Environmental and Social Management Plan (ESMP) for Farmers Management Service Delivery Centers (FMSDC) At Birnin Tudu, Zamfara State.

Transforming Irrigation Management in Nigeria (TRIMING) Project




Draft Report

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ABBREVIATIONS AND ACRONYMS

ADP	Agricultural Development Projects
APP	Agricultural Promotion Policy
BOD	Biological Oxygen Demand
BP	Bank Procedures
BOQ	Bill of Quantity
CBO	Community Based Organization
CoC	Code of Conduct
CO	Carbon monoxide
COD	Chemical Oxygen Demand
CSO	Chief Security Officer
DID	Department of Irrigation and Drainage
DO	Dissolved Oxygen
EA	Environmental Assessment
EC	Electrical Conductivity
EIA	Environmental Impact Assessment
EHS	Environmental Health Safety
ES	Environmental Safeguard
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESO	Environmental Safeguard Officer
ESSU	Environmental and Social Safeguard Unit
FEPA	Federal Environmental Protection Agency
FGN	Federal Government of Nigeria
FMSDC	Farmers Management Service and Development Center
FMARD	Federal Ministry of Agriculture and Rural Development
FMEnv	Federal Ministry of Environment
FMWR	Federal Ministry of Water Resources
FPMU	Federal Project Management Unit
FRSC	Federal Road Safety Corps
FWUA	Federated Water Users Association
GBV	Gender based Violence

GDP	Gross Domestic Product
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
HA	Hydrological Areas
HIV/AIDS	Human Immune Virus/ Acquired Immunodeficiency Syndrome
HSMP	Health and Safety Management Plan
IPM	Integrated Pest Management
ITD	Inter Tropical Discontinuity
IVM	Integrated Vector Management
JHA	Job Hazard Analysis
LGA	Local Government Area
KRIS	Kano River Irrigation Scheme
MDAs	Ministry Development and Agencies
MRIS	Middle Rima Irrigation Scheme
ND	Not Detected
NEP	National Environmental Policy
NESREA	National Environmental Standard and Regulation Enforcement Agency
NGO	Non-Governmental Organization
NIHSA	Nigeria Hydrological Services Agency
NIP	National Implementation Plan
NO	Nitrogen (II) Oxide
NPF	Nigerian Police Force
NWRI	National Water Resources Institute
OHS	Occupational Health and Safety
OP	Operational Policy
O&P	Operation & Maintenance
PAD	Project Appraisal Document
PAPs	Project Affected Persons
PCU	Project Coordination Unit
PDO	Project Development Objective
PIM	Project Implementation Manual
PMP	Pest Management Plan
PIM	Project Implementation Manual
PMU	Project Management Unit

PPE	Personal Protective Equipment
PS	Permanent Secretary
PSC	Project Steering Committee
RBDAs	River Basin Development Authorities
RPF	Resettlement Policy Framework
SCC	Site Contractor's Coordinator
SEA	Sexual Exploitation and Abuse
SEP	Stakeholders Engagement Plan
SID	State Irrigation Departments
SLM	Sustainable Land Management
SMAs	State Ministries of Agriculture
SMWR	State Ministry of Water Resources
SRRBDA	Sokoto-Rima River Basin Development Authority
SS	Social Safeguard
SSO	Social Safeguard Officer
STD	Sexually Transmitted Diseases
SWAs	State Water Agencies
TDS	Total Dissolved Solids
TOR	Terms of Reference
ToT	Training-of-Trainers
TRIMING	Transforming Irrigation Management in Nigeria
WMP	Waste Management Plan
VAC	Violence Against Children
WASH	Water Sanitation and Health
WB	World Bank
WUAs	Water Users Associations

EXECUTIVE SUMMARY

CHAPTER ONE: INTRODUCTION

1.1 Background

The "Transforming Irrigation Management in Nigeria (TRIMING) Project" was borne out of the need to boost and strengthen agricultural production and productivity through the development of irrigation infrastructure. The development objective of the program is to support and improve agricultural productivity in selected large-scale public schemes in Northern Nigeria through strengthened institutional arrangements and improved access to irrigation and drainage services including value chains with active involvement of the stakeholders.

The Project is designed to be implemented under four components as follows:

- Component 1 – water resource management and dam operation improvement.
- Component 2 – irrigation development and management.
- Component 3 – enhancing agricultural productivity and support to value chains development.
- Component 4 – institutional development and project management.

Component 3 focuses on value chains management and capacity building to improve job opportunities by promoting small and medium sized local entrepreneurs and including youth and women in project activities. Part of its subcomponent activities involves the establishment of Farmers' Management and Service Delivery Centers on each scheme (Bakolori Irrigation Scheme (BIS), Middle Rima Irrigation Scheme (MRIS) in Sokoto State, Kano River Irrigation Scheme (KRIS) in Kano State and Hadeija Valley Irrigation Scheme (HVIS) in Jigawa State), supported by extension and marketing agribusiness professionals.

To implement the above activities, the TRIMIMG Project has selected **the Bakolori Irrigation Scheme (BIS) in Zamfara State** as one of the Intervention sites. Essentially, the project in this location will entail civil works such as construction of the FMSDC. This will inadvertently give rise to environmental and social safeguards concerns which are being addressed through this Environmental and Social Management Plan (ESMP).

The ESMP is a site-specific management instrument detailing a set of mitigation, monitoring and institutional measures to be taken before and during implementation of civil works and operation of the facility at the proposed site to eliminate negative impacts, offset them or reduce them to acceptable levels.

1.2 Beneficiaries of the proposed work

The proposed project is to be situated Birnin tudu ward of Bakura Local Government Area in Zamfara State. Majority of the population in these areas are farmers and cattle nomads. Some of the settlers along the major riverbanks also engage in fishing activities. Consequently, The FMSDC aims at building WUAs' and organized farmers-cooperatives' technical and managerial capacity to improve farmers' ability to access market opportunities and adequate production support services, mechanization services, agro-processing support, and financial management in order to improve farmers' productivity through access to improved technologies.

The direct beneficiaries of the proposed project are majorly the farmers, with other value chain actors in the scheme's market ecosystem such as cooperative leaders, scheme managers, SMEs operating in and around the schemes, members and directors of producer cooperatives, management of the WUAs, private service providers, and principal off-takers in the project area.

1.3 Description of Proposed Intervention

The Farmers Management Service Delivery Centre (FMSDCs) was proposed to be established for the Bakolori Irrigation Scheme farmers and other value chain actors to benefits from some critical services such as access to farm machineries, warehouse for storage of rice and other farm produce, training farmers on capacity building, accounting and financial management; facilitating out grower schemes and other market linkages, extension and financial services, and inputs

The TRIMING PMU facilitated the allocation of five hectares for the proposed intervention, which will be built at Birnin Tudu community.

According to the project design, the FMSDC will comprise of the following facilities;

- Administrative building with offices
- Conference room
- A large warehouse with modern facilities and a
- Capacity for storing 50,000 tonnes
- A mechanical and equipment maintenance facility
- With lock-up garage for large vehicles
- Tomato pack house design

- Food canteen design

The major activities that will be undertaken to realize the establishment of the project include the following: site clearing, construction/civil works and centre operation.

Site clearing: This activity is to prepare the land for the construction work to commence. This will involve clearing of vegetation, levelling and grading the land to the proportion of foundation specification and architectural design using mechanical method by trained construction personnel.

Supply of materials: Building materials required before commencement of construction will be supplied to site. This includes construction machineries, building sand, back filling sand, aggregates, cements and other construction materials which will be sourced locally. These materials will be supplied only when needed to avoid damage or weathering.

Excavation, construction/civil works: This phase of the project activity involves excavation, foundation works, super structure, basement casting, structural walls, plumbing, electrification, roofing, fittings, cladding/coating and landscaping. Each phase of this activity is critical (especially the foundation/basement) to this project and shall be carried out by qualified engineers/technicians using best available technology.

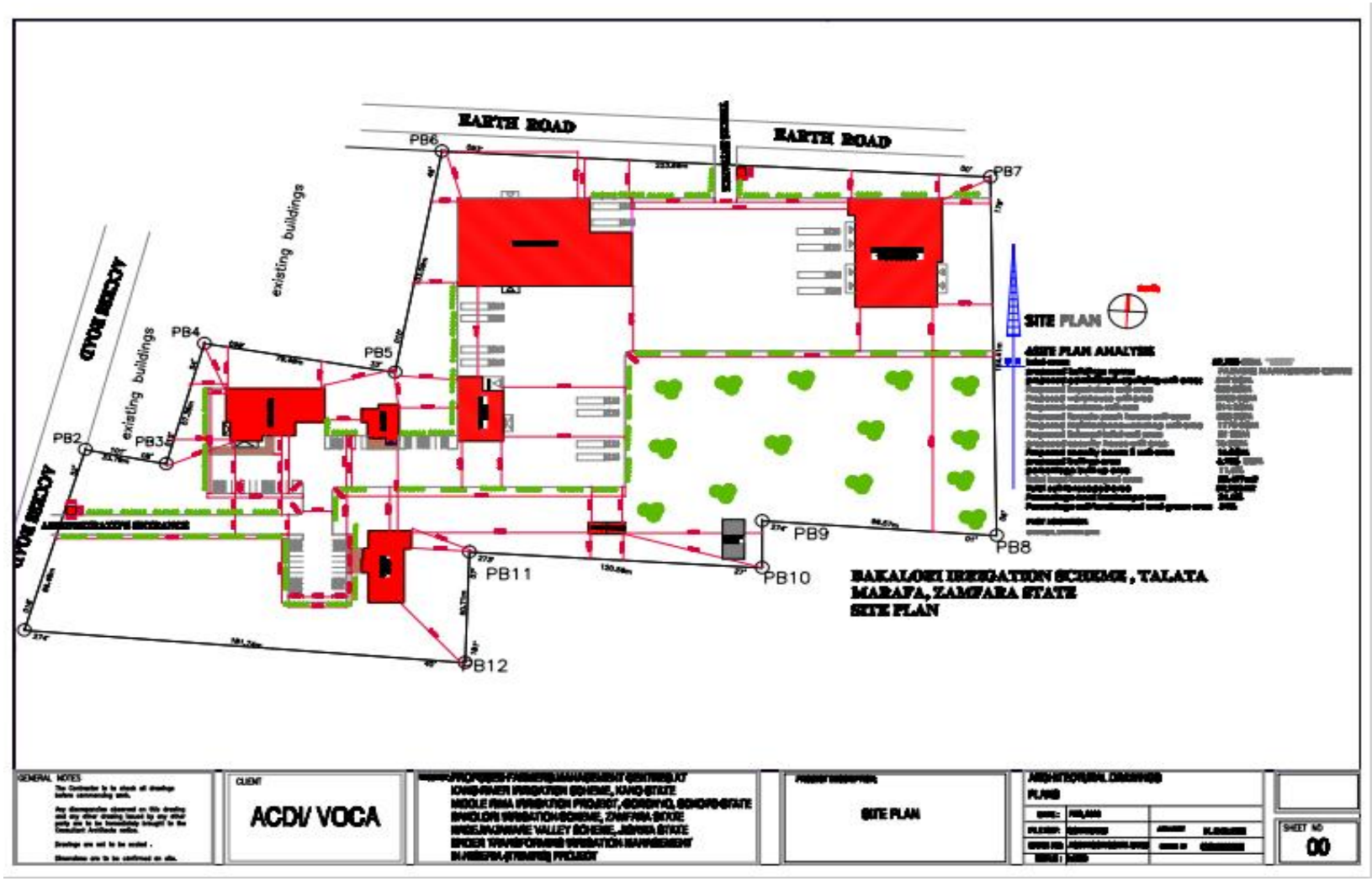

Figure 1: Site Plan of the proposed FMSDC in Birnin Tudu , Zamfara state

1.4 Objective of the ESMP

The objective of the study is to prepare an Environmental and Social Management Plan (ESMP) for the Farmers Management Service Delivery Centres (FMSDC). This ESMP provides well-documented set of mitigation, monitoring, and institutional actions to be taken before and during construction to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels. It also provides measures needed to implement these actions, addressing the adequacy of the monitoring and institutional arrangements at the permanent office site.

1.5 Rationale of the ESMP

The proposed intervention (construction of Farmers Management Service Delivery Centres) is classified as a Category B project according to the World Bank's Operational Policy on Environmental Assessment OP 4.01. The categorization is justified on the basis of the potential negative impacts of the project on the biophysical and social environment. The OP 4.01 when triggered requires that an ESMP be prepared; this will ensure environmental and social sustainability of the project. The ESMP will provide a clear process, including action plans to integrate environmental and social considerations into the implementation of civil works and to ensure a safe environment.

1.5.1 Scope of the ESMP

As described in the TOR, the scope of the project includes and is not limited to the following activities:

1. Review existing documentation of the TRIMING Project, all relevant safeguards documents and the PAD, ESMF, PIM and Environmental and Social Impact Assessment prepared for the Bakolori Irrigation Scheme, Zamfara State.
2. Review Environmental and Social Safeguards policies of the World Bank especially the applicable polices triggered on the project i.e., Environmental Assessment OP/BP 4.01; Natural Habitats OP/BP 4.04; Pest Management OP 4.09; Physical Cultural Resources OP/BP 4.11; Involuntary Resettlement OP/BP 4.12.
3. Describe the proposed project by providing a systematic description of the project relevant components and presenting plans, maps (proposed works, base camps, environmental and social sensitivities, staging areas, alternative routes etc. with details of XY coordinates), figures and tables.

4. Identify and summarize the policy, legal and administrative framework relevant to the project.
5. Define and justify the proposed project study area for the assessment and management of environmental and social risks and impacts.
6. Describe and analyze the environmental, social, physical, biological, Occupational Health and Safety conditions in the study area before and during project implementation. This analysis shall include a mapping of the project area of influence (500 meters' radius) as well as discussions on the interrelations between environmental and social components and the importance that the society and local populations attach to these components.
7. Identify and assess the risk of labour influx and GBV/SEA/SH on the subproject as well as recommend mitigation measures in managing the risks and potential adverse impacts associated with labour influx and GBV. Define stakeholders' identification criteria, carry out stakeholders' mapping and categorization. Carry out consultations with primary and secondary stakeholders in order to obtain their views on and perception about the project. These consultations shall identify key environmental and social risks and impacts and obtain comments from stakeholders on the proposed mitigation/enhancement measures.
8. Define the potential environmental and social impacts and risks resulting from proposed project activities and appropriate measures to prevent, minimize, mitigate or ameliorate for adverse impacts or to enhance the project environmental and social benefits, including responsibilities and costs applicable to actual mitigation and subsequently to monitoring exercise.
9. Define community health broadly, and also as related to STDs such as HIV/AIDS and other STIs, VAC, child labour, and forced labour. Ensure that awareness creation on the aforementioned is captured to include responsibility for implementation such as prevention and mitigation as well as monitoring of progress.
10. Review institutional framework for environmental and social management. Use the outcome of this review to identifying responsibilities and actors for the implementation of proposed mitigation measures. By extension assess the capacity available across all relevant actors to implement the proposed mitigation measures and suggest recommendation in terms of training and capacity building, and applicable budget.

11. Discuss other salient related concerns that could be triggered as a result of project development.
12. Prepare an ESMP matrix table which could include cells for activities, potential risks/impacts, mitigation measures, responsibility for mitigation, cost of mitigation, parameters to be measured, KPIs, monitoring frequency and responsibility and costs.

1.5.2 ESMP Approach and Methods

This ESMP was prepared in accordance with the Nigerian EIA Act CAP E12 LFN 2004 and the World Bank's OP. A multidisciplinary approach was employed for the study in order to holistically address all pertinent aspects of the proposed intervention works on the bio-physical, socio-economic and health conditions of the project areas

Specifically, the methodology adopted for carrying out the assignment include inception meeting with TRIMING project office, Desktop research, Reconnaissance visits to site, Data gathering (biophysical and socioeconomic), Stakeholders' engagement (questionnaire administration, focus group discussions and interviews), Identification of impacts and mitigation measures and preparation of ESMP report. Detailed description of methods used for each activity is provided in the applicable sections.

CHAPTER TWO: POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

This chapter provides an overview of international, national and state legislations, policies and institutional framework including highlights on World Bank operational policies that are applicable to the operations of the TRIMING implementation activities and more specifically the proposed intervention activities.

The proposed intervention activities fall under mandatory study activities according to the Nigeria Environmental Impact Assessment (EIA) Act. To a large extent, this section makes reference to the Policy, Legal and Administrative Framework of the previously conducted Environmental and Social Impact Assessment (ESIA) for Rehabilitation of Bakolori Irrigation Scheme in Zamfara state in which policies and mandates of associated Regulatory Bodies are detailed. (TRIMING, 2015)

This section is summarized in the following sub sections.

2.1 The Environmental and Social Management Framework for the TRIMING Project

The ESMF describes in general terms the potential environmental and social impacts of the sub-projects to be financed by TRIMING project. The ESMF also provides guidance for preparation of ESIAs, ESMPs, and environmental audits.

2.2 Relevant National Legal and Administrative Framework

2.2.1 Water Resources Management at Federal Level

The relevant MDAs under the Water Resources Management include; ***the Federal Ministry of Water Resources (FMWR), River Basin Development Authority, National Water Resources Institute (NWRI), National Legal Instrument on Water Resources.***

The FMWR is the main national coordinating body in the water sector and the implementer of the National Water Policy and water-related sanitation. The Department of Irrigation and Drainage (DID) and the Department of Dams and Reservoir Operations are the relevant departments under FMWR that relate to the proposed sub-projects. The FMWR has the core mandate of formulating and implementing national irrigation policy and supports programmes and performances of the RBDAs and the National Water Resources Institute (NWRI).

2.2.2 Environmental Management at Federal Level

The Federal Ministry of Environment is the main implementing body that sees to Environmental Management in project activities. It has the mandate of ensuring that all development and industry activity, operations and emissions are within the limits prescribed in the National Guidelines and Standards and comply with relevant regulations for environmental pollution management in Nigeria. To fulfil this mandate, some regulations /instruments are available however, the main instruments in fulfilling this mandate of environmental and social issues are mainstreamed into development projects in the Environmental Impact Assessment (EIA) Act No. 86 of 1992, which provides the guidelines for activities of development projects according to the project categories.

2.2.3 Agricultural Management at Federal Level

2.2.3.1 Federal Ministry of Agriculture and Rural Development

The Federal Ministry of Agriculture and Rural Development is the main Implementing body in Agricultural Management. FMARD ensures that the citizenry is provided with credible and timely information on government activities, programs and initiatives in the development of agriculture and food production while creating an enabling technological environment for socio-economic development of the nation. The Federal Ministry of Agriculture and Rural Development (FMARD) was involved in irrigation development in the past as it funded, with World Bank support, a series of state-run Agricultural Development Projects (ADPs), including the promotion of irrigation owned and managed by farmers, particularly in adama areas, and the provision of extension services to the public sector irrigation schemes of the RBDAs and the State Irrigation Departments.

Concerned policies on agriculture include; The Agricultural Promotion Policy 2016-2020, and National Irrigation Policy . (TRIMING, 2015)

2.2.4 Land Use Act of 1978

The land-use Act of 1978 states that "…It is also in the public interest that the rights of all Nigerians to use and enjoy land in Nigeria and the natural fruits thereof in sufficient quality to enable them to provide for the sustenance of themselves and their families should be assured, protected and preserved'. This implies that acts that could result in the pollution of the land, air, and waters of Nigeria negates this decree, and is therefore unacceptable.

2.3 Sokoto Rima River Basin Development Authority (SRRBDA)

The Sokoto-Rima River Basin Development Authority was constituted as one of 2 Basin Development Authorities created by Federal Military Government Decree No. 25 of 1976; the other being the Chad Basin Development Authority. Under the provisions of Decree No. 87 of 1979, the area of operation (jurisdiction) of the Authority was modified to include the whole of the then Sokoto State and Katsina Emirate of Kaduna State. The Authority presently covers the States of Sokoto, Kebbi, Katsina and **Zamfara** with an estimated total land area of 116,134km^2. Its head office is located along kilometer 10, Sokoto- Gusau road, Sokoto State. Three area offices namely Katsina Area Office, Katsina; Kebbi Area Office, Birnin Kebbi, and Zamfara Area Office, Gusau are operated by the Authority

2.4 World Bank Operational Policies

The World Bank has in place several operational and safeguards policies which aims to prevent and mitigate undue harm to people and their environment in any development initiative involving the Bank. However, this sub section outlines the World Bank Environmental and Social Safeguard Policies applicable to this sub-project in Table 1 below.

Table 1: World Bank Safeguard Policies Triggered by Proposed Intervention Activities

Safeguard Policies	Reason for Triggers
Environmental Assessment (OP 4.01)	Proposed project was classified as Category B after environmental and social screening and requires an ESMP study.
Natural Habitats (OP 4.04)	Will result in significant loss of natural habitat during construction phases of intervention activities
Pest Management (OP 4.09)	Agricultural activities involve use of fertilizer and chemicals including pesticides.
Physical Cultural Resources (OP 4.11)	Excavation activities during construction can lead to impacts on physical and cultural resources
Involuntary Resettlement (OP 4.12)	Project intervention may result in some degree of land acquisition and temporary loss of livelihood.
Safety of Dams (OP 4.37)	Project dependent on existing multi-purpose dams and reservoirs

CHAPTER THREE: ENVIRONMENTAL AND SOCIAL BASELINE STUDIES

3.1 Description of the Environmental Baseline Conditions

This section describes the existing environmental conditions of the proposed project area, particularly, assessment of those elements of the environment that may be impacted upon by the project, and which would serve as basis for future assessment of temporal and spatial changes that may occur due to the proposed project. The environmental baseline conditions captures description of the project area of influence, physical characteristics such as climate, geology, soil condition, topography, biological characteristics, traffic / transport assessment, Environmental Quality Assessment of soil, noise and vibrations, air, water conditions.

3.1.1 Overview of Project Area

The proposed project is located in Birnin tudu ward of Bakura Local Government Area in Zamfara State, Nigeria. Bakura town is located in the Northwest Part of Zamfara, with an area of 1,366 km² and a population of 187,141 according to the 2006 Census. Bakura LGA falls within the western Senatorial District of Zamfara State which includes Talata Mafara, Gumi, Anka, Bakura, Maradun and Bukkuyum LGAs. The local government shares a common boundary with Talata Mafara, Maradun and Anka LGAs. Bakura LGA has ten wards namely Bakura, Dakko, Damri, Dan Manu, Dankadu, Nasarawa, Rini, Yar Geda, Yar kofoji and **Birnin Tudu**.

Figure 2: Map of Zamfara State showing the project location: Bakura

Figure 3: The proposed project site at Birnin tudu ward of Bakura LGA

Climate: The climatic condition of the area as it relates to the rainfall and other characteristics is tropically warm with temperature rising to 38 °C and above between March and May. The rainy season extends from late May to September while the cold season, known as the Harmattan, lasts from December to February. This is the main growing season for crops such as rice, wheat and vegetables.

Geology: Geologically, very old igneous and metamorphic rocks, formed during the Precambrian-Paleozoic era, characterize the State. Two rock types are found - granites, and meta-sediments. The granites (including un-differentiated granites), gneisses and migmatites are likely resistant to erosion, but when weathered, they result into poor soils. The meta-sediments, on the other hand, consist of phyllites, quartzites and meta-conglomerates. Although the meta-sediments are also resistant to erosion, weathered, they give rise to more fertile soils because the schists are rich in magnesium minerals.

Land cover: The area falls within Sudan Savanah vegetation belt which must have contributed to reddish brown sand with loosed particles that covers its land surface. The soil

in the area is sandy; reddish brown on the sand stones. There is existence of an erosion in the project area which developed as a result of run-off during rainfall.

Figure 4: An Erodible Area (Pit) about 150m away from the FMSDC with Typha grass

Fauna: It was gathered that some of the fauna normally hide due to cultivation activities and others are nocturnal such as hedgehog and owls, therefore can only be seen once in a while by coincidence. The respondents also revealed that some of the community members keep livestock such as Cows, Sheeps, Donkeys, Goats and Poultry. Some of the common fauna in the area mentioned include; Mouse (*Mus musculus*), Rat (*Cricetomys gambianus*), Cat (*Felis catus*), Hedgehog (*Erinaceinae*), Snakes, Skink lizard (*Scincidae*), lizard (*Agama agama*), Dove (*Strigiformes*), Black ant (*Lasius niger*), small black Ant (*Monomorium minimum*), Termite (*Trinervitermes spp*), Ant hill ant (*Formica ant*), small Snail (*Angustopila psammion*) with Tilapia (*Oreochromis niloticus*) and Cat fish (*Clarias gariepinus*) as the most abundant fishes

Agriculture: Majority of the community are into farming activities and mostly crop farming with 87.1% crop farmer's respondents, Fish farmers (7.10%), and 5.70% Livestock farmers. According to the findings of the survey 58.5% of the respondents are into cropping cereal crops such as rice (Oryza sativa), maize (Zea mays), Millet (Panicum miliaceum) and guinea corn (Sorghum). 15.7% crop root and stem tuber such as Potato (Ipomoea batatas) and Cassava (Manihot esculenta) , 11.4% crop Leafy vegetable such as Spinach (Spinacia oleracea), Lettuce (Lactuca sativa) and Cabbage (Brassica oleracea), legumes such as Groundnut (Arachis hypogeae) and Beans (Phaseolus vulgaris) are cropped by 10% of the

respondents and Fruit & Fruit vegetables are cropped by 4.2% of the respondents. Cropping

Figure 5: An orchard behind the FMSDC (50m away)

take place in both rainy and dry seasons due to the availability of irrigation infrastructure.

Traffic Management and Infrastructure: The community has a major tarred access road connecting it to other communities which also goes through the project site (FMSCD). The road is usually busy on market days. The road which connects the main road to the project site is untarred as presented in the picture below, therefore, it needs to be watered during project activities to reduce dust in the community.

Figure 6: Birnin Tudu Main road and Market about 50m away from the FMSDC

Figure 7: Access road leading to the proposed project site, from the main road

3.1.2 Environmental Quality Assessment of the Area of Influence

This section describes the assessment and analysis of the elemental environmental parameters/components in the proposed project area. These parameters include Air quality measurement, Noise Level, Water quality and soil quality. This is important not only for establishing the chemical and biological baseline status of the project area, but also to suggest the likely environmental, social and health impacts these parameters might exact. It will also serve as cautionary guide in advising mitigation measures in the course of the project. The environmental parameters were obtained through field data gathering exercises (Observation, onsite measurements, sample collection and laboratory analyses).

Soil Assessment

Top-soil and sub-soil samples were collected across the major proposed project districts within a soil depth of 0 - 15cm for the top soil and 15 - 30cm for the sub-soil at geo-referenced locations. The samples were collected in polyethylene bags and wrapped in aluminium foil. Samples for microbial analyses were collected in sterilized 100 ml McCartney bottles and stored in a cool box.

Result: A total of Four top soils and Four Sub soils were collected at collected at several locations to make a total of Eight samples, at the project are. The results of the physicochemical analysis of the soil samples are presented in Table 2.

Table 2: Results of the Soil sampling in the project area

S/N	Parameters	Unit	A		B		C		D	
			Top soil	Sub soil	Top soil	Sub soil	Top soil	Sub soil	Top soil	Sub soil
A. SOIL CHARACTERISTICS										
1.	Texture	-	Clay loam	Loam	Loam	Sandy	Sandy loam	Sandy loam	Clay loam	Sandy clay
2.	pH		8.0	7.3	7.9	8.4	8.2	8.3	7.5	7.9
3.	Permeability	Cm/hr	13.8	12.1	16.8	17.1	10.4	12.6	14.2	16.4
4.	Alkalinity	mg/kg	1.7	1.2	1.0	1.0	1.3	1.6	2.7	1.5
5.	Carbonate	mg/kg	1.3	1.22	1.21	1.61	1.38	1.54	1.36	1.42
B. EXCHANGEABLE CATION										
6	Ca^{2+}	mg/kg	1.40	1.51	1.44	1.42	1.61	1.53	1.36	1.40
7.	K^{+}	mg/kg	0.82	1.44	1.52	1.68	0.92	1.00	1.33	1.46
8.	Na+	mg/kg	38	48	56	41	39	58	50	50
9	Mg2+	mg/kg	0.21	0.36	0.31	0.18	0.30	0.26	0.30	0.29
C.EXCHANGEABLE ANION										
10.	SO_4^{2-}	mg/kg	4	7	5	3	3	2	6	8
11.	NO_3^{2-}	mg/kg	15.6	12.8	11.8	16.7	12.0	8.7	8.2	8.0
12.	NH_4+	mg/kg	0.14	1.20	2.46	0.47	1.46	1.21	1.22	1.96
13.	Total Nitrogen (N_2)	mg/kg	23.0	11.6	10.1	8.9	15.1	13.0	9.4	7.9
14.	PO_4^{2-}	mg/kg	0.06	0.11	0.74	0.81	0.23	0.61	0.36	0.41
D. HEAVY METALS										
15.	Mercury (Hg)	µg/kg	0	0	0	0	0	0	0	0
16.	Cadmium (Cd)	mg/kg	0.0001	0.000	0.000	0.0001	0.0001	0.000	0.000	0.000
17.	Arsenic (Ar)	µg/kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18.	Iron (Fe)	mg/kg	2.23	2.68	3.01	3.31	3.00	2.96	2.01	1.96
19.	Zinc (Zn)	mg/kg	0.73	1.46	0.18	0.21	0.01	0.01	0.17	0.13

Water quality assessment

Water sample was collected from a borehole located within the project area at geo-referenced point of Latitude:**12.653655** and Longitude:**6.044290**. Clean sampling bottle rinsed with distilled water was used to collect the samples at geo-referenced locations after which it was preserved by storing in ice-filled cooler boxes before transportation to the laboratory.

Result: the physicochemical result of the water sampling is presented in Table 3 below.

Table 3: Result of water sampling

S/N	PARAMETERS	UNIT	RESULT	FM_{ENV} LIMIT
A. PHYSICOCHEMICAL				
1.	Colour	PtCoU	Clear	
2.	pH	-	8.0	6-8.5
3.	Electrical Conductivity	µs/cm	645	1000
4.	Total Dissolve Solid	ppm	146	200
5.	Total Suspended Solid	mg/L	2	30
6.	Dissolve Oxygen (D.O)	mg/L	4.3	2 – 8
B. CHEMICAL TEST				
7.	Sodium (Na^+)	mg/L	88	200
8.	Calcium (Ca^{2+})	mg/L	27.3	200
9.	Magnesium (Mg^{2+})	mg/L	6.4	200
10.	Potassium (K^+)	mg/L	0.3	-
11.	Total Chlorine (Cl_2)	mg/L	3.48	250
12.	Ammonium (NH_4^+)	mg/L	18	600
13.	Phosphate (PO_4^{2-})	mg/L	0.06	-
14.	Nitrate (NO_3^{2-})	mg/L	4.73	50
15.	Sulphate (SO_4^{2-})	mg/L	1	100
16.	Total Hardness	mg/L	72	150
17.	B.O.D	mg/L	1.9	40
18.	C.O.D	mg/L	0	50
C. HEAVY METALS				
19.	Chromium (Cr^{3+})	mg/L	0.01	0.05
20.	Zinc (Zn^{2+})	mg/L	0.02	3.0
21.	Iron (Fe^{3+})	mg/L	0.1	0.3
22.	Cobalt (Co^{3+})	mg/L	0.000	<1
23.	Nickel (Ni^{2+})	mg/L	0.000	0.02
24.	Copper (Cu^{2+})	mg/L	0.026	1.0
25.	Manganese (Mn^{2+})	mg/L	0.0	0.2
26.	Mercury (Hg^{2+})	µg/L	0.000	0.001
27.	Cadmium (Cd^{2+})	µg/L	0.000	0.003
E. MICROBIOLOGICAL ANALYSIS				
28.	E. Coli	Cfu/100ml	0	0
29.	Total Coliform Count	Cfu/100ml	2	400

Air and Noise assessment

Air quality assessments were carried out at strategic points across the project districts. The analytical results were reviewed against the appropriate regulatory limits of the Federal Ministry of Environment (FMEnv) to determine any potential health risk levels. Field (in-situ) air sampling was carried out using PCE-mpc10 multi parameters gas detector, with range: 0.02 – 150mg per cubic meter. Noise levels were also assessed using a PCE-MSl1 Decibel meter, calibrated in Decibel (dB) with range:20-230. The results were reviewed against the permissible limits of 90dB set by the Federal Ministry of Environment.

Table 4: Air quality and noise measurement in the project area

S/N	PARAMETERS	UNIT	POINT A	POINT B	POINT C	POINT D
1.	Wind Speed	Ft/min	208	302	234	148
2.	Sound	dB	58.4	51.0	54.3	53.0
3.	TVOC	mg/m^3	0.000	0.000	0.000	0.000
4.	$Pm_{2.5}$	$\mu g/m^3$	12	19	20	19
5.	SO_2	ppm	0.00	0.00	0.00	0.00
6.	CO	ppm	0	0	0	0
7.	NH_3	ppm	0.00	0.00	0.00	0.00
8.	H_2S	ppm	0.0	0.0	0.0	0.0
9.	Humidity	%	37	52	53	48
10.	Latitude	-	12.651711	12.650722	12.650095	12.651858
11.	Longitude	-	6.046079	6.046033	6.044332	6.044578

Discussion of results

Soil: analysis of the soil samples in the project area showed that the texture of the soil is majorly sandy loam. The level of Sodium, Nitrogen and Ammonium ion were present in significant amount which could be attributed presence of organic matter in the soil and the use of agro-chemicals. The average pH for the soils a moderately alkaline condition. Alkaline soils are associated with the presence of sodium in the soil, either as a result of natural weathering of the soil particles or brought in by irrigation and/or flood water.

Water: Result of the Physicochemical analysis of the water sample in then project area showed that all parameters are within the limit of FMEnv.

The mean results of the baseline air quality parameters and noise level within the project district show concentrations below the regulatory threshold limits of the Federal Ministry of Environment.

The Environmental baseline analysis conducted on the samples (Soil and Water) and also the general Air Quality Assessment shows that the aesthetic values of the project area is

appreciable, and meets the standard limits of Federal Ministry of Environment (FM_{ENV}) which is good for both Agricultural, Domestic and Construction activities.

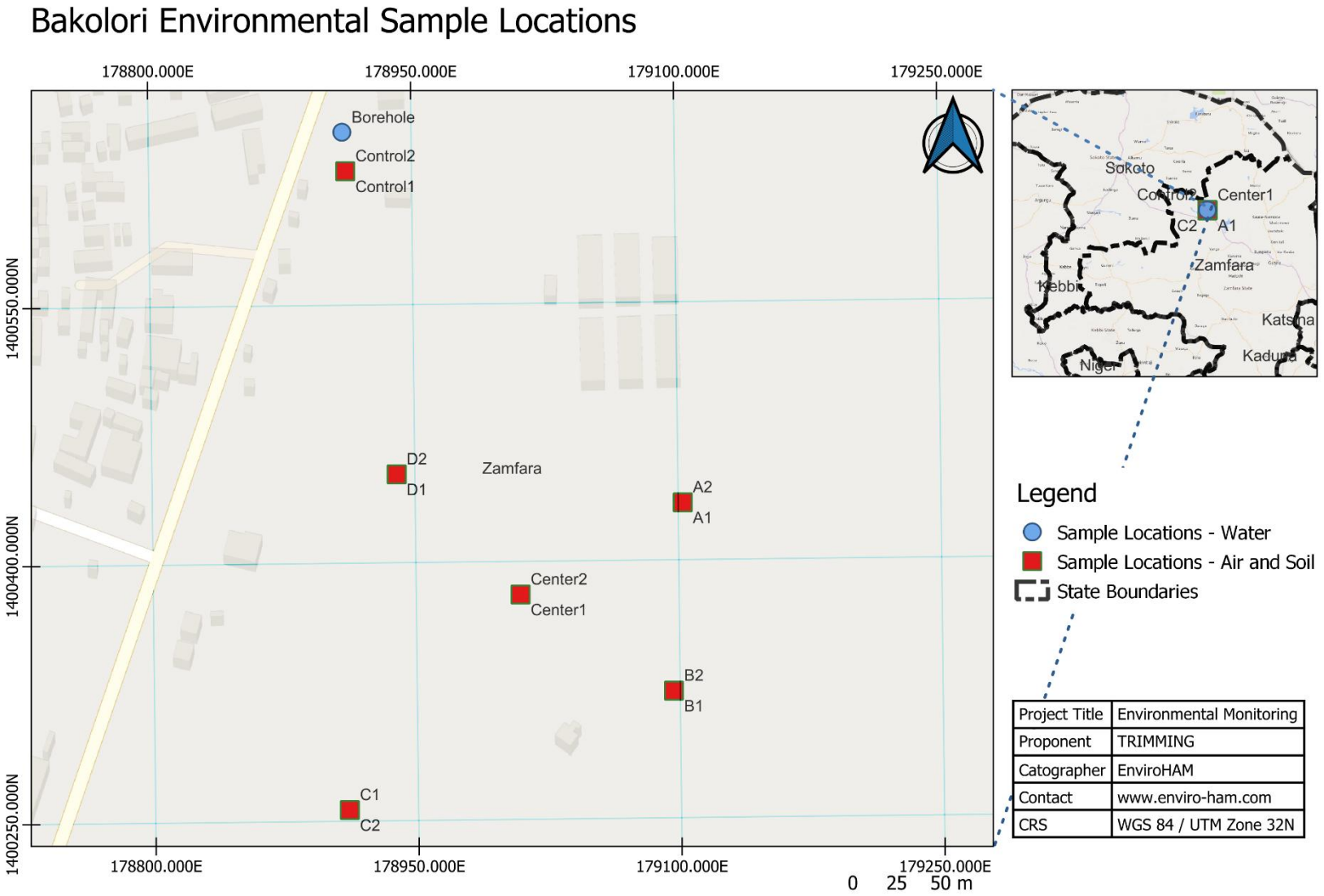

Figure 8: Environmental Sample Location

3.2 Description of Socio-Economic Baseline Conditions

The socio-economic baseline study of the project area is aimed at understanding the socioeconomic and health status of the people and settlements of and around the intervention communities. The specific objectives of this study are to:

- establish the existing social and economic characteristics of host environment.
- establish people's perception of the intervention project.
- identify associated impacts on the socioeconomic environment.
- provide the basis for monitoring identified impacts.

3.2.1 Methodology

The baseline demographic survey was conducted using a random sampling strategy for data collection. The primary base line information was gathered from the community (Birnin tudu) through interviews with the community members randomly selected within 500m radius from the center (FMSDC), by administering questionnaire as the survey tool.

3.2.2 Culture and Equality

A significant number of married Muslim women observe the Islamic tradition of *purdah*; restricting their movements and activities outside the home which is described as inequality among individuals. They do not directly cultivate lands but engage family assistance or hired labours. They often assist their husbands in crop processing at home. However, older married women or widows have less restriction do some farming.

3.2.3 Gender Distribution of the Respondents

The respondents were both males and females and the males constitute (72.8%) while the females constitute (27.2%). The females constitute the least number because they were only interacted with in the houses while male were interviewed both inside and outside the houses.

3.2.4 Age Distribution of the Respondents

The age range of the respondents is between (18- 65 and above). Majority of the respondents are between 35-44 years with (44.3%), the respondents with 25-34 years are (21.42%), respondents with age range of 55-64 years are (12.8%), respondents with age range of 45-50 years constitute (11.4%) and the least are (10%) with 18-24 years' age range.

3.2.5 Religious Practices of the Respondent.

The community are Predominantly Muslims (100%) and Hausas (100%) being it one of the core northern community in Zamfara state.

3.2.6 Marital Status of Respondents

Majority of the respondents are Married (95.7%), few are divorced (4.3%) and none of them is single. Being it a rural community contributed to having majority of the married respondents, usually in such communities anybody with 18 years and even less are married especially females.

3.2.7 Literacy Level

The Educational level of 50% of the respondents is Islamic education, while 21.4% have secondary school certificate as the highest level of academic qualification, 15.8% of the respondents attained some higher institution qualification the least respondents with 12.8% have primary education.

3.2.8 Water

The survey show that majority of the respondent sourced water from the well (55.8%), this was followed by 32.8% of the respondent who get water from borehole and only 11.4% get water from surface water.

3.2.9 Household Waste Disposal, Cooking Fuel Source and Electricity

100.0% of the respondents confirmed that they use open Dump waste management method. None indicated the use of Land Fill or Burning as a method of waste management.

3.2.10 Waste Management and Toilet Facility

70% of the respondent dispose their waste on land fill, 18.5% practice open dump while, 11.5% burn their waste.

Also, the survey shown that 65.7% of the respondents make use of pit latrine for defecation, 28.5% practice open defecation, while 5.7% have access to water system. This implies that the waste management of the community is relational poor; sensitization of new good hygiene is needed.

Figure 9: An open dump beside the road leading to the proposed project site

3.2.11 Local Economy of Project Area and Occupation

The major source of livelihood in the project area is farming as seen below (82.8%) of the respondents are into different farming activities, mostly crop farming, 11.4% are civil servant working with the Government and 5.7% are artisans and others with private business. these farmers are largely self-employed.

CHAPTER FOUR: IDENTIFICATION OF POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS

The project is expected to have high positive environmental and social impacts for impacted communities in the project area as it provides incentives for improved access to good seeds and mature plants which leads to increase in food production, improved environmental management and livelihoods. The negative environmental and social impacts will largely be localized in spatial extent, short in duration, occurring within less sensitive environmental areas and are manageable through the implementation of appropriate mitigation measures. Based on the assessment, the potential environmental and social impacts are outlined in Table 5.

This chapter highlights the positive and negative impacts identified which will serve as a basis for mitigation measures proffered to ensure that adverse impacts will be minimized or eliminated while enhancing positive impacts.

4.1 Impact Rating

The potential adverse impacts are evaluated with respect to the Pre-construction phase, Construction phase and the Operation and Maintenance phase. Impacts are classified as High, Moderate and Low

High Impact **(H):** an impact of major significance is one where an accepted limit or standard may be exceeded, or large magnitude impacts occur to highly valued resource. The impact is very strong and cannot easily be reduced.

Moderate Impact **(M):** an impact is described as moderate when it is within the accepted limits and standards. The impact on the environment is substantial but can be reduced through specific mitigation measures.

Low Impact **(L):** an impact is low when the magnitude is sufficiently small and well within accepted standards and receptor is of low sensitivity. The impact on the environment is significant but subdued and may or may not require the application of mitigation measures.

4.2 Potential Positive Impacts

The potential positive environmental and social impacts identified for this project are presented in Table 5. Achieving these potential positive environmental and social impacts will depend greatly on the proper implementation of the project.

Table 5: Potential Positive Environmental and Social Impacts

POTENTIAL POSITIVE IMPACTS OF THE PROJECT	
ENVIRONMENTAL IMPACTS	**SOCIAL IMPACTS**
• Improved Infrastructure which incites development in the project Area • New construction access routes will also benefit local people • Improvement of degraded Environment • Provision of modern amenities/infrastructures • Possibility of enhanced management of environmental elements such as soil, air, water etc. emanating from improved Operation and Maintenance of the facilities while in operation. • Encourage the adoption of sustainable agricultural and land use practices such as planting of cover crops, mixed cropping, Integrated Pest Management that will be beneficial to fauna and flora; hence, enhancing the eco-system.	• Provision of access to mechanization, agricultural extension, financial services, market and inputs. • Increased opportunities for contracting, supplies and business entrepreneurship in local dealers, suppliers and distribution of finished products. • Improved agricultural activities • Improvement on the economic status of the stakeholder community due to increased demand for local goods and Services • Increase in employment opportunities. • Improved commercial activities. • Increased in farm produces • Increased Gross Domestic Product and improved economy. • Improved knowledge and technical know-how on use of mechanized farming • Developed and strengthened Institutions required to support sustainability of intervention project. • Reduced poverty rate and increased shared prosperity. • Improvement of security of life and properties as the residents also benefits from security of contractors' materials on site • The boreholes to be provided at the center will serve nearby communities with a safer source of water especially for those that don't have good water for domestic uses

4.3 Potential Adverse Environmental and Social Impacts of the Proposed Project.

The results of the evaluation of the proposed intervention activities with respect to the project (pre-construction, construction and operation) phases and their potential adverse impacts on environmental and social sensitivities are captured in this sub-section. The identified negative impacts were rated as minor, moderate and major. Beneficial impacts arising from the project required no rating. In order to minimize or eliminate these negative impacts, mitigation measures proffered must be adhered to.

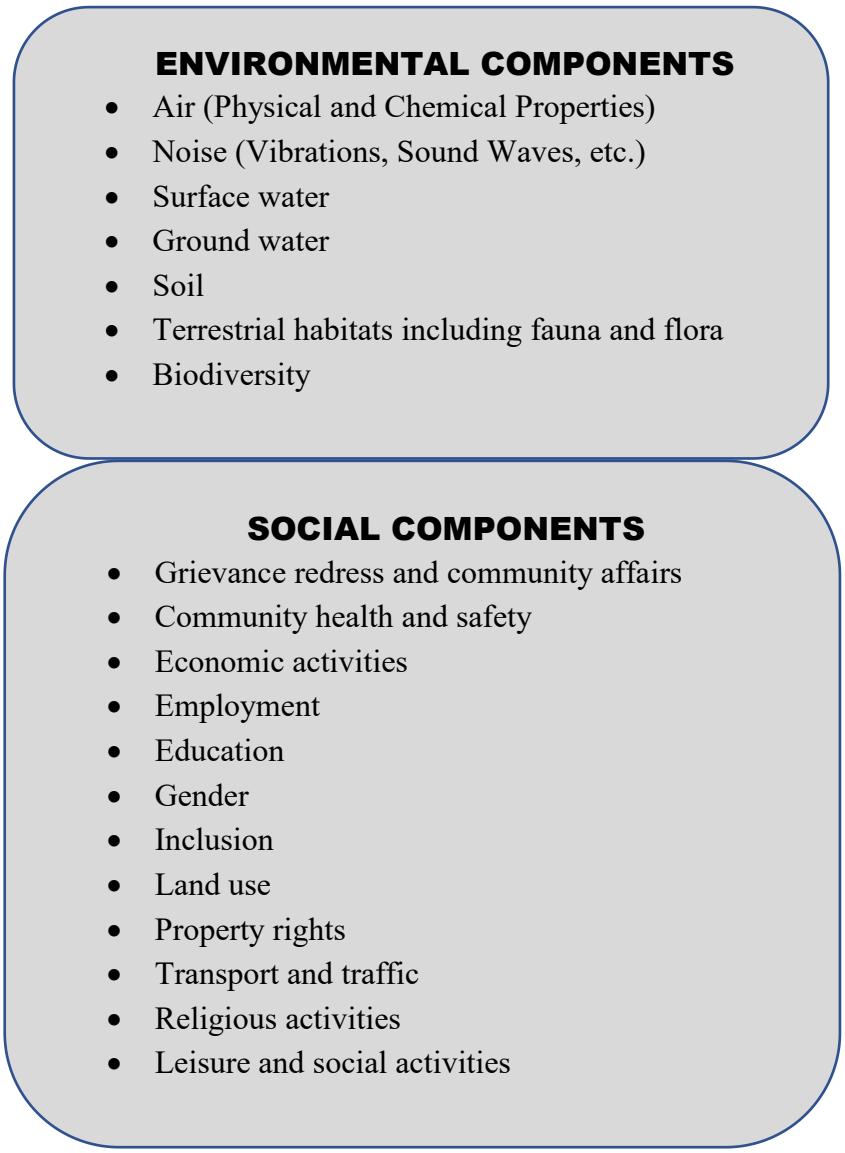

Figure 10: Environmental and Social Sensitivities

Table 6: Potential Negative Environmental and Social Impacts

NEGATIVE IMPACTS OF THE PROJECT	
ENVIRONMENTAL IMPACTS	**SOCIAL IMPACTS**
Air Quality • Fugitive dusts, machinery exhaust fumes [nitrogen oxides (NO_X), carbon monoxide (CO), sulphur oxides (SOx), hydrocarbons and suspended particulates], and dusts from rehabilitation / construction activities. • Exposure of residents living close to the poultry and fishery facilities to odour especially if the poultry dunks and fishery wastewater are not properly managed during operation phase. ***Soil*** • Leakages may occur from stacked equipment containing oil such as engine oil or fuel. This could result in the seeping-through of toxic fluid into the soil, thereby leading to possible contamination of soil. • Change in soil morphology may occur due to influx and stationary positioning of heavy-duty equipment and vehicles. • Loss in soil nutrients due to continued planting without leaving the soil to be fallow to regain adequate nutrient before next planting season. • Heavy equipment vibrations may cause denudation which could subsequently lead to soil erosion. • Displacement of soil important micro-organisms due to continues excavation of soil. ***Noise and vibration*** • Noise pollution as a result of movement of construction equipment in and out of the project sites.	***Livelihood / Community Activities / Social Stress*** • Possible disruptions of movement of residents within the project area to places of work, and businesses, as a result of movement of equipment and materials along access roads. • Destruction of farmlands within the project corridor. • Possibility of grievances resulting from loss of livelihood • Disruption of communal activities such as meetings, celebrations etc. ***Risks associated with Labour Influx*** • Increased risk of illicit behaviour and crime (including prostitution, theft and substance abuse). Possible disruption of cultural/religious practices due to labour influx • Possibility of sexual exploitation and abuse and other forms of GBV during construction activities as a result of large influx of foreign labours. • Possibility of child labour during construction works. ***Loss of Assets*** • Possible destruction of buildings within the community through which construction equipment will transverse due to narrow access routes. ***Conflict*** • Conflict may arise between community members and contractor, especially when members of the community are not hired/employed at the construction site. • Conflict between hawkers that will be selling within the project camp.

NEGATIVE IMPACTS OF THE PROJECT	
ENVIRONMENTAL IMPACTS	**SOCIAL IMPACTS**
Water Quality • Surface runoffs and effluents may cause turbidity, changes in water colour and in pH levels. • Flood draining activities may introduce chemicals into water bodies leading to possible changes in water colour and pH levels, pollution and eutrophication • Leakages may occur from stacked equipment containing oil such as engine oil or fuel. This could result in the seeping-through of toxic fluid into surface water and ground water. • Increased demand on water resources. ***Waste*** • Generation of solid wastes from construction activities - soil excavated debris, metal scraps, plastics, wood, waste concrete, papers and cartons, etc. • At operational phase, indiscriminate dumping of waste may lead to blocking of drainages and channels. ***Flora and Fauna*** • Loss of flora and fauna during mobilization of equipment, construction activities such as grading, filling, excavation, etc. • Vegetation clearing for location of campsite leading to loss of fauna and flora. ***Community Health and Safety*** • Accidents involving vehicles or pedestrians may occur during vehicle and equipment movement. • Increased health risk such as respiratory infections and diseases	***Community infrastructure*** • Pressure on community infrastructure such as transportation, restaurant etc. if adequate provisions are not made for workers • Possible of local inflation for goods and services

NEGATIVE IMPACTS OF THE PROJECT	
ENVIRONMENTAL IMPACTS	**SOCIAL IMPACTS**
(silicosis, asthma, bronchitis, etc) due to dust and fume emissions. • Possible spread of water borne diseases (e.g. Cholera, Dysentery, Amoebiasis, Salmonellosis etc.) if contamination of ground and surface water occur. • Increase in HIV transmission. ***Occupational Health and Safety*** • Occurrence of accidents and injury of workers at constructions sites. • Exposure of workers to hazardous substances and unsafe working conditions	

4.4 Rating of Potential Adverse Environmental and Social Impacts of the Proposed Project.

Table 7: Impact Rating at the Pre-Construction Phase

ACTIVITIES	COMPONENT	SUB-COMPONENT	POTENTIAL IMPACT	RATING
• Site Survey, Clearing of vegetation and de-stumping • Establishment of Contractors' Workshops • Transportation and movement of heavy equipment to the site	**Environment**	**Air**	Fugitive dust and exhaust fume from operating equipment.	**MODERATE**
			Release of CO, from exhausts which could lead to atmospheric pollution	**MODERATE**
		Soil	Soil compaction and soil structure changes due to influx and stationary positioning of heavy - duty equipment and vehicles.	**MODERATE**
			Leakages from stacked equipment and subsequent seeping through of toxic fluid (oil, fuel, etc).	**MODERATE**
			Damage to existing roads due to increased equipment mobilization	**MODERATE**
			Soil erosion in places where vegetation is cleared.	**MODERATE**
		Vegetation	Loss of natural scrublands within 200m to the project site	**MODERATE**
		Noise	Noise and vibration from vehicular movement.	**MODERATE**
	Social	**Traffic**	Traffic congestion/travel delay.	**MODERATE**
		Land acquisition	Conflict over land ownership.	**LOW**
		Safety	Accidents involving vehicles or Pedestrians.	**MODERATE**
		Public Health	Exposure to minor respiratory disease risks from dusts, exhaust fumes of equipment and vehicles.	**MODERATE**
		Perception / Grievances	Delay in project execution due to community discontentment about the project.	**LOW**

Table 8: Impact Rating at the Construction Phase

ACTIVITIES	COMPONENT	SUB-COMPONENT	POTENTIAL IMPACT	RATING
Construction works activities	Environment	Air	Cement dust, fugitive dust, exhaust fumes, hazardous gases (NOx, CO, S Ox, PM2.5, PM 10).	MODERATE
		Water quality / Hydrology	Groundwater contamination during run-off, resulting from accidental leakages and spills from diesel, petrol, cleaning agents, lubricants, hydraulic oil.	MODERATE
		Biodiversity	Loss of flora and fauna due to clearing of vegetation	MODERATE
			Displacement of slow-moving animals	MODERATE
		Soil/Geology	Soil disturbance and destabilization of soil structure due to excavation works.	HIGH
			Loss or compaction of topsoil due to movement of heavy vehicles and equipment.	MODERATE
			Contamination of soil by oil or fuel spills from vehicle and equipment used for construction.	MODERATE
		Noise	Extensive noise pollution because of on-going rehabilitation works.	LOW
		Waste	Increased generation of solid and liquid wastes	MODERATE
	Social	Physical displacement	Relocation or loss of shelter of assets along Right of Way	LOW
		Economic displacement (Livelihood)	Blocked access route to farmlands	MODERATE
			Accidental destruction of property particularly farmland/crops.	MODERATE
		Perception	Negative perception among residents and commercial establishments about the project which can lead to resistance.	LOW
		Public Health	Possible increase in HIV/AIDS and STIs	HIGH
			Exposure to minor respiratory disease risks from dusts, exhaust fumes of equipment and vehicles.	MODERATE
			Incidence of water borne diseases	MODERATE

		Project performance	Conflicts between contractors may disrupt completion of tasks on or before the proposed project end date.	**LOW**
		Labour Influx	Unequal employment of local residents.	**MODERATE**
			Strain on existing public infrastructures such as health facilities, public utilities and transportation.	**MODERATE**
		Gender-based violence (GBV)	• Sexual Exploitation and Abuse (SEA), Child Abuse and Exploitation. • Non - inclusion of some groups such as women and vulnerable groups.	**HIGH**
	Occupational Health and Safety	**Personnel Health and Safety**	• Workplace accidents / incidents during construction activities. This may lead to injury/death of personnel • Risk of respiratory tract infections from fugitive dusts	**HIGH**

Table 9: Impact rating at the Operation Stage

ACTIVITIES	COMPONENT	SUB-COMPONENT	POTENTIAL IMPACT	RATING
Installation of Building System. Operation and Maintenance Activities	**Environment**	**Water quality and hydrology**	• Contaminated water run-off into surrounding environment • Groundwater extraction from borehole	**MODERATE**
		Air	• Localized increase in the ambient concentration of air pollutants during operation of equipment • Release of SO_X, NO_X, CO_X, etc from exhausts which could lead to atmospheric pollution / GHG emission.	**MODERATE**
		Waste	• Waste generation/discharge (packaging materials/ containers, food wastes/agricultural wastes from stores etc) and associated	**HIGH**

			environmental effects such as pollution and blockage of drainages due to indiscriminate disposal	
		Noise	• Noise generation from vehicles and trucks	**MODERATE**
		Others	• Incidence of pest infestation on stored inputs such as grains	**HIGH**
	Social	**Employment**	• Loss of employment (e.g. when engaged contract staff and un-skill labourers are no longer needed)	**MODERATE**
		Public Health	• Increase in water borne diseases (typhoid, cholera)	**MODERATE**
		Traffic	• Increase road traffic accident (RTA) during transportation of materials and products	**MODERATE**
	Occupational Health and Safety	**Personnel safety**	• Maintenance activities may result in accidents and injuries. • Risk of injury / death of personnel as a result of industrial accident. • Occupational health impact from industrial accident and equipment malfunction.	**MODERATE**

CHAPTER FIVE: ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

5.1 Overview

The range of environmental, social and occupational health and safety issues associated with the activities for the construction and operation of FMSDC have been described in *a* matrix table format for the Environmental and Social Management Plan (ESMP). The ESMP provides an essential link between the EHS impacts predicted and mitigation measures during pre-construction, construction, and operational and maintenance activities. The ESMP outlines the responsibilities for mitigation, Monitoring Indicators and Monitoring Frequencies; it also states the costs of monitoring of the ESMP implementation.

5.2 Environmental and Social Management Plan

Tables 10, 11 and 12 show the breakdown of the ESMP for the proposed intervention activities for Pre-Construction, Construction and Operation / Maintenance Phases respectively.

5.2.1 ESMP for Pre-Construction Phase

Table 10: ESMP for Pre-construction Phase

ESMP for Pre-construction Phase										
COMPONENT	SUB-COMPONENT	ACTIVITIES	POTENTIAL IMPACT	MITIGATION MEASURES	MONITORING INDICATORS	MONITORING FREQUENCY	INSTITUTIONAL RESPONSIBILITY	COSTS (NAIRA)		
								MITIGATION	MONITORING	TOTAL
Environment	**Air**	Transportation and movement of heavy equipment to the site	Fugitive dusts and exhaust fumes from movement of heavy-duty vehicles and equipment into work areas.	Routine wetting.	Serviced and tested vehicles and equipment.	One-off	**Mitigation**: Contractors **Monitoring:** Supervision Consultant; SRRBDA; ESO - TRIMING Scheme Level Office	**450,000.00**	**112,500.00**	**562,500.00**
			Release of CO, from exhausts which could lead to atmospheric pollution	Ensure that vehicles and equipment are serviced; undergo Vehicle Emission Testing (VET) and Vehicle Exhaust Screening (VES) as laid down in the NESREA guidelines.	Air quality parameters within permissible limits.					
	Soil		Disturbance to topsoil due to movement of vehicles to site and stacking of heavy- duty equipment	Limit zones for vehicle and equipment weight impacts (designate an area for stacking equipment).	Designated path or routes for movement of heavy - duty vehicles and equipment.	One – off	**Mitigation:** Contractors **Monitoring:** Supervision Consultant; SMEnv; ESO-TRIMING Scheme Level Office	**400,000.00**	**153,000.00**	**553,000.00**

ESMP for Pre-construction Phase										
COMPONENT	SUB-COMPONENT	ACTIVITIES	POTENTIAL IMPACT	MITIGATION MEASURES	MONITORING INDICATORS	MONITORING FREQUENCY	INSTITUTIONAL RESPONSIBILITY	COSTS (NAIRA)		
								MITIGATION	MONITORING	TOTAL
Environment	**Soil**	Clearing of vegetation and de-stumping	Soil erosion in places where vegetation has been removed.	Adoption of Erosion control measures e.g. soil compactment, Rock rip rapping. Where possible, drive over flattened vegetation, to preserve rootstock and prevent soil erosion.	Erosion and land degradation assessment	Daily	**Mitigation:** Contractors **Monitoring:** Supervision Consultant; SMEnv	**500,000.00**	**100,000.00**	**600,000.00**
		Establishment of Contractors' Workshop	Leakage from stacked equipment and subsequent intrusion of oil and chemical substances into soil.	Stacking layout with access to allow for monitoring of equipment for leakages. Ensure fastening of loose parts (bolts, nuts). Installing impermeable surface at the limit zone to contain potential leakages.	Presence of impermeable platform e.g. tarpaulin at limit zone.	Weekly	**Mitigation:** Contractors **Monitoring:** Supervision Consultant; SMEnv; ESO – TRIMING Scheme Level Office	**300,750.00**	**200,187.50**	**500,937.00**
	Vegetation	Vegetation clearing in preparation for construction works	Loss of natural scrublands and fauna due to vegetation clearing. Predisposition of cleared area to erosion	Contractors should limit vegetation clearing to the designated path. Cleared areas should be revegetated with beneficial local species known to mitigate against erosion	Vegetation clearing limited to designated areas	One - off	**Mitigation:** Contractors **Monitoring**: TRIMING Scheme Level Office, SMEnv	**550,000**	**350,000**	**900,000.**

ESMP for Pre-construction Phase										
COMPONENT	SUB-COMPONENT	ACTIVITIES	POTENTIAL IMPACT	MITIGATION MEASURES	MONITORING INDICATORS	MONITORING FREQUENCY	INSTITUTIONAL RESPONSIBILITY	COSTS (NAIRA)		
								MITIGATION	MONITORING	TOTAL
Environment	**Noise**	Establishment of Contractors' Workshops	Increase above permissible noise level, (90dB) during movement of vehicles, equipment and machines.	Utilization of mufflers, and good vehicles/equipment with less noise Ensure all equipment are well serviced and in good condition.	Availability of updated Equipment Servicing Tags. Noise measurement using noise measurement meter to ensure compliance	One-off Daily	**Mitigation:** Contractors **Monitoring:** Supervision Consultant, ESO - TRIMING Scheme Level Office, SMEnv	**271,000.00**	**67,750.00**	**338,750.00**
	Public Health		Indiscriminate disposal of liquid and solid waste.	Provision of adequate waste management facility.	Waste Management Plan (WMP). Onsite sanitary facility	One –off	**Mitigation:** Contractors **Monitoring:** SMEnv, Supervision Consultant, ESO - TRIMING Scheme Level Office	**450,000.00**	**100,000.00**	**550,000.00**
Social	**Property Right / Loss**	Mobilization of workers, equipment and other materials to site	Possible destruction of structures within the access route / ROW to proposed project site	Thorough assessment of access routes should be done prior to mobilization of equipment to site. All routes to be mapped out and residents made aware of these routes and timing of mobilization of workers and equipment movements	No / minimal structures destroyed	One-off	**Mitigation:** Contractor **Monitoring**: SS0 – TRIMING Scheme Level Office	**No additional costs to BOQ**		-

ESMP for Pre-construction Phase										
COMPONENT	SUB-COMPONENT	ACTIVITIES	POTENTIAL IMPACT	MITIGATION MEASURES	MONITORING INDICATORS	MONITORING FREQUENCY	INSTITUTIONAL RESPONSIBILITY	COSTS (NAIRA)		
								MITIGATION	MONITORING	TOTAL
Social	**Traffic / Road Safety**	Mobilization of workers, equipment and other materials to site	Accidents involving vehicles or Pedestrians. Traffic congestion / travel delay.	Positioning warning/reflective signs/symbols [in clear language] and traffic control personnel at all strategic points. For minimal obstruction to traffic movement, it is recommended that equipment be moved into the project area at off – peak hours.	Warning/reflective signs and traffic wardens. Movement of vehicles in the afternoon hours	One-off One-off	**Mitigation:** Contractors, FRSC **Monitoring**: Supervision Consultant, SSO – TRIMING Scheme Level Office, FRSC	**200,000.00**	**50,000.00**	**250,000.00**
Health and Safety	**Community Health and Safety**	Establishment of Contractors' Workshops	Materials or tools falling on a pedestrian.	Fencing off of camp site with warning signals and secured access to avoid trespassing. Installation of security cameras [in case of in-house collaboration]	Secure and adequate fencing and access control.	One-off	**Mitigation:** Contractors; Security Outfit **Monitoring**: Supervision Consultant	**750,250.00**	**300,062.50**	**1,050,312.50**
	Security of Equipment and Assets		Theft and vandalization of equipment.							
	Occupational Health and Safety		Work-related accidents and emergencies	Conduct safety and first aid training. Provision of PPE and first aid boxes. Provision of fire safety and protection equipment.	Safety Training report PPE and First aid box Fire safety and protection	Weekly One-off One-off	**Mitigation:** Contractors **Monitoring**: Supervision Consultant			

ESMP for Pre-construction Phase										
COMPONENT	SUB-COMPONENT	ACTIVITIES	POTENTIAL IMPACT	MITIGATION MEASURES	MONITORING INDICATORS	MONITORING FREQUENCY	INSTITUTIONAL RESPONSIBILITY	COSTS (NAIRA)		
								MITIGATION	MONITORING	TOTAL
				Provision and use of safety signs and signals Standby utility vehicle in cases of emergencies to the hospital.	equipment					
ESMP TOTAL FOR PRE-CONSTRUCTION STAGE								**3,872,000**	**1,433,489**	**5,305,489**

5.2.2 ESMP for Construction Phase

Table 11: ESMP for Construction Phase

ESMP for Construction Phase										
COMPONENT	SUB-COMPONENT	ACTIVITIES	POTENTIAL IMPACT	MITIGATION MEASURES	MONITORING INDICATORS	MONITORING FREQUENCY	INSTITUTIONAL RESPONSIBILITY	COSTS (NAIRA)		
								MITIGATION	MONITORING	TOTAL
Environment	**Air**	Operation of equipment Construction works which includes; Welding and galvanizing works, Excavation, Concreting, Brick masonry	Exhaust fumes, hazardous gases (NOx, CO, SOx, SPM,), Oxides from welding activities	Vehicles and equipment installed with emission control devices e.g catalytic converter, air injection, etc Reduced carbon emission through hiring vehicles, plants and equipment that are in good condition (current models) generally less than 3 yrs. old.	Contractors' compliance to proffered mitigation measures. Regular servicing of machineries and equipment	Daily Weekly	**Mitigation:** Contractors	**No additional costs to BOQ**		
			Rise in fugitive dusts e.g cement dust.	Routine weting. **Test Procedures –** Air monitoring for toxic gases and CO concentrations during construction works should be employed for PMS powered vehicles.	Contractors' compliance Report of emission test Sample analysis	Daily Weekly	**Mitigation:** Contractors **Monitoring**: Supervision Consultant, SMEnv, ESO -TRIMING Scheme Level Office	**300,000.00**	**75,000.00**	**375,000.000**

ESMP for Construction Phase										
COMPONENT	SUB-COMPONENT	ACTIVITIES	POTENTIAL IMPACT	MITIGATION MEASURES	MONITORING INDICATORS	MONITORING FREQUENCY	INSTITUTIONAL RESPONSIBILITY	COSTS (NAIRA)		
								MITIGATION	MONITORING	TOTAL
Environment	**Water Quality /Hydrology**	Construction works	Groundwater contamination during run-off, resulting from accidental leakages and spills from diesel cleaning agents, lubricants, hydraulic oil, etc	Check working conditions of machines /vehicles. Ensure all fuel storage facilities are bonded and lined with impermeable materials.	Contractors Compliance	Daily	**Mitigation:** Contractors **Monitorin**g: Supervision Consultant	No additional costs to BOQ		
			Generation of sewage (from use of temporary mobile toilets by workers)	Liaise with the municipal sewage collection authorities for collection and treatment of waste	Contractors Compliance	Monthly	**Mitigation:** Contractors, **Monitoring:** Supervision Consultant, SMEnv	**300,000.00**	**110,000.00**	**410,000.00**
	Soil	Construction works construction works	Contamination of soil by oil spills, lubricants and other chemicals.	All oil and lubricants storage should be sited on an impervious base and should have drip pans. Check working conditions of machines /vehicles for leakages. Provision of spill kit in case of spill incident.	Contractor Compliance	Monthly	**Mitigation:** Contractor **Monitoring:** Supervision Consultant, ESO -TRIMING Scheme Level Office	**1,135,000.00**	**283,750.00**	**1,418,750.00**

ESMP for Construction Phase										
COMPONENT	SUB-COMPONENT	ACTIVITIES	POTENTIAL IMPACT	MITIGATION MEASURES	MONITORING INDICATORS	MONITORING FREQUENCY	INSTITUTIONAL RESPONSIBILITY	COSTS (NAIRA)		
								MITIGATION	MONITORING	TOTAL
Environment	**Soil**	Excavation activities	Increases soil erosion Loss of topsoil. Possible minor to moderate soil instability.	Topsoil to be stripped to 300mm deep and stored separately to replace after construction, or to be used elsewhere for rehabilitation purposes. Limit exposed cut and fill slopes, or armour this against erosion. Controlling the earthworks and ensuring the management of excavation activities.	Contractors Compliance	Weekly	**Mitigation:** Contractor **Monitoring:** ESO -TRIMING Scheme Level Office	No additional costs to BOQ		
	Waste	All construction works	Waste generation	Implement site-specific waste management plan. Liaise with collection authority for effective waste collection.	Contractors Compliance	Weekly	**Mitigation:** Contractor **Monitoring:** Supervision Consultant, SMEnv	**150,000.00**	**100,000.00**	**250,000.00**
Social	**Labour**	All construction phase activities	Strain on health facilities and public utilities.	Provision of sick bay at camp site.	Adequate WASH facilities	One – off	**Mitigation:** Contractor	**5,500,000**	**1,625,000**	**7,125,000.00**

ESMP for Construction Phase										
COMPONENT	SUB-COMPONENT	ACTIVITIES	POTENTIAL IMPACT	MITIGATION MEASURES	MONITORING INDICATORS	MONITORING FREQUENCY	INSTITUTIONAL RESPONSIBILITY	COSTS (NAIRA)		
								MITIGATION	MONITORING	TOTAL
	Influx **Labour Influx**	All construction phase activities	Strain on health facilities and public utilities.	Provision of clean water at camp and site. Provision of sound WASH facilities (toilets, handwashing stations, bathrooms) both at camp and on site. Contractors should ensure facilities are adequately provided and clearly labelled for both genders.	available.	One – off	**Monitoring:** Supervision Consultant, Contractor's Health & Safety Officer, SSO-TRIMING Scheme Level Office.			
Social	**Labour Influx**	All construction phase activities	Increase in sexual activities leading to possible spread of STIs	Awareness campaign on sexual diseases, and distribution of male and female condoms.	Conduct of awareness campaigns	Monthly	**Mitigation:** Contractor **Monitoring:** Supervision Consultant, SSO-TRIMING Scheme Level Office	No additional costs to BOQ		
			Unequal employment of local residents.	Implementation of Labour Influx Management Plan. Ensure qualified locals are engaged for both skilled and unskilled labour	Compliance with the Labour Influx Management Plan.	One-off	**Mitigation:** Contractor **Monitoring:** Supervision Consultant, SSO-TRIMING Scheme Level Office	No additional costs to BOQ		

ESMP for Construction Phase										
COMPONENT	SUB-COMPONENT	ACTIVITIES	POTENTIAL IMPACT	MITIGATION MEASURES	MONITORING INDICATORS	MONITORING FREQUENCY	INSTITUTIONAL RESPONSIBILITY	COSTS (NAIRA)		
								MITIGATION	MONITORING	TOTAL
Social	**Gender Based Violence (GBV) & Violence Against Children (VAC)**	All construction phase activities	Sexual Exploitation and Abuse (SEA), Sexual Harassment [SH], child abuse and exploitation.	Stakeholders informed on GBV Signs/posters/symbols of zero tolerance of GBV/SEA/SH displayed in the project site for reminder/deterrence Implement measures outlined in the GBV Action Plan. Confidentiality and respect for victims/survivors maintained	Service providers identified and referral pathway established. .	One-off One-off	**Mitigation:** Contractor, SSO-TRIMING Scheme Level Office **Monitoring:** Supervision Consultant, SSO-TRIMING PMU	No additional costs to BOQ		

ESMP for Construction Phase										
COMPONENT	SUB-COMPONENT	ACTIVITIES	POTENTIAL IMPACT	MITIGATION MEASURES	MONITORING INDICATORS	MONITORING FREQUENCY	INSTITUTIONAL RESPONSIBILITY	COSTS (NAIRA)		
								MITIGATION	MONITORING	TOTAL
Social	**Livelihood**	All proposed construction / rehabilitation works	Disruptions to farming activities – (e.g. blocked access to farmlands) Accidental destruction of property particularly farmland/crops.	Conduct survey to identify best alternatives to prevent disruption to livelihoods before commencement of works. Establishment and operation of an effective GRM structure and process accessible to community members. Encourage regular engagement meetings with community and periodic special meetings with vulnerable & women groups in a safe place to ensure social inclusiveness on the project.	Independent consultant's compliance. Grievance record.	One-off	**Mitigation:** Contractor, WUA, TRIMING Scheme Level Office **Monitoring:** Supervision Consultant, SMWR	No additional costs to BOQ		
Health and Safety	**Community Health and Safety**	All construction works	Materials or tools falling on a pedestrian. Falling into	The contractor(s) will provide suitable fencing, warning signs and security at the	Fence, visible warning signs and presence of security	Daily	**Mitigation:** Contractor **Monitoring:** Supervision	Cost inclusive at pre-construction phase.		

ESMP for Construction Phase										
COMPONENT	SUB-COMPONENT	ACTIVITIES	POTENTIAL IMPACT	MITIGATION MEASURES	MONITORING INDICATORS	MONITORING FREQUENCY	INSTITUTIONAL RESPONSIBILITY	COSTS (NAIRA)		
								MITIGATION	MONITORING	TOTAL
			trenches. Being struck by moving plant and vehicles	project site during construction works to limit entry of unauthorised persons to the project site.			Consultant			
	Personnel Safety	All construction works	Work-related accidents such as fall from height, entanglement, cuts, etc. Risk of respiratory tract infections from fugitive dusts	Provision of insurance for workers. Implement OHS Management Plan. Routine OHS training and education.	Insurance contract Contractors compliance Training reports	Monthly Monthly Daily	**Mitigation:** Contractor **Monitoring:** Supervision Consultant, Engineering Unit - TRIMING.	No additional costs to BOQ		
				Provision of PPEs and ensuring workers are trained on its use. Provision and use of safety signs and signals.	Availability of PPEs Safety signs and signals	One-off	**Mitigation:** Contractor **Monitoring:** Supervision Consultant, Engineering Unit - TRIMING.	Cost inclusive at pre-construction phase.		
ESMP FOR CONSTRUCTION PHASE								**7,385,000**	**2,195,750**	**9,580,750**

5.2.3 ESMP for Operation Phase

Table 12: Table 5.3: ESMP for Operation Phase

ESMP for Operation Phase

COMPONENT	SUB-COMPONENT	ACTIVITY	POTENTIAL IMPACT	MITIGATION MEASURES	MONITORING INDICATORS	MONITORING FREQUENCY	INSTITUTIONAL RESPONSIBILITY	COSTS (NAIRA)		
								MITIGATION	MONITORING	TOTAL
	Air	Operation of facility equipment such as Generators.	Emissions from stacks into the atmosphere. Localized increase in the ambient concentration of air pollutants during operation of equipment	Machines to be turned off when not in use, in order to reduce emissions into the atmosphere. Servicing of all processing machines when due. Air quality to be monitored	Compliance Machineries in good condition Air monitoring log book	Daily Quarterly Quarterly	**Mitigation**: FMSDC Managers **Monitoring**:	**% of FMSDC operation cost**	-	-
	Water Quality/ Hydrology	Operation of Facility	Reduction in level of ground water	Employ water conservation techniques to reduce demand on water. Train personnel on water conservation.	Worker's Compliance	One – off Annually	**Monitoring:** Independent Consultant, TRIMING Scheme Level Office, SRRBDA, SMEnv, SMWR	**To be covered by % OF FMSDC operation cost**	-	-
	Waste	Operation activities	Waste generation/discharge (packaging materials/ containers, food wastes/agricultural wastes from stores etc) and associated environmental effects such as pollution and blockage of	Implement Waste Management Plan	FMSDC compliance	Monthly	**Mitigation:** Facility Manager **Monitoring:** SRRBDA	-	-	-

ESMP for Operation Phase										
COMPONENT	SUB-COMPONENT	ACTIVITY	POTENTIAL IMPACT	MITIGATION MEASURES	MONITORING INDICATORS	MONITORING FREQUENCY	INSTITUTIONAL RESPONSIBILITY	COSTS (NAIRA)		
								MITIGATION	MONITORING	TOTAL
			drainages due to indiscriminate disposal							
	Public Health	Discharge of wastewater into surrounding water bodies	Increase in water-borne diseases due to possible contaminate water source.	Mainstreaming Waste management plan Sensitization and training of workers	FMSDC compliance	Monthly	**Mitigation:** Contractor, TRIMING PMU **Monitoring:** SRRBDA, Independent consultant	-	-	-
		Human activities	Open defecation due to unavailability of toilet facilities.	Proper use and maintenance of toilet facilities[1]	FMSDC compliance	Daily	**Mitigation**: **Monitoring**:	**% of FMSDC operation cost**		
Social	**Livelihood**	Closure of civil works	Loss of employment	Inform personnel with a reminder 3 months to the expiration of contract that employment is short-term prior to their engagement.	Proper engagement of service documentation	One – off	**Mitigation:** Contractor **Monitoring:** SSO-TRIMING Scheme Level Office	-	-	-
	Traffic	Movement of inputs and products in	Increase road traffic accident (RTA) during	Ensure that speed limits are adhere to use standard		Quarterly		-	-	-

[1] Separate toilet facilities, clearly marked, should be made available for men and women within the office blocks. Toilets used by women must also be provided with facilities for disposing of sanitary towels.

ESMP for Operation Phase										
COMPONENT	SUB-COMPONENT	ACTIVITY	POTENTIAL IMPACT	MITIGATION MEASURES	MONITORING INDICATORS	MONITORING FREQUENCY	INSTITUTIONAL RESPONSIBILITY	COSTS (NAIRA)		
								MITIGATION	MONITORING	TOTAL
		and out of the Facility.	transportation of materials and products	warning notice (e.g., signal lights and horn) to other road users. Road safety training and defensive driving training for staff						
	Project Performance	Management and operation of the Facility	Lack of proper funding arrangement and mismanagement leading to unsustainability of the project Theft of machine parts.	Define funding arrangement, source, schedule for fund release and responsibilities. Security presence onsite Auditing of operation books Documentation of machines/equipment/materials going in and out of site	Evidence of the action Plan	One-off Daily	**Mitigation:** SRRBDA, Independent Consultant **Monitoring:** TRIMING PMU SMWR	**To be covered by % OF FMSDC operation cost**	-	-

ESMP for Operation Phase										
COMPONENT	SUB-COMPONENT	ACTIVITY	POTENTIAL IMPACT	MITIGATION MEASURES	MONITORING INDICATORS	MONITORING FREQUENCY	INSTITUTIONAL RESPONSIBILITY	COSTS (NAIRA)		
								MITIGATION	MONITORING	TOTAL
Occupational Health and Safety	**Personnel and Facility Safety**	Maintenance and operational activities	Work-related accidents Fire outbreak	Health and safety trainings. Provision and use of PPEs, safe work equipment and first aid boxes. Ensure monthly record of near misses and incidences and routine safety inspection carried out by a professional in the team. Ensure fire extinguishers are mounted at strategic points and workers trained on handling of the equipment.	Safety training reports Availability of PPEs and first aid boxes Zero incidents record Fire extinguishers	Weekly Daily Daily	**Mitigation:** TRIMING Scheme Level Office, FMSDC **Monitoring:** FMSDC	**3,000,000**	**750,000**	**3,750,000**
ESMP TOTAL FOR OPERATION PHASE								**3,000,000.00**	**750,000.00**	**3,750,000.00**

5.3 ESMP Budget

The total cost of the ESMP implementation and monitoring for the Consctuction of FMSDC in, Zamfara is estimated at ₦25,623,797.20 (*Twenty-Five Million, Six Hundred and Twenty-Three Thousand, Seven Hundred and Ninety-Seven Naira, Twenty Kobo)* which converts to $53,606.17 (*Fifty-Three Thousand, Six Hundred and Six Dollars, Seventeen Cent).*

Table 13: ESMP Budget

ITEM	RESPONSIBILITY	COST BREAKDOWN	COST ESTIMATE	
			NAIRA (₦)	USD ($)
Enhancement of +ve impacts and Mitigation of –ve impacts	Contractor, TRIMING, SRRBDA, BISPO		18,635,489.00	38,986.37
Monitoring, Evaluation & Audit	SMWR, SRRBDA, BISPO	25% of Mitigation Cost	4,658,872.25	9,746.58
SUB TOTATL (ESMP IMPLEMENTATION AND MONITORING)			**23,294,361.15**	**48,732.97**
Contingency		10% of Sub-Total	**2,329,436.10**	**4,873.29**
TOTAL			**25,623,797.20**	**53,606.17**

Exchange Rate $1.00(USD) = ₦478 (NGN) – CBN rate as at October 2022

5.4 Institutional Arrangement for ESMP and Monitoring Plan

It is planned that the environmental and social impacts and their designed enhancement and mitigation measures shall be monitored during implementation of the construction/intervention works and operation phases. The institutional roles and responsibilities for monitoring the environmental and social impacts and the implementation of the ESMP are as follows.

Table 14: Institutional Roles and Responsibilities for Implementing and Monitoring ESMP

S/N	INSTITUTIONS	ROLES AND RESPONSIBILITIES
1.	Federal Ministry of Water Resources (FMWR)	The Ministry is the lead institution for the overall project coordination and implementation of the ESMP. The FMWR hosts the TRIMING PMU.
	TRIMING PMU	• The PMU will oversee the daily coordination, supervision and implementation of the project's components. • The environmental and social management team from the PMU will comprise of the National Project Coordinator; the Environmental, Social, Communication and Irrigation Specialist of the TRIMING PMU. • Mapping of services for survivors of SEA and addressing GBV risk and protection from SEA. • Contribute to the implementation of GBV strategies. • Work with communities to increase awareness about GBV/SEA/SH and engage community leaders to work with CSOs and advocate for GBV services and implementation of

S/N	INSTITUTIONS	ROLES AND RESPONSIBILITIES
		GBV laws and policies.
2.	Contractor	• Ensure all contractors and workers sign the Code of Conduct (CoC) and are routinely trained on the contents of the CoC. • Compliance to BOQ specification in procurement of material and construction. • Prepare C-ESMP for approval of Supervision Consultant. • Ensure that all construction personnel and subcontractors are trained on the content of the C-ESMP and are made aware of the required measures for environmental and social compliance and performance. • Prepare and implement Workers' Campsite Management Plan which will also provide guidance for management of staging areas for the pre-construction phase, construction and operational phase. • Prepare OHS manual and abide by labor laws as set out in the agreement. • Provide adequate basic amenities and PPEs to workers, and ensure that the PPEs are worn by workers during work. • Prepare and maintain records and all required reporting data as stipulated by the ESMP, for submission to the Supervising Consultant.
3.	Supervision Consultant	• Responsible for ensuring the effective implementation, monitoring and supervision of the proposed intervention activities. • Provide necessary technical support in the overall project management. • Provide timely project implementation reports. • Ensure proper and timely execution of all management plans. • Prepare and implement Environmental Monitoring Plan during construction Supervise contractor performance of implementation of the Workers' Campsite Management Plan to be included in the Contractor's C-ESMP. • Report any incidents or non-compliance with the C-ESMP to the PMU. • Ensure adequate training and education of all staff involved in environmental supervision. • Prepare monthly safeguards report including recommendations to the PMU regarding ESMP performance as part of an overall commitment to continuous improvement.
4.	Federal Ministry of Environment (FMEnv)	For this ESMP, the FMEnv through the EA Department and relevant agencies will play the role of lead environmental regulator, overseeing compliance requirements, granting consent and also monitoring or providing supervisory oversight for the project. • Register ESMPs in the Ministry's database • Provide guidance for disclosure of safeguard documents
5.	World Bank	• Overall supervision and provision of technical support and guidance • Recommend additional guidance for strengthening the management framework and implementation performance • Conduct due diligence to ensure project environmental and social sustainability
6.	State Ministry of Water	The State Ministry of Water Resources will oversee the day-day

S/N	INSTITUTIONS	ROLES AND RESPONSIBILITIES
	Resources (SMWR) for Zamfara State State	project management and ensure that environmental and socio-economic concerns and management as elucidated in the ESMP are integrated into all aspects of project implementation.
7.	State Ministry of Environment (SME) for Zamfara State	The SME will be the environmental compliance overseer at the state level. They shall also ensure that all project activities comply with the State environmental laws and requirements and perform regular compliance monitoring and periodic inspection of all the phases of the intervention project.
8.	Sokoto Rima River Basin Development Authority (SRRBDA)	The SRRBDA will ensure that environmental and socio-economic concerns as elucidated in the ESMP are integrated into all aspects of project implementation.
9.	The Scheme Manager	• He will be responsible for the implementation of project specific management plans as described in the ESMP (e.g. monitoring program, site-specific safety management plans, site-specific waste management plans, health, safety and environmental management plans, etc. • Report on Environmental and Social Concerns at The Scheme Level to the SRRBDA.
10.	Federal Road Safety Corps (FRSC)	• Control and manage traffic throughout project implementation • Ensure vehicles operate within allowable emission limits • Discourage counter road safety practices among road users
11.	Host Communities	• Provide comments and advice especially during consultation for the effective implementation of the ESMP • Communities to participate fully in road maintenance activities • Nominate vigilantes to support project security concerns
12.	Traditional Leaders/Community Leaders	• Inform their subjects about the project • Ensure conducive social atmosphere for the execution of the project in their various communities • Act as intermediaries between the project implementation team and the communities • Assist in the recruitment of local workers during the construction activities and be involved in all grievances and conflict resolutions
13.	NGOs/CBOs	• Assisting in their respective ways to ensure effective response actions, conducting scientific researches alongside Government groups to evolve and devise sustainable environmental strategies and techniques.
14.	Nigerian Police Force (NPF)	Work with community leaders to ensure security during project implementation
15.	Zamfara State Ministry of Health	Will work hand in hand with Contractors to: • Manage public health issues and ensuring proper Water and Sanitation Hygiene management • Implement mitigation measures that address public health

CHAPTER SIX: STAKEHOLDERS' CONSULTATION

6.1 Consultation Approach

Stakeholders/Public consultation and participation are essential because they afford PAPs the opportunity to contribute to both the design and implementation of the project activities and reduce the likelihood for conflicts.

The consultation process ensured that all those identified as stakeholders were consulted. Information about the project was shared with the stakeholders, to enable meaningful contributions from them which will enhance the success of the project.

The public consultation strategy for the ESMP activities evolved around the provision of a full opportunity for involvement for all stakeholders, especially the PAPs. Concerns raised by the stakeholders were documented and incorporated in this report and used to develop mitigation and/or enhancement measures in the ESMP.

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

1. The project will have foreseeable environmental and social impacts, especially on the environment, the people and structures in the project area.
2. The project aims at impacting more positively on the environment and social conditions, and will devise suitable, practicable mitigation measures through an ESMP to minimize or eliminate negative impacts.
3. The measures to enhance positive impacts of sub-project activities will be recommended and adopted.
4. The priority concerns raised by Project Affected Persons (PAPs) and other relevant stakeholders will be put into account and incorporated in project planning, design and implementation.

6.2 Objectives of the Public Consultation

- To create general public awareness and understanding of the project, and ensure its acceptance.
- To develop and maintain avenues of communication between the project proponent, stakeholders and locals in order to ensure that their views and concerns are incorporated into project design and implementation with the objectives of reducing, mitigating or offsetting negative impacts and enhancing positive impacts (benefits) of the project.

- To inform and discuss about the nature and scale of adverse impacts and to identify and prioritize the mitigation measures for these impacts in a transparent and direct manner.
- To document the concerns raised by stakeholders and locals so that their views and proposals are mainstreamed to formulate mitigation and benefit enhancement measures.
- To sensitize all other stakeholders about the project and solicit their views and discuss their share of responsibility for the smooth functioning of the overall project operations.

Stakeholders and community leaders were informed of the visits through the Site Coordinator of TRIMING Project Office. The Community leaders through the use of town criers and phone calls, informed the members of the community of the proposed meetings.

6.3 Identified Stakeholder Groups

This ESMP categorized stakeholders into primary and secondary categories. Primary stakeholders are those that are directly affected by the adverse impacts of the proposed works and those who are to benefit from the livelihood intervention options which include community members, farmers, fishermen and water users etc. On the other hand, secondary stakeholders are those with some form of interest and influence on the project such as local and state government, State Ministry of Environment, State Ministry of Water resources, Ministry of Agriculture, State Ministry of Social and Community Development, NGOs, etc.

The team visited the District Head of Birnin Tudu Community with the representatives from local stakeholders, Leadership of FMSDC's and WUA to discuss the objective of the Screening exercise and to capture the views and opinion of the farmers in BIS and the community as a whole with regards the proposed project. The community expressed great interest about the project as it will provide good opportunity for easy and profitable agricultural practices for the farmers.

Figure 12: Meeting with Birnin Tudu District head

Figure 11: Consultation: the team with WUA Chairman within the project area

CHAPTER SEVEN: GRIEVANCE REDRESS MECHANISM

The grievance redress mechanism is anchored on the need to provide a forum locally to receive, hear and resolve disputes arising from the project activities and implementation in the best interest of all parties to prevent the lengthy process of litigation, which could affect the efficiency and effectiveness of dispute resolution. Therefore, the setting of grievance redress committee early during the project's preparation is imperative. Grievances may not be limited to but can arise from any of the following: violence, exclusion from project benefits and non-compliance of the contractor to the agreement reached with TRIMING or the community.

7.1 Sources of Conflict within the Project Area

The most notable cause of conflict within the community is the issue of Herdsmen encroaching into people's farmlands and damaging their crops. In addition, displacement of people's asset by a project without proper compensation results in conflicts too. In a situation where landowners know the value of their land and realize that they were short-changed. This can create serious problems and hinder the progress of the project in the area. As such, land issues are common causes of conflict in the project area.

7.1.1 Existing Conflict Resolution Mechanism within the Project Area

There are laid down procedures in place locally for handling and resolving conflicts within the project area. The traditional conflict resolution system that exists and are being harnessed for resolution of conflicts and grievances within the communities involves the following traditional heads: (a) *Mai Unguwa* (Ward Head); (b) *Hakimi* (District Head); and (c) *Sarki* (Emir). The traditional system follows a three (3) stage resolution hierarchy as described in Figure 7.1.

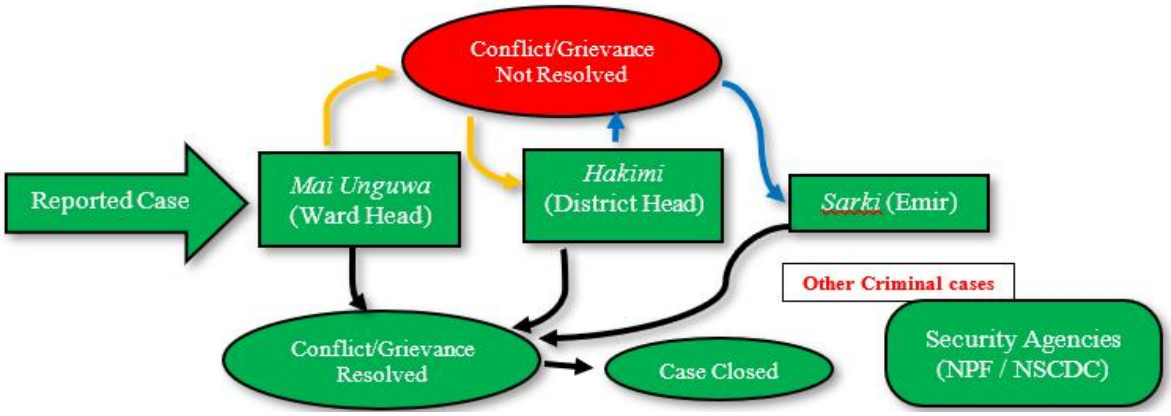

Figure 13: Traditional Conflict Resolution System

Ward Head popularly known as *Mai Unguwa* mediate on conflict matters arising from a section of the community under his jurisdiction and powers, but in situations where the case is beyond his control, the case is forwarded to the district head, *Hakimi*. In a scenario where the district head was not able to reach a consensus or resolve the matter, the case is then transferred to the Emir (*Sarki*) who in most cases resolves and settles cases that are not criminally connected. Cases of land, farmers and herdsmen crises are mostly resolved by the Emir. Criminal cases are reported to the police and other security agencies.

Matters and disputes that has to do with the irrigation scheme is reported to the intake officers (WUA) who resolve and settle cases within the sector. However, in a situation where the case is beyond the WUA Leadership, it is then reported to the project office.

Although these traditional conflict resolution systems exist within the communities, there is need to mainstream the TRIMING Project GRM into the existing structure so as to have an elaborate process of resolving any form of conflict that may arise within and around the project areas. Accordingly, a Grievance Redress Committee (GRC) shall be established at the participating communities. The GRCs shall be the touch point for first response to conflict resolution. In line with mainstreaming the existing traditional system and the TRIMING GRM structure, members of the GRC shall be drawn from both structures to serve as a robust structure for grievance redress.

7.1.2 The TRIMING GRM Procedure

Registration

The first step is the presentation of a grievance at the uptake point at any level. The social contact person will receive grievance from the complainant clarifying primary information, register and acknowledge receipt of it to the grievant within two days. The registration will capture the following data: Name of the complainant, Date of the grievance, Category of the grievance, Persons involved, Impact on complainant's life, Proofs and Witnesses.

Verification

The verification will determine among other things whether the matter has any relationship with the project and whether the level at which it is presented can handle it. This will mean a quick referral of the case either to the next level or the traditional rulers or to law enforcement. Part of investigation will also be assessing the cost of loss or risk involved in the grievance.

Processing

The processing step is when options for the approach to resolving the case are weighed and determined. Parties involved in the case are brought together for a first attempt at resolution with suggestion from the parties by the social contact personnel. The social personnel at a certain level then decides where the case should go to for hearing and resolution if complainant decides to pursue the matter further. This should happen within five days from investigation.

Implementation and Case Closing

The social contact personnel then refer the case to the responding authority within the level for GRM implementation. This authority may be the chairman of WUA, the APM Services at the Scheme level or the officers with direct responsibility over the nature of the case within the PMU. Putting this in writing makes the appeal process faster in case of dissatisfaction on the part of the complainant. The outcome of the GR process is therefore communicated to the complainant and other concerned party.

Feedback

All responses to the complainant in a grievance redress process that moves beyond the unit level must be communicated in writing and/or by verbal presentation to the complainant. This will include a follow up on the corresponding authority where cases are referred to ascertain the status of reported cases. Feedback on outcome of each case should get to the complainant through the social contact person at all levels.

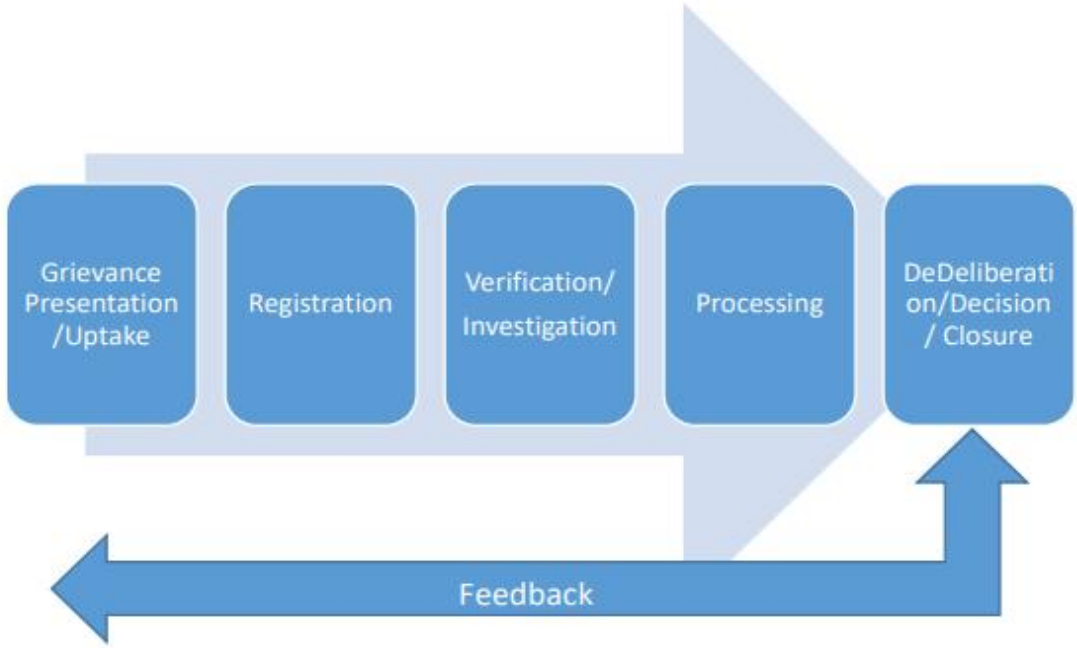

Figure 14: The TRIMING Project GRM Process

7.1.3 Setting Up of Community-based Grievance Redress Committees (GRCs)

Three (3) levels of grievance redress channels have been identified:

- First Level of GRM: GRC at Site/Community Level
- Second Level of GRM: GRC at the PMU Level
- Third Level of GRM: GRC at the State Technical Committee Level

First Level of GRM: GRC at Site/Community Level

Complaints regarding project implementation and activities arising from the project area shall be channelled to the local community chairman, who shall convene the GRC committee at that level to review and address the complaint. The underlying merit is that the community has proven a notable channel for conflict resolution in the project area. The personnel involved are; The local community chairman, Social Safeguards Officer at the Scheme level, A representative of Council of Elders/Community Executives, A representative of the Community Development Association, A representative of Youth Organization and Representative of the Women Group.

After registering the complaint in the Grievance Redressal Registration and Monitoring Sheet, the Social Safeguards Officer at the scheme level would study the complaint made in detail and forward the complaint to the TRIMING PMU with specific dates for replying and redressing the same.

Second Level of GRM: GRC at the PMU Level

The Members involved at the PMU level include; National Project Coordinator, Social Safeguard Officer, Gender Specialist, Internal Auditor, M7E Officer, Environmental Office, Communication Officer and One representative of the non-state sector from within the State Project Monitoring Committees. The PMU shall receive, hear and address complaints arising from the project implementation. The National Project Coordinator (NPC) shall head this committee while membership of the committee.

All complaints submitted to the PMU shall be logged with a unique ID code. Complainants shall receive an acknowledgement letter within 5 working days, including an outline of the complaint review and appeal process.

The decisions of the PMU-GRC are communicated to the complainant formally and if he accepts the resolutions, the complainant's acceptance is obtained on a disclosure form.

If the complainant does not accept the solution offered by the PMU-GRC, then the complaint is passed on to the next level / or the complainant can reach the next level. The Chairman of the PMU-GRC would require to forward the issue to the next level through the Secretary of the PMU-GRC to facilitate in exploring a solution to this at this level before transferring it to the Third level.

Third Level of GRM: GRC at the Project Technical Committee Level

Any unresolved matter at the PMU level will be channelled to the Project Technical Committee. The committee at this level shall be headed by the Permanent Secretary, Federal Ministry of Water Resources while the NPC shall serve as the secretary of the committee. This committee shall convene on a case-by case basis, arbitrate the issue based on the guidelines established, and convene the necessary stakeholders if necessary. All the stakeholders, including state and non-state actors shall be able to lodge a complaint with the TC-GRC. The TC-GRC will be constituted as the Third Level of Redressal to look into the problems not solved in the Second Level

The Traditional/Community Leaders and the Commissioner of Local Government of the project Community will be the invitees to the Committee meetings to enable the TC-GRC to understand the deliberations of the Community Level GRC.

The decisions of the TC-GRC would be final from the Project side and the Complainant may decide to take a legal or any other recourse if he /she is not satisfied with the resolutions due to the deliberations of the Third Level GRC.

7.2 Dissemination of TRIMING GRM

A dissemination workshop will be held to acquaint the stakeholders of the Project with the guideline and workings of the GRM. This workshop, to be facilitated by a consultant will rally representatives of the WUAs, senior personnel of the RBDAs, PMU and key personalities in the project areas.

A pull-out of the GRM framework from this document should be printed into a small handbook in both Hausa and English language and distributed among project managers and every person that will be officially involved in the TRIMING Project GRM for ease of reference. The entire GRM document will be available, also in Hausa and English, in print at each office of the Social Scheme Manager.

7.3 Gender Based Violence (GBV) and Sexual Exploitation and Abuse (SEA)

Cases related to GBV shall be treated in a private and confidential manner, limiting information to what the survival or complainant is freely willing to provide. A separate register shall be opened for this category of cases and shall ONLY be accessed by the Grievance Redress Committee (GRC) secretary and the GRM focal person at the PMU. The complainant (if a survival) shall be attended to with empathy, assurance of safety and confidentiality. In the event that the complainant is not willing to divulge any information, this view should be respected by the GRM officer, and the complainant referred to the appropriate nearest medical centre, approved available GBV service provider or police, depending on the complainant's choice. Such a complaint should be reported to the World Bank Task Team as well by the PMU GRC within 24 hours.

CHAPTER EIGHT: SUMMARY, CONCLUSION AND RECOMMENDATION

This Environmental and Social Management Plan (ESMP) for the Proposed **Farmers Management Service Delivery Centers (FMSDC), Zamfara state** was prepared in order to predict the impact of the proposed project activities on the various biophysical and socio-economic components of the project environment and host communities and also to proffer adequate mitigation and enhancement measures for adverse and beneficial impacts respectively. Extensive literature review and field sampling and measurements/testing were used to carefully establish and assess the status and sensitivities of the various ecological and socio- economic components of the project area. Data acquisition from terrestrial and socio-economic environment as well as the assessment of the sensitivities of the various biophysical and socio-economic parameters involved a multidisciplinary approach. The impacts assessment of the proposed project shows that it will impact positively on the local economy, provide revenue and contribute to socio-economic development within the host communities and result in economic empowerment for the indigenes and residents particularly/, the farmers and all associated value chain actors. The adverse impact of the proposed project on water, land use, vegetation, socioeconomics and health are localized and can be controlled and ameliorated if the recommended mitigation measures are strictly followed.

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ANNEX: TERMS OF REFERENCE

TRANSFORMING IRRIGATION MANAGEMENT IN NIGERIA (TRIMING) PROJECT

DRAFT TERMS OF REFERENCE

FOR THE PREPARATION OF AN ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

FOR

FARMERS MANAGEMENT SERVICE DELIVERY CENTERS (FMSDC) AT ZAMFARA, JIGAWA, KANO AND SOKOTO STATES.

February 9, 2021

Acronyms and Abbreviations

BIS	Bakalori Irrigation Scheme
ESHS	Environmental, Social, Health, and Safety
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FMWR	Federal Ministry of Water Resources
GBV	Gender Based Violence
GDP	Gross Domestic Product
GRM	Grievance Redress Mechanism
HH	House Hold
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
HVIS	Hadeija Valley Irrigation Scheme
IC	Individual Consultant
IWRM	Integrated Water Resources Management
KRIS	Kano River Irrigation Scheme
KPI	Key Performance Indicator
M&E	Monitoring and Evaluation
MRVIS	Middle Rima Valley Irrigation Scheme
NCDC	Nigeria Centre for Disease Control
NGO	Non-Governmental Organization
OHS	Occupational Health and safety
OP	Operational Policy
PAD	Project Appraisal Document
PMU	Project Management Unit
PIM	Project Implementation Manual
PRA	Participatory Rapid Appraisal
RAP	Resettlement Action Plan
RBDAs	River Basin Development Authorities
RPF	Resettlement Policy Framework
SEA	Sexual Exploitation and Abuse
SH	Sexual Harassment
STD	Sexually Transmitted Disease
STI	Sexually Transmitted Infection
TRIMING	Transforming Irrigation Management in Nigeria Project
VAC	Violence Against Child
WUA	Water Users Association
WB	World Bank

1.0 INTRODUCTION

The Transforming Irrigation Management in Nigeria (TRIMING) Project is a World Bank financed project in collaboration with the Federal Government of Nigeria under the Federal Ministry of Water Resources. The Project Development Objective is to Improve Access to Irrigation and Drainage Services and to Strengthen Institutional Arrangements for Integrated Water Resources Management and Agriculture Service Delivery in selected large-scale public schemes in Northern Nigeria. The project is composed of four major components which includes:

Table 1: **TRIMING Project Components**

Project Components	**Main Activities**
Component 1: Water Resources Management and Dam Operation Improvement	
Subcomponent 1.1: Support to Integrated Water Resources Management	The *piloting* of anticipated provisions for separation of government regulatory and operational powers and responsibilities for integrated water resources management (IWRM) of basin-wide allocation, control, and river channel maintenance for sustainable public irrigation scheme functioning.
Subcomponent 1.2: Dam Operations Improvement and Safety	Investments for sustainable operational safety, improved operational practices and increased dam safety of selected dams and reservoirs including: Bakolori, Zobe, Goronyo, Tiga, Challawa Gorge and Dadin Kowa dams (i e. 6 dams), and Ruwan Kanya operational reservoir and Hadejia Barrage.
Component 2: Irrigation Development and Management	
Subcomponent 2.1: Irrigation Infrastructure Investments	Rehabilitation of 27,000 ha to improve the performance of a total of 50,000 ha irrigation area in five schemes downstream of the existing storage reservoirs and major investment in irrigation civil works and related studies.
Subcomponent 2.2: Improving Irrigation Management at Scheme Level	Aims to ensure the long-term viability of the irrigation and drainage services delivered on public irrigation schemes by implementing a progressive management transfer to Water Users Associations (WUAs) and to autonomous professional operators, either public or private.
Component 3: Enhancing Agricultural Productivity and Support to Value Chain Development	

Subcomponent 3.1: Support to agricultural productivity and market linkages	Provide resources to enhance farmers' productivity in the rehabilitated schemes and improve their participation in value chains through a matching grant mechanism; and the establishment of Farmers' Management and Service Delivery Centers on each scheme, supported by extension and marketing agribusiness professionals.
Subcomponent 3.2: Support to Innovation and R&D	Technical assistance for farmers, water schools, applied research such as improving irrigated agronomy, and introduction of innovations such as new crops or production techniques as part of emerging commercial partnerships.
Component 4: Institutional Development and Project Management	
Subcomponent 4.1: Institutional Development and Governance	This subcomponent includes five activities: capacity building and training of FMWR staff; support to RBDAs; consensus building and supporting the change process; generation, feedback, and dissemination of data, and strengthening supervision and accountability in the sector.
Subcomponent 4.2: Project Management and M&E	The activities here will support the establishment of the Project Management Unit and other key coordination institutions within Government and will provide guidance on change management processes. The M&E activities will develop an Information System for project purposes, studies and analytical work and a records and document management system.

The Component 3 focuses on value chains management and capacity building to improve job opportunities by promoting small- and medium-sized local entrepreneurs and including youth and women in project activities. Part of activities scheduled for developments under component 3 includes;

- Structuring and capacity building of farmer organizations for improved access to markets, inputs, and services.
- Facilitating value chains development opportunities to increase and improve supply of services along the value chains by using a Matching Grants Mechanism (MGM)
- Introducing and promoting innovation through a collaborative research and development program.

Description of Project Location: Bakura. Bakalori Irrigation Scheme (BIS)

The project is located in Birnin tudu ward of Bakura Local Government Area in Zamfara State, Nigeria. Bakura town is located in the Northwest Part of Zamfara, at 12°42′37”N and 5°52′23”E. It has an area of 1,366 km² and a population of 187,141 as per the 2006 Census. The postal code of the area is 892. Bakura LGA falls within the western Senatorial District of Zamfara State which includes Talata Mafara, Gumi, Anka, Bakura, Maradun and Bukkuyum LGAs. The local government shares a common boundary with Talata Mafara, Maradun and Anka LGAs. Bakura LGA has ten wards namely Bakura, Dakko, Damri, Dan Manu, Dankadu, Nasarawa, Rini, Yar Geda, Yar kofoji and Birnin Tudu. The project location falls in Birnin tudu ward. Figure 1 below shows the map of the Local Governement Area and Figure 2 shows the map of the project location. This project is aimed to improve the effectiveness of the target value chains and to provide to farmers and other value chain actors, critical services such as access to mechanization, inputs and other services.

Figure 1. Map of Local Government and Birnin Tudu

Birnin-Tudu

1.5 Rationale of the Study

According to the project design, the Farmers Management Service Delivery Center (FMDCs) needs to be established in order to improve the effectiveness of the target value chains and to provide farmers and other value chain actors, critical services such as accounting and financial management; facilitating out grower schemes and other market linkages, access to mechanization, extension and financial services, and inputs. To implement these activities, the TRIMING Project contracted the services of ACDI/VOCA

under direct supervision of the TRIMING Value Chains Specialist, to provide the following technical assistance to four targeted Irrigation Schemes:

- Develop a value chain development strategy (VCDS) for improving the productivity of smallholder crops, livestock, and fish farmers in targeted irrigation schemes and their linkages to input, output, and service markets
- Conduct value chain development activities for structuring business partnerships between smallholder farmers, off takers, input suppliers, mechanization services providers, and financial institutions for up to two years before established farmers' management and service delivery centers (FMCs) can undertake this role
- Develop FMCs' capacity in each targeted scheme to sustainably provide technical services such as accounting and financial management; establishment of out grower schemes and other forms of market linkages; and facilitation of access to mechanization, extension and financial services, and input supply to farmer organizations and other value chain players
- Support TRIMING's Project Management Unit (PMU) in design and implementation of the MGM.

However, this is not without some risks and potential impacts both positive and negative. Therefore, the concern with safety on site becomes necessary, equally important is the impact that this project may have on the project community and its people, as regarding their livelihood, health and safety, physical and socio-environmental clime. This has necessitated a thoroughly executed social and environmental analysis of the site, sprawling into the community with a view to taking into consideration people and environmental protection before, during, and after the project has been delivered; this will ensure that the rights and safety of the people are not trampled upon as a result of the project intervention, instead, seeking out how the people may be left better off.

1.6 Objective of the Consultancy

The objective of the study is to prepare an Environmental and Social Management Plan (ESMP) for the Farmers Management Service Delivery Centres (FMSDC). The ESMP must consist of a well-documented set of mitigation, monitoring, and institutional actions to be

taken before and during construction to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels. It should also include the measures needed to implement these actions, addressing the adequacy of the monitoring and institutional arrangements at the permanent office site. Tables, Pictures and Maps are important, these could be embedded within the body of the plan or attached in the appendix section.

Terms of reference of the ESMP are to:

- Describe the measures required to implement the construction of the Farmer Management Service Delivery Centre and related management and mitigation commitments;
- Describe specific additional measures required to implement contract related to international best practices, and approval conditions stipulated by the World Bank Safeguard Standards, Nigeria's Federal Ministry of Environment and NESREA requirements along with the appropriate intuitional laws/policies.
- Identify the roles and responsibilities of the environmental and social management stakeholders of the project; and
- Communicate the environmental and social expectations and requirements throughout the project tenure.

While all contractors and subcontractors shall comply with and apply the ESMP requirements as applicable to the tasks they are employed to undertake, some of the measures and procedures outlined in this proposal are commitments made by Project Management of TRIMING, and therefore remain responsible for their implementation. It should however be recognized that practical implementation of many of the measures may rest with contractors and subcontractors and consequently supervised by the TRIMING Project Management Unit.

2.0 Scope of Work

The ESMP Consultant will work in close collaboration with the design engineers or consultants as well as the TRIMING project team. S/he will have to consider the technical variants of the proposed activities and in return, inform the technical design consultants of any major constraint and recommend his/her professional advice if any issues or challenges are observed due to the social and environmental situation on ground.

The Consultant will consider the proposed civil, water management resources, electrical, river channels, irrigation and drainage routes, engineering designs, remodelling [if any] and other activities that would be carried out within the project location. The consultant will assess natural resources such as the trees and infrastructure [if any] that might be potentially affected during project implementation and operation and select the management strategies needed to mitigate any environmental and social risks/impacts.

The Coverage of the ESMP will be for the Farmer Management and Service Delivery Centres at (a) Bakolori Irrigation Scheme (b) Hadejia Valley Irrigation Scheme (c) Middle Rima Valley Irrigation Scheme (d) Kano River Irrigation Scheme

The core tasks of the ESMP shall include:

1. Review existing documentation of the TRIMING Project, all relevant safeguards documents and the PAD, ESMF, PIM and Environmental and Social Impact Assessment prepared for the Middle Rima Valley Irrigation Scheme, Sokoto State.
2. Review Environmental and Social Safeguards policies of the World Bank especially the applicable polices triggered on the project i.e., Environmental Assessment OP/BP 4.01; Natural Habitats OP/BP 4.04; Pest Management OP 4.09; Physical Cultural Resources OP/BP 4.11; Involuntary Resettlement OP/BP 4.12.
3. Describe the proposed project by providing a systematic description of the project relevant components and presenting plans, maps (proposed works, base camps, environmental and social sensitivities, staging areas, alternative routes etc. with details of XY coordinates), figures and tables.
4. Identify and summarize the policy, legal and administrative framework relevant to the project.
5. Define and justify the proposed project study area for the assessment and management of environmental and social risks and impacts.
6. Describe and analyze the environmental, social, physical, biological, Occupational Health and Safety conditions in the study area before and during project implementation. This analysis shall include a mapping of the project area of influence (500 meters radius) as well as discussions on the interrelations between environmental and social components and the importance that the society and local populations attach to these components.

7. Identify and assess the risk of labour influx and GBV/SEA/SH on the subproject as well as recommend mitigation measures in managing the risks and potential adverse impacts associated with labour influx and GBV. Define stakeholders' identification criteria, carry out stakeholders' mapping and categorization. Carry out consultations with primary and secondary stakeholders in order to obtain their views on and perception about the project. These consultations shall identify key environmental and social risks and impacts and obtain comments from stakeholders on the proposed mitigation/enhancement measures.
8. Define the potential environmental and social impacts and risks resulting from proposed project activities and appropriate measures to prevent, minimize, mitigate or ameliorate for adverse impacts or to enhance the project environmental and social benefits, including responsibilities and costs applicable to actual mitigation and subsequently to monitoring exercise.
9. Define community health broadly, and also as related to STDs such as HIV/AIDS and other STIs, VAC, child labour, and forced labour. Ensure that awareness creation on the aforementioned is captured to include responsibility for implementation such as prevention and mitigation as well as monitoring of progress.
10. Review institutional framework for environmental and social management. Use the outcome of this review to identifying responsibilities and actors for the implementation of proposed mitigation measures. By extension assess the capacity available across all relevant actors to implement the proposed mitigation measures and suggest recommendation in terms of training and capacity building, and applicable budget.
11. Discuss other salient related concerns that could be triggered as a result of project development.
12. Prepare an ESMP matrix table which could include cells for activities, potential risks/impacts, mitigation measures, responsibility for mitigation, cost of mitigation, parameters to be measured, KPIs, monitoring frequency and responsibility and costs.

The ESMP should capture:

The potential environmental and social impacts resulting from project activities including an assessment of Environmental, Social, Occupational Health and Safety (ESHS) risks

- The proposed mitigation measures;

- The institutional responsibilities for implementation of mitigation and enhancement measures;
- The monitoring indicators;
- The institutional responsibilities for monitoring the implementation of mitigation and enhancement measures;
- The costs of mitigation and enhancement activities; and sources of funds
- A calendar for implementation.

13. Develop an environmental and social monitoring program, including indicators, institutional responsibilities and associated costs.
14. As appropriate, prepare an Occupational health and safety hazard plan including an analysis of the risk of accident, the identification of appropriate security measures and the development of a preliminary contingency plan.
15. Based on the outcome of the consultation with stakeholders, the consultant should provide a summary of key indicators of community support for the project, as well as perceived benefits from the project expressed by different stakeholder groups.
16. Participate in the finalization of the detailed designs for the project intervention for the community.
17. Consultations- the ESMP Consultant would carry out consultations with identified primary and secondary stakeholders to obtain their views/opinions about the sub-project. These consultations shall occur during the preparation of the ESMP. The ESMP results and the proposed mitigation measures will be discussed with relevant stakeholders directly involved by the rehabilitation activities. Recommendations from this consultation will be included in the final ESMP report.

3.0 Socio-Economic Baseline Report

As part of diligent efforts to understand the current situation of inhabitants of the communities and the possible inter-relationship between them and the project, it is important that TRIMING identifies these people so as to be guided in tailoring the ESMP to suit the reality of the people as the introduction of the project in their community is concerned. What is the estimated population of residents, what percentage are male and female, how much children are in this community (including vulnerable groups), what's their primary

occupation, are there prevalent cultural beliefs that shape their way of life and so on? The consultant should carry out a socio-economic baseline study in order to report a detailed characteristic of the people, which will be relevant in preparing site-specific safeguard instruments such as ESMP, GRM, HIV/AIDs, GBV/SEA/SH prevention and mitigation action plan etc. Correct reportage of socio-economics is crucial as it will be used to make very important decisions, the consultant should take note of this.

3.1 Stakeholders Identification and Engagement

This section shall summarize the actions undertaken to consult all the various groups that are likely to be affected by the invention Project. Consultation here would be highly inclusive in getting the requisite feedbacks from the project beneficiaries about the Project, understanding their economic, social cultural life style [in assessing how these might affect the Project Intervention] and the Project Team responses so as to manage the expectations beneficiaries' might have for the Project. an in-depth stakeholders' analysis is required as part of this consulting. The analysis will include identification of all relevant persons, groups, organizations while zooming in on the vulnerable, women, girls and children, the elderly, persons with disabilities and project affected persons such as those likely to be displaced as a result of the intervention works, those whose livelihoods are threatened or directly affected by the project etc. The detailed record of the consultation meetings shall be presented in annex to the ESMP. Mitigation and adaptation measures should be planned against Covid-19 Pandemic during stakeholder engagements

3.2. Uptake of In-depth Analysis of Gender Based Violence and Consultations

Prevention of GBV and related incidences such as SEA/SH/VAC is of utmost importance in the project. In a bid to reduce risks associated with daily work routine within project intervention areas and around the site as a result of the project implementation, the consultant should explore this concern exhaustively, especially by consulting with women groups so as to understand current realities of GBV and related cases as guided by inputs of women during consultations. This may not be a one-off assignment; consultations should be carried out as necessary until satisfactory outcomes are attained. Data such as frequency of occurrence, coping mechanisms, reportage and punishment systems etc can be discussed at a great depth. Relevant legal provisions for such cases in the Nigerian law and other relevant documents

should be reviewed so as to aid design of incidence prevention, uptake, and resolution in the event of such incidence, although prevention is the most important factor here.

4.0 Ethical Requirements

Before undertaking any activity, the team will make sure that it understands all ethical considerations related to working on GRM, GBV, SEA, SH and VAC. The consultant should not collect any primary data or conduct interviews or research using GBV/SEA survivors as case studies; consultant will only make use of secondary data in this regard. Furthermore, the consultant shall ensure that the consultation process is in line with NCDC protocol and WB COVID-19 guidelines.

4.1 Content of the Environmental and Social Management Plan

The typical content of an ESMP is presented below. It shall be noted that the presentation of the report may be modified depending on the nature and specific requirements of the project.

Preliminary pages

- Cover page
- Table of contents
- List of acronyms and their definitions
- Executive Summary

Chapter 1: Introduction

- Background information
- Beneficiaries of the proposed work
- Description of the proposed intervention
- Objectives of the ESMP
- Rationale of the ESMP. This shall include scope, methodology and review of relevant literature and project documents
- Relevant Maps

Chapter 2: Policy Legal and Administrative Framework

This should include policy framework, National Regulatory Framework, Institutional Framework and World Bank Safeguard Policies

Chapter 3: Environmental and Social Baseline

- Description of the environmental baseline conditions. (To include a description of the physical environment and political administration of the study area)
- Description of socio-economic baseline conditions. (To include population, ethnicity, employment, disability etc.)
- Description of Biophysical Environment

Chapter 4: Assessment of Potential Adverse Impacts and Analysis of Alternatives

- Methods and techniques used in assessing and analyzing the environmental and social impacts of the proposed project
- Discussion of alternatives to the current project and reasons for their rejection, including short description of likely future scenario without intervention;
- Discussion of the potentially significant adverse environmental and social impacts of the proposed project.

Chapter 5: Environmental and Social Management Plan (including):

- Discussion of the potential adverse environmental and social impacts of the proposed sub-projects including the impact of COVID 19 Pandemic
- Proposed mitigation measures and institutional responsibilities for Implementation including cost estimates;
- Environmental and Social Monitoring programs and instructional responsibilities for implementation including cost estimates;
- Implementation schedule
- Contractual measures
- Indicative budget for ESMP implementation
- ESMP disclosure

Chapter 6: Stakeholder Consultation

- This chapter shall summarize the actions undertaken to consult the groups affected by the project, as well as other concerned key stakeholders including Civil Society Organizations. The detailed record of the consultation meetings shall be presented in the annex to the ESMP. Documentation under this chapter should also include measures taken to mitigate against COVID 19 during the consultation

Chapter 7: Grievance Redress Mechanism (GRM)

In addition to the GRM structure already on ground, the chapter should Develop a mitigating GRM template for grievances and complaints that may arise from the project stating the GRM procedures, the value chain, persons responsible [GRM Focal persons] and the levels of the GRM structures. This chapter should contain reporting of the establishment of an active Grievance Redress Mechanism within the participating communities.

Chapter 8: Conclusion and Recommendations

Annexes

Annex 1: Terms of Reference

Annex 2: List of Persons met with pictures

Annex 3: Summary of World Bank Safeguard Policies triggered by this project.

Annex 4: Records of Inter Agency and Public/NGO Communications including photos

Annex 5: List of participants in consultations and summaries of consultations

Annex 6: General Environmental and Social Management Conditions for Construction Contracts

Annex 7: Occupational Health and Safety (OHS) Plan

Annex 8: Sample of Questionnaire for socio-economics

Annex 9: Waste Management Plan

Annex 10: Environmental and Social Performance Monitoring Checklist

Annex 11: Traffic Management Plan

Annex 12: Workers Code of Conduct for both contractors and supervision consultants

Annex 13: Labor Influx Management Plan to include salient aspects such as Gender Based Violence (GBV)/ Sexual Exploitation and Abuse (SEA)

Annex 14: Workers Camp Site Management Plan

Annex 15: Sample Content of Contractor Environmental and Social Management Plan

Annex 16: Sample Borrow pit management plan

Annex 17: COVID 19 prevention and active response plan

Annex 18: Pest Management Plan. This should be captured in the body of the report and Executive summary succinctly

5.0 Required Qualification and Experience of the Consultant

a. The candidate shall have expertise and an advanced degree earned in relevant field including any of the following: civil/environmental engineering, environmental sciences, or social sciences.

b. The candidate shall have not less than eight (8) years of experience with a minimum specific experience of four (4) years in planning related to infrastructure development or disaster response.

c. Experience in the design and preparation of an Environmental and Social Management Plan (ESMP) for infrastructure projects.

d. Competency and documented experience in social and environmental scientific analysis and development of operational action plans.

e. Working knowledge of World Bank operational safeguards policies gained through hands-on experience in the preparation and implementation of environmental and social management plans in Northern Nigeria.

6.0 Duration of work:

This assignment is expected to be completed within a period of four (4) weeks commencing immediately after contract signing. It should be noted that the success of the assignment during this period largely revolves around adequate consultations with all relevant stakeholders. The successful consultant is expected to spend considerable time in the project site to gather all necessary salient primary information.

6.1 Reporting

The consultant shall report to the National Project Coordinator through the Environmental and Social Safeguards Specialists.

7.0 Responsibilities of the Client

In addition to the project supervisory and other responsibilities contained in this assignment, the proponent shall provide the consultant with the following project documents:

- Project Appraisal Document
- Environmental and Social Management Framework (ESMF) for the TRIMING Project
- Resettlement Policy Framework (RPF) for the TRIMING Project
- Feasibility study report and subsequently, the Engineering designs

- Disclosed Environmental and Social Impact Assessment report for the Middle Rima Valley Irrigation Scheme
- Grievance Redress Mechanism report and Communication strategy report for the TRIMING Project
- Reports on the TRIMING Project's Integrated Pest Management and safe use of chemicals approaches
- Other relevant Safeguard instruments prepared for the TRIMING Project

8.0 Deliverables:

A comprehensive and fully referenced report including detailed ESMP table and implementation process must be submitted by the consultant at the end of the assignment.

- **Inception Report:** Expected in one (1) week after the date of contract signing. This should include methodology and work plan with clearly defined community entry strategy that ensures free prior and informed consent. Consultant shall submit (3) hard copies and a soft copy of the inception report.

- **Draft Report:** Expected in two (2) weeks after contract signing, detailing out findings from desk reviews, fieldwork, environmental and socioeconomic characteristics and stakeholders' engagement/consultation, etc. which will be circulated for comments and relevant recommendation. Consultant shall submit (6) hard copies and a soft copy of the draft report.

- **Draft Final Report:** Expected in three (3) weeks after contract signing, after all comments and inputs from the PMU and the World Bank have been addressed and incorporated in the report. Consultant shall submit (6) hard copies and a soft copy of the draft final report to the PMU.

- **Final Report:** Expected in four (4) weeks after contract signing, detailing all relevant information and addressed comments. Consultant shall submit (8) hard copies and a soft copy of the final draft report to the PMU.

All Reports Shall Be in English and Presented in Hard and Soft Copies, however, for the purpose of workshops and the final report submissions, the adviser is to produce the executive summary in English language and in the local language of the target community.

The adviser will prepare high quality PowerPoints. All submission shall be made to the National Project Coordinator, TRIMING.

All information pertaining to this programme as well as outputs produced under this contract shall remain the property of the FMWR who shall have exclusive rights over their use. Except for purposes of this assignment, the products shall not be disclosed to the public nor used in any format without written permission of FMWR and TRIMING in line with the national and International Copyright Laws applicable.

THE CONSULTANT WILL SIGN A CONFIDENTIALITY and NON-DISCLOSURE AGREEMENT WITH THE PMU. Noncompliance will subject to legal penalties not inferior to the Full Cost of the Contract.

10.0 SELECTION METHOD

The Client will source internally within the Project Management Unit.