



FEDERAL REPUBLIC OF NIGERIA

**ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA)
AND ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN
(ESMP) FOR THE SUPPORT TO NATIONAL PROGRAMME ON
MALARIA ELIMINATION AND NUTRITION IMPROVEMENT
PROJECT IN ANAMBRA STATE**

FINAL ESIA/ESMP REPORT

SUBMITTED TO

**PROJECT IMPLEMENTATION UNIT (PIU) MALARIA ELIMINATION AND
NUTRITION IMPROVEMENT PROGRAM**

ANAMBRA STATE MINISTRY OF HEALTH

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TABLE OF CONTENTS

DOCUMENT VERSION CONTROL.....	II
LIST OF TABLES	V
LIST OF FIGURES	V
LIST OF PLATES.....	VI
ABBREVIATIONS AND ACRONYMS.....	VII
ESIA AND ESMP PREPARATION TEAM	IX
EXECUTIVE SUMMARY	X
CHAPTER ONE: INTRODUCTION	1
1.1 BACKGROUND	1
1.2 PROJECT OBJECTIVES	2
1.3 PROJECT LOCATION	2
1.4 PROJECT PROPONENT	5
1.5 OBJECTIVE OF THE ESIA/ESMP.....	5
1.6 ADMINISTRATIVE AND LEGAL FRAMEWORK	5
1.6.1 Nigerian Administrative Framework.....	5
1.6.2 Relevant Nigerian Guidelines, Policies and Legal Provisions.....	6
1.6.2.1 National Policy on the Environment (Revised 1999).....	7
1.6.2.2 EIA Act Cap E12 LFN 2004	7
1.6.2.3 National Environmental Protection (Management of Solid and Hazardous Wastes) Regulations, 1991.....	8
1.6.2.4 National Environmental (Sanitation and Wastes Control) Regulations, 2009.....	8
1.6.2.5 National Environmental (Noise Standards and Control) Regulations, 2009.....	8
1.6.2.6 National Environmental (Surface & Groundwater Quality Control) Regulations 2011	8
1.6.2.7 Harmful Wastes (Special Criminal Provisions etc.) Act CAP HI LFN 2004.....	9
1.6.2.8 National Environmental Protection (Pollution Abatement in Industries and Facilities Generating Wastes) Regulations, 1991	9
1.6.2.9 Guidelines and Standards for Environmental Pollution Control in Nigeria, 1991	9
1.6.2.10 National Environmental Protection (Effluent Limitation) Regulations, 1991.....	9
1.6.2.11 Land Use Act CAP L5 LFN 2004.....	10
1.6.2.12 Public Health Law Cap 103 LFN 1990	10
1.6.2.13 Employee's Compensation Act, 2010.....	10
1.6.3 International Policies, Guidelines and Conventions	11
Figure 1.4. Structure of the AfDB ISS.....	11
1.7 EIA REPORT STRUCTURE	13
CHAPTER TWO: PROJECT JUSTIFICATION	14
2.1 PURPOSE AND NEED OF THE PROJECT.....	14
2.2 JUSTIFICATION FOR THE PROJECT	14
2.3 PROJECT OBJECTIVES	15
2.4 PROJECT DESIGN AND ALTERNATIVES CONSIDERED	16
CHAPTER THREE PROJECT DESCRIPTION	18
3.1 INTRODUCTION	18
3.2 PROJECT COMPONENTS.....	18
3.3 PROJECT COMPONENTS WITH POTENTIAL E&S IMPACTS.....	19
3.4 PROJECT IMPLEMENTATION SCHEDULE	19
CHAPTER FOUR: DESCRIPTION OF THE EXISTING ENVIRONMENT AND CONSULTATIONS	22
4.1 INTRODUCTION	22
4.2 DATA ACQUISITION APPROACH AND METHODS	22



4.3	PROJECT AREA OF INFLUENCE	22
4.3.1	Direct Area of Influence	22
	LOCATION OF MATERNAL AND CHILD HOSPITAL AND SENSITIVE RECEPTORS	29
4.3.2	DESKTOP STUDIES/LITERATURE REVIEW	30
4.3.3	SITE RECONNAISSANCE SURVEY AND FIELD DATA GATHERING.....	30
4.4	DESCRIPTION OF THE PHYSICAL AND BIOLOGICAL ENVIRONMENT	31
4.4.1	Climate and Meteorology	31
4.4.2	Air Quality.....	31
4.4.3	Noise Levels.....	33
4.4.4	Soils and Geology	33
4.4.5	Groundwater	33
4.4.6	DESCRIPTION OF THE BIOLOGICAL ENVIRONMENT.....	35
4.5	TRAFFIC.....	40
4.6	DESCRIPTION OF THE SOCIO-ECONOMIC ENVIRONMENT	40
4.7	STAKEHOLDER ENGAGEMENT AND CONSULTATIONS.....	40
	CHAPTER FIVE: ASSOCIATED AND POTENTIAL IMPACTS.....	52
5.1	INTRODUCTION	52
5.2	IMPACT ASSESSMENT APPROACH AND METHODS	52
5.2.1	Identification of Potential E&S Impacts for all Project Phases.....	54
5.2.2	Impact Characterization	54
5.2.3	Impact Evaluation, Significance Ranking and Mitigation Measures.....	59
5.3	IMPACT MITIGATION OR ENHANCEMENT MEASURES.....	59
	CHAPTER SIX: MITIGATION AND ENHANCEMENT MEASURES	60
6.1	INTRODUCTION	60
6.2	MITIGATION APPROACH	60
6.3	MITIGATION AND ENHANCEMENT MEASURES.....	60
	CHAPTER SEVEN: ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN (ESMMP)	64
7.1	INTRODUCTION	64
7.2	ENVIRONMENTAL AND SOCIAL IMPACTS AND MITIGATION (ESMP)	64
7.3	INSTITUTIONAL ARRANGEMENT FOR ESMP IMPLEMENTATION.....	64
7.4	TRAINING, AWARENESS AND COMPETENCE	71
7.5	MONITORING AND REPORTING	71
7.6	IMPLEMENTATION SCHEDULE	72
7.7	CONTRACTUAL MEASURES.....	73
7.8	COST ESTIMATES FOR ESMP IMPLEMENTATION.....	73
7.9	ESMP DISCLOSURES	74
7.10	PROGRAM GRIEVANCE REDRESS MECHANISM (GRM).....	74
7.10.1	AfDB Grievance Redress Mechanism Approach	74
7.10.2	GRM at project level.....	75
7.10.3	Appointing members of Grievance Redress Committees (GRC)	76
7.10.4	Procedures, complaints channels and time frame for Grievance Redress Mechanisms.....	77
7.10.5	The AfDB's Independent Review Mechanism (IRM)	78
	APPENDIX I: LIST OF PEOPLE MET DURING CONSULTATIONS.....	79
	APPENDIX 2: GENERAL ENVIRONMENTAL MANAGEMENT CONDITIONS FOR CONSTRUCTION CONTRACTS ..	82
	GENERAL CONDITIONS OF CONTRACT	82
	WORKSITE WASTE MANAGEMENT	83
	REHABILITATION AND SOIL EROSION PREVENTION	83



WATER RESOURCES MANAGEMENT	84
TRAFFIC MANAGEMENT	84
DISPOSAL OF UNUSABLE ELEMENTS	84
HEALTH AND SAFETY	84
REPAIR OF PRIVATE PROPERTY	84
CONTRACTOR'S ENVIRONMENT, HEALTH AND SAFETY MANAGEMENT PLAN (EHS-MP)	85
EHS REPORTING	85
TRAINING OF CONTRACTOR'S PERSONNEL	86
COST OF COMPLIANCE	86
EXAMPLE FORMAT: EHS REPORT	86
EXAMPLE FORMAT: EHS INCIDENT NOTIFICATION	86

LIST OF TABLES

TABLE 1.1. LOCATIONS OF THE FACILITIES SELECTED TO BE REHABILITATED THROUGH THE PROGRAM	3
TABLE 1.2. CONTACT DETAILS OF THE PROJECT PROPONENT	5
TABLE 1.3. AfDB OPERATIONAL SAFEGUARDS OS1-5	12
TABLE 2.1. PROJECT ALTERNATIVES CONSIDERED AND REASONS FOR REJECTION	16
TABLE 3.1. PROJECT COMPONENTS	18
TABLE 3.2. PROJECT COMPONENTS WITH POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS.	20
TABLE 4.1. SENSITIVE RECEPTORS IDENTIFIED IN THE PROJECT AREA OF INFLUENCE DURING THE SITE VISIT	23
TABLE 4.2. SUMMARY OF THE BASELINE DATA COLLECTED DURING THE FIELD WORKS	30
TABLE 4.3. DETAILS OF THE AIR QUALITY AND NOISE DATA COLLECTED AS PART OF THE BASELINE SURVEYS	32
TABLE 4.4. DESCRIPTION OF SOILS OF THE PROJECT AREAS	33
TABLE 4.5. RESULTS OF GROUNDWATER ANALYSIS	34
TABLE 4.6. BIODIVERSITY OF THE PROJECT AREA	36
TABLE 4.7. TRAFFIC COUNT ON THE MAIN ROADS AROUND THE HEALTH CARE FACILITIES	40
TABLE 4.8. SOCIAL CHARACTERISTICS OF PROJECT AREAS	41
TABLE 4.9. SUMMARY OF STAKEHOLDER CONSULTATION UNDERTAKEN	43
TABLE 5.4. IMPACT CHARACTERIZATION PARAMETERS AND DEFINITION	54
TABLE 5.1. IDENTIFIED IMPACTS OF PROPOSED INTERVENTIONS AT SELECTED FACILITIES IN ANAMBRA STATE	55
TABLE 6.1. MITIGATION AND ENHANCEMENT MEASURES	61
TABLE 7.1. ROLES AND RESPONSIBILITY OF INSTITUTIONS IN THE IMPLEMENTATION AND MONITORING OF THE ESMMP	65
TABLE 7.2. PROPOSED TRAINING PROGRAM FOR THE IMPLEMENTATION OF ESMP	71
TABLE 7.3. INTERNAL AND EXTERNAL MONITORING OF THE IMPLEMENTATION OF THE ESMP	72
TABLE 7.4. TENTATIVE ESMP IMPLEMENTATION SCHEDULE	72
TABLE 7.5. CONTRACTUAL MEASURES	73
TABLE 7.6. ESTIMATED BUDGET FOR THE IMPLEMENTATION OF ESMP	73
TABLE 7.7. DISCLOSURE PROCEDURE TO COMPLY WITH NIGERIAN REGULATIONS	74

LIST OF FIGURES

FIGURE 1.1. ADMINISTRATIVE MAP OF NIGERIA SHOWING ANAMBRA STATE	3
FIGURE 1.2. LOCATION OF THE SELECTED HEALTH CARE FACILITIES IN ANAMBRA STATE	4
FIGURE 1.3. THE ESIA/ESMP DEVELOPMENT FLOWCHART	8
FIGURE 1.4. STRUCTURE OF THE AfDB ISS	11
FIGURE 4.1. LOCATION MAP OF HEALTHCARE FACILITIES AND IMMEDIATE ENVIRONMENT	26
FIGURE 5.1. OVERVIEW OF IMPACT ASSESSMENT PROCESS	53



LIST OF PLATES

Plate 2.1: Existing Poor Conditions of the Healthcare Facilities.....	15
Plate 4.1: Features of The Immediate Environment of Project Areas	25
Plate 4.2: Environmental (Air Quality, Noise Level, Water Quality And Biodiversity) Assessment at the Various PHC Facilities.	35
Plate 4.3. Ecological Diversity And Issues In The Project Areas.....	39
Plate 4.4: Consultations and Some E&S Issues Across The Intervention Areas	51



ABBREVIATIONS AND ACRONYMS

ACT	Artemisinin-based Combination Therapy
AfDB	African Development Bank
AIDS	Acquired Immune Deficiency Syndrome
ASWAMA	Anambra State Waste Management Agency
BAT	Best Available Technology
BPT	Best Practicable Technology
CHC	Comprehensive Health Centre
DLI	Disbursement Link Indicator
E&S	Environmental and Social Artemisinin
ESO	Environmental Safeguard Officer
ERGP	Economic Recovery and Growth Plan
ESIA	Environmental and Social Impact Assessment
ESMMP	Environmental and Social Management and Monitoring Plan
ESMP	Environmental and Social Management Plan
FGN	Federal Government of Nigeria
FME _{Env}	Federal Ministry of Environment
FPMU	Federal Project Management Unit
GBV	Gender Based Violence
GRM	Grievance Redress Mechanism
HSE	Health Safety and Environment
HIV	Human Immunodeficiency Virus
IPT	Intermittent Preventive Treatment
IRM	Independent Review Mechanism
ISS	Integrated Safeguard System
IUCN	International Union for Conservation of Nature
IYCF	Infant and Young Child Feeding
LFN	Laws of the Federation of Nigeria
LGA	Local Government Areas
LLIN	Long Lasting Insecticidal Nets
MCH	Maternal and Child Hospital



M&E	Monitoring and Evaluation
MDA	Ministries, Departments and Agencies
NESREA	National Environmental Standards and Regulations Enforcement Agency
NHIS	National Health Insurance Scheme
NMEP	National Malaria Elimination Programme
NSA	Non State Actors
OIC	Officer in Charge
OPD	Out Patient Department
OS	Operational Safeguards
PHC	Primary Health Care
PIU	Project Implementation Unit
PPE	Personal Protective Equipment
RDT	Rapid Diagnostic Tests
RTA	Road Traffic Accident
SAM	Severe and Acute malnutrition
SEA	Sexual Exploitation and Abuse
SDG	Sustainable Development Goals
SME	State Ministry of Environment
SPIU	State Project Implementation Unit
SSO	Social Safeguard Officer
STDs	Sexually Transmitted Diseases
UES	Uniform Effluent Standards
WHO	World Health Organization
WMP	Waste Management Plan



ESIA AND ESMP PREPARATION TEAM

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EXECUTIVE SUMMARY

Introduction

Health is one of the key sectors with great considerations in the Economic Recovery and Growth Plan (ERGP) of the Federal Government of Nigeria. The sector requires critical intervention from both public and private sectors to improve service delivery, most importantly to pregnant women, children under the age of 5 and people of old age. This improvement is also required to achieve Goal 3 of the SDG which covers good health and wellbeing. As part of the ERGP, the Federal Government of Nigeria (FGN) has recently developed intervention to support the implementation of National Program on Malaria Elimination and Nutrition Improvement Project, a program to support malaria elimination and improve nutrition among the populace in Nigeria.

Two states of Anambra and Ondo have been selected to be among the first states to benefit from the intervention. In these states, some healthcare facilities have been selected for a wide range of interventions which includes improvement and renovations. Specifically, for Anambra state, seven health care facilities have been identified for various interventions covering renovation of existing structures, construction of new staff quarters, provision of water supply infrastructure and provision of solar power source to enhance operations and improve service delivery in these facilities.

Project Objectives

The project development objective is a reduction in under-5 morbidity and mortality through improved delivery of quality and cost-effective malaria and nutrition services for children and pregnant women in Anambra and Ondo States. The specific objectives of the project, which are in line with the National Health Policy, Malaria Elimination strategic plan as well as the National Nutrition Plan, include, the specific objectives of the project are:

- To increase the percentage of children under-5 sleeping inside Long Lasting Insecticidal Nets.
- To increase the percentage of children aged under 5 years with fever receiving Rapid Diagnostic Tests and Artemisinin-based Combination Therapy (ACT) within 24 hours.
- To increase the percentage of pregnant women receiving appropriate doses of Intermittent Preventive Treatment (IPT) during antenatal care.
- To improve behaviour and knowledge of parents/community on the prevention and management of malaria and malnutrition.
- To improve exclusive breastfeeding practices for infants 0-6 months.
- To improve Infant and Young Child Feeding (IYCF) practices for children 6-59 months

Project Description

As part of the intervention, selected health care facilities will benefit from various civil work interventions including renovation works (main building and staff quarters), construction of new staff quarters, provision of water supply facilities and provision of solar power source to enhance their operations amongst others. A total of 7 health care facilities across the State have been selected for inclusion the program, as shown in Table A and Figure A.



Table A. Health care facilities in Anambra State considered in the program

Senatorial District	Local Government Area (LGA)	Name of Facility	Location	Scope of activities to be carried out
Anambra North	Anambra East	Maternal and Child Hospital	Otuocha	<ul style="list-style-type: none"> • Rehabilitation of main building • Rehabilitation of male ward • Construction of new twin 1BR staff quarter • Rehabilitation of fence • Paving of some part of the floor • Provision of solar panel • Water supply (Overhead tank, pump, piping)
	Ogbaru	Primary Health Centre (PHC)	Atani I	<ul style="list-style-type: none"> • Rehabilitation of main building • Rehabilitation of Staff quarters (2) • Rehabilitation of fence • Paving of some part of the floor • Provision of solar panel
Anambra Central	Awka South	Central Pharmaceutical Stores	Amaku, Awka	<ul style="list-style-type: none"> • Drilling and installation of motorized borehole with solar panel • Water supply (Overhead tank, pump, piping)
	Anaocha	Primary Health Centre (PHC)	Adazi-Ani Ward I	<ul style="list-style-type: none"> • Rehabilitation of main building • Rehabilitation of Staff quarters • Construction of new twin 1BR staff quarter • Rehabilitation of fence • Paving of some part of the floor • Provision of solar panel
	Idemili South	Primary Health Centre (PHC)	Awka Etiti I	<ul style="list-style-type: none"> • Rehabilitation of Staff quarters (5) • Construction of new twin 1BR staff quarter • Rehabilitation of fence (Painting) • Paving of some part of the floor • Provision of solar panel
Anambra South	Ihiala	Primary Health Centre (PHC)	Ubahumonu, Okija	<ul style="list-style-type: none"> • Rehabilitation of main building • Rehabilitation of Staff quarters (2) • Rehabilitation of fence • Paving of some part of the floor • Provision of solar panel • Water supply (Overhead tank, pump, piping)
		Primary Health Centre (PHC)	Azia	<ul style="list-style-type: none"> • Rehabilitation of main building • Rehabilitation of fence • Paving of some part of the floor • Provision of solar panels • Drilling and installation of motorized borehole with solar panel

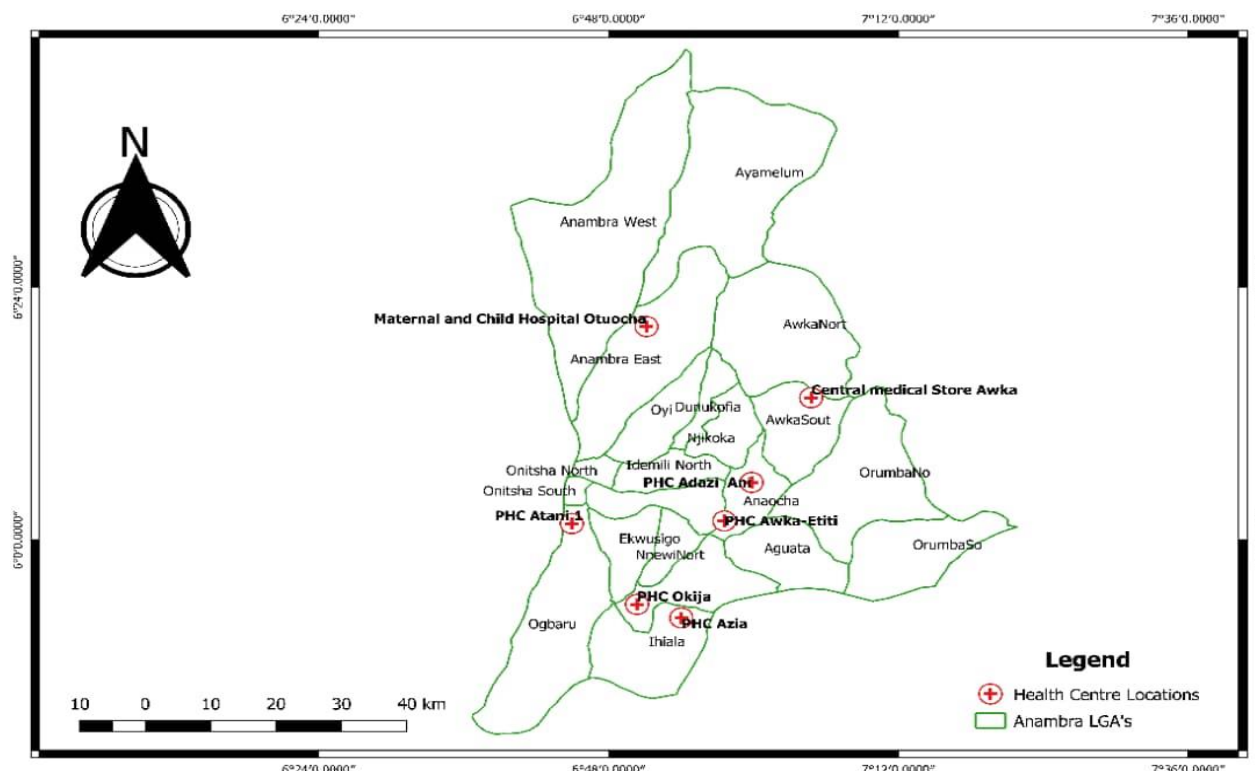


Figure A. Location of the selected health care facilities in Anambra State

The intervention will entail medium-sized civil engineering activities, particularly renovations and construction of new buildings, which have the potentials to cause negative environmental and social (E&S) risks and impacts. In line with the provisions of the Environmental Impact Assessment (EIA) Act Cap E12 LFN 2004 mandating an EIA to be undertaken for public and private projects in order to assess the significance of all potential environmental and social impacts as well as propose appropriate mitigation measures in the form of an Environmental and Social Management Plan (ESMP). The ESIA was prepared in line with all applicable environmental legislation of the Federal Republic of Nigeria as well as international best practice such as the African Development Bank Integrated Safeguards System.

Environmental and Social Baseline

Detailed baseline surveys were undertaken to determine the baseline physical, biological and socio-economic conditions of all the project sites based on identified sensitive receptors within the project area of influence. Field surveys were undertaken in September 2019 to assess the baseline conditions of the project environments as well as consult with stakeholders including PAPs around the project area. The baseline conditions are summarized below.

- Climate and Meteorology.** The project areas fall within the predominant climatic conditions of Anambra state which is in the tropical rainforest zone of Nigeria. The temperature in Anambra is generally 27-30°C between June and December but rises to 32-34 °C between January and April, with the last few months of the dry season marked by intense heat. Air temperature values are generally slightly higher for the dry season months than the wet season months. The tropical climate of the project area is broadly of two seasons: rainy season (April - October) and dry season (November – March). The



dry periods is usually marked by a Harmattan wind, which is a particularly dry and dusty. This wind is also characterized by a grey haze limiting visibility and blocking the sun's rays before dissipating and leading to extreme dry heat in the latter months of February and March.

- **Air Quality.** Baseline air quality data indicate that all pollutants measured were either not detected or within acceptable FMEnv limits. Consequently, the ambient air quality in the area can be adjudged to be good. The air shed within the project area of influence is not degraded.
- **Noise Levels.** The ambient daytime noise levels recorded within the sampling locations ranged between 30.2– 76.9 dB(A). Elevated noise levels greater than 60 dB(A) were recorded in Awka (an urban city) and at PHC Atani and MCH Otuocha due to vehicular movement along adjoining expressway. Generally, the collated results show that the values were below the FMEnv permissible Noise Exposure Limits of 90 dB(A).
- **Biological Environment.** Due to the setting of the facilities, several domesticated plants were identified in the vicinity of the project sites. **Cereals** – maize (*Zea mays*)
Tubers – Sweet potato (*Ipomea batatas*) Cassava (*Manihot esculentus*), yams (*Dioscorea* spp.), cocoyam (*Celosia esculentus*),
Oil crops - Oil palm (*Elaeis guineensis*), egusi melon (*citrullus lanatus*)
vegetables: *Talinum triangulare* (water leaf), amaranthus (*Amaranthus cruentus*, *A. hybridus*), okra (*Abelmoschus esculentus*), jute mallow (*Corchorus olitorius*), egg-plant (*Solanum raddi*, *S. melongena*), bitter leaf (*Vernonia amygdalina*), Scent leaf (*Ocimum gratissimum*)
Fruits: African pear (*Dacryodes edulis*), Sycamore (*Ficus sycomorus*), Almond fruit (*Terminalia catappa*), Banana (*Musa sapientum*) and plantain (*Musa paradisiaca*), pawpaw (*Carica papaya*), orange (*Citrus* spp.), mango (*Mangifera indica*), cashew (*Anacardium occidentale*), Avocado pear (*Persea americana*),
Weeds: Sensitive plant (*Mimosa pudica*), Spear grass (*Imperata cylindrica*), Siam weed (*Chromolaena odorata*), Mariscus (*Mariscus alternifolius*), Carpet grass (*Axonopus compressus*), False thistle (*Acanthus montanus*) No species of IUCN Red List conservation status were identified in the project areas.

Reported and observed species at this location consists of vertebrate animals like:

Domestic goat (*Capra aegagrus hircus*), Domestic dog (*Canis lupus familiaris*), Domestic pig (*Sus scrofa domesticus*), agama lizard (*Agama agama*), and invertebrates such as: high populations of Termites (*Marcotermes bellicosus*), Black Ant (*Lepisiota sp.*), House Flies (*Musca domestica*), Centipede (*Lithobius forficatus*), White Butterfly (*Pieris rapae*), Monarch Butterfly (*Danaus plexippus*).

- **Socio-economic baseline.** The health care facilities are located within 6 LGAs with Igbo being the tribal language. Religious practices include Christianity and traditional worship. Most households in the States obtain water from boreholes and rain water. The residents are mostly farmers, artisans, traders and civil servants.



Potential Environmental and Social Impacts

The activities associated with the implementation of the proposed interventions at selected health care facilities especially the civil engineering aspects can result in varying degrees of impacts on the bio-physical and social environment.

Pre-Construction and Construction Phase Impacts

1. Deterioration of local air quality due to the release of fugitive dusts and gaseous pollutant emissions from heavy duty vehicles transporting personnel, equipment and materials to site.
2. Noise and vibration disturbances from movement of heavy-duty vehicles.
3. Soil compaction and increased susceptibility to erosion as a result of operation and stationary positioning of heavy-duty vehicles.
4. Disturbance and displacement of terrestrial fauna as a result of noise and vibration from heavy duty vehicles.
5. Increased risk of social unrest if construction workers are not recruited from the local community
6. Disruption of traffic flow and increased risk of Road Traffic Accidents (RTAs) due to movement of heavy-duty vehicles.
7. Risk of security breaches and threat to lives and properties due to storage of materials and equipment on site.
8. Employment of local labour.
9. Risks of Gender Based Violence (GBV)/Sexual Exploitation Abuse (SEA) resulting from the interaction between contractors and members of the communities.
10. Interaction between workforce and local communities may increase occurrence of communicable diseases, including HIV/AIDS and Sexually Transmitted Diseases (STDs).
11. Differences in ethnicity, religion, etc. may lead to discrimination and harassment, and differences (perceived or real) in working conditions between workers may lead to resentment.
12. Poor management of occupational health and safety leading to accidents, injuries and illnesses among workers

Operational Phase Impacts

1. Generation of solid waste from the usage of renovated and new buildings
2. Generation of Hazardous waste streams like used batteries, used solar panels, fluorescent tubes and Spent oil
3. Generation of increased medical waste as the intervention s will improve utilisation of the facilities
4. Increased noise level from the use of Generator
5. Improved quality of life and reduced infant mortality rates resulting from improved treatment of malaria at the new health care facilities

Mitigation Measures



- **Air Quality.** Implementation of dust control and suppression measures, such as use of dampening and wetting; Use of modern equipment meeting appropriate emissions; Standards, and regular preventative maintenance; Encourage increased fuel efficiency in project vehicles (e.g. selection of fuel in order to minimise harmful emissions); No use of ozone depleting substances during construction.
- **Noise and Vibration.** Use of noise barriers to screen receptors, e.g. with berms or bunds; Use of modern, well maintained equipment fitted with abatement devices (e.g. mufflers, noise enclosures); Strict controls of timing of activities e.g. blasting and other high noise emissions; prohibition on night working if possible.
- **Soil compaction and erosion.** Avoidance of areas liable to flooding, slope instability, and water crossings where possible; Retention of topsoil for restoration (including tilling and revegetation) as soon as practicable.
- **Traffic risk and awareness.** Develop and implement a traffic management plan covering materials delivery as well as all project vehicles
- **Security.** Develop a security management plan and work with relevant agencies to secure lives and properties within the project environment
- **Waste Management.** Preparation of Waste Management Plan following the waste hierarchy, supported by staff training; Use of authorized contractors for hazardous and any other wastes which the project cannot dispose of safely. Also all hazardous waste generated shall be quarantined pending the time of evacuation and disposal.
- **Occupational health and Safety.** Provide adequate PPE and enforce its use; Provide first aid on site work with facilities for immediate treatment in case of any injury.
- **Conflict with communities.** Engage the communities before the commencement of project intervention and identify amenities that workers may need to leverage on. Where they are inadequate, project should help to improve them
- **Interaction between workforce and local communities may increase occurrence of communicable diseases, including HIV/AIDS and sexually transmitted diseases (STDs).** Training and awareness raising for workforce and their dependents on HIV/AIDS and other STDs, and communicable diseases including malaria; health awareness raising campaigns for communities on similar topics; Provision of opportunities for workers to regularly return to their families.

Estimated ESMP implementation and monitoring costs

The Environmental and Social Mitigation Monitoring and Evaluation shall be integrated into the overall M&E programme for the Project. The cost of mitigation by the Contractor will be included in the contract as part of the implementation cost by the Contractor. The total estimated cost for the ESMP implementation and monitoring is **₦22, 890,000 (US\$ 62,712.00)**.



Table B. Estimated Budget for the Implementation of ESMP

Item	Responsibility	Cost Estimate in Nigerian Naira (N)	Cost Estimate in US Dollars (US\$)*
ESMP implementation	Contractor, SPIU	10,800,000	29,589
ESMP Monitoring	SPIU, MDAs	7,100,000	19,452
Training and capacity building	SPIU, SME and other MDAs	2,400,000	6,575
Grievance Redress Mechanism (GRM)	SPIU	1,000,000	2,740
Disclosure	SPIU	500,000	1,370
Sub-Total		21,800,000	59,726
Contingency	5% of Sub- Total	1,090,000	2,986
Total		22,890,000.00	62,712.00

*1 US\$ =N365

Institutional Arrangement for the implementation of the ESMP

The successful implementation of the monitoring program will depend on the commitment and capacity of the PIU, E&S safeguards Officers, consultants and other third parties/institutions to implement the program effectively. **The PIU will have principal responsibility for all measures outlined in this ESMP but will delegate certain responsibilities to its contractors and supervising consultant.** Given that most of the mitigation measures are the obligations of the Contractor during project implementation, the contractor shall prepare the Contractor's ESMP (C-ESMP) taking into account the measures in this ESMP.

Additional roles in the implementation of the ESMP will include the Federal Ministry of Environment, Anambra State Ministry of Environment, Anambra State Ministry of Health, Safeguard Unit, (Environmental & Social) from Anambra State Ministry of Environment and an external E & S consultant.

E & S Capacity Building

Engagement with the State Project Implementation Unit (SPIU) and relevant other stakeholders including LGA departments revealed that they are not very conversant with environmental regulations and requirements, including the AfDB ISS as well as some components of the ESMP implementation with regards to Gender-Based Issues, labour influx and Grievance Redress Mechanisms. A capacity building program has been developed for a range of stakeholders including SPIU (Safeguard Unit, M&E Officers), relevant staff of FMEnv (EA Dept.), relevant staff of Anambra State Ministry of Environment, other relevant MDAs, LGA departments and Contractors.

Stakeholder Engagement and Consultation

Detailed consultations were undertaken with a range of stakeholders including the State Project Implementation Unit, workers at selected facilities as well as the PAPs around project areas between the 12 and 13 September 2019. Generally, all stakeholders praised the project and the benefits that will arise from it for the people of Anambra State. Major concerns raised included



the risk of interruption of normal activities at the health facilities during project implementation, risk of accidents and the need for continuous engagements and communication with communities and staff. Appropriate mitigation measures have been included in the ESMP.

Following the review and clearance of this ESMP by the PIU, it will be disclosed at the National and local levels by the SPIU in line with the applicable Nigerian EIA laws and regulations as set out in Table C below.

Table C. Disclosure Procedure to comply with Nigerian regulations

Action	Remarks
Disclosure on 2 national newspapers	The FPMU/SPIU will disclose the ESMP as required by the Nigeria EIA public notice and review procedures. This entails advert in 2 newspapers; one national and one local (state) newspaper
Disclosure at the Federal Ministry of Environment office	The SPIU will disclose the ESMP as required by the Nigeria EIA public notice and review procedures
Disclosure at the Anambra State Ministry of Environment	The SPIU will disclose the ESMP as required by the Nigeria EIA public notice and review procedures
Disclosure at the SPIU Office	The SPIU will display the ESMP as required by the Nigeria EIA public notice and review procedures
Disclosure at host LGA office & the host Health Facilities	The purpose will be to inform stakeholders about the project activities; environmental and social impacts anticipated and proposed environmental and social mitigation measures.

ESMP Monitoring and Reporting

A program of monitoring (internal and external) and reporting of the implementation of the ESMP will be adopted as presented below. Monitoring results shall be documented with preventive/corrective actions to be implemented.

Table D. Internal and External Monitoring of the implementation of the ESMP

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



				actions where necessary.
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Bidding Documents and E & S Clauses

Most of the mitigation measures are the obligation of the Contractor during all phases of the project. Consequently, the potential contractor will have to prepare their proposals taking into account the measures below and the E & S clauses detailed in Appendix I of the ESIA

Table E. Contractual Measures

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

Conclusion

The identified environmental and social impacts are all of moderate to low significance, reducing significantly after implementation of the mitigation measures. The stakeholders engaged with during the preparation of the EIA were broadly in support of the interventions at the health facilities. Overall, the project will be environmentally sustainable if implemented in line with the recommendations included in the ESMP.



CHAPTER ONE: INTRODUCTION

1.1 Background

The Economic Recovery and Growth Plan (ERGP) of the Federal Government of Nigeria (FGN) is the major government's plan for economic resurgence and growth. The Plan articulates the most recent Medium-Term Development Economic Policy Thrust (2017 – 2020) with three broad strategic objectives to help achieve the vision of inclusive and sustainable growth, namely (i) restoring growth, ii) investing in the people, iii) building a globally competitive economy.

One of the key sectors with great considerations in the ERGP is health. The sector requires critical intervention from both public and private sectors to improve service delivery, most importantly to pregnant women, children under the age of 5 and people of old age. This intervention is also required to boost Nigeria's chances of achieving goal 3 of the Sustainable Development Goals. As part of the ERGP, the FGN has recently developed intervention to support the implementation of National Program on Malaria Elimination and Nutrition Improvement Project, a program to support malaria elimination and improve nutrition among the populace in Nigeria.

The intervention designed to support the National Programme on Malaria Elimination and Nutrition Improvement Project in Anambra State is in direct linkage with the ERGP's second objective which is to improve human capital development in the health sector. Specifically, the FGN intends to invest in health and education to fill the skills gap in the economy thereby meeting the international targets set under the United Nation's Sustainable Development Goals (SDGs) for these sectors. The ERGP will improve the accessibility, affordability and quality of healthcare and expand coverage of the National Health Insurance Scheme (NHIS) across the country. The Support to National Programme on Malaria Elimination and Nutrition Improvement Project will build on the achievements of the Health Systems Development Project which was implemented in twelve states and supported by African Development Bank (AfDB) between 2003 and 2010.

Two states of Anambra and Ondo have been selected to be among the first states to benefit from the intervention. In these states, some healthcare facilities have been selected for a wide range of improvement and renovation. Specifically, for Anambra state, seven health care facilities have been identified for various interventions including renovation of existing buildings, building of new staff quarters, provision of water supply infrastructure and provision of solar power source to enhance operations and improve service delivery in these facilities.

The intervention will entail medium-sized civil engineering activities, particularly renovations and construction of new buildings, which may have the potential to cause negative environmental and social (E&S) risks and impacts. In line with the EIA Act of 2004, all major developments with potentials to cause negative environmental and social impacts are required to go through the EIA process to assess the significance of all potential environmental and social impacts as well as propose appropriate mitigation measures in the form of an Environmental and Social Management Plan (ESMP).

The Project Implementation Unit (PIU) in Anambra State has commissioned **Ecosphere Consulting Limited** to undertake an Environmental and Social Impact Assessment (ESIA) and prepare an Environmental and Social Management Plan (ESMP) for the proposed project. The



ESIA will identify and assess these E&S issues, evaluate alternatives and propose appropriate measures to manage them through the development of an Environmental and Social Management Plan (ESMP) to ensure that the proposed project is environmentally sound and sustainable.

1.2 Project Objectives

The overall sector goal of the proposed project is to contribute to improvement in the quality of life for the people in Anambra State. The project development objective is to achieve a reduction in morbidity and mortality rate in pregnant women and children under-5 through improved delivery of quality and cost-effective malaria and nutrition services.

The specific objectives which are in line with the National Health Policy, Malaria Elimination Strategic Plan, as well as the national nutrition plan include:

- To increase the percentage of children under-5 sleeping inside Long Lasting Insecticidal Nets.
- To increase the percentage of children aged under 5 years with fever receiving Rapid Diagnostic Tests and Artemisinin-based Combination Therapy (ACT) within 24 hours.
- To increase the percentage of pregnant women receiving appropriate doses of Intermittent Preventive Treatment (IPT) during antenatal care.
- To improve behaviour and knowledge of parents/community on the prevention and management of malaria and malnutrition.
- To improve exclusive breastfeeding practices for infants 0-6 months.
- To improve Infant and Young Child Feeding (IYCF) practices for children 6-59 months.

In order to achieve the above objectives, there is therefore the need to rehabilitate and modernize existing health care facilities in a number of locations across the State. The facilities are selected based on needs assessments undertaken by the State Ministry of Health. The rehabilitation of these facilities will also offer opportunities for improved environmental, sanitation, hygiene and infection control performance at the facilities.

1.3 Project Location

Anambra State is located in the South-South region of Nigeria as shown on Figure 0.1

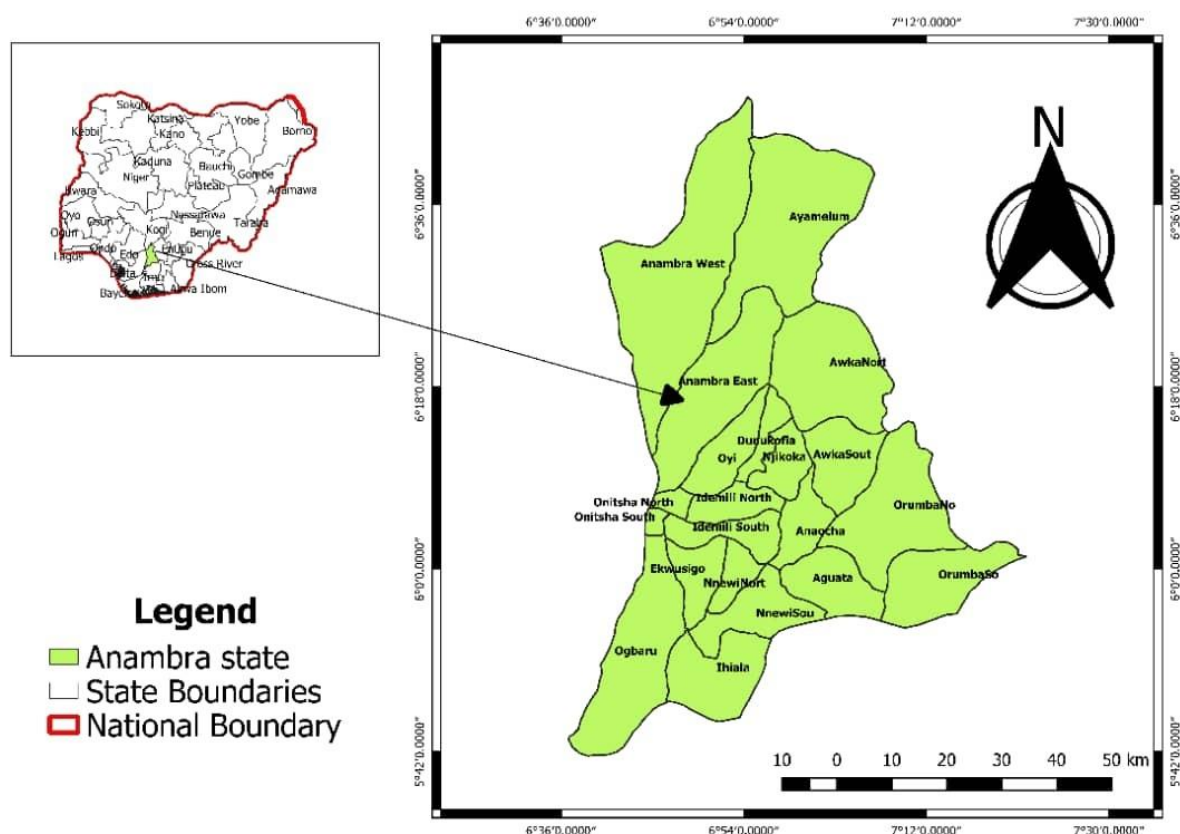


Figure 0.1. Administrative Map of Nigeria Showing Anambra State

The project locations are presented in Table 0.1 and represented in Figure 0.2 below.

Table 0.1. Locations of the facilities selected to be rehabilitated through the program

Senatorial District	Local Government Area (LGA)	Name of Facility	Location	Coordinates	
				Latitude	Longitude
Anambra North	Anambra East	1. Maternal and Child Hospital	Otuocha	06°20'17.6"	006°51'07.8"
	Ogbaru	2. Primary Health Centre (PHC)	Atani I	06°01'34.0"	006°44'57.2"
Anambra Central	Awka South	3. Central Pharmaceutical Stores	Amaku, Awka	06°13'29.8"	007°04'46.3"
	Anaocha	4. Primary Health Centre (PHC)	Adazi-Ani Ward I	06°05'28.3"	006°59'49.8"
	Idemili South	5. Primary Health Centre (PHC)	Awka Etiti I	06°01'52.2"	006°57'34.8"
Anambra South	Ihiala	6. Primary Health Centre (PHC)	Ubahumonu, Okija	05°53'54.1"	006°50'20.7"
		7. Primary Health Centre (PHC)	Azia	05°52'37.4"	006°54'00.6"

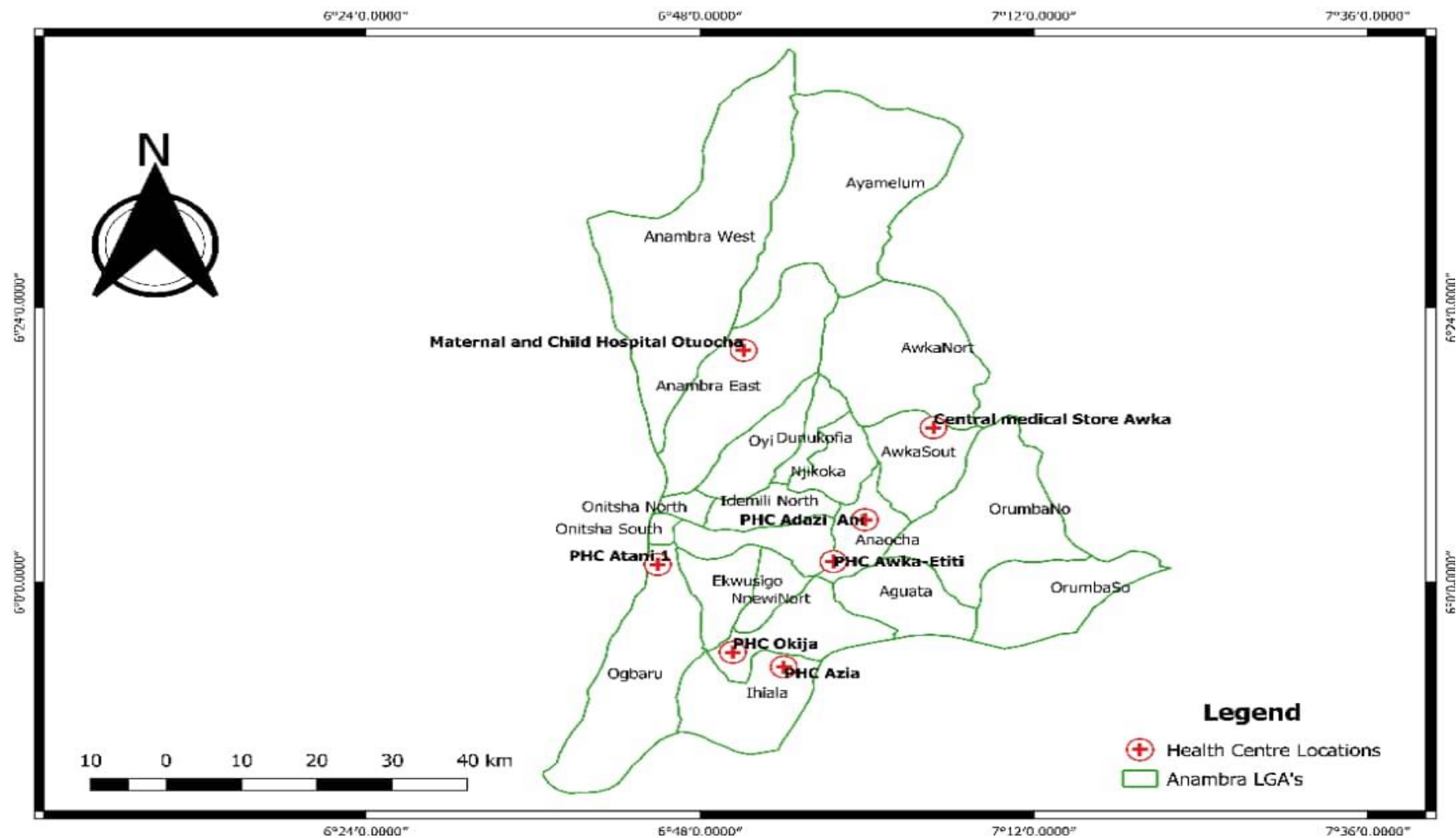


Figure 0.2. Location of the selected health care facilities in Anambra State



1.4 Project Proponent

The project proponent is the Ministry of Health Anambra State through the Malaria Elimination and nutrition Improvement Project Implementation Unit. The contact details are shown on **Erreur ! Source du renvoi introuvable.**

Table 0.2. Contact details of the project proponent

Designation	Name	Contact Number
Honourable Commissioner, Ministry of Health	Dr Vincent Akpala	+2347089946169
Permanent Secretary, Ministry of Health	Dr. Ogochukwu John Ndibe	+2348083129986
Director, Public Health & Diseases Control Ministry of Health	Dr Uchechukwu Onyejimbe	+2348030610303
Program Coordinator	Mr. Nonso Ndibe	+234 803 209 7792

1.5 Objective of the ESIA/ESMP

The overall objective of this ESIA is to identify and evaluate all potential adverse environmental and social impacts and effects that could arise from the proposed interventions including renovations, construction of new buildings, borehole drilling, and installation of Air Conditioners and Generator as well as Solar panel installations. Potential adverse environmental and social impacts have been identified and appropriate mitigation measures have been developed to mitigate the identified negative impacts on the bio-physical and social¹ environment. Ultimately, the outcome of this ESIA will shape the final project designs and project implementation processes to assure the sustainable management of the environment during project implementation.

1.6 Administrative and Legal Framework

This section provides an overview of the institutional structures, policies, laws and regulations applicable to the proposed interventions as well as environment and social (E&S) sustainability in Anambra State and Nigeria at large. In addition, other relevant international E&S standards, policies and agreements to which Nigeria is a party are also discussed.

1.6.1 Nigerian Administrative Framework

This section highlights the relevant national, state and Local Government institutions with the core mandate for environmental protection and the health sector governance in Nigeria. The section succinctly summarises their roles and responsibilities as applicable to the implementation of proposed projects.

1.6.1.1 Federal Ministry of Environment

The Federal Ministry of Environment (FME_{env}) which was formerly known as the Federal Environmental Protection Agency (FEPA) was established in 1999 through Decree No. 58 of 1988 as amended by Decree No. 59 of 1992. The Ministry is the statutory government institution mandated to coordinate environmental protection and natural resources conservation for sustainable development in Nigeria. Some of the other mandates of the Ministry include:

- Advising the Federal Government on national environmental policies and priorities, conservation of natural resources, sustainable development as well as scientific and technological activities affecting the environment and natural resources; and

¹ social environment include but not limited to economy, culture, labour and community health



- Prescribing standards and formulating regulations on water quality, effluent limitations, air quality, atmospheric protection, ozone protection, noise control as well as the removal and control of hazardous substances.

As established in the EIA Act 86 of 1992, all public and private projects likely to negatively affect the environment must go through the EIA process administered by the FMEnv including oil and gas production and mining activities. The EIA Division of the Environmental Assessment (EA) Department at the FMEnv is the main administrative unit responsible for overseeing the EIA process, preparing documents and developing the procedures necessary for decision making on project certification by the Minister of Environment.

1.6.1.2 National Environmental Standards and Regulations Enforcement Agency

The National Environmental Standards and Regulations Enforcement Agency (NESREA) was established by the NESREA Act of 30th July 2007 as an Agency of the FMEnv. NESREA is charged with the responsibility of enforcing all environmental laws, guidelines, policies, standards and regulations in Nigeria. It also has the responsibility to enforce compliance with provisions of international agreements, protocols, conventions and treaties on the environment to which Nigeria is a party.

1.6.1.3 Anambra State Ministry of Environment

The Anambra State Ministry of Environment (SME) has the responsibilities of protecting the environment within the state. The ministry's functions related to environmental matters include:

- Liaise routinely and ensure effective harmonization with Federal Ministry of Environment in order to achieve the National Policy on the Environment.
- Cooperate with FMEnv and other relevant national directorates/agencies in the promotion of environmental education in the citizenry
- Be responsible for monitoring compliance with waste management standards
- Be responsible for general environmental matters in the state including the negative effects of soil degradation due to flood and erosion, mineral and oil exploitation and exploration, deforestation, physical planning including amusement parks, gardens and beautification programmes, sewerage matters, water quality and pollution control.

Monitor the implementation of the environmental impact assessment, environmental assessment, environmental audit, environmental evaluation report guidelines and procedures on all development policies and companies within the state.

1.6.1.4 Local Government Areas (LGA)

As indicated in Table 1.2, the selected facilities are within the jurisdiction of six Local Government Councils. These are: Anambra South, Anaocha, Awka South, Idemili South, Ihiala and Ogbaru. These LGAs have departments of Water, Sanitation and Hygiene (WASH) which promote community health by ensuring access to clean water supply. Environmental matters at the local government level are essentially guided by relevant state laws.

1.6.2 Relevant Nigerian Guidelines, Policies and Legal Provisions

The section succinctly summarises applicable national and state policies, guidelines, edicts, regulations and laws relevant to this EIA and the implementation of proposed project.



1.6.2.1 National Policy on the Environment (Revised 1999)

The National Policy on the Environment describes the conceptual framework and strategies for achieving the overall goal of sustainable development in Nigeria. Specifically, the goals of the Policy include to:

- Secure a quality of environment adequate for good health and human well-being;
- Conserve and use the environment and natural resources sustainably for the benefit of present and future generations;
- Restore, maintain and enhance 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 living natural resources and ecosystems;
- Raise public awareness and promote understanding of the essential linkages between the environment, resources and development, and encourage individual and community participation in environmental improvement efforts; and
- Co-operate with other countries, international organizations and agencies to achieve optimal use of trans-boundary natural resources and effective prevention or abatement of trans-boundary environmental degradation.

1.6.2.2 EIA Act Cap E12 LFN 2004

The EIA Act No. 86 of 1992 as amended by EIA Act Cap E12 LFN, 2004 is the principal legislative instrument relating to activities that may likely or to a significant extent affect the environment. The Act sets the goals and objectives of EIA and procedures including the minimum requirements for the conduct of EIA of public or private projects. The Act makes EIA mandatory for all major development projects likely to have adverse impacts on the environment and gives specific powers to FMEnv to facilitate environmental assessment of projects in Nigeria.

FMEnv categorizes mandatory study activities into three categories: Category 3 activities have beneficial impacts on the environment. For Category 2 activities (unless within the Environmentally Sensitive Area) full EIA is not mandatory, while Category 1 activities requires full and mandatory EIA. Projects are pre-listed into these categories based on type and whether it would involve physical intervention of the environment. Either the listing or the result of an Initial Environmental Evaluation (IEE) is used to determine projects requiring full EIA. In accordance with the EIA Act, the medical facilities rehabilitation projects will be classified as Category 2 projects, requiring mandatory light ESIA with one season data gathering exercise

The FMEnv also established the National EIA Procedural Guideline in 1995 that indicates the process for conducting an EIA for projects in Nigeria in line with the requirements of the EIA Act CAP E12 LFN 2004. The process has been designed to ensure that the proposed project is implemented with maximum consideration for the environment. The basic steps in the EIA process include submission of Project Proposal/TOR, Initial Environmental Examination, Scoping, EIA Study, Review, Decision Making, Monitoring and Auditing. For smaller project with lower categorisation, the regulators allows the development of simple ESIA that will produce a focused ESMP for the project activities. In such case, the normal ESIA process may not be totally followed. These steps are shown in Figure 0.3

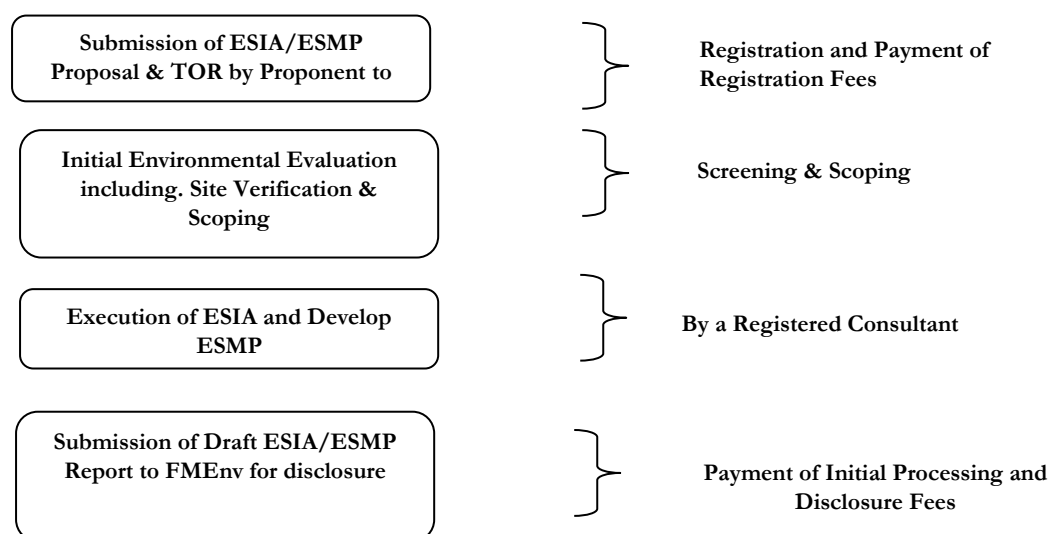


Figure 0.3. The ESIA/ESMP Development Flowchart

1.6.2.3 National Environmental Protection (Management of Solid and Hazardous Wastes) Regulations, 1991

These Regulations address handling and management of solid, radioactive and (infectious) hazardous waste. They define the objectives of management of solid and hazardous waste, the functions of appropriate Government agencies and obligations of industries. The Regulations mandate all industries to inform FMEnv of all toxic, hazardous and radioactive substances which they keep in their premises and/or which they discharge during their production processes. Schedule 12 and 13 of the Regulations provide a comprehensive list of all waste deemed to be hazardous and dangerous.

1.6.2.4 National Environmental (Sanitation and Wastes Control) Regulations, 2009

The Regulations provide the legal framework for the adoption of sustainable and environment friendly practices in sanitation and control of solid wastes, hazardous wastes and effluent discharges to minimize pollution. Part 3 of the Regulations states that all owners or occupiers of premises shall provide waste receptacles for storage before collection by licensed waste managers. In addition, the Regulations make it mandatory for facilities that generate waste, to reduce, re-use, recycle and ensure safe disposal to minimize pollution. The Regulations also spell out roles and responsibilities of State and Local Government Authorities.

1.6.2.5 National Environmental (Noise Standards and Control) Regulations, 2009

The purpose of these Regulations is to ensure maintenance of a healthy environment for all people in Nigeria, the tranquillity of their surroundings and their psychological wellbeing by regulating noise levels. The Regulations prescribe the maximum permissible noise levels on a facility or activity to which a person may be exposed and provide for the control of noise and for mitigating measures for the reduction of noise.

1.6.2.6 National Environmental (Surface & Groundwater Quality Control) Regulations 2011

The purpose of these Regulations is to restore, enhance and preserve the physical, chemical and biological integrity of the nation's surface waters and to maintain existing water uses. The Regulations also seek to protect groundwater sources by regulating the discharge of hazardous



wastes, fossil fuels energy and any other substances having the potential to contaminate groundwater. The Regulations also include amongst others, the application and general provisions of water quality standards for various uses such as agriculture, industrial, aquatic life and recreation.

1.6.2.7 Harmful Wastes (Special Criminal Provisions etc.) Act CAP HI LFN 2004.

An Act to prohibit the carrying, depositing and dumping of harmful waste on any land, territorial waters and matters relating thereto. Specifically, Section 1 of the Act prohibits all activities relating to the purchase, sale, importation, transit, transportation, deposit, storage of harmful wastes. Section 6 of the Act spells out the penalty for offences under the Act to include life imprisonment for individual and appropriate punishment for corporate bodies.

1.6.2.8 National Environmental Protection (Pollution Abatement in Industries and Facilities Generating Wastes) Regulations, 1991

The Regulations spell out the requirements for identification of solid, toxic and extremely hazardous substances to public health and provides necessary measures to facilitate the disposal of hazardous waste. The Regulations also highlight possible reuse and recycling of hazardous waste and requirements for groundwater protection, surface impoundment, land treatment, waste piles, landfills, incinerators, etc.

The Regulations prohibit industry or facility from release of hazardous or toxic substances into the air, water of Nigeria's ecosystems beyond the permissible limits of FEPA (now FMEnv). The Regulations further charge an industry or facility to have a pollution monitoring unit within their premises, (b). Have on site a pollution control and (c). Assign the responsibility for pollution control to a person or body accredited by the FMEnv. Section 5 of the Regulations mandate industry or facility to submit to the nearest office of FMEnv a list of chemicals used in the manufacture of its product, details of stored chemicals and storage conditions and where chemicals are bought, sold or obtained.

1.6.2.9 Guidelines and Standards for Environmental Pollution Control in Nigeria, 1991

The Guidelines and Standards for Environmental Pollution Control in Nigeria was promulgated in March 1991 to serve as a basic instrument for monitoring and controlling industrial and urban pollution. The guidelines and standards relate to six (6) areas of concern, namely: Effluent limitations, Water quality or industrial water uses at point of intake, Industrial emission limitations, Noise exposure limitations, Management of solid and hazardous wastes and Pollution abatement in industries.

Specifically, it provides effluent limitation guidelines for various categories of industries as well as water quality requirements for various industries and processes. It adopts the WHO limits for domestic water use. It also provides gaseous emissions and ambient air quality limitations as well as guidelines for the management of solid and hazardous wastes. It provides interim permissible limits as protective measures against indiscriminate discharge of particulate matter and untreated industrial effluents.

1.6.2.10 National Environmental Protection (Effluent Limitation) Regulations, 1991

The Regulations mandate every industry which discharges effluent to install anti-pollution equipment for the treatment or detoxification of effluent and chemical discharges emanating from the industry to ensure assimilation by the receiving water into which the effluent is discharged. The Regulations also provide that such anti-pollution equipment must be based on



the Best Available Technology (BAT), the Best Practical Technology (BPT) or the Uniform Effluent Standards (UES) to ensure effluents are treated to a uniform level as specified in the Second Schedule in the Regulations.

In addition, the Regulations stipulate that industry must monitor their effluents and report the composition of their treated effluents to the nearest office of the FMEnv from time to time. Schedule 1 of the Regulations provides the list of wastewater parameters to be monitored by respective industry while Schedule II states the Effluent limitation guidelines in Nigeria for all categories of industries.

1.6.2.11 Land Use Act CAP L5 LFN 2004

The Land Use Act is the legal framework for land acquisition and resettlement in Nigeria. The Act vests all land comprised in the territory of each State in the Governor of that State and requires that such land shall be held in trust and administered for the use and common benefit of all Nigerians. Specifically, the Act stipulates that: (a) All land in urban areas shall be under the control and management of the Governor of each State; and (b) all other land, subject to this Act, shall be under the control and management of the Local Government within the area of jurisdiction in which the land is situated.

The Acts gives the government the right to acquire land by revoking both statutory and customary rights of occupancy for the overriding public interest. In doing so, the Act specifies that the State or Local Government should pay compensation to the current holder or occupier with equal value.

Based on information gathered during site visit, the new constructions at some of the selected facilities will not require acquisition of new lands as the facilities have exiting landmass for the proposed buildings.

1.6.2.12 Public Health Law Cap 103 LFN 1990

Public Health Law examines the authority of the government at various jurisdictional levels to improve the health of the general population within societal limits and norms. The State is empowered to protect and improve the environment and safeguard the water, air and land, forest and wildlife of Nigeria. The law prohibits the public or private sector of the economy not to undertake or embark on or authorize projects or activities without prior consideration of the effect on the environment.

1.6.2.13 Employee's Compensation Act, 2010

The Act provides for an open and fair system of guaranteed and adequate compensation for all employees or their dependants for any death, injury, disease or disability arising out of or in the course of employment. The Act also makes provision for rehabilitation of employees with work-related disabilities and establishment of a solvent compensation fund managed in the interest of employees and employers. One of the core objectives of the Act is to harness combined efforts and resources of relevant stakeholders for the prevention of workplace disabilities and the enforcement of occupational safety and health standards in Nigeria. This act will be applicable to the construction and rehabilitation component of the program as labourers and other workers will be involved.

1.6.3 International Policies, Guidelines and Conventions

1.6.3.1 The African Development Bank (AfDB) Integrated Safeguards System (ISS)

The E&S safeguards of the AfDB are a cornerstone of the Bank's support for inclusive economic growth and environmental sustainability in Africa. AfDB will apply the Integrated Safeguards System for all sub-projects considered under the Malaria Elimination and Nutrition Improvement Program. The Bank ISS is designed to promote the sustainability of project outcomes by protecting the environment and people from the potentially adverse impacts of projects. This requires that all the projects under the program will comply with the safeguard requirements of the ISS during sub-projects preparation and implementation. The safeguards aim to:

- Avoid adverse impacts of projects on the environment and affected people, while maximizing potential development benefits to the extent possible;
- Minimize, mitigate, and/ or compensate for adverse impacts on the environment and affected people when avoidance is not possible; and
- Help borrowers/clients to strengthen their safeguard systems and develop the capacity to manage E&S risks.

The ISS consists of four interrelated components as summarized in Figure 0.4 below.

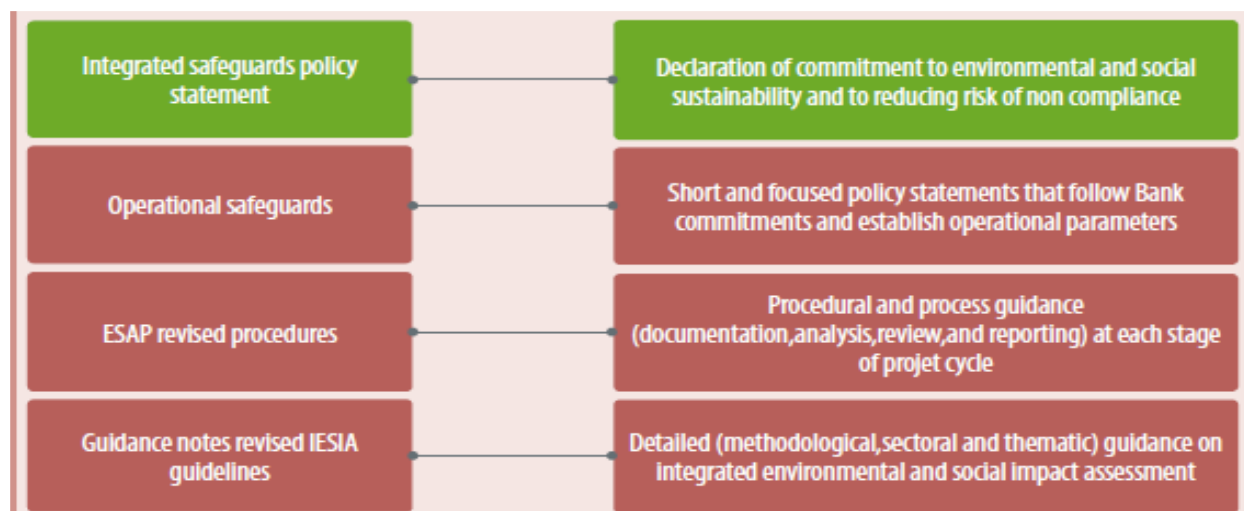


Figure 0.4. Structure of the AfDB ISS

1.6.3.2 The Integrated Safeguards Policy Statement

This describes common objectives of the Bank's safeguards and lays out policy principles. It is designed to be applied to current and future lending modalities, and it considers the various capacities and needs of regional member countries in both the public and private sectors. The Integrated Safeguards comprises of Policy Statement that sets out the basic tenets that guide and underpin the Bank's approach to environmental safeguards. The Bank's Integrated Safeguards Policy Statement sets out the Bank's own commitments to and responsibilities for delivering the ISS: to

- ensure the systematic assessment of E&S impacts and risks;
- apply the OSs to the entire portfolio of Bank operations;
- support clients and countries with technical guidance and practical support in meeting the requirements;



- iv. implement an adaptive and proportionate approach to E&S management measures to be agreed with clients as a condition of project financing;
- v. ensure that clients engage in meaningful consultations with affected groups;
- vi. respect and promote the protection of vulnerable groups, in a manner appropriate to the African context.

1.6.3.3 Operational Safeguards (OSs)

These are a set of five safeguard requirements that Bank clients are expected to meet when addressing social and environmental impacts and risks. Bank staff use due diligence, review, and supervision to ensure that, clients comply with these requirements during project preparation and implementation. Over time the Bank may adopt additional safeguard requirements or update existing requirements to enhance effectiveness, respond to changing needs, and reflect evolving best practices. The five OSs are presented in Table 0.3 were designed in order to:

- Better integrate considerations of E&S impacts into Bank operations to promote sustainability and long-term development in Africa;
- Prevent projects from adversely affecting the environment and local communities or, where prevention is not possible, minimise, mitigate and/or compensate for adverse effects and maximize development benefits;
- Systematically consider the impact of climate change on the sustainability of investment projects and the contribution of projects to global greenhouse gas emissions;
- Delineate the roles and responsibilities of the Bank and its borrowers or clients in implementing projects, achieving sustainable outcomes, and promoting local participation; and
- Assist regional member countries and borrowers/clients in strengthening their own safeguards systems and their capacity to manage E&S risks.

Table 0.3. AfDB Operational Safeguards OS1-5

Operational Safeguard	Description	Triggered (Yes/No)
OS 1: Environmental and social assessment	This overarching safeguard governs the process of determining a project's environmental and social category and the resulting environmental and social assessment requirements	This OS is triggered because the construction and rehabilitation component of the project will have environmental interactions with potential negative impacts to man and the environment
OS 2: Involuntary Resettlement; Land Acquisition, Population Displacement and Compensation	This safeguard consolidates the policy commitments and requirements set out in the Bank's policy on involuntary resettlement and incorporates a few refinements designed to improve the operational effectiveness of those requirements	This OS is not triggered. All activities including construction of new staff quarters are within the existing boundaries of the health facilities.
OS 3: Biodiversity and Ecosystem Services	This safeguard aims to conserve biological diversity and promote the sustainable use of natural resources. It also translates the commitments in the Bank's policy on integrated water resources management into operational requirements.	This OS is triggered. Although all selected facilities are on brown field, there are a few vegetation and trees within the premises of some of the facilities which may be removed for construction of building and pavement, particularly at PHC Okija and MCH Otuocha . It is instructive to note, however, that clearing will be limited, if at all.
OS 4: Pollution Prevention and Control, Greenhouse Gases, Hazardous Materials and Resource Efficiency	This safeguard covers the range of key impacts of pollution, waste, and hazardous materials for which there are agreed international conventions, as well as comprehensive industry-specific and regional standards, including greenhouse gas accounting, that other multilateral development banks follow.	This OS is triggered. Rehabilitation and construction of new buildings will generate some construction waste which requires proper management. Some of the existing buildings to be rehabilitated at MCH Otuocha and PHC Atani as well as the old buildings to be demolished at PHC Azia have



Operational Safeguard	Description	Triggered (Yes/No)
		some asbestos containing materials.
OS 5: Labour Conditions, Health and Safety	This safeguard establishes the Bank's requirements for its borrowers or clients concerning workers' conditions, rights and protection from abuse or exploitation. It also ensures greater harmonization with most other multilateral development banks.	This OS is triggered. The selected facilities have their existing labor conditions, the contractors that will handle the rehabilitation and new constructions will also engage personnel to work on the sites. There is therefore potential for risks to health and safety of workers during project implementation.

1.7 EIA Report Structure

The structure of this ESIA report is presented below.

- **Chapter 1. Introduction.** Provides a background to the proposed Project and the ESIA and provides information about the Proponent. The Legal and Regulatory Frameworks within which the ESIA was undertaken were also stated while other environmental legislation, standards and guidelines applicable to the Project were listed.
- **Chapter 2. Project Justifications and Alternatives.** It presents the project justification, the need/value and its envisaged sustainability as well as the project development and site/route options considered
- **Chapter 3. Project Description.** The chapter provides a description of the Project
- **Chapter 4. Biophysical and Socio-economic baseline.** The chapter defines the areas of direct and indirect influence of the Project. It describes the biophysical and socio-economic baseline of the Project's areas of influence and presents the public participation process in the ESIA.
- **Chapter 5. Impact Assessment.** The chapter presents the approach and methodology for the ESIA process. It identifies and assesses potential Project impacts (biophysical and socioeconomic impacts).
- **Chapter 6: Mitigation Measures.** This chapter defines relevant mitigation measures to avoid, reduce, compensate or enhance Project impacts (as applicable).
- **Chapter 7. Environmental and Social Management Plan (ESMP).** It presents the Project ESMP, organizing all mitigation, management and monitoring requirements and management programs.
- **Appendices.** This section provides support information referenced throughout the ESIA.



CHAPTER TWO: PROJECT JUSTIFICATION

2.1 Purpose and Need of the Project

The mortality rate for children under five years in Nigeria is estimated at about 132 children in every 1000 live births with malaria accounting for as much as 30% (excluding neo-natal mortality). Other major causes of death for the age group include diarrhoea and pneumonia. Worldwide, Nigeria accounts for 25% of global malaria cases, and 30% of deaths, making it the highest burdened country globally, which calls for urgent and concerted efforts at addressing the challenge. It is noteworthy that 50% of death cases affecting the under-5 are associated with malnutrition therefore making it a major health and development issue in the country. Malnutrition, particularly in young children, leads to increased mortality and undernutrition is responsible for approximately half of under-five mortality and one-fifth of maternal mortality in Nigeria. The prevalence of exclusive breastfeeding in infants up to 6 months is low (23.7% at national level). Half of women of reproductive age suffer from anaemia. These high rates of morbidity and mortality result in decreased productivity of the individuals, communities and the nation at large. This contributes to the poverty levels and often sets off a chain of events that continually hinder the growth and development of the people.

Across Nigeria, most public health centers lack basic infrastructure, equipment and drugs and about 80% of health facilities are reportedly at different states of dysfunctionality, including issues with water and electricity.² The Federal Government of Nigeria (FGN) lacks the necessary financial resources to effectively address the challenge and it is seeking funding from Multilateral Development Banks (MDB) to develop health care facilities in order to contribute in reducing the prevalence of child mortality and poverty rate in the long run.

2.2 Justification for the Project

The project is part of the Federal Government's overall National Malaria Elimination Programme (NMEP) and Nutrition Services Management in the country and is anchored on both the malaria and nutrition programme strategic plans for 2014-2020 and 2014-2019 respectively. The NMEP is supported by the Global Funds, PMI and some other partners in all but 17 of the 36 states and the FCT.

Consequently, the FGN requested the African Development Bank to support 2 states, World Bank to support 6 states and the Islamic Development Bank to support 5 states in providing parallel financing for the 17 states. The support aims at augmenting or complementing the efforts of government in addressing the challenges of malaria and malnutrition in the country.

Part of the funds will be used to rehabilitate existing buildings particularly dilapidated medical wards and staff quarters as well build new structures where the existing structures are inadequate. In addition, ancillary infrastructure such as power supply (solar panels) and water supply (boreholes, overhead tanks, pumps and piping) will also be provided to provide an enabling environment for staff and patient to facilitate the successful implementation of the malaria elimination and nutrition improvement program. The existing conditions at some of the selected facilities are presented in Plate 2.1.

² National Health Policy 2016.



Waterlogged area within the premises of PHC Atani



Damaged portion of PHC Otuocha's roof



Abandoned PHC Azia building showing dilapidated windows



A Dilapidated window at PHC Adazi-Ani



Premises of PHC Okija showing waterlogged access



Abandoned Motorized borehole and overhead tank at PHC Azia

Plate 2.1: Existing Poor Conditions of the Healthcare Facilities

2.3 Project Objectives

The overall sector goal of the proposed project is to contribute to improvement in the quality of life for the people in the intervention States of Anambra and Ondo. The project development objective is a reduction in under-5 morbidity and mortality through improved delivery of quality and cost-effective malaria and nutrition services for children and pregnant women in Anambra and Ondo States.



The specific objectives of the project, which are in line with the National Health Policy, Malaria Elimination strategic plan as well as the National Nutrition Plan, include, the specific objectives of the project are:

- To increase the percentage of children under-5 sleeping inside Long Lasting Insecticidal Nets (LLINs);
- To increase the percentage of children aged under 5 years with fever receiving RDT and Artemisinin-based Combination Therapy (ACT) within 24 hours;
- To increase the percentage of pregnant women receiving appropriate doses of Intermittent Preventive Treatment (IPT) during antenatal care;
- To improve behavior and knowledge of parents/community on the prevention and management of malaria and malnutrition;
- To improve Infant and Young Child Feeding (IYCF) practices for children 0-23 months.

2.4 Project Design and Alternatives Considered

The project's design was informed by extensive consultative engagement with key stakeholders across the State and in the health care sector. The alternatives considered to improve and enhance service quality are summarised in Table 0.1.

Table 0.1. Project Alternatives Considered and Reasons for Rejection

Alternative	Brief Description	Reason for Rejection
Use of government structures/staff for the distribution of major project commodities to beneficiaries instead of non-state actors	Distribution, intake and use of the project commodities like the LLINs at the community level is vital for achievement of the project's objectives. This therefore means that the products must reach the beneficiaries and the necessary advocacy and support provided for them to do the right things. Under the project, non-state actors will be competitively recruited with performance-based contracts to implement these functions. These NSAs will work very closely with the government counterparts to ensure transfer of knowledge and skills for sustainability.	<ul style="list-style-type: none"> • Previous efforts with use of government structures/staff witnessed significant product losses and wastages. Accountability is difficult to secure using government staff particularly, as the system is weak.
Input-based financing, particularly for service providers	The project will use innovative approaches that pay for results rather than simply inputs. NSAs recruited under the project will be paid only after meeting some set performance targets.	<ul style="list-style-type: none"> • The goal of the project is to meet set targets and not just carrying out activities. Some previous projects in the country did not meet set goals yet the money was spent.
Procurement of the LLINs directly by the AfDB-supported state instead of through the National Malaria Elimination	The project has planned that the procurement of LLINs in the 13 states (AfDB-supported state inclusive) will be carried out jointly by the states with strong technical and administrative support from the NMEP rather than individually by the states.	<ul style="list-style-type: none"> • Loss of economics-of-scale benefit if the different states are to go separately making their individual purchases • Import waivers are much more difficult through the states compared with NMEP and so



Alternative	Brief Description	Reason for Rejection
Programme (NMEP)		<p>landing costs are likely to be higher if making the purchases through the states.</p> <ul style="list-style-type: none"> • Quality and time efficiency is less assured and may be compromised, particularly as the states have not been involved in international procurement of such volumes of LLINs which NMEP has been doing over the years with support from development partners.

The project intends to engage Non-State Actors (NSAs) in the delivery of the Malaria and Nutrition services through performance-based contracts as against the usual practice of using entirely government workers. This will reduce losses and increase reach as well as improve private sector involvement and interaction with government in the overall delivery of health services particularly at the rural levels. The preferred alternative considered reflects the need for more effective and efficient service delivery; complementarity with related interventions of partners, including government, and; in addition to strengthening, building upon and ensuring the sustainability of gains already made.



CHAPTER THREE PROJECT DESCRIPTION

3.1 Introduction

This chapters presents a brief description of the projects, with a focus on project activities that have the potential to cause negative environmental and social impacts.

3.2 Project Components

The project is to be executed under three reinforcing components (Table 3.1) with key expected outcomes as follows:

- i. Improved basic health services delivery at Primary Health care (PHC) facilities in intervention states;
- ii. Reduced malaria prevalence among children under 5 years in project states;
- iii. Reduced prevalence of malnutrition among children under 5 years in project states;
- iv. Improved knowledge and practices to malaria and malnutrition prevention measures and management.

Table 0.1. Project Components

Component	Description
Component I: Expanding Access to Quality Malaria and Nutrition Healthcare Services	<p>Sub-component 1.1: Improving Access to Health Facilities: Under this subcomponent, the project will rehabilitate and equip some existing public health facilities from both states. This will include;</p> <ul style="list-style-type: none"> • 10 No. Primary Health Care facilities including staff quarters per state to serve as reference points in support of other smaller facilities under their catchment areas • The two central medical stores in both states. • One maternal & child specialist facility per state to serve as referral facilities • Provision of portable water through boreholes in the facilities • Solar lights to power boreholes and lighting points in and around the facilities. <p>The rehabilitation works will contribute to increased access to services; staff retention and availability at duty posts and ensure better storage of drugs, medical materials and commodities.</p>
	<p>Sub-Component 1.2: Strengthening Quality Services Delivery. Under this sub-component, the project will support the scaling up of quality malaria and nutrition interventions in the project states with a focus on children under 5years and women. These shall be undertaken through performance-based contracts signed between State PIUs of Ministries of Health and competitively procured Non-State Actors (NSAs). Activities to be undertaken by these NSAs include;</p> <ul style="list-style-type: none"> • Malaria and malnutrition case management improvement in the facilities through capacity building for public and private as well as community based healthcare service providers; • Training of facility-based health care providers and logistics officers on drugs and commodities logistics management. • Development/training on use of SOPs <p>Additionally, robust management of these performance-based contracts and the achievement of agreed quantitative and qualitative targets for service delivery by the NSAs and the public health centres, will trigger disbursements to appropriate implementing agencies at the state level through a disbursement-linked indicator (DLI) mechanism. These will focus on some agreed-upon outputs/outcome and process indicators including;</p> <ul style="list-style-type: none"> • Increased utilization of LLINs by children under-5 years, and pregnant women; • Increased LLIN ownership and use by households; • Improved knowledge on malaria and malnutrition prevention measures among households; • Deworming twice per year; • Sharper focus on nutrition during antenatal visits in facilities (specifically, provision of and counselling on iron folic acid tablets during pregnancy, and counselling on early and exclusive breastfeeding).



	<p>Sub-Component 1.3: Provision of health commodities/materials and drugs;</p> <ul style="list-style-type: none"> Provision of relevant commodities and drugs including LLINs, ACTs, RDTs, SPs, deworming medications, folic acid, F-75 and F-100 therapeutic milk for children with SAM and complications etc; Distribution of procured items to healthcare facilities and communities/ households as required
<p>Component II: Community Engagement, Learning and System Strengthening</p>	<p>Sub-component 2.1: Enhancing Demand and Utilization of Malaria and Nutrition Healthcare Services (Social Behavioural Change Communication)</p> <ul style="list-style-type: none"> The Project shall strive to improve community uptake of malaria and malnutrition prevention and curative services and knowledge through the services of the recruited NSAs at state level. This shall be through mass/social media, inter-personal & group interactions/communication, traditional and religious leaders, etc. The project will also fund the training and retraining of health workers in inter-personal communication to encourage care seeking behaviour. Mobilization and training of community health influencers, promoters and volunteers as agents for behavioural change with special focus on nutrition and gender; Community enlightenment on climate change effect on the project; <p>Establishment/ strengthening of school health clubs with organization of seminars, quiz competitions and campaigns.</p>
	<p>Sub-component 2.2: Strengthening Monitoring, Evaluation and Reporting.</p> <ul style="list-style-type: none"> Support the government (NPHCDA etc.) in the conduct of routine household and health-facility-based surveys to produce results for the project progress monitoring and status report on malaria and malnutrition key indicators in the intervention states. Use of Verification Agents to support data generation for project progress (output/outcome) monitoring. <p>Support the State Health Management Information System (HMIS)</p>
	<p>Sub-component 2.3: System Strengthening; This shall include;</p> <ul style="list-style-type: none"> Support to Public procurement reform through a study for the strategy and implementation roadmap development. Also, a scheme of service and competency framework for procurement cadre in both states shall be developed. Provision of technical support to state key operations staff across the 2 states of project intervention Institutional capacity building for the ministries of health in both states.
<p>Component III: Project Management and Capacity Development</p>	<p>The Project shall undertake the following under this component:</p> <ul style="list-style-type: none"> Rehabilitation and equipping of the office space Project supervision, reporting, gender and consultants' services for the 2 states Project audit services for two states and FMOH Project coordination/supervision and reporting activities by FMOH Capacity development/retraining of PIU staff Performance-based contract/incentives/bonuses to PIU to foster accountability and efficient achievement of results. Two pick-up vehicles; and Project office maintenance and supplies

3.3 Project Components with Potential E&S Impacts

Some of the project components with associated civil works have the potential to negatively impact on the environment. The project activities that could result in potential environmental and social impacts are summarized in table 3.2 for each of the health care facilities within the program. The detailed impact assessment is presented in Chapter 5 and 6.

3.4 Project Implementation Schedule

Construction activities for the project will start in 2020 and it is expected that all facilities rehabilitated or constructed under the program will be operational in by the end of Q1 2021.



Table 0.2. Project components with potential environmental and social impacts.

Proposed Activity	MCH, Otuocha	PHC, Atani	PHC Adazi- Ani	PHC Awka Etiti	PHC Okija	PHC Azia	Central Pharmaceutical Stores, Awka	Potential E & S Impacts (Positive and Negative)
Construction of New Staff Quarters	X		X	X				<ul style="list-style-type: none"> Dust disturbances in adjoining sensitive receptors (including health centers, schools, residential areas and markets) due to the release of fugitive dusts. Noise disturbances from operation of machineries and equipment Generation of construction waste Disruption of normal operation of the health facility due to construction activities taking place behind/ beside existing OPD. Threat to community culture, safety and security associated with presence of construction workers and business opportunists. Increased risk of social unrest if construction workers are not recruited from the local community Risks of Gender Based Violence (GBV)/Sexual Exploitation Abuse (SEA) resulting from the interaction between contractors and members of the communities. Traffic related issues including Road Traffic Accidents due to movement of heavy trucks conveying materials to site Occupational accidents & injuries from construction activities. Improvement in service delivery as health workers will be available to attend to emergencies due to availability of residential accommodation
Construction/ Extension of fence		X			X			<ul style="list-style-type: none"> The new staff quarters will enhance workers retention and low turnover of workforce. Increased commercial activities of locals/ traders due to the presence of construction workers accessing the market. Employment of local labour for construction activities Increased productivity and efficiency of health workers due to the availability of staff accommodation
Renovation of existing OPD (include removal of ceilings and roofing)	X	X	X		X	X		<ul style="list-style-type: none"> Generation of construction wastes, including Asbestos Containing Materials (ACMs) which may be encountered in the roofing and other older components in the building. Exposure to asbestos fibre from the roofing during demolition Dust and noise disturbances due to demolition/ rehabilitation activities
Renovation of existing Staff Quarters		X	X	X	X			<ul style="list-style-type: none"> Increased risk of social unrest if construction workers are not recruited from the local community. Disruption of normal operations of the healthcare facilities during renovation.
Rehabilitation of fence (including painting)	X	X	X	X	X	X		<ul style="list-style-type: none"> Employment of local labour for construction activities Provision of an enabling environment for staff and patients especially pregnant women & children. The remodeled health facility will attract pregnant women to use the facility for antenatal care and delivery. Provision of more space to support critical services including antenatal care clinics, general wards, HIV/AIDS counselling, nutrition etc.



Drilling and installation of motorized borehole with solar panel						X	X	<ul style="list-style-type: none"> Noise and vibration disturbances from drilling activities Occupational accidents and injuries to workers and other site users (e.g. associated with vehicular movement in a constrained space) Waste generation Risks of accidental spillages of oils and hydrocarbons which may contaminate groundwater Employment of local labour for construction activities Provision of clean and reliable potable water to healthcare facility Reduced risks of water borne diseases such as cholera and typhoid which may be associated with the consumption of water from shallow hand-dug wells. Improvement in the overall sanitation and hygiene condition of the healthcare facilities. Reduction in overall greenhouse gases emission from operation of generators.
Renovation of water supply system including provision of overhead tank, pump & piping	X					X		<ul style="list-style-type: none"> Provision of clean and reliable potable water to healthcare facility Reduced risks of water borne diseases such as cholera and typhoid which may be associated with the consumption of water from shallow hand-dug wells. Improvement in the overall sanitation and hygiene condition of the healthcare facilities.
Installation of water treatment plant		X						<ul style="list-style-type: none"> Occupational accidents and injuries to workers and other site users Waste generation
Paving of Some Section of the Floor	X	X	X	X	X	X		<ul style="list-style-type: none"> Disruption of the normal operations of facilities during construction (facilities run for 24hours) Removal of trees that are currently serving as wind shields to the facility buildings. Increased Traffic issues including accidents along access road due to movement of heavy trucks delivering construction materials to site. Generation of dust and noise as a result of paving activities
Provision and Installation of Solar Panels	X	X	X	X	X	X		<ul style="list-style-type: none"> Improved access to reliable electricity for the health facility which will enhance overall productivity and performance at the facility. Reduction in overall greenhouse gases emission from operation of generators. Increased productivity and efficiency of health workers due to steady supply of electricity. Provision of steady electricity from renewable sources to prevent disruption to services due to power outages. Reduction in the cost of purchasing diesel to run generators. Reduction in the noise level due to the operation of generators during power outages Generation of hazardous waste e.g. batteries Risks of accidents and injury during installation (e.g. working at height and lifting heavy equipment)



CHAPTER FOUR: DESCRIPTION OF THE EXISTING ENVIRONMENT AND CONSULTATIONS

4.1 Introduction

The chapter describes the existing (baseline) condition of the environment of the benefitting health facilities in Anambra State which may be affected by the proposed rehabilitation/construction activities. The baseline information of the project area is crucial to the ESIA process as it helps to identify the key environmental and social parameters in the project area that may be impacted by the project as well as provide data to aid the prediction of potential impacts of the proposed intervention. In addition, baseline information helps to describe and quantify the current characteristics (nature, condition, quality, extent, etc.) of key environmental resources/receptors, and predict their likely future characteristics in the absence of the project.

The description of the baseline conditions of the project area is based on analysis of both primary and secondary data from various sources. In accordance with the ESIA regulatory requirements for Category 2 projects, requiring only a partial ESIA, the description of the baseline conditions is based on a detailed review of information as well as the collection of a limited number of samples based on receptor sensitivity.

Baseline information is described for the following biophysical and socio-environmental components.

- Climate and Meteorology;
- Air;
- Soils and land;
- Geology and Hydrogeology;
- Ecological Biodiversity (Aquatic/Terrestrial Flora and Fauna); and
- Socio-economic and Community Health.

4.2 Data Acquisition Approach and Methods

Baseline data for the study area was generated using a combination of field studies; analysis of maps, plans, photographs; review of background project documents; site reconnaissance surveys; structured and semi-structured interviews via engagements with project affected persons and communities as well as a collection of field baseline data for a number of indicators using *in-situ* measurement methods.

4.3 Project Area of Influence

A project's area of influence is an area around the project where significant environmental and social impacts caused by the project performance are evidenced on physical, biological and socioeconomic components of the environment.

4.3.1 Direct Area of Influence

The project's area of influence for the benefitting health care facilities is the immediate environment where the civil work component of the intervention will take place. The receptors in this immediate environment will receive directly most of the E&S impacts emanating from project implementation. The direct areas of influence for the selected facilities are presented in the

Table

0.1

and

Plate

4.1.

**Table 0.1. Sensitive receptors identified in the project area of influence during the site visit**

#	Location	Project Activities	Geographical Locations	Description of Immediate Environment	Receptor Sensitivity	Scope of the Baseline Surveys and Assessments
1	Maternal and Child Hospital, Otuocho, Anambra East LGA	Rehabilitation of (i) main building (ii) male ward (iii) fence. Construction of twin 1BR staff quarter. Paving of floor. Installation of solar panel. Installation of water supply (overhead tank, pump, piping).	N06°20'17.6" E006°51'07.8"	The facility shares the same premises with the Motherless Children's Home being managed by the Anambra East LGA. There are no residential areas within the immediate area but there a few local shops in the adjoining areas.	Motherless Children's Home within the premises of the PHC. Shop owners in the adjoining areas Staff and Patients at the facility	Local ecological description, Ground water, Air Quality, physical description of soil, Noise and Traffic count.
2	Primary Health Centre, Atani I, Ogbaru LGA	Rehabilitation of (i) main building (ii) 2 nos staff quarters (iii) fence. Paving of floor. Installation of solar panel. Installation of water treatment plant	N06°01'34.0" E006°44'57.2"	The facility is located along Onitsha expressway adjoining the Nile River. The PHC shares fence with the Comprehensive Health Centre (CHC), Atani to the right. The PHC under consideration was built to handle minor ailments and antenatal program in order to decongest the CHC and allow it to focus on more advanced medical issues. Other than the CHC, there are no residential areas within 100m radius. There is no fence to the left-hand side and as such the vegetation within and outside of the premises of the PHC may be affected by construction of fence in that area.	Comprehensive Health Centre, Atani which shares fence with the PHC and lush of vegetation to the left of the facility. Staff and Patients at the facility	Local ecological description, Physical description of soil, ground water, Air Quality, Noise and traffic count.
3	Central Pharmaceutical Stores, Amaku, Awka	Drilling of borehole (mechanized with solar panels) and installation of water supply infrastructure (overhead tank, pump and piping)	N06°13'29.8" E007°04'46.3"	The facility is in the center of Awka and shares the same premises with Axios Warehouse and the Office of the Pharmacist Council of Nigeria. Access road is Aruoma road connecting Zik Avenue in Awka City. The facility is also in proximity of the Teaching Hospital and other government offices. The premises is well landscaped and paved with a few trees. There is currently no potable water source for the facility, water is sourced through commercial vendors.	Staff of the facility and the neighboring offices (Axios Warehouse and the Office of the Pharmacist Council of Nigeria.)	Local ecological description, Physical description of soil, ground water, Air Quality, Noise and traffic count.
4	Primary Health Centre, Adazi-Ani, Anaocha LGA	Rehabilitation of (i) main building (ii) staff quarter (iii) fence. Construction of student twin 1BR staff quarter. Paving of floor. Installation of solar panel.	N06°05'28.3" E006°59'49.8"	The facility is located beside All Saint Catholic Church, Adazi-Ani as well as an uncompleted building and lush of vegetation.	All Saint Catholic Church, Adazi-Ani Staff and Patients at the facility	Local ecological description, Air Quality and Noise, Ground Water, physical description of soil.
5	Primary Health Centre, Awka-Etiti, Idemili South LGA	Construction of new student staff quarter. Rehabilitation of 5 nos staff quarters. Painting of fence. Paving of floor.	N06°01'52.2" E006°57'34.8"	The facility is within on the outskirt of Awka-Etiti with a few residential buildings in the area. The facility is completely fenced indicating that project activities will take place within the premises of the health facility with	Staff and Patients at the facility as well as the residence of the immediate environment.	Local ecological description, Air Quality and Noise, physical description of soil.

September 2019

		Installation of solar panel.		limited interaction with the neighboring areas. The premises also house an uncompleted building being built by communal efforts, to serve as general hospital, but has been abandoned due to lack of funds. The community is currently seeking intervention from the government to complete the building.		
6	Primary Health Centre, Okija, Ihiala LGA	Rehabilitation of (i) main building (ii) 2 nos staff quarters (iii) fence. Paving of floor. Installation of solar panel. Installation of water supply (overhead tank, pump, piping).	N05°53'54.1"E006°50'20.7"	The facility is located within Okija town and surrounded by residential buildings. It is partially fenced and will require extension of fence at the back of the facility. The PHC currently has no toilets, staff and patients use the nearby bush for defecation.	Dwellers of the nearby residential buildings. Staff and patients at the facility.	Local ecological description, Physical description of soil, ground water, Air Quality, Noise.
7	Primary Health Centre, Azia, Ihiala LGA	Rehabilitation of main building and fence. Paving of floor. Installation of solar panel. Drilling of borehole (mechanized with solar panels).	N05°52'37.4"E006°54'00.6"	This facility shares a fence with a residential building to the left and the old dilapidated building currently housing the PHC (which will be demolished). There is currently no water supply to the PHC, staff travel as far as 1km to fetch water for use. Access road to the facility is untarred with several failed portions	Residents of the building sharing fence with the PHC building. Workers and Patients at the facility. Vegetation within the premises of the PHC	Local ecological description, Physical description of soil, ground water, Air Quality, Noise.



CPS Awka premises showing Axios Warehouse and Office of PCN



PHC Adazi-Ani shares a common fence with All Saints Catholic Church to the left and lush of vegetation to the right



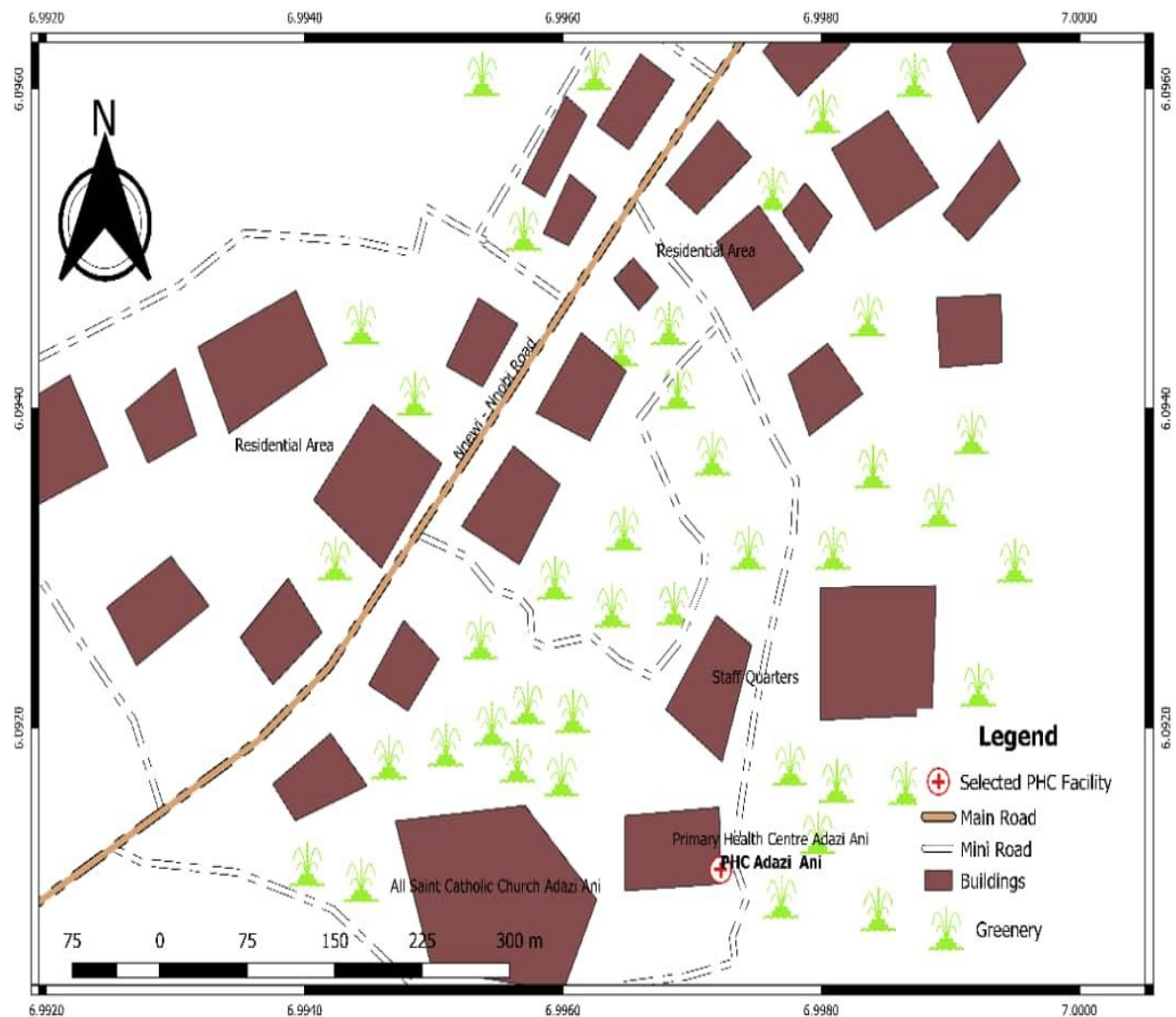
An uncompleted building (intended for use as General Hospital) within the premises of PHC Awka-Etiti



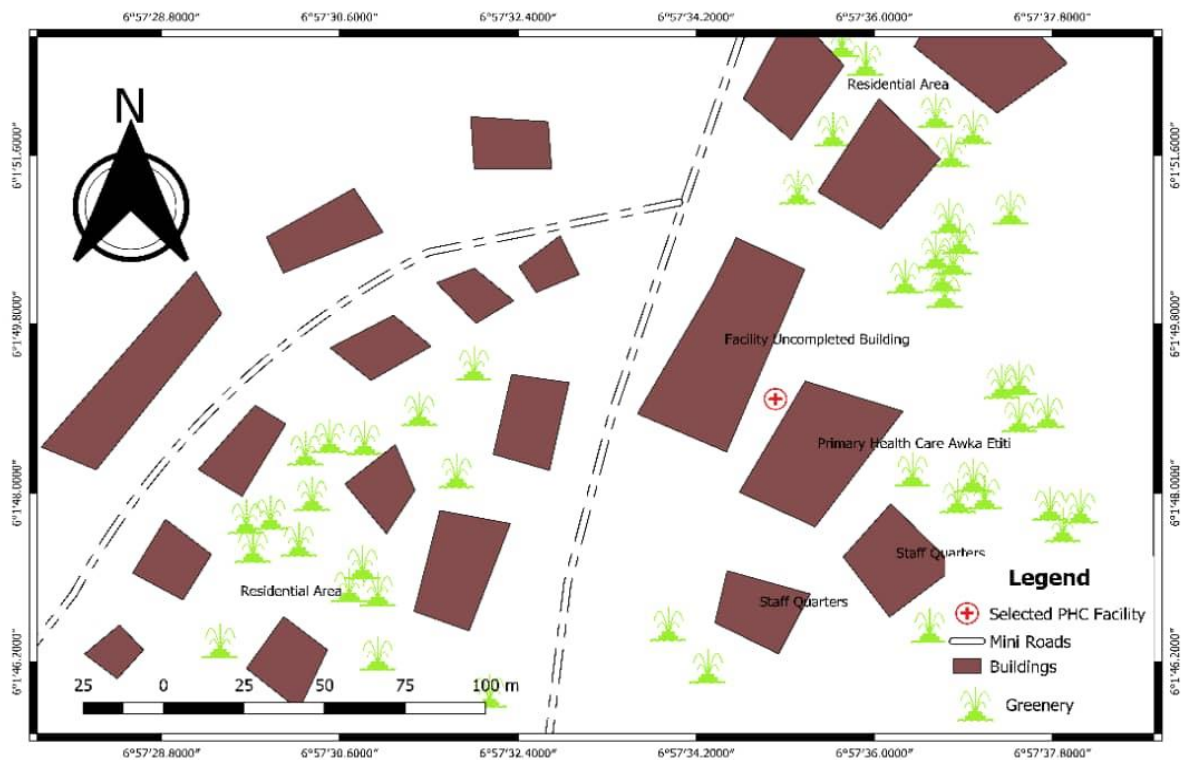
Plate 4.1: Features of the Immediate Environment of Project Areas

A series of maps describing the specific project locations and surrounding receptors for each of the facilities considered in the project are shown in **Erreur ! Référence non valide pour un signet..**

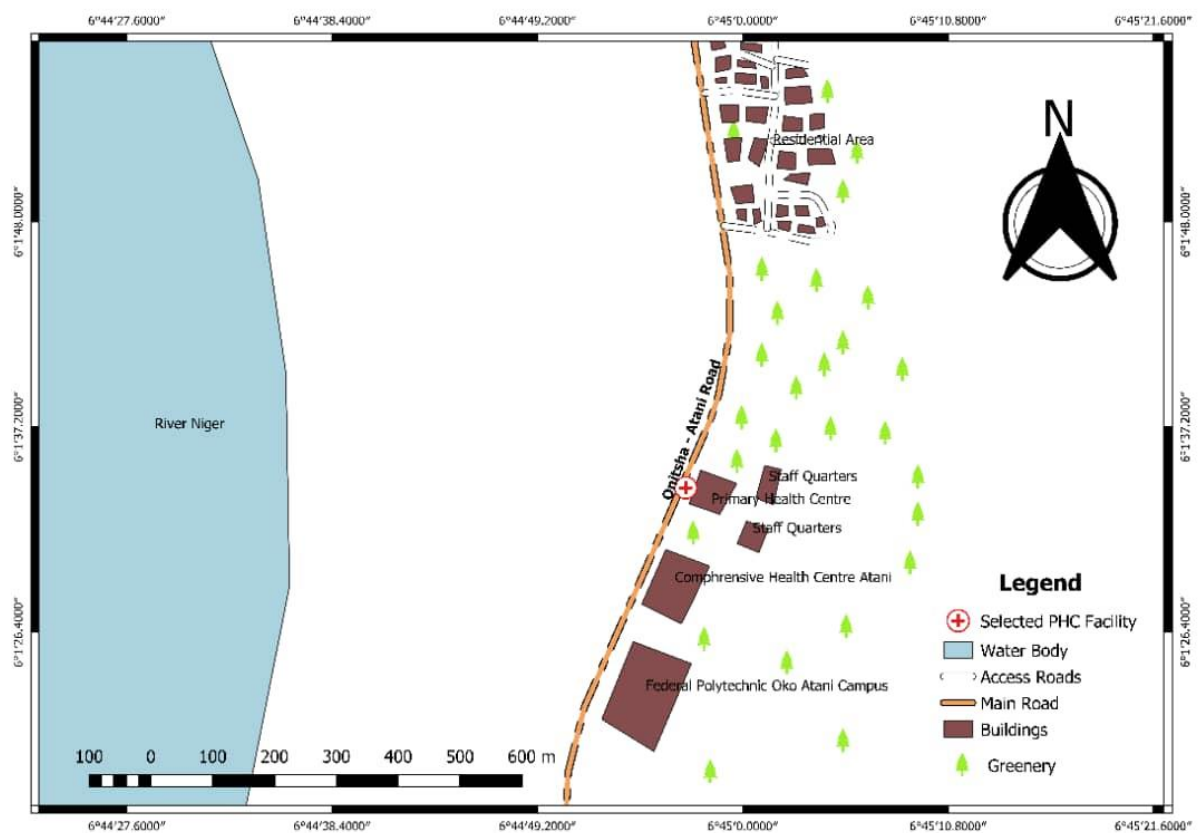
Figure 0.1. Location Map of Healthcare Facilities and Immediate Environment



Location of PHC Adazi-Ani and sensitive receptors



Location of PHC Awka-Etiti and sensitive receptors



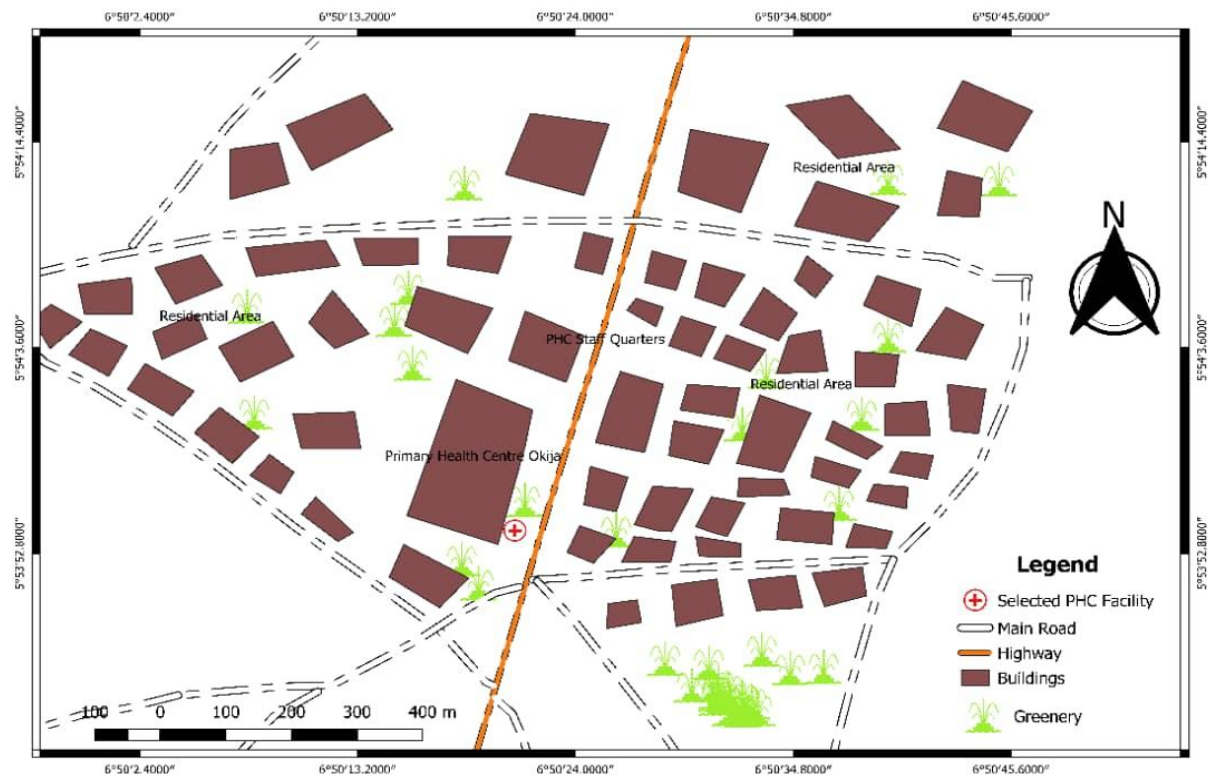
Location of PHC Atani and sensitive receptors



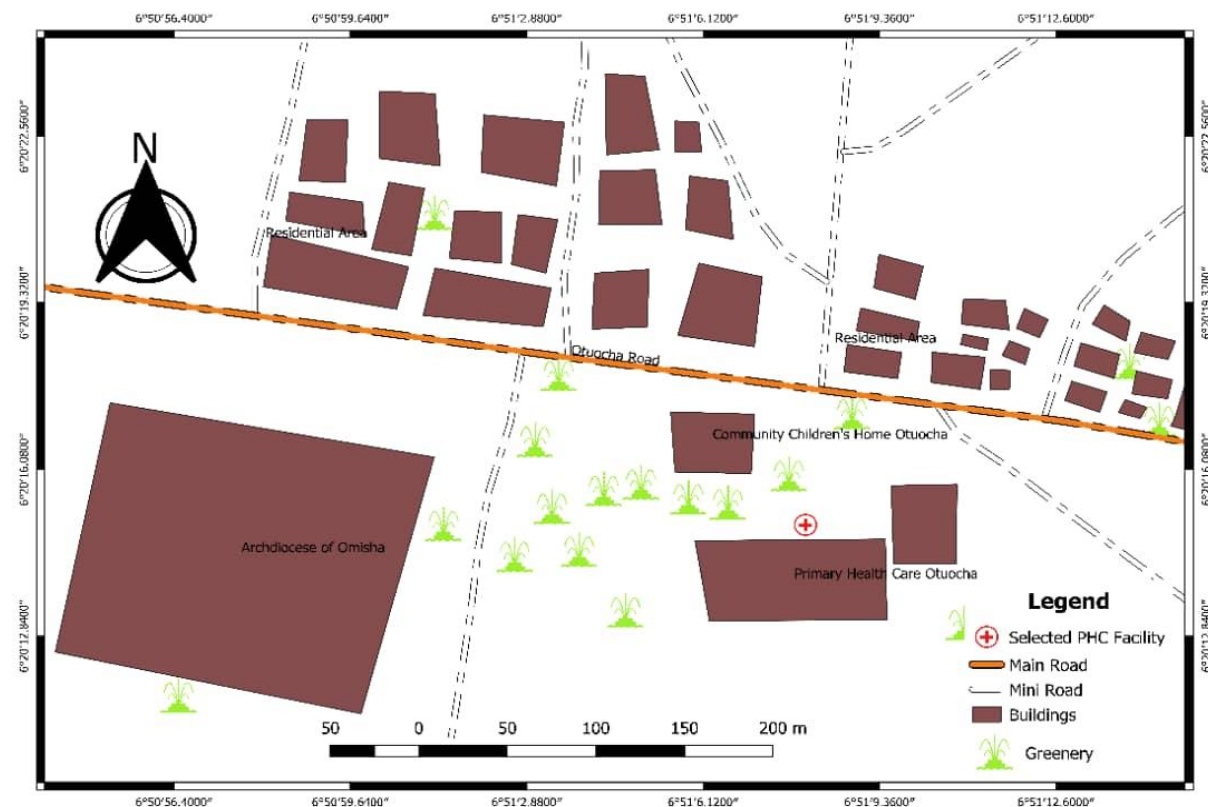
Location of Central Pharmaceutical Stores, Awka and sensitive receptors



Location of PHC Azia and sensitive receptors



Location of PHC Okija and sensitive receptors



Location of Maternal and Child Hospital and sensitive receptors



4.3.2 Desktop Studies/Literature Review

Comprehensive desktop studies of relevant literatures were undertaken by the EIA team to acquire the biophysical and socioeconomic information required for this EIA. Some of the key literatures reviewed include FMEnv relevant policies, laws, regulations and guidelines particularly the EIA Procedural Guidelines of 1995 and the National Guidelines for EIA. Other materials include project design and preliminary feasibility studies as well as textbooks and peer-reviewed articles, relevant past environmental and socio-economic studies reports carried out in the project area and maps. The desktop review process helped to identify the sensitive receptors in the project area of influence.

4.3.3 Site reconnaissance survey and Field Data Gathering

A combined site reconnaissance survey and field data collection program was executed between the 11 - 14 September 2019 by a team of environmental and social specialists. The site reconnaissance survey was undertaken to confirm the information identified as part of the desk-based assessment and also to physically observe the general biophysical and socio-economic characteristics of the entire study area and refine the proposed field data collection methods, where it was appropriate.

The sampling was conducted using pre-determined sampling locations essentially based on ecological features and the geographical location of communities/settlements in the study area. Each sampling station was geo-referenced using an Extrex Model Global Positioning System (GPS). Field data was collected for air quality, noise and ecology at sensitive receptor locations. A summary of the type of data collected during the field surveys is presented in Table 0.3 below.

Table 0.2. Summary of the baseline data collected during the field works

Component		Data collected and methods	
Physical Environment	ambient air	Air quality data sampling was carried out based on identified sensitive receptors at all the 7 health facilities. In situ air quality paramaters were collected as indicated below.	
		Parameter Measured	Equipment
		Sulphur (IV) Oxide (SO ₂),	In-situ single gas SO ₂ monitor (ToxiRAE Model PGM-1130)
		Nitrogen (IV) Oxide (NO ₂)	Single gas NO ₂ monitor (ToxiRAE Model PGM-1110)
		Carbon Monoxide (CO)	CO monitor (MultiRAE Pro Model PGM-6248)
		Ammonia (NH ₃)	NH ₃ monitor (MultiRAE Pro Model PGM-6248)
		Volatile Organic Compounds	MultiRAE gas monitor (MultiRAE Pro Model PGM-6248)
		Hydrogen Sulphide (H ₂ S)	MultiRAE gas monitor (MultiRAE Pro Model PGM-6248)
		Particulate Matter (PM)	Haz-Dust Model EPAM-500
		Oxygen (O ₂)	Gas alert microclip XL (4-in-One) (Model MCXL XWHM-Y-NA)
	Noise Level	Extech Multifunctional sound level meter	
Groundwater	In situ groundwater data was collected from existing boreholes within the health facilities. The indicator parameters were temperature, Total Dissolved Solid (TDS), Electrical Conductivity (EC) and pH		
Biological Environment	Ecological biodiversity	<ul style="list-style-type: none">Vegetation and flora surveys via a detailed assessment of plant characterics and identification and an inventory of economic crops within the project locations. Method involved the use of photograph and frequency method while attributes considered were frequency, cover, density, production, structure and composition of plant species.Fauna survey using a range of methods, i.e. direct observation, indirect observation, identification and biological nomenclature, handpicking and informal Interviews.Soil characteristic based mainly on soil morphology. An approximate classification was made by spreading a sample on a flat surface and examining it, noting particular grain size, gradation, grain shape and particle hardness.	



Socioeconomic Environment	Stakeholder Engagements	<ul style="list-style-type: none"> Socio economic study focused on the facilities' immediate environment with stakeholders consulted around all the facilities through interviews and Focus Group Discussions. .
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4.4 Description of the Physical and Biological environment

4.4.1 Climate and Meteorology

The project areas fall within the predominant climatic conditions of Anambra state which is in the tropical rainforest zone of Nigeria. The weather parameters for temperature, rainfall, relative humidity and wind are described below.

- Maximum and Minimum Temperature:** The temperature in Anambra is generally 27-30°C between June and December but rises to 32-34 °C between January and April, with the last few months of the dry season marked by intense heat. Air temperature values are generally slightly higher for the dry season months than the wet season months.
- Rainfall and Relative Humidity.** The tropical climate of the project area is broadly of two seasons: rainy season (April - October) and dry season (November – March) with annual rainfall of about 1,150mm. Rainfall usually peaks in October when an average monthly rainfall can be as high as 222mm. The mean relative humidity in the area is usually as high as 75%.
- Wind Speed and Direction.** The prevailing wind direction across the project area is the West - South-Westerlies averaging speed, 4m/s during the wet season with about 60% chance of rainfall. The dry periods is usually marked by a Harmattan wind, which is a particularly dry and dusty. This wind is also characterized by a grey haze limiting visibility and blocking the sun's rays before dissipating and leading to extreme dry heat in the latter months of February and March.

4.4.2 Air Quality

In order to assess the ambient air quality and noise level of the project areas, a total of 15 *in-situ* analyses were conducted within the premises of the health facilities and surrounding sensitive receptors as indicated in Table 0.3.



Table 0.3. Details of the air quality and noise data collected as part of the baseline surveys

#	Sampling Location	Northings	Eastings	NH ₃ (ppm)	°C	RH (%)	NO ₂ (ppm)	SO ₂ (ppm)	CO ₂ (ppm)	CO (ppm)	H ₂ S (ppm)	PM ₁₀ (µg/m ³)	VOC	W/S	Noise dB(A)
FMEnv LIMIT							0.04-0.06 ppm	0.1 Ppm		10ppm	0.008 ppm	250 (µg/m ³)			90 dB(A)
WHO Guideline Standard							40 (µg/m ³)	20 (µg/m ³)		25 ppm	7 µg/m ³	50 (µg/m ³)			
1	PHC Adazi – Ani (Main Building)	06°05'28.3"	006°59'49.8"	0	28.0	70.1	0.0	0.0	870	0	0.0	16.4	0	0.0	36.8
2	PHC Adazi – Ani (Staff Quarters)	06°05'29.3"	006°59'49.0"	0	28.2	72.2	0.0	0.0	787	0	0.0	19.1	0	0.2	30.2
3	PHC Awka-Etiti (Entrance)	06°01'52.2"	006°57'34.8"	0	29.5	69.0	0.0	0.0	780	0	0.0	19.1	0	0.4	43.7
4	PHC Awka-Etiti (Staff Quarters)	06°01'49.0"	006°57'34.9"	0	30.7	67.2	0.0	0.0	773	0	0.0	18.7	0	0.0	39.7
5	PHC Awka-Etiti (Beside the facility)	06°01'50.3"	006°57'35.7"	0	29.3	68.8	0.0	0.0	793	0	0.0	19.6	0	0.2	38.9
6	PHC Azia (Main Building))	05°52'37.4"	006°54'00.6"	0	33.6	55.3	0.0	0.0	732	0	0.0	13.1	0	1.7	45.8
7	PHC Azia (Staff Quarters)	05°52'39.7"	006°53'58.4"	0	33.5	57.7	0.0	0.0	758	0	0.0	16.2	0	1.1	35.8
8	PHC Okija (Main Building)	05°53'54.1"	006°50'20.7"	0	32.0	67.7	0.0	0.0	716	0	0.0	17.1	0	2.3	55.7
9	PHC Okija (Staff Quarters)	05°53'55.3"	006°50'20.2"	0	31.3	66.2	0.0	0.0	695	0	0.0	14.9	0	1.3	50.2
10	Central Medical Store Awka (Main Building)	06°13'29.8"	007°04'46.3"	0	25.8	81.7	0.0	0.0	849	0	0.0	42.9	0	0.4	61.8
11	Central medical Store Awka (Main gate)	06°13'30.4"	007°04'47.1"	0	26.4	79.7	0.0	0.0	862	0	0.0	44.5	0	0.2	71.2
12	PHC Atani (Front of the Facility)	06°01'34.0"	006°44'57.2"	0	28.8	75.8	0.0	0.0	800	0	0.0	27.8	0	0.2	69.8
13	PHC Atani (Staff Quarters)	06°01'33.5"	006°44'58.4"	0	27.9	77.0	0.0	0.0	781	0	0.0	13.9	0	0.6	56.2
14	Maternal and Child Hospital Otuocho (Entrance gate)	06°20'17.6"	006°51'07.8"	0	32.5	65.6	0.0	0.0	729	0	0.0	14.8	0	1.8	76.9
15	Maternal and Child Hospital Otuocho (Beside the Facility)	06°20'14.6"	006°51'07.8"	0	32.3	64.9	0.0	0.0	805	0	0.0	17.0	0	2.0	47.6

*WS = Wind Speed; Particulate Matter = PM; RH = Relative Humidity; VOC = Volatile Organic Compound; PHC = Primary Health Centre.

As presented above, the air quality data collected indicates that pollutants such as SO₂, NO₂, NH₃, CO and H₂S were not detected at all the sampling locations. VOC was also not detected while the concentration levels of PM ranged from 13.9 – 44.5 µg/m³ which is lower than the stipulated threshold for both FMEnv (250 µg/m³) and WHO (50 µg/m³) respectively.

The air quality assessment results indicate that all pollutants measured were either not detected or within acceptable FMEnv limits. Consequently, the ambient air quality in the area can be adjudged to be good. The air shed within the project area of influence is not degraded as most of the health facilities are in the rural areas.

4.4.3 Noise Levels

As shown in Table 0.3 ambient daytime noise levels recorded within the sampling locations ranged between 30.2– 76.9 dB(A). Elevated noise levels greater than 60 dB(A) were recorded in Awka (an urban city) and at PHC Atani and MCH Otuocha due to vehicular movement along adjoining expressway. Generally, the collated results show that the values were below the FMEnv permissible Noise Exposure Limits of 90 dB(A).

4.4.4 Soils and Geology

The project locations lie in the Anambra Basin, comprising of about 6,000 m of sedimentary rocks. The sedimentary rocks comprise ancient Cretaceous deltas, somewhat similar to the Niger Delta, with the Nkporo Shale, the Mamu Formation, the Ajali sandstone and the Nsukka Formation as the main deposits. On the surface, the dominant sedimentary rocks are the Imo Shale a sequence of grey shales, occasional clay ironstones and Sandstone beds.

The soils are of high agricultural value for both tree and arable crops. The soil characteristic described in Table 4.4 was based mainly on soil morphology. An approximate classification was made by spreading a sample on a flat surface and examining it, noting particular grain size, gradation, grain shape and particle hardness.

Table 0.4. Description of soils of the project areas

#	Health Facility	Geolocation	Soil Description
1	PHC Adazi-Ani	N06° 05' 26.9" E006°59' 51.5"	Reddish sandy-clayey moist soil with abrupt textural change from coarse to fine grains.
2	PHC Awka-Etiti	N06°01'48.4" E006° 57'37.5"	Rich humus soil, humic material and good proportion of clay, sand and silt with high organic matter content that supports diverse plant species.
3	PHC Azia	N05°52'35.5" E006°54'03.2"	Reddish soil with good compaction, fine grained and adequately drained.
4	PHC Okija	N05°53'51.7" E006°50'24.4"	Soil is light brown, spongy feel, highly organic (silty /clayey fine grains) soil, graded sand-clay mixture.
5	CPS, Amaku Awka	N06°13'28.2" E006° 04'49.5"	Dark brown Sandy-loam soil, fine grains with rich organic matter content.
6	PHC Atani	N06°01'32.2" E006° 44'59.9"	Golden brown clayey-sandy soil with high water retention capacity and high plasticity.
7	MCH Otuocha	N06° 20'15.6" E006° 51'10.5"	Reddish sandy-loam soil with high organic matter content that supports the growth of food crops.

*PHC = Primary Healthcare Facility; CPS = Central Pharmaceutical Stores; MCH = Maternal & Child Hospital

4.4.5 Groundwater

In order to assess the quality of existing groundwater resources in the project area, a total of four (4) groundwater samples were analysed *in-situ* from existing available boreholes sources in the study area (Table 0.5).

Table 0.5. Results of groundwater analysis

Parameters	PHC Adazi-Ani	PHC Awka-Etiti	PHC Okija	PHC Atani	FMEEnv Limit
Source	Borehole	Borehole	Borehole	Borehole	
Geo-Locations	N06°05'28.3" E006°59'49.8"	N06°01'50.3" E006°57'35.7"	N05°53'54.1" E006°50'20.7"	N06°01'33.3" E006°44'57.5"	-
Temperature (°c)	28.3	26.8	27.3	29.6	<40
pH	6.1	6.0	6.7	6.5	6.5-8.5
Total Dissolved Solid (ppm)	029	108	014	073	2000
Electrical Conductivity EC (µS/cm)	0.03	0.31	0.03	0.09	1000

*PHC – Primary Healthcare Center; FMEEnv – Federal Ministry of Environment.

The water samples across all sampling points are colourless, tasteless and odorless as it should normally be for drinking water. The results showed most of the parameters were within regulatory level except at Adazi-Ani and Awka-Etiti where pH values ranged from 6.0 – 6.1 below FMEEnv limit of 6.5-8.5 prescribed for drinking water, indicating the water is slightly acidic and may not be fit for drinking. The acidic pH may be due to the geology of the area.



Air quality & noise level (in-situ) assessment at PHC, Adazi-Ani



Air quality & noise level (in-situ) assessment at PHC, Azia



Groundwater in-situ assessment at PHC Atani



Air quality & noise level (in-situ) assessment at PHC Atani



*Biodiversity assessment at PHC **Atani***

*Biodiversity assessment at PHC **Anka-Etiti***

Plate 4.2: Environmental (Air quality, noise level, water quality and biodiversity) assessment at the various PHC facilities.

4.4.6 Description of the Biological Environment

Vegetation studies involved detailed assessment of plant characterization and identification and an inventory of economic crops within the project locations. Method involved the use of photograph and frequency method while attributes considered were frequency, cover, density, production, structure and composition of plant species. Fauna studies entailed Direct Observation, Indirect Observation, Identification and Biological Nomenclature, Handpicking and Informal Interviews. The outcome of studies is presented in Table 0.6 with field images of selected flora and fauna species shown in Plate 0.3.



Table 0.6. Biodiversity of the Project Area

Sampling Locations	Geo- location	Habitat Type/ Description	Flora Species Composition	Fauna Species Composition
Primary Health Centre Adazi-Ani	N06° 05' 26.9" E006°59' 51.5" 223m	Facility compound is unpaved; the soil is being washed off by storm water runoff and has fence that is soggy with colonies of algal growth, compound shares fence with All Saint Catholic Church and an open plot with high vegetal cover.	Plant species that are found here include: Cereals – maize (<i>Zea mays</i>) Tubers – Sweet potato (<i>Ipomea batatas</i>) Cassava (<i>Manihot esculentus</i>), yams (<i>Dioscorea</i> spp.), cocoyam (<i>Celosia esculentus</i>), Oil crops - Oil palm (<i>Elaeis guineensis</i>), egusi melon (<i>Citrullus lanatus</i>) vegetables: <i>Talinum triangulare</i> (water leaf), amaranthus (<i>Amaranthus cruentus</i> , <i>A. hybridus</i>), okra (<i>Abelmoschus esculentus</i>), jute mallow (<i>Corchorus olitorius</i>), egg-plant (<i>Solanum raddi</i> , <i>S. melongena</i>), bitter leaf (<i>Vernonia amygdalina</i>), Scent leaf (<i>Ocimum gratissimum</i>) Fruits: African pear (<i>Dacryodes edulis</i>), Sycamore (<i>Ficus sycomorus</i>), Almond fruit (<i>Terminalia catappa</i>), Banana (<i>Musa sapientum</i>) and plantain (<i>Musa paradisiacal</i>), pawpaw (<i>Carica papaya</i>), orange (<i>Citrus</i> spp.), mango (<i>Mangifera indica</i>), cashew (<i>Anacardium occidentale</i>), Avocado pear (<i>Persea americana</i>), Weeds: Sensitive plant (<i>Mimosa pudica</i>), Spear grass (<i>Imperata cylindrica</i>), Siam weed (<i>Chromolaena odorata</i>), Mariscus (<i>Mariscus alternitoliis</i>), Carpet grass (<i>Axonopus compressus</i>), False thistle (<i>Acanthus montanus</i>)	Reported and observed species at this location consists of vertebrate animals like: Domestic goat (<i>Capra aegagrus hircus</i>), Domestic dog (<i>Canis lupus familiaris</i>), Domestic pig (<i>Sus scrofa domestica</i>), agama lizard (<i>Agama agama</i>), and invertebrates such as: high populations of Termites (<i>Marcotermes bellicosus</i>), Black Ant (<i>Lepisiota</i> sp.), House Flies (<i>Musca domestica</i>), Centipede (<i>Litobius forticatus</i>), White Butterfly (<i>Pieris rapae</i>), Monarch Butterfly (<i>Danaus plexippus</i>)
Primary Health Centre Awka-Etiti	N06°01'48.4" E006° 57'37.5" 231m	Facility located on a large expanse of land, unpaved soil surface and fenced, also having an uncompleted hospital complex donated by the community, with rich vegetal cover and high composition of arable crops.	Plant species that are found here include: Cereals – maize (<i>Zea mays</i>) Tubers – Sweet potato (<i>Ipomea batatas</i>) Cassava (<i>Manihot esculentus</i>), yams (<i>Dioscorea</i> spp.), cocoyam (<i>Celosia esculentus</i>), Oil crops - Oil palm (<i>Elaeis guineensis</i>), egusi melon (<i>Citrullus lanatus</i>) vegetables: tomato (<i>Solanum lycopersicum</i> , water leaf (<i>Talinum triangulare</i>), amaranthus (<i>Amaranthus cruentus</i> , <i>A. hybridus</i>), okra (<i>Abelmoschus esculentus</i>), jute mallow (<i>Corchorus olitorius</i>), egg-plant (<i>Solanum raddi</i> , <i>S. melongena</i>), bitter leaf (<i>Vernonia amygdalina</i>), Aloe vera, Scent leaf (<i>Ocimum gratissimum</i>) Fruits: African pear (<i>Dacryodes edulis</i>), Sycamore (<i>Ficus sycomorus</i>), Almond fruit (<i>Terminalia catappa</i>), Banana (<i>Musa sapientum</i>) and plantain (<i>Musa paradisiacal</i>), pawpaw (<i>Carica papaya</i>), orange (<i>Citrus</i> spp.), mango (<i>Mangifera indica</i>), cashew (<i>Anacardium occidentale</i>), Avocado pear (<i>Pyrus communis</i>), Weeds: Sensitive plant (<i>Mimosa pudica</i>), Spear grass (<i>Imperata cylindrica</i>), Siam weed (<i>Chromolaena odorata</i>), Mariscus (<i>Mariscus alternitoliis</i>), Carpet grass (<i>Axonopus compressus</i>), False thistle (<i>Acanthus montanus</i>)	Reported and observed species at this location consists of vertebrate animals like: Cane rat <i>Thryonomis swinderianus</i> Giant rat <i>Cricetomys gambianus</i> Brown rat <i>Crecetomys</i> spp. Stripped-ground squirrel (<i>Xerus erythropus</i>), African rabbit (<i>Poelagus marjorita</i>), Village Weaver (<i>Plocens cucullatus</i>), Common Weaver Bird (<i>Plocens luteolus</i>), and invertebrates such as: high populations of Termites (<i>Marcotermes bellicosus</i>), Black Ant (<i>Lepisiota</i> sp.), House Flies (<i>Musca domestica</i>), Centipede (<i>Litobius forticatus</i>), White Butterfly (<i>Pieris rapae</i>), Monarch Butterfly (<i>Danaus plexippus</i>)
Primary Health Centre Azia,	N05°52'35.5" E006°54'03.2" 125m	Old structure undergoing renovation, facility temporarily occupying an old dilapidated structure that one's served as residential quarters for staff,	Plant species that are found here include: Cereals – maize (<i>Zea mays</i>) Tubers –Cassava (<i>Manihot esculentus</i>), white yams (<i>Dioscorea rotundata</i>), cocoyam (<i>Celosia esculentus</i>), Oil crops - Oil palm (<i>Elaeis guineensis</i>), egusi melon (<i>Citrullus lanatus</i>)	Reported and observed species at this location consists of vertebrate animals like: Cane rat <i>Thryonomis swinderianus</i> Giant rat <i>Cricetomys gambianus</i> Brown rat <i>Crecetomys</i> spp.



		surrounding are unpaved, surrounded by thick bushes and horticultural plants. compound is being threatened by gradual denudation of surface and subsoil layers with resultant evidence of eroding foundations of old structure	<p>vegetables: <i>Talinum triangulare</i> (water leaf), amaranthus (<i>Amaranthus cruentus</i>, <i>A. hybridus</i>), okra (<i>Abelmoschus esculentus</i>), bitter leaf (<i>Vernonia amygdalina</i>)</p> <p>Fruits: Banana (<i>Musa sapientum</i>) and plantain (<i>Musa paradisiaca</i>), pawpaw (<i>Carica papaya</i>), orange (<i>Citrus</i> spp.), mango (<i>Mangifera indica</i>)</p> <p>Weeds: Spear grass (<i>Imperata cylindrica</i>), Siam weed (<i>Chromolaena odorata</i>), Carpet grass (<i>Axonopus compressus</i>),</p> <p>Other Trees: <i>Parkia biglobosa</i> Dogoyanro <i>Azadirachta indica</i>, Gmelina <i>Gmelina arborea</i>, Hog (<i>Spondias mombin</i>)</p>	Stripped-ground squirrel (<i>Xerus erythropus</i>), African rabbit (<i>Poelagus marjorita</i>), Village Weaver (<i>Ploceus cucullatus</i>), Common Weaver Bird (<i>Ploceus luteolus</i>). and invertebrates such as: high populations of Termites (<i>Marcotermes bellicosus</i>), Black Ant (<i>Lepisiota sp.</i>), House Flies (<i>Musca domestica</i>), Centipede (<i>Litibobius forticatus</i>), White Butterfly (<i>Pieris rapae</i>), Monarch Butterfly (<i>Danaus plexippus</i>)
Primary Health Centre Okija	N05°53'51.7" E006°50'24.4" 86m	Facility occupies a large area of land being cultivated for food crops, soil surface is unpaved, road leading to facility is also unpaved and covered with thick bushes at both sides.	<p>Plant species that are found here include:</p> <p>Cereals – maize (<i>Zea mays</i>)</p> <p>Tubers – Sweet potato (<i>Ipomea batatas</i>) Cassava (<i>Manihot esculentus</i>), yams (<i>Dioscorea</i> spp.), cocoyam (<i>Celosia esculentus</i>),</p> <p>Oil crops - Oil palm (<i>Elaeis guineensis</i>), egusi melon (<i>citrullus lanatus</i>)</p> <p>vegetables: <i>Talinum triangulare</i> (water leaf), amaranthus (<i>Amaranthus cruentus</i>, <i>A. hybridus</i>), okra (<i>Abelmoschus esculentus</i>), jute mallow (<i>Corchorus olitorius</i>), egg-plant (<i>Solanum raddi</i>, <i>S. melongena</i>), bitter leaf (<i>Vernonia amygdalina</i>), <i>Aloe vera</i>, Scent leaf (<i>Ocimum gratissimum</i>)</p> <p>Fruits: African pear (<i>Dacryodes edulis</i>), Sycamore (<i>Ficus sycomorus</i>), Almond fruit (<i>Terminalia catappa</i>), Banana (<i>Musa sapientum</i>) and plantain (<i>Musa paradisiaca</i>), pawpaw (<i>Carica papaya</i>), orange (<i>Citrus</i> spp.), mango (<i>Mangifera indica</i>), cashew (<i>Anacardium occidentale</i>), Avocado pear (<i>Pyrus communis</i>),</p> <p>Weeds: Sensitive plant (<i>Mimosa pudica</i>), Spear grass (<i>Imperata cylindrica</i>), Siam weed (<i>Chromolaena odorata</i>), Mariscus (<i>Mariscus altermitolius</i>), Carpet grass (<i>Axonopus compressus</i>), False thistle (<i>Acanthus montanus</i>),</p> <p>Other Trees: Dogoyanro <i>Azadirachta indica</i>, Gmelina <i>Gmelina arborea</i>, Hog (<i>Spondias mombin</i>)</p>	Reported and observed species at this location consists of vertebrate animals like: Village Weaver (<i>Ploceus cucullatus</i>), Common Weaver Bird (<i>Ploceus luteolus</i>), Domestic goat (<i>Capra aegagrus hircus</i>), Domestic dog (<i>Canis lupus familiaris</i>), African Giant Snails (<i>Achachatina maginata</i>)
Pharmaceutical /Medical Stores Awka South LGA	N06°13'28.2" E006° 04'49.5" 141m	A large land area housing the Central Medical Stores, Pharmaceutical Council of Nigeria and Zonal axios HIV ware house, compound is concretized, landscaped with open green spaces interspersed with trees, flowers and grasses.	<p>Plant species found here were majorly ornamentals:</p> <p>Calathea (<i>Calathea marantifolia</i>), Cordyline (<i>Cordyline angustissima</i>), Croton (<i>Croton variegatum</i>), Fish Tail Palm (<i>Caryota urens</i>), Flame of the forest (<i>Butea monosperma</i>), Hibiscus (<i>Hibiscus abelmoschus</i>)</p>	Earthworm burrows and detritus
Primary Health Centre Atani, Ogburu LGA	N06°01'32.2" E006° 44'59.9" 25m	Facility operates in a compound with unpaved soil surface, swampy and shares a common fence with the Comprehensive Health Centre Atani. Facility is demarcated from the Niger River by the	<p>Plant species found here were majorly ornamentals:</p> <p>Calathea (<i>Calathea marantifolia</i>), Cordyline (<i>Cordyline angustissima</i>), Croton (<i>Croton variegatum</i>), Fish Tail Palm (<i>Caryota urens</i>), Flame of the forest (<i>Butea monosperma</i>), Hibiscus (<i>Hibiscus abelmoschus</i>)</p>	Reported and observed species at this location consists of vertebrate animals like: Amphibian Species Toad <i>Bufo regularis</i> Frog <i>Rana temporaria</i> Fish Species Nile Tilapia <i>Oreochromis niloticus</i> , Tilapia <i>zilli</i> , <i>Sarotherodon</i>



		Onitcha-Owerri Atani Express road with high vehicular traffic and emissions.		<p><i>melanothereon</i>, and <i>Synodontis clarias</i> (Mochokidae)</p> <p>Molluscs African giant snail <i>Archachatina marginata</i> Freshwater snail <i>Bulinus spp</i></p> <p>Reptilian species Cobra <i>Naja spp</i>, African python <i>Python sebae</i> (most times seen inside their living quarters), Nile monitor <i>Varanus niloticus</i></p> <p>Mammalian species Giant rat <i>Cricetomys gambianus</i> , Wild cat <i>Felis silvestris</i></p> <p>Avian species Cattle egret <i>Ardeola ibis</i>, Pied crow <i>Corvus albus</i> Double-spurred francolin <i>Francolinus bicalcaratus</i> Common Buzzards <i>Buteo buteo</i> Kite <i>Helicolestes hamatus</i></p>
Maternal and Child Hospital Otuocha	N06° 20'15.6" E006° 51'10.5" 103m	Facility exists on a large expanse of land, jointly occupied by a motherless baby's home, fenced with a gate, unpaved soil surface, no landscape, highly cultivated for food crops and presence of stands of economic and forest trees	<p>Plant species that are found here include:</p> <p>Cereals – maize (<i>Zea mays</i>)</p> <p>Tubers – Sweet potato (<i>Ipomea batatas</i>) Cassava (<i>Manibot esculentus</i>), yams (<i>Dioscorea spp.</i>), cocoyam (<i>Celosia esculentus</i>),</p> <p>Oil crops - Oil palm (<i>Elaeis guinensis</i>), egusi melon (<i>citrullus lanatus</i>)</p> <p>vegetables: <i>Talinum triangulare</i> (water leaf), amaranthus (<i>Amaranthus cruentus</i>, <i>A. hybridus</i>), okra (<i>Abelmoschus esculentus</i>), jute mallow (<i>Corchorus olitorius</i>), egg-plant (<i>Solanum raddi</i>, <i>S. melongena</i>), bitter leaf (<i>Vernonia amygdalina</i>), Scent leaf (<i>Ocimum gratissimum</i>)</p> <p>Fruits: African pear (<i>Dacryodes edulis</i>), Banana (<i>Musa sapientum</i>) and plantain (<i>Musa paradisiacal</i>), pawpaw (<i>Carica papaya</i>), orange (<i>Citrus spp.</i>), mango (<i>Mangifera indica</i>), cashew (<i>Anacardium occidentale</i>)</p> <p>Weeds: Sensitive plant (<i>Mimosa pudica</i>), Spear grass (<i>Imperata cylindrica</i>), Siam weed (<i>Chromolaena odorata</i>), Mariscus (<i>Mariscus alternitolius</i>), Carpet grass (<i>Axonopus compressus</i>), False thistle (<i>Acanthus montanus</i>),</p> <p>Other Trees: Seem <i>Newbouldia laevis</i>, Dogoyanro <i>Azadirachta indica</i>, Gmelina <i>Gmelina arborea</i>, Hog (<i>Spondias mombin</i>)</p>	<p>Reported and observed species at this location consists of vertebrate animals like:</p> <p>High population of Domestic pigeons <i>Columba livia domestica</i> Smiling Dove <i>Stigmatopelia senegalensis</i> and invertebrates such as: high populations of Termites (<i>Marcotermes bellicosus</i>), Scorpion <i>Isometrus maculatus</i></p>



Waterlogged

residential quarters at Atani PHC



Some aquatic species of river Nile Adjoining Atani PHC



Colony of Domestic Pigeons at PHC Otuocha



Soggy walls of PHC Adazi with algal growth

Plate 0.3. Ecological diversity and issues in the project areas

4.5 Traffic

Traffic count was carried out at the access and feeder roads leading to the facilities in areas where the interventions may lead to traffic related issues. The details of locations, access roads and traffic counts are presented in Table 0.7. For each of the location, the total number of trucks, cars and bikes for one hour were counted to determine the traffic flow. This is to enable proper planning for movement of personnel, equipment and materials to these facilities during project implementation.

Table 0.7. One hour Traffic Count on the main roads around the health care facilities

S/N	Location	Road	Cars	Trucks	Tricycle/Bikes	Total Traffic
1	Central Medical Store, Awka	Aruoma Road	252	12	186	450
2	PHC Okija	Old Owerri Road	168	24	102	294
3	PHC Atani	Onitsha Road	186	18	60	264
4	Maternal & Child Hospital, Otuocha		216	36	450	702

From the table above, Maternal and Child Hospital, Otuocha have much of Bikes/Tricycles on the road leading to the facility with less cars and very low number of trucks. This indicates that the introduction of trucks to deliver construction materials may constitute risk to the multiple bikes on the road. At Aruoma road, leading to the Central Pharmaceutical Stores in Awka, about 252 cars were counted in an hour. The project activities (which is limited to borehole and water supply) may not affect traffic situation as the borehole drilling truck will only be mobilised once and demobilised after construction. It is however recommended that such mobilization should be done during off peak periods during weekdays or preferably at weekends especially on Sunday. The traffic condition along PHCs Okija and Atani is adjudged medium with just under 200 cars, very low number of trucks and considerably low number of bikes recorded during one-hour traffic count.

Overall, the project activities are not envisaged to cause major traffic issues as a few trucks are expected to deliver materials for the medium-scale civil works. Regardless, measures to protect the interest of other road users and ensure their safety are included in the ESMP.

4.6 Description of the Socio-economic Environment

The socio-economic characteristics of the cities/ towns where health facilities are located are discussed in the Table 0.8.

4.7 Stakeholder Engagement and Consultations

As part of the baseline surveys, detailed consultation was undertaken with a range of stakeholders as summarized in Table 4.9.



Table 0.8. Social Characteristics of project areas

LGA	Anambra East	Ogbaru	Awka South	Anaocha	Idemili South	Ihiala
Health Facility	Maternal and Child Hospital	PHC Atani	Central Pharmaceutical Stores, Amaku	PHC Adazi-Ani Ward I	PHC Awka-Etiti	PHC Okija PHC Azia
Town/City	Otuocha	Atani	Awka	Adazi-Ani	Awka-Etiti	Okija/Azia
Location	Otuocha is the headquarter of Anambra East LGA located east of the River Niger.	Atani is the headquarter of Ogbaru LGA located on the eastern bank of the Niger River in Anambra State	Awka is the Anambra State capital city located midway between Onitsha and Enugu cities. The city is located 199km directly north of Port Harcourt city.	Adazi-Ani is a town in Anaocha LGA located at about 24km to Awka the state capital.	Awka-Etiti is situated within the Igbo cultural area 24 km from the river Niger, north-east of Onitsha, 16 km from Nri and 2 km from Igbo-Ukwu.	Okija is the largest town in Ihiala LGA. The town is bordered n the east by Ihembosi and Ukpok cities, within the west by olu or Ogbakubara, within the north by Ozubulu and within the south by Ihiala.
Tribe and Language	Igbo natives of Ivite Aguleri. The major language is Igbo	Igbo	Igbo	Igbo	Igbo/The main language spoken in Awka-Etiti is the Idemili variant of the Igbo language.	Igbo
Population	The town and surrounding villages have an estimated population of 152,149 people as at the 2006 population census	The current population is estimated at about 230,000	301,657 as of 2006 Nigerian census	284,215 based on the 2006 population census)	35,000 people (based on the 2006 population census)	Ihiala LGA has a population of 302,277 (based on the 2006 population census)
Catchment Population served by Health Facility	The catchment population served by the health centre is approximately 18,600	The catchment population served by the health centre is approximately 9,895.	The entire people of Anambra State	The catchment population served by the health centre is approximately 15,300. On average, the PHC attends to about 250 patients every month.	The catchment population served by the health centre is approximately 9,863. On average, the PHC attends to about 27 patients every month from Ogunzele, Ejighinandu, Iruowelle and Nkolofia.	The catchment population served by the health centre is approximately 19,500. On average, the PHC attends to about 65 patients every month.
Religion	Christianity is the predominant religion, but many residents also retain belief in the traditional religion	Christianity and Islam are the basis of faith for most residents. others also engage in traditional worship.	Christianity is the predominant religion, but many residents also retain belief in the traditional religion	Christianity is the predominant religion, but many residents also retain belief in the traditional religion	Christianity is the predominant religion, but many residents also retain belief in the traditional religion	The people of Okija are predominantly Christians but many residents also retain belief in the traditional religion. The major shrine is the Okija shrine.
Sources of Drinking water	Boreholes and rainwater	Borehole and rainwater	Boreholes	Mainly boreholes	Mainly boreholes	Borehole and rainwater
Educational Institutions	Many primary and secondary schools.	Many primary and secondary schools.	Many primary and secondary schools. Tertiary institutions	Primary and secondary schools	Awka-Etiti has various primary and secondary	Many primary and secondary schools. Tertiary institutions



			include the popular Nnamdi Azikiwe University and Paul University.		schools in the seven villages	include Okija is the home to Madonna University and Legacy University.
Amenities	Roads, Telecommunication facilities	Roads, Telecommunication facilities	Awka is an urban city with Roads, Telecommunication facilities, Street Lights amongst other urban features	Roads, Telecommunication facilities	Most of the roads in Awka-Etiti are tarred. There are also telecommunication services.	Most of the roads in Awka-Etiti are tarred. There are also telecommunication services.
Major Health Facilities	Otuocha General Hospital	Comprehensive Health Centre, Atani	Nnamdi Azikiwe University Teaching Hospital and a host of other state and privately owned hospitals.	All Saint's Hospital and Maternity	Idemili Specialist Hospital, as well as the Roman Catholic Fatima Hospital.	Obijackson Children's Hospital, Okija Our Lady of Lourdes Hospital Complex, Ihiala
Economy	The residents are mostly farmers, artisans, traders and civil servants	The residents are mostly farmers and fishermen. The few private industries in town involve fish processing and rice packaging.	The residents are mostly traders and civil servants.	The residents are mostly farmers, artisans and traders.	The residents are mostly farmers, artisans, traders and civil servants	The chief occupations in Okija is fishing, searching and animal-keeping (especially goats, sheep, pigs and fowls).
Agriculture	People in the area grow varieties of crops including yam, plantain, cassava and oil palm.	Atani is still the rice, fish, yam and cassava basin of Anambra state, producing most of the food sold in many markets in Delta and Anambra States		People in the area grow varieties of crops including yam, plantain, cassava and oil palm.	People in the area grow varieties of crops including yam, plantain, cassava and oil palm.	Okija is that the largest food Producer in Ihiala L.G.A. Major produce include yams, cassava, cocoyam, maize, plantain and palm manufacture (oil and kernel) etc
Waste Management	Waste is managed through communal dumping sites, open burning and burying. Waste management at the MCH is characterised by indiscriminate dumping, open burning and burying including contaminated and sharp objects.	Waste is managed through communal dumping sites, open burning and burying. Waste management at the PHC is characterised by indiscriminate dumping, open burning and burying including contaminated and sharp objects.	Waste management practice in Awka and the premises of health facilities is characterized by disposal of waste into skips and bins for evacuation by the government owned Anambra State Waste Management Authority (ASWAMA)	Waste is managed through communal dumping sites, open burning and burying. Waste management at the PHC is characterised by indiscriminate dumping, open burning and burying including contaminated and sharp objects.	Waste is managed through communal dumping sites, open burning and burying. Waste management at the PHC is characterised by indiscriminate dumping, open burning and burying including contaminated and sharp objects.	Waste is managed through communal dumping sites, open burning and burying. Waste management at the PHC is characterised by indiscriminate dumping, open burning and burying including contaminated and sharp objects.



Table 0.9. Summary of Stakeholder Consultation Undertaken

Name & Details of Persons Met	Date	Key Considerations	Major Issues Raised by Stakeholders	How Issues Were Addressed
1. MOTHER AND CHILD HOSPITAL, OTUOCHA, ANAMBRA EAST LGA, ANAMBRA STATE				
FGD was held with staff: 1). Mrs Agbata Florence- <i>Officer-In-Charge (OIC) of the Health Centre</i> <i>Phone:</i> 07037834853 2). See Appendix 1 for list of other staff in attendance	13 September 2019	<ul style="list-style-type: none"> • The Hospital was rebuilt and commissioned on 24 June 2000 specifically to meet the medical needs of pregnant women and children under the age of 5. • Provides the following services: Antenatal care and delivery to pregnant women, treatment of children under 5 years, Family Planning, Food & Nutrition (demonstration & education for mothers), Malaria campaigns and sensitization program including free distribution of treated nets to mothers. • The facility serves Otuocha community with a catchment population of about 18,600 • Waste management including sharp and contaminated objects is through indiscriminate dumping within the premises and open burning. • The only source of water is mechanized borehole which is currently not functioning. Consequently, rainwater is harvested for use. • There is asbestos ceiling which should be removed as part of renovation works. 	<ul style="list-style-type: none"> • The staff expressed delight about the proposed intervention. She believed it will enable the health facility to serve the community more efficiently. • The OIC enumerated the poor condition of the existing facility including the leaking roof, the ceiling which has totally failed in some parts, dilapidated windows and doors as well as damaged floors. • She also lamented about the equipment which are grossly inadequate, for example there are only 2 tables in the entire hospital, 1 delivery bed, 2 drip stands, sterilizer (none), oxygen cylinder (none) and most of the beds are also damaged. • Currently the hospital relies on rainwater, which is not suitable considering its hygiene condition and potability, for their operations as the only borehole facility is damaged with the solar panels also stolen. • The staff lamented about the sanitary situation of the facility as there is only 1 functional toilet available to staff and patients. • Staffing is also a major challenge. The facility currently has only 2 permanent staff and 15 volunteers whose availability is not guaranteed. • Waste management is currently by burn and bury including for sharp and contaminated objects. There is a pit for placenta and other human tissues. 	<ul style="list-style-type: none"> • The OIC was reminded that the proposed intervention includes rehabilitation of main building and staff quarters as well as installation of solar panels for electricity and provision of water supply infrastructure which will take care of some of the critical needs of the hospital. • The official from the State Ministry of Health noted other concerns regarding staffing and equipment and promised to communicate to authorities.
Mrs Philomena Okechukwu (Carer at the Motherless Children's Home)	13 September 2019	<ul style="list-style-type: none"> • The facility shares the same premises with Motherless Children's Home. • Major sensitive receptors may be staff and patients of hospitals as well as staff and children at the Motherless Children's Home. • The facility is fenced and as such most of key impacts will be limited to the premises of the health facility. • There are insufficient sanitary facilities as there is only one functional toilet. • There is challenge of power supply and lamps are often used to operate at night. 	<ul style="list-style-type: none"> • She expressed delight about the proposed intervention as she also hoped that the Motherless Children's Home will also benefit from the intervention. • She called the attention of the Consultant to the fact that the Children's home lack access to potable water and relies heavily on rainwater for most of their sanitary needs (commercial water supply for drinking). • She appealed to the Ministry of Health to extend pipes to the center so that the children at the Home can also benefit from the proposed intervention. • She also requested that considerations should be given to the safety and security of the children during construction activities particularly due to usage of heavy-duty equipment and presence of construction workers. 	<ul style="list-style-type: none"> • The Consultant assured that recommendations will be made to ensure that the new water supply will be reticulated to also supply water to the Motherless Children's Home. • The consultant assured that her concerns regarding the safety of the children will be addressed.



2. PHC ADAZI-ANI, ANAOCHA LGA, ANAMBRA STATE				
Mrs Pauline Ejim, Chief Community Health Worker (CHEW). 08075103454	12 September 2019	<ul style="list-style-type: none"> The facility is fenced, and all project activities will take place within the premises. There are a few trees including Cashew, Guava and plantains within the premises where project activities will take place. Access road is a sealed but low volume road with about 15 motorcycles and 5 vehicles using the road in a space of 1 hour. Project activities may not affect traffic on the road. The health facility shares a common fence with All Saint Catholic Church. The church has been providing support for the PHC in the areas of water supply, electricity and other crucial needs. There is a local incinerator for waste including medical waste stream with sharp objects like needles. There is a pit for placenta and other human tissues. The catchment population served by the health centre is approximately 15,300. On average, the PHC attends to about 250 patients every month. The PHC is equipped to treat common ailments such as Malaria, Typhoid, diarrhoea etc. Provides the following services: Antenatal care and delivery to pregnant women, Family Planning, Food & Nutrition (demonstration & education for mothers), immunization, circumcision, Malaria campaigns and sensitization program including free distribution of treated nets to mothers. The health centre has a functional borehole for potable water supply. 	<ul style="list-style-type: none"> The OIC expressed delight that the health centre has been chosen to benefit from the intervention which will improve the PHC to serve the people better. She emphasized that the intervention will meet critical needs of the PHC and enhance productivity of staff. She remarked that the All Saints Catholic Church has been providing support to the PHC particularly in the area of water supply. Specifically, the church repaired the damaged borehole and currently supply electricity (generator) to pump water daily. The Church on several occasion has also assisted in repairing the PHC's generator. She highlighted some of the challenges currently affecting the PHC including leaking roof, damaged floor, cracked walls and dilapidated windows and doors. She also enumerated lack (or shortage) of critical equipment such as couches, delivery beds, tables amongst others. The PHC currently has only 4 staff (2 permanent and 2 voluntary staff) which is grossly inadequate. She advised the project should be implemented in phases, so the normal operation of the health facility is not impeded. She appealed to the government to also intervene in the areas of staffing and equipment. 	<ul style="list-style-type: none"> The consultant further reiterated that the main building will be renovated as part of the intervention to solve the issue of leaking roof and damaged floor etc. Solar panels be provided to ensure constant water and electricity supply. The official from the State Ministry of Health noted other concerns regarding staffing and equipment and promised to communicate to authorities.
3. CENTRAL PHARMACEUTICAL STORES, AMAKU, AWKA SOUTH LGA, ANAMBRA STATE				
Pharmacist Ojukwu Okwuchukwu (08033964570)	10 August 2019	<ul style="list-style-type: none"> The facility was commissioned in 2007 to house medical equipment and drugs and it is the largest medical store in the state. The facility is fenced, and all project activities will take place within the premises. The facility shares the same premises with Office 	<ul style="list-style-type: none"> The Pharmacist praised the AfDB for assisting the state to rehabilitate health facilities and provide critical amenities especially for water supply which has been the most pressing need of the facility. He also expressed gratitude to their neighbour, Axios Warehouse who provided support for the rehabilitation of the facility, landscaping of the premises. 	The official from the State Ministry of Health noted his concerns regarding equipment and other critical needs and promised to



		<p>of the Pharmacists Council of Nigeria and Axios Warehouse (where HIV commodities are stored and distributed to 6 states in the zone).</p> <ul style="list-style-type: none"> • The facility is located along the busy Aruoma Road connecting Zik Avenue. Although the road is usually busy with traffic, project activities (limited to borehole and water supply) may not affect traffic situation as the borehole drilling truck will only be mobilised once and demobilised after construction. • The environment is well landscaped with a few mango trees observed by the side of the facility where project activities may likely take place. • The facility has no water supply source, water is sourced via commercial vendors. • Electricity is supplied by Axios warehouse to aid storage of temperature sensitive materials. 	<ul style="list-style-type: none"> • Axios is also supplying electricity (through their generator) to aid storage of temperature sensitive materials. • He remarked that electricity supply to the facility has been disconnected for over 3 years due to non-payment of bills and there is no functional generator. • He also pointed out that the facility currently has no functioning borehole and as such the intervention is meeting critical needs of the store. • One of the challenges of lack of water is poor sanitary condition of the facilities. There are currently about 25 staff working in the premises. Additional numbers, which can be up to 30 truck drivers when Axios is distributing drugs. Since there is no water supply to the toilets, these incoming drivers defecate in the premises and near bushes posing serious risks to the services rendered by the facilities. • He strongly urged that public toilets should be provided within the premises as part of the intervention. This is because the existing toilets are located inside the offices and not available to visitors who usually visit in large numbers when Axios is distributing drugs. • He also pleaded for more intervention to be targeted at other needs including provision of air conditioning system, security surveillance system, smoke detectors, modern racks and shelves amongst other things. 	communicate to authorities.
4. PHC, AWKA-ETITI, IDEMILI SOUTH LGA, ANAMBRA STATE				
Mrs Lilian Nedolisa – OIC (08038675152)	12 September 2019	<ul style="list-style-type: none"> • All project activities will take place within the premises. • The health centre is located on the outskirts of Adazi-Ani community where there are only a few residential buildings, as such traffic along access road is very limited and may not be an issue during project implementation. • Adjoining facilities also include the Igwe's Palace and Excellent Primary school. • There is an uncompleted building which was intended by the community to serve as General Hospital but abandoned due to lack of funds. The community is currently seeking help from the government to complete the building. • Waste including medical and sharp objects are managed by open burning and burying within the 	<ul style="list-style-type: none"> • The OIC expressed delight that the health centre has been chosen to benefit from the laudable initiative which will give the facility a new look, boost staff morale to serve the community better. • She was grateful that the main building and staff quarters will be renovated. The main building is dilapidated with leaking roof, damaged doors and windows etc. All 5 staff quarters are dilapidated and not fit for human dwelling. • She appealed that the rehabilitation of the main building should include demarcation of the OPD and Ward to enhance privacy of patients. She regretted that the current ward is an open hall where all patients, males and females including pregnant women, HIV patients and others are kept without any form of privacy. The current arrangement may also predispose patients to cross infection and should be improved as soon as possible. • She appealed to the government to also intervene in the areas of staffing and equipment. The health centre currently has only 2 permanent staff as all other staff are volunteers and students. The OIC 	<p>The consultant noted the concerns regarding the main Ward and assure the OIC the issue will be highlighted in the ESIA/ESMP report.</p> <p>The official from the State Ministry of Health noted her concerns regarding staffing and promised to communicate to authorities.</p>

		premises. There is a pit for placenta and other body tissues.	is currently running both day and night shifts as there are no staff to run the shifts. The PHC is in critical needs of beds, mattresses, delivery forceps and scissors, sterilizers, suction machines etc.	
Hon. Innocent Uwachukwu – Assistant Secretary of the Community (08038696039)	12 September 2019	<ul style="list-style-type: none"> • Equipped to treat common ailments such as Malaria, Typhoid, diarrhoea etc. • Provides the following services: Antenatal care and delivery to pregnant women, treatment of children under 5 years, Family Planning, Food & Nutrition (demonstration & education for mothers), Malaria campaigns and sensitization program including free distribution of treated nets to mothers. • The catchment population served by the health centre is approximately 9,863. On average, the PHC attends to about 27 patients every month from Ogunzele, Ejighinandu, Iruowelle and Nkolofia. • The existing borehole is functioning and used for essential services. There is also rainwater harvesting for washing and sanitary use. 	<ul style="list-style-type: none"> • They both expressed delight towards the intervention. They opined that it is a laudable project which will improve the services the community benefit from health centre. • Hon. Innocent Uwachukwu informed consultant about the efforts so far to raise funds to complete the General Hospital. He expressed concern that all the letters written, and meetings arranged to call the attention of the government to the building which was started in 1986 has yielded no result. • He therefore appealed to the AfDB through this intervention to assist the community to complete the hospital building. • Mrs Oluchi who owns a drug store adjacent to the PHC is a trained Auxiliary Nurse who has volunteered at the PHC on many occasions. She urged the government to recruit more staff as there is shortage of staff. She however regretted that she may not be able to offer her service as she has done in the past as there are other challenges in her private life. 	The consultant thanked the community leader and the neighbour for their input and promised to mainstream their concerns into the ESIA/ESMP Report. He also assured them of continuous engagement before and during construction
5. PHC, AZIA, IHIALA LGA, ANAMBRA STATE				
FGD was held with staff: 1). Mrs Agnes Ezeatuagwu (Assistant Officer in Charge) 2). See Appendix 1 for list of other staff in attendance	12 September 2019	<ul style="list-style-type: none"> • The existing building being used temporarily has failed and no longer fit for use thereby exposing staff and patients to great danger. • There is need to demolish the building as well as the old staff quarter immediately hence the need to rehabilitate the PHC building next to it in order to relocate the PHC back. • The current building has also been marked for demolition as it is standing directly under the RoW of new TCN transmission line. • The existing dilapidated building has asbestos ceiling (hazardous waste). • Waste including contaminated and sharp objects are managed by open burning and burying within the premises. There is a pit for placenta and other body tissues. • Equipped to treat common ailments such as Malaria, Typhoid, diarrhoea etc. • The catchment population served by the health 	<ul style="list-style-type: none"> • The staff of the health centre were full of praise because they have hope of leaving the failing building to relocate back to the original PHC building. They were also delighted for the provision of solar energy and mechanised borehole. They remarked that the provision of these facilities will enhance their work and make them available to serve the community better. • The only borehole within their premises has broken down and staff go to fetch water from the community for use at about 1km away. The staff were grateful that the intervention will ensure constant water supply and put an end to their plight. • They lamented that staff are grossly inadequate and appealed that the government should take urgent action. The health centre currently has about 2 permanent and 6 voluntary/temporary staff. • They also called attention to non-availability of both children and adult beds and mattresses, delivery couches, tables and chairs and urge the government to provide these essential tools to enhance service delivery. • Their priority need however is the urgent completion of the PHC building so they can relocate from the current failed building which 	The official from the State Ministry of Health noted their concerns regarding staffing and equipment and promised to communicate to authorities.



		<p>centre is approximately 14,400 from the surrounding Umudansu, Umudiokpara, Ihite, Ukwakwa and Abam communities.</p> <ul style="list-style-type: none"> • Provides the following services: Antenatal care and delivery to pregnant women, treatment of children under 5 years, Family Planning, Food & Nutrition, Malaria campaigns and sensitization program including free distribution of treated nets. • The existing borehole is currently not functioning. Staff trekked over 1km to fetch water. Rainwater is also harvested for use. 	they feel is endangering their lives and that of their patients.	
6. PHC OKIJA, IHIALA LGA, ANAMBRA STATE				
<p>Mrs Ebele Ofoma (OIC)</p> <p>Mrs Livina Chukwudozie (CHEW)</p> <p>Mrs Assumpta Igbo (voluntary staff)</p> <p>See Appendix 1 for list of staff in attendance and their contact details</p>	12 September 2019	<ul style="list-style-type: none"> • The PHC is located within a built-up area and surrounded by residential buildings. • The facility is partially fenced (the front and the sides are fenced but there is no fence at the back). All project activities will take place within the premises, despite the lack of fence at the back, it is envisaged that there will be limited impacts on residents of the nearby buildings as there is large space to accommodate project activities. • The premises are rich in vegetation including a few trees such as oil palm, mango and plantain. Some of these may be affected by paving activities. • Waste is managed by burning and burying including contaminated materials & sharp objects. • The PHC has no functional toilet, staff and patients defecate in the nearby bush both within and outside of the PHC. • The catchment population served by the health centre is approximately 19,500. On average, the PHC attends to about 65 patients every month. • The PHC is equipped to treat common ailments such as Malaria, Typhoid, diarrhoea etc. • Provides the following services: Antenatal care and delivery to pregnant women, Family Planning, Food & Nutrition (demonstration & education for mothers), immunization, circumcision, Malaria campaigns and sensitization program including 	<ul style="list-style-type: none"> • The OIC expressed delight that the health centre has been chosen to benefit from the intervention which will enable the PHC to serve the community better. • She appealed that the rehabilitation of the main building and the staff quarters should include provision of toilet facilities as there is currently no functioning toilet in the entire PHC. Staff and patients defecate in the nearby bushes. • The staff lamented that the entire roof in the main building is leaking and they cannot work when it is raining as they must be busy draining water from the ward. • They also highlighted that the 2 staff quarters are dilapidated and need urgent attention. • The OIC appealed to the government to also intervene in the areas of staffing and equipment. The health centre currently has 3 permanent staff, 4 volunteers and 1 temporary (Npower) staff. • The most critical need of the PHC is toilet facility. Other needs highlighted include fridge including solar panels to ensure they can keep temperature sensitive drugs. The PHC is also in need of beds, mattresses, sterilizer and drip stands. • The Senior CHEW advised that the installation should be done in phases so that their operations will not be impeded. 	<p>The Consultant noted their concerns and advice regarding phase implementation of project. He informed them of the role the ESMP will play in ensuring project is implemented in a manner that will not cause harm to the environment, staff, patients and hospital operations.</p>
Mrs Blessing Nwite (A shop owner in the neighbourhood)	12 September 2019	<ul style="list-style-type: none"> • Provides the following services: Antenatal care and delivery to pregnant women, Family Planning, Food & Nutrition (demonstration & education for mothers), immunization, circumcision, Malaria campaigns and sensitization program including 	<ul style="list-style-type: none"> • She expressed joy about the news of the proposed intervention which the PHC will benefit from. She and her children have used the PHC in the past for antenatal, delivery and treatment of minor ailments. She believed the improvement will boost the morale of the staff and encourage community members to visit the PHC. 	<p>The consultant thanked her for her inputs and informed her of the role the ESMP will play in ensuring project is implemented in a manner that will not cause harm to</p>



		<p>free distribution of treated nets to mothers.</p> <ul style="list-style-type: none"> • The health centre has a functional borehole for potable water supply. 	<ul style="list-style-type: none"> • As a neighbour to the PHC, she did not envisage the activities of the intervention will have any negative impacts on her and her family. To her the positive outweighs the negative. In addition, the activities are minor renovation and nothing major to cause any concern. 	<p>the environment, staff, patients, neighbours and hospital operations.</p>
7. PHC ATANI, OGBARU LGA, ANAMBRA STATE				
<p>Mrs Nwabor Miriam (OIC)</p> <p>08039534999</p> <p>Mrs Stella Nwadiobu (Senior CHEW)</p> <p>08037633796</p>	<p>13 September 2019</p>	<ul style="list-style-type: none"> • The PHC is not located within a built-up area but shares a fence with Comprehensive Health Centre to the right and lush vegetation to the left. • The facility is partially fenced but the gate is damaged (the left side has no fence). All project activities will take place within the premises, despite the lack of fence at one side, it is envisaged that the only sensitive receptor may be the CHC nearby and the Onitsha expressway. The premises of the PHC is large enough to accommodate project activities. • The premises of the facility are rich in vegetation including trees such as pawpaw, mango, guava and plantain. Some of these may be affected by paving activities. • The main building and staff quarters are dilapidated. There is asbestos ceiling in the main building and some of the staff quarters. The premises are also waterlogged. There is evidence of flooding during heavy rain. • Waste is managed by open burning and burying including contaminated materials and sharp objects. • The catchment population served by the health centre is approximately 9,895. • The PHC is equipped to treat common ailments such as Malaria, Typhoid, diarrhoea etc. • Provides the following services: Antenatal care and delivery to pregnant women, Family Planning, Food & Nutrition (demonstration & education for mothers), immunization, circumcision, Malaria campaigns and sensitization program including free distribution of treated nets to mothers. • Due to the proximity of the facility to the ocean, the borehole water has very high concentration of 	<ul style="list-style-type: none"> • The OIC expressed delight that the health centre has been chosen to benefit from the intervention which will improve the PHC to serve the people better. She emphasized that the intervention will meet critical needs of the PHC and enhance productivity of staff. • She however advised that the ward should be demarcated as part of the rehabilitation. Currently both male and female patients use the same ward so there is always concerns of privacy. • The issue of privacy is further complicated as they have no examination and injection rooms. The female patients do not feel comfortable being examined in the open where there are men. She often uses her office which also doubles as nurses' room (due to lack of space) for such examinations. • Another concern is cross infection may happen when all manners of patients share the same ward. • The staff lamented about the current condition of the facilities particularly the leaking roof, damaged windows and doors, torned mosquito nets, collapsed fence and damaged gate. • The Senior Chew also commented on the condition of the staff quarters and the premises which is water-logged. Due to damaged doors and windows, snake often manage to get inside the quarters endangering the lives of the staff. • The OIC appealed to the government to also intervene in the areas of staffing and equipment. The health centre currently has 3 permanent staff, 5 volunteers and 1 temporary (Npower) staff. • Other needs highlighted include beds, mattresses, baby cots, sterilizer etc • They also commented on their water supply which is contaminated due to their proximity to the ocean. They cannot use the water for drinking and other essential services. • They advocated for the intervention to be done in phases so that their operations will not be impeded. 	<p>The official from the State Ministry of Health noted their concerns regarding staffing and equipment and promised to communicate to authorities.</p> <p>The Consultant reminded them that the main building, all staff quarters and the fence will be rehabilitated. The water-logged areas will also be paved and water treatment plant will be installed to treat their water and ensure potability. He also noted their concerns and advice regarding phase implementation of project. He informed them of the role the ESMP will play in ensuring project is implemented in a manner that will not cause harm to the environment, staff, patients and hospital operations.</p>



		iron and other pollutant, hence the provision of water treatment plant as part of the intervention.		
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Consultation with Staff of MCH, Otuocha, Anambra East LGA



Consultation with OIC, Motherless Children's Home, Otuocha



Consultation with staff of PHC, Awka-Etiti



Consultation with community member at Awka-Etiti



Rainwater harvesting system at PHC Awka-Etiti



Consultation with Pharmacist Ojukwu at CPS, Awka



Consultation with OIC at PHC, Adazi-Ani, Anaocha LGA



Open burning of waste at MCH, Otuocha



Plate 4.4: Consultations and some E&S issues across the intervention areas



CHAPTER FIVE: ASSOCIATED AND POTENTIAL IMPACTS

5.1 Introduction

The activities associated with the implementation of the proposed interventions on Malaria elimination and nutrition improvement at selected health care facilities especially the civil engineering aspects can result in varying degrees of impacts on the bio-physical and social environment. In this Chapter, the potential impacts of the proposed project are identified and assessed in order to determine their significance. Subsequently, mitigation measures are proffered to avoid, reduce or compensate for all potentially significant impacts.

Three high-level categories of project receptors were identified:

- Physical: including air, surface water, groundwater, landscapes, soils, etc.;
- Biological: essentially terrestrial ecology (i.e. habitat, flora and fauna); and
- Human: including staff of the various facilities, residents of nearby communities, local economy, community health and safety etc.

The impact identification was based on the project interaction with individual receptors within these broad groups while the value, sensitivity and importance of these receptors form the bases upon which the impacts were assessed to determine their significance and the proposed mitigation measures.

5.2 Impact Assessment Approach and Methods

The broad approach (and methods) adopted for assessing the impacts of the construction and installations contained in the proposed interventions at the selected facilities on the physical, biological and social environment is adapted from the International Organization for Standardization (ISO) 14001 requirements for risk and impact assessment as well as Environmental Management System Procedure (EMSP) Aspects and Impacts – Determining Significance developed by the University of Bristol in 2015.

The impact assessment process was undertaken in line with the process summarised in Figure 0.1.

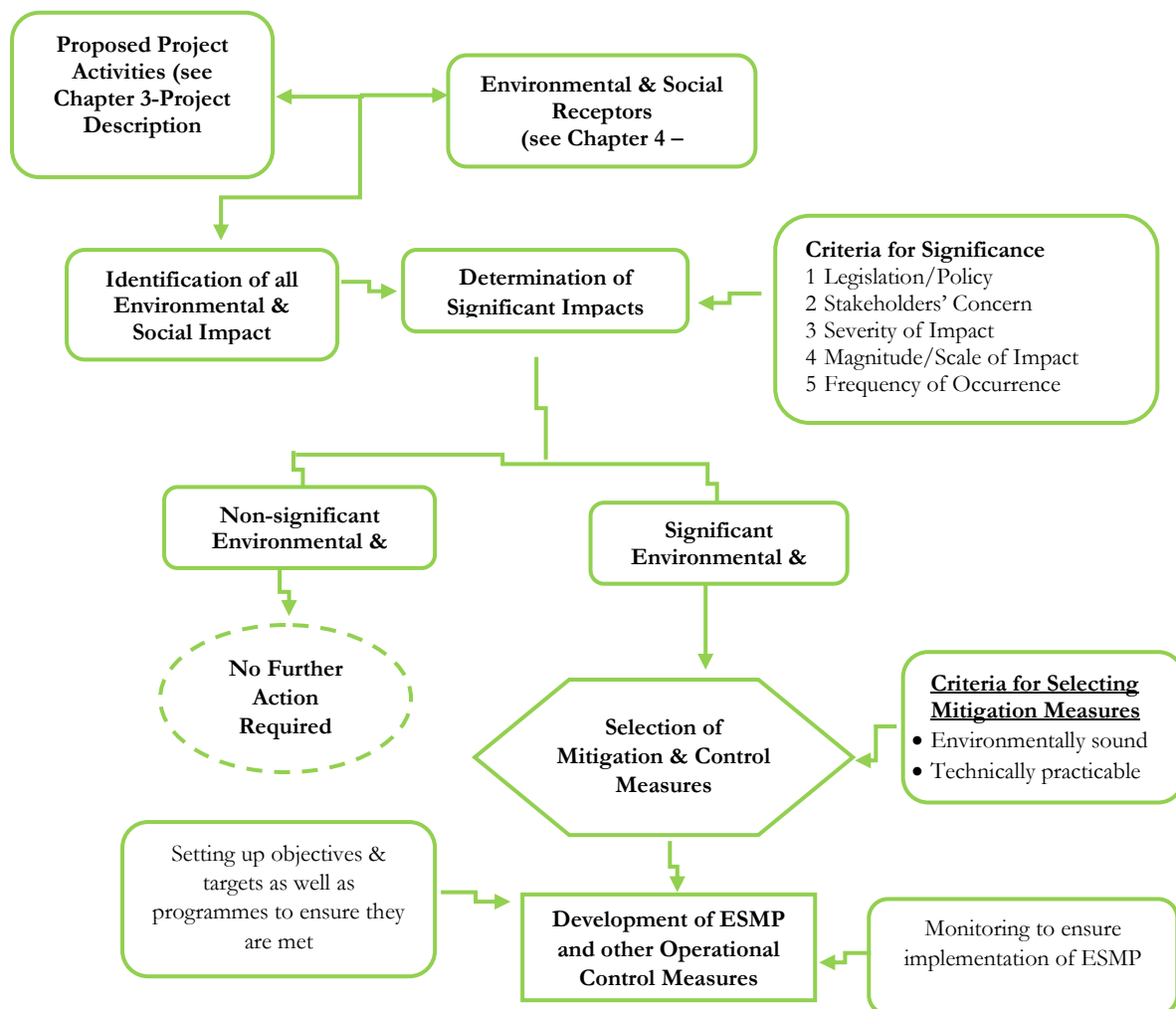


Figure 0.1. Overview of Impact Assessment Process

The impacts were assessed using a combination of primary and secondary information collected from project sites as well as professional experience and judgements of the multidisciplinary ESIA team. The impact assessment process involved 3 key stages, namely:

- i. **Impact Prediction or Identification:** this first stage entails prediction of changes to the environment that could result from the proposed construction and installations at the selected facilities. The prediction of these changes is based on the identification of potential interactions between aspects/ activities of the project and the physical, biological and social resources/receptors.
- ii. **Impact Characterization:** entails characterizing/forecasting the nature, magnitude, extent, duration, frequency and scale of the impacts. Characterization will essentially help determine the magnitude of impacts and degree of change the impact is likely to have on the receptor.
- iii. **Impact Evaluation:** entails determination of the significance of impacts based on the magnitude of impacts and the value, sensitivity/fragility and recoverability of the affected receptors. This requires an in-depth appraisal of the attributes of potential receptors which has been carried out in the baseline studies and documented in Chapter 4.



5.2.1 Identification of Potential E&S Impacts for all Project Phases

The potential impacts of the project were predicted in the context of the interactions of the environmental aspects of project activities and the environmental (and social) receptors in the project area of influence during the pre-construction, construction and operational phases of the project.

The prediction of impacts based on the linkages (based on the source-pathway-receptor approach) among project activities, aspects and receptor is presented in Table 5.1. Due to the nature of the project, the sources of impacts are identified for all project sites. However, where the potential impacts are specific to a particular location and LGA, this has been separately identified in the Table 0.2.

5.2.2 Impact Characterization

In order to further qualify the impacts of the various proposed project activities on the environment and people, all identified impacts were characterised based on the nature, duration and reversibility of impacts as shown in **Erreur ! Source du renvoi introuvable.**

Table 0.1. Impact Characterization Parameters and Definition

Impact Parameters	Definition
Beneficial Impacts	Impacts with positive and beneficial effects.
Adverse Impacts	Impacts with negative and untoward effects.
Direct Impacts	Impacts that are most obvious, result solely and are directly related to the proposed project and can be connected to the action that caused them.
Indirect Impacts	Secondary impacts that do not occur directly from a project activity but occur as a consequence of the project as a result of some intermediate step or processes.
Cumulative Impacts	Impacts that typically occur from the incremental impact of an action when combined with impacts from projects that have been undertaken recently or would be carried out in the near future.
Reversible Impacts	Impacts over which the components involved have the ability to recover after the disturbances caused by the impact.
Irreversible Impacts	Impacts whose effects are such that the affected environmental/socioeconomic component cannot be returned to its original state even after adequate mitigation measures are applied.
Residual Impacts	Impacts whose effects remain after mitigation measures have been applied.
Short Term Impacts	Impacts which last only within the period of a specific project activity.
Long Term Impacts	Impacts which have their effects remain after a specific project activity.

Table 0.2. Identified Impacts of Proposed interventions at selected facilities in Anambra state

Project Phase and Planned Activities	Environmental Aspect	Environmental Resources/ Receptor	Associated and Potential Impacts	Context of the impact
PRE-CONSTRUCTION PHASE				
Land acquisition	<ul style="list-style-type: none"> Land take for the new construction works 	Landowners Farmers	<ul style="list-style-type: none"> There are no impacts related to involuntary resettlement, physical or economic as the land required for new constructions are available within the premises of the health facilities and owned by the respective facilities. 	Not Applicable
Mobilization of personnel, equipment and materials to project sites	<ul style="list-style-type: none"> Movement of heavy-duty vehicles transporting personnel, equipment and materials to site Fugitive dusts and vehicular exhaust emissions Noise & Vibration Generation Stationary positioning of heavy-duty vehicles and equipment Presence of valuable assets on site Engagement of local staff 	Surrounding Communities, Air, Soil, Flora and Fauna, Project Workers	<ul style="list-style-type: none"> Deterioration of local air quality due to the release of fugitive dusts and gaseous pollutant emissions from heavy duty vehicles transporting personnel, equipment and materials to site. Noise and vibration disturbances from movement of heavy-duty vehicles. Soil compaction and increased susceptibility to erosion as a result of operation and stationary positioning of heavy duty vehicles. Disturbance and displacement of terrestrial fauna as a result of noise and vibration from heavy duty vehicles. Increased risk of social unrest if construction workers are not recruited from the local community Risks of Gender Based Violence (GBV)/Sexual Exploitation Abuse (SEA) resulting from the interaction between contractors and members of the communities. Disruption of traffic flow and increased risk of Road Traffic Accidents (RTAs) due to movement of heavy-duty vehicles. Risk of security breaches and threat to lives and properties due to storage of materials and equipment on site. Respiratory and eye related problems in residents of surrounding communities from exposure to fugitive dusts. Employment of local labour. Landscape disruption and visual intrusion due to presence of equipment, vehicles and trucks. Risks of accidents from struck-by injuries to workers from the movement of heavy-duty vehicles. 	Applicable to all sites
Site Preparation	<ul style="list-style-type: none"> Clearing of land for new constructions 	Vegetation, Fauna, Soil, Air and	<ul style="list-style-type: none"> Deterioration of local air quality due to the release of fugitive dusts and gaseous pollutant from vegetation clearance, soil disturbance and 	ALL project sites while the impacts related to



	<ul style="list-style-type: none"> • Use of heavy equipment • Fuel and oil usage • Emission of dust and poisonous gases • Waste generation 	Humans	<ul style="list-style-type: none"> • heavy-duty vehicles. • Noise and vibration disturbances from operation of earth moving equipment. • Loss, damage, erosion and disruption of soil from exposure of soil surfaces to rain and wind. • Waste generation from accumulation of cleared vegetal materials and spoils. • Respiratory and eye related problems in residents of surrounding communities from exposure to fugitive dusts. • Risk of occupational accidents and injuries. 	construction of new staff quarters are only applicable to MCH Otuocho, PHC Adazi-Ani, PHC Awka-Etiti
Demolition activities (including removal of asbestos contaminated material)	<ul style="list-style-type: none"> • Emission of dust and carcinogenic substances • Waste generation 	Air and Humans	<ul style="list-style-type: none"> • Deterioration of air quality through the release of dust particulates during demolition and removal of asbestos contaminated materials. • Generation of hazardous and non-hazardous waste streams. • Soil contamination from indiscriminate dumping of hazardous wastes. 	Demolition of existing building with asbestos ceiling is only applicable to PHC Azia. Renovation activities at PHC Atani, MCH Otuocho may also require removal of asbestos used as inner roof lining.
Construction/ Installation of Temporary Structures for workers including storage area, water supply system, electricity, sanitation and waste disposal areas etc.	<ul style="list-style-type: none"> • Waste Generation • Noise and Vibration Generation • Installation of Site Structures 	Affected communities, Workers, Soil and Land	<ul style="list-style-type: none"> • Noise and vibration disturbances in surrounding communities from the use of machineries and motorized equipment. • Generation of hazardous and non-hazardous wastes from construction activities. • Soil contamination from indiscriminate dumping of hazardous wastes. • Risk of occupational accidents and injuries to workers 	Applicable to all facilities
CONSTRUCTION PHASE				
Excavation for foundations of new buildings	<ul style="list-style-type: none"> • Dust Emission • Vehicular movement and use of equipment • Engagement of local workers 	Air, Soil, Human	<ul style="list-style-type: none"> • Deterioration of local air quality due to the release of fugitive dusts from excavation for foundations of new buildings • Noise and vibration from construction equipment, traffic and activities, may disturb sensitive noise receptors (i.e. humans). 	Applicable to MCH Otuocho, PHC Adazi-Ani, PHC Awka-Etiti where construction of new staff quarters will take place
Earthworks and concrete works including floor paving and Fencing	<ul style="list-style-type: none"> • Dust Emission • Engagement of local workers 	Air and Humans	<ul style="list-style-type: none"> • Loss, damage, erosion and disruption of soil from exposure of soil surfaces to rain and wind. • Real or perceived disruption to normal operational life of the facilities, through the physical presence of a workforce. • Potential for conflicts over usage of community amenities by workers. 	Applicable at all facilities except at Central Medical Stores, Awka.



			<ul style="list-style-type: none"> • Direct employment of local population in workforce and stimulation of local economy • Abstraction of significant volume of water from surface or ground water sources may affect supply for other water users and ecosystems, and result in conflicts over water use. • Inefficient estimation of materials during construction leading to excess consumption of materials, generation of wastes/emissions, pollution of soils and water. • Increased respiratory and eye related problems from exposure to dusts and gaseous emissions. • Poor construction management practices may lead to adverse effects on safety, human health and wellbeing. • Interaction between workforce and local communities may increase occurrence of communicable diseases, including HIV/AIDS and sexually transmitted diseases (STDs). • Differences in ethnicity, religion, etc. may lead to discrimination and harassment, and differences (perceived or real) in working conditions between workers may lead to resentment. • Poor management of occupational health and safety leading to accidents, injuries and illnesses among workers 	
Roofing of renovated and new building and installation of internal and external finishing materials as well as painting	<ul style="list-style-type: none"> • Noise level • Waste Generation • Engagement of local workers 	Humans	<ul style="list-style-type: none"> • Increased noise level within the environment as a result of roofing works • Generation of Hazardous waste like paint cans and other aerosols • Generation of non-hazardous waste from other material packages 	Applicable at all facilities except at Central Medical Stores, Awka.
Renovation of existing structures	<ul style="list-style-type: none"> • Noise • Generation of waste • Disturbance to facility 	Human	<p>Generation of noise from removal and replacement of materials during renovation</p> <p>Generation of Hazardous and Non-Hazardous waste during renovation</p> <p>Disruption of the activities at the facilities as a result of renovation of existing structures</p>	Applicable at all facilities except at Central Medical Stores, Awka.
Drilling of Borehole	<ul style="list-style-type: none"> • Noise • Gaseous emission • Traffic 	Human Air	<p>Generation of noise from drilling rig</p> <p>Traffic disruption by drilling rig and supporting truck</p> <p>Air pollution emissions from drilling rig and supporting truck</p>	Applicable only to Central Medical Stores, Awka and PHC Azia.
Supply and Installation of Solar Inverters and Panel	<ul style="list-style-type: none"> • Traffic • Occupational accidents 	Humans	<p>Increased road traffic and possibility of RTA</p> <p>Occupational accidents and injuries during installation of solar system</p>	Impacts applicable to all facilities



OPERATIONAL PHASE				
Site Operation activities	<ul style="list-style-type: none"> Waste Generation 	Humans	Generation of solid waste from the usage of renovated and new buildings Generation of Hazardous waste streams like used batteries, used solar panels, fluorescent tubes and Spent oil Generation of increased medical waste as the intervention s will improve utilisation of the facilities	Impacts of used batteries and solar panels are peculiar to all facilities. Impact of increased medical waste applicable to all selected facilities.



5.2.3 Impact Evaluation, Significance Ranking and Mitigation Measures

This was based on the methodological framework set by (ISO) 14001 – EMS and EMSP Aspects and Impacts – Determining Significance developed by the University of Bristol in 2015 was used in evaluating the impacts based on a combination of consequence (e.g. legislation, stakeholder concern, magnitude and severity of the impact) and likelihood (frequency of the impact occurring). The combination of these factors results in an impact significance assessed as Low Medium and High or Positive impacts.

5.3 Impact Mitigation or Enhancement Measures

A summary of the impact assessment undertaken showing the impact significance pre-mitigation as well as the residual impact significance is presented in Chapter 6- Mitigation and Enhancement Measures.

CHAPTER SIX: MITIGATION AND ENHANCEMENT MEASURES

6.1 Introduction

This Chapter describes mitigation measures that are technically and financially feasible to address environmental and social impacts associated with the redevelopment of the health facilities in Anambra State. The mitigation measures recommended are commensurate with the nature and magnitude of the potential impacts taking into cognisance the peculiarity of the proposed project and activities as well as environmental and social setting of the project area.

6.2 Mitigation Approach

The approach adopted for selecting appropriate mitigation measures followed a hierarchy that favours the avoidance of impacts over minimization, and where residual impacts remain, compensate/offset for impacts to workers, affected communities and the environment.

- **Avoidance:** To avoid the impact altogether by not using certain type of resources, or areas considered to be environmentally sensitive nor taking certain actions or parts of an action that could result in negative impacts. This is considered to be the most acceptable form of mitigation.
- **Minimization:** To minimize impacts by limiting or reducing the degree, extent, magnitude or duration of adverse impacts. Negative impacts can be minimized through environmental and social measures/treatments/design. Available options to minimize negative impacts include abate, rectify, repair, and/or restore.
- **Compensation:** To compensate for the impact by replacing or providing substitute resources especially for unavoidable and residual impacts. This does not eliminate the adverse impact but seeks to offset it with an (at least) comparable positive one.

6.3 Mitigation and Enhancement Measures

A summary of all identified impacts as well as the proposed mitigation measures is presented in Table 0.1.

**Table 0.1. Mitigation and Enhancement Measures**

Project Phase and Planned Activities	Associated and Potential Impacts	Pre-Mitigation Significance	Mitigation Measure	Post mitigation (Residual) significance
PRE-CONSTRUCTION PHASE				
Mobilization of personnel, equipment and materials to project sites	Deterioration of local air quality due to the release of fugitive dusts and gaseous pollutant emissions from heavy duty vehicles transporting personnel, equipment and materials to site.	Medium	<ul style="list-style-type: none"> Implement Dust control and suppression measures, such as use of dampening and wetting. Use of modern equipment meeting appropriate emissions Standards, and regular preventative maintenance. Encourage increased fuel efficiency in project vehicles (e.g. selection of fuel in order to minimise harmful emissions). No use of ozone depleting substances during construction. 	Low
	Noise and vibration disturbances from movement of heavy-duty vehicles	Medium	<ul style="list-style-type: none"> Use of noise barriers to screen receptors, e.g. with berms or bunds. Use of modern, well maintained equipment fitted with abatement devices (e.g. mufflers, noise enclosures) Strict controls of timing of activities e.g. blasting and other high noise emissions; prohibition on night working if possible. 	Low
	Soil compaction and increased susceptibility to erosion as a result of operation and stationary positioning of heavy duty vehicles	Medium	<ul style="list-style-type: none"> Avoidance of areas liable to flooding, slope instability, and water crossings where possible. Retention of topsoil for restoration (including tilling and revegetation) as soon as practicable. 	Low
	Disturbance and displacement of terrestrial fauna as a result of noise and vibration from heavy duty vehicles.	Medium	<ul style="list-style-type: none"> Observance of seasonal sensitivities (e.g. breeding seasons), and alteration of activity to reduce noise levels at that time. 	Low
	Disruption of traffic flow and increased risk of road traffic accidents (RTAs) due to movement of heavy-duty vehicles.	High	<ul style="list-style-type: none"> Develop and implement a traffic management plan covering materials delivery as well as all project vehicles 	Low
	Increase in revenue and job creation	Positive Impact	<ul style="list-style-type: none"> Give priority to local people who have expertise in works required and patronize local businesses during interventions 	Positive
	Risk of security breaches and threat to lives and properties due to storage of materials and equipment on site.	Medium	<ul style="list-style-type: none"> Develop a security management plan and work with relevant agencies to secure lives and properties within the project environment 	Low
	Respiratory and eye related problems in residents of surrounding communities from exposure to fugitive dusts.	Medium	<ul style="list-style-type: none"> Implement Dust control and suppression measures, such as use of dampening and wetting 	Low
	Landscape disruption and visual intrusion due to presence of equipment, vehicles and trucks.	Medium	<ul style="list-style-type: none"> Rehabilitation of trampled areas with native species, and ecosystem restoration in habitats of conservation value, using specialist advice and input, backed up by a long-term monitoring programme and corrective actions as necessary. 	Low
	Risks of Gender Based Violence (GBV)/Sexual Exploitation Abuse (SEA) resulting from the interaction between contractors and members of the communities.	Medium	<ul style="list-style-type: none"> Develop and Implement Code of Conduct for workers that specifically prohibit GBV and SEA Create partnership with local NGO to report workers' misconduct and complains on Gender Based Violence 	
	Disruption of traffic flow and increased risk of Road Traffic Accidents (RTAs) due to movement of heavy-duty vehicles.	High	<ul style="list-style-type: none"> Ensure that heavy duty trucks and major haulages are done during traffic off-peak periods to reduce the possibility of Road Traffic Accidents 	
	Risks of accidents from struck-by injuries to workers from the movement of heavy-duty vehicles.	Medium	<ul style="list-style-type: none"> Train drivers driving project's heavy duty trucks on evasive and defensive driving to avoid accidents at all time 	Low
Site Preparation	Deterioration of local air quality due to the release of fugitive dusts and gaseous pollutant from vegetation clearance, soil disturbance and heavy-duty vehicles	Low-Medium	<ul style="list-style-type: none"> Implement Dust control and suppression measures, such as use of dampening and wetting 	Low
	Noise and vibration disturbances from operation of earth moving equipment.	Medium	<ul style="list-style-type: none"> Use of noise barriers to screen receptors, e.g. with berms or bunds. Use of modern, well maintained equipment fitted with abatement devices (e.g. mufflers, noise enclosures) Strict controls of timing of activities e.g. blasting and other high noise emissions; prohibition on night working if possible. 	Low
	Loss, damage, erosion and disruption of soil from exposure of soil surfaces to rain and wind.	Low-Medium	<ul style="list-style-type: none"> Minimize areas exposed to what is required for construction or pavement. Retention of topsoil for restoration (including tilling and revegetation) as soon as practicable. Earthworks to be designed to achieve a balance between cut and fill wherever possible. 	Low
	Waste generation from accumulation of cleared vegetal materials and spoils.	Medium	<ul style="list-style-type: none"> Ensure that all waste are managed by authorized waste management contractor. 	Low



Project Phase and Planned Activities	Associated and Potential Impacts	Pre-Mitigation Significance	Mitigation Measure	Post mitigation (Residual) significance
	Risk of occupational accidents and injuries.	Medium	<ul style="list-style-type: none"> Provide adequate PPE and Enforce its use Provide first aid on site work with facilities for immediate treatment in case of any injury. 	Low
Demolition activities (including removal of asbestos contaminated material)	Deterioration of air quality through the release of dust particulates during demolition and removal of asbestos contaminated materials.	High	<ul style="list-style-type: none"> Ensure that workers are properly protected with PPE Extra Care should be taken while removing Asbestos containing materials to avoid release of carcinogenic substances Ensure that Asbestos Contaminated Materials are quarantined pending evacuation by to treatment facility by licensed waste management contractor. 	Low
	Generation of hazardous and non-hazardous waste streams.	High	<ul style="list-style-type: none"> Preparation of Waste Management Plan following the waste hierarchy, supported by staff training. Use of authorized contractors for hazardous and any other wastes which the project cannot dispose of safely. 	Low
			<ul style="list-style-type: none"> 	
Construction/ Installation of Temporary Structures including storage area, water supply system, electricity, sanitation and waste disposal areas etc.	Noise and vibration disturbances in surrounding communities from the use of machineries and motorized equipment.	Low-Medium	<ul style="list-style-type: none"> Use of noise barriers to screen receptors, e.g. with berms or bunds. Use of modern, well maintained equipment fitted with abatement devices (e.g. mufflers, noise enclosures) Strict controls of timing of activities e.g. blasting and other high noise emissions; prohibition on night working if possible. 	Low
	Generation of hazardous and non-hazardous wastes from construction activities.	High	<ul style="list-style-type: none"> Preparation of Waste Management Plan following the waste hierarchy, supported by staff training. Use of authorized contractors for hazardous and any other wastes which the project cannot dispose of safely. 	Low
	Soil contamination from indiscriminate dumping of hazardous wastes.	High	<ul style="list-style-type: none"> Ensure that all hazardous waste are evacuated by authorized waste management contractor and disposed at appropriate recycling or management facility 	Low
	Risk of occupational accidents and injuries to workers	High	<ul style="list-style-type: none"> Provide adequate PPE and Enforce its use Provide first aid on site work with facilities for immediate treatment in case of any injury. 	Low
CONSTRUCTION PHASE				
Excavation for foundations of new buildings	Deterioration of local air quality due to the release of fugitive dusts from excavation for foundations of new buildings	Low - Medium	<ul style="list-style-type: none"> Implement dust suppression method of wetting before excavation 	Low
	Noise and vibration from construction equipment, traffic and activities, may disturb sensitive noise receptors (i.e. humans).	Low - Medium	<ul style="list-style-type: none"> Use of noise barriers to screen receptors, e.g. with berms or bunds. Use of modern, well maintained equipment fitted with abatement devices (e.g. mufflers, noise enclosures) Strict controls of timing of activities e.g. blasting and other high noise emissions; prohibition on night working if possible. 	Low
	Loss, damage, erosion and disruption of soil from exposure of soil surfaces to rain and wind.	Low-Medium	<ul style="list-style-type: none"> Limit exposure to only spaces required 	Low
	Real or perceived disruption to normal operational life of the facilities, through the physical presence of a workforce	High	<ul style="list-style-type: none"> Create another access to the areas where new buildings are being built to avoid disruption of activities at the facilities. Where renovation is to be done, sectionalize the work to allow smooth running of the facilities. 	Low
	Potential for conflicts over usage of community amenities by workers.	High	<ul style="list-style-type: none"> Engage the communities before the commencement of project intervention and identify amenities that workers may need to leverage on. Where they are inadequate, project should help to improve them 	Low
	Direct employment of local population in workforce and stimulation of local economy		<ul style="list-style-type: none"> Positive impact which is to be sustained 	
	Abstraction of significant volume of water from surface or ground water sources may affect supply for other water users and ecosystems and result in conflicts over water use.	Medium	<ul style="list-style-type: none"> Where water is not much available, use commercial sources to supplement during construction and not depend solely on the existing waste supply infrastructure at the facilities. 	Low
	Inefficient estimation of materials during construction leading to excess consumption of materials, generation of wastes/emissions, pollution of soils and water.	Medium	<ul style="list-style-type: none"> Encourage the implementation of Reduce, Reuse, Recover and Recycle 	Low
Earthworks and concrete works including floor paving and Fencing	Increased respiratory and eye related problems from exposure to dusts and gaseous emissions.	Medium	<ul style="list-style-type: none"> Provide Nose mask and enforce its use 	Low
	Poor construction management practices may lead to adverse effects on safety, human health and wellbeing.	High	<ul style="list-style-type: none"> Ensure that safety policies are implemented 	Low



Project Phase and Planned Activities	Associated and Potential Impacts	Pre-Mitigation Significance	Mitigation Measure	Post mitigation (Residual) significance
	Interaction between workforce and local communities may increase occurrence of communicable diseases, including HIV/AIDS and sexually transmitted diseases (STDs).	Medium	<ul style="list-style-type: none"> Training and awareness raising for workforce and their dependents on HIV/AIDS and other STDs, and communicable diseases including malaria; health awareness raising campaigns for communities on similar topics. Provision of opportunities for workers to regularly return to their families. 	Low
	Differences in ethnicity, religion, etc. may lead to discrimination and harassment, and differences (perceived or real) in working conditions between workers may lead to resentment.	Medium	<ul style="list-style-type: none"> Employment practices and working conditions should conform to International Labour Organisation (ILO) Standards and national regulations. Rest and recreational facilities and time should be provided, and rules on alcohol and drugs defined and clearly communicated to workers. The basis for differences in the standard of accommodation should be non-discriminatory; it should be documented and communicated transparently to the workforce. Clear and comprehensive health and safety reporting and grievance procedure system should be established and be freely available to all of the workforce. 	Low
	Poor management of occupational health and safety leading to accidents, injuries and illnesses among workers	High	<ul style="list-style-type: none"> Develop and Implement HSE Plan to cater for proper management of Occupational Health and Safety. 	Low
Roofing of renovated and new building and installation of internal and external finishing materials as well as painting	Increased noise level within the environment as a result of roofing works	Low-Medium	<ul style="list-style-type: none"> Provide noise attenuator for workers and restrict such works to times when it will create lesser nuisance to people 	Low
	Generation of Hazardous waste like paint cans and other aerosols	High	<ul style="list-style-type: none"> Dispose all waste through licensed waste management contractor 	Low
	Generation of non-hazardous waste from other material packages	Medium	<ul style="list-style-type: none"> Same as above 	Low
Renovation of existing structures	Generation of noise from removal and replacement of materials during renovation	Low-Medium	<ul style="list-style-type: none"> Provide noise attenuator for workers and restrict such works to times when it will create lesser nuisance to people 	Low
	Generation of Hazardous and Non-Hazardous waste during renovation	High	<ul style="list-style-type: none"> Same as above 	Low
	Disruption of the activities at the facilities as a result of renovation of existing structures	High	<ul style="list-style-type: none"> Sectionalise the renovations to allow smooth 	Low
Drilling of Borehole	Generation of noise from drilling rig	Medium	<ul style="list-style-type: none"> Inform the community before the day of drilling 	Low
	Traffic disruption by drilling rig and supporting truck	Low-Medium	<ul style="list-style-type: none"> Inform road users and put proper signage in place to inform road users while traffic should also be controlled during the short period of disruption. 	Low
Supply and Installation of equipment such as Solar Inverters and Panel	Increased road traffic and possibility of RTA	Low-Medium	<ul style="list-style-type: none"> Deliver Generator and solar components during traffic off-peak periods which are usually early morning over the weekends. 	Low
	Occupational accidents and injuries during installation of solar system	Medium-High	<ul style="list-style-type: none"> Contractor shall Develop and implement Health Safety and Environment Plan 	Low
OPERATIONAL PHASE				
Operations and Usage of intervention's physical component	Generation of solid waste from the usage of renovated and new buildings Generation of Hazardous waste streams like used batteries, used solar panels, fluorescent tubes and Spent oil	High	<ul style="list-style-type: none"> Preparation of Waste Management Plan following the waste hierarchy, supported by staff training. Use of authorized contractors for hazardous and any other wastes which the project cannot dispose of safely. 	Low
	Intervention will increase utilisation of facilities which will in turn increase medical waste		<ul style="list-style-type: none"> Ensure that medical waste is managed by authorized waste management contractors 	



CHAPTER SEVEN: ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN (ESMMP)

7.1 Introduction

This chapter presents the Environmental and Social Management and Monitoring Plan (ESMMP) for redevelopment of health care facilities across Anambra State. This ESMP is a proactive tool that will ensure seamless integration of action plans and programmes for overall management of all identified (and unidentified) impacts of the proposed projects.

The overarching objective of the ESMP is to ensure that all potential impacts of the project are contained and brought to an acceptable level to guarantee economic, environmental and social sustainability of the projects.

The ESMP has been developed to meet international and national standards on environmental and social (E&S) performance and covers the project implementation phases (i.e. Pre-construction, construction and operation phases) of the project. Furthermore, it details the mitigation and enhancement measures that Anambra State government and their Contractors will be committed to implement throughout project life cycle as well as desired outcomes, performance indicators, monitoring, timing for actions and responsibilities.

The delegated authorities within the PIU formed by the Anambra State governments shall have principal responsibility for all measures outlined in this ESMP but will delegate certain responsibilities to its contractors. Such delegation of responsibility shall be adequately documented as part of contractual agreements to guarantee absolute compliance and commitment on the part of the contractors to implement the ESMP. It is instructive to note that most of the mitigation measures are the obligations of the Contractor during project implementation. Consequently, the contractor shall prepare its proposals taking into account the measures in this ESMP and the detailed general environmental management conditions during civil works which is attached as **Appendix 2**.

7.2 Environmental and Social Impacts and Mitigation (ESMP)

The significant potential E&S impacts for which management actions are required have been identified in Chapter 5 of this Report. The feasible, practical and cost-effective measures and actions to avoid, minimize, mitigate the potentially significant negative E&S impacts of the project to acceptable levels and enhance positive impacts (effectively the ESMP) are also described in Chapter 6 of this Report. The mitigation measures mainly relate to the adoption of environmentally friendly designs and the application of sound construction and operations management practices. **All the management measures will be included in the bid documents for the successful enterprise to implement.**

7.3 Institutional Arrangement for ESMP Implementation

The successful implementation of the monitoring program will depend on the commitment and capacity of the PIU, E&S safeguards Officers, consultants and other third parties/institutions to implement the program effectively.

The PIU will have principal responsibility for all measures outlined in this ESMMP but will delegate certain responsibilities to its contractors and supervising consultant. Such

delegation of responsibility shall be documented as part of contractual agreements to guarantee compliance and commitment on the part of the supervising consultant to supervise and on the part of the contractors to implement the ESMP. As **most of the mitigation measures are the obligations of the Contractor** during project implementation, the contractor shall prepare the Contractor's ESMP (C-ESMP) taking into account the measures in this ESMP.

The estimated costs of mitigation measures associated with the civil work activities as stated in Table 7.2 will be included in the project's Bill of Quantities (BoQ). The contractor is responsible to implement the proposed mitigation measures as per the instruction of the PIU. The specific roles and responsibilities of those that will be involved in the implementation and monitoring of this ESMP are highlighted in Table 0.1 below.

Table 0.1. Roles and Responsibility of Institutions in the implementation and monitoring of the ESMMP

S/N	Category	Roles & Responsibilities
1.	Federal Ministry of Environment	<ul style="list-style-type: none"> Lead role - provision of advice on screening, scoping, review of draft ESMP report (in liaison with State Ministry of Environment and Water Resources), receiving comments from stakeholders, public hearing of the project proposals and social liability investigations, monitoring and evaluation process and criteria.
2.	Anambra State Ministry of Env (SME)	<ul style="list-style-type: none"> Nominate competent staff to serve as E&S Safeguard Officers for the SPIU Environmental monitoring and compliance overseer at the State level Review of draft ESMP report (in liaison with Federal Ministry of Environment) Site assessment and monitoring of ESMP implementation.
3.	Anambra State Ministry of Health/SPIU	<ul style="list-style-type: none"> Liaise closely with Anambra SME in preparing a coordinated response on E&S aspects of project development. Safeguards due diligence.
4.	Safeguard Unit, (Environmental & Social) from Anambra SME	<p>Environmental Safeguards</p> <ul style="list-style-type: none"> Collate environmental baseline data on relevant environmental characteristics of the selected project sites; Analyze potential community/individual sub-projects and their environmental impacts; Ensure that project activities are implemented in accordance to best practices and guidelines set out in the ESMP; 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. <p>Social Safeguards</p> <ul style="list-style-type: none"> Develop, coordinate and ensures the implementation of the social aspects of the ESMP Identify and liaise with all stakeholders involved in social related issues in the project; Conduct impact evaluation and beneficiary's assessment; and Establish partnerships & liaise with organizations, CBOs and CSOs.
5.	E&S Consultant	<ul style="list-style-type: none"> Development of ESMP Training of relevant SPIU, regulators, MDAs and contractor on ESMP implementation and monitoring. Implementation of ESMP
6.	Contractor	<ul style="list-style-type: none"> Compliance to BOQ specification in procurement of material and construction Implement ESMP during project implementation Ensure all contractors and workers sign the Code of Conduct (CoC) and are routinely trained on the contents of the CoC Prepare C-ESMP for approval of PIU Implement C-ESMP during project implementation Ensure that all construction personnel and subcontractors are trained on the content of the C-ESMP and are made aware of the required measures for environmental and social compliance and performance Prepare OHS manual and abide by labor laws as set out in the agreement Provide adequate basic amenities and PPEs to workers and ensure that the PPEs are worn by workers during works. Prepare and maintain records and all required reporting data as stipulated by the ESMP, for

		submission to the Supervising Consultant
7.	State Government MDAs	<ul style="list-style-type: none"> • Other MDAs come in as and when relevant areas or resources under their jurisdiction are likely to be affected by projects. • Participate in the EA processes and project decision-making that helps prevent or minimize impacts and to mitigate them. MDAs may also be required to issue a consent/approval for an aspect of a project; allow an area to be included; or allow impact to a certain extent or impose restrictions/conditions, monitoring responsibility or supervisory oversight.
8.	LGAs	<ul style="list-style-type: none"> • Provision of oversight function across project within its jurisdiction for ESMP compliance. • Monitoring of activities related to public health, sanitation, waste management amongst others.
9.	Affected Health Facilities	<ul style="list-style-type: none"> • Promote environmental awareness. • Review environmental and social performance report made available by SPIU. • Provide comments, advice and/or complaints on issues of nonconformity. • Attend public meetings organized by the SPIU to disseminate information and receive feedback.
10.	CDA	<ul style="list-style-type: none"> • Ensure community participation by mobilizing, sensitizing community members
11.	NGOs/CSOs	<ul style="list-style-type: none"> • 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.
12.	AfDB	<ul style="list-style-type: none"> • Overall supervision and provision of technical support and guidance. • Recommend additional measures for strengthening management framework and implementation performance;
13.	General Public	<ul style="list-style-type: none"> • Identify issues that could derail the project and support project impacts and mitigation measures, Awareness campaigns.

Table 7.2: Environmental and Social Management & Monitoring Plan

Project Activity	Associated & Potential Impacts	Mitigation Measures	Responsibility For Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring	Cost of Monitoring (Naira)
PRECONSTRUCTION PHASE											
Mobilization of personnel, equipment and materials to project sites	A2). Deterioration of local air quality due to the release of fugitive dusts and gaseous pollutant emissions from heavy duty vehicles transporting personnel, equipment and materials to site.	<ul style="list-style-type: none"> • Use water to wet ground for dust suppression. • Enforce appropriate speed limit to reduce dust on unpaved surfaces. • Train drivers/ workers on proper operation of vehicles & equipment to include fuel efficiency and anti-idling techniques. 	Contractor	800,000	Air quality parameters (CO, NO ₂ , SO ₂ , CO ₂ , SPM ₁₀)	<i>In-situ</i> measurement. Visual observation of records & interviews	FME _{env} permissible limit	Road corridor and adjoining communities	Weekly during pre-construction	ESO SME	1,000,000 (for air quality and noise level measuring equipment)
	A3). Noise and vibration disturbances from movement of heavy-duty vehicles.	<ul style="list-style-type: none"> • Use of modern, well maintained equipment fitted with abatement devices (e.g. mufflers, noise enclosures) • Strict controls of timing of activities e.g. blasting and other high noise emissions; • Prohibition on night working. 	Contractor	500,000	Noise level	<i>In situ</i> measurement	Noise level not to exceed FME _{env} limit of level (90 dBA) for an 8-hour period	Construction site and nearby sensitive receptors	Weekly during pre-construction	PIU SSO & ESO SME	1,500,00 for monitoring activities during Pre-construction
	A4). Soil compaction and increased susceptibility to erosion as a result of operation and stationary positioning of heavy duty vehicles.	<ul style="list-style-type: none"> • Avoidance of areas liable to flooding, slope instability, and water crossings. • Retention of topsoil for restoration (including filling and revegetation) as soon as practicable. 	Contractor	--	Avoidance of areas prone to erosion	Visual observation	Little or no evidence of erosion	Project areas	Weekly during pre-construction	PIU (ESO) SME	--
	A5). Disturbance and displacement of terrestrial fauna as a result of noise and vibration from heavy duty vehicles.	<ul style="list-style-type: none"> • Use of modern, well maintained equipment fitted with abatement devices (e.g. mufflers, noise enclosures) • Strict controls of timing of activities e.g. blasting and other high noise emissions; • Prohibition on night working. 	Contractor	Same as above	Noise level	<i>In situ</i> measurement	Noise level not to exceed FME _{env} limit of level (90 dBA) for an 8-hour period	Construction site and nearby sensitive receptors	Weekly	PIU SSO & ESO SME	--
	A6). Disruption of traffic flow and increased risk of road traffic accidents (RTAs) due to movement of heavy-duty vehicles.	<ul style="list-style-type: none"> • Implement a traffic management plan • Engage competent drivers with appropriate level of experience • Ensure training of drivers and enforce speed limits • Ensure vehicles conveying materials to site are covered 	Contractor	500,000	TMP developed Level of experience and training of drivers Speed limits	Visual observation of records & interviews	Zero traffic related incidents	Project sites, across access road corridors	Weekly	PIU SSO Police	--
	A7). Risk of security breaches and threat to lives and properties due to storage of materials and equipment on site.	<ul style="list-style-type: none"> • Deploy competent security personnel to secure project site. • Work with relevant agencies to secure lives and properties within the project environment 	Contractor	500,000	No of security personnel engaged	Records and Interviews	Zero security incidents	Construction site	Daily	PIU (SSO) OIC of Host Health Facility Host LGA Police	--
	A8). Employment of local labour.	<ul style="list-style-type: none"> • Ensure construction works are targeted towards local people 	Contractor	--	No of locals employed	Records and Interviews	Level of satisfaction in host community	Project site and host community	Monthly	PIU (SSO)	
	A9). Landscape disruption and visual intrusion due to presence of equipment, vehicles and trucks.	<ul style="list-style-type: none"> • Rehabilitation and revegetation of trampled areas with native species. • Ensure all equipment and left over materials are removed after construction 	Contractor	100,000	Evidence of rehabilitation and revegetation	Visual observation	Satisfactory level of blending of project areas with the environment	Project site	Weekly during preconstruction	PIU (SSO) OIC of Host Health Facility	--
	A10). Risks of accidents from struck-by injuries to workers from the movement of heavy-duty vehicles.	<ul style="list-style-type: none"> • Train drivers on evasive and defensive driving to avoid accidents at all time. • Engage competent drivers with appropriate level of experience • Ensure vehicles conveying materials to site are covered 	Contractor	500,000	Training and experience of drivers	Visual observation of records & interviews	Zero traffic related incidents	Project sites, across access road corridors	Weekly	PIU SSO Police	--
Site Preparation and Clearing	A11). Deterioration of local air quality due to the release of fugitive dusts and gaseous pollutant from vegetation clearance, soil disturbance and heavy-duty vehicles.	<ul style="list-style-type: none"> • Use water to wet ground for dust suppression. • Enforce appropriate speed limit to reduce dust on unpaved surfaces. • Train drivers/ workers on proper operation of vehicles & equipment to include fuel efficiency and anti-idling techniques. 	Contractor	200,000	Air quality parameters (CO, NO ₂ , SO ₂ , CO ₂ , SPM ₁₀)	<i>In-situ</i> measurement. Visual observation of records & interviews	FME _{env} permissible limit	Road corridor and adjoining communities	Weekly during pre-construction	PIU - ESO SME	--
	A12). Noise and vibration disturbances from operation of earth moving equipment.	<ul style="list-style-type: none"> • Select and use vehicles/ equipment with lower sound power levels. • Install suitable mufflers on engine exhausts and compressors. • Respond promptly to noise complaints 	Contractor	Same as noise measures above	Noise level	<i>In situ</i> measurement	Noise level not to exceed FME _{env} limit of (90 dBA) for an 8 hour period	Construction site and nearby communities	Monthly	PIU – ESO, SSO SME	--

	A13). Loss, damage, erosion and disruption of soil from exposure of soil surfaces to rain and wind.	<ul style="list-style-type: none"> Avoid trees as much as possible. Restrict removal of vegetation and trees to the boundary of project. 	Contractor	500,000	Clearly defined boundaries of protected areas	Visual observation; and	Available number and diversity of plant species within baseline conditions	Construction areas	Weekly	PIU - ESO SME	
	A14). Loss of vegetation and biodiversity	<ul style="list-style-type: none"> Protect all vegetation not required to be removed against damage; Construct drainage system and use erosion protection structures such as sediment traps, riprap and gabions. 			Evidence of re-vegetation	Biodiversity survey					
	A15). Waste generation from accumulation of cleared vegetal materials and spoils.	<ul style="list-style-type: none"> Ensure that all wastes are securely stored on site and evacuated by authorized waste management contractor. 	Contractor	500,000	Evidence of proper storage and evacuation	Visual observation and records	Waste transfer documentation	Construction areas	Weekly	PIU - ESO SME ASWAMA	
	A16). Respiratory and eye related problems in residents of surrounding communities from dust exposure	<ul style="list-style-type: none"> Same as A11 above 									
	A17). Risk of occupational accidents and injuries.	<ul style="list-style-type: none"> Provide adequate first aid, first aiders, PPE, signages (English and Local languages), lighting and/or reflective tapes, engineering barriers e.g. fencing to ensure safety. Restrict unauthorized access to all areas of high-risk activities Collaborate with host health facilities for treatment in case of any injury 	Contractor	500,000	No of trained first Aiders	Visual observation	Compliance with Factory Act, 1990	Construction Site	Monthly	PIU ESO & SSO SME	
Demolition activities (including removal of asbestos contaminated material)	A18). Deterioration of air quality through release of dust particulates during demolition and removal of asbestos contaminated materials.	<ul style="list-style-type: none"> Ensure that workers are properly protected with PPE Extra Care should be taken while removing Asbestos containing materials to avoid release of carcinogenic substances 	Contractor	For PPE, see A17	Usage of appropriate PPE	Visual observation	FMEEnv permissible limit for pollutants	Construction Site	Monthly	PIU ESO & SSO SME	
	A19). Generation of hazardous and non-hazardous waste streams.	<ul style="list-style-type: none"> Preparation of Waste Management Plan following the waste hierarchy, supported by staff training. 	Contractor	1,000,000	Developed WMP	Visual observation	Waste Consignment Note	Construction Site	Monthly	PIU ESO & SSO SME ASWAMA	
	A20). Soil contamination from indiscriminate dumping of hazardous wastes	<ul style="list-style-type: none"> Use of authorized contractors for hazardous and any other wastes which the project cannot dispose of safely. 									
Construction/ Installation of Temporary Structures including storage area, water supply system, electricity, sanitation and waste disposal areas etc.	A21). Noise and vibration disturbances in surrounding communities	<ul style="list-style-type: none"> Same as A12 									
	A22). Generation of hazardous and non-hazardous wastes from construction activities.	<ul style="list-style-type: none"> Same as A19 									
	A23). Soil contamination from indiscriminate dumping of hazardous wastes.	<ul style="list-style-type: none"> Same as A20 									
	A24). Risk of occupational accidents and injuries to workers	<ul style="list-style-type: none"> Same as A17 									
SUB-TOTAL				5,600,000							2,500,000
B	CONSTRUCTION PHASE										
Excavation for foundations of new buildings	B1). Deterioration of local air quality due to the release of fugitive dusts from excavation for foundations of new buildings	<ul style="list-style-type: none"> Use water to wet ground for dust suppression. Enforce appropriate speed limit to reduce dust on unpaved surfaces. Train drivers/ workers on proper operation of vehicles & equipment to include fuel efficiency and anti-idling techniques. 	Contractor	1,000,000	Air quality parameters (CO, NO ₂ , SO ₂ , CO ₂ , SPM ₁₀)	<i>In-situ</i> measurement.	FMEEnv permissible limit	Road corridor and adjoining communities	Weekly during pre-construction	PIU - ESO SME	2,500,000 (monitoring air and noise level during construction phase)
Earthworks and concrete works including floor paving and Fencing	B2). Noise and vibration from construction equipment, traffic and activities, may disturb sensitive noise receptors (i.e. humans).	<ul style="list-style-type: none"> Select and use vehicles/ equipment with lower sound power levels. Install suitable mufflers on engine exhausts and compressors. Respond promptly to noise complaints 	Contractor	--	Noise level	<i>In situ</i> measurement	Noise level not to exceed FMEEnv limit of (90 dBA) for an 8-hour period	Construction site and nearby communities	Monthly	PIU – ESO, SSO SME	
	B3). Loss, damage, erosion and disruption of soil from exposure of soil surfaces to rain and	Ensure construction of effective drainage system and use erosion protection structures such as sediment traps,	Contractor	500,000	Evidence of erosion protection	Visual observation	Erosion incidents	Project site	Monthly	PIU - ESO	

	wind.	riprap, gabions etc.			structures					SME	
	B4). Real or perceived disruption to normal operational life of the facilities, through the physical presence of a workforce.	<ul style="list-style-type: none"> Create another access to the areas where new buildings are being built to avoid disruption of activities at the facilities. Where renovation is to be done, sectionalize the work to allow smooth running of the facilities. 	Contractor	--	New access to work locations	Visual observation and Interview	Minimal service disruption. Level of satisfaction of health workers in host facility	Host health facilities	Monthly	PIU - SSO OIC of host Health Facility	500,000
	B5). Potential for conflicts over usage of community amenities by workers.	<ul style="list-style-type: none"> Ensure priority recruitment of local labour Ensure workers' camp are equipped with all essential services (water, sanitary facilities, electricity etc.). 	Contractor	1,000,000	Availability of amenities in workers' camp	Visual inspection	Public perception	Workers' camp and host communities	Weekly	PIU - SSO LGA	--
	B6). Direct employment of local population in workforce and stimulation of local economy	Ensure construction works are targeted towards local people	Contractor	--	No of locals employed	Records and Interviews	Level of satisfaction in host community	Project site and host community	Monthly	PIU (SSO)	--
	B7). Abstraction of significant volume of water from surface or ground water sources may affect supply for other water users and ecosystems and result in conflicts over water use.	<ul style="list-style-type: none"> Where enough water is not available, use commercial sources to supplement during construction Avoid total dependency solely on the existing waste supply infrastructure at the facilities. 	Contractor	500,000	Alternative sources of water	Visual Observation	Availability of water in host health facility	Host health facility and surrounding community	Monthly		--
	B8). Inefficient waste management during construction leading to excess consumption of materials, generation of wastes/emissions, pollution of soils/ water.	<ul style="list-style-type: none"> Develop and implement Waste Management Plan (WMP). Ensure waste is evacuated from site by approved waste contractors to prevent unregulated dumping. 	Contractor	1,000,000 for WM during construction	WMP	Visual observation	Waste vendor licenses Waste documentation	Construction route	Bi-monthly	PIU ESO & SSO SME ASWAMA	500,000
	B9). Increased respiratory and eye related problems from exposure to dusts and gaseous emissions.	<ul style="list-style-type: none"> See B1 above Provide appropriate PPE and enforce usage 									
	B10). Poor construction management practices may lead to adverse effects on safety, human health and wellbeing.	<ul style="list-style-type: none"> Provide adequate first aid, first aiders, PPE, signages (English and Local languages), lighting and/or reflective tapes, engineering barriers e.g. fencing to ensure safety. Restrict unauthorized access to all areas of high-risk activities Collaborate with host health facilities for treatment in case of any injury 	Contractor	--	No of trained first Aiders Usage of appropriate PPE Usage of signages and demarcations	Visual observation	Compliance with Factory Act, 1990	Construction Site	Monthly	PIU ESO & SSO SME	
	B11). Interaction between workforce and local communities may increase occurrence of communicable diseases, including HIV/AIDS and sexually transmitted diseases (STDs).	<ul style="list-style-type: none"> Vaccinating workers against common diseases. Implementation of HIV/AIDS education program. Campaign on STDs and transmission among workers and local communities. Provision of condoms to workers Raising awareness of local communities about the impacts of labour influx 	PIU	500,000	Evidence of awareness among construction workers and members of affected communities	Interview	No of incidents/cases	Construction route and adjoining communities	Quarterly	PIU - SSO SME LGA	500,000
	B12). Differences in ethnicity, religion, etc. may lead to discrimination and harassment, and differences (perceived or real) in working conditions between workers may lead to resentment.	<ul style="list-style-type: none"> Ensure priority recruitment of local labour Provide information regarding Worker Code of Conduct in English & Yoruba Provide cultural sensitization training for workers regarding engagement with local community. Consultations with and involvement of local communities in project planning and implementation. 	Contractor	200,000	Developed Code of Conduct Evidence of awareness among construction workers and members of affected communities	Interview	No of local staff No of Complaints	Construction site and host community	Monthly	PIU - SSO SME LGA	--
	B13). Poor management of occupational health and safety leading to accidents, injuries and illnesses among workers	<ul style="list-style-type: none"> Same as B10 above 									
Roofing of renovated and new building and installation of internal and external finishing materials as well as painting	B14). Increased noise level within the environment as a result of roofing works	<ul style="list-style-type: none"> Provide PPE for workers and restrict such works to times when it will create lesser nuisance to health workers e.g. weekends 	Contractor	500,000	Usage of PPE	Visual observation	Minimal service disruption. Level of satisfaction of health workers in host facility	Host health facilities	Monthly	PIU - SSO OIC of host Health Facility	
	B15). Generation of Hazardous waste like paint cans and other aerosols	<ul style="list-style-type: none"> Implement WMP following the waste hierarchy, supported by staff training. 	Contractor	Same as B8	Developed WMP	Visual observation	Waste Consignment Note	Construction Site	Monthly	PIU ESO & SSO	
	B16). Generation of non-hazardous waste from other material packages	<ul style="list-style-type: none"> Use of authorized contractors for hazardous and any other wastes which the project cannot dispose of 								SME	

		safely.								ASWAMA	
Renovation of existing structures	B17). Generation of noise from removal and replacement of materials during renovation	• Same as B2 above									
	B18). Generation of Hazardous and Non-Hazardous waste during renovation	<ul style="list-style-type: none"> • Implement WMP following the waste hierarchy, supported by staff training. • Use of authorized contractors for hazardous and any other wastes which the project cannot dispose of safely. 	Contractor	Same as B8	Developed WMP	Visual observation	Waste Consignment Note	Construction Site	Monthly	PIU ESO & SSO SME ASWAMA	
	B19). Disruption of the activities at the facilities as a result of renovation of existing structures	<ul style="list-style-type: none"> • Where renovation is to be done, sectionalize the work to allow smooth running of the facilities. 	Contractor	--	New access to work locations	Visual observation and Interview	Minimal service disruption. Level of satisfaction of health workers in host facility	Host health facilities	Monthly	PIU - SSO OIC of host Health Facility	
Drilling of Boreholes	B20). Generation of noise from drilling rig	• Same as B2 above									
	B21). Traffic disruption by drilling rig and supporting truck	<ul style="list-style-type: none"> • Inform road users and put proper signage in place to inform road users while traffic should also be controlled during the short period of disruption. 	Contractor	--	Evidence of proper signages and traffic wardens	Visual observation	Minimal traffic disruption. Level of satisfaction in host community	Construction Site	Daily during borehole drilling	PIU ESO & SSO LGA	500,000
	B22). Air pollution emissions from drilling rig and supporting truck	• Same as B1									
Supply and Installation of such as Solar Inverters and Panels	B23). Increased road traffic and possibility of RTA	<ul style="list-style-type: none"> • Deliver Generator and solar components during traffic off-peak periods which are usually early mornings at weekends. 	Contractor	--	Delivery period	Visual observation	Minimal traffic disruption. Level of satisfaction in host community	Construction site and access roads	Weekly	PIU ESO & SSO	
	B24). Occupational accidents and injuries during installation of solar system	• Same as B									
SUB-TOTAL				5,200,000							4,500,000
OPERATION PHASE											
General Operational activities	Generation of solid waste from the usage of renovated and new buildings	• Implement WMP	OIC Health Facilities	Part of operational cost	Developed WMP	Visual observation	Waste transfer and Consignment Note	Premises of Health Facilities	Monthly	SME ASWAMA	
	Generation of hazardous waste streams like used batteries, used solar panels, fluorescent tubes and Spent oil etc.	<ul style="list-style-type: none"> • Implement WMP • Use of authorized contractors for hazardous and any other wastes which the project cannot dispose of safely. 	OIC Health Facilities	Part of operational cost	Developed WMP	Visual observation	Waste Consignment Note	Premises of Health Facilities	Monthly	SME ASWAMA	
SUB-TOTAL				--							--
GRAND TOTAL				10,800,000							7,000,000

7.4 Training, Awareness and Competence

Engagement with the State Project Implementation Unit and relevant other stakeholders including LGA departments revealed that they are not very conversant with environmental regulations and requirements, including the AfDB ISS as well as some components of the ESMP implementation with regards to gender-based issues, labour influx and grievance redress mechanisms. Consequently, the training program in Table 0.2 have been proposed to enhance the capacities of those that will be involved in ESMP implementation.

Table 0.2. Proposed Training Program for the Implementation of ESMP

Capacity Building Activity	Proposed Topics	Objectives	Target Audience	Duration	Estimated Budget (Naira)
Module 1: AfDB's ISS and Nigeria Extant Laws on Environmental Protection	<ul style="list-style-type: none"> • Introduction to E&S policies and laws in Nigeria • AfDB's ISS & OS • Operational Safeguards triggered by project activities • The roles and responsibilities of regulators and the AfDB during project implementation 	To enhance awareness of AfDB's OS and applicable national regulatory requirements for project activities	SPIU (Safeguard Unit, M&E Officers), relevant staff of FMEnv (EA Dept.), Relevant staff of Anambra State Ministry of Environment, other relevant MDAs, LGA departments, Contractors	1 day	800,000
Module 2: Training on Environmental and Social Management Plan (ESMP) Implementation	<ul style="list-style-type: none"> • Overview of ESMP • Potential Impacts of Project • Pollution & Control Measures • Environmental Management • Labour influx, GBV, Code of Conduct, vulnerable people etc. • Environmental Performance Monitoring • Environmental Reporting 	To enhance competence in environmental sustainability and regulatory practice	SPIU (Safeguard Unit, M&E Officers), relevant staff of FMEnv (EA Dept.), Relevant staff of Anambra State Ministry of Environment, other relevant MDAs, LGA departments, Contractors	1 day	800,000
Module 3: Training on Construction HSE	<ul style="list-style-type: none"> • Introduction to Construction HSE • Overview of Health and Safety Hazards in Construction • Incidents: Causation, Investigation & Reporting • Excavation Safety • First Aid, Defensive Driving etc. • Project/Site Specific OHS • Construction Site Inspection • Personal Protective Equipment 	To ensure completion of project with zero fatalities, zero Lost Time Injuries (LTI) or occupational illness by promoting safe & healthy working conditions for workers and monitoring officers	SPIU (Safeguard Unit, M&E Officers), relevant staff of FMEnv (EA Dept.), Relevant staff of Anambra State Ministry of Environment, other relevant MDAs, LGA departments, Contractors	1 day	800,000
TOTAL				3 days	2,400,000

7.5 Monitoring and Reporting

The monitoring plan (Internal and External Monitoring) for the ESMP is presented in Table 0.3. Monitoring results shall be documented with preventive/corrective actions to be implemented.

Table 0.3. Internal and External Monitoring of the implementation of the ESMP

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

7.6 Implementation Schedule

The activities related to E&S management and monitoring must be integrated in the overall construction schedule. The project implementation phase is estimated to be completed in **12 months**. The implementation schedule is presented in Table 0.4.

Table 0.4. Tentative ESMP Implementation Schedule

S/N	Activity Description	Responsible Party	Preliminary Stages (Weeks)				Preconstruction (Weeks)				Constructiuron (Months)										
			1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	9	10	
1.	Clearance and Formal Disclosure of ESMP	SPIU																			
2.	Inclusion of Environmental & Social Requirements in Bid Docs	SPIU																			
3.	Allocating Budget for ESMP	SPIU																			
4.	Appointing Support Staff for ESMP	SPIU																			
5.	Review & Approval of Contractor's ESMP, Waste & HSE Plan	SPIU																			
6.	Finalization of Designs, studies and other preliminary	SPIU/Engineering Design Consultant																			
7.	Environmental and Social Training	E&S Consultant																			
8.	Mobilization to site	Contractor																			
9.	Site Clearing and preparation	Contractor																			
10.	Construction Phase	Contractor																			
11.	Implementation of Mitigation	Contractor																			
12.	Supervising ESMP	SPIU																			

S/N	Activity Description	Responsible Party	Preliminary Stages (Weeks)				Preconstruction (Weeks)				Constructiioon (Months)										
			1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	9	10	
	Implementation																				
13.	Monitoring & Reporting on ESMP Implementation	SPIU/Relevant MDAs																			
14.	Environmental and Social Auditing	SPIU/SME/E&S Consultant																			

7.7 Contractual Measures

Most of the mitigation measures are the obligation of the Contractor during all phases of the project. Consequently, the potential contractor will have to prepare their proposals taking into account the measures in Table 0.5 and the E & S clauses detailed in Appendix 2.

Table 0.5. Contractual Measures

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

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 0.6. The cost of mitigation by the Contractor will be included in the contract as part of the implementation cost by the Contractor. The total estimated cost for the ESMP implementation and monitoring is **N22,890,000 (US\$ 62,712.00)**.

Table 0.6. Estimated Budget for the Implementation of ESMP

Item	Responsibility	Cost Estimate in Nigerian Naira (N)	Cost Estimate in US Dollars (US\$)*
ESMP implementation	Contractor, SPIU	10,800,000	29,589
ESMP Monitoring	SPIU, MDAs	7,100,000	19,452
Training and capacity building	SPIU, SME and other MDAs	2,400,000	6,575
Grievance Redress Mechanism (GRM)	SPIU	1,000,000	2,740
Disclosure	SPIU	500,000	1,370
Sub-Total		21,800,000	59,726
Contingency	5% of Sub- Total	1,090,000	2,986
Total		22,890,000.00	62,712.00

*1 US\$ =N365

7.9 ESMP Disclosures

Following the review and clearance of this ESMP by the PIU, it will be disclosed at the National and local levels by the SPIU in line with the applicable Nigerian EIA laws and regulations. Minimum disclosure requirements and budget is shown in Table 0.7 below.

Table 0.7. Disclosure Procedure to comply with Nigerian regulations

Action	Remarks	Cost (Naira)
Disclosure on 2 national newspapers	The FPMU/SPIU will disclose the ESMP as required by the Nigeria EIA public notice and review procedures. This entails advert in 2 newspapers; one national and one local (state) newspaper	500,000
Disclosure at the Anambra State Ministry of Environment	The SPIU will disclose the ESMP as required by the Nigeria EIA public notice and review procedures	--
Disclosure at the SPIU Office	The SPIU will display the ESMP as required by the Nigeria EIA public notice and review procedures	--
Disclosure at host LGA offices & the host Health Facilities	The purpose will be to inform stakeholders about the project activities; environmental and social impacts anticipated and proposed environmental and social mitigation measures.	--
Disclosure at the AfDB disclosure website	The summary of the ESIA will be disclosed on the AfDB website in accordance with the disclosure requirements for Category 2 projects i.e. 30 days before board presentation.	--
Total		500,000.00

7.10 Program Grievance Redress Mechanism (GRM)

The Program will adopt the AfDB's approach to resolving grievances on project interventions. This is described below:

7.10.1 AfDB Grievance Redress Mechanism Approach

The AfDB defines project GRM as a systematic process for receiving, evaluating and facilitating resolution of affected people's project-related concerns, complaints and grievances about the borrower's/client's social and environmental performance on a project. AfDB requires its clients to be aware of and respond to stakeholders' concerns related to the project in a timely manner. For this purpose, the program will establish an effective grievance mechanism, process, or procedure to receive and facilitate resolution of stakeholders' concerns and grievances, in particular, about the client's E&S performance.

In OS 1, the Bank requires the borrower/client to establish a "credible, independent and empowered local grievance and redress mechanism to receive, facilitate and follow up on the resolution of the affected people's grievances and concerns regarding the E&S performance of the project. The local grievance mechanism needs to be sufficiently independent, empowered and accessible to the stakeholders at all times during project cycle and all responses to grievances shall be recorded and included in project supervision formats and reports."

Some Bank's intervention may inevitably have the potential to impact the local population's well-being. The aim of a project GRM is, therefore, to enable people fearing or suffering adverse impacts to be able to be heard and assisted. People potentially or actually affected by a Bank-funded project

need a trusted way to voice and resolve project related concerns and the project needs an effective way to address affected people's concerns. The GRM provides a structured and managed way of allowing the concerns of affected people to be heard and addressed, including by the borrower's/client's project management staff and in certain circumstances, by Bank staff.

The main advantages of establishing and maintaining an appropriate GRM linked to a Bank-funded project are:

- Helping maintain good development conditions in the field, conducive to harmonious, sustainable development.
- Minimizing the risk of violent or otherwise destructive behaviors, and the associated economic and social costs.
- Helping to protect the most vulnerable local groups and individuals.
- Alleviating the risk of dispute or conflict escalation, such as cases being brought to the Bank's Independent Review Mechanism.

The process by which the GRM is designed should be integrated into the overall approach to project preparation as prescribed in the Bank's ISS. The Bank ISS through its (IESIA) Guidelines Notes provides guidance on development and Implementation of GRM. It should also be included in the concrete actions required in the ESMP for Category 1 projects and on a case by case basis, for Category 2 projects that exhibit specific potential social tensions, in particular risks of mismanagement of compensation/resettlement schemes or the presence of particularly vulnerable groups in the project's area of influence.

7.10.2 GRM at project level

The GRM in the Program will be established under the guidance provided in the Bank's ISS through its IESIA Guidelines Notes. The first step is to determine the primary goal of the GRM which would generally be to resolve specific grievances in a manner that meets both project management and community needs, but with important local variations. The scope of the grievances that may legitimately be brought forward by the communities and/or individuals affected shall be defined in advance. That scope will generally cover most, if not all, of the issues raised in a typical E&S Assessment: natural resources, pollution, cultural property, land acquisition, the income of resettled/displaced populations, the welfare of vulnerable groups, etc.

The second step is to design the GRM by:

1. Preparing a preliminary design.
2. Selecting ways and means to receive, register, assess and respond to grievances.
3. Select grievance resolution approaches.
4. Design a means to track and monitor grievances.
5. Develop the grievance mechanism infrastructure.
6. Review and refine the design.

At sub project level, within the Malaria Elimination and Nutrition Improvement program across selected facilities, the design of GRM may be done with the assistance of the specialized Independent consulting team as part of the ESMP implementation. The GRM shall be designed based on the following principles:



- Involvement of individuals of mixed levels and functions from the entity (e.g., operations, environmental affairs, community relations, legal affairs, contractors). Staffing the design team from just one function such as community relations or human resources is unwise.
- The inclusion of a balanced group of representatives from the community, representing the range of constituencies and demographics that will be using the grievance mechanism, while keeping the team small enough to be responsive.
- GRM Relying upon clear terms of reference and a work plan that outlines team goals, roles, and responsibilities, level of decision-making authority, reporting lines, tasks, time frame, and products.
- Making the use of multiple channels (e.g., face to face, phone conversation, mail, text or e-mail, message on a dedicated website), sensitive to cultural customs and traditional methods that may influence or impede the expression of grievances.
- The existence of a central point of contact that will receive complaints and log them into a central register.
- Existence and operation of designated complaint resolution staff.
- Processes for acknowledging the receipt of a grievance and informing the complainant about the time frame in which a response can be expected.

7.10.3 Appointing members of Grievance Redress Committees (GRC)

The Program will involve the formulation of a Grievance Redress Committee (GRC) at project level, i.e. GRM staff, for handling grievances. Generally, all project staff, the management staff of agencies involved in the project, and government administrators will take on grievance handling as a responsibility. The GRC members shall be qualified, experienced, and competent personnel who can win respect and confidence of the affected communities. It is also important to maintain a gender balance within the GRMs. Criteria for selecting members of GRCs shall include the following:

- Knowledge of the project, its objectives, and outcomes
- Technical knowledge and expertise to understand project design and requirements;
- Understanding of the social, economic, and cultural environments and the dynamics of the communities;
- Capacity to absorb the issues dealt with and to contribute actively to decision-making processes;
- Social recognition and standing; and
- equitable representation of males and females.

The GRC at project level shall constitute among other members, an officer from the Local Government Authority, Village or Community Heads, Project Coordinator, a member from a recognized Non-Government Organization and a community representative. The GRC shall have the right to request the project technical staff, and officers from relevant state or non-state institutions to attend the meetings and provide information. A complainant has the right to appear in person, to be accompanied by a community member, and/or to request to be represented by a community elder. GRCs shall be established at the project level to assure accessibility for Project Affected Persons.

7.10.4 Procedures, complaints channels and time frame for Grievance Redress Mechanisms

As there is no ideal model or one-size-fits-all approach to grievance resolution, the best solutions to conflicts are generally achieved through localized mechanisms that take account of the specific issues, cultural context, local customs, and project conditions and scale. The process by which a complaint will be accepted or rejected needs shall be carefully designed and shall maximize interactivity and cultural sensitivity. The acceptance/rejection of a complaint will go through a discussion stage where the plaintiff and the GRM staff interact on the grounds and motives of the complaint, after which the plaintiff should clearly and transparently be told whether or not the complaint is eligible and will be processed. The acceptance/rejection of the complaint shall be based on objective criteria that are posted by the GRC, including a written copy displayed in the public access area of the GRM in an appropriate language.

The processing of the complaint, if accepted should go through various phases:

- Filing of the complaint and labeling with an identification code communicated immediately to the plaintiff.
- Assessment of the complaint (including severity of the risk/impact).
- Formulation of the response.

Selection of the grievance resolution approach is a key. There are four general approaches to choose from:

- The project's management proposes a solution.
- The community and the project's management decide together.
- The project's management and the community defer to a third party to decide.
- The project's management and the community utilize traditional or customary practices to reach a solution.

AfDB's ISS recommends the application of a “**Decide together**” approach that is usually the most accessible, natural and unthreatening ways for communities and a project's management to resolve differences. With the potential to resolve perhaps the majority of all grievances, “decide together” should be the center-piece of any grievance mechanism's resolution options. In its simplest form, a grievance mechanism can be broken down into the following primary components:

1. Receive and register a complaint.
2. Screen and validate the complaint (based on the nature and type of a complaint).
3. Formulate a response.
4. Select a resolution approach, based on consultation with affected person/group.
5. Implement the approach.
6. Settle the issues.
7. Track and evaluate results.
8. Learn from the experience and communicate back to all parties involved.

The time for the Grievance Redress Committees to be held shall be agreed and documented, depending on the nature and severity of the complaint.

A number of mechanisms will be available to aggrieved parties to access redress. These shall include institutions specific (**internal**) to a project and set up from its inception or others that might have emerged over time in response to needs identified while the project evolved. Other institutions



which are already established within a country's judicial, administrative, and/or political systems and exist outside a project shall also be used. These include the government bureaucracy; judicial institutions; and political institutions such as Local Government Authorities, etc.

In addition, the Bank itself sometimes shall provide a forum for grievance redress. GRMs shall include avenues for resolving conflicts between Affected Persons or other stakeholders and can provide information sought by the public on the project.

The channels of presenting complaints could include the presentation of complaints via third parties (e.g., village elites/traditional leaders, community-based organizations, lawyers, non-government organizations [NGOs], etc.); face-to-face meetings; facsimile, telephone, and email communications; written complaints; etc.

The projects to be implemented under this intervention will have diverse E&S contexts. It is therefore expected that as part of the implementation of these projects, the projects shall develop GRM which will bring simpler means of addressing complaints. If the complainant is not satisfied, the complainer will have to appeal to the Project Coordinator of the SPIU.

7.10.5 The AfDB's Independent Review Mechanism (IRM)

AfDB has also established its own accountability mechanism, the Independent Review Mechanism (IRM). The IRM seeks to assess whether a Bank approved project complies with relevant the AfDB's ISS. The IRM makes itself accessible to any group (a minimum of 2 persons living in the project's area of influence) actually or potentially negatively affected by a Bank-funded project. The IRM reports to the Bank's Board of Directors and is thus independent of Bank management.

The IRM has been set up by the Bank to achieve more transparency. It is also a costly mechanism to trigger. The establishment of local GRMs can help to alleviate the need for plaintiffs to resort to the IRM, while problem-solving can be more rapidly and cost-effectively done locally. The cultural context in which GRMs operate also helps to defuse complaints and to find appropriate and commensurate solutions.

APPENDIX I: LIST OF PEOPLE MET DURING CONSULTATIONS











ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) AND ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP) FOR THE SUPPORT TO NATIONAL PROGRAMME ON MALARIA ELIMINATION AND NUTRITION IMPROVEMENT PROJECT IN ANAMBRA STATE

PEOPLE'S MET

LOCATION.....		DATE.....			
S/N	NAME	DESIGNATION	ORGANISATION	PHONE NO	SIGNATURE
1	Pharm. Ojukwu Okwuchukwu	DDPS 7/C	Central Medical Store, M.O.H. Anoka	08033964570	[Signature]
2	Nwanisoit Miriam	cm/ans(orc)	PHC ATANI I	0803953491	[Signature]
3	Nwanisoit Stella	SCHEW	PHC ATANI I	08037633796	[Signature]
4	Agbata Florence	JSHOW	MCH OTUOCHAI	07037834853	[Signature]
5	Ogugwa Chiora	VOLUNTER	MCH OTUOCHAI	07063810422	[Signature]
6	Onwubuya Ngozi	VOLUNTER	MCH OTUOCHAI	09020890920	[Signature]
7	Ujunwa Ike	VOLUNTER	MCH OTUOCHAI	08102339932	[Signature]
8	Okoro Linda	VOLUNTER	MCH OTUOCHAI	07033061442	[Signature]
9	Philomena Okochukwu	Nanny	Mother's Society	—	[Signature]

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) AND ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP) FOR THE SUPPORT TO NATIONAL PROGRAMME ON MALARIA ELIMINATION AND NUTRITION IMPROVEMENT PROJECT IN ANAMBRA STATE

PEOPLE'S MET

S/N	LOCATION:.....		DATE:.....		SIGNATURE
	NAME	DESIGNATION	ORGANISATION	PHONE NO	
1	ETIM PAULINE N.	CHEW	PHC A24214-NIT	08075103454	
2	Dwight E. Nwagwu	PNS	PHC A24214-NIT	08060480267	
3	NEDELISA LILIAN	S/m	PHC A24214-NIT	08038675152	
4	HON. Isaacson Chikwura	ASSISTANT SEC	PHC A24214-NIT	08038675152	
5	Edel Chikwura	Student JCHew	PHC A24214-NIT	08023949073	
6	Ezeatuegwu Agnes	CHew/m	PHC A24214-NIT	07036368387	
7	Chagaka Lucy		PHC A24214-NIT	07033472771	
8	Oloma Chikwura		PHC A24214-NIT	08072839852	
9	Udenwike Chikwura		PHC A24214-NIT	07067200658	
10	Imanabuka Chikwura		PHC A24214-NIT	07033927978	

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) AND ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP) FOR THE SUPPORT TO NATIONAL PROGRAMME ON MALARIA ELIMINATION AND NUTRITION IMPROVEMENT PROJECT IN ANAMBRA STATE

PEOPLE'S MET

LOCATION.....		DATE.....			
S/N	NAME	DESIGNATION	ORGANISATION	PHONE NO	SIGNATURE
(1)	Mrs Oluchi Oguego	Chemist owner	Anka Etit-i	09060755228	Oluchi
(2)	Mrs Obiagholi Obi	Trader	Anka Etit-i	08068159659	
3	Chukwudozie Living	CHEW	P.H.C Uba-Ikumonu	08062175247	Chukwudozie
4	Igbu Assumpta	Volunteer	P.H.C Uba-Ikumonu	08166769337	Igbu
5	Umezu-like Esther	Malaria Focal Person	ASMP	08060147815	Umezu-like
6	Adesijan Babatunde	Intermediate Consultant	Ecosphere Consulting Ltd	08062832449	Adesijan
7	Dr. Peter Okeke	Senior Consultant	Ecosphere Consulting Ltd	08030760088	Dr. Peter
8	Seunayo Adesayo	Environmental Consultant	Ecosphere Consulting Ltd	081732-11313	Seunayo

APPENDIX 2: GENERAL ENVIRONMENTAL MANAGEMENT CONDITIONS FOR CONSTRUCTION CONTRACTS

General Conditions of Contract

1. In addition to these general conditions, the Contractor shall comply with any specific Environmental Management Plan (EMP) or Environmental and Social Management Plan (ESMP) for the works he is responsible for. The Contractor shall inform himself about such an 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 EMP after written instruction by the Supervising Engineer (SE) to fulfil his obligation within the requested time, the Owner reserves the right to arrange through the SE for execution of the missing action by a third party on account of the Contractor.
2. Notwithstanding the Contractor's obligation under the above clause, the Contractor shall implement all measures necessary to avoid undesirable adverse environmental and social impacts wherever possible, restore work sites to acceptable standards, and abide by any environmental performance requirements specified in an 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, 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, drilling of boreholes) are kept at a minimum for the safety, health and protection of workers within the vicinity of high noise levels and nearby communities.
 - c. 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 is channeled into drains in the best way to avoid creating possible breeding grounds for mosquitoes.
 - d. 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 project Engineer and the SPIU so that the appropriate authorities may be expeditiously contacted for fulfilment of the measures aimed at protecting such historical or archaeological resources.
 - e. Implement soil erosion control measures in order to avoid surface run off and prevents siltation, of existing drainage system
 - f. Ensure that garbage, sanitation and drinking water facilities are provided during construction.
 - g. Ensure that, in as much as possible, local materials are used to avoid importation of foreign material and long distance transportation.
 - h. Ensure public safety, and meet traffic safety requirements for the operation of work to avoid accidents.
 - i. Develop and Implement Code of Conduct for workers that specifically prohibit GBV and SEA
 - j. Create partnership with local NGO to report workers' misconduct and complains on Gender Based Violence.
 - k. Liaise with the Health Care Facilities to conduct awareness campaigns for workers and the general populace on communicable diseases.
3. The Contractor shall indicate the period within which he/she shall maintain status on site after completion of civil works to ensure that significant adverse impacts arising from such works have been appropriately addressed.



4. The Contractor shall adhere to the proposed activity implementation schedule and the monitoring plan / strategy to ensure effective feedback of monitoring information to project management so that impact management can be implemented properly, and if necessary, adapt to changing and unforeseen conditions.

5. Besides the regular inspection of the sites by the SE for adherence to the contract conditions and specifications, the Owner may appoint an Inspector to oversee the compliance with these environmental conditions and any proposed mitigation measures. State environmental authorities may carry out similar inspection duties. The African Development Bank and other donor organizations may also carry out site visits to oversee the implementation of the ESMP. 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 Waste Management

6. All vessels (drums, containers, bags, etc.) containing oil/fuel/surfacing materials and other hazardous chemicals shall be banded in order to contain spillage. All waste containers, litter and any other waste generated during the construction shall be collected and disposed off at designated disposal sites in line with applicable government waste management regulations.

7. All drainage and effluent from storage areas, workshops and work sites shall be captured and treated before being discharged into the drainage system in line with applicable government water pollution control regulations.

8. Used oil from maintenance shall be collected and disposed off appropriately at designated sites or be re-used or sold for re-use locally.

9 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.

Rehabilitation and Soil Erosion Prevention

12 To the extent practicable, Contractor shall rehabilitate the site progressively so the rate of rehabilitation is similar to the rate of construction.

13 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.

14. Topsoil shall not be stored in large heaps. Low mounds of no more than 1 to 2m high are recommended.

15. Re-vegetate stockpiles to protect the soil from erosion, discourage weeds and maintain an active population of beneficial soil microbes.

16. Locate stockpiles where they will not be disturbed by future construction activities.

17. To the extent practicable, reinstate natural drainage patterns where they have been altered or impaired.

18. 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.

19. Identify potentially toxic overburden and screen with suitable material to prevent mobilization of toxins.

20. 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.



21. Minimize the long-term visual impact by creating landforms that are compatible with the adjacent landscape.
22. Compacted surfaces shall be deep ripped to relieve compaction unless subsurface conditions dictate otherwise.
23. Revegetate with plant species that will control erosion, provide vegetative diversity and, through succession, contribute to a resilient ecosystem. The choice of plant species for rehabilitation shall be done in consultation with local research institutions, forest department and the local people.

Water Resources Management

24. The Contractor shall at all costs avoid conflicting with water demands of local communities.
25. 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.
26. Abstraction of water from wetlands shall be avoided. Where necessary, authority has to be obtained from relevant authorities.
27. No construction water containing spoils or site effluent, esp. cement and oil, shall be allowed to flow into natural water drainage courses.
28. Wash water from washing out of equipment shall not be discharged into water courses or road drains.
29. 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

30. 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.
31. Untarred access roads shall be sprinkled with water at least 2 times a day to suppress dust emissions.

Disposal of Unusable Elements

32. 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.
33. 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.
34. Asbestos Contaminated materials shall be quarantined until they are disposed by licensed waste management contractor
35. Unsuitable and demolished elements shall be dismantled to a size fitting on ordinary trucks for transport.

Health and Safety

36. During construction phase, the Contractor shall in conjunction with the health care facilities organize an awareness and hygiene campaign where workers and local residents shall be sensitized on health risks particularly of AIDS.
37. Adequate road signs to warn pedestrians and motorists of construction activities, diversions, etc. shall be provided at appropriate points.
38. Construction vehicles shall not exceed maximum speed limit of 30km per hour.

Repair of Private Property

39. 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.

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

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

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

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

- a description of procedures and methods for complying with these general environmental management conditions, and any specific conditions specified in an EMP;
- a description of specific mitigation measures that will be implemented in order to minimize adverse impacts;
- the internal organizational, management and reporting mechanisms put in place for such.

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

EHS Reporting

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

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

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



Training of Contractor's Personnel

46. 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:

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

Cost of Compliance

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

Example Format: EHS Report

Contract:		Period of reporting:	
EHS management actions/measures:			
Summarize EHS management actions/measures taken during period of reporting, including planning and management activities (e.g. risk and impact assessments), HSE training, specific design and work measures taken, etc.			
EHS incidents			
Report on any problems encountered in relation to EHS aspects, including its consequences (delays, costs) and corrective measures taken. Include relevant incident reports.			
EHS compliance			
Report on compliance with Contract HSE conditions, including any cases of non-compliance.			
Changes			
Report on any changes of assumptions, conditions, measures, designs and actual works in relation to EHS aspects.			
Concerns and observations			
Report on any observations, concerns raised and/or decisions taken with regard to EHS management during site meetings and visits.			
Name, Title of Contractor Representative		Signature	Date

Example Format: EHS Incident Notification

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

