FEDERAL MINISTRY OF FINANCE

FEDERAL MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT (FMARD), SPECIAL AGRO-INDUSTRIAL PROCESSING ZONES PHASE TWO (SAPZ2)

COUNTRY : FEDERAL REPUBLIC OF NIGERIA

PROJECT : ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR PROPOSED, SPECIAL AGRO INDUSTRIAL PROCESSING ZONE PROJECT IN ONDO STATE

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ABBREVIATIONS & ACRONYMS

AEA	Agricultural Extension Agents
AfDB	African Development Bank
ACHPR	African Charter on Human and Peoples' Rights
ACRWC	African Charter on the Rights and Welfare of the Child
ATCs	Agricultural Transformation Centres
AoI	Area of influence
BAT	Best Available Technology
BCS	Broad Community Support
BPT	Best Practical Technology
BOQ	Bill of Quantities
CAT	Convention against Torture
CBOs	Community Based Organisations
CCAC	Climate and Clean Air Coalition
CoC	Code of Conduct
CEDAW	Convention on the Elimination of All Forms of Discrimination against Women
CEMPs	Construction Environmental Management Plans
C-ESMP	Contractors Environmental and Social Management Plan
CO	Carbon monoxide
CITES	Convention on International Trade and Traffic in Endangered Species
CRC	Convention on the Rights of the Child
CRPD	Convention on the Rights of Persons with Disabilities
CPGs	Consumer Packaged Goods
CSOs	Civil Society Organisations
Db	Noise-decibel
DFIs	Development Financial Institutions
EIA	Environmental Impact Assessment
EA	Environmental Assessment
ESAP	Environmental and Social Action Plan
ESEU	Environmental Sanitation and Enforcement Unit
ESF	Environmental and Social Framework
ESIA	Environmental and Social Impact Assessment
ESS	Environmental and Social Standards
E&S	Environmental and Social
ESMP	Environmental and Social Management Plan
ESMMP	Environmental and Social Management and Monitoring Plan
FAO	Food and Agriculture Organisation
FEPA	Federal Environmental Protection Agency
FGD	Focus Group Discussions
FGN	Federal Government of Nigeria
FMARD	Federal Ministry of Agriculture and Rural Development
FMEnv.	Federal Ministry of Environment
FMWASD	Federal Ministry of Women Affairs and Social Development
GBV	Gender Based Violence
GDP	???
GFSI	Global Food Safety Initiatives
GHGs	Green House Gases
GON	Government of Nigeria
GPS	Global Positioning System
GRM	Grievance Redress Mechanism
GRC	Grievance Redress Committee
Ha	Hectare
HIV/AIDS	Human Immune Deficiency/ Acquired Immune Deficiency Syndrome
HHQ	Household questionnaires

H_2S	Hydrogen sulphide
HSE	Health Safety and Environment
IEE	Initial Environmental Evaluation
IESIA	Integrated Environmental and Social Impact Assessment
ISS	Integrated Safeguards System
ICESCR -	International Covenant on Economic, Social and Cultural Rights
ICCPR -	International Covenant on Civil and Political Rights
IPF	Investment Project Financing
ISO	International Organization for Standardization
IRM	Independent Review Mechanism
KII	Key informant interviews
LEL	Lower Explosive Limit
LFN	Laws of the Federation of Nigeria
LGA	Local Government Area
MDA	Ministries, Departments and Agencies
MoU	Memorandum of Understanding
NAP	National Action Plan
NESREA	National Environmental Standards and Regulations Enforcement Agency
NH_3	Ammonia
NEPAD	New Partnership for Africa's Development
NGOs	Non-Governmental Organizations
NIMET	Nigerian Meteorological Agency
NO_2	Nitrogen dioxide
OS	Operational Safeguards
OHSP	Occupational Health and Safety Plan
ONSMA	Ondo State Ministry of Agriculture
ONSMoH	Ondo State Ministry of Health
ONSME	Ondo State Ministry of Environment
ONSMWASD	Ondo State Ministry of Women Affairs and Social Development
PM	Particulate matter
PAPS	Project Affected Persons
PACs	Project Affected Communities
PPE	Personal Protective Equipment
RAM	Risk Assessment Matrix
RH	Relative Humidity
SAPZ	Special Agro-Processing Zones
SEA	Sexual Exploitation and Abuse
SEP	Stakeholder Engagement Plan
SH	Sexual Harassment
SME	Small and Medium Scale Enterprise
STDs/STIs	Sexually Transmitted Diseases/Sexually Transmitted Infections
SO_2	Sulphur dioxide
SPM	Suspended Particulate Matter
SPV	Special Purpose Vehicle
SSHA	????
TDS	Total Dissolved Solid
TOR	Terms of Reference
UES	Uniform Effluent Standards
UNFCCC	United Nations Framework Convention on Climate Change
UN SDG	United Nations Sustainable Development Goal
USEPA	United State Environmental Protection Agency
VOCs	Volatile Organic Compounds
WASH	Water, Sanitation and Hygiene
WEEE	Waste Electrical Electronic Equipment
WMP	Waste Management Plan

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CHAPTER 1: INTRODUCTION

1.1 Introduction

The Ondo State Government (OSG) is developing a Special Agro-Processing Zone (SAPZ) project in Odigbo Local Government Area (LGA) of Ondo State in partnership with the African Development Bank (AfDB), key private investors and the Federal Government of Nigeria (FGN).

The initiative is conceived in line with the priority agenda of the FGN and in sync with a flagship program of AfDB's Feed Africa Strategy to stimulate development of effective agriculture value chains, with greater shifting towards creating sustainable agricultural practices, including development of maritime products and the blue economy. The main strategy of the SAPZ programme is to stimulate private sector investments to drive a market-oriented agricultural transformation across Nigeria.

The proposed Ondo State SAPZ will be developed on the 11,000 hectares of land located near the Omotosho Power plant in Odigbo LGA, which was Gazetted by the FGN and currently owned by the OSG. The project will entail the development Oil and Cocoa plantations and processing zones, Crop Production and Processing zone, construction of Ranches and Feedlots, Meat Production Zone, Milk Production Zone, Breed Improvement Zone, Veterinary and Disease Control Area. Coasting on the already constructed power plant in the area, other supporting Infrastructure being planned for the SAPZ will include water supply, access roads, bridges and drainages, offices, agro-input shops, vocational training centre, schools, clinic and truck parking area/car park.

The investment in Agro products will bring about many benefits including enhancing food production for the people (meat, milk, cheese and other animal products), increased earning potential for farmers, job creation, economic prosperity and overall improvement in the quality of life for livestock and cocoa farmers and others involved in value chain activities. However, the development and operation of the SAPZ may also lead to some adverse impacts on the natural and human environments. Such impacts may include degradation of terrestrial and aquatic habitats with associated loss of flora and fauna species, physical/ economic displacement and resettlement of affected persons and businesses as well as increased health and safety risks.

Consequently, the OSG has commissioned Green Engagement Limited to undertake an Environmental and Social Impact Assessment (ESIA) for the proposed SAPZ in line with the requirements of the Environmental Impact Assessment (EIA) Act Cap E12 LFN 2004 which mandates all major public and private developments to go through the EIA process. The ESIA will help to identify and assess the potential environmental and social impacts and risks of the proposed project, evaluate alternatives and propose appropriate measures to manage the significant adverse effects to ensure the overall sustainability of the project throughout its life span. This ESIA is thus executed for the proposed project in compliance with both Nigerian EIA Act and the Integrated Safeguards System (ISS) of the AfDB.

1.2 Project Development Objective of Ondo SAPZ

Key development of the proposed SAPZ frameworks is as follow:

Key Development Needs/SAPZ objectives include	**Discussion**
Increasing food production capacity and efficiency	The processing hub is envisaged to have a capacity of about 120,000 tons of processed cocoa, as such this means the farmers will have to produce more. In addition to this, the processing hub will process other crops such as oil palm, cassava and rubber. The increased demand for these produces, will inevitably mean more income for the farmers, which means a better livelihood for the farmers, and poverty alleviation, all positive contributors of increased food production.
Increasing value addition to agriculture produce	Rather than exporting just raw material as it has been practiced for many years across Africa, the processing hub will process raw materials, thus add more value to the raw material.
Promoting local, regional and international trade.	The global chocolate market is forecasted to reach USD 139.94 billion by 2024 growing at a compound annual growth rate (CAGR) of four-point five percent (4.5%) a) Rapidly growing chocolate industry in emerging economies including China, India and African countries is expected to boost the demand for cocoa beans as intermediates. The SSAH is set to meet some of this demand.
Promoting investments in agribusiness	b) The establishment of the processing hub, will promote investments into other linked value chain actors, such as seeds, mechanization, irrigation, aggregation storage, financial services etc.
Increasing the contribution of the agriculture sector to GDP, wealth and employment creation.	Sustainable direct and indirect employment over 20,000 persons, as a result of the reviving of other value chain actors.

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1.3 Project Justification

This SAPZ project will be in line with the state and federal government's vision of encouraging value addition to raw cocoa beans. Even though Cocoa is the major cash crop cultivated in Ondo State, the main inhibiting factor affecting cocoa farmers is poor processing infrastructure and unfair prices between the export market and the producers, as a result, cocoa farmers generally live in poverty, as they are unable to plan or increase their incomes. The SAPZ will combat this issue by off-taking the raw cocoa on a fair and consistent basis. SAPZ will transform cocoa beans into three main components: cocoa liquor and cocoa butter and cocoa powder.

The Ondo SAPZ is further justified on the ground of the multiple benefits it promises to deliver and the attendant proposed and available infrastructure within the area. Some of the potential benefits and attractions of the SAPZ include:

- Sustainable direct and indirect employment over 40,500 persons estimated from an average of 2 workers per hectare.
- Improved access to high quality livestock products such as meat, milk egg, cheese etc. thereby enhancing food and nutrition security for the local population.
- Infrastructural development, around the facilities of the Special Agro-processing hub (extension of infrastructure from Linyi Industrial Park)
- Increased incomes for the farmers and better purchasing power for farmers across 6 senatorial zone, through access to better inputs, resulting to better yields and reduced post-harvest losses from Processing.
- Promotion of price stability with the necessary regulation by Ondo State Government.
- Expansion of demand for local agricultural produce by creating new international and local market.
- Increase in the forex earning on cocoa by reduction of cocoa beans exports and begin exports of value-added cocoa by-products after meeting local demands
- Improvement of the living and working conditions of cocoa farmers and their families and workers.
- Raising the opportunities for cocoa farmers to participate in the decision-making processes behind cocoa marketing.
- Support other ancillary Infrastructural development such as:
    - Power/Electricity (30MW Ore industrial park or Omotosho NIPP 518MW extension)
    - Health facilities
    - Irrigation/water facilities
    - Education (Schools)
    - Roads infrastructure
    - Water infrastructure (potable water supply)

- Vocational Training
- Sports and leisure options for youth

1.4 Project Components and activities:

The SAPZ project is a multi-sector intervention covering the following components:

Table 1.1: Components of SAPZ and Planned Activities

S/N	SAPZ Components	Activities
1	Nursery bed	• Develop Nursery beds for palm trees and cassava
2	Cocoa and Oil palm processing plant	• Cocoa and Oil Palm plantation, as well as other crops such as cassava and rubber • Fodder production after harvest.
3	Livestock Production Zone	• Construction of Abattoir/ slaughterhouse (cattle, sheep, goats, poultry) • Construction of meat processing and storage facilities (cold rooms). • Construction of leather curing facilities • Construction of boreholes for water supply • Construction of foul water (effluent) treatment plants
4	Milk Production Zone	• Construction of milk production facilities (barns and milking parlour) • Construction of milk pre-processing, storage (cold rooms) and collection centres.
5	Breed Improvement Zone	• Construction of breeding stations
6	Veterinary and Disease Control	• Construction of veterinary and quarantine stations
7	Infrastructure development	• Access roads, bridges and drainages • Livestock Market • Facilities for managing waste including wastewater, manure and dead animals. • Buildings for workers and storage facilities including Farmhouses, Offices, Agro-input shops, Stores (for feed, materials and equipment) etc. • Other Buildings including Vocational Training Centre, Primary School and Clinic • Truck parking area/car park • Solar Farm

Nursery Beds
A 1000ha of land has been carved out for use as a nursery bed for cocoa, palm tree and crop production. Here seedlings of plants of interest to be planted will be grown in nurseries until ready for transplant. The site for the nursery beds is so situated as to benefit from the dam/water body flowing adjacent it.

Fodder Plant
Cultivation of fodder plants will be necessary to serve as feed for farmed animals. The plants will produce concentrated animal feed from grain crops which will then be used to feed cattle, sheep, goats and poultry. The production process will include the following operations:

- Raw products will be sourced from those farmed within the crop production area
- Grain and meals will be stored in silos, where the raw products will be delivered by closed-type conveyors. Mineral products and premixes will be stored in bags in a warehouse.
- Cracking of grain, meals and mineral components.
- Dosing of vitamin-mineral complexes (micro-dosage).
- Batch mixing of raw products with use of buffer and discharge bins.
- Pelletising the raw materials by additional mixing in a blade mixer whilst applying steam before cooling of the produced feed.
- Storage of pelletised feed.

Feedlots
The feedlot is an area within the Reserve where animals will be fed with certain types of feed with the goal of growing and or fattening cattle until they reach slaughter weight. The feedlot section will contain forage of high-grain rations and other types of feed which will be determined by livestock nutrition specialists to speed up the fattening process of the animals particularly the calves or yearlings until they reach a prescribed finish (fat cover) before slaughtering.

Crop Production Area
An area within the adjourning 10,000ha of land will be allocated for the cultivation of palm trees, cassava and maize. Following harvest, the vegetal remains from the farms will be used as raw material for fodder production.

Oil Palm Plantation and processing
A major component in the SAPZ will be the cultivation of Palm trees and subsequent production of Palm oil. The oil processing plant entail a mechanized process for maximum output. After the harvested fruits have been cut down at maturity, a palm fruit sterilization machine uses high temperature to cook palm fruit bunches, after which the palm fruits will go through a process known as threshing where each piece of palm fruit is separated from its bunch. Lastly the lastly the fruits is pressed to separate the oil from its skin and pulp and then filtered. Wastes generated from production will also serve as animal feed.

Cocoa Processing plant:
This will include mechanical cleaner de-stoner, roaster, sterilizer, and de-sheller. The total capacity of the plant will be 120,000 tonnes/year and it will produce 25,000 tonnes/year of cocoa liquor, 52,000 tonnes/year of cocoa butter, 36,000 tonnes/year

of low-fat cocoa powder, and 9,000 tonnes/year fat-free cocoa powder.

Cassava cultivation and processing

Cassava crops will be grown in the crop processing area as well as an included value chain that processes the cassava into *Garri.* The processing plant will be mechanised incorporating modernized techniques in mass *Garri* production.

Water Supply Facilities

Essentially, the water supply infrastructure planned for the SAPZ will include a network of boreholes and an existing impoundment adjacent proposed land. The dam will ensure steady supply of water for the animals during the dry season months.

Storage Silo

Silos are required for the plants, to store large volume of raw produce delivered to the SAPZ. The storage silo will include an operational tank, standby tank, and spare tank.

Roads

In order to increase the efficiency of commodities evacuation and reduce transportation costs, roads rehabilitation, spot improvements, routine and recurrent maintenance, new road and bridge construction, will have to be carried out in different locations where the farms are located.

Abattoir (Slaughterhouse)

The abattoir will be designed such that the slaughtering is carried out in fully mechanised lines where workers are assigned to specific workstations and the carcasses move on a conveyor system from station to station until the slaughter process is completed. The abattoir will have the capacity to slaughter between 2,000 - 10,000 animals daily and require approximately 200 employees once operational. Hot water for heating, cleaning and use in the treatment of the carcasses will be provided by the site's boiler house. The site will source electricity from the onsite solar farm. Water will be drawn from the site boreholes. The abattoir, slaughtering and processing must conform to the recommendations of FAO[1].

Cold Room/ Refrigeration

Cold room will be provided as part of the abattoir so that the carcasses can go into the cooler as soon as possible in order to retard bacterial growth and extend the shelf-life. Chilling meat post-mortem from 40°C down to 0°C and keeping it cold will give a shelf-life of up to three weeks, provided high standards of hygiene were observed during slaughter and dressing. Carcasses will be placed in the cooler immediately after weighing and hung on rails and never touch the floor. After several hours the outside of a carcass will feel cool to the touch, but the important temperature is deep inside the carcass. The internal temperature of the meat will be measured with a probe thermometer (not glass) and used as a guide to the efficiency of the cooling. Food and Agricultural Organisation recommendations of deep muscle temperature of 6 –7° C achieved in 28 to 36 hours for beef, 12 to 16 hours for pigs and 24 to 30 hours for sheep carcasses will be followed.

1Guidelines for slaughtering, meat cutting and further processing. FAO Animal Production and Health Paper 1991. http://www.fao.org/3/T0279E/T0279E00.htm.

Transportation of Beef (Carcass)
Vehicles for transporting beef carcasses will be considered as an extension of the refrigerated storage so as to maintain the meat temperature at or near 0°C. Meat will be chilled to 0°C before loading and hang on rails, not on the floor while the trucks will carry nothing other than meat. To ensure an unbroken cold chain, insulated vans and closed trucks will be considered as suitable transport for meat to maintain an unbroken cold chain and integrity of meat during transport. Loading and unloading will be done quickly. If there are any unavoidable delays then dry-ice blocks will be placed in the partly filled van.

Other Supporting SAPZ Infrastructure
SAPZ Hub will be developed to include power infrastructure, water, buildings and processing plants. There will be about 900 hectares of land for other agro-allied related companies to lease for Agro-industrial production such as chocolate, roasting, confectionery, and cosmetics. Other sub-concessions will be agro input dealers, processors, aggregators, warehouse businesses for storage etc.

1.5 Objective of the ESIA/ESMP

The overall objective of this ESIA is to identify and evaluate all potential adverse environmental and social impacts and effects that could arise from the activities associated with the construction and operation of the proposed Agro processing facilities and ancillary infrastructure. Once potential adverse environmental and social impacts are identified, appropriate mitigation measures will be developed to mitigate the identified negative impacts on the bio-physical and social environment. Ultimately, the outcome of this ESIA will be mainstreamed into the final project designs and project implementation processes to ensure the sustainable management of the environment during project implementation.

1.6 ESIA Report Structure

The structure of this ESIA report as presented below will be preceded by an Executive Summary.

Chapter 1: Introduction. Provides a background to the proposed Project including the objectives, justification and components.
Chapter 2: Institutional and Legal Framework. The Legal and Regulatory Framework within which the ESIA was undertaken were also stated while other environmental legislation, standards and guidelines applicable to the Project were listed.
Chapter 3: Project location and Site Description. The chapter provides a description of the Project State and detailed Site Description.
Chapter 4: Biophysical and Socio-economic baseline. The chapter defines the areas of direct and indirect influence of the Project. It describes the biophysical and socio-economic baseline of the Project's areas of influence and presents the public participation process in the ESIA.
Chapter 5: Impact Assessment. The chapter presents the approach and methodology for the ESIA process. It identifies and assesses potential Project impacts (biophysical and socioeconomic impacts).

Chapter 6: Mitigation Measures. This chapter defines relevant mitigation measures to avoid, reduce, compensate or enhance Project impacts (as applicable).
Chapter 7: Environmental and Social Management Plan (ESMP). It presents the Project ESMP, organizing all mitigation, management and monitoring requirements and management programs.
Appendices: This section provides support information referenced throughout the ESIA including the General Environmental Management Measures for inclusion in Contractors Contracts.

CHAPTER 2: LEGAL AND INSTITUTIONAL FRAMEWORK

2.1 Introduction

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

Relevant Nigerian Guidelines, Policies and Legal Provisions
The section succinctly summarises applicable national and state policies, guidelines, edicts, regulations and laws relevant to this ESIA and the development of the proposed SAPZ.

2.2 National Policies and Laws on Environmental Protection

2.2.1 National Policy on the Environment (Revised 1999)

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

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

2.2.2 EIA Act Cap E12 LFN 2004

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

FMEnv. categorizes mandatory study activities into three categories: Category 3 activities have beneficial impacts on the environment. For Category 2 activities (unless within the Environmentally Sensitive Area) full EIA is not mandatory, while Category 1

activities require full and mandatory EIA. Projects are pre-listed into these categories based on type and whether it would involve physical intervention of the environment. Either the listing or the result of an Initial Environmental Evaluation (IEE) is used to determine projects requiring full EIA. In accordance with the EIA Act, the development of the SAPZ at Odigbo LGA of Ondo state has been classified as Category 1 project, requiring mandatory ESIA.

The FMEnv. established the National EIA Procedural Guidelines in 1995 that indicate the process for conducting an EIA for projects in Nigeria in line with the requirements of the EIA Act CAP E12 LFN 2004. The process has been designed to ensure that the proposed project is implemented with maximum consideration for the environment. The basic steps in the EIA process include submission of Project Proposal/TOR, Initial Environmental Examination, Scoping, EIA Study, Review, Decision Making, Monitoring and Auditing. For smaller project with lower categorisation, the regulators allow the development of simple ESIA that will produce a focused ESMP for the project activities. In such cases, the normal ESIA process may not be totally followed. These steps are shown in Figure 4.

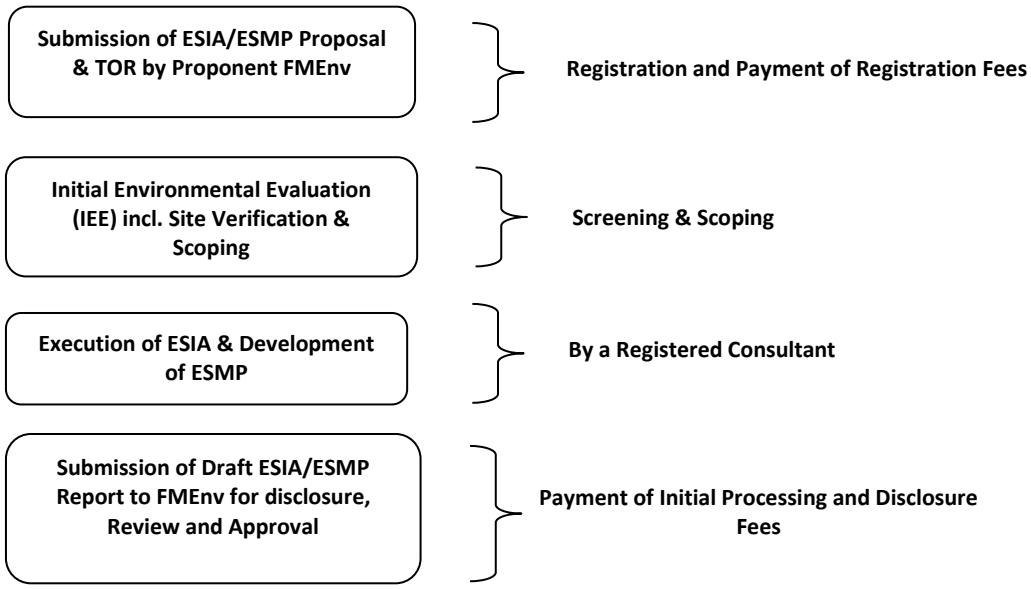

Figure.1: The ESIA/ESMP Development Flowchart

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

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

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

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

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

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

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

The purpose of these Regulations is to restore, enhance and preserve the physical, chemical and biological integrity of the nation's surface waters and to maintain existing water uses. The Regulations also seek to protect groundwater sources by regulating the discharge of hazardous wastes, fossil fuels energy and any other substances having the potential to contaminate groundwater. The Regulations also include amongst others, the application and general provisions of water quality standards for various uses such as agriculture, industrial, aquatic life and recreation.

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

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

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

The Regulations spell out the requirements for identification of solid, toxic and extremely hazardous substances to public health and provides necessary measures

to facilitate the disposal of hazardous waste. The Regulations also highlight possible reuse and recycling of hazardous waste and requirements for groundwater protection, surface impoundment, land treatment, waste piles, landfills, incinerators, etc.

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

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

The Guidelines and Standards for Environmental Pollution Control in Nigeria was promulgated in March 1991 to serve as a basic instrument for monitoring and controlling industrial and urban pollution. The guidelines and standards relate to six (6) areas of concern, namely: Effluent limitations, Water quality or industrial water uses at point of intake, Industrial emission limitations, Noise exposure limitations, Management of solid and hazardous wastes and Pollution abatement in industries.
Specifically, it provides effluent limitation guidelines for various categories of industries as well as water quality requirements for various industries and processes. It adopts the WHO limits for domestic water use. It also provides gaseous emissions and ambient air quality limitations as well as guidelines for the management of solid and hazardous wastes. It provides interim permissible limits as protective measures against indiscriminate discharge of particulate matter and untreated industrial effluents.

2.2.10 National Environmental Protection (Effluent Limitation) Regulations, 1991

The Regulations mandate every industry which discharges effluent to install anti-pollution equipment for the treatment or detoxification of effluent and chemical discharges emanating from the industry to ensure assimilation by the receiving water body into which the effluent is discharged. The Regulations also provide that such anti-pollution equipment must be based on the Best Available Technology (BAT), the Best Practical Technology (BPT) or the Uniform Effluent Standards (UES) to ensure effluents are treated to a uniform level as specified in the Second Schedule in the Regulations.
In addition, the Regulations stipulate that industry must monitor their effluents and report the composition of their treated effluents to the nearest office of the FMEnv. from time to time. Schedule 1 of the Regulations provides the list of wastewater parameters to be monitored by respective industry while Schedule II states the Effluent limitation guidelines in Nigeria for all categories of industries.

2.2.11 Land Use Act CAP L5 LFN 2004

The Land Use Act promulgated in 1978, is the legal framework for land acquisition and resettlement in Nigeria. The Act vests all land comprised in the territory of each State in the Governor of that State and requires that such land shall be held in trust and administered for the use and common benefit of all Nigerians. Specifically, the Act stipulates that: (a) All land in urban areas shall be under the control and management of the Governor of each State; and (b) all other land, subject to this Act, shall be under the control and management of the Local Government within the area of jurisdiction in which the land is situated. The Acts gives the government the right to acquire land by revoking both statutory and customary rights of occupancy for the overriding public interest. In doing so, the Act specifies that the State or Local Government should pay compensation to the current holder or occupier with equal value.
The entire 34,000ha of land of which 11,000ha have been carved out for the SAPZ has been gazetted by the Ondo State Government for the "Ondo State Agro Revolution Programme. The 11,000ha of land is a Greenfield with no agricultural activity or human settlements within or around it. Consequently, the project will not involve any physical or economic displacement but rather provide opportunities for more farmers to come into the area and participate in the programme.

2.2.12 Public Health Law Cap 103 LFN 1990

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

National Environmental (Construction Sector) Regulations, 2011. (S.I No. 19)
It is the regulation that covers environmental considerations in construction sector. Part II of the regulation discusses specific provisions for site waste management plans, storm water discharge, lighting activities, control of dust and fugitive emission, noise control, avoiding nuisance, hazardous substances, use of asbestos, spent oil,

prevention and control of explosion hazards, radiation, polluter-pays-principle, community relations and close-out. The design of the proposed livestock processing facilities and ancillary infrastructure must therefore consider and comply with the requirements of these Regulations.

2.2.13 Employee's (Workman) Compensation Act, 2010

The Act provides for an open and fair system of guaranteed and adequate compensation for all employees or their dependants for any death, injury, disease or disability arising out of or in the course of employment. The Act also makes provision for rehabilitation of employees with work-related disabilities and establishment of a solvent compensation fund managed in the interest of employees and employers. One of the core objectives of the Act is to harness combined efforts and resources of relevant stakeholders for the prevention of workplace disabilities and the enforcement of occupational safety and health standards in Nigeria. Occupational accidents and injuries arising during the construction phase of the development will be handled using the employee's compensation Act.

2.2.14 Factories Act (CAP F1), 2004

The Act establishes a legal framework for the registration of factories and to make adequate provisions regarding the safety of workers against occupational hazards and to impose penalties for any breach of its provisions. All workplaces are covered by this Act.

2.3 Institutional Framework Relevant to Ondo SAPZ

2.3.1 Federal Ministry of Environment (FMEnv)

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

- Advising the Federal Government on national environmental policies and priorities, conservation of natural resources, sustainable development as well as scientific and technological activities affecting the environment and natural resources; and
- Prescribing standards and formulating regulations on water quality, effluent limitations, air quality, atmospheric protection, ozone protection, noise control as well as the removal and control of hazardous substances.

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

2.3.2 National Environmental Standards and Regulations Enforcement Agency (NESREA)

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

2.3.3 Federal Ministry of Agriculture and Rural Development (FMARD)

The Federal Ministry of Agriculture was created in 1966 with the mandate to ensure food security in crop, livestock and fisheries, stimulate agricultural employment and services, promote the production and supply of raw materials to agro industries, provide markets for the products of the industrial sector, generate foreign exchange and aid rural socio-economic development. The vision of the Ministry is to grow Nigeria's agriculture sector, drive income growth, accelerate food and nutrition security, generate employment, and transform Nigeria into a leading global food market with wealth for farmers. The Ministry intends to achieve this vision by organising and managing the agriculture sector and facilitating agribusiness for increased food security and employment along commodity value chains and agro-industrial development to earn foreign exchange and contribute to socio-economic development of the country.

The FMARD is the lead implementing Ministry for the SAPZ in the country. The Federal Project Management Unit (FPMU) for the programme coordinates the programmes and actions plan; prepares plans for effective project development and management; coordinates all environmental and social issues through a Safeguard unit. The FPMU also liaises with the various levels of government and other identified stakeholders, namely relevant Federal MDAs, State MDAs, LGAs, project host communities, NGOs/CSOs, Traditional Rulers; Trade Unions/Local social and professional groups, and the public. To ensure sustainability in all sub-project activities, an environmental and social development safeguards unit was formed which includes the environmental and social development safeguards officers that report directly to the Project Coordinator.

2.3.4 Ondo State Ministry of Agriculture (OSMA)

The Ondo State Ministry of Agriculture has the mandate to position Ondo state as the leading and most efficient food producing State in Nigeria and West Africa by harnessing her enormous agricultural resources, human capital potentials and strategic geographical location in order to ensure food security, create wealth, decent employment for the teeming youths and women, provide raw materials for secondary production sector as well as produce for domestic and international consumption, there by leading to Rural development, increased IGR of the State and ultimately improving the standard of living of Ondo people.

The SAPZ programme is managed at the state level by the Ondo state Ministry of Agriculture.

2.3.5 Ondo State Ministry of Environment (OSME)

The OSME was established with the mandate to ensure the sustenance of the State's environment and its capacity for wealth creation by creating and ensuring a cleaner, healthier and sustainable environment that will promote economic growth and wellbeing of Ondo people. Some of the responsibilities of the OSME relevant to the proposed project include but not limited to the following:

- Formulating policies and programmes within the context of the FMEnv. protection polices and guidelines.
- Formulating and enforcing policies and regulations on the general environment protection, control and regulations on the ecological system, industrial and domestic wastes management including solid waste collection, and disposal, appropriate management of liquid waste and effluents among others.
- Coordinating the activities of all agencies and organizations connected with environmental and ecological matters in the state.
- Liaising with state Ministries, department Local Government, statutory bodies and research Agencies on matters and facilities relating to environmental protection.
- Initiating appropriate policy action(s) on the environmental impact and implications of environmental related activities.
- Monitoring source of toxic pollution in the State's environment (air, land and water) and offer necessary advice.
- Management of the forests including wildlife resources of the State for sustainable yield.

2.3.6 Ondo State Environmental Protection Agency (OSEPA)

The Ondo State Environmental Protection Agency Law was enacted in 1992. The Act created the Ondo State Environmental Protection Agency (OSEPA) to promote a safe and healthy environment for the people of Ondo state to live in, and to ensure sustainable development for the purposes of the use of the environment. The Agency is shadowed with the powers to carry on all environmental protection activities, to carryout research and development activities for environmental protection and to educate the general public on the types of disposal methods acceptable by the State Government for domestic and industrial wastes amongst others.

2.3.7 Odigbo LGA

The proposed project is within the jurisdiction of Odigbo LGA of Ondo State. The LGA being the third tier of government is empowered to oversee primary education, public health, town and regional planning, roads and transport, refuse collection and disposal and environmental protection amongst other things within their jurisdiction. The LGA has a department of Water, Sanitation and Hygiene (WASH) which promote community health by ensuring access to clean water supply. Environmental matters at the local government level are essentially guided by OWEPA Law of 1992 which established the Local Government Committee on environmental protection for the purpose of maintaining good environment quality in their domain.

2.4 Gender Based Institutions, Policies and Legal Provisions

This section succinctly summarises the roles of relevant national and state institutions as well as applicable policies, guidelines and laws which address Gender Based Issues in Ondo State and Nigeria.

2.4.1 Federal Ministry of Women Affairs (FMWA)

The national machinery for the promotion of gender issues in Nigeria is the Department of Women Affairs of Federal Ministry of Women Affairs and Social Development (FMWASD), which was established in 1995. The objective and vision statement of FMWASD is as follows: To have a Nigerian society that guarantees equal access to social, economic and wealth creation opportunities to all, irrespective of gender; and one that places premium on protection of the child, the aged and persons with disabilities, while focusing attention on key operators in both private and public sectors on mainstreaming the concerns of these groups of people in national development process.

Their role is to serve as the national vehicle to bring about speedy and healthy development of Nigerian women, children, the socially disadvantaged and persons with disabilities and the mainstreaming of their rights and privileges in national development processes.

2.4.2 Ondo State Ministry of Women Affairs & Social Development (OSMWASD)

At State level, ONSMWASD is empowered to create a conducive environment for the development of women, children and other vulnerable people by providing equal opportunities, adequate care and support for them and harnessing their potentials. The Ministry ensures holistic development of women through Educational, Economic, Social and Political empowerment and monitoring gender responsive issues amongst other functions.

2.4.3 Gender Based Policies and Legal Provisions

The summary of relevant laws and policies with focus on gender-based issues including Gender Based Violence (GBV), Sexual Exploitation and Abuse (SEA), Sexual Harassment (SH) and other forms of abuse and discriminatory attitudes to be considered during the implementation of proposed project are provided in Table 2.1.

Table 2.1: Gender Based Policies and Legal Provisions

Instrument	Provisions
The 1999 Constitution	The Constitution of the Federal Republic of Nigeria, 1999 is the core framework for the recognition and protection of fundamental human rights in Nigeria, including the right to the dignity of the person. The Constitution provides a general framework available to all classes of individuals for the redress of specific rights violations.
National Gender Policy, 2006	Its overall goal is to promote the welfare and rights of Nigerian women and children in all aspects of life: political, social and economic. The policy seeks to plan, coordinate, implement, monitor and evaluate the development of women in the county. In concrete terms, the National Gender Policy in Nigeria focus on: • Contribution towards women's empowerment and the eradication of unequal gender power relations in the workplace and economy, in trade unions and in broader society. • Encouragement of the participation, support and co-operation of men in taking shared responsibility for the elimination of sexism and redefining of oppressive gender roles. • Increase the participation of women in leadership and decision-making. • Ensure that through labour legislation and collective bargaining, the particular circumstances of women are considered and that measures are promoted to eliminate discrimination on the basis of gender. • Ensure that there is a gender perspective in all sectors of development.
The National Action Plan for the Implementation of United Nations Security Council Resolution 1325 (2009)	The development of the National Action Plan (NAP) for the implementation of United Nations Security Council Resolution 1325 became imperative for the inclusion of Women in the process of peace building, peace keeping, conflict resolution and management in Nigeria. The NAP acknowledges the heavy price the Nigerian women have paid violent conflicts that have been ravaging the country especially unprecedented levels of sexual violence and assault, along with related HIV infections, involuntary pregnancies and health complications as a result of abuses. The NAP presents a comprehensive political framework within which the protection of women and their roles in peace processes can be achieved.

International Conventions and Treaties on Gender Based Issues

The federal government of Nigeria has ratified multiple international laws and conventions to address the historical discrimination and marginalization of women and girls including the ones highlighted below.

2.4.4 Regional Treaties Relevant to GBV

- The African Charter on Human and Peoples' Rights (ACHPR) (1982).
- The African Charter on the Rights and Welfare of the Child (ACRWC) (2007).
- The Protocol to the ACHPR on the Rights of Women in Africa (the "Maputo Protocol") (2007).

2.4.4 International Treaties Relevant to GBV

- The International Covenant on Economic, Social and Cultural Rights (ICESCR) (2004).
- The International Covenant on Civil and Political Rights (ICCPR) (2004).
- The Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment (CAT) (1993).
- The Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) (1984).
- The Convention on the Rights of the Child (CRC) (1990).
- The Convention on the Rights of Persons with Disabilities (CRPD) (2012).
- International Convention on the Elimination of All Forms of Racial Discrimination (1976).

2.5 Development Financial Institutions Environmental and Social requirements

Environmental and social standards are established criteria for the Development Financial Institutions in terms of requirements for activities that it will or will not finance and also establish requirements for clients/investees to comply with, such as national environmental and social regulations and international standards. The commitments of DFIs to Environmental and Social Governance in project financing are embedded in developed standards known as safeguards polices. This includes the ISS of AfDB, the ESS of World Bank amongst others.

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

The E&S safeguards of the AfDB are a cornerstone of the Bank's support for inclusive economic growth and environmental sustainability in Africa. AfDB will apply the Integrated Safeguards System for the proposed Ondo State SAPZ. 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 inter-related components as summarized in Figure 2 below.

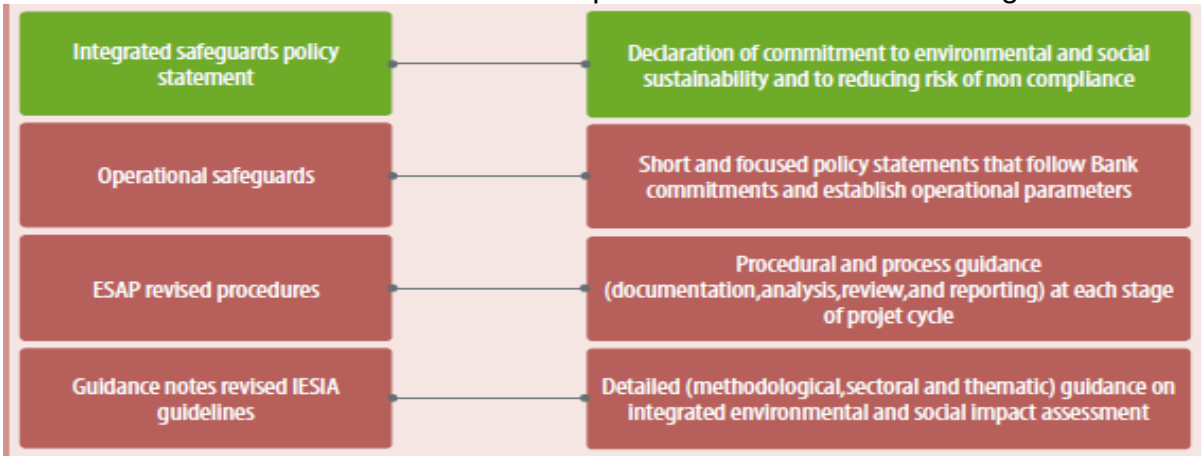

Figure.2: Structure of the AfDB ISS

2.5.1.1 The Integrated Safeguards Policy Statement

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

- ensure the systematic assessment of E&S impacts and risks.
- apply the OSs to the entire portfolio of Bank operations.
- Support clients and countries with technical guidance and practical support in meeting the requirements.
- Implement an adaptive and proportionate approach to E&S management measures to be agreed with clients as a condition of project financing.
- 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.

2.5.1.2 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 Table 2.2 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 2.2: AfDB Operational Safeguards OS1-5.

Operational Safeguard	Description	Triggered (Yes/No)
OS 1: *Environmental and social assessment*	This overarching safeguard governs the process of determining a project's environmental and social category and the resulting environmental and social assessment requirements	**This OS is triggered.** The construction and operation of the SAPZ facilities and ancillary infrastructures 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.** The forest reserve hosting the proposed SAPZ has been gazetted and belongs to the ONSG in its entirety.
OS 3: *Biodiversity and Ecosystem Services*	This safeguard aims to conserve biological diversity and promote the sustainable use of natural resources. It also translates the commitments in the Bank's policy on integrated water resources management into operational requirements.	**This OS is not triggered.** The reserve is deliberately carved out as an agro hub which has limited sensitive ecological receptors. Areas of ecological importance particularly the streams on the site will be conserved/enhanced as part of project activities to ensure the preservation of the natural habitat for aquatic organisms and for plant nursery development. In addition, only the portion where construction activities will take place will be cleared.
OS 4: *Pollution Prevention and Control, Greenhouse Gases, Hazardous Materials and Resource Efficiency*	This safeguard covers the range of key impacts of pollution, waste, and hazardous materials for which there are agreed international conventions, as well as comprehensive industry-specific and regional standards, including greenhouse gas accounting, that other multilateral development banks follow.	**This OS is triggered.** The construction and operation activities will generate waste including hazardous waste which will require proper management to prevent environmental pollution.
OS 5: *Labour Conditions, Health and Safety*	This safeguard establishes the Bank's requirements for its borrowers or clients concerning workers' conditions, rights and protection from abuse or exploitation. It also ensures greater harmonization with most other multilateral development banks.	**This OS is triggered.** Many workers are envisaged to be engaged during the construction and operation of the SAPZ. These workers would need to comply with HSE policies and requirements and be kept safe.

2.5.1.3 Assessment of Nigerian Policies and Legislations and AfDB Safeguard Systems

The Nigerian E&S Safeguards system addresses most of the key elements of AfDB E&S Safeguards except for the preparation of ESMF for projects involving multiple subprojects, vulnerable groups and the required differentiated treatment of vulnerable groups which are adequately addressed by the AfDB safeguard systems. A comparison between Nigerian legislation and the AfDB ISS is presented in

Table **0**.

Apart from the gaps highlighted above, the main challenge facing E&S safeguarding in Nigeria is the overlapping functions of different agencies in relation to enforcement of these policies, guidelines and legislative provisions. To ensure E&S safeguard during implementation of the proposed Agro-industrial processing zone, both the Nigerian and AfDB E&S safeguards systems will be implemented. However, in the event of divergence and gaps the AfDB safeguards system with the more stringent requirement will take precedence.

Table 02.3: Benchmarking of Nigerian Legal Provisions and AfDB ISS requirements

Key Element	Nigerian Provisions	AfDB Integrated Safeguard System	Provision to be adopted by the ESIA preparation
ESMF for Projects involving multiple subprojects.	Not a national requirement	OS 1: Environmental and social assessment	OS 1: Environmental and social assessment
Screening	EIA Act Cap E12 LFN 2004	OS 1: Environmental and social assessment	OS 1: Environmental and social assessment
Scoping	EIA Act Cap E12 LFN 2004	OS 1: Environmental and social assessment	EIA Act Cap E12 LFN 2004
Environmental and Social Impact Assessment Guideline	EIA Procedural Guidelines, 1995	IESIA Guidance Notes ESAP	EIA Procedural Guidelines, 1995 and IESIA Guidance Notes ESAP
Environmental Categorization	EIA Procedural Guidelines, 1995 Categories I, II & III	OS 1 – Categories 1, 2, 3, and FI for operations involving lending to financial intermediaries.	OS 1 – Categories 1, 2, 3, and FI for operations involving lending to financial intermediaries.
Environmental and Social Assessment	EIA Act Cap E12 LFN 2004	OS 1: Environmental and social assessment	OS 1: Environmental and social assessment
Environmental and Social Management Plan	EIA Act Cap E12 LFN 2004	OS 1: Environmental and social assessment	OS 1: Environmental and social assessment
Consultation and Participation	EIA Act Cap E12 LFN 2004	OS 1 (include provision of IESIA Guidance Notes on consultation)	OS 1 (include provision of IESIA Guidance Notes on consultation)
Involuntary Resettlement	• Land Use Act CAP L5 LFN 2004 • Acquisition of Land Access Rights for Electricity Projects Regulations, 2012	OS 2: Involuntary Resettlement: Land Acquisition, Population Displacement and Compensation	OS 2: Involuntary Resettlement: Land Acquisition, Population Displacement and Compensation
Compensation	Cash compensation is generally made based upon market value. Whilst in principle there is allowance for in-kind compensation or replacement of assets, cash compensation is common practice	OS 2: Affected Persons are compensated for all their losses at full replacement cost. They can be offered a range of different compensation packages, resettlement assistance & livelihood improvement options.	OS 2: Affected Persons are compensated for all their losses at full replacement cost. They can be offered a range of different compensation packages, resettlement assistance & livelihood improvement options.
Pollution Prevention and Control	National Environmental Protection (Pollution Abatement in Industries and Facilities Generating Wastes) Regulations, 1991; and National Environmental (Surface & Groundwater Quality Control) Regulations 2011	Operational safeguard 4 – Pollution prevention and control, hazardous materials and resource efficiency	Operational safeguard 4 – Pollution prevention and control, hazardous materials and resource efficiency
Greenhouse Gases	National Environmental Protection (Pollution Abatement in Industries and Facilities Generating Wastes) Regulations, 1991	Operational safeguard 4 – Pollution prevention and control, hazardous materials and resource efficiency (Special screening for GHGs is also considered under OS 1)	Operational safeguard 4 – Pollution prevention and control, hazardous materials and resource efficiency (Special screening for GHGs is also considered under OS 1)
Waste and Hazardous Materials	National Environmental Protection (Management of Solid and Hazardous Wastes) Regulations, 1991	Operational safeguard 4 – Pollution prevention and control, hazardous	Operational safeguard 4 – Pollution prevention and control, hazardous

Key Element	Nigerian Provisions	AfDB Integrated Safeguard System	Provision to be adopted by the ESIA preparation
	-Harmful Wastes (Special Criminal Provisions etc.) Act CAP HI LFN 2004	materials and resource efficiency	materials and resource efficiency
Resources and Conservation	Natural Resources Conservation Act CAP 349 LFN 1990	Operational safeguard 3: Biodiversity and Ecosystem Services	Operational safeguard 3: Biodiversity and Ecosystem Services
Labour Conditions	Employee Compensation Act, 2010 Labour Act, 1990	Operational safeguard 5 – Labour conditions, health and safety	Employee Compensation Act, 2010 Labour Act, 1990
Health and Safety	Factories Act (CAP F1), 2004	Operational safeguard 5 – Labour conditions, health and safety	Operational safeguard 5 – Labour conditions, health and safety
Natural Habitat and Biodiversity	Forestry Law CAP 51 LFN 1994 Endangered Species (Control of International Trade and Traffic) Act No. 11 of 1985. Natural Resources Conservation Act CAP 349 LFN 1990	Operational safeguard 3: Biodiversity and Ecosystem Services	Operational safeguard 3: Biodiversity and Ecosystem Services
Gender	National Gender Policy 2010	Special consideration is given to the needs and rights of women. In the context of gender vulnerability, the client must consider the social and political constraints and barriers that women may face.	There is the need for the project to consider the implications of the AfDB Gender Marker System and how to design and implement an appropriate Gender Action Plan for the subprojects
Vulnerable Groups	Some Nigerian policies address the needs of vulnerable people, such as the Gender Policy, Child Act or NEEDS framework. However, there are no specific provisions related to E&S Assessment.	OS 1: Environmental and social assessment. Special attention is given to vulnerable groups.	OS 1: Environmental and social assessment. Special attention is given to vulnerable groups.
Differentiated Measures for Vulnerable Group	No provisions	Provision for differentiated measures for inclusion	(Provision for differentiated measures for inclusion)
Environmental Monitoring	EIA Act Cap E12 LFN 2004	ESAP	ESAP
Disclosure and Access to Information	EIA Act Cap E12 LFN 2004	OS 1: Environmental and social assessment	OS 1: Environmental and social assessment

2.5.2 World Bank Environmental and Social Framework

The Environmental and Social Framework (ESF) enables the World Bank and Borrowers to better manage environmental and social risks of projects and to improve development outcomes. It was launched on October 1, 2018. The ESF offers broad and systematic coverage of environmental and social risks. It makes important advances in areas such as transparency, non-discrimination, public participation, and accountability including expanded roles for grievance mechanisms. It brings the World Bank's environmental and social protections into closer harmony with those of other development institutions.

The ESF consists of:

- the World Bank's Vision for Sustainable Development.
- the World Bank's Environmental and Social Policy for Investment Project Financing (IPF), which sets out the requirements that apply to the Bank.
- the 10 Environmental and Social Standards (ESS), which set out the requirements that apply to Borrowers.
- Bank Directive: Environmental and Social Directive for Investment Project Financing.
- Bank Directive on Addressing Risks and Impacts on Disadvantaged or Vulnerable Individuals or Groups

2.5.2.1 Environmental and Social Standards (ESS)

The World Bank has set out 10 Environmental and Social Standards (ESS) requirements for Borrowers relating to the identification and assessment of environmental and social risks and impacts associated with projects supported by the Bank through Investment Project Financing (Table 2.4). The Bank believes that the application of these standards, by focusing on the identification and management of environmental and social risks, will support Borrowers in their goal to reduce poverty and increase prosperity in a sustainable manner for the benefit of the environment and their citizens.

Table 2.4: The World Bank's ESS

ESS	Description
ESS 1: Assessment and Management of Environmental and Social Risks and Impacts	This overarching standard sets out the Borrower's responsibilities for assessing, managing and monitoring E&S risks and impacts associated with each stage of a project supported by the Bank through Investment Project Financing, in order to achieve E&S outcomes consistent with Bank's ESS.
ESS 2: Labor and Working Conditions	ESS2 recognizes the importance of employment creation and income generation in the pursuit of poverty reduction and inclusive economic growth. Borrowers can promote sound worker-management relationships and enhance the development benefits of a project by treating workers in the project fairly and providing safe and healthy working conditions.
ESS 3: Resource Efficiency and Pollution Prevention and Management	ESS3 recognizes that economic activity and urbanization often generate pollution to air, water, and land, and consume finite resources that may threaten people, ecosystem services and the environment at the local, regional, and global levels
ESS 4: Community Health and Safety	ESS4 recognizes that project activities, equipment, and infrastructure can increase community exposure to risks and impacts. In addition, communities that are already subjected to impacts from climate change may also experience an acceleration or intensification of impacts due to project activities.
ESS 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	ESS5 recognizes that project-related land acquisition and restrictions on land use can have adverse impacts on communities and persons. This may cause physical or economic displacement.
ESS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	ESS6 recognizes that protecting and conserving biodiversity and sustainably managing living natural resources are fundamental to sustainable development.
ESS 7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	This ESS applies to a distinct social and cultural group identified as "*Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities, indigenous ethnic Minorities etc."*
ESS 8: Cultural Heritage	ESS8 sets out measures designed to protect cultural heritage throughout the project life cycle.
ESS 9: Financial Intermediaries	This ESS applies to Financial Intermediaries (FIs) that receive financial support from the Bank.
ESS 10: Stakeholder Engagement and Information Disclosure	This ESS recognizes the importance of open and transparent engagement between the Borrower and project stakeholders as an essential element of good international practice.

2.6 International Conventions and Agreements applicable to the sector

Apart from the National Laws, Acts and Regulations, Nigeria is a signatory or party to many International Environmental Conventions and Treaties that are relevant to the construction sector. A list of some of the relevant International Environmental Conventions and Treaties ratified by the Government of the Federal Republic of Nigeria are presented in Table 2.5

Table.2.5: Selected international agreements and conventions to which Nigeria is a signatory

Regulations	Year Adopted
• United Nations Framework Convention on Climate Change (UNFCCC)	1992
• Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal	1989
• Montreal Protocol on Substance that Deplete the Ozone Layer	1987
• Vienna Convention on the Ozone Layer	1985
• Convention on Conservation of Migratory Species of Wild Animals	1979
• Convention on the Protection of the World Cultural and Natural Heritage (world Heritage Convention), Paris	1975
• Convention to Regulate International Trade in Endangered Species of Fauna and Flora (CITES)	1973
• Convention on the Conservation of Migratory Species of Wild Animals (CMS or Bonn Convention) (Signatory only)	1988
• African Convention on the Conservation of Nature and Nature Resource	1968
• Paris Agreement	2015

CHAPTER THREE: PROJECT LOCATION AND SITE DESCRIPTION

3.1 Description of Ondo State

Ondo state is located in the South Western part of Nigeria. It covers an area of 15,500 km2 and density of 319.9/km² with a population of over 6 million (NPC 2018). The State lies within latitudes 5º 0'' 0' North and longitudes 4º 0''0' East. It is bordered in the Northwest by Ekiti and Kogi States- West-Central by Osun State; North east, East Central by Edo State; Southwest by Ogun State and Southeast by Delta State. The Southern coastline rests on the Atlantic Ocean with considerable territorial waters offshore, and is rich in aquatic and mineral resources of significant importance. Figure 3.1 shows location of Ondo State in Nigeria

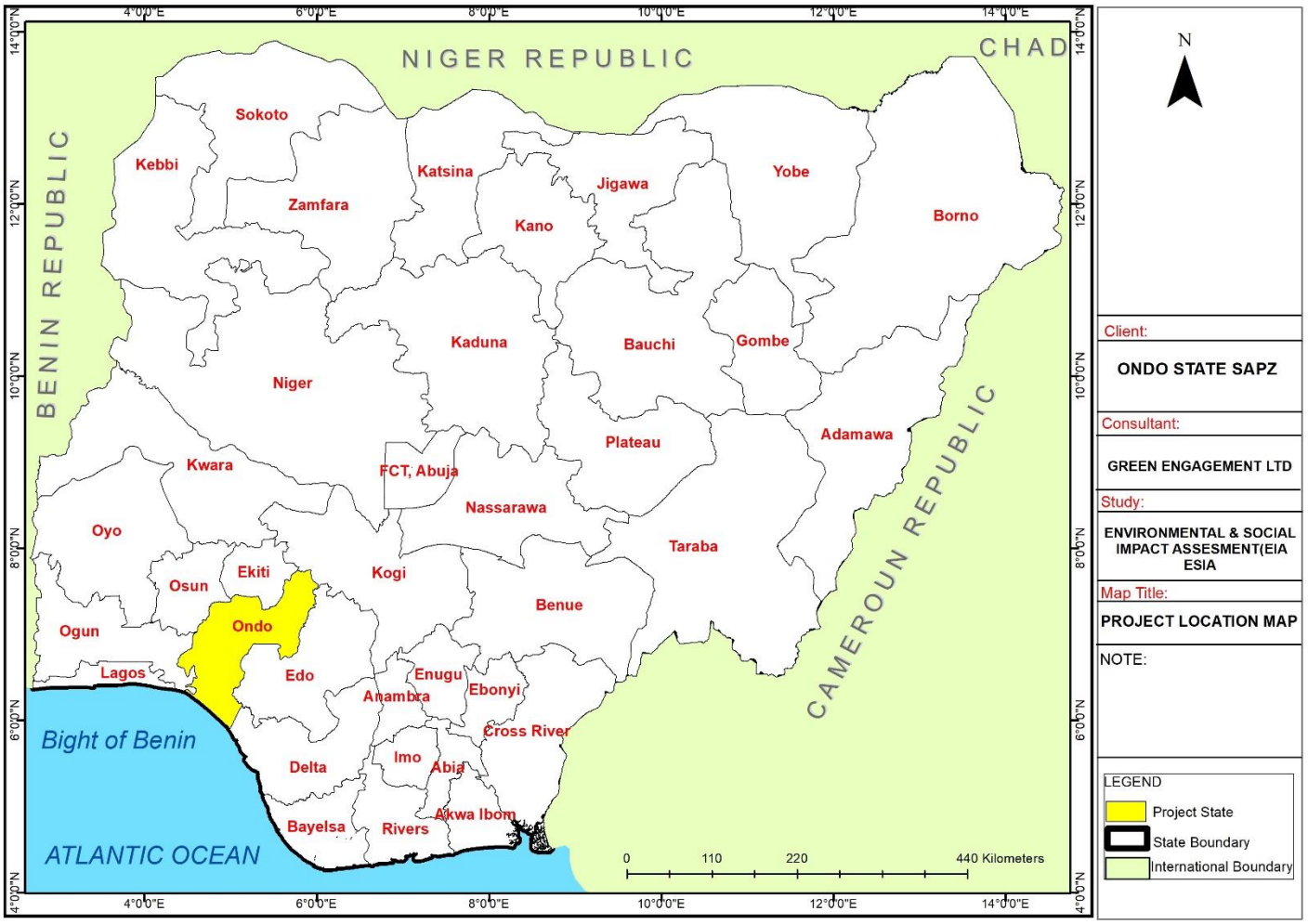

Figure 3.1: Map of Nigeria showing location of Ondo State

3.2 Description of the Project Location

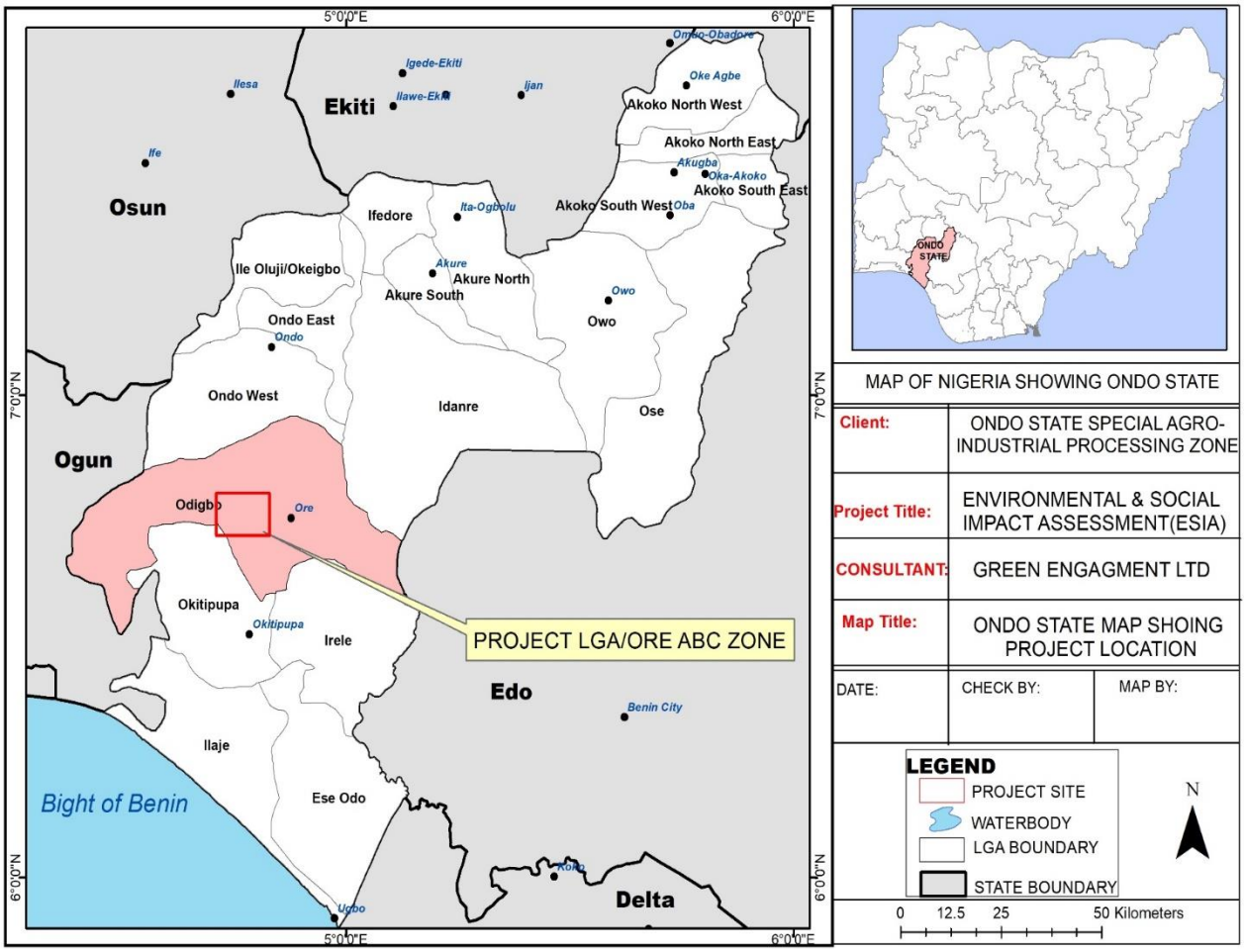

Figure 4: Map of Ondo state showing Odigbo LGA

The proposed location for the SAPZ is Ore, in Odigbo local government area of Ondo State, situated at coordinate 4°30'0"E 6°55'0"N and 5°0'0"E 6°30'0"N. Odigbo has an area of 1,818 km^2 (702 sqmi) and a population of 230,351 at the 2006 census. Ore is a cosmopolitan town inhabited by non-indigenes like people from Oyo and Osun States as well as the Ikale people of Irele and Okitipupa local government areas of Ondo state. It has largely all the ethnic groups in Nigeria represented. The major economic activity in the area is agriculture with a strong agro industrial presence with emphasis on the cultivation of food crops such as cassava, rice, yams, and cash crops such as cocoa, oil palm, kola-nuts, etc.

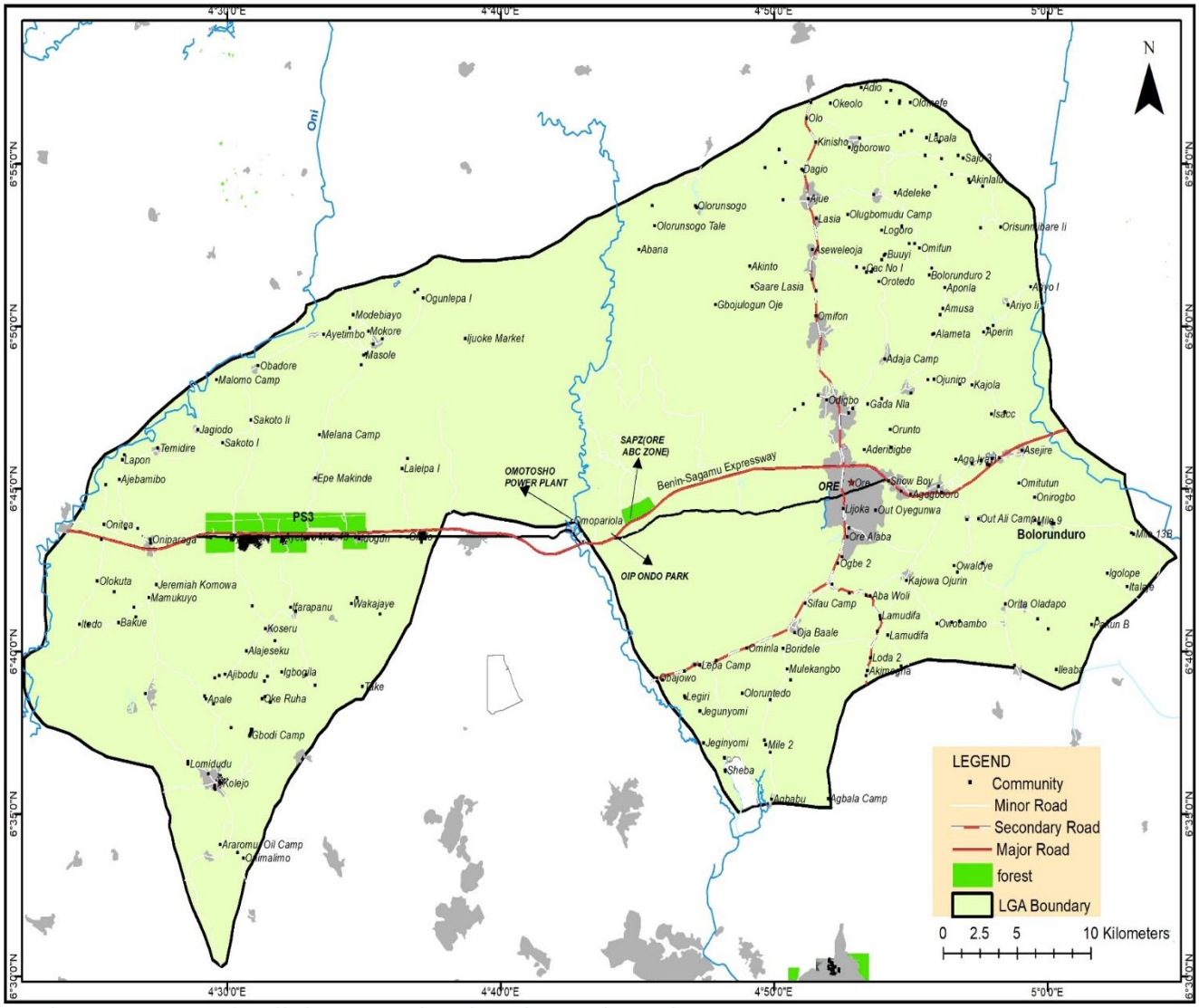

Figure 5: Map of Odigbo LGA showing the project site

3.3 Site Description

The proposed location for the industrial hub is in Ore within Odigbo LGA, in Ondo State where government have dedicated about 34,000 ha of land for the "Ondo State Agro Revolution Programme". The hub is proposed to be developed around the location with the geographical coordinates of 4°44'16.392"E 6°45'43.786"N and 4°46'5.119"E 6°44'47.916"N. Total land area dedicated for the hub is 11,000ha, where 1000ha of the total land area have been delineated to be used for the sole purpose of cultivating a nursery for plant/crop production.

Figure 3.xxxx below is the site map that depicts the entire SAPZ land delineated into two lots: the 10,000Ha for the Agro industrial hub and the 1,000 Ha for the plant nursery.

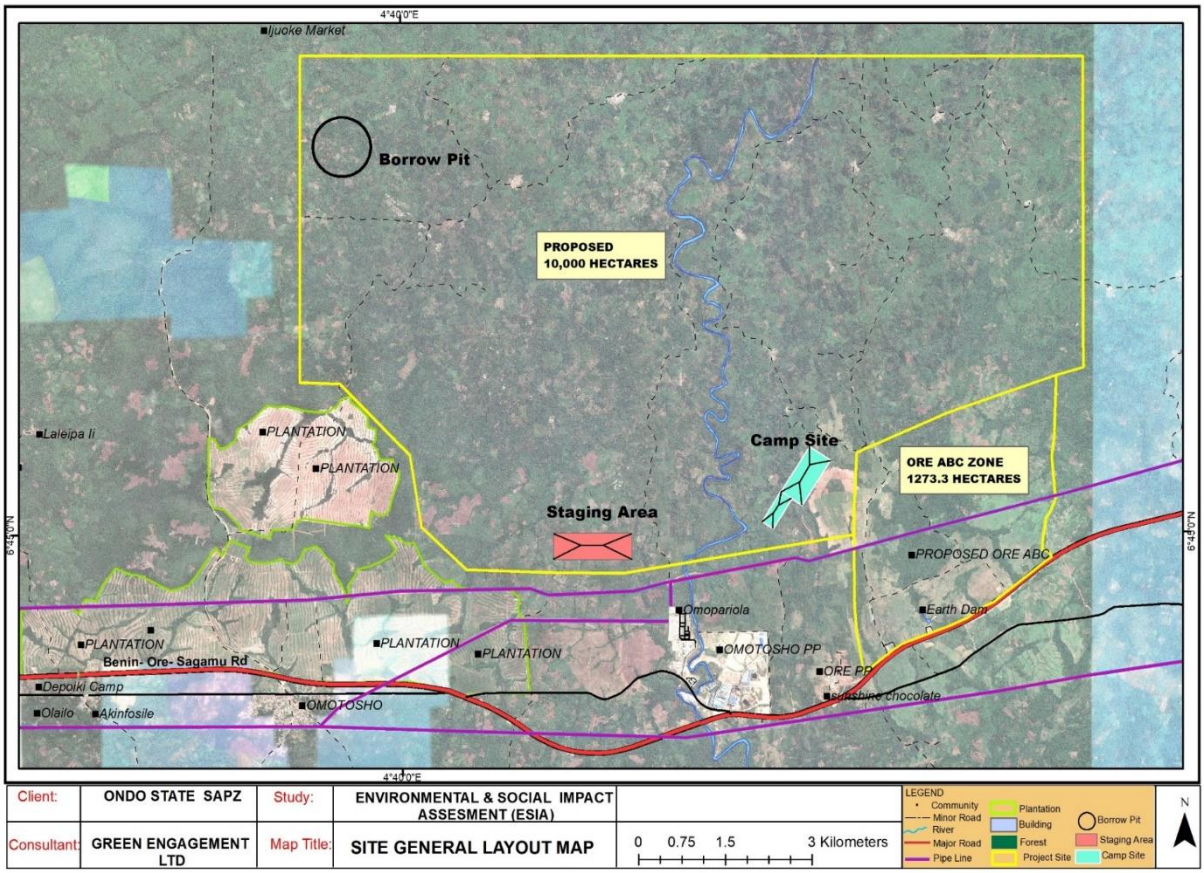

Figure 3.xxxx: Site Layout showing the delineated boundaries and features

The 11,000ha of land is a Greenfield with no agricultural activity or human settlements within or around it. Consequently, the project will not involve any physical or economic displacement but rather provide opportunities for farmers and agro investors to come into the area and participate in the programme.

Overview of Existing Condition of the proposed SAPZ

Plate.1: ESIA team and surveyors walking the length of the demarcated land

Plate.2: existing dam within the area

CHAPTER 4: ENVIRONMENTAL AND SOCIAL BASELINE

4.1 Introduction

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

The description of the baseline conditions of the project area is based on analysis of both primary (collection of samples from the project area based on receptor sensitivity) and secondary data from various sources. The baseline information is described for the following biophysical and socio-economic components including Climate and Meteorology; Air quality; Noise levels, Soils and land; Geology; Ecological Biodiversity (Flora and Fauna) as well as Socio-economic and Community Health.

4.2 Area of Influence

The project's area of influence was delineated to cover the entire 11,000 ha earmarked for the project and sections of the immediate environment up to 5km radius around the site. This area is defined based on the extent to which the proposed project activities may interact with the surrounding environment whilst taking into considerations the nature of the project and associated activities, nature of surrounding ecosystem and ecosystem resources, spatial distribution of the affected/ host communities and professional experience of ESIA multidisciplinary team. This area is believed to capture the full reach of possible effects of the proposed project especially in relation to affected human settlement and down rivers.
No community or human settlement can be found within a 5km radius of the proposed site.

Some of the key environmental features within this AoI include but not limited to the following:

- The River Oluwa and dam which traverses the area
- Adjoining Facilities: Access to the Reserve is via the road linking Ore to Lagos, Shagamu, Abeokuta, Benin City, Port-Harcourt, Onitsha, etc
- Vegetative flora and fauna within the site

4.3 Data Acquisition Approach and Methods

Baseline data for the project area was generated using a combination of field studies; analysis of maps, plans, photographs; review of background project documents; site reconnaissance surveys; structured and semi-structured interviews via engagements with project implementers.

4.3.1 Desktop Research

The ESIA team conducted a comprehensive search and review of available literature on the project location, similar projects and requirements of regulators and international development partners particularly the AfDB. These included reports of previously conducted ESIA under the SAPZ programme in other states, academic research studies, technical/government publications, and meteorological data of the project area. A comprehensive understanding of the environmental and social information already available was critical for the ESIA especially in designing the field data collection program.

4.3.2 Reconnaissance Survey

A reconnaissance survey was undertaken to familiarize the team with the proposed SAPZ area in order to acquaint the ESIA team with the nature of the environmental and social nomenclature of the area. Preliminary baseline information on the existing project environment was obtained at this stage through physical observations and interviews with key informants/ groups. As part of the survey, critical stakeholders were identified for consultation. The reconnaissance visit to project areas was undertaken along with the relevant staff of the OSMA staff.

4.3.3 Biophysical Environmental Sampling

Primary baseline data on the biophysical components of project environment were obtained through a field data gathering exercise carried out from 12th – 23rd June 2021, by a multidisciplinary team of experts. The baseline sampling was aimed at establishing the existing conditions of the environmental resources potentially subject to change by the project. Specifically, the exercise was conducted to verify and fill the gaps on preliminary information obtained from literature on the environmental and social characteristics of the area. The field exercise entailed real-time observations, field sampling, *in-situ* measurements, laboratory analysis and interviews.

4.3.4 Stakeholders Consultations and Socioeconomic Assessment

The result of the stakeholder's identification and consultation during the reconnaissance survey formed the basis for further consultation with key stakeholders during the ESIA. Three methods were used to collect data on the socio-economic and community health status of the study area, namely; Desktop review, Key Informants Interview (KII); and public consultation, including Focus Group Discussions (FGD). Due to the absence of a community presence or settlement within and around the project area of influence no primary household socioeconomic information was collected, instead desktop research was conducted to obtain the general socioeconomic baseline condition of the Ore town the closest town to the project location

A summary of the number and types of data collected during the field surveys is presented in Table **01** while the sampling locations and distribution across the study area are presented in subsequent sections

.

Table 01: Summary of the Baseline Data Collected

<table>
<tr><th colspan="2">Component</th><th>Data collected and methods</th></tr>
<tr><td rowspan="3">Physical Environment</td><td>Ambient air</td><td>In order to evaluate the prevailing scenario for the air quality and noise level in the study area, in-situ measurements were taken from 13 selected points spatially distributed within the project area. The ambient noise levels and micro-climatic condition of the area were also measured. The in-situ air quality parameters were collected as indicated below.
<table>
<tr><th>Parameter Measured</th><th>Equipment</th></tr>
<tr><td>Sulphur (IV) Oxide (SO_2),</td><td>In-situ single gas SO_2 monitor (ToxiRAE Model PGM-1130)</td></tr>
<tr><td>Nitrogen (IV) Oxide (NO_2)</td><td>Single gas NO_2 monitor (ToxiRAE Model PGM-1110)</td></tr>
<tr><td>Carbon Monoxide (CO)</td><td>CO monitor (MultiRAE Pro Model PGM-6248)</td></tr>
<tr><td>Ammonia (NH_3)</td><td>NH_3 monitor (MultiRAE Pro Model PGM-6248)</td></tr>
<tr><td>Volatile Organic Compounds</td><td>MultiRAE gas monitor (MultiRAE Pro Model PGM-6248)</td></tr>
<tr><td>Hydrogen Sulphide (H_2S)</td><td>MultiRAE gas monitor (MultiRAE Pro Model PGM-6248)</td></tr>
<tr><td>Particulate Matter (PM)</td><td>Haz-Dust Model EPAM-500</td></tr>
<tr><td>Oxygen (O_2)</td><td>Gas alert microclip XL (4-in-One) (Model MCXL XWHM-Y-NA)</td></tr>
<tr><td>Noise Level</td><td>Extech Multifunctional sound level meter</td></tr>
<tr><td></td><td></td></tr>
</table></td></tr>
<tr><td>Soil</td><td>A total of 10 soil samples were collected from selected locations from 0 – 15cm (topsoil) and 15 – 30cm (sub soil) depths respectively using a stainless-steel hand auger and homogenized. Soil samples were collected into clean decontaminated containers and stored for transfer to the laboratory for physico-chemical and microbial analyses. Sub samples for microbial analysis were wrapped up using aluminium foil. All samples collected were preserved in ice chest and transported to the laboratory for analysis</td></tr>
<tr><td>Groundwater</td><td>In order to assess the quality of existing groundwater resources across the project area, a total of 3 groundwater samples were collected from dug wells. The water samples were collected into 1-litre polyethylene bottles for general physico-chemical analysis. Samples for heavy metals analysis were collected separately in plastic containers and fixed with diluted nitric acid (10ml HNO_3 in 100ml of Distilled Water). Water samples for Oil and Grease content were collected into dark brown opaque bottles to prevent photo oxidation while pre-sterilized 50ml McCartney bottles were used for samples meant for microbial analysis. In-situ measurements of fast changing parameters including pH, Conductivity, Total Dissolved Solids (TDS), Temperature, and Dissolved Oxygen (DO) were taken at each location using calibrated Extech Digital DO700 meter. All samples collected were preserved on ice chest and transported to the laboratory for further analysis.</td></tr>
<tr><td>Biological Environment</td><td>Flora and Fauna</td><td>Flora surveys were conducted via a detailed assessment of plant characteristics and identification and an inventory of economic crops within the project locations while Fauna survey was undertaken using a range of methods, i.e., direct observation, indirect observation, identification, and biological nomenclature, handpicking and informal Interviews.</td></tr>
</table>

What were the measures conducted to assure and guarantee the integrity (quality) of the analytical data acquired and presented as the correct baseline condition of the Ondo SAPZ area? Include these measures in the revised report.

4.4 Description of the Project Environment

This section describes the physical, biological and socioeconomic status of the project areas.

4.4.1 Climate

The climate of the area can be described as humid, semi hot equatorial type with high rainfall. There are two seasons namely, the rainy season and dry season. The wet season from April to October and the dry season from November to March, is typical of the area. The main characteristics of the climate and meteorological variables of interest include Air temperature, rainfall, relative humidity, wind speed direction and sunshine pressure as described below.

4.4.1.1 Rainfall

Odigbo is lowland within a humid forest zone with a mean cumulative annual rainfall of 1,320. It has monthly mean temperatures that vary from 27.6 °C to 31.6 °C. Its wet season lasts about seven to eight months, while the dry season lasts three to four months. A wet day is one with at least 0.04 inches of liquid or liquid-equivalent precipitation. In Odigbo, the chance of a wet day over the course of July is very rapidly decreasing, starting the month at 75% and ending it at 67%. For reference, the year's highest daily chance of a wet day is 83% on September 11, and its lowest chance is 3% on December 31.

4.4.1.2 Relative Humidity

The mean monthly relative humidity of the project area occurs with the highest values in July (92%) and August (92%) and lowest values recorded in December (76%), January (68%) and March (78%). As expected, mean monthly relative humidity values are high for the wet season months when the influence of the moisture-laden southwester lies is greatest.

4.4.1.3 Temperature

Temperatures are generally high throughout the year in Odigbo LGA, with monthly minima and maxima of about 22^{o}C and 34^{o}C, respectively and an annual mean of 32oC. On a diurnal basis, maximum temperature occurs between 1300 and 1500h while minimum temperature occurs between 0100 and 0600h. Air temperature values are generally slightly higher for the dry season months (32.4-35.0^{o}C) than the wet season months (28.0-32.8^{o}C). The highest mean temperature values occur in the month of February at the peak of the dry season while the lowest temperature occurs in the month of August at the peak of the wet season.

4.4.1.4 Wind Speed

The project area has a calm weather with wind speed ranging between 0.5 m/s to 5.7m/. The mean surface wind speed and direction are influenced by seasonal variation. Two main air masses alternate with the season. During the dry season, the northeast winds predominate while the southwest winds are dominant during the wet season. The highest wind speed is recorded at the onset of the wet season when early rains are torrential and accompanied by squalls, lightning, and thunder. The wind speeds are lower in the nights than during the days.

4.4.1.5 Sunshine Pattern

The mean monthly sunshine duration in the project area is about 21.4 % which varies between 14 % and 27 % with the minimum and maximum in the months of July and December respectively. The generally short sunshine rate in July could be attributed to the greater amount of cloudiness and rainfall characteristic of the period. Conversely, the higher sunshine rate in December is due to the prevalent clear skies when the ITCZ has once more started its Northward migration.

The proposed SAPZ activities that could cause or exacerbate climate change risks were identified in this ESIA with climate change mitigation and adaptation measures also recommended. The details of climate risks associated with the project including adaptation and mitigation measures are presented in Chapter 6 and the ESMP.

4.4.2 Ambient Air

The ambient air quality and noise pollution survey was undertaken across the project site during the month of June 2021, which corresponds to the dry season cessation period. Criteria pollutants such as Suspended Particulate Matter (SPM), carbon monoxide (CO), nitrogen dioxide (NO_2), sulphur dioxide (SO_2), hydrogen sulphide (H_2S), Ammonia (NH_3) and Volatile Organic Compounds (VOCs), were considered for the air quality and noise assessment survey to establish the existing baseline of air quality prior to the project implementation. The baseline data is expected to provide informed knowledge about the physical atmospheric condition of the project site and the immediate environment

4.4.2.1 Approach and Methods

In order to evaluate the prevailing scenario of air quality and noise level in the study area, *in-situ* measurements of the criteria pollutants (NO_2, CO, SO_2, SPM, H_2S, and NH_3) and noise level were conducted at a height of 1.5 meters above ground level using a mobile gas detector.

The result obtained (presented in table 4.3) were compared to the Nigerian Ambient Air Quality Standards (NAAQS) propounded by the Federal Ministry of Environment (FMEnv) and the World Health Organization (WHO) Air Quality and Noise Guidelines. The threshold for outdoor concentration of pollutants established by FMEnv and WHO are provided in table 4.2 However, due to the absence of FMEnv and WHO permissible threshold for outdoor concentration of CO_2 pollutant, the USEPA standard was adopted.

Table 4.2: Threshold for outdoor concentration of pollutants

Parameter	FMEnv		WHO		USEPA	
	Guideline Value	**Averaging Period**	**Guideline Value**	**Averaging Period/Time Base**	**Guideline Value**	**Averaging Period**
CO	10 ppm 11.4 µg/m^3	1 - hour	25 ppm	1 – hour	9 ppm	1 - hour
NO_2	0.04 – 0.06 ppm 75.0 – 113 µg/m^3	1 – hour	200µg/m^3	1 - hour	0.053 ppm	1 – hour
SO_2	0.01 ppm 26 µg/m^3	1 - hour	0.175 ppm 500 µg/m^3	10mins	0.5 ppm 0.075 ppm	1 - hour
H_2S	0.008 mg/m^3	30 mins	7 µg/m^3	30 mins		1 – hour
PM	80 µg/m^3	1 - hour	25 µg/m^3	Annual	150 µg/m^3	Annual
	250 µg/m^3		50 µg/m^3	24 - hour	35 µg/m^3	24 – hour
LEL	-	-		-	-	-
CO_2	-	-		-	1000	24 – hour
Noise (Industrial Area)	90dB(A)	8 hour	70 dB(A)	24 hours	70	24 – hour
Noise (Residential Area)	-		55 dB(A)	16 hours	55	24 – hour

Sources: Guidelines & Standards for Environmental Pollution Control in Nigeria (FEPA 1991). Air Quality Guidelines (WHO, 2005)

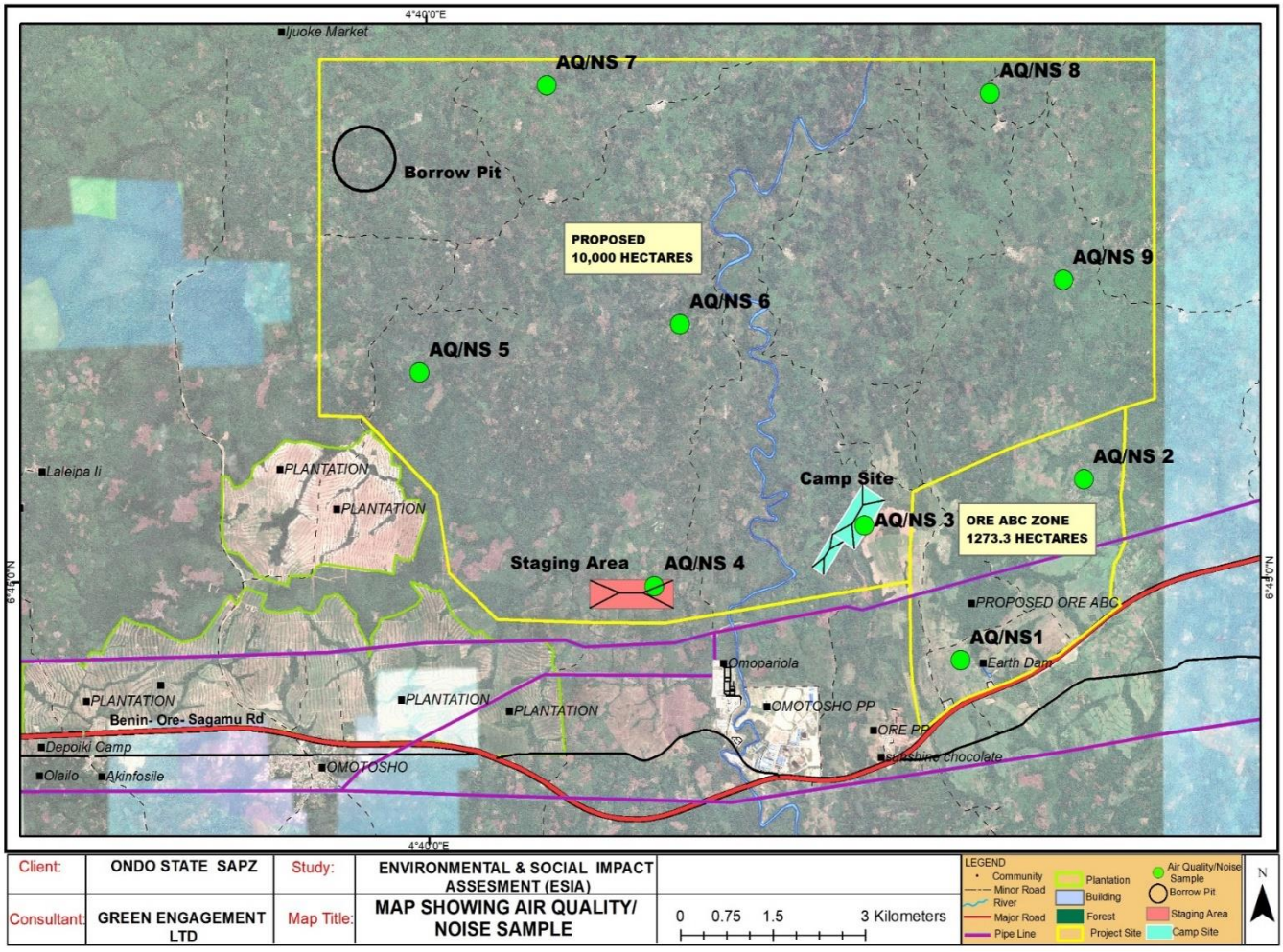

Figure 7: Map showing the air quality and noise sample of the project area

Source: Green Engagement ESIA Field survey, 2021

Table.4.3: Ambient Air Quality and Noise Level around the Project Area

Point Code	Description	Latitude	Longitude	Time (24Hr)	NH_3	NO_2	SO_2	CO_2	CO	H_2S	PM10	LEL	Db (A)
AQ/NS1	Downstream, 1000 Ha Nursery Area	6°44'19.243"N	4°44'40.13"E	10:22	0	0.0	0.03	822	0	0.0	0.057	0	29.7
AQ/NS2	Upstream, 1000 Ha Nursery Area	6°47'9.089"N	4°42'13.945"E	11:10	0	0.0	0.00	720	0	0.0	0.451	0	30.2
AQ/NS3	Camp site Area	6°44'57.778"N	4°42'0.141"E	11:39	0	0.0	0.00	453	0	0.0	0.036	0	36.9
AQ/NS4	Staging Area	6°46'43.914"N	4°39'55.274"E	12:40	0	0.0	0.02	456	0	0.0	0.032	0	23.5
AQ/NS5	Western boundary of the 10,000 HA ABC	6°49'9.405"N	4°41'3.533"E	13:40	0.02	0.0	0.00	630	0	0.0	0.054	0	23.6
AQ/NS6	Middle of the 10,000 HA	6°49'5.494"N	4°44'57.585"E	14:04	0	0.0	0.00	701	0	0.0	0.54	0	32.4
AQ/NS7	North-Western boundary of the 10,000 HA	6°45'50.331"N	4°45'48.203"E	15:10	0	0.0	0.00	674	0	0.0	0.45	0	26.7
AQ/NS8	North-Eastern boundary of the 10,000 HA	6°45'27.148"N	4°43'51.103"E	10:42	0	0.0	0.00	767	0	0.0	0.45	0	13.4
AQ/NS9	Eastern boundary of the 10,000 HA	6°47'30.939"N	4°45'37.277"E	11:09	0	0.0	0.01	752	0	0.0	3.45	0	31.2
Mean					0.0015	0.0	0.004	663.5	0	0.0	1.36	0	26.70
Standard Deviation					0.0056	0.0	0.0	57.57	0	0.0	0.4	0	8.3

Note: NH_3 (Ammonia); °C (Temperature); RH (Relative humidity); 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); LEL (lower explosive limit).

4.4.2.2 Results of Air Quality and Noise Level Assessment

- Pollutants like Nitrogen dioxide (NO_2), Sulphur dioxide (SO_2), Hydrogen sulphide (H_2S), Carbon monoxide (CO), and Lower Explosive Limit (LEL) were not detected at the various sampling locations.
- Carbon dioxide (CO_2) recorded within the sampling locations ranged between 453-822ppm. While the mean value was 663 ±57.57ppm. These values are within the 1000ppm limit for CO_2 emission set by USPA.
- There was no elevated PM 10 above the FMEnv. threshold of 250 µg/m3 recorded at any of the sampling locations as concentration in all locations were less than 5 µg/m^3 with a mean average of 1.36 ± 0.4µg/m^3.
- The average noise level recorded in the entire project area is 26.7 ±8.3 dB while the highest noise level of 36.9 db was recorded at the proposed camp site area. Generally, the collated results show that the values were below the FMEnv permissible Noise Exposure Limits of 90 dB and the WHO (70 dB -A) permissible noise exposure limits.
- The air quality assessment results indicate that all pollutants measured were either not detected or within acceptable FMEnv limits. Consequently, the ambient air quality in the area can be adjudged to be good.

The meteorology and climatic data of the project area should be presented in a tabular form in the revised report.

4.4.3 Soils

The assessment of the soil in the project area was undertaken during the field data gathering to establish the existing soil quality prior to the project implementation. The baseline data is expected to provide informed knowledge about the physical, chemical and microbial condition of the soils of the project site and the immediate environment.

4.4.3.1 Approach and Methods

In order to evaluate the soils of the project area, ten (10) sampling stations were established in the study area. Stainless steel, handheld Dutch type Soil Auger was used to collect soil sample at each soil sampling station. At each sampling station, soil depth 0 - 15 cm and 15-30 cm for topsoil and subsoil levels were collected and composited to yield a representative sample. Soil samples to be analysed for physical and nutrient elements were sub-sampled and appropriately labelled using masking tape and indelible ink to indicate sample location, time, date, soil depth level and other relevant observations. Soil samples to be analysed for hydrocarbon contents analyses were collected into amber glass bottles and labelled appropriately using masking tape and indelible ink. In contrast, soil samples for microbiology were put in sterile glass bottles. **Error! Reference source not found.**4.4 outlines the results of laboratory analysis for soil, while figure 8 is the map of soil sampling locations.

Table2: Soil physicochemical characteristics

Sampling Code	**Sampling Location**		**pH**	**Particle Size (%)**			**Exchangeable Bases (Cmol-1)**				**H+ Al**
	Latitude	Longitude		**Sand**	**Clay**	**Silt**	**Ca**	**Mg**	**Na**	**K**	
SS1	6°44'19.243" N,	E4°44'40.13"	6.11	63.5	15.0	21.5	2.63	0.68	0.43	0.20	0.11
SS2	6°45'50.331" N	4°45'48.203" E	6.73	57.2	19.5	23.5	0.30	0.68	0.63	0.10	0.10
SS3	N6°45'27.148 "N	4°43'51.103" E	6.80	71.6	11.3	17.1	2.18	0.13	0.34	0.23	0.12
SS4	6°44'57.778" N	4°42'0.141"E	6.36	66.9	12.8	20.3	0.75	1.19	0.25	0.30	0.11
SS5	6°46'43.914" N	4°39'55.274" E	6.72	61.4	17.1	21.5	1.65	0.17	0.05	0.38	0.07
SS6	6°47'9.089"N	4°42'13.945" E	6.49	53.5	20.2	26.3	0.20	1.12	0.43	0.05	0.10
SS7	6°49'9.405"N	4°41'3.533"E	6.47	65.6	11.5	22.9	1.85	0.32	0.65	0.38	0.09
SS8	6°49'5.494"N	4°44'57.585" E	6.24	73.4	12.2	14.4	0.05	0.43	0.34	0.13	0.10
SS9	6°47'30.939" N	4°45'37.277" E	6.84	78.0	12.1	9.9	2.01	1.47	0.44	0.05	0.07
FAO/FME Limit			5.0- 8.0				150	50	NS	NS	NS
Sampling Code	**Sampling Location**		**%**				**ppm**				
	Latitude	Longitude	**ECEC**	**BASE SAT**	**C**	**N**	**Av P**	**Cu**	**Mn**	**Zn**	**Fe**
SS1	6°44'19.243" N,	E4°44'40.13"	1.17	97.60	3.48	0.21	4.62	4.00	22.00	7.12	5.1
SS2	6°45'50.331" N	4°45'48.203" E	1.24	90.32	1.10	0.14	1.68	3.50	27.50	7.10	3.7
SS3	N6°45'27.148 "N	4°43'51.103" E	1.22	97.70	2.33	0.12	7.05	6.00	32.50	12.5	2.6
SS4	6°44'57.778" N	4°42'0.141"E	1.39	95.40	1.49	0.14	5.87	2.50	10.00	10.18	2.2
SS5	6°46'43.914" N	4°39'55.274" E	1.31	98.68	1.78	0.27	6.61	2.00	40.50	8.60	6.1
SS6	6°47'9.089"N	4°42'13.945" E	1.70	94.71	0.84	0.10	3.12	5.00	31.00	1.90	6.0

SS7	6°49'9.405"N	4°41'3.533"E	1.70	98.42	2.12	0.26	4.49	1.50	34.00	0	6.8
SS8	6°49'5.494"N	4°44'57.585"E	0.77	87.01	0.61	0.10	2.31	1.00	7.00	0	5.5
SS9	6°47'30.939"N	4°45'37.277"E	2.33	97.00	1.04	0.22	7.30	1.00	21.50	2.00	6.5
FAO/FME Limit					NS	NS	NS	36.0	NS	50.0	30,000

H+Al = Acidity; ECEC = Effective Cation Exchange Capacity; %Base SAT = Percentage Base Saturation; Av. P = Available Phosphorus; NS = Not Specified.

4.4.3.2 Results of Soil Assessment

The soil particles sizes comprise mainly of sand (the highest), silt and clay (the smallest) fractions. The relative proportion of the soil separates in a soil determines its texture. The texture in turn determines the water intake rates (absorption), water storage, the ease of tilling, and the amount of aeration as well as influences on the soil fertility. The name and sizes of soil particle classes as defined by the United State Department of Agriculture (USDA) are sand with particle sizes ranging from 0.05 – 2.0mm, silt ranging from 0.002 - 0.05mm and clay with the particle sizes <0.002mm (Boyd *et al* 2002). The pH of soil samples ranged from 6.11 – 6.80, indicating a slightly alkaline soil still within FAO recommended threshold for agricultural soils.

The total Nitrogen ranged from 0.10 – 0.27%. The values for available Phosphorus were found to be in the range of 1.68 – 7.30ppm while the carbon content ranged from 0.61 – 3.48%. The results show low carbon, nitrogen and phosphorous content in soils thus indicating low soil nutrients. The values of calcium recorded in soils ranged from 0.05 – 2.6 $cmol^{-1}$, far below the 150mg/l FAO permissible limit for agricultural practices. Magnesium ranged from 0.17 – 1.47 $cmol^{-1}$. Sodium on soils ranged from 0.04 – 0.06 $cmol^{-1}$ while potassium values ranged from 0.05 – 0.38$cmol^{-1}$. For metals, the concentration of copper ranged from 1.00 – 6.00ppm, manganese ranged from 7.0 – 40.5ppm, zinc ranged from 0.0 – 7.12ppm while iron metal ranged from 2.2 -7.9ppm. All values where indicated were within FAO/FMEnv recommended values for agricultural soils.

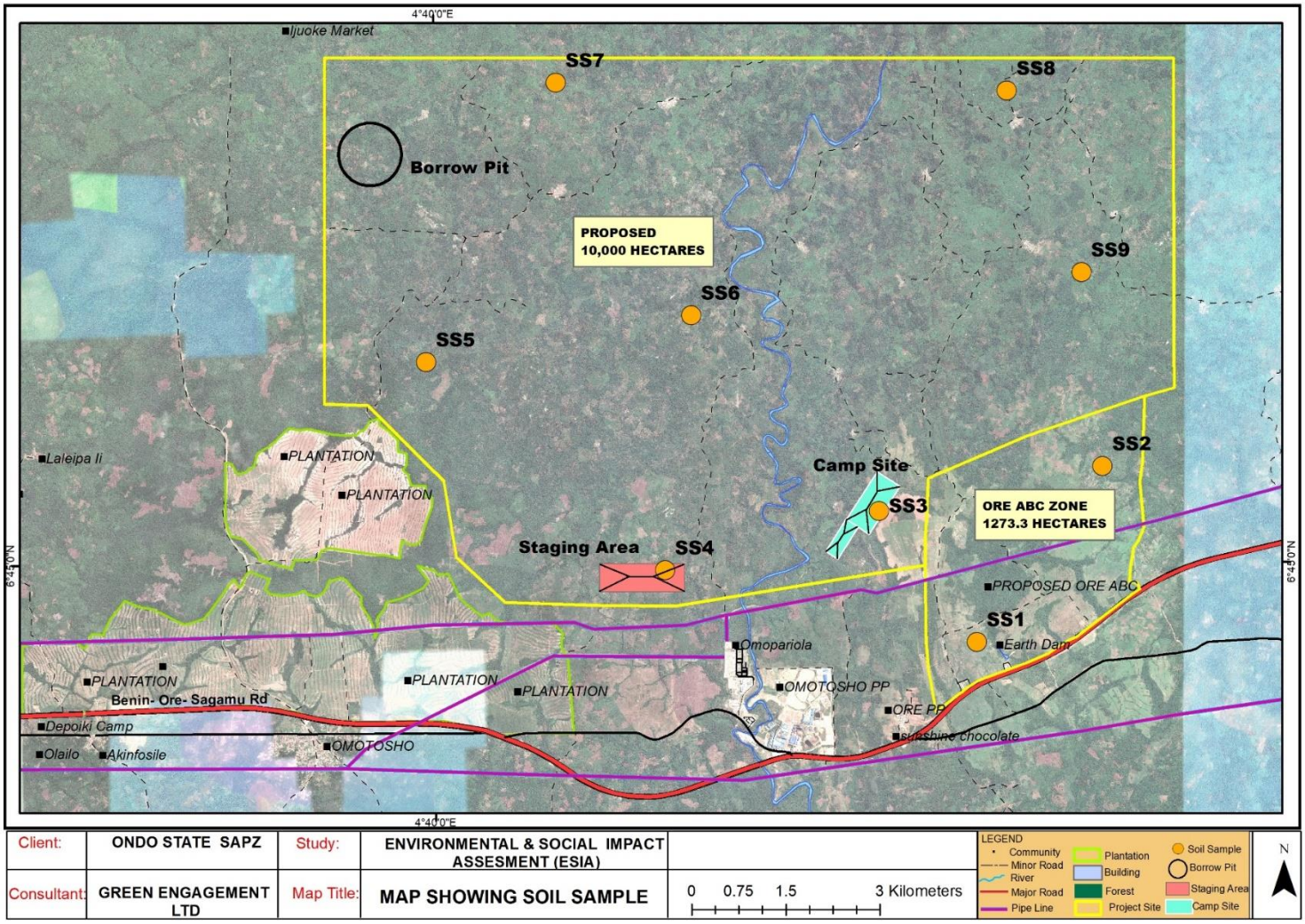

Figure.8: Map showing the SAPZ and Locations of Soil Sampling

Plate.3: Soil sampling near the Dam at the proposed Nursery Area of the SAPZ

4.4.4 Geology and Soil condition

The project area is situated within the pre-cambrian Basement complex rocks of Southwestern Nigeria which consist of four broad lithologic groups which includes: the meta-sedimentary and meta-volcanic rocks consisting of the schist belts, the migmatite-gneiss complex consisting of migmatite, gneisses of various kinds, the older granites consisting mainly of granites and syenites and the younger granites which are alkaline to para-alkaline bodies.

The geology and hydrogeogy conditions of the Ondo SAPZ area should be included in the revised report.

4.4.4.1 Hydrology of the Study Area

The ground water flow trends in project area runs from the higher elevation to the lower elevation from the North to the South direction. The ground water flow is determined by the static water level and the hydraulic head. The static water level (SWL) of the project area which ranges between (2-5m) are mostly observed in the topographically low zones (South/depressed zones) along the river channels while the high SWL which ranges between 8-11m generally occurs in the North elevated areas. Higher hydraulic heads can be observed to occur mostly in the North while low Hydraulic heads occur mostly in the South.

4.4.5 Groundwater

Groundwater sources were sampled during the data gathering to allow for future evaluation and monitoring of the project impacts on groundwater resource.

4.4.5.1 Approach and Methods

Three groundwater samples were obtained from hand-dug wells in the project area. The water samples were collected into 1-litre polyethylene bottles for general physico-chemical analysis. Samples for heavy metals analysis were collected separately in plastic containers and fixed with diluted nitric acid (10ml HNO_3 in 100ml of Distilled Water). Water samples for Oil and Grease content were collected into dark brown opaque bottles to prevent photo oxidation while pre-sterilized 50ml McCartney bottles were used for samples meant for microbial analysis. In-situ measurements of fast degrading parameters including pH, Conductivity, Total Dissolved Solids (TDS), Temperature, and Dissolved Oxygen (DO) were taken at each location using calibrated Extech Digital DO700 meter. All samples collected were preserved on ice chest and transported to the laboratory for further analysis. The results of the physico-chemical and microbial analyses are presented in Table 4.5.

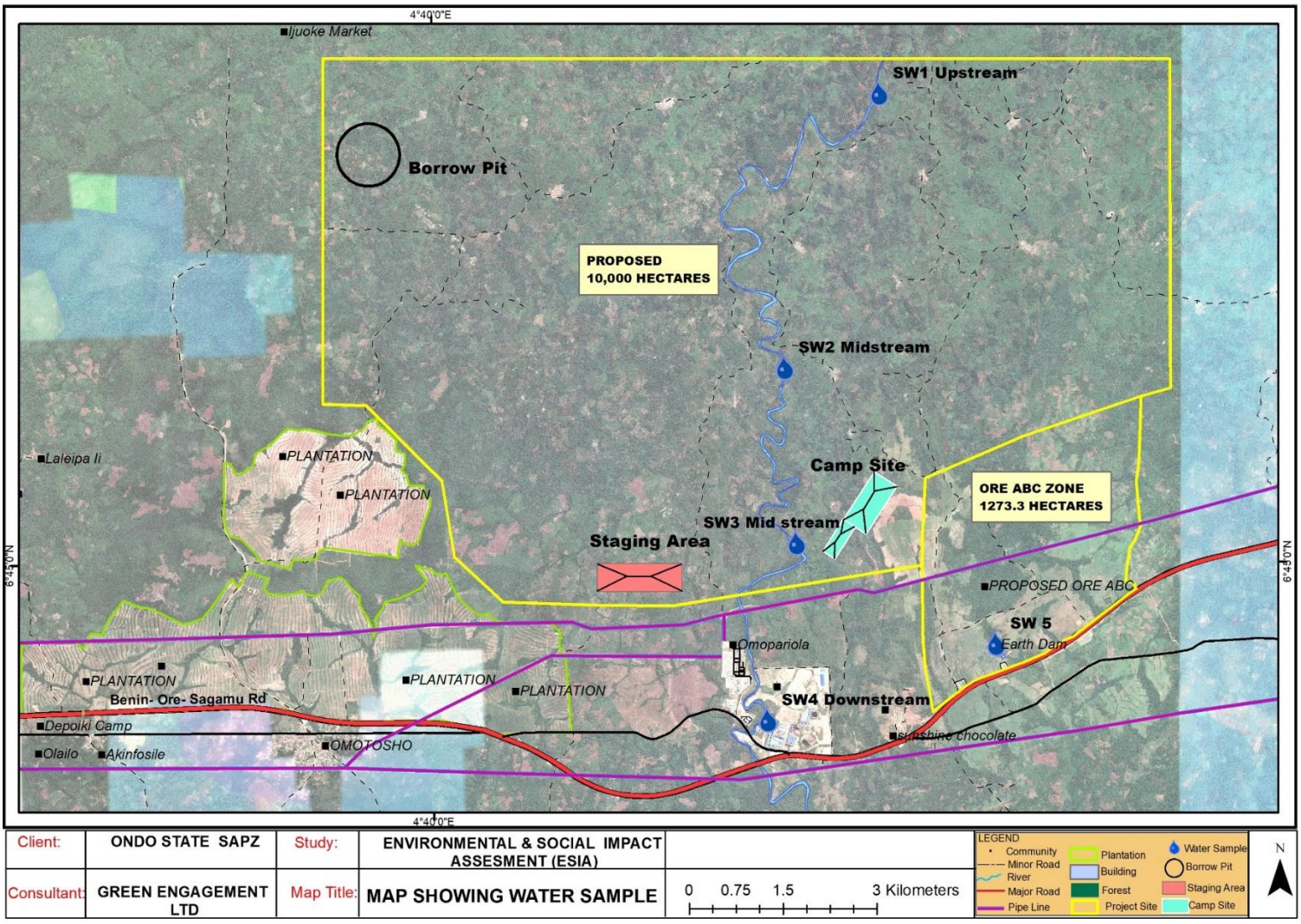

Figure 9: Map showing the SAPZ and Locations of Water Sampling

Table 4.5: Results of Surface Water Analysis

CODE	River	Latitude	Longitude	pH	TDS Mg/1	Total Hardness $CaCO_2$	C1 (mg/1)	SO^2_4 Mg/1	NO_3 Mg/1	Acidity Mg/1	Mg (ppm)	Ca (ppm)
SW1	Upstream	6°49'3.675"	4°43'52.903"	6.20	122	12.00	14.18	16.30	0.30	14.00	10.20	30.00
SW2	Midstream	6°46'40.177"	4°43'4.143"	6.95	180	10.00	14.18	26.60	0.70	8.00	6.16	12.00
SW3	Midstream	6°45'6.773"	4°43'8.945"	6.36	107	60.00	21.27	18.10	1.60	6.00	11.20	21.00
SW4	Downstream	6°43'37.546"	4°42'53.235"									
SW5	Earth Dam	6°44'15.098"	4°44'51.406"									
FME				**6.5-8.5**	**NS**	**NS**	**NS**	**250**	**50**	**NS**	**20**	**75**
CODE	**River**	**Latitude**	**Longitude**	**Na (ppm)**	**K (ppm)**	**Mn (ppm)**	**Cu (ppm)**	**Fe (ppm)**	**Zn (ppm)**	**Cd (ppm)**	**Pb (ppm)**	
SW1	Upstream	6°49'3.675"	4°43'52.903"	8.99	11.91	0.02	0.00	8.00	0.00	0.00	0.00	
SW2	Midstream	6°46'40.177"	4°43'4.143"	4.98	22.97	0.00	0.00	4.00	0.00	0.00	0.00	
SW3	Midstream	6°45'6.773"	4°43'8.945"	3.96	9.93	0.01	0.00	1.00	0.00	0.00	0.00	
SW4	Downstream	6°43'37.546"	4°42'53.235"									
SW5	Earth Dam	6°44'15.098"	4°44'51.406"									
FME				**NS**	**NS**	**0.5**	**0.5**	**300**	**5.0**	**0.003**	**1.0**	

SAMPLE ID	TOTAL VIABLE COUNT (CFU/ML)		GENERAL ISOLATES
	Bacteria	Fungi	
SLP2-SW1	152×10^2	3	Coliform Aspergillus sp present
SLP2-SW2	86×10^2	5	Coliform Aspergillus sp present
SLP2-SW3	38×10^2	10	Coliform Aspergillus sp Present

SW1- Upstream; SW2 – Mid Stream; SW3 – Mid stream; SW4- Downstream; SW5- Earth Dam

4.4.5.2 Results of Surface Water Analysis

Based on the result of this test, all physicochemical parameters are within FMEnv recommended threshold for aquatic, agriculture and recreational. All water samples were devoid of heavy metal contamination. The microbiological parameters depicted the positive presence of coliform bacteria in all samples indicating faecal contamination.

4.4.6 Flora and Fauna

The ecological studies were carried out as part of the ESIA to establish the existing ecological conditions and any anticipated changes before the establishment of the special livestock processing zone project. Attention was paid to biological environment (i.e., flora and fauna types and diversity, rare and endangered species within or adjacent to the project area) and adjoining areas.

4.4.6.1 Flora (Vegetation)

The natural vegetation of this area is the lowland tropical rainforest type, composed of a variety of hard wood timbers. In the study area, the vegetation consists of woody savannah featuring tree species like Blighia sapida and Parkia biglobosa. Some common economic trees in the project area include; cocoa, coconut, cashew, and herbal trees like bitter leaf.

Floristic Composition, Distribution, Density and Diversity of Terrestrial Vegetation

The families/sub-families that had the highest frequency of occurrence of plant species include Caesalpiniaceae, Ochnaceae, Cochlospermaceae, Mimosaece, Annonaceae, Verbanceae, Ulmaceae, Cleomaceae, Lamiaceae, Loganiaceae, Euphorbiaceae, Araceae and Poaceae. Plant species with frequencies of occurrence of 50% and above within this vegetational zone along the proposed project area include:

- **Trees/shrubs:** *Bombax buonopozense, Daniellia oliveri, Lophira lanceolata, Pterocarpus erinaceus, Cochlospernum planchoni, Vitex doniana, Parkia clappertoniana Annona senegalensis, , Anacardium occidentalis, Anogeissus leiocarpa*
- **Herbs:** *Aspilia africana, Cleome viscosa, Calopogonium sp, Phyllanthus amarus, Tridax procumbens, Euphorbia heterophylla, E. hirta, Hyptis suavolens, , Anchomanes welwitschii.*
- **Grasses:** *Andropogon gayanus, Brachiaria lata, Imperata cylindrica, Hyparrhenia involucrata, H.rufa, Sporobolus pyramidalis, Pennisetum polystachion*.

- Trees of the family of *Anogeissus leiocarpa (Anacardiaceae)* are particularly common in the study area. Within the study area the dominant trees were thus *Anogeissus leiocarpa, Anacardium occidentale, Daniellia oliveri, Piliostigma thonningii* (Caesalpiniaceae), *Parkia clappertoniana* (Mimosaceae), *Lophira lanceolata* (Ochnaceae), and *Vitex doniana* (Verbanaceae) and these form an association. Palm trees (Oil, Borrassus and Raffia) and other riparian forest trees were encountered along river/stream courses. Of the smaller trees and shrubs, species of *Piliostigma thonningii, Annona senegalensis, and Cochlospermum planchoni* are common. The herbaceous genera encountered belonged mainly to the families *Fabaceae, Euphorbiaceae, Cleomaceae and Asteraceae*. The commonest monocotyledonous plants belonged to the families *Poaceae, Araceae and Cyperaceae*.

4.4.6.2 Vegetation Sampling Methods

Transect sampling method was used to determine the vegetation cover of the study areas. A transect is a straight line across an expanse of ground along which ecological measurements are taken, continuously or at regular intervals. A 25 m by 25 m and 50 cm by 50 cm transects were used for the study. Because a single transect cannot be expected to sample a community adequately, repeated transects samples were taken. The sampling points were divided up into sub-areas depending on habits and apparent floristic differences; and these were sampled separately; within sub-areas, transects were established randomly. This type of sampling approach ensures a representative sample of the different physical and floristic features of the study areas. This type of sampling is called stratified random sampling.

When sampling vegetation using transects, different measures of abundance were quantified to assess the influence or “importance” of each species in each marked out transects. For example, the following were taken:

- Counts – a simple tally of the number of individuals of a species
- Cover – the percent (%) area of the transect occupied by a plant species.

- Density – estimated by quantifying the number of individuals of a species per unit area.
- Frequency – the proportion of transects sampled in which the species is represented.

To determine the proportional representation of each species relative to the entire plant community, relative cover, relative density and relative frequency values were then computed. For example, relative cover is the proportional cover of an individual species as a percentage of total plant cover; hence, it is expressed as a percentage, ranging from 0 – 100%. “Importance” is a measure of overall influence of a plant species in the community. An Importance Value (IV) for each species is derived from the combined contribution of the relative cover, relative density and relative frequency of each species in the community.

Floristic Composition of Selected Sample Locations:

Table 4.6: Flora Species Composition of the Project Area

SN	Species	Family Name	Common Name	Habit	Uses
1	*Acacia spp*	Fabaceae	Wattles, Acacias	Tree	Medicinal
2	*Adansonia digitata*	Malvaceae	Baobab, Macaw-fat	Tree	Food, medicinal, religious
3	*Afzelia africana*	Fabaceae	African mahogany	Tree	Timber
4	*Albizia ferruginea*	Mimosaceae	Indian siris	Tree	Medicinal
5	Alchornea cordifolia	Euphorbiaceae	Christmas bush	Tree	Medicinal
6	*Anacardium occidentale*	Anacardiaceae	Cashew	Tree	Fruit
7	*Anogeissus leiocarpa*	Anacardiaceae		Tree	Medicinal
8	*Annona senegalensis*	Annonaceae	Custard-apple	Tree	Fruit
9	*Anogeissus leiocarpus*	Combretaceae	Axle-wood tree	Tree	Timber
10	*Azadirachta indica*	Meliaceae	Neem, Dogoyaro	Tree	Medicinal
11	*Axonopus compressus*	Poaceae	Broadleaf carpet grass	grass	
11	*Bambusa vulgaris*	Poaceae	Bamboo	Tree	Construction
12	*Bauhinia tomentosa*	Fabaceae	Yellow bauhinia, Yellow bell orchid tree	Tree	Medicinal
13	*Bombax buonopozense*	Bombacaceae		Tree	Medicinal
14	*Borassus Aethiopum*	Palmae	Giginya	Tree	Wine, fruit
15	*Bridelia micrantha*	Phyllanthaceae	Bridelia, Coast goldleaf	Tree	Medicinal
16	*Celtis integrifolia*	Ulmaceae	African Nettle, Zuwo	Tree	Medicinal
17	*Daniellia oliveri*	Fabaceae	West african copal tree	Tree	Timber, medicinal
18	*Dialium guineense*	Fabaceae	Velvet tamarind	Tree	Food
19	*Diopspyro spp*	Ebenaceae	African satinwood, Ayan	Tree	Timber, charcoal
20	*Eleais guineensis*	Arecaceae	African oil palm	Tree	Food, medicinal
21	*Gmelia arborea*	Verbaneaceae	Gmelia	Tree	Timber
24	*Khaya senegalensis*	Meliaceae	Mahogany	Tree	Timber
25	*Mangifera indica*	Anacardiaceae	Mango	Tree	Fruit
26	*Parkia biglobosa*	Fabaceae	African locust bean tree	Tree	Seasoning
27	*Prosopris Africana*	Fabaceae	Iron tree, Guele	Tree	food, medicine, timber
28	*Pterocarpus erinaceus*	Fabaceae	African rosewood	Tree	Timber
29	*Tectona grandis*	Combretaceae	Teak	Tree	Pole
30	*Vitellaria paradoxa*	Sapotaceae	Shea butter tree	Tree	Medicinal
31	*Vitex doniana*	Lamiaceae	West african plum, African oak	Tree	Food, medicinal
32	*Acacia nilotica*	Fabaceae	Scented-pod acacia	Shrub	shade, food, fodder
33	*Annona senegalensis*	Annonaceae	African custard-apple, Wild soursop	Shrub	Fruit, medicine
34	*Balanites aegyptiaca*	Zygophyllaceae	Desert date	Shrub	Food, medicine
35	*Calotropis Procera*	Asclepiadaceae	Adams apple	Shrub	Medicinal
36	*Cochlospermum planchoni*	Bixaceae	Gbehutu or Feru	Shrub	Medicinal
37	*Entada gigas*	Fabaceae	Monkey-ladder , Sea bean	Shrub	Food, medicine
38	*Nauclea latifolia*	Rubiaceae	African peach	Shrub	Medicinal
39	*Newbouldia laevis*	Bignoniaceae		Shrub	Medicinal, religious

*Plate 4.xxx **1:** Axonopus spp and Celtis integrifolia within the project location*

Plate 5: Riparian ecosystem within the project area (showing lush evergreen vegetation along the stream channels)

4.4.6.3 Ecological Occurrence in the Project Area

4.4.7 Fauna

4.4.7.1 Methodologies for Fauna Assessment

Wildlife survey was carried out through direct observations, informal interviews, net trapping of terrestrial and flying Insects, Auditory and visual study of amphibians and reptiles (herpetofauna) and mammals, Nest box log, point counts and feeder counts for birds as well as signs of animal's presence which included scat (faeces); footprints, burrows, nests, or dens; cast-off larval cases or cocoons; tracks, carcasses as well as wildlife specimens provided by local residents, vigilantes, hunters and bush-meat traders to show evidence of their occurrence. Characteristic sounds, such as bird song, were also used to reveal an animal's presence and sometimes information about relative abundance. Wildlife species known to be mostly secretive and nocturnal were sampled at night times with the help of the locals and vigilante group in the community.
Species targets

- Migratory birds
- Resident birds
- Game animals
- Carnivores
- Prey species
- Rodents
- Insects
- Reptiles
- Amphibians

The list of animal species encountered in the project area is provided in Table 4.7 while the evidence of the occurrence of some of them is presented in Plate 6

4.4.7.2 Conservation Status of Animal Species in the Study Area

The conservation status of the animal species in the study area was evaluated using the International Union for Conservation of Nature (IUCN) Red List Categories and Criteria. The IUCN Red List of Threatened Species is widely recognized as the most comprehensive, objective global approach for evaluating the conservation status of animal, fungi and plant species and their links to livelihoods. The IUCN Red List is set upon precise criteria to evaluate the extinction risk of thousands of species and subspecies. The aim is to convey the urgency of conservation issues to the public and policy makers, as well as help the international community to try to reduce species extinction. Species are classified by the IUCN Red List into nine groups as follows:

- Extinct (EX) – No known individuals remaining.
- Extinct in the wild (EW) – Known only to survive in captivity, or as a naturalized population outside its historic range.
- Critically endangered (CR) – Extremely high risk of extinction in the wild.
- Endangered (EN) – High risk of extinction in the wild.
- Vulnerable (VU) – High risk of endangerment in the wild.

- Near threatened (NT) – Likely to become endangered in the near future.
- Least concern (LC) – Lowest risk. Does not qualify for a more at-risk category. Widespread and abundant taxa are included in this category.
- Data deficient (DD) – Not enough data to make an assessment of its risk of extinction.
- Not evaluated (NE) – Has not yet been evaluated against the criteria.

When discussing the IUCN Red List, the official term "threatened" is a grouping of three categories: Critically Endangered, Endangered, and Vulnerable.

Table.4.7: List of animal species encountered in the project area

Scientific name	Common name	Family	Conservation Status
MAMMALIAN			
Thryonomys swinderianus	Greater cane rat	Thryonomidae	LC
Tragelaphus scriptus	Antelope	Bovidae	VU
Cephalophus maxwelli	Maxwell duiker	Bovidae	VU
Civettictis civetta	African civet	Viverridae	LC
Potamochoerus larvatus	Bush pig	Suidae	LC
Cercopithecus mona	Mona monkey	Cercopithecidae	VU
Papio spp	Baboon	Cercopithecidae	VU
Cricetomys gambianus	African giant rat	Muridae	NT
Numida meleargris	Helmeted guinea fowl	Numididae	NT
Vivera civita	African civet cat	Viverridae	VU
Canis catus	Domestic cats	Felidae	NE
Canis lupus familiaris	Domestic dog	Canidae	NE
Sus scrofa domesticus	Domestic pig	Suidae	NE
Capra aegagrus hircus	Domestic goat	Bovidae	NE
Ovis aries	Domestic sheep	Bovidae	NE
Ratus ratus	House rats	Muridae	NE
Bos taurus	Cow	Bovidae	NE
Equus africanus	Donkey	Equidae	NE
Chaerephon nigeriae	Nigerian Free- Tailed Bat	Molossidae	NT
REPTILIAN			
Varanus niloticus	Nile Monitor Lizard	Varanidae	VU
Python regius	Royal Python	Boidae	EN
Python sebae	African Python	Boidae	EN
Naja melanoleuca	Black Cobra	Elapidae	EN
Agama agama	Native agama	Agamidae	LC
Plestiodoon fasciatus	Five lined skink	Scincidae	LC
AMPHIBIAN			
Ptychadena taenioscelis	Dwarf grass Frog	Ptychadenidae	Least concern
Bufo regularis	Common toad	Bufonidae	Least concern
AVIAN			
Ardea alba	Great egret	Ardeidae	LC
Milvus migrans	Black kite	Accipitridae	LC
Columba livia domestica	domestic pigeon	Columbidae	LC
Bubulcus ibis	Cattle Egret	Ardeidae	LC
Elanus caeruleus	Black-shouldered Kite	Accipitridae	NT
Falco tinnunculus	Common Kestrel	Falconidae	NT
Francolinus bicalcaratus	Double-spurred Francolin	Phasianidae	LC
Merops albicollis	White-throated Bee-eater	Meropidae	LC
Tockus fasciatus	African Pied Hornbill	Bucerotidae	LC
Motacilla aguimp	African Pied Wagtail	Motacillidae	NT
Pycnonotus barbetus	Common Garden Bulbul	Pycnonotidae	LC
Nectarinia chloropygia	Olive-bellied Sunbird	Nectariniidae	LC

Scientific name	Common name	Family	Conservation Status
Passer griseus	Grey-headed Sparrow	Passeridae	LC
Lagonosticta senegala	Red-billed Fire-Finch	Estrildidae	LC
Actophilornis africana	Lillly trotters, African jacana	Jacanidae	LC
Cossypha natalensis	Red capped robin chat	Muscicapidae	LC
Streptopelia senegalensis	Laughing dove	Columbidae	LC
Tockus erythrorhynchus	Red hornbill	Bucerotidae	LC
Tockus nasatus	Grey horn bill	Bucerotidae	LC
Venellus superciliosis	Wattled plover	Charadriidae	LC

4.4.7.3 Invertebrates

The results of the invertebrate species assessment indicated that phylum Arthropoda was predominant in the study area. The observed invertebrates included a total of 19 arthropod species belonging to different taxa. There were frequent sightings of butterflies (Lepidoptera) and grasshoppers (Orthoptera). Table 4.8 below shows the classification of the invertebrate fauna observed in the study area.

Table.4.8: Classification of Invertebrate Fauna observed in the Project Area

Taxa /Common Names	Scientific Names	Order	IUCN Status
Phylum Arthropoda			
Bee	*Apis spp*	Hymenoptera	NE
Termites	*Marcotermes bellicosus*	Isoptera	NE
Common Black Ground Beetle	*Pterostichus melanarius*	Coleoptera	NE
Rhinocerous beetle	*Pentodon idiota*	Coleoptera	NE
Grass hopper	*Zonocerus variegates*	Orthoptera	NE
Gray bird grasshopper	*Schistocerca nitens*	Orthoptera	NE
Praying mantis	*Mantodea religiousa*	Orthoptera	NE
House Cricket	*Acheta domestica*	Orthoptera	NE
Field cricket	*Gryllus spp*	Orthoptera	NE
Mole cricket	*Gryllotalpa orientalis*	Orthoptera	NE
Black Ant	*Lepisiota sp.*	Hymenoptera	NE
Millipede	*Narceus americanus*	Spirobolida	NE
House Flies	*Musca domestica*	Diptera	NE
Monarch Butterfly	*Danaus plexippus*	Lepidoptera	NE
Black Pansy	*Junonia oenone*	Lepidoptera	LC
Plain Tiger	Danaus chrysippus	Lepidoptera	NE
Centipede	*Lithobius forticatus*	Chilopoda	NE

LC – Least Concern; NE = Not endangered

4.4.8 Social Environment

4.4.8.1 Project Host Community

Odigbos administrative structure consists of a legislative council that makes laws which governs the local government area. The council consists of a presiding chairman and 10 councillors representing the 10 wards. Odigbo LGA has its administrative headquarters in ore the location of the Agro hub. The population Ore is about 600,000 (NPC, 2020), as Ore town continue to attract new inhabitants from neighbouring states. Ore town also maintains a traditional ruling system in the form of Obas. Detailed socioeconomics of Ore is given in Table 4.9

Table 4.9: General Baseline Survey of Ore

Variables	Description
Population	**Odigbo** is a Local Government Area in Ondo State, Nigeria. Its headquarters are in the town of Ore. It has a population of 230,351 (male 114,814, female 115,537) at the 2006 census. The current census as of 2020 is over 600,000 as Ore town continues to attract new inhabitants from every part of the country. The people of Odigbo local government are from the Yoruba lineage. These people include The Odigbos, and the Araromi Obus who largely observe similar customs and uphold the same tradition as other Yorubas. The biggest town of Osogbo local Government is Ore Town, this town is the major town separating the southwest from the Southeast. People from every part of the country lives in Ore Town because it's a commercial Town
Ethnicity	The people of Ore are from the Yoruba lineage
Language	The major languages extensively spoken in the area are the Yoruba dialects of Ikale and Ondo
Religion	The religions of Christianity and Islam are commonly practiced in the area
Festivals	A number of important festivals are held in Odigbo LGA and these include the Ogun and Ore festivals
Main livelihood	The major economic activity in the area is agriculture with emphasis on cultivation of food crops such as cassava, rice, yams and cash crops such as cocoa, oil palm, kola-nuts, etc.
Migrant Status	The Ore town is inhabited by non-indigenes like people from Oyo and Osun States as well as the Ikale people of Irele and Okitipupa local government areas of Ondo state and are engaged in trading and farming.
Existing Infrastructures in the project area	
Benin-Shagamu Express Road or A121 highway	The A121 highway is a major infrastructure along the project axis which traverses Benin- Ore to Shagamu in Ogun State. It is a trunk A road serving as the main linkage between Lagos, the commercial centre of Nigeria to all the South-south, South-

Variables	Description
	Eastern states. In addition, there are other arterial roads that serve as linkages to other South western states. The site for the SAPZ access to the road is less than one kilometre
12km intra-farm Road	This provides linkages to the various parts of the project site location. Some of the identified culverts had been constructed. Although the roads was proposed to be tarred but currently, it is being maintained as earth road
Three Earth Dams	The earth dams were primarily designed as gravity dams for powering some 120 ponds located at the downstream end of the dams. Two of the dams had failed while the existing one is poorly maintained
Water Infrastructure	The source of water supply is River Oluwa which is a major river that runs through Ondo State with River Oluwa as its tributary. The river is about 1km to the proposed SAPZ site towards the south-western border.
Energy Infrastructure	The SAPZ has a close proximity to the 518MW Omotosho II Power Plant, an open cycle gas turbine power plant and state owned 30MWw Tri-fuel powered Ore Power Plant
ICT Connectivity	An MTN mast is located very close to the proposed SAPZ and farms which provides the needed backbone for internal access for ICT connectivity.
Access to Market	The location of the proposed Industrial hub has access to the major commercial centres in Nigeria. Lagos, Abeokuta, Ibadan, Benin City, Port-Harcourt, etc These cities have good road linkages to Ore. The following logistics infrastructure are available in Ore: ▪ A121 highway – This is a trunk A road linking Ore to Lagos, Shagamu, Abeokuta, Benin City, Port-Harcourt, Onitsha, etc. ▪ The proposed railway lines that would traverse most of the major cities in Nigeria would pass through Ore; ▪ The major seaports in Nigeria are within are less than 200 Km from the proposed project sites; ▪ About four airports, Akure, Benin, Lagos and Ibadan are in close proximity of the proposed project site.
Transportation	The A121 trunk road that passed through the proposed location with many arterial roads estimated at 24km would provide effective means of transportation. The Benin-Sagamu-Ore major highway connecting Ondo to Lagos State is less than 1km to the SAPZ Site

CHAPTER 5: ASSOCIATED AND POTENTIAL IMPACTS

5.1 Introduction

The activities associated with the proposed construction and operation of the SAPZ at Odigbo LGA in Ondo State, Nigeria, will inevitably result in varying degrees of impacts on the bio-physical and social environment. In this Chapter, the potential impacts of the proposed project are identified and assessed to determine their significance. Subsequently, mitigation measures are proffered to avoid, reduce or compensate for all potentially significant impacts on the physical (air, surface water, groundwater, soils, etc.), biological (terrestrial and aquatic flora and fauna) and human (particularly host community and farmers etc) environment.

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

5.2 Impact Assessment Approach and Methods

The broad approach (and methods) adopted for assessing the impacts of the construction and operation of the SAPZ on the physical, biological and social environment is adapted from the International Organization for Standardization (ISO) 14001 requirements for risk and impact assessment as well as *Environmental Management System Procedure (EMSP) Aspects and Impacts – Determining Significance developed by the University of Bristol in 2015*. The impacts were assessed using a combination of primary and secondary information collected from project areas (grazing reserve and local communities) as well as professional experience and judgements of the multidisciplinary ESIA team. The impact assessment process involved 3 key stages, namely:

***5.2.1 Impact Prediction or Identification*:** this first stage entails prediction of changes to the environment that could result from the proposed construction and installations at the selected facilities. The prediction of these changes is based on the identification of potential interactions between aspects/ activities of the project and the physical, biological and social resources/receptors.

5.2.1 Impact Characterization: entails characterizing/forecasting the nature, magnitude, extent, duration, frequency and scale of the impacts. Characterization will essentially help determine the magnitude of impacts and degree of change the impact is likely to have on the receptor.

5.2.3 Impact Evaluation: entails determination of the significance of impacts based on the magnitude of impacts and the value, sensitivity/fragility and recoverability of the affected receptors. This requires an in-depth appraisal of the attributes of potential receptors which has been carried out during the baseline studies and documented in Chapter 4.

The impact assessment process was undertaken in line with the process summarised in Figure 10.

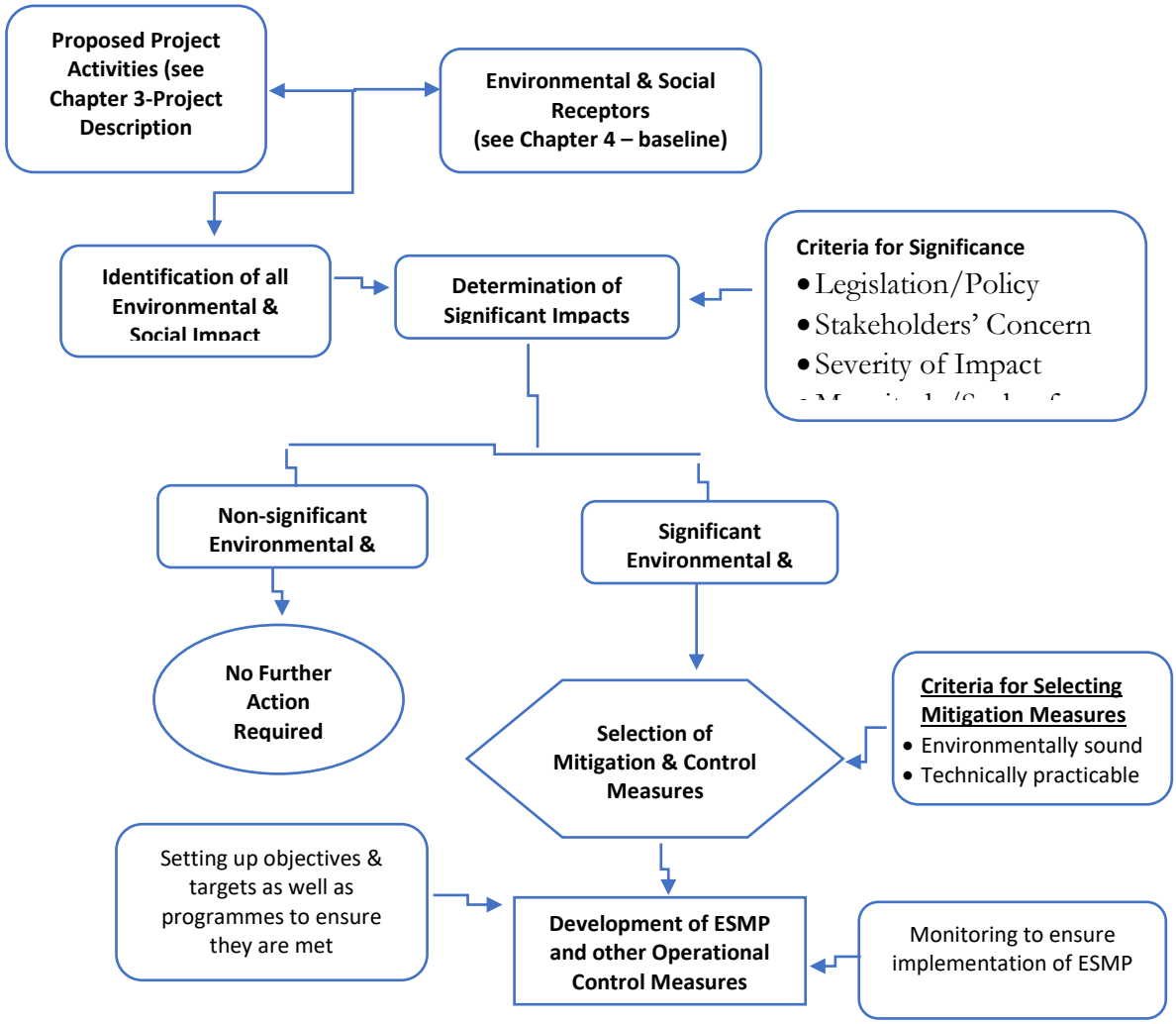

Figure 10: Overview of Impact Assessment Process

5.2.4 Environmental and Social Impact Identification

The potential impacts of the project were predicted in the context of the interactions of the environmental aspects of project activities and the environmental (and social) receptors in the project area of influence during the construction and operational phases of the project. The prediction of impacts based on the linkages (the source-pathway-receptor approach) among project activities, aspects and receptors. The positive impacts of the proposed project are presented below while all identified negative impacts are identified and evaluated in Table **0**5.1.

5.2.4.1 Potential Positive Impacts

The potential positive impacts of the project include but not limited to the following:

- The project will reduce poverty by creating direct and indirect jobs for farmers and herders, traders, and other agro value chain participants.
- The output of the project (particularly meat and dairy) will lead to improved food and nutrition security for the local population.
- Provision of employment opportunities for the teeming youths of Ore town and Odigbo LGA at large and many others.
- Steady supply of quality livestock products for the manufacturing of Ready-to-Eat (RTE) products (such as Sausages, milk, cheese, yoghurt, ice cream etc) and consumer packaged goods (CPGs) such as milk-based drinks.
- Support other ancillary Infrastructural development such as: Power/Electricity (30MW Ore industrial park or Omotosho NIPP 518MW extension), Health facilities, Irrigation/water facilities, Education (Schools), Roads infrastructure, Water infrastructure (potable water supply), Vocational Training, Sports and leisure options for youth
- Increased incomes for the farmers and better purchasing power for farmers across 6 senatorial zone, through access to better inputs, resulting to better yields and reduced post-harvest losses from Processing.
- Promotion of cocoa price stability with the necessary regulation by Ondo State Government.
- Expand demand for local agricultural produce by creating new international and local market.
- Increase the forex earning on cocoa by reduction of cocoa beans exports and begin exports of value-added cocoa by-products after meeting local demands
- Improving the living and working conditions of cocoa farmers and their families and workers.
- Raising the opportunities for cocoa farmers to participate in the decision making processes behind cocoa marketing.
- Contribution to reduced national expenditure on importation of livestock products and increased export and foreign exchange earnings.
- Increased private sector capacity and skills in livestock management and value chain development.
- Provision of enabling infrastructure for livestock value chain development.
- The project will contribute to the realisation of the following UN SDG in Nigeria: Goal 1: End poverty in all its forms everywhere. Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture. Goal 8: Promote inclusive and sustainable economic growth, employment and decent work for all. Goal 9: Build resilient infrastructure, promote sustainable industrialization and foster innovation and Goal 12: Ensure sustainable consumption and production patterns.

5.2.4.2 Impact Characterization

In order to further qualify the impacts of the various proposed project activities on the environment and people, all identified impacts were characterised based on the nature, duration and reversibility of impacts as shown in Table5.1.

Table 5.1: Impact Characterization Parameters and Definition

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

5.2.4.3 Impact Evaluation

The third stage in the assessment procedure involved the evaluation of the concerns, issues and impacts identified. This was based on the Risk Assessment Matrix (RAM). The risk of the impacts occurring was analysed by determining the consequence/severity of the impacts and the probability of occurrence. The severity of the consequences was determined using a Consequence Severity Table and the probability of an impact resulting from a pathway was determined with a Likelihood Ranking Table. The RAM in Table 5.2 was then used to determine the level of risk and the significances or otherwise of the impacts.

Table 5.2: Probability of Occurrence, Consequence Severity, Likelihood Ranking and Risk Matrix

Probability	**Attributes**
Certain	Impacts that can reasonably be expected to occur during the project
Likely	Impacts that are likely to occur during the project
Possible	Impacts that might occur sometime during the project
Unlikely	Impacts that can reasonably be expected NOT to occur during the project
Rare	Impacts that are unlikely to occur except in exceptional circumstances

Severity	**Attributes**
Negligible	No detectable environmental and socio-economic impact
Marginal	Minimum environmental and socio-economic impact. Localised reversible habitat loss or minimal long term effects on habitat species or media/ public health and safety
Critical	Significant environmental and socio-economic harm. Significant widespread and persistent changes in species, habitat and media (e.g., widespread habitat degradation/public health and safety)
Catastrophic	Detrimental environmental and socio-economic impact. Loss of a significant portion of a valued species or effective ecosystem function on a landscape scale/ injury and death is possible

	Severity			
Probability	Negligible	Marginal	Critical	Catastrophic
Certain				
Likely				
Possible				
Unlikely				
Rare				

Low	
Medium	
High	
Extreme	

Impact Rating

- Low Risk: No response plans will be needed for these risks.
- Medium Risk: Actions may be required to control acceptable risk.
- High Risk: Adequate action and management attention are required to control risk. There is need for some response planning for these risks.
- Extreme Risk: Significant additional action and high priority management attention will be required to control risk. There is need for an in-depth response plan for these risks.

Table 05.3: Characterization and Evaluation of Potential Impacts of Proposed Project

Project Activity	Potential Impact	Impact Qualification										Risk		Impact Category
		Direct	Indirect	Reversible	Irreversible	Cumulative	Long term	Short term	Beneficial	Adverse	Residual	Probability	Severity	
PRE-CONSTRUCTION PHASE														
Site Preparation and Clearing for Access/ Internal Road, Forage development and other SAPZ Infrastructure.	Air quality deterioration from release of dusts and gaseous emissions from exposed soil surfaces and vehicles may affect receptors such as motorist plying the Benin-Shagamu expressway situation close to the project locale	X		X				X		X		CERTAIN	MARGINAL	HIGH
	Noise and vibration from the use of machineries and motorized equipment	X		X				X		X		LIKELY	MARGINAL	HIGH
	Loss of vegetation cover due to clearing for forage development and construction	X		X				X		X		CERTAIN	MARGINAL	HIGH
	Exposure of wild animals to poaching/hunting	X		X				X		X		LIKELY	MARGINAL	HIGH
	Reduction in carbon sequestration in the project area due to removal of trees											LIKELY	NEGLIGIBLE	MEDIUM
	Removal of vegetation and trees leading to habitat destruction and fauna loss	X		X				X		X		LIKELY	NEGLIGIBLE	MEDIUM
Mobilization and storage of equipment, materials on site	Movement of equipment, vehicles and workforce into project area, could introduce invasive species which adversely impact fauna, flora, ecosystems, and crops.	X		X				X		X		POSSIBLE	MARGINAL	MEDIUM
	Depletion of soil fauna due to removal of vegetation	X		X				X		X		LIKELY	NEGLIGIBLE	MEDIUM
	Soil erosion and loss of soil quality from exposure of soil to weather elements	X		X				X		X		LIKELY	MARGINAL	HIGH
Installation of Site Offices & Workers Camp Site	Soil contamination from spillages of oil and other petroleum products from leakages and/or improper handling during maintenance of vehicles and equipment	X		X				X		X		POSSIBLE	MARGINAL	MEDIUM
	Soil compaction and predisposition to erosion due to movement of vehicles on site and stacking of heavy-duty equipment	X		X				X		X		POSSIBLE	MARGINAL	MEDIUM
	Generation of vegetal wastes from de-vegetation and site clearing activities	X		X				X		X		CERTAIN	MARGINAL	HIGH
	Contamination/pollution of sources of water, food and fodder for animals during clearing	X		X				X		X		LIKELY	MARGINAL	HIGH
	Eutrophication/nutrient-enrichment due to siltation of River Oluwa and dam as a result of sediment runoffs from exposed soils during clearing	X		X				X		X		LIKELY	MARGINAL	HIGH
	Alteration of aquatic habitat in rivers as a result of pollution and sedimentation may lead to depletion of aquatic biota	X		X				X		X		LIKELY	MARGINAL	HIGH
	Traffic congestion/travel delay along the access road to project site will occur as a result of mobilization of workers, equipment and other materials to the site	X		X				X		X		POSSIBLE	MARGINAL	MEDIUM
	Storage of materials and equipment on site may attract theft and lead to security breaches and threat to lives and properties.	X		X				X		X		POSSIBLE	CRITICAL	HIGH

Project Activity	Potential Impact	Impact Qualification										Risk		Impact Category
		Direct	Indirect	Reversible	Irreversible	Cumulative	Long term	Short term	Beneficial	Adverse	Residual	Probability	Severity	
	There could be increased exposure to health risks from fugitive dusts and exhausts fumes.	X		X				X		X		POSSIBLE	MARGINAL	MEDIUM
	Site clearing and mobilization of workers, equipment and other materials to the site may cause an upsurge in noise nuisance in the area which can have adverse health impacts	X		X				X		X		POSSIBLE	MARGINAL	MEDIUM
	Struck by injuries from falling of trees	X		X				X		X		POSSIBLE	MARGINAL	MEDIUM
	Occupational accidents and injuries from use of heavy machineries and equipment	X		X				X		X		POSSIBLE	MARGINAL	MEDIUM
CONSTRUCTION PHASE														
Construction of SAPZ Infrastructure such as Access/Internal Roads, Buildings, Livestock Containments, Boreholes	Air Quality deterioration from dusts generated during excavation, filling, backfilling and compaction activities	X		X				X		X		LIKELY	MARGINAL	HIGH
	Noise and vibration from the use of machineries and vehicles during excavation, burrowing, backfilling and compaction activities	X		X				X		X		POSSIBLE	MARGINAL	MEDIUM
	Predisposition of soil to erosion during excavation and earth movement	X		X				X		X		LIKELY	MARGINAL	HIGH
	Loss, damage or disruption of soil/sediments during construction works.	X		X				X		X		POSSIBLE	MARGINAL	MEDIUM
	Release of hazardous substances associated with construction activities or with transport of goods (e.g., accidental spills & leaks), leading to soil, surface or groundwater contamination.	X		X				X		X		POSSIBLE	MARGINAL	MEDIUM
	Siltation of River Oluwa and dam due to runoff of spoils and topsoil from exposed soils	X		X				X		X		LIKELY	MARGINAL	HIGH
	Generation of construction waste including spoils, debris and concrete wastes.	X		X				X		X		LIKELY	MARGINAL	HIGH
	Generation of scrap wastes from mechanical and electrical works such as pieces of electric cables, timbers, metals cuttings, nails and packaging materials	X		X				X		X		LIKELY	MARGINAL	HIGH
	Inefficient waste management during construction leading to excess consumption of materials, generation of wastes/emissions, pollution of soils and water.	X		X				X		X		POSSIBLE	CRITICAL	HIGH
	Introduction of air pollutants into the atmosphere from asphalt laying on access/internal roads.	X		X				X		X		POSSIBLE	MARGINAL	MEDIUM
	Disruption to livelihood activities such as farming and grazing due to interruptions caused by construction activities	X		X				X		X		POSSIBLE	MARGINAL	MEDIUM
	Construction activities will likely intercept or terminate the flow of the existing surface water bodies and Wells; and cause lack of water for human and livestock drinking as well as water for irrigation.	X		X				X		X		LIKELY	MARGINAL	HIGH
	Abstraction of large volume of water from ground or surface water sources may affect supply for other water users and result in conflicts over water use.	X		X				X		X		POSSIBLE	MARGINAL	MEDIUM

Project Activity	Potential Impact	Impact Qualification										Risk		Impact Category
		Direct	Indirect	Reversible	Irreversible	Cumulative	Long term	Short term	Beneficial	Adverse	Residual	Probability	Severity	
	Traffic congestion and increased road traffic accident on the Shagamu-Benin expressway and site access road due to movement of heavy-duty vehicles in and out of the construction site.	X		X				X		X		POSSIBLE	MARGINAL	MEDIUM
	The project has no safeguard officers and is likely not able to implement the ESMP prepared for the project	X		X			X			X		LIKELY	CRITICAL	HIGH
	Risk of health problems from exposures to noise, fugitive dust and exhaust emissions from the use of machineries & motorized equipment for construction	X		X				X		X		LIKELY	MARGINAL	HIGH
	Risk of occupational accidents and injuries from working in excavations and the use of machineries and equipment	X		X				X		X		POSSIBLE	CRITICAL	HIGH
Presence of Migrant Workers & Business Opportunists	Direct employment of local population in workforce, and stimulation of local economy through export of and demand for goods and services will enhance livelihoods and economic activity in local communities; potential for adverse effects if expectations not met and community relations are not well managed.	X		X			X		X			CERTAIN	MARGINAL	HIGH POSITIVE
	Threat to Ore community culture, safety and security due to presence of workers and business opportunists.	X		X				X		X		POSSIBLE	MARGINAL	MEDIUM
	Real or perceived disruption to normal community life, through the physical presence of a non-local workforce.	X		X				X		X		POSSIBLE	MARGINAL	MEDIUM
	Risk of illicit behaviour and crime (including prostitution, theft, robbery and substance abuse)	X		X				X		X		POSSIBLE	MARGINAL	MEDIUM
	Interaction between non-local workforce and local communities may increase occurrence of communicable diseases, including HIV/AIDS and sexually transmitted diseases (STDs).	X		X				X		X		POSSIBLE	MARGINAL	MEDIUM
	Potential increased prevalence of GBV & SEA resulting from interaction among construction workers, community members and camp followers	X		X				X		X		POSSIBLE	MARGINAL	MEDIUM
	Child labour and school drop-out in nearby communities of Ore due to availability of construction work	X		X				X		X		POSSIBLE	MARGINAL	MEDIUM
	Individuals are likely to migrate into the project area from the local/regional area, which may cause conflict with residents, and put pressure on resources and infrastructure.	X		X				X		X		POSSIBLE	MARGINAL	MEDIUM
	Pollution of River Oluwa and dam from open defaecation of construction workers may lead to increased risk of water borne diseases in nearby communities.	X		X				X		X		POSSIBLE	MARGINAL	MEDIUM
	Assault of workers, kidnapping and vandalization of equipment by local youths over local jobs	X		X				X		X		POSSIBLE	CRITICAL	HIGH
	Conflicts between investors and farmers over labour related issues	X		X				X		X		POSSIBLE	CRITICAL	HIGH
	Loss of employment for temporary construction workers	X		X				X		X		CERTAIN	MARGINAL	HIGH

Project Activity	Potential Impact	Impact Qualification										Risk		Impact Category
		Direct	Indirect	Reversible	Irreversible	Cumulative	Long term	Short term	Beneficial	Adverse	Residual	Probability	Severity	
Creation of borrow pits.	Unsustainable excavation and non-rehabilitation of burrow pits may lead to land degradation and increased susceptibility to erosion and flooding	X		X				X		X		POSSIBLE	CRITICAL	HIGH
	Borrow-pit may become inundated with water and pose possible risk of accident and drowning to human and animals.	X		X				X		X		POSSIBLE	CRITICAL	HIGH
OPERATION AND MAINTENANCE PHASE														
Operation and Maintenance of SAPZ and Ancillary Infrastructure	Dust and emissions from maintenance activities, and from vehicles and machinery during operation, could affect human health, vegetation and wildlife.	X		X			X			X		POSSIBLE	MARGINAL	MEDIUM
	Increase ambient noise from machineries and equipment including haulage trucks	X		X			X			X		LIKELY	MARGINAL	HIGH
	Odours associated with livestock and waste may have nuisance implications for nearby receptors and workers/farmers	X		X			X			X		LIKELY	MARGINAL	HIGH
	Abstraction of large volumes of water from surface or groundwater sources for watering livestock and irrigation may affect supply for human communities and ecosystems.	X		X			X			X		LIKELY	CRITICAL	HIGH
	Inefficient waste management during operation and maintenance leading to excess consumption of materials, generation of wastes/emissions, pollution of soils and water.	X		X			X			X		LIKELY	CRITICAL	HIGH
	Loss, damage or disruption of soil/sediments from livestock presence (e.g. trampling).	X		X			X			X		POSSBLE	MARGINAL	MEDIUM
	Development of agro hub in remote or undeveloped areas leading to further development, increased disturbance and pressure on natural resources through bush meat hunting, logging, fire, etc.	X		X		X	X			X		POSSIBLE	MARGINAL	MEDIUM
	Increased development in remote areas could lead to greater demand for bush meat (from workforce and wider community), stimulate the wildlife trade and facilitate access to hunting areas.	X		X			X			X		POSSIBLE	MARGINAL	MEDIUM
	Presence of livestock and humans may displace animals and disturb their habitats, by direct disturbance during construction and operation (e.g., livestock grazing and movements, increased human and vehicle presence, noise, light disturbance at night, construction of associated facilities).	X		X			X			X		POSSIBLE	MARGINAL	MEDIUM
	Degradation of health and size of populations of native species due to spread of diseases from livestock and farmed crops	X		X			X			X		POSSIBLE	CRITICAL	MEDIUM
	Increased likelihood of certain vector-, animals- or water-borne diseases spreading within workforce and local community due to presence of livestock and	X		X			X			X		POSSIBLE	CRITICAL	HIGH

Project Activity	Potential Impact	Impact Qualification										Risk		Impact Category
		Direct	Indirect	Reversible	Irreversible	Cumulative	Long term	Short term	Beneficial	Adverse	Residual	Probability	Severity	
	standing water; health risks associated with chemicals used and wastes produced during operation (e.g. pesticides, noxious gases).													
	Poor animal welfare (e.g., malnutrition)	X		X			X			X		LIKELY	CRITICAL	HIGH
	Pollution of watercourses from open defaecation of construction workers may lead to increased risk of water borne diseases in nearby communities.	X		X		X	X			X		LIKELY	CRITICAL	HIGH
	Fear of sustainability of the project amidst change of political leadership	X		X			X			X		POSSIBLE	CRITICAL	HIGH
	Marginalization of the vulnerable groups and minority tribes	X		X			X			X		POSSIBLE	CRITICAL	HIGH
	Risk of illicit behavior and crime (including prostitution, theft and robbery)	X		X			X			X		POSSIBLE	CRITICAL	HIGH
	Individuals are likely to migrate into the project area from the local/regional area, which may cause conflict with residents, and put pressure on resources and infrastructure.	X		X			X			X		LIKELY	CRITICAL	HIGH
	Labour Influx which could lead to increase in sexual activities and potential spread of STDs/STIs including HIV/AIDS in the project location	X		X			X			X		POSSIBLE	CRITICAL	HIGH
	Potential increased prevalence of GBV & SEA resulting from interaction among construction workers, community members and camp followers	X		X			X			X		POSSIBLE	CRITICAL	HIGH
	Child labour and school drop-out in Ore community due to availability of construction work	X		X			X			X		POSSIBLE	CRITICAL	HIGH
	Traffic congestion and increased road traffic accident due to movement of vehicles conveying (inputs and products to and from the SAPZ.	X		X		X	X			X		LIKELY	MARGINAL	MEDIUM
	Transportation and storage of hazardous materials such as petrol and gas may results in explosions, fires or spills during operation.	X		X		X	X			X		POSSIBLE	CRITICAL	HIGH
	Threat to Ore community culture, safety and security due to presence of workers and business opportunists.	X		X			X			X		POSSIBLE	MARGINAL	MEDIUM
	Evolution of slums/uncontrolled human settlements around the SAPZ with attendant overcrowding, crimes, vices and diseases.	X		X			X			X		POSSIBLE	MARGINAL	MEDIUM
	Poor management of occupational health and safety leading to accidents, injuries and illnesses among workers); mental health issues due to remote or enclosed living.	X		X			X			X		LIKELY	MARGINAL	MEDIUM
	Differences in nationality, ethnicity, religion, etc. may lead to discrimination and harassment, and differences (perceived or real) in working conditions between workers may lead to resentment.	X		X			X			X		LIKELY	MARGINAL	MEDIUM
	Generation of waste products consisting primarily of palm fronts, spent kernels and pods, manure with straw	X		X		X	X			X		CERTAIN	MARGINAL	HIGH

Project Activity	Potential Impact	Impact Qualification										Risk		Impact Category
		Direct	Indirect	Reversible	Irreversible	Cumulative	Long term	Short term	Beneficial	Adverse	Residual	Probability	Severity	
Forage Fields and Fodder Plants	Continuous air emission sources will include a service boiler house, transportation, grain cracking, husking, drying and cooling of finished products.	X		X			X			X				
	Abstraction of large volume of water	X		X		X	X			X		POSSIBLE	CRITICAL	HIGH
	Generation of waste including fodder and grain dust, sludge and packaging waste	X		X		X	X			X		CERTAIN	MARGINAL	HIGH
	Pollution of watercourses caused by wastes from livestock, and workforce sewage effluent, as well as runoff from grazing areas and land used for growing feed (containing fertilisers, pesticides and herbicides etc.).	X		X			X			X		POSSIBLE	CRITICAL	HIGH
Abattoir and Meat Processing Areas	Abstraction of large volumes of water may lead to water shortages in the zone	X		X			X			X		POSSIBLE	CRITICAL	HIGH
	Poor hygiene and management of abattoir may lead to bacterial contamination with attendant public health risk	X		X			X			X		POSSIBLE	CRITICAL	HIGH
	Generation of animal waste including manure, blood and inedible animal parts and chemical used for tanning may lead to environmental contamination	X		X		X	X			X		CERTAIN	MARGINAL	HIGH
	Emission of methane, ammonia and other GHGs may aggravate climate change and cause unpleasant odours	X		X		X	X			X		CERTAIN	MARGINAL	HIGH
	Odours from animal waste products and some carcass treatment and manure in the lairage pens	X		X		X	X			X		LIKELY	MARGINAL	MEDIUM
	Pollution of soil and watercourses due to run-off or discharge of untreated foul water (effluents) and improper management of waste	X		X		X	X			X		LIKELY	CRITICAL	HIGH
Milk Production Areas	Generation of manure waste may lead to uncontrolled release of ammonia and environmental contamination	X		X		X	X			X		CERTAIN	MARGINAL	HIGH
	Generation/ uncontrolled discharge of foul water with high BOD, suspended solids and nutrients may cause pollution/eutrophication/nutrient-enrichment in waterbodies.	X		X		X	X			X		LIKELY	CRITICAL	HIGH
	Poor hygiene and management of milk may lead to bacterial contamination with attendant public health risk	X		X			X			X		POSSIBLE	CRITICAL	HIGH
Veterinary and Disease Control	Zoonoses (potential transmission of diseases between animals and humans)	X		X			X			X		POSSIBLE	CRITICAL	HIGH
	Degradation of health and size of populations of native species due to spread of diseases from livestock.	X		X			X			X		POSSIBLE	CRITICAL	HIGH
	Generation of hazardous waste (including medical waste and animal tissues)	X		X			X			X		CERTAIN	MARGINAL	HIGH
Crop Production Area	Pollution of watercourses caused by run-off from farming areas (containing fertilisers, pesticides and herbicides etc.).	X		X		X	X			X		POSSIBLE	CRITICAL	HIGH
	Conflict between farmers and investors over labour related issues	X		X		X	X			X		LIKELY	CRITICAL	HIGH
Cocoa Plantation and processing	Risk of child labour on plantations	X		X			X			X		POSSIBLE	MARGINAL	HIGH
	Generation of wastes from production and processing of cocoa	X		X			X			X		CERTAIN	CRITICAL	HIGH

Project Activity	Potential Impact	Impact Qualification										Risk		Impact Category
		Direct	Indirect	Reversible	Irreversible	Cumulative	Long term	Short term	Beneficial	Adverse	Residual	Probability	Severity	
	Occupational hazards from operation of machinery in processing plant	X		X			X			X		POSSIBLE	MARGINAL	HIGH
Oil palm plantation and processing	Risk of child labour on plantations	X		X			X			X		POSSIBLE	MARGINAL	HIGH
	Generation of wastes from production and processing of oil palm	X		X			X			X		CERTAIN	CRITICAL	HIGH
	Occupational hazards from operation of machinery in processing plant	X		X			X			X		POSSIBLE	MARGINAL	HIGH

CHAPTER 6: MITIGATION AND ENHANCEMENT MEASURES

6.1 Introduction

This Chapter describes mitigation measures that are technically and financially feasible to address environmental and social impacts associated with the development SAPZ at Ore in Odigbo LGA of Ondo State, Nigeria. The mitigation measures recommended are commensurate with the nature and magnitude of the potential impacts taking into cognisance the peculiarity of the proposed project and activities as well as environmental and social setting of the project area.

6.2 Mitigation Approach

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

6.2.1 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.

6.2.2 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.

6.2.3 Compensation: To compensate for the impact by replacing or providing substitute resources especially for unavoidable and residual impacts. This does not eliminate the adverse impact but seeks to offset it with an (at least) comparable positive one.

6.3 Mitigation and Enhancement Measures

A summary of all identified impacts as well as the proposed mitigation measures is presented in **Error! Reference source not found.**6.1.

Table 6.1: Mitigation and Enhancement Measures

Project Phase and Planned Activities	Associated and Potential Impacts	Pre-Mitigation Significance	Mitigation Measure	Post mitigation (Residual) significance
PRE-CONSTRUCTION PHASE				
Site Preparation and Clearing for Access/ Internal Road, Forage development, Crop production and other SAPZ Infrastructure.	Air quality deterioration from release of dusts and gaseous emissions from exposed soil surfaces and vehicles may affect motorist plying the Benin-Shagamu expressway.	HIGH	• Use spraying devices such as water tanker to sprinkle water on exposed soil surfaces to limit dusts. • Ensure all vehicles and machines are serviced and meet appropriate emissions standards before being brought to site. • Train drivers/ workers on proper operation of vehicles & equipment to include fuel efficiency and anti-idling techniques. • Tarpaulins should be used to cover trucks transporting earth materials or spoil on public roads	LOW
Mobilization and storage of equipment, materials on site Installation of Site Offices & Workers Camp Site	Noise and vibration from the use of machineries and motorized equipment	HIGH	Ensure equipment not in use are turned off. Ensure construction work is limited to daytime hours to limit impact of noise. Provide appropriate PPE for hearing protection and enforce usage. Ensure use of low-noise machineries and equipment or fit with exhaust mufflers/silencers to minimize noise.	LOW
	Loss of vegetation cover due to clearing for crop production and construction	HIGH	• Schedule vegetation clearing to occur in phases so that the entire area is not cleared at once. • Avoid Land clearing by bush burning to reduce the amount of CO_2 released in the course of establishing the hub • Where possible, ensure site clearing is done during the dry season to protect work areas from erosion. • Restrict removal of vegetation and trees to ONLY areas of need within the Agri hub • Protect all vegetation not required to be removed against damage particularly riparian vegetation along the watercourses to act as buffer zone and sediment trap. • Ensure early installation of temporary drainage and diversion structures to include silt traps. • Re-vegetate cleared unused areas and ensure site landscaping plan include green areas where indigenous plant species and tolerant grasses and shrubs are planted. • Use vegetal waste as compost to aid rapid vegetal propagation.	LOW
	Reduction in carbon sequestration in the project area due to removal of trees	HIGH		LOW
	Removal of vegetation and trees leading to habitat destruction and fauna loss	MEDIUM		LOW
	Depletion of Soil fauna due to removal of vegetation	MEDIUM		
	Soil erosion and loss of soil quality from exposure of soil to weather elements	HIGH		
	Movement of equipment, vehicles and workforce into project area, could introduce invasive species which adversely impact fauna, flora, ecosystems, and crops.		• Training and awareness-raising amongst workers, farmers and communities on potential impacts of invasive species. • No introduction of exotic species (e.g., for site rehabilitation) without specialist vetting and approval by OSMARD.	

Project Phase and Planned Activities	Associated and Potential Impacts	Pre-Mitigation Significance	Mitigation Measure	Post mitigation (Residual) significance
			• Ensure clearance of invasive species upon completion of construction and periodically during SAPZ operations.	
	Soil contamination from spillages of oil and other petroleum products from leakages and/or improper handling during maintenance of vehicles and equipment	MEDIUM	• Ensure all vehicles and machines are serviced before being brought to site to avoid leaks of oil. • Install impermeable surface (bunds) at fuel storage areas, vehicle servicing & limit zone to contain potential leakages. • Prevent unregulated dumping of fuel waste by ensuring that spent oil drained from equipment during maintenance are properly collected and sent to recycling facility.	
	Soil compaction and predisposition to erosion due to movement of vehicles on site and stacking of heavy-duty equipment	MEDIUM	• Limit zone of vehicle and equipment weight impacts by designating an area for parking and stacking equipment	
	Generation of vegetal wastes from de-vegetation and site clearing activities	HIGH	• Prepare and Implement Waste Management Plan (WMP). • Waste to be disposed should be evacuated by OWEPA approved vendors. • To the extent possible, woody debris and slash generated from vegetation clearance should be given to locals for use as fuel wood for cooking or mulched for use in farms or site restoration.	LOW
	Contamination/pollution of sources of water, food and fodder for animals during clearing	HIGH	• Schedule vegetation clearing to occur in phases so that the entire area is not cleared at once. • Where possible, ensure site clearing is done during the dry season to protect work areas from erosion. • Restrict removal of vegetation and trees to ONLY areas of need within the Reserve. • Protect all vegetation not required to be removed against damage particularly riparian vegetation along the watercourses to act as buffer zone and sediment trap. • Ensure early installation of temporary drainage and diversion structures to include silt traps. • Re-vegetate cleared unused areas and ensure site landscaping plan include green areas where indigenous plant species and tolerant grasses and shrubs are planted. • Use vegetal waste as compost to aid rapid vegetal propagation.	LOW
	Eutrophication/nutrient-enrichment due to Siltation of River Oluwaand dam as a result of sediment runoffs from exposed soils during clearing	HIGH		LOW
	Alteration of aquatic habitat in rivers as a result of pollution and sedimentation may lead to depletion of aquatic biota	HIGH		LOW
	Traffic congestion/travel delay along the access road into the project site will occur as a result of mobilization of workers, equipment and other materials to the site	MEDIUM	• Implement Traffic Management Plan (TMP) prepared for the project, including the following: • Hire drivers with appropriate driver's license, train drivers and enforce speed limit. • Mobilization of equipment and machinery should be done at off-peak period (10am – 4pm). • Ensure trucks and other vehicles are parked at the designated parking area within the project site and prohibited from parking along Benin-Shagamu expressway to prevent obstruction of traffic. • Ensure Traffic/caution signs at strategic locations in English and Yoruba and engage personnel to manage traffic flow during peak periods.	

Project Phase and Planned Activities	Associated and Potential Impacts	Pre-Mitigation Significance	Mitigation Measure	Post mitigation (Residual) significance
			• Cover truck conveying materials to site to prevent materials falling and causing injuries to pedestrians & motorists.	
	Storage of materials and equipment on site may attract theft and security breaches and threat to lives and properties.	HIGH	• Ensure deployment of 24-hour security guards and distribution of suitable security light. • Ensure consultation and collaboration with local Police	
	There could be increased exposure to health risks from fugitive dusts and exhausts fumes.	MEDIUM	• Use spraying devices such as water tanker to sprinkle water on exposed soil surfaces to limit dusts. • Ensure provision of appropriate PPE for eye/respiratory protection and enforce usage.	
	Site clearing and mobilization of workers, equipment and other materials to the site may cause an upsurge in noise, fugitive dust and exhaust fumes nuisance in the area which can have adverse health impacts	MEDIUM	• Ensure use of low-noise machineries and equipment or retrofit with exhaust mufflers/ silencers to minimize noise. Ensure equipment not in use are turned off. Ensure construction work is limited to daytime hours to limit impact of noise. Provide appropriate PPE for hearing, eyes and respiratory protection and enforce usage by workers and visitors. Restrict access of non-project personnel to work areas where dusts and emissions exist/persist from project works.	
	Occupational accidents and injuries from use of heavy machineries and equipment as well as struck by injuries from falling of trees, insect bites and exposure to dangerous animals etc.	MEDIUM	• Develop a project specific Occupational Health and Safety Plan (OHSP) commensurate to construction activities. OHSP to include: • Prohibition of drug and alcohol use by workers while on the job. • Provision of adequate first aid, first aiders, PPE, signages (English and Yoruba), engineering barriers e.g., fencing. • Restrict unauthorized access to all areas of high-risk activities. • Training of personnel on worksite OHS management, induction/ daily toolbox and refresher program. • Adequate safety signage and barriers at construction sites, staging areas, pits, equipment parking areas etc should be installed to alert workers, community members, drivers and pedestrians. • Lighting and reflective tapes and signages should be made available in all worksites for safety at night.	LOW
CONSTRUCTION PHASE				
Construction of SAPZ Infrastructure such as Internal Roads, Buildings, Processing	Air Quality deterioration from dusts generated during excavation, filling, backfilling and compaction activities	**HIGH**	• Use spraying devices such as water tanker to sprinkle water on exposed soil surfaces to limit dusts. • Ensure all vehicles and machines are serviced and meet appropriate emissions standards before being brought to site. • Train drivers/ workers on proper operation of vehicles & equipment to include fuel efficiency and anti-idling techniques.	LOW

Project Phase and Planned Activities	Associated and Potential Impacts	Pre-Mitigation Significance	Mitigation Measure	Post mitigation (Residual) significance
facilities, Livestock Containments, Impoundment and Boreholes			Tarpaulins should be used to cover trucks transporting earth materials or spoil on public roads	
	Noise and vibration from the use of machineries and vehicles during excavation, burrowing, backfilling and compaction activities	**MEDIUM**	Ensure equipment not in use are turned off. Ensure construction work is limited to daytime hours to limit impact of noise. Provide appropriate PPE for hearing protection and enforce usage. Ensure use of low-noise machineries and equipment or fit with exhaust mufflers/silencers to minimize noise.	LOW
	Introduction of air pollutants into the atmosphere from asphalt laying on internal roads.	**MEDIUM**	• Use dust control and suppression measures such as wetting, dampening. • Use modern equipment that meet appropriate and ensure regular preventive maintenance.	LOW
	Predisposition of soil to erosion during excavation and earth movement	**HIGH**	• Use erosion protection structures such as sediment traps, riprap, gabions etc. as additional measures to control erosion and run-off to waterbodies. • If possible, schedule construction to take place in dry season to prevent run-off to waterbodies. • Ensure stockpile and disposal areas are stable and protected against erosion and not interfere with run off or subsequent construction activities. Stockpile to be covered and stored in a sealed and bonded area in order to divert storm water away. • Reuse stockpile as fill materials for reclamation of river channel. • Establish vegetation buffers and green belts between project area and waterbodies.	LOW
	Loss, damage or disruption of soil/sediments during construction works.	**MEDIUM**		
	Siltation of River Oluwaand dam due to runoff of spoils and topsoil from exposed soils	**HIGH**		LOW
	Release of hazardous substances associated with construction activities or with transport of goods (e.g., accidental spills & leaks), leading to soil, surface or groundwater contamination.	**HIGH**	• Ensure all vehicles and machines are serviced before being brought to site. • to avoid leaks of oil. • Install impermeable surface at fuel storage areas, vehicle servicing & limit zone to contain potential leakages. • Ensure that equipment maintenance on site is done at the designated site where the surface is impervious. • Prevent unregulated dumping of fuel waste by ensuring that spent oil drained from equipment during maintenance are properly collected and sent to recycling facility.	LOW LOW
	Generation of construction waste including spoils, debris and concrete wastes.	**HIGH**	• Prepare Waste Management Plan following the waste hierarchy, supported by training and awareness-raising around topic of waste for workforce and for local community.	LOW

Project Phase and Planned Activities	Associated and Potential Impacts	Pre-Mitigation Significance	Mitigation Measure	Post mitigation (Residual) significance
	Generation of scrap wastes from mechanical and electrical works such as pieces of electric cables, timbers, metals cuttings, nails and packaging materials	**HIGH**	• Use of authorised contractors for hazardous and any other wastes which the project cannot dispose of safely. • Unsuitable soils can be used for reclamation. • Ensure recycling of scraps and other recyclables through approved recycling facilities to conserve resources. • Storage of hazardous waste onsite should be done in closed/ labelled containers, stored away from direct sunlight/ rain with bunds provided to contain spillage. • Ensure no waste is left behind at project site after construction.	LOW
	Inefficient waste management during construction leading to excess consumption of materials, generation of wastes/emissions, pollution of soils and water.	**HIGH**		LOW
	Construction activities will likely intercept or terminate the flow of the existing surface water bodies and Wells; and cause lack of water for human and livestock drinking as well as water for irrigation.	**HIGH**	• Proper channelization of surface water flow should be undertaken as part of measures to preserve water availability to the settlement and livestock during construction works. • An impoundment should be created as part of the SAPZ to accommodate varieties of water needs for irrigation, livestock production and value chain processing.	
	Abstraction of large volume of water from ground or surface water sources may affect supply for other water users downstream of the hub resulting in conflicts over water use.	**MEDIUM**	• Ensure water for construction is sourced from multiple sources including rainwater harvesting, waterbodies, borehole and water tankers to prevent overreliance on a single source. • Promotion of water efficiency (including leak detection, preventative maintenance of equipment) and water recycling. • Water for construction SHOULD not be sourced from perennial streams during the dry season.	LOW
	Traffic congestion and increased road traffic accident along Benin-Shagamu expressway and site access road due to movement of heavy-duty vehicles in and out of the construction site.	**MEDIUM**	• Implement Traffic Management Plan (TMP) prepared for the project, including the following: • Hire drivers with appropriate driver's license, train drivers and enforce speed limit. • Mobilization of equipment and machinery should be done at off-peak period (10am – 4pm). • Ensure trucks and other vehicles are parked at the designated parking area within the project site and prohibited from parking along the Benin-Shagamu expressway the Agri hub access road to prevent obstruction of traffic. • Ensure Traffic/caution signs at strategic locations in English and Yoruba and engage personnel to manage traffic flow during peak periods. • Cover truck conveying materials to site to prevent materials falling and causing injuries to pedestrians & motorists.	LOW
	The project has no safeguard officers and is likely not able to implement the ESMP prepared for the project	**HIGH**	• Employ or train personnel on environmental and social safeguards best practices. • Work closely with the Ministry of Environment to achieve success in environmental management including waste management	

Project Phase and Planned Activities	Associated and Potential Impacts	Pre-Mitigation Significance	Mitigation Measure	Post mitigation (Residual) significance
	Risk of health problems from exposures to noise, fugitive dust and exhaust emissions from the use of machineries & motorized equipment for construction	**HIGH**	• Ensure use of low-noise machineries and equipment or retrofit with exhaust mufflers/ silencers to minimize noise. Ensure equipment not in use are turned off. Ensure construction work is limited to daytime hours to limit impact of noise. Provide appropriate PPE for hearing, eyes and respiratory protection and enforce usage by workers and visitors. Restrict access of non-project personnel to work areas where dusts and emissions exist/persist from project works.	
	Poor management of occupational health and safety leading to accidents, injuries and illnesses among workers; mental health issues due to remote or enclosed living	**HIGH**	• Implement the Occupational Health and Safety Plan (OHSP) developed for this project. Prohibition of drug and alcohol use by workers while on the job. Provision of adequate first aid, first aiders, PPE, signages (English and Yoruba), engineering barriers e.g., fencing. Restrict unauthorized access to all areas of high-risk activities. Training of personnel on worksite OHS management, induction/ daily toolbox and refresher program. • Adequate safety signage and barriers at construction sites, staging areas, pits, equipment parking areas etc should be installed to alert workers, community members, drivers and pedestrians. • Lighting and reflective tapes and signages should be made available in all worksites for safety at night. • Rest and recreational facilities and time should be provided, and rules on alcohol and drugs defined and clearly communicated to workers. • The basis for differences in the standard of accommodation should be non-discriminatory; it should be documented and communicated transparently to the workforce.	LOW
Creation of borrow pits.	Unsustainable excavation and non rehabilitation of borrow pits may lead to land degradation and increased susceptibility to erosion and flooding	**HIGH**	• Avoid the production of excess spoil material and reduce the need for borrow pit materials. • Where burrowing becomes unavoidable, develop and implement Borrow pit Reclamation Plan to ensure that site is rehabilitated and restored to a safe and stable state. Plan should include measures to: • Re-contour/grade site to blend with natural topography. • Reuse excess stockpile to back fill pits during grading. • Revegetate with appropriate plant species. • Avoid material borrowing or restrict borrowing to approve quarry and ensure rehabilitation before the onset of wet season.	LOW
	Borrow-pit may become inundated with water and pose possible risk of accident and drowning to human and animals.	**HIGH**		LOW
	Community health & safety risks associated with creation and poor management of borrow pits and staging areas.	**HIGH**		LOW
Presence of Migrant Workers &	Direct employment of local population in workforce, and stimulation of local economy	**POSITIVE**	• Employment practices and working conditions should conform to International Labour Organization (ILO) Standards and national regulations.	

Project Phase and Planned Activities	Associated and Potential Impacts	Pre-Mitigation Significance	Mitigation Measure	Post mitigation (Residual) significance
Business Opportunists	through export of and demand for goods and services will enhance livelihoods and economic activity in local communities; potential for adverse effects if expectations not met and community relations are not well managed.		• Ensure priority engagement of workers from local communities. • Rest and recreational facilities and time should be provided, and rules on alcohol and drugs defined and clearly communicated to workers. • The basis for differences in the standard of accommodation should be non-discriminatory; it should be documented and communicated transparently to the workforce.	
	Real or perceived disruption to normal community life, through the physical presence of a non-local workforce.	**MEDIUM**	• Adopt a Stakeholder Engagement Plan, as a framework for early and ongoing community consultation. • Ensure priority engagement of workers from local communities. • Implement the Grievance Redress Mechanism designed for this project. • Define works procedure and Code of Appropriate Conduct for all workers, including acceptable behaviour with respect to community interactions.	
	Risk of illicit behaviour and crime (including prostitution, theft, robbery and substance abuse)	**MEDIUM**	• Ensure payment of adequate salaries for workers to reduce incentive for theft. • Pay salaries into workers' bank accounts rather than in cash. • Partner with the existing local vigilante and seek cooperation with the Police to curb the activities of theft and robbery. • Ensure priority engagement of workers from local communities. • Ensure creation of supervised leisure areas in workers' camp. • Introduce sanctions (e.g., dismissal) for workers involved in criminal activities. • Prohibit the use of illicit drugs by workers.	
	Potential increased prevalence of GBV & SEA resulting from interaction among construction workers, community members and camp followers	**MEDIUM**	• Mandatory and regular training for workers on required lawful conduct in host community and legal consequences for failure to comply with laws. • Training program for project personnel to include GBV and SEA issues. • Contractor to engage locals from the communities as labour force where possible. • All workers must be trained and retrained on the provisions of the Code of Conducts and have it signed. Training can be done in local language to ensure that it is understood by all. • Ensure cross gender participation in project implementation. • Provision of gender-based awareness campaign within the communities. • Commitment to cooperate with law enforcement agencies investigating perpetrators of GBV	
	Interaction between non-local workforce and local communities may increase occurrence of communicable diseases, including HIV/AIDS and sexually transmitted diseases (STDs).	**MEDIUM**	• Institute HIV prevention programs (peer education, condom distribution etc.) • Liaise with appropriate health focused NGOs to undertake health awareness and education initiatives on STDs amongst workers and in the host community. • Provide opportunities for workers to regularly return to their families. • Implement community-based Grievance Redress Mechanism (GRM).	

Project Phase and Planned Activities	Associated and Potential Impacts	Pre-Mitigation Significance	Mitigation Measure	Post mitigation (Residual) significance
	Threat to community culture, safety and security due to presence of workers and business opportunists.	**MEDIUM**	• Develop an induction program including a code of appropriate conduct for all workers. Code of conduct to address the following: Respect for local residents; No hunting or unauthorized taking of products or livestock; Zero tolerance of illegal activities such as child sexual exploitation and underage sex, prostitution, harassment of women, GBV, purchase or use of illegal drugs, Disciplinary measures and sanctions (e.g. dismissal) for infringement of the code of conduct and/or company rules; Commitment / policy to cooperate with law enforcement agencies investigating perpetrators of GBV. • Provide cultural sensitization training to improve awareness of and sensitivity of workers to local cultures, traditions, and lifestyles. • Implement GRM and Labour Influx Management Plan prepared for this project. • Limit the number of migrant workers by engaging local workers.	LOW
	Increased social vices/crimes and dilution of indigenous culture, norms and traditions in surrounding communities, due to influx of migrant workers and business opportunists	**MEDIUM**		
	Child labour and school drop out in nearby communities of Ore due to availability of construction work	**MEDIUM**	• Ensure children and minors are not employed directly or indirectly on the project. • Communication on hiring criteria, minimum age, and applicable laws should be ensured. • Enforcement of legislations that prohibits child labour. • Ensure CoCs contains texts that speak on zero tolerance on child labour and all forms of SEA/SH/VAC.	LOW
	Individuals are likely to migrate into the project area from the local/regional area, which may cause conflict with residents, and put pressure on resources and infrastructure.	**MEDIUM**	• Implement the Labour Influx Management Plan prepared for this project in consultation with Odigbo LGA • Limit the number of migrant workers by engaging local workers.	
	Increase demand on community health and sanitation infrastructure due to influx of workers and camp followers.	**MEDIUM**	• Provide basic amenities (water, sanitation etc to workers according to WHO standards). • Provide separate toilets for male and female workers.	LOW
	Pollution of River Oluwa and dam from open defaecation of construction workers may lead to increased risk of water borne diseases in nearby communities.	**MEDIUM**	• Provide water and sanitation amenities at the construction site and camp site so that workers will not use nearby bushes or the sisters. • Provide separate toilets for male and female workers.	LOW
	Assault of workers, kidnapping and vandalization of equipment by local youths over local jobs	**HIGH**	• Adopt a Stakeholder Engagement Plan, as a framework for early and ongoing community consultation. • Ensure priority engagement of workers from local communities. • Implement the GRM and Labour Influx Management Plan prepared for this project. • Engage competent security to protect workers and assets 24/7 in collaboration with the Police	
	Conflicts between contractors and community members over labour intake	**HIGH**		

Project Phase and Planned Activities	Associated and Potential Impacts	Pre-Mitigation Significance	Mitigation Measure	Post mitigation (Residual) significance
	Loss of employment for temporary construction workers	**HIGH**	• Ensure compliance with all legal and contractual agreement with workers. • Ensure all workers receive notice of dismissal and severance payments mandated by law and collective agreements in a timely manner. • Provide a grievance mechanism for workers to raise workplace concerns.	LOW
OPERATIONAL PHASE				
Operation and Maintenance of SAPZ and Ancillary Infrastructure	Increase ambient noise from machineries and equipment including haulage trucks	**HIGH**	• Ensure installation of modern processing equipment fitted with noise abatement technology such as silencers to exhaust systems. • Ensure installation of enclosure and cladding of processing plants. • Ensure installation of proper sound barriers and / or noise containments, with enclosures and curtains at or near the source equipment. • Ensure regular maintenance of processing plants to ensure noise is minimal. • Ensure provision of appropriate hearing PPE (earmuffs) for workers and enforce usage. • Ensure installation of processing plants on anti-vibration mountings. • Ensure that project staff are not exposed to more than nine hours at a go on any equipment generating noise level of more than 90 dBA	LOW
	Odour associated with livestock and waste can constitute nuisance for nearby receptors.	**HIGH**	• Ensure all processing facilities are installed in an enclosed plant and processing activities are taking place within an enclosed system to prevent odour. • Ensure provision of appropriate PPE (respiratory protection) for workers and enforce usage. • Ensure waste storage areas are covered including waste pond and effluent treatment plants. • Ensure proper sanitary conditions in livestock pens or ranches	LOW
	Abstraction of large volumes of water from surface or groundwater sources for cocoa and oil palm processing, irrigation and watering livestock may affect water availability and ecosystems.	**HIGH**	• Ensure water for SAPZ operation is sourced from multiple sources including rainwater harvesting, waterbodies, borehole and water tankers to prevent overreliance on a single source. • Promotion of water efficiency (including leak detection, preventative maintenance of equipment) and water recycling. • The existing impoundments within the project site should be rehabilitated as part of the SAPZ to accommodate varieties of water needs for irrigation, value chain processing and livestock production	
	Inefficient waste management during operation and maintenance leading to excess consumption of materials, generation of wastes/emissions, pollution of soils and water.	**HIGH**	• Implement the general and Livestock Waste Management Plan following the waste hierarchy, supported by training and awareness-raising around topic of waste for workforce and for local community. • Use of authorised contractors for hazardous and any other wastes which the project cannot dispose of safely.	LOW

Project Phase and Planned Activities	Associated and Potential Impacts	Pre-Mitigation Significance	Mitigation Measure	Post mitigation (Residual) significance
			• Encourage manure recovery for use as fertiliser and reapplication of by-products of cocoa and oil palm processing • Ensure treatment of effluents through Effluent Treatment Plant before discharge into the environment. Output should conform to FMEnv Effluent Standards. • Storage of hazardous waste onsite should be done in closed/ labelled containers, stored away from direct sunlight/ rain with bunds provided to contain spillage.	
	Generation of normal and hazardous waste during maintenance including obsolete parts (batteries, WEEE, solar panels etc)	**HIGH**	• Liaise with contractor/ manufacturer to take back obsolete parts including batteries, spent oils during maintenance and repair. • Alternatively, use waste vendor licensed by OSWMA to evacuate and process hazardous waste. • Storage of hazardous waste onsite should be done in closed/ labelled containers, stored away from direct sunlight/ rain with bunds provided to contain spillage.	LOW
	Pollution of soil and watercourses due to run-off of untreated effluents and improper management of hazardous waste from the processing complexes	**HIGH**	• Storage of hazardous waste onsite should be done in closed/ labelled containers, stored away from direct sunlight/ rain with bunds provided to contain spillage. • Ensure treatment of effluents through Effluent Treatment Plant before discharge into the environment. Output should conform to FMEnv Effluent Standards. • use waste vendor licensed by OSWMA to evacuate and process hazardous waste. • Establish vegetation buffers and green belts between project area and waterbodies.	
	Loss, damage or disruption of soil/sediments from livestock presence (e.g., trampling).	**MEDIUM**	• Establish clearly defined grazing areas within the zone (ranching) • Restrict livestock access to fragile/unstable soil; adapt the type and number of animals to the land carrying capacity.	
	Development of the Agri-hub and its ancillary infrastructure in its proposed remote or undeveloped area can lead to further development, increased disturbance and pressure on natural resources through bushmeat hunting, logging, fire, etc.	**MEDIUM**	• Where possible, instate access controls on roads leading to livestock containment areas or associated facilities in otherwise undeveloped or remote areas. • Develop an induction program including a code of appropriate conduct for all workers. Code of conduct to prohibit hunting for bushmeat or unauthorized taking of products or livestock. • Sensitisation and public awareness campaigns against hunting and bushmeat trade amongst livestock project workers and local communities.	
	Presence of livestock and humans may displace animals and disturb their habitats, by direct disturbance during operation (e.g, increased human and vehicle presence, noise, light disturbance at night, construction of associated facilities).	**MEDIUM**	• Demarcation and avoidance of areas of conservation interest (high value species, feeding or breeding sites, migration routes, etc.) where possible, and wildlife rescue and translocation where appropriate, under expert supervision. • Establish compensatory wildlife refuges, as needed.	

Project Phase and Planned Activities	Associated and Potential Impacts	Pre-Mitigation Significance	Mitigation Measure	Post mitigation (Residual) significance
	Pollution of watercourses from open defaecation of construction workers may lead to increased risk of water borne diseases in nearby communities.	**HIGH**	• Provide and maintain water and sanitation amenities at the construction site and camp site to prevent open defecation • Provide separate toilets for male and female workers.	LOW
	Fear of sustainability of the project amidst change of political leadership	**HIGH**	• Create a Special Purpose Vehicle (SPV) to manage the SAPZ in order to encourage private sector involvement and participation. SPV will manage critical aspects of the project such as the dam/water supply and other necessary infrastructure, solar farm, coca/oil palm processing, etc	
	Marginalization of the vulnerable groups and minority tribes in employment opportunities	**HIGH**	• As much as possible, groups should be encouraged to organize themselves as cooperatives with structures and be trained/sensitized for meaningful participation in the SAPZ. • Ensure gender inclusivity in employment opportunities • Develop compensation measures for affected parties (e.g., excluded farmers, downstream water users).	
	Conflict between farmers and Employees over wage related issues	**HIGH**	• Develop and in-house conflict resolution mechanism • Each farmer or worker employed should be engaged under written down terms and conditions and benefits that they are entitled to •	
	Risk of illicit behavior and crime (including prostitution, theft and robbery)	**HIGH**	• Ensure payment of adequate salaries for workers to reduce incentive for theft. • Pay salaries into workers' bank accounts rather than in cash. • Partner with the existing local vigilante and seek cooperation with the Police to curb the activities of theft and robbery. • Ensure priority engagement of workers from local communities. • Ensure creation of supervised leisure areas in workers' camp. • Introduce sanctions (e.g., dismissal) for workers involved in criminal activities. • Prohibit the use of illicit drugs by workers.	
	Threat to community culture, safety and security due to presence of workers and business opportunists.	**HIGH**	• Develop an induction program including a code of appropriate conduct for all workers. Code of conduct to address the following: Respect for local residents; No hunting or unauthorized taking of products or livestock; Zero tolerance of illegal activities such as child sexual exploitation and underage sex, prostitution, harassment of women, GBV, purchase or use of illegal drugs, Disciplinary measures and sanctions (e.g. dismissal) for infringement of the code of conduct and/or company rules; Commitment / policy to cooperate with law enforcement agencies investigating perpetrators of GBV. • Provide cultural sensitization training to improve awareness of and sensitivity of workers to local cultures, traditions, and lifestyles. • Implement GRM and Labour Influx Management Plan prepared for this project. • Limit the number of migrant workers by engaging local workers.	

Project Phase and Planned Activities	Associated and Potential Impacts	Pre-Mitigation Significance	Mitigation Measure	Post mitigation (Residual) significance
	Individuals are likely to migrate into the project area from the local/regional area, which may cause conflict with residents, and put pressure on resources and infrastructure.	**HIGH**	• Implement the Labour Influx Management Plan prepared for this project in consultation with Odigbo LGA • Limit the number of migrant workers by engaging local workers.	
	Labour Influx which could lead to increase in sexual activities and potential spread of STDs/STIs including HIV/AIDS in the project location	**HIGH**	• Institute HIV prevention programs (peer education, condom distribution etc.) • Liaise with appropriate health focused NGOs to undertake health awareness and education initiatives on STDs amongst workers and in the host community. • Provide opportunities for workers to regularly return to their families. • Implement community-based Grievance Redress Mechanism (GRM).	LOW
	Potential increased prevalence of GBV & SEA resulting from interaction among construction workers, community members and camp followers	**HIGH**	• Conduct GBV service mapping in the project area for effective referral and response. This coordination will be aimed at minimizing duplication of efforts since these data already exist and fostering greater coherence of approaches and programmes. • Include a GBV specialist as part of the E&S Safeguard team for the project. • Define and reinforce GBV requirements in procurement processes and contracts. • Separate toilet and shower facilities for men and women and add GBV-free signage. • Ensure regular GBV risks evaluation in order to update action/mitigation and training requirements throughout the project life cycle. • Ensure regular training of all workers on GBV and related issues throughout the life cycle of the project. • Create an effective Grievance Resolution Mechanism (GRM) with multiple channels to initiate complaint. This should have specific procedures for GBV cases confidentiality reporting with safe and ethical documenting. A parallel GRM for GBV and related issues can also be created.	LOW
	Child labour involvement in plantation work	**HIGH**	• Ensure that children and minors are not employed directly or indirectly on the project. • Communication on hiring criteria, minimum age, and applicable laws should be ensured. • Enforcement of legislations that prohibits child labour. • Ensure CoCs contains texts that speak on zero tolerance on child labour and all forms of SEA/SH/VAC.	LOW
	Evolution of slums/uncontrolled human settlements around the Agro-Industrial hub with attendant overcrowding, crimes, vices and diseases.	**HIGH**	• Odigbo LGAs and ONS Ministry of Land should ensure slums and unauthorised developments around the Agro hub are not allowed. • OMARD should ensure prompt reporting of illegal activities in and around the hub to the Police and relevant Ore and Odigbo LGA authorities for action.	LOW
	Increase demand on community health and sanitation infrastructure due to influx of workers and camp followers.	**HIGH**	• Provide basic amenities (water, sanitation etc to workers according to WHO standards) within the project site	LOW

Project Phase and Planned Activities	Associated and Potential Impacts	Pre-Mitigation Significance	Mitigation Measure	Post mitigation (Residual) significance
	Traffic congestion and increased road traffic accident due to movement of vehicles conveying (inputs and products to and from the SAPZ.	**MEDIUM**	• Hire drivers with appropriate driver's license, train drivers and enforce speed limit. • Ensure movement of inputs/ products to and from site is done at off-peak period (10am – 4pm). • Ensure trucks and other vehicles are parked at the designated parking lot within the Reserve and prohibited from parking along the Benin-Shagamu express and access roads to prevent obstruction of traffic. • Ensure Traffic/caution signs at strategic locations in English and Yoruba and engage personnel to manage traffic flow during peak periods. • Cover truck conveying inputs and produce to and from the Reserve to prevent materials falling and causing injuries to pedestrians & motorists.	LOW
	Transportation and storage of hazardous materials such as petrol and gas may results in explosions, fires or spills during operation.	**HIGH**	• Emergency response plan should be developed for the facility to include: • Training of workers in emergency response and procedure. • Procedures in the case of fire should be communicated to all employees. • Firefighting devices should be installed, and their position should be clearly marked and communicated to workers. • Ensure compliance of the SAPZ with fire safety is assessed by Federal Fire Agency. • Ensure fuel storage areas are clearly marked and secure to always prevent unauthorised access.	LOW
	Differences in nationality, ethnicity, religion, etc. may lead to discrimination and harassment, and differences (perceived or real) in working conditions between workers/farmers may lead to resentment.	**MEDIUM**	• Employment practices and working conditions should conform to International Labour Organization (ILO) Standards and national regulations. • Ensure priority engagement of workers from local communities. • Rest and recreational facilities and time should be provided, and rules on alcohol and drugs defined and clearly communicated to workers. • The basis for differences in the standard of accommodation should be non-discriminatory; it should be documented and communicated transparently to the workforce. • Clear and comprehensive health and safety reporting and grievance procedure system should be established and be freely available to all of the workforce.	
	Poor management of occupational health and safety leading to accidents, injuries and illnesses among workers); mental health issues due to remote or enclosed living.	**MEDIUM**		LOW
Crop Production and value chain processing	Generation of wastes (by-products from cocoa and oil palm harvesting and processing)		• Implement the Waste Management Plan following the waste hierarchy, supported by training and awareness-raising around topic of waste for workforce. • Use of authorised contractors for hazardous and any other wastes which the project cannot dispose of safely. • Encourage reapplication of by-products of cocoa and oil pam processing in other industries or as fertilizers or animal feed	
	Generation of odours from composting of spent farm materials			

Project Phase and Planned Activities	Associated and Potential Impacts	Pre-Mitigation Significance	Mitigation Measure	Post mitigation (Residual) significance
	Abstraction of large volume of water	**HIGH**	• Ensure water for SAPZ operation is sourced from multiple sources including rainwater harvesting, waterbodies, boreholes and water tankers to prevent overreliance on a single source. • Promotion of water efficiency (including leak detection, preventative maintenance of equipment) and water recycling. • An impoundment should be created as part of the SAPZ to accommodate varieties of water needs for irrigation, livestock production and value chain processing.	
	Indiscriminate discharge of waste effluent into rivers		• Establish site drainage structures for both foul water and storm water with interceptor (oil and water separator). Foul water to be channel though Effluent Treatment Plant before discharge into the environment. Output should conform to FMEnv. Effluent Standards • Implementation of standard good wastewater management and disposal procedures; wastewater drainage outlets to discharge into vegetated areas if possible; vegetation along watercourses and drainage lines to be retained if possible.	
	Occupational health risks associated with farming and harvesting of cocoa and palm fruits (e.g cuts and injuries, toxicity from pesticide use, falls, etc)		• Develop a project specific Occupational Health and Safety Plan (OHSP) commensurate to construction activities. OHSP to include: • Prohibition of drug and alcohol use by workers while on the job. • Provision of adequate first aid, first aiders, PPE, signages (English and Yoruba), engineering barriers e.g., fencing. • Restrict unauthorized access to all areas of high-risk activities. • Training of personnel on worksite OHS management, induction/ daily toolbox and refresher program.	
	Pollution of watercourses caused by run-off from farming areas (containing fertilisers, pesticides and herbicides etc.).	**HIGH**	• Implement agricultural techniques minimising the use of fertilisers, pesticides, herbicides etc. • Encourage the use of manure from livestock production areas to limit the	
	Conflict between farmers and Employees.	**HIGH**	• Develop and in-house conflict resolution mechanism • Each farmer or worker employed should be engaged under written down terms and conditions and benefits they are entitled to	
Livestock rearing, Abattoir and Meat Processing Areas	Abstraction of large volumes of water may lead to water shortages in the zone	**HIGH**	• Ensure water for SAPZ operation is sourced from multiple sources including rainwater harvesting, waterbodies, boreholes and water tankers to prevent overreliance on a single source. • Promotion of water efficiency (including leak detection, preventative maintenance of equipment) and water recycling. • An impoundment should be created as part of the SAPZ to accommodate varieties of water needs for irrigation, livestock production and value chain processing.	

Project Phase and Planned Activities	Associated and Potential Impacts	Pre-Mitigation Significance	Mitigation Measure	Post mitigation (Residual) significance
	Pollution of watercourses caused by wastes from livestock, and workforce sewage effluent, as well as runoff from grazing areas and land used for growing feed (containing fertilisers, pesticides and herbicides etc.).	**HIGH**	• Implement Livestock Waste Management Plan following the waste hierarchy, supported by training and awareness-raising around topic of waste for workforce and for local community. • Implement agricultural techniques minimising the use of fertilisers, pesticides, herbicides etc. • Encourage manure recovery for use as fertiliser.	
	Generation of waste products consisting primarily of manure with straw Generation of waste including fodder and grain dust, sludge and packaging waste	**HIGH**	• Implement Livestock Waste Management Plan following the waste hierarchy, supported by training and awareness-raising around topic of waste for workforce and for local community. • Encourage manure recovery for use as fertiliser by farmers.	
	Poor animal welfare (e.g., malnutrition)	**HIGH**	• The cattle will be housed in insulated buildings with controlled temperature and ventilation systems and ample space per cow. • Ensure barns have solid concrete flooring covered by straw particularly during cold periods and ensure waste products consisting primarily of manure with straw which is removed from the stables daily. • Ensure animals are well fed daily and provided adequate water for sustenance. • Train all workers on good practice in animal handling and prohibit animal cruelty.	
	Poor hygiene and management of abattoir may lead to bacterial contamination with attendant public health risk	**HIGH**	• Strict hygiene standards will be imposed at the site with all staff entering the slaughterhouse required to wear appropriate clothing, hair nets and footwear, and follow procedures for hand and foot disinfection. • Vehicles entering and leaving the abattoir should be subject to a disinfection procedure. • Any diseased animals/contaminated meat will be segregated from other animals/carcasses and collected by the veterinary authorities. • The facility should be cleaned at the end of each working day. This includes washing of floors to remove blood and solids using hosed water, brushes and disinfectants.	
	Generation of animal waste including manure, blood and inedible animal parts and chemical used for tanning may lead to environmental contamination	**HIGH**	• Implement Livestock Waste Management Plan following the waste hierarchy, supported by training and awareness-raising around topic of waste for workforce and for local community. • Implementation of standard good wastewater management and disposal procedures; wastewater drainage outlets to discharge into vegetated areas if possible; vegetation along watercourses and drainage lines to be retained if possible. • Effluent treatment should include maximising the extent that solids and blood are collected before entering the wastewater stream. • Establish site drainage structures for both foul water and storm water with interceptor (oil and water separator). Foul water to be channel though Effluent	

Project Phase and Planned Activities	Associated and Potential Impacts	Pre-Mitigation Significance	Mitigation Measure	Post mitigation (Residual) significance
			Treatment Plant before discharge into the environment. Output should conform to FMEnv. Effluent Standards. • Encourage manure recovery for use as fertiliser for use in nearby farms.	
	Emission of methane, ammonia and other GHGs may aggravate climate change and cause unpleasant odours	**HIGH**	• Create manure lagoons (impermeable pit or tank protected from rain and sun) to temporary store manure before being used as fertilizer in forage fields and nearby farms. • The production of methane can be encouraged and recovered for use as a fuel using specially designed recovery systems. The size of the SAPZ would make methane recovery feasible, although KWSG has no plans to recover methane at this time, however, other private investors should be encouraged to do so.	
	Odours from animal waste products and some carcass treatment and manure in the lairage pens	**MEDIUM**	• Odours should be minimised by good manure management; the animals will be held in lairage pens with slatted floors for manure collection with daily scrapping. • Odours from inedible animal parts can be managed by good housekeeping and livestock waste management practices, and for singeing odours using abatement equipment if necessary. • Inedible waste should be removed by specialist operators for rendering, or in the future, possibly utilised in the production of biogas that will subsequently be used as a fuel source for the facility.	
	Pollution of soil and watercourses due to run-off or discharge of untreated foul water (effluents) and improper management of waste	**HIGH**	• Establish site drainage structures for both foul water and storm water with interceptor (oil and water separator). Foul water to be channel though Effluent Treatment Plant before discharge into the environment. • ETP should consist of mechanical clarification using a 1mm screen followed by chemical flocculation, flocculent removal and dewatering and disposal of resultant solid waste in order for the output to conform to FMEnv Effluent Standards. • Effluent treatment should include maximising the extent that solids and blood are collected before entering the wastewater stream. • Implement Livestock Waste Management Plan following the waste hierarchy, supported by training and awareness-raising around topic of waste for workforce and for local community. • Use of authorised contractors for hazardous and any other wastes which the project cannot dispose of safely. • Encourage manure recovery for use as fertiliser. • Storage of hazardous waste onsite should be done in closed/ labelled containers, stored away from direct sunlight/ rain with bunds provided to contain spillage.	

Project Phase and Planned Activities	Associated and Potential Impacts	Pre-Mitigation Significance	Mitigation Measure	Post mitigation (Residual) significance
Milk Production Areas	Generation of manure waste may lead to uncontrolled release of ammonia and environmental contamination	**HIGH**	• Implement Livestock Waste Management Plan following the waste hierarchy, supported by training and awareness-raising around topic of waste for workforce and for local community. • Ensure barns are equipped with slatted flooring and manure scrapers to reduce ammonia emissions through regular collection of manure in collection basins underneath the flooring. The under-floor manure basins will be periodically emptied to manure lagoons from where manure recovery for use as fertiliser will be done. • Establish site drainage structures for both foul water and storm water with interceptor (oil and water separator). Foul water to be channel though Effluent Treatment Plant before discharge into the environment. Output should conform to FMEnv. Effluent Standards.	
	Generation/ uncontrolled discharge of foul water with high BOD, suspended solids and nutrients may cause pollution/eutrophication/nutrient-enrichment in waterbodies.	**HIGH**		
	Poor hygiene and management of milk may lead to bacterial contamination with attendant public health risk	**HIGH**	• Strict hygiene standards should be imposed at the milking parlour with all staff entering required to wear appropriate clothing, hair nets and footwear, and follow procedures for hand and foot disinfection. • Vehicles entering and leaving the facility should be subject to a disinfection procedure. • All animals in the barn (milking parlour) must be checked daily by Veterinary Doctor to confirm they are not infected before milking. • The barns should have slatted floors and equipped with automatic cleaning scrapers with manure basins underneath to collect manure (and urine). The barns should also be regularly disinfected.	
Veterinary and Disease Control	Zoonoses (potential transmission of diseases between animals and humans)	**HIGH**	• Ensure adequate and sufficient medical and veterinary services/ clinics and presence of doctors are included within project planning. • Good environmental, sanitation and hygiene conditions of the livestock processing zone • Veterinary screening of all livestock for diseases prior to introduction into the grazing reserve. • Proper containment of livestock, to reduce interaction with wild and other domestic animal populations. • Monitor diseases in livestock and implement appropriate actions to eliminate any diseases detected, especially those with potential to spread to wild populations (e.g., control vectors using bioenvironmental management techniques). • Ensure control of human/animal interactions. • Monitor diseases in livestock and implement appropriate actions to eliminate any diseases detected, especially those with potential to spread to humans (e.g., vector control, use of quarantine, contact avoidance, focal use of insecticides etc.).	
	Degradation of health and size of populations of native species due to spread of diseases from livestock.	**HIGH**		
	Increased likelihood of certain vector-, animals- or water-borne diseases spreading within workforce and local community due to presence of livestock and standing water; health risks associated with chemicals used and wastes produced during operation (e.g. pesticides, noxious gases).	**HIGH**		

Project Phase and Planned Activities	Associated and Potential Impacts	Pre-Mitigation Significance	Mitigation Measure	Post mitigation (Residual) significance
			• Regulate livestock waste and ensure appropriate ventilation in livestock buildings to control emissions of noxious gases. • Safely manage chemicals (e.g., appropriate containers and labelling, workforce training, use of protective equipment).	
	Generation of hazardous waste (including medical waste and animal tissues)	**HIGH**	• Implement the veterinary waste management plan prepared for this project and work closely with the Ondo State Ministry of Health to provide guidance and monitoring. • Install incinerator with secondary burners and gaseous pollutant abatement technology to manage medical waste. • The receptacles for waste should be sized appropriately for the waste volumes generated, colour-coded and labelled according to the types of waste to be deposited. • Ensure workers handling waste from the facility are using appropriate PPE including coveralls, face masks, hand-gloves and safety boots.	

6.4 Climate Change Consideration for the SAPZ

Intensifying crop production and addressing climate change must be done in an integrated and sustainable manner. All food-producing agricultural activities inevitably generate GHG emissions and thus face the same global challenge of minimising emissions whilst continuing to feed the world's growing population (UNEP, 2011. According to the United Nations Environment Programme2 (UNEP, 2011) the entire value chain of livestock production accounts for 18-25 % of the world's GHG emissions, Oil palm production involving deforestation releases global anthropogenic emissions of 6%-17% CO2 (Baccini et al.,2012).

The primary route of GHG emissions particularly in crop production is through land clearing for forage production. Plantation farming have the potential to increase climate change through deforestation and bush burning as a method of land clearing. Other sources include Nitrous oxide and methane from manure, water abstraction etc. Aspects of livestock production with regards to climate change potential include; deforestation for grazing, forage production, nitrous oxide from manure and slurry (31%) and methane from animal digestion (25%) (UNEP, 2011). These considerations have been extensively captured as part of the impacts with appropriate mitigation measures proffered to reduce the climate change potential of the SAPZ.
Organisations such as FAO3 provides support to help countries identify and conserve livestock breed diversity, which allows for evolution in line with environmental changes. There are Regional and global gene banks of the FAO which provide the maintenance of backup collections of genetic material that can be drawn upon to support climate change adaptation measures.

6.4.1 SAPZ Vulnerability to Climate Change

Nigeria as a whole continues to experience changing climatic conditions in its various regions. These changes present itself in the form of rising temperatures encouraging desertification, changes in rainfall pattern causing droughts in northern Nigeria and flash floods in the south amongst others. Crop production the primary focus of the SPAZ is sensitive to climate change. Conditions for optimum crop production are both abiotic (rainfall, temperature, CO2 etc) and biotic (disease, pests, pollinators, etc), all of which can be influenced negatively by climate change to reduce crop yield and nutritional quality contained in crop biomass without adaptation and mitigation strategies being applied
The table below shows how variability of rainfall and increased temperature; the major climate change impacts expose the major components of the SPAZ to the vulnerability. Table 6.2 presents how different aspects of SAPZ are vulnerable to the effects of climate change as well as mitigation and adaptation measures available

2https://unfccc.int/resource/docs/2012/smsn/ngo/194.pdf
3 http://www.fao.org/3/i6345e/i6345e.pdf

Table 6.2: SAPZ Vulnerability to Climate Change and Mitigation Measures

Climate Change Parameters	Crops (cocoa, oil palm, cassava)	Animals	Labour Force & Capital
Variability in Rainfall	• Decreased yields • Decreased forage quality • Changes in nutritional quality of crops • Changes in production system (e.g., from mixed crop-livestock to rangelands) • Increased susceptibility to cocoa pod disease	• Shortages in drinking & servicing water • Diseases • Increased & changed distribution of pathogens, parasites & vector. • Evolution of new diseases.	• Reduced income • Increased vulnerability from threat to livelihood • Decreased productivity • Migration
Temperature	• Decreased yields • Decreased forage quality. • Change in pasture composition • Reduced amount of some pollinators	• Heat stress • Decreased feed intake & livestock yields. • Decreased conception rates. • Altered metabolism & increased mortality. • Diseases • Increased pathogens, parasites & vectors. • Decreased resistance of livestock • New diseases • Domestic biodiversity loss	• Reduced income • Increased vulnerability from threat to livelihood. • Decreased productivity • Heat stress • Increased need for more plantations
CO_2 in the Atmosphere	• Partial stomata closure & reduced transpiration. • Delayed flowering		• Heat stress
Climate change Mitigation & Adaptation Solutions for the SAPZ	• Developing varieties resistant to climate change • Use of cover crops to maintain canopy cover • Use of mixed crops in plantation to help	• Water management (e.g., boreholes). • Breed for resistance to drought, heat and harsh environments. • Shifts in species, breeds and/or	• • On and off farm diversification. • Insurance. • Training farmers on good agricultural practices to increase yield

Climate Change Parameters	Crops (cocoa, oil palm, cassava)	Animals	Labour Force & Capital
	maintain canopy cover • Breed feed crops & forage resistance to drought and heat. • Changes in cropping calendar. • Agroforestry. • Increase mobility for resources	production system (e.g., small ruminants, poultry). • Disease control & animal health. • Cooling (indoor systems) or provide shade (e.g., trees)	• Institutional changes (e.g. trade, conflict resolution, income stabilisation programs)

Source: Adapted from FAO (2016)

6.4.2 SAPZ Potential Contribution to Climate Change

Agriculture contributes 17% of the global greenhouse gas emissions that are causing climate change and an additional 7%-14% through land use changes (OECD, 2016). The major source of GHG emission associated with crop production is through deforestation and bush burning. Mitigations against these major sources have been captured in this ESIA and is being addressed in the ESMP table with attendant cost implications.

The livestock sector contributes 380 million tonnes CO2-eq per year with beef and dairy cattle contributing 75% of the total emission (beef 45% and dairy 30% cattle) according to FAO (2016). The four major sources of GHGs emission are described below showing feeding and enteric fermentation accounting for over 85% of emission. Enteric fermentation is a natural part of the digestive process in animals such as cattle, sheep, goats etc where microbes in the digestive tract, or rumen, decompose and ferment food, producing methane as a by-product. To significantly reduce carbon emission, the development of the SAPZ should focus on the 2 major contributors (feeding and enteric fermentation).

S/N	Aspects	% Contribution	Colour Code
1	Energy Consumption	4.7	
2	Manure management	9.7	
3	Enteric Fermentation	39.1	
4	Feeding	46.7	

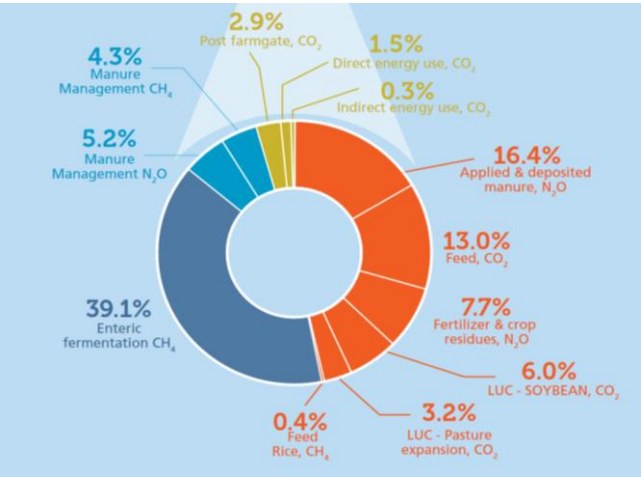

Figure 11: Sources of GHGs Emission in Livestock Production
Source: Adapted from FAO (2016)

6.4.2.1 Adaptation and Mitigation Measures

- Avoid land clearing by bush burning
- Planting of cover crops and operating a mixed plantation to increase carbon sequestration by crops.
- Re-vegetate cleared unused areas and ensure site landscaping plan include green areas where indigenous plant species and tolerant grasses and shrubs are planted.
- Restricting land clearing strictly to areas needed by the SAPZ
- Optimizing feed digestibility and availability, balancing and fine-tuning feed rations; promoting better animal health, and improving performance through breeding.
- Improving the quality and usage of crop residues as fodder. Recently in Ethiopia, the Climate and Clean Air Coalition4 (CCAC, 2016) has reported that supplementing feed with leguminous shrubs, urea treated crop residue, control of trypanosomiasis, and artificial insemination) would increase milk production by 62 to 225% and decrease enteric methane emission intensity by 44 to 68% across production systems, relative to the baseline.
- In addition, the CCAC work in Bangladesh has also revealed that the key drivers of the low productivity and corresponding high emission intensity in dairy cattle sector are poor animal nutrition, animal health, genetics, and environmental constraints such as heat stress. The strong correlation between greenhouse gas emissions and milk productivity points to an opportunity for meeting food and nutrition security needs and reducing methane emissions.
- High consideration should be given to the reapplication of value chain by-products to avoid the release of large quantities of CO2 from decomposition of generated biomass.
- The SAPZ should also consider natural grass and pastureland for livestock feeding. This strategy will ensure livestock emission reductions by sequestering carbon in soils and biomass.

4 https://www.ccacoalition.org/en/activity/enteric-fermentation

6 https://www.oecd.org/agriculture/ministerial/background/notes/4_background_note.pdf

CHAPTER 7: ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN (ESMMP)

7.1 Introduction

This chapter presents the Environmental and Social Management and Monitoring Plan (ESMMP) for development of the Ondo State SAPZ in Ore, Odigbo LGA of Ondo state.

This ESMMP is a proactive tool that will ensure seamless integration of action plans and programmes for overall management of all identified (and unidentified) impacts of the proposed projects. The overarching objective of the ESMMP is to ensure that all potential impacts of the project are contained and brought to an acceptable level to guarantee economic, environmental and social sustainability of the projects.

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

The OSMA shall have the principal responsibility for all measures outlined in this ESMMP but shall delegate certain responsibilities to its Contractors and other private investors. Such delegation of responsibility shall be adequately documented as part of contractual agreements to guarantee absolute compliance and commitment on the part of the contractors to implement the ESMMP. It is instructive to note that most of the mitigation measures are the obligations of the Contractor during project implementation. Consequently, the contractor shall prepare its proposals taking into account the measures in this ESMMP and the detailed general environmental management conditions during civil works which is attached as Appendix 6.

In addition, as most of the mitigation measures are the obligations of the Contractor during project implementation, the contractor shall prepare the Contractor's ESMP (C-ESMP) taking into account the measures in this ESMMP. The estimated costs of mitigation measures associated with the civil work activities as stated in Tabl.1 will be included in the project's Bill of Quantities (BoQ). The contractor is responsible to implement the proposed mitigation measures as per the instruction of OSMA.

7.2 Environmental and Social Impacts and Mitigation

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

7.3 Institutional Arrangement for ESMMP Implementation

The successful implementation of the monitoring program will depend on the commitment and capacity of OSMA and their contractors as well as other third parties (including private investors and institutions of government) to implement the program effectively. The specific roles and responsibilities of those that will be involved in the implementation and monitoring of this ESMMP are highlighted in Table 7.1 below.

Table 7.1: Roles and Responsibility of Institutions in the implementation and monitoring of the ESMMP

S/N	Category	Roles & Responsibilities
•	Federal Ministry of Environment	• Lead role - provision of advice on screening, scoping, review of draft ESMP report (in liaison with State Ministry of Environment and Water Resources), receiving comments from stakeholders, public hearing of the project proposals and social liability investigations, monitoring and evaluation process and criteria.
•	Ondo State Ministry of Env (ONSME)	• Environmental monitoring and compliance overseer at the State level • Site assessment and monitoring of ESMMP implementation.
•	Ondo State Environmental Protection Agency	• Agency of ONSME • Provide support to ONSME in the area of safeguards due diligence. • Monitors ESMMP implementation particularly waste management and pollution control aspects.
•	Federal Ministry of Agriculture and Rural Development (FMARD)	• Provides overall leadership and direction to other MDAs by engaging all the critical stakeholders to support, cooperate with and participate in established policy direction for the SAPZ; and • Pursues an agenda of encouraging and ensuring investors comply with all environmental laws and policies
•	Ondo State Ministry of Agriculture	• Coordinates the overall implementation of the SAPZ in Ondo State in through the Department of Animal Husbandry. • Pursues an agenda of encouraging and ensuring investors comply with all environmental laws and policies governing the SAPZ in consonance with the FMARD Safeguard Unit. •
•	Safeguard Unit, OSMA (*yet to be created)*	**<u>Environmental Safeguards</u>** • Collate environmental baseline data on relevant environmental characteristics of the selected project sites. • Analyze potential community/individual sub-projects and their environmental impacts. • Ensure that project activities are implemented in accordance with best practices and guidelines set out in the ESMMP. • Identify and liaise with all stakeholders involved in environment related issues in the project; and be responsible for the overall monitoring of mitigation measures and the impacts of the project during implementation. **<u>Social Safeguards</u>** • Develop, coordinate and ensures the implementation of the social aspects of the ESMMP. • Identify and liaise with all stakeholders involved in social related issues in the project. • Conduct impact evaluation and beneficiary's assessment; and • Establish partnerships & liaise with organizations, CBOs and CSOs.
•	Other State MDAs including OSMWASD and OSMoH	• Ensure monitoring of mitigation measures and the impacts of the project during implementation as it relates to gender and health issues respectively. • Establish partnerships & liaise with organizations relevant NGOs as well as CBOs and CSOs.
•	E&S Consultant	• Development of ESMMP • Training of relevant AAU Staff, regulators, MDAs and contractor on ESMP implementation and monitoring. • Implementation of ESMMP

S/N	Category	Roles & Responsibilities
•	Contractors	• Compliance to BOQ specification in procurement of material and construction • Implement ESMMP 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 FMARD/ OSMA. • Implement C-ESMMP 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 ESMMP, for submission to the Supervising Consultant
•	Odigbo LGA	• Provision of oversight function across project within its jurisdiction for ESMMP compliance. • Monitoring of activities related to public health, sanitation, waste management amongst others.
•	Ore Town	• Promote environmental awareness. • Review environmental and social performance report made available by project developer. • Provide comments, advice and/or complaints on issues of nonconformity. • Attend public meetings organized by the project developer to disseminate information and receive feedback.
•	NGOs/CSOs	• Assisting in their respective ways to ensure effective response actions, conducting scientific research alongside government groups to evolve and devise sustainable environmental strategies and techniques.
•	AfDB	• Recommend additional measures for strengthening management framework and implementation performance. • Implementation support missions and ensuring that the SAPZ of ONSG and its subprojects comply with the E & S conditions of the loan agreement with the AfDB
•	General Public	• Identify issues that could derail the project and support project impacts and mitigation measures, Awareness campaigns.

7.4 Training, Awareness and Competence

Assessment of the Ondo state Ministry of Agriculture project implementation team revealed that there is currently no safeguard unit and relevant safeguard staff. Training and the establishment of Safeguard Unit is essential for ensuring that the ESMMP is implemented efficiently and effectively. It is therefore imperative that the ONSMA and other institutions and persons that have roles to play in the implementation of the ESMMP are competent with appropriate education, training or experience.

This study therefore, recommends that competent E&S Safeguard persons should be recruited for the project. Alternatively, relevant staff from the ONSME and ONMWASD can be seconded and trained to serve to fill the gap. Capacity assessment generally revealed that most institutions with roles in the ESMMP are not very conversant with AfDB ISS as well as some components of the ESMMP implementation with regards to gender-based issues, labour influx climate change and grievance redress mechanisms. Consequently, the training program in Table 7.2 have been proposed to enhance the capacities of those that will be involved in ESMMP implementation.

Table 7.2: Proposed Training Program for the Implementation of ESMMP

Capacity Building Activity	Proposed Topics	Objectives	Target Audience	Duration	Estimated Budget (Naira)
Module 1: AfDB's ISS and Nigeria Extant Laws on Environmental Protection	• Introduction to E&S policies and laws in Nigeria • AfDB's ISS & OS • Operational Safeguards triggered by project activities. • The roles and responsibilities of regulators and the AfDB during project implementation	To enhance awareness of AfDB's OS and applicable national regulatory requirements for project activities	ONSMA, Contractors, FMEnv, ONSME, ONEPA, KSMWASD, ONMoH, Edu and Odigbo LGA officials	1 day	800,000
Module 2: Training on Environmental and Social Management Plan (ESMP) Implementation	• Overview of ESMMP • Potential Impacts of Project • Pollution & Control Measures • Environmental Management • Labour influx, GBV, Code of Conduct, vulnerable people etc. • Environmental Performance Monitoring • Environmental Reporting	To enhance competence in environmental sustainability and regulatory practice	ONSMA, Contractors, FMEnv, ONSME, ONEPA, KSMWASD, ONMoH, Edu and Odigbo LGA officials	1 day	800,000
Module 3: Climate Smart Livestock Production	• Introduction to livestock production and climate change • Climate-smart strategies for livestock production • Climate-smart livestock production systems in practice • Creation of an enabling environment for climate-smart crop production	To mainstream climate change adaptation strategies to enhance project sustainability.	ONSMA, Contractors, FMEnv, ONSME, ONEPA, KSMWASD, ONMoH, Edu and Odigbo LGA officials	1 day	800,000
Module 4: Livestock Waste Management	• Livestock waste streams and management • Livestock waste recycling strategies • Composting • Biogas Production • Vermicomposting	To develop & implement eco-friendly and modern methods of livestock waste recycling to prevent environmental degradation and enhance profitability	ONSMA, Contractors, FMEnv, ONSME, ONEPA, KSMWASD, ONMoH, Edu and Odigbo LGA officials	1 day	800,000
Module 5: Training on Construction HSE	• Introduction to Construction HSE • Overview of Health and Safety Hazards in Construction • Incidents: Causation, Investigation & Reporting • Excavation Safety • First Aid, Defensive Driving etc. • Project/Site Specific OHS • Construction Site Inspection • Personal Protective Equipment	To ensure completion of project with zero fatalities, zero Lost Time Injuries (LTI) or occupational illness by promoting safe & healthy working conditions for workers and monitoring officers	ONSMA, Contractors, FMEnv, ONSME, ONEPA, KSMWASD, ONMoH, Edu and Odigbo LGA officials	1 day	800,000
	TOTAL			**5 days**	**4,000,000**

7.5 Monitoring and Reporting

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

Table 7.3: Internal and External Monitoring of the implementation of the ESMP

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

7.6 Contractual Measures

Most of the mitigation measures are the obligation of the Contractors particularly during the pre-construction and construction phases of the project. Consequently, the contractors will have to prepare their proposals taking into account the measures in Table 7.4 and the E & S clauses detailed in Appendix 6.

Table 7.4: 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.

7.7 ESMP Disclosures

Following the review and clearance of this ESMMP by the FMEnv/AfDB, it will be disclosed at the National and local levels by ONSMA in line with the applicable Nigerian EIA laws and regulations. Minimum disclosure requirements and budget is shown in Table 7.5 below.

Table 7.5: Disclosure Procedure to comply with Nigerian regulations

Action	Remarks	Cost (Naira)
Disclosure on 2 national newspapers	ONSMA will disclose the ESIA/ESMP as required by the Nigeria EIA public notice and review procedures. This entails advert in 2 newspapers: one national and one local (state) newspaper	1,000,000
Disclosure at the ONSME	The ONSMA will disclose the ESMP as required by the Nigeria EIA public notice and review procedures	--
Disclosure at ONSMA	The project proponent will display the ESMP as required by the Nigeria EIA public notice and review procedures	--
Disclosure at Ore, Odigbo LGA office	The purpose will be to inform stakeholders about the project activities; environmental and social impacts anticipated and proposed environmental and social mitigation measures.	--
Total		**1,000,000.00**

7.8 Cost Estimates for ESMMP Implementation

To effectively implement the mitigation and monitoring measures recommended in this ESMMP, necessary provision will have to be made. The cost of these measures has been estimated, included in the ESMP and presented in Table 7.6.

Table 7.6: Estimated Budget for the Implementation of ESMP

Item	Responsibility	Cost Estimate in Nigerian Naira (N)	Cost Estimate in US Dollars (US$) *
ESMMP Implementation	Contractors/ONSMA	22,900,000	47,708
ESMMP Monitoring	ONSMA, other MDAs	900,000	1,875
Training and capacity building	ONSMA, ONSME and other MDAs	4,000,000	8,333
Disclosure	ONSMA	1,000,000	2,083
Sub-Total		**28,800,000**	**59,999**
Contingency	5% of Sub- Total	1,440,000	3,000
Total		**30,240,000**	**63,000**

**1 US$ =N480*

The total estimated cost for the ESMMP implementation and monitoring as shown in Table 7.6 is N**30,240,000** (US$ 63,000.00).

7.9 Implementation Schedule

The activities related to E&S management and monitoring must be integrated in the overall construction schedule. The project implementation phase is estimated to be completed in 12 months. The implementation schedule is presented in 7.7.

Table 7.7: Tentative ESMP Implementation Schedule

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

Table 7.8: Environmental and Social Management & Monitoring Plan (ESMMP)

Project Activities	Associated and Potential Impacts	Mitigation Measure	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location & Frequency	Responsibility for Monitoring	Cost of Monitoring (Naira)
PRE-CONSTRUCTION PHASE										
Site Preparation and Clearing for Access/ Internal Road, Forage development and other SAPZ Infrastructure. **Mobilization and storage of equipment, materials on site** **Installation of Site Offices & Workers Camp Site**	Air quality deterioration from release of dusts and gaseous emissions from exposed soil surfaces and vehicles may affect sensitive receptors such as River Oluwa, Cattles & Ore people	• Ensure all vehicles and machines are serviced and meet appropriate emissions standards before being brought to site. • Use spraying devices such as water tanker to sprinkle water on exposed soil surfaces to limit dusts. • Train drivers/ workers on proper operation of vehicles & equipment to include fuel efficiency and anti-idling techniques. • Tarpaulins should be used to cover trucks transporting earth materials or spoil on public roads	Contractor	400,000	Air quality parameters (PM2.5, PM10, CH_3, CO, NO_2, SO_2, CO_2) Maintenance records Driver's training records	In-situ Air Quality measurement	FMEnv air pollutants and noise level permissible limit	Agro industrial hub Ore Weekly	ONSME	500,000 for monitoring activities during the pre-construction phase.
	Noise and vibration from the use of machineries and motorized equipment	• Ensure use of low-noise machineries and equipment or fit with exhaust mufflers/silencers to minimize noise. Ensure equipment not in use are turned off. • Ensure construction work is limited to daytime hours to limit impact of noise. • Provide appropriate PPE for hearing protection and enforce usage.	Contractor	-- 400,000	Noise level	In-situ noise level measurement	FMEnv noise level permissible limit	Agro industrial hub Ore Weekly	ONSME	
	Loss of vegetation cover due to clearing for forage development and construction.	• Restrict removal of vegetation and trees to areas of need within the Reserve. • Schedule vegetation clearing to occur in phases so that the entire area is not cleared at once. • Where possible, ensure site clearing is done during the dry season to protect work areas from erosion.	Contractor	--	Clearly defined boundaries of protected areas	Visual observation	Protection of all vegetation outside of marked working areas. Floristic composition of adjoining areas	Agro industrial hub Weekly during Site clearing	ONSME	
	Reduction in carbon sequestration in the project area due to removal of trees		Contractor							
	Removal of vegetation and trees leading to		Contractor							

Project Activities	Associated and Potential Impacts	Mitigation Measure	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location & Frequency	Responsibility for Monitoring	Cost of Monitoring (Naira)
	habitat destruction and fauna loss. Soil erosion and loss of soil quality from exposure of soil to weather elements Depletion of Soil fauna due to removal of vegetation	• Protect all vegetation not required to be removed against damage particularly riparian vegetation along the watercourses to act as buffer zone and sediment trap. • Ensure early installation of temporary drainage and diversion structures to include silt traps. • Re-vegetate cleared unused areas and ensure site landscaping plan include green areas where indigenous plant species and tolerant grasses and shrubs are planted. • Use vegetal waste as compost to aid rapid vegetal propagation.	Contractor Contractor	500,000 200,000			within baseline condition			
	Movement of equipment, vehicles and workforce into project area, could introduce invasive species which adversely impact fauna, flora, ecosystems, and crops.	• Training and awareness-raising amongst workers, livestock herders and communities on potential impacts of invasive species. • No introduction of exotic species (e.g., for site rehabilitation) without specialist vetting and approval by ONMA. • Ensure clearance of invasive species upon completion of construction and periodically during SAPZ operations.	Contractor	200,000	Training and awareness raising Non usage of exotic species for revegetation	Visual Observation and Interview	Little or no invasive species within the Agro hub	Agro industrial hub	ONSMA	
	Soil contamination from spillages of oil and other petroleum products from leakages and/or improper handling during maintenance of vehicles and equipment	• Ensure all vehicles and machines are serviced before being brought to site to avoid leaks of oil. • Install impermeable surface (bunds) at fuel storage areas, vehicle servicing & limit zone to contain potential leakages. • Prevent unregulated dumping of fuel waste by ensuring that spent oil drained from equipment during maintenance are properly collected and sent to recycling facility.	Contractor	200,000	Installation of impermeable bunds and platform at limit zone. Vehicle's maintenance records	Visual Observation	Soil Quality within baseline condition	Agro industrial hub Monthly	ONSMA	

Project Activities	Associated and Potential Impacts	Mitigation Measure	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location & Frequency	Responsibility for Monitoring	Cost of Monitoring (Naira)
	Soil compaction and predisposition to erosion due to movement of vehicles on site and stacking of heavy-duty equipment	• Limit zone of vehicle and equipment weight impacts by designating an area for parking and stacking equipment	Contractor	--	Designation of parking zones	Visual Observation		Agro industrial hub	ONSME	
	Generation of vegetal wastes from de-vegetation and site clearing activities	• Implement Waste Management Plan (WMP). See Appendix 3. • Waste to be disposed should be evacuated by KWEPA approved vendors. • To the extent possible, woody debris and slash generated from vegetation clearance should be given to locals for use as fuel wood for cooking or mulched for use in farms or site restoration.	Contractor	200,000 200,000	WMP developed. Waste transfer documentation Evidence of waste reuse and recycling	Visual Observation Waste Tracking Report	Zero waste left behind at project site	Agro industrial hub Monthly	ONEPA	
	Contamination/pollution of sources of water, food and fodder for animals during clearing	• Schedule vegetation clearing to occur in phases so that the entire area is not cleared at once. • Where possible, ensure site clearing is done during the dry season to protect work areas from erosion. • Restrict removal of vegetation and trees to ONLY areas of need within the Agro hub. • Protect all vegetation not required to be removed against damage particularly riparian vegetation along the watercourses to act as buffer zone and sediment trap. • Ensure early installation of temporary drainage and diversion structures to include silt traps. • Re-vegetate cleared unused areas and ensure site landscaping plan include green areas where indigenous plant species and tolerant grasses and shrubs are planted.	Contractor	--	Evidence of erosion/ sediment control such as silt trapping measures	Visual Observation	Water Quality of Reserve Waterbodies within baseline condition	Agro industrial hub River Oluwa Monthly	ONSME	
	Eutrophication/nutrient-enrichment due to Siltation of River Oluwa a result of sediment runoffs from exposed soils during clearing		Contractor							
	Alteration of aquatic habitat in rivers as a result of pollution and sedimentation may lead to depletion of aquatic biota		Contractor	500,000 200,000						

Project Activities	Associated and Potential Impacts	Mitigation Measure	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location & Frequency	Responsibility for Monitoring	Cost of Monitoring (Naira)
		• Use vegetal waste as compost to aid rapid vegetal propagation.								
	Traffic congestion/travel delay along the access road to Ore-Shagamu will occur as a result of mobilization of workers, equipment and other materials to the site	• . • Implement Traffic Management Plan (TMP) prepared for the project (See Appendix 5), including the following: • Hire drivers with appropriate driver's license, train drivers, enforce speed limit. • Mobilization of equipment and machinery should be done at off-peak period (10am – 4pm). • Ensure trucks and other vehicles are parked at the designated parking area within the project site and prohibited from parking along the F124 expressway and Lata-Nna access road to prevent obstruction of traffic. • Ensure Traffic/caution signs at strategic locations in English and Yoruba and engage personnel to manage traffic flow during peak periods. • Cover truck conveying materials to site to prevent materials falling and causing injuries to pedestrians & motorists.	Contractor	-- -- -- 200,000	TMP Drivers training and licence. Period of mobilisation Appropriate traffic signages in Yoruba Incident/ Accident Report	Visual observation Interview	Zero incident/ accident/ complaints	Ore (F121) Expressway. Along Site Access Road Weekly during Pre-construction	FRSC Police Odigbo LGA	
	Storage of materials and equipment on site may attract theft and security breaches and threat to lives and properties.	• Ensure deployment of 24-hour security guards and distribution of suitable security light. • Ensure consultation and collaboration with Ore local vigilante and Police	Contractor	400,000	No of security personnel engaged.	Records and Interviews	No of security incidents	Agro hub, Camp site, staging areas Monthly	Police Odigbo LGA ONSMA	
	There could be increased exposure to health risks from fugitive dusts and exhausts fumes.	• Use spraying devices such as water tanker to sprinkle water on exposed soil surfaces to limit dusts.	Contractor	Cost included as part of Air Quality	Air quality parameters (PM10, CH_3,	In-situ Air Quality measurement	FMEnv air pollutants and noise level within	Agro hub Ore	ONSME	

Project Activities	Associated and Potential Impacts	Mitigation Measure	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location & Frequency	Responsibility for Monitoring	Cost of Monitoring (Naira)
		• Ensure provision of appropriate PPE for eye/respiratory protection and enforce usage.		Management Above	CO, NO_2, SO_2, CO_2) Provision and usage of PPE		permissible limit	Monthly		
	Site clearing and mobilization of workers, equipment and other materials to the site may cause an upsurge in noise, fugitive dust and exhaust fumes nuisance in the area which can have adverse health impacts	• Ensure use of low-noise machineries and equipment or retrofit with exhaust mufflers/ silencers to minimize noise. • Ensure equipment not in use are turned off. • Ensure construction work is limited to daytime hours to limit impact of noise. • Provide appropriate PPE for hearing, eyes and respiratory protection and enforce usage by workers and visitors. • Restrict access of non-project personnel to work areas where dusts and emissions exist/persist from project works.	Contractor		Noise Level & Air quality parameters (PM10, CH_3, CO, NO_2, SO_2, CO_2) Provision and usage of PPE Restriction of access by non-project personnel	In-situ Air Quality and Noise Level Measurement	FMEnv air pollutants and noise level within permissible limit	Agro hub Ore Monthly	ONSME	
	Occupational accidents and injuries from use of heavy machineries and equipment as well as struck by injuries from falling of trees, insect bites and exposure to dangerous animals etc.	• Implement Occupational Health and Safety Plan (OHSP) developed for the project (See Appendix 4) OHSP to include: • Prohibition of drug and alcohol use by workers while on the job. • Provision of first aid, first aiders, PPE, signages (English and Yoruba), engineering barriers e.g., fencing. • Restrict unauthorized access to all areas of high-risk activities. • Training of personnel on worksite OHS management, induction/ daily toolbox and refresher program. • Adequate safety signage and barriers at construction sites, staging areas, pits, equipment parking areas etc should be installed to alert workers, community members, drivers and pedestrians.	Contractor	400,000	No of trained first Aiders Usage of appropriate PPE Usage of signages and demarcations Accident/ Incident Report	Visual observation Records	Zero incident/ accident	Agro hub Monthly	ONSME Odigbo LGA	

Project Activities	Associated and Potential Impacts	Mitigation Measure	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location & Frequency	Responsibility for Monitoring	Cost of Monitoring (Naira)
		• Lighting and reflective tapes and signages should be made available in all worksites for safety at night.								
CONSTRUCTION PHASE										
Construction of SAPZ Infrastructure such as Access/ Internal Roads, Buildings, Livestock Containments, Impoundment and Boreholes	Air Quality deterioration from dusts generated during excavation, filling, backfilling and compaction activities	• Use spraying devices such as water tanker to sprinkle water on exposed soil surfaces to limit dusts. • Ensure all vehicles and machines are serviced and meet appropriate emissions standards before being brought to site. • Train drivers/ workers on proper operation of vehicles & equipment to include fuel efficiency and anti-idling. • Tarpaulins should be used to cover trucks transporting earth materials or spoil on public roads	Contractor	1,000,000	Air quality parameters (PM2.5, PM10, CH_3, CO, NO_2, SO_2, CO_2) Maintenance records Driver's training records	In-situ Air Quality measurement	FMEnv air pollutants and noise level permissible limit	Agro hub Ore Monthly	ONSME	2,000,000 for monitoring activities during the construction phase
	Noise and vibration from the use of machineries and vehicles during excavation, burrowing, backfilling and compaction activities	• Provide appropriate PPE for hearing protection and enforce usage. • Turn off equipment not in use. • Ensure construction work is limited to daytime hours to limit impact of noise. • Ensure use of low-noise machineries and equipment or fit with exhaust mufflers/silencers to minimize noise.	Contractor	400,000	Noise level	In-situ noise level measurement	FMEnv noise level permissible limit	Agro hub Ore Monthly	ONSME	
	Introduction of air pollutants into the atmosphere from asphalt laying on internal roads.	• Use dust control and suppression measures such as wetting, dampening. • Use modern equipment that meet appropriate and ensure regular preventive maintenance.	Contractor	Same as Air Quality Management above						
	Predisposition of soil to erosion during excavation and earth movement Loss, damage or disruption of	• Use erosion protection structures such as sediment traps, riprap, gabions etc. as additional measures to control erosion and run-off to waterbodies.	Contractor	400,000	Evidence of erosion/ sediment control such as	Visual Observation	Water Quality of Reserve Waterbodies within baseline condition	Agro hub River Oluwa Monthly	ONSME	

Project Activities	Associated and Potential Impacts	Mitigation Measure	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location & Frequency	Responsibility for Monitoring	Cost of Monitoring (Naira)
	soil/sediments during construction works. Siltation of River Oluwa due to runoff of spoils and topsoil from exposed soils	• If possible, schedule construction to take place in dry season to prevent run-off to waterbodies. • Ensure stockpile and disposal areas are stable and protected against erosion and not interfere with run off or subsequent construction activities. • Reuse stockpile as fill materials for reclamation of river channel. • Establish vegetation buffers and green belts between project areas and waterbodies.		200,000	silt trapping measures					
	Release of hazardous substances associated with construction activities or with transport of goods (e.g., accidental spills & leaks), leading to soil, surface or groundwater contamination.	• Install impermeable surface at fuel storage areas, vehicle servicing & limit zone to contain potential leakages. • Ensure that equipment maintenance on site is done at the designated site where the surface is impervious. • Ensure all vehicles and machines are serviced before being brought to site to avoid leaks of oil. • Prevent unregulated dumping of fuel waste by ensuring that spent oil drained from equipment during maintenance are properly collected and sent to recycling facility.	Contractor	200,000	Presence of impermeable surface at designated areas for servicing	Visual Observation	Soil/water quality within baseline values	Agro hub River Oluwa Monthly	ONSME	
	Generation of construction waste including spoils, debris and concrete wastes. Generation of scrap wastes from mechanical and electrical works such as pieces of electric cables, timbers, metals cuttings, nails and packaging materials Inefficient waste management during	• Prepare Waste Management Plan following the waste hierarchy, supported by training and awareness-raising around topic of waste for workforce and for local community. • Use of authorised contractors for hazardous and any other wastes which the project cannot dispose of safely. • Unsuitable soils can be used for reclamation. • Ensure recycling of scraps and other recyclables through approved	Contractor	1,000,000	WMP developed. Waste transfer documentation Evidence of waste reuse and recycling	Visual Observation Waste Tracking Report	Zero waste left behind at project site	Agro hub Monthly	ONEPA	

Project Activities	Associated and Potential Impacts	Mitigation Measure	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location & Frequency	Responsibility for Monitoring	Cost of Monitoring (Naira)
	construction leading to excess consumption of materials, generation of wastes/emissions, pollution of soils and water.	recycling facilities to conserve resources. • Storage of hazardous waste onsite should be done in closed/ labelled containers, stored away from direct sunlight/ rain with bunds provided to contain spillage. • Ensure no waste is left behind at project site after construction.								
	Disruption to livelihood activities such as farming and grazing due to interruptions of construction activities	• Conduct survey to identify best alternatives to prevent disruptions to livelihood within on & off-site work areas before commencement of civil works. • Provide alternative source of water for livestock, in the areas where existing surface water supply will be disrupted. • Sensitize farmers/herders about the locations for alternative water supply.	ONSMA	1,000,000	Alternative sources of water and other initiatives to ensure minimal disruption.	Visual Observation Interview	High level of satisfaction expressed by farmers/ and livestock rearers	Agro hub Ore Monthly	Odigbo LGA	
	Construction activities will likely intercept or terminate the flow of the existing surface water bodies and cause lack of water for human, irrigation and agro processing productions.	• Proper channelization of surface water flow and de-siltation of the existing dam should be undertaken as part of measures to preserve water availability to the agro hub. • An impoundment should be created as part of the SAPZ to accommodate varieties of water needs for irrigation, livestock production and value chain processing.	Contractor	1,000,000	Channelization of surface water Provision of impoundment	Visual Observation	High level of satisfaction expressed by farmers/ herders.	Agro hub Ore Monthly	Odigbo LGA	
	Abstraction of large volume of water from ground or surface water sources may affect supply for other water users and result in conflicts over water use.	• Ensure water for construction is sourced from multiple sources including rainwater harvesting, waterbodies, dam and water tankers to prevent overreliance on a single source. • Promotion of water efficiency (including leak detection, preventative maintenance of equipment) and water recycling.	Contractor	1,000,000	Water for construction from multiple sources. Evidence of water reuse on site	Visual Observation	High level of satisfaction among water users	Agro hub Ore Monthly	ONSME Odigbo LGA	

Project Activities	Associated and Potential Impacts	Mitigation Measure	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location & Frequency	Responsibility for Monitoring	Cost of Monitoring (Naira)
		• Water for construction SHOULD not be sourced from perennial streams during the dry season.								
	Traffic congestion and increased road traffic accident along F121 expressway and site access road due to movement of heavy-duty vehicles in and out of the construction site.	• Implement Traffic Management Plan (TMP) prepared for the project, including the following: • Hire drivers with appropriate driver's license, train drivers and enforce speed limit. • Mobilization of equipment and machinery should be done at off-peak period (10am – 4pm). • Ensure trucks and other vehicles are parked at the designated parking area within the project site and prohibited from parking along the F121 expressway to prevent obstruction of traffic. • Ensure Traffic/caution signs at strategic locations in English and Yoruba and engage personnel to manage traffic flow during peak periods. • Cover truck conveying materials to site to prevent materials falling and causing injuries to pedestrians & motorists.	Contractor	400,000	Drivers training and licence. Period of mobilisation Appropriate traffic signages in Yoruba Incident/ Accident Report	Visual observation Interview	High level of satisfaction expressed by other road users Zero incident/ accident	Ore F121 Expressway Monthly during construction	FRSC Police Odigbo LGA	
	The project has no safeguard officers and is likely not able to implement the ESMP prepared for the project	• Employ or train personnel on environmental and social safeguards best practices. • Work closely with the Ministry of Environment to achieve success in environmental management including waste management	ONSMA	1,000,000	No of E&S Safeguard experts	Interview Records	Presence of experienced and competent E&S Safeguard Experts	Agro hub	ONSME	
	Risk of health problems from exposures to noise, fugitive dust and exhaust emissions from the use of machineries & motorized	• Ensure use of low-noise machineries and equipment or retrofit with exhaust mufflers/ silencers to minimize noise.	Contractor	Same as Air Quality Management above	Noise Level & Air quality parameters (PM10, CH_3,	In-situ Air Quality and Noise Level Measurement	FMEnv air pollutants and noise level within	Agro hub Ore	ONSME	

Project Activities	Associated and Potential Impacts	Mitigation Measure	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location & Frequency	Responsibility for Monitoring	Cost of Monitoring (Naira)
	equipment for construction	• Ensure equipment not in use are turned off. • Ensure construction work is limited to daytime hours to limit impact of noise. • Provide appropriate PPE for hearing, eyes and respiratory protection and enforce usage by workers and visitors. • Restrict access of non-project personnel to work areas where dusts and emissions exist/persist from project works.			CO, NO_2, SO_2, CO_2) Provision and usage of PPE Restriction of access by non-project personnel		permissible limit	Monthly		
	Poor management of occupational health and safety leading to accidents, injuries and illnesses among workers; mental health issues due to remote or enclosed living	• Implement the Occupational Health and Safety Plan (OHSP) developed for this project. • Prohibition of drug and alcohol use by workers while on the job. • Provision of first aid, first aiders, PPE, signages (English and Yoruba), engineering barriers e.g., fencing. • Restrict unauthorized access to all areas of high-risk activities. • Training of personnel on worksite OHS management, induction/ daily toolbox and refresher program. • Adequate safety signage and barriers at construction sites, staging areas, pits, equipment parking areas etc should be installed to alert workers, community members, drivers and pedestrians. • Lighting and reflective tapes and signages should be made available in all worksites for safety at night. • Rest and recreational facilities and time should be provided, and rules on alcohol and drugs defined and clearly communicated to workers.	Contractor	1,000,000	No of trained first Aiders Usage of appropriate PPE Usage of signages and demarcations Accident/ Incident Report	Visual observation Records	Zero incident/ accident	Agro hub Monthly	ONSME Odigbo LGA	

Project Activities	Associated and Potential Impacts	Mitigation Measure	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location & Frequency	Responsibility for Monitoring	Cost of Monitoring (Naira)
		• The basis for differences in the standard of accommodation should be non-discriminatory; it should be documented and communicated transparently to the workforce.								
Creation of borrow pits.	Unsustainable excavation and non-rehabilitation of burrow pits may lead to land degradation and increased susceptibility to erosion and flooding Borrow-pit may become inundated with water and pose possible risk of accident and drowning to human and animals. Community health & safety risks associated with creation and poor management of borrow pits and staging areas.	• Avoid the production of excess spoil material and reduce the need for borrow pit materials. • Where burrowing becomes unavoidable, develop and implement Borrow pit Reclamation Plan to ensure that site is rehabilitated and restored to a safe and stable state. Plan should include measures to: • Re-contour/grade site to blend with natural topography. • Reuse excess stockpile to back fill pits during grading. • Revegetate with appropriate plant spp. • Avoid material borrowing or restrict borrowing to approve quarry and ensure rehabilitation before the onset of wet season.	Contractor	500,000	Quarry Lease of quarry sites Spoil management Developed borrow site Reclamation Plan. Number of borrow pits.	Visual observation and Pictures	Compliance Evidence of spoil management/ Spoil stockpiling for reclamation Site reclamation after construction	Material borrow sites Agro hub Monthly	ONSME Odigbo LGAs	
Presence of Migrant Workers & Business Opportunists	Direct employment of local population in workforce, and stimulation of local economy through export of and demand for goods and services will enhance livelihoods and economic activity in local communities; potential for adverse effects if expectations not met and community relations are not well managed.	• Employment practices and working conditions should conform to International Labour Organization (ILO) Standards and national regulations. • Ensure priority engagement of workers from local communities. • Rest and recreational facilities and time should be provided, and rules on alcohol and drugs defined and clearly communicated to workers. • The basis for differences in the standard of accommodation should be non-discriminatory; it should be documented and communicated	Contractor	200,000	ILO employment practices Ratio of local vs migrant workers		High level of satisfaction expressed by workers/ farmers	Agro hub Ore	Odigbo LGAs ONSMA	

Project Activities	Associated and Potential Impacts	Mitigation Measure	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location & Frequency	Responsibility for Monitoring	Cost of Monitoring (Naira)
		transparently to the workforce.								
	Real or perceived disruption to normal community life, through the physical presence of a non-local workforce.	• Adopt a Stakeholder Engagement Plan, as a framework for early and ongoing community consultation. • Ensure priority engagement of workers from local communities. • Implement the Grievance Redress Mechanism designed for this project. • Define works procedure and Code of Appropriate Conduct for all workers, including acceptable behaviour with respect to community interactions.	Contractor ONSMA	--	SEP developed. Ratio of local vs migrant workers GRM	Visual observation Interview	High level of satisfaction expressed by workers/ farmers.	Agro hub Ore	Odigbo LGAs ONSMA	
	Risk of illicit behaviour and crime (including prostitution, theft, robbery and substance abuse)	• Ensure payment of adequate salaries for workers to reduce incentive for theft. • Pay salaries into workers' bank accounts rather than in cash. • Partner with the existing local vigilante and seek cooperation with the Police to curb the activities of theft and robbery. • Ensure priority engagement of workers from local communities. • Ensure creation of supervised leisure areas in workers' camp. • Introduce sanctions (e.g., dismissal) for workers involved in criminal activities. • Prohibit the use of illicit drugs by workers.	ONSG Contractor	--	Mode of payment and amount paid. Ratio of local vs migrant workers	Records Interview	Crime level not exceeding baseline condition. High level of satisfaction expressed by workers/ farmers	Agro hub Ore	Police Odigbo LGA	
	Potential increased prevalence of GBV & SEA resulting from interaction among construction workers, community members and camp followers	• Mandatory and regular training for workers on required lawful conduct in host community and legal consequences for failure to comply with laws. • Training program for project personnel to include GBV and SEA issues. • Contractor to engage locals from the communities as labour force where	Contractor ONSMA	400,000	Level of awareness of local culture by migrant workers. Training on GBV	Visual observation and interviews Rapid health survey Consultations	Community perception and level of satisfaction. GBV/SEA not exceeding	Agro hub Ore Monthly	Police Odigbo LGA ONSMWASD	

Project Activities	Associated and Potential Impacts	Mitigation Measure	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location & Frequency	Responsibility for Monitoring	Cost of Monitoring (Naira)
		possible. • All workers must be trained and retrained on the provisions of the Code of Conducts and have it signed. Training can be done in local language to ensure that it is understood by all. • Ensure cross gender participation in project implementation. • Provision of gender-based awareness campaign within the communities. • Commitment to cooperate with law enforcement agencies investigating perpetrators of GBV			Worker's manual, employment codes etc Ratio of migrant to local workers Ratio of male vs female workers	GBV Incident Report	baseline condition. Signed CoCs			
	Interaction between non-local workforce and local communities may increase occurrence of communicable diseases, including HIV/AIDS and sexually transmitted diseases (STDs).	• Institute HIV prevention programs (peer education, condom distribution etc.) • Liaise with appropriate health focused NGOs to undertake health awareness and education initiatives on STDs amongst workers and in the host community. • Provide opportunities for workers to regularly return to their families. • Implement community-based Grievance Redress Mechanism (GRM).	Contractor ONSMA	400,000 1,000,000 for GRM operation	level of awareness and knowledge of preventive measures.	Rapid health survey Consultations	High level of awareness and knowledge of preventive measures. HIV/AIDS level not exceeding baseline condition.	Agro hub Ore Monthly	Odigbo LGA ONSMoH	
	Threat to community culture, safety and security due to presence of workers and business opportunists. Increased social vices/crimes and dilution	• Develop an induction program including a code of appropriate conduct for all workers. Code of conduct to address the following: Respect for local residents; No hunting or unauthorized taking of products or livestock; Zero tolerance of illegal activities such as child sexual exploitation and underage sex, prostitution, harassment of women, GBV, purchase or use of illegal drugs, Disciplinary measures and sanctions	Contractor	400,000	Induction programme and CoC developed and signed by all workers. level of awareness and knowledge of local culture.	Interview Records	High level of satisfaction expressed by farmers in the agro hub	Agro hub Ore Annually.	Police Odigbo LGA	

Project Activities	Associated and Potential Impacts	Mitigation Measure	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location & Frequency	Responsibility for Monitoring	Cost of Monitoring (Naira)
	of indigenous culture, norms and traditions in surrounding communities, due to influx of migrant workers and business opportunists	(e.g. dismissal) for infringement of the code of conduct and/or company rules; Commitment / policy to cooperate with law enforcement agencies investigating perpetrators of GBV. • Provide cultural sensitization training to improve awareness of and sensitivity of workers to local cultures, traditions, and lifestyles. • Implement GRM and Labour Influx Management Plan (LIMP) prepared for this project. • Limit the number of migrant workers by engaging local workers.	ONSMA		GRM LIMP					
	Child labour and school drop out in Ore due to availability of construction work	• Ensure children and minors are not employed directly or indirectly on the project. • Communication on hiring criteria, minimum age, and applicable laws should be ensured. • Enforcement of legislations that prohibits child labour. • Ensure CoCs contains texts that speak on zero tolerance on child labour and all forms of SEA/SH/VAC.	Contractor ONSMA	--	Employment Records	Visual observation Interview	Zero number of workers under the age of 18 years	Agro hub Agro hub Monthly	Police Odigbo LGA ONSMWASD	
	Individuals are likely to migrate into the project area from the local/regional area, which may cause conflict with residents, and put pressure on resources and infrastructure.	• Implement the Labour Influx Management Plan prepared for this project in consultation with OdigboLGA • Limit the number of migrant workers by engaging local workers.	Contractor ONSMA	--	LIMP Ratio of migrant to local workers	Interview Records	Community perception and level of satisfaction.	Agro hub , Ore Monthly	Police Odigbo LGA	
	Increase demand on community health and sanitation infrastructure due to influx of workers and camp followers.	• Provide basic amenities (water, sanitation etc to workers according to WHO standards). • Provide separate toilets for male and female workers.	Contractor	1,000,000	No of amenities in worker's camp	Visual observation	Availability of all essential amenities in workers' camp	Workers camp site Monthly	ONSME Odigbo LGA ONSMA	

Project Activities	Associated and Potential Impacts	Mitigation Measure	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location & Frequency	Responsibility for Monitoring	Cost of Monitoring (Naira)
	Pollution of Oluwa River from open defaecation of construction workers may lead to increased risk of water borne diseases in nearby communities.	• Provide water and sanitation amenities at the construction site and camp site so that workers will not use nearby bushes or the sisters. • Provide separate toilets for male and female workers.								
	Assault of workers, kidnapping and vandalization of equipment by local youths over local jobs Conflicts between contractors and community members over labour intake	• Adopt a Stakeholder Engagement Plan, as a framework for early and ongoing community consultation. • Ensure priority engagement of workers from local communities. • Implement the GRM and Labour Influx Management Plan prepared. • Engage competent security to protect workers and assets 24/7 in collaboration with the Police	Contractor ONSMA	--	SEP, LIMP, GRM No of local workers No of security personnel engaged.	Visual observation Interview Review Grievance redress Log	No of complaint received by the GRC for GRM. Community perception and level of satisfaction.	Agro hub, Ore Monthly	Police Odigbo LGA	
	Loss of employment for temporary construction workers	• Ensure compliance with all legal and contractual agreement with workers. • Ensure all workers receive notice of dismissal and severance payments mandated by law and collective agreements in a timely manner. • Provide a grievance mechanism for workers to raise workplace concerns.	Contractor	--	Compliance with workers contract of employment Timely payment of workers dues	Records and Interviews	Nigerian Labour Law No of grievances	Site Office Once after construction	Odigbo LGA ONSMA	
OPERATIONAL PHASE										
Operation and Maintenance of SAPZ and Ancillary Infrastructure	Increase ambient noise from machineries and equipment including haulage trucks	• Ensure installation of modern processing equipment fitted with noise abatement technology such as silencers to exhaust systems. • Ensure installation of enclosure and cladding of processing plants. • Ensure installation of proper sound barriers and / or noise containments, with enclosures and curtains at or near the source equipment. • Ensure regular maintenance of processing plants to ensure noise is minimal.	ONSMA SPV/Private Investors	--	Processing plants fitted with noise abatement technology. All plants installed in enclosed facilities. Maintenance records	Visual Observation Records *In-situ* noise level measurement	Noise level for all installed processing plants to conform with the FMEnv permissible limits	SAPZ Annually	ONSME Odigbo LGA	2,000,000 (for monitoring activities) during the 1st year of Operation.

Project Activities	Associated and Potential Impacts	Mitigation Measure	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location & Frequency	Responsibility for Monitoring	Cost of Monitoring (Naira)
		• Ensure provision of hearing PPE (earmuffs) for workers & enforce usage. • Ensure installation of processing plants on anti-vibration mountings. • Ensure that project staff are not exposed to more than nine hours at a go on any equipment generating noise level of more than 90 dBA			Provision and usage of hearing protection PPE. Workers shift					
	Odour associated with livestock and waste may have nuisance value for nearby receptors.	• Ensure all processing facilities are installed in an enclosed plant and processing activities are taking place within an enclosed system to prevent odour. • Ensure provision of appropriate PPE (respiratory protection) for workers and enforce usage. • Ensure waste storage areas are covered including waste pond and effluent treatment plants.	ONSMA SPV/Private Investors	--	All plants installed in enclosed facilities. Provision and usage of PPE Waste storage in closed containers	Visual Observation Records Interview	Worker's perception and level of satisfaction.	SAPZ Bi-annually	ONSME Odigbo LGA	
	Abstraction of large volumes of water from surface or groundwater sources for watering livestock may affect supply for human communities and ecosystems.	• Ensure water for SAPZ operation is sourced from multiple sources including rainwater harvesting, waterbodies, borehole and water tankers to prevent overreliance on a single source. • Promotion of water efficiency (including leak detection, preventative maintenance of equipment) and water recycling. • An impoundment should be created as part of the SAPZ to accommodate varieties of water needs for irrigation, livestock production and value chain processing.	ONSMA SPV/Private Investors	--	Water from multiple sources. Evidence of water reuse on site Presence of an impoundment	Visual Observation	High level of satisfaction among water users	SAPZ Ore Monthly	ONSME Odigbo LGA	
	Inefficient waste management during operation and maintenance leading to	• Implement Livestock Waste Management Plan (Appendix 2) following the waste hierarchy, supported by training and awareness-	ONSMA SPV/Private Investors		LWMP developed.	Visual Observation Records	Good housekeeping	SAPZ Bi-annually	ONSME Odigbo LGA	

Project Activities	Associated and Potential Impacts	Mitigation Measure	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location & Frequency	Responsibility for Monitoring	Cost of Monitoring (Naira)
	excess consumption of materials, generation of wastes/emissions, pollution of soils and water.	raising around topic of waste for workforce and for local community. • Use of authorised contractors for hazardous and any other wastes which the project cannot dispose of safely. • Encourage manure recovery for use as fertiliser. • Ensure treatment of effluents through Effluent Treatment Plant before discharge into the environment. Output should conform to FMEnv Effluent Standards. • Storage of hazardous waste onsite should be done in closed/ labelled containers, stored away from direct sunlight/ rain with bunds provided to contain spillage.			Waste documentation Evidence of reuse and recycling Presence of an Effluent Treatment Plant Waste storage in labelled and closed containers.					
	Generation of normal and hazardous waste during maintenance including obsolete parts (batteries, , solar panels etc)	• Liaise with contractor/ manufacturer to take back obsolete parts including batteries, spent oils during maintenance and repair. • Alternatively, use waste vendor licensed by ONEPA to evacuate and process hazardous waste. • Storage of hazardous waste onsite should be done in closed/ labelled containers, stored away from direct sunlight/ rain with bunds provided to contain spillage.	ONSMA SPV/Private Investors	Part of construction cost	MoU with manufacturer/ supplier to take back obsolete equipment. Waste storage in labelled and closed containers Waste transfer documentation	Visual Observation Waste Tracking Report	Good housekeeping Effluents conforming to FMEnv standards. Soil/Water Quality within baseline.	SAPZ Monthly	ONEPA	
	Pollution of soil and watercourses due to run-off of untreated effluents and improper management of hazardous waste from the processing complexes	• Storage of hazardous waste onsite should be done in closed/ labelled containers, stored away from direct sunlight/ rain with bunds provided to contain spillage. • Ensure treatment of effluents through Effluent Treatment Plant before discharge into the environment.								

Project Activities	Associated and Potential Impacts	Mitigation Measure	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location & Frequency	Responsibility for Monitoring	Cost of Monitoring (Naira)
		Output should conform to FMEnv Effluent Standards. • use waste vendor licensed by KWS-EPA to evacuate and process hazardous waste. • Establish vegetation buffers and green belts between project area and waterbodies.								
	Loss, damage or disruption of soil/sediments from livestock presence (e.g., trampling).	• Establish clearly defined grazing area/ranche routes/t within the agro hub. • Restrict livestock access to fragile/unstable soil; adapt the type and number of animals to the land carrying capacity.	ONSMA SPV/Private Investors	Part of construction cost	Availability of a clearly defined grazing routes/track	Visual Observation	Preservation of the pristine nature of grazing reserve	SAPZ Monthly	ONSME Odigbo LGA	
	Development of livestock projects in remote or undeveloped areas leading to further development, increased disturbance and pressure on natural resources through bushmeat hunting, logging, fire, etc. Increased development in remote areas could lead to greater demand for bushmeat (from workforce and wider community), stimulate the wildlife trade and facilitate access to hunting areas.	• Where possible, instate access controls on roads leading to SAPZ. • Develop an induction program including a code of appropriate conduct for all workers. Code of conduct to prohibit hunting for bushmeat or unauthorized taking of products or livestock. • Sensitisation and public awareness campaigns against hunting and bushmeat trade amongst livestock Farmers and local communities.	ONSMA	Part of construction cost	Control of access to SAPZ Code of conduct for workers Public awareness campaign	Visual Observation Records Interview	Strict enforcement of access restriction. Prohibition of hunting, logging, wildlife trade.	SAPZ Monthly	ONSME Odigbo LGA	
	Presence of livestock and humans may displace animals and disturb their habitats, by direct disturbance during operation (e.g., livestock rearing and movements, increased human and	• Demarcation and avoidance of areas of conservation interest (high value species, feeding or breeding sites, migration routes, etc.) where possible, and wildlife rescue and translocation where appropriate, under expert supervision.	ONSMA	--	Demarcation and restriction of access to sensitive ecological areas	Visual Observation	Conservation of areas of high value species, feeding or breeding sites, migration routes, etc.	SAPZ Monthly	ONSME Odigbo LGA	

Project Activities	Associated and Potential Impacts	Mitigation Measure	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location & Frequency	Responsibility for Monitoring	Cost of Monitoring (Naira)
	vehicle presence, noise, light disturbance at night, construction of associated facilities).	• Establish compensatory wildlife refuges, as needed.								
	Poor animal welfare (e.g., malnutrition)	• The cattle will be housed in insulated buildings with controlled temperature and ventilation systems and ample space per cow. • Ensure barns have solid concrete flooring covered by straw particularly during cold periods and ensure waste products consisting primarily of manure with straw removed from the stables daily. • Ensure animals are well fed daily and provided adequate water for sustenance. • Train all workers on good practice in animal handling & prohibit animal cruelty.	ONSMA SPV/Private Investors	Part of construction cost	Compliance of SAPZ structures to international standard	Visual Observation	Satisfactory overall animal's wellbeing and welfare	SAPZ Monthly	ONSMA	
	Pollution of watercourses from open defaecation of construction workers may lead to increased risk of water borne diseases in nearby communities.	• Provide water and sanitation amenities at the construction site and camp site so that workers will not use nearby bushes or the sisters. • Provide separate toilets for male and female workers.	SPV/Private Investors	1,000,000	No of amenities in worker's camp	Visual observation	Availability of all essential amenities at SAPZ	SAPZ Annually	ONSME Odigbo LGA ONSMA	
	Fear of sustainability of the project amidst change of political leadership	• Create a Special Purpose Vehicle (SPV) to manage the SAPZ in order to encourage private sector involvement and participation. SPV will manage critical aspects of the project such as the dam/water supply infrastructure, Palm Oil processing, solar farm, diary processing, etc	ONSMA	--	No of private sector investors	Records	Development of all project components and presence of private sector investors	SAPZ Annually	FMARD Odigbo LGA	

Project Activities	Associated and Potential Impacts	Mitigation Measure	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location & Frequency	Responsibility for Monitoring	Cost of Monitoring (Naira)
	Marginalization of the vulnerable groups and minority tribes	• All settlements (tribes and groups) within the project area should be registered and project benefits shared on merits and interest to participation by stakeholders. • As much as possible, groups should be encouraged to organize themselves as cooperatives with structures and be trained/sensitized for meaningful participation in the SAPZ. • Develop detailed baseline of existing reliance on land resources in the project area; from this, identify specific groups that may not benefit from the project and adopt corrective measures as required. • Develop compensation measures for affected parties (e.g., excluded farmers, downstream water users).	ONSMA	--	Identification, registration and sensitization of all existing tribes and groups using the reserve and their interests.	Records of Consultation Interview	High level of satisfaction among various interest groups.	Agro hub Ore Annually	FMARD Odigbo LGA	
	Risk of illicit behavior and crime (including prostitution, theft and robbery)	• Ensure payment of adequate salaries for workers to reduce incentive for theft. • Pay salaries into workers' bank accounts rather than in cash. • Partner with the existing local vigilante and seek cooperation with the Police to curb the activities of theft and robbery. • Ensure priority engagement of workers from local communities. • Ensure creation of supervised leisure areas in workers' camp. • Introduce sanctions (e.g., dismissal) for workers involved in criminal activities. • Prohibit the use of illicit drugs by workers.	ONSMA SPV/Private Investors		Mode of payment and amount paid. Ratio of local vs migrant workers	Records Interview	Crime level not exceeding baseline condition. High level of satisfaction expressed by workers/ farmers.	Agro hub Ore	Police Odigbo LGA	

Project Activities	Associated and Potential Impacts	Mitigation Measure	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location & Frequency	Responsibility for Monitoring	Cost of Monitoring (Naira)
	Threat to community culture, safety and security due to presence of workers and business opportunists.	• Develop an induction program including a code of appropriate conduct for all workers. Code of conduct to address the following: Respect for local residents; No hunting or unauthorized taking of products or livestock; Zero tolerance of illegal activities such as child sexual exploitation and underage sex, prostitution, harassment of women, GBV, purchase or use of illegal drugs, Disciplinary measures and sanctions (e.g. dismissal) for infringement of the code of conduct and/or company rules; Commitment / policy to cooperate with law enforcement agencies investigating perpetrators of GBV. • Provide cultural sensitization training to improve awareness of and sensitivity of workers to local cultures, traditions, and lifestyles. • Implement GRM and Labour Influx Management Plan prepared for this project. • Limit the number of migrant workers by engaging local workers.	ONSMA SPV/Private Investors	1,000,000 Annually for Sensitization and GRM Operations.	Induction programme and CoC developed and signed by all workers. level of awareness and knowledge of local culture. GRM LIMP	Interview Records	High level of satisfaction expressed by farmers in the hub and adjoining communities.	Agro hub Ore Annually.	Police Odigbo LGA	
	Individuals are likely to migrate into the project area from the local/regional area, which may cause conflict with residents, and put pressure on resources and infrastructure.	• Implement the Labour Influx Management Plan prepared for this project in consultation with Odigbo LGA • Limit the number of migrant workers by engaging local workers.	ONSMA SPV/Private Investors		LIMP Ratio of migrant to local workers	Interview Records	Community perception and level of satisfaction.	SAPZ, Ore community Bi-Annually	Police Odigbo LGA	
	Labour Influx which could lead to increase in sexual activities and potential spread of STDs/STIs	• Institute HIV prevention programs (peer education, condom distribution etc.) • Liaise with appropriate health focused NGOs to undertake health awareness	ONSMA SPV/Private Investors	1,000,000 annually.	level of awareness and knowledge of preventive measures.	Rapid health Survey Consultations	High level of awareness and knowledge of preventive measures.	Agro hub Ore community	Odigbo LGA ONSMoH ONSMWASD	

Project Activities	Associated and Potential Impacts	Mitigation Measure	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location & Frequency	Responsibility for Monitoring	Cost of Monitoring (Naira)
	including HIV/AIDS in the project location	and education initiatives on STDs amongst workers and in the host community. • Provide opportunities for workers to regularly return to their families. • Implement community-based Grievance Redress Mechanism (GRM).					HIV/AIDS level not exceeding baseline condition.	Monthly		
	Potential increased prevalence of GBV & SEA resulting from interaction among construction workers, community members and camp followers	• Conduct GBV service mapping in the project area for effective referral and response. This coordination will be aimed at minimizing duplication of efforts since these data already exist and fostering greater coherence of approaches and programmes. • Include a GBV specialist as part of the E&S Safeguard team for the project. • Define and reinforce GBV requirements in procurement processes and contracts. • Separate toilet and shower facilities for men and women and add GBV-free signage. • Ensure regular GBV risks evaluation in order to update action/mitigation and training requirements throughout the project life cycle. • Ensure regular training of all workers on GBV and related issues throughout the life cycle of the project. • Create an effective Grievance Resolution Mechanism (GRM) with multiple channels to initiate complaint. This should have specific procedures for GBV cases confidentiality reporting with safe and ethical documenting. A parallel GRM for GBV and related issues can also be created.	ONSMA SPV/Private Investors	1,000,000 annually	Level of awareness of local culture by migrant workers. Training on GBV Worker's manual, employment codes etc Ratio of migrant to local workers Ratio of male vs female workers	Visual observation and interviews Rapid health survey Consultations GBV Incident Report	Community perception and level of satisfaction. GBV/SEA not exceeding baseline condition. Signed CoCs	SAPZ Ore Monthly	Police Odigbo LGA ONSMWASD	

Project Activities	Associated and Potential Impacts	Mitigation Measure	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location & Frequency	Responsibility for Monitoring	Cost of Monitoring (Naira)
	Child labour and school drop out in Ore due to availability of construction work	• Ensure that children and minors are not employed directly or indirectly on the project. • Communication on hiring criteria, minimum age, and applicable laws should be ensured. • Enforcement of legislations that prohibits child labour. • Ensure CoCs contains texts that speak on zero tolerance on child labour and all forms of SEA/SH/VAC.	ONSMA SPV/Private Investors	--	Employment Records	Visual observation Interview	Zero number of workers under the age of 18 years	Agro hub Ore community Monthly	Police Odigbo LGA ONSMWASD	
	Increase demand on community health and sanitation infrastructure due to influx of workers and camp followers.	• Provide basic amenities (water, sanitation etc to workers according to WHO standards) within the grazing reserve.	ONSMA SPV/Private Investors	Part of construction costs	No of amenities in worker's camp	Visual observation	Availability of all essential amenities in workers' camp	Workers camp site Monthly	ONSME Odigbo LGA ONSMA	
	Traffic congestion and increased road traffic accident due to movement of vehicles conveying (inputs and products to and from the SAPZ.	• Hire drivers with appropriate driver's license, train drivers and enforce speed limit (TMP is presented in Appendix 5) • Ensure movement of inputs/ products to and from site is done at off-peak period (10am – 4pm). • Ensure trucks and other vehicles are parked at the designated parking lot within the Reserve and prohibited from parking along the F124 expressway and access roads to prevent obstruction of traffic. • Ensure Traffic/caution signs at strategic locations in English and Yoruba and engage personnel to manage traffic flow during peak periods. • Cover truck conveying inputs and produce to and from the Reserve to prevent materials falling and causing injuries to pedestrians & motorists.	SPV/Private Investors ONSMA	400,000 Part of construction costs	Drivers training and licence. Period of mobilisation Appropriate traffic signages in Yoruba Incident/ Accident Report	Visual observation Interview	High level of satisfaction expressed by other road users Zero incident/ accident	Monthly during construction	FRSC Police Odigbo LGA	

Project Activities	Associated and Potential Impacts	Mitigation Measure	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location & Frequency	Responsibility for Monitoring	Cost of Monitoring (Naira)
	Transportation and storage of hazardous materials such as petrol and gas may results in explosions, fires or spills during operation.	• Emergency response plan should be developed for the facility to include: • Training of workers in emergency response and procedure. • Procedures in the case of fire should be communicated to all employees. • Firefighting devices should be installed, and their position should be clearly marked and communicated to workers. • Ensure compliance of the SAPZ with fire safety is assessed by Federal Fire Agency. • Ensure fuel storage areas are clearly marked and secure to always prevent unauthorised access.	ONSMA SPV/Private Investors	500,000	Emergency response plan Workers Training on emergency procedures. Presence of firefighting devices.	Visual observation Interview	Zero emergency incidents/ accidents Compliance with fire safety recommendations of fire agency	SAPZ Annually	Fire Agency LGAs	
	Differences in nationality, ethnicity, religion, etc. may lead to discrimination and harassment, and differences (perceived or real) in working conditions between workers may lead to resentment. Poor management of occupational health and safety leading to accidents, injuries and illnesses among workers); mental health issues due to remote or enclosed living.	• Employment practices and working conditions should conform to International Labour Organization (ILO) Standards and national regulations. • Ensure priority engagement of workers from local communities. • Rest and recreational facilities and time should be provided, and rules on alcohol and drugs defined and clearly communicated to workers. • The basis for differences in the standard of accommodation should be non-discriminatory; it should be documented and communicated transparently to the workforce. • Clear and comprehensive health and safety reporting and grievance procedure system should be established and be freely available to all of the workforce.	SPV/Private Investors	--	ILO Employment Practices and Labour Conditions Ratio of local vs migrant workers Presence of recreational facilities HSE reporting and GRM	Records Interview Visual Observation	Compliance with ILO Employment Practices and Labour Conditions.	Odigbo LGA	ONSMA Odigbo LGA	
Palm products, cocoa products	Generation of waste products consisting	• Implement Livestock Waste Management Plan (Appendix 2)	ONSMA	2,500,000 annually	LWMP	Records	Good housekeeping	SAPZ	ONEPA	

Project Activities	Associated and Potential Impacts	Mitigation Measure	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location & Frequency	Responsibility for Monitoring	Cost of Monitoring (Naira)
Forage Fields and Fodder Plants	primarily of manure with straw Generation of waste including fodder and grain dust, sludge and packaging waste	following the waste hierarchy, supported by training and awareness-raising around topic of waste for workforce and for local community. • Encourage manure recovery for use as fertiliser by farmers.	SPV/Private Investors		Manure recovery	Interview Visual Observation	Compliance with LWMP	Bi-Annually	Odigbo LGA	
	Pollution of watercourses caused by wastes from livestock, and workforce sewage effluent, as well as runoff from grazing areas and land used for growing feed (containing fertilisers, pesticides and herbicides etc.).	• Implement Livestock Waste Management Plan (Appendix 2) following the waste hierarchy, supported by training and awareness-raising around topic of waste for workforce and for local community. • Implement agricultural techniques minimising the use of fertilisers, pesticides, herbicides etc. • Establish site drainage structures for both foul water and storm water with interceptor (oil and water separator). Foul water to be channelled though Effluent Treatment Plant (ETP) before discharge into the environment. Output should conform to FMEnv Effluent Standards. • Encourage manure recovery for use as fertiliser in forage fields & nearby farms.	ONSMA SPV/Private Investors	As above Part of construction cost	LWMP Manure recovery Site drainages and ETP	Records Interview Visual Observation	Good housekeeping Compliance with LWMP Output of ETP should conform to FMEnv Effluent Standards	SAPZ Bi-Annually	ONEPA Odigbo LGA	
	Abstraction of large volume of water	• Ensure water for SAPZ operation is sourced from multiple sources including rainwater harvesting, waterbodies, boreholes and water tankers to prevent overreliance on a single source. • Promotion of water efficiency (including leak detection, preventative maintenance of equipment) and water recycling. • An impoundment should be created as part of the SAPZ to accommodate varieties of water needs for irrigation,	ONSMA SPV/ Private Operators	Part of construction cost	Water from multiple sources. Evidence of water reuse on site Presence of an impoundment	Visual Observation	High level of satisfaction among water users	SAPZ Ore community Annually during the dry season	ONSME Odigbo LGA	

Project Activities	Associated and Potential Impacts	Mitigation Measure	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location & Frequency	Responsibility for Monitoring	Cost of Monitoring (Naira)
		livestock production and value chain processing.								
Abattoir and Meat Processing Areas	Poor hygiene and management of abattoir may lead to bacterial contamination with attendant public health risk	• Strict hygiene standards will be imposed at the site with all staff entering the slaughterhouse required to wear appropriate clothing, hair nets and footwear, and follow procedures for hand and foot disinfection. • Vehicles entering and leaving the abattoir should be subject to a disinfection procedure. • Any diseased animals/contaminated meat will be segregated from other animals/carcasses and collected by the veterinary authorities. • The facility should be cleaned at the end of each working day. This includes washing of floors to remove blood and solids using hosed water, brushes and disinfectants.	ONSMA SPV/ Private Operators	--	Hygiene standards for each facility Compliance with mitigation	Visual Observation Records Interview	The abattoir, slaughtering and processing must conform to the recommendations of FAO - Guidelines for slaughtering, meat cutting and further processing. http://www.fao.org/3/T0279E/T0279E00.htm	SAPZ Quarterly	ONSME ONSMoH NESREA NAFDAC	
	Generation of animal waste including manure, blood and inedible animal parts and chemical used for tanning may lead to environmental contamination	• Implement Livestock Waste Management Plan (Appendix 2) following the waste hierarchy, supported by training and awareness-raising around topic of waste for workforce and for local community. • Implementation of standard good wastewater management and disposal procedures; wastewater drainage outlets to discharge into vegetated areas if possible; vegetation along watercourses and drainage lines to be retained if possible. • Effluent treatment should include maximising the extent that solids and blood are collected before entering the wastewater stream.	ONSMA SPV/ Private Operators	As above Part of construction cost	LWMP Manure recovery Site drainages and ETP	Records Interview Visual Observation	Good housekeeping Compliance with LWMP Output of ETP should conform to FMEnv Effluent Standards	SAPZ Bi-Annually	ONEPA Odigbo LGA	

Project Activities	Associated and Potential Impacts	Mitigation Measure	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location & Frequency	Responsibility for Monitoring	Cost of Monitoring (Naira)
		• Establish site drainage structures for both foul water and storm water with interceptor (oil and water separator). Foul water to be channelled through Effluent Treatment Plant before discharge into the environment. Output should conform to FMEnv Effluent Standards. • Encourage manure recovery for use as fertiliser for use in nearby farms.								
	Abstraction of large volumes of water may lead to water shortages in the zone	• Ensure water for SAPZ operation is sourced from multiple sources including rainwater harvesting, waterbodies, boreholes and water tankers to prevent overreliance on a single source. • Promotion of water efficiency (including leak detection, preventative maintenance of equipment) and water recycling. • An impoundment should be created as part of the SAPZ to accommodate varieties of water needs for irrigation, livestock production and value chain processing.	ONSMA SPV/ Private Operators	Part of construction cost	Water from multiple sources. Evidence of water reuse on site Presence of an impoundment	Visual Observation	High level of satisfaction among water users	SAPZ Farmers Annually during the dry season	ONSME Odigbo LGA	
	Emission of methane, ammonia and other GHGs may aggravate climate change and cause unpleasant odours	• Create manure lagoons (impermeable pit or tank protected from rain and sun) to temporary store manure before being used as fertilizer in forage fields and nearby farms. • The production of methane can be encouraged and recovered for use as a fuel using specially designed recovery systems. The size of the SAPZ would make methane recovery feasible, although KWSG has no plans to recover methane at this time, however, other private investors should be encouraged to do so.	ONSMA SPV/ Private Operators	Part of construction cost	Recycling of manure as fertilizer	Visual Observation	Good housekeeping and waste management measures	SAPZ Bi-Annually	ONEPA Odigbo LGA	

Project Activities	Associated and Potential Impacts	Mitigation Measure	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location & Frequency	Responsibility for Monitoring	Cost of Monitoring (Naira)
	Odours from animal waste products and some carcass treatment and manure in the lairage pens	• Odours should be minimised by good manure management; the animals will be held in lairage pens with slatted floors for manure collection with daily scrapping. • Odours from inedible animal parts can be managed by good housekeeping and livestock waste management practices, and for singeing odours using abatement equipment if necessary. • Inedible waste should be removed by specialist operators for rendering, or in the future, possibly utilised in the production of biogas that will subsequently be used as a fuel source for the facility.	ONSMA SPV/ Private Operators	Part of construction cost	LWMP Manure recovery	Records Interview Visual Observation	Good housekeeping Compliance with LWMP	SAPZ Bi-Annually	ONEPA Odigbo LGA	
	Pollution of soil and watercourses due to run-off or discharge of untreated foul water (effluents) and improper management of waste	• Establish site drainage structures for both foul water and storm water with interceptor (oil and water separator). Foul water to be channelled though Effluent Treatment Plant before discharge into the environment. • ETP should consist of mechanical clarification using a 1mm screen followed by chemical flocculation, flocculent removal and dewatering and disposal of resultant solid waste in order for the output to conform to FMEnv Effluent Standards. • Effluent treatment should include maximising the extent that solids and blood are collected before entering the wastewater stream. • Implement Livestock Waste Management Plan following the waste hierarchy, supported by training and awareness-raising around topic of waste for workforce and for local community.	ONSMA SPV/ Private Operators	As above Part of construction cost	LWMP Manure recovery Site drainages and ETP Waste transfer records	Records Interview Visual Observation	Good housekeeping Compliance with LWMP Output of ETP should conform to FMEnv Effluent Standards	SAPZ Bi-Annually	ONEPA Odigbo LGA	

Project Activities	Associated and Potential Impacts	Mitigation Measure	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location & Frequency	Responsibility for Monitoring	Cost of Monitoring (Naira)
		• Use of authorised contractors for hazardous and any other wastes which the project cannot dispose of safely. • Encourage manure recovery for use as fertiliser. • Storage of hazardous waste onsite should be done in closed/ labelled containers, stored away from direct sunlight/ rain with bunds provided to contain spillage.								
Milk Production Areas	Generation of manure waste may lead to uncontrolled release of ammonia and environmental contamination. Generation/ uncontrolled discharge of foul water with high BOD, suspended solids and nutrients may cause pollution/eutrophication/nutrient-enrichment in waterbodies.	• Implement Livestock Waste Management Plan (Appendix 2) following the waste hierarchy, supported by training and awareness-raising around topic of waste for workforce and for local community. • Ensure barns are equipped with slatted flooring and manure scrapers to reduce ammonia emissions through regular collection of manure in collection basins underneath the flooring. The under-floor manure basins will be periodically emptied to manure lagoons from where manure recovery for use as fertiliser will be done. • Establish site drainage structures for both foul water and storm water with interceptors (oil and water separator). Foul water to be channelled through Effluent Treatment Plant before discharge into the environment. Output should conform to FMEnv Effluent Standards.	ONSMA SPV/ Private Operators	As above Part of construction cost	LWMP Manure recovery Site drainages and ETP	Records Interview Visual Observation	Good housekeeping Compliance with LWMP Output of ETP should conform to FMEnv Effluent Standards	SAPZ Bi-Annually	ONEPA Odigbo LGA	
	Poor hygiene and management of milk may lead to bacterial contamination with	• Strict hygiene standards should be imposed at the milking parlour with all staff entering required to wear appropriate clothing, hair nets and	ONSMA SPV/ Private Operators	--	Hygiene standards for each facility	Visual Observation Records	The milking barn should conform with FAO Guidelines.	SAPZ Quarterly	ONSME ONSMoH NESREA	

Project Activities	Associated and Potential Impacts	Mitigation Measure	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location & Frequency	Responsibility for Monitoring	Cost of Monitoring (Naira)
	attendant public health risk	footwear, and follow procedures for hand and foot disinfection. • Vehicles entering and leaving the facility should be subject to a disinfection procedure. • All animals in the barn (milking parlour) must be checked daily by Veterinary Doctor to confirm they are not infected before milking. • The barns should have slatted floors and equipped with automatic cleaning scrapers with manure basins underneath to collect manure (and urine). The barns should also be regularly disinfected.			Compliance with mitigation	Interview			NAFDAC	
Veterinary and Disease Control	Zoonoses (potential transmission of diseases between animals and humans) Degradation of health and size of populations of native species due to spread of diseases from livestock. Increased likelihood of certain vector-, animals- or water-borne diseases spreading within workforce and local community due to	• Ensure adequate and sufficient medical and veterinary services/ clinics and presence of doctors are included in project planning. • Good environmental, sanitation and hygiene conditions of the livestock processing zone • Veterinary screening of all livestock for diseases prior to introduction into the grazing reserve. • Proper containment of livestock, to reduce interaction with wild and other domestic animal populations. • Monitor diseases in livestock and implement appropriate actions to eliminate any diseases detected, especially those with potential to spread to wild populations (e.g., control vectors using bioenvironmental management techniques). • Ensure control of human/animal interactions.	ONSMA SPV/ Private Operators	Part of project cost	Medical and Veterinary Services Veterinary screening of all livestock Livestock containment Control of human/animal interactions LWMP	Visual Observation Records Interview	Absence of Zoonoses Zero outbreak of diseases.	SAPZ and adjoining communities Quarterly	ONSME ONSMoH Odigbo LGA	

Project Activities	Associated and Potential Impacts	Mitigation Measure	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location & Frequency	Responsibility for Monitoring	Cost of Monitoring (Naira)
	presence of livestock and standing water; health risks associated with chemicals used and wastes produced during operation (e.g. pesticides, noxious gases).	• Monitor diseases in livestock and implement appropriate actions to eliminate any diseases detected, especially those with potential to spread to humans (e.g., vector control, use of quarantine, contact avoidance, focal use of insecticides etc.). • Regulate livestock waste and ensure appropriate ventilation in livestock buildings to control emissions of noxious gases. • Safely manage chemicals (e.g., appropriate containers and labelling, workforce training, use of protective equipment).								
	Generation of hazardous waste (including medical waste and animal tissues)	• Implement the veterinary and livestock waste management plan prepared for this project and work closely with the KWS Ministry of Health to provide guidance and monitoring. • Install incinerator with secondary burners and gaseous pollutant abatement technology to manage medical waste. • The receptacles for waste should be sized appropriately for the waste volumes generated, colour-coded and labelled according to the types of waste to be deposited. • Ensure workers handling waste from the facility are using appropriate PPE including coveralls, face masks, hand-gloves and safety boots.	ONSMA SPV/ Private Operators	Part of project cost	LWMP Installation of abatement technology – incinerators Waste segregation Usage of PPE by waste handlers.	Visual Observation Records Interview	Good housekeeping	SAPZ Veterinary and Medical Clinics. Quarterly	ONEPA ONSMoH Odigbo LGA	
Crop Production Area	Pollution of watercourses caused by run-off from farming areas (containing	• Implement agricultural techniques minimising the use of fertilisers, pesticides, herbicides etc.	ONSMA SPV/ Private Operators	--	Agric practices implemented to reduce fertilizer application.	Visual observation	Water quality of the receiving rivers within	SAPZ Annually	ONSME ONSMA	

Project Activities	Associated and Potential Impacts	Mitigation Measure	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location & Frequency	Responsibility for Monitoring	Cost of Monitoring (Naira)
	fertilisers, pesticides and herbicides etc.).	• Encourage the use of manure from livestock production areas to limit the			Manure recycling as fertilizer		baseline condition		Odigbo LGA	

7.10 Project Grievance Redress Mechanism (GRM)

The grievance redress mechanism will take into consideration the existing social and administrative structures present within Ore to constitute a GRM that is localised and acceptable. This structure will be adapted and enhanced using the AfDB approach. The AfDB's approach to resolving grievances on project interventions is described below:

7.10.1 AfDB Grievance Redress Mechanism Approach

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

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

Some Bank's intervention may inevitably have the potential to impact the local population's well-being. The aim of a project GRM is, therefore, to enable people fearing or suffering adverse impacts to be able to be heard and assisted. People potentially or actually affected by a Bank-funded project need a trusted way to voice and resolve project related concerns and the project needs an effective way to address affected people's concerns. The GRM provides a structured and managed way of allowing the concerns of affected people to be heard and addressed, including by the borrower's/client's project management staff and in certain circumstances, by Bank staff.

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

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

The process by which the GRM is designed should be integrated into the overall approach to project preparation as prescribed in the Bank's ISS. The Bank ISS through its (IESIA) Guidelines Notes provides guidance on development and Implementation of GRM. It should also be included in the concrete actions required in the ESMP for

Category 1 projects and on a case-by-case basis, for Category 2 projects that exhibit specific potential social tensions, in particular risks of mismanagement of compensation/resettlement schemes or the presence of particularly vulnerable groups in the project's area of influence.

7.10.2 GRM at project level

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

The second step is to design the GRM by:

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

At the project level, the design of GRM may be done with the assistance of the specialized Independent consulting team as part of the ESMP implementation. The GRM shall be designed based on the following principles:

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

7.10.3 Appointing members of Grievance Redress Committees (GRC)

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

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

Specifically, for the SAPZ implementation, the GRC at project level shall constitute among other members:

- Director, Crop production Department (ONSMA)
- Representatives from Odigbo LGA
- Village Head of Ore town.
- A Representative of Farmers Group
- A Representative of the Herders Group
- A Representative of Community Women
- Youth Leader (Ore town)
- a member from a recognized Non-Government Organization
- SAPZ Liaison Officer from ONSMA (Secretary).

The GRC shall have the right to request the project technical staff, and officers from relevant state or non-state institutions to attend the meetings and provide information. A complainant has the right to appear in person, to be accompanied by a community member, and/or to request to be represented by a community elder. GRCs shall be established at the project level to assure accessibility for Project Affected Persons.

7.10.4 Procedures, complaints channels and time frame for GRM

As there is no ideal model or one-size-fits-all approach to grievance resolution, the best solutions to conflicts are generally achieved through localized mechanisms that take account of the specific issues, cultural context, local customs, and project conditions and scale. The process by which a complaint will be accepted or rejected needs shall be carefully designed and shall maximize interactivity and cultural sensitivity. The acceptance/rejection of a complaint will go through a discussion stage where the plaintiff and the GRM staff interact on the grounds and motives of the complaint, after which the plaintiff should clearly and transparently be told whether or

not the complaint is eligible and will be processed. The acceptance/rejection of the complaint shall be based on objective criteria that are posted by the GRC, including a written copy displayed in the public access area of the GRM in an appropriate language.

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

- Filing of the complaint and labelling with an identification code communicated immediately to the plaintiff.
- Assessment of the complaint (including severity of the risk/impact).
- Formulation of the response.
- Selection of the grievance resolution approach is a key. There are four general approaches to choose from:
- The project's management proposes a solution.
- The community and the project's management decide together.
- The project's management and the community defer to a third party to decide.
- The project's management and the community utilize traditional or customary practices to reach a solution.

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

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

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

A number of mechanisms will be available to aggrieved parties to access redress. These shall include institutions specific (internal) to a project and set up from its inception or others that might have emerged over time in response to needs identified while the project evolved. Other institutions which are already established within a country's judicial, administrative, and/or political systems and exist outside a project shall also be used. These include the government bureaucracy; judicial institutions; and political institutions such as Local Government Authorities, etc.

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

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

The projects to be implemented under this intervention will have diverse E&S contexts. It is therefore expected that as part of the implementation of these projects, the projects shall develop GRM which will bring simpler means of addressing complaints. If the complainant is not satisfied, the complainer will have to appeal to the ONSG SAPZ Project Implementation Unit domiciled in the ONSMA, headed by the Permanent Secretary.

7.10.5 The AfDB's Independent Review Mechanism (IRM)

AfDB has also established its own accountability mechanism, the Independent Review Mechanism (IRM). The IRM seeks to assess whether a Bank approved project complies with relevant the AfDB's ISS. The IRM makes itself accessible to any group (a minimum of 2 persons living in the project's area of influence) actually or potentially negatively affected by a Bank-funded project. The IRM report 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 8: PUBLIC CONSULTATION

8.1 Introduction

Public consultation is a mandatory requirement and a good practice that ensures project sustainability. Prior to the execution of this ESIA, relevant stakeholders, especially potentially affected communities, were identified through a stakeholder mapping analysis, so that adequate engagement and consultation can be carried out during the ESIA process and beyond. This stakeholder mapping analysis then informed the development and implementation of a Stakeholder Engagement Plan (SEP) that includes a detailed description of the plan for stakeholder engagement through the ESIA process.

For this ESIA, the fundamental principle of consultations is meaningful engagement with the various identified groups (i.e., free, prior and informed), with the objective of informing the stakeholders and to ultimately achieve Broad Community Support (BCS) for the SAPZ. Although, there were no inhabitants/settlers within the SAPZ, the consultation targeted stakeholders within Ore and the environ including MDAs, farmers, women and minority groups ensuring that the requirements for meaningful engagement and consultation are adequately fulfilled. These consultations served as a two-way process between the project and its host/affected communities and other stakeholders to adequately inform them about the project (including its benefits and adverse impacts) and to obtain their input, concerns and fears which were then mainstreamed into this ESIA.

8.2 Stakeholder Analysis and Identification

The stakeholder analysis focused on the identification of stakeholders, roles and influence they wield in decision making and implementation of the ESIA and development of the SAPZ in general. This is apt for determining the capacities, concerns and influence on policy formulation and implementation. For example, this ESIA acknowledges that it is possible for an agency, organization or a group to have the dominant influence over formulation of a policy but at the same time have less practical impact than a large number of groups who have no knowledge of the regulations and information about the project, but nevertheless control day to day events or actions that affects the project. By plotting the relative influence and impacts of different stakeholders on a graph, valuable insights can be gained in terms of the actions that need to be taken to make policies more effective.

Through meetings with ONSMA and from extensive literature review, a list of stakeholders was drawn. These stakeholders were contacted via letters, visits and phone calls. Categories of stakeholders in the SAPZ project ecosystem include statutory MDAs, beneficiary/host/affected communities and project affected groups with varying range of influences and interests as identified below:

Table 8.1: Categorization and Analysis of Stakeholders Influence and interest

Stakeholders	Influence	Interest	Engagement Plan
Federal Ministry of Environment FMEnv)	High	High	Fully engage this group and ensure that their requirements are satisfied at all times.
Odigbo LGA	High	High	As in above
Traditional Rulers/Community leaders	High	High	As in above
Ondo State Ministry of Environment (ONSME)	High	High	As in above
Ondo State Environmental Protection Agency (ONEPA)	High	High	As in above
Ondo State Waste Management Authority (OSWMA)	High	High	As in above
Ondo State Senior Special Assistant on Agric	High	High	Fully engage on the progress of project
Host Community Ore	High	High	As in above
Cocoa Farmers Community	High	High	As in above
Farmers and Herders,	High	High	As in above
CBOs, NGOs, CSOs	High	High	As in above
Ondo State Ministry of Women Affairs and Social Development	Low	High	Keep this group informed, ensuring that no major issues arise because of the project
Ondo State Ministry of Health (ONSMoH)	Low	High	As in above
Market/ community Women	Low	High	As in above
Vulnerable persons	Low	High	As in above

8.3 Summary of Consultations

The summary of the consultation with various stakeholders are presented in Tables 8.2 – 8.4 below while the attendance at these meetings is attached as Appendix 6.

Table 8.2: Summary of Public Consultation with SAPZ Stakeholders

Date	23rd June, 2021
Attendance	Representatives from the Ministry of Environment, Ministry Agriculture, Traditional Ruler, Odigbo LGA Vice Chairman, ESIA Consulting team, Community groups (including men, women, farmers, etc)
Language	English and Yoruba
Venue	Heritage Continental Hotel Ore
Introduction	The meeting started with an opening prayer by the Local Government secretary after which a welcome address was given by the chairman of Odigbo L.G.A. The SSA on Agric gave an overview of the purpose of the project. He informed the participants about the project and pleaded for their cooperation to the successful implementation of the project. He introduced the ESIA Consultant who greeted the gathering and gave an overview of the purpose of the ESIA study, stating its aims and objectives and why each participant group is being consulted. He inquired to know from the people if there are concerns about implementation of the project in their area and went further to explain the scoping activities that has been carried out in the period of the field study. The scoping activities involved focus group discussions with various stakeholders, collection of water and soil samples at strategic locations for environmental parameter analysis and description of the Bio-physical features that borders the project area. The study carried out so far will be useful in addressing the adverse impact of the project.

	The consultant stated that the conduct of the ESIA is in line with the extant law of Nigeria EIA Act Cap E12 LFN 2004 which requires Environmental Assessment for major development activities. This is also in compliance with the requirement of African Development Bank for support and funding of the project. He informed the people about the grievance redress mechanism (GRM), which will be established for the project, who's aim is to provide a platform for lodgement and settlement of grievances which may affect the project. He stated that the operational guideline for the GRM will be revealed at the end of the preparation of the ESIA and that the Ondo State Ministry of Agriculture will also sensitize the stakeholders further about it. The consultant informed the stakeholders that the prepared ESIA report will be disclosed at community level, LGA level, State Ministry of Environment and at Ondo State Ministry of Agriculture office when it is ready for the public to have access to it for comments. In addition, the ESIA report according to the consultant will be disclosed on the website of AfDB.
Remarks	The representative of the Oba of Ore expressed gratitude for the Special Agro Processing Zone project, stating that Ore town is happy for the development and the opportunity it presents to indigent cocoa farmers within the community and pride in Ore's contribution in overall economic improvement of Ondo State through export of products. He pledged his support for the project and informed the consultant that he will get full support from the beneficiary community.
Perception about the Project	The stakeholders took their time in turns to express their appreciation to the government of the state and African Development Bank for the project. They believe that the project is a step in the right direction to enhance the livelihood of the people and create employment. They gave their assurance that the Community would give their full support to make sure that the project is successful and sustainable.
Concerns, Questions and Request raised by the stakeholders	Concerns raised by the stakeholders include the following: • Will transportation be provided to farmers to have access to the Agro-hub seeing as the hub is situated many kilometres away from their homes • Will farmers be provided accommodation within the hub? • How will farmers be engaged? • What are the solutions to the environmental impacts and ecological issues mentioned by the consultant? • How will the project benefit the crop farmers and what will happen to their crops? • The project should mainstream the participation of women • How will security on farmlands be ensured? • Inquires on the exact location of the proposed Agro-hub
How concerns questions and requests were addressed.	The questions and concerns of the people were addressed by the consultant as follows: • Farmers and herders to be engaged by the project will be provided suitable transportation to ferry workers to and fro the agro-hub pending whether a residential unit will be added to infrastructure to be constructed • Experienced farmers within Ore will be considered and selected in a fair and transparent manner taking into consideration different sub villages within Ore. • The ESIA will recommend mitigation measures for addressing specific adverse impacts so that all significant impacts are avoided, reduced to barest minimum or mitigated. He cited examples, that where the project will result in surface water pollution and depleting of the available

	surface water in the community, there will be need to renovate existing and failed dams in the project location as a veritable alternative. • The project will mainstream the participation of women farmers and workers, in various employment opportunities created by the project. • The consultant requested for the improvement of security situations within the community through the Odigbo LGA Chairman. He also stated that the investment company would be responsible for maintaining security during operations. • The location description with common landmarks were provided as well as coordinate points
Conclusion	The consultant assured them that their concerns are well noted and will be mainstreamed into the decision framework of the project to ensure project sustainability. All relevant issues were exhausted, and the meeting ended with a closing prayer by a member of the community.

*Table 8.3: **FGD with Ore community Men and Men Farmers Group***

Date	23rd June, 2021
Attendance	The Odigbo LGA Vice Chairman, a representative from the Department of Crop production; Ondo State Ministry of Agriculture the consultant team, men and farmers of Ore community
Language	English and Yoruba
Venue	Heritage Continental hotel
Introduction	The meeting started with an opening prayer by a member of the community, after which the representative from the Ministry of Agriculture gave an overview of the project and the reason for which the consultant was in their midst. He introduced the ESIA Consultant who greeted the gathering and thanked everyone for being receptive. He gave an overview of the project whose aim is to increase the production, value chain processing and agro export capacity of Oil palm and Cocoa in Ore and Ondo State at large, as well as investments in other aspects of agriculture such as cassava, rubber farming and livestock production. He informed them the hub will be developed on a total of about 11,000Ha of land at Ore with other associated ancillary facilities. He also informed the people that the project is such that will open the community up to development, creating employment and enhance marketing. He inquired to know from the people if there are concerns about implementation of the project in their area and went further to explain the activities of the ESIA. The activities of the ESIA according to the consultant are: focus group discussions with other small group of stakeholders, water and soil samples collection, noise and air samples at strategic locations for environmental parameter analysis which aims at ensuring that that the environment will be safe before and after the operational phase of the project. He further inquired to know how disputes involving members of the community are being resolved.
Remarks	The chairman of the farmers association group expressed gratitude for the Special Agro Processing Zone project, stating that they are open to the new development and the potential benefits it will bring to farmers within the community. The group pledged their support for the project and informed the consultant that he will get full support from the people of Ore.
Perception about the Project	The stakeholders took their time in turns to express their appreciation to the government of the state and African Development Bank for the project. They believe that the project is a step in the right direction to enhance the livelihood of the people and create employment.
Concerns,	Concerns raised by the stakeholders include the following:

raised by the stakeholders	• Implementation of the project should mainstream employment of the indigenous inhabitants of the community. • There should be a demarcation between the area of land for grazing and area for pastoral farming.
How concerns were addressed.	The concerns of the people were addressed by the consultant as follows: • The consultant assured the people that farmers and workers will first be sourced from within the Ore communities as well as during civil works and implementation of the project, there will be temporal employment for the indigenous inhabitants of the community especially the youths • They were informed by the consultant that there will be demarcation between the area of land for grazing and area for pastoral farming.
Conclusion	All relevant issues were exhausted, and the meeting ended with a closing remark by the chairman of the men with a pledge to support the success of the project.

Table 8.4 FGD with Women of Ore Community

Date	23rd June, 2021
Attendance	Women of Ore communities, a representative from the Department of crop production and the ESIA Consulting team
Language	English and Yoruba
Venue	Heritage Continental hotel
Introduction	The purpose of the meeting was introduced to the women, after which an overview of the project was given by the ESIA Consultant. He informed the women that the project is such that will open the community up to development, creating employment and enhancing economic activities. He sensitized the women on the risk of sexual abuse and exploitation and discouraged child labour among the women during project implementation. The women were encouraged to report any suspected case of GBV to the appropriate places which are the Gender Specialist Desk of the SAPZ or to the Health Center within the project area.
Remarks	The women expressed gratitude for the Special Agro Processing Zone project and also affirmed that women were involved in decision making process in the community. They pledged their support for the project.
Perception about the Project	They women received the project well but want the project to ensure their participation and interests as women as well as farmers are ensured and also build an effective monitoring structure against sexual exploitation and harassment of the ladies in the community that may result from anticipated labour influx during project implementation.
Concerns, raised by the stakeholders	Concerns raised by the stakeholders include the following: • Incorporation of women farmers as beneficiaries • Provision of basic amenities and infrastructural facilities such as residents within the hub or transportation to and fro the hub • Perceived occurrence of sexual exploitation and harassment of the ladies in the community
How concerns were addressed.	The concerns of the people were addressed by the consultant as follows: • The consultant assured the women that the project will ensure fair representation of women groups into employment opportunities • The consultant reiterated that the project will provide suitable transportation to ferry workers to and fro the agro-hub pending whether a residential unit will be added to infrastructure to be constructed

	• The project will sensitize migrant workers against GBV. A contract clause will specify stringent punishment to the contractor and staff for any act of GBV. In addition, there will be a GBV referral health center to treat and rehabilitate victims of GBV which is unlikely to occur. Finally, on GBV, there will be a GBV grievance redress mechanism where any act or report on GBV matters can be reported and addressed.
Conclusion	All relevant issues were exhausted, and the meeting ended with a closing remark by a member of the women group with a pledge to support the success of the project.

Include pictures of partcipants at the stakeholder engagement (" A picture speaks a thousand words").

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Appendix 1: Veterinary and Livestock Waste Management Plan

Introduction

In Nigeria, livestock production and value chain are under two major production systems: the sedentary mixed farming production system and the nomadic pastoral or agro-pastoral production system. In both systems waste management is crucial and plays a significant role in sustainable development of livestock value chain.

Objectives of Veterinary and Livestock Waste Management Plan

The aim of the Waste Management Plan (WMP) is to guide the project implementation unit and other investors/beneficiaries on how to reduce and eliminate adverse impact of hazardous waste materials on human health during livestock production and processing.

Need for Veterinary and Livestock Waste Management Plan (WMP)

Recognising the critical challenges and nexus livestock's waste can pose to the environment, climate change, public health and the food chain, as part of the implementation of Ondo State Agro Processing Zone Project activities, there is need to develop a WMP which is designed to minimize potential harmful effects on human, animal health and on the environment that may arise particularly in the context of waste storage, collection, transportation, treatment and disposal.

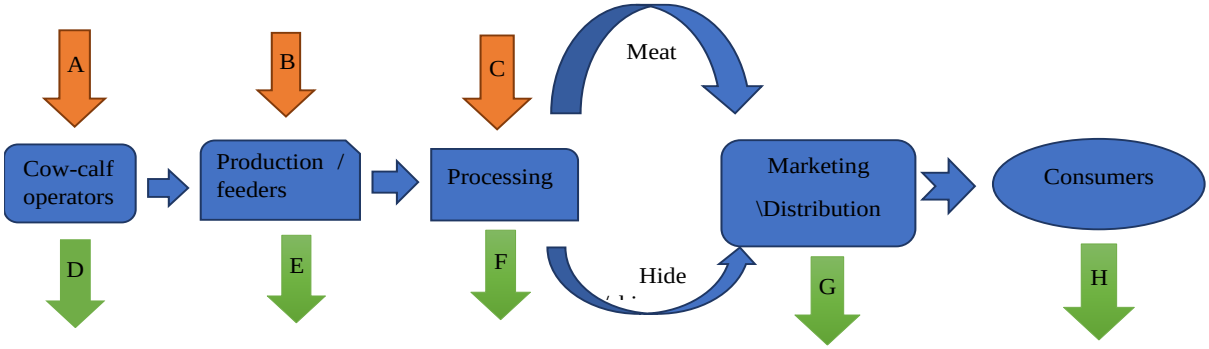
Assessment of Potential Impacts

The increase in livestock production and processing activities will result in several impacts from waste within the environment in which they are located. These are as summarized in the Table 1 below.

Table 1: Summary of Potential Impacts Associated with Livestock waste

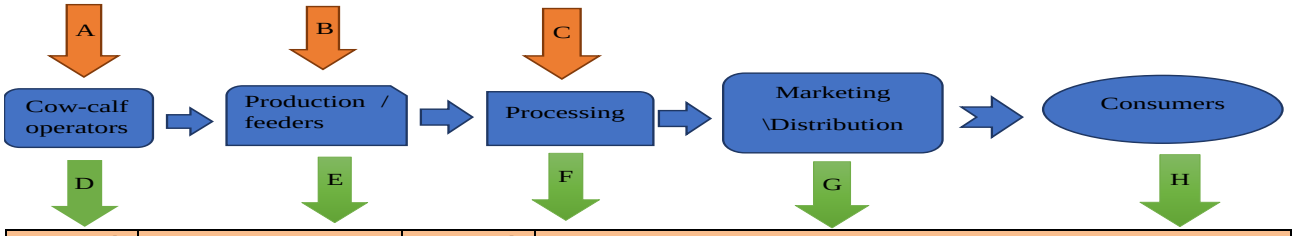
POTENTIAL ADVERSE IMPACTS	
SOCIAL IMPACTS	**ENVIRONMENTAL IMPACTS**
• Public discomfort and mood swings from odour; • Heightened risks of pathogens (disease- and non-disease-causing) passed from animals to humans. • Emergence of microbes resistant to antibiotics and antimicrobials, due in large part to widespread use of antimicrobials for nontherapeutic purposes; food-borne disease; worker health concerns; and dispersed impacts on the adjacent community at large. • Attraction of rodents, insects and other pests, release of animal pathogens into groundwater. • Risk of occupational accidents, injuries and diseases.	• Deterioration of ambient air quality due to the release of odour, fugitive dusts and gaseous pollutants. • Noise & vibration disturbances from operation of waste treatment equipment (for large scale operations). • Destruction of natural habitat & displacement of fauna particularly in wetland areas. • Soil contamination from manure. • Groundwater contamination from wastewater and manure leaching. • Surface water contamination as a result of sediment/pollutants run off from exposed soils and accidental leakage/runoff of manure lagoon into water. • Greenhouse gas emissions that affect climate change.

Livestock Value Chain and Waste Generated



Legend Label	Input	Legend Label	Waste Output
A	Feeds, animal health services and products	D	Dead animals, wastewater from animal wash, feed waste, feed bags(nylons), dungs, urine, vaccine, insecticides and drugs residue waste
B	Feeds, animal health services and products	E	Dead animals, wastewater from animal wash, feed waste, feed bags(nylons), dungs, urine, vaccine, insecticides and drugs residue waste
C	Water	F	Dungs, undigested ingest, wastewater from meat processing, bones, horns, fats, blood, hooves, and furs
	Meat, hides	G	Bones
	Meat, hides	H	Bones

Figure 1: Schematic Representation of Waste Generated along Meat Value Chain



Legend Label	Input	Legend Label	Waste Output
A	Feeds, animal health services and products	D	Dead animals, wastewater from animal wash, feed waste, feed bags(nylons), dungs, urine, vaccine, insecticides and drugs residue waste
B	Feeds, animal health services and products	E	Dead animals, wastewater from animal wash, feed waste, feed bags(nylons), dungs, urine, vaccine, insecticides and drugs residue waste
C	Water, Soap and Sanitizer	F	Milk products residue waste, cleaning compounds and sanitizers, discarded cuts, spent ripening bags, wax residues from cheese production.
		G	Waste milk
		H	Waste from tins and sachets

Figure 2: Schematic Representation of Waste Generated along Dairy Value Chain

WASTE MANAGEMNT PLAN

The Veterinary and Livestock Waste Management Plan is predicated on International best practices and the waste management hierarchy. It encompasses a range of measures across all 5 tiers namely, prevention and minimisation, reuse, recycling, recovery and disposal towards minimization of waste impact on our environment. Associated waste impacts and sanitary nuisances from livestock operations needs to be mitigated through good husbandry practices and a proper farm management to avoid any inconveniences to the surrounding environment. Major issues of environmental concern will relate to, zoning and site selection, solid waste, odour and sanitary nuisances, wastewater, health and safety aspects, and energy and water consumption.

Waste Hierarchy

As far as is reasonably practicable, general waste management and waste minimization will be practiced through the following waste hierarchy approach presented in Figure 3.

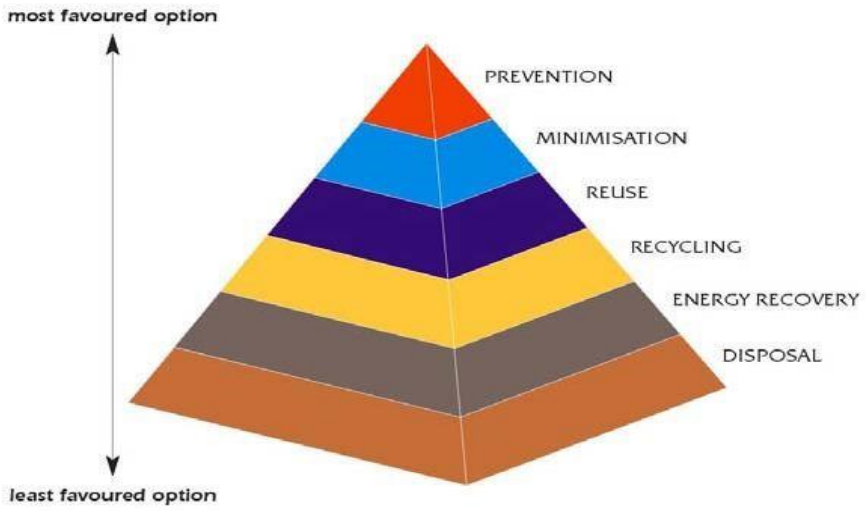


Figure 3: Hierarchy of Waste

Prevention: Waste prevention at source. Departments must plan activities to avoid the generation of waste.
Minimization: Reduce the amount of waste produced.
Re-use: Re-use materials wherever possible.
Recycle: Transfer waste to approved recycling plants to minimize environmental impact.
Energy recovery: feasible to be carried out as farm waste because of high calorific value.
Disposal: Sending of waste to landfill as a last resort.
Hazardous waste will be disposed of and treated by authorized disposal contractors and facilities.

Waste Categories
Based on the activities that are undertaken within livestock farm, waste has been categorized into:

- **Non-Hazardous Waste**: includes paper, wood, office, rubbish, cardboard, scrap metal, and glass.
- **Hazardous Waste**: animal waste, oil, Lubricants Cans, Chemical, Pesticides Cans, Paint Cans, expired drugs etc.

GENERAL WASTE MANAGEMENT CONTROL MEASURES
The following control measures will be employed within the livestock farm to reduce the environmental impacts from waste generation, handling, storage and disposal:

- Open burning of waste, dumping of waste in any water body (stream/ river / marine) or the dumping of waste at undesignated area within the property is prohibited ;
- Separate labelled waste receptacles will be provided for, plastic, cardboard / paper, tins, glass, the biodegradables/ manure, sharps etc ;
- The dilution of hazardous waste is prohibited ;
- The mixing of hazardous and non-hazardous waste is prohibited ;
- All hazardous waste will be provided with secondary containment and suitably bunded to meet legal requirements, where necessary ;
- A program for regular collection and removal of skips and bins will be implemented
- All litter will be controlled within each farm by means of good housekeeping ;
- Where possible, performance measurement and targets for reduction reuse and recycling will be developed and implemented ;
- Any wastes that cannot be reused and recycled will be transported and disposed in accordance with Municipality and environmental requirements ;

- Volumes and types of waste will be monitored to establish whether additional opportunities for improvements in waste management (avoid, reduce, reuse, recycle) can be adopted, where practicable ;
- All workers/ farm staff will be trained on the Waste Management Plan, through shift briefs, etc.

DISPOSAL LANDFILL

Where the above hierarchy of control cannot be satisfied the waste will be sent to an approved Municipality landfill. Landfill is a last resort. The burning, burying, and unauthorized dumping of waste is prohibited.

Specific Waste Management Options

Specific waste management plan is summarised in Table 2 for the production and processing value chain of the mammalian ruminants (cattle, sheep and goat), Poultry & Birds,

Table 2: Specific Waste Management Plan in the Value Chain of Livestock's

Type of Animal	Waste Generated	Source	Mitigation Measures	Implementation Schedule	Frequency	Institutional Responsibility for Implementation	Institutional Responsibility for Supervision	Annual Budget (Naira)
Cattle, Sheep and Goat		**PRODUCTION PHASE**						
	Feed Waste	Dry Grass, clover, forbs and hay	Regulated quantity of feed should always be served. Proper storage, handling of feed should be practiced.	Regularly	Every 3days	Farm Personnel	ONSMEnv	600,000
	Dung	Animal faeces	Dungs should used as manure on farmland	Regularly	Daily	Farm Personnel	ONSMEnv	360,000
	Dead Animal	Dead cattle, sheep and goat Dead Rodents	proper animal care and disease prevention. Collect carcasses on a regular basis to prevent putrefaction. Compost only disease-free carcasses and ensure that the composting process is managed to prevent leachate and odours. Regular veterinary check-up of animals.	On a need basis	Periodically	Farm Personnel, Veterinary officer	OSMA, ONSMEnv	600,000
	Wastewater	Housekeep and sanitary use	Direct runoff from cleaning animal house & spillage of drinking water into a Septic tank	Regularly	Every 3days	Farm Personnel	ONSMEnv	360,000
	Hazardous and Veterinary Waste	Used Syringes, used needles, used drug packs, used vaccine bottles, expired drugs & vaccines	Purchase vaccines and drug on request to avoid stockpile of vaccines. Designated clearly marked label waste bins. Proper disposal through incineration or landfill.	On a need basis	Monthly	Farm management Veterinary officer	ONSMEnv	600,000
		PROCESSING PHASE						
	Waste Generated	Source	Mitigation Measures	Implementation Schedule	Frequency	Institutional Responsibility for Implementation	Institutional Responsibility for Supervision	Budget
	Animal waste	Inedible organs, animal hair, animal fats	Offal and other by- product are processed and used as pet food and rendered product. Fats are to be converted into tallow and used in other industries. They can be mixed with other materials used for organic manure.	On regular basis during processing phase	Daily	Process section personnel	ONSMEnv	480,000
	Wastewater	Water from cleaning, washing and rinsing.	Effluent Treatment Plant for water reuse and conservation.	Regularly during processing phase	Daily	Plant Engineer	ONSMEnv	600,000

			Sanitary wastewater should be channelled to a septic tank.					
	Packaging	Nylon, plastic containers, cartons	The Packaging materials should be received back for recycling under the Extended Producer Responsibility Policy	Regularly	Daily	Farm management	ONSMEnv FMEnv	240,000
		TOTAL BUDGET FOR CATTLE, SHEEP AND GOAT: 3,840,000.00						
Poultry		**PRODUCTION PHASE**						
	Waste Generated	Source	Mitigation Measures	Implementation Schedule	Frequency	Institutional Responsibility for Implementation	Institutional Responsibility for Supervision	Budget
	Solid Waste components - Feed waste	Perforated feed bag, spilled during storage, loading, and unloading or during animal feeding	Regulated quantity of feed should always be served. Appropriate feed-holder should be strictly adopted. Proper storage, handling of feed should be practiced.	Regularly	Daily	Farm Personnel	ONSMEnv	90,000
	Bird Excretes	Droppings	Processed into compost and as well processed into feed for fishes.	On a need basis	Every 3days	Farm Personnel	ONSMEnv	480,000
	Dead Birds	Disease, Flu, poor housekeep.	Proper animal care and disease prevention. Collect carcasses on a regular basis to prevent putrefaction. Compost only disease-free carcasses and ensure that the composting process is managed to prevent leachate and odours. Regular veterinary check-up of animals.	On a need basis	Frequently	Farm Personnel and Veterinary officer	ONSMEnv OSMA	840,000
	Veterinary waste	Used Syringes, used needles, used drug packs, used vaccine bottles, expired drugs & vaccines	Purchase vaccines and drug on request to avoid stockpile of vaccines. Designated waste bins with clearly marked label. Proper disposal through incineration or landfill	On a need basis	Monthly	Farm Personnel and Veterinary officer	ONSMEnv	600,000
	Hatchery Waste	Infertile hatching eggs, Methyl bromide, Ethylene, eggshells, dead embryos, weaklings and packaging materials	Check hatcher temperature and relative humidity. Usage of Fresh feeds and addition of Vitamin E supplements to water Off-site rendering as mortality is recycled into protein by-product for animal feed	Regularly	Daily	Poultry Farm Manager	ONSMEnv	600,000
	Gaseous emission	Air emissions from poultry production include primarily ammonia (e.g., management of animal waste), odours (e.g. animal housing and waste management), and dust	•Control the temperature, humidity, and other environmental factors of manure storage to reduce emissions. •Consider composting of manure to reduce odour emissions. •Reduce emissions and odours during land application activities by applying a few	Regularly	weekly	Farm Personnel and Poultry Farm Manager	FMEnv/ ONSMEnv	840,000

		(e.g. feed storage, loading and unloading, and waste management activities).	centimeters below the soil surface and by selecting favorable weather conditions (e.g., wind blowing away from inhabited areas); •If necessary, apply chemicals (e.g., urinase inhibitors) to reduce conversion of nitrogen to ammonia •Install dust collection systems (including use of misters) in areas with dusty operations (e.g., feed grinding); •Implement fugitive dust-control measures (e.g., wetting vehicle parking lots and frequently travelled dirt roads, as necessary); •Ensure the prevention of bioaerosols emissions, which may contain disease-causing agents, through the application of the above-reference dust and emissions control measures in manure production and storage facilities.					
	Wastewater	Poultry operations may generate effluents from various sources including runoff from poultry housing, feeding, and watering, from waste storage and management facilities. Waste management activities such as land application of manure, may generated non-point source effluents due to runoff.	•Reduce water use and spills from animal watering by preventing overflow of watering devices and using calibrated, well-maintained self-watering devices. •Install vegetative filters to trap sediment. •Install surface water diversions to direct clean runoff around areas containing waste. •Implement buffer zones to surface water bodies, as appropriate to local conditions and requirements, and avoiding land spreading of manure within these area	Regularly	weekly	HSE Farm Personnel and Poultry Farm Manager	ONSMEnv	840,000.00
		PROCESSING PHASE						
	Waste Generated	Source	Mitigation Measures	Implementation Schedule	Frequency	Institutional Responsibility for Implementation	Institutional Responsibility for Supervision	Budget
	Dressing waste,	Feathers, non-edible organs	Processed with heat to hydrolyze the proteins for animal feed. Converting to manure or incinerate	On regular basis during processing phase	Daily	Process section personnel	ONSMEnv, OSMA	600,000
	Wastewater from processing	Slaughtering process i.e Blood flows, during cleaning of bird cages and sanitary use	Use of dripping trays to collect blood and ensure that it is transported to the blood tank rather than into the wastewater stream Installation of Effluent Treatment Plant for water reuse and conservation.	On regular basis during processing phase	Daily	Process section personnel	ONSMEnv	600,000

			Sanitary wastewater should be channeled to a septic tank.					
	Packaging Materials	Plastics, Nylons, cartons, crates etc	Based on the Extended Producer Responsibility (EPR) principle, the producer should bear the responsibility of taking back, recycling and final disposal of their packaging materials.	Regularly	Daily	Farm Management	FMENv, ONSMEnv	240,000
		TOTAL BUDGET FOR POULTRY: 5,730,000.00						
		TOTAL BUDGET FOR WMP FOR LIVESTOCK'S: 9,570,000.00						

Waste Management Monitoring Plan

The efficient monitoring of this WMP shall ensure effective compliance for the entire life cycle of this project from planning through the construction, operational and decommissioning phases. This shall be guaranteed by pursuing the proper implementation of the Waste Management Monitoring Plan in Table 3 below.

Table 3: Livestock's Waste Management Monitoring Plan

ISSUE	METHOD OF MONITORING	AREAS OF CONCERN	POSITIVE INDICATOR (VALUES)	FREQUENCY	RESPONSIBLE AUTHORITIES
Air Pollution	Observations should be made on the level of dust, ammonia methane, greenhouse gas and odours generated during the livestock production on site. Using gas sensors in milking parlours and cow and poultry sheds Dampening and use of urinase chemicals should be carried out if levels are unacceptable.	Levels of bio aerosols, and dust emissions from (e.g. feed storage, loading, and unloading, feeding, and waste management, Level of ammonia from management of animal or poultry waste Level of methane, greenhouse gas, and nitrous oxide from (e.g. animal feeding and waste management), Explosive concentrations of methane may be released during liquid manure agitation and remain for several weeks after emptying the storages. Level of odours (Hydrogen sulfide) (e.g. animal housing and waste management- agitation of manure)	Deposition of dust on surfaces should decrease with increased dampening. The minimum perceptible level for ammonia is 0.5 to 54 ppm. Air mixtures containing from 50,000–150,000 ppm or 5–15% CH4 are explosive Typical concentrations of CO2 in well-ventilated buildings are in the 500–5000 ppm. Concentrations reaching 200–300 ppm have been reported within a few minutes after the start of manure agitation and have been as high as 1000 ppm during vigorous agitation.	Daily / Regularly	FMEnv, ONSMEnv, OSMA Project Environmental Specialist
Water resources	Water resources should be monitored on site and downstream through	Watercourses and impoundments. Surface water quality Ground Water	Water sample to meet permissible limits prescribe by the NESREA regulation (See annex 1) and the respective state standards.	Tests for water pollution to be done regularly – monthly.	FMEnv, ONSMEnv, OSMA Project Environmental Specialist

ISSUE	METHOD OF MONITORING	AREAS OF CONCERN	POSITIVE INDICATOR (VALUES)	FREQUENCY	RESPONSIBLE AUTHORITIES
	regular testing of water resources. Appropriate land use downstream is done and no pollution of crops from contaminated water.	Quality Recommended distances from watercourses. Possible lagoon/ dam construction sites.	Effluent treat plant installed. Techniques for treating process wastewater in this sector include: Sedimentation for suspended solids reduction using clarifiers or settling ponds; Flow and load equalization; biological treatment, typically anaerobic followed by aerobic treatment, for reduction of soluble organic matter (BOD); biological nutrient removal for reduction in nitrogen and phosphorus; chlorination of effluent when disinfection is required; Dewatering of residuals and composting or land application of wastewater treatment residuals of acceptable quality. Additional engineering controls may be required (i) if pass through of active ingredients (residual amounts of growth enhancers and antibiotics, among other hazardous constituents) is an issue, and (ii) to contain and neutralize nuisance odours.		
Complaints	The PMU should ensure the record of complaints made by local residents are kept by the farmers and should check that action is taken quickly and that the numbers of	Complaints	Number and type of Complaints received, Complaint responded to and resolved.	Regularly-quarterly	OSMA-PMU Farm Manager

ISSUE	METHOD OF MONITORING	AREAS OF CONCERN	POSITIVE INDICATOR (VALUES)	FREQUENCY	RESPONSIBLE AUTHORITIES
	complaints do not rise significantly.				

WMP Monitoring Responsibilities

The overall responsibility of ensuring the implementation, administration and enforcement of the Waste Management Plan shall be that of the Ondo State Ministry of Agriculture Project Management Unit, through the Environmental specialist or any personnel so appointed within the monitoring team.

The monitoring roles and responsibilities would be as follows:

a) Sampling, analysis and evaluation of monitoring parameters with reference to the Waste Management Plan recommendations and requirements.

b) Carry out environmental site surveillance to investigate and audit the Farm, Facilities and Contractors' site practices as applicable, equipment and work methodologies with respect to pollution control and adequacy of waste management mitigation measures implemented.

c) Review the success of WMP programme to cost-effectively confirm the adequacy of mitigation measures implemented

d) Monitor compliance with environmental protection, pollution prevention and control and contractual requirements.

e) Monitor the implementation of other environmental mitigation measures.

f) Audit and prepare audit reports on waste management compliance, the environmental monitoring data and site environmental conditions.

g) Compliance investigation, evaluation and identification of corrective measures.

h) Offer advice to the Contractor(s) on environment improvement, awareness, and proactive pollution prevention measures, including best practise on site measures to prevent spread of zoonotic diseases and communicable diseases such as the deadly Ebola virus disease.

i) Follow the procedures in the WMP and recommend suitable mitigation measures to the Contractor(s) in the case of non-compliance / discrepancies identified.

j) Perform interface functions by liaising with the Contractor(s) and Ondo SLPZ PMU on all environmental performance matters, and timely submission of reports to the project proponent and relevant administrative authorities, where necessary.

Table 4: Shows the monitoring components for this project and corresponding costs.

Table 4: Summary of Monitoring Plan and Cost

Component	Monitoring Parameter/Action	Method	Frequency	Responsible	Annual Budget (₦)
Air quality	SPM, SO_2, CO, NO_X	Visual Observation and *purchase* of equipment for, air monitoring using standard method of sampling and analysis around the premises	Ensure testing Once a week (night and day each time)	Environmental specialist/M&E unit	700,000
Water	NO3, pH, BOD,	Collection of downstream surface and site ground water samples and analyzing in the laboratory	Monthly / quarterly Monitoring	Environmental specialist/M&E unit	
Soil	K, SO2, pH, Ca, Temperature, BOD	Collection of soil sample and analyzing in the laboratory	Quarterly	Environmental specialist/M&E unit	
Health, Safety & Environment (HSE)	Safety audit Health assessment	Regular visit to site	Bi-monthly	Contractor HSE officer/ Environmental Specialist/M&E officers	300,000
Waste Management	Ensure campaigns are carried out as scheduled	Regular visit to site	Monthly	M&E officers	
Health and Sanitation	Flood, Water logging of surfaces,	Visual assessment by regular visits to site	Routinely during construction	project monitoring and evaluation team	

	prevention of stagnant water				
Total Monitoring Cost			**1,000,000.00**		

Capacity Building and Training Plan

The implementation of this WMP shall require that personnel and stakeholders possess the appropriate capacity in knowledge skills and necessary structural infrastructures to deliver effective waste management for SLPZ project. This capacity building and training plan is shown in the Table 5 below:

Table 5: Budgets for Capacity Building and Training Plan

S/N	Proposed Training Topics	Course Content	Target audience	Duration	Cost
1	Training on environmental health and safety guidelines for livestock production including AfDB safeguard policies.	• What is meant by EHS guidelines. • How can this guideline help and improve the environment, human health and livestock production?	**Livestock farmers, veterinarian officers.**	**Two days**	**620,000**
	Occupational health and safety	• How to mitigate occupational and health hazards (accident, zoonotic diseases and other kinds of accidents during operation. • Training on Handling infected animals			
	Community Health and Safety	Training on measures to mitigate Community health and safety hazards in livestock production and prevention of hazardous substance in livestock products (milk, beef and Poultry).			
2	Training on environmental issues in livestock production	• Impact of livestock production on the environment. • How to mitigate impact of livestock production on the environment.	**Livestock farmers**		
3	Livestock waste management.	Training on livestock waste management	**Livestock farmers, veterinarian officers**		
	Total Cost				**N620,000**

Implementing the WMP

The cost of implementing this WMP is a total of all the individual costs as provided in Table 6.

Table 6: Costs of implementing the WMP

	Heading	Indicative Costing in Naira (=N=)	Cost estimate in USD ($)
	Sites Specific WMP Mitigation Measures	9,570,000.00	25,118.1
	Training	620,000.00	1,627.2
	Monitoring Programme	1,000,000.00	2,624.6
A.	Sub Total	**11,190,000.00**	**29,370**
B.	Contingency	1,119,000.00	2,937
	Total (A+B)	**12,309,000.00**	**32,307**

(1USD =381.00)

Appendix 2: Worksite Waste Management Plan

General construction waste in each phase of the Ondo state livestock Processing zone project life cycle has been identified in the Table below which specifies proactive management approach to prevent environmental pollution, construction waste and degradation.

Overview of Potential Waste Streams and Management

S/N	Potential Source	Waste Type	Waste Streams	Management
A	**PRECONSTRUCTION PHASE**			
1	Site Clearing and Installation of temporary workers camp and offices and workshops	Non-Hazardous	• Vegetal Waste • Industrial Waste: Metal scraps, packaging waste	Vegetal waste shall be supplied to farmers for use as compost. Woody vegetal waste 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 licensed third-party facilities.
2	Movement of vehicles on unpaved surface and engine exhaust	Emission	COx, SOx, NOx, CO, Dust	Use water suppression to prevent dust emission. Maintain vehicles and machineries to reduce emission. Maintain low speed to reduce dust and gaseous emission. Allow aerial dispersal over a large area.
3	Workers' camp	Domestic and Sanitary	• Food remnant, kitchen wastes. Food packaging etc Domestic Sewage	To be transferred to locals for use as compost and animal feed. Plastic and other packaging to be recycled through licensed recycling third parties. Temporary stored and transferred to licensed carrier for disposal
4	Demolition of existing structures and dismantling infrastructure	Non-Hazardous	• Rubbles, metal scraps, wood products, steel, concrete.	Segregated and stored on site to be collected for reuse or recycle through licensed third-party facilities.
		Hazardous	• Asbestos	Store on site in closed skips with and transferred to a registered waste contractor with off-site permitted hazardous waste treatment, storage, or disposal facilities
B	**CONSTRUCTION PHASE**			
1	Movement of vehicles on unpaved surface and engine exhaust	Emission	COx, SOx, NOx, CO, Dust	Use water suppression to prevent dust emission. Maintain vehicles and machineries to reduce emission. Maintain low speed to reduce dust and gaseous emission. Allow aerial dispersal over a large area.

S/N	Potential Source	Waste Type	Waste Streams	Management
2	Civil works	Non-Hazardous /Industrial	• Spoils • Waste Packaging and Dunnage such as scrap wood, scrap metal, steel, glass, plastic, paper and cardboard, empty metal containers**,** excess concrete, broken equipment, or components	Reuse spoils as fill materials as much as possible. Segregated and kept securely in closed containers on site. To be transferred to approved recycling third parties for reuse/recycling. Non-recyclables to be removed by approved waste contractor for onward disposal at approved sites.
	Workers' camp/offices		• Domestic-type waste: wastepaper and food scraps, metal cans	To be transferred to locals for use as compost and animal feed. Plastic and other packaging to be recycled through licensed recycling third parties.
3	Civil Works	Hazardous Waste	**Solid Wastes:** used batteries, chemical containers, concrete etc	Store on site in closed containers with secondary containment and transferred to a registered waste contractor with off-site permitted hazardous waste treatment, storage, or disposal facilities
			Liquid Waste: spent lubricating oils, hydraulic fluids, brake fluids, battery electrolyte, chemical cleaning agents, paints, primers, thinners 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.
4	Workers' camp	Domestic and Sanitary	• Food remnant, kitchen wastes. Food packaging etc • Domestic Sewage	To be transferred to locals for use as compost and animal feed. Plastic and other packaging to be recycled through licensed recycling third parties. Temporary stored and transferred to licensed carrier for disposal
C	**OPERATION PHASE**			
1	Operation of Ondo state livestock Processing zone facilities including generators, boreholes	Emission	COx, SOx, NOx, CO, Dust	
		Non-Hazardous /Industrial	Packaging waste, scrap metals, plastic, paper and cardboard, empty metal containers**,** broken equipment, or components Sludge	Segregated and kept securely in closed containers on site. To be transferred to approved recycling third parties for reuse/recycling. Non-recyclables to be removed by approved waste contractor for onward disposal at approved sites.

S/N	Potential Source	Waste Type	Waste Streams	Management
				Sludge should be disposed by land application through approved vendors.
		Hazardous	• Chemicals and containers • Oils and lubricants	Store on site in closed containers with secondary containment and transferred to a registered waste contractor with off-site permitted hazardous waste treatment, storage, or disposal facilities.
2	Maintenance of Ondo state Agro Processing zone Workers' camp/offices	Non-Hazardous /Industrial	• Packaging waste, scrap metals, plastic, empty metal containers**,** broken equipment, or components • Domestic-type waste: wastepaper and food scraps, metal cans, paper and cardboard,	Segregated and kept securely in closed containers on site. To be transferred to approved recycling third parties for reuse/recycling. Non-recyclables to be removed by approved waste contractor for onward disposal at approved sites. To be transferred to locals for use as compost and animal feed. Plastic and other packaging to be recycled through licensed recycling third parties.
		Hazardous	**Solid Wastes:** used batteries, chemical containers, concrete etc	Store on site in closed containers with secondary containment and transferred to a registered waste contractor with off-site permitted hazardous waste treatment, storage, or disposal facilities.
			Liquid Waste: spent lubricating oils, hydraulic fluids, brake fluids, battery electrolyte, chemical cleaning agents, paints, primers, thinners etc.	

Appendix 3: Occupational Health and Safety Plan

1.0 INTRODUCTION

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

2.1 Purpose

The purpose of this document is to describe the Project Occupational Health and Safety (OHS) plan for the proposed project and the specific management controls, risk control systems and workplace precautions required to ensure compliance with Occupational Health and Safety Laws and Standards.

2.2 Scope of Work

The OHS plan covers the entire project phases for this SLPZ. This includes Preconstruction, Construction, Operation & Maintenance and Demobilization phases.

2.3 Policy Statement

In addition to the existing HSE policy, other policies shall be developed which includes:

- Substance Abuse Policy – Prohibiting the consumption or possession of narcotics, drugs, alcohol and other banned substances.
- Emergency Response Policy – Stating commitment to ensure adequate resources and arrangement are in place in the case an emergency.
- Community Affairs Policy – Stating commitment to foster healthy relationships with communities through observance of the highest standard of conduct.
- Road Safety Policy–Stating commitment to complying with Road Traffic regulations and continuously improving its road safety performance by implementing a Road Safety Management Plan (RSMP)

3.0 KEY RESPONSIBILITIES

Involvement of all in implementing, maintaining and continually improving OHS processes is the key to successful completion and achievement of quality objectives set by the management. All project personnel shall therefore be required to be familiar with the content of this OHS plan and shall participate in implementing, maintaining and improving the management system.

It is the responsibility of the project manager and all key personnel to ensure that the requirements for quality are fulfilled for works under their responsibility.

All new staff and staff who are given new responsibilities are to be inducted into the requirements set out in this plan in general and into their function and responsibilities in particular.

3.1 Project Manager Responsibilities

- Ensure the availability of resources essential to establish, implement, maintain and improve the OHS Management System.
- Define, document and communicate roles, allocate responsibilities and accountabilities, delegating authorities, to facilitate effective OHS management.
- Ensure that all of the activities undertaken in the Project conform to Nigerian legislation, client requirements or international standards when applicable.
- Review objectives achievements throughout the year.
- Ensure that project staffs are instructed on the NCDC/WHO COVID-19 guidelines
- Provide all necessary requirements/protocols for use against the spread of COVID-19, such as running water for washing of hands, face masks and hand sanitizers.

3.2 Project Supervisors Responsibilities

- Enforcing all phases of the established OHS plan
- Preparing Job Hazard Analysis when required.
- Ensuring the safety of all workers associated with the site.
- Conducting HSE inspections.
- Ensuring workers are competent for their allocated tasks.
- Attending and participating in OHS meetings.
- Participating in accident investigations.

3.3 HSE Manager/Supervisor Responsibilities

- Prepare relevant OHS documentation and procedures.
- Monitor the efficient implementation of OHS requirements.
- Participate and organize the OHS risk assessments.
- Advise management of compliance and of conditions requiring attention.
- Conduct regular HSE inspections.
- Make thorough analysis of statistical data and inspections; delineates problem areas; and makes recommendation for solutions.
- Take part in the review of all OHS incidents and assist in investigating incident.
- Monitor the efficient implementation of the Project's OHS requirements.
- Organize the Project's OHS risk assessment exercises.

- Check on the use of all types of personal protective equipment specifies the use of appropriate PPE for the various work activities. Evaluates their effectiveness and suggests improvements where indicated.

3.4 HSE Advisor Responsibilities

- Check on the use of all types of personal protective equipment and specifies the use of appropriate PPE for the various work activities. Evaluates their effectiveness and suggests improvements.
- Conduct independent inspections to observe conformance with established OHS Plan and determines the effectiveness of individual elements of the plan (pre-task briefing, weekly toolbox talk, etc)
- Establish contact with Subcontractors with the objective of maintaining good relations and coordination of accident prevention activities and compliance with the established OHS plan.
- Correct unsafe acts and unsafe conditions.
- Deliver HSE induction/orientation course to all employees, including subcontractors.
- Deliver HSE awareness course and toolbox talk.
- Advise employees on OHS matters.

3.5 All Employees Responsibilities

- Take all reasonable and practical steps to care for their own health and safety and avoid affecting the health and safety of co-workers and the general public.
- Follow all instructions and use the equipment properly.
- Adhere to use of face masks and all COVID-19 sanitation rules.
- Report all accidents and near misses to project supervisor.
- Adhere to the code of conduct.
- Report any circumstances which may not comply with the project's OHS management system.

4.0 General requirements

In order to ensure safety of workers construction and operation of facilities must pay attention to the following details: Integrity of workplace structures, Workspace and exit, Fire precautions, Lavatories and showers, Potable water supply, Clean eating areas, Adequate lighting, Safe access(segregation of vehicles and pedestrians, Railings covers for falling items, prevent unauthorized access), First aid, Air supply, Work environment temperature.

6.0 HSE Training

6.1 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.

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

- Site safety rules.
- Personnel protective equipment requirements (PPE).
- Task specific training
- Preparation and planning of the job (Daily Pre-task talk).
- Emergency plan and muster points.

7.0 Hazard identification & HSE risk assessment

7.1 Project HSE Risk Assessment

The project HSE risk assessment shall be developed and recorded. The Project's HSE risk assessment shall be conducted by a team consisting of HSE Manager/ Supervisor and technical managers/supervisors. It must be approved by the Project manager.

7.3 Job Hazard Analysis

Job hazard analysis is required when the hazards and risks associated with a specific task is to be identified so as to implement control measures. The HSE department together with the technical managers/supervisors shall develop a job hazard analysis when applicable.

8.0 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. This will include Planning and coordination in events of fires or accidents, availability of emergency equipment such as mode of transport, first aid kits etc and training of employees in relevant procedures.

9.1 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).

9.2 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.

9.3 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.

9.4 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.

Personal Protective Equipment (PPE)

The basic PPE required for the project shall be Safety Glasses, Safety Boots, Hand Gloves, Face masks, Hard Hat and Overall. 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.

The table below contain specific anticipated risks in different phases of the project; preconstruction, construction and operational phases and their mitigation measures.

	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (NGN)	Indicators	Monitoring Frequency	Monitoring Responsibility	Monitoring costs
PRE-CONSTRUCTION PHASE (A)								
Major Activities • **Land Acquisition, clearing of site, and Creation of access road and Mobilization, Creation of borrow pits, Staging area & Campsite. And Installation of Site Structures**								
OHS associated Risks and Hazards								
A1	Injuries from falling of trees. Injuries from falling into ditches.	• A HSE personnel employed by contactor should be present on site • Conduct HSE training for every new or rehired employee and sub-contractor employee. • 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. • Provision of adequate first aid, first aiders, PPE, appropriate signage (English and Local languages), engineering barriers or positive separation e.g. fencing, road closures. • Restrict unauthorized access to all areas of high-risk activities including staging areas. • Any uncovered work pits should have appropriate signage and protection around them. • Inspect machinery before use • Ensure all Incident/ accident are reported to the HSE supervisor and investigated for future prevention • Implement the emergency preparedness plan in the case of serious injury • Implement HSE meetings once a month to identify safety problems develop solutions, review incident reports and provide training where necessary • Use of high visibility clothing • Strict rules of no drugs or alcohol during working time and steep punishments if found guilty (see code of conduct) • Ensure workers do not work more than 8hr shifts to prevent fatigue • Provision of adequate lighting for night works	Contractor Project Supervisor HSE personnel	1,000,000 for PPE	No of trained first Aiders Usage of appropriate PPE Usage of signage and demarcations Accident/ Incident Report Hours of shifts by each worker	Daily	OSMA-PMU	1,000,000
A2	Accidents and injuries from the use of machineries and equipment						OSMA-PMU	
A3	Risk of sexually transmitted diseases (STDs) including HIV/AIDS from interaction among construction workers and host community	• Vaccinating workers against common and locally prevalent diseases or evidence of previous vaccination • Provide opportunities for workers to regularly return to their families. • Institute sexual health and HIV prevention programs (peer education etc.) Provision of condoms to workers	Contractor Project Supervisor HSE personnel	500,000	Evidence of sexual health programs Number of condoms shared	Monthly	OSMA-PMU	
Sub Total				**1,500,00**				**1,000,000**
B	**CONSTRUCTION PHASE**							

	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (NGN)	Indicators	Monitoring Frequency	Monitoring Responsibility	Monitoring costs
	Major Activities **Road construction, Construction of abattoir, Construction of meat and milk processing facilities and other associated structures**							
B1	Accidents and injuries from the use of machineries and equipment	Mitigations for A1/A2	Contractor HSE personnel	Captured in A1/A2	Availability and usage of PPEs Number of accidents and injury from use of machinery and equipment	Daily	OSMA-PMU	2,000,000
B2	Risk of exposure to hazardous substances	Hazardous materials should be well labelled All workers should be made aware of hazardous materials present and their location All hazardous wastes should be handled by licensed and reputable waste handlers	Contractor HSE personnel	Captured in waste management plan	Number of accidents and injury from exposure to hazardous substances, Evidence of training received	Monthly	OSMA-PMU	
B3	Falls from heights	Workers must wear a safety belt or harness whenever the worker is more than 3 meters above ground or machinery Workers must be trained and supervised on the appropriate use of ladders	Contractor HSE personnel	Captured in A1/A2-	Availability and usage of PPEs Number of accidents and injury from use of machinery and equipment	Monthly	OSMA-PMU	
B4	Risk of injury from vibration using hand and power tools Risk of pain or injury from performing repetitive tasks	installation of vibration dampening pads or devices where possible Workers should work in shifts to limit duration of exposure	Contractor HSE personnel	-	Exposure time of workers to source of vibration	Weekly	OSMA-PMU	
B5	Exposure to noise Risk of eye injury from flying particles	Selecting equipment with lower sound power levels Workers should work in shifts to limit duration of exposure Installing suitable mufflers on engine exhausts and compressor components where possible Use of PPEs (Safety glasses with side-shields, protective shades and Ear muffs where appropriate)	Contractor HSE personnel	-	Noise Levels Availability and usage of PPEs	Monthly	OSMA-PMU	
B6	Spread of communicable diseases	• Ensure good living quarters of workers with adequate spacing and ventilation • Ensure proper functional sanitation facilities for workers with adequate supply of water • Employment of cleansers to ensure facilities remain clean • Ensure clean supply of water for consumption within camp • Providing clean eating areas within camp • Regular medical check-up for workers	Contractor HSE personnel	2,000,000	Incidence of communicable diseases among workers	Monthly	OSMA-PMU	
B7	Risk of Gender based violence (rape, sexual harassment, molestation amongst workers and host community	Separate facilities for men and women Provision of well lighted work areas and walk ways Sensitization and awareness of hired staff against GBV Stiff punishments and penalties for perpetrators	Contractor HSE personnel	200,000 for sensitization efforts	Reported cases of GBV	Monthly	OSMA-PMU	
B8		**SUB-TOTAL**		**2,200,000**				**2,000,000**
C	**OPERATION PHASE**							

	Potential Impact	Mitigation Measures	Responsibility for Mitigation	Mitigation Cost (NGN)	Indicators	Monitoring Frequency	Monitoring Responsibility	Monitoring costs
C1	Cuts and bruises from equipment	Mitigations for A1/A2 Ensure no waste is left behind at project site after construction.	Project Supervisor HSE personnel	5% of Annual operational budget	Accident/ Incident Report	Monthly	OSMA-PMU	
C2	Injuries, accidents and deaths	Mitigations for A1/A2 Establish an occupational accidents and disease compensation system in line with Nigeria's profile on occupational health and safety Implement a road safe	Project Supervisor HSE personnel		Accident/ Incident Report	Monthly	OSMA-PMU	
C3	Risk of disease transmission between workers and animals	Presence of veterinary doctors and services to ensure animal health Immunizations and vaccinations where appropriate to prevent spread of disease Maintain sanitary conditions in work areas through regular cleaning and disinfection Proper disposal of wastes as contained in the waste management plan. Use of appropriate PPE when handling animals Inspection of work areas to ensure sanitary measures are being upheld	Project Supervisor HSE personnel		Incidence of communicable diseases among workers	Monthly	OSMA-PMU	
C4	Animal kick injuries	Only experienced personnel should be involved in animal handling Use of appropriate safety techniques when handling animals Adoption of technologically advanced methods in cow slaughter	Project Supervisor HSE personnel		Accident/ Incident Report	Monthly	OSMA-PMU	
C5	Offensive odors from animal handling	Maintain hygienic and sanitary conditions in work areas Proper disposal of wastes as contained in the waste management plan.	Project Supervisor HSE personnel		Presence of odors in working areas	Daily	OSMA-PMU	
C6	Risk of pain or injury from performing repetitive tasks	See B4	Project Supervisor HSE personnel		Prevalence of pain/injury amongst workers	Monthly	OSMA-PMU	
C7	Exposure to dust from feed processing	Use of granulation method to reduce exposure to dust in workplace Correct use of equipment and PPE	Project Supervisor HSE personnel		Availability and use of PPEs by workers	Daily	OSMA-PMU	
C8	Risk of fires and electrical fault hazards	Implement Emergency preparedness plan Provision of firefighting and prevention equipment (fire extinguisher, fire hydrants and detection equipment) Provision and sensitization of staff on muster point area	Project Supervisor HSE personnel		Existence of a functional emergency preparedness plan	Monthly	OSMA-PMU	
C9	Risk of Gender based violence (rape, sexual harassment, molestation amongst workers and host community	See B7	Project Supervisor HSE personnel		Number of reported GBV related cases	Monthly	OSMA-PMU	
		TOTAL COST OF MITIGATION		**3,700,000**				**3,000,000**

Appendix 4: Traffic Management Plan

A Traffic Management Plan is required for this project, because the project could have an impact on:

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

The objective of this TMP is to provide safe passage for pedestrians, cyclists and vehicular traffic along the during the construction phase of the project.

Components of the Traffic Management Plan
The proposed TMP for the construction works should to a minimum address the following:
The Contractor should designate a TMP Supervisor who will oversee traffic management within the Ondo state Agro processing zone during the preconstruction and construction stage;
Traffic Management Plan for the project will address the following:

- **Safety Signage:** Safety signage will be put up along all major roads within the project corridors. This would inform motorists and other road users of the ongoing construction works within the area. These signages will indicate that there are “Men at Work”. Caution is most required by motorists and cyclists who transverse the project areas.

- **Road Diversion Signage:** Diversion signage will be erected at sensitive places where diversions will exist from the project implementation.

- **Traffic Calming:** The traffic calming, also known as Local Area Traffic Management (LATM), the contractor should engage with the locals in different localities to identify traffic and parking issues in the area, and coming up with solutions to improve the liveability, safety and amenity in those areas. It also includes installation of traffic calming devices such as speed bumps, roundabout, speed cushions, bulb outs and more.

- **Communication:** The Contractor, with support from the PIU, will prepare a communication protocol including road safety campaigns where leaflets on road safety issues from the project will be shared with the communities within the respective zones. The communication protocol will also provide a stepwise approach to informing residents about traffic plan alterations 48hrs before they are implemented. Communication with communities will be directly facilitated by the Contractor’s Community Liaison Officer and the Secretary of each respective Community Association. Additionally, communications should be made with the PIU, FRSC and Community associations a week prior to notifying the general populace.

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

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

Appendix 5: General Environmental Management Conditions for Construction Contracts

General Conditions of Contract

1. In addition to these general conditions, the Contractor shall comply with any specific Environmental Management Plan (EMP) or Environmental and Social Management Plan (ESMP) for the works he is responsible for. The Contractor shall inform himself about such an ESMP, and prepare his work strategy and plan to fully take into account relevant provisions of that ESMP. If the Contractor fails to implement the approved EMP after written instruction by the Supervising Engineer (SE) to fulfil his obligation within the requested time, the Owner reserves the right to arrange through the SE for execution of the missing action by a third party on account of the Contractor.

2. Notwithstanding the Contractor's obligation under the above clause, the Contractor shall implement all measures necessary to avoid undesirable adverse environmental and social impacts wherever possible, restore work sites to acceptable standards, and abide by any environmental performance requirements specified in an ESMP. In general, these measures shall include but not be limited to:

a. Minimize the effect of dust on the surrounding environment resulting from earth mixing, vibrating equipment, temporary access roads, etc. to ensure safety, health and the protection of workers and communities living in the vicinity dust producing activities.

b. Ensure that noise levels emanating from machinery, vehicles and noisy construction activities (e.g. excavation, drilling of boreholes) are kept at a minimum for the safety, health and protection of workers within the vicinity of high noise levels and nearby communities.

c. Prevent oils, lubricants and waste water used or produced during the execution of works from entering into rivers, streams, irrigation channels and other natural water bodies/reservoirs, and also ensure that stagnant water is channelled into drains in the best way to avoid creating possible breeding grounds for mosquitoes.

d. Upon discovery of ancient heritage, relics or anything that might or believed to be of archaeological or historical importance during the execution of works, immediately report such findings to the project Engineer and the developer so that the appropriate authorities may be expeditiously contacted for fulfilment of the measures aimed at protecting such historical or archaeological resources.

e. Implement soil erosion control measures in order to avoid surface run off and prevents siltation, of existing drainage system

f. Ensure that garbage, sanitation and drinking water facilities are provided during construction.

g. Ensure that, in as much as possible, local materials are used to avoid importation of foreign material and long distance transportation.

h. Ensure public safety, and meet traffic safety requirements for the operation of work to avoid accidents.

i. Develop and Implement Code of Conduct for workers that specifically prohibit GBV and SEA

j. Create partnership with local NGO to report workers' misconduct and complains on Gender Based Violence.

k. Liaise with the Health Care Facilities to conduct awareness campaigns for workers and the general populace on communicable diseases.

3. The Contractor shall indicate the period within which he/she shall maintain status on site after completion of civil works to ensure that significant adverse impacts arising from such works have been appropriately addressed.

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

5. Besides the regular inspection of the sites by the SE for adherence to the contract conditions and specifications, the Owner may appoint an Inspector to oversee the compliance with these environmental conditions and any proposed mitigation measures. State environmental authorities may carry out similar inspection duties. The African Development Bank and other donor organizations may also carry out site visits to oversee the implementation of the ESMP. In all cases, as directed by the SE, the Contractor shall comply with directives from such inspectors to implement measures required to ensure the adequacy rehabilitation measures carried out on the bio-physical environment and compensation for socio-economic disruption resulting from implementation of any works.

Worksite Waste Management

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

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

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

9 Construction waste shall not be left in stockpiles along the road, but removed and reused or disposed of on a daily basis.

11. If disposal sites for clean spoil are necessary, they shall be located in areas, approved by the SE, of low land use value and where they will not result in material being easily washed into drainage channels. Whenever possible, spoil materials should be placed in low-lying areas and should be compacted and planted with species indigenous to the locality.

Rehabilitation and Soil Erosion Prevention

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

13 Always remove and retain topsoil for subsequent rehabilitation. Soils shall not be stripped when they are wet as this can lead to soil compaction and loss of structure.

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

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

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

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

18. Remove toxic materials and dispose of them in designated sites. Backfill excavated areas with soils or overburden that is free of foreign material that could pollute groundwater and soil.

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

20. Ensure reshaped land is formed so as to be inherently stable, adequately drained and suitable for the desired long-term land use, and allow natural regeneration of vegetation.

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

Water Resources Management

24. The Contractor shall at all costs avoid conflicting with water demands of local communities.
25. Abstraction of both surface and underground water shall only be done with the consultation of the local community and after obtaining a permit from the relevant Water Authority.
26. Abstraction of water from wetlands shall be avoided. Where necessary, authority has to be obtained from relevant authorities.
27. No construction water containing spoils or site effluent, esp. cement and oil, shall be allowed to flow into natural water drainage courses.
28. Wash water from washing out of equipment shall not be discharged into water courses or road drains.
29. Site spoils and temporary stockpiles shall be located away from the drainage system, and surface run off shall be directed away from stockpiles to prevent erosion.

Traffic Management

30. Location of access roads/detours shall be done in consultation with the local community especially in important or sensitive environments. Access roads shall not traverse wetland areas.
31. Untarred access roads shall be sprinkled with water at least 2 times a day to suppress dust emissions.

Disposal of Unusable Elements

32. Unusable materials and construction elements such as electro-mechanical equipment, pipes, accessories and demolished structures will be disposed of in a manner approved by the SE. The Contractor has to agree with the SE which elements are to be surrendered to the Client's premises, which will be recycled or reused, and which will be disposed of at approved landfill sites.
33. As far as possible, abandoned pipelines shall remain in place. Where for any reason no alternative alignment for the new pipeline is possible, the old pipes shall be safely removed and stored at a safe place to be agreed upon with the SE and the local authorities concerned.
34. Asbestos Contaminated materials shall be quarantined until they are disposed by licensed waste management contractor
35. Unsuitable and demolished elements shall be dismantled to a size fitting on ordinary trucks for transport.

Health and Safety

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

Repair of Private Property

39. Should the Contractor, deliberately or accidentally, damage private property, he shall repair the property to the owner's satisfaction and at his own cost. For each repair, the Contractor shall obtain from the owner a certificate that the damage has been made good satisfactorily in order to indemnify the Client from subsequent claims.
40. In cases where compensation for inconveniences, damage of crops etc. are claimed by the owner, the Client has to be informed by the Contractor through the SE. This compensation is in general settled under the responsibility of the Client before signing the Contract. In unforeseeable cases, the respective administrative entities of the Client will take care of compensation.

Contractor's Environment, Health and Safety Management Plan (EHS-MP)
41. Within 6 weeks of signing the Contract, the Contractor shall prepare an EHS-MP to ensure the adequate management of the health, safety, environmental and social aspects of the works, including implementation of the requirements of these general conditions and any specific requirements of an ESMP for the works. The Contractor's EHS-MP will serve two main purposes:
- For the Contractor, for internal purposes, to ensure that all measures are in place for adequate EHS management, and as an operational manual for his staff.
- For the Client, supported where necessary by a SE, to ensure that the Contractor is fully prepared for the adequate management of the EHS aspects of the project, and as a basis for monitoring of the Contractor's EHS performance.

42. The Contractor's EHS-MP shall provide at least:
- a description of procedures and methods for complying with these general environmental management conditions, and any specific conditions specified in an EMP;
- a description of specific mitigation measures that will be implemented in order to minimize adverse impacts;
- the internal organizational, management and reporting mechanisms put in place for such.

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

EHS Reporting
44. The Contractor shall prepare bi-weekly progress reports to the SE on compliance with these general conditions, the project EMP if any, and his own EHS-MP. An example format for a Contractor EHS report is portrayed below. It is expected that the Contractor's reports will include information on:
- EHS management actions/measures taken, including approvals sought from local or national authorities;
- Problems encountered in relation to EHS aspects (incidents, including delays, cost consequences, etc. as a result thereof);
- Lack of compliance with contract requirements on the part of the Contractor;
- Changes of assumptions, conditions, measures, designs and actual works in relation to EHS aspects; and
- Observations, concerns raised and/or decisions taken with regard to EHS management during site meetings.

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

below. Details of EHS performance will be reported to the Client through the SE's reports to the Client.

Training of Contractor's Personnel

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

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

Cost of Compliance

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

Example Format: EHS Report

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

Example Format: EHS Incident Notification

EHS Incident Notification

Provide within 24 hrs to the Supervising Engineer

Originators Reference No:.....

Date of Incident:..... Time:.....

Location of incident:.....

Name of Person(s) involved:.....

Employing Company:.....

Type of Incident:.....

Description of Incident:

Where, when, what, how, who, operation in progress at the time (only factual)

Immediate Action:

Immediate remedial action and actions taken to prevent reoccurrence or escalation

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

Contractor Representative

Appendix 6: Attendance at Consultations

FOCUS GROUP DISCUSSION WITH WOMEN & WOMEN FARMERS.

ATTENDANCE LIST FOR STAKEHOLDERS' CONSULTATION ON ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR THE SPECIAL AGRICULTURAL PROCESSING ZONE PROJECT IN ORE, ONDO STATE

DATE: 22/06/2021

VENUE: Ore Community town Hall.

S/N	NAME	DESIGNATION	PHONE NUMBER/ E-mail	SIGNATURE
1.	Mrs. Racheal Owolabi	Chairlady	07060405856	
2.	Mrs. Florence Ayeni	Secretary	08160621766	
3.	Grace Ariyo	Treasurer	08134276834	
4.	Adenike Adekogbe	member	08137219652	
5.	Bosede Idowu	✓	08067172520	
6.	Temitope Alabi	member	07062198115	
7.	Omotosho Tolutope	member	07030443853	
8.	Elizabeth Musa	✓	07067108839	
9.	Temitope Babalola	✓	07081730251	
10.	Janet Omoniyi	✓	08120714841	
11.	Ogunjobi Oluwatemi	✓	07067859781	
12.	Florence Abeku	✓	08063346220	
13.	Adeba Sunday	✓	08166501150	
14.	Temisi Iyabo Ojo	✓	08165207129	

ATTENDANCE LIST FOR STAKEHOLDERS' CONSULTATION ON ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR THE SPECIAL AGRICULTURAL PROCESSING ZONE PROJECT IN ORE, ONDO STATE

DATE: 23-06-2021

VENUE: Heritage Continental Hotel, Ore.

S/N	NAME	DESIGNATION	PHONE NUMBER/ E-mail	SIGNATURE
1	Chief Aiyo Agbale	Community Member	07097377227	
2	Samson Fadeke	✓	08156299317	
3	Mr Isaiah Ajerote	✓	08160699028	
4	Adewale Olodu	✓	08032490740	
5	Mrs Rachael Owolabi	✓	07060405856	
6	Mrs Florence Ayeni	✓	08160621766	
7	Grace Aiyo	✓	08134276834	
8	Adenike Adekoya	✓	08137219652	
9	Mr Ogunyemila C.K	✓	07054600056	
10	Janet Onoriyi	✓	08120714841	
11	Florence Abeni	✓	08063346220	
12	Elder Olomfemi T.D	✓	08051366329	
13	Mr Ore Babalola	✓		
14	Mr Emmanuel Ajayi	✓	09088741232	

ATTENDANCE LIST FOR STAKEHOLDERS' CONSULTATION ON ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR THE SPECIAL AGRICULTURAL PROCESSING ZONE PROJECT IN ORE, ONDO STATE

DATE: 23-06-2021

VENUE: Heritage Continental Hotel Ore

S/N	NAME	DESIGNATION	PHONE NUMBER/ E-mail	SIGNATURE
15	Pastor S. A. Olunasiyi	Community member	08056302323	[signature]
16	Pastor Tope Alabi	—	07062198115	[signature]
17	Olowo Tope Esther	—	09045635148	[signature]
18	Morenike Owolabi	—	08079500551	[signature]
19	Owolabi funmilayo	—	08133315855	[signature]
20	Aluko Adetunji S.	—	08063318831	[signature]
21	Mr Ayade	—	08063627458	[signature]
22	Emmanuel Olorunfun	—	07064454510	[signature]
23	Olotu Adewale	—	08032495140	[signature]
24	Roseline Oletunde	—	09069146316	[signature]
25	Agolopo B. E	—	08137910403	[signature]
26	Alowosa Olubunmi	—	08143800487	OluA.
27	Mr Adeyemo Bose	—	07051278438	[signature]
28	Emmanuel Ajayi	—	09068741232	[signature]

Focus Group Discussion with the men and new farmers

ATTENDANCE LIST FOR STAKEHOLDERS' CONSULTATION ON ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR THE SPECIAL AGRICULTURAL PROCESSING ZONE PROJECT IN ORE, ONDO STATE

DATE: 22/06/2021

VENUE: Ore Community town Hall

S/N	NAME	DESIGNATION	PHONE NUMBER/ E-mail	SIGNATURE
1.	Mr Sunday Ajala	Chairman farmers	08134252972	
2.	Chief Aniyo Agbabe	Secretary	07069737222	
3.	Samson Fadele	Provost	08156295317	
4.	Mr Isaiah Ajenole	Member	08168699028	
5.	Mr Sunday Agbabe	Member	08068242034	
6.	Adewale Olodu	member	08032495400	
7.	Elder Afuye G.A	Member	08067985075	
8.	Mr. Ogunyemi C.K	Member	07054600586	
9.	Mr. Emmanuel Ajayi	Community Member	09068741232	
10	Mr - Ojo Alabi	✓	07061058423	
11.	Adeyemi Isaac	✓	07061243432	
12.	Elder Olonyemi I.D	✓	08051366329	
13.	Babayemi Clement	✓	07065777709	
14.	Mr Dare Babalola	✓	—	

The pictures (plates) should be numbered and titled.