national levels, the World Bank OP4.11 has been adopted.
The state adopts the National Land Use Act (1978)	✓ Land Use Act (1978), which proscribes that all land belongs to the State Government and can be allocated for developmental purposes.	✓ OP 4.12 Involuntary Resettlement which ensures measures to compensate for land acquisition, economic and physical displacement, loss of assets, economic trees and cash crops. ✓ Project activities will affect economic trees, a and temporary structures, thus a Stand-alone RAP will be prepared by the SPIU	In the absence of stringent relevant state and national laws, the World Bank OP/BP 4.12 has been adopted.

2.2.1 World Bank Group Environmental, Health and Safety Guideline

These guidelines are technical reference documents with general and industry-specific examples of good international industry practice. The EHS guidelines contain the

performance levels and measures that are normally acceptable to the World Bank Group and that are generally considered to be achievable for infrastructural developments including road and bridges construction. The general EHS guidelines contain information on environmental (air emmisions and ambient air quality), energy conservation, wastewater and ambient water quality, water conservation, hazardous materials management, waste management, Noise and contaminated land), occupational health and safety (general facility design and operation, communication and training, physical hazards, chemical hazards, biological hazards, radiological hazard, personal protective equipment (PPE), special hazard environment and monitoring), community health and safety (water quality and availability, structural safety of project infrastructure, life and fire safety, traffic safety, transport of hazardous materials, disease prevention, disease prevention and emergency preparedness and response) and construction and decommissioning (environment, occupational health and safety and community health and safety). Find details in the World Bank general EHS guideline[5].

2.2.2 Environmental, Health and Safety Guideline for Construction Materials Extraction

This document includes information relevant to construction materials extraction activities such as aggregates, limestone, slates, sand, gravel, clay, gypsum, feldspar, silica sands, and quartzite, as well as the extraction of dimension stone. It addresses stand-alone projects and extraction activities supporting construction, civil works, and cement projects. Although the construction materials extraction guidelines emphasize major and complex extraction schemes, the concepts are also applicable to small operations[6].

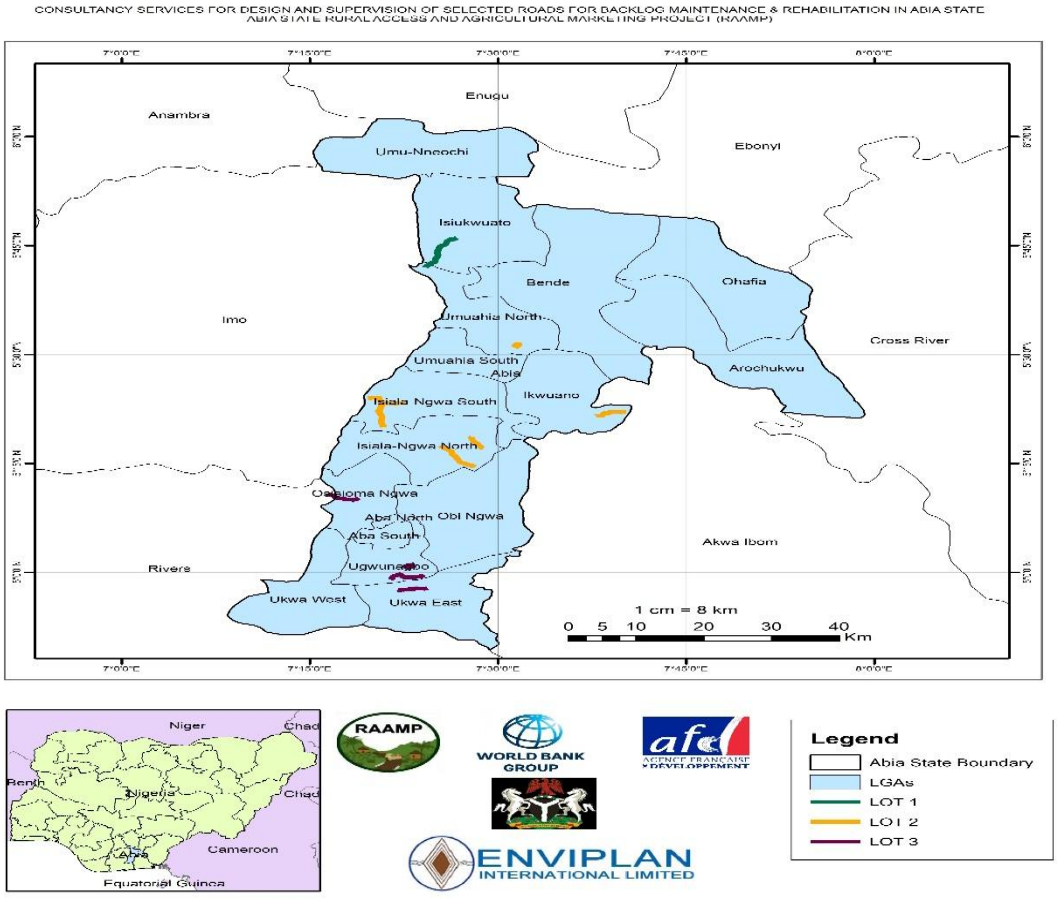
[5] https://www.ifc.org/content/dam/ifc/doc/2000/2007-general-ehs-guidelines-en.pdf
[6] https://www.ifc.org/content/dam/ifc/doc/2000/2007-construction-materials-extraction-ehs-guidelines-en.pdf

CHAPTER THREE

PROJECT DESCRIPTION

3.1 PROJECT OVERVIEW

The proposed intervention is essentially civil engineering work entailing spot improvement and cross drainage structures, backlog maintenance/rehabilitation and upgrading activities on the various identified rural roads across 17 LGAs in Abia State (Figure 3-1). The roads, culverts and bridges provide access to several rural communities in the benefiting local government areas in the state as indicated in Tables 3-1, 3-2. 3-3 and 3-4 respectively for spot improvement, backlog maintenance, upgrade and cross drainage works packages.



Source: Abia RAAMP Backlog Maintenance Engineering Design

Figure 3- 1: Map of Abia State Showing the Project LGAs

3.2 DESCRIPTION OF THE PROPOSED ROAD REHABILITATION ACTIVITIES

The Abia state RAAMP proposes to carryout intervention works on 33 No roads totaling 174.122km and 9No cross drainage structures totaling 79m. Specifically, the proposed intervention works shall include: Spot Improvement (12Nos – 64.362km), Backlog Maintenance/Rehabilitation (10Nos – 55.60km), Upgrade (11Nos - 54.16km) and construction and rehabilitation of Cross Drainage Structures (9Nos – 79m) under phase 1 intervention works package. The sub-projects intervention shall be situated in various rural communities located within the 17 LGAs across the three senatorial districts of Abia State.

The intervention shall be divided into a total twelve (12) Lots and one contractor engaged to handle each Lot. The phase 1 work package would involve civil works such as but not limited to:

a) **Backlog Maintenance:** These intervention works will be carried out on 10No roads totaling 55.60km in 8 LGAs and 6 Lots. The works package will include:
   - Site clearance on all designated roads.
   - Excavation, hauling of unsuitable material at failed road sections to subgrade level.
   - Excavation of fill material from approved borrow pits.
   - Filling, spreading, shaping and compacting approved fill material for sub-base and base course to 100% WAS compaction as well as embankment slopes.
   - Desilting of existing silted drains and culverts.
   - Construction of reinforced concrete drains as well as Cross Drainage Structures (box and pipe culverts) of 1x900mm to 2mx2mx2m dimensions at designated locations needing culverts.
   - Prime coating of surface with MC1.
   - Overlaying of asphaltic wearing course.
   - Installation of Traffic Control/Management features (road signs, road markings, speed bumps and rumble strips, etc.) along the road corridor.
   - Vegetation control along the road corridor.

Summary of the roads selected for backlog maintenance and other details associated with the roads are presented in Table 3-1.

Table 3- 1: List of Roads Selected for Backlog Maintenance

S/N	LGA	Road Name	No of Communities	Length (Km)	Lot	Coordinates
1	Isiala Ngwa North	Amorji Junction - Abayi - Ahiaba court - umuchima – Uratta	5	9.60	3	N5.3895, E7.3760; N5.3318, E7.3491
2	Isiala Ngwa South	Amiyi Nvosi junction - Ohuhu - Ohuhu Ikwuru	2	3.40	2	N5.3107, E7.4647 N5.2970, E7.4471
3	Isiala Ngwa South	Umuokoro-Umuapu Amede-Isi Engime	3	7.20	2	N5.2437, E7.4671 N5.2905, E7.4222
4	Osisioma	Egbelu Onwo - Egbede Umuagbai Rd	3	5.20	5	N5.1685, E7.1355 N5.2970, E7.4713
5	Ugwunagbo	Abalegwu junction - Amaokpu – Umuaja	2	3.70	5	N5.0218, E7.3547 N5.0162, E7.3898
6	Ugwunagbo	Umuakoli Akanu-Umuosi Akanu	2	2.60	6	N4.9595, E7.3695 N4.9944, E7,4014
7	Ukwa East	Ohanku Market Road Ukebe Ohuru Ndoki	3	4.50	6	N4.9711, E7.4268 N4.9832, E7.4309

S/N	LGA	Road Name	No of Communities	Length (Km)	Lot	Coordinates
		Road				
8	Isuikwuato	Amiyi Obinohia - Umueriem - Nnuya - Eziama Nnuya	3	11.60	1	N5.6838, E7.4205; N5.7582, E7.4742
9	Ikwuano	Osaka-Nkalu Road	2	5.10	4	N5.3174, E7.5426; N5.3005, E7.5568
10	Isialangwa South	Mgbokonta - Ohuhuekwuru	2	2.70	4	N5.5161, E7.5216; N5.5158, E7.5225
Total			27		55.60km	

b) **Upgrade:** These intervention works will be carried out on 11No roads totaling 54.16km in 9 LGAs and 3 Lots. The works package will include but not limited to:

- Clearing of site either side of the centerline of the road.
- Excavation and haulage of unsuitable materials from site.
- Excavation of fill material from approved borrow pits.
- Filling, spreading, shaping and compacting approved fill material for sub-base and base course to 100% WAS compaction as well as embankment slopes.
- Construction of reinforced concrete drains as well as Cross Drainage Structures (box and pipe culverts) of 1x900mm to 2mx2mx2m dimensions at designated locations needing culverts.
- Prime coating of surface with Medium Curing 1 (MC-1) cut-back bitumen.
- Laying of asphaltic wearing course.
- Installation of Traffic Control/Management features (road signs, road markings, speed bumps and rumble strips, etc.)

Summary of the roads selected for upgrade and other details associated with the roads are presented in Table 3-2.

Table 3- 2: List of Roads Selected for Upgrade

S/N	LGA	Road Name	No of Communities	Length (Km)	Lot	Coordinates
1	Arochukwu	Amuvi-Ututu-Amakofia	3	5.20	7	N5.4190, E7.8846 N5.4250, E7.9134
2	Arochukwu	Umeye Junction - Nka	2	3.40	7	N5.4667, E7.8813 N5.4771, E7.8898
3	Arochukwu	Ndiokorie-Eziafor- Atani-Ndioji Abam	5	7.26	7	N5.5483, E7.7749 N5.5061, E7.7844
4	Bende	Uzuakoli market junction - Ugwumba - Uzuitim road	3	7.10	8	N5.6326, E7.5597 N5.6227, E7.5978
5	Umunneochi	Uzoigwe kenneth Rd-Obinagu-Umada-Orie Ngodo mkt	3	5.40	8	N5.9675, E7.3863 N5.9617, E7.3680
6	Ikwuano	Ndi Oro-Nnono road	2	1.20	8	N5.4402, E7.5658 N5.4419, E7.5597
7	Isiala Ngwa	Market junction -	2	4.40	9	N5.3910, E7.3806

S/N	LGA	Road Name	No of Communities	Length (Km)	Lot	Coordinates
	North	Ntigha Okpuala - Umnachi Ntigha				N5.3955, E7.3871
8	Isiala Ngwa South	Nkwo Ebe-Ebeyi Nvosi-Okpokiri Nvosi-Umuhi Nvosi	4	6.00	9	N5.3334, E7.4790 N5.3148, E7.4480
9	Ugwunagbo	Ukebe Junction Etiti Akanu Ngwa Ugwunagbo HQS	2	7.20	9	N4.9944, E7.4012 N5.0207, E7.3604
10	Aba South	Boundry rd-Amaukwu,	2	2.00	9	N5.0934, E7.3411 N5.0952, E7.3468
11	Ukwa West	Afor Ogwe Market Junction-Umuazuta-Umunneato Ihie Ukwu Road	3	5.00	9	N5.0096,E7.2641 N5.0087, E7.3065
Total			31		54.16km	

C) **Spot Improvement Works Package:** These intervention works will be carried out on 12No roads totaling 64.365km in 8 LGAs and 3 Lots. Spot Improvement and cross drainage structures intervention are lotted together and will be handled by three contractors for the lots.The works package will include but not limited to:

1. ***Paved Roads***

- Excavation, hauling of unsuitable material at failed road sections to subgrade level.
- Compacting to 100% WAS compaction all excavated sections.
- Excavation of fill material from approved borrow pits.
- Filling and compacting to 100% WAS compaction approved sub-base material.
- Filling and compacting to 100% WAS compaction approved base course material.
- Prime coating of surface with S124 and Surface dressing of eroded slopes at designated locations.
- Desilting of existing silted drains and culverts.

2***. Unpaved Roads***

- Site clearance either side of the centerline of the roads.
- Excavation, hauling of unsuitable material at failed road sections to subgrade level.
- Grading and compacting of road to 100% WAS compaction.
- Excavation of fill material from approved borrow pits.
- Filling, spreading, shaping and compacting approved fill material for sub-base and base course to 100% WAS compaction as well as embankment slopes.
- Construction of earthen drains at designated locations along the road corridor

Summary of the roads selected for Spot Improvement and other details associated with the roads are presented in Table 3-3.

Table 3- 3: List of Roads selected for Spot Improvement

S/N	LGA	Road Name	No of Communities	Length (Km)	Lot	Coordinates
1	Ohafia	Okagwe - Nkwebi Onwuwanyanwu	3	4.00	10	N5.6861, E7.8045 N5.6745, E7.7980

S/N	LGA	Road Name	No of Communities	Length (Km)	Lot	Coordinates
2	Ohafia	Okwuma Road – Ohafia Military Base	2	0.710	10	N5.6145, E7.7929 N5.6026, E7.7929
3	Bende	Alayi – Ezeukwu Road	2	9.670	10	N5.7407, E7.5954 N5.8481, 7.5543
4	Bende	Bende – Etitiulo – Ntalakwu	3	17.00	10	N5.5596, E7.6382 N5.4460, E7.6826
5	Umunneochi	Umuelem – Ihe – Ngada Road	3	6.476	11	N5.9742, E7.4043 N5.9718, E7.4464
6	Isuikwuato	Amaba - Umuasua	2	1.200	11	N5.7224, E7.5167 N5.7201, E7.5009
7	Isuikwuato	Amaoho Amaba – Okoba Road	2	3.765	11	N5.7301, E7.5139 N5.7357, E7.5014
8	Obingwa	Umuohia – Osusu Umuikpeghi – 7up	3	2.537	12	N5.1803, E7.3900 N5.1571, 7.3924
9	Umuahia North	Umuagu-Utali	2	5.905	12	N5.5613, E7.4482 N5.6457, E7.4303
10	Umuahia North	Agalabano-Umuhu central school-Ekeoba	2	2.000	11	N5.5800, E7.4446 N5.5821, E7.4473
11	Ugwunagbo	Ihie Ukwu-Obegu	2	4.564	12	N5.5009, E7.3093 N4.9625, E7.3290
12	Aba North	Ariara-Umumgbede-Umuiku	3	6.535	12	N5.1068, E7.3276 N5.1748, E7.2823
Total			29		64.362	

d) Cross Drainage Structures: These intervention works will be carried out on 9No sub projects totaling 79m in 4 LGAs and 3 Lots. The works package will include but not limited to:

- Excavation and haulage of unsuitable materials below foundation of culverts.
- Construction of box and pipe culverts and including blinding, reinforcement, formwork complete with head walls, wing walls, toes, aprons and concrete walkway.
- Provision of stone pitching as embankment protection at designated culverts locations.

Summary of the roads with the cross-drainage locations and other details associated with the cross drainage structures are presented in Table 3-4.

Table 3- 4: List of roads selected for Cross Drainage Intervention``

S/N	LGA	Road Name	No of Communities	Length (Km)	Lot	Coordinates
1	Ohafia	Oboro-Ndiudumaukwu-Ndianku-Nkwebi-Okagwe Ohafia (Okagwa Stream)	5	6m		N5.6765, E7.7990
2	Ohafia	Okwuma Road – Ohafia Military Base	2	6m		N5.6019, E7.7929
3	Bende	Bende Etitiulo-Ubibia-Ndiwo-Itumbuzo-Okopedi- Ntalakwu (Awiwa Stream)	3	10m		N5.5036, E7.6393
4	Bende	Amaokwelu Alayi	3	12m	10	N5.6810,

S/N	LGA	Road Name	No of Communities	Length (Km)	Lot	Coordinates
		Junction-Amankalu-Akoli Imenyi (Igwu river)				E7.5753
5	Bende	Amaokwelu Alayi Junction-Amankalu-Akoli Imenyi (Nchichi stream)	3	3m		N5.6739, E7.5637
6	Bende	Ezeukwu-Ugwueke Road (Ifuama Bridge in Amangwu Ezeukwu)	2	14m	10	N5.1266, E7.5634
7	Umuahia North	Agalabano-Umuhu-Ekeoba Express (Ekweze stream)	2	6m		N5.5877, E7.4530
8	Umuahia North	Umuafiaka-Umuokpara (iyi Obowo)	2	11m	11	N5.5638, E7.4402
9	Umuahia South	Ahiaukwu-Amangwo-Umuajata Umudere Aamkama (Umudere Stream)	3	11m	12	N5.3683, E7.5227
Total			25		79m	

3.3 PROPOSED PROJECT ACTIVITIES

The major activity of the project is civil engineering works which will entail the following as described in Table 3-5.

Table 3- 5: Proposed Project Activities

PROJECT PHASE	SPOT IMPROVEMENT	BACKLOG MAINTENANCE/ REHABILITATION	UPGRADE
PRE-CONSTRUCTION			
Site Preparation	• Site clearance • Setting up of camp site/Engineering yard. • Mobilization of equipment and workers to site • Dewatering • Creation of borrow pits • Sanitary Facilities including 3 male and 3 female toilets (will be used throughout implementation) • Staging Area for contractor equipment • Borrow Pit Area • Personal Protective Equipment (PPEs) • First Aid kits • Portable water • On-camp power source	• Site clearance • Setting up of camp site/Engineering yard. • Mobilization of equipment and workers to site. • Dewatering • Creation of borrow pits • Sanitary Facilities including 3 male and 3 female toilets (will be used throughout implementation) • Staging Area for contractor equipment • Borrow Pit Area • Personal Protective Equipment (PPEs) • First Aid kits • Portable water • On-camp power source	• Site clearance • Setting up of camp site/Engineering yard. • Mobilization of equipment and workers to site. • Dewatering • Creation of borrow pits • Sanitary Facilities including 3 male and 3 female toilets (will be used throughout implementation) • Staging Area for contractor equipment • Borrow Pit Area • Personal Protective Equipment (PPEs) • First Aid kits • Portable water • On-camp power source
CONSTRUCTION			
Earthwork	• Excavation, cutting and filling and surfacing).	• Removal of encumbrances,	• Removal of encumbrances, unsuitable materials, and

PROJECT PHASE	SPOT IMPROVEMENT	BACKLOG MAINTENANCE/ REHABILITATION	UPGRADE
	• Provision of soil stabilization • material sourcingMovement of earth materials. • Generation and disposal of construction spoil and waste in general.	unsuitable materials, and demolition of failed culverts. • Excavation, cutting and filling with lateritic materials. • Provision of soil stabilization • material sourcing • Movement of earth materials. • Generation and disposal of construction spoil and waste in general.	demolition of failed culverts. • Excavation, cutting and filling with lateritic materials. • Provision of soil stabilization • Material sourcing. • Movement of earth materials. • Generation and disposal of construction spoil and waste in general.
Drainage Infrastructure	• Construction of earth and concrete lined side drains. • Construction of single and multiple cells concrete pipe culvert extensions and new culverts. • Construction of reinforced concrete box culverts. • Provision of slope protection. • cement and concrete works for drainage structures.	• Construction of earth and concrete lined side drains. • Construction of single and multiple cells concrete pipe culvert extensions and new culverts. • Construction of reinforced concrete box culverts. • Provision of slope protection. • Cement and concrete works for drainage structures.	• Construction of earth and concrete lined side drains. • Construction of single and multiple cells concrete pipe culvert extensions and new culverts. • Construction of reinforced concrete box culverts. • Provision of slope protection. • Cement and concrete works for drainage structures.
Pavement	• Provision of sub-base and base course at critical sections.	• Provision of sub-base, • Provision of lateritic base-course	• Provision of sub-base, • Provision of lateritic base-course
Asphalting	Not applicable	• Provision of prime coat. • Provision of surface dressing	• Provision of prime coat • Provision of 30mm asphaltic concrete
Road Furniture	• Provision of appropriate road furniture.	• Provision of road markings, signs and other safety and traffic control infrastructure	• Provision of road markings, signs and other safety and traffic control infrastructure.
Construction of 9Nos Cross Drainage	• Excavation, cutting and filling. • Creation of borrow pits and borrowing to fill. • Construction of cross drainages/bridges not exceeding a single span of 15m, • , • Provision of slope protection where applicable, • Other works (i.e., provision of road markings, signs and other infrastructure).		
Labour Requirement*	• Skilled Labour = 6 • Semi-Skilled/Unskilled = 38	• Skilled Labour = 8 • Semi-Skilled/Unskilled = 40	• Skilled Labour = 10 • Semi-Skilled/Unskilled = 40
Support Facilities	• Base Camp (must be fenced) • Staging Area (must be fenced) • Site Clinic • Sanitary Facilities (minimum of 2 male and 2 female toilets) • PPEs (Helmets, respiratory protection, protective gloves, hearing protection, face shields,		

PROJECT PHASE	SPOT IMPROVEMENT	BACKLOG MAINTENANCE/ REHABILITATION	UPGRADE
	protective clothing etc) • First aid kits (1: 20 staff) • Portable water/food. • Borrow pit area.		
Decommisioning	• Removal of construction equipment and unused materials from the roads and staging areas. • Disposal of construction spoil and waste. • Rehabilitation of material borrow areas. • Dismantling of temporary workers' camps of the contractor. • Rehabilitation of disturbed areas including recon touring and revegetation.		
OPERATION PHASE			
Road Usage and Maintenance	• Vehicular movement • Identification and fixing of road defects. • De-siltation of culverts and drains. • etc	• Vehicular movement • Identification and fixing of road defects. • De-siltation of culverts and drains. • Etc	• Vehicular movement • Identification and fixing of road defects. • De-siltation of culverts and drains. • Etc

**Estimates are provided as the actual number will be dependent on many factors and be determined at contracting.*

3.4 ENGINEERING DESIGN FOR THE PROPOSED WORKS

This section provides samples of the engineering design for each of the intervention works. The civil works contract will be for a period of eighteen (18) months for all the interventions (Backlog Maintenance/Rehabilitation, Upgrade, Spot Improvement and Cross Drainage Structires).

3.4.1 Backlog Maintenance/Rehabilitation

The design specifications for roads selected for backlog maintenance intervention works was guided by the low volume road (LVRs) manual (2016) developed under RAAMP project to take care of specific needs of rural roads in Nigeria. The standard specifications stated below was adopted in the design of backlog maintenance roads for Abia state RAAMP.

- Design Speed - 60 km/hour
- Maximum gradient along the road is 7% and minimum is 0.3%
- Width of carriageway - 6.0m
- Width of shoulders - 1.0m (on either side)
- Total width of roadway - 8.0m
- Right of way width shall be a minimum of 12.0m
- 150mm lateritic sub base and base course
- 30mm asphaltic concrete
- 900mm diameter pipe culverts
- Stopping Sight Distance (Stopping) - 85m
- Stopping Sight Distance (Passing) - 410m
- Lateral Clearance - 0.5 to 1.20m
- Vertical Clearance - 5.55m
- Minimum Radius (Horizontal Curve) - 123m
- Minimum Gradient (Drainage) - 0.30%
- Limiting K – value (Crest Curve) - 11
- Limiting K – value (Sag Curve) - 18
- Maximum Super elevation - 6%

- Traffic Signs and Road Safety - As stipulated in Nigeria Highway Manual Part 1: Volume VI: Signs and Markings
- Road cross-fall (paved surface) - 2.50%
- Road side drains - Rectangular (Depth not less than 1.0m

To meet the new road span intended for the backlog maintenance/rehabilitation works, some of the existing culverts which have failed or are inadequate—will be rebuilt and elongated. The design calls for building new culverts and expansion of the existing once at selected portions of the project corridors.

See Figure 3-2 for engineering designs for Backlog Maintenance roads in Abia State

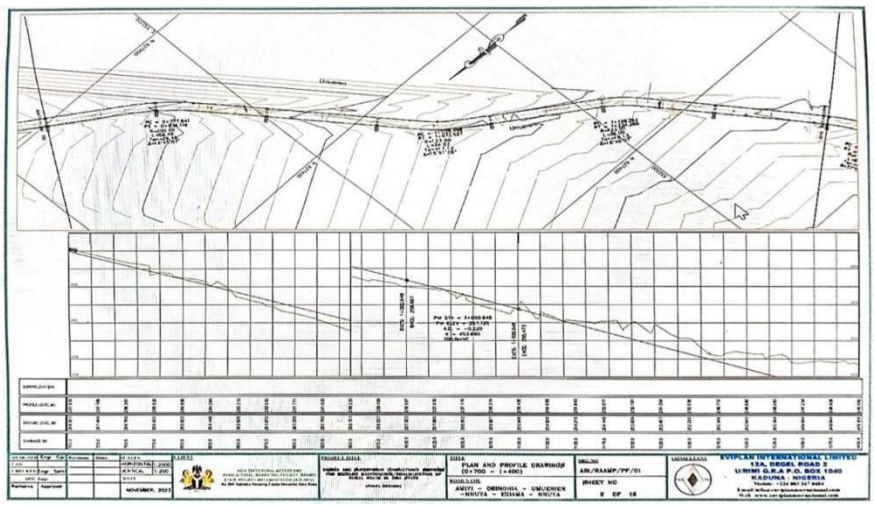


Figure 3- 2: Backlog Maintenance design

3.4.2 Upgrade

Upgrade intervention works will be carried out in 11No roads in Abia State. The proposed design width shall be 6m carriage way with 1m shoulder on both sides of the roads. The roads shall be concrete drains with culverts (Pipe and box culverts) where necessary. The design proposed for construction of new culverts and reinforcement/expansion of the existing once at selected portions of the roads selected for upgrade intervention and rebuilding of the failed or inadequate once. See figure 3-3 below for the engineering design for road selected for upgrade intervention.

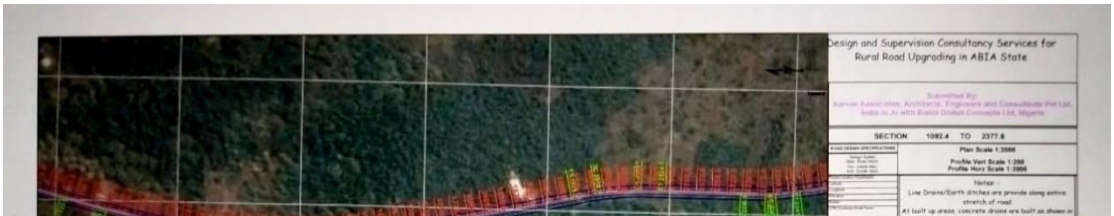


Figure 3- 3: Upgrade Engineering Design

3.4.3 Spot Improvement and Cross Drainage Structures

Spot improvement intervention works shall be carried out on failed portions of paved partially paved and unpaved roads while cross drainage interventions shall be done on roads with failed bridges, gaps without bridges, etc. The carriage way for this intervention (Spot Improvement) shall not exceed 6m with 1m shoulder on both sides of the roads while cross drainage structure intervention shall not exceed 20m span. See figure 3-4 and 3-5 for the engineering design of Spot improvement interventions and cross drainage structures.

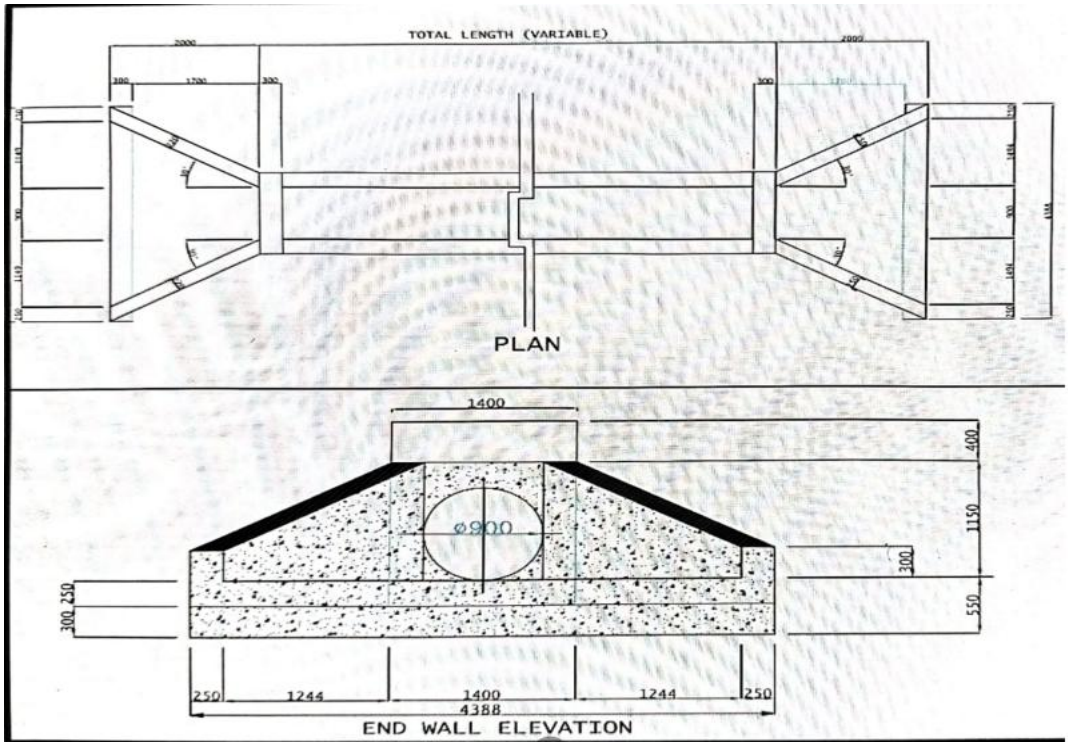


Figure 3- 4: Engineering Design for Cross Drainage Structures

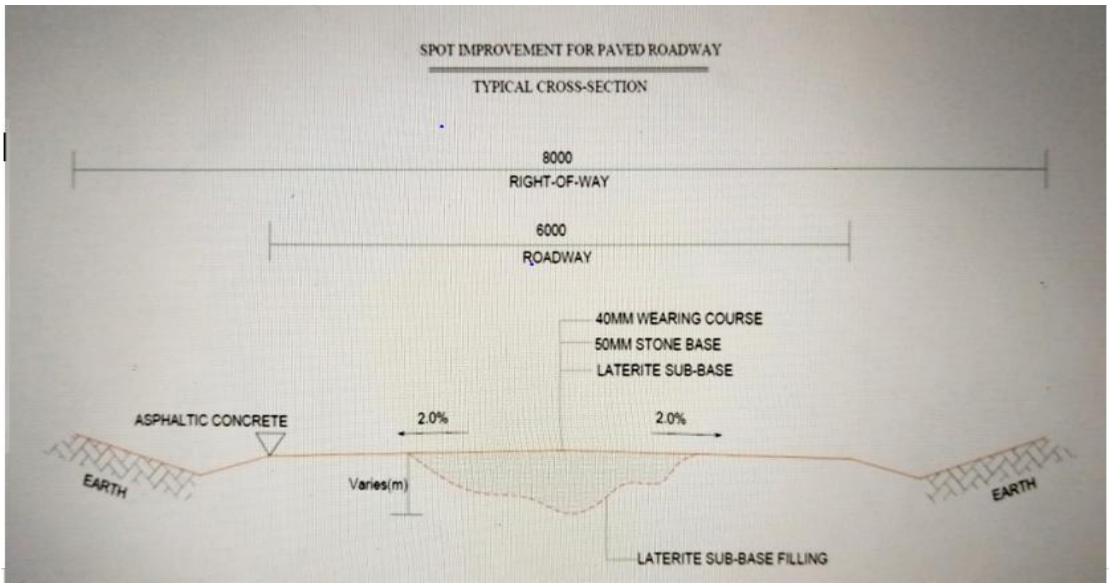


Figure 3- 5: Engineering Design for Spot Improvement Roads

3.5 PROPOSED CAMPSITES

To ensure seamless implementation of contracts, a campsite with offices will be established for each LOT by the contractor with the assistance of the supervision consultant and the SPIU.. In line with the stated requirements, the AB-RAAMP SPIU shall engage with communities after suitable locations for campsites have been identified. It has been agreed that Contractors will include aspects of campsite management and community health and safety including waste management plans in their C-ESMPs. Exact locations are not known at this point but will be secured by Contractors in liaison with community representatives prior

to commencement of civil works. The locations for the establishment of the Contractors' campsites shall be determined in consultation with the design and supervision consultant, the AB-RAAMP SPIU (safeguard unit and Infrastructure unit input is required) and the local communities, taking into consideration the following criteria.

- Located within an acceptable distance from existing residential areas.
- Not located in areas with high vegetation or in sensitive areas such as wetlands critical habitats, etc.
- Not located in or around a school premises, worship centres, health facilities, etc.
- The contractor must show evidence of permission from the property owner and approval from the relevant authorities.
- The contractor must submit for the prior approval of the supervisory consultant, the implementation design and other project structures and specifications related to the camps and sites that are intended to be built.
- The contractor must ensure that separate rooms will be provided for male and female workers and that all necessary sanitary facilities complying with World Health Organization (WHO) regulations will be provided for workers to include but not limited to separate toilets for male and female, portable water with well-placed overhead tanks, wash basins and concrete and covered septic tanks.

Campsite management plan has been provided in appendix 10 of this report detailing all measures to avoid, reduce, minimize, and mitigate impacts relating to labour camp management.

3.6 BORROW PITS/MATERIAL SOURCING

Construction materials such as water, sand, laterite and aggregates are available within the project area. Materials proposed to be used are presented as follows:

a) **Water**: Water for the proposed road rehabilitation and construction works can be sourced from streams/rivers/boreholes within the project areas. However, sourcing would not be done from community water sourcing points in order not to pollute and/or increase competition on the resource. Alternatively, water shall be supplied through a water tanker for construction works as well as for sanitary use.

b) **Borrow Pits**: The Contractor shall identify potential borrow pits in collaboration with the design consultant, AB-RAAMP SPIU and shall comply with the Borrow Pit Management Plan (BPMP) provided in appendix 7 of this report. Where existing borrow pits are to be used, the contractor shall mark out the area where it will carry out its excavation and the dimension documented by the supervisory consultant, Infrastructure Engineer and safeguards unit of the AB-RAAMP SPIU. This will provide baseline information for monitoring during decommissioning of the borrow pits. Where an area is to be leased for the purpose of a new borrow pit, the agreement between the contractor and landowner should be presented to the AB-RAAMP SPIU and the dimensions of the area documented. Similarly, the borrow pit should be reclaimed once intervention works are completed.

The AB-RAAMP SPIU will ensure that the contractors comply with the following criteria to establish borrow pits:

- The proposed locations not to be located in agricultural fields.
- Locations should not be near schools or other public facilities.
- Locations not along the proposed road (at least 25m from the shoulder of the road).
- Sufficient quality of soil and suitable earth as adjudged to be available by material quality test to be submitted to the SPIU engineers.
- The coordinates, pictures, borrow pit management and reclamation plan for each borrow pit to be submitted to the SPIU.

- The SPIU to confirm reclamation of borrow pits after as much as possible to pre use state including proper documentation and pictures. The unsuitable from the road construction can be used to reclaim the pit; where this is not sufficient, contractors should have a plan and budget in place for reclamation and should be duly included in their bid documents. A sample BPMP is provided in the Appendix 7 of this ESMP.
- The SPIU will ensure adequate and documented transaction agreement between the contractor and the landowners.

c) Aggregates: Aggregates (sand, gravel etc.) and laterite can be purchased, and stock piled from the existing quarries in the local government areas of the State and Abakiliki Area of Ebonyi state. The aggregates must meet the requirements stipulated in relevant sections of Federal Ministry of Works General Specification, Vol II (Roads and Bridges) and Low Volume Road Manual produced for RAAMP.

3.7 STAGING AREA

The staging area for siting of the project office, parking of equipment and other machinery for the project works will be identified by the contractor in conjunction with the supervisory consultant, AB-RAAMP SPIU and the communities. The potential impacts that may be associated with the sighting and operation of the staging area have been identified alongside mitigation measures and included in the ESMP Matrix table. The following criteria will be adopted in identifying and managing the staging area:

- Not to be located in or around school premises, worship centres, health facilities, etc.
- Not to be located within sensitive areas such as wetlands, intact vegetation area, etc.
- Be located within an acceptable distance from existing residential areas.
- The site must be cordoned off and access restricted to prevent accidents and unwanted visitors.
- The contractor must first obtain the necessary licenses and consents from the local authorities or from the owner of the needed area, including agreement on how the site should be handed over after use.
- The contractor must submit for the prior approval of the supervisory consultant, SPIU safeguard and infrastructure team, the proposed design for the staging area.
- The contractor shall take all measures and precautions to avoid any disturbance in the local communities and among the users of the road, as a result of the project execution.
- The Contractor will ensure that all necessary sanitary facilities shall be provided for workers expected on site:
  - ✓ Conducive office space with tables, chairs, drinking water, good aeration, etc.
  - ✓ Sanitary facilities for workers should include a shaded area for breaks and meals.
  - ✓ Separate toilets for male and female
  - ✓ Portable water with well-placed overhead tanks
  - ✓ Wash basins
  - ✓ Concrete and covered septic tanks.

3.8 Energy/Power Source and Green House Gas (GHG)

This project's power requirement majorly during pre-construction and construction phases for site clearing, excavation, pavement and drainage works, will involve use of heavy-duty diesel engines such as dozers, excavators, trucks and generators, Estimating the fuel consumption is based on an hourly rate of CAT product suitable for the project exercise using 10hr per day as presented in Table 3-6. The fuel consumption during the project will depend on the numbers of heavy-duty machines and duration of operation. According to USEPA, 2020,emission

factor for diesel fuel in heavy-duty engines is 10.21 kg CO_2 per gallon. This implies that over 270 metric tons $CO_{2\ eqv}$ per day could be discharge per road, depending on numbers of heavy-duty machines and duration of the operation.

Table 3-6: Fuel consumption

Machine	Fuel Consumption Rate	Estimated Diesel Required (gallon)	Estimated Diesel Required (L)
Excavator (349FL, 336FL)	4GPH	240	908.5
Dozer (D7E LGP, D6T, D8T)	45GPH	27,060	102,433
Generator	2GPH	120	454
Grader	4GPH	240	908.5
Truck	15miles/gallon	31	118
Total		27,691	

Source: www.heavyequipmentforums.com

Note: GPH = gallons per hour

3.9 Design Recommendation and Climate Resilient Features in Road and Bridge Construction.

Climate resilient features are features incooperated in designs of infrastrutures that help ensure that roads and bridges can withstand the impacts of climate change, such as increased flooding, extreme temperatures, and sea-level rise. These features in road and bridge design include:

- Elevated structures: Building roads and bridges on elevated foundations to protect against flooding and sea-level rise.
- Drainage systems: Designing drainage systems to handle increased rainfall and stormwater runoff.
- Flood-resistant materials: Using materials that can withstand floodwaters, such as concrete or steel.
- Scour protection: Protecting bridge piers and abutments from scouring (erosion) due to increased water flow.
- Temperature resilience: Designing pavement and bridge structures to withstand extreme temperatures and thermal expansion.
- Sea-level rise considerations: Designing structures to accommodate projected sea-level rise and increased coastal erosion.
- Hydrological analysis: Conducting detailed hydrological analysis to understand water flow and flooding patterns.
- Green infrastructure: Incorporating green infrastructure, such as green roofs and permeable pavement, to manage stormwater runoff.
- Redundancy and backup systems: Designing critical infrastructure with redundancy and backup systems to ensure continued functionality during extreme weather events.
- Regular maintenance and inspection: Regularly inspecting and maintaining infrastructure to ensure it remains resilient to climate-related hazards.

3.9.1 Design Recommendation

Designs for the proposed roads and bridges should take recognizance of climate resilient features like elevated foundation to protect against flooding and sea level rise; good drainages to handle increased rainfall and storm water runoff due to building pattern; use of materials that can flood water; designing structures to accommodate projected sea-level rise and increased coastal erosion; designing pavement and bridge structures to withstand extreme temperatures and thermal expansion; etc.

CHAPTER FOUR

DESCRIPTION OF THE ENVIRONMENT

4.1 GENERAL OVERVIEW OF THE PROJECT AREA

The project area is located in Abia State, South Eastern Nigeria. It is bordered to the north and northeast by the states of Enugu and Ebonyi, Imo state to the west, Cross river state to the east, Akwa Ibom to the southeast and Rivers state to the south. The state has 17 LGAs with a total land area of 6,320 square kilometers. The state has a total of nineteen (19) forest reserves out of which four (4) are natural forest and fifteen (15) are plantation forest reserves (Diana Et al., 2022). The proposed sub projects are not within the forest reserved areas in Abia State. The proposed interventions will cut- across the entire 17 local government areas in the three senatorial districts. The benefiting LGAs are Arochukwu, Ohafia, Bende, Isuikwuato, Umunneochi, Umuahia North, Umuahia South, Ikwuano, Isialangwa North, Isialangwa South, Osisioma, Obingwa, Aba North, Aba South, Ugwunagbo, Ukwa North and Ukwa South local government areas. Majority of the local government areas are rural except Umuahia North, Aba North and Aba South. The maps of the project locations for all interventions presented per senatorial zone showing the sampling points are provided in figures 4-1, 4-2, 4-3 below.

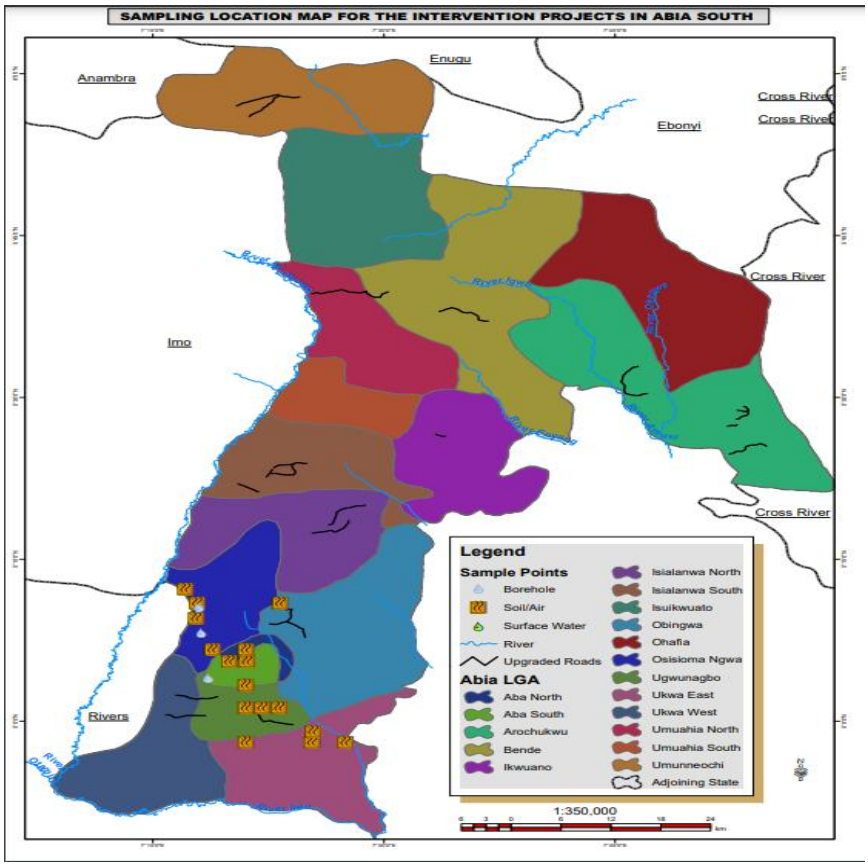


Figure 4- 1: Sampling points around Section A Roads (Abia South Intervention Projects)

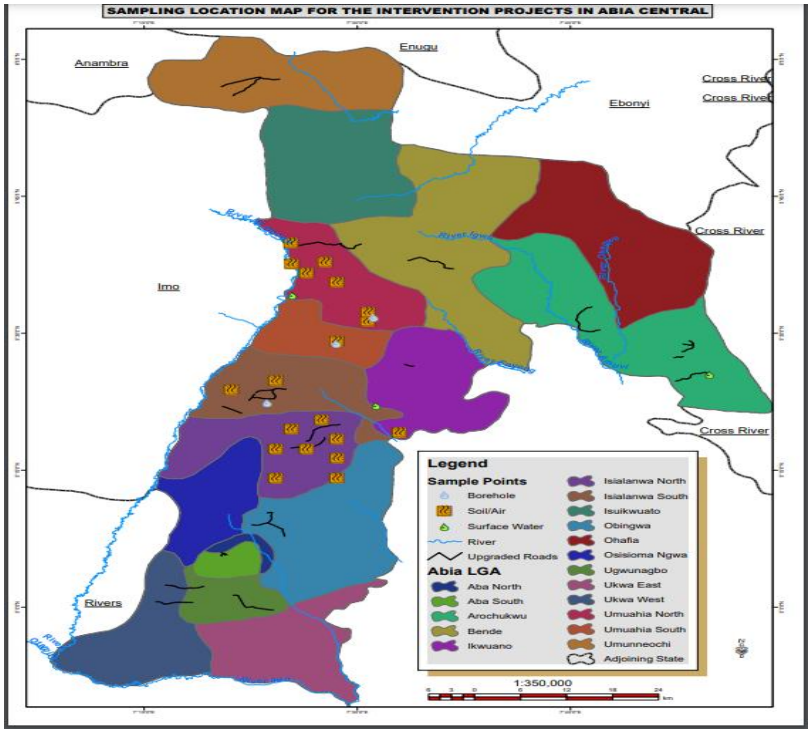


Figure 4- 2: Sampling points around Section B Roads (Abia Central Intervention Projects)

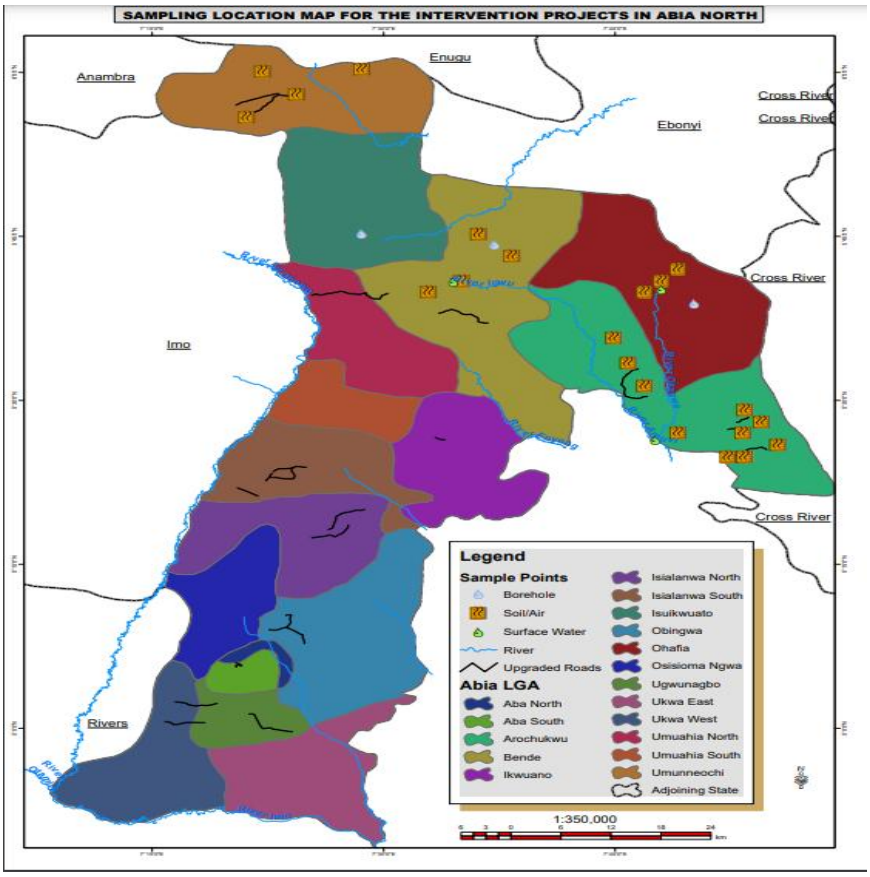


Figure 4- 3: Sampling points around Section C Roads (Abia North Intervention Projects)

4.1.1 Field Sampling and Sampling Design

The environmental baseline data obtained through field data gathering around the projects areas took place during the dry season, between 7th February and 21st February, 2024. Data collected include; Air quality and noise, Topsoil and subsoil, surface water, ground water and socioeconomics data. Collected samples for laboratory analysis were collected using sterilized containers for water samples and celephene papers for soil soil sampls. Samples collected were preserved using a cooler container and analyzed at the Federal Ministry of Environment Accredited laboratory (Anila Laboratory, Ikeja, Lagos). The study area was classified into three (3) sections A, B and C; Abia South roads, Abia Central Roads and Abia North roads as shown in Tables 4-1 and 4-2. The number of sampling stations is based on the length (km) of the road intervention across each zone.

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Table 4- 1: Sections of Sampling Areas

Sampling Section	Name of Roads	Samples collected
Section A (Abia South)	Ohanku Market Road Ukebe Ohuru Ndoki Road, Umuakoli Akanu- Umuosi Akanu, Egbelu Onwo - Egbede Umuagbai Rd, Abalegwu junction - Amaokpu – Umuaja, Ukebe Junction Etiti Akanu Ngwa Ugwunagbo HQS, Boundry rd- Amaukwu, Afor Ogwe Market Junction- Umuazuta-Umunneato Ihie Ukwu Road, Umuohia – Osusu Umuikpeghi – 7up, Ihie Ukwu-Obegu, Ariara-Umumgbede-Umuiku..	Air/Noise (16 Stations), Groundwater (3 Stations) and Topsoil & subsoil (16 Stations)
Section B (Abia central)	Amiyi Nvosi junction - Ohuhu - Ohuhu Ikwuru, Umuokoro-Umuapu Amede-Isi Engine, Ahiaukwu-Amangwo-Umuajata Umudere Aamkama (Umudere Stream), Ndi Oro-Nnono road, Market junction - Ntigha Okpuala - Umnachi Ntigha, Nkwo Ebe-Ebeyi Nvosi-Okpokiri Nvosi-Umuhi Nvosi.	Air/Noise (18 Stations), Surface water (2 Stations), Groundwater (3 Stations) and Topsoil & subsoil (18 Stations) Rivers Sampled - Umudere Stream (Umuahia South) (and Usaka stream (Ikwuano)
S16ection C (Abia North)	Umuafiaka-Umuokpara (iyi Obowo), Agalabano-Umuhu-Ekeoba Express (Ekweze stream), Ezeukwu-Ugwueke Road (Ifuama Bridge in Amangwu Ezeukwu), Amaokwelu Alayi Junction-Amankalu-Akoli Imenyi (Nchichi stream), Amaokwelu Alayi Junction-Amankalu-Akoli Imenyi (Igwu river), Oboro-Ndiudumaukwu-Ndianku-Nkwebi-Okagwe Ohafia (Okagwa Stream), Agalabano-Umuhu central school-Ekeoba, Umuagu-Utali, Okagwe - Nkwebi Onwuwanyanwu, Alayi – Ezeukwu Road, Bende – Etitiulo – Ntalakwu, Ndiokorie-Eziafor- Atani-Ndioji Abam, Amuvi-Ututu-Amakofia.	Air/Noise (21 Stations), Surface water (4 Stations), Groundwater (3 Stations) and Topsoil & subsoil (21 Stations) Rivers Sampled - iyi Obowo (Umuahia North), Igwu river (Bende), Nchichi stream (Bende), and Okagwe stream (Ohafia)

4.2 ENVIRONMENTAL CONDITION OF THE PROJECT AREA

4.2.1 Climate

The climate of the Abia state falls within the equatorial climatic belt with alternating dry and wet seasons (Abija and Nwankwoala, 2018). The wet season starts from March and ends around October, while the dry season spans between November and February each year. The

annual rainfall is between 2000 mm and 2250 mm in the south, and between 1250 and 2000 mm in the northern part of Abia (Abija and Nwankwoala, 2018). Ibeabuchi, (2022) reported that the northern part of Abia state has a relatively lower annual rainfall than the southern part of the state with an estimated annual rainfall difference of 1.30, 1.40 and 1.14 mm/day between 1972-1986, 1986- 2003 and 2003-2015. The low rainfall difference between the north and south was due to the presence of imo river and coastal city of Port Harcourt bordering southern part of the state, and the influence of the north-ward movement of Inter Tropical Convergence Zone (ITCZ) with maximum rainfall southward which decreases inland.

4.2.2 Air Quality and Noise Level

Ambient air quality assessment was conducted in the three sections (Abia South, Abia Central and Abia North) along each of the 42No sub projects using MultiRAE Pro Model PGM-6248, ToxiRAE Model PGM-1130, Temtop M2000C, etc. The value of the atmospheric concentrations of each gaseous pollutant was read off directly on the equipment screen after 3 – 5 minutes with equipment held at arm's length towards the direction of the prevailing wind at every point where measurement took place. Air quality parameters such as CO, SO_2, H_2S and NH_3 were below detection limits of the equipment. Oxides of nitrogen ranges below detection limit (<0.01ppm) to 0.045ppm. Volatile organic compounds (VOCs) ranges 0.1 to 2.5μg/m^3, (DL, <0.01μg/m^3) suspended particulate matters $PM_{2.5}$ and PM_{10} range, 0.035ppm to 0.139ppm and 0.08ppm to 0.55ppm (DL, <0.01ppm) respectively. All values of the air quality parameters across the intervention areas were within FMEnv limits, 3.0 μg/m^3 and 150 ppm respectively. In the Abia South roads, noise levels ranged between 39.6 - 60.2 dB, the Abia Central roads measured between 40.2 – 60.2 dB (A) while Abia North roads ranged between 44.2 – 68.0 dB (A). All values across the intervention areas (55 sampling stations) were within FMEnv limits of 90 dB (A). Raw data for the air quality and noise around the project areas are presented in Appendix 15. Generally, the low noise levels and good air quality were due to no industrial activity, as well as no vehicular movement at the time of study (between 9am and 4pm).

4.2.3 Geology and Hydro-geology

Geologically, Abia State is located within the transition zone of the Benin and Ogwashi-Asaba Formations of the coastal sedimentary rocks of the northern Niger Delta. Therefore, the major geologic sequences encountered in the area include the Coastal Plain Sands otherwise known as Benin Formation, the Ogwashi-Asaba and Bende-Ameki Formations. These lithologies are underlain by the Paleocene Imo shales which are conspicuous in the northern part of the study area. The Benin Formation (Late Tetiary-Early Quaternary age) is the most predominant and it is overlain by the Recent Alluvium and underlain by the Ogwashi-Asaba Formation. The Benin Formation is about 200m thick and the lithology is unconsolidated fine-medium-coarse-grained, cross bedded sands occasionally pebbly with localized clays and shales (Chukwudi et al, 2013; Ebilah-Salmon and Partners, 1993). Most of the aquifers in the study area tap from this formation. The yield is prolific. The Ogwashi-Asaba Formation is made up of variable succession of clays, sands and grits with seams of lignite. It is directly underlain by the Bende-Ameki Formation.

4.2.4 Soil Erosion

In the past five decades, Soil erosion in Abia State has been identified as the most serious environmental hazard threatening the region. The results review by Kalu et al, 2012 on soil erosion for Abia state, the value ranges between 0.00 and 3,734.39ton/ha/year. Soil erosion

estimation is more in the northern part of the state this is due to high terrain variability and abrupt changes in slope while south has low terrain. And in the south the terrain are low lying and also discharge velocity is low. Toward the end of the state has high soil loss this due to the presence of large water bodies and low terrain near Coast of Imo River. Table 4-2 below shows Soil erosion loss for each of the local government in Abia state.

Table 4-2: Soil erosion loss (Tons/Ha/Yr) for each local Government

Local Government Area	Mean Soil Loss (Tons/Ha/Yr)	Actual Soil Loss (Tons/Ha/Yr)	Local Government Area	Mean Soil Loss (Tons/Ha/Yr)	Actual Soil Loss (Tons/Ha/Yr)
Nneochi	195.31	1836.24	Aba South	329.65	1782.26
Isukwuato	325.55	3377.33	Ugwnagbo	306.52	2264.8
Ohafia	358.09	2026.56	Ukwa East	235.87	2264.8
Ikwuano	260.24	2026.4	Ukwa West.	218.9	3734.4
Isiala Nkwa North	293.13	2256.13	Umuahia South	382.48	2590.81
Isiala Nkwa South	280.09	3341.3	Bende	286.13	2026.56
Osisioma	282.69	3159.19	Umuahia North	327.72	3211.04
Obingwa	296.18	2084.8	Arochukwu	175.13	2979.65
Aba North	234.97	2247.19			

Source: Kalu et al, 2012

4.2.5 Aquifer - Vulnerability Assessment

Groundwater forms the most important source of water supply in the urban, sub-urban and rural areas of most Sub-Saharan African (SSA) countries. It therefore drives a country's socio-economic development. Abia State, a component part of Nigeria, a Sub-Saharan country can also derive its socio-economic activities from the sustainable development of available groundwater in the area. Profitable groundwater everywhere in the world exists in the sub-surface geologic material known as the aquifer. Since it exists below the earth's surface and is not visible to anybody, its occurrence, movement, flow direction and other attributes are poorly understood by most people. Consequently, groundwater has not been developed to its full potential as a source of high economic activities and good water quality in many parts of Abia State (Abija et al, 2016). Rapid urban expansion has often resulted in increased risk to groundwater quality in areas of recharge. In the past several decades, climate change has resulted in unpredictable rainfall events. This generally affects groundwater recharge quality and quantity negatively and also controls available surface water. All these create enormous challenges and pose threats to groundwater, and consequently affect continued provision of adequate and safe potable water for present and future generations of people everywhere on the planet earth. Abia State is not excluded from such negative impacts. The mapping and characterization of aquifers in Abia State at a time like this, has therefore become necessary so that adequate planning to ensure continued economic activities through sustainability of groundwater. It is anticipated that this process will bring about unprecedented socio-economic progress and continued supply of safe potable water now and in the future.

Table 4-3: Environmental Samples and Coordinates of Sampling Points

Section A Abia South Roads				Section B Abia Central Roads				Section C Abia North Roads			
Samples	**Points**	**Northing**	**Easting**	**Samples**	**Points**	**Northing**	**Easting**	**Samples**	**Points**	**Northing**	**Easting**
Soil/Air	SS1/A1	4.96752573	7.42264467	Soil/Air	SS1/A1	5.23595242	7.40467836	Soil/Air	SS1/A1	5.43272579	7.92570123
Soil/Air	SS2/A2	4.98429470	7.42380740	Soil/Air	SS2/A2	5.23595242	7.47654358	Soil/Air	SS2/A2	5.41483992	7.87180231
Soil/Air	SS3/A3	4.96793610	7.45859030	Soil/Air	SS3/A3	5.27242020	7.47707080	Soil/Air	SS3/A3	5.41483992	7.88976861
Soil/Air	SS4/A4	4.96752573	7.35077944	Soil/Air	SS4/A3	5.30751366	7.47654358	Soil/Air	SS4/A4	5.45083760	7.88772760
Soil/Air	SS5/A5	5.02122000	7.38671206	Soil/Air	SS4/A4	5.32653340	7.42298430	Soil/Air	SS5/A5	5.48560640	7.89000210
Soil/Air	SS6/A6	5.02122000	7.36874575	Soil/Air	SS5/A5	5.28962413	7.40467836	Soil/Air	SS6/A6	5.45061112	7.81790339
Soil/Air	SS7/A7	5.02122000	7.35077944	Soil/Air	SS6/A6	5.34320270	7.45878070	Soil/Air	SS7/A7	5.46849593	7.90773492
Soil/Air	SS8/A8	5.05701373	7.35077944	Soil/Air	SS7/A7	5.28966400	7.56532500	Soil/Air	SS8/A8	5.66519311	7.78197078
Soil/Air	SS9/A9	5.09391040	7.35175860	Soil/Air	SS8/A8	5.39744430	7.35231850	Soil/Air	SS9/A9	5.55791189	7.76400448
Soil/Air	SS10/A10	5.09280548	7.33281314	Soil/Air	SS9/A9	5.41483992	7.40467836	Soil/Air	SS10/A10	5.52214712	7.78197078
Soil/Air	SS11/A11	5.11070061	7.31484683	Soil/Air	SS10/A10	5.28962413	7.44061097	Soil/Air	SS11/A11	5.70094911	7.81790339
Soil/Air	SS12/A12	5.11070061	7.35077944	Soil/Air	SS11/A11	5.52214712	7.51247620	Soil/Air	SS12/A12	5.68228300	7.80016020
Soil/Air	SS13/A13	5.18362330	7.38815470	Soil/Air	SS12/A12	5.48638019	7.47654358	Soil/Air	SS13/A13	5.59673210	7.74828620
Soil/Air	SS14/A14	5.18311650	7.29790880	Soil/Air	SS13/A13	5.53913390	7.51307370	Soil/Air	SS14/A14	5.66519311	7.54840881
Soil/Air	SS15/A15	5.16438299	7.27891422	Soil/Air	SS14/A14	5.62761490	7.42354240	Soil/Air	SS15/A15	5.68307139	7.58434142
Soil/Air	SS16/A16	5.20105380	7.27817150	Soil/Air	SS15/A15	5.66519311	7.42264467	Soil/Air	SS16/A16	5.75457892	7.60230772
Borehole	BH1	5.06668582	7.30999524	Soil/Air	SS16/A16	5.63017050	7.46248480	Soil/Air	SS17/A17	5.72031540	7.63833040
Borehole	BH2	5.13563530	7.30257842	Soil/Air	SS17/A17	5.59367449	7.47654358	Soil/Air	SS18/A18	5.96778110	7.40585800
Borehole	BH3	5.17544203	7.30051819	Soil/Air	SS18/A18	5.61155497	7.44061097	Soil/Air	SS19/A19	6.00285460	7.36885430
NA	NA	NA	NA	Surface Water	SW1	5.4250	7.9134	Soil/Air	SS20/A20	6.00478376	7.47654358
NA	NA	NA	NA	Surface Water	SW2	5.3683	7.5227	Soil/Air	SS21/A21	5.93275350	7.35189740
NA	NA	NA	NA	Borehole	BH1	5.37279679	7.39487664	Borehole	BH1	5.75361100	7.47654500
NA	NA	NA	NA	Borehole	BH2	5.48026890	7.47563758	Borehole	BH2	5.73670288	7.62027403
NA	NA	NA	NA	Borehole	BH3	5.52825594	7.51972646	Borehole	BH3	5.64731428	7.83586970
NA	NA	NA	NA	NA	NA	NA	NA	Surface Water	SW1	5.4250	7.7929
NA	NA	NA	NA	NA	NA	NA	NA	Surface Water	SW2	5.6765	7.7990
NA	NA	NA	NA	NA	NA	NA	NA	Surface Water	SW3	5.6810	7.5753
NA	NA	NA	NA	NA	NA	NA	NA	Surface Water	SW4	5.5638	7.4402

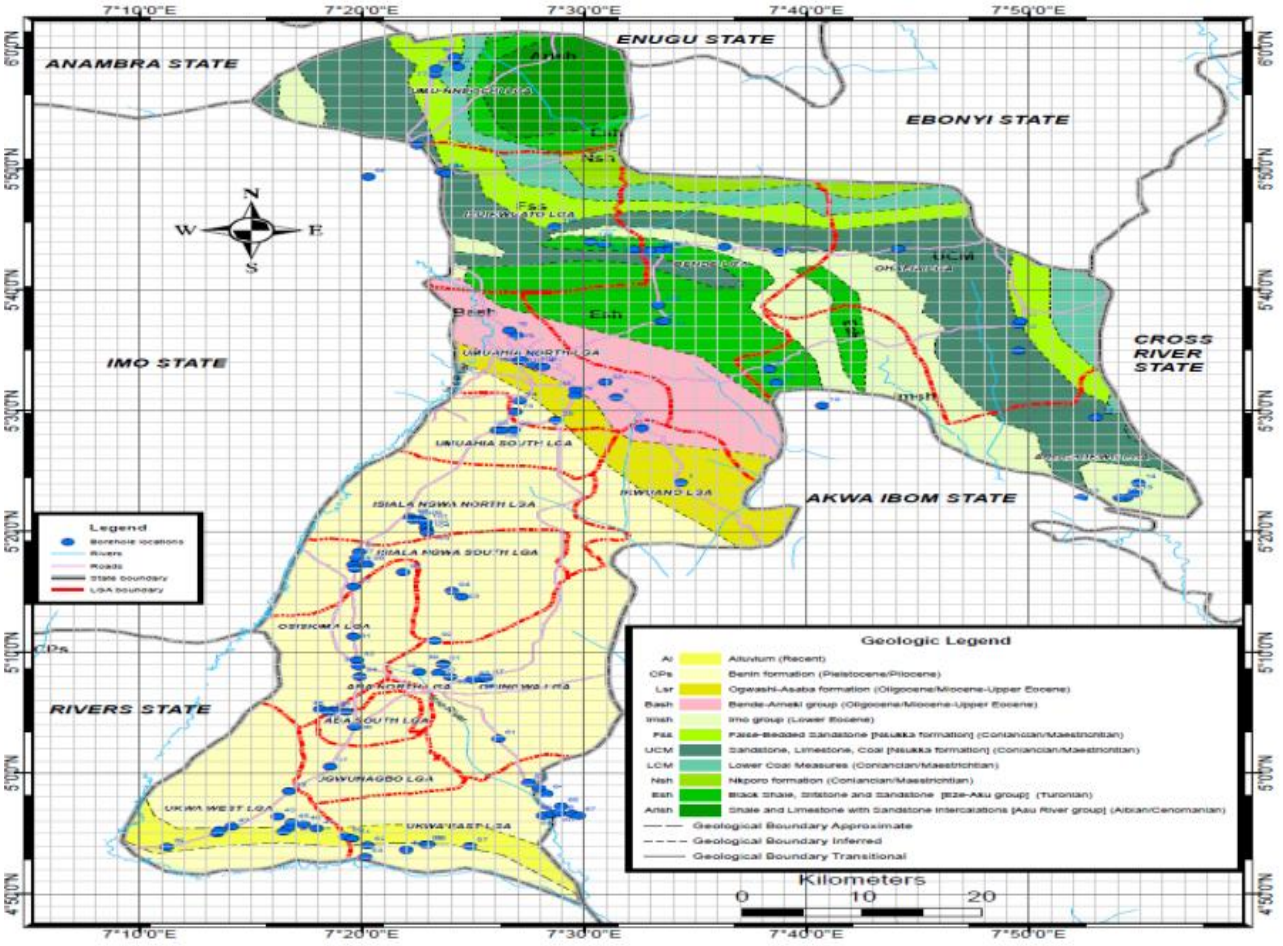


Figure 4- 4: Geologic Map of Abia State showing LGA boundaries and some boreholes

Source: Abija et al, 2016

4.2.6 Soil Quality

The soil textures around the project area across the 33 roads and 9 cross drainage areas in the Abia South, Central and North range between sandy and sandy loam at the topsoil (0 nto 15cm depth) and sub-surface (15cm to 30cm depth). The recorded mean percentage for sand, silt and clay were approximately 70%, 20% and 10%. The soils are highly porous, well drained and poorly ferruginous. Due to the sandy texture, the soil may be prone to erosion especially when vegetation cover is removed. The percentage organic carbon ranged 0.26% to 2.82%(topsoil) and 0.18% to 2.69% (subsoil) and total nitrogen content ranged, 0.024mg/kg to 0.95mg/kg. Soil pH ranged 4.4 to 6.95, indicating very acidic to slightly acidic. Traces of metal elements analyzed in the topsoil and subsoil include; Manganese (Mn), Iron (Fe), Zinc (Zn), Copper (Cu), Cadmium (Cd), Nickel (Ni) and Lead (Pb). Most of the trace metals were not detected. The only detected metals include Fe ranged 2.56mg/kg to 1.85mg/kg and Zn ranged 1.96mg/kg to 4.85mg/kg. These metals are all within the limit of FAO for agricultural soils. Total heterotrophic bacterial counts ranged from 1.01 x 10^7 cfu/g to 8.40 x 10^7 cfu/g, total heterotrophic fungi counts from 3.0 x 10^4 cfu/g to12.0 x 10^4 cfu/g and total hydrocarbon utilizing bacteria from 12.0 x 10^2 cfu/g to 52 x 10^2 cfu/g, suggesting absence of chronic and persistent petroleum oil pollution of the soils. Raw data for the soil quality around the project areas are found in Appendix 15.

4.2.7 Groundwater Quality

The groundwater around the project areas is colorless, odourless, with temperature range between 27°C to 34.7°C, pH ranged, 6.59 to 7.21, dissolved oxygen ranged, 4.6 mg/l to 6.5mg/l. Heavy metals such as cadmium, nickel, copper, lead and manganese were not detected. Iron and zinc ranged 0.02mg/l to 0.65mg/l and 0.01mg/l to 0.09mg/l respectively. These values were below FMEnv limits (0.3mg/l and 3.0mg/l respectively) for potable water. The groundwater Total Coliform count had a range from not detected level to 5.0 colony formation unit per 100ml and absence of E.coli. This is within FMEnv limit of 10 cfu/ml. Raw data for the groundwater quality around the project areas are found in Appendix 15.

4.2.8 Surface water Quality

Temperature from rivers and streams around the project areas in the Abia South and Central range ranges from 27.8 – 29.8^{0}C which falls within the FMEnv limit of 25-35^{0}C. Their pH ranges 6.88 – 7.67 which is within the FMEnV limit of (6-8). Total hardness ranged from 11 - 50 mg/l in the sampled water. The concentration of Dissolved Oxygen (DO) ranged from 2.3 mg/l to 4.4 mg/l, while the Biological Oxygen Demand (BOD) varied from 6.5 to 10 mg/l in all the water samples across the project corridors. The values were within the FMEnv limit for both DO (7.0 mg/l) and BOD (30.0 mg/l). Similarly, the chemical properties such as Calcium Hardness (6.3 – 16.09mg/l), Magnesium Hardness (2.78 – 11.23 mg/l), Alkalinity (3.0 – 8.0mg/l), Sulphate (23 - 40mg/l), Nitrate (2.4- 4.4mg/l) Calcium hardness (5.24 – 10.09mg/l), Magnesium hardness (2.78 – 6.94mg/l) and Phosphate (0.42 – 1.101mg/l) were within FMEnv limit. However, properties such as Total chlorides (0.01 – 0.33mg/l) were slightly above the FMEnv limit (0.2mg/l) in all the surface water samples across the project corridors. This could be associated with the use of fertilizers by farmers around project corridors.

Traces of metal elements were recorded in some of the sampled water. These include Manganese (Mn), Iron (Fe), Zinc (Zn), Copper (Cu), Cadmium (Cd), Nickel (Ni) and Lead (Pb). The concentration of Zn in the sampled water varied from 0.002 mg/l to 2.49mg/l. Similarly, the concentration of Cu ranged from 0.05 – 0.091 mg/l, Mn ranged from (0.018 –

0.2 mg/l), Cd concentration ranged from 0.001 – 0.066 mg/l) and traces of Pb and Ni are detected in most of the water samples slightly below the FMEnv limit (0.05 mg/l). All the heavy metals were within FMEnv regulatory limits. Microbial organisms such as faecal coliforms and *E. coli* were present in all water samples. Other organisms such as Salmonella bacteria were present in samples from Umudele and Usaka streams in the Abia Central, Nchichi, Igwu, Okagwe and Iyi Obowo in Abia North. Raw data for the surface water quality around the project areas are presented in Appendix 15.

4.2.9 Vegetation Cover

The study area is in derived savanna/forest regrowth ecological zone of Nigeria (Keay, 1959). It consists of grassland, thickets of herbs and shrubs, low secondary forests, farmlands, and a riparian forest. NDDC EIA Report, (2011) had reported 123 plant species belonging to 55 families. There were 37 tree species, 21 shrub species, 50 herb, 11 climbers/creepers/twiners, a bromeliad, a liane and two pseudostem plant habits. Dominant tree species include; Among these are tree species; *Cleistopholis patens, Symphonia globulifera, Anthosterma aubreyanum, Albizia ferruginea, Hallea ledermanii, Eleais guineensis, Raphia sp., Musanga cecrepoides, Irvingia gaboneensis, Calamus deeratus, Alchornea cordifolia and Harungana madagascariensis* (NDDC EIA Report, 2011).

4.2.9.1 Economic Plant Species and Protected Areas

Economic crops reported around the study area, include; cassava (*Manihot),* banana and plantain (*Musa spp), pineapple (Ananas comosus),* pawpaw (*Carica papaya),* Ogili *(Citrulus lanatus),* Yam (*Dioscorea spp),* mango (*Mangifera indica),* native pear (*Dacroydes edulis),* guava (*Psidium guajava),* bitter leaf (*vernonia amygdalina),* fluted pumpkin (*Telfaira occidentalis)* and snake gourd (*Trichosanthes cucumerina),* in different farms, some near human habitations. According to NDDC EIA, (2011), the vast majorities of the plant species are not threatened or endangered according to IUCN (1992) Red List, except for timber species (*Milicia excelsa (Iroko/African Teak)* and *Nuclea diderrichi*i (African Peach) and African mango/bush mango (*Irvingia gabonensis)*. These endangered species were not found along or close to the project corridor. There were nineteen (19) protected forest areas across fifteen (15) communities in seven (7) local government areas in Abia State, but none of these protected areas/classified forest are along, within or close to the project corridor.

4.2.10 Terrestrial Fauna

NDDC EIA, (2011) reported 18 mammalian species belonging to 9 families, 20 avian species belonging to 13 families, 14 reptilian species belonging to 8 families, 7 amphibian species belonging to 4 families. Mammals were the most hunted. Mammals reported include; *Tragelaphus scriptus (*Bush buck), *Philatomba maxwelli (*Maxwell's duiker), *Cricetomys gambianus (*Giant Rat), *Manis tricuspis (*Tree Pangolin), *Lemniscomys striatus (*Spotted grass mouse), *Hybomys trivirgtus (*Three-striped mouse), *Hypsignaqthus monstrosu (*Fruit bat), *Eidolon helvum (*Straw-coloured fruit bat), *Myonyctens torquata \(*Forest Fruit bat), *Heliosciurus rufobrachium (*Red-legged squirrel), *Dendrohyrax dorsalis (*Tree Hyrax), *Xerus erythropus (*Ground spuirrel), *Funishcirurus leucogenys (*Orange-head Tree squirrel), *Potamochoerus procus (*Bush pig), *Thryonomys swinderianus, (*Grass cutter), *Civettictis civetta (*African civet), *Genetta poensis (*Forest genet), *Herpestes naso (*Long-nosed mongoose). Among these animals, only *Manis tricuspis (*Tree Pangolin) is Endangered according in the IUCN category. The ecological setting of the project area is presented in Figure 4-5.

4.2.11 Socioeconomic Condition of Project Area

The socioeconomic data across the entire project area were collected through consultation with affected stakeholders and administration of questionnaire with community leaders, women, men, youths, farmers, market men/women etc. A total of 342 questionnaires were administered face-to-face using trained interviewers in the surveyed 112 communities in four (4) sections across 17 LGA (Section A - 126 respondents, Section B – 93 respondents, Section C - 60 and Section D – 63 respondents) using simple random sampling technique as shown in Table 4-5. The sample size is the number of individuals included in the study. This was chosen from the age 18years and above.

The summary of the socioeconomic condition of the project area is presented in Table 4-6. The outcome of stakeholders' engagement including Focus group discussion (FGD), Key informant interviews (KII) and other engagement with stakeholders is presented in Chapter 8 of this report.

Table 4-4: Distribution of Questionnaires Across Communities Within 17 LGAs

Section	Local Government Area	No of Communities	No of Questionnaires
Section A Total, 51 Communities	Ohafia	12	126
	Isu Ikwanto	10	
	Arochukwu	4	
	Umumeoch	6	
	Bende	19	
Section B Total, 35 Communities	Umuahia North	10	93
	Umuahia South	5	
	Ikwano	4	
	Isiala-Ngwa North	7	
	Isiala-Ngwa South	9	
Section C Total, 12 Communities	Osisioma Ngwa	3	60
	Obi Ngwa	3	
	Aba North	3	
	Aba South	3	
Section D Total, 14 Communities	Ugwunagbo	8	63
	Ukwa East	3	
	Ukwa West	3	
Total		112	

Table 4- 6: Socioeconomic Condition of Project Area

S/N	Socio-Economic Indicator	Sections			
		Section A **Ohafia, Arochukwu, Isuikwuato, Umunneochi and Bende**	**Section B** **Umuahia North, Umuahia South, Ikwuano, Isiala-Ngwa North and Isiala-Ngwa South**	**Section C** **Osisioma Ngwa, Obi Ngwa, Aba North and Aba South**	**Section D** **Ugwunagbo, Ukwa West and Ukwa East**
1	Gender	There were more males (52.0%) than females (48.0%) respondents. This implies that there were gender inclusiveness as regards activities in each of the communities visited. Hence both gender voices were taken into account in this study.	There were more males (57.0%) than females (43.0%) respondents. This implies that there were gender inclusiveness as regards activities in each of the communities visited. Hence both gender voices were taken into account in this study.	There were more males (54.0%) than females (46.0%) respondents. This implies that there were gender inclusiveness as regards activities in each of the communities visited. Hence both gender voices were taken into account in this study.	There were more males (51.0%) than females (49.0%) respondents. This implies that there were gender inclusiveness as regards activities in each of the communities visited. Hence both gender voices were taken into account in this study.
2	Age	The highest proportion of the respondents (55.0%) falls within the age range of 42–65 years. This is followed by 18–41 years (31.0%) and 65 and above(14.0%). This indicates a potential availability of active work force (labour) in the project areas.	Age groups between 18-41 years constitute the highest proportion of the respondents with 56.0%. 42–65 years age group constitutes 34.0% of the respondents while 66 years and above are about 10.0%. This indicates a potential of available active work force (labour) in the project areas.	Age groups between 18-41 years constitute the highest proportion of the respondents with 66.0%. 42–65 years age group constitutes 24.0% of the respondents while 66 years and above are about 10.0%. This indicates a potential of available active work force (labour) in the project areas.	The highest proportion of the respondents (54.0%) falls within the age range of 42–65 years. This is followed by 18–41 years (31.0%) and 65 and above (15.0%). This indicates a potential of available active work force (labour)in the project areas.
3	Family Structure	Extended family structure is the most common family pattern along the project corridors. The family members stay together within a defined boundary. This is because 75.0% of the respondents revealed that they practice extended family pattern, 21.0% said their own family pattern is nuclear while only 4.0% disclosed that they stay alone.	Extended family structure is the most common family pattern along the project corridors. The family members stay together within a defined boundary. This is because 82.0% of the respondents revealed that they practice joint family pattern, 15.0% said their own family pattern is nuclear while only 5.0% disclosed that they stay alone.	Extended family structure is the most common family pattern along the project corridors. The family members stay together within a defined boundary. This is because 78.0% of the respondents revealed that they practice joint family pattern, 17.0% said their own family pattern is nuclear while only 5.0% disclosed that they stay alone.	Extended family structure is the most common family pattern along the project corridors. The family members stay together within a defined boundary. This is because 90.0% of the respondents revealed that they practice joint family pattern, 8.0% said their own family pattern is nuclear while only 2.0% disclosed that they stay alone.
4	Family Size	The common family size along the project corridors is large which is above 5 persons in a household.	The common family size along the project corridors is large which is above 5 persons in a household.	The common family size along the project corridors is large which is above 5 persons in a household.	The common family size along the project corridors is large which is above 5 persons in a household.

S/N	Socio-Economic Indicator	Sections			
		Section A **Ohafia, Arochukwu, Isuikwuato, Umunneochi and Bende**	**Section B** **Umuahia North, Umuahia South, Ikwuano, Isiala-Ngwa North and Isiala-Ngwa South**	**Section C** **Osisioma Ngwa, Obi Ngwa, Aba North and Aba South**	**Section D** **Ugwunagbo, Ukwa West and Ukwa East**
5	Religion	The residents of the project communities are majorly Christians (85%) and about 15% of people practice the traditional religion.	The residents of the project communities are majorly Christians (80%) and about 20% of people practice the traditional religion.	The residents of the project communities are majorly Christians (90%) and about 10% of people practice the traditional religion.	The residents of the project communities are majorly Christians (88%) and about 12% of people practice the traditional religion.
6	Literacy level / Language(s) spoken	About 58.5.0% of the respondents in this settlement have a definite form of formal education, basically up to secondary school level, hence they can read and write in English and local Language. This can be related to the potential ease of communication and reduction in conflict which may be caused by poor understanding of the project	Literacy level is high in this settlement with only 72.0% of the respondents with formal education. This contributes similarly to the language spoken as most can read and write in English and their mother tongue. This can be related to the potential ease of communication and reduction in conflict which may be caused by poor understanding of the project	About 65.0% of the respondents in this settlement have a definite form of formal education, basically up to secondary school level, hence they can read and write in English and local Language. This can be related to the potential ease of communication and reduction in conflict which may be caused by poor understanding of the project	Literacy level is substantive in this settlement with only 56.0% of the respondents having formal education basically up to secondary school level. This contributes similarly to the language spoken as most can read and write in English and their mother language. This can be related to the potential ease of communication which leads to reduced conflict which would have been caused by poor understanding of the project.
7	Marital Status	Most of the respondents (69.0%) are married while 16.0% are single. The widows/widowers (15.0%) are mostly within the aged age group. The predominance of married individuals among the respondents in the project area points to the possibility of population increase. The intervention will lead to easy access to farms and markets for the families in the benefiting communities.	Most of the respondents in this settlement are married 70.5% while 22.5% are single. The widows/widowers (7.0%) are mostly within the aged age group. The predominance of married individuals in the project area points to the possibility of population increase. The intervention will lead to easy access to farms and markets for the families in the benefiting communities.	Most of the respondents are married 43.0% while 36.0% are single. The widows/widowers (21.0%) are mostly within the aged age group. The predominance of married individuals in the project area points to the possibility of population increase. The intervention will lead to easy access to farms and markets for the families in the benefiting communities.	Most of the respondents are married 71.0% while 10.0% are single. The widows/widowers (19.0%) are mostly within the aged age group. The predominance of married individuals in the project area points to the possibility of population increase. The intervention will lead to easy access to farms and markets for the families in the benefiting communities.
8	Monthly Income in naira	The majority of the respondents corresponding to about 65.07% earned below the national minimum wage of N30,000, while about 35% earned above the minimum wage. The project will alleviate poverty, by	The majority of the respondents corresponding to about 70.5% earned below the national minimum wage of N30,000, while about 29.5% earned above the minimum wage. The project will alleviate poverty, by creating better	The majority of the respondents corresponding to about 60.0% earned below the national minimum wage of N30,000, while about 40.0% earned above the minimum wage. The project will alleviate	The majority of the respondents corresponding to about 75.0% earned below the national minimum wage of N30,000, while about 25.0% earned above the minimum wage. The project will alleviate poverty, by creating better

S/N	Socio-Economic Indicator	Sections			
		Section A **Ohafia, Arochukwu, Isuikwuato, Umunneochi and Bende**	**Section B** **Umuahia North, Umuahia South, Ikwuano, Isiala-Ngwa North and Isiala-Ngwa South**	**Section C** **Osisioma Ngwa, Obi Ngwa, Aba North and Aba South**	**Section D** **Ugwunagbo, Ukwa West and Ukwa East**
		creating better opportunities that will increase income and standard of living of the community dwellwers	opportunities that will increase income and standard of living of the community dwellwers	poverty, by creating better opportunities that will increase income and standard of living of the community dwellwers	opportunities that will increase income and standard of living of the community dwellwers.
9	Livelihood	The majority of the respondents are farmers (62%), traders (5%), student (5%), artisans (18%) and others (10%). The project will enhance farmers turn-around time to farm and traders time to markets and business centres will be quickened, students time to school will be reduced because of good roads, artisans business will grow.	The majority of the respondents are farmers (70%), traders (10%), student (2%), artisans (8%) and others (10%). The project will enhance farmers turn-around time to farm and traders time to markets and business centres will be quickened, students time to school will be reduced because of good roads, artisans business will grow	The majority of the respondents are farmers (65%), traders (15%), student (5%), artisans (5%) and others (10%). The project will enhance farmers turn-around time to farm and traders time to markets and business centres will be quickened, students time to school will be reduced because of good roads, artisans business will grow	The majority of the respondents are farmers (80%), traders (5%), student (2%), artisans (8%) and others (5%). The project will enhance farmers turn-around time to farm and traders time to markets and business centres will be quickened, students time to school will be reduced because of good roads, artisans business will grow
10	Public Health care	39.73% of the respondents revealed that the condition of the public health institution within their community is fair while 28.08% said it is good. Also, 18.49% disclosed that the facilities are poor while only 13.70% agreed they have very good health facilities within their communities. There is generally lack of adequate personnel, equipment and facilities in some of the health facilities, eg. Elu ohafia health centre, Ozuitem health cemtre, Ututu health centre, Ngodo health cemtre, etc. The staff make the best use of what is available to help the people. The condition of access roads also make it difficult to access these facilities.	42.5% of the respondents revealed that the condition of the public health institution within their community is fair while 31.00% said it is good. Also, 12.5% disclosed that the facilities are poor while only 15.5% agreed they have very good health facilities within their communities. There is generally lack of adequate personnel, equipment and facilities in some of the health facilities, eg. Ndume health center, Ndioru health centre, umuchima health centre, Omoba health centre, etc. The staff make the best use of what is available to help the people. The condition of access roads also make it difficult to access these facilities.	30.0% of the respondents revealed that the condition of the public health institution within their community is fair while 25.0% said it is good. Also, 24.49% disclosed that the facilities are poor while only 21.00% agreed they have very good health facilities within their communities. There is generally lack of adequate personnel, equipment and facilities in some of the health facilities, eg. Umuobiakwa health centre, nnentu health centre, Eziukwu health centre, etc. The staff make the best use of what is available to help the people. The condition of access roads also make it difficult to access these facilities.	49.0 of the respondents revealed that the condition of the public health institution within their community is fair while 25.00% said it is good. Also, 11.0% disclosed that the facilities are poor while only 15.00% agreed they have very good health facilities within their communities. There is generally lack of adequate personnel, equipment and facilities in some of the health facilities, eg. Ohanku health centre, Ogwe health centre, etc. The staff make the best use of what is available to help the people. The condition of access roads also make it difficult to access these facilities.

S/N	Socio-Economic Indicator	Sections			
		Section A **Ohafia, Arochukwu, Isuikwuato, Umunneochi and Bende**	**Section B** **Umuahia North, Umuahia South, Ikwuano, Isiala-Ngwa North and Isiala-Ngwa South**	**Section C** **Osisioma Ngwa, Obi Ngwa, Aba North and Aba South**	**Section D** **Ugwunagbo, Ukwa West and Ukwa East**
11	Transport Access	Most respondents are of the opinion that road access to urban areas, and market are very difficult to access, no vehicles. This is often worst during the rainy season.	Most respondents are of the opinion that road access to urban areas, and market are very difficult to access, no vehicles. This is often worst during the rainy season.	Most respondents are of the opinion that road access to urban areas, and market are very difficult to access, no vehicles. This is often worst during the rainy season.	Most respondents are of the opinion that road access to urban areas, and market are very difficult to access, no vehicles. This is often worst during the rainy season.
12	Economic Opportunity	All the respondents were of the opinion that the RAAMP project will bring a lot of economic opportunity to their community, create new opportunities, easy access to market, increase their income and improve their standard of living.	All the respondents were of the opinion that the RAAMP project will bring a lot of economic opportunity to their community, create new opportunities, easy access to market, increase their income and improve their standard of living.	All the respondents were of the opinion that the RAAMP project will bring a lot of economic opportunity to their community, create new opportunities, easy access to market, increase their income and improve their standard of living.	All the respondents were of the opinion that the RAAMP project will bring a lot of economic opportunity to their community, create new opportunities, easy access to market, increase their income and improve their standard of living.
13	Security Risk	Most respondents attested that the security risk along the existing roads and around the communities is low. The reported incidence of kidnapping and violence, is low except the sit-at-home law imposed by the IPOB group every Monday and Biafra remembrance day which holds on every June 30th..The respondents were of the opinion that the operational phase of the project will bring about population influx, traffic and increase crime in the host communities.	Most respondents attested that the security risk along the existing roads and around the communities is low. The reported incidence of kidnapping and violence is low, except the sit-at-home law imposed by the IPOB group every Mondayand Biafra Remembrance Day which holds on every June 30th. The respondents were of the opinion that the operational phase of the project will bring about population influx, traffic and increase crime in the host communities.	Most respondents attested that the security risk along the existing roads and around the communities is low. The reported incidence of kidnapping and violence is low, except the sit-at-home law imposed by the IPOB group every Mondayand Biafra Remembrance Day which holds on every June 30th.The respondents were of the opinion that the operational phase of the project will bring about population influx, traffic and increase crime in the host communities.	Most respondents attested that the security risk along the existing roads and around the communities is low. The reported incidence of kidnapping and violence is low, except the sit-at-home law imposed by the IPOB group every Monday and Biafra remembrance day which holds on every June 30th. The respondents were of the opinion that the operational phase of the project will bring about population influx, traffic and increase crime in the host communities.

4.3 SITE SPECIFIC E&S BASELINE CONDITIONS OF THE PROJECT LOCATIONS PER INTERVENTION

The site specific environmental and social conditions of the 42Nos sub-project locations selected for rehabilitation are presented in Tables 4-7, 4-8, 4-9 and 4-10 below.

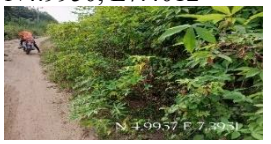
Figure 4-5: Ecological Features around the Project Area

Table 4- 7: Site Specific E&S Description of the Roads Selected for Upgrade Intervention

S/N	LGA	Road Name	Coordinates	Site Specific E&S Conditions of the sub project environment	E&S sensitivity	Pictures
1	Arochukwu	Amuvi-Ututu-Amakofia	Origin - N5.4190, E7.8846; Destination - N5.4250, E7.9134	Amuvi -Amakofia – Ututu road is a 5.2km road with paved section of about 500m from Amuvi section and another 400m at Ututu section. The entire section of the road transverses three (3) communities (Amuvi, Amakofia and Ututu in Arochukwu LGA. The road is wide enough being that it is an existing motorable road, though there are few encroachments at some sections of the road. There are drainages at some sections of the road. The three communities along the road are predominantly Christians and are majorly engaged in farming. They are low-income communities. The communities generally forbid adultery and stealing.	Encroachment of plantain farm on the RoW and widening of the road may impact on economic tree triggering compensation (see RAP)	 N5.4262, E7.8982
					Economic activities around the project area. y traffic during construction which may reduce travel time	 N5.4250, E7.9134
2	Arochukwu	Umuye Junction - Nka	Origin - N5.4667, E7.8813. Destination- N5.4771,E7.8898	Umuye Juction – Nka road is a 3.4km unpaved road that cuts across Umuye Elu and Umuye Agbo. The road is wide enough and its motorable upto Umuye elu. Though there are some sections where some farmland encroached on the road corridor and there are also possiblility of relocating electric poles and possible impact on an abandoned structure. There are no drainages on the road. Both communities predominantly Christians and are majorly engaged in farming. They are low - income communities. The communities generally forbid adultery and stealing. The community affirms that women do not bath in their stream and no one is permitted to take water from the stream out of their community.	Presence of electric pole (relocation of Pole) and demolition of a dilapidated structure triggering compensation (see RAP) Settlement around the project area.)	 N.4694, E7.8862  N5.4784, E7.8905

S/N	LGA	Road Name	Coordinates	Site Specific E&S Conditions of the sub project environment	E&S sensitivity	Pictures
3.	Arochukwu	Ndiokorie-Eziafor- Atani-Ndioji Abam	Origin -N5.5483, E7.7749 Destination - N5.5061, E7.7844	Ndiokorie-Eziafor - The road is 7.26km unpaved road, swampy during rainy season. There are economic activities at both sides of the road (Atani Abam market. They are low-income communities. The communities are predominantly Christians and are majorly engaged in farming. The communities generally forbid adultery and stealing. There are 2 streams, 6 churches and 3 schools.	Settlement around the project area.	 N 5.5043, E 7.7785  N 5.5061, E 7.7620  N 5.5257, E 7.7570
4	Bende	Uzuakoli market junction - Ugwumba - Uzuitim road	Origin- N 5.6326, E 7.5597; Destination- N5.6227, E 7.5978	Ugwumba - Uzuitim road is 7.10km unpaved road, swampy during rainy season. There were economic activities at both sides of the road (Uzuakoli market). The communities are predominantly Christians and are majorly engaged in farming. They are low-income communities. The communities generally forbid adultery and stealing. There are 1 bridge, 1 culverts, 1 streams, 4 churches, 2 school, 1 hospital, 1 market.	Flood prone and Water logged area. Temporary structure/shop beside the road corridor;	 N5.6290, E7.5856  N5.6290, E7.5856
5	Umunneochi	Uzoigwe kenneth Rd-Obinagu-Umada-Orie Ngodo mkt	Origin- N 5.9675, E 7.3863; Destination- N 5.9617, E7.3680	Road cut across communities; Uzoigwe kenneth Rd-Obinagu- Umada-Orie Ngodo mkt is 5.4km unpaved road, swampy during rainy season. There were economic activities at both sides of the road The communities are predominantly Christians and are majorly engaged in farming.	Flood prone and Water logged area. Vegetation on the RoW	 N5.9648,E7.3766

S/N	LGA	Road Name	Coordinates	Site Specific E&S Conditions of the sub project environment	E&S sensitivity	Pictures
				They are low-income communities. The communities generally forbid adultery and stealing. There are 1 church and 2 schools.	Cassava farm beside the road corridor.	 N5.9632,E7.3719  N5.9629, E7.3710
6	Ikwuano	Ndi Oro-Nnono road	Origin- N5.4402, E7.5658; Destination- N5.4419, E7.5597	Ndi Oro-Nnono road is 1.2km unpaved road, swampy during rainy season. The communities are predominantly Christians and are majorly engaged in farming. The communities generally forbid adultery and stealing. They are low-income communities. There are no church, no school and very limited social amenities. The community only had 1 market.	Flood prone and Water logged area Fence and stores within the RoW.	 N5.4401, E7.5645  N5.4402, E7.5658
7	Isiala Ngwa North	Market junction - Ntigha Okpuala - Umnachi Ntigha	Origin- N5.3910, E7.3806; Destination- N5.3955, E7.3871	Ntigha Okpuala - Umnachi Ntigha road is 4.4km unpaved road, swampy during rainy season. The communities are predominantly Christians and are majorly engaged in farming. They are low-income communities. The communities generally forbid adultery and stealing. There is no bridge, no culvert, no stream, 1 market, 5 churches, no school	Flood prone and Water logged area Cassava farm on the road side; Palm trees on the road corridor and Water-logged area;	 N5.3935, E7.3853  N5.3914, E7.3809

S/N	LGA	Road Name	Coordinates	Site Specific E&S Conditions of the sub project environment	E&S sensitivity	Pictures
						 N5.3922, E7.3819
8	Isiala Ngwa South	Nkwo Ebe-Ebeyi Nvosi-Okpokiri Nvosi-Umuhi Nvosi	Origin- N5.3334, E7.4790 Destination- N5.3148, E7.4480	Nkwo Ebe-Ebeyi Nvosi-Okpokiri Nvosi-Umuhi Nvosi road is 6km unpaved road, swampy during rainy season. The communities are predominantly Christians and are majorly engaged in farming. They are low-income communities. The communities generally forbid adultery and stealing. There is no bridge, no culvert, no stream, but the community has 10 churches and 2 health centers.	Economic activities on the road corridor, - Flood prone and Water logged area Economic trees along the road corridor and access to assert	 N5.2446, E7.4089  N5.3326, E7.4758  N5.3221, E7.4524
9	Ugwunagbo	Ukebe Junction Etiti Akanu Ngwa Ugwunagbo HQS	Origin - N 4.9944 E 7.401 2 Destination - N 5.0207, E 7.3604	Ukebe Junction Etiti Akanu Ngwa Ugwunagbo HQS road is 7.2km unpaved road, swampy during rainy season. The communities are predominantly Christians and are majorly engaged in farming. They are low-income communities. The communities generally forbid adultery and stealing. There is no bridge, no culvert, no stream, 12 churches, 2 health center, 4 schools.	Flood prone and Water logged area. Cassava farm on the road side;	 N4.9950, E7.4012  N4.9957, E7.3951

S/N	LGA	Road Name	Coordinates	Site Specific E&S Conditions of the sub project environment	E&S sensitivity	Pictures
10	Aba South	Boundry rd-Amaukwu,	Origin- N5.0934, E 7.3411; Destination- N5.0952, E7.3468	Boundry rd- Amaukwu road is 2.2km unpaved road, swampy during rainy season. The communities are predominantly Christians and are majorly engaged in farming. They are low-income communities. The communities generally forbid adultery and stealing. There is no bridge, no culvert, no stream, 12 churches, 2 health center, 4 schools.	Flood prone and Water logged area. House entrance within the road corridor; -	 N 5.0934, E7.3411  N 5.0936, E7.3409
11	Ukwa West	Afor Ogwe Market Junction-Umuazuta-Umunneato Ihie Ukwu Road	Origin- N 5.0096, E 7.2641; Destination- N 5.0087, E 7.3065	Afor Ogwe Market Junction- Umuazuta-Umunneato Ihie Ukwu road is 5.0km unpaved road, swampy during rainy season. The communities are predominantly Christians and are majorly engaged in farming. They are low-income communities. The communities generally forbid adultery and stealing. There is no bridge, no culvert, no stream, 1 school, 1 market, 3 Church.	Market at the beginning of the road with T Junction. -	 N5.0087, E7.2901  N5.0079, E7.2707

Table 4-8: Site Specific E&S Description of the Roads Selected for Backlog Maintenance Intervention

S/N	LGA	Road Name	Coordinates	Site Specific E&S Conditions of the sub project environment	E&S sensitivity	Pictures
1	Isiala Ngwa North	Amorji Junction - Abayi - Ahiaba court - umuchima –	Origin - N 5.3895, E 7.3760; Destination -	Amorji Junction - Abayi - Ahiaba court road is 9.60km unpaved road, swampy during rainy season. The communities are predominantly Christians and are majorly engaged in farming. They are low-income communities. The	The terrain along the RoW is sloppy with no bridge. Has market (Abieke) beside road corridor	 N 5.3623, E 7.3440

S/N	LGA	Road Name	Coordinates	Site Specific E&S Conditions of the sub project environment	E&S sensitivity	Pictures
		Uratta	N 5.3318, E 7.3491	communities generally forbid adultery and stealing. There are no bridge and no stream but 1 culvert, 1 market, 10 churches and 5 schools.	Due to Abieke market, economic activities along the road corridor. Presence of stores along the RoW.	 N 5.3890, E 7.3484
						 N 5.3886;E 7.3508
2	Isiala Ngwa South	Amiyi Nvosi junction - Ohuhu - Ohuhu Ikwuru	Origin - N 5.3107, E 7.4647; Destination - N 5.2970, E 7.44713	Amiyi Nvosi junction - Ohuhu - Ohuhu Ikwuru road is 3.4km unpaved road, swampy during rainy season. The communities are predominantly Christians and are majorly engaged in farming. They are low-income communities. The communities generally forbid adultery and stealing. There is no bridge, no culvert, no stream, but has 12 churches, 1 health centers	Economic Trees on the road corridor; -. Waterlogged and Plantain on the road corridor; - Flooding Area	 N 5.3081, E 7.4647  N5.3081, E7.4646  N5.3061, E7.4652
3.	Isiala Ngwa South	Umuokoro-Umuapu Amede-Isi Engime	Origin - N 5.2437, E 7.4671; Destination - N 5.2905, E7.4222	Umuokoro-Umuapu - Amede-Isi Engime Road is 7.2km unpaved road, swampy during rainy season. The communities are predominantly Christians and are majorly engaged in farming. They are low-income communities. The communities generally forbid adultery and stealing. There is no bridge, 1 culvert, no stream, 12 churches, 4 schools, 2 health centers	Waterlogged prone area; - Cassava Farm and plantain trees beside the road corridor; -	 N 5.2896, E 7.4238  N 5.2842, E 7.4298

S/N	LGA	Road Name	Coordinates	Site Specific E&S Conditions of the sub project environment	E&S sensitivity	Pictures
4	Osisioma	Egbelu Onwo - Egbede Umuagbai Rd	Origin- N 5.1685, E 7.1355; Destination - N 5.2970, E 7.4713	Egbelu Onwo - Egbede Umuagbai Rd is 5.2km unpaved road, swampy during rainy season. The communities are predominantly Christians and are majorly engaged in farming. They are low-income communities. The communities generally forbid adultery and stealing. There is no bridge, 1 culvert, no stream, 17 churches, 1 health center, 5 schools	Flooded and mashy area - during raining season Economic tree (Ube tree) within the road corridor; Waterlogged area during raining season	 N5.1665, E7.3084  N 5.1768, E 7.2805  N 5.1686, E 7.2954
5	Ugwunagbo	Abalegwu junction - Amaokpu – Umuaja	Origin- N 5.0218, E 7.3547; Destination - N 5.0162, E 7.3898	Abalegwu junction - Amaokpu – Umuaja Rd is 3.7km unpaved road, swampy during rainy season. The communities are predominantly Christians and are majorly engaged in farming. They are low-income communities. The communities generally forbid adultery and stealing. There is no bridge, no culvert, no stream, 10 churches, 2 health centers, 1 school	Water logged area; Plantain on the RoW	 N 5.0217, E 7.3554  N 5.0169, E 7.3693
6	Ugwunagbo	Umuakoli Akanu-Umuosi Akanu	Origin - N 4.9595, E 7.3691; Destination - N 4.9944 E 7.4014	Umuakoli Akanu- Umuosi Akanu Rd is 2.6km unpaved road, swampy during rainy season. The communities are predominantly Christians and are majorly engaged in farming. There no bridge, no culvert, no stream, 5 churches, 1 health center, 1 school	Flooding Area; Cassava farm within the RoW that can potentially be impacted	 N 4.9942, E 7.4011  N 4.9888, E 7.3895

S/N	LGA	Road Name	Coordinates	Site Specific E&S Conditions of the sub project environment	E&S sensitivity	Pictures
7	Ukwa East	Ohanku Market Road Ukebe Ohuru Ndoki Road	Origin - N 4.9711, E 7.4268; Destination - N 4.9600, E 7.3725	Ohanku Market Road Ukebe Ohuru Ndoki Road is 4.5km unpaved road, swampy during rainy season. The communities are predominantly Christians and are majorly engaged in farming. There no bridge, 1culvert, no stream, 7 churches, 1 health center, 1schools	Water logged area, Cassava Farm and Plantain Plantation within the road corridor;	 N 4.9690, E 7.4210  N 4.9687, E 7.4197
8	Isuikwuato	Amiyi Obinohia - Umueriem - Nnuya - Eziama Nnuya	Origin - N5.6838, E7.4205; Destination - N5.7582, E7.4742	Amiyi Obinohia - Umueriem - Nnuya - Eziama Nnuya Road is 11.6km unpaved road, swampy during rainy season. The communities are predominantly Christians and are majorly engaged in farming. There no bridge, 1culvert, 1 stream, 7 churches, 1 health center, 1schools	Flooded and waterlogged areas Presence of a Culvert and a stream: - Market on the RoW: Plantain on the RoW;	 N5.3117, E7.5508  N5.3067, E7.5542  
9	Ikwuano	Osaka-Nkalu Road			Electric pole on the RoW, Water logged area, Presence of economic crops	 N5.5204, E7.5231

S/N	LGA	Road Name	Coordinates	Site Specific E&S Conditions of the sub project environment	E&S sensitivity	Pictures
					on the ROW- mango, cassava, etc	 N5.5119, E7.5226  N5.5170, E7.5251  N5.5204, E7.5235

Table 4- 9: Site Specific E&S Description of the Roads for Spot Improvement

S/N	LGA	Road Name	Coordinates	Site Specific E&S Conditions of the sub project environment	E&S sensitivity	Pictures
1	Ohafia	Okagwe - Nkwebi Onwuwanyanwu	Origin- N5.6145, E7.7929; Destination- N5.6026, E 7.7929	Okagwe - Nkwebi Onwuwanyanwu Road is 710m unpaved road, swampy during rainy season. The communities are predominantly Christians and are majorly engaged in farming. There no bridge, 1 culvert, 1 stream, 1 church, no school.	Cassava farm on both sides of the road;	 N 5.6117, E 7.7927
					Water logged area;	 N 5.6079, E 7.7937

S/N	LGA	Road Name	Coordinates	Site Specific E&S Conditions of the sub project environment	E&S sensitivity	Pictures
					Economic activities (Palm fruit loading park) in the project area	 N 5.6034; E 7.7929
2	Ohafia	Okwuma Road – Ohafia Military Base	Origin- N 5.6861, E 7.8045; Destination- N 5.6745, E 7.7980	Okwuma Road – Ohafia Military Base Road is 4.0km unpaved road, swampy during rainy season. The communities are predominantly Christians and are majorly engaged in farming. There are 1 bridge, 1 stream/river, 2 schools.	River crossings with stream; Bamboo trees within the sub project area; - Flooding area; -	 N5.6765, E7.7990  N5.6765, E7.7990  N5.6766, E7.7984
3.	Bende	Alayi – Ezeukwu Road	Origin - N 5.7407, E 7.5954; Destination- N 5.8481, E 7.5543	Alayi – Ezeukwu Road is 9.67km unpaved road, swampy during rainy season. The communities are predominantly Christians and are majorly engaged in farming. There are 2 bridges, 6 culverts, 2 streams, 2 churches, 2 schools, 1 health center.	Water logged and muddy area; Market beside the road corridor; -. - Weak old bridge on the ROW; - -	 N 5.7945; E 7.5614  N 5.7945; E 7.5614

S/N	LGA	Road Name	Coordinates	Site Specific E&S Conditions of the sub project environment	E&S sensitivity	Pictures
						 N 5.7705; E 7.5757
4	Bende	Bende – Etitiulo – Ntalakwu	Origin- N 5.5596, E 7.6382; Destination- N 5.4460, E 7.6826	Etitiulo – Ntalakwu Road is 17.00km unpaved road, swampy during rainy season. The communities are predominantly Christians and are majorly engaged in farming. There is no bridge, 3 culvert, no stream, 2 schools.	Erosion intervention ongoing; Economic activities beside the road corridor; Water logged area;	 N 5.5538; E 7.6438  N 5.5054; E 7.6839  N 5.4548; E 7.6821
5	Umunneochi	Umuelem – Ihe – Ngada Road	Origin- N 5.9742, E 7.4043; Destination- N 5.9718, E 7.4464	Umuelem – Ihe – Ngada Road is 6.476km unpaved road, swampy during rainy season. The communities are predominantly Christians and are majorly engaged in farming. There are 1 bridge, 3 culverts, 1 stream, 5 churches, 3 schools.	Water logged area; Natural valley and vegetation on the road side; - Stream with Culvert with no protection bar; - Flood prone area;	 N 5.9787; E 7. 4393  N 5.5902, E7.4259

S/N	LGA	Road Name	Coordinates	Site Specific E&S Conditions of the sub project environment	E&S sensitivity	Pictures
						 N 5.9810, E7.4289  N5.9522, E7.3072
6	Isuikwuato	Amaba - Umuasua	Origin- N 5.7224, E 7.5167; Destination- N 5.7201, E 7.5009	Amaba - Umuasua is 1.20km unpaved road, swampy during rainy season. The communities are predominantly Christians and are majorly engaged in farming. There is no bridge, 2 culverts, 1 stream, 2 churches, no school	Flood prone with water logged; Fence and mud house beside the road corridor; - Presence of a culvert without crossing bars with surface water; -	 N 5.7209, E7.5104  N 5.7174, E7. 5053  N 5.7186, E7.5033
7	Isuikwuato	Amaoho Amaba – Okoba Road	Origin- N 5.7301, E 7.5139; Destination- N 5.7357, E 7.5014	Amaoho Amaba – Okoba Road is 3.765km unpaved road, swampy during rainy season. The communities are predominantly Christians and are majorly engaged in farming. There is no bridge, 1 culvert, 1 stream, no school, no church	Fence and plantain with palm trees beside the road corridor; - Flood prone area; Failed culvert with stream; -	 N 5.7422; E 7.5095  N 5.7382; E 7.5018

S/N	LGA	Road Name	Coordinates	Site Specific E&S Conditions of the sub project environment	E&S sensitivity	Pictures
						 N 5.7450; E 7.5076
8	Obingwa	Umuohia – Osusu Umuikpeghi – 7up	Origin- N 5.1803, E 7.3900; Destination- N 5.1571, E 7.3924	Umuohia – Osusu Umuikpeghi – 7up Road is 2.537km unpaved road, swampy during rainy season. The communities are predominantly Christians and are majorly engaged in farming. There is no bridge, no culvert, no stream, 5 churches	Shops/Economic activities on the road sides; - - Water logged area	 N 5.1803; E 7.3900  N 5.1670; E 7.3900
9	Umuahia North	Umuagu-Utali	Origin- N 5.5613, E 7.4482; Destination- N 5.6457, E 7.4303	Umuagu – Utali road is a 5.905km unpaved road. The road is flat in some sections and slightly sloppy is some sections and swampy during rainy season. . The communities are predominantly Christians and are majorly engaged in farming. There are 2 bridges, 4 culvert, 5 stream, 6 churches, 2 school, 1 health centers within the project area.	Eme River with collapsed bridge; - ; -Possible impact on economic trees (Mango tree and cassava farm) House entrance within the road corridor;	 N 5.6258; E 7.4482  N 5.6234; E 7.4479  N 5.6169; E 7.4470
10	Umuahia North	Agalabano-Umuhu central school-Ekeoba	Origin- N 5.5800, E 7.4446; \ Destination- N 5.5821, E 7.4473	Agalabano-Umuhu central school-Ekeoba Road is 2.537km unpaved road, swampy during rainy season. The communities are predominantly Christians and are majorly engaged in farming. There is no bridge, 2 culvert, 2 stream, n churches, 1 school	Building fence on the road corridor; -Ancestral tree within the project	 N 5.5800; E 7.4446

S/N	LGA	Road Name	Coordinates	Site Specific E&S Conditions of the sub project environment	E&S sensitivity	Pictures
					community Building and electric pole on the RoW;	 N 5.5800; E 7.4446  N 5.5805; E 7.4452
11	Ugwunagbo	Ihie Ukwu-Obegu	Origin- N 5.5009, E 7.3093; Destination- N 4.9625, E 7.3290	Ihie Ukwu-Obegu Road is 4.564km unpaved road, swampy during rainy season. The communities are predominantly Christians and are majorly engaged in farming. There is no bridge, no culvert, no stream, 12 churches, 2 health center, 4 schools	Water logged/ flood prone area;	 N 4.9988; E 7.3187  N 4.9833; E 7.3253
12	Aba North	Ariara-Umumgbede-Umuiku	Origin- N 5.1068, E 7.3276; Destination- N 5.1748, E 7.2823	Ariara-Umumgbede-Umuiku Road is 6.535km unpaved road, swampy during rainy season. The communities are predominantly Christians and are majorly engaged in farming. There is no bridge, no culvert, no stream, 40 churches, 15 health center, 14 schools, 6 markets	Market within the road corridor; - Water logged area; Economic trees within the road corridor; -	 N 5.1068; E 7..3276  N 5.1242 ; E 7.2904 

S/N	LGA	Road Name	Coordinates	Site Specific E&S Conditions of the sub project environment	E&S sensitivity	Pictures
						N 5.1432; E 7.2710

Table 4- 10: Site Specific E&S Description of the Roads for Cross Drainage Intervention

S/N	LGA	Road Name	Coordinates	Site Specific E&S Conditions of the sub project environment	E&S sensitivity	Pictures
1	Ohafia	Oboro-Ndiudumaukwu-Ndianku-Nkwebi-Okagwe Ohafia (Okagwa Stream)	Coordinate: N5.6765, E7.7990	Oboro-Ndiudumaukwu-Ndianku-Nkwebi-Okagwe Ohafia (Okagwa Stream) is 6m crossing, swampy during rainy season. The communities are predominantly Christians and are majorly engaged in farming. There are 1 bridge, 1 stream/river,	River crossings with stream;	 N 5.6765; E 7.7990
					Bamboo trees within the sub project area; -	 N 5.6765; E 7.7990
					Flooding area; -	 N 5.6766; E 7.7984
2	Ohafia	Okwuma Road – Ohafia Military Base	Coordinate: N 5.6019, E 7.7929	Okwuma Road – Ohafia Military Base is 6m crossing, swampy during rainy season. The communities are predominantly Christians and are majorly engaged in farming. There are 1 bridge, 1 stream, no school,	Flood prone; - crops and other economic trees on the RoW- cassava, etc	 N 5.6019, E 7.7929  N 5.6018; E 7.7927

S/N	LGA	Road Name	Coordinates	Site Specific E&S Conditions of the sub project environment	E&S sensitivity	Pictures
3.	Bende	Bende Etitiulo-Ubibia-Ndiwo-Itumbuzo-Okopedi- Ntalakwu (Awiwa Stream)	Coordinate: N 5.5036, E 7.6393	Bende Etitiulo-Ubibia-Ndiwo-Itumbuzo-Okopedi-Ntalakwu (Awiwa Stream) is 6m crossing, swampy during rainy season. The communities are predominantly Christians and are majorly engaged in farming. There are 1 bridge, 1 stream, no school,	Failed Bridge with Stream; -. Presence of aCassava/Oil Mill and Plantain Plantation; - Flood prone area; -	 N 5.5036; E 7.6393  N 5.5037, E 7.6392  N 5.5045; E 7.6395
4	Bende	Amaokwelu Alayi Junction-Amankalu-Akoli Imenyi (Igwu river)	Coordinate: N 5.6810, E 7.5753	Amaokwelu Alayi Junction-Amankalu-Akoli Imenyi (Igwu river) is 6m crossing, swampy during rainy season. The communities are predominantly Christians and are majorly engaged in farming. There are 1 bridge, 1 stream, no school,	Presence of aollapsed bridge at Igwu Stream; - Muddy surface within 50 meters from the bridge;	 N 5.6810; E 7.5753  N 5.6810; E 7.5749
5	Bende	Amaokwelu Alayi Junction-Amankalu-Akoli Imenyi (Nchichi stream)	Coordinate: N 5.6739, E 7.5637	Amaokwelu Alayi Junction-Amankalu-Akoli Imenyi (Nchichi stream) is 6m crossing, swampy during rainy season. The communities are predominantly Christians and are majorly engaged in farming. There are 1 bridge, 1 stream, no school,	Gap at Nchichi stream	 N 5.6739; E 7.5637
6	Bende	Ezeukwu-Ugwueke Road (Ifuama Bridge in Amangwu Ezeukwu)	Coordinate: N 5.1266, E 7.5634	Ezeukwu-Ugwueke Road (Ifuama Bridge in Amangwu Ezeukwu) is 14m crossing, swampy during rainy season. The communities are predominantly Christians and are majorly engaged in farming. There are 1 bridge, 1 stream,	Ifuama Bridge (collapsed bridge); - Building beside the road corridor;	 N 5.1266; E 7.5634

S/N	LGA	Road Name	Coordinates	Site Specific E&S Conditions of the sub project environment	E&S sensitivity	Pictures
						 N 5.12659; E 7.5639
7	Umuahia North	Agalabano-Umuhu-Ekeoba Express (Ekweze stream)	Coordinate: N 5.5877, E 7. 4530	iAgalabano-Umuhu-Ekeoba Express (Ekweze stream) s 11m crossing, swampy during rainy season. The communities are predominantly Christians and are majorly engaged in farming. There is 1 bridge, 1 stream,	Collapsed Bridge; Fence and cassava farm on the RoW; - Muddy area;	 N 5.5870; E 7.4515  N 5.5877; E 7. 4530
8	Umuahia North	Umuafiaka-Umuokpara (iyi Obowo)	Coordinate: N 5.3683, E 7.5227	Umuafiaka-Umuokpara (iyi Obowo) is 11m crossing, swampy during rainy season. The communities are predominantly Christians and are majorly engaged in farming. There is 1 bridge, 1 stream,	River Crossing with no bridge/culvert;	 N 5.3683; E 7.5227
9	Umuahia South	Ahiaukwu-Amangwo-Umuajata Umudere Aamkama (Umudere Stream)	Coordinate: N5.5643; E7.4411	Ahiaukwu-Amangwo-Umuajata Umudere Aamkama (Umudere Stream) is 11m crossing,, swampy during rainy season. The communities are predominantly Christians and are majorly engaged in farming. There are 1 bridge, 1 stream.	Umudere Stream within the road corridor.	 N 5.5643; E 7.4411

CHAPTER FIVE

POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS AND MITIGATION MEASURES

5.1 INTRODUCTION

A key tool towards achieving sound environmental and social performance of a project is the identification of the environmental impacts and providing appropriate site-specific mitigation measures. The activities associated with the different phases viz pre-construction, construction and post-construction involved in road construction projects will result in varying degrees of impacts on the bio-physical and social components of the environment. In this Chapter, the potential E&S impacts that may arise from the proposed road and bridge construction are identified with effective mitigation measures proffered for all impacts. Mitigation measures are actions taken to minimize negative impacts while also enhance positive ones. Mitigation measures are often implemented continuously throughout the project's life span.

5.2 IMPACT IDENTIFICATION AND EVALUATION METHODOLOGY

ISO 14001 was used for identification of environmental aspects and impact evaluation of the proposed project. The impact identification is a crucial component in determining the potential impact of a given project or activity. The process of impact identification commenced during the project screening and scoping and continued throughout the field data gathering including stakeholder's engagement process where potential E&S impacts were identified. In this Chapter, the overall impact identification and evaluation were based on ISO 14001:2004 impact identification and evaluation methodology, which comprises five stages;

- identification of impacts on the receiving environment
- screening for impact importance
- detailed assessment
- final assessment and assignment of overall significance

Impacts Identification

The impact identification process included the following:

- identification of project boundaries;
- identification of stakeholders within the project boundaries;
- expert identification of potential impacts;
- stakeholders' identification of issues to arise from project implementation; and
- harmonization of potential impacts and issues

Impacts Significance Prediction

The identified impacts were assessed in terms of the criteria and rating scales outlined in ***Table 5-1*** below. The rating assignment was based on experience and professional judgments by a multidisciplinary team of specialists in all cases.

Table 5-1: Impact Prediction Criteria and Rating Scales

Criteria	Rating Scales	Score
Nature	Positive	+
	Negative	-
	Neutral	
Cumulative impacts (incremental impacts of the activity and other	**Negligible** (there is still significant capacity (above 50% carrying capacity) of the environmental resources within the geographic area to respond to change and withstand further stress)	**1**

Criteria	Rating Scales	Score
past, present, and future activities on a common resource)	**Low** (there is still capacity (below 50% carrying capacity) of the environmental resources within the geographic area to respond to change and withstand further stress)	**2**
	Medium (impacted natural, cultural, or social functions and processes will return to their pre-impacted state within the medium term)	**3**
	High (impacted natural, cultural or social functions, and processes will return to their pre-impacted state within the long term)	**4**
	Severe (impacted natural, cultural or social functions, and processes will never return to their pre-impacted state)	**5**
Impact on **irreplaceable resources**	**Yes Reversible** (recovery without rehabilitation)	**1**
	Yes Recoverable	**3**
	No (Irreversible)	**5**
Intensity (partially quantified in terms of the percent of resources affected and by the relative concentration at receptor points)	**Minor** assigned as 1-5 in Table 5.4	**1**
	Low assigned as 6-10 in Table 5.4	**2**
	Medium assigned as 11-15 in Table 5.4	**3**
	High assigned as 16-20 in Table 5.4	**4**
	Severe assigned as 21-25 in Table 5.4	**5**
Extent (the spatial limit of the impact)	**Site only**	**1**
	Local (Immediate surrounding areas)	**2**
	Regional (Abia State)	**3**
	National (Beyond Abia State)	**4**
	International (include international spatial extent)	**5**
Duration (the predicted lifetime of the impact)	**Immediate**	**1**
	Short-term (0 to 5 years)	**2**
	Medium-term (6 to 15 years)	**3**
	Long-term (16 to 30 years) - where the impact will cease after the operational life of the activity either because of natural processes or by human intervention	**4**
	Permanent	**5**
Probability (the likelihood of the impact occurring)	**Improbable** – where the possibility of the impact occurring is very low (0 – 5%)	**1**
	Low - where the possibility of the impact occurring is low (6 – 45%)	**2**
	Medium – where there is a good possibility (46 – 55% chance) that the impact will occur	**3**
	Highly probable – where it is most likely (56-95% chance) that the impact will occur	**4**
	Definite – where the impact will occur regardless of any prevention measures (>95% chance of occurring)	**5**

❖ **Intensity**

The intensity of an impact is partially quantifiable in terms of the percent of resources affected and the relative concentration at receptor points.

- **Proportion of resources affected** is defined as the quantitative intensity of the impact and can be measured as a percentage of resources or a population within the study area that may be affected by an impact. The definition of **Critical, Major, Moderate, Minor and Negligible** with respect to intensity may vary depending upon the specific receptor. The attribute for characterizing the proportion of the affected resources is defined in ***Table 5-2*** below:

Table 5-2: Impact Characterization by Intensity on Resources or Receptors

Significance	Equivalent Numerical Value	Description
Critical	5	Extremely large amount of the resources or population is affected.
Major	4	Large amount of the resources or population is affected. An easily observable and measurable effect.
Moderate	3	Moderate amount of the resources or population is affected. Generally measurable and observable effect
Minor	2	Small amount of the resources or population is affected. A low magnitude impact may be within the range of normal variation of background conditions.
Negligible	1	The amount of resources or population affected is unnoticeable or immeasurably small

- **Concentration at receptor points** is defined with respect to quantitative or semi-quantitative criteria. The identified quantitative criteria (benchmarks) would align with industry best practices as well as national and international standards. The concentration factor is categorized as provided in ***Table* 5-3** below.

Table 5-3: Impact Characterization by Intensity at Receptor Points

Significance	Equivalent Numerical Value	Description
Critical	5	Exceeds the quantitative or semi-quantitative benchmark
Major	4	At the quantitative or semi-quantitative benchmark.
Moderate	3	Periodically and briefly exceeds this benchmark, although generally within the benchmark.
Minor	2	Generally, only a fraction of less than the quantitative or semi-quantitative benchmark.
Negligible	1	Impact not detected or at background condition or well below the quantitative or semi-quantitative benchmark.

Impact Evaluation

Once the impacts are assessed according to the criteria in *Table 5-1,* a consequence rating is applied, as per the calculation using the values obtained in *Tables 5-2* and *5-3* and the following equation, which generated a significance rating as per **Table 5-4 below.**

ENVIRONMENTAL SIGNIFICANCE (S) = NATURE **N** x (CUMULATIVE IMPACT, **C** + MAGNITUDE, **M** + EXTENT, **E**+ REVERSIBILITY, **R** + DURATION, **D**) x PROBABILITY, **P**

N= Nature; **C**= Cumulative; **R**= Reversibility; **M**= Magnitude; **E**= Extent; **D**= Duration; **P**=Probability.

Table 5-4: Table used to assign impact significance rating to the scores obtained using

Environmental Significance (S) Rating	Percentage of Environmental Significance (S)
Severe	> 75%
High	51 – 75%
Medium	26 – 50%
Low	≤25%

Stage 5: Impact Assessment Matrix: The potential impacts were evaluated using the Impact Assessment Matrix shown in **Table 5-5**.

Table 5-5: Impact Assessment Matrix

CONSEQUENCE					INCREASING PROBABILITY				
					1	**2**	**3**	**4**	**5**
Severity	People	Assets	Environment	Reputation	Never heard of incident (0-20%)	Incident has occurred (21-40%)	Incident has occurred i (41-60%)	Happens several times per year (61-80%)	Happens several times per year (81-100%_
0	No injury	No damage	No effect	No impact	**0**	**0**	**0**	**0**	**0**
1	Slight Injury	Slight damage	Slight effect	Slight impact	**5**	**10**	**15**	**20**	**25**
2	Minor Injury	Minor damage	Minor effect	Limited impact	**4**	**8**	**12**	**16**	**20**
3	Major Injury	Localized damage	Localized effect	Considerable impact	**3**	**6**	**9**	**12**	**15**
4	Single Fatality	Major damage	Major effect	National impact	**2**	**4**	**6**	**8**	**10**
5	Multiple Fatalities	Extensive damage	Catastrophic effect	International impact	**1**	**2**	**3**	**4**	**5**

(Adapted after Leopold et al., 1971)

From the Table 5-5 above, only critical, high, and medium impacts were considered for impact mitigation. Continuous improvement practices will address low impacts. The positive impacts shall be monitored and enhanced when expedient.

5.3 POTENTIAL IMPACTS AND MITIGATION MEASURES

The proposed intervention is predicted to alter the present state of the environment as well as impact on the existing lifestyle or culture of the locals that interact with the roads. These may result from project related activities, and they may be beneficial or adverse. **Table 5-6** and Table 5-7 below provide an assessment summary of potential negative impacts and mitigation measures, respectively, in connection with the proposed project.

Table 5-6: Potential Negative Impacts Assessment Summary

Activities	Impact/ Potential Source	Impact Description	Impact Evaluation							
			N	C	R	M	E	D	P	Impact Sig.
A. PRE-CONSTRUCTION PHASE										
Site Clearing / Mobilisation of Equipment and Workers to Site • Site clearance • Setting up of camp site/Engineering yard. • Mobilization of equipment and workers to site • Dewatering • Creation of borrow pits • Sanitary Facilities • Staging Area for contractor equipment • Borrow Pit Area • On-camp power source THIS IMPLIES TO Spot	Agitation due to loss of economic trees, crops and structures along the RoW: Grievances from stakeholder community, competition for employment (A1).	Agitation by community members for compensation and youth employment, contracts, perceived environmental impacts of projects, and other community/third party interests. This impact, although negative, is reversible. The probability of the impact arising is medium. A standalone Resettlement Action Plan (RAP) will be prepared to address all resettlement related impacts and ensure adequate compensation of Project Affected Persons (PAPs). The percentage of environmental significance is greater than 25%, but less than 50%; therefore, the impact significance is described as medium	-	1	2	3	3	2	3	**Medium**
	Deterioration of local air quality due to generation of dusts and emission of gases (A2)	Dust, particulates, SOx, NOx, CO, etc., are the main constituents of emissions from vehicles used for site visits and pre-construction planning. This impact although negative, is reversible, short-time, localized and dispersed by air. Impact is seasonal, higher in dry season. The probability of the impact arising is medium. The percentage of environmental significance is greater than than 25% but less than 50%;; therefore, the impact significance is described as medium	-	1	2	3	3	2	3	**Medium**
	Noise and vibration (A3)	The baseline noise levels in the host communities along the Abia South roads ranged between 39.6 - 60.2 dB, the Abia Central roads, ranged, 40.2 – 60.2 dB (A) and Abia North roads ranged 44.2 – 68.0 dB (A). Increase in these noise level above regulatory limits, 90dB(A), could have environmental heath impact. This impact although negative, is reversible, short-time, localized. The probability of the impact arising is medium. The percentage of environmental significance is greater than than 25% but less than 50%; therefore, the impact significance is described as medium.	-	1	2	3	3	2	3	**Medium**

Activities	Impact/ Potential Source	Impact Description	Impact Evaluation							
			N	C	R	M	E	D	P	Impact Sig.
Improvement, Backlog Maintenance and Rehabilitation, Maintenance, Upgrade as well as Drainage Infrastructure.	Loss of vegetation and biodiversity due to the removal of vegetation and trees along RoW (A4).	This impact although negative, is reversible, short-time, localized and limited to the RoW. The probability of the impact arising is low. The percentage of environmental significance is less than 25%; therefore, the impact significance is described as low.	-	1	1	3	2	2	1	**Low**
	Road Traffic causing delay in travel time (A5).	The background traffic condition at the rural access roads is low. The traffic volume at the pre-construction stage will be minimal, the cumulative impact will be low and low magnitude. This impact is negative, is reversible, short-time, localized and probability the impact arising is low. The percentage of environmental significance is less than 25%; therefore, the impact significance is described as low.	-	1	1	3	2	2	1	**Low**
	Contamination of surface water from vegetal waste especially at the river crossing. (A6)	This impact is negative, is irreversible, short-time, localized. The percentage of environmental significance is greater than 25%; but less than 50% therefore, the impact significance is described as medium.	-	1	2	3	3	2	3	**Medium**
	Gender Based Violence (GBV) due to establishment of Campsite and Influx of workers (A7)	This impact is negative, is irreversible, short-time, localized and probability the impact arising is high. The percentage of environmental significance is greater than 50%; but less than 75%, therefore, the impact significance is described as high.	-	3	3	3	2	4	4	**High**
	Child labour and school dropout due to opportunities for the host community to sell goods and services to construction workers (A8).	This impact is negative, is irreversible, short-time, localized and probability the impact arising is high. The percentage of environmental significance is greater than 50%; but less than 75%, therefore, the impact significance is described as high.	-	3	3	3	2	4	4	**High**
	Climate Change from GHG emissions from heavy duty diesel machines and equipment's (A9)	Over 270 metric tons CO_2 per day could be discharge per road, depending on numbers of heavy-duty machines and duration of the operation. This impact is negative, irreversible, and its global effect The probability of the impact arising is medium. Impact has global significance. The percentage of environmental significance is greater than 25% but less than 50%; therefore, the impact significance is described as medium.	-	1	2	3	3	2	3	**Medium**

Activities	Impact/ Potential Source	Impact Description	Impact Evaluation							
			N	C	R	M	E	D	P	Impact Sig.
	Increase demand on existing community health and sanitation infrastructure due to influx of temporary workers (A10)	This impact although negative, is reversible, short-time, localized. The probability of the impact arising is medium. The percentage of environmental significance is greater than 25% but less than 50%; therefore, the impact significance is described as medium.	-	1	2	3	3	2	3	**Medium**
	Increased risk of spread of communicable diseases (including sexually transmitted diseases (STDs) and HIV/AIDS) due to influx of construction workers and camp followers. (A11)	his impact is negative, is irreversible, short-time, localized and probability the impact arising is high. The percentage of environmental significance is greater than 50%; but less than 75%, therefore, the impact significance is described as high.	-	3	3	3	2	4	4	**High**
	Solid waste generation in as well as sewage at camp sites A12)	This impact although negative, is reversible, short-time, localized. The probability of the impact arising is medium. The percentage of environmental significance is greater than 25% but less than 50%; therefore, the impact significance is described as medium.	-	1	2	3	3	2	3	**Medium**
B. CONSTRUCTION PHASE.										
Spot Improvement • Excavation, cutting and filling and surfacing). • Provision of soil stabilization • Creation of borrow pits.	Deterioration of local air quality due to generation of dusts and emission of gases (B1)	Dust, particulates, SOx, NOx, CO, etc., are the main constituents of emissions from vehicles used for site visits and pre-construction planning. This impact although negative, is reversible, short-time, localized and dispersed by air. Impact is seasonal, higher in dry season. The probability of the impact arising is medium. The percentage of environmental significance is greater than than 25% but less than 50%; therefore, the impact significance is described as medium	-	1	2	3	3	2	3	**Medium**
	Noise and vibration (B2)	The baseline noise levels in the host communities along the Abia South roads ranged between 39.6 - 60.2 dB, the Abia Central roads, ranged, 40.2 – 60.2 dB (A) and Abia North roads ranged 44.2 – 68.0 dB (A). Increase in these noise level above regulatory limits, 90dB(A), could have environmental heath impact. This impact although negative, is	-	1	2	3	3	2	3	**Medium**

Activities	Impact/ Potential Source	Impact Description	Impact Evaluation							
			N	C	R	M	E	D	P	Impact Sig.
• Movement of earth materials. • Generation and disposal of construction spoil and waste in general. • Pavement • Asphalting • Road Infrastructure		reversible, short-time, localized. Th e probability of the impact arising is medium. The percentage of environmental significance is greater than than 25% but less than 50%; therefore, the impact significance is described as medium.								
	Road Traffic causing delay in travel time (B3).	The background traffic condition at the access roads is low. The traffic volume at the construction stage will be minimal, the cumulative impact will be low and low magnitude. This impact is negative, is reversible, short-time, localized and probability the impact arising is low. The percentage of environmental significance is less than 25%; therefore, the impact significance is described as low.	-	1	1	3	2	2	1	**Low**
	Gender Based Violence (GBV) due to establishment of Campsite and Influx of workers (B4)	This impact is negative, is irreversible, short-time, localized and probability the impact arising is high. The percentage of environmental significance is greater than 50%; but less than 75%, therefore, the impact significance is described as high.	-	3	3	3	2	4	4	**High**
	Child labour and school dropout due to opportunities for the host community to sell goods and services to construction workers (B5).	This impact is negative, is irreversible, short-time, localized and probability the impact arising is high. The percentage of environmental significance is greater than 50%; but less than 75%, therefore, the impact significance is described as high.	-	3	3	3	2	4	4	**High**
	Climate Change from GHG emissions from heavy duty diesel machines and equipment's (B6)	Over 270 metric tons CO_2 per day could be discharge per road, depending on numbers of heavy-duty machines and duration of the operation. This impact is negative, irreversible, and its global effect The probability of the impact arising is medium. Impact has global significance. The percentage of environmental significance is greater than 25%; but less than 50%, therefore, the impact significance is described as medium.	-	1	2	3	3	2	3	**Medium**
	Increase demand on existing community health and sanitation infrastructure due to influx of temporary workers (B7)	This impact although negative, is reversible, short-time, localized The probability of the impact arising is medium. The percentage of environmental significance is greater than 25%; but less than 50%, therefore, the impact significance is described as medium.	-	1	2	3	3	2	3	**Medium**

Activities	Impact/ Potential Source	Impact Description	Impact Evaluation							
			N	C	R	M	E	D	P	Impact Sig.
	Solid waste generation in construction sites (B8)	This impact although negative, is reversible, short-time, localized. The probability of the impact arising is medium. The percentage of environmental significance is greater than 25%; but less than 50%, therefore, the impact significance is described as medium.	-	1	2	3	3	2	3	**Medium**
	Increased risk of spread of communicable diseases (including sexually transmitted diseases (STDs) and HIV/AIDS) due to influx of construction workers and camp followers (B9).	This impact is negative, is irreversible, short-time, localized and probability the impact arising is high. The percentage of environmental significance is greater than 50%; but less than 75%, therefore, the impact significance is described as high.	-	3	3	3	2	4	4	**High**
	Risk of occupational accidents (OHS), Injuries and diseases (B10)	Health and safety impacts such as an injury that could affect workers and community member is identified. The impact is reversible, medium and low aerial extent. The percentage of environmental significance is greater than 25%; but less than 50%, therefore, the impact significance is described as medium.	-	1	2	3	3	2	3	**Medium**
	Injuries from application of asphalting material to road surface (B11)	Health and safety impacts such as an injury that could affect workers and community member is identified. The impact is reversible, medium and low aerial extent. The percentage of environmental significance is greater than 25%; but less than 50%, therefore, the impact significance is described as medium.	-	1	2	3	3	2	3	**Medium**
	Exposure to harmful chemicals (B12)	Health and safety impacts such as an injury that could affect workers and community member is identified. The impact is reversible, medium and low aerial extent. The percentage of environmental significance is greater than 25%; but less than 50%, therefore, the impact significance is described as medium.	-	1	2	3	3	2	3	**Medium**
	Risk of Fire and Life safety due to Chemical Storage	This impact is negative, irreversible, short-time, localized and probability of the impact arising is high. The percentage of environmental significance is greater than 50%; but less than 75%, therefore, the impact significance is described as high.	-	3	3	3	2	4	4	**High**

Activities	Impact/ Potential Source	Impact Description	Impact Evaluation							
			N	C	R	M	E	D	P	Impact Sig.
Backlog Maintenance • Removal of encumbrances, unsuitable materials, and demolition of failed culverts. • Excavation, cutting and filling with lateritic materials. • Provision of soil stabilization • Creation of borrow pits. • Movement of earth materials. • Generation and disposal of construction spoil and waste in general. • Pavement • Asphalting • Road Infrastructure	Deterioration of local air quality due to generation of dusts and emission of gases (BX1).	Same as B1	-	1	2	3	3	2	3	**Medium**
	Noise and vibration (BX2)	Same as b2	-	1	2	3	3	2	3	**Medium**
	Road Traffic causing delay in travel time (BX3).	Same B3	-	1	1	3	2	2	1	**Low**
	Gender Based Violence (GBV) due to establishment of Campsite and Influx of workers (BX4)	Same B4	-	3	3	3	2	4	4	**High**
	Child labour and school dropout due to opportunities for the host community to sell goods and services to construction workers (BX5).	Same as B5	-	3	3	3	2	4	4	**High**
	Climate Change from GHG emissions from heavy duty diesel machines and equipment's (BX6)	Same as B6	-	1	2	3	3	2	3	**Medium**
	Increase demand on existing community health and sanitation infrastructure due to influx of temporary workers (BX7)	Same as B7	-	1	2	3	3	2	3	**Medium**

Activities	Impact/ Potential Source	Impact Description	Impact Evaluation							
			N	C	R	M	E	D	P	Impact Sig.
	Solid waste generation in construction sites (BX8)	Same as B8	-	1	2	3	3	2	3	**Medium**
	Increased risk of spread of communicable diseases (including sexually transmitted diseases (STDs) and HIV/AIDS) due to influx of construction workers and camp followers (BX9).	Same as B9	-	3	3	3	2	4	4	**High**
	Risk of occupational accidents (OHS), Injuries and diseases (BX10)	Same as B10	-	1	2	3	3	2	3	**Medium**
	Injuries from application of asphalting material to road surface (BX11)	Same B11	-	1	2	3	3	2	3	**Medium**
	Exposure to harmful chemicals (BX12)	Same as B12	-	1	2	3	3	2	3	**Medium**
Upgrade • Removal of encumbrances, unsuitable materials, and demolition of failed culverts. • Excavation,	Deterioration of local air quality due to generation of dusts and emission of gases (BY1).	Same as B1	-	1	2	3	3	2	3	**Medium**
	Noise and vibration (BY2)	Same as b2	-	1	2	3	3	2	3	**Medium**
	Road Traffic causing delay in travel time	Same B3	-	1	1	3	2	2	1	**Low**

Activities	Impact/ Potential Source	Impact Description	Impact Evaluation							
			N	C	R	M	E	D	P	Impact Sig.
cutting and filling with lateritic materials. • Provision of soil stabilization • Creation of borrow pits. • Movement of earth materials. • Generation and disposal of construction spoil and waste in general. • Pavement • Asphalting • Road Infrastructure	(BY3).									
	Gender Based Violence (GBV) due to establishment of Campsite and Influx of workers (BY4)	Same B4	-	3	3	3	2	4	4	**High**
	Child labour and school dropout due to opportunities for the host community to sell goods and services to construction workers (BY5).	Same as B5	-	3	3	3	2	4	4	**High**
	Climate Change from GHG emissions from heavy duty diesel machines and equipment's (BY6)	Same as B6	-	1	2	3	3	2	3	**Medium**
	Increase demand on existing community health and sanitation infrastructure due to influx of temporary workers (BY7)	Same as B7	-	1	2	3	3	2	3	**Medium**
	Solid waste generation in construction sites (BY8)	Same as B8	-	1	2	3	3	2	3	**Medium**
	Increased risk of spread of communicable diseases (including sexually transmitted diseases (STDs) and HIV/AIDS) due to	Same as B9	-	3	3	3	2	4	4	**High**

Activities	Impact/ Potential Source	Impact Description	Impact Evaluation							
			N	C	R	M	E	D	P	Impact Sig.
	influx of construction workers and camp followers (BY9).									
	Risk of occupational accidents (OHS), Injuries and diseases (BY10)	Same as B10	-	1	2	3	3	2	3	**Medium**
	Injuries from application of asphalting material to road surface (BY11)	Same B11	-	1	2	3	3	2	3	**Medium**
	Exposure to harmful chemicals (BY12)	Same as B12	-	1	2	3	3	2	3	**Medium**
Drainage Infrastructure • Construction of earth and concrete lined side drains. • Construction of single and multiple cells concrete pipe culvert extensions and new culverts. • Construction of reinforced concrete box culverts. • Provision of slope	Deterioration of local air quality due to generation of dusts and emission of gases (BZ1).	Same as B1	-	1	2	3	3	2	3	**Medium**
	Noise and vibration (BZ2)	Same as b2	-	1	2	3	3	2	3	**Medium**
	Road Traffic causing delay in travel time (BZ3).	Same B3	-	1	1	3	2	2	1	**Low**
	Gender Based Violence (GBV) due to establishment of Campsite and Influx of workers (BZ4)	Same B4	-	3	3	3	2	4	4	**High**
	Child labour and school dropout due to opportunities for the host community to sell goods and services to	Same as B5	-	3	3	3	2	4	4	**High**

Activities	Impact/ Potential Source	Impact Description	Impact Evaluation							
			N	C	R	M	E	D	P	Impact Sig.
protection. cement and concrete works for drainage structures. **THIS IMPLIES TO** Spot Improvement, Backlog Maintenance and Rehabilitation, Maintenance, Upgrade	construction workers (BZ5).									
	Climate Change from GHG emissions from heavy duty diesel machines and equipment's (BZ6)	Same as B6	-	1	2	3	3	2	3	**Medium**
	Increase demand on existing community health and sanitation infrastructure due to influx of temporary workers (BZ7)	Same as B7	-	1	2	3	3	2	3	**Medium**
	Solid waste generation in construction sites (BZ8)	Same as B8	-	1	2	3	3	2	3	**Medium**
	Increased risk of spread of communicable diseases (including sexually transmitted diseases (STDs) and HIV/AIDS) due to influx of construction workers and camp followers (BZ9).	Same as B9	-	3	3	3	2	4	4	**High**
	Risk of occupational accidents (OHS), Injuries and diseases (BZ10)	Same as B10	-	1	2	3	3	2	3	**Medium**
	Injuries from application of asphalting material to road surface (BZ11)	Same B11	-	1	2	3	3	2	3	**Medium**

Activities	Impact/ Potential Source	Impact Description	Impact Evaluation							
			N	C	R	M	E	D	P	Impact Sig.
	Exposure to harmful chemicals (BZ12)	Same as B12	-	1	2	3	3	2	3	**Medium**
	Contamination of surface water from construction waste at the river crossing. (BZ136)	Same as A6	-	1	2	3	3	2	3	**Medium**
C. Decommissioning										
• Removal of construction equipment and unused materials from the roads and staging areas. • Disposal of construction spoil and waste. • Rehabilitation of material borrow areas. • Dismantling of temporary workers' camps of the contractor. • Rehabilitation of disturbed areas including	Deterioration of local air quality due to generation of dusts and emission of gases (C1)	Same as B1	-	1	2	3	3	2	3	**Medium**
	Noise and vibration (C2)	Same as b2	-	1	2	3	3	2	3	**Medium**
	Road Traffic causing delay in travel time (C3).	Same B3	-	1	1	3	2	2	1	**Low**
	Gender Based Violence (GBV) due to establishment of Campsite and Influx of workers (C4)	Same B4	-	3	3	3	2	4	4	**High**
	Child labour and school dropout due to opportunities for the host community to sell goods and services to construction workers (C5).	Same as B5	-	3	3	3	2	4	4	**High**
	Climate Change from GHG emissions from heavy duty diesel	Same as B6	-	1	2	3	3	2	3	**Medium**

Activities	Impact/ Potential Source	Impact Description	Impact Evaluation							
			N	C	R	M	E	D	P	Impact Sig.
recon touring and revegetation. **THIS IMPLIES TO** Spot Improvement, Backlog Maintenance and Rehabilitation, Maintenance, Upgrade and Drainage Infrastructure	machines and equipment's (C6)									
	Increase demand on existing community health and sanitation infrastructure due to influx of temporary workers (C7)	Same as B7	-	1	2	3	3	2	3	**Medium**
	Solid waste generation in construction sites (C8)	Same as B8	-	1	2	3	3	2	3	**Medium**
	Increased risk of spread of communicable diseases (including sexually transmitted diseases (STDs) and HIV/AIDS) due to influx of construction workers and camp followers (C9).	Same as B9	-	3	3	3	2	4	4	**High**
	Risk of occupational accidents (OHS), Injuries and diseases (C10)	Same as B10	-	1	2	3	3	2	3	**Medium**
	Injuries from application of asphalting material to road surface (C11)	Same B11	-	1	2	3	3	2	3	**Medium**
	Exposure to harmful chemicals (C12)	Same as B12	-	1	2	3	3	2	3	**Medium**
	Contamination of surface water from construction waste at	Same as A6	-	1	2	3	3	2	3	**Medium**

Activities	Impact/ Potential Source	Impact Description	Impact Evaluation							
			N	C	R	M	E	D	P	Impact Sig.
	the river crossing. (C13)									
D, POST-CONSTRUCTION PHASE										
Road Usage and Maintenance • Vehicular movement • Identification and fixing of road defects. • Community based maintenance • De-siltation of culverts and drains. etc	Gully formation along the road alignment due to lack of defined drainage system (D1).	This impact is negative, is irreversible, long-time, localized and probability the impact arising is high. The percentage of environmental significance is greater than 50%; but less than 75%, therefore, the impact significance is described as high.	-	3	3	3	2	4	4	**High**
	The drainages may become conveyors for surface debris and improperly disposed wastes during a heavy rain, leading to drainage blockage and disruption of free flow. This may result in stagnated water, and water contamination downstream (D2).	This impact is negative, is irreversible, long-time, localized and probability the impact arising is high. percentage of environmental significance is greater than 50%; but less than 75%, therefore, the impact significance is described as high.	-	3	3	3	2	4	4	**High**
	Generation of maintenance waste and debris (D3)	Same as B8								**Medium**
	Noise generation from vehicular movement (D4)	This impact is negative, is reversible, long-time, localized and probability the impact arising is medium. The percentage of environmental significance is greater than 25%; but less than 50%, therefore, the impact significance is described as medium.								**Medium**
	Increased traffic & risk of road traffic accidents	This impact is negative, is irreversible, long-time, localized and probability the impact arising is high. The percentage of environmental significance is greater than 50%; but less than 75%, therefore, the impact	-	3	3	3	2	4	4	**High**

Activities	Impact/ Potential Source	Impact Description	Impact Evaluation							
			N	C	R	M	E	D	P	Impact Sig.
	and injuries (D5).	significance is described as high.								
	Risks of occupational accidents and injuries to workers (D6).	Health and safety impacts such as an injury that could affect workers and community member is identified. The impact is reversible, medium and low aerial extent. The percentage of environmental significance is greater than 25%; but less than 50%, therefore, the impact significance is described as medium.	-	1	2	3	3	2	3	**Medium**
	Discrimination against gender and vulnerable group for routine maintenance (D7)	Same as B4	-	3	3	3	2	4	4	**High**

Table 5-7: Mitigation Measures for Identified Impactsof the Proposed 12No Spot Improvement Roads totaling 64.362km, 10No Backlog Maintenance Roads totaling 55.60km, 11No Upgrade Roads totaling 54.16km and 9No Cross Drainage Structures totaling 79m Span

Activities	Impact/ Potential Source	Impact Description	Impact Sig.	Mitigation Measures	Residual Impact
A. PRE-CONSTRUCTION PHASE					
Site Clearing / Mobilisation of	Agitation due to loss of economic trees, crops	Agitation by community members for compensation and	**Medium**	Mitigation Measures shall include;	**Low**

Activities	Impact/ Potential Source	Impact Description	Impact Sig.	Mitigation Measures	Residual Impact
Equipment and Workers to Site • Site clearance • Setting up of camp site/Engineering yard. • Mobilization of equipment and workers to site • Dewatering • Creation of borrow pits • Sanitary Facilities • Staging Area for contractor equipment • Borrow Pit Area • On-camp power source THIS IMPLIES TO Spot Improvement, Backlog Maintenance and Rehabilitation, Maintenance, Upgrade as well as Drainage Infrastructure	and structures along the RoW: Grievances from stakeholder community, competition for employment (A1). Desicration of ancestral tree	youth employment, contracts, perceived environmental impacts of projects, desicration of ancestral heritage and other community/third party interests. This impact, although negative, is reversible. The probability of the impact arising is medium. A standalone Resettlement Action Plan (RAP) will be prepared to address all resettlement related impacts and ensure adequate compensation of Project Affected Persons (PAPs). The percentage of environmental significance is greater than 25%, but less than 50%; therefore, the impact significance is described as medium		➢ Abia SPIU shall pay compensation for buildings identified to be at high risk. ➢ Structural damage during construction shall be repaired promptly. ➢ Economic crops and trees shall also be compensated for. ➢ Proper sensitization of project workers on the norms of the community. ➢ Secret areas or spots shall be identified and avoided. ➢ GRM shall be deployed in resolving all conflict ➢ Community youths shall be given priority in recruitment of unskilled jobs.	
	Deterioration of local air quality due to generation of dusts and emission of gases (A2)	Dust, particulates, SOx, NOx, CO, etc., are the main constituents of emissions from vehicles used for site visits and pre-construction planning. This impact although negative, is reversible, short-time, localized and dispersed by air. Impact is seasonal, higher in dry season. The probability of the impact arising is medium. The percentage of environmental significance is greater than than 25% but less than 50%;; therefore, the impact significance	**Medium**	Mitigation Measures shall include; ➢ Abia SPIU shall ensure that dust/emission control measures are implemented such as: ● Use water to wet ground for dust suppression at least twice daily in built up areas. ● Use of covers on trucks transporting loose materials that may generate dust. ● Enforce appropriate speed limit to reduce dust on unpaved surfaces. ● Limiting soil disturbance activities and travel on unpaved roads during period of high winds ➢ Abia SPIU shall implement routine preventative maintenance including tune-ups on all heavy duty/combustion equipment and vehicles. ➢ Abia SPIU shall train drivers/ workers on proper	**Low**

Activities	Impact/ Potential Source	Impact Description	Impact Sig.	Mitigation Measures	Residual Impact
		is described as medium		operation of vehicles & equipment to include maintenance and use fuel efficiency techniques. ➢ Abia SPIU shall ensure all equipment are turned off when not in use, in order to reduce carbon emissions. ➢ Abia SPIU shall ensure that vehicles/ equipment or engines that meet emission quality standards are used	
	Noise and vibration (A3)	The baseline noise levels in the host communities along the Abia South roads ranged between 39.6 - 60.2 dB, the Abia Central roads, ranged, 40.2 – 60.2 dB (A) and Abia North roads ranged 44.2 – 68.0 dB (A). Increase in these noise level above regulatory limits, 90dB(A), could have environmental heath impact. This impact although negative, is reversible, short-time, localized The probability of the impact arising is medium. The percentage of environmental significance is greater than than 25% but less than 50%; therefore, the impact significance is described as medium.	**Medium**	Mitigation Measures shall include; ➢ Abia SPIU shall ensure that vehicles/ equipment with lower sound power levels or noise proof or engines that meet noise quality standards are used. ➢ Abia SPIU shall respond promptly to noise complaints	**Low**
	Loss of vegetation and biodiversity due to the removal of vegetation and trees along RoW (A4).	This impact although negative, is reversible, short-time, localized and limited to the RoW. The probability of the impact arising is low. The percentage of environmental significance is less than 25%; therefore, the impact	**Low**	Mitigation Measures shall include; ➢ Abia SPIU shall ensure that economic crops and trees shall also be compensated for. ➢ Abia SPIU shall ensure revegetation in areas of significant vegetation loss. ➢ Abia SPIU shall ensure that workers are not	

Activities	Impact/ Potential Source	Impact Description	Impact Sig.	Mitigation Measures	Residual Impact
		significance is described as low.		allowed to hunt or kill wild animals' ➢ Abia SPIU shall ensure that wandering animals are protected, captured and returned to the wild. ➢ Vegetal waste can be given to farmers as compost or animal feed.	
	Road Traffic causing delay in travel time (A5).	The background traffic condition at the access roads is low. The traffic volume at the pre-construction stage will be minimal, the cumulative impact will be low and low magnitude. This impact is negative, is reversible, short-time, localized and probability the impact arising is low. The percentage of environmental significance is less than 25%; therefore, the impact significance is described as low.	**Low**	Mitigation Measures shall include; ➢ Abia SPIU shall prepare & implement TMP (see framework in Appendix 8) ➢ Abia SPIU shall give prior notification and proper continuous consultations with PAPs including mosque, church, schools, markets etc. ➢ Abia SPIU shall put traffic/caution signs at strategic locations/junctions ➢ Abia SPIU shall ensure continuous collaboration with FRSC regularly to manage traffic build up within the community. ➢ Movement of equipment and machinery shall be limited during peak hours/days/period as identified such as market days	
	Contamination of surface water from vegetal waste especially at the river crossing. (A6)	This impact is negative, is irreversible, short-time, localized The percentage of environmental significance is greater than 25%; but less than 50% therefore, the impact significance is described as medium.	**Medium**	Mitigation Measures shall include; ➢ SPIU shall ensure that the streams and rivers are not contaminated with vegetal waste, wastes are properly managed; - can be given to farmers as compost or animal feed. ➢ SPIU shall implement site-specific waste management plan as presented in the Appendix 5.	**Low**
	Gender Based Violence (GBV) due to establishment of Campsite and Influx of	This impact is negative, is irreversible, short-time, localized and probability the impact arising is high. The percentage of	**High**	Mitigation Measures shall include; ➢ Abia SPIU shall ensure priority is giving to sourcing of local workforce.	**Low**

Activities	Impact/ Potential Source	Impact Description	Impact Sig.	Mitigation Measures	Residual Impact
	workers (A7)	environmental significance is greater than 50%; but less than 75%, therefore, the impact significance is described as high.		➢ Abia SPIU shall ensure all contractors' workers are sensitized and sign Code of Conduct (CoC) (see Annex 9 for sample CoC). ➢ Abia SPIU shall ensure strict compliance with CoC. ➢ Abia SPIU shall prohibit workers sexual relations with minors, school children and community members. ➢ Abia SPIU shall ensure separate toilets for male and females with locks, and to be well lit at night. ➢ Abia SPIU shall ensure that community leaders/ women group/youth group to sensitize the community on appropriate conduct with contractors. ➢ Abia SPIU shall establish a GRM equipped to handle GBV cases with reporting channels that are easily accessible and community members feels safe reporting to ➢ Abia SPIU shall map GBV service providers in the project area and develop a referral pathway to enable survivors access to quality care. ➢ Abia SPIU shall mainstream GBV/SEA action plan in Contractor's contract ➢ Signage against tolerance for SEA/SH/GBV to be installed along the project communities/corridor. ➢ Abia SPIU shall ensure compliance with the GBV Action Plan and A&RF	
	Child labour and school dropout due to opportunities for the host community to sell goods	This impact is negative, is irreversible, short-time, localized and probability the impact arising is high.The percentage of	**High**	Mitigation Measures shall include; ➢ Abia SPIU shall ensure that children and minors under the age of 18 are not employed directly or indirectly on the project.	**Low**

Activities	Impact/ Potential Source	Impact Description	Impact Sig.	Mitigation Measures	Residual Impact
	and services to construction workers (A8).	environmental significance is greater than 50%; but less than 75%, therefore, the impact significance is described as high.		➢ Abia SPIU shall ensure that communication on hiring criteria, minimum age, and applicable laws are followed. ➢ Abia SPIU shall enforcement of legislation prohibiting child labour.	
	Climate Change from GHG emissions from heavy duty diesel machines and equipment's (A9)	Over 270 metric tons CO_2 per day could be discharge per road, depending on numbers of heavy-duty machines and duration of the operation. This impact is negative, irreversible, and its global effect The probability of the impact arising is medium. Impact has global significance. The percentage of environmental significance is greater than 25% but less than 50%; therefore, the impact significance is described as medium.	**Medium**	Mitigation Measures shall include; ➢ Abia SPIU shall implement routine preventative maintenance including tune-ups on all heavy duty/combustion equipment and vehicles. ➢ Abia SPIU shall train drivers/ workers on proper operation of vehicles & equipment to include maintenance and use fuel efficiency techniques. ➢ Abia SPIU shall ensure all equipment are turned off when not in use, in order to reduce carbon emissions. ➢ Abia SPIU shall ensure that vehicles/ equipment or engines that meet emission quality standards are used ➢ Abia SPIU shall engage in renewable energy transition campaign and awareness. ➢ Abia SPIU shall ensure revegetation in areas of significant vegetation loss.	**Low**
	Increase demand on existing community health and sanitation infrastructure due to influx of temporary workers (A10)	This impact although negative, is reversible, short-time, localized. The probability of the impact arising is medium. The percentage of environmental significance is greater than 25% but less than 50% ; therefore, the impact significance is described as medium.	**Medium**	Mitigation Measures shall include; ➢ Abia SPIU shall develop and implement Camp Site Management Plan (Appendix 11). ➢ Abia SPIU shall establish workers' camp with sufficient capacity for workers & sub-contractors. ➢ Abia SPIU shall ensure that workers' camp are equipped with all essential services (water, sanitary facilities, electricity etc.). ➢ Abia SPIU shall ensure provision of	**Low**

Activities	Impact/ Potential Source	Impact Description	Impact Sig.	Mitigation Measures	Residual Impact
				entertainment and events for workers within camp to reduce incentives for mixing with local community. ➢ Abia SPIU shall ensure that Worker Code of Conduct cover the aspect on water and electricity consumption. ➢ Abia SPIU shall implement the GRM and act on grievances received	
	Increased risk of spread of communicable diseases (including sexually transmitted diseases (STDs) and HIV/AIDS) due to influx of construction workers and camp followers. (A11)	his impact is negative, is irreversible, short-time, localized and probability the impact arising is high. The percentage of environmental significance is greater than 50%; but less than 75%, therefore, the impact significance is described as high.	**High**	Mitigation Measures shall include; ➢ Abia SPIU shall conduct a periodic awareness campaign on sexual diseases. ➢ Abia SPIU shall implement Labour Influx Plan (see Appendix 11)	**Low**
	Sewage and Solid waste generation in as well as sewage at camp sites A12)	This impact although negative, is reversible, short-time, localized The probability of the impact arising is medium. The percentage of environmental significance is greater than 25% but less than 50%; therefore, the impact significance is described as medium.	**Medium**	Mitigation Measures shall include; ➢ Abia SPIU shall develop and implement Waste Management Plan (WMP) (see Appendix 5) ➢ Abia SPIU shal ensure waste is evacuated from site by AbSME or approved waste contractors to prevent unregulated dumping. ➢ Abia SPIU record of type, volume, mode of transportation, final disposal site and waste vendors should be kept as part of project documents.	**Low**
	Violation of cultural norms and values I.e taboos associated with ancestral trees and sacred sites. (A13),	This impact is negative, is irreversible, short-time, localized and probability the impact arising is high.The percentage of environmental significance is	**High**	Mitigation Measures shall include; ✓ Proper sensitization of workers and contractors on the cultures and traditions of the locals or communities. ✓ Warning signs shall be posted in restricted areas	

Activities	Impact/ Potential Source	Impact Description	Impact Sig.	Mitigation Measures	Residual Impact
		greater than 50%; but less than 75%, therefore, the impact significance is described as high.		such as sacred sites and ancestral trees.	
CONSTRUCTION PHASE					
Spot Improvement • Excavation, cutting and filling and surfacing). • Provision of soil stabilization • Creation of borrow pits. • Movement of earth materials. • Generation and disposal of construction spoil and waste in general. • Pavement • Asphalting Road Infrastructure	Deterioration of local air quality due to generation of dusts and emission of gases (B1)	Dust, particulates, SOx, NOx, CO, etc., are the main constituents of emissions from vehicles used for site visits and pre-construction planning. This impact although negative, is reversible, short-time, localized and dispersed by air. Impact is seasonal, higher in dry season. The probability of the impact arising is medium. The percentage of environmental significance is greater than than 25% but less than 50%; therefore, the impact significance is described as medium	**Medium**	Mitigation Measures shall include; ➢ Same as A2	**Low**
THESE MITIGATION MEASURES ARE ALSO APPLICABLE TO BACKLOG MANTENANCE, UPGRADE, DRAINAGE INFRASTRUCTURE AS WELL AS DECOMMISIONING	Noise and vibration (B2)	The baseline noise levels in the host communities along the Abia South roads ranged between 39.6 - 60.2 dB, the Abia Central roads, ranged, 40.2 – 60.2 dB (A) and Abia North roads ranged 44.2 – 68.0 dB (A). Increase in these noise level above regulatory limits, 90dB(A), could have environmental heath impact. This impact although negative, is	**Medium**	Mitigation Measures shall include; ➢ Same as A3	**Low**

Activities	Impact/ Potential Source	Impact Description	Impact Sig.	Mitigation Measures	Residual Impact
(As appeared in Table 5-3.		reversible, short-time, localized. The probability of the impact arising is medium. The percentage of environmental significance is greater than than 25% but less than 50%; therefore, the impact significance is described as medium.			
	Road Traffic causing delay in travel time (B3).	The background traffic condition at the access roads is low. The traffic volume at the construction stage will be minimal, the cumulative impact will be low and low magnitude. This impact is negative, is reversible, short-time, localized and probability the impact arising is low. The percentage of environmental significance is less than 25%; therefore, the impact significance is described as low.	**Low**	Mitigation Measures shall include; ➢ Same as A5	
	Gender Based Violence (GBV) due to establishment of Campsite and Influx of workers (B4)	This impact is negative, is irreversible, short-time, localized and probability the impact arising is high. The percentage of environmental significance is greater than 50%; but less than 75%, therefore, the impact significance is described as high.	**High**	Mitigation Measures shall include; ➢ Same as A7	**Low**
	Child labour and school dropout due to opportunities for the host community to sell goods	This impact is negative, is irreversible, short-time, localized and probability the impact arising is high. The percentage of	**High**	Mitigation Measures shall include; ➢ Same as A8	

Activities	Impact/ Potential Source	Impact Description	Impact Sig.	Mitigation Measures	Residual Impact
	and services to construction workers (B5).	environmental significance is greater than 50%; but less than 75%, therefore, the impact significance is described as high.			
	Climate Change from GHG emissions from heavy duty diesel machines and equipment's (B6)	Over 270 metric tons CO_2 per day could be discharge per road, depending on numbers of heavy-duty machines and duration of the operation. This impact is negative, irreversible, and its global effect The probability of the impact arising is medium. Impact has global significance. The percentage of environmental significance is greater than 25%; but less than 50%, therefore, the impact significance is described as medium.	**Medium**	Mitigation Measures shall include; ➢ Same as A9	**Low**
	Increase demand on existing community health and sanitation infrastructure due to influx of temporary workers (B7)	This impact although negative, is reversible, short-time, localized. The probability of the impact arising is medium. The percentage of environmental significance is greater than 25%; but less than 50%, therefore, the impact significance is described as medium.	**Medium**	Mitigation Measures shall include; ➢ Same as A10	**Low**
	Sewage and Solid waste generation in construction sites (B8)	This impact although negative, is reversible, short-time, localized. The probability of the impact arising is medium. The percentage of environmental significance is greater than 25%;	**Medium**	Mitigation Measures shall include; ➢ Abia SPIU shall ensure that contractors provide mobile toilets and on-camp sanitary facilities for workers. ➢ Abia SPIU shall sensitize and sanction workers	

Activities	Impact/ Potential Source	Impact Description	Impact Sig.	Mitigation Measures	Residual Impact
		but less than 50%, therefore, the impact significance is described as medium.		against open defecation. ➢ Abia SPIU shall implement the detailed Waste Management Plan (WMP) (See Appendix 5), and Campsite Management Plan (Appendix 10). ➢ Vegetal waste can be given to farmers as compost or animal feed.	
	Increased risk of spread of communicable diseases (including sexually transmitted diseases (STDs) and HIV/AIDS) due to influx of construction workers and camp followers (B9).	This impact is negative, is irreversible, short-time, localized and probability the impact arising is high. The percentage of environmental significance is greater than 50%; but less than 75%, therefore, the impact significance is described as high.	**High**	Mitigation Measures shall include; ➢ Same as A10	**Low**
	Risk of occupational accidents (OHS), Injuries and diseases (B10)	Health and safety impacts such as an injury that could affect workers and community member is identified. The impact is reversible, medium and low aerial extent. The percentage of environmental significance is greater than 25%; but less than 50%, therefore, the impact significance is described as medium.	**Medium**	Mitigation Measures shall include; ➢ Abia SPIU shall Implement project OHS Plan in Appendix 6 ➢ Abia SPIU shall provide and enforce the usage of appropriate PPE. ➢ Abia SPIU shall demarcate/cordon off construction areas and, lit up adequately at night, ➢ Abia SPIU shall fence out danger zones and keep out of reach. ➢ Abia SPIU shall ensure that restricted access are placed at construction sites using caution signs and manned personnel. ➢ Abia SPIU shall use caution tapes. ➢ Abia SPIU shall develop and implement visitors' management protocol. ➢ Abia SPIU shall ensure that staging areas for contractor equipment are adequately delineated and cordoned off with reflective tapes and	**Low**

Activities	Impact/ Potential Source	Impact Description	Impact Sig.	Mitigation Measures	Residual Impact
				barriers. ➢ Abia SPIU shall shall ensure that any uncovered work pits should have appropriate signage and protection around them. ➢ Abia SPIU shall ensure that workers should get a daily induction/toolbox before going on the site and a refresher of what happened on site a day before. ➢ Abia SPIU shall ensure there is availability of shaded areas for workers to take their breaks/meals. ➢ Abia SPIU shall ensure appropriate security measures in place to prevent harassment or kidnapping of workers. ➢ Abia SPIU shall provide well-equipped first aid box	
	Injuries from application of asphalting material to road surface (B11)	Health and safety impacts such as an injury that could affect workers and community member is identified. The impact is reversible, medium and low aerial extent. The percentage of environmental significance is greater than 25%; but less than 50%, therefore, the impact significance is described as medium.	**Medium**	Mitigation Measures shall include; ➢ Abia SPIU shall implement project OHS Plan (Appendix 6) ➢ Abia SPIU shall provide PPE and enforce usage of appropriate PPE. ➢ Abia SPIU shall demarcate/cordon off construction areas and, lit up adequately at night, ➢ Abia SPIU shall fence out danger zones and keep out of reach. ➢ Abia SPIU shall restrict access at construction sites using caution signs and manned personnel. ➢ Use caution tapes. ➢ Abia SPIU shall develop and implement visitors' management protocol. ➢ Abia SPIU shall ensure that staging areas for contractor equipment are adequately delineated	**Low**

Activities	Impact/ Potential Source	Impact Description	Impact Sig.	Mitigation Measures	Residual Impact
				and cordoned off with reflective tapes and barriers. ➢ Any uncovered work pits shall have appropriate signage and protection around them. ➢ Abia SPIU shall ensure that Workers get a daily induction/toolbox before going on the site and a refresher of what happened on site a day before. ➢ Abia SPIU shall ensure there is availability of shaded areas for workers to take their breaks/meals. ➢ Abia SPIU shall appropriate security measures in place to prevent harassment or kidnapping of workers. ➢ Abia SPIU shall provide well-equipped first aid box and well trained first aiders.	
	Exposure to harmful chemicals (B12)	Health and safety impacts such as an injury that could affect workers and community member is identified. The impact is reversible, medium and low aerial extent. The percentage of environmental significance is greater than 25%; but less than 50%, therefore, the impact significance is described as medium.	**Medium**	Mitigation Measures shall include; ✓ Same as B11	**Low**
	Risk of Fire and Life safety due to Chemical Storage (B13)	This impact is negative, is irreversible, short-time, localized and probability the impact arising is high. The percentage of environmental significance is greater than 50%; but less than 75%, therefore, the impact	High	✓ Mitigation Measures shall include; ✓ Proper Storage of Chemicals I.e hydrocarbons shall be stored in well-built leak-proof tanks. ✓ Fire Extinguishers shall be located in strategic areas. ✓ Contractors/workers shall be trained on fire	

Activities	Impact/ Potential Source	Impact Description	Impact Sig.	Mitigation Measures	Residual Impact
		significance is described as high.		emergency and life safety	
	Violation of cultural norms and values I.e taboos associated with ancestral trees and sacred sites. (B14),	This impact is negative, is irreversible, short-time, localized and probability the impact arising is high. The percentage of environmental significance is greater than 50%; but less than 75%, therefore, the impact significance is described as high.		Mitigation Measures shall include; ✓ Proper sensitization of workers and contractors on the cultures and traditions of the locals or communities. ✓ Warning signs shall be posted in restricted areas such as sacred sites and ancestral trees.	
D, POST-CONSTRUCTION PHASE					
Road Usage and Maintenance • Vehicular movement • Identification and fixing of road defects. • Community based maintenance • De-siltation of culverts and drains. etc	Gully formation along the road alignment due to lack of defined drainage system (D1).	This impact is negative, is irreversible, long-time, localized and probability the impact arising is high. The percentage of environmental significance is greater than 50%; but less than 75%, therefore, the impact significance is described as high.	**High**	Mitigation Measures shall include; ✓ Abia SPIU shall construct climate resilient road infrastructure including good drainage, retaining walls, culverts, terracing, good road grading complete with bituminous sealing to ensure sustainability.	**Low**
	The drainages may become conveyors for surface debris and improperly disposed wastes during a heavy rain, leading to drainage blockage and disruption of free flow. This may result in stagnated water, and water contamination	This impact is negative, is irreversible, long-time, localized and probability the impact arising is high. The percentage of environmental significance is greater than 50%; but less than 75%, therefore, the impact significance is described as high.	**High**	Mitigation Measures shall include; ➢ Abia SPIU shall ensure routine maintenance of drainages, including regularly desilting ➢ Abia SPIU shall ensure proper waste management system in the communities. Sensitization of the communities to this ESMP	**Low**

Activities	Impact/ Potential Source	Impact Description	Impact Sig.	Mitigation Measures	Residual Impact
	downstream (D2).				
	Generation of maintenance waste and debris (D3)	Same as B8	**Medium**	Mitigation Measures shall include; ➢ Abia SPIU shall ensure routine maintenance of drainages, including regularly desilting ➢ Abia SPIU shall ensure proper waste management system in the communities. Sensitization of the communities to this ESMP	**Low**
	Noise generation from vehicular movement (D4)	This impact is negative, is reversible, long-time, localized and probability the impact arising is medium. The percentage of environmental significance is greater than 25%, but less than 50%; therefore, the impact significance is described as medium.	**Medium**	Mitigation Measures shall include; ✓ Same as A3	**Low**
	Increased traffic & risk of road traffic accidents and injuries (D5).	This impact is negative, is irreversible, long-time, localized and probability the impact arising is high. The percentage of environmental significance is greater than 50%; but less than 75%, therefore, the impact significance is described as high.	**High**	Mitigation Measures shall include; ✓ Same as A5	**Low**
	Risks of occupational accidents and injuries to workers (D6).	Health and safety impacts such as an injury that could affect workers and community member is identified. The impact is reversible, medium and low aerial extent. The percentage of environmental significance is	**Medium**	Mitigation Measures shall include; ✓ Same as B11	**Low**

Activities	Impact/ Potential Source	Impact Description	Impact Sig.	Mitigation Measures	Residual Impact
		greater than 25%, but less than 50%; therefore, the impact significance is described as medium.			
	Discrimination against gender and vulnerable group for routine maintenance (D7)	Same as B4	**High**	Mitigation Measures shall include; ✓ Abia SPIU shall ensure that it continues sensitization and awareness program and ensure that community level programs allow for gender inclusiveness	**Low**

5.4 Potential Beneficial Impacts

The proposed intervention is projected to be highly beneficial to the communities, the 17 LGAs, and the state at large. Some of the potential benefits are described below:

- Improvement of accessibility and mobility to rural communities, markets, farms and agro-processing centres in the project area.
- Increase in agricultural output as the roads will ultimately facilitate easy access to farm inputs, extension services, primary and secondary (urban) markets.
- Improvement in agricultural productivity will translate to economic empowerment, poverty reduction and socio-cultural wellbeing of the benefiting communities.
- Provision of employment opportunities as locals will be engaged as semi-skilled (e.g., masons, carpenters, electrical technicians, welders, etc.) and unskilled labour (e.g., for site clearance, loading and offloading of materials, security services etc.).
- There will also be indirect opportunities for local contractors and businesses (food vendors, traders).
- Improved communication and socioeconomic integration amongst adjoining communities from improved connectivity.
- Reduction in travel time and transport cost due to improvement in riding quality of the roads.
- Increase environmental aesthetics from the road construction.
- Reduction in erosion and flooding issues along intervened roads from provision of cross drainage, culverts and road civil works.

CHAPTER SIX

GRIEVANCE REDRESS MECHANISM

6.1 INTRODUCTION

A Grievance Redress Mechanism (GRM), as a management tool, is a citizen engagement instrument which is used to address grievances/complaints that may arise as a result of the impacts of a project at all levels among the affected communities and other interest parties. Leveraging on methods that are legitimate, reliable, transparent, cost-effective and easily accessible to Project-Affected Persons and Other Interested Parties at the lowest level. A GRM also serves as a tool for enhancing sustainability and prevention of any form of crisis that could hinder the success of the project. Grievances may arise from any of the following: 1) Land related matters, including trespass during road expansions, 2) Project exclusion of claims, 3) involuntary resettlement and compensation issues, 4) gender-based violence/SEA issues, 5) exclusion from project benefits and non-compliance of the contractor to the agreement reached with RAAMP or the community, 6) Poor construction waste handling, 7) lack of alternative route for movement during construction, etc.

A Grievance Redress Mechanism (GRM) will be implemented to ensure that all complaints from local communities are dealt with appropriately, with corrective actions being implemented, and the complainant being informed of the outcome. It will be applied to all complaints from affected parties. The SPIU will maintain a Complaints Log-Book/ Database, which will contain all the information on complaints or grievances received from the communities or other stakeholders. This would include: the name of the Complainant, Contact, type of complaint, location, Date/time, channel of complaint, actions/Response, Date actions taken to address these complaints, and final outcome.

The SPIU, shall set-up a grievance redress committee that will address any complaints during project implementation. This will be treated in two folds; 1) GBV related GRM and 2) non GBV related GRM. A classified procedure for confidentiality is required in the cases of GBV and thus, a GBV risk management plan is prepared separate for this project (see details in appendix 9). Grievance Redress Committees (GRCs) shall be constituted at various levels to implement the GRM for the project including community level, SPIU level, State level, FPMU level, World Bank Grievance Redress System. It is noteworthy to state that a detailed GRM is been developed for RAAMP, thus Abia RAAMP will align its processes to the framework.

The Grievance Redress Committee will be responsible for:

- Communicating with the Affected persons (AP's) and evaluate if they are entitled to recompense;
- Making the list of affected persons public and the established grievance redress procedure.
- Recommending to the Social Safeguard Officer of the SPIU solutions to such grievances from affected persons;

Communicating the decisions to the AP's; to acknowledge appeals from persons, households or groups who rightfully will not be affected by the project, but claim to be, and to recommend to the SPIU whether such persons should be recognized as AP's, and to communicate back the decisions to the Claimants.

6.2 EXPECTATION WHEN GRIEVANCES ARISE

When people present a grievance, any of the followings is or are expected from the project management/channel of grievance resolution by the local people:

- acknowledgement of their problem;
- an honest response to questions/issues brought forward;
- an apology, adequate compensation; and
- Modification of the conduct that caused the grievance and some other fair remedies.

Note that the grievance redress mechanism will also allow for anonymous complaints to be raised and addressed

6.3 STRUCTURE AND PROTOCOLS FOR REPORTING AND MANAGING GRIEVANCES

The SPC will set up a grievance redress committee to look into escalated grievances. This shall be established in various levels as follows:

Table 6- 1: Structure and Protocol for Reporting Grievances

First Level GRM: GRC at the Site/Community Level	Composed at the community level, easily accessible to community people, village head and representative of women shall be part of the committee among other identified persons. This committee will be expected to report to the SPIU. In addition, complaint box will be placed in the Community leader's palace and other locations such as markets, civic centers etc. that will encourage aggrieved parties drop their complaints.
Second Level of GRM: GRC at the SPIU Level	This committee shall comprise of PIU members including the Project Coordinator, Social Safeguard Officer among others, and other state level representative from within the State. If the complainant does not accept the solution offered by the SPIU-GRC, then the complaint is referred by the SPC to the State Citizen Meditation Centre (SCMC).
Third level of GRM: GRC at the State Level-Abia State Citizens Mediation Centre (SCMC) GRC	This committee shall comprise of the following members; Permanent secretary Abia State Ministry of Women Affairs and Poverty Alleviation (Chairman)Abia State RAAMP SPC (Secretary), Permanent secretary Abia State Ministry of Land and Housing, Representative of the chairman of the beneficiary Local Government, NGOs/CBOs/CSOs within the intervention local government/community and Contractor; i) In addition, the committee will be responsible for; Allow the Affected Parties, who are unhappy with how their complaint has been handled by the first, second and third tiers GRCs to appeal for redress and, ii) E&S feedback or issues that has not been handled by and filed directly to the SSO, Community based GRCs and SPIU. iii) Settle disputes that are referred from SPIU
Forth Level of GRM: GRC at the FPMU Level	The Federal Project Management Unit (FPMU) will be required to intervene in grievances beyond the state level resolution.
Court Redress of Grievances	While the purposes of GRM put in place by this Project is to resolve all issues caused by the project implementation out of court and to save time which is usually involved in litigation matters, it is not out of place to anticipate a scenario where aggrieved person is not satisfied with the process and judgment given by the grievance redress committee(s). Therefore, SPIU shall inform aggrieved persons of their right to seek for redress in the court of law as the final resort.

The process of grievance redress will start with registration of the grievance(s) to be addressed, for reference purposes and to enable progress updates of the cases. Thus, the person affected by the project will file a complaint/ fill a grievance form with the Grievance Redress Committee. The compliant should contain a record of the person responsible for an individual complaint, and records dates for the date the complaint was reported; date the

Grievance Log was uploaded onto the project database; date information on proposed corrective action sent to complainant (if appropriate), the date the complaint was closed out and the date response was sent to complainant.
The officer receiving the complaint (part of the GRC member) will ensure that each complaint has an individual reference number and is appropriately tracked and, recorded actions are completed. The response time will depend on the issue to be addressed but it should be addressed with efficiency. The Grievance committee will act on it within 10 working days of receipt of grievances. If no amicable solution is reached, or the affected person does not receive a response within 15 working days, the affected person can appeal to the SPIU, which should act on the grievance within 15 working days of its filing. These timelines are further illustrated below:

Table 6- 2: Process of Grievance Redress

Steps	Process	Description	Completion Time frame	Responsible Agency/Person
1	Receipt of complaint	Document date of receipt, name of complainant/anonymous complainant, village, nature of complaint, inform the SPIU	1 day	Secretary to GRC at project level
2	Acknowledgement of grievance	By letter, email, phone	1-2 days	Social safeguard officer at SPIU
3	Screen and Establish the Merit of the Grievance	Visit the site; listen to the complainant/community; assess the merit	5-10 days	GRC & social safeguard officer & the aggrieved PAP or his/her representative
4	Implement and monitor a redress action	Where complaint is justified, carry out resettlement redress in line with the entitlement matrix/OP 4.12	14 days or at a time specified in writing to the aggrieved PAP	PC-PIU and Social safeguard Officer
5	Extra intervention for a dissatisfied scenario	Review the redress steps and conclusions, provide intervention solution	10 days of receiving status report	PC-PIU
6	Judicial adjudication	Take complaint to court of law	No fixed time	Complainant
7	Funding of grievance process	GRC logistics and training, redress compensation, court process	No fixed time	The proponent

6.4 GBV-GRM

Based on the high GBV risk profile of RAAMP, a separate GBV related GRM will be constituted to receive GBV related complaints. The GBV-GRM composition must be sensitive to create safe-space for reporting grievances. The GRM should primarily serve to refer complaints to the GBV intermediary service provider and record resolution of the complaint. This GRM will operate under the following principles:

- The project GBV specialist will make certain, the availability of an effective grievance redress mechanism (GRM) for GBV, with multiple channels to initiate complain.
- Refer cases where needed, and work with GBV Services Providers as entry points into service provision, to raise awareness of the GRM.
- Provide essential services and referrals for survivors, based on the GBV mapping of services documented.
- Report cases to intermediary service provider, who is a member of the GRC, who will in turn refer the survivor on his/her permission to the service provider.

- Cases brought through the GRM are documented and closed.

CHAPTER SEVEN

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

7.1 INTRODUCTION

The activities associated with the different phases involved in road construction projects will result in varying degrees of impacts on the biophysical and social components of the environment. These impacts have been identified and discussed in Chapter 5 of this report. This Chapter therefore presents a project specific E&S management and monitoring plan that has been designed to identify potential impacts and outline mitigation measures with well-defined desired outcomes and actions to address all potential negative impacts. The plan also includes elements such as parameters to be measured, methods of measurement, location of measurement, performance indicators (targets or acceptance criteria) that can be tracked over defined periods, cost estimates and responsibilities for monitoring.

7.2 ROLES AND RESPONSIBILITIES FOR ESMP IMPLEMENTATION

The successful implementation of the monitoring program will depend on the commitment and capacity of the SPIU, E&S safeguards unit, consultants and other third parties/institutions to implement the program effectively. The specific roles and responsibilities of those that will be involved in the implementation and monitoring of this ESMP are discussed in Table 7-1.

Table 7- 1: Roles and Responsibility of Institutions

SN	Category	Roles & Responsibilities
1	FPMU	• Overall coordination of the project and providing technical support to participating states. • Responsible for overall due diligence of all documents and reports submitted by the SPIUs. **FPMU E&S Team** • Provide guidance to the SPIU on E&S compliance. • Review ESMP and other safeguard instruments to ensure compliance with Nigerian and the World Bank E&S policies. • Periodic monitoring and supervision of the ESMP/RAP/GBV implementation activities. • Review of monthly safeguards reports and other reports on safeguards activities. • Provision of safeguards training to the SPIU, contractors and other stakeholders.
2	Abia State RAAMP SPIU	• Overall responsibility for the implementation and monitoring of the implementation of the ESMP. • Monitoring of project/contractor performance and taking appropriate action to ensure ESMP provisions are met. • Inclusion of relevant provisions in the bidding document for contractors. • Safeguards due diligence. • Review of ESMP performance and implementation of correction actions if any. • Assisting the contractor with implementation of ESMP sub-plans. • Liaise with other relevant State Government MDAs such as AbSME, and Federal Government MDAs such as Federal Ministry of Environment, FMARD, FRSC as well as affected LGAs, Host/Affected Communities, CBOs and NGOs for effective implementation of the ESMP.
3.	Safeguards Unit, Abia RAAMP SPIU	**Environmental Safeguards Officer** • Analyse potential environmental risks and impacts. • Provide technical assistance and support during ESMP development and implementation. • Ensure that project activities that are implemented will be in accordance with best practices and guidelines. • Identify and liaise with all stakeholders involved in environment related issues in the project; and be responsible for the overall monitoring of mitigation

SN	Category	Roles & Responsibilities
		measures and the impacts of the project during implementation. • Ensure that the project design and specifications adequately reflect the recommendations of the ESMP. **Social Safeguards Officer** • Develop, coordinate and ensure the implementation of the social aspects of the proposed project. • Identify and liaise with all stakeholders involved in social related issues during the proposed backlog maintenance/rehabilitation and spot improvement. • Ensure that project activities that are implemented will be in accordance with best practices and guidelines. **GBV Officer** • Plan and implement all GBV related activities for the project. • Supervise the implementation of GBV GRM./GRC • Support the SPIU, in the identification, mitigation and management of sexual exploitation and abuse (SEA), child abuse, and other forms of GBV related risks identified in the projects. • Ensure that all measures outlined in the GBV Action Plans are implemented. • Supervise and report on the activities of intermediary/service providers. • Ensure that GBV mitigation and response measures are in place & working correctly. **Technical Assistants (TAs), Environment and Social Safeguards** • Provide technical assistance, guidance and support during ESMP development and implementation.
4	E&S Consultant	• Development of ESMP. • Training of relevant SPIU/ RAAMP staff, regulators, MDAs and contractors on ESMP implementation and monitoring.
5	Contractors	• Compliance to BOQ specification in procurement of material and construction. • Implement ESMP during project implementation. • Ensure all contractors and workers sign the Code of Conduct (CoC) and are routinely trained on the contents of the CoC. • Prepare C-ESMP for approval of ESSU-SPIU. • Implement C-ESMP during project implementation. • Ensure that all construction personnel and subcontractors are trained on the content of the C-ESMP and are made aware of the required measures for environmental and social compliance and performance. • Prepare and implement Campsite, Staging Area management Plan for the pre-construction phase, construction and operation phase. • Prepare OHS manual and abide by labor laws as set out in the agreement. • Provide adequate basic amenities and PPEs to workers and ensure that the PPEs are worn by workers during work. • Prepare and maintain records and all required reporting data as stipulated by the ESMP, for submission to the Supervising Consultant.
6	Supervising Consultant E&S and GBV Officers.	• Monitor implementation of the GBV Action plan, A&R Framework. • Ensure compliance with signing of code of conduct for all workers. • Prepare and implement Environmental Monitoring Plan during construction. • Supervise contractor performance of implementation of the Construction Campsite/Staging area Camp Management Plan/C-ESMP. • Report any incidents or non-compliance with the C-ESMP and other plans including the GBV Action Plan to the ESSU-PIU. • Ensure adequate training and education of all staff involved in environmental and social safeguard supervision. • Prepare monthly safeguards report including recommendations to the RAAMP regarding ESMP performance as part of an overall commitment to continuous improvement.

SN	Category	Roles & Responsibilities
7	Abia State Ministry of Environment (AbSME)	• Environmental monitoring and compliance overseer at the State level. • Review of draft ESMP report (in liaison with Federal Ministry of Environment). • Site assessment and monitoring of ESMP implementation.
8	FRSC	• Control and manage traffic and road safety throughout project implementation. • Discourage counter road safety practices among road users. • Support the contractors in training their drivers.
10	State Government Ministries, Departments and Agencies (MDAs)	• Other MDAs come in as and when relevant areas or resources under their jurisdiction are likely to be affected by projects. • Participate in the EA processes and project decision-making that helps prevent or minimize impacts and to mitigate them. • MDAs may also be required to issue a consent/approval for an aspect of a project; allow an area to be included; or allow impact to a certain extent or impose restrictions/conditions, monitoring responsibility or supervisory oversight.
11	Federal Ministry of Environment	• Lead role - provision of advice on screening, scoping, review of draft ESMP report (in liaison with State Ministry of Environment), receiving comments from stakeholders, public hearing of the project proposals and social liability investigations, monitoring and evaluation process and criteria.
12	Affected 17 LGAs	• Provision of oversight function across project within its jurisdiction for ESMP compliance. • Monitoring of activities related to public health, sanitation, waste management amongst others.
13	Host/Affected 112 Communities.	• Promote environmental and social awareness including GBV prevention measures. • Review environmental and social performance report made available by SPIU. • Provide comments, advice and/or complaints on issues of nonconformity. • Attend public meetings organized by the SPIU to disseminate information and receive feedback.
14	Community Development Associations (CDAs)	• Ensure community participation by mobilizing and sensitizing community members.
15	Non-Governmental Organisations and Civil Society Organisations (NGOs/CSOs)	• Participate in consultations to support the design of different project components including the GRM. • Assisting in their respective ways to ensure effective response actions to environmental, social and GBV related issues. • Conducting scientific research alongside government groups to evolve and devise sustainable environmental strategies and techniques. • Participate in consultations to support the design of different project components including the GRM. • Support the project to prevent and respond to GBV and other social and environmental project related incidents.
16	World Bank / AFD	• Overall supervision and provision of technical support and guidance. • Recommend additional measures for strengthening management framework and implementation performance. • Conduct implementation support missions, technical oversight and monitoring to ensure overall safeguards compliance
17	General Public	• Identify issues that could derail the project and support project impacts and mitigation measures, Awareness campaigns.

The SPIU will have principal responsibility for all measures outlined in this Plan but will delegate certain responsibilities to its contractors and supervising consultant. Such delegation of responsibility shall be documented as part of contractual agreements to guarantee compliance and commitment on the part of the supervising consultant to supervise and on the part of the contractors to implement the ESMP. As most of the mitigation measures are the obligations of the Contractor during project implementation, the contractor shall prepare the

Contractor's ESMP (C-ESMP) taking into account the measures in this ESMP and the detailed general environmental management conditions during civil works. The estimated costs of mitigation measures associated with the civil work activities as stated in Tables 7-2 and 7-3 will be included in the project's Bill of Quantities (BoQ). The contractor is responsible for implementing the proposed mitigation measures as per the instruction of the SPIU. The SPIU is obligated to ensure relevant documents are provided to the contractors including this ESMP, the GBV Accountability & Response Framework amongst others.

Table 7- 2: Environmental and Social Management and Monitoring Plan for Consolidated 33 Roads (174.122km) across 12 LOTs

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
PRECONSTRUCTION PHASE											
ENVIRONMENTAL IMPACTS											
Site Clearing including removal of encumbrances, unsuitable materials and demolition of failed culverts/ Mobilization of Equipment and Workers to Site	Deterioration of local air quality due to generation of dusts and emission of gases Upper Respiratory diseases and eye related problems for workers	• Implement dust/emission control measures such as: - Use water to wet ground for dust suppression at least twice daily in built up areas. - Use of covers on trucks transporting loose materials that may generate dust. - Enforce appropriate	Contractor	8,706,100NGN/174.122km (50,000NGN/km)	Air quality parameters (CO, NO_2, SO_2, CO_2, SPM Evidence of Dust	In-*situ* measurement. Visual observation of records & interviews	FMEnv permissible limit as documented by NESREA [7]	Road corridor and adjoining communities	Weekly	Supervision Consultant (SC) Environmental Safeguard Officer (ESO) – SPIU	Supervision Consultant costs are part of operational costs in their contract. 6,600,000 NGN/(200,000NGN/road) (Monitoring budget for SPIU including security cost during pre-construction phase). .

[7] National Environmental (Air Quality Control) Regulations, 2014

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
		speed limit to reduce dust on unpaved surfaces. - Limiting soil disturbance activities and travel on unpaved roads during period of high winds ▪ Implement routine preventative maintenance including tune-ups on all heavy duty/combustion equipment and vehicles. ▪ Train drivers/ workers on proper operation of vehicles & equipment to include									

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
		maintenance and use fuel efficiency techniques.									
	Loss of vegetation and biodiversity due to the removal of vegetation and trees	• Minimize area of land clearance to the extent possible. • Protect all vegetation not required to be removed against damage. • Establish buffer zones wherever feasible, around watercourses and avoid or minimize activity within the area.	Contractor	--	Radius of cleared path. Evidence of re-vegetation	Visual observation/ Site Inspection	Evidence of compliance such as record keeping, pictures and number of seedlings of revegetation (plants or flowering shrubs),	Project area	Weekly	SC ESO – SPIU	
	Vegetal waste from	• Vegetal waste can be	Contractor	3,482,440NGN	Presence of	Visual observat	Compliance with	Project area	Weekly	SC	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
	clearance can deface the environment and cause pollution	given to farmers as compost or animal feed. • Implement site-specific waste management plan as presented in the Appendix 5.		(20,000 NGN/14.81 USD/174.122km)	vegetal waste on-site	ion/ Site Inspection	the site waste management plan Good house keeping			ESO – SPIU	
	Loss of topsoil and soil compaction due to movement of vehicles to site and stacking of heavy-duty equipment	• Limit zone of vehicle and equipment weight impacts (designate an area for parking and stacking equipment). • Only deploy the required number of heavy-duty equipment needed for movement of equipment and	Contractor	--	Visible demarcation of vehicles and equipment limit zone	Visual observation Soil Compaction test	Satisfactory Soil Compaction test	Project camp sites and equipment packing zones	Weekly	SC ESO - SPIU	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
		materials.									
	Leakages from stacked equipment and subsequent intrusion of oil and chemical substances into soil	• Ensure all vehicles and machines are serviced before being brought to site. • Ensure fastening of loose parts (bolts, nuts). • Install impermeable surface at the limit zone to contain potential leakages. • Install impermeable surface at fuel storage areas, vehicle servicing & limit zone to contain potential leakages. • Provide spill/emerge	Contractor	720,000NGN (60,000 NGN/44.44 USD for the provision of impermeable surface /bunds at fuel storage locations/12 LOT)	Installation of impermeable platform at limit zone.	Visual observation	Soil quality test	Project camp sites and equipment packing zones	Weekly during pre-construction	SC ESO - SPIU	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
		ncy contingency planning for abatement/stabilization of release, recovery of spilled product and remediation of affected area. • Ensure refuelling, maintenance as well as storage of diesel and oil conform to best practices to ensure there are no spillages or leakages.									
Movement of Vehicles and Equipment	Accidents and injuries from the use of machineries and equipment	▪ Provision of PPE to workers and enforce usage by all workers. ▪ Ensure training of workers	Contractor	1,200,000NGN (100,000 NGN/74.07USD/12 LOT)	Contractors Compliance	Routine inspection	Use of PPEs by Workers Training Records	Construction site	Weekly	SC ESO-SPIU SSO-SPIU	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
		before mobilization. ▪ Training of First Aiders and Provision of First Aid onsite. ▪ Ensure that staging areas for contractor equipment are adequately delineated and cordoned off with reflective tapes and barriers. ▪ Ensure uncovered work pits have appropriate signage and protection around them. ▪ Workers									

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
		should get daily induction/toolbox before going on the site and a refresher of what happened on site a day before. ▪ Ensure there is availability of shaded areas for workers to take their breaks/meals. ▪ ▪ (See the Appendix 6 for OHS Plan and Security Risk Management Template)									
	Increase in noise level above	▪ Equipment should be	Contractor	--	Number and frequenc	In-situ measurement of	Noise level test (Not to	Project Site	Weekly	SC ESO-	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
	permissible noise level, (60dB and 40dB for day and night respectively) [8]during movement can disturb the community. Community health & safety risks such as accidents, increase in communicable diseases and STDs, SEA/SH etc.	mobilized to site during off peak hours/ weekends when it will cause least disturbance to schools, mosque, church etc. ▪ Retrofit machines with sound proofing devices. ▪ Implement CASHES as in Appendix 12 and all contractor drivers must adhere to			y of complaints in project area	noise level	exceed 60dB(A) for 8 hours working period	1 km radius of project site		SPIU SSO-SPIU GBV Officer (GBVO)	

[8] The National Environment (Noise Standards and Control) Regulations, 2009.

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
		the TMP as in Appendix 8 and road safety rules.									
SOCIAL IMPACTS											
Movement of vehicles and operationalization of equipment	.	▪									
Site Clearing	Physical displacement due to removal of encumbrances including buildings and fences constraining the road width.	• Implement the standalone RAP to ensure PAPs are compensated for affected assets prior construction. • Implement project specific GRM to promptly receive and address resettlement	SPIU Contractor SPIU/ Design consultant	Included in the RAP implementation cost.	RAP Prepared and implemented.	Visual observation of records & interviews	RAP implemented. All PAPs compensated before mobilization to site. All grievances received are resolved. High	Affected communities	Once before mobilization	SSO SPIU GBVO, SPIU Affected LGAs	Included in the RAP implementation cost.
Site Clearing	Involuntary displacement of farmers from their source of livelihood.										

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
Site Clearing	Loss of agricultural farmlands, crops and economic trees.	related grievances. • Restrict clearance to work areas and protect adjoining structures, farmlands and economic trees. • Consider revisiting road design to reduce width in built up areas to reduce physical displacement.					level of satisfaction amongst PAPs.				
Setting up of camp site/Engineering yard. Mobilization of Equipment and Materials to Site	Storage of construction equipment and materials may invite thieves and hoodlums	• Implement Security Management Plan (SMP) prepared for Abia RAAMP. • Seek clearance	Contractor	1,200,000NGN (100,000 NGN/74.07 USD/12 LOT)	SMP No of security personnel engaged.	Records and Interviews	No of security incidents	Construction site	Weekly	SSO GBVO Affected LGAs NPF	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
	thereby posing security breaches and threats to lives and properties in adjoining communities	from Security Agencies before mobilizing to the areas with security challenges. • Deploy competent security personnel to secure project site. • Disclose site security arrangements to the Police and host communities									
Mobilization of Equipment and Workers to Site	Risk of social conflicts between the local community and the construction workers, which may be related to religious,	• Provision of Workers' Code of Conduct in English and local language (Igbo); • Provision of cultural sensitization training for	Contractor	600,000.00NGN (50,000 NGN/37.04USD Per LOT)	No of workers trained. No of workers who signed CoC. Consultation with	Records and Interviews	Zero conflicts	Affected /host communities	Weekly	SSO GBVO Affected LGAs NPF	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
	cultural or ethnic differences, or based on competition for local resources.	workers regarding engagement with local community. • Consultations with and involvement of local communities in project planning and implementation. • Awareness raising among local community and workers.			host communities						
Mobilization of Equipment and Workers to Site	Road Traffic causing delay in travel time. Accidents involving vehicles or pedestrians	• Hire drivers with appropriate driver's license. • Train drivers and enforce speed limit. • Mobilization	Contractor	--	Drivers training and license.	Visual observation Interview Incident/ Accident Record	No of complaints received within the project area.	Project Area	Weekly	SC SSO-SPIU GBVO Project Engineer	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
	Grievances from movement of equipment and if equipment is not parked at designated location.	of equipment and machinery should be done at off-peak period (10am – 4pm). • Ensure vehicles and equipment are NOT mobilized to site on market days. • Ensure traffic/caution signs at strategic locations in English & local languages to warn other road users. • Ensure vehicles and equipment are parked at Campsite and designated	SPIU	. GRM procedure is provided in the standalone GRM Manual for Abia RAAMP	Appropriate traffic signage in local languages Incident/ Accident Report GRC Records		Zero incident/ accident Timely resolution of complaints				

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
		areas ONLY. • Ensure incident/ accidents are reported immediately to the SPIU. • Ensure all Grievances are resolved within the stipulated time of 14 days.									
Mobilization of Equipment and Workers to Site	Influx of Additional Population ("Camp Followers") such as traders, suppliers and other service providers (including sex workers)	• Contractor to hire workers through recruitment offices and avoid hiring "at the gate" to discourage spontaneous influx of job seekers.	Contractor	--	Recruitment Process	Observation and Interview/ Records	Compliance with Mitigation	Camp Office Project Site	Monthly	SC SSO – SPIU GBVO LGAs	
Mobilization of Equipment and Workers to Site	Increased risk of illicit behaviour	• Paying adequate salaries for workers to	Contractor	--	Workers' salary and mode of	Interview	Compliance with mitigation	Project site Worker	Monthly	SSO – SPIU GBVO	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
	and crime (including prostitution, theft and substance abuse)	reduce incentive for theft. • Sourcing of local workforce. • Creation of supervised leisure areas in workers' camp. • Cooperation with local law enforcement. • Ensure frequent and timely sensitization of workers. • Introduction of sanctions (e.g., dismissal) for workers involved in criminal activities.			payment % of local workforce			s' camp		Police	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
Mobilization of Equipment and Workers to Site	Increased demand and competition for local services such as water, electricity, medical services, transport, education and social services Illegal lodging arrangements or the establishment of shanty towns and their attendant problems	• Develop and implement Workers' Site Management Plan (Appendix 10) • Establish workers' camp with sufficient capacity for workers & sub-contractors. • Ensure workers' camp are equipped with all essential services (water, sanitary facilities, electricity etc.). • Provision of entertainment and events for workers within camp	Contractor	GRM procedure is provided in the standalone GRM Manual for Abia RAAMP	Availability of amenities in workers' camp	Visual inspection	Public perception	Workers' camp and host communities	Weekly	SSO – SPIU GBVO	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
		to reduce incentives for mixing with local community. • Worker Code of Conduct to cover the aspect on water and electricity consumption. • Implement the GRM and act on grievances received									
Site Clearing	Noise and vibration disturbances from operation of heavy-duty vehicles.	• Select and use vehicles/ equipment with lower sound power levels. • Install suitable mufflers on engine exhausts and compressors. • Respond	Contractor	--	Noise level	*In situ* measurement	Noise level test (Not to exceed 60dB(A) for 8 hours working period	Construction site and nearby communities	Weekly	SSO ESO GBVO SC	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
		promptly to noise complaints									
Establishment of Campsite/ Engineering Yard/ Borrow Pit	Transactional issues and grievances for areas earmarked for borrow pits, campsite, staging areas etc by contractors.	• Fair compensation for affected structures crops at current market value. • Signing of agreement with local authorities and communities (evidence should include minutes of meeting, signed attendance and photographs). • Ensure the ownership of land is effectively established to mitigate the	Contractor	--	Documents/ Records including signed agreements, minutes of meeting, attendance and pictures. No of complaints received	Records Interviews Review of Grievance Log	Evidence of adequately signed transactional agreements. No of cases resolved by the GRC	Project area of influence	Weekly	Grievance Redress Committee SSO ESO GBVO SC	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
		possibilities of taking land owned by women for public interest without ensuring the affected women are provided land for land replacement option.									
Mobilization to Site	Labour Influx which could lead to Increase in sexual activities and possible spread of STDs/STIs in the project's location	▪ Awareness campaign on sexual diseases. ▪ Implement Labour Influx Plan (see Appendix 11)	Contractor, SPIU	Included in the cost for GBV related activities	Level of Awareness and Education Increase in STI cases	Rapid health survey/ Primary Healthcare centres' report	Level of awareness and knowledge of preventive measures. % of reported STI/ STD cases among workforce	Nearby communities Health care facilities	Once during pre-construction	SC SSO GBVO Primary Health Care Centres (PHCs)	
Mobilization to site	Potential risk of Gender Based	▪ Ensure priority is giving to sourcing of	Contractor SPIU	-- 500,000 NGN/370,37 USD	Level of Awareness and Educatio	Consultations Visual	Evidence of Signed CoCs for contracto	Project communities	During Pre-Construction/	SSO GBVO SC GBV	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
	Violence (GBV)/ Sexual Exploitation and Abuse (SEA)/ Sexual Harassment (SH) due to influx of workers to project location	local workforce. ▪ Ensure all contractors' workers are sensitized and sign Code of Conduct (CoC) (see Annex 9 for sample CoC). ▪ Ensure strict compliance with CoC. ▪ Prohibit workers sexual relations with minors, school children and community members. ▪ Ensure separate toilets for male and females		for GBV related activities	n Among community members and workers CoC GRM	observation where required. Monthly / quarterly monitoring reports Third Party Monitoring Report	r workers with the supervision consultant and SPIU Evidence of signage on site, separate toilets with locks for male and females Conduct of sensitization campaigns Training reports and attendance % of		Continuous	Specialist GBV Service Providers FPMU GBVO	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
		with locks, and to be well lit at night. ▪ Community leaders/ women group/youth group to sensitize the community on appropriate conduct with contractors. ▪ SPIU to establish a GRM equipped to handle GBV cases with reporting channels that are easily accessible and community members feels safe reporting to					survivors reporting project-related incidents who were referred to case management services Compliance with the provisions of the GBV Action Plan and A&RF				

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
		▪ Map GBV service providers in the project area and develop a referral pathway to enable survivors access to quality care. ▪ Mainstreaming GBV/SEA action plan in Contractor's contract ▪ Signage against tolerance for SEA/SH/GBV to be installed along the project communities/corridor. ▪ Ensure compliance with the									

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
		GBV Action Plan and A&RF									
Site Clearing/ Establishment of Campsite/Engineering Yard/ Borrow Pit	Potential for Child labour and school drop out	• Ensure that children and minors under the age of 18 are not employed directly or indirectly on the project. • Communication on hiring criteria, minimum age, and applicable laws should be ensured. • Enforcement of legislation prohibiting child labour.	Contractor SPIU	--	Record Visual observation	Routine inspection	No. of cases observed & recorded	Project site	Weekly	SSO GBVO Project Engineer SC	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
All Project Activities	Security Risks: Project workers including FPMU, SPIU, Consultants, contractor workers could fall victim of kidnap, banditry, insurgency, social conflicts etc.	• The SPIU to liaise with the state Government and security forces to ensure adequate provision of security for project personnel. • SPIU to develop a security management plan for the project and engage the services of a state security adviser. • Contractors and supervision consultant to ensure they develop their own security management plan in line with the	SPIU Contractor Security Supervising Consultant Security State Government	Cost of development & implementation of security management Plan (SMP)	Availability of security personnel No of Incidents	Visual Observation Security Incident Report	Absence of security incidents associated with project workers and contractors	Project Site	Daily	SSO GBVO Police NSCDC	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
		project security plan and costs for it appropriately in the contract. • Ensure compliance with the SPIU security advisor's security clearance.									
SUB-TOTAL			**Contractor SPIU**	**16,408,540NGN/12,154.47USD**							**6,600,000NGN/4,888.89USD**
B	**CONSTRUCTION PHASE**										
ENVIRONMENTAL IMPACTS											
Earthworks, Construction of Drainage Infrastructure, Pavement and Asphalting including Cross Drainages	Deterioration of local air quality due to the release of dust & exhaust gases.	• Implement dust/emission control measures such as: - Use water to wet ground for dust suppression at least	Contractor	8,706,100NGN/174.122km (50,000 NGN/111.11USD/km)	Air quality parameters (CO, NO_2, SO_2, CO_2, $SPM_)$ Fugitive dust	Visual Observation. In-situ measurement. Vehicle Emission	Minimal Dust FMEnv permissible limit	Road corridors and nearby communities	Monthly	SC ESO FMEnv & AbSME	1,500,000 NGN/1,111.11USD (Monitoring budget for SPIU including security cost during construction phase).

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
		twice daily in built up areas. - Use of covers on trucks transporting loose materials that may generate dust. - Use of mufflers, catalytic converters, etc. on machinery - Enforce appropriate speed limit to reduce dust on unpaved surfaces. - Limiting soil disturbance activities and travel on unpaved roads				Testing (VET) and Vehicle Exhaust Screening (VES) Report.					

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
		during period of high winds ▪ Implement routine preventative maintenance including tune-ups on all heavy duty/combustion equipment and vehicles. • Train drivers/ workers on proper operation of vehicles & equipment to include maintenance and use fuel efficiency techniques. • Ensure all equipment are turned off when not in use, in order to reduce carbon									

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
		emissions. • Equip vehicles with catalytic converters.									
Earthworks, Construction of Drainage Infrastructure, Pavement and Asphalting including for Cross Drainages	Predisposition of soil to erosion. Surface water contamination as a result of pollutants run off from project site.	• Ensure construction of effective drainage system and use erosion protection structures such as sediment traps, riprap, gabions. • Ensure proper termination of drainage system. • Ensure waste asphalt and other chemicals are safely stored and evacuated from site for reuse in other locations or	Contractor	Part of construction cost	Evidence of erosion protection structures	Visual observation	Erosion incidents	Project site	Monthly	SC ESO – SPIU Project Engineer	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
		recycling through licensed vendors.									
Earthworks, Construction of Drainage Infrastructure, Pavement and Asphalting including for Cross Drainages	Soil contamination from leakage/spillage of fuel or oil from equipment and vehicles.	• Prepare and implement an Emergency Response Plan to respond to incident of spillage. • Ensure all vehicles and machines are serviced before being brought to site. • Install impermeable surface at the limit zone to contain potential leakages. • Install impermeable surface at	Contractor	Cost included under Pre-construction Phase	Emergency Response Plan developed. Soil quality parameters Compliance with fuel storage procedures	Visual observation Laboratory testing	Compliance with Mitigation	Project site	Weekly	SC ESO Project Engineer FMEnv AbSME	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
		fuel storage areas, vehicle servicing & limit zone to contain potential leakages. • Provide spill/emergency contingency planning for abatement/stabilization of release, recovery of spilled product and remediation of affected area. • Ensure refuelling, maintenance as well as storage of diesel and oil conform to best practices to ensure there are no									

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
		spillages or leakages.									
Parking of Equipment and Vehicles	Surface soil compaction from Movement of heavy vehicles/Stationary vehicles and equipment	• Limit zone of vehicle and equipment weight impacts • Designate an area for parking and stacking equipment and prohibit indiscriminate parking along the RoW. • Only deploy the required number of heavy-duty equipment needed for movement of equipment and materials.	Contractor	-	Visible demarcation of vehicles and equipment limit zone	Visual observation Soil Compaction test	Visual observation Soil Compaction test	Project camp sites and equipment packing zones	Monthly	Supervising Consultant ESO SSO Project Engineer	
Construction works/	Increase in noise level	• Adequate maintenanc	Contractor	--	Number and	In-situ measure	Noise level test	2-3Km Radius	Weekly	SC	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
Operationalization of Equipment and Machinery	above permissible noise level, (60dB) during construction activities can disturb communities and cause OHS issues	e of equipment and machineries to reduce noise. • Retrofit machines with soundproof devices. • Implement OHS Plan (Annex 6) • Use of adequate PPEs including earmuffs • Implement CASHES (Appendix 12)			frequency of complaints in project area	ment of noise level	(Not to exceed 60dB(A) for 8 hours working period	of project site		ESO SSO GBVO Project Engineer AbSME FMEnv	
	Excessive vibrations from operations of construction heavy duty trucks to existing buildings	• Mitigation at source (for all activities) • A noise barrier or acoustic shield will reduce noise by	Contractor	--	No of affected buildings	Visual inspection	Machinery fitted with acoustic shield. Adequate mitigation for associate	Project areas	Monthly	SC ESO SSO Project Engineer LGA	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
	(some buildings along the road are mud built) may lead to collapse if not attended to	interrupting the propagation of sound waves. • Limiting operation to specific areas where work is carried out. • Conduct preconstruction survey/ Vibration risk assessment to identify buildings at risk of damage/ collapse. • Temporary or permanent support should be provided for building at high risk.					d impacts Prompt repair of damage to buildings				
Earthworks, Construction of Drainage	Generation of constructio	• Develop and implement	Contractor	1,200,000NGN	Presence of construct	Visual observation	Good housekeeping	Construction route	Monthly	SC ESO	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
Infrastructure, Pavement and Asphalting including for Cross Drainages	n waste and debris which can pollute the environment leading to community and public health issues.	Waste Management Plan (WMP) (see Appendix 5 • Ensure waste is evacuated from site by AbSME or approved waste contractors to prevent unregulated dumping. • The record of type, volume, mode of transportation, final disposal site and waste vendors should be kept as part of project documents. • Ensure waste asphalt and other		(100,000 NGN/741 USD/37.04/Lot)	ion waste on-site Waste disposal documentation		Compliance with WMP			SSO Project Engineer	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
		chemicals are safely stored and evacuated from site for reuse in other locations or recycling through licensed vendors.									
Sand Mining from Rivers/ Streams	Land degradation and increased susceptibility to erosion due to sand mining from the network of rivers/ streams.	• Borrow pit investigation report should establish mining volume for each river based on annual replenishment. • Contractors shall not extract beyond the volume recommended in the borrow-pit investigatio	SPIU Contractor	--	Extracted volume established	Visual observation Record of extraction	Volume mined within the amount recommended in the Borrow-pit investigation report	Mined Rivers	Monthly	SC ESO SSO Project Engineer FMEnv AbSME	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
		n report. • Extraction of sand should be restricted to downstream portion of the river. • Vegetation buffer/riparian vegetation should be protected.									
Material Sourcing	Land degradation and increased susceptibility to erosion due to excavation of earth materials in borrow pit	• Avoid the production of excess spoil material and reduce the need for borrow pit materials. • Created borrow pits should have appropriate signage and protection around them. • Develop and	Contractor	2,400,000.00NGN 200,000 NGN/741 NGN/LOT	Caution signs Developed site Reclamation Plan Number of borrow pits.	Visual observation	Number of borrow pits incidents. Site reclamation after construction	borrow site. Project site	Monthly	SC ESO SSO Project Engineer FMEnv AbSME	
Earthworks, Construction of Drainage Infrastructure, Pavement and	Community health and safety risk due to improperly abandoned										

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
Asphalting including for Cross Drainages	borrow pits	implement Borrow pit Reclamation Plan (see Appendix 7) to ensure site is rehabilitated and restored to a safe and stable state. Plan should include measures to: -Re-contour/grade site to blend with natural topography - Reuse excess stockpile to back fill pits during grading									
Earthworks, Construction of Drainage Infrastructure, Pavement and Asphalting	Risk of occupational accidents (OHS), Injuries and diseases	• Implement project OHS Plan (Appendix 6) • Provide PPE and enforce	Contractor	) Provided in the pre-construction phase	OHS Plan Developed Compliance with	Consultations/ visual observation Accident	Decrease in Lost Time Injuries (LTI)	Project area	Monthly	SC ESO SSO	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
including for Cross Drainages	Injuries from application of asphalting material to road surface Exposure to harmful chemicals	usage of appropriate PPE. • Demarcate/cordon off construction areas and, lit up adequately at night, • Fence out danger zones and keep out of reach. • Restricted access to be placed at construction sites using caution signs and manned personnel. • Use caution tapes. • Develop and implement visitors' management protocol. • Ensure that staging areas for contractor		1,200,000NGN (100,000 NGN/74 USD (caution signs, tapes, barricades & First Aid)/LOT	OHS Plan First aid box	Report	Zero incident /accident report Well stocked first aid box			GBVO Project Engineer	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
		equipment are adequately delineated and cordoned off with reflective tapes and barriers. • Any uncovered work pits should have appropriate signage and protection around them. • Workers should get a daily induction/toolbox before going on the site and a refresher of what happened on site a day before. • Ensure there is availability of shaded									

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
		areas for workers to take their breaks/meals. • Appropriate security measures in place to prevent harassment or kidnapping of workers. • Provide well-equipped first aid box and well trained first aiders.									
Campsite Management	Pollution of the environment from open defecation by contractors' workers Waste generation and	• Contractor to provide mobile toilets and on-camp sanitary facilities for workers. • Sensitize and sanction workers against open defecation.	Contractor	Included in Contractor Cost	Evidence of faecal waste within the project sites	Site inspection	Absence of faecal waste on-site. Presence of on-site mobile toilets and sanitation facilities.	Camp sites and working zones	Monthly	SC ESO SSO GBVO Project Engineer	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
	disposal	• Implement the detailed Waste Management Plan (WMP) (See Appendix 5), and Campsite Management Plan (Appendix 10).									
SOCIAL IMPACTS											
Earthworks, Construction of Drainage Infrastructure, Pavement and Asphalting including for Cross Drainages	Noise and vibration disturbances from operation of heavy-duty vehicles and equipment.	• Select and use vehicles/ equipment with lower sound power levels. • Install suitable mufflers on engine exhausts and compressors. • Respond promptly to noise complaints	Contractor	Captured above	Noise level	*In situ* measurement	Noise level test (Not to exceed 60dB(A) for 8 hours working period	Construction site and nearby communities	Monthly	SC SSO & ESO – SPIU	
	Temporal traffic build-up	• Prepare & Implement TMP (see	Contractor	Same as presented in pre-construction stage	No of complaints	Site visits and	Traffic signs	Routes through commu	Monthly	SC	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
	and delay in travel time along the road	framework in Appendix8) • Prior notification and proper continuous consultations with PAPs including mosque, church, schools, markets etc. • Traffic/caution signs at strategic locations/junctions • Continuous collaboration with FRSC regularly to manage traffic build up within the community. • Movement of equipment and machinery should be limited			received within the project area. Contractors Compliance	observation	Contractors' compliance Presence of flagmen and Traffic Control Team	nity to the sites		ESO SSO GBVO Project Engineer FRSC	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
		during peak hours/days/period as identified such as market days									
	Electric Utilities (poles and accessories) to be moved or relocated may create disruption and grievances for community members	• The contractor and the SPIU in conjunction with Enugu Electricity Distribution Company (EEDC) and Geometric Company Limited will inform the community prior to the movement and inform them of the schedule	Contractor SPIU EEDC Geometric Company Limited	Cost of relocation is captured in the RAP	No of complaints by community persons Timely consultation	Interview Grievance Log	Minimal number of reported cases	Host Communities	As required	SC SSO GBVO ESO Project Engineer LGA	
	Grievances and negative perception by community	Conduct stakeholders' consultation with the host community at every phase of	Contractor GRC	-- Provided in the standard GRM operation manual for RAAMP	No of complaints by community persons	Consultations Review grievance log	Minimal number of reported cases	Host community	Monthly	ESO SSO GBVO Project Engineer	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
	members	the project • Grievance channels and GRC to be set up at project level									
Earthworks, Construction of Drainage Infrastructure, Pavement and Asphalting including for Cross Drainages	Increased risk of spread of communicable diseases (including sexually transmitted diseases (STDs) and HIV/AIDS) due to influx of construction workers and camp followers.	• Vaccinating workers against common diseases. • Implementation of HIV/AIDS education program. • Campaign on STDs transmission among workers and local communities. • Raising awareness of local communities about the impacts of labour influx	Contractor	600,000NGN 50,000 NGN/74 USD/Lot	Evidence of awareness among construction workers and members of affected communities	Interview Rapid health survey	Level of awareness and knowledge of preventive measures. % of reported STI/ STD cases among workforce	Nearby communities Health care facilities	Twice during Construction	SC SSO GBVO Primary Healthcare Centre (PHC) Affected LGA	
	Potential	• Ensure	Contrac	--	Level of	Consulta	Evidence	Project	Monthl	SSO	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
	risk of Sexual Exploitation and Abuse (SEA)/ Gender Based Violence (GBV) Influx of workers to project location	priority is giving to sourcing of local workforce. • Ensure all contractors' workers are sensitized and sign Code of Conduct (CoC) (see Annex 9 for sample CoC). • Prohibit workers sexual relations with minors, school children and community members. • Ensure separate toilets for male and females	tor SPIU GBV Specialist Supervision Consultant GBV Specialist GBV Service Providers	GBV management related costs captured above (to supplement cost included in the GBV Action plan)	Awareness and Education Among community members and workers CoC GRM	tions Visual observation where required. Monthly / quarterly monitoring reports Third Party Monitoring Report	of Signed CoCs for contractor workers with the supervision consultant and SPIU Evidence of signage on site, separate toilets with locks for male and females Conduct of sensitization campaigns Training reports and attendance	communities	y	GBVO SC GBV Specialist GBV Service Providers Project Third Party monitor	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
		with locks, and to be well lit at night. • Community leaders/ women group/youth group to sensitize the community on appropriate conduct with contractors. • SPIU to establish a GRM equipped to handle GBV cases with reporting channels that are easily accessible and community members feels safe					% of survivors reporting project-related incidents who were referred to case management services Compliance with the provisions of the GBV Action Plan and A&RF				

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
		reporting to • Map GBV service providers in the project area and develop a referral pathway to enable survivors access to quality care. • Mainstreaming GBV/SEA action plan in Contractor's contract • Signage against tolerance for SEA/SH/GBV to be installed along the project communities/corridor. • Ensure									

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
		compliance with the GBV Action Plan and A&RF									
Earthworks, Construction of Drainage Infrastructure, Pavement and Asphalting including for Cross Drainages	Predisposition of children to risks of accidents, dust and noise disturbance due to the proximity of the alignment to schools within communities.	• Ensure appropriate safety measure are in place (road signs, speed bumps, dust reduction measures, etc)in to protect children from risk of road accidents, irritability/ respiratory disorder due to dust exposure and disturbance due traffic noise in areas near a school. • Install speed	SPIU Contractor	Cost captured above as dust mitigation, provision of caution signs, etc. Part of construction cost	Compliance with mitigation	Visual observation and interviews	Realignment or Provision of fence for the school. Zero accidents, injuries and GBV issues against children.	Host communities with schools.	Monthly	SC SSO ESO GBVO Project Engineer LGA	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
		bumps near schools to reduce vehicular speed. • Wet the ground during dust emitting activities. • Limit noise-generating activities during school periods.									
Earthworks, Construction of Drainage Infrastructure, Pavement and Asphalting including for Cross Drainages	Child labour and school dropout due to opportunities for the host community to sell goods and services to construction workers	• Ensure that children and minors under the age of 18 are not employed directly or indirectly on the project (see Appendix 9). • Communication on on hiring criteria, minimum age, and	Contractor	--	Presence of underage workers	Visual observation/ Interview	All workers above 18 years of age	Project site	Monthly	SC SSO-RAAMP	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
		applicable laws should be ensured. • Enforcement of legislation prohibiting child labour.									
	Increase demand on existing community health and sanitation infrastructure due to influx of temporary workers	• Develop and implement Workers' Site Management Plan (see Appendix 10) • Establish workers' camp with sufficient capacity for workers & sub-contractors. • Ensure workers' camp are equipped with all essential services (water, sanitary facilities,	Contractor	Cost of provision of campsite included above	Availability of amenities in workers' camp	Visual inspection	Public perception	Workers' camp and host communities	Monthly	SC SSO ESO GBVO Project Engineer LGA Affected LGA	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
		electricity etc.). • Provision of entertainment and events for workers within camp to reduce incentives for mixing with local community. • Worker Code of Conduct to cover the aspect on water and electricity consumption. • Implement the GRM and act on grievances received									
Operationalisation of equipment	Risk of structural damage to/ collapse houses along the road	• Compensation should be paid for buildings identified to be at high risk.	Contractor SPIU	Part of RAP contingency cost	No of affected buildings	Visual Observation Interview	Zero grievance due to building damage. Prompt	Project site	Monthly	SC SSO ESO GBVO Project Engineer	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
	alignment due to vibration caused by heavy-duty construction vehicles.	• Structural damage during construction should be repaired promptly.				Record	repair of damage to buildings			LGA	
All project activities	Risk to community health and safety including mosque, church, markets, schools as well as the residential areas	▪ Implement community health & safety plan. ▪ Install caution signs, barricades, speed bumps. ▪ Train drivers. ▪ Avoid working at night as well as time of corporate worship by both Christians and Muslims. ▪ Light up danger/work areas at night. ▪ Restrict construction areas and staging areas for controlled	Contractor	Captured as provision of caution signs. OHS and GBV sensitization	Appropriate signage in local languages Safety measures Restrictions	Visual observation	Zero injuries to community members	Project site	Monthly	SC SSO ESO GBVO Project Engineer LGA	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
		visiting, etc. (see Annex 14).									
Excavation and Realignment of road	Risk of chance find during excavation and opening of new access road as part of re-alignment	• Implement chance find procedures provided (Appendix13)	Contractor SPIU	--	Compliance with procedures	Records and interviews	No of incidents adequately handled	Project site	As required	SC ESO, SSO	
Demobilization from site	Loss of employment for temporary workers after construction	• Ensure compliance with all legal and contractual agreement with workers. • Ensure all workers receive notice of dismissal and severance payments mandated by law and collective agreements in a timely	Contractor	--	Compliance with workers contract of employment Timely payment of workers dues	Records and Interviews	Nigerian Labour Law No of grievances	Site Office	Once	SC SSO ESO GBVO Project Engineer LGA	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
		manner. • Provide a grievance mechanism for workers to raise workplace concerns.									
	Risks of accidents to community members from movement/ removal of construction equipment	▪ Implement community health & safety plan. ▪ Install caution signs, barricades, speed bumps. ▪ Train drivers. ▪ Avoid working at night. ▪ Light up danger/work areas at night. Restrict construction areas and staging areas for controlled visiting, etc. (see Appendix 14).	Contractor	--	Appropriate signage in local languages Safety measures Restrictions	Visual observation	Zero injuries to community members	Project site	Monthly	SC SSO ESO GBVO Project Engineer LGA	
SUB-TOTAL				**14,106,100NGN/190**							**1,500,000NGN/1,**

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
				,488.96USD							**111.11USD**
C	**OPERATION AND MAINTENANCE PHASE**										
ENVIRONMENTAL IMPACTS											
Road Operation	Gully formation along the road alignment due to lack of defined drainage system.	Construct climate resilient road infrastructure including good drainage, retaining walls, culverts, terracing, good road grading complete with bituminous sealing to ensure sustainability.	SPIU	Part of construction cost	Presence of climate resilient and drainage infrastructure	Visual observation	Provision of climate resilient and drainage infrastructure	Project site	After construction	SPIU Affected LGA	1,200,000NGN 100,000NGN/74.07USD/LOT
	The drainages may become conveyors for surface debris and improperly disposed wastes	Routine maintenance of drainages, including regularly desilting Proper waste management system in the	Abia State Ministry of Works AbSME	Annual budget of ministry	Flow rate of water through the drainage systems Adequat	Visual observation	Implementation of proffered mitigation	Project site and community	Quarterly	SPIU AbSME LGA	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
	during heavy rains, leading to drainage blockage and disruption of free flow. This may result in stagnated water, and water contamination downstream.	communities. Sensitization of the communities to this ESMP			e waste treatment in the communities						
Community-Based Maintenance	Generation of maintenance waste and debris	Ensure usage of approved waste vendor for waste evacuation, processing & disposal.	Maintenance Committee	Annual budget of ministry	• Waste vendor licenses • Waste documentation	Visual observation	Good housekeeping	Project site	Routine during maintenance works	AbSME LGA	
SOCIAL IMPACTS											
Road Operation	Noise generation from vehicular movement	Ensure installation of speed breakers and speed limit warnings at	Contractor	As above	Speed breakers, Traffic signs, Markings etc.	Visual observation	Zero complaint	Adjoining communities	Quarterly	SPIU Affected LGA	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
		appropriate places especially at built up areas to reduce vehicular noise									
Road Operation	Increased traffic & risk of road traffic accidents and injuries.	Ensure installation of appropriate speed breakers, traffic signs and markings to warn drivers.	Contractor	As above	Speed breakers, Traffic signs, Markings etc.	Visual observation	No of accidents	Along proposed road	Periodic	SPIU FRSC Police	
Community-Based Maintenance	Risks of occupational accidents and injuries to workers.	Develop a project specific OHS and emergency response plan (See Appendix 6) commensurate to construction activities.	Contractor/ Maintenance Committee	--	OHSP developed.	Visual observation	Compliance with OHSP	Construction Site	Monthly	ESO & SSO – SPIU	
Community-Based Maintenance	Discrimination against gender and vulnerable	Continues sensitization and awareness program and	Community project monitorin	-	Reports and awareness	Number of cases indicated	General compliance	Communities	Quarterly	SSO-SPIU GBV	

Project Activity	Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira/USD)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring/ Supervision	Cost of Monitoring (Naira/USD)
	group for routine maintenance	ensure that community level programs allow for gender inclusiveness	g committee							SPIU	
	SUB-TOTAL			**-**							**1,200,000NGN**
	GRAND TOTAL COST		**Contractor SPIU**	**30,518,640NGN/22,606.40USD**							**9,300,000NGN/6,888.89**

** Most of the cost is borne by the contractor and the AB-SPIU will ensure it is embedded in their BOQ and will be verified by the AB-SPIU Safeguards team.*
** Mitigation costs are estimates, contractors to review and ensure final costs in the BOQ are realistic and can adequately mitigate stated impacts.*
** Cost of Mitigation is per road except the cost of GBV related activities by the AB-SPIU which covers all Phase 1 roads.*
** Grand total cost estimate for monitoring is per lot*

Table 7- 3: Summary of Mitigation and Monitoring Cost for Backlog Maintenance/Rehabilitation Roads Lot 1-6.

Phase	Lot 1 (1No)		Lot 2 (2 Nos)		Lot 3 (1 No)		Lot 4 (2Nos)		Lot 5 (2Nos)		Lot 6 (2 Nos)	
Road Name and Length	Amiyi Obinohia – Umuerem Nunya	11.60km	Amiyi Nvosi-Ohuhu ekwuru	3.40km	Amorji Junction-Abayi – Ahiaba Court - Umuchima	9.60km	Osaka – Nkalu Rd	5.10km	Abaliegwu – Amaokpu - Umuaja	3.70km	Ohanko Mkt – Ukebe Rd	4.50km
			Umuokoro Umuapu Amaede Isingine Rd	7.20km			Mgbokonta Ohuhuekwuru	2.70	Egbelu onwo – Egbede - Umuagbai	5.20km	Umuakoli Akanu – Umuosi Akanu Rd	2.60km
	Total Length- 11.60km		Total Length- 10.60km		Total Length- 9.60km		Total Length- 7.80km		Total Length- 8.90km		Total Length- 7.10km	
	Mitigation	Monitoring	Mitigation	Monitoring	Mitigation	Monitoring	Mitigation	Monitoring	Mitigation	Monitoring	Mitigation	Monitoring
Pre-construction	1,668,258NGN	258,333NGN	1,668,258NGN	258,333NGN	1,668,258NGN	258,333NGN	1,568,258NGN	258,333NGN	1,568,258NGN	258,333NGN	1,568,258NGN	258,333NGN
Construction	847,628NGN	258,333NGN	847,628NGN	258,333NGN	847,628NGN	258,333NGN	747,628NGN	258,333NGN	747,628NGN	258,333NGN	747,628NGN	258,333NGN
Operation	--	258,333NGN	--	258,333NGN	--	258,333NGN	--	258,333NGN	--	258,333NGN	--	258,333NGN
Total Per LOT	2,515,886NGN	774,999NGN	2,515,886NGN	774,999NGN	2,515,886NGN	774,999NGN	2,315,886NGN	774,999NGN	2,315,886NGN	774,999NGN	2,315,886NGN	774,999NGN

Table 7- 3: Summary of Mitigation and Monitoring Cost for Upgrade Roads Lot 7 – 9.

Phase	Lot 7 (3 Nos)		Lot 8 (3 Nos)		Lot 9 (5 Nos)	
Road Name and Length	Amuvi-Amakofia-Ututu Road	5.20km	Uzuakoli Market Junction-Elugwumba-Amagbo-Ozuitem Road	7.10km	Market Juntion Ntigha-Okpuala Umunachi Ntigha Road	4.40km
	Umuye Junction-Nka Road	3.40km	Ndioro-Nnono Road	1.20km	Nkwo Ebe-Ebeyi Nvosi-Okpokiri Nvosi-Umuhi Nvosi Road	6.00km
	Ndiokorie-Eziafor-Atani-Ndioji Abam Road	7.26km	Uzoigwe Kenneth Road-Obinikpa-Umada-Orie Ngodo Market Road	5.40km	Ukebe Junction-Etiti Akanu Ngwa-Ugwunagbo HQs	7.20km
					Boundary Road-Amaukwu Road	2.00km
					Afor Ogwe Market Junction-Umuazuta-Umunneato-Ihe Ukwu Road	5.00km
	Total Length - 15.86km		Total Length ---13.70km		Total Length --- 24.60km	
	Mitigation	Monitoring	Mitigation	Monitoring	Mitigation	Monitoring
Pre-construction	1,668,258NGN	258,333 NGN	1,668,258NGN	258,333 NGN	1,768,258NGN	258,333NGN
Construction	847,628NGN	258,333 NGN	847,628NGN	258,333 NGN	947,628NGN	258,333NGN
Operation	--	258,333 NGN	--	258,333 NGN	--	258,333NGN
Total Per LOT	2,515,886NGN	774,999 NGN	2,515,886NGN	774,999 NGN	2,715,886NGN	774,999NGN

Summary of Mitigation and Monitoring Cost for Spot Improvement Roads and Cross Drainage Structures Lot 10 – 12.

Phase	Lot 10 (6 Nos)		Lot 11 (5 Nos)		Lot 12 (5 Nos)	
Road Name and Length	Okagwe - Nkwebi Onwuwanyanwu	4.0km	Umuelem – Ihe – Ngada Road	6.48km	Umuohia – Osusu Umuikpeghi – 7up	2.54km
	Okwuma Road – Ohafia Military Base	0.71km	Amaba -Umuasua	1.2km	Ihie Ukwu-Obegu	4.56km
	Alayi – Ezeukwu Road	9.67km	Amaoho Amaba – Okoba Road	3.77km	Ariara-Umumgbede-Umuiku	6.54km
	Bende – Etitiulo – Ntalakwu	17.0km	Agalabano-Umuhu central school-Ekeoba	2.00km	Umuagu-Utali	5.91km
	Amaokwelu Alayi Junction-Amankalu-Akoli Imenyi (Igwu river)	12m	Umuafiaka-Umuokpara (iyi Obowo	11m	Ahiaukwu-Amangwo-Umuajata Umudere Aamkama (Umudere Stream)	11m
	Oboro-Ndiudumaukwu-Ndianku-Nkwebi-Okagwe Ohafia (Okagwa Stream)	6m	Agalabano-Umuhu-Ekeoba Express (Ekweze stream)	6m	Ezeukwu-Ugwueke Road (Ifuama Bridge in Amangwu Ezeukwu)	14m
	Bende Etitiulo-Ubibia-Ndiwo-Itumbuzo-Okopedi-Ntalakwu (Awiwa Stream)	10m				
	Amaokwelu Alayi Junction-Amankalu-Akoli Imenyi (Nchichi stream)	3m				
	Okwuma Road – Ohafia Military Base	6m				
	Total Length - 31.38km		Total Length ---13.45km		Total Length --- 19.55km	
	Mitigation	Monitoring	Mitigation	Monitoring	Mitigation	Monitoring
Pre-construction	1,768,258NGN	258,333 NGN	1,668,258NGN	258,333NGN	1,768,258NGN	258,333NGN
Construction	947,628NGN	258,333 NGN	847,628NGN	258,333NGN	947,628NGN	258,333NGN
Operation	--	258,333 NGN	--	258,333NGN	--	258,333NGN
Total Per LOT	2,715,886NGN	774,999 NGN	2,515,886NGN	774,999NGN	2,715,886NGN	774,999NGN

Training and Capacity Building
Training programs have been proposed as presented in table 7-4 below to enhance the capacities of those that will be involved in the implementation of the ESMP.

Table 7- 4: Proposed Training Program for the Implementation of ESMP

Training Description	Participants	Duration	Responsibility	Training Cost (₦/USD)
ESMP Implementation:	SPIU Relevant MDAs	2 days	E&S Consultant/ E&S Technical Assistants	1,000,000 /740.7USD
Construction HSE- OHS, First Aid	SPIU, Supervising Consultants, Contractors, and relevant MDAs	2 days	E&S Consultant/ E&S Technical Assistants	1,000,000 /740.7USD
Gender Mainstreaming and GBV/SEA/SH Prevention and response **Code of Conducts**	SPIU, Supervising Consultants, Contractors	2 days	GBV Specialist	1,000,000 /740.7USD
Road Safety Training	Drivers of SPIU, contractors and supervising consultants Communities along the road	2 Days	FRSC	500,000 NGN/370 USD
Fire Emergency and Life Safety Training	Contractor workers SPIU Officer, SC	2 Days	Abia State Fire Service, Federal Fire Service	500,000 NGN/370 USD
Total				**4,000,000NGN/2,962.96**

7.3 CONTRACTORS' TRAINING

The contractors shall be required to undertake general HSE awareness for their project workforce and specific training for those whose work may significantly have an impact on the environment. Contractor's training should also include sensitization on appropriate behaviour related to GBV/SEA and SH. The training will also ensure that they are fully aware of the relevant aspects of the ESMP and are able to fulfil their roles and functions. As a minimum, the contractors shall ensure they provide the following training to their personnel:

- OHS/HSE Induction/Orientation Course for all workers to include (site safety rules, PPE requirements, Emergency Preparedness and Response).

- Sensitization on GBV/SEA/SH and compliance with the Code of Conduct (refer to the GBV Action Plan for additional trainings)
- Daily toolbox talks for workers at the start of each day's job.
- Refresher OHS Courses as at when required.
- Manual Handling Techniques.
- First Aid Training (for Site First Aiders).
- Safe Driving Techniques (for drivers).

The contractor will be required to forward internal OHS training and procedures to the SPIU for approval before commencement of civil works.

7.4 MONITORING AND REPORTING

Monitoring and reporting can be tools for measuring the effectiveness of the project's safeguard instruments and also efficient use of resources, and for determining broad trends and recurring problems so that they can be resolved proactively before they become points of contention. To this end, all activities, impacts, mitigation and grievances will be tracked and monitored as they proceed through the system. This will involve the use of tracking forms and procedures and the development of processes for informing stakeholders about the status of a case. Results of monitoring shall be used to evaluate the mechanism in place and used to ensure continual improvement of the project during its lifespan.

7.4.1 Monitoring Activities

The monitoring plan (Internal and External Monitoring) for the ESMP is presented in Table 7-5. Monitoring results shall be documented with preventive/corrective actions to be implemented.

Table 7- 5: Internal and External Monitoring

Monitoring	Action	Responsibility	When	Deliverables
Internal Monitoring	Regular site visit to ensure that the mitigation measures and actions specified in the monitoring plan and as bound by the contract is satisfactorily implemented.	E&S Safeguard Officers from SPIU. FPMU Safeguards Unit	During Preconstruction, Construction and Operation Phases	Monitoring Reports and documentation.
	Site visit for monitoring and inspection to ensure contractors adhere strictly to the engineering designs and specifications for the project.	Supervision Consultants	During Construction Phase	Observations and Monitoring Reports to be compiled and presented to the SPIU.
External Monitoring	Regular site visit to ensure project is implemented in an environmentally & socially sustainable manner using the monitoring indicators specified in the monitoring plan and other national and international environmental & social requirements.	FMEnv, Abia State Ministry of Environment, GBV TPM, Representatives of affected communities, and other relevant MDAs	During Preconstruction, Construction and Operation Phases	Inspect monitoring reports from Safeguard units and provide feedback on observations. Enforce corrective actions where necessary.

7.5 IMPLEMENTATION SCHEDULE

The activities related to environmental management and monitoring shall be integrated in the overall construction schedule as described in Table 7-6.

Table 7- 6: Tentative ESMP Implementation Schedule

No.	Activity Description	Responsibility	Pre-Construction	Construction	Post-Construction
1	Clearance & Disclosure of ESMP	SPIU	✓		
2	Inclusion of Environmental & Social Requirements in Bid Documents	SPIU	✓		
3	Finalization of Engineering Designs.	SPIU/Engineering Design Consultant	✓		
4	Review and Approval of Contractor's ESMP, Waste & Safety Plan and other pre-kick-off requirements expected of the contractor.	SPIU	✓		
5	Environmental and Social Training.	E&S Consultant	✓		
6	Mobilization to site.	Contractor	✓		
7	Construction Phase.	Contractor		✓	
8	Implementation of Mitigation Measures.	Contractor	✓	✓	✓
9	Supervising ESMP Implementation.	SPIU		✓	✓
10	Monitoring & Reporting on ESMP Implementation.	SPIU/Relevant MDAs		✓	✓
11	Environmental and Social Auditing.	SPIU/AbSME/E&S Consultant			✓

7.6 CONTRACTUAL MEASURES

Most of the mitigation measures are the obligation of the Contractor, consequently, the potential contractor will have to prepare their proposals taking into account the measures in Table 7-7 and the detailed general environmental management conditions during civil works attached as Appendix 4.

Table 7- 7: Contractual Measures

Action	Remarks
The measures as described in this ESMP shall be included in the tender documents with appropriate flexibility to adjust these measures to site circumstances, and that the potential contractor will have to prepare their proposals taking into account these measures.	The non-inclusion of these measures in the proposal will lead to a disqualification of the proponent. The contract with the successful bidder should contain these environmental and social management measures as firm conditions to be complied with.
Specifically, the measures should be translated into a suite of environmental specification that are written in the same language style and format as the rest of the contract document	This approach will ensure that the environmental and social controls integrate seamlessly into the tender document and are presented in a familiar form to the Contractor.
Cost of mitigation measures be added to the cost of the	The contactor must take into account and put the cost for the

contractual document	environmental and social requirements specified in the ESMP.

7.7 ESMP Disclosure

Inline with the World Bank guideline on disclose, the SPIU shall disclose the ESMP in accordance with the Nigerian EIA act for 21 days upon clearance by the Bank. This shall include a formal registration of the ESMP with the FMEnv and receipt of formal guidelines for the disclosure from the EA department including locations to disclose the documents. The documents shall be disclosed at the headquarters of the 17 benefiting LGAs, the Abia State Ministry of Environment, Abia State ministry of Women affairs and the benefiting communities. At a minimum, this will the following;

ESMP Disclosure Table

No	Action	Remarks	Cost (NGN)
1	Registration of the ESMP at the FMEnv	This is based on fixed statutory fees by the FMEnv	₦ 50,000.00
2	Inhouse technical review	This is based on fixed statutory fees by the FMEnv	₦ 200,000.00
3	IMM FMEnv Statutory Cost	This is based on fixed statutory fees by the FMEnv	₦ 500,000.00
4	Final Access Charges	This is based on fixed statutory fees by the FMEnv	₦250,000.00
5	Disclosure on 2 National Newspapers or as guided by the FMEnv	This entails advert in 2 newspapers (actual costs will be determined at the point of placing the advert and varies depending on the paper)	₦ 600,000.00
6	Radio announcement of the ESMP at Ogun state radio	The SPIU will conduct radio announcement that has state coverage for the ESMP, to air for 10 working days (actual cost will depend on the station)	₦200,000.00
7	Printing of Hard Copies for Display Centres in 17LGAs, 4 MDAs	N10,350 (estimate) X 21copies	₦217,350.00
8	Disclosure at the World Bank External Website	The ESMP will be disclosed according to the World Bank Disclosure OP17.50	NA
		Total	₦2,017,350

7.8 COST ESTIMATES FOR ESMP IMPLEMENTATION

To effectively implement the mitigation and monitoring measures recommended in this ESMP, necessary provision will have to be made. The cost of these measures has been estimated and included in the ESMP as presented in the table below. The cost of mitigation by the Contractor will be included in the contract as part of the implementation cost by the Contractor. The total estimated cost for the ESMP implementation, training, monitoring and disclosure for all 33No roads and 9CDS is ₦50,058,767.00 equivalent to 37,080.57 United States Dollars (₦1,350 per USD). The cost breakdown per road, the cost of mitigation measures per km as well as the cost of monitoring per lot have been included for ease of implementation. The cost breakdown for the implementation of mitigation measures has been calculated per km to make contracting easier.

Summary of ESMP Implementation Budget

SN	Item	Responsibility	Total Cost (₦)	Total (USD)
1	Cost of Mitigation	Contractor	30,190,632.00	22,363.43
2	Monitoring Programme	Abia RAAMP SPIU, Supervising Consultant, responsible MDAs	9,299,988.00	6,888.88
3	Capacity Building and Training	Abia RAAMP SPIU, Supervising Consultant, responsible MDAs	4,000,000.00	2,962.96
4	ESMP Disclosure	Abia RAAMP SPIU	2,017,350	1,494.33
5	**Sub-total**		**45,507,970.00**	**33,709.61**
6	Contingency	10% of Sub-Total	4,550,797.00	3,370.96
	Total		**50,058,767.00**	**37,080.57**

CHAPTER EIGHT

PUBLIC CONSULTATION

8.1 INTRODUCTION

Public participation and consultation were carried out as necessary through meetings, requests for written proposals/comments, filling of questionnaires, explanations of project to the locals, making public documents available at the state and local levels at all stage of the project. At the local level, the stakeholder consultation was carried out at the project sites and in the community town halls/open grounds between 7th February and 15th February, 2024. The consultation measures took into account the low literacy levels prevailing in these rural communities by allowing an adequate amount of time for responses and feedback. Nevertheless, details of public consultation are discussed.

8.2 OBJECTIVES

Stakeholders' engagement is essential in achieving the major objectives of any project implementation and sustainable development. Participatory approaches in project planning and implementation enhances project policy, ownership and sustainability and also empower targeted beneficiaries. The objectives for stakeholders' engagement and sensitization include but not limited to the following:

i. To create general public awareness and understanding of the project, and ensure its acceptance;
ii. To develop and maintain avenues of communication between the project proponent and stakeholders in order to ensure that their views and concerns are incorporated into the project design and implementation with the objectives of reducing, mitigating or offsetting negative impacts and enhancing benefits from the project;
iii. To inform and discuss about the nature and scale of possible adverse impacts of the rehabilitation work and to identify and prioritize the mitigation measures for the impacts in a more transparent and direct manner;
iv. To document the concerns raised by stakeholders so that their views and proposals are mainstreamed to formulate mitigation and benefit enhancement measures;
v. To reduce potential conflict between stakeholders, project proponents PAPs.
vi. To develop stakeholder's capacity in the areas sustainable project management.

In summary, it goes to spell out the role of stakeholders in the project planning, implementation and monitoring. Involving stakeholders in monitoring service delivery, revenues, budget execution, procurement, contract awards, and reform policies can increase transparency, improve efficiency of service delivery or budget execution, and reduce opportunities for corruption. Some mechanisms for stakeholders- led monitoring include public expenditure tracking surveys, social audits, or stakeholder report cards.

8.3 STAKEHOLDER ENGAGEMENT PLAN

The strategy for engaging stakeholders throughout the lifecycle of the project is decided in Table 8-1 below. The aim is to have a clean-cut plan/guideline that the project developer and/or those carrying out services on its behalf can follow to maintain social inclusion and responsiveness.

Table 8- 1: Stakeholder Engagement Plan

Project Phase	Project Activities	Target Group	Method
Preconstruction	▪ Disclosure of project information ▪ Identification of proposed project location and area of influence ▪ Scoping and study ▪ ESMP disclosure	▪ Traditional rulers ▪ Community Union Chairman ▪ Affected/Benefitting communities ▪ NGOs, CBOs ▪ LG Council	▪ Meetings at the communities and/or villages ▪ Distribution of background information document (BID) to the locals interpreted in local language ▪ Meetings at the LGAs ▪ Disclosure of ESMP at LGAs, SME, SPIU, National & Local Dailies.
Construction	▪ Road construction – Civil Works ▪ ESMP Implementation ▪ ESMP Monitoring	▪ Traditional rulers ▪ Community Union Chairman ▪ Affected/Benefitting communities ▪ NGOs, CBOs ▪ Host LG Council Police,	▪ Meetings at the communities and/or villages ▪ Information dissemination via village messenger ▪ Distribution of fliers to the locals printed in English &Igbo language ▪ Follow up calls by SSO/ESO
Operation	▪ Demobilisation ▪ Audit/ Post construction evaluation ▪ Road Maintenance	▪ Traditional rulers ▪ Community union chairman ▪ Affected/Benefitting communities ▪ NGOs, CBOs ▪ Host LG Council	▪ Community based interview, questionnaire surveys by SPIU ▪ Meetings at the communities and/or villages ▪ Information dissemination via village messenger ▪ Follow up calls by SSO/ESO

8.4 STAKEHOLDER ENGAGEMENT APPROACH

8.4.1 Consultations in the Study Area

For the ESMP, the consultant visited Abia state between 7th February and 16th February, 2024. Informal interactive sessions with the various stakeholders were carried out as necessary. The gathering provided insights into the state of the proposed roads and river crossings, hierarchy of traditional rulers in the study area, community life style and dispute resolution system amongst others. Present at the interactive stakeholder consultation meetings were:

- Community Traditional rulers (ref to Table 8-2)
- Stakeholder Engagement Consultant
- Abia State RAAMP Environmental safeguard officer
- Abia State RAAMP Social safeguard officer,
- Abia State RAAMP Communication officer
- Abia State RAAMP GBV officer
- Abia State RAAMP Project Engineer
- Community Women leaders (ref to Table 8-2)
- Community Youth leaders (ref to Table 8-2)
- General public (people living at the host communities).

8.5 STAKEHOLDER FOCAL GROUP DISCUSSION, COMMUNITY MEETING AND INTERPRETATION

In all interactions, stakeholders present comprised of the State PIU's environmental and social safeguard officers, representatives/leadership of the host communities, and Heads of community/ households. Information provided in this section is completely based on responses from stakeholders, documented reports in state and physical site observations.

Focus Group Discussion FGDs) were carried out to obtain the stakeholders' views on the project. The groups consulted include, The Elders, Women and youths in the Communities. other groups include Fishermen, farmers, hunters and artisans. Questions asked include efforts of the state/community to ensure accessibility, knowledge of the potential environmental and social impacts of the proposed sub-project activities, presence or absence of community conflict, seasonal challenges experienced with the use of the roads, community associations and cultural heritage that might be impinged upon by the project fundamental benefits of the project to the women. This section attracts a large populace of the host communities as shown in Appendix. The comprehensive list of attendance at the engagement are presented in Appendix and the Photo Album Engagement in the various host communities are presented in Appendix 3. Over one thousand (1000) individuals from one hundred and twelve communities (112) across the local government areas were engaged out of which four hundred and eighty (480) representing 48% are female and eighty (80) representing 8% are vulnerable (see Table 4-5 and Appendix 3). Summary of the Focus Group Discussions (FGDs) are provided in Table 8-2.

Table 8- 2: Summary of Issues Raised at FGDs

Date of Consultation	**7th February to 15th February, 2024**	
Name of Stakeholders	**All priority sites**	
Language	**Pidgin-English, English and Igbo**	
Community/Road and Date	**Key Issues Raised**	**Consultants' Response**
• Community/Road - Ndiokorie-Etiafor Atani-Ndioji Abam (Arochukwu).	• The main occupation of the residents of the communities is farming • The impact of the intervention on the economy of the people will be mainly	Explanations were offered by the ESMP team: • It was explained to them that another team of consultant

Date of Consultation 7th February to 15th February, 2024		
Name of Stakeholders	**All priority sites**	
Language	**Pidgin-English, English and Igbo**	
Community/Road and Date	**Key Issues Raised**	**Consultants' Response**
• Venue - Ndioji Abam • Date - 8th February, 2024	positive as it will improve their finances and social interaction • No undue levies by community youths (marching grant). • Absence of sacred and restricted areas within the community I.e shrine • Absence forbidden foods or animals.	will prepare the Resettlement Action Plan (RAP) to access and value structures that would be affected by the proposed intervention based on the designed engineering drawing.
• Umeye Junction - Nka (Arochukwu) • Venue - Umeye Junction • Date - 8th February, 2024	• There were concerns by PAPs that the project will lead to loss of farm land and crops along the road corridors which will make them economically worse off. • No undue levies by community youths (marching grant) • Absence of sacred and restricted areas within the community i.e shrine • Absence forbidden foods or animals.	• On the concern about the potential loss of farm land and crops, the stakeholders were informed that measures are in place to avoid impacts such as realignment of the route and reduction of the width as much as possible. However, where impacts are unavoidable after necessary engineering adjustment, the PAPs will be consulted and compensated.
• Amuvi-Ututu- Amakofa (Arochukwu) • Venue - Amakofa • Date: 8th February, 2024	• Business owners along the road corridors were concerned that they will be evicted in order to pave way for the road construction activities. The action of eviction and demolition may imply that some businesses may be moved and relocated temporary losing some days of business, while some others may lose their business premises for a longer time and even permanently. • Presence of deity (Ajala), women are not allowed to urinate at the village square • Ezeogu women president explained the benefits and the need of the project by the women. It will bring easy access to trade, greater income, and access to market. • The youth president promised to support the project and provide security.	• PAPs that will lose income from loss of business as a result of displacement will be compensated for loss of business income in line with the OP 4.12 guideline
• Eze Ogo Achi Ukoly Okagwe (Ohafia) • Venue –Eze's Compound • Date: 8th February, 2024	• PAPs raised concerns that they want their compensations paid to them directly and not through any community leader or a third party. PAPs also sought to know when the project will commence and if they will receive their compensations before the start of project • No undue levies by community youths (marching grant) • Absence of sacred and restricted areas within the community i.e shrine • Absence forbidden foods or animals.	• PAPs were assured that compensation due them will be paid to them directly.
• Uzuakoli market Junction - Ugwumba Uzitim Road (Bende) • Venue - Uzuakoli market Junction • Date: 9th February, 2024	• The women were concern that STD, HIV and AIDS are likely going to spread in the communities, particularly among girls who can easily be deceived with money and material things from the construction workers and labour influx. They also wanted to know if the project will offer employment	• RAAMP will carry out community wide sensitization on the risk of STD, HIV and AIDs. Also, the civil contractor will undertake and implement a code of conduct for its

Date of Consultation	7th February to 15th February, 2024	
Name of Stakeholders	**All priority sites**	
Language	**Pidgin-English, English and Igbo**	
Community/Road and Date	**Key Issues Raised**	**Consultants' Response**
	opportunity to the women. • Women president explained the benefits and the need of the project by the women. It will bcreate easy access to trade, greater income, and access to market. • The youth president promised to support the project and provide security. • No undue levies by community youths (marching grant) • Absence of sacred and restricted areas within the community i.e shrine • Absence forbidden foods or animals.	workers and train them on prevention of GBV and STDs risk. • The right of the women will be protected under this process and implementation.
• Ezeukwu-Ugweke Road (Ifuama Bridge) Bende • Venue - Ezeukwu • Date: 9th February, 2024	• The tenants wanted to know how their loss of business premise is accommodated by the project • Women president explained the benefits and the need of the project by the women. It will bring easy access to trade, greater income, and access to market. • The youth president promised to support the project and provide security. • No undue levies by community youths (marching grant) • Absence of sacred and restricted areas within the community, i.e shrine • Absence forbidden foods or animals.	• The tenant will be paid for loss of business income for the days the project will prevent him from carrying on business or for the time it takes to relocate him/her.
• Alayi-Ezeukwu Road (Bende) • Venue - Alayi Community • Date: 9th February, 2024	• The PAPs requested timely intervention stating that during the rainy season, their shops and houses get flooded. • Women president explained the benefits and the need of the project by the women. It will create easy access to trade, greater income, and access to market. • The youth president promised to support the project and provide security. • Absence of sacred and restricted areas within the community i.e shrine • Absence forbidden foods or animals.	• The consultant informed the PAPs that the SPIU does not intend to delay in the execution of the project. He also informed them that civil works will commence after resettlement has been executed.
• Etitiulo - Ntalakwu (Bende) • Venue - Etitiulo Junction • Date: 9th February, 2024	• Vulnerable persons expressed concern over how their livelihood will be restored in view of the fact that their income based economic trees will be cut down by the project • Women president explained the benefits and the need of the project by the women. It will create easy access to trade, greater income, and access to market. • The youth president promised to support the project and provide security. • Absence of sacred and restricted areas within the community I.e shrine • Absence forbidden foods or animals.	• The vulnerable group were assured that more trees and even improved species will be planted for them to ensure that they are sustained in livelihood
• Umuahia North • Venue - Utali Junction • Date: 9th February, 2024	Some of the stakeholders asked what their lots would be should their farms and other properties get affected by the proposed intervention. • Absence of sacred and restricted areas	• It was explained to them that another team of consultant will prepare a Resettlement Action Plan (RAP) to access and value

Date of Consultation	7th February to 15th February, 2024	
Name of Stakeholders	**All priority sites**	
Language	**Pidgin-English, English and Igbo**	
Community/Road and Date	**Key Issues Raised**	**Consultants' Response**
	within the community, i.e shrine • Absence forbidden foods or animals.	structures and all other cultural activities that would be affected by the proposed intervention based on the designed engineering drawing. •
• Amaokwelu Junction • Venue - Amaokwelu Junction • Date: 9th February, 2024	Sexual relationship with underage or unmarried girls especially teenagers is not allowed. Any girl who gets pregnant before the Fattening process would be ostracized for life and her family shamed. • Absence of sacred and restricted areas within the community I.e shrine • Absence forbidden foods or animals.	• With regards to making advances to women and underage girls, the community members were assured that their views and concerns will be recorded and communicated to the contractors and other consultants that will be visiting •
• Umuakoli Akanu (Ugwunagba) • Venue - Ugwunagba • Date: 10th February, 2024	• The women leader expressed gratitude to the government for being mindful of them in the area. She highlighted some of the challenges imposed by the current condition of the road. • The challenges include difficulties for women in accessing medical facilities during emergencies, difficulties in bringing their goods to the market, high cost of transportation, lack of transportation as cars are avoiding the area due to bad roads, etc. • She expressed that a good road network will help improve their business. • Women who engage in buying and selling of yam, bean, rice and millet and other produce will have easy access to market at a reduced cost as they currently pay between 2000 to 5000 to transport goods to the market. • The women leader further stated the needs of women to include water supply, hospital for our women and children with good Doctors and Nurses. • Absence of sacred and restricted areas within the community I.e shrine • Absence forbidden foods or animals.	• The consultant emphasis that the aim of the ESMP is to scope and seek their opinion on the impact of the project on the livelihood and generally well-being. • Their response shall be used to improve the mitigation measures and develop a robust ESMP for contractors and workers.
• Ukebe Junction - Etiti Akanu Ngwa (Ugwunagbo HQS) • Venue - Ukebe Junction • Date: 10th February, 2024	• There is a shrine (Agbala) within 30m from the RoW and should be kept secred. • No Abortion is allowed • No charm is allowed within the community. • The women leader) further explained the benefits and the need of the project by the women. It will bcreate easy access to trade, greater income, and access to market.	• All cultural heritage and customs shall be respected and preserved. Contractors and employers shall be oriented on these traditions.
• Afor Ogwe Market Junction - Umuazuta (Ukwa West) • Venue - Afor Ogwe Market Junction	• There were concerns by PAPs that the project will lead to loss of farm land and crops along the road corridors which will make them economically worse off. • No undue levies by community youths	• On the concern about the potential loss of farm land and crops, the stakeholders were informed that measures are in place to avoid impacts

Date of Consultation 7th February to 15th February, 2024		
Name of Stakeholders	**All priority sites**	
Language	**Pidgin-English, English and Igbo**	
Community/Road and Date	**Key Issues Raised**	**Consultants' Response**
• Date: 10th February, 2024	(marching grant) • Absence of sacred and restricted areas within the community i.e shrine • Absence forbidden foods or animals.	such as realignment of the route and reduction of the width as much as possible. However, where impacts are unavoidable after necessary engineering adjustment, the PAPs will be consulted and compensated.
• Osaka-Nkalu Roa - Usala-N • Venue - Osaka • Date: 10th February, 2024	• The women were concern that STD, HIV and AIDS are likely going to spread in the communities, particularly among girls who can easily be deceived with money and material things from the construction workers and labour influx. They also wanted to know if the project will offer employment opportunity to the women. • The youth president promised to support the project and provide security. • No undue levies by community youths (marching grant) • Absence of sacred and restricted areas within the community, i.e shrine • Absence forbidden foods or animals.	• RAAMP will carry out community wide sensitization on the risk of STD, HIV and AIDs. Also, the civil contractor will undertake and implement a code of conduct for its workers and train them on prevention of GBV and STDs risk. The right of the women will be protected under this process and implementation.
• Ikwuano Ndi-Nnonio Road • Venue - Ndi-Nnonio • Date: 10th February, 2024	• There were concerns by PAPs that the project will lead to loss of farm land and crops along the road corridors which will make them economically worse off. • No undue levies by community youths (marching grant) • Absence of sacred and restricted areas within the community i.e shrine • Absence forbidden foods or animals.	• On the concern about the potential loss of farm land and crops, the stakeholders were informed that measures are in place to avoid impacts such as realignment of the route and reduction of the width as much as possible. However, where impacts are unavoidable after necessary engineering adjustment, the PAPs will be consulted and compensated.
• Umuahia South (Ahiaukwu-Amangwo-Umuajata, Umudere Amkama (Umudere stream) • Venue - Ahiaukwu • Date: 12th February, 2024	• There were concerns by PAPs that the project will lead to loss of farm land and crops along the road corridors which will make them economically worse off. • New yam festival (Epie) often in the month of August to open to all including visitors. • Women president explained the benefits and the need of the project by the women. It will create easy access to trade, greater income, and access to market. • The youth president promised to support the project and provide security. • No undue levies by community youths (marching grant) • Absence of sacred and restricted areas within the community, i.e shrine • Absence forbidden foods or animals.	• On the concern about the potential loss of farm land and crops, the stakeholders were informed that measures are in place to avoid impacts such as realignment of the route and reduction of the width as much as possible. However, where impacts are unavoidable after necessary engineering adjustment, the PAPs will be consulted and compensated.
• Umuahia North (Agalabono-Umuhu-Ekeoba Express (Ekweze	• The members of the community expressed delight about the intervention. They highlighted some of the challenges currently	• The consultant emphasis that the aim of the ESMP is to scope and seek their opinion

Date of Consultation 7th February to 15th February, 2024		
Name of Stakeholders	**All priority sites**	
Language	**Pidgin-English, English and Igbo**	
Community/Road and Date	**Key Issues Raised**	**Consultants' Response**
stream) • Venue - Agalabomo • Date: 12th February, 2024	encountered due to the nature • The youth president promised to support the project and provide security. • No undue levies by community youths (marching grant) • No shrine, no deity	on the impact of the project on the livelihood and generally well-being. • Their response shall be used to improve the mitigation measures and develop a robust ESMP for contractors and workers.
• Umuahia North (Umuafiaka-Umuokpara (Iyi-Obowo) • Venue - Umuafiaka • Date: 12th February, 2024	• Vulnerable persons expressed concern over how their livelihood will be restored in view of the fact that their income based economic trees will be cut down by the project • The youth president promised to support the project and provide security. • No undue levies by community youths (marching grant) • Absence of sacred and restricted areas within the community, i.e shrine • Absence forbidden foods or animals.	• The vulnerable group were assured that more trees and even improved species will be planted for them to ensure that they are sustained in livelihood
• Agalaba ATO (Ugwunagbo • Date: 13th February, 2024	• Of the existing road – most of the culverts are damaged making the road impassable during the wet season. • The prices of commodities are also very high as there is high demands created by lack of access for produce. • The people believed the rehabilitation of the road will lead to many benefits including ease of access for people as well as ease of movement of produce to the market. • The people appealed to RAAMP to prevail on the contractor to employ labour from their communities as they have plenty drivers, carpenters, builders, and welders. • No undue levies by community youths (marching grant) • Absence of sacred and restricted areas within the community, i.e shrine • Absence forbidden foods or animals.	• The consultant emphasis that the aim of the ESMP is to scope and seek their opinion on the impact of the project on the livelihood and generally well-being. • Their response shall be used to improve the mitigation measures and develop a robust ESMP for contractors and workers.
• Etiti Akanu (Ugwunagbo) • Date: 13th February, 2024 • Venue - Etiti Akanu	• The head of community expressed his happiness for the wonderful developmental project that RAAMP is bringing to their community. He promised to mobilize the community to give their maximum support towards the successful actualization of the project. • The youth leader expressed concern about the commencement of the project as it is long overdue. • No undue levies by community youths (marching grant).	• The consultant emphasis that the aim of the ESMP is to scope and seek their opinion on the impact of the project on the livelihood and generally well-being. • Their response shall be used to improve the mitigation measures and develop a robust ESMP for contractors and workers.
• Isiala Ngwa South (Nwosi community) • Date: 13th February, 2024 • Venue - Nwosi community	• The Community members were grateful and looking forward to the fruition of the project. They overwhelmingly pledged their support. The only concern expressed by the people was about compensation for assets that will be removed or damaged because of	• The SPIU assured the people of the community that adequate compensation will be paid for any assets that will be removed or damaged prior to project

Date of Consultation	7th February to 15th February, 2024	
Name of Stakeholders	**All priority sites**	
Language	**Pidgin-English, English and Igbo**	
Community/Road and Date	**Key Issues Raised**	**Consultants' Response**
	the project's implementation. • No undue levies by community youths (marching grant).	implementation. It is crucial to understand that compensation would be handled in accordance with Nigeria's legal system, the guiding principles of the World Bank, and global best practices.
• Akanu Ukwu community (Ugwunagbo) • Date: 13th February, 2024 • Venue - Akanu Ukwu community	• The Community members were grateful and looking forward to the fruition of the project. • They also pledged their maximum supports to ensure successful implementation. • They raised concerns that Implementation is the main problem with projects of this kind as the project may not see the light of the day. • They requested that RAAMP should engage locals as semi-skilled and unskilled workers during construction works. • They advocated that locals should be properly sensitized on the need to understand that the project is a value addition initiative rather than an immediate money-making venture. • They also advised the SPIU to ensure adequate provision is made for security during project implementation to deal with unforeseen security challenges	• The SPIU assured the community that the project will be implemented. • The sensitization and several engagements are part of the process and are necessary to ensure project sustainability. • The SPIU emphasized that engagement of the local workers is part of the project and will be ensured. • Security arrangements will be put in place, as is typical for RAAMP operations, to guarantee the security of personnel and equipment while the project is being implemented.
• Isiala Ngwa South • Venue - Umuapu community • Date: 13th February, 2024	• The people expressed that the rehabilitation of the road is the main priority of the community. • The echoed that the construction of the road will alleviate their pain and long-term suffering. • The reiterated that their women sometimes give birth on their way to the hospital due to the inaccessible nature of the road. • The expressed utmost need for the road as well as water supply and hospital. • No undue levies by community youths (marching grant)	• The consultant emphasis that the aim of the ESMP is to scope and seek their opinion on the impact of the project on the livelihood and generally well-being. • Their response shall be used to improve the mitigation measures and develop a robust ESMP for contractors and workers.
• Umuahia North • Venue - Agalabano-Umuhu central school • Date: 14th February, 2024	• There were concerns by PAPs that the project will lead to loss of farm land and crops along the road corridors which will make them economically worse off. • New yam festival (Epie) often in the month of August to open to all including visitors. • Women president explained the benefits and the need of the project by the women. It will create easy access to trade, greater income, and access to market.	• On the concern about the potential loss of farm land and crops, the stakeholders were informed that measures are in place to avoid impacts such as realignment of the route and reduction of the width as much as possible. However, where impacts are unavoidable after necessary

Date of Consultation	7th February to 15th February, 2024	
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Community/Road and Date	**Key Issues Raised**	**Consultants' Response**
	• The youth president promised to support the project and provide security. • No undue levies by community youths (marching grant)	engineering adjustment, the PAPs will be consulted and compensated.
• Umuahia North • Venue - Ahiaukwu • Date: 14th February, 2024	• Vulnerable persons expressed concern over how their livelihood will be restored in view of the fact that their income based economic trees will be cut down by the project • No undue levies by community youths (marching grant)	• The vulnerable group were assured that more trees and even improved species will be planted for them to ensure that their livelihood are sustained.

The communities' expectations during construction and operation phases are as follows:

1. Employment of the local during construction and operation phases of the project should be prioritized;
2. For safety and security of workers, machinery and equipment, the host communities are willing to be engaged for proper policing;
3. Adequate compensation to people whose properties will be lost due to the intervention, especially along the channel of water distribution. This will be captured in the report
4. With regards to the creation of alternative routes, the beneficiaries were informed that alternative routes will be captured in the engineering designs for all the river crossings to ease their movement during construction.
5. The potential impact of construction on the River was raised. The beneficiaries were informed that mitigation measures will be developed to reduce this impact. This also applies to other environmental impacts connected to the project

In general, the host communities are peace-loving people. Also, the communities assured the ESMP team of total cooperation with the State's coordinators, contractors and consultants. They promised adequate security and protection of lives, properties and equipment during construction and operation phases.

In summary, issues raised at the stakeholders' engagement are highlighted below;

S/N	Issues Raised at the Stakeholders' Engagement	How Issues were Addressed
1	Cconflicts due to lack of opportunities for their youths to work during construction	SPIU assured the people that measures will be put in place to ensure locals are engaged as semi-skilled labour and skilled labour (where the required expertise can be found in the communities), and this will form a part of the contractual requirements.
2	Compensation of affected assets	The people were also assured that RAP will be prepared and the people will be duly compensated for all affected assets before construction.
3	Clear communication regarding the commencement of the road to enable the people harvest their produce along the road.	SPIU addressed all concerned raised and assured the communities that they will be carried along and consulted before and during project implementation through a community laison person who will be appointed by the community.

S/N	Issues Raised at the Stakeholders' Engagement	How Issues were Addressed
4	Influx of construction workers which may lead to introduction of vices into the communities, gender-based issues particularly Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH) of children/girls, increased prevalence of sexually transmitted diseases and security challenges.	The people were assured that measures will be put in place to prevent SEA/SH and as part of these measures, communities will be sensitized and contractors will be made to sign code of conducts.

CHAPTER NINE

SUMMARY AND RECOMMENDATION

The study assessed the basic biophysical and social baseline information of the proposed intervention site, identified susceptible environmental parameters, which may be positively and or negatively impacted upon at different phases of the project. It also presented the necessary mitigation measures for such identified impacts. An assessment of the ground state of affairs illustrates that the nature and extent of accessibility is poor within the project sites. The proposed intervention works will therefore positively impact on human lives and improve their productivity. Similarly, the residents of the communities within the project sites have also expressed their acceptance for the intervention. Hence, the proposed intervention project is a welcome development to the affected communities.

9.1 RECOMMENDATION

The following recommendations are for the consideration of the Abia State RAAMP SPIU. The recommendations are geared towards ensuring the improvement of decisions and filling of gaps identified by the ESMP study.

- There is need for more public consultation and awareness to ensure the buy-in and ownership of the proposed projects by the host communities.
- There is a need to create more awareness on the anthropogenic causes of soil erosion and flooding with a bid to ensure project sustainability after the river crossing rehabilitation works.
- Efforts should be made to increase climate resilience or reduce climate vulnerability of the communities around the project area by incooperating climate resilient features like elevated structures to protect against flooding, good drainage system, scour protection, sea level rise considerations, hydrological analysis, redundancy and backup systems, regular maintenance and inspection in the design, construction and operations.
- Waste management is also a serious issue in the area as residents tend to dump their refuse in the drainages. These should be discouraged and programme designed to enlighten them on best practice for refuse disposal.
- All contractors must sign the contractor's Code of Conduct' detailing their responsibilities for implementing the contractor's commitments and enforcing the responsibilities in the 'Individual Code of Conduct'.
- All employees must sign the project's 'Individual Code of Conduct' confirming their agreement not to engage in activities resulting in GBV/SEA/SH or VAC.
- Displaying the Contractor and Individual Codes of Conduct prominently and in clear view at workers' camps, offices, and in public areas of the work space.
- Examples of areas include waiting, rest and lobby areas of sites, canteen areas, health clinics.
- Ensure that posted and distributed copies of the Contractor and Individual Codes of Conduct are translated into the appropriate language of use in the work site areas as well as for any international staff in their native language.
- That the cotractor effectively implements the Action Plan, providing feedback to the SPIU for improvements and updates as appropriate. Contractors should be encouraged to recruit local laborers and, when feasible, certain technical workers from project host communities during project implementation. This approach aims to minimize the reliance on migrant workers, thereby mitigating potential threats to community culture, health, safety, and security. Additionally, it is expected to stimulate local

socioeconomic activities, enhance livelihoods, and contribute to the reduction of poverty in the affected communities.

- All employees attend an induction training course prior to commencing work on site to ensure they are familiar with the contractor's commitments and the project's GBV/SEA/SH and Codes of Conduct.
- The construction site will be fenced off with temporary fencing to all surrounds. Site fencing will prevent any access from un-authorized entry to site. Construction site access is through site entry only.
- The construction vehicle site entry will be via the Road and will make use of driveway access then flowing across a vacant allotment to an existing bitumen paved parking area. This makes use of the existing site conditions and reduces the impact to the adjoining facilities. All of the construction deliveries and access will be via this entry.
- Clear signage will be erected outlining the construction entry. Construction pedestrian / workers access will be separated from vehicle access by way of separate pedestrian entry from adjoining footpath. Workers will have a direct footpath access to site amenities from pedestrian entry gate.
- A delivery area will be located within the site compound. All material deliveries for the works will be made via the entry/entry via the Road. Vehicular movements around the building will be managed by trained traffic management operatives. All vehicles will enter and exit the construction site in forward facing direction.
- Traffic control during loading and unloading inside the construction site will be carried out by contractor's representative.
- A man and materials hoist will be used to provide safe access on the floors and the movement of smaller materials. A safe pedestrian access will be provided to the hoist location.
- The Contractor shall be required to provide appropriate information, training, instruction or supervision necessary to protect all persons from risks to their health and safety.
- The Contractor must also ensure construction induction training is provided to workers who carry out construction work.
- Use water suppression to prevent dust emission.
- Maintain vehicles and machineries to reduce emission and noise.
- Maintain low speed to reduce dust and gaseous emission.
- Vegetal waste shall be supplied to farmers for use as compost

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APPENDICES

APPENDIX 1:

TERMS OF REFERENCE

RURAL ACCESS & AGRICULTURAL MARKETING PROJECT (RAAMP) PREPARATION OF ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP) FOR SPOT IMPROVEMENT (12Nos- 64.362KM), BACKLOG MAINTENANCE (10Nos – 55.60KM), UPGRADE (11Nos – 54.16KM) AND CROSS DRAINAGE (9Nos - 79M) UNDER PHASE 1 INTERVENTION UNDER THE ABIA STATE RAAMP

I. Background and Context

1. The Federal Government of Nigeria (FGN) has initiated the preparation of the Rural Access and Agricultural Marketing Project (RAAMP), the successor of the Second Rural Access and Mobility Project (RAMP-2). The project will be supported with financing from the World Bank and the French Development Agency (AFD) and will be guided by the Government's Rural Travel and Transport Policy (RTTP). The lead agency for the Federal Government is the Federal Department of Rural Development (FDRD) of the Federal Ministry of Agriculture and Rural Development (FMARD). The Federal Project Management Unit (FPMU) is overseeing the project on behalf of FDRD, while the respective state government of nineteen (19) participating states will implement it. The project development objective of RAAMP is to improve rural access and agricultural marketing in selected participating states while strengthening the financing and institutional base for effective development, maintenance and management of the rural road network. The participating states are: eleven northern states (Bauchi, Gombe, Kaduna, Kano, Katsina, Kebbi, kogi, kwara, Niger, Plateau and Sokoto) and eight southern states (Abia, Akwa Ibom, Ebonyi, Ekiti, Ogun, Ondo, Osun and Oyo).

2. The Nigeria road network is relatively dense consisting of about 194,000 km of roads. This includes 34,000 km of federal roads, 30,000 km of state roads and 130,000 km of registered rural roads. The road density is about 0.21 km of roads per square kilometre. In spite of the relatively high road density, the rural accessibility index for Nigeria (defined as the proportion of the rural population living within 2 kilometres away from an all-weather road) is low, at only 25.5percent, leaving about 92 million rural dwellers unconnected (RAAMP PAD). Rural access is limited where the poor population is concentrated. These considerations demand the expansion and improvement of rural road network, and, also, conservation of rural road/transport assets.

3. Furthermore, an improved rural access will enhance the agricultural potentials and marketing opportunities for the agrarian rural communities in Nigeria and, by extension, help in the improvement of livelihoods of the rural population.

4. Out of the total project outlay of US$575 million, the Association, the AFD and the GoN will contribute US$280 million, US$230 million (Euro 200 million equivalent) and US$65 million respectively. These contributions are equivalent to 49 percent, 40 percent and 11 percent of the total cost respectively for the Association, the AFD and GoN (RAAMP PAD).

5. RAAMP has four components however this Consultancy will be focused on the following component;

Component A: Improvement of Rural Access and Trading Infrastructure – activities include the upgrading of rural roads, construction of short-span critical cross-drainage structures, physical improvement of agro-logistics centers and support to the costs of consultancies and supervision of construction activities.

Component B: Asset Management, Agro-logistics Performance Enhancement and Sector Reform-activities include support to maintenance and spot improvement of rural roads, support to Agro-logistics performance enhancement activities which include support to farms

and cooperatives to reduce post-harvest losses and support to SMEs at the agro-logistics centers and provision of TA support to state level road sector reforms activities

Component C: Institutional Development, Project management and Risk Mitigation- activities include institutional development and project management and risk mitigation and resiliency.

Component D: Contingent Emergency Response, this component will address any unforeseen emergency infrastructure needs following a natural disaster.

6. Considering the nature of these works, their scope, geographic coverage and client's capacity, the following World Bank's environmental and social safeguards policies are triggered: Environmental Assessment OP/BP 4.01, Natural Habitats OP/BP 4.04, Physical Cultural Resources OP/BP 4.11 and Involuntary Resettlement OP/BP 4.12. The project has been assigned an Environmental Assessment (EA) Screening Category "B". This rating is based on the scope of the project, which indicates limited adverse environmental and social impacts. It is expected that minimal adverse negative impacts are likely during project implementation; especially as the project does not contemplate constructing new roads and will essentially remain within the existing right-of-way. At project preparation, an Environmental and Social Management Framework (ESMF) and Resettlement Policy Framework (RPF) were prepared. These safeguard instruments are frameworks that need to be translated into specific cost, measurable and monitorable actions for specific sites interventions through the preparation of site specific management and action plans. In general, the ESMF specifies the procedures to be used for preparing, approving and implementing environmental and social assessments (ESMPs, or alternatively both EMP and SMP) for individual civil works packages developed for each project. The Resettlement Policy framework is prepared as a stand-alone document to provide guidance, and a procedure and process for preparing ARAP/RAP which may be carried out when the subcomponents' locations are known and more detailed information on subcomponents become available.

II. BRIEF INFORMATION ON THE PROJECT AREA

7. The project area is located in Abia State, South Eastern Nigeria. It is bordered to the north and northeast by the states of Enugu and Ebonyi, Imo state to the west, Cross river state to the east, Akwa Ibom to the southeast and Rivers state to the south. The state has 17 LGAs with a total land area of 6,320 square kilometers. The proposed interventions will cut- across the entire 17 local government areas which are; Arochukwu, Ohafia, Bende, Isuikwuato, Umunneochi, Umuahia North, Umuahia South, Ikwuano, Isialangwa North, Isialangwa South, Osisioma, Obingwa, Aba North, Aba South, Ugwunagbo, Ukwa North and Ukwa South local government areas. Majority of the local government areas are rural except Umuahia North, Aba North and Aba South.

III. Description of Proposed Intervention

8. The Abia state RAAMP proposes to intervene in 33Nos. roads totaling 174.122km and 9 Nos. river crossings totaling 79m (Spot Improvement 64.362km, Backlog Maintenance 55.60km, Upgrade 54.16km, Cross Drainage 79m) as phase 1 roads and cross drainage structures to be intervened under the rehabilitation/upgrading work package. The work package would involve engineering works such as, but not limited to, the following:

Spot Improvement, Backlog Maintenance/Rehabilitation and Upgrade Works Packages

- Site clearance

- Earthworks (i.e. removal of unsuitable material and filling of lateritic material)
- Re-sealing / overlay of cracks and eroded carriageway sections
- Potholes patching
- Pavement works (i.e. construction of sub-base and base courses, priming, and thin asphalting).
- Improvement / provision of culverts/ drains /slopes/embankments/other structures.
- Complete or slight resurfacing
- Widening of shoulders of the existing road.
- Miscellaneous works (i.e. provision of road markings, signs and other infrastructure).

Cross Drainage Intervention Work Package

- Site clearance
- Breaking of ground and installation of cross drainage foundation (Installation of pillars)
- Installation of piers and cross drainage support
- Installation of superstructures (support beams and latticework)
- Installation of crossing bars
- Miscellaneous works (i.e. signs and other infrastructure).

8. These activities have the potential to generate environmental and social impacts including noise and dust generation; Delay in travel time due to traffic obstruction, accident risks to road users, potential pollution to water resources from poor waste management, community health & safety risks such as accidents/spread of STDs, risks of GBV/SEA/SH, disruption of social amenities like electric power poles etc.

9. In line with the RAAMP ESMF, an Environmental and Social Screening was conducted in February 2023 to ascertain the eligibility of the roads based on the environmental and social sensitivities, and the need for preparation of any site-specific instrument or otherwise. The screening identified the need to prepare an Environmental and Social Management Plan (ESMP) to adequately address the site-specific impacts envisaged due to the project activities.

11. Against this backdrop, Abia state RAAMP is desirous to engage the services of a consulting firm to prepare an Environmental and Social Management Plan (ESMP) for the selected Phase 1 roads and cross drainage structures (totaling 174.122Km road and 79m cross drainage) respectively prior to the commencement of the civil works (list of selected roads and river crossings is provided in Annex 1).

IV. Objectives of the ESMP

10. The specific objective of the ESMP will be to assess the potential environmental and social impacts of the proposed works as described in the detailed preliminary designs and prepare a detailed Environmental and Social Management Plan (ESMP) and develop appropriate mitigation measures to address the negative impacts. The ESMP will also outline mitigation costs & responsibilities, and a monitoring plan which will include monitoring parameters, frequency, responsibility and costs. The ESMP will advise any required updates to the engineering design based on impacts reduction strategies and mitigation measures, prior to finalization of the engineering design. Furthermore, the costs for mitigation of the ESMP which is due to the contractor will be embedded in Bill 1 in the standard bidding documents for contractors to enable adequate consideration and costing for E&S management in their bids.

V Scope of Works

13. The assignment is for the preparation of site specific ESMP for the selected roads for Backlog Maintenance, Spot Improvement, Cross Drainage Structures and Upgrading that should consist of a well-documented set of mitigation measures, monitoring, and institutional actions to be taken before and during implementation to eliminate adverse environmental and social impacts, offset or reduce them to acceptable levels. It should be also include the measures required to implement these actions, costing, and responsibility, addressing the adequacy of the monitoring and institutional arrangements in the intervention site.

14. The ESMP consultant will work in close collaboration with the engineering design consultants and Abia state RAAMP State Project Implementation Unit's (SPIU) safeguard team, and with other actors as directed by the SPIU. In that respect the sequencing of the technical/feasibility studies and the ESMP will be critical. The ESMP consultant will have to consider the technical variants of the proposed activities and also in return inform the technical design consultants of any major constraint that may arise due to the social and environmental situation on ground.

The specific task for the consultancy assignment shall include but not limited to the following:

a) Review the existing PAD, ESMF and RPF prepared for the project;
b) Review of the Project's PIM and Road Intervention Catalogue;
c) Review Environmental and Social Safeguards policies of the World Bank triggered on the project;
d) Review of preliminary engineering designs and technical /feasibility studies for the proposed project locations;
e) Describe the proposed project by providing a description of the project relevant components and presenting schematic diagrams, maps, figures and tables.
f) As appropriate in highly sensitive sites, describe and analyse the physical, biological and human environment conditions in the study area before project implementation. This analysis shall include the interrelations between environmental and social components and the importance that the society and local populations attach to these components, in order to identify the environmental and social components of high value or presenting a particular interest.
    - The following biophysical issues shall be taken into consideration; Climate, Air Quality, erosion/flooding patterns, drainage pattern, water quality (surface and aquifer characteristics), noise level, Soil, biological aspects: flora and fauna, endemic and endangered species.
g) Identify the policy, legal and administrative framework relevant to the sub-projects.
h) Define and justify the project study area for the assessment of environmental and social impacts.
i) Assess the potential environmental and social impacts related to project activities;
j) Define appropriate mitigation/enhancement measures to prevent, minimise, mitigate, or compensate for adverse impacts or to enhance the project environmental and social benefits, including responsibilities and associated costs.
k) Review institutional assessment and framework for environmental and social management.
l) Identify responsibilities and actors for the implementation of proposed mitigation measures
m) Assess the capacity available to implement the proposed mitigation measures and identify institutional responsibilities and needs for capacity building, if necessary, to implement the recommendations of the environmental and social assessment and associated costs

n) The following socio-economic issues shall be addressed in the ESMP:
    - Using a mixed methods approach, the study shall establish the social baseline information before project intervention. Social baseline parameters to be determined for each of the sub-project sites include;
        - Location
        - Community Organisation and Governance
        - Pattern of social networks and interaction in the project area;
        - Access/Transport preferences of residents of project communities
        - population characteristics (number, demographic, literacy levels, other social characteristics, distribution of vulnerability within population around the project sites);
        - economy (prevalent occupations, employment rate, income distribution);
        - Availability of social services (health, education)
        - public services (types, capacity, and adequacy)
        - housing type;
        - Absorptive capacity of local communities for project-induced labour influx (worker/family).
        - Pattern of conflict and conflict resolution mechanisms in project communities
        - Factors driving Gender-Based Violence and Sexual Exploitation & Abuse risk in project areas
    - A summary of the views of the population including vulnerable groups, determined through documented discussions with local communities.
    - Cultural: Summarize the possible effects of the project on historical/archaeological sites, heritage/artefacts, native religious or harvest sites of the affected communities and identification or development of mechanisms for handling chance findings.

o) Carry out consultations with primary and secondary stakeholders in order to obtain their views about the project. These consultations shall occur during the preparation of the ESMP to identify key environmental and social issues and impacts, and after completion of the draft ESMP to obtain comments from stakeholders on the proposed mitigation/enhancement measures

p) Develop a Labor Influx, The Consultant shall also document how to manage risk related to Gender Based Violence (GBV) INCLUDING Sexual Exploitation and Abuse, and sexual harassment taken cognisance of (i) Develop a Labour Influx, (ii) Security issues, (iii) project GBV accountability and response Framework. In doing these, he/she shall develop a labour influx, SEA/SH and Occupational Health and Safety Response Plan

q) Develop a Grievance Redress Mechanism (GRM) which will be applied on the project. A GBV-specific Grievance Mechanism will also be developed to address complaints related to forms of GBV on the project.

r) For ESMPs to capture the socio-economic, cultural and risk context for women, they should consider:
    - Existing gender-specific statistics;
    - Data and/or information on cultural and socio-economic practices for women;
    - Information obtained from consultations carried out in the preparation of the project.

s) Prepare an Environmental and Social Management Plan (ESMP). The ESMP should identify:

- The potential environmental and social impacts resulting from project activities
- The proposed mitigation measures;
- The monitoring indicators;
- The institutional responsibilities for monitoring and implementation of mitigation measures;
- The costs of mitigation, monitoring activities and implementing the ESMP; and
- A calendar for implementation.

In executing the above task, the consultant shall carry out consultations with primary and secondary stakeholders in order to obtain their views about the project. These consultations shall occur during the preparation of the ESMP to identify key environmental and social issues and impacts, and after completion of the draft ESMP to obtain comments from stakeholders on the proposed mitigation/enhancement measures.

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

- A summary of the impacted communities for the project: Location Access, Population (number, demographic and social characteristics); economy (employment rate, income distribution); services (types, capacity, and adequacy) and housing. The concern is the ability to provide workforce, service new development and absorb and adjust to growth (worker/family).
- A summary of the views of the population including vulnerable groups, determined through thoroughly documented discussions with local communities. These meetings and discussion must be documented and should show how issues and problem raised are or will be resolved (note that a Resettlement Action Plan (RAP) could be developed for the site, and this is covered under separate ToR.
- Cultural: Summarize the possible effects of the project on historical/archaeological sites, heritage/artefacts, native religious or harvest sites of the affected communities and identification or development of mechanisms for handling chance findings.

Information will be gathered from field surveys and secondary data sources (interviews, structured questionnaires, in –depth interviews and focus group discussions).

Ethical requirements

Before undertaking any activity, the team will make sure that it understands all ethical considerations related to working GBV (in particular Sexual Exploitation and Abuse). The consultant should not collect any primary data, they should NOT_conduct interviews or research using the SEA survivors and will only make use of secondary sources and data. This is with the objective to minimize harm to women and children.[9]

The typical contents of an ESMP Report are presented hereafter in section XI. It shall be noted that the presentation of the Report may be adapted pending on the nature and specific requirements of the project. Also, the ESMP report should not be more than 50 pages with all other documentation in the annex. This is important to enable the engineers review the report during project implementation.

VI. Qualification of consultant

- The ESMP will be prepared by a firm consultant.

[9] *"A woman may suffer physical harm and other forms of violence if a partner finds out that she has been talking to others about her relationship with him. Because many violent partners control the actions of their girlfriends of wives, even the act of speaking to another person without his permission may trigger a beating." For more information on ethical considerations see: VAWG Resource guide, http://www.vawgresourceguide.org/ethics*

- The firm consultant must have a working knowledge of World Bank Operational safeguards policies gained through hands-on experience in the preparation and implementation of environmental and social management plans in an urban/rural area.
- The lead consultant personnel must have at least a master's degree in environmental sciences, natural sciences, environmental management or similar field
- The firm must have a minimum of 7 years' work experience in civil works contracts requiring Environmental management procedures including mitigation measures
- Proven skill in World Bank (WB) Environmental and Social safeguard policy implementation including addressing cross-cutting issues in development project and must have prepared at least three (3) ESMPs for three different World Bank funded projects.
- Qualified staff with experience in social safeguards/socioeconomics, occupational Health, SEA/GBV and Safety/HSE and relevant certification
- Excellent communication and report writing skills

VII. Staffing Requirement

The consulting firm is expected to have the following staff on the team for preparation of the ESMP with the following minimum requirement:

1. **Lead Consultant (**Environmental and Social Management Specialist) - MSc in Environmental Management Fields or similar qualification: At least 10 years' working experience, – 5 years specific experience in the preparation of environmental and social assessment reports (ESIAs/ESMPs). – Participation in similar role in at least three World Bank funded projects in the last 5 years.
2. **Environmental Scientist**: Advance degree in environmental sciences or a similar discipline – At least 5 years working experience with specific experience in the preparation of ESIA/ESMP reports. – Participation in similar role in at three World Bank funded projects in the last 3 years.
3. **Social Expert**: Advance degree in Sociology or related discipline. -at least 5 years work experience with specific experience in similar assignment. – Participation in similar role in at least three World Bank funded projects in the last 3 years.
4. **HSE Expert**: Advance degree in Environmental sciences, Engineering or similar discipline. -HSE certification. -at least 5 years work experience with specific experience in similar assignment. - Participation in similar role in at least three World Bank funded projects in the last 3 years
5. **Design Engineer**: Degree in engineering, at least 5 years work experience in with specific experience in civil works/road construction projects. - Participation in similar role in at least three World Bank funded projects in the last 3 years.
6. **Mapping/GIS Specialis**t- BSc. GIS/Remote Sensing or other related courses, at least 5 years working experience with specific experience in similar assignment – Participation in similar role in at three World Bank funded projects in the last 3 years – Evidence of familiarity with GIS, Arc Info, AutoCAD and other Geo Spatial Design Software.
7. **Stakeholder Consultation Specialist:** - Degree in Social Science/Mass Communication or related discipline: At least 5 years working experience with specific experience in similar assignment. – Participation in similar role in at least three World Bank funded projects in the last 3 years.
8. **Gender Based Violence (GBV) Specialist**: BSc Sociology or related discipline, at least 5 years work experience with specific experience in similar assignment. –

Participation in similar role in at least three World Bank funded projects in the last 3 years.

VIII. Deliverables and Timing

The assignment shall be for duration of six weeks. The following deliverables will be submitted.

- **Inception Report**: An Inception report detailing the work plan for execution, review of relevant project documents and preliminary impacts identified shall be submitted to the SPIU one (1) week after contract signing. Two (2) hard copies and soft copy shall be submitted to the SPIU.
- **Draft Report**: A draft ESMP report shall be submitted to the Abia SPIU for review three (3) weeks from the date of contract signing. Two (2) hard copies and soft copy shall be submitted to the SPIU.
- **Final Report**: A Final ESMP report considering all comments from the FPMU and World Bank shall be submitted within six (6) weeks for clearance and No-Objection from the World Bank. Five (5) hard copies and soft copy shall be submitted to the SPIU.

IX. Payment Milestone

- 20% upon submission of Inception Report
- 50% upon submission and acceptance of the Draft ESMP Report
- 30% upon approval/clearance of the Final ESMP Report

X. Conduct of the Consulting Firm

- The firm consultant will at all times be expected to carry out the assignment with the highest degree of professionalism and integrity. The Consultant will be expected to conduct his duties in an open and transparent manner.
- The Consultant will not under any circumstance, take any actions or be seen to be taking any actions which may hinder or prevent the Abia State RAAMP from executing this assignment.
- The Consultant will study all Abia State RAAMP guidelines and policies, and will be expected to ensure that the assignment is concluded with the strictest adherence to all such policies and regulations.
- The Consultant will not under any circumstances take any material decision pertinent to this assignment without the express permission and written consent to the Project Coordinator or any authorized representative of Abia RAAMP SPIU.
- The Consultant will not in any circumstances, discuss, divulge, or use any information regarding this assignment or any other transaction conducted without the express written permission of an authorized representative of Abia RAAMP.
- The Consultant must not have a conflicting assignment with government agencies, development partners etc. If a conflict of interest is discovered, the contract shall be terminated with the consultant.
- The Consultant must avoid all potential conflict of interest situations.

XI. DURATION

The duration of the assignment shall be for a period of six (6) weeks.

Project Specific Background Documents

- Environmental and Social Management Plan (ESMP)
- Resettlement Policy Framework (RPF)
- RAAMP Project Appraisal Document (PAD)
- RAAMP Project Implementation Manual (PIM)
- Draft Engineering Design Report.

XII. Report Outline

LIST OF TABLES
LIST OF FIGURES
LIST OF PLATES
ABBREVIATIONS AND ACRONYMS
EXECUTIVE SUMMARY
CHAPTER ONE: INTRODUCTION

- Background
- Description of the proposed intervention
- Scope of the assignment
- Rationale for ESMP
- Objectives of the ESMP

CHAPTER TWO: ADMINISTRATIVE & REGULATORY FRAMEWORK

- Discussion of the World Bank safeguard policies triggered by RAAMP and the proposed activity
- Summary of relevant local and federal policy, legal, regulatory, and administrative frameworks

CHAPTER THREE: PROJECT DESCRIPTION

- Description of the Proposed Project, Project Component and Activities

CHAPTER FOUR: DESCRIPTION OF PROJECT ENVIRONMENT

- Description of the area of influence and environmental baseline conditions including climate, air quality, erosion/flooding patterns (vulnerability assessment), drainage pattern, water quality (surface and aquifer characteristics), soil, biological aspects: flora and fauna, endemic and endangered species.
- Analysis of socio-economic baseline conditions including livelihoods, economic opportunities, income, gender characteristics, age profile, health, transport access, existing community structures - at community, household, and individual levels

CHAPTER FIVE: POTENTIAL IMPACTS AND MITIGATION

- Methods and techniques used in assessing and analyzing the environmental and social impacts of the proposed project
- Discussion of the potentially significant adverse environmental and social impacts of the proposed project
- Discuss the Climate Change Impact and its Mitigation Measures
- Labour influx
- Description of the GBV risk (including a GBV Action Plan), and more broadly the ESHS expectations, and include appropriate mitigation measures. The basis of the GBV Action Plan should be provided as part of the ESMP.[10]

[10] *The GBV Action Plan needs to include specific* ***arrangements*** *for the project by which GBV risks will be addressed. This includes considerations such as: a) Awareness Raising Strategy, which describes how workers and local communities will be sensitized to GBV risks, and the worker's responsibilities under the CoC; b) GBV Services Providers to which GBV survivors will be referred, and the services which will*

CHAPTER SIX: GRIEVANCE REDRESS MECHANISM

- Description of grievance redress mechanism (in alignment with the ESMP and Project Implementation Manual) to address situations of conflicts or disagreements about some of the project activities

CHAPTER SEVEN: ENVIRONMENTAL & SOCIAL MANAGEMENT PLAN[11]

- Discussion of the proposed mitigation measures
- ESMP table
- Institutional responsibilities and accountabilities
- Capacity building plan
- Climate Change Adaptation Plan
- Monitoring and evaluation plan, including suitable indicators for the proposed project
- Costs of implementing the ESMP

CHAPTER EIGHT: PUBLIC CONSULTATION

- Public consultation plan
- Presentation of consultations with relevant stakeholders and affected persons

CHAPTER NINE: CONCLUSION AND RECOMMENDATIONS

REFERENCES

APPENDIX 1: TERMS OF REFERENCE FOR THE ESMP

APPENDIX 2: SOCIO-ECONOMIC DATA COLLECTION INSTRUMENTS

APPENDIX 3: ATTENDANCE AT COMMUNITY CONSULTATIONS

APPENDIX 4: GENERAL ENVIRONMENTAL MANAGEMENT CONDITIONS FOR CONSTRUCTION CONTRACTS

APPENDIX 5: WASTE MANAGEMENT PLAN

APPENDIX 6: OCCUPATIONAL HEALTH AND SAFETY (OHS) PLAN

APPENDIX 7: BORROW PIT MANAGEMENT PLAN

APPENDIX 8: TRAFFIC MANAGEMENT PLAN (TMP)

APPENDIX 9: CODE OF CONDUCT FOR GENDER-BASED VIOLENCE

APPENDIX 10: CAMPSITE MANAGEMENT PLAN

APPENDIX 11: LABOUR INFLUX PLAN

APPENDIX 12: COMMUNITY AFFAIRS, SAFETY, HEALTH, ENVIRONMENT AND SECURITY (CASHES) PLAN

APPENDIX 13: SAMPLE CHANCE FIND PROCEDURE FOR THE PROTECTION OF PHYSICAL RESOURCES

APPENDIX 14: SAMPLE OUTLINE FOR SECURITY RISK MANAGEMENT PLAN

*be available; and, c) GBV **Allegation Procedures:** How the project will provide information to employees and the community on how to report cases of GBV CoC breaches to the GRM.*

[11] *The ESMP should take into account that designation of responsibilities between contractor and Borrower may vary on a project-specific basis, in order to improve effectiveness and efficiency in implementation and associated results. To this end, the ESMP should follow the guidance in table 5 in the Labour influx guidance note : http://pubdocs.worldbank.org/en/497851495202591233/Managing-Risk-of-Adverse-impact-from-project-labor-influx.pdf*

APPENDIX 2: SOCIO-ECONOMIC DATA COLLECTION INSTRUMENTS

SOCIOECONOMIC SURVEY QUESTIONNAIRE FOR RURAL ACCESS & AGRICULTURAL MARKETING PROJECT (RAAMP)

Instruction: Please, Tick, write or fill in your response/answer to the questions as appropriate.
Questionnaire Number: ……
Name of Community: ……...
Settlement Type: ……
(Indicate if: Town, Village, Fishing Port, Hamlet, other)
L.G.A: ……
District/Group: ……
Name of Interviewer: ……
Date: ……

Section A: Respondent's Personal/Socioeconomic Data
DEMOGRAPHY

1. What is your sex?
1.1. Male
1.2. Female

2. Which of these age brackets do you belong?
2.1 Less than 20 years
2.2 20-29 years
2.3 30-39 years
2.4 40-49 years
2.5 50-59 years
2.6 60-69 years
2.7 70 years and above

3. Which of these is the highest level of education you have completed?
3.1 Primary school
3.2 Secondary school
3.3 Vocational/Technical school
3.4 Tertiary school
3.5 No Formal Education
3.6 Any other (please specify) ……

4. Which is the highest level of education completed by your spouse?
4.1 Primary school
4.2 Secondary school
4.3 Vocational/Technical school
4.4 Tertiary school
4.5 No Formal Education

4.6 Any other (please specify) ……

5. What is your marital Status?

5.1 Single
5.2 Married
5.3 Divorced
5.4 Separated
5.5 Widowed

6. Age and Sex structure of household members

Age in years	Male	Female	Total
0-4			
5-12			
13-18			
19-25			
26-59			
60-69			
70+ and above			

7. How many of your children presently attend the following categories of schools?

School	Boys	Girls	Total
Primary			
Secondary	`		
Vocational/Tech			
Tertiary			
Any other			

8. What is your religion
8.1 Christian
8.2 Islam
8.3 Traditionalist
8.4 Others

9. How many years have you lived in this settlement/community?
9.1 Less than 1 year
9.2 1-5 years
9.3 6-10 years
9.4 11-15 years
9.5 16-20 years
9.6 Above 20 years
9.7 Since birth

10. Which of these is your main Occupation?
10.1 Farming
10.2 Fishing
10.3 Technician/Artisan
10.4 Trading
10.5 Business/Contractor
10.6 Civil Servant
10.7 Industrial Work (Please specify) ……
10.8 Student/Apprentice/Retired ……
10.9 No Occupation/Unemployed
10.10 Others (specify): ……..

11. How much do you earn, on the average, as income in a month from your main occupation?

11.1 Less than ₦ 5,000
19.1 ₦ 5,000- 10,000
19.2 ₦ 10,001-15,000
19.3 ₦ 15,001-20,000
19.4 ₦ 20,001-25,000
19.5 ₦ 25,001-30,000
19.6 ₦ 30,001-35,000
19.7 ₦ 35,001-40,000
19.8 ₦ 40,001-45,000
19.9 ₦ 45,001-50,000
19.10 Above ₦ 50,000

12. What do you mostly spend on your family in a week?
23.1 Food items
23.2 Shelter/Accommodation
23.3 Educational Expenses (school fees, uniforms, etc)
23.4 Healthcare/Medical Expenditures
23.5 Household items/goods (furniture, electrical goods)
23.6 Clothing
23.7 Entertainment/Socio-cultural obligations
23.8 Others (Please specify): …….

13. How many of your household members have attained 18 years and above but are not employed?
13.1 None
13.2 1
13.3 2
13.4 3
13.5 4
13.6 5 and above (please specify number) …

INFRASTRUCTURE
14A. Which of the following amenities do you have in your community and what are the types and numbers?
-Primary School ….
-Secondary School…
-Tertiary School…
-Technical/Vocational School….
-Health Facility (Public, Private)
-Electricity (National Grid, Community Generator, supply from Company Facility)
-Market (daily; periodic) No. of stalls
-Town Hall
-Telecommunication (GSM Networks……..)
-Access Road (graded, paved)
-Streets/Lanes (paved, earth)
-Jetty (concrete, steel, wooded)
-Courts (Customary, Magistrate, High Court)
-Security Post (Police, Military)
-Any other, please list

15. **Which of the following type of house do you live in? 15.1** House made of sticks/bamboo with thatch roof 15.2 Mud with thatch roof
15.3 Mud with zinc roof (indicate if plastered) ….
15.4 Wood/plank with zinc roof
15.5 Zinc with zinc roof
15.6 Concrete/block with thatch roof
15.7 Concrete/block house with zinc roof
15.8 Others (specify). ……

16. What is your status in relation to the dwelling/house you live in? Are you the:
16.1 Owner
16.2 Renter
16.3 An occupier who pays no rent
16.4 Receiving house as part of job
16.5 Other (Specify) …….

17. Which is your source of drinking water supply in your household?
17.1 Rain water
17.2 Surface water (river/Creek/Stream/pond) (Specify) ……
17.3 Public hand-dug well system
17.4 Own hand-dug well in residence/compound
17.5 Public piped/tap
17.6 Private piped water in residence/compound
17.7 Community Bore-hole (provided by whom?)
17.8 Vendor/buys from private borehole
17.9 Others (specify). …….

18. How will you describe the quality of water from the identified source of domestic water?
18.1 Water has colour
18.2 Water has a bad taste
18.3 Water is contaminated with oil (oilsheen)
18.4 Water does not lather well when used to wash or bath
18.5 Other (Please specify) ……

Section B: Socioeconomic Sensitivity, Attitudes and Perceptions

19A. Are there communal deities/shrines/sacred places, where are they located?
……
……
…….
19B Does the road rehabilitation encroach on any shrine/sacred forest/sacred river, stream, creek, pond?
……
……
19C. Are there cultural festivals and when are they held?
……
……
……..

19D Are there restrictions concerning any of the festival?
Which ones and what are the restrictions?
……
……
…….
19E. Are there food taboos, what are they?
……
……
……...
19F. What are prohibited practices in your community?
……
……
……..
19G. Has there been any archaeological study in your community or in a neighbouring community?
……
……
……
19H. What are the cultural assets/heritage in your community (museum, historical sites, historical objects etc)
……
……
……

20. Which of the following important environmental resources in your community do you value most?
20.1 Forest resources
20.2 River/Creek water
20.3 Ancestral sites
20.4 Animals
20.5. Others (please specify): .....……..

21. Please indicate the environmental problems which your settlement/community experiences
22. 1`Poor mobility/access to Urban areas
79.1 Crime/Insecurity
79.3 Erosion problems
79.2 Flooding
79.5 Road accident
79.6 Others (specify): …….

22. Have you observed any road rehabilitation/construction activities in the area in the past?
22.1: Yes
22.2: No

23. If yes, has the activity affected you in any way?
23.1: Yes
23.2: No

24. Has the above identified activities caused your community any environmental and social problem during construction and after?
24.1 Yes
24.2 No

23. If yes, identify from below which effect is applicable in your community (tick as many as applicable).
95.1 Obstruction and delay, waste of economic time
95.2 High level dust and air pollution
95.3 Cultural interference
95.4 Noise nuisance from construction works and equipment
95.5 Erosion and flood
95.6 Excess mud and unpleasant landscape
95.7 Other (Specify) ……

24. Has your community benefited in one way or the other from the presence of the constructed roads?
24.1 Yes
24.2 No

25. What personal benefits have you received from the past operations in your area?
25.1 Employment for me and/or my relative (please specify) ……
100.2 Indirect economic empowerment
100.3 Community project(s) (please specify): ……
100.4 Skills acquisition programme
100.5 Any other (specify?): ……
100.6 None

26. What do you feel are the most pressing needs in your community? (Please rank in order of importance, 1= very important to the least important)

Community Need	Rank
Employment of indigenes	
Contract for indigenes	
Provision of electricity	
Assistance with educational infrastructures (Primary, Secondary)	
Provision of Water facility	
Primary Healthcare/Cottage Hospital	
Public safety/security of life	
Other (Specify)	

27. Do you have any objection to the proposed Road Rehabilitation/Construction project by the State?
1) Yes 2) No

28. Are you aware of any Government-Community relationship with Abia State Government (the Project proponent)?
1) Yes 2) No

29. If 'YES', is your answer, how will you describe the relationship?
1) Very Good 2) Good 3) Fair 4) Poor
5) Very Poor

30. Which of the under-listed social problems have your community experienced in the recent past (tick as many as applicable)?

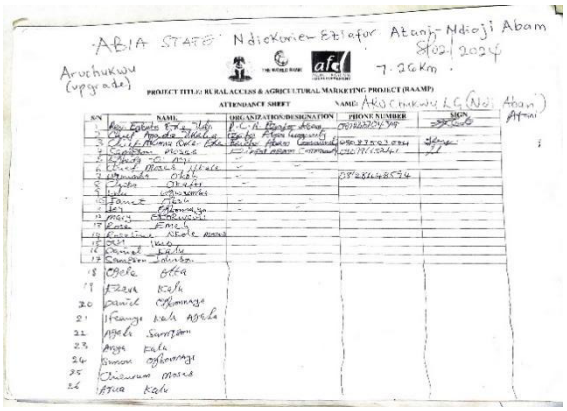
106.1 Youth delinquency and lack of respect for constituted authority/elders
106.2 Land dispute
106.3 Crime/Insecurity
106.4 Inter-family problems
106.5 Inter-village tribal conflicts
106.6 Unemployment
106.7 Alcoholism/prostitution
106.8 Any other (Please specify) ……

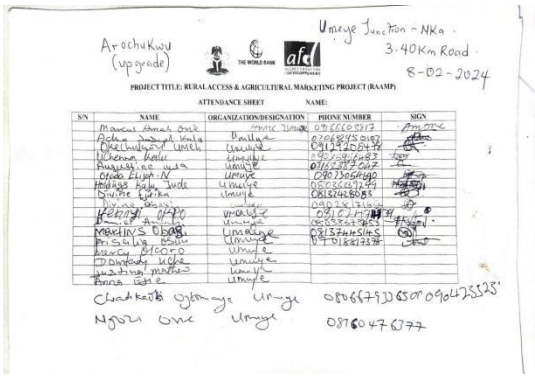
31. What reasons or causes can you give for the observed behaviors/problems

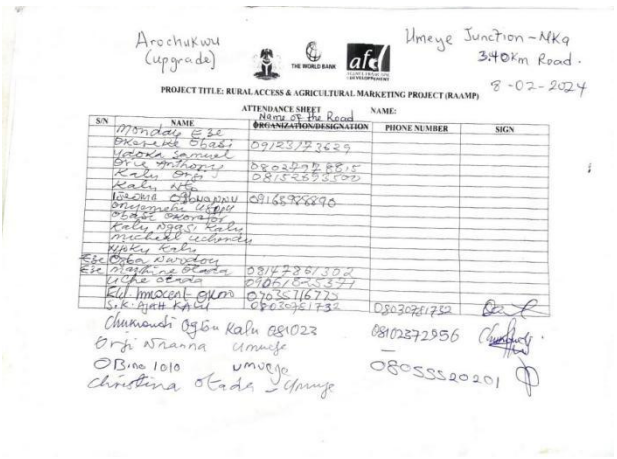
31.1 …….
31.2 …….
31.3 …….
31.4 …….
31.5 ……

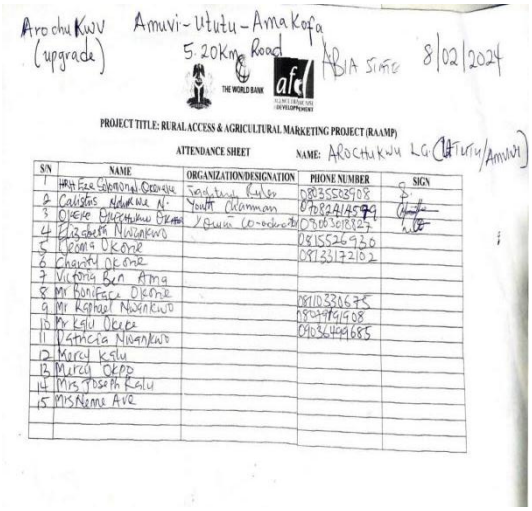
THANK YOU VERY MUCH FOR THE CO-OPERATION.

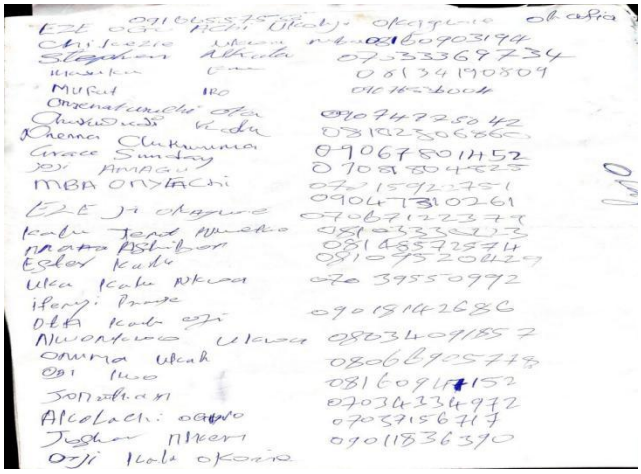
APPENDIX 3: ATTENDANCE AT COMMUNITY CONSULTATIONS











Uzuakoli market Junction ~~Nkwomaha~~ Ozuitem 09-02-2024 Uguumba Uzuitim Road (7.10K

THE WORLD BANK afd AGENCE FRANÇAISE DE DÉVELOPPEMENT

PROJECT TITLE: RURAL ACCESS & AGRICULTURAL MARKETING PROJECT (RAAMP)

ATTENDANCE SHEET NAME:

S/N	NAME	ORGANIZATION/DESIGNATION	PHONE NUMBER	SIGN
1	OKECHUKWU IGWE		08037502414	
2	ONYEKACHI ABAJIULO		07014177191	
3	OMEREMBA NKOCHUKWU		09132674805	
4	CHUKWU IROGBEREMACH		09137692535	
5	IKEMEFUNA CHIKEZIE		09043596800	
6	EZESIA ISAAC		07031585130	
7	DANIEL STEPHEN		08167751555	
8	ONYESI NKEMJIKA		08037677974	
9	OHIA ANTHONY C		09023232067	
10	OJOEMELAM ONEMAECHI		09076907161	
11	KINGSLEY OKAFOR		07084493906	
12	OKORAFOR IHEONUHEKWU		09135393079	
13	NKASINYI KINSLEY O.		08065406142	
14	IGWE MUNACHIMSO E.		08063132151	
15	CHINEDUM OKORIE		08185370767	
16	KENNETH NGOCHUKWU		09043086250	
17	NWECHUKWU KALU		08062990058	

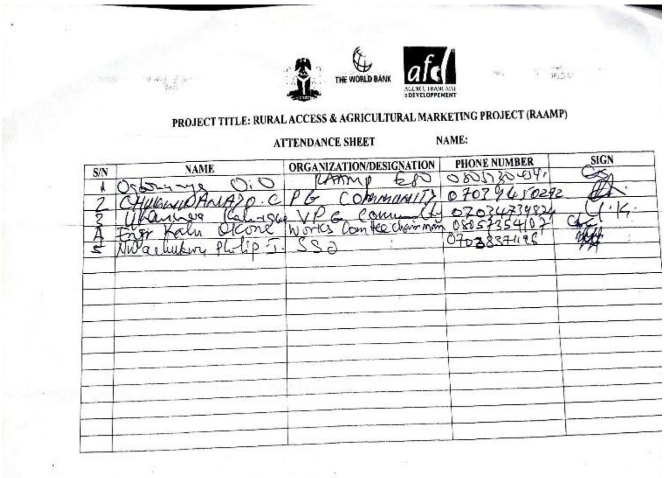
Uzuakoli market Junction 09-02-2024 ~~Nkwomaha~~ Ozuitem Uguoumba Uzuitim Road (7. 10Km)

THE WORLD BANK afd AGENCE FRANÇAISE DE DÉVELOPPEMENT

PROJECT TITLE: RURAL ACCESS & AGRICULTURAL MARKETING PROJECT (RAAMP)

ATTENDANCE SHEET NAME:

S/N	NAME	ORGANIZATION/DESIGNATION	PHONE NUMBER	SIGN
18	ELEKWACHI CHINEDUM		07014219297	
19	AMARA IROKA	DEPUTY PRESIDENT G	09060380363	
20	NKEMDIRIM OBUTI	VILLAGE HEAD	0812563036	
21	JOHN MBA	CHAIRMAN NDIGBO Com	09077579990	
22	ELDER OKOSRUA ASO	VILLAGE HEAD	08063473624	
23	ELDER SAMUEL EZIEKE	VILLAGE HEAD	07032585253	
24	UTAH UTAH	VILLAGE HEAD	09029617522	
25	ONWUCHEKWA DAVID		08036052276	
26	CHINYERE SUNDAY		—	
27	DOCAS OTIKWU		—	
28	HANNAH ELEKWACHI		—	
29	STELLA OSRATUE		—	
30	MERCY ANOLIKE		07081630054	
31	COMFORT JOY		—	
32	ONYAMAUWA C.		—	
23	NZOMA UKOH		—	
32	IHEMAKWANU IHEIKWOYA			

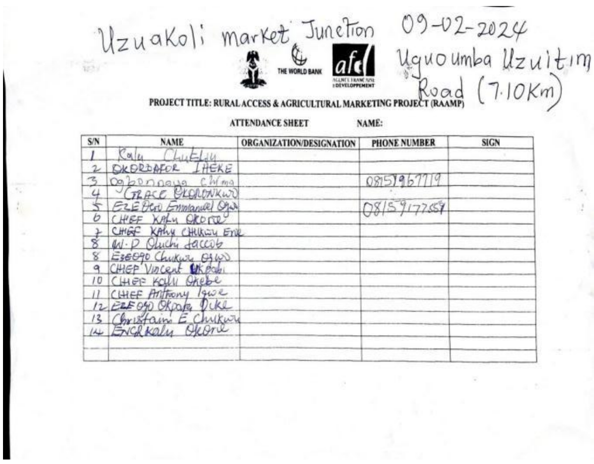


THE WORLD BANK afd AGENCE FRANÇAISE DE DÉVELOPPEMENT

PROJECT TITLE: RURAL ACCESS & AGRICULTURAL MARKETING PROJECT (RAAMP)

ATTENDANCE SHEET NAME:

S/N	NAME	ORGANIZATION/DESIGNATION	PHONE NUMBER	SIGN
1	Osbunnye O.O	RAAMP EO	08037804941	
2	CHUKWUDANAZO.C	PG COMMUNITY	07079450292	
3	Ukaunwa Kalu-gbe	VPG Community	07034734824	
4	Engr Kalu Okore	Works Comttee chairman	08057354107	
5	Nwachukwu Philip I.	SSO	07038837196	



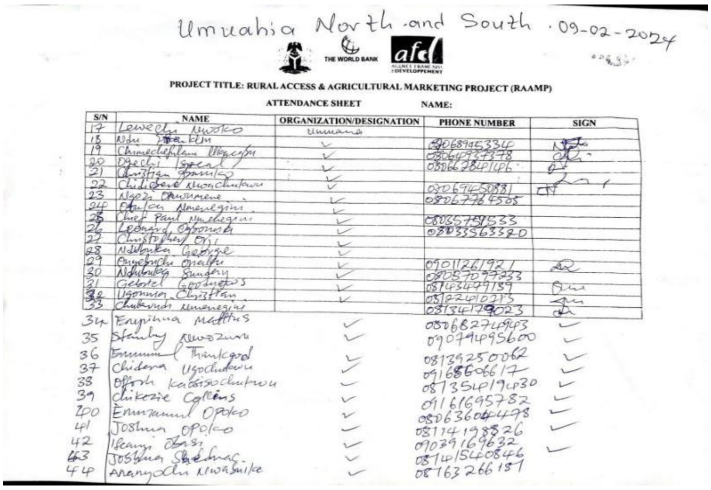
Uzuakoli market Junction 09-02-2024 Uguoumba Uzuitim Road (7.10Km)

THE WORLD BANK afd AGENCE FRANÇAISE DE DÉVELOPPEMENT

PROJECT TITLE: RURAL ACCESS & AGRICULTURAL MARKETING PROJECT (RAAMP)

ATTENDANCE SHEET NAME:

S/N	NAME	ORGANIZATION/DESIGNATION	PHONE NUMBER	SIGN
1	Kalu Chukelu			
2	OKORDAFOR IHEKE			
3	Ogbonnaya Chima		08159677719	
4	GRACE OKORONKWO			
5	EZE OGO Emmanuel Ogu		08159177559	
6	CHIEF KALU OKORIE			
7	CHIEF KALU CHUKWU Ene			
8	W.P Oluchi Jaccob			
8	EzeOgo Chukwu Ogwo			
9	CHIEF Vincent Ukoabi			
10	CHIEF Kalu Okebe			
11	CHIEF Anthony Igwe			
12	EzeOgo Okpara Dike			
13	Christiana E Chukwu			
14	ENGR Kalu Okore			



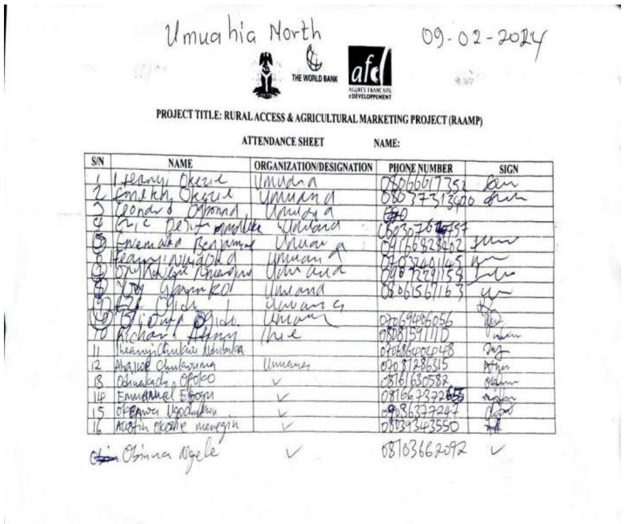
Umuahia North and South . 09-02-2024

THE WORLD BANK afd AGENCE FRANÇAISE DE DÉVELOPPEMENT

PROJECT TITLE: RURAL ACCESS & AGRICULTURAL MARKETING PROJECT (RAAMP)

ATTENDANCE SHEET NAME:

S/N	NAME	ORGANIZATION/DESIGNATION	PHONE NUMBER	SIGN
17	Lewechi Nwoko	Umuana		
18	Ndu Franklin	✓	09068945334	
19	Chimechefulam Mgaegbu	✓	08064937378	
20	Ogechi Isreal	✓	08066284146	
21	Christian Ananiko	✓		
22	Chidiebere Nwachukwu	✓	07069450881	
23	Ngozi Onwumene	✓	08067764505	
24	Ofulor Umenegini	✓		
25	Chief Paul Nwenegini	✓	08035759533	
26	Leonard Ogbonna	✓	08033563320	
27	Christopher Orji	✓		
28	Ndubuka George	✓		
29	Onyebuchi Onalu	✓	09011261921	
30	Nduburg Sunday	✓	08057097233	
31	Gebriel Goodness	✓	08143479139	
32	Ugonma Christian	✓	08122410273	
33	Chukwudi Umenegini		08134179023	
34	Enyinna Matthew	✓	08068274943	✓
35	Stanley Nwozuru	✓	09079495600	✓
36	Emmanuel Thankgod	✓	08139250062	✓
37	Chidera Ugochukwu	✓	09168606617	✓
38	Offorh Kaosisochukwu	✓	08135419430	✓
39	Chikezie Collins	✓	09161695782	✓
40	Emmanuel Opoko	✓	08063604478	✓
41	Joshua Opoko	✓	08114198826	✓
42	Ifeanyi Obasi	✓	09039169632	✓
43	Joshua Shedrac	✓	08141540846	
44	Ananyochi Nwabuike	✓	08163266187	



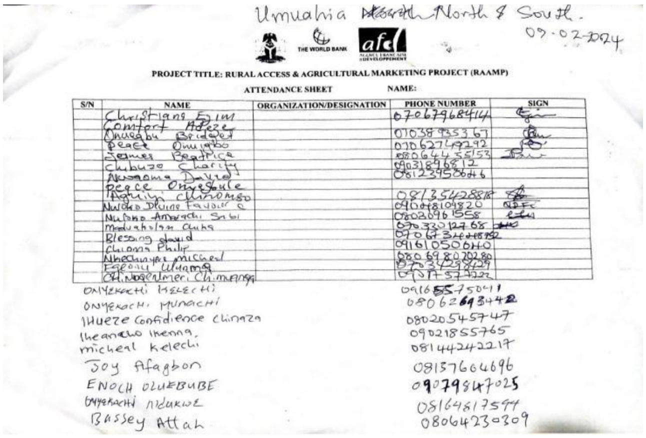
Umuahia North 09-02-2024

THE WORLD BANK afd AGENCE FRANÇAISE DE DÉVELOPPEMENT

PROJECT TITLE: RURAL ACCESS & AGRICULTURAL MARKETING PROJECT (RAAMP)

ATTENDANCE SHEET NAME:

S/N	NAME	ORGANIZATION/DESIGNATION	PHONE NUMBER	SIGN
1	Ifeanyi Okezie	Umuana	08066617752	
2	Emekah Okezie	Umuana	08037313400	
3	Leonard Ogbonna	Umuana		
4	Eric Desire	Umuana	08030764457	
5	Nwemaka Benjamin	Umuana	09166828402	
6	Ifeanyi Nwaoha	Umuana	07037401145	
7	Onyekwere Nwadinma	Umuana	09081229159	
8	Joy Nwankwo	Umuana	08061567163	
9	[illegible] Ojide	Umuana		
10	[illegible] Ojide	Umuana	07069406056	
10	Richard Afam	Ihie	08081591110	
11	Ifeanyi Chukwu Ndubuka		07068600048	
12	Ahanwe Chukwuma	Umuana	07081286315	
13	Odinakachi Opoko	✓	08161630582	
14	Emmanuel Egom	✓	08166737265	
15	Okpara Ugochukwu	✓	09036377247	
16	Austin Okoye Menegini	✓	08039343550	
	Obinna Ngele	✓	08103662092	✓



Umuahia North & South.
09-02-2024

PROJECT TITLE: RURAL ACCESS & AGRICULTURAL MARKETING PROJECT (RAAMP)

ATTENDANCE SHEET NAME:

S/N	NAME	ORGANIZATION/DESIGNATION	PHONE NUMBER	SIGN
	Christiana Ejim		07067968414	
	Comfort Adeze			
	Onuegbu Bridget		01038935367	
	Peace Onuigbo		07062749292	
	James Beatrice		08064435153	
	Chibuzo Charity		09031896812	
	Nwaoma David		08123958646	
	Peace Onyesoule			
	Agiriyi Chinomso		08135428818	
	Nwoko Divine Favour C		09048109820	
	Nwoko Amarachi Sabi		08030961558	
	Madukolam Chika		07033012768	
	Blessing David		07067344818	
	Chioma Philip		09161050640	
	Nkechinyere Michael		08069802280	
	Egeonu Uluoma		07034298429	
	Chinonyelumeri Chimanya		0907757 [illegible]	

ONYEKACHI KELECHI 09165575041
ONYEKACHI MUNACHI 08062693442
IHUEZE Confidence Chinaza 08020545747
Iheanacho Ikenna. 09021855765
micheal Kelechi 08144242217
Joy Afagbon 08137604696
ENOCH OLUEBUBE 09079847025
ONYEKACHI NDUKWE 08164817594
Bassey Attah 08064230309

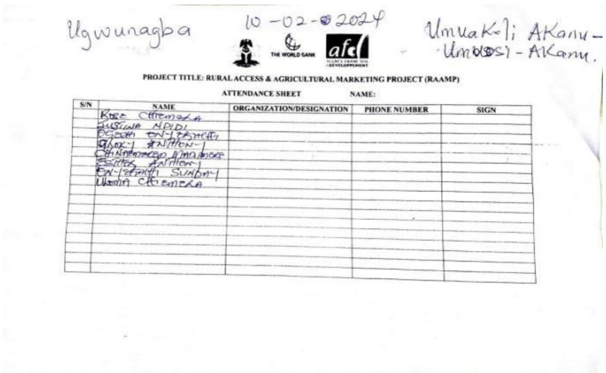
Umuahia North 09-02-2024

PROJECT TITLE: RURAL ACCESS & AGRICULTURAL MARKETING PROJECT (RAAMP)

ATTENDANCE SHEET NAME:

S/N	NAME	ORGANIZATION/DESIGNATION	PHONE NUMBER	SIGN
1	Ufomadu Chinesie James		08037289319	
2	Obinna Daddy		08134297144	
3	Ifeanyi Ukwe		08032382317	
4	Chief Paul O. Meregini		08035759533	
5	Ngozi Onwumere		08061764505	
6	Innocent Eze O.		08033223817	
7	Eld Chief Ofuka Meregini		07058047871	
8	Florence Iwonsi		09039986633	
9	Nwakaego Ogbonna		07067523205	
10	Elizabeth Chimaobi		08101420630	
11	Ogbonna		08137488032	
12	Gabriel [illegible]			
13	Chinyeaka Onyejiuwa		08057449193	
14	[illegible]		070	
15	Nnamdi [illegible]			
16	Ukaegbu Uchenna		070	
17	Nwaokoro Ifechukwu		07061981271	

18 Okenna Brightt 07061758885

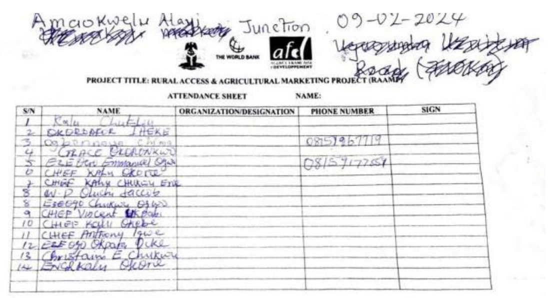


Ugwunagba 10-02-2024 Umuakoli Akanu-Umuosi-Akanu.

PROJECT TITLE: RURAL ACCESS & AGRICULTURAL MARKETING PROJECT (RAAMP)

ATTENDANCE SHEET NAME:

S/N	NAME	ORGANIZATION/DESIGNATION	PHONE NUMBER	SIGN
	Kore Chiemeka			
	Justina Ndidi			
	Ogechi Onyebuchi			
	Glory Anthony			
	Chinemerem Nwadimere			
	Esther Anthony			
	Onyebuchi Sunday			
	Uloma Chiemeka			



Amaokwelu Alayi Junction. 09-02-2024 Road

PROJECT TITLE: RURAL ACCESS & AGRICULTURAL MARKETING PROJECT (RAAMP)

ATTENDANCE SHEET NAME:

S/N	NAME	ORGANIZATION/DESIGNATION	PHONE NUMBER	SIGN
1	Kalu Chukelu			
2	OKORDAFOR IHEKE			
3	Ogbonnaya Chima		08157967719	
4	GRACE OKORONKWO			
5	Ezeibe Emmanuel Ogwo		08159177059	
6	CHIEF KALU OKORIE			
7	CHIEF KALU CHUKWU ENE			
8	W.P Oluchi Jacob			
8	Ezeogo Chukwu Ogwo			
9	CHIEF Vincent Ukpabi			
10	CHIEF Kalu Gbebe			
11	CHIEF Anthony Igwe			
12	EZE ogo Okpara Uke			
13	Christaina E Chukwu			
14	Engr Kalu Okore			

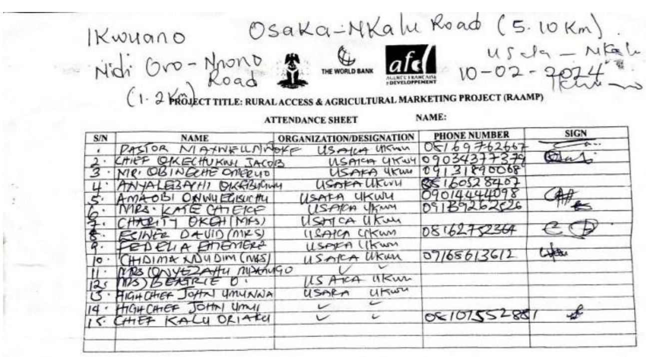
Ugwunagba 10-02-2024 Ukebe Junction Etiti Akanu Ngwa Ugwunagbo HQS 7.2Km Road

PROJECT TITLE: RURAL ACCESS & AGRICULTURAL MARKETING PROJECT (RAAMP)

ATTENDANCE SHEET NAME:

S/N	NAME	ORGANIZATION/DESIGNATION	PHONE NUMBER	SIGN
1	Nwachukwu Philip J	SSO - Abia RAAMP	07038371196	
2	Elder Chiabu Nwagu		09166090663	
3	ELDER PROMISE AKWARANDU		08060509325	
4	HON NKEMAKOLAM OGBONNA		07063885107	
5	MOSES CHIMECHEREM AKWARANDU		07047715583	
6	VICTORIA NWANKPA			
7	FLORENCE PROMISE NWANKPA			
8	REGINA JOHN			
9	Uzoma MADUMERE			
10	CHINEDU EZINMA			
11	MADUMERE NWANKPA			
12	GOODNESS AKWARANDU			
13	MERCY EDWARD			
14	EMMANUEL NWOGU			
15	Bob Chinemela John			
16	IFEOMA UDE			
17	NWANYIMMA EDWARD			

18. CHRISTIANA EBIAMA
19. JOY KENNETH NWANKPA
20. OCHIEZE CHIGBUNDU
21. UZOMA NWOGU
22. MERCY ANTHONY
23. ROSSANA EDWARD
24. NWAOGU NWAMUO
25. GINIKA MOSES
26. EMMANUEL NWANKPA
27. SUNNY JOHN

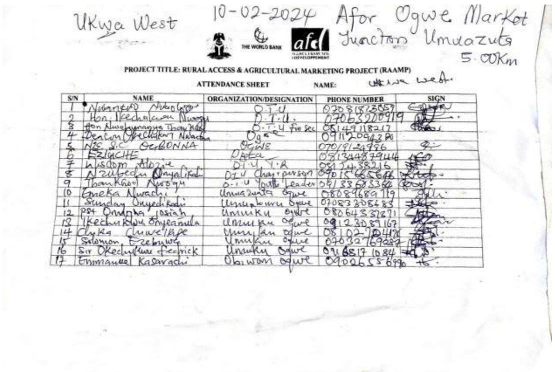


Ikwuano Osaka-Nkalu Road (5.10Km). Nidi Oro-Nnono Road (1.2Km) Usaka - Nkalu 10-02-2024

PROJECT TITLE: RURAL ACCESS & AGRICULTURAL MARKETING PROJECT (RAAMP)

ATTENDANCE SHEET NAME:

S/N	NAME	ORGANIZATION/DESIGNATION	PHONE NUMBER	SIGN
1.	PASTOR MAXWELL NWOKE	USAKA UKWU	08169762667	
2.	CHIEF OKECHUKWU JACOB	USAKA UKWU	09034377379	
3.	MR. OBINECHE OMERUO	USAKA UKWU	09131890068	
4.	ANYALEBACHI OKEBUGWU	USAKA UKWU	08160528407	
5.	AMAOBI ONWUEGBUCHU	USAKA UKWU	09014444098	
6.	MRS. KATE CHIEKE	USAKA UKWU	09139262626	
7.	CHARITY OKEH (MRS)	USAKA UKWU		
8.	ESINEE DAVID (MRS)	USAKA UKWU	08162752364	
9.	FEDELIA EMEMERE	USAKA UKWU		
10.	CHIDIMA NDUDIM (MRS)	USAKA UKWU	07168613612	
11.	MRS ONYEZAHU MPAMUGO	✓ ✓		
12.	MRS) BEATRICE O.	USAKA UKWU		
13.	HIGH CHIEF JOHN UMUNNA	USAKA UKWU		
14.	HIGH CHIEF JOHN UMU	✓ ✓		
15.	CHIEF KALU ORIAKU	✓ ✓	08107552881	

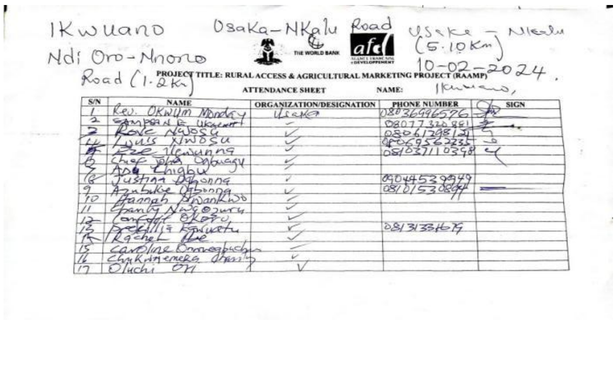

Ukwa West 10-02-2024 Afor Ogwe Market Junction Umuazuta 5.00Km

THE WORLD BANK afd

PROJECT TITLE: RURAL ACCESS & AGRICULTURAL MARKETING PROJECT (RAAMP)

ATTENDANCE SHEET NAME: Ukwa West

S/N	NAME	ORGANIZATION/DESIGNATION	PHONE NUMBER	SIGN
1	[illegible]	O.I.U	[illegible]	
2	Hon. Ikechukwu Nwogu	O.I.U.	07065920919	
3	Hon. Nwokoma [illegible]	O.I.U. Fin Sec	[illegible]	
4	[illegible]	Ogwe	[illegible]	
5	[illegible]	Ogwe	[illegible]	
6	[illegible]	Data	[illegible]	
7	Wisdom Alozie	O.I.U Y.R	[illegible]	
8	[illegible]	O.I.U Chairperson	[illegible]	
9	[illegible]	O.I.U Youth Leader	[illegible]	
10	Emeka Nwachi	Umuazuta Ogwe	08084689119	
11	Sunday Onyechukwu	[illegible] Ogwe	[illegible]	
12	[illegible]	Umuaku Ogwe	[illegible]	
13	Ikechukwu Onyemaula	Umuaku Ogwe	[illegible]	
14	Chika [illegible]	Umuala Ogwe	[illegible]	
15	Solomon Ezebuwe	Umuaku Ogwe	[illegible]	
16	Sir Okechukwu Fredrick	Umuaku Ogwe	[illegible]	
17	Emmanuel Kasiwachi	Obiwom Ogwe	[illegible]	

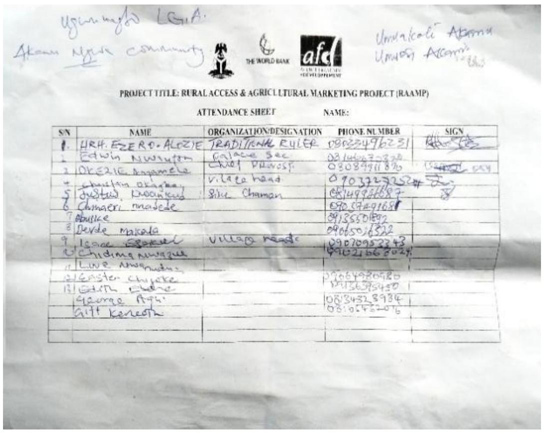

IKwuano Osaka-NKalu Road Usaka – NKalu (5.10Km) Ndi Oro-Nnono Road (1.2Km) 10-02-2024.

THE WORLD BANK afd

PROJECT TITLE: RURAL ACCESS & AGRICULTURAL MARKETING PROJECT (RAAMP)

ATTENDANCE SHEET NAME: Ikwuano

S/N	NAME	ORGANIZATION/DESIGNATION	PHONE NUMBER	SIGN
1	Rev. Okwum Monday	Usaka	08036996596	
2	[illegible]	✓	08077320881	
3	[illegible]	✓	[illegible]	
4	Louis Nwosu	✓	[illegible]	
5	[illegible]	✓	08103710398	
6	Chief [illegible]	✓		
7	[illegible]	✓		
8	Justina [illegible]	✓	[illegible]	
9	[illegible]	✓	[illegible]	
10	[illegible]	✓		
11	[illegible]	✓		
12	[illegible]	✓		
13	[illegible]	✓	08131336679	
14	Rachel [illegible]	✓		
15	Caroline [illegible]	✓		
16	Chukwuemeka [illegible]	✓		
17	Uluchi [illegible]	✓		

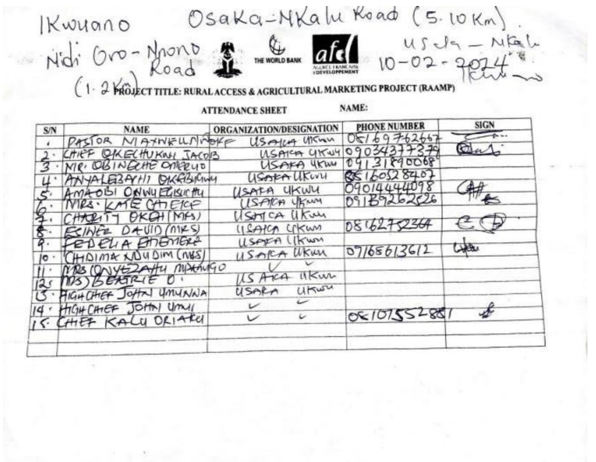

Ugwunagbo LGA. Akanu Ngwa Community Umuakoli Akanu Umuosu Akanu

THE WORLD BANK afd

PROJECT TITLE: RURAL ACCESS & AGRICULTURAL MARKETING PROJECT (RAAMP)

ATTENDANCE SHEET NAME:

S/N	NAME	ORGANIZATION/DESIGNATION	PHONE NUMBER	SIGN
1	HRH. Ezero Alozie	Traditional Ruler	[illegible]	
	Edwin Nwaoha	Palace Sec	[illegible]	
2	Okezie [illegible]	Chief Priest	[illegible]	
	[illegible]	Village head	09032273252	
5	Justus [illegible]	Bike Chairman	[illegible]	
6	Chinweri [illegible]		[illegible]	
	[illegible]		[illegible]	
8	Devine [illegible]		[illegible]	
9	Isaac [illegible]	Village heads	[illegible]	
	Chidima Nwagwe		[illegible]	
	[illegible]			
	[illegible]		[illegible]	
	[illegible]		[illegible]	
	George [illegible]		[illegible]	
	Gift [illegible]		[illegible]	

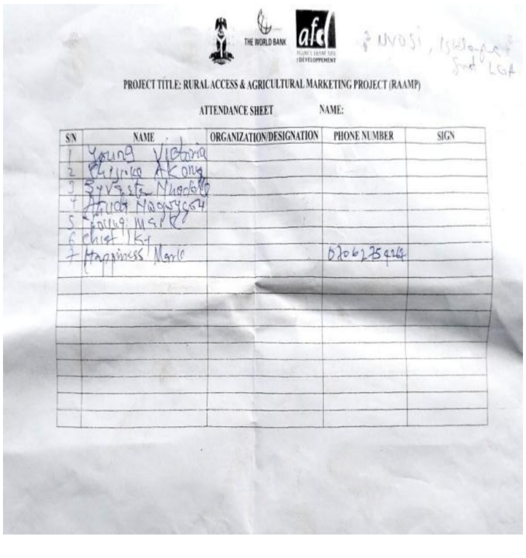

IKwuano Osaka-NKalu Road (5.10Km). Ndi Oro-Nnono Road (1.2Km) Usaka – NKalu 10-02-2024 Ikwuano

THE WORLD BANK afd

PROJECT TITLE: RURAL ACCESS & AGRICULTURAL MARKETING PROJECT (RAAMP)

ATTENDANCE SHEET NAME:

S/N	NAME	ORGANIZATION/DESIGNATION	PHONE NUMBER	SIGN
1	Pastor Maxwell [illegible]	Usaka Ukwu	08169762667	
2	Chief Okechukwu Jacob	Usaka Ukwu	09034377374	
3	Mr. Obinche Okezie	Usaka Ukwu	09131890068	
4	Anyalebechi [illegible]	Usaka Ukwu	08160528407	
5	Amaobi Onwuegbuchu	Usaka Ukwu	09014444098	
6	Mrs. Kate Chioke	Usaka Ukwu	09135262626	
7	Charity Okoh (Mrs)	Usaka Ukwu		
8	Esinee David (Mrs)	Usaka Ukwu	08162752364	
9	Fedelia Ehiemere	Usaka Ukwu		
10	Chidima Ndudim (Mrs)	Usaka Ukwu	07068613612	
11	Mrs Onyebuchi Mathew	✓		
12	Ms Beatrice O.	Usaka Ukwu		
13	High Chief John Umunna	Usaka Ukwu		
14	High Chief John Umu	✓		
15	Chief Kalu Oriaku	✓	08107552881	

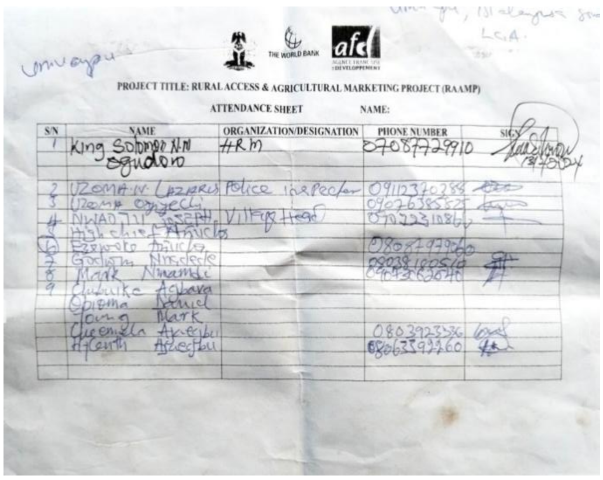

Nvosi, Isiala Ngwa South LGA

THE WORLD BANK afd

PROJECT TITLE: RURAL ACCESS & AGRICULTURAL MARKETING PROJECT (RAAMP)

ATTENDANCE SHEET NAME:

S/N	NAME	ORGANIZATION/DESIGNATION	PHONE NUMBER	SIGN
1	Young Victoria			
2	Chinyere Akong			
3	Syvesta Nwogbo			
4	[illegible]			
5	[illegible]			
6	Chief Iky			
7	Happiness Mark		08062754124	

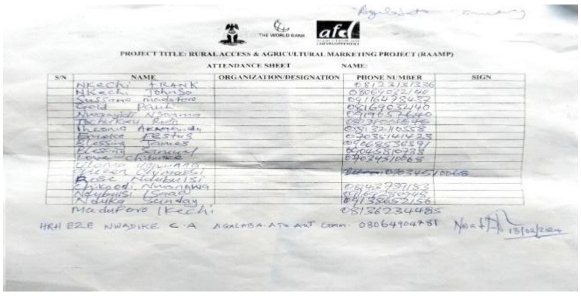

Umuagu, Isiala Ngwa South LGA.

THE WORLD BANK afd

PROJECT TITLE: RURAL ACCESS & AGRICULTURAL MARKETING PROJECT (RAAMP)

ATTENDANCE SHEET NAME:

S/N	NAME	ORGANIZATION/DESIGNATION	PHONE NUMBER	SIGN
1	King Solomon N.N Egudom	HRM	07087729910	
2	Uzoma N. Lazarus	Police inspector	09112370288	
3	Uzoma Ogechi		[illegible]	
4	Nwanjiji Joseph	Village Head	07023310866	
5	High chief Amaefule			
6	Ezerioha [illegible]		08087979960	
7	Godwin Nwokocha		09038160510	
8	Mark Nnamdi		09093636040	
9	Chukwuke Agbara			
	Opiema Daniel			
	Young Mark			
	Chiemela Anyanwu		08039238386	
	Hyacinth [illegible]		08063593260	



THE WORLD BANK
afd AGENCE FRANÇAISE DE DÉVELOPPEMENT

PROJECT TITLE: RURAL ACCESS & AGRICULTURAL MARKETING PROJECT (RAAMP)

ATTENDANCE SHEET NAME:

S/N	NAME	ORGANIZATION/DESIGNATION	PHONE NUMBER	SIGN
	Nkechi Frank		08123131336	
	Nkechi Johnso		08064022140	
	Sussana Madufoero		09116478437	
	Gold Paul		08169032140	
	Nwangidi Nsoamo		09196576640	
	Tochukwu Rob		[illegible]	
	Ihuoma Akamadu		08132110558	
	Emeka Festus		07035141423	
	Blessing James		09068538391	
	Blessing Samuel		09045810738	
	Love Chibuike		07034510068	
	Uloma Uguwaga			
	Eileen Chimaobi		07034510068	
	Rose Ndubuisi			
	Chikaodi Nwangwa		08142737183	
	Ndubuisi Isaac		09162250748	
	Nduka Sunday		09138652156	
	Madufoero Ikechi		08136234485	

HRH EZE NWADIKE C.A AGALABA ATA AUT COMM. 08064904781 13/02/2024

THE WORLD BANK
afd

PROJECT TITLE: RURAL ACCESS & AGRICULTURAL MARKETING PROJECT (RAAMP)

ATTENDANCE SHEET NAME:

S/N	NAME	ORGANIZATION/DESIGNATION	PHONE NUMBER	SIGN
1	UGOEZE EZINWANYI OGUIBE		08064277792	
2	HRH EZE P.O OGUIBE		08036687115	
3	OLUCHI JOYCE CHIJIEZE		07038654348	
4	BLESSING PROMISE		08129346985	
5	ROSE ATHUNANYA		08067548700	
6	ONYINYECHI MARK		08132118828	
7	COMFORT ALUMMA		07031269372	
8	CECELIA EBENEZER			
9	ROSE MONDAY			
10	LOVE ATHUNANYA			
11	SALOMY CHIDI			
12	EVELINE ALOZIE		09038460693	
13	KASARACHI CHINKATA			
14	IHUOMA EGUZORO		07032022849	

UGODEE EZINWANYI OKECHI OGUIBE

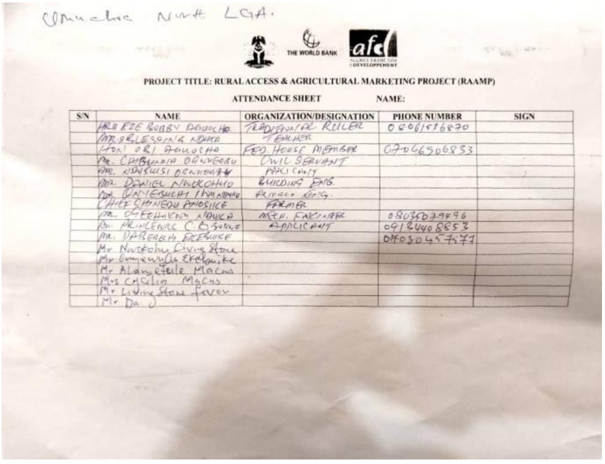
Umuahia North LGA (1)
Umuafiaka-Umuokpara River Crossing

THE WORLD BANK
afd AGENCE FRANÇAISE DE DÉVELOPPEMENT

PROJECT TITLE: RURAL ACCESS & AGRICULTURAL MARKETING PROJECT (RAAMP)

ATTENDANCE SHEET NAME:

S/N	NAME	ORGANIZATION/DESIGNATION	PHONE NUMBER	SIGN
1	MR CHUKWUMA NDUKA	CHAIRMAN	09030991491	
2	DEACON CHRISTIAN IGBOKWE		08056938554	
3	CHIEF UCHECHI NWOKEOHUO		08167879742	
4	MR UZODINMA IHUKWUMERE		08138950670	
5	MR IHECHILURU ARIWA		08032584153	
6	ENGR CHIBUNDU K. TIMOTHY	Posted P.G	08037408610	
7	MRS CHIOMA NDUKA		08132736136	
8	MR OKECHUKWU EKEBUIKE		08062167077	
9	MRS CHIOMA ARIWA		08106216669	
10	AP NWACHUKWU ASIEGBU		08033019968	
11	Mr Chamberlain Nwokolu	Asst. Secretary	08060366611	
12	Sir Chinuike Ewere		07066868077	
13	Akujobi Usani		08055798827	
14	MRS Udochina Nnadi		08125187006	
15	Ejinwanya Ogbonna		07037665959	
16	Ndubuisi Chukwu		07064868295	
17	Chinwe Okechukwu		07069236629	



Umuahia North LGA.

THE WORLD BANK
afd AGENCE FRANÇAISE DE DÉVELOPPEMENT

PROJECT TITLE: RURAL ACCESS & AGRICULTURAL MARKETING PROJECT (RAAMP)

ATTENDANCE SHEET NAME:

S/N	NAME	ORGANIZATION/DESIGNATION	PHONE NUMBER	SIGN
	HRH EZE BOBBY ANUOCHA	TRADITIONAL RULER	08061516870	
	MRS BLESSING NDUKA	TEACHER		
	HON. ORJI ANUOCHA	FED. HOUSE MEMBER	07066506833	
	MR. CHIBUZOR OGUNEGBU	CIVIL SERVANT		
	MR. NDUBUISI OGUNEGBU	APPLICANT		
	MR. DANIEL NWOKOHUO	BUILDING ENG.		
	MR. ONYEBUCHI IHEANACHO	PRIVATE ENG.		
	CHIEF CHINEDU ANOSIKE	FARMER		
	MR. OKECHUKWU NDUKA	MECH. ENGINEER	08035079496	
	MR. PRINCEWILL C. OBIOHA	APPLICANT	09134408853	
	MR. DABERECHI EKEBUIKE		07030457571	
	Mr Nwokolu Living Stone			
	Mr Onyewuchi Ekebuike			
	Mr Alozieuwa Macus			
	Mrs Cecilia Macus			
	Mr Living Stone favour			
	Mr Da			

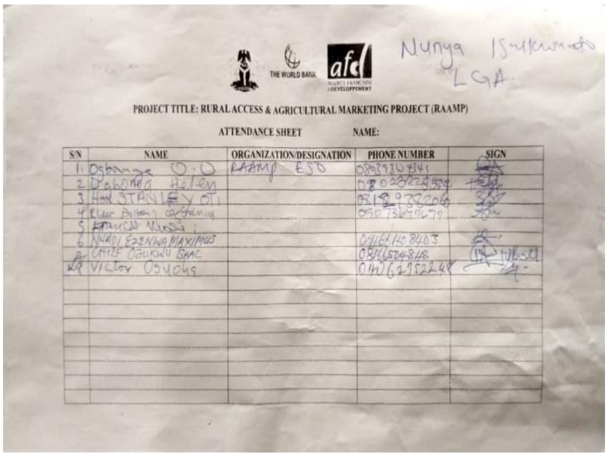
Umuahia North LGA (1)
Umuafiaka-Umuokpara River Crossing

THE WORLD BANK
afd AGENCE FRANÇAISE DE DÉVELOPPEMENT

PROJECT TITLE: RURAL ACCESS & AGRICULTURAL MARKETING PROJECT (RAAMP)

ATTENDANCE SHEET NAME:

S/N	NAME	ORGANIZATION/DESIGNATION	PHONE NUMBER	SIGN
1	MR CHUKWUMA NDUKA	CHAIRMAN	09030991491	
2	DEACON CHRISTIAN IGBOKWE		08056938554	
3	CHIEF UCHECHI NWOKEOHUO		08167879742	
4	MR UZODINMA IHUKWUMERE		08138950670	
5	MR IHECHILURU ARIWA		08032584153	
6	ENGR CHIBUNDU K. TIMOTHY	Posted P.G	08037408610	
7	MRS CHIOMA NDUKA		08132736136	
8	MR OKECHUKWU EKEBUIKE		08062167077	
9	MRS CHIOMA ARIWA		08106216669	
10	AP NWACHUKWU ASIEGBU		08033019968	
11	Mr Chamberlain Nwokolu	Asst. Secretary	08060366611	
12	Sir Chinuike Ewere		07066868077	
13	Akujobi Usani		08055798827	
14	MRS Udochina Nnadi		08125187006	
15	Ejinwanya Ogbonna		07037665959	
16	Ndubuisi Chukwu		07064868295	
17	Chinwe Okechukwu		07069236629	



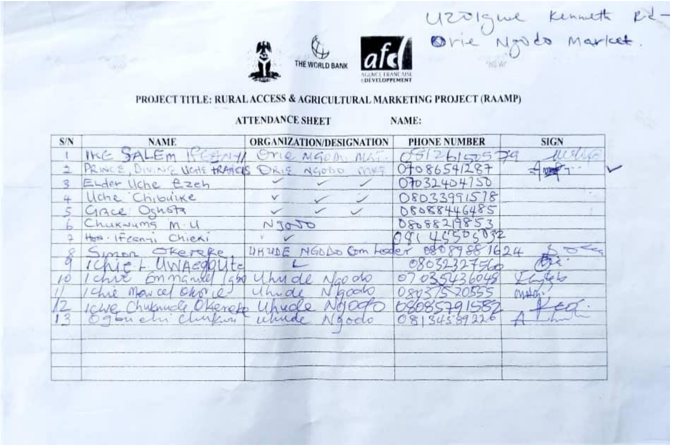
Nunya Isuikwuato LGA.

THE WORLD BANK
afd AGENCE FRANÇAISE DE DÉVELOPPEMENT

PROJECT TITLE: RURAL ACCESS & AGRICULTURAL MARKETING PROJECT (RAAMP)

ATTENDANCE SHEET NAME:

S/N	NAME	ORGANIZATION/DESIGNATION	PHONE NUMBER	SIGN
1.	Ogbonnaya O.O	RAAMP ESO	08039304141	
2	Ogbonna Helen		08023822959	
3	Hon STANLEY OTI		08189382066	
4	Elder Anthony Ogbonna		09073697679	
5	Francis Nwosu			
6	NNADI EZENWA MAXIMUS		09166408403	
7	CHIEF OGUKWU ISAAC		08165504848	
8	Victor Osuoha		09062952248	



Uzoigwe Kenneth Rd - Orie Ngodo Market.

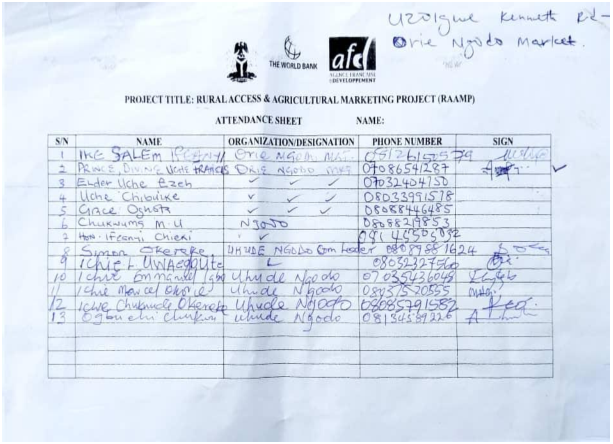
THE WORLD BANK

afd AGENCE FRANÇAISE DE DEVELOPPEMENT

PROJECT TITLE: RURAL ACCESS & AGRICULTURAL MARKETING PROJECT (RAAMP)

ATTENDANCE SHEET NAME:

S/N	NAME	ORGANIZATION/DESIGNATION	PHONE NUMBER	SIGN
1	IKE SALEM IFEANYI	Orie NGODO MKT.	08126150579	
2	PRINCE, DIVINE UCHE FRANCIS	ORIE NGODO MKT	07086541287	
3	Elder Uche Ezeh	✓ ✓ ✓	07032404750	
4	Uche Chibuike	✓ ✓ ✓	08033991578	
5	Grace Oghota	✓ ✓ ✓	08088446485	
6	Chukwuma M. U	NGODO	08088219853	
7	Hon. Ifeanyi Chieki	✓	08145505032	
8	Simon Okereke	UHUDE NGODO Com Leader	08089881624	
9	Chief Uwaegbute	✓	08032327560	
10	Ichie Emmanuel Igbo	Uhude Ngodo	07035436048	
11	Ichie Marcel Okorie	Uhude Ngodo	08037520555	
12	Iche Chukwudi Okereke	Uhude Ngodo	08085791582	
13	Ogbuchi Chukwu	Uhude Ngodo	08134589226	



Uzoigwe Kenneth Rd - Orie Ngodo Market.

THE WORLD BANK

afd AGENCE FRANÇAISE DE DEVELOPPEMENT

PROJECT TITLE: RURAL ACCESS & AGRICULTURAL MARKETING PROJECT (RAAMP)

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1	IKE SALEM IFEANYI	Orie NGODO MKT.	08126150579	
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7	Hon. Ifeanyi Chieki	✓	08145505032	
8	Simon Okereke	UHUDE NGODO Com Leader	08089881624	
9	Chief Uwaegbute	✓	08032327560	
10	Ichie Emmanuel Igbo	Uhude Ngodo	07035436048	
11	Ichie Marcel Okorie	Uhude Ngodo	08037520555	
12	Iche Chukwudi Okereke	Uhude Ngodo	08085791582	
13	Ogbuchi Chukwu	Uhude Ngodo	08134589226	

Table 1: Focal Group Pictures for community engagement of the Selected roads for Upgrade Intervention

S/N	LGA	Road Name	Photo 1	Photo 2
1	Arochukwu	Amuvi-Ututu-Amakofia		
2	Arochukwu	Umuye Junction - Nka		
3.	Arochukwu	Ndiokorie-Eziafor-Atani-Ndioji Abam		
4	Bende	Uzuakoli market junction - Ugwumba - Uzuitim road		
5	Umunneochi	Uzoigwe kenneth Rd-Obinagu- Umada-Orie Ngodo mkt		
6	Ikwuano	Ndi Oro-Nnono road		

S/N	**LGA**	**Road Name**	**Photo 1**	**Photo 2**
7	Isiala Ngwa North	Market junction - Ntigha Okpuala - Umnachi Ntigha		
8	Isiala Ngwa South	Nkwo Ebe-Ebeyi Nvosi-Okpokiri Nvosi-Umuhi Nvosi		
9	Ugwunagbo	Ukebe Junction Etiti Akanu Ngwa Ugwunagbo HQS		
10	Aba South	Boundry rd-Amaukwu,		
11	Ukwa West	Afor Ogwe Market Junction- Umuazuta-Umunneato Ihie Ukwu Road		

Table 2: *Focal Group Pictures for community engagement* of the Selected roads for Backlog Maintenance Intervention

S/N	LGA	Road Name	Photo 1
1	Isiala Ngwa North	Amorji Junction - Abayi - Ahiaba court - umuchima – Uratta	
2	Isiala Ngwa South	Amiyi Nvosi junction - Ohuhu - Ohuhu Ikwuru	
3.	Isiala Ngwa South	Umuokoro-Umuapu Amede-Isi Engime	
4	Osisioma	Egbelu Onwo - Egbede Umuagbai Rd	
5	Ugwunagbo	Abalegwu junction - Amaokpu – Umuaja	

S/N	LGA	Road Name	Photo 1
6	Ugwunagbo	Umuakoli Akanu- Umuosi Akanu	
7	Ukwa East	Ohanku Market Road Ukebe Ohuru Ndoki Road	
8	Isuikwuato	Amiyi Obinohia - Umueriem - Nnuya - Eziama Nnuya	
9	Ikwuano	Osaka-Nkalu Road	

Table 3: Site Specific E&S Description of the Roads for Spot Improvement

S/N	LGA	Road Name	Photo 1
1	Ohafia	Okagwe - Nkwebi Onwuwanyanwu	

S/N	LGA	Road Name	Photo 1
2	Ohafia	Okwuma Road – Ohafia Military Base	
3.	Bende	Alayi – Ezeukwu Road	
4	Bende	Bende – Etitiulo – Ntalakwu	
5	Umunneochi	Umuelem – Ihe – Ngada Road	
6	Isuikwuato	Amaba - Umuasua	
7	Isuikwuato	Amaoho Amaba – Okoba Road	

S/N	LGA	Road Name	Photo 1
8	Obingwa	Umuohia – Osusu Umuikpeghi – 7up	
9	Umuahia North	Umuagu-Utali	
10	Umuahia North	Agalabano-Umuhu central school-Ekeoba	
11	Ugwunagbo	Ihie Ukwu-Obegu	
12	Aba North	Ariara-Umumgbede-Umuiku	

Table 4: Site Specific E&S Description of the Roads for Cross Drainage Intervention

S/N	LGA	Road Name	Photo 1
1	Ohafia	Oboro-Ndiudumaukwu-Ndianku-Nkwebi-Okagwe Ohafia (Okagwa Stream)	
2	Ohafia	Okwuma Road – Ohafia Military Base	
3.	Bende	Bende Etitiulo-Ubibia-Ndiwo-Itumbuzo-Okopedi- Ntalakwu (Awiwa Stream)	
4	Bende	Amaokwelu Alayi Junction-Amankalu-Akoli Imenyi (Igwu river)	
5	Bende	Amaokwelu Alayi Junction-Amankalu-Akoli Imenyi (Nchichi stream)	

S/N	LGA	Road Name	Photo 1
6	Bende	Ezeukwu-Ugwueke Road (Ifuama Bridge in Amangwu Ezeukwu)	
7	Umuahia North	Agalabano-Umuhu-Ekeoba Express (Ekweze stream)	
8	Umuahia North	Umuafiaka-Umuokpara (iyi Obowo)	
9	Umuahia South	Ahiaukwu-Amangwo-Umuajata Umudere Aamkama (Umudere Stream)	
12	Aba North	Ariara-Umumgbede-Umuiku	

APPENDIX 4: GENERAL ENVIRONMENTAL MANAGEMENT CONDITIONS FOR CONSTRUCTION CONTRACTS

General

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

3. The Contractor shall indicate the period within which he/she shall maintain status on site after completion of civil works to ensure that significant adverse impacts arising from such works have been appropriately addressed.
4. The Contractor shall adhere to the proposed activity implementation schedule and the monitoring plan / strategy to ensure effective feedback of monitoring information to project management so that impact management can be implemented properly, and if necessary, adapt to changing and unforeseen conditions.
5. Besides the regular inspection of the sites by the SE for adherence to the contract conditions and specifications, the Owner may appoint an Inspector to oversee the compliance with these environmental conditions and any proposed mitigation measures. State environmental authorities may carry out similar inspection duties. In all cases, as directed by the SE, the Contractor shall comply with directives from such inspectors to implement measures required to ensure the adequacy rehabilitation measures carried out on the bio-physical environment and compensation for socio-economic disruption resulting from implementation of any works.

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

Material Excavation and Deposit
12. The Contractor shall obtain appropriate licenses/permits from relevant authorities to operate quarries or borrow areas.
13. The location of quarries and borrow areas shall be subject to approval by relevant local and national authorities, including traditional authorities if the land on which the quarry or borrow areas fall in traditional land.
14. New extraction sites:
a) Shall not be located in the vicinity of settlement areas, cultural sites, wetlands or any other valued ecosystem component, or on on high or steep ground or in areas of high scenic value and shall not be located less than 1km from such areas.
b) Shall not be located adjacent to stream channels wherever possible to avoid siltation of river channels. Where they are located near water sources, borrow pits and perimeter drains shall surround quarry sites.
c) Shall not be located in archaeological areas. Excavations in the vicinity of such areas shall proceed with great care and shall be done in the presence of government authorities having a mandate for their protection.

d) Shall not be located in forest reserves. However, where there are no other alternatives, permission shall be obtained from the appropriate authorities and an environmental impact study shall be conducted.
e) Shall be easily rehabilitated. Areas with minimal vegetation cover such as flat and bare ground, or areas covered with grass only or covered with shrubs less than 1.5m in height, are preferred.
f) Shall have clearly demarcated and marked boundaries to minimize vegetation clearing.
15. Vegetation clearing shall be restricted to the area required for safe operation of construction work. Vegetation clearing shall not be done more than two months in advance of operations.
16. Stockpile areas shall be located in areas where trees can act as buffers to prevent dust pollution. Perimeter drains shall be built around stockpile areas. Sediment and other pollutant traps shall be located at drainage exits from workings.
17. The Contractor shall deposit any excess material in accordance with the principles of the general conditions, and any applicable EMP, in areas approved by local authorities and/or the SE.
18. Areas for depositing hazardous materials such as contaminated liquid and solid materials shall be approved by the SE and appropriate local and/or national authorities before the commencement of work. Use of existing, approved sites shall be preferred over the establishment of new sites.

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

Water Resources Management

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

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

Blasting
42. Blasting activities shall not take place less than 2km from settlement areas, cultural sites, or wetlands without the permission of the SE.
43. Blasting activities shall be done during working hours, and local communities shall be consulted on the proposed blasting times.
44. Noise levels reaching the communities from blasting activities shall not exceed 90 decibels.
Disposal of Unusable Elements
45. Evacuation of work areas prior to blasting operations shall be undertaken to prevent injuries from flying rocks.
46. Employees authorized to prepare explosive charges or conduct blasting operations shall use every reasonable precaution including, but not limited to, visual and audible warning signals, flags, or barricades, to ensure employees and community safety.
47. Blasting operations in the proximity of overhead power lines, communication lines, utility services, or other services and structures shall not be carried on until the operators and/or owners have been notified and measures for safe control have been taken.
48. Unusable materials and construction elements such as electro-mechanical equipment, pipes, accessories and demolished structures will be disposed of in a manner approved by the SE. The Contractor has to agree with the SE which elements are to be surrendered to the Client's premises, which will be recycled or reused, and which will be disposed of at approved landfill sites.
49. As far as possible, abandoned pipelines shall remain in place. Where for any reason no alternative alignment for the new pipeline is possible, the old pipes shall be safely removed and stored at a safe place to be agreed upon with the SE and the local authorities concerned.
50. AC-pipes as well as broken parts thereof have to be treated as hazardous material and disposed of as specified above.

51. Unsuitable and demolished elements shall be dismantled to a size fitting on ordinary trucks for transport.

Health and Safety

52. In advance of the construction work, the Contractor shall mount an awareness and hygiene campaign. Workers and local residents shall be sensitized on health risks particularly of AIDS.

53. Adequate road signs to warn pedestrians and motorists of construction activities, diversions, etc. shall be provided at appropriate points.

54. Construction vehicles shall not exceed maximum speed limit of 40km per hour.

Repair of Private Property

55. Should the Contractor, deliberately or accidentally, damage private property, he shall repair the property to the owner's satisfaction and at his own cost. For each repair, the Contractor shall obtain from the owner a certificate that the damage has been made good satisfactorily in order to indemnify the Client from subsequent claims.

56. In cases where compensation for inconveniences, damage of crops etc. are claimed by the owner, the Client has to be informed by the Contractor through the SE. This compensation is in general settled under the responsibility of the Client before signing the Contract. In unforeseeable cases, the respective administrative entities of the Client will take care of compensation.

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

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

- For the Contractor, for internal purposes, to ensure that all measures are in place for adequate EHS management, and as an operational manual for his staff.
- For the Client, supported where necessary by a SE, to ensure that the Contractor is fully prepared for the adequate management of the EHS aspects of the project, and as a basis for monitoring of the Contractor's EHS performance.

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

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

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

EHS Reporting

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

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

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

Training of Contractor's Personnel

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

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

Cost of Compliance

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

3. Example Format: EHS Report

Contract: Period of reporting:

EHS management actions/measures:

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

EHS incidents:

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

EHS compliance:

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

Changes:

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

Concerns and observations:

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

Signature (Name, Title Date):
Contractor Representative

4. Example Format: EHS Incident Notification

EHS Incident Notification

Provide within 24 hrs to the Supervising Engineer
Originators Reference No:.....
Date of Incident:..... Time:.....
Location of incident:.....
Name of Person(s) involved:.....
Employing Company:.....
Type of Incident:.....
Description of Incident:
Where, when, what, how, who, operation in progress at the time (only factual)
Immediate Action:
Immediate remedial action and actions taken to prevent reoccurrence or escalation

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

APPENDIX 5: WASTE MANAGEMENT PLAN

The categories of waste envisaged under the sub-project is as follows:

Vegetal waste – This will be vegetation clearance during site preparation. However, vegetal waste is expected to be minimal considering the road to be upgraded is an existing alignment void of vegetation in almost the whole length of the road.

Construction waste – This will include concrete debris from road scarification in selected portions, demolition materials from existing culverts & drainages and affected assets (mud house), left over materials including cement, stones, gravels, wood, metal scraps, etc. Most of the concrete debris and unsuitable will be used as materials to reclaim the existing burrow pits abandoned by the communities and also burrow pits used by the contractors.

Gaseous emissions – from movement of vehicles, machine operations, site clearing activities and mixing of materials.

Liquid waste - Leakages from vehicles, oil containers, chemicals, adhesives, etc.

Sanitary waste – from workers campsite such as domestic sewage, faeces, urine, wastewater, food remnant, food packaging etc.

The table below shows how this waste generated will be managed.

S/N	Potential Source	Waste Type	Waste Streams	Management
A	**PRECONSTRUCTION**			
1	Movement of vehicles on unpaved surface and engine exhaust	Emission	COx, SOx, NOx, CO, Dust	Use water suppression to prevent dust emission. Maintain vehicles and machineries to reduce emission. Maintain low speed to reduce dust and gaseous emission. Allow aerial dispersal over a large area.
2	Site Clearing and Installation of temporary workers camp and offices and workshops	Non-Hazardous	• Vegetal Waste • Industrial Waste: Metal scraps, packaging waste	Vegetal waste shall be supplied to farmers for use as compost. Woody vegetal shall be supplied to host communities for domestic uses including as fuel wood for cooking. Segregated and stored on site to be collected at least once a week for reuse or recycle through the Abia State Ministry of Environment (AbSME) or licensed third party facilities.
3	Workers' camp	Domestic and Sanitary	• Food remnant, kitchen wastes. Food packaging etc • Domestic Sewage	To be transferred to locals for use as compost and animal feed. Plastic and other packaging to be recycled through licensed recycling third parties or collected by AbSME. Sewage will be collected in a properly closed constructed septic tank and will be evacuated in conjunction with SEPA at least twice during the 18month period or as required.
B	**CONSTRUCTION**			
1	Movement of vehicles on unpaved surface and engine exhaust	Emission	COx, SOx, NOx, CO, Dust	Use water suppression to prevent dust emission. Maintain vehicles and machineries to reduce emission. Maintain low speed to reduce dust and gaseous emission. Use of cleaner technologies and modern equipment.
2	Civil works	Non-	• Spoils	Reuse spoils as fill materials as much as

S/N	Potential Source	Waste Type	Waste Streams	Management
A	**PRECONSTRUCTION**			
	Workers' camp/offices	Hazardous /Industrial	• Waste Packaging and Dunnage such as scrap wood, scrap metal, steel, glass, plastic, paper and cardboard, empty metal containers, excess concrete, broken equipment, or components • Domestic-type waste: wastepaper and food scraps, metal cans	possible Segregated and kept securely in closed containers on site. To be evacuated by AbSME or transferred to approved recycling third parties for reuse/recycling. Non-recyclables to be removed by AbSME or other approved waste contractor by the state To be transferred to locals for use as compost and animal feed. Plastic and other packaging to be evacuated by AbSME or recycled through licensed recycling third parties.
3	Civil Works	Hazardous Waste	**Solid Wastes:** used batteries, chemical containers, concrete etc **Liquid Waste:** spent lubricating oils, hydraulic fluids, brake fluids, battery electrolyte, and dielectric fluids, chemical cleaning agents, paints, primers, thinners, and corrosion control coatings; sealants and adhesives etc	Store on site in closed and labelled containers with secondary containment to be evacuated by AbSME or registered waste contractor with off-site permitted hazardous waste treatment, storage, or disposal facilities in accordance with AbSME policies.
	Civil works	Wastewater	Wastewater from equipment washing and concrete production	Discharged to the ground as only very small quantity is envisaged at this stage.
C	**OPERATION**			
1	Movement of vehicles	Emission	COx, SOx, NOx, CO, Dust	See A1
2	Maintenance of bridge and other infrastructures	Non-Hazardous /Industrial	• Packaging waste, scrap metals, plastic, paper and cardboard, empty metal containers, broken equipment, or components	Segregated and kept securely in closed containers on site to be collected by AbSME. Non-recyclables to be removed by AbSME.

APPENDIX 6: OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT PLAN

Every project poses its own HSE risks. This plan is developed to meet up with OHS standards and to achieve the objectives set for the project. The project team shall undertake to ensure high performance standards and conformity with contract requirements by managing the works in a systematic and thorough manner.

Competency

All personnel required to operate or work with any equipment or machine must be competent, be tested for each equipment that he/she shall be operating. All personnel who as part of their profession require licensing or certification must obtain the necessary certification before he/she shall be allowed to work on the site.

Fitness

All personnel working on site shall be required to be certified medically fit to do so by an approved medical facility or Medical Doctor (pre-employment medical examination)

HSE Training

Induction/Orientation

Every new or rehired employee and Subcontractors employees must undergo mandatory OHS orientation / induction. The purpose of the Induction is to educate workers and make them aware of the major potential hazards he or she shall come into contact with while working on the site; also, it is one more opportunity to stress the importance of HSE being the first priority in the operations.

The content of the HSE orientation / induction shall cover the following subjects:

- Site safety rules.
- Personnel protective equipment requirements (PPE).
- Environmental sensitivity and protection.
- Preparation and planning of the job (Daily Pre-task talk).
- Emergency plan and muster points.
- SEA/SH and GBV prevention strategies
- COVID-19 prevention strategies

Project Specific HSE Training

In addition to the HSE orientation /induction, there shall be specific site HSE trainings which shall cover the following topics:

- Manual handling.
- Electrical Safety
- Emergency Prevention, Preparedness and Response
- Work at height training
- First Aid training (for site First Aiders)
- Lifting and Rigging
- Safe Driving techniques (for drivers)

EMERGENCY PREPAREDNESS AND RESPONSE

Emergency procedures and evacuation plan shall be developed by the HSE Department and displayed on the notice board. These procedures shall be communicated to all staff. Also each section/department shall have at least a trained first aider at all times.

HSE IMPLEMENTATION AND PERFORMANCE MONITORING

HSE Meetings

HSE management meetings shall be held once a month. The meeting is to help identify safety problems, develop solutions, review incident reports, provide training and evaluate the effectiveness of our safety program. Some of the meetings shall be:

- Project/Site Management HSE Meeting for management and supervision (Monthly).
- Tool box talk meetings for all workforce (Weekly).
- Pre-task briefing for all workforces (Daily).
- Special situation meeting (As required).

HSE Reporting

All incidents and illnesses must be reported to site supervisor after which investigation shall commence and recorded so that appropriate corrective actions shall be implemented to prevent any re-occurrence and report findings shall be forwarded to management for review. Reporting requirements shall include notification of incident, investigation report, and monthly report. Notification of Incident form shall be developed which shall be filled and submitted to HSE department for investigation.

HSE Inspection and Audits

For continual improvement of HSE management system, HSE inspection and audit shall be conducted. An inspection checklist shall be developed. This is to ensure that the HSE management system is being adhered to. The inspection shall be conducted by the HSE department together with site management.

Corrective and Preventive Actions and Non Conformities

During the cause of inspections, concerns raised shall be addressed and closed out. It is expected that in a period of two weeks, a close out inspection shall take place to verify that the corrective actions have been closed.

Project HSE Rules

The project HSE rules shall be developed and supervision shall develop specific rules and procedures when necessary.

The following site rules shall be implemented at all times. The Site Manager shall draw these rules to the attention of their own workmen or staff. All sub-contractors must ensure that these rules are drawn to the attention of their workmen and staff.

The Principal Contractor may implement additional site rules during the contract programme. Any such additional rules shall be notified to all personnel engaged on the project prior to their implementation. The HSE rules shall include but not limited to:

1. Personal Protective Equipment must be worn at all times.
2. All instructions issued by the Site Manager regarding the storage, handling or cleaning of materials, plant and equipment must be followed.
3. All vehicles must be parked in the designated areas.
4. Any workman suffering from a medical condition that might affect his work and/or that could require specific Medical treatment must inform the supervisor before commencing work.
5. All site tools shall either be battery operated or 110 volts.
6. No one shall be permitted on site if it is believed that they are under the influence of alcohol or drugs.
7. Vehicles must not reverse without a banksman in attendance.
8. All visitors to site must undergo a site-specific induction and operative Identity badges must be worn at all times.

9. All excavations must be secured.
10. Smoking and eating shall only be permitted in the designated area. This area shall be identified during induction.
11. No hot works operations are permitted without a hot work permit in place.
12. There shall be no radios or other music playing devices on site.
13. Good housekeeping practices to be adopted**.**
14. Compliance with all Ethical Power Permit to Work systems.
15. The site keyed access procedure must be strictly adhered to.
16. All Contractors must comply with Site Health & Safety Guidelines / Site Safety Method Statement
17. No untrained worker shall be permitted to operate heavy machineries.
18. COVID-19 protocols to be adhered to including frequent handwashing, use of nose masks when in crowded spaces, timely reporting of any symptoms to HSE officer and immediate isolation.

Safe Work Practices/Personal Protective Equipment (PPE)

The basic PPE required for the project shall be Safety Glasses, Safety Boots, Hand Gloves, Hard Hat, ear plugs and Coverall. Any other PPE shall be used as applicable. Management is responsible for the provision of PPE and usage shall be enforced at all time.

PPE shall be provided in circumstances where exposure to hazards cannot be avoided by other means or to supplement existing control measures identified by a risk assessment. An assessment shall be made to ensure that the PPE is suitable for purpose and is appropriate to the risk involved.

Information, instruction & training shall be given to all employees on safe use, maintenance and storage of PPE. Employees shall, in accordance with instructions given, make full use of all PPE provided and maintain it in a serviceable condition and report its loss or defect immediately to the maintenance department where it shall be replaced.
PPE shall be replaced when it is no longer serviceable and returned on a new for old basis. Employees shall sign to state that they have received PPE when issued.

Welfare Facilities

The provision of welfare facilities on the site shall be communicated to all operatives at site induction.
A cleaning regime shall be implemented and maintained for the duration of the construction phase to ensure the site welfare facilities remain in a clean and tidy condition.
If mains drinking water becomes unavailable during the construction phase bottled water shall be brought to site for all operatives for the necessary period.

Signage

Adequate provision for warning and directional signs shall be made.

APPENDIX 7: BORROW PIT MANAGEMENT PLAN

In general, the contractor will be expected to carry out the construction works in a manner that will minimize the need for the use of borrow materials, including careful attention to re-use of excavated material as sub-base/base where technically feasible.

The contractor is also required to prepare a borrow pit management plan which takes account of these activities and follows them through to handing over. These plans need to take account of the potential environmental & social impact and health & safety hazard; including drowning hazards, water-borne disease vectors, impact on local land holdings, land-use and visual impacts.

The borrow pit management plan will include restoration measures for the site after decommissioning, such as removal and stockpiling of topsoil layers. Where borrow pits are to be left open, for their use in regular maintenance programs, the responsibility for their management should be assigned to the government entity / local authority in charge of road maintenance and compliance with the borrow pit management plan monitored.

Stage	Activities and features	Measures/mitigation	Responsibility
Site selection	Complete a preliminary site assessment prior to undertaking excavation	• Outreach to the community leadership (e.g. operation, hazards, restoration) • Written approval from community leadership for use of the proposed site • Liaise with the local community on the option of retaining quarry pits as water collection ponds for watering cattle, irrigating crops or similar uses. Highlight issues of disease transmission and the need to prohibit its use for drinking, bathing, and clothes washing	Contractor
		• When siting borrow pit areas, avoid using sensitive areas or sites that drain directly into a sensitive area • Borrow pits will not be located in wetland or densely vegetated areas	Contractor
		• Test pits/excavations to confirm the quantity and quality of material in the proposed site • Determine presence of any groundwater	Contractor
		• Map of the location and a plan of the site, including buffer zone, perimeter berm, stockpiles, operational area • Borrow pit design must comply with standards defined (above), • Photographic record of the site in its undisturbed state	Contractor
Excavation Operation	Excavation will consider the following measures	• Ensure that excavation is accompanied by well-engineered drainage. • Topsoil is stripped and stockpiled away from other materials and is to be used only for reinstatement, once pit operations are complete. • Overburden soil (layer between topsoil and material of interest) to be used as a perimeter berm to direct drainage or stockpiled separately to backfill the pit. • Pit excavations maximum 6 metres in depth, with a vertical slope of 2:1 • Excavation below the water table is not permitted. • Heavy machinery access and operation • Carry out necessary preliminary geotechnical investigation to confirm the quality and extent of materials. • Carry out hydrological assessment to determine the presence and depth of aquifer.	Contractor

Stage	Activities and features	Measures/mitigation	Responsibility
		• The contractor shall ensure that topsoil (150m-500m) is stripped and stockpiled at a separate location and preserved for future reclamation activities.	
	Site access and safety	• Barrier (e.g., warning tape, perimeter berms, fencing) to control or discourage public access to the pit. • Fence all sites with standing water deeper than 0.75 metres, to prevent public access. • Install signposts warning of danger and no trespassing, at no more than 50 meters' distance from the pit. • Community awareness and outreach on the dangers of borrow pits and that trespassing is prohibited.	Contractor
	Vegetation	• Avoid or reduce to a minimum vegetation clearance. • Existing vegetation within the buffer area should provide some visual and physical screening of the pit operations	Contractor
	Water	• If water is required for borrow pit operation, a water extraction point (e.g. borehole) will be established within the site are and will be planned for use by the community once the site is reinstated • Drainage structures or pumping will remove any standing water in the borrow pit. Alternatively, any pits with 0.75 metres or more of standing water will be fenced. • Overburden soil can be used as a perimeter berm to direct water drainage away from the site. • Use drainage features in flatter areas, such as mitre drains and sumps, to remove water from around the road ditches. • Community members are not allowed to use water at an active borrow pit, for any purpose	Contractor
	Erosion	• Erosion control measures undertaken in all aspects of the borrow-pit operation, including: reduced slopes, seeding, etc • Protect topsoil stockpiles from wind and water erosion by reducing slopes, using a cover, and/or spraying with water	Contractor
	Dust and noise	• If a rock crusher is used, dust control measures shall be put in place (water truck or sprinklers on crushing equipment) • Vegetation within the buffer area will screen noise of pit operations	Contractor
Reinstatement	Reinstatement will be completed prior to handover of the completed road section	• Fill excavated site with overburden stockpiles and perimeter berms and graded to the desired slope and drainage path. • Spread topsoil on top of the overburden	Contractor
		• Develop/construct suitable surface slopes, drainage ditches and conduits to prevent water from collecting at the sites. • Scarify the borrow pit operational site to encourage vegetation cover. • Establish a vegetation cover corresponding to at least 75% of the cover present prior to excavation (supporting photographs) and maintain following the first rains after reinstatement. • Minimize erosion by focusing vegetation cover on side slopes of the excavated area. • Any required seeding will make use of local plant varieties	Contractor
Review	Ensure the Borrow	• Review borrow pit management / monitoring reports	FPMU

Stage	Activities and features	Measures/mitigation	Responsibility
	pit management plan implementation	• Review reinstated borrow pit areas prior to handover of completed road sections. • Engage local community authorities to take responsibility for long-term borrow pits in their areas. • Ensure that the responsibility for management of borrow pits left open is assigned to the government entity / local authority. • Verify conformance with Borrow Pit Management Plan	

APPENDIX 8: TRAFFIC MANAGEMENT PLAN

The objective of this TMP is to provide safe passage for pedestrians, motorcyclist, cyclists and vehicular traffic along the intervention roads during the road construction. The Contractor should designate a TMP Supervisor who will oversee traffic management along major roads within the project corridors. The following are the minimum requirements for traffic management on the project: Please refer to the World Bank Good Practice Note on Road Safety (2019)[12] for additional guidance.

a) Design and layout of Road Systems

The contractor in conjunction with the community, SPIU and FRSC must: -

a) Plan traffic routes to give the safest route between places within the project route
b) Make traffic routes wide enough for safe movement of the largest vehicle using them.
c) Ensure all drops and falls are adequately protected.
d) Avoid traffic routes passing close to vulnerable areas such as fuel tanks.
e) Ensure there are designated safe areas for loading, unloading and plant maintenance.
f) Avoid sharp corners or blind bends, if these cannot be avoided install mirrors.
g) Road crossings and junctions should be clearly signed and marked.
h) Make entrances and gates wide enough.
i) Set speed limits and clearly mark on traffic routes; (5mph).
j) Give prominent warning of limited headroom and overhead cables.

b) Liaisons with Government Traffic Agencies

The TMP will ensure liaisons with the FRSC at the State level. In situations where heavy traffic impacts are envisaged, the Contractor will liaise with the FRSC to ensure traffic coordination and mitigate adverse traffic impacts.

c) Pedestrians

a) Provide separate routes for pedestrians and where needed provide suitable barriers.
b) If traffic routes are used by both pedestrians and vehicles, they should be wide enough.
c) Provide suitable well marked crossing points.

S/N	Aspects	Descriptions	Responsible Party
1	Traffic/Safety Signage	▪ Safety signage should be put at both ends of the road corridor to warn road users of the ongoing construction activities. ▪ Signages should also be located along borrow pits, engineering yards and workers' camp.	Contractor
2	Movement of Vehicles and Equipment	▪ Mobilization of equipment and materials should be done at off-peak period (10am – 4pm). ▪ Enforce speed limit. ▪ Ensure vehicles and equipment are parked at Camp site and designated areas ONLY. ▪ Untarred access roads shall be sprinkled with water frequently to suppress dust emissions. ▪ The contractor must ensure that trucks carrying sand/soil to and from the sites are well covered in order not to cause injury to the public. ▪ Station flagmen at junctions, diversion points, near public crossings such as schools and speed bumps will be installed in built up areas and near public facilities such as schools, mosques, churches to reduce speed and dust.	Contractor

[12] https://thedocs.worldbank.org/en/doc/648681570135612401029002019/original/GoodPracticeNoteRoadSafety.pdf

S/N	Aspects	Descriptions	Responsible Party
		▪ During peak periods, such as market days FRSC will also be involved in assisting traffic and road safety management. Furthermore, the contractor will engage the services of FRSC to train all project drivers.	
3	Training	▪ Hire drivers with appropriate driver's license. ▪ Liaise with FRSC to train drivers. ▪ As part of refresher course for construction workers, train drivers on defensive driving and enforce speed limits	Contractor
4	Communication	▪ All Traffic and Safety signages should be boldly written in English & local languages. ▪ The Contractor, with support from the SPMU should undertake road safety campaigns in communities along the road to sensitize them about the project activities. ▪ Any incident/ accidents should be reported immediately to the SPIU within 24hrs. The SPIU will also report to the FPMU/WB within 48hrs including immediate action taken	Contractor SPIU Contractor

APPENDIX 9: CODE OF CONDUCT FOR GBV/SEA/SH

Individual Code of Conduct
Preventing Gender Based Violence and Violence Against Children

Definitions:

Gender Based Violence (GBV) - is an umbrella term for any harmful act that is perpetrated against a person's will, and that is based on socially ascribed (gender) differences between males and females. It can be sexual, physical, psychological and economic in nature, and includes acts, attempted or threatened, committed with force, manipulation, or coercion and without the informed consent of the survivor. A SURVIVOR is a person who has experienced GBV.

Sexual Exploitation and Abuse (SEA) is the actual or attempted abuse of a position of vulnerability, power, or trust for sexual purposes including but not limited to profiting monetarily or socially from sexually exploitation of another.

Sexual harassment (SH) is the unwanted behavior of a sexual nature.

Violence Against Children (VAC) is both physical and non-physical forms including neglect, maltreatment, exploitation and sexual abuse.

I, _____, acknowledge that preventing gender-based violence (GBV) and violence against children (VAC) is important. The company considers that GBV or VAC activities constitute acts of gross misconduct and are therefore grounds for sanctions, penalties or potential termination of employment. All forms of GBV or VAC are unacceptable be it on the work site, the work site surroundings, or at worker's camps. Prosecution of those who commit GBV or VAC may be pursued if appropriate.

I agree that while working on the project I will:

- Consent to police background check.
- Treat women, children (persons under the age of 18), and men with respect regardless of race, colour, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status.
- Not use language or behaviour towards women, children or men that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate.
- Not participate in sexual contact or activity with children—including grooming or contact through digital media. Mistaken belief regarding the age of a child is not a defence. Consent from the child is also not a defence or excuse.
- Not engage in sexual favours—for instance, making promises or favourable treatment dependent on sexual acts—or other forms of humiliating, degrading or exploitative behaviour.
- Unless there is the full consent[13] by all parties involved, I will not have sexual interactions with members of the surrounding communities. This includes relationships involving the withholding or promise of actual provision of benefit (monetary or non-monetary) to community members in exchange for sex-such sexual activity is considered "non-consensual" within the scope of thisCode.

[13] **Consent** is defined as the informed choice underlying an individual's free and voluntary intention, acceptance or agreement to do something. No consent can be found when such acceptance or agreement is obtained through the use of threats, force or other forms of coercion, abduction, fraud, deception, or misrepresentation. In accordance with the United Nations Convention on the Rights of the Child, the World Bank considers that consent cannot be given by children under the age of 18, even in the event that national legislation of the country into which the Code of Conduct is introduced has a lower age. Mistaken belief regarding the age of the child and consent from the child is not a defense.

- Attend and actively partake in training courses related to HIV/AIDS, GBV and VAC as requested by my employer.
- Consider reporting through the GRM or to my manager any suspected or actual GBV or VAC by a fellow worker, whether employed by my company or not, or any breaches of this Code of Conduct. With regard to children under the age of 18:
- Wherever possible, ensure that another adult is present when working in the proximity of children.
    - Not invite unaccompanied children unrelated to my family into my home unless they are at immediate risk of injury or in physical danger.
    - Not sleep close to unsupervised children unless absolutely necessary, in which case I must obtain my supervisor's permission, and ensure that another adult is present if possible.
    - Use any computers, mobile phones, or video and digital cameras appropriately, and never to exploit or harass children or to access child pornography through any medium (see also "Use of children's images for work related purposes" below).
    - Refrain from physical punishment or discipline of children.
    - Refrain from hiring children for domestic or other labour which is inappropriate given their age or developmental stage, which interferes with their time available for education and recreational activities, or which places them at significant risk of injury.
    - Comply with all relevant local legislation, including labour laws in relation to child labour.

Use of children's images for work related purposes

When photographing or filming a child for work related purposes, I must:

- Before photographing or filming a child, assess and endeavor to comply with local traditions or restrictions for reproducing personal images.
- Before photographing or filming a child, obtain informed consent from the child and a parent or guardian of the child. As part of this I must explain how the photograph or film will be used.
- Ensure photographs, films, videos and DVDs present children in a dignified and respectful manner and not in a vulnerable or submissive manner. Children should be adequately clothed and not in poses that could be seen as sexually suggestive.
- Ensure images are honest representations of the context and the facts.
- Ensure file labels do not reveal identifying information about a child when sending images electronically.

Sanctions

I understand that if I breach this Individual Code of Conduct, my employer will take disciplinary action which could include:

- Informal warning.
- Formal warning.
- Additional Training.
- Loss of up to one week's salary.
- Suspension of employment (without payment of salary), for a minimum period of 1 month up to a maximum of 6 months.
- Termination of employment.
- Report to the police if warranted.

I understand that it is my responsibility to avoid actions or behaviors that could be construed as GBV or VAC or breach this Individual Code of Conduct. I do hereby acknowledge that I have read the foregoing Individual Code of Conduct, do agree to comply with the standards

contained therein and understand my roles and responsibilities to prevent and respond to GBV and VAC. I understand that any action inconsistent with this Individual Code of Conduct or failure to take action mandated by this Individual Code of Conduct may result in disciplinary action and may affect my ongoing employment.

Signature: _____
Printed Name: _____
Title: _____
Date: _____

Contractor's Code of Conduct
Preventing Gender Based Violence (GBV) and Sexual Exploitation & Abuse (SEA)

Definitions:

Gender Based Violence (GBV) - is an umbrella term for any harmful act that is perpetrated against a person's will, and that is based on socially ascribed (gender) differences between males and females. It can be sexual, physical, psychological and economic in nature, and includes acts, attempted or threatened, committed with force, manipulation, or coercion and without the informed consent of the survivor. A SURVIVOR is a person who has experienced GBV.

Sexual Exploitation and Abuse (SEA) is the actual or attempted abuse of a position of vulnerability, power, or trust for sexual purposes including but not limited to profiting monetarily or socially from sexually exploitation of another.

Sexual harassment (SH) is the unwanted behavior of a sexual nature.

Violence Against Children (VAC) is both physical and non-physical forms including neglect, maltreatment, exploitation and sexual abuse.

The company is obliged to create and maintain an environment which prevents Gender Based Violence (GBV) and Sexual Exploitation & Abuse (SEA) issues. The company is also required to maintain an environment where the unacceptability of GBV and actions against children are clearly communicated to all those involved in the project. In order to prevent GBV and SEA, the following core principles and minimum standards of behaviour will apply to all employees without exception:

1. GBV/SEA constitutes acts of gross misconduct and are therefore grounds for sanctions, penalties and/or termination of employment. All forms of GBV/SEA including grooming are unacceptable, be it on the work site, the work site surroundings, project neighbourhoods or at worker's camps. Prosecution of those who commit GBV or SEA will be followed.
2. Treat women, children (persons under the age of 18), and men with respect regardless of race, colour, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status.
3. Do not use inappropriate language or behaviour towards women, children and men. This includes harassing, abusive, sexually provocative, derogatory, demeaning or culturally inappropriate words, gestures or actions.
4. Sexual activity with children under 18—including through digital media—is prohibited. Mistaken belief regarding the age of a child and consent from the child is not a defence.
5. Sexual favours or other forms of humiliating, degrading or exploitative behaviour are prohibited.
6. Sexual interactions between contractor's and consultant's employees at any level and member of the communities surrounding the workplace that are not agreed to with full consent by all parties involved in the sexual act are prohibited. This includes relationships involving the withholding/promise of actual provision of benefit (monetary or non-monetary)

to community members in exchange for sex – such sexual activity is considered "non-consensual" within the scope of this Code.

7. All employees are required to attend an induction training course prior to commencing work on site to ensure they are familiar with the GBV/SEA Code of Conduct.

8. All employees must attend a mandatory training course once a month for the duration of the contract starting from the first induction training prior to commencement of work to reinforce the understanding of the institutional GBV and SEA Code of Conduct.

9. All employees will be required to sign an individual Code of Conduct confirming their agreement to support GBV and SEA activities.

I do hereby acknowledge that I have read the foregoing Code of Conduct, do agree to comply with the standards contained therein and understand my roles and responsibilities to prevent and respond to GBV and SEA. I understand that any action inconsistent with this Code of Conduct or failure to take action mandated by this Code of Conduct may result in disciplinary action.

FOR THE COMPANY

Signed by _____

Title: _____

Date: _____

Manager's Code of Conduct

Preventing Gender Based Violence (GBV) and Sexual Exploitation & Abuse (SEA)

Definitions:

Gender Based Violence (GBV) - is an umbrella term for any harmful act that is perpetrated against a person's will, and that is based on socially ascribed (gender) differences between males and females. It can be sexual, physical, psychological and economic in nature, and includes acts, attempted or threatened, committed with force, manipulation, or coercion and without the informed consent of the survivor. A SURVIVOR is a person who has experienced GBV.

Sexual Exploitation and Abuse (SEA) is the actual or attempted abuse of a position of vulnerability, power, or trust for sexual purposes including but not limited to profiting monetarily or socially from sexually exploitation of another

Sexual harassment (SH) is the unwanted behavior of a sexual nature

Violence Against Children (VAC) is both physical and non-physical forms including neglect, maltreatment, exploitation and sexual abuse

Managers at all levels have particular responsibilities to create and maintain an environment that prevents GBV and SEA. They need to support and promote the implementation of the Company Codes of Conduct. To that end, Project Managers are required to sign up to Codes of Conduct applicable to their managerial duties within the context and also sign the Individual Codes of Conduct. This commits them to support and develop systems that facilitate the implementation of this action plan and maintain a GBV-free, child-safe and conflict-free work environment. These responsibilities include but are not limited to:

Mobilization

1. Establish a GBV/SEA Compliance Team from the contractor's and consultant's staff to write an Action Plan that will implement the GBV and SEA Codes of Conduct.

2. The Action Plan shall, as a minimum, include the

i. Standard Reporting Procedure to report GBV and SEA issues through the project Grievance Redress Mechanism (GRM);

ii. Accountability Measures to protect confidentiality of all involved; and,

iii. Response Protocol applicable to GBV survivors/survivors (including access to support coping and post-trauma management strategies) and perpetrators.

iv. Engagement of the services of social service providers (NGOs) with requisite skill in the prevention and management of GBV and SEA.

3. Coordinate and monitor the development of the Action Plan and submit for review to the RAAMP-PIU safeguards teams, as well as the World Bank prior to mobilization.

4. Update the Action Plan to reflect feedback and ensure the Action Plan is carried out in its entirety.

5. Provide appropriate resources and training opportunities for capacity building so members of the compliance team will feel confident in performing their duties. Participation in the Compliance tame will be recognized in employee's scope of work and performance evaluations.

6. Ensure that contractor, consultant and client staff are familiar with the RAAMP GRM and that they can use it to anonymously report concerns over GBV and SEA.

7. Hold quarterly update meetings with the compliance team to discuss ways to strengthen resources and GBV/SEA support for employees and community members.

8. In compliance with applicable laws and to the best of your abilities, prevent perpetrators of sexual exploitation and abuse from being hired, re-hired or deployed. Use background and criminal reference checks for all employees.

9. Ensure that when engaging in partnership, sub-grant or sub-recipient agreements, these agreements

a) incorporate this Code of Conduct as an attachment;

b) include the appropriate language requiring such contracting entities and individuals, and their employees and volunteers to comply with this Code of Conduct; and

c) expressly state that the failure of those entities or individuals, as appropriate, to take preventive measures against GBV and SEA, to investigate allegations thereof, or to take corrective actions when GBV/SEA has occurred, shall constitute grounds for sanctions and penalties.

Training

1. All managers are required to attend an induction manager training course prior to commencing work on site to ensure that they are familiar with their roles and responsibilities in upholding the GBV/SEA Codes of Conduct.

2. Provide time during work hours to ensure that direct recruits attend the mandatory induction training which covers GBV/SEA training required of all employees prior to commencing work on site.

3. Managers are required to attend and assist with the NGO-facilitated monthly training courses for all employees. Managers will be required to introduce the trainings and announce results of consequential evaluations.

4. Collect satisfaction surveys to evaluate training experiences and provide advice on improving the effectiveness of training.

Prevention

1. All managers and employees shall receive a clear written statement of the company's requirements with regards to preventing GBV/SEA in addition to the training.

2. Managers must verbally and in writing explain the company and individual codes of conduct to all di¬rect recruits.

3. All managers and employees must sign the individual 'Code of Conduct for GBV and SEA, including acknowledgment that they have read and agree with the code of conduct.

4. To ensure maximum effectiveness of the Codes of Conduct, managers are required to prominently display the Company and Individual Codes of Conduct in clear view in public areas of the work space. Examples of areas include waiting, rest and lobby areas of sites, canteen areas, health clinics.

5. Managers will explain the GRM process to all employees and encourage them to report suspected or actual GBV/SEA

6. Mangers should also promote internal sensitization initiatives (e.g. workshops, campaigns, on-site demonstrations etc.) throughout the entire duration of their appointment in collaboration with the compliance team, service providers and in accordance to the Action Plan.
7. Managers must provide support and resources to the compliance tea and service provider NGOs to create and disseminate the internal sen¬sitization initiatives through the Awareness-raising strategy under the Action Plan.

Response

1. Managers will be required to provide input, final decisions and sign off on the Standard Reporting Pro¬cedures and Response Protocol developed by the compliance team as part of the Action Plan.
2. Once signed off, managers will uphold the Accountability Measures set forth in the Action Plan to maintain the confidentiality of all employees who report or (allegedly) perpetrate incidences of GBV/SEA (unless a breach of confidentiality is required to protect persons or property from serious harm or where required by law).
3. Once a sanction has been determined, the relevant manager(s) is/are expected to be personally responsible for ensuring that the measure is effectively enforced, within a maximum timeframe of 14 days from the date on which the decision was made.
4. Managers failing to comply with such provision can be in turn subject to disciplinary measures, to be determined and enacted by the company's CEO, Managing Director or equivalent highest-ranking manager. Those measures may include:

i. Informal warning
ii. Formal warning
iii. Additional Training
iv. Loss of up to one week's salary.
v. Suspension of employment (without payment of salary), for a minimum period of 1 month up to a maximum of 6 months.
vi. Termination of employment.

I do hereby acknowledge that I have read the foregoing Code of Conduct, do agree to comply with the standards contained therein and understand my roles and responsibilities to prevent and respond to GBV and SEA. I understand that any action inconsistent with this Code of Conduct or failure to take action mandated by this Code of Conduct may result in disciplinary action.

FOR THE EMPLOYER
Signed by _____
Title: _____
Date: _____

APPENDIX 10 : CAMP SITE MANAGEMENT PLAN

The objectives of the Camp Management Plan are:

- Avoid or reduce negative impacts on the community and maintain constructive relationships between local communities and workers' camps; and
- Establish standards on worker welfare and living conditions at the camps that provide a healthy, safe and comfortable environment.

This Plan should be read in conjunction with other environmental and social management plans (ESMPs), if available including:

- Traffic Management Plan
- Security Plan
- Stakeholder Engagement Plan

Legal Requirements and Grievances

The Contractor is required to operate within the parameters of the Nigeria Labour Law and the International Labour Organization guidelines. The World Bank Performance Standards are applicable to RAAMP and its sub projects. Furthermore, the Grievance Redress Mechanism contained in this ESMF is required to be adhered to by the Contractor.

Contractor personnel shall conduct regular safety walks and an HSE committee will track performance against requirements stipulated in this plan. The Contractor will also have its grievance mechanism developed for the project.

Additionally, Contractor would be required to sign and acknowledge the Code of Conduct and agree to abide by its provisions.

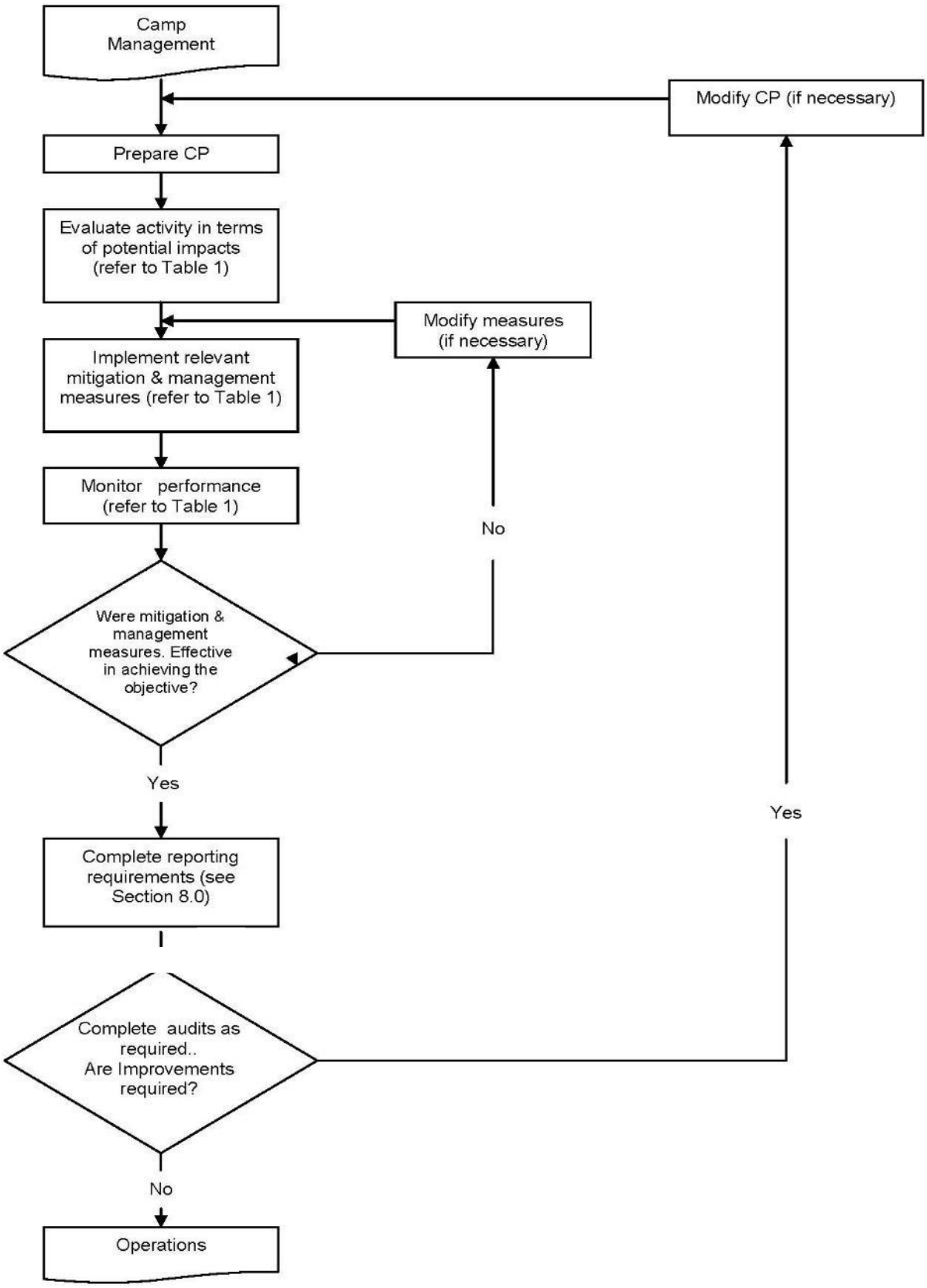
Management and Monitoring

Figure 1 presents a flow chart summarising key management steps associated with implementation and review of this Plan, including steps to allow for continued improvement. Table 1 presents a summary of the potential impacts related to camp activities, together with mitigation and management measures to avoid or reduce these impacts, and the monitoring required to assess the performance of these measures.

The Contractor shall develop a Contractor Plan which shall, as a minimum, incorporate the camp management measures described in Table 1. The Contractor shall not be limited to these measures.

Monitoring to be undertaken as part of this Plan is described in Table 1.The Contractor is responsible for developing area or site-specific procedures for the monitoring program (where necessary) based upon the final design details of the infrastructure

Camp Management Process



Management and Monitoring of Contractors Campsite

Aspect	Potential impact	Mitigation & Management	Monitoring	Frequency	Responsibility
Community Relations	Unauthorised movements of construction workers (during and after working hours) could result in trespassing, damage to local land and property and create amongst local residents a sense of their privacy being invaded. Residents may feel vulnerable and there may be increasing incidents of crime and or violence (GBV etc) and threats to the safety of community members. Disparity of pay, increase in disposable income and potential availability of illegal substances, illicit or culturally inappropriate lifestyle choices, leading to increased tension between local communities and the workers at camps.	1. Contractor shall enforce a 'closed' camp policy unless otherwise agreed and approved by Company. Workers will comply with the agreed camp closure hours. 2. Contractor shall implement suitable measures to maintain the closed camp policy which may include perimeter security fences, security controls and guard houses, monitoring transfer of goods into and out of camps for contraband and stolen goods. Contractor should refer to the Project Security Management Plan. 3. Contractor, as appropriate, shall provide adequate recreation facilities for workers to reduce incentive for leaving camps during leisure time. 4. Contractor shall limit workers interaction with the community when outside the camp e.g., by organising transport directly to and from the worksite. 5. If community members or local businesses express grievances in relation to camp related activities/operations, the Project shall respond to the grievance in accordance with the Grievance Redress Mechanism contained in the ESMF. 6. FPMU/SPIU may request that camp related activities/operations be amended to address community grievances. Contractor shall comply with these requests. 7. Workers shall abide by camp rules which include a disciplinary process to be developed by the contractor once appointed. 8. The Project shall, be cognisant of the environment	Monitoring and Verification	Continuous Every 3 months Every 6 months Continuous Continuous Continuous Every 3 months	Contractor, Supervising Consultant and SPIU/FPMU

Aspect	Potential impact	Mitigation & Management	Monitoring	Frequency	Responsibility
		in which it works and shall, where practicable, respect local cultural events such as religious events, funerals and the like. 9. The Project shall provide training to all workers on camp management including: a. A briefing on camp rules, including closed camp policy, behaviour between fellow workers and the community; b. Procedures for dealing with camp related complaints, worker issues and community issues and c. Community relations orientation. The objective of this orientation will be to increase awareness about the local area and cultural sensitivities.		Continuous Every 3 months	
Health	Potential interaction between workers, persons engaged in illicit activities and the community increases the risk of spreading communicable diseases, particularly in more remote communities. Camp operations have the potential to develop favourable conditions for pests and disease, which could impact the health of workers and the community, as well as affect community livelihoods (e.g. rodent infestation affecting crops).	1. Contractor shall comply with the Minimum Health Requirements for Project Execution and the Community Health and Safety Management Plan which set out requirements and management measures on controlling communicable diseases within camps and to outside communities. 2. Contractor shall enforce the closed camp policy to limit interaction with community. 3. The Contractor shall develop a Pathogen and Pest Management Plan to prevent pathogens and pests from entering the camps and spreading outside the camps. 4. Posters and informational sessions will be conducted to raise awareness among the workforce and communities locally around the worker camps.	Verification	Every three months Continuous Every three months	Contractor Supervising Consultant
Waste management, pollution and environmental impacts	Camp has the potential to have off site pollution impacts from waste disposal, emissions and spills. Camp operations may also cause environmental issues including deteriorating water quality, erosion, sedimentation, noise and air quality	1. Contractor shall exercise all reasonable due diligence to conduct its operations in a manner that will minimize pollution. 2. Contractor shall comply with the Waste Management Plan and Hazardous Materials Management Plan which define requirements to contain, transport, handle and dispose of camp	Verification & Notification	Continuous	Contractor Supervising Consultant/ SPIU

Aspect	Potential impact	Mitigation & Management	Monitoring	Frequency	Responsibility
	issues. These factors have the potential to affect the community if not adequately managed.	wastes and hazardous materials to avoid impacts to human health and the environment. 3. Contractor shall also apply appropriate mitigation measures as contained in this ESMF.			
Community resources	• Any infrastructure, services or resources used by camps (e.g. water abstraction) that result in reductions/ shortage/interruptions for the local community will have a negative impact. • There is potential for social envy and increased resentment from the community towards the Project and project team if camp facilities are perceived to be superior to those in the community. Services of note include camp health facilities, power supply, clean running water. Restricted ability to access these services may increase frustration at the level of the services available to them.	1. Contractor shall utilise water sources for camp use in a manner that minimises impacts on local supply and use. Where necessary, water supply should be sought outside of the community source(s). 2. The Project shall routinely monitor quality and supply of water source used by camp through quarterly sampling exercises. 3. Contractors shall be encouraged to extend Corporate Social Responsibility projects to host communities.	Verification and On-going	Prior to establishing the camps Every 3 months Annual	Contractor Supervising Consultant SPIU
Procurement and supply of goods	Increased demand for food and other provisions may deplete natural resources e.g. agriculture, fisheries, etc. potentially causing shortages of supply in the local community, and/or increasing the price of goods, affecting affordability for local communities.	The Project shall not purchase products in the local community unless through formal contracts with approved suppliers.	Verification	Continuous	Contractor
Camp location	• Siting of camps may result in displacement of residents, loss of productive lands and the	1. Potential camp locations will be selected in consultation with FPMU/SPIU and affected communities will be subsequently consulted.		Prior to establishing the camp	Contractor and/or Company

Aspect	Potential impact	Mitigation & Management	Monitoring	Frequency	Responsibility
	resources upon these lands. Camps may also restrict or impede access to areas for the local community. • Construction camps may result in a noticeable increase in traffic, noise, air emissions and light intrusion which could negatively affect the amenity and lifestyle of nearby communities and pose a potential safety issue.	Necessary permits will be obtained from the relevant Local Authorities for the approved camp location. 2. The Project shall refer to those Environmental & Social Management Plan's (ESMP) that include mitigation/avoidance measures that relate to the local community, including: • Noise and Vibration Management Plan; • Air Emissions Management Plan; and • Waste Management Plan.		Continuous	Community SPIU
Labour Influx	There is a likelihood of influx of non local labour into areas around the construction camps. However, people from outside of the local area may migrate into existing settlements or develop new settlements in proximity to camps and the Project area. Labour Influx can result in disputes and sometimes violence between the new settlers and the resident community. Migrants moving into existing settlements may increase demand and inflate prices for housing, goods and services. Increased population and development of new and uncontrolled settlements increase pressure on infrastructure, services and resources. Major labour influx related risks include workers' sexual relations with minors and resulting pregnancies, presence of sex workers in the community, the spread of HIV/AIDS, sexual	• Contractor shall enforce a 'closed' camp policy. This is intended to deter individuals setting up near camp. • Contractor shall develop a Labour Influx Management Plan. • Contractor is to coordinate with Local government to ensure that no illegal and unsafe settlements develop. • Contractor shall review and ensure adherence to labour influx management plan.	Verification	Continuous	Contractor and FPMU/SPIU

Aspect	Potential impact	Mitigation & Management	Monitoring	Frequency	Responsibility
	harassment of female employees, child labour and abuse, increased drop out rates from school, poor labour practice and lack of road safety.				
Worker welfare and living conditions	Construction workers living in camps may encounter stresses and discomforts that negatively impact their health and welfare. These stressors or discomforts may be caused by Poor living conditions (accommodation, ablution and sanitary, health, recreation catering and laundry).	Contractor shall comply with minimum standards for camp buildings, facilities and services in line with the Bank standard or as contained in the Project Invitation to Tender (ITT) requirements. This will include separate sleeping spaces and toilets for male and female workers with ability to lock from inside, WASH facilities should comply with WHO standards including portable water with well-placed overhead tanks, wash basins and concrete and covered septic tanks Sleeping matrasses should be provided for all workers to avoid them sleeping on the floor First aid kits should be provided in the Camp sites and the HSE officers should receive training on first aid The area should be secured and security arrangements should be made to ensure workers safety	Verification	Continuous	Contractor, Supervising Consultant and SPIU/FPMU
	Cultural issues (nationality, religion, discrimination, GBV and harassment, etc.).	• Contractor shall ensure that applicable ESMF mitigation measures for specific issues are applied. • Contractor may provide prayer rooms and other facilities, as necessary and to the extent practicable, to satisfy the religious needs and customs of its workforce. • Contractor's personnel shall not engage in any discrimination, GBV, SEA or harassing behaviour. Contractor shall establish an Equal Opportunity Policy to promote non-discrimination in accordance with Labour and Worker Conditions Management Plan. • Contractor shall implement a worker grievance procedure to address grievances between workers. .	Verification	Continuous	Contractor
	Mental health issues (morale, isolation, family attachments,	1. Camps will be treated as closed camps. Camp rules in relation to alcohol consumption and drug	Verification	Continuous	Contractor

Aspect	Potential impact	Mitigation & Management	Monitoring	Frequency	Responsibility
	boredom).	prohibition will be complied with. 2. Contractor shall provide recreational facilities where practicable. 3. Contractor will provide counselling for all workers, with no discrimination by race, sex or religion.		Every 6 months	
	Personal security (crime, and emergencies).	• Camps will be controlled by security to avoid intrusions from outside community. • Work Site Security Plan to be developed by Contractor shall include security measures to be provided at the camps which may include fencing, locks, alarms, pass card systems, badge and pass system, access points, safe transport of personnel as appropriate. • Contractor shall develop an Emergency Response Plan that meets requirements set out in ITT package	Verification	Prior to establishing camp	Contractor
	Environmental stress (climate, noise etc.).	Contractor shall comply with Minimum Health requirements for Project Execution including the following: • Accommodation will be designed to suit climatic conditions; • Accommodation and surroundings shall be constructed so that noise does not interfere with sleep to the extent that is reasonably practicable; and • Health and hygiene inspections shall be carried out.	Verification	Continuous	Contractor
Decommissioning	Decommissioning of camps has several potential impacts: • Local employment and provision of local goods and services at camps will no longer be required; • Locals employed and previously accommodated in camps will no longer have access to services and benefits available at camps (e.g. health services, recreation	• Contractor is to follow retrenchment procedure contained in Labour and Worker Conditions Management Plan (if available) • Where Community requests, some infrastructure and services may be retained as advised by the FPMU and the World Bank: o Disturbed areas will be reinstated; o Where practicable, Contractor will return camp areas to former landforms; o No facilities will be maintained in or near	Verification	Continuous	Contractor and FPMU/SPIU

Aspect	Potential impact	Mitigation & Management	Monitoring	Frequency	Responsibility
	facilities); and • Infrastructure which provides benefits to communities may no longer be maintained (e.g. roads, camp boreholes) and may be decommissioned and removed.	especially environmentally or socially sensitive areas; and ○ Where there are negative consequences of induced access, the facility will also be decommissioned and the area reinstated.			

APPENDIX 11: LABOUR INFLUX MANAGEMENT PLAN

This plan identifies labour requirements and sets out the procedures for addressing labour conditions and risks associated with the proposed project, which is aimed at helping Plateau SPIU to determine the resources necessary to address project labor issues.

SUB-CATEGORY	WORKER IMPACTS\RISKS	PROJECT IMPACTS\RISKS	MITIGATION MEASURES	MONITORING	MONITORING FREQUENCY	RESPONS-IBILITY
Employment	Influx of many foreigners into project community	Competition on livelihood and job opportunity with locals	Unskilled labour shall be from the project community. (pre-construction phase 35, construction phase 80, operation phase 15). Where possible qualified skilled workers on contract shall also be sourced within the community (skilled labor: preconstruction phase 10, construction phase 25, operation phase 3)	Verify	Onset of Project and bi-weekly	Contractor Monitoring: Supervision Consultant SPIU -ESS/SSS
Housekeeping.	The general appearance of the camp deteriorates making camp life unpleasant.	The overall camp experience is compromised which in turn leaves workers demoralised and unproductive.	Ensure that campgrounds and common areas are routinely cleaned and organised with appropriate signage in place, and that grounds are maintained (e.g., grassed areas are regularly mown). Establish easily accessible, designated smoking areas which are clearly highlighted and regularly cleaned.	Verify	Monthly	Contractor Monitoring: Supervision Consultant SPIU -ESS/SSS
Recreation.	Workers spend most of their time in the camps and could become disenchanted and bored. They may want to leave the camps and go into the local towns and villages in search of recreation.	Tensions arise from the local communities as workers impact their activities in search of recreation. An increase in alcohol consumption and prostitution could result due to the influx of workers into local communities.	Provide appropriate recreational facilities and activities. These should be discussed with the camp residents committee.	Assessment	Quarterly	Contractor Monitoring: Supervision Consultant SPIU -ESS/SSS

SUB-CATEGORY	WORKER IMPACTS\RISKS	PROJECT IMPACTS\RISKS	MITIGATION MEASURES	MONITORING	MONITORING FREQUENCY	RESPONS-IBILITY
Spiritual /Religion.	Workers will want access to places of worship for their chosen religion. They may leave the camps and go into the local towns and villages in search of an appropriate place of worship.	Tensions arise from the local communities as workers impact their activities.	Provide appropriate places of worship where residents express a need for this in accordance with cultural sensitivities and assess transport arrangements on a case-by-case basis. Ensure that equipment and facilities are kept clean and well maintained.	Assessment	Quarterly	Contractor Monitoring: Supervision Consultant SPIU -ESS/SSS
SUB-CATEGORY	**WORKER IMPACTS\RISKS**	**PROJECT IMPACTS\RISKS**	**MITIGATION MEASURES**	**MONITORING**	**MONITORING FREQUENCY**	**RESPONS-IBILITY**
Security.	Inconsistent and aggressive behaviour of security personnel towards workers can result in tensions and conflict in the workplace and a perception of human rights abuses.	Insufficient training and control of security personnel can lead to the inappropriate use of force, while protecting Project workers and assets, or inappropriate behaviour towards local populations, resulting in human rights claims.	Ensure that camp security personnel meet at least the following requirements: • Have not been implicated in past abuses • Are trained in appropriate conduct towards workers and community members including: o Exercising constraint and caution and understand how force may be used o Respecting human rights o Behaving consistently o Knowing and abiding by applicable laws o Fostering good community relations through their interaction and behaviour towards the workforce and communities	Assessment	Quarterly	Contractor Monitoring: Supervision Consultant SPIU -ESS/SSS
Community relations.	Communities are negatively impacted by camp activities: noise, waste, traffic, lighting and so forth. This may result in negative actions towards camp operations such as road closures and the prevention of workers or suppliers from entering the	Workers are stopped from going to work, which affects productivity.	Implement control measures to avoid and minimise the impacts of camp and living conditions on communities. Limit foreign worker interaction with communities and provide cultural sensitivity awareness training to facilitate appropriate interaction with communities.	Assessment	Quarterly	Contractor Monitoring: Supervision Consultant SPIU -ESS/SSS

SUB-CATEGORY	WORKER IMPACTS\RISKS	PROJECT IMPACTS\RISKS	MITIGATION MEASURES	MONITORING	MONITORING FREQUENCY	RESPONS-IBILITY
	worksite.					

APPENDIX 12: COMMUNITY AFFAIRS, SAFETY, HEALTH, ENVIRONMENT & SECURITY (CASHES) PLAN

The contractor recognizes that failure to perform its duties with the highest sense of responsibility and in line with laid down procedures, regulations and standards could result in accidents, incidents or dire consequences. It is the company's belief that good CASHES performance is an integral part of efficient and profitable business management. We shall therefore:

- Provide and maintain safe and healthy working environment and conditions, taking account of any statutory requirement of our client and the national regulatory agencies.
- Ensure that no activity shall be carried out unless it is safe to the environment, workers and third parties.
- Provide training and instruction to enable employees to perform their job safely and efficiently.
- Make available all necessary safety devices and protective equipment and enforce their use.
- Maintain a constant and continuing interest in environment, health and safety matters application to the company's activities, in particular by consulting and involving employees and clients wherever possible.
- Ensure that there exist adequate facilities and avenues for consultation between our company and clients/projects host communities.
- Comply with the provisions and implementation of supplementary plans in this ESMP such as TMP, WMP, Borrow Pit Management Plan, OHS Plan, Code of Conducts and General Conditions for Contract
- The company will give full backing to this policy and to the company HSE Officer, whose function it shall be to monitor and operate this policy.

A sample generic CASHES Plan is presented below:

Potential Risk	Mitigation Plan
Disturbance from project activities such as noise, emissions, movement of vehicles/equipment	• Contractors to minimise noise by retrofitting equipment with noise mufflers. • Contractors to maintain equipment regularly and use BAT/BEP technologies to minimise emissions. • Water roads in built up areas frequently to reduce dust. • Avoid construction activities before 8.00am and after 7.00pm • Project SPIU to establish and implement an effective GRM to enable timely receipt and resolution of complaints
Increased risks of accidents from project activities	• Contractors to demarcate/cordon off construction areas and lit up adequately at night, fence out danger zones and keep out of reach. • Restricted access to be placed at construction sites using caution signs and manned personnel. • Adequate road signs to warn pedestrians and motorists of construction activities, diversions, etc. shall be provided at appropriate points. • Drivers should be competent and trained by FRSC. • Ensure the use of flagmen at strategic locations such as junctions, pedestrian crossings, near schools and other public facilities etc. • Implement associated plans including Traffic Management Plan, Burrow pit reclamation plan, OHS plan, WMP etc.
Exposure to social risks such as theft, vandalism, STIs/STDs, GBV/SEA/SH, child labor	• Contractor to sensitise workers on and strictly implement the code of conduct for all workers. And ensure monthly refresher courses. This will be done by GBV specialists. • Signages against SEA/SH/GBV to be placed in communities and

Potential Risk	Mitigation Plan
	workers campsites in English and local languages (signages to be approved by the FPMU GBV specialist and the World Bank safeguards team) • Contractor shall enforce a 'closed' camp policy unless otherwise agreed and approved by Company. Workers will comply with the agreed camp closure hours. • Ensure that children and minors are not employed directly or indirectly on the project. • SPIU to conduct sensitisation for communities on SEA/SH/GBV prevention strategies and reporting channels for incidents
Increased risk of COVID-19 contamination	• COVID-19 prevention mechanisms shall also be put in place including access to handwashing, regular health checks and reporting. • Minimise the need for public gatherings and where required safe practices such as use of nose masks, handwashing/sanitisers should be used. • Workers to comply with the COVID-19 regulations in annex 13
Competition for scarce resources such as water	• Contractors to provide alternative source of water for construction, staging area and campsite. • Community sources of water will not be exploited by the contractors
Pollution of the environment from different waste categories	• Contractor to sensitise workers on the provisions and implementation of the WMP and monitor compliance. • Contractor to avoid littering the project areas with spoils/unsuitable and shall not restrict access to community assets with waste.

APPENDIX 13: SAMPLE CHANCE FIND PROCEDURE FOR THE PROTECTION OF PHYSICAL RESOURCES

In Plateau State, the institution responsible for the protection of Physical Cultural Resources is the Ministry of Tourism, Culture and Hospitality. Though the project area does not have sacred or cultural sites, this chance find procedure is provided as a plan in the event of such encounter during project activities.

Chance find procedures will be used as follows:

a) Stop all construction activities immediately in the area of the chance find.

b) Delineate the discovered site or area.

c) Secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a guard/NSCDC/NPF shall be present until the responsible local authorities and the equivalent take over.

d) Notify the supervisory Engineer who in turn will notify the village head of the discovery. Also, the supervisory engineer to notify the SPIU (within 24 hours or less);

e) Responsible local authorities and the national authority for Antiquities would be in charge of protecting and preserving the site before deciding on subsequent appropriate procedures. This would require a preliminary evaluation of the findings to be performed by the relevant authority (within 72 hours). The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage; those include the aesthetic, historic, scientific or research, social and economic values.

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

g) Implementation for the authority decision concerning the management of the finding shall be communicated in writing and

h) Construction work could resume only after permission is given from the responsible authority for Antiquities concerning safeguard of the heritage.

These procedures must be referred to as standard provisions in construction contracts, when applicable.
During project supervision, the SPIU and FPMU shall monitor the above regulations relating to the treatment of any chance find encountered.

APPENDIX 14: SAMPLE OUTLINE FOR SECURITY RISK MANAGEMENT PLAN

CHAPTER ONE: INTRODUCTION

- Objective of SRM Plan
- Guiding Principles

CHAPTER TWO: SECURITY POLICIES

- Federal Government
- State Government

CHAPTER THREE: GUIDELINES, STANDARDS AND GOOD INTERNATIONAL PRACTICES

CHAPTER FOUR: METHOD OF APPROACH FOR SRM

CHAPTER FIVE: OVERVIEW OF SECURITY SITUATION

- Project Setting
- Security Risks
    - Internal Risks
    - External Risks
- Security Arrangements

CHAPTER SIX: SECURITY STRATEGY FOR STATE

CHAPTER SEVEN: SECURITY OPERATING PROCEDURE FOR RAAMP STATE

- Boundary Security
- Access-Point Operations
- Incident Response and Reporting
- Security Patrols—what patrols check and how often.
- Travel Security
- Materials Storage and Control
- Information and Communication—procedures for categorizing, handling, and controlling sensitive information.
- Firearms Security
- Special Situations

CHAPTER EIGHT: SECURITY SUPERVISION AND CONTROL

- Private Security Management
- Public Security

APPENDIX 15: LABORATORY RESULTS FOR SOIL, GROUNDWATER AND SURFACE WATER QUALITY

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Certificate of Analysis

Surface water Parameters

Rivers	Northing	Easting	Location	Code
Osaka (Ikwuano)	5.4250	7.9134	Abia Central	CSW1
Umudere (Umuahia South)	5.3683	7.5227	Abia Central	CSW2
Amuvi (Arochukwu)	5.4250	7.7929	Abia North	NSW1
Okagwe (Ohafia)	5.6765	7.7990	Abia North	NSW2
Igwu (Bende)	5.6810	7.5753	Abia North	NSW3
Iyi Obowo (Umuahia North)	5.5638	7.4402	Abia North	NSW4

Surface water Quality

S/N	Parameters	CSW1	CSW2	NSW1	NSW2	NSW3	NSW4
1	pH	5.4	6.9	6.9	7.6	8.1	7.5
2	Temperature °C	31.3	34.2	27.4	28.9	34.3	31.6
3	E.Cond µs/cm	0.06	0.06	0.02	0.06	0.10	0.13
4	DO (mg/l)	2.8	2.3	2.9	3.6	2.7	4.4
5	BOD (mg/l)	6.9	6.5	10	7.9	8.4	7.6
6	TDS (mg/l)	36	50	26	51	14	10.2
7	Total Hardness	23	11	48	50	43	39
8	Mg Hardness	4.8	2.78	6.56	6.44	6.94	6.1
9	Ca (mg/l)	6.9	5.24	10.09	9.75	9.5	7.5
10	Alkalinity (mg/l)	3.0	6.35	7.0	8.0	7.5	7.9
11	Sulphate (mg/l)	40	25	23	32	25	30
12	Nitrate (mg/l)	4.4	2.8	2.4	3.0	2.8	3.9
13	Phosphate (mg/l)	0.42	0.65	1.10	0.95	0.75	0.82
14	Total Chloride (mg/l)	0.01	0.23	0.15	0.33	0.31	0.25
15	Iron (Fe) (mg/l)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
16	Zinc (Zn) (mg/l)	0.002	0.86	0.72	1.53	2.49	1.75
17	Lead (Pb) (mg/l)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
18	Nickel (Ni) (mg/l)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
19	Cadmium (Cd) (mg/l)	0.001	0.066	0.045	0.058	0.005	0.009
20	Manganese (Mn) (mg/l)	0.018	0.045	0.19	0.096	0.20	0.067
21	Copper (Cu) (mg/l)	0.05	0.067	0.085	0.091	0.063	0.072

Groundwater Parameters

Bole holes	Northing	Easting	Location
SBH1	5.06668582	7.30999524	Abia South Roads
SBH2	5.13563530	7.30257842	Abia South Roads
SBH3	5.17544203	7.30051819	Abia South Roads
CBH1	5.37279679	7.39487664	Abia Central Roads
CBH2	5.48026890	7.47563758	Abia Central Roads
CBH3	5.52825594	7.51972646	Abia Central Roads
NBH1	5.75361100	7.47654500	Abia North Roads
NBH2	5.73670288	7.62027403	Abia North Roads
NBH3	5.64731428	7.83586970	Abia North Roads

Groundwater Quality

S/N	Parameters	SBH1	SBH2	SBH3	CBH1	CBH2	CBH3	NBH1	NBH2	NBH3
1	pH	6.59	7.16	6.78	6.96	7.21	6.82	7.18	6.89	7.11
2	Temp ℃	28.4	27.0	27.8	30.7	34.7	32.8	33.85	29.65	27.9
3	DO (mg/l)	4.6	4.8	5.86	6.5	5.2	5.9	6.3	4.9	5.3
4	Fe (mg/l)	0.02	0.35	0.29	0.49	0.09	0.65	0.39	0.36	0.12
5	Zn (mg/l)	0.04	0.08	0.01	0.09	0.06	0.03	0.07	0.02	0.05
6	Pb (mg/l)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
7	Ni (mg/l)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
8	Cd (mg/l)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
9	Mn (mg/l)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
10	Cu (mg/l)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Soil Parameters

Abia South Roads

Location		pH	NC	%OC	Fe	Zn	Cu	Ni	Pb	Mn
SS1	SS	4.9	0.024	0.75	1.85	1.96	<0.001	<0.001	<0.001	<0.001
	TS	4.8	0.030	0.95	1.92	2.11	<0.001	<0.001	<0.001	<0.001
SS2	SS	6.8	0.45	1.15	1.93	2.23	<0.001	<0.001	<0.001	<0.001
	TS	6.95	0.52	1.20	1.94	2.20	<0.001	<0.001	<0.001	<0.001
SS3	SS	5.98	0.12	0.63	2.02	2.05	<0.001	<0.001	<0.001	<0.001
	TS	6.02	0.15	0.69	2.11	2.11	<0.001	<0.001	<0.001	<0.001
SS4	SS	6.80	0.048	0.35	2.04	3.45	<0.001	<0.001	<0.001	<0.001
	TS	6.75	0.052	0.38	2.05	3.42	<0.001	<0.001	<0.001	<0.001
SS5	SS	6.57	0.095	1.06	1.03	2.78	<0.001	<0.001	<0.001	<0.001
	TS	6.60	0.121	1.09	0.95	2.75	<0.001	<0.001	<0.001	<0.001
SS6	SS	6.59	0.065	0.49	1.67	2.97	<0.001	<0.001	<0.001	<0.001
	TS	6.62	0.072	0.52	1.65	3.02	<0.001	<0.001	<0.001	<0.001
SS7	SS	6.82	0.096	0.85	1.23	3.78	<0.001	<0.001	<0.001	<0.001
	TS	6.79	0.112	0.92	1.43	3.97	<0.001	<0.001	<0.001	<0.001
SS8	SS	6.02	0.234	1.64	0.98	4.11	<0.001	<0.001	<0.001	<0.001
	TS	5.97	0.311	1.74	1.06	4.07	<0.001	<0.001	<0.001	<0.001
SS9	SS	6.40	0.645	2.08	1.96	2.89	<0.001	<0.001	<0.001	<0.001
	TS	6.55	0.685	2.33	2.33	2.92	<0.001	<0.001	<0.001	<0.001
SS10	SS	4.95	0.351	1.79	2.67	3.89	<0.001	<0.001	<0.001	<0.001
	TS	4.85	0.365	1.93	2.85	3.86	<0.001	<0.001	<0.001	<0.001
SS11	SS	4.56	0.811	0.96	1.64	4.36	<0.001	<0.001	<0.001	<0.001
	TS	4.52	0.863	1.11	1.50	4.33	<0.001	<0.001	<0.001	<0.001
SS12	SS	4.86	0.723	1.79	2.11	4.45	<0.001	<0.001	<0.001	<0.001
	TS	4.78	0.745	1.82	2.19	4.64	<0.001	<0.001	<0.001	<0.001
SS13	SS	5.21	0.654	2.78	2.67	3.98	<0.001	<0.001	<0.001	<0.001

Location		pH	NC	%OC	Fe	Zn	Cu	Ni	Pb	Mn
	TS	5.26	0.674	2.82	2.61	4.03	<0.001	<0.001	<0.001	<0.001
SS14	SS	5.62	0.752	2.45	1.09	4.85	<0.001	<0.001	<0.001	<0.001
	TS	5.67	0.783	2.52	1.04	4.78	<0.001	<0.001	<0.001	<0.001
SS15	SS	6.11	0.542	2.64	2.55	4.05	<0.001	<0.001	<0.001	<0.001
	TS	6.08	0.564	2.73	2.49	4.12	<0.001	<0.001	<0.001	<0.001
SS16	SS	6.92	0.211	1.79	2.11	3.22	<0.001	<0.001	<0.001	<0.001
	TS	6.95	0.234	1.83	2.15	3.25	<0.001	<0.001	<0.001	<0.001

EC (µs/cm), Nitrogen content (%), Organic Carbon (%), Fe (mg/kg); Zn (mg/kg), Cu (mg/kg), Ni (mg/kg), Pb (mg/kg), Mn (mg/kg).

Abia Central Roads

Location		pH	NC	%OC	Fe	Zn	Cu	Ni	Pb	Mn
SS1	SS	6.02	0.352	2.65	1.98	3.96	<0.001	<0.001	<0.001	<0.001
	TS	5.97	0.382	2.69	2.06	3.93	<0.001	<0.001	<0.001	<0.001
SS2	SS	6.40	0.056	1.85	0.65	4.11	<0.001	<0.001	<0.001	<0.001
	TS	6.55	0.063	1.93	0.73	4.12	<0.001	<0.001	<0.001	<0.001
SS3	SS	4.56	0.029	1.42	1.22	3.08	<0.001	<0.001	<0.001	<0.001
	TS	4.52	0.035	1.52	1.20	3.07	<0.001	<0.001	<0.001	<0.001
SS4	SS	6.85	0.386	0.64	0.95	2.97	<0.001	<0.001	<0.001	<0.001
	TS	6.95	0.411	0.73	1.01	2.99	<0.001	<0.001	<0.001	<0.001
SS5	SS	5.98	0.822	0.89	1.96	3.04	<0.001	<0.001	<0.001	<0.001
	TS	6.02	0.911	0.92	2.11	3.09	<0.001	<0.001	<0.001	<0.001
SS6	SS	5.98	0.197	1.23	1.11	3.97	<0.001	<0.001	<0.001	<0.001
	TS	6.02	0.211	1.42	1.05	4.11	<0.001	<0.001	<0.001	<0.001
SS7	SS	6.80	0.752	1.22	1.64	3.75	<0.001	<0.001	<0.001	<0.001
	TS	6.75	0.783	1.34	1.73	3.80	<0.001	<0.001	<0.001	<0.001
SS8	SS	6.02	0.542	0.56	1.93	3.22	<0.001	<0.001	<0.001	<0.001
	TS	5.97	0.564	0.62	2.04	3.29	<0.001	<0.001	<0.001	<0.001
SS9	SS	6.40	0.211	0.72	1.29	2.96	<0.001	<0.001	<0.001	<0.001
	TS	6.55	0.234	0.79	1.32	2.98	<0.001	<0.001	<0.001	<0.001
SS10	SS	6.11	0.744	1.89	1.94	2.63	<0.001	<0.001	<0.001	<0.001
	TS	6.08	0.749	1.94	1.91	2.69	<0.001	<0.001	<0.001	<0.001
SS11	SS	6.92	0.584	2.11	2.74	4.67	<0.001	<0.001	<0.001	<0.001
	TS	6.95	0.611	2.31	2.86	4.71	<0.001	<0.001	<0.001	<0.001
SS12	SS	6.59	0.382	0.67	1.75	2.89	<0.001	<0.001	<0.001	<0.001
	TS	6.62	0.392	0.85	1.81	2.92	<0.001	<0.001	<0.001	<0.001
SS13	SS	6.59	0.12	0.29	1.64	3.93	<0.001	<0.001	<0.001	<0.001
	TS	6.62	0.15	0.34	1.73	3.97	<0.001	<0.001	<0.001	<0.001
SS14	SS	6.82	0.048	0.26	1.06	4.35	<0.001	<0.001	<0.001	<0.001
	TS	6.79	0.052	0.29	1.02	4.42	<0.001	<0.001	<0.001	<0.001
SS15	SS	4.9	0.095	1.97	2.11	4.74	<0.001	<0.001	<0.001	<0.001
	TS	4.8	0.121	2.11	1.98	4.79	<0.001	<0.001	<0.001	<0.001
SS16	SS	6.8	0.811	1.86	2.22	4.56	<0.001	<0.001	<0.001	<0.001

Location		pH	NC	%OC	Fe	Zn	Cu	Ni	Pb	Mn
	TS	6.95	0.863	1.97	2.34	4.62	<0.001	<0.001	<0.001	<0.001
SS17	SS	6.59	0.723	1.62	1.03	3.94	<0.001	<0.001	<0.001	<0.001
	TS	6.62	0.745	1.69	1.01	3.92	<0.001	<0.001	<0.001	<0.001
SS18	SS	4.86	0.12	0.98	1.75	2.98	<0.001	<0.001	<0.001	<0.001
	TS	4.93	0.15	1.22	1.56	2.86	<0.001	<0.001	<0.001	<0.001

EC (µs/cm), Nitrogen content (%), Organic Carbon (%), Fe (mg/kg); Zn (mg/kg), Cu (mg/kg), Ni (mg/kg), Pb (mg/kg), Mn (mg/kg).

Abia North Roads

Location		pH	NC	%OC	Fe	Zn	Cu	Ni	Pb	Mn
SS1	SS	6.59	0.048	0.35	1.03	2.23	<0.001	<0.001	<0.001	<0.001
	TS	6.62	0.052	0.38	1.01	2.20	<0.001	<0.001	<0.001	<0.001
SS2	SS	6.82	0.095	1.06	1.75	2.05	<0.001	<0.001	<0.001	<0.001
	TS	6.79	0.121	1.09	1.56	2.11	<0.001	<0.001	<0.001	<0.001
SS3	SS	6.80	0.065	0.49	1.29	3.45	<0.001	<0.001	<0.001	<0.001
	TS	6.75	0.072	0.52	1.32	3.42	<0.001	<0.001	<0.001	<0.001
SS4	SS	6.57	0.096	0.85	1.94	2.78	<0.001	<0.001	<0.001	<0.001
	TS	6.60	0.112	0.92	1.91	2.75	<0.001	<0.001	<0.001	<0.001
SS5	SS	6.59	0.645	2.08	2.74	4.85	<0.001	<0.001	<0.001	<0.001
	TS	6.62	0.685	2.33	2.86	4.78	<0.001	<0.001	<0.001	<0.001
SS6	SS	6.59	0.351	1.79	1.75	4.05	<0.001	<0.001	<0.001	<0.001
	TS	6.62	0.365	1.93	1.81	4.12	<0.001	<0.001	<0.001	<0.001
SS7	SS	4.86	0.811	0.96	2.04	3.22	<0.001	<0.001	<0.001	<0.001
	TS	4.93	0.863	1.11	2.05	3.25	<0.001	<0.001	<0.001	<0.001
SS8	SS	4.9	0.723	1.79	1.03	3.04	<0.001	<0.001	<0.001	<0.001
	TS	4.8	0.745	1.82	0.95	3.09	<0.001	<0.001	<0.001	<0.001
SS9	SS	6.8	0.822	2.64	1.67	3.97	<0.001	<0.001	<0.001	<0.001
	TS	6.95	0.911	2.73	1.65	4.11	<0.001	<0.001	<0.001	<0.001
SS10	SS	6.59	0.197	1.79	1.23	3.75	<0.001	<0.001	<0.001	<0.001
	TS	6.62	0.211	1.83	1.43	3.80	<0.001	<0.001	<0.001	<0.001
SS11	SS	4.56	0.752	1.64	1.29	2.98	<0.001	<0.001	<0.001	<0.001
	TS	4.52	0.783	1.74	1.32	2.86	<0.001	<0.001	<0.001	<0.001
SS12	SS	6.85	0.542	2.08	1.94	2.63	<0.001	<0.001	<0.001	<0.001
	TS	6.95	0.564	2.33	1.91	2.69	<0.001	<0.001	<0.001	<0.001
SS13	SS	5.98	0.211	1.79	2.74	4.67	<0.001	<0.001	<0.001	<0.001
	TS	6.02	0.234	1.93	2.86	4.71	<0.001	<0.001	<0.001	<0.001
SS14	SS	5.98	0.12	1.97	1.75	2.89	<0.001	<0.001	<0.001	<0.001
	TS	6.02	0.15	2.11	1.81	2.92	<0.001	<0.001	<0.001	<0.001
SS15	SS	6.80	0.048	1.86	2.22	3.93	<0.001	<0.001	<0.001	<0.001
	TS	6.75	0.052	1.97	2.34	3.97	<0.001	<0.001	<0.001	<0.001
SS16	SS	6.57	0.095	1.62	1.03	4.56	<0.001	<0.001	<0.001	<0.001
	TS	6.60	0.121	1.69	1.01	4.62	<0.001	<0.001	<0.001	<0.001
SS17	SS	4.9	0.811	1.89	1.75	3.94	<0.001	<0.001	<0.001	<0.001
	TS	4.8	0.863	1.94	1.56	3.92	<0.001	<0.001	<0.001	<0.001
SS18	SS	6.8	0.723	2.11	1.29	2.98	<0.001	<0.001	<0.001	<0.001
	TS	6.95	0.745	2.31	1.32	2.86	<0.001	<0.001	<0.001	<0.001
SS19	SS	6.59	0.12	0.67	1.94	2.89	<0.001	<0.001	<0.001	<0.001
	TS	6.62	0.15	0.85	1.91	2.92	<0.001	<0.001	<0.001	<0.001
SS20	SS	6.40	0.211	0.29	2.74	3.93	<0.001	<0.001	<0.001	<0.001
	TS	6.55	0.234	0.34	2.86	3.97	<0.001	<0.001	<0.001	<0.001
SS21	SS	4.95	0.284	0.26	1.75	4.35	<0.001	<0.001	<0.001	<0.001
	TS	4.85	0.291	0.29	1.56	4.42	<0.001	<0.001	<0.001	<0.001

EC (µs/cm), Nitrogen content (%), Organic Carbon (%), Fe (mg/kg); Zn (mg/kg), Cu (mg/kg), Ni (mg/kg), Pb (mg/kg), Mn (mg/kg).

Air Quality And Noise Parameters

Location		Noise	$PM_{2.5}$	PM_{10}	VOC	CO	NO_2	SO_2	CH_4	H_2S
AQ1	AbS	48.7	0.124	0.506	0.1	<0.001	0.045	<0.001	<0.001	<0.001
	AbC	45.6	0.126	0.504	0.1	<0.001	0.045	<0.001	<0.001	<0.001
	AbN	50.3	0.139	0.552	0.2	<0.001	0.007	<0.001	<0.001	<0.001
AQ2	AbS	47.6	0.091	0.306	0.1	<0.001	<0.001	<0.001	<0.001	<0.001
	AbC	51.6	0.118	0.327	0.2	<0.001	<0.001	<0.001	<0.001	<0.001
	AbN	48.9	0.095	0.310	1.2	<0.001	<0.001	<0.001	<0.001	<0.001
AQ3	AbS	50.4	0.073	0.211	1.1	<0.001	0.010	<0.001	<0.001	<0.001
	AbC	40.1	0.125	0.286	0.9	<0.001	0.033	<0.001	<0.001	<0.001
	AbN	47.9	0.035	0.097	1.2	<0.001	0.003	<0.001	<0.001	<0.001
AQ4	AbS	40.3	0.037	0.080	0.1	<0.001	0.004	<0.001	<0.001	<0.001
	AbC	41.6	0.039	0.201	0.1	<0.001	0.007	<0.001	<0.001	<0.001
	AbN	40.3	0.052	0.296	0.2	<0.001	0.010	<0.001	<0.001	<0.001
AQ5	AbS	39.7	0.036	0.099	0.2	<0.001	0.014	<0.001	<0.001	<0.001
	AbC	51.7	0.054	0.194	1.6	<0.001	0.012	<0.001	<0.001	<0.001
	AbN	45.8	0.045	0.231	1.1	<0.001	<0.001	<0.001	<0.001	<0.001
AQ6	AbS	40.1	0.085	0.056	1.2	<0.001	<0.001	<0.001	<0.001	<0.001
	AbC	40.5	0.112	0.234	2.5	<0.001	<0.001	<0.001	<0.001	<0.001
	AbN	41.8	0.095	0.324	0.1	<0.001	0.005	<0.001	<0.001	<0.001
AQ7	AbS	42.7	0.122	0.564	0.1	<0.001	0.004	<0.001	<0.001	<0.001
	AbC	40.6	0.135	0.453	0.2	<0.001	0.007	<0.001	<0.001	<0.001
	AbN	40.8	0.085	0.123	0.1	<0.001	0.012	<0.001	<0.001	<0.001
AQ8	AbS	43.7	0.045	0.097	0.4	<0.001	0.006	<0.001	<0.001	<0.001
	AbC	44.6	0.034	0.126	0.3	<0.001	<0.001	<0.001	<0.001	<0.001
	AbN	41,5	0.024	0.356	0.1	<0.001	<0.001	<0.001	<0.001	<0.001
AQ9	AbS	50.4	0.110	0.263	0.6	<0.001	<0.001	<0.001	<0.001	<0.001
	AbC	40.1	0.078	0.511	0.8	<0.001	0.007	<0.001	<0.001	<0.001
	AbN	47.9	0.034	0.167	1.6	<0.001	0.010	<0.001	<0.001	<0.001
AQ10	AbS	40.3	0.059	0.205	0.9	<0.001	0.014	<0.001	<0.001	<0.001
	AbC	41.6	0.111	0.564	1.2	<0.001	0.012	<0.001	<0.001	<0.001
	AbN	40.3	0.108	0.453	0.1	<0.001	0.003	<0.001	<0.001	<0.001
AQ11	AbS	39.7	0.023	0.123	0.1	<0.001	0.012	<0.001	<0.001	<0.001
	AbC	51.7	0.126	0.327	0.2	<0.001	<0.001	<0.001	<0.001	<0.001
AQ12	AbN	45.8	0.139	0.310	0.2	<0.001	<0.001	<0.001	<0.001	<0.001
	AbS	42.7	0.091	0.211	1.6	<0.001	<0.001	<0.001	<0.001	<0.001
AQ13	AbC	40.6	0.118	0.286	1.1	<0.001	0.006	<0.001	<0.001	<0.001
	AbN	40.8	0.075	0.097	1.2	<0.001	0.004	<0.001	<0.001	<0.001
AQ14	AbS	43.7	0.067	0.563	2.5	<0.001	0.007	<0.001	<0.001	<0.001
	AbC	44.6	0.049	0.435	1.9	<0.001	0.012	<0.001	<0.001	<0.001
	AbN	42.6	0.123	0.511	1.0	<0.001	0.005	<0.001	<0.001	<0.001
AQ15	AbS	40.1	0.097	0.123	0.1	<0.001	0.003	<0.001	<0.001	<0.001
	AbC	41.6	0.095	0.125	0.4	<0.001	0.018	<0.001	<0.001	<0.001
	AbN	45.8	0.122	0.322	0.1	<0.001	0.009	<0.001	<0.001	<0.001
AQ16	AbS	53.8	0.135	0.511	0.1	<0.001	0.002	<0.001	<0.001	<0.001
	AbC	59.7	0.085	0.112	0.6	<0.001	0.009	<0.001	<0.001	<0.001
	AbN	55.7	0.045	0.235	0.8	<0.001	<0.001	<0.001	<0.001	<0.001
AQ17	AbC	51.8	0.034	0.085	1.6	<0.001	<0.001	<0.001	<0.001	<0.001
	AbN	40.3	0.024	0.306	0.9	<0.001	<0.001	<0.001	<0.001	<0.001
AQ18	AbC	42.7	0.110	0.327	1.2	<0.001	0.016	<0.001	<0.001	<0.001
	AbN	41.5	0.015	0.310	0.4	<0.001	0.023	<0.001	<0.001	<0.001
AQ19	AbN	40.9	0.035	0.211	0.3	<0.001	<0.001	<0.001	<0.001	<0.001

Location		Noise	$PM_{2.5}$	PM_{10}	VOC	CO	NO_2	SO_2	CH_4	H_2S
AQ20	AbN	53.8	0.115	0.344	0.1	<0.001	<0.001	<0.001	<0.001	<0.001
AQ21	AbN	56.8	0.132	0.115	0.1	<0.001	<0.001	<0.001	<0.001	<0.001

Noise (dBA), $PM_{2.5}$ (ppm), PM_{10} (ppm), NO_2 (ppm), SO_2 (ppm), H_2S (ppm), VOCs (ppm), CO (ppm), CH_4 (ppm). AbS, Abia South Roads; AbC, Abia Central Roads; AbN, Abia North Roads.

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