

AB-RAAMP

Abia State Rural Access and Agricultural Marketing Project



DRAFT REPORT

Environmental and Social Management Plan (ESMP) for Roads Rehabilitation (Spot Improvement [12No Roads - 40.36km] and Upgrades [25No Roads - 92.78km]) in Eleven (11) Local Government Areas Under Phase 2 Intervention in Abia State.



**Abia State
Government**



**Federal Ministry of
Agriculture & Food
Security (FMAFS)**



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ACRONYMS AND ABBREVIATIONS

ABSUTH	Abia State University Teaching Hospital
ACHPR	African Commission on Human and People's Rights
ADF	Agricultural Development Fund
ADP	Agricultural Development Programme
AED	Automated External Defibrillator
AFD	French Development Agency
AfDB	African Development Bank
AB-RAAMP	Abia State Rural Access and Agricultural Marketing Project
AGO	Automotive Gas Oil
AIDS	Acquired Immunodeficiency Syndrome
APP	Agricultural Promotion Policy
ASEPA	Abia State Environmental Protection Agency
ASMEEnv	Abia State Ministry of Environment
ATR	African Traditional Religion
AWMP	Asbestos Waste Management Plan
BF	Beneficiary Feedback
BOD	Biochemical Oxygen Demand
BPMP	Borrow Pit Management Plan
CASHES	Community Affairs, Safety, Health, Environment & Security
CBOs	Community Based Organizations
CDS	Cross Drainage Structure
CEA	Child Exploitation and Abuse
CEDAW	Convention on the Elimination of All Forms of Discrimination against Women
CHS	Community Health and Safety
CLO	Community Liaison Officer
CMP	Campsite Management Plan
CO	Carbon Monoxide
CO ₂	Carbon dioxide
CoC	Code of Conduct
C-ESMP	Contractors Environmental and Social Management Plan
CRA	Child Rights Act
CRC	Convention on the Rights of the Child
CRPD	Convention on the Rights of Persons with Disabilities
DFRRI	Director for Food, Roads and Rural Infrastructure
DO	Dissolved Oxygen
EC	Electrical Conductivity
E&S	Environmental and Social
EA	Environmental Assessment
EIA	Environmental Impact Assessment
EEDC	Enugu Electricity Distribution Company
ESHS	Environmental, Social, Health and Safety
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESO	Environmental Safeguards Officer
FCT	Federal Capital Territory
FDRD	Federal Department of Rural Development
FGN	Federal Government of Nigeria

FMAFS	Federal Ministry of Agriculture and Food Security
FME _{env}	Federal Ministry of Environment
FMLE	Federal Ministry of Labour and Employment
FMWASD	Federal Ministry of Women Affairs
FPMU	Federal Project Management Unit
FRSC	Federal Road Safety Corps
FSLC	First School Leaving Certificate
GBV	Gender Based Violence
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GoN	Government of Nigeria
GPS	Global Positioning System
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
GUC	Grievance Uptake Channel
HIV	Human Immunodeficiency Virus
HND	Higher National Diploma
HSE	Health Safety and Environment
ICCPR	International Covenant on Civil and Political Rights
ICESCR	International Covenant on Economic, Social and Cultural Rights
ILO	International Labour Organization
IVMS	In-Vehicle Monitoring System
JHA	Job Hazards Analysis
JSSCE	Junior Secondary School Certificate Examination
LGAs	Local Government Areas
LVRM	Low Volume Road Manual
MPL	Maximum Permissible Limit
MDAs	Ministries, Departments and Agencies
NBS	National Bureau of Statistics
NCE	National Certificate Examination
NESREA	National Environmental Standards and Regulations, Enforcement Agency
NGOs	Non-Governmental Organizations
NHA	National Health Act
NIMET	Nigeria Meteorological Agency
NISHA	Nigeria Hydrological Services Agency
NMT	Non-Motorized Transport
NPF	Nigerian Police Force
NSCDC	Nigerian Security and Civil Defence Corps
NSTC	National Technical Steering Committee
NTU	Nephelometric Turbidity Unit
NURTW	Nigerian Union of Road Transport Workers
OC	Organic Carbon
OHSM _P	Occupational Health and Safety Management Plan
OND	Ordinary National Diploma
OP	Operational Policy
OSHA	Occupational, Health and Safety Act
PAD	Project Appraisal Document
PAPs	Project Affected Persons
PC	Project Coordinator
PCR	Physical Cultural Resources
PCRMP	Physical Cultural Resources Management Plan

PDO	Project Development Objective
PHA	Process Hazard Analysis
PHC	Primary Healthcare Center
PIM	Project Implementation Manual
PIU	Project Implementation Unit
PMS	Premium Motor Spirit
POS	Point of Sale
PPE	Personal Protective Equipment
PPPs	Public Private Partnerships
PSPs	Private Service Providers
RAAMP	Rural Access and Agricultural Marketing Project
RAMP-2	Second Rural Access and Mobility Project
RARA	Rural Access and Road Agency
RAP	Resettlement Action Plan
RIC	Resettlement Implementation Committee
ROW	Right of Way
RPF	Resettlement Policy Framework
RTTP	Rural Travel and Transport Policy (RTTP)
SARCs	Sexual Assault Referral Centers
SC	Supervisory Consultant
SCMC	State Citizens Mediation Centre
SDG	Sustainable Development Goals
SEA	Sexual Exploitation and Abuse
SH	Sexual Harassment
SLO	Social License to Operate
SMoA	State Ministries of Agriculture
SON	Standard Organization of Nigeria
SPCs	State Project Coordinators
SPIU	State Project Implementation Unit
SPMC	State Project Monitoring Committee
SSO	Social Safeguards Officer
STDs	Sexually Transmitted Diseases
STIs	Sexually Transmitted Infections
TA	Technical Assistant
TDS	Total Dissolved Solids
THC	Total Hydrocarbon
TMP	Traffic Management Plan
ToR	Terms of Reference
TPH	Total Petroleum Hydrocarbon
TSS	Total Suspended Solids
UN	United Nation
UNFCCC	United Nations Framework Convention on Climate Change
USD	United State Dollars
VAC	Violence Against Children
VAPP	Violence Against Persons Prohibition Act
VOCs	Volatile Organic Compounds
WHO	World Health Organization
WB	World Bank
WMP	Waste Management Plan

EXECUTIVE SUMMARY

ES 1: Introduction

The Federal Government of Nigeria (FGN) is implementing the Rural Access and Agricultural Marketing Project (RAAMP), the successor of the Second Rural Access and Mobility Project (RAMP-2). RAAMP. The project is being supported with financing from the World Bank (WB) and the French Development Agency (AFD) and 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 Food Security (FMAFS). The Federal Project Management Unit (FPMU) is responsible for overseeing the project on behalf of the FDRD, while at the state-level, the State Project Implementation Units (SPIUs) of nineteen (19) participating states are implementing RAAMP in their respective states on behalf of their state governments. The Project Development Objective (PDO) of RAAMP is to improve rural access and agricultural marketing in selected participating states whilst strengthening the financing and institutional base for effective development, maintenance and management of the rural road network sustainability. RAAMP has four project components – Component A: Improvement of Rural Access and Trading Infrastructure; Component B: Asset Management, Agro-logistics Performance Enhancement and Sector Reform; Component C: Institutional Development, Project Management and Risk Mitigation and Component D: Contingent Emergency Response.

Specifically, the Abia State RAAMP (AB-RAAMP) in view of achieving the outputs of Component A, proposes to carryout intervention works on 37No roads totaling 133.14km. Precisely, the proposed intervention works shall include: Spot Improvement (40.36km) and rural road upgrades (92.78km) in 11 Local Government Areas (LGAs), under the phase II work package. The proposed intervention works have undergone Environmental and Social (E&S) screening which indicated that the proposed project activities will result in E&S impacts and thus triggering the World Bank's Safeguards Policies; OP/BP 4.01 (Environmental Assessment), OP/BP 4.04 (Natural Habitats), OP/BP 4.12. (Involuntary resettlement) and OP 4.11 (Physical Cultural Resources) and have been deemed necessary for further E&S assessment. Consequently, the AB-RAAMP has prepared this Environmental and Social Management Plan (ESMP) to identify, assess and mitigate all potential adverse E&S risks and impacts associated with the proposed intervention works. The ESMP will also enhance beneficial impacts of the proposed intervention works.

ES 2: Administrative and Regulatory Framework

The preparation of this ESMP was guided by the Environmental Impact Assessment Act No. 86, 1992 (codified as EIA Act CAP E12 LFN 2004). Other social, legal and regulatory frameworks applicable to the project include: The Land Use Act, Cap L5, LFN, 2004, Employee Compensation Act (2010), Labour Act (2004), Social Development Act (1974), The Child Rights Act (2003), etc. **(See Table 3 in Chapter Two for the full list)**, while the Federal Environmental Laws, Regulations and Guidelines are applied to ensure international best practices in infrastructure development with due considerations on the safety and health of the environment.

According to the World Bank Environmental Assessment (EA) screening criteria, the project has been identified as Category B which corresponds to the Nigerian EIA category II, meaning that impacts will be largely site-specific and manageable (the activities will involve minimal adverse social or environmental impacts that are few in number, generally site-specific, largely reversible, and readily addressed through mitigation measures). The ESMP was prepared in line with the Environmental and Social Management Framework (ESMF) prepared for the RAAMP and the four (4) triggered World Bank operational policies as stated in ES1 above. This is discussed in chapter two of this report.

ES 3: Project Description

The AB-RAAMP proposes to carryout intervention works on 37 rural roads, spanning a total of 133.14 km. These works are categorized into two main work packages; spot improvement and upgrade. Spot improvement works will cover 12 number roads totaling 40.36km and 25 number roads totaling 92.78km for upgrade interventions.

The proposed intervention works on the various identified roads selected for both interventions (Spot Improvement and Upgrade) will involve engineering works such as but not limited to the following: site clearance; earthworks (i.e. removal of unsuitable material and filling of lateritic material); excavation of fill material from approved borrow pits; construction of reinforced concrete drains (box and pipe culverts) at designated locations needing culverts and drainages; re-sealing/overlay of cracks and eroded carriageway sections; pavement works (i.e. construction of sub-base and base courses to 100% WAS compaction as well as embankment slope, prime coating of surface with medium curing 1 (MC-1) cut-back bitumen, and 30mm thin asphaltting); improvement/provision of culverts/drains/slopes/embankments/other structures; complete or slight resurfacing; widening of shoulders of the existing road; miscellaneous works/installation of Traffic control/management features (i.e. provision of road markings, signs, speed bumps, rumble strips and other infrastructure).

ES 4: Description of the Project Environment

General Information

Abia State has a tropical monsoon climate with high annual rainfall (274.44mm) and humidity (75.72%) as well as prolonged wet seasons (May – October). The state's topography ranges from low-lying flood-prone areas (especially in the south) to moderately elevated terrains (20 – 200m ASL). Vegetation falls within the tropical rainforest zone but has been heavily altered by farming and urbanization, leading to secondary vegetation. The state's drainage is shaped by five main rivers including Imo, Esu, Akpoha, Igu, and Aba Rivers including several tributaries. Geologically, the roads traverse mainly Coastal Plain Sands (Benin Formation) and Bende-Ameki Formation characterized by permeable, unconsolidated sands which requires careful erosion and slope management. Hydrologically, the Benin Formation offers good groundwater potential, while the Bende-Ameki supports minor aquifers. Soils in Abia State vary from sandy and erosion-prone to clayey and moisture-retentive.

Environmental Baseline Studies

Notably, field assessments undertaken across all project locations have identified flooding and erosion as the primary climate change risks impacting most rural roads. Specifically, baseline studies indicate that over 90% of the roads surveyed (36 out of 37) are vulnerable to flood; whereas, 57% of the roads surveyed (21 out of 37) are erosion-prone. Broadly, the risk factors for flooding across the locations include: inadequate or absent drainage systems, low-lying terrain, and high precipitation intensity, while erosion is primarily as a result of steep gradients, inadequate water management infrastructure, and vegetation loss. The civil works across the project locations shall address these risks through the installation of efficient and reinforced hydraulic structures (drainages, Cross Drainage Structures [CDS]/bridges) where necessary as well as other measures. **(See Chapter 5 for Climate Change Impacts, Adaptation and Mitigation Measures).**

Sampling of Environmental Media	
Procedure	Results of Analysis
Environmental baseline data were collected within a 1–2 km buffer around the proposed road corridors, targeting proximal communities and environmental receptors likely to be impacted by the project. This approach ¹ ensured access to relevant sampling points in rural and dispersed areas. 42 surface water samples were collected from the upstream, midstream, and downstream points of 14 streams along 10 roads. Groundwater samples were obtained from 18 wells and boreholes in proximal communities, while 11 soil samples were collected across all 11 project LGAs. Air and noise quality measurements were taken at 98 strategic locations using calibrated devices, focusing on areas near settlements and	Surface water quality results from 14 sampled streams indicate that key parameters such as salinity (≤ 100 mg/L), electrical conductivity (≤ 1500 μ S/cm), and total dissolved solids (≤ 1200 mg/L) were generally within FMEnv permissible limits. Minor deviations were noted for pH (acceptable range: 6.5 – 8.5), turbidity (≤ 50 NTU), and total coliform (0 cfu/100mL) in a few locations (e.g. Nkata Alike, Ekweze and Ifuama Streams), likely influenced by localised human activities. Groundwater samples from 18 wells and boreholes in proximal communities (within 1–2 km of the road corridors) showed that all physicochemical and heavy metal parameters were within FMEnv/NESREA thresholds, indicating suitability for domestic use. Soil analysis across the project area revealed stable conditions with most values falling within permissible limits. Slight exceedances of cadmium (limit 0.03 mg/kg) and chromium were detected in isolated samples, potentially due to agricultural inputs or improper waste disposal. Air quality measurements taken at 98 strategic locations showed compliance with FMEnv standards, including CO (≤ 10 ppm), NOx (≤ 0.06 ppm), SOx (≤ 0.01 ppm), NH ₄ (≤ 0.2 mg/L), H ₂ S (≤ 0.008 ppm), VOCs (≤ 0.1 ppm), SPM _{2.5} (≤ 80

¹ While we acknowledge that linear infrastructure projects ideally follow a corridor-based sampling approach (e.g., every 1 km within 500 m of the road centerline), our method was adapted to reflect field realities, optimize available resources, and ensure coverage of key receptor locations likely to be impacted.

Sampling of Environmental Media	
Procedure	Results of Analysis
socioeconomic receptors. All sampling was conducted during the dry season (18–30 November 2024), between 10:00 a.m. and 5:30 p.m.	$\mu\text{g}/\text{m}^3$), and SPM_{10} ($\leq 250 \mu\text{g}/\text{m}^3$). These results reflect minimal industrial activity and low vehicular emissions in the area. Noise levels, also measured at 98 locations, ranged from 23–51 dB, remaining below the FMEnv daytime threshold of 55 dB, consistent with the rural and semi-urban setting. Refer to Chapter 4, Section 4.3 and Annexes 16 for detailed sampling results and analysis procedures.

Socioeconomic Assessment of the Project Area

A comprehensive socioeconomic baseline study was conducted to assess the existing conditions within the rural communities along the project corridors. Semi-structured questionnaires were administered to respondents across the project communities. Respondents included community elders, women and youth groups, business owners, farmers, fishermen, and stream users, so as to ensure that diverse perspectives were captured. Altogether, 865 respondents surveyed across all 82 communities along the 37 roads under the work packages (i.e. Spot Improvement and Upgrades).

Across the 82 project communities, gender distribution reveals 54% male and 46% female. The surveyed population consisted of diverse age groups, with a significant portion being elderly persons (38%) falling within the 60 – 74 age brackets. Meanwhile, 29% were teenagers or youths, 27% were middle-aged, and 6% were old aged spanning the age ranges of 15 – 39, 40 – 59, and >75 years respectively. Approximately 88% of respondents across the 82 communities had formal education, with varying levels of attainment. The survey further revealed a varied monthly income level among the surveyed group ranging from 0 – N100,000 (74%) to N100,000 – above (26%). Primary livelihood activities consist of crop farming (55%) (i.e. cultivation of crops such as maize, yam, cocoyam, pepper, vegetables, water yam, three leave yam, cassava, rice, etc.), animal husbandry (13%), and trading (16%) within the project communities. Other socioeconomic activities in the project communities, accounting for 16% of the sampled population, included civil service/white-collar jobs, block industry, artisans/craftsmanship (e.g. welding, carpentry, etc.), palm oil processing, local quarry/sand mining, hunting and lumbering/sales of firewood.

ES 5: Potential E&S Impacts and Mitigation

The activities under the proposed intervention work packages (Spot Improvement and Upgrades) will lead to potential impacts on the environmental and socioeconomic status of the project locations. Some of these impacts will be beneficial and some negative. The potential negative environmental and social impacts and mitigation measures are presented in chapter 5 and 7 while some of the positive impacts are highlighted below.

Beneficial/Positive Impacts

The proposed rural road rehabilitation is expected to bring significant benefits to the project areas. These benefits include but are not limited to the following:

- Proper drainage systems and culvert construction will mitigate risks of erosion and flooding.
- Priming and thin asphaltting of the roads will enhance their surface integrity and structural durability (longevity). This reduces their susceptibility to erosion and minimizes fugitive dust generation, particularly during the operation phase.
- The rehabilitation of rural roads will facilitate the efficient transportation of agricultural products to markets, reducing post-harvest losses, thereby promoting sustainable farming practices and increasing economic opportunities for farmers.
- The proposed road rehabilitation will improve access to essential social services including schools, churches and hospitals, thereby contributing to the overall social well-being of the project affected communities.
- Upgraded transportation infrastructure will improve mobility, reduce travel time, and lower transportation costs for individuals and businesses.
- Short-term and long-term job opportunities will arise from the project. These include direct employment for local labour during construction and indirect opportunities through the provision of goods and services to technical teams, such as food kiosks, local security services, and equipment handling.

ES 6: Grievance Redress Mechanism

The GRM for the proposed intervention works will adopt the provisions in the existing Beneficiary Feedback and Grievance Redress Mechanism and will be applied at 4 levels adopting GRM model 2. The first level of grievance redress is community-based, using traditional structures. The second level is at the state project implementation unit (SPIU), the third level is the state steering committee and the fourth and final level is the Federal Project Management Unit (FPMU). All the stakeholders identified for this project and the project affected persons will be informed of the various GRM levels. The detailed discussions of the various structures and composition of each of these levels has been presented in chapter 6 of this ESMP report.

For GBV cases, a separate, confidential channel will be managed by an independent intermediary (appointed by the SPIU and approved by the FPMU/WB) who will, with consent, refer survivors to appropriate support services. The GRM will assist the AB-RAAMP PIU to ensure that deliberate processes and procedures are put in place to capture, assess and respond to concerns from project beneficiaries, project executors and the general public during the implementation of the project in a timely manner.

ES 7: Environmental and Social Management and Monitoring Plan

Two (2) ESMP matrix tables have been prepared for the two (2) work packages – Spot Improvement and Roads Upgrades. However, costings were proffered based on the number of lots in each work package. This is simply because several contractors will be procured for the intervention works. Nonetheless, where unique peculiarities exist in any of the project locations or are noteworthy, the ESMP has captured such. The ESMP also includes indicators, institutional arrangement, roles, responsibilities and an estimated budget. All the mitigation measures specified in the ESMP shall be included in the bids and contract documents for the successful implementation of the road rehabilitation. Details are documented under Chapter 7 along with a summary of the ESMP mitigation cost for each work package per Lots.

The overall total estimated cost for the ESMP implementation, monitoring, capacity building, GRM implementation and safeguard instrument disclosure for all intervention packages is estimated at Fifty Thousand, Nine Hundred and Twenty-Seven US Dollars, only (**USD 50,927**). This is equivalent to Seventy-Seven Thousand, Nine Hundred and Nineteen Naira and Four Hundred and Ninety-Three Kobo, only (**N77,919,493**). **The summary of the total estimated budget for the implementation of this ESMP has been included in Table 42 of chapter seven.**

ES 8: Stakeholders Engagement

The primary stakeholder groups consulted include the AB-RAAMP PIU, Design Consultants, Abia State Ministry of Environment, Abia State Environmental Protection Agency (ASEPA), Federal Road Safety Corps (FRSC), Project Communities (Local Leaders, Elders, Women Groups, Youth Groups, Farmers, Fishermen, Local Vigilante, Stream Users, etc.) and are listed in Chapter 8. Full details, including photographs and attendance records, are provided in Annex 3. All consultations were held at the PIU, MDA Offices and Project Communities between 18th and 30th of November 2024. Summary of key issues/concerns and agreements reached are provided below.

ASMEEnv/ASEPA: Waste management during construction will be addressed through site-specific WMPs implemented by Contractors in liaison with ASEPA or Private Service Providers licensed by the ASMEEnv. ASEPA highlighted their efforts in community sensitization on waste management but identified resource constraints, public compliance challenges, and monitoring difficulties as key obstacles.

FRSC: Specifically, as regards traffic management, key strategies discussed included training of drivers, speed limit enforcement, deployment of traffic signages, and real-time updates to road users. The FRSC committed to enforcing traffic regulations, managing congestion at critical points, and supporting driver sensitization campaigns should their services be needed by the Contractors or the PIU. They further highlighted the need for early and effective communication with the project team. The ESMP team assured that they shall be engaged when necessary and meetings facilitated by the Contractor or PIU's Communications Specialist.

Communities (Local Leaders, Elders, Youth Groups, Farmers, Fishermen, Local Vigilante, etc.): The ESMP consultations introduced the project to communities, who generally expressed optimism and support, though some elders in locations like Agalabano and Ntubi were initially skeptical due to previous unfulfilled promises and failed road development initiatives within their locality. Communities emphasized the preservation of culturally significant resources and transparency in property valuation and compensation. Vibrant market activities were observed at several locations, with calls for careful construction scheduling to minimize disruptions, access restriction and business disturbances. Elders stressed traditional land processes, while community leaders and youths pledged cooperation, emphasizing communication, transparency, and local content engagement during project implementation.

Women Group: Women across the project areas highlighted challenges in accessing essential services, economic opportunities, and concerns about potential social and environmental impacts of the road rehabilitation project. Key issues they experience included limited healthcare access, high transportation costs and some fears expressed as per the proposed intervention, potential stream contamination, and GBV risks. The ESMP team assured that the project aims to enhance connectivity, mitigate environmental impacts, promote women's economic inclusion, and integrate proactive GBV-specific mitigation measures such as signing of Contractors and Workers CoCs and Zero Tolerance for SEA/SH. Clarity on grievance redress mechanisms was provided, with assurances of timely and fair resolution of complaints.

ES 9: Recommendations

- Considering that about 50% – 90% of the roads surveyed (21 – 36 of the roads) selected to be rehabilitated in Abia RAAMP phase II interventions are either vulnerable to flooding or susceptible to erosion to some degree, it is best practice to manage the root-causes of the erosion and flood occurrences, especially if they are due to topographical or engineering defects e.g. lack of drainage. Roads prone to or affected by flooding and erosion will require adequate attention from the Abia State government and the AB-RAAMP PIU. Decision making by the PIU as regards most suitable, environmentally sound and cost-effective hydraulic controls in flood plains is critical (**Refer to Chapter 3 and 5 for more details**). The Abia RAAMP SPIU need to ensure the implementation of flood resilient structures so as to ensure long-term viability of proposed rehabilitation and construction works.
- Drains should be designed and installed based on knowledge of the topography and natural drainage pattern of the area with knowledge of the watershed mitigation measures.
- Contractors must prepare and sign all levels of Code of Conduct (CoCs) and present a Contractor's Environmental and Social Management Plan (C-ESMP) that specifically includes the CoCs. prior to the commencement of any form of civil works. 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.
- Occupational Health and Safety (OHS) is critical and Personal Protective Equipment (PPE) provision and usage enforcement should be ensured by the Abia RAAMP SPIU throughout project implementation.
- For Physical and Cultural Resource which may be impacted on; the AB-RAAMP PIU and its Contractors should have effective collaboration and liaison with the communities. Furthermore, "Chance Find Procedures" must be adhered to and compliance monitored (Refer to the PCRMP – Annex 13). **Full Recommendations are Outlined in Chapter 9.**
- 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

1.1 Project Background

The Federal Government of Nigeria (FGN) is implementing the Rural Access and Agricultural Marketing Project (RAAMP), the successor of the Second Rural Access and Mobility Project (RAMP-2). The project is supported with financing from the World Bank (WB) and the French Development Agency (AFD) and being 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 Food Security (FMAFS). The Federal Project Management Unit (FPMU) is responsible for overseeing the project on behalf of the FDRD, while at the state-level, the State Project Implementation Units (SPIUs) of nineteen (19) participating states (Abia, Akwa Ibom, Bauchi, Ebonyi, Ekiti, Gombe, Kaduna Kano, Katsina, Kebbi, Kogi, Kwara, Niger, Ogun, Ondo, Osun, Oyo, Plateau and Sokoto states) are implementing RAAMP in their respective states on behalf of their state governments. The Project Development Objective (PDO) of RAAMP is to improve rural access and agricultural marketing in selected participating states whilst strengthening the financing and institutional base for effective development, maintenance and management of the rural road network sustainability. RAAMP has four project components – Component A: Improvement of Rural Access and Trading Infrastructure; Component B: Asset Management, Agro-logistics Performance Enhancement and Sector Reform; Component C: Institutional Development, Project Management and Risk Mitigation and Component D: Contingent Emergency Response.

Specifically, the Abia State RAAMP (AB-RAAMP) in view of achieving the outputs of Component A, proposes to carryout intervention works on 37No roads totaling 133.14km which includes: Spot Improvement (40.36km) and rural road upgrades (92.78km), under the Phase 2 intervention work package. The intervention works/sub-projects shall be situated in various rural communities located within 11 Local Government Areas (LGAs) across the three senatorial districts² of Abia State (according to the Terms of Reference). The proposed intervention works have undergone Environmental and Social (E&S) Screening from 6th – 23rd of February 2024 which indicated that the activities will result in E&S impacts and thus triggered the World Bank's Safeguards Policies; OP/BP 4.01 (Environmental Assessment), OP/BP 4.04 (Natural Habitats), OP/BP 4.12. (Involuntary resettlement) and OP 4.11 (Physical Cultural Resources) and have been deemed necessary for E&S assessment. Consequently, the AB-RAAMP has prepared this Environmental and Social Management Plan (ESMP) to identify, assess and mitigate the envisaged potential adverse E&S risks and impacts associated with the proposed intervention works. The ESMP will also enhance beneficial impacts of the proposed intervention works.

1.1.1 RAAMP Project Development Objective (PDO)

The RAAMP PDO is to improve rural access and agricultural marketing in participating states while strengthening the financing and institutional base for effective development, maintenance and management of the rural road network. This will be achieved through the improvement and maintenance of rural roads, improvement of agro-logistics centers, supporting the activities for the enhancement of agro-logistics performance, road sector reform and institutional development of main actors responsible for the development, maintenance and management of rural road infrastructure at the RAAMP participating states.

1.1.2 Project Components

The project has four (4) distinct components. Table 1 provides information on the RAAMP project components and a summary of project activities under each component/sub-component.

Table 1: RAAMP Project Components (Source: RAAMP Project Appraisal Document)

Project Components	Description
Component A: Improvement of Rural Access and Trading Infrastructure	The component will have two sub-components: Sub-Component A1 – Major Civil Works. Support to major civil works: upgrading of rural

² Abia State has three (3) Senatorial Districts and Seventeen (17) LGAs. However, the intervention works shall be implemented across twelve (12) LGAs within the three (3) senatorial districts viz: Abia North (Arochuku, Ohafia, Bende, Umu-Nneochi, Isiukwuato LGAs); Abia Central (Umuahia North, Umuahia South, Isiala Ngwa North and Isiala Ngwa South LGAs); Abia South (Aba North, Ugwuagbo and Obingwa LGAs)

Project Components	Description
	roads and the construction of short-span (largely up to 15 meters) cross-drainage structures (culverts/bridges) on rural roads, and the physical improvement of the existing agro-logistics centers (rural markets).; and • Sub-Component A2 – Consultancies and Supervision. Support to the supervision and consultancy costs linked to the civil works.
Component B: Asset Management, Agro-logistics Performance Enhancement and Sector Reform.	This component comprises three sub-components: • Sub-Component B1 – Other Civil Works. Support the maintenance and spot improvement of rural roads; • Sub-Component B2 – Support for Improving Agro-logistics Activities. Support to Agro-logistics performance enhancement activities. Including support to farms and cooperatives to reduce post-harvest losses and support to the small and medium-sized enterprises (SMEs) at the agro-logistics centers; and • Sub-Component A1 – Consultancies Studies and Supervision. This sub-component will provide technical assistance (TA) support to state-level road sector reforms activities, to the establishment of an asset management system, and to the design and supervision of civil works under the component.
Component C: Institutional Development, Project Management and Risk Mitigation.	The component has two sub-components. • Sub-Component C1: Institutional Development and Project Management. This sub-component will involve support to institutional development of the rural transport, trading infrastructure and agro-logistics activities, maintenance and management. It will also support project operating costs, TA consultancies, training and study tours, project monitoring and impact evaluation activities. Preparation activities connected to any future rural transport and trading projects, including studies and TA to incorporate new states within the proposed project, will be supported by the sub-component. • Sub-Component C2: Risk Mitigation and Resiliency. This sub-component will support project risk mitigation and resiliency activities, including sexual exploitation and abuse (SEA), gender, grievance redressal, rural road safety and climate resiliency of rural roads.
Component D: Institutional Development, Project Management and Risk Mitigation.	The component will address any unforeseen emergency infrastructure needs following a natural disaster.

1.2 Project Locations and Description of Proposed Intervention Works

The proposed interventions will cut across 11 out of the 17 LGAs in Abia State namely: Arochukwu, Ohafia, Bende, Umunneochi, Umuahia North, Umuahia South, Isialangwa North, Isialangwa South, Obingwa, Aba South and Ugwuagbo LGAs. Majority of the LGAs are rural except Umuahia North and Aba South. The intervention works for the rural roads shall broadly involve i) Spot improvement (12 roads spanning a length of 40.36km), and ii) Upgrades (25 roads spanning a total length of 92.78km) (**See Chapter 3; Subsection 3.1 for more details**).

1.3 Scope of the ESMP

The assignment is for the preparation of a site specific ESMP for the selected 37Nos roads (Spot improvement – 12nos totaling 40.36km and Upgrades – 25nos totaling 92.78km) for phase 2 intervention work package 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 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.

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

- Review and utilize relevant information in the existing PAD, ESMF and RPF prepared for the project to actualize the ESMP;
- Review of the Project's PIM and Markets Intervention Catalogue and utilize relevant information for the ESMP;
- Review Environmental and Social Safeguards policies of the World Bank triggered on the project;
- 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 environmental 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 factors 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, minimize, 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 subproject sites include;
 - ✓ Location.
 - ✓ Community Organization 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 labor 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 Mitigation Plan, the Consultant shall also document how to manage risk related to Gender Based Violence (GBV) including Sexual Exploitation and Abuse, and sexual harassment taken cognizance of (i) Influx of workers (ii) Security issues (iii) project GBV accountability and response

Framework. In doing this, he/she shall develop a labor influx mitigation plan, 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.

1.4 Rationale for the ESMP

The proposed rural road rehabilitation activities under RAAMP involve civil and earth works across multiple rural communities. While these activities are expected to enhance connectivity and agricultural productivity, they also pose potential environmental and social (E&S) risks that need to be managed proactively. In line with the World Bank's Environmental Assessment (EA) framework, the project has been classified as Category B; corresponding to Category II under Nigeria's EIA guidelines. This classification indicates that the potential adverse impacts are expected to be site-specific, largely reversible, and manageable through appropriate mitigation measures. Given the nature and scale of the project, an Environmental and Social Management Plan (ESMP) has been determined to be the most appropriate safeguard instrument. The ESMP will ensure that environmental and social concerns are fully integrated into project planning, design, construction, and operational phases, while also assigning roles and responsibilities for effective implementation.

1.5 Objectives of the ESMP

The overall objective of this ESMP is to guide the integration of environmental and social safeguards into the implementation of the proposed intervention works. Specifically, the ESMP aims to:

- Identify and assess potential site-specific E&S risks associated with the rural road rehabilitation activities;
- Propose practical and cost-effective mitigation and enhancement measures to minimize negative impacts and optimize project benefits;
- Define clear roles and responsibilities for environmental and social performance monitoring and management among relevant stakeholders;
- Ensure compliance with applicable national environmental regulations and the triggered WB safeguard policies, particularly OP 4.01;
- Establish a framework for stakeholder engagement, grievance redress, and capacity building to support effective ESMP implementation throughout the project lifecycle.

This objective aligns with the Terms of Reference (ToR) provided for this ESMP, included as Annex 1 of this report.

CHAPTER TWO – ADMINISTRATIVE AND REGULATORY FRAMEWORK

The Environmental and Social Management Framework (ESMF) prepared for the Rural Access and Agricultural Marketing Project (RAAMP) already highlights all specific relevant policies, laws, regulations, guidelines and applicable World Bank Operational Policies triggered under this project. However, some other policies and state level regulatory and administrative frameworks applicable to the project and the intervention works to be implemented by the AB-RAAMP are highlighted in this Chapter.

The key administrative and regulatory framework guiding agriculture and rural development in Nigeria among others include; Nigeria Agricultural Policy (2001), National Policy on Integrated Rural Development (NPIRD) (2001), and Agricultural Promotion Policy (2016); while the Federal Environmental Laws, Regulations and Guidelines are applied to ensure international best practices in rural roads development projects with due considerations on the safety and health of the environment.

2.1 Legal and Regulatory Frameworks

2.1.1 Federal Ministry of Environment (FMEnv) – EIA Act CAP E12, LFN (2004)

The EIA Act Cap E12, LFN 2004 is the primary legal framework supporting the conduct of environmental and social assessments in Nigeria. It prohibits the execution of any project likely to significantly affect the environment without

prior assessment (Section 2), and it mandates EIA for projects such as roads and infrastructure developments (Section 4). Considering the scope of RAAMP, rural road rehabilitation activities fall under this requirement, warranting the preparation of an ESMP³ as the appropriate safeguard instrument.

2.1.2 Applicable Legal and Regulatory Frameworks

Tables 2 – 4 below presents the applicable regulations, guidelines and standards that affect the rehabilitation of rural roads; and specifically, RAAMP.

Table 2: Applicable National Legal Frameworks (Acts)

S/N	National Legal and Regulatory Framework (Acts)	Summary of Relevant Provisions	Applicability to RAAMP and the Proposed Intervention Works
1.	Environmental Impact Assessment (EIA) Act CAP E12, LFN 2004	Mandates prior EIA for any activity likely to significantly affect the environment. Sets minimum content for EIAs and lists projects requiring mandatory assessment.	Relevant to RAAMP and the proposed intervention activities in particular, due to potential localized environmental impacts from the rural road rehabilitation.
2.	NESREA Act (Amendment), 2018	Establishes NESREA to enforce all environmental laws, standards, and regulations in Nigeria.	NESREA ensures compliance with environmental regulations during construction.
3.	Land Use Act, 1978 (as amended 1990)	Governs land acquisition and resettlement processes.	Guides land access procedures for road expansion and right-of-way.
4.	Water Resources Act, CAP W2, LFN 2004	Regulates exploitation and protection of water resources. It is important in managing impacts on surface and groundwater during road works.	Relevant where road projects affect rivers/streams, wetlands, or require culverts.
5.	Labour Act, CAP L1, LFN 2004	Defines worker rights and employment conditions, including contracts and working conditions.	It ensures protection of construction workers' rights.
6.	Employees Compensation Act, 2010	Provides compensation for workplace injuries and occupational diseases.	Relevant for contractors to manage site-related accidents.
7.	Harmful Waste (Special Criminal Provisions) Act, 1988	Prohibits illegal handling or dumping of hazardous waste.	Applicable to hazardous wastes generated during construction, and in particular, those that may be uncovered during intervention activities e.g. asbestos pipes.
8.	Federal Road Safety Commission (FRSC) Act, 2007	Regulates traffic safety and highway management.	Supports safe road use, signage, and post-construction road safety.
9.	Child Rights Act, 2003	Prohibits child labour, abuse, neglect, and exploitation. It upholds the right of every child to be protected from economic exploitation and from engaging in work that is hazardous or likely to interfere with their education, health, or overall development.	This Act protects children from all forms of abuse, exploitation, and hazardous labor. In the context of RAAMP, it supports safeguards against child labour during civil works implementation.
10.	Climate Change Act, 2021	This act mandates climate adaptation and mitigation efforts across all sectors, and emphasizes the integration of climate considerations into both national and subnational development planning. It also promotes the development of climate-resilient infrastructure and encourages sustainable land use practices.	The act emphasizes the need to integrate climate resilience into rural road rehabilitation design and planning, particularly in flood-prone and erosion-affected areas. It supports the use of environmentally sustainable materials, proper drainage systems, and long-term maintenance planning in line with climate adaptation principles.
11.	Natural Resources Conservation Council Act, 1990	The Act establishes the Natural Resources Conservation Council (NRCC), tasked with formulating national policies to conserve Nigeria's natural resources—such as soil, water, forests, fisheries, and wildlife—and overseeing their protection.	It promotes the conservation and sustainable use of Nigeria's natural resources, including land, forests, and biodiversity. In project-affected areas, this Act supports the implementation of ecosystem management principles—ensuring that road construction and associated civil works do not lead to

³ This is because the project is classified as Category B under the World Bank's Operational Policy (OP 4.01 – Environmental Assessment), and Category II under Nigeria's EIA Guidelines—implying that its impacts are site-specific, moderate, and readily manageable through mitigation measures provided in an ESMP.

S/N	National Legal and Regulatory Framework (Acts)	Summary of Relevant Provisions	Applicability to RAAMP and the Proposed Intervention Works
			the degradation of natural habitats, soil erosion, or loss of vegetation.

Table 3: Applicable National Guidelines and Regulations

S/N	National Guidelines and Regulatory Framework	Summary of Relevant Provisions	Applicability to RAAMP and the Proposed Intervention Works
1.	EIA Sectoral Guidelines for Roads & Highways (FMEEnv, 1995)	Provides technical guidance on assessing and mitigating environmental impacts of road projects.	Provides guidance in the preparation of the ESMPs under RAAMP.
2.	National Environmental (Solid & Hazardous Waste) Regulations, 1991	Sets standards for hazardous waste management including its handling, tracking and disposal.	Guides disposal of construction waste and bitumen/asphalt.
3.	National Environmental (Air Quality Control) Regulations, 2014	Establish comprehensive controls over air emissions to protect human health, vegetation, and environmental quality. It sets maximum permissible levels for key air pollutants (e.g. particulate matter, NO _x , SO ₂) to prevent harmful impacts.	Its compliance ensures minimized air pollution and protection of worker and community health during and after civil works implementation.
4.	National Environmental (Sanitation & Waste Control) Regulations, 2009	It promotes environmental sanitation and waste management.	Useful for Contractors' housekeeping, including managing workers' camps and site cleanliness.
5.	National Environmental (Soil Erosion & Flood Control) Regulations, 2011	This regulation establishes enforceable standards and best practices for controlling soil erosion, siltation, and sedimentation resulting from non-agricultural earth-disturbing activities, such as road construction.	Mandates the adoption of soil conservation and erosion control measures, including sedimentation management, especially in areas where road construction may disturb land surfaces, affect drainage patterns, or increase runoff. This is particularly relevant in erosion-prone roads, where poorly managed construction activities can lead to long-term environmental degradation.
6.	National Environmental (Noise Standards & Control) Regulations, 2009	Limits noise levels to protect public well-being. It sets acceptable noise levels to minimize disturbance.	Regulates noise from equipment and site operations. Applicable during construction and equipment operation.
7.	National Environmental (Construction Sector) Regulations, 2010	The regulations apply to all construction sector activities including building, road, bridge, rail, airport, and other civil engineering construction works in Nigeria. Both public and private sector construction operations are covered. It aims to prevent environmental pollution from construction related activities.	Construction companies must prepare and implement an Environmental Management Plan (EMP) prior to commencing construction. Measures must be taken to prevent or minimize pollution during all project phases—site clearing, excavation, construction, and demobilization.
8.	National Environmental (Vehicular Emissions Control) Regulations, 2010	Limits emissions from construction vehicles. Its purpose is to restore, preserve and improve the quality of air.	It ensures air quality is not degraded by equipment fumes.
9.	National Environmental (Surface & Groundwater Quality) Regulations, 2010	The regulations aim 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.	Relevant near water crossings or drainage discharges.

Table 4: Applicable National Regulatory Policies

S/N	Applicable National Policies	Summary of Relevant Provisions	Applicability to RAAMP and the Proposed Intervention Works
1.	National Policy on	Aims to ensure environmental protection and	Supports integration of sustainability, biodiversity

S/N	Applicable National Policies	Summary of Relevant Provisions	Applicability to RAAMP and the Proposed Intervention Works
	Environment, 2016	sustainable development. It emphasizes: coordinated environmental management, quality environment for health, sustainable resource use, biodiversity preservation, public awareness, and stakeholder partnerships.	protection, and public awareness into road construction planning, execution, and maintenance, especially in rural and ecologically sensitive areas.
2.	National Flood & Erosion Control Policy, 2006	Provides operational strategies through the National Action Plan and Technical Guidelines developed by FMEnv's WIC Committee. Focuses on identifying and mitigating erosion and flood risks through planned interventions.	Informs design and alignment of rural roads to prevent erosion and manage flood-prone areas. Encourages implementation of site-specific drainage and slope protection measures to minimize environmental degradation during and after construction.
3.	National Gender Policy, 2006	Aims to eliminate gender inequality in political, social, and economic life. Key focus areas include women's empowerment, increased participation in leadership, gender mainstreaming in development, elimination of workplace sexism, and promoting shared responsibilities in gender roles.	Supports gender-responsive stakeholder engagement and benefit-sharing during road planning and rehabilitation. Encourages inclusion of women in community consultations, local employment opportunities, and monitoring activities associated with the project.
4.	National Policy on Occupational Safety and Health, 2020	Provides a national framework for occupational safety and health (OSH). Aims to protect workers from hazards, promote health in the workplace, and encourage voluntary compliance with safety standards under development projects.	Guides the implementation of Occupational Health and Safety measures for contractors and site workers involved in RAAMP activities. Ensures adequate use of PPE, emergency preparedness, and adherence to safe working practices during road construction and rehabilitation.
5.	National Climate Change Policy (2021–2030)	Promotes low-carbon and climate-resilient development. Focus areas include vulnerability reduction, emission control, resilience building, public awareness, technology innovation, and institutional capacity-building at all levels of governance.	Encourages the incorporation of climate-resilient road designs (e.g., elevated culverts, durable materials), low-emission construction practices, and community-level climate awareness as part of the RAAMP infrastructure upgrades.

2.2 Abia State Legal and Regulatory Frameworks on Environment

Abia State derives its environmental regulatory authority from both national and state-level legal instruments. The table below presents the applicable state regulatory and administrative laws, policies and framework to RAAMP project.

Table 5: Applicable Abia State Legal, Administrative and Regulatory Framework

Applicable Abia State Policies and Agencies	Mandate
Abia State Environmental Protection Agency (ASEPA).	This law establishes the Abia State Environmental Protection Agency (ASEPA) as a statutory body responsible for environmental protection and waste management in the state. The law empowers ASEPA to: a) regulate and monitor waste collection, disposal, and sanitation services, b) enforce environmental standards and penalize violations, and c) Issue environmental permits and oversee compliance within designated areas.
Abia State Ministry of Poverty Alleviation and social protection	This ministry is the supervisory ministry where Abia State RAAMP is domicile. The ministry assumes the overall supervisory role of all Abia RAAMP activities including the implementation of the selected sub projects.
Abia State Ministry of Environment	The mandate of the ministry includes: i) liaising with the Federal Ministry of Environment, FMEnv to achieve a healthy or better management of the environment via development of National Policy on Environment; ii) responsibility for monitoring waste management standards; iii) responsibility for general environmental matters in the State; iv) Monitoring the implementation of ESIA studies and other environmental studies for all developmental projects in the State; v) Formulates environmental policies for the state
Abia State Ministry of Agriculture	This aims and objectives of the ministry include: i) The achievement of self-sufficiency in basic food supply and the attainment of food security; ii) increased production of agricultural raw materials for industries; iii) increased production and processing of export crops, using improved production and processing technologies; iv) generating gainful employment; v) rational utilization of agricultural resources, improved

	protection of agricultural land resources from drought, desert encroachment, soil erosion and flood, and the general preservation of the environment for the sustainability of agricultural production; vi) promotion of the increased application of modern technology to agricultural production; and, improvement in the quality of life of rural dwellers.	
Abia State Ministry of Works	The Ministry of Works plays a key administrative role in RAAMP implementation. Its responsibilities relevant to the project include the construction and maintenance of state roads and bridges, regulation of traffic and road safety, enforcement of transport-related levies, and oversight of road transport policies. The Ministry is also involved in the registration and licensing of contractors, as well as the construction and repair of drainage and sewage systems critical to road infrastructure.	
Local Government Authorities/Regulations	Collaborates with State and Federal environmental agencies to implement environmental byelaws and ensure proper management of local environmental and social issues, including community engagement, grievance redress, and monitoring of local impacts of the RAAMP interventions.	
Applicable Legislative Framework		
Applicable legislative framework	Year	Provisions
Abia State Environmental Protection Agency Establishment Law Cap 14 July, 1994	1994	The act empowers ASEPA with the responsibility of inspecting, monitoring and enforcing environmental policies of the government as it relates to sanitation. This act empowers ASEPA to enforce compliance to environmental sanitation and waste management within the State.
Abia State Child’s Right Act, 2016	2016	The Act aims to protect children under 18, enduring their well-being and rights, including protection from abuse, neglect, and exploitation, as well as access to education and healthcare.
Abia State Violence Against Persons (prohibition) (VAPP) law, 2019	2019	The law aims to eliminate violence and provide protection and remedies for victims, addressing a wide range of issues including rape, sexual harassment and other forms of abuse.
Abia State gender policy 2022	2022	The laws at providing and enforcing female persons right to inheritance which guarantees women the right to inherit and own property within their father’s family, addressing a long-standing issue of gender discrimination.
Abia State Environmental Sanitation Edict No. 5 of 1995	1995	This edict provides for the enforcement of environmental sanitation measures throughout the state. It mandates: a) regular environmental sanitation exercises, b) sanctions for improper waste disposal, nuisance, and unsanitary conditions, c) environmental health inspections and control of communicable disease vectors.
Abia State Public Health Law Cap. 111 of 2001	2001	Although primarily a health statute, this law includes environmental provisions relating to: a) prevention and abatement of environmental nuisances, b) regulation of water sources, waste disposal, and pollution control within residential and commercial premises, c) sanctions against activities detrimental to public environmental health

2.3 International Treaties/Agreements/Conventions Applicable to RAAMP and the Intervention Works

- African Charter on Human and Peoples' Rights (Banjul Charter) (1981)
- African Charter on the Rights and Welfare of the Child (1999)
- International Covenant on Economic, Social and Cultural Rights (ICESCR) (1966)
- United Nations Framework Convention on Climate Change (UNFCCC), Paris Agreement (1992)
- Convention on the Elimination of all forms of Discrimination Against Women (CEDAW) (1985)
- Convention on climate change 1992.
- Vienna convention for the protection of the Ozone Layer and the Montreal protocol for Control of Substances that deplete the ozone layer; 1987
- Convention on Biodiversity 1992;
- World Health Organization (WHO) Health and Safety Component of EIA, 1987.

2.3.1 International Labour Organization Treaties/Agreements/Conventions Ratified by Nigeria and Applicable to OHS, Labour and Working Conditions

Table 6 below presents the ILO Treaties/Agreements/Conventions ratified by Nigeria applicable to OHS, Labour and Working Conditions, Ratification Status and Date.

Table 6: ILO Treaties/Agreements/Conventions ratified by Nigeria applicable to OHS, Labour and Working Conditions, Ratification Status and Date

ILO Treaties/Agreements/Conventions	Ratification Status	Date
Forced Labour Convention, 1930 (No. 29)	Ratified	17 Oct 1960
Abolition of Forced Labour Convention, 1957 (No. 105)	Ratified	17 Oct 1960
Equality of Treatment (Accident Compensation) Convention, 1925 (No. 19)	Ratified	17 Oct 1960
Safety of Chemicals at the Workplace, 1990 (No.170)	Ratified	4 Nov 1993
Worst Forms of Child Labour Convention, 1999 (No. 182)	Ratified	2 Oct 2002
Minimum Age Convention, 1973 (No 138)	Ratified	2 Oct 2002
Protocol of 2002 to Safety & Health Convention (No. 155)	Ratified	3 May 1994
Occupational Safety and Health Convention (1981) and its Protocol of 2002 (No. 155)	Ratified	3 May 1994
Occupational Health Services Convention, 1985 (No.161)	Ratified	3 May 1994
Promotional Framework for Occupational Safety and Health Convention, 2006 (No. 187)	Ratified	8 Nov 2022
Vocational Rehabilitation and Employment (Disabled Persons) Convention, 1983 (No 159)	Ratified	26 Aug 2010
Violence and Harassment Convention, 2019 (No. 190)	Ratified	8 Nov 2022

2.4 Relevant Legal and Regulatory Framework on Gender Based Violence

2.4.1 Legal and Institutional Framework on GBV/SEA/SH in Abia State

The Abia RAAMP recognizes that road infrastructure development may heighten risks of Gender-Based Violence (GBV), Sexual Exploitation and Abuse (SEA), and Sexual Harassment (SH), particularly for women, girls, and other vulnerable groups in project-affected communities. To address these risks, the project aligns with both national and state-level legal frameworks on GBV. Abia State has domesticated key national laws that serve as the legal foundation for addressing GBV and its related risks, including:

- **The Violence Against Persons (Prohibition) Law (Abia State VAPP Law, 2020)** – which criminalizes various forms of GBV including rape, domestic violence, harmful traditional practices, and emotional abuse.
- **The Child's Rights Law of Abia State** – adapted from the national **Child Rights Act (CRA, 2003)**, which provides legal protection against violence, exploitation, and abuse of children.

Institutionally, the Abia State Ministry of Women Affairs and Social Development (ABSMWASD) is the lead agency for coordinating GBV prevention and response in the state. The Ministry partners with community-based organizations and health/social service providers where available, and contributes to the development of referral pathways for survivors. Also, in line with the World Bank's GBV Good Practice Note, Abia RAAMP has:

- Integrated mitigation measures in the ESMP, including a Code of Conduct (CoC) for contractors and workers;
- Established a Grievance Redress Mechanism (GRM) with GBV-sensitive reporting channels;
- Conducted mapping of GBV service providers and initiated partnerships with local Non-Governmental Organizations/Civil Society Organizations (NGOs/CSOs) for survivor support services;
- Scheduled community sensitization and awareness campaigns on GBV and workers' obligations under the CoC.

Additionally, Nigeria is a party to key international and regional treaties ratified by the federal government that reinforce its commitments to eliminating GBV, SEA, and SH, including:

- The Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) (1985),
- The Convention on the Rights of Persons with Disabilities (CRPD) (2012)
- The International Covenant on Civil and Political Rights (ICCPR) (2004);
- The International Covenant on Economic, Social and Cultural Rights (ICESCR) (2004)
- Convention Against Torture & other Cruel, Inhuman or Degrading Treatment or Punishment (CAT) 2001
- The Convention on the Rights of the Child (CRC) (1990),

- The Protocol to the African Commission on Human and People's Rights (ACHPR) on the Rights of Women in Africa (the "Maputo Protocol") (2007).

In addition, Nigeria also has obligations to protect the environment through various commitments to the African Union, the Economic Community of West African States and the Commonwealth. It is also committed through relations with the European Community under the Lome IV Convention.

2.5 Triggered World Bank Safeguard Policies, Applicability and Project's Compliance

Four (4) Safeguard Policies have been triggered for RAAMP and the proposed phase 2 intervention works, in particular. These are namely: Environmental Assessment (OP 4.01), Natural Habitats (OP 4.04), Physical Cultural Resources (OP 4.11), and Involuntary Resettlement (OP 4.12). Table 7 below provides information on the provisions of the triggered OPs, their applicability to the proposed interventions and the project's compliance.

Table 7: Triggered World Bank Safeguard Policies' Provisions, Applicability to the Proposed Interventions and the Project's Compliance

Triggered World Bank Operational Policies	Policy Provisions	Applicability to Abia RAAMP and Proposed Interventions	Project's Compliance
Environmental Assessment (OP 4.01)	OP 4.01 requires borrowers to carry out an Environmental Assessment (EA) to identify, assess and manage the potential environmental and social risks and impacts of proposed projects, ensure sustainability, and support informed decision-making. It classifies projects into categories (A, B, or C) based on risk magnitude and nature. The EA process includes the assessment of alternatives, identification of mitigation measures, consultation with stakeholders, and the integration of findings into project design and implementation. For Category B projects (like RAAMP in Abia), the environmental and social impacts are expected to be site-specific, reversible, and manageable with appropriate mitigation. The EA must comply with both World Bank safeguard requirements and applicable national environmental regulations.	The Abia RAAMP Phase 2 sub-projects, which include rural road rehabilitation, involve civil and earthworks that are likely to trigger moderate environmental and social impacts. These may include increased air pollution (dust and exhaust from machinery), noise pollution, generation of construction and demolition (C&D) wastes, potential soil erosion, and disruption of local biodiversity. Social risks include temporary disruption of access, increased labour influx, potential for Gender-Based Violence (GBV)/Sexual Exploitation and Abuse (SEA/SH), and occupational health and safety risks for workers.	In line with OP 4.01 (and Nigeria's EIA Act CAP E12, LFN 2004), the Abia RAAMP PIU is preparing an Environmental and Social Management Plan (ESMP) for the proposed Phase 2 interventions. The ESMP is proportionate to the identified E&S risks and includes specific mitigation and monitoring measures, roles and responsibilities, cost estimates, and grievance redress mechanisms. Public consultations have been initiated and institutional arrangements are being made to ensure effective ESMP implementation. The document will be submitted to the project and the World Bank for review and clearance prior to implementation of civil works.
Natural Habitats (OP 4.04)	OP 4.04 aims to protect, maintain, and restore natural habitats (i.e. the natural home or environment of an animal, plant, or other organism) and their ecological functions as part of sustainable development. The policy prohibits significant conversion or degradation of critical natural habitats unless (i) there are no feasible alternatives, and (ii) the overall benefits substantially outweigh the environmental costs. The policy emphasizes the precautionary principle and requires that any project involving natural habitats incorporate mitigation and conservation	The proposed Abia RAAMP Phase 2 road rehabilitation interventions may involve minor vegetation clearance along selected rural road corridors. These vegetated areas often include shrubs, grasses, and trees that are used by local communities for traditional medicine, food, fuelwood, and fodder. Some of these roads may pass near freshwater ecosystems (e.g., streams and rivers), where construction-related activities such as grading, excavation, or	Abia RAAMP has undertaken a robust screening process to avoid selecting roads near critical or protected natural habitats, through its exclusion criteria. For locations where minor vegetation clearance is unavoidable due to road encroachment or the need for siting staging areas, the ESMP includes mitigation measures such as selective clearance, tree replanting, and restoration of disturbed areas. In areas near water bodies, provisions are made to implement erosion and sediment control measures (e.g., silt traps, drainage management) to

Triggered World Bank Operational Policies	Policy Provisions	Applicability to Abia RAAMP and Proposed Interventions	Project's Compliance
	measures, promote habitat restoration, and engage local communities in management and protection efforts.	improper waste handling could result in sedimentation or pollution affecting aquatic habitats. Although no road segments were found to traverse officially designated critical natural habitats or protected areas, the presence of ecologically sensitive features necessitates the application of OP 4.04.	prevent degradation of aquatic habitats. Engagement with local communities is planned to raise awareness on habitat protection and resource conservation. The ESMP therefore complies with OP 4.04 through the integration of habitat-sensitive design, conservation practices, and environmental monitoring protocols.
Physical Cultural Resources (OP 4.11)	OP 4.11 aims to ensure that development projects financed by the Bank avoid or mitigate adverse impacts on Physical Cultural Resources (PCRs), including sites, structures, objects, or landscapes of historical, religious, archaeological, aesthetic, or cultural significance. The policy requires the borrower to identify and assess such resources early in the project cycle, engage with affected communities, apply mitigation measures (including design modifications), and adopt culturally appropriate management and protection strategies. Where necessary, a Physical Cultural Resources Management Plan (PCRMP) should be prepared and integrated into the Environmental Assessment (EA). The policy also mandates that a Chance Find Procedure be included for unexpected discoveries during project implementation.	The proposed civil works under Abia RAAMP Phase 2 involve rural road rehabilitation activities, which may require vegetation clearance, widening of the existing road width, excavation, and site preparation across multiple communities. Some of these areas are known to host culturally significant elements such as shrines, memorial tombstones, sacred groves, ancestral pathways, or sites associated with traditional festivals and spiritual heritage. These could be directly or indirectly impacted by project activities, especially during site clearing or alignment changes. Therefore, OP 4.11 is triggered to ensure that such resources are identified, respected, and protected throughout the project lifecycle.	In compliance with OP 4.11, this ESMP includes a Physical Cultural Resources Management Plan (PCRMP) as an annex, which outlines preventive, avoidance, and mitigation strategies for managing PCRs. The PCRMP incorporates a Chance Find Procedure, which mandates contractors and the PIU to immediately halt work and notify relevant authorities if any PCR is discovered during construction. In cases where known cultural sites are present, the design of the roads may be adjusted to avoid impacts ("mitigation by avoidance"). Public consultations have been conducted with local communities and traditional authorities to identify PCRs and integrate local knowledge into project planning. The implementation of these measures will help prevent grievances, social tensions, and cultural loss, thereby ensuring compliance with the policy and sustaining cultural harmony within project communities.
Involuntary Resettlement (OP 4.12)	OP 4.12 seeks to avoid involuntary resettlement wherever feasible and minimize its impact where unavoidable by exploring all viable alternative project designs. Where land acquisition or restrictions on access to assets or sources of livelihood are necessary, the policy requires that affected persons are meaningfully consulted, adequately compensated at full replacement cost, and provided with assistance to improve or at least restore their livelihoods and standards of living. It mandates the preparation of a Resettlement Action Plan (RAP) or Resettlement Policy Framework (RPF), depending on the project phase and level of detail available. Special attention must be given to	The Abia RAAMP Phase 2 rural roads rehabilitation triggers OP 4.12 due to the potential for physical and/or economic displacement resulting from the proposed civil works. Though large-scale land acquisition is not anticipated, minor encroachments along the road corridors by roadside vendors, small-scale farmers, and economic trees (such as plantain, oil palm, and fruit trees) have been identified. Some road segments may also require widening, which could impact adjacent structures or farmlands. In addition, contractor access to borrow pit sites may require temporary land use agreements	In accordance with OP 4.12, a standalone Resettlement Action Plan (RAP) is currently being prepared by the Abia RAAMP PIU to address all potential resettlement impacts. The RAP will provide detailed information on Project-Affected Persons (PAPs), asset valuation procedures, entitlement frameworks, compensation and livelihood restoration strategies, budget estimates, institutional responsibilities, and grievance redress mechanisms. The RAP preparation includes stakeholder consultations, particularly with affected individuals and vulnerable groups, to ensure transparency and buy-in. Implementation of the RAP will be a precondition for the

Triggered World Bank Operational Policies	Policy Provisions	Applicability to Abia RAAMP and Proposed Interventions	Project's Compliance
	vulnerable groups. The policy also requires that resettlement costs be included in overall project budgeting and that a functioning grievance redress mechanism is in place.	or leases, which may also affect land users.	commencement of civil works across the project communities.

2.5.1 World Bank Group Environmental, Health and Safety Guideline

The World Bank Group Environmental, Health and Safety (EHS) Guidelines are technical reference documents that outline Good International Industry Practices (GIIP) for managing environmental, occupational, and community health and safety risks across various sectors, including infrastructure and road construction. These guidelines provide performance levels and measures generally acceptable to the World Bank Group and applicable to RAAMP activities. The General EHS Guidelines cover the following core areas: a) Environmental Management, b) Occupational Health and Safety (OHS), c) Community Health and Safety, and d) Construction and Decommissioning. In addition to the general guidelines, sector-specific EHS Guidelines for Toll Roads⁴ also apply to rural road rehabilitation works. These documents are essential for ensuring that the project adheres to internationally recognized health, safety, and environmental standards during planning/preconstruction, construction, and operation phases.

2.5.2 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 operations⁵.

<https://www.ifc.org/content/dam/ifc/doc/2000/2007-construction-materials-extraction-ehsguidelines-en.pdf>

2.6 Comparison Between Applicable National Laws and World Bank 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 the Table below.

Table 8: 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 efforts to sustainable management of Abia environment.	Environmental Impact Assessment (EIA) Act CAP. E12 L.F.N (2004) makes it mandatory for all major development projects likely to have negative impacts on the environment like the RAAMP to conduct Environmental Impact Assessments.	Environmental Assessment (OP/BP 4.01) which ensures that projects likely to have potential environmental and social negative impacts undergo environmental assessments based on the defined project category.	Based on the limited coverage and capacity of the Abia State environmental laws, Abia 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.
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	RAAMP is rated a category II based on the Nigerian EIA law which stipulates the need for an Environmental Management Plan (EMP)	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.	

⁴ [EHS Guidelines for Toll Roads](#)

⁵ <https://www.ifc.org/content/dam/ifc/doc/2000/2007-construction-materials-extraction-ehs-guidelines-en.pdf>

Abia State Laws	Nigeria National Laws	World Bank Policies	Comments
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 Cultural Policy 1988. The National Commission for Museums and Monuments Act has provisions for cultural heritage items.	Physical 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	In the absence of an 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)	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.

CHAPTER THREE – DESCRIPTION OF THE PROJECT ACTIVITIES

3.1 Description of the Proposed Road Rehabilitation Activities

The AB-RAAMP proposes to carryout intervention works on 37 rural roads totaling 133.14km. Precisely, the proposed intervention works shall include: Spot Improvement (40.36km) and Rural Road Upgrades (92.78km) under the Phase 2 work package. The intervention works/sub-projects shall be situated in various rural communities (at least 110) located within 11 LGAs across the three senatorial districts of Abia State. The phase 2 work package shall involve civil works as follows:

a) **Rural Roads Upgrade:** These intervention works will be carried out on 25 roads totalling 92.78km and cutting across 10 LGAs. The roads to be rehabilitated under this work package have been divided into five (5) Lots. Specifically, the civil works to be undertaken will include:

- Site clearance
- Earthworks (i.e. removal of unsuitable material and filling of lateritic material)
- Excavation of fill material from approved borrow pits.
- Construction of reinforced concrete drains as well as Cross Drainage Structures (box and pipe culverts) at designated locations needing culverts.
- Re-sealing/overlay of cracks and eroded carriageway sections
- Pavement works (i.e. construction of sub-base and base courses to 100% WAS compaction as well as embankment slope, prime coating of surface with medium curing 1 (MC-1) cut-back bitumen, and 30mm thin asphaltting).
- Improvement/provision of culverts/drains/slopes/embankments/other structures.
- Complete or slight resurfacing
- Widening of shoulders of the existing road.
- Miscellaneous works/installation of Traffic control/management features (i.e. provision of road markings, signs, speed bumps, rumble strips and other infrastructure).

Table 9 below, shows a summary of the roads earmarked for upgrade and other relevant details.

Table 9: List of Roads selected for Upgrade

SN	LOT	LGA	ROAD NAME	LENGTH (KM)
1.	1.	Arochuku	Achara – Okpo – Nkporo – Ututu	10.39km
2.			Umeye I – Umeye II	1.40km
3.			Obinto – Atani Road	1.20km
4.		Ohafia	Okagwe – Nkwebi Onwuanyanwu	4.30km
5.	2	Bende	Sameke Junction – Amaraugboghu	2.46km
6.		Umu Nneochi	Oba Junction – Umumaduako – Umumezie	2.55km
7.			Orie Ngodo Market - Obinochia Umuodim – Lomara	5.20km
8.	3.	Isialangwa North	Amorji – Ngbedeala – Ntigha Umukalu – Mbawsi	4.45km
9.			Amorji Market Road – Amorji Junction	1.61km
10.			Ogbagala Junction – Amaugba	0.49km
11.			Nbawsi – Agburuike – Umuomaighiukwu	5.49km
12.		Isialangwa South	Amiyi Nvosi – Ometeghi – Umuada Nvosi – Omuapu Road	5.60km
13.			Nkwo Ebe – Umunko – Umuakwu	3.62km
14.			Umunkpeyi – Amachi – Umuaro	2.70km
15.	4	Umuahia South	Eziama – Amaibo Ring Road	3.95km
16.			Agalaba Ise – Ahiamorie – Umuamadi – Amalaubi – Umuokereke	6.00km
17.			Apumiri – Avo – Amibo Express	1.52km
18.			Umuawoli Road	0.61km
19.			Ogbodioriloku – Umuchiche – Mbaraukwu	4.40km
20.		Umuahia North	Agalabano – Umuhu Central School – Ekeoba	1.36km
21.	5	Obingwa	Nkwo Elechi Market – Umueme Road	2.11km
22.			Umuagu Ohuru Amaisii – Osaa Ukwu – Itungwa	9.30km
23.			Umuariama Ahiaba Ubi – Nkwo Elechi	2.98km
24.			Nkwo Elechi Umuagu Umuorukwu Osusu Amaukwa Road	3.85km

25	Ugwunagbo	Asa Umunka – Umugo – Ameyi Oza – Ozata – Ugwati Asa	5.24km
TOTAL			92.78km

b) Spot Improvement Work Packages: This intervention covers 12 roads with a combined length of 40.36km, spread across four LGAs. The roads have been grouped into three (3) Lots for implementation. The scope of civil works for these spot improvements is essentially the same as those planned for the upgrade works, as the roads involved share similar characteristics and current conditions. The key civil work activities include:

- Site clearance
- Earthworks (i.e. removal of unsuitable material and filling of lateritic material)
- Excavation of fill material from approved borrow pits.
- Construction of reinforced concrete drains as well as Cross Drainage Structures (box and pipe culverts) at designated locations needing culverts.
- Re-sealing/overlay of cracks and eroded carriageway sections
- Pavement works (i.e. construction of sub-base and base courses to 100% WAS compaction as well as embankment slope, prime coating of surface with medium curing 1 (MC-1) cut-back bitumen, and 30mm thin asphaltting).
- Improvement/provision of CDSs or culverts/drains/slopes/embankments/other structures.
- Complete or slight resurfacing
- Widening of shoulders of the existing road.
- Miscellaneous works/installation of Traffic control/management features (i.e. provision of road markings, signs, speed bumps, rumble strips and other infrastructure).

Table 10 below, shows a summary of the roads earmarked for spot improvement and other relevant details.

Table 10: List of Roads selected for Spot Improvement

SN	LOT	LGA	ROAD NAME	LENGTH (KM)
1.	1.	Bende	Ozara Market Junction – Amaoku Alayi – Ugwueke Road	2.8km
2.			Amaokwelu Alayi Junction – Amankalu – Akoli Imenyi	6.2km
3.	2.	Bende	Alayi – Ezeukwu Road	9.6km
4.			Ezeukwu – Ugwueke Road	6.6km
5.	3.	Bende	Bende Etitiulo – Ubibia – Ndiwo – Itumbuzo – Okopedi – Ntalakwu	4.3km
6.		Umuahia North	Amaogwugwu Olololo Junction – Umukabia	0.67km
7.			Umuafiaka – Umuokpara	2.6km
8.		Umuahia South	Old Umuahia (Divinity School) – Osah/Ohia Road	4.0km
9.			Ahiaukwu – Amangwo – Umuajata Umudere Amakama	1.54km
10.			Okpikpe Umuana – Ikot Ekpene Road	1.18km
11.		Aba South	Umuanyaso Road	0.5km
12.			Umuegwere Road	0.37km
		TOTAL		40.36km

3.1.1 Project Activities and Phases

Table 11 below provides the summary of the project phases, activities, staffing requirement and support facilities.

Table 11: Summary of the Project Phases, Activities, Staffing Requirement and Support Facilities

PROJECT PHASE	SPOT IMPROVEMENT	UPGRADE
PRE-CONSTRUCTION		
Site Preparation (2 Months)	- 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). - Provision of soil stabilization - material sourcing Movement of earth materials. - Generation and disposal of construction spoil and waste in general.	- Removal of encumbrances, 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.
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.
Pavement	Provision of sub-base and base course at critical sections.	- Provision of sub-base, - Provision of lateritic base-course
Asphalting	- Provision of prime coat. - Provision of 30mm asphaltic concrete	- 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.
Labour Requirement/Lot	- Skilled Labour = 12 - Semi-Skilled/Unskilled = 40	- Skilled Labour = 18 - Semi-Skilled/Unskilled = 50
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, protective clothing etc) - First aid kits (1: 20 staff) - Portable water/food. - Borrow pit area.	
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.	

PROJECT PHASE	SPOT IMPROVEMENT	UPGRADE
	- 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

Note: to reduce labour influx in the project area, at least 70% of the unskilled labour shall be sourced from the project communities and where possible, semi-skilled and skilled workers shall also be sourced from the project communities.

3.1.2 Project Implementation Schedule

The proposed intervention works are estimated to be implemented over an 18-months period, with the operation phase being continuous (annually) until general large-scale infrastructural/engineering auditing is required (probably every 5 years). See the Implementation Chart in Table 12 below.

Table 12: Project Implementation Schedule

S/N	Phase	Implementation Period (Months)																		Annually
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
1.	Pre-Construction																			
2.	Construction																			
3.	Demobilization																			
4.	Operation																			

3.2 Engineering Designs for Proposed Works and Design Considerations/ Modifications

3.2.1 Proposed Engineering Designs

This section provides engineering designs and specifications for the two work packages as described in the engineering designs/design reports for the phase 2 interventions under AB-RAAMP. Excerpts for each are presented in the subsequent subsections below. It is noteworthy to state that the figures presented give a general overview of the engineering designs for intervention works to be carried out under each work package. Essentially, due to the number of the engineering designs and for the purpose of succinctness, a sample per work package has been presented below.

3.2.1.1 Spot Improvement

Design Standards and Parameters

The spot improvement roads will follow the Low Volume Road Manual (LVRM) specifications, adhering to Federal Ministry of Agriculture and Rural Development guidelines. The design prioritizes road safety, durability, and compliance with international standards, including hydrology and loading requirements for drainage structures. Key features of the road cross-sections include:

- 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 10m
- 150mm lateritic sub base and base course
- 30mm asphaltic concrete
- 900mm diameter pipe culverts
- 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)

Right-of-Way (ROW) Clearance

Efforts are made to minimize demolition within the ROW, especially as the roads pass through established communities. ROW dimensions include space for pavement, shoulders, side ditches, and slopes. Cross-sectional widths range from 7 – 8m to accommodate carriageways and hard shoulders (the proposed design is for the roads to have a width of 6m with a shoulder of 0.5m on each side).

Pavement Design

Spot improvement will be carried out on Paved, Partially Paved and Unpaved roads. The pavement structure includes:

- Sub-Base: 150mm thick approved lateritic material.
- Surfacing: Thin asphalt (30mm) or equivalent, with options such as double surface dressing for extended service life.

Drainage Design

Drainages of width 1m each shall be installed on both sides of the road, but only in built up areas/human settlement. Two types of drains have been selected for the roads where spot improvement will be undertaken. These are a) Earth Drains and b) Concrete Line drains. See respective designs in Figures 2-4 below.

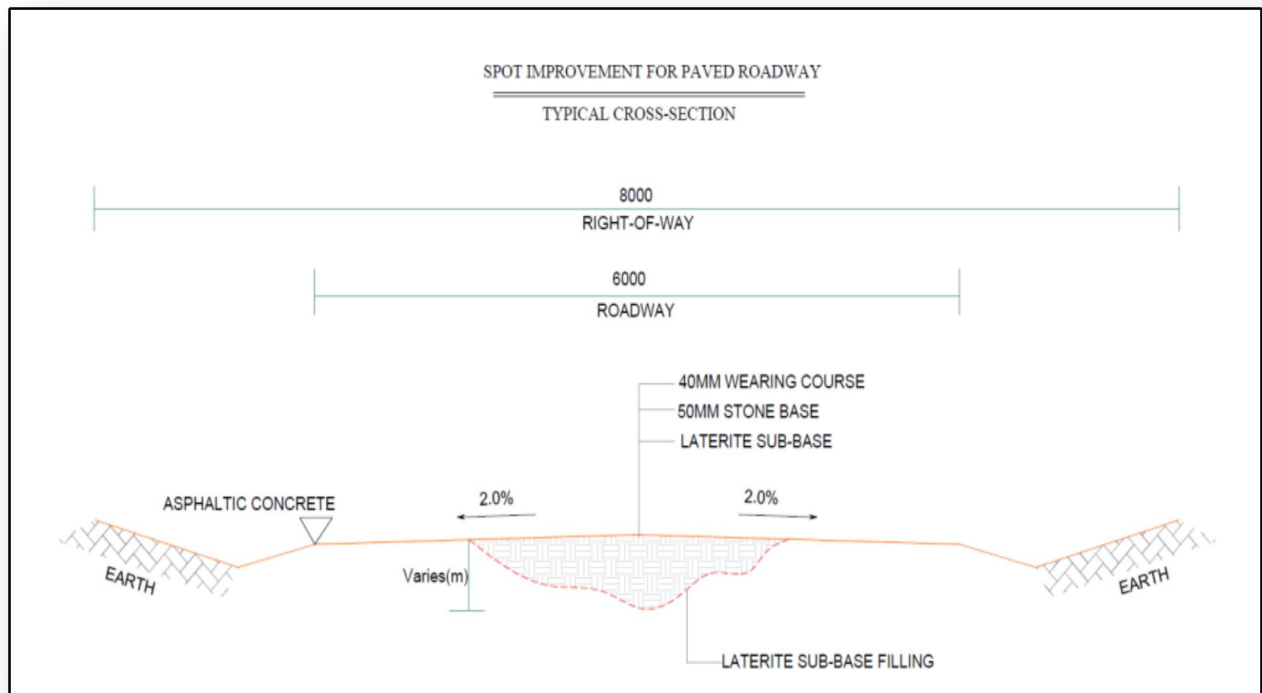


Figure 1: Restoring/Replacing of Base, Sub-base and Subgrade for Paved Roadway

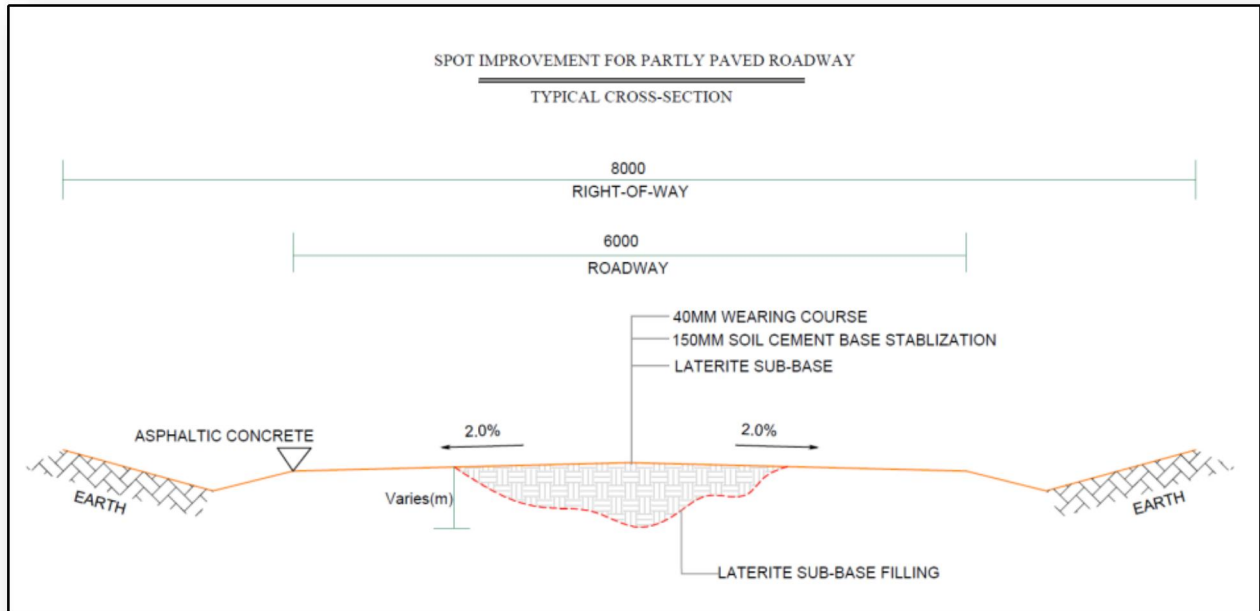


Figure 2: Improving Unpaved and Partly Paved to Paved Standard

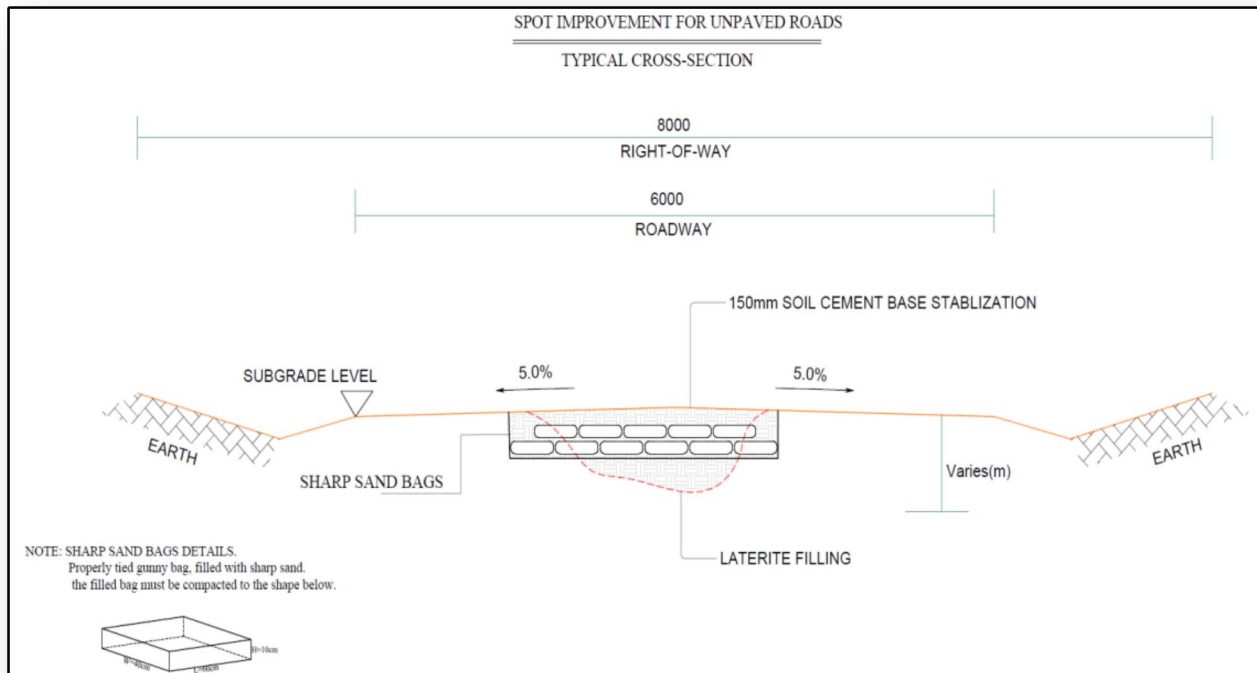


Figure 3: Restoring/Replacement of Subgrade for Earth Road

Non-Motorized Transport (NMT)

The design will incorporate considerations for the safe and efficient movement of pedestrians, cyclists, and animal-drawn vehicles along and across the road. Where feasible, measurements or estimates of such movements will inform design decisions to ensure inclusivity and enhance road safety.

3.2.1.2 Upgrades

The pavement design for the upgrade roads shall ensure durability and environmental sustainability through specific compaction standards, thickness specifications, and materials. Pavement layers will be compacted to a density of at least 97% Proctor MDD, using an optimum moisture content of 10.7%. The road structure will consist of a 150mm total thickness, with a 30mm asphaltic concrete surface, a 150mm granular road base, and a 150mm granular subbase. Hot Mix Asphalt (HMA), composed mainly of aggregates and asphalt cement, will be used for the surface. Drainage systems will be implemented to prevent waterlogging and maintain road integrity. ROW dimensions include space for pavement, shoulders, side ditches, and slopes. Cross-sectional widths range from 7m to accommodate carriageways and hard shoulders (the proposed design is for the roads to have a width of 6m with a shoulder of 0.5m on each side). See Figures 4 – 6 for excerpt of engineering designs for Upgrades.

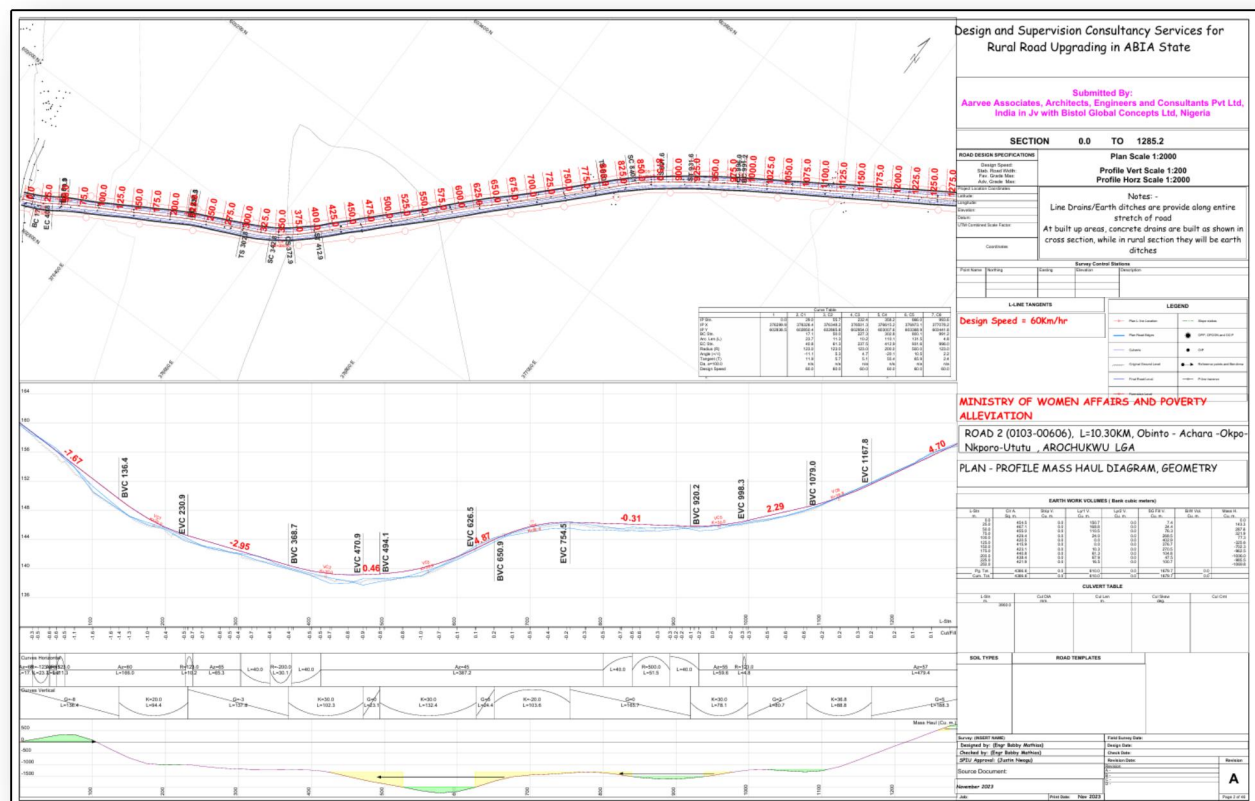


Figure 4: Upgrade Engineering Design A - Plan - Profile Mass Haul Diagram, Geometry

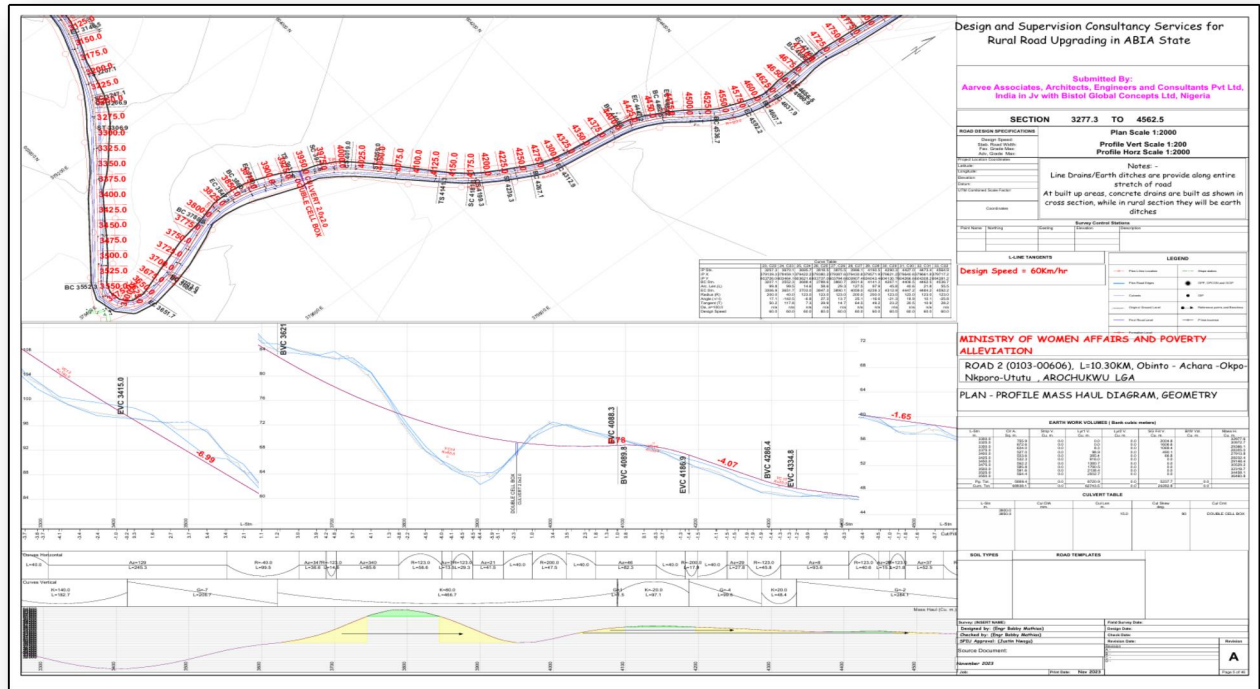


Figure 5: Upgrade Engineering Design B Plan - Profile Mass Haul Diagram, Geometry

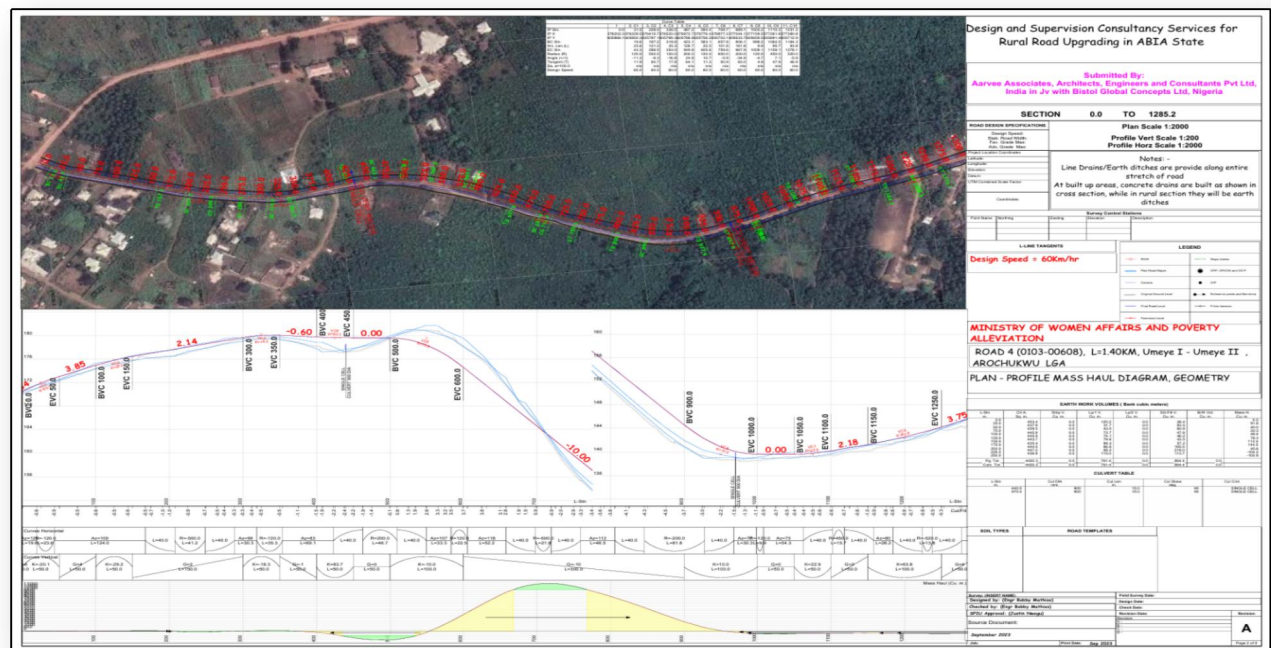


Figure 6: Upgrade Engineering Design C Plan - Profile Mass Haul Diagram, Geometry

Hydraulic Structures (Drainages and Culverts).

Drainage shall be constructed across the entire stretch of the road. However, while concrete drains (1-meter-wide on each side) shall be constructed only in built up areas along the roads marked for upgrade, earth ditches shall be constructed in rural areas. Additionally, various types and sizes of culverts (such as single and double-cell ring culverts, box culverts, etc.) will be installed where necessary to replace existing structures. This is intended to enhance hydraulic performance and improve water flow capacity.

Design Standards and Parameters

The spot improvement roads will follow the Low Volume Road Manual (LVRM) specifications, adhering to Federal Ministry of Agriculture and Rural Development guidelines. The design prioritizes road safety, durability, and compliance with international standards, including hydrology and loading requirements for drainage structures. Key features of the road cross-sections include:

- 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)

3.2.2 Design Considerations/Recommendations

Based on field observations and certain site-specific realities and E&S sensitivities along the road corridors, several key engineering design considerations are proposed to improve constructability, enhance resilience, and mitigate adverse social and environmental impacts, while generally ensuring that the rehabilitation works are socially responsive. These are summarized in Table 13 below.

Table 13: Design Considerations/Recommendations for Some Selected roads

Lots	Roads	Design Considerations
Upgrades		
Lot 1	• Achara – Okpo – Nkporo – Ututu • Umeye I – Umeye II • Obinto – Atani Road • Okagwe – Nkwebi Onwuwanwu	• Extension of Drainage Beyond Settlements: While current designs intend to adequately provide drainage in built-up areas alone with earth-based drainages in rural sections, observations along roads such as the Achara–Okpo–Nkporo–Ututu and Umeye I–Umeye II corridors reveal severe erosion and waterlogging in non-settlement areas, some of which may lead to farmlands and other major access roads in the project locations. It is recommended that the scope of side and stormwater drains be expanded to erosion-prone sections and areas with undulating

Lots	Roads	Design Considerations
		terrain, especially along steep slopes and at stream approaches. • Cultural and Sacred Site Setbacks: In locations such as Amaetiti (Achara – Okpo – Nkporo – Ututu), culturally significant sites like shrines and sacred grounds lie close to the road corridor. Realignment or slight carriageway shifts, especially during shoulder expansion should be incorporated in road design reviews to avoid direct disturbance, without compromising the proposed 8m road width. The realignment should be informed by the side of the road (left or right) that has lesser social issues or encumbrance. • Consideration for Road Termination and Connectivity Improvements: For roads such as Obinto – Atani, the engineering design abruptly terminates at about 1.25km from its actual terminal about 5km away, before reaching community economic assets like palm plantations and farmlands. If possible, it is advised that the road is completed to its terminal which connects the Abam corridor (another major road leading to Umuahia). This is particularly considering that its extension, even by a short distance would enhance economic linkages and support long-term utility of the road investment.
Lot 2	• Sameke Junction – Amaraugboghu • Oba Junction – Umumaduako – Umumezie • Orié Ngodo Market - Obinohia Umudim – Lomara	• Gully Rehabilitation: At the Obinulo–Umumaduako–Umumezie Road, a severe gully near Evangel Secondary School renders the road impassable. The design should be revised to include appropriate gully stabilization and backfilling solutions to restore connectivity and ensure long-term structural stability. • Incorporation of Traffic Reduction Measures: In locations near schools and community centers (e.g., Ngodo Town School), existing informal traffic calming installations such as speed bumps and signage should be formalized and integrated into the design for pedestrian safety.
Lot 3	• Amorji – Ngbedeala – Ntigha Umukalu – Mbawsi • Amorji Market Road – Amorji Junction • Ogbagala Junction – Amaugba • Nbawsi – Agburuike – Umuomaighiukwu • Amiyi Nvosi – Ometeghi – Umuada Nvosi – Omuapu Road • Nkwo Ebe – Umunko – Umuakwu • Umunkpeyi – Amachi – Umuaro	• Drainage Optimization in Flat Terrain: Several Lot 3 roads traverse flat, low-lying areas with poor natural drainage (e.g., Amaorji–Nsulu–Umunachi, Amiyi Nvosi–Ometeghi–Omuapu, and Umuakwu–Amachi–Umuakpeyi). To enhance resilience and water management, design modifications should incorporate raised embankments, shallow wide roadside drains with infiltration capacity, and closely spaced culverts or turnout drains to enable cross-flow. Where feasible, vegetative stabilization (e.g., vetiver grass) and water retention features like recharge pits, etc. should be converted and integrated to reduce erosion, manage runoff, and support local water use. These adjustments align with green infrastructure best practices and will ensure durability of the road assets. • Drainage Level Recalibration: In sections where the road profile is lower than existing drains due to previous over grading (e.g., Nkwo Ebe–Umuakwu), the design should be recalibrated to re-establish proper drainage gradient. Raised or misaligned drains should be redesigned to match the rehabilitated road level, so as to ensure storm water flows away from the carriageway.
Lot 4	• Eziamá – Amaibo Ring Road • Agalaba Ise – Ahiamorie – Umuamadi – Amalaubi – Umuokereke • Apumiri – Avo – Amibo Express • Umuawoli Road • Ogbodioriloku – Umuchiche – Mbaraukwu • Agalabano – Umuhu Central School – Ekeoba	• Extension of Drainage Infrastructure to Adjoining Road: Although the Eziamá–Amibo Ring Road is the primary focus of rehabilitation, erosion-prone segments have been observed along an adjoining Uturu–Isiala road corridor. This is due in part to storm water runoff from the Ring Road flowing into the adjoining route. To prevent further degradation and protect the structural integrity of the Uturu–Isiala road, the proposed design should extend drainage infrastructure, such as lined side drains beyond the project limits. <i>(See Specific Design Considerations for Eziamá – Amibo Ring Road at Sub-section 3.2.2.3).</i> • Cultural and Community Features: Key community landmarks such as the Ogbodi Ukwu village square ("Mbara") and Ofe Iyi stream used for livelihood activities should be protected during construction. Designs should factor in possible rerouting or protective buffers around such sensitive assets to preserve community relations and avoid disruption of local customs or economic uses <i>(See Specific Design Considerations for Ogbodioriloku – Umuchiche - Mbaraukwu Road at Sub-section 3.2.2.1).</i>
Lot 5	• Nkwo Elechi Market – Umueme Road • Umuagu Ohuru Amaisii – Osaa Ukwu – Itungwa • Umuariama Ahiaba Ubi – Nkwo Elechi	• Runoff and Discharge Management: Care should be taken in the installation of hydraulic structures for stormwater management in areas such as along the Nkwo Elechi–Amaukwa Road as well as most roads within the Obingwa LGA under Lot 5 due to their flat terrain and lack of natural watercourses <i>(See Note on Drainage Optimization in Lot 3 above and Specific Design Considerations for Nkwo Elechi - Amaukwa Road at Sub-section 3.2.2.2 for more details).</i>

Lots	Roads	Design Considerations
	- Nkwo Elechi Umuagu - Umuorukwu Osusu Amaukwa Road - Asa Umunka – Umugo – Ameyi - Oza – Ozata – Ugwati Asa	Access to Key Facilities: Vehicle access provisions (ramps, slab crossings) must be incorporated for schools, health centers, markets, and worship centers located directly on or near road alignments. This is critical for roads like Nkwo Elechi–Umueme and Umuagu–Itungwa.
Spot Improvement		
Lot 1	- Ozara Market Junction – Amaoku Alayi – Ugwueke Road - Amaokwelu Alayi Junction – Amankalu – Akoli Imenyi	Improved Access Across Water Crossings: The Iyi Ogbu Nkwu stream along the Ozara–Ugwueke route is currently accessed directly from the carriageway. With the proposed road widening, the existing community access point to the stream may be affected. To ensure continued safe use by locals especially during the dry season when the stream is heavily relied upon, a designated pedestrian access/entry step into the stream should be integrated into the road works by the Contractor. Stabilization of Erosion-Prone Segments: The Amaokwelu–Akoli Imenyi road features unstable lateritic terrain and significant erosion, especially along untarred sections downhill. Design modifications should include slope protection measures, stone pitching, or bioengineering techniques (e.g., vetiver grassing) to stabilize embankments and exposed surfaces.
Lot 2	- Alayi – Ezeukwu - Ezeukwu – Ugwueke	<i>Implement Same Realignment Considerations for identified PCRs as outlined in the design considerations for Lot 1</i>
Lot 3	- Bende Etitulo – Ubibia – Ndiwo – Itumbuzo – Okopedi – Ntalakwu - Amaogwugwu Olololo Junction – Umukabia Road - Umuafiaka – Umuokpara Road - Old Umuahia (Divinity School) – Osah/Ohia Road - Ahiaukwu – Amangwo – Umuajata –Umunere – Amakama - Okpikpe Umuana – Ikot Ekpene Road - Umuanyaso Road - Umuegwere Road	- The roads in Lot 3 require climate-resilient and adaptive engineering interventions to address flooding, erosion, and poor terrain. Designs should incorporate well-graded, continuous drainage systems with adequately sized culverts and raised embankments in flood-prone areas. Pavement solutions must consider soil stability, using reinforced sub-bases or interlocking blocks where necessary. Slope stabilization with stone pitching and vegetation is essential on steep or eroded stretches. At stream crossings, durable cross drainage structures with scour protection and safe access features must be prioritized. Also, where there are encroachments particularly of PCR such as at the Ahiaukwu – Umunere Road, considerations such as slight adjustments in the original road alignment (either to the right or left depending on where avoids/minimizes impact to the PCR) may be a proactive management and preservation strategy, while maintaining the planned 8m roadway design. - Implement Climate Resilient CDS Construction for Ahiaukwu – Amangwo – Umuajata – Umunere – Amakama Road (See Sub-section 3.2.2.4)

3.2.2.1 Specific Design Consideration for Ogbodioriloku – Umuchichie – Mbaraukwu Road

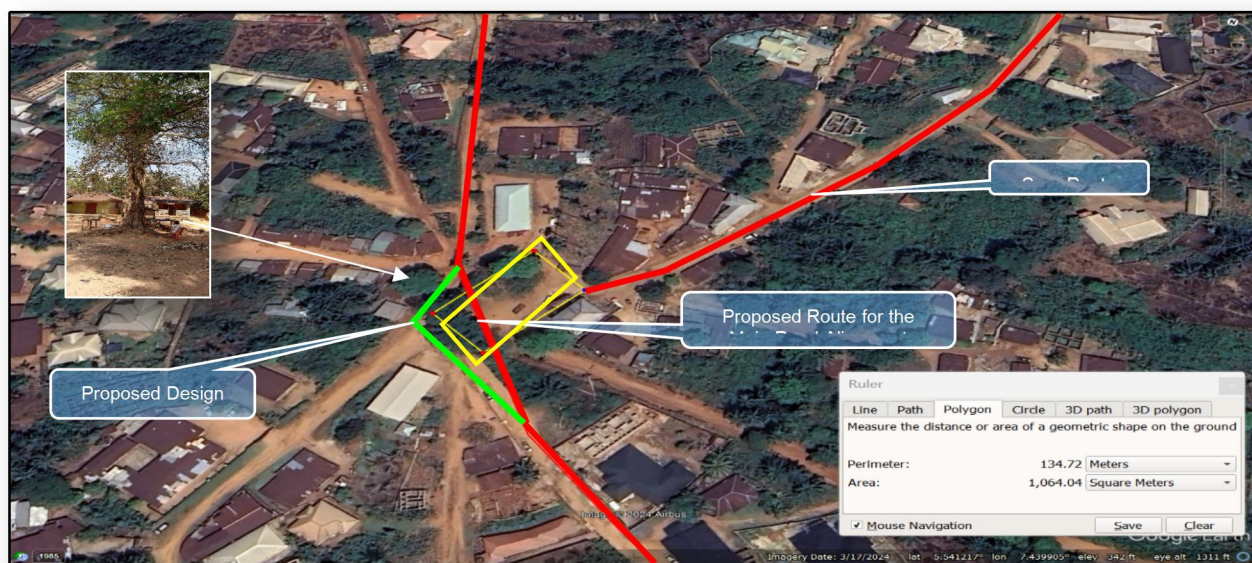


Figure 7: Google Earth Map Showing the Proposed Design Modification for Ogbodioriloku – Umuchichie – Mbaraukwu Road

During the E&S baseline studies, a significant finding was identified for the Ogbodioriloku – Umuchichie – Mbaraukwu Road, particularly in the Ogbodi-Ukwu Mbara community in Umuahia South LGA. According to the proposed design, the planned route for the main road alignment is set to cut through the community's village square, known as "Mbara". The village square is an arena situated at coordinates N5.541248, E7.440264, on the right-hand side; about 2.6km from the start point of the road with an area of 1,064m² approx. Stakeholder engagements with the Council of Elders revealed that this site holds profound historical and cultural significance. The village square is regarded as sacred ground, historically used by the community's ancestors for the renowned Ekpe festival⁶. This annual event draws dignitaries and visitors from across the southeastern states. Beyond its ceremonial role, the square also serves as a central venue for village meetings and deliberations. The surrounding trees are also of immense cultural importance and integral to Ekpe ceremonies, as they form part of the ritual space where Ekpe masquerades are prepared and spiritual invocations are performed. Community members, particularly the elders, expressed concerns regarding the impact of the proposed road project on the village square. Specifically,

- Paving or asphaltting the square during road rehabilitation could disrupt its function as a gathering space for festivals and meetings.
- The hard-asphalted surface may pose safety risks during celebrations, such as increased likelihood of injuries peradventure participants fall during traditional dances and gyrations.
- Construction activities could damage the culturally significant trees, undermining their role in Ekpe rituals.

To address these concerns, a collaborative engagement was undertaken between the Consultant, representatives of the project team and the community. An alternative route alignment was identified to avoid direct impacts on the village square and its surroundings. The proposed adjustment includes: a) realigning the main road to bypass the Mbara village square entirely while maintaining its connection to the original course at the Ogbodi-Ukwu Mbara junction, and b) preserving the sacred trees and ensuring that the village square remains untouched by the proposed road rehabilitation activities, thereby safeguarding its cultural integrity. This alternative ensures the protection of the community's cultural heritage while allowing the proposed rehabilitation of Ogbodioriloku – Umuchichie – Mbaraukwu

⁶ The Ekpe festival is a significant festival in the Igbo culture. In January, the Ekpe Festival in Umuahia brings the community to life with its centuries-old tradition of Ekpe masquerades performing ethnic dances, making it a lively start to the new year. The Igbo people celebrate this festival annually and attract people from far and near to witness this colorful event. It's rooted in tradition and holds deep cultural meaning for the community. With vibrant displays and lively celebrations, the Ekpe festival showcases the rich heritage of the Igbo people. It's a time of joy, unity, and pride for all who participate.

Road to proceed without significant disruption to their local way of life. Figure 7 above illustrates the proposed realignment, demonstrating how it circumvents the village square and mitigates potential adverse impacts.

3.2.2.2 Major Finding for Roads in Obingwa LGA and Specifically, Nkwo Elechi – Umuagu – Umuorukwu – Osusu – Amaukwa Road

Broadly, most roads situated within Obingwa LGA, face significant challenges due to the predominantly flat terrain of the area. Additionally, the project areas are not well-drained as there are insufficient waterbodies (streams, rivers, etc.) to aid the discharge of water. This characteristic complicates and poses substantial challenges as regards runoff management. The issue is particularly pronounced during the rainy season when water accumulates due to inadequate drainage infrastructure, leading to waterlogging and road inundation. Community consultations have highlighted dissatisfaction with existing drainage systems on other roads in the LGA. The drains lack adequate discharge outlets, resulting in standing water and exacerbating flooding. Compounding this issue is the habitual dumping of household and municipal waste into the drains, which obstructs water flow and leads to stagnant pools, creating breeding grounds for mosquitoes and other parasites. See Figure 8 below.



Figure 8: Waterlogged Drains in Obingwa LGA—(Left) Overtopped Drainage Channel, and (Right) Deposition of Municipal Wastes into Existing Drainage at Umuariama – Ahiaba Ubi – Nkwo Elechi Market Road, Obingwa LGA

Specifically, for the Nkwo Elechi–Umuagu–Umuorukwu–Osusu–Amaukwa Road, water runoff naturally accumulates at its lowest point, located approximately 725m along the alignment (coordinates N5.150420, E7.400659), leading to recurrent flooding. To resolve this issue, the engineering design includes a 15-meter single-cell ring culvert (900mm diameter) at this point to facilitate proper drainage. However, the proposed discharge outlet lies within a privately-owned farmland measuring approximately 4,542.37m² (perimeter: 290m) [See Figure 9]. This introduces a potential E&S risk, particularly concerning loss of agricultural use, compensation claims, and possible grievances.



Figure 9: Google Earth Image Showing the Lowest Point Along the Route where a Culvert is Proposed and Its Associated Social Impact

Based on consultations, the project will proceed with the culvert installation conditional upon formal engagement with the landowner, agreement on compensation in line with the RAP, and documentation of consent. Additionally, the PIU and Contractor could explore a defined contingency option — such as diverting the culvert discharge to a less sensitive area adjacent to the road corridor that does not require private land acquisition. This alternative discharge point will be subject to a rapid hydrological and engineering feasibility assessment to confirm its effectiveness in safely managing runoff without creating residual flood risks. Successful implementation will enhance road durability, reduce flooding, and significantly enhance connectivity and local livelihoods for the affected communities while addressing longstanding drainage issues.

3.2.2.3 Major Finding for Ezizama – Amibo Ring Road

During stakeholder engagement with the village leader and elders of the Uturu Isiala Community situated along Ezizama – Amibo Ring Road, a critical environmental issue was identified. The adjoining Uturu Road, located at a lower elevation near the Uturu Junction of the Ezizama–Amibo Ring Road, becomes severely submerged during the rainy season. This road naturally serves as a drainage outlet for runoff from the Ezizama–Amibo Ring Road. Consequently, this has led to significant erosion along the Uturu Road, widening the earth drainage constructed by the community and causing frequent flooding of adjacent farmlands. Rehabilitation activities proposed for the Ezizama–Amibo Ring Road, particularly at the Uturu Junction, are expected to improve drainage in the area. However, without adequate runoff management measures, these activities may exacerbate the rate of inundation along the Uturu Road post-construction, as the volume and speed of runoff could increase. The low-lying terrain of the community and the current lack of robust drainage infrastructure mean that runoff from the upgraded road will inevitably flow into the Uturu Road, worsening existing flooding and erosion challenges. The topography of the area directs runoff off the Ezizama–Amibo Ring Road through Uturu Road, which slopes downward towards the Iyi Ama Stream, a tributary of the Imo River. See Figure 10.



Figure 10: Google Earth Image Showing the Eziama - Amibo Ring Road (Red Line) and Critical E&S Issue along its adjoining Uturu Road

While the current engineering design does not incorporate specific solutions to address these challenges, additional measures are essential to mitigate potential environmental and social risks and prevent community grievances. To manage runoff effectively and prevent further flooding and erosion, the construction/installation of a concrete-lined drain approximately 1km in length is recommended. This drain would extend from the Uturu Junction to the Iyi Ama Stream, so as to improve water flow and reduce adverse impacts on the community. Incorporating this measure into the design would address flooding and erosion along Uturu Road, while ensuring sustainable runoff management along the Eziama–Amibo Ring Road.

3.2.2.4 Climate Resilience and Vulnerability Considerations for Ahaiukwu – Umuajata – Umudere Road

Considering the road's vulnerability to seasonal flooding, waterlogging, and erosion, especially within the floodplain, a climate-resilient approach must be adopted. Stakeholder engagement, historical rainfall data and recent field observations confirm that the Iyi Nkpurute stream frequently overflows during the wet season, impacting mobility and nearby agricultural land. However, this vulnerability does not render the road non-viable. Rather, it necessitates context-sensitive engineering solutions to ensure long-term sustainability, safeguard livelihoods, and preserve access.

Proposed Design and Climate Resilience Measures

To address flood risks and enhance the road's viability, the following shall be undertaken by the Contractor:

- The road level within the floodplain shall be raised to at least 0.5 – 1.0m above the highest recorded flood level, using compacted, flood-resistant materials to prevent overtopping.
- Considering that the project proposes to construct a CDS at the Iyi Nkpurute crossing, it should incorporate a reinforced culvert with adequate hydraulic capacity to handle peak flow during heavy rains.

- The CDS should include wing walls and riprap aprons (energy dissipators) to prevent erosion and structural failure of the culvert during high-flow events.
- Install lined side drains that channel water into well-designed outfall points and regrade surrounding slopes to redirect runoff efficiently into the culvert and away from the road, farmland and adjacent areas.
- Vegetated buffers (e.g., vetiver grass) shall be established along embankments and culvert outlets to reduce sediment transport and reinforce soil structure.

3.2.2.5 Design Recommendation

Designs for the proposed roads should take cognizance of climate resilient features like elevated drainage and culverts 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.

3.3 Proposed Campsite and Staging Area

To ensure the smooth coordination and execution of civil works under the RAAMP Phase II intervention in Abia State, the establishment of campsites and staging areas is essential. These facilities are being planned in accordance with the number of project Lots, site proximity, the geographical distribution of roads across various LGAs, and the scope and complexity of the proposed works. While the exact locations and final number of campsites and staging areas will be determined before/during project implementation, by the Contractors in consultation with the Resident Engineer, the AB-RAAMP PIU (especially the Safeguards Unit), and local community representatives, a reasonable estimate has been provided in this ESMP to guide planning and preparation. Each Lot will typically require at least one dedicated campsite⁷ to serve as a base of operations for the contractor. This will include temporary accommodation for workers, a site office, sanitary facilities, and basic utilities. Additionally, one or more staging areas/equipment yard will be required per Lot (i.e. depending on the number of roads/clusters and their distribution) to house construction materials, plants, and equipment for efficient logistical support. Based on the current civil works design, the intervention packages and their estimated logistical needs are summarized in Table 14 below:

Table 14: Proposed Campsites and Staging Areas Per Intervention Type

Intervention Package	No. of Roads	Lots	Estimated Campsites	Estimated Staging Areas
Rural Roads Upgrade	25	5	5	10
Spot Improvement Works	12	3	3	5
Total	37	8	8	15

These provisions are essential for supporting project operations throughout the preconstruction and construction phases, including worker accommodation, equipment management OHS and environmental compliance. In the interim, the AB-RAAMP Project Implementation Unit (PIU) has initiated consultations with community stakeholders within the designated Lots to identify and propose potential locations for campsites and staging areas. This engagement aligns with the campsite selection criteria, which are designed to ensure that the sites are environmentally safe, socially acceptable, and operationally suitable. The identification process is participatory and ensures community input, while final decisions will be made jointly by the Contractor, Resident Engineer, the AB-RAAMP PIU (with Safeguards Unit input), and the local community.

Selection Condition/Criteria and Site Management

The following conditions shall guide the selection, approval, and management of campsites and staging areas:

- Must be located outside protected zones of watercourses (minimum 100m buffer) and away from wetlands;
- Should be within reasonable distance from residential areas to ease access while avoiding disturbances;
- Must avoid intact vegetated areas and must not be sited near schools or other sensitive receptors;

⁷ This could be a rented apartment by the Contractor for its administrative staff or skilled personnel.

- Contractors shall obtain all necessary land use permits, leases, or consents from the appropriate authorities and/or private owners;
- Final site layouts and specifications shall be submitted to the Resident Engineer for approval before construction;
- Contractors must implement the camps in line with environmental and regulatory requirements, including provisions set out in this ESMP;
- Disturbance to local communities must be minimized and Code of Conduct signed by all workers to prevent SEA/SH, GBV, and other social risks (See Annex 9);
- Reinstatement of sites to original or agreed conditions is mandatory upon completion of works;
- Adequate separate accommodations and sanitary facilities (e.g., toilets, potable water, septic systems) for male and female workers shall be provided in accordance with World Health Organization (WHO) standards.

To ensure uniform standards across all sites, a detailed Campsite Management Plan (CMP) is presented in Annex 10 of this report. The CMP outlines preventive and mitigation measures for managing potential environmental and social impacts, with defined responsibilities for enforcement, monitoring, and periodic review.

3.4 Material Sourcing

Naturally occurring construction materials such as water, fine sand, laterite and aggregates are available in the project area; where applicable, approvals may be required for the extraction of raw materials. Materials proposed to be used are presented subsequently.

Construction Water

Contractors shall not source water for construction from community water sources, including rivers, streams, wells, or boreholes that are known to serve domestic, agricultural, or other essential community needs. In line with RAAMP best practices, all water required for construction activities (including earthworks, dust suppression, concrete mixing, etc.) shall be sourced independently by the Contractor and costed in their Bill of Quantities (BoQ). Preferred options include: i) procuring water from licensed commercial vendors; ii) Sourcing from non-community surface water bodies (subject to environmental clearance and permits where applicable); iii) drilling temporary boreholes strictly for construction use (subject to hydrogeological feasibility and regulatory approvals).

Borrow Pit and Earth Material Sourcing

The Contractor shall identify potential borrow pits in collaboration with the AB-RAAMP PIU with materials that possess suitability for the construction works and shall comply with the Borrow Pit Management Plan (BPMP) in Annex 7. Where existing borrow pits are to be used (See Annex 7 for identified Existing Borrow Pits and locations), the Contractor shall mark out the area where it will carry out its excavation. The dimension should be documented by the resident engineer, Supervisory Consultant and Safeguards Unit of the AB-RAAMP PIU. This will provide baseline information for monitoring during reclamation 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 land owner should be presented to the AB-RAAMP PIU and the dimensions of the area documented. Additionally, it is imperative that Contractor implement a progressive borrow pit reclamation plan, ensuring that areas not currently in use are reclaimed even before the completion of the intervention works, taking into account public safety considerations.

The AB-RAAMP PIU 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 20m from the shoulder of the road).
- Location not within a reserved area or mangrove area.
- 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 AB-RAAMP PIU prior to the commencement of civil works.

- The AB-RAAMP PIU to confirm reclamation of pits after use to close to pre-use state as much as possible including proper documentation and pictures. The unsuitable from the road scarification 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 Annex 7 of this ESMP.
- The AB-RAAMP PIU will ensure adequate and documented transactional agreement between the contractor and the landowners.
- The entire vicinity of the borrow pit should be barricaded with the installation of caution and safety signs.
- Most suitable equipment should be selected and used for excavation so as to avoid adverse impacts on soil.
- In addition to barricading borrow pits, a temporary source of lighting may be provided to assure workers and community health and safety especially at night.

Refer to the Borrow Pit Management Plan (Annex 7 for more details)

Aggregates

Aggregates (coarse sand, gravel etc.) and laterite can be purchased, and stock piled from existing quarries in the local government areas of the State. The aggregates must meet the requirements stipulated in relevant sections of Federal Ministry of Works General Specification, Vol II (Roads and Bridges).

Sources of Energy

Energy will be provided for machines dependent on petroleum products, which include motor gasoline/Premium Motor Spirit (PMS), Automotive Gas Oil (AGO). Although the vehicles and machineries will operate on these fuel sources, keen attention will be paid to mitigation measures⁸ to reduce pollution from vehicles and engines.

⁸ **Drive Less:** Use of haulage services (public delivery trucks) for procurement and avoid extra trips, plan procurement trips ahead of time, use shorter routes.

Drive Wise: Drive efficiently – reduce vehicle speed (go easy on gas pedals and brakes); Regular Maintenance of Vehicles and Generators.

Choose Fuel Efficient Engines: Less pollution and cleaner burning gasoline vehicles; Diesel generators are the better choice where efficiency is concerned (petrol generators burn approximately 50% more energy over extended periods than diesel generators).

Avoid Unnecessary Idling of project vehicles.

CHAPTER FOUR – DESCRIPTION OF THE PROJECT ENVIRONMENT

4.1 Background to the Project Environment

The proposed intervention works will be undertaken across eleven LGAs in the three (3) senatorial districts in Abia State (i.e. Abia North, Abia South and Abia Central Senatorial Districts). The maps of the coverage area of the project by LGAs as well as the rural roads to be rehabilitated are provided in Figures 11 and 12 below.

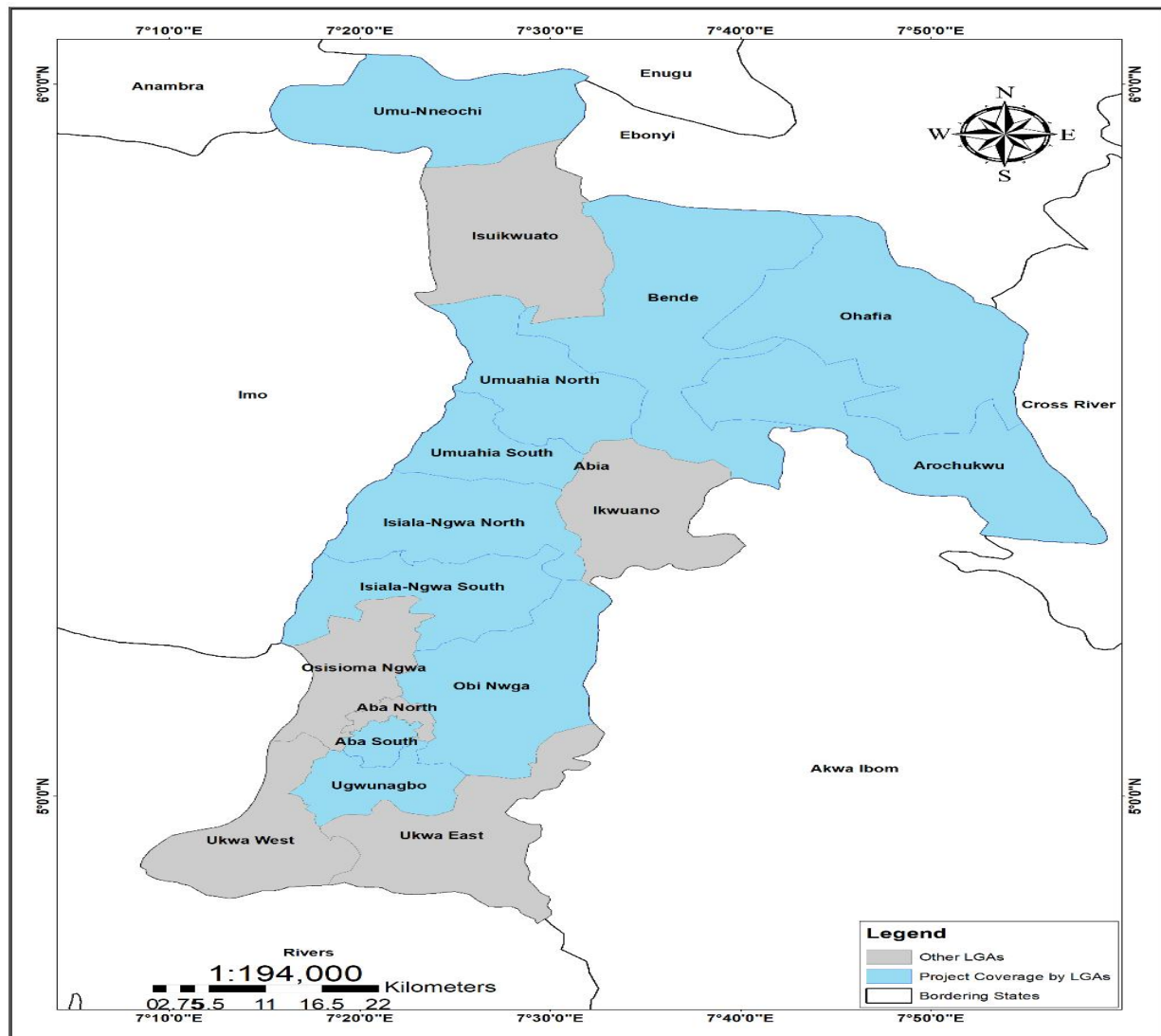
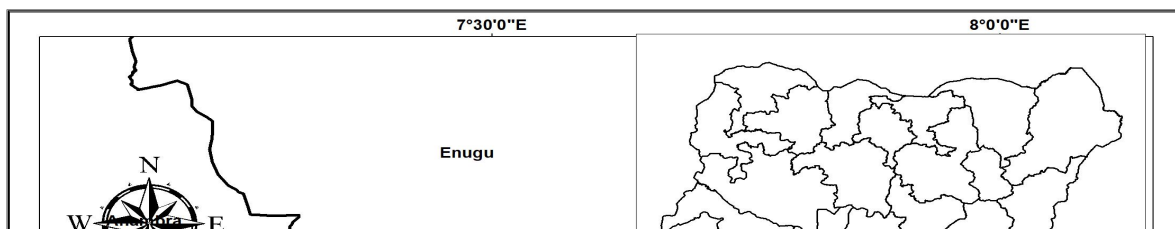


Figure 11: Map of the Project Coverage Area (11 LGAs)



The general description of the biophysical and socio-economic setting of the project target areas are shown in Tables 15 and 16 below.

Table 15: Summary of General Biophysical Setting in Abia State

FEATURES	DESCRIPTION
Climate Conditions	Abia State has a Tropical monsoon climate ⁹ (Am classification). The state experiences an annual average temperature of 28.68°C (83.62°F), slightly below Nigeria's average, with yearly highs of 32.81°C (91.06°F). January is the warmest month at 36.57°C (97.83°F), while August is the coldest at 22.42°C (72.36°F). Abia receives 274.44mm (10.8 inches) of rainfall annually, with rain occurring on 264.44 days (72.45%) and leaving 100.56 dry days (27.55%). September is the wettest month in the State, with 582.39mm (22.93in) of rain, and December is the driest at 33.96mm (1.34in). The city has an average annual humidity of 75.72%. In summary, the State's climate as well as its high annual rainfall and humidity, can affect the durability and integrity of road surfaces, especially in flood-prone LGAs. Prolonged wet seasons (May–October) may delay construction timelines, increase erosion risks, and impact material storage and site access. Therefore, proper drainage and construction scheduling are critical.
Topography	Abia has an average altitude of 125.79m (412.7ft) above mean sea level (Igbokwe and Nwankwo, 2011 ¹⁰). The project areas spans both low-lying and moderately elevated terrains (20–200m ASL). Lowland areas, particularly in southern LGAs, are prone to flooding, poor drainage, and waterlogging, which may compromise road substructure if not properly designed. Terrain gradients also influence road alignment, earthworks, and cut-and-fill requirements.
Vegetation	Abia State lies within the tropical rainforest zone, characterized by lush and diverse vegetation. Geographically, the state transitions from the Niger Delta swamp forests in the far south to the drier Cross–Niger transition forests and pockets of savanna in other regions. This ecological gradient, supported by the state's high rainfall and warm climate, nurtures dense forests and rich biodiversity, including tropical hardwoods such as Mahogany, Iroko, and Obeche, alongside various shrubs, climbers, herbs, and riparian vegetation along riverbanks. However, in many of the project target areas, native vegetation has been significantly degraded due to agricultural expansion, urbanization, and other land-use changes. As a result, much of the original rainforest has been replaced by secondary vegetation comprising grasses, shrubs, and scattered trees. Proposed road rehabilitation works under RAAMP may require further localized vegetation clearing, especially for alignment widening, site access, or culvert and drainage structure installations, which may pose potential risks of habitat fragmentation, loss of biodiversity, and reduced ecological connectivity. The ESMP provides for the implementation of vegetation buffer zones, avoidance of sensitive ecological areas where feasible, and re-vegetation or landscaping plans as part of site restoration and post-construction activities.
Drainage	The drainage system in Abia State is dominated by five significant rivers: Imo, Esu, Akpoha, Igu, and Aba Rivers. Some of the road corridors intersect or are in proximity to minor tributaries of these rivers. These streams may influence culvert design, stormwater management, and erosion control. Hydrological surveys have been considered in the road designs to aid drainage installations during construction so as to prevent future downstream siltation or overtopping of road sections.
Geology	The geology of Abia State is dominated by two principal formations: the Coastal Plain Sands (Benin Formation) and the Bende-Ameki Formation. The Benin Formation, which is the more predominant and widespread, dates from the Late Tertiary to Early Quaternary period and consists of approximately 200 meters of unconsolidated fine to coarse-grained, cross-bedded sands (often pebbly) and interspersed with localized clay and shale layers. It overlies the Bende-Ameki Formation, which is older (Eocene to Oligocene) and comprises medium to coarse-grained white sandstones. The road project corridors traverse both formations, with significant portions lying within the Benin Formation. The geological characteristics, particularly the unconsolidated and permeable nature of these sands, necessitate careful consideration in the design and implementation of civil works. Additionally, the geological factors directly influence slope stability, erosion susceptibility, and drainage effectiveness along the proposed road alignments.

⁹ **Tropical monsoon climates** have monthly mean temperatures above 18°C (64°F) in every month of the year and a dry season. Tropical monsoon climate can be found in south southern part of Nigeria. This climate generally has an estimated average annual rainfall of 2000mm which varies for both the coastal areas and the inland regions.

¹⁰ Igbokwe, M and Nwankwo, C. N. (2011). Geostatistical Correlation of Aquifer Potentials in Abia State, South-Eastern Nigeria. *International Journal of Geosciences*. 2. 541-548. DOI:[10.4236/ijg.2011.24057](https://doi.org/10.4236/ijg.2011.24057)

FEATURES	DESCRIPTION
Hydrology	Abia State's groundwater regime is shaped by two principal geological formations: the Benin Formation and the Bende-Ameki Formation. The Benin Formation, predominant in the region, exhibits high permeability, featuring lateritic earth, weathered topsoil, and underlying clay shale from the Bende-Ameki series, which together provide favorable conditions for aquifer formation. This formation can sustain significant regional borehole production. In contrast, the Bende-Ameki Formation contains less extensive lenticular sand bodies that form minor aquifers with specific capacities ranging from 3–6 m ³ per meter per hour, offering comparatively less groundwater availability.
Soil Type	The soils in Abia State are derived from six major parent materials—Alluvium, Coastal Plain Sands, Shale, Lower and Upper Coal Measures, and False-bedded Sandstone—reflecting the region's varied geology and geomorphology. These parent materials influence soil texture, fertility, moisture retention, and structural behavior. Alluvial soils, commonly found in river valleys, are typically fertile and support intensive agriculture, while soils from Coastal Plain Sands and sandstones are generally sandy, well-drained, and susceptible to erosion. Shale-derived soils tend to be clayey, retaining moisture but posing challenges such as shrink-swell behavior and reduced permeability. Along the project corridors, soils are predominantly sandy or clayey depending on location. Sandy soils, though easier to work with, require stabilization to prevent erosion and subgrade failure, especially during heavy rains. Clayey soils, while offering better compaction, may retain excess water, potentially leading to pavement heaving or structural instability. These soil characteristics must be carefully considered in the design of road foundations, drainage systems, and during borrow site selection and reclamation, to ensure long-term durability and environmental sustainability of the project.

Table 16: Summary of General Socioeconomic Setting in Abia State

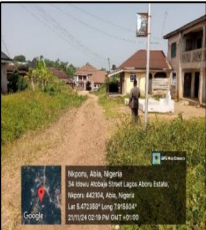
FEATURES	DESCRIPTION
Demography	Abia is the 32nd largest state by area and the 27th most populous with an estimated population of over 4.143 million (2022) (population growth rate of the state is estimated at 2.4%). Modern-day Abia State has been inhabited for years by various ethnic groups, but it is predominantly inhabited by the Igbo people.
Administration	The Abia State Government is the supreme authority in Abia State, comprising the Executive, Legislative, and Judiciary arms. The Executive, led by the Governor, manages daily administration and bill implementation, supported by the Deputy Governor, the Secretary to the State Government, and 23 Commissioners. The Governor also appoints special advisers through the Legislature. The Judiciary, a co-equal arm of government, consists of 11 departments and a Judicial Service Commission responsible for promoting and appointing judicial staff. Headed by the Chief Judge, who is appointed by the Governor with legislative approval, it holds constitutional authority to interpret and enforce laws.
Religion	The people of Abia are predominantly Christians. Although, there are still a few who continue to practice African Traditional Religion (ATR) – beliefs include ancestor worship/shrines.
Education/Literacy Rate	Abia State, renowned for its emphasis on technical and vocational education, holds the fifth position in education rankings. The state's dedication to education is evident in its impressive literacy rate of 94.24%. Abia boasts nine tertiary institutions, underscoring its commitment to higher education. However, challenges persist, with a dropout rate of 26% and an out-of-school rate of 20% at the upper secondary level (Source: National Bureau of Statistics and UNICEF Education Fact Sheet, 2023).
Occupation/Livelihood	The main occupations in Abia State, Nigeria, include agriculture, civil service, crude oil and natural gas production, and manufacturing. Agriculture, employing 70% of the workforce and contributing 27% to the state's GDP, focuses on crops such as yams, cassava, cocoa, and oil palm. Crude oil and natural gas production play a significant economic role, accounting for over 39% of the GDP. Additionally, Abia is a hub for local manufacturing and trading, particularly in clothing, footwear, beverages, agro-processing, and furniture, with Aba serving as the state's industrial center renowned for its skilled craftsmen.
Ethnic Groups	The Igbo people, the primary ethnic group in Abia State, Nigeria, comprise 95% of the population. Indigenous to southeastern Nigeria, they share cultural and linguistic ties with states like Anambra, Ebonyi, Enugu, and Imo, speaking a language from the Niger-Congo family. Minority groups in Abia include the Ibibio people, primarily in Arochuku, the Ngwa people, who inhabit nine LGAs, and the Ndoki people, known for their rich culture of masquerading and folklore.
Cultural Festivals and Events	Abia State is home to vibrant cultural celebrations that highlight its rich heritage. The Ugwu Abia Festival , meaning "pride of Abia," is a unique event where delegations from all LGAs come together to

FEATURES	DESCRIPTION
	showcase their regional traditions, making it the first festival of its kind in Nigeria. Another significant celebration is the Iwaji Festival (New Yam Festival), a beloved Igbo holiday held in early August after the harvest. This festival involves elaborate planning, thanksgiving, and the ceremonial cooking of the first yams to honor the deities for a fruitful season. In January, the Ekpe Festival in Umuahia brings the community to life with its centuries-old tradition of Ekpe masquerades performing ethnic dances, making it a lively start to the new year.

4.2 Summary of Site-Specific E&S Baseline Characteristics of the Project Location

This section outlines the site-specific E&S conditions at the project locations, covering all roads under the two work packages: spot improvement and road upgrades. A detailed summary of the E&S characteristics, including key sensitivities identified for each road, according to project lots, is presented in Tables 17 and 18 below.

Table 17: E&S Site-Specific Description of the Roads Earmarked for Upgrade Intervention

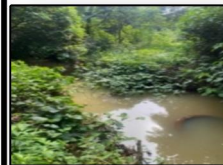
Lot s	Name of Road	Coordinates	E&S Conditions and Sensitivities	Remarks	Ecological Sensitivities	Pictures
Lot 1	Achara – Okpo – Nkporo – Ututu 10.39km	Start Point N5.585117 E7.822830 Terminal N5.442848 E7.909276	This 10.39 km earth road links seven remote communities and traverses steep, flood-prone terrain with multiple seasonal streams and degraded culverts. Culturally significant sites, including "Isionyemaobi" and "Ndi Nduu" shrines, and tombs in Amiyi lie near the corridor. Roadworks may require realignment to protect these features. Stream crossings and unsafe footbridges also pose risks, necessitating bridge reconstruction for improved community safety and access.	Need for strong drainage design, culverts, and bridge reconstruction; PCRs must be carefully avoided during construction	Based on the initial environmental screening and baseline study, the proposed sub-project is an existing road and does not traverse through any ecological sensitive, reserved areas or designated protected habitats.	 Burial tombs in Amiyi outside the road existing
	Umeye I – Umeye II 1.40km	Start Point N5.48032382 E7.88247137 Terminal N5.47934409 E7.89384647	Spanning 1.36 km, this rural road links Ndiokpo and Umeye communities. The route lacks proper drainage and experiences seasonal waterlogging, especially around chainages 450m and 970m, requiring culverts to maintain accessibility. Though traffic is low, the road is vital for transporting farm produce to Orié Obinto Market. Its rehabilitation will significantly reduce mobility challenges for these agrarian populations during the rainy season	Similar to other rural roads but culvert placement is a key priority for flood mitigation	Based on the initial environmental screening and baseline study, the proposed sub-project route does not traverse any ecological sensitive, reserved areas or designated protected habitats.	
	Obinto – Atani Road 1.20km	Start Point N5.4631654 E7.8845758 Terminal N5.45694339 E7.8756513	This 1.25 km corridor connects Awada Ndiolé and Atan Ihechiowa. Its unpaved stretch causes seasonal inaccessibility, particularly around schools and churches. Proposed road widening may result in minor displacements (see RAP). Despite the presence of a solar borehole exists, access to basic services (water, healthcare, etc.) remains poor. The road is expected to abruptly terminate close to its mid-section. Extending the road beyond its current terminus would improve access to palm plantations and link communities better to the Abam corridor.	Risk of minor displacement and economic disruption; access structures needed for community facilities	Based on the initial environmental screening and baseline study, the proposed sub-project route does not traverse any ecological sensitive, reserved areas or designated protected habitats.	 Few structures within the road width at the
	Okagwe – Nkwebi Onwuwan yanwu 4.30km	Start Point N5.686245 E7.804532 T-Junction Point N5.679825 E7.793094	This 2.7 km road features deteriorated paved sections and encroached earth tracks. It intersects the "Iyi Uyim" stream—used for domestic and agricultural activities—where erosion and a weak wooden bridge hinder access. Near the midpoint lies the culturally sensitive "Igboro Uduma" sacred site. Upgrading the stream crossing and addressing minor resettlement at Nkwebi terminus are crucial for improving mobility and safety. Note: The stream has been earmarked for CDS installation under the phase II intervention.	Cultural heritage sensitivity and water access must be preserved; cross drainage structure recommended for	Based on the initial environmental screening and baseline study, the proposed sub-project route does not traverse any ecological sensitive or reserved areas or designated protected	

Lot s	Name of Road	Coordinates	E&S Conditions and Sensitivities	Remarks	Ecological Sensitivities	Pictures
		Terminal N5.675638 E7.802682		stream crossing	habitats.	Bamboo trees within Improvised wooden N5.6765, E7.7990
Lot 2	Sameke Junction – Amaraug hoghu 2.46km	Start Point N5.725202; E7.613757 Terminal N5.705472; E7.607828	The road traverses sparsely populated farmland and two agrarian communities, Okpufu and Ama Utazi, whose livelihoods depend on rice, cassava, and oil palm cultivation. Key sensitivities include a culturally significant sacred tree ("Ala Nna Umuokpo") requiring alignment shift, minor physical displacement (electric pole, shop), seasonal waterlogging at the lowest point (culvert needed), and potential traffic disruptions on market days ("Eke" and "Afor"). Bush burning is a major practice by local hunters and local quarries are also present.	Sacred tree to be preserved through minor road realignment; culvert to be installed at identified low point	Based on the initial environmental screening and baseline study, the proposed sub-project route does not traverse any ecological sensitive or reserved areas or designated protected habitats.	 The branch of a "Ala Nna Umuokpu" within the road width.
	Obinulo – Umumad uako – Umumezi e 2.55km	Start Point N5.965595 E7.386362 Terminal N5.963889 E7.408752	The road runs through a densely populated area with markets, schools, and churches. Notable E&S sensitivities include encroaching structures (shops, fences), school zones with improvised speed controls, and a major gully (near Evangel Secondary School) severing road connectivity at its terminal. Flood-prone sections, obstructed culverts exist. The introduction of military into the area has significantly resulted in reduction of security risks (recent notorious banditry, now reduced). Orie Ngodo Market at the entrance is a key socioeconomic hub.	Proper drainage and culvert design are priorities; community road safety features/structures to be installed during civil works	Based on the initial environmental screening and baseline study, the proposed sub-project route does not traverse any ecological sensitive or reserved areas or designated protected habitats.	 Gully dividing the road
	Orie Ngodo Market – Obinohia Umudim – Lomara 5.20km	Start Point N5.96531805 E7.3860215 Terminal N5.93384865 E7.35489747	This route comprises degraded paved and unpaved sections, with overgrown vegetation, faulty culverts, and compromised drains. Key sensitivities include street lighting infrastructure, crops (cassava, oil palm) cultivated along the corridor, and a community market building encroaching into the road's right-of-way. The road follows a bush path before terminating along Ajali – Ihube Road. At its endpoint, a communal building (approximately 150m² in area) used as a mini-market square. It is owned by the Obohia community and encroaches into the road width, posing an obstacle for planned construction (refer to the RAP). Community elders have identified an alternative site on their communal land directly across the Ajali – Ihube Road where the proposed road terminates, which could serve as a new market location.	Priority be given to culvert and drainage construction were necessary	Based on the initial environmental screening and baseline study, the proposed sub-project route does not traverse any ecological sensitive or reserved areas or designated protected habitats.	 Obohia Community Market encroaching into the road width at the road terminal, Lomara.

Lot s	Name of Road	Coordinates	E&S Conditions and Sensitivities	Remarks	Ecological Sensitivities	Pictures
Lot 3	Amaorji – Ngbedeal a – Ntigha – Umukalu – Mbawsi 4.45km	Start Point – N5.3957, E7.3926. Terminal – N5.3932, E7.3925	This rural road serves Amaorji/Amaugba, Umukalu Ntigha, and Okpuala/Umunachi communities. Key sensitivities include roadside crop farms (maize, cassava, plantain), informal brick-moulding sites, and plantain trees within the ROW. Evidence of open grazing activities such as livestock roaming freely are observed, which may pose safety risks. Civil works may disturb stockpiled construction materials at Umunachi. There is need for speed reduction measures near settlements to reduce accident risks.	Priority be given to culvert and drainage construction were necessary	Based on the initial environmental screening and baseline study, the proposed sub-project route does not traverse any ecological sensitive or reserved areas or designated protected habitats.	 Informal brick moulding activities along the road
	Amaorji Market Road – Amaorji Junction 1.61km	Start Point N5.38913597 E7.37988921 Terminal N5.37741265 E7.37255441	The road links Amaorji to the expressway via Orié Ukwu Market. Sensitive features include stagnant, waste-clogged roadside drains at the entrance, small-scale trading clusters, and structures encroaching into the road near the market. It provides vital access to churches, a town hall, and farms. Drainage improvements and traffic safety features are essential to minimize social and environmental disruption.	Desilting of drainages and reduction in road width to avoid impacts	Based on the initial environmental screening and baseline study, the proposed sub-project route does not traverse any ecological sensitive or reserved areas or designated protected habitats.	 Clogged drains due to the deposition of municipal wastes.
	Ogbagala Junction – Amaugba . 0.49km	Start Point N5.382361 E7.381098 Terminal N5.383275 E7.376850	This short earth road (0.49km) connects to the busy Amaorji Market and passes through farmland. No significant human settlements exist along its alignment. Key sensitivities include seasonal water puddles and lack of drainage. Its rehabilitation will decongest traffic particularly during market days and facilitate smoother farm-to-market transportation also connecting other RAAMP roads in the area.	Priority be given to culvert and drainage construction were necessary.	Based on the initial environmental screening and baseline study, the proposed sub-project route does not traverse any ecological sensitive or reserved areas or designated protected habitats	 Terminal of the Road linking Amaorji Market – Amaorji Junction Road.
	Nbawsi – Agburuik e – Umuomai ghiukwu 5.49km	Start Point N5.31002187 E7.43584041 Terminal N5.42519919 E7.41409982	Traversing semi-developed areas, civil work activities such as drainage construction and widening of road shoulders may affect encumbering residential fences, pavements, and plantain trees. A notable feature along the road, at coordinates N5.393075 E7.435480, is the exposure of asbestos pipes, remnants of a water pipeline installation from the 1970s that reportedly never served the community. These pipes, now visible on the road surface due to extensive grading, may pose environmental and public health risks if improperly handled, as civil works activities such as the removal of unsuitable road sections might lead to the pipes being stockpiled along the roadside. Other sensitivities include, nearby schools and health centers.	Carefully remove the old pipes with the supervision of Abia state ministry of public utility.	Based on the initial environmental screening and baseline study, the proposed sub-project route does not traverse any ecological sensitive or reserved areas or designated protected habitats	 Exposure of Asbestos Pipes on the Road

Lot s	Name of Road	Coordinates	E&S Conditions and Sensitivities	Remarks	Ecological Sensitivities	Pictures
	Amiyi Nvosi – Ometeghi – Umuada Nvosi – Omuapu Road 5.60km	Start Point N5.31002187 E7.46193837 Terminal N5.29049735 E7.4225218	This road cuts across four farming communities, as well as a perennial stream at N5.295785 E7.452735. Roadside farms (cassava, maize, oil palm) and weed-encroached sections are key sensitivities. Facilitating access to Omuapu Market for residents and farmers at villages in Nvosi is a major economic importance of this road.	No major E&S concerns. Culverts and drainages required were necessary.	Based on the initial environmental screening and baseline study, the proposed sub-project route does not traverse any ecological sensitive or reserved areas or designated protected habitats	 Section of the road with minimal vegetation
	Nkwo Ebe – Umunko – Umuakwu 3.62km	Start Point N5.33375151 E7.47910545 Terminal N5.35841338 E7.49845899	Serving three communities, this route is marked by sections overgrown by vegetation and a dysfunctional and elevated drainage system higher than the road level, causing waterlogging. Sensitive features include residential areas near Umuakwu, public amenities like a health center and village hall, and fallow farmland.	No major E&S concerns. Vegetation cover on the section of the road	Based on the initial environmental screening and baseline study, the proposed sub-project route does not traverse any ecological sensitive or reserved areas or designated protected habitats	 Vegetation cover on the section of the road
	Umuakwu – Amachi – Umuakpeyi . 2.6km	Start Point N5.358717 E7.499049 Y-Junction/ Beginning of Spur N5.355286 E7.512444 Spur Terminal N5.350868 E7.514418 Main Alignment's Terminal N5.354718 E7.516739	This is a 2.6km rural road originating from the Ubaha–Oloko Road in Umuakwu, with a 570m spur branching off its main alignment. The road features both paved and earth sections. The mixed-surface road traverse semi-urban areas and farmlands. Key sensitivities include existing culverts overgrown with vegetation, visible gully erosion from poor drainage, and encroaching trees, particularly at the spur's terminal. Drainage along this road is also higher than the road level hence resulting in the carriageway to be waterlogged during the rainy season. Minor vegetation clearance will be necessary at road terminal for full access.	Prioritize drainage and culvert construction to manage flood and prevent gully.	Based on the initial environmental screening and baseline study, the proposed sub-project route does not traverse any ecological sensitive or reserved areas or designated protected habitats.	  (Left) Gully Erosion along the Road and (Right) Tree encroaching into the road's width.

Lot s	Name of Road	Coordinates	E&S Conditions and Sensitivities	Remarks	Ecological Sensitivities	Pictures
Lot 4	Eziama – Amibo Ring Road. 3.95km	Start Point N5.491780 E7.437871 Junction at Uturu Isiala N5.494957 E7.424074 Terminal N5.476867 E7.434208	This rural road connects four agrarian communities and key markets. Civil works may impact encroaching farmlands, roadside vegetation, and local drainage patterns, particularly at Uturu Isiala, where runoff currently flows into a lower-lying feeder road causing erosion (<i>See Specific Design Considerations for Eziama – Amibo Ring Road at Sub-section 3.2.2.3</i>). Sensitive areas include high foot/vehicle traffic zones on market days and erodible sections near failed pavements. Temporary detours exist for traffic redirection during the proposed rehabilitation particularly during the market days when the road experiences peak usage/traffic.	Effective drainage management and diversion of runoff are essential to prevent flooding and erosion along adjoining Uturu Isiala road.	Based on the initial environmental screening and baseline study, the proposed sub-project route does not traverse any ecological sensitive or reserved areas or designated protected habitats.	 Section of the Road
	Agalaba Ise – Ahiamori e – Umuama di – Amalaubi – Umuoker eke. 6.00km	Start Point N5.473526 E7.444908 Terminal N5.424196 E7.442289	This 6km Road links Umuahia South to Isiala Ngwa North LGAs, starting at Afaraukwu–Eziama Road and ending at Agburuikwe Nsulu. It combines good asphalted stretches (7m wide) with poorly graded earth sections (up to 10m wide), lacking adequate drainage. Access slabs may be needed during works to maintain entry to key public facilities such as schools, churches, etc. Beyond built-up areas, the road becomes agricultural with possible palm tree removal connecting another RAAMP road at Agburike.	Design should integrate slab crossings at strategic locations to minimize grievances.	Based on the initial environmental screening and baseline study, the proposed sub-project route does not traverse any ecological sensitive or reserved areas or designated protected habitats.	 Tarred Section at the beginning of the Road
	Apumiri – Avo – Amibo Express 1.52km	Start Point N5.473897 E7.436044 Terminal N5.486478 E7.440972	This road situated in a peri urban setting spans 1.52km in length and structures such as fences of public facilities (Apumiri Police Division Headquarters, and Post Office) encroach into its width, thereby shrinking it. These may need to be removed to give way for the proposed rehabilitation. Slabs may be required for access to school and guest houses during drainage civil works implementation. Roadside dumping of solid waste is a major practice. Rehabilitation will improve local access, services, and connectivity to Aba.	Reduce road width to avoid impact on assets.	Based on the initial environmental screening and baseline study, the proposed sub-project route does not traverse any ecological sensitive or reserved areas or designated protected habitats.	 Road Entrance showing encroaching structures, fences of the NPF HQ Apumiri (Left) and fence of the Post Office (Right)
	Agalabano – Umuhu	PART A: Start Point – N5.587934	Dense vegetation overgrowth has rendered much of the road impassable to vehicles. Additionally, two streams are lacking a cross-drainage structure, thus disrupting connectivity. Several encroaching structures including several	CDS installation is required. Careful	Based on the initial environmental screening and baseline study, the	

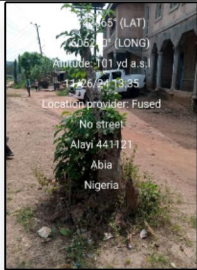
Lot s	Name of Road	Coordinates	E&S Conditions and Sensitivities	Remarks	Ecological Sensitivities	Pictures
	Central School – Ekeoba. 1.36km	E7.45312 Terminal – N5.584997 E7.448323 PART B: Start Point – N5.587934 E7.45312 Terminal – N5.580065 E7.444708	residential structures, electricity poles, farmlands near the road shoulders, may be removed (refer to the RAP). The road terminates at Ekeoba, a vibrant rural community, with livelihoods centered on farming, trading, small-scale hunting, palm oil processing and civil service jobs. Road works will enhance school access and improve agricultural linkages.	vegetation clearance and compensation is required for assets which may be displaced.	proposed sub-project route does not traverse any ecological sensitive or reserved areas or designated protected habitats.	 (Left) Structures within the road width and (Right) Nkata Alike Stream requiring a Cross Drainage Structure
	Umuawoli Road 0.61km	Start Point N5.498529 E7.401644 Terminal N5.494268 E7.404054	This short rural route links farmlands to community roads but suffers from poor maintenance and minor weed encroachment. The only built-up areas lie at the entry and exit points. Civil works may disrupt minimal traffic (mostly farmers), and clearing will be required to restore full road width.	Minimal E&S impact. Vegetation clearance and asphalt required.	Based on the initial environmental screening and baseline study, the proposed sub-project route does not traverse any ecological sensitive or reserved areas or designated protected habitats.	
	Ogbodioriloku – Umuchiche – Mbaraukwu. 4.40km	Start Point N5.535646 E7.460193 Ogbodi-Ukwu Junction (Spur Origin) N5.541436 E7.440498 Spur Terminal N5.548019 E7.442488 Main Alignment Terminal N5.548703 E7.440101	The road has a main alignment (4.3km) and a spur of length 0.84km. Spanning mixed-use areas, this road features eroded segments, silted culverts, and uneven drainage. Sensitive points include the Ofé Iyi stream used for palm oil processing and the Ogbodi Ukwu village square ("Mbara") (<i>See Specific Design Considerations for Ogbodioriloku – Umuchiche - Mbaraukwu Road at Sub-section 3.2.2.1</i>). Encroachments such as fences and palm trees along both the main and spur sections may be affected during road widening.	Protection of culturally sensitive areas is critical particularly during civil works. Proper drainage installation and erosion control measures are also necessary.	Based on the initial environmental screening and baseline study, the proposed sub-project route does not traverse any ecological sensitive or reserved areas or designated protected habitats.	 Palm trees and Structures within the road width at the terminal section

Lot s	Name of Road	Coordinates	E&S Conditions and Sensitivities	Remarks	Ecological Sensitivities	Pictures
Lot 5	Umuaria ma – Ahiaba Ubi – Nkwo Elechi 2.98km	Start Point N5.1720335 E7.39460057 Terminal N5.15504595 E7.39596131	This road connects Umuariama to Nkwo Elechi Market serving as a key route for residents and farmers across the three communities. Due to the flat terrain, stormwater fails to drain properly, causing sections to be waterlogged during the rainy season, particularly near the paved section. Road rehabilitation activities are currently underway at the paved section near Nkwo Elechi Market. Note: The road comprises of a paved section and an unpaved earth track. The proposed rehabilitation activity is 2.98km and shall commence from the untarred section which constitutes the majority of the route.	Road rehabilitation activities are currently underway at the paved section near Nkwo Elechi Market. Flat terrain poses runoff management challenges, leading to frequent flooding and waterlogging, particularly during the rainy season.	Based on the initial environmental screening and baseline study, the proposed sub-project route does not traverse any ecological sensitive or reserved areas or designated protected habitats.	 Road Rehabilitation Underway at the Paved Section near Nkwo Elechi Market
	Nkwo Elechi – Umuagu – Umuoruk wu – Osusu – Amaukwa Road 3.85km	Start Point N5.153450 E7.395034 Tarred Section Commences N5.147701 E7.404071 Earth Track Continues N5.147789 E7.404949 Terminal N5.129369 E7.414394	Predominantly unpaved, this route experiences flooding at its lowest point (N5.150420, E7.400659), where culvert installation is planned. The proposed discharge point sits on a private farmland (See Specific Design Considerations for Nkwo Elechi – Amaukwa Road Road at Sub-section 3.2.2.2). Civil works could affect few encumbering structures, access to adjacent farmlands, and minor roadside trading spots.	Flat terrain and absence of drainage along the earth sections results in puddles and waterlogging, particularly at the lowest point of the road. Proposed culvert installation may redirect runoff onto privately-owned farmland.	Based on the initial environmental screening and baseline study, the proposed sub-project route does not traverse any ecological sensitive or reserved areas or designated protected habitats.	 Lowest Point where a culvert is proposed

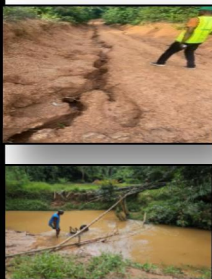
Lot s	Name of Road	Coordinates	E&S Conditions and Sensitivities	Remarks	Ecological Sensitivities	Pictures
	Nkwo Elechi – Market – Umueme Road 2.11km	Start Point N5.1803 E7.3900 Terminal N5.1571 E7.3924	This road lacks drainage and suffers from poor and muddy surface conditions, impeding access and disrupting economic activities at Nkwo Elechi Market and nearby businesses like hotels and retail shops, as well as a primary healthcare center. Despite its current state, the road remains a critical connector, linking the Umuagu community to Nkwo Elechi Market, thereby supporting agro-trade and local economic activities. Its rehabilitation presents an opportunity to restore and enhance connectivity for both economic and social activities.	The absence of drainage infrastructure leads to severe waterlogging and muddy conditions, impacting road usability and resilience.	Based on the initial environmental screening and baseline study, the proposed sub-project route does not traverse any ecological sensitive or reserved areas or designated protected habitats.	 Muddy sections of the road
	Umuagu Ohuru Amaisii – Osaa Ukwu – Itungwa Road 9.30km	Start Point N5.14576481 E7.40072658 Terminal N5.19300392 E7.45975613	Current traffic along the road is minimal, predominantly consisting of pedestrians, bicyclists, and occasional motorbike riders. Average driving speed along the road ranges from 20–30km/h. Despite linking 4 communities, the existing culverts along the road are undersized and obstructed by silt and overgrown weeds, reducing their functionality and requiring rehabilitation. Key socioeconomic features along the road include churches, a community health center, Ohuru Community School, and a market. The road terminates at Umuoba Road in Itungwa.	Existing culverts are obstructed by silt and weeds, leading to reduced functionality and waterlogging.	Based on the initial environmental screening and baseline study, the proposed sub-project route does not traverse any ecological sensitive or reserved areas or designated protected habitats.	 Terminal at Umuoba Road
	Asa Umunka – Umugo – Ameyi Oza – Ozanta – Ugwati Asa 5.24km	Start Point N5.03775738 E7.3197654 Terminal N5.04030855 E7.27513538	This earth track spans a length of 5.24km (about 15 minutes' drive) with with no established drainage infrastructure, making it prone to waterlogging during the rainy season. This road traverses three key communities: Asa Umunka, Ozata Umugo, and Ugwati, connecting these settlements to each other and to the larger regional road network. The local population primarily consists of farmers, petty traders, artisans, craftsmen, and civil servants. The environment along the route alternates between semi-developed areas with scattered residential and commercial buildings and stretches of fallow farmland and unused plots. At Ozanta, the road cuts across an existing railway line thereby posing safety risks. Despite the generally low traffic levels, the road remains relatively motorable under current conditions.	Absence of drainage infrastructure leads to waterlogging. The road cuts across an existing railway line, thus posing safety risks.	Based on the initial environmental screening and baseline study, the proposed sub-project route does not traverse any ecological sensitive or reserved areas or designated protected habitats.	 Section where the road traverses an existing railway line

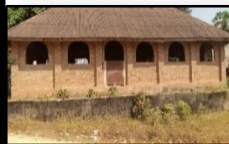
Table 18: E&S Site-Specific Description of the Roads Earmarked for Spot Improvement.

Lots	Name of Road	Coordinates	Site Specific E&S Description of the Roads and Project Environment.	Remarks	Ecological Sensitivities	Pictures
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Lots	Name of Road	Coordinates	Site Specific E&S Description of the Roads and Project Environment.	Remarks	Ecological Sensitivities	Pictures
1	Ozara Market Junction – Amaoku Alayi – Ugwueke Road 2.80km	Start Point N5.726710 E7.604495 Terminal N5.756542 E7.600172	This 2.8km road traverses Ozara, Amaoku Alayi, and Ugwueke, with key sensitivities including inadequate drainage, erosion-prone sections, and proximity to a culturally significant tree near Amaoku Alayi (N5.7742565, E7.605240). The Iyi Ogbu Nkwu stream, used for domestic purposes, crosses the alignment and requires a safe access into it to be created to facilitate public access post-rehabilitation, considering that expansion of the road shoulders will impact its existing access point constructed by locals. Construction must also consider ongoing drainage works near Ugwueke to avoid interference.	Construct a mini roundabout to preserve the cultural tree.	Based on the initial environmental screening and baseline study, the proposed sub-project route does not traverse any ecological sensitive or reserved areas or designated protected habitats.	 Sacred Tree at Amaoku Alayi
	Amaokwelu Alayi Junction – Amankalu – Akoli Imenyi	Start Point 5.692667° 7.599212° Terminal 5.667726° 7.553291°	This rural corridor crosses multiple agrarian communities. The untarred area where civil works shall commence is marked by undulating terrain and highly erodible soils lacking drainage. A progressive gully has partially dissected the road in the earth section. Critical sensitivities include the collapsed CDS at Igwu River, which supports irrigation for farming. Due to its current condition, the road is unmotorable and weed has overtaken much of the area. The road is strategically positioned to serve as a bypass or alternative route for commuters traveling to Umuahia and Aba, linking up with the Alayi-Umuahia Road at its terminal.	The absence of drainage infrastructure along the earth-based sections, coupled with clayey lateritic soil, exacerbates increased flooding and waterlogging. The failed CDS at the Igwu River bridge renders the road impassable.	Based on the initial environmental screening and baseline study, the proposed sub-project route does not traverse any ecological sensitive or reserved areas or designated protected habitats.	  (Left) Erosion along the earth section of the road and failed CDS at Igwu stream.
2	Alayi – Ezeukwu Road	Start Point N5.740700 E7.595497 Terminal N5.818986 E7.561883	This road spans from Alayi to Ezeukwu in Bende LGA, cutting through sparsely populated agrarian landscapes with fallow plots, palm bushes, and cassava farms. It consists of a tarred section and an earth-based section which comprises the bulk of its length and where the proposed civil works shall be undertaken. Sensitive features include a recently completed 3-cell box culvert at the tarred section which is experiencing edge erosion and a sacred tree, Egbu Egbukwa, near Amakwu Junction that holds spiritual value for Ezeukwu residents. The Afor Market is also situated along the road; a major market active every 8 days, during which period, vehicle and pedestrian traffic is high. Seasonal waterlogging and localized erosion around low-lying sections demand careful construction staging and drainage improvements.	Newly constructed 3-cell box culvert in the tarred road section shows early signs of edge erosion The sacred “Egbu Egbukwa” tree near Amakwu Junction is culturally significant to the Ezeukwu community.	Based on the initial environmental screening and baseline study, the proposed sub-project route does not traverse any ecological sensitive or reserved areas or designated protected habitats.	 Low-lying sections which get muddy during the rainy season

Lots	Name of Road	Coordinates	Site Specific E&S Description of the Roads and Project Environment.	Remarks	Ecological Sensitivities	Pictures
	Ezeukwu – Ugwueke Road	Start Point N5.806539° E7.559909° Terminal 5.798484° 7.613002°	Beginning at Amakwu Junction and ending at Ugwueke, this route spans a length of 6.6km and features significant cultural sensitivities including the Akparata sacred tree and Arusi Ajala shrine near an almost collapsed bailey bridge slated for rehabilitation. Muddy sections were also observed few meters after the bridge. Importantly, dense vegetation along the corridor limits access. Communities in the area relies on the road for farming and inter-village commerce.	A partially collapsed bridge near Amakwu Junction restricts vehicular access. A sacred tree and a shrine were found in proximity to the road	Based on the initial environmental screening and baseline study, the proposed sub-project route does not traverse any ecological sensitive or reserved areas or designated protected habitats.	 (Left) Failed bailey bridge along the road and (Right) low-lying marshy sections of the road.
3	Bende Etitiulo – Ubibia – Ndiwo – Itumbuzo – Okopedi – Ntalakwu	Start Point N5.535051 E7.644607 Terminal N5.503622 E7.639250	This 4.34km rural road traverse dense vegetation, cocoa farmlands, and erosion-prone terrain. Key sensitivities include widespread gully erosion, failed road sections, and proximity to Awiwa Stream, where the deteriorated CDS poses child safety risks. The route supports critical agro-economic activities, especially cocoa production. Notably, the region is Abia State's largest producer of cocoa, making the road critical for commercial agriculture and economic connectivity. Traffic on the road is sparse, primarily limited to occasional motorbikes and large trucks transporting timber, as lumbering is another key livelihood activity in the area.	The road is flood and erosion prone. Narrow and dilapidated CDS over Awiwa Stream poses significant safety risks for the community.	Based on the initial environmental screening and baseline study, the proposed sub-project route does not traverse any ecological sensitive or reserved areas or designated protected habitats.	 Gully and rill erosion along the road
	Amaogwugwu Olololo Junction – Umukabia Road	Start Point N5.597725 E7.448625 Terminal N5.600247 E7.458985	This 1.3km earth road traverses a low-lying, flood-prone terrain and connects Amaogwugwu to Umukabia and Ori Market. The entrance features partially built side drains, but lacks a culvert at the Okpara Road junction, where a sealed drainage outlet causes recurrent flooding and erosion. The situation is worsened by poor elevation design, with existing drains sitting above the road surface, leading to water stagnation. These conditions disrupt access during the rainy season and threaten the road's structural integrity.	The drainage along Okpara Road at the Amaogwugwu Olololo Junction is obstructed by a concrete seal, preventing proper water flow across	Based on the initial environmental screening and baseline study, the proposed sub-project route does not traverse any ecological sensitive or	 Section of the road

Lots	Name of Road	Coordinates	Site Specific E&S Description of the Roads and Project Environment.	Remarks	Ecological Sensitivities	Pictures
				the road. Existing drainage channels are higher than the road surface.	reserved areas or designated protected habitats.	
	Umuafiaka – Umuokpara Road	Start Point N5.554487 E7.434922 Terminal N5.568055 E7.448055	This rural earth road links Umuokpara to the Enugu–Port Harcourt Expressway, crossing steep, erosion-prone terrain with exposed sandstone and quartzite. Poor drainage, especially on slopes, has led to rill erosion and poor vehicular access. A key sensitivity is the Iyi Umuokpara stream, currently crossed via a makeshift bamboo bridge; it serves local needs for water, fishing, and sand mining. The surrounding area supports farming, quarrying, and lumbering. There is need for extensive vegetation clearance in the areas beyond the river up to the road terminal.	A small stream divides the road thereby preventing access to the remaining section of the road leading to Umuafiaka. Lack of drainages along the slopes have resulted to the road being very susceptible to erosion and rill formation.	Based on the initial environmental screening and baseline study, the proposed sub-project route does not traverse any ecological sensitive or reserved areas or designated protected habitats.	 (Left) Rill erosion along the slope, and Iyi Obowo dividing the road (Right)
	Old Umuahia (Divinity School) – Osah/Ohia Road	Start Point N5.490831 E7.470582 Terminal N5.518857 E7.456221	The Old Umuahia (Divinity School)– Osah/Ohia Road is an unpaved, earth-surfaced track located within Umuahia South LGA, Abia State. It connects connecting the Old Umuahia area to the Enugu–Port Harcourt Expressway. The road suffers from poor drainage and weed overgrowth. There is also waterlogging, especially during rains, which is amplified by the lack of drainage. Key sensitivities include flooding risks, muddy surfaces, and multiple encroachments such as shops, kiosks, trees, and the Divinity School fence, that obstruct access. These challenges hinder movement, especially for residents accessing markets, schools, and services.	Structures near the road's origin have narrowed the carriageway, requiring potential removal for rehabilitation. Absence of proper drainage leads to frequent waterlogging, and muddy sections, especially during the wet season.	Based on the initial environmental screening and baseline study, the proposed sub-project route does not traverse any ecological sensitive or reserved areas or designated protected habitats.	 Encroachments at the road's entrance.
	Ahiakwu – Amangwo – Umuajata – Umuere – Amakama	Start Point N5.478888 E7.500875 Terminal N5.450459 E7.490407	The 4km Ahiakwu–Amangwo–Umuajata–Umuere–Amakama Road links several rural communities and transitions from a built-up area into farmlands and floodplains. Sensitivities along the route include intermittent drainage, erosion, and seasonal flooding, especially near Iyi Nkpurute stream, which frequently inundates farmlands and renders the road impassable. A culturally significant monument—the "Obi Ikoro" Gong—partially encroaches on the carriageway and will require careful	The road traverses a floodplain near Iyi Nkpurute Stream, where seasonal overflow floods farmlands and renders the road	Based on the initial environmental screening and baseline study, the proposed sub-project route does not traverse any	 Makeshift wooden culvert at Iyi Nkpurute Stream

Lots	Name of Road	Coordinates	Site Specific E&S Description of the Roads and Project Environment.	Remarks	Ecological Sensitivities	Pictures
			realignment. The stream supports domestic use, fishing, and recreation, but current access is hindered by a deteriorated makeshift bridge.	impassable. A deteriorated makeshift wooden culvert at Iyi Nkpurute Stream disrupts connectivity. The "Obi Ikoro" Gong, a culturally significant structure, encroaches on the road at Amangwo.	ecological sensitive or reserved areas or designated protected habitats.	 "Obi Ikoro" Gong encroaches into the road
	Okpikpe Umuana – Ikot Ekpene Road	Start Point N5.507258 E7.512106 Terminal N5.515688 E7.513975	This road follows a flat terrain and has an asphalt surface that has significantly deteriorated due to poor drainage, which is inconsistently distributed and clogged with silt. It traverses peri-urban settlements where residents rely on petty trading and small-scale farming for their livelihoods. Surface puddles, particularly at low points, have further degraded the road. The road is vital for local commerce, as it provides farmers with access to transport goods and farm produce to nearby markets. Given its proximity to Ikot Ekpene Road, it also serves as a crucial link for residents traveling to the state capital and commercial centers. Proper rehabilitation will restore road functionality and support the area's socio-economic activities.	Poor drainage causing surface ponding and road deterioration. Need for additional culverts and improved drainage to prevent waterlogging.	Based on the initial environmental screening and baseline study, the proposed sub-project route does not traverse any ecological sensitive or reserved areas or designated protected habitats.	 Surface puddle along the road
	Umuanyaso Road	Start Point N5.094505 E7.343508 Terminal N5.098404 E7.341624	This 0.5km unpaved access road in Aba South LGA connects Umuanyaso to Uratta Road, which is currently unmotorable. The route passes through a developed area with schools, water points, and small businesses. Poor drainage, absence of culverts, and surface ponding make the road impassable during rains, disrupting local commerce and access to the Aba–Port Harcourt Road. Comprehensive drainage and culvert installation are needed to restore safe, reliable connectivity.	Inadequate drainage infrastructure leads to surface ponding and impassable sections. The abandonment of Uratta Road severely limits access to Umuanyaso Road, affecting local mobility.	Based on the initial environmental screening and baseline study, the proposed sub-project route does not traverse any ecological sensitive or reserved areas or designated protected habitats.	 Section of the Road

Lots	Name of Road	Coordinates	Site Specific E&S Description of the Roads and Project Environment.	Remarks	Ecological Sensitivities	Pictures
	Umuegwere Road	Start Point N5.095188 E7.345105 Terminal N5.098175 E7.343656	This 0.37km unpaved road links Umuegwere community to Anyanzu and Uratta Roads within a developed area. With sandy soil, no drainage, and surface ponding, the road becomes unusable during rains, affecting access to markets and the Aba–Port Harcourt corridor. It lies very close to Umuanyaso Road.	Absence of side drains and cross culverts amplifies the formation of water puddles. Access route to the road (i.e. Uratta Road) is deteriorated.	Based on the initial environmental screening and baseline study, the proposed sub-project route does not traverse any ecological sensitive or reserved areas or designated protected habitats.	 Section of the Road

4.2.1 Management of Asbestos Identified along Nbawsi – Agburuike – Umuomaighiukwu

Baseline environmental studies conducted along the Nbawsi – Agburuike – Umuomaighiukwu road corridor (Lot 3) revealed the presence of buried asbestos pipes at coordinates N5.393075, E7.435480 (Figure 13). These pipes, in several sections, were found to be exposed and protruding through the ground, likely as a result of previous road grading and earthworks. Community consultations and stakeholder engagement with local residents confirmed that the asbestos pipes were part of an abandoned water supply project dating back to the 1970s. According to respondents, the pipeline never became operational and has since remained unused. With ongoing or planned civil works activities particularly the excavation and removal of unsuitable road materials/sections, there is a high likelihood that more of these asbestos pipes will be unearthed, dislodged, or left stockpiled along the roadside.

Asbestos materials, if disturbed or mishandled, can release hazardous fibers that pose serious environmental, occupational and public health risks. Therefore, it is imperative that the Abia RAAMP SPIU, in collaboration with the engaged Contractor, ensures that the handling, removal, transportation, and disposal of these asbestos pipes are carried out in strict compliance with environmental safety protocols and international best practices. Considering that typical construction crews may lack the requisite expertise or certification for handling asbestos, the Contractor engaged for Lot 3, under the supervision and guidance of the SPIU is strongly advised to engage a competent and state-licensed hazardous waste management firm. This firm should be responsible for the safe exhumation, containment, and off-site disposal of the asbestos materials in accordance with national regulations and World Bank Environmental, Health and Safety (EHS) guidelines. An Asbestos Management Plan (AMP) has been developed and included as Annex 15 of this report for guidance and compliance. This plan outlines the standard procedures, responsibilities, and safety measures to be followed during the management of asbestos-containing materials encountered along the project route.



Figure 13: Buried Asbestos Pipes Exposed/Protruding Along the Nbawsi – Agburuike – Umuomaighiukwu Road (Upgrade, Lot 3)

4.3 Environmental Baseline Studies

Baseline data were acquired during field visits across the project area, focusing on environmental and socioeconomic receptor situated along or proximate to the proposed road corridors (1-2km buffer corridor) and likely to be influenced by the civil works. This approach¹¹ was adopted to ensure practical accessibility to sling points such as streams, segments, boreholes, and settlement areas, particularly in rural or dispersed settings where direct roadside features were limited or absent. Environmental media sampled included surface water (from nearby streams crossed by the road alignments) groundwater (from wells and boreholes in host communities), air quality and noise (near built-up areas and socioeconomic receptors), and soil (from roadside areas). Socioeconomic data were collected from settlement and communities within the project footprint, including households, vulnerable groups, and community leaders. Field-based sampling and observations were conducted between 18th and 30th November 2024. The data serves as a critical reference point to guide the effective management of project-related adverse impacts in existing environmental conditions (baseline levels).

4.3.1 Sampling Methodology

Specifically, surface water samples were collected from fourteen (14) rivers and streams located along 10 roads identified for spot improvement and upgrade (See Table 19). Each stream was sampled at three distinct sections: upstream, midstream, and downstream, resulting in a total of 42 surface water samples. Groundwater samples were drawn from 18 boreholes and wells located within 1km of the project communities near the designated roads. Soil sampling was carried out randomly to ensure representative coverage across the 11 LGAs under the project. One soil sample was taken from a road per each LGA, amounting to 11 soil samples in total. Air quality measurements were conducted using a Testo 350 XL device. Readings were obtained at 98 strategic locations along the roads, with a particular focus on segments near communities and areas with significant socioeconomic activities. Noise levels were similarly collected using a Testo 815 Noise meter. All samples and measurements were taken during the dry season, specifically between the 18th and 30th of November 2024, from 10:00am to 5:30pm daily. Figure 16 below provides a map showing the surface and groundwater and soil sampling locations while Table 19 below shows the roads and streams where surface water samples were collected and their geo-coordinates.

Table 19: List of Roads and Streams for Surface Water Collection

S/N	Name of Road	Name of Stream	Total No of Samples	Geographic Coordinate
Upgrades				
1.	Agalabano – Umuhu Central School – Ekeoba Express	Nkata Alike Stream	3	N5.587186 E7.451573
2.		Ekweze Stream	3	N5.567077 E7.44601
3.	Achara – Okpo – Nkporo – Ututu	Iyi Okpo	3	N5.790280 E7.467669
4.		Nkporo stream	3	N5.484210 E7.496899
5.	Amiyi Nvosi-Ometeghi-Umuada Nvosi-Omuapu	Iyi Ama	3	N5.295785 E 7.452735
6.	Nkwo Elechi Umuagu Umuorukwu Osusu Amaukwa	Elechi Stream	3	N5.35224003 E7.49474975
7.	Ogbodioriloku-Umuchiche-Mbaraukwu	Ofe-Iyi	3	N5.453420 E7.492169
Spot Improvement				
8.	Ezeukwu-Ugwueke Road	Ifuama Stream	3	N5.805752 E7.563313
10.	Ahiaukwu-Amangwo-Umuajata Umudere Aamkama	Umudere Stream	3	N5.729420 E7.485162
11	Umuafiaika – Umuokpara Road	Iyi Umuokpara	3	N5.556832 E7.436487
12		Iyi Obowo	3	N5.556832 E7.436487
13	Bende Etitulo – Ubibia – Ndiwo – Itumbuzo – Okopedi – Ntalakwu	Awiwa Stream	3	N5.5036591 E7.6392327
14	Amaokwelu Alayi Junction – Amankalu – Akoli	Igwu River	3	N5.680895 E7.575064
15	Imenyi	Nchichi Stream	3	N5.680427 E7.574046
Total Samples			45 Samples	

¹¹ While we acknowledge that linear infrastructure projects ideally follow a corridor-based sampling approach (e.g., every 1 km within 500 m of the road centerline), our method was adopted to reflect field realities, optimize available resources, and ensure coverage of key receptor locations likely to be impacted.

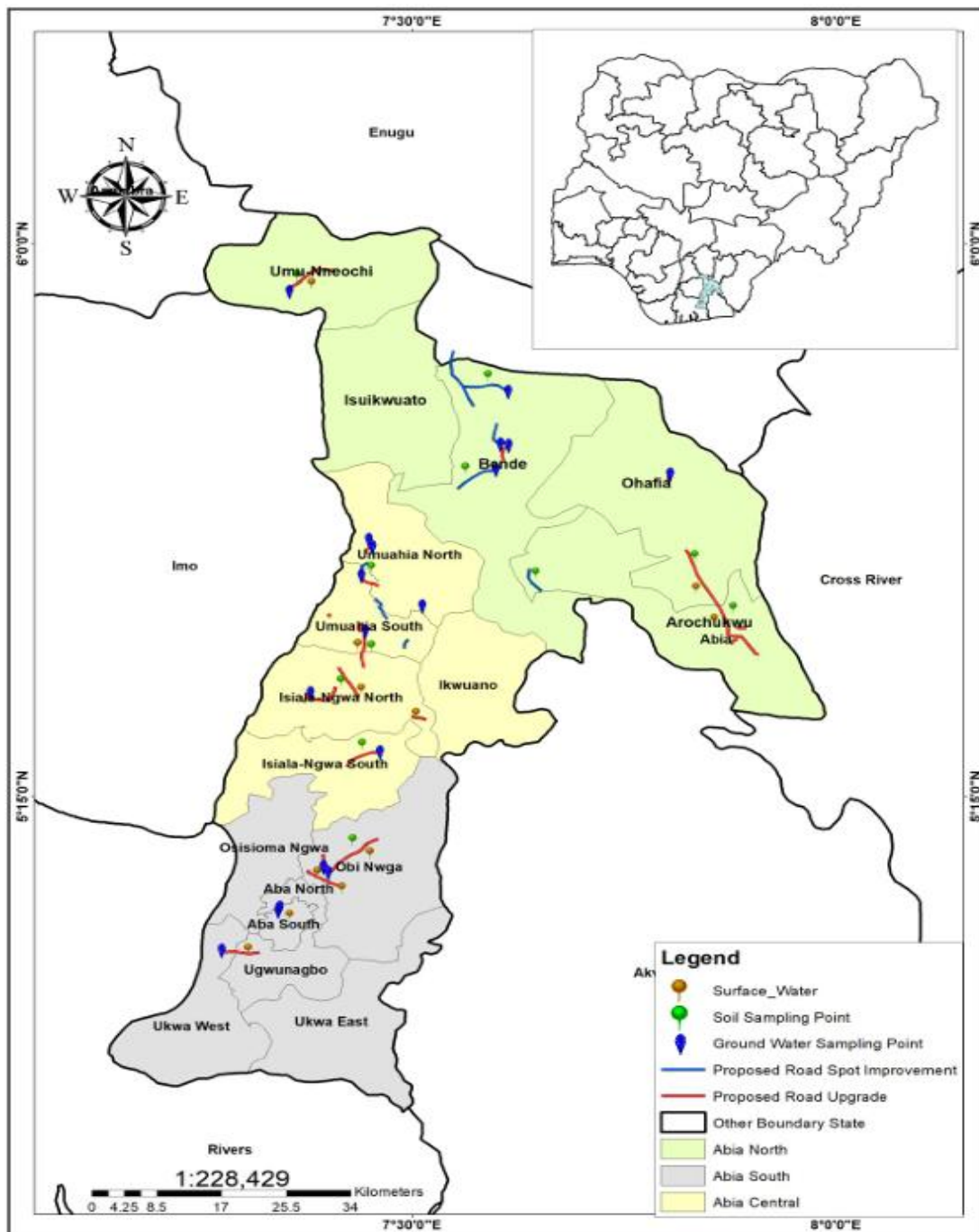


Figure 14: Map of the Sampling Locations

4.3.2 Surface Water Sampling Procedure and Analysis

Surface water samples were collected during the dry season between 18th to 30th of November 2024. The samples were collected using a well labeled sterile dark colour-coded 100ml bijour bottles, stored in ice-packed coolers on field and preserved in refrigerators at 4°C prior to laboratory analysis. The samples were sent to the Abia State University, Uturu (Biochemistry Laboratory) for analysis including their chain of custody. Laboratory analysis was carried out for physiochemical parameters including Salinity, Total Dissolved Solids (TDS), Nutrient Level (Nitrogen and Phosphorus), Heavy Metals [Lead (Pb), Cadmium (Cd), Mercury (Hg), Arsenic (As), Copper (Cu)], etc. and microbial parameters such as Total Coliforms, Faecal Coliform, E. Coli, Heterotrophic Plate Counts (HPCs), and Tetrahydrofuran (THF), etc. However, in-situ analysis was carried out real time, for rapidly fluctuating physiochemical parameters such as Dissolved Oxygen (DO), pH, Temperature, Electrical Conductivity (EC), Turbidity, Total Suspended Solids (TSS), etc. using an Ultrameter II 6PFCE water analysis tool.

Results of Physiochemical Analysis of Surface Water Samples

Physicochemical analysis of 14 stream samples indicated that most parameters fell within FME_{nv} Maximum Permissible Limits (MPLs). Electrical conductivity ranged from 5.8 to 750 $\mu\text{S}/\text{cm}$ (MPL: 1500 $\mu\text{S}/\text{cm}$), salinity from 25.2 to 100 mg/L (MPL: 100 mg/L), and TDS from 18 to 700 mg/L (MPL: 1200 mg/L). Other parameters also remained within limits, including phosphate (0.031–0.34 mg/L, MPL: 3.5 mg/L), chloride (23.12–100 mg/L, MPL: 250 mg/L), and sulfate (41.1–145 mg/L, MPL: 250 mg/L). However, localized exceedances were observed. At Nkata Alike and Ekweze Streams, midstream pH values were slightly acidic at 6.3 and 6.4, just below the acceptable range (MPL: 6.5–8.5), likely due to fertilizer runoff. Turbidity exceeded the 50 NTU limit in both streams, with values up to 67 NTU, attributed to sedimentation from deforestation, agriculture, quarrying, and sand mining. Downstream of Ekweze Stream, salinity remained within limit (65 mg/L, MPL: 100 mg/L), but TDS reached 700 mg/L, still below the limit (MPL: 1200 mg/L). BOD₅ values were elevated in the upstream and midstream of Nkata Alike (6.5 and 6.3 mg/L, MPL: 6.0 mg/L), indicating organic pollution from domestic and agricultural sources. High BOD₅ may deplete dissolved oxygen, endangering aquatic ecosystems. Full results are available in Table 20 and Annex 16.

Results of Heavy Metals Analysis of Surface Water Samples

Analysis of surface water samples revealed elevated levels of cadmium, arsenic, and copper in some locations. Cadmium slightly exceeded the permissible limit of 0.01 mg/L downstream of Iyi Umuokpara Stream, recording 0.0116 mg/L. Though marginal, long-term exposure may affect aquatic life and enter the food chain. Arsenic levels in Awiwa Stream were significantly above the threshold, with a downstream concentration of 13.4027 mg/L (limit: 0.05 mg/L), potentially linked to nearby industrial or agricultural activities. Arsenic is a known health risk and environmental contaminant. Copper concentrations were consistently high in both Iyi Umuokpara and Awiwa streams, peaking at 27.041 mg/L downstream of Iyi Umuokpara (limit: 0.01 mg/L), possibly due to copper-based agrochemicals or local industrial runoff. Elevated copper can impact aquatic ecosystems and biodiversity. These findings indicate localized water quality concerns that may be associated with human activities in the surrounding communities. Further details are provided in Table 21 and Annex 16.

Table 20: Physiochemical Values of Surface Water above the FMEEnv/NESREA Maximum Permissible Limit

US = Upstream, MS = Midstream and DS = Downstream

STREAMS	ENVIRONMENTAL PARAMETERS (FMENV/NESREA MAXIMUM PERMISSIBLE LIMIT {MPL})																							
	pH			Dissolved Oxygen (mg/l)			Turbidity (NTU)			TSS (mg/L)			NH ⁴⁺ (mg/L)			NO ³ (mg/L)			BOD5 (mg/L)			COD (mg/L)		
	US	MS	DS	US	MS	DS	US	MS	DS	US	MS	DS	US	MS	DS	US	MS	DS	US	MS	DS	US	MS	DS
Nkata Alike Stream	6.6	6.3**	6.5	3.3	3.7	4.1	67**	64**	50	0.54	0.51	0.42	0.05	0.06	0.11	1.11	1.16	1.15	6.5**	6.3**	6	34**	33.6**	33.3**
Ekweze Stream	6.7	6.4**	6.1**	6.2	4.8**	4.0**	45	60**	10	20**	35**	50**	0.5	1.5	2**	10	25	3.8	4	8**	12**	10	25	40**
FME _{env} /DPR Limits	6.5 – 8.5			24			50			0.75			2			40			6			30		

Table 21: Heavy Metals and Microbial Values of Surface Water above the FMEEnv/NESREA Maximum Permissible Limit

US = Upstream, MS = Midstream and DS = Downstream

STREAMS	ENVIRONMENTAL PARAMETERS (FMENV/NESREA MAXIMUM PERMISSIBLE LIMIT (MPL))																				
	Mercury (mg/L)			Cadmium (0.01 mg/l)			Arsenic (0.05 mg/l)			Copper (0.01 mg/l)			Total coliforms cfu/100ml			Faecal coliforms cfu/100ml			E. coli cfu/100ml		
	US	MS	DS	US	MS	DS	US	MS	DS	US	MS	DS	US	MS	DS	US	MS	DS	US	MS	DS
Nkata Alike Stream	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.7**	2.5**	2.5**	0.2**	0	0	0.2**	0	0
Ekweze Stream	0.0001	0.0003	0.001**	ND	ND	ND	0.01	0.03	0.05	0.005	0.015	0.025	8.95**	9**	9.05**	1.98**	2**	2.02**	0.1**	0.1**	0.1**
Iyi Umuokpara	ND	ND	ND	0.0056	0.0086	0.0116**	ND	ND	ND	26.441**	26.741**	27.041**	1.5**	3.2**	5.6**	0.8**	2.5**	4.1**	0.9**	2.8**	4.5**
Awiwa Stream	ND	ND	ND	ND	ND	ND	12.8027*	13.1027*	13.4027*	25.7227*	26.1227*	26.5227*	2.1**	4.7**	6.9**	1.2**	3.6**	5.3**	1.3**	3.4**	5.0**
Igwu River	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.008	0.009	0.008	1.5**	2.0**	2.3**	0.8**	1.0**	1.2**	0.3**	0.4**	0.5**
Nchichi Stream	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.009	0.010	0.009	2.3**	2.5**	2.6**	1.1**	1.2**	1.3**	0.5**	0.6**	0.7**
Ofe-Iyi	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.007	0.004	0.003	8.52**	9**	9.48**	2.64**	3**	3.36**	1.7**	2**	2.29**
Ifuama Stream	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.003	0.006	0.006	13.7**	14**	14.3**	4.6**	5**	5.4**	1.7**	2**	2.3**
Iyi Obowo	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.001	0.003	0.005	0.003**	2.7**	2.05**	0	0.5**	0	0.2**	0.5**	0
Umudere Stream	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.01	0.01	0.009	0.009**	0.01**	0.009**	1.458**	1.5**	1.542**	0	0	0.1**
Iyi Okpo	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.005	0.004	0.006	7.007**	7.001**	6.903**	3**	3.5**	4**	1.2**	1.5**	1.8**
Nkporo stream	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.01	0.01	0.01	0.01**	0.009**	0.01**	4**	4.5**	5**	1.7**	2**	2.3**
Ama-Iyi	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.001	0.004	0.0041	4**	4.2**	4.1**	0	0	0.2**	0.78**	0.69**	0.66**
Elechi Stream	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.009	0.01	0.01	7.2**	8.0**	8.4**	1.8**	1.89**	2.3**	0.1**	0.2**	0.8**
FME _{env} /DPR	0.0005			0.01			0.05			0.01			0			0			0		

For document succinctness, Tables 20 and 21 above provided information on sample parameters which exceeded the FMEEnv/NESREA permissible limit. Samples which exceeded the permissible limits are asterisked (**) and are highlighted in red fonts. The full result of the surface water analysis inclusive of other parameters analyzed is provided in Annex 16.

Microbial Analysis of Surface Water

The microbial analysis reveals significant exceedances of FMEnv/NESREA permissible limits across several streams, with concerning trends observed for total coliforms, fecal coliforms and *E. coli*. The highest total coliform concentrations were recorded in Ifuama Stream, ranging from 13.7 to 14.3cfu/100mL, followed by Ekweze Stream with values between 8.95 and 9.05cfu/100mL, both far exceeding permissible levels. Fecal coliform contamination was also high, particularly in Ifuama Stream, with levels reaching 5.4cfu/100mL, and Nkporo Stream, where concentrations peaked at 5cfu/100mL. Elevated *E. coli* counts were notable in Ifuama Stream and Nkporo Stream, with both reaching a maximum of 2.3cfu/100mL. The progressive increase in microbial loads from upstream to downstream in multiple streams highlights the significant influence of anthropogenic activities and a direct fecal contamination by human or animal waste on water quality. Detailed results are provided in Annex 16.

4.3.3 Groundwater Analysis

Ground water samples were collected from boreholes and wells within a 1km radius from roads at the project communities to be rehabilitated using sterile dark coloured 100ml bijour bottles. Samples for heavy metals and physiochemical studies were also collected in their respective coded plastic containers and stored in ice-packed coolers. Samples were preserved in refrigerators at 4°C prior to laboratory analyses. Laboratory analysis was carried out for physiochemical parameters such as Total Suspended Solids, Ammonia, Sulphate, Calcium, Chloride and Phosphates; and Heavy Metals such as Lead (Pb), Iron (Fe), Chromium (Cr), Cadmium (Cd), Zinc (Zn). Fast changing physiochemical parameters such as pH, Turbidity, Electrical Conductivity, and TDS etc. were measured in-situ using an in-situ water analyzer. Similarly, microbial analysis was carried out for parameters such as *Faecal coliform*, *E. coli*, *Enterobacter aerogenes*, *Salmonella spp.*, *Pseudomonas aeruginosa* and *Shigella spp.*

Physiochemical and Heavy Metal Properties of Groundwater Samples

Results of the laboratory analysis of samples collected from boreholes and wells within a 1km radius from the roads to be rehabilitated revealed that the physiochemical and heavy metal parameters analyzed were all within the FMEnv/NESREA limits. Refer to Annex 16 for details.

Microbial Characteristics of Groundwater Samples

The microbial analysis of groundwater samples collected from boreholes and wells within a 1 km radius of the rural roads revealed contamination levels exceeding the FMEnv permissible limits. Predominant bacterial organisms included faecal coliforms (1–5 cfu/ml), *Escherichia coli* (1–3 cfu/ml), *Enterobacter aurogenes* (1–2 cfu/ml), and *Bacillus species*. These findings are concerning as the permissible limit for all these micro-organisms is 0 cfu/ml, thus indicating possible faecal contamination of the groundwater. The exceedances may be attributed to vertical infiltration from inadequately designed pit toilets and poorly maintained septic systems. The high permeability of the soil in the region likely facilitates the movement of bacteria and other contaminants from surface sources into the groundwater. In addition, the absence of adequate buffers or protective measures around water points further exacerbates the risk of contamination. Communities such as Nkwebi Onwuwanyanwu, Lomara, Amiyi, and Amankalu reported consistent bacterial presence in their groundwater samples. These areas are characterized by limited access to improved sanitation facilities. The presence of faecal coliforms and *E. coli* in groundwater poses significant public health risks, including the potential for outbreaks of waterborne diseases such as diarrhea, cholera, and typhoid. Chronic exposure to such contaminants can lead to long-term health issues, particularly in vulnerable populations such as children and the elderly. Refer to Annex 16 for full details of results of the microbial analysis.

4.3.4 Soil Sample Collection Procedure and Analysis

Eleven (11) topsoil samples, within a depth of 0–15 cm, were collected across the 37 roads earmarked for rehabilitation spanning 11 LGAs using a purposive stratified sampling approach¹². Some of the roads where soil samples were collected include Upgrade Roads (UR): Achara – Okpo – Nkporo – Ututu, Okagwe – Nkwebi Onwuwanyanwu, Orié Ngodo Market - Obinohia Umudim – Lomara, Amorji Market Road – Amorji Junction, Nkwo Ebe – Umunko – Umuakwu etc. Spot Improvement (SI): Amaokwelu Alayi Junction – Amankalu – Akoli Imenyi, Okpikpe Umuana – Ikot Ekpene Road, Umuanyaso Road. Samples were collected using a manual soil auger from 20th – 30th November 2024. These were preserved in coded plastic bags (high UV-resistant material) after being wrapped in aluminium foil. The soil samples were further sent to the Abia State University (Biochemistry Laboratory) for analysis including the chain of custody.

Physiochemical and Heavy Metal Properties of Soil Samples

The analysis of physiochemical and heavy metal properties in soil samples from rural roads demonstrates that most physiochemical parameters, such as pH (6.48–6.90), moisture content (14.5–15.4%), and electrical conductivity (32.6–36.5 $\mu\text{S}/\text{cm}$), fall within permissible limits, indicating stable soil conditions suitable for agricultural and ecological purposes. However, heavy metal concentrations, particularly Cadmium (Cd) and Chromium (Cr), exceeded the Department of Petroleum Resources (DPR) and FMEnv permissible limits in specific locations. Cadmium, recorded at 0.04 mg/kg in UR-20 (Agalabano – Umuhu Central School – Ekeoba) and SI-9 (Ahiaukwu – Amangwo – Umuajata – Umudere Road) surpassed the permissible limit of 0.03 mg/kg, likely attributable to agricultural runoff and improper disposal of industrial and domestic waste. Chromium concentrations at 0.06 mg/kg at Agalabano – Umuhu Central School – Ekeoba (slightly above the 0.05 mg/kg threshold) may suggest contributions from agrochemical applications or natural mineral deposits in the soil. Microbial contamination was also evident, with faecal coliforms reaching 10 cfu/100 ml in UR-9 (Amorji Market Road – Amorji Junction) and SI-9 (Ahiaukwu – Amangwo – Umuajata – Umudere Road), and *E. coli* detected consistently at 2 cfu/100 ml for most of the locations, exceeding the permissible limit of 0 cfu/100 ml. These results strongly suggest anthropogenic pollution, likely stemming from open defecation, agricultural runoff containing animal waste, and inadequate waste management practices. The implications of these exceedances are profound. Elevated heavy metals can impair soil fertility and pose health risks through bioaccumulation in crops, potentially entering the food chain. Microbial contamination compromises soil quality and presents risks of waterborne diseases if the runoff reaches water bodies. The findings reveal the need for effective waste management practices, regulation of agrochemical usage, and environmental monitoring to mitigate contamination and protect soil health. Refer to Annex 16 for detailed results.

4.3.5 Air Quality

Air quality levels were measured at strategic locations along the proposed roads corridors. Factors considered includes sections of the road in proximity to: a) local communities, churches, schools, etc. b) socioeconomic clusters (markets, business premises, artisanal shops, etc.) etc. Air quality measurements were taken across 98 locations. The results for the air quality parameters (CO, NO_x, SO_x, NH₄, H₂S, VOC, SPM 2.5, SPM 10, SPM Total) measured showed parameters are within permissible limits – CO (10 mg/m³), NO_x (0.04 – 0.06mg/m³), SO_x (0.01mg/m³), NH₄ (0.2mg/m³), H₂S (0.008mg/m³), VOC (0.1mg/m³), SPM 2.5 (80 $\mu\text{g}/\text{m}^3$), SPM 10 (250 $\mu\text{g}/\text{m}^3$), Total (250 $\mu\text{g}/\text{m}^3$) as shown in Annex 16. This could be largely attributed to absence of industrial activities and reduced vehicular movements around the roads proposed for intervention.

4.3.6 Noise Level

Accordingly, noise levels were measured at the same sampling stations as those used for air quality measurements. Measurements were carried out across 98 locations. The results show that noise levels ranged from 23dB – 51dB, which were all within the National Environment (Noise Standard and Control) Regulation of 55dB (day). This could be

¹² This method was employed to ensure representative sampling from each LGA, recognizing that soil composition may not significantly vary within individual LGAs but could differ between them. The stratification into LGAs allowed for comprehensive geographic coverage, while purposive selection ensured that each LGA was represented adequately. This approach was informed by the need to capture spatial variability across the study area, balancing practicality and analytical feasibility, given the wide distribution of roads across Abia state.

attributed to the rural/semi-urban nature of the areas, void of industries and minimal vehicular movements due to the bad roads. Results are presented in Annex 16.

4.3.7 Biodiversity (Vegetation and Wildlife)

Notably, major flora species found around the road corridors range from economic trees such as Oil Palm (*Elaeis guineensis*), Bamboo (*Bambusa vulgaris*), Bush mango/Ogbono (*Irvingia gabonensis*), Cocoa (*Theobroma cacao*), Plantain and Banana Trees (*Musa spp.*), Mango (*Mangifera indica*), etc. to weeds such as Elephant Grass (*Pennisetum purpureum*), Carpet Grass (*Axonopus compressus*) and food crops such as Cassava (*Manihot esculenta*), Yam (*Dioscorea spp.*), etc. There was no wildlife observed during the study, however, some locals and hunters engaged stated that reptiles (snakes, monitor lizards), birds, some monkey species and bats have been sighted. However, this is rare or occasional. No endemic or endangered flora/fauna were discovered within and around the project corridors (roads/communities) during site visits and baseline studies.

4.3.8 Climate Change Vulnerability and Resilience of the Roads

Climate change poses significant challenges to rural road rehabilitation, particularly in areas with existing vulnerabilities. The prevailing baseline conditions (such as topography, soil type, presence and adequacy of hydraulic infrastructure, and proximity to flood-prone zones, flood plains, etc.) could also amplify the occurrence and severity of climate change impacts. Field assessments undertaken across all project locations have identified flooding and erosion as the two primary climate change hazards impacting most rural roads. Broadly, Abia State falls within the moderate to high flood risk zones of Nigeria, according to the Nigeria Meteorological Agency (NIMET) GIS/Remote Sensing Monthly Review Bulletin for October 2024 forecast (See Figure 15). Specifically, baseline studies indicate that 97% of the roads surveyed (36 out of 37) are vulnerable to flooding; whereas, 57% of the roads surveyed (21 out of 37) are susceptible to erosion. Broadly, the risk factors for flooding across the locations include: inadequate or absent drainage systems, low-lying terrain, and high precipitation intensity, while erosion is primarily driven by steep gradients, inadequate water management infrastructure, and vegetation loss (See Table 22).

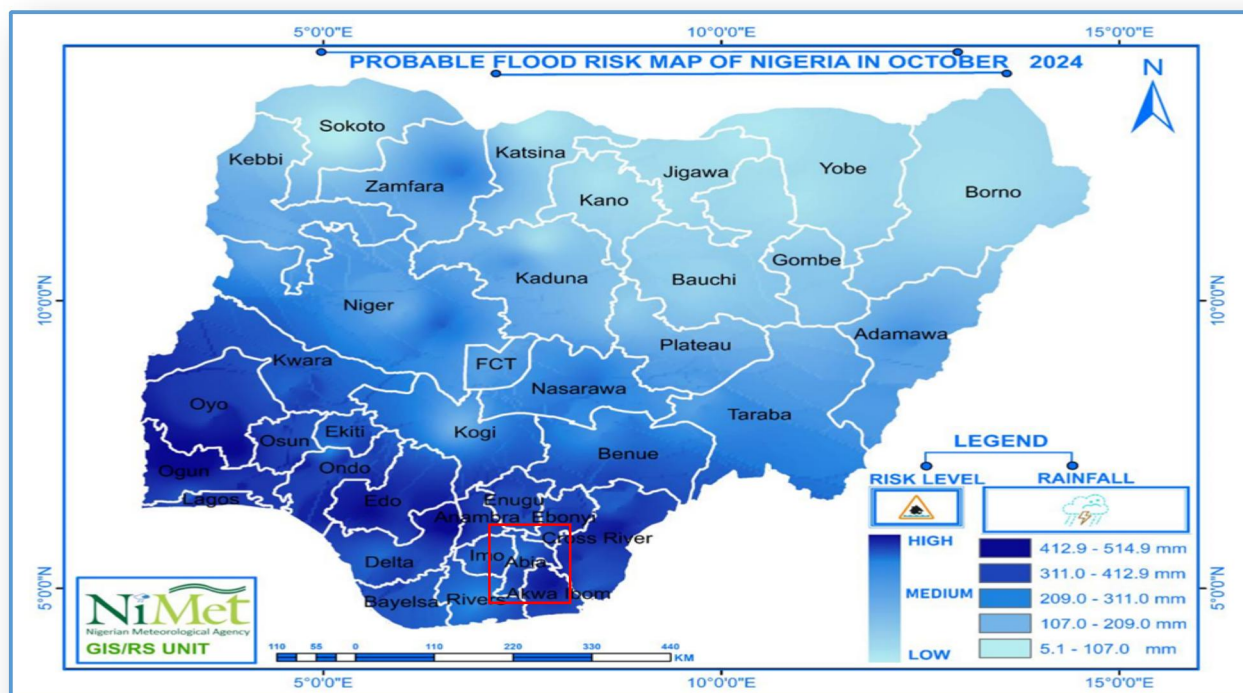


Figure 15: Map Indicating Areas of High, Medium and Low Wetness (Flood Risk Areas) in October 2024 (Source: NIMET GIS/Remote Sensing Monthly Review Bulletin – Oct 2024)

Table 22: Flood and Erosion Vulnerability Assessment of the Roads Including their Risk Factors

Intervention Type	Road Name	Flood Vulnerability				Erosion Susceptibility		Risk Factors
		Flooding Due to No or Inadequate Drainage, Culvert, or Failed Hydraulic Structures	Flooding Due to Soil Type	Flooding Due to Proximity to Flood Plains	Flooding Due to Gradient or Topography (e.g. Low-Lying Terrain)	Erosion Due to Steep Terrain or Inadequate Drainage	Erosion Due to Soil Type or Vegetation Loss	
Roads Upgrade	Achara–Okpo–Nkporo–Ututu	☑ Yes	✗ No	✗ No	☑ Yes	☑ Yes	☑ Yes	Very Steep Slopes, poor drainage and absence of culverts results in erosion and waterlogging, making the road impassable during heavy rains.
	Umeye I–Umeye II	☑ Yes	✗ No	✗ No	☑ Yes	✗ No	✗ No	Water stagnation at low points due to lack of culverts; road becomes muddy and inaccessible during rainy seasons. This road is not predisposed to erosion.
	Obinto–Atani	☑ Yes	✗ No	✗ No	☑ Yes	✗ No	✗ No	Flooding at critical locations caused by inadequate drainage; culverts are required for proper runoff management. No erosion vulnerability.
	Okagwe–Nkwebi Onwunwanyanwu	☑ Yes	✗ No	✗ No	☑ Yes	☑ Yes	☑ Yes	Erosion on steep, sloppy terrain leading to the stream due to high runoff velocity; flooding also caused by inadequate drainage facilities.
	Sameke Junction–Amarauhoghu	☑ Yes	✗ No	✗ No	☑ Yes	☑ Yes	☑ Yes	Lack of drainage leads to surface runoff and erosion; culverts needed at the lowest point to manage waterlogging.
	Obinulo–Umumaduako–Umumezie	☑ Yes	✗ No	✗ No	☑ Yes	☑ Yes	☑ Yes	Lowered road elevation and blocked culverts cause sectional flooding; terminal section has severe gully erosion.
	Orie Ngodo Market–Obinohia Umudim–Lomara	☑ Yes	✗ No	✗ No	☑ Yes	✗ No	✗ No	Poorly designed drainage and silted culverts contribute to flooding of some sections. This is exacerbated by household waste deposition.
	Amorji–Ngbedeala–Ntigha–Mbawsi	☑ Yes	✗ No	✗ No	☑ Yes	✗ No	✗ No	Flat terrain, lack of natural watercourses, and inadequate drainage lead to sectional ponding.
	Amorji Market Road–Amorji Junction	☑ Yes	✗ No	✗ No	✗ No	✗ No	✗ No	Stagnant and clogged drainage at road entrance due to waste accumulation.
	Ogbagala Junction–Amaugba	☑ Yes	✗ No	✗ No	✗ No	✗ No	✗ No	Absence of drainage infrastructure causes waterlogging during rainfall.
	Nbawsi–Agburuikwe–Umuomaighiukwu	☑ Yes	✗ No	✗ No	☑ Yes	☑ Yes	☑ Yes	Sandy, loose soil and lack of drainage infrastructure result in muddy and eroded sections.
	Amiyi Nvosi–Ometeghi–Umuada Nvosi–Omuapu	☑ Yes	✗ No	☑ Yes	☑ Yes	✗ No	☑ Yes	A perennial stream crossing the road contributes to flooding during heavy rains.
	Nkwo Ebe–Umunkwo–Umuakwu	☑ Yes	✗ No	✗ No	☑ Yes	☑ Yes	☑ Yes	Poorly maintained drainage system and uneven grading lead to waterlogging and erosion.
	Umuakwu–Amachi–Umuakpeyi	☑ Yes	✗ No	✗ No	☑ Yes	☑ Yes	☑ Yes	Gully erosion and elevated drainage systems above road level limits its hydraulic efficiency and results in flooding and road degradation.
	Eziama–Amibo Ring Road	☑ Yes	✗ No	✗ No	☑ Yes	☑ Yes	☑ Yes	Erosion-prone sections and inadequate drainage makes runoff management difficult. Further, runoff from elevated areas on the road flows to low-lying adjacent roads causing flooding and erosion.
	Agalaba Ise–Ahiamorie–Umuamadi–Amalaubi–Umuokereke	☑ Yes	✗ No	✗ No	☑ Yes	✗ No	✗ No	Inconsistent and poorly distributed drainage infrastructure causes waterlogging.
	Apumiri–Avo–Amibo Express	☑ Yes	✗ No	✗ No	✗ No	✗ No	✗ No	Ineffective drainage and open waste dumping contribute to flooding risks.
	Agalabano–Umu Central School–Ekeoba	☑ Yes	✗ No	✗ No	☑ Yes	✗ No	✗ No	No existing drainage to aid runoff management, low-lying sections. Poor settlement patterns.
	Umuawoli Road	✗ No	✗ No	✗ No	✗ No	✗ No	✗ No	Not prone to significant erosion or flooding due to sparse settlement and low-impact natural terrain
	Ogbodioriloku–Umuchiche–Mbaraukwu Road	☑ Yes	✗ No	✗ No	☑ Yes	☑ Yes	✗ No	Poor drainage infrastructure and silted culverts exacerbate formation of grooves, rill erosion and flooding, especially in sloped areas.
	Umuariama–Ahiaba Ubi–Nkwo Elechi Road	☑ Yes	✗ No	✗ No	☑ Yes	✗ No	✗ No	Flat terrain causes runoff to stagnate, resulting in persistent flooding during the rainy season; existing drainage overflows due to no natural surface water to aid the release of runoff.
	Nkwo Elechi–Umuagu–Umuorukwu–Osusu–	☑ Yes	✗ No	✗ No	☑ Yes	☑ Yes	✗ No	Absence of drainage infrastructure and a flat topography leads to

Intervention Type	Road Name	Flood Vulnerability				Erosion Susceptibility		Risk Factors
		Flooding Due to No or Inadequate Drainage, Culvert, or Failed Hydraulic Structures	Flooding Due to Soil Type	Flooding Due to Proximity to Flood Plains	Flooding Due to Gradient or Topography (e.g. Low-Lying Terrain)	Erosion Due to Steep Terrain or Inadequate Drainage	Erosion Due to Soil Type or Vegetation Loss	
	Amaukwa Road							sectional waterlogging, particularly at low point along the road.
	Nkwo Elechi Market–Umueme Road	☑ Yes	✗ No	✗ No	☑ Yes	✗ No	✗ No	Lack of drainage infrastructure leads to waterlogging and muddy conditions impacting road usability.
	Umuagu Ohuru Amaisii–Osaa Ukwu–Itungwa Road	☑ Yes	✗ No	✗ No	☑ Yes	☑ Yes	✗ No	Silted and weed-obstructed culverts reduce drainage functionality and results in flooding and localized erosion at critical low points.
	Asa Umunka–Umugo–Ameji Oza–Ozanta–Ugwati Asa Road	☑ Yes	✗ No	✗ No	☑ Yes	✗ No	✗ No	Waterlogging occurs due to a lack of drainage infrastructure, particularly during heavy rains.
Spot Improvement Roads	Ozara Market Junction – Amaoku Alayi – Ugwueke Road	☑ Yes	☑ Yes	✗ No	☑ Yes	☑ Yes	☑ Yes	Lack of drainage infrastructure, clayey soil, and surface water accumulation causing erosion and flooding.
	Amaokwelu Alayi Junction – Amankalu – Akoli Imenyi	☑ Yes	☑ Yes	✗ No	☑ Yes	☑ Yes	☑ Yes	Absence of drainage, clayey lateritic soil, undulating terrain, and failed CDS at Igwu River bridge.
	Alayi – Ezeukwu Road	☑ Yes	☑ Yes	✗ No	☑ Yes	☑ Yes	☑ Yes	Erosion degrading culvert edges; low-lying sections lead to water puddling and muddy conditions.
	Ezeukwu – Ugwueke Road	☑ Yes	☑ Yes	✗ No	☑ Yes	☑ Yes	☑ Yes	Inadequate drainage causes waterlogging; collapsed bridge leads to marshy conditions near low-lying areas.
	Bende Etitulo – Ubibia – Ndiwo – Itumbuzo – Okopedi – Ntalakwu	☑ Yes	☑ Yes	☑ Yes	☑ Yes	☑ Yes	☑ Yes	Lack of drainage, eroded slopes, gully erosion, and waterlogging during rains
	Amaogwugwu Olololo Junction – Umukabia Road	☑ Yes	✗ No	✗ No	☑ Yes	☑ Yes	☑ Yes	Improper drainage alignment causes flooding; elevation of channels higher than road worsens water stagnation.
	Umuafiaka – Umuokpara Road	☑ Yes	☑ Yes	✗ No	☑ Yes	☑ Yes	☑ Yes	Steep slopes and inadequate drainage lead to erosion and rill formation; stream crossing lacks proper CDS.
	Old Umuahia (Divinity School) – Osah/Ohia Road	☑ Yes	☑ Yes	✗ No	☑ Yes	☑ Yes	☑ Yes	Lack of drainage causes waterlogging and muddy sections, especially during the rainy season.
	Ahiauaku – Amangwo – Umuajata – Umuere – Amakama	☑ Yes	☑ Yes	☑ Yes	☑ Yes	☑ Yes	☑ Yes	Floodplain near Iyi Nkpurute stream leads to seasonal overflow and erosion due to inadequate infrastructure.
	Okpikpe Umuana – Ikot Ekpene Road	☑ Yes	✗ No	✗ No	☑ Yes	✗ No	✗ No	Poor and insufficient drainage, silted culverts and side drains, and surface ponding due to flat terrain.
	Umuanyaso Road	☑ Yes	✗ No	✗ No	☑ Yes	✗ No	✗ No	Minimal waterlogging observed at low points along both roads, particularly due to absence of drainages.
	Umuegwere Road	☑ Yes	✗ No	✗ No	☑ Yes	✗ No	✗ No	

4.4 Socioeconomic Baseline Studies (SEBS)

Collection of Primary Data: A comprehensive socioeconomic baseline study was conducted to assess the existing conditions within the rural communities along the project corridors. To collect primary data, the convenience sampling¹³ method was adopted due to its practicality, considering accessibility to respondents, geographical proximity, and willingness to participate. The sampling was based on defined community clusters along the roads. While this method allowed for broad engagement, its limitations, such as potential sampling bias, were acknowledged and mitigated by ensuring the representation of diverse respondents across gender, age and occupational groups.

Table 23: Communities at the Project Locations

S/N	Road	Names of Project Communities	Number of Communities
Upgrade Roads			
1	Obinto - Achara -Okpo- Nkporo-Ututu	Umuchiakuma, Amaetiti/Eleoha, Achara, Okpo Ihechiowa, Nkporo/Amiyi, Umuzomgbo, and Obinto-Ihechiowa	7
2	Umeye I - Umeye II	Umeye I, and Umeye II	2
3	Obinto – Atani Road	Atan Ihechiowa	1
4	Okagwe – Nkwebi Onwuwanyanwu	Okagwe	1
5	Sameke Junction – Amaraughoghu	Okpufu and Ama Utazi	2
6	Obinulo – Umumaduako – Umumezie	Ndiawa Isuochi	1
7	Orie Ngodo Market – Obinohia Umudim – Lomara	Obinohia Umudim,	1
8	Amorji – Ngbedeala – Ntigha – Umukalu – Mbawsi	Amaorji/Amaugba, Umukalu Ntigha, and Okpuala/Umunachi	3
9	Amorji Market Road – Amorji Junction	Amaorji/Amaugba	1
10	Ogbagala Junction – Amaugba	None	0
11	Nbawsi – Agburuike – Umuomaighiukwu	Umuomaighukwu	1
12	Amiyi Nvosi – Ometeghi – Umuada Nvosi – Omuapu Road	Amaiya, Ometeghi Nvosi, Umuada Nvosi, and Omuapu	4
13	Nkwo Ebe – Umunko – Umuakwu	Umuakwu, Umunkwo, and Umuakwu	3
14	Umuakwu – Amachi – Umuakwu	Umuakwu and Umuogele	2
15	Eziama – Amibo Ring Road	Amibo, Eziama, Uturu Isiala, and Amuzu-Ubakala	4
16	Agalaba Ise – Ahiamorie – Umuamadi – Amalaubi – Umuokereke	Mbara Akuma, Ahiamorie, Umuokereke, and Agburuike	4
17	Apumiri – Avo – Amibo Express	Apumiri Ubakala and Amibo	2
18	Agalabano – Umu Central School – Ekeoba	Agalabano, and Ekeoba	2
19	Umuawoli Road	Umu Nwa Nwa	1
20	Ogbodioriloku – Umuchiche – Mbaraukwu	Ama Achara and Ogbodi Ukwu	2
21	Umuariama – Ahiaba Ubi – Nkwo Elechi	Umuariama Alaoma, Umuariama and Umuojima	3
22	Nkwo Elechi – Umuagu – Umuorukwu – Osusu – Amaukwa Road	Nkwo Elechi	1
23	Nkwo Elechi –Market – Umueme Road	Umuagu	1
24	Umuagu Ohuru Amaisii – Osaa Ukwu – Itungwa	Umuobasiukwu, Ohuru Amaisii, Osaa, and Imu Ikala	4
25	Asa Umunka – Umugo – Ameyi Oza – Ozanta – Ugwati Asa	Asa Umunka, Ozata Umugo, and Ugwati	3
Total			56
Spot Improvement			
1	Ozara Market Junction – Amaoku Alayi – Ugwueke Road	Ozara, Amaoku Alayi, and Ugwueke	3
2	Amaokwelu Alayi Junction – Amankalu – Akoli Imenyi	Amankalu, Akoli Imenyi, and Amaba	3
3	Alayi – Ezeukwu Road	Alayi, Ezeukwu Ndelu, Isiala, and Ezeukwu	4
4	Ezeukwu – Ugwueke	Ugwueke	1
5	Bende Etitulo – Ubibia – Ndiwo – Itumbuzo – Okopedi	Etitulo, Ubibia, Ntubi, and Itumbuzo.	4
6	Amaogwugwu Olololo Junction – Umukabia	Amaogwugwu Olololo	1

¹³ Convenience sampling is a qualitative research sampling strategy that involves selecting participants based on their accessibility and availability to the researcher. This can be due to geographical proximity, availability at a given time, or willingness to participate in the study.

	Road		
7	Umuafiaka – Umuokpara Road	Umuafiaka and Umuokpara	2
S/N	Road	Names of Project Communities	Number of Communities
8	Old Umuahia (Divinity School) – Osah/Ohia Road	Osah/Ohia	1
9	Ahiaukwu – Amangwo – Umuajata – Umdere – Amakama	Amangwo, Umuajata, Amakama, and Umdere	4
10	Okpikpe Umuana – Ikot Ekpene Road	Okpikpe Umuana–	1
11	Umuanyaso Road	Umuanyaso	1
12	Umuegwere Road	Umuegwere	1
Total			26
Overall Total Communities (Spot Improvement and Upgrades Roads)			82

Survey Methodology: Semi-structured questionnaires¹⁴ were administered to respondents across all 82 project communities. Respondents included community elders, women and youth groups, business owners, farmers, fishermen, and stream users, to ensure that diverse perspectives were captured. The survey was designed to achieve an average of 25 respondents per road, based on the combined responses from communities along each road corridor.

Although an average of 25 respondents per road was used as a planning benchmark, the survey itself was implemented at the community level, with respondents drawn from multiple settlements located along each road corridor. While a uniform sample size per road was used as a guiding benchmark, it is acknowledged that population sizes and the number of communities varied across roads. The survey prioritized diversity and inclusion over strict proportionality, and responses were triangulated with field observations and stakeholder consultations to enhance contextual understanding and data reliability. This approach was considered adequate for the ESMP's objective of identifying key socio-economic and environmental risks and perceptions. Notably, this target was not consistently met due to factors such as stakeholder availability, geographical accessibility, varying population sizes of project communities', and the absence of settlements along certain road segments. The number of respondents per road ranged from 15 to 25, with a total of 865 respondents surveyed across all roads covered under the work packages (i.e., Spot Improvement and Upgrades). The questionnaires explored themes such as household demographics, livelihood activities, access to infrastructure and social services, and perceptions of the proposed road rehabilitation project.

Survey Results:

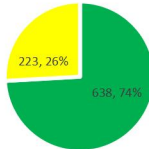
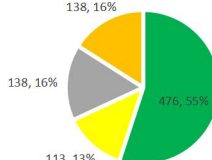
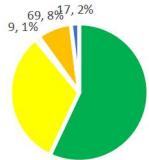
Socioeconomic Parameter	Survey Results															
Gender Distribution: Across the project locations, gender distribution reveals 54% male (467 respondents) and 46% female (398 respondents). The nearly balanced distribution reflects the gender composition of the communities and reveals active participation of both men and women in providing insights into local socioeconomic conditions. Additionally, the ESMP shall include strategies to promote gender inclusivity in hiring practices, so as to ensure that women can access skilled and unskilled labour positions traditionally dominated by men.	Gender Distribution <table><thead><tr><th>Gender</th><th>Count</th><th>Percentage</th></tr></thead><tbody><tr><td>Male</td><td>467</td><td>54%</td></tr><tr><td>Female</td><td>398</td><td>46%</td></tr></tbody></table>	Gender	Count	Percentage	Male	467	54%	Female	398	46%						
Gender	Count	Percentage														
Male	467	54%														
Female	398	46%														
Age of Respondents: The surveyed population consisted of diverse age groups, with a significant portion being elderly persons (38%) falling within the 60 – 74 age brackets. Meanwhile, 29% were teenagers or youths, 27% were middle-aged, and 6% were old aged spanning the age ranges of 15 – 39, 40 – 59, and >75 years respectively. The study findings suggest that there may be a higher proportion of elderly/older individuals within the	Age of Respondents <table><thead><tr><th>Age Group</th><th>Count</th><th>Percentage</th></tr></thead><tbody><tr><td>Teenagers/Youths</td><td>251</td><td>29%</td></tr><tr><td>Middle-Aged</td><td>329</td><td>38%</td></tr><tr><td>Elderly Persons</td><td>233</td><td>27%</td></tr><tr><td>Old Aged</td><td>52</td><td>6%</td></tr></tbody></table>	Age Group	Count	Percentage	Teenagers/Youths	251	29%	Middle-Aged	329	38%	Elderly Persons	233	27%	Old Aged	52	6%
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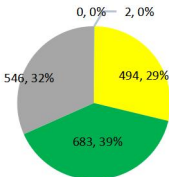
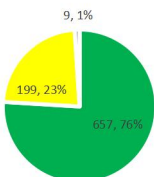
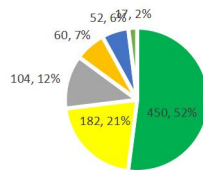
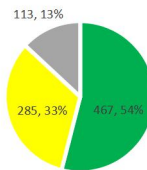
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was retrieved and analysed to estimate socioeconomic conditions within the project com

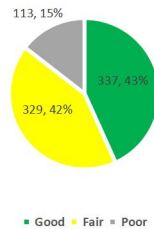
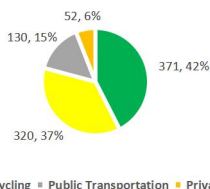
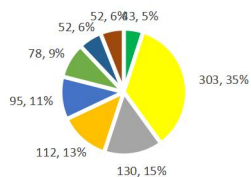
75

¹⁴ A semi-structured questionnaire was prepared and administered to 15 – 25 respondents per road. The data was retrieved and analysed to estimate socioeconomic conditions within the project communities.

Socioeconomic Parameter	Survey Results																					
project communities who could be more sensitive to certain environmental or social changes attributed to the proposed road rehabilitation activities, such as disruptions to their living environment (physical and economic displacement) or access to essential services (healthcare, social services, recreation and leisure spots). Additionally, elderly individuals are more susceptible to health risks from dust, noise, and vibrations which may likely occur as a result of the proposed road rehabilitation activities. These underscores the importance of adopting age-sensitive mitigation strategies to offset adverse impacts of the proposed rehabilitation, such as phased construction (e.g. sectionalizing civil work activities), health and safety measures and ensuring uninterrupted access to essential services. Further to the above, the 29% youth population represents a key demographic for skilled and unskilled labour. Abia RAAMP shall ensure that youths within the host communities are prioritized for job opportunities, so as to foster economic inclusion and development of local content.																						
Education & Literacy Rate: In terms of education and literacy level, the socioeconomic study indicated a significant level among the sampled population, which has positive implications for the project. Approximately 88% (752) of respondents had formal education (55% male and 45% female), with varying levels of attainment. Specifically, 40% had acquired First School Leaving Certificates (FLSC), 28% had Junior Secondary School Certificate Examination (JSSCE), 14% had O'Level Certificates, 5% had National Certificate Examination (NCE)/Ordinary National Diploma (OND), and 1% held a University Degree/Higher National Diploma. Conversely, the minority, comprising about 12% of the surveyed group, had no formal education. The prevalence of formal education supports the use of oral, written and visual communication methods for community engagement and project awareness campaigns. The varied educational attainment also implies that local labour recruitment should align with the skill levels available, offering opportunities for unskilled and semi-skilled individuals while considering capacity-building programs to address gaps. The recorded high education/literacy level of the populace could further facilitate smoother consultations, thereby fostering active participation in decision-making and ownership of the project's outcomes.	Education and Literacy Rate <table><thead><tr><th>Education Level</th><th>Count</th><th>Percentage</th></tr></thead><tbody><tr><td>FSLC</td><td>346</td><td>41%</td></tr><tr><td>JSSCE</td><td>242</td><td>28%</td></tr><tr><td>O'Level</td><td>121</td><td>14%</td></tr><tr><td>NCE/OND</td><td>43</td><td>5%</td></tr><tr><td>Degree/HND</td><td>0</td><td>0%</td></tr><tr><td>No Formal Education</td><td>104</td><td>12%</td></tr></tbody></table>	Education Level	Count	Percentage	FSLC	346	41%	JSSCE	242	28%	O'Level	121	14%	NCE/OND	43	5%	Degree/HND	0	0%	No Formal Education	104	12%
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No Formal Education	104	12%																				
Religious Affiliations: The survey findings highlighted two primary religious affiliations among respondents: 96% (830) identified as Christians, and 4% (35) practiced the African Traditional Religion (ATR).	Religious Affiliations <table><thead><tr><th>Religion</th><th>Count</th><th>Percentage</th></tr></thead><tbody><tr><td>Christians</td><td>830</td><td>96%</td></tr><tr><td>Muslims</td><td>0</td><td>0%</td></tr><tr><td>ATR</td><td>35</td><td>4%</td></tr></tbody></table>	Religion	Count	Percentage	Christians	830	96%	Muslims	0	0%	ATR	35	4%									
Religion	Count	Percentage																				
Christians	830	96%																				
Muslims	0	0%																				
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Marital Status: Regarding marital status, 44% (381) of respondents were married, 32% (277) were single, and approximately 18% (156) were widows or widowers. Additionally, about 6% (52) of respondents reported being divorced. With 44% of respondents married, the majority of households are likely to have dependents, making it essential to consider the broader family-level impacts of construction activities, such as disruptions to mobility and access to services.	Marital Status <table><thead><tr><th>Marital Status</th><th>Count</th><th>Percentage</th></tr></thead><tbody><tr><td>Single</td><td>277</td><td>32%</td></tr><tr><td>Married</td><td>381</td><td>44%</td></tr><tr><td>Widows/Widowers</td><td>156</td><td>18%</td></tr><tr><td>Divorced</td><td>52</td><td>6%</td></tr></tbody></table>	Marital Status	Count	Percentage	Single	277	32%	Married	381	44%	Widows/Widowers	156	18%	Divorced	52	6%						
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Family Pattern & Size: The socioeconomic analysis indicates that the																						

Socioeconomic Parameter	Survey Results																								
extended family structure is the predominant family pattern along the project corridors, with an average of approximately 81% of respondents practicing this system. Nuclear family structures account for about 15% of households, while only 4% of respondents live alone (solitary/single-person household). The typical family size is large (>7 members), with most households comprising more than seven members. This implies a strong communal living dynamic and the potential for larger households to experience cumulative impacts from the project.																									
Income Levels & Livelihood Activities: The survey further revealed a varied monthly income level among the surveyed group ranging from 0 – N100,000 (74%) to N100,000 – above (26%). Primary livelihood activities consist of crop farming (55%) (i.e. cultivation of crops such as maize, yam, cocoyam, millet, groundnuts, pepper, vegetables, etc.), animal husbandry (13%), and trading (16%) within the project communities. Other socioeconomic activities in the project communities, accounting for 16% of the sampled population, included civil service/white-collar jobs, block industry, artisans/craftsmanship (e.g. welding, carpentry, etc.), palm oil processing, local quarry/sand mining, hunting and lumbering/sales of firewood. See the Figures below	Income Levels <table><thead><tr><th>Income Level</th><th>Count</th><th>Percentage</th></tr></thead><tbody><tr><td>0 - N100,000</td><td>638</td><td>74%</td></tr><tr><td>N100,000 - Above</td><td>223</td><td>26%</td></tr></tbody></table> Livelihood Activities <table><thead><tr><th>Livelihood Activity</th><th>Count</th><th>Percentage</th></tr></thead><tbody><tr><td>Crop Farming</td><td>476</td><td>55%</td></tr><tr><td>Animal Husbandry</td><td>138</td><td>16%</td></tr><tr><td>Trading</td><td>138</td><td>16%</td></tr><tr><td>Others</td><td>113</td><td>13%</td></tr></tbody></table>	Income Level	Count	Percentage	0 - N100,000	638	74%	N100,000 - Above	223	26%	Livelihood Activity	Count	Percentage	Crop Farming	476	55%	Animal Husbandry	138	16%	Trading	138	16%	Others	113	13%
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 The varied monthly income levels and primary livelihood activities indicate the economic dependence of the surveyed group on natural resources and agricultural activities. The proposed road rehabilitation may affect these livelihoods through land acquisition, changes in access to resources, or disruptions to traditional economic activities. Additionally, vulnerable groups, such as those with lower income levels or reliant on specific livelihood activities (e.g., crop farming, artisans), may be disproportionately impacted by the project. Currently, AB-RAAMP is developing a RAP to capture and address issues related to physical and economic displacement attributed to the proposed road rehabilitation activities.																									
Health Conditions: In the aspect of health and prevalent disease conditions in the project areas, Malaria and Typhoid were the most predominant ailments, affecting 57% and 32% of respondents, respectively. Diarrhoea (1%) was reported, while Cough (8%) and Respiratory Disturbances (2%) were also reported. Construction activities can exacerbate existing health conditions by creating conditions for water stagnation (mosquito breeding sites) or increasing dust and air pollution (aggravating respiratory problems). The ESMP includes dust suppression measures, proper drainage systems, and regular site maintenance to mitigate these impacts. The findings emphasize the importance of providing healthcare provisions for construction workers, including protective measures against malaria and other prevalent diseases in the area. This could involve distributing repellents, ensuring access to potable water, and providing onsite medical assistance.	Health Conditions <table><thead><tr><th>Health Condition</th><th>Count</th><th>Percentage</th></tr></thead><tbody><tr><td>Malaria</td><td>493</td><td>57%</td></tr><tr><td>Typhoid</td><td>277</td><td>32%</td></tr><tr><td>Diarrhoea</td><td>69</td><td>8%</td></tr><tr><td>Cough</td><td>17</td><td>2%</td></tr><tr><td>Respiratory Diseases</td><td>9</td><td>1%</td></tr></tbody></table>	Health Condition	Count	Percentage	Malaria	493	57%	Typhoid	277	32%	Diarrhoea	69	8%	Cough	17	2%	Respiratory Diseases	9	1%						
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Socioeconomic Parameter	Survey Results									
Access to Financial Services: Further to the above, the study unveiled an inadequacy in access to financial services among the surveyed residents of the project communities. Approximately 32% of respondents are categorized as "unbanked," indicating a lack of access to formal banking services. These individuals rely hugely on their personal savings and traditional money lending facilitated through door-to-door collection methods. Furthermore, approximately 68% of households fall into the "underbanked" category, relying on alternative financial mechanisms. These alternatives include Point of Sale (POS) services, barter trading, Microcredits and the services of Micro finance Institutions (MFIs). The observed limited access to financial services in these localities is chiefly attributed to the remote nature of the communities and their considerable distance from established banking and financial institutions.	Access to Financial Services  <table><tr><td>Availability of Commercial Banks</td><td>Microcredit & MFIs</td></tr><tr><td>Point of Sale (POS) Services</td><td>Traditional Door-to-Door Lending</td></tr></table>	Availability of Commercial Banks	Microcredit & MFIs	Point of Sale (POS) Services	Traditional Door-to-Door Lending					
Availability of Commercial Banks	Microcredit & MFIs									
Point of Sale (POS) Services	Traditional Door-to-Door Lending									
Assessment of Road Conditions: The socioeconomic survey revealed that the majority of respondents (76%) rated the road infrastructure within and around the project communities as "poor," while 23% considered it "fair," and only 1% described it as "good." These findings/opinions reflect significant variability in road quality and maintenance across the project areas. It reveals a widespread dissatisfaction with existing road conditions and highlights the critical need for the proposed rehabilitation.	Assessment of Road Conditions  <table><tr><td>Poor</td><td>Fair</td><td>Good</td></tr></table>	Poor	Fair	Good						
Poor	Fair	Good								
Access to Potable Water & Sanitation: Access to water in the project communities is predominantly from streams and rivers (52%), followed by commercial boreholes (21%), hand pumps (12%), and wells (7%) (See the Figure below). In some areas, private boreholes (6%) and water vendors (2%) are additional water sources. Regarding sanitation, the majority of households rely on pit toilets (54%), while open defecation in nearby bushes is common (33%). Only a small proportion of households (13%) reported using water closets for sanitation. The reliance on streams, rivers, and other non-potable sources highlights a significant risk of waterborne diseases, particularly during construction activities that may contaminate these sources e.g. construction/installation of CDS.	Access to Potable Water  <table><tr><td>Streams/Rivers</td><td>Commercial Boreholes</td><td>Hand Pumps</td></tr><tr><td>Wells</td><td>Private Boreholes</td><td>Well Vendors</td></tr></table> Sanitation Facilities  <table><tr><td>Pit Toilets</td><td>Open Defecation</td><td>Water Closet</td></tr></table>	Streams/Rivers	Commercial Boreholes	Hand Pumps	Wells	Private Boreholes	Well Vendors	Pit Toilets	Open Defecation	Water Closet
Streams/Rivers	Commercial Boreholes	Hand Pumps								
Wells	Private Boreholes	Well Vendors								
Pit Toilets	Open Defecation	Water Closet								
Assessment of Waste Management Methods: At the household level, waste is primarily disposed of through informal methods, including dumping in nearby bushes or rivers, drainages and open burning. In some cases, organic household waste is repurposed for agricultural use, such as improving soil quality through composting or feeding domestic animals like										

Socioeconomic Parameter	Survey Results																								
dogs. From an administrative perspective, the Abia State Environmental Protection Agency (ASEPA) is officially responsible for waste management. However, community members report minimal impact or presence and coverage of their services. There is also a notable lack of formal or informal communication regarding waste management expectations or best practices.																									
Access to Social Services (Education and Healthcare): The socioeconomic survey revealed mixed perspectives on access to education and healthcare services within the project communities. Schools in these communities are operational but widely perceived as insufficient to meet local educational needs. Similarly, access to public healthcare facilities received varied ratings: 39% of respondents rated it as "good," 38% as "fair," and 23% as "poor". Despite these challenges, most communities reported having functional primary healthcare centers. Communities closer to urbanized areas, such as Umuanyaso and Umuegwere Roads in Aba South LGA, Apumiri–Avo–Amibo Express, and Eziana–Amibo Ring Road in Umuahia South, benefit from proximity to secondary healthcare facilities within a 5–10 km radius. These include notable institutions like the Abia State University Teaching Hospital (ABSUTH), Aba, Seventh-day Adventist Hospital, Ogbor Hill, Federal Medical Centre (FMC), Umuahia, and General Hospital Amachara.	Access to Health Services <table><thead><tr><th>Rating</th><th>Count</th><th>Percentage</th></tr></thead><tbody><tr><td>Good</td><td>337</td><td>43%</td></tr><tr><td>Fair</td><td>329</td><td>42%</td></tr><tr><td>Poor</td><td>113</td><td>15%</td></tr></tbody></table>	Rating	Count	Percentage	Good	337	43%	Fair	329	42%	Poor	113	15%												
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Local Mobility and Transportation Patterns: The survey indicates that walking (42%) and cycling (37%) are the predominant means of transportation among residents of the project communities. These preferences are largely influenced by the poor condition of the roads, which limits the use of motorized vehicles. Public transportation (15%) and private vehicles (6%) are the least utilized, thus reflecting limited access to or affordability of these options.	Local Mobility and Transportation <table><thead><tr><th>Mode</th><th>Count</th><th>Percentage</th></tr></thead><tbody><tr><td>Walking</td><td>371</td><td>42%</td></tr><tr><td>Cycling</td><td>320</td><td>37%</td></tr><tr><td>Public Transportation</td><td>130</td><td>15%</td></tr><tr><td>Private Vehicles</td><td>52</td><td>6%</td></tr></tbody></table>	Mode	Count	Percentage	Walking	371	42%	Cycling	320	37%	Public Transportation	130	15%	Private Vehicles	52	6%									
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Private Vehicles	52	6%																							
Assessment of Stream Usage: The socioeconomic survey and interviews conducted at streams along the roads revealed diverse uses of these water bodies by community members. Approximately 5% of respondents rely on the streams as a source of drinking water, while 35% primarily use them for domestic activities, including laundry, bathing children, dishwashing, and cleaning motorbikes. The streams also serve as critical resources for fishing (15%) and irrigation farming (13%). Additional uses include recreational swimming (11%), sand mining (9%), livestock watering (6%), and palm oil processing (6%). There is need to mitigate potential impacts on water quality and accessibility to ensure that the streams remain safe and accessible for these essential activities during and after the project, as construction activities could introduce sedimentation, pollution, or physical barriers that disrupt these vital uses.	Assessment of Stream Usage <table><thead><tr><th>Activity</th><th>Count</th><th>Percentage</th></tr></thead><tbody><tr><td>Domestic Activities</td><td>303</td><td>35%</td></tr><tr><td>Fishing</td><td>130</td><td>15%</td></tr><tr><td>Irrigation</td><td>112</td><td>13%</td></tr><tr><td>Recreational Swimming</td><td>95</td><td>11%</td></tr><tr><td>Sand Mining</td><td>78</td><td>9%</td></tr><tr><td>Livestock Watering</td><td>52</td><td>6%</td></tr><tr><td>Palm Oil Processing</td><td>52</td><td>6%</td></tr></tbody></table>	Activity	Count	Percentage	Domestic Activities	303	35%	Fishing	130	15%	Irrigation	112	13%	Recreational Swimming	95	11%	Sand Mining	78	9%	Livestock Watering	52	6%	Palm Oil Processing	52	6%
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CHAPTER FIVE - POTENTIAL IMPACTS AND MITIGATION MEASURES

5.1 Methods and Techniques in Assessing the E&S Risks and Impacts of the Proposed Road Rehabilitation Activities

The methodology and techniques used for identifying, assessing the potential E&S risks and impacts for the proposed roads rehabilitation in 11 LGAs under Phase 2 Intervention for the AB-RAAMP involved a “5-Step approach for impact identification in line with the Leopold Matrix. See Figure 16. The 5 steps applied are as follows.

Step 1: Impact Identification - Interaction between project activities and environmental and social sensitivities

Step 2: Qualification of impacts positive/negative, Direct/Indirect/ Short/Long term, Reversible/Irreversible

Step 3: Rating of Impact Likelihood

Step 4: Degree of Impact Significance - Major, Moderate, Moderately High, Moderately Low

Step 5: Impact Assessment Matrix.

Step 1: Identification of Potential Impacts

Potential impacts were determined based on anticipated interactions between project activities and major environmental and social sensitivities. The identification was done through technical examination of the scope and nature of construction works required, previous experience on similar jobs, concerns raised by stakeholders during focused group discussions and public consultations, and interactions with professionals and experts in the field. The environmental and social sensitivities likely to be affected by project activities are outlined below.

Environmental Components/Sensitivities considered included: Air Quality, Noise (Vibrations, Sound Waves, etc.), Surface water Quality, Ground water Quality, Soil Quality, Terrestrial habitats including fauna and flora.

Social Component/ Sensitivities considered included: Grievance redress and community affairs, Community health and safety, Economic activities, Employment, Education, Gender Inclusion, Land use pattern, Security risks, Property rights, Transport and traffic, religious activities, Cultural Resources and Involuntary Resettlement, Vulnerable Groups and Persons Living with Disability.

Step 2: Categorization of Impacts

In order to further qualify the impacts of the various project activities on the environment, the identified impacts were characterized based on the following beneficial, adverse, direct, indirect, cumulative, reversible, irreversible, residual, short-term and long-term impacts

Step 3: Rating of Impact Likelihood

This is an assessment of the probability of the effect occurring. Table 24 below illustrates evaluation/rating based on probability, likelihood and frequency of effect occurring.

Table 24: Likelihood of Occurrence of Impact

Impact Probability	Likelihood	Frequency
High probability (80-100%)	A very likely impact	Very frequent impacts
Medium high probability (60-79%)	A likely impact	Frequent impacts
Medium probability (40-59%)	A possible impact	Occasional impacts
Medium low probability (20-39%)	An unlikely impact	Few impacts
Low probability (0-19%)	A very unlikely impact	Rare impacts

Step 4: Degree of Significance

At this stage, the impact rating is determined based on its significance/potential consequence. Table 25 below shows the impact significance with associated impact ratings.

Table 25: Impact Significance with Associated Impact Ratings

Impact Significance	Impact Ratings
Major Significance	Major Impact
Moderate Significance	Moderate Impact
Minor Significance	Minor Impact
Negligible Significance	Negligible Impact

Step 5: Impact Assessment Matrix

The final impact assessment was rated based on the likelihood of occurrence and potential consequence of the impact; after the rating of each impact, the determination of mitigation measures followed. Only moderate and major impacts were considered for impact mitigation. Continuous improvement practices will address low impacts. Figure 16 shows the Leopold Impact Risk Assessment Matrix.

	Potential consequences					
Likelihood	Positive	Negative				
		Hardly any	Little	Considerable	Great	Extreme
High		Moderate	Moderate	Major	Major	Major
Medium high		Minor	Moderate	Moderate	Major	Major
Medium		Minor	Minor	Moderate	Moderate	Major
Medium low		Negligible	Minor	Minor	Moderate	Moderate
Low		Negligible	Negligible	Minor	Minor	Moderate

Figure 16: Leopold Impact Risk Assessment Matrix

5.2 Potential Environmental and Social Impacts of the Proposed Project

The activities under the proposed intervention work packages (Spot Improvement and Upgrades) will lead to potential impacts on the environmental and socioeconomic status of the project locations. Some of these impacts will be beneficial and some negative. See Sub-sections 5.2.1 and 5.2.2 respectively.

5.2.1 Positive E&S Impacts

The proposed rural road rehabilitation is expected to bring significant environmental and social benefits to the project areas. These benefits, which contribute to the overall sustainability of the initiative, include but are not limited to the following:

- Proper drainage systems and culvert construction will mitigate risks of erosion and flooding. This is particularly relevant for locations such as Obinulo – Umumaduako – Umumezie Road, Bende Etitulo – Ubibia – Ndiwo – Itumbuzo – Okopedi – Ntalakwu Road, Eziana – Amibo Ring Road, Nkwo Elechi – Umuagu – Umuorukwu – Osusu – Amaukwa Road, Amaokwelu Alayi Junction – Amankalu – Akoli Imenyi, Ezeukeu – Ugwueke Road, etc.
- Priming and thin asphaltting of the roads will enhance their surface integrity and structural durability (longevity). This reduces their susceptibility to erosion and minimizes fugitive dust generation, particularly during the operation phase.

- The rehabilitation of rural roads will facilitate the efficient transportation of agricultural products to markets, reducing post-harvest losses, thereby promoting sustainable farming practices and increasing economic opportunities for farmers.
- The proposed road rehabilitation will improve access to essential social services including schools, churches and hospitals, thereby contributing to the overall social well-being of the project affected communities.
- Upgraded transportation infrastructure will improve mobility, reduce travel time, and lower transportation costs for individuals and businesses.
- Improved road infrastructure will enable women to access markets, education, and healthcare more easily, contributing to their empowerment. Women and children who previously traversed narrow and rugged paths for water and other resources will benefit from safer and more accessible water points. Key areas include Obinto – Atani Road and Amorji – Ngbedeala – Ntigha – Umukalu – Mbawsi.
- Short-term and long-term job opportunities will arise from the project. These include direct employment for local labour during construction and indirect opportunities through the provision of goods and services to technical teams, such as food kiosks, local security services, and equipment handling.

5.2.2 Adverse E&S Risks and Impacts

The adverse E&S risks and impacts associated with the proposed project and their corresponding mitigation measures are provided in Table 26–29 below.

Table 26: Potential Negative Environmental and Social Impacts during Pre-Rehabilitation Phase

PRE-REHABILITATION PHASE				
The Pre-Rehabilitation Activities are: • Site clearance on either side of the centreline at designated roads (Spot Improvement and Upgrades) – including the removal of structures in the ROW. • Site marking and pegging, • Mobilization of equipment and workers to site, and staging of campsite • Removal of topsoil/unsuitable materials to sub-grade level • Dewatering • Excavation of fill materials from approved Borrow Pits • Material sourcing • Siting and Construction of Staging Area				
Component	Adverse E&S Risks	Description of Potential Adverse Environmental and Social Risks and Impacts	Impact Rating	Mitigation Measures
Environment	Air Pollution	• The generation of dust is expected to be minimal but may occur during civil work activities, particularly in the following scenarios: i) site clearing along the selected roads, ii) Cleaning of workers' campsites, and iii) preparation of equipment staging areas, especially during the dry season.	Minor	• Watering of exposed soil surfaces and work areas, to suppress dust emissions. • Distribute PPEs such as nose masks or respirators to workers/PAPs.
		• Transportation of construction materials to project sites, particularly via roads in Isiala Ngwa LGA (e.g., Amorji – Ngbedeala – Ntigha – Umukalu – Mbawsi, and Amiyi Nvosi – Ometeghi – Umuada Nvosi – Omuapu Road), which have recently been graded, as well as roads like Umuariama – Ahiaba Ubi – Nkwo Elechi in Obingwa LGA, currently under construction, may lead to moderate to high fugitive dust generation¹⁵ due to their unpaved and disturbed surface conditions. Additionally, offloading of materials such as sand, gravel, and cement at work areas can cause short-term dust generation. Dust inhalation could cause temporary respiratory issues, such as sneezing, or worsen pre-existing conditions like asthma among workers and PAPs.	Moderate	• Install speed limiting devices in vehicles • Conduct offloading in designated areas away from sensitive receptors. • Cover trucks conveying cement and sand with tarpaulins. • Provide workers/PAPs with PPEs and enforce its use. Also, verify existing health conditions of workers prior to engagement.
		• Carbon emission from exhaust fumes of vehicles carrying construction materials to work/project areas may also occur.	Moderate	• Use vehicles, plants and equipment that are in good condition generally less than 5 years old
	Loss of Vegetation and Potential Surface Erosion	• Vegetation and palm overgrowth have rendered parts of some project roads impassable. Extensive clearing in these areas may result in the loss of beneficial flora and economic crops within the ROW (as addressed in the RAP), and increase risks of surface erosion and rill formation. Notable locations include all roads in Upgrade Lot 4, as well as roads in Spot Improvement Lots 1, 2, and 3 such as Amaokwelu–Amankalu–Akoli Imenyi and Umuafiaka–Amakama corridor.	Major	• Limit clearing activities to the exact width necessary for road rehabilitation, avoiding unnecessary removal of vegetation outside the ROW. • Implement erosion control methods e.g. silt fences, erosion control blankets around cleared areas. • Where feasible, implement replanting programs in designated areas post-construction to offset vegetation loss.
	Noise	• Increase in noise levels above the NESREA National Environmental (Noise Standard and Control) (55dB) is envisaged as work equipment are being conveyed to project sites and during the operation of project vehicles within and around the project areas.	Major	• Where possible retrofit all hired vehicle exhausts with mufflers/silencers to minimize noise.
	Surface Water Contamination	• The suction and removal of water from potholes during the dewatering activity may potentially lead to the discharge of sediments and pollutants into nearby water bodies, impacting surface water quality.	Moderate	• Install appropriate filters or geotextiles in dewatering systems to trap sediments and

¹⁵ It is noteworthy that most roads earmarked for intervention under the project are not prone to dust generation due to the compacted nature of the soil and its fairly damp conditions, hence they are not prone to dust generation as vehicles traverse.

PRE-REHABILITATION PHASE				
	Waste Generation	Site clearing activities may lead to the generation of brush piles¹⁶ and vegetative debris (e.g., grass clippings, leaves, brush pruning, tree limbs and stumps). Additionally, the removal of top soil and unsuitable materials may also generate heaps of removed top soil/earth material.	Minor	pollutants before discharging water. Implement WMP
Social	Traffic Congestion¹⁷	- Temporary traffic congestion is expected along 5–10% of access roads leading to the project areas, especially near rural markets where roads start or end. Congestion may occur during material transport, particularly when trucks are navigating or reversing, and will mostly happen during peak hours, market days, and festive periods. Likely roads may include Okikpe–Umuana–Ikot Ekpene, Umuahia–Ohafia, Afara Ukwu–Eziama, and areas around Ori Ngodo and Nkwo Elechi Markets. Minor travel delays may occur. (See Traffic Management Plan in Annex 8.) - Traffic is also envisaged peradventure heavy-duty trucks carrying construction equipment breaks down on these access roads.	Moderate	- Implement Traffic Management Plan (TMP) (See Annex 8) - Implement temporary traffic control measures, such as cones, barriers, and flaggers, to guide traffic through the construction zone safely and efficiently.
	Grievances	- Farm owners and roadside businesses, may express concerns or grievances from site clearing activities. - Grievances may also arise due to physical and economic displacement resulting from site clearance along the road's centreline and the reclamation or removal of structures within the ROW.	Minor	- Engage with affected farm owners, traders, and other stakeholders early in the project to inform them about the timeline and scope of activities, addressing concerns and grievances proactively. - Implement GRM - Provide fair and prompt compensation for any physical or economic displacement caused by the site clearance, in line with the RAP.
	Possibility of Uncovering Chance Finds	Possibility of uncovering chance finds during excavation of unsuitable material in the road sections to sub-grade level.	Moderate	Implement Chance Find Procedures as part of the PCRMP (See Annex 13).
	Security	Tendency of theft and vandalism of equipment during staging, particularly in communities with a history of insecurity or banditry, such as Obinulo – Umumaduako – Umumezie, or in areas showing signs of youth unrest.	Moderate	Engage local security personnel, such as community vigilantes, to ensure safety and support during the mobilization of workers and equipment to the site and the establishment of staging areas.
	Community Health and Safety	Transport of procured construction materials to work sites, may predispose commuters, pedestrians, etc. to road accidents. Possible accidents may be as a result of equipment/material fall from trucks, side collision, etc. or in areas where children loiter and play around or around high socioeconomic areas e.g. markets, churches, schools.	Major	- Train drivers to reduce vehicle speed while driving through built up areas at the project communities, nodal settlements, etc. - Consider rescheduling transport of materials at off peak hours or at night.
	Livestock Road Kills	Livestock roadkill may occur as vehicles and heavy-duty trucks move through some project community where open grazing of livestock is practiced e.g. Amorji – Ngbedeala – Ntigha – Umukalu – Mbawsi	Moderate	
	Occupational Health & Safety Incidents	- Likelihood of accident occurring due to Unsafe Conditions (<i>Improperly stacked, fastened and secured materials with potential to collapse or work environment</i>) and Unsafe Behaviours (<i>e.g. if the appropriate PPEs are not worn, horseplay, etc.</i>). Offloading of materials (bricks, cement, paints, wood, iron rods, etc.) from trucks may present significant OHS risks and impacts during the pre-rehabilitation phase of this project. - Workers may be exposed to excessive dust and noise levels, potentially causing respiratory or hearing issues.	Moderate	Conduct OHS training and education; HazCom, routine JHA/PHA; Implement site-specific OHSMP (See Annex 6).

¹⁶ A brush pile is a mound or pile of appropriate woody material fashioned by piling brush and loose branches on top of a base comprised of larger logs or other natural materials.

¹⁷ It is important to state that traffic congestion during the pre-rehabilitation phase will occur largely on the access roads leading to the proposed roads selected for **a) Backlog Maintenance b) Spot Improvement, and c) Upgrading**. This is because the access roads are more motorable than the selected roads and are used by vehicles, motorcycles, bicycles etc. Because equipment will need to be moved by accessing sites through these roads, traffic congestion is envisaged to be low – moderate depending on the number of vehicles, size of vehicles, width of the roads, need to park, load or offload, period of the day, festivity within the area etc.

Table 27: Potential Negative Environmental and Social Impacts during Rehabilitation Phase

REHABILITATION PHASE				
Component	Adverse E&S Impacts	Description of Potential Environmental and Social Risks & Impacts	Potential Consequence	Mitigation Measures
Environment	Soil Contamination and Degradation	Leaks from stacked equipment containing lubricants, as well as the use of priming and thin asphaltting materials during roadworks, may release harmful substances into the soil, particularly in unpaved or unprotected areas, leading to localized contamination and degraded soil quality.	Moderate	- Conduct regular maintenance to prevent leakages - Store lubricants and chemicals in sealed, labeled containers under covered, bunded areas and install impermeable surfaces (e.g., concrete). - Use drip pans or trays beneath parked equipment to collect leaks or drips - Apply priming and asphalt materials only in designated, controlled sections, avoiding overspills
	Impacts on Natural Habitats	Excavation activities (e.g. for borrow pits) may disrupt local habitats (e.g. edaphic fauna and fossorial organisms such as squirrels, grasscutters, etc.).	Moderate	- Conduct pre-construction ecological surveys to identify and mark sensitive habitats or burrows - Limit excavation to designated work areas, avoiding unnecessary vegetation and soil disturbance.
	Impact on Surface Water Quality	- Construction of Cross Drainage Structures and sediment-laden runoff can disrupt the streambed and banks, reduce water quality, leading to the loss of vegetation and affect critical habitats for fish, amphibians, and other aquatic organisms. - Improperly designed culverts or bridges at locations such as Lot 1 (Okagwa Stream along Okagwe – Nkwebi – Onwuwanyanwu) and Lot 4 (Ekweze Stream along Agalabano – Umu Central – Ekeoba) may alter water flow patterns increasing the risk of sectional flooding,		- Design drains to mimic natural drainage patterns and minimize disruption to local habitats. - Minimize sedimentation by using silt fences, sediment traps, or other erosion control measures. - Ensure that the invert levels of culverts and cross-drainage structures align closely with the natural streambed elevation.
	Flooding and Erosion	Runoff from the upgraded drainage system at the Uturu section of the Eziana–Amibo Ring Road may exacerbate flooding and erosion along Uturu Road due to the community's low-lying terrain and inadequate drainage infrastructure.	Major	Construct a concrete-lined drainage system, approximately 1 km in length, extending from Uturu Junction (off Eziana – Amibo Ring Road) up to the Iyi Ama Stream, to effectively manage runoff, improve water flow, and minimize flooding and erosion impacts on the community.
	Air Pollution	Civil works will likely degrade air quality in the project area due to emissions from machinery (e.g., NOx, CO, SOx, hydrocarbons, and particulates) and dust from activities like road grading, asphaltting, and material handling. These pollutants can exacerbate existing respiratory conditions e.g. asthma, in workers and community members.	Moderate	Machines could be turned off when not in use to improve its energy efficiency.
			Major	- Regular water spraying on roads and construction sites to suppress dust. - Maintain and service machinery to minimize exhaust emissions. - Use of low-emission equipment and

REHABILITATION PHASE				
				vehicles (generally <3years old) • Cover materials like cement and gravel using tarpaulin during transport and storage to prevent dust dispersion. • Ensure regular air quality monitoring to ensure pollutant levels remain within acceptable limits. • Restricting construction activities near residential areas to daytime hours only (typically from 8am to 5pm, to reduce exposure).
	Potential for Water Borne Diseases	• Project activities may impact water and sanitation conditions, potentially creating stagnant water pools that could increase the risk of waterborne diseases.	Moderate	• Ensure proper design and construction of drainage systems to prevent stagnation of water and promote effective water flow away from the project area.
	Sedimentation - Clogging and Blockages of Drainages	• Improper or incomplete backfilling after installing drainage systems may leave piles of soil that, over time, can erode or be displaced by rain, wind, or human activities. This can lead to sedimentation within the drainage channels, obstructing water flow.	Moderate	• Ensure proper backfilling of installed drainages and implement a maintenance schedule to keep drainage channels clear of debris, vegetation, and sediment build-up, ensuring continuous water flow.
	Poor Environmental Sanitation	• Construction workers may engage in open defecation, resulting in poor environmental sanitation and potential health risks.	Moderate	• Provision of gender specific mobile toilets (Porta-Potty) and enforcement of their use by construction workers • Engage a licensed waste management contractor to desludge and disinfect the units at least once a week, or more frequently depending on use.
	Waste Generation	• waste generation, including debris, topsoil, disused materials, empty containers, organic waste such as food etc. which could lead to environmental pollution and public health concerns if not properly managed	Moderate	• Implement WMP (See Annex 5) to segregate, recycle, and dispose of construction waste responsibly
	Land Degradation from the Excavation of Borrow pits	• The excavation of earth from existing or new borrow pits may lead to land degradation and increased susceptibility to erosion, especially in areas already affected or where previous borrow pits were not properly reclaimed. If not properly managed, borrow pits can also become informal dumping sites for construction waste, further exacerbating environmental degradation.	Major	• As much as possible, refrain from gathering earth materials from borrow pits that are susceptible to erosion. • Deploy erosion control measures around borrow pits to mitigate widening and prevent additional erosion. Refer to the BPMP (Annex 7)
	Noise	• Noise levels during activities operation of machinery and equipment may exceed the NESREA National Environmental (Noise Standard and Control) limit of 55 dB, could result in adverse health effects such as include headaches, sleep disturbances, hearing impairments, and tinnitus, with older individuals and other vulnerable groups being particularly at risk.	Major	• Use modern, well-maintained machinery with lower noise emissions. Consider equipment designed to meet low-noise operation standards. • Early notification of community on road rehabilitation schedule. Additionally, restrict noisy activities to daytime hours (e.g., 9am – 5pm) to minimize disturbance. • Avoid simultaneous operation of multiple noisy machines in built up areas.

REHABILITATION PHASE				
				• Ensure all machinery is regularly serviced and maintained. Turn off machines when not in use
Social	Restricted access along roads being rehabilitated	• Road rehabilitation activities may result in restricted access to roads, impacting road users to reach essential services such as healthcare, social services, village square and leisure spots. This is particularly significant for elderly individuals within the project communities, who are more vulnerable to disruptions. • Also, considering that most of the roads slated for rehabilitation serve as primary routes to local markets, the impact on women who predominantly engage in trading activities in these markets could be significant. This impact is likely to be more pronounced on major market days, which occur on a 4 or 8-day cycle, corresponding to the traditional market schedules (<i>Eke, Ori, Afor, and Nkwo</i>).	Moderate	• Early notification of PAPs and road users. • Adopt a phased approach to the road rehabilitation e.g. sectionalize works into manageable portions to allow for a segment of the roads to be undertaken at a time so as to ensure uninterrupted access for PAPs. • Create detours/diversions or use road signs to redirect traffic to existing alternative access routes which have been identified for the roads. • Consider carrying out other civil works such as drainage construction which may not have direct impacts on the road users on market days.
	Physical and economic displacement	• Reclaiming the ROW could involve the removal or relocation of market shops, electric poles, and encroaching sections of farms, thereby potentially impacting livelihoods. Similarly, the proposed installation of a culvert at the lowest point along the Nkwo Elechi-Umuagu-Umuorukwu-Osusu-Amakwa Road could lead to intermittent flooding of farmland in the area. Considering that this location is already naturally prone to flooding, culvert installation may increase water flow particularly during the rainy season, resulting in crop losses, damage to agricultural produce, and economic displacement for affected farmer or landowner.	Major	• Early notification of PAPs • Implement RAP and compensation to affected individuals or communities • Implement livelihood restoration programs for identified vulnerable groups • Ensure culverts are adequately sized to handle peak water flow during the rainy season. • Incorporate proper culvert outlets and water diversion channels to prevent water stagnation and overflow onto farmland. • Implement fair compensation for the farmer/land owner whose crops or land may be affected
	Impact to Physical Cultural Resources (PCR)	• Expansion of the shoulders of existing road and installation of drainages could result in potential impacts to memorial tomb stones, sacred trees and grounds (e.g. Mbara) and shrines during road rehabilitation along some Upgrade Roads (such as Lot 1 – Achara – Okpo – Nkporo – Ututu, Sameke Junction – Amaraughoghu, Lot 4 – Ogbodioriloku – Umuchiche – Mbaraukwu, Agalabano – Umuhu Central School – Ekeoba); and Spot Improvement Roads (such as Lot 1 - Ozara Market Junction – Amaoku Alayi – Ugwueke Road; Lot 2 - Alayi – Ezeukwu Road, Ezeukwu – Ugwueke Road; Lot 3 - Ahiaukwu – Amangwo – Umuajata – Umudere – Amakama). • The rehabilitation of the Ogbodioriloku-Umuchi- Mbaraukwu road, including paving or asphaltting the square, could disrupt its traditional function as a gathering space for festivals and community meetings. The hard-asphalted surface may also increase safety risks during celebrations, as it could lead to a higher likelihood of injuries from falls during traditional dances and gyrations. Additionally, construction activities may damage culturally significant trees, potentially undermining their importance in Ekpe rituals.	Major	• Implement PCRMP • Explore the option of adjusting the road alignment to the left or right, as needed, to completely avoid interference with PCR. • Establish clear exclusion zones around sacred areas and communicate them to the Contractor workers. • Realign the main road to bypass/evade the Mbara village square entirely while maintaining its connection to the original course at the Ogbodi-Ukwu Mbara Junction. • Where possible, preserve the sacred

REHABILITATION PHASE				
		Possibility of uncovering chance finds during excavation of unsuitable material in the road sections to sub-grade level.		trees and ensure that the village square remains untouched by the proposed road rehabilitation activities. Implement Chance Find Procedures as part of the PCRMP
	Potential Impact on Power Infrastructure	The relocation of power distribution poles may be required during road shoulder expansions or drain construction along specific routes, such as Sameke Junction – Amaraughoghu (Upgrade; Lot 2), Agalabano – Umuhu Central School – Ekeoba (Upgrade; Lot 4), and Ahiaukwu – Amangwo – Umuajata – Umdere (Spot Improvement; Lot 3). This process could result in damages to infrastructure or temporary power outages, potentially leading to grievances from relevant government agencies (MDAs), electricity companies responsible for managing/monitoring the affected infrastructure, and operators of local businesses that rely on a stable power supply.	Moderate	- Early follow-up engagement with Enugu Electricity Distribution Company (EEDC) to identify power infrastructure that may be affected and to coordinate relocation plans. - Notify local businesses and residents in advance about potential disruptions to power supply - Implement the relocation of power poles in phases, minimizing downtime and ensuring power is restored as quickly as possible. Schedule relocations during off-peak hours or when businesses are less reliant on power to reduce the impact on local operations. - Set up a GRC and Implement GRM to promptly address concerns or complaints from affected parties.
	Grievances and Disruption of Community Activities	- Project activities may lead to physical and economic displacement, causing dissatisfaction among PAPs. - Community members relying on streams for water may raise grievances due to contamination from sediment-laden runoff during construction activities such as stone pitching, thin asphaltting, and prime coating. - Negligence by contractors in hiring workers from host communities may result in dissatisfaction and tension. - Grievances may arise if contractors or external workers trespass or loiter near community shrines or sacred sites (e.g., Igboro Uduma Shrine, Ala Nna Sacred Tree, Umuokpu, and Arusi Ajala Shrine). - Construction activities, including drain installation and road surfacing, may temporarily block access to farmlands, entrance into public places e.g. schools, hospitals, churches, markets, or businesses, causing disruption to local livelihoods.	Major	- Implement RAP and livelihood restoration to address displacement issues, including fair and prompt compensation for lost assets, livelihoods, and economic activities. - Install silt fences, sediment traps, and other runoff control measures to prevent contamination of streams. - Schedule construction activities during dry seasons to reduce the risk of runoff into water bodies. - Require Contractors to prioritize hiring from the host community for unskilled and semi-skilled labour positions. - Conduct mandatory cultural sensitivity training for contractors and workers to respect local customs and sacred sites. - Implement PCRMP (Annex 13) - Create/construct diversions or temporary access paths to maintain connectivity to farmlands, markets, and businesses during construction. - Construct slabs or ramps over drainages to enable vehicle entry/access into public places post-construction.

REHABILITATION PHASE				
		Civil works, such as the installation of hydraulic structures (e.g., drainages) in project locations within Obingwa LGA, which have flat terrain, may result in grievances if there is no effective drainage outlet or mechanism for water discharge.		- Use phased or section-by-section construction to minimize prolonged disruptions to livelihoods. - Early notification of construction schedules - Implement GRM - Ensure hydraulic structures are designed with proper outlets to facilitate efficient water flow and prevent stagnation. - Conduct periodic cleaning and maintenance of installed drainage systems to ensure continued functionality.
	Antisocial Behaviours/ Social Vices of Labour Influx	Labour influx may lead to: - Increased pressure on community resources, such as water supply points and financial services (e.g., Point of Sale [POS] providers). - A rise in sexually transmitted infections (STIs) and diseases (STDs) may occur due to consensual and transactional sexual relationships between workers, community members, and others attracted to the project area. - The presence of workers may lead to an increase in theft, physical assaults, substance abuse, and prostitution, disrupting social order. - Migrant workers and other individuals seeking opportunities may move to the project area, straining the community's ability to meet increased demands for goods and services. - Tensions may arise between workers and the local community, particularly displaced individuals (e.g., youth or owners of affected structures or farms). Conflicts may also stem from religious, cultural, or ethnic differences, as well as misunderstandings during construction activities	Moderate	- Workers camp to include utilities (water, separate POS service providers, waste disposal point, leisure/sports facilities, etc.) and prohibition of use from community sources - Implement a strict code of conduct for all workers, outlining unacceptable behaviors such as theft, physical assaults, substance abuse, and disrespect for local customs. - Provide regular sensitization and training for workers on respecting community values, gender sensitivity, and conflict resolution. - Organize health awareness campaigns for both workers and community members, focusing on the prevention of STIs/STDs - Limit the number of migrant workers and implement a registration and monitoring system to manage their activities and movement. - Enforce and ensure proper orientation on acceptable behaviours for construction personnel on/off-site. - Engage local security personnel or community vigilantes to maintain order and address incidents of theft or antisocial behavior.
	Risk of Sexual Exploitation and Abuse	The Risk of Sexual Exploitation, Abuse, and Harassment (SEA/SH) is particularly high in the rural areas affected by the proposed road rehabilitation, where power imbalances between construction workers and local community members, particularly women and teenage/adolescent females, can lead to exploitation. In these communities, a lack of awareness about rights and available support, combined with weak or non-existent reporting systems, may prevent survivors from coming forward. For example, in isolated project areas where workers may stay in temporary camps or accommodation near local villages, the social and	Major	- Implement stringent screening processes for all workers to identify and exclude individuals with a history of SEA/SH offenses. - Ensure all contracted workers sign the Code of Conduct (CoC), and establish

REHABILITATION PHASE				
		economic dependence of local women or adolescents (including followers) on workers for access to goods, services, or employment could increase the risk of SEA/SH. Additionally, fear of retaliation or community stigma may discourage survivors from reporting incidents, further perpetuating the cycle of abuse.		strict penalties, including immediate termination, for workers found guilty of SEA/SH offenses. • Conduct regular SEA/SH awareness and sensitization workshops for all project workers and community members, emphasizing zero tolerance for such behaviors. • The SPIU must ensure that Supervisory Consultants and Contractors engage a qualified GBV focal person/officer as part of their safeguards team. • Establish a community-based GRM, with specific provisions for SEA/SH cases, ensuring anonymity and confidentiality (i.e. GBV-GRM). •
	Violence Against Children (VAC) Attributed to Labour Influx	• Children may be exposed to various forms of harassment or violence by workers especially if they are asked by such workers to help carry out a duty such as i) buy food items ii) assist them move materials/equipment, etc. during the rehabilitation phase. • Child labour and possible dropping out of school may occur as a result of the project, when families consider engaging the under aged children to hawk or sale at work sites.	Moderate	• VAC sensitization Campaign against child labour • Ensure that children and minors are not directly or indirectly on the project
	Security	• Contractors and workers may be at risk of robbery, extortion, kidnapping, and equipment theft by local gangs or criminals, particularly in areas such as Isiala Ngwa North and South LGAs and Umu Nneochi LGA, which have previously experienced insecurity. While such risks are anticipated, security conditions have significantly improved in these areas, and normalcy has largely been restored.	Moderate	• Liaise with and build positive relationships with vigilantes and community watch groups to enhance local security support and ownership of project. • Collaborate with local law enforcement agencies to enhance security presence and patrols around construction sites.
	Community Health and Safety	• Unreclaimed and abandoned borrow pits may pose safety hazards to children and other members of the local community. • If not properly designed and secured, concrete and earthen drains could present safety risks to people living near or along roads undergoing construction. • Pedestrians crossing access roads and freely grazing animals may be at risk of accidents or roadkill.	Major	• Barricade in-use borrow pits prior to reclamation. • Implement Borrow Pit Management Plan (BPMP). • Install drains in sections/batches to avoid multiple open pits, and barricade unfinished work at the end of each day. • Install speed bumps and road furniture on rehabilitated roads. • Implement Community Affairs, Safety, Health, Environment & Security (CASHES) Plan (see annex 12)
Occupational Health and Safety	OHS Impacts	In the course of the rehabilitation works, there would be a moderate to severe likelihood of the occurrence of workplace hazards. Most activities could predispose personnel to hazards. "Unsafe behaviours" ¹⁸ and	Major	Ensure drivers adhere to regulated rest periods and limit working hours to prevent fatigue-related accidents.

¹⁸ **Unsafe Behaviours** – are behaviours that expose workers or visitors to the workplace, to hazards and risks. These may include, horseplay; not undergoing training before commencing a hazardous activity; not wearing appropriate Personal Protect Equipment (PPEs), not reporting worksite incidents or accidents etc.

REHABILITATION PHASE				
		“Unsafe conditions”¹⁹ will pose a serious occupational health and safety risk. Hazardous conditions or practices likely to impact on occupational health and safety will include: - Local workers may be injured by construction machinery such as excavators, bulldozers, cranes, and trucks due to mishandling, lack of training, or mechanical failure. - Materials like steel, concrete, or tools can fall and cause serious injuries to workers e.g. during construction of CDSs - Uneven ground, wet conditions, or cluttered work areas may cause workers to slip, trip, or fall, leading to injuries. - Traffic collisions involving construction vehicles or equipment on site can cause serious injuries or fatalities. - Prolonged exposure to dust from excavation and earthworks and to high levels of noise from heavy machinery, can cause respiratory problems and hearing loss. Pre-existing conditions such as asthma, may also be triggered. - Handling materials like asphalt, bitumen, cement, or chemicals used in construction processes can expose workers to toxic substances, leading to skin irritation, respiratory issues, or long-term health conditions. - Working in hot weather conditions without proper hydration or rest can lead to heat stress, heat exhaustion, or dehydration - Long working hours e.g. driving or physically demanding tasks can lead to fatigue, impairing decision-making and increasing the likelihood of accidents and/or near misses. - Workers performing repetitive tasks, such as lifting, bending, or manual handling of heavy materials, may suffer from musculoskeletal disorders. - Tight project timelines, pressure from supervisory consultant, or conflicts with co-workers can lead to stress, affecting workers' mental well-being. - Burns from fire, explosion or leakages of hazardous materials like battery acids, explosives, etc.		- Implement on-site OHSMP; - Provide workers with appropriate PPEs such as dust masks, respirators, ear plugs, and noise-cancelling headphones; - Ensure good construction housekeeping - Implement JHA/PHA; - Safe Work Practices; - Use of PPE; - Provision for adequate caution signages - Provide break/rest periods for all workers. - Adequate training on proper lifting and manual handling procedures. - Provision of fire extinguishers

Table 28: Potential Negative Environmental and Social Impacts during Decommissioning Phase

DECOMMISSIONING PHASE				
Activities	Adverse E&S Impacts	Description of Potential Environmental and Social Risks & Impacts	Potential Consequence	Mitigation Measures
Removal of construction equipment and unused materials from the roads and staging areas. Disposal of construction spoil and waste. Rehabilitation of	Deterioration of local air quality due to generation of dusts and emission of gases.	- The generation of dust is expected to be minimal but may occur during decommissioning activities, especially during the dry season. - Carbon emission from exhaust fumes of vehicles carrying construction materials away from the project areas may also occur.	Moderate	- Watering of exposed soil surfaces and work areas, to suppress dust emissions. - Distribute PPEs such as nose masks or respirators to workers.
	Noise and vibration	Increase in noise levels above the NESREA National Environmental (Noise Standard and Control) (55dB) is envisaged as work sites are dismantled and equipment removed from the project sites.	Moderate	Where possible retrofit all hired vehicle exhausts with mufflers/silencers to minimize noise.
	Road Traffic causing delay in travel time.	Temporary traffic congestion is expected along access roads leading to the project areas, especially near the staging areas. Congestion may occur during material transport, particularly when trucks are navigating or reversing.	Moderate	- Implement Traffic Management Plan (TMP) (See Annex 8). - Implement temporary traffic

¹⁹ **Unsafe Conditions** – represent onsite situations or settings that predispose workers, supervisors, PAPs etc. to worksite hazards and risks such as uncovered ditches, naked energized electric wires or cables, exposed rotatory machinery, leaking poisonous liquids, gels etc.

DECOMMISSIONING PHASE				
Activities	Adverse E&S Impacts	Description of Potential Environmental and Social Risks & Impacts	Potential Consequence	Mitigation Measures
material borrow areas. Dismantling of temporary workers' camps of the contractor. Rehabilitation of disturbed areas including revegetation.		Traffic is also envisaged peradventure any of the trucks carrying these materials breaks down on these access roads or entrance to the staging areas.		control measures, such as cones, barriers, and flaggers, to guide traffic throughout the decommissioning period safely and efficiently.
	Gender Based Violence (GBV) due to establishment of Campsite and Influx of workers	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 major	Major	Ensure all contracted workers sign the Code of Conduct (CoC), and establish strict penalties, including immediate termination, for workers found guilty of SEA/SH offenses
	Child labour and school dropout due to opportunities for the host community to sell goods and services to construction workers.	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 major	Major	- Ensure all persons working onsite is above the working age of 18 years. - Do not allow a child below 18 years of age to either work or sell in the project area.
	Climate Change from GHG emissions from heavy duty diesel machines and equipment's	Over 270 metric tons CO₂ 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 moderate. Impact has global significance. The percentage of environmental significance is greater than 25%; but less than 50%, therefore, the impact significance is described as moderate.	Moderate	Ensure use of efficient machines with low carbon emission.
	Risk of occupational accidents (OHS), Injuries and diseases	- Likelihood of accident occurring due to Unsafe Conditions (<i>Improperly stacked, fastened and secured materials with potential to collapse or work environment</i>) and Unsafe Behaviours (<i>e.g. if the appropriate PPEs are not worn, horseplay, etc.</i>). Loading of spoils and materials (bricks, cement, paints, wood, iron rods, etc.) into trucks may present significant OHS risks and impacts during the decommissioning phase of this project. - Workers may be exposed to excessive dust and noise levels, potentially causing respiratory or hearing issues.	Moderate	- Ensure drivers adhere to regulated rest periods and limit working hours to prevent fatigue-related accidents; - Implement on-site OHSMP; - Provide workers with appropriate PPEs such as dust masks, respirators, ear plugs, and noise-cancelling headphones; - Ensure good construction housekeeping; - Use of PPE; - Provision for adequate caution signages. - Adequate training on proper lifting and manual handling procedures. - Provision of fire extinguishers
	Solid waste generation in construction sites	waste generation, including debris, disused materials, empty containers, organic waste such as food etc. which could lead to environmental pollution and public health concerns if not properly managed	Moderate	Implement WMP (See Annex 5) to segregate, recycle, and dispose of construction waste responsibly

Table 29: Potential Negative Environmental and Social Impacts during Operation Phase

OPERATION PHASE				
Component	Adverse E&S Impacts	Description of Potential Environmental and Social Risks & Impacts	Potential Consequence	Mitigation Measures
Environment	Weed Overgrowth and Potholes Formation	Rehabilitated roads may be predisposed to potholes, weed overgrowth, etc. shoulders due to no/poor maintenance. This may reduce the width of the road and the potholes may predispose road users to accidents.	Moderate	Institute a community-based road maintenance group to carryout maintenance activity at periodically.
	Soil Erosion and Water Runoff	Without proper maintenance and regular desilting of drainage systems, the road could exacerbate soil erosion, particularly in areas with steep gradients. This can lead to the washing away of the road itself, CDS structures or surrounding land, affecting agricultural activities and local ecosystems, increased surface runoff and causing sedimentation in water bodies.	Moderate	- Regularly clean and maintain drainage systems to prevent clogging and reduce the risk of surface runoff and flooding. - Sensitize the community on the risk of dumping refuse in the drainage channels. - Implement erosion control measures.
	Livestock Road Kills	Improved roads may increase the risk of vehicle collisions with livestock and other stray domestic animals, especially in areas where animals frequently cross roads.	Minor	Install speed bumps across the road to reduce vehicle speed.
Social	Loss of Employment	Workers engaged in civil works will be relieved of their duties at the commencement of the operational phase.	Minor	Early notification of workers prior to their disengagement
	Accidents	Risk of accidents is foreseeable, especially in built up areas with high pedestrian activity e.g. schools, churches, etc. Vulnerable road users	Major	- Install road furniture (safety signages, speed limits, etc.) and speed bumps - Routine maintenance of roads.

5.2.3 Climate Change Impacts and Mitigation Measures

The most significant envisaged climate change hazards/events and their potential impacts on the rural roads are provided in Table 30 below including their mitigation measures.

Table 30: Envisaged Climate Change Hazards/Events, their Potential Impacts on the Rural Roads, and Adaptation and Mitigation Measures

Climate Change Hazard/Events	Potential Impact on the Roads	Climate Change Adaptation Measures	Climate Change Mitigation Measures
Flooding	- Damage to or inaccessibility of low-lying areas due to water accumulation, particularly in areas without adequate drainage or hydraulic structures. - Submersion of roads, particularly those close to streams or in floodplains, leading to stream diversion²⁰ and temporary inaccessibility of the road. This could also lead to road washouts. - Waterlogging in poorly graded areas, increasing maintenance	- Design roads with raised embankments in flood-prone areas. - Construct high-capacity culverts, bridges, and side drains for effective water management. - Integrate climate-resilient materials, such as porous asphalt¹. - Plant vegetation alongside roads to enhance water absorption and prevent excessive runoff.	- Align roads to follow natural topography (where possible avoiding low-lying areas prone to water accumulation). - Implement sub-surface drainage systems to reduce standing water. - Introduce regular road maintenance schedules to prevent water accumulation. - Conduct periodic de-silting of drainage channels and

²⁰ **Stream diversion** occurs when a culvert plugs at a road-stream crossing, and the overtopping flow is diverted down the road. The water flow then typically washes out part or all the road, either totally destroying or damaging the road for some distance.

Climate Change Hazard/Events	Potential Impact on the Roads	Climate Change Adaptation Measures	Climate Change Mitigation Measures
	- requirements. - Disruption of access to economic centres, markets, and critical facilities.		storm water systems.
Erosion	- Formation of gullies, undermining the structural integrity of road embankments and pavements and preventing accessibility. - Loss of topsoil and vegetation, leading to further slope instability. - Sedimentation in nearby water bodies, affecting aquatic ecosystems and water quality.	- Implement well-designed drainage structures, such as culverts and side ditches, to manage surface runoff and prevent the initiation of gullies. - Build small barriers within gullies to slow water flow, reduce erosion, and promote sediment deposition, thereby stabilizing the gully. - Installing temporary barriers during construction activities to prevent sediment from entering waterways.	- Establish vegetated areas between roads and water bodies to filter sediments and pollutants from surface runoff. - Install temporary barriers during construction activities to prevent sediment from entering waterways. - Build small barriers within gullies to slow water flow, reduce erosion, and promote sediment deposition, thereby stabilizing the gully.
Strong Windstorm	- Damage to auxiliary infrastructure such as safety signages, traffic signals, etc. - Increased risk of tree falls along roads with vegetation encroachment, obstructing roadways and causing potential safety hazards.	- Position road signs at locations less exposed to direct wind force (e.g., behind natural windbreaks). - Use low profile or ground-level signage where feasible to reduce wind resistance. - Maintain a minimum clearance zone between trees and roadways to reduce the likelihood of falling debris. - Avoid planting shallow-rooted or brittle tree species near roadsides.	- Install protective shields or enclosures around electronic components of signages. - Deploy perforated or mesh-style signage materials that allow wind to pass through, reducing resistance and damage risk.
Rising Intensity of Precipitation and Extreme Rainfall Events	- Overflow of drainage systems and culverts, leading to road flooding and erosion. - Slope destabilization/failures, particularly on hilly terrains. - Rills and gully formations along poorly drained roads. - Increased soil moisture levels, reduced soil cohesion, and heightened seepage and infiltration through the road structure (thin asphalt) can weaken the road body and compromise its stability. This could result in an accelerated wear and tear of asphalted surfaces, reducing road life and increasing repair costs. - Erosion and scouring or washout of edges of CDS or other works for river crossings. - Overwhelmed drainage system exceeding their capacity, thus leading to increased erosion/widening. - Sediment and waste deposition in culverts and drains, requiring frequent desilting.	- Upgrade culverts and drainage structures to handle higher water volumes. - Install additional cross-drainage structures to improve water flow. - Implement terracing and benching on steep road embankments. - Design roads with crowned surfaces to direct water to designated drains. - Use water-resistant asphalt mix and stabilized sub-base layers. - Strengthen culvert and bridge foundations using rock armouring or concrete aprons. - Design energy dissipators at culvert outlets to reduce water velocity. - Increase culvert and drainage channel dimensions based on climate projection.	- Remove obstructions such as silt, debris, and vegetation to maintain efficient water flow. - Conduct frequent patching and resurfacing of damaged asphalt layers. - Enforce weight restrictions during peak-wet seasons to prevent excessive wear. - Use mechanical dredging in major drainage channels before peak rainy seasons. - Implement public awareness campaigns on waste disposal to reduce drain blockages. - Deploy community-based drain-cleaning initiatives to prevent silt accumulation. - Use hydrodynamic separators to separate pollutants and maintain cleaner drainage flows. - Use stone pitching or stabilized laterite to reduce direct impact from runoff.
Higher Maximum Temperature and Frequency of Consecutive Hot Days (Heat Waves)	- Softening, cracking, and rutting of asphalt, compromising pavement integrity. - Bleeding of asphalt surfaces, leading to slippery conditions and safety concerns. - Expansion of unsealed road cracks, making them more vulnerable to further degradation during subsequent rainy periods.	- Introduce composite pavements combining asphalt and concrete for greater durability. - Incorporate materials with higher albedo in road construction can reflect more sunlight, thereby reducing surface temperatures and associated heat-induced damages. - Use solar-reflective coatings to minimize heat build-up.	- Use vegetative shading near roads to lower surface temperatures. - Implement routine inspections allows for early detection of heat-related damages, enabling timely repairs and prolonging pavement life. - Install subsurface drains to manage water accumulation in cracked areas.

5.3 Labour Influx and Gender Based Violence

This section highlights various crucial social impacts that necessitate substantial focus and should be prioritized throughout project implementation. Nevertheless, it is crucial to underscore that this emphasis on specific areas does not lessen the significance of addressing other social impacts detailed in the preceding sections. The primary emphasis in this context revolves around labour influx migration, gender-based violence, and the repercussions of STDs/STIs, as detailed below:

5.3.1 Labour Influx

Throughout the project implementation, the influx of construction workers and the associated arrival of camp followers or business opportunists in the project areas may give rise to various labour influx-related risks. These risks include inappropriate relationships between workers and minors leading to sexual abuse and unwanted pregnancies, the presence of sex workers in project communities, the potential spread of HIV/AIDS and STIs, sexual harassment of female/male employees, instances of child labour and abuse, heightened dropout rates from school, diminished community participation, substandard labour practices, and lack of safety measures within the project work place. To enhance the social sustainability of the project and bolster resilience and social cohesion in the affected communities where these markets are located, there is a need for a comprehensive action plan addressing these risks. To ensure adequate protection of project communities/markets against the vices highlighted above, the SPIU should ensure the implementation of the following additional mitigation measures:

1. Assessing the living conditions of workers' camps and ensuring appropriate living conditions in accordance to the Investment Project Financing (IPF) Guidance Note on Workers' Accommodation, processes and Standards. This guidance note looks at the provision of housing or accommodation for workers by employers and the issues that arise from the planning, construction and management of such facilities.
2. Establishing proper agreement with host community on equipment staging area.
3. Establishing and enforcing a mandatory Code of Conduct for the company, managers and workers, and an Action Plan for implementation.
4. Ensuring appropriate location of camps sites and staking areas.
5. Taking countermeasures - indicated in the Social Management Plan - to reduce the impact of the labour influx on the public services; and,
6. Devising and implementing a strategy for maximizing employment opportunities for local population, including women and also, implementation of labour management plan/procedure.
7. Implement the security management plan to identify and mitigate potential security threats.
8. Recruiting of workers from the host communities

The Supervision Consultant shall be responsible for monitoring the contractor performance and adherence to the labour influx guideline and that of its Sexual Exploitation and Abuse (SEA) obligations, with a protocol in place for immediate, timely, mandatory and confidential reporting in case of incidents to project community. The SPIU will supervise the Supervision Consultant and report to the FPMU on labour influx related issues.

5.3.2 Gender based Violence Risk

GBV risks within the project areas could encompass Intimate Partner Violence (IPV), public harassment involving verbal abuse, physical harm, rape, harmful practices related to widowhood, and trafficking of women and children, SEA/SH. It is crucial to develop and implement targeted strategies for the prevention and mitigation of GBV risks, taking into account local contexts. Therefore, the SPIU will incorporate key principles and specific requirements to address GBV, particularly during project implementation, in the bidding documents (including 'pre-qualification' and 'employers' requirements)

In 2020, a Gender-Based Violence (GBV) risk assessment was conducted specifically for Sexual Exploitation and Abuse (SEA) in the context of RAAMP, and it was determined to be categorized as "High." The assessment utilized the World Bank's GBV risk assessment tool, supplemented by an additional analysis of information from the GBV portfolio review, insights from other stakeholders, and a consideration of the project's scale and scopes. Nigeria has enacted legislation addressing violence against individuals, namely the Violence against Persons (Prohibition) Act of 2015, which has been domestically adopted and enacted into law by the Abia State government in September, 2021. Additionally, Nigeria has also revised the National Gender Policy 2021-2026 and it has a Standalone GBV objective. Furthermore, Nigeria has developed a National Action Plan for implementing UN Resolution 1325 in 2015.

RAAMP, guided by the World Bank, has devised mitigation and response measures in alignment with the assessed risk level. The recommendations of the Good Practice Note Addressing Gender-Based Violence in Investment Project Financing Involving Major Civil Works were also taken into account during the development of these measures. This includes the formulation of a GBV Action Plan and GBV Accountability and Response Framework, both of which will be adopted by Abia RAAMP SPIU in managing GBV issues on site.

As a result, Abia RAAMP will implement specific actions to minimize potential GBV risks associated with labour influx, such as;

1. Abia RAAMP SPIU to have GBV Specialist in the supervision consultants' contract as key staff.
2. C-ESMPs to reflect GBV risk and mitigation actions.
3. GBV-specific GRM process to be operationalized.
4. SPIU to clearly define GBV requirement and expectation in bidding documents.
5. Mapping out of service providers for GBV response.
6. Engage an intermediary service provider for survivor referral.

7. GBV SEA/SH sensitization will be provided for all Abia RAAMP SPIU project staff, consultants, contractors and workers.
8. All project workers will understand and sign the Code of Conduct.
9. Awareness raising activities will be conducted in all the project implementation communities.
10. Capacity building workshop on GBV and SEA/SH will be provided to all project workers.
11. An easy access and functional GRM and a referral pathway will be operationalized in order to collate complaints related to SEA/SH and refer survivors to the nearest survivor center.
12. Liaise with the FPMU on providing Third Party Monitors (TPM) for the project.
13. Compliance with the GBV Action Plan Accountability & Response Framework.

The GBV Specialist appointed by the Supervision Consultant will be responsible for daily oversight of the contractor's performance, ensuring compliance with the labour influx guidelines and Sexual Exploitation and Abuse (SEA) obligations. A structured protocol is in place to facilitate immediate, timely, mandatory, and confidential reporting of incidents to the project-level GBV-GRM.

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.

The GRM will help the Abia RAAMP SPIU establish deliberate processes and procedures to capture, assess, and respond to concerns from project beneficiaries, implementers, and the general public throughout the ALCs project's implementation. This approach will ensure smooth project execution and enable timely and effective resolution of any issues that arise during implementation.

Therefore, setting up the Grievance Redress Committee (GRC) early during the project's preparation is imperative. Grievances may not be limited to but can arise from any of the following:

- Delay in execution of project leading to breakdown of trust
- Failure to generate opportunities for employment of locals in the communities
- Disruption to amenities, utilities, farms and socio-economic activities.
- Blockage of access routes and consequent traffic congestion on adjoining roads, non-installation of ramps or slabs at entry point into public places such as schools, churches, hospitals, etc. to aid vehicle entrance.
- Noise/disturbance
- Fugitive dust from movement of vehicles along earth roads
- Accidents or injuries
- Impact to PCR and trespass into sacred areas
- Contamination of surface water resources (streams, rivers) due to sediment run-off
- Sexual Exploitation and Abuse/Sexual Harassment of locals as a result of labour influx
- Land related matters, including trespass during road expansions
- Flooding of road, adjacent houses and community(s) as a result of poor channelization or inadequate road infrastructures (culverts, drainages).
- Physical and/or economic displacements caused by land acquisition, Delay in Compensation and Under Estimation of Compensation
- Improper waste management across the project areas.
- Delays in payment of workers' salaries or non-issuance of formal letters of engagement.
- Discrimination of Vulnerable Persons

6.2 Objectives of the GRM

The specific objectives of this GRM are as follows;

- a. Establish a prompt, easy to understand, culturally appropriate, consistent, acceptable and respectful mechanism to support the receiving, investigating and responding to complaints or grievances from community stakeholders and prevent them from escalating.
- b. Provide communication channels for aggrieved persons to express their displeasure and be heard and ensure proper documentation of complaints or grievances and any corrective actions taken
- c. Achieve resolution of grievances and conflicts related to AB-RAAMP activities in a transparent, timely and efficient manner;
- d. Improve stakeholder participation and decision making through dialogues and registration of grievances and conflicts;
- e. Win the trust and confidence of project beneficiaries and stakeholders to create productive relationships between parties; and

- f. Allow communities to express views on negative impacts from the intervention activities, Contractor's conduct, work quality, malpractice, and so on.

6.3 Grievance Uptake Channels

The following channels will be available for grievance uptake:

- In-person to the grievance redress committee (GRC) focal persons
- During meetings organized by the community GRC (with participation of the aggrieved person and stakeholders)
- Use of complaint box (there should be a complaint box for general grievances and for GBV-specific issues)
- Letter addressed to the GRC at the Community and SPIU levels
- Telephone hotlines-07038371196
- Toll-Free lines-08000000999
- SMS (regular or short code SMS)
- Dedicated Mobile Applications-07038371196
- Email: ihechilurup@gmail.com
- Any other suitable channels to be recommended in future based on further citizens engagement activities.

6.4 Key Steps and Processes for Handling Complaints through the GRM

To ensure efficient grievance resolution, the following steps will be implemented by the AB-RAAMP SPIU in line with the overall RAAMP Beneficiary Feedback and GRM framework:

- **Receipt and Registration of Grievance:** Grievances will be received through designated channels such as grievance boxes, toll-free lines, email, or in-person reporting. Upon receipt, each grievance will be formally registered in a logbook or database for proper tracking and follow-up.
- **Feedback to Complainant:** Acknowledgment of the grievance will be provided to the complainant promptly (ideally within 48 hours). This feedback will confirm receipt of the grievance and outline the next steps in the resolution process.
- **Verification, Screening, and Sorting of Grievances:** The following shall be undertaken following grievance receipt and acknowledgement:
 - ✓ **Verification and Screening:** A thorough review of the grievance will determine its merit; whether the issue is linked to Abia RAAMP and assess its complexity. If the grievance falls outside the project's jurisdiction, it will be referred to the appropriate authority, and the complainant will be informed.
 - ✓ **Sorting:** Grievances will be categorized based on their type (e.g., compensation, resettlement, OHS/CHS and labour issues, environmental concerns, or SEA/SH complaints). This categorization will ensure that the grievance is addressed appropriately and by the relevant team or authority.
 - ✓ **SEA/SH Cases:** In the event of a Sexual Exploitation, Abuse, or Harassment (SEA/SH) complaint, the grievance will not be investigated by the GRM but referred immediately to the GBV Service Provider engaged by the SPIU through the GBV Officer, with confidentiality and survivor-centric principles.
 - ✓ **Criminal Cases:** Grievances involving criminal matters, such as armed robbery, grievous bodily harm, or homicide, will be referred directly to the SPIU for onward transmission to relevant authorities through the following means; Hotlines: 08000000999/07038371196, GRM box or abiarampspiu@yahoo.com for further necessary actions.

All screening and verification activities shall be completed within 5 – 10 days of receipt of grievance.

- **Investigation and Consideration of Grievances:** A comprehensive investigation will be conducted to identify the root cause and propose actionable solutions to redress the grievance. The investigation team shall be comprised of members of the SPIU GRC. The complainant may be consulted for additional details or clarification during this process.
- **Resolution, Implementation, and Case Closure:** Once a resolution is reached, the agreed-upon corrective actions will be implemented promptly. The complainant will be informed of the outcome and

provided an opportunity to confirm satisfaction with the resolution. If the complainant is dissatisfied, the case may be escalated to higher redressal levels for further resolution.

Finally, the grievance will be marked as closed in the logbook or database, and the resolution process documented for transparency and accountability. Lessons learned from resolved grievances will be used to improve future project implementation and grievance handling.

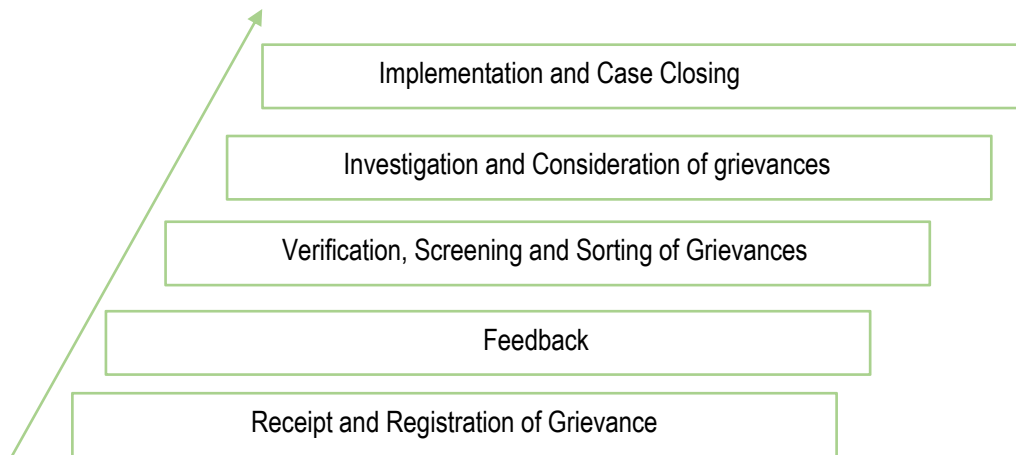


Figure 17: Schematic illustration of steps in grievance uptake and redressal for AB-RAAMP

6.5 Structure of Grievance Redress for AB-RAAMP

A three-level redress system in the form of Grievance Redress Committee (GRC) is planned to address all complaints during the implementation of AB-RAAMP intervention works. These include:

- Community Level
- SPIU Level
- State steering committee (SSC)
- FPMU Level

6.5.1 First Level of Redress: Community-Based GRC

Complaints regarding project implementation and activities arising from the project area shall be channelled to the community level GRC under Abia RAAMP, which shall be headed by the Traditional or Village Head. The membership of the committee will consist of the following representatives:

- The Community Leader (the King)
- Palace Secretary
- Women Leader
- Opinion or Community Influencer
- Youth Leader
- NGO representative
- Any minority group(s) within the community e.g., non-indigenous settlers

Summary of functions: There shall be a GRC in each proximate cluster of project beneficiary communities along each proposed road for rehabilitation or Lot – depending on the distance between communities. The nomination of members of the GRC shall involve a participatory process to take place during a well-publicized town hall or community meeting, led by the traditional leadership and supported by the SPIU. Local interest groups like NGOs/CSOs, respected citizens in the communities and reputable community associations shall also participate in

the selection of the GRC members. During the sensitization of the communities on the GRM, a Community Grievance Focal Person, would be selected based on a set of standard criteria.

Roles of the Community Grievance Focal Persons

- Be the main support for the ABS-RAAMP GRM at community level.
- Receive training from SPIU on roles and responsibilities.
- Be responsible for the Complaint Box and ensure that Complaint Forms are always available.
- Enter information into the incident intake form.
- Promptly call the complaint in to the SPIU Grievance Focal Person directly in the case of SEA/SH cases as soon as the incident is known.
- Refer SEA/SH survivors to GBV service providers engaged by the PIU, based on his/her consent, as per the GBV referral pathway detailed in Section 6.8 below and follow up with GBV cases, all while maintaining confidentiality to protect the survivor and remaining in close contact with the SPIU.
- Enter the information into the incident intake form while maintaining the reporting protocol.
- Ensure proper feedback is provided to complainants.

6.5.2 Second Level of Redress: SPIU Level – ABS-RAAMP SPIU GRC

The GRC established within the Abia RAAMP SPIU, will receive and redress issues or matters presented to it from the Community-Based GRC. The SSO is the Focal Person of the GRC at the level of the SPIU. Specifically, the SPIU GRC comprises of:

- State Project Coordinator (Advisory)
- Social Safeguard Officer
- Environmental Safeguards Officer
- Gender Based Violence Officer
- Monitoring & Evaluation Officer
- Communication Officer
- Infrastructure Engineer

Representatives of the project contractors shall also be invited when the need arises. Furthermore, the SPIU GRC shall be responsible for:

- Coordinating the entire grievance mechanism at the state level.
- Resolving disputes that are within their power or control.
- Making recommendations for action to the GRC at the FPMU in the case of issues of extreme importance or urgency.
- Offering the interested parties, the option of referral to the Citizens' Rights/Mediation Centre under the respective state Ministry of Justice in the event that the complaint is not resolved at the SPIU level.
- Provide adequate resources to offset operational administrative costs of the community based GRCs.

6.5.3 Third Level of Redress: State Citizen Mediation Center (SCMC GRC)

The Committee will be constituted as the Third Level of Redressal to investigate the problems not solved in the Second Level. Membership of the GRC at this level shall constitute as outlined below;

- Permanent Secretary of the Supervising Ministry - Chairman.
- State Project Coordinator – Secretary
- Director ADR State Ministry of Justice - Member
- Director Ministry of Land and Survey-Member.
- Director State Ministry of Environment.
- Director State Ministry of Agriculture.
- Social Safeguard Officer
- Environmental Safeguard Officer
- Representative of Focal NGO.

6.5.3.1 Roles and responsibilities of state Citizens' Rights/Mediation Centres

- Settle project disputes received directly or that are referred from SPIU
- Second arbitrators to Community-based GRC sessions

6.5.4 Fourth Level of Redress: RAAMP FPMU GRC

The main roles of the FPMU GRC is to; i) oversee the operations of the GRMs in the various participating states ii) allow affected parties, who are unhappy with how their complaint has been handled by the first, second and third tiers GRCs to apply for a reconsideration of their cases and, iii) E&S feedback or issues that has not been handled by and filed directly to the SSO, Community based GRCs, GRCs, SPIU and, SCMC. The FPMU GRM shall consist of the following members:

- A Nominee from the Office of the National Coordinator, RAAMP
- FPMU Social Safeguard Officer
- FPMU Technical Assistant on Social Safeguard (GRM Coordinator)
- FPMU Technical Assistant on Environmental Safeguard
- FPMU GBV Specialist
- Head of Procurement or a Nominee
- Elected Representative of the Community Based GRC from the States.

This committee shall receive monthly reports on status of disputes/complaints from the ABS-RAAMP SPIU GRC and shall provide approvals or guidance on action items in the report. If disputes cannot be resolved by the FPMU GRC, the affected or interested party may choose to pursue the case in a court. However, a detailed report should be sent to the World Bank Task Team Leader including all steps taken to resolve the issue.

6.6 Awareness of GRM

GRM should be given a wide publicity among stakeholder groups such as affected parties, government agencies, and civil society organizations. Effective awareness of GRM process makes people better understand about their options, depending on the types of complaints. However, measures should also be taken to encourage stakeholders not to submit false claims. Criteria for eligibility need to be communicated and also awareness campaigns should be launched to give publicity to the roles and functions of the GRM.

Awareness should include the following components:

- Scope of the work packages, selected roads, potential positive and negative impacts etc.;
- Types of GRCs available, members of the community GRC purposes for which the different GRMs can be accessed.
- Members of each community shall nominate not more than ten persons into a community-based GRC in line with the GRC structure. The SPIU shall not select or impose any members for them.
- Types of grievances not acceptable to the GRC.
- How complaints can be reported to those GRC and to whom, e.g., phone, postal and email addresses, as well as information that should be included in a complaint;
- Procedures and timeframes for initiating and concluding the grievance redress process; boundaries and limits of GRM in handling grievances; and roles of different agencies such as project implementer (ABS-RAAMP and funding agencies).
- A variety of methods can be adopted for communicating information to the relevant stakeholders. These methods could include display of posters in public places such as in government offices, project offices, community centres/village squares, schools, churches, hospitals and health clinics of the area.

6.7 Addressing SEA/SH/GBV in the GRM

Based on the high GBV risk profile of RAAMP, RAAMP will adopt model 2 of the GRM document which links project grievance mechanism to an identified intermediary service provider to handle SEA/SH allegation. The intermediary service provider will be open to the use of all members of the communities as well as stakeholders. SEA/SH allegation can be reported through project-level GRM Channels or directly to the intermediary service provider. This

sub-project GRM will adopt the survivor centered approach specifically for handling SEA/SH cases as captured in the RAAMP BF and GRM. In addition, to the survivor centered approach the GBV-GRM shall address right to safety, respect, and confidentiality, of the complaint intake and management. There is need to ensure that GRM procedures and mechanisms for reporting allegations of SEA/SH are known to all GRM Focal Persons.

Specific Principles Applicable to GRMs for Sexual Exploitation and Abuse

Confidentiality and Anonymity

The GRM should:

- Grievance Uptake Channels (GUCs) must be designed to allow complainants submit grievances in a confidential and anonymous way
- Unauthorized persons MUST not have access to complaints
- Personal details of complaints must not be disclosed if complainants wish to remain anonymous
- Allow safe and confidential reporting: survivors should be able to report SEA/SH without being identified publicly.
- Protect information about SEA/SH allegation, and in particular the identity of the survivor and those involved, at all times.
- Log SEA/SH cases separately from other cases and should not include identifiable information in a logbook. A separate coding system for names should be created and stored in a locked cabinet. The complaint logbook should also be stored in a different locked cabinet.

Survivor-Centricity and Safety

The GRM should:

- Support the creation of a supportive, dignified and protective environment for the SEA/SH survivor, and full respect of his/her rights, wishes and choices. Also, provide essential services and referrals for survivors, based on the GBV mapping of services documented.
- Be based on the survivor's informed consent, which needs to be guaranteed throughout the GM. Maintain confidentiality and anonymity as a fundamental way to guarantee survivors' safety: survivor files should not be discussed with anyone.
- Provide feedback on the case to the survivor only and exercise strong caution before communicating any results beyond the survivor.

The Figure 18 below shows the flow chart for the Grievance Redress Mechanism (GRM)

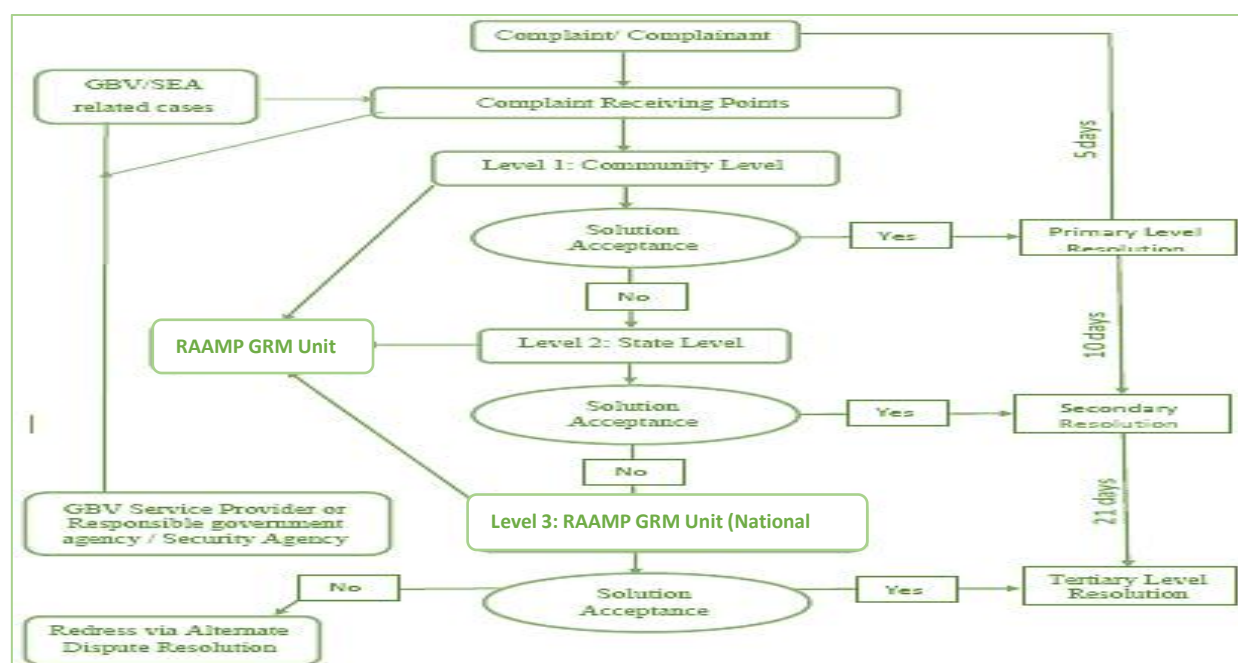


Figure 18: Flowchart RAAMP GRM

CHAPTER SEVEN – ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

7.1 Introduction

A matrix table format is used to describe the Environmental and Social Management Plan (ESMP) which outlines the mitigation and monitoring strategies for addressing adverse environmental, social, and occupational health and safety risks associated with the proposed interventions. This table comprehensively integrates mitigation measures and cost for all identified potential adverse E&S impacts of the civil works. Additionally, it includes monitoring indicators, institutional responsibilities and monitoring frequencies for the pre-rehabilitation, rehabilitation, and operation phases of the project. Tables 31–36 below display the Environmental and Social Mitigation and Monitoring Plan for each intervention package, categorized by project phases.

IMPORTANT NOTE: Two (2) ESMP matrix tables have been developed to address all adverse E&S risks and impacts associated with the phase 2 interventions under the respective work packages - Spot Improvement and Upgrades. While several impacts and mitigation measures apply to all the interventions, specific E&S impacts are unique to some roads and/or intervention(s) due to the peculiarities of their proposed interventions and project environments. For this reason, a comprehensive ESMP table per work package, including mitigation and monitoring costs for all identified adverse E&S impacts at the project locations, has been prepared. Additionally, a summarized version of the total cost per intervention as it applies to the respective Lots (where applicable) is provided in Table 37. The Abia RAAMP Safeguards Unit shall ensure that all the mitigation measures specified in the ESMP including their associated costs, are included in the bid documents for the Contractors to implement. Kindly be reminded that Chapter 3 of this ESMP report provides detailed information on labour requirements, as well as procedures for selecting locations for setting up campsites and staging areas. Several Management Plans have been prepared as guides to facilitate a seamless implementation of the ESMP and are included in the annexures.

Note: All conversions were done using the Central Bank of Nigeria (CBN) current exchange rate of 1USD = 1,530 NGN as at July, 2025.

Table 31: ESMP Mitigation and Monitoring Matrix Table for Roads Selected for Upgrades (Pre-Rehabilitation Phase).

ESMP Mitigation and Monitoring Matrix Table for Roads Selected for Upgrades (Pre-Rehabilitation Phase).												
S/N	Activity	Potential E&S Risks & 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 of Monitoring	Cost of Monitoring Naira/(USD)
A. ENVIRONMENTAL IMPACTS												
1.	Mobilization of equipment and workers to site.	Dust generation is anticipated—from movement of construction vehicles through some Lot 3 and Lot 5 roads and transport/offloading of materials (e.g. sand, gravel, cement etc.)	Regularly water the graded roads, Install speed limiting devices in vehicles Cover construction trucks carrying dry materials such as sand, gravel, and cement with tarpaulins to prevent materials from spilling	Contractors	Lot 3 = N354,815 Lot 5 = N105,208 Total= N460,023 (301)	Dust generation (PM2.5 and PM10). Vehicle speed. Dust emissions from uncovered loads.	In-situ Air Quality Measurement; Visual observation Use of GPS/speed monitoring devices e.g. In-Vehicle Monitoring Systems - IVMS ²¹ Tracker Visual inspections; In-situ Air Quality Measurement;	Reduction in airborne dust concentrations Adherence to prescribed speed limits in project communities. Compliance with covering regulations and reduction in visible dust from trucks. Adherence to specified offloading zones.	Stretch of Lot 3 and the Lot 5 roads Equipment staging areas and offload sites.	During equipment supply to site and mobilization activity). One-off One-off	SPIU; Safeguards Unit; ESO; Supervisory Consultant.	821,225 (537)
	Site Clearing; Erection of Staging Areas and Campsites.	Localized dust generation.	Distribute PPEs such as nose masks or respirators to workers/PAPs.		Cost incorporated in the OHS Management Section	Frequency of PPEs distribution, and usage compliance	No of PPEs (dust masks or respirators) distributed.	High distribution rates, and consistent and correct use of PPEs by workers/PAPs.	Areas requiring Site Clearing; Staging Areas and Campsites.			
2.	Mobilization of equipment and workers to site.	Carbon emission from exhaust fumes of vehicles carrying construction materials to work/project areas may also occur.	Use vehicles, plants and equipment that are in good condition generally less than 5 years old. Ensure Vehicles are serviced regularly, depending on the frequency of use (ideally every 5,000 – 10,000km).	Contractors	As Captured in the Contractors' BOQ	Gaseous Pollutants such as SO ₂ , NO ₂ , CO ₂ , CO, VOCs, H ₂ S, TSP	In-situ Air Quality Measurement ²² Visual observation	Air quality parameters are within NESREA permissible Limits. Contractors' compliance to equipment and vehicle servicing	Road corridors	One-off	SPIU; Safeguards Unit; ESO; Supervisory Consultant;	Captured in A1 above

²¹ An In-Vehicle Monitoring System (IVMS) Tracker consists of an electronic device or number of devices installed in a vehicle to monitor driver activities and help identify behaviours such as excessive speed, harsh braking, rapid acceleration or drowsy driving.

²² In Situ Air Quality Measurements – Safeguards Unit shall undertake monitoring of baseline levels using advanced monitors that can detect a broader range of pollutants, including the criteria pollutants, e.g. uHoo Smart Air Monitor (which measures nine air quality parameters, including PM2.5, PM10, CO₂, CO, O₃, NO₂, SO₂, VOCs, and temperature/humidity. Priced at approximately ₦300,000)

ESMP Mitigation and Monitoring Matrix Table for Roads Selected for Upgrades (Pre-Rehabilitation Phase).												
S/N	Activity	Potential E&S Risks & 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 of Monitoring	Cost of Monitoring Naira/(USD)
3		Noise: Noise levels may exceed the NESREA National Environmental (Noise Standard and Control) (75dB) due to the operation of vehicles.	Where possible retrofit all hired vehicle exhausts with mufflers/silencers to minimize noise. Schedule mobilization during off-peak hours. (5-6am and 7-8pm daily). Enforce speed limits to reduce engine noise and tire screeches associated with harsh braking of fast-moving vehicles. Regular maintenance of vehicles. Provide and enforce the use of PPEs (e.g. ear muffs, ear plugs) by workers.	Contractors	Same as A1 Above	Noise levels Vehicle speed; harsh braking events Vehicle Maintenance Records. Usage of PPE by Workers	Noise monitoring using noise meters. Use of speed monitoring devices Maintenance Logs and Inspections Observational Checks and Surveys	Compliance with Noise Standards - NESREA National Environmental (Noise Standard and Control) of 50dB. Adherence to Speed Limits Compliance to vehicle maintenance. Percentage of workers consistently using provided PPE	Project locations.	Weekly	SPIU; Safeguards Unit; ESO; Supervisory Consultant;	Captured in A1 above
3.	Site clearance on either side of the centreline at designated roads	Loss of beneficial flora and economic crops located within the ROW of the road, including the carriageway (addressed in the RAP). This clearing could also expose the area and increase the risk of surface erosion and rill formation. Notable locations include all roads in Upgrade Lot 4,	Limit clearing activities to the exact width necessary for road rehabilitation, Implement RAP Establish buffer zones around ecologically significant or economically valuable vegetation. Implement erosion control methods e.g. silt fences, erosion control blankets around cleared areas. Where feasible, implement replanting programs in designated areas post-construction to offset vegetation loss.	Contractors Safeguards Unit; SSO; RAP Consultant Contractor	N/A Included in RAP Implementation Cost As Captured in the Contractors' BOQ	Loss of beneficial flora RAP Implementation Compliance to creation of buffer zones Risk of erosion and rill formation, particularly in cleared areas.	Physical field survey/measurement and mapping, pre and post-photographs. RAP Compliance Audits & Validations; Stakeholder engagement Visual observations Visual inspection and field measurements of rill formation or surface erosion using erosion pins or markers placed along cleared areas.	Adherence to Designated Zones (% site clearing within specified road design width) Compliance to RAP implementation; PAP and stakeholders' satisfaction. Area of surface erosion or rill formation detected.	<i>Lot 4 roads as well as all project locations where there are encroachments which could result in site clearing, physical and economic displacement—refer to the RAP, and surface erosion.</i>	<i>Every 2 weeks (periodic checks during the clearing process)</i> <i>One-off</i> <i>Weekly during active site clearance, and monthly during the rainy season.</i>	SPIU; Safeguards Unit; ESO; Supervisory Consultant; Safeguards Unit; SSO	Captured in A1 above

ESMP Mitigation and Monitoring Matrix Table for Roads Selected for Upgrades (Pre-Rehabilitation Phase).												
S/N	Activity	Potential E&S Risks & 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 of Monitoring	Cost of Monitoring Naira/(USD)
4.	Dewatering of the roads.	Surface Water Contamination: Suction and removal of water from potholes and pools of water along the road may potentially lead to the discharge of sediments and pollutants into nearby water bodies. Note: No surface waters were found along rural roads in Lot 2 and Lot 5 earmarked for upgrade works.	Use eco-friendly dewatering aids or polymers to improve sediment settling and minimize suspended solids discharge. Install appropriate filters or geotextiles in dewatering systems to trap sediments and pollutants before discharging water. Designate specific zones for sediment settling. Erect sediment fencing along water bodies as a physical barrier.	Contractors	As Captured in the Contractors' BOQ	Sediment concentrations Effectiveness of sediment control measures	Sampling and laboratory analysis - to measure sediment concentrations Field inspections	Surface water quality is within permissible limits. Operational efficiency of controls	Streams and rivers along the road corridors (specifically for Lots 1, 3 and 4)	Weekly	SPIU; Safeguards Unit; ESO; Supervisory Consultant; Abia SMEnv,	Captured in A1 above
6.	Site Clearing Removal of topsoil/unsuitable materials to sub-grade level	Generation of brush piles and vegetative debris (e.g., grass clippings, leaves, brush pruning, tree limbs and stumps). Generation of heaps of removed top soil/earth material.	Implement WMP Engage local community to reuse brush piles as mulches and compost Where feasible, prioritize the on-site reuse of removed topsoil, incorporating it back into the rehabilitation activities.	Contractors	@ N50,655 x 5 Lots = N253,275 (166)	Effectiveness of WMP Volume of brush piles and vegetative debris generated.	WMP Audits Quantitative measurement; visual estimation.	WMP compliance Reduction in Volume of generated wastes.	Road corridors	Weekly	SPIU; Safeguards Unit; ESO; Supervisory Consultant;	Captured in A1 above
7.	Removal of topsoil/unsuitable materials to sub-grade level	The removal of topsoil during upgrade road (e.g., Nbawsi-Agburuike-Umuomaighiukwu, Lot 3) may unearth already visible asbestos pipes, potentially leaving hazardous materials exposed and abandoned, thereby posing serious health risks like lung cancer, asbestosis, and mesothelioma to residents and workers.	Implement Asbestos WMP Conduct a pre-construction survey to identify and map locations of asbestos pipes. Engage certified hazardous materials contractors to handle and dispose of asbestos safely. Train workers on asbestos handling and provide them with appropriate PPE. Erect warning signs and	SPIU Safeguards Unit Contractors Certified Hazardous Materials Contractor	3,070,000 (2,006) – specifically for Lot 3.	Asbestos WMP Implementation Quantity of asbestos removed. Engagement of a state approved and certified hazardous materials contractor Air quality (asbestos fibril)	Audits, Checks and Verifications. Visual inspections and photographic records of removal sites. Letter of engagement, contracts, etc. Air sampling and laboratory analysis for asbestos fibrils.	SPIU/Contractors Compliance to AWMP Implementation Complete removal and proper disposal of all identified asbestos materials. Certified contractor engaged for asbestos removal and disposal. Air fibril concentrations within permissible	Sections of Nbawsi-Agburuike-Umuomaighiukwu Road (Lot 3) where asbestos pipes are buried (GPS Coordinates - N5.393075 E7.435480)	One-off Once, during initial site survey. One-off Weekly inspections and	FPMU ESO, SPIU, Safeguards Unit, ESO, Supervisory Consultant.	1,535,000 (1,000)

ESMP Mitigation and Monitoring Matrix Table for Roads Selected for Upgrades (Pre-Rehabilitation Phase).												
S/N	Activity	Potential E&S Risks & 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 of Monitoring	Cost of Monitoring Naira/(USD)
		economic displacement resulting from site clearance along the road's centreline and the reclamation or removal of structures within the ROW	Implement Grievance Redress Mechanism (GRM)	Grievance Redress Committee (GRC)		alternative access routes RAP implementation Effectiveness of GRM	Checks & verifications Implementation progress assessment on GRM	Compliance Minimal grievance.				
11.	Excavation of unsuitable material in the road sections to sub-grade level	Possibility of uncovering chance finds.	Implement Chance Find Procedures as part of the PCRMP to ensure proper handling, documentation, and protection of any discovered artefacts during excavation. Train workers on Chance Find Procedures, halt work immediately upon discovery, notify relevant authorities, and engage heritage experts for evaluation.	Contractor	Incorporated in the Cost for Implementing PCRMP—Refer to the Construction Phase	Number and type of chance finds discovered. Adherence to Chance Find Procedures (e.g., work stoppage, notification, documentation).	Onsite inspections Monitoring reports, logbooks and checklists Training attendance records	No damage or mishandling of discovered artefacts. Timely reporting (within 24 hours) and engagement of authorities and experts for any finds. 100% of workers trained in Chance Find Procedures.	Project locations	Daily during excavation activities to ensure immediate response to discoveries.	SPIU; Safeguards Unit; SSO; Supervisory Consultant;	Incorporated in D9 Above
12.	Mobilization of Workers/Equipment to project sites	Tendency of theft and vandalism of equipment during staging, particularly in communities with a history of insecurity or banditry, such as Obinulo – Umumaduako – Umumezie, or in areas showing signs of youth unrest.	Engage local security personnel, such as community vigilantes, to ensure safety and support during the mobilization of workers and equipment to the site and the establishment of staging areas.	Contractor	As Captured in the Contractors' BOQ	Number of security incidents (e.g., theft, vandalism, or unrest) reported at staging areas. Presence and effectiveness of security personnel (e.g., community vigilantes)	Review of incident logs. On-site inspections to verify security arrangements. Community feedback through interviews or surveys.	Reduction or absence of theft and vandalism incidents. Consistent and visible presence of security personnel Positive feedback from the community	Staging Areas and Project Affected Communities	Daily during the mobilization of equipment and workers	SPIU; Safeguards Unit; SSO; Supervisory Consultant;	Incorporated in D9 Above
13.	Mobilization of Workers/Equipment to project sites	Transport of procured construction materials to work sites, may predispose commuters, pedestrians, etc. to road accidents. Possible accidents may be as a result of equipment/material	Train drivers to reduce vehicle speed while driving through built up areas at the project communities, nodal settlements, etc. Consider rescheduling transport of materials at off peak hours or at night.	Contractor	Incorporated in OHS Mitigation Cost	Vehicle speed in built-up areas. Timing of material transport Number of safety training sessions conducted for drivers.	Vehicle trackers/GPS Transport schedules, training attendance sheets Review of incident/accident reports	Vehicles maintain speed limits in built-up areas (e.g., below 30 km/h in sensitive zones). Compliance to off-peak periods for equipment transport 100% of drivers trained in safe	Project Locations	Daily	SPIU; Safeguards Unit; ESO & SSO; Supervisory Consultant;	Incorporated in OHS Monitoring Cost

ESMP Mitigation and Monitoring Matrix Table for Roads Selected for Upgrades (Pre-Rehabilitation Phase).												
S/N	Activity	Potential E&S Risks & 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 of Monitoring	Cost of Monitoring Naira/(USD)
		fall from trucks, side collision, etc. or in areas where children loiter and play around or around high socioeconomic areas e.g. markets, churches, schools.				Number of reported transport-related accidents or near misses.		driving practices. Reduction in the number of transport-related accidents or incidents.				
14.	Mobilization of equipment and workers to site	Livestock Roadkill: may occur as vehicles and heavy-duty trucks move through some project community where open grazing of livestock is practiced e.g. Lot 3: Amorji – Ngbedeala – Ntigha – Umukalu – Mbawsi	Enforce speed limits; Train drivers to reduce vehicle speed in areas with open grazing. Restrict mobilization activities during night-time hours Peradventure roadkill occurs, compensate for loss of livestock and/or domestic animals.	Contractors	N/A	Compliance with speed limits Incidents of livestock roadkill Evidence of compensation	Speed monitoring devices Surveys and incident reports Verifications	Higher level of compliance and reduced risk of roadkill Percentage reduction in incidents of livestock roadkill Zero grievance by PAPs attributed to livestock roadkill.	Project communities where open grazing of livestock is practiced, and particularly Lot 3	Weekly	SPIU; Safeguards Unit; SSO; Supervisory Consultant;	Incorporated in D9 Above
Sub-total Mitigation & Monitoring Cost (Social Risks and Impacts)					934,815 (611)							732,195 (479)
C.	OCCUPATIONAL HEALTH AND SAFETY (OHS) IMPACTS											
15.	Mobilization of equipment and workers to site; Offloading of supplied equipment; Site clearing, etc.	Likelihood of accident occurring due to Unsafe Conditions and Unsafe Behaviours. Offloading of materials (bricks, cement, paints, wood, iron rods, etc.) from trucks may present significant OHS risks and impacts e.g. falling objects. Transport of procured construction materials to work sites, may predispose commuters, pedestrians, etc. to road accidents resulting from equipment fall from	Conduct OHS training and education; HazCom, routine JHA/PHA; Implement site-specific OHSMP Develop and implement safe offloading procedures, including the use of proper equipment (cranes, forklifts) and PPEs to minimize the risk of falling objects. Ensure that construction materials are securely loaded and properly fastened prior to transportation to prevent them from falling off trucks. Reduce speed when driving within and around project sites, staging areas, communities Regular inspections of	Contractors	@ N349,980 x 5 Lots = N1,749,900 (1,144)	Number of Accidents or Incidents Adherence to Offloading Procedures; Use of proper equipment and PPEs Transportation Safety Compliance; Adherence to speed limits. Vehicle inspections	Incident Reports and Records of any Accidents or Near Misses. Spot checks and periodic audits Inspections and audits of vehicles and transportation practices	Accident Frequency Rate Compliance to offloading procedures and use of PPEs Transportation Safety Score	Project corridors	Daily	SPIU; Safeguards Unit; Supervisory Consultant;	N311,605 (203)

ESMP Mitigation and Monitoring Matrix Table for Roads Selected for Upgrades (Pre-Rehabilitation Phase).												
S/N	Activity	Potential E&S Risks & 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 of Monitoring	Cost of Monitoring Naira/(USD)
		trucks, side collision, etc.	vehicles for roadworthiness.									
Sub-total Mitigation & Monitoring Cost (OHS Risks and Impacts)					N1,749,900 (1,144)							N311,605 (204)
Total ESMP Cost (Pre-Rehabilitation Phase)					6,468,013 (4,227)							3,400,025 (2,222)

Table 32: ESMP Mitigation and Monitoring Matrix Table for Roads Selected for Upgrades (Rehabilitation Phase)

ESMP Mitigation and Monitoring Matrix Table for Roads Selected for Upgrades (Rehabilitation Phase)													
S/N	Activity	Sub-Activity	Potential Risks & Impacts	Mitigation Measures	Responsibility for Mitigation	Cost of Mitigation USD/(Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility of Monitoring	Cost of Monitoring USD/(Naira)
D. ENVIRONMENTAL RISKS & IMPACTS													
1a.	Civil Works; Thin Asphaltting of the Road Surface	Operation and use of vehicles and machinery; stacking of materials;	Soil Contamination and Degradation: Leakages may occur from vehicles or stacked equipment containing lubricants, seeping through into the soil is likely in areas covered by earth.	Conduct regular maintenance to prevent leakages. Provide designated storage areas with impermeable surfaces. Implement proper containment measures for stored materials. Also, carryout regular inspections for leaks or spills.	Contractors	Captured in the Contractors' BOQ	Spills or leakages; soil quality indicators (pH, nutrient levels, contaminants – specifically THC, TPH, OC).	Soil sampling and laboratory analysis.	Hydrocarbon levels in surrounding soil remain within acceptable environmental thresholds.	Equipment staging areas - stacking points.	Monthly soil sampling and analysis	SPIU; Safeguards Unit; ESO; Supervisory Consultant;	3,111,980 (2,034)
1b.		Thin Asphaltting of the Road Surface	Layering of asphalt may introduce potentially harmful chemicals into the environment, impacting soil quality.	Coating should be such that it does not exceed the delineated road width (i.e. Carriageway) according to the project design.			Presence of spill containment measures at work sites. Adherence to delineated road width for asphalt layering.	Site verifications Visual observation	Spill containment measures are in place and functional throughout the project duration. No asphalt spills or runoff outside the designated road width	Project locations	Weekly checks for proper storage and containment measures Daily visual inspections during asphalt application.		
2.	Excavation of fill material from approved borrow pits; Excavation of earth drains; Excavation hauling of unsuitable	Excavation activities.	Impacts on Natural Habitats Excavation activities may disrupt local habitats (rivers, streams, ponds, forest), burrowing/fossorial organisms and wildlife and fishes.	Implement erosion control measures around excavation sites to prevent sediment runoff into nearby streams, rivers, etc. Minimize disturbance to natural habitats by controlled	Contractors	Captured in the Contractors' BOQ	Changes or disruptions in habitat structure	Ecological surveys, habitat assessments, and wildlife monitoring	Minimal disturbance to habitats and wildlife populations	Natural Habitats along road corridors (rivers, streams, ponds, forest),	Monthly	FPMU ESO; SPIU; Safeguards Unit; ESO; Supervisory Consultant;	Incorporated in D1 Above

ESMP Mitigation and Monitoring Matrix Table for Roads Selected for Upgrades (Rehabilitation Phase)													
S/N	Activity	Sub-Activity	Potential Risks & Impacts	Mitigation Measures	Responsibility for Mitigation	Cost of Mitigation USD/(Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility of Monitoring	Cost of Monitoring USD/(Naira)
		Installation of CDS along some roads.	Improperly designed CDS (culverts or bridges) at locations such as Lot 1 (Okagwa Stream along Okagwe – Nkwebi – Onwuwanwu) and Lot 4 (Ekweze Stream along Agalabano – Umuhu Central – Ekeoba) may alter water flow patterns increasing the risk of sectional flooding, and potentially creating unsuitable conditions for species that rely on specific flow regimes. It can also create barriers that prevent fish and amphibians from moving upstream or downstream, disrupting their breeding or feeding cycles.	Design culverts and bridges to match the natural flow regime, maintaining adequate width, depth, and gradient to accommodate species movement. Ensure that the invert levels of culverts and cross-drainage structures align closely with the natural streambed elevation. Conduct hydrological modelling (post CDS installation) to confirm that culverts and bridges do not obstruct water flow or exacerbate flooding risks.	Contractors	<i>Captured in the Contractors' BOQ</i>	Water flow velocity and pattern around culverts and bridges. Observed movement of fish and amphibians through the structure. Incidence of flooding upstream or downstream of the structure.	Measure using flow meters or current velocity sensors. Visual surveys or tagging studies. Inspect upstream and downstream areas during and after heavy rainfall to identify water pooling or altered flow patterns.	around the culvert or bridge. Evidence of uninterrupted fish and amphibian movement through the structure, with no signs of blockage or avoidance. No reports of increased flooding in the vicinity due to the structure.	Proposed CDS locations – specifically, Lot 1 (Okagwa Stream along Okagwe – Nkwebi – Onwuwanwu) and Lot 4 (Ekweze Stream along Agalabano – Umuhu Central – Ekeoba)	Monthly		
4.	Civil Works;	Operation of work vehicles and construction equipment, generators, etc.	Air Pollution: Carbon and Greenhouse Gas (GHG) emissions	Use vehicles, plants and equipment that are in good condition generally less than 5 years old. Fuel switching- Fuel switching from high to low-carbon content fuels ²³ (where available) Energy Efficiency Machines could be turned off when not in use. Multiple Trips	Contractors	<i>Captured in the Contractors' BOQ</i>	Gaseous Pollutants such as SO ₂ , NO ₂ , CO ₂ , CO, VOCs, H ₂ S, TSP	In-situ Air Quality Measurement	Air quality parameters are within NESREA MPL	Project corridors	Monthly	SPIU; Safeguards Unit; Supervisory Consultant; Abia SMEEnv	<i>Incorporated in D1 Above</i>

²³ **Fuel Switching:** Involves transitioning from “carbon intense” fuels (like gasoline or propane) to low- or zero-carbon alternatives (like renewable energy) in our vehicles. Primary examples of Alternative Low/ No Carbon Fuels include Biofuels, Advanced Diesel, Natural Gas, etc. It is noteworthy that in practical use, the overall CO₂ emissions from a diesel car (i.e. 120g CO₂/km on average) tends to be lower than the average emissions from PMS-based vehicles (i.e. 200g CO₂/km). Therefore, advanced diesel-based vehicles are recommended for the project as a viable alternative, if the adoption of cleaner fuels is not feasible.

ESMP Mitigation and Monitoring Matrix Table for Roads Selected for Upgrades (Rehabilitation Phase)													
S/N	Activity	Sub-Activity	Potential Risks & Impacts	Mitigation Measures	Responsibility for Mitigation	Cost of Mitigation USD/(Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility of Monitoring	Cost of Monitoring USD/(Naira)
				Reduction and subsequent reduction of carbon emissions. Ensure regular air quality monitoring to ensure pollutant levels remain within acceptable limits.									
5.	Excavation hauling of unsuitable material at failed road sections to subgrade level; Filling, spreading, shaping and compacting approved fill material for sub-base and base course to 100% compaction as well as embankment slopes.	a) Road Survey; b) Excavating to the required depth to reach the subgrade level; c) Loading excavated material onto trucks; d) Hauling unsuitable material away from the excavation site to disposal or stockpile locations; e) Subgrade preparation. Filling, spreading, shaping and compacting	Fugitive dust generation. Release of Volatile Organic Compounds (VOCs) substances from paints used for painting road furniture e.g. road signs and welding fumes	Regular water spraying on roads and construction sites to dampen the area and suppress dust. Provide workers and PAPs with appropriate PPEs such as respirators or masks, to reduce dust inhalation. Cover trucks disposing unsuitable materials with tarpaulin during transport to prevent dust dispersion. Restrict construction activities near residential areas to specific hours to reduce exposure.	Contractors	@ N25,344 for hiring tanker per km x 17.29km (Lot 1) x 2 times per week = N876,395 For Lot 2 (10.21km) = N517,524 For Lot 3 (23.96km) = N1,214,484 For Lot 4 (17.84km) = N904,273 For Lot 5 (23.48km) = N1,190,154 Total Mitigation Cost for Fugitive Dust across the 5 Lots = N4,702,830 (3,074)	Fugitive dust generation Distribution of PPE and proper usage by workers and PAPs. Number of trucks covered with tarpaulin during transport. Adherence to construction schedule and noise/dust levels near residential areas.	Visual observation; Measurement of ambient particulate matter (PM_{2.5} and PM₁₀) Inspection of PPE inventory and distribution records. Visual observation of Workers/PAPs Spot checks of trucks entering and exiting the site. Review of daily construction logs for compliance with approved working hours.	Dust levels within acceptable limits (e.g., PM₁₀ < 50 µg/m³ and PM_{2.5} < 25 µg/m³ as per WHO/NESREA standards). 100% of workers and PAPs in high-dust areas provided with PPE. 100% of trucks carrying loose materials covered with tarpaulin. Zero incidents of complaints from communities about dust dispersion from trucks Construction activities limited to approved hours (e.g., 8:00 AM to 5:00 PM).	Project corridors	Weekly	SPIU; Safeguards Unit; ESO; Supervisory Consultant;	Incorporated in D1 Above
6.	Civil Works; Construction of Drains/Culverts/CDS Structures, etc.	Construction of drainage and channelization	Runoff from the upgraded drainage system at the Uturu section of the Eziamma-Amibo Ring Road (Lot 5) may exacerbate existing flooding and erosion issues along Uturu Road due to the community's low-	Construct a concrete-lined drainage system, approximately 1 km in length, extending from Uturu Junction (off Eziamma – Amibo Ring Road) up to the Iyi Ama Stream, to effectively manage runoff,	Contractor	TBD	Water level and flow rate in the drainage system and nearby flood prone areas. Erosion indicators (e.g., soil displacement, gully formation)	Conduct visual inspections during and after rainfall events, and near the Iyi Ama Stream and low-lying areas. Conduct visual inspections to identify new gully formations or changes in soil structure.	Runoff flow rate and water levels remain within the acceptable range, as per drainage design capacity, during rainfall events. No new significant gully formations or	Lot 5—Uturu Road off Eziamma – Amibo Ring Road and at Iyi Ama Stream	Weekly during construction and daily during peak rainy seasons Monthly during	SPIU; Safeguards Unit; ESO; Supervisory Consultant; Abia SMEEnv	451,290 (295)

ESMP Mitigation and Monitoring Matrix Table for Roads Selected for Upgrades (Rehabilitation Phase)													
S/N	Activity	Sub-Activity	Potential Risks & Impacts	Mitigation Measures	Responsibility for Mitigation	Cost of Mitigation USD/(Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility of Monitoring	Cost of Monitoring USD/(Naira)
			lying terrain and inadequate drainage infrastructure.	improve water flow, and minimize flooding and erosion impacts on the community. N/B: The constructed drain shall be expanded to handle increased runoff/rainfall intensity—to enhance its resilience against extreme weather events and climate change. Construct sediment traps and check dams along the installed drainage channel to prevent sediment flow and prevent downstream blockages. This will prevent siltation of the Iyi Ama Stream and downstream areas.		TBD	along Uturu Road and nearby areas Structural integrity of the concrete-lined drainage system Community feedback regarding flooding and erosion issues. Sediment load in drainage channels & physical condition of sediment traps Water Quality of the Iyi Ama Stream (e.g., Total Suspended Solids (TSS))	Perform physical inspections of the concrete lining for cracks, wear, or blockages Conduct periodic community consultations and surveys to document residents' observations regarding flooding and erosion. Visual inspection and assessment of sediment accumulation in traps and check dams, also for cracks, etc. Sampling of water from the Iyi Ama Stream and laboratory analysis for TSS concentration	expansion of existing erosion sites. Concrete-lined drainage is free from major cracks, blockages, or structural failures. Reduced complaints or reports of flooding and erosion by community members. Sediment traps and check dams remain structurally sound and free of blockages/sediment accumulation or excessive erosion. TSS levels in the Iyi Ama Stream remain below a threshold value (based on baseline conditions)		construction and Quarterly during operation Quarterly Biannual consultation Monthly inspection and surface water sampling during construction and after major rainfall events (>20 mm rainfall in 24 hours).		
7.	Civil works;	General road rehabilitation activities.	Project activities may affect water and sanitation conditions, increase chances of stagnated water, which may lead to waterborne diseases. Improper backfilling or a failure to backfill where drainages have been installed may result in heaps of soil which overtime may fall back into the drainage channel forming sedimentation and	Ensure proper design and construction of drainage systems to prevent stagnation of water and promote effective water flow away from the project area. Ensure proper backfilling of installed drainages and implement a maintenance schedule to keep drainage channels clear of debris, vegetation, and	Contractors	N/A Captured in the Contractors' BOQ	Presence of sanitation hazards (e.g., stagnant water, waste accumulation); Effectiveness of drainage systems, water flow patterns. Backfilling of installed drainages	Physical observations during site inspection. Visual inspections, monitoring water levels and flow rates.	Minimal stagnation of water, Effective drainage of runoff away from the project area. Minimal silt accumulation in drains	Drainages along the road corridors.	Biweekly	SPIU; Safeguards Unit; Supervisory Consultant; Abia SMEnv	Incorporated in D1 Above

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			may hinder the flow of water through the drains	sediment build-up, ensuring continuous water flow.									
8.	Civil Works	General Rehabilitation Activities	Rehabilitation activities may increase the occurrence of open defecation by construction workers leading to poor environmental sanitary conditions.	Provision of gender specific mobile toilets (Porta-Potty) and enforcement of their use by construction workers.	Contractor	@ N550,000 x 5 Lots = N2,750,000 (1,792)	Compliance to the provision and enforcement of the use of mobile toilets	Inspections, checks and verifications	Reduced practice of open defecation and improved hygiene and sanitation conditions.	Project Areas	One-off	SPIU; Safeguards Unit; ESO; Supervisory Consultant;	Incorporated in D1 Above
9.	General Civil Work Activities	Civil works	Waste- Generation of waste including such as food waste, debris, top soil, disused materials and containers, toxic waste (such as asphalt, spent oils and chemicals) etc. Inadequate management of food wastes may lead to odorous conditions and encourage swarming of flies and rodents, thereby posing risks to public and community health.	Develop and implement the detailed Waste Management Plan (WMP) (See Annex 6) Ensure segregation of waste to facilitate reuse and recycling opportunities. Ensure regular collection and disposal of food waste to prevent odour and pest infestation. Ensure toxic and hazardous wastes are stored in labelled closed containers with secondary containment with storage containers. Ensure usage of ASEPA approved waste vendor for waste evacuation, processing & disposal. All interventions will keep a written record or inventory of type, quantity/amount, transportation and	Contractor	@ N450,560 x 5 Lots = N2,252,800 (1,472)	Compliance to WMP implementation; Frequency and effectiveness of waste collection and disposal. Quantity of construction waste generated. Odour due to poor management of food waste Waste vendor licenses and waste evacuation documentation	Checks and site verifications Documentation of waste collection schedules and disposal activities Regular waste audits and documentation of waste volumes. Visual site observations and inspections	Contractor's Compliance Quantity of wastes reused/recycled following segregation Minimal odour and improved aesthetics of the project sites	Weekly	Project Areas	ABS-RAAMP PIU – ESO, Safeguards Unit ASEPA	Incorporated in D1 Above

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				final disposal of waste.									
10.	Excavation of fill material from approved borrow pits; Excavation of new borrow pits.	Excavation of fill material from approved borrow pits; Excavation of new borrow pits.	Excavation of earth from existing borrow pits will result in widening of the borrow pit perimeter and may predispose areas currently suffering erosion to further erosion and inundation, especially where existing borrow pits were not reclaimed from previous activities. Also excavating new borrow pits can lead to land degradation and erosion risk. Improper waste disposal may occur in these pits	As much as possible, refrain from gathering earth materials from borrow pits that are susceptible to erosion. If sourcing earth materials from erosion-prone pits is unavoidable, deploy erosion control measures around borrow pits to mitigate widening and prevent additional erosion. Reclaim and stabilize used sections of existing borrow pits to prevent erosion and inundation. Monitor and enforce proper waste disposal practices to prevent disposal in in-use borrow pits. Properly reclaim and rehabilitate borrow pits after use, revegetate and restore natural environment. Implement Borrow Pit Management Plan (BPMP) – See Annex 8	Contractor	N/A <i>Captured in the Contractors' BOQ</i>	Borrow pit perimeter and erosion rates. Waste disposal in borrow pits. Borrow pit reclamation and revegetation Implementation and effectiveness of BPMP	Inspections of borrow pits to measure changes in perimeter and erosion levels Regular inspections Visual observation Checks & verifications	Stable borrow pit perimeters and minimal erosion Absence of contaminants and wastes in borrow pits Percentage borrow pit reclamation across project areas. Contractors' compliance	Existing Borrow Pits and New Borrow Pit Sites.	One-off Every 2 months	FPMU ESO; SPIU; Safeguards Unit; ESO; Supervisory Consultant;	<i>Incorporated in D1 Above</i>
11.	Excavation – hauling of unsuitable material at failed road sections to	Excavation activities, Haulage, Asphaltting, Mixing of cement and	Noise level may exceed the NESREA National Environmental (Noise Standard and Control)	Conduct regular maintenance on equipment to minimize noise emissions.	Contractor	<i>Captured in the Contractors' BOQ</i>	Noise levels in decibels (dB).	Use of Noise meters Inspections and verifications	Noise levels are within NESREA permissible limits (75dB)	Project areas	Twice weekly	SPIU; Safeguards Unit; ESO; Supervisory Consultant;	<i>Incorporated in D1 Above</i>

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				coir logs, or terracing) in cleared areas to stabilize the soil until vegetation is re-established. Engage local communities to assist with tree planting and maintenance programs, ensuring sustainable long-term management.			Effectiveness of erosion control measures	movement in cleared areas. Inspection of erosion control structures (silt fences, coir logs).	Erosion control measures are intact and functional in cleared areas.		quarterly thereafter. Bi-weekly during construction and after major rainfall events		
Sub-total Mitigation & Monitoring Cost (Environmental Risks and Impacts)						14,718,110 (9,620)							3,563,270 (2,329)
E.	SOCIAL RISKS & IMPACTS												
13.	Civil Works	Road rehabilitation activities	Road users may suffer restricted access to roads. This is particularly significant for elderly individuals within the project communities, who are more vulnerable to disruptions. Restricted access could limit their ability to reach essential services such as healthcare, social services, village square and leisure spots. In addition, considering that most of the roads slated for rehabilitation serve as primary routes to local markets, the impact on women who	Early notification of PAPs and road users. Adopt a phased approach to road rehabilitation e.g. sectionalize rehabilitation works into manageable portions to allow for a segment of the roads to be rehabilitated at a time. Local collaboration to create detours/diversions or use road signs to redirect traffic to existing alternative access routes, which have been identified for the roads. Schedule the rehabilitation of	Contractors	N/A	No of notifications distributed & mediums used for notification (flyers, town criers, etc.) Sections completed per the phased plan Road user's access to un-rehabilitated sections Number of detours/diversions provided Visibility and condition of road signs Feedback on disruptions from	Conduct short interviews with community members to confirm awareness. Compare progress reports to the approved phased rehabilitation schedule Field verification of accessibility Site inspections to verify detour condition and signage Feedback from road users through interviews or surveys Conduct informal	Notifications reach at least 80% of affected road user and majority of respondents confirm receiving adequate prior notice Rehabilitation follows the phased plan in at least 90% of cases Road users have continued access to unworked sections Functional detours provided for all blocked sections At least 80% of road users report clear and visible traffic directions Minimal disruption	Road corridors	Weekly Biweekly Weekly	SPIU; Safeguards Unit; SSO; Supervisory Consultant; GRC	1,295,766 (847)

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			predominantly engage in trading activities in these markets could be significant. This impact is likely to be more pronounced on major market days, which occur on a 4 or 8-day cycle	major or busy sections of the roads during off-peak hours, non-market days or at night to minimize access restriction. Minor or Non-carriageway related civil works e.g. drainage construction which may not have direct impacts on PAPs can be implemented on market days. Implement GRM	PIU Safeguards Unit, GRC	Embedded in GRM Cost	market users Types of works conducted on market days No of grievances submitted & percentage resolved within the stipulated timeframe	interviews with road users and market women about access during works Observe activities on-site to confirm only non-carriageway works Review grievance records/logbooks and interview PAPs to assess satisfaction with resolution	reported Minimal complaints from market users and PAPs At least 75% of grievances are resolved within 2 weeks PAPs express satisfaction with resolutions in follow-up surveys		Monthly		
14.	Widening of shoulders of the existing road	Reclamation of the ROW	Physical and Economic Displacement: Implementation of civil works (widening of the shoulders of the existing road) may result to reclamation of the ROW and impact on livelihoods, farms, etc. Possible crop losses, damage to agricultural produce, and economic displacement for farmer or landowner who may be potentially affected by the proposed installation of culvert at the lowest point along the Nkwo Elechi-Umuagu-Umuorukwu-Osusu-Amukwa Road.	Early notification of PAPs Implement RAP and compensation to affected individuals or communities Implement livelihood restoration programs for identified vulnerable groups. Ensure culverts are adequately sized to handle peak water flow during the rainy season. If possible, incorporate proper culvert outlets and water diversion channels to prevent water stagnation and overflow onto	SPIU; Communications Specialist Safeguards Unit; SSO; RIC	Incorporated in RAP Implementation Cost	RAP Implementation and timely disbursement of compensation and livelihood restoration support	Record-keeping of compensation payments and livelihood support provided	Minimal grievance attributed to physical and economic displacement	Road corridors/stretches particularly narrow sections where displacement is likely.	One-off	FPMU SSO; SPIU; Safeguards Unit; SSO; Supervisory Consultant; Resettlement Implementation Committee (RIC)	Incorporated in E13 Above

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				farmland. Implement fair compensation for the farmer/land owner whose crops or land may be affected			Zero grievances	PAP interviews	PAP satisfaction with compensation				
15.	Widening of shoulders of the existing road	Reclamation of the ROW Construction of drains	Potential Impact on Power Infrastructure: The relocation of power distribution poles may be required during road shoulder expansions or drain construction along specific routes, such as Sameke Junction – Amaraughoghu (Upgrade; Lot 2), Agalabano – Umuhu Central School – Ekeoba (Upgrade; Lot 4). This process could result in damages to infrastructure or temporary power outages, potentially leading to grievances from relevant government MDAs, electricity companies responsible for managing/monitoring the affected infrastructure, and operators of local businesses that rely on a stable power supply.	Assess and explore the possibility and option of realigning the road either to the right or left, based on which side minimizes adverse impacts on the distribution poles. Early follow-up engagement with Enugu Electricity Distribution Company (EEDC) to identify power infrastructure that may be affected and to coordinate relocation plans. Notify local businesses and residents in advance about potential disruptions to power supply Implement the relocation of power poles in phases, minimizing downtime and ensuring power is restored as quickly as possible. Schedule relocations during off-peak hours or when businesses are less reliant on power to reduce the impact on local	Contractor	N/A @ N500,688 x 2 Lots = N1,001,376 (654)	Compliance to road alignment Compliance to early notification Timeliness of pole relocation by EEDC	Visual observation Interviews, surveys and stakeholder consultations Scheduled and actual dates of pole relocation	Impact to power distribution poles is evaded. Positive feedback indicating effective communication and minimal disruption. Adherence to planned pole relocation schedules	Locations where power distribution poles encroached into the Sameke Junction – Amaraughoghu (Upgrade; Lot 2), Agalabano – Umuhu Central School – Ekeoba (Upgrade; Lot 4) Roads.	One-off	SPIU; Safeguards Unit; SSO; Supervisory Consultant	Incorporated in E13 Above

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		labour	pressure on community resources e.g., water points, disbursement of cash from Point of Sale (POS) providers, etc. Increase risk of communicable diseases, Sexually Transmitted Infections (STIs) and Sexually Transmitted Diseases (STDs) as a result of consensual and transactional sexual intercourse between workers, locals and followers. Risk of illicit behaviour and practices such as theft, physical assaults, substance abuse, prostitution, etc. Risk of social conflicts between communities and contractor workers due to ethnic, religious or cultural differences.	(water, separate POS service providers, waste disposal point, leisure/sports facilities, etc.) and prohibition of use from other community sources; Vaccinate workers against common and locally prevalent diseases; Provide HIV/AIDS and STDs campaigns and sensitization; Distribute condoms; Ensure workers sign Code of Conduct (CoC) (<i>See Annex 11</i>) which incorporates sanctions (e.g., dismissal) for workers involved in criminal activities; Implement Labour Influx Management Plan (Annex 13) Substance abuse prevention and management programs. Cooperation with local law enforcement; Cultural sensitization trainings.	Project Engineer	N1,006,960 (658)	worker's camp Vaccination of workers HIV/STDs sensitization and campaigns Signing of COC Engagement of local law enforcement.	Verifications Evidence of Sensitization/Campaign (e.g. flyers, manual, reports, attendance sheets, etc.) Checks and validation. Evidence of engagement	resources. Reduced cases of disease transmission Contractors' compliance Antisocial behaviours and social vices amongst workers is reduced. Compliance	Project areas		Unit; SSO; Supervisory Consultant;	
19.	Continuous Civil Works	Civil works and steady influx of labour	SEA/SH: Teenage and adolescent females/males as well as adults, may be exposed to SEA/SH as a result of interactions with	Implement stringent screening processes for all workers to identify and exclude individuals with a history of SEA/SH	Contractors	@ N500,717 x 5 Lots = N2,503,585 (1,636)	Records of worker screening processes and criteria applied. Number of	Review worker recruitment records. Audit of screening criteria used.	100% of workers screened for SEA/SH history. Documented evidence of	Project Locations	One-off	FPMU GBV Specialist; SPIU; Safeguards Unit; GBV	Incorporated in E13 Above

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			workers and possibly followers. Additionally, fear of retaliation or community stigma may discourage survivors from reporting incidents, further perpetuating the cycle of abuse.	offenses. Ensure all contracted workers sign the Code of Conduct (CoC), and establish strict penalties, including immediate termination, for workers found guilty of SEA/SH offenses. Conduct regular SEA/SH awareness and sensitization workshops for all project workers and community members, emphasizing zero tolerance for such behaviors. The SPIU must ensure that Supervisory Consultants and Contractors engage a qualified GBV focal person/officer as part of their safeguards team. This requirement should be explicitly included in their contracts. Alternatively, the SPIU should partner with NGOs in the state, specializing in GBV to provide independent third-party monitoring of SEA/SH risks. Establish a community-based GRM, with specific provisions for SEA/SH cases, ensuring anonymity and confidentiality	SPIU; Safeguards Unit; GBV Specialist;	N/A	workers screened. 100% of workers screened for SEA/SH history. Documented evidence of exclusion of offenders. Number of workshops conducted. Attendance records of workers and community members. Workshop content. Presence of a qualified GBV focal person/officer. Number of contracts with GBV requirements included. Functionality of GBV-GRM. Number of SEA/SH complaints received and resolved.	Verify signed CoCs. Review incident reports and disciplinary records. Review workshop attendance sheets and training materials. Participant feedback forms. Interviews with safeguards team and GBV focal person. Contracts and procurement audits. Regular checks on GRM functionality. Complaint log reviews.	exclusion of offenders. 100% CoC compliance. Documented actions taken for any SEA/SH violations. Zero repeat offenses. At least one workshop per quarter. Increased awareness reported in feedback. Active GBV focal person engaged. 100% of contracts include GBV requirements. Functional GBV-GRM in place. 100% of complaints handled confidentially and within set timelines.			Specialist; SSO; Supervisory Consultant;	

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				(i.e. GBV-GRM). Conduct a detailed mapping of local GBV service providers and Sexual Assault Referral Centers (SARCs) to establish a robust referral system.			Confidentiality measures. Availability of mapped service providers and SARCs. Quality of the referral system established.	Interviews with complainants. Review mapping documents and referral records. Consultation with service providers.	Completed mapping document. Robust and functional referral system in place.				
20.	Continuous Civil Works	Civil works and steady influx of labour	VAC: Children may face harassment or violence from workers, particularly when asked to perform tasks like buying food or assisting with materials. Some families may opt to involve underage children in selling goods at work sites leading to dropping out of school and child labour.	Ensure that children and minors are not employed directly or indirectly on the project. Communication on hiring criteria, minimum age, and applicable laws should be ensured. VAC sensitization Campaign against child labour.	Contractors	Cost incorporated in E19 above	VAC	Checks and verifications	Zero cases of VAC Increased VAC awareness.	Project locations and communities	Weekly	SPIU; Safeguards Unit; SSO; Supervisory Consultant; GBV Officer	Incorporated in E13 Above
21.	Continuous Civil Works	Civil works and steady influx of labour	Security: Contractors and workers may be at risk of robbery, extortion, kidnapping, and equipment theft by local gangs or criminals, particularly in areas such as Isiala Ngwa North and South LGAs (Lot 3) and Umu Nneochi LGA (Lot 2), which have previously experienced insecurity	Obtain a Social Licence to Operate (SLO) from the host communities prior to commencement of civil works. Liaise with and build positive relationships with vigilantes and community watch groups to enhance local security support and ownership of project.	Contractor (Lots 2 and 3)	Captured in the Contractors' BOQ	Obtainment of SLO Level of community participation in security initiatives. Liaison with local law enforcement; Number and nature of security incidents Training of workers	Checks and validation Meetings, and feedback sessions with locals Letter of engagement; Incident reports, police records, and security logs. Attendance records; Training manuals and reports	Contractor's compliance Increased community involvement and cooperation in security efforts Reduction in the frequency and severity of security incidents during rehabilitation activities in the locations. Increased security	All project locations, with emphasis on roads within Isiala Ngwa North and South LGAs (Lot 3) and Umu Nneochi LGA (Lot 2),	One-off	SPIU; Safeguards Unit; SSO; Supervisory Consultant;	Incorporated in E13 Above

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				Collaborate with local law enforcement agencies to enhance security presence and patrols around construction sites. Train construction workers on emergency procedures and evacuation protocols. Establish reporting mechanisms for workers to report security incidents promptly. Implement Security Management Plan (Annex 16) Provide Social License to Operate			Effectiveness of Security Mgt. Plan	Verifications and consultations	awareness and emergency procedures among workers Percentage security related incidences.				
22.	Construction of earthen drains at designated locations along the road corridor Excavation of fill material from approved borrow pits	Construction of earthen drains at designated locations along the road corridor Excavation of fill material from approved borrow pits Civil Works	Community Health and Safety: Un-reclaimed and abandoned borrow pits may pose safety risks for children. Dug-up concrete drains may also pose safety issues. Accidents while pedestrians are crossing access roads and also animals that graze freely.	Barricade in-use borrow pits prior to reclamation. Install drains in sections/batches to avoid multiple open pits, and barricade unfinished work at the end of each day. Install speed bumps and road furniture on rehabilitated roads. Reduce vehicle speed. Implement Community Affairs, Safety, Health, Environment & Security (CASHES) Plan (See Annex 14)	Contractors	Incorporated in the cost for Borrow Pit Reclamation (i.e. Environment – Section D10 above). Captured in the Contractors' BOQ	Barricading of in-use borrow pits and uncompleted drainage channels Installation of speed bumps CASHES Plan Implementation	Site inspection Site inspection, Checks and verifications Verifications and checks	Zero incidents and accidents associated with open pits. No case of road accidents or livestock road kills. Minimal Community Health, Safety & Security incidences/impacts	Borrow pits, open drains and road corridors Project locations	One-off	SPIU; Safeguards Unit; SSO; Supervisory Consultant;	Incorporated in the cost for Borrow Pit Reclamation (i.e. Environment – Section D10 above).

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	Sub-total Mitigation & Monitoring Cost (Social Risks and Impacts)					5,412,967 (3,538)							1,295,766 (847)
F.	OCCUPATIONAL HEALTH AND SAFETY RISKS & IMPACTS												
23.	General Civil Works:	General Civil Works	Likelihood of accident occurring due to Unsafe Conditions and Unsafe Behaviours.	Conduct OHS training and education; HazCom, routine JHA/PHA; Implement site-specific OHSMP	Contractors	@ N750,000 x 5 Lots = N3,750,000 (2,451)	Number of Accidents or Incidents	Incident Reports and Records of any Accidents or Near Misses.	Accident Frequency Rate	Project corridors	Daily toolbox training;	SPIU; Safeguards Unit; Supervisory Consultant;	N500,410 (327)
		Operation and use of heavy machinery or equipment	Local workers may be injured by construction machinery such as excavators, bulldozers, cranes, and trucks due to mishandling, lack of training, or mechanical failure.	Provide comprehensive OHS training for all workers and ensure all equipment operators are properly trained and certified. Conduct routine maintenance on machinery.	Contractors		Number of OHS training sessions conducted; Training attendance records. Maintenance records.	Review training records. Conduct spot checks on-site. Inspect equipment maintenance logs.	100% of workers trained. Zero injuries caused by improper machinery use. Functional machinery.	Project corridors	Quarterly	SPIU; Safeguards Unit; Supervisory Consultant;	
		General Civil Works, Construction of CDSs	Materials like steel, concrete, or tools can fall and cause serious injuries to workers e.g. during construction of CDSs	Procure, distribute and mandate the use of PPEs, including helmets and safety boots. Secure all materials and tools during use or storage.	Contractors		Availability and use of PPE. Proper storage and securing of materials. Incident reports.	Conduct PPE compliance checks. Inspect storage areas. Review incident logs.	100% PPE compliance. Zero injuries caused by falling materials. Hazard-free work environment.	Project corridors	Weekly	SPIU; Safeguards Unit; Supervisory Consultant;	
		General Civil Work Activities	Uneven ground, wet conditions, or cluttered work areas may cause workers to slip, trip, or fall, leading to injuries.	Regularly inspect and maintain work areas to ensure they are clean, dry, and free of hazards. Use signs to mark hazardous areas.	Contractors		Number of inspections conducted. Records of hazard identification and rectification	Conduct site inspections. Review hazard reports and corrective actions taken.	Reduced number of slips, trips, or falls.	Project corridors	Weekly	SPIU; Safeguards Unit; Supervisory Consultant;	
		Procurement, Haulage/ Transport/ Supply. Also, Operation of Heavy-duty Machines	Traffic collisions involving construction vehicles or equipment on site can cause serious injuries or fatalities.	Ensure all drivers are trained and licensed. Establish speed limits and designated parking zones	Contractors		Driver certification records. Compliance with speed limits and parking zones	Conduct driver audits. Observe compliance during site visits.	Zero traffic collisions or fatalities on-site.	Project corridors	Monthly	SPIU; Safeguards Unit; Supervisory Consultant;	
		Excavation/ Earth Works	Prolonged exposure to dust from excavation and earthworks and to high levels of noise from heavy	Implement dust suppression measures (e.g., water spraying, covering materials).	Contractors		Availability and use of PPE. Frequency of water spraying.	Visual inspection of PPE use. Measure noise levels using a sound meter.	100% use of PPE by workers. Noise levels within permissible limits (e.g., <85 dB).	Project corridors	Weekly and during peak activities.	SPIU; Safeguards Unit; Supervisory Consultant;	

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			machinery can cause respiratory problems and hearing loss. Pre-existing conditions such as asthma may also be triggered.	Provide workers with PPE (e.g., masks and earplugs).			Noise levels at work areas.	Check dust suppression logs.	Visible dust reduced on-site.				
		Thin Asphaltting, Cement Mixing, Painting of Road Furniture, Excavation and Haulage of Unsuitable Road Sections to Subgrade Level	Handling materials like asphalt, asbestos, bitumen, cement, or chemicals used in construction processes can expose workers to toxic substances, leading to skin irritation, respiratory issues, or long-term health conditions.	Train workers on safe handling of hazardous materials. Provide PPE (e.g., gloves, goggles, respirators). Ensure proper storage and labelling of hazardous materials.	Contractors		Training records. Availability and use of PPE. Storage conditions of hazardous materials.	Review training attendance. Visual inspection of PPE and storage areas. Audit material safety data sheets (MSDS).	100% of workers trained. No incidents of exposure to hazardous substances. Proper storage maintained	Project corridors	Monthly	SPIU; Safeguards Unit; Supervisory Consultant;	
		General Civil Work Activities	Working in hot weather conditions without proper hydration or rest can lead to heat stress, heat exhaustion, or dehydration	Provide shaded rest areas and ensure regular breaks. Supply potable water/provide water points Train workers to recognize signs of heat stress.	Contractors		Number of shaded areas and water stations. Worker compliance with breaks. Training sessions conducted.	Site inspection of rest areas and water supply. Monitor worker breaks. Review training records.	No reported cases of heat stress. Adequate water and shade available at all work areas. Workers report satisfaction.	Project corridors	Weekly	SPIU; Safeguards Unit; Supervisory Consultant;	
		Transportation, Operation of Heavy Machinery, General Civil Works	Long working hours e.g. driving or physically demanding tasks can lead to fatigue, impairing decision-making and increasing the likelihood of accidents and/or near misses.	Enforce maximum working hours (e.g., no more than 8 hours/day). Provide regular breaks and monitor worker schedules. Rotate tasks to prevent overwork.	Contractors		Worker schedules and task rotations. Compliance with maximum working hours	Review work schedules. Conduct worker fatigue surveys. Monitor adherence to shift limits.	No worker exceeds the prescribed working hours. Reduced complaints of fatigue.	Project corridors	Monthly	SPIU; Safeguards Unit; Supervisory Consultant;	
		Loading and offloading of materials, menial jobs, civil works, etc.	Workers performing repetitive tasks, such as lifting, bending, or manual handling of heavy materials, may suffer from musculoskeletal disorders.	Train workers on proper lifting techniques. Provide ergonomic tools and equipment. Encourage job rotation to reduce repetitive strain.	Contractors		Training records. Availability of ergonomic tools. Number of workers rotated.	Review training attendance. Inspect tools and equipment. Monitor task rotation logs.	100% trained workers. Ergonomic tools available for high-risk tasks. Reduced complaints of musculoskeletal pain.	Project corridors	Monthly	SPIU; Safeguards Unit; Supervisory Consultant;	

ESMP Mitigation and Monitoring Matrix Table for Roads Selected for Upgrades (Rehabilitation Phase)													
S/N	Activity	Sub-Activity	Potential Risks & Impacts	Mitigation Measures	Responsibility for Mitigation	Cost of Mitigation USD/(Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility of Monitoring	Cost of Monitoring USD/(Naira)
		General Civil Work Activities	Tight project timelines, pressure from supervisory consultant, or conflicts with co-workers can lead to stress, affecting workers' mental well-being.	Provide regular stress management training and mental health workshops. Establish a workplace-counselling program. Encourage teamwork through conflict resolution sessions. Ensure realistic project timelines and regular breaks.			Number of stress management workshops conducted. Availability of counselling services. Worker feedback on workload and stress levels.	Attendance records for workshops. Worker satisfaction surveys. Reports from counselling sessions (anonymized).	At least one workshop per quarter. Positive feedback from workers (e.g., reduced stress reports).	Project Corridors	Quarterly	SPIU; Safeguards Unit; Supervisory Consultant;	
		General Civil Work Activities	Burns from fire, explosion or leakages of hazardous materials like battery acids, explosives, etc.	Provide adequate PPE (e.g., gloves, goggles, fire-resistant clothing). Conduct regular safety drills and training. Implement proper storage and handling procedures for hazardous materials. Display hazard warning signs and labels. Establish an emergency response plan.	Contractors		PPE distribution records. Number of safety drills conducted. Availability of hazard signs and labels. Incident reports for burns or accidents.	Site inspections to verify PPE use. Drill observation and feedback. Review of incident logs.	100% PPE compliance. Regular drills conducted. Zero incidents of burns or hazardous material-related accidents.	Project Corridors	Monthly	SPIU; Safeguards Unit; Supervisory Consultant;	
	Sub-total Mitigation & Monitoring Cost (OHS Risks and Impacts)					N3,750,000 (2,451)							N500,410 (327)
	Total ESMP Cost (Rehabilitation Phase)					23,881,077 (15,609)							5,359,466 (3,502)

Table 33: ESMP Mitigation and Monitoring Matrix Table for Roads Selected for Upgrades (Operation Phase)

ESMP Mitigation and Monitoring Matrix Table for Roads Selected for Upgrades (Operation Phase)												
S/N	Activity	Potential Risks & Impacts	Mitigation Measures	Responsibility for Mitigation	Cost of Mitigation USD/(Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility of Monitoring	Cost of Monitoring USD/(Naira)
G.	ENVIRONMENTAL RISKS & IMPACTS											
1.	Operation and usage of	Rehabilitated roads and drainages may be	Institute a community-based road	SPIU	N/A	Set up of Road Maintenance	Verification and consultations	Road is being maintained	Rehabilitated road corridors	Monthly	SPIU, Safeguards Unit, RARA	N/A

ESMP Mitigation and Monitoring Matrix Table for Roads Selected for Upgrades (Operation Phase)													
S/N	Activity	Potential Risks & Impacts	Mitigation Measures	Responsibility for Mitigation	Cost of Mitigation USD/(Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility of Monitoring	Cost of Monitoring USD/(Naira)	
	rehabilitated roads	predisposed to potholes, weed overgrowth which may reduce road width and predispose road users to accidents	maintenance group to carryout maintenance activity at periodically. RARA to continue with road maintenance and pot hole repairs	Project Engineer Road Maintenance Committee		Committee		regularly					
2.		Erosion and Water Runoff: Poor drainage management and household waste accumulation could also lead to clogging and potentially flooding of the road, nearby areas and may result in sedimentation of Surface Water. The edges of CDS structures and bridges may erode and wear off due to non-implementation of erosion control measures	Regularly clean and maintain drainage systems to prevent clogging and reduce the risk of surface runoff and flooding. Sensitize the community on the risk of dumping refuse in the drainage channels. Implement erosion control measures on the installed CDSs to prevent edge washouts	Contractor	N/A	Clogging and siltation of drains Waste accumulation Erosion control measures	Site inspection and physical observation	Installed drainages are devoid of silt and household wastes. Zero erosion of installed CDSs	Project Locations	Monthly One-off	SPIU, Safeguards Unit, RARA	N/A	
3.		Road kills: Improved roads may increase the risk of livestock-vehicle collisions, especially in areas where animals frequently cross roads.	Install speed breakers and speed limits along the rehabilitated roads to slow down vehicle speed	Contractors	Incorporated in the CASHES Plan Rehabilitation Phase – E22	Speed bumps, Traffic signs, Markings etc.	Visual observation	Minimal dust generation	Rehabilitated road corridors	Quarterly	SPIU, Safeguards Unit, RARA	Incorporated in the CASHES Plan Rehabilitation Phase – E22	
Sub-total Mitigation & Monitoring Cost (Environmental Risks and Impacts)					N/A								N/A
H.	SOCIAL RISKS & IMPACTS												
4.	Closure of civil works	Workers and personnel engaged in civil works will be relieved of their duties at the commencement of the operational phase	Early notification of workers prior to their disengagement Some community based unskilled labourers can be integrated into the Road Maintenance Group. Offer skills development and training programs to enhance the employability of worker's post-closure.	Contractor	N/A	Compliance to early notification Integration of unskilled labourers in Road Maintenance Group	Interviews Checks, surveys and verification	Zero grievance Minimal grievance from disengaged workers	Project communities	One-off	RARA, SPIU; Safeguards Unit; SSO	50,655 (33)	
5.	Operation and usage of rehabilitated roads	Accidents involving vehicles or pedestrians are likely to occur because of drivers	Install road furniture and speed bumps Routine maintenance of roads.	Contractor	Incorporated in the CASHES Plan Rehabilitation	Road accidents; installation of road furniture and speed	Surveys and interview, consultations, inspections	Number of cases or incidences of road accidents	Rehabilitated roads and project communities	Monthly	SPIU; Safeguards Unit; SSO	Incorporated in the CASHES Plan Rehabilitation	

ESMP Mitigation and Monitoring Matrix Table for Roads Selected for Upgrades (Operation Phase)												
S/N	Activity	Potential Risks & Impacts	Mitigation Measures	Responsibility for Mitigation	Cost of Mitigation USD/(Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility of Monitoring	Cost of Monitoring USD/(Naira)
		exceeding speed limits.	Regular inspection of roads		Phase – E22	bumps						Phase – E22
Sub-total Mitigation & Monitoring Cost (Social Risks and Impacts)					N/A							101,310 (66)
Total ESMP Cost (Operation Phase)					N/A							101,310 (66)
Grand Total ESMP Cost (Spot Improvement)					30,349,090 (19,836)							8,759,471 (5,725)

Note: Most of the cost are borne by the Contractor. The SPIU Safeguards team shall ensure and verify that the costs are integrated into the Contractors' BOQ. Mitigation costs are estimates; Contractors are expected to review and ensure final costs in the BOQ are realistic and can adequately mitigate stated impact.

Table 34: ESMP Mitigation and Monitoring Matrix Table for Roads Selected for Spot Improvement (Pre-Rehabilitation Phase)

ESMP Mitigation and Monitoring Matrix Table for Roads Selected for Spot Improvement (Pre-Rehabilitation Phase)												
S/N	Activity	Potential E&S Risks & 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 of Monitoring	Cost of Monitoring Naira/(USD)
A. ENVIRONMENTAL IMPACTS												
1.	Mobilization of equipment and workers to site.	Transport/offloading of sourced materials (e.g. sand, gravel, cement etc.) at work areas may also lead to short-term localized dust generation.	Cover construction trucks carrying dry materials such as sand, gravel, and cement with tarpaulins to prevent materials from spilling and generating dust during transport. Designate offloading areas at least 50 meters away from	Contractors	N/A	Dust emissions from uncovered loads.	Visual inspections; In-situ Air Quality Measurement;	Reduction in airborne dust concentrations	Project Locations/Offload Sites	Twice Weekly (during equipment supply to site and mobilization activity).	SPIU; Safeguards Unit; ESO; Supervisory Consultant.	1,026,915 (671)

ESMP Mitigation and Monitoring Matrix Table for Roads Selected for Spot Improvement (Pre-Rehabilitation Phase)												
S/N	Activity	Potential E&S Risks & 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 of Monitoring	Cost of Monitoring Naira/(USD)
		rill formation.	significant or economically valuable vegetation. Implement erosion control methods e.g. silt fences, erosion control blankets around cleared areas. Where feasible, implement replanting programs in designated areas post-construction to offset vegetation loss.	Contractor	<i>As Captured in the Contractors' BOQ</i> N/A	Compliance to creation of buffer zones Risk of erosion and rill formation, particularly in cleared areas.	Visual observations Visual inspection and field measurements of rill formation or surface erosion using erosion pins or markers placed along cleared areas.	implementation; PAP and stakeholders' satisfaction. Area of surface erosion or rill formation detected. Soil stability and compaction rate after erosion control measures are implemented.		Weekly during active site clearance, and monthly during the rainy season.		
4.	Mobilization of equipment and workers to site.	Noise: Noise levels may exceed the NESREA National Environmental (Noise Standard and Control) (75dB) due to the operation of vehicles.	Where possible retrofit all hired vehicle exhausts with mufflers/silencers to minimize noise. Schedule mobilization during off-peak hours. (5-6am and 7-8pm daily). Enforce speed limits to reduce engine noise and tire screeches associated with harsh braking of fast-moving vehicles. Regular maintenance of vehicles. Provide and enforce the use of PPEs (e.g. earmuffs, earplugs) by workers.	Contractors	<i>As Captured in the Contractors' BOQ</i>	Noise levels Vehicle speed; harsh braking events Vehicle Maintenance Records. Usage of PPE by Workers	Noise monitoring using noise meters. Use of speed monitoring devices Maintenance Logs and Inspections Observational Checks and Surveys	Compliance with Noise Standards - NESREA National Environmental (Noise Standard and Control) of 50dB. Adherence to Speed Limits Compliance to vehicle maintenance. Percentage of workers consistently using provided PPE	Project locations.	Weekly	SPIU; Safeguards Unit; ESO; Supervisory Consultant;	<i>Incorporated in A1 Above</i>
5.	Dewatering ²⁶ of the roads.	Surface Water Contamination: Suction and removal of water from potholes and pools of water along the road may	Use eco-friendly dewatering aids or polymers to improve sediment settling and minimize suspended solids discharge.	Contractors	<i>As Captured in the Contractors' BOQ</i>	Sediment concentrations	Sampling and laboratory analysis - to measure sediment concentrations	Surface water quality is within permissible limits.	Streams and rivers along all Spot Improvement roads	Weekly	SPIU; Safeguards Unit; ESO; Supervisory Consultant; Abia SMEnv,	<i>Incorporated in A1 Above</i>

²⁶ **Dewatering of the roads** involves draining or pumping out water that has accumulated within the roadway alignment, trenches, excavated sections, or foundation areas. This is typically done prior to or during construction to maintain soil stability, prevent delays, and protect the integrity of construction materials. Methods for dewatering include: a) Surface dewatering – using ditches, channels, or shallow pumps to remove rainwater or runoff, b) Sump pumping – water is collected in low points (sumps) and pumped out, c) Wellpoint systems – used in areas with high groundwater; multiple small wells and pumps draw water out, d) Drainage pipes – temporary or permanent sub-surface pipes to guide water away, e) Grading and sloping – adjusting land levels to direct water flow out of the construction zone.

ESMP Mitigation and Monitoring Matrix Table for Roads Selected for Spot Improvement (Pre-Rehabilitation Phase)												
S/N	Activity	Potential E&S Risks & 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 of Monitoring	Cost of Monitoring Naira/(USD)
		potentially lead to the discharge of sediments and pollutants into nearby water bodies.	Install appropriate filters or geotextiles in dewatering systems to trap sediments and pollutants before discharging water. Designate specific zones for sediment settling, enabling temporary holding to allow sediments to settle before discharge. Erect sediment fencing along water bodies as a physical barrier to prevent sediment runoff during dewatering.			Effectiveness of sediment control measures	Field inspections	Operational efficiency of controls				
6.	Site Clearing Removal of topsoil/unsuitable materials to sub-grade level	Generation of brush piles and vegetative debris (e.g., grass clippings, leaves, brush pruning, tree limbs and stumps). Generation of heaps of removed top soil/earth material.	Implement WMP Engage local community to reuse brush piles as mulches and implement composting technique for vegetative debris. Where feasible, prioritize the on-site reuse of removed topsoil, incorporating it back into the rehabilitation activities.	Contractors	@ N250,655 x 3 Lots = N751,965 (491)	Effectiveness of WMP Volume of brush piles and vegetative debris generated.	WMP Audits Quantitative measurement; visual estimation.	WMP compliance Reduction in Volume of generated wastes.	Road corridors	Weekly	SPIU; Safeguards Unit; ESO; Supervisory Consultant;	Incorporated in A1 Above
7.	Excavation of fill materials from borrow pits	Land degradation and increased susceptibility to erosion due to excavation of earth materials from borrow pits.	Borrow pit design and siting should factor and carefully consider slope, size, and location to minimize the impact on land stability and reduce susceptibility to erosion. Implement a phased excavation approach, followed by timely	Contractors	<i>Refer to the rehabilitation phase for the cost of implementing Borrow Pit Management and Reclamation Plan²⁷</i>	Rate of erosion in and around the borrow pits Compliance to phased excavation and	Use of erosion pins to measure changes in soil stability; Visual observation. Checks, field inspections, physical verifications.	Reduced erosion rates around borrow pits. Percentage of decommissioned borrow pits that	Sites used as borrow pits for the project.	Monthly	FPMU ESO; SPIU; Safeguards Unit; ESO; Supervisory Consultant;	Incorporated in A1 Above

²⁷ Reclamation of end-life or decommissioned Borrow Pits primarily occurs during the rehabilitation phase. Therefore, the costs associated with implementing the Borrow Pit Management Plan are outlined in the ESMP Mitigation and Monitoring Matrix Table, specifically under the Rehabilitation Phase.

ESMP Mitigation and Monitoring Matrix Table for Roads Selected for Spot Improvement (Pre-Rehabilitation Phase)												
S/N	Activity	Potential E&S Risks & 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 of Monitoring	Cost of Monitoring Naira/(USD)
			reclamation of decommissioned borrow pits. Additionally, replant native vegetation in and around the borrow pits to stabilize the soil and reduce future erosion. Implement Borrow Pit Management Plan (BPMP). <i>See Annex 8</i>			borrow pit reclamation. Compliance and effectiveness of BPMP	 Verifications	have undergone complete reclamation and revegetation.				
Sub-total Mitigation & Monitoring Cost (Environmental Risks and Impacts)					751,965 (491)							1,026,915 (671)
B.	SOCIAL IMPACTS											
8.	Mobilization of equipment and workers to site; Site marking and pegging; Site clearance on either side of the centreline at designated roads.	Grievance: Owners of farms, (especially those growing cash crops such as cassava, oil palm, yam, etc.) and petty traders/road side businesses may express displeasure or grievances. Grievances may also arise due to physical and economic displacement resulting from site clearance along the road's centreline and the reclamation or removal of structures within the ROW	Conduct early notification and consultations with local communities, especially farm owners and roadside businesses, to understand their concerns, share project details, and explore potential collaboration. Work with local communities to identify and establish alternative access routes to minimize disruptions. Implement RAP Implement Grievance Redress Mechanism (GRM)	SPIU Communication Specialist Contractor SPIU; Safeguards Unit; SSO Grievance Redress Committee (GRC)	Incorporated in the GRM Implementation Cost Included in RAP implementation cost	PAPs' project perceptions and stakeholder satisfaction. Adoption and usage of identified alternative access routes RAP implementation Effectiveness of GRM	Surveys, consultations and feedback sessions Observational checks and surveys Checks & verifications Implementation progress assessment on GRM	Community Satisfaction Index Effective use of alternatives Compliance Minimal grievance.	Project locations	Weekly	SPIU; Safeguards Unit; SSO; Supervisory Consultant; GRC	578,705 (378)
9.	Excavation of unsuitable material in the road sections to sub-grade level	Possibility of uncovering chance finds.	Implement Chance Find Procedures as part of the PCRMP to ensure proper handling, documentation, and protection of any discovered artefacts	Contractor	Incorporated in the Cost for Implementing PCRMP—See Construction Phase	Number and type of chance finds discovered. Adherence to Chance Find Procedures	Onsite inspections Monitoring reports, logbooks and checklists Training attendance records	No damage or mishandling of discovered artefacts. Timely reporting (within 24 hours) and engagement	Project locations	Daily during excavation activities to ensure immediate response to discoveries.	SPIU; Safeguards Unit; SSO; Supervisory Consultant;	Incorporated in B8 Above

ESMP Mitigation and Monitoring Matrix Table for Roads Selected for Spot Improvement (Pre-Rehabilitation Phase)												
S/N	Activity	Potential E&S Risks & 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 of Monitoring	Cost of Monitoring Naira/(USD)
			during excavation. Train workers on Chance Find Procedures, halt work immediately upon discovery, notify relevant authorities, and engage community leaders/heritage experts for evaluation.			(e.g., work stoppage, notification, documentation).		of authorities and experts for any finds. 100% of workers trained in Chance Find Procedures.				
10.	Mobilization of Workers/Equipment to project sites	Tendency of theft and vandalism of equipment during staging.	Engage local security personnel, such as community vigilantes, to ensure safety and support during the mobilization of workers and equipment to the site and the establishment of staging areas.	Contractor	As Captured in the Contractors' BOQ	Number of security incidents (e.g., theft, vandalism, or unrest) reported at staging areas. Presence and effectiveness of security personnel (e.g., community vigilantes)	Review of incident logs. On-site inspections to verify security arrangements. Community feedback through interviews or surveys.	Reduction or absence of theft and vandalism incidents. Consistent and visible presence of security personnel Positive feedback from the community	Staging Areas and Project Affected Communities	Daily during the mobilization of equipment and workers	SPIU; Safeguards Unit; SSO; Supervisory Consultant;	Incorporated in B8 Above
11.	Mobilization of Workers/Equipment to project sites	Transport of procured construction materials to work sites, may predispose commuters, pedestrians, etc. to road accidents. Possible accidents may be as a result of equipment/ material fall from trucks, side collision, etc.	Install speed monitoring devices in vehicles and enforce reduction of vehicle speed while driving through built up areas Consider rescheduling transport of materials at off peak hours or at night.	Contractor	Incorporated in OHS Mitigation Cost	Vehicle speed in built-up areas. Timing of material transport Number of safety training sessions conducted for drivers. Number of reported transport-related accidents or near misses.	Vehicle trackers/GPS Transport schedules, training attendance sheets Review of incident/accident reports	Vehicles maintain speed limits in built-up areas (e.g., below 30 km/h in sensitive zones. Compliance to off-peak periods for equipment transport 100% of drivers trained in safe driving practices. Reduction in the number of transport-related accidents or incidents.	Project Locations	Daily	SPIU; Safeguards Unit; ESO & SSO; Supervisory Consultant;	Incorporated in B8 Above

ESMP Mitigation and Monitoring Matrix Table for Roads Selected for Spot Improvement (Pre-Rehabilitation Phase)												
S/N	Activity	Potential E&S Risks & 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 of Monitoring	Cost of Monitoring Naira/(USD)
12.	Mobilization of equipment and workers to site	Livestock Roadkill: may occur as vehicles and heavy-duty trucks move through project community where open grazing of livestock is practiced	Enforce speed limits; Train drivers to reduce vehicle speed in areas with open grazing. Restrict mobilization activities during night-time hours when visibility is reduced, and the risk of roadkill is higher. Implement compensation.	Contractors	N/A	Compliance with speed limits Incidents of livestock roadkill Evidence of compensation	Speed monitoring devices Surveys and incident reports Verifications	Higher level of compliance and reduced risk of roadkill Percentage reduction in incidents of livestock roadkill Zero grievance by PAPs attributed to livestock roadkill.	Project communities where open grazing of livestock is practiced, and particularly Lot 3	Weekly	SPIU; Safeguards Unit; SSO; Supervisory Consultant;	Incorporated in B8 Above
Sub-total Mitigation & Monitoring Cost (Social Risks and Impacts)					N/A							578,705 (378)
C.	OCCUPATIONAL HEALTH AND SAFETY (OHS) IMPACTS											
13.	Mobilization of equipment and workers to site; Offloading of supplied equipment; Site clearing, etc.	Likelihood of accident occurring due to Unsafe Conditions and Unsafe Behaviours. Offloading of materials (bricks, cement, paints, wood, iron rods, etc.) from trucks may present significant OHS risks and impacts e.g. falling objects. Transport of procured construction materials to work sites, may predispose commuters, pedestrians, etc. to road accidents resulting from equipment fall from trucks, side collision, etc.	Conduct OHS training and education; HazCom, routine JHA/PHA; Implement site-specific OHSMP Develop and implement safe offloading procedures, including the use of proper equipment (cranes, forklifts) and PPEs to minimize the risk of falling objects. Ensure that construction materials are securely loaded and properly fastened prior to transportation to prevent them from falling off trucks. Reduce speed when driving within and around project sites, staging areas, communities Regular inspections of vehicles for roadworthiness.	Contractors	@ N349,980 x 3 Lots = N1,049,940 (684)	Number of Accidents or Incidents Adherence to Offloading Procedures; Use of proper equipment and PPEs Transportation Safety Compliance; Adherence to speed limits. Vehicle inspections	Incident Reports and Records of any Accidents or Near Misses. Spot checks and periodic audits Inspections and audits of vehicles and transportation practices	Accident Frequency Rate Compliance to offloading procedures and use of PPEs Transportation Safety Score	Project corridors	Daily	SPIU; Safeguards Unit; Supervisory Consultant;	N311,605 (203)
Sub-total Mitigation & Monitoring Cost (OHS Risks and Impacts)					N1,049,940 (686)							N311,605 (203)
Total ESMP Cost (Pre-Rehabilitation Phase)					1,801,905							1,917,225

ESMP Mitigation and Monitoring Matrix Table for Roads Selected for Spot Improvement (Pre-Rehabilitation Phase)												
S/N	Activity	Potential E&S Risks & 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 of Monitoring	Cost of Monitoring Naira/(USD)
					(1,178)							(1,253)

Table 35: ESMP Mitigation and Monitoring Matrix Table for Roads Selected for Spot Improvement (Rehabilitation Phase)

ESMP Mitigation and Monitoring Matrix Table for Roads Selected for Spot Improvement (Rehabilitation Phase)													
S/N	Activity	Sub-Activity	Potential Risks & Impacts	Mitigation Measures	Responsibility for Mitigation	Cost of Mitigation USD/(Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility of Monitoring	Cost of Monitoring USD/(Naira)
D. ENVIRONMENTAL RISKS & IMPACTS													
1a.	Civil Works;	Operation and use of vehicles and machinery; stacking of materials;	Soil Contamination and Degradation: Leakages may occur from vehicles or stacked equipment containing lubricants, seeping through into the soil is likely in areas covered by earth.	Conduct regular maintenance to prevent leakages. Provide designated storage areas with impermeable surfaces. Implement proper containment measures for stored materials. Also, carryout regular inspections for leaks or spills. Coating should be such that it does not exceed the delineated road width (i.e. Carriageway) according to the project design.	Contractors	As Captured in the Contractors' BOQ	Spills or leakages; soil quality indicators (pH, nutrient levels, contaminants – specifically THC, TPH, OC). Presence of spill containment measures at work sites.	Soil sampling and laboratory analysis. Site verifications	Hydrocarbon levels in surrounding soil remain within acceptable environmental thresholds. Spill containment measures are in place and functional throughout the project duration.	Equipment staging areas - stacking points. Project locations	Monthly soil sampling and analysis Weekly checks for proper storage and containment measures	SPIU; Safeguards Unit; ESO; Supervisory Consultant;	3,113,980 (2,035)
1b.	Thin Asphaltting of the Road Surface	Thin Asphaltting of the Road Surface	Layering of asphalt may introduce potentially harmful chemicals into the environment, impacting soil quality.				Adherence to delineated road width for asphalt layering.	Visual observation	No asphalt spills or runoff outside the designated road width		Daily visual inspections during asphalt application.		
2.	Civil Works; Construction of Drains/ Culverts/CDS Structures, etc. Civil works; Thin Asphaltting	Construction activities such as concrete drains, hydraulic structures and culvert construction; thin asphaltting, etc. Installation of	Potential Surface Water Contamination: Increased sediment-laden runoff (comprising of mortar and asphalt) from construction of road and hydraulic structures as well as desilting in existing silted drains may reduce water quality, smother fish spawning grounds, and clog the gills of aquatic species. This is also applicable during provision of stone pitching as embankment protection at designated culvert locations. Improperly designed	Use containment measures, such as berms or barriers, around construction sites to prevent runoff. Implement erosion and sediment control measures (e.g., silt fences, sediment traps, or geotextiles) around construction areas. Regularly desilt and clean drains to maintain flow without allowing silt to re-enter water bodies. Design culverts and	Contractors Contractors	N/A As Captured in the Contractors' BOQ	Adherence to spill prevention and containment procedures. Turbidity and sediment concentration in surface water, including the presence of construction-related hydrocarbon contaminants (e.g., oil, grease, and asphalt residue). Water flow	Visual inspections, water sampling, and laboratory analysis. Use of Turbidity Meters for Sediment Concentration Analysis Measure using flow	No visible signs of construction-related contaminants (e.g., oil sheen, asphalt residue) in nearby water bodies. Turbidity and sediment levels remain below baseline thresholds (e.g., less than 20 NTU or other site-specific limits). Water flow velocity within 10–20% of pre-construction levels in and	Streams along the roads, particularly those whose culverts have been earmarked for rehabilitation	Weekly or after heavy rains. Monthly for laboratory analysis	SPIU; Safeguards Unit; ESO; Supervisory Consultant; Abia SMeEnv	Incorporated in D1 Above

ESMP Mitigation and Monitoring Matrix Table for Roads Selected for Spot Improvement (Rehabilitation Phase)													
S/N	Activity	Sub-Activity	Potential Risks & Impacts	Mitigation Measures	Responsibility for Mitigation	Cost of Mitigation USD/(Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility of Monitoring	Cost of Monitoring USD/(Naira)
				emissions. Ensure regular air quality monitoring to ensure pollutant levels remain within acceptable limits.									
4.	Excavation hauling of unsuitable material at failed road sections to subgrade level; Filling, spreading, shaping and compacting approved fill material for sub-base and base course to 100% compaction as well as embankment slopes.	a) Road Survey; b) Excavating to the required depth to reach the subgrade level; c) Loading excavated material onto trucks; d) Hauling unsuitable material away from the excavation site to disposal or stockpile locations; e) Subgrade preparation. Filling, spreading, shaping and compacting	Fugitive dust generation. Release of Volatile Organic Compounds (VOCs) substances from paints used for painting road furniture e.g. road signs and welding fumes	Regular water spraying on roads and construction sites to dampen the area and suppress dust. Provide workers and PAPs with appropriate PPEs such as respirators or masks, to reduce dust inhalation. Cover trucks disposing unsuitable materials with tarpaulin during transport to prevent dust dispersion. Restrict construction activities near residential areas to specific hours to reduce exposure.	Contractors	@ N25,344 for hiring tanker per km x 9.0km (Lot 1) x 2 times per week = N456,192 For Lot 2 (16.2km) = N821,146 For Lot 3 (15.16km) = N768,430 Total = N2,045,768 (1,337)	Fugitive dust generation Distribution of PPE and proper usage by workers and PAPs. Number of trucks covered with tarpaulin during transport. Adherence to construction schedule and noise/dust levels near residential areas.	Visual observation; Measurement of ambient particulate matter (PM _{2.5} and PM ₁₀) Inspection of PPE inventory and distribution records. Visual observation of Workers/PAPs Spot checks of trucks entering and exiting the site. Review of daily construction logs for compliance with approved working hours.	Dust levels within acceptable limits (e.g., PM ₁₀ < 50 µg/m³ and PM _{2.5} < 25 µg/m³ as per WHO/NESREA standards). 100% of workers and PAPs in high-dust areas provided with PPE. 100% of trucks carrying loose materials covered with tarpaulin. Zero incidents of complaints from communities about dust dispersion from trucks Construction activities limited to approved hours (e.g., 8:00 AM to 5:00 PM).	Project corridors	Weekly	SPIU; Safeguards Unit; ESO; Supervisory Consultant;	Incorporated in D1 Above
5.	Civil works;	General road rehabilitation activities.	Project activities may affect water and sanitation conditions, increase chances of stagnated water, which may lead to waterborne diseases. Improper backfilling or a failure to backfill where drainages have been installed may result in heaps of soil which overtime	Ensure proper design and construction of drainage systems to prevent stagnation of water and promote effective water flow away from the project area. Ensure proper backfilling of installed drainages and implement a maintenance	Contractors	As Captured in the Contractors' BOQ	Presence of sanitation hazards (e.g., stagnant water, waste accumulation); Effectiveness of drainage systems, water flow patterns.	Physical observations during site inspection. Visual inspections, monitoring water levels and flow rates.	Minimal stagnation of water, Effective drainage of runoff away from the project area. Minimal silt	Drainages along the road corridors.	Biweekly	SPIU; Safeguards Unit; Supervisory Consultant; Abia SMEnv	Incorporated in D1 Above

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			may fall back into the drainage channel forming sedimentation and may hinder the flow of water through the drains	schedule to keep drainage channels clear of debris, vegetation, and sediment build-up, ensuring continuous water flow.			Backfilling of installed drainages		accumulation in drains				
6.	Civil Works	General Rehabilitation Activities	Rehabilitation activities may increase the occurrence of open defecation by construction workers leading to poor environmental sanitary conditions.	Provision of gender specific mobile toilets (Porta-Potty) and enforcement of their use by construction workers.	Contractor	@ N550,000 x 3 Lots = N1,650,000 (1,075)	Compliance to the provision and enforcement of the use of mobile toilets	Inspections, checks and verifications	Reduced practice of open defecation and improved hygiene and sanitation conditions.	Project Areas	One-off	SPIU; Safeguards Unit; ESO; Supervisory Consultant;	Incorporated in D1 Above
7.	General Civil Work Activities	Civil works	Waste- Generation of waste including such as food waste, debris, top soil, disused materials and containers, toxic waste (such as asphalt, spent oils and chemicals) etc. Inadequate management of food wastes may lead to odorous conditions and encourage swarming of flies and rodents, thereby posing risks to public and community health.	Develop and implement the detailed Waste Management Plan (WMP) (See Annex 6) Ensure segregation of waste to facilitate reuse and recycling opportunities. Ensure regular collection and disposal of food waste to prevent odour and pest infestation. Ensure toxic and hazardous wastes are stored in labelled closed containers with secondary containment with storage containers. Ensure usage of ASEPA approved waste vendor for waste evacuation, processing & disposal. All interventions will	Contractor	@ N450,560 x 3 Lots = N1,352,335 (881)	Compliance to WMP implementation; Frequency and effectiveness of waste collection and disposal. Quantity of construction waste generated. Odour due to poor management of food waste Waste vendor licenses and waste evacuation documentation	Checks and site verifications Documentation of waste collection schedules and disposal activities Regular waste audits and documentation of waste volumes. Visual site observations and inspections	Contractor's Compliance Quantity of wastes reused/recycled following segregation Minimal odour and improved aesthetics of the project sites	Weekly	Project Areas	ABS-RAAMP PIU – ESO, Safeguards Unit ASEPA	Incorporated in D1 Above

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	unsuitable material at failed road sections to subgrade level; Filling, spreading, shaping and compacting approved fill material for sub-base and base course to 100% WAS compaction as well as embankment slopes;	Haulage, Asphalting, Mixing of cement and matrices, etc. and Use of machineries and equipment	National Environmental (Noise Standard and Control)	equipment to minimize noise emissions. Implement noise control measures during construction, such as mufflers or silencers on machinery. Provide workers and PAPs with PPEs such as earplugs or earmuffs. Train workers on noise management and the proper use of equipment to minimize noise emissions			Installation of noise mufflers on machines Distribution of PPEs to PAPs and workers	Inspections and verifications Checks and verifications	permissible limits (75dB) Minimal noise from work equipment and machinery Contractors' compliance			Unit; ESO; Supervisory Consultant;	
	Sub-total Mitigation & Monitoring Cost (Environmental Risks and Impacts)					6,551,192 (4,282)							3,113,980 (2,035)
E.	SOCIAL RISKS & IMPACTS												
10.	Civil Works	Road rehabilitation activities	Road users may suffer restricted access to roads. In addition, considering that most of the roads slated for rehabilitation serve as primary routes to local markets, the impact on women who predominantly engage in trading activities in these markets could be significant. This impact is likely to be more pronounced on major market days, which occur on a 4 or 8-day cycle	Early notification of PAPs and road users. Adopt a phased approach to road rehabilitation e.g. sectionalize rehabilitation works into manageable portions to allow for a segment of the roads to be rehabilitated at a time. Local collaboration to create detours/diversions or use road signs to redirect traffic to existing alternative access routes which	Contractors	@ N76,032 x 3 Lots = N228,096 (149)	No of notifications distributed & mediums used for notification (flyers, town criers, etc.) Sections completed per the phased plan Road user's access to un-rehabilitated sections Number of detours/diversions provided Visibility and condition of road signs	Conduct short interviews with community members to confirm awareness. Compare progress reports to the approved phased rehabilitation schedule Field verification of accessibility Site inspections to verify detour condition and signage Feedback from road	Notifications reach at least 80% of affected road user and majority of respondents confirm receiving adequate prior notice Rehabilitation follows the phased plan in at least 90% of cases Road users have continued access to unworked sections Functional detours provided for all blocked sections At least 80% of road users report	Road corridors	Weekly Biweekly Weekly	SPIU; Safeguards Unit; SSO; Supervisory Consultant; GRC	892,061 (583)

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				have been identified for the roads. Schedule the rehabilitation of major or busy sections of the roads during off-peak hours, non-market days or at night to minimize access restriction. Minor or Non-carriageway related civil works Implement GRM	PIU Safeguards Unit, GRC		Feedback on disruptions from market users Types of works conducted on market days No of grievances submitted & percentage resolved within the stipulated timeframe	users through interviews or surveys Conduct informal interviews with road users and market women about access during works Observe activities on-site to confirm only non-carriageway works Review grievance records/logbooks and interview PAPs to assess satisfaction with resolution	clear and visible traffic directions Minimal disruption reported Minimal complaints from market users and PAPs At least 75% of grievances are resolved within 2 weeks PAPs express satisfaction with resolutions in follow-up surveys		Monthly		
11.	Widening of shoulders of the existing road	Reclamation of the ROW	Physical and Economic Displacement: Implementation of civil works (widening of the shoulders of the existing road) may result to reclamation of the ROW and impact on livelihoods, farms, etc. There may also be disturbances to business operations, etc.	Early notification of PAPs Implement RAP and compensation to affected individuals or communities Implement livelihood restoration programs for identified vulnerable groups.	SPIU; Communications Specialist Safeguards Unit; SSO; RIC	Incorporated in RAP Implementation Cost	RAP Implementation and timely disbursement of compensation and livelihood restoration support	Record-keeping of compensation payments and livelihood support provided	Minimal grievance attributed to physical and economic displacement	Road corridors/ stretch particularly narrow sections where displacement is likely.	One-off	FPMU SSO; SPIU; Safeguards Unit; SSO; Supervisory Consultant; Resettlement Implementation Committee (RIC)	Incorporated in E10 Above
12.	Widening of shoulders of the existing road	Reclamation of the ROW Construction of drains	Potential Impact on Power Infrastructure: The relocation of power distribution poles may be required during road shoulder expansions or drain construction along specific routes, such as Ahiaukwu – Amangwo – Umuajata – Umuajata – Umuajata (Spot Improvement; Lot 3).	Assess and explore the possibility and option of realigning the road either to the right or left, based on which side minimizes adverse impacts on the distribution poles. Early follow-up engagement with Enugu Electricity Distribution Company (EEDC) to identify power	Contractor	@ N500,410 (327) specifically, for Lot 3	Compliance to road alignment Compliance to early notification	Visual observation Interviews, surveys and stakeholder consultations	Impact to power distribution poles is evaded. Positive feedback indicating effective communication and minimal disruption.	Locations where power distribution poles encroached into the Ahiaukwu – Amangwo – Umuajata – Umuajata Road (Spot Improvement; Lot 3)	One-off	SPIU; Safeguards Unit; SSO; Supervisory Consultant	Incorporated in E10 Above

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				infrastructure that may be affected and to coordinate relocation plans. Notify local businesses and residents in advance about potential disruptions to power supply Implement the relocation of power poles in phases, minimizing downtime and ensuring power is restored as quickly as possible. Schedule relocations during off-peak hours or when businesses are less reliant on power to reduce the impact on local operations. Set up a GRC and Implement GRM to promptly address concerns or complaints from affected parties.			Timeliness of pole relocation by EEDC	Scheduled and actual dates of pole relocation	Adherence to planned pole relocation schedules				
13.	Desilting of existing silted drains and culverts; Thin Asphaltting	Desilting of existing silted drains and culverts; Prime coating of surface with S124 and Surface dressing of eroded slopes at designated locations	Grievances: from PAPs using streams resulting from contamination of surface water due to sediment laden runoffs during stone pitching, prime coating activities etc. Contractors' negligence in utilizing workforce from host communities. Grievances may also	Implement GRM Minimize risk of surface water contamination during road construction and desilting of culverts/drains. Carryout desilting activity at night when stream use is minimal. Reduce labour influx by sourcing	PIU Safeguards Unit; GRC Contractors	Incorporated in GRM Implementation Cost	Implementation and effectiveness of GRM Grievances Compliance to hiring unskilled labour locally Compliance to sectionalizing works	Implementation progress assessment and performance evaluation on GRM Interviews, surveys, consultations. Community engagement and feedback Visual observation	Project grievance as very minimal and addressed promptly as they arise. PAP perception and stakeholder satisfaction Zero grievance arising from hiring of migrant workers	Project corridors	Twice weekly	SPIU; Safeguards Unit; SSO; Supervisory Consultant; GRC	Incorporated in E10 Above

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			arise especially when locals cannot access farmlands, etc. Civil works, such as the installation of hydraulic structures	required unskilled labour locally. Early notification; Where feasible, sectionalize works to avoid access restrictions. Ensure hydraulic structures are designed with proper outlets to facilitate efficient water flow and prevent stagnation. Conduct periodic cleaning and maintenance of installed drainage systems to ensure continued functionality.					Minimal access restrictions				
14.	Widening of shoulders of the existing road	Reclamation of the ROW Widening of Road Shoulders Construction of drains	Potential Impact on PCRs and Chance Finds: Expansion of the shoulders of existing road and installation of drainages could result in potential impacts to sacred trees and hallowed/revered grounds and shrines during road rehabilitation Possibility of uncovering chance finds during	Implement PCRMP Explore options to shift the road alignment left or right to completely avoid interference with sacred areas, heritage sites, or other PCRs. Establish clear exclusion zones around sacred areas and communicate them to the Contractor workers. Implement Chance Find Procedures as part of the PCRMP	Contractor	@ N450,523 x 3 Lots = N1,351,569 (883)	PCRMP implementation Final road design Survey of PCR locations relative to the road alignment Number of exclusion zones marked Signage at sacred sites Awareness training attendance records Number of chance finds reported	Review PCRMP document and incident reports Review road design documents Conduct site inspections Visual inspection of exclusion zones Verify signage Review training logs Review chance find reports	Zero incidents of PCR interference Road alignment avoids PCRs No PCRs affected during construction Exclusion zones clearly marked Signage installed Workers understand and respect exclusion zones All chance finds reported	PCRs along Spot Improvement Roads (Such as Lot 1 - Ozara Market Junction – Amaoku Alayi – Ugwueke Road; Lot 2 - Alayi – Ezeukwu Road, Ezeukwu – Ugwueke Road; Lot 3 - Ahiaukwu – Amangwo – Umuajata – Umudere – Amakama). Project Locations	Quarterly Continuous (daily) monitoring	SPIU; Safeguards Unit; SSO; Supervisory Consultant;	Incorporated in E10 Above

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			excavation of unsuitable material in the road sections to sub-grade level.				Response time to chance finds Worker awareness of CFP	Conduct random worker interviews Track response timelines	Response initiated within 48 hours Workers aware of CFP process		during construction		
15.	Continuous Civil Works	Civil works and steady influx of labour	Labour influx may lead to: Potential pressure on community resources e.g., water points, disbursement of cash from Point of Sale (POS) providers, etc. Increase risk of communicable diseases, Sexually Transmitted Infections (STIs) and Sexually Transmitted Diseases (STDs) because of consensual and transactional sexual intercourse between workers, locals and followers. Risk of illicit behaviour and practices such as theft, physical assaults, substance abuse, prostitution, etc. Risk of social conflicts between communities and contractor workers due to ethnic, religious or cultural differences.	Workers' camp to include utilities (water, separate POS service providers, waste disposal point, leisure/sports facilities, etc.) and prohibition of use from other community sources; Vaccinate workers against common and locally prevalent diseases; Provide HIV/AIDS and STDs campaigns and sensitization; Distribute condoms; Ensure workers sign Code of Conduct (CoC) (See Annex 11) which incorporates sanctions (e.g., dismissal) for workers involved in criminal activities; Implement Labour Influx Management Plan (Annex 13) Substance abuse prevention and management programs. Cooperation with local law enforcement; Cultural sensitization	Contractor Project Engineer	@ N201,392 x 3 Lots = N604,176 (395)	Incorporation of utilities in worker's camp Vaccination of workers HIV/STDs sensitization and campaigns Signing of COC Engagement of local law enforcement.	Checks and verifications Verifications Evidence of Sensitization/Campaign (e.g. flyers, manual, reports, attendance sheets, etc.) Checks and validation. Verifications Evidence of engagement	Minimal pressure on community resources. Reduced cases of disease transmission Contractors' compliance Antisocial behaviours and social vices amongst workers is reduced. Compliance	Workers' camp Project areas	One-off	SPIU; Safeguards Unit; SSO; Supervisory Consultant;	151,965 (99)

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16.	Continuous Civil Works	Civil works and steady influx of labour	SEA/SH: Teenage and adolescent females/males as well as adults, may be exposed to SEA/SH as a result of interactions with workers and possibly followers. Additionally, fear of retaliation or community stigma may discourage survivors from reporting incidents, further perpetuating the cycle of abuse.	trainings. Implement stringent screening processes for all workers to identify and exclude individuals with a history of SEA/SH offenses. Ensure all contracted workers sign the Code of Conduct (CoC), and establish strict penalties, including immediate termination, for workers found guilty of SEA/SH offenses. Conduct regular SEA/SH awareness and sensitization workshops for all project workers and community members, emphasizing zero tolerance for such behaviors. The SPIU must ensure that Supervisory Consultants and Contractors engage a qualified GBV focal person/officer as part of their safeguards team. This requirement should be explicitly included in their contracts. Alternatively, the SPIU should partner with NGOs in the state, specializing in GBV to provide independent third-party monitoring of	Contractors SPIU; Safeguards Unit; GBV Specialist;	@ N500,717 x 3 Lots = N1,502,151 (979) TBD	Records of worker screening processes and criteria applied. Number of workers screened. 100% of workers screened for SEA/SH history. Documented evidence of exclusion of offenders. Number of workshops conducted. Attendance records of workers and community members. Workshop content. Presence of a qualified GBV focal person/officer. Number of contracts with GBV requirements included.	Review worker recruitment records. Audit of screening criteria used. Verify signed CoCs. Review incident reports and disciplinary records. Review workshop attendance sheets and training materials. Participant feedback forms. Interviews with safeguards team and GBV focal person. Contracts and procurement audits.	100% of workers screened for SEA/SH history. Documented evidence of exclusion of offenders. 100% CoC compliance. Documented actions taken for any SEA/SH violations. Zero repeat offenses. At least one workshop per quarter. Increased awareness reported in feedback. Active GBV focal person engaged. 100% of contracts include GBV requirements.	Project Locations	One-off	FPMU GBV Specialist; SPIU; Safeguards Unit; GBV Specialist; SSO; Supervisory Consultant;	N251,740 (164)

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				SEA/SH risks. Establish a community-based GRM, with specific provisions for SEA/SH cases, ensuring anonymity and confidentiality (i.e. GBV-GRM). Conduct a detailed mapping of local GBV service providers and Sexual Assault Referral Centers (SARCs) to establish a robust referral system.			Functionality of GBV-GRM. Number of SEA/SH complaints received and resolved. Confidentiality measures. Availability of mapped service providers and SARCs. Quality of the referral system established.	Regular checks on GRM functionality. Complaint log reviews. Interviews with complainants. Review mapping documents and referral records. Consultation with service providers.	Functional GBV-GRM in place. 100% of complaints handled confidentially and within set timelines. Completed mapping document. Robust and functional referral system in place.				
17.	Continuous Civil Works	Civil works and steady influx of labour	VAC: Children may face harassment or violence from workers, particularly when asked to perform tasks like buying food or assisting with materials. Some families may opt to involve underage children in selling goods at work sites leading to dropping out of school and child labour.	Ensure that children and minors are not employed directly or indirectly on the project. Communication on hiring criteria, minimum age, and applicable laws should be ensured. VAC sensitization Campaign against child labour.	Contractors	Cost incorporated in E16 above	VAC	Checks and verifications	Zero cases of VAC Increased VAC awareness.	Project locations and communities	Weekly	SPIU; Safeguards Unit; SSO; Supervisory Consultant; GBV Officer	Cost incorporated in E16 above
18.	Continuous Civil Works	Civil works and steady influx of labour	Security: Contractors and workers may be at risk of robbery, extortion, kidnapping, and equipment theft by local gangs or criminals.	Obtain a Social Licence to Operate (SLO) from the host communities prior to commencement of civil works. Liaise with and build positive relationships with vigilantes and community watch groups to enhance	Contractors	As Captured in the Contractors' BOQ	Obtainment of SLO Level of community participation in security initiatives. Liaison with local law enforcement;	Checks and validation Meetings, and feedback sessions with locals Letter of engagement; Incident reports, police records, and security logs.	Contractor's compliance Increased community involvement and cooperation in security efforts Reduction in the	All project locations/Lots	One-off	SPIU; Safeguards Unit; SSO; Supervisory Consultant;	Incorporated in E10 Above

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				local security support and ownership of project. Collaborate with local law enforcement agencies to enhance security presence and patrols around construction sites. Train construction workers on emergency procedures and evacuation protocols. Establish reporting mechanisms for workers to report security incidents promptly. Implement Security Management Plan (Annex 16) Provide Social License to Operate			Number and nature of security incidents Training of workers Effectiveness of Security Mgt. Plan	Attendance records; Training manuals and reports Verifications and consultations	frequency and severity of security incidents during rehabilitation activities in the locations. Increased security awareness and emergency procedures among workers Percentage security related incidences.				
19.	Construction of earthen drains at designated locations along the road corridor Excavation of fill material from approved borrow pits	Construction of earthen drains at designated locations along the road corridor Excavation of fill material from approved borrow pits Civil Works	Community Health and Safety: Un-reclaimed and abandoned borrow pits may pose safety risks for children. Dug-up concrete drains may also pose safety issues. Accidents while pedestrians are crossing access roads and also animals that graze freely.	Barricade in-use borrow pits prior to reclamation. Install drains in sections/batches to avoid multiple open pits, and barricade unfinished work at the end of each day. Install speed bumps and road furniture on rehabilitated roads. Reduce vehicle speed. Implement Community Affairs, Safety, Health,	Contractors	Incorporated in the cost for Borrow Pit Reclamation (i.e. Environment – Section D9 above). As Captured in the Contractors' BOQ	Barricading of in-use borrow pits and uncompleted drainage channels Installation of speed bumps CASHES Plan	Site inspection Site inspection, Checks and verifications Verifications and	Zero incidents and accidents associated with open pits. No case of road accidents or livestock road kills. Minimal	Borrow pits, open drains and road corridors Project locations	One-off	SPIU; Safeguards Unit; SSO; Supervisory Consultant;	Incorporated in the cost for Borrow Pit Reclamation (i.e. Environment – Section D9 above). As Captured in the Contractors' BOQ

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				Environment & Security (CASHES) Plan (<i>See Annex 13</i>)			Implementation	checks	Community Health, Safety & Security incidences/impacts				
Sub-total Mitigation & Monitoring Cost (Social Risks and Impacts)						4,186,402 (2,736)							1,295,766 (847)
F.	OCCUPATIONAL HEALTH AND SAFETY RISKS & IMPACTS												
20.	General Civil Works:	General Civil Works	Likelihood of accident occurring due to Unsafe Conditions and Unsafe Behaviours.	Conduct OHS training and education; HazCom, routine JHA/PHA; Implement site-specific OHSMP	Contractors	@ N750,000 x 3 Lots = N2,250,000 (1,471)	Number of Accidents or Incidents	Incident Reports and Records of any Accidents or Near Misses.	Accident Frequency Rate	Project corridors	Daily toolbox training;	SPIU; Safeguards Unit; Supervisory Consultant;	N500,410 (327)
		Operation and use of heavy machinery or equipment	Local workers may be injured by construction machinery such as excavators, bulldozers, cranes, and trucks due to mishandling, lack of training, or mechanical failure.	Provide comprehensive OHS training for all workers and ensure all equipment operators are properly trained and certified. Conduct routine maintenance on machinery.	Contractors		Number of OHS training sessions conducted; Training attendance records. Maintenance records.	Review training records. Conduct spot checks on-site. Inspect equipment maintenance logs.	100% of workers trained. Zero injuries caused by improper machinery use. Functional machinery.	Project corridors	Quarterly	SPIU; Safeguards Unit; Supervisory Consultant;	
		General Civil Works, Construction of CDSs	Materials like steel, concrete, or tools can fall and cause serious injuries to workers e.g. during construction of CDSs	Procure, distribute and mandate the use of PPEs, including helmets and safety boots. Secure all materials and tools during use or storage.	Contractors		Availability and use of PPE. Proper storage and securing of materials. Incident reports.	Conduct PPE compliance checks. Inspect storage areas. Review incident logs.	100% PPE compliance. Zero injuries caused by falling materials. Hazard-free work environment.	Project corridors	Weekly	SPIU; Safeguards Unit; Supervisory Consultant;	
		General Civil Work Activities	Uneven ground, wet conditions, or cluttered work areas may cause workers to slip, trip, or fall, leading to injuries.	Regularly inspect and maintain work areas to ensure they are clean, dry, and free of hazards. Use signs to mark hazardous areas.	Contractors		Number of inspections conducted. Records of hazard identification and rectification	Conduct site inspections. Review hazard reports and corrective actions taken.	Reduced number of slips, trips, or falls.	Project corridors	Weekly	SPIU; Safeguards Unit; Supervisory Consultant;	
		Procurement, Haulage/ Transport/ Supply. Also, Operation of Heavy-duty Machines	Traffic collisions involving construction vehicles or equipment on site can cause serious injuries or fatalities.	Ensure all drivers are trained and licensed. Establish speed limits and designated parking zones	Contractors		Driver certification records. Compliance with speed limits and parking zones	Conduct driver audits. Observe compliance during site visits.	Zero traffic collisions or fatalities on-site.	Project corridors	Monthly	SPIU; Safeguards Unit; Supervisory Consultant;	

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		Excavation/ Earth Works	Prolonged exposure to dust from excavation and earthworks and to high levels of noise from heavy machinery can cause respiratory problems and hearing loss. Pre-existing conditions such as asthma may also be triggered.	Implement dust suppression measures (e.g., water spraying, covering materials). Provide workers with PPE (e.g., masks and earplugs).	Contractors		Availability and use of PPE. Frequency of water spraying. Noise levels at work areas.	Visual inspection of PPE use. Measure noise levels using a sound meter. Check dust suppression logs.	100% use of PPE by workers. Noise levels within permissible limits (e.g., <85 dB). Visible dust reduced on-site.	Project corridors	Weekly and during peak activities.	SPIU; Safeguards Unit; Supervisory Consultant;	
		Thin Asphaltting, Cement Mixing, Painting of Road Furniture, Excavation and Haulage of Unsuitable Road Sections to Subgrade Level	Handling materials like asphalt, asbestos, bitumen, cement, or chemicals used in construction processes can expose workers to toxic substances, leading to skin irritation, respiratory issues, or long-term health conditions.	Train workers on safe handling of hazardous materials. Provide PPE (e.g., gloves, goggles, respirators). Ensure proper storage and labelling of hazardous materials.	Contractors		Training records. Availability and use of PPE. Storage conditions of hazardous materials.	Review training attendance. Visual inspection of PPE and storage areas. Audit material safety data sheets (MSDS).	100% of workers trained. No incidents of exposure to hazardous substances. Proper storage maintained	Project corridors	Monthly	SPIU; Safeguards Unit; Supervisory Consultant;	
		General Civil Work Activities	Working in hot weather conditions without proper hydration or rest can lead to heat stress, heat exhaustion, or dehydration	Provide shaded rest areas and ensure regular breaks. Supply potable water/provide water points Train workers to recognize signs of heat stress.	Contractors		Number of shaded areas and water stations. Worker compliance with breaks. Training sessions conducted.	Site inspection of rest areas and water supply. Monitor worker breaks. Review training records.	No reported cases of heat stress. Adequate water and shade available at all work areas. Workers report satisfaction.	Project corridors	Weekly	SPIU; Safeguards Unit; Supervisory Consultant;	
		Transportation, Operation of Heavy Machinery, General Civil Works	Long working hours e.g. driving or physically demanding tasks can lead to fatigue, impairing decision-making and increasing the likelihood of accidents and/or near misses.	Enforce maximum working hours (e.g., no more than 8 hours/day). Provide regular breaks and monitor worker schedules. Rotate tasks to prevent overwork.	Contractors		Worker schedules and task rotations. Compliance with maximum working hours	Review work schedules. Conduct worker fatigue surveys. Monitor adherence to shift limits.	No worker exceeds the prescribed working hours. Reduced complaints of fatigue.	Project corridors	Monthly	SPIU; Safeguards Unit; Supervisory Consultant;	
		Loading and offloading of materials, menial jobs, civil works, etc.	Workers performing repetitive tasks, such as lifting, bending, or manual handling of heavy materials, may suffer from	Train workers on proper lifting techniques. Provide ergonomic tools and	Contractors		Training records. Availability of ergonomic tools.	Review training attendance. Inspect tools and equipment.	100% trained workers. Ergonomic tools available for high-risk tasks.	Project corridors	Monthly	SPIU; Safeguards Unit; Supervisory Consultant;	

ESMP Mitigation and Monitoring Matrix Table for Roads Selected for Spot Improvement (Rehabilitation Phase)													
S/N	Activity	Sub-Activity	Potential Risks & Impacts	Mitigation Measures	Responsibility for Mitigation	Cost of Mitigation USD/(Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility of Monitoring	Cost of Monitoring USD/(Naira)
			musculoskeletal disorders.	equipment. Encourage job rotation to reduce repetitive strain.			Number of workers rotated.	Monitor task rotation logs.	Reduced complaints of musculoskeletal pain.				
		General Civil Work Activities	Tight project timelines, pressure from supervisory consultant, or conflicts with co-workers can lead to stress, affecting workers' mental well-being.	Provide regular stress management training and mental health workshops. Establish a workplace-counselling program. Encourage teamwork through conflict resolution sessions. Ensure realistic project timelines and regular breaks.			Number of stress management workshops conducted. Availability of counselling services. Worker feedback on workload and stress levels.	Attendance records for workshops. Worker satisfaction surveys. Reports from counselling sessions (anonymized).	At least one workshop per quarter. Positive feedback from workers (e.g., reduced stress reports).	Project Corridors	Quarterly	SPIU; Safeguards Unit; Supervisory Consultant;	
		General Civil Work Activities	Burns from fire, explosion or leakages of hazardous materials like battery acids, explosives, etc.	Provide adequate PPE (e.g., gloves, goggles, fire-resistant clothing). Conduct regular safety drills and training. Implement proper storage and handling procedures for hazardous materials. Display hazard warning signs and labels. Establish an emergency response plan.	Contractors		PPE distribution records. Number of safety drills conducted. Availability of hazard signs and labels. Incident reports for burns or accidents.	Site inspections to verify PPE use. Drill observation and feedback. Review of incident logs.	100% PPE compliance. Regular drills conducted. Zero incidents of burns or hazardous material-related accidents.	Project Corridors	Monthly	SPIU; Safeguards Unit; Supervisory Consultant;	
	Sub-total Mitigation & Monitoring Cost (OHS Risks and Impacts)					N2,250,000 (1,471)							N500,410 (327)
	Total ESMP Cost (Rehabilitation Phase)					12,987,594 (8,489)							4,910,156 (3,209)

Table 36: ESMP Mitigation and Monitoring Matrix Table for Roads Selected for Spot Improvement (Operation Phase)

S/N	Activity	Potential Risks & Impacts	Mitigation Measures	Responsibility for Mitigation	Cost of Mitigation USD/(Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility of Monitoring	Cost of Monitoring USD/(Naira)
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S/N	Activity	Potential Risks & Impacts	Mitigation Measures	Responsibility for Mitigation	Cost of Mitigation USD/(Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility of Monitoring	Cost of Monitoring USD/(Naira)	
G. ENVIRONMENTAL RISKS & IMPACTS													
1.	Operation and usage of rehabilitated roads	Rehabilitated roads and drainages may be predisposed to potholes, weed overgrowth and silt accumulation due to no/poor maintenance.	Institute a community-based road maintenance group to carryout maintenance activity at periodically.	SPIU Project Engineer Road Maintenance Committee	N/A	Set up of Road Maintenance Committee	Verification and consultations	Road is being maintained regularly	Rehabilitated road corridors	Monthly	SPIU, Safeguards Unit, RARA	N/A	
2.		Erosion and Water Runoff: Poor drainage management and household waste accumulation could also lead to clogging and potentially flooding of the road, nearby areas and may also result in sedimentation of Surface Water. The edges of CDS structures and bridges may erode and wear off due to non-implementation of erosion control measures	Regularly clean and maintain drainage systems to prevent clogging and reduce the risk of surface runoff and flooding. Sensitize the community on the risk of dumping refuse in the drainage channels. Implement erosion control measures on the installed CDSs to prevent edge washouts	Contractor	N/A	Clogging and siltation of drains Waste accumulation Erosion control measures	Site inspection and physical observation	Installed drainages are devoid of silt and household wastes. Zero erosion of installed CDSs	Project Locations	Monthly One-off	SPIU, Safeguards Unit, RARA	N/A	
3.		road kills: Improved roads may increase the risk of wildlife-vehicle collisions, especially in areas where animals frequently cross roads.	Install speed breakers and speed limits along the rehabilitated roads to slow down vehicle speed	Contractors	Incorporated in the CASHES Plan Rehabilitation Phase – E22	Speed bumps, Traffic signs, Markings etc.	Visual observation	Minimal dust generation	Rehabilitated road corridors	Quarterly	SPIU, Safeguards Unit, RARA	Incorporated in the CASHES Plan Rehabilitation Phase – E22	
Sub-total Mitigation & Monitoring Cost (Environmental Risks and Impacts)					N/A								N/A
H. SOCIAL RISKS & IMPACTS													
4.	Closure of civil works	Workers and personnel engaged in civil works will be relieved of their duties at the commencement of the operational phase	Early notification of workers prior to their disengagement Some community based unskilled labourers can be integrated into the Road Maintenance Group. Offer skills development and training programs to enhance the employability of worker's post-closure.	Contractor	N/A	Compliance to early notification Integration of unskilled labourers in Road Maintenance Group	Interviews Checks, surveys and verification	Zero grievance Minimal grievance from disengaged workers	Project communities	One-off	SPIU; Safeguards Unit; SSO	50,655 (33)	
5.	Operation and usage of rehabilitated roads	Increased vehicular traffic on rehabilitated roads could contribute	Implement and enforce speed limits on rehabilitated roads to	Contractor	N/A	Installation of speed limits;	Site inspection	Reduce noise levels	Road corridors	One-off	SPIU; Safeguards Unit; SSO	50,655 (33)	

S/N	Activity	Potential Risks & Impacts	Mitigation Measures	Responsibility for Mitigation	Cost of Mitigation USD/(Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility of Monitoring	Cost of Monitoring USD/(Naira)
		to noise pollution	minimize vehicle noise associated with high-speed traffic									
6.	Operation and usage of rehabilitated roads	Accidents involving vehicles or pedestrians are likely to occur as a result of drivers exceeding speed limits.	Install road furniture and speed bumps Routine maintenance of roads. Regular inspection of roads	Contractor	<i>Incorporated in the CASHES Plan Rehabilitation Phase – E22</i>	Road accidents; installation of road furniture and speed bumps	Surveys and interview, consultations, inspections	Number of cases or incidences of road accidents	Rehabilitated roads and project communities	Monthly	RARA, SPIU; Safeguards Unit; SSO	<i>Incorporated in the CASHES Plan Rehabilitation Phase – E22</i>
Sub-total Mitigation & Monitoring Cost (Social Risks and Impacts)					N/A							101,310 (66)
Total ESMP Cost (Operation Phase)					N/A							101,310 (67)
Grand Total ESMP Cost (Spot Improvement)					14,789,499 (9,666)							6,928,691 (4,529)

Note: Most of the cost are borne by the Contractor. The SPIU Safeguards team shall ensure and verify that the costs are integrated into the Contractors' BOQ. Mitigation costs are estimates, Contractors are expected to review and ensure final costs in the BOQ are realistic and can adequately mitigate stated impact

7.1.1 Budgetary Allocation for the ESMP Mitigation Per Lot

The E&S risk mitigation measures, along with their associated costs, identified in the proceeding ESMPs for the proposed work packages (i.e. spot improvement and roads upgrade), shall be seamlessly integrated into the bidding documents. This allows Contractors to incorporate these mitigation expenses into their bids for the respective road rehabilitation activities. It is noteworthy that the intervention packages are divided into different lots (Upgrades – 5 Lots and Spot Improvement – 3 Lots). As a result, the total mitigation cost per intervention will be distributed proportionately across each lot, based on the specific mitigations required for roads within the lots as outlined in the ESMP tables above. Each contractor will be responsible for their assigned lot and the specific mitigation costs should be incorporated into their bidding documents accordingly. Table 37 below provides details of the ESMP mitigation cost for the proposed intervention works according to Lots.

Table 37: Summary of ESMP Mitigation Cost for the Upgrade and Spot Improvement Work Packages Per Lots

Intervention Packages	Lots	List of Roads	Length	ESMP Mitigation Cost	
				NGN	USD
Upgrades	Lot 1	Achara – Okpo – Nkporo – Ututu	10.39km	5,182,718	3,387
		Umeye I – Umeye II	1.40km		
		Obinto – Atani Road	1.20km		
		Okagwe – Nkwebi Onwuwanyanwu	4.30km		
	Lot 2	Sameke Junction – Amaraugboghu	2.46km	5,185,617	3,389
		Oba Junction – Umumaduako – Umumezie	2.55km		
		Orie Ngodo Market - Obinohia Umudim – Lomara	5.20km		
	Lot 3	Amorji – Ngbedeala – Ntigha Umukalu – Mbawsi	4.45km	8,495,099	5,552
		Amorji Market Road – Amorji Junction	1.61km		
		Ogbagala Junction – Amaugba	0.49km		
		Nbawsi – Agburuike – Umuomaighiukwu	5.49km		
		Amiyi Nvosi – Ometeghi – Umuada Nvosi – Omuapu Road	5.60km		
		Nkwo Ebe – Umunko – Umuakwu	3.62km		
		Umunkpeyi – Amachi – Umuaro	2.70km		
	Lot 4	Eziama – Amaibo Ring Road	3.95km	6,022,889	3,937
		Agalaba Ise – Ahiamorie – Umuamadi – Amalaubi – Umuokereke	6.00km		
		Apumiri – Avo – Amibo Express	1.52km		
		Umuawoli Road	0.61km		
		Ogbodioriloku – Umuchiche – Mbaraukwu	4.40km		
		Agalabano – Umuhu Central School – Ekeoba	1.36km		
	Lot 5	Nkwo Elechi Market – Umueme Road	2.11km	5,462,767	3,570
		Umuagu Ohuru Amaisii – Osaa Ukwu – Itungwa	9.30km		
		Umuariama Ahiaba Ubi – Nkwo Elechi	2.98km		
		Nkwo Elechi Umuagu Umuorukwu Osusu Amaukwa Road	3.85km		
		Asa Umunka – Umugo – Ameyi Oza – Ozata – Ugwati Asa	5.24km		
	Total ESMP – Contractors' Mitigation Cost for Upgrades Work Package			92.78km	30,349,090
Spot Improvement	Lot 1	Ozara Market Junction – Amaoku Alayi – Ugwueke Road	2.8km	4,537,299	2,966
		Amaokwelu Alayi Junction – Amankalu – Akoli Imenyi	6.2km		
	Lot 2	Alayi – Ezeukwu Road	9.6km	4,902,253	3,204
		Ezeukwu – Ugwueke Road	6.6km		
	Lot 3	Bende Etitulo – Ubibia – Ndiwo – Itumbuzo – Okopedi – Ntalakwu	4.3km	5,349,947	3,497
		Amaogwugwu Olololo Junction – Umukabia	0.67km		
		Umuafiaka – Umuokpara	2.6km		
		Old Umuahia (Divinity School) – Osah/Ohia Road	4.0km		
		Ahiakwu – Amangwo – Umuajata Umudere Amakama	1.54km		
		Okpikpe Umuana – Ikot Ekpene Road	1.18km		
		Umuanyaso Road	0.5km		
		Umuegwere Road	0.37km		
Total ESMP – Contractors' Mitigation Cost for Spot Improvement Work Package			40.36km	14,789,499	9,666
Grand Total ESMP Mitigation Cost (all Intervention Packages)				45,138,589	29,502

Note: The breakdown above provides details of mitigation costs according to Lots for Contractors exclusively and does not represent the total ESMP mitigation cost. It is noteworthy that additional mitigation measures may have been assigned to other stakeholders (including but not limited to the GRC, SPIU, as well as in the operation phase), in the ESMP table.

7.2 Institutional Roles and Responsibilities for ESMP Mitigation and Monitoring

The successful implementation and effectiveness of the mitigation and monitoring program will depend on the commitment and capacity of the ABS-RAAMP SPIU and other relevant third-party institutions to carryout project implementation effectively. Table 38 outlines the roles and responsibilities of all parties involved in implementing, monitoring, and reviewing this ESMP.

Table 38: Institutional Roles and Responsibilities for ESMP Mitigation and Monitoring

S/N	Category	Roles & Responsibilities
1.	Abia 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 - Implementation of request for environmental and social protection.
2.	Abia State RAAMP SPIU Safeguards Unit	Environmental Safeguards - Analyse and monitor potential environmental impacts; - Ensure that project activities that are implemented are 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 measures and the impacts of the project during implementation. - The review and approval of draft ESMP report. - Disclosure of the ESMP report at the designated locations within Abia State. Social Safeguards - Develop, coordinate and monitor the implementation of the social aspects of the proposed project. - Identify and liaise with all stakeholders involved in social related issues during the proposed road rehabilitation; - Ensure that project activities that are implemented will be in accordance with best practices and guidelines - Review and approval of ESMP draft report - Liaise with the other relevant officers to disclose the ESMP report at the designated locations within Abia State. GBV Officer - Plan and implement all GBV related activities for the project - Ensure that GBV mitigation and response measures are in place & working correctly. - Development of GBV Grievance Redress Mechanism - Support the SPIU, in the identification, mitigation and management of the sexual exploitation and abuse (SEA), Child Exploitation and Abuse (CEA), and other forms of GBV-related risks identified in the projects. - Ensure that all measures outlined in the GBV Action Plans are implemented for all SPIU programmes. Technical Assistants (TAs), Environment, Social and GBV - Provide technical assistance, guidance and support during ESMP development and implementation.
3.	E&S Consultant	- Development of ESMP - Training of relevant SPIU/RAAMP staff, regulators, MDAs and contractor on ESMP implementation and monitoring.
4.	Federal Ministry of Environment	- Lead role – in the review and approval of draft ESMP report - Disclosure of the ESMP report at the FMEnv designated display centers
5.	FPMU Safeguards Unit (E&S Officers, GBV Specialist, TAs E&S)	- Provide guidance to the SPIU on E&S compliance - Review of the ESMP and other safeguard instruments to ensure it complies with the WB requirements and the Nigerian EIA Act - Periodic oversight/monitoring and supervision of the ESMP/RAP/GBV activities implementation - Review of monthly safeguards reports and other reports on safeguards activities. - Provision of safeguards training to the SPIU and contractors
6.	Abia State Ministry of Environment	- Assist with the disclosure of the ESMP report at the designated locations within Abia State. - Monitoring the implementation of the ESMP

S/N	Category	Roles & Responsibilities
7.	Abia State Environmental Protection Agency (ASEPA)	- Oversee the collection/evacuation of waste from the project site - Ensure management of project waste in line with best environmental practices as not to degrade or pollute the environment. - Conduct periodic monitoring of environmental parameters to ensure compliance with environmental regulations
8.	Abia State Ministry of Women Affairs and Social Development	Advise the State government on gender and children's issues and issues affecting persons with disabilities and elderlies (vulnerable)
9.	Abia State Ministry of Works	Continuous routine maintenance of upgraded road
10.	FRSC, Traffic Control Team	- Control and manage traffic and road safety throughout project implementation - Ensure route diversions are seamless and direct road users appropriately - Discourage counter road safety practices among road users
11.	Other relevant State Government MDAs	- Relevant areas or resources under their jurisdiction or management are likely to be affected or implicated by the proposed project. - Participate in the EA processes and in project decision-making that helps prevent or minimize environmental and social impacts and to mitigate them.
12.	All 11 Local Government Areas (LGAs)²⁹ of Interventions	- Provide oversight function across the project area for ESMP compliance. - Liaising with the SPIU, engage and encourage carrying out comprehensive and practical awareness campaign for the proposed project amongst the various relevant grass roots interest groups
13.	Project Host Communities	- Promote environmental and social awareness - Project Support amongst the various relevant grass roots interest groups.
14.	Community Leadership, Traditional Rulers, etc.	- Develop, coordinate and ensure the implementation of the social aspects of the ESMP - Provision of oversight function across project within its jurisdiction for ESMP compliance. - Promote environmental awareness. - Provide comments, advice and/or complaints on issues of non-conformity. - Attend public meetings organized by the SPIU to disseminate information and receive feedback.
15.	Contractor	- Compliance to BOQ specification in procurement of material and construction - Follow the ESMP and provisions of other management plans during project implementation - Establish and maintain communication with project host communities through a Community Liaison Officer (CLO). - Prepare and implement the Contractor's ESMP (C-ESMP)
16.	Site Engineers/ Supervisors	- Provide oversight function during site mobilization, construction and demobilization - Supervise and assist with the selection of suitable sites for labour camps and staging areas in collaboration with the E&S safeguards officers.
17.	Supervising Consultant (Environmental and Social)	- 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 to the E&S Safeguards Unit of the SPIU - Ensure adequate training and education of all staff involved in environmental and social safeguard supervision including training on CoC understanding - Prepare monthly safeguards report including recommendations to the ABS-RAAMP regarding ESMP performance as part of an overall commitment to continuous improvement
18.	Grievance Redress Committee (GRC)	Provision of directives and guidance in monitoring effective and timely handling of grievance as it relates to the ABS-RAAMP project
19.	NGOs/CSOs	- Assisting in their respective ways to ensure effective response actions, conducting scientific researches alongside government groups to evolve and devise sustainable environmental strategies and techniques. - Overall monitoring of ESMP implementation and its impact in the communities. - Conduct sensitizations and awareness campaigns, etc.
20.	World Bank	- Overall supervision and provision of technical support and guidance. - Recommend additional measures for strengthening the management framework and implementation performance. - Review of monthly/quarterly reports on ESMP implementation and monitoring - Conduct implementation support missions, technical oversight and monitoring to ensure overall

²⁹ Arochukuwu, Ohafia, Bende, Umunneochi, Umuahia North, Umuahia South, Isialangwa North, Isialangwa South, Obingwa, Aba South and Ugwuagbo LGAs.

S/N	Category	Roles & Responsibilities
		safeguards compliance
21.	Others/General Public	Identify issues that could derail the project and support project risks & impacts and mitigation measures, awareness campaigns.

7.3 Capacity Building

The ABS-RAAMP PIU possesses the technical expertise needed to design, implement, and oversee its interventions. However, for this ESMP, it is recommended that the SPIU undergo training to enhance its capacity in environmental assessment, implementation, and monitoring. Training is crucial to ensure the efficient and effective implementation of ESMP provisions. Therefore, the SPIU must ensure that all parties involved in ESMP implementation (Section 7.3) are competent, with appropriate education, training, or experience. Likewise, contractors must provide general OHS training for their project workforce, along with specific training for those whose work may significantly impact the environment. This ensures that workers are fully aware of ESMP requirements and can fulfil their roles effectively. To a minimum, contractors must provide the following training to their workers:

- OHS/Health Safety and Environment (HSE) Induction/Orientation course for all workers to include (site safety rules, PPE requirements, Emergency Preparedness and Response);
- Fire and Life Safety (fire prevention, fire safety regulations, emergency procedures, fire safety equipment, electrical safety).
- Daily tool box talks for workers at the start of each day's job;
- Refresher courses on E&S safeguards as at when required.
- Manual Handling Techniques
- First Aid Training (for Site First Aiders)
- Safe Driving Techniques (for drivers)

Based on the assessment of the institutional capacities of the various agencies involved in implementing the ESMP, specific areas outlined in Table 39 have been identified for capacity building. This includes training costs to ensure effective implementation and monitoring of the ESMP.

Table 39: Capacity Building Plan for ESMP Implementation and Monitoring

Training Description	Participants	Duration	Responsibility	Training Cost	
				(₹)	(\$)
ESMP mitigation measures and procedures for implementation	Contractors	1 day	Independent E&S Consultant/ SPIU E&S TAs	544,925	356
Monitoring and Evaluation Basics – Establishing	SPIUs; Safeguards Unit, M&E Officer; Supervisory Consultants.	1 day	Independent E&S Consultant/ FPMU E&S TAs	818,155	535
Monitoring Indicators and Evaluating Performance;					
Environmental and Social Health and Safety (ESHS) Performance Monitoring					
Training on Code of Conduct, Labour Influx, OHS Management, Fire and Life Safety, C-ESMP, Onsite Waste Management, PCR identification and management, GRM, GBV-GRM, Stakeholder Engagement	SPIU, Supervising Consultants, Contractors, GRCs, other relevant institutions stated in the ESMP, etc.	3 days during preconstruction and refresher training quarterly	Independent E&S Consultant/ FPMU E&S TAs	3,816,010	2,494
Training of Contractor Drivers and SPIU Drivers	SPIU, Contractor drivers, Supervising Consultants, Traffic Control Team	1 day during pre-construction.	FRSC	544,925	356
Awareness for communities especially children on road use safety practices		1 day during construction phase			
Awareness campaign on preventing STI/sexual diseases	Contractor workers, SPIU Officers, SC	1 day during pre-construction.	Healthcare workers	1,307,820	855

Training Description	Participants	Duration	Responsibility	Training Cost	
				(₦)	(\$)
		1 day during construction phase			
SH/SEA and VAC Awareness and Application to the rehabilitation works – orientation on acceptable behaviours for construction personnel on/off-site. GBV prevention, mitigation and response	SPIU, Supervising Consultants, Contractors	2 days	FPMU GBV Specialist	1,036,125	677
Total Cost for Capacity Building for ESMP Implementation and Monitoring				8,067,960	5,273

The total cost for capacity building for ESMP Mitigation and Monitoring Program is estimated at, **Five Thousand, Two Hundred and Seventy-Three US Dollars, only (\$5,273)**. This is equivalent to **Eight Million and Sixty-Seven Thousand, Nine Hundred and Sixty Naira, only (NGN 8,067,960)**.

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

7.4 Measures for Non-Compliance

Provisions for addressing non-compliance will be clearly outlined in the bidding documents and contracts. In cases where the Contractor fails to fulfil ESHS obligations or contractual tasks, the Project Manager has the authority to withhold the corresponding value of pending work or obligations until satisfactory completion is confirmed. Additionally, if rectification or replacement is necessary, associated costs can be withheld until these actions are successfully carried out, as determined by the Project Manager's assessment. For repeated instances of non-compliance, the Resident Engineer overseeing supervision may consider suitable alternative actions outlined in the contract. These measures could include suggesting to the client the activation of the Performance Security.

Failure to perform includes, but is not limited to, the following:

- Non-compliance with any ESHS obligations or work described in the Works' Requirements, such as working outside site boundaries, excessive dust, failure to maintain public roads in a safe condition, damage to offsite vegetation, pollution of water courses from oils or sedimentation, land contamination (e.g., from oils, human waste), damage to archaeology or cultural heritage features, and air pollution resulting from unauthorized and/or inefficient combustion.
- Failure to regularly review and update the C-ESMP in a timely manner to address emerging ESHS issues or anticipated risks and impacts.
- Failure to implement the C-ESMP, including the provision of required training or sensitization.
- Undertaking Works or related activities without appropriate consents/permits.

- Failure to submit ESHS reports or submit them in a timely manner.
- Failure to implement remediation as instructed by the Engineer within the specified timeframe to address non-compliance.
- A written notification from the resident engineer 10 days after the agreed date for the submission of monthly environmental reports if no written explanation is submitted by the environmental officer of the contractor.
- Failure to submit a declaration of methods for operations that require it, resulting in the immediate suspension of activities by the Resident Engineer until the document is approved.
- Financial penalties imposed on the employer if workers at the workplace do not have their personal protective equipment (e.g., gloves, jackets, boots).
- Contractors penalized with a written notice if they do not comply with the approved methodology for the work. In case of recurrence, the Resident Engineer may take further appropriate measures as outlined in the contract, including advising the client to call the Performance Security.

7.5 Monitoring and Reporting

The monitoring plan (Internal and External Monitoring) for the ESMP is presented in the Table 40 below. Monitoring results shall be documented with preventive/corrective actions to be implemented.

Table 40: Monitoring Procedures

Monitoring	Action	Responsibility	When	Frequency	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).	SPIU Environmental and Social Safeguard Officers FPMU Safeguards Unit	During Preconstruction, Construction and Operation Phase	SPIU Weekly –	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		FPMU Quarterly - Daily	
External Monitoring	Regular site visits to ensure project is implemented in an environmentally and socially sustainable manner using the monitoring indicators specified in the monitoring plan and other national and international environmental guidelines/laws	FMEEnv, Abia SMEEnv, ASEPA, FRSC, NGOs/CBOs, etc.	During the preconstruction, construction and operation phases.	Bi-Annually	Inspect monitoring reports from safeguard units and provide feedback and enforce corrective actions where required.

Reporting Procedures

The reporting procedures presented in Table 41 below, have been developed in order to ensure that the ABS-RAAMP PIU are able to receive feedback from the implementation of the ESMP on an ongoing basis and to take rapid corrective actions if there are issues of non-conformance.

Table 41: Reporting Procedures

Phase	Responsibilities	Deliverables	Accountability
Rehabilitation	SPIU Safeguard Unit	Two (2) monitoring Reports First to be prepared mid-way into the civil works and the other upon completion of all construction activities.	SPIU, FMEEnv on request
		Additional Reports according to specific conditions e.g., Incidents/Accidents, serious environmental/ social risks & impacts.	
	Contractors	Report on Environmental and Social compliance during civil works	SPIUs, Supervisory Consultants.
Completion of	SPIU Safeguards	Final Monitoring Report including all monitoring	SPIU, FPMU, Report to be archived

Phase	Responsibilities	Deliverables	Accountability
construction and demobilization of Contractors from site	Units	activities throughout project implementation	and made available to the World Bank, & FMEnv on request

Record Keeping and Control

The Contractors are required to keep records providing evidence of ongoing mitigation activities. Such records may include C-ESMPs, site monitoring plan, OHS Policy, site specific OHS plan, emergency response and preparedness procedures, waste inventory and management procedures (type, quantity, transportation and final disposal), site instructions, training records, complaints records, incident report, inspection, maintenance and equipment calibration records. These documents should be made available to the SPIU Safeguards Unit upon request. The SPIU Safeguard Unit is also required to keep records to provide evidence of monitoring activities and effectiveness of the monitoring plan. The site monitoring plan, identified problems/corrective actions and monitoring reports are to be kept by the Safeguard Unit and be made available to relevant regulators upon request. In addition, all significant communications with FMEnv, the Abia SMEnv/ASEPA and other relevant authorities should be documented and kept. These documents are required to track performance to achieve and demonstrate compliance with the monitoring plan and applicable regulatory requirements.

7.6 ESMP Implementation Schedule

The activities related to environmental and social management and monitoring have to be integrated in the overall construction schedule. The project implementation phase for the rehabilitations under the Abia RAAMP phase 2 interventions under will be completed in eighteen (18) months period. The implementation schedule is presented in Table 42 below.

Table 42: Tentative ESMP Implementation Schedule

No.	Activity Description	Responsibility	Prior to Contract Award	Pre-Rehabilitation	Rehabilitation	Operation
				2-Months	16-Months	Post-18 Months
1	Clearance & Disclosure of ESMP	SPIU	√			
2	Finalization of Engineering Designs	SPIU/Engineering Design Consultant	√			
3	Inclusion of Environmental & Social Requirements in Bid Documents	SPIU/Safeguards Unit	√			
4	Review and Approval of Contractor's ESMP, Waste & Safety Plan	SPIU Safeguards Unit	√			
5	Capacity building	FPMU/SPIU		√		
6	Mobilization to site	Contractor		√		
7	Implementation of Mitigation Measures	Contractor, GRC, SPIU, Comm. Specialist, GBV Specialist, etc.		√	√	√
8	Supervising ESMP Implementation	SPIU Safeguards Unit and Supervisory Consultant		√	√	√
9	Monitoring & Reporting on ESMP Implementation	SPIU Safeguards Unit/Supervisory Consultant/Relevant MDAs		√	√	√
10	Environmental and Social Training	FPMU, Independent E&S Consultant	√	√	√	
11	Environmental and Social Monitoring and Auditing	SPIU, FPMU and Independent E&S			√	√

No.	Activity Description	Responsibility	Prior to Contract Award	Pre-Rehabilitation	Rehabilitation	Operation
				2-Months	16-Months	Post-18 Months
		Consultant				

7.7 Contractual Measures

Most of the mitigation measures are the obligation of the Contractors during all phases of the project. Consequently, the Contractors will have to prepare their proposals considering the measures as well as the detailed general environmental and social management conditions during civil works. Table 43 below presents the Contractual Measures.

Table 43: 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 and social specifications 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 documents and are presented in a familiar form to the Contractors
Cost of applicable mitigation measures only be added to the cost of the contract document as provisional sum (See Table 36 for Summary of ESMP Mitigation Cost for the Intervention Works Per Lots.)	The Contractor must consider and put the cost for the applicable environmental and social mitigation requirements specified in the ESMP.
Code of Conduct – Preventing GBV and Violence Against Child (VAC): A Code of Conduct should be prepared by the Contractor and signed; and forms part of the engagement agreement. To a minimum, the Code of Conduct should address: Standards of Conduct such as (a) Conflicts of interest (b) Quality of products and services, (c) Health and Safety-reporting injuries and unsafe conditions (d) Workplace violence, labour and human rights, ethics, reporting violations, (e) Sex with any person under 18 is prohibited, etc.	The Code of Conduct indicates the Contractors' commitment to be of best behaviour and comply professionally with the requirements of its engagement and Bank's safeguards.
Individual Code of Conduct Preventing SH/SEA and Violence Against Child (VAC): To a minimum, the individual code of conduct should spell out acceptable behaviour, consequence of violation, the routes for resolution of conflicts in any instance where personal interests conflict general interests regarding to the project work, outside work conduct, due diligence in providing required services, individual commitment to sustainable environmental practice during project implementation activities, etc.	The Individual Code of Conduct indicates the Contractor worker's commitment to be of best behaviour and comply professionally with the requirements of his/her engagement.
The procurement process should ensure that in addition to submission of CESMP, signing and filing of CoC, Contractors also include their employment policy based on the requirements of the Employees Compensation Act 2010 which establishes the procedure, processes and compliance to contribution to the employee compensation fund which is to be used to compensate the workers in case of injury, work-induced disability or fatalities.	The project should ensure that the Contractors fulfils this requirement and are reliable especially when work related accidents/incidents, occurs so that the well-being and well-fare of the workers is taken into consideration.

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 and presented in Table 44 below. The cost of mitigation to be implemented by the Contractor will be included in the contract as part of the implementation cost by the Contractor. The overall total estimated cost for the ESMP implementation, monitoring, capacity building, GRM implementation and safeguard instrument disclosure for all intervention packages is estimated at Fifty Thousand, Nine Hundred and Twenty-Seven US Dollars, only (**USD 50,927**). This is equivalent to

Seventy-Seven Thousand, Nine Hundred and Nineteen Naira and Four Hundred and Ninety-Three Kobo, only (N77,919,493).

Table 44: Overall ESMP Cost Estimate for the Intervention Works

Item	Intervention Package(s)		Total Cost (A+B)	
	Road Upgrades (A)	Spot Improvement (B)	NGN	USD
Mitigation	30,349,090	14,789,499	45,138,589	29,502
Monitoring	8,759,471	6,928,691	15,688,162	10,254
Capacity Building			8,067,960	5,273
ESMP Disclosure			2,314,000	1,512
GRM Implementation Cost			3,000,330	1,961
Sub Total ESMP Implementation Cost)			74,209,041	48,502
Contingency (5% of Sub-Total ESMP Implementation Cost)			3,710,452	2,425
Grand Total ESMP Implementation Cost			77,919,493	50,927

Note: All conversions were done using the Central Bank of Nigeria (CBN) current exchange rate of 1USD = 1,530 NGN at July, 2025.

7.9 ESMP Disclosure

Following the ESMP clearance by the World Bank, the SPIU shall disclose the ESMP in line with the Nigerian EIA laws for 21 working days. This will include a formal registration of the ESMP with the FMEnv and receipt of guidelines for the disclosure from the EA department including the locations to disclose the documents. At a minimum, the aspects to be followed through for the ESMP disclosure is provided in the Table 45 below.

Table 45: ESMP Disclosure

No	Action	Remarks	Cost (NGN)
1.	Registration of the ESMP at the FMEnv	Based on fixed statutory fees by the FMEnv	N 50,000.00
2.	In-house technical review	Based on fixed statutory fees by the FMEnv	N 400,000
3.	IMM FMEnv Statutory Cost	Based on fixed statutory fees by the FMEnv	N 500,000
4.	Final Access Charges	Based on fixed statutory fees by the FMEnv	N 250,000
5.	Disclosure on 2 National Newspapers and local news paper	This entails advert in 2 newspapers (actual costs will be determined at the point of placing the advert and varies depending on the paper)	N 500,000
6.	Radio announcement of the ESMP at the state	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)	N 150,000
7.	Printing of Hard Copies for Display Centres	N29,000 (estimate) x 16 copies (and binding)	N 464,000
8.	Disclosure at the World Bank External Website	The ESMP will be disclosed according to the World Bank Disclosure OP17.50	N/A
Total			N 2,314,000

**Actual costs will be provided at the point of disclosure.*

CHAPTER EIGHT – STAKEHOLDER ENGAGEMENT

8.1 Introduction

Public consultation and stakeholder engagement is a comprehensive process carried out throughout the project lifecycle. When effectively designed and executed, it fosters strong, constructive, and responsive relationships that are vital for managing a project's E&S risks. To achieve this, stakeholder engagement should commence early in the project cycle, as it helps secure a "Social License to Operate (SLO)" by demonstrating to communities and local stakeholders that their perspectives and well-being are valued. This section highlights consultations with key stakeholders. A Stakeholder Engagement Process was established to ensure accurate stakeholder identification and mapping. Its objectives centered on gathering feedback from relevant stakeholders regarding matters related to the proposed activities. As part of the stakeholder engagement process, the Consultant collaborated with the AB-RAAMP PIU's Safeguards Unit to conduct stakeholder mapping

8.2 Stakeholder Engagement Plan

The strategy for engaging stakeholders throughout the life-cycle of the project is described in Table 46. It identifies a broad spectrum of activities and events that will occur at different stages of the life cycle of the project and the targeted stakeholders that are required to be engaged, and how they should be engaged. The aim is to have a clear-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 46: Stakeholders Engagement Plan

Phase According to Consultants Work Plan	Key Stakeholder Engagement Activities	Stakeholders Identified	Level of Influence on the Project
Reconnaissance Survey	✓ Desktop study of project area ✓ Mapping of primary stakeholders in and around the project locations in the 11 LGAs (especially communities likely to be influenced by proposed project activities) ✓ Initial identification of stakeholders in synergy with the AB-RAAMP PIU Safeguards Unit ✓ Introductory meetings with Community Associations, Grievance Redress Committee (GRC), and informants to explain the proposed project and importance of the ESMP, and obtain initial feedback on relevant local issues, including Gender Based Violence and opinions from vulnerable groups (Will be done extensively during baseline studies and assessments) ✓ Building trust and manage expectations	Direct Project Affected Persons (PAPs) ✓ Farmers (growing economic crops such as oil palm, plantain, cassava, etc.) ✓ Owners of physical structure (Buildings, fences, pavements etc.) ✓ Land owners whose lands may be used as borrow pits ✓ Stream users including fishermen, sand miners, domestic/laundry activities, irrigation farmers, recreational swimmers, etc. (of Ekweze Stream, Iyi Obowo, Igwu River, Umudere Stream, Awiwa Stream, Nchichi Stream, etc.) ✓ Motorcyclists and Motorcycle/Tricycle Unions ✓ Nigerian Union of Road Transport Workers (NURTW) ✓ Marketers (Ozara Market, Orie Ngodo, Nkwo Elechi, Amorji Market, Orie Ngodo, etc.) ✓ Owners of Memorial Tombstones, Shrines/Communal Sacred and Hallowed Grounds ("Ala Nna Umuokpu", "Mbara", "Akparata", "Arusi Ajala", "Egbu Egbukwa", farmland protected with charms/shrines, etc.). Staff and students of schools (Anglican School of Divinity, along Old Umuahia (Divinity School)-Osah Road) ✓ Worshippers at Churches (Kingdom Hall of Jehovah's Witness, Methodist Church, St. Mathews Anglican Church, St. Theresa Catholic Church, Assemblies of God Church, Apostolic Church, Achara, Presbyterian Church of Nigeria, Atan Parish, Assemblies of God Church, Obinulo, Cherubim and Seraphim Church, Amorji, etc.) ✓ Primary Health Care Centers (PHCs) - e.g. Umuana PHC along Okikpe – Umuanna Road, ✓ Utility Service Providers e.g. Enugu Electricity Distribution Company (EEDC) Bordering communities Indirect Project Affected Persons	Own farms or structures (buildings, shrines, tomb stones, fences, electricity distribution poles and transformers, etc.) along the proposed roads to be rehabilitated, or use water from streams for fishing purposes as well as other domestic activities, etc. Are located along the proposed routes, use social amenities that are accessed through these roads and are within a 2km radius of the project target area(s) To a certain extent, are leaders at the community level with influence on the behaviour of habitants

		(Interested Parties) a) Community Leadership Level ✓ Community leaders ✓ Development Union Leaderships ✓ Youth Groups ✓ Women Association ✓ GRC b) Community Driven-Initiatives ✓ Community Based Organizations (Akpufu Ama Utazi Development Union (Home and Abroad), Isiaku Development Union (Home and Abroad), etc.) ✓ Faith Based Organizations ✓ Non-Governmental Organizations c) Government/State Agencies ✓ RAAMP Project ✓ Abia State Ministry of Poverty Alleviation and Social Protection ✓ Abia State Ministry of Environment ✓ Abia State Environmental Protection Agency (ASEPA) ✓ Ministry of Women Affairs and Social Welfare, Abia State. ✓ Abia State Federal Road Safety Corps (FRSC) ✓ Nigeria Security and Civil Defence Corps (NSCDC), Abia State ✓ Nigerian Police Force (NPF)	in their domain Operate business and deliver services within the area Provide some form of Social/Technical assistance for community driven initiatives related to livelihood, security, health and gender issues These have the mandate of the State Government to be critical decision makers, advisory groups and provide technical assistance in terms of land delineation, provision of cadastral maps etc.
Baseline Studies and Field Works	✓ Complement field activities with input from the public consultation/stakeholder engagement specialist ✓ Detailed mapping of stakeholders and social landscape ✓ Maintain a stakeholder log/minute (meetings, key issues raised, agreed actions, and responsibility) ✓ Plan, liaise and brainstorm with the AB-RAAMP PIU on consultations, and outcomes ✓ Ensure inclusion of a formal grievance mechanism as an annex in the ESMP Report	Stakeholder Identification continues	Will be determined once other stakeholders are identified

Wide-ranging consultations were held with the AB-RAAMP PIU, interested parties (Abia SMEnv, ASEPA, FRSC, etc.) and communities along the roads. The consultations served as platforms to elicit information, questions and concerns relevant to the project. Participants at the community meetings (See Table 47) comprised the traditional rulers (Eze), women and youths.

Vulnerable Groups

Vulnerable Groups were identified at the level of consultations. The criteria utilized were based on establishing members of the project area of influence likely to be at the most risk of the adverse impacts of the proposed intervention works. This is with regards to: (i) *easy predisposition to SH and SEA, contracting STIs and STDs or unwanted pregnancies (social vulnerability)*; (ii) *individuals likely to suffer damage of their food crops (physical and economic vulnerability)*; (iii) *people living with disabilities (physical vulnerability)* (iv) *elderly persons (social and probably, economic vulnerability)* etc. In line with the criteria above, these include:

- **Teenage and Adolescent Females:** These, especially from communities and schools along or in proximity to the rural roads earmarked for rehabilitation. They stand the risk of suffering SH/SEA, contracting STIs, STDs or unwanted and/or early pregnancies caused from relations with contractor workers and labour influx.

- **Women and Children:** These refer to or constitute those that carry out farming activities; fishing and domestic activities within the streams and rivers along the roads such as bathing, laundry etc. who may be exposed to the presence of construction workers.
- **Persons with Disabilities:** These refer to or constitute people living with disabilities within the communities where the roads to be rehabilitated transverse.
- **Elderly Persons:** This group of vulnerable people are present across communities in all 37 roads, it's imperative to put them into cognisance, as they might easily be susceptible to adverse environmental and social impacts associated with the rural road rehabilitation e.g., site clearance during widening of the shoulders of the road which may affect their farms.

8.3 Stakeholders Engagement Summary

The primary stakeholder groups consulted are listed in the Tables below including Key discussions, concerns, and responses from the site-specific consultations while photographs and attendance records, are provided in Annex 3.

Table 47: Summary of Consultations with Stakeholders

Stakeholder	Key Question(s)/Concern(s)	Response/Action
AB-RAAMP PIU and ESMP/RAP Consultants Venue: Abia RAAMP SPIU Office Date: 19 th November, 2024		
ESMP Consultant	Requested all relevant documents (e.g., design reports, feasibility studies) E&S screening report	SPIU The necessary documents will be provided to support a comprehensive review. Furthermore, an E&S Screening has been undertaken for all work packages under the Phase 2 Interventions.
	Sought clarification on whether a single contractor will be engaged for the entire rehabilitation or if works will be awarded on a lot-by-lot basis.	SPIU noted that evaluations are conducted on a lot-by-lot basis, although a single contractor could potentially be awarded more than one lot, subject to evaluation outcomes.
	Enquired about the grouping of roads (into lots) for spot improvement intervention and whether this will be completed before the ESMP draft phase, to aid breakdown of costs according to lots for a seamless integration into Contractors bids for implementation.	SPIU explained that while the upgrade road is divided into five lots, the spot improvement roads will be grouped into lots before the ESMP draft phase and the grouping shall be shared with the Consultant.
Consultant	Questions on the assets within the Right of Way (ROW) and details about road setbacks, width, and drainage.	The SPIU noted that assets mainly include crops, fences, and pavements. The Infrastructure Engineer clarified the road width: a 6m carriageway, 2m shoulders (1m each side), and 2m for drainage (1m each side), totalling 10m (with variations in non-drainage areas).
ESMP Consultant	Request for a list of security-prone villages for team safety and assistance in grouping roads based on local knowledge.	The SPIU stated that Abia State is peaceful with no known security challenges, and agreed to assist the consultant in road grouping.
Participants: AB-RAAMP PIU and Engineering Design Consultants Venue: Abia RAAMP SPIU Office Date: 19 th November, 2024		
	Clarification on the proposed road width, inclusion of drainage, and implications for PAPs.	The Infrastructure Engineer confirmed a standard road width of 10m (6m carriageway, 1m shoulder on each side, 1m drainage on each side) with adjustments (8m) in areas without drainage. Drainage is included only in built-up areas, and in critical areas, width may be reduced to minimize impacts.
	Whether to organize the ESMP Matrix by lots or by type of intervention.	Both the ESO and the Infrastructure Engineer expressed a preference for organizing the ESMP Matrix by interventions while providing
SPIU Infrastructural Engineer	How will modifications be effected especially if design adjustments are necessary post ESMP/RAP field assessments?	It was explained that once the environmental and social assessments are completed, a tripartite meeting involving the consultant, SPIU, and contractor will be convened to address any design adjustments required.

Stakeholder	Key Question(s)/Concern(s)	Response/Action
Participants: ASMEnv/ASEPA Consultation Venue: ASEPA Office, Umuahia, Abia State Date: 29 th November, 2024		
ASMEnv Staff	How does the project plan to manage the E&S issues that shall arise during the civil works implementation?	The ESMP Consultant informed them of some anticipated E&S risks and impacts and further assured that all potential adverse impacts will be assessed and that appropriate mitigation measures will be incorporated into the ESMP report for implementation, including their costings. He further informed that there will be specific monitoring responsibilities for the ASMEnv and ASEPA in the matrix table and informed them that their proactive participation in monitoring activities will enhance the E&S performance of the phase 2 intervention activities under AB-RAAMP.
ASEPA Staff	How will wastes generated from the road construction activities be managed during the project?	The ESMP team confirmed that a site-specific WMP will be prepared and included as an annex in the ESMP report. Contractors are also expected to implement the WMPs.
ESMP Consultant	How does ASEPA currently engage with local communities on waste management issues, and what are the main obstacles you face?	ASEPA staff explained that they conduct periodic sensitization campaigns and work closely with community leaders. They noted that limited resources, challenges with public compliance, and difficulties in monitoring and enforcement are the key obstacles.
Participants: Staff of Abia State Federal Roads Safety Corps (FRSC) Venue: FRSC Office, Umuahia, Abia State Date: 29 th November, 2024		
FRSC Staff	The FRSC sought clarity on their specific role in the road projects.	The ESMP Consultant explained the proposed project and their traffic mitigation responsibilities. He further emphasized the importance of collaboration to manage traffic on major roads leading to project sites, as the roads to be rehabilitated typically experience minimal traffic, except on market days or during festivities.
	The FRSC inquired about accident mitigation strategies.	The Consultant informed that the ESMP will recommend measures such as driver training, speed limit enforcement, and FRSC coordination to prevent incidents.
ESMP Team	On ensuring road users are adequately informed, the ESMP team highlighted that signages would be placed at key locations to provide real-time traffic updates	They deploy trained personnel, traffic cones, barriers, signage, and patrol vehicles to address congestion, which may cost the project since man-hour and resources are being deployed. The FRSC agreed to enforce traffic regulations, manage flow at critical points, and collaborate on driver sensitization campaigns while ensuring speed limit compliance. However, they emphasized that all these can be achieved effective communication with the project team.
	The ESMP team sought details on how FRSC's will provide support in managing traffic during peak disruption periods.	
ESMP Consultant	The ESMP team assured that the PIU will maintain regular coordination through meetings and updates facilitated by the Communications Specialist and MIS Officer.	
Participants: Community leaders, Community Locals, Women Groups, Youths, farmers, traders, etc. Venue: Within Project Communities Situated Along Roads Earmarked for Upgrade Under the Abia RAAMP Phase II Interventions (e.g, Agalabano-Umuhu central school-Ekeoba, Achara-Okpo-Nkporo-Ututu, Umeye I - Umeye II, Obinto - Atani, Eziana-Amaibo Ring Road Communities (Anuzu, Uturu, and Amaigbo), Okagwe- Nkwebi – Onwuwanyanwu, Sameke Junction - Amaraugboghu Communities, Amorji market road - Amorji junction, etc.). Date: 20th November to 1st December 2024.		
Consultation Summary The consultations conducted across various communities covered key aspects of the ESMP, project goals, and anticipated outcomes. Community members actively engaged in discussions, sharing concerns and suggestions. The major themes and unique insights are summarized below:		
The ESMP consultants introduced the project, inviting communities to share insights about cultural, economic, and environmental aspects. Communities warmly welcomed the team, expressing optimism and support. However, in some locations like Agalabano and Ntubi, elders expressed skepticism due to previous unfulfilled assessments. The consultants reassured them the assessments undertaken are necessary to ensure that the proposed rehabilitation is implemented seamlessly across the project locations. However, he assured them that civil works will most likely commence following the completion of the ESMP/RAP.		

Stakeholder	Key Question(s)/Concern(s)	Response/Action
	- Improved access to farms and markets, temporary employment, and socio-economic development were highlighted as key project benefits. Youths in Agalabano and Ezeukwu expressed enthusiasm about employment prospects, while women leaders stressed the need to accommodate market days to avoid disruptions. - Dust, noise, and temporary disruptions were identified as some potential environmental impacts. Communities acknowledged these but emphasized their willingness to support the project given its long-term benefits. - Several communities identified culturally significant resources, such as sacred trees, shrines, and ritual grounds. The consultants assured them that these would be preserved and managed sensitively, with potential design adjustments to respect cultural heritage. (Refer to Annex 15 – PCRMP) - Assessments at project locations at Umunneochi, Isiala Ngwa, Obingwa LGAs and other communities revealed vibrant market activities at the origin/terminal of the roads, which are central to livelihoods. Community members requested careful scheduling of construction works to minimize disruptions. - In Amuzu and Ntubi, community members highlighted previous failed contracts and political neglect. - Specific requests included preserving sacred trees, adjusting drainage designs, and ensuring access to streams. At Nkwo Elechi, youth leaders kicked against drainage installations due to waterlogging/flooding issues currently experienced in their LGA. - Community leaders pledged full cooperation, emphasizing the importance of communication, transparency, and local content in the project's execution.	
Consultation with Women's Groups Venue: Various Project Communities along Intervention Sites. Date: 20th November – 1st December 2024.		
A consultation was held with women's groups across project communities to incorporate their perspectives into the ESMP. Discussions involved Women Leaders, Widows, Female Heads of Households, Older Women, Teenagers, and Adolescents, all of whom rely on the roads and streams for transportation, economic activities, and household needs. Participation varied based on location, availability, and willingness to engage.		
	The ESMP team briefed participants on the upcoming road rehabilitation and its objectives, including identifying potential environmental and social (E&S) impacts and mitigation measures	
	- Women across the project areas highlighted challenges in accessing essential services, including healthcare, legal support, and social welfare programs. Limited healthcare facilities, high transportation costs, and inadequate legal aid were primary concerns. The ESMP team assured them that the project aims to improve connectivity, which may enhance service delivery and access. - Emphasis was made on the importance of the roads in connecting homes, markets, schools, churches, and health centers. Women groups interviewed along most of the spot improvement roads notified that streams are used for drinking, fishing, and domestic activities such as laundry and cooking. Concerns were raised about potential water contamination and temporary access restrictions. The team assured that mitigation measures, including safe construction practices would be implemented to mitigate impact on surface water resources. - The impact of road rehabilitation on women's economic activities was discussed. Women rely on these roads for trade (to access major markets), farming, and access to business arenas. Improved road infrastructure was seen as a potential enabler for their economic activities. The ESMP team noted that local women would be considered for employment during civil works where feasible. - Women shared concerns about gender-based discrimination and fears of GBV risks especially during the project implementation phase. Issues such as harassment, wage disparity, and exclusion from decision-making processes were highlighted. The ESMP team committed to incorporating GBV sensitive mitigation measures, including signing of code of conduct by contractor's workforce, GBV awareness training and a safe reporting mechanism for affected individuals. - Women sought clarity on how to lodge complaints related to project activities. The ESMP team explained the RAAMP's GRM, including multiple reporting channels. He emphasized that the process ensures timely responses and fair resolutions for all complaints.	
Consultation with the LGAs/Chairmen		
	- Chairmen were concerned about the extent of road rehabilitation and which specific villages/areas would be targeted under their LGAs. Following this concern, they were made to understand the roads which have been earmarked for rehabilitation and upgrades under their jurisdiction. Their assistance was sought in the aspect of obtainment of an SLO from the project communities and they expressed their willingness to work with and be part of the project during implementation as it brings development to their locality. - There were inquiries about measures to ensure that the rehabilitation work does not disrupt local communities and businesses along the routes. The consultant clarified the essence of the ESMP which was currently being developed to target and address all adverse impacts/consequences of the project including the disruptions envisaged.	

Stakeholder	Key Question(s)/Concern(s)	Response/Action
	The stakeholders enquired about the longevity of the project. They enquired about the strategies for the long-term maintenance of the rehabilitated roads considering the challenges often faced in sustaining infrastructure projects. The Consultant however explained that road maintenance shall be undertaken in the operation phase and that it is captured in the ESMP. He further emphasized that local content is leveraged for this activity since many youths based in the project communities are currently unemployed. Additionally, he notified the stakeholders that a key requirement of the RAAMP participating states is the establishment of a Rural Access and Road Agency (RARA) for future road management post- rehabilitation.	

SUMMARY OF CONSULTATION WITH ABIA PIU		
STAKEHOLDER	QUESTIONS/CONCERNS/SUGGESTIONS	RESPONSE
AB-RAAMP Project Coordinator	Welcomed the Consultant and stated that they are willing to assist the Consultant with every information within their reach to enable the project run smoothly.	Consultant appreciated the entire team of AB-RAAMP PIU
AB-RAAMP Environmental Safeguards Officer (ESO)	The ESO enquired to know if the Consultant will commence work immediately considering the short timeline of the Consultancy service	The Consultant explained that their team was on-site to conduct field assessments for the ESMP. He added that two teams would be working simultaneously to carry out baseline studies for both tasks.
ESMP Consultant	The Consultant inquired whether the intervention sites had been grouped into lots. He further inquired whether the engineering design process for the roads proposed for spot improvement would be completed, and the roads grouped into lots before the draft phase of the consultancy service. This, he explained, would enable the consultant to update the report—particularly the ESMP matrix tables—to reflect the lots, ensuring seamless implementation by each contractor.	The SPIU explained that the road proposed for upgrading has been divided into five lots, while the roads designated for spot improvement have not yet been grouped into lots. This is because the engineering design process for the spot improvement works is still ongoing. He further noted that all the roads are distributed across the three senatorial districts of the state. The SPIU responded, stating that it is expected that, before the draft phase, the roads designated for spot improvement will be grouped into lots and shared with the Consultant for necessary updates and actions.
ESMP Consultant	The Consultant inquired whether a single contractor would be engaged for the entire rehabilitation works or if the intervention works would be awarded on a lot-by-lot basis.	The Project Engineer explained that the evaluation process is still ongoing and is being conducted on a lot-by-lot basis. He added that some contractors submitted Expressions of Interest (EOIs) for multiple lots. Furthermore, the final contracting will depend on the evaluation outcome. He also noted that it is possible for a single contractor to be awarded two lots.
Consultant	The Consultant asked whether the design consultants would be available to assist the ESMP team during field visits and if the project could facilitate a meeting with the Design Consultants.	The PC stated that the design consultants are on-site and have been informed about their collaboration with the ESMP Consultant. He added that the ESMP Consultant could meet with the design consultant for the upgrade works immediately after the meeting, as he was available at the SPIU office at the time.
ESMP Consultant	The Consultant requested additional documentation, specifically the engineering designs for the Spot improvement and Cross Drainage Works.	The PC responded the team that he will prioritize getting it ready as soon as possible to ensure the ESMP consultants have everything they need to work efficiently.
AB-RAAMP ESO	The ESO inquired about the expected timeline for the completion of the draft reports (ESMP and RAP).	The Consultant stated that, according to the ToR and their work plan for the assignment, the draft is due by the 6 th week. Therefore, the team will work diligently to ensure the project receives the expected deliverables on time.
Consultant	The Consultant inquired about the nature and magnitude of the assets within the ROW of the roads.	The SPIU informed the team that the assets are few and, in most cases, consist of crops extending into the road from farmlands, as well as building fences, pavements, and similar structures.
ESMP/RAP Consultant	The ESMP/RAP Consultant inquired about the setback and the standard road width that the project design will adopt for the roads.	The Infrastructure Engineer clarified that for the roads, the carriageway will be 6m, with 2m road shoulders (1m on each side) and 2m for drainage (1m on each side), totalling 10m.
ESMP Consultant	The ESMP Consultant inquired for clarification on the Cross-Drainage interventions. He also asked if an E&S assessment has been conducted for the ESMP, as it was not included in the scope of the ESMP but only in the RAP.	The SPIU explained that an ESMP has been prepared for the Cross-Drainage interventions and that the RAP will determine if any compensation is required for the CDS interventions. Therefore, the focus for CDS lies within the scope of the RAP, not the ESMP.
RAP Consultant	The RAP Consultant requested the AB-RAAMP PIU to assist in grouping the roads to improve their itinerary, as they have better knowledge of the axes, proximity, and LGAs where the roads are located.	The SPIU responded by stating that their team will assist the Consultant in grouping the roads, as they have better knowledge of the roads and access to the communities.
ESMP Consultant	The Consultant requested a list of security-prone villages, if any, and further stated that this information is necessary for the safety of the team.	The SPIU stated that Abia State is a very peaceful state. The team further informed that, to the best of their knowledge, there are no communities with security challenges and that all project locations are accessible.
ESMP Consultant	The Consultant requested a copy of the signed contract to	The Acting PC informed the team that a copy will be provided to them after

SUMMARY OF CONSULTATION WITH ABIA PIU		
STAKEHOLDER	QUESTIONS/CONCERNS/SUGGESTIONS	RESPONSE
	be shared with the team and also inquired about the speed at which payments are processed upon receipt of reports.	the meeting. He further stated that, on average, it takes a week for payments to be processed.
ESMP/RAP Consultant	The ESMP/RAP Consultant requested that AB-RAAMP provide his team with an introductory letter to the MDAs or for the Ag. SPC to make a call to the ABSMEnv/ASEPA and FRSC to facilitate smooth consultations.	The PC stated that he will visit the ministries to establish contact and pave the way for further consultations with the Consultant team before the commencement of fieldwork.

Consultation with Design Consultant, Infrastructure Engineer and Safeguards Team		
STAKEHOLDER	QUESTIONS/CONCERNS/SUGGESTIONS	RESPONSE
ESMP Consultant	The Consultant introduced the members of the team and outlined the purpose of the consultancy.	The Design Consultants welcomed the ESMP Consultants and expressed their willingness to provide any necessary information to facilitate the consultancy and ensure the successful outcome of the project.
ESMP Consultant	The Consultant explained that the design is crucial for the assessment, as it will determine how the design impacts the physical, cultural, and social environment it is intended for. He further emphasized that the design serves as a guiding document for the assessment, outlining the project's objectives, location, and implementation plan. He then requested the design engineer to provide an overview of the design.	The Design Consultant responded that providing a detailed rundown of the design might be challenging, as it covers a wide range of areas with different environmental attributes, features, intended interventions, and design parameters. He referred the consultant to the Design Report, which was prepared based on the ToR. He further stated that, after reviewing the design, if any areas require clarification, he and his team would be happy to provide further explanations.
ESMP Consultant	The consultant inquired if there are any findings from the design that the Design Consultant would like to bring to the attention of the ESMP/RAP consultants.	The Design Consultant referred the consultant to the design report and further mentioned that a true understanding of the level of work done would only be possible once they are on the field.
Infrastructure Engineer	The engineer mentioned that after the environmental and social assessment is completed, a tripartite meeting will be held involving the consultant, the SPIU, and the contractor. During this meeting, there will be room to make any necessary adjustments based on the findings and reports of the consultants.	The Design Consultant further noted that they have also identified areas that may require resettlement. He emphasized the importance of conducting a field visit to fully understand the scope of work completed. This visit would allow for any questions or clarifications to be addressed on-site. The Design Consultant added that, while their design report has identified areas that may require compensation, it has been some time since the sites were last visited. As a result, some areas may no longer require compensation or resettlement due to changes in environmental factors or community interventions.
ESMP Consultant	The consultant inquired about the proposed width of the roads. The consultant asked for clarification, specifically whether the drainage would only be built in the developed areas. The consultant also sought confirmation that the assessment should be limited to a existing width of 10 meters, noting that extending beyond the existing road width could involve more Project Affected Persons (PAPs).	The Infrastructure Engineer responded that the road width is 10 meters, consisting of a 6-meter carriageway, 1-meter shoulder on both sides, and 1-meter drainage on both sides. In areas without drainage, the width will be reduced to 8 meters, with a 6-meter carriageway and 1-meter shoulder on each side. The engineer confirmed that drainage would only be included in built-up areas. The team stated that it should not exceed the existing road width. But in critical areas it can be minimize, since many of these roads are in rural areas and some of the buildings along the road width are ancestral homes, therefore the assessment should consider these factors to avoid potential issues.
Consultant	The consultant inquired whether the drainage will be on both sides of the road.	The Engineer and the ESO explained that it depends on the road and the specific environmental factors, such as the slope.
ESMP Consultant	The consultant asked if the SPIU is willing to collaborate closely with the contractor to ensure the design is followed.	The ESO assured that the SPIU is willing to collaborate with the contractor to ensure adherence to the design. He shared examples from the past where they successfully persuaded contractors to follow adjusted designs to minimize impact, particularly in areas with open spaces or less valuable assets on the opposite side. He further stated that they have issued standing orders to contractors, requiring the SPIU to be present before any assets can be removed in order to manage the process.
Design Consultant	The consultant offered to provide the consultant with the inventory for each of the roads that were visited.	The ESMP/RAP team expressed their appreciation to the Design Consultant and the SPIU team for their support.
ESMP Consultant	The consultant inquired whether the roads designated for upgrade have been divided into lots and, if so, how many	The Design Consultant confirmed that the roads have been divided into five lots.

Consultation with Design Consultant, Infrastructure Engineer and Safeguards Team		
STAKEHOLDER	QUESTIONS/CONCERNS/SUGGESTIONS	RESPONSE
	lots there are. The ESMP consultant also asked if, when writing the ESMP Matrix table, it would be preferred to organize it by lots or by intervention.	The ESO and Infrastructure Engineer responded that they would prefer the ESMP Matrix table to be organized by lots.

Summary of Stakeholder Engagement with Abia State Environmental Protection Agency (ASEPA)		
Date of Consultation	29 th November, 2024 Time: 12:15 PM	
Venue	Abia State Environmental Protection Agency (ASEPA)	
Participants	Staff of ASEPA	
Language of communication	English	
Category	Comments Raised	Responses and Recommendations
Introductions from the ESMP/RAP Consultants and Overview of the ESMP/RAP	The ESMP/RAP Consultants introduced the team and provided an overview of the proposed road rehabilitation project, including its objectives, scope, processes, and expected outcomes, as well as the purpose of the ESMP.	ASEPA welcomed the team and assured their full support for the successful execution of the project.
Staff of ASEPA	Inquired about the detailed scope and objectives of the project, as well as the areas and communities that will be involved.	The ESMP Consultant detailed the project's scope and objectives, stating that 37 roads across 11 LGAs in the state are earmarked for rehabilitation. A list of the specific roads was also presented to ASEPA.
	When will the project activities begin?	The ESMP Consultant explained that the timeline for civil works commencement could not be confirmed at the time, as the ESMP must undergo a review process and receive approval and disclosure. ASEPA will be informed in advance by the AB-RAAMP PIU since they have a role in the rehabilitation activities.
	What are the potential adverse environmental impacts, and how will they be mitigated?	The ESMP Consultant stated that the project's potential adverse risks and impacts will be identified and appropriate mitigation measures will be proffered for the identified adverse impacts and incorporated into the ESMP report. The ESMP also stated that amongst other adverse impacts identified, some of the environmental adverse impacts are waste generation, impact on air quality, surface water contamination, impact on natural habitat etc.
	Are there provisions for a Waste Management Plan (WMP) will be prepared for the project?	The ESMP team stated that a site-specific WMP will be prepared and incorporated into the ESMP report as an annex.
	Will the environmental parameters (water, soil, noise and air) be monitored to ensure they do not exceed the recommended maximum permissible limits during the rehabilitation activities?	The ESMP consultant informed that environmental parameters analysis has been proffered as part of the mitigation measures for identified impacts such as surface water contamination, soil contamination, impact on air quality, and noise.
	Are there provisions for a Waste Management Plan?	The ESMP Consultant confirmed that a site-specific WMP will be developed and included as an annex to the ESMP report.
ESMP Consultant	How does ASEPA currently engage with local communities to address waste management challenges?	A staff of ASEPA responded that they conduct periodic sensitization campaigns and collaborate with community leaders to educate residents on proper waste disposal methods.
	The ESMP/RAP Consultant asked about the primary obstacles ASEPA faces in enforcing waste management regulations.	They responded that limited resources, inadequate public compliance, and challenges in monitoring and enforcement are our main issues.
	Are there specific areas or sectors where you feel additional support is needed to improve environmental sustainability in the	ASEPA Staff responded that they could use more support in capacity building, funding for modern equipment, and partnerships for sustainable waste recycling initiatives.

Summary of Stakeholder Engagement with Abia State Environmental Protection Agency (ASEPA)		
Date of Consultation	29 th November, 2024 Time: 12:15 PM	
Venue	Abia State Environmental Protection Agency (ASEPA)	
Participants	Staff of ASEPA	
Language of communication	English	
	state?	
	The ESMP Consultant concluded by thanking the ASEPA staff for their warm reception and constructive participation.	

Summary of General Stakeholder Engagement with PAPs and Project Affected Communities (Upgrade)		
Date of Consultation	20 th November – 1 st December, 2024 Time: 9:00 AM – 5:45PM Daily	
Intervention Work	Upgrade	
Venue	Within Project Communities Situated Along Roads Earmarked for Upgrade Under the Abia RAAMP Phase II Interventions (e.g, Agalabano-Umuhu central school-Ekeoba, Achara-Okpo-Nkporo-Ututu, Umeye I - Umeye II, Obinto - Atani, Eziamma-Amaibo Ring Road Communities (Anuzu, Uturu, and Amaigbo), Okagwe- Nkwebi – Onwuwanyanwu, Sameke Junction - Amaraugboghu Communities, Amorji market road - Amorji junction, etc.). (consultations were held separately across the various locations and critical feedbacks have been incorporated in baseline conditions of this report).	
Participants	Agalabano (Traditional rulers/Elders, Youth groups, Women groups, Farmers), Achara (Elders, Youth groups, Council of Chiefs, Women groups, Farmers), Obinto (Traditional council, Youth groups, Women groups, Farmers), Ndiokpo (Land committee, Union members, Youth groups, Patron, Women groups, Farmers), Amuzu (Traders, Eze, Youths, Women groups, Farmers, Vigilante), Uturu (Council of Elders, Youth groups, Women groups, Community Development Association-Home and Abroad, Farmers), Amaigbo (Traditional Prime Minister {TPM}, Palace Secretary, Village Head, Elders, groups, Farmers, traders), Okagwe (Igwe and council, Women groups, Chief Priest, Farmers, Elders), Sameke (Community Development Organization {Home and Abroad} Leaders, Elders, Farmers, Women groups) Amorji (Farmer)	
Language of communication	English, and Igbo	
Stakeholder	Questions/Concerns/Suggestions	Responses and Recommendations
Introductions from the ESMP Consultants and Overview of the ESMP	The ESMP team presented a comprehensive summary of the planned road rehabilitation project to the elders and local community, outlining its goals, scope, anticipated outcomes, and expectations. They emphasized that the ESMP aims to identify potential environmental and social impacts of the proposed rural road rehabilitation in their community, recommend suitable mitigation strategies, and engage stakeholders to incorporate their perspectives. Additionally, the ESMP team encouraged the elders and locals to share any relevant information about their communities, cultural and socioeconomic activities, streams, and structures along the roads. They were urged to express their opinions regarding the project.	The elders of the community and other stakeholders warmly welcomed the ESMP team and expressed gratitude for the opportunity to share their opinions. They also pledged their support to the ESMP team. Furthermore, they went ahead to discuss about their communities, cultural and socioeconomic activities, roads, streams and structures along the road and usage, farming/fishing activities etc.
Elder at Agalabano	Expressed his doubts about the project, saying he is skeptical because, in the past, others had come to do similar assessments but never followed up or completed the promised projects.	The ESMP consultant assured the elder that this was the final assessment required for the project. He explained that once it was reviewed and approved by the Bank, the contractors would begin work immediately. He emphasized the project's commitment to moving forward and highlighted the importance of the community's support in ensuring its success.
ESMP Consultant	The Consultant highlighted to the community several benefits that the project would bring beyond its primary purpose of providing transportation	The youths eagerly expressed their willingness to work for the contractor, showing enthusiasm for the opportunity to contribute to the project. They appreciated the Bank's

	infrastructure. These included enhanced access to farmlands, which would improve the efficiency of agricultural activities and support the livelihoods of farmers. Additionally, the project is expected to generate temporary employment opportunities, offering skilled and semi-skilled labour roles to local youths, thereby fostering economic empowerment within the community. Other indirect benefits discussed included potential stimulation of local businesses, easier access to markets for farm produce, and overall enhancement of socio-economic development in the rural agrarian community.	encouragement to involve the community and saw it as a chance to gain experience and improve their livelihoods.
	The consultant sought information about the security situation in the host community, including incidents such as theft, kidnapping, banditry, and other related crimes.	An elder responded confidently, assuring the Consultant that there are no security threats in the community. He emphasized that the area is peaceful and that the residents were committed to maintaining a safe environment to support the successful implementation of the project.
ESMP Consultant	The consultant inquired about the purpose and usage of the streams located along the road, seeking to understand how they are utilized by the local community. The consultant asked if all these activities are carried out in the same stream. The consultant asked if they were concerned that the project might restrict or interfere with their ability to use the stream during its implementation. The consultant asked if there are any existing borrow pits within the community, noting that if there is already a borrow pit with quality laterite, the contractor may not need to create new ones, rather liaise with the existing owners/operators on terms of lease and possible reclamation. The consultant also asked if there are any Physical Cultural Resources in the community, particularly along or in close proximity to the road, such as shrines, sacred trees (using a large tree around the meeting venue for example) and stones, or other significant cultural sites. The consultant asked the community to mention other general benefits of the road to them.	An elder responded that the water is used for most of their domestic needs, such as drinking, cooking, irrigation, washing of utensils and cloth, and bathing. He also mentioned that the community uses the water for fishing, and that their children often swim in it as well. The community unanimously affirmed that all these activities are carried out in the same stream, but noted that the stream is partitioned to serve different purposes. This arrangement is well-known to all members, and it is considered a crime to use the stream for purposes other than those designated. The elder responded that they believe the project would not hinder their use of the stream. He explained that they understood the importance of the project and trusted that the contractors would ensure their access to the stream remained unaffected. As long as the partitions and flow of water were maintained, they could continue with their daily activities without any problems. A youth confirmed that there is an existing borrow pit along the expressway, about three Kilometres from the community. The community responded that there are no physical cultural resources within the community. They mentioned that the Cross Drainage Structure, in particular, would benefit them greatly as it would provide better access to their farms mostly situated across. During the rainy season, the area is usually impassable, and the drainage system would help alleviate this problem.

ESMP Consultant	The ESMP consultant asked if there are other social amenities in the community, The consultant further asked if the schools are primary, secondary and, or tertiary and if they are owned by the government or individuals. The consultant inquired about the primary occupations of the community members.	The community responded positively, stating that they do have some social amenities. These include a primary school, a health Centre, a market, and access to electricity. An elder explained that the school is a government-owned primary school. However, it is no longer operational as it has been vandalized. In response, members of the community explained that their primary occupation is farming. However, few are involved in petty trading, artisanal crafts, and occasional employment in nearby urban centres. Some also engage in transportation services, while others rely on seasonal labour or small-scale businesses to sustain their livelihoods.
ESMP Consultant	The Consultant informed the community about some anticipated E&S impacts of the project/road rehabilitation. These include localized generation of fugitive dust, a slight increase in noise levels, vibrations, traffic disruptions, temporary access restrictions, and potential physical or economic displacement.	A community elder expressed the community's understanding and willingness to support the road rehabilitation project despite the anticipated challenges. He acknowledged the Consultant's efforts in explaining the potential impacts, but emphasized that the benefits, far outweighed the inconveniences. He assured the Consultant of the community's readiness to cooperate and collaborate to minimize the impacts and ensure the project's success. The Consultant further explained that the ongoing assessment aims to identify areas within the project environment where these risks and impacts are likely to be more significant. Based on this assessment, a comprehensive plan will be developed to address these issues and any additional concerns. This plan will be implemented by the Contractor to effectively mitigate the identified impacts.
ESMP Consultant	The consultant also inquired on the process of dispute resolution and grievance redress within the community	An elder explained that disputes are first reported to the family head or kindred elders for mediation. If unresolved, the matter is escalated to the council of elders or the traditional ruler, where both parties present their cases under an oath of honesty. He added that resolutions are binding, though unresolved cases may be referred to the courts.
Elder at Achara	They inquired whether the road project was initiated by the Abia State Government, noting that a neighboring community called Ahia-Obinto is already benefiting from a similar project.	The consultant explained that the project is funded by the World Bank and the French Development Bank (ADB), with counterpart funding provided by the Abia State Government. The elders expressed great joy upon learning that their project is not solely sponsored by the State Government but is also supported by the World Bank and other international partners. They felt a deep sense of pride and hope, recognizing the significance of such global collaboration in bringing development to their community.
The ESMP Consultant	The consultant requested clarification on the exact number of communities located along the Achara-Okpo-Nkporo-Ututu road. The consultant requested information on the additional benefits the road will provide once constructed.	An elder explained that main communities along the project route: Amafia Amaetiti, Achara, Nkporo, and Ututu. He also mentioned a smaller community before Nkporo called Okpo, which is often referred to as "Okpo-Nkporo" because of its close proximity to Nkporo. This naming is intended to promote the smaller community (ie. Okpo) and attract development to the area. An elder noted that, in addition to providing access to the aforementioned communities, it will serve as a major bypass and a shorter route for travelers heading to the Obinto market.
An elder at Achara	Informed the consultant that there is a sacred tree at	The ESMP consultant expressed gratitude to the elders for

	Amaetiti by name <i>Ndi Nduu</i>” shrine near the Apostolic Church along the road, but it will not hinder construction, as equipment can be parked underneath it. However, the tree should not be uprooted. The elders further assured that the sacred tree would not pose any hindrance to the project and emphasized that they would be present to provide all necessary support.	sharing the information. He then took the opportunity to educate the community about the four Bank Policies triggered by the RAAMP project. These policies are: 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 sacred tree in question is particularly sensitive to the project because it is classified as a Physical Cultural Resource (PCR). As the community has shown willingness to cooperate with the contractor during the work, both the ESMP and RAP teams will visit the site to assess the tree and develop measures to mitigate any potential negative impact on it. In response, the consultant expressed gratitude for their willingness to cooperate but reiterated the importance of visiting the site to assess, document the situation and develop a Physical Cultural Resources Management Plan (PCRMP) (if and where necessary) to ensure proper management and protection of the tree.
ESMP Consultant	The consultant inquired whether there are any other objects or areas (PCR) that are of significance to the community. The consultant inquired to know the significance of the sacred ground to the community.	The elders agreed and mentioned two more sites; a fenced shrine and a sacred ground or entrance called “<i>Isi onyemobi</i>” along the road. An elder explained that the site holds great significance to the community, as it is the location where sacrifices are made. Due to its sacred nature, menstruating women are prohibited from accessing the area, and corpses are not allowed to pass through it. When a corpse is brought into the community, it must take an alternate route to avoid desecrating the sacred ground. Aside from this site, the elder confirmed that there are no other such locations along the road.
ESMP Consultant	The consultant asked about their major source of livelihood.	The elder explained that the community consists predominantly of farmers who once thrived as marketers of various agricultural produce. However, this is no longer feasible due to the poor condition of the roads leading to their farms. The deteriorated infrastructure has significantly hindered their ability to transport goods to market, thereby affecting their livelihoods and economic stability. The elder further explained that in the past, they cultivated large quantities of cassava, which they transported to other parts of the state for sale. However, due to the poor road conditions, cassava production has drastically declined. Motorcycle riders, locally known as “Okada,” charge exorbitant fees to transport their produce, making it too costly and inefficient for them to continue producing cassava and other bulky crops.
ESMP Consultant	The consultant asked about the security situation in the community.	An elder responded that their community is very secure, with no reported cases of insecurity in recent times, apart from some petty theft, which is common in every society.
ESMP Consultant	The consultant asked whether the community has schools, hospitals, and other social amenities. The consultant further asked what their major challenge is in the community besides the bad road.	An elder responded positively, stating that the community has both schools and a clinic. The elder explained that the poor road conditions are their primary challenge, but the community also faces significant water scarcity. He further elaborated that while a few boreholes were constructed by the Peoples Democratic Party (PDP) and the Niger Delta Development Commission

		(NDDC), none are currently functional. One of the boreholes, for instance, has a damaged submersible pump (sumo).
ESO	The AB-RAAMP Environmental Safeguards Officer inquired about the steps the community is taking to address the issue of the dilapidated boreholes.	When no satisfactory response was provided, the ESO emphasized the importance of the community taking ownership of projects implemented in their area. He advised the elders to view these projects not as external provisions but as their own community assets. By adopting this sense of ownership, he explained, the community would be more likely to take proper care of the amenities and ensure their longevity. He encouraged the elders to instill this mindset among community members, fostering collective responsibility and pride in maintaining the infrastructure provided for their benefit.
ESMP Consultants	The consultant inquired for more information about the Obinto market. He asked about the traffic along that road on such market days.	It was stated that the market occurs after every four days and that it is an "Orie" The response indicated that the market is typically crowded. The ESO further explained that this market is one of those earmarked for rehabilitation under the World Bank-supported Agro-Logistic Centres project. Additionally, the ESO clarified that the market is not situated directly along the road, and therefore, it will not be impacted by the ongoing road works.
ESMP Consultant	Inquired to know how many communities are on the said project route.	The youth leader present answered that there are only two communities around that route. These are; Obinto and Atani
ESMP Consultant at Obinto	The consultant asked if there are cultural resources along the project route. The consultant asked for the benefits of the road to the community. The consultant asked about the condition of the road during the rainy season. The consultant asked if the road is predisposed to erosion The consultant inquired to know the security situation in the Obinto community and along the road.	A pastor in attendance responded that the road is currently accessible, with drainage on both sides, implying that there are no assets within the RoW. The pastor responded that with the upgrades to the Obinto-Atani road, areas such as Aba (the state's commercial hub) and Abam, a neighboring community, can be accessed through the palm plantation. This improvement will facilitate the easy transportation of their farm produce to the market and other locations where there is demand. An elder remarked that the road is often muddy and advised that the project should be carried out during the dry season. The answer was negative. The youth leader responded that their community is very safe. In his words, "Obinto is the safest and most peaceful community in the area, being the commercial centre and headquarter of Ihechioha. It is centrally located, and as such, there are no security issues." He also mentioned that there is regular patrol by the local vigilante. Additionally, he expressed their long-standing desire for the road to connect to Abam, and from there, to Umuahia and Aba.
Elder at Obinto	An elder remarked that in their community, great respect is given to their culture. Therefore, one thing the contractors must strictly avoid at all costs is any form of illicit relationship or interaction with married women.	The consultant thanked the elder for bringing this to their attention and encouraged the community to feel free to share any further concerns. He assured them that their input would be used to inform the contractor of their concerns.

Youth Chairman (Home based)	The youth leader assured the consultants of the community's full cooperation with the contractors to ensure the safety of their equipment. He further informed the consultants that in the Obinto community, there are skilled youths and women, referred to as "soft contractors," who are ready to supply materials such as laterite, gravel, iron rods, and other resources required by the contractor. He also appealed for community members to be actively involved in the project and be given an opportunity to make a living.	The consultant together with the ESO expressed their appreciation for the assurance of cooperation. They commended the willingness of the community to be involved fully in the project and also noted that the community's initiative to involve local youths and women as "soft contractors" aligns with the World Bank's policy to promote local content. The consultants assured the youth leader that they would communicate the request to the contractor and prioritize the engagement of local resources and talents to ensure a successful and mutually beneficial project.
ESMP Consultant	The consultant asked if there is any borrow pit located close to their community.	An elder responded that the project has nothing to worry about and that together with their Eze, they are willing to give up a community land for this purpose. The consultant expressed sincere appreciation for the community's kind gesture and proactive approach. He highlighted that, in line with the World Bank's policy of promoting environmental sustainability and minimizing disruption, it is preferable for the contractor to utilize existing borrow pits within the community. To achieve this, the contractor would enter into an agreement with the owner of the borrow pit, ensuring its optimal use for the construction project. This approach reduces the need to create new borrow pits, which could lead to unnecessary environmental degradation. The youth leader responded that there is a borrow pit situated less about a kilometer away from their community and are willing to take the consultant to the location for assessment.
ESMP Consultant	The consultant inquired about their primary sources of livelihood. The consultant asked about their days of market. He went further to ask them to describe the nature of traffic on such market days.	The pastor responded that their people are predominantly farmers with a few who are traders and some artisans such as welders, bricklayers, carpenters, etc. A woman responded that their markets occur every four days. The woman explained that the area is typically bustling with activity, as people from various places such as Ohafia, Abam, Umuahia, Ututu, Achara, and even Akwa Ibom State come to buy and sell. She confirmed that Obinto is the nerve centre of Ihechioha as such, all roads leading to and out of Obinto are usually busy on their market day. She noted that other areas have their market days but their own market which falls every four days attracts more people because of its central location.
Elder at Ndiokpo	An elder inquired to know the day the road work will commence.	The ESO informed them that the bidding process for the contractors had been completed and that the contract would be signed with the selected contractor very soon. He further explained that this ongoing assessment is the final step, and once approved, the road work can commence immediately.
Chairman Land Committee	The chairman lands committee asked to know the projects plan for community members who own assets along the road.	The RAP consultant assured the chairman of the land committee that the project had a comprehensive plan to address the concerns of community members who own assets along the road and that this is part of the reason why they are having this consultation. He explained that, in line with the World Bank's safeguards and relevant national policies, the project will ensure fair and transparent

		compensation for all affected persons. He noted that a detailed inventory of affected assets will be conducted and that appropriate measures were being put in place to compensate for any losses, whether related to land, structures, or livelihoods. The consultant further stated that support would be provided for restoration or resettlement where necessary, ensuring that no one would be left worse off due to the project. The consultant took the opportunity to inform the community about the cut-off date and that a team will be coming to carry out the enumeration.
ESMP Consultant	The consultant informed the community that the project might lead to some environmental and social impacts, such as temporary traffic restrictions and fugitive dust. However, he assured them that measures have been put in place to minimize these impacts as much as possible.	The community leader expressed appreciation for the consultant's transparency and reassured them that the community would cooperate, trusting that the measures in place would effectively minimize any disruptions.
ESMP Consultant	The consultant asked to know if there are PCRs along the project route or within the community that they will want the contractors to be made aware of.	The community leader responded that there are no PCRs along the project route or within the community that the contractors need to be concerned about. He went further to mention that their community and people are very hospitable and accommodating. Thus, the contractors will have no issues working in their community.
Women leader	The woman inquired to know if the road will be dualized.	The consultants explained that, according to the design, the road will be a single-lane carriageway, 6 meters wide, with 1-meter-wide drainage on each side and a 1-meter-wide shoulder, making the total width of the road 10 meters.
Igwe of Amuzu Community	Inquired to know the duration between this consultation and the commencement of work by the contractors.	The ESMP consultant responded that, according to the contract, the entire consultation process, including report submission, is scheduled to take eight weeks, with one week already completed. He further explained to the elders the purpose of their visit, which was to assess the potential environmental and social impacts that may arise as a result of the project. He concluded by noting that while he cannot provide an exact date for the commencement of work, it is expected to begin shortly after the report is cleared. The RAP consultant took the opportunity to inform the community leaders that they would return to conduct an enumeration and valuation of assets such as farmlands, businesses within the Right of Way (RoW), and that compensation would be provided accordingly. This process is essential to ensure fair compensation for any assets affected by the project, and it will be carried out in accordance with the project's social safeguard policies.
Elder from Amuzu	An elder pointed out that the Igwe is asking this question because, usually, during this festive period, some communities hire a bulldozer to clear the roads, making them more accessible for their relations traveling home from the cities. If the project begins immediately, however, they won't need to worry about this, as the roads will already be in better condition.	The RAAMP Infrastructure Engineer responded that he would advise the elders to proceed with their plans for now. He explained that, as the consultant mentioned, the work may not start this year but will likely begin in January.
Igwe of Amuzu	The Igwe brought to the consultant's attention a construction company called Cosmobase. He explained that this company was awarded the contract for constructing the same road back in 2014 but failed to deliver it to this day. He, therefore, urged the consultant and the Infrastructure Engineer on-site to	The consultant acknowledged the Igwe's concerns and expressed appreciation for his input. He assured the community that the project's success is a priority and emphasized that the evaluation process would thoroughly consider the track record of potential contractors. He further stated that measures would be put in place to prevent a

	be vigilant about such contractors. He expressed concern that if Cosmobase is awarded the contract for rehabilitating this or any other road, they are likely to repeat their failure to deliver.	recurrence of past failures and ensure that the selected contractor delivers the project to the required standard.
A Televangelist at Amuzu	He supported the Igwe's allegations, stating that the contractor in question is from their neighboring community. He revealed that the contract for this particular road has been awarded and executed multiple times; once during Senator Nkechi Nwaogbo's tenure and again when Dr. Ngozi Okonjo-Iweala was Minister of Finance, as it was one of the projects she brought to their community. He further explained that during the project screening process, he guided the team to the point where the road diverges into two paths and asked for clarification on the exact project route. He noted that one of these paths leads to the home of the contractor. According to him, during the last contract, the contractor only rehabilitated the portion of the road leading to his house, leaving the rest of the road neglected.	The Infrastructure Engineer reassured the council of elders that their concerns would be conveyed to the State Project Coordinator and the SPIU. He affirmed that they would remain vigilant to identify such contractors and their cohorts.
TPM	The TPM, like others, emphasized that when the road project is awarded and work begins, certain individuals might suggest or insist that construction starts from their end, claiming it is where the previous work stopped. He strongly advised against accommodating such requests, stressing that the road should rightfully commence from the expressway.	The Infrastructure Engineer clarified that the RAAMP project, funded by the World Bank, the French Development Bank, and the Abia State government, has a strict policy of completing all projects it begins. He assured the community that they need not worry about where the road rehabilitation will start, as the project is being closely monitored by the World Bank and the Federal Project Implementation Unit (FPIU) in Abuja. He explained that whether the work begins from point A to B or from B to A is inconsequential, as the focus is on ensuring the road is fully completed without any abandonment. Additionally, he highlighted that the road design has already been finalized and will be strictly adhered to by the contractor, leaving no room for concern.
Youth leader	The youth leader asked if there are other things that will be required of them during the rehabilitation, as in the past, projects failed to carry them along and while they have a timing youth population that is capable and able to work, they are not given that opportunity.	The ESMP consultant informed the council that community involvement is a mandatory requirement for all World Bank-supported projects. He explained that this consultation, for instance, is part of the effort to ensure the community is actively engaged and not left out. Addressing questions about expectations, the consultant highlighted that the contractor would undoubtedly require semi-skilled and unskilled labor from the community. He encouraged the youth leader to organize the youth, so they are prepared to seize these opportunities and deliver effectively when the time comes.
Igwe of Amuzu	The Igwe requested that drainage be constructed along the road to ensure its longevity. He noted that in the past, the road had been flooded and severely affected by erosion.	The consultant responded that drainage is already factored into the design and they have no cause to worry.
ESMP Consultant	The consultant asked to know how many markets are situated along this road. The consultant inquired whether there are any other bypasses along this ring road, so that, during construction, the contractor can easily divert traffic to prevent a complete blockage.	The Palace Secretary responded that there are three major markets on the road. They include; Ahia Afor-uche for Amigbo, Ahia Oyencheffula for Amuzu, Ahia Ogumaebere for Eziana and they are daily markets. He further noted that the markets serve as centres for the trade of farm produce to the town. The youth leader confirmed that there is a bypass called Umuaroko-Umuekpe-Umuoda Road, which can be used for traffic diversion.

ESMP Consultant	The consultant requested to know from the women leader if there are GBV related cases within the community	The women leader responded that it is not common in their community. The Consultant noted that the GBV Specialist would soon visit the community to raise awareness and provide training for the women on GBV-related issues. This initiative aims to better prepare and empower them, particularly ahead of the commencement of construction work by the contractors.
ESMP Consultant	The consultant inquired to know how they handle their grievances and other conflicts in the community.	The TPM responded that it depends on the nature of the matter. He further explained that for civil cases, the issue is first reported to the village head, and once unresolved, it is brought to the Igwe. The entire council will then deliberate on the matter. If no solution is reached, the case is referred to the court. However, for criminal cases, the matter is reported directly to the police, as they do not handle such cases at their level. He concluded by saying that such cases are rare, as they are a peace-loving community.
Elder at Uturu	An elder requested to know how long it will take for the road rehabilitation to be completed.	The Infrastructure Engineers responded that the time frame for the road project is 18 months. (1 year 6 months)
Elulu Chairman	The chairman informed the consultant that a major challenge they have faced, and will continue to face if not properly addressed, is flooding. He explained that due to the low terrain, all the water from the Ezima-Amaibo Ring Road flows into their community. This has resulted to erosion in their community.	The Infrastructure Engineer responded that drainage systems are an integral part of the road design, and no contractor will channel water into their community in a way that could damage their property. He assured them that the drainage systems have been carefully designed to address this challenge effectively.
ESMP Consultant	The consultant requested to know if there are any PCRs on the Okagwe-Nkwebi-Onwuanyanwu road.	The Eze of Okagwe responded that they have a sacred shrine (<i>Igboroduma</i>) that they do not allow anyone to trespass into and it is situated close to the road. He further noted that the Chief Priest who was also in attendance has assured the project that this will not pose a challenge as it is not directly on the project route.
ESMP Consultant	The consultant inquired to know the state of security in the community.	The Eze assured the consultant that his community is very safe. As the chief security officer of the community, he confidently guaranteed their security. He cited an example of how they successfully addressed the activities of the Indigenous People of Biafra (IPOB) a few years ago, noting that since then, there have been no threats to life or property in the community.
ESMP Consultant	The consultant inquired whether there are any borrow pits located within or near the Ogbodiorloku-Umuchiche-Mbaraukwu communities.	A youth mentioned that there is a borrow pit near Ofiyi and expressed willingness to guide the consultants to the site for assessment.
Chairman of the Elders Council at Ogbodi-Ukwu Mbara community	The committee of elders, after learning about the proposed project route, raised concerns about the road passing through Mbara village square. He explained that the trees in the square are sacred and play a significant role during the Ekpe festivals, serving as a starting point for masquerades and providing a natural shield. He emphasized that the village square should not be paved or asphalted during the proposed rehabilitation because it is a gathering place during festivals, where dancing and celebrations take place. Paving the square could increase the risk of injuries if someone falls. To address these concerns, he suggested reducing the width of the road near the square to preserve the trees and avoiding any construction that might compromise the safety and cultural significance of the village square.	The consultant acknowledged their observations and, along with the elders, visited the site to better understand the extent of the village square and the concerns raised by the council of elders.
Youth leader at Nkwo Elechi	The youth leader at Nkwo Elechi expressed the community's strong preference against constructing	The consultant acknowledged the youth leader's concerns and assured him that his objections would be carefully

	drainage alongside the road. He explained that most existing drainages in the community often become breeding grounds for mosquitoes due to stagnant water, as they lack proper outlets for drainage. Based on this concern, he emphasized that the road rehabilitation should exclude side drainage, warning that the community would oppose any attempt to include it in the project.	considered. He explained that the team would evaluate the issue thoroughly to determine the best and most sustainable solution that addresses the community's worries while ensuring the success of the project.
A Community member	A middle-aged woman firmly opposed the proposal to construct a culvert that would potentially channel runoff onto her family's land. She explained that the land belongs to her father, who has already divided it among her brothers. She expressed deep concern about the impact this runoff could have on their property and its future use.	The consultant assured her that proper compensation would be provided for all affected assets, including her family's land. He emphasized that the process would be conducted transparently and fairly, ensuring that any impact on the land would be addressed adequately.
ESMP Consultant	The consultant inquired from the owner of a recreational centre popular called "Ghetto" at Umuorukwu Osusu about the significance and relevance of the spot situated just beside the road.	The owner of <i>Ghetto</i> responded that the recreational centre serves several purposes to the community and beyond. He mentioned that notably, <i>Ghetto</i> is sometimes used as movie site and that people come from far and wild to shoot clips and films there. He went further to mention that the spot is a resting ground for youths and elders alike in the community.
ESMP Consultant	The consultant approached the owner of the recreational area "Ghetto" to inquire whether he would be open to accepting compensation for the property, should the adjoining community land prove insufficient for the project's requirements. The Consultant emphasized that this was a preliminary discussion to explore all options and ensure that any decisions made would be fair and beneficial to all parties involved.	He responded that he would prefer the road design to be adjusted to avoid impacting the "Ghetto." However, if this is not feasible, he expressed his willingness to accept compensation, as he does not want to be the sole reason for delaying the road project. Additionally, he offered to help secure a written agreement from the community granting approval for the use of the land opposite the Ghetto as an alternative route.
ESMP Consultant	The consultant inquired about their primary occupation within the community. Additionally, the consultant asked about the social amenities available in the community.	A young man responded that over 70% of the community members are farmers, with a few engaged in trading and an even smaller number working in government. In response to the question about social amenities, it was mentioned that they have both primary and secondary schools, a police outpost, and access to electricity. However, they face challenges with piped water, as many households that can afford it drill boreholes, while the majority rely on well water.

Summary of General Stakeholder Engagement with PAPs and Project Affected Communities (Spot Improvement)		
Date of Consultation	20 th November – 1 st December, 2024 Time: 9:00 AM – 5:45PM Daily	
Intervention Work	Spot Improvement	
Venue	<i>Within Project Communities Situated Along Roads Earmarked for Upgrade Under the Abia RAAMP Phase II Interventions</i> (e.g. Okpikpe Umuana – Ikot Ekpene Road, Amaogwugwu olololo Junction-Umukabia, Bende Etitiulo-Ubibia-Ndiwo-Itumbuzo-Okopedi- Ntalakwu, Ezeukwu-Ugwueke Road, Ozara market Junction -Amaoku Alayi-Ugwueke Road, Amaokwelu Alayi Junction-Amankalu-Akoli Imenyi, Umuegwere Road, Amorji-Ngbedeala-Ntigha Umukalu-Mbawsi, Old Umuahia (Divinity School)-Osah Road, etc. (consultations were held separately across the various locations and critical feedbacks have been incorporated in baseline conditions of this report).	
Participants	Amorji (Elders, Youth groups, Women groups, Farmers), Okpikpe (Elders, Youth groups, Council of Chiefs, Women groups, Farmers), Ugwueke (Traditional council, Youth groups, Women groups, Farmers), Amaoku (Land committee, Union members, Youth groups, Patron, Women groups, Farmers), Alayi (Traders, Eze, Youths, Women groups, Farmers, Vigilante),	
Language of communication	English, and Igbo	
Stakeholder	Questions/Concerns/Suggestions	Responses and Recommendations

Introductions from the ESMP Consultants and Overview of the ESMP	The ESMP team presented a comprehensive summary of the planned road rehabilitation project to the elders and local community, outlining its goals, scope, anticipated outcomes, and expectations. They emphasized that the ESMP aims to identify potential environmental and social impacts of the proposed rural road rehabilitation in their community, recommend suitable mitigation strategies, and engage stakeholders to incorporate their perspectives. Additionally, the ESMP team encouraged the elders and locals to share any relevant information about their communities, cultural and socioeconomic activities, streams, and structures along the roads. They were urged to express their opinions regarding the project.	The elders of the community and other stakeholders warmly welcomed the ESMP team and expressed gratitude for the opportunity to share their opinions. They also pledged their support to the ESMP team. Furthermore, they went ahead to discuss about their communities, cultural and socioeconomic activities, roads, streams and structures along the road and usage, farming/fishing activities etc.
Elder at Okpikpe	An elder asked to know the length of the said road.	The Consultant responded that according to the design, the road is earmarked for Spot Improvement and it is 1km.
ESMP Consultant	The consultant requested that individuals with assets along the road be informed to come forward and identify them for proper evaluation and documentation.	An elder suggested that since some community members had already gone to the farm, those present would accompany the team to the site. Once the affected assets were marked, they would inform the affected individuals to be present the following day for proper valuation and documentation. The consultant welcomed the suggestion.
ESMP Consultant	The consultant commented that from his observation, they seem to be in agreement that the road project be done. He went further to ask how many communities are situated on the 1km road. The consultant further inquired about their primary occupations and the approximate percentage of people engaged in each. The consultant inquired to know if the road had undergone rehabilitation in the past. The consultant inquired about the security situation in the community. The consultant inquired whether there were any existing borrow pits within the community. He explained that if a borrow pit with quality laterite is already available, the contractor could collaborate with the current owners or operators to arrange lease terms and potential reclamation, eliminating the need to establish new borrow pits. The consultant inquired about the source of laterite used by the previous contractors who worked on the road.	There was a resounding YES! From everyone present at the consultation. They responded that there is only one community by name Umuana. An elder responded that while a few community members engage in trading, primarily involving farm produce and perishables, about 70-80% are predominantly farmers, cultivating crops such as cassava, cocoa, yam, and cocoyam. He further mentioned that some are civil servants, primarily employed by the state and local governments. An elder responded that the road had been worked upon by NDDC about 10 to 11 years ago. The community responded that they enjoy relative peace and that their community is safe. Youth responded that there are no borrow pits in the community. They responded that the laterite was gotten from a borrow pit situated along the Enugu-Port Harcourt expressway.

	The consultant requested to be taken to the borrow pit for some assessment. The consultant also inquired about the presence of any Physical Cultural Resources within the community, particularly near or along the road, such as shrines, sacred trees, stones, or other culturally significant sites. He further explained to the community the importance of identifying and assessing these assets to ensure that proper plans are made to avoid negatively impacting them.	A youth offered to take the team to the borrow pit. The community responded that they have no such resources along the project route.
ESMP Consultant	The consultant informed the community that the cut-off date is set as today, the day of the consultation. The consultant asked if there are social amenities in the community.	The community agreed to take note of the said date. The community responded that they have a health clinic, a primary and secondary school. They also have electricity but they don't have pipe borne water, as such, they all rely on boreholes and water vendors.
ESMP Consultant	The consultant asked to know how the community settle conflicts within the community. The consultant asked the community about the benefits they expect to gain from the spot improvement works.	The community chairman explained that the first point of contact for conflict resolution in their community is the village head. If the issue remains unresolved, it is escalated to the Eze, who may choose to involve the Home and Abroad Development Association. Should the matter still persist, the parties are advised to seek assistance from the police or, alternatively, take the case to court for resolution. The community responded in one accord that it will improve their access to the market, and most importantly, their farmlands. They went further to mention that the road reduces travel time and distance to neighbouring communities and others such as Aba (the commercial centre of Abia State), and Akwa Ibom State.
ESMP consultant	The consultant inquired about the security situation in Amaogwugwu.	An elderly woman responded, stating that their community is peaceful and has not experienced any unrest in recent times. A young man further emphasized that their community is generally safe. However, he acknowledged occasional cases of petty theft, which he described as a common occurrence and not peculiar to their community.
Youth member	The consultant inquired about the occupation of members of the community.	Response was given by a youth, that members of the community are predominantly farmers. A few are also into trading of farm produce. He gave an estimate of 70% farmers and 30% traders.
ESMP Consultant	The consultant inquired to know if there are PCRs within their community or anywhere along the project route. The consultant asked if the road has ever been worked on.	An elder responded that there are no PCRs along the road. He specifically mentioned that they do not bury people along the roadside; therefore, there are no graves along the project route. The young man explained that the road was initially constructed by the Abia State Government. However, he noted that the project started from the other end and was abandoned midway.
Elder at Amaogwugwu	An elder expressed concern that although drainages were constructed on both sides of the road, the project was abandoned midway. This has worsened erosion on the road, causing the drainages to become misaligned with the road surface. The drainages are now higher than the road, further contributing to increased erosion and flooding.	The consultant explained that the upgrade work will address the issue by properly sand filling the road to align it with the height of the drainages. This adjustment will facilitate the smooth flow of surface runoff and prevent further erosion.

ESMP Consultant	The consultant inquired on the process of acquiring land in the community for strangers.	An elderly woman explained that in their community, land ownership is categorized as belonging to individuals, families, or the entire community. Individuals are free to sell their land. However, for family-owned land, only the head of the family can authorize a sale, and this must be done with the agreement of other family members. She further emphasized that community land cannot be sold, as it is reserved for projects that benefit the entire community.
ESMP Consultant	The consultant inquired whether there are any borrow pits within or around the community.	A young man responded that there is a borrow pit located along the Enugu-Port Harcourt expressway, which has been in existence for over 30 years.
Elder at Achara	They inquired whether the road project was initiated by the Abia State Government, noting that a neighboring community called Ahia-Obinto is already benefiting from a similar project.	The consultant explained that the project is funded by the World Bank and the French Development Bank (ADB), with counterpart funding provided by the Abia State Government. The elders expressed great joy upon learning that their project is not solely sponsored by the State Government but is also supported by the World Bank and other international partners. They felt a deep sense of pride and hope, recognizing the significance of such global collaboration in bringing development to their community.
The ESMP Consultant	The consultant requested to know the major problem they face on the road in question	An elder pointed out that the primary issue with the road is erosion, which he attributed to the abandoned road project. He explained that the incomplete work left the drainage systems at a higher elevation than the road, worsening the problem. He further noted that the previous contractors had only constructed the drainage systems without properly sand filling the road, resulting in the ongoing issues.
ESMP Consultant	The consultant informed the community of the cutoff date. The consultant asked if they have social amenities such as schools, hospitals.	The community agreed to collaborate with the consultants to ensure that the cut-off date is strictly adhered to. They further assured the consultant of their full support to ensure that all affected individuals are properly documented and that no one falsely claims another person's property. an elder responded that they have a primary health centre within the community and few private schools.
ESMP Consultant	The consultant inquired to know the major benefits they will derive from the rehabilitation of the road.	A woman responded that the road will ease accessibility to their farmlands and markets. She mentioned that the road will also link them to communities such as; Umukabia, Ukwegwu market, Arochukwu, Ohafia, Abiriba, Enugu, etc.
Cocoa Farmer at Ntubi (Bende etitulo)	A cocoa farmer inquired about who holds responsibility for the payment of compensation.	The consultant explained that the project is funded by the World Bank and the French Development Bank, with counterpart funding from the Abia State Government. An elder highlighted that compensation or the absence of it is not seen as a barrier to the project's progress, as the community has long awaited and fully supports its implementation. He assured the team that they are eager for the project to proceed, even without compensation. Furthermore, he emphasized that the community is prepared to address any concerns that may arise internally.
ESMP Consultant	The consultant asked about the methods they use to resolve conflicts within their community.	An elder explained that in their community, conflicts are initially resolved at the family level. If the dispute involves individuals from different families, the matter is escalated to the elders of the land. Only after these steps have been taken can the case be reported to the police.
ESMP Consultant	The consultant asked if there are PCRs along the	An elder stated that there are no cultural assets along or

	project route.	near the project route. He added that the main feature commonly found along their roads is cassava.
ESMP Consultant	The consultant asked	
Elder at Ntubi	An elderly woman expressed skepticism, noting that others had conducted similar assessments in the past, but no tangible outcomes had resulted. Another resident pointed out that, over the years, they have voted for multiple governments, yet no meaningful development has been brought to their community. He added that, as things stand, most residents are unable to bring their friends to the village, and those who own cars often have to park them in Umuahia due to the lack of accessible roads leading to their village.	The consultant explained that the ESMP and RAP assessments are the final evaluations conducted before work begins. He encouraged optimism, emphasizing that World Bank projects are not influenced by political considerations. He further clarified that the road designs are already finalized, and once a road is designed, its course cannot be altered.
An Elder from Ntubi	An elder also expressed skepticism, voicing concerns that the road could potentially be diverted to another village. He then asked the consultant how certain they were that this would not occur.	The consultant assured the elderly woman that the road project would not be hijacked, emphasizing that the design is already complete and only requires the approval of this assessment for work to begin. He added that construction would commence soon after approval is granted. The entire community expressed their joy and relief, showing enthusiasm for the positive development and the potential transformation the project would bring to their lives.
ESMP Consultant	The consultant inquired about their occupation.	The community shared that the majority of its members are engaged in farming, with cocoa being the primary crop produced in large quantities. In addition to cocoa, they cultivate cassava, timber, okra, and coconut, and are also involved in the production of palm oil.
ESMP Consultant	The consultant inquired about the purpose for which the community uses the water from the stream that runs across the road. Additionally, the consultant asked whether the work on the cross-drainage structure would have any impact on the sand miners in the area.	The community responded that the stream is used for domestic activities, fishing, cocoa processing, and sand mining. The elders clarified that the work will not impact the sand miners, as they can choose to move further upstream or downstream to continue their mining activities.
ESMP Consultant	The consultant inquired about other challenges faced by the community.	They responded that their primary challenge is a lack of water, which becomes particularly severe from January to March. Additionally, they face issues with a lack of electricity and inadequate schools.
Elder at Ezeukwu	An elder requested to know when work will commence	The consultant responded that he could not provide a specific date but emphasized that the ESMP and RAP assessments are among the final evaluations and documents required. Once these are completed and approved, the project will be ready to begin. He encouraged the community to remain optimistic, expressing confidence that the project will start in the near future.
ESMP Consultant	The consultant informed the community about potential impacts the project might have, including fugitive dust, increased noise, and minor traffic obstructions. He also inquired if there are any Physical Cultural Resources (PCRs) along the project route or within the community that they would like the contractor and the project team to take into consideration.	The community expressed their gratitude to the consultant for visiting and noted that the potential impacts outlined by the consultant are far outweighed by the benefits they will gain once the road is constructed. They affirmed their full support for the project and encouraged its continuation. The TPM responded by identifying two sacred assets along the project route: a sacred tree known as Akparata and, directly opposite it, a shrine (Ajaala). Beyond these, there are no other Physical Cultural Resources (PCRs) along the project route or within the community that require attention.

ESMP consultant	The consultant inquired about their means of livelihood.	An elder responded that the majority of the community members are farmers, while a small number are involved in hunting and trading.
ESMP Consultant	The consultant sought to verify the claim that the road connects to another state. He also inquired about other neighboring communities that the road would link to. Additionally, the consultant asked about the distance in kilometers from the boundary to Akwa Ibom, the nearest state.	An elder confirmed that the road does indeed connect to Akwa Ibom State but noted that the project in question ends at the border. A young man added that the road not only links their community to Akwa Ibom but also provides access to Enugu, Anambra, and Okigwe in Imo State. He further explained that it takes less than a five-minute walk to reach the next village in Akwa Ibom.
Youth from Ezeukwu	A young man inquired whether members of the community would have the opportunity to work with the contractor during the project. He emphasized that such an opportunity would provide much-needed empowerment and economic benefits for the local people.	The consultant informed the community, particularly the youth, that they should prepare to actively participate in the project, provided they cooperate with the contractor. He emphasized that in World Bank-funded projects, communities are often given opportunities to contribute through labor, which not only fosters local involvement but also promotes economic empowerment.
ESMP Consultant	The consultant informed the community that their team would be visiting the following day to enumerate assets located within the RoW.	The town crier assured the consultant that he would deliver the message to the community that same night.
ESMP Consultant	The consultant asked the community how land is acquired in their community.	An elder responded that land is primarily inherited. It can also be gifted, leased, or purchased from families, but community land is not to be sold.
ESMP consultant	The consultant asked the major crops cultivated by farmers in the community.	They responded that they cultivate rice, cassava, palm, yam, cucumber, carrots, tomatoes, potatoes, and okra. They specifically noted that they produce palm oil in very large quantities and that their land is very fertile, as such, they barely apply fertilizer to their farms.
ESMP consultant	The consultant asked about other challenges faced by the community. The consultant asked their major source of water.	The community responded that, apart from the lack of access to their farmland, they face a major challenge of insufficient potable water, lack of health care facilities and erratic power supply. They further mentioned that their primary sources of water for all domestic use are streams and wells.
ESMP Consultant	The consultant inquired about the security situation in the community.	The elders responded that their community is very safe and that they do not experience any security challenges.
Women leader	The women's leader noted that, since it is in the interest of both the Bank and the PIU for the community and contractor to cooperate, she would like to suggest a solution. The market is the community's primary source of livelihood, with many women selling their produce and using the proceeds to educate their children. Since there are no alternative routes to their market, which is located along the project route, she proposes that civil works on the main road be suspended on market days. Instead, the focus should be on other ancillary works, such as drainage. This would help avoid traffic congestion on market days and ensure that customers from other communities can still access the market. She also suggested that the contractors not only employ unskilled labor but also consider utilizing the skilled labor available within the community. She believes this approach will help foster the necessary cooperation to ensure the project runs smoothly.	The ESO responded that the suggestion has been noted and emphasized that it aligns with the World Bank's policy to promote local content. This approach is designed to discourage labor influx. The ESO encouraged the youth to prepare themselves, assuring them that they would have opportunities to work with the contractor.

Chairman of Sameke Development Association	Here's a polished and more structured version of the comment: The chairman expressed heartfelt gratitude to the Federal and the State Government for initiating the road project in their community, highlighting that rehabilitating the road had long been a collective desire. He emphasized that the community is blessed with solid soil and mentioned that even if the road is not asphalted, having drainage on both sides would still be immensely appreciated, as it would address many of their challenges. Furthermore, he pledged the community's full support for the project. On behalf of the community, he assured that no contractors would face harassment over levies such as "matching ground" fees, and the security of their equipment would be guaranteed. He also noted that the project would directly employ some of their youths, further strengthening their commitment to its success.	The SPIU thanked the stakeholders for accepting the project and prayed for their maximum support and collaborations throughout the project implementation and requested the benefiting communities to own the project for sustainability and progress.
ESMP Consultant	The consultant inquired to know if there are PCRs on the project route.	The community collectively highlighted the presence of a sacred tree along the project route, known as <i>Alanna Urmuekpu</i>. They explained that the tree holds significant cultural importance as a site where community disputes are resolved. They also noted that it is considered taboo for non-community members to wait, sit, stand, or rest around the tree. In response, the consultant requested that a community representative accompany the team to the site for an assessment. This would allow for potential adjustments to the project design to preserve the tree and respect its cultural significance during the road rehabilitation.
ESMP Consultant	The consultant inquired about their source of livelihood.	The chairman explained that over 80% of the community members are farmers, primarily cultivating crops such as cassava, yam, rice, and palm. A smaller percentage are engaged in petty trading activities.
ESMP Consultant	The consultant asked about other social amenities	A woman stated that the community is equipped with a primary school and a health center, which serve as essential facilities for education and basic healthcare needs.
ESMP Consultant	The consultant inquired to know if there is a borrow pit close to the community.	A young man stated that there are no borrow pits within or near the community.
Chairman of Amaoku Community	An elder from Amaoku explained that there are few obstacles in the community that might hinder the road construction project. He pointed out a sacred tree that was once used for ancestral worship but is no longer of religious significance. He also mentioned another tree that has existed for over 40 years but has not grown beyond four feet, noting that it would not pose any obstruction. He assured that the community would fully accept and comply with the Consultant's recommendations regarding these features. The elder also identified a building located by the	The consultant together with the elders made assessment of the two PCRs.

	roadside where women are traditionally not allowed to sit, emphasizing that this restriction applies only to women, while men are free to use the space at any time.	
Youth Chairman at Amaoku	The youth chairman highlighted a stream located along the project route, which serves as the community's primary water source. He pointed out that the staircase leading to the stream is currently positioned directly on the road. He requested that the staircase be relocated and installed on the opposite side to avoid being directly on the road.	The consultants, along with the Environmental and Social Officer (ESO), visited the sites and assured the community that a comprehensive plan would be developed to address their opinions and contributions effectively.
ESMP Consultant	The consultant asked about the state of security in the community.	There was a chorus answer that there is no security challenge in the community and that their community is safe.
Chairlady of Amaoku community	The women leader inquired whether the contractor would consider employing their children during the road construction works.	The consultant explained to the community that, in line with the World Bank's policies, efforts would be made to prioritize employment opportunities for local residents especially unskilled labour during the project. They assured the women leader and the entire community that the contractor would be encouraged to hire qualified individuals from the community, including their children, where possible. This approach, the consultant noted, is meant to ensure the community owns and benefits directly from the project.
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1 st Vice President at Umuajata community	The elder sought to learn more details about the project that their community would benefit from.	The consultants, along with the SPIU, provided a detailed explanation of the project. They outlined its sponsors and highlighted that the community would benefit from two key components in this second phase: spot improvements along the entire road and CDS.
Chairman at Umuajata	The elder mentioned that around April 2024, another group of people came for a similar assessment. He sought clarification on the differences between the two and inquired about when the contract will commence.	The SSO and the engineer responded, explaining that it is normal for different experts to conduct assessments before the commencement of work. However, they clarified that this particular assessment is the final one, and once approved, the contractor will begin work in the community. They further emphasized that in all World Bank-funded or supported projects, such assessments are mandatory to identify and mitigate potential adverse effects on both the environment and the local community.
ESMP Consultant	The consultant asked if there are PCRs within the RoW or within the community that may want the contractor to be aware of.	The Chairman explained that the community highly values a metal gong known as <i>Obikoro</i> . To safeguard it, they have even built a dedicated structure around it to prevent unauthorized access. He assured that this would not pose any obstacle to the project's progress.
Youth leader at Umuajata	The youth leader welcomed the consultants and assured them that the youth are fully supportive of the project. He promised to ensure the safety of the equipment and guaranteed that no one would harass the contractors. He also requested an opportunity for the young people in their community to be considered for employment during the course of the work.	The consultant thanked the youth leader for the warm reception and for their willingness to support the project by cooperating with the contractors. He added that the contractors would definitely need the skills of some community members during the work phase. He assured them that it is of great importance to the World Bank, the major financier of the project, that the contractors engage community members as much as possible.

Summary of Stakeholder Engagement with Women Groups along Project Corridors (Road Upgrades, and Spot Improvement)	
Date of Consultation	19 th November – 30 th November, 2024 Time: 9:00 AM – 5:30PM Daily
Intervention Work	Road Upgrades, and Spot Improvement
Venue	All project Locations/Communities
Participants	Women Leaders, Widows and Female Heads of Households, Older Women, Teenagers and

	<i>Adolescents, general road and stream users, etc.</i>
Language of Communication	English, and Igbo.
Key Areas	The ESMP/RAP team briefed them about the upcoming roads projects activity within their communities, and the objectives of the ESMP which was to document their concerns, identify potential E&S impacts and define appropriate mitigation measures. Questions and their inputs were sought in the following areas: - Presence of/ access to service providers such as health, legal - Use of the roads and streams/rivers within the project communities. - Socioeconomic engagements. - General inequalities between men and women, challenges facing community women and other associated issues. - Channels for complaint resolutions etc.
Questions/Concerns/Complaints/ Suggestions and Responses (by Stakeholders and ESMP Consultant Team)	- Women in the project areas noted that the roads to be rehabilitated serve as vital access points to homes, markets, schools, churches, health centers, farmlands, streams, and neighboring villages. They explained that the intersecting streams are used for drinking, fishing, and domestic activities like laundry, dishwashing, and bathing children. - Women in the project communities stated that the roads to be rehabilitated serves as access roads to residential buildings, markets, schools, churches, health posts, farmlands, streams and other villages. They further stated that the streams that intersects the said roads are used for drinking, fishing and domestic purposes such as laundry, dishwashing and bathing their young children. - Women at Okpikpe Umuana road asked if shops or structures along the road might be demolished and when the work would begin. The ESMP team explained that structures within the ROW might be affected but assured that affected individuals would be compensated. They also noted that the ESMP must be prepared and disclosed before construction begins, with stakeholders informed at all stages. - Widows in Bende etitulu noted that vulnerable groups, including widows and physically challenged individuals, receive no special assistance but are not discriminated against or excluded from community resources. The ESMP team acknowledged the importance of this demographic information and emphasized that issues affecting vulnerable groups, such as ramp provision and access restrictions, were addressed in the project's design and ESMP. - The women leader of Ndiokpo asked if women would be hired during the civil works. The ESMP team emphasized that semi-unskilled workers from local communities would be recruited and highlighted the project's commitment to gender inclusion. Employment would be based on individuals' ability to perform assigned roles effectively. - A woman at Okagwe asked if the project will affect access to streams and water sources used for drinking, fishing, and domestic activities. The consultants responded that the project design prioritizes maintaining access to streams and water sources. If temporary disruptions occur, alternative water access points will be arranged. Mitigation measures will also be implemented to prevent contamination from construction activities, ensuring the safety and usability of the water sources. - The women leader at Amaokwelu asked when the project activities begin, and how will we be informed. The consultant responded that the project timeline depends on completing the ongoing environmental and social assessments. Once finalized, stakeholders, including women in the communities, will be consulted and informed well in advance of the start of construction activities.
Remarks	The ESMP/RAP Consultants thanked the women for their valuable input, highlighting the importance of their feedback in shaping the rehabilitation activities. All their concerns and suggestions were carefully noted and acknowledged.

CHAPTER NINE – RECOMMENDATIONS

The recommendations below have been provided for the proposed project.

- Considering that about 57% – 97% of the roads surveyed (21 – 36 of the roads) selected to be rehabilitated in Abia RAAMP phase II interventions are either vulnerable to flooding or susceptible to erosion to some

degree, it is best practice to manage the root-causes of the erosion and flood occurrences, especially if they are due to topographical or engineering defects. Roads prone to or affected by flooding and erosion will require adequate attention from the Abia State government and the AB-RAAMP PIU. Decision making as regards most suitable, environmentally sound and cost-effective hydraulic controls in flood plains is critical. Decision makers need to weigh the pros and cons associated with resistance and resilience flood control strategies so as to ensure long-term viability of proposed rehabilitation and construction works.

- Drains should be designed and installed based on knowledge of the topography and natural drainage pattern of the area with knowledge of the watershed mitigation measures.
 - the AB-RAAMP PIU should engage local communities on road safety and transportation safety awareness and sensitization programs. The AB-RAAMP PIU should also collaborate with FRSC – Abia State Sector, as well as local security agencies to ensure road safety and security.
 - The implementation of rural roads development should involve public hearings and participation and a well-established community relation to create a sense of ownership of the project by the communities and to make the projects successful and sustainable. The project shall ensure compliance with, and implementation of the ESMP, and also conduct regular E&S safeguards performance audits to ensure compliance with ESMP provisions.
 - For temporary relocation of electric poles, the AB-RAAMP PIU must effectively ensure that there is collaboration and guidance provided by the Ministry of Works and EEDC in selecting alternative sites during the pre-construction and construction phases.
 - Labour Influx is likely to aggravate GBV, SEA and VAC issues. Contractors must prepare and sign all levels of CoCs requested and present a C-ESMP that specifically addresses the aforementioned. The submission and acceptance of the C-ESMP is a mandatory process, essential prior to the commencement of any form of civil works.
 - For Physical and Cultural Resource which may be impacted on; the AB-RAAMP PIU and its Contractors should have effective collaboration and liaison with the communities. Furthermore, “Chance Find Procedures” must be adhered to and compliance monitored.
-

REFERENCES

- Terms of reference for engagement of consultant for the preparation of Environmental and Social Management Plan (ESMP) for Spot Improvement and Upgrade roads in Abia State by Abia RAAMP.
- Abia State Rural Access and Agricultural Marketing Project (RAAMP). Road Prioritization Report (2018);
- Abia State RAAMP (2023). Engineering Design and Supervision Consultancy Services for Spot Improvement and Cross Drainage Structures (Bridges and Culverts) in Abia State.
- Abia State RAAMP (2023). Consultancy Services for Design and Supervision of Upgrade Rural Roads in Abia State.
- Abia State RAAMP (2023). Consolidated Environmental and Social Screening Report of Rural Roads for Spot Improvement, Backlog Maintenance/Rehabilitation and Upgrading Under Abia State RAAMP.
- FEPA (FMEEnv) (1991). Guidelines and Standards for Environmental Pollution Control in Nigeria.
- IFC (2007). Environmental, Health, and Safety (EHS) Guidelines. Washington, DC: The World Bank Group.
- WB Good Practices Note
- WHO (2021). Global Air Quality Guidelines: Particulate Matter (PM2.5 and PM10), Ozone, Nitrogen Dioxide and Carbon Monoxide.
- World Bank (2017). Environmental and Social Framework. Washington, DC: The World Bank.
- World Bank (2016). Managing the Risks of Adverse Impacts on Communities from Temporary Project Induced Labor Influx. Washington, DC: The World Bank.
- World Bank (2020). Project Appraisal Document (PAD) for Rural Access and Agricultural Marketing Project.

Annexure 1: Terms of Reference for the ESMP

ABIA STATE RURAL ACCESS & AGRICULTURAL MARKETING PROJECT (RAAMP) CONSULTANCY SERVICES FOR THE PREPARATION OF CONSOLIDATED ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP) FOR UPGRADE (25Nos-92.78KM) and SPOT IMPROVEMENT (12Nos-40.86km) UNDER PHASE 2 INTERVENTION WORKS UNDER THE ABIA STATE RAAMP.

PART A: INTRODUCTION

BACKGROUND AND CONTEXT

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 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).

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.

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.

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.

BRIEF INFORMATION ON THE PROJECT AREA

The project area is located in Abia State between latitude 5.9133 and longitude 7.7167, 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, Abia 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 12 out of the 17 local government areas which are; Arochuku, Ohafia, Bende, Isikwuato, Umunneochi, Umuahia North, Umuahia South, Isialangwa North, Isialangwa

South, Obingwa, Aba North and Ugwuagbo local government areas. Majority of the local government areas are rural except Umuahia North and Aba North.

DESCRIPTION OF PROPOSED INTERVENTION

The Abia state RAAMP proposes to prepare an Environmental and Social Management Plan (ESMP) for 37 number roads totaling 132.78km (Upgrade 92.78km, Spot Improvement 40.86km) under the phase 2 work package. The work package would involve engineering works such as, but not limited to, the following:

Spot Improvement 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 asphaltting).
- 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).

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.

In line with the RAAMP ESMF, an Environmental and Social Screening was conducted in March 2024 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) and Resettlement Action Plan (RAP) to adequately address the site-specific impacts envisaged due to the project activities.

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 132.78km phase 2 roads (92.78km upgrade and 40.86km spot improvement roads) prior to the commencement of the civil works.

REPORTING OUTLINE FOR ESMP

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.ⁱ

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 PLANⁱ

- 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

Annexure 2: Socio-Economics Data Collection Instrument

ABIA-RAAMP ESMP - Socioeconomic Survey

Consultancy Services for the Preparation of an Environmental and Social Management Plan for Roads Rehabilitation in Ten (10) Local Government Areas Under Phase 2 Intervention Under the Abia State Rural Access and Agricultural Marketing Project (RAAMP).

The survey aims to explore the socioeconomic and cultural conditions in the ABIA-RAAMP project communities spanning the 10 LGAs of the state. Participation in the survey is voluntary, requiring informed consent from respondents. We aim to collect opinions from a minimum of 25 respondents in each project community, constituting the sample population, to ensure the validity of the study's findings.

* Indicates required question

Name of Rural Road? *

Your answer

Name of Project Community? *

Your answer

Length of stay within the community *

Your answer

Gender *

☐ Male

☐ Female

☐ Other:

Ethnic Group

Your answer

Age of Respondent

☐ 15 - 30

☐ 30 - 50

☐ 50 - 75

☐ 75 and above

☐ Other:

Religious Group

☐ Christian

☐ Muslim

☐ ATR

☐ Other (Specify)

☐ Other:

Marital Status

☐ Single

☐ Married

☐ Divorced

☐ Widow/Widower

Highest Educational Qualification *

☐ First School Leaving Certificate

☐ Junior Secondary School Certificate Examination (JSSCE)

☐ O'Level (WAEC, GCE, etc)

☐ Bachelors Degree

☐ Postgraduate

☐ Other (Please Specify) _____

Family Pattern

☐ Joint

☐ Nuclear

☐ Individual

Family Size

☐ Small (2-4)

☐ Medium (5-7)

☐ Large (Above 7)

Household Main Occupation

☐ Crop Farming

☐ Livestock Farming

☐ Fishing

☐ Agrochural Processing

☐ Artisan

☐ Trading

☐ Public Servant

☐ Private Sector Employment

☐ Housewife

☐ Retired

☐ Other (Specify) _____

☐ Other: _____

Monthly Income of your household

☐ N0 - N20,000

☐ N20,000 - N50,000

☐ N50,000 - N100,000

☐ N100,000 - N500,000

☐ Above N500,000

☐ Other: _____

Total number of adult members in your household

Your answer: _____

Total number of dependents

Your answer: _____

How would you describe the condition of roads leading to your community? *

☐ Excellent (Well-maintained and smooth)

☐ Good (Generally in good condition with occasional issues)

☐ Fair (Significant issues, some areas need improvement)

☐ Poor (Frequent issues, major repairs needed)

☐ No road access/I prefer not to answer.

☐ Other: _____

How would you rate your community's access to educational facilities? *

☐ Excellent

☐ Good

☐ Fair

☐ Limited

☐ None

☐ Other: _____

How would you assess the availability and condition of public health institutions in your community? *

☐ Excellent (Well-equipped and accessible)

☐ Good (Functional with occasional limitations)

☐ Fair (Limited services, some facilities need improvement)

☐ Poor (Challenges with accessibility and quality)

☐ No access to public health institutions/I prefer not to answer.

☐ Other: _____

Provide information/listing of some healthcare facilities available within your community (Names). *

Your answer: _____

Which of the following best describes your household's access to potable water in the community? *

☐ We have reliable access to clean and safe drinking water within our home.

☐ We have access to clean water, but it requires significant effort or time to obtain.

☐ We have limited access to clean water, and its quality is a concern.

☐ We do not have access to clean and safe drinking water in our community.

☐ Not applicable/I prefer not to answer.

☐ Other: _____

Major source of water available to your household *

☐ River

☐ Borehole (Commercial)

☐ Borehole (Private)

☐ Public Pipe-Borne Water

☐ Ponds

☐ Water Vendor

☐ Well Water

☐ Rainwater Harvesting

☐ Other: _____

How would you describe your community's access to public electricity? *

☐ Reliable and consistent

☐ Adequate but with occasional disruptions

☐ Limited and inconsistent

☐ No access to public electricity

☐ Other: _____

How would you rate your community's access to communication facilities? *

☐ Excellent (Postal service, telephone, internet, and network coverage)

☐ Good (Most services available with occasional issues)

☐ Fair (Limited access to certain facilities)

☐ Poor (Challenges with multiple communication services)

☐ Other: _____

Major source of fuel used for cooking

☐ Firewood

☐ Charcoal

☐ Kerosene

☐ Gas

☐ Electricity

☐ Other (Specify) _____

☐ Other: _____

What is your primary source of electricity? *

☐ Lamp

☐ Private Generators

☐ Community Generators

☐ PHCN (National Grid)

☐ Other (Specify) _____

☐ Other: _____

Type of toilet facility used *

☐ Pit

☐ Open defecation (bush)

☐ Bucket

☐ Water Closet

☐ Other (Specify) _____

☐ Other: _____

What is the method of refuse disposal in your community? *

☐ Public Open Dump

☐ Organized Collection

☐ Open Burning

☐ Burying

☐ Bush

☐ Other (Specify) _____

☐ Other: _____

What is the most prevalent disease conditions in your community? *

☐ Malaria

☐ Typhoid

☐ Diarrhoea

☐ Cough

☐ Respiratory Disturbance

☐ Other (Specify) _____

☐ Other: _____

Are you aware of the project RAAMP?

☐ Yes

☐ No

If yes, how were you informed? (how did you get to know?)

Your answer: _____

What is your opinion about the project? *

☐ Good

☐ Bad

☐ Cannot Say

☐ Other: _____

What positive impacts do you perceive *

Your answer _____

What negative impacts do you perceive *

Your answer _____

What are the major market days in your locality? *

Your answer _____

Are there locations/features of cultural significance specifically along the roads to be rehabilitated the community? (e.g. shrines, water deities, cemetery, evil forests, tree or rocks/monoliths worshipped by the community)? *

Your answer _____

Does your community experience insecurities (banditry, theft, kidnapping, boundary conflicts, farmer-herder conflicts, etc.) (in the past or presently) *

☐ Banditry
☐ Theft
☐ Kidnapping
☐ Boundary Conflicts
☐ Farmer-Herder Conflicts
☐ Nil
☐ Other (Specify)
☐ Other: _____

Frequency of attacks *

Your answer _____

Briefly describe the structure and dynamics of your community organization and local governance *

Your answer _____

What kind of grievances have arisen in your community in the past and what are the conflict resolution mechanisms to manage these issues in your community? *

Your answer _____

What are the transportation preferences and local mobility patterns of residents in the project communities? *

☐ Private vehicles
☐ Public transportation
☐ Walking
☐ Cycling (e.g. Motorbikes, Bicycles)
☐ Beast of Burden (e.g. Horses, Donkeys, Camels)
☐ Other (please specify) _____

Do you identify vulnerable groups or individuals within the population around your community? If yes, please specify the distribution among the following categories: *

☐ Children
☐ Elderly
☐ Persons with disabilities
☐ Female Headed/Low-income households

Other (please specify) _____

How well do you think your community can handle an increase in workers due to a project? *

☐ Very well
☐ Well
☐ Neutral
☐ Poorly
☐ Very poorly

Have there been any past issues of gender-based violence, sexual exploitation and abuse, or sexual harassment in your community? *

☐ Yes
☐ No

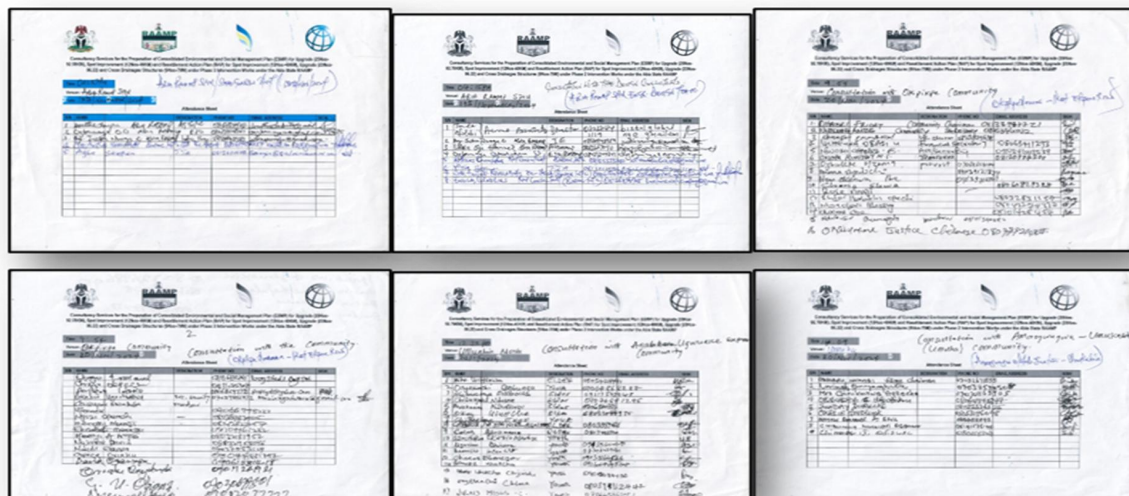
If yes, what do you think are the main factors driving these issues? *

Your answer _____

Asides poor road infrastructure, what other challenges does the community face? *

Your answer _____

Annexure 3: Attendance and Pictures at Community Consultation



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Consulting Services for the Preparation of Technical Specifications and Social Management Plan (SMP) for Upgrading of
 1000, Two Lanes Urban Streets and Roadside Safety for 2000 Two Lane Improvement Urban Roads, Upgrading of 200
 K.M of One Lane Streets Urban Roads, 1000 and Phase 2 One Lane Streets under the New Urban Road

No. _____
 Date _____

Attention: Sr.

Sl. No.	Particulars	Remarks	Signature	Date
1	1.0 Project Technical Details			
2	2.1 The Existing Streets	21/07/2017		
3	2.2 The Existing Streets	21/07/2017		
4	2.3 The Existing Streets	21/07/2017		
5	2.4 The Existing Streets	21/07/2017		
6	2.5 The Existing Streets	21/07/2017		
7	2.6 The Existing Streets	21/07/2017		
8	2.7 The Existing Streets	21/07/2017		
9	2.8 The Existing Streets	21/07/2017		
10	2.9 The Existing Streets	21/07/2017		
11	2.10 The Existing Streets	21/07/2017		
12	2.11 The Existing Streets	21/07/2017		
13	2.12 The Existing Streets	21/07/2017		
14	2.13 The Existing Streets	21/07/2017		
15	2.14 The Existing Streets	21/07/2017		
16	2.15 The Existing Streets	21/07/2017		
17	2.16 The Existing Streets	21/07/2017		
18	2.17 The Existing Streets	21/07/2017		
19	2.18 The Existing Streets	21/07/2017		
20	2.19 The Existing Streets	21/07/2017		
21	2.20 The Existing Streets	21/07/2017		
22	2.21 The Existing Streets	21/07/2017		
23	2.22 The Existing Streets	21/07/2017		
24	2.23 The Existing Streets	21/07/2017		
25	2.24 The Existing Streets	21/07/2017		
26	2.25 The Existing Streets	21/07/2017		
27	2.26 The Existing Streets	21/07/2017		
28	2.27 The Existing Streets	21/07/2017		
29	2.28 The Existing Streets	21/07/2017		
30	2.29 The Existing Streets	21/07/2017		
31	2.30 The Existing Streets	21/07/2017		
32	2.31 The Existing Streets	21/07/2017		
33	2.32 The Existing Streets	21/07/2017		
34	2.33 The Existing Streets	21/07/2017		
35	2.34 The Existing Streets	21/07/2017		
36	2.35 The Existing Streets	21/07/2017		
37	2.36 The Existing Streets	21/07/2017		
38	2.37 The Existing Streets	21/07/2017		
39	2.38 The Existing Streets	21/07/2017		
40	2.39 The Existing Streets	21/07/2017		
41	2.40 The Existing Streets	21/07/2017		
42	2.41 The Existing Streets	21/07/2017		
43	2.42 The Existing Streets	21/07/2017		
44	2.43 The Existing Streets	21/07/2017		
45	2.44 The Existing Streets	21/07/2017		
46	2.45 The Existing Streets	21/07/2017		
47	2.46 The Existing Streets	21/07/2017		
48	2.47 The Existing Streets	21/07/2017		
49	2.48 The Existing Streets	21/07/2017		
50	2.49 The Existing Streets	21/07/2017		
51	2.50 The Existing Streets	21/07/2017		
52	2.51 The Existing Streets	21/07/2017		
53	2.52 The Existing Streets	21/07/2017		
54	2.53 The Existing Streets	21/07/2017		
55	2.54 The Existing Streets	21/07/2017		
56	2.55 The Existing Streets	21/07/2017		
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59	2.58 The Existing Streets	21/07/2017		
60	2.59 The Existing Streets	21/07/2017		
61	2.60 The Existing Streets	21/07/2017		
62	2.61 The Existing Streets	21/07/2017		
63	2.62 The Existing Streets	21/07/2017		
64	2.63 The Existing Streets	21/07/2017		
65	2.64 The Existing Streets	21/07/2017		
66	2.65 The Existing Streets	21/07/2017		
67	2.66 The Existing Streets	21/07/2017		
68	2.67 The Existing Streets	21/07/2017		
69	2.68 The Existing Streets	21/07/2017		
70	2.69 The Existing Streets	2		

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Commonwealth of Massachusetts
 Department of Transportation
 Office of the Secretary
 100 State Street, Room 1000
 Boston, MA 02109

To: Mr. [Name]
 At: Mr. [Name]
 Re: Mr. [Name]

Date: 10/10/2010

Subject: Mr. [Name]

Description: Mr. [Name]

Item	Quantity	Unit Price	Total Price	Notes
1. [Item]	1	100.00	100.00	
2. [Item]	1	100.00	100.00	
3. [Item]	1	100.00	100.00	
4. [Item]	1	100.00	100.00	
5. [Item]	1	100.00	100.00	
6. [Item]	1	100.00	100.00	
7. [Item]	1	100.00	100.00	
8. [Item]	1	100.00	100.00	
9. [Item]	1	100.00	100.00	
10. [Item]	1	100.00	100.00	
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Consulting Services for the Preparation of Consolidated Environmental and Social Management Plan (ESMP) for Integrated Urban Development Project (IUDP) in the City of Bengaluru
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Consultation at Agalabano
Umuhia North



Consultation at Agalabano
- Umuhia North



Consultation at Umukabia
Umuhia North LGA



Consultation at Amaibo -
Umuahia South



Consultation at Ntubi -



Consultation at Ndiokpo -
Arochukwu LGA



Consultation at Amuzu -
Umuahia South



Consultation at Obinto -
Arochukwu LGA



Consultation at Ndiokpo
- Arochukwu LGA



Consultation at Ntubi -
Rende LGA



Consultation at Ntubi -
Rende LGA



Consultation at Okagwe -
Obafia LGA

Annexure 4: General Environmental Management Conditions for Construction Contracts

General

1. In addition to these general conditions, the Contractor shall comply with any specific Environmental and Social Management Plan (ESMP) for the works he is responsible for. The Contractor shall inform himself about such an ESMP and prepare his work strategy and plan to fully take into account relevant provisions of that ESMP. If the Contractor fails to implement the approved ESMP 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 ESMP. 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, 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 oils, lubricants and waste water used or produced during the execution of works from entering into rivers, streams, irrigation channels and other natural water bodies/reservoirs, and also ensure that stagnant water in uncovered borrow pits is treated in the best way to avoid creating possible breeding grounds for mosquitoes.
 - e) Prevent and minimize the impacts of quarrying, earth borrowing, piling and building of temporary construction camps and access roads on the biophysical environment including protected areas and arable lands; local communities and their settlements. In as much as possible restore/rehabilitate all sites to acceptable standards.
 - f) Upon discovery of ancient heritage, relics or anything that might or believed to be of archaeological or historical importance during the execution of works, immediately report such findings to the SE so that the appropriate authorities may be expeditiously contacted for fulfilment of the measures aimed at protecting such historical or archaeological resources.
 - g) Discourage construction workers from engaging in the exploitation of natural resources such as hunting, fishing, and 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.

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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/construction materials and other hazardous chemicals shall be bonded in order to contain spillage. All waste containers, litter and any other waste generated during the construction shall be collected and disposed off at designated disposal sites in line with applicable government waste management regulations.
7. All drainage and effluent from storage areas, workshops and camp sites shall be captured and treated before being discharged into the drainage system in line with applicable government water pollution control regulations.
8. Used oil from maintenance shall be collected and disposed 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 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 these general conditions, and any applicable ESMP, 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. Re-vegetate stockpiles to protect the soil from erosion, discourage weeds and maintain an active population of beneficial soil microbes.
22. Locate stockpiles where they will not be disturbed by future construction activities.
23. To the extent practicable, reinstate natural drainage patterns where they have been altered or impaired.
24. 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.
25. Identify potentially toxic overburden and screen with suitable material to prevent mobilization of toxins.
26. 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.
27. Minimize the long-term visual impact by creating landforms that are compatible with the adjacent landscape.
28. Minimize erosion by wind and water both during and after the process of reinstatement.
29. Compacted surfaces shall be deep ripped to relieve compaction unless subsurface conditions dictate otherwise.
30. Re-vegetate 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

31. The Contractor shall at all costs avoid conflicting with water demands of local communities.
32. 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.
33. Abstraction of water from wetlands shall be avoided. Where necessary, authority has to be obtained from relevant authorities.
34. 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.
35. No construction water containing spoils or site effluent, especially cement and oil, shall be allowed to flow into natural water drainage courses.
36. Wash water from washing out of equipment shall not be discharged into water courses or road drains.
37. 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

38. 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.
39. Upon the completion of civil works, all access roads shall be ripped and rehabilitated.
40. 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

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

Disposal of Unusable Elements

44. 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.

45. 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.
46. AC-pipes as well as broken parts thereof have to be treated as hazardous material and disposed of as specified above.
47. Unsuitable and demolished elements shall be dismantled to a size fitting on ordinary trucks for transport.

Health and Safety

48. 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.
49. Adequate road signs to warn pedestrians and motorists of construction activities, diversions, etc. shall be provided at appropriate points.
50. Construction vehicles shall not exceed maximum speed limit of 40km per hour.

Repair of Private Property

51. 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.
52. In cases where compensation for inconveniences, damage of assets 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 Health, Safety and Environment Management Plan (HSE-MP)

53. 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 ESMP 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 HSE 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 HSE aspects of the project, and as a basis for monitoring of the Contractor's HSE performance.
54. 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 ESMP;
 - 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.
55. 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.

HSE Reporting

56. The Contractor shall prepare bi-weekly progress reports to the SE on compliance with these general conditions, the project ESMP if any, and his own EHS-MP. An example format for a Contractor HSE report is given below. It is expected that the Contractor's reports will include information on:
 - HSE management actions/measures taken, including approvals sought from local or national authorities;
 - Problems encountered in relation to HSE 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 HSE aspects; and
 - Observations, concerns raised and/or decisions taken with regard to HSE management during site meetings.
57. It is advisable that reporting of significant HSE incidents be done “as soon as practicable”. Such incident reporting shall therefore be done individually. Also, it is advisable that the Contractor keeps 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. Example formats for an incident notification and detailed report are given below. Details of HSE performance will be reported to the Client through the SE’s reports to the Client.

Training of Contractor’s Personnel

58. 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 ESMP, 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:
- HSE in general (working procedures); emergency procedures; and social and cultural aspects (awareness raising on social issues).

Cost of Compliance

59. 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 these costs. No other payments will be made to the Contractor for compliance with any request to avoid and/or mitigate an avoidable HSE impact.

Example Format: HSE Report

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

HSE incidents:

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

HSE compliance:

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

Changes:

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

Concerns and observations:

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

Signature (Name, Title Date):

Contractor Representative

Example Format: HSE 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

Annexure 5: Waste Management Plan

S/N	Potential Source	Waste Streams	Waste Type	Recommended Measures	Responsible Party
1.	Site clearance on either side of the centreline at designated roads (Upgrades, and Spot Improvement (unpaved).	Agricultural waste	Organic Waste - of brush piles and vegetative debris (e.g., grass clippings, leaves, brush pruning, tree limbs and stumps)	Engage local community to reuse brush piles as mulches and implement composting technique for vegetative debris.	Contractor
2.	Civil Works during construction phase and removal of construction materials during decommissioning phase	Municipal Solid Waste (MSW)	Organic Waste – food waste, debris	- Ensure regular collection and disposal of food waste to prevent odour and pest infestation. - Implement proper food waste management practices, such as composting or disposal in sealed containers. - Provide bins on site for temporary storage of domestic waste such as lubricant containers, drinking water sachets, food waste and carrier bags/ packaging materials. - Dispose all domestic waste at the approved dumpsites and in a manner approved by the ASEPA	Contractor
3.		Construction Waste	Excavated Material - soil and earth removed, rock and stone. Construction Debris – from Asphalt pavement remnants, masonry waste, Wood waste from formwork, Metal scraps and reinforcement bars, Demolition waste - Construction debris resulting from demolished structures within RoW, the removal of existing pavement, curbs, and gutters. Contaminated water from dewatering activities, concrete curing, or construction site runoff.	- Provide designated waste collection areas and bins on-site. - Liaise with ASEPA for the evacuation and safe disposal of construction wastes - Encourage the recycling of reusable materials onsite to minimize waste generation. - All wastes that are not designated, as combustible waste on-site will be recycled, disposed of in any of the State's approved dumpsites, landfills or waste treatment facilities (where they exist). - Waste materials should be placed and stored in suitable containers. Storage areas and containers will be maintained in a sanitary condition and shall be covered to prevent spreading of wastes by water, wind or animals. - Control placement of all construction waste to approved disposal sites (>300 m from rivers, streams, lakes, or wetlands). - All cement-contaminated wastewater from cleaning or mixing is to be considered toxic and must be prevented from entering any watercourse or drainage channel for at least 48 hours to allow the water to reach neutral pH level.	
4.	Leakages from vehicles and oil containers; Road surfacing activities with MC1, asphaltic wearing course, Painting, welding and installation of road furniture	Hazardous Waste	Waste materials containing hazardous substances, such as paints, solvents, adhesives, and chemicals used for road marking or surface treatments; Waste oils, lubricants, and fuels from construction machinery and vehicles	- Safe removal and replacement of oil during construction activities; use of impermeable materials to insulate nearby media such as soil, water. - Avoid indiscriminate disposal of oil cans and containing materials within and outside project sites; - Proper and safe handling of hazardous and corrosive materials; - Storage of hazardous materials within safe conditions and perimeter from nearby communities and project implementation sites when not in use. - There should be a designated site for washing of containers or trucks that contain cement wastes.	Contractor

5.	Construction and operation of workers camp	Generation of solid and sanitary waste	Faeces, urine, waste water etc.	• Ensure provision of sanitary facilities on site for workers and enforce usage. • Ensure usage of ASEPA approved waste vendor for waste evacuation & disposal. • Ensure access to toilets for construction crew or provide temporary toilets (mobile toilets) for use where there are no existing ones. • Ensure mobile toilets/sanitary provisions are provided to reflect gender types. • Ensure regular toolbox meetings are held among contractor workers to offer awareness on transmission of contagious or communicable diseases.	
				Total (See ESMP Table for more details)	Mitigation: NGN: 4 USD: 2

Annexure 6: Occupational Health and Safety Management Plan (OHSMP)

S/N	Potential Hazards	Recommended Actions (OHS Measures/Safety Procedures)
1.	Likelihood of accident occurring due to Unsafe Conditions and Unsafe Behaviours. Offloading of materials (bricks, cement, wood, iron rods, etc.) from trucks may present significant OHS risks and impacts e.g. falling objects. Transport of procured construction materials to work sites, may predispose commuters, pedestrians, etc. to road accidents resulting from equipment fall from trucks, side collision, etc.	• Use of PPEs (Nose masks, safety boots etc) • Conduct OHS training and education; HazCom, routine JHA/PHA • Train personnel involved in the transport and offload of construction materials process on safety measures and best practice • Reduce speed when driving into work sites • Training of drivers on safe driving practices • Enforce speed limits within and outside built-up areas.
2.	Workers' fatigue, road accidents, Whole Body Vibration from Rollers, Excavators, Bulldozers etc	• Ensure drivers adhere to regulated rest periods and limit working hours to prevent fatigue-related accidents. • Provide comprehensive training for drivers on safe driving practice. • Conduct regular inspections and maintenance of vehicles and machinery to ensure roadworthiness and minimize the risk of breakdowns or accidents due to mechanical failures
3.	Workers may be exposed to risk of dust, toxic bituminous fumes and elevated noise levels.	• Provide workers with appropriate PPEs such as dust masks, respirators, ear plugs, and noise-cancelling headphones; • Conduct regular OHS training sessions on health and safety practices, including the proper use of PPE;
4.	Collapse, injuries, death, Overexertion during Lifting leading to Musculoskeletal Disorders (MSDs).	• JHA/PHA; • Safe Work Practices;
5.	Burns from fire, explosion or leakages of hazardous materials like battery acids, explosives, etc.	• Use of PPE; • Provision of fire extinguishers.
6.	Predisposition of workers to snake bites and scorpion stings during excavation and construction activities	• Provide first aid box containing, among others, antivenin injections
7.	Risk of drowning especially in sites selected for cross drainage rehabilitation	• Workers must wear safety harness, lifejackets and lifebuoys when working in river-areas
Total Cost for Implementing OHSP		Mitigation: NGN: 750,000 USD: 489
		Monitoring: NGN: 500,410 USD: 326

CONTRACTORS' CODE OF CONDUCT ON OCCUPATIONAL HEALTH AND SAFETY (OHS) AND VIOLENCE AGAINST CHILDREN (VAC)

1. INTRODUCTION

This Code of Conduct outlines the responsibilities of contractors, subcontractors, and their workers in ensuring compliance with Occupational Health and Safety (OHS) standards and preventing Violence Against Children (VAC) in all project activities.

2. GENERAL PRINCIPLES

All contractors and their workers must:

- Adhere to national and international labor laws, environmental standards, and human rights policies.
- Promote a safe, healthy, and secure working environment.
- Ensure zero tolerance for any form of child abuse, exploitation, or harassment.

3. OCCUPATIONAL HEALTH AND SAFETY (OHS)

To maintain a safe workplace, contractors must:

- Provide and enforce the use of Personal Protective Equipment (PPE) for all workers.
- Conduct regular safety training and hazard awareness programs.
- Implement emergency response procedures, including first aid and fire prevention measures.
- Ensure proper handling, storage, and disposal of hazardous materials.
- Report and investigate all workplace accidents and incidents promptly.
- Prohibit drug and alcohol use during working hours.
- Ensure access to safe drinking water, sanitation, and hygiene facilities.
- Appoint a Health and Safety Officer to monitor compliance with safety protocols.

4. VIOLENCE AGAINST CHILDREN (VAC)

Contractors and workers must:

- Refrain from engaging in, supporting, or tolerating any form of child abuse, including physical, emotional, and sexual harm.
- Avoid hiring individuals under the legal working age as defined by national labor laws.
- Ensure that no children are engaged in hazardous labor or exploited in any manner.
- Report any suspected cases of child abuse or exploitation to relevant authorities.
- Maintain professional conduct when interacting with local communities and children.

5. CODE OF CONDUCT ENFORCEMENT

- All workers must sign this Code of Conduct before commencing work.
- Violations of this Code may result in disciplinary action, including termination of employment or legal prosecution.
- Contractors must establish a grievance redress mechanism to address complaints related to OHS and VAC violations.
- Regular monitoring and reporting mechanisms should be implemented to ensure compliance.

6. COMMITMENT AND ACKNOWLEDGEMENT

By signing this Code of Conduct, I acknowledge that I have read, understood, and agree to comply with its provisions. I understand that failure to adhere to this Code may result in disciplinary action or legal consequences.

Name: _____

Designation: _____

Company: _____

Signature: _____

Date: _____

Annexure 7: Borrow Pit Management Plan (BMP)

A borrow pit is an area from which material is excavated for use in the construction of a nearby infrastructure project.

Objectives of Borrow Pit remediation plan

The objectives for the restoration and aftercare of the borrow pits are to:

- Restore land to a condition suitable for its original use, post-excavation;
- Essential mitigation for local environmental effects that occur as a consequence of the use of the borrow pits; and
- Contribute to addressing the impact of climate change by taking opportunities to mitigate pre-existing and potential future flood risk and water stress risk issues.

Design Principles for borrow pits

The following design principles will be applied when siting the borrow pits

- All borrow pits will be excavated only for granular material for use within the Proposed intervention package sites (i.e. not for commercial extraction);
- Borrow pits will be backfilled using natural uncontaminated material from Proposed intervention package sites excavations (including clay / fines which are a by-product of processing the granular material at the borrow pit sites) and restored using subsoil and topsoil stripped from and stored within the Proposed Scheme. Surplus topsoil, whether from within and outside the borrow pit sites, will not be used as backfill. Topsoil and subsoil will normally be stripped and stored separately within the footprint of the borrow pit for use in site restoration;
- It is intended that the borrow pits will be restored to the original ground level and to a condition suitable for their previous land use, except where the land is proposed to be used for other purposes, such as for a replacement floodplain storage area, balancing pond or access track;
- Where agricultural uses are to be resumed on land disturbed during the construction of the Proposed roads, the design objective is to avoid any reduction in long term capability, which would downgrade the quality of the disturbed land, through the adoption of good practice technique in handling, storing and reinstating soils on that land and to provide a sufficiently deep soil profile to manage both wetter and drier conditions in the future due to climate change impacts;
- Backfill will be compacted as much as necessary to meet the relevant requirements for the intended end use of the land;
- Ruminant groundwater control during borrow pit excavation with regards to hydrological regimes

Borrow Pit Restoration Plans

The plan will consider these approaches:

- Soil reinstatement
- Backfilling
- Revegetation

During the field visit, several borrow pits were identified. Consultations with host communities revealed that most of these borrow pits have been abandoned, while a few are still actively used by construction companies. As part of this ESMP preparation, existing borrow pits along the project corridors were documented. The table below provides details of these borrow pits and their locations.

BORROW PIT				DESCRIPTION
SN	LGA	ROAD NAME	GPS Coordinates	
1	Umuahia North	Along Enugu Port Harcourt Expressway	N5.561007 E7.449466	This borrow pit is an established site situated along the Port Harcourt-Enugu Expressway, adjacent to a human settlement. The pit is actively in use, and consultations with its current users indicate that it is suitable for use by the AB-RAAMP project.
2	Arochuku	Achara – Okpo – Nkporo – Ututu	N5.449725 E7.904463	Situated along the Ohafia-Arochuku Road, this borrow pit lies about 1 km from the Ama Obinto. During consultations, the owner claimed that the soil from the borrow pit had been previously used for road construction, confirming its suitability for use by the AB-RAAMP project.
3	Umuahia South	Ogbodioriloku – Umuchiche – Mbaraukwu	N5.535099 E7.454625	This borrow pit is located approximately 100 meters from the Ogbodioriloku-Umuchi-Mbaraukwu community members revealed that the pit serves as a primary source of laterite in the area. On the road, it is deemed suitable and readily available for use by the AB-RAAMP project.
4	Umuahia South	Ogbodioriloku – Umuchiche – Mbaraukwu	N5.534217 E7.444122	This borrow pit is located approximately 450 meters from the Ogbodioriloku-Umuchi-Mbaraukwu from the nearest human settlement. Consultations revealed that the borrow pit is highly active and used by the AB-RAAMP project. According to a community member, the pit was established in 2021 to meet the needs of the area.

Borrow Pit Identification and Management

Some existing borrow pits were identified in the course of baseline studies. The borrow pits have been used in the past for previous road construction and are still currently being used for construction works undertaken by the Abia State Government. It is very likely that RAAMP Contractors may obtain earth materials (including laterite) from these borrow pits pending their conduct of independent geotechnical tests, etc. There is also the possibility of new borrow pits been excavated by Contractors. In a situation where pre-existing borrow pits are to be used by the AB-RAAMP Contractors, certain procedures need to be followed so as to manage the potential negative impacts of borrow pit excavation on the biophysical and social environment. Such procedures should also be applied for new borrow pits but with modifications. These are enumerated subsequently.

Existing Borrow Pits

- The Supervisory Consultant (SC), AB-RAAMP PIU Safeguards Unit and Contractor should identify ownership of already existing borrow pits and make necessary formal arrangements to use them.
- Sections within the existing borrow pits where Contractors will be excavating earth should be barricaded such that it is clear that such an area has been occupied by the project and therefore will be reclaimed after completion of implementation works.
- Where there are socioeconomic, livelihood, or recreational activities happening around such borrow pits, there is need for stakeholder engagements, awareness and sensitization.
- Caution and safety signs should also be installed.
- Contractors should prepare a Borrow Pit Reclamation Plan prior to the commencement of civil works.
- Most suitable equipment should be selected and used for excavation so as to avoid adverse impacts on soil.
- In addition to barricading borrow pits, a temporary source of lighting may be provided to assure workers and community health and safety especially at night.

New Borrow Pits

- Contractors should obtain and show evidence of land lease or borrow pit acquisition from the owner (this is very important especially for future E&S safeguards audits).
- The entire vicinity of the borrow pit should be barricaded with the installation of caution and safety signs.
- Contractors should prepare a Borrow Pit Reclamation Plan prior to the commencement of civil works.
- Most suitable equipment should be selected and used for excavation so as to avoid adverse impacts on soil.
- In addition to barricading borrow pits, a temporary source of lighting may be provided to assure workers and community health and safety especially at night

Annexure 8: Traffic Management Plan (TMP)

In general, a Traffic Management Plan is required for all projects that could have an impact on:

- **MOBILITY** - including interruptions to pedestrians, cyclists and vehicular traffic; and
- **COMMUNITY** - including interruptions to surrounding businesses and residents from construction activity and worker parking needs.

The objective of this TMP is to provide safe passage for pedestrians, cyclists and vehicular traffic along the proposed AB-RAAMP 37 roads project areas and access roads leading to the some of the proposed roads for rehabilitation.

Components of the Traffic Management Plan

The proposed TMP for the construction works should to a minimum address the following:

The Contractor should designate a TMP Supervisor who will oversee traffic management along major roads within the project corridors;

Traffic Management Plan for the project will address the following:

- a) **Safety Signage:** Safety signage will be put up along all major roads in within the project corridors. This would inform motorists and other road users of the ongoing construction works within the area. This signage will indicate that there are "Men at Work". Caution is most required by motorists and cyclists who transverse the project areas.
- b) **Road Diversion Signage:** Diversion signage will be erected at sensitive places where diversions will exist from the project implementation.
- c) **Communication:** The Contractor, with support from the AB-RAAMP SPIU, will prepare a communication protocol which will be shared with the communities within the respective zones. The communication protocol will provide a stepwise approach to informing residents about traffic plan alterations 48hrs before they are implemented. Communication with communities will be directly facilitated by the Contractor's Community Liaison Officer and the Secretary of each respective Community Association. Additionally, communications should be made with the PIU, FRSC and Community associations a week prior to notifying the general populace.

- d) **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.
- e) **Employee Transportation:** To the extent possible employees will use buses provided by the contractor as transportation to and from the site, thereby reducing overall vehicle traffic. Project vehicles or will be utilized by staff, only when necessary.
- f) **Speed Limits:** Speed limits will be enforced to and from the site and signage(s) shall be posted along the access and site roads (maximum 40 km/hr, reduced to 20 km/hr at blind corners and bridge crossings. Traffic along other access roads will be radio controlled for safety and speed control. Furthermore, employees and contractors will be educated on safety including traffic protocols and speed limits during mandatory orientation. Routine traffic inspections and/or speed indicator signs will be used to encourage safe and responsible driving.
- g) **Reporting:** Records on traffic management and implementation of this plan should be kept and updated by the contractor as evidence of ongoing mitigation compliance, which will be submitted to AB-RAAMP PIU as part of routine reports on progress of work.

The contractor shall ensure that all construction activities are performed in accordance with the approved Traffic Management Plan.

Mitigation and Monitoring Costs for Traffic Management

The Table below presents the costs for mitigation and monitoring for traffic along the access roads leading to the TCs. The mitigation and monitoring costs for implementing the TMP is adopted from the ESMP table.

S/N	Recommended Measure	Responsibility	Mitigation
1.	Communication Protocol: The Contractor with support from the SPIU, will prepare a communication protocol which will be shared with the inhabitants of the host communities of the TCs.	Contractor and SPIU	NGN 49,280 USD 32
2.	Advanced Warning Signs and Signals: Install advanced warning signs, signals, and electronic message boards well in advance of construction zones to alert motorists of upcoming roadwork, lane closures, and detours. These signages will indicate that there are “ Men at Work ”.	Contractor	Cost already incorporated in the CASHES Plan
3.	Alternative Routes: Collaborate with locals to identify and establish alternative routes for motorists to bypass construction zones, reducing the volume of traffic in the affected area.		NGN 25,344 USD 17
4.	Work Hours and Shifts: Schedule roadwork during off-peak hours, overnight, or on weekends to minimize disruption to peak traffic periods and reduce congestion.		N/A
5.	Phased Construction: Implement phased construction techniques to minimize the length and impact of lane closures, allowing for continuous traffic flow during certain stages of the project.		
6.	Temporary Traffic Control Devices: Use temporary traffic control devices such as cones, flagmen, barricades, and delineators to guide motorists safely through construction zones and redirect traffic as needed.		NGN 85,888 USD 56
7.	Liaison with FRSC: In situations where heavy traffic impacts are envisaged, the Contractor will liaise with the FRSC to ensure traffic coordination and mitigate adverse traffic impacts.	Contractor and SPIU	NGN 150,656 USD 98
Total cost for implementing TMP			NGN 311,605 USD 203

Annexure 9: Contractors Code of Conduct on GBV, Violence Against Children, Compliance to OHS and Implementation of Safeguards Mitigation Measures

Our 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 comply with OHS rules, implementation of all the safeguards compliances and mitigating measures including reclamation of sites after use, mitigation for dust, Labour influx Management and 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, be aware of, and respond to any allegations of GBV and SEA, the following core principles and minimum standards of behaviour will apply to all employees without exception:

1. The company—and therefore all employees, associates, and representatives—commit to treating women, children (persons under the age of 18), and men with respect regardless of race, color, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status. Acts of GBV and VAC are in violation of this commitment.
2. All employees must adhere to OHS rules including wearing of PPEs and implement all the safeguards mitigating measures while on sites.
3. 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.
4. 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.
5. 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.
6. 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.
7. Sexual favours or other forms of humiliating, degrading or exploitative behaviour are prohibited.
8. Sexual interactions between contractor's and consultant's employees at any level and member of the communities surrounding the work place 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.
9. 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.
10. 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.
11. All employees will be required to sign an individual Code of Conduct confirming their agreement to support GBV and SEA activities.
12. *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: _____

WORKER'S CODE OF CONDUCT

I, _____ (*name of employee*), acknowledge that preventing Gender-based Violence (GBV) and Sexual Exploitation & Abuse are important. GBV/SEA activities constitute acts of gross misconduct and are therefore grounds for sanctions, penalties or termination of employment. All forms of GBV or SEA are unacceptable either on the work site, neighbouring project communities, or at worker's camps. Prosecution of those who commit GBV/SEA will be followed as appropriate according to applicable laws. I also acknowledge the need to maintain peaceful relationships and interactions with residents of project areas.

- i. Specifically, I agree that while working on projects of the ABIASTATE RURAL ACCESS & AGRICULTURAL MARKETING PROJECT (RAAMP), I will: Maintain conflict-free relationships with residents of project areas *when such relationships and interactions become necessary*.
- ii. Consent to police background check.
- iii. 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.
- iv. Not use language or behaviour towards women, children or men that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate.
- v. Not participate in sexual activity with children—including grooming or through digital media. Mistaken belief regarding the age of a child and consent from the child is not a defence.
- vi. Not engage in sexual favours or other forms of humiliating, degrading or exploitative behaviour.
- vii. Not have sexual interactions with members of the communities surrounding the work place and worker's camps that are not agreed to with full consent by all parties involved in the sexual act. 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 this Code.
- viii. Attend and actively partake in training courses related to HIV/AIDS, GBV and SEA as requested by my employer.
- ix. Report through the GRM or to my manager suspected or actual GBV and/or SEA by a fellow worker, whether in my company or not, or any breaches of this code of conduct.

With regard to children under the age of 18:

- x. Wherever possible, ensure that another adult is present when working in the proximity of children.
- xi. Not invite unaccompanied children into my home, unless they are at immediate risk of injury or in physical danger.
- xii. 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.
- xiii. 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”).
- xiv. Refrain from physical punishment or discipline of children.
- xv. 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.
- xvi. 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:

- xvii. Before photographing or filming a child, assess and endeavour to comply with local traditions or restrictions for reproducing personal images.
- xviii. 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.

xix. 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.

xx. Ensure images are honest representations of the context and the facts.

xxi. Ensure file labels do not reveal identifying information about a child when sending images electronically.

I understand that it is my responsibility to use common sense and avoid actions or behaviour that could be construed as GBV or SEA or breach this code of conduct. 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 and may affect my ongoing employment.

Signed by _____
(Employee)

Signed by _____
(Employer/Manager)

Title: _____

Title: _____

Date: _____

Date: _____

Annexure 10: Campsite Management Plan (CMP)

The Workers Camp Site Management Plan for the 37 rural roads rehabilitation Project, under the Abia RAAMP should to a minimum address specific activity that will be undertaken to minimize the impacts resulting from siting a worker's camp on the local project communities.

Elements for managing risks associated with the Workers Campsite under the proposed project include:

The Contractor shall ensure to site workers camp at a designated and approved location by the AB-RAAMP PIU.

On-site Social and Health Care Facilities: Provision of basic on-site social and medical facilities such as first aid, basic health care centre, recreational centre, food service, etc. in order to reduce pressure on community facility.

Campsite Safety and Security: Provision of 24 hours security stationed at the Campsite to ensure the security and safety of construction workforce and construction equipment.

Campsite Waste Management: Adequate waste management of sewage and other forms of waste within the campsite. The Campsite shall be equipped with independent toilet facilities for male and female workers respectively, in order to discourage irregular waste disposal. Furthermore, standards must be instituted for personal and public hygiene among project workers. Additionally, project workers shall be properly trained on personal hygiene.

Establishment of and Training on Workers on Code of Conduct: The Supervising Engineer and AB-RAAMP Safeguards Unit shall ensure that Contractors establish a workers' Code of Conduct (CoC). The CoC will help mitigate some of the social and environmental impacts of labour influx such as risk of social conflict, Increased risk of illicit behaviour and crime, Increased burden on and competition for public service provision, Wastewater discharges, Increased demand on freshwater resources, and Inadequate waste disposal and illegal waste disposal sites etc., will help keep workers (local/foreign) in check on the rules and regulations binding their engagement. Contractors to ensure provision of training to workforce on code of conduct and ensure strict compliance. Measures provided for in the ESMP to deter illicit behaviour and other social vices are adequately enforced.

Training programs: Conduct and ensure key staff, including contractors, receive training regarding the likelihood, significance and management of influx-related issues such as HIV/AIDS, GBV, SEA, VAC etc.

Carry out Regular Monitoring: The AB RAAMP PIU shall monitor for change throughout the project cycle to ensure compliance and on mitigation effectiveness from projects/contractors. Ensure a documented monitoring program that tracks key social outcomes, changes and issues at regular intervals throughout the project lifecycle.

<https://www.ifc.org/en/insights-reports/2000/publications-gpn-workersaccommodation>

[<https://www.ifc.org/content/dam/ifc/photos/ifc-twitter.jpg>]-<https://www.ifc.org/en/insights-reports/2000/publications-gpn-workersaccommodation>>

Workers' Accommodation: Processes and Standards<<https://www.ifc.org/en/insights-reports/2000/publications-gpn-workersaccommodation>>

This guidance note, developed jointly by IFC and the EBRD, looks at the provision of housing or accommodation for workers by employers and the issues that arise from the planning, construction and management of such facilities. www.ifc.org

Annexure 11: Labour Influx Management Plan

The Labour Influx Management Plan (LIMP) for the AB-RAAMP Phase II Intervention Works is a strategic framework designed to mitigate the potential social, economic, and environmental impacts of labour migration associated with rural road rehabilitation across the selected 37 roads (for upgrades and spot improvement). Developed in line with the World Bank Good Practice Notes on Labour Influx, this plan outlines mitigation and monitoring measures to ensure that local communities benefit from, rather than suffer from, the project activities. By prioritizing local workforce recruitment, enforcing a strict Workers' Code of Conduct, delivering targeted training, managing temporary worker camps, and establishing effective community liaison and GRM or conflict resolution mechanisms, the plan aims to protect community resilience, safeguard public services and local resources, and foster sustainable development. The following tables detail the specific actions, timelines, responsibilities, performance indicators, and cost allocations necessary for the successful implementation of this plan.

Activity/Measure	Objective	Actions/Measures	Timeline	Responsible Party	Measurement/ Performance Indicator	Cost (Naira)	Monitoring Objective	Parameters to be Measured	Method of Measurement	Frequency/Timeline
Local Workforce Recruitment & Training	Reduce external labour influx by prioritizing local recruitment and building local capacity.	- Prioritize hiring unskilled labour locally. - Implement an accelerated training program to equip locals with necessary skills for construction and post-construction operation.	Recruitment: 1-month pre-commencement. Training: Initiate within first month; refresher sessions quarterly.	Contractor's HR Team	% of local hires (Target: ≥70% of workforce). Training attendance and skill assessment results.	N100,000	Local Workforce Ratio Monitoring Verify the proportion of local hires is maintained at target levels.	% of local hires vs. non-local workers	Review of recruitment records and payroll data.	Monthly
Worker Code of Conduct (CoC)	Mitigate social and environmental impacts (e.g., illicit behaviour, excessive resource use) through clear rules.	- Develop and disseminate a CoC covering behavioural expectations, sanitation, waste management, and resource use. - All workers must sign the CoC upon arrival.	Finalize and distribute CoC 2 weeks before worker arrival.	Contractor's Site Manager in collaboration with Supervising Engineer	Number of CoC violations recorded (Target: zero or minimal infractions). Regular spot checks and incident reporting.	N25,000	Compliance with Worker CoC Ensure adherence to behavioural and environmental standards among workers.	Number and type of CoC violations. Frequency of corrective actions taken.	Spot checks, incident reports, and interviews with site supervisors.	Monthly
Training on the Management of Influx-Related Social Issues	Equip project staff and Contractors with knowledge to manage issues such as HIV/AIDS, GBV, SEA, and VAC.	- Conduct initial training sessions on relevant social issues. - Provide periodic refresher courses. - Engage local NGOs or experts to assist with training content.	First training within first month; then quarterly refreshers.	Contractor, Local NGOs	% of supervisory/field staff trained (Target: 100% trained by Month 1). Pre- and post-training evaluations.	<i>Included in overall mitigation and training cost/budget SEA/SH mitigation (refer to the ESMP table)</i>	Training Effectiveness Assess the impact of social issues training on worker behaviour and awareness.	Training attendance and evaluation scores. Reduction in reported social issues.	Analysis of training records and pre/post evaluation surveys.	Quarterly

Campsite Management & Community Resource Protection	Prevent overuse of community resources and reduce environmental impacts from temporary worker camps.	- Designate and manage worker campsites with clearly defined occupancy limits (not exceeding 80% of capacity). - Provide portable sanitation, waste collection, and controlled water usage.	Campsite planning: 1-month pre-commencement. Ongoing management throughout the project cycle.	Contractor's Site Manager	Daily headcounts vs. occupancy limit (Target: ≤80% occupancy). Regular monitoring of water usage, waste collection records, and incident logs on resource misuse.	N26,392	Campsite and Resource Management Ensure worker campsites operate within designated limits and do not overburden local resources.	Daily campsite occupancy rates. Water usage and waste management data.	Daily headcount logs, utility usage records, and weekly waste collection reports.	Daily (weekly summary)
Community Liaison & Conflict Resolution Mechanism	Address potential social conflicts and mitigate pressure on local public services through proactive engagement.	- Establish a community liaison office/GRM focal person to facilitate dialogue between workers and local communities. - Implement GRM and conflict resolution protocol and a rapid response system for emerging issues.	Establish GRM 1-month pre-commencement; ongoing operation throughout the project.	AB-RAAMP PIU, in coordination with GRCs	Number of conflicts reported vs. resolved (Target: prompt resolution with minimal escalation). Feedback from community meetings.	Included in overall GRM budget	Community Liaison and Conflict Resolution Track and resolve any emerging social conflicts effectively.	Number of community complaints and conflicts reported. Resolution time for each conflict.	Community meeting minutes, grievance logs, and follow-up interviews with community leaders.	Monthly
Total Mitigation Cost						N201,392	Total M			

Strategy for Gender Inclusion in Contractor Hiring Practices

To promote gender inclusivity and ensure women's equitable access to both skilled and unskilled labour opportunities during project implementation, the following measures shall be adopted by contractors and enforced through supervision mechanisms:

- Gender-Sensitive Recruitment Targets**
 - Contractors shall aim to allocate a minimum of 30% of unskilled job roles to women, in line with local capacity and context.
 - Where feasible, skilled roles shall also be made available to qualified female candidates.
- Inclusive Job Advertisement and Communication**
 - Job announcements shall be **shared in local languages** and through **channels accessible to women**, including women's groups, markets, health centres, and places of worship.
 - Clearly state that **women are encouraged to apply** for all available positions.
- Flexible Work Arrangements**
 - Where possible, **introduce shifts or flexible hours** to accommodate women with caregiving responsibilities, especially for unskilled daily roles.
- Safe and Supportive Work Environment**
 - Provide **gender-segregated sanitation facilities** and ensure the work environment is free from harassment, discrimination, or abuse.
 - Enforce a **Code of Conduct** for all workers, including anti-harassment provisions.
- Capacity Building and On-the-Job Training**
 - Offer basic **on-site training to women** for roles they may not traditionally occupy, such as flaggers, materials handlers, or site assistants.
 - Encourage mentorship for women in semi-skilled roles (e.g., assistant masons, carpenters, or welders).
- Monitoring and Reporting**
 - The Contractor's monthly reports shall include **gender-disaggregated employment data**, showing the number of women employed in various roles.
 - The supervising engineer and Social Safeguards Officer shall ensure compliance with agreed gender inclusion targets.

Annexure 12: Community Affairs, Safety, Health, Environment & Security (CASHES) Plan

S/N	Potential Hazards	Recommended Actions (HSE Measures/Safety Procedures)	Responsibility
1.	Project activities may affect water and sanitation conditions, increase chances of stagnated water, which may lead to waterborne diseases.	• Ensure proper design and construction of drainage systems to prevent stagnation of water and promote effective water flow away from the project area. • Ensure proper backfilling of installed drainages and implement a maintenance schedule to keep drainage channels clear of debris, vegetation, and sediment build-up, ensuring continuous water flow. • Provide information needed by the contractors to document and carry out work in a safe manner • Ensure that Contractors follow all safety and environmental requirements.	Contractor
2.	Un-reclaimed and abandoned borrow pits may pose safety risks for children. Dug-up concrete drains may also pose safety issues	• Barricade in-use borrow pits prior to reclamation. • Install drains in sections to avoid multiple open pits, and barricade unfinished work at the end of each day.	
3.	Accidents while pedestrians are crossing access roads and also animals that graze freely.	• Install speed bumps and road furniture on rehabilitated roads. • Enforce speed limits and train drivers to reduce vehicle speed while driving through local communities •	
4.	Likely occurrence of metabolic diseases due to heavy metals poisoning resulting from sediment laden runoffs in surface water due to asphaltting, road priming, etc	• Implement effective sediment control measures such as use of sediment traps, silt fences, erosion control blankets, vegetative buffers, etc to prevent heavy metal poisoning from runoff during stone pitching, asphaltting, prime coating, etc. • Contractors are responsible for ensuring that safety and health hazards associated with the work they are performing, are satisfactorily controlled and do not pose a risk. In the process of carrying out their work, a Contractor may introduce other hazards. The identification and control of these hazards is the responsibility of the Contractor. These hazards and controls identified by the Contractor must be considered in the Safe Work Method Statements.	
Total (See ESMP and Monitoring Tables for more details)			Mitigation: NGN 201,392 USD 131

Annexure 13: Sample Chance Find Procedure for the Protection of Physical Resources

It is the responsibility of the Contractor, and the AB-RAAMP PIU to protect and safeguard the physical cultural resources by adopting proper site management practices and respect of cultural norms. This Physical Cultural Resource Management Plan has been prepared as per the policy guidelines described under OP/BP 4.11 before the commencement of geochemical sampling activities around the project areas. The significance of cultural resources management includes:

- Prudent so that the risk of damage can be assessed, measured, monitored and controlled, and adequately mitigated;
- Participatory involvement of local communities by providing input, suggestions, and opinions in managing physical cultural resources;
- Collaboration with the authorized agency becomes an obligation to ensure that the physical cultural resources get proper management;
- Professionalism in conducting mitigation measures to reduce larger risk to physical cultural resources through the implementation of International Best Practice in each project site;
- Fairness for all stakeholders in utilizing the findings of physical cultural resources at the project site;
- Transparent and accountable in managing the benefits of physical cultural resources that is fair to all parties and as an effort to comply with good governance; and
- Sustainability by ensuring that the physical cultural resources shall be managed well for the sake of next generation.

During the ESMP preparation across the 37 roads selected for rehabilitation for AB-RAAMP Project, some areas of critical cultural significance were discovered. These include;

S/N	Name of Road	Project	Name of PCR	GPS Coordinates	Con
1.	Achara – Okpo – Nkporo – Ututu	Upgrade	- Isionyemaobi” sacred site - Ndi Nduu	N5.482707 E7.913292 N5.480561 E7.913694	
2.	Okagwe – Nkwebi Onwuwanyanwu		Igboro Uduma sacred ground	N5.679941 E7.793036	
3.	Sameke Junction – Amaraughoghu		Ala Nna Umuokpo	N5.705903 E7.608080	
4.	Ogbodioriloku – Umuchiche – Mbaraukwu		Village square, “Mbara”	N5.541399 E7.440245	
6.	Alayi – Ezeukwu Road	Spot Improvement	Egbu Egbukwa (Sacred Tree)	N5.80641 E7.55976	
7.	Ozara Market Junction – Amaoku Alayi – Ugwueke Road		Sacred Tree	N5.742565 E7.605240	
8.	Ezeukwu – Ugwueke Road		- Akparata (Sacred Tree) - Shrine	N5.805573 E7.561248 N5.805442 E7.561339	
9.	Ahiaukwu – Amangwo – Umuajata – Umudere – Amakama		Sacred Gong	N5.462704 E7.495457	

CHANCE FIND PROCEDURES

1. Purpose and Scope

This procedure establishes clear guidelines for contractors to follow upon encountering any cultural, archaeological, or historical material that may be inadvertently uncovered during construction works. It aims to:

- Protect cultural and physical heritage resources.
- Ensure prompt and coordinated reporting to project management and relevant authorities.
- Minimize delays while preserving the integrity of any discovered resources.

N/B: A Chance Find is any archaeological, historical, or cultural resource or object unexpectedly discovered during construction activities. This includes artifacts, features, human remains, sacred objects, or structures with cultural significance.

3. Responsibilities

Contractor Responsibilities:

- Ensure all personnel are aware of and trained in these Chance Find Procedures.
- Immediately halt work within the immediate vicinity of any suspected chance find.
- Secure and clearly mark the area to prevent further disturbance.
- Notify the CRM Officer and the on-site supervisor without delay.
- Provide preliminary documentation (location, nature, photographs) of the find.

CRM Officer Responsibilities:

- Assess the situation on arrival.
- Take detailed records (photos, sketches, GPS coordinates) of the find.
- Communicate with local heritage authorities and community representatives as necessary.
- Advise on temporary protection measures until further instructions are provided.
- Liaise with the PMT and, if required, arrange for specialized archaeological expertise.

Project Management Team Responsibilities:

- Ensure that the procedure is included in all contractual documents.
- Provide support and guidance to the CRM Officer and contractor.
- Coordinate with state and local cultural heritage authorities to decide on further actions.

4. Step-by-Step Procedures

4.1. Identification

-
- **Observation:** All workers should be vigilant for any unexpected items or features (e.g., pottery shards, stone tools, structural remains, burial sites).
 - **Suspicion:** If a worker suspects the presence of a cultural or archaeological resource, they must immediately notify their site supervisor.

4.2. Immediate Actions (Stop Work)

- **Halt Activities:** The site supervisor must instruct all workers to stop work immediately in and around the area of the suspected find.
- **Secure the Area:** Mark the perimeter (using tape, flags, or other visible markers) to restrict access and prevent contamination or further disturbance.
- **Notify the CRM Officer:** The site supervisor or the first person on-site to discover the find must call the CRM Officer directly.

4.3. Documentation and Preliminary Assessment

- **Initial Documentation:** The CRM Officer (or designated representative) should document the find's location (using GPS coordinates), take photographs from multiple angles, and record any initial observations.
- **Worker Statements:** Collect statements from the personnel who first observed the find regarding its context and location.
- **No Further Disturbance:** Do not remove, touch, or attempt to clean the find beyond marking and photographing, as this may damage its integrity.

4.4. Reporting

- **Internal Report:** The CRM Officer prepares an immediate internal report that includes:
 - ✓ Description of the find.
 - ✓ Exact location and extent of the disturbed area.
 - ✓ Time, date, and names of individuals involved.
- **Notification to Authorities:** If the find appears significant, the CRM Officer must contact the relevant state cultural heritage authority (or designated heritage body) as soon as possible. Follow any specific protocols or directions they provide.

4.5. Expert Assessment and Decision Making

- **Site Visit:** Arrange for an expert (archaeologist or heritage specialist) to visit the site for a more detailed assessment.
- **Determine Impact:** Together with the PMT and heritage authorities, decide if the construction works need to be modified, halted, or if further investigation is warranted.
- **Protect the Find:** Implement any temporary protective measures recommended by the heritage authorities until a final decision is reached.

4.6. Resumption of Work

- **Clearance:** Work may only resume once the cultural resource has been fully assessed and clearance has been given by the heritage authorities, in consultation with the PMT.
- **Documentation Update:** Ensure that all actions taken and decisions made are recorded, and update the Physical Cultural Resources Management Plan accordingly.
- **Communicate:** Inform all on-site personnel about the resolution and any changes to work procedures resulting from the find.

5. Training and Awareness

- **Regular Training:** Contractors and their employees must be trained regularly to ensure all employees understand the PCR procedures.
- **On-Site Signage:** Place visible signage in areas known for cultural heritage to remind workers of the procedures.
- **Review Meetings:** Periodic meetings should be held to review any chance finds and refine procedures as necessary.

6. Compliance and Monitoring

- **Site Inspections:** Regular monitoring by the PMT and CRM Officer to ensure compliance with these procedures.
- **Record Keeping:** Maintain comprehensive records of all chance finds, assessments, communications, and actions taken.
- **Contractual Obligations:** Adherence to these procedures is a contractual requirement; failure to comply may result in penalties or project delays.

Annexure 14: Sample Outline for Security Risk Management Plan

The contractor shall pay necessary attention to ensuring security of life & property during the execution of this contract according to the scope of works. In ensuring that this role is carried out, the following will be given priority:

1. Management Commitment and Responsibilities

Management is committed to ensuring that the following are in place:

- Providing up to date information regarding the security management mechanism, tools & updates in and around the work sites
- Ensure necessary early warning system is deployed to respond to security emergencies in the workplace by:
- Development of a specific step-by-step approach to security response
- Establish a security task force to respond to specific hazards, which is to be deployed in the case of security emergency (kidnapping, insurgency etc.)
- Employing the appropriate personnel for the role of security personnel/advisor(s) and security staff
- Prioritize training of security personnel
- Enforcing disciplinary actions as needed to enforce security compliance
- Promoting interaction and assistance with regulatory and response agencies such as the Nigerian Police Force & Nigerian Military armed forces.

1. Threat Assessment and Analysis

A vital component of this Security Management Plan is the identification of internal and external threats. The mechanisms for identifying threats shall comprise but will not be limited to:

- Have in place and periodically update a threat matrix that will be submitted to management for review and approval.
 - Undertake periodic drills that will include responses to:
 - Bomb threats.
 - A violence in the workplace situation – potential or actual.
 - Domestic violence occurring within our facilities.
 - General evacuation requirements due to a technical, human or natural threat.
- Others as may be determined by the General Manager or Security Management Committee

Threats will be qualified utilizing a threat matrix, or other tool that compares operations to threats, and their likelihood and severity. Where possible, mitigating actions and recommendations will be initiated.

3. The Role of the Security Focal Person or Manager

In the minimum, the contractor will have a security manager or focal staff that will be responsible for all security related issues in the workplace. The role of this security focal person includes:

- Lead role in threat assessments
- Program maintenance and updates
- Incident response and coordination
- Chair of the Security Program Committee
- Training Responsibilities
- Coordination with other Departments
- Coordination with agencies and response units

4. Employee security education and training

The company-training security program will ensure:

- Employee duties and responsibilities
- Event-specific responsibilities
- Threat or event reporting
- Back-to-work/check-in requirements
- Potential disciplinary actions
- Dealing with the media, regulatory agencies, or other entities outside the company

5. Management and Supervisor Education and Training

For Managers and Supervisors, our program focuses upon:

- Individual or Department duties
- Knowledge and deployment of response protocols
- Assuring employee and other constituent welfare
- Threat or event reporting
- Back-to-work/check-in requirements
- Potential disciplinary actions
- Dealing with the media, regulatory agencies, or other entities outside the company

Program Exercises and Drills

The training and education activities that will be undertaken for the purposes of implementing this Security Management Plan shall be one of the following: case studies, desktop exercises, or small and/or large-scale exercises involving response pattern to adopt in the face of clear and present threats e.g. insurgent attacks.

Annexure 15: Asbestos Management Plan (AMP)

This Asbestos Management Plan (AMP) is designed specifically for Lot 3 Contractor so as to provide a comprehensive framework for the safe and environmentally sound handling, removal, temporary onsite storage, transportation, and disposal of asbestos pipes uncovered during its civil works under the AB-RAAMP Phase 2. Asbestos is a hazardous material and poses significant health risks when its fibers are released into the air. Inhalation of asbestos fibers can lead to severe respiratory diseases, including asbestosis, lung cancer, and mesothelioma. Given these risks, the AMP ensures that all activities involving asbestos are performed in strict adherence to safety standards to protect workers, the surrounding community, and the environment.

This plan provides detailed procedures for:

- Identifying and isolating asbestos materials during excavation and construction activities.
- Training and equipping workers to handle asbestos safely.
- Mitigating risks associated with exposure to asbestos dust during the removal process.
- Establishing secure temporary storage facilities for asbestos pipes, ensuring they are contained and managed without posing a threat to site workers or nearby populations.
- Partnering with licensed waste management firms to safely transport and dispose of asbestos waste in compliance with national and international hazardous waste regulations.
- Ensuring accountability through meticulous record-keeping, tracking the lifecycle of asbestos waste from removal to final disposal.

The AMP is also aligned with Good international Industry Practices (GIIPs) on asbestos management, thus ensuring compliance with requisite Nigerian environmental laws, as well as ESS 4. Notably, Nigeria is still in the process of developing its own regulatory framework on asbestos management. The plan is designed to be robust and adaptable, addressing both the immediate concerns related to asbestos handling and management on the AB-RAAMP Phase 2 Lot 3 Road – Nbawsi. In addition to safeguarding human health, this plan also considers the environmental and socioeconomic impacts of improper asbestos handling, particularly in the context of public health, environmental pollution, and regulatory compliance. It seeks to minimize the potential for legal liabilities that could arise from asbestos exposure incidents, while ensuring that the project maintains its commitment to sustainability and environmental protection. By following the AMP, all parties involved—PIU Safeguards Unit, Supervisory Consultants, Contractors and the approved/licensed waste management firm—will have clear, actionable guidelines for managing asbestos in a way that prevents harm and promotes environmental stewardship throughout the project lifecycle.

The project might carry out these activities or procure the services of a competent firm to handle the management of asbestos waste. See the Table below.

S/N	Activity Description	Mitigation Measures to be taken	Monitoring Measures	Responsibility	M
1.	Survey of Intervention Sites to Identify Asbestos – Identification and marking of locations where asbestos pipes are protruding unto the road surface	- Use of PPE for all survey personnel. - Mapping and marking asbestos locations including GPS coordinates.	Validation of survey documentation and mapping	PIU Safeguards Unit Or Waste management firm	NGN (USD)
2.	Removal of Asbestos Pipes from Project Sites – The safe removal of asbestos pipes uncovered at the project sites (i.e. Nbawsi – Agburuike – Umuomaighiukwu Road (N5.393075 E7.435480))	- All personnel involved in handling asbestos must undergo specialized training on asbestos hazards, proper handling techniques, and best health and safety practices. - Early notification should be given to workers, visitors and other stakeholders before asbestos removal begins. - Asbestos pipe removal should be scheduled during non-working hours where possible or cordoned off to reduce exposure. - Workers must be equipped with appropriate PPE (disposable face masks, gloves, boots, goggles, and protective overalls) to prevent exposure to asbestos dust.	Site supervisors and the PIU Safeguards Unit will monitor PPE usage and adherence to safety protocols.	Contractors (under PIU supervision) Or Waste management firm	NGN (USD)
3.	Handling and Installation of Temporary Onsite Storage Structures – Safe handling of asbestos pipes and preparation for temporary onsite storage at a secure designated location in AB-RAAMP main office (if immediate disposal is not available).	- Asbestos pipes should be handled with care to avoid breaking them and releasing dust. Workers should wet the pipes with fine mist to minimize dust emissions before cutting them into manageable chunks/sections. - If immediate removal isn't possible, all excavated pipes should be collected (from the various pumping stations) and temporarily stored in a designated area (a secure location at AB-RAAMP main office), covered with impermeable sheeting to prevent the release of fibers into the air or soil. The storage area should be prepared with an impermeable surface to prevent contamination of soil. - Workers must wash hands and faces after handling asbestos materials and dispose of used PPE properly in designated hazardous waste containers.	Regular inspections of the temporary storage areas will be carried out by site supervisors and the PIU Safeguards Unit to ensure compliance with safe storage protocols.	Contractors, (under PIU oversight) Or Waste management firm	NGN (USD)
4.	Evacuation and Transportation of Asbestos Waste – Safe evacuation and transportation of asbestos pipes from project sites to an approved disposal site.	- The PIU Safeguards Unit should work with a licensed waste management firm for the proper evacuation and transportation of asbestos waste. - Waste management personnel, including truck drivers, must receive refresher training/briefing on asbestos handling and hazardous waste transportation. - Waste should be carefully loaded into trucks to prevent damage and release of asbestos fibers. Asbestos waste must be securely covered during transport.	Supervisory Consultant and PIU will oversee the transportation process to ensure compliance with safety and regulatory standards.	Licensed waste management firm, supervised by PIU	NGN (USD)
5.	Final Disposal of Asbestos Waste – disposal of asbestos waste at an approved hazardous waste disposal site.	- Asbestos waste should be immobilized using cement or other appropriate materials to prevent fiber release. - Asbestos waste should be incinerated at a licensed facility or disposed of in a hazardous waste landfill following local and international regulations.	Waste management firm will monitor and document the disposal process. The PIU will inspect the final disposal site.	Licensed waste management firm	NGN (USD)
6.	Record Keeping and Documentation – Ensuring that accurate records are maintained for the entire lifecycle of asbestos waste, from removal to final disposal.	- Contractors and waste management firms must maintain comprehensive tracking records of all asbestos materials, including removal, transport, and disposal details. - Upon final disposal, a certificate of disposal should be issued to the PIU to ensure accountability.	The PIU will audit the record-keeping process periodically to ensure all necessary documentation is complete and accurate.	Contractors, waste management firm, PIU	NGN (USD)

	Total Cost for Implementing AMP	NGN (US\$)
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Annexure 16: Biophysical Sampling Analysis Result

S/N	NAME OF ROAD	SAMPLE POINTS (GPS COORDINATES)	DATE	TIME	PHYSICOCHEMICAL PROPERTIES OF GROUND WATER SAMPLES							
					GROUND WATER QUALITY PARAMETERS							
					pH	Conductivity (µs/cm)	Turbidity (NTU)	TDS (mg/l)	TSS (mg/l)	Ammonia (mg/l)	Sulphate (mg/l)	Calcium (mg/l)
1	Okagwe – Nkwebi Onwuwanyanwu	N5.686225 E7.804501	23/11/2024	10:23am	6.74	231	3.4	334.22	127.6	0.15	91.73	74.2
2	Sameke Junction – Amaraugboghu	N5.725235 E7.613734	26/11/2024	10:07am	6.9	216	3.86	490.81	111.2	0.56	77.28	75.9
3	Orie Ngodo Market - Obinohia UmuDim – Lomara	N5.933848 E7.354897	30/11/2024	12:32pm	6.5	174	3.24	391.1	102.1	0.9	56.77	67.1
4	Amorji Market Road – Amorji Junction	N5.389225 E7.379957	28/11/2024	11:15am	6.8	393	3.09	219.3	127.1	0.85	63.27	28.6
5	Amiyi Nvosi – Ometeghi – Umuada Nvosi – Omuapu Road	N5.309830 E7.461767	28/11/2024	01:03pm	6.9	254	2.79	279.1	125.4	0.4	69.14	53.1
6	Agalaba Ise – Ahiamorie – Umuamadi – Amalaubi – Umuokereke	N5.473205 E7.444763	25/11/2024	11:39am	6.6	175	3.14	179.4	122.5	0.85	74.23	28.6
7	Ogbodioriloku – Umuchiche – Mbaraukwu	N5.548739 E7.440075	22/11/2024	11:30am	6.5	116	2.5	204.5	125	0.59	97.64	54.3
8	Agalabano – Umuhu Central School – Ekeoba	N 5.587864 E 7.453075	20/11/2024	10:55am	6.7	151	3.27	316.7	129.1	0.19	39.13	57.3
9	Umuagu Ohuru Amaisi – Osaa Ukwu – Itungwa	N5.145780 E7.400754	29/11/2024	11:06am	6.5	201	3.34	200.4	175.3	0.18	91.97	68.6
10	Nkwo Elechi - Umuagu -Umuorukwu Osusu - Amaukwa Road	N5.153428 E7.395169	29/11/2024	01:38pm	7.2	196	3.85	384.2	103.4	0.15	91.73	74.2
11	Asa Umunka – Umugo – Ameyi Oza – Ozata – Ugwati Asa	N5.040308 E7.275135	30/11/2024	02:21pm	7.5	376	2.19	226.6	86.5	0.9	97.64	67.1
12	Ozara Market Junction – Amaaku Alayi – Ugwueke Road	N5.726721 E7.604484	26/11/2024	11:05am	6.9	288	3.34	391.1	108.1	0.4	91.97	53.1
13	Amaogwugwu Olololo Junction – Umukabia	N5.597730 E7.448630	20/11/2024	12:32pm	6.7	253	2.84	288.05	120.4	0.74	74.01	71.6
14	Okpikpe Umuana – Ikot Ekpene Road	N5.507256 E7.512108	20/11/2024	02:19pm	6.6	110	3.26	391.83	126	0.15	39.18	74.2
15	Umuanyaso Road	N5.093833 E7.341893	29/11/2024	03:43pm	6.74	79	4.2	143.2	121.1	0.9	93.75	67.1
16	Umuegwere Road	N5.098192 E7.343693	29/11/2024	12:44pm	6.5	105	2.62	303.2	93.6	0.4	89.82	53.1
17	Amaokwelu Alayi Junction – Amankalu – Akoli Imenyi	N5.692656 E7.599223	26/11/2024	01:01pm	6.9	218	2.97	206.3	101.3	0.4	99.55	53.1
18	Ezeukwu – Ugwueke Road	N5.798545 E7.612962	26/11/2024	02:41pm	6.8	263	3.42	288	175.2	0.51	92.37	18.2
	FME _{Env} Limits				9	1000	5	500	500	10	500	75

S/N	NAME OF ROAD	SAMPLE POINTS (GPS COORDINATES)	DATE	TIME	HEAVY METAL PROPERTIES OF GROUND WATER			
					GROUND WATER QUALITY PARAMETERS			
					Pb (mg/l)	Cr (mg/l)	Cd (mg/l)	Ni (mg/l)
1	Okagwe – Nkwebi Onwuwanyanwu	N5.686225 E7.804501	23/11/2024	10:23am	0.046	0.003	0.002	0.01
2	Sameke Junction – Amaraugboghu	N5.725235 E7.613734	26/11/2024	10:07am	0.028	0.001	0.001	0.01
3	Orie Ngodo Market - Obinohia Umudim – Lomara	N5.933848 E7.354897	30/11/2024	12:32pm	0.024	0.001	0.02	0.006
4	Amorji Market Road – Amorji Junction	N5.389225 E7.379957	28/11/2024	11:15am	0.0012	0.0012	0.001	0.02
5	Amiyi Nvosi – Ometeghi – Umuada Nvosi – Omuapu Road	N5.309830 E7.461767	28/11/2024	01:03pm	0.006	0.003	0.003	0.01

6	Agalaba Ise – Ahiamorie – Umuamadi – Amalaubi – Umuokereke	N5.473205 E7.444763	25/11/2024	11:39am	0.009	0.003	0.002	0.009
7	Ogbodioriloku – Umuchiche – Mbaraukwu	N5.548739 E7.440075	22/11/2024	11:30am	0.01	0.001	0.003	0.059
8	Agalabano – Umuhu Central School – Ekeoba	N 5.587864 E 7.453075	20/11/2024	10:55am	0.01	0.042	0.001	0.005
9	Umuagu Ohuru Amaisii – Osaa Ukwu – Itungwa	N5.145780 E7.400754	29/11/2024	11:06am	0.002	0.044	0.001	0.02
10	Nkwo Elechi - Umuagu -Umuorukwu Osusu - Amaukwa Road	N5.153428 E7.395169	29/11/2024	01:38pm	0.01	0.003	0.0012	0.09
11	Asa Umunka – Umugo – Ameyi Oza – Ozata – Ugwati Asa	N5.040308 E7.275135	30/11/2024	02:21pm	0.009	0.049	0.003	0.014
12	Ozara Market Junction – Amaoku Alayi – Ugwueke Road	N5.726721 E7.604484	26/11/2024	11:05am	0.008	0.019	0.002	0.003
13	Amaogwugwu Olololo Junction – Umukabia	N5.597730 E7.448630	20/11/2024	12:32pm	0.002	0.024	0.001	0.029
14	Okpikpe Umuana – Ikot Ekpene Road	N5.507256 E7.512108	20/11/2024	02:19pm	0.002	0.0017	0.003	0.003
15	Umuanyaso Road	N5.093833 E7.341893	29/11/2024	03:43pm	0.005	0.003	0.002	0.077
16	Umuegwere Road	N5.098192 E7.343693	29/11/2024	10:23am	0.004	0.026	0.002	0.073
17	Amaokwelu Alayi Junction – Amankalu – Akoli Imenyi	N5.692656 E7.599223	26/11/2024	10:07am	0.007	0.046	0.001	0.036
18	Ezeukwu – Ugwueke Road	N5.798545 E7.612962	26/11/2024	12:32pm	0.01	0.03	0.007	0.014
FMEEnv Limits					0.01	0.05	0.003	0.1

S/N	NAME OF ROAD	SAMPLE POINTS (GPS COORDINATES)	DATE	TIME	MICROBIAL ANALYSIS OF GROUND WATER SAMPLES				
					GROUND WATER QUALITY PARAMETERS				
					Faecal Coliform (cfu/ml)	E. coli (cfu/ml)	Salmonella Spp. (cfu/ml)	Pseudomonas Aeruginosa	Bacillus Spp.
1	Okagwe – Nkwebi Onwuwanyanwu	N5.686225 E7.804501	23/11/2024	10:23am	3**	1**	0	0	0
2	Sameke Junction – Amaraugboghu	N5.725235 E7.613734	26/11/2024	10:07am	5**	0	0	0	0
3	Orie Ngodo Market - Obinohia Umudim – Lomara	N5.933848 E7.354897	30/11/2024	12:32pm	1**	3**	0	0	0
4	Amorji Market Road – Amorji Junction	N5.389225 E7.379957	28/11/2024	11:15am	0	0	0	0	2**
5	Amiyi Nvosi – Ometeghi – Umuada Nvosi – Omuapu Road	N5.309830 E7.461767	28/11/2024	01:03pm	2**	1**	0	0	0
6	Agalaba Ise – Ahiamorie – Umuamadi – Amalaubi – Umuokereke	N5.473205 E7.444763	25/11/2024	11:39am	0	0	0	0	0
7	Ogbodioriloku – Umuchiche – Mbaraukwu	N5.548739 E7.440075	22/11/2024	11:30am	0	2**	0	0	0
8	Agalabano – Umuhu Central School – Ekeoba	N 5.587864 E 7.453075	20/11/2024	10:55am	0	0	0	0	0
9	Umuagu Ohuru Amaisii – Osaa Ukwu – Itungwa	N5.145780 E7.400754	29/11/2024	11:06am	0	0	0	0	0
10	Nkwo Elechi - Umuagu - Umuorukwu Osusu - Amaukwa Road	N5.153428 E7.395169	29/11/2024	01:38pm	0	0	0	0	0
11	Asa Umunka – Umugo – Ameyi Oza – Ozata – Ugwati Asa	N5.040308 E7.275135	30/11/2024	02:21pm	0	0	0	0	0
12	Ozara Market Junction – Amaoku Alayi – Ugwueke Road	N5.726721 E7.604484	26/11/2024	11:05am	0	0	0	0	0
13	Amaogwugwu Olololo Junction – Umukabia	N5.597730 E7.448630	20/11/2024	12:32pm	0	0	0	0	0
14	Okpikpe Umuana – Ikot Ekpene Road	N5.507256 E7.512108	20/11/2024	02:19pm	0	0	0	0	0
15	Umuanyaso Road	N5.093833 E7.341893	29/11/2024	03:43pm	0	0	0	0	0
16	Umuegwere Road	N5.098192 E7.343693	29/11/2024	10:23am	0	0	0	0	0

17	Amaokwelu Alayi Junction – Amankalu – Akoli Imenyi	N5.692656 E7.599223	26/11/2024	10:07am	0	0	1**	0	0
18	Ezeukwu – Ugwueke Road	N5.798545 E7.612962	26/11/2024	12:32pm	0	0	0	0	0
FMEnv Limits					0	0	0	0	0

Surface Water Quality Parameters	Nkata Alike Stream (N5.587186 E7.451573)			Ekweze Stream (N5.567077 E7.44601)			Iyi Umuokpara (N5.556832 E7.436487)			Awiwa Stream (N5.5036)	
	Date: 20/11/2024 Time: 11:24am			Date: 20/11/2024 Time: 11:39am			Date: 21/11/2024 Time: 11:12am			Date: 23/11/2024 Time: 03:07pm	
	Upstream	Midstream	Downstream	Upstream	Midstream	Downstream	Upstream	Midstream	Downstream	Upstream	Midstream
pH	6.6	6.3**	6.5	6.7	6.4**	6.1**	6.8	7.0	7.1	6.7	7.0
DO (mg/L)	3.3	3.7	4.1	6.2	4.8**	4.0**	5.5	5.7	6.0	6.0	6.2
E. Cond (µS/cm)	5.8	6	5.9	450	600	750	312	365	412	342	378
Turbidity (NTU)	67**	64**	50	20	45	60**	10	15	20	8	12
Salinity (mg/L)	49.2	51.2	50.1	30	50	65	45	52	59	42	50
TDS (mg/L)	18	19	19.5	400	550	700	115	142	198	130	148
TSS (mg/L)	0.54	0.51	0.42	20**	35**	50**	0.24	0.32	0.41	0.19	0.29
NH ⁴⁺ (mg/L)	0.05	0.06	0.11	0.5	1.5	2**	0.25	0.31	0.42	0.22	0.28
NO ³⁻ (mg/L)	1.11	1.16	1.15	10	25	3.8	5.6	7.5	8.9	6.3	7.8
PO ⁴³⁻ (mg/L)	0.031	0.03	0.034	0.05	0.07	0.09	0.12	0.21	0.34	0.18	0.27
BOD5 (mg/L)	6.5**	6.3**	6	4	8**	12**	3.2	4.3	4.8	3.6	4.1
COD (mg/L)	34**	33.6**	33.3**	10	25	40**	17	22	27	19	23
Cl ⁻ (mg/L)	34.97	35.37	35.77	40	70	100	54	63	72	50	61
S04 ²⁻ (mg/L)	41.1	41.6	42.1	50	63	75	112	127	142	116	132
Pb (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hg (mg/L)	ND	ND	ND	0.0001	0.0003	0.001**	ND	ND	ND	ND	ND
Cd (mg/L)	ND	ND	ND	ND	ND	ND	0.0056	0.0086	0.0116**	ND	ND
As (mg/L)	ND	ND	ND	0.01	0.03	0.05	ND	ND	ND	12.8027**	13.1027**
Cu (mg/L)	ND	ND	ND	0.005	0.015	0.025	26.441**	26.741**	27.041**	25.7227**	26.1227**
Total coliforms cfu/100ml	3.7**	2.5**	2.5**	8.95**	9**	9.05**	1.5**	3.2**	5.6**	2.1**	4.7**
Faecal coliforms cfu/100ml	0.2**	0	0	1.98**	2**	2.02**	0.8**	2.5**	4.1**	1.2**	3.6**
E. coli cfu/100ml	0.2**	0	0	0.1**	0.1**	0.1**	0.9**	2.8**	4.5**	1.3**	3.4**
HPC cfu/100ml	1.12x10 ²	1.2x10 ²	1.0x10 ²	1.13x10 ²	1.2x10 ²	1.17x10 ²	1.3x10 ²	1.0x10 ²	2.01x10 ²	2.19x10 ²	2.5x10 ²
THF cfu/100ml	1.2x10 ²	1.2x10 ²	1.21x10 ²	1.21x10 ²	1.10x10 ²	1.13x10 ²	1.15x10 ²	1.1x10 ²	1.25x10 ²	1.18x10 ²	1.2x10 ²

Surface Water Quality Parameters	Iyi Obowo (N5.556832 E7.436487)			Umudere Stream (N5.453420 E7.492169)			Iyi Okpo			Nkporo stream	
	Date: 21/11/2024 Time: 12:29pm			Date: 25/11/2024 Time: 11:45am			Date: 21/11/2024 Time: 03:12pm			Date: 21/11/2024 Time: 01:07pm	
	Upstream	Midstream	Downstream	Upstream	Midstream	Downstream	Upstream	Midstream	Downstream	Upstream	Midstream
pH	6.6	6.64	67	6.85	6.8	6.7	6.7	6.6	6.67	6.5	6.6
DO (mg/L)	5.83	6.3	6.77	6.08	6.3	6.52	5.867	6.2	6.533	6.93	7.3
E. Cond (µS/cm)	26.5	27	27.5	30.1	30.5	30.9	26.94	29.2	29.46	28.065	28.5
Turbidity (NTU)	12.555	12.9	11.245	13.008	13.4	13.792	12.349	12.6	12.851	21.14	21.6
Salinity (mg/L)	57.28	57.5	57.7	49.584	49.8	50	22.017	22.4	23.73	52.72	53
TDS (mg/L)	213.5	169.2	223.8	292	296.2	2974.6	113.1	112.5	113.7	193.8	194.2

TSS (mg/L)	0.038	0.04	0.042	0.043	0.045	0.047	0.06	0.062	0.064	0.043	0.046
NH4+ (mg/L)	0.262	0.28	0.298	0.177	0.18	0.183	0.147	0.15	0.153	0.1877	0.19
N03• (mg/L)	2.54	3	3.46	1.429	1.75	2.071	2.898	2.9	2.902	2.75	3.2
P04 ³⁻ (mg/L)	0.107	0.11	0.113	0.086	0.09	0.094	0.106	0.11	0.114	0.127	0.15
BOD5 (mg/L)	3.95	4.15	4.35	4.795	4.8	4.805	4.15	4.4	4.65	2.495	2.5
COD (mg/L)	6.066	6.35	6.634	5.15	5.35	5.55	5.32	5.8	6.28	6.594	6.6
Cl- (mg/L)	20.07	20.5	21.93	34.846	35.2	35.554	33.12	33.5	33.88	29	29.4
S04 ²⁻ (mg/L)	138.61	139	139.39	133.5	134	134.5	119.498	119.5	119.502	108.2	108.5
Pb (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hg (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cd (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
As (mg/L)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cu (mg/L)	0.001	0.003	0.005	0.01	0.01	0.009	0.005	0.004	0.006	0.01	0.01
Total coliforms cfu/100ml	0.003**	2.7**	2.05**	0.009**	0.01**	0.009**	7.007**	7.001**	6.903**	0.01**	0.009**
Faecal coliforms cfu/100ml	0	0.5**	0	1.458**	1.5**	1.542**	3**	3.5**	4**	4**	4.5**
E. coli cfu/100ml	0.2**	0.5**	0	0	0	0.1**	1.2**	1.5**	1.8**	1.7**	2**
HPC cfu/100ml	1.8x10 ²	1.5x10 ²	1.4x10 ²	2.0x10 ²	2.2x10 ²	2.2x10 ²	2.3x10 ²	2.7x10 ²	3.0x10 ²	2.3x10 ²	2.3x10 ²
THF cfu/100ml	1.0110 ²	1.2x10 ²	1.1x10 ²	1.4x10 ²	1.6x10 ²	1.67x10 ²	0.9x10 ²	1.1x10 ²	1.2x10 ²	1.0x10 ²	1.02x10 ²

Physiochemical, Heavy Metals and Microbial Analysis of Soil Samples are presented below

SOIL QUALITY PARAMETERS	UR-1 Date: 21/11/2024 Time: 10:56am	UR-4 Date: 23/11/2024 Time: 10:40am	SI-2 Date: 23/11/2024 Time: 12:56pm	UR-7 Date: 30/11/2024 Time: 12:38pm	UR-9 Date: 28/11/2024 Time: 11:21am	UR-18 Date: 29/11/2024 Time: 10:50am	SI-12 Date: 20/11/2024 Time: 02:24pm	UR-16 Date: 20/11/2024 Time: 10:59am	UR-13 Date: 29/11/2024 Time: 10:30am	UR -20 Date: 30/11/2024 Time: 02:24pm
pH	6.62	6.59	6.63	6.68	6.75	6.80	6.55	6.70	6.48	6.85
Moisture content (%)	15.3	14.6	15.4	14.5	14.9	14.8	15.2	14.8	15.1	14.7
Organic matter content (%)	3.1	3.2	3.0	3.1	3.0	3.0	3.0	3.1	2.9	3.2
Electrical cond. (µS/cm)	32.9	35.0	34.4	33.7	34.1	33.8	35.4	32.6	33.2	34.7
Salinity (mg/Kg)	2.21	9.06	3.53	3.26	2.91	7.84	2.7	2.05	7.37	9.06
NH ₄ ⁺ (mg/Kg)	4.13	0.29	1.19	4.31	4.38	0.14	3.97	3.62	4.03	0.94
Nitrogen (%)	0.12	0.14	0.13	0.11	0.13	0.20	0.19	0.16	0.1	0.1
Phosphorus (mg/Kg)	10.5	9.3	8.0	12.7	9.9	7.6	9.7	7.9	8.2	7.9
Potassium (Meq/100g)	0.45	0.6	0.5	0.5	0.54	0.39	0.47	0.4	0.37	0.4
Base saturation (%)	65.4	65.0	65.5	64.6	65.1	64.9	65.0	64.8	65.3	64.7
CEC (Meq/100g)	13.1	10.4	12.4	17.3	12.1	12.2	11.9	18.9	12.1	12.0
Pb (mg/Kg)	0.9	0.6	0.4	0.2	2.2**	1.9	2.0	2.1**	0.9	1.4
Cr (mg/Kg)	0.03	0.05	0.04	ND	0.04	0.05	0.04	0.05	0.03	0.04
Cd (mg/Kg)	ND	0.03	0.02	0.01	0.03	0.03	0.02	0.03	0.03	0.04*
Ni (mg/Kg)	0.05	0.06	0.07	0.05	0.07	0.04	0.06	0.05	0.04	0.07
Cu (mg/Kg)	45.2	50.6	48.7	47.1	46.5	35.2	36.8	48.3	55.7	49.3
Total coliforms cfu/ 100ml	13**	10**	12**	12**	18**	13**	10**	8	14**	13**
Faecal coliforms cfu/100ml	8**	5**	6**	6**	10**	7**	5**	0	8**	7**
E. coli cfu/100ml	2**	2**	2**	1**	2**	1**	2**	1**	2**	2**
HPC cfu/100ml	2.6 x10 ²	1.8 x10 ²	2.2 x10 ²	1.9 x10 ²	1.7 x10 ²	2.2 x10 ²	2.7 x10 ²	1.0 x10 ²	2.0 x10 ²	2.3 x10 ²

THF cfu/100ml	1.9 x10 ²	1.7 x10 ²	1.0 x10 ²	1.8 x10 ²	1.6 x10 ²	1.9 x10 ²	1.7x10 ²	1.3 x10 ²	1.2 x10 ²	1.1 x10 ²
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UR= Upgrade Road; SI = Spot Improvement; ND = Not Detected; 1, 2, 3, etc. = the S/N of the roads as presented in the TOR.

Result of Noise and Air Quality Sampling Along the Proposed Roads Earmarked for Spot Improvement

S/N	ROADS/ SAMPLE POINTS	GPS COORDINATES		DATE	TIME	NOISE LEVELS	AIR QUALITY PARAMETERS					
		Latitude	Longitude				CO	NO _x	SO _x	NH4	H2S	VOC
Ozara Market Junction – Amaoku Alayi – Ugwueke Road												
1	NAQSI1A	N 5.734356	E 7.605590	26/11/2024	11:10am	31	<0.01	<0.01	<0.01	<0.01	<0.01	0.008
2	NAQSI1B	N 5.743456	E 7.604777	26/11/2024	11:16am	34	<0.01	<0.01	<0.01	<0.01	<0.01	0.003
3	NAQSI1C	N 5.745501	E 7.604719	26/11/2024	11:22am	38	<0.01	<0.01	<0.01	<0.01	<0.01	0.01
Amaokwelu Alayi Junction – Amankalu – Akoli Imenyi												
4	NAQSI2A	N 5.692260	E 7.598848	26/11/2024	01:10pm	40	<0.01	<0.01	<0.01	<0.01	<0.01	0.01
5	NAQSI2B	N 5.671345	E 7.554897	26/11/2024	01:16pm	44	<0.01	<0.01	<0.01	<0.01	<0.01	0.02
6	NAQSI2C	N 5.668742	E 7.553209	26/11/2024	01:22pm	42	<0.01	<0.01	<0.01	<0.01	<0.01	0.04
Alayi – Ezeukwu Road												
7	NAQSI3A	N 5.798917	E 7.559924	26/11/2024	03:10pm	28	<0.01	<0.01	<0.01	<0.01	<0.01	0.002
8	NAQSI3B	N 5.808040	E 7.560366	26/11/2024	03:18pm	34	<0.01	<0.01	<0.01	<0.01	<0.01	0.005
Ezeukwu – Ugwueke Road												
9	NAQSI4A	N 5.805693	E 7.561675	26/11/2024	02:34pm	37	<0.01	<0.01	<0.01	<0.01	<0.01	0.03
10	NAQSI4B	N 5.805680	E 7.561659	26/11/2024	02:46pm	36	<0.01	<0.01	<0.01	<0.01	<0.01	0.05
11	NAQSI4C	N 5.805549	E 7.565511	26/11/2024	02:54pm	40	<0.01	<0.01	<0.01	<0.01	<0.01	0.016
Bende Etiulo – Ubibia – Ndiwo – Itumbuzo – Okopedi – Ntalakwu												
12	NAQSI5A	N 5.558901	E 7.689201	23/11/2024	12:03pm	39	<0.01	<0.01	<0.01	<0.01	<0.01	0.08
13	NAQSI5B	N 5.555003	E 7.671040	23/11/2024	12:15pm	40	<0.01	<0.01	<0.01	<0.01	<0.01	0.004
14	NAQSI5C	N 5.546254	E 7.673917	23/11/2024	12:19pm	37	<0.01	<0.01	<0.01	<0.01	<0.01	0.002
15	NAQSI5D	N 5.537650	E 7.644158	23/11/2024	12:26pm	42	<0.01	<0.01	<0.01	<0.01	<0.01	0.009
16	NAQSI5E	N 5.536750	E 7.644065	23/11/2024	12:32pm	44	<0.01	<0.01	<0.01	<0.01	<0.01	0.03
17	NAQSI5F	N 5.536110	E 7.644315	23/11/2024	12:40pm	48	<0.01	<0.01	<0.01	<0.01	<0.01	0.01
Amaogwugwu Olololo Junction – Umukabia												
18	NAQSI6A	N 5.598345	E 7.448864	20/11/2024	12:39pm	30	<0.01	<0.01	<0.01	<0.01	<0.01	0.005
19	NAQSI6B	N 5.599254	E 7.449563	20/11/2024	12:44pm	33	<0.01	<0.01	<0.01	<0.01	<0.01	0.007
Umuafiaka – Umuokpara												
20	NAQSI7A	N 5.567677	E 7.447267	21/11/2024	04:30pm	26	<0.01	<0.01	<0.01	<0.01	<0.01	0.06
Old Umuahia (Divinity School) – Osah/Ohia Road												
21	NAQSI8A	N 5.517874	E 7.460302	20/11/2024	03:30pm	36	<0.01	<0.01	<0.01	<0.01	<0.01	0.008
22	NAQSI8B	N 5.519061	E 7.457843	20/11/2024	03:45pm	39	<0.01	<0.01	<0.01	<0.01	<0.01	0.021
Ahiaukwu – Amangwo – Umuajata Umudere Amakama												
23	NAQSI9A	N 5.461893	E 7.495366	25/11/2024	02:05pm	30	<0.01	<0.01	<0.01	<0.01	<0.01	0.002
24	NAQSI9B	N 5.459753	E 7.494380	25/11/2024	02:15pm	33	<0.01	<0.01	<0.01	<0.01	<0.01	0.01
25	NAQSI9C	N 5.456424	E 7.494519	25/11/2024	02:27pm	34	<0.01	<0.01	<0.01	<0.01	<0.01	0.009
Okpikpe Umuana – Ikot Ekpene Road												
26	NAQSI10A	N 5.508196	E 7.512203	20/11/2024	02:25pm	42	<0.01	<0.01	<0.01	<0.01	<0.01	0.001
27	NAQSI10B	N 5.514865	E 7.512862	20/11/2024	02:39pm	44	<0.01	<0.01	<0.01	<0.01	<0.01	0.002
Umuanyaso Road												
28	NAQSI11A	N 5.094983	E 7.341448	29/11/2024	03:50pm	28	<0.01	<0.01	<0.01	<0.01	<0.01	0.004
29	NAQSI11B	N 5.096424	E 7.340510	29/11/2024	03:56pm	31	<0.01	<0.01	<0.01	<0.01	<0.01	0.01
Umuegwere Road												
30	NAQSI12A	N 5.095694	E 7.345088	29/11/2024	12:50pm	40	<0.01	<0.01	<0.01	<0.01	<0.01	0.005
31	NAQSI12B	N 5.097173	E 7.344289	29/11/2024	12:57pm	43	<0.01	<0.01	<0.01	<0.01	<0.01	0.02
		National Environment (Noise Standard and Control) Regulation and FMEEnv Limits				50dB	10	0.04-0.06	0.01	0.2	0.008	0.1

NAQSI means Noise and Air Quality for Spot Improvement Road; 1,2,3,4,5 stands for the serial numbers of the road as listed in Chapter 1; A, B, C, D stands for the points where samples were collected. E.g. A means point 1, B means point 2, etc.

Result of Noise and Air Quality Sampling Along the Proposed Roads Earmarked for Upgrade

S/N	ROADS/ SAMPLE POINTS	GPS COORDINATES		DATE	TIME	NOISE LEVELS	AIR QUALITY PARAMETERS					
		Latitude	Longitude				CO	NO _x	SO _x	NH4	H2S	VOC
Achara – Okpo – Nkporo – Ututu												
1	NAQUR1A	N 5.489979	E 7.903823	21/11/2024	12:30pm	38	<0.01	<0.01	<0.01	<0.01	<0.01	0.008
2	NAQUR1B	N 5.479223	E 7.914398	21/11/2024	12:38pm	37	<0.01	<0.01	<0.01	<0.01	<0.01	0.004
3	NAQUR1C	N 5.461860	E 7.896574	21/11/2024	12:45pm	34	<0.01	<0.01	<0.01	<0.01	<0.01	0.01
Umeve I – Umeve II												

53	NAQUR20B	N 5.580571	E 7.445434	20/11/2024	11:13am	29	<0.01	<0.01	<0.01	<0.01	<0.01	0.06
Nkwo Elechi Market – Umueme Road												
54	NAQUR21A	N 5.149946	E 7.384096	29/11/2024	12:08pm	30	<0.01	<0.01	<0.01	<0.01	<0.01	0.002
55	NAQUR21B	N 5.152428	E 7.389780	29/11/2024	12:20pm	34	<0.01	<0.01	<0.01	<0.01	<0.01	0.006
Umuagu Ohuru Amaisii – Osaa Ukwu – Itungwa												
56	NAQUR22A	N 5.148197	E 7.405294	29/11/2024	11:15am	40	<0.01	<0.01	<0.01	<0.01	<0.01	0.02
57	NAQUR22A	N 5.158728	E 7.422174	29/11/2024	11:22am	43	<0.01	<0.01	<0.01	<0.01	<0.01	0.06
58	NAQUR22A	N 5.192788	E 7.455564	29/11/2024	11:30am	47	<0.01	<0.01	<0.01	<0.01	<0.01	0.09
Umuariama Ahiaba Ubi – Nkwo Elechi												
59	NAQUR23A	N 5.172580	E 7.396850	29/11/2024	02:26pm	36	<0.01	<0.01	<0.01	<0.01	<0.01	0.010
60	NAQUR23B	N 5.161940	E 7.399710	29/11/2024	02:33pm	39	<0.01	<0.01	<0.01	<0.01	<0.01	0.008
Nkwo Elechi – Umuagu - Umuorukwu Osusu - Amaukwa Road												
61	NAQUR24A	N 5.146524	E 7.402134	29/11/2024	01:44pm	41	<0.01	<0.01	<0.01	<0.01	<0.01	0.010
62	NAQUR24B	N 5.139156	E 7.412730	29/11/2024	01:50pm	44	<0.01	<0.01	<0.01	<0.01	<0.01	0.007
63	NAQUR24C	N 5.134359	E 7.414119	29/11/2024	01:55pm	49	<0.01	<0.01	<0.01	<0.01	<0.01	0.004
64	NAQUR24D	N 5.130413	E 7.414704	29/11/2024	01:59pm	51	<0.01	<0.01	<0.01	<0.01	<0.01	0.001
Asa Umunka – Umugo – Ameyi Oza – Ozata – Ugwati Asa												
65	NAQUR25A	N 5.036754	E 7.316387	30/11/2024	02:32pm	45	<0.01	<0.01	<0.01	<0.01	<0.01	0.07
66	NAQUR25B	N 5.035171	E 7.303427	30/11/2024	02:40pm	46	<0.01	<0.01	<0.01	<0.01	<0.01	0.01
67	NAQUR25C	N 5.035271	E 7.305870	30/11/2024	02:46pm	49	<0.01	<0.01	<0.01	<0.01	<0.01	0.03
		National Environment (Noise Standard and Control) Regulation and FMEEnv Limits				50dB	10	0.04-0.06	0.01	0.2	0.008	0.1

NAQUR means Noise and Air Quality for Upgrade Road; 1, 2,3,4,5 stands for the serial numbers of the road as listed in Chapter 1; A, B, C, D stands for the points where samples were collected. E.g. A means point 1; B means point 2, etc.