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F.S.T.C LASSA

Nigeria Inclusive Basic Service Delivery and Livelihood Empowerment Integrated Programme (IBSDLEIP)

DRAFT REPORT

Environmental and Social Management Plan (ESMP) for construction works in FSTC Lassa, Borno State

FEBRUARY 2023

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LIST OF ACRONYMS AND ABBREVIATIONS

AfDB –	African Development Bank
ACHPR -	African Charter on Human and Peoples' Rights
ACRWC -	African Charter on the Rights and Welfare of the Child
AIDs -	Acquired Immune Deficiency Syndrome
AoI -	Area of influence
AQI -	Air quality index
BAT -	Best Available Technology
BDC -	Business Development Centre
BPT -	Best Practical Technology
BSDLEIP -	Basic Service Delivery and Livelihood Empowerment Integrated Program
BOQ –	Bill of Quantities
BOWDI -	Borno Women Development Initiative
CBOs	Community Based Organisations
CCTV -	Closed-circuit Television
CEDAW -	Convention on the Elimination of All Forms of Discrimination against Women
CEMPs -	Construction Environmental Management Plans
CITES -	Convention on International Trade and Traffic in Endangered Species
CO -	Carbon monoxide
CoC -	Code of Conduct
CPMC -	Council of Presidents of Medical Colleges
CRC -	Convention on the Rights of the Child
CRPD -	Convention on the Rights of Persons with Disabilities
CSOs	Civil Society Organisations
Db -	Noise-decibel
DFIs -	Development Financial Institutions
DNA -	Deoxyribonucleic acids
DP -	Development Partners
EA -	Environmental Assessment
EHS -	Environment, Health and Safety
EHS-MP -	Environment, Health and Safety Management Plan
EIA -	Environmental Impact Assessment
EMS -	Environmental Management System
ESAP –	Environmental and Social Action Plan
ESMP -	Environmental and Social Management Plan
ESEU -	Environmental Sanitation and Enforcement Unit
ESF -	Environmental and Social Framework
ESS -	Environmental and Social Standards
E&S -	Environmental and Social
FEC -	Federal Executive Council
FGD -	Focus Group Discussions
FIDA -	International freedom of Women Lawyers
FMARD -	Federal Ministry of Agriculture and Rural Development
FMEnv -	Federal Ministry of Environment
FMWASD -	Federal Ministry of Women Affairs and Social Development
FSTC	Federal Science and Technical College
GBV -	Gender Based Violence
GEPADC -	Gender Equality Peace and Development Center

GFSI -	Global Food Safety Initiatives
GHGs –	Green House Gases
GPS -	Global Positioning System
GRM –	Grievance Redress Mechanism
GRC -	Grievance Redress Committee
HIV –	Human Immune Deficiency
HHQ -	Household questionnaires
HQTF -	High-Quality Tapioca Flour
H_2S -	Hydrogen sulphide
HSE -	Health, Safety, Environment
IBSDLEIP	Inclusive Basic Service Delivery and Livelihood Empowerment Integrated Programme
ICCPR -	International Covenant on Civil and Political Rights
ICESCR -	International Covenant on Economic, Social and Cultural Rights
IDP -	Internally Displaced Persons
IESIA –	Integrated Environmental and Social Impact Assessment
ISS -	Integrated Safeguards System
IPF -	Investment Project Financing
ISO -	International Organization for Standardization
IRM -	Independent Review Mechanism
KII -	Key informant interviews
LEL -	Lower explosive limit
LGA –	Local Government Area
MDAs -	Ministries, Department and Agencies
NBC	National Bureau of Statistics
NCE -	National Council on Education
NESREA -	National Environmental Standards and Regulations Enforcement Agency
NH3 –	Ammonia
NIPDs -	National Immunization Plus Days (NIPDs
NSBPs -	Nigerian Sustainable Banking Principles
NEPAD -	New Partnership for Africa's Development
NGOs -	Non-governmental organizations
NO_2 -	Nitrogen dioxide
NPE	National Policy on Education
NSCDC -	Nigerian Security and Civil Defense Corps
O2 -	Oxygen
OHS -	Occupational Health and Safety
OHSP -	Occupational Health and Safety Plan
OS -	Operational Safeguards
PACs -	Project Affected Communities
PAPS -	Project Affected Persons
PDO -	Project development objective
PHC –	Primary Health Centre
PIU -	Project Implementation Unit
PLWD -	People Living with Disability
PM -	Particulate matter
PMU -	Project Management Unit
PPE –	Personal Protective Equipment
PWDs -	People With Disabilities

RAM -	Risk Assessment Matrix
RH -	Relative humidity
RNA -	Ribonucleic acids
RTE -	Ready-to-Eat
SARC -	Sexual Assault Referral Centre SARC
SAPZ -	Special Agro-Processing Zones
SBG -	Shine Bridge Global
SE -	Supervising Engineer
SEA -	Sexual Exploitation and Abuse
SH -	Sexual Harassment
SL	Sandy Loam
SMART -	Specific, Measure, Achievable, Relevant, Time-bound
SMP -	Security Management Plan
STDs/STIs –	Sexually Transmitted Diseases/Sexually Transmitted Infections
STVEP -	Strengthened Technical-Vocational Education Program
SO_2 -	Sulphur dioxide
SPM -	Suspended Particulate Matter
SPV -	Special Purpose Vehicle
TC -	Textural Content
TDS -	Total Dissolved Solid
TMP -	Traffic Management Plan
TVET -	Technical Vocational Education and Training
UNICEF -	United Nations Children's Fund
UN SDG –	United Nations Sustainable Development Goal
USEPA -	United State Environmental Protection Agency
VAC -	Violence Against Children
VAPP -	The Violence Against Persons Prohibition
VOCs -	Volatile Organic Compounds
WASH -	Water Sanitation and Hygiene
WEEE –	Waste Electrical Electronic Equipment
WINN -	Women in new Nigeria and Youth
WMP -	Waste Management Plan
ZEGCAWIS -	Zenith of the Girl Child and Women Initiative

EXECUTIVE SUMMARY

ES 1.0 Introduction

The Federal Government of Nigeria has received financing from the African Development Bank for the Inclusive Basic Service Delivery and Livelihood Empowerment Integrated Program (IBSDLEIP) with a specific objective to improve the quality of life by increasing access of the poor and vulnerable to basic social services in water, sanitation, hygiene, health and education; livelihood opportunities; food security and strengthened safety net systems in affected states in the Northeast. The Lassa project is financed by an additional ADF loan under the IBSDLEIP. The additional fund is to finance the completion of educational and hostel buildings, provide water and sanitation system, along with providing capacity building and a Business Development Centre (BDC) and other additional facilities at the Federal Science and Technical College (FSTC), in Lassa, Borno State.

The Project development objective (PDO) of IBSDLEIP is to improve the quality of life by increasing access of the poor and vulnerable to basic social services in water, sanitation, hygiene, health and education; livelihood opportunities; food security and strengthened safety net systems in affected states in the Northeast.

ES 1.1 Project Components

The IBSDLEIP comprises two (2) major components as follows:

- Component I: Service Delivery
- Component II: Institutional Strengthening and Project Management

As part of activities under component I, the Lassa FSTC Additional Financing will support renovation/reconstruction of school infrastructure including classrooms, workshops, hostels, fencing, infirmary, staff quarters and administration block. While the provision of the aforementioned infrastructure will create positive impacts, however, due to the nature of the civil works to be carried out and the sensitivities of the receptor environment, some negative impacts may be associated with the project activities. Such impacts will need to be addressed in an Environmental and Social Management Plan (ESMP) in line with the National Environmental Assessment guidelines and the AfDB Environmental and Social Policy and Operational Safeguards (OS).

ES 1.2 Objectives of the ESMP

The ESMP identifies potential environmental and social impacts of the project during the pre-construction, construction and operation phases, along with appropriate enhancement/mitigation measures for positive and negative impacts respectively. The ESMP also stipulates responsibilities for mitigation and monitoring, timelines, monitoring parameters and adequate budget.

ES 1.3 Policy, Legal and Administrative Framework

The regulatory power for all environmental matters is vested in the Federal Ministry of Environment (FMENV), which is charged with the responsibility of ensuring that all developmental projects are carried out in compliance with relevant environmental laws and regulations including relevant International Regulations and Conventions relating to Environmental and Social Protection in order to ensure environmental sustainability. This ESMP has been prepared in line with the Environmental Impact Assessment (EIA) Act CAP E12 LFN 2004, National Policy on the Environment, 1989 (Revised 2016), AfDB ISS amongst others. See section 1.9 for more details.

ES 1.4 Study Approach and Methodology

The preparation of this plan followed a systematic approach as highlighted below, while details are provided in the relevant chapters.

Literature review of relevant documents to acquire legal, biophysical and socioeconomic information relevant to the project and the project area, which include FMEnv relevant policies, laws, regulations and guidelines particularly the EIA Procedural Guidelines of 1995 and the AfDB Integrated Safeguards Standards. 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.

Baseline environmental and social sensitivities of the project corridor were identified through field studies; analysis of maps, plans, photographs; review of background project documents; site surveys (conducted 15th – 16th December); in-situ and laboratory analysis of physio-chemical properties of air, water and soil, and consultations with stakeholders held between 15th Dec- 20th December and 15th January – 20thJanuary, 2023 respectively during the preparation of the ESMP.

Impacts Identification and Mitigation - Subsequently potential environmental and social impacts as a result of the interaction between the project activities and the receptor environment were identified, impacts assessment was conducted using the Leopold matrix to consider the likelihood of occurrence of impact and appropriate mitigation measures, responsibilities and costs were identified. These are described in the relevant chapters in the report.

ES 2.0 Project Description

Most of the existing buildings (classroom blocks, workshops, hostels, clinic staff quarters etc.) have either been burnt down or vandalized during the insurgency or are in a state of disrepair. 96-bed capacity boys' hostel and a workshop under construction as part of the STVEP could not be completed as a result of the insurgency. There are however a few new facilities namely a library and IT center. The College has no staff accommodation.

Under this project, a partially completed workshop, hostel and water tanks that started under STVEP would be completed. Other facilities to be completed/rehabilitated include classrooms/administrative blocks, clinic, workshops, hostels, fencing for the girls' section, infirmary, staff quarters and rehabilitation of the administration block. The roads within the compound would be graveled to mitigate surface erosion during raining season. Details are provided in chapter 2.

ES 3.0 Description of the Project Environment

The project site is located in Lassa town in Askira Uba LGA of Borno State, in the North-East geopolitical zone of Nigeria. The Federal Science and Technical College (FSTC) is located at the northern outskirts of Lassa town along the Lassa-Dille Road. Located between longitudes 13° 07'-13° 17'E and latitudes 10° 40'-10° 54'N, it occupies an area of 336.6sq km.

ES 3.1 Climate and Meteorology

The rainfall is highly seasonal with marked wet and dry seasons. The wet seasons are usually associated with southwesterly monsoon winds while the dry season is associated with the dry northeasterly winds from the Sahara Desert. Normally the rainy season begins in June and terminates in September or early October

(between 4 - 5 months) while the dry season begins in October and terminates in May (between 7-8 months)[1]. The heaviest rainfall and the highest number of rainfall days are normally recorded in August. The dry northeasterly winds are typically dust-laden and associated with low nighttime temperatures. Mainly as a result of the dust, visibility is limited, posing considerable hazard to aviation. The climate has considerable influence over crop farming, livestock rearing and indeed almost all human activities in the area.

The coldest night of the year occurs in the months of December and January during which air is often hazy and visibility is poor due to fine particles of dust. During this period, temperatures range from 21^{o}C to 25^{o}C while at night, it could be as low as 14^{o}C, though, at higher altitudes. March to June experiences an increase in temperature as the rainy season set in with daily maximum temperature up to 44^{o}C as shown in section 3.3 of this ESMP.

ES 3.2 Air Quality and Noise

The results of air quality and noise level measurement presented in table 3.6 show that the entire project area is within the Federal Ministry of Environment (FMEnv) limits for all indicators measured (NO_2, CO, SO_2, SPM, H_2S, and NH_3) and noise level, largely due to the absence of industrial or major anthropogenic activities in the project area.

ES 3.3 Geography

Geographically, the state is divided between the semi-desert Sahelian savanna in the north and the West Sudanian savanna in the centre and south with a part of the montane Mandara Plateau in the southeast. Prominent physical features include the Bornu Plains, the volcanic Biu Plateau, and the firki ("black cotton") swamps south and southwest of Lake Chad. Most of the state is drained by seasonal rivers flowing toward Lake Chad. The far south, however, is drained by the Gongola River, a tributary of the Benue. In the far northeast of the state is the Nigerian portion of Lake Chad and the Lake Chad flooded savanna ecoregion; the lake is fed by the Yobe River which forms the state's border with Niger until it reaches the lakebed[2].

ES 3.4 Geology & Hydrogeology

Borno State is largely underlain by the Chad Formation, which is the youngest stratigraphic sequence in the Chad Basin and most prolific in terms of groundwater resources. The Formation consists of the three prominent water bearing zones known as the Upper, Middle and Lower zone aquifers. The Crystalline Basement is prominent around Gwoza, Askira Uba, Chibok and Biu which are differentiated into migmatites, gneisses, granites and basalt rocks. International Journal of Hydrology; August 2018, vol2, Issue 4[3]

ES 3.5 Surface water and Hydrobiology

The nearest water body is an earth dam with source from Yadzaram River, a tributary of river Benue. The earth dam is located approximately 800m to the south of the FSTC and it is the only perennial river around the area and takes it source from the mountains around the southern part, and flow from the south around Bazza towards the north. Surface water sample was collected from the dam for laboratory analysis. The pH

[1] https://en.climate-data.org/europe/italy/lombardy/borno-110754/

[2] https://en.wikipedia.org/wiki/Borno_State

[3] https://medcraveonline.com/IJH/occurrence-and-distribution-of-fluoride-in-groundwater-of-chad-formation-aquifers-in-borno-state-nigeria.html

of surface water is 6.55 and 6.62, which is within the FMEnv range of 6.5-8.5[4]. The Total Dissolved Solids (TDS) of surface water is 85.64ppm and 87.65ppm which is lower than the FMEnv limit 500ppm. The Dissolved Oxygen (DO) in surface water is 2.84mg/L and 2.78mg/L as against the FMEnv limit of 6.0mg/L. The BOD of the analyzed surface water is 1.60mg/L and 1.74mg/L which is within the permissible limit of 20mg/L. with respect to heavy metals, Cadmium (Cd), Iron (Fe) and Lead (Pb) were not detected, while Mg (0.05mg/L in both samples) was detected in small quantities below FMEnv permissible limits of 10mg/L. Zinc (Zn) values (1.01mg/L and 1.04mg/L) were above the FMEnv limit of Zn (0.01mg/L) probably due to corrosion of metal pipes. Nitrate (NO_3) values (16.11mg/L and 14.68mg/L) were higher than the FMEnv permissible limit of 9.1mg/L, probably as a result of runoff or leakage from fertilized soil, wastewater, animal feedlots. (Minimum detection limit of instrument for: Cd and Zn – 0.01mg/ ml. Pb – 0.02mg/ml. Fe -. 0.5mg/ml).
Escherichia Coli, Salmonella spp. and *Shigella spp*. *Salmonella spp*. and *Shigella spp*. were present (qualitatively) in the surface water sample as against the FMEnv requirements of a 0 count. This is probably due to periodic watering of cattle in the area.

ES 3.6 Groundwater

Groundwater in general originate as surface water, but their occurrence and distribution are controlled by geologic factors such as lithology, texture of the rock and climatic factors such as rainfall. Domestic water supply in Lassa and environs comes largely from the groundwater from boreholes; much of this is taken from the overburden and fractured granite. Over the years, boreholes and water wells have been drilled for domestic use. For further analysis of the chemical characteristics, borehole water within the community was sampled. Table 3.9 shows physico chemical characteristics of Ground water sampled.

The pH of ground water is borehole (7.4) and well (6.5) which is within the WHO limit of 6.5-8.5. The TDS of groundwater is 168.5ppm and 170.3ppm for borehole and well respectively against the limit of 500ppm (WHO limit) is unfit for portable use and is detrimental to road structure. The DO in ground water is 3.95mg/L and 3.25mg/L in borehole and well respectively, against the WHO limit of 8mg/L. The BOD of groundwater is 2.82mg/L and 2.45mgL/which are within the permissible limit of 20mg/L by WHO.
With respect to heavy metals, in the analyzed ground water sample, Cd and Pb were not detected, while Fe was 3.21mg/L for borehole and 2.11mg/L for well water against the WHO limit of 0.3mg/L, which is probably due to corrosion of plumbing fixtures and metal parts. Zn (0.06mg/L and 0.07mg/L in borehole and groundwater respectively) were detected in small quantities below the WHO permissible limits of 10mg/L.
E. *coli, Salmonella spp*. and *Shigella spp*. *shows* absent in ground water sampled. E-Coli was present in the well water sample at 5.22cfu/100ml against the WHO limit of 0.0cfu, probably due to contamination from human/animal feces, while Salmonella and Shigella were absent.

ES 3.7 Soil

There are two different types of soil namely the clay and sandy soil found in northern and southern part of the local government. There is also lateritic soil and alluvial soil which is mainly found along the coast of Yadzaram River and streams. The clay is suitable for cultivation of crops like guinea corn, beans, groundnuts and even cotton while the sandy loam soil, on the other hand is more suitable for the cultivation of tree crops such as orange, mango, guava and various types of vegetables. The pH of the soil ranged from 6.5 - 6.90

[4] https://standards.lawnigeria.com/2020/08/18/national-environmental-surface-and-groundwater-quality-control-regulations-2010/

which is within the neutral range. For heavy metals, Pb was not detected in the soil while traces of Fe (0.97-1.27mg/kg), Zn (0.08-1.03mg/kg) and Cu (0.06-0.13mg/kg) were present in the soil samples.

ES 3.8 Vegetation

The vegetation in Borno state is mainly of the Sudan savanna type, which includes the acacia (a source of gum arabic), baobab, locust bean, shea butter, dum palm, and kapok trees; however, there is a region of Sahel savanna, crops grown mostly include groundnut, cowpea, millet, maize and guinea corn and with sandy soils, in the north. The vegetation of the area influences deforestation and even the types of crops to be cultivated. Natural vegetation has long disappeared in the area as a result of interference by man and animal through cultivation. Bush burning and clearing for cultivation has denuded the vegetational land to be open plane land. Due to the increasing number of livestock reared in the area, it has contributed to the keeping of vegetation and modifying the natural ecological system of the area.

ES 3.9 Fauna

The project area is a built-up area and thus void of wildlife while a some domestic animals are present such as cows, goats, sheep, ram, chickens. In Borno state at large, seasonal drought is also a normal feature of the zone and animals best fitted are those that can survive on grass without regular water to drink (Ayeni, Afolayan& Ajayi, 1982). Major species of birds includes guinea fowl, francolin, village weaver, Abyssinian ground hornbill, Arabian bustard, Savile's bustard, African collared-dove, chestnut-bellied starling, black scrub-robin and the Sudan golden sparrow. species of animals includes, baboon, pates monkey, Tantalus monkey, Grimm's duiker, red-fronted gazelle, African bush elephant, roan antelope, hartebeest, African leopard and spotted hyenas.

ES 3.10 Environmental Issues

Limited access to water and poor water quality is a serious issue in the state. A paucity of drains and clogging leads to annual flooding in the wet season. Desert encroachment is also a major environmental threat (AfricaBib.Org). Climate change is posing a huge threat to food security in the region and exacerbating the desert encroachment. The state is faced with late commencement of rains and early cessation, the change in precipitation threatens largely rain-fed agriculture dependent communities around the rural communities. The large-scale shift in weather patterns shortens the planting window with excessive rainfall variability.

ES 3.11 Socioeconomic Setting

Borno is the second largest in area of the 36 states, only behind Niger State. Despite its size, the state is the eleventh most populous with an estimated population of about 5.86 million as of 2016. Askira Uba, the projet LGA is a Local Government Area of Borno State, Nigeria with its headquarters are in the town of Askira. It has an area of 2,687 km² Area and a population of 210,000 in 2022, with a 78.15/km² Population Density (National Population Commission of Nigeria (web), National Bureau of Statistics (web))[5].

As a partially agriculturally-based state, the rural Borno State economy relied heavily on livestock and crops prior to the Boko Haram insurgency while state capital Maiduguri is a major regional trade and service center (Mercy Corps, 2021). Crops grown include groundnut, cowpea, millet, maize and guinea corn while animals reared are cattle, sheep, goat and poultry. However after years of the insurgency affecting development and forcing farmers from rural areas in the state, Borno has the thirteenth lowest Human Development Index in

[5] https://en.wikipedia.org/wiki/Borno_State

the country but as the insurgency has slightly abated since 2016, development has renewed (Mercy Corps, 2021).

In Lassa, a few houses have modern designs (25%) and they are built with utilities like kitchen, toilet and bath in-house. These modern houses are also constructed with semi-permanent materials like zinc, wood and roofed with corrugated iron and aluminum sheets.

Recurrent health challenges in Borno state include dysentery, measles, malaria, tyhoid and especially Cholera (WHO). There are some government and private clinics and hospitals in Askira Uba including Primary Health Care Centres in every word.

With respect to education, Borno has many higher institutions, these include: University of Maiduguri, Nigerian Army University Biu, Borno State University, Al-Ansar University, Kashim Ibrahim college of Education, Mohammed Goni College of Legal and Islamic Studies, School of Health and Technology Maiduguri and Maiduguri College of Nursing and Midwifery. Askira Uba Local Government has 48 primary schools which is located in the various part of the villages and nine (9) secondary schools. The presence of Federal Technical College, Lassa is very important as the LGA has no other higher institution. However, it has local craft industries which is located at various centres in Lassa, Mussa, Uba and Askira. At these centres, men and women are taught how to design various types of bags with local materials. In 2014, Askira, Hausari Zadawa, Ngoli, Rumirgo/Chul, Uba, Dille/Huyum, and Lassa were displaced by the insurgents which is responsible for the absence of academic activities in the school and the deserted community at the time of the assessment.

Borno state and Askira Uba LGA in particular falls within the high-risk security zone in Nigeria which is plagued by Boko Haram. Lassa town in particular has had a lot of insecurity attacks in the past which has led to the town been abandoned. Currently the school activities have been moved to another school in Adamawa temporarily for their academic session. However, they are hopeful that the insurgency will be brought under control and after construction, the students will resume school activities in Lassa FSCTC.

ES 4.0 Potential Impacts

The proposed construction works in FSTC Lassa will cause potential impacts on the environmental and socio-economic aspects of the project area. Majority of these impacts will be beneficial especially in areas of improved access to education and quality infrastructure. Nonetheless, civil works have the potential to generate adverse impacts on the environment and immediate communities. As earlier stated, impacts assessment was conducted using the Leopold matrix to consider the likelihood of occurrence of impact, details are provided in chapter 4. The following negative impacts were identified along the various phases of the project:

Pre-construction Phase:

- Land clearing activities could lead to loss of vegetation cover and soil erosion and exacerbate climate change impacts;
- Potential air, water and soil pollution from land clearing activities, fugitive dust and exhaust fumes from movement and use of vehicles and machines which could result in environmental pollution and public health concerns;
- Disturbance to community members and potential for Gender Based Violence (GBV)/ Sexual Exploitation & Abuse, conflicts, spread of Sexually Transmitted Diseases (STIs) from presence of contractor workers;
- Community health and safety risks such as accidents from movement of heavy vehicles and materials to site;

- Construction works may unearth/destroy sensitive sites such as graves and cause social conflicts;
- Occupational health and safety risks for contractor workers such as injury, accidents, fatality, infectious diseases such as COVID 19 etc. also workers could be exposed to hazardous substances such as toxic materials and unsafe working conditions;

Construction Phase

- Construction waste which could pose a challenge of management thus leading to environmental pollution and public health concerns;
- Increase in traffic and delay in travel time, disturbance of market and religious activities due to movement of vehicles/materials/equipment to site which can also lead to grievances from community members;
- Labor influx can cause disturbance to community members, increased risk of illicit behavior and crime (including prostitution, theft and substance abuse). and potential for Gender Based Violence (GBV)/ Sexual Exploitation & Abuse, conflicts, spread of Sexually Transmitted Diseases (STIs) from presence of contractor workers;
- Potential for child abuse and child labor which could expose children to hazardous situation, accidents, and molestation;
- Conflict may arise between community members and contractor, especially when members of the community are not hired/employed at the construction site;
- Community health and safety risks such as accidents from movement of heavy vehicles and materials to and from site;
- Occupational health and safety risks for contractor workers such as injury, accidents, fatality, infectious diseases such as COVID 19 etc.
- Contractor workers could fall victim of security threats such as kidnap, insurgency, banditry, social conflicts etc.

Decommissioning from Site Phase

- Poor housekeeping during decommissioning of staging area, campsite and project site could pollute the environment and also lead to grievances from the school/community members;
- Unsuitable and unwanted materials could be left lying indiscriminately in the project area and cause environmental pollution and also lead to grievances from the school/community members;
- Unreclaimed established borrow pits used by contractors may lead to environmental degradation, and store dirty water which could harbour disease vectors, become drowning sites especially for children, stagnant pools could harbour disease vectors and cause illnesses;
- Loss of temporary employment for locals engaged during the project activities will lead to loss of income and grievances

Operation Phase

- Waste generated during operation of the school - paper, plastics, aluminium cans, food waste, lab chemical waste, sewage etc could lead to environmental pollution and public health concerns.;
- Poor air quality from exhaust fumes from use of school generators;
- The sanitation facilities may be poorly maintained leading to groundwater contamination and adverse health effects for the community. Water pollution from discharge of effluents (sewage/sanitary wastewater, lab wastewater etc.) and chemical/oil spill during maintenance; etc can lead to disease outbreaks in the school/community;
- Risk of underground water pollution which can cause public health concerns and disease outbreak if borehole is situated too close to septic tanks for the toilet facilities;
- People with Disabilities (PWDs) may be disenfranchised from benefiting from the project if infrastructure is not disable-friendly;

- Students and staff during the operation phase may be exposed to risks of GBV/SEA especially considering the insecurity in the project area and also the presence of armed forces within the school premises;
- Students and staff of school could fall victim of kidnapping, banditry and insurgency;
- Facilities built may be vandalised or burnt due to insurgency;
- There may be resistance from the armed forces currently occupying the school to vacate the premises during the operation phase of the project and may lead to conflict.

ES 5.0 Mitigation Measures

- 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. A summary of the mitigation measures as explaine din chapter 5 are as follow:
- Contractor to ensure that all vehicles are serviced; undergo vehicle emission testing (VET) and vehicle exhaust screening (VES) and use road worthy vehicles/ maintain regularly;
- Limit land clearing to specific zone needed for the construction work, protect all vegetation not required to be removed against damage and replant or revegetate trees/shrubs within the school environment;
- Ensure timely and adequate stakeholder consultations to inform them about the project activities, and the project should set up an effective Grievance Redress Mechanism (GRM) for receipt and resolution of complaints;
- Contractor to develop and implement a site-specific Waste Management Plan (WMP) which will ensure proper management of waste. The Ministry of Education and the school management to provide waste bins that are immovable but can be easily tipped off from down or up should be provided in strategic location in the school;
- All contractor workers to be sensitized and sign Code of Conduct (CoC) prohibiting GBV/SEA and illicit behaviors;
- Contractor to develop & implement a project specific Occupational Health and Safety Plan (OHSP) to ensure safety of workers on site;
- Contractor to develop a borrow pit management plan and remediate borrow pit site after use;
- Water points/ boreholes to be attached to WASH Facilities for easy cleaning and maintenance;
- The designs should make provisions for people with disabilities such as access ramps, special toilets etc.
- The Ministry of Education in conjunction with the FSTC Lassa should develop and implement a security management plan to ensure protection of lives and property during the implementation phase.

ES 6.0 Environmental and Social Management Plan

The overall objective of environmental and social monitoring is to ensure that mitigation measures are implemented and that they are effective. Environmental and social monitoring will also enable response to new and developing issues of concern. The activities and indicators that have been recommended for monitoring are presented in the ESMP. Environmental monitoring will be carried out to ensure that all construction activities comply and adhere to environmental provisions and standard specifications, so that all mitigation measures are implemented.

ES 6.1 Estimated Costs for Implementing the ESMP

The total costs of the ESMP including costs for mitigation, monitoring, disclosure and capacity building is estimated as: Thirty-Six Million, Eight Hundred Thousand Naira (36,800,000.00) only, which is $80,000. Details are provided in table 6.13 in the ESMP. (*1$=N460 – CBN official exchange rate as at 01/05/2023(https://www.cbn.gov.ng/rates/exchratebycurrency.asp).*

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ES 6.2 ESMP Implementation and Reporting

The activities related to environmental and social management and monitoring have to be integrated in the overall construction schedule. Most of the environmental management actions are standard or "good housekeeping" measures applicable to construction projects and are thus the responsibility of the contractor. The primary responsibility for the project execution and ESMP implementation is on the Project Implementation Unit (PIU). The key actors in the implementation of this ESMP include:

- The Contractor - to be awarded the civil works contract and be required to implement the environmental and social safeguard mitigation measures stated in this ESMP.
- Project Implementation Unit (PIU) - to ensure that the provisions of the ESMP and the AfDB ISS are duly implemented in executing the project and conduct periodic monitoring to safeguards compliance.
- Federal Ministry of Education: to ensure external monitoring of compliance to environmental and social protection procedures of the project and to ensure adequate budgetary allocation for ESMP monitoring costs.
- Federal Ministry of Environment (FMEnv)/Federal Project Management Unit (FPMU) - to ensure compliance with the ESMP and other relevant approval conditions.
- AfDB – provide guidance to the project on compliance to safeguards requirements and conduct periodic supervision to safeguards compliance.

Contractor Responsibility for Implementation of ESMP

The Contractor shall be responsible for implementing all impact mitigation measures as detailed in the ESMP provisions of the ESMP Report for the project. Contractors are also required to include as part of their costs all elements associated with mitigation measures. For purposes of clarity, the CONTRACTOR shall obtain a full copy of the ESMP Report prepared for this project to fully understand the scope of the ESMP implementation and required mitigation actions.

Monitoring and evaluation will be the responsibility of the Project Implementation Unit (PIU) for all measures outlined in the ESMP matrix, but the PIU can delegate certain responsibilities to its contractors and supervising team. 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, it is expected that there is compliance and also sanctions for non-compliance. The PIU is expected to prepare monthly safeguards compliance & monitoring report for the attention of the Federal Ministry of Education and AfDB.

ES 7.0 Stakeholder Consultation

Stakeholder consultations were held with various stakeholders including the school authority, relevant Ministries, Departments and Agencies (MDAs) in the project area including Borno State Ministry of Environment, Ministry of Health, and the Ministry of Women Affairs & Social Development, between 15th Dec- 20th December and 15th January – 20thJanuary, 2023 respectively during the preparation of the ESMP. Further consultation was held with the Project Implementation Unit (PMU) on 26th January 2023. However,

consultations could not be held with students and project communities due to the high security alert in the community during the time of the assessment. The community was largely deserted, no students/activities were going on in the school, only the presence of armed forces in the school and in the community. In addition, the armed forces only permitted a limited time for the ESMP consultants to conduct the assessment within the school, with no permission to enter/interact with the communities.

Responses from stakeholders were embedded as part of project enhancement/ mitigation measures in this ESMP. All stakeholder categories were receptive of the project. Major responses from stakeholder consultations are summarized below, while details are provided in chapter 7:

The school principal of FSCTC Lassa raised concerns about the issue of insecurity in the area which has led to the presence of military personnel in the school and currently there are no students nor academic activities in the school, currently the school activities have been moved to another school in Adamawa temporarily for their academic session. However, they are hopeful that the insurgency will be brought under control and after construction, the students will resume school activities in Lassa FSCTC.

The Director, Pollution control Department in the state ministry of environment pointed out that environmental/operation department is in charge of monitoring environmental parameters for compliance with regulatory standards while the Borno State Environmental Protection Agency (BOSEPA) on the other hand is in charge of waste management in the state. In addition, sewage and other forms of waste is mostly collected by BOSEPA from schools whenever the agency is notified by the school Authority. He stated that the agency will support the ongoing Lassa FSCTC project in the aspect of waste management during the construction and operation phases, however, the school/contractor will have to give them adequate notice.

The Director, Women and Social Development Department in the Borno state ministry of women affairs state that one of the issues faced in schools attacked by insurgents is gender based violence especially for female students. When there is incident of sexual harassment or Gender Based from the community or schools, some report directly to the ministry, some report through any of the sexual referral centres and service providers while some report directly to the ministry through the principal or any head teacher in case of schools. The legal facilities and personnel that exist for survivors are:

1) State Human Right Office and the Federation of the Women Lawyers (FIDA)
2)Sexual Assault Referral Centre, Umaru Shehu Ultra-Modern Hospital

The Ministry conducts sensitization of GBV prevention and response in schools and they are willing to so the same in Lassa once they are informed by the principal or the ministry of education.

ES 8.0 Grievance Redress Mechanism

The ESMP prescribes a Grievance Redress Mechanism (GRM) in chapter 8, which should be adopted by project stakeholders at the project site level and implementation level to ensure concerns about the project implementation are timely received and addressed in a manner that would avoid escalation and potential conflicts. The GRM process excludes criminal cases which should be referred to the government law enforcement agents.

The grievance reporting channels include grievance redress committees (formed at the school/community level, PIU and Ministry of Education levels), complaint boxes (in strategic places such as within the school compound, community leaders house, community market), contact phone numbers (provided on the project signpost and the complaint box) and other channels such as site project progress meetings, focal group

discussions, community meetings, student meetings, through the school management or other forms of oral receipt, etc. In all cases complaints should be documented, investigated and addressed in a timely manner so as to avoid escalation.

ES 9.0 Conclusion

The proposed project is most desirable because of the obvious environmental, health and socio-economic benefits. These far out-weigh the negative impacts that could arise in the course of implementation. Potential impacts of sufficient magnitude that could interrupt the execution of the project were not detected. Although some negative impacts may potentially occur due to the activities associated with the proposed project adequate and Specific, Measure, Achievable, Relevant, Time-bound (SMART) measures have been provided to address them in this ESMP.

Climate considerations should be included in the proposed infrastructure such as energy saving bulbs, solar panels as energy source, provision of green areas within the school, avoid use of prohibited building materials such as Persistent Organic Pollutants, asbestos, toxic paints etc.

The buildings should promote disability inclusion such as access ramps to the buildings, special toilets etc. in line with the Discrimination Against Persons with Disabilities (Prohibition) Act 2018.

Owing to the project area being in a high-risk security area, it is important that a Security Management Plan (SMP) is prepared for this project, disseminated to stakeholders and implemented.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

The Federal Government of Nigeria has received financing from the African Development Bank for the Inclusive Basic Service Delivery and Livelihood Empowerment Integrated Programme (IBSDLEIP) with a specific objective to improve the quality of life by increasing access of the poor and vulnerable to basic social services in water, sanitation, hygiene, health and education; livelihood opportunities; food security and strengthened safety net systems in affected states in the Northeast. The Program is part of ongoing Federal Government efforts toward Northeast States Emergency Transition, Recovery and Peacebuilding, elaborated by the five-year programmatic "Buhari Plan" of 2016.

The Lassa project is financed by an additional ADF loan under the IBSDLEIP. The additional fund is to finance the completion of educational and hostel buildings, provide water and sanitation system, along with providing capacity building and a Business Development Centre (BDC) and other additional facilities at the Federal Science and Technical College (FSTC), in Lassa, Borno State. The Lassa FSTC Additional Financing will have a large socio-economic impact. In the context of recovery and peace building in the North East, the additional activities will contribute to spur local economic activities in Borno State by enhancing Science and Technical Education service delivery and developing skills of both boys and girls in construction (brick-laying, block-laying and concrete-work; painting and decorating; carpentry and joinery; electrical installation and maintenance; welding and fabrication), computer craft and electronics/television/radio-craft. Entrepreneurial skills will also be developed. The additional operation will also create additional jobs in the construction industry (permanent and temporary), and also increase informal economic activity, as the Lassa community will benefit from the provision of water to FSTC Lassa through the reticulation of the water system from the adjacent water source.

The additional financing is specific to bringing improvement to the school infrastructure and improve the quality of services in science and technical education. Renovation/reconstruction of school infrastructure will ensure a conducive learning and teaching environment to acquire knowledge.

1.2 Project Development Objective

The Project development objective (PDO) of the BSDLEIP is to improve the quality of life by increasing access of the poor and vulnerable to basic social services in water, sanitation, hygiene, health and education; livelihood opportunities; food security and strengthened safety net systems in affected states in the Northeast.

1.3 Project Components

The Program comprises two major reinforcing components as stated below:

Component I: Service Delivery:

Promoting restoration and improving access and utilization of basic social services in water sanitation, health and education

Component II: Institutional strengthening and programme management:

Institutional Strengthening and Project Management

This additional loan reinforces program components at the Federal Level. It reinforces planned activities in Technical Vocational Education and Training (TVET) training at secondary school level in order to enhance skills and promote entrepreneurship, and it will ensure a sustainable TVET policy is implemented.

1.4 Project Location

The Federal Science and Technical College (FSTC) is located at the northern outskirts of Lassa town along the Lassa-Dille Road. Located between longitudes 13º 07'-13º 17'E and latitudes 10º 40'-10º 54'N, it occupies an area of 336.6sq km. The land is gently sloping and like all Lassa, is underlain by rock with shallow topsoil. Vegetation is sparse. Drainage of the land is poor during the rains. Lassa town is made up of the following communities of Dilli, Killi Yamua and Sambo Gari.

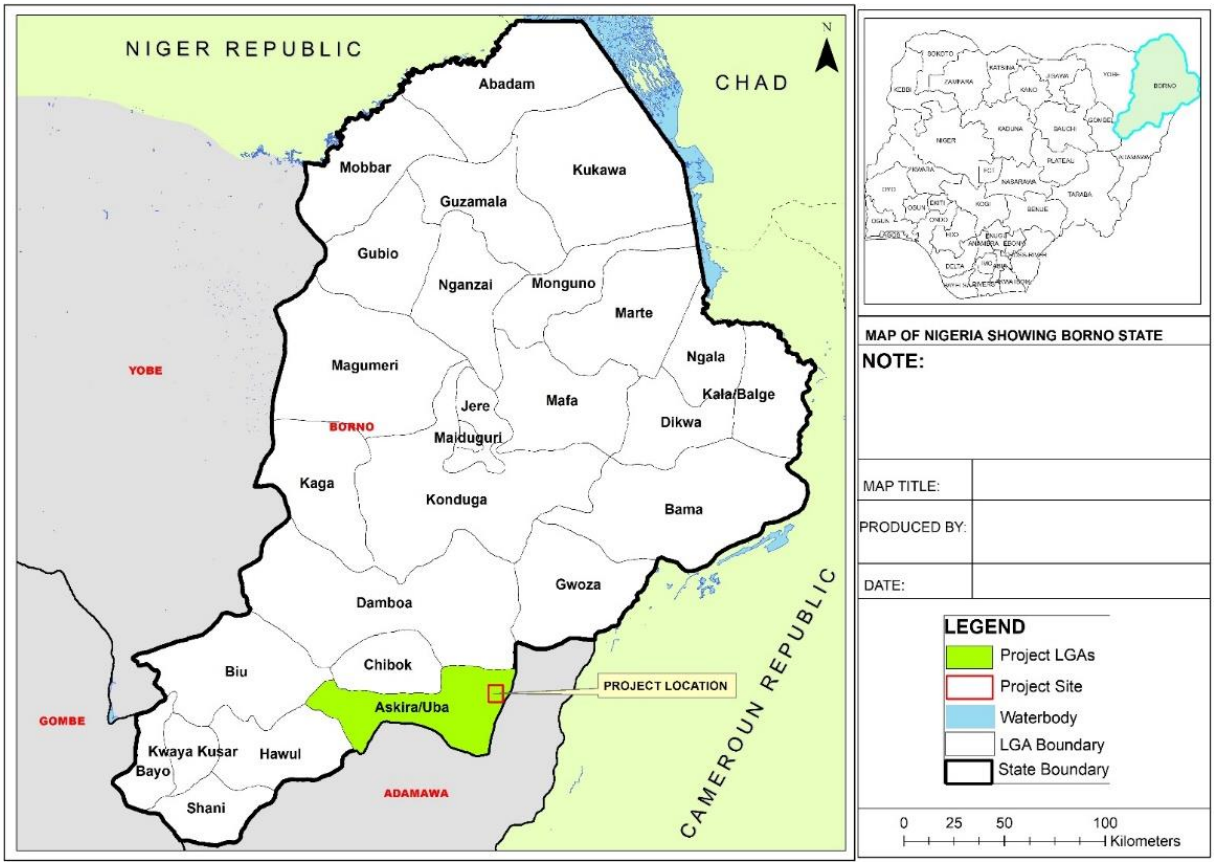

Figure 1.1 Map Showing the Project Location in Askira Uba LGA in Borno State

1.5 Rationale for the ESMP

The Lassa project is aimed at bringing improvement to the school infrastructure and improves the quality of services in science and technical education through the renovation/reconstruction of school infrastructure which will ensure a conducive learning and teaching environment to acquire knowledge. However, due to the nature of the project and the sensitivities of the receptor environment, some negative impacts may be associated with the project activities. These potential impacts include respiratory tract infections (RTIs) from air pollution, environmental pollution and disease outbreak from improperly management waste generated from construction and operation activities, labor influx which could lead to spread of infectious diseases such as HIV/AIDs and STDs due to interactions of contractor staff and the local population, GBV/Sexual harassment, exposure of children to accidents and hazardous situation due to child labor, occupational health and safety risks such as workers accidents/injury/fatality, security risks for contractor workers and school users such as kidnapping, robbery, banditry etc. such impacts require the preparation of an Environmental and Social Management Plan (ESMP) to mitigate the envisaged negative impacts.

1.6 Objectives of the ESMP

The objectives of the ESMP includes the following:

- Identify potential positive and negative environmental and social project impacts.
- Define enhancement measures for the positive impacts and mitigation measures to address the negative impacts, including the roles and responsibilities for such actions.
- Define a management and monitoring plan which will include timeline, monitoring parameters, responsibility and costs to ensure mitigation measures are implemented.
- Identify institutional strengthening measures to be undertaken during project implementation and operations.

1.7 Justification for the ESMP

The Lassa project operates under the national regulatory framework as well as the AfDB's Operational Safeguards (OS) which are intended to prevent projects from adversely affecting the environment and local communities or, where prevention is not possible, minimize, mitigate for adverse effects and maximize development benefits. The IBSDLEIP was assigned a category 2, which is in tandem with the Nigerian Environmental Impact Assessment (EIA) Category II project, as activities under this project are of moderate environmental and social risk and will have limited impacts that are site specific, manageable, and easily reversible. As such, the most appropriate E&S instrument to be prepared is the ESMP.

The ESMP will identify the environmental and social impacts of the proposed project and define the roles and responsibilities of all critical stakeholders throughout the project lifecycle in order to ensure that mitigation measures are implemented, and overall sustainability of the project is assured. Furthermore, plans such as Waste Management Plan (WMP), Occupational Health and Safety Plan (OHSP), etc. have been enshrined into the ESMP.

1.8 Study Approach and Methodology

The preparation of this plan followed a systematic approach as highlighted below, while details are provided in the relevant chapters.

Literature review of relevant documents to acquire legal, biophysical and socioeconomic information relevant to the project and the project area, which include FMEnv relevant policies, laws, regulations and guidelines particularly the EIA Procedural Guidelines of 1995 and the AfDB Integrated Safeguards Standards. 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.

Baseline environmental and social description of the project corridor were identified through literature review; field studies; analysis of maps, plans, photographs; review of background project documents; site surveys (conducted 15th – 16th December); in-situ and laboratory analysis of physio-chemical properties of air, water and soil, and consultations with stakeholders held between 15th Dec- 20th December and 15th January – 20thJanuary, 2023 respectively during the preparation of the ESMP. Climatic parameters were obtained from Nigerian Meteorological Agency (NIMeT) and climatedata.org, while geological, hydrological, flora, fauna data were obtained from literature review and previous studies. In order to evaluate the prevailing scenario of air quality and noise level in the study area, in-situ measurements of the criteria pollutants (NO2, CO, SO2, PM10, H2S, and NH3) and noise level were conducted at a height of 1.5 meters above ground level in two (2) selected locations spatially distributed within the project sites. Air quality was measured in 2 locations using MSA ATAIR-4X-R, while noise was measured using Nady DSM-1X digital decibels meter, and referenced against Federal Ministry of Environment (FMEnv) permissible limits. Soil samples were collected from the project site in aluminum foil, using a soil auger, and was sent to the Federal Ministry of Agriculture and Rural Development

laboratory, Garki area II, Abuja. Surface water samples were collected from the earth dam (Yadzaram River) within the site, while groundwater was collected from borehole and well using clean amber colored bottles and stored in a refrigerator for 24hrs and submitted to the Federal Ministry of Agriculture and Rural Development laboratory, Garki area II, Abuja for analysis. Results were referenced against FMEnv and WHO permissible limits. Socio-economic data was obtained primarily through literature review and consultations with the FSCTC Lassa management and state MDAs. (however, consultations with the community were not held as a result of the high insecurity in the area causing deserted communities, absence of academic activities and limited permission by the armed forces to conduct any assessment/visit any areas).

Impacts Identification and Mitigation - Subsequently potential environmental and social impacts as a result of the interaction between the project activities and the receptor environment were identified, impacts assessment was conducted using the Leopold matrix to consider the likelihood of occurrence of impact and appropriate mitigation measures, responsibilities and costs were identified. These are described in the relevant chapters in the report.

1.9 Policy, Legal and Regulatory Framework

This project will be guided by applicable Federal and State policies and regulatory framework particularly the Environmental Impact Assessment Act (EIA) Act CAP E12 LFN 2004 as well as the AfDB's Integrated Safeguard System.

1.9.1 Nigerian Institutional & Legal Framework

In Nigeria, the power of regulation of all environmental matters is vested in the Federal Ministry of Environment (FMEnv). The Environmental Assessment (EA) Department of the FMEnv is charged with the responsibility of ensuring that all developmental projects are carried out in compliance with relevant environmental laws and regulations in order to ensure environmental sustainability.

The functions of the EA department includes:

1. Implementation of the provisions of the Environmental Impact Assessment (EIA) Act Cap E12 LFN 2004 on development projects.
2. Ensure environmental sustainability of development projects through regulation of activities within the oil and gas, mining, infrastructure, agriculture, manufacturing sectors, etc.
3. Development of guidelines and standards for environmental quality monitoring, eco-labelling, etc.
4. Accreditation of environmental laboratories.
5. Implementation of Environmental Audit and Environmental Management System (EMS) in Nigeria.

A concise summary of the policies and regulatory instruments relevant to the project is presented in **Error! Reference source not found.**

Table 2.1: Relevant Guidelines, Policies and Legal Framework

Regulatory Framework	Description
Environmental Impact Assessment (EIA) Act CAP E12 LFN 2004	Provide guidelines for activities of developmental projects for which EIA is mandatory in Nigeria. The Act also stipulates the minimum content of an EIA as well as a schedule of projects, which require mandatory EIAs. FMEnv has issued EIA Procedural Guidelines which indicate the steps to be followed in the EIA process from project conception to commissioning in order to ensure that the project is implemented with maximum consideration for the environment. The development of this ESMP follows the EIA Act.
National Environmental Standards and Regulation	The Act established NESREA as a parastatal of the FMEnv 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

Enforcement Agency (NESREA) ACT 2007	provisions of international agreements, protocols, conventions and treaties on the environment to which Nigeria is signatory. NESREA is empowered to regulate the environmental aspects of the factory's operation ensuring that all applicable laws and Regulations are fully complied with.
National Environmental (Sanitation and Wastes Control) Regulations (2009)	The purpose of the Regulation is the adoption of sustainable and environment friendly practices in environmental sanitation and waste management to minimize pollution. The Instrument amongst others makes provisions for the control of solid wastes and hazardous wastes.
National Policy on Plastic Waste Management	The National Action Plan on Plastic Waste Management is prepared based on a preventative approach and using 3R (Reduce, Reuse and Recycle) related waste hierarchy.
National Policy on the Environment, 1989 (Revised 2016)	The policy identifies key sectors requiring integration of environmental concerns and sustainability with development and presents their specific guidelines
National Environmental (Construction Sector) Regulations (S.I No. 19), 2011	The purpose of these regulations is to prevent and minimize pollution from construction, decommissioning and demolition activities in the Nigerian environment. It stipulates that new projects in the construction sector shall apply cost-effective, upto-date, efficient, best available technology, to minimize pollution to the barest degree practicable. In addition, every operator or facility shall carry out an EIA and submit an EMP for new projects or modification including expansion of existing ones before commencement of activity.
National Environmental (Noise Standards and Control) Regulations, 2009	The objective of the Regulations is to ensure maintenance of a healthy environment for all people in Nigeria, the tranquility of their surroundings and their psychological wellbeing by regulating noise levels. The Instrument prescribes maximum permissible noise levels for construction as 55dB[6](A) and 40dB(A) for day and night respectively
National Environmental (Soil Erosion & Flood Control) Regulations (S.I. 12) 2011	The purpose of these Regulations is to establish technically feasible and economically reasonable standards and procedures to achieve appropriate level of management and conservation practices to abate soil erosion, siltation, and sedimentation of the waters of Nigeria, due to soil erosion and flood aggravated by non-agricultural earth-disturbing activities.
National Policy on Occupational Safety and Health, revised 2020	This policy was approved by the Federal Executive Council (FEC) in September 2020. It provides a guide for voluntary compliance and serves as a basis for occupational health and safety (OHS) programs for workers even under such development projects
National Climate change policy	The strategic goal of Nigeria's response to climate change is to foster low-carbon, high growth economic development path and build a climate resilient society through the attainment of the following objectives as relevant to this project: a) Implement mitigation measures that will promote low carbon as well as sustainable and high economic growth; b) Strengthen national capacity to adapt to climate change; c) Raise climate change-related science, technology and R&D to a new level that will enable the country to better participate in international scientific and technological cooperation on climate change;
National Environmental (Ozone Layer Protection) Regulations, 2009. S. I. No. 32:	The purpose of these Regulations is to prohibit the import, manufacture, sale and the use of ozone-depleting substances. In line with the provisions of these Regulations, the PIU shall ensure ozone-depleting substances are not involved in the construction and operation of the facilities.
Water Resources Act (2004)	This Act vests the right to use and control all surface and groundwater and all water in any watercourse affecting more than one state, together with the banks and beds thereof, in the Federal Government (sect. 1).
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.

[6] NESREA Federal Standards: National Environmental (Noise Standards and Control) Regulations 2009; First Schedule, Table 1 (https://standards.lawnigeria.com/2020/08/21/national-environmental-noise-standards-and-control-regulations-2009/)

Workers Compensation Act (2010)	The Workmen's Compensation Act makes provisions for the payment of compensation to workmen for injuries suffered in the course of their employment
Nigeria Labor Law (2004)	The Labor Act of 2004 set the standard for the minimum amount of naira a worker in Nigeria is supposed to make. In 2020, the National Minimum Wage was set to ₦30,000.00 per month
Child Rights Act (2003)	The Child's right Act provides a platform for protection of children against child labour, exploitation and other forms of social vices. It codifies the rights of children in Nigeria (a person below the age of 18 years. The Act gives full protection to privacy, honour, reputation, health and prevention from indecent and inhuman treatment through sexual exploitation, drug abuse, child labour, torture, maltreatment amongst others. This project prohibits the use of child labor and associated offences as will be signed in the Code of Conducts for workers.
The Convention on the Rights of Persons with Disabilities (CRPD) (2012)	It clarifies and qualifies how all categories of rights apply to persons with disabilities and identifies areas where adaptations have to be made for persons with disabilities to effectively exercise their rights such as the right to inclusive education.
Borno State Environmental Protection Laws	Facilitate protection, restoration, conservation, development and management of the environment and natural resources for equitable, sustainable socio-economic development.

1.9.2 The 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 the proposed civil works. 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 activities under the project will comply with the safeguard requirements of the ISS during 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.
- 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 1.2 below.

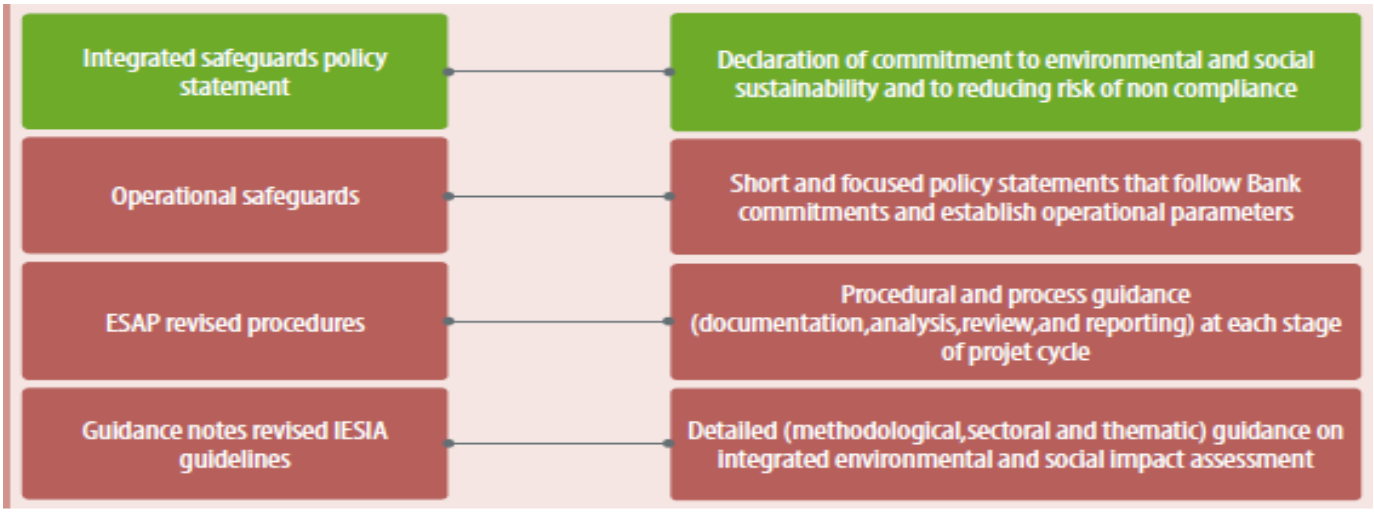

Figure 1.2 Structure of the AfDB ISS

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

i. ensure the systematic assessment of E&S impacts and risks.
ii. apply the OSs to the entire portfolio of Bank operations.
iii. 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; respect and promote the protection of vulnerable groups, in a manner appropriate to the African context.

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 presented in **Error! Reference source not found.** 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 maximise 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.
- Assist regional member countries and borrowers/clients in strengthening their own safeguards systems and their capacity to manage E&S risks.

Table 1.3: AfDB Operational Safeguards OS1-5.

Operational Safeguard	Description	Triggered (Yes/No)
OS1: *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.** The construction and operation of the facilities will have environmental interactions with potential negative impacts to the people 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 as civil works are within an existing school and there is no land acquisition.
OS3: *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 not triggered.** The project is on existing school land with limited sensitive ecological receptors.
OS4: *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.** The construction and operation activities will generate waste including hazardous waste which will require proper management to prevent environmental pollution. Use of certain materials and equipment during the construction and operation phases such as toxic paints, non-energy saving bulbs, diesel generators etc, may contribute to emissions and environmental pollution
OS5: *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.** Many workers are envisaged to be engaged during the construction and operation phase. These workers would need to comply with HSE policies and requirements and be kept safe and secure.

CHAPTER TWO

2.0 PROJECT DESCRIPTION

The Federal Science and Technical College (FSTC) is located at the northern outskirts of Lassa town in Borno state. Development is currently confined to about 21.2 Ha of the college's land. The IBSDLEIP is being implemented under the Department of Technology and Science Education in the Federal Ministry of Education. The project aims to promote access to quality education and access to technical education through technology support. FSCTC Lassa is one of the five pilot schools selected for promotion of technology skills.

2.1 Project Location

The project site is located in Lassa town in Askira Uba LGA of Borno State. The state has an area of 61, 435sq. km shares borders with Republic of Niger to the north, Republic of Chad to the northeast and Cameroon Republic to the east. It also shares borders with Adamawa State to the south, Gombe State to the southwest and Yobe State to the west. Borno State was created out of the defunct North Eastern Nigeria in 1976 and it is divided into twenty-seven (27) local government areas which include Abadan, Askira-Uba, Bama, Bayo, Biu, Chibok, Damboa, Dikwa, Gubio, Guzamala, Gwoza, Hawul, Jere, Kaga, Kala/Balge, Kukawa, Konduga, Kwaya-Kusar, Mafa, Maiduguri, Magumeri, Marte, Mobbar, Monguno, Ngala, Nganzai and Shani

The Federal Science and Technical College (FSTC) is located at the northern outskirts of Lassa town along the Lassa-Dille Road. Located between longitudes 13º 07'-13º 17'E and latitudes 10º 40'-10º 54'N, it occupies an area of 336.6sq km. The land is gently sloping and like all Lassa, is underlain by rock with shallow topsoil. Vegetation is sparse. Drainage of the land is poor during the rains. Lassa town is made up of the following communities of Dilli, Killi Yamua and Sambo Gari. The presence of FSCTC Lassa and the proposed project is very important as the LGA has no other higher institution Detailed description of the project environment is provided in chapter three of this ESMP.

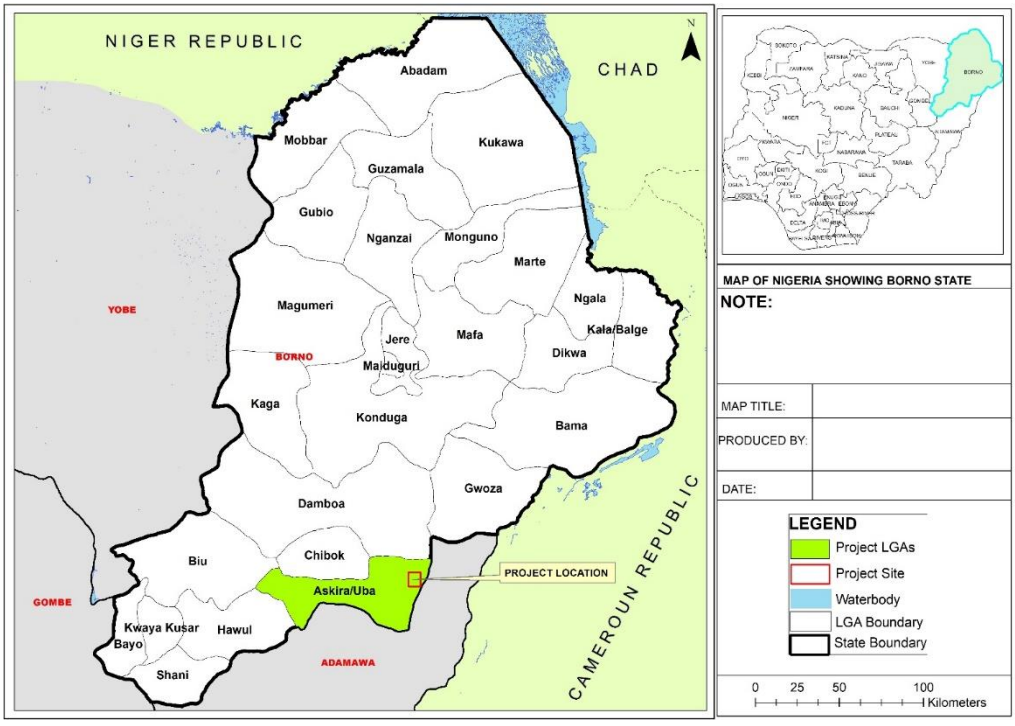

Figure 2.1 Map Showing the Project Location in Askira Uba LGA in Borno State

2.2 Project Rationale and Context

The Program is part of ongoing Federal Government efforts toward North East States1 Emergency Transition, Recovery and Peacebuilding, elaborated by the five-year programmatic "Buhari Plan" of 2016. According to the Human Rights Watch Report of 2018, FSTC Lassa along with other schools in the region has been part of insurgent attacks, and had to close: all three boys' hostels, one of three girls' hostels, the clinic and some classroom blocks were burnt down, while the roof of another girls' hostel was removed. A Business Development Centre (BDC) workshop and boy's hostel under construction as part of the Skills Training and Vocational Education Project (STVEP) could not be completed. It is reported that 50% of the water facilities were also reportedly damaged in Borno State which also affected water availability in the school.

The proposed construction works in FSCTC Lassa will help in completion of educational and hostel buildings, provide water and sanitation system, along with providing capacity building and a Business Development Centre (BDC) and other additional facilities at the school. The IBSDLEIP will contribute to spur local economic activities in Borno State by enhancing Science and Technical Education service delivery and developing skills of both boys and girls in construction (brick-laying, block-laying and concrete-work; painting and decorating; carpentry and joinery; electrical installation and maintenance; welding and fabrication), computer craft and electronics/television/radio-craft. Entrepreneurial skills will also be developed. The additional operation will also create additional jobs in the construction industry (permanent and temporary), and also increase informal economic activity. Key program activities include the following:

- Rehabilitation of schools and clinics;
- Training to enhance basic service delivery;
- Water Supply and Sanitation Infrastructure integrating livelihood support;
- Capacity Building and Institutional Support;
- Livelihood support, skills and entrepreneurship training;
- Tracer studies for TVET graduates;
- Establishing a unified Social registry;
- Institutional capacity building for Ministry of Labour and employment and JCU;
- Impact Evaluation of programme.

Climate resilience has also been built into relevant activities under the Programme in accordance with the Bank's Climate Risk Management Policy and the FMWR "Partnership for Expanded Water Supply, Sanitation and Hygiene (PEWASH)" strategy. Youth and gender issues have also been mainstreamed into all program activities. The youth in the community will be empowered economically through being engaged in the supply of local construction materials, having skills developed and entrepreneurship development and young graduates will have required training through relevant attachments. All activities will integrate a gender perspective that will ensure equality and equity e.g. provision of appropriate sanitary systems, secure hostels for girls, and activities to encourage participation of women.

2.3 Project Component

A detailed condition assessment and proposed activities as prepared by the project appraisal team is contained in the Lassa-Technical annex_Infrastructure 2 document. However, a brief description is provided in the following subsections.

2.3.1 Existing Facilities

Most of the existing buildings (classroom blocks, workshops, hostels, clinic staff quarters etc.) have either been burnt down or vandalized during the insurgency or are in a state of disrepair. A 96-bed capacity boys' hostel and a workshop under construction as part of the STVEP could not be completed as a result of the insurgency. There are however a few new facilities within the school namely a library and IT center. The College has. A partially completed workshop, hostel and water tanks that started under STVEP would be completed under this project. Other facilities to be completed/rehabilitated include classrooms/administrative blocks, clinic, workshops, hostels, fencing for the girls' section, infirmary, staff quarters and rehabilitation of the administration block. The roads within the compound would be graveled to mitigate surface erosion during raining season. The following pictures depicts the situation in the school.

Entrance to the School

Existing acces sroad to be rehabilitated

Burnt down buildings in the school due to insurgent attacks

Burnt down buildings in the school due to insurgent attacks

Existing earth Dam (source from Yadzaram River) source of water to the school

Water Tank in the school	
 Information Technology Centre	 Library
 Entrance to the school	 Rehabilitated female hostel block
 Staff Quarters	
	

Ongoing construction of 2no block of 24 rooms male hostel	Ongoing construction of 2no block of 24 rooms female hostel
 Ongoing 1no block of class rooms with a pit latrine system	 Rehabilitated female hostel block

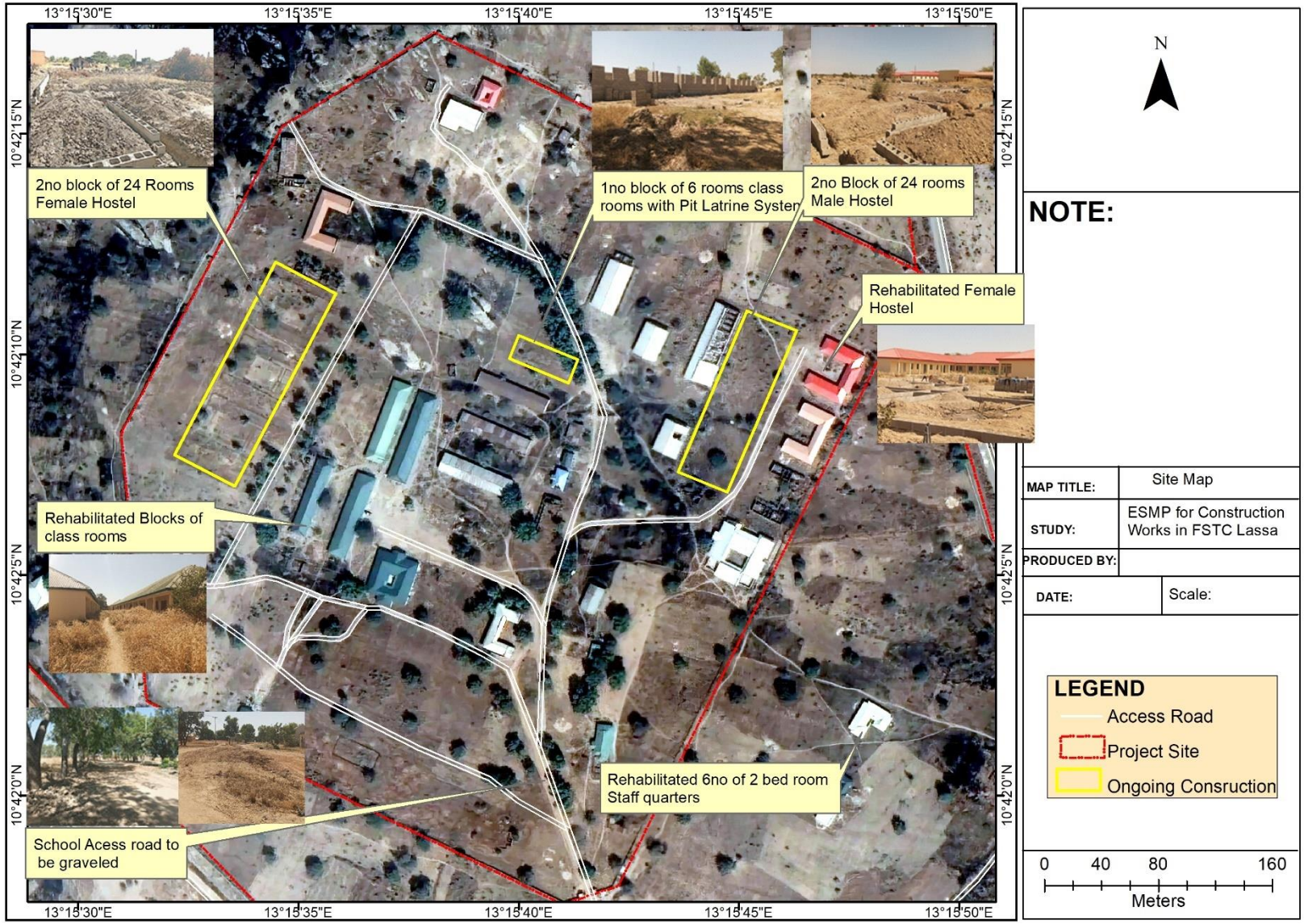

Figure 2.2: Project Site Map

2.3.2 New Facilities

The following new facilities will be constructed:

a. 4Nos. hostels (48 bed capacity),
b. 1No Classroom block
c. 6Nos. 2-B/R Self-contained unit staff quarters (135m2 each),
d. 1 No clinic (2 wards, 2WCs, 1 reception/ injection/ dressing area; 110m2; attached to admin block);
e. 44m2 generator housing;
f. 370m fencing of girls' wing.
g. Walkways and 10m wide graveled paths with kerbs estimated to a combined length of 2.3km within the school premises.

The following uncompleted buildings will be completed:

1No. workshop;
1No. hostel.

And rehabilitation works will be carried out on:

a. 3Nos Classroom Blocks
b. 2Nos Workshops
c. 2Nos Hostels
d. 1No. detached laundry/washroom for hostel
e. 1No. Administrative block

2.4 Project Developmental Phases

The Project Activities for the Interventions sites according to the project phases includes but not limited to the following:

I. Pre-construction Phase

- Mobilisation of equipment and materials to site
- Use of labour
- Establishment of staging area
- Land clearing/Setting out
- Excavation of top soil

II. Construction Phase

- Use of materials and equipment
- Use of labor
- Establishment of burrow pit
- Building trenches
- Footings and blinding
- Reinforcement for culling and sand filling
- Block works
- Field solid
- Ground beams
- Ground beam casting
- DP Works
- Super structure, roofing, finishing (Plastering, painting, wiring, furniture)

III. Decommissioning from Site

- Demobilization of workers and equipment
- Exit of staging areas
- Burrow pit reclamation

IV. Operation and Maintenance Phase

- Maintenance of facilities
- Use of Labor: school staff
- Use of facilities by students and staff

Technical details of each type of civil works activities are contained in the Lassa Technical Specifications Document, while the table below provides a summary of the type of activities, associated facilities and requirements for each developmental phase.

Table 2.2: Project Developmental Phases

No.	Project Phase	Activities	Equipment and Materials	Labor / Staffing	Support Facilities	Potential Affected Persons
1.	Pre-Construction (1 month)	• Mobilisation of equipment and materials to site • Setting out, site marking and pegging • Site clearing including onsite vegetation. • Mobilization of workers to site. • Establishment of staging area and campsite. • Removal of topsoil. • Dewatering. • Creation of borrow pits.	• Materials such as wood, cement, sand, roofing sheets, stone/gravel etc. to be sourced from building material markets and quarries[7]. • Equipment to be used is as recommended in the technical specification document and based on the contractor method statement. This may include Survey pegs, Centrifuges/ Gravity and low-pressure devices, spade, hoe etc.	• Skilled labor (estimate of 4 nos) • Unskilled Labor (estimate of 10 nos)	• Staging area for contractor equipment • Workers campsite[8] • Sanitary Facilities including 1 male and 1 female toilets onsite • Borrow Pit Area • Personal Protective Equipment (PPEs) for workers • First Aid kits • Portable water	**Beneficiaries:** • Project workers • Local community workers • Local markets **Affected Persons:** • Lassa Community members • Project workers
2.	Construction (6-18 months)	• Movement of materials and heavy duty vehicles to site. • Use of materials and equipment. • Use of labor. • Installation of safety Signages.	• Materials such as wood, cement, sand, roofing sheets, stone/gravel etc. to be sourced from markets and quarries.	• Skilled labor (estimate of 6 nos) • Unskilled labor (estimate of 50 nos)	• Construction water • Staging Area • Sanitary Facilities (2 male and 2 female toilets) • PPEs	**Beneficiaries:** • Project workers • Local community workers • Local markets

[7] Uba materials market, Mubi materials market, Yola materials market, Maiduguri Materials market.
Stones, granite – AG vision quarry in Song LGA of Adamawa, Triacta Nig Ltd Quarry in Mubi
Cement – BUA, Dangote, Lafarge

[8] Due to the security situation of the area, there will be no establishment of campsite, workers will come in from out of town from their residences.

		• Excavation and foundation works. • Building trenches. • Footings and blinding. • Reinforcement for culling and sand filling. • Block works. • Field solid. • Ground beams • Ground beam casting • DP Works • Super structure, roofing, finishing (Plastering, painting, wiring, furniture) • Earth filing and alignment • Road surfacing • Etc.	• Equipment to be used is as recommended in the technical specification document and based on the contractor method statement.		• Portable water • Healthcare facility • First aid kits (1 kit would serve 10 staff) • Borrow pit	**Affected Persons:** • Lassa Community members • School staff & students • Project workers
3.	Decommissioning	• Removal of construction equipment. • Disposal of construction spoil and waste. • Decommissioning of staging area. • Demobilization of workers. • Burrow pit reclamation.	• Waste trucks • Sand and backfilling material • Compactors etc.	• Skilled labor (estimate 1 nos) • Unskilled labor (estimate 5 nos)	• First aid kits (1 kit would serve 10 staff) • Sanitary Facilities (2 male and 2 female toilets) • PPEs • Portable water	**Beneficiaries:** • Project workers **Affected Persons:** • Lassa Community members • School staff & students • Project workers
4.	Operation and Maintenance	• Maintenance of facilities • Use of Labor: school staff • Use of facilities by students and staff • Waste Management • Sewage management	• School equipment • Waste bins • Waste trucks	• Skilled labor (estimate 3 nos) • Unskilled labor (estimate 15 nos)	• Maintenance Workshop • Maintenance equipment • Waste disposal area	**Beneficiaries:** • School staff & students • Lassa Community members • Federal Ministry of Education • Borno State

2.5 Waste Management during all project phases

The waste streams envisaged during construction phase are typical construction, while waste during the operation phase include waste from usage and maintenance of facilities. Waste management principles for the project should be based on an integrated approach which will involve adopting a combination of techniques and programs to manage waste holistically through a site-specific Waste Management Plan (WMP). This approach shall adopt the principles of the 5Rs of waste management hierarchy – Reduce, Repair, Re-use, Recycle and Recover with disposal being the very last option for any waste generated.

A non-exhaustive list of indicative waste streams which will be generated during the construction and operation phases of the development are presented in 2.1 below.

Table 0.3: Envisaged Waste Streams and Management

Project Phase & Activity	Material Input	Waste Expected	Management
Construction Phase: Excavation and Earthworks for drainages and landscaping		Non-Hazardous: • Top-soil • Spoils • Vegetal waste	• Vegetal waste should be supplied to local farmers for use as compost. • Woody vegetal waste should be supplied to host communities for domestic uses including as fuel wood for cooking. • Securely keep topsoil and reuse for landscaping • Reuse spoils as fill materials as much as possible. • Segregated and stored scraps on site to be collected at least once a week for reuse or recycle through licensed third-party facilities.
Construction Phase: Civil Works including concrete works for buildings as well as construction of internal roads, drainages, etc	Fine chiselled, natural stones, cement, sand, ballast, steel bars and water	Non-Hazardous: Waste Packaging and Dunnage such as scrap wood, scrap metal, steel, glass, plastic, paper and cardboard, empty metal containers.	Segregated and kept securely in designated areas on site. To be collected by Borno State Environmental Protection Agency (BOSEPA)/ licensed waste vendors or transferred to approved recycling third parties for reuse/recycling.
	Operation of equipment Cement	Hazardous: used batteries, chemical containers, cement bags etc.	Store on site in closed containers with secondary containment and collected by BOSEPA or transferred to a registered waste contractor with off-site permitted hazardous waste treatment, storage, or disposal facilities.
Construction Phase: Plumbing and drainage. Electromechanical Works.	Pipes, metals, solar panels sockets, plastics etc.	Scraps metals, wood chips, pipes, plastics, wires, nails, metal cuttings etc.	Segregated and kept securely in closed containers on site. To be transferred to approved recycling third parties for reuse/recycling.
Decommissioning Phase	Construction spoils, Scraps, unsuitable	Steel bar, sand, stone, cement, scraps metals, wood chips, pipes, plastics, wires, nails, metal cuttings, unwanted soil etc.	• To be collected by Borno State Environmental Protection Agency (BOSEPA)/ licensed waste vendors • Use unwanted topsoil for reclamation and fill materials
Operations Phase	Solid waste, Gaseous emissions, Chemical waste, Sewage, E-waste	Maintenance of buildings, toilet facilities, sewage disposal, carbon dioxide (CO2), nitrogen oxide (NOx), hydrocarbons and particulate matter	Segregated and kept securely in closed containers on site to be collected by Borno State Environmental Protection Agency. Non-recyclable solid waste to be sent to approved BOSEPA dumpsites. Recyclable waste to be sent to MRF facilities and recycling facilities, this will be done in liaison with BOSEPA

Project Phase & Activity	Material Input	Waste Expected	Management
			Liaise with WASH departments at the LGA and other WASH projects like SURWASH on Sewage management and WASH facilities

2.6 Construction Environmental Management Plan (CEMP)

The contractors shall develop and implement Construction Environmental Management Plans (CEMPs) to ensure that the construction activities are undertaken in such a way so as to minimise potential environmental and social impacts. The contractors will also ensure that all works at the site are undertaken in accordance with all applicable national regulatory requirements as well as the requirements of the AfDB's ISS.

As part of the impact assessment presented in this ESMP, potential impacts of construction both existing and envisaged have been identified with mitigation measures proposed. The proposed mitigation measures summarised in the ESMP will form the basis of the CEMP to be prepared by the contractors.

CHAPTER THREE

3.0 BIOPHYSICAL ENVIRONMENT AND SOCIAL SETTING

This chapter provides a description of the current environmental and socioeconomic baseline conditions of the project area against which the potential impacts of the Federal Science and Technical College (FSTC) rehabilitation and construction would be assessed, and future changes monitored.

3.1 Project Location

Borno State is a state in the North-East geopolitical zone of Nigeria, bordered by Yobe to the west, Gombe to the southwest, and Adamawa to the south while its eastern border forms part of the national border with Cameroon, its northern border forms part of the national border with Niger, and its northeastern border forms all of the national border with Chad, being the only Nigerian state to border three foreign countries. The project site is located in Lassa town in Askira Uba LGA of Borno State, in the North-East geopolitical zone of Nigeria. The Federal Science and Technical College (FSTC) is located at the northern outskirts of Lassa town along the Lassa-Dille Road. Located between longitudes 13^{o} 07'-13^{o} 17'E and latitudes 10^{o} 40'-10^{o} 54'N, it occupies an area of 336.6sq km.

3.2 Environmental and Social Baseline of the Project Area

The environmental and social baseline of the project area was established through literature review of existing studies, field visit to the site to observe the environment, conduct of in-situ/ex-situ physio-chemical analysis of air, water, soil, analysis of site maps and consultations with relevant stakeholders as explained in section 1.8.

3.3 Biophysical Baseline

3.3.1 Climate and Meteorology

The rainfall is highly seasonal with marked wet and dry seasons. The wet seasons are usually associated with southwesterly monsoon winds while the dry season is associated with the dry northeasterly winds from the Sahara Desert. Normally the rainy season begins in June and terminates in September or early October (between 4 - 5 months) while the dry season begins in October and terminates in May (between 7-8 months). The heaviest rainfall and the highest number of rainfall days are normally recorded in August. The dry northeasterly winds are typically dust-laden and associated with low nighttime temperatures (climatedata.org). Mainly as a result of the dust, visibility is limited, posing considerable hazard to aviation. The climate has considerable influence over crop farming, livestock rearing and indeed almost all human activities in the area. The most important climate elements are rainfall and temperature.

3.3.2 Wind Direction

Wind direction ranges from 220 – 350 degrees during the rainy season and this (25.0-60 degree) low in the dry season. With the highest (358.69) annual wind direction recorded in 2001. Table 3.1 shows data on wind direction from 2001 to 2022 in Lassa town.

Table 4.1: Monthly/Annual wind direction data in Lassa town

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
2001	31.25	27.06	27	249.12	231.06	233.19	235.31	235.94	213.75	48.5	36.56	33.69	359.69
2002	35.44	27.81	29.38	248.56	240.62	230.69	229	222.44	214.31	256.81	29.44	34.44	351.94
2003	30.12	29.69	29.75	254.56	243.31	222.19	225.56	227.94	199.31	171.12	40.81	32.62	17.75
2004	28.88	36.5	33.38	251.5	232.88	215.19	213.25	223.75	190.69	138.75	45.19	36.5	32.06
2005	35.5	38.25	45.12	335.5	198.56	229.56	226.25	224.81	171.19	73.06	38.88	34.12	37.5
2006	40.88	34.94	30.88	40.31	213.88	208.38	215.88	212.62	198.75	132.38	39.69	34	45.12
2007	39.62	34.94	38	231.81	215.38	231.25	235.31	228.5	176.44	183.25	50.12	40.62	35.12
2008	24.06	36.19	32.81	72.94	215.31	215.56	230.25	225.81	190.81	78	42.69	30.31	36.06
2009	32.31	38.56	43.56	231.5	220.94	215.31	218.31	218.12	204.12	189.5	27.25	33.31	34.56
2010	33	38.38	34.56	217.69	226.12	212.94	236.75	229	185.25	175.69	59.44	36.88	31.81
2011	38.31	47.81	57.62	15.31	212.69	219.12	217.88	223	180.88	122.81	52.19	37.12	63.31
2012	36.38	40.44	33	224.38	225.31	228.06	232.69	231.81	180.25	143.19	53.81	33.5	34.06
2013	30.75	40.31	35.38	245	210.06	218.44	218.94	243.5	196.5	90.69	33.06	37.38	33.38
2014	32	30.69	24.5	215.38	194.12	215.06	230.12	238.25	185.94	112.31	55.31	29.56	35.56
2015	34.12	28.81	28.06	40.38	211.81	224.25	216.06	232.31	174.5	166.5	41.06	34.38	38.56
2016	33.19	38.31	26.56	235.31	217.81	216.06	226.38	223.75	196.81	109.12	40.44	44	35.88
2017	32.81	31.56	29.75	250.88	221.44	214.06	230.44	229.5	196	69.88	45.19	37.56	31.31
2018	36.88	27.69	24.12	217.25	225.25	215.12	223.69	235.06	150.38	126.62	50.81	35.56	42.44
2019	27.06	21.31	39	331.19	210.56	214.81	213.38	234.38	168.12	141.44	112.62	43.69	54.31
2020	45.5	38.19	28.19	241.75	233.19	228.06	232.5	243	223.19	92.38	39.94	42.81	19.94
2021	43.25	34.56	11.31	311.88	219.81	214.19	235.44	226.12	235.12	234.5	54.06	34.12	22.06
2022	31	35.69	24.5	215.38	194.12	215.06	250.12	238.25	185.94	112.31	55.31	41.56	33.56

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3.3.3 Wind Speed

In dry season, wind speed ranges from 320 – 495m/s all year round and as low as 1.5-1.8m/s at the peak of rainy season. Table 3.2 shows data on wind speed from 2001 to 2022 in Lassa town

Table 3.2: Monthly/Annual wind speed data in Lassa town

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
2001	4.45	5.22	4.27	4.55	3.95	3.34	3.07	2.62	1.8	2.61	4.12	4.56	3.7
2002	5.51	5.05	4.27	3.8	3.84	3.98	3.05	2.34	2.22	2.25	3.52	4.82	3.71
2003	4.51	4.8	5.39	3.59	3.66	2.85	2.73	2.34	1.97	2.16	3.91	4.94	3.56
2004	4.77	5.77	5.28	3.39	3.71	3.34	2.48	2.48	2.17	2.16	3.5	4.27	3.6
2005	4.97	5.06	4.72	4.22	3.16	3.09	2.67	2.28	1.86	2.32	4.22	4.78	3.6
2006	4.96	4.41	4.62	4.52	3.46	2.95	2.81	2.27	2.11	2.04	3.8	4.61	3.54
2007	5.72	5.07	5.13	3.66	3.27	3.66	3.36	2.17	2.2	1.97	3	4.51	3.64
2008	4.97	5.95	4.5	3.77	3.31	3.64	2.96	2.12	2.18	2.45	3.27	3.95	3.58
2009	3.8	5.19	4.78	3.76	3.19	3.63	2.81	2.22	2.05	2.27	3.43	4.45	3.45

2010	4.1	4.88	4.95	3.84	4.03	2.88	3.35	2.6	2.07	2.02	2.87	4.29	3.48
2011	5.19	4.66	5.1	4.01	3.55	3.2	2.75	2.43	2.08	2.5	3.54	4.62	3.63
2012	4.81	4.85	5.59	3.67	3.62	2.96	2.35	2.41	1.93	2.03	2.62	4.27	3.42
2013	4.48	4.79	3.41	3.29	3.52	3.18	2.6	2.52	1.94	2.12	3.37	4.16	3.27
2014	4.48	5.21	4.12	3.62	3.18	3.53	3.28	2.82	2.03	2.16	3.38	4.55	3.52
2015	5.16	4.87	4.84	5.21	3.48	3.23	2.91	2	2.14	2.19	3.69	5.11	3.73
2016	5.18	4.99	4.03	3.84	3.55	3.12	2.66	2.25	1.87	2.23	3.59	4.86	3.52
2017	4.49	5.77	4.9	3.7	3.34	2.62	2.73	2.42	2.23	2.24	3.9	4.73	3.58
2018	5.13	4.23	4	3.6	3.59	3.2	2.39	2.55	1.97	2.27	3.33	4.76	3.41
2019	4.52	4.84	5.16	3.66	3.4	2.75	2.44	2.67	2.02	2.05	2.72	4.09	3.35
2020	5.21	5.69	4.59	4.01	3.32	3.52	2.77	3.15	2.01	2.27	3.88	4.05	3.7
2021	5.19	5.16	5.03	3.7	2.98	2.81	3.12	2.31	2.07	2.04	2.79	4.73	3.49
2022	5.14	3.23	4	3.6	3.5	3.2	2.39	3	1.97	2.28	3.33	4.76	5.42

NASA/POWER CERES/MERRA2 Native Resolution Monthly and Annua

3.3.4 Temperature

The coldest night of the year occurs in the months of December and January during which air is often hazy and visibility is poor due to fine particles of dust. During this period, temperatures range from 21^{o}C to 25^{o}C while at night, it could be as low as 14^{o}C, though, at higher altitudes. March to June experiences an increase in temperature as the rainy season set in with daily maximum temperature up to 44^{o}C (climate.org). Table 3.3 and 3.4 shows data on minimum and maximum temperature at project site between 2001 and 2022

Table 3.3: Temperature Minimum (C) 2001-2022

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
2001	11.48	12.96	17.92	20.64	20.85	20.72	19.74	19.38	20.11	14.36	13.73	13.63	11.48
2002	9.37	14.12	18.8	22.27	20.58	21.26	20.83	19.52	20.14	16.75	13.32	11.3	9.37
2003	11.36	16.63	20.23	21.39	18.95	20.65	19.28	20.19	19.9	21.15	16.83	13.51	11.36
2004	15.9	13.38	15.33	22.04	21.27	21.51	19.77	19.58	19.64	19.35	15.89	14.63	13.38
2005	10.63	17.67	21.82	21.96	22.4	20.87	20.2	19.23	20.02	17.76	15.83	15.9	10.63
2006	16.53	18.55	19.61	18.83	22.61	21.77	20.37	19.88	19.33	17.45	11.8	10.25	10.25
2007	10.33	16.3	17.87	21.79	21.85	20.9	20.18	19.49	19.44	18.55	15.68	11.98	10.33
2008	11.29	14.04	19.53	20.95	22.44	21.7	19.89	19.98	19.58	15.55	13.82	13.77	11.29
2009	14.75	16.49	18.8	21.45	21.57	21.54	20.07	20.44	19.48	20.19	14.4	13.46	13.46
2010	13.33	15.15	18.12	21.45	23.58	21.3	19.73	19.22	19.26	19.98	15.15	11.32	11.32
2011	10.75	18.67	18.88	21.48	22.16	21.24	20.35	19.38	19.01	17.38	12.73	12.45	10.75
2012	12.08	16.52	19.02	21.28	22.02	20.18	18.18	19.08	19.19	16.64	15.77	10.8	10.8
2013	13.33	13.47	20.58	19.56	21.86	21.02	20.01	18.88	19.46	14.98	13.9	10.75	10.75
2014	13.99	16.02	18.42	22.15	21.34	21.37	20.12	19.44	19.62	17.24	14.08	12.47	12.47
2015	8.62	18.05	19.79	19.21	22.35	21.27	20.22	20.26	19.69	19.57	14.44	10.83	8.62
2016	11.16	12.74	21.36	19.51	20.66	20.01	19.95	20.12	20.41	15.54	13.96	14.46	11.16
2017	14.13	15.32	18.6	22.51	21.47	20.47	19.94	19.69	19.08	16.94	14.44	14.87	14.13

2018	10.51	14.74	17.83	21.26	21.68	20.23	20.12	19.28	19.85	16.29	14.37	12.4	10.51
2019	14.08	15.48	21.27	22.73	22.45	19.73	19.98	18.77	19.84	19.85	15.62	11.66	11.66
2020	10.43	14.66	17.81	20.94	21.97	20.86	20.28	18.08	19.27	15.91	15.33	15.12	10.43
2021	14.14	13.28	19.82	19.33	22.01	20.78	19.48	19.94	20.13	17.83	14.61	14.9	13.28
2022	12.08	16.48	21.27	22.73	21.45	18.73	19.98	18.77	19.84	19.85	15.62	11.67	11.66

NASA/POWER CERES/MERRA2 Native Resolution Monthly and Annual

Table 3.4: Temperature Maximum (C) 2001-2022

2001	35.81	40.21	40.9	40.62	41.89	34.63	33.65	29.28	31.31	34.38	35.9	36.88	41.89
2002	35.62	39.97	41.16	43.35	41.51	36.12	35.81	30.02	30.62	33.65	34.65	37.25	43.35
2003	37.21	39.36	41.05	41.3	42.05	37.83	32.56	29.81	34.65	38.52	38.47	36.91	42.05
2004	38.8	39.2	42.67	42.08	40.86	36.44	35.63	30.9	31.82	36.24	38.29	37	42.67
2005	39.92	41.78	41.76	42.92	41.29	39.08	32.87	31.68	32.05	35.4	38.21	37.73	42.92
2006	39.57	41.04	41.29	41.65	41.19	39.44	34.63	31.2	30.49	33.04	34.25	34.87	41.65
2007	37.46	40.05	43.24	43.27	41.93	33.87	30.91	29	31.76	34.08	36.3	36.47	43.27
2008	36.09	38.56	41.49	42.15	40.08	38.86	34.77	29.44	30.61	33.21	36.99	36.77	42.15
2009	38.96	39.98	41.44	41.24	40.94	40.26	36.94	31.9	32.74	36.21	36.95	37.66	41.44
2010	39.61	41.57	41.48	43.04	40.89	37.15	33.92	28.52	30.25	32.36	35.39	35.15	43.04
2011	38.12	39.64	40.91	42.35	39.63	38.23	34.81	31.13	30.97	34.97	36.2	36.4	42.35
2012	39.23	40.16	40.3	42.71	41.43	34.83	29.28	29.39	30.75	32.33	35.14	35.2	42.71
2013	40.07	41.52	41.69	42.43	38.97	36.83	33.54	29.46	30.74	32.54	36.55	36.9	42.43
2014	38.46	39.39	40.96	40.85	39.73	37.41	34.37	29.08	31.01	35.37	36.79	36.07	40.96
2015	37.01	40.11	41.43	42.23	42.23	35.39	34.35	30.55	31.5	33.43	35.42	32.6	42.23
2016	36.86	41.81	42.89	42.25	40.84	35.91	32.11	29.9	30.89	31.65	36.01	35.7	42.89
2017	39.24	38.01	41.73	41.62	39.25	34.37	30.59	29.36	31.14	33.46	36.56	36.75	41.73
2018	34.74	40.3	41.26	40.72	38.68	34.07	30.26	29.36	31.34	32.33	35.26	34.8	41.26
2019	38.12	39.2	42.63	43.05	40.66	35.76	31.11	28.43	31.13	31.08	33.61	34.36	43.05
2020	36.74	39.08	41.57	41.33	37.63	37.46	36.5	29.15	31.51	33.18	34.8	36.64	41.57
2021	37.5	38.41	41.44	42.8	40.9	38.37	32.12	29.83	30.45	34.27	35.01	35.55	42.8
2022	37.12	39.2	42.63	42.05	40.66	35.76	31.11	28.43	31.13	31.08	33.61	35.36	43.05

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3.3.5 Relative Humidity

Relative Humidity ranges from 47% - 83% over 24hrs during the rainy season and low (11-44%) in the dry season table 3.5 shows data on relative humidity from 2001 to 2022 in Lassa town.

Table 3.5:2001-2022 Lassa Town Relative Humidity

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
2001	14.31	13.62	11.62	44.56	56.5	72.5	83.69	87.44	83.69	61.12	32.94	20.88	48.75
2002	16.94	13.44	15.06	46.56	53.38	68	81	85.06	84.38	71	38.88	22.38	49.88
2003	14.06	13.94	12.69	43.75	40.56	66.56	79.44	84.56	78.44	60.5	29.06	17.81	45.25
2004	15.44	12.31	11.5	36.81	64.19	66.25	78.94	85	81.31	62.75	30.31	17	46.94
2005	16.56	16.75	12.81	31.38	47.06	64.62	80	84.56	79.81	63.25	28.38	20.38	45.62
2006	16.19	15.31	11.81	17.56	53.06	59.44	75.75	84.75	84	72.38	39.31	23.75	46.31
2007	18.06	13	11.31	36.62	56.12	73.75	83.62	87.44	83.19	73.69	40.5	23.31	50.25
2008	19.62	14	12.19	32.62	50.94	62.44	78.44	86.12	84.88	69.12	38.44	29.81	48.31
2009	18.38	11.56	11.19	49.94	54.19	58.88	70.19	79.88	81.31	72.69	43.19	18.5	47.69
2010	15.31	12.31	17.75	36.81	55.19	66.25	83.44	87.88	85.88	79.44	47.5	26.69	51.44
2011	19.25	18.12	11.5	27.06	54.19	64	74.81	84.94	83.38	68.38	30.62	20.31	46.56
2012	17.62	13.88	10.69	41.75	58	78	84.69	86.75	84.12	75.88	48.69	28.5	52.44
2013	20.75	14.81	20.62	36.56	55.31	66.38	79.5	88.5	83.81	66.56	38.38	27.69	50.12
2014	15.75	13.75	22.38	39.75	55.62	68.44	74.88	86.94	82.94	68.56	38.5	22.19	49.31
2015	15.69	13.88	18.31	14.69	41.44	73.31	77.81	85.69	83.5	76.94	41	27.38	47.69
2016	16.38	12.69	22.56	39.75	60.69	76.44	86.38	87.62	85.62	73.75	47.06	28.06	53.19
2017	19.75	12.31	12.19	33	68.31	79.38	86.25	87.94	84.56	64.62	37.38	25.94	51.19
2018	14.44	17.12	13.31	33.06	68.56	76.12	83.88	88.31	84.94	76.5	48.25	30.75	53.12
2019	17.38	16.75	15.81	25.25	54.75	74.31	84.75	89.31	84.56	83.94	60.94	32.06	53.5
2020	21.88	15.81	20.38	44.62	63.38	67.94	80	87.75	85.44	70.62	45.75	27.88	52.75
2021	17.75	14.25	28	32.12	51	68.25	86.06	86.19	85	73.69	49.88	29.75	51.06
2022	18.75	14.25	22	32.12	51	66.25	86.06	82.19	82	73.69	50.88	30.75	52.06

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3.3.6 Geography

Geographically, the state is divided between the semi-desert Sahelian savanna in the north and the West Sudanian savanna in the centre and south with a part of the montane Mandara Plateau in the southeast. Prominent physical features include the Bornu Plains, the volcanic Biu Plateau, and the firki ("black cotton") swamps south and southwest of Lake Chad. Most of the state is drained by seasonal rivers flowing toward Lake Chad. The far south, however, is drained by the Gongola River, a tributary of the Benue. In the far northeast of the state is the Nigerian portion of Lake Chad and the Lake Chad flooded savanna ecoregion; the lake is fed by the Yobe River which forms the state's border with Niger until it reaches the lakebed.

3.3.7 Air Quality

Air quality in the rural areas is generally good in Nigeria, while air quality in cities is poor, with elevated concentrations of carbon monoxide, lead, volatile hydrocarbons, ozone, and particulate matter. These pollutants are associated with transportation and industrial sources.. The results of air quality and noise level measurement presented in table 3.6 show that the entire project area is within the Federal Ministry of Environment (FMEnv) limits for all indicators measured (NO_2, CO, SO_2, SPM, H_2S, and NH_3) and noise

level, largely due to the absence of industrial or major anthropogenic activities in the project area. This indicate that the existing condition of the project area is a safe environment for human habitation.

Table 3.6: Ambient Air Quality and Noise Level around the Project Area

Point Code	Description	Latitude	Longitude	NH_3	NO_2	SO_2	CO_2 ppm	CO ppm	H_2S ppm	PM10 µg/m³	Noise dB(A)
AQ1	Site for the construction of Boys Hostel	06.01565	08.71701	0.0	0.0	0.0	893	0.0	0.0	34.1	34.2
AQ2	site for the construction of administrative block and class rooms	06.01599	08.71421	0.0	0.0	0.0	894	0.0	0.0	12.0	31.5
FMEnv/WHO/USEPA Standard*				**-**	**0.06**	**0.01**	**1000**	**10**	**0.08**	**250**	**55**[9]

**Sources: Guidelines & Standards for Environmental Pollution Control in Nigeria (FEPA 1991). Air Quality Guidelines (WHO, 2005)* Note: NH_3 (Ammonia); Db (Noise-decibel); NO_2 (nitrogen dioxide); SO_2 (Sulphur dioxide); CO (Carbon monoxide); CO_2 (Carbon dioxide); H_2S (Hydrogen sulphide), PM (Particulate matter); O_2 (Oxygen).

3.3.8 Geology & Hydrogeology

Borno State is largely underlain by the Chad Formation, which is the youngest stratigraphic sequence in the Chad Basin and most prolific in terms of groundwater resources. The Formation consists of the three prominent water bearing zones known as the Upper, Middle and Lower zone aquifers. The landscape of the southern part of Borno State is characterized by Basement Complex rocks and Sedimentary covers. The Crystalline Basement is prominent around Gwoza, Askira Uba, Chibok and Biu which are differentiated into migmatites, gneisses, granites and basalt rocks.

The geology is made up of the Precambrian basement complex rocks which are considered to be undifferentiated basement complex mainly gneisses, migmatite, and granites. The gneiss-migmatite complex is the most widespread and occupies more than half of the area and is the oldest rock in the area. They are heterogeneous rock group, which is composed gneiss migmatite of various origin and series of metamorphosed basic and ultra-basic rocks. Most of the basement complex of the area is dominated by biotitic granite, which is light gray, very coarse grained and occasionally pegmatite and aplitic. Pyrophoric feldspar is occasionally present, and some places show a generally parallel.
International Journal of Hydrology; August 2018, vol2, Issue 4[10]

3.3.9 Soil

There are two different types of soil namely the clay and sandy soil found in northern and southern part of the local government. There is also lateritic soil and alluvial soil which is mainly found along the coast of Yadzaram River and streams. The clay is suitable for cultivation of crops like guinea corn, beans, groundnuts and even cotton while the sandy loam soil, on the other hand is more suitable for the cultivation of tree crops such as orange, mango, guava and various types of vegetables. The predominant soils textures are sandy

[9] NESREA Federal Standards: National Environmental (Noise Standards and Control) Regulations 2009; First Schedule, Table 1 (https://standards.lawnigeria.com/2020/08/21/national-environmental-noise-standards-and-control-regulations-2009/)
[10] https://medcraveonline.com/IJH/occurrence-and-distribution-of-fluoride-in-groundwater-of-chad-formation-aquifers-in-borno-state-nigeria.html

loam to silty clay and are observed in some areas along the corridor. The land use is arable farming (under the bush fallow/rotation system) and crops grown include maize, guinea corn, millet, groundnut and beans.

The physico-chemical characteristics of soil around the project area is shown on Table 3.7.

The particle size distribution of soil determines the consistency and to extent the engineering uses of the soil. It also determines the characters of the soil that effect plant growth. The textural class of Lassa soil is sandy loam and % of the particles are in the following order: Sand> Silt > Clay as shown in Table 3.2.

pH is the concentration of hydrogen ion of a medium. It determines how basic or acidic a soil is. The pH of the soil in water ranged from 6.5 - 6.9 which is within the neutral range, and that it can facilitate availability of nutrients to plants readily. The capacity of medium to carry electric current is called the conductivity of that medium. It depends on presence, concentration, mobility and valence ions. It is a measure of soluble salt content in soil. The conductivity of soil around the project area is between 0.16dS/cm - 0.18dS/cm. For heavy metals, Pb was negligible (0.001mg/kg) in the soil while traces of Fe (0.97-1.27mg/kg), Zn (0.08-1.03mg/kg) and Cu (0.06-0.13mg/kg) were present in the soil samples.

Table 3.7: Physico-Chemical Characteristics of Soil around the project area

S/N	**SAMPLE**	**DEPTH**	**% PARTICLE DISTRIBUTION**				**pH**	**%**			**mg/kg**	**>Cmol/Kg<**					
		0-30cm	SAND	SILT	CLAY	**TC**	H20	OC	MC	TN	AvP	Ca	Mg	K	Na	EA	ECEC
1	SS1		81.24	12.10	6.66	SL	6.90	0.37	1.510	0.413	8.521	1.331	0.250	0.235	0.113	0.23	2.197
2	SS2		78.96	14.15	6.89	SL	6.50	0.12	0.93	50	3.55	0.55	0.207	0.213	0.174	0.115	1.259
FME	LMT		-	-	-	-	6.5-8.5	-	-							-	-

S/N	Depth	mg/kg				ds/cm^3	g/cm^3	mg/kg	mg/kg	CFU/g			
	0-30cm	Zn	Fe	Cu	Pb	EC	SG	BD	TPH	HB	HUB	HF	HUF
1	SS1	0.08	0.97	0.06	ND	0.18	2.22	1.65	2.55	$3.4X10^3$	$1.8X10^3$	$2.9X10^3$	$1.6X10^3$
2	SS2	1.03	1.27	0.13	0.001	0.16	1.31	1.25	1.80	$5.0X10^3$	$2.4X10^3$	$2.2X10^3$	$2,0X10^3$
FME	LMT	-	100	2-100	2	-	-	-					

Key: Av. P-Available Phosphorus, EC-Electrical Conductivity, OC-Organic Carbon, MC-Moisture Content, TN -Total Nitrogen, EA-Exchangeable Acidity, ECEC-Effective Cation Exchange Capacity, SL-Sandy Loam, TC-Textural Class, Zn-Zinc, Fe-Iron, Cu-Copper, Pb-Lead, BD-Bulk Density, SG-Specific Gravity, TPH- Total petroleum hydrocarbons, HB: Heterotrophic Bacteria, HUB: Hydrocarbons Utilising Bacteria, HF: Heterotrophic Fungi, HUF: Hydrocarbons Utilising Fungi

3.3.10 Surface water

The nearest water body is an earth dam with source from Yadzaram River, a tributary of river Benue. The earth dam is located approximately 800m to the south of the FSTC and it is the only perennial river around the area and takes it source from the mountains around the southern part, and flow from the south around Bazza towards the north. Table 3.8 shows physico chemical characteristics of surface water sample as against the FMEnv permissible limits (National environmental (ground and surface water quality control) regulation 2011. Schedule 2, regulation 5 and 6), and discussed as follows:

pH:

The pH of surface water samples is 6.55 and 6.62, which is within the FMEnv range of 6.5-8.5.

Total Dissolve Solid:

The measure of the sum of the cations and anions dissolved in water is refers to as total dissolve solids (TDS). The TDS of surface water are 85.64ppm and 87.65ppm which is below the FMEnv limit of 500ppm[11] and thus fit for domestic usage. The lower the TDS of water, the better the portability of the water and high TDS water above 500ppm (is unfit for portable use.

Dissolved Oxygen:

Dissolve oxygen (DO) is the quantity of oxygen dissolved in water. Dissolved oxygen is available to aquatic life (fish, reptiles, microbes). Atmospheric oxygen dissolves in water body (surface) as air comes in contact with it while infiltration of rainwater gets the oxygen to the aquifer as it collects in it. Dissolve oxygen is free and bond oxygen in water molecule is unavailable for aquatic life use. The DO in surface water is 2.84mg/L and 2.78mg/L as against the FMEnv limit of 6.0mg/L.

Biochemical Oxygen Demand:

The amount of oxygen required by microorganism to decompose organic matter under aerobic conditions at specified temperature is called biochemical oxygen demand (BOD). It is the most commonly used index to measure the degree of organic pollution in a water body. The BOD of the analyzed surface water was 1.60mg/L and 1.74mg/L which is within the permissible limit of 3.0mg/L by FMEnv.

Heavy Metals:

Heavy metals in water are of utmost concerns due to their negative health effect on humans, plants, and other animals. In the analyzed water samples, Cadmium (Cd), Iron (Fe) and Lead (Pb) were not detected, while Mg (0.05mg/L in both samples) was detected in small quantities below FMEnv permissible limits of 10mg/L. Zinc (Zn) values (1.01mg/L and 1.04mg/L) were above the FMEnv limit of Zn (0.01mg/L) probably due to corrosion of metal pipes. Nitrate (NO_3) values (16.11mg/L and 14.68mg/L) were higher than the FMEnv permissible limit of 9.1mg/L, probably as a result of runoff or leakage from fertilized soil, wastewater, animal feedlots. (Minimum detection limit of instrument for: Cd and Zn – 0.01mg/ ml. Pb – 0.02mg/ml. Fe -. 0.5mg/ml).

Microbiology:

Water microbiology establishes the presence or absence of indicator organisms in water. Though, indicator organisms might not constitute danger to humans and the environment, but their presence suggest or indicate the presence of potential pathogens in the water. Major biological parameter sought after to determine portability of water include E. *coli*, *Salmonella spp*. and *Shigella spp*. *Salmonella spp*. and *Shigella spp*. were present (qualitatively) in the surface water sample as against the FMEnv requirements of a 0 count. This is probably due to periodic watering of cattle in the area.

[11] National environmental (ground and surface water quality control) regulation 2011. Schedule 2, regulation 5 and 6

Table 3.8: Physico-Chemical Characteristics of surface Water Sample

SN	Sample ID	pH	TDS (ppm)	EC (µS/cm)	Fe (mg/l)	SO_4^{-2} (mg/l)	NO_3^- (mg/l)	Cd (mg/l)	Mg (mg/l)	Pb (mg/l)	Zn (mg/l)	Mn (mg/l)	Ca (mg/l)	Na (mg/l)	K (mg/l)	BOD_5 (mg/l)	COD (mg/l)	DO (mg/l)
1	SW1 Beginning Point	6.62	87.65	102.8	ND	33.38	16.77	ND	0.05	ND	1.01	1.98	13.52	10.25	6.10	1.60	2.11	2.84
2	SW2(end point	6.55	85.64	99.2	ND	31.45	14.68	ND	0.05	ND	1.04	1.78	11.45	13.22	4.12	1.74	2.45	2.78
NESREA	LMT	6.5-8.5	500	1000	10.00	100	9.1	0.005	40.00	0.01	0.01		180	120	50	3	30	6.0

SN	Sample ID	(MPN/100ml)	E. Coli (cfu/100ml)	Salmonella spp. (cfu/100ml)	Shigella spp. (cfu/100ml)
1	SW1 Beginning Point	103	AB	PRES	PRES.
2	SW2(end point)	111	AB	PRES	PRES
NESREA LIMIT	-	400	Must be absent	Must be absent	Must be absent

Source: National environmental (ground and surface water quality control) regulation 2011. Schedule 2, regulation 5 and 6.

Note: ND: Noted Detected, AB: Absent, Pres: Present, NO_2^- *Nitrite, Mn: Manganese, Ca: Calcium, Na: Sodium, K: Potassium, MPN: Most Probable Number of Organisms*

3.3.11 Ground water

Groundwater in general originate as surface water, but their occurrence and distribution are controlled by geologic factors such as lithology, texture of the rock and climatic factors such as rainfall. Domestic water supply in Lassa and environs comes largely from the groundwater from boreholes; much of this is taken from the overburden and fractured granite. Over the years, boreholes and water wells have been drilled for domestic use. For further analysis of the chemical characteristics, borehole water sample . Table 3.9 shows physico chemical characteristics of Ground water sampled.

Table 3.9: Physico-Chemical Characteristics of Ground Water Sample

SN	Sample ID	pH	TDS (ppm)	EC (µS/cm)	Fe (mg/l)	SO_4^{-2} (mg/l)	NO_3^- (mg/l)	Cd (mg/l)	Mg (mg/l)	Pb (mg/l)	Zn (mg/l)	Ca (mg/l)	Na (mg/l)	K (mg/l)	BOD_5 (mg/l)	COD (mg/l)	DO (mg/l)
1	GW(Borehole)	7.4	168.5	205.7	3.21	35.44	17.4	ND	7.11	ND	0.06	15.41	13.50	6.11	2.81	3.55	3.95
2	Well	6.5	170.3	235.2	2.11	22.55	12.37	ND	6.21	ND	0.07	14.35	12.55	7.21	2.45	2.51	3.25
WHO	LMT	6.5-8.5	500	1000	0.3	400	10	0.03	50.00	0.01	10.00	200	200	10	20	10	8

(Minimum detection limit of instrument for: Cd and Zn – 0.01mg/ ml. Pb – 0.02mg/ml. Fe -. 0.5mg/ml).

SN	Sample ID	E. Coli (cfu/100ml)	Salmonella spp. (cfu/100ml)	Shigella spp. (cfu/100ml)
1	GW(Borehole	0.00	AB	AB
2	Well	5.22	AB	AB
WHO LIMIT	-	0.00	0.00	0.00

Source: WHO – World Health Organisation

Note: ND: Noted Detected, AB: Absent, Pres: Present, Mn: Manganese, Ca: Calcium, Na: Sodium, K: Potassium, MPN: Most Probable Number of Organisms

pH

The pH of ground water is borehole (7.4) and well (6.5) which is within the WHO limit of 6.5-8.5.

Total Dissolve Solid:

The measure of the sum of the cations and anions dissolved in water is refers to as total dissolve solids (TDS.). The TDS of groundwater is 168.5ppm and 170.3ppm for borehole and well respectively. The lower the TDS of water, the better the portability of the water and high TDS water above 500ppm (WHO limit) is unfit for portable use and is detrimental to road structure.

Dissolved Oxygen:

Dissolve oxygen (DO) is the quantity of oxygen dissolved in water. Dissolved oxygen is available to aquatic life (fish, reptiles, microbes). Atmospheric oxygen dissolves in water body (surface) as air comes in contact with it while infiltration of rainwater gets the oxygen to the aquifer as it collects in it. Dissolve oxygen is free and bond oxygen in water molecule is unavailable for aquatic life use. The DO in ground water is 3.95mg/L and 3.25mg/L in borehole and well respectively, against the WHO limit of 8mg/L.

Biochemical Oxygen Demand:

The amount of oxygen required by microorganism to decompose organic matter under aerobic conditions at specified temperature is called biochemical oxygen demand (BOD). It is the most commonly used index to measure the degree of organic pollution in a water body. The BOD of groundwater is 2.82mg/L and 2.45mgL/which are within the permissible limit of 20mg/L by WHO.

Heavy Metals:

Heavy metals in water are of utmost concerns due to their negative health effect on humans, plants, and other animals. In the analyzed ground water sample, Cd and Pb were not detected, while Fe was 3.21mg/L for borehole and 2.11mg/L for well water against the WHO limit of 0.3mg/L, which is probably due to corrosion of plumbing fixtures and metal parts. Zn (0.06mg/L and 0.07mg/L in borehole and groundwater respectively) were detected in small quantities below the WHO permissible limits of 10mg/L.

Microbiology:

Water microbiology establishes the presence or absence of indicator organisms in water. Though, indicator organisms might not constitute danger to humans and the environment, but their presence suggest or indicate the presence of potential pathogens in the water. Major biological parameter sought after to determine portability of water include E. *coli*, *Salmonella spp*. and *Shigella spp*. *shows* absent in ground water sampled. E-Coli was present in the well water sample at 5.22cfu/100ml against the WHO limit of 0.0cfu, probably due to contamination from human/animal feces, while Salmonella and Shigella were absent.

3.3.12 Biological Environment

Flora (Vegetation)

The vegetation in Borno state is mainly of the Sudan savanna type, which includes the acacia (a source of gum arabic), baobab, locust bean, shea butter, dum palm, and kapok trees; however, there is a region of Sahel savanna, crops grown mostly include groundnut, cowpea, millet, maize and guinea corn and with sandy soils, in the north. The vegetation of the area influences the deforestation and even the types of crops to be cultivated. Natural vegetation has long disappeared in the area as a result of interference by man and animal through cultivation. Bush burning and clearing for cultivation has denuded the vegetational land to be open plane land. Major trees and bushes in the forest include tallow, rubber, wild black plum, birch, date palm, mesquite, acacia, monkey bread, red Bushwillow, baobab, jackal berry, tamarind and Terminalia. A list of popular plant species found in Borno is provided on https://www.picturethisai.com/region/Nigeria-Borno-Maiduguri.html.

Plate 1:Vegetation types within the project site

Fauna

The project area is a built up area and thus void of wild life while a some domestic animals are present such as cows, goats, sheep, ram, chickens. In Borno state al large, seasonal drought is also a normal feature of the zone and animals best fitted are those that can survive on grass without regular water to drink (Ayeni, Afolayan& Ajayi, 1982). Major species of birds includes guinea fowl, francolin, village weaver, Abyssinian ground hornbill, Arabian bustard, Savile's bustard, African collared-dove, chestnut-bellied starling, black scrub-robin and the Sudan golden sparrow. species of animals includes, baboon, pates monkey, Tantalus monkey, Grimm's duiker, red-fronted gazelle, African bush elephant, roan antelope, hartebeest, African leopard and spotted hyenas. A list of animal species in Borno state can be found via https://www.inaturalist.org/places/borno.

3.3.13 Environmental Problems in Borno

Limited access to water and poor water quality is a serious issue in the state. A paucity of drains and clogging leads to annual flooding in the wet season. Desert encroachment is also a major environmental threat (AfricaBib.Org). Climate change is posing a huge threat to food security in the region and exacerbating the desert encroachment. The state is faced with late commencement of rains and early cessation, the change in precipitation threatens largely rain-fed agriculture dependent communities around

the rural communities. The large-scale shift in weather patterns shortens the planting window with excessive rainfall variability.

3.4 Socio-Economic Environment

3.9.1 Social Setting

Borno is the second largest in area of the 36 states, only behind Niger State. Despite its size, the state is the eleventh most populous with an estimated population of about 5.86 million as of 2016. Askira Uba, the project LGA is a Local Government Area of Borno State, Nigeria with its headquarters are in the town of Askira. It has an area of 2,687 km² Area and a population of 210,000 in 2022, with a 78.15/km² Population Density (National Population Commission of Nigeria (web), National Bureau of Statistics (web))[12]. Askira Uba shares a Boundary with Mubi, Adamawa state from the south. It is dominated by mostly the Chibok (Kibaku) and Marghi tribes, although there are different dialects and some Fulani communities in the upland areas. It is one of the first settlement areas of the Christian Missionaries in Northern Nigeria. The LGA has two first class Emirs, one in Askira and the other in Uba Town. In 2014, Askira, HausariZadawa, Ngoli, Rumirgo/chul, Uba, Dille/Huyum, Lassa were displaced by the insurgents. They fled to Maiduguri, Yola, Taraba, Borno, Kaduna, Cameroun Republic.

3.9.2 Socioeconomics and Livelihoods

According to a data published by NBS in 2012, Borno had a total GDP of $5.175 billion and ranked as the 19th state in Nigeria with the biggest GDP. Among the states in the North-East region, in 2021 the state increased its IGR by 129.21% and was ranked as the state with the largest IGR in the Northeast region[13]. As a partially agriculturally based state, the rural Borno State economy relied heavily on livestock and crops prior to the Boko Haram insurgency while state capital Maiduguri is a major regional trade and service center (Mercy Corps, 2021). Crops grown include groundnut, cowpea, millet, maize and guinea corn while animals reared are cattle, sheep, goat and poultry. However, after years of the insurgency affecting development and forcing farmers from rural areas in the state, Borno has the thirteenth lowest Human Development Index in the country but as the insurgency has slightly abated since 2016, development has renewed (Mercy Corps, 2021). Other economic activities include using iron as a medium to produce tools like agricultural hoe, arrows, spears, muzzles lading of gun etc. Decorating of calabashes are being done by women, which is usually done in a variety of different ways. The area is connected to network service providers such as MTN, GLO, and Airtel. The houses within the community are connected to the national grid, but there is skeletal power supply. Majority of the residents rely on private generator for power supply. There is no modern market facility at Lassa, however, there are designated spaces earmarked for market use and Wednesdays are designated as their market days. Traders and farmers also take their wares and produce to bigger towns like Askira Uba main market. The high costs of transportation fares to bigger markets adversely affect their marginal profit.

[12] https://en.wikipedia.org/wiki/Borno_State

[13] https://www.dataphyte.com/latest-reports/2023-elections-performance-appraisal-time-for-states-and-their-governors-borno-state/#:~:text=The%20most%20recent%20state%20GDP,Borno%20has%20the%20biggest%20GDP.

3.9.3 Housing and Settlement Pattern

In Lassa, a few houses have modern designs (25%) and they are built with utilities like kitchen, toilet and bath in-house. These modern houses are also constructed with semi-permanent materials like zinc, wood and roofed with corrugated iron and aluminum sheets. A majority of the houses observed at Lassa (36%) are made of clay and roofed with corrugated iron sheets while 30% are houses made of clay and roofed with thatch (Jalam, U. A, 2011)[14].

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Settlement Pattern in Lassa Community

3.9.4 Environmental Health

The most used means of human faeces disposal are pit latrine system (39%) and modern-system water closet (35%). Other unsafe practices include open defecation onto the nearby bush (16%), burying (28%). The commonest refuse disposal method was open dumping on land (59.45%) while 32.43% burn their wastes. The remaining 8% of the respondents reported they either bury or throw by the riverside. With respect to domestic source of water, about 40% make use of boreholes (private and public) while 60% make use of streams (GlobalDataLab[15]).

3.9.5 Public Health

Recurrent health challenges in Borno state include dysentery, measles, malaria, tyhoid and especially Cholera (WHO). There are some government and private clinics and hospitals in Askira Uba including Primary Health Care Centres in every word. A link to the list of healthcare centres is provided below[16].

3.9.6 Education

With respect to education, Borno has many higher institutions, these include: University of Maiduguri, Nigerian Army University Biu, Borno State University, Al-Ansar University, Kashim Ibrahim college of

[14] ATBU Journal of Environmental Technology, 4, (1), December 2011

[15] https://globaldatalab.org/profiles/region/NGAr106/

[16] https://thehospitalbook.com/hospital/borno-hospital/askira-uba-borno-hospital/

Education, Mohammed Goni College of Legal and Islamic Studies, School of Health and Technology Maiduguri and Maiduguri College of Nursing and Midwifery. Askira Uba Local Government has 48 primary schools which is located in the various part of the villages and nine (9) secondary schools. The presence of Federal Technical College, Lassa is very important as the LGA has no other higher institution. However, it has local craft industries which is located at various centres in Lassa, Mussa, Uba and Askira. At these centres, men and women are taught how to design various types of bags with local materials. In 2014, Askira, Hausari Zadawa, Ngoli, Rumirgo/Chul, Uba, Dille/Huyum, and Lassa were displaced by the insurgents which is responsible for the absence of academic activities in the school and the deserted community at the time of the assessment.

3.9.7 Security Issues

Borno state and Askira Uba LGA in particular falls within the high-risk security zone in Nigeria which is plagued by Boko Haram. Lassa town in particular has had a lot of insecurity attacks in the past which has led to the town been abandoned (The Organisation for World Peace), with the absence of public and trading activities, and the presence of armed forces even within the FSTC Lassa. Currently the school activities have been moved to another school in Adamawa temporarily for their academic session. However, they are hopeful that the insurgency will be brought under control and after construction, the students will resume school activities in Lassa FSCTC.

CHAPTER FOUR

4.0 POTENTIAL IMPACTS

The proposed construction and rehabilitation work in FSTC Lassa could potentially cause impacts on the environmental and socio-economic components of the project area. Majority of these impacts will be beneficial especially in areas of improved access to education and quality infrastructure. Nonetheless, civil works have the potential to generate adverse impacts on the environment and immediate communities. These unfavorable impacts need to be prevented/managed to enhance the sustainability of the project. This section presents an extensive analysis of the identified potential beneficial and adverse impacts associated with the proposed project at FSTC Lassa.

4.1 Impact Identification and Rating Process

For this study, a "5-Step approach was employed by the consultant for the impact identification in line with the Leopold Matrix:

Step 1: Impact Identification - Interaction b/w project activities and environmental and social sensitivities
Step 2: Qualification of impacts positive/negative, Direct/Indirect/ Short/Long term, Reversible/Irreversible
Step 3: Rating of Impact Likelihood
Step 4: Degree of Impact Significance - Major, Moderate, Moderately High, Moderately Low
Step 5: Impact Assessment Matrix

Step 1: Identification of Potential Impacts

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

Environmental Component

- Air Quality
- Noise (Vibrations, Sound Waves, etc.)
- Surface water Quality
- Ground water Quality
- Soil Quality
- Terrestrial habitats including fauna and flora

Social Component

- Grievance redress and community affairs
- Community health and safety
- Economic activities
- Employment
- Education
- Gender
- Inclusion

- Land use
- Property rights
- Transport and traffic
- Religious activities
- Cultural Resources

Step 2: Categorization of Impacts

In order to further qualify the impacts of the various project activities on the environment, the identified impacts were characterized based on the nature, duration, and reversibility as follows:

- Beneficial Impacts – these are impacts that have positive and beneficial effects.
- Adverse Impacts – these are impacts that have negative and untoward effects.
- Direct Impacts – these are impacts that are most obvious and are directly related to the proposed project and can be connected to the action that caused them.
- Indirect Impacts – these are secondary impacts that occur later in time or further away from the impact source.
- Cumulative Impacts – 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 – these are impacts over which the components involved have the ability to recover after the alterations caused by the impact.
- Irreversible Impacts – these are the impacts whose effects are such that the sensitivity cannot be returned to its original state even after adequate mitigation measures are applied.
- Residual Impacts – these are the impacts whose effects remain after mitigation measures have been applied.
- Short-term Impacts – these are the impacts whose effects remain over a short period of time and are removed after the application of mitigation measures.
- Long-term Impacts – these are the impacts whose effects remain over a long period of time, even after the application of mitigation measures.

Step 3: Rating of Impact Likelihood

This is an assessment of the probability of the effect occurring. ***Table 4.1*** illustrates evaluation/rating based on probability, likelihood and frequency of effect occurring.

Table 5.1: Likelihood of Occurrence of Impact

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

Step 4: Degree of Significance

At this stage, the impact rating is determined based on its significance / potential consequence. Table 4.2 shows the impact significance with associated impact ratings.

Table 4.2: Impact Significance with Associated Impact Ratings

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

Step 5: Impact Assessment Matrix

The final impact assessment was rated based on the likelihood of occurrence and potential consequence of the impact; after the rating of each impact, the determination of mitigation measures followed. Only moderate and major impacts were considered for impact mitigation. Continuous improvement practices will address low impacts. Figure 4.1 shows the Leopold Impact Risk Assessment Matrix.

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

Figure 4.1: Impact Assessment Matrix (Risk Assessment Matrix)

4.2 Potential Environmental and Social Impacts

The potential environment and social impacts from the construction/rehabilitation of FSTC Lassa are itemised below 4.2.1 Potential Positive Impacts. The potential positive environmental and social impacts are presented in Table 4.3. These potential positive environmental and social impacts will depend on the proper implementation of the project.

Table 4.3: Potential Positive Environmental and Social Impacts

ENVIRONMENTAL IMPACTS	SOCIAL IMPACTS
• Create conducive learning environment as result of the new infrastructure. • Reduced susceptibility to flood and prevent surface erosion through graveled access road within the school. • Promote modernization of infrastructure and climate resilience from use of environmentally-friendly design and building options.	• Increased enrolment of school children especially support to Girl child education by improving access to schools. • Improvement in hygiene and sanitation in the schools and thus better health status by provision of Water and Sanitation (WASH) facilities. • Increase in local development and employment as the local population are expected to be employed during the construction phase as local labor and during operation phase

ENVIRONMENTAL IMPACTS	SOCIAL IMPACTS
	as school workers or provide services such as food, trade, telecommunication etc. • Promotion of human capital development during the operation phase which will support economic growth and poverty reduction in the project area and Borno state at large. • Promote inclusive education by constructing facilities with access for people with disabilities.

4.2.2 Potential Negative Impacts

The potential negative environmental and social impacts are presented in Table 4.4 below. These impacts have been classified according to the preconstruction, construction and operation phases.

Table 4.4: Potential Negative Environmental and Social Impacts

ENVIRONMENTAL IMPACTS	SOCIAL IMPACTS
Preconstruction Phase	
• ***Loss of Flora and Fauna*** Land clearing activities could lead to loss of vegetation cover and soil erosion and exacerbate climate change impacts. • ***Environmental Pollution*** ✓ Vegetal waste from clearance of vegetation may be washed into water bodies and cause pollution if they are not properly managed. ✓ Potential air, water and soil pollution from land clearing activities, fugitive dust and exhaust fumes from movement and use of vehicles and machines which could result in environmental pollution and public health concerns. • ***Land Degradation*** Sourcing of construction materials such as sand, clay, gravels could lead to environmental degradation and erosion from sand mining activities and extraction of gravel from unlicensed quarries .	• ***Disruption of Community Activities / Social Stress*** ✓ Disturbance of communities due to construction activities such as movement of vehicles/materials/equipment to site and civil works/operation of machinery on-site, which could also cause grievances. ✓ Increase in traffic and delay time, disturbance of market and religious activities due to movement of vehicles/materials/equipment to site. • ***Labor Influx*** ✓ Increased risk of illicit behavior and crime (including prostitution, theft and substance abuse) from presence of workers in the community. ✓ Risks associated with Labor influx such as Gender-based violence, including sexual harassment, child abuse and exploitation. ✓ Poor labor and working conditions could expose workers to illhealth, injury, conflicts and legal action • ***Conflict and Community Unrest*** ✓ Conflict may arise between community members and contractor, especially when members of the community are not hired/employed at the construction site. ✓ Armed personnel onsite may act harshly towards the contractor workers. • ***Accident/incidents involving Community members*** ✓ Movement of equipment and vehicle to site could lead to accidents involving community members, students and staff. ✓ Material and equipment stacking could restrict access for students and community members. • ***Occupational Accidents/incidents*** Occurrence of accidents and injury of workers during pre-construction activities. • ***Insecurity***

	Project workers including Consultants, contractor workers could fall victim of theft, kidnap, insurgency, and social conflicts. • ***Loss of Archaeological and Cultural Resources*** Construction works may unearth/destroy sensitive sites such as graves which can cause conflict or grievances
Construction Phases	
• ***Impairment of Air Quality*** Potential air, water and soil pollution from fugitive dust and exhaust fumes from movement and use of vehicles and equipment which could result in environmental pollution and public health concerns. • ***Soil degradation/contamination*** ✓ Leakages may occur from stacked equipment containing oil such as engine oil or fuel. This could result in the seeping-through of toxic fluid into the soil, thereby leading to possible contamination of soil. ✓ Soil compaction and soil structure changes may occur due to influx and stationary positioning of heavy-duty equipment and vehicles during access road construction. ✓ Sourcing of construction materials such as sand, clay, gravels could lead to environmental degradation and erosion from sand mining activities and extraction of gravel from unlicensed quarries. • ***Noise and vibration nuisance*** Noise pollution resulting from movement and use of heavy machinery and equipment. • ***Impairment of Water Quality*** Leakages may occur from stacked equipment containing oil such as engine oil or fuel. This could result in the seeping-through of toxic fluid into surface water and ground water and cause water pollution. • ***Environmental Pollution*** Generation of solid wastes - soil excavated debris, metal scraps, plastics, wood, waste concrete, papers and cartons, etc. and waste from staging area can cause pollution to soil, water and air if not properly managed.	• ***Disruption of Community Activities / Social Stress*** ✓ Disturbance of communities due to construction activities such as movement of vehicles/materials/equipment to site and civil works/operation of machinery on-site. ✓ Increase in traffic and delay time, disturbance of market and religious activities due to movement of vehicles/materials/equipment to site. • ***Labor Influx*** ✓ Increased risk of illicit behavior and crime (including prostitution, theft and substance abuse). ✓ Risks associated with Labor influx such as Gender-based violence, including sexual harassment, child abuse and exploitation. Poor labor and working conditions. ✓ Potential for child abuse and child labor which could expose children to hazardous situation, accidents, and molestation. ✓ Poor labor and working conditions could expose workers to ill-health, injury, conflicts and legal action. • ***Conflict and Community Unrest*** ✓ Conflict may arise between community members and contractor, especially when members of the community are not hired/employed at the construction site. ✓ Armed personnel onsite may act harshly towards the contractor workers. • ***Accident/incidents involving Community members*** ✓ Movement of equipment and vehicle to site as well as construction activities could lead to accidents involving community members, students and staff. ✓ Material and equipment stacking could restrict access for students and community members. • ***Occupational Accidents/incidents*** ✓ Occurrence of accidents, injury, fatality of workers during construction activities from unsafe work practices, unavailability of PPEs and lack of Health & safety cautions ✓ Exposure of workers to hazardous substances such as toxic materials and unsafe working conditions. • ***Insecurity*** Project workers including Consultants, contractor workers could fall victim of theft, kidnap, insurgency, and social conflicts.
Decommissioning Phase	
• ***Environmental Pollution*** ✓ Poor housekeeping during decommissioning of staging area, campsite and project site could pollute the environment and also lead to grievances from the school/community members. ✓ Unsuitable and unwanted materials could be left lying indiscriminately in the project area and	• ***Accidents/incidents involving community members*** ✓ Unreclaimed established borrow pits used by contractors may become accident and drowning sites especially for children, stagnant pools could harbour disease vectors and cause illnesses.

cause environmental pollution and also lead to grievances from the school/community members. ✓ Unreclaimed established borrow pits used by contractors may lead to environmental degradation, and store dirty water which could harbour disease vectors and cause public health issues.	✓ Loss of temporary employment for locals engaged during the project activities will lead to loss of income and grievances.
Operational Phase	
Environment	**Social**
• ***Generation of Waste*** Waste generated during operation of the school - paper, plastics, aluminium cans, food waste, lab chemical waste, sewage etc could lead to environmental pollution and public health concerns. • ***Environmental Pollution*** Poor air quality from exhaust fumes from use of school generators and other machineries. • ***Water Pollution*** ✓ The sanitation facilities may be poorly maintained leading to groundwater contamination and adverse health effects for the community. ✓ Water pollution from discharge of effluents (sewage/sanitary wastewater, lab wastewater etc.) and chemical/oil spill during maintenance; etc can lead to disease outbreaks in the school/community. ✓ Sanitary pads may clog the sewage. ✓ Water unavailability may impact cleaning and usage.	• ***Exposure of School Users to Diseases*** Risk of underground water pollution which can cause public health concerns and disease outbreak if borehole is situated too close to septic tanks for the toilet facilities. • ***Exclusion of People with Disabilities (PWDs)*** PWDs may be disenfranchised from benefiting from the project if infrastructure is not disable-friendly. • ***Conflict between the Armed Forces and the School Management*** There may be resistance from the armed forces currently occupying the school to vacate the premises during the operation phase of the project and may lead to conflict. • ***GBV/SEA*** Students and staff during the operation phase maybe exposed to risks of GBV/SEA especially considering the present insecurity in the project area and also the presence of armed forces within the school premises. • ***Fire Outbreak*** Fire outbreaks in facilities constructed could lead to accidents. • ***Insecurity*** Students and staff of school could fall victim of kidnapping, banditry and insurgency. Facilities built may also be vandalised or burnt due to insurgency.

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Table 4.5: Rating of Identified Potential Impacts at Pre-Construction Phase

Activities	Component	Sub-Component	Potential Impact	Categorization	Likelihood	Consequence	Rating
Preconstruction and Construction Phases							
Site clearance and vegetation clearance Mobilisation of Equipment and material to site Use of machinery Creation of borrow pits and staging area All civil works activities	Environment	Air	Impairment of overall air quality resulting from fugitive dust, particulates and gaseous emission from vegetation clearance and movement/operation of vehicles and machinery	Direct / Negative / Short-term / Local / Reversible	Medium	Considerable	Moderate
		Climate Change	Promote modernization of infrastructure and climate resilience from use of environmentally-friendly design and building options	Direct / Positive / Long-term / Local / Irreversible			Beneficial
		Soil	Reduced susceptibility to erosion and waterlogging of roads	Direct / Positive / Long-term / Local / Reversible			Beneficial
		Flora and Fauna	Loss of flora and fauna during mobilization of equipment and site clearing,	Direct / Negative / Long-term / Local / Reversible	Medium	Little	Minor
		Land & Water	Land degradation from Sourcing of construction materials from sand mining sites, unlicensed quarries, unstable areas	Direct / Negative / Long-term / Local / Irreversible	Medium	Considerable	Moderate
		Soil	Soil and ground water contamination from leakages of oil and chemicals from staked equipment and use of chemicals	Direct / Negative / Long-term / Local / Irreversible	Low	Considerable	Moderate
		Noise	Noise pollution resulting from movement and use of heavy machinery and equipment	Direct / Negative / Short-term / Local / Irreversible	Medium	Little	Moderate
		Waste	Environmental pollution from vegetal waste, construction waste, human waste	Direct / Negative / Short-term / Local / Reversible	Medium	Considerable	Moderate
Site clearance and vegetation clearance Mobilisation of Equipment and material to site Use of machinery	Social						
		People	Increase in local development and employment as the local population are expected to be employed during the civil works	Direct / Positive / Short-term / Local/ Reversible	Soci		Beneficial
			Gender-based violence, including sexual harassment, child abuse and exploitation, substance abuse from labor influx.	Direct / Negative / Long-term / Local/ Irreversible	High	Considerable	Major
			Potential for child abuse and child labor which could expose children to hazardous situation, accidents, and molestation	Direct / Negative / Long-term / Local/ Irreversible	High	Considerable	Major

Employment and use of labor Creation of borrow pits and staging area All civil works activities			Poor labor and working conditions could expose workers to ill-health, injury, conflicts	Direct / Negative / Short-term / Local/ Reversible	Medium	Considerable	Moderate
			Accidents involving community members, students and staff Movement of equipment and vehicle to site and use of machinery	Direct / Negative / Long-term / Local/ Irreversible	Medium	Considerable	Moderate
	Social	People	Increase in traffic and delay time, disturbance of communities, market and religious activities	Direct / Negative / Short-term / Local/ Reversible	Low	Little	Minor
			Conflict between community members and contractor	Direct / Negative / Short-term / Local/ Irreversible	Medium	Considerable	Moderate
			Material and equipment stacking could restrict access for students and community members	Direct / Negative / Short-term / Local/ Reversible	Low	Little	Minor
		Occupational Health & Safety	Accidents and injury of workers	Direct / Negative / Short-term / Local/ Irreversible	Medium	Considerable	Moderate
			Exposure of workers to hazardous substances such as toxic materials and unsafe working conditions.	Direct / Negative / Short-term / Local/ Irreversible	Medium	Considerable	Moderate
			Insecurity resulting in theft, kidnap, and insurgency. Armed personnel onsite may act harshly towards the contractor workers	Direct / Negative / Long-term / Local/ Irreversible	Medium	Considerable	Major
		Cultural Resources	Construction works may unearth/destroy sensitive sites such as graves etc.	Direct / Negative / Long-term / Local/ Irreversible	Medium	Considerable	Moderate
Decommissioning Phase							
Activities	**Component**	**Sub-Component**	**Potential Negative Impact**	**Categorization**	**Likelihood**	**Consequence**	**Rating**
Demobilisation from site Closure of staging area Removal of equipment from site	Environment	Land and Waste	Poor housekeeping during decommissioning of staging area and project site can lead to environmental pollution.	Direct / Negative / Short-term / Local/ Reversible	Medium	Considerable	Moderate
			Environmental degradation from unreclaimed established borrow pits.	Direct / Negative / Long-term / Local/ Irreversible	Low	Considerable	Moderate
	Social	People	Accidents, exposure to diseases and drowning from unreclaimed borrow pits	Direct / Negative / Long-term / Local/ Irreversible	Low	Considerable	Moderate
			Grievances from loss of temporary employment for locals	Indirect / Negative / Short-term / Local/ Irreversible	Low	Considerable	Moderate

Operational Phase							
Use of facilities Enrolment of students Employment of staff and operations Maintenance of facilities	Environment	Waste	Environmental pollution from waste generated during operation of the school	Direct / Negative / Long-term / Local/ Reversible	Medium	Considerable	Moderate
		Air	Poor air quality from exhaust fumes from use of school generators and other machineries	Direct / Negative /Long-term/ Local/ Irreversible	Medium	Considerable	Moderate
		Water	Poor maintenance of sanitation facilities may lead to water pollution and spread of diseases; Sanitary pads may clog the sewage; Water unavailability may impact cleaning and usage.	Direct / Negative / Short-term / Local/ Irreversible	Medium	Considerable	Moderate
			Underground water pollution if borehole is situated too close to septic tanks for the toilet facilities	Direct / Negative / Short-term / Local/ Irreversible	Medium	Considerable	Moderate
	Social	People	Create conducive learning environment as result of the new infrastructure	Direct / Positive / Long-term / Local / Reversible			Beneficial
			Increased enrolment of school children especially support to Girl child education by improving access to schools	Direct / Positive / Long-term / Local/ Irreversible			Beneficial
			Promotion of human capital development	Direct / Positive / Long-term / Local / Reversible			Beneficial
			Promote inclusive education by constructing facilities with access for people with disabilities	Direct / Positive / Long-term / Local / Irreversible			Beneficial
			Improvement in hygiene and sanitation in the schools and thus better health status	Direct / Positive / Short-term / Local/ Reversible			Beneficial
			Fire outbreaks in facilities constructed could lead to accidents	Direct / Negative / Long-term / Local/ Irreversible	Medium	Considerable	Moderate
			People with Disabilities (PWDs) may be disenfranchised from benefiting from the project	Direct / Negative / Long-term / Local/ Reversible	Medium	Considerable	Moderate Beneficial
			Conflict between school users and armed forces	Direct / Negative / Long-term / Local/ Irreversible	Medium	Considerable	Major
			Students and staff during the operation phase maybe exposed to risks of GBV/SEA.	Direct / Negative / Long-term / Local/ Irreversible	Medium	Considerable	Major
			Students and staff of school could fall victim of kidnapping, banditry and insurgency. Facilities built may be vandalised or burnt due to insurgency	Direct / Negative / Long-term / Local/ Irreversible	High	Considerable	Major

CHAPTER FIVE

5.0 MITIGATION MEASURES

5.1 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.

5.2 Mitigation and Enhancement Measures

This Section describes mitigation measures that are technically and financially feasible to address significant environmental and social impacts associated with the construction and operation of FSTC. 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. A summary of all identified impacts as well as the proposed mitigation measures are presented in table 5.1 below.

Table 5.1: Mitigation and Enhancement Measures

Activities	Potential Impact	Pre-Mitigation Significance	Mitigation Measures	Post mitigation (Residual) significance
Pre-construction and Construction Phase				
Site clearance and vegetation clearance Mobilisation of Equipment and material to site Use of machinery Creation of borrow pits and staging area All civil works activities	Impairment of overall air quality resulting from fugitive dust, particulates and gaseous emission from vegetation clearance and movement/operation of vehicles and machinery.	Moderate	• Wet earth roads to reduce dust • Ensure that all vehicles are serviced; undergo vehicle emission testing (VET) and vehicle exhaust screening (VES). • Use road worthy vehicles/ maintain regularly.	Minor
	Loss of flora and fauna during mobilization of equipment and site clearing.	Minor	• Limit land clearing to specific zone needed for the construction work. • Protect all vegetation not required to be removed against damage. • Replant or revegetate trees/shrubs.	Minor
	Land degradation from Sourcing of construction materials from sand mining sites, unlicensed quarries, unstable areas.	Moderate	• Ensure sourcing of earth materials from registered quarries and licensed construction vendors with appropriate quarry lease to prevent illegal sand mining. • Develop borrow pit management plan and remediate borrow pit site after use.	Minor
	Soil and ground water contamination from leakages of oil and chemicals from staked equipment and use of chemicals	Moderate	• Segment a safe and specific area for stacking of equipment. • Service equipment and install a non-permeable membrane/ drip pans.	Minor
	Noise pollution resulting from movement and use of heavy machinery and equipment	Moderate	• Observe a strict control of timing of activities especially high noise emissions; prohibition on night working if possible. • Use modern, well maintained equipment fitted with noise abatement devices (e.g., mufflers). • Ensure provision of earmuffs for personnel working with or near noise generating equipment. • Ensure that project staff are not exposed to more than nine hours at a go on any equipment generating noise level of more than 55 dBA.	Minor
	Environmental pollution from vegetal waste, construction waste, human waste	Moderate	• Develop and implement a site-specific Waste Management Plan (WMP). • Vegetal waste can be given to farmers to use as manure. • Segregrate waste and designate a zone for waste storage onsite.	Minor

			• Liaise with Borno state ministry of environment or licensed private waste collector for periodic waste collection from site (weekly).	
	Accidents and injury of workers	Moderate	• Develop & implement a project specific Occupational Health and Safety Plan (OHSP) to include but not limited to: - Prohibition of drug and alcohol use by workers while on the job. - Provision of adequate first aid, first aiders, PPE, signage (English and Hausa languages). - Restriction of unauthorized access to all areas of high-risk activities. - Provision of specific personnel training on worksite OHS management. - Ensure that staging areas for contractor equipment are adequately delineated and cordoned off with reflective tapes and barriers. - Workers should get a daily induction/toolbox before going on the site and a refresher of what happened on site a day before. - Lighting and/or reflective tapes and signage integrated in all worksites for safety at night. • Ensure all chemicals are labelled and appropriately stored in sealed containers.	Minor
	Exposure of workers to hazardous substances such as toxic materials and unsafe working conditions.	Moderate		
	Gender-based violence, including sexual harassment, child abuse and exploitation, substance abuse from labor influx.	Major	Implement GBV/SEA/SH prevention plan: • All contractors' workers to be sensitized and sign Code of Conduct (CoC) (see annex 4 for sample CoC) and zero tolerance for sexual integration with students, staff, community. • Sourcing of local workforce from project communities. • Prohibition of drug and alcohol use by workers while on the job through awareness & sensitization on side effects of drug abuse • Liaise with the Ministry of Women Affairs and also Sexual Assault and Referral Centres (SARCs[17]). • Sensitise staff, Community leaders, women group, youth group on SEA/SH preventive measures and response plan. • Signages against tolerance for SEA/SH/GBV to be installed along the project communities.	Moderate

[17] Sexual Assault Referral Centre
Umaru Shehu Ultra Modern Hospital
Maiduguri, Borno State
08023585805

	Potential for child abuse and child labor which could expose children to hazardous situation, accidents, and molestation	Major	Implement child labor prevention plan: • All contractors' workers to be sensitized and sign Code of Conduct (CoC) (see annex 4 for sample CoC) and zero tolerance for sexual integration with students, staff, community. • The project must implement zero tolerance for child labor and any situation that will expose children to dangerous situation. • Employment process to include procedures for engagement where ID showing verified date of birth or affirmation from community leader are mandatory.	Moderate
	Poor labour and working conditions can lead to injury, accidents, conflict and legal action	Moderate	• Comply with and implement the Labour Management Plan in the ESMP including: inclusive recruitment, safe work conditions, provision of basic amenities, fair wages etc. • Ensure non-compliance cases have sanctions. • Implement Grievance Redress Mechanism.	Minor
	Accidents involving community members, students and staff	Moderate	Implement community health & safety plan: • Prohibition of drug and alcohol use by workers while on the job. • Restriction of unauthorized access to all areas of high-risk activities. • Ensure that staging areas for contractor equipment are adequately delineated and cordoned off with reflective tapes and barriers. • Adequate safety signage on construction sites should be installed to alert community/drivers/pedestrians. • Lighting and/or reflective tapes and signage integrated in all worksites for safety at night. • Install appropriate safety signage and/or use signallers at strategic locations. • Liaise with FRSC to enforce road safety standards, traffic rules including speed limits Schedule large and slow-moving vehicles for off peak period, and use of flagmen to direct construction vehicles.	Minor
	Increase in traffic and delay time, disturbance of communities, market and religious activities	Minor	• Install appropriate safety signage and/or use signallers at strategic locations. • Inform local communities in advance of major activities likely to affect traffic. • Enforce road safety standards, traffic rules including speed limits Schedule large and slow-moving vehicles for off peak period, and use of flagmen to direct construction vehicles. • Have in place a traffic Management Plan (TMP)	Minor

	Conflict between community members and contractor over non-engagement of locals and other issues	Moderate	• Limit the number of migrant workers by engaging local workers. • Establish a community-grievance redress mechanism. • Conduct adequate and timely sensitization in the community about the project activities.	Minor
	Material and equipment stacking could restrict access for students and community members	Minor	• Designate a zone for parking of equipment and storage of materials onsite and away from access routes. • Construction vehicles should not be parked on the road or infront of facilities in use.	Minor
	Insecurity resulting in theft, kidnap, and insurgency.	Major	• Appropriate security measures in place to prevent harassment or kidnapping of workers. • Prepare and implement a security management plan for the project (see guidelines in section 6.6.4).	Moderate
	Armed personnel onsite may act harshly towards the contractor workers	Moderate	• Contractor workers to liaise with school management and inform the military of all planned activities and schedule. • Contractors to work within approved hours as agreed with the security personnel.	Minor
	Construction works may unearth/destroy sensitive sites such as graves etc.	Moderate	• Restrict construction activities away from community sensitive sites. • Inform school management and community leaders of any cultural findings such as graves, artifacts etc.	Minor
Decommissioning Phase				
Activities	**Potential Negative Impact**	**Rating**		
Demobilisation from site Closure of staging area Removal of equipment from site	Poor housekeeping during decommissioning of staging area and project site can lead to environmental pollution.	Moderate	• Implement site specific waste management plan and liaise with license waste vendors to collect waste and unsuitables from site. • Ensure staging areas are tidied up and left in a pre-project state or better.	Minor
	Environmental degradation from unreclaimed established borrow pits.	Moderate	All borrow pits used should be reclaimed after construction to as near the pre-project stage as possible	Minor
	Accidents, exposure to diseases and drowning from unreclaimed borrow pits	Moderate		Minor
	Grievances from loss of temporary employment for locals	Moderate	• Adequate information should be given to workers at the point of recruitment. • School management should consider hiring some of these people as menial workers/staff in the operation phase.	Minor

Operation Phase				
Use of facilities Enrolment of students Employment of staff and operations Maintenance of facilities	Environmental pollution from waste generated and facility maintenance activities during operation of the school.	Moderate	• Provide waste bins that are immovable but can be easily tipped off from down or up. • School management to liaise with Borno Ministry of Environment to ensure periodic waste disposal. • E-waste should be segregated in the schools and transferred to the Ministry of education to stockpile and liaise with facilities for recycling of e-waste. • Ensure fuel storage tanks are installed in a bonded area and checked daily. • Ensure regular maintenance of vehicles to avoid leaks of oil. • Prevent unregulated dumping of fuel waste	Minor
	Poor air quality from exhaust fumes from use of school generators and other machineries	Moderate	• Use of environmentally-friendly alternatives such as solar power source, cleaner engines • Service equipment and machinery regularly	Minor
	• Poor maintenance of sanitation facilities may lead to water pollution and spread of diseases; • Sanitary pads may clog the sewage; • Water unavailability may impact cleaning and usage.	Moderate	• Sewage to be evacuated periodically. • Ensure water points close to WASH facilities to facilitate easy cleaning and maintenance. • Implement proper waste management practices in line with the Borno state ministry of environment. • Provide safe and secure options for disposal of sanitary pads such as covered buckets and incineration pits.	Minor
	Underground water pollution if borehole is situated too close to septic tanks for the toilet facilities	Major	• Site boreholes at least 30m away from septic tanks (WHO) • Ensure regular test of water quality.	Minor
	Fire outbreaks in facilities constructed could lead to accidents	Moderate	• The buildings should have fire protective equipment such as fire extinguisher, sand bucket, emergency exit, sprinkler system if possible. • Fire emergency training should also be provided to students and staff. • Emergency contact number for fire service should be placed on notice boards in the school (including +234 76-231213, 08028505257, +234 806 128 7455).	Minor
	People with Disabilities (PWDs) may be disenfranchised from benefiting from the project	Moderate	• Designs should make provisions for people with disabilities such as access ramps with guard railings, special toilets etc. • Height of tables and electrical appliances should be considerable for use of people with disabilities.	Minor

	Conflict between school users and armed forces	Major	• School management to liaise with the state government on locating another residence for the armed forces who are currently residing in the school. • Liaise with the state Government to ensure the military comply with Code of Conducts against GBV/SEA/SH.	Moderate
	Students and staff during the operation phase maybe exposed to risks of GBV/SEA	Major	• School management to implement Code of Conducts for all staff and sensitise students on GBV prevention and response and availability of SARCs.	Moderate
	Students and staff of school could fall victim of kidnapping, banditry and insurgency. Facilities built may be vandalised or burnt due to insurgency	Major	• Ensure implementation of Security Management Plan in schools (see section 6.6.4 for guide on security management strategy). • Install flood lights and CCTV cameras as part of security measures to capture movement in and around the schools especially in high-risk areas.	Moderate

CHAPTER SIX

6.0 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

The Environmental & Social management Plan (ESMP) provides a plan for systematic coordination of the responsibilities associated with managing the identified impacts with a view to ensuring environmental friendliness of the proposed project.

The plan highlights the specific mitigation measures that would be taken and the entities responsible for carrying out the mitigating measures. The ESMP also contains a monitoring plan indicating the responsible parties, the frequency of monitoring, key indicators and the reporting format, and provides for necessary capacity building to facilitate the ESMP implementation. Cost estimates for implementation of the various measures, monitoring plan and capacity building are also given. The projected implementation budget will enable the ESMP to be an integral part of financing for the construction and maintenance works in the project.

6.1 Purpose of the ESMP

The ESMP has been developed to meet international and national standards on E&S performance and covers the pre-construction, construction phase and the operation phase of the project. In each phase, it details the mitigation and enhancement measures to be implemented by the ministry of education, contractors and other relevant institutions.

6.2 ESMP Objectives

The ESMP identifies potential environmental and social impacts of the project during the pre-construction, construction and operation phases, along with appropriate enhancement/mitigation measures for positive and negative impacts respectively. The ESMP also stipulates responsibilities for mitigation and monitoring, timelines, monitoring parameters and adequate budget.

6.3 Institutional Arrangements

The successful implementation of the ESMP depends on the commitment of the relevant institutions, and the capacity within the institutions implement the plan effectively. Table 6.1 below outlines the institutional roles for implementing the ESMP.

Table 6.1: Outlines the roles and responsibilities of applicable institutions and stakeholders

S/N	Category	Roles
1	Contractor	• 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 the 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 labour 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

2	Project Implementation Unit IBSDLEIP	• Implementing agency has the mandate to ensure effective implementation and compliance of all socio-environmental requirements. • Monitoring of contractor to ensure compliance with the provision of the ESMP. • Periodic reporting to AfDB on safeguards aspects of the project. • Ensure external environmental and social audit of the project after decommissioning by engaging a qualified E&S consultant.
3	Environmental Management and Social Protection (EMSP) Officer	• Ensure that project activities are implemented in accordance with best practices and guidelines set out in the ESMP. • Identify and liaise with all stakeholders involved in implementation of the ESMP; and be responsible for the overall monitoring of mitigation measures and the impacts of the project during implementation. • Periodic monitoring and supervisory visits to the project site (with security caution) to ensure compliance to the ESMP. • Prepare monthly safeguards report for the attention of the Project Coordinator and the AfDB. • Conduct periodic internal audit of ESMP compliance (quarterly) and develop corrective action plan.
4	Federal Ministry of Education	• Oversight function for all activities related to E&S management. • Ensure provision of required funds for the ESMP implementation.
5	Federal Ministry of Environment	• Disclose the ESMP document. • External monitoring of compliance to environmental and social protection procedures of the project.
6	State Ministry of Environment	Support waste management and environmental monitoring activities.
7	All relevant MDAs	Support the implementation of the project in the construction and operation phases.
8	AfDB	• Provide oversight guidance/support for the implementation of the ESMP. • Recommend additional measures for strengthening the E&S performance

6.4 Training and Capacity Building

The success of implementation of this ESMP and continuous environmental and social compliance on the project will depend on the capacity of the various actors to either implement or monitor. It is noteworthy to state that most of the project actors do not have a good capacity on Environmental and Social (E&S) compliance implementation on infrastructure projects. Table 6.2 below shows a capacity building plan on E&S compliance for the project.

Table 6.2: Capacity Building Plan for E&S

No	Training Modules	Participants	Duration	When	Who to Conduct Training	Cost ($)
1.	National Environmental and Social Requirements ESMP mitigation measures and procedures for implementation and monitoring Management	PIU School Management Contractors	2 days	During project preparatory/implementation stage	Technical Consultant	N1,000,000 (funded by PIU)

No	Training Modules	Participants	Duration	When	Who to Conduct Training	Cost ($)
2	Training on Code of Conduct for workers GBV Prevention & Response Plan, Referral pathways, Mitigating GBV risks in the project	Contractors	1 day	During Project Construction	Borno state Ministry of Women Affairs and Social Development/ Technical Consultant	N500,000 (funded by contractor)
3.	Construction HSE Overview of Health and Safety Hazards in Construction Site Specific OHS Construction Site Inspection Personal Protective Equipment	Contractors PIU	2 days	During pre-construction phase (2 days) and construction phase (2days)	Certified OHS/HSE Consultant	N1,000,000 (funded by contractor)
4.	Awareness campaign on preventing STDs/ GBV/SEA/SH and reporting mechanisms	School staff and students Project Communities	1 day	During construction	Technical Consultant/ Borno state Ministry of Women Affairs and Social Development/ Ministry of Health	N500,000 (funded by PIU)
5.	Environment, Health, Social and Safety Certification Courses: • EMS Training • OHS Training • Environmental Compliance Monitoring • Labor Management Certification • Disability Inclusion • Climate Resilience Training	EMSP Officer, Project Coordinator IBSDLEIP	To be determined by training course	Over the project course	Training vendors/ certification bodies	N3,000,000
Total						**N6,000,000 ($13,043.48)**

**costs are indicative for resource persons fee and training logistics/certification, however are exclusive of staff logistics costs and per diem*

1$=N460 – CBN official exchange rate as at 01/05/2023(https://www.cbn.gov.ng/rates/exchratebycurrency.asp)

6.5 ESMP Disclosure

After the ESMP review and clearance by the AfDB, the ESMP shall be disclosed in line with the Nigerian EIA laws for 21 days. This will include a formal registration of the ESMP with the FMEnv and receipt of guidelines for the disclosure from them. The disclosure process is provided on the

Department of Environmental Assessment Website (www.ead.gov.ng),at a minimum, this will include the following

Table 6.3 ESMP Disclosure

S/No	Action	Remarks	Cost
1.	Registration of the ESMP at the FMEnv	This will be coordinated by the PIU	₦ 50,000.00
2.	Disclosure on 2 national newspapers	This entails advert in 2 newspapers	₦550,000
3	Disclosure at the Borno State Ministry of Environment	The PIU in the state will display the ESMP as required by the Nigeria EIA public notice and review procedures	N/A
4.	Radio announcement of the ESMP at the State level	The PMU will conduct radio announcement that has state coverage for the ESMP, to air for 10 working days	₦200,000
5.	Disclosure at Lassa FSTC	The purpose will be to inform stakeholders about the project activities; environmental and social impacts anticipated and proposed environmental and social mitigation measures.	N/A
6.	Disclosure at the AfDB External Website	The ESMP will be disclosed according to the AfDB	N/A
7.	Inhouse technical review	FMEnv Statutory charges	₦ 200,000
8.	IMM Charges	FMEnv Statutory charges	₦500,000
9.	Final Access Charges	FMEnv Statutory charges	₦ 250,000
10.	Logistics and printing of copies for disclosure	Logistics costs for providing the report at the display centres including transportation and sensitising stakeholders about the disclosure	₦ 100,000
		Total	**₦1, 850,000.000 ($4,021.7)**

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

1$=N460 – CBN official exchange rate as at 01/05/2023(https://www.cbn.gov.ng/rates/exchratebycurrency.asp)

6.6 ESMP Implementation and Reporting Plan

The primary responsibility for the project execution and ESMP implementation is on the Project Implementation Unit (PIU). The key actors in the implementation of this ESMP include:

- The Contractor - to be awarded the civil works contract and be required to implement the environmental and social safeguard mitigation measures stated in this ESMP;
- Project Implementation Unit (PIU) - to ensure that the provisions of the ESMP and the AfDB ISS are duly implemented in executing the project and conduct periodic monitoring to safeguards compliance;
- Federal Ministry of Education: to ensure external monitoring of compliance to environmental and social protection procedures of the project and to ensure adequate budgetary allocation for ESMP monitoring costs;
- Federal Ministry of Environment (FMEnv)/Federal Project Management Unit (FPMU) - to ensure compliance with the ESMP and other relevant approval conditions;
- AfDB – provide guidance to the project on compliance to safeguards requirements and conduct periodic supervision to safeguards compliance.

6.6.1 Contractor Responsibility for Implementation of ESMP

The Contractor shall be responsible for implementing all impact mitigation measures as detailed in the ESMP provisions of the ESMP Report for the project. Contractors are also required to include as part of their costs all elements associated with mitigation measures. For purposes of clarity, the CONTRACTOR shall obtain a full copy of the ESMP Report prepared for this project to fully understand the scope of the ESMP implementation and required mitigation actions.

Most of the mitigation measures are the obligation of the Contractors particularly during the construction phase of the project. Consequently, the contractors will have to prepare their proposals taking into account the measures in table 6.8 – 6.11 respectively and the E & S clauses in the contract bidding document.

Table 6.4 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 contactor must take into account and put the cost for the environmental and social requirements specified in the ESMP.

6.6.2 Occupational Health & Safety Management Plan

Selected Contractor shall be required to prepare and implement an occupational and community health and safety plans that contributes to a healthy workforce and local community. The health and safety plan shall be submitted to the PIU for necessary approvals prior to implementation. In developing the Plans, the Contractors shall evaluate possible hazards that may be associated with the project activities. The Contractor shall fully comply with Environment, Social, Health & Safety (ESHS) standards and bear the cost of implementation. Some of the occupational health issues/Hazards and mitigation measures are listed below:

Table 6.5 Occupational Health and Safety Measures

S/N	Occupational health and safety issues	Management Plan	Responsible party
1	The exclusion of occupational health and safety issues in contract documents	Occupational health issues shall be noted and included in contract documents to make them obligatory/mandatory.	PIU AfDB
2	Use of defective, Damaged or inappropriate tools for a particular and specific task.	Conduct pre-use inspections on all tools, provide workers the appropriate and quality hand tools as are necessary for the execution of specific activities or tasks.	Contractor PIU

3	Engagement of workers to use machines and tools for which they have not been trained.	Provide on-the-job training to workers on how to handle and use available tools and machinery before engaging them.	Contractor PIU
4	Involvement of workers in activities without the provision of the appropriate protective wear.	Appropriate protective wear to workers for specific activities/tasks. (Gumboots, gloves, overalls, helmets, etc.)	Contractor PIU
5	Non provision of First Aid Kits (FAKs),	FAKs and trained personnel in administering first-aid must always be available on the site for purposes of minor injuries.	Contractor PIU
6	The exposure of workers to dust during implementation of works.	Workers must wear the right protective gear. Watering of dusty areas must be done with a water at least three times a day to reduce dust levels to the barest minimum.	Contractor PIU
7	Lack of informatory signposts indicating that work is in progress.	Informatory signposts must be posted so as to lessen the risks of accidents to workers.	Contractor PIU
8	Accidents involving plants/equipment	Only properly trained men for operation. Prep/tool box talks to be done before commencement of works	Contractor PIU
9	Safety of and from traffic	Providing adequate traffic signs and protection at locations where works are taking place. Where necessary, traffic should be stopped during the placement or removal of temporary signs. Engagement of flagmen where necessary.	Contractor PIU

6.6.3 Waste Management Plan

A waste management plan (WMP) is required to achieve the goals set for managing construction waste. The contractor shall prepare and submit for approval of the PIU, a comprehensive Waste Management Plan (WMP). The WMP will provide the specific and general guide to the management of solid and liquid wastes throughout the project area and for the duration of the project. The Contractor shall have responsibility for the implementation of the Plan The implementation of the WMP will protect the community and workforce from the health hazards of indiscriminate waste disposal during construction.

The waste management plan should cover the following:

i. Specify who is responsible for managing waste on site.
ii. Establish goals and objectives.
iii. Estimate the waste types and amounts involved.
iv. Set targets for reducing the amount of each waste sent to the waste disposal site;
v. Describe recycling/reuse methods for each material.
vi. Identify the waste destinations and transport modes, including what materials are being segregated on site for reuse or recycling.
vii. Track progress.
viii. Describe special measures for material use and handling.
ix. Describe communication and training to support and encourage participation from everyone on site.

Some management guidelines are presented below:

Solid Waste

Non-hazardous solid waste generated at construction and decommissioning sites includes excess fill materials from grading and excavation activities, scrap wood and metals, steel, small concrete spills, plastics, wrapping papers etc. Other non-hazardous solid wastes include human waste. Hazardous solid waste includes contaminated soils, which could potentially be encountered on-site due to previous land use activities, or small amounts of machinery maintenance materials, such as oily rags, used oil filters, and used oil, as well as spill clean-up materials from oil and fuel spills. See annex 3 for detailed guideline.

Hazardous Materials

Decommissioning activities may pose the potential for release of petroleum-based products, such as lubricants, hydraulic fluids, or fuels during their storage, transfer, or use in equipment. These materials may also be encountered during decommissioning activities in building components. Techniques for prevention, minimization, and control of these impacts include:

- Providing adequate secondary containment for fuel storage tanks and for the temporary storage of other fluids such as lubricating oils and hydraulic fluids;
- Using impervious surfaces for refueling areas and other fluid transfer areas;
- Training workers on the correct transfer and handling of fuels and chemicals and the response to spills;
- Providing portable spill containment and cleanup equipment on site and training in the equipment deployment;
- Assessing the contents of hazardous materials and petroleum-based products in building systems (e.g. PCB containing electrical equipment, asbestos-containing building materials) and process equipment and removing them prior to initiation of decommissioning activities.

Wastewater Discharges

Decommissioning activities may include the generation of sanitary wastewater discharges in varying quantities depending on the number of workers involved. Adequate portable or permanent sanitation facilities serving all workers should be provided at all construction sites. Guidelines for wastewater management are provided in annex 3.

6.6.4 Security Management Plan

The contractor should prepare and implement a security management plan considering the project area is a high-risk security zone. A security management strategy is outlined below:

Prevention Strategies

- The PIU should ensure all contractors/consultants engaged by the project and implementing parties receive security training/ briefing before site visits.
- Visiting teams and contractor to the site should ensure they liaise with the school management to inform them of their visit ahead of time.
- Project workers should maintain a low profile; avoid travel in darkness; only using trusted drivers / taxis; not set patterns and routines; keep in pairs or teams at all times.

- Local knowledge of the operational context must be maintained by staff at all times: ability to seek information from humanitarian and other agencies is VITAL.
- Any event having a potential to change the security situation within your operational areas must always be communicated to project management so that appropriate steps can be taken.
- The project, develop and implement a security management plan. The security management plan should be made available to all staff and appropriate training conducted.
- The ministry of education should ensure adequate security arrangements are made for the school.
- CCTVs can also be put in schools were possible to enable the school management to monitor the school environment.
- More collaboration between security apparatus like Nigeria Security and Civil Defence Corps (NSCDC), Police, Department of Security Services (DSS), Peace Corps etc. and the school.
- Security awareness trainings should be conducted for contractors and the schools (management and students) on preventive, monitoring the environment, reporting protocols for incidents including provision of emergency contact numbers for security forces.

Response Strategies

- Contact number of key personnel of security infrastructure in the state and LGA respectively should be made available to all contractors/consultants and project personnel.
- Contact number of whom to contact in the event of any incident should also be provided to project workers.
- The security response protocol for the project should be developed by the PIU in conjunction with the state Government and the Project Coordinator should be aware of it.
- Emergency and relocation plans should be made available to all staff and appropriate training conducted.

Reporting of Incidents

The security management plan should have a detailed reporting protocol which should include the following minimum requirements:

- All security incidents emanating from the project locations/contractor/ consultants/PIU etc. should be reported to the Project Coordinator immediately/ within an hour of the incident and security forces.
- The response protocol as will be defined by the Project should be triggered, including reporting to the PIU/ Federal Ministry of Education and the Nigerian Police Force/other security agents for due action.
- The Project Coordinator to inform the AfDB within 24hrs of the incident including an incident report and what actions have been taken.

6.6.5 Monitoring and Evaluation Plan

Monitoring and evaluation will be the responsibility of the Project Implementation Unit (PIU) for all measures outlined in the ESMP matrix, but the PIU can delegate certain responsibilities to its contractors and supervising team. 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, it is expected that there is compliance and also sanctions for non-compliance. The PIU is expected to prepare monthly safeguards compliance & monitoring report for the attention of the Federal Ministry of Education and AfDB.

External bodies also form part of monitoring activities such as Borno State Ministry of Environment, Health, Women Affairs, Federal Ministry of Environment, Federal Ministry of Education and AfDB.

The monitoring plan (Internal and External Monitoring) for the ESMP is presented in **Error! Reference source not found.**. Monitoring results shall be documented with preventive/corrective actions to be implemented.

Table 6.6: 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.	EMSP Officer/ PIU	During Preconstruction, Construction and Operational Phases	Monitoring Reports and documentation to Federal Ministry of Education (FME) and AfDB
	Site visit for monitoring and inspection to ensure contractor adhere strictly to the engineering designs and specifications for the project	Project Engineer/ PIU	During Construction and Operational Phase	Observations and Monitoring Reports to be compiled and presented to the FME and AfDB
External Monitoring	Periodic site visit to ensure project is implemented in an environmentally & socially sustainable manner using the monitoring indicators specified in the monitoring plan and other national and international environmental & social requirements	FMEnv SMEnv FME AfDB	During Preconstruction, Construction and Operational Phases	Inspect monitoring reports, feedback on observations. Enforce corrective actions where necessary.

6.6.6 Record Keeping

The contractor is required to keep records providing evidence of ongoing mitigation activities. Such records may include site monitoring plan, site specific HSE plan, waste management plan, traffic control plan, signed code of conduct, emergency response and preparedness procedures, site instructions, training records, complaints records, incident reports, inspection reports, maintenance records, and equipment calibration records. These documents should be made available to the PIU upon request.

The PIU is also required to keep records to provide evidence of monitoring activities and effectiveness of the monitoring plan. The site monitoring plan will identify problems/corrective actions and monitoring reports. These documents shall be made available to the AfDB and other relevant regulators upon request. In addition, all significant communications with MDAs should be documented and kept. These documents are required to track performance in order to achieve and demonstrate compliance with the monitoring plan and applicable regulatory requirements.

6.7 ESMP Implementation Schedule

It is expected that the activities related to the ESMP Matrix as seen in table 6.8 – 6.11 should be integrated into the overall construction schedule. The implementation schedule is presented in the Table 6.7 below.

Table 6.7: ESMP Implementation &Decommissioning Schedule

No.	Activity Description	Responsibility	Prior to Contract Award for Civil Works	Pre-Construction	Construction	Decommissioning	Operation
1	Clearance of the ESMP	AfDB	√				
2	Disclosure of ESMP	PIU/ FMEnv	√				
3	Finalization of Engineering Designs	/Engineering Design Consultant	√				
4	Environmental and Social Training for MDAs	PIU/Consultants		√			
5	Inclusion of Environmental & Social Requirements in Bid Documents	PIU	√				
6	Environmental and Social Training for Contractor workers	Contractor		√	√		
7	Review and Approval of Contractor's plans: Waste & OH & Safety Plan etc.	PIU		√			
8	Implementation of Mitigation Measures	Contractor		√	√	√	√
9	Supervising ESMP Implementation	Supervising Consultant/PIU		√	√	√	√
10	Monitoring & Reporting on ESMP Implementation	Relevant MDAs		√	√	√	√
11	Environmental and Social Auditing	Environmental and Social Consultant			√	√	√

6.8 Environmental and Social Management and Monitoring Plan

This section is discussed under three (3) phases: (a) Preconstruction Phase; (b) Construction Phase; and (c) Operation Phase with potential impacts highlighted based on the nature and scope of activities to be carried out in each phase. Furthermore, the matrix highlights costs for implementing the preferred mitigation measures and for monitoring. It further highlights what is to be measured, when it is to be measured, where, the frequency and whose responsibility it is to monitor.

Table 6.8 Mitigation and Monitoring Table for Preconstruction Phase

	MITIGATION					MONITORING					
S/No	**Activities**	**Potential Impact**	**Mitigation Measures**	**Responsibility for Mitigation**	**Mitigation Cost**	**Parameters to be measured**	**Performance indicator**	**Sampling Location**	**Monitoring Frequency**	**Institutional Responsibility (Monitoring)**	**Monitoring Costs**
A. Environmental & OHS Impacts											
1A	Movement of materials, vehicles, and equipment to site	Impairment of overall air quality resulting from fugitive dust, particulates and gaseous emission from vegetation clearance and movement/operation of vehicles and machinery	Wet earth roads to reduce dust; Ensure that all vehicles are serviced; undergo vehicle emission testing (VET) and vehicle exhaust screening (VES); Use road worthy vehicles/ maintain regularly.	Contractor	N400,000	SO2, NO_X, CO, VOC, $PM_{2.5}$, PM_{10} Type of vehicles Vehicle maintenance reports	Air Quality Parameters are within permissible limits as documented by NESREA[18] Evidence of compliance to vehicle standard and maintenance records	Project area and within 1km	Bi-monthly	PIU/EMSP Officer, IBSDLEIP Supervising Engineer Borno State Ministry of Environment	N1,000,000 (Represents monitoring costs for environmental parameters for the preconstruction phase)
2A	Land and site clearing, staging area	Loss of flora and fauna during mobilization of equipment and site clearing.	Limit land clearing to specific zone needed for the construction work. Protect all vegetation not required to be removed against damage. Replant or revegetate trees/shrubs.	Contractor	N200,000	Amounts of vegetation cleared.	Contractor compliance to stipulated actions. Presence of revegetation	Project site	Before and during land clearing	PIU/EMSP Officer, IBSDLEIP Supervising Engineer Borno State Ministry of Environment	

18 National Environmental (Air Quality Control) Regulations, 2014

	MITIGATION					MONITORING					
S/No	**Activities**	**Potential Impact**	**Mitigation Measures**	**Responsibility for Mitigation**	**Mitigation Cost**	**Parameters to be measured**	**Performance indicator**	**Sampling Location**	**Monitoring Frequency**	**Institutional Responsibility (Monitoring)**	**Monitoring Costs**
3A	Mobilisation and sourcing of materials	Land degradation from Sourcing of construction materials from sand mining sites, unlicensed quarries, unstable areas.	Ensure sourcing of earth materials from registered quarries and licensed construction vendors with appropriate quarry lease to prevent illegal sand mining Develop borrow pit management plan	Contractor	N/A	Source of materials for construction	Licensed material vendors Borrow pit management plan	Project area	Bi-monthly	PIU/EMSP Officer, IBSDLEIP Supervising Engineer Borno State Ministry of Environment	
4A	Mobilisation of Materials onsite	Soil and ground water contamination from leakages of oil and chemicals from staked equipment and use of chemicals	Segment a safe and specific area for stacking of equipment. Service equipment and install a non-permeable membrane/ drip pans	Contractor	N150,000	Onsite chemicals and fluid storage	Presence of drip pans and non-permeable membrane. Good housekeeping onsite.	Project site	Bi-monthly	PIU/EMSP Officer, IBSDLEIP Supervising Engineer Borno State Ministry of Environment	
5A	Mobilisation of Equipment and material to site Use of machinery	Noise pollution resulting from movement and use of heavy machinery and equipment	Prohibition on night working if possible. Use modern, well-maintained equipment fitted with noise abatement devices (e.g., mufflers). Ensure provision of earmuffs for personnel working with or near noise generating equipment.	Contractor	N 300,000	Noise level Hours of work PPEs	Noise level in compliance with NESREA limits[19]	Project Area	Bi-monthly	PIU/EMSP Officer, IBSDLEIP Supervising Engineer, School management, Borno State Ministry of Environment	

[19] (https://standards.lawnigeria.com/2020/08/21/national-environmental-noise-standards-and-control-regulations-2009/)

	MITIGATION					MONITORING					
S/No	**Activities**	**Potential Impact**	**Mitigation Measures**	**Responsibility for Mitigation**	**Mitigation Cost**	**Parameters to be measured**	**Performance indicator**	**Sampling Location**	**Monitoring Frequency**	**Institutional Responsibility (Monitoring)**	**Monitoring Costs**
6A	Site clearance and vegetation clearance	Environmental pollution from vegetal waste	Implement a site-specific Waste Management Plan (WMP) (see annex 3 for guide). Vegetal waste can be given to farmers to use as manure. Liaise with Borno state ministry of environment (SMEnv) or licensed private waste collector for waste collection from site	Contractor	N100,000	Vegetal waste Waste Management Plan	Absence of vegetal waste on site Compliance with WMP	Project site	Weekly during site clearance	PIU/EMSP Officer, IBSDLEIP Supervising Engineer Borno State Ministry of Environment	
7A	Mobilisation to site and clearing activities	Accidents and injury of workers Exposure of workers to hazardous substances such as toxic materials and unsafe working conditions	Develop & implement a project specific Occupational Health and Safety Plan (OHSP) including HSE trainings, use of PPEs etc. (see table 5.1 and annex 2 for guide)	Contractor	N600,000	No of accidents/ incidents or injuries Noise level PPEs HSE Training Reports	Compliance with OHSP Training on HSE/OHS Availability and use of appropriate PPE	Project Site	Bi-weekly	PIU/EMSP Officer, IBSDLEIP Supervising Engineer School management	
	Sub-Total A				**N1,750,000**						**N1,000,000**
	B. Social Impacts										
1B	Mobilisation of workers to site	Gender-based violence, including sexual harassment, child abuse and exploitation, substance abuse from labor influx.	Implement GBV/SEA/SH prevention & response plan (see table 5.1 and annex 4 for sample Code of Conducts)	Contractor	N500,000	Awareness program No of Incidents CoCs	Zero records of incidents Signed Code of Conducts by workers Training reports	Project area Project community	Monthly	PIU/EMSP Officer, IBSDLEIP Supervising Engineer	N1,000,000 (represents monitoring costs for social parameters for the preconstruction phase)

	MITIGATION					MONITORING					
S/No	**Activities**	**Potential Impact**	**Mitigation Measures**	**Responsibility for Mitigation**	**Mitigation Cost**	**Parameters to be measured**	**Performance indicator**	**Sampling Location**	**Monitoring Frequency**	**Institutional Responsibility (Monitoring)**	**Monitoring Costs**
										Borno State Ministry of Women Affairs	
2B	Mobilization of workers to site	Potential for child abuse and child labor which could expose children to hazardous situation, accidents, and molestation	Implement child labor prevention (see table 5.1).	Contractor	N/A	Child labor Employment records Complaints of incidents	Absence of child labor	Project site	Weekly	PIU/EMSP Officer, IBSDLEIP Supervising Engineer, School management. Borno State Ministry of Women Affairs	Captured in 1B above
3B	Use of Labor	Poor labour and working conditions can lead to injury, accidents, conflict and legal action	Comply with the labor management plan (see table 5.1) including: safe work conditions, provision of basic amenities etc.	Contractor	N500,000	Working conditions and welfare	Compliance with LMP such as safe working conditions, availability of amenities – portable water, food, sanitation	Project site	Bi-weekly	PIU/EMSP Officer, IBSDLEIP, Supervising Engineer, School management, Borno State Ministry of Women Affairs	Captured under 1B
4B	Movement of equipment and vehicle to site and use of machinery	Accidents involving community members, students and staff Increase in traffic and delay time, disturbance of communities, market and religious activities	Implement community health & safety plan and traffic management plan (see table 5.1 and annex 5)	Contractor	N500,000	Caution signs, Trainings, Complaints, Incidents.	Presence of caution signs, flagmen, evidence of driver trainings, absence of incidents or complaints.	Project area	Monthly	PIU/EMSP Officer, IBSDLEIP Supervising engineer Community leaders & members FRSC, police	

	MITIGATION					MONITORING					
S/No	**Activities**	**Potential Impact**	**Mitigation Measures**	**Responsibility for Mitigation**	**Mitigation Cost**	**Parameters to be measured**	**Performance indicator**	**Sampling Location**	**Monitoring Frequency**	**Institutional Responsibility (Monitoring)**	**Monitoring Costs**
5B	Engagement of labor. All project activities.	Conflict between community members and contractor over non-engagement of locals and other issues	Limit the number of migrant workers by engaging local workers. Establish a community-grievance redress mechanism (GRM). See chapter 8. Conduct adequate and timely sensitization in the community about the project activities.	Contractor PIU	N500,000 (for GRM activities)	Complaints Incidents Employment records Consultations	Absence/limited complaints and incidents. Locals are employed as part of project workforce	Project site	Bi-monthly	PIU/EMSP Officer, IBSDLEIP Supervising engineer School Management Community leaders & members	
6B	Mobilization of vehicles, equipment and materials to site	Material and equipment stacking could restrict access for students and community members	Designate a zone for parking of equipment and storage of materials onsite and away from access routes. Construction vehicles should not be parked on the road or infront of facilities in use.	Contractor	N/A	Staging area Project route Complaints	Designated parking zones available Absence of complaints	Project area	Weekly		
7B	All project activities	Insecurity resulting in theft, kidnap, and insurgency.	Appropriate security measures in place to prevent harassment or kidnapping of workers. Prepare and implement a security management plan for the project (see guidelines in section 6.6.4).	Contractor PIU Ministry of Education Borno state Government	Part of project security costs	Project area	Security management plan (SMP) Incidents	Compliance to SMP Absence of incidents	Continuous	PIU, School Management, Ministry of Education, Borno state Government, Police, Army	Part of project security costs and state security costs
8B	All project activities	Armed personnel onsite may act harshly towards the contractor workers	Contractor workers to liaise with school management and inform the military of	Contractor School management	N/A	Project site	Incidents Complaints	Absence of incidents	Continuous	PIU EMSP Officer School management	Captured under 1B

	MITIGATION					MONITORING					
S/No	**Activities**	**Potential Impact**	**Mitigation Measures**	**Responsibility for Mitigation**	**Mitigation Cost**	**Parameters to be measured**	**Performance indicator**	**Sampling Location**	**Monitoring Frequency**	**Institutional Responsibility (Monitoring)**	**Monitoring Costs**
			all planned activities and schedule. Contractors to work within approved hours as agreed with the security personnel							Ministry of education	
9B	Excavation and land clearing	Construction works may unearth/destroy sensitive sites such as graves	Restrict construction activities away from community sensitive sites. Inform school management and community leaders of any cultural findings such as graves, artifacts etc.	Contractor	N/A	Cultural sites and artifacts Incidents	Compliance to procedures such as informing the community leader. Absence of complaints	Project area	Monthly	PIU/EMSP Officer, IBSDLEIP Supervising engineer, School Management, Community leaders	Captured under 1B
	Sub-Total B				**N2,000,000**						**N1,000,000**
	Total Preconstruction Phase (Sub Total A+B)				**N3,750,000**						**N2,000,000**

Table 6.9Mitigation and Monitoring Table for Construction Phase

	MITIGATION					MONITORING					
S/No	**Activities**	**Potential Impact**	**Mitigation Measures**	**Responsibility for Mitigation**	**Mitigation Cost**	**Parameters to be measured**	**Performance indicator**	**Sampling Location**	**Monitoring Frequency**	**Institutional Responsibility (Monitoring)**	**Monitoring Costs**
A. Environmental & OHS Impacts											
1C	Movement of materials, vehicles, and equipment to site	Impairment of overall air quality resulting from fugitive dust, particulates and gaseous	Wet earth roads to reduce dust. Ensure that all vehicles are serviced; undergo vehicle emission testing (VET) and	Contractor	N2,000,000	SO2, NO_X, CO, VOC, $PM_{2.5}$, PM_{10}	Air Quality Parameters are within permissible limits as	Project area and within 1km	Bi-monthly	PIU/EMSP Officer, IBSDLEIP Supervising Engineer	N3,000,000 (Represents monitoring costs for environmental parameters for

	MITIGATION					MONITORING					
S/No	**Activities**	**Potential Impact**	**Mitigation Measures**	**Responsibility for Mitigation**	**Mitigation Cost**	**Parameters to be measured**	**Performance indicator**	**Sampling Location**	**Monitoring Frequency**	**Institutional Responsibility (Monitoring)**	**Monitoring Costs**
		emission from movement/operation of vehicles and machinery	vehicle exhaust screening (VES). Use road worthy vehicles/ maintain regularly.			Type of vehicles Vehicle maintenance reports	documented by NESREA[20] Evidence of compliance to vehicle standard and maintenance records			Borno State Ministry of Environment	the construction phase)
2C	Sourcing and use of materials	Land degradation from Sourcing of construction materials from sand mining sites, unlicensed quarries, unstable areas.	Ensure sourcing of earth materials from registered quarries and licensed construction vendors with appropriate quarry lease to prevent illegal sand mining. Develop borrow pit management plan (see annex 6 for sample).	Contractor	N/A	Source of materials for construction	Licensed material vendors Borrow pit management plan	Project area	Bi-monthly	PIU/EMSP Officer, IBSDLEIP Supervising Engineer Borno State Ministry of Environment	
3C	Storage of materials and use of materials and equipment	Soil and ground water contamination from leakages of oil and chemicals from staked equipment and use of chemicals	Segment a safe and specific area for stacking of equipment. Service equipment and install a non-permeable membrane/ drip pans	Contractor	N200,000	Onsite chemicals and fluid storage	Presence of drip pans and non-permeable membrane. Good housekeeping onsite.	Project site	Bi-monthly	PIU/EMSP Officer, IBSDLEIP Supervising Engineer Borno State Ministry of Environment	

20 National Environmental (Air Quality Control) Regulations, 2014

	MITIGATION					MONITORING					
S/No	**Activities**	**Potential Impact**	**Mitigation Measures**	**Responsibility for Mitigation**	**Mitigation Cost**	**Parameters to be measured**	**Performance indicator**	**Sampling Location**	**Monitoring Frequency**	**Institutional Responsibility (Monitoring)**	**Monitoring Costs**
4C	Mobilisation of Equipment and material to site Use of machinery	Noise pollution resulting from movement and use of heavy machinery and equipment	Prohibition on night working if possible. Use modern, well-maintained equipment fitted with noise abatement devices (e.g., mufflers). Ensure provision of earmuffs for personnel working with or near noise generating equipment.	Contractor	N 500,000	Noise level Hours of work PPEs	Noise level in compliance with NESREA limits[21]	Project Area	Bi-monthly	PIU/EMSP Officer, IBSDLEIP Supervising Engineer, School management, Borno State Ministry of Environment	
5C	Civil works	Environmental pollution from construction waste and human waste	Implement a site-specific Waste Management Plan (WMP) see annex 3. Provide sanitation facilities for workers. Liaise with Borno state ministry of environment (SMEnv) or licensed private waste collector for waste collection from site	Contractor	N1,500,000	Waste disposal Waste Management Plan	Compliance with WMP Good housekeeping	Project site	Bi-monthly	PIU/EMSP Officer, IBSDLEIP Supervising Engineer Borno State Ministry of Environment	
6C	Civil works Use of equipment and labor	Accidents and injury of workers Exposure of workers to hazardous substances such as toxic materials and unsafe	Develop & implement a project specific Occupational Health and Safety Plan (OHSP) including HSE trainings, use of PPEs etc. (see table5.1 and annex 2)	Contractor	N1,500,000	No of accidents/ incidents or injuries Noise level PPEs HSE Training Reports	Compliance with OHSP Training on HSE/OHS Availability and use of appropriate PPE	Project Site	Bi-weekly	PIU/EMSP Officer, IBSDLEIP Supervising Engineer School management	

[21] (https://standards.lawnigeria.com/2020/08/21/national-environmental-noise-standards-and-control-regulations-2009/)

	MITIGATION					MONITORING					
S/No	**Activities**	**Potential Impact**	**Mitigation Measures**	**Responsibility for Mitigation**	**Mitigation Cost**	**Parameters to be measured**	**Performance indicator**	**Sampling Location**	**Monitoring Frequency**	**Institutional Responsibility (Monitoring)**	**Monitoring Costs**
		working conditions									
	Sub-Total C				**N5,700,000**						**N3,000,000**
	B. Social Impacts										
1D	Use of Labor	Gender-based violence, including sexual harassment, child abuse and exploitation, substance abuse from labor influx.	Implement GBV/SEA/SH prevention & response plan (see table 5.1 and annex 4 for sample Code of Conducts)	Contractor	N500,000	Awareness program No of Incidents CoCs	Zero records of incidents Signed Code of Conducts by workers Training reports	Project area Project community	Monthly	PIU/EMSP Officer, IBSDLEIP Supervising Engineer Borno State Ministry of Women Affairs	N2,000,000 (represents monitoring costs for social parameters for the preconstruction phase)
2D	Use of Labor	Potential for child abuse and child labor which could expose children to hazardous situation, accidents, and molestation	Implement child labor prevention plan (see table 5.1)	Contractor	N/A	Child labor Employment records Complaints of incidents	Absence of child labor	Project site	Weekly	PIU/EMSP Officer, IBSDLEIP Supervising Engineer, School management. Borno State Ministry of Women Affairs	Captured in 1D above
3D	Use of Labor	Poor labour and working conditions can lead to injury, accidents, conflict and legal action	Comply with the labor management plan (see table 5.1) including: safe work conditions, provision of basic amenities etc.	Contractor	N1,500,000	Working conditions and welfare	Compliance with LMP such as safe working conditions, availability of amenities – portable water, food, sanitation	Project site	Bi-weekly	PIU/EMSP Officer, IBSDLEIP, Supervising Engineer, School management, Borno State Ministry of Women Affairs	Captured under 1D

	MITIGATION					MONITORING					
S/No	**Activities**	**Potential Impact**	**Mitigation Measures**	**Responsibility for Mitigation**	**Mitigation Cost**	**Parameters to be measured**	**Performance indicator**	**Sampling Location**	**Monitoring Frequency**	**Institutional Responsibility (Monitoring)**	**Monitoring Costs**
4D	Movement of equipment and vehicle to site and use of machinery Civil works	Accidents involving community members, students and staff Increase in traffic and delay time, disturbance of communities, market and religious activities	Implement community health & safety plan and traffic management plan (see table 5.1 and annex 5)	Contractor	N1,000,000	Caution signs, Trainings, Complaints, Incidents.	Presence of caution signs, flagmen, evidence of driver trainings, absence of incidents or complaints.	Project area	Monthly	PIU/EMSP Officer, IBSDLEIP Supervising engineer Community leaders & members FRSC, police	
5D	Use of labor. All project activities.	Conflict between community members and contractor over non-engagement of locals and other issues	Limit the number of migrant workers by engaging local workers. Establish a community-grievance redress mechanism (GRM) see chapter 8. Conduct adequate and timely sensitization in the community about the project activities.	Contractor PIU	N1,000,000 (for GRM activities)	Complaints Incidents Employment records Consultations	Absence/limited complaints and incidents. Locals are employed as part of project workforce	Project site	Bi-monthly	PIU/EMSP Officer, IBSDLEIP Supervising engineer School Management Community leaders & members	
6D	Movement of vehicles, equipment and materials to site	Material and equipment stacking could restrict access for students and community members	Designate a zone for parking of equipment and storage of materials onsite and away from access routes. Construction vehicles should not be parked on the road or infront of facilities in use.	Contractor	N/A	Staging area Project route Complaints	Designated parking zones available Absence of complaints	Project area	Weekly		

	MITIGATION					MONITORING					
S/No	**Activities**	**Potential Impact**	**Mitigation Measures**	**Responsibility for Mitigation**	**Mitigation Cost**	**Parameters to be measured**	**Performance indicator**	**Sampling Location**	**Monitoring Frequency**	**Institutional Responsibility (Monitoring)**	**Monitoring Costs**
7D	All project activities	Insecurity resulting in theft, kidnap, and insurgency for workers	Appropriate security measures in place to prevent harassment or kidnapping of workers. Prepare and implement a security management plan for the project (see guidelines in section 6.6.4).	Contractor PIU Ministry of Education Borno state Government	Part of project security costs	Project area	Security management plan (SMP) Incidents	Compliance to SMP Absence of incidents	Continuous	PIU, School Management, Ministry of Education, Borno state Government, Police, Army	Part of project security costs and state security costs
8D	All project activities	Armed personnel onsite may act harshly towards the contractor workers	Contractor workers to liaise with school management and inform the military of all planned activities and schedule. Contractors to work within approved hours as agreed with the security personnel	Contractor School management	N/A	Project site	Incidents Complaints	Absence of incidents	Continuous	PIU EMSP Officer School management Ministry of education	Captured under 1D
	Sub-Total				**N4,000,000**						**N2,000,000**
	Total Preconstruction Phase				**N9,700,000**						**N5,000,000.00**

Table 6.10: Mitigation and Monitoring Table for Decommissioning Phase

	MITIGATION					MONITORING					
S/No	**Activities**	**Potential Impact**	**Mitigation Measures**	**Responsibility for Mitigation**	**Mitigation Cost**	**Parameters to be measured**	**Performance indicator**	**Sampling Location**	**Monitoring Frequency**	**Institutional Responsibility (Monitoring)**	**Monitoring Costs**
A. Environmental, OHS and Social Impacts											
1E	Demobilisation from site Closure of staging area	Poor housekeeping during decommissioning of staging area and project site	Implement site specific waste management plan and liaise with license waste vendors to collect waste and unsuitables from site.	Contractor	N500,000	Waste management practices Site condition	Good housekeeping Absence of waste on site	Project site	During decommissioning	PIU/EMSP Officer, IBSDLEIP Supervising Engineer	N500,000 (represents monitoring costs for environmental parameters for

	MITIGATION					MONITORING					
S/No	**Activities**	**Potential Impact**	**Mitigation Measures**	**Responsibility for Mitigation**	**Mitigation Cost**	**Parameters to be measured**	**Performance indicator**	**Sampling Location**	**Monitoring Frequency**	**Institutional Responsibility (Monitoring)**	**Monitoring Costs**
	Removal of equipment from site	can lead to environmental pollution.	Ensure staging areas are tidied up and left in a pre-project state or better.			Complaints	Absence of complaints			Borno State Ministry of Environment	the decommissioning phase)
2E	Closure of borrow pits	Environmental degradation from unreclaimed established borrow pits. Accidents, exposure to diseases and drowning from unreclaimed borrow pits	All borrow pits used should be reclaimed after construction to as near the pre-project stage as possible (see annex 6 for sample plan).	Contractor	Part of contract costs	Borrow pits	Reclaimed borrow pits Absence of incidents and complaints	Borrow pit area	During decommissioning	PIU/EMSP Officer, IBSDLEIP Supervising Engineer Borno State Ministry of Environment	
3E	Demobilisation from site	Grievances from loss of temporary employment for locals	Adequate information should be given to workers at the point of recruitment. School management should consider hiring some of these people as menial workers/staff in the operation phase.	Contractor School management	N/A	Complaints Incidents	Absence of incidents and complaints	Project area	During decommissioning	PIU/EMSP Officer, IBSDLEIP Supervising Engineer Borno State Ministry of Environment	
	Total Decommissioning E				**N500,000**						**N500,000**

Table 6.11: Mitigation and Monitoring table for Operation Phase

	MITIGATION					MONITORING					
S/No	**Activities**	**Potential Impact**	**Mitigation Measures**	**Responsibility for Mitigation**	**Mitigation Cost**	**Parameters to be measured**	**Performance indicator**	**Sampling Location**	**Monitoring Frequency**	**Institutional Responsibility (Monitoring)**	**Monitoring Costs**
A. Environmental, OHS and Social Impacts											
1F	Use and maintenance of facilities	Environmental pollution from waste generated and facility maintenance activities during operation of the school.	Provide waste bins that are immovable but can be easily tipped off from down or up. School management to liaise with Borno Ministry of Environment to ensure periodic waste disposal. E-waste should be segregated in the schools and transferred to the Ministry of education to stockpile and liaise with facilities for recycling of e-waste. Ensure fuel storage tanks are installed in a bonded area and checked daily. Ensure regular maintenance of vehicles to avoid leaks of oil. Prevent unregulated dumping of fuel waste	School management Ministry of education	N500,000 (for waste bins) Part of school operations cost	Waste management practices	Proper waste management practices such as waste sorting, recycling, disposal	School	Continuous	PIU/EMSP Officer, IBSDLEIP Borno State Ministry of Environment	N2,000,000 for PIU monitoring Part of school operation costs from Ministry of education

	MITIGATION					MONITORING					
S/No	**Activities**	**Potential Impact**	**Mitigation Measures**	**Responsibility for Mitigation**	**Mitigation Cost**	**Parameters to be measured**	**Performance indicator**	**Sampling Location**	**Monitoring Frequency**	**Institutional Responsibility (Monitoring)**	**Monitoring Costs**
2F	Use of facilities and equipment	Poor air quality from exhaust fumes from use of school generators and other machineries	Use of environmentally-friendly alternatives such as solar power source, cleaner engines Service equipment and machinery regularly	PIU Contractor	Part of project design costs	Type of equipment and machinery	Environmentally-friendly machines and use of alternative sources	School	Continuous	PIU/EMSP Officer, IBSDLEIP Ministry of education Borno State Ministry of Environment	
3F	Use and maintenance of WASH facilities	Poor maintenance of sanitation facilities may lead to water pollution and spread of diseases; Sanitary pads may clog the sewage; Water unavailability may impact cleaning and usage.	Sewage to be evacuated periodically. Ensure water points close to WASH facilities to facilitate easy cleaning and maintenance. Implement proper waste management practices in line with the Borno state ministry of environment. See annex 3 for Waste Management Plan.	School management	Part of school operations cost	WASH facilities	Clean WASH facilities Proper sewage maintenance	School	Continuous	PIU/EMSP Officer, IBSDLEIP Ministry of education Borno State Ministry of Environment	
4F	Use and maintenance of WASH facilities	Underground water pollution if borehole is situated too close to septic tanks for the toilet facilities	Site boreholes at least 30m away from septic tanks (WHO) Ensure regular test of water quality.	Contractor Borno state ministry of environment	N/A Part of operational costs	Water quality Public health indices	Good water quality in line with regulatory limits[22]	School	Half-yearly or as required	PIU/EMSP Officer, IBSDLEIP Ministry of education	

[22] National environmental (ground and surface water quality control) regulation 2011. Schedule 2, regulation 5 and 6)

	MITIGATION					MONITORING					
S/No	**Activities**	**Potential Impact**	**Mitigation Measures**	**Responsibility for Mitigation**	**Mitigation Cost**	**Parameters to be measured**	**Performance indicator**	**Sampling Location**	**Monitoring Frequency**	**Institutional Responsibility (Monitoring)**	**Monitoring Costs**
										Borno State Ministry of Environment	
5F	Use of facilities	Fire outbreaks in facilities constructed could lead to accidents	The buildings should have fire protective equipment such as fire extinguisher, sand bucket, emergency exit, sprinkler system if possible. Fire emergency training and emergency drills should also be provided to students and staff. Emergency contact number for fire service should be placed on notice boards in the school	School management Fire Service	N1.000,000	Firefighting equipment Fire incidents Emergency training	Presence of firefighting equipment Absence of fire incidents Evidence of fire training and emergency drills	School	Annually	PIU EMSP Officer Ministry of education	
	Sub-Total F				**N1,500,000**						**N2,000,000**
	B. Social Impacts										
1G	Enrollment of students and use of facilities	People with Disabilities (PWDs) may be disenfranchised from benefiting from the project	Designs should make provisions for people with disabilities such as access ramps with guard railings, special toilets etc. See chapter 9 for additional guide.	PIU Ministry of education Contractor	Part of project design costs	Access ramps Special toilets PWDs	Presence of access ramps, special toilets and other facilities. No or PWDs enrolled as students and staff	School	Annual	Ministry of education	Part of operational cost
2G	Use of facilities	Conflict between school users and armed forces	School management to liaise with the state government on locating another residence for the	School management Borno state Government	State Government budget	Incidents	Absence of incidents	School	Monthly	PIU Ministry of Education	Part of ministry operational costs

	MITIGATION					MONITORING					
S/No	**Activities**	**Potential Impact**	**Mitigation Measures**	**Responsibility for Mitigation**	**Mitigation Cost**	**Parameters to be measured**	**Performance indicator**	**Sampling Location**	**Monitoring Frequency**	**Institutional Responsibility (Monitoring)**	**Monitoring Costs**
			armed forces who are currently residing in the school. Liaise with the state Government to ensure the military comply with Code of Conducts against GBV/SEA/SH.								
3G	Use of facilities	Students and staff during the operation phase maybe exposed to risks of GBV/SEA	School management to sensitise and implement Code of Conducts for all staff and sensitise students on GBV prevention and response and availability of SARCs see table 5.1 for guide.	School management Ministry of education	N500,000	Code of Conducts Incidents	Signed Code of Conducts Evidence of sensitization program Absence of incidents	School	Annually	Borno state ministry of women affairs	
4G	Use of facilities	Students and staff of school could fall victim of kidnapping, banditry and insurgency. Facilities built may be vandalised or burnt due to insurgency	Ensure implementation of Security Management Plan in schools. Install flood lights and CCTV cameras as part of security measures to capture movement in and around the schools especially in high-risk areas.	PIU Ministry of Education Borno state Government	Part of state security costs and Ministry of education operational budget	Security management plan (SMP) Security incidents	Absence of incidents Compliance to SMP	School	Quarterly	Ministry of education	
	Sub-Total G				**N500,000**						**-**
	Total Operation Phase (F+G)				**N2,000,000**						**N2,000,000.00**
				Total Mitigation and Monitoring Costs	**N15,950,000**						**N9,500,000**

6.9 Environmental Audit

The project shall conduct internal and external audit to ensure compliance with the ESMP and all Environmental and Social (E&S) compliance requirements of the Nigerian Government and the AfDB. The audit schedule is as follows:

Table 6.12: Environmental Audit Program

S/N	Audit Scope	Audit Outcome	Responsibility	Timeline	Cost
1	Project compliance to E&S policies and relevant statutory documents such as ESMP prepared.	ESMP has been prepared and approved. Contractor's E&S Plan submitted and approved by the SPIU (Waste management plan, Occupational health & safety plan, signed Code of Conducts, Security management plan etc.	PIU, IBSDLEIP	Pre-Construction Phase	N500,000
2	Compliance to Implementation of the ESMP measures.	Mitigation measures in the ESMP are being implemented. Monitoring of environmental and social parameters (air, water, soil, people index – complaints, GRM etc.) Availability of statutory E&S reports monthly/quarterly and adequate reporting of incidents. Apply sanctions where required for non-compliance. Development of corrective action plans for non-compliance.	PIU, IBSDLEIP/ Environmental Consultant.	Once During Construction Phase. Once during decommissioning phase. Once, 6 months into the operation phase.	N1,500,000 (construction phase) N500,000 (decommissioning phase) N1,000,000 (operation phase)
Total					**N3,500,000.00**

6.10 ESMP Implementation Cost

The summary of the cost for the implementation of the ESMP is presented in Table 6.13 below. The total costs of the ESMP including costs for mitigation and monitoring is estimated as: Thirty-Six Million, Eight Hundred Thousand Naira **(~~N~~36,800,000.00**) Only.

Table 6.13: Summary of ESMP Implementation Budget

S/N	Item	Estimated Cost (NGN)	Estimated Cost ($)
1.	Mitigation	15,950,000.00	34,673.9
2.	Monitoring	9,500,000.00	20,652.2
3.	Training	6,000,000.00	13,043.5
4.	Disclosure Costs	1,850,000.00	4,021.7
5.	Environmental Audit	3,500,000.00	7,608.7
	TOTAL	**36,800,000.00**	**80,000.00**

1$=N460 – CBN official exchange rate as at 01/05/2023(https://www.cbn.gov.ng/rates/exchratebycurrency.asp)

CHAPTER SEVEN

7.0 STAKEHOLDER CONSULTATIONS

Stakeholder participation during project planning, design and implementation is widely recognized as an integral part of environmental and social management for projects. It is a two-way flow of information and dialogue between project proponents and stakeholders, which is specifically aimed at developing ideas that can help shape project design, resolve conflicts at an early stage, assist in implementing solutions and monitor ongoing activities. The main objective of the consultations with stakeholders is to discuss the proposed project's environmental and social implications and to identify alternatives for consideration. Specifically, the consultations seek to achieve the following objectives:

- To provide some information about the proposed project.
- To provide opportunities for stakeholders to discuss their concerns and offer recommendations.
- To gain insight on the role of each stakeholder in the implementation of the environmental and social safeguards as well as structures in place for the management of the proposed facilities.
- To provide and discuss with stakeholders the alternatives considered to reduce anticipated impacts.
- To identify and verify significance of environmental, social and health impacts; and to inform the process of developing appropriate mitigation and management options.

7.1 Consultation Strategy and approach

The consultation strategy planned was to have discussions with the different categories of stakeholders identified including the school management & staff, students, project community, Relevant Ministries at the state level. However, consultations could not be held with students and project communities due to the high security alert in the community during the time of the assessment. The community was largely deserted, no students/activities were going on in the school, only the presence of armed forces in the school and in the community. In addition, the armed forces only permitted a limited time for the ESMP consultants to conduct the assessment within the school, with no permission to enter/interact with the communities.

Stakeholder consultations were however held with the school management, relevant Ministries, Departments and Agencies (MDAs).

The following were taken into full account during the stakeholder consultations and engagement activities:

1. The project will have foreseeable environmental and social impacts, especially on the environment, the people, and structures in the project area.
2. The project aims at impacting more positively on the environment and social conditions, and will devise suitable, practicable mitigation measures through an ESMP to minimize or eliminate negative impacts.
3. The measures to enhance positive impacts of sub-project activities will be recommended and adopted.

7.2 Summary of consultations

Stakeholder consultations were held with various stakeholders including the school authority, relevant Ministries, Departments and Agencies (MDAs) in the project area including Borno State Ministry of Environment, Ministry of Health, and the Ministry of Women Affairs & Social Development, between 15th

Dec- 20th December and 15th January – 20thJanuary, 2023 respectively during the preparation of the ESMP. Further consultation was held with the Project Implementation Unit (PMU) on 26th January 2023. Stakeholder participation during project planning, design and implementation is widely recognized as an integral part of environmental and social management for projects. Responses from stakeholders were embedded as part of project enhancement/ mitigation measures in this ESMP. All stakeholder categories were receptive of the project. A summary of consultations is presented below while pictures and attendance sheets are presented in annex 1:

Table 7.1: Consultations with FSTC Lassa Management

CONSULTATIONS WITH FSTC LASSA MANAGEMENT	
Date	15/12/2022
Venue	FSTC LASSA PREMISES
Attendance	Five Persons - The Principal, Vice Principal, Project Engineer and the ESMP consultants
Language of Communication	English
Overview	The meeting started by a welcoming address by the principal. The ESMP consultant also introduced themselves. The consultant informed the management that the aim of the meeting is to brief the staff about the importance and objectives of the ESMP and how the consultant intends to carry out the assignment. The ESMP is part of the requirement of the Nigerian Government and the AfDB before implementation of any developmental project which helps to identify the potential environmental and social risk of the project activities, waste management plan. Institutional arrangement etc.
ESMP Consultant	The consultant sought for a brief history of the school from the principal and how the intervention works will improve the standard of the school.
Principal	The school was established in July 1992 with 20 staff only at inception. The school presently has a total number of 480 students with 78 teaching staff. But the school has been relocated to michika due to insecurity that bedeviled the area since 2014. As such, the school has been occupied by soldiers since 2014. Being a federal college, the students of the school cut across all the Geo-Political zones. The school has a clinic and a borehole which was built by WASH. On the issue of waste disposal, the school resort to burning of the waste in a pit within the school compound.
ESMP Consultant	The consultant explained that while the project will have largely positive impacts by supporting infrastructure provision however, some negative impacts are envisaged such as Noise/air pollution, management and disposal of construction and other wastes, increased risk of HIV/AIDs and STDs due to interactions of contractor staff and the local population., child labor, GBV/Sexual harassment, occupational accidents/incidents, insecurity etc. Mitigation measures will be included in the ESMP to address such risks
Principal and Vice Principal	They appreciated the explanation by the ESMP consultants and promised to abide by the mitigation measures that will be stated in the ESMP. They also raised concerns about the issue of insecurity in the area which has led to the presence of military personnel in the school and currently there are no students in the school as they are embedded in another school in Adamawa temporarily for their academic session. However, they are hopeful that the insurgency will be brought under control and after construction, the students will resume school activities in Lassa FSCTC.

Table 7.2: Consultations with various MDAs

Date: 18th – 25th January2023 **Venue:** MDA Offices of Borno State Ministry of Environment, Women Affairs and Health			
Overview Consultations were held with various MDAs at the state level including Borno State Ministry of Environment, Women Affairs and Health.			
Organization	**Participants**	**Key Discussions**	**Response**
Ministry of Environment	Six persons - Director, Pollution control Department Director Environmental/ Operation Department ESMP Consultants	**Directors Office** • The E&S Consultants introduced themselves and explained the reason behind the visit to the ministry. The consultants sensitize the ministry on the importance and objectives of Environmental and social management Plan (ESMP) as an instrument and the role of the ministry as one of the critical stakeholders toward the actualization of the Project. • The consultant also informed the ministry that once the report is ready it will be made available to them for disclosure. • The discussion centered on the role the agency will play as regard to the project since it involves constructions works which may lead to generation of constructions waste and other forms of waste, air and noise pollution. • The E&S Consultant sought to know if the ministry has a working policy on environment, accredited dumpsites/landfills, and how waste are been managed in the state. • The E&S Consultant also inquired about the method adopted by the ministry in handling sewage, e-waste and if the state has any recycling /recovery plants in the state that the project can key into.	• The Director, Pollution control Department appreciated the E&S Consultant for the enlightenment and sensitization on the ESMP and promised to support the project whenever the need arises. • He pointed out that environmental/operation department is in charge of monitoring environmental parameters and Borno State Environmental Protection Agency (BOSEPA) on the other hand is in charge of waste management in the state. • He further mentioned some of the dumpsites used in Borno which includes Shehuri North, Specialist hospital, Baga road, Bolari, Custom area, circular road etc. • Sewage and other forms of waste is mostly collected by BOSEPA from schools whenever the agency is notified by the school Authority • The Director responded that the state does not have a working policy yet. • He stated that the agency will support the ongoing Lassa FSCTC project in the aspect of waste management during the construction and operation phases, however, the school/contractor will have to give them adequate notice.
Ministry of Women Affairs and Social Development	Five Persons - Director, Women and Social Development Department Assistant Director	• The E&S consultant briefed the Director on the aim and objectives of the ESMP and why it's needed as part of the requirement before the constructions works commence. • The E&S Consultant explained that the constructions works will take place in FSTC which is a mixed school. Hence there is need to provide an avenue to avoid sexual Harassment and Gender Based Violence in the school. • The E&S Consultant enquired on how the Department handles issues of GBV/SEA in the state and precisely the schools. • The consultant further asked the ministry staff receive regular training on GBV and SH.	• The Director welcomed and appreciated the consultant for consulting with the ministry as part of the critical stakeholders most especially that the project deals with adolescent girls. • The Director further informed the consulting team that the ministry has a standard approach toward issues of GBV/SH/SEA in the state. • She further reiterated that when there is incident of sexual harassment or Gender Based from the community or schools, some report directly to the ministry while others report through any of the sexual referral centres and service providers while some report directly to the ministry through the principal or any head teacher in case of schools. • There are channels through which the survivors can report to, these includes caregivers, aid workers and focal persons.

			• The legal facilities and personnel that exist for survivors are: 1) State Human Right Office and the Federation of the Women Lawyers (FIDA) 2)Sexual Assault Referral Centre, Umaru Shehu Ultra-Modern Hospital • Health service, legal service, case management and referral service are available for survivors of GBV. • The state ministry also ensures confidentiality of the survivors by hiding their identity. The Ministry conducts sensitization of GBV prevention and response in schools and they are willing to so the same in Lassa once they are informed by the principal or the ministry of education.
Ministry of Health and Human Services	Five persons - Director, Health Services Director, public health and disease control	• The E&S Consultant informed the ministry the importance of conducting the ESMP and what it entails. Therefore, the ministry of health has a role to play in ensuring the successful implementation of the project at all levels. • The consultant asked whether the ministry collaborate with schools' management on reproductive health and hygiene as the project target technical college which comprises both boys and girls. • The discussion further centered on the health structure at the LGA Level and their activities. Moreover, if there is disease outbreak in a school or community, how do they channel it to the ministry.	• The representative of the ministry welcomed and appreciated the consultant for the visit. • He explained to the consultant that the ministry reaches out to schools through the department of public health and disease control. There is a particular unit in charge of reproductive health and family planning that enlighten the students on issues bordering reproductive health and hygiene. • The ministry has a structure of referring any incident or disease break out at all levels. When there is disease outbreak in a community it is reported to the nearest PHC/ health clinic dispensary, from there to any secondary facility or hospital. This is to say that the disease surveillance and notification officer must have reported the matter to the ministry for record purposes because in each facility they have a focal person saddled with the responsibility of notifying the ministry on any new disease outbreak.

CHAPTER EIGHT

8.0 GRIEVANCE REDRESS MECHANISM

This chapter presents a Grievance Redress Mechanism (GRM) which should be adopted by project stakeholders at the project site level and implementation level to ensure concerns about the project implementation are timely received and addressed in a manner that would avoid escalation and potential conflicts.

8.1 GRM Principles

The Project Grievance Mechanism is free, open, and accessible to all, including disadvantaged and vulnerable groups. Grievances will be addressed in a fair and transparent manner. Information about the procedures, who to contact and how, will be made available to all stakeholders. The grievance procedure is designed to consider the needs of vulnerable groups. All complaints will be investigated to establish their validity and to ensure they are treated in a timely and prompt manner. If required, corrective actions will be implemented, documented, and communicated to prevent any recurrence of problems. The GRM process excludes criminal cases which should be referred to the government law enforcement agents.

The GRM is applicable to all levels of the project execution including the project level (school site/community level), Project Implementation Unit (PIU) level, MDAs involved in the project, stakeholders with interest/influence in the project, and the Ministry of Education.

With respect to the civil works, some areas of potential concerns include grievances that may arise from any of the following:

- Construction activities which may cause noise, dust emission, community health and safety issues, and waste management issues;
- Disruption of academic activities and livelihood activities;
- Potential sexual exploitation and abuse/sexual harassment (SEA/SH) in the project community and school;
- Disagreements and conflicts from community members against the contractors either as a result of illicit behaviour, abuse of culture, competition for resources in the project area, or non-involvement of community youth as local labor;
- Exclusion of persons with disabilities (PWD) from benefitting from the project;
- Poor communication between the contractor and the project communities especially in such a high security risk area

8.2 Grievance Reporting Channels

All project stakeholders can make use of any of the following grievance reporting channels:

- Grievance Redress Committees
- Complaint Boxes
- Contact Phone Numbers

8.2.1 Grievance Redress Committees (GRCs)

Grievance Redress Committees (GRCs) will be formed at the school/community level, PIU and Ministry of Education levels as defined below.

- Complaints/suggestions can be received through Grievance Redress Committees (GRCs).
- The school management, staff and students, members of the community should be sensitized on the GRM use, process and procedure.

- Stakeholders can channel their concerns through any member of the GRC, who will in-turn inform the committee for proper recording and subsequent action.

The following levels of GRCs will be applicable to the project:

First level GRC – Project Site/Community Level

This GRC is easily accessible to complainants in the project area (school/community people), without any/minimal costs.

Members of the 1st level GRC will include:

- Community Leader
- School Principal
- GRM Focal Person (usually the school counsellor/ liaison person/mediator)
- Women representative (from the community)
- Student representative

The PIU should identify and inform the aforementioned persons of their roles as GRC members and what is expected of them in line with this GRM procedures.

With the support of the PIU, the GRC will sensitise students, staff, community members on how to channel complaints to the committee through any of its members or other available channels such as complaint boxes, phone lines etc.

This committee will be expected to receive complaints through the designated channels (complaints boxes, designated phone numbers, direct complaints lodged with any member, complaints raised at progress review meetings/FGDs/public consultations etc., anonymous complaints amongst others).

(Where complaints relate to GBV, SEA/SH, complaints will be channeled to the Sexual Assault Referral Centre (SARC[23])

The committee will be expected to investigate the complaint and proffer solutions to grievances received. Where this cannot be resolved at this level, it can be transferred to the second level GRC.

Second level GRC – PIU Level

This GRC is formed at the PIU level and can receive complaints from the 1st level GRC or directly from complainants through phone calls, walk-in at the PIU office or directly during visit to the communities.

Members of the 2nd level GRC include:

- Project Coordinator
- E&S Officer – GRM Focal person
- Monitoring & Evaluation Officer
- Project Secretary

[23] Sexual Assault Referral Centre
Umaru Shehu Ultra Modern Hospital
Maiduguri, Borno State
08023585805

The PIU should identify and inform the aforementioned persons of their roles as GRC members and what is expected of them in line with this GRM procedures.

The committee will be expected to investigate the complaint and proffer solutions to grievances received. Where this cannot be resolved at this level, it can be transferred to the third level GRC.

Third level GRC – Department of Technology and Science Education, FME

This GRC is formed at the level of the Federal Ministry of Education, specifically, the Department of Technology and Science Education, to receive cases that are beyond the first 2 GRC levels. The Department will be expected to resolve all pending complaints at this level. However, where the complainant remains unsatisfied, he/she can be advised of their right to seek legal redress, while the project informs AfDB about the issue and resolution taken.

Court Redressal/Legal Action

Complainants also have the right to seek court redress when the previous options have been exhausted without solution. The project will inform the complainant on their right to seek court redressal and ensure that the AfDB is duly informed before giving such clearance. However, a complainant at any stage may decide to seek legal action and such a person must not be harassed by the project, rather should be guided to either use the available GRCs as first options, but they cannot be forced or coerced.

8.2.2 Channels to Receive Complaints

The Project will utilize various channels provided below to receive complaints/grievances from Project affected persons and stakeholders:

- Grievance Redress Committees (GRCs) at all levels
- Complaint register /Suggestion Boxes located at strategic places in the communities such as within the school compound, community market, community leaders house, etc.
- Dedicated Telephone Lines which will be manned by the GRM focal persons
- Meetings/consultations/Focus Group Discussions (FGDs), oral reports to school management, community leaders, women leader, youth leader, etc.

8.2.2.1 Complaint/Suggestion Boxes

- The PIU should place complaint/suggestion boxes in strategic places such as within the school compound, community market, community leaders house. Complaints/suggestions can be written by project affected persons, interested parties and other stakeholders and dropped in the complaint boxes in the project area.
- The name of the project and dedicated GRM number is on the box.
- It should have a lock and be on a stand and safe from rain.
- The boxes will be accessible to persons in the project area but also provide some form of privacy in case of anonymous complaints.
- The designated GRM focal person should retrieve complaints from the box at least every 48 hrs.
- Project related complaints should be documented in a grievance logbook for further action, while complaints not directly related to the project should be forwarded to the appropriate authority for action and the complainant duly informed of this action.
- Following the record of the complaints, the GRC will schedule a meeting to address the complaints in a timely manner.

- The GRCs should sensitise students, staff and community members on the locations and use of the complaint boxes.

8.2.2.2 Dedicated Phone Lines

- The PIU should provide a phone number for stakeholders to reach at the project level. It should be manned by the GRM focal persons, and it is usually best to have a toll free line (i.e., at no cost to the complainant.
- This number will be provided on the project signpost and the complaint box for easy access of stakeholders.
- All complaints received on the phone will be recorded in the grievance logbook.
- Subsequently, this will be addressed by the GRC.
- The GRCs should sensitise students, staff and community members on the numbers.
- The cost of maintaining the phone lines will be borne by the PIU.

8.2.2.3 Meetings, Consultations and Direct Reports

- Complaints and suggestions could be received during on-site project progress meetings, focal group discussions, community meetings, student meetings, through the school management or other forms of oral receipt, etc.
- This complaints from such meetings will be channeled to the GRC and documented.
- This will also follow the complaints resolution process.

8.3 Processing of Complaints

This section explains the step-by-step process that a complaint goes through from receipt to resolution. This covers the following:

- Receiving and Recording Grievances
- Acknowledgement of Grievance
- Verification/Screening
- Allocation of Responsibility
- Grievance Investigation
- Resolution, Closure and Feedback
- Process chart
- Timeframe

8.3.1 Receiving and Recording Grievances

The grievances from the stakeholders or their representatives may be communicated verbally in person or over a telephone conversation to the dedicated GRM line or in written form placed in the complaint boxes or submitted to the project representatives. All grievances communicated in any of these mediums will be recognized and recorded by the GRCs as and when it is expressed.

Grievance Logbook – all project related grievances will be logged in the grievance logbook.

- The grievance logbook will be maintained by the GRCs at the project site and PIU level.
- This will be used to record grievances and how they are resolved.
- The PIU will provide the logbook for the GRC at the project sites.
- The logbook will be kept by the GRC secretary/GRM focal officer at each level.

- The PIU GRM officer would review the project sites logbooks on a monthly basis to see the type of grievances received and how they were addressed. The officer should maintain an electronic version of the grievance logbooks and upload details of grievances from all project sites in the GRM database.

8.3.2 Acknowledgement of Grievance

Once the grievance is received and registered by the GRM focal person, a grievance number will be allocated and communicated to the grievant. This communication will also serve as an acknowledgement of the grievance. In case the grievance is assessed to be out of the scope of the GRM, a communication towards the same will be made to the grievant, and an alternative mode of redress will be suggested. As part of this acknowledgement, a tentative timeline for the redress of the grievances will be identified, in keeping with the process below. This acknowledgement will be provided on the same day as the grievance is received.

8.3.3 Verification/Screening

Upon acknowledgement of the grievance, the recipient of the grievance in conjunction with the GRM focal person will quickly screen the complaint to ascertain its merit, relevance, categorization and whether further action is required by the project or not:

- Where complaints are not project related, the GRC should channel this to the appropriate authority for resolution. The complaint should be closed and feedback should be given to the complainant on action taken.
- In the case of SEA/SH/ GBV complaint, this will not be investigated by the GRC, but rather the case will be referred to the Sexual Assault Referral Centre, Umaru Shehu Ultra-Modern Hospital, Maiduguri, Borno State, and with the survivor's consent for further action upon disclosure of available information to the survivor.
- Where the case is criminal in nature such as issues relating to armed robbery, serious bodily harm, manslaughter or murder, it should be immediately reported to the police/ other appropriate authorities.

8.3.4 Allocation of Responsibility

- Once the grievance is received and recorded, based on the subject and issue, the GRM focal person will identify the department, contractor or personnel responsible for resolving the grievance, and also the GRC members that will be relevant to the matter and initiate a timeline for discussion/constitute a GRC meeting.
- Addressing a complaint will be timely, responsive and as less complicated as possible.
- Where the complaint is an emergency, the matter will be treated urgently, pending when proper investigations and address can be made.
- Timeline to discuss matters will be commensurate to the complaint.

8.3.5 Grievance Investigation

The Grievance Redress Committee will discuss and undertake an enquiry into the facts relating to the grievance. This will be aimed at establishing and analyzing the cause of the grievance and subsequently identifying suitable mitigation measures for the same. The committee may also undertake confidential discussions with the concerned parties to develop a more detailed understanding of the issue at hand.

The grievance redress committees will be responsible for the following:

- Communicate with the affected persons and evaluate what form of redress they are entitled to

- Investigate the complaint in a fair, honest and open-minded manner
- Interview/discuss with concerned parties with a view to resolving the issue
- Recommend a solution to the grievance
- Communicate the decisions to the complainant
- Refer the grievance to a higher level GRC, if unresolved

The GRC will investigate all project related complaints and resolve/provide responses. Where the issue cannot be resolved at a particular GRC level, the complainant will be supported in escalating the grievance to the next level GRC. However, efforts will be made to resolve all grievances at the project site/community level.

8.3.6 Resolution, Closure and Feedback

Based on the understanding developed from the investigation and consultations, the GRC will identify a suitable resolution to the issue. This resolution will be communicated accordingly to the grievant.

- If at any stage, the grievant is not satisfied with the resolution, she/he may choose to ask for an escalation of the grievance to the next level GRC, this should be facilitated by the GRM focal person. However, where grievance still remains unresolved, complainant will be advised of his/her freedom to seek court redressal if they choose to.
- The status of the grievance will be updated in the grievance logbook frequently by the GRM focal person.
- Once the grievance is resolved, and the same has been communicated to the grievant, the grievance shall be closed in the grievance logbook.
- The grievance logbook will also provide an understanding of the manner in which the grievance was resolved. These instances shall then serve as references for any future grievances of similar nature.
- Where there is evidence of recurring issues or grievance coming up on the project, it is necessary to flag this up to the PIU in order to assess if the project design requires updating.
- The GRM focal persons at every level should endeavour to obtain feedback from complainants on their level of satisfaction with the grievance process and the outcome. This should be used to review the GRM when required.

8.4 Timeframe for Processing Grievances

This section provides information on the expected timeframe for each stage of the GRM. It is expected that every responsible party will ensure they achieve the stipulated timelines or less.

Table 8.1: Time Frame for Processing Complaints

PROCESS	DESCRIPTION	COMPLETION TIME FRAME	RESPONSIBLE AGENCY/PERSON
Receipt of complaint	Document date of receipt, name of complainant, location, nature of complaint etc.	1 day	GRM focal person at project level
Acknowledgement of grievance to the complainant	By letter, email, phone	1 day	GRM focal person at project level
Screen and Establish the Merit of the Grievance	Review the complaint/ Listen to the complainant and assess the merit	2 days	Project level GRC & the complainant or his/her representative
Refer unrelated project grievances	Where complaint is not related to the project refer to appropriate authority and inform complainant	2 days	Project level GRC & the complainant or his/her representative
Investigate the grievance	Visit the site, conduct investigations and interviews	1 – 3 days	Project level GRC members
Implement a redressal action	Discuss and agree on the grievance resolution	1 – 7 days	Project level GRC members &the complainant or his/her representative
Escalate to PIU for a dissatisfied scenario	Refer the complainant to the PIU GRC	3 – 10 days	Project level GRC Chairman
Receipt and record of complaint at PIU GRC	Document date of receipt, name of complainant, location, nature of complaint etc.	1 day	PIU GRM focal person
Investigate/ Implement a redressal action	Review the previous action by the project level GRC/ conduct investigations and interviews. Recommend grievance resolution.	2 – 7 days	PIU GRC
Escalate to the Department of Technology & Science Education, FME for a dissatisfied scenario	Refer the complainant to the 3RD level GRC	3 – 10 days	Project Coordinator
Receipt and record of complaint at Department	Document date of receipt, name of complainant, location, nature of complaint etc.	1 day	Department focal person for the project
Investigate/ Implement a redressal action	Review the previous action by the GRCs/ conduct investigations and interviews. Recommend grievance resolution	2 – 5 days	Department of Technology & Science Education
Last resort - Advice complainant of option to seek judicial redress	Where resolution is not reached, complainant is free to seek judicial redress. Project Coordinator to document the case including all attempts at resolution and send a report to the ADB	7days	Project Coordinator
Close the case	Follow up to obtain feedback and document resolution in logbook	As required	GRM focal person

8.5 Monitoring

The GRM focal persons will be responsible for:

- Providing the grievance Committee with a monthly report detailing the number and status of complaints any outstanding issues to be addressed
- Monthly/quarterly reports, including analysis of the type of complaints, levels of complaints, actions to reduce complaints and initiator of such action.

8.6 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 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.

CHAPTER NINE

9.0 CONCLUSION

The proposed project is most desirable because of the obvious environmental, health cum socio-economic benefits to the students, community and education sector as a whole. These far out-weigh the negative impacts that could arise in the course of implementation. Potential impacts of sufficient magnitude that could interrupt the execution of the project was majorly about the security situation in the project area, which the school management is optimistic will improve. Although some negative impacts may potentially occur due to the activities associated with the proposed project, adequate and specific, measurable, achievable, relevant and time-bound (SMART) measures have been provided to address them in this ESMP. It is thus important that the Project Implementation Unit (PIU) ensures timely and adequate implementation of the ESMP.

The following recommendations are made to enhance the project positive impacts:

1. Climate and Environmentally-friendly Considerations

- Use of energy saving bulbs to promote energy efficiency and reduce emissions.
- Solar panels are recommended as source of renewable energy for the buildings and boreholes as part of resilient infrastructure and emission reduction strategy.
- Provision of green areas within the school to promote carbon sequestration and provide vegetative cover to the earth surface.
- Avoid use of prohibited building materials such as Persistent Organic Pollutants, asbestos, toxic paints etc.

2. Waste Management

- Separating, reducing, reusing, recycling of waste should be considered for managing school waste, in order to find ways to get rid of school waste with the least negative effects on the environment.
- Some essential waste management & ECO clubs and recycling programmes can be developed to educate staff and students. The school can liaise with the Borno State Ministry of Environment to assist with this program.

3. Disability Inclusion

The buildings should promote disability inclusion in line with the Discrimination Against Persons with Disabilities (Prohibition) Act 2018. Measures to comply with are recommended below:

- Inclusion of access ramps should be constructed to all buildings with attached railings for support.
- Ramps should have a slope of about 5^{o} and width of 0.9-1.2 mm with handrails/grab bars for additional support.
- Pathways within the buildings should be of limited slope and include sufficient turning radius for wheel chairs.
- Doors should be light in weight and easy to turn, and entrances should be sufficiently wide, and Furniture, counters, equipment, power sockets, and plugs should be placed at suitable heights reachable by persons who use wheelchairs.

4. Security Protocol

Owing to the project area being in a high-risk security area, recommendations on security is provided below:

- It is important that a Security Management Plan (SMP) is prepared for this project in conjunction with the state Government and security apparatus like the police, Army, Nigerian Security and Civil Defense Corps (NSCDC) and disseminated to stakeholders.
- The security management plan should be treated confidentially as not to fall in the wrong hands or public consumption.
- The PIU should ensure all contractors/consultants engaged by the project and implementing parties such receive security training/ briefing coordinated by the security adviser before any site visits.
- It is recommended that the design/planned construction or the Ministry of Education make provision for security lights in and around the school vicinity as way of protection of the structures/properties and movement in and around the school premises. Small circuit surveillance cameras (CCTV) are also recommended.
- All other measures as stated in section 6.6.4 should be implemented.

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Annex 1

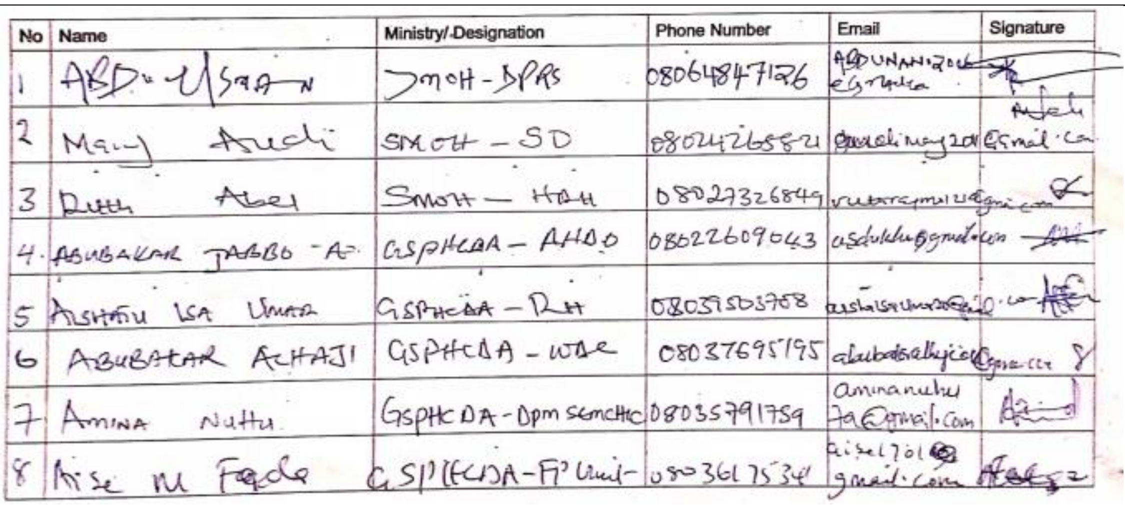
Consultation Pictures and attendance

Consultation with Borno State Ministry of Environment

Consultation picture with the head school principal FSTC

Consultation with Borno state ministry of women affairs

Consultation with Borno State Ministry of Health



No	Name	Ministry/ Designation	Phone Number	Email	Signature
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Annex 2

Occupational Health and Safety Plan

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

- ***Competency***

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

- ***Fitness***

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

- ***HSE Training***

1. Induction/Orientation

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

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

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

2. Project Specific HSE Training

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

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

EMERGENCY PREPAREDNESS AND RESPONSE

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

The contractor team should have a trained first-aider present at all times with well-equipped first aid box. For accidents which are beyond first aid/require medical attention, ill-health, disease outbreaks, health emergencies the contractor to liaise with the Primary Healthcare Centres present in each Ward and registered hospitals in the project areas to ensure timely medical attention (list of health facilities - https://hfr.health.gov.ng/facilities/hospitals-list?page=1055).

3. HSE IMPLEMENTATION AND PERFORMANCE MONITORING

a. HSE Meetings

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

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

1. HSE Reporting

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

- **HSE Inspection and Audits**

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

Corrective and Preventive Actions and Non Conformities

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

Project HSE Rules

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

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

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

- Personal Protective Equipment must be worn at all times.
- All instructions issued by the Site Manager regarding the storage, handling or cleaning of materials, plant and equipment must be followed.
- All vehicles must be parked in the designated areas.
- Any workman suffering from a medical condition that might affect his work and/or that could require specific Medical treatment must inform the supervisor before commencing work.
- All site tools shall either be battery operated or 110 volts.
- No one shall be permitted on site if it is believed that they are under the influence of alcohol or drugs.
- Vehicles must not reverse without a banksman in attendance.
- All visitors to site must undergo a site-specific induction and operative Identity badges must be worn at all times.
- All excavations must be secured.
- Smoking and eating shall only be permitted in the designated area. This area shall be identified during induction.
- No hot works operations are permitted without a hot work permit in place.
- There shall be no radios or other music playing devices on site.
- Good housekeeping practices to be adopted**.**
- Compliance with all Ethical Power Permit to Work systems
- The site keyed access procedure must be strictly adhered to.

- All Contractors must comply with Site Health & Safety Guidelines / Site Safety Method Statement
- No untrained worker shall be permitted to operate heavy machineries.
- COVID-19 protocols to be adhered to including frequent handwashing, use of nose masks when in crowded spaces, timely reporting of any symptoms to HSE officer and immediate isolation

- **Safe Work Practices/Personal Protective Equipment (PPE)**

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

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

Information, instruction & training shall be given to all employees on safe use, maintenance and storage of PPE. Employees shall, in accordance with instructions given, make full use of all PPE provided and maintain it in a serviceable condition and report its loss or defect immediately to the maintenance department where it shall be replaced.

PPE shall be replaced when it is no longer serviceable and returned on a new for old basis. Employees shall sign to state that they have received PPE when issued.

- **Welfare Facilities**

The provision of welfare facilities on the site shall be communicated to all operatives at site induction. A cleaning regime shall be implemented and maintained for the duration of the construction phase to ensure the site welfare facilities remain in a clean and tidy condition.

If mains drinking water becomes unavailable during the construction phase bottled water shall be brought to site for all operatives for the necessary period.

- **Signage**

Adequate provision for warning and directional signs shall be made.

Annex 3

Waste Management Plan

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

Vegetal waste – This will be vegetation cleared during site preparation. However, vegetal waste is expected to be minimal considering most of the schools are already existing.

Construction waste – This will include concrete including cement, stones, gravels, wood, metal scraps, etc.

Gaseous emissions – from movement of vehicles, machine operations, site clearing activities, mixing of materials and chemicals such as paints

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

Human Waste – from workers onsite, campsite such as domestic sewage, faeces, urine

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

S/N	Potential Source	Waste Type	Waste Streams	Management
A	**PRECONSTRUCTION**			
1	Movement of vehicles on unpaved surface and engine exhaust	Emission	COx, SOx, NOx, CO, Dust	Use water suppression to prevent dust emission Maintain vehicles and machineries to reduce emission Maintain low speed to reduce dust and gaseous emission
2	Site Clearing and Installation of staging areas	Non-Hazardous	Vegetal Waste Industrial Waste: Metal scraps, packaging waste	Vegetal waste shall be supplied to farmers for use as compost. Woody vegetal shall be supplied to host communities for domestic uses including as fuel wood for cooking. Segregated and stored on site to be collected at least once a week for reuse or recycle through the Borno state ministry of environment or licensed third party facilities.
3	Workers' camp	Domestic and Human waste	Food remnant, kitchen wastes. Food packaging etc Domestic Sewage	To be transferred to locals for use as compost and animal feed. Plastic and other packaging to be recycled through licensed recycling third parties or collected by Borno state ministry of environment Sewage will be collected in a properly closed constructed septic tank and will be evacuated in conjunction with Borno state ministry of environment at least twice during the 18month period or as required.
B	**CONSTRUCTION**			
1	Movement of vehicles on unpaved surface and engine exhaust	Emission	COx, SOx, NOx, CO, Dust	Use water suppression to prevent dust emission Maintain vehicles and machineries to reduce emission Maintain low speed to reduce dust and gaseous emission Use of cleaner technologies and modern equipment
2	Civil works Workers' camp/offices	Non-Hazardous /Industrial	Spoils/demolition Waste Packaging and Dunnage such as scrap wood, scrap metal, steel, glass, plastic, paper and cardboard, empty metal containers, excess concrete, broken	Segregated and kept securely in closed containers on site. To be evacuated by Borno state ministry of environment or transferred to approved recycling third parties for reuse/recycling. Non-recyclables to be removed by Borno state ministry of environment or other approved waste contractor by the state To be transferred to locals for use as compost and animal feed.

			equipment, or components Domestic-type waste: wastepaper and food scraps, metal cans	Plastic and other packaging to be evacuated by Borno state ministry of environment or recycled through licensed recycling third parties.
3	Civil Works	Hazardous Waste	Solid Wastes: used batteries, chemical containers, concrete etc	Store on site in closed and labelled containers with secondary containment to be evacuated by Borno state ministry of environment or registered waste contractor with off-site permitted hazardous waste treatment, storage, or disposal facilities in accordance with Borno state ministry of environment policies
			Liquid Waste: spent lubricating oils, hydraulic fluids, brake fluids, battery electrolyte, and dielectric fluids, chemical cleaning agents, paints, primers, thinners, and corrosion control coatings; sealants and adhesives etc	
	Civil works	Wastewater	Wastewater from equipment washing and concrete production	Discharged to the ground as only very small quantity is envisaged at this stage.
	Civil works	Electrical and electronic waste (e-waste)	Electrical wirings, cables, damaged computers etc.	This will be sent to the recycling plant for garbage and plastic waste which includes Micro-composting plant.
C	**OPERATION**			
1	Movement of vehicles	Emission	COx, SOx, NOx, CO, Dust	See A1
2	Operations	Solid waste Chemical waste Sewage E-waste	Maintenance of buildings, roofing sheets, iron sheets, paint. Sewage evacuation from constructed toilets	Segregated and kept securely in closed containers on site to be collected by Borno state ministry of environment. Non-recyclable solid waste to be sent to approved Borno state ministry of environment dumpsites. Recyclable waste to be sent to MRF facilities and recycling facilities, this will be done in liaison with Borno state ministry of environment Sewage waste to be handled in collaboration with the Ministry of Environment's approved site at KwanarMaguwa and Ramin Coca-Cola

Menstrual Pad management Protocol

As pads are often disposed after one use they create large quantities of litter, accumulate in landfills, block sanitation systems when thrown in toilets, and release toxins when burned incorrectly. An appropriate waste-management chain must be in place from on-point to endpoint. As cultural beliefs and stigma influence individual disposal, users must change their disposal behaviour to manage disposable pads.

A. Planning for best pad management protocols

i. Consultations should be held with the adolescent girls to understand their needs, cultural beliefs and worries about different disposal methods.
ii. Consultations are an effective way of getting in-depth information about the beliefs, attitudes, perceptions, and practices related to menstrual health and hygiene in a given context.
iii. Ensure the consultation process is ethical and confidential and in a safe space and ensure effective participation

B. Use and care of Pads and Menstrual Materials

Caregivers (school management, ministry of health, gender desks etc.) should consider the following principles:

i. Are girls and women familiar with the sanitary pad material?
ii. How frequently does the material need to be changed?
iii. Does the material require supportive supplies such as water, soap, washbasins etc. and are they available?
iv. How is the material cleaned and are supplies available?
v. Are water, private spaces for washing, drying and changing available?

C. Disposal Considerations

Caregivers (school management, ministry of health, gender desks etc.) should consider the following principles:

i. How frequently must the material be disposed of?
ii. What are the local beliefs about different methods of disposal?
iii. Are discreet disposal points available for used materials?
iv. Is there a waste collection system and endpoint disposal site?
v. Are girls and women aware of disposal mechanisms?
vi. Is there hand washing facilities and access to changing rooms

D. Disposal Options

i. They can be wrapped properly with old news papers/ recycled papers/waste papers and taken home to be disposed for day students, while boarders can follow steps ii to iv below. The school should make available the materials to wrap soiled sanitary pads
ii. The wrapped pads can be dropped in covered bins provided in the toilets
iii. The waste bins can be collected by garbage collectors or collected by those responsible for incineration of these pads
iv. The wrapped pads can also be directly put into incinerators. Environmentally friendly[24] local incinerators can be constructed in conjunction the state ministries of environment especially in schools in rural areas (minimal access to the ministry of environment waste disposal facilities. Private waste disposal companies) and boarding schools to ensure proper disposal of sanitary wastes.
v. Where the above options are not feasible, the pads can be disposed into a disposal pit or pit latrine

E. DONT'S

i. Sanitary pads should never be flushed down the toilet because it may clog the drainage system
ii. Menstrual cloth slows the decomposition process in eco-san toilets and commercial sanitary pads are NOT biodegradable, thus should not be dumped/flushed into toilets, this increases the risk of clogging the pipes.

[24]Smokeless combustion. Containerized combustion. 180mm-221mm of refractory wall thickness that retains the incinerator heat inside the machine and ensures that it heats efficiently. Make the best use of the heat generated by mapping thermal energy inside the machine

F. Information Dissemination and Awareness

Schools should organize periodic awareness and sensitization programs (at least annually) for adolescent girls on:

i. Menstrual hygiene, sanitation and prevention of infection
ii. Education on proper use and safe disposal of used sanitary pads
iii. Education on the available disposal options
iv. Environmental and public health concerns of inappropriate/poor disposal methods

The training can be done in conjunction with the school guidance counsellors, ministry of health, women affairs, ministry of education (gender desk), NGOs and organisations like UNICEF, Save the Children

Annex 4

Sample Codes of Conduct

Individual Code of Conduct

Preventing Gender Based Violence and Violence Against Children

Definitions:

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

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

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

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

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

I agree that while working on the project I will:

- Consent to police background check.
- Treat women, children (persons under the age of 18), and men with respect regardless of race, colour, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status.
- Not use language or behaviour towards women, children or men that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate.
- Not participate in sexual contact or activity with children—including grooming or contact through digital media. Mistaken belief regarding the age of a child is not a defence. Consent from the child is also not a defence or excuse.
- Not engage in sexual favours—for instance, making promises or favourable treatment dependent on sexual acts—or other forms of humiliating, degrading or exploitative behaviour.
- Unless there is the full consent[25] by all parties involved, I will not have sexual interactions with members of the surrounding communities. This includes relationships involving the withholding or promise of actual provision of benefit (monetary or non-monetary) to

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

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

- Attend and actively partake in training courses related to HIV/AIDS, GBV and VAC as requested by my employer.
- Consider reporting through the GRM or to my manager any suspected or actual GBV or VAC by a fellow worker, whether employed by my company or not, or any breaches of this Code of Conduct.

With regard to children under the age of 18:

- Wherever possible, ensure that another adult is present when working in the proximity of children.
- Not invite unaccompanied children unrelated to my family into my home unless they are at immediate risk of injury or in physical danger.
- Not sleep close to unsupervised children unless absolutely necessary, in which case I must obtain my supervisor's permission, and ensure that another adult is present if possible.
- Use any computers, mobile phones, or video and digital cameras appropriately, and never to exploit or harass children or to access child pornography through any medium (see also "Use of children's images for work related purposes" below).
- Refrain from physical punishment or discipline of children.
- Refrain from hiring children for domestic or other labour which is inappropriate given their age or developmental stage, which interferes with their time available for education and recreational activities, or which places them at significant risk of injury.
- Comply with all relevant local legislation, including labour laws in relation to child labour.

Use of children's images for work related purposes

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

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

Sanctions

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

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

- Report to the police if warranted.

I understand that it is my responsibility to avoid actions or behaviors that could be construed as GBV or VAC or breach this Individual Code of Conduct. I do hereby acknowledge that I have read the foregoing Individual Code of Conduct, do agree to comply with the standards contained therein and understand my roles and responsibilities to prevent and respond to GBV and VAC. I understand that any action inconsistent with this Individual Code of Conduct or failure to take action mandated by this Individual Code of Conduct may result in disciplinary action and may affect my ongoing employment.

Signature: _____

Printed Name: _____

Title: _____

Date: _____

Contractor's Code of Conduct

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

Definitions:

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

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

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

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

1. The company is obliged to create and maintain an environment which prevents Gender Based Violence (GBV) and Sexual Exploitation & Abuse (SEA) issues. The company is also required to maintain an environment where the unacceptability of GBV and actions against children are clearly communicated to all those involved in the project. In order to prevent GBV and SEA, the following core principles and minimum standards of behaviour will apply to all employees without exception:
2. GBV/SEA constitutes acts of gross misconduct and are therefore grounds for sanctions, penalties and/or termination of employment. All forms of GBV/SEA including grooming are unacceptable, be it on the work site, the work site surroundings, project neighbourhoods or at worker's camps. Prosecution of those who commit GBV or SEA will be followed.
3. Treat women, children (persons under the age of 18), and men with respect regardless of race, colour, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status.
4. Do not use inappropriate language or behaviour towards women, children and men. This includes harassing, abusive, sexually provocative, derogatory, demeaning or culturally inappropriate words, gestures or actions.
5. Sexual activity with children under 18—including through digital media—is prohibited. Mistaken belief regarding the age of a child and consent from the child is not a defence.
6. Sexual favours or other forms of humiliating, degrading or exploitative behaviour are prohibited.

7. Sexual interactions between contractor's and consultant's employees at any level and member of the communities surrounding the work place that are not agreed to with full consent by all parties involved in the sexual act are prohibited. This includes relationships involving the withholding/promise of actual provision of benefit (monetary or non-monetary) to community members in exchange for sex – such sexual activity is considered "non-consensual" within the scope of this Code.
8. All employees are required to attend an induction training course prior to commencing work on site to ensure they are familiar with the GBV/SEA Code of Conduct.
9. All employees must attend a mandatory training course once a month for the duration of the contract starting from the first induction training prior to commencement of work to reinforce the understanding of the institutional GBV and SEA Code of Conduct.
10. All employees will be required to sign an individual Code of Conduct confirming their agreement to support GBV and SEA activities.

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

FOR THE COMPANY

Signed by _____

Title: _____

Date: _____

Manager's Code of Conduct

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

Definitions:

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

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

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

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

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

Mobilization

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

2. The Action Plan shall, as a minimum, include the
   i. Standard Reporting Procedure to report GBV and SEA issues through the project Grievance Redress Mechanism (GRM);
   ii. Accountability Measures to protect confidentiality of all involved; and,
   iii. Response Protocol applicable to GBV survivors/survivors (including access to support coping and post-trauma management strategies) and perpetrators.
   iv. Engagement of the services of social service providers (NGOs) with requisite skill in the prevention and management of GBV and SEA.
3. Coordinate and monitor the development of the Action Plan and submit for review to the RAMP-PIU safeguards teams, as well as the World Bank prior to mobilization.
4. Update the Action Plan to reflect feedback and ensure the Action Plan is carried out in its entirety.
5. Provide appropriate resources and training opportunities for capacity building so members of the compliance team will feel confident in performing their duties. Participation in the Compliance tame will be recognized in employee's scope of work and performance evaluations.
6. Ensure that contractor, consultant and client staff are familiar with the GRM and that they can use it to anonymously report concerns over GBV and SEA.
7. Hold quarterly update meetings with the compliance team to discuss ways to strengthen resources and GBV/SEA support for employees and community members.
8. In compliance with applicable laws and to the best of your abilities, prevent perpetrators of sexual exploitation and abuse from being hired, re-hired or deployed. Use background and criminal reference checks for all employees.
9. Ensure that when engaging in partnership, sub-grant or sub-recipient agreements, these agreements

   a) Incorporate this Code of Conduct as an attachment;
   b) Include the appropriate language requiring such contracting entities and individuals, and their employees and volunteers to comply with this Code of Conduct; and
   c) expressly state that the failure of those entities or individuals, as appropriate, to take preventive measures against GBV and SEA, to investigate allegations thereof, or to take corrective actions when GBV/SEA has occurred, shall constitute grounds for sanctions and penalties.

Training

1. All managers are required to attend an induction manager training course prior to commencing work on site to ensure that they are familiar with their roles and responsibilities in upholding the GBV/SEA Codes of Conduct.
2. Provide time during work hours to ensure that direct recruits attend the mandatory induction training which covers GBV/SEA training required of all employees prior to commencing work on site.
3. Managers are required to attend and assist with the NGO-facilitated monthly training courses for all employees. Managers will be required to introduce the trainings and announce results of consequential evaluations.
4. Collect satisfaction surveys to evaluate training experiences and provide advice on improving the effectiveness of training.
5. Prevention
6. All managers and employees shall receive a clear written statement of the company's requirements with regards to preventing GBV/SEA in addition to the training.
7. Managers must verbally and in writing explain the company and individual codes of conduct to all direct recruits.

8. All managers and employees must sign the individual 'Code of Conduct for GBV and SEA, including acknowledgment that they have read and agree with the code of conduct.
9. To ensure maximum effectiveness of the Codes of Conduct, managers are required to prominently display the Company and Individual Codes of Conduct in clear view in public areas of the work space. Examples of areas include waiting, rest and lobby areas of sites, canteen areas, health clinics.
10. Managers will explain the GRM process to all employees and encourage them to report suspected or actual GBV/SEA
11. Mangers should also promote internal sensitization initiatives (e.g. workshops, campaigns, on-site demonstrations etc.) throughout the entire duration of their appointment in collaboration with the compliance team, service providers and in accordance to the Action Plan.
12. Managers must provide support and resources to the compliance tea and service provider NGOs to create and disseminate the internal sensitization initiatives through the Awareness-raising strategy under the Action Plan.

Response

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

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

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

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

Annex 5

Community Health and Safety Plan

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

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

A sample generic CASHES Plan is presented below:

Potential Risk	**Mitigation Plan**
Disturbance from project activities such as noise, emissions, movement of vehicles/equipment	• Contractors to minimise noise by retrofitting equipment with noise mufflers • Contractors to maintain equipment regularly and use Best Available Technologies (BAT)/Best Environmental Practices (BEP) to minimise emissions • Water roads in built up areas frequently to reduce dust • Avoid construction activities before 8.00am and after 7.00pm • PIU to establish and implement an effective GRM to enable timely receipt and resolution of complaints
Increased risks of accidents from project activities	• Contractors to demarcate/cordon off construction areas and lit up adequately at night, fence out danger zones and keep out of reach. • Restricted access to be placed at construction sites using caution signs and manned personnel • Adequate road signs to warn pedestrians and motorists of construction activities, diversions, etc. shall be provided at appropriate points. • Drivers should be competent and trained by FRSC • Ensure the use of flagmen at strategic locations such as junctions, pedestrian crossings, near schools and other public facilities etc. • Implement associated plans including Traffic Management Plan, Borrow pit reclamation plan, OHS plan, WMP etc.

Exposure to social risks such as theft, vandalism, STIs/STDs, GBV/SEA/SH, child labor	• Contractor to strictly implement the code of conduct for all workers • Contractor shall enforce a 'closed' camp policy unless otherwise agreed and approved by Company. Workers will comply with the agreed camp closure hours • Ensure that children and minors are not employed directly or indirectly on the project
Competition for scarce resources such as water	• Contractors to provide alternative source of water for construction, staging area and campsite. • Community sources of water will not be exploited by the contractors
Pollution of the environment from different waste categories	• Contractor to sensitise workers on the provisions and implementation of the WMP and monitor compliance • Contractor to avoid littering the project areas with spoils/unsuitable and shall not restrict access to community assets with waste.

Appendix 6

Borrow Pit Management Plan

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

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

Stage	Activities and features	Measures/mitigation	Responsibility
Site selection	Complete a preliminary site assessment prior to undertaking excavation	• Outreach to the community leadership (e.g., operation, hazards, restoration) • Written approval from community leadership for use of the proposed site • Liaise with the local community on the option of retaining quarry pits as water collection ponds for watering cattle, irrigating crops or similar uses. Highlight issues of disease transmission and the need to prohibit its use for drinking, bathing, and clothes washing	Contractor
		• When siting borrow pit areas, avoid using sensitive areas or sites that drain directly into a sensitive area • Borrow pits will not be located in wetland or densely vegetated areas	Contractor
		• Test pits/excavations to confirm the quantity and quality of material in the proposed site • Determine presence of any groundwater	Contractor
		• Map of the location and a plan of the site, including buffer zone, perimeter berm, stockpiles, operational area • Borrow pit design must comply with standards defined (above), • Photographic record of the site in its undisturbed state	Contractor
Excavation Operation	Excavation will consider the following measures	• Ensure that excavation is accompanied by well-engineered drainage • Topsoil is stripped and stockpiled away from other materials and is to be used only for reinstatement, once pit operations are complete • Overburden soil (layer between topsoil and material of interest) to be used as a perimeter berm to direct drainage or stockpiled separately to backfill the pit • Pit excavations maximum 6 metres in depth, with a vertical slope of 2:1 • Excavation below the water table is not permitted • Heavy machinery access and operation • Carry out necessary preliminary geotechnical investigation to confirm the quality and extent of materials. • Carry out hydrological assessment to determine the presence and depth of aquifer. • The contractor shall ensure that topsoil (150m-500m) is stripped and stockpiled at a separate location and preserved for future reclamation activities.	Contractor
	Site access and safety	• Barrier (e.g., warning tape, perimeter berms, fencing) to control or discourage public access to the pit	Contractor

Stage	Activities and features	Measures/mitigation	Responsibility
		• Install signposts warning of danger and no trespassing, at no more than 50 meters' distance from the pit • Community awareness and outreach on the dangers of borrow pits and that trespassing is prohibited.	
	Vegetation	• Avoid or reduce to a minimum vegetation clearance • Existing vegetation within the buffer area should provide some visual and physical screening of the pit operations	Contractor
	Water	• If water is required for borrow pit operation, a water extraction point (e.g. borehole) will be established within the site are and will be planned for use by the community once the site is reinstated • Drainage structures or pumping will remove any standing water in the borrow pit. Alternatively any pits with 0.75 metres or more of standing water will be fenced • Overburden soil can be used as a perimeter berm to direct water drainage away from the site • Use drainage features in flatter areas, such as mitre drains and sumps, to remove water from around the road ditches • Community members are not allowed to use water at an active borrow pit, for any purpose	Contractor
	Erosion	• Erosion control measures undertaken in all aspects of the borrow-pit operation, including: reduced slopes, seeding, etc • Protect topsoil stockpiles from wind and water erosion by reducing slopes, using a cover, and/or spraying with water	Contractor
	Dust and noise	• If a rock crusher is used, dust control measures shall be put in place (water truck or sprinklers on crushing equipment) • Vegetation within the buffer area will screen noise of pit operations	Contractor
Reinstatement of Borrow Pits	Reinstatement of borrow pits will be completed prior to handover of the site	• Fill excavated site with suitable materials • Spread topsoil on top of the overburden	Contractor
		• Develop/construct suitable surface slopes, drainage ditches and conduits to prevent water from collecting at the sites • Scarify the borrow pit operational site to encourage vegetation cover • Establish a vegetation cover corresponding to at least 75% of the cover present prior to excavation (supporting photographs) and maintain following the first rains after reinstatement • Minimize erosion by focusing vegetation cover on side slopes of the excavated area • Any required seeding will make use of local plant varieties	Contractor
Review	Ensure the Borrow pit management plan implementation	• Review borrow pit management / monitoring reports • Review reinstated borrow pit areas prior to handover of completed road sections • Engage local community authorities to take responsibility for long-term borrow pits in their areas • Ensure that the responsibility for management of borrow pits left open is assigned to the government entity / local authority • Verify conformance with Borrow Pit Management Plan	PIU

Annex 7

Laboratory Certificate for Biophysical Analysis

FEDERAL MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT

DEPARTMENT OF AGRIC LAND RESOURCES,
GARKI, AREA 11 - ABUJA.

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Tel: 09 - 2344315
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Ref. No: AKR/LMD/1/152
Date: 9-01 2023

CLIENT: IBSDLEIP/ REHAB. /CONS./LINDA.
LASSA/FSTC SOIL RESULT

RESULT OF PHYSICO-CHEMICAL ANALYSIS OF SOIL AND WATER IN Lassa Borno.

I hereby submit the result of Soil and Water samples submitted to the laboratory on 28th Decembber,2022 for analysis.
Attached, is a copy of the laboratory analysis results.
Thank you for your patronage.

Yours faithfully,

Daniel Auta Danjuma (MR)
Head of Lab,
AL& CCMS,
Kaduna.